SAR TEST REPORT

REPORT NO.: SA110715C24
MODEL NO.: F-02D
FCC ID: VQK-F02D
RECEIVED: Jul. 15, 2011
TESTED: Jul. 30, 2011
ISSUED: Sep. 01, 2011

APPLICANT: FUJITSU LIMITED

ADDRESS: 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588, Japan

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Sep. 01, 2011

1. CERTIFICATION

PRODUCT:	Mobile Phone
MODEL NO.:	F-02D
FCC ID:	VQK-F02D
BRAND:	FOMA
APPLICANT:	FUJITSU LIMITED
TESTED:	Jul. 30, 2011
STANDARDS:	**FCC Part 2 (Section 2.1093)** **FCC OET Bulletin 65, Supplement C (01-01)** **IEEE 1528:2003** **RSS-102 Issue 4 (2010-03)**

The above equipment 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 SAR characteristics under the conditions specified in this report.

PREPARED BY : Ivonne Wu , **DATE:** Sep. 01, 2011

Ivonne Wu / Senior Specialist

APPROVED BY : Gary Chang , **DATE:** Sep. 01, 2011

Gary Chang / Technical Manager

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

EUT	Mobile Phone
MODEL NO.	F-02D
FCC ID	VQK-F02D
CLASSIFICATION	Engineering Sample
UPLINK MODULATION TYPE	GSM: GMSK WCDMA: QPSK
TX FREQUENCY RANGE	GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz
ANTENNA TYPE	Fixed Internal antenna
ACCESSORY DEVICES	Battery

NOTE:

1. The EUT use the following internal Li-ion battery:

BRAND	Fujitsu Limited
MODEL	F22
RATING	3.7Vdc, 1000mAh

2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

2.2 SUMMARY OF PEAK SAR RESULTS

Band	Position	SAR_{1g} (W/kg)
WCDMA Band V	**Head**	**0.482**
	Body (Body Worn)	**0.495**
	Body (Hotspot)	**0.495**
GSM1900	**Head**	**0.542**
	Body (Body Worn)	**0.519**
	Body (Hotspot)	**0.519**

2.3 TEST CONFIGURATION

The device was controlled by using a base station emulator. Communication between the device and the emulator was established by air link. The distance between the DUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of DUT. The DUT was set from the emulator to radiate maximum output power during all tests.

In general, the crest factor is 8.3 for GSM and GPRS multi-slot class 8, and 1 for WCDMA.

This device supports WiFi hotspot function, so body SAR was tested under 1 cm for the surfaces/slide edges where a transmitting antenna is within 2.5 cm from the edge.

The WWAN antenna is located on top edge of the phone on close mode. Bottom edge is not tested since the distance between antenna and bottom edge is > 2.5 cm.

2.4 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 Issue 4 (2010-03)

IEEE 1528-2003

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

2.5 GENERAL INOFRMATION OF THE SAR SYSTEM

DASY4/5 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 DASY4/5 software defined. The DASY4/5 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.

EX3DV4 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.

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.

2.6 TEST EQUIPMENT

FOR SAR MEASURENENT

ITEM	NAME	BRAND	TYPE	SERIES NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
1	SAM Phantom	S & P	QD000 P40 CA	TP-1485	NA	NA
2	SAM Phantom	S & P	QD000 P40 CA	TP-1202	NA	NA
3	Signal Generator	Agilent	E8257C	MY43320668	Dec. 27, 2010	Dec. 26, 2011
6	E-Field Probe	S & P	EX3DV4	3590	Feb. 25, 2011	Feb. 24, 2012
8	DAE	S & P	DAE3	579	Sep. 20, 2010	Sep. 19, 2011
9	Robot Positioner	Staubli Unimation	NA	NA	NA	NA
10	Validation Dipole	S & P	D835V2	4d021	Mar. 23, 2011	Mar. 22, 2012
			D1900V2	5d022	Jan. 26, 2011	Jan. 25, 2012

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

FOR TISSUE PROPERTY

ITEM	NAME	BRAND	TYPE	SERIES NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
1	Network Analyzer	Agilent	E8358A	US41480538	Dec. 30, 2010	Dec. 29, 2011
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.

2.7 GENERAL DESCRIPTION OF THE SPATIAL PEAK SAR EVALUATION

The DASY4/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 5 x 5 x 7 scans. The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 32 x 32 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.

2.8 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.
1	Universal Radio Communication Tester	R&S	CMU200	101372

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).

3. DESCRIPTION OF TEST POSITION

3.1 DESCRIPTION OF TEST POSITION

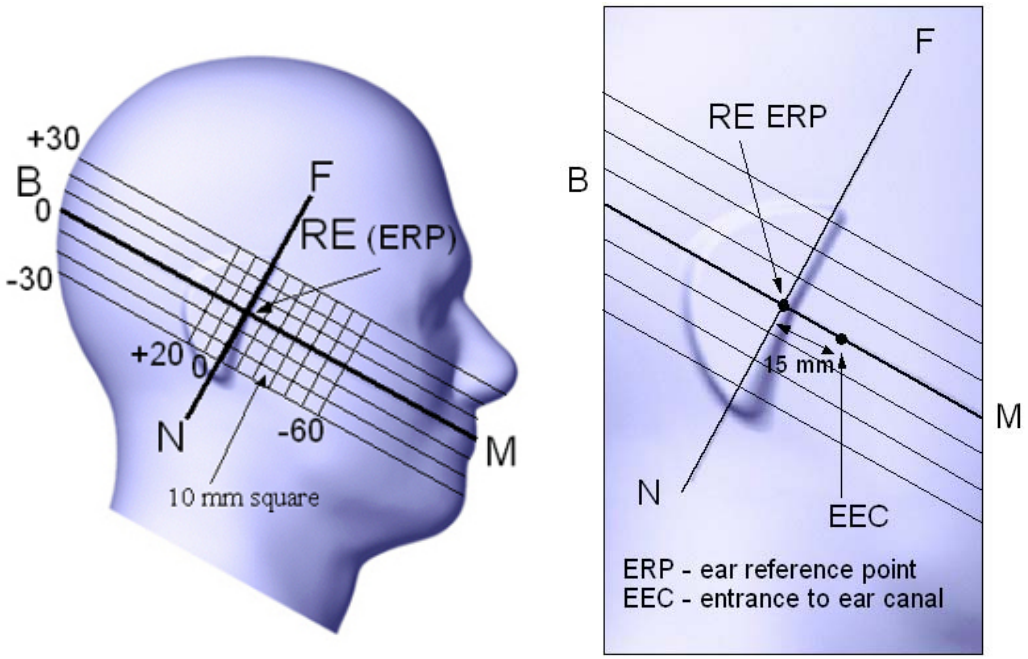


FIGURE 3.1

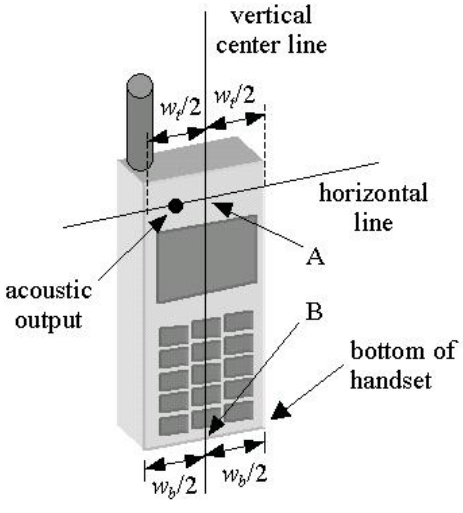


FIGURE 3.1a

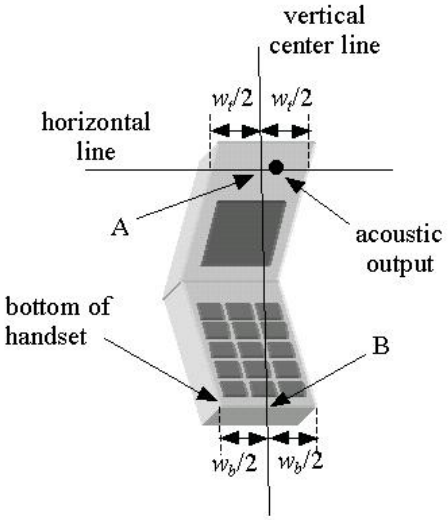
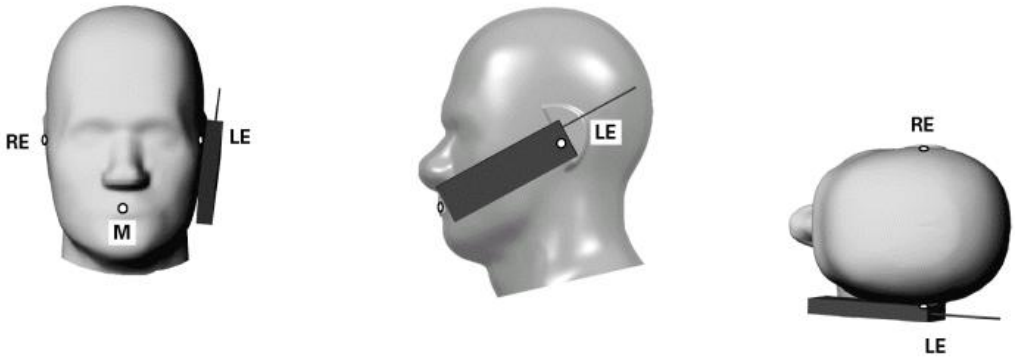


FIGURE 3.1b

3.1.1 TOUCH/CHEEK TEST POSITION

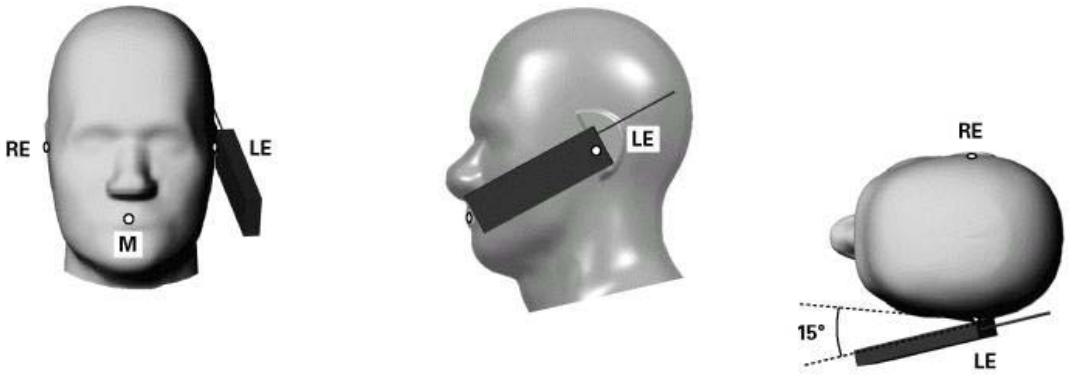
The head position in Figure 3.1, the ear reference points ERP are 15mm above entrance to ear canal along the B-M line. The line N-F (Neck-Front) is perpendicular to the B-M (Back Mouth) line. The handset device in Figure 3.1a and 3.1b, The vertical centerline pass through two points on the front side 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

3.1.2 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

3.1.3 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.

If the device supports WiFi hotspot function, the body SAR will test under 1 cm for the surfaces/slide edges where a transmitting antenna is within 2.5 cm from the edge.

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 750MHZ SIMULATING LIQUID TABLE

INGREDIENT	HEADSIMULATING LIQUID 700MHz (HSL-700)	BODY SIMULATING LIQUID 700MHz (MSL-700)
Water	41%	52%
Sugar	57%	47%
Cellulose	0.3%	0%
Salt	1.5%	0.9%
Preventol	0.2%	0.1%

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	2.41%	NA
Salt	1.38%	0.94%
Preventtol D-7	0.18%	0.09%
Sugar	57.97%	48.2%
Dielectric Parameters at 22℃	f = 835MHz ε= 41.5 ± 5% σ= 0.9 ± 5% S/m	f= 835MHz ε= 55.2 ± 5% σ= 0.97 ± 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 DASY4/5 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 SIMULATING LIQUID

Frequency (MHz)	Liquid Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (εr)	Date
835	Head	22.5	0.92	42.1	Jul. 30, 2011
835	Body	22.3	0.98	55.6	Jul. 30, 2011
1900	Head	22.2	1.42	40.4	Jul. 30, 2011
1900	Body	22.1	1.57	54.5	Jul. 30, 2011

5. 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.

5.1 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 DASY4/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%.

5.2 VALIDATION RESULTS

Date	Frequency (MHz)	Targeted SAR (W/kg)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)
Jul. 30, 2011	835	9.65	2.49	9.96	3.2
Jul. 30, 2011	835	10.10	2.47	9.88	-2.2
Jul. 30, 2011	1900	40.90	9.84	39.36	-3.8
Jul. 30, 2011	1900	40.90	9.93	39.72	-2.9

NOTE:

1. Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification of 10 %. Above table shows the target SAR and measured SAR after normalized to 1W input power.

2. Please see Appendix for the photo of system validation test.

5.3 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	0.25	Rectangular	√3	0.7	0.7	0.10	0.10	∞
Hemispherical Isotropy	1.30	Rectangular	√3	0.7	0.7	0.53	0.53	∞
Boundary effects	1.00	Rectangular	√3	1	1	0.58	0.58	∞
Linearity	0.30	Rectangular	√3	1	1	0.17	0.17	∞
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	9
RF Ambient Reflections	3.00	Rectangular	√3	1	1	1.73	1.73	9
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								
Sample positioning	1.90	Normal	1	1	1	1.90	1.90	4
Device holder uncertainty	2.80	Normal	1	1	1	2.80	2.80	4
Output power variation-SAR drift measurement	4.50	Rectangular	√3	1	1	2.60	2.60	1
Dipole Related								
Dipole Axis to Liquid Distance	1.60	Rectangular	√3	1	1	0.92	0.92	4
Input Power Drift	4.30	Rectangular	√3	1	1	2.48	2.48	1
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)	4.12	Normal	1	0.64	0.43	2.64	1.77	9
Liquid Permittivity (target)	5.00	Rectangular	√3	0.6	0.49	1.73	1.41	∞
Liquid Permittivity (measurement)	4.32	Normal	1	0.6	0.49	2.59	2.12	9
Combined Standard Uncertainty						**9.68**	**9.20**	
Coverage Factor for 95%						**Kp=2**		
Expanded Uncertainty (K=2)						**19.35**	**18.41**	

6. TEST RESULTS

6.1 TEST PROCEDURES

The EUT 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 DASY4/5 SAR measurement system manufactured and calibrated by SPEAG. According to the IEEE 1528, 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

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 2.0 mm and maintained at a constant distance of ±1.0 mm during a zoom scan to determine peak SAR locations. The distance is 2mm between the first measurement point and the bottom surface of the phantom.

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 2mm 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%.

6.2 MEASURED CONDUCTED POWER OF DUT

Band	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880	1909.8
GSM	30.70	30.50	30.60
GPRS 8	30.70	30.50	30.60

Band	WCDMA Band V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.69	23.79	23.39
HSDPA	23.04	23.22	22.80
HSUPA	23.56	22.63	22.91

Band	802.11b			802.11g		
Channel	1	6	11	1	6	11
Frequency (MHz)	2412	2437	2462	2412	2437	2462
Peak Power (dBm)	11.08	11.27	11.48	10.55	10.78	10.98

Band	802.11n (BW 20MHz)			-		
Channel	1	6	11	-	-	-
Frequency (MHz)	2412	2437	2462	-	-	-
Peak Power (dBm)	10.36	10.71	10.44	-	-	-

6.3 MEASURED SAR RESULTS

<Head SAR>

Stand-alone SAR_{1g} (W/kg)				
HEAD	RIGHT		LEFT	
Position	CHEEK	TILT	CHEEK	TILT
WCDAM 850				
CH 4182	0.401	0.223	**0.482**	0.259
GSM 1900				
CH 661	**0.542**	0.182	0.319	0.182

<Body SAR: Body Worn Mode>

Stand-alone SAR_{1g} (W/kg)					
EUT to phantom	Body 10mm (Panel Down)				
Position	Front	Back	-	-	-
WCDMA 850					
CH 4182	0.104	**0.495**	-	-	-
GPRS 1900					
CH 661	0.122	**0.519**	-	-	-

Stand-alone SAR_{1g} (W/kg)					
EUT to phantom	Body 10mm (Panel Up)				
Position	Front	Back	-	-	-
WCDMA 850					
CH 4182	0.193	0.49	-	-	-
GPRS 1900					
CH 661	0.158	0.155	-	-	-

<Body SAR: Hotspot Mode>

Stand-alone SAR_{1g} (W/kg)					
EUT to phantom	Body 10mm (Panel Down)				
Position	Front	Back	Right Edge	Left Edge	Top Edge
WCDMA 850					
CH 4182	0.104	**0.495**	0.229	0.105	0.164
GPRS 1900					
CH 661	0.122	**0.519**	0.081	0.031	0.433

Stand-alone SAR_{1g} (W/kg)					
EUT to phantom	Body 10mm (Panel Up)				
Position	Front	Back	-	-	-
WCDMA 850					
CH 4182	0.193	0.49	0.373	0.164	0.186
GPRS 1900					
CH 661	0.158	0.155	0.029	0.031	0.394

6.4 SIMULTANEOUS TRANSMISSION EVALUATION

Summary:

According to KDB 648474, the WLAN/BT standalone SAR and simultaneous transmission SAR for WWAN and WLAN/BT were not required, because the closest separation distance (10.5 cm) between WWAN and WLAN/BT antennas are larger than 5 cm and WLAN/BT power is less than $2P_{Ref}$. The WLAN and BT cannot transmit simultaneously, so there is no co-location test requirement for WLAN and BT. The RFID standalone SAR and simultaneous transmission SAR for WWAN and RFID were not required, because the closest separation distance between WWAN and RFID antennas are 2.5 cm and RFID power is less than P_{Ref}. Simultaneous transmission SAR for WLAN/BT and RFID was not required, because their power are less than 60/f.

6.5 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: This limits accord to 47 CFR 2.1093 – Safety Limit.

7. 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 according to ISO/IEC 17025.

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

Email: service.adt@tw.bureauveritas.com
Web Site: www.adt.com.tw

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

Appendix A: TEST DATA

Product Name: Smart Phone ; Type: F-02D

Liquid Level Photo

HSL1900MHz D=150mm

Date: 2011/7/30

M01-Right Head-WCDMA 850-Ch4183

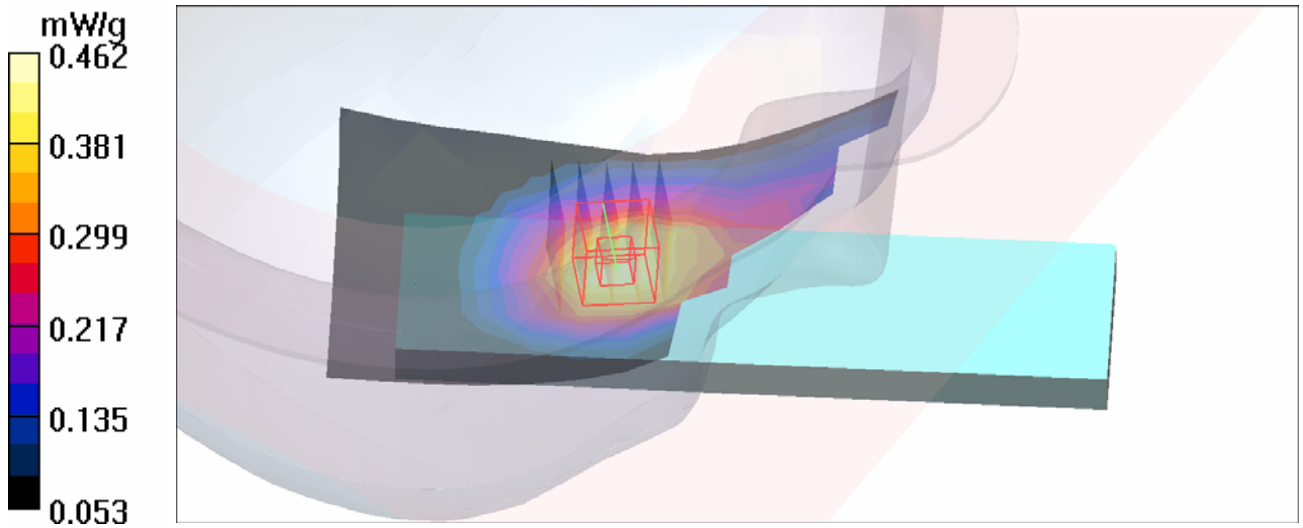
DUT: Mobile phone ; Type: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 836.6 MHz; σ = 0.93 mho/m; ε_r = 42; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: BPSK

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.21, 10.21, 10.21); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - Middle/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.439 mW/g

Touch position - Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.75 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 0.510 W/kg
SAR(1 g) = 0.401 mW/g; SAR(10 g) = 0.296 mW/g
Maximum value of SAR (measured) = 0.462 mW/g



Date: 2011/7/30

M02-Right Head-WCDMA 850-Ch4183

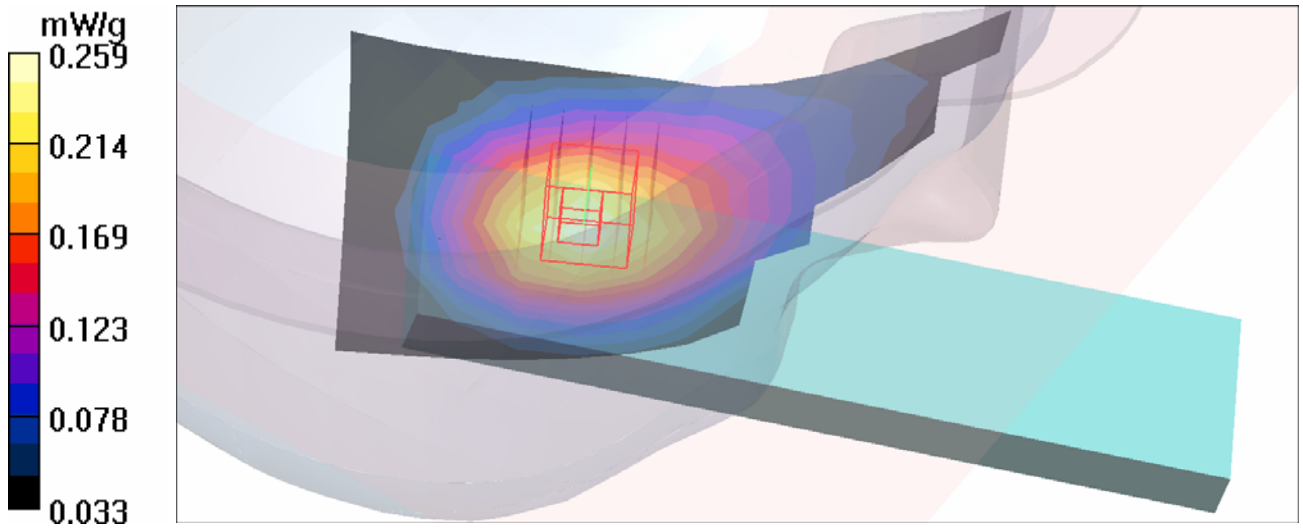
DUT: Mobile phone ; Type: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 836.6 MHz; σ = 0.93 mho/m; ε_r = 42; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: BPSK

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.21, 10.21, 10.21); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt position - Middle/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.258 mW/g

Tilt position - Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.1 V/m; Power Drift = -0.058 dB
Peak SAR (extrapolated) = 0.287 W/kg
SAR(1 g) = 0.223 mW/g; SAR(10 g) = 0.164 mW/g
Maximum value of SAR (measured) = 0.259 mW/g



Date: 2011/7/30

M03-Left Head-WCDMA 850-Ch4183

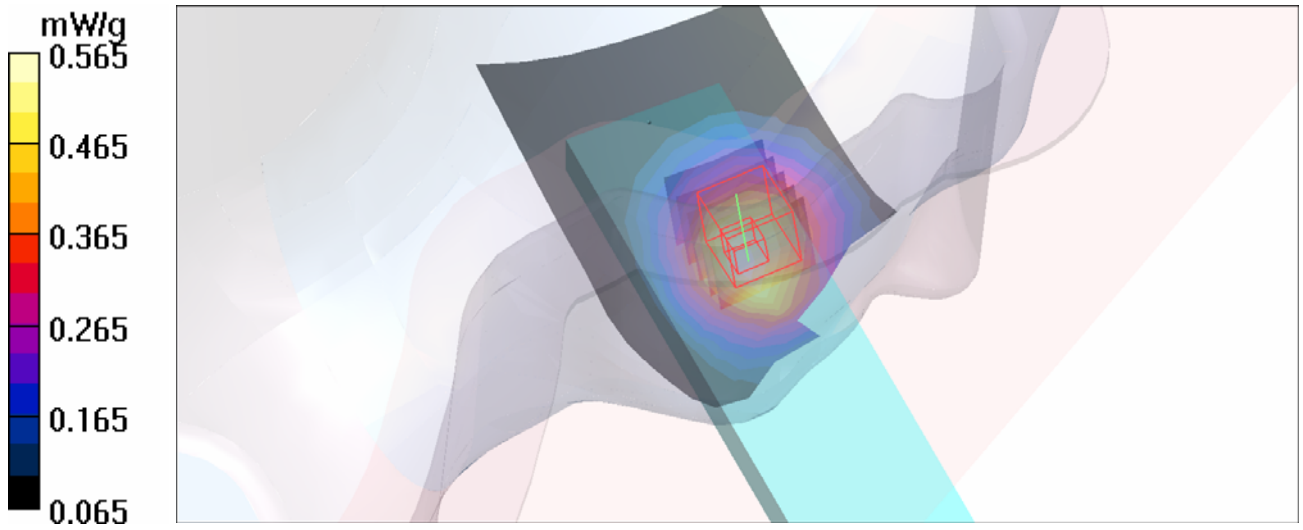
DUT: Mobile Phone ; Type: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 836.6 MHz; σ = 0.93 mho/m; ε_r = 42; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: BPSK

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.21, 10.21, 10.21); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Touch position - Middle/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.564 mW/g

Touch position - Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.61 V/m; Power Drift = -0.152 dB
Peak SAR (extrapolated) = 0.644 W/kg
SAR(1 g) = 0.482 mW/g; SAR(10 g) = 0.348 mW/g
Maximum value of SAR (measured) = 0.565 mW/g



Date: 2011/7/30

M04-Left Head-WCDMA 850-Ch4183

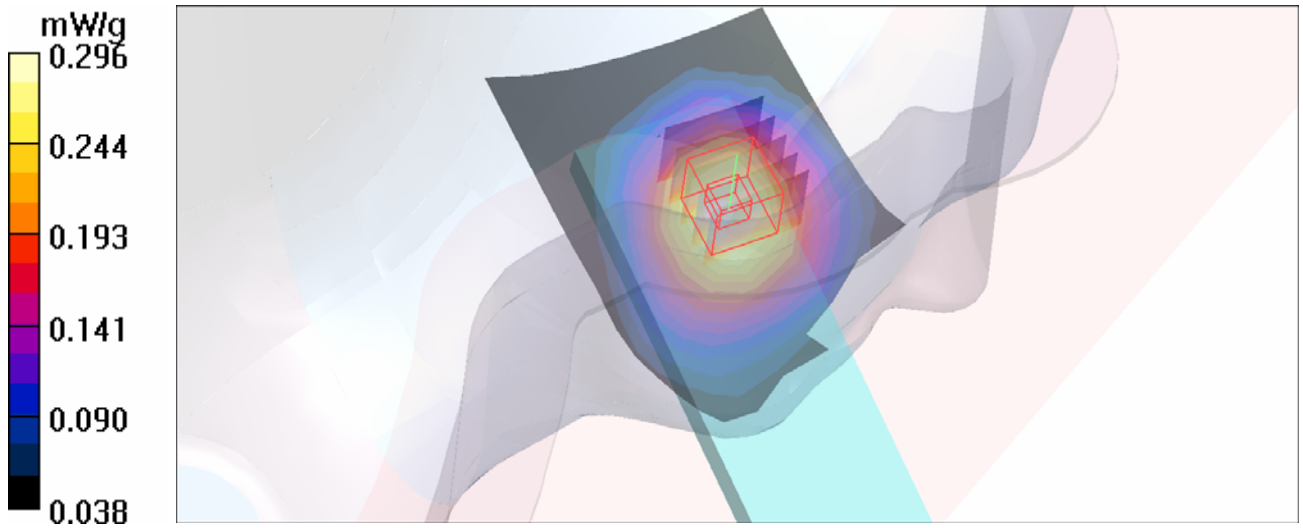
DUT: Mobile Phone ; Type: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1
Medium: HSL835 Medium parameters used: f = 836.6 MHz; σ = 0.93 mho/m; ε_r = 42; ρ = 1000 kg/m^3
Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: BPSK

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.21, 10.21, 10.21); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Tilt position - Middle/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.290 mW/g

Tilt position - Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.4 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 0.325 W/kg
SAR(1 g) = 0.259 mW/g; SAR(10 g) = 0.194 mW/g
Maximum value of SAR (measured) = 0.296 mW/g



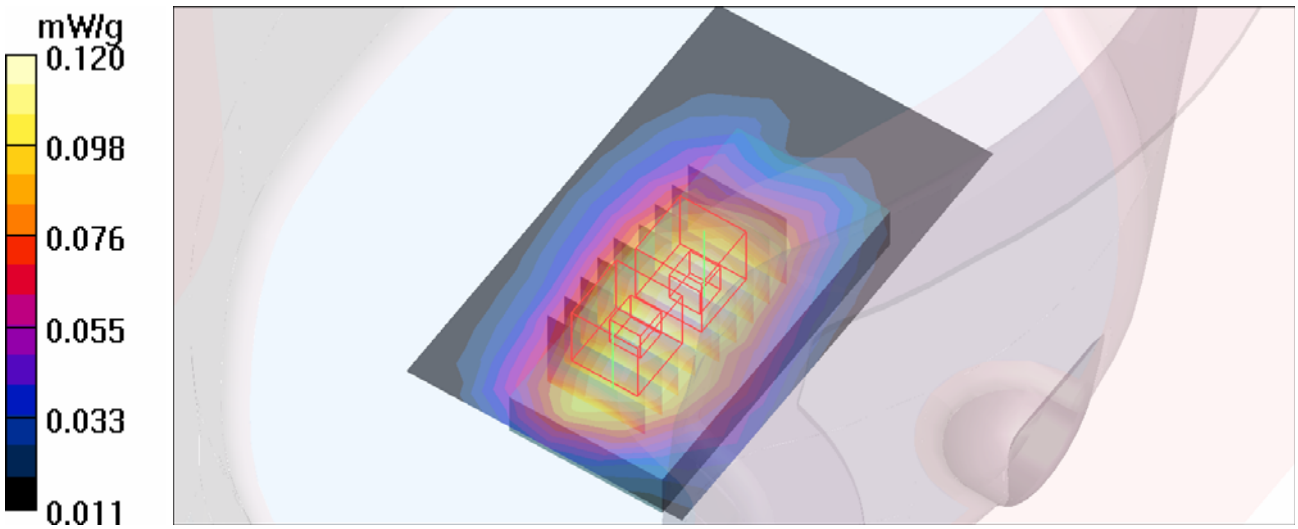
Date: 2011/7/30

M05-Front-WCDMA850-Panel Down-Ch4183

DUT: Mobile PhoneType: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Front side of the EUT to the Phantom)
DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.118 mW/g
Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.102 dB
Peak SAR (extrapolated) = 0.134 W/kg
SAR(1 g) = 0.104 mW/g; SAR(10 g) = 0.078 mW/g
Maximum value of SAR (measured) = 0.120 mW/g
Body Position - Mid/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.102 dB
Peak SAR (extrapolated) = 0.143 W/kg
SAR(1 g) = 0.093 mW/g; SAR(10 g) = 0.064 mW/g
Maximum value of SAR (measured) = 0.113 mW/g



Date: 2011/7/30

M06-Back-WCDMA850-Panel Down-Ch4183

DUT: Mobile PhoneType: F-02D

Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3

Phantom section: Flat Section ; Separation distance : 10 mm (The Back side of the EUT to the Phantom)

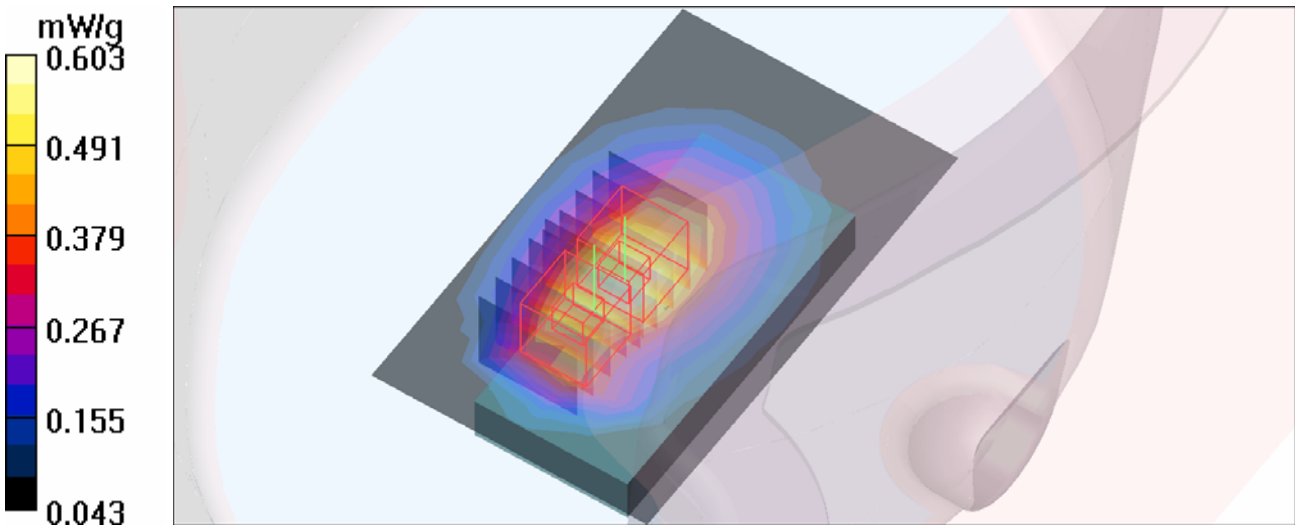
DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.551 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.6 V/m; Power Drift = 0.102 dB
Peak SAR (extrapolated) = 0.695 W/kg
SAR(1 g) = 0.495 mW/g; SAR(10 g) = 0.345 mW/g
Maximum value of SAR (measured) = 0.603 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.6 V/m; Power Drift = 0.102 dB
Peak SAR (extrapolated) = 0.646 W/kg
SAR(1 g) = 0.410 mW/g; SAR(10 g) = 0.253 mW/g
Maximum value of SAR (measured) = 0.554 mW/g



Date: 2011/7/30

M07-Right edge-WCDMA850-Panel Down-Ch4183

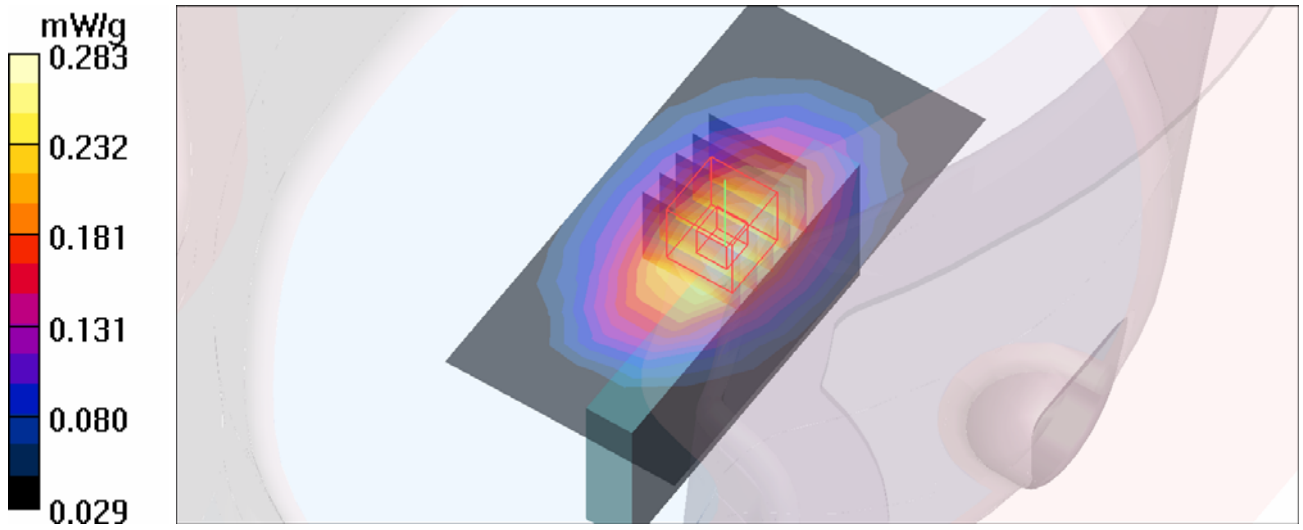
DUT: Mobile PhoneType: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Right edge side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.272 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.3 V/m; Power Drift = -0.072 dB
Peak SAR (extrapolated) = 0.331 W/kg
SAR(1 g) = 0.229 mW/g; SAR(10 g) = 0.158 mW/g
Maximum value of SAR (measured) = 0.283 mW/g



Date: 2011/7/30

M08-Left edge-WCDMA850-Panel Down-Ch4183

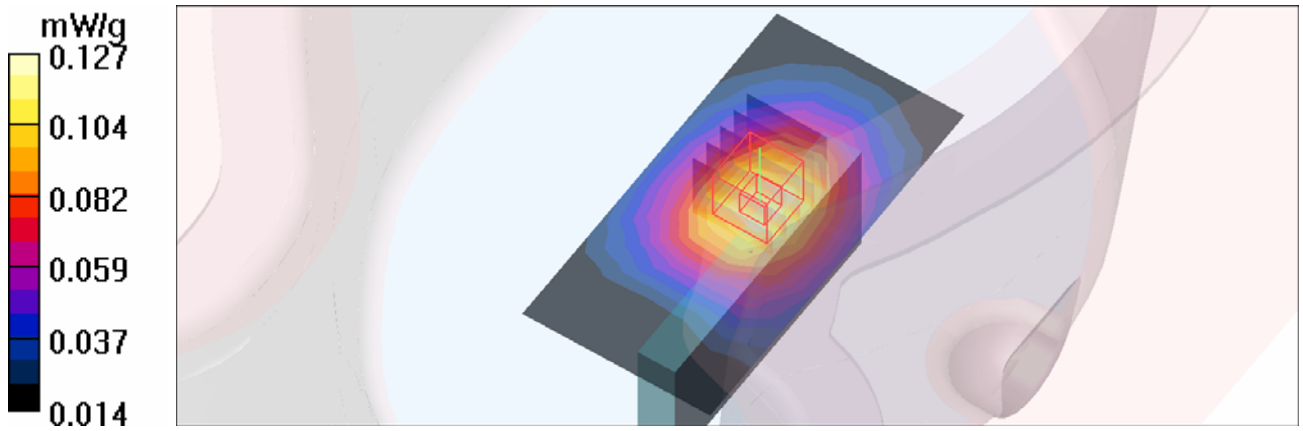
DUT: Mobile PhoneType: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Left side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.119 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 0.147 W/kg
SAR(1 g) = 0.105 mW/g; SAR(10 g) = 0.074 mW/g
Maximum value of SAR (measured) = 0.127 mW/g



Date: 2011/7/30

M09-Top edge-WCDMA850-Panel Down-Ch4183

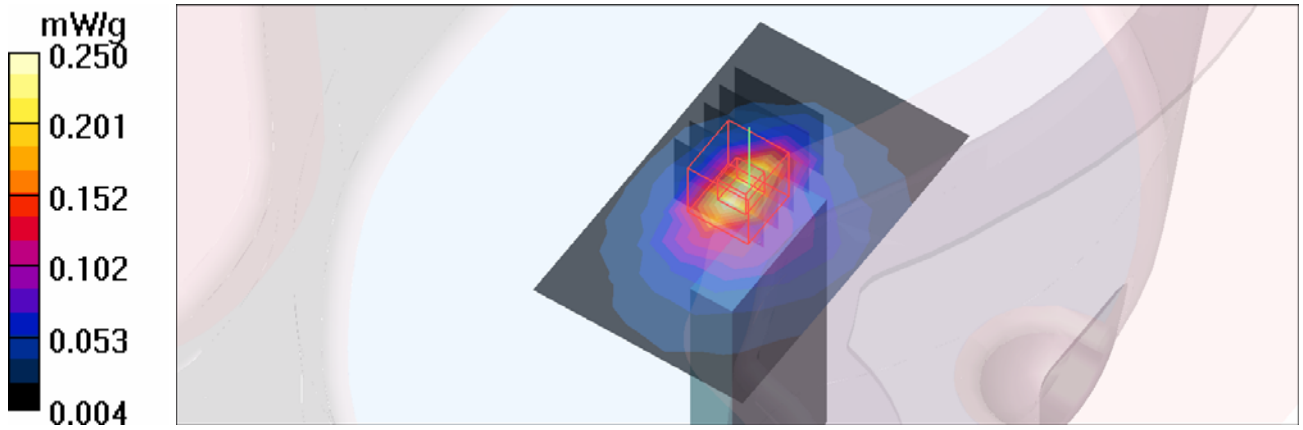
DUT: Mobile PhoneType: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Top side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.247 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.2 V/m; Power Drift = 0.142 dB
Peak SAR (extrapolated) = 0.345 W/kg
SAR(1 g) = 0.164 mW/g; SAR(10 g) = 0.084 mW/g
Maximum value of SAR (measured) = 0.250 mW/g



Date: 2011/7/30

M10-Front-WCDMA850-Panel up-Ch4183

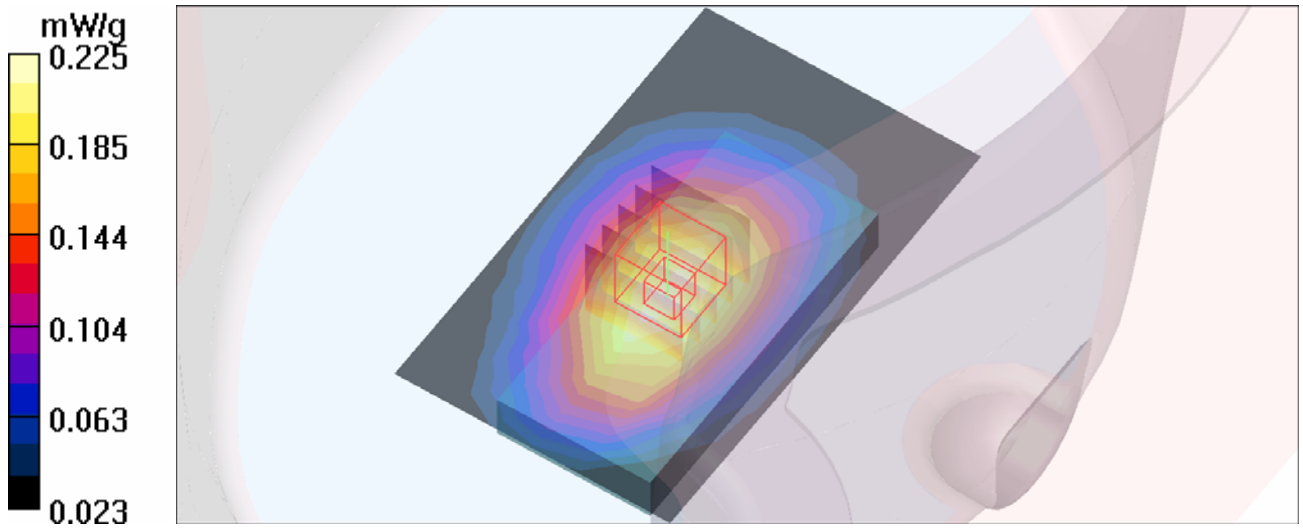
DUT: Mobile PhoneType: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Front side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.226 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.0 V/m; Power Drift = 0.030 dB
Peak SAR (extrapolated) = 0.251 W/kg
SAR(1 g) = 0.193 mW/g; SAR(10 g) = 0.142 mW/g
Maximum value of SAR (measured) = 0.225 mW/g



Date: 2011/7/30

M12-Back-WCDMA850-Panel up-Ch4183

DUT: Mobile PhoneType: F-02D

Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3

Phantom section: Flat Section ; Separation distance : 10 mm (The Back side of the EUT to the Phantom)

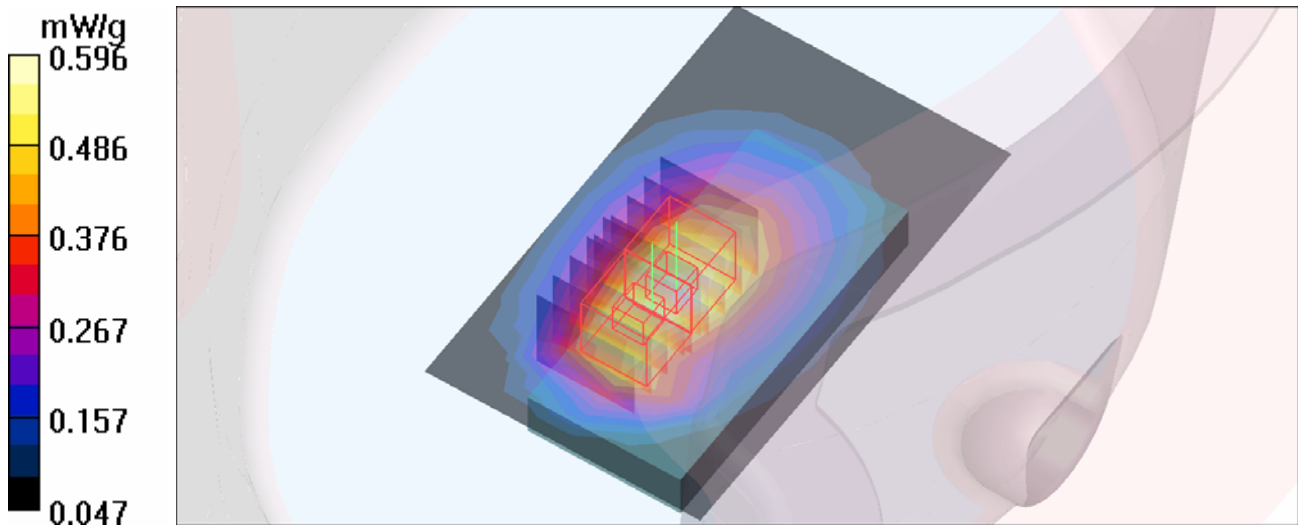
DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.582 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.4 V/m; Power Drift = 0.082 dB
Peak SAR (extrapolated) = 0.687 W/kg
SAR(1 g) = 0.490 mW/g; SAR(10 g) = 0.344 mW/g
Maximum value of SAR (measured) = 0.596 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.4 V/m; Power Drift = 0.082 dB
Peak SAR (extrapolated) = 0.670 W/kg
SAR(1 g) = 0.439 mW/g; SAR(10 g) = 0.282 mW/g
Maximum value of SAR (measured) = 0.579 mW/g



Date: 2011/7/30

M13-Right edge-WCDMA850-Panel Up-Ch4183

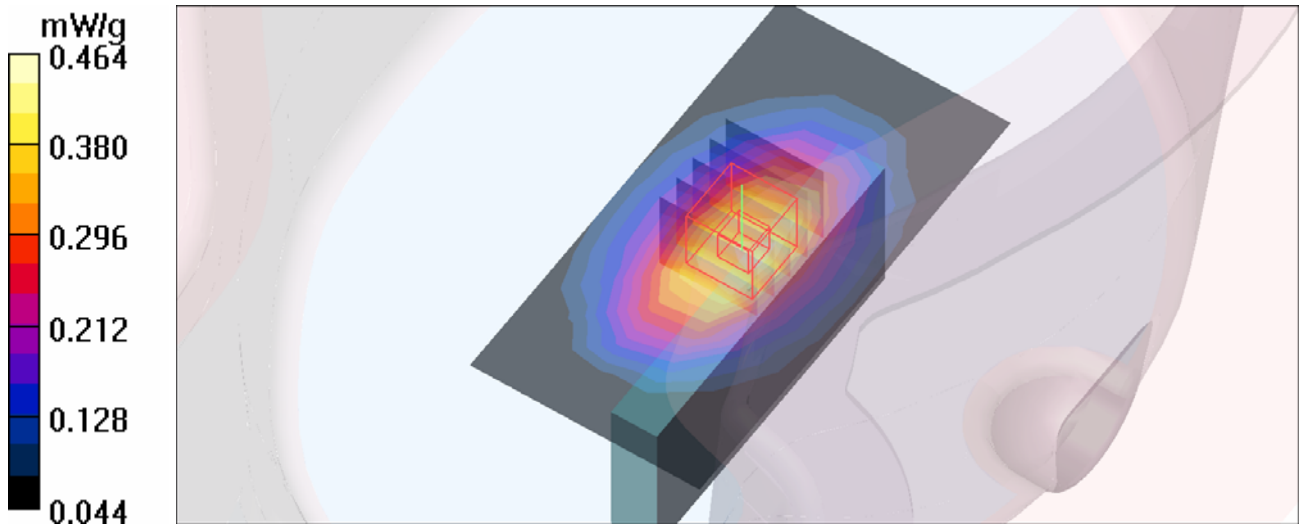
DUT: Mobile PhoneType: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Right edge side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.426 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.9 V/m; Power Drift = 0.079 dB
Peak SAR (extrapolated) = 0.542 W/kg
SAR(1 g) = 0.373 mW/g; SAR(10 g) = 0.254 mW/g
Maximum value of SAR (measured) = 0.464 mW/g



Date: 2011/7/30

M14-Left edge-WCDMA850-Panel Up-Ch4183

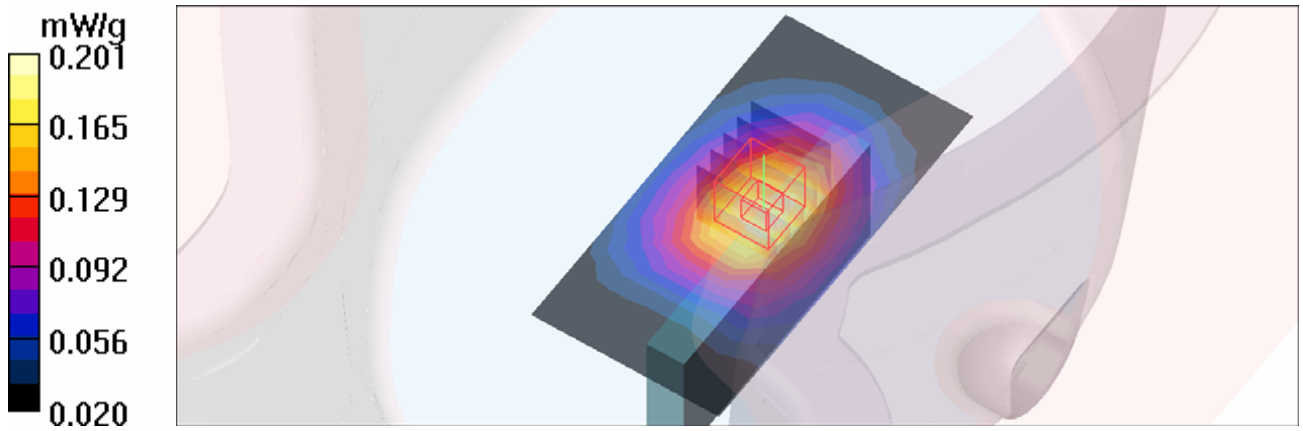
DUT: Mobile PhoneType: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Left side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid 2/Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.192 mW/g

Body Position - Mid 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = -0.123 dB
Peak SAR (extrapolated) = 0.232 W/kg
SAR(1 g) = 0.164 mW/g; SAR(10 g) = 0.114 mW/g
Maximum value of SAR (measured) = 0.201 mW/g



Date: 2011/7/30

M15-Top edge-WCDMA850-Panel Up-Ch4183

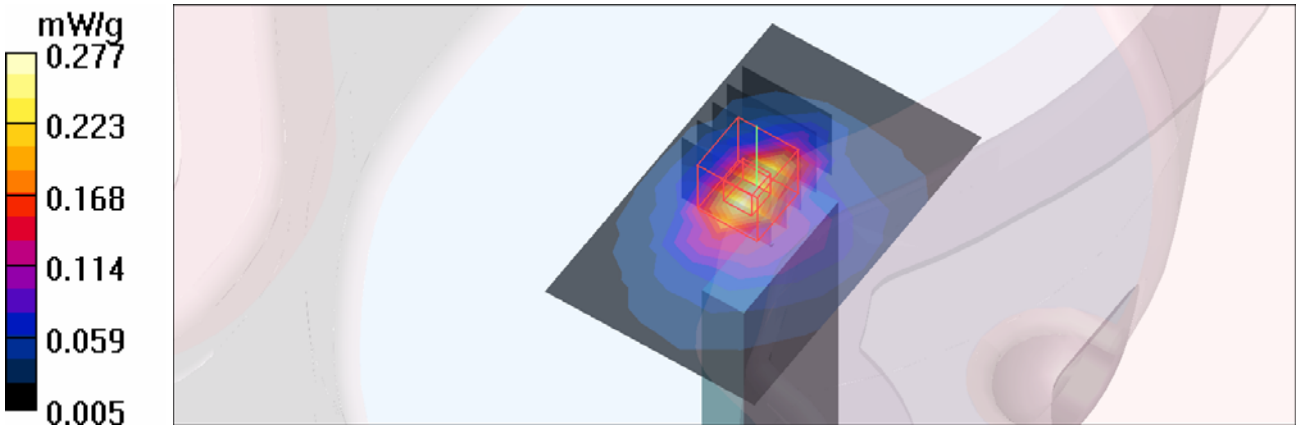
DUT: Mobile PhoneType: F-02D
Communication System: WCDMA850 ; Frequency: 836.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK
Medium: MSL835 Medium parameters used: f = 836.6 MHz; σ = 0.98 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Top side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.270 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = 0.154 dB
Peak SAR (extrapolated) = 0.388 W/kg
SAR(1 g) = 0.186 mW/g; SAR(10 g) = 0.096 mW/g
Maximum value of SAR (measured) = 0.277 mW/g



Date: 2011/7/30

M16-Right Head-GSM1900-Ch661

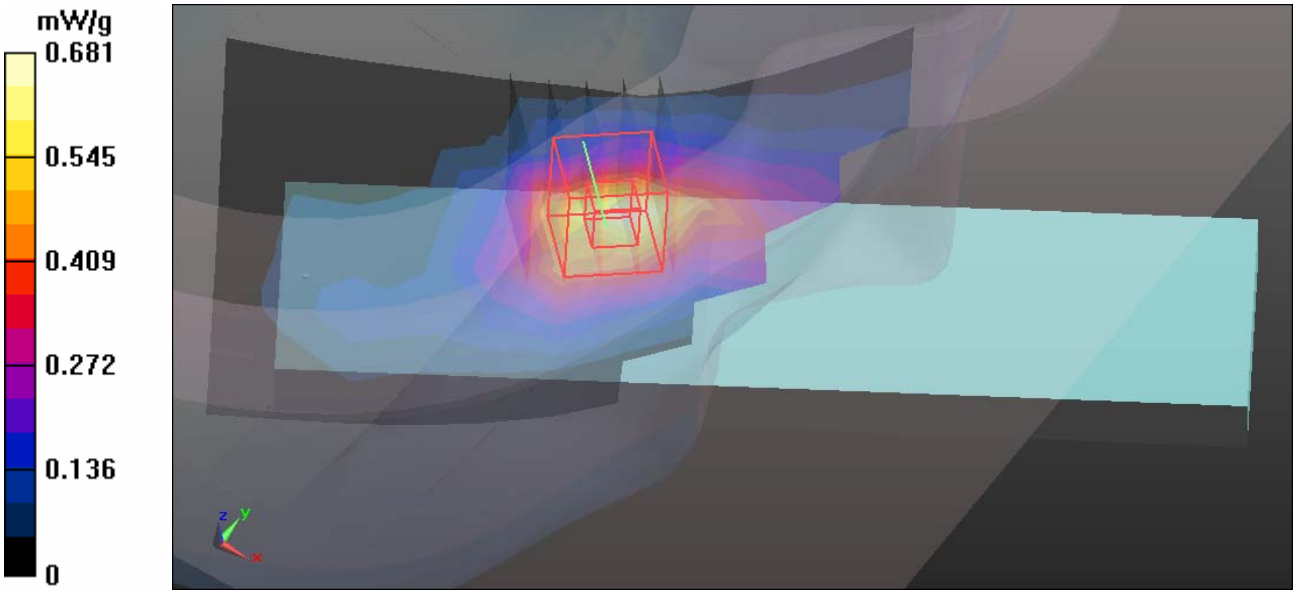
DUT: Mobile PhoneType: F-02D
Communication System: Generic PCS1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202

- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right-Hand-Side HSL/Touch Position - Mid/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.681 mW/g
Right-Hand-Side HSL/Touch Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.581 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.810 W/kg
SAR(1 g) = 0.542 mW/g; SAR(10 g) = 0.334 mW/g
Maximum value of SAR (measured) = 0.674 mW/g



Date: 2011/7/30

M17-Right Head-GSM1900-Ch661

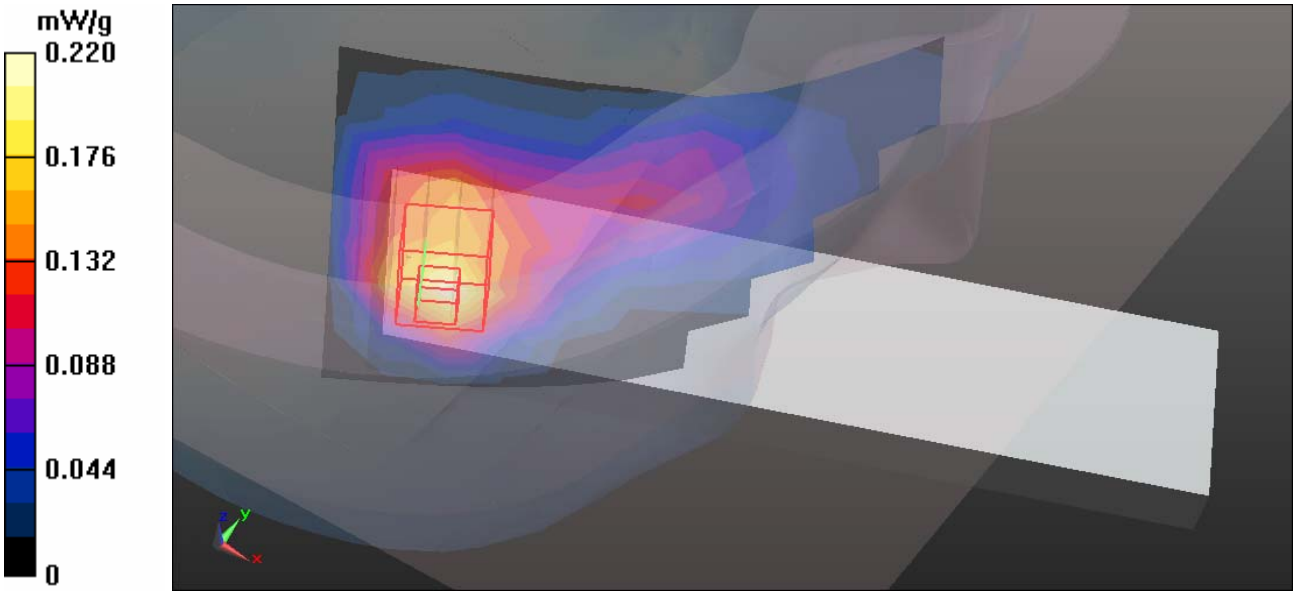
DUT: Mobile PhoneType: F-02D
Communication System: Generic PCS1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186
Right-Hand-Side HSL/Tilt Position - Mid/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.220 mW/g

Right-Hand-Side HSL/Tilt Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.859 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.312 W/kg
SAR(1 g) = 0.182 mW/g; SAR(10 g) = 0.104 mW/g
Maximum value of SAR (measured) = 0.238 mW/g



Date: 2011/7/30

M18-Left Head-GSM1900-Ch661

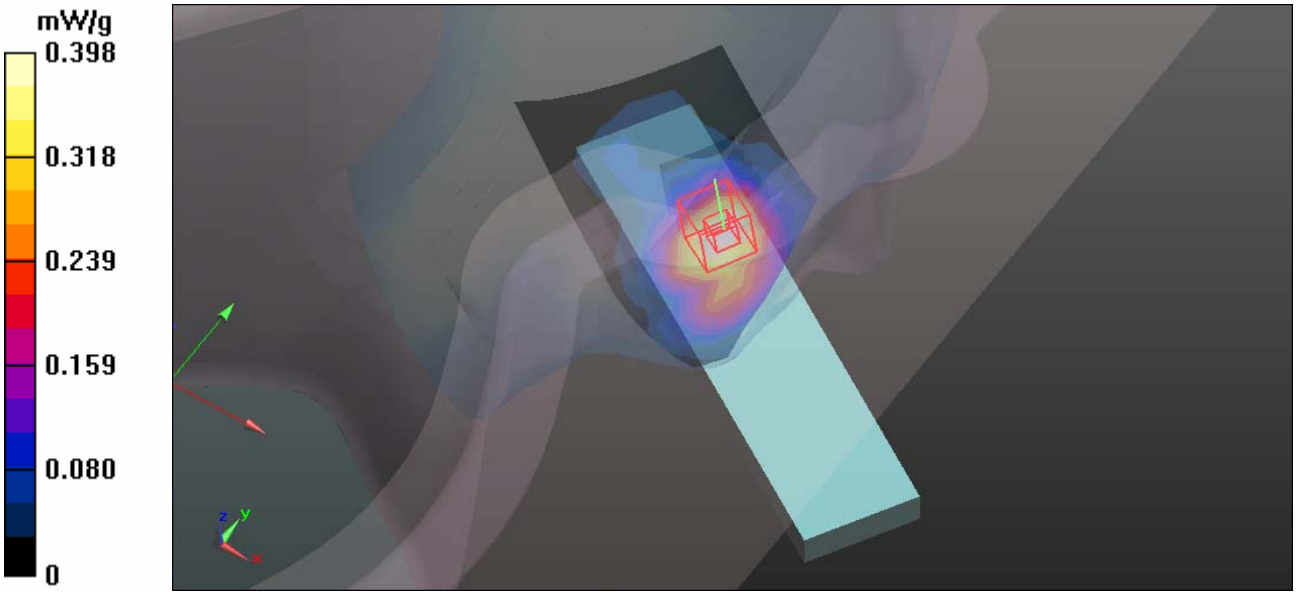
DUT: Mobile PhoneType: F-02D
Communication System: Generic PCS1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186
Right-Hand-Side HSL/Touch Position - Mid/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.398 mW/g

Right-Hand-Side HSL/Touch Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.857 V/m; Power Drift = -0.42 dB
Peak SAR (extrapolated) = 0.478 W/kg
SAR(1 g) = 0.319 mW/g; SAR(10 g) = 0.207 mW/g
Maximum value of SAR (measured) = 0.404 mW/g



Date: 2011/7/30

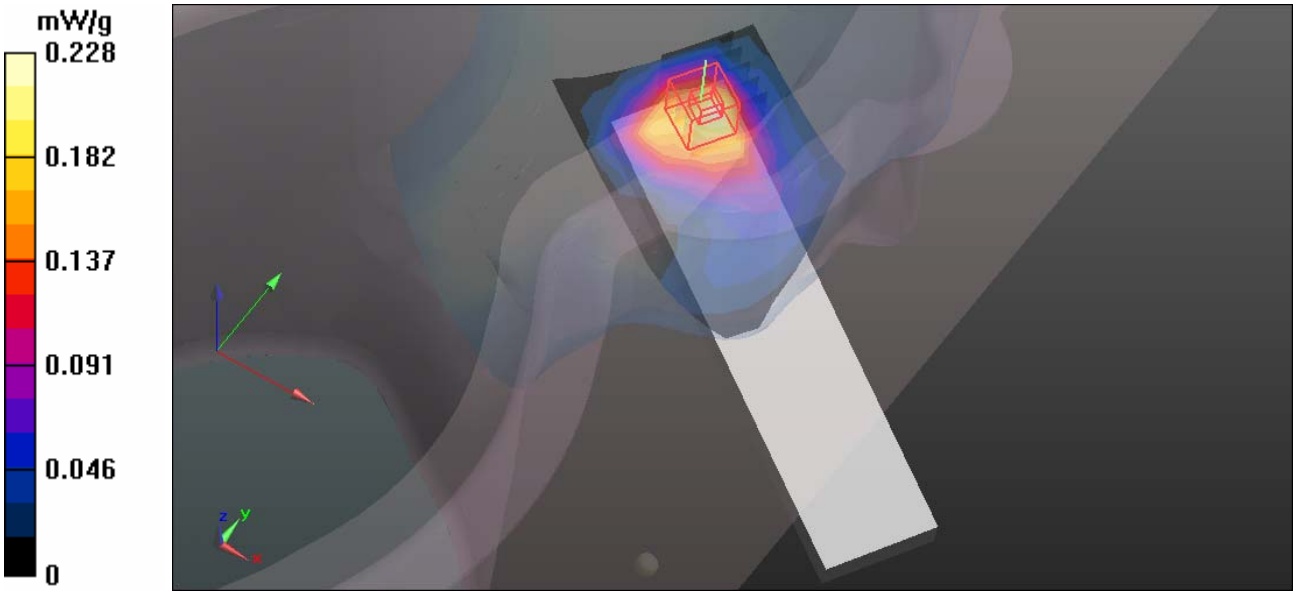
M19-Left Head-GSM1900-Ch661

DUT: Mobile PhoneType: F-02D
Communication System: Generic PCS1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3
Medium: HSL1900 Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202

Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186
Right-Hand-Side HSL/Tilt Position - Mid/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.228 mW/g

Right-Hand-Side HSL/Tilt Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.055 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.306 W/kg
SAR(1 g) = 0.182 mW/g; SAR(10 g) = 0.112 mW/g
Maximum value of SAR (measured) = 0.243 mW/g



Date: 2011/7/30

M20-Front-GPRS1900-Panel Down-Ch661

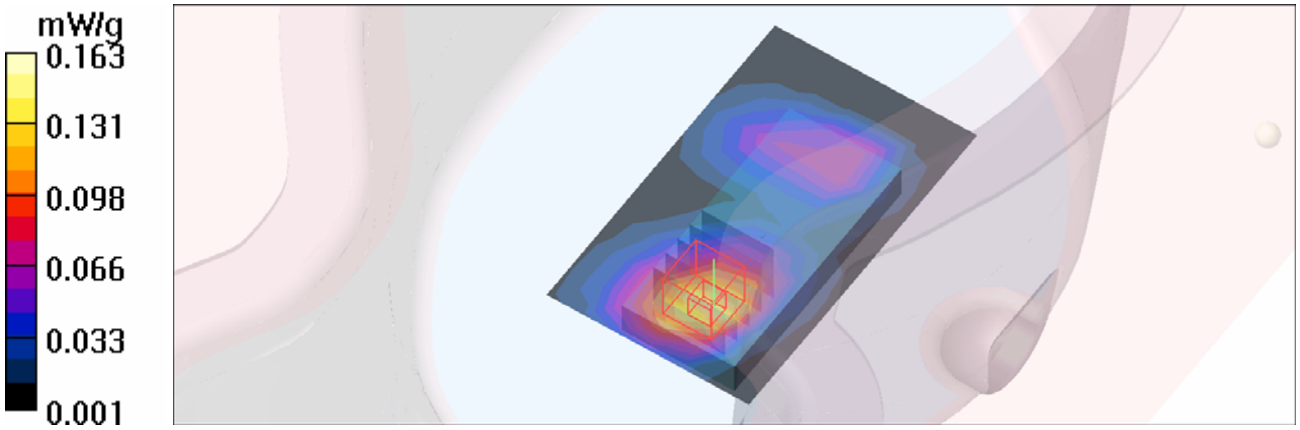
DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Front side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.142 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.65 V/m; Power Drift = -0.114 dB
Peak SAR (extrapolated) = 0.201 W/kg
SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.073 mW/g
Maximum value of SAR (measured) = 0.163 mW/g



Date: 2011/7/30

M21-Back-GPRS1900-Panel Down-Ch661

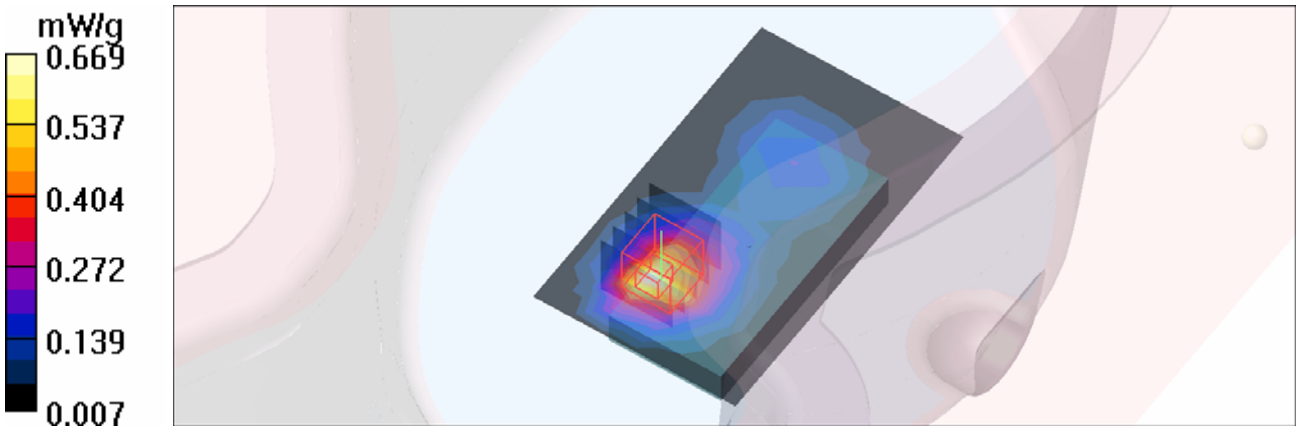
DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Back side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.688 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.46 V/m; Power Drift = 0.087 dB
Peak SAR (extrapolated) = 0.871 W/kg
SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.299 mW/g
Maximum value of SAR (measured) = 0.669 mW/g



Date: 2011/7/30

M22-Right edge-GPRS1900-Panel Down -Ch661

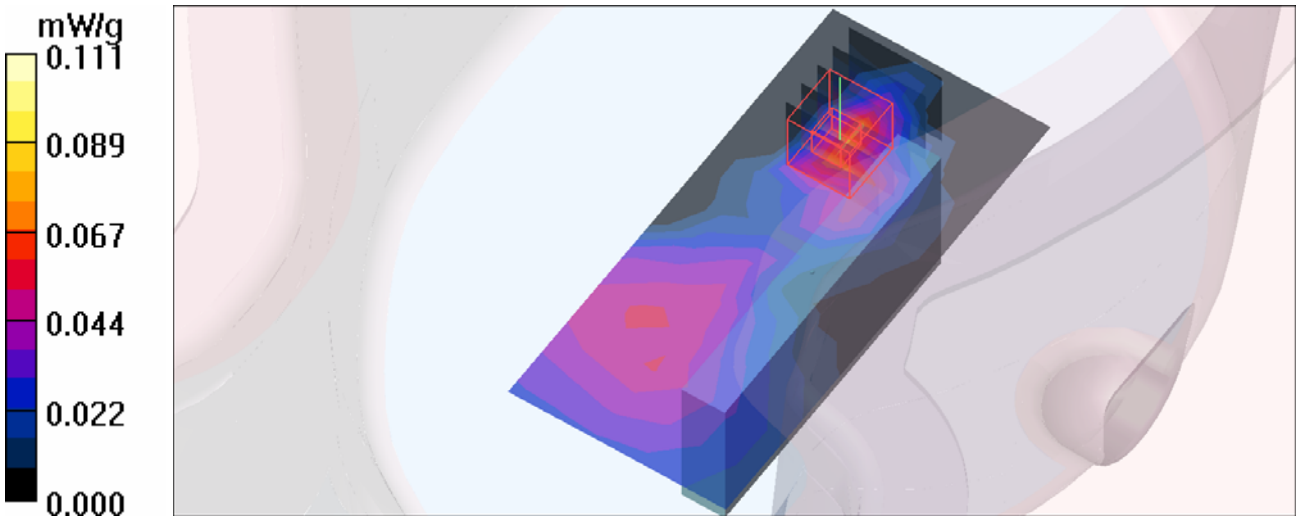
DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Right side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid 2/Area Scan (6x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.070 mW/g

Body Position - Mid 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.68 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.140 W/kg
SAR(1 g) = 0.081 mW/g; SAR(10 g) = 0.046 mW/g
Maximum value of SAR (measured) = 0.111 mW/g



Date: 2011/7/30

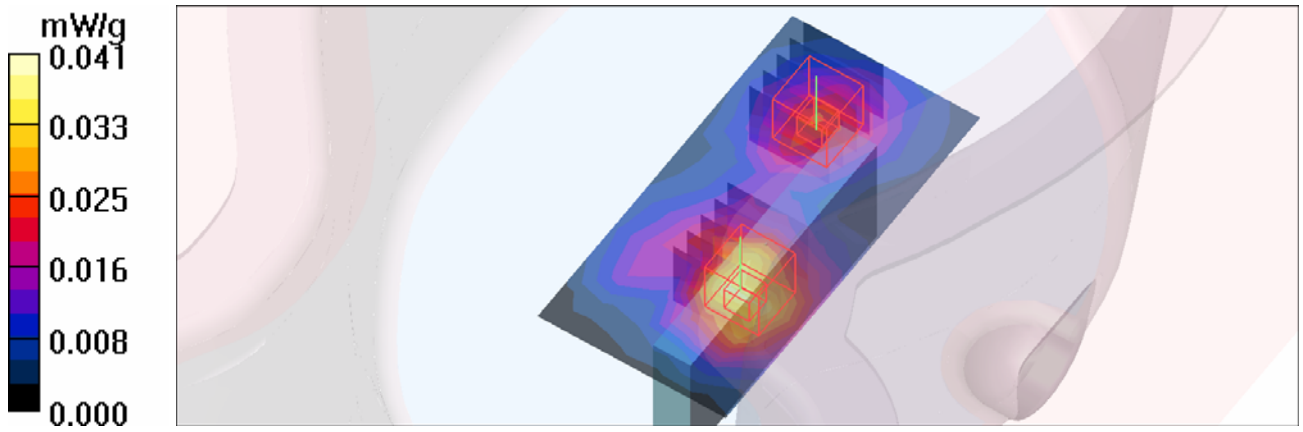
M23-Left edge-GPRS1900-Panel Down-Ch661

DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Left side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.036 mW/g
Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.38 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 0.052 W/kg
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.041 mW/g
Body Position - Mid/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.38 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 0.035 W/kg
SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.013 mW/g
Maximum value of SAR (measured) = 0.029 mW/g



Date: 2011/7/30

M24-Top edge-GPRS1900-Panel Down-Ch661

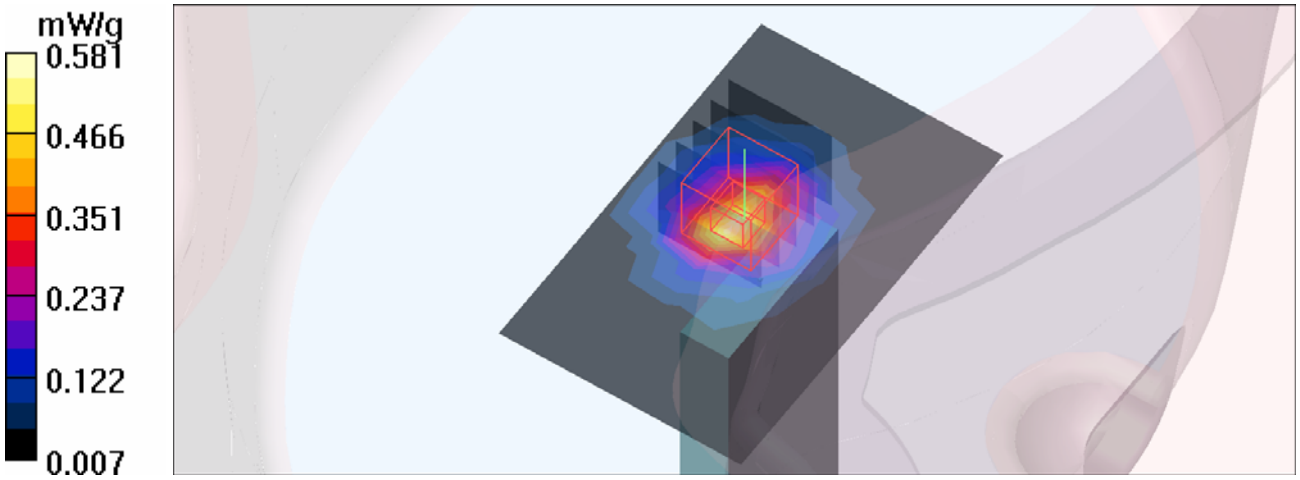
DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Top side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.565 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.0 V/m; Power Drift = 0.084 dB
Peak SAR (extrapolated) = 0.739 W/kg
SAR(1 g) = 0.433 mW/g; SAR(10 g) = 0.233 mW/g
Maximum value of SAR (measured) = 0.581 mW/g



Date: 2011/7/30

M25-Front-GPRS1900-Panel Up-Ch661

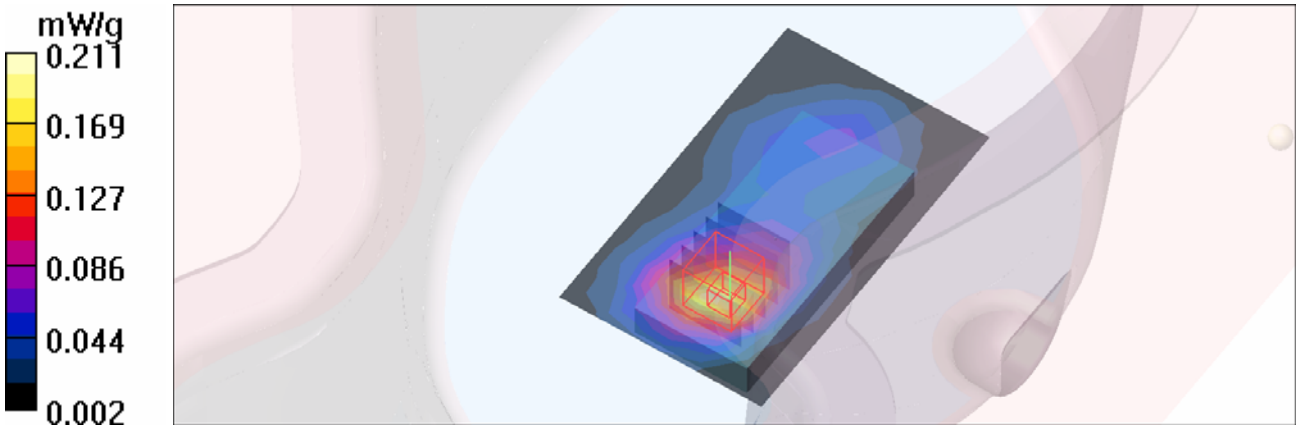
DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Front side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.197 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.13 V/m; Power Drift = 0.052 dB
Peak SAR (extrapolated) = 0.259 W/kg
SAR(1 g) = 0.158 mW/g; SAR(10 g) = 0.092 mW/g
Maximum value of SAR (measured) = 0.211 mW/g



Date: 2011/7/30

M26-Back-GPRS1900-Panel Up-Ch661

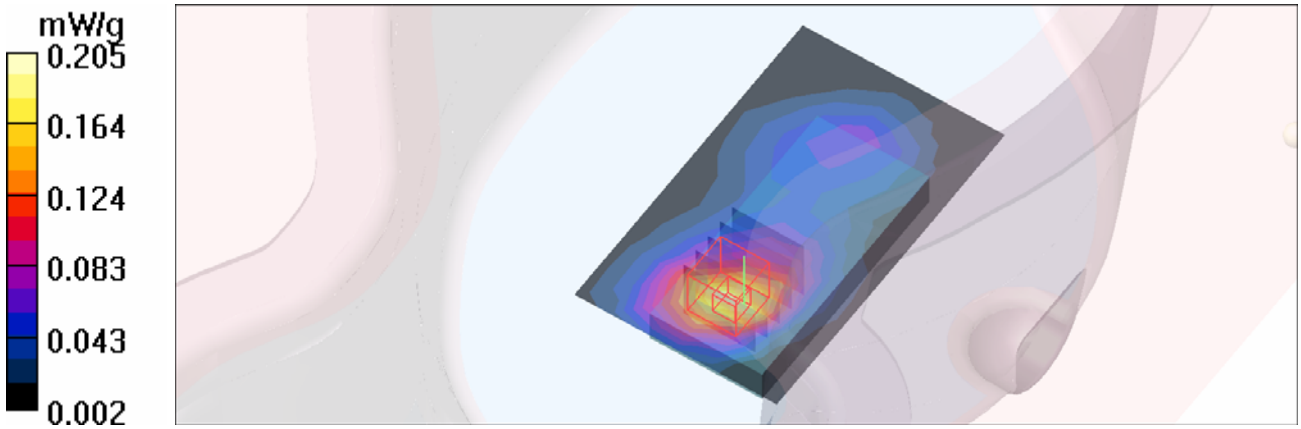
DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Back side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.192 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.73 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 0.257 W/kg
SAR(1 g) = 0.155 mW/g; SAR(10 g) = 0.091 mW/g
Maximum value of SAR (measured) = 0.205 mW/g



Date: 2011/7/30

M27-Right edge-GPRS1900-Panel Up-Ch661

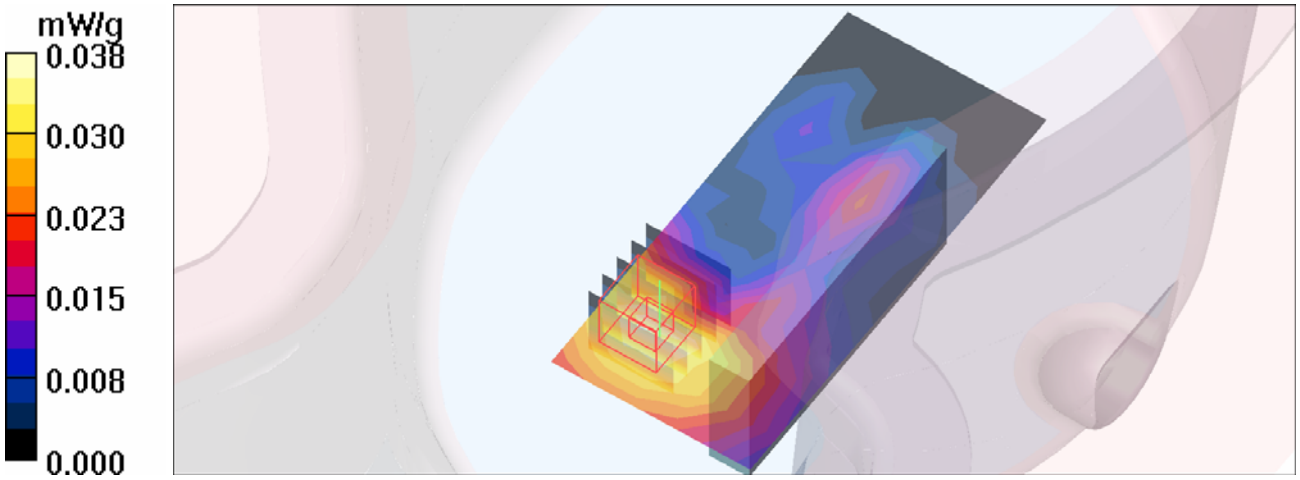
DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Right side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x12x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.037 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.90 V/m; Power Drift = -0.794 dB
Peak SAR (extrapolated) = 0.048 W/kg
SAR(1 g) = 0.029 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.038 mW/g



Date: 2011/7/30

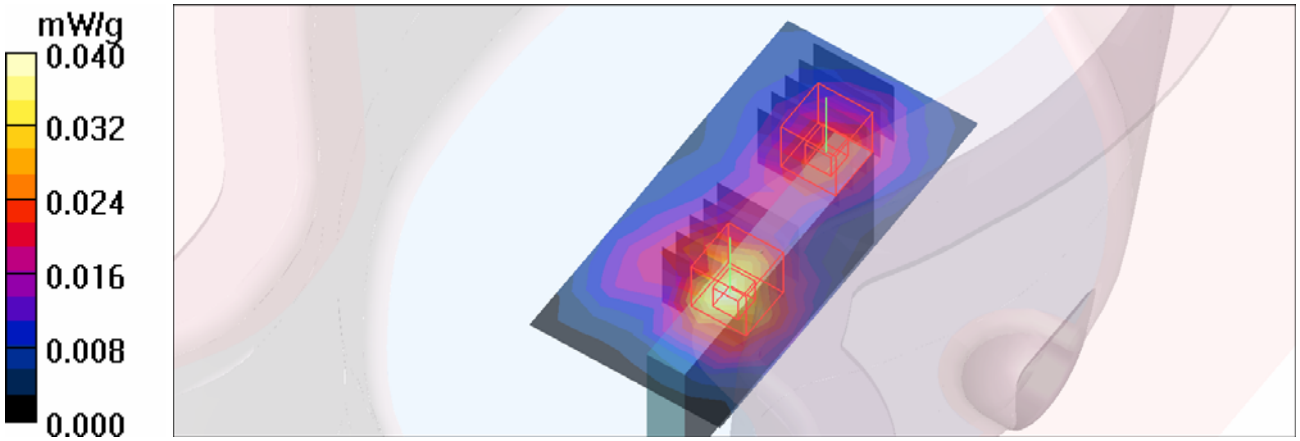
M28-Left edge-GPRS1900-Panel Up-Ch661

DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Left side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.040 mW/g
Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.54 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 0.050 W/kg
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.018 mW/g
Body Position - Mid/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.54 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 0.033 W/kg
SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.012 mW/g
Maximum value of SAR (measured) = 0.027 mW/g



Date: 2011/7/30

M29-Top edge-GPRS1900-Panel Up-Ch661

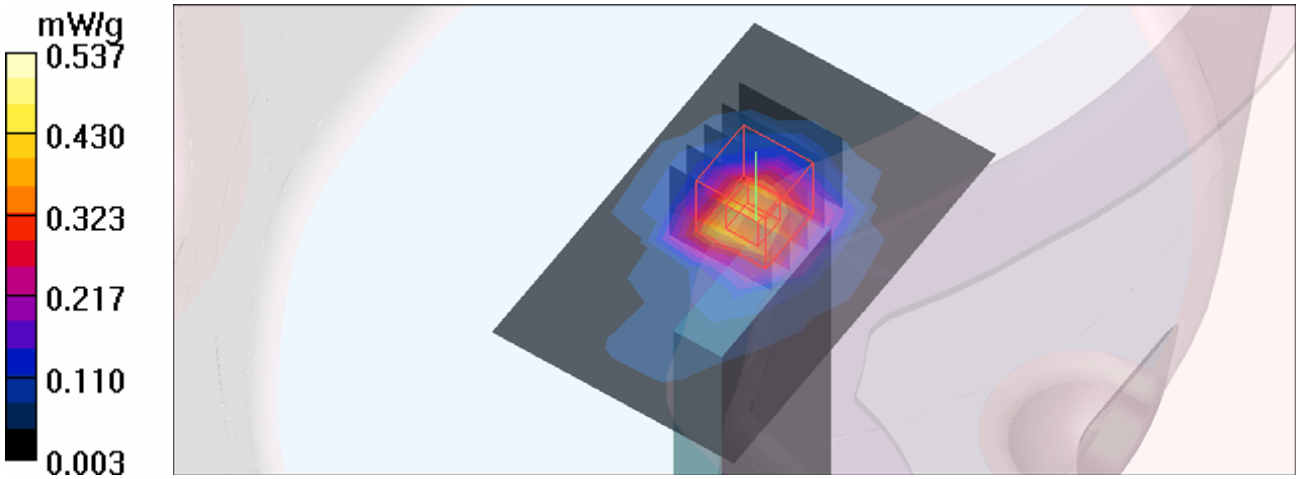
DUT: Mobile PhoneType: F-02D
Communication System: GSM1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GPRS
Medium: MSL1900 Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Separation distance : 10 mm (The Top side of the EUT to the Phantom)

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body Position - Mid/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.423 mW/g

Body Position - Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.9 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 0.668 W/kg
SAR(1 g) = 0.394 mW/g; SAR(10 g) = 0.213 mW/g
Maximum value of SAR (measured) = 0.537 mW/g



Date: 2011/7/30

SystemPerformanceCheck-D835V2-HSL835

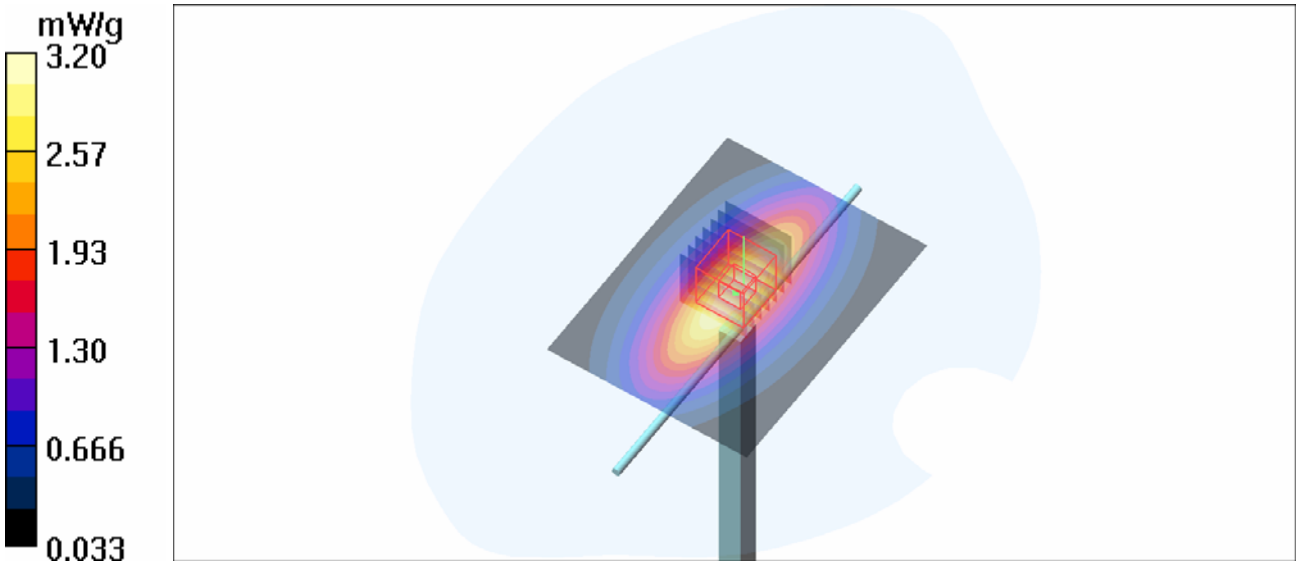
DUT: Dipole 835 MHz ; Type: D835V2 ; Serial: D835V2 - SN:4d021 ; Test Frequency: 835 MHz

Communication System: CW ; Frequency: 835 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: HSL835;Medium parameters used: f = 835 MHz; σ = 0.92 mho/m; ε_r = 42.1; ρ = 1000 kg/m^3 ;
Liquid level : 151 mm
Phantom section: Flat Section ; Separation distance : 10 mm (The feet point of the dipole to the Phantom)Air temp. : 22.7 degrees ; Liquid temp. : 22.5 degrees

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.21, 10.21, 10.21); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.20 mW/g
d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.2 V/m; Power Drift = -0.101 dB
Peak SAR (extrapolated) = 3.79 W/kg
SAR(1 g) = 2.49 mW/g; SAR(10 g) = 1.62 mW/g
Maximum value of SAR (measured) = 3.18 mW/g



Date: 2011/7/30

SystemPerformanceCheck-D835V2-MSL835

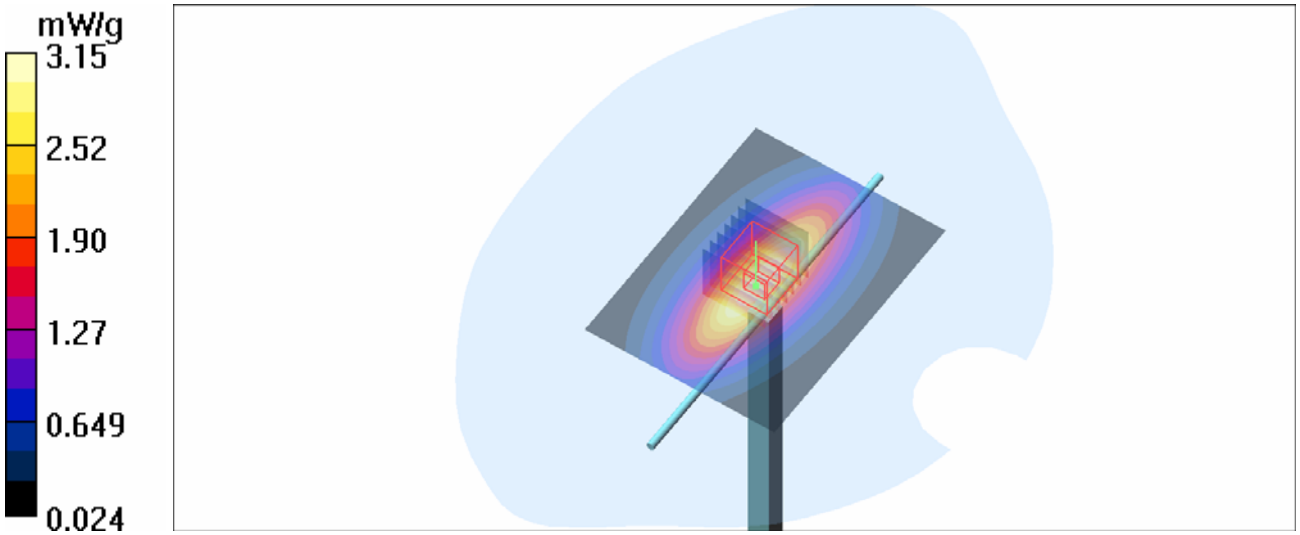
DUT: Dipole 835 MHz ; Type: D835V2 ; Serial: D835V2 - SN:4d021 ; Test Frequency: 835 MHz

Communication System: CW ; Frequency: 835 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: MSL835;Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 55.6; ρ = 1000 kg/m^3 ;
Liquid level : 151 mm
Phantom section: Flat Section ; Separation distance : 10 mm (The feet point of the dipole to the Phantom)Air temp. : 22.5 degrees ; Liquid temp. : 22.3 degrees

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(10.32, 10.32, 10.32); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.15 mW/g
d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.2 V/m; Power Drift = 0.041 dB
Peak SAR (extrapolated) = 3.75 W/kg
SAR(1 g) = 2.47 mW/g; SAR(10 g) = 1.61 mW/g
Maximum value of SAR (measured) = 3.15 mW/g



Date: 2011/7/30

SystemPerformanceCheck-D1900V2-HSL1900

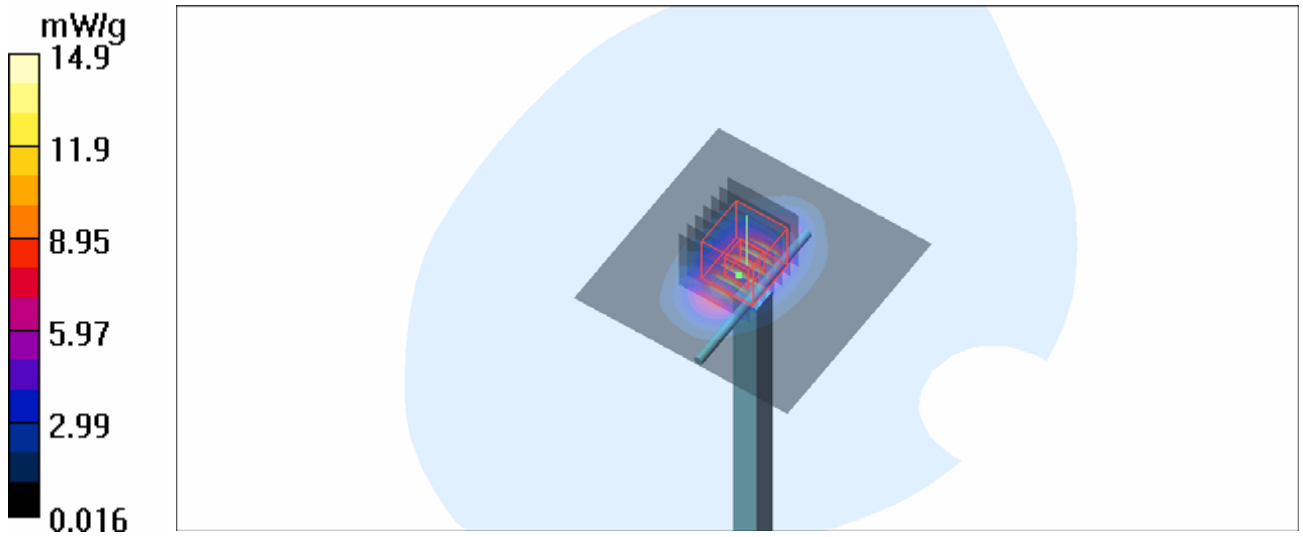
DUT: Dipole 1900 MHz ; Type: D1900V2 ; Serial: D1900V2 - SN:5d022 ; Test Frequency: 1900 MHz

Communication System: CW ; Frequency: 1900 MHz; Duty Cycle: 1:1; Modulation type: CW
Medium: HSL1900;Medium parameters used: f = 1900 MHz; σ = 1.42 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3 ; Liquid level : 151 mm
Phantom section: Flat Section ; Separation distance : 10 mm (The feet point of the dipole to the Phantom)Air temp. : 22.8 degrees ; Liquid temp. : 22.2 degrees

DASY4 Configuration:

- Probe: EX3DV4 - SN3590; ConvF(8.45, 8.45, 8.45); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.9 mW/g
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.9 V/m; Power Drift = 0.074 dB
Peak SAR (extrapolated) = 19.3 W/kg
SAR(1 g) = 9.84 mW/g; SAR(10 g) = 4.97 mW/g
Maximum value of SAR (measured) = 14.6 mW/g



Date: 2011/7/30

SystemPerformanceCheck-D1900V2-MSL1900

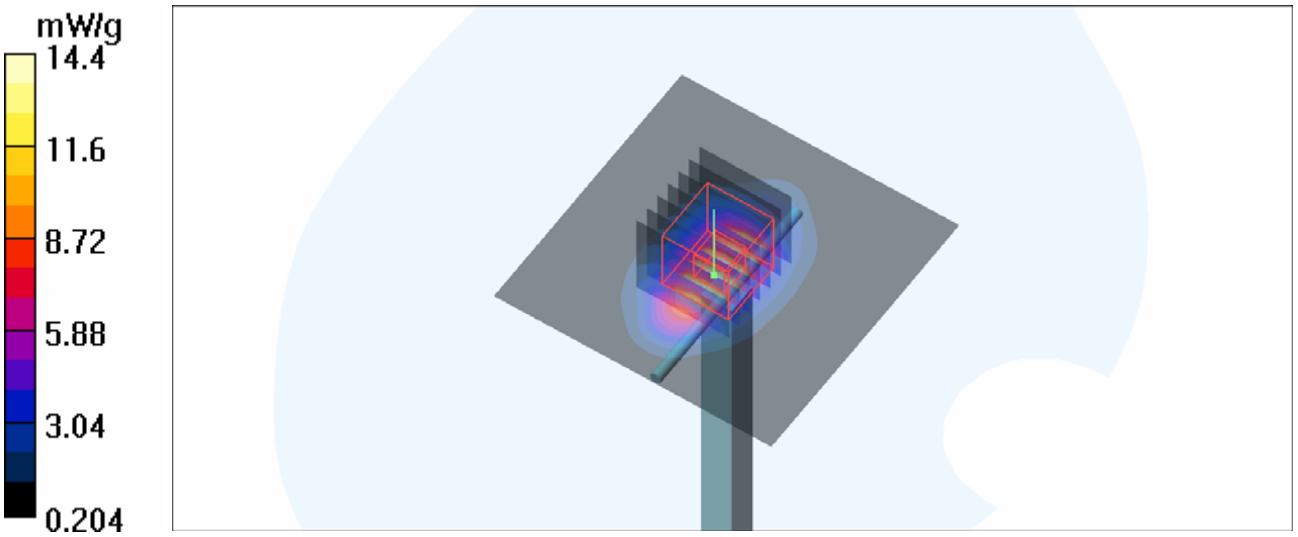
DUT: Dipole 1900 MHz ; Type: D1900V2 ; Serial: D1900V2 - SN:5d022 ; Test Frequency: 1900 MHz

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 = 54.5; ρ = 1000 kg/m^3 ; Liquid level : 151 mm
Phantom section: Flat Section ; Separation distance : 10 mm (The feet point of the dipole to the Phantom)Air temp. : 22.7 degrees ; Liquid temp. : 22.1 degrees

DASY4 Configuration:

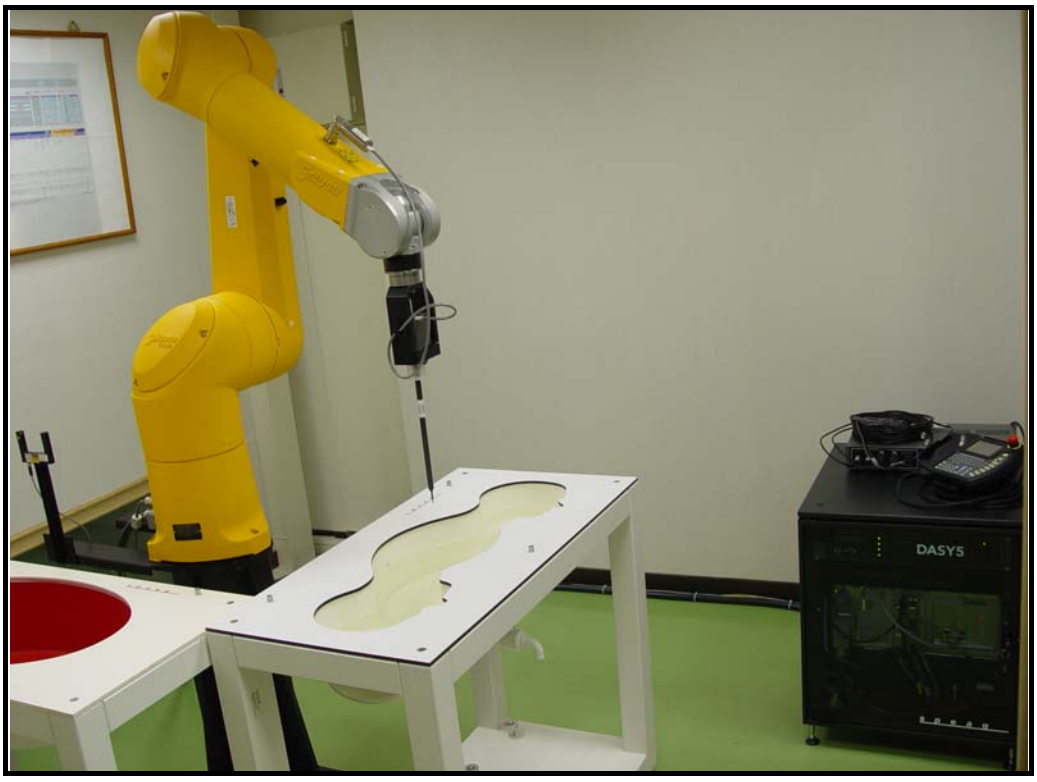
- Probe: EX3DV4 - SN3590; ConvF(8.49, 8.49, 8.49); Calibrated: 2011/2/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2010/9/20
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP 1202
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

d=10mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.2 mW/g
d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.4 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 18.7 W/kg
SAR(1 g) = 9.93 mW/g; SAR(10 g) = 5.04 mW/g
Maximum value of SAR (measured) = 14.4 mW/g



APPENDIX B: BV ADT SAR MEASUREMENT SYSTEM

DASY5



DASY4

APPENDIX C: PHOTOGRAPHS OF SYSTEM VALIDATION

DASY5

DASY4