SAR TEST REPORT

(Mobile Phone)

REPORT NO.: SA980313L04-3

MODEL NO.: MC9596

RECEIVED: Mar. 13, 2009

TESTED: Mar. 17 ~ May 05, 2009

ISSUED: Apr. 02, 2009

APPLICANT: Motorola, Inc.

ADDRESS: One Motorola Plaza, Holtsville, NY 11742-1300 USA

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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1. CERTIFICATION

PRODUCT:	Mobile Computer
MODEL:	MC9596
BRAND:	Motorola
APPLICANT:	Motorola, Inc.
TESTED:	Mar. 17 ~ May 05, 2009
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 2 (Section 2.1093)** **FCC OET Bulletin 65, Supplement C (01-01)** **RSS-102**

The above equipment (model: MC9596) have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Andrea Hsia , **DATE:** Apr. 02, 2009
Andrea Hsia / Specialist

TECHNICAL ACCEPTANCE : James Fan , **DATE:** Apr. 02, 2009
Responsible for RF
James Fan / Engineer

APPROVED BY : Gary Chang , **DATE:** Apr. 02, 2009
Gary Chang / Assistant Manager

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

EUT	Mobile Computer	
MODEL NO.	MC9596	
FCC ID	UZ7MC9596	
POWER SUPPLY	3.7Vdc from rechargeable lithium battery 12Vdc from power adapter	
CLASSIFICATION	Portable device, production unit	
MODULATION TYPE	GMSK / 8PSK / BPSK	
FREQUENCY RANGE	Tx Frequency: 824.2MHz ~ 848.8MHz (GSM band) 1850.2MHz ~ 1909.8MHz (WCDMA band) Rx Frequency: 869.2MHz ~ 893.8MHz (GSM band) 1930.2MHz ~ 1989.8MHz (WCDMA band)	
CHANNEL FREQUENCIES UNDER TEST AND ITS CONDUCTED OUTPUT POWER	**GSM850 band:**	**WCDMA850 band:**
	1.663W / 836.6MHz for CH 190	0.188W / 836.4MHz for CH 4182
	PCS1900 band:	**WCDMA1900 band:**
	0.966W / 1880.0MHz for CH 661	0.228W / 1880.0MHz for CH 9400
MAX. AVERAGE SAR (1g)	**Head:**	**Body:**
	0.199W/kg (GSM850) 0.196W/kg (WCDMA850) 0.089W/kg (GSM1900) 0.208W/kg (WCDMA1900)	0.215W/kg (GSM850) 0.168W/kg (WCDMA850) 0.112W/kg (GSM1900) 0.274W/kg (WCDMA1900)
ANTENNA TYPE	Monopole antenna	
MAX. ANTENNA GAIN	**850MHz:** -0.3dBi	**1900MHz:** 2.2dBi
DATA CABLE	Refer to NOTE as below	
I/O PORTS	Refer to user's manual	
ACCESSORY DEVICES	Battery	

NOTE:

1. The applicant defined the normal working voltage of the battery is from 3.7Vdc to 4.2Vdc.
2. The EUT has one lithium battery listed as below:

LI-ION BATTERY	
BRAND:	MOTOROLA
MODEL:	82-111636-01
RATING:	3.7Vdc, 4800mAh, 17.7Wh

3. The models identified as below are identical to each other except of the following options:
   - Barcode reader: 1D laser scanner / 2D Imager

BRAND	MODEL	DESCRIPTION
Motorola	MC9596	HSDPA 1D Calculator Numeric
Motorola	MC9596	HSDPA 2D Calculator Numeric
Motorola	MC9596	HSDPA 1D Alpha Primary
Motorola	**MC9596**	**HSDPA 2D Alpha Primary**
Motorola	MC9596	HSDPA 1D Telephony Numeric
Motorola	MC9596	HSDPA 2D Telephony Numeric
Motorola	MC9596	HSDPA 1D Alpha Numeric Wide
Motorola	MC9596	HSDPA 2D Alpha Numeric Wide
**the worst case had been marked by boldface.		

4. The EUT is a Mobile Computer. The functions of EUT listed as below:

	REFERENCE REPORT
WLAN 802.11b/g	SA980313L04
WLAN 802.11a (5745~5825 MHz)	
WLAN 802.11a (5180 ~ 5320MHz, 5500 ~ 5700MHz)	SA980313L04-1
BLUETOOTH	SA980313L04-2
GSM 850 / WCDMA 850	SA980313L04-3
PCS 1900 / WCDMA 1900	

5. The communicated functions of EUT listed as below:

		GSM 850MHz	PCS 1900MHz	WCDMA 850MHz	WCDMA 1900MHz	
2G	GSM	√	√			With 802.11a/b/g + Bluetooth + GPS functions
	GPRS	√	√			
	EDGE	√	√			
3G	WCDMA			√	√	
	Release 5 HSDPA			√	√	

6. The following accessories are for support units only.

PRODUCT	BRAND	MODEL	P/N	DESCRIPTION
USB charging Y cable	Motorola	-	25-116365-01R	1.8m shielded cable with one core
Headset	Motorola	-	50-11300-050R	0.8m non-shielded cable with one core
Adapter	HIPRO	HP-O2040D43	-	Input: 100-240Vac, 50-60Hz, 1.5A Output: 12Vdc, 3.33A, MAX 40W Power line: AC 1.7m non-shielded cable without core DC1.8m non-shielded cable with one core
Holster	-	-	-	-

7. Hardware version: 1A.
8. Software version: BSP15.1.
9. IMEI Code: 00440168005 000 ~ 00440168005 999
10. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

2.2 SAR MEASUREMENT CONDITIONS FOR WCDMA

The following procedures were followed according to FCC “SAR Measurement Procedure for 3G Devices”, October 2007.

➢ Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1’s” for WCDMA/HSDPA or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HSDPA, HSPA) should be tabulated in the SAR report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations should be clearly identified.

➢ Head SAR Measurement

SAR for head exposure configurations in voice mode is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than ¼ dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 kbps AMR with a 3.4 kbps SRB (signaling radio bearer) using the exposure configuration that results in the highest SAR in 12.2 kbps RMC for that RF channel.

➢ Body SAR Measurements

SAR for body exposure configurations in voice and data modes is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. SAR for other spreading codes and multiple DPDCHn, when supported by the DUT, are not required when the maximum average output of each RF channel, for each spreading code and DPDCHn configuration, are less than ¼ dB higher than those measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel with an applicable RMC configuration for the corresponding spreading code or DPDCHn using the exposure configuration that results in the highest SAR with 12.2 kbps RMC. When more than 2 DPDCHn are supported by the DUT, it may be necessary to configure additional DPDCHn for a DUT using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

➢ Handsets with Release 5 HSDPA

Body SAR is not required for handsets with HSDPA capabilities when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than that measured without HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2 kbps RMC is ≤ 75% of the SAR limit. Otherwise, SAR is measured for HSDPA, using the additional body SAR procedures in the “Release 5 HSDPA Data Devices” section of this document, on the maximum output channel with the body exposure configuration that results in the highest SAR in 12.2 kbps RMC for that RF channel. Handsets with both HSDPA and HSUPA should be tested according to Release 6 HSPA test procedures.

2.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to the specifications of the manufacturer, this product must comply with the requirements of the following standards:

FCC 47 CFR Part 2 (2.1093)

FCC OET Bulletin 65, Supplement C (01- 01)

RSS-102

IEEE 1528-2003

All test items have been performed and recorded as per the above standards.

2.4 GENERAL INOFRMATION OF THE SAR SYSTEM

DASY5 (software 5.0 Build 125) consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY5 software defined. The DASY5 software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

EX3DV3 ISOTROPIC E-FIELD PROBE

CONSTRUCTION	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
FREQUENCY	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
DIRECTIVITY	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
DYNAMIC RANGE	10 μW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μW/g)
DIMENSIONS	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
APPLICATION	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

NOTE

1. The Probe parameters have been calibrated by the SPEAG. Please reference “APPENDIX D” for the Calibration Certification Report.
2. For frequencies above 800MHz, calibration in a rectangular wave-guide is used, because wave-guide size is manageable.
3. For frequencies below 800MHz, temperature transfer calibration is used because the wave-guide size becomes relatively large.

TWIN SAM V4.0

CONSTRUCTION	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-2003, CENELEC 50361 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.
SHELL THICKNESS	2 ± 0.2 mm
FILLING VOLUME	Approx. 25 liters
DIMENSIONS	Height: 810 mm; Length: 1000 mm; Width: 500 mm

SYSTEM VALIDATION KITS:

CONSTRUCTION	Symmetrical dipole with l/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with brain simulating solutions Includes distance holder and tripod adaptor
CALIBRATION	Calibrated SAR value for specified position and input power at the flat phantom in brain simulating solutions
FREQUENCY	835, 1900
RETURN LOSS	> 20 dB at specified validation position
POWER CAPABILITY	> 100 W (f < 1GHz); > 40 W (f > 1GHz)
OPTIONS	Dipoles for other frequencies or solutions and other calibration conditions upon request

DEVICE HOLDER FOR SAM TWIN PHANTOM

CONSTRUCTION

The device holder for the GSM900/DCS1800/PCS1900 GSM/GPRS/CDMA Mobile Phone device is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles. The holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity ε =3 and loss tangent δ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered. The device holder for the portable device makes up of the polyethylene foam. The dielectric parameters of material close to the dielectric parameters of the air.

DATA ACQUISITION ELECTRONICS

CONSTRUCTION

The data acquisition electronics (DAE3) consists of a highly sensitive electrometer grade preamplifier with auto-zeroing, a channel and gain-switching multiplex, a fast 16 bit AD converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The mechanical probe is mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

2.5 GENERAL DESCRIPTION OF THE SPATIAL PEAK SAR EVALUATION

The DASY5 post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the micro-volt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
Device parameters:	- Frequency	F
	- Crest factor	Cf
Media parameters:	- Conductivity	σ
	- Density	ρ

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \bullet \frac{cf}{dcp_i}$$

V_i	=compensated signal of channel i	(i = x, y, z)
U_i	=input signal of channel I	(i = x, y, z)
Cf	=crest factor of exciting field	(DASY parameter)
dcp_i	=diode compression point	(DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

$$\text{E-fieldprobes: } E_i = \sqrt{\frac{V_1}{Norm_i \cdot ConvF}}$$

$$\text{H-fieldprobes: } H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

V_i	=compensated signal of channel I	(i = x, y, z)
$Norm_i$	=sensor sensitivity of channel i μV/(V/m)2 for E-field Probes	(i = x, y, z)
ConvF	= sensitivity enhancement in solution	
a_{ij}	= sensor sensitivity factors for H-field probes	
F	= carrier frequency [GHz]	
E_i	= electric field strength of channel i in V/m	
H_i	= magnetic field strength of channel i in A/m	

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1'000}$$

SAR	= local specific absorption rate in mW/g
E_{tot}	= total field strength in V/m
σ	= conductivity in [mho/m] or [Siemens/m]
ρ	= equivalent tissue density in g/cm3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid. The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

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

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

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

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7 x 7 x 7 scans. The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30 x 30 x 30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume in a 1mm grid (42875 points). In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

3. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
1	Universal Radio Communication Tester	R&S	CMU200	104484	Jan. 20, 2009

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE: All power cords of the above support units are non shielded (1.8m).

4. DESCRIPTION OF TEST POSITION

4.1 DESCRIPTION OF TEST POSITION

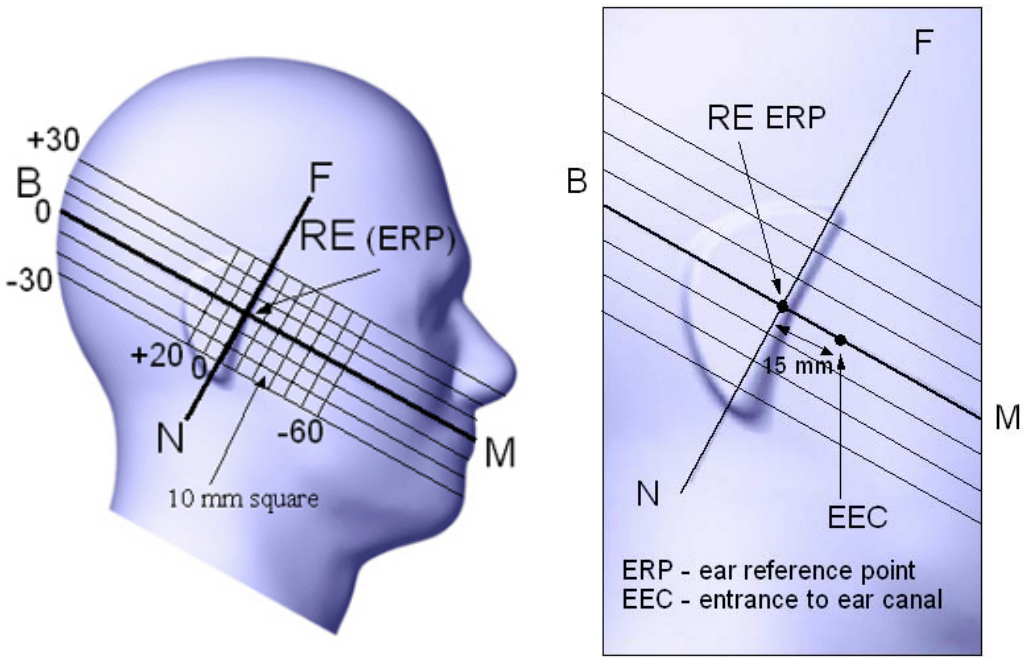


FIGURE 3.1

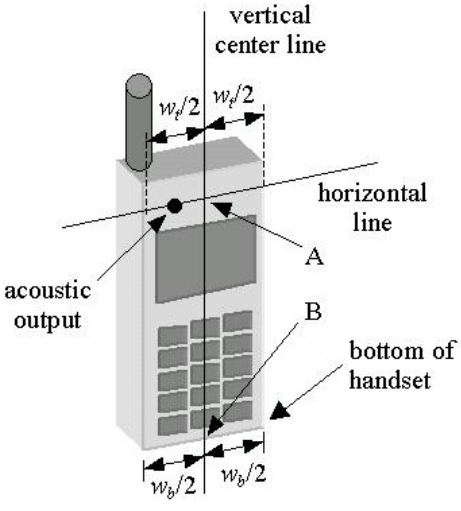


FIGURE 3.1a

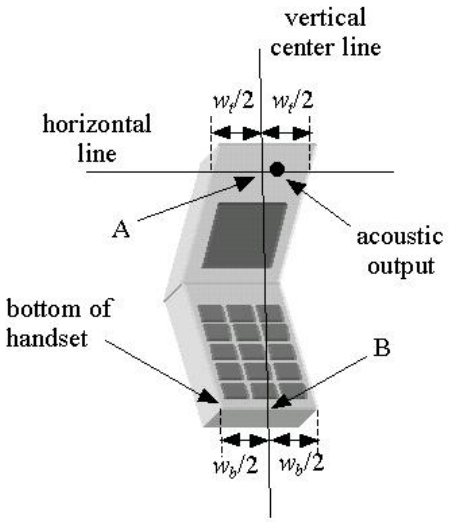
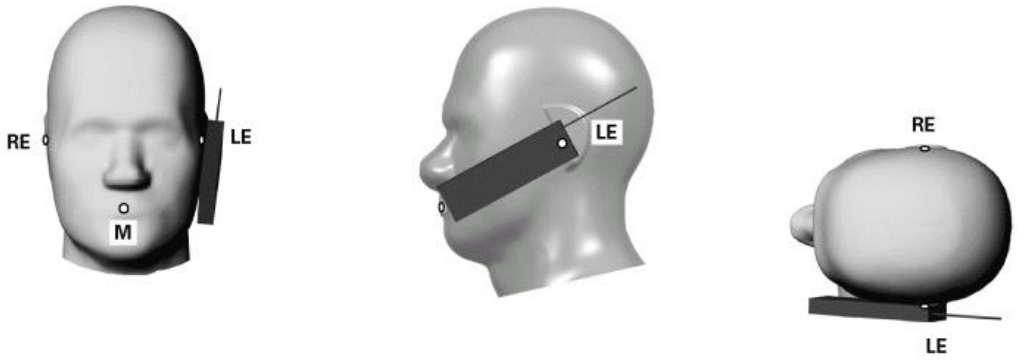


FIGURE 3.1b

4.1.1 TOUCH/CHEEK TEST POSITION

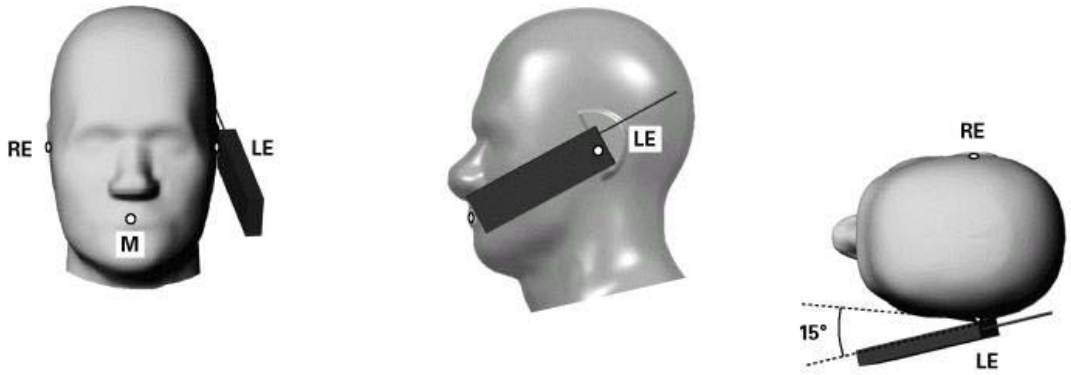
The head position in Figure 3.1, the ear reference points ERP are 15mm above entrance to ear canal along the B-M line. The line N-F (Neck-Front) is perpendicular to the B-M (Back Mouth) line. The handset device in Figure 3.1a and 3.1b,The vertical centerline pass through two points on the front side of handset: the midpoint of the width wt of the handset at the level of the acoustic output (point A) and the midpoint of the width Wb of the bottom of the handset (point B). The vertical centerline is perpendicular to the horizontal line and pass through the center of the acoustic output. The point A touches the ERP and the vertical centerline of the handset is parallel to the B-M line. While maintaining the point A contact with the ear(ERP), rotate the handset about the line NF until any point on handset is in contact with the cheek of the phantom



TOUCH/CHEEK POSITION FIGURE

4.1.2 TILT TEST POSITION

Adjust the device in the cheek position. While maintaining a point of the handset contact in the ear, move the bottom of the handset away from the mouth by an angle of 15 degrees.



TILT POSITION FIGURE

4.1.3 BODY-WORN CONFIGURATION

The handset device attached the belt clip or the holster. The keypad face of the handset is against with the bottom of the flat phantom face and the bottom of the keypad face contact to the bottom of the flat phantom.

When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only accessory that dictates the closest spacing to the body must be tested.

4.2 DESCRIPTION OF TEST MODE

TEST MODE	COMMUNICATION MODE	MODULATION TYPE	ASSESSMENT POSTITION	TESTED CHANNEL
1	GSM850	GMSK	A / Cheek	190
2		GMSK	A / Tilt	190
3		GMSK	B / Cheek	190
4		GMSK	B / Tilt	190
5		GMSK	C / Head in flat phantom	190
6		GMSK	D : Body / Front (with sheath)	190
7	GPRS850 TS2	GMSK	D : Body / Front (with sheath)	190
8	GPRS850 TS1	GMSK	D : Body / Front (with sheath)	190
9	E-GPRS850 TS2	8PSK	D : Body / Front (with sheath)	190
10	E-GPRS850 TS1	8PSK	D : Body / Front (with sheath)	190
11	WCDMA850	BPSK	A / Cheek	4182
12		BPSK	A / Tilt	4182
13		BPSK	B / Cheek	4182
14		BPSK	B / Tilt	4182
15		BPSK	C / Head in flat phantom	4182
16		BPSK	D : Body / Front (with sheath)	4182
17	HSDPA850	8PSK	D : Body / Front (with sheath)	4182

TEST MODE	COMMUNICATION MODE	Modulation TYPE	ASSESSMENT POSTITION	Tested Channel
18	GSM1900	GMSK	A / Cheek	661
19		GMSK	A / Tilt	661
20		GMSK	B / Cheek	661
21		GMSK	B / Tilt	661
22		GMSK	C / Head in flat phantom	661
23		GMSK	D : Body / Front (with sheath)	661
24	GPRS1900 TS2	GMSK	D : Body / Front (with sheath)	661
25	GPRS1900 TS1	GMSK	D : Body / Front (with sheath)	661
26	E-GPRS1900 TS2	8PSK	D : Body / Front (with sheath)	661
27	E-GPRS1900 TS1	8PSK	D : Body / Front (with sheath)	661
28	WCDMA1900	BPSK	A / Cheek	9400
29		BPSK	A / Tilt	9400
30		BPSK	B / Cheek	9400
31		BPSK	B / Tilt	9400
32		BPSK	C / Head in flat phantom	9400
33		BPSK	D : Body / Front (with sheath)	9400
34	HSDPA1900	8PSK	D : Body / Front (with sheath)	9400

NOTE 1: Assessment position A: Right head position, B: Left head position, C: Head in flat phantom, D: Body position; please refer to the test set up photo.

NOTE 2: Since mobile phone antennas located at the bottom of EUT, SAR measurements around the mouth and jaw regions of the SAM head phantom is required. The SAR required in these regions of SAM should be measured using a flat phantom. Test setup follows KDB No.878710. Test setup show on "Head in flat phantom" of TSup_UZ7MC9596.pdf.

4.3 SUMMARY OF TEST RESULTS

ITEM		1	2	3	4	5
PART OF ASSESSMENT		HEAD POSITION				
COMMUNICATION MODE		GSM850				
CHAN.	FREQ. (MHz)	MEASURED VALUE OF 1g SAR (W/kg)				
190	836.6 (Mid.)	0.180	0.188	0.150	**0.199**	0.145

ITEM		6	7	8	9	10
PART OF ASSESSMENT		BODY POSITION				
COMMUNICATION MODE		GSM850	GPRS850 TS2	GPRS850 TS1	E-GPRS850 TS2	E-GPRS850 TS1
CHAN.	FREQ. (MHz)	MEASURED VALUE OF 1g SAR (W/kg)				
190	836.6 (Mid.)	0.135	**0.215**	0.151	0.065	0.052

ITEM		11	12	13	14	15
PART OF ASSESSMENT		HEAD POSITION				
COMMUNICATION MODE		WCDMA850				
CHAN.	FREQ. (MHz)	MEASURED VALUE OF 1g SAR (W/kg)				
4182	836.4 (Mid.)	0.182	0.177	0.142	**0.196**	0.129

ITEM		16	17
PART OF ASSESSMENT		BODY POSITION	
COMMUNICATION MODE		WCDMA850	HSDPA850
CHAN.	FREQ. (MHz)	MEASURED VALUE OF 1g SAR (W/kg)	
4182	836.4 (Mid.)	0.164	**0.168**

NOTE: The worst value of each communication has been marked by boldface.

ITEM		18	19	20	21	22
PART OF ASSESSMENT		HEAD POSITION				
COMMUNICATION MODE		GSM1900				
CHAN.	FREQ. (MHz)	MEASURED VALUE OF 1g SAR (W/kg)				
661	1880.0 (Mid.)	**0.089**	0.035	0.072	0.035	0.051

ITEM		23	24	25	26	27
PART OF ASSESSMENT		BODY POSITION				
COMMUNICATION MODE		GSM1900	GPRS1900 TS2	GPRS1900 TS1	E-GPRS1900 TS2	E-GPRS1900 TS1
CHAN.	FREQ. (MHz)	MEASURED VALUE OF 1g SAR (W/kg)				
661	1880.0 (Mid.)	0.086	**0.112**	0.082	0.106	0.076

ITEM		28	29	30	31	32
PART OF ASSESSMENT		HEAD POSITION				
COMMUNICATION MODE		WCDMA1900				
CHAN.	FREQ. (MHz)	MEASURED VALUE OF 1g SAR (W/kg)				
9400	1880.0 (Mid.)	**0.208**	0.056	0.167	0.075	0.112

ITEM		33	34
PART OF ASSESSMENT		BODY POSITION	
COMMUNICATION MODE		WCDMA1900	HSDPA1900
CHAN.	FREQ. (MHz)	MEASURED VALUE OF 1g SAR (W/kg)	
9400	1880.0 (Mid.)	**0.274**	0.248

NOTE: The worst value of each communication has been marked by boldface.

5. TEST RESULTS

5.1 TEST PROCEDURES

The EUT (Mobile Computer) makes a phone call to the communication simulator station. Establish the simulation communication configuration rather the actual communication. Then the EUT could continuous the transmission mode. Adjust the PCL of the base station could controlled the EUT to transmitted the maximum output power. The base station also could control the transmission channel. The SAR value was calculated via the 3D spline interpolation algorithm that has been implemented in the software of DASY5 SAR measurement system manufactured and calibrated by SPEAG. According to the IEEE 1528 / EN 50361, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- Power reference measurement
- Verification of the power reference measurement
- Area scan
- Zoom scan
- Power reference measurement

The area scan with 15mm x 15mm grid was performed for the highest spatial SAR location. Consist of 11 x 13 points while the scan size is the 150mm x 180mm. The zoom scan with 30mm x 30mm x 30mm volume was performed for SAR value averaged over 1g and 10g spatial volumes.

In the zoom scan, the distance between the measurement point at the probe sensor location (geometric center behind the probe tip) and the phantom surface is 4.0 mm and maintained at a constant distance of ±1.0 mm during a zoom scan to determine peak SAR locations. The distance is 4mm between the first measurement point and the bottom surface of the phantom. The secondary measurement point to the bottom surface of the phantom is with 9mm separation distance. The cube size is 7 x 7 x 7 points consist of 343 points and the grid space is 5mm.

The measurement time is 0.5 s at each point of the zoom scan. The probe boundary effect compensation shall be applied during the SAR test. Because of the tip of the probe to the Phantom surface separated distances are longer than half a tip probe diameter.

In the area scan, the separation distance is 4mm between the each measurement point and the phantom surface. The scan size shall be included the transmission portion of the EUT. The measurement time is the same as the zoom scan. At last the reference power drift shall be less than ±5%.

5.2 MEASURED SAR RESULTS

GSM850 BAND HEAD POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.1°C, Liquid Temperature：22.7°C Humidity：61%RH		
TESTED BY	Dylan Chiou	DATE	Mar. 17, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
190	836.6 (Mid.)	GMSK	1.663	1.651	-0.72	1	0.180
190	836.6 (Mid.)	GMSK	1.663	1.649	-0.84	2	0.188
190	836.6 (Mid.)	GMSK	1.663	1.647	-0.96	3	0.150
190	836.6 (Mid.)	GMSK	1.663	1.645	-1.08	4	**0.199**

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

GSM850 BAND HEAD POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.2°C, Liquid Temperature：22.7°C Humidity：63%RH		
TESTED BY	Dylan Chiou	DATE	May 05, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
190	836.6 (Mid.)	GMSK	1.663	1.645	-1.08	5	0.145

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

GSM850/GPRS850 TS2/GPRS850 TS1/E-GPRS850 TS2/E-GPRS850 TS1
BAND BODY POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.3°C, Liquid Temperature：22.9°C Humidity：63%RH		
TESTED BY	Dylan Chiou	DATE	Mar. 19, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
190	836.6 (Mid.)	GMSK	1.663	1.642	-1.26	6	0.135
190	836.6 (Mid.)	GMSK	1.156	1.140	-1.38	7	**0.215**
190	836.6 (Mid.)	GMSK	1.663	1.639	-1.44	8	0.151
190	836.6 (Mid.)	8PSK	0.332	0.327	-1.51	9	0.065
190	836.6 (Mid.)	8PSK	0.543	0.534	-1.66	10	0.052

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

WCDMA850 BAND POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.1°C, Liquid Temperature：22.7°C Humidity：61%RH		
TESTED BY	Dylan Chiou	DATE	Mar. 17, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
4182	836.4 (Mid.)	BPSK	0.188	0.186	-1.06	11	0.182
4182	836.4 (Mid.)	BPSK	0.188	0.185	-1.60	12	0.177
4182	836.4 (Mid.)	BPSK	0.188	0.184	-2.13	13	0.142
4182	836.4 (Mid.)	BPSK	0.188	0.183	-2.66	14	**0.196**

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

WCDMA850 BAND POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.2°C, Liquid Temperature：22.7°C Humidity：63%RH		
TESTED BY	Dylan Chiou	DATE	May 05, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
4182	836.4 (Mid.)	BPSK	0.188	0.184	-2.13	15	0.129

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

WCDMA850/HSDPA850 BAND BODY POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.3°C, Liquid Temperature：22.9°C Humidity：63%RH		
TESTED BY	Dylan Chiou	DATE	Mar. 19, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
4182	**836.4 (Mid.)**	**BPSK**	0.188	0.181	-3.72	16	0.164
4182	**836.4 (Mid.)**	**8PSK**	0.187	0.180	-3.74	17	**0.168**

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

PCS1900 BAND HEAD POSITION

ENVIRONMENTAL CONDITION	Air Temperature：22.9°C, Liquid Temperature：22.7°C Humidity：62%RH		
TESTED BY	Dylan Chiou	DATE	Mar. 18, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
661	1880 (Mid.)	GMSK	0.966	0.957	-0.93	18	**0.089**
661	1880 (Mid.)	GMSK	0.966	0.956	-1.04	19	0.035
661	1880 (Mid.)	GMSK	0.966	0.955	-1.14	20	0.072
661	1880 (Mid.)	GMSK	0.966	0.954	-1.24	21	0.035

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

PCS1900 BAND HEAD POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.0°C, Liquid Temperature：22.8°C Humidity：63%RH		
TESTED BY	Dylan Chiou	DATE	May 05, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
661	1880 (Mid.)	GMSK	0.966	0.955	-1.14	22	0.051

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

PCS 1900/GPRS1900 TS2/GPRS1900 TS1/E-GPRS1900 TS2/E-GPRS1900 TS1
BAND BODY POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.1°C, Liquid Temperature：22.8°C Humidity：64%RH		
TESTED BY	Dylan Chiou	DATE	Mar. 20, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
661	1880 (Mid.)	GMSK	0.966	0.952	-1.45	23	0.086
661	1880 (Mid.)	GMSK	0.673	0.662	-1.63	24	**0.112**
661	1880 (Mid.)	GMSK	0.918	0.902	-1.74	25	0.082
661	1880 (Mid.)	8PSK	0.275	0.270	-1.82	26	0.106
661	1880 (Mid.)	8PSK	0.448	0.439	-2.01	27	0.076

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

WCDMA1900 BAND POSITION

ENVIRONMENTAL CONDITION	Air Temperature：22.9°C, Liquid Temperature：22.7°C Humidity：62%RH		
TESTED BY	Dylan Chiou	DATE	Mar. 18, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
9400	1880.0 (Mid.)	BPSK	0.228	0.225	-1.32	28	**0.208**
9400	1880.0 (Mid.)	BPSK	0.228	0.224	-1.75	29	0.056
9400	1880.0 (Mid.)	BPSK	0.228	0.223	-2.19	30	0.167
9400	1880.0 (Mid.)	BPSK	0.228	0.222	-2.63	31	0.075

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

WCDMA1900 BAND POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.0°C, Liquid Temperature：22.8°C Humidity：63%RH		
TESTED BY	Dylan Chiou	DATE	May 05, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
9400	1880.0 (Mid.)	BPSK	0.228	0.224	-1.75	32	0.112

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

WCDMA1900/HSDPA1900 BAND BODY POSITION

ENVIRONMENTAL CONDITION	Air Temperature：23.1°C, Liquid Temperature：22.8°C Humidity：63%RH		
TESTED BY	Dylan Chiou	DATE	Mar. 20, 2009

CHAN.	FREQ. (MHz)	MODULATION TYPE	CONDUCTED POWER (W)		POWER DRIFT (%)	DEVICE TEST POSITION MODE	MEASURED 1g SAR (W/kg)
			BEGIN TEST	AFTER TEST			
9400	**1880.0 (Mid.)**	**BPSK**	0.228	0.220	-3.51	33	**0.274**
9400	**1880.0 (Mid.)**	**8PSK**	0.226	0.218	-3.54	34	0.248

NOTE:

1. Test configuration of each mode is described in section 4.2.
2. In this testing, the limit for General Population Spatial Peak averaged over **1g, 1.6W/kg**, is applied.
3. Please see the Appendix A for the data.
4. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.

5.3 SAR LIMITS

HUMAN EXPOSURE	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / controlled Exposure Environment)
Spatial Average (whole body)	0.08	0.4
Spatial Peak (averaged over 1 g)	**1.6**	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

NOTE:

1. This limits accord to 47 CFR 2.1093 – Safety Limit.
2. The EUT property been complied with the partial body exposure limit under the general population environment.

5.4 RECIPES FOR TISSUE SIMULATING LIQUIDS

For the measurement of the field distribution inside the SAM phantom, the phantom must be filled with 25 litters of tissue simulation liquid.

The following ingredients are used：

- **WATER-** Deionized water (pure H20), resistivity _16 M - as basis for the liquid
- **SUGAR-** Refined sugar in crystals, as available in food shops - to reduce relative permittivity
- **SALT-** Pure NaCl - to increase conductivity
- **CELLULOSE-** Hydroxyethyl-cellulose, medium viscosity (75-125 mPa.s, 2% in water, 20_C),
  CAS # 54290 - to increase viscosity and to keep sugar in solution
- **PRESERVATIVE-** Preventol D-7 Bayer AG, D-51368 Leverkusen, CAS # 55965-84-9 - to prevent the spread of bacteria and molds
- **DGMBE-** Diethylenglycol-monobuthyl ether (DGMBE), Fluka Chemie GmbH, CAS # 112-34-5 - to reduce relative permittivity

THE RECIPES FOR 835MHz SIMULATING LIQUID TABLE

INGREDIENT	HEAD SIMULATING LIQUID 835MHz (HSL-835)	MUSCLE SIMULATING LIQUID 835MHz (MSL-835)
Water	40.28%	50.07%
Cellulose	02.41%	NA
Salt	01.38%	0.94%
Preventtol D-7	00.18%	0.09%
Sugar	57.97%	48.2%
Dielectric Parameters at 22℃	f = 835MHz ε= 41.5 ± 5% σ= 0.97 ± 5% S/m	f= 835MHz ε= 55.0 ± 5% σ= 1.05 ± 5% S/m

THE RECIPES FOR 1900MHz SIMULATING LIQUID TABLE

INGREDIENT	HEAD SIMULATING LIQUID 1900MHz (HSL-1900)	MUSCLE SIMULATING LIQUID 1900MHz (MSL-1900)
Water	55.24%	70.16%
DGMBE	44.45%	29.44%
Salt	0.306%	00.39%
Dielectric Parameters at 22℃	f= 1900MHz ε= 40.0 ± 5% σ= 1.40 ± 5% S/m	f= 1900MHz ε= 53.3 ± 5% σ= 1.52 ± 5% S/m

Testing the liquids using the Agilent Network Analyzer E8358A and Agilent Dielectric Probe Kit 85070D.The testing procedure is following as

1. Turn Network Analyzer on and allow at least 30 min. warm up.
2. Mount dielectric probe kit so that interconnecting cable to Network Analyzer will not be moved during measurements or calibration.
3. Pour de-ionized water and measure water temperature (±1°).
4. Set water temperature in Agilent-Software (Calibration Setup).
5. Perform calibration.
6. Validate calibration with dielectric material of known properties (e.g. polished ceramic slab with >8mm thickness ε'=10.0, ε''=0.0). If measured parameters do not fit within tolerance, repeat calibration (±0.2 for ε': ±0.1 for ε'').
7. Conductivity can be calculated from ε'' by $\sigma = \omega \varepsilon_0 \varepsilon'' = \varepsilon''$ f [GHz] / 18.
8. Measure liquid shortly after calibration. Repeat calibration every hour.
9. Stir the liquid to be measured. Take a sample (~50ml) with a syringe from the center of the liquid container.
10. Pour the liquid into a small glass flask. Hold the syringe at the bottom of the flask to avoid air bubbles.
11. Put the dielectric probe in the glass flask. Check that there are no air bubbles in front of the opening in the dielectric probe kit.
12. Perform measurements.
13. Adjust medium parameters in DASY5 for the frequencies necessary for the measurements (‘Setup Config’, select medium (e.g. Brain 900 MHz) and press ‘Option’-button.

Select the current medium for the frequency of the validation (e.g. Setup Medium Brain 900 MHz).

FOR GSM850 & WCDMA850 BAND SIMULATING LIQUID

LIQUID TYPE		HSL-835		
SIMULATING LIQUID TEMP.		22.7		
TEST DATE		Mar. 17, 2009		
TESTED BY		Dylan Chiou		
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)
835.0	Permitivity (ε)	41.50	43.10	3.86
836.4		41.50	43.10	3.86
836.6		41.50	43.10	3.86
835.0	Conductivity (σ) S/m	0.90	0.93	3.33
836.4		0.90	0.93	3.33
836.6		0.90	0.93	3.33
Dielectric Parameters Required at 22℃		**f= 835MHz ε= 41.5 ± 5% σ= 0.97 ± 5% S/m**		

LIQUID TYPE		MSL-835		
SIMULATING LIQUID TEMP.		22.9		
TEST DATE		Mar. 19, 2009		
TESTED BY		Dylan Chiou		
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)
835.0	Permitivity (ε)	55.20	54.50	1.27
836.4		55.20	54.50	1.27
836.6		55.20	54.50	1.27
835.0	Conductivity (σ) S/m	0.97	1.01	4.12
836.4		0.97	1.01	4.12
836.6		0.97	1.01	4.12
Dielectric Parameters Required at 22℃		**f= 835MHz ε= 55.0 ± 5% σ= 1.05 ± 5% S/m**		

LIQUID TYPE		HSL-835		
SIMULATING LIQUID TEMP.		22.7		
TEST DATE		May 05, 2009		
TESTED BY		Dylan Chiou		
FREQ. (MHz)	**LIQUID PARAMETER**	**STANDARD VALUE**	**MEASUREMENT VALUE**	**ERROR PERCENTAGE (%)**
835.0	Permitivity (ε)	41.50	42.50	2.35
836.4		41.50	42.50	2.35
836.6		41.50	42.50	2.35
835.0	Conductivity (σ) S/m	0.90	0.91	1.10
836.4		0.90	0.91	1.10
836.6		0.90	0.91	1.10
Dielectric Parameters Required at 22℃		**f= 835MHz ε= 41.5 ± 5% σ= 0.97 ± 5% S/m**		

FOR PCS1900 & WCDMA1900 BAND SIMULATING LIQUID

LIQUID TYPE		HSL-1900		
SIMULATING LIQUID TEMP.		22.7		
TEST DATE		Mar. 18, 2009		
TESTED BY		Dylan Chiou		
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)
1880	Permitivity (ε)	40.00	40.80	2.00
1900		40.00	40.70	1.75
1880	Conductivity (σ) S/m	1.40	1.43	2.14
1900		1.40	1.45	3.57
Dielectric Parameters Required at 22℃		**f= 1900MHz** **ε= 40.0 ± 5%** **σ= 1.40 ± 5% S/m**		

LIQUID TYPE		MSL-1900		
SIMULATING LIQUID TEMP.		22.8		
TEST DATE		Mar. 20, 2009		
TESTED BY		Dylan Chiou		
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)
1880	Permitivity (ε)	53.30	55.70	4.50
1900		53.30	55.60	4.32
1880	Conductivity (σ) S/m	1.52	1.54	1.32
1900		1.52	1.57	3.29
Dielectric Parameters Required at 22℃		**f= 1900MHz** **ε= 53.3 ± 5%** **σ= 1.52 ± 5% S/m**		

LIQUID TYPE		HSL-1900		
SIMULATING LIQUID TEMP.		22.8		
TEST DATE		May 05, 2009		
TESTED BY		Dylan Chiou		
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)
1880	Permitivity (ε)	40.00	40.70	1.75
1900		40.00	40.80	2.00
1880	Conductivity (σ) S/m	1.40	1.41	0.71
1900		1.40	1.44	2.85
Dielectric Parameters Required at 22℃		**f= 1900MHz ε= 40.0 ± 5% σ= 1.40 ± 5% S/m**		

5.5 TEST EQUIPMENT FOR TISSUE PROPERTY

ITEM	NAME	BRAND	TYPE	SERIES NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
1	Network Analyzer	Agilent	E8358A	US41480538	Nov. 27, 2008	Nov. 26, 2009
2	Dielectric Probe	Agilent	85070D	US01440176	NA	NA

NOTE:

1. Before starting, all test equipment shall be warmed up for 30min.
2. The tolerance (k=1) specified by Agilent for general dielectric measurements, deriving from inaccuracies in the calibration data, analyzer drift, and random errors, are usually ±2.5% and ±5% for measured permittivity and conductivity, respectively. However, the tolerances for the conductivity is smaller for material with large loss tangents, i.e., less than ±2.5% (k=1). It can be substantially smaller if more accurate methods are applied.

6. SYSTEM VALIDATION

The system validation was performed in the flat phantom with equipment listed in the following table. Since the SAR value is calculated from the measured electric field, dielectric constant and conductivity of the body tissue and the SAR is proportional to the square of the electric field. So, the SAR value will be also proportional to the RF power input to the system validation dipole under the same test environment. In our system validation test, 250mW RF input power was used.

6.1 TEST EQUIPMENT

ITEM	NAME	BRAND	TYPE	SERIES NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
1	SAM Phantom	S & P	QD000 P40 CA	TP-1150	NA	NA
2	Signal Generator	Anritsu	68247B	984703	May 27, 2008	May 26, 2009
3	E-Field Probe	S & P	EX3DV3	3504	Jan. 22, 2009	Jan. 21, 2010
4	DAE	S & P	DAE	861	Sep. 23, 2008	Sep. 22, 2009
5	Robot Positioner	Staubli Unimation	NA	NA	NA	NA
6	Validation Dipole	S & P	D835V2	4d021	May 19, 2008	May 18, 2009
			D1900V2	5d036	Apr. 22, 2008	Apr. 21, 2009
			D1900V2	5d022	Mar. 18, 2009	Mar. 17, 2010
7	Power Meter	Agilent	E4416A	GB41291763	Sep. 28, 2008	Sep. 29, 2009
8	Power Sensor	Agilent	E9327A	US40441181	Sep. 28, 2008	Sep. 29, 2009

NOTE: Before starting the measurement, all test equipment shall be warmed up for 30min.

6.2 TEST PROCEDURE

Before you start the system performance check, need only to tell the system with which components (probe, medium, and device) are performing the system performance check; the system will take care of all parameters. The dipole must be placed beneath the flat phantom section of the SAM Twin Phantom with the correct distance holder in place. The distance holder should touch the phantom surface with a light pressure at the reference marking (little cross) and be oriented parallel to the long side of the phantom. Accurate positioning is not necessary, since the system will search for the peak SAR location, except that the dipole arms should be parallel to the surface. The device holder for the EUT can be left in place but should be rotated away from the dipole.

1.The ”Power Reference Measurement” and ”Power Drift Measurement” jobs are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the amplifier output power. If it is too high (above ±0.1 dB), the system performance check should be repeated; some amplifiers have very high drift during warm-up. A stable amplifier gives drift results in the DASY system below ±0.02 dB.

2.The ”Surface Check” job tests the optical surface detection system of the DASY system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ±0.1mm). In that case it is better to abort the system performance check and stir the liquid.

3. The ”Area Scan” job measures the SAR above the dipole on a plane parallel to the surface. It is used to locate the approximate location of the peak SAR. The proposed scan uses large grid spacing for faster measurement; due to the symmetric field, the peak detection is reliable. If a finer graphic is desired, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result.

4. The ”Zoom Scan” job measures the field in a volume around the peak SAR value assessed in the previous ”Area Scan” job (for more information see the application note on SAR evaluation).

About the validation dipole positioning uncertainty, the constant and low loss dielectric spacer is used to establish the correct distance between the top surface of the dipole and the bottom surface of the phantom, the error component introduced by the uncertainty of the distance between the liquid (i.e., phantom shell) and the validation dipole in the DASY5 system is less than ±0.1mm.

$$SAR_{tolerance}[\%] = 100 \times (\frac{(a+d)^2}{a^2} - 1)$$

As the closest distance is 10mm, the resulting tolerance $SAR_{tolerance}$[%] is <2%.

6.3 VALIDATION RESULTS

SYSTEM VALIDATION TEST OF SIMULATING LIQUID					
FREQUENCY (MHz)	**REQUIRED SAR (mW/g)**	**MEASURED SAR (mW/g)**	**DEVIATION (%)**	**SEPARATION DISTANCE**	**TESTED DATE**
HSL 835	2.31 (1g)	2.38	3.03	15mm	Mar. 17, 2009
MSL 835	2.34 (1g)	2.39	2.14	15mm	Mar. 19, 2009
HSL 835	2.31 (1g)	2.40	3.90	15mm	May 05, 2009
HSL 1900	10.20 (1g)	9.82	-3.73	10mm	Mar. 18, 2009
MSL 1900	10.20 (1g)	9.49	-6.96	10mm	Mar. 20, 2009
HSL 1900	10.20 (1g)	10.23	0.29	10mm	May 05, 2009
TESTED BY	Dylan Chiou				

NOTE: Please sees Appendix for the photo of system validation test.

6.4 SYSTEM VALIDATION UNCERTAINTIES

In the table below, the system validation uncertainty with respect to the analytically assessed SAR value of a dipole source as given in the IEEE 1528 standard is given. This uncertainty is smaller than the expected uncertainty for mobile phone measurements due to the simplified setup and the symmetric field distribution.

Error Description	Tolerance (±%)	Probability Distribution	Divisor	(C_i)		Standard Uncertainty (±%)		(v_i)
				(1g)	(10g)	(1g)	(10g)	
Measurement System								
Probe Calibration	5.50	Normal	1	1	1	5.50	5.50	∞
Axial Isotropy	4.70	Rectangular	√3	0.7	0.7	1.90	1.90	∞
Hemispherical Isotropy	9.60	Rectangular	√3	0.7	0.7	3.88	3.88	∞
Boundary effects	1.00	Rectangular	√3	1	1	0.58	0.58	∞
Linearity	4.70	Rectangular	√3	1	1	2.71	2.71	∞
System Detection Limits	1.00	Rectangular	√3	1	1	0.58	0.58	∞
Readout Electronics	0.30	Normal	1	1	1	0.30	0.30	∞
Response Time	0.80	Rectangular	√3	1	1	0.46	0.46	∞
Integration Time	2.60	Rectangular	√3	1	1	1.50	1.50	∞
RF Ambient Noise	3.00	Rectangular	√3	1	1	1.73	1.73	∞
RF Ambient Reflections	3.00	Rectangular	√3	1	1	1.73	1.73	∞
Probe Positioner	0.40	Rectangular	√3	1	1	0.23	0.23	∞
Probe Positioning	2.90	Rectangular	√3	1	1	1.67	1.67	∞
Max. SAR Eval.	1.00	Rectangular	√3	1	1	0.58	0.58	∞
Dipole Related								
Dipole Axis to Liquid Distance	2.00	Rectangular	√3	1	1	1.15	1.15	145
Input Power Drift	5.00	Rectangular	√3	1	1	2.89	2.89	∞
Phantom and Tissue parameters								
Phantom Uncertainty	4.00	Rectangular	√3	1	1	2.31	2.31	∞
Liquid Conductivity (target)	5.00	Rectangular	√3	0.64	0.43	1.85	1.24	∞
Liquid Conductivity (measurement)	4.59	Normal	1	0.64	0.43	2.94	1.97	∞
Liquid Permittivity (target)	5.00	Rectangular	√3	0.6	0.49	1.73	1.41	∞
Liquid Permittivity (measurement)	4.93	Normal	1	0.6	0.49	2.96	2.42	∞
Combined Standard Uncertainty						**10.37**	**9.85**	
Coverage Factor for 95%						**Kp=2**		
Expanded Uncertainty (K=2)						**20.73**	**19.69**	

NOTE: About the system validation uncertainty assessment, please reference the section 7.

7. MEASUREMENT SAR PROCEDURE UNCERTAINTIES

The assessment of spatial peak SAR of the hand handheld devices is according to IEEE 1528. All testing situation shall be met below these requirements.

- The system is used by an experienced engineer who follows the manual and the guidelines taught during the training provided by SPEAG.
- The probe has been calibrated within the requested period and the stated uncertainty for the relevant frequency bands does not exceed 4.8% (k=1).
- The validation dipole has been calibrated within the requested period and the system performance check has been successful.
- The DAE unit has been calibrated within the within the requested period.
- The minimum distance between the probe sensor and inner phantom shell is selected to be between 4 and 5mm.
- The operational mode of the DUT is CW, CDMA, FDMA or TDMA (GSM, DCS, PCS, IS136 and PDC) and the measurement/integration time per point is >500 ms.
- The dielectric parameters of the liquid have been assessed using Agilent 85070D dielectric probe kit or a more accurate method.
- The dielectric parameters are within 5% of the target values.
- The DUT has been positioned as described in section 3.

7.1 PROBE CALIBRATION UNCERTAINTY

SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN 50361, IEC 62209, etc.) under ISO17025. The uncertainties are stated on the calibration certificate. For the most relevant frequency bands, these values do not exceed 4.8% (k=1). If evaluations of other bands are performed for which the uncertainty exceeds these values, the uncertainty tables given in the summary have to be revised accordingly.

7.2 ISOTROPY UNCERTAINTY

The axial isotropy tolerance accounts for probe rotation around its axis while the hemispherical isotropy error includes all probe orientations and field polarizations. These parameters are assessed by SPEAG during initial calibration. In 2001, SPEAG further tightened its quality controls and warrants that the maximal deviation from axial isotropy is ±0.20 dB, while the maximum deviation of hemispherical isotropy is ±0.40 dB, corresponding to ±4.7% and ±9.6%, respectively. A weighting factor of cp equal to 0.5 can be applied, since the axis of the probe deviates less than 30 degrees from the normal surface orientation.

7.3 BOUNDARY EFFECT UNCERTAINTY

The effect can be estimated according to the following error approximation formula

$$SAR_{tolerance}[\%] = SAR_{be}[\%] \times \frac{(d_{be} + d_{step})^2}{2d_{step}} \frac{e^{-\frac{d_{be}}{\delta/2}}}{\delta/2}$$

$$d_{be} + d_{step} < 10mm$$

The parameter d_{be} is the distance in mm between the surface and the closest measurement point used in the averaging process; d_{step} is the separation distance in mm between the first and second measurement points; δ is the minimum penetration depth in mm within the head tissue equivalent liquids (i.e., δ= 13.95 mm at 3GHz); SAR_{be} is the deviation between the measured SAR value at the distance d_{be} from the boundary and the wave-guide analytical value SAR_{ref}.DASY5 applies a boundary effect compensation algorithm according to IEEE 1528, which is possible since the axis of the probe never deviates more than 30 degrees from the normal surface orientation. SAR_{be}[%] is assessed during the calibration process and SPEAG warrants that the uncertainty at distances larger than 4mm is always less than 1%.In summary, the worst case boundary effect SAR tolerance[%] for scanning distances larger than 4mm is < ± 0.8%.

7.4 PROBE LINEARITY UNCERTAINTY

Field probe linearity uncertainty includes errors from the assessment and compensation of the diode compression effects for CW and pulsed signals with known duty cycles. This error is assessed using the procedure described in IEEE 1528. For SPEAG field probes, the measured difference between CW and pulsed signals, with pulse frequencies between 10 Hz and 1 kHz and duty cycles between 1 and 100, is < ±0.20 dB (< ±4.7%).

7.5 READOUT ELECTRONICS UNCERTAINTY

All uncertainties related to the probe readout electronics (DAE unit), including the gain and linearity of the instrumentation amplifier, its loading effect on the probe, and accuracy of the signal conversion algorithm, have been assessed accordingly to IEEE 1528.The combination (root-sum-square RSS method) of these components results in an overall maximum error of ±1.0%.

7.6 RESPONSE TIME UNCERTAINTY

The time response of the field probes is assessed by exposing the probe to a well-controlled electric field producing SAR larger than 2.0 W/kg at the tissue medium surface. The signal response time is evaluated as the time required by the system to reach 90% of the expected final value after an on/of switch of the power source. Analytically, it can be expressed as:

$$SAR_{tolerance}[\%] = 100 \times \left(\frac{T_m}{T_m + \tau e^{-T_m/\tau} - \tau} - 1\right)$$

where Tm is 500 ms, i.e., the time between measurement samples, and $_T$ the time constant. The response time $_T$ of SPEAG's probes is <5 ms. In the current implementation, DASY5 waits longer than 100 ms after having reached the grid point before starting a measurement, i.e., the response time uncertainty is negligible.

7.7 INTEGRATION TIME UNCERTAINTY

If the device under test does not emit a CW signal, the integration time applied to measure the electric field at a specific point may introduce additional uncertainties due to the discretization and can be assessed as follows

$$SAR_{tolerance}[\%] = 100 \times \sum_{allsub-frames} \frac{t_{frame}}{t_{integration}} \frac{slot_{idle}}{slot_{total}}$$

The tolerances for the different systems are given in Table 7.1, whereby the worst-case $SAR_{tolerance}$ is 2.6%.

System	$SAR_{tolerance}$ %
CW	0
CDMA*	0
WCDMA*	0
FDMA	0
IS-136	2.6
PDC	2.6
GSM/DCS/PCS	1.7
DECT	1.9
Worst-Case	2.6

TABLE 7.1

7.8 PROBE POSITIONER MECHANICAL TOLERANCE

The mechanical tolerance of the field probe positioner can introduce probe positioning uncertainties. The resulting SAR uncertainty is assessed by comparing the SAR obtained according to the specifications of the probe positioner with respect to the actual position defined by the geometric enter of the probe sensors. The tolerance is determined as:

$$SAR_{tolerance}[\%] = 100 \times \frac{d_{ph}}{\delta/2}$$

The specified repeatability of the RX robot family used in DASY5 systems is ±25 µm. The absolute accuracy for short distance movements is better than ±0.1mm, i.e., the $SAR_{tolerance}$[%] is better than 1.5% (rectangular).

7.9 PROBE POSITIONING

The probe positioning procedures affect the tolerance of the separation distance between the probe tip and the phantom surface as:

$$SAR_{tolerance}[\%] = 100 \times \frac{d_{ph}}{\delta/2}$$

where d_{ph} is the maximum deviation of the distance between the probe tip and the phantom surface. The optical surface detection has a precision of better than 0.2 mm, resulting in an $SAR_{tolerance}$[%] of <2.9% (rectangular distribution). Since the mechanical detection provides better accuracy, 2.9% is a worst-case figure for DASY5 system.

7.10 PHANTOM UNCERTAINTY

The SAR measurement uncertainty due to SPEAG phantom shell production tolerances has been evaluated using

$$SAR_{tolerance}[\%] \cong 100 \times \frac{2d}{a}, \qquad d << a$$

For a maximum deviation d of the inner and outer shell of the phantom from that specified in the CAD file of ±0.2 mm, and a 10mm spacing a between source and tissue liquid, the calculated phantom uncertainty is ±4.0%.

7.11 DASY5 UNCERTAINTY BUDGET

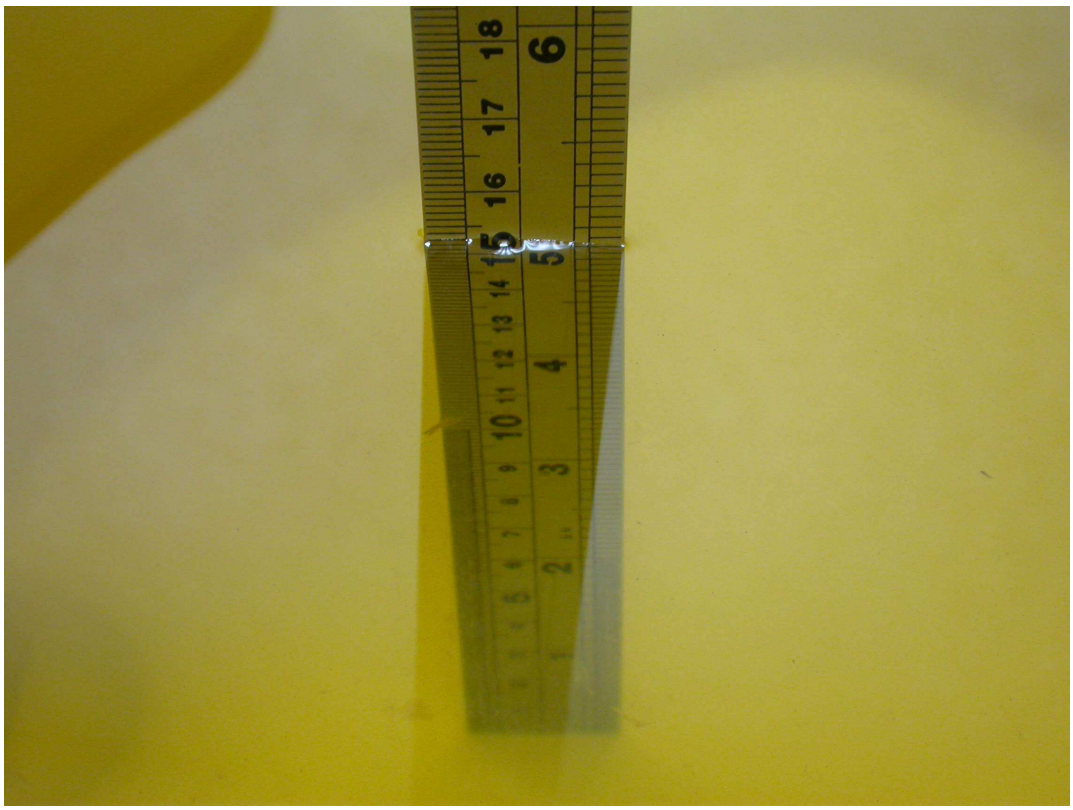
Error Description	Tolerance (±%)	Probability Distribution	Divisor	(C_i)		Standard Uncertainty (±%)		(v_i)
				(1g)	(10g)	(1g)	(10g)	
Measurement Equipment								
Probe Calibration	5.50	Normal	1	1	1	5.50	5.50	∞
Axial Isotropy	4.70	Rectangular	√3	0.7	0.7	1.90	1.90	∞
Hemispherical Isotropy	9.60	Rectangular	√3	0.7	0.7	3.88	3.88	∞
Boundary effects	1.00	Rectangular	√3	1	1	0.58	0.58	∞
Linearity	4.70	Rectangular	√3	1	1	2.71	2.71	∞
System Detection Limits	1.00	Rectangular	√3	1	1	0.58	0.58	∞
Readout Electronics	0.30	Normal	1	1	1	0.30	0.30	∞
Response Time	0.80	Rectangular	√3	1	1	0.46	0.46	∞
Integration Time	2.60	Rectangular	√3	1	1	1.50	1.50	∞
RF Ambient Noise	3.00	Rectangular	√3	1	1	1.73	1.73	∞
RF Ambient Reflections	3.00	Rectangular	√3	1	1	1.73	1.73	∞
Probe Positioner	0.40	Rectangular	√3	1	1	0.23	0.23	∞
Probe Positioning	2.90	Rectangular	√3	1	1	1.67	1.67	∞
Max. SAR Eval.	1.00	Rectangular	√3	1	1	0.58	0.58	∞
Test Sample Related								
Device Positioning	0.89	Normal	1	1	1	0.89	0.89	9
Device Holder	3.60	Normal	1	1	1	3.60	3.60	5
Power Drift	5.00	Rectangular	√3	1	1	2.89	2.89	∞
Phantom and Tissue parameters								
Phantom Uncertainty	4.00	Rectangular	√3	1	1	2.31	2.31	∞
Liquid Conductivity (target)	5.00	Rectangular	√3	0.64	0.43	1.85	1.24	∞
Liquid Conductivity (measurement)	4.59	Normal	1	0.64	0.43	2.94	1.97	∞
Liquid Permittivity (target)	5.00	Rectangular	√3	0.6	0.49	1.73	1.41	∞
Liquid Permittivity (measurement)	4.93	Normal	1	0.6	0.49	2.96	2.42	∞
Combined Standard Uncertainty						**10.95**	**10.46**	
Coverage Factor for 95%						**Kp=2**		
Expanded Uncertainty (K=2)						**21.90**	**20.92**	

TABLE 7.2

APPENDIX A: TEST DATA

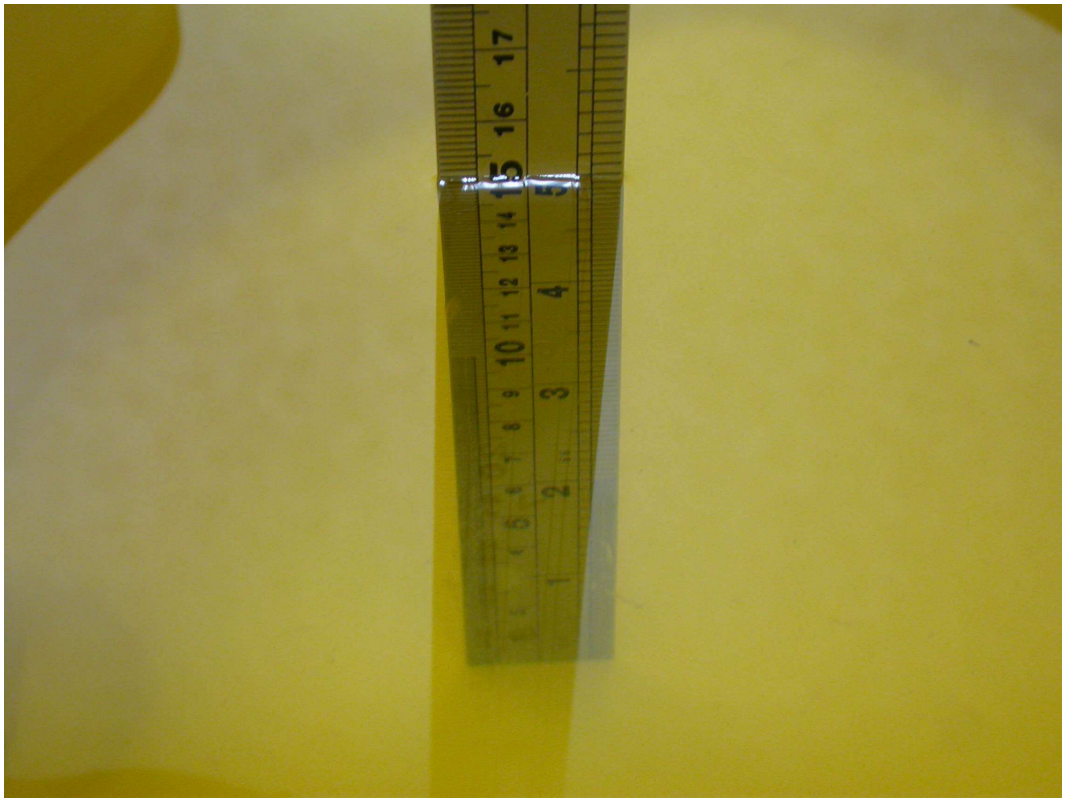
Liquid Level Photo

Tissue HSL835MHz D=153mm

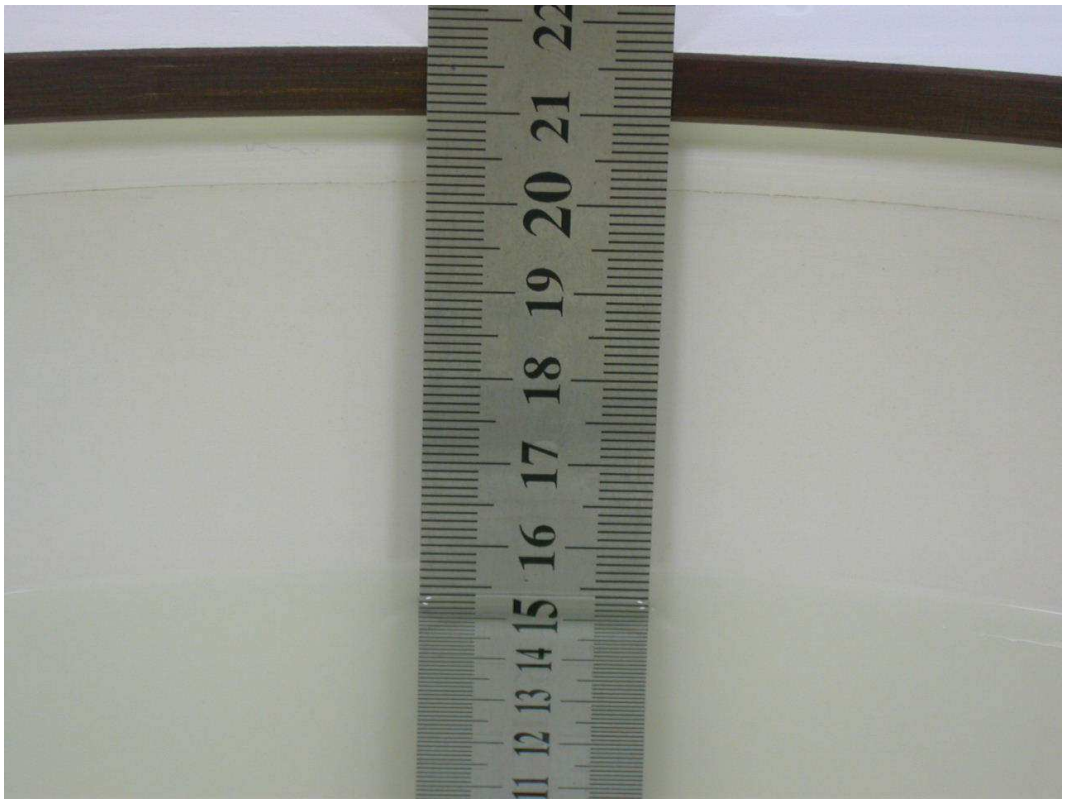


Tissue HSL1900MHz D=151mm

Tissue MSL835MHz D=152mm



Tissue MSL1900MHz D=154mm



Date/Time: 2009/3/17 01:32:40

Test Laboratory: Bureau Veritas ADT

M01-Right Head-Cheek-GSM 850-Ch 190

DUT: MOBILE COMPUTER ; Type: MC9596

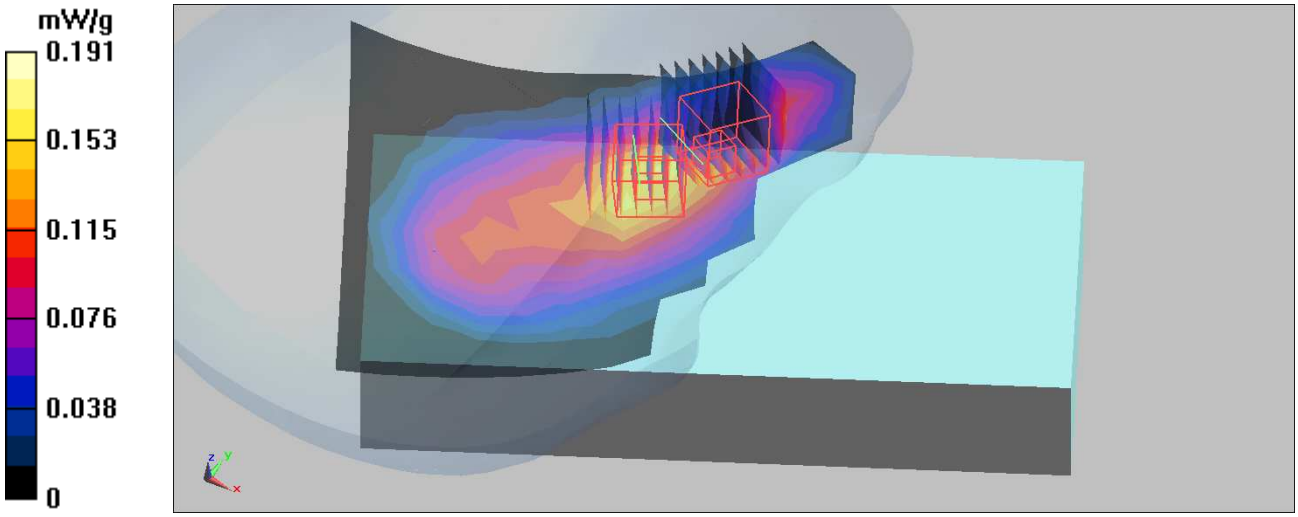
Communication System: GSM 850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:8.3
Medium: HSL835 Medium parameters used: f = 836.6 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Touch position - Mid Channel 190/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.191 mW/g

Touch position - Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m;
Peak SAR (extrapolated) = 0.228 W/kg
SAR(1 g) = 0.180 mW/g; SAR(10 g) = 0.141 mW/g
Maximum value of SAR (measured) = 0.196 mW/g

Touch position - Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m;
Peak SAR (extrapolated) = 0.207 W/kg
SAR(1 g) = 0.163 mW/g; SAR(10 g) = 0.120 mW/g
Maximum value of SAR (measured) = 0.181 mW/g



Date/Time: 2009/3/17 01:58:50

Test Laboratory: Bureau Veritas ADT

M02-Right Head-Tilt-GSM 850-Ch 190

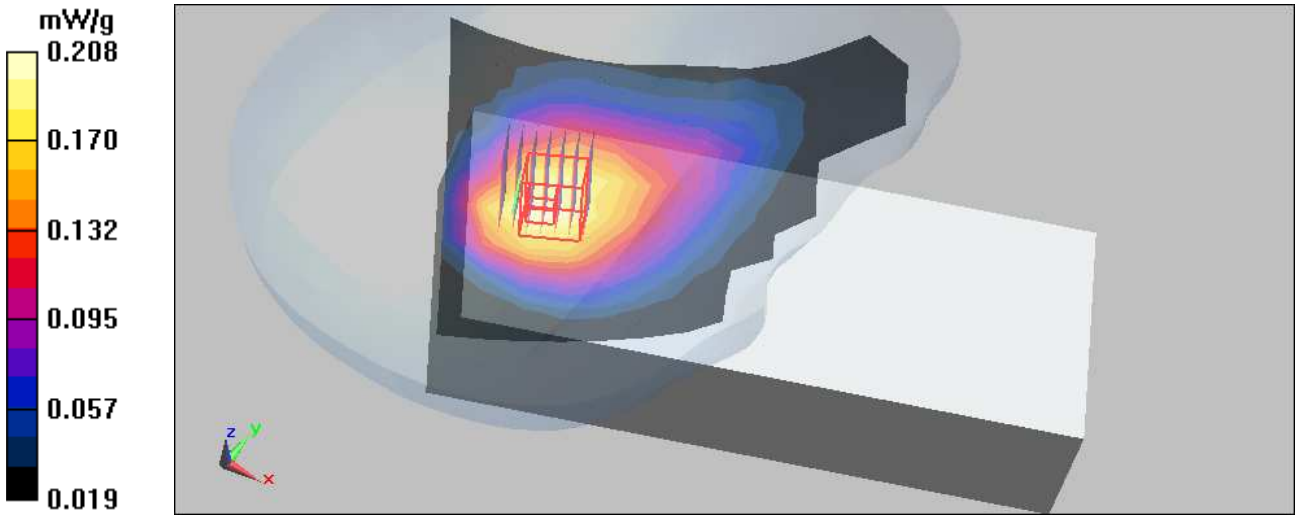
DUT: MOBILE COMPUTER ; Type: MC9596

Communication System: GSM 850 ; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: HSL835 Medium parameters used: f = 836.6 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Tilt position - Mid Channel 190/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.207 mW/g

Tilt position - Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.9 V/m;
Peak SAR (extrapolated) = 0.257 W/kg
SAR(1 g) = 0.188 mW/g; SAR(10 g) = 0.141 mW/g
Maximum value of SAR (measured) = 0.208 mW/g



Date/Time: 2009/3/17 02:41:47

Test Laboratory: Bureau Veritas ADT

M03-Left Head-Cheek-GSM 850-Ch 190

DUT: MOBILE COMPUTER ; Type: MC 9596

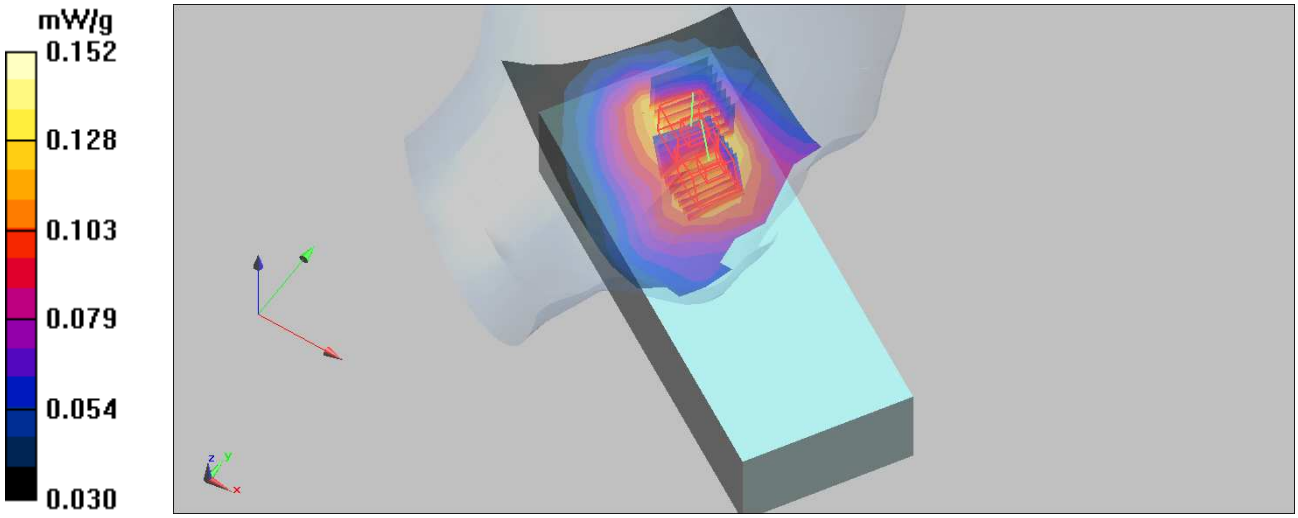
Communication System: GSM 850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:8.3
Medium: HSL835 Medium parameters used: f = 836.6 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: GMSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Touch position - Mid Channel 190/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.161 mW/g

Touch position - Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.2 V/m;
Peak SAR (extrapolated) = 0.193 W/kg
SAR(1 g) = 0.150 mW/g; SAR(10 g) = 0.117 mW/g
Maximum value of SAR (measured) = 0.164 mW/g

Touch position - Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.2 V/m;
Peak SAR (extrapolated) = 0.169 W/kg
SAR(1 g) = 0.138 mW/g; SAR(10 g) = 0.108 mW/g
Maximum value of SAR (measured) = 0.152 mW/g



Date/Time: 2009/3/17 03:11:57

Test Laboratory: Bureau Veritas ADT

M04-Left Head-Tilt-GSM 850-Ch 190

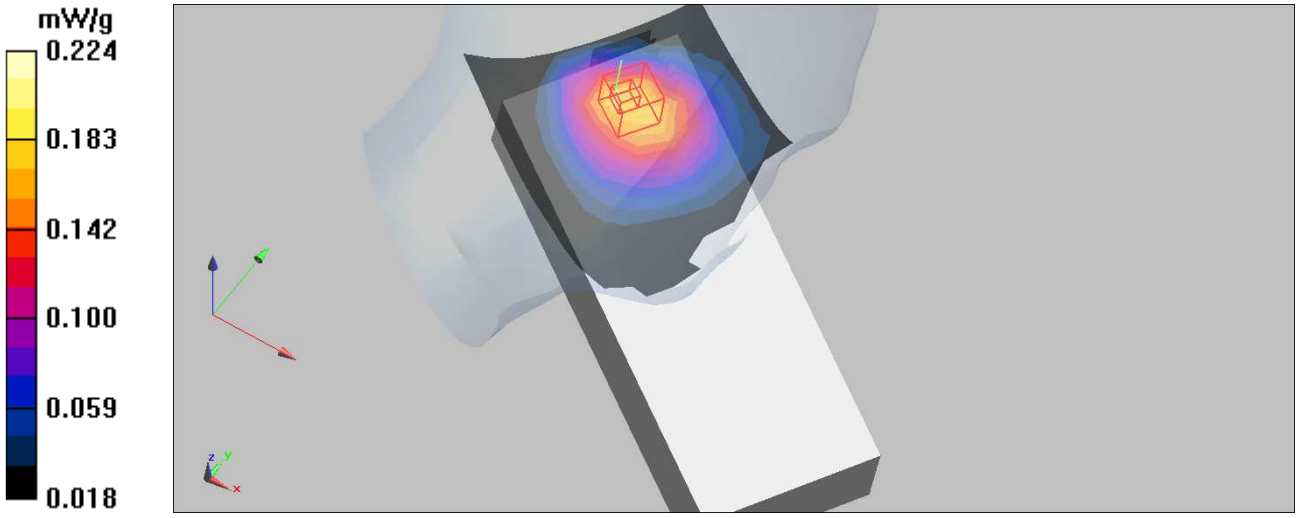
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: GSM 850 ; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: HSL835 Medium parameters used: f = 836.6 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: GMSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Tilt position - Mid Channel 190/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.219 mW/g

Tilt position - Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.4 V/m;
Peak SAR (extrapolated) = 0.279 W/kg
SAR(1 g) = 0.199 mW/g; SAR(10 g) = 0.147 mW/g
Maximum value of SAR (measured) = 0.224 mW/g



Date/Time: 2009/3/17 04:18:58

Test Laboratory: Bureau Veritas ADT

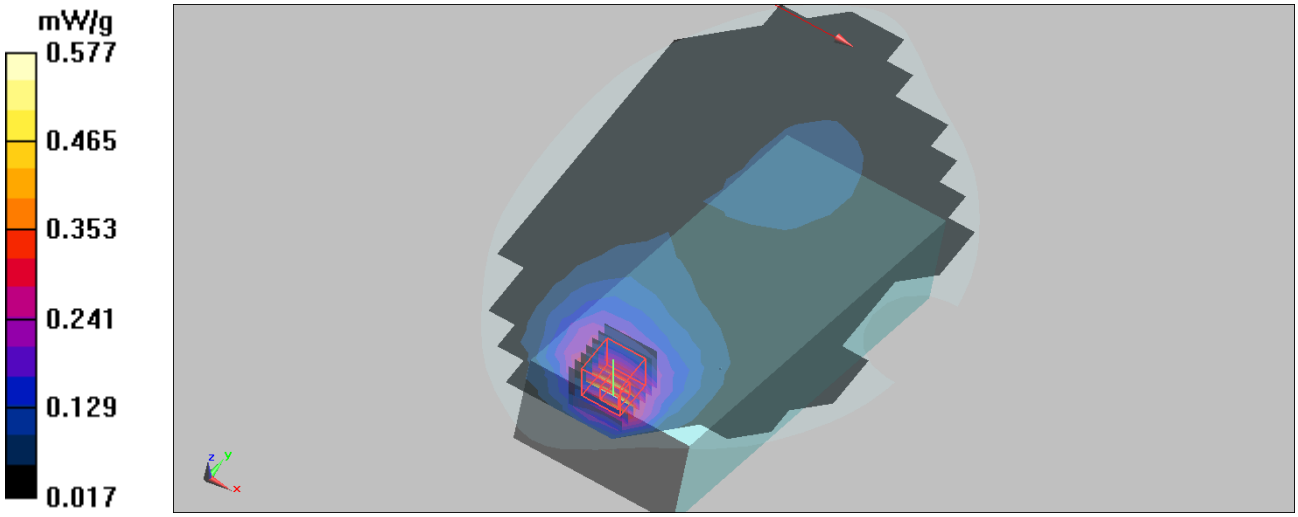
M05-Head-GSM 850-Ch 190

DUT: MOBILE COMPUTER ; Type: MC 9596
Communication System: GSM 850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK
Medium: HSL835 Medium parameters used : f = 836.6 MHz; σ = 0.93 mho/m; ε_r = 43.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 190/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.422 mW/g

Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.98 V/m
Peak SAR (extrapolated) = 0.964 W/kg
SAR(1 g) = 0.441 mW/g; SAR(10 g) = 0.248 mW/g
Maximum value of SAR (measured) = 0.577 mW/g



Date/Time: 2009/3/19 01:29:21

Test Laboratory: Bureau Veritas ADT

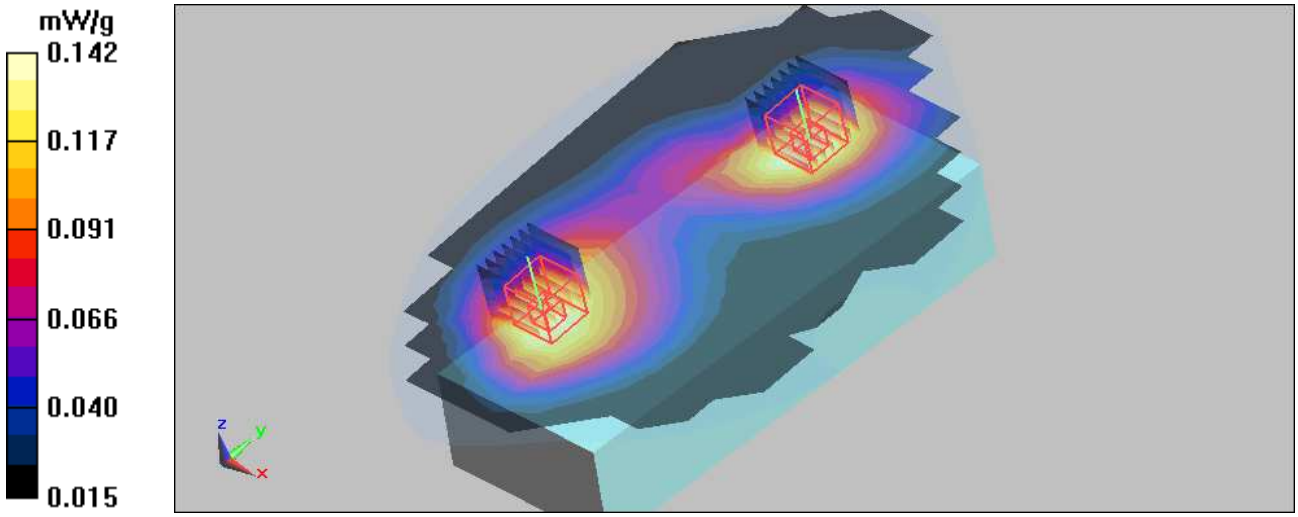
M06-BodyWorn-GSM 850-Ch190 / with Sheath

DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: GSM 850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 1.01 mho/m; εr = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.71, 9.71, 9.71) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 190/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.153 mW/g
Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.17 V/m;
Peak SAR (extrapolated) = 0.183 W/kg
SAR(1 g) = 0.135 mW/g; SAR(10 g) = 0.097 mW/g
Maximum value of SAR (measured) = 0.152 mW/g
Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.17 V/m; Peak SAR (extrapolated) = 0.168 W/kg
SAR(1 g) = 0.128 mW/g; SAR(10 g) = 0.096 mW/g
Maximum value of SAR (measured) = 0.142 mW/g



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Test Laboratory: Bureau Veritas ADT

M07-BodyWorn-GPRS850 TS2-Ch190 / with Sheath

DUT: MOBILE COMPUTER ; Type: MC 9596

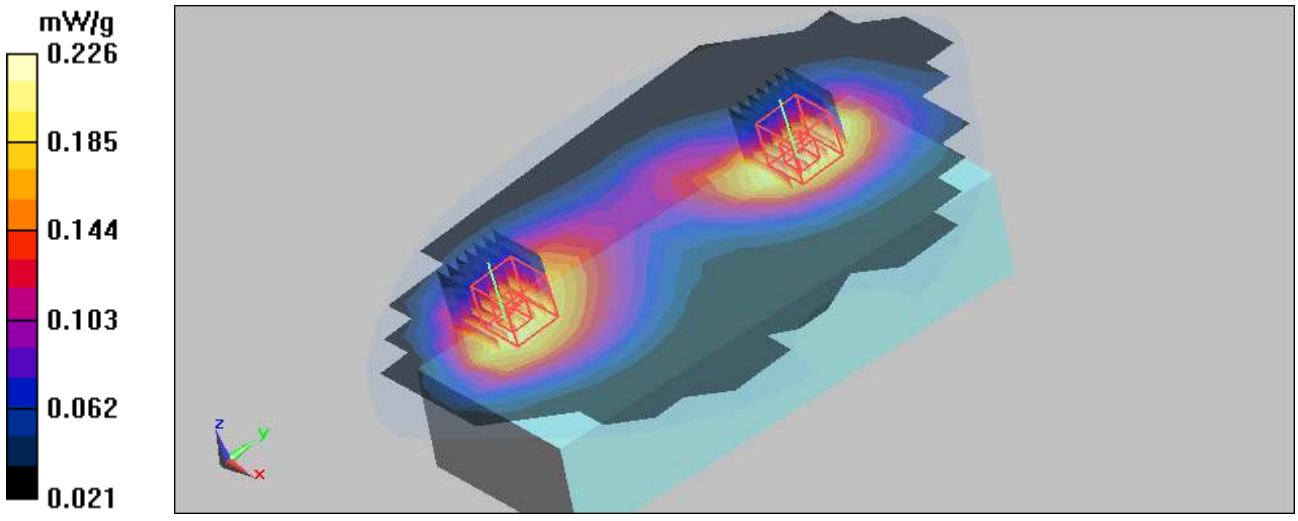
Communication System: GSM 850 ; Frequency: 836.6 MHz; Duty Cycle: 1:4; Modulation type: GMSK / UL 2 time slots
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 1.01 mho/m; εr = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.71, 9.71, 9.71) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 190/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.239 mW/g

Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.64 V/m;
Peak SAR (extrapolated) = 0.293 W/kg
SAR(1 g) = 0.215 mW/g; SAR(10 g) = 0.153 mW/g
Maximum value of SAR (measured) = 0.244 mW/g

Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.64 V/m; Peak SAR (extrapolated) = 0.271 W/kg
SAR(1 g) = 0.202 mW/g; SAR(10 g) = 0.149 mW/g
Maximum value of SAR (measured) = 0.226 mW/g



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Test Laboratory: Bureau Veritas ADT

M08-BodyWorn-GPRS850 TS1-Ch190 / with Sheath

DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: GSM 850 ; Frequency: 836.6 MHz; Duty Cycle: 1:8.3; Modulation type: GMSK / UL 1 time slot

Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 1.01 mho/m; εr = 54.5; ρ = 1000 kg/m^3

Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(9.71, 9.71, 9.71) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 190/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.165 mW/g

Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.27 V/m;

Peak SAR (extrapolated) = 0.204 W/kg

SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.108 mW/g

Maximum value of SAR (measured) = 0.170 mW/g

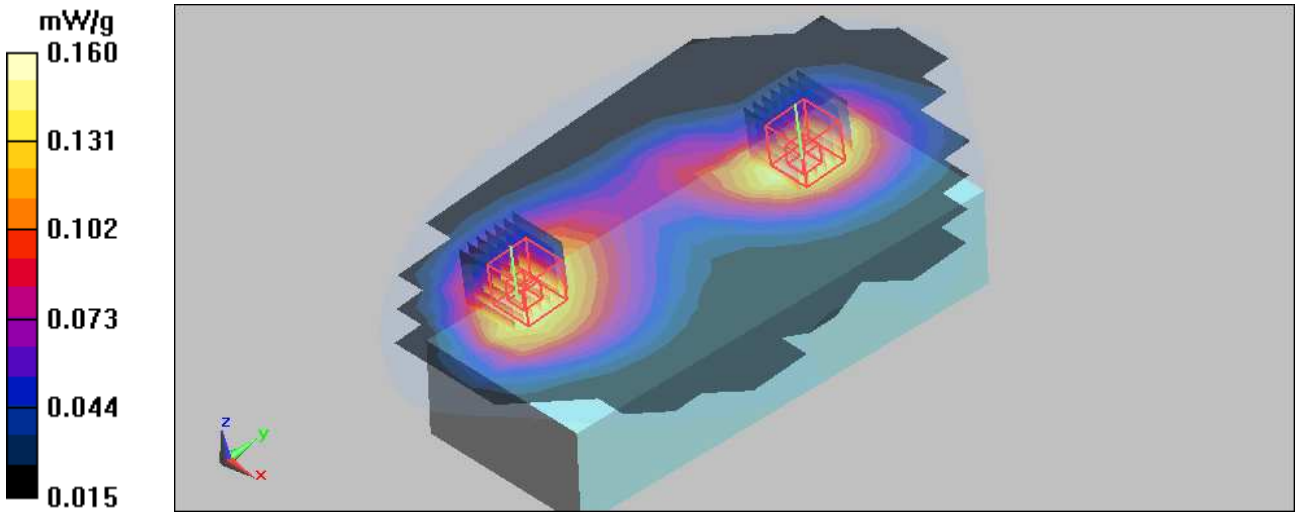
Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.27 V/m;

Peak SAR (extrapolated) = 0.191 W/kg

SAR(1 g) = 0.144 mW/g; SAR(10 g) = 0.107 mW/g

Maximum value of SAR (measured) = 0.160 mW/g



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Test Laboratory: Bureau Veritas ADT

M09-BodyWorn-E-GPRS850 TS2-Ch190 / with Sheath

DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: GSM 850 ; Frequency: 836.6 MHz; Duty Cycle: 1:4; Modulation type: 8PSK / UL 2 time slots

Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 1.01 mho/m; εr = 54.5; ρ = 1000 kg/m^3

Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(9.71, 9.71, 9.71) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 190/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.073 mW/g

Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.16 V/m

Peak SAR (extrapolated) = 0.089 W/kg

SAR(1 g) = 0.065 mW/g; SAR(10 g) = 0.048 mW/g

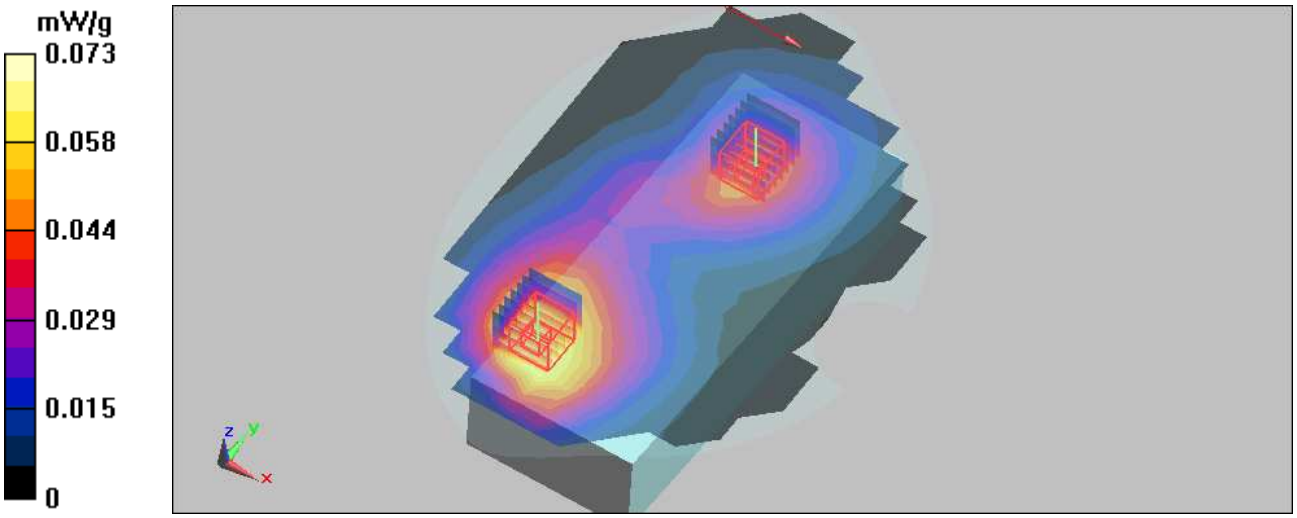
Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.16 V/m

Peak SAR (extrapolated) = 0.062 W/kg

SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.033 mW/g

Maximum value of SAR (measured) = 0.051 mW/g



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Test Laboratory: Bureau Veritas ADT

M10-BodyWorn-E-GPRS850 TS1-Ch190 / with Sheath

DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: GSM 850 ; Frequency: 836.6 MHz; Duty Cycle: 1:8.3; Modulation type: 8PSK / UL 1 time slot

Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 1.01 mho/m; εr = 54.5; ρ = 1000 kg/m^3

Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(9.71, 9.71, 9.71) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 190/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.058 mW/g

Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.61 V/m

Peak SAR (extrapolated) = 0.069 W/kg

SAR(1 g) = 0.052 mW/g; SAR(10 g) = 0.038 mW/g

Maximum value of SAR (measured) = 0.057 mW/g

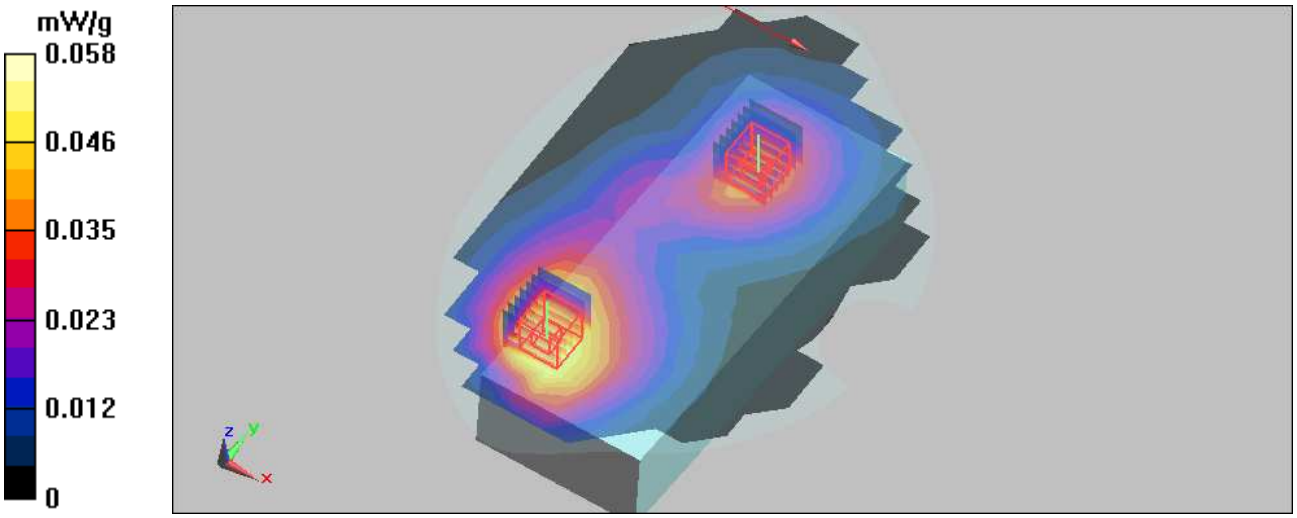
Mid Channel 190/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.61 V/m

Peak SAR (extrapolated) = 0.050 W/kg

SAR(1 g) = 0.037 mW/g; SAR(10 g) = 0.027 mW/g

Maximum value of SAR (measured) = 0.042 mW/g



Date/Time: 2009/3/17 05:01:14

Test Laboratory: Bureau Veritas ADT

M11-Right Head-Cheek-WCDMA 850-Ch4182

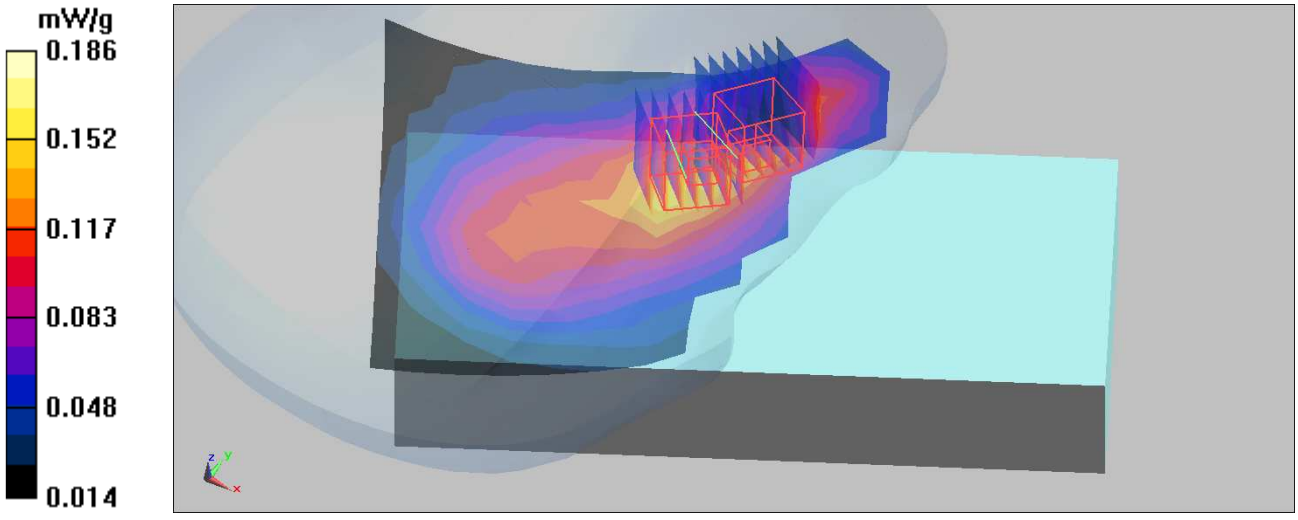
DUT: MOBILE COMPUTER ; Type: MC9596
Communication System: WCDMA ; Frequency: 836.4 MHz ; Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 836.4 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: BPSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Touch position - Mid Channel 4182/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.193 mW/g

Touch position - Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.5 V/m;
Peak SAR (extrapolated) = 0.230 W/kg
SAR(1 g) = 0.182 mW/g; SAR(10 g) = 0.143 mW/g
Maximum value of SAR (measured) = 0.197 mW/g

Touch position - Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.5 V/m;
Peak SAR (extrapolated) = 0.213 W/kg
SAR(1 g) = 0.169 mW/g; SAR(10 g) = 0.124 mW/g
Maximum value of SAR (measured) = 0.186 mW/g



Date/Time: 2009/3/17 05:32:52

Test Laboratory: Bureau Veritas ADT

M12-Right Head-Tilt-WCDMA 850-Ch4182

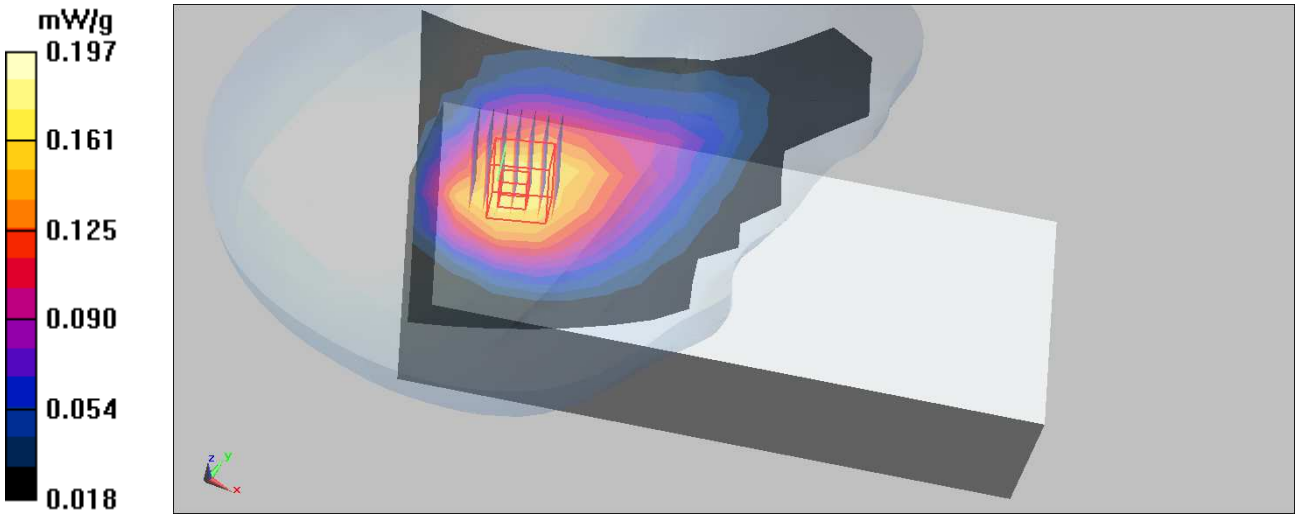
DUT: MOBILE COMPUTER ; Type: MC9596

Communication System: WCDMA ; Frequency: 836.4 MHz; Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 836.4 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: BPSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Tilt position - Mid Channel 4182/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.186 mW/g

Tilt position - Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.3 V/m;
Peak SAR (extrapolated) = 0.231 W/kg
SAR(1 g) = 0.177 mW/g; SAR(10 g) = 0.133 mW/g
Maximum value of SAR (measured) = 0.197 mW/g



Date/Time: 2009/3/17 06:14:34

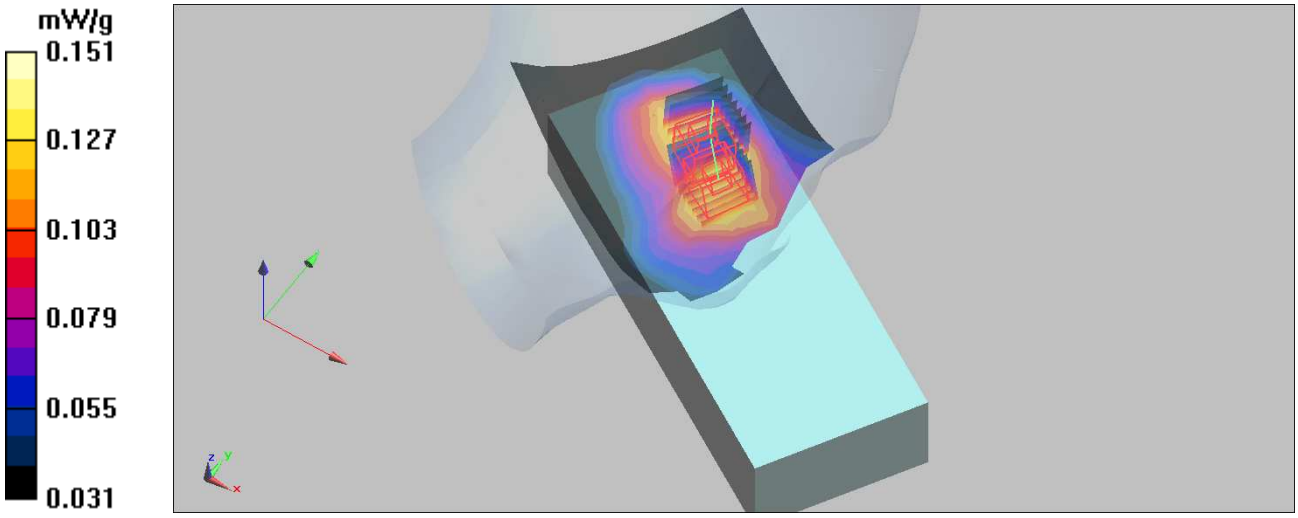
Test Laboratory: Bureau Veritas ADT

M13-Left Head-Cheek-WCDMA 850-Ch4182

DUT: MOBILE COMPUTER ; Type: MC 9596
Communication System: WCDMA ; Frequency: 836.4 MHz ; Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 836.4 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: BPSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Touch position - Mid Channel 4182/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.153 mW/g
Touch position - Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.4 V/m;
Peak SAR (extrapolated) = 0.186 W/kg
SAR(1 g) = 0.142 mW/g; SAR(10 g) = 0.112 mW/g
Maximum value of SAR (measured) = 0.157 mW/g
Touch position - Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.4 V/m;
Peak SAR (extrapolated) = 0.171 W/kg
SAR(1 g) = 0.140 mW/g; SAR(10 g) = 0.109 mW/g
Maximum value of SAR (measured) = 0.151 mW/g



Date/Time: 2009/3/17 06:40:08

Test Laboratory: Bureau Veritas ADT

M14-Left Head-Tilt-WCDMA 850-Ch4182

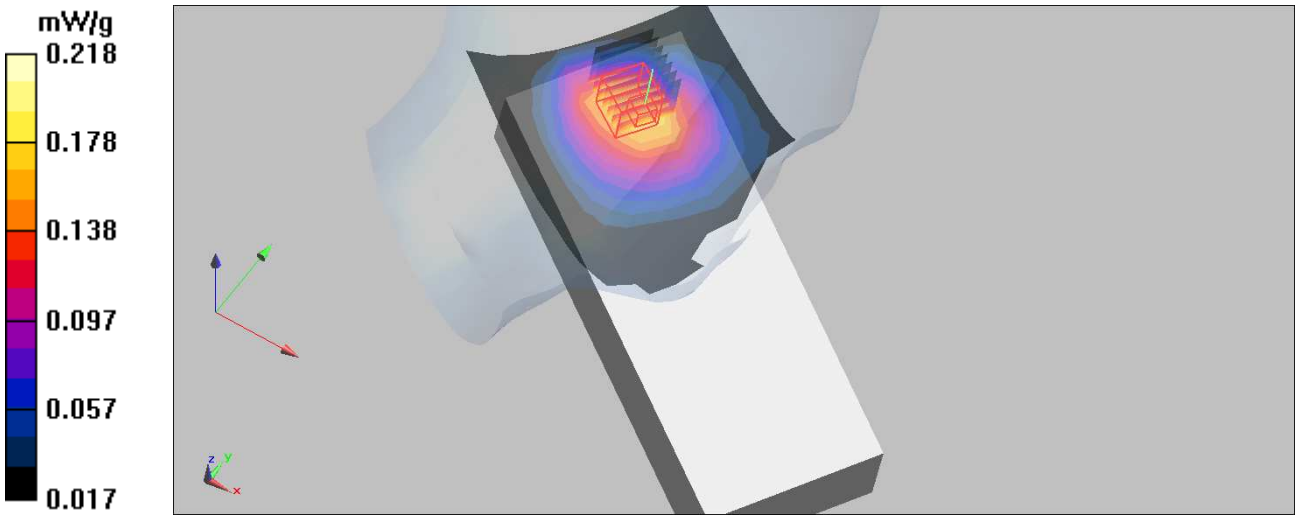
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: WCDMA ; Frequency: 836.4 MHz; Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 836.4 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: BPSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Tilt position - Mid Channel 4182/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.213 mW/g

Tilt position - Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.3 V/m;
Peak SAR (extrapolated) = 0.263 W/kg
SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.146 mW/g
Maximum value of SAR (measured) = 0.218 mW/g



Date/Time: 2009/3/17 07:39:30

Test Laboratory: Bureau Veritas ADT

M15-Head-WCDMA 850-Ch4182

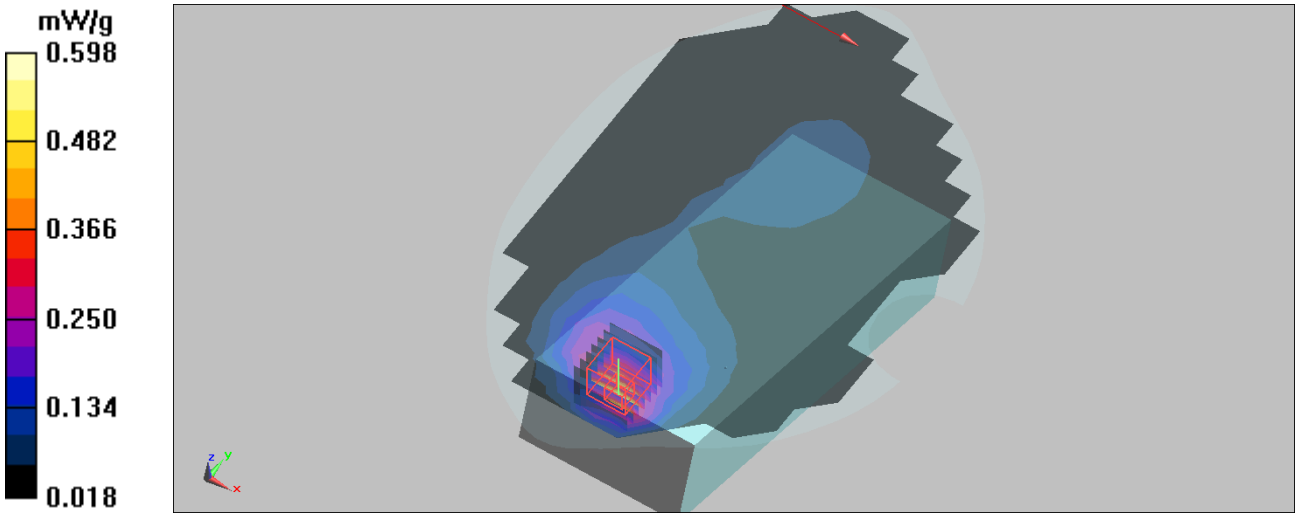
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: WCDMA ; Frequency: 836.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: HSL835 Medium parameters used: f = 836.4 MHz; σ = 0.93 mho/m; εr = 43.1; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 4182/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.391 mW/g

Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.35 V/m
Peak SAR (extrapolated) = 0.965 W/kg
SAR(1 g) = 0.451 mW/g; SAR(10 g) = 0.256 mW/g
Maximum value of SAR (measured) = 0.598 mW/g



Date/Time: 2009/3/19 05:25:17

Test Laboratory: Bureau Veritas ADT

M16-BodyWorn-WCDMA 850-Ch4182 / with Sheath

DUT: MOBILE COMPUTER ; Type: MC 9596

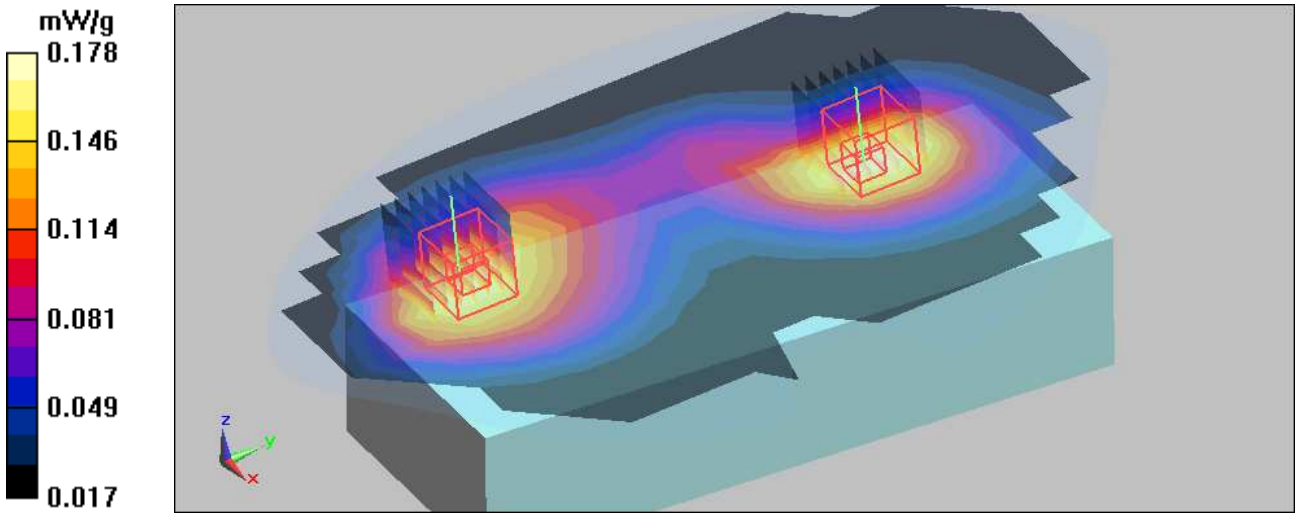
Communication System: WCDMA ; Frequency: 836.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.4 MHz; σ = 1.01 mho/m; εr = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with leather to the Phantom)
DASY5 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(9.71, 9.71, 9.71) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 4182/Area Scan (12x21x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.179 mW/g

Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 7.2 V/m;
Peak SAR (extrapolated) = 0.225 W/kg
SAR(1 g) = 0.164 mW/g; SAR(10 g) = 0.120 mW/g
Maximum value of SAR (measured) = 0.188 mW/g

Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.2 V/m;
Peak SAR (extrapolated) = 0.213 W/kg
SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.178 mW/g



Date/Time: 2009/3/19 06:09:13

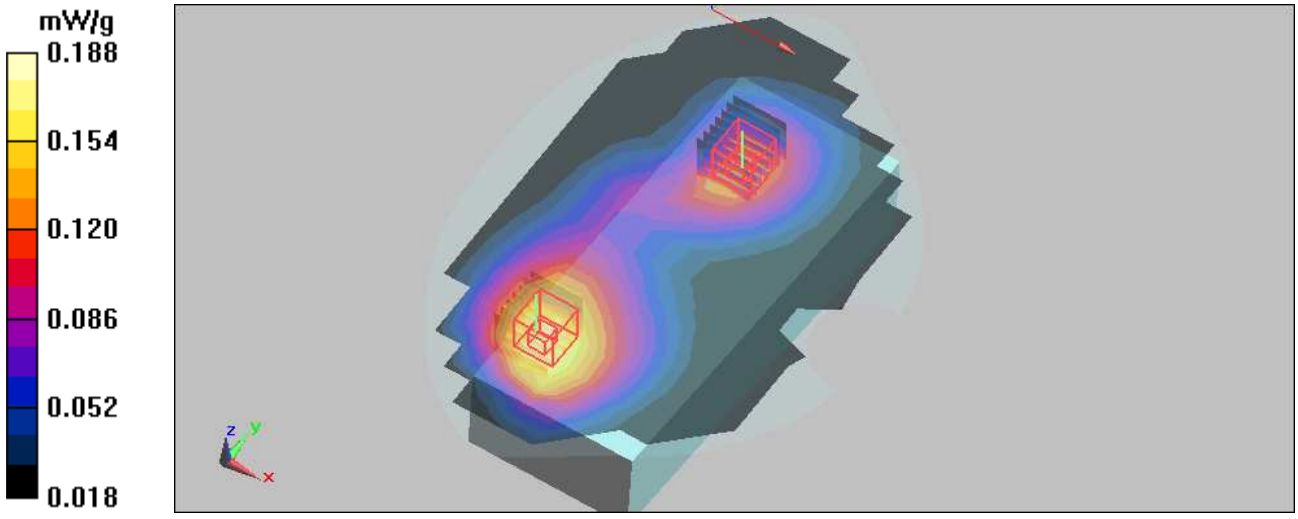
Test Laboratory: Bureau Veritas ADT

M17-BodyWorn-HSDPA850-Ch4182 / with Sheath
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: WCDMA ; Frequency: 836.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.4 MHz; σ = 1.01 mho/m; εr = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with leather to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.71, 9.71, 9.71) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 4182/Area Scan (12x21x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.181 mW/g
Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.8 V/m
Peak SAR (extrapolated) = 0.224 W/kg
SAR(1 g) = 0.168 mW/g; SAR(10 g) = 0.125 mW/g
Maximum value of SAR (measured) = 0.188 mW/g
Mid Channel 4182/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.8 V/m
Peak SAR (extrapolated) = 0.178 W/kg
SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.096 mW/g
Maximum value of SAR (measured) = 0.149 mW/g



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Test Laboratory: Bureau Veritas ADT

M18-Right Head-Cheek-GSM 1900-Ch661

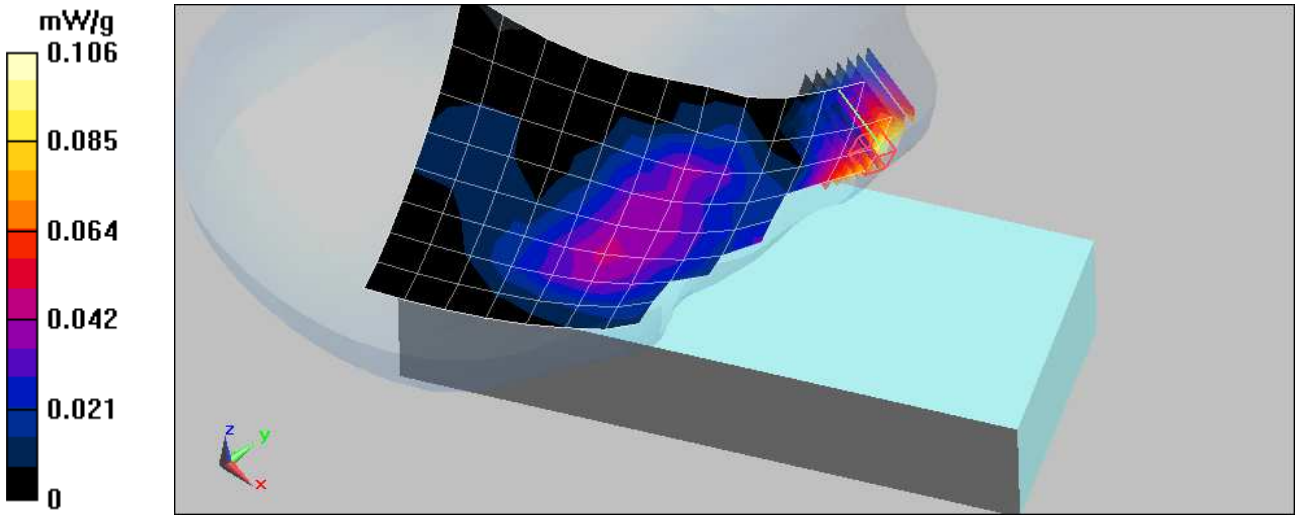
DUT: MOBILE COMPUTER ; Type: MC9596

Communication System: PCS 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Touch position - Mid Channel 661/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.099 mW/g

Touch position - Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.4 V/m;
Peak SAR (extrapolated) = 0.129 W/kg
SAR(1 g) = 0.089 mW/g; SAR(10 g) = n.a.
Maximum value of SAR (measured) = 0.106 mW/g



Date/Time: 2009/3/18 01:31:06

Test Laboratory: Bureau Veritas ADT

M19-Right Head-Tilt-GSM 1900-Ch661

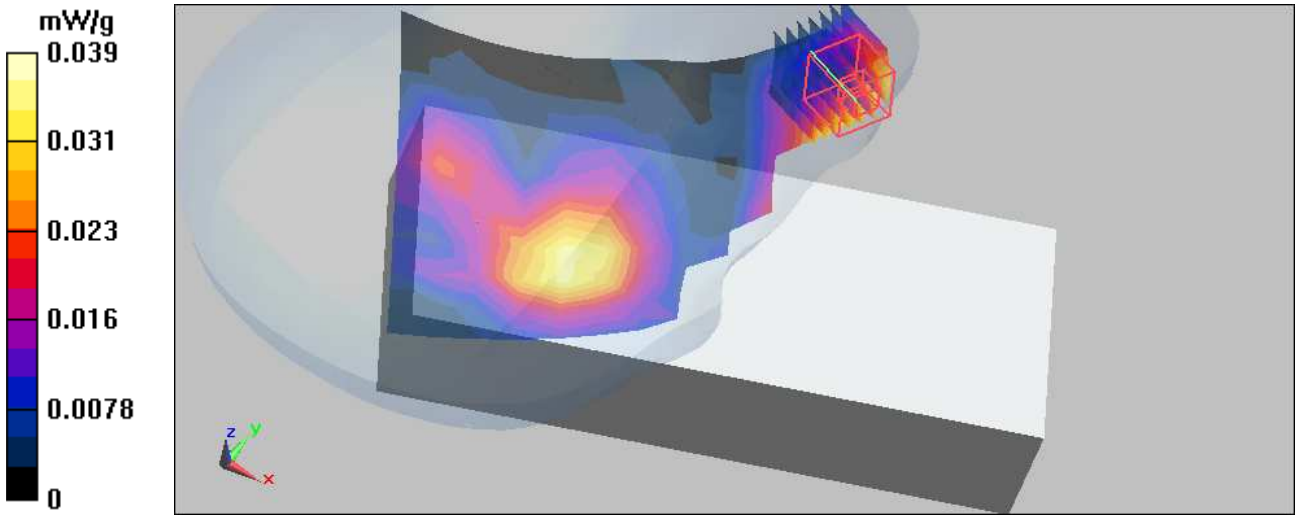
DUT: MOBILE COMPUTER ; Type: MC9596

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Tilt position - Mid Channel 661/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.039 mW/g

Tilt position - Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.44 V/m;
Peak SAR (extrapolated) = 0.049 W/kg
SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.025 mW/g



Date/Time: 2009/3/18 01:59:17

Test Laboratory: Bureau Veritas ADT

M20-Left Head-Cheek-GSM 1900-Ch661

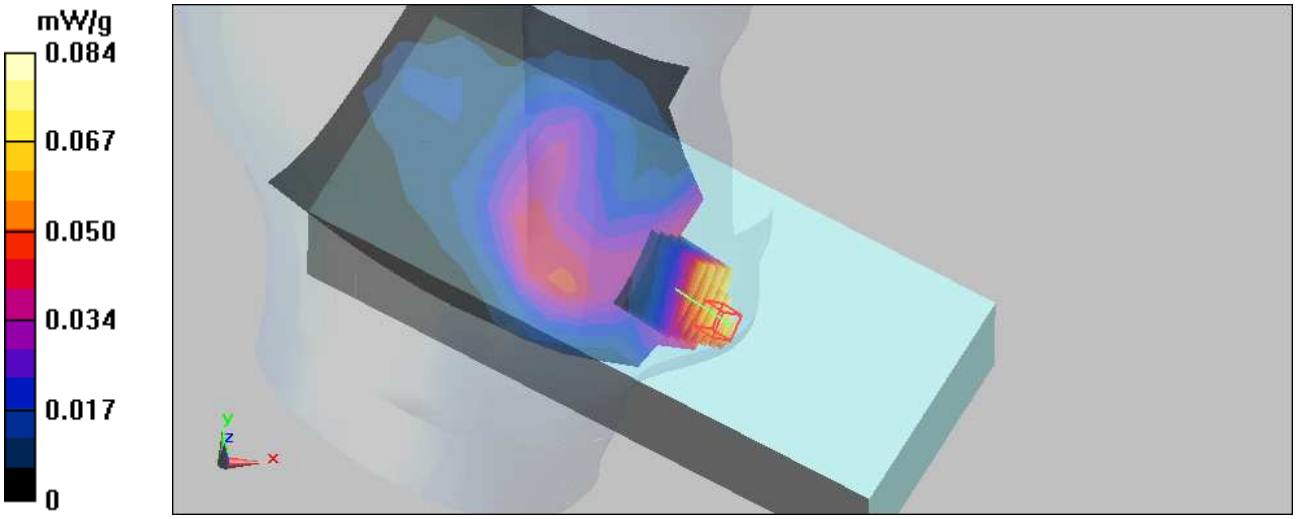
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: PCS 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: GMSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Touch position - Mid Channel 661/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.077 mW/g

Touch position - Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.34 V/m;
Peak SAR (extrapolated) = 0.105 W/kg
SAR(1 g) = 0.072 mW/g; SAR(10 g) = n.a.
Maximum value of SAR (measured) = 0.084 mW/g



Date/Time: 2009/3/18 02:43:44

Test Laboratory: Bureau Veritas ADT

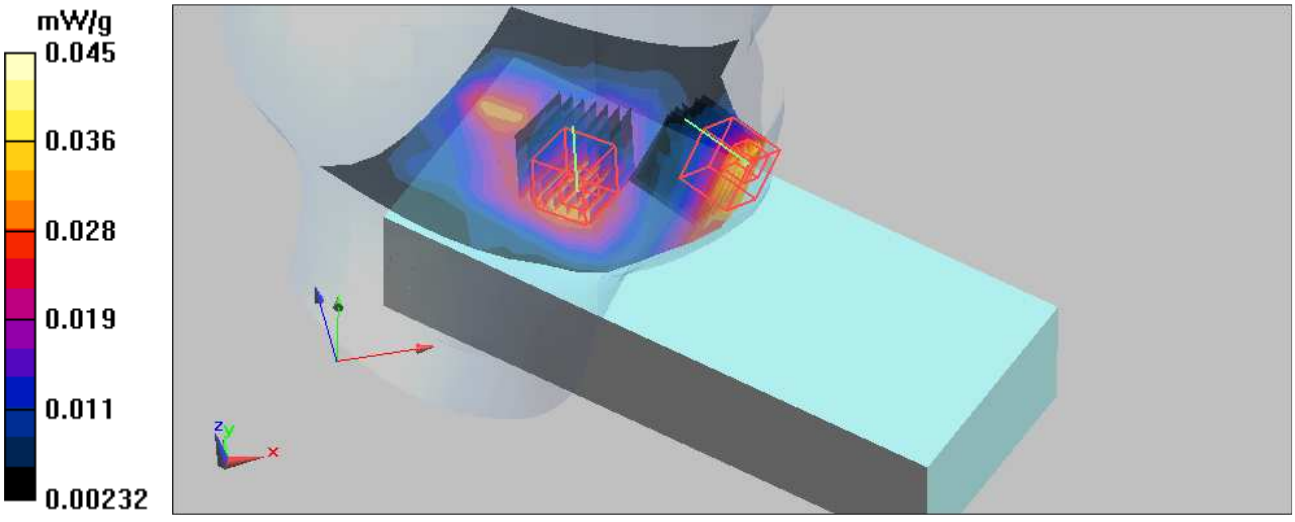
M21-Left Head-Tilt-GSM 1900-Ch661

DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: GMSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Tilt position - Mid Channel 661/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.036 mW/g
Tilt position - Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.01 V/m;
Peak SAR (extrapolated) = 0.049 W/kg
SAR(1 g) = 0.030 mW/g; SAR(10 g) = 0.020 mW/g
Maximum value of SAR (measured) = 0.035 mW/g
Tilt position - Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.01 V/m;
Peak SAR (extrapolated) = 0.058 W/kg
SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.045 mW/g



Date/Time: 2009/3/18 03:24:30

Test Laboratory: Bureau Veritas ADT

M22-Head-GSM 1900-Ch661

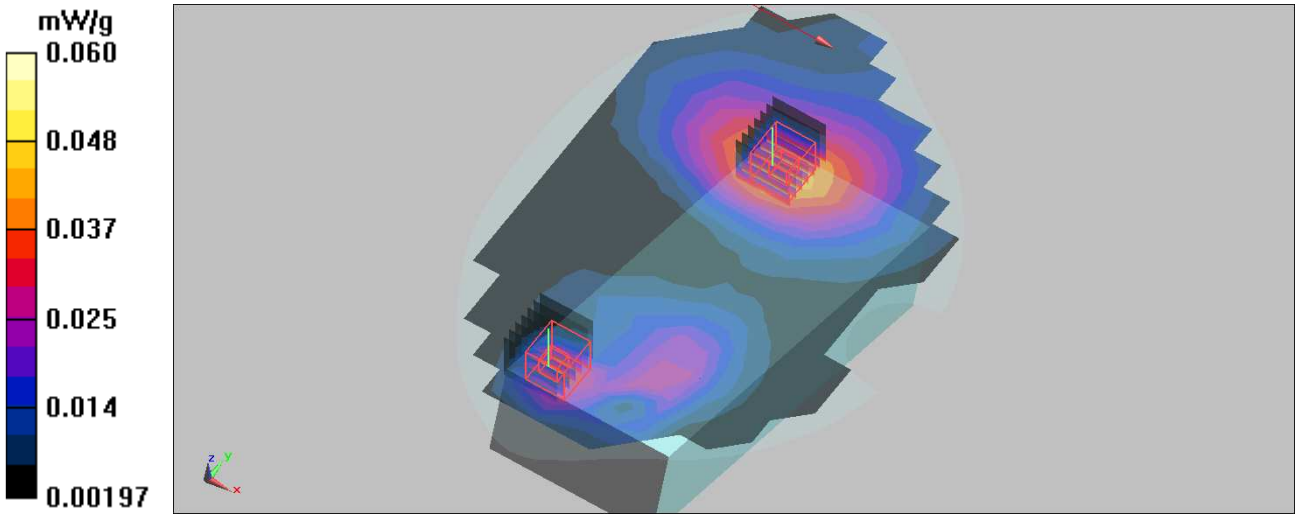
DUT: MOBILE COMPUTER ; Type: MC 9596
Communication System: PCS 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 661/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.060 mW/g

Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.48 V/m
Peak SAR (extrapolated) = 0.094 W/kg
SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.025 mW/g
Maximum value of SAR (measured) = 0.063 mW/g

Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.48 V/m
Peak SAR (extrapolated) = 0.081 W/kg
SAR(1 g) = 0.051 mW/g; SAR(10 g) = 0.032 mW/g



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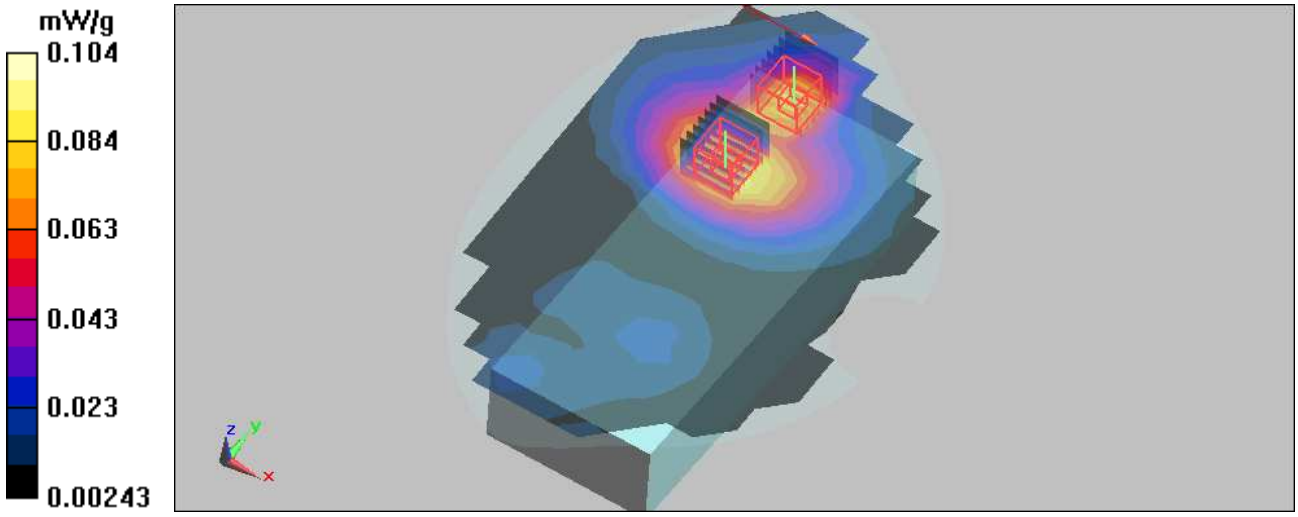
Test Laboratory: Bureau Veritas ADT

M23-BodyWorn-GSM1900 Ch661 / with Sheath
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8.3; Modulation type: GMSK
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 661/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.090 mW/g
Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.88 V/m
Peak SAR (extrapolated) = 0.142 W/kg
SAR(1 g) = 0.086 mW/g; SAR(10 g) = 0.053 mW/g
Maximum value of SAR (measured) = 0.104 mW/g
Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.88 V/m
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.081 mW/g; SAR(10 g) = 0.050 mW/g
Maximum value of SAR (measured) = 0.095 mW/g



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Test Laboratory: Bureau Veritas ADT

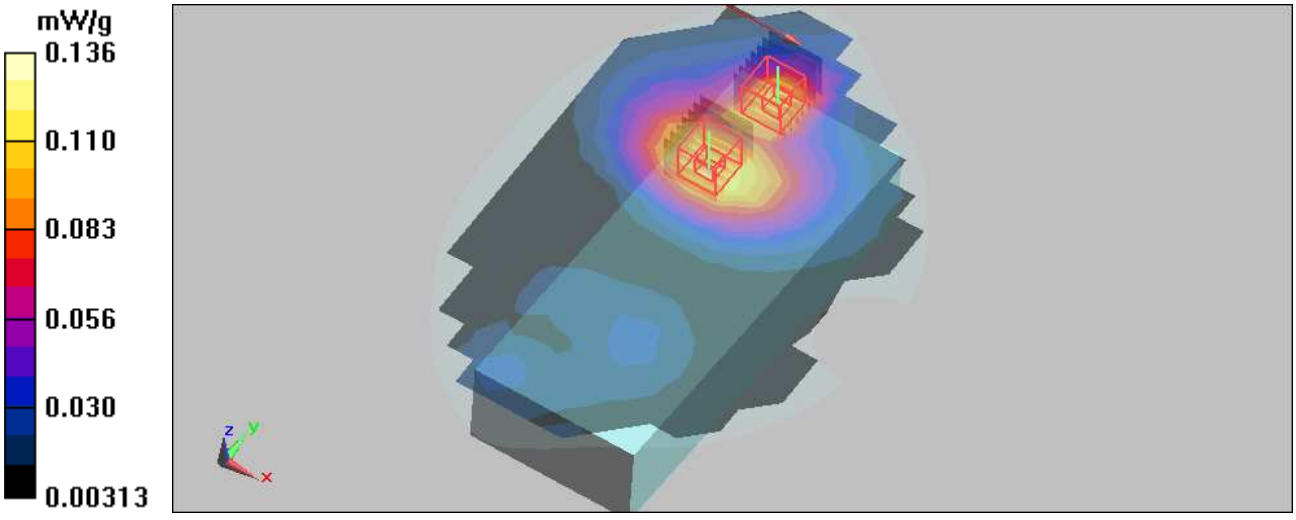
M24-BodyWorn-GPRS1900 TS2-Ch661 / with Sheath

DUT: MOBILE COMPUTER ; Type: MC 9596
Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:4; Modulation type: GMSK / UL 2 time slots
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)
DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 661/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.121 mW/g

Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.92 V/m
Peak SAR (extrapolated) = 0.188 W/kg
SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.069 mW/g
Maximum value of SAR (measured) = 0.136 mW/g

Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.92 V/m
Peak SAR (extrapolated) = 0.166 W/kg
SAR(1 g) = 0.107 mW/g; SAR(10 g) = 0.065 mW/g
Maximum value of SAR (measured) = 0.125 mW/g



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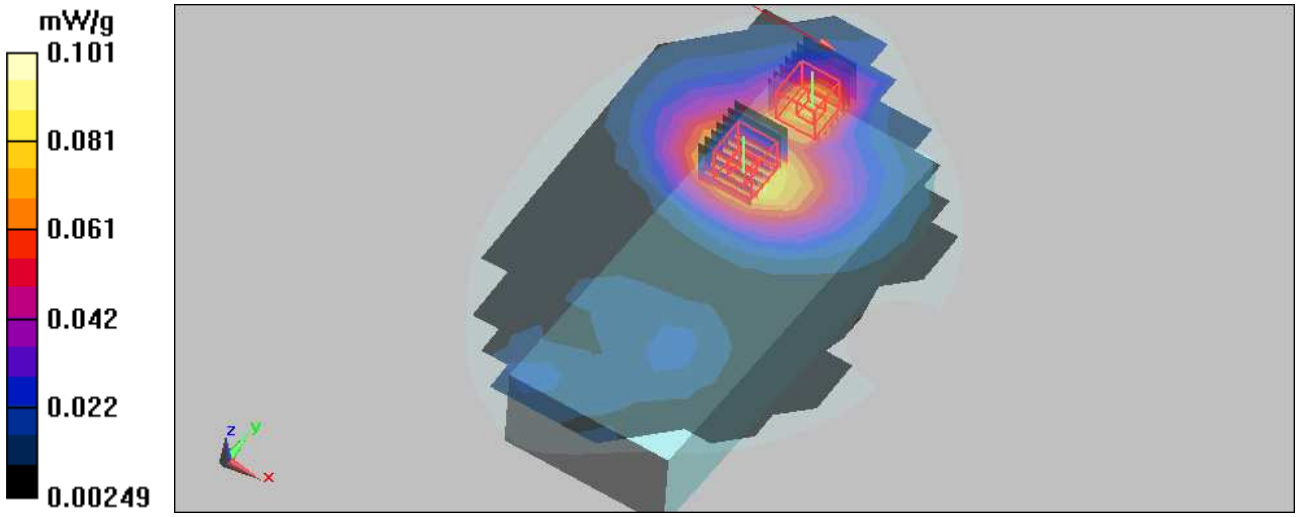
Test Laboratory: Bureau Veritas ADT

M25-BodyWorn-GPRS1900 TS1-Ch661 / with Sheath
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8.3; Modulation type: GMSK / UL 1 time slot
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)
DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 661/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.087 mW/g
Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.43 V/m
Peak SAR (extrapolated) = 0.138 W/kg
SAR(1 g) = 0.082 mW/g; SAR(10 g) = 0.051 mW/g
Maximum value of SAR (measured) = 0.101 mW/g

Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.43 V/m
Peak SAR (extrapolated) = 0.121 W/kg
SAR(1 g) = 0.078 mW/g; SAR(10 g) = 0.048 mW/g
Maximum value of SAR (measured) = 0.092 mW/g



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Test Laboratory: Bureau Veritas ADT

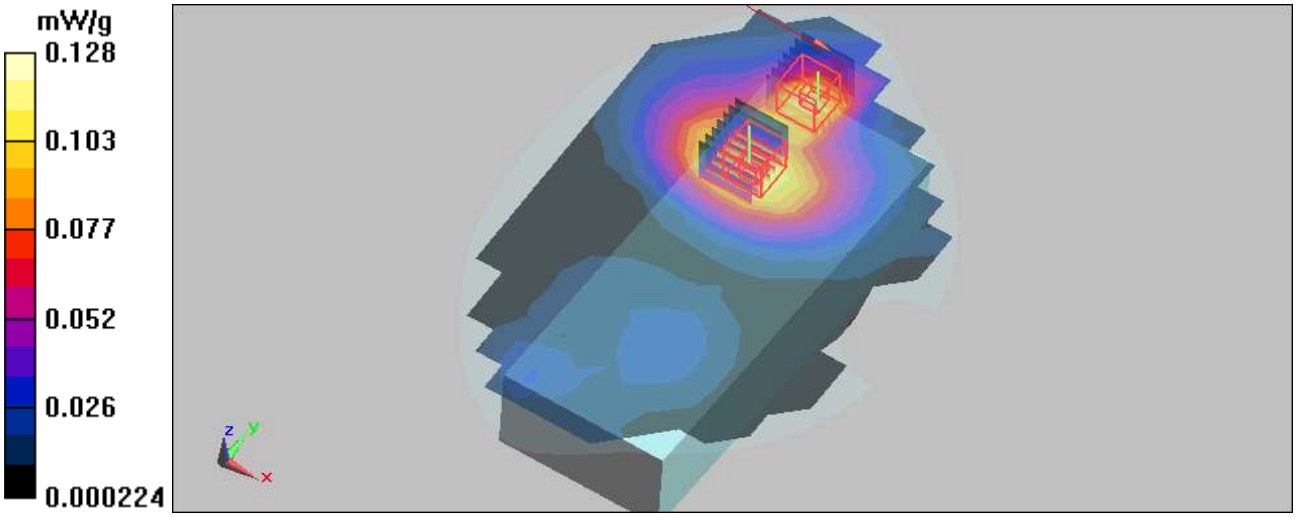
M26-BodyWorn-E-GPRS1900 TS2-Ch661 / with Sheath
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:4; Modulation type: 8PSK / UL 2 time slots
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 661/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.118 mW/g
Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.65 V/m
Peak SAR (extrapolated) = 0.177 W/kg
SAR(1 g) = 0.106 mW/g; SAR(10 g) = 0.065 mW/g
Maximum value of SAR (measured) = 0.128 mW/g

Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.65 V/m
Peak SAR (extrapolated) = 0.153 W/kg
SAR(1 g) = 0.100 mW/g; SAR(10 g) = 0.064 mW/g
Maximum value of SAR (measured) = 0.116 mW/g



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Test Laboratory: Bureau Veritas ADT

M27-BodyWorn-E-GPRS1900 TS1-Ch661 / with Sheath

DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: PCS 1900 ; Frequency: 1880 MHz; Duty Cycle: 1:8.3; Modulation type: 8PSK / UL 1 time slot

Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 55.7; ρ = 1000 kg/m^3

Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 661/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.084 mW/g

Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.29 V/m

Peak SAR (extrapolated) = 0.127 W/kg

SAR(1 g) = 0.076 mW/g; SAR(10 g) = 0.048 mW/g

Maximum value of SAR (measured) = 0.093 mW/g

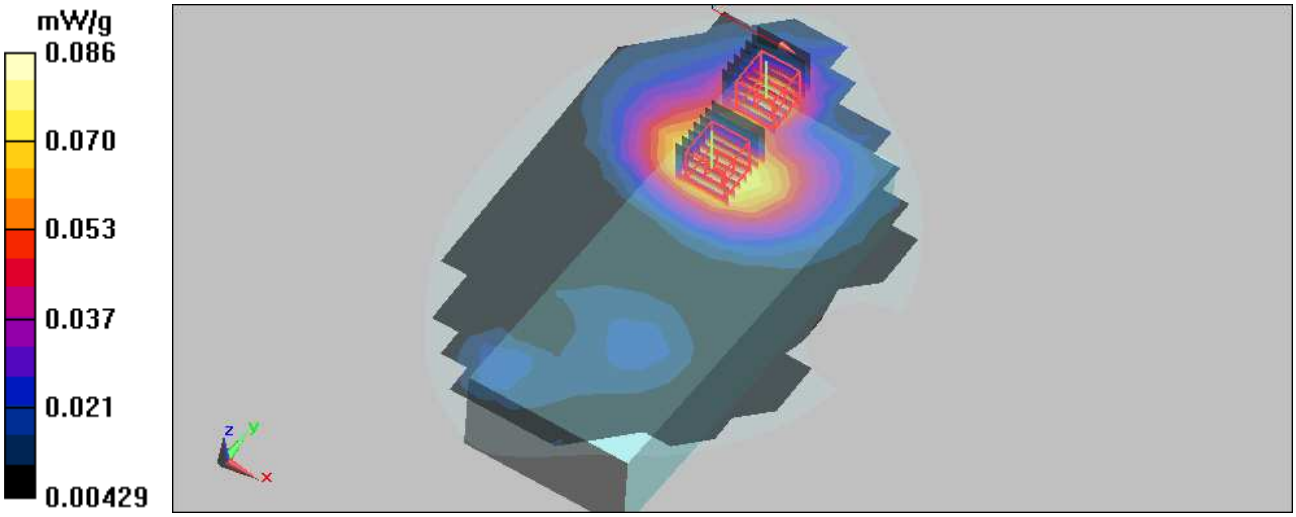
Mid Channel 661/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.29 V/m

Peak SAR (extrapolated) = 0.114 W/kg

SAR(1 g) = 0.074 mW/g; SAR(10 g) = 0.044 mW/g

Maximum value of SAR (measured) = 0.086 mW/g



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Test Laboratory: Bureau Veritas ADT

M28-Right Head-Cheek-WCDMA 1900-Ch 9400

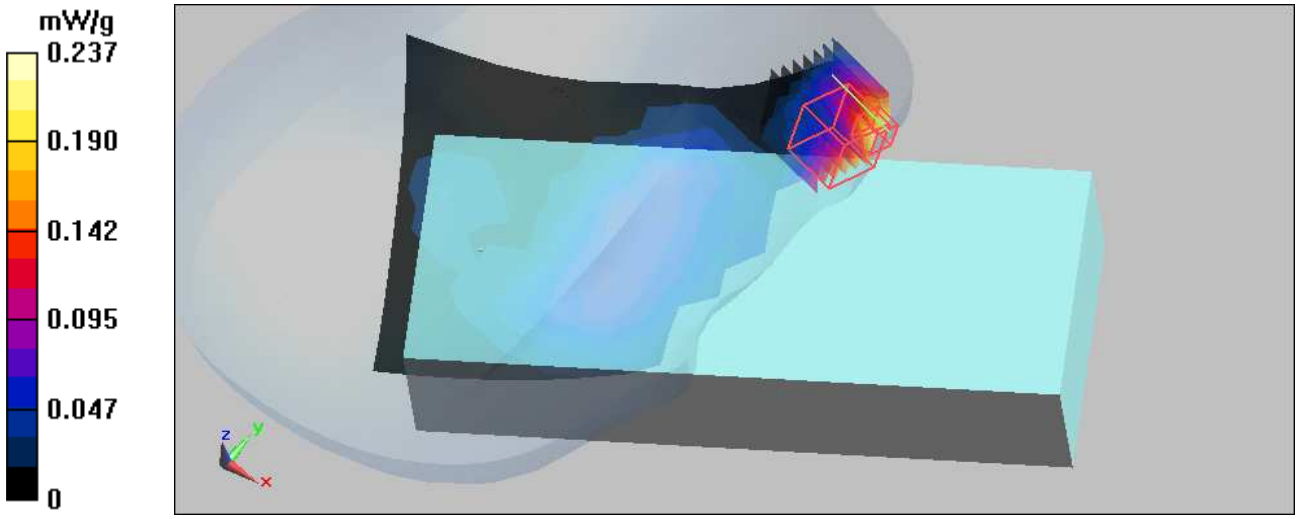
DUT: MOBILE COMPUTER ; Type: MC9596

Communication System: WCDMA1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:1
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: BPSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Touch position - Mid Channel 9400/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.207 mW/g

Touch position - Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.84 V/m
Peak SAR (extrapolated) = 0.277 W/kg
SAR(1 g) = 0.208 mW/g; SAR(10 g) = 0.121 mW/g
Maximum value of SAR (measured) = 0.237 mW/g



Date/Time: 2009/3/18 04:21:43

Test Laboratory: Bureau Veritas ADT

M29-Right Head-Tilt-WCDMA 1900-Ch9400

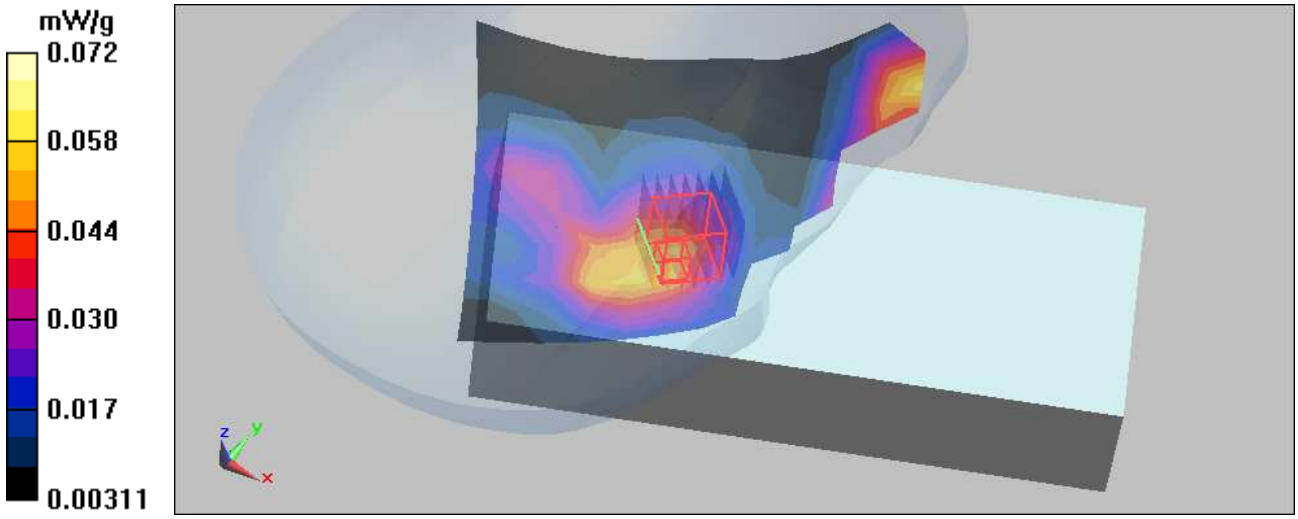
DUT: MOBILE COMPUTER ; Type: MC9596

Communication System: WCDMA1900 ; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: BPSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Tilt position - Mid Channel 9400/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.068 mW/g

Tilt position - Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.86 V/m;
Peak SAR (extrapolated) = 0.092 W/kg
SAR(1 g) = 0.056 mW/g; SAR(10 g) = 0.029 mW/g
Maximum value of SAR (measured) = 0.072 mW/g



Date/Time: 2009/3/18 04:48:29

Test Laboratory: Bureau Veritas ADT

M30-Left Head-Cheek-WCDMA 1900-Ch 9400

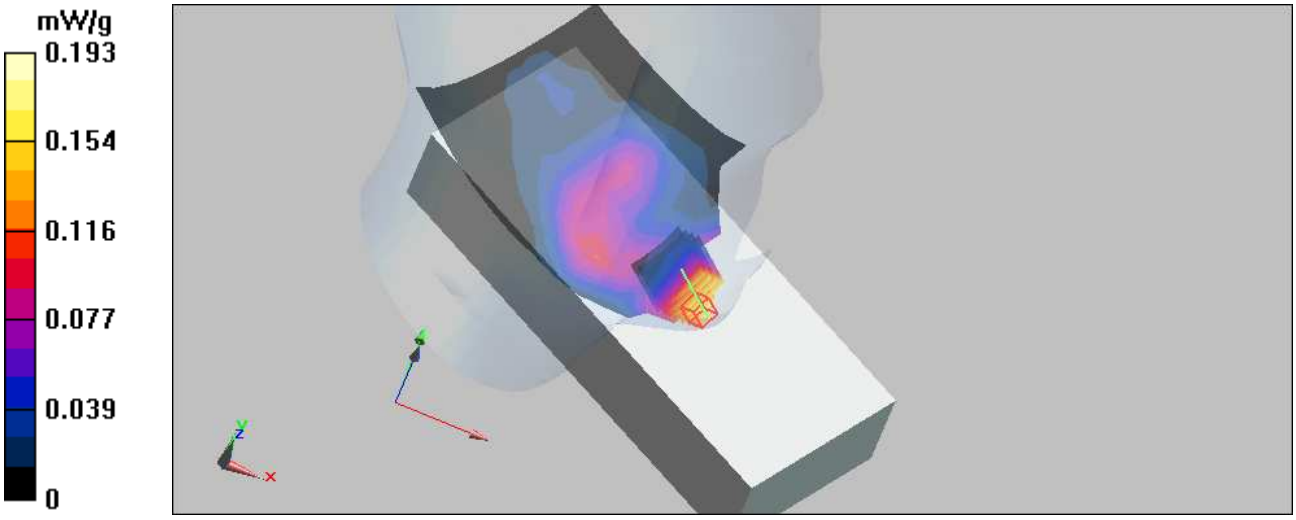
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: WCDMA1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:1
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: BPSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Touch position - Mid Channel 9400/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.178 mW/g

Touch position - Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.37 V/m;
Peak SAR (extrapolated) = 0.241 W/kg
SAR(1 g) = 0.167 mW/g; SAR(10 g) = n.a.
Maximum value of SAR (measured) = 0.193 mW/g



Date/Time: 2009/3/18 05:30:39

Test Laboratory: Bureau Veritas ADT

M31-Left Head-Tilt-WCDMA 1900-Ch9400

DUT: MOBILE COMPUTER ; Type: MC 9596

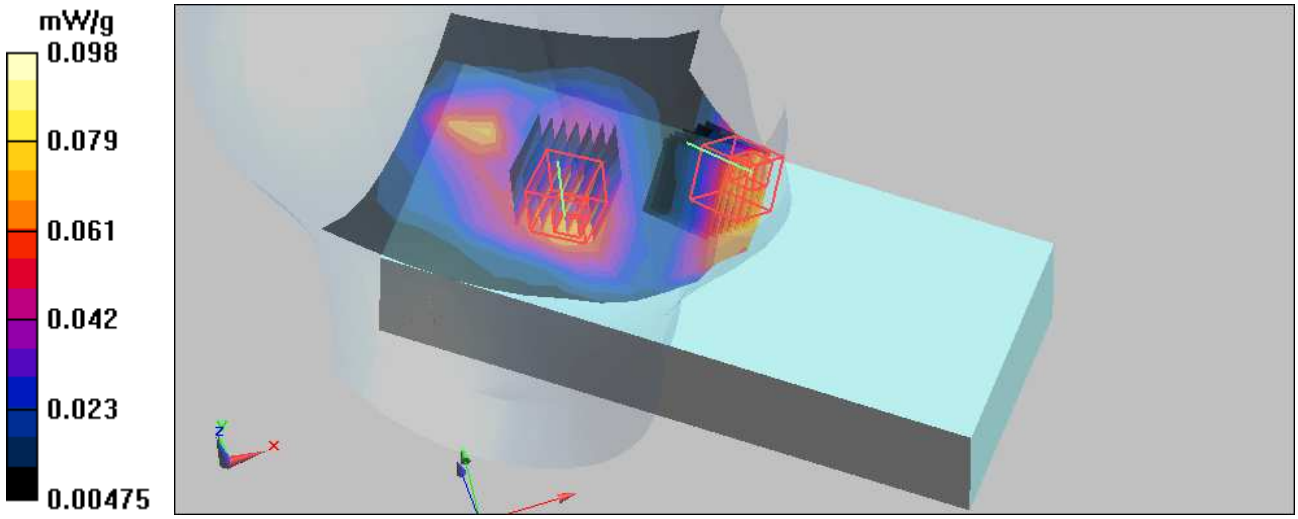
Communication System: WCDMA1900 ; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: BPSK

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Tilt position - Mid Channel 9400/Area Scan (9x18x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.077 mW/g

Tilt position - Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.06 V/m;
Peak SAR (extrapolated) = 0.099 W/kg
SAR(1 g) = 0.066 mW/g; SAR(10 g) = 0.044 mW/g
Maximum value of SAR (measured) = 0.076 mW/g

Tilt position - Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.06 V/m;
Peak SAR (extrapolated) = 0.129 W/kg
SAR(1 g) = 0.075 mW/g; SAR(10 g) = 0.047 mW/g
Maximum value of SAR (measured) = 0.098 mW/g



Date/Time: 2009/3/18 06:56:22

Test Laboratory: Bureau Veritas ADT

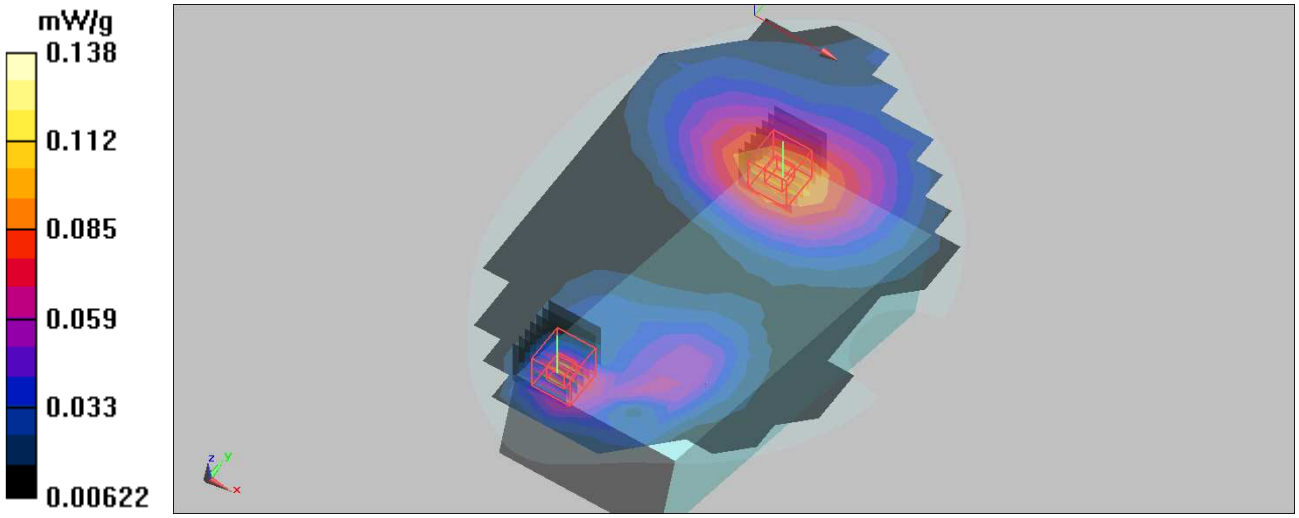
M32-Head-WCDMA 1900-Ch9400

DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: WCDMA1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 9400/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.138 mW/g
Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.3 V/m
Peak SAR (extrapolated) = 0.224 W/kg
SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.075 mW/g
Maximum value of SAR (measured) = 0.156 mW/g
Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.3 V/m
Peak SAR (extrapolated) = 0.187 W/kg
SAR(1 g) = 0.117 mW/g; SAR(10 g) = 0.062 mW/g



Date/Time: 2009/3/20 04:43:02

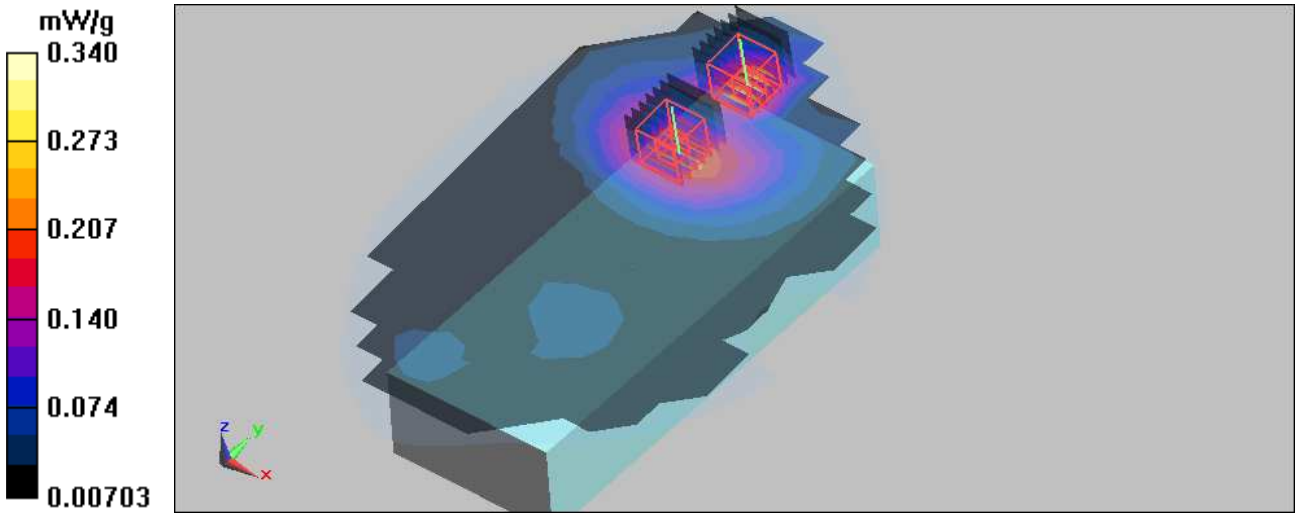
Test Laboratory: Bureau Veritas ADT

M33-BodyWorn-WCDMA1900-Ch9400 / with Sheath
DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: WCDMA1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 9400/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.286 mW/g
Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.2 V/m;
Peak SAR (extrapolated) = 0.473 W/kg
SAR(1 g) = 0.274 mW/g; SAR(10 g) = 0.149 mW/g
Maximum value of SAR (measured) = 0.340 mW/g
Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.2 V/m;
Peak SAR (extrapolated) = 0.309 W/kg
SAR(1 g) = 0.203 mW/g; SAR(10 g) = 0.132 mW/g
Maximum value of SAR (measured) = 0.236 mW/g



Date/Time: 2009/3/20 05:25:18

Test Laboratory: Bureau Veritas ADT

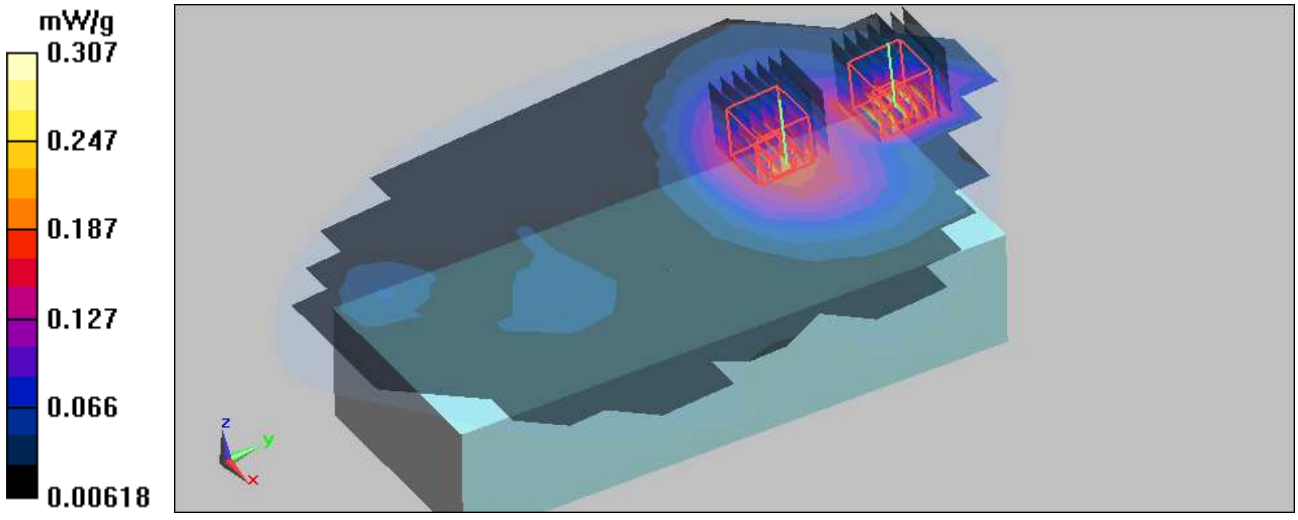
M34-BodyWorn-HSDPA1900-Ch9400 / with sheath

DUT: MOBILE COMPUTER ; Type: MC 9596

Communication System: WCDMA1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 0 mm (The front side of the EUT with sheath to the Phantom)

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861 ; Calibrated: 2008/9/22
- Phantom: SAM with CRP ; Type: SAM ; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

Mid Channel 9400/Area Scan (13x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.233 mW/g
Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.98 V/m;
Peak SAR (extrapolated) = 0.438 W/kg
SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.136 mW/g
Maximum value of SAR (measured) = 0.307 mW/g
Mid Channel 9400/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.98 V/m;
Peak SAR (extrapolated) = 0.276 W/kg
SAR(1 g) = 0.180 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.212 mW/g



Date/Time: 2009/3/17 00:39:28

Test Laboratory: Bureau Veritas ADT

System validation-HSL835

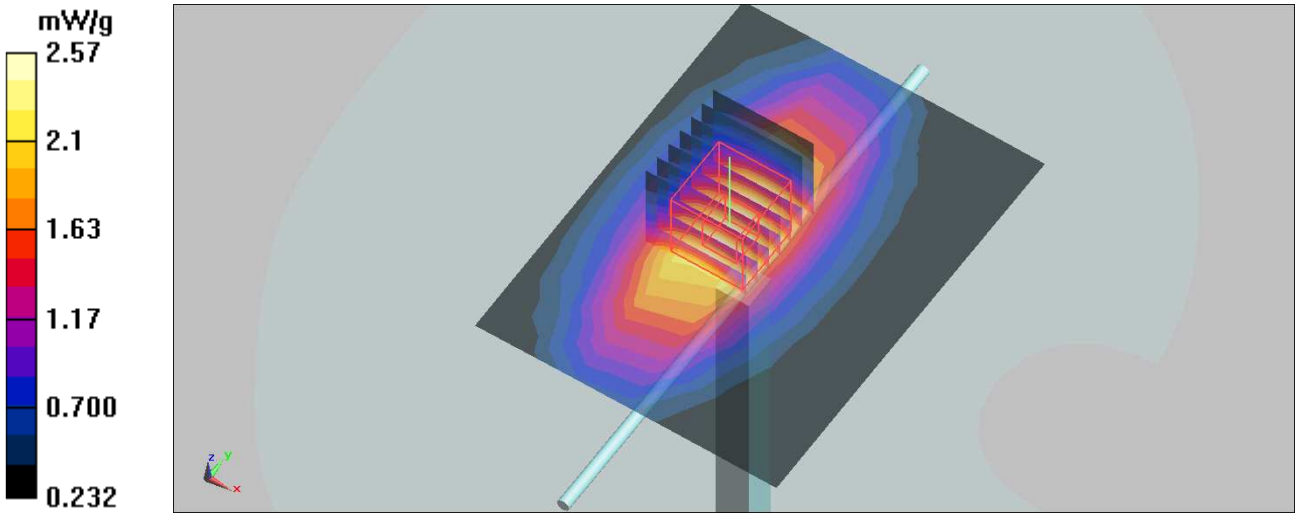
DUT: Dipole 835 MHz ; Type: D835V2 ; Serial: D835V2 - SN:4d021 ; Test Frequency: 835 MHz

Communication System: CW ; Frequency: 835 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: HSL835;Medium parameters used: f = 835 MHz; σ = 0.93 mho/m; ε_r = 43.1; ρ = 1000 kg/m^3 ;
Liquid level : 153 mm
Phantom section: Flat Section ; Separation distance : 15 mm (The feetpoint of the dipole to the Phantom)Air temp. : 23.1 degrees ; Liquid temp. : 22.7 degrees

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.57, 9.57, 9.57) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

d=15mm, Pin=250mW/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.31 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.9 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 3.63 W/kg
SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.55 mW/g
Maximum value of SAR (measured) = 2.57 mW/g



Date/Time: 2009/3/19 00:43:23

Test Laboratory: Bureau Veritas ADT

System validation-MSL835

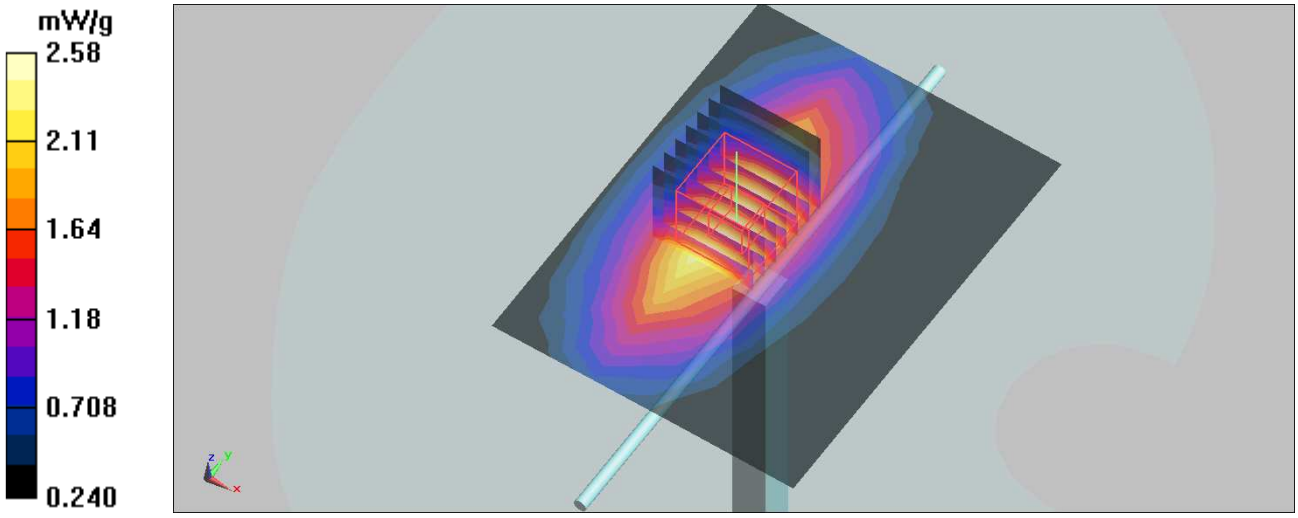
DUT: Dipole 835 MHz ; Type: D835V2 ; Serial: D835V2 - SN:4d021 ; Test Frequency: 835 MHz

Communication System: CW ; Frequency: 835 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: MSL835;Medium parameters used: f = 835 MHz; σ = 1.01 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3 ;
Liquid level : 152 mm
Phantom section: Flat Section ; Separation distance : 15 mm (The feetpoint of the dipole to the Phantom)Air temp. : 23.3 degrees ; Liquid temp. : 22.9 degrees

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(9.71, 9.71, 9.71) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

d=15mm, Pin=250mW/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 2.54 mW/g

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.9 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 3.6 W/kg
SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.56 mW/g
Maximum value of SAR (measured) = 2.58 mW/g



Date/Time: 2009/3/18 00:34:26

Test Laboratory: Bureau Veritas ADT

System validation-HSL1900

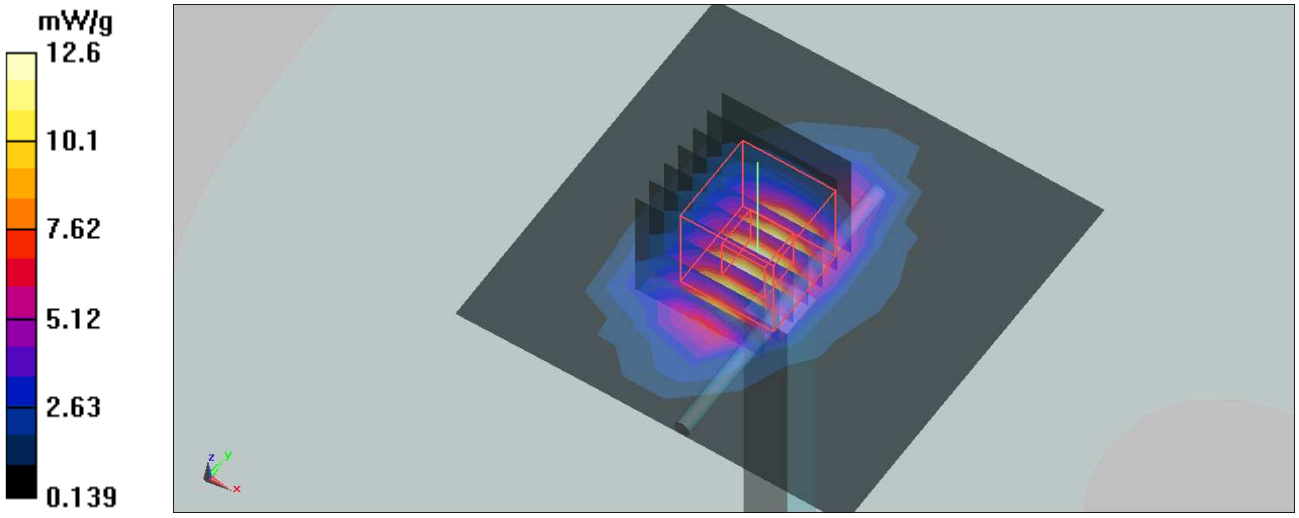
DUT: Dipole 1900 MHz ; Type: D1900V2 ; Serial: 5d036 ; Test Frequency: 1900 MHz

Communication System: CW ; Frequency: 1900 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: HSL1900;Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.7; ρ = 1000 kg/m^3 ;
Liquid level : 151 mm
Phantom section: Flat Section ; Separation distance : 10 mm (The feetpoint of the dipole to the Phantom)Air temp. : 22.9 degrees ; Liquid temp. : 22.7 degrees

DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.08, 8.08, 8.08) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

d=10mm, Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 11.4 mW/g

d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.7 V/m; Power Drift = 0.083 dB
Peak SAR (extrapolated) = 19.4 W/kg
SAR(1 g) = 9.82 mW/g; SAR(10 g) = 4.94 mW/g
Maximum value of SAR (measured) = 12.6 mW/g



Date/Time: 2009/3/20 00:27:01

Test Laboratory: Bureau Veritas ADT

System validation-MSL1900

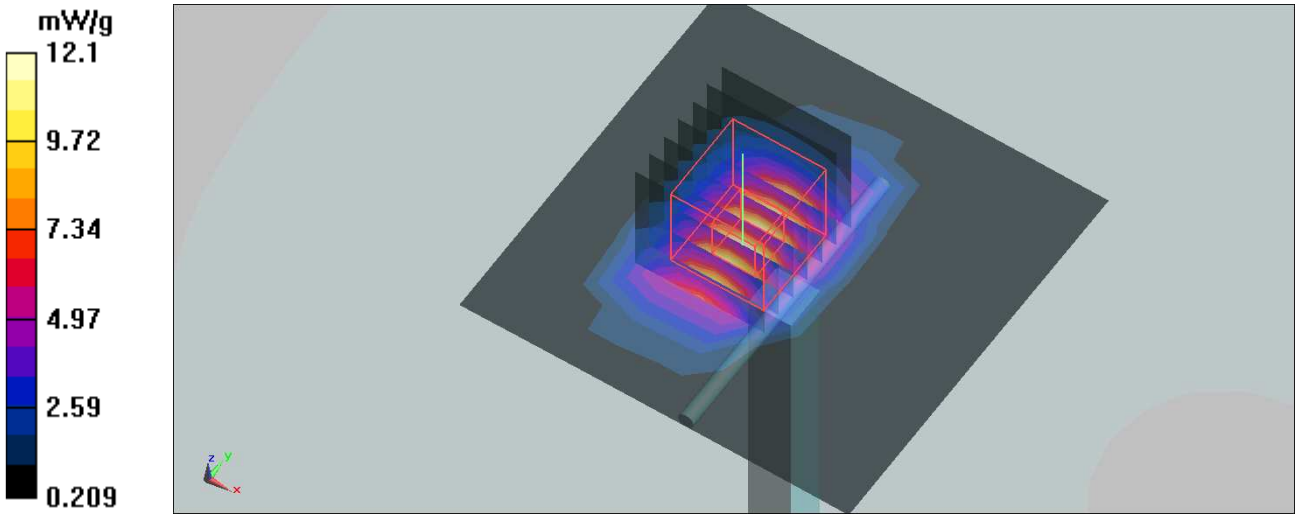
DUT: Dipole 1900 MHz ; Type: D1900V2 ; Serial: 5d036 ; Test Frequency: 1900 MHz

Communication System: CW ; Frequency: 1900 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: MSL1900;Medium parameters used: f = 1900 MHz; σ = 1.57 mho/m; ε_r = 55.6; ρ = 1000 kg/m^3 ; Liquid level : 154 mm
Phantom section: Flat Section ; Separation distance : 10 mm (The feetpoint of the dipole to the Phantom)Air temp. : 23.1 degrees ; Liquid temp. : 22.8 degrees

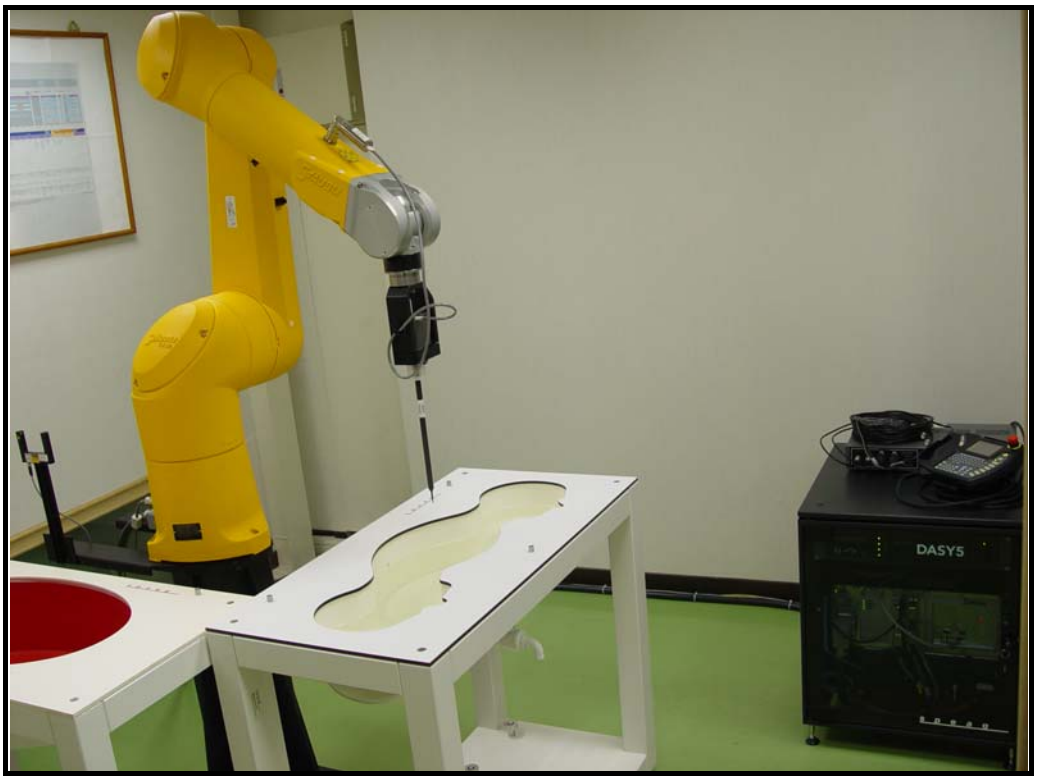
DASY5 Configuration:
- Probe: EX3DV3 - SN3504 ; ConvF(8.21, 8.21, 8.21) ; Calibrated: 2009/1/21
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn861; Calibrated: 2008/9/22
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.0 Build 125; SEMCAD X Version 13.4 Build 125

d=10mm, Pin=250mW/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 8.31 mW/g

d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.4 V/m; Power Drift = 0.157 dB
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 9.49 mW/g; SAR(10 g) = 4.9 mW/g
Maximum value of SAR (measured) = 12.1 mW/g



APPENDIX B: BV ADT SAR MEASUREMENT SYSTEM



APPENDIX C: PHOTOGRAPHS OF SYSTEM VALIDATION

APPENDIX D: SYSTEM CERTIFICATE & CALIBRATION

D1: PHANTOM

Schmid & Partner Engineering AG

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

Certificate of Conformity / First Article Inspection

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

Tests

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

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

Standards

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

Conformity

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

Date 07.07.2005

Signature / Stamp

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 **ADT (Auden)**

Certificate No: EX3-3504_Jan09

CALIBRATION CERTIFICATE

Object	EX3DV3 - SN:3504
Calibration procedure(s)	QA CAL-01.v6, QA CAL-14.v3 and QA CAL-23.v3 Calibration procedure for dosimetric E-field probes
Calibration date:	January 21, 2009
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)	1-Jul-08 (No. 217-00865)	Jul-09
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	1-Jul-08 (No. 217-00866)	Jul-09
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09

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-08)	In house check: Oct-09

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

Issued: January 21, 2009

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

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:3504

Manufactured:	December 15, 2003
Last calibrated:	August 30, 2007
Recalibrated:	January 21, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: EX3DV3 SN:3504

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

NormX	**0.60** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**94** mV
NormY	**0.62** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**94** mV
NormZ	**0.65** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**95** 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	10.0	6.0
SAR_{be} [%]	With Correction Algorithm	0.7	0.3

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	8.0	4.9
SAR_{be} [%]	With Correction Algorithm	0.8	0.6

Sensor Offset

Probe Tip to Sensor Center	**1.0** mm

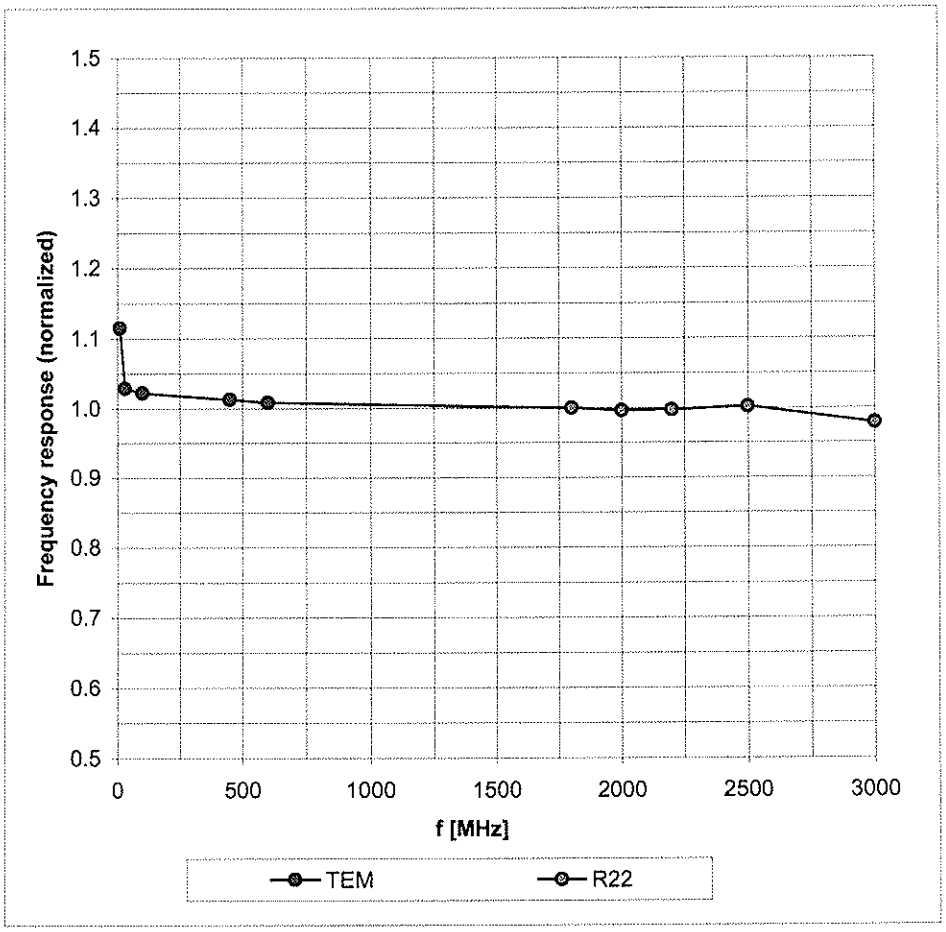
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[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.

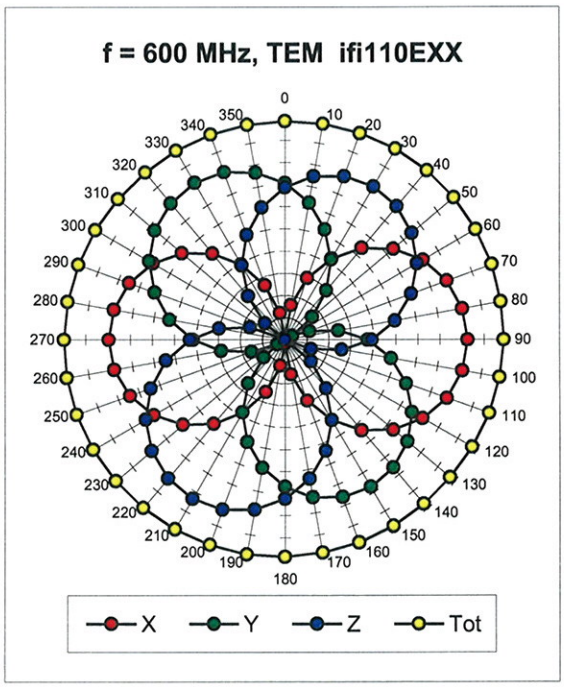
Frequency Response of E-Field

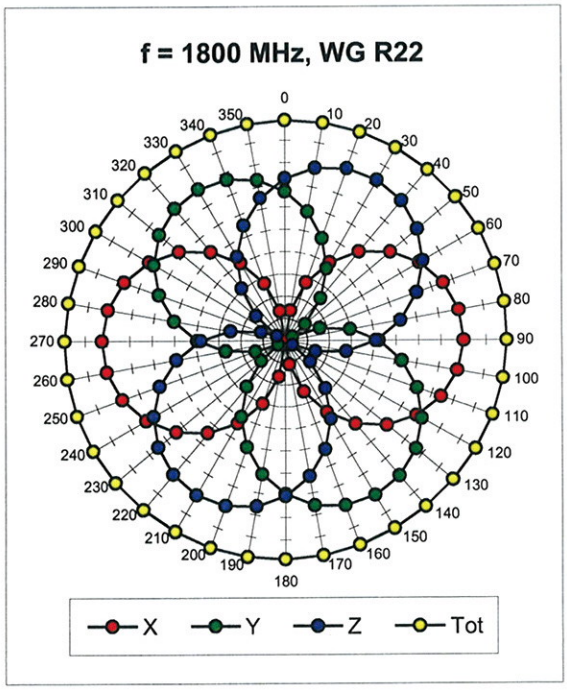
(TEM-Cell:ifi110 EXX, Waveguide: R22)

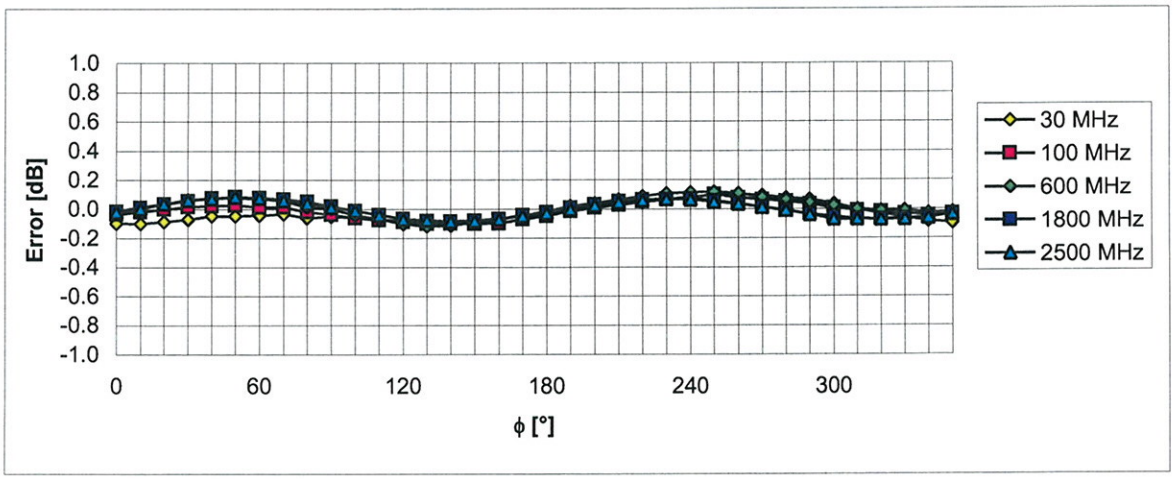


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°



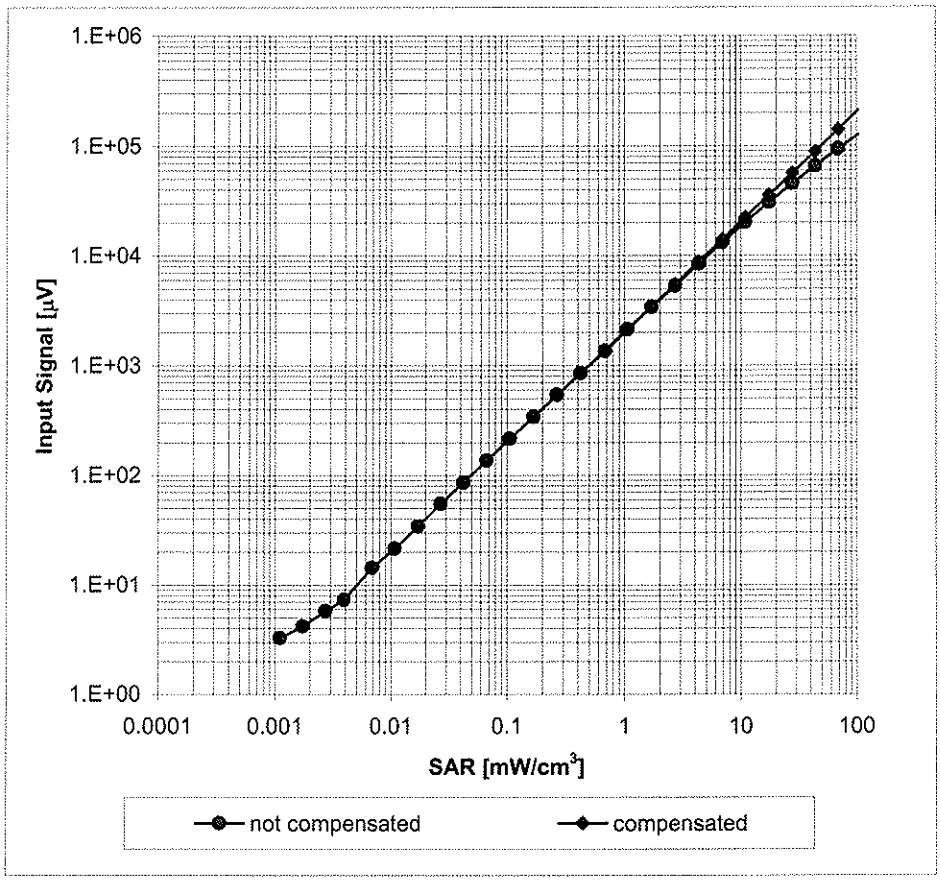


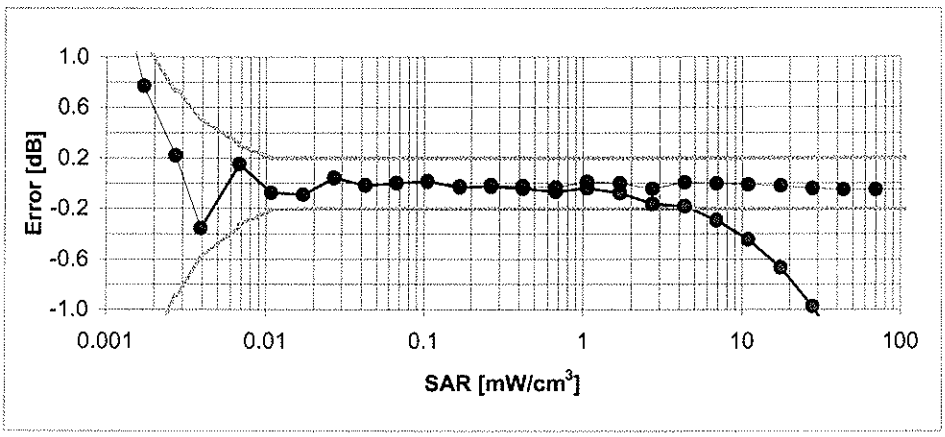


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)





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

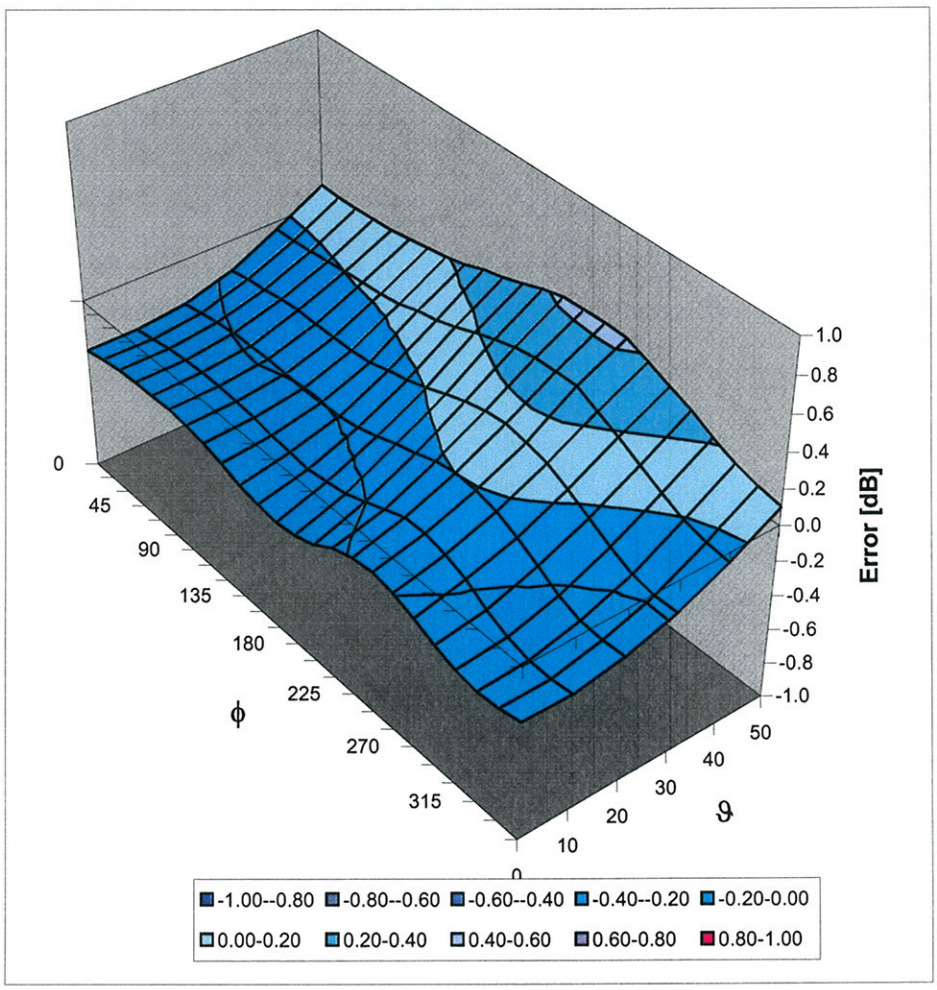
Conversion Factor Assessment

f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.74	0.65	9.57 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.56	0.64	8.53 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.76	0.57	8.08 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.53	0.66	7.67 ± 11.0% (k=2)
2600	± 50 / ± 100	Head	39.0 ± 5%	1.96 ± 5%	0.24	0.98	7.56 ± 11.0% (k=2)
5200	± 50 / ± 100	Head	36.0 ± 5%	4.66 ± 5%	0.42	1.70	4.65 ± 13.1% (k=2)
5300	± 50 / ± 100	Head	35.9 ± 5%	4.76 ± 5%	0.42	1.70	4.49 ± 13.1% (k=2)
5500	± 50 / ± 100	Head	35.6 ± 5%	4.96 ± 5%	0.42	1.70	4.39 ± 13.1% (k=2)
5600	± 50 / ± 100	Head	35.5 ± 5%	5.07 ± 5%	0.42	1.70	4.29 ± 13.1% (k=2)
5800	± 50 / ± 100	Head	35.3 ± 5%	5.27 ± 5%	0.42	1.70	4.40 ± 13.1% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.50	0.73	9.71 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.46	0.73	8.36 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.43	0.73	8.21 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.27	1.07	7.53 ± 11.0% (k=2)
2600	± 50 / ± 100	Body	52.5 ± 5%	2.16 ± 5%	0.25	1.10	7.33 ± 11.0% (k=2)
5200	± 50 / ± 100	Body	49.0 ± 5%	5.30 ± 5%	0.45	1.75	4.38 ± 13.1% (k=2)
5300	± 50 / ± 100	Body	48.9 ± 5%	5.42 ± 5%	0.45	1.75	4.06 ± 13.1% (k=2)
5500	± 50 / ± 100	Body	48.6 ± 5%	5.65 ± 5%	0.42	1.75	3.98 ± 13.1% (k=2)
5600	± 50 / ± 100	Body	48.5 ± 5%	5.77 ± 5%	0.42	1.75	3.91 ± 13.1% (k=2)
5800	± 50 / ± 100	Body	48.2 ± 5%	6.00 ± 5%	0.42	1.75	3.98 ± 13.1% (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)

8. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, NVLAP
GERMANY	TUV Rheinland
JAPAN	VCCI
NORWAY	NEMKO
CANADA	INDUSTRY CANADA , CSA
R.O.C.	TAF, BSMI, NCC
NETHERLANDS	Telefication
SINGAPORE	GOST-ASIA (MOU)
RUSSIA	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.