

# SAR TEST REPORT

**REPORT NO.:** SA990605C01

**MODEL NO.:** F-10B

**RECEIVED:** Jun. 07, 2010

**TESTED:** Jun. 11 ~ Jun. 12, 2010

**ISSUED:** Jun. 23, 2010

**APPLICANT:** FUJITSU LIMITED

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## 1. CERTIFICATION

**PRODUCT:** Mobile phone  
**MODEL NO.:** F-10B  
**BRAND:** FOMA  
**APPLICANT:** FUJITSU LIMITED  
**TESTED:** Jun. 11 ~ Jun. 12, 2010  
**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: F-10B) has 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:** Jun. 23, 2010  
Andrea Hsia / Specialist

**TECHNICAL ACCEPTANCE** : Mason Chang , **DATE:** Jun. 23, 2010  
Responsible for RF Mason Chang / Engineer

**APPROVED BY** : Gary Chang , **DATE:** Jun. 23, 2010  
Gary Chang / Assistant Manager

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Mobile phone	
<b>MODEL NO.</b>	F-10B	
<b>POWER SUPPLY</b>	3.7Vdc (Li-ion battery) 5.4Vdc (Adapter)	
<b>MODULATION TYPE</b>	<b>For WCDMA 850:</b> WCDMA (Band 5) / HSDPA <b>For PCS 1900:</b> GMSK	
<b>FREQUENCY RANGE</b>	824MHz ~ 849MHz ; 1850MHz ~ 1910MHz	
<b>CHANNEL FREQUENCIES UNDER TEST AND ITS CONDUCTED OUTPUT POWER</b>	<b>WCDMA 850 band</b>	<b>HSDPA 850 band</b>
	22.85dBm / 826.4MHz for CH4132	22.56dBm / 826.4MHz for CH4132
	22.80dBm / 836.4MHz for CH4182	22.48dBm / 836.4MHz for CH4182
	22.75dBm / 846.6MHz for CH4233	22.37dBm / 846.6MHz for CH4233
	<b>PCS1900 band</b>	
<b>MAX. AVERAGE SAR (1g)</b>	Head:	1.560W/kg
	Body:	0.649W/kg
<b>ANTENNA GAIN</b>	Integral antenna with 0dBi gain (EUT open) Integral antenna with -2dBi gain (EUT close)	
<b>DATA CABLE</b>	NA	
<b>I/O PORTS</b>	Refer to user's manual	
<b>ACCESSORY DEVICES</b>	Battery	

#### NOTE:

- The EUT is powered by the following battery.

BATTERY	
<b>BRAND</b>	Fujitsu Limited
<b>MODEL</b>	F17
<b>RATING</b>	3.7Vdc, 800mAh

- The following accessory is for support units only.

PRODUCT	BRAND	DESCRIPTION
Adapter	SMK	I/P: 100-240Vac, 0.12A, 50-60Hz O/P: 5.4Vdc, 700mA
USB cable	NA	0.8m non-shielded cable without core

- Hardware version: V2.0.0
- Software version: R02.6
- IMEI Code: 352467040000346
- 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 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC 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.

## 2.3 GENERAL INFORMATION OF THE SAR SYSTEM

DASY5 (**Software 5.2 Build 162**) 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 from the optical into digital electric signal of the DAE and transfers data to the PC.

## EX3DV3 ISOTROPIC E-FIELD PROBE

<b>CONSTRUCTION</b>	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
<b>FREQUENCY</b>	10 MHz to > 6 GHz Linearity: $\pm 0.2$ dB (30 MHz to 6 GHz)
<b>DIRECTIVITY</b>	$\pm 0.3$ dB in HSL (rotation around probe axis) $\pm 0.5$ dB in tissue material (rotation normal to probe axis)
<b>DYNAMIC RANGE</b>	10 $\mu$ W/g to > 100 mW/g Linearity: $\pm 0.2$ dB (noise: typically < 1 $\mu$ W/g)
<b>DIMENSIONS</b>	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
<b>APPLICATION</b>	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

<b>CONSTRUCTION</b>	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-2003, EN 62209-1 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.
<b>SHELL THICKNESS</b>	$2 \pm 0.2$ mm
<b>FILLING VOLUME</b>	Approx. 25liters
<b>DIMENSIONS</b>	Height: 810mm; Length: 1000mm; Width: 500mm

## SYSTEM VALIDATION KITS:

<b>CONSTRUCTION</b>	Symmetrical dipole with 1/4 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
<b>CALIBRATION</b>	Calibrated SAR value for specified position and input power at the flat phantom in brain simulating solutions
<b>FREQUENCY</b>	835, 1900MHz
<b>RETURN LOSS</b>	> 20dB at specified validation position
<b>POWER CAPABILITY</b>	> 100W (f < 1GHz); > 40W (f > 1GHz)
<b>OPTIONS</b>	Dipoles for other frequencies or solutions and other calibration conditions upon request

## DEVICE HOLDER FOR SAM TWIN PHANTOM

<b>CONSTRUCTION</b>	The device holder for the 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 $\epsilon = 3$ and loss tangent $\delta = 0.02$ . 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.
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## 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 200M $\Omega$ ; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



## 2.4 TEST EQUIPMENT

### FOR SAR MEASUREMENT

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	Signal Generator	Agilent	E8257C	MY43320668	Feb. 23, 2010	Feb. 22, 2011
3	E-Field Probe	S & P	EX3DV3	3504	Jan. 26, 2010	Jan. 25, 2011
4	DAE	S & P	DAE	510	Dec. 16, 2009	Dec. 15, 2010
5	Robot Positioner	Staubli Unimation	NA	NA	NA	NA
6	Validation Dipole	S & P	D835V2	4d021	Apr. 29, 2010	Apr. 28, 2011
7	Validation Dipole	S & P	D1900V2	5d036	Feb. 23, 2010	Feb. 22, 2011

**NOTE:** Before starting, 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. 03, 2009	Dec. 02, 2010
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  $\pm 2.5\%$  and  $\pm 5\%$  for measured permittivity and conductivity, respectively. However, the tolerances for the conductivity is smaller for material with large loss tangents, i.e., less than  $\pm 2.5\%$  ( $k=1$ ). It can be substantially smaller if more accurate methods are applied

## 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 <sub>i</sub> , a <sub>i0</sub> , a <sub>i1</sub> , a <sub>i2</sub>
	- Conversion factor	ConvF <sub>i</sub>
	- Diode compression point	dcp <sub>i</sub>
Device parameters:	- Frequency	F
	- Crest factor	Cf
Media parameters:	- Conductivity	$\sigma$
	- Density	$\rho$

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:

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

V <sub>i</sub>	=compensated signal of channel i	(i = x, y, z)
U <sub>i</sub>	=input signal of channel I	(i = x, y, z)
Cf	=crest factor of exciting field	(DASY parameter)
dcp <sub>i</sub>	=diode compression point	(DASY parameter)

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

$$\text{E-fieldprobes: } E_i = \sqrt{\frac{V_i}{\text{Norm}_i \cdot \text{ConvF}}}$$

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

$V_i$	=compensated signal of channel I	(i = x, y, z)
$\text{Norm}_i$	=sensor sensitivity of channel i $\mu\text{V}/(\text{V/m})^2$ for E-field Probes	(i = x, y, z)
$\text{ConvF}$	= 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
$\sigma$	= conductivity in [mho/m] or [Siemens/m]
$\rho$	= equivalent tissue density in g/cm <sup>3</sup>

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 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

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

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

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 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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.
1	Universal Radio Communication Tester	R&S	CMU200	104484

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. RECIPES FOR TISSUE SIMULATING LIQUIDS

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

The following are some common ingredients :

- **WATER-** Deionized water (pure H<sub>2</sub>O), resistivity  $\geq 16 \text{ M}\Omega\cdot\text{cm}$  - 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 (75-125mPa.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-monobutyl 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°C	f = 835MHz $\epsilon = 41.5 \pm 5\%$ $\sigma = 0.97 \pm 5\% \text{ S/m}$	f = 835MHz $\epsilon = 55.0 \pm 5\%$ $\sigma = 1.05 \pm 5\% \text{ S/m}$

### 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°C	f= 1900MHz $\epsilon = 40.0 \pm 5\%$ $\sigma = 1.40 \pm 5\% \text{ S/m}$	f= 1900MHz $\epsilon = 53.3 \pm 5\%$ $\sigma = 1.52 \pm 5\% \text{ S/m}$

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 30min. 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 ( $\pm 1^\circ$ ).
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  $>8\text{mm}$  thickness  $\epsilon' = 10.0$ ,  $\epsilon'' = 0.0$ ). If measured parameters do not fit within tolerance, repeat calibration ( $\pm 0.2$  for  $\epsilon'$ :  $\pm 0.1$  for  $\epsilon''$ ).
7. Conductivity can be calculated from  $\epsilon''$  by  $\sigma = \omega \epsilon_0 \epsilon'' = \epsilon'' f [\text{GHz}] / 18$ .
8. Measure liquid shortly after calibration. Repeat calibration every hour.
9. Stir the liquid to be measured. Take a sample ( $\sim 50\text{ml}$ ) 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 900MHz) and press 'Option'-button.
14. Select the current medium for the frequency of the validation (e.g. Setup Medium Brain 900MHz).



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## FOR BAND SIMULATING LIQUID

LIQUID TYPE		HSL-835			
SIMULATING LIQUID TEMP.		22.5			
TEST DATE		Jun. 11, 2010			
TESTED BY		Match Tsui			
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)	LIMIT( % )
826.4	Permittivity ( $\epsilon$ )	41.50	43.00	3.61	$\pm 5$
835.0		41.50	42.90	3.37	
836.4		41.50	42.90	3.37	
846.6		41.50	42.80	3.31	
826.4	Conductivity ( $\sigma$ ) S/m	0.90	0.86	-4.44	
835.0		0.90	0.87	-3.33	
836.4		0.90	0.87	-3.33	
846.6		0.91	0.88	-3.30	

LIQUID TYPE		MSL-835			
SIMULATING LIQUID TEMP.		22.5			
TEST DATE		Jun. 12, 2010			
TESTED BY		Match Tsui			
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)	LIMIT( % )
826.4	Permittivity ( $\epsilon$ )	55.00	54.30	-1.27	$\pm 5$
835.0		55.20	54.30	-1.63	
836.4		55.20	54.30	-1.63	
846.6		55.20	54.10	-1.99	
826.4	Conductivity ( $\sigma$ ) S/m	0.97	0.98	1.03	
835.0		0.97	0.97	0	
836.4		0.97	0.98	1.03	
846.6		0.98	0.99	1.02	





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LIQUID TYPE		HSL-1900			
SIMULATING LIQUID TEMP.		22.9			
TEST DATE		Jun. 12, 2010			
TESTED BY		Match Tsui			
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)	LIMIT( % )
1850.2	Permittivity ( $\epsilon$ )	40.00	40.70	1.75	$\pm 5$
1880.0		40.00	40.70	1.75	
1900.0		40.00	40.70	1.75	
1909.8		40.00	40.60	1.50	
1850.2	Conductivity ( $\sigma$ ) S/m	1.40	1.37	-2.14	
1880.0		1.40	1.41	0.71	
1900.0		1.40	1.43	2.14	
1909.8		1.40	1.44	2.86	

LIQUID TYPE		MSL-1900			
SIMULATING LIQUID TEMP.		23.0			
TEST DATE		Jun. 12, 2010			
TESTED BY		Match Tsui			
FREQ. (MHz)	LIQUID PARAMETER	STANDARD VALUE	MEASUREMENT VALUE	ERROR PERCENTAGE (%)	LIMIT( % )
1850.2	Permittivity ( $\epsilon$ )	53.30	53.40	0.19	$\pm 5$
1880.0		53.30	53.40	0.19	
1900.0		53.30	53.30	0.00	
1909.8		53.30	53.20	-0.19	
1850.2	Conductivity ( $\sigma$ ) S/m	1.52	1.50	-1.32	
1880.0		1.52	1.54	1.32	
1900.0		1.52	1.57	3.29	
1909.8		1.52	1.58	3.95	

## 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 the system performance check, we need only to tell the system which components (probe, medium, and device) are used for the system performance check; the system will take care of all parameters. The dipole must be placed beneath the flat 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 mobile phones 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  $\pm 0.1$  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  $\pm 0.02$ 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  $\pm 0.1$ mm). 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  $\pm 0.1\text{mm}$ .

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

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

## 5.2 VALIDATION RESULTS

SYSTEM VALIDATION TEST OF SIMULATING LIQUID					
FREQUENCY (MHz)	REQUIRED SAR (mW/g)	MEASURED SAR (mW/g)	DEVIATION (%)	SEPARATION DISTANCE	TESTED DATE
HSL835	2.37 (1g)	2.26	-4.64	15mm	Jun. 11, 2010
MSL835	2.52 (1g)	2.36	-6.35	15mm	Jun. 11, 2010
HSL1900	10.00 (1g)	10.40	4.00	10mm	Jun. 12, 2010
MSL1900	10.30 (1g)	9.55	-7.28	10mm	Jun. 12, 2010
TESTED BY	Match Tsui.				

**NOTE:** 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 <sub>i</sub> )		Standard Uncertainty (±%)		(v <sub>i</sub> )
				(1g)	(10g)	(1g)	(10g)	
Measurement System								
Probe Calibration	5.50	Normal	1	1	1	5.50	5.50	∞
Axial Isotropy	0.50	Rectangular	√3	0.7	0.7	0.20	0.20	∞
Hemispherical Isotropy	2.60	Rectangular	√3	0.7	0.7	1.05	1.05	∞
Boundary effects	1.00	Rectangular	√3	1	1	0.58	0.58	∞
Linearity	0.60	Rectangular	√3	1	1	0.35	0.35	∞
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	0.00	Rectangular	√3	1	1	0.00	0.00	∞
Integration Time	0.00	Rectangular	√3	1	1	0.00	0.00	∞
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	∞
Post-processing	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)	4.10	Normal	1	0.64	0.43	2.62	1.76	∞
Liquid Permittivity (target)	5.00	Rectangular	√3	0.6	0.49	1.73	1.41	∞
Liquid Permittivity (measurement)	3.61	Normal	1	0.6	0.49	2.17	1.77	∞
Combined Standard Uncertainty						8.63	8.14	
Coverage Factor for 95%						Kp=2		
Expanded Uncertainty (K=2)						17.26	16.28	

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

## 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 DASY5 SAR measurement system manufactured and calibrated by SPEAG. According to the IEEE 1528 / EN 62209-1, 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 was performed for the highest spatial SAR location. 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 3mm and maintained at a constant distance of  $\pm 0.5\text{mm}$  during a zoom scan to determine peak SAR locations. The distance is 3mm 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 8mm separation distance. The cube size is 7 x 7 x 7 points consists of 343 points and the grid space is 5mm.

The measurement time is 0.5s 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 probe diameter.

In the area scan, the separation distance is 3mm 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  $\pm 5\%$ .

## 6.2 DESCRIPTION OF TEST CONDITION

TEST DATE	TISSUE TYPE / FREQ.	TEST MODE	TEMPERATURE (°C)		HUMIDITY (%RH)	TESTED BY
			AIMBENT	LIQUID		
Jun. 11, 2010	HSL835	1 ~ 12	23.0	22.5	62	Match Tsui
Jun. 11, 2010	MSL835	13 ~ 20	23.1	22.5	62	Match Tsui
Jun. 12, 2010	HSL1900	21 ~ 32	23.2	22.9	62	Match Tsui
Jun. 12, 2010	MSL1900	33 ~ 40	23.2	23.0	62	Match Tsui

### 6.3 MEASURED SAR RESULT

SAR (1g)				
HEAD	RIGHT		LEFT	
CH	CHEEK	TILT	CHEEK	TILT
<b>WCDMA 850</b>				
Low	1.480	0.243	0.776	0.225
Middle	<b>1.560</b>	0.241	0.880	0.235
High	1.440	0.187	0.710	0.214
<b>GSM 1900</b>				
Low	1.070	0.242	1.190	0.237
Middle	1.090	0.256	<b>1.190</b>	0.246
High	0.952	0.244	1.120	0.229

SAR (1g)-15mm		
BODY / MSL		
CH	Front	Bottom
<b>WCDMA 850</b>		
Low		0.512
Middle	0.238	0.647
High		<b>0.649</b>
<b>WCDMA 850 HSDPA</b>		
Low		0.450
Middle	0.233	0.609
High		0.578
<b>GSM 1900</b>		
Low		0.230
Middle	0.092	0.330
High		<b>0.424</b>
<b>GSM 1900 GPRS TS1</b>		
Low		0.212
Middle	0.085	0.312
High		0.405

#### NOTE:

1. In this testing, the limit for General Population Spatial Peak averaged over 1g, 1.6 W/kg, is applied.
2. Please see the Appendix A for the data.
3. The variation of the EUT conducted power measured before and after SAR testing should not over 5%.
4. Per DA-02-1438A1, when 1-g SAR for the middle channel is less than 0.8 W/kg, testing for the other channels is not required



## 6.4 SAR LIMITS

HUMAN EXPOSURE	SAR (W/kg)	
	(GENERAL POPULATION / UNCONTROLLED EXPOSURE ENVIRONMENT)	(OCCUPATIONAL / CONTROLLED EXPOSURE ENVIRONMENT)
Spatial Peak (averaged over 1 g)	1.6	8.0

**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.



## 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](http://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](http://www.adt.com.tw)

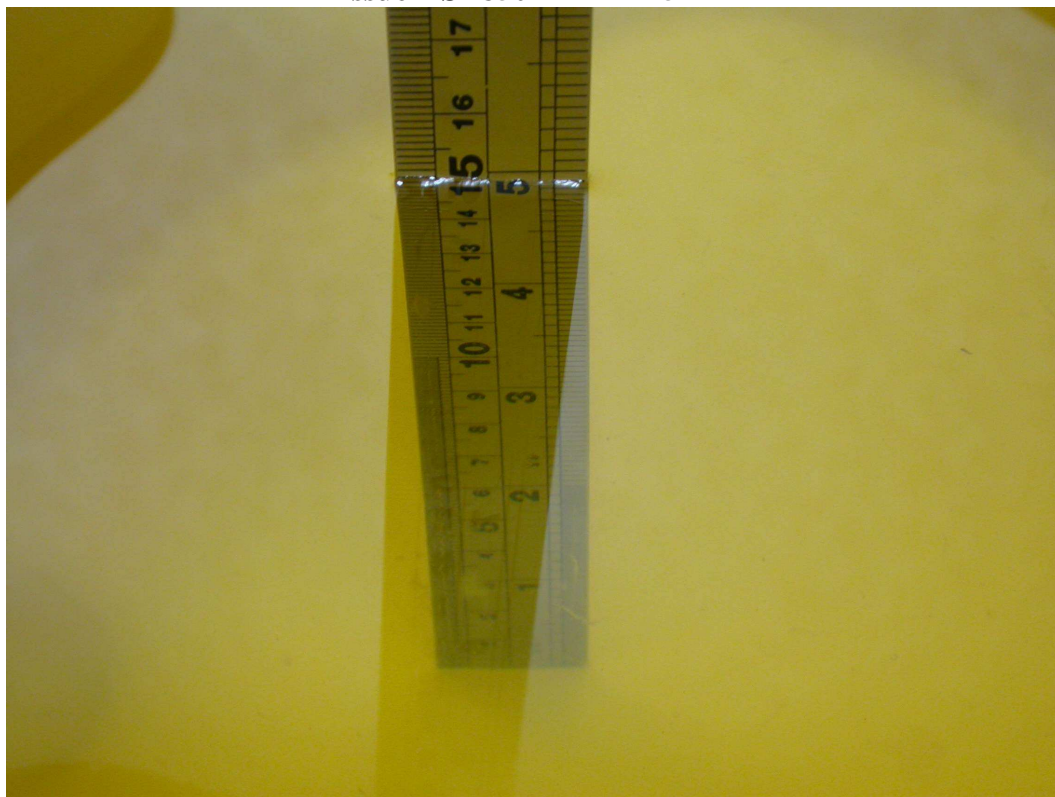
The address and road map of all our labs can be found in our web site also.

---END---

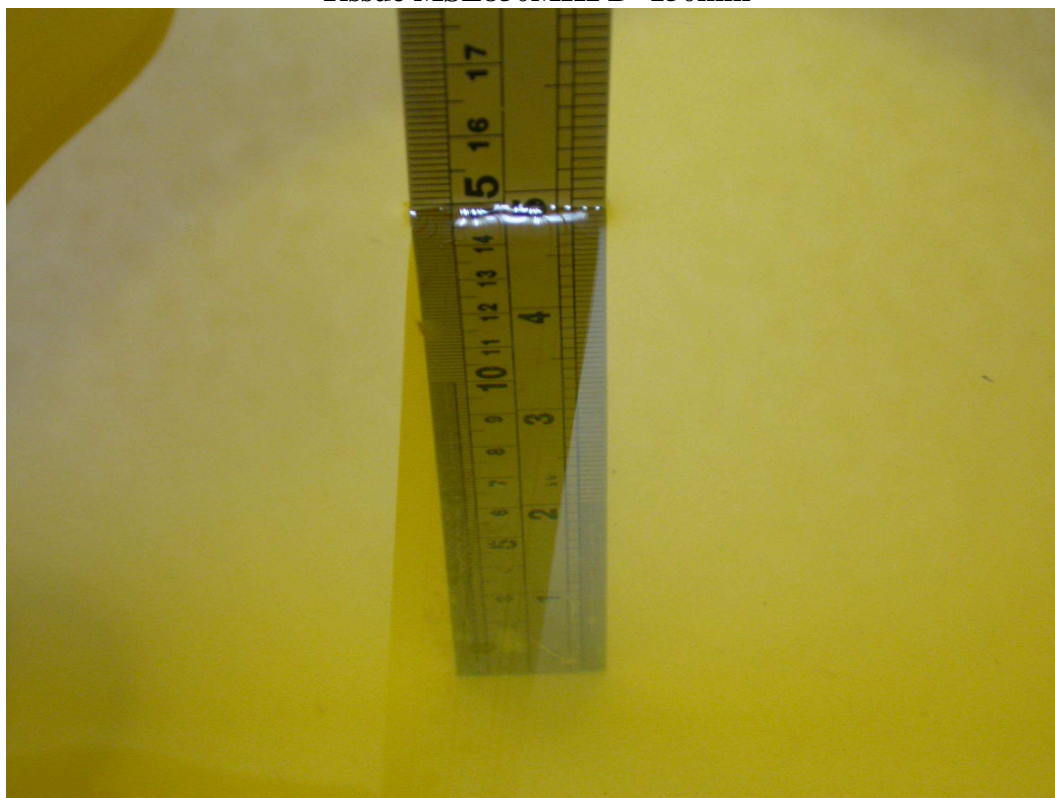
## APPENDIX A: TEST DATA

### Liquid Level Photo

Tissue HSL850MHz D=151mm



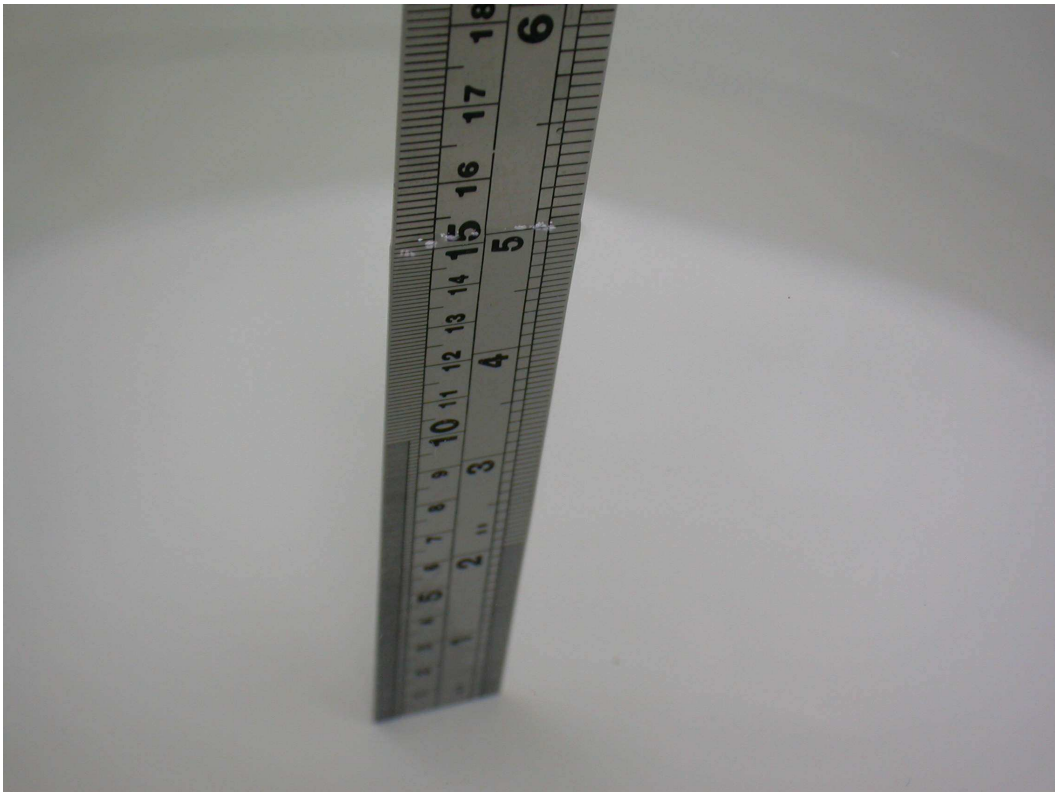
Tissue MSL850MHz D=150mm



**Tissue HSL1900MHz D=152mm**

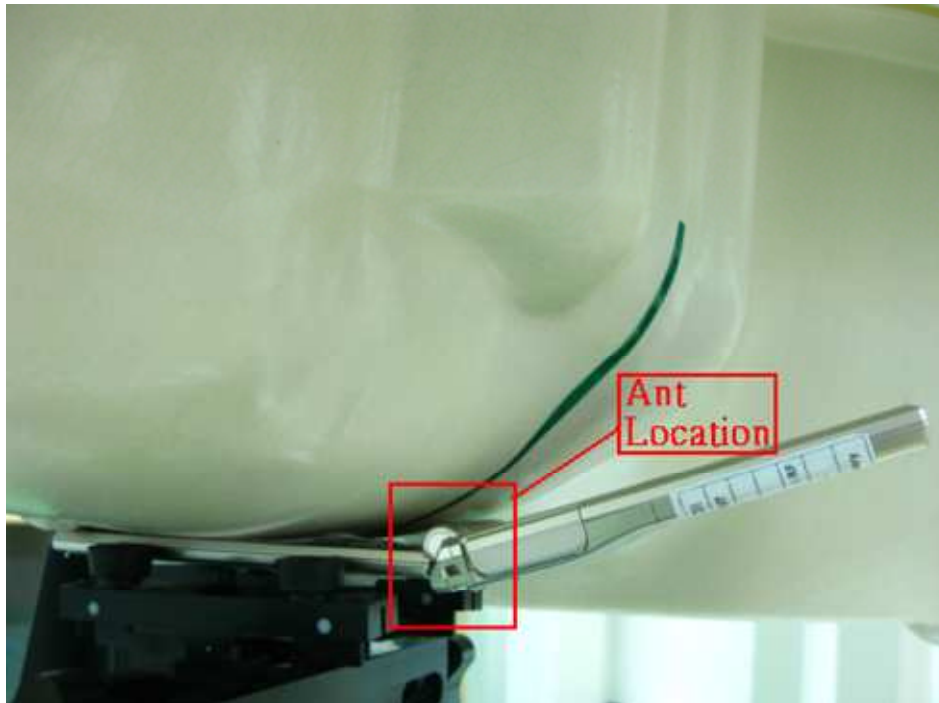


**Tissue MSL1900MHz D=151mm**



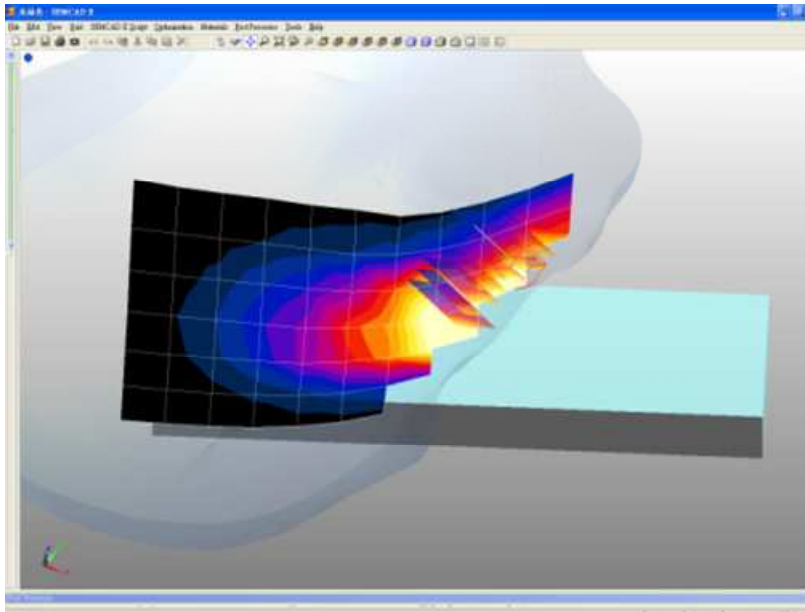
## 1. EUT information

- This is a clam phone that contains 2 Tx bands (GSM/GPRS 1900 & WCDMA 850)
- **MODEL NO.:**F-10B
- **BRAND:**FUJITSU
- **TEST SAMPLE:**ENGINEERING





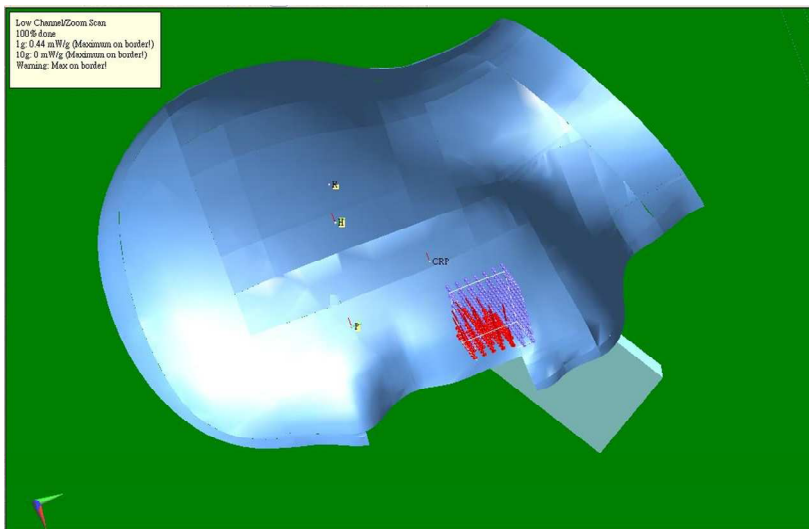
## 2. SAR test issue



a.

When perform the SAR area scan that can not cover whole DUT and the hot spot is located around the jaw regions of the SAM head phantom.

The scan area can not include whole hot spot.



b.

When perform the SAR zoom scan that can not measure whole points of the cube.

### 3.SAR test plot

Test Laboratory: Bureau Veritas ADT

#### WCDMA850 Right head

DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 836.4\text{MHz}$ ;  $\sigma = 0.93\text{ mho/m}$ ;  $\epsilon_r = 43.1$ ;  $\rho = 1000\text{ kg/m}^3$

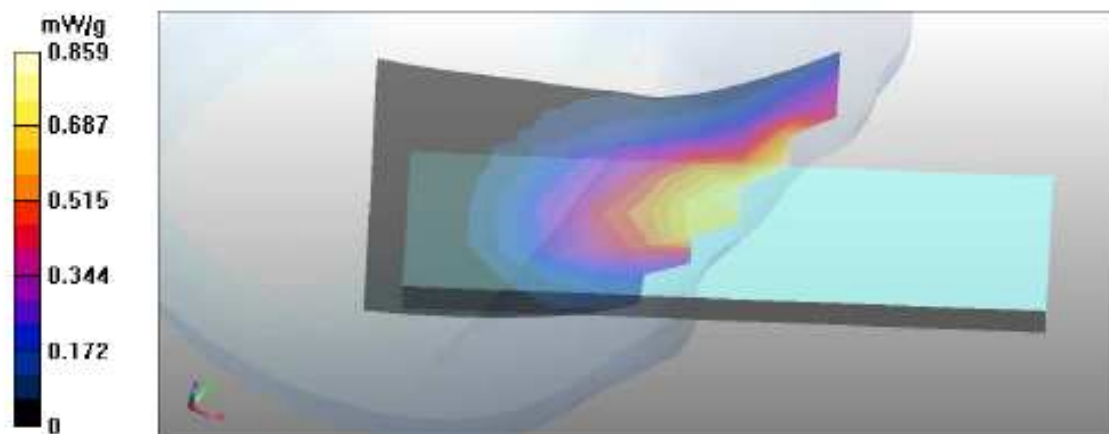
Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: BPSK

DASY5 Configuration:

- Probe: EX3DV3 - SN3504 ; ConvF(9.8, 9.8, 9.8);Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- ; SEMCAD X Version 14.0 Build 61

Mid Channel/Area Scan (7x16x1): Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) =  $0.859\text{ mW/g}$



Test Laboratory: Bureau Veritas ADT

## M01-WCDMA 850 Body Cheek -Ch4132

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 826.4 MHz ; Duty Cycle: 1:1; Modulation type: BPSK

Medium: HSL850 Medium parameters used:  $f = 826.4 \text{ MHz}$ ;  $\sigma = 0.86 \text{ mho/m}$ ;  $\epsilon_r = 43$ ;  $\rho = 1000 \text{ kg/m}^3$   
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(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.54 mW/g

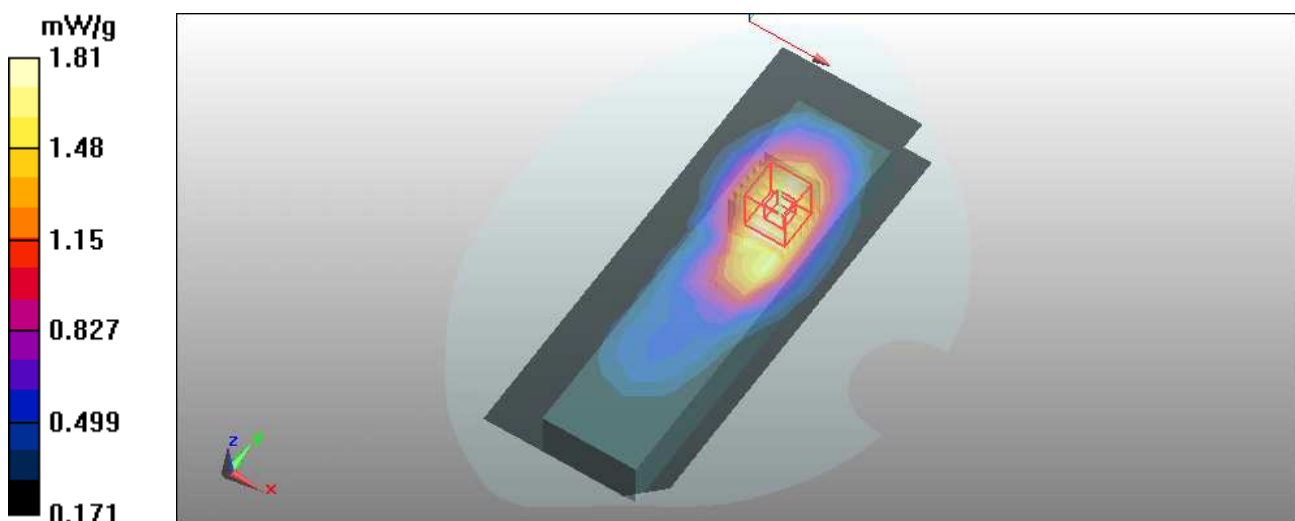
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 37.1 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 2.23 W/kg

SAR(1 g) = 1.48 mW/g; SAR(10 g) = 0.936 mW/g

Maximum value of SAR (measured) = 1.81 mW/g



Test Laboratory: Bureau Veritas ADT

## M02-WCDMA 850 Body Cheek -Ch4182

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1; Modulation type: BPSK

Medium: HSL850 Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.87 \text{ mho/m}$ ;  $\epsilon_r = 42.9$ ;  $\rho = 1000 \text{ kg/m}^3$   
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(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x17x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.59 mW/g

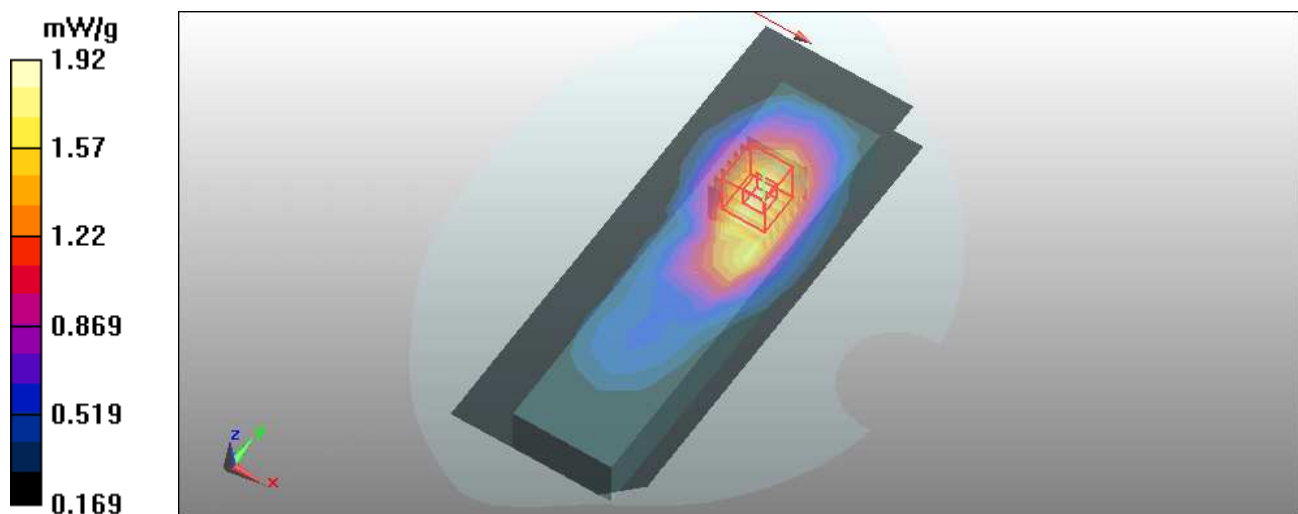
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 41.5 V/m; Power Drift = -0.143 dB

Peak SAR (extrapolated) = 2.59 W/kg

SAR(1 g) = **1.56 mW/g**; SAR(10 g) = **0.985 mW/g**

Maximum value of SAR (measured) = 1.92 mW/g





Test Laboratory: Bureau Veritas ADT

## M03-WCDMA 850 Body Cheek -Ch4233

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 846.6 MHz ; Duty Cycle: 1:1; Modulation type: BPSK

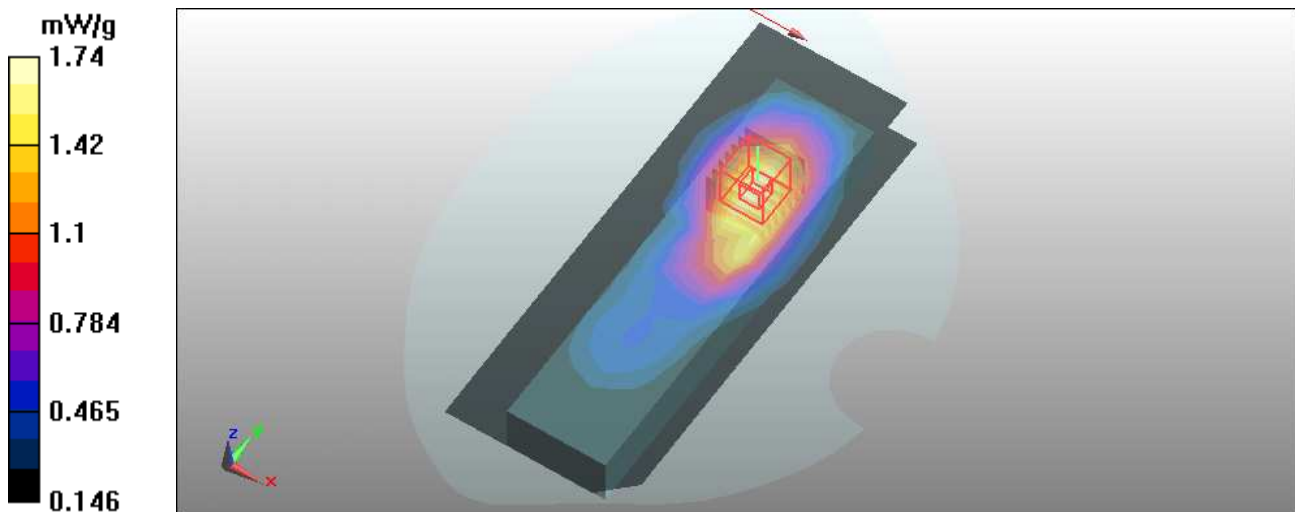
Medium: HSL850 Medium parameters used:  $f = 846.6 \text{ MHz}$ ;  $\sigma = 0.88 \text{ mho/m}$ ;  $\epsilon_r = 42.8$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section ; Separation distance : 0 mm (The Front side of the EUT with leather to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**Hight Channel/Area Scan (7x17x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (measured) = 1.49 mW/g

**Hight Channel/Zoom Scan (7x7x9)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=3\text{mm}$   
Reference Value = 36.9 V/m; Power Drift = -0.064 dB  
Peak SAR (extrapolated) = 2.31 W/kg  
**SAR(1 g) = 1.44 mW/g; SAR(10 g) = 0.922 mW/g**  
Maximum value of SAR (measured) = 1.74 mW/g



Test Laboratory: Bureau Veritas ADT

## M04-WCDMA 850 Right head Tilt -Ch4132

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 826.4 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 826.4$  MHz;  $\sigma = 0.86$  mho/m;  $\epsilon_r = 43$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.261 mW/g

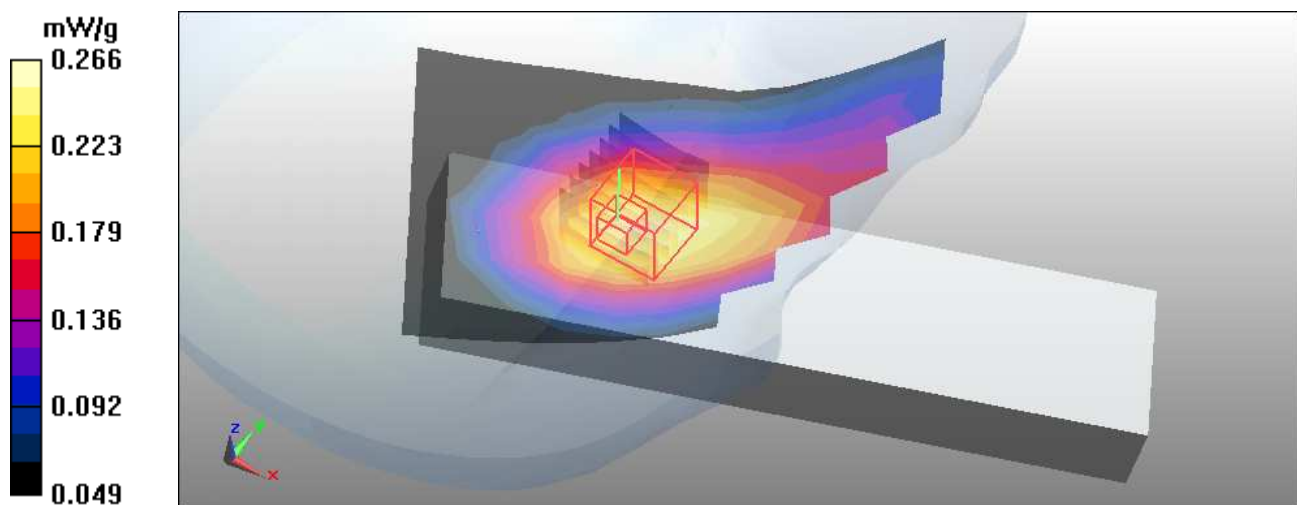
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 11.6 V/m; Power Drift = 0.116 dB

Peak SAR (extrapolated) = 0.308 W/kg

SAR(1 g) = **0.243 mW/g**; SAR(10 g) = 0.185 mW/g

Maximum value of SAR (measured) = 0.266 mW/g



Test Laboratory: Bureau Veritas ADT

## M05-WCDMA 850 Right head Tilt -Ch4182

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.87 \text{ mho/m}$ ;  $\epsilon_r = 42.9$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x16x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) =  $0.266 \text{ mW/g}$

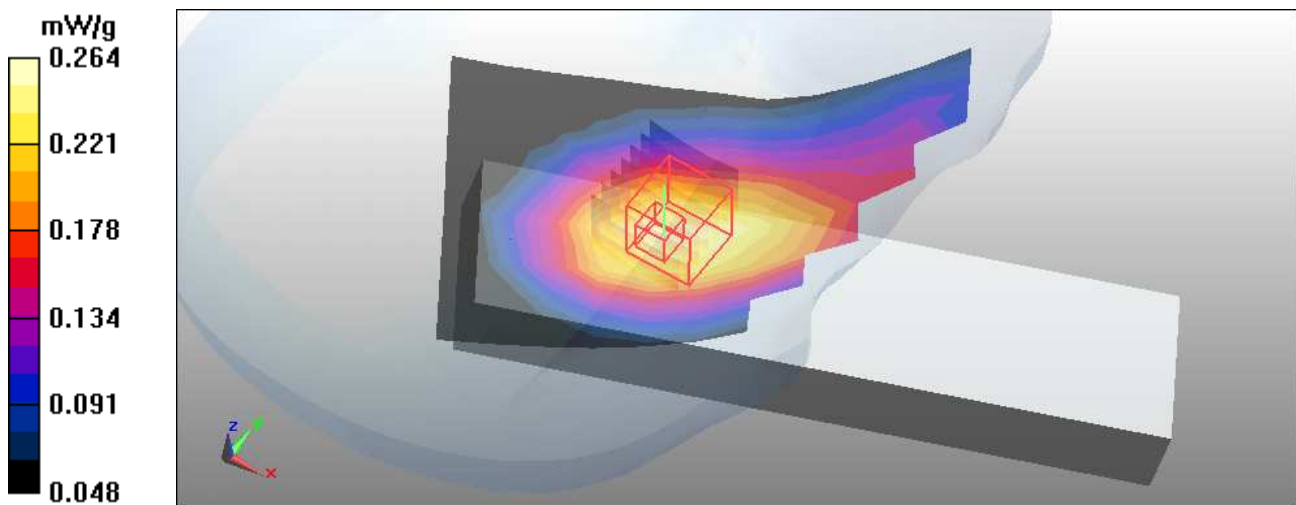
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value =  $11.7 \text{ V/m}$ ; Power Drift =  $-0.070 \text{ dB}$

Peak SAR (extrapolated) =  $0.307 \text{ W/kg}$

SAR(1 g) =  **$0.241 \text{ mW/g}$** ; SAR(10 g) =  $0.184 \text{ mW/g}$

Maximum value of SAR (measured) =  $0.264 \text{ mW/g}$



Test Laboratory: Bureau Veritas ADT

## M06-WCDMA 850 Right head Tilt-Ch4233

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 846.6 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 846.6 \text{ MHz}$ ;  $\sigma = 0.88 \text{ mho/m}$ ;  $\epsilon_r = 42.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.208 mW/g

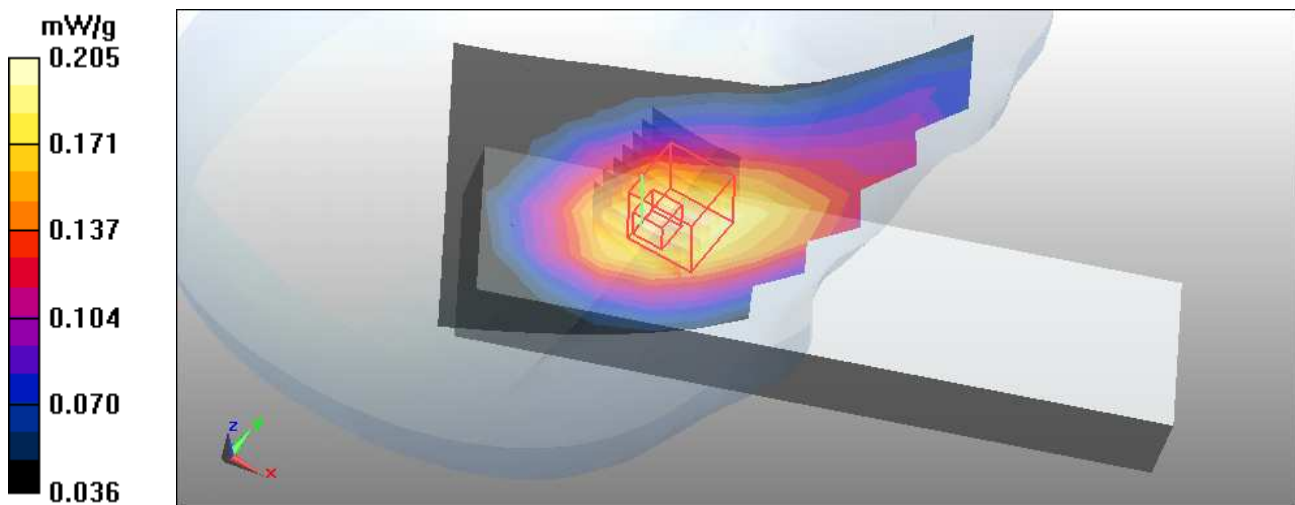
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 9.96 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 0.239 W/kg

SAR(1 g) = **0.187 mW/g**; SAR(10 g) = 0.143 mW/g

Maximum value of SAR (measured) = 0.205 mW/g



Test Laboratory: Bureau Veritas ADT

## M07-WCDMA 850 Left head Cheek -Ch4132

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 826.4 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 826.4 \text{ MHz}$ ;  $\sigma = 0.86 \text{ mho/m}$ ;  $\epsilon_r = 43$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**Low Channel/Area Scan (7x16x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) =  $1.03 \text{ mW/g}$

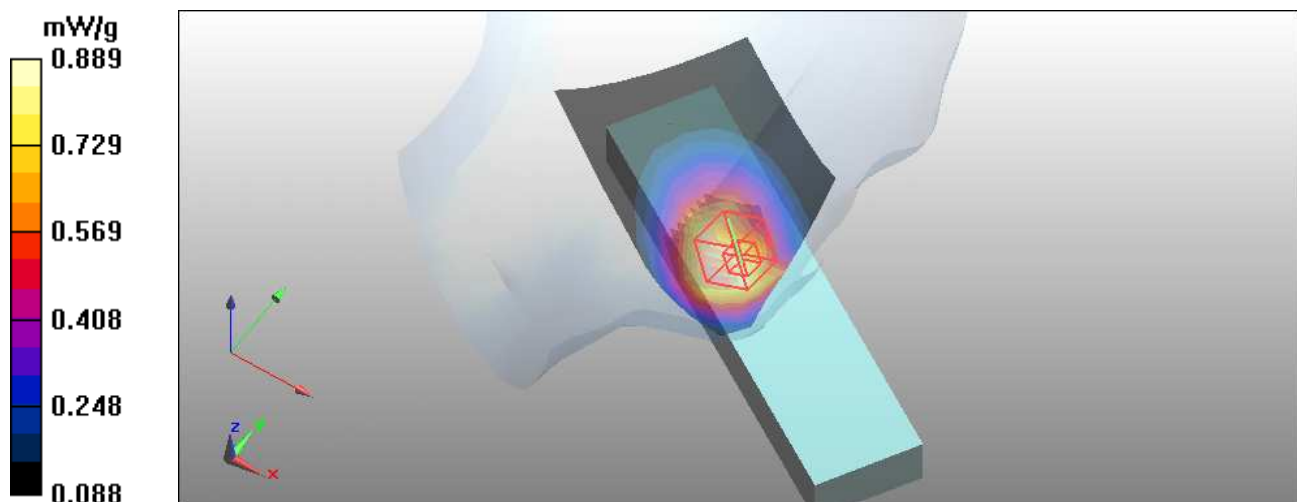
**Low Channel/Zoom Scan (7x7x9)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=3\text{mm}$

Reference Value =  $8.3 \text{ V/m}$ ; Power Drift =  $-0.11 \text{ dB}$

Peak SAR (extrapolated) =  $1.15 \text{ W/kg}$

**SAR(1 g) =  $0.766 \text{ mW/g}$ ; SAR(10 g) =  $0.510 \text{ mW/g}$**

Maximum value of SAR (measured) =  $0.889 \text{ mW/g}$



Test Laboratory: Bureau Veritas ADT

## M08-WCDMA 850 Left head Cheek -Ch4182

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 836.4$  MHz;  $\sigma = 0.87$  mho/m;  $\epsilon_r = 42.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.987 mW/g

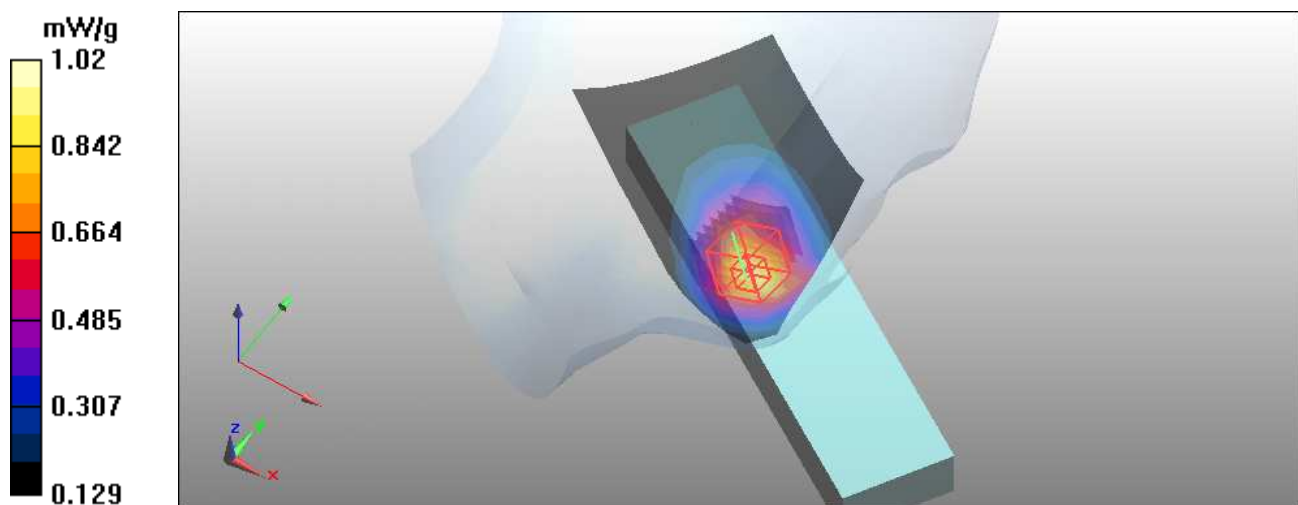
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 8.3 V/m; Power Drift = 0.135 dB

Peak SAR (extrapolated) = 1.36 W/kg

SAR(1 g) = **0.880** mW/g; SAR(10 g) = 0.579 mW/g

Maximum value of SAR (measured) = 1.02 mW/g



Test Laboratory: Bureau Veritas ADT

## M09-WCDMA 850 Left head Cheek -Ch4233

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 846.6 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 846.6 \text{ MHz}$ ;  $\sigma = 0.88 \text{ mho/m}$ ;  $\epsilon_r = 42.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x16x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) =  $0.790 \text{ mW/g}$

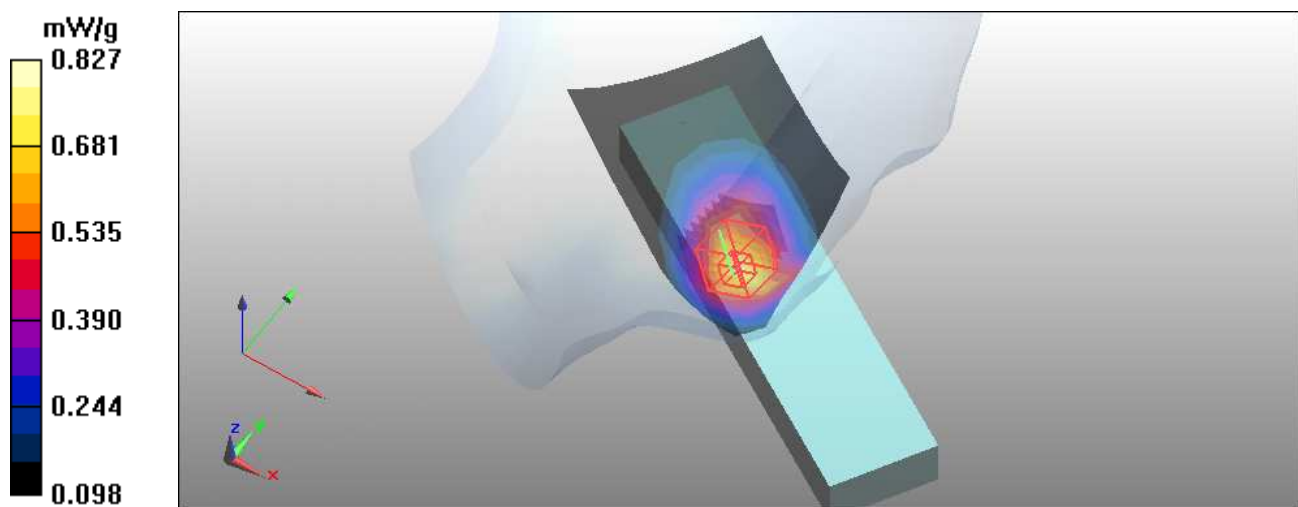
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value =  $7.03 \text{ V/m}$ ; Power Drift =  $0.146 \text{ dB}$

Peak SAR (extrapolated) =  $1.1 \text{ W/kg}$

SAR(1 g) =  **$0.710 \text{ mW/g}$** ; SAR(10 g) =  $0.469 \text{ mW/g}$

Maximum value of SAR (measured) =  $0.827 \text{ mW/g}$





Test Laboratory: Bureau Veritas ADT

## M10-WCDMA 850 Left head Tilt - Ch4132

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 826.4 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 826.4 \text{ MHz}$ ;  $\sigma = 0.86 \text{ mho/m}$ ;  $\epsilon_r = 43$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x16x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.245 mW/g

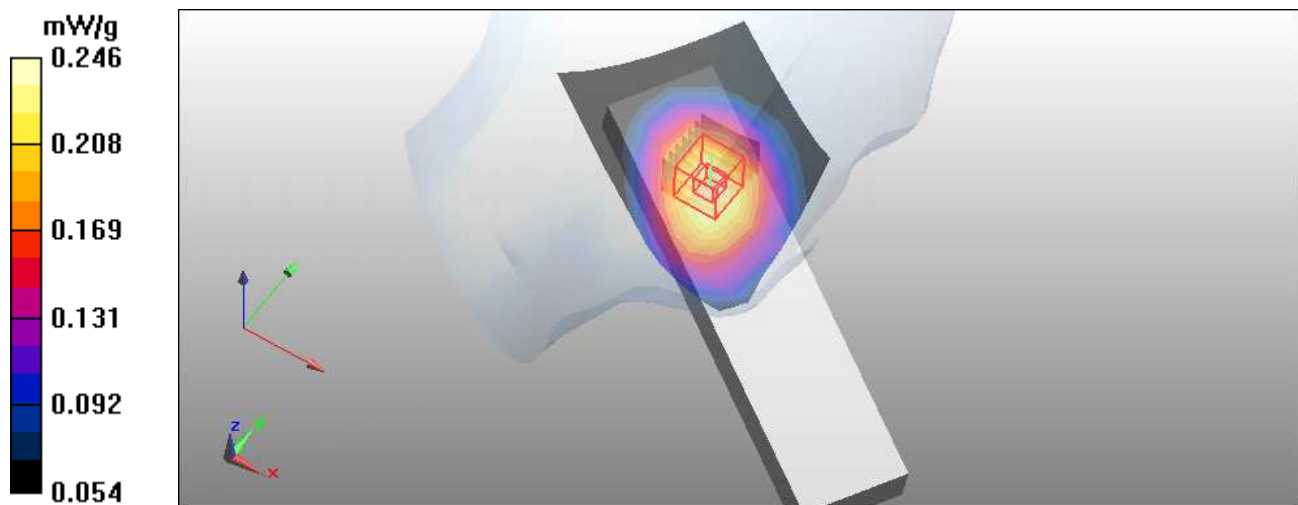
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value = 10.2 V/m; Power Drift = 0.042 dB

Peak SAR (extrapolated) = 0.277 W/kg

SAR(1 g) = **0.225 mW/g**; SAR(10 g) = 0.172 mW/g

Maximum value of SAR (measured) = 0.246 mW/g





Test Laboratory: Bureau Veritas ADT

## M11-WCDMA 850 Left head Tilt -Ch4182

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 836.4$  MHz;  $\sigma = 0.87$  mho/m;  $\epsilon_r = 42.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.257 mW/g

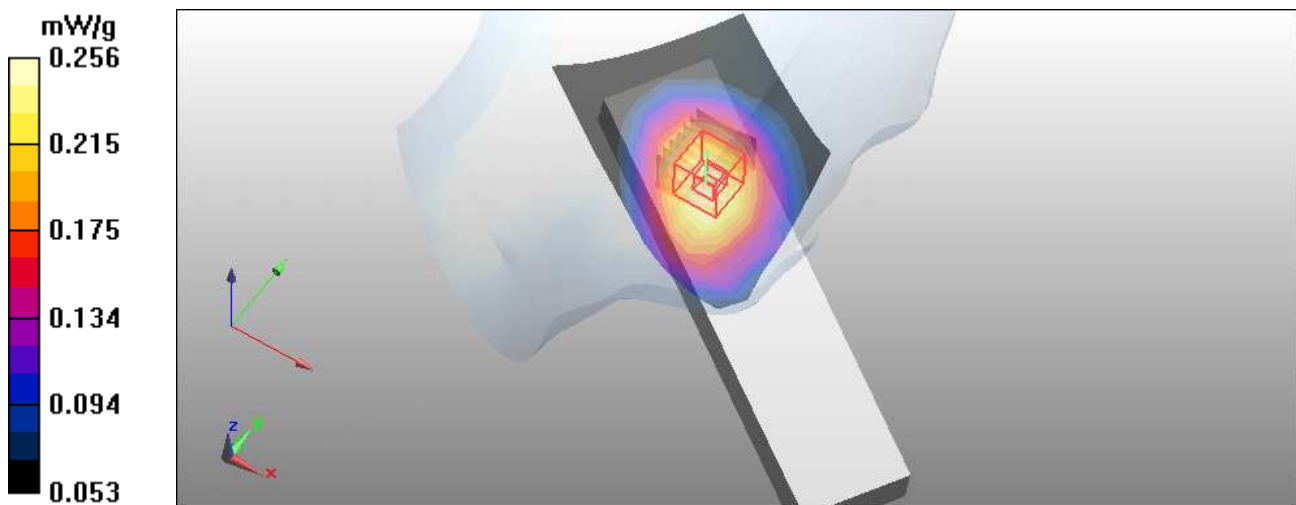
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 10.6 V/m; Power Drift = -0.146 dB

Peak SAR (extrapolated) = 0.291 W/kg

SAR(1 g) = **0.235** mW/g; SAR(10 g) = 0.179 mW/g

Maximum value of SAR (measured) = 0.256 mW/g



Test Laboratory: Bureau Veritas ADT

## M12-WCDMA 850 Left head Tilt -Ch4233

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 846.6 MHz ; Duty Cycle: 1:1

Medium: HSL850 Medium parameters used:  $f = 846.6 \text{ MHz}$ ;  $\sigma = 0.88 \text{ mho/m}$ ;  $\epsilon_r = 42.8$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: BPSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x16x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.227 mW/g

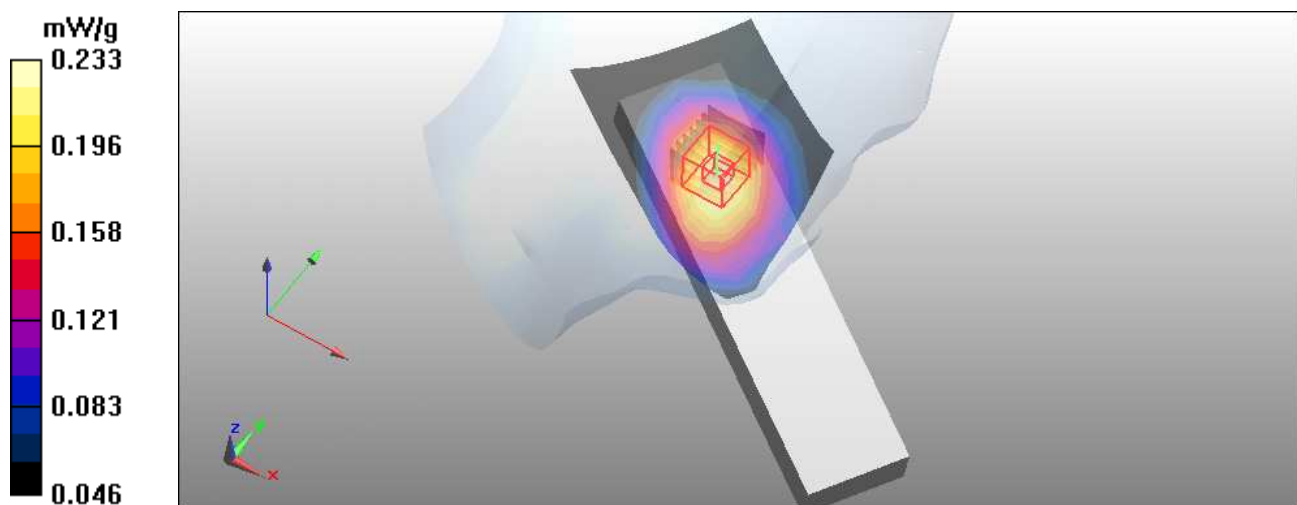
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value = 9.9 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 0.266 W/kg

SAR(1 g) = **0.214 mW/g**; SAR(10 g) = 0.162 mW/g

Maximum value of SAR (measured) = 0.233 mW/g



Test Laboratory: Bureau Veritas ADT

## M13-WCDMA 850 Body Front-Ch4182

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL850 Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.98 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The Front side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.256 mW/g

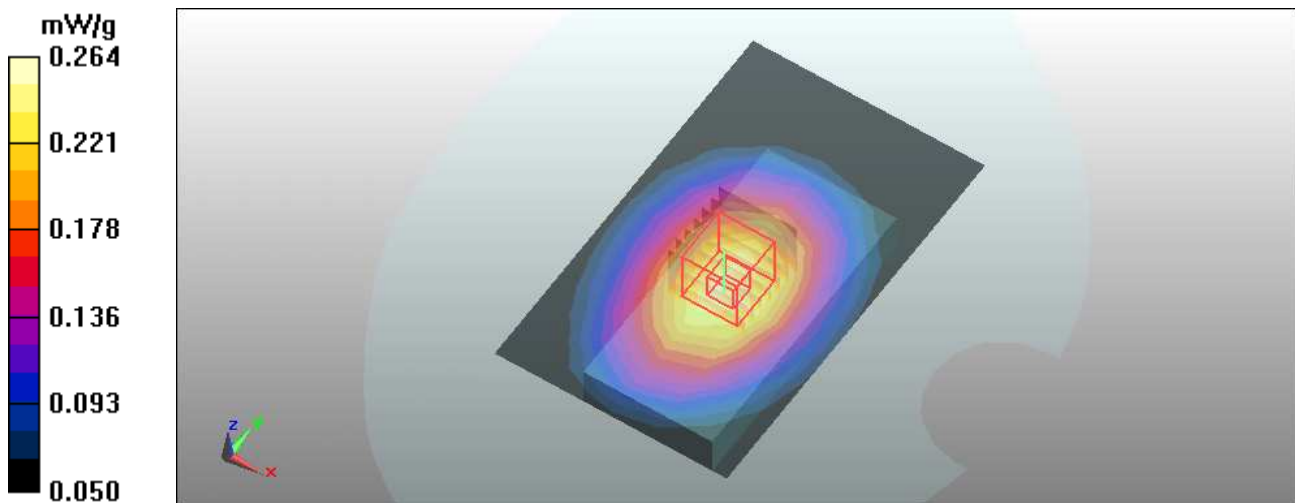
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 15.9 V/m; Power Drift = 0.007 dB

Peak SAR (extrapolated) = 0.310 W/kg

SAR(1 g) = **0.238 mW/g**; SAR(10 g) = **0.175 mW/g**

Maximum value of SAR (measured) = 0.264 mW/g



Test Laboratory: Bureau Veritas ADT

## M14-WCDMA 850 Body Bottom-Ch4132

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 826.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL850 Medium parameters used:  $f = 826.4 \text{ MHz}$ ;  $\sigma = 0.98 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.563 mW/g

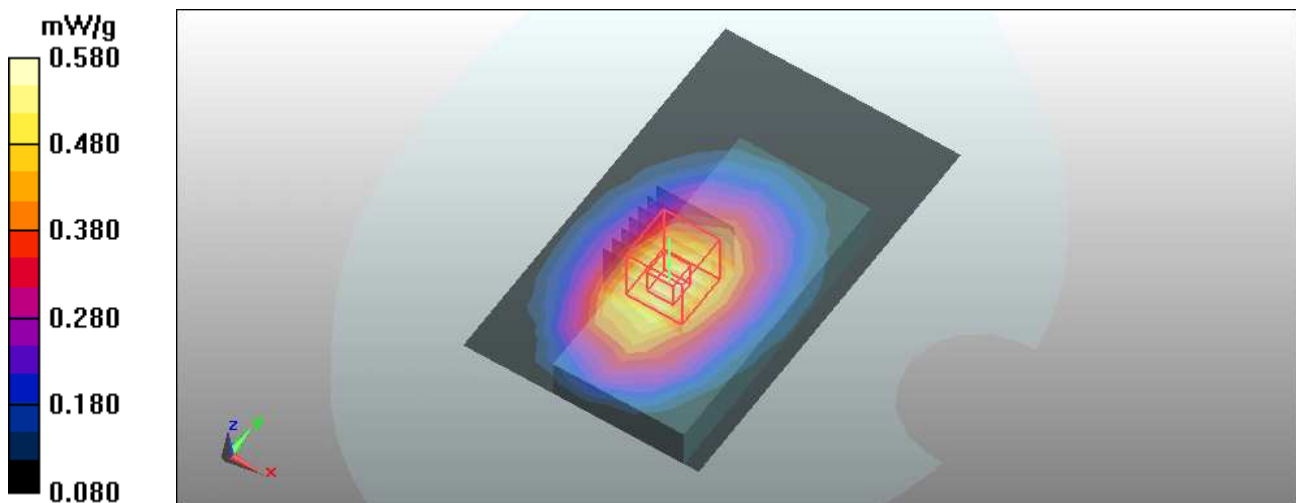
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 20 V/m; Power Drift = 0.174 dB

Peak SAR (extrapolated) = 0.707 W/kg

SAR(1 g) = **0.512 mW/g**; SAR(10 g) = **0.361 mW/g**

Maximum value of SAR (measured) = 0.580 mW/g



Date/Time: 2010/6/11 15:20:39

Test Laboratory: Bureau Veritas ADT

## M15-WCDMA 850 Body Bottom -Ch4182

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL850 Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.98 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**Mid Channel/Area Scan (7x11x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.715 mW/g

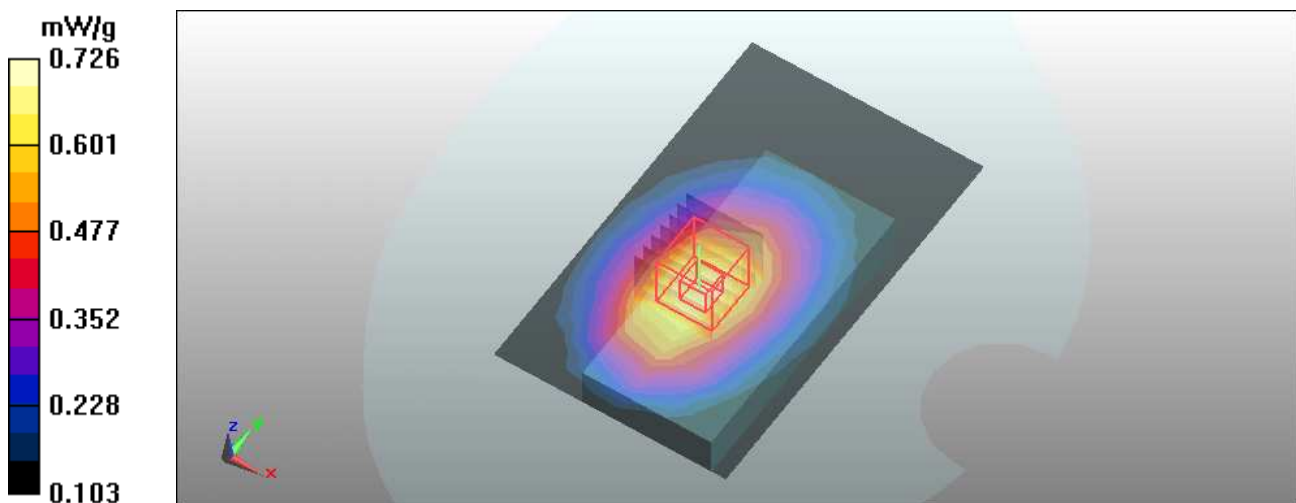
**Mid Channel/Zoom Scan (7x7x9)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=3\text{mm}$

Reference Value = 24.5 V/m; Power Drift = 0.115 dB

Peak SAR (extrapolated) = 0.886 W/kg

**SAR(1 g) = 0.647 mW/g; SAR(10 g) = 0.458 mW/g**

Maximum value of SAR (measured) = 0.726 mW/g



Date/Time: 2010/6/11 16:08:15

Test Laboratory: Bureau Veritas ADT

## M16-WCDMA 850 Body Bottom -Ch4233

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 846.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL850 Medium parameters used:  $f = 846.6 \text{ MHz}$ ;  $\sigma = 0.99 \text{ mho/m}$ ;  $\epsilon_r = 54.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.720 mW/g

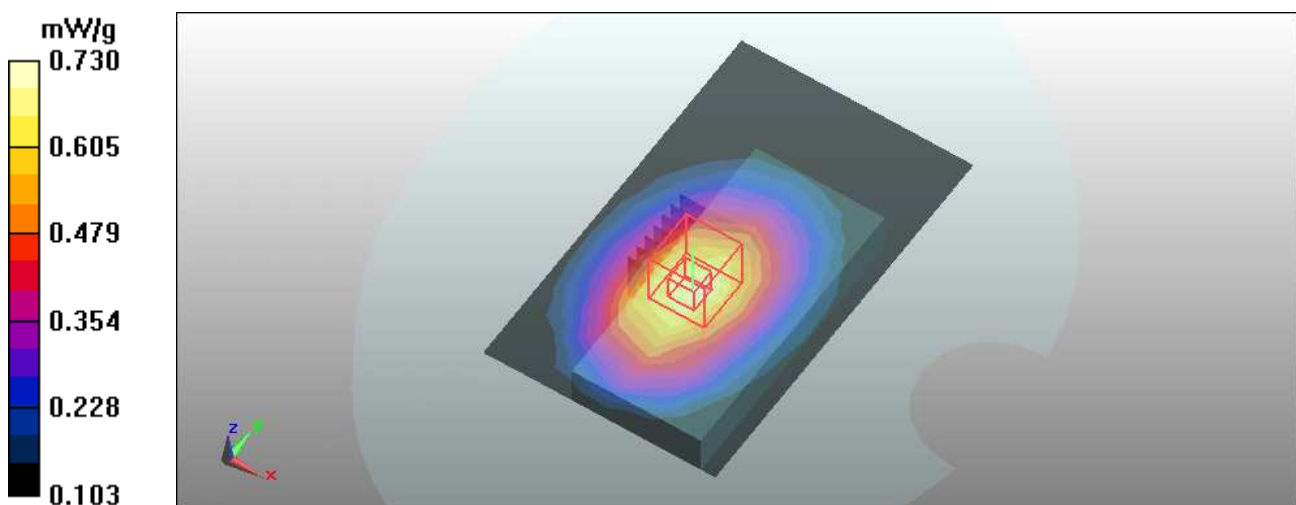
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 25.3 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 0.896 W/kg

SAR(1 g) = **0.649 mW/g**; SAR(10 g) = **0.458 mW/g**

Maximum value of SAR (measured) = 0.730 mW/g



Test Laboratory: Bureau Veritas ADT

## M17-HSPDA 850 Body Front -Ch4182

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

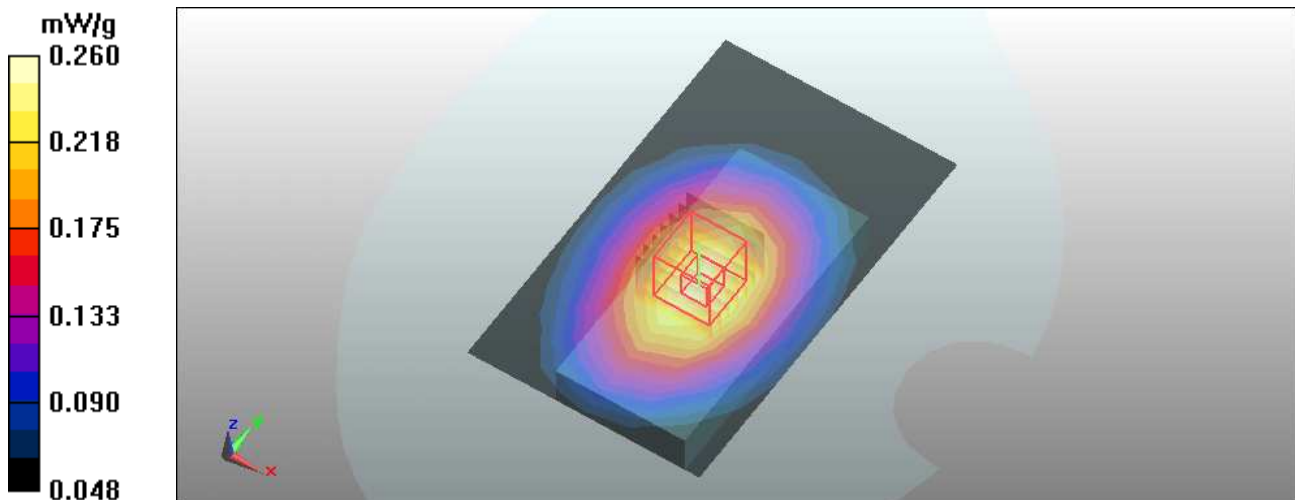
Medium: MSL850 Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.98 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section ; Separation distance : 15 mm (The Front side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**Mid Channel/Area Scan (7x11x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$   
Maximum value of SAR (measured) =  $0.257 \text{ mW/g}$

**Mid Channel/Zoom Scan (7x7x9)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=3\text{mm}$   
Reference Value =  $15.9 \text{ V/m}$ ; Power Drift =  $-0.020 \text{ dB}$   
Peak SAR (extrapolated) =  $0.305 \text{ W/kg}$   
**SAR(1 g) =  $0.233 \text{ mW/g}$ ; SAR(10 g) =  $0.173 \text{ mW/g}$**   
Maximum value of SAR (measured) =  $0.260 \text{ mW/g}$





Test Laboratory: Bureau Veritas ADT

## M18-HSDPA 850 Body Bottom-Ch4132

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 826.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL850 Medium parameters used:  $f = 826.4 \text{ MHz}$ ;  $\sigma = 0.98 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The Bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.490 mW/g

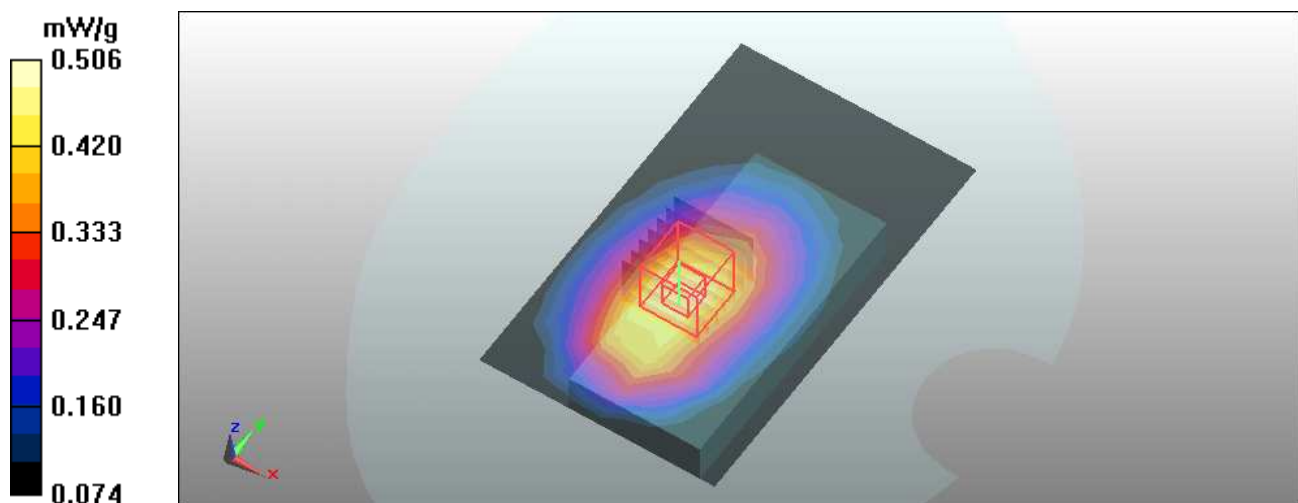
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 21 V/m; Power Drift = -0.055 dB

Peak SAR (extrapolated) = 0.622 W/kg

SAR(1 g) = 0.450 mW/g; SAR(10 g) = 0.318 mW/g

Maximum value of SAR (measured) = 0.506 mW/g





Test Laboratory: Bureau Veritas ADT

## M19-HSDPA 850 Body Bottom-Ch4182

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 836.4 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL850 Medium parameters used:  $f = 836.4 \text{ MHz}$ ;  $\sigma = 0.98 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The Bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.669 mW/g

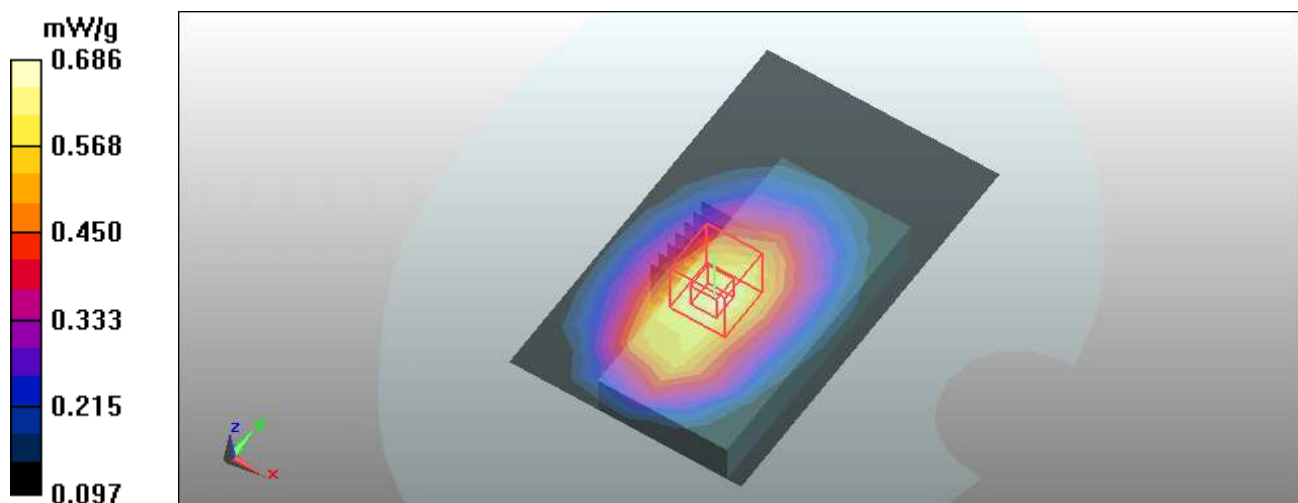
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value = 24.4 V/m; Power Drift = 0.015 dB

Peak SAR (extrapolated) = 0.844 W/kg

SAR(1 g) = 0.609 mW/g; SAR(10 g) = 0.431 mW/g

Maximum value of SAR (measured) = 0.686 mW/g



Test Laboratory: Bureau Veritas ADT

## M20-HSDPA 850 Body Bottom-Ch4233

### DUT: Phone ; Type: F-10B

Communication System: WCDMA 850 ; Frequency: 846.6 MHz ; Duty Cycle: 1:1 ; Modulation type: BPSK

Medium: MSL850 Medium parameters used:  $f = 846.6 \text{ MHz}$ ;  $\sigma = 0.99 \text{ mho/m}$ ;  $\epsilon_r = 54.1$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The Bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.633 mW/g

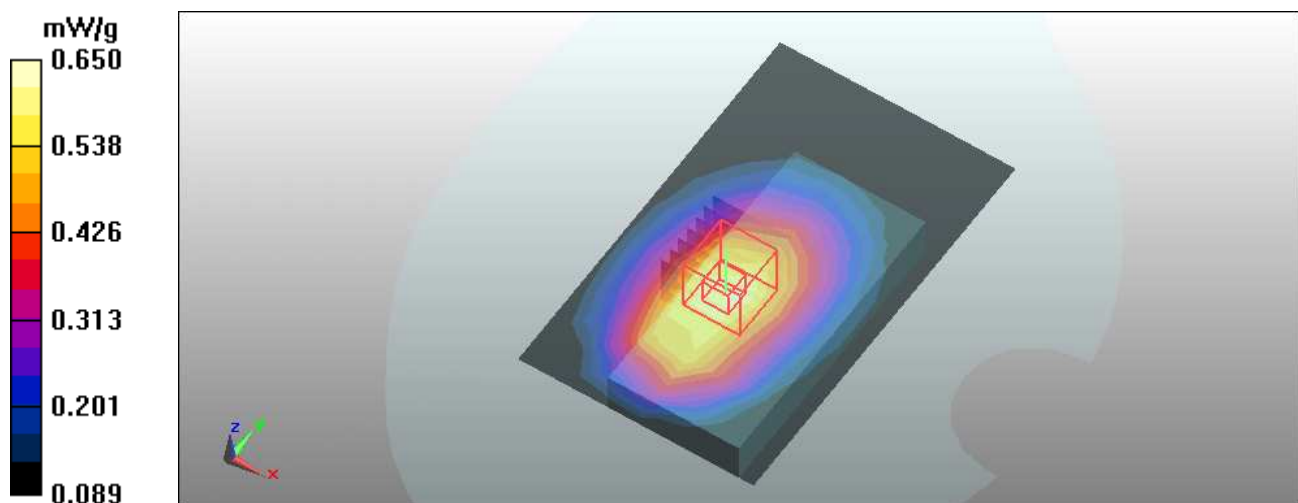
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 23.6 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 0.802 W/kg

SAR(1 g) = **0.578 mW/g**; SAR(10 g) = **0.408 mW/g**

Maximum value of SAR (measured) = 0.650 mW/g



Test Laboratory: Bureau Veritas ADT

## M21- Right head Cheek GSM1900 –Ch512

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1850.2 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.37 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x16x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) = 1.16 mW/g

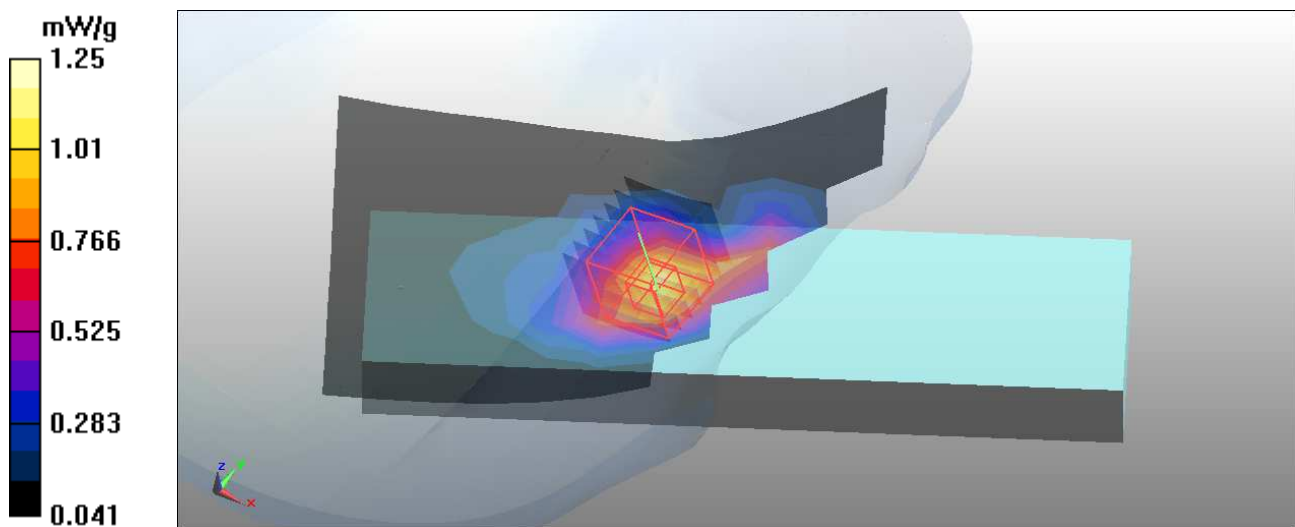
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value = 6.08 V/m; Power Drift = -0.123 dB

Peak SAR (extrapolated) = 1.54 W/kg

SAR(1 g) = **1.07 mW/g**; SAR(10 g) = **0.655 mW/g**

Maximum value of SAR (measured) = 1.25 mW/g



Test Laboratory: Bureau Veritas ADT

## M22- Right head Cheek GSM1900- Ch661

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.28 mW/g

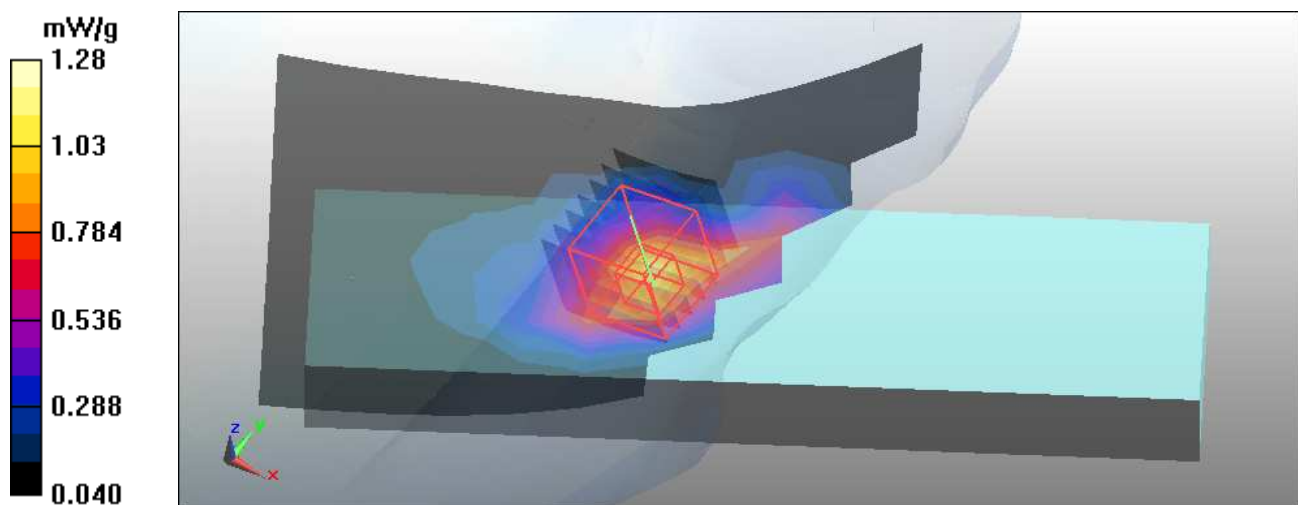
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 5.9 V/m; Power Drift = 0.180 dB

Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = **1.09** mW/g; SAR(10 g) = 0.663 mW/g

Maximum value of SAR (measured) = 1.28 mW/g



Test Laboratory: Bureau Veritas ADT

## M23-GSM1900 Right head Cheek -Ch810

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1909.8 \text{ MHz}$ ;  $\sigma = 1.44 \text{ mho/m}$ ;  $\epsilon_r = 40.6$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section ; DUT test position : Cheek ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.12 mW/g

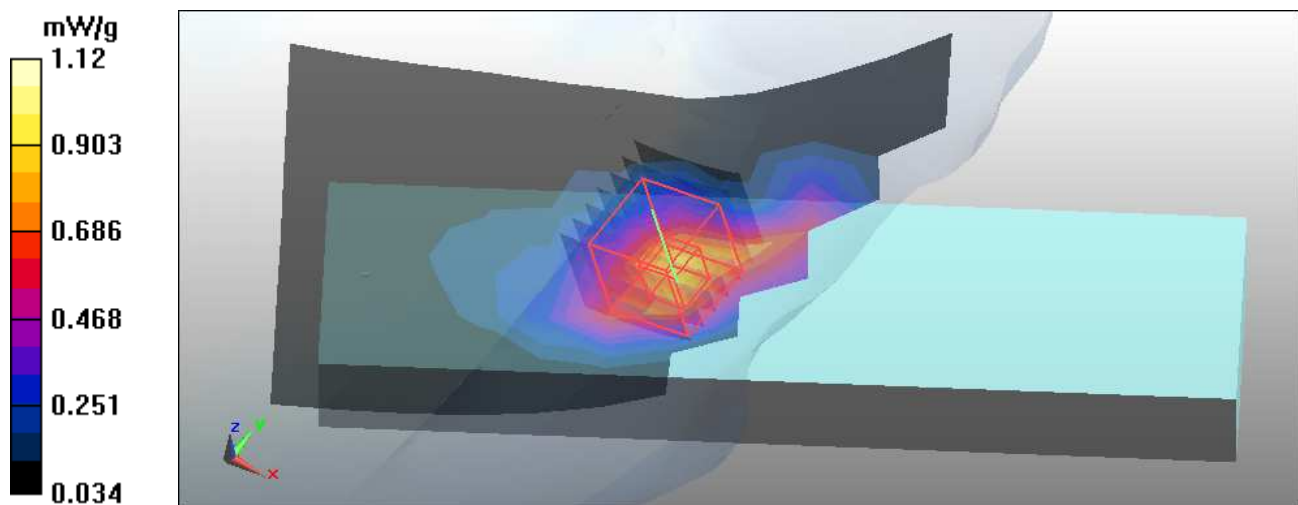
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 5.49 V/m; Power Drift = 0.147 dB

Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = **0.952 mW/g**; SAR(10 g) = 0.576 mW/g

Maximum value of SAR (measured) = 1.12 mW/g



Test Laboratory: Bureau Veritas ADT

## M24-GSM1900 Right head Tilt –Ch512

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1850.2 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.37 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.285 mW/g

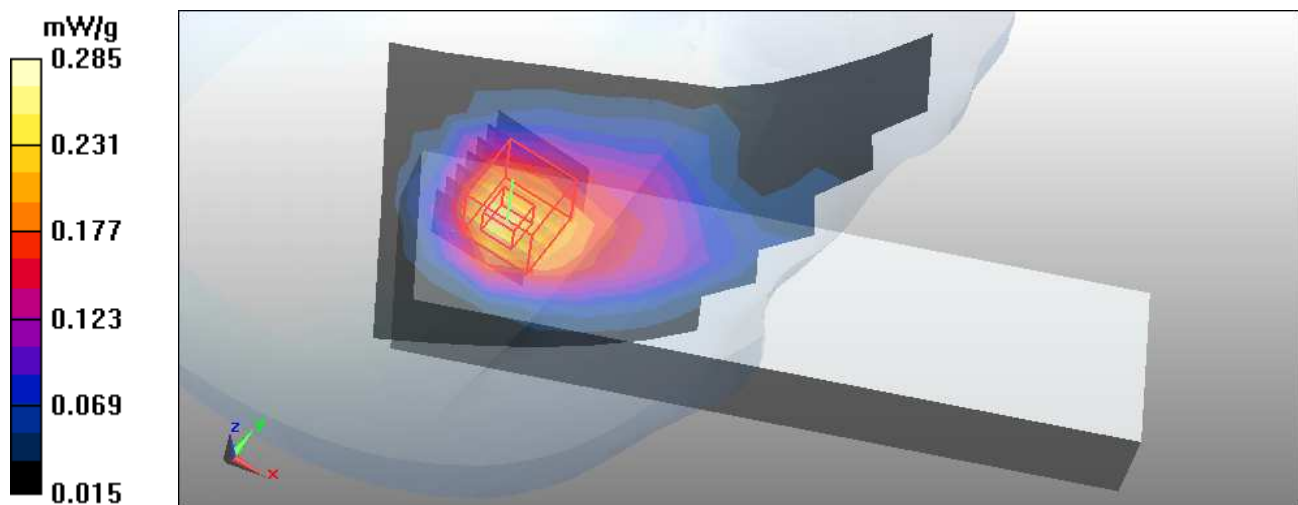
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 11.1 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 0.357 W/kg

SAR(1 g) = **0.242 mW/g**; SAR(10 g) = 0.154 mW/g

Maximum value of SAR (measured) = 0.285 mW/g



Test Laboratory: Bureau Veritas ADT

## M25-GSM1900 Right head Tilt-Ch661

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.301 mW/g

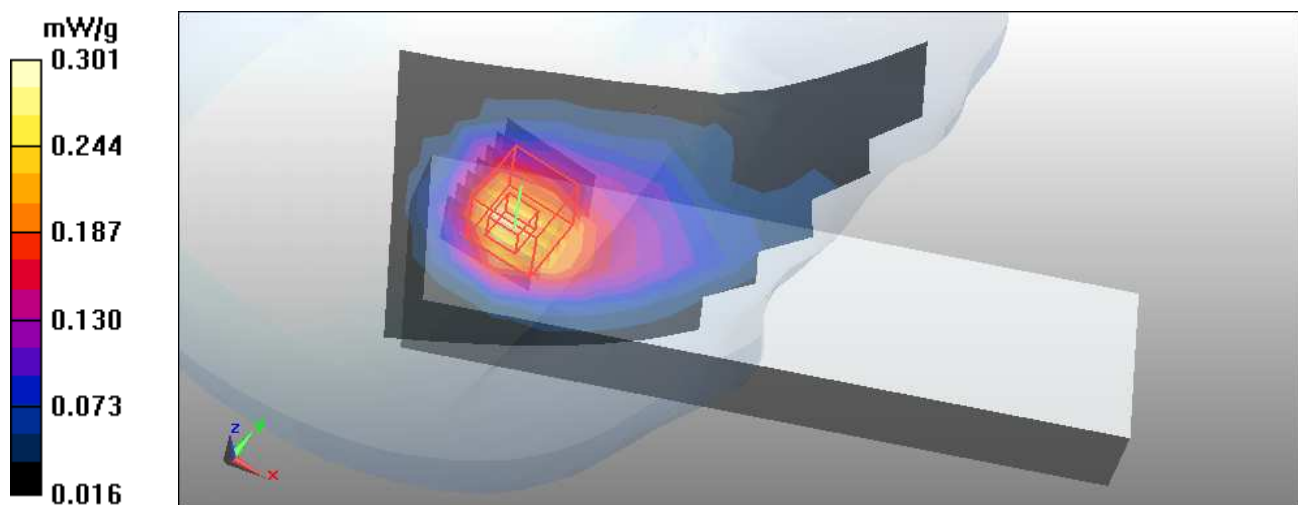
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 11.3 V/m; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 0.382 W/kg

SAR(1 g) = **0.256** mW/g; SAR(10 g) = 0.161 mW/g

Maximum value of SAR (measured) = 0.301 mW/g





Test Laboratory: Bureau Veritas ADT

## M26-GSM1900 Right head Tilt –Ch810

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1909.8 \text{ MHz}$ ;  $\sigma = 1.44 \text{ mho/m}$ ;  $\epsilon_r = 40.6$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section ; DUT test position : Tilt ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x16x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.285 mW/g

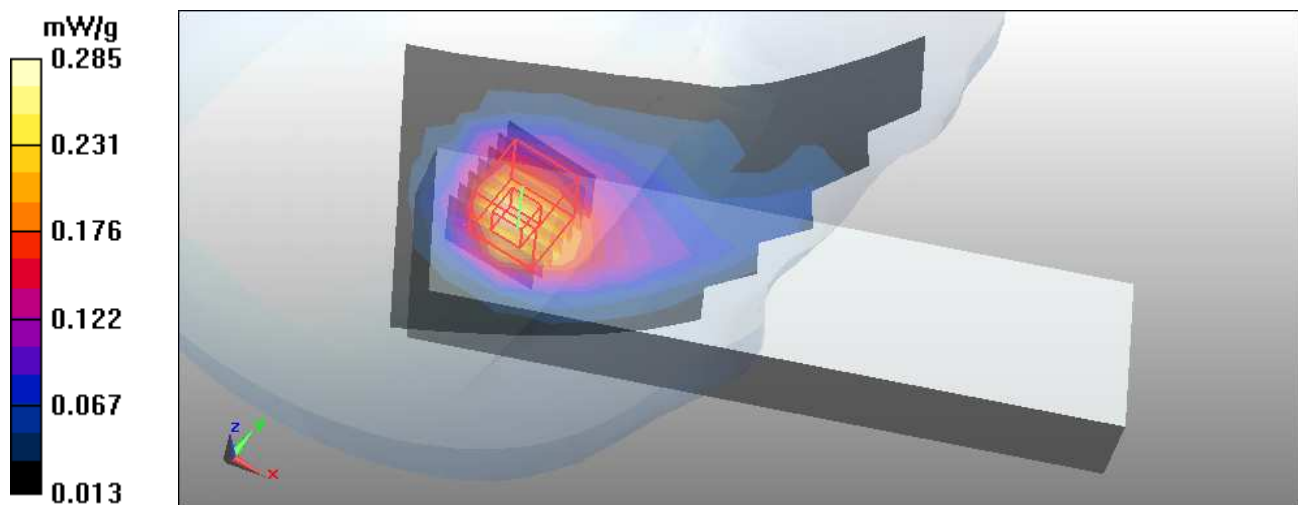
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value = 11.1 V/m; Power Drift = -0.088 dB

Peak SAR (extrapolated) = 0.371 W/kg

SAR(1 g) = **0.244 mW/g**; SAR(10 g) = 0.151 mW/g

Maximum value of SAR (measured) = 0.285 mW/g





Test Laboratory: Bureau Veritas ADT

## M27-GSM1900 Cheek Left head-Ch512

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1850.2 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1850.2$  MHz;  $\sigma = 1.37$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.4 mW/g

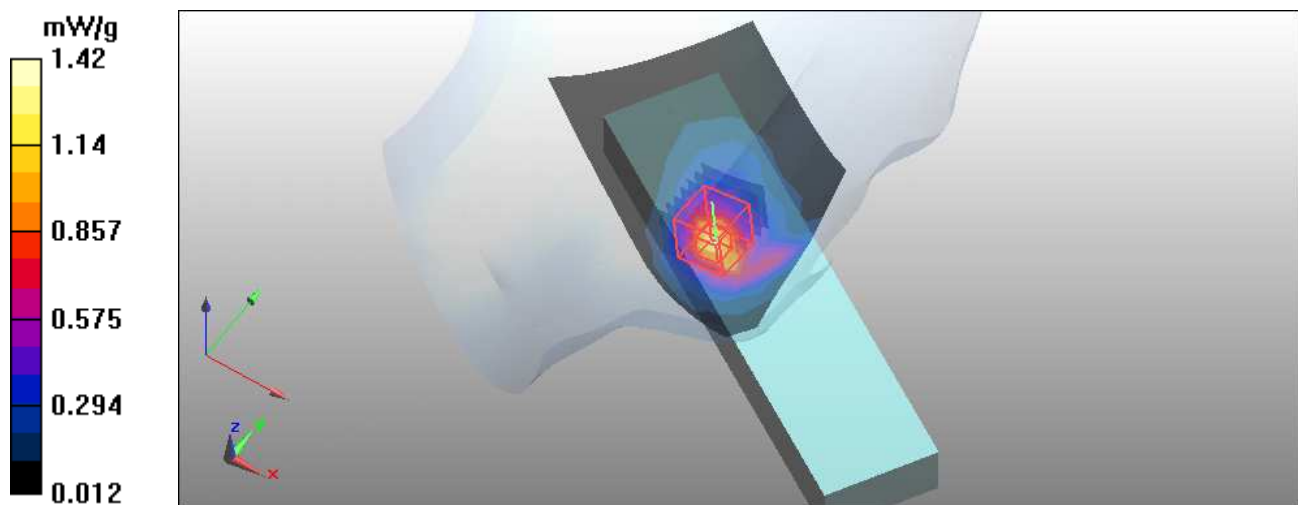
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 5.02 V/m; Power Drift = 0.150 dB

Peak SAR (extrapolated) = 1.75 W/kg

SAR(1 g) = **1.19** mW/g; SAR(10 g) = 0.681 mW/g

Maximum value of SAR (measured) = 1.42 mW/g



Date/Time: 2010/6/12 06:56:57

Test Laboratory: Bureau Veritas ADT

## M28-GSM1900 Cheek Left head-Ch661

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

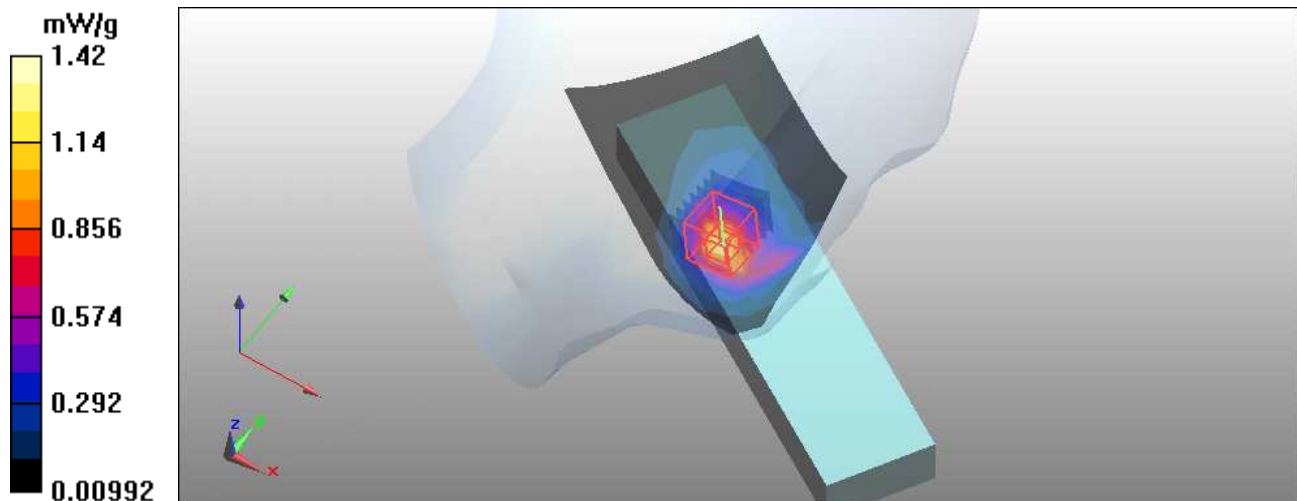
Maximum value of SAR (measured) = 1.42 mW/g

### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 5.1 V/m; Power Drift = -0.057 dB

Peak SAR (extrapolated) = 1.77 W/kg

SAR(1 g) = **1.19** mW/g; SAR(10 g) = 0.684 mW/g



Test Laboratory: Bureau Veritas ADT

## M29-GSM1900 Left head Cheek -Ch810

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1909.8 \text{ MHz}$ ;  $\sigma = 1.44 \text{ mho/m}$ ;  $\epsilon_r = 40.6$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section ; DUT test position : Cheek ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x16x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) =  $1.34 \text{ mW/g}$

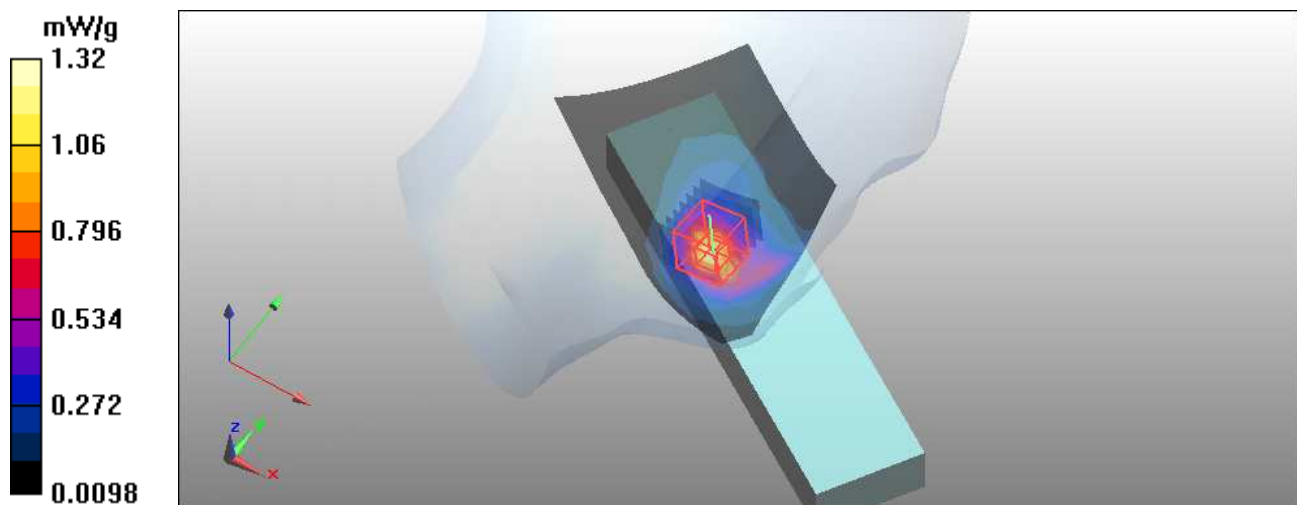
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value =  $4.98 \text{ V/m}$ ; Power Drift =  $0.124 \text{ dB}$

Peak SAR (extrapolated) =  $1.64 \text{ W/kg}$

SAR(1 g) =  **$1.12 \text{ mW/g}$** ; SAR(10 g) =  **$0.638 \text{ mW/g}$**

Maximum value of SAR (measured) =  $1.32 \text{ mW/g}$



Test Laboratory: Bureau Veritas ADT

## M30-GSM1900 Left head Tilt –Ch512

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1850.2 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.37 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.257 mW/g

### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 9.76 V/m; Power Drift = -0.100 dB

Peak SAR (extrapolated) = 0.333 W/kg

SAR(1 g) = **0.237 mW/g**; SAR(10 g) = 0.158 mW/g

Maximum value of SAR (measured) = 0.272 mW/g



Test Laboratory: Bureau Veritas ADT

## M31-GSM1900 Left head Tilt -Ch661

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 40.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**GSM1900/Mid Channel/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.258 mW/g

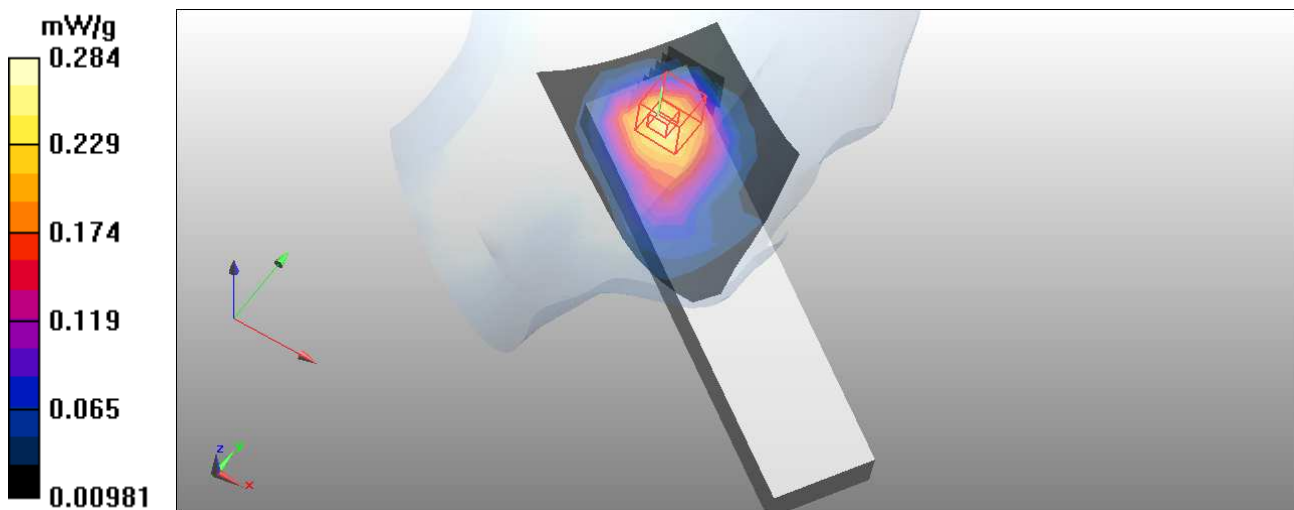
**GSM1900/Mid Channel/Zoom Scan (7x7x9)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 9.98 V/m; Power Drift = -0.080 dB

Peak SAR (extrapolated) = 0.361 W/kg

**SAR(1 g) = 0.246 mW/g; SAR(10 g) = 0.160 mW/g**

Maximum value of SAR (measured) = 0.284 mW/g



Test Laboratory: Bureau Veritas ADT

## M32-GSM1900 Left head Tilt -Ch810

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:8.3

Medium: HSL1900 Medium parameters used:  $f = 1909.8 \text{ MHz}$ ;  $\sigma = 1.44 \text{ mho/m}$ ;  $\epsilon_r = 40.6$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section ; DUT test position : Tilt ; Modulation type: GMSK

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x16x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.248 mW/g

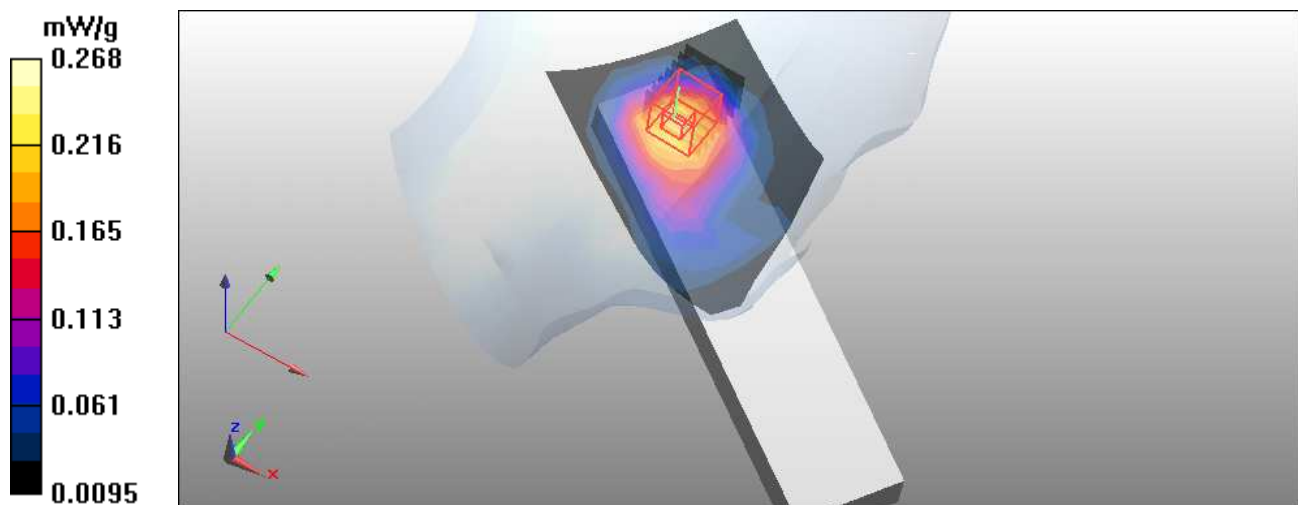
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 9.75 V/m; Power Drift = -0.058 dB

Peak SAR (extrapolated) = 0.336 W/kg

SAR(1 g) = **0.229 mW/g**; SAR(10 g) = 0.147 mW/g

Maximum value of SAR (measured) = 0.268 mW/g



Test Laboratory: Bureau Veritas ADT

## M33-GSM1900 Body Front-Ch661

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type:GMSK

Medium: MSL1800 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.54 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section ; Separation distance : 15 mm (The Front side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.101 mW/g

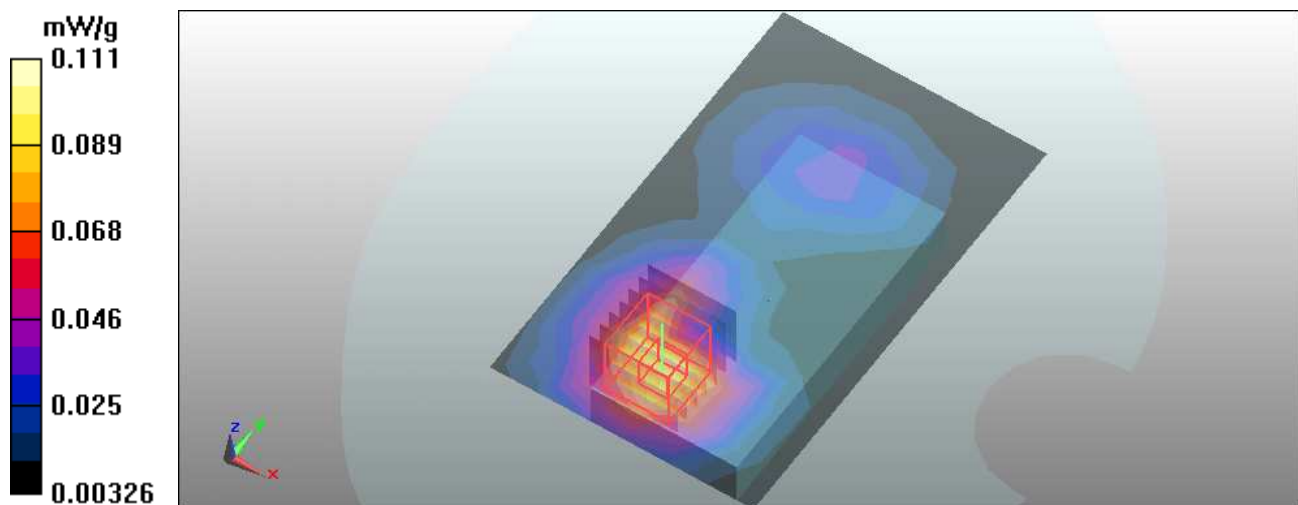
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 2.73 V/m; Power Drift = 0.115 dB

Peak SAR (extrapolated) = 0.145 W/kg

SAR(1 g) = **0.092 mW/g**; SAR(10 g) = **0.055 mW/g**

Maximum value of SAR (measured) = 0.111 mW/g



Test Laboratory: Bureau Veritas ADT

## M34-GSM1900 Body Bottom-Ch512

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1850.2 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK

Medium: MSL1800 Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.5 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The Bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.255 mW/g

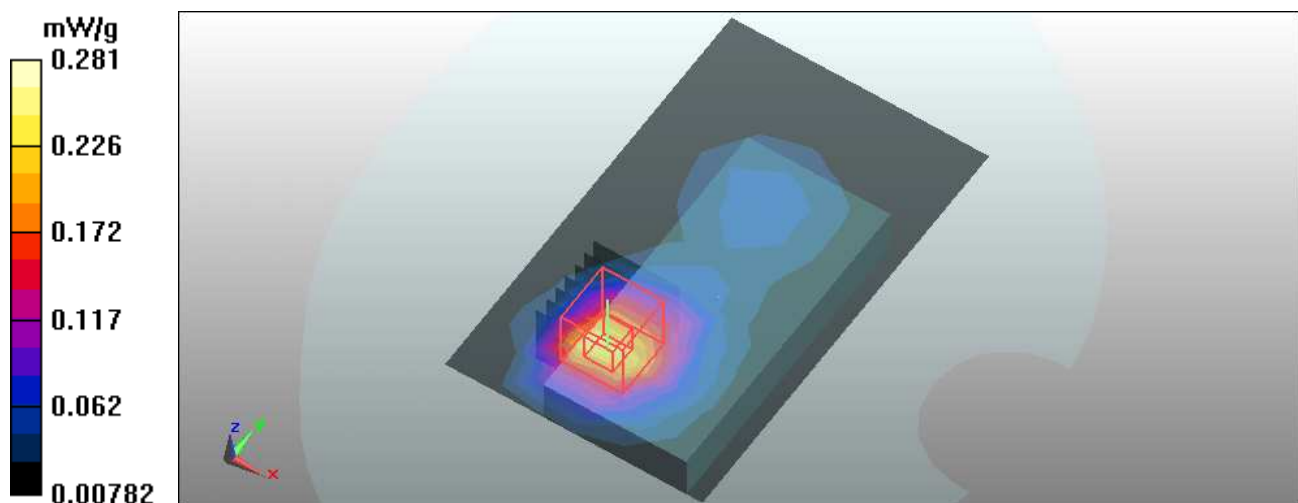
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 5.27 V/m; Power Drift = -0.171 dB

Peak SAR (extrapolated) = 0.370 W/kg

SAR(1 g) = **0.230 mW/g**; SAR(10 g) = **0.132 mW/g**

Maximum value of SAR (measured) = 0.281 mW/g





Test Laboratory: Bureau Veritas ADT

## M35-GSM1900 Body Bottom-Ch661

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK

Medium: MSL1800 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.54 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The Bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.361 mW/g

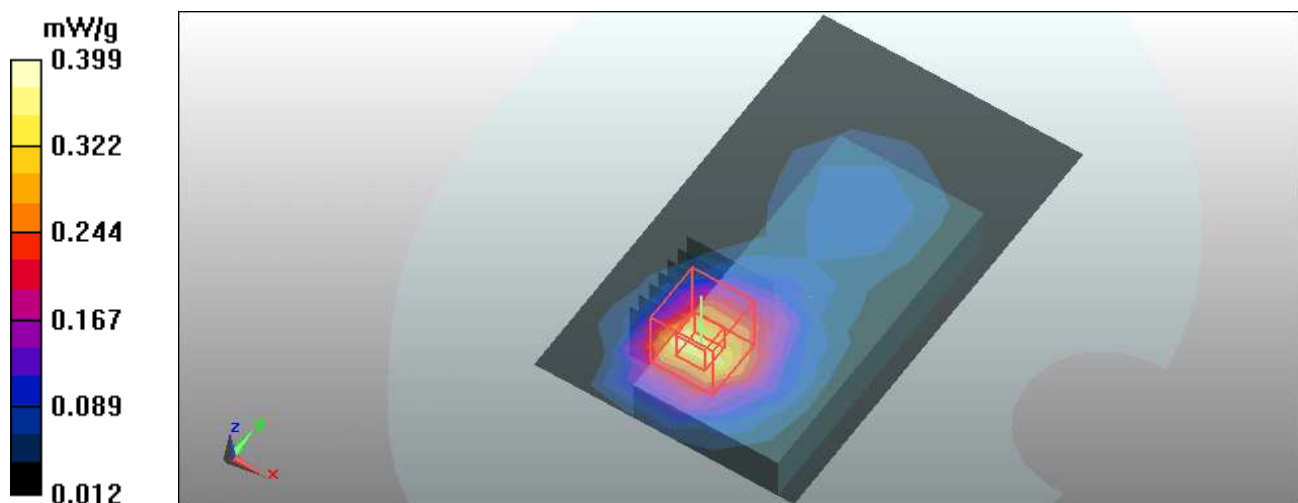
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value = 6.58 V/m; Power Drift = -0.091 dB

Peak SAR (extrapolated) = 0.528 W/kg

SAR(1 g) = 0.330 mW/g; SAR(10 g) = 0.191 mW/g

Maximum value of SAR (measured) = 0.399 mW/g



Test Laboratory: Bureau Veritas ADT

## M36-GSM1900 Body Bottom-Ch810

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK

Medium: MSL1800 Medium parameters used:  $f = 1909.8 \text{ MHz}$ ;  $\sigma = 1.58 \text{ mho/m}$ ;  $\epsilon_r = 53.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The Bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$ , $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.459 mW/g

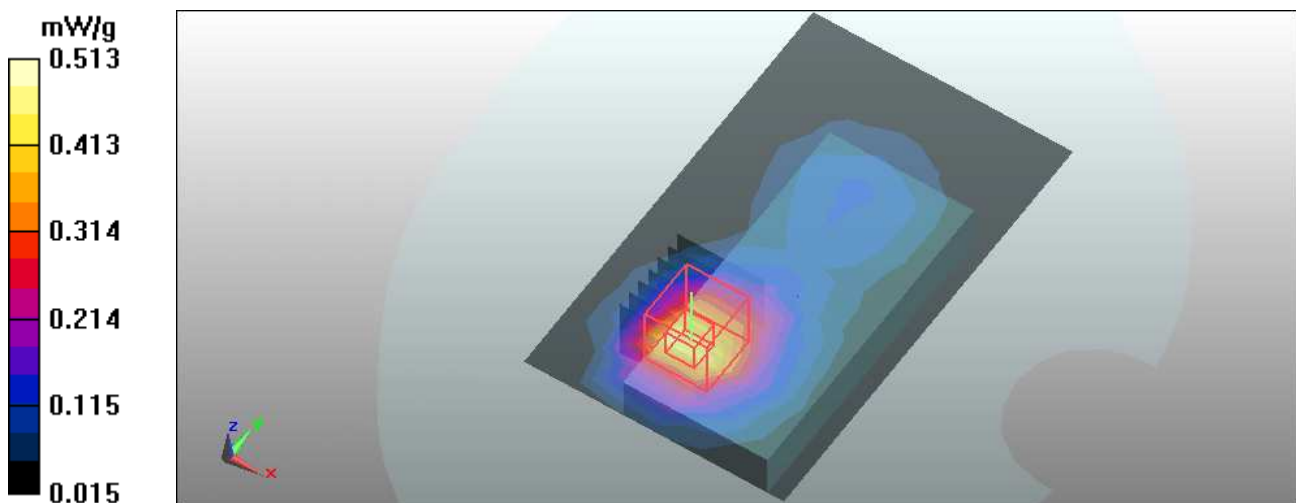
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: $dx=5\text{mm}$ , $dy=5\text{mm}$ , $dz=3\text{mm}$

Reference Value = 7.72 V/m; Power Drift = -0.043 dB

Peak SAR (extrapolated) = 0.683 W/kg

SAR(1 g) = **0.424 mW/g**; SAR(10 g) = 0.246 mW/g

Maximum value of SAR (measured) = 0.513 mW/g



Test Laboratory: Bureau Veritas ADT

## M37-GPRS1900 Body Front TS1-Ch661

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK

Medium: MSL1900 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.54 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$   
Phantom section: Flat Section ; Separation distance : 15 mm (The Front side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Mid Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.102 mW/g

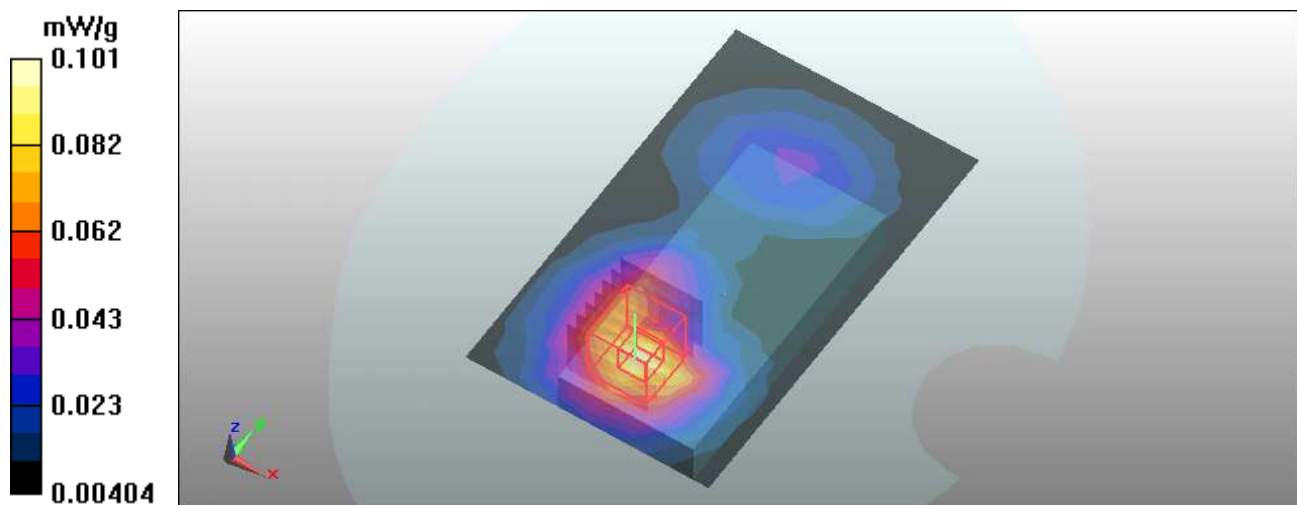
### Mid Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 3.07 V/m; Power Drift = 0.113 dB

Peak SAR (extrapolated) = 0.132 W/kg

SAR(1 g) = **0.085 mW/g**; SAR(10 g) = **0.051 mW/g**

Maximum value of SAR (measured) = 0.101 mW/g



Test Laboratory: Bureau Veritas ADT

## M38-GPRS1900 Body Bottom TS1-Ch512

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1850.2 MHz ; Duty Cycle: 1:8.3 ; Modulation type:GMSK

Medium: MSL1800 Medium parameters used:  $f = 1850.2 \text{ MHz}$ ;  $\sigma = 1.5 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Low Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.232 mW/g

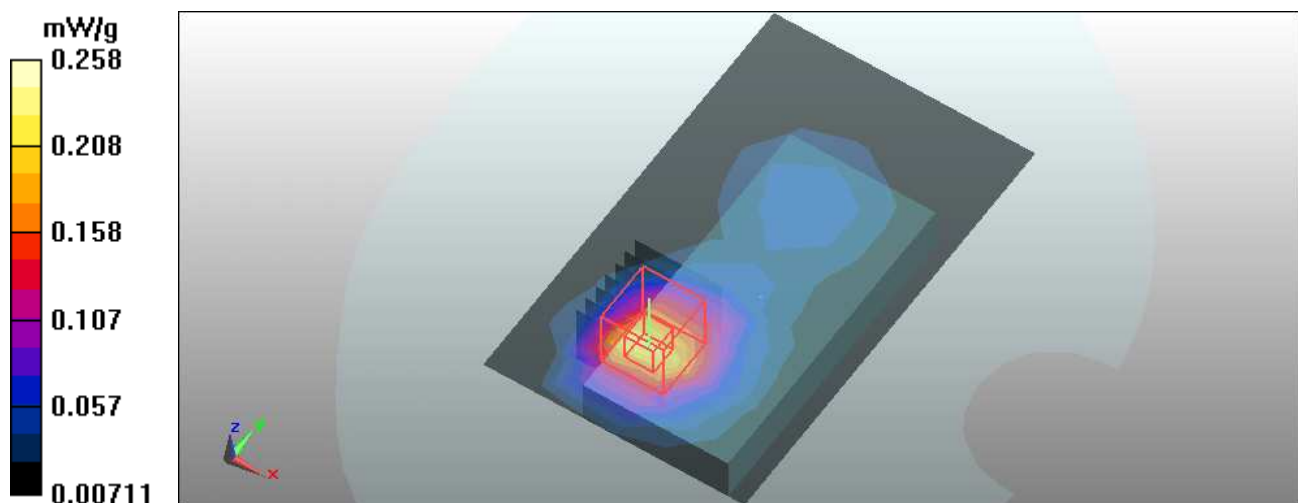
### Low Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 5.06 V/m; Power Drift = -0.044 dB

Peak SAR (extrapolated) = 0.337 W/kg

SAR(1 g) = **0.212 mW/g**; SAR(10 g) = **0.122 mW/g**

Maximum value of SAR (measured) = 0.258 mW/g



Test Laboratory: Bureau Veritas ADT

### M39-GPRS1900 Body Bottom TS1-Ch661

**DUT: Phone ; Type: F-10B**

Communication System: GSM 1900 ; Frequency: 1880 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK

Medium: MSL1800 Medium parameters used:  $f = 1880 \text{ MHz}$ ;  $\sigma = 1.54 \text{ mho/m}$ ;  $\epsilon_r = 53.4$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The Front side of the EUT to the Phantom)

DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**Mid Channel/Area Scan (7x11x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.338 mW/g

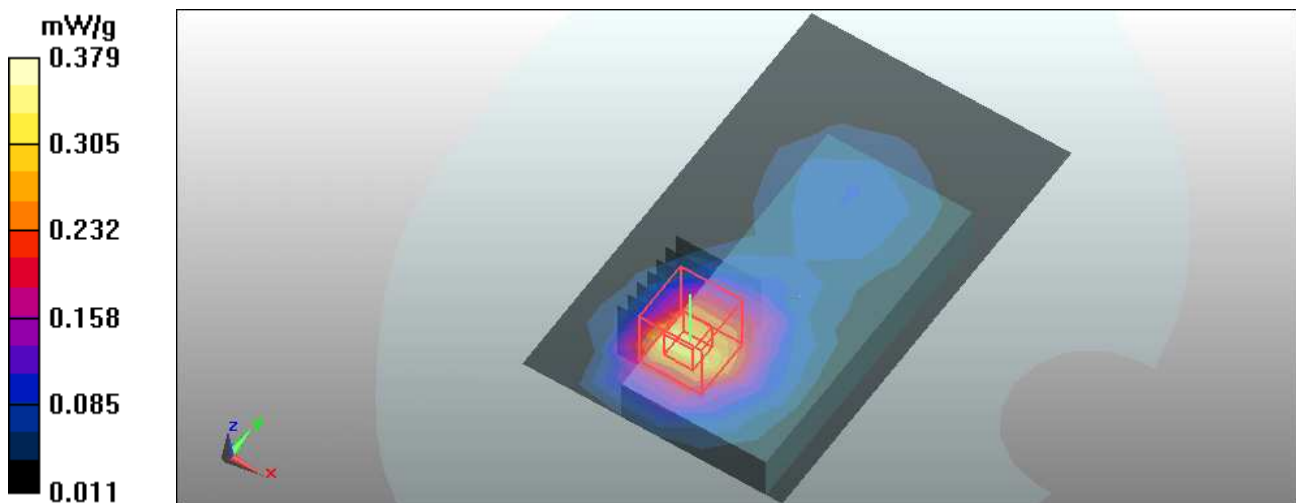
**Mid Channel/Zoom Scan (7x7x9)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=3\text{mm}$

Reference Value = 6.38 V/m; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 0.503 W/kg

**SAR(1 g) = 0.312 mW/g; SAR(10 g) = 0.180 mW/g**

Maximum value of SAR (measured) = 0.379 mW/g



Test Laboratory: Bureau Veritas ADT

## M40- GPRS1900 Body Bottom TS1-Ch810

### DUT: Phone ; Type: F-10B

Communication System: GSM 1900 ; Frequency: 1909.8 MHz ; Duty Cycle: 1:8.3 ; Modulation type: GMSK

Medium: MSL1800 Medium parameters used:  $f = 1909.8 \text{ MHz}$ ;  $\sigma = 1.58 \text{ mho/m}$ ;  $\epsilon_r = 53.2$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Separation distance : 15 mm (The bottom side of the EUT to the Phantom)

### DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

### Hight Channel/Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.439 mW/g

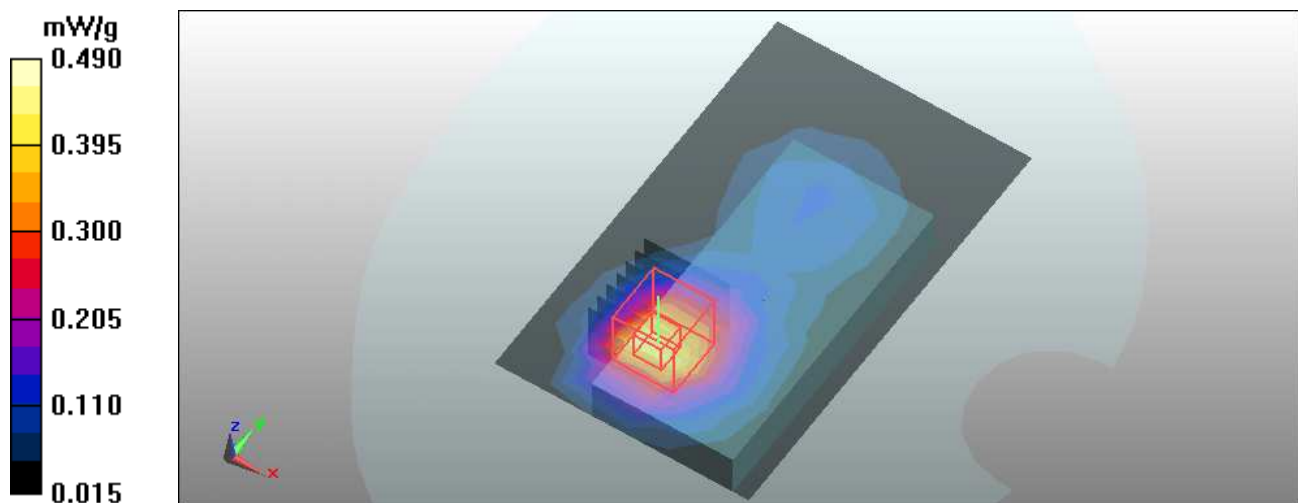
### Hight Channel/Zoom Scan (7x7x9)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=3mm

Reference Value = 7.72 V/m; Power Drift = -0.043 dB

Peak SAR (extrapolated) = 0.653 W/kg

SAR(1 g) = **0.405 mW/g**; SAR(10 g) = 0.235 mW/g

Maximum value of SAR (measured) = 0.490 mW/g



Test Laboratory: Bureau Veritas ADT

## System Performance Check-HSL835

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

Communication System: CW ; Frequency: 835 MHz; Duty Cycle: 1:1; Modulation type: CW

Medium: HSL850; Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.87 \text{ mho/m}$ ;  $\epsilon_r = 42.9$ ;  $\rho = 1000 \text{ kg/m}^3$  ;  
Liquid level : 151 mm

Phantom section: Flat Section ; Separation distance : 15 mm (The feet point of the dipole to the Phantom) Air temp. : 23 degrees ; Liquid temp. : 22.5 degrees

DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.8, 9.8, 9.8); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**d=15mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Area Scan (7x9x1):** Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.32 mW/g

**d=15mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0:**

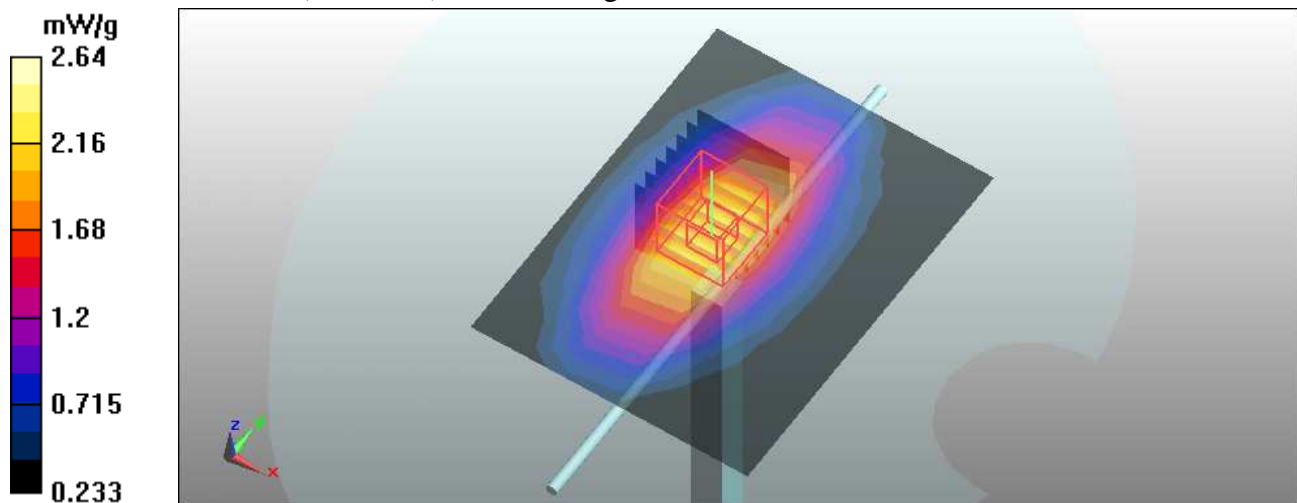
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.2 V/m; Power Drift = -0.081 dB

Peak SAR (extrapolated) = 3.41 W/kg

**SAR(1 g) = 2.26 mW/g; SAR(10 g) = 1.47 mW/g**

Maximum value of SAR (measured) = 2.64 mW/g





Test Laboratory: Bureau Veritas ADT

## System Performance Check-MSL835

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

Communication System: CW ; Frequency: 835 MHz; Duty Cycle: 1:1; Modulation type: CW

Medium: MSL850; Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.97 \text{ mho/m}$ ;  $\epsilon_r = 54.3$ ;  $\rho = 1000 \text{ kg/m}^3$  ;  
Liquid level : 150 mm

Phantom section: Flat Section ; Separation distance : 15 mm (The feet point of the dipole to the Phantom) Air temp. : 23.1degrees ; Liquid temp. : 22.5 degrees

DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(9.83, 9.83, 9.83); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**d=15mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Area Scan (7x9x1):** Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.6 mW/g

**d=15mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0:**

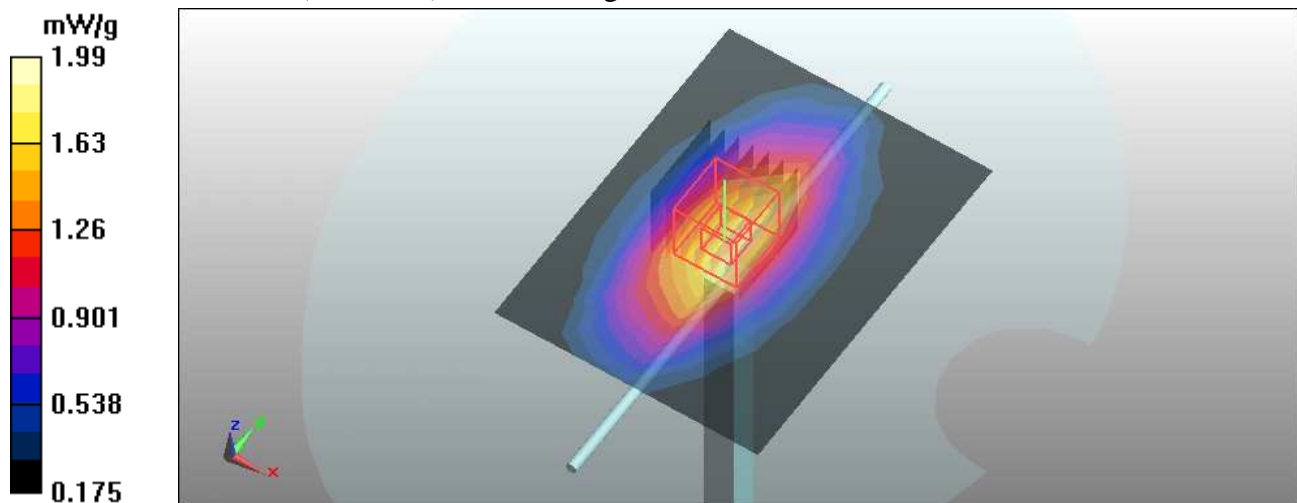
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.2 V/m; Power Drift = 0.068 dB

Peak SAR (extrapolated) = 3.56 W/kg

**SAR(1 g) = 2.36 mW/g; SAR(10 g) = 1.54 mW/g**

Maximum value of SAR (measured) = 2.77 mW/g





Test Laboratory: Bureau Veritas ADT

## System Performance Check-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:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.43 \text{ mho/m}$ ;  $\epsilon_r = 40.7$ ;  $\rho = 1000 \text{ kg/m}^3$  ;  
Liquid level : 152 mm

Phantom section: Flat Section ; Separation distance : 10 mm (The feet point of the dipole to the Phantom) Air temp. : 23.2 degrees ; Liquid temp. : 22.9 degrees

DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.2, 8.2, 8.2); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**d=10mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Area Scan (7x7x1):** Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (measured) = 13.1 mW/g

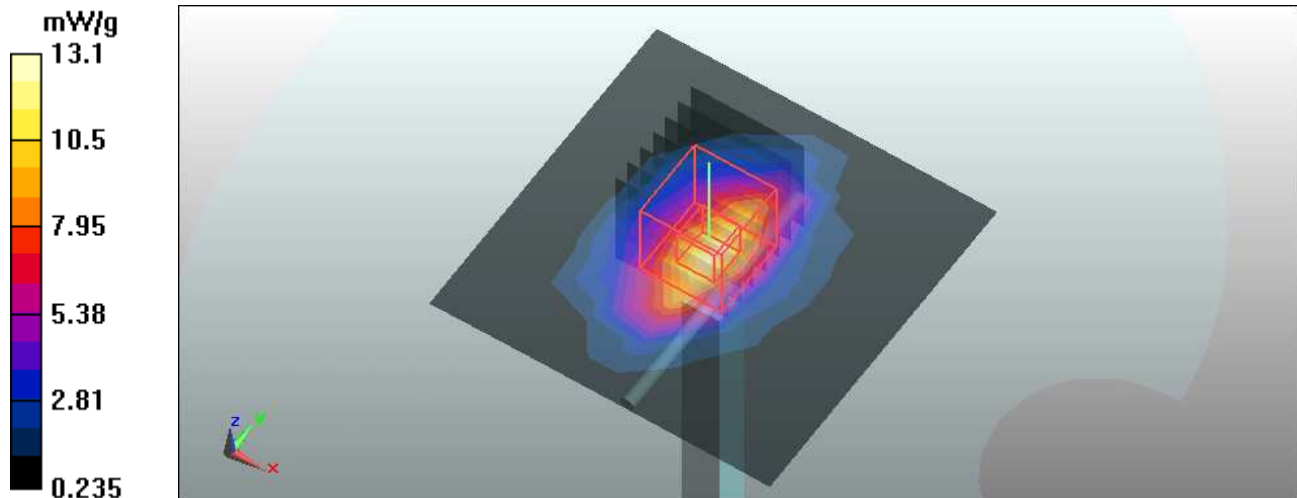
**d=10mm, Pin=250 mW, dist=3.0mm (EX-Probe)/Zoom Scan (7x7x7)/Cube 0:**

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.5 V/m; Power Drift = -0.151 dB

Peak SAR (extrapolated) = 19.2 W/kg

SAR(1 g) = **10.4 mW/g**; SAR(10 g) = 5.43 mW/g



Test Laboratory: Bureau Veritas ADT

## System Validation Check-MSL 1900MHz

**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;  $\sigma = 1.57$  mho/m;  $\epsilon_r = 53.3$ ;  $\rho = 1000$  kg/m<sup>3</sup> ; Liquid level : 151 mm

Phantom section: Flat Section ; Separation distance : 10 mm (The feet point of the dipole to the Phantom) Air temp. : 23.2 degrees ; Liquid temp. : 23 degrees

DASY5 Configuration:

- Probe: EX3DV3 - SN3504; ConvF(8.52, 8.52, 8.52); Calibrated: 2010/1/26
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn510; Calibrated: 2009/12/16
- Phantom: SAM with CRP; Type: SAM; Serial: TP-1485
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

**Configuration/d=10mm, Pin=250mW/Area Scan (7x7x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 8.36 mW/g

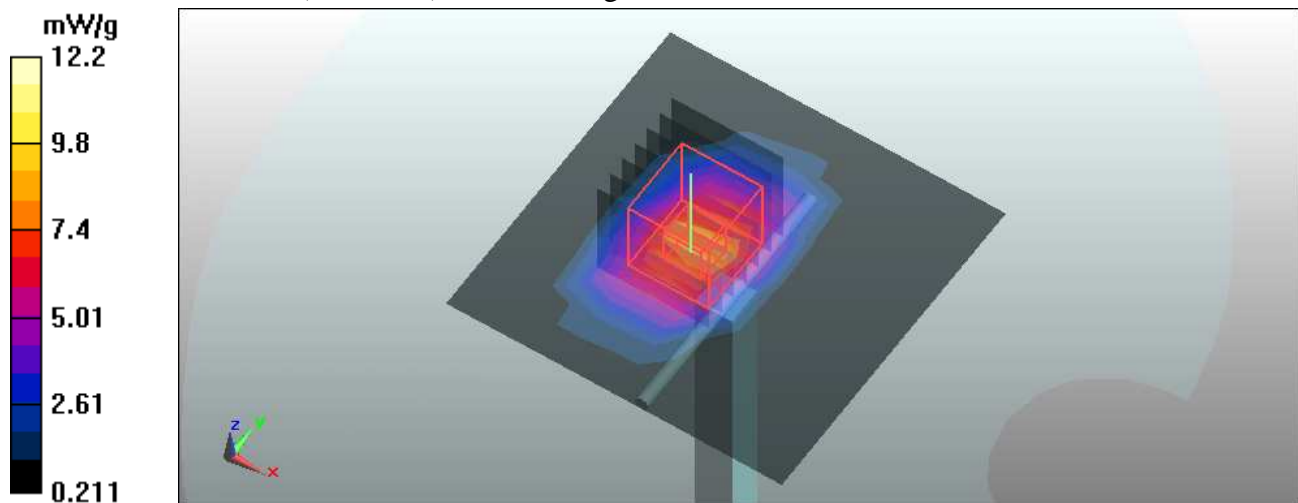
**Configuration/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 73.4 V/m; Power Drift = 0.157 dB

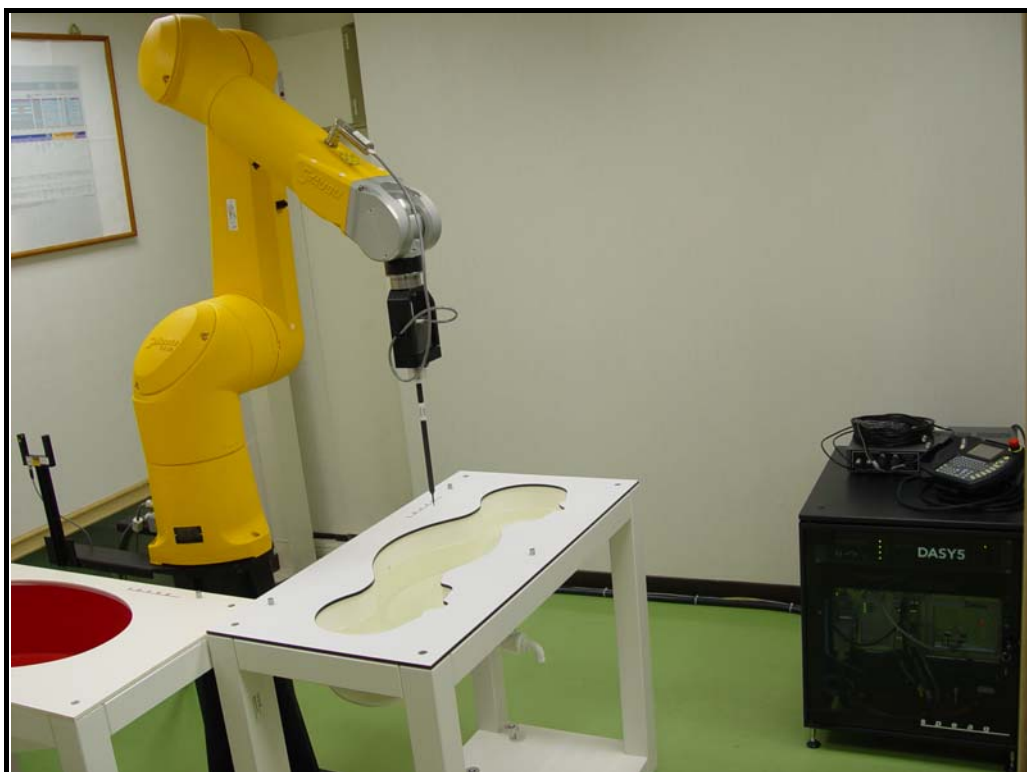
Peak SAR (extrapolated) = 17.7 W/kg

**SAR(1 g) = 9.55 mW/g; SAR(10 g) = 4.93 mW/g**

Maximum value of SAR (measured) = 12.2 mW/g



## APPENDIX B: BV ADT SAR MEASUREMENT SYSTEM



## APPENDIX C: PHOTOGRAPHS OF SYSTEM VALIDATION

