SAR Test Report

Product Name ： GSM Mobile Phone
Model No. ： HUAWEI G6210

Applicant ： HUAWEI TECHNOLOGIES CO., LTD
Address ： Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129

Date of Receipt ： 2011/02/17
Issued Date ： 2011/03/04
Report No. ： 112215R-HPUSP10V01
Report Version ： V1.0

Test Report Certification

Issued Date: 2011/03/04
Report No.:112215R-HPUSP10V01

Product Name	:	GSM Mobile Phone
Applicant	:	HUAWEI TECHNOLOGIES CO., LTD
Address	:	Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129
Manufacturer	:	HUAWEI TECHNOLOGIES CO., LTD
Trade Name	:	HUAWEI
FCC ID	:	QISG6210
Model No.	:	HUAWEI G6210
Applicable Standard	:	FCC Oet65 Supplement C June 2001 IEEE Std. 1528-2003 47CFR § 2.1093
Test Result	:	Max. SAR Measurement (1g) GSM 850MHz: 1.45 W/kg PCS 1900MHz: 0.550 W/kg BT: 0.048 W/kg

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of Quie Tek Corporation.

Documented By	:	Anny Chou (Adm. Assistant / Anny Chou)
Tested By	:	Jung Chang (Engineer / Jung Chang)
Approved By	:	 (Manager /Vincent Lin)

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1. General Information

1.1 EUT Description

Product Name	GSM Mobile Phone
Model No.	HUAWEI G6210
FCC ID	QISG6210
TX Frequency	GSM 835：824 ~ 849MHz PCS 1900：1850 ~ 1910MHz BT: 2400MHz ~ 2480MHz
RX Frequency	GSM 835：869 ~ 894MHz PCS 1900：1930 ~ 1990MHz BT: 2400MHz ~ 2480MHz
Antenna Type	Fixed
Device Category	Portable
RF Exposure Environment	Uncontrolled
Max. Output Power (Conducted)	GSM 850: 32.16 dBm PCS 1900: 29.75 dBm BT: 7.88 dBm

1.2 Test Environment

Ambient conditions in the laboratory:

Test Date: Feb 21, 2011

Items	Required	Actual
Temperature (°C)	18-25	20.1±2
Humidity (%RH)	30-70	57

Ambient conditions in the laboratory:

Test Date: Feb 22, 2011

Items	Required	Actual
Temperature (°C)	18-25	20.3±2
Humidity (%RH)	30-70	56

Ambient conditions in the laboratory:

Test Date: Feb 23, 2011

Items	Required	Actual
Temperature (°C)	18-25	20.2±2
Humidity (%RH)	30-70	56

Ambient conditions in the laboratory:

Test Date: Mar 04, 2011

Items	Required	Actual
Temperature (°C)	18-25	20.0±2
Humidity (%RH)	30-70	57

Site Description:

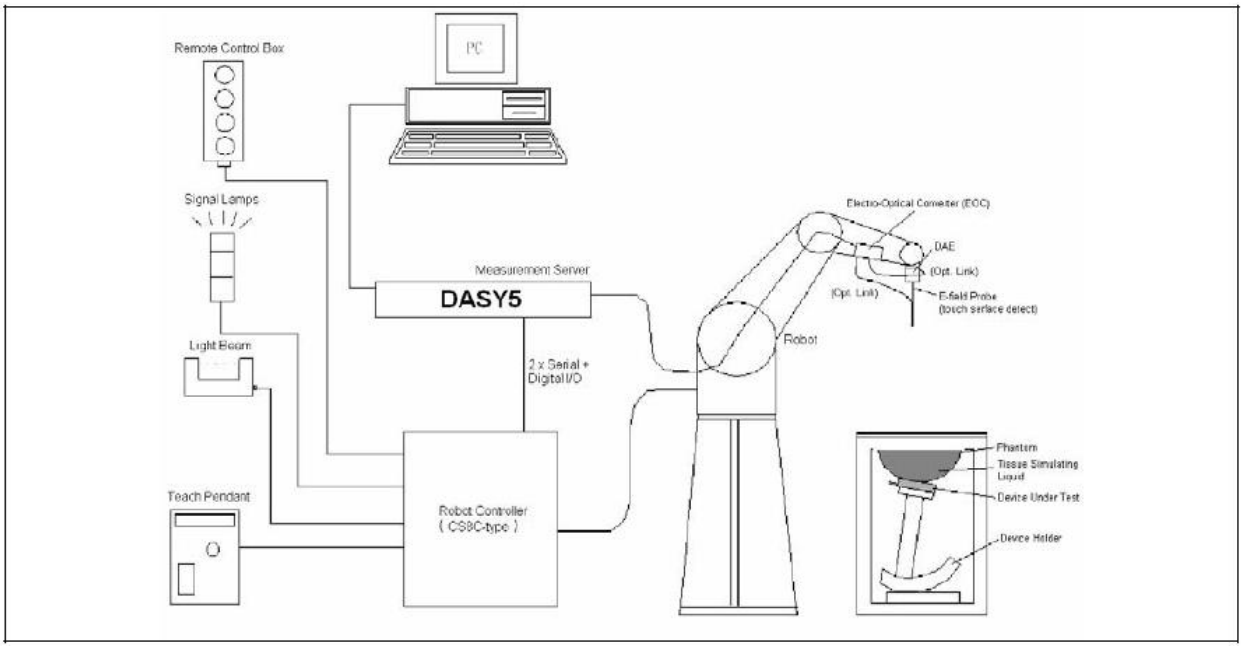
Accredited by TAF
Accredited Number: 0914
Effective through: December 12, 2011

Site Name: Quietek Corporation

Site Address: No. 5-22, Rueishu Keng, Linkou Dist.,
New Taipei City 24451, Taiwan. R.O.C.
TEL: 886-2-8601-3788 / FAX: 886-2-8601-3789
E-Mail: service@quietek.com

2. SAR Measurement System

2.1 DASY5 System Description



The DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

2.1.1 Applications

Predefined procedures and evaluations for automated compliance testing with all worldwide standards, e.g., IEEE 1528, OET 65, IEC 62209-1, IEC 62209-2, EN 50360, EN 50383 and others.

2.1.2 Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a $10mm^2$ step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2003, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan).

2.1.3 Zoom Scan (Cube Scan Averaging)

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of 1000 kg/m^3 is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1 g cube is 10mm, with the side length of the 10 g cube 21,5mm.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 5x5x7 (8mmx8mmx5mm) providing a volume of 32mm in the X & Y axis, and 30mm in the Z axis.

2.1.4 Uncertainty of Inter-/Extrapolation and Averaging

In order to evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Postprocessor, DASY5 allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEEE 1528.The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat

distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.

$$f_1(x,y,z) = Ae^{-\frac{z}{2a}}\cos^2\left(\frac{\pi}{2}\frac{\sqrt{x'^2+y'^2}}{5a}\right)$$

$$f_2(x,y,z) = Ae^{-\frac{z}{a}}\frac{a^2}{a^2+x'^2}\left(3-e^{-\frac{2z}{a}}\right)\cos^2\left(\frac{\pi}{2}\frac{y'}{3a}\right)$$

$$f_3(x,y,z) = A\frac{a^2}{\frac{a^2}{4}+x'^2+y'^2}\left(e^{-\frac{2z}{a}}+\frac{a^2}{2(a+2z)^2}\right)$$

2.2 DASY5 E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SPEAG. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN 62209-1, IEC 62209, etc.) under ISO 17025. The calibration data are in Appendix D**.**

2.2.1 Isotropic E-Field Probe Specification

Model	Ex3DV4	
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

2.3 Boundary Detection Unit and Probe Mounting Device

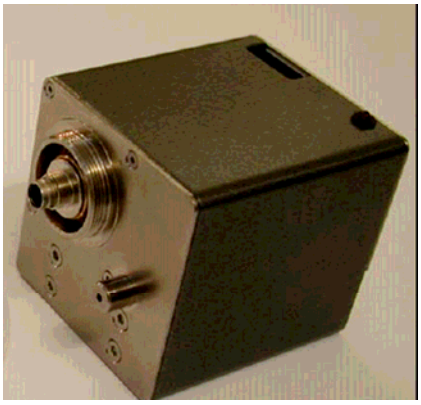
The DASY probes use a precise connector and an additional holder for the probe, consisting of a plastic tube and a flexible silicon ring to center the probe. The connector at the DAE is flexibly mounted and held in the default position with magnets and springs. Two switching systems in the connector mount detect frontal and lateral probe collisions and trigger the necessary software response.

2.4 DATA Acquisition Electronics (DAE) and Measurement Server

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, 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 input impedance of the DAE4 is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.



The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz intel ULV Celeron, 128MB chipdisk and 128MB RAM. The necessary circuits for communication with the DAE electronics box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.

2.5 Robot

The DASY5 system uses the high precision robots TX90 XL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY5 system, the CS8C robot controller version from Stäubli is used.
The XL robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

2.6 Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.
The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

2.7 Device Holder

The DASY5 device holder 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 center for both scales is the ear reference point (EPR).

Thus the device needs no repositioning when changing the angles.

The DASY5 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity εr =3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

2.8 SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

- Left head
- Right head
- Flat phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

3. Tissue Simulating Liquid

3.1 The composition of the tissue simulating liquid

INGREDIENT (% Weight)	835MHz Head	835MHz Body	1900MHz Head	1900MHz Body	2450MHz Head	2450MHz Body
Water	40.45	52.4	54.90	40.5	-	73.2
Salt	1.45	1.40	0.18	0.50	-	0.04
Sugar	57.6	45.0	0.00	58.0	-	0
HEC	0.40	1.00	0.00	0.50	-	0
Preventol	0.10	0.20	0.00	0.50	-	0
DGBE	0.00	0.00	44.92	0.00	-	26.76

3.2 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using APREL Dielectric Probe Kit and Anritsu MS4623B Vector Network Analyzer.

Head Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
835 MHz	Reference result ± 5% window	41.5 39.425 to 43.575	0.92 0.874 to 0.966	N/A
	21-Feb-11	42.83	0.89	19.5
824 MHz	Low channel	43.12	0.88	19.5
836 MHz	Mid channel	42.36	0.91	19.5
848 MHz	High channel	42.01	0.93	19.5

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
835 MHz	Reference result ± 5% window	55.2 52.44 to 57.96	0.99 0.9405 to 1.0395	N/A
	23-Feb-11	56.12	0.98	19.8
824 MHz	Low channel	56.47	0.96	19.8
836 MHz	Mid channel	55.83	0.99	19.8
848 MHz	High channel	55.26	1.01	19.8

Head Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
1900 MHz	Reference result ± 5% window	40 38 to 42	1.4 1.33 to 1.47	N/A
	22-Feb-11	39.51	1.42	19.8
1850 MHz	Low channel	40.38	1.39	19.8
1880 MHz	Mid channel	39.74	1.41	19.8
1910 MHz	High channel	39.13	1.43	19.8

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
1900 MHz	Reference result ± 5% window	53.3 50.635 to 55.965	1.52 1.444 to 1.596	N/A
	23-Feb-11	54.23	1.48	19.8
1850 MHz	Low channel	55.12	1.46	19.8
1880 MHz	Mid channel	54.67	1.47	19.8
1910 MHz	High channel	53.91	1.50	19.8

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
2450MHz	Reference result ± 5% window	52.7 50.065 to 55.335	1.95 1.8525 to 2.0475	N/A
	04-Mar-11	53.45	1.91	19.7

3.3 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

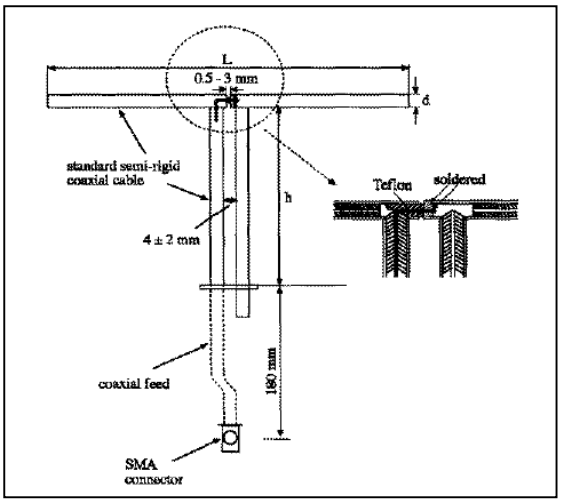
Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

4. SAR Measurement Procedure

4.1 SAR System Validation

4.1.1 Validation Dipoles



The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE and FCC Supplement C. the table below provides details for the mechanical and electrical specifications for the dipoles.

Frequency	L (mm)	h (mm)	d (mm)
835MHz	165.0	900	3.6
1900MHz	68.0	39.5	3.6
2450MHz	53.5	30.4	3.6

4.1.2 Validation Result

System Performance Check at 835MHz &1900MHz

Head Validation Kit: ASL-D-835-S-2

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
835 MHz	Reference result ± 10% window	9.28 8.352 to 10.208	6.04 5.436 to 6.644	N/A
	21-Feb-11	9.12	5.92	19.5

Head Validation Kit: ASL-D-1900-S-2

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
1900 MHz	Reference result ± 10% window	38.6 34.74 to 42.46	20.0 18 to 22	N/A
	22-Feb-11	38.48	19.72	19.8

Note: All SAR values are normalized to 1W forward power.

System Performance Check at 835MHz &1900MHz

Body Validation Kit: ASL-D-835-S-2

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
835 MHz	Reference result ± 10% window	9.84 8.856 to 10.824	6.44 5.796 to 7.084	N/A
	23-Feb-11	9.64	6.72	19.8

Body Validation Kit: ASL-D-1900-S-2

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
1900 MHz	Reference result ± 10% window	40.4 34.36 to 44.44	21.7 19.53 to 23.87	N/A
	23-Feb-11	39.4	20.36	19.8

Note: All SAR values are normalized to 1W forward power.

System Performance Check at 2450MHz

Validation Kit: ASL-D-2450-S-2

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
2450 MHz	Reference result ± 10% window	52 46.8 to 57.2	24.4 21.96 to 26.84	N/A
	04-Mar-11	54.8	24.8	19.7

Note: All SAR values are normalized to 1W forward power.

4.2 Arrangement Assessment Setup

4.2.1 Test Positions of Device Relative to Head

This specifies exactly two test positions for the handset against the head phantom, the “cheek” position and the “tilted” position. The handset should be tested in both positions on the left and right sides of the SAM phantom. If the handset construction is such that it cannot be positioned using the handset positioning procedures described in 4.2.2.1 and 4.2.2.2 to represent normal use conditions (e.g., asymmetric handset), alternative alignment procedures should be considered with details provided in the test report.

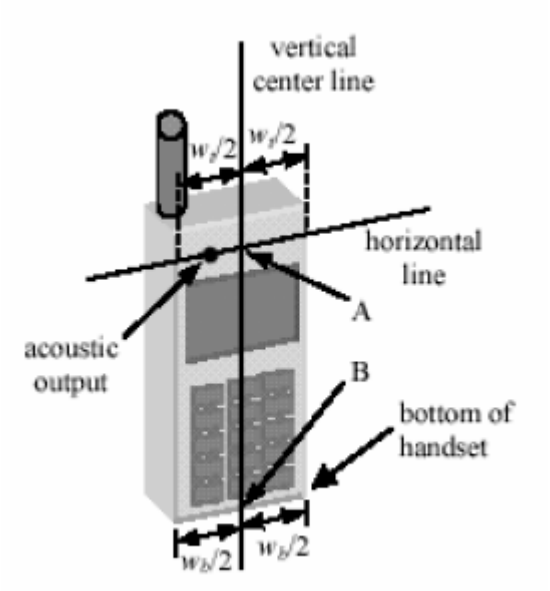


Figure 4.1a Fixed Case

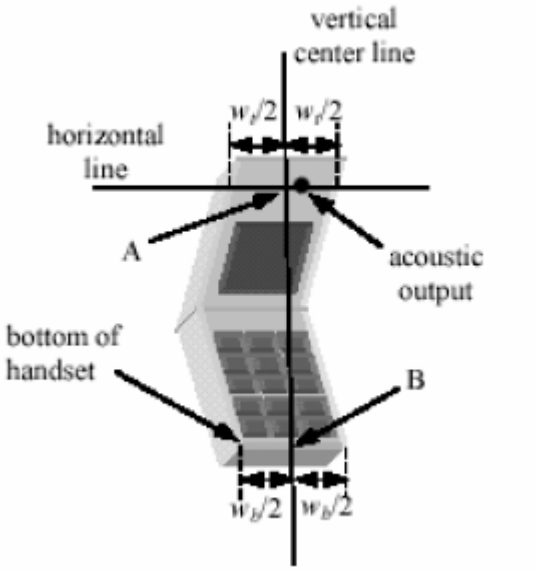


Figure4.1b Clam Shell

4.2.1.1 Definition of the “Cheek” Position

The “cheek” position is defined as follows:

a. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece, open the cover. (If the handset can also be used with the cover closed both configurations must be tested.)

b. Define two imaginary lines on the handset: the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset: the midpoint of the width *wt* of the handset at the level of the acoustic output (point A on Figures 4.1a and 4.1b), and the midpoint of the width *wb* of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 4.1a). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output. However, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the

handset (see Figure 4.1b), especially for clamshell handsets, handsets with flip pieces, and other irregularly-shaped handsets.

c. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 4.2), such that the plane defined by the vertical center line and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.

d. Translate the handset towards the phantom along the line passing through RE and LE until the handset touches the pinna.

e. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to MB-NF including the line MB (called the reference plane).

f. Rotate the handset around the vertical centerline until the handset (horizontal line) is symmetrical with respect to the line NF.

g. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE and maintaining the handset contact with the pinna, rotate the handset about the line NF until any point on the handset is in contact with a phantom point below the pinna (cheek). See Figure 4.2 the physical angles of rotation should be noted.

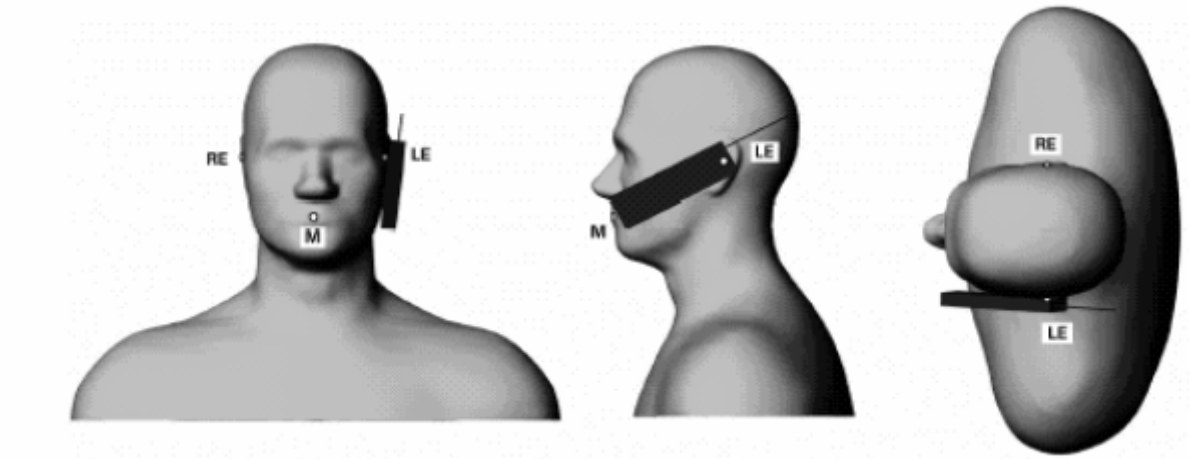


Figure 4.2 – Phone position 1, “cheek” or “touch” position.

4.2.1.2 Definition of the “Tilted” Position

The “tilted” position is defined as follows:

a. Repeat steps (a) – (g) of 4.2.1.1 to place the device in the “cheek position.”

b. While maintaining the orientation of the handset move the handset away from the pinna along the line passing through RE and LE in order to enable a rotation of the handset by 15 degrees.

c. Rotate the handset around the horizontal line by 15 degrees.

d. While maintaining the orientation of the handset, move the handset towards the phantom on a line passing through RE and LE until any part of the handset touches the ear. The tilted position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna (e.g., the antenna with the back of the phantom head), the angle of the handset should be reduced. In this case, the tilted position is obtained if any part of the handset is in contact with the pinna as well as a second part of the handset is contact with the phantom (e.g., the antenna with the back of the head).

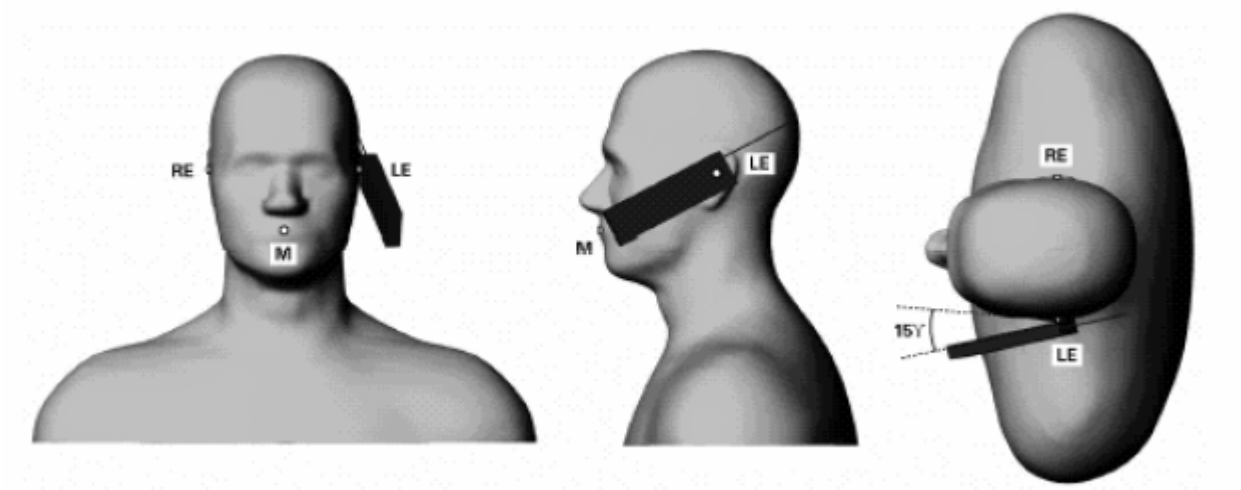


Figure 4.3 – Phone position 2, “tilted” position.

4.2.2 Test Positions for body-worn

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distance may be use, but not exceed 2.5 cm.

4.3 SAR Measurement Procedure

The ALSAS-10U calculates SAR using the following equation,

$$SAR = \frac{\sigma |E|^2}{\rho}$$

σ: represents the simulated tissue conductivity

ρ: represents the tissue density

The EUT is set to transmit at the required power in line with product specification, at each frequency relating to the LOW, MID, and HIGH channel settings.

Pre-scans are made on the device to establish the location for the transmitting antenna, using a large area scan in either air or tissue simulation fluid.

The EUT is placed against the Universal Phantom where the maximum area scan dimensions are larger than the physical size of the resonating antenna. When the scan size is not large enough to cover the peak SAR distribution, it is modified by either extending the area scan size in both the X and Y directions, or the device is shifted within the predefined area.

The area scan is then run to establish the peak SAR location (interpolated resolution set at $1mm^2$)which is then used to orient the center of the zoom scan. The zoom scan is then executed and the 1g and 10g averages are derived from the zoom scan volume (interpolated resolution set at $1mm^3$).

1. The device was put into operation by using a call tester. Communication between the device and the call tester was established by air link.
2. The device output power was set to maximum power level for all tests; a fully charged battery was use for every test sequence.
3. In all operating band in measurements were performed on lowest, middle and highest channels.

4.4 SAR Evaluation Considerations

According to the content of KDB648474,

Table 1 – Output Power Thresholds for Unlicensed Transmitters

	2.45	5.15 - 5.35	5.47 - 5.85	GHz
P_{Ref}	12	6	5	mW
Device output power should be rounded to the nearest mW to compare with values specified in this table.				

Table 2 – Summary of SAR Evaluation Requirements for a Cell Phone with Multiple Transmitters

	Individual Transmitter	Simultaneous Transmission
Licensed Transmitters	Routine evaluation required	SAR not required: Unlicensed only o when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas Licensed & Unlicensed o when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas o when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3
Unlicensed Transmitters	When there is no simultaneous transmission – o output ≤ 60/f: SAR not required o output > 60/f: stand-alone SAR required When there is simultaneous transmission – Stand-alone SAR not required when o output ≤ 2·P_{Ref} and antenna is ≥ 5.0 cm from other antennas o output ≤ P_{Ref} and antenna is ≥ 2.5 cm from other antennas o output ≤ P_{Ref} and antenna is < 2.5 cm from other antennas, each with either output power ≤ P_{Ref} or 1-g SAR < 1.2 W/kg Otherwise stand-alone SAR is required When stand-alone SAR is required o test SAR on highest output channel for each wireless mode and exposure condition o if SAR for highest output channel is > 50% of SAR limit, evaluate all channels according to normal procedures	SAR required: Licensed & Unlicensed antenna pairs with SAR to peak location separation ratio ≥ 0.3; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply

The antennas distance is less 2.5cm and GSM SAR value >1.2W/kg, but the sum of the 1-g SAR is <1.6W/Kg, so It does not need to be tested simultaneous transmission. (BT: 0.048W/Kg + GSM: 1.45W/Kg < 1.6W/Kg)

5. SAR Exposure Limits

SAR assessments have been made in line with the requirements of IEEE-1528, FCC Supplement C, and comply with ANSI/IEEE C95.1-1992 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (1g cube tissue for brain or body)	**1.60 W/kg**
Spatial Average SAR (whole body)	**0.08 W/kg**
Spatial Peak SAR (10g for hands, feet, ankles and wrist)	**4.00 W/kg**

6. Test Equipment List

Instrument	Manufacturer	Model No.	Serial No.	Last Calibration	Next Calibration
Stäubli Robot TX60L	Stäubli	TX60L	F09/5BL1A1/A 06	May. 2009	only once
Controller	Speag	CS8c	N/A	May. 2009	only once
Aprel Reference Dipole 835Mhz	Aprel	ALS-D-835	QTK-315	May. 2010	May. 2012
Aprel Reference Dipole 1900Mhz	Aprel	ALS-D-1900	QTK-318	May. 2010	May. 2012
Aprel Reference Dipole 2450MHz	Aprel	ALS-D-2450-SN	QTK-319	May. 2010	May. 2012
SAM Twin Phantom	Speag	QD000 P40 CA	Tp 1515	N/A	N/A
Device Holder	Speag	N/A	N/A	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1207	Apr. 2010	Apr. 2011
E-Field Probe	Speag	EX3DV4	3698	July. 2010	July. 2011
SAR Software	Speag	DASY5	Version52.6 (1)	N/A	N/A
Aprel Dipole Spaccer	Aprel	ALS-DS-U	QTK-295	N/A	N/A
Power Amplifier	Mini-Circuit	ZHL-42	D051404-20	N/A	N/A
Directional Coupler	Agilent	778D-012	50550	N/A	N/A
Universal Radio Communication Tester	R&S	CMU 200	104846	May. 2010	May. 2011
Vector Network	Anritsu	MS4623B	992801	Aug. 2010	Aug. 2011
Signal Generator	Anritsu	MG3692A	042319	Jun. 2010	Jun. 2011
Power Meter	Anritsu	ML2487A	6K00001447	Apr. 2010	Apr. 2011
Wide Bandwidth Sensor	Anritsu	MA2491	030677	Apr. 2010	Apr. 2011

7. Measurement Uncertainty

Uncertainty								
Error Description	Uncertainty value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±5.9%	N	1	1	1	±5.9%	±5.9%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Max. SAR Eval.	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom Uncertainty	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Liquid Conductivity (target)	±5.0%	R	$\sqrt{3}$	0.64	0.43	±1.8%	±1.2%	∞
Liquid Conductivity (meas.)	±2.5%	N	1	0.64	0.43	±1.6%	±1.1%	∞
Liquid Permittivity (target)	±5.0%	R	$\sqrt{3}$	0.6	0.49	±1.7%	±1.4%	∞
Liquid Permittivity (meas.)	±2.5%	N	1	0.6	0.49	±1.5%	±1.2%	∞
Combined Std. Uncertainty						±10.9%	±10.7%	387
Expanded STD Uncertainty						**±21.9%**	**±21.4%**	

8. Conducted Power Measurement

Mode	Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)
GSMS850	824.2	31.36	0.7	32.06
	836.4	31.38	0.7	32.08
	848.8	31.46	0.7	32.16
GPRS1900	1850.2	28.62	1.0	29.62
	1880.0	28.70	1.0	29.70
	1909.8	28.75	1.0	29.75
GPRS850 2slot	824.2	30.15	0.7	30.85
	836.4	30.16	0.7	30.86
	848.8	30.35	0.7	31.05
GPRS850 3slot	824.2	27.85	0.7	28.55
	836.4	27.90	0.7	28.60
	848.8	28.09	0.7	28.79
GPRS850 4slot	824.2	25.93	0.7	26.63
	836.4	25.96	0.7	26.66
	848.8	26.18	0.7	26.88
GPRS1900 2slot	1850.2	28.32	1.0	29.32
	1880.0	28.21	1.0	29.21
	1909.8	28.24	1.0	29.24
GPRS1900 3slot	1850.2	26.32	1.0	27.32
	1880.0	26.26	1.0	27.26
	1909.8	26.32	1.0	27.32
GPRS1900 4slot	1850.2	25.27	1.0	26.27
	1880.0	25.19	1.0	26.19
	1909.8	25.29	1.0	26.29

9. Test Results

9.1 SAR Test Results Summary

SAR MEASUREMENT						
Ambient Temperature (°C) : 20.1 ±2				Relative Humidity (%): 57		
Liquid Temperature (°C) : 19.5 ±2				Depth of Liquid (cm):>15		
Product: GSM Mobile Phone						
Test Mode: GSM 850						
Test Position Head/Body	Antenna Position	Frequency		Conducted Power (dBm)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz			
Left-Cheek (Open)	Fixed	128	824.2	32.06	0.528	1.6
Left-Cheek (Close)	Fixed	189	836.4	32.08	0.673	1.6
Left-Cheek (Open)	Fixed	189	836.4	32.08	0.804	1.6
Left-Cheek (Open)	Fixed	251	848.8	32.16	0.780	1.6
Left-Tilted (Open)	Fixed	128	824.2	32.06	**	1.6
Left-Tilted (Open)	Fixed	189	836.4	32.08	0.433	1.6
Left-Tilted (Open)	Fixed	251	848.8	32.16	**	1.6
Right-Cheek (Open)	Fixed	128	824.2	32.06	0.531	1.6
Right-Cheek (Close)	Fixed	189	836.4	32.08	0.652	1.6
Right-Cheek (Open)	Fixed	189	836.4	32.08	0.800	1.6
Right-Cheek (Open)	Fixed	251	848.8	32.16	0.850	1.6
Right-Tilted (Open)	Fixed	128	824.2	32.06	**	1.6
Right-Tilted (Open)	Fixed	189	836.4	32.08	0.410	1.6
Right-Tilted (Open)	Fixed	251	848.8	32.16	**	1.6

SAR MEASUREMENT						
Ambient Temperature (°C) : 20.2 ±2				Relative Humidity (%): 56		
Liquid Temperature (°C) : 19.8 ±2				Depth of Liquid (cm):>15		
Product: GSM Mobile Phone						
Test Mode: GSM 850 - Close						
Test Position Head/Body	Antenna Position	Frequency		Conducted Power (dBm)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz			
Front	Fixed	189	836.4	32.08	0.444	1.6
Back	Fixed	128	824.2	32.06	0.959	1.6
Back	Fixed	189	836.4	32.08	0.946	1.6
Back	Fixed	251	848.8	32.16	0.623	1.6

SAR MEASUREMENT						
Ambient Temperature (°C) : 20.2 ±2				Relative Humidity (%): 56		
Liquid Temperature (°C) : 19.8 ±2				Depth of Liquid (cm):>15		
Product: GSM Mobile Phone						
Test Mode: GSM 850 GPRS 2 Slot - Close						
Test Position Body	Antenna Position	Frequency		Conducted Power (dBm)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz			
Front	Fixed	189	836.4	30.86	0.713	1.6
Test Mode: GSM 850 GPRS 2 Slot – Close						
Back	Fixed	128	824.2	30.85	**1.45**	1.6
Back	Fixed	189	836.4	30.86	1.37	1.6
Back	Fixed	251	848.8	31.05	0.925	1.6
Test Mode: GSM 850 GPRS 3 Slot – Close						
Back	Fixed	189	836.4	28.60	1.22	1.6
Test Mode: GSM 850 GPRS 4 Slot – Close						
Back	Fixed	189	836.4	26.66	1.04	1.6

SAR MEASUREMENT						
Ambient Temperature (°C) : 20.3 ±2				Relative Humidity (%): 56		
Liquid Temperature (°C) : 19.8 ±2				Depth of Liquid (cm):>15		
Product: GSM Mobile Phone						
Test Mode: PCS 1900						
Test Position Head/Body	Antenna Position	Frequency		Conducted Power (dBm)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz			
Left-Cheek (Open)	Fixed	512	1850.2	29.62	0.401	1.6
Left-Cheek (Close)	Fixed	661	1880	29.70	0.486	1.6
Left-Cheek (Open)	Fixed	661	1880	29.70	0.518	1.6
Left-Cheek (Open)	Fixed	810	1909.8	29.75	**0.550**	1.6
Left-Tilted (Open)	Fixed	512	1850.2	29.62	--	1.6
Left-Tilted (Open)	Fixed	661	1880	29.70	0.204	1.6
Left-Tilted (Open)	Fixed	810	1909.8	29.75	--	1.6
Right-Cheek (Open)	Fixed	512	1850.2	29.62	0.319	1.6
Right-Cheek (Close)	Fixed	661	1880	29.70	0.312	1.6
Right-Cheek (Open)	Fixed	661	1880	29.70	0.374	1.6
Right-Cheek (Open)	Fixed	810	1909.8	29.75	0.386	1.6
Right-Tilted (Open)	Fixed	512	1850.2	29.62	--	1.6
Right-Tilted (Open)	Fixed	661	1880	29.70	0.190	1.6
Right-Tilted (Open)	Fixed	810	1909.8	29.75	--	1.6

SAR MEASUREMENT						
Ambient Temperature (°C) : 20.2 ±2				Relative Humidity (%): 56		
Liquid Temperature (°C) : 19.8 ±2				Depth of Liquid (cm):>15		
Product: GSM Mobile Phone						
Test Mode: PCS 1900 - Close						
Test Position Head/Body	Antenna Position	Frequency		Conducted Power (dBm)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz			
Front	Fixed	661	1880	29.70	0.158	1.6
Back	Fixed	512	1850.2	29.62	0.235	1.6
Back	Fixed	661	1880	29.70	0.296	1.6
Back	Fixed	810	1909.8	29.75	0.313	1.6

SAR MEASUREMENT						
Ambient Temperature (°C) : 20.2 ±2				Relative Humidity (%): 56		
Liquid Temperature (°C) : 19.8 ±2				Depth of Liquid (cm):>15		
Product: GSM Mobile Phone						
Test Mode: PCS 1900 GPRS 2 Slot - Close						
Test Position Body	Antenna Position	Frequency		Conducted Power (dBm)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz			
Front	Fixed	661	1880	29.21	0.245	1.6
Test Mode: PCS 1900 GPRS 2 Slot – Close						
Back	Fixed	512	1850.2	29.32	0.352	1.6
Back	Fixed	661	1880	29.21	0.453	1.6
Back	Fixed	810	1909.8	29.24	0.506	1.6
Test Mode: PCS 1900 GPRS 3 Slot – Close						
Back	Fixed	661	1880	27.26	0.415	1.6
Test Mode: PCS 1900 GPRS 4 Slot – Close						
Back	Fixed	661	1880	26.19	0.437	1.6

SAR MEASUREMENT						
Ambient Temperature (°C) : 20.0 ±2			Relative Humidity (%): 57			
Liquid Temperature (°C) : 19.7 ±2			Depth of Liquid (cm):>15			
Product: GSM Mobile Phone						
Test Mode: Bluetooth						
Test Position Head/Body	Antenna Position	Frequency		Conducted Power (dBm)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz			
Front	Fixed	00	2402.5	7.88	0.020	1.6
Back	Fixed	00	2402.5	7.88	**0.048**	1.6

Appendix

Appendix A. SAR System Validation Data

Appendix B. SAR measurement Data

Appendix C. Test Setup Photographs & EUT Photographs

Appendix D. Probe Calibration Data

Appendix E. Dipole Calibration Data

Appendix A. SAR System Validation Data

Test Laboratory: QuieTek Date/Time: 2/21/2011

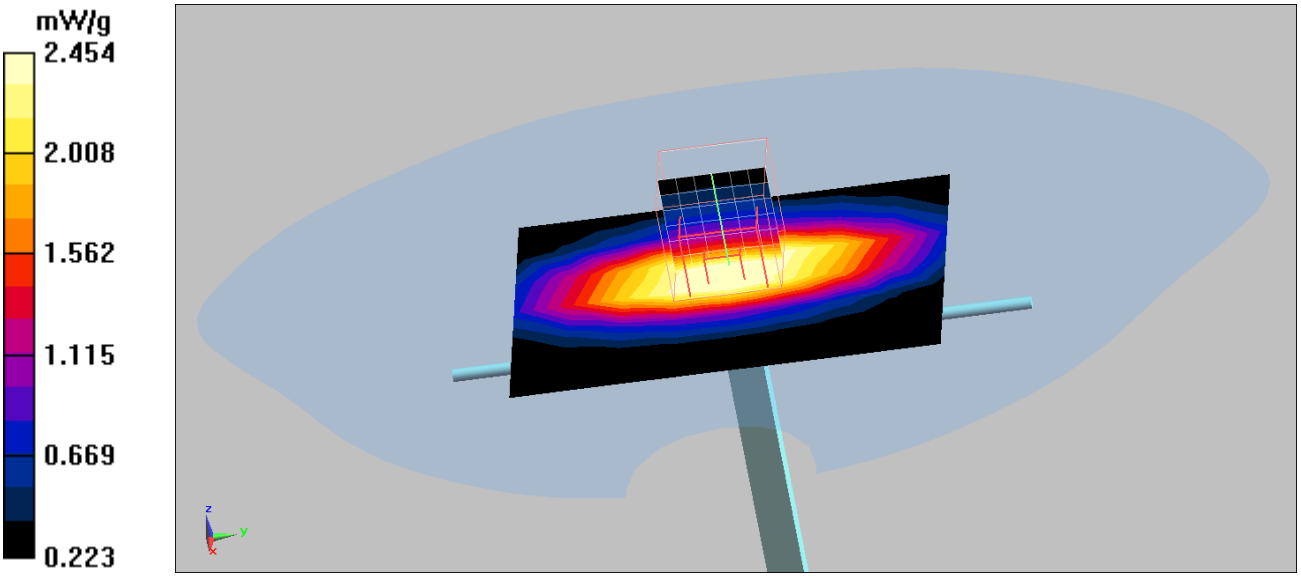
SystemPerformanceCheck-835MHz_Head
DUT: Dipole 835 MHz; Type: ALS-D-835-S-2; Serial: QTK-315
Communication System: CW; Frequency: 835 MHz;Communication System PAR: 0 dB
Medium parameters used (interpolated): f = 835 MHz; σ = 0.89 mho/m; ε_r = 42.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/835MHz_Head/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.528 mW/g

Configuration/835MHz_Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.09 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 3.467 W/kg
SAR(1 g) = 2.28 mW/g; SAR(10 g) = 1.48 mW/g
Maximum value of SAR (measured) = 2.454 mW/g



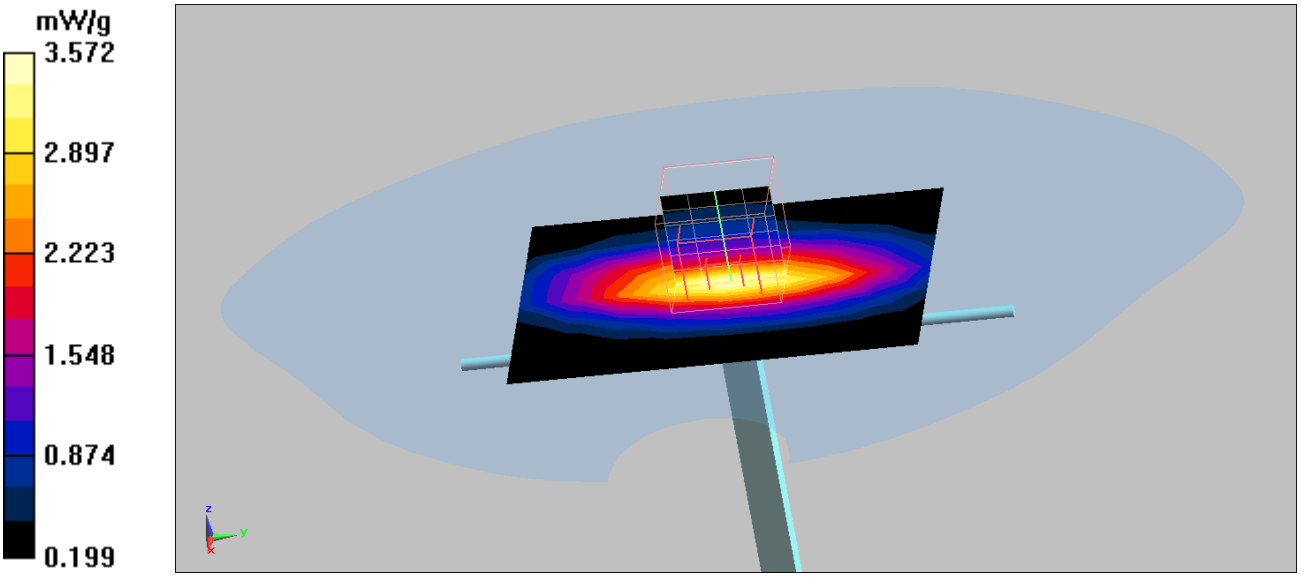
Test Laboratory: QuieTek Date/Time: 2/23/2011

System Performance Check-835MHz_Body
DUT: Dipole 835 MHz; Type: ALS-D-835-S-2; Serial: QTK-315
Communication System: CW; Frequency: 835 MHz;Communication System PAR: 0 dB
Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM Right Table; Type: SAM;
- Measurement SW: DASY52, Version 52.2 (0); SEMCAD X Version 14.4.2 (2595)

Configuration/835MHz_Body/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.438 mW/g

Configuration/835MHz_Body/Zoom Scan (7x7x7) (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 60.523 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 4.367 W/kg
SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.68 mW/g
Maximum value of SAR (measured) = 3.572 mW/g



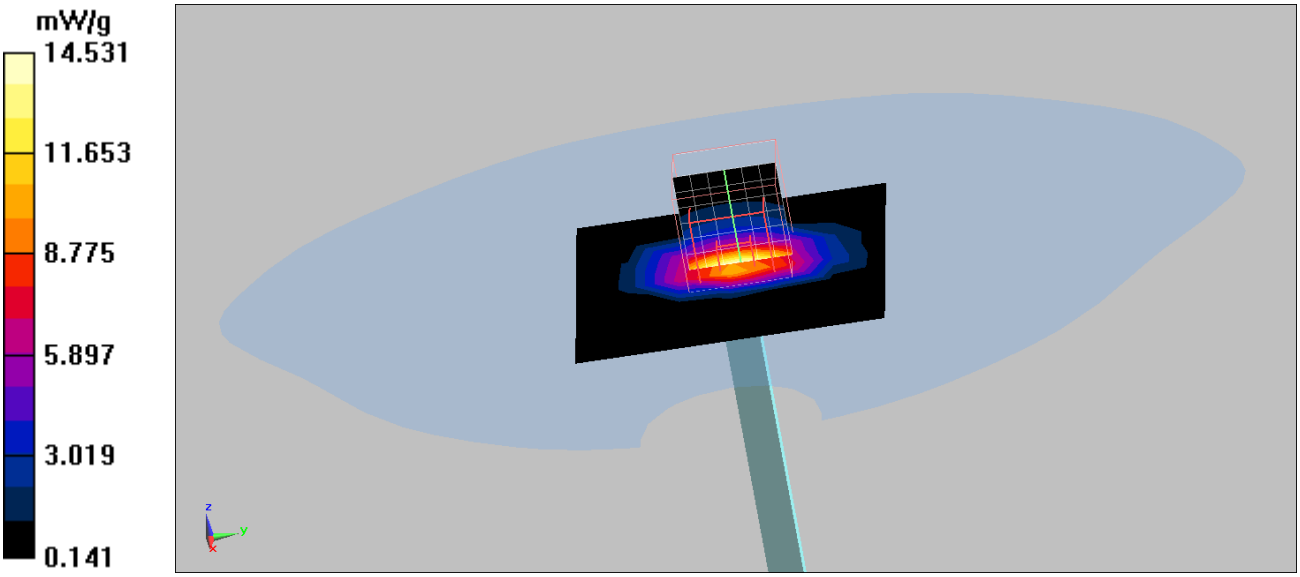
Test Laboratory: QuieTek Date/Time: 2/22/2011

System Performance Check_1900MHz-Head
DUT: Dipole 1900 MHz; Type: ALS-D-1900-S-2; Serial: QTK-318
Communication System: CW; Frequency: 1900 MHz;Communication System PAR: 0 dB
Medium parameters used: f = 1900 MHz; σ = 1.42 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.2 (0); SEMCAD X Version 14.4.2 (2595)

Configuration/1900MHz_Head/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 10.498 mW/g

Configuration/1900MHz_Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.7 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 19.864 W/kg
SAR(1 g) = 9.62 mW/g; SAR(10 g) = 4.93 mW/g
Maximum value of SAR (measured) = 14.531 mW/g



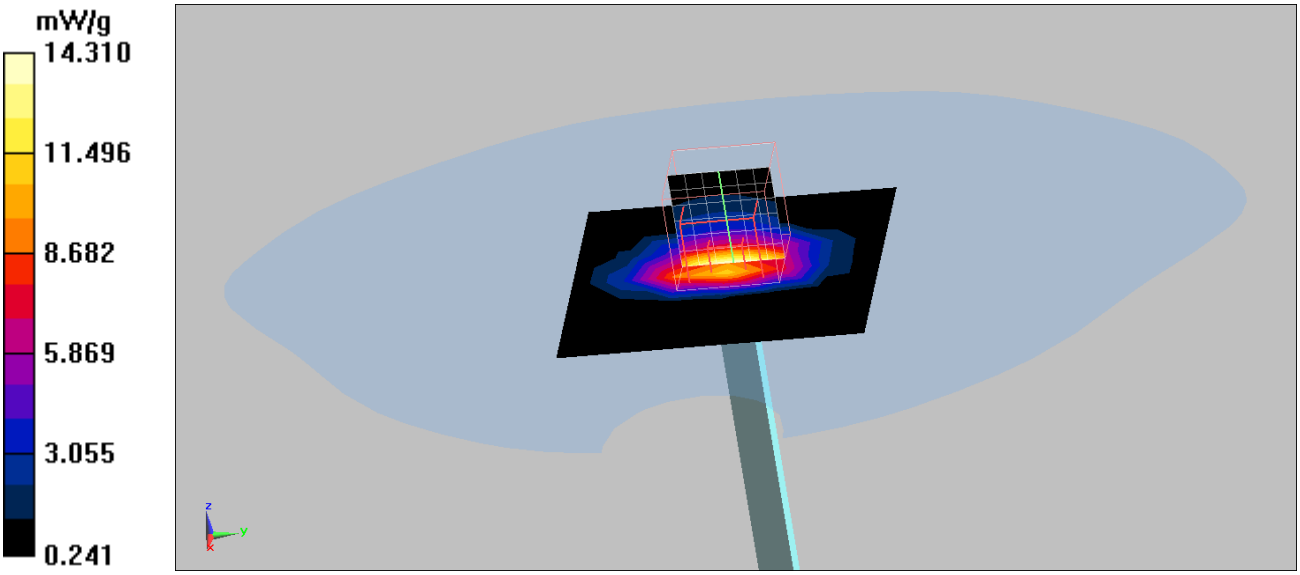
Test Laboratory: QuieTek Date/Time: 2/23/2011

System Performance Check_1900MHz-Body
DUT: Dipole 1900 MHz; Type: ALS-D-1900-S-2; Serial: QTK-318
Communication System: CW; Frequency: 1900 MHz;Communication System PAR: 0 dB
Medium parameters used: f = 1900 MHz; σ = 1.48 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.2 (0); SEMCAD X Version 14.4.2 (2595)

Configuration/1900MHz_Body/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 11.148 mW/g

Configuration/1900MHz_Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.203 V/m; Power Drift = -0.0044 dB
Peak SAR (extrapolated) = 18.544 W/kg
SAR(1 g) = 9.85 mW/g; SAR(10 g) = 5.09 mW/g
Maximum value of SAR (measured) = 14.310 mW/g



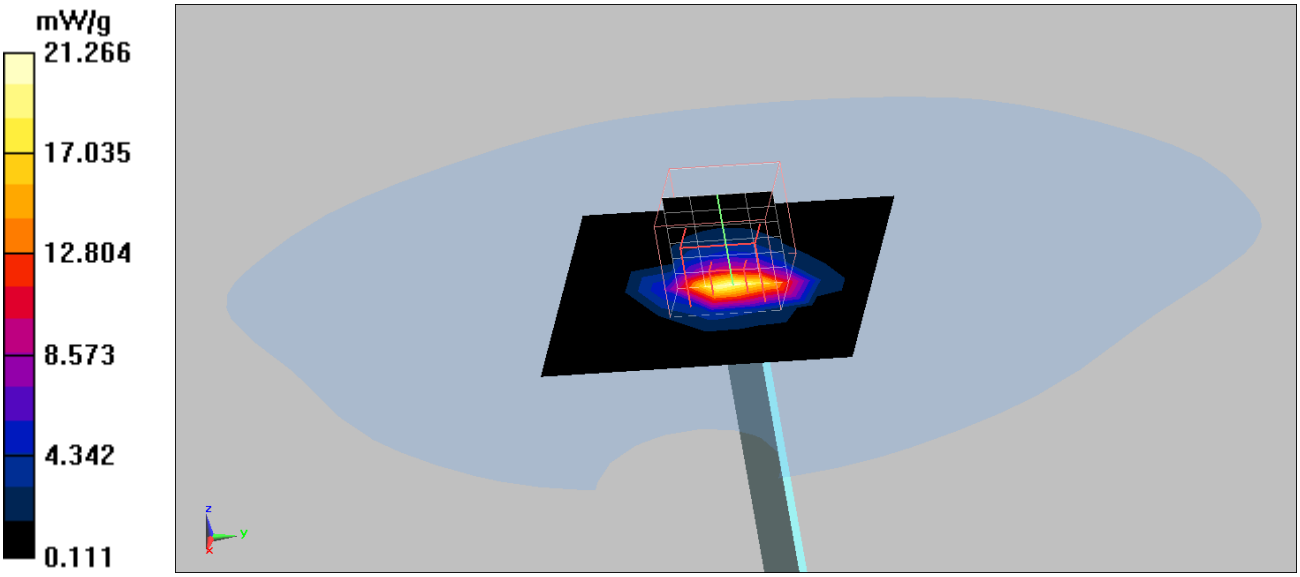
Test Laboratory: QuieTek Date/Time: 3/4/2011

System Performance Check_2450MHz-Body
DUT: Dipole 2450 MHz; Type: ALS-D-2450-S-2; Serial: QTK-319
Communication System: CW; Frequency: 2450 MHz;Communication System PAR: 0 dB
Medium parameters used: f = 2450 MHz; σ = 1.91 mho/m; ε_r = 53.45; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.0, Liquid Temperature (°C) : 19.7
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.01, 7.01, 7.01); Calibrated: 7/19/2010
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/2450MHz_Body/Area Scan (7x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 20.092 mW/g

Configuration/2450MHz_Body/Zoom Scan (7x7x7) (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 107.6 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 28.887 W/kg
SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.2 mW/g
Maximum value of SAR (measured) = 21.266 mW/g



Appendix B. SAR measurement Data

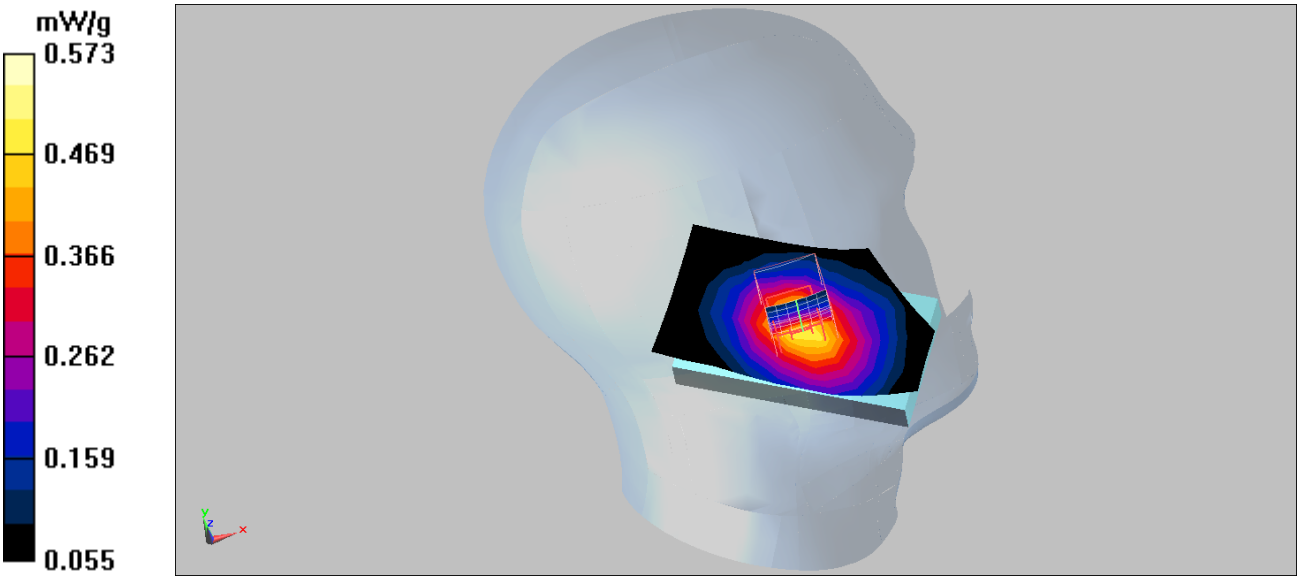
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Left-Cheek_128-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 824.2 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 824.2 MHz; σ = 0.88 mho/m; ε_r = 43.12; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.500 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.292 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.704 W/kg
SAR(1 g) = 0.528 mW/g; SAR(10 g) = 0.368 mW/g
Maximum value of SAR (measured) = 0.573 mW/g



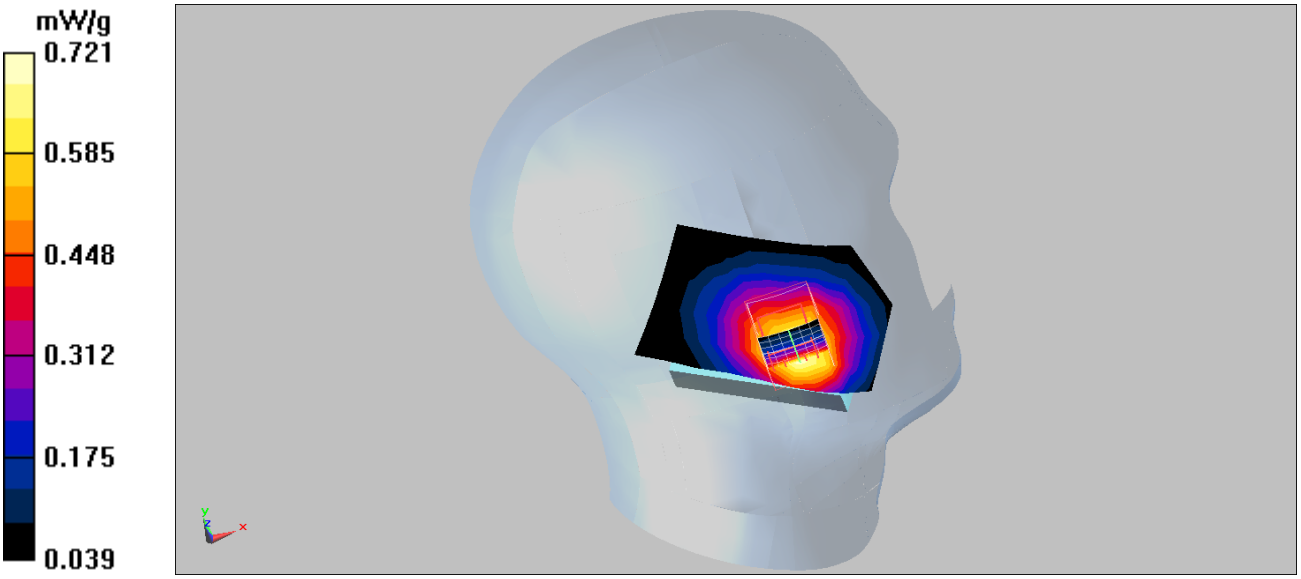
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Left-Cheek_189-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 836.4 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 836.4 MHz; σ = 0.91 mho/m; ε_r = 42.36; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.712 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.697 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.156 W/kg
SAR(1 g) = 0.673 mW/g; SAR(10 g) = 0.451 mW/g
Maximum value of SAR (measured) = 0.721 mW/g



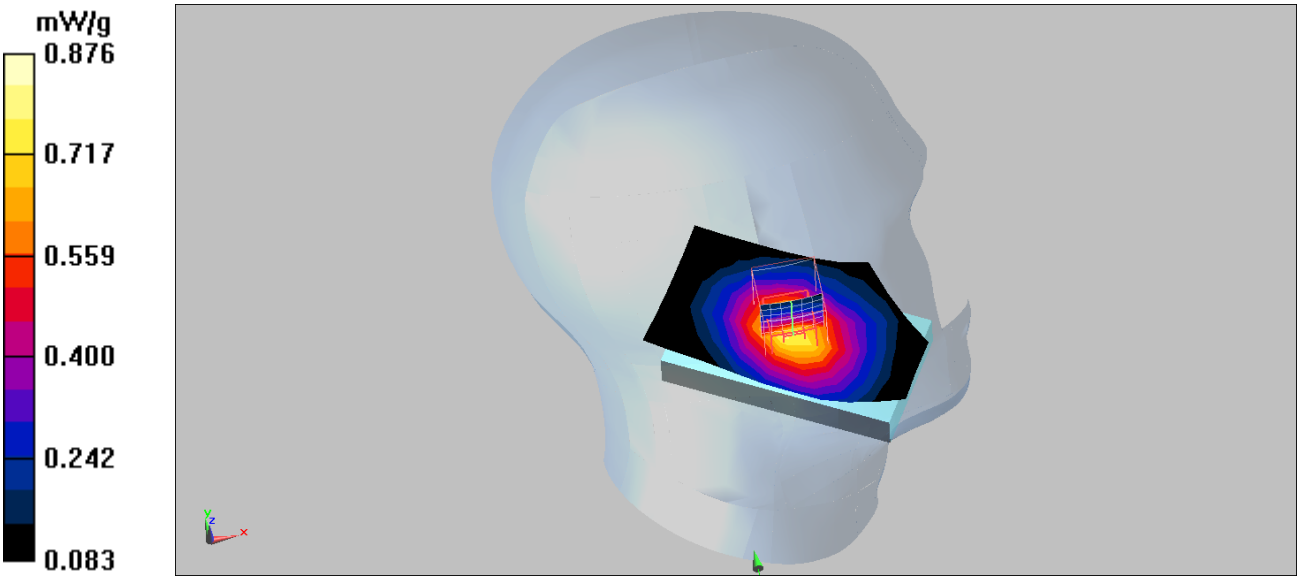
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Left-Cheek_189-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 836.4 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 836.4 MHz; σ = 0.91 mho/m; ε_r = 42.36; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.784 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.270 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.075 W/kg
SAR(1 g) = 0.804 mW/g; SAR(10 g) = 0.557 mW/g
Maximum value of SAR (measured) = 0.876 mW/g



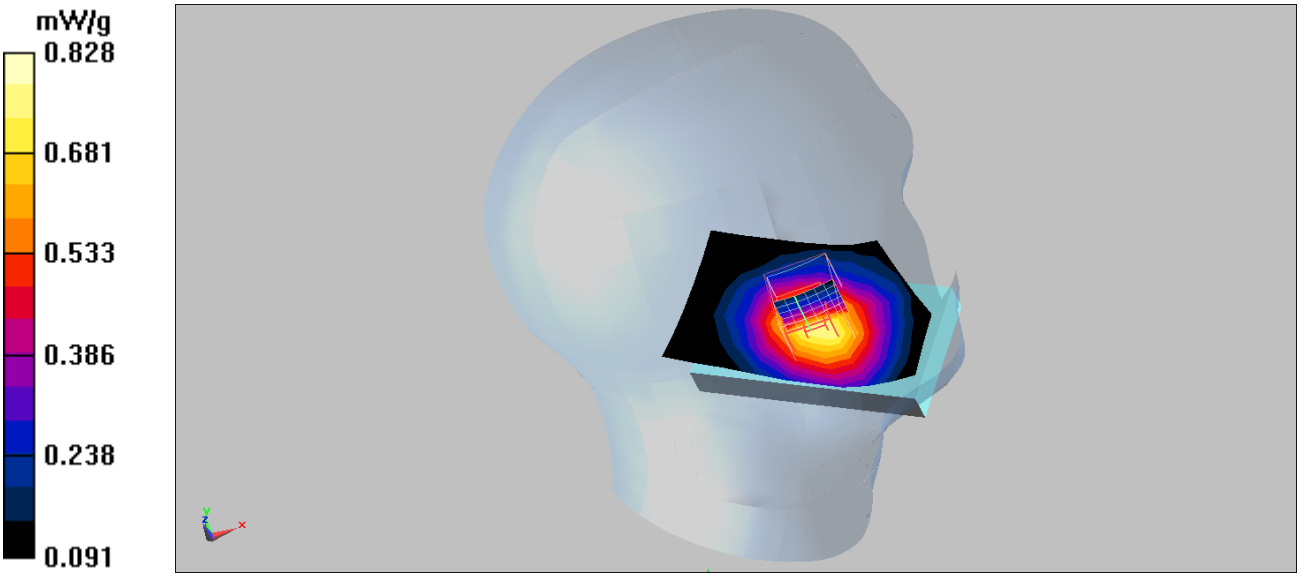
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Left-Cheek_251-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 848.8 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 848.8 MHz; σ = 0.93 mho/m; ε_r = 42.01; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.779 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.704 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.993 W/kg
SAR(1 g) = 0.780 mW/g; SAR(10 g) = 0.562 mW/g
Maximum value of SAR (measured) = 0.828 mW/g



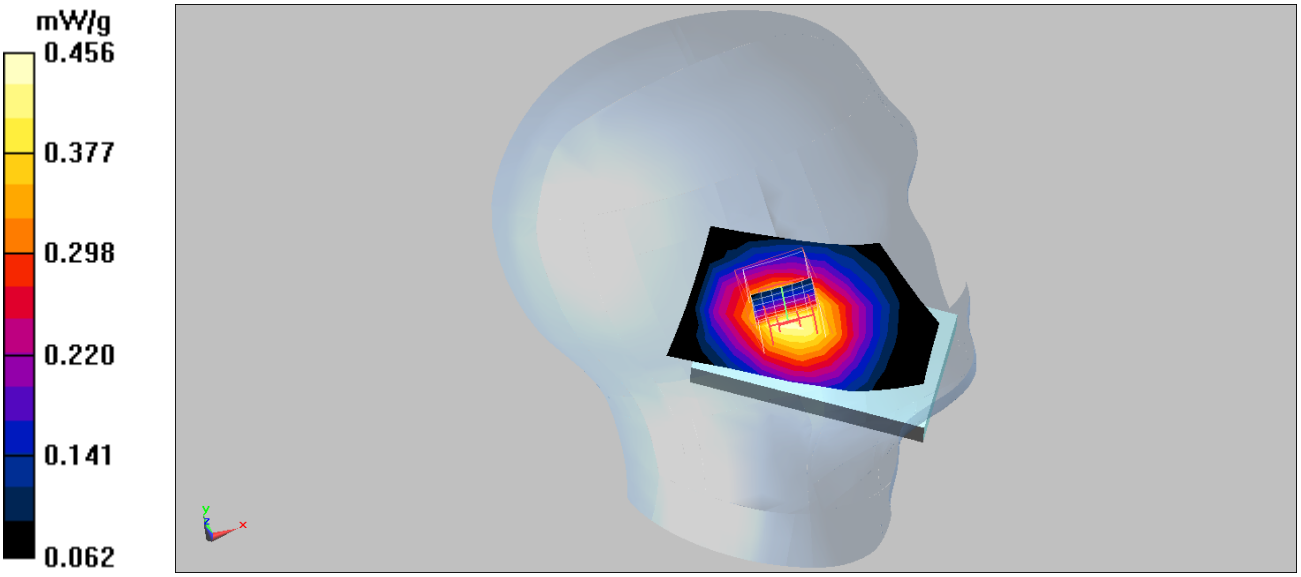
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Left-Tilt_189-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 836.4 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 836.4 MHz; σ = 0.91 mho/m; ε_r = 42.36; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.445 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.537 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.557 W/kg
SAR(1 g) = 0.433 mW/g; SAR(10 g) = 0.319 mW/g
Maximum value of SAR (measured) = 0.456 mW/g



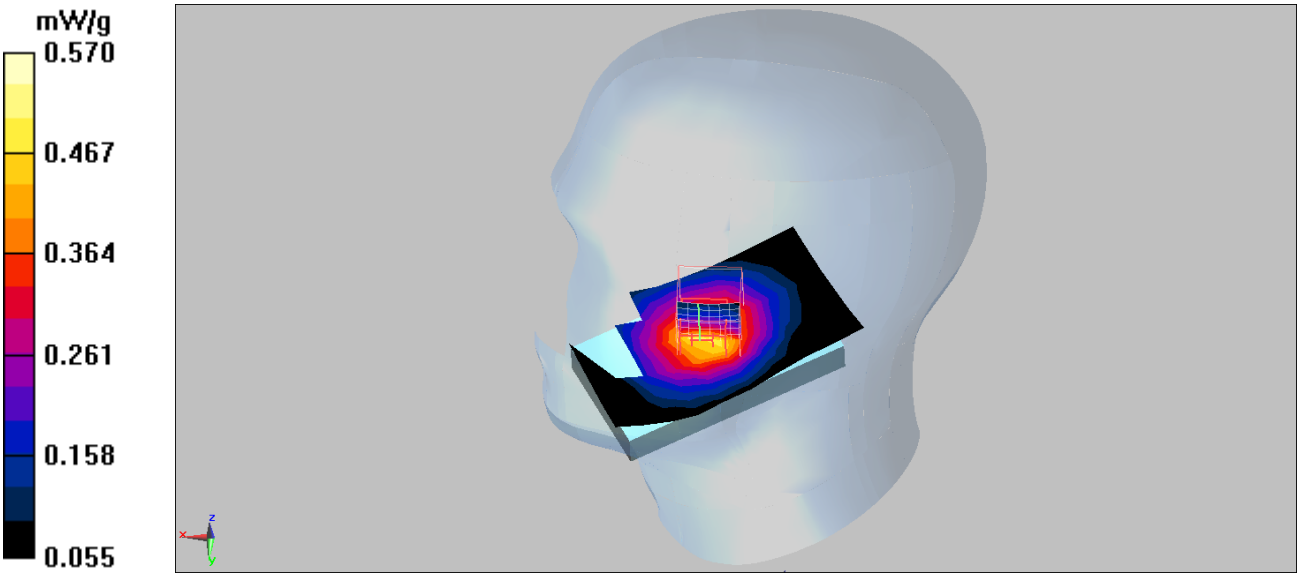
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Right-Cheek_128-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 824.2 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 824.2 MHz; σ = 0.88 mho/m; ε_r = 43.12; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.518 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.029 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.727 W/kg
SAR(1 g) = 0.531 mW/g; SAR(10 g) = 0.364 mW/g
Maximum value of SAR (measured) = 0.570 mW/g



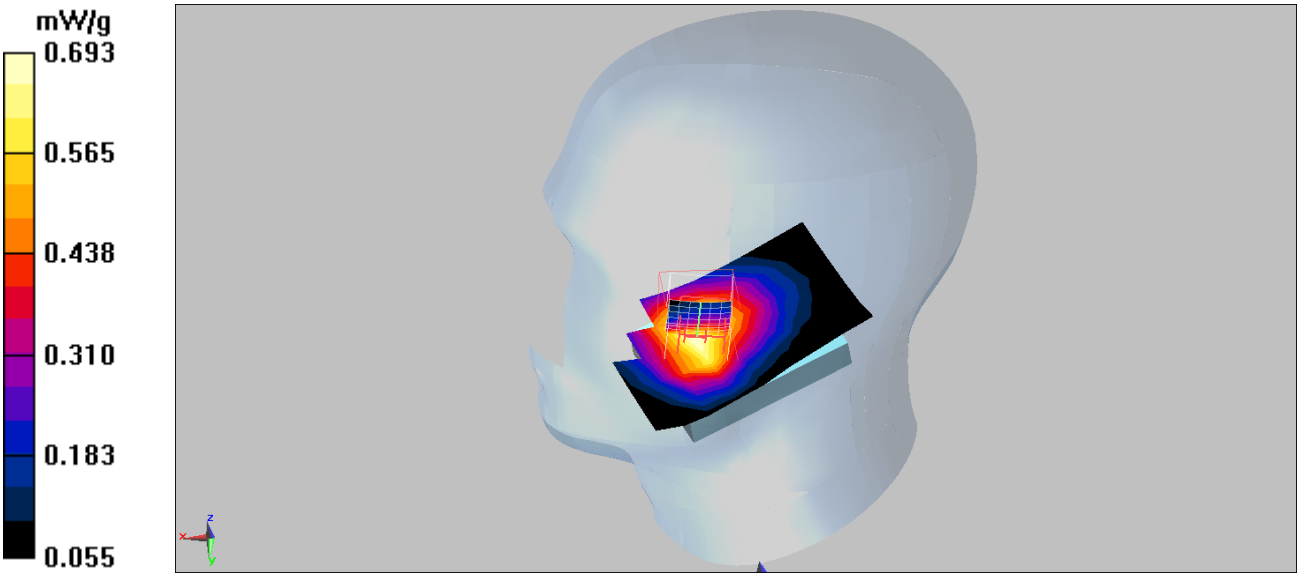
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Right-Cheek_189-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 836.4 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 836.4 MHz; σ = 0.91 mho/m; ε_r = 42.36; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.708 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.998 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.970 W/kg
SAR(1 g) = 0.652 mW/g; SAR(10 g) = 0.453 mW/g
Maximum value of SAR (measured) = 0.693 mW/g



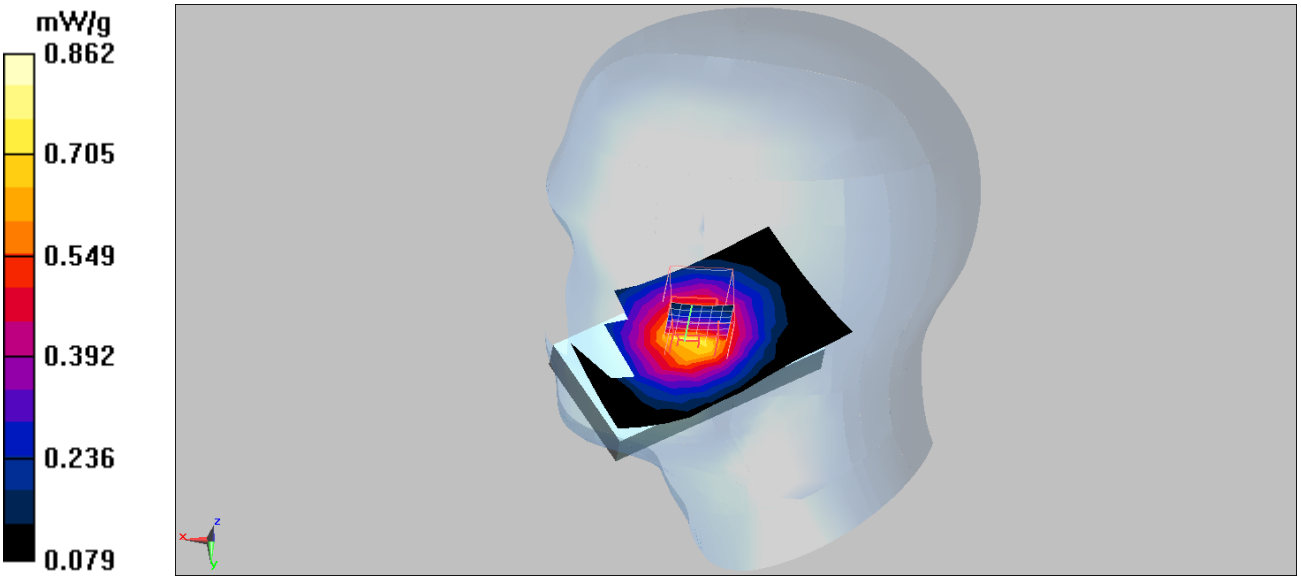
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Right-Cheek_189-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 836.4 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 836.4 MHz; σ = 0.91 mho/m; ε_r = 42.36; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.787 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.648 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.095 W/kg
SAR(1 g) = 0.800 mW/g; SAR(10 g) = 0.548 mW/g
Maximum value of SAR (measured) = 0.862 mW/g



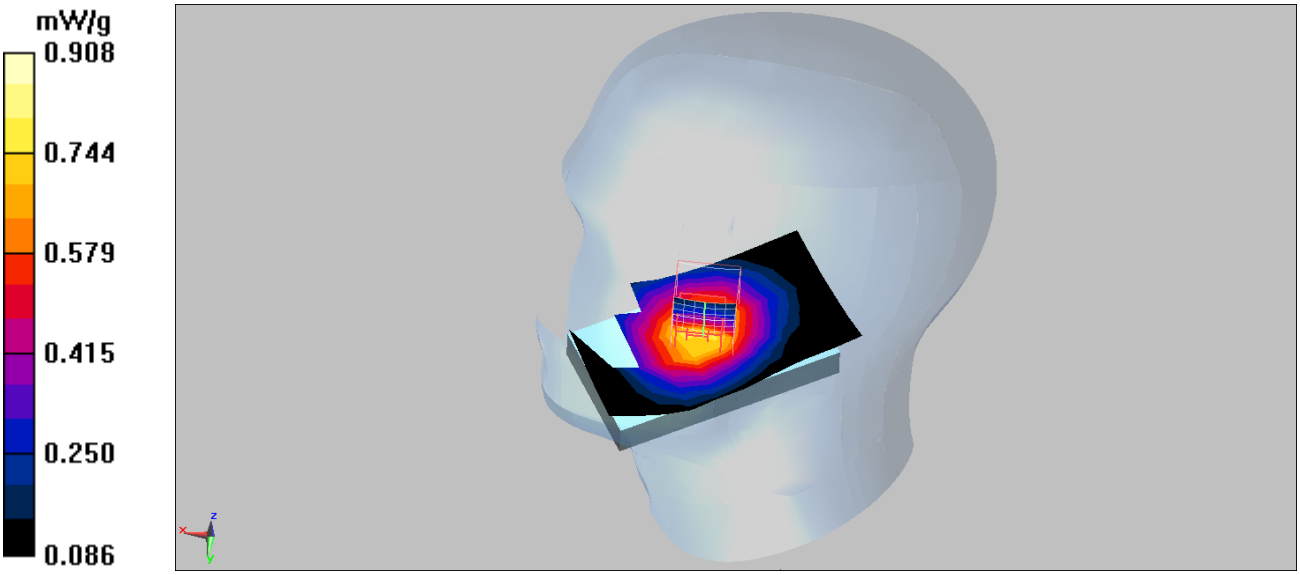
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Right-Cheek_251-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 848.8 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 848.8 MHz; σ = 0.93 mho/m; ε_r = 42.01; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.842 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.002 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.134 W/kg
SAR(1 g) = 0.850 mW/g; SAR(10 g) = 0.594 mW/g
Maximum value of SAR (measured) = 0.908 mW/g



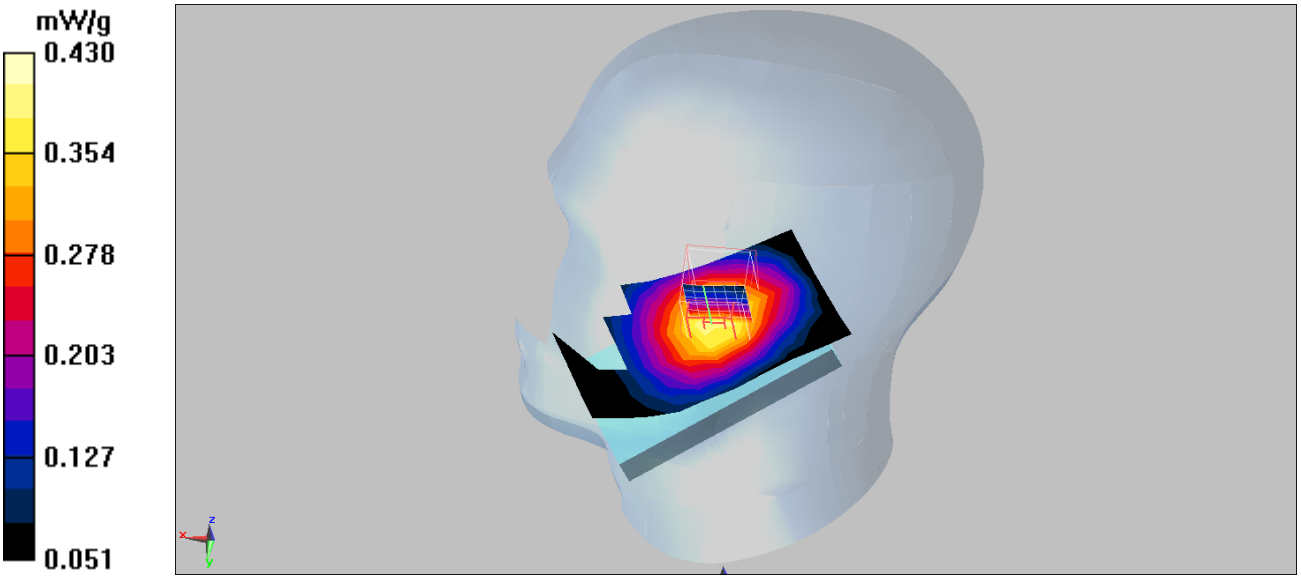
Test Laboratory: QuieTek Date/Time: 2/21/2011

GSM850_Right-Tilt_189-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 836.4 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 836.4 MHz; σ = 0.91 mho/m; ε_r = 42.36; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.1, Liquid Temperature (°C) : 19.5
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.23, 8.23, 8.23); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.422 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.669 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.533 W/kg
SAR(1 g) = 0.410 mW/g; SAR(10 g) = 0.301 mW/g
Maximum value of SAR (measured) = 0.430 mW/g



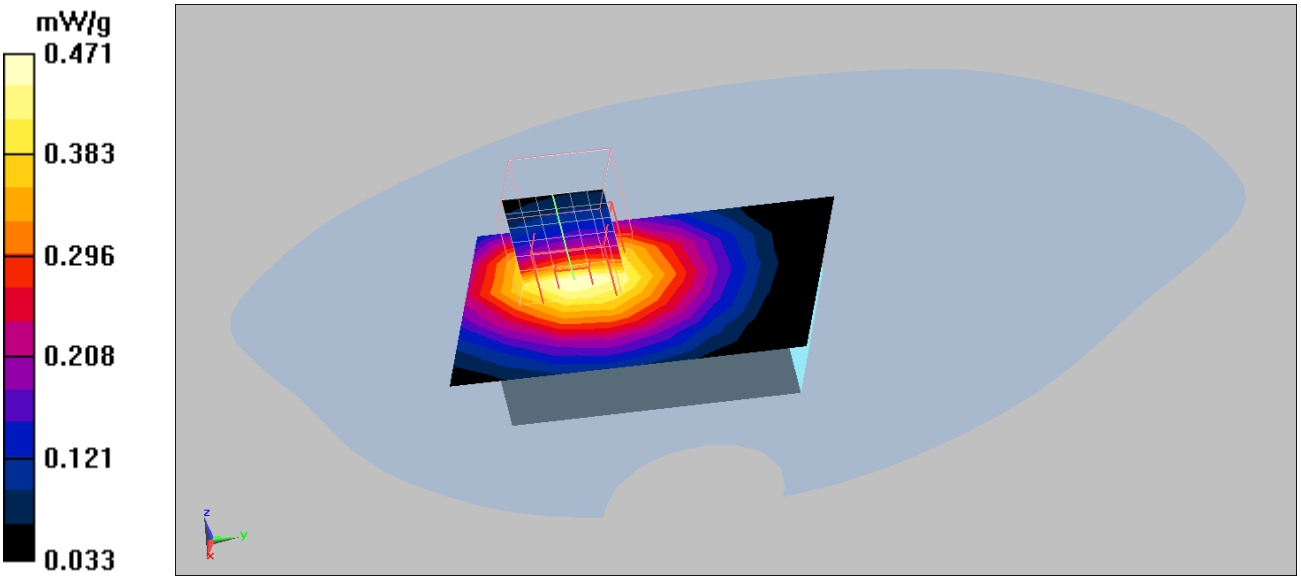
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850_Body_189-Front-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 836.4 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 836.4 MHz; σ = 0.99 mho/m; ε_r = 55.83; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.469 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.308 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.651 W/kg
SAR(1 g) = 0.444 mW/g; SAR(10 g) = 0.303 mW/g
Maximum value of SAR (measured) = 0.471 mW/g



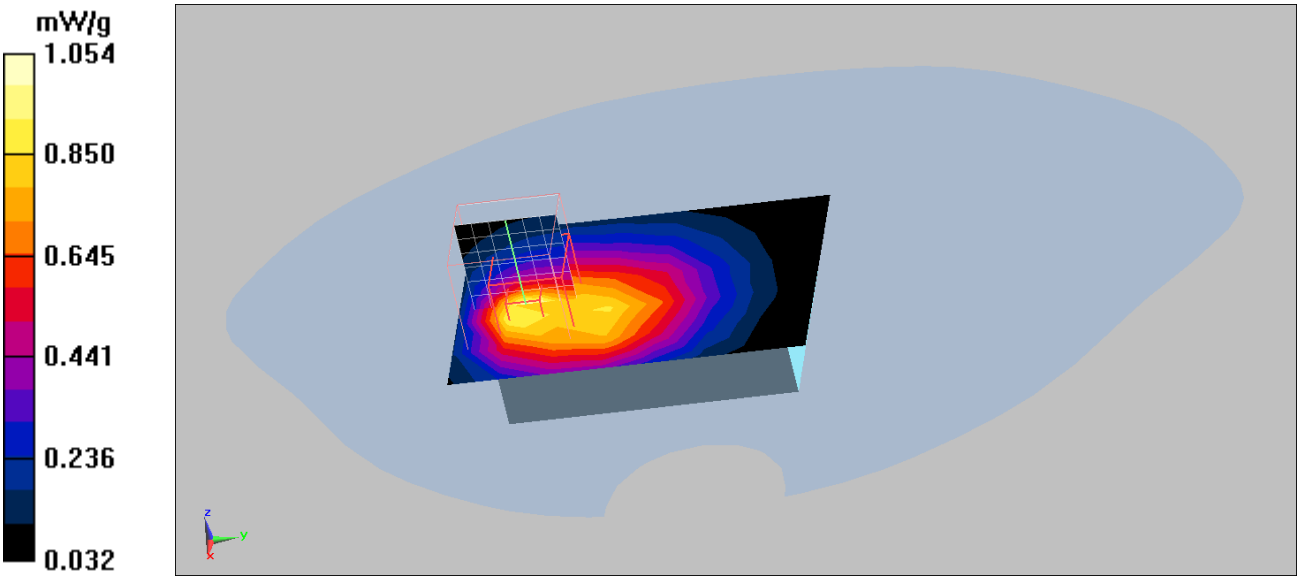
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850_Body_128-Back-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 824.2 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 824.2 MHz; σ = 0.96 mho/m; ε_r = 56.47; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.924 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.807 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.610 W/kg
SAR(1 g) = 0.959 mW/g; SAR(10 g) = 0.591 mW/g
Maximum value of SAR (measured) = 1.054 mW/g



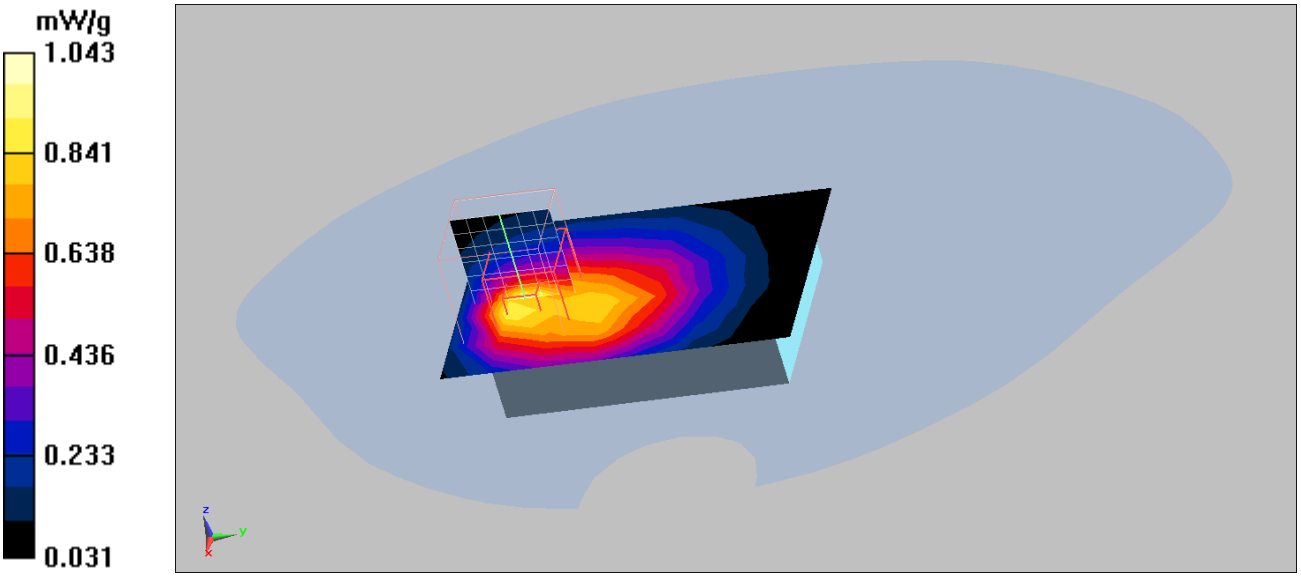
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850_Body_189-Back-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 836.4 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 836.4 MHz; σ = 0.99 mho/m; ε_r = 55.83; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.904 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.246 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.611 W/kg
SAR(1 g) = 0.946 mW/g; SAR(10 g) = 0.577 mW/g
Maximum value of SAR (measured) = 1.043 mW/g



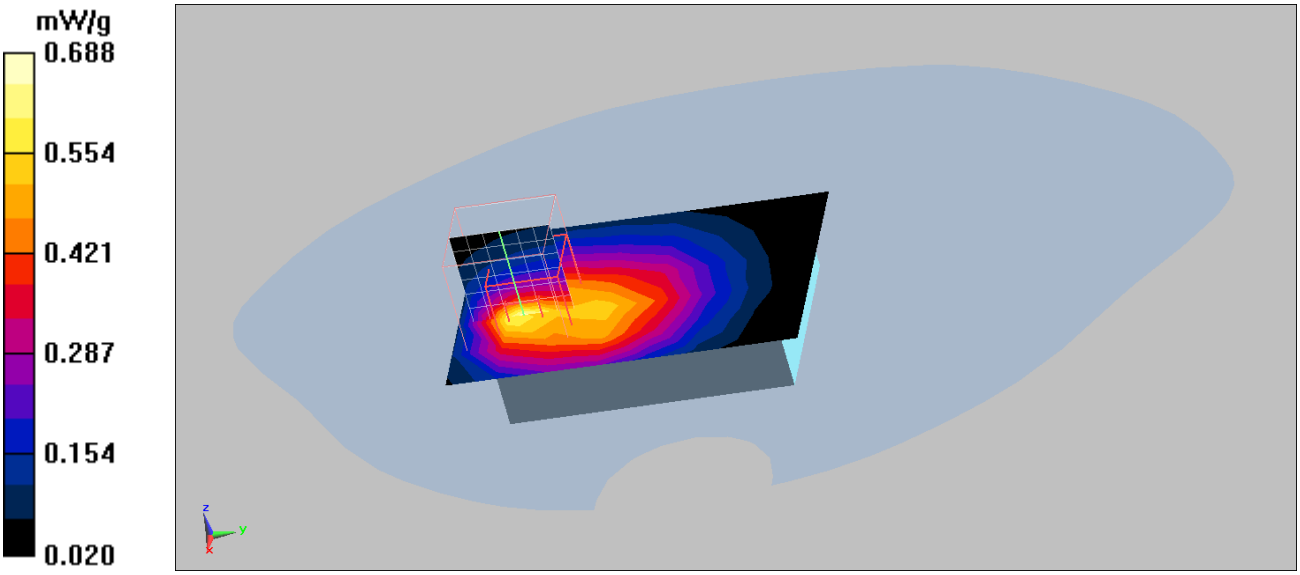
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850_Body_251-Back-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz; Frequency: 848.8 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 848.8 MHz; σ = 1.01 mho/m; ε_r = 55.26; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.595 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.057 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.053 W/kg
SAR(1 g) = 0.623 mW/g; SAR(10 g) = 0.376 mW/g
Maximum value of SAR (measured) = 0.688 mW/g



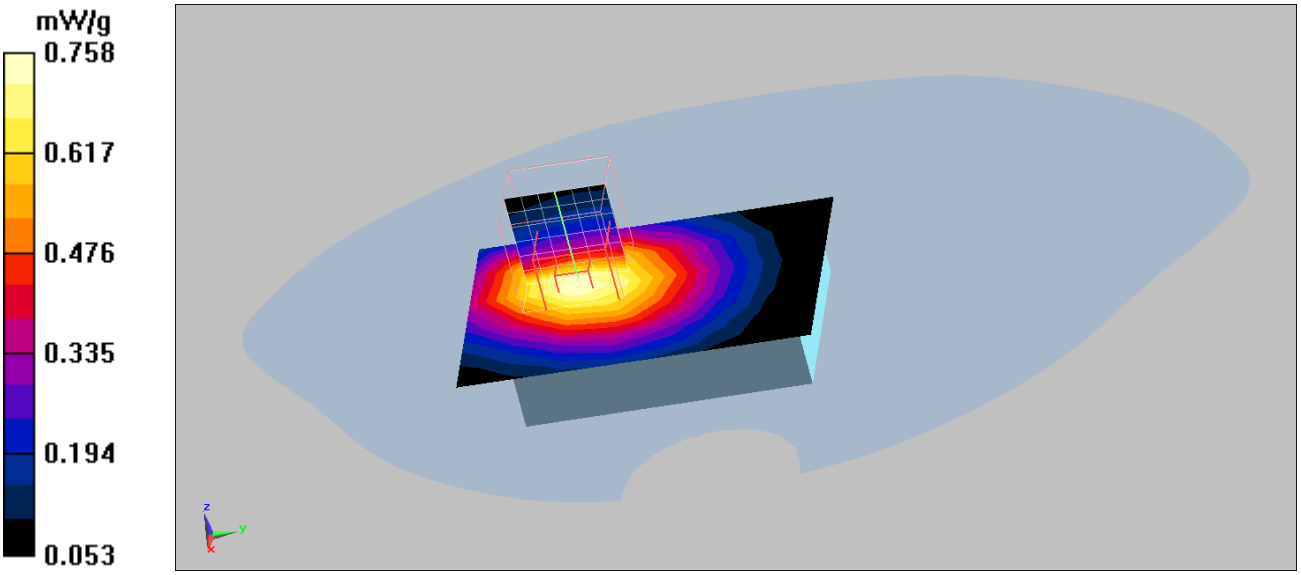
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850 GPRS_189-Front_2 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz_GPRS&EGPRS-2 Slot; Frequency: 836.4 MHz;Communication System PAR: 6.128 dB
Medium parameters used: f = 836.4 MHz; σ = 0.99 mho/m; ε_r = 55.83; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.757 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.912 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.058 W/kg
SAR(1 g) = 0.713 mW/g; SAR(10 g) = 0.484 mW/g
Maximum value of SAR (measured) = 0.758 mW/g



Test Laboratory: QuieTek Date/Time: 2/23/2011

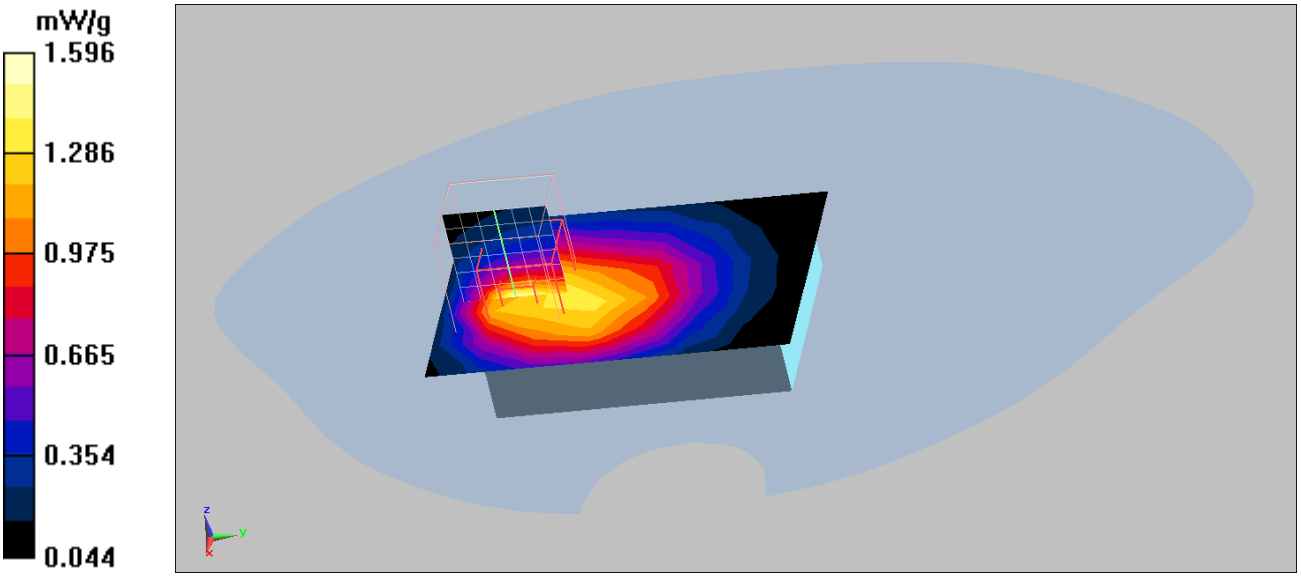
GSM850 GPRS_128-Back_2 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz_GPRS&EGPRS-2 Slot; Frequency: 824.2 MHz;Communication System PAR: 6.128 dB
Medium parameters used: f = 824.2 MHz; σ = 0.96 mho/m; ε_r = 56.47; ρ = 1000 kg/m^3
Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.340 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.190 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.398 W/kg
SAR(1 g) = 1.45 mW/g; SAR(10 g) = 0.902 mW/g
Maximum value of SAR (measured) = 1.596 mW/g



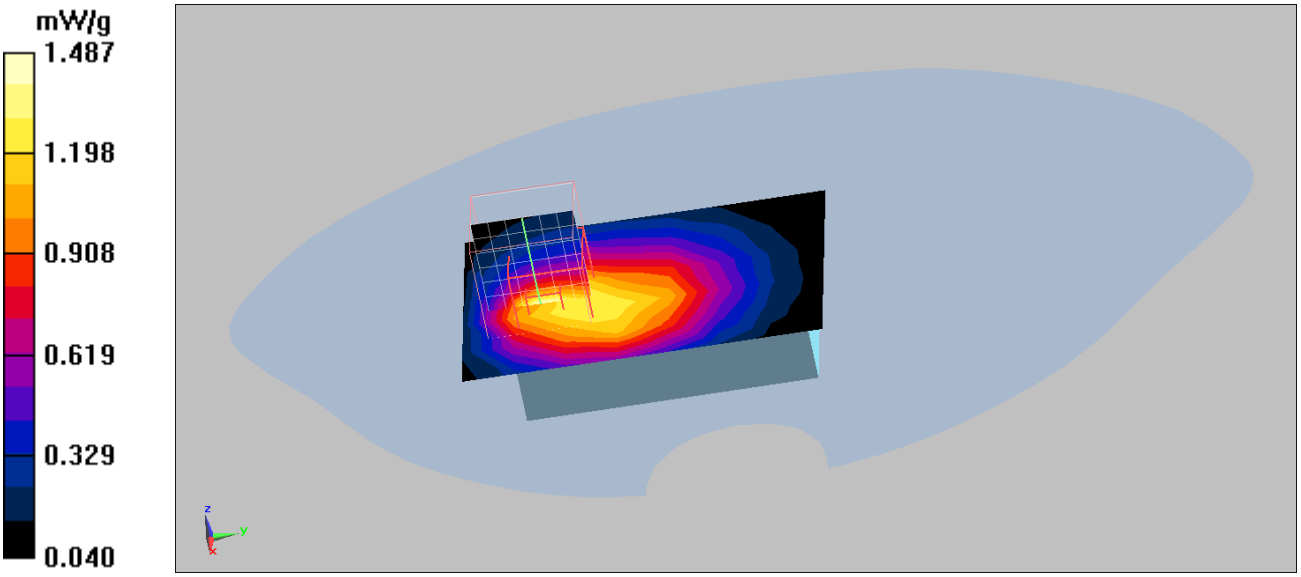
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850 GPRS_189-Back_2 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz_GPRS&EGPRS-2 Slot; Frequency: 836.4 MHz;Communication System PAR: 6.128 dB
Medium parameters used: f = 836.4 MHz; σ = 0.99 mho/m; ε_r = 55.83; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.281 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.148 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 2.275 W/kg
SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.849 mW/g
Maximum value of SAR (measured) = 1.487 mW/g



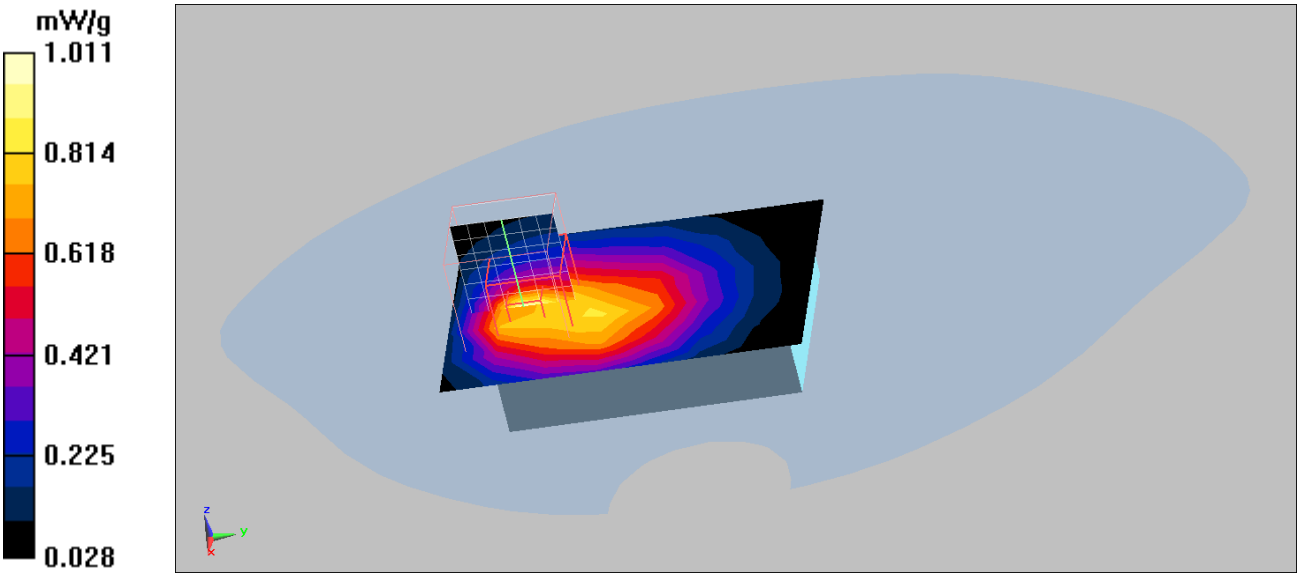
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850 GPRS_251-Back_2 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz_GPRS&EGPRS-2 Slot; Frequency: 848.8 MHz;Communication System PAR: 6.128 dB
Medium parameters used: f = 848.8 MHz; σ = 1.01 mho/m; ε_r = 55.26; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.826 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.391 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.556 W/kg
SAR(1 g) = 0.925 mW/g; SAR(10 g) = 0.562 mW/g
Maximum value of SAR (measured) = 1.011 mW/g



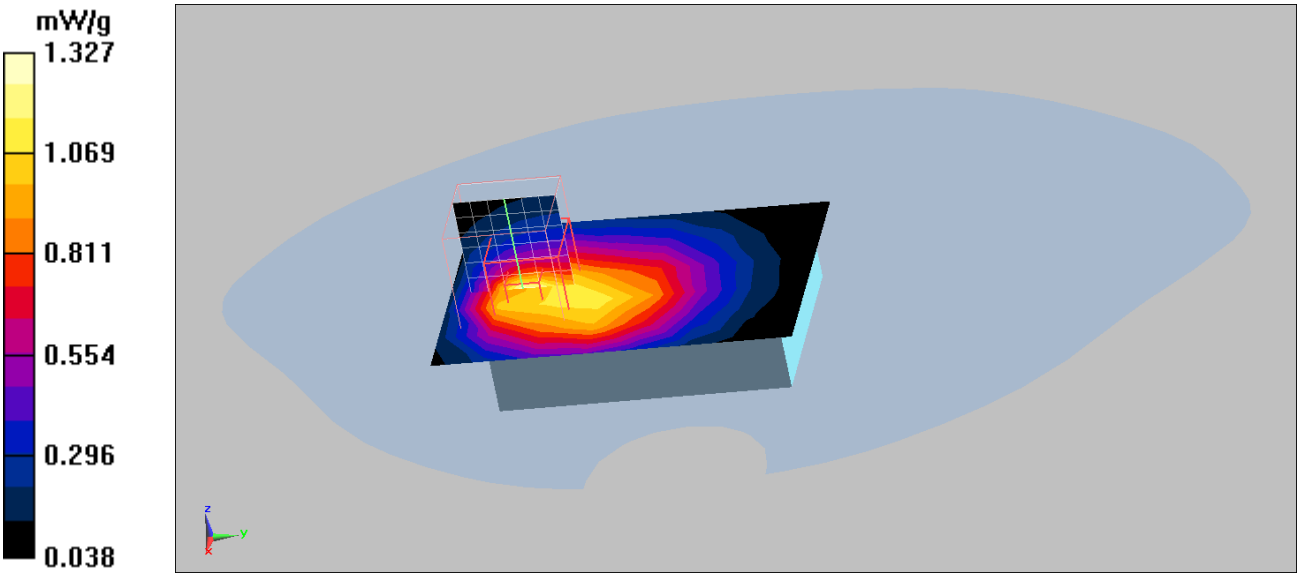
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850 GPRS_189-Back_3 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz_GPRS&EGPRS-3 Slot; Frequency: 824.2 MHz;Communication System PAR: 4.314 dB
Medium parameters used: f = 824.2 MHz; σ = 0.96 mho/m; ε_r = 56.47; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.126 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.497 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 2.040 W/kg
SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.749 mW/g
Maximum value of SAR (measured) = 1.327 mW/g



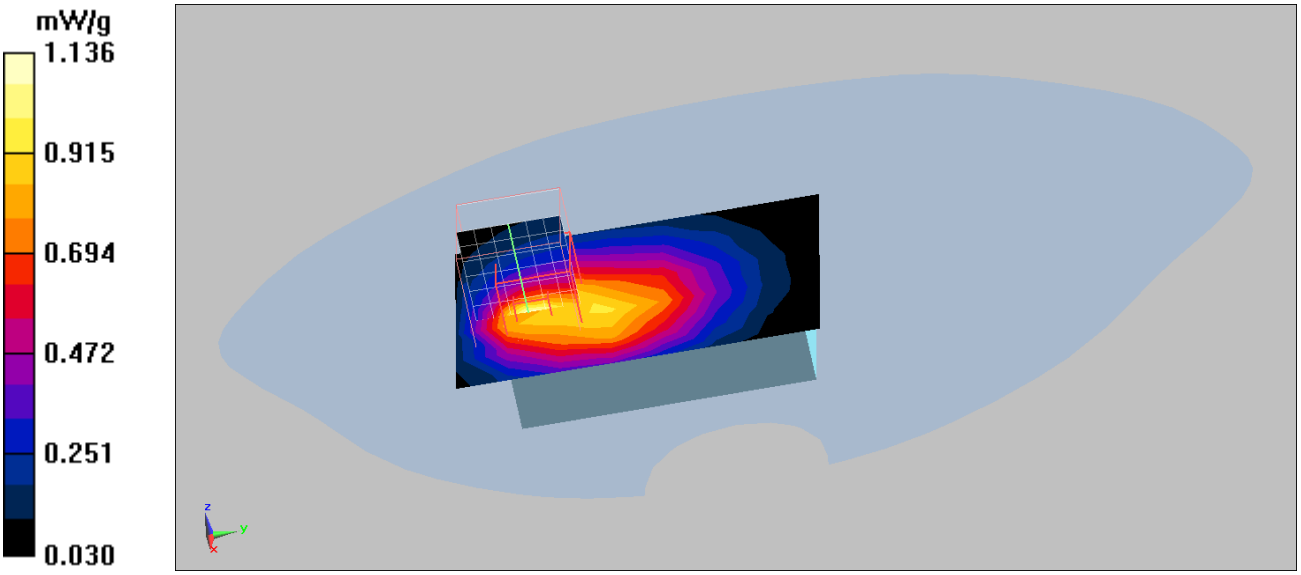
Test Laboratory: QuieTek Date/Time: 2/23/2011

GSM850 GPRS_189-Back_4 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC GSM_850MHz_GPRS&EGPRS-4 Slot; Frequency: 824.2 MHz;Communication System PAR: 3.01 dB
Medium parameters used: f = 824.2 MHz; σ = 0.96 mho/m; ε_r = 56.47; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

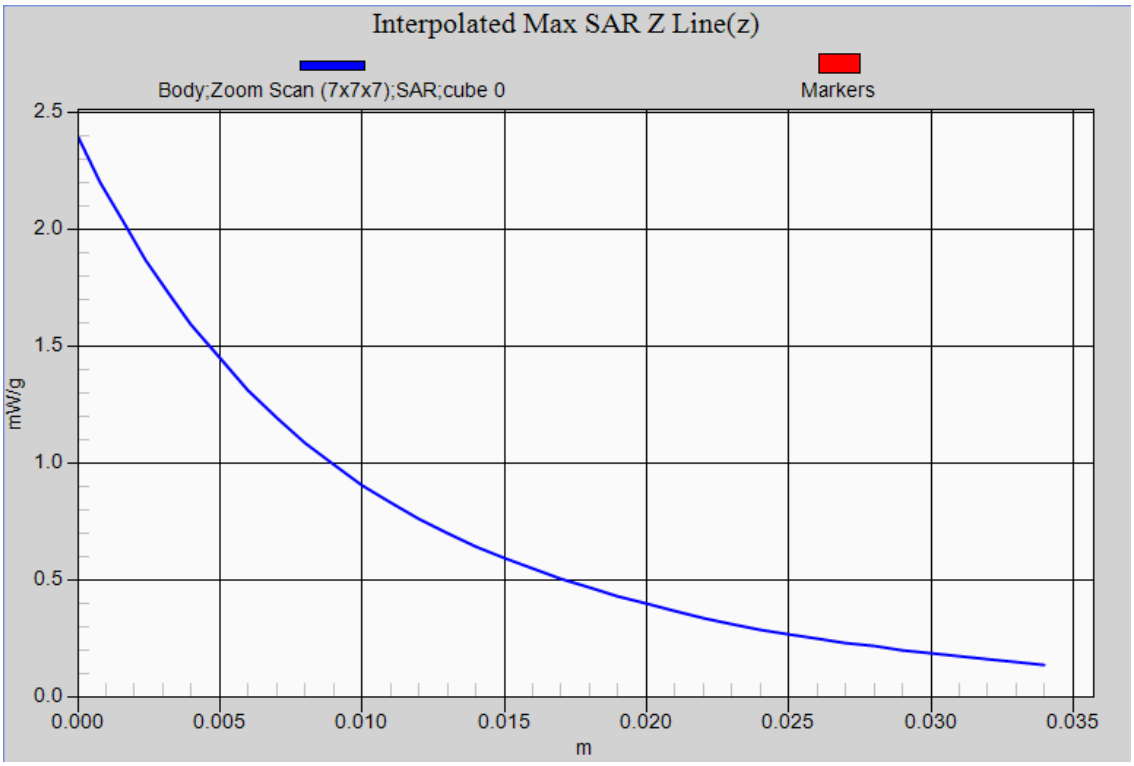
- Probe: EX3DV4 - SN3698; ConvF(8.21, 8.21, 8.21); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.931 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.879 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.732 W/kg
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.635 mW/g
Maximum value of SAR (measured) = 1.136 mW/g



GSM 850 EUT Back GPRS 2 Slot-Close Z-Axis plot
Channel: 128



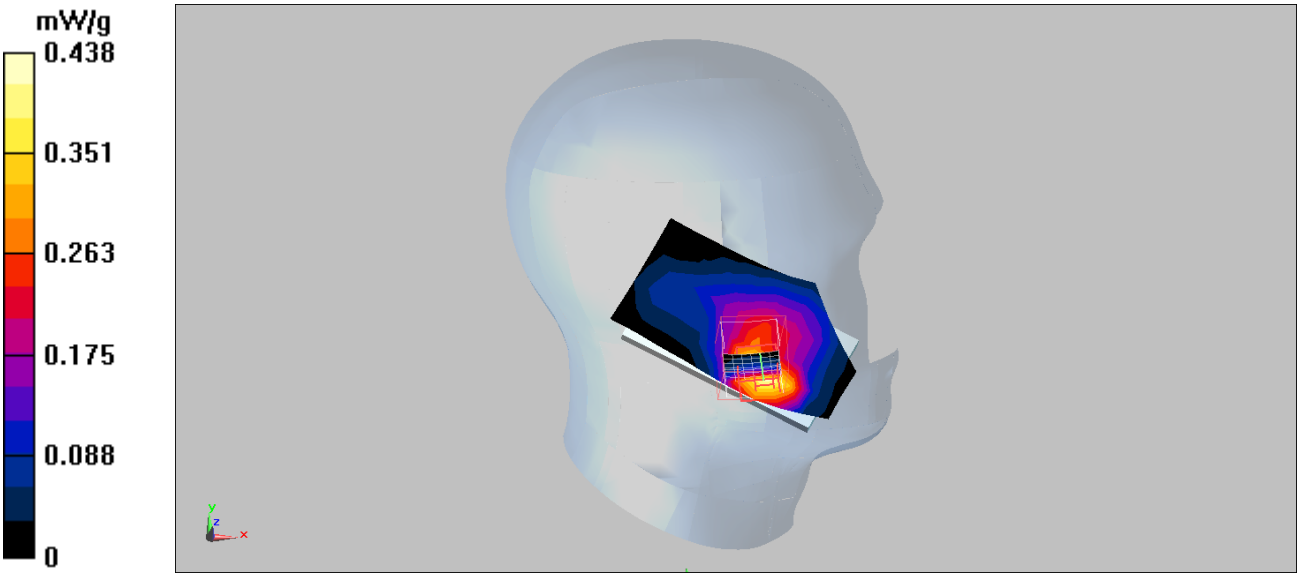
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Left-Cheek_512-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1850.2 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1850.2 MHz; σ = 1.39 mho/m; ε_r = 40.38; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.438 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.834 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.678 W/kg
SAR(1 g) = 0.401 mW/g; SAR(10 g) = 0.232 mW/g
Maximum value of SAR (measured) = 0.440 mW/g



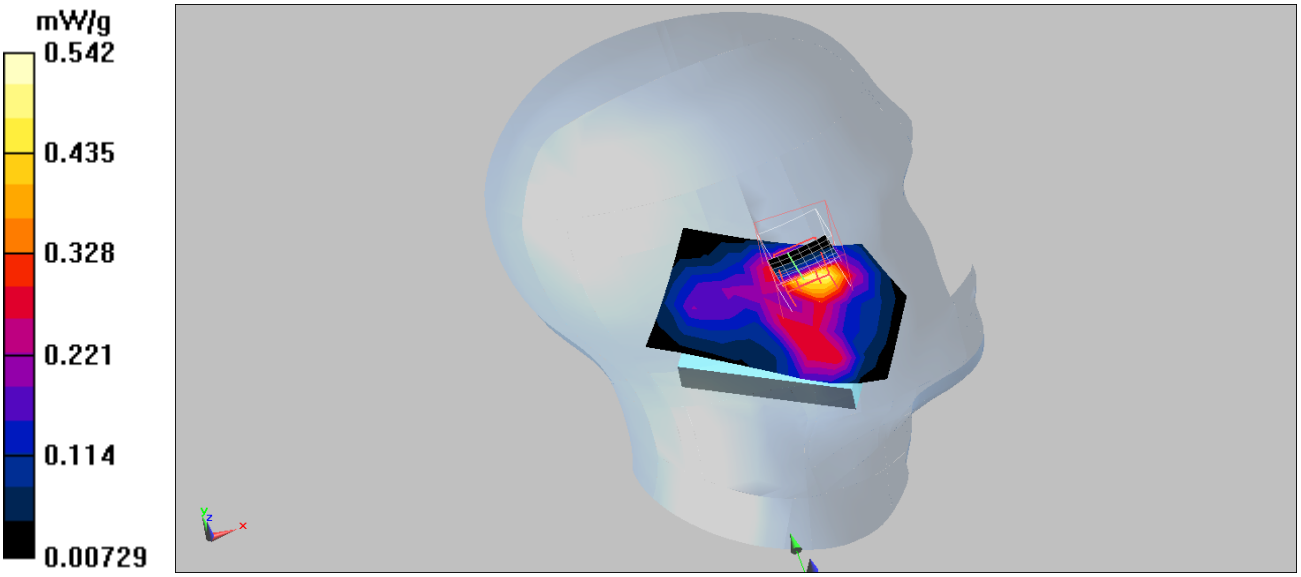
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Left-Cheek_661-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.41 mho/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.511 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.400 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 1.011 W/kg
SAR(1 g) = 0.486 mW/g; SAR(10 g) = 0.243 mW/g
Maximum value of SAR (measured) = 0.542 mW/g



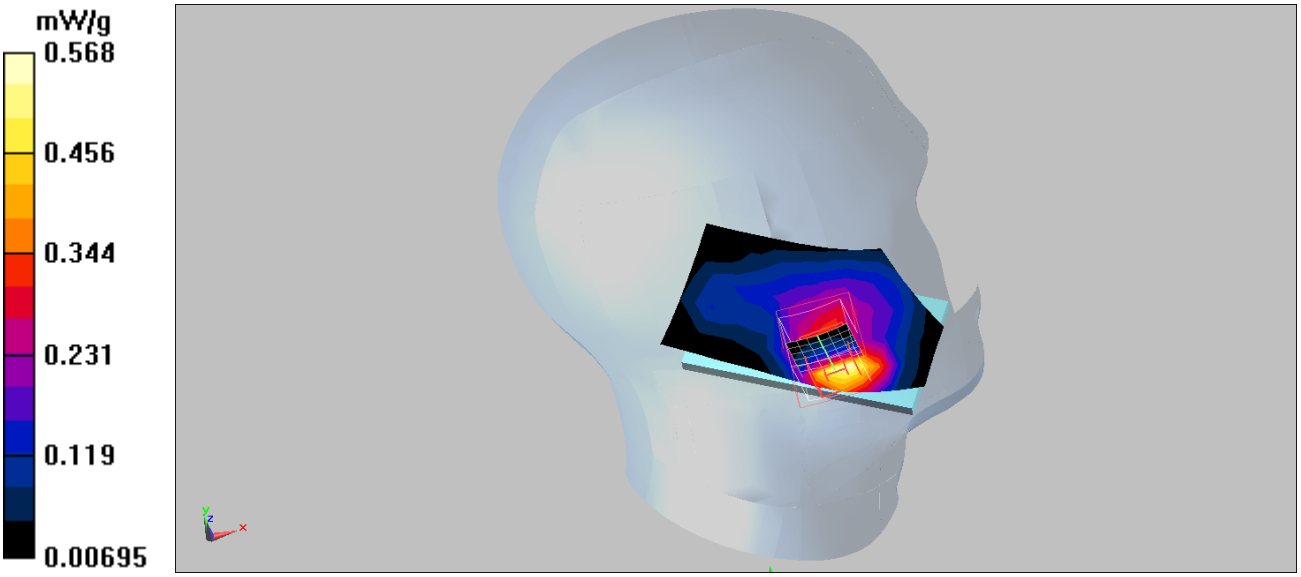
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Left-Cheek_661-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.41 mho/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.551 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.846 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.875 W/kg
SAR(1 g) = 0.518 mW/g; SAR(10 g) = 0.298 mW/g
Maximum value of SAR (measured) = 0.568 mW/g



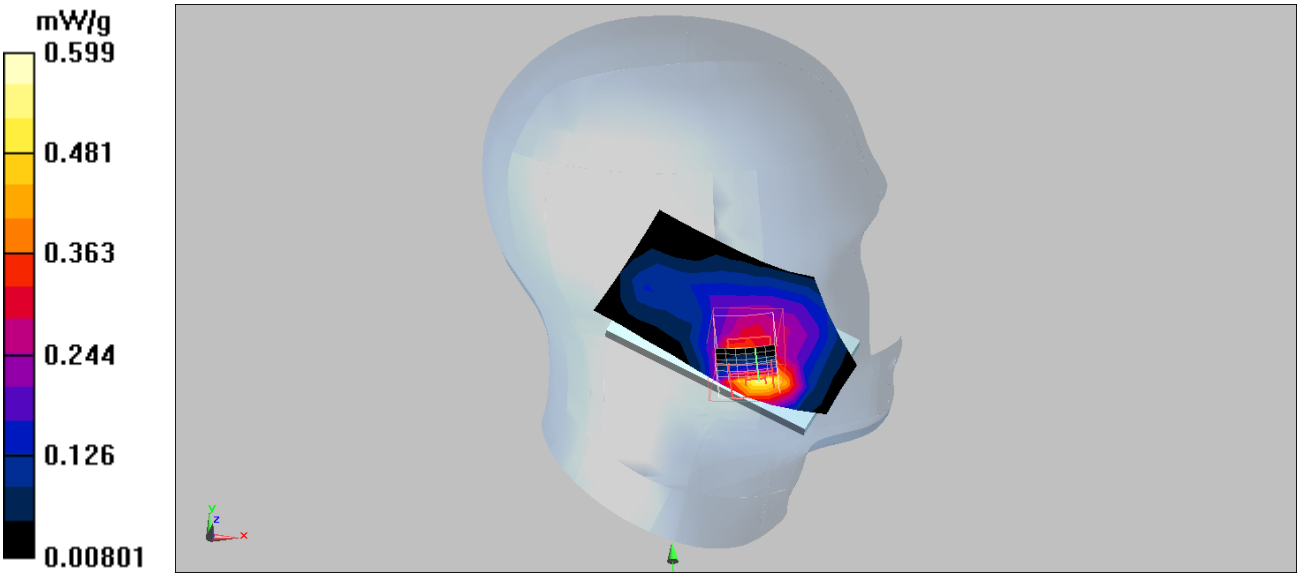
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Left-Cheek_810-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1909.8 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1909.8 MHz; σ = 1.43 mho/m; ε_r = 39.13; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.609 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.793 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.937 W/kg
SAR(1 g) = 0.550 mW/g; SAR(10 g) = 0.314 mW/g
Maximum value of SAR (measured) = 0.599 mW/g



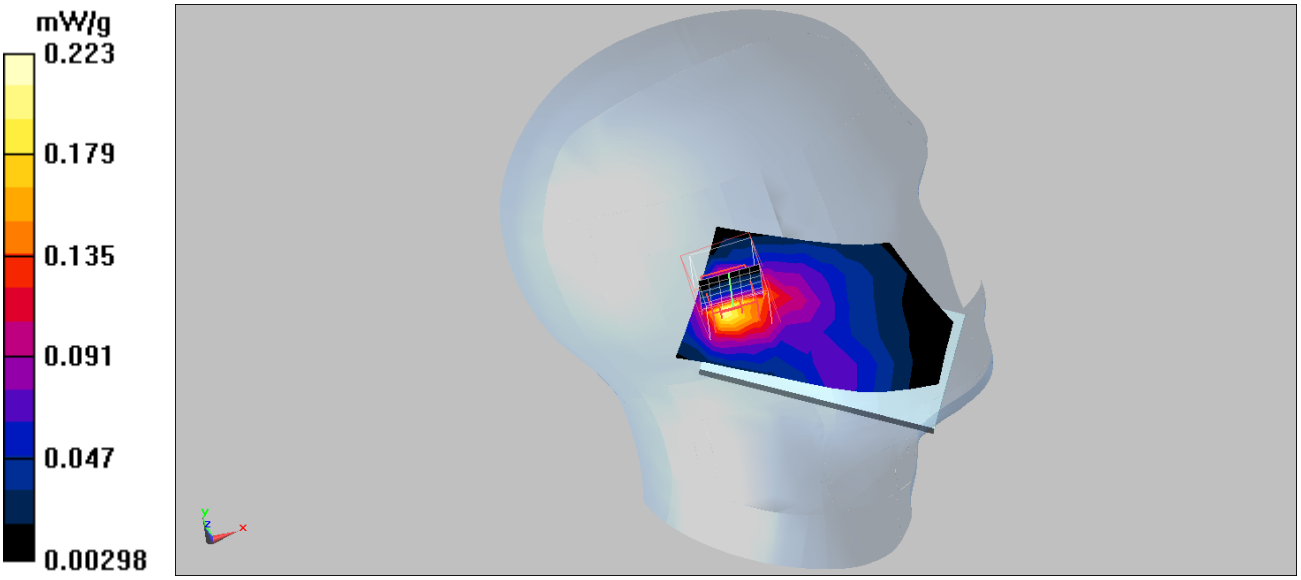
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Left-Tilt_661-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.41 mho/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Left Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.211 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.531 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.369 W/kg
SAR(1 g) = 0.204 mW/g; SAR(10 g) = 0.111 mW/g
Maximum value of SAR (measured) = 0.223 mW/g



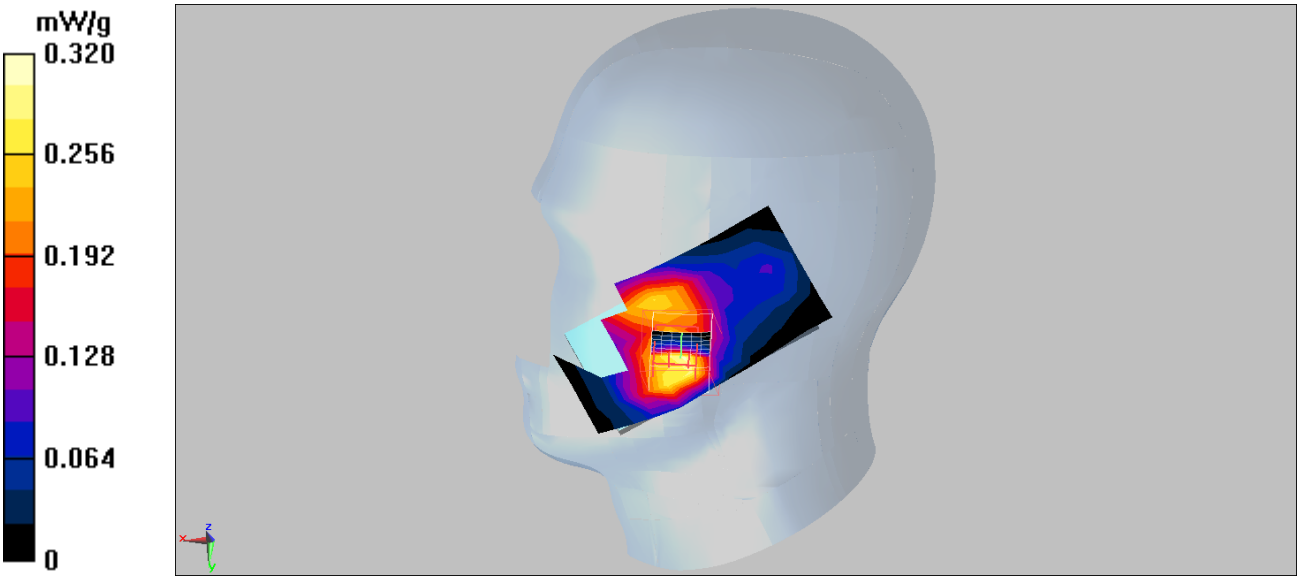
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Right-Cheek_512-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1850.2 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1850.2 MHz; σ = 1.39 mho/m; ε_r = 40.38; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.320 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.132 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.520 W/kg
SAR(1 g) = 0.319 mW/g; SAR(10 g) = 0.182 mW/g
Maximum value of SAR (measured) = 0.353 mW/g



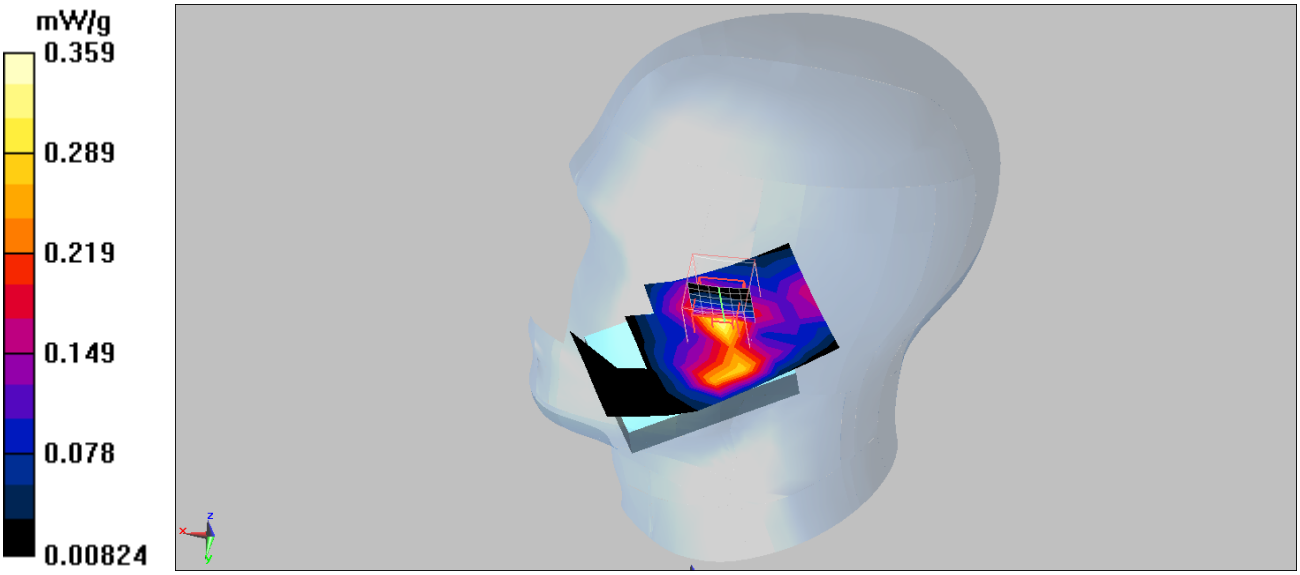
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Right-Cheek_661-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.41 mho/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.334 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.253 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.590 W/kg
SAR(1 g) = 0.312 mW/g; SAR(10 g) = 0.167 mW/g
Maximum value of SAR (measured) = 0.359 mW/g



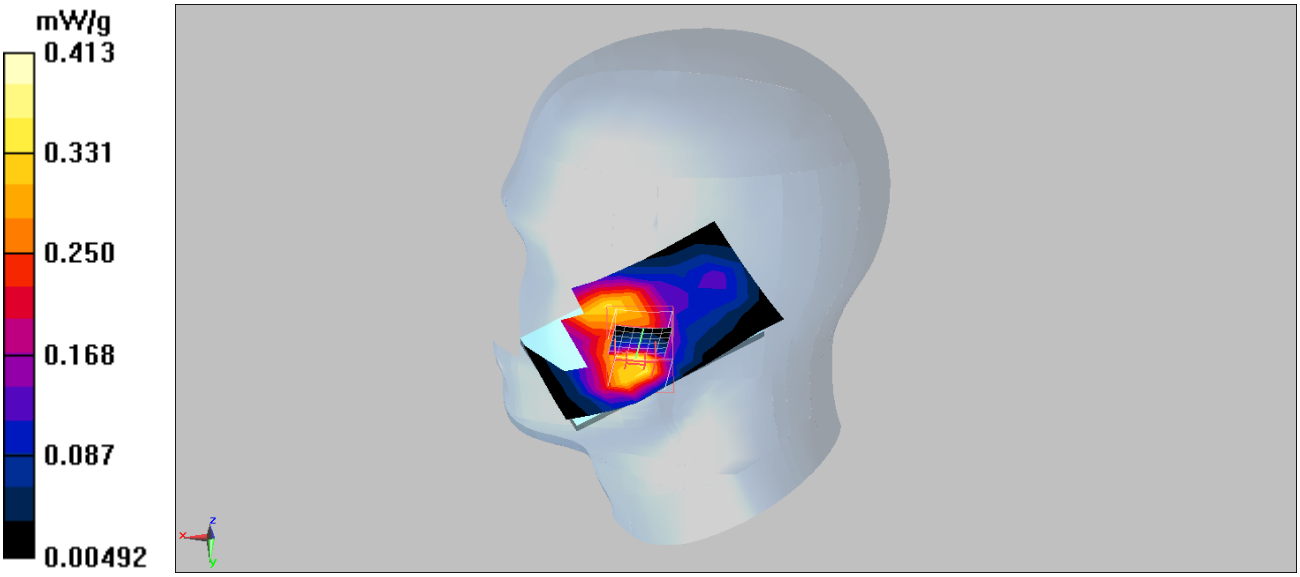
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Right-Cheek_661-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.41 mho/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.374 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.969 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.613 W/kg
SAR(1 g) = 0.374 mW/g; SAR(10 g) = 0.213 mW/g
Maximum value of SAR (measured) = 0.413 mW/g



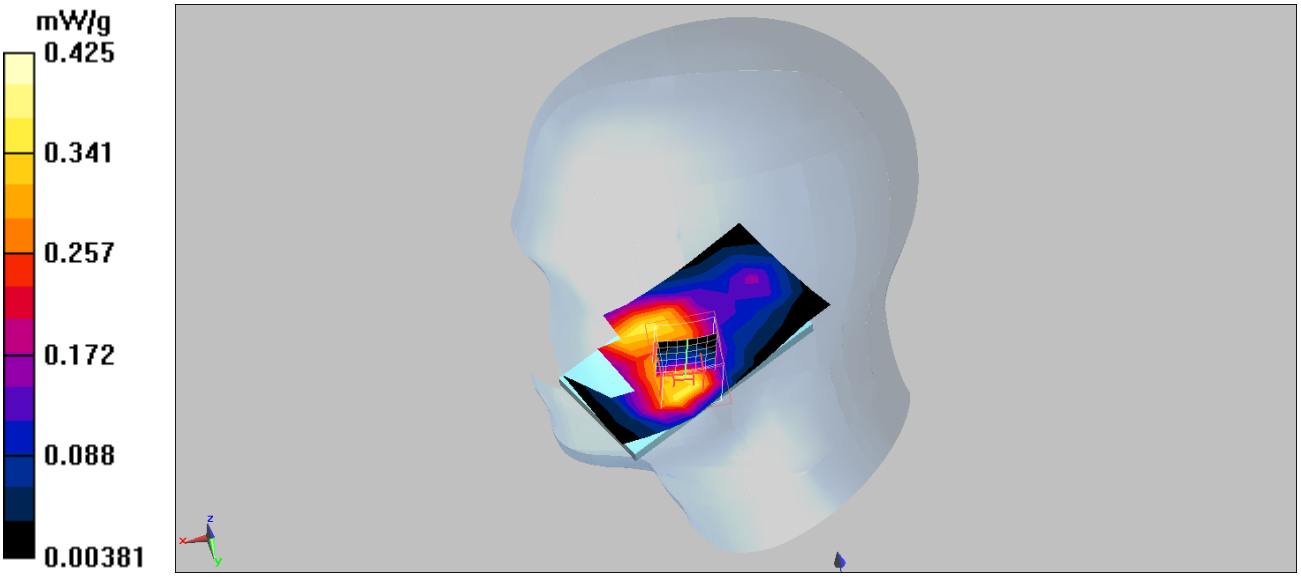
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Right-Cheek_810-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1909.8 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1909.8 MHz; σ = 1.43 mho/m; ε_r = 39.13; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.376 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.586 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.638 W/kg
SAR(1 g) = 0.386 mW/g; SAR(10 g) = 0.220 mW/g
Maximum value of SAR (measured) = 0.425 mW/g



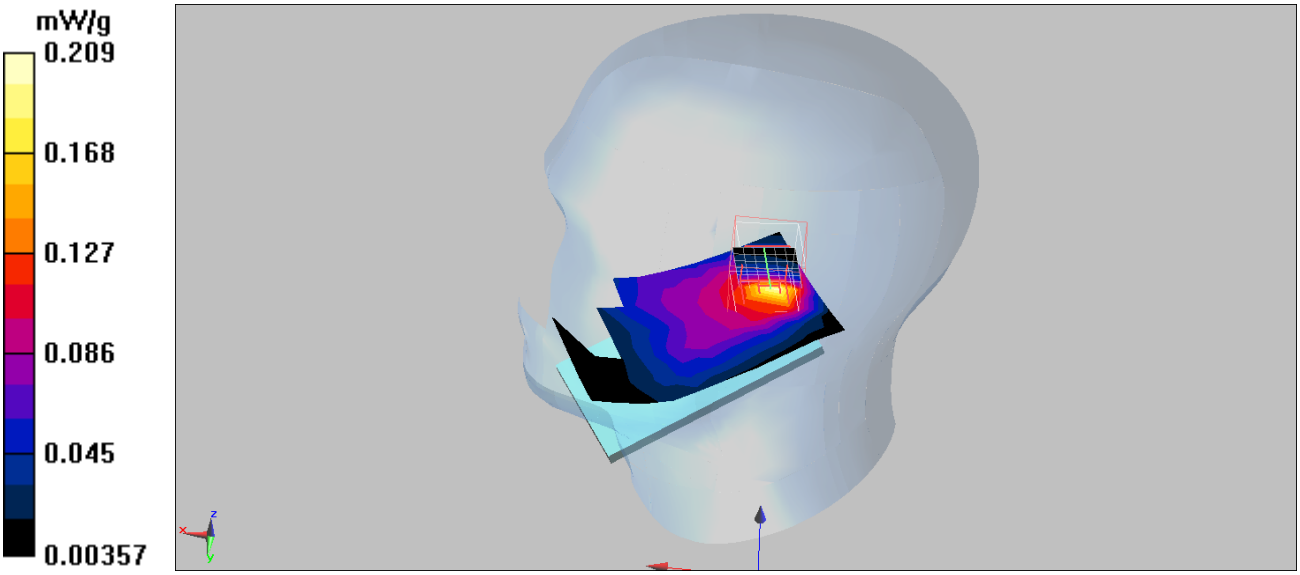
Test Laboratory: QuieTek Date/Time: 2/22/2011

PCS1900_Right-Tilt_661-Open
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.41 mho/m; ε_r = 39.74; ρ = 1000 kg/m^3
Phantom section: Right Section
Ambient Temperature (°C) : 20.3, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.32, 7.32, 7.32); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Head/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.213 mW/g

Configuration/Head/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.566 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.334 W/kg
SAR(1 g) = 0.190 mW/g; SAR(10 g) = 0.105 mW/g
Maximum value of SAR (measured) = 0.209 mW/g



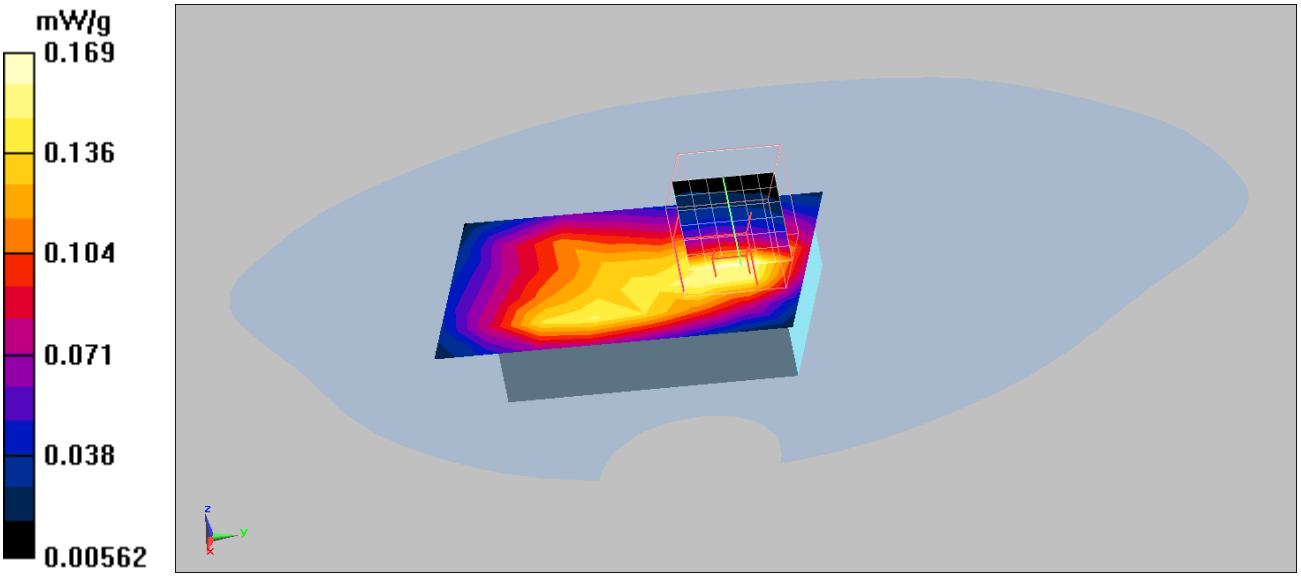
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900_Body_661-Front-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.47 mho/m; ε_r = 54.67; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.156 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.795 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.251 W/kg
SAR(1 g) = 0.158 mW/g; SAR(10 g) = 0.099 mW/g
Maximum value of SAR (measured) = 0.169 mW/g



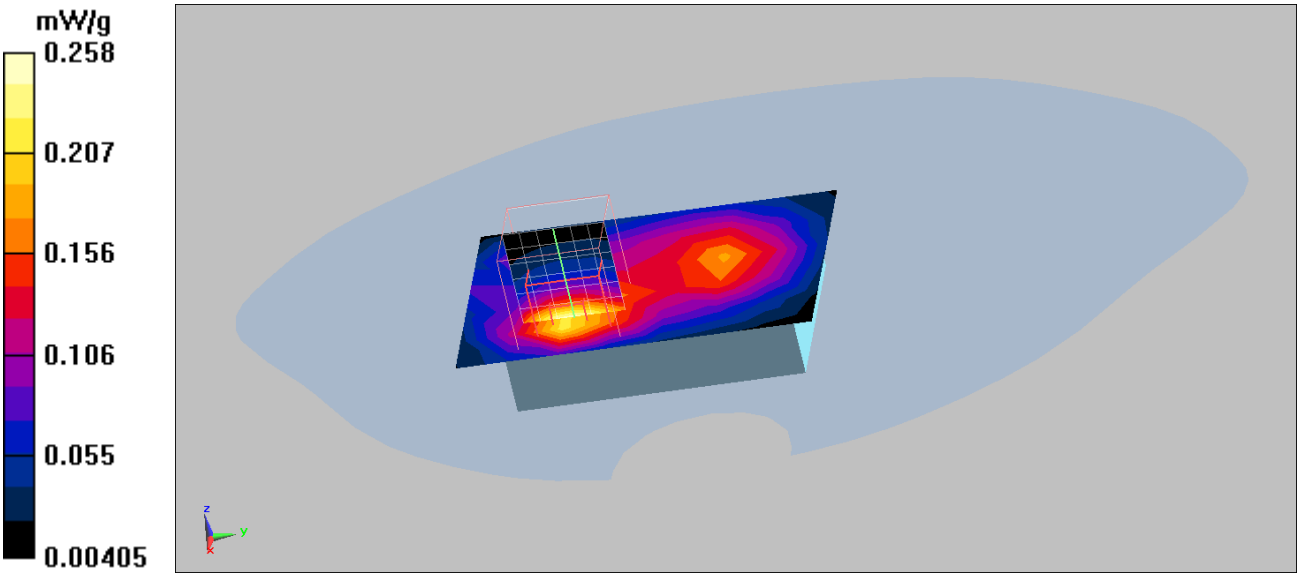
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900_Body_512-Back-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1850.2 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 55.12; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.217 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.027 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.392 W/kg
SAR(1 g) = 0.235 mW/g; SAR(10 g) = 0.133 mW/g
Maximum value of SAR (measured) = 0.258 mW/g



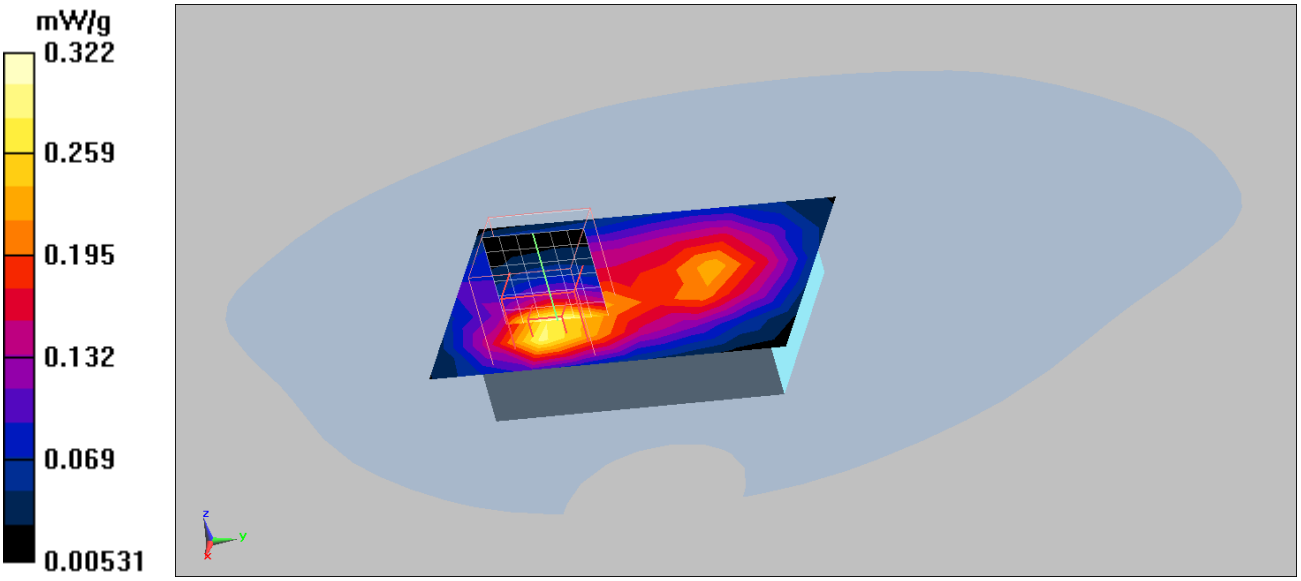
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900_Body_661-Back-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.47 mho/m; ε_r = 54.67; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.289 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.586 V/m; Power Drift = -0.0076 dB
Peak SAR (extrapolated) = 0.500 W/kg
SAR(1 g) = 0.296 mW/g; SAR(10 g) = 0.168 mW/g
Maximum value of SAR (measured) = 0.322 mW/g



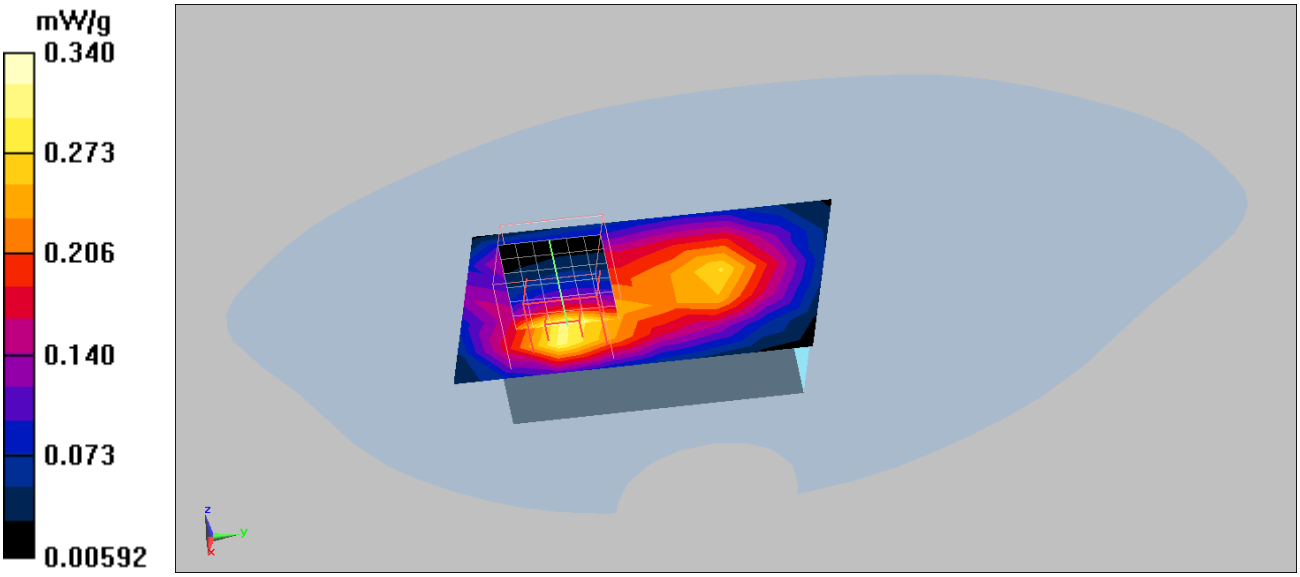
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900_Body_810-Back-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz; Frequency: 1909.8 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1909.8 MHz; σ = 1.5 mho/m; ε_r = 53.91; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.306 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.524 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.532 W/kg
SAR(1 g) = 0.313 mW/g; SAR(10 g) = 0.179 mW/g
Maximum value of SAR (measured) = 0.340 mW/g



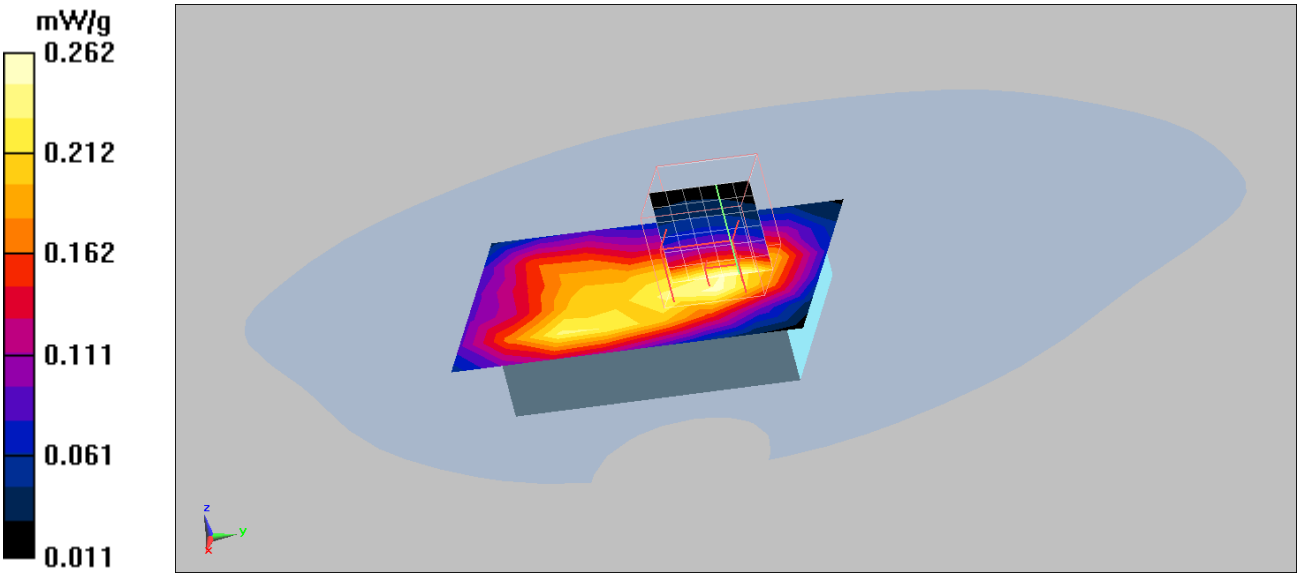
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900 GPRS_661-Front_2 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz_GPRS&EGPRS-2 Slot; Frequency: 1880 MHz;Communication System PAR: 6.128 dB
Medium parameters used: f = 1880 MHz; σ = 1.47 mho/m; ε_r = 54.67; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.252 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.500 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.385 W/kg
SAR(1 g) = 0.245 mW/g; SAR(10 g) = 0.155 mW/g
Maximum value of SAR (measured) = 0.262 mW/g



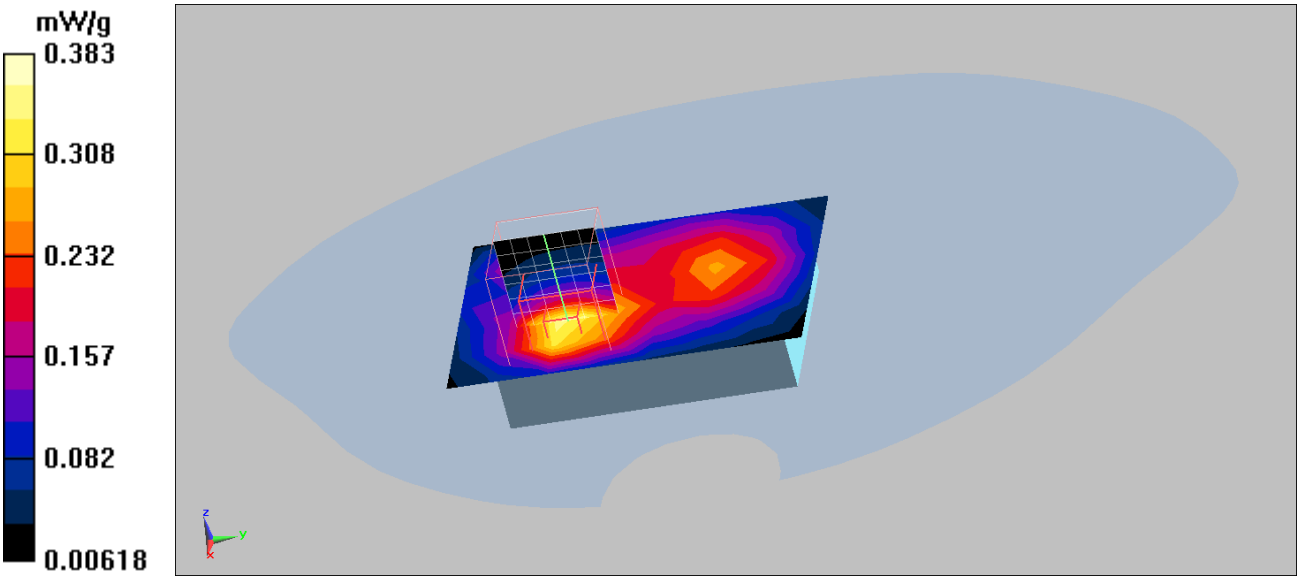
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900 GPRS_512-Back_2 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz_GPRS&EGPRS-2 Slot; Frequency: 1850.2 MHz;Communication System PAR: 6.128 dB
Medium parameters used: f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 55.12; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.354 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.551 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.584 W/kg
SAR(1 g) = 0.352 mW/g; SAR(10 g) = 0.201 mW/g
Maximum value of SAR (measured) = 0.383 mW/g



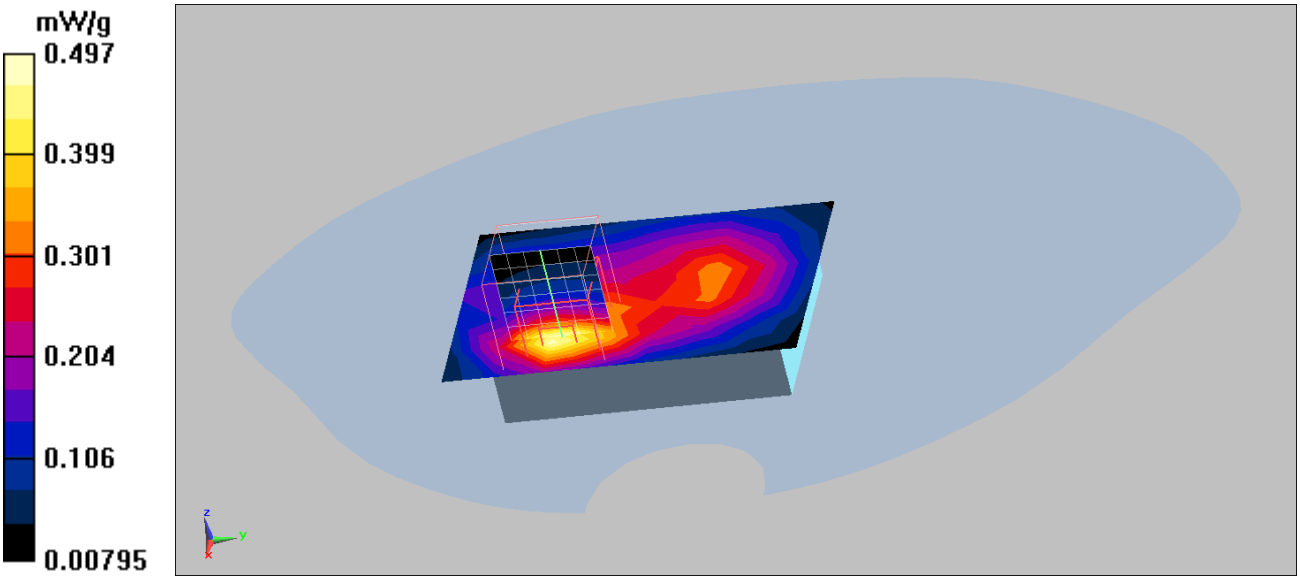
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900 GPRS_661-Back_2 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz_GPRS&EGPRS-2 Slot; Frequency: 1880 MHz;Communication System PAR: 6.128 dB
Medium parameters used: f = 1880 MHz; σ = 1.47 mho/m; ε_r = 54.67; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.478 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.136 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.747 W/kg
SAR(1 g) = 0.453 mW/g; SAR(10 g) = 0.260 mW/g
Maximum value of SAR (measured) = 0.497 mW/g



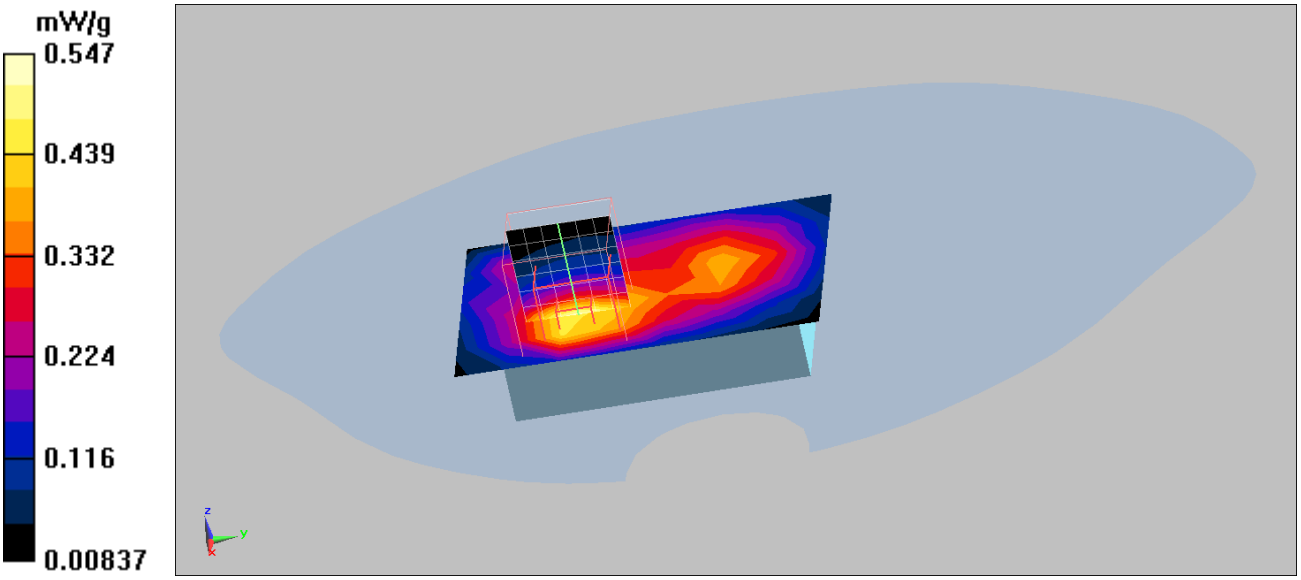
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900 GPRS_810-Back_2 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz_GPRS&EGPRS-2 Slot; Frequency: 1909.8 MHz;Communication System PAR: 6.128 dB
Medium parameters used: f = 1909.8 MHz; σ = 1.5 mho/m; ε_r = 53.91; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.471 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.472 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.848 W/kg
SAR(1 g) = 0.506 mW/g; SAR(10 g) = 0.289 mW/g
Maximum value of SAR (measured) = 0.547 mW/g



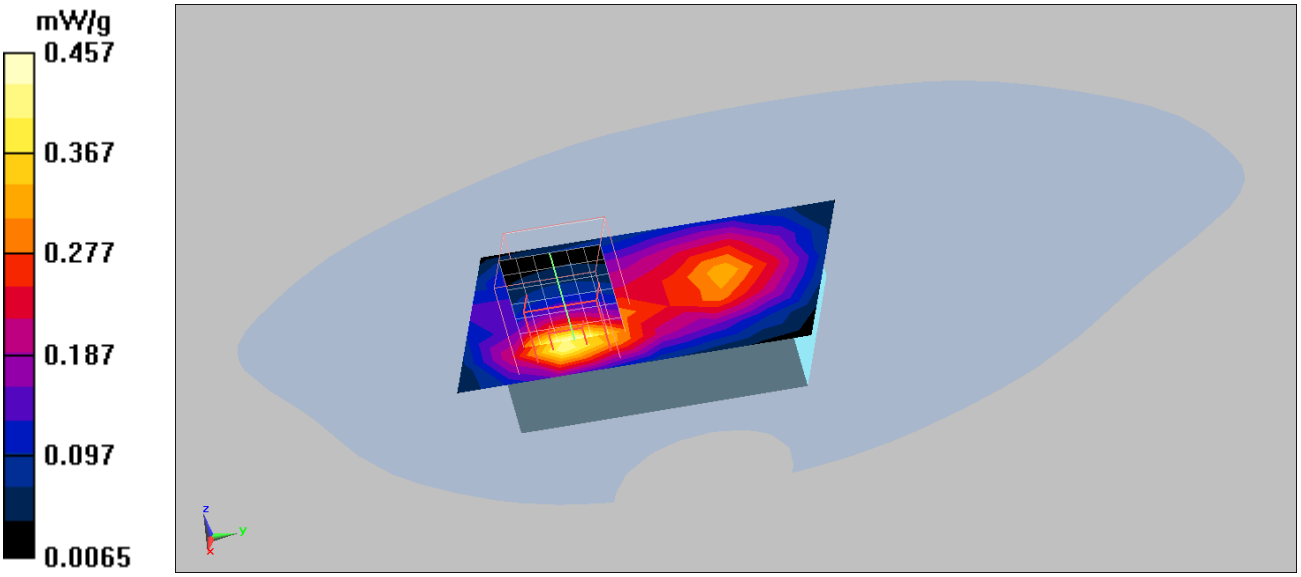
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900 GPRS_661-Back_3 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz_GPRS&EGPRS-3 Slot; Frequency: 1850.2 MHz;Communication System PAR: 4.314 dB
Medium parameters used: f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 55.12; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.426 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.138 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.685 W/kg
SAR(1 g) = 0.415 mW/g; SAR(10 g) = 0.237 mW/g
Maximum value of SAR (measured) = 0.457 mW/g



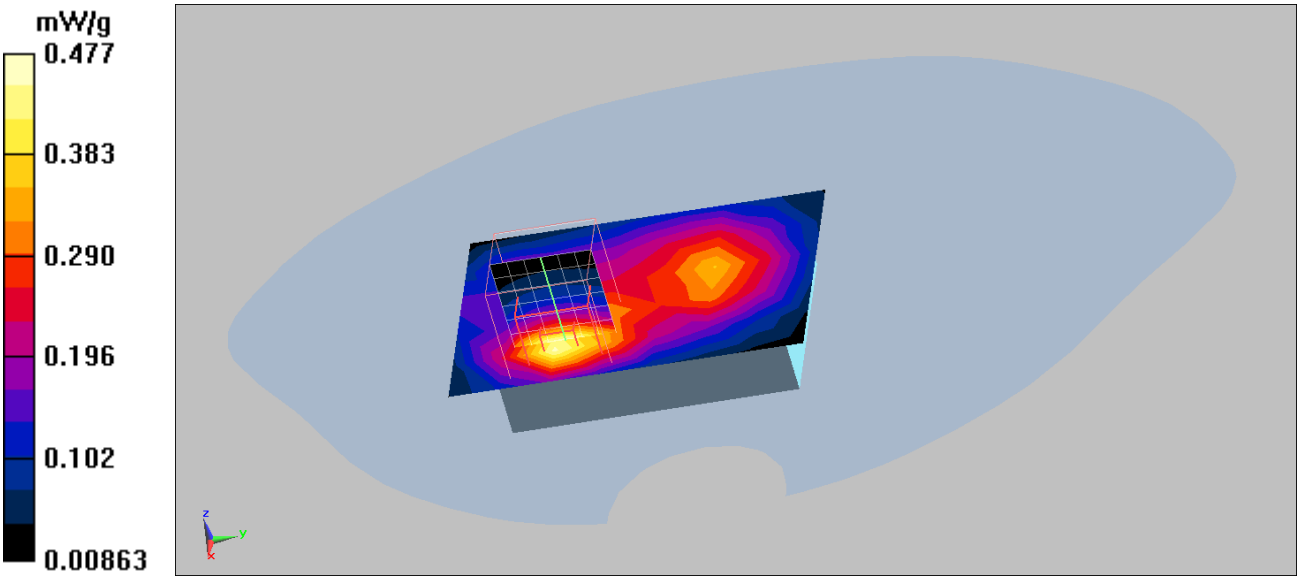
Test Laboratory: QuieTek Date/Time: 2/23/2011

PCS1900 GPRS_661-Back_4 Slot-Close
DUT: Mobile Phone; Type: G6210
Communication System: FCC PCS_1900MHz_GPRS&EGPRS-4 Slot; Frequency: 1850.2 MHz;Communication System PAR: 3.01 dB
Medium parameters used: f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 55.12; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.2, Liquid Temperature (°C) : 19.8
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

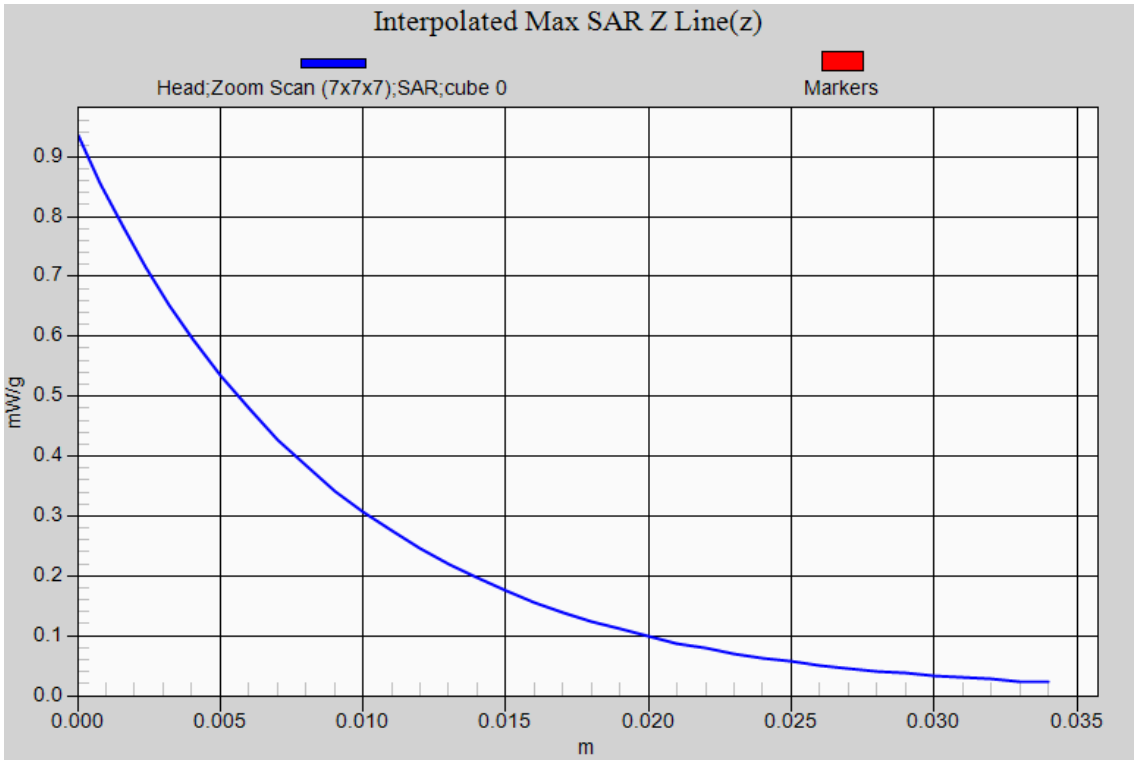
- Probe: EX3DV4 - SN3698; ConvF(7.16, 7.16, 7.16); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with right table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.456 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.571 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.727 W/kg
SAR(1 g) = 0.437 mW/g; SAR(10 g) = 0.250 mW/g
Maximum value of SAR (measured) = 0.477 mW/g



PCS 1900 EUT Left-Cheek-Open Z-Axis plot
Channel: 810



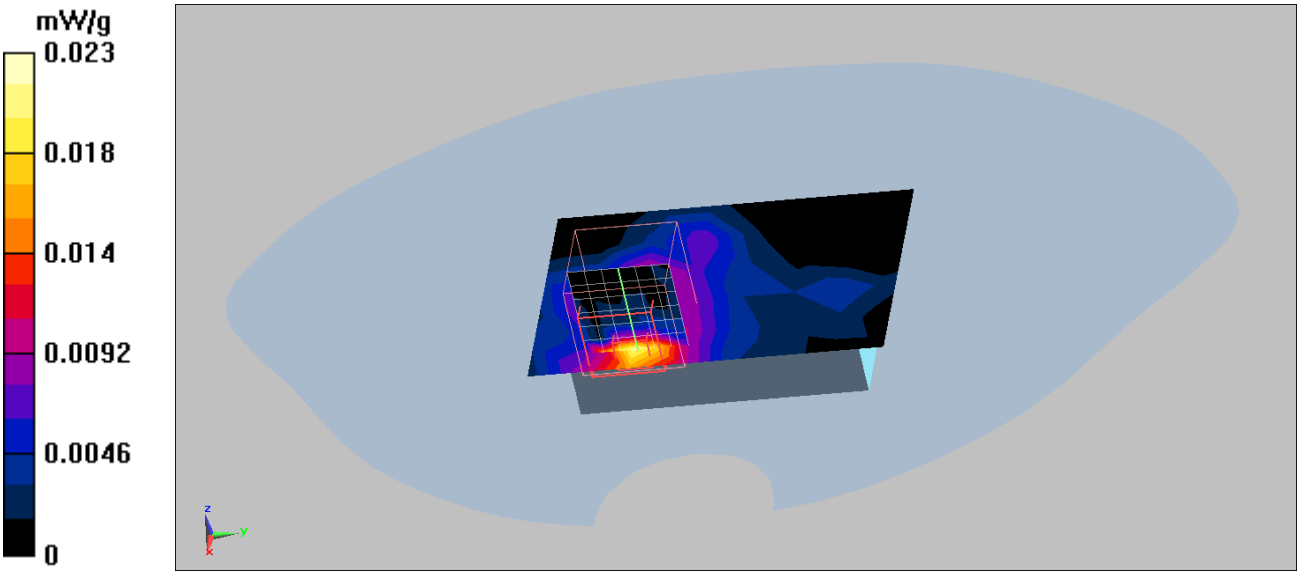
Test Laboratory: QuieTek Date/Time: 3/4/2011

BT_Body_2402MHz-Front
DUT: Mobile Phone; Type: G6210
Communication System: BT_Body 2.4G; Frequency: 2402 MHz;Communication System PAR: 0 dB
Medium parameters used: f = 2402 MHz; σ = 1.88 mho/m; ε_r = 54.18; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.0, Liquid Temperature (°C) : 19.7
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3698; ConvF(7.01, 7.01, 7.01); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.024 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.538 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.046 W/kg
SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.00868 mW/g
Maximum value of SAR (measured) = 0.023 mW/g



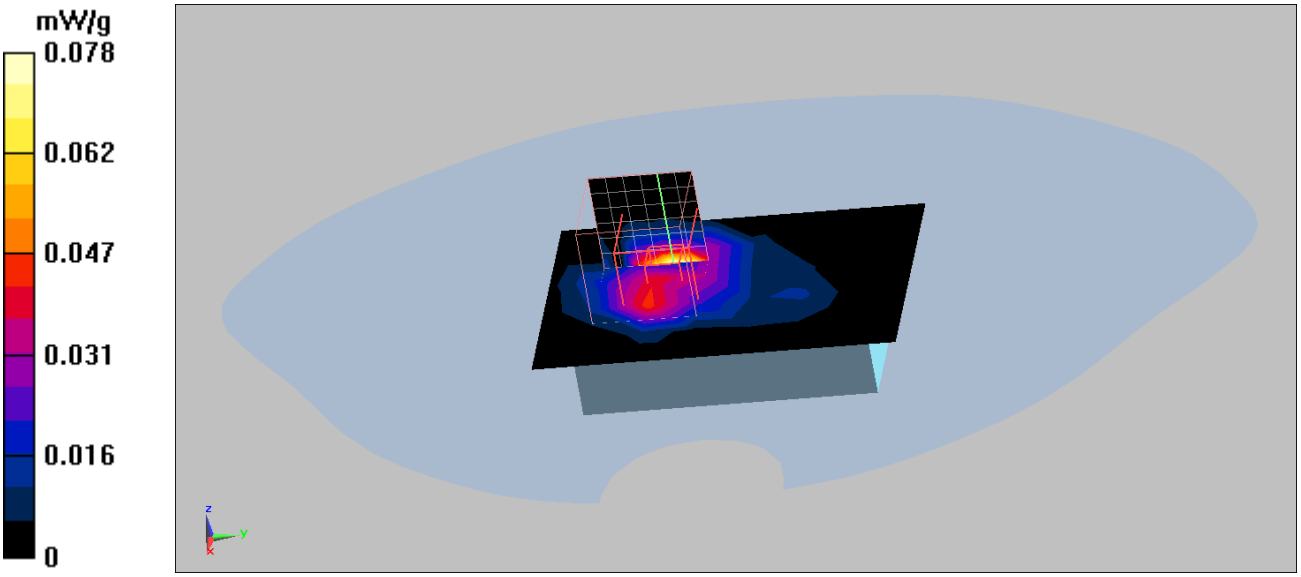
Test Laboratory: QuieTek Date/Time: 3/4/2011

BT_Body_2402MHz-Back
DUT: Mobile Phone; Type: G6210
Communication System: BT_Body 2.4G; Frequency: 2402 MHz;Communication System PAR: 0 dB
Medium parameters used: f = 2402 MHz; σ = 1.88 mho/m; ε_r = 54.18; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient Temperature (°C) : 20.0, Liquid Temperature (°C) : 19.7
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

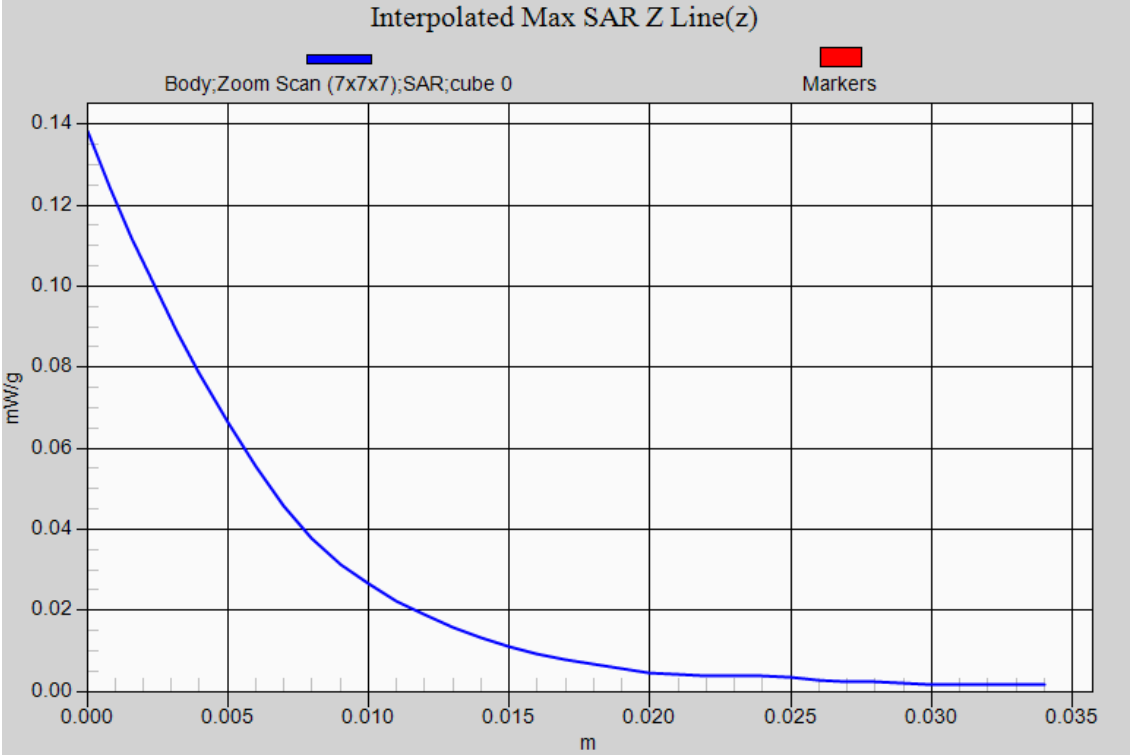
- Probe: EX3DV4 - SN3698; ConvF(7.01, 7.01, 7.01); Calibrated: 7/19/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1207; Calibrated: 4/26/2010
- Phantom: SAM with left table; Type: SAM;
- Measurement SW: DASY52, Version 52.6 (1); SEMCAD X Version 14.4.2 (2595)

Configuration/Body/Area Scan (6x8x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.045 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.723 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.138 W/kg
SAR(1 g) = 0.048 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.078 mW/g



BT EUT Back Z-Axis plot
Channel: 2402



QuieTek

Appendix D. Probe Calibration Data

Object: EX3DV4- SN 3698

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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Quietek (Auden)

Certificate No: EX3-3698_Jul10

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3698

Calibration procedure(s): QA CAL-01.v6, QA CAL-14.v3, QA CAL-23.v3 and QA CAL-25.v2
Calibration procedure for dosimetric E-field probes

Calibration date: July 19, 2010

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	20-Apr-10 (No. DAE4-660_Apr10)	Apr-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10

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

Issued: July 20, 2010

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

S Schweizerischer Kalibrierdienst
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S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
Accreditation No.: SCS 108
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z*: *A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3698

Manufactured:	April 22, 2009
Last calibrated:	October 30, 2009
Recalibrated:	July 19, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 SN:3698

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.48	0.45	0.45	± 10.1%
DCP (mV)[B]	94.4	86.2	90.3	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300	± 1.5%
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).

[B] Numerical linearization parameter: uncertainty not required.

[E] Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 SN:3698

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth	Unc (k=2)
850	± 50 / ± 100	41.5 ± 5%	0.92 ± 5%	8.23	8.23	8.23	0.99	0.52	± 11.0%
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	8.52	8.52	8.52	0.71	0.61	± 11.0%
1810	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.34	7.34	7.34	0.59	0.69	± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.32	7.32	7.32	0.66	0.64	± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	6.77	6.77	6.77	0.39	0.80	± 11.0%
2600	± 50 / ± 100	39.0 ± 5%	1.96 ± 5%	6.76	6.76	6.76	0.24	1.19	± 11.0%
3500	± 50 / ± 100	37.9 ± 5%	2.91 ± 5%	6.51	6.51	6.51	0.20	1.85	± 13.1%
5200	± 50 / ± 100	36.0 ± 5%	4.66 ± 5%	4.63	4.63	4.63	0.45	1.80	± 13.1%
5300	± 50 / ± 100	35.9 ± 5%	4.76 ± 5%	4.44	4.44	4.44	0.45	1.80	± 13.1%
5500	± 50 / ± 100	35.6 ± 5%	4.96 ± 5%	4.42	4.42	4.42	0.50	1.80	± 13.1%
5600	± 50 / ± 100	35.5 ± 5%	5.07 ± 5%	4.14	4.14	4.14	0.50	1.80	± 13.1%
5800	± 50 / ± 100	35.3 ± 5%	5.27 ± 5%	4.05	4.05	4.05	0.50	1.80	± 13.1%

[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

DASY/EASY - Parameters of Probe: EX3DV4 SN:3698

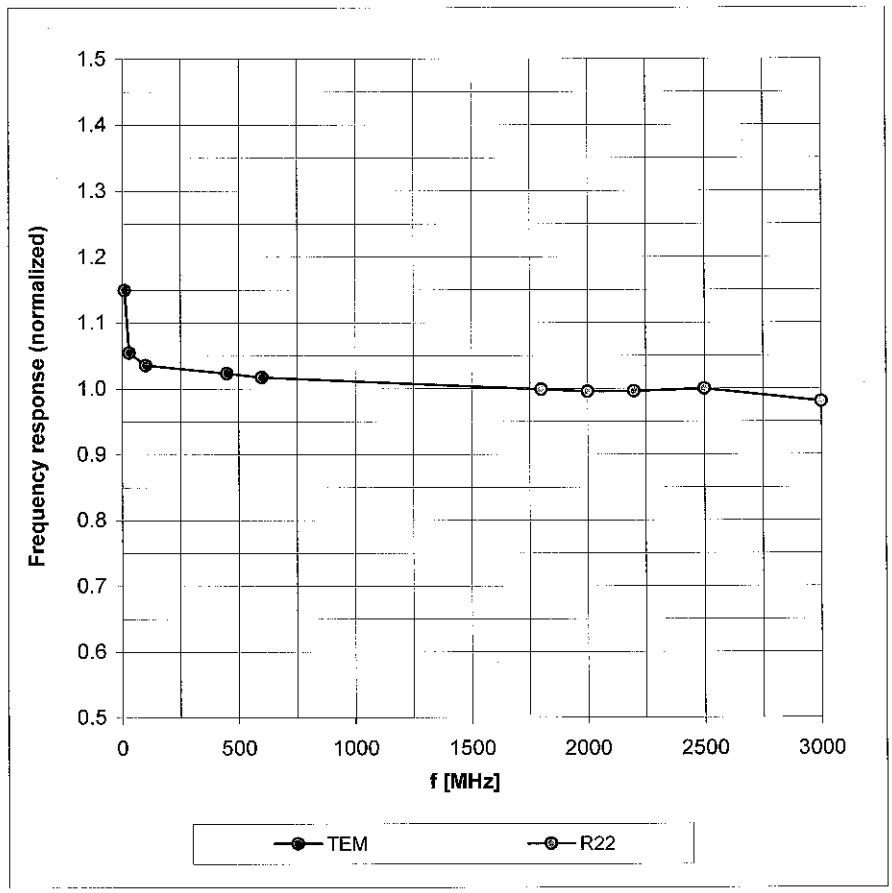
Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth	Unc (k=2)
850	± 50 / ± 100	55.2 ± 5%	0.99 ± 5%	8.21	8.21	8.21	0.99	0.53	± 11.0%
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	8.61	8.61	8.61	0.59	0.73	± 11.0%
1810	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	7.22	7.22	7.22	0.71	0.62	± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	7.16	7.16	7.16	0.84	0.59	± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	7.01	7.01	7.01	0.44	0.81	± 11.0%
2600	± 50 / ± 100	52.5 ± 5%	2.16 ± 5%	7.00	7.00	7.00	0.35	0.95	± 11.0%
3500	± 50 / ± 100	51.3 ± 5%	3.31 ± 5%	5.93	5.93	5.93	0.25	1.60	± 13.1%
5200	± 50 / ± 100	49.0 ± 5%	5.30 ± 5%	4.11	4.11	4.11	0.55	1.95	± 13.1%
5300	± 50 / ± 100	48.5 ± 5%	5.42 ± 5%	3.89	3.89	3.89	0.55	1.95	± 13.1%
5500	± 50 / ± 100	48.6 ± 5%	5.65 ± 5%	3.40	3.40	3.40	0.60	1.95	± 13.1%
5600	± 50 / ± 100	48.5 ± 5%	5.77 ± 5%	3.20	3.20	3.20	0.65	1.95	± 13.1%
5800	± 50 / ± 100	48.2 ± 5%	6.00 ± 5%	3.48	3.48	3.48	0.65	1.90	± 13.1%

[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

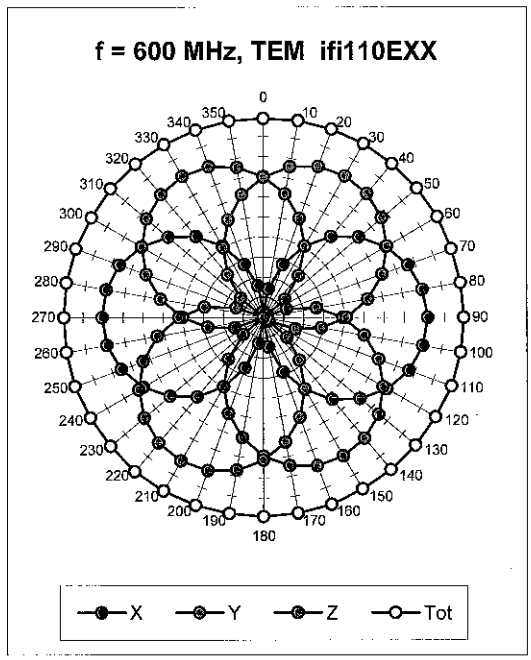
Frequency Response of E-Field

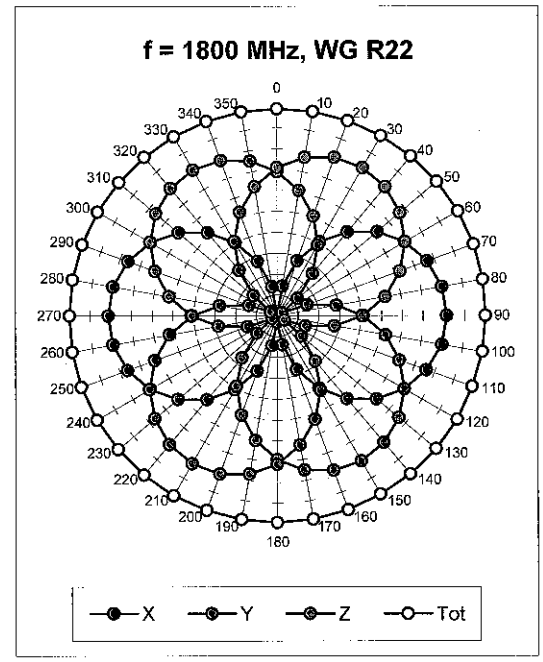
(TEM-Cell:ifi110 EXX, Waveguide: R22)

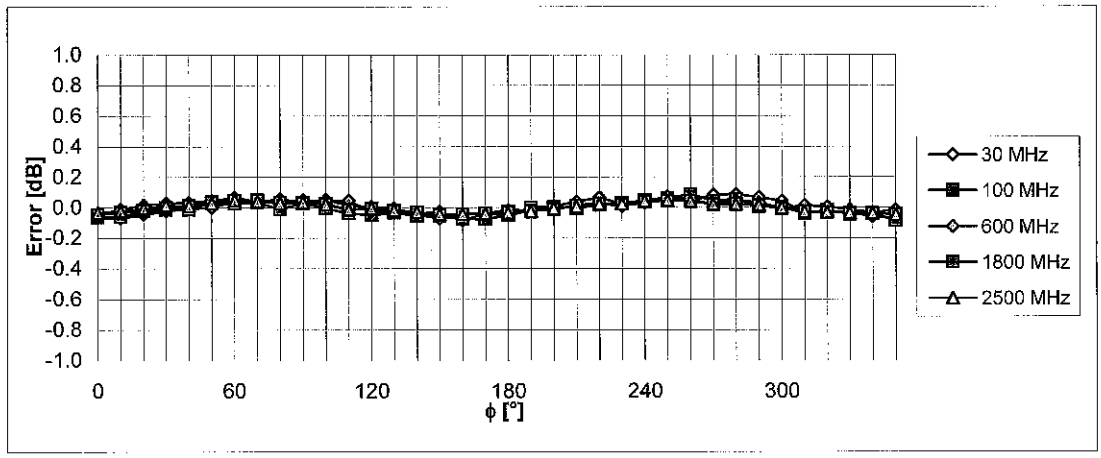


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°



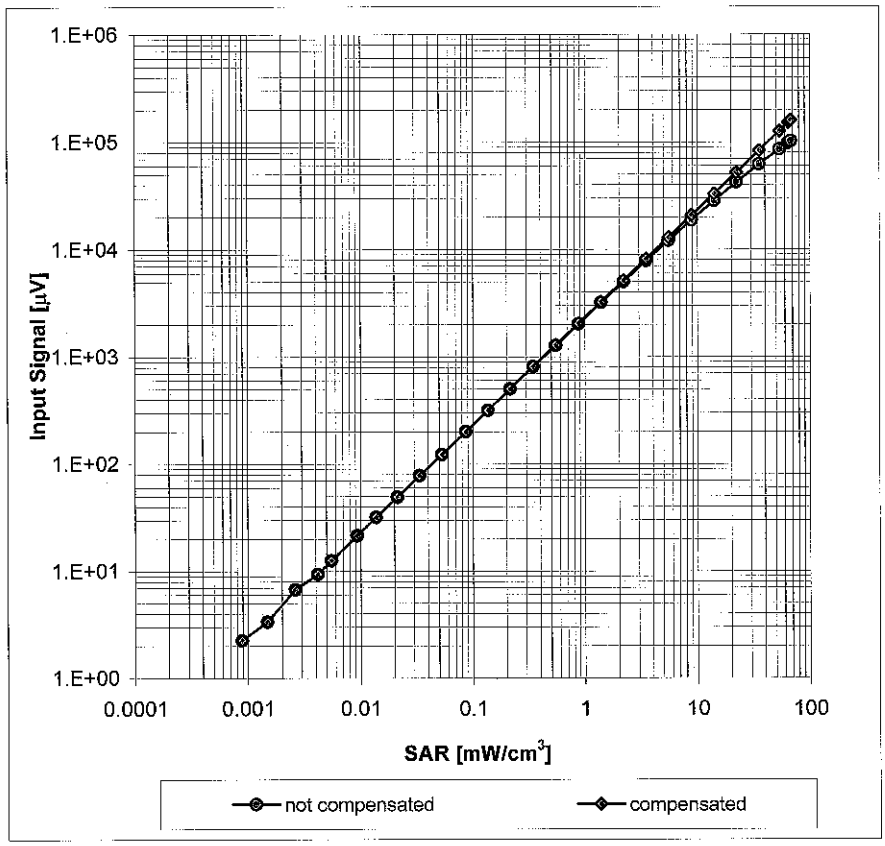


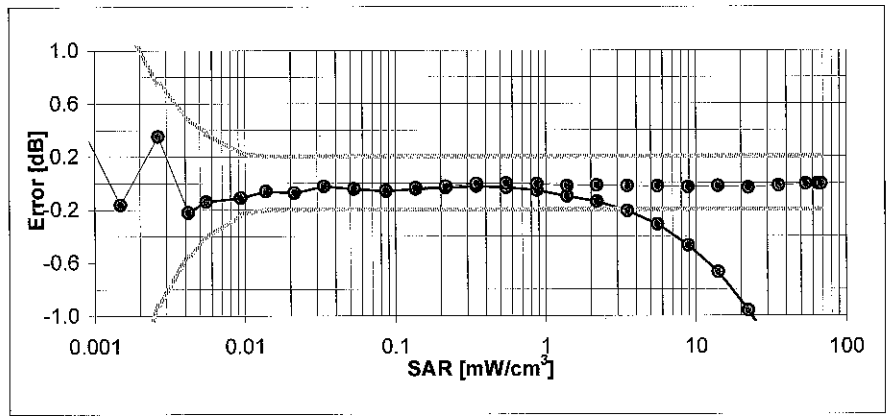


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

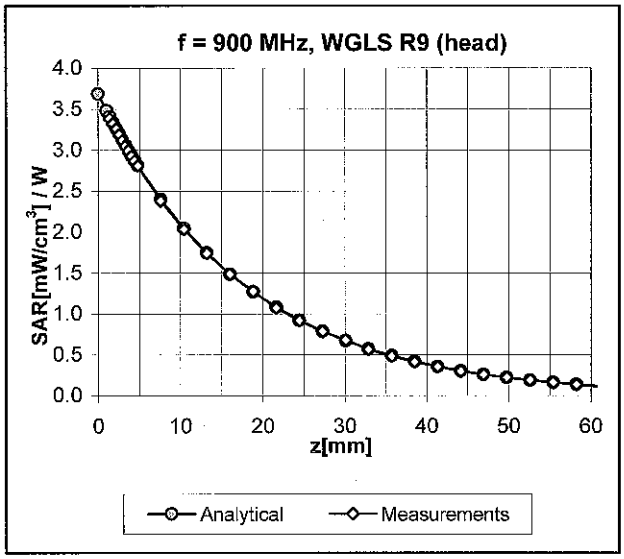
(Waveguide R22, f = 1800 MHz)

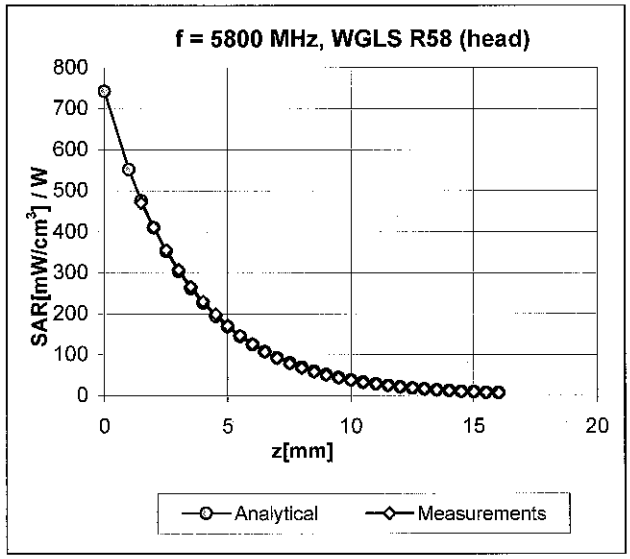




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

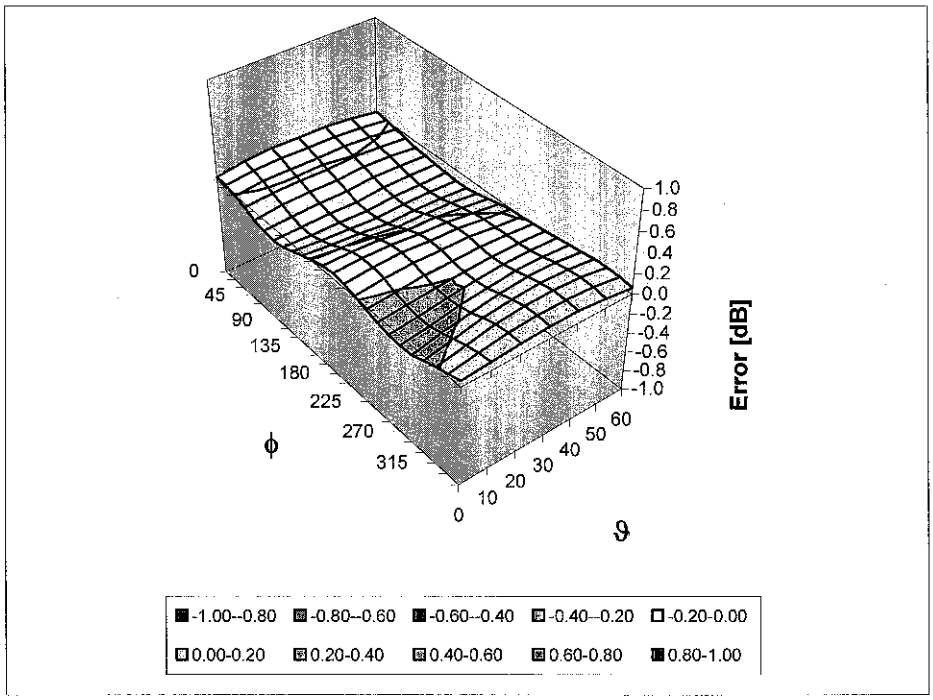
Conversion Factor Assessment





Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

QuieTek

Appendix E. Dipole Calibration

Validation Dipole 835 MHz
M/N: ALS-D-835
S/N: QTK-315

Validation Dipole 1900 MHz
M/N: ALS-D-1900
S/N: QTK-318

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

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Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Quietek (Auden)**

Certificate No: ALS-835-QTK-315_May10

CALIBRATION CERTIFICATE

Object	ALS-D-835 - SN: QTK-315
Calibration procedure(s)	QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date:	May 21, 2010

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 26, 2010

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY5	V5.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.7 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature during test	(22.5 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.32 mW / g
SAR normalized	normalized to 1W	9.28 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.22 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.51 mW / g
SAR normalized	normalized to 1W	6.04 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.01 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.2 ± 6 %	0.98 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.46 mW / g
SAR normalized	normalized to 1W	9.84 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.72 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.61 mW / g
SAR normalized	normalized to 1W	6.44 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.39 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.2 Ω + 0.5 jΩ
Return Loss	- 40.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.8 Ω - 1.4 jΩ
Return Loss	- 24.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.583 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	APREL
Manufactured on	Not available

DASY5 Validation Report for Head TSL

Date/Time: 21.05.2010 11:41:57

Test Laboratory: SPEAG, Zurich, Switzerland

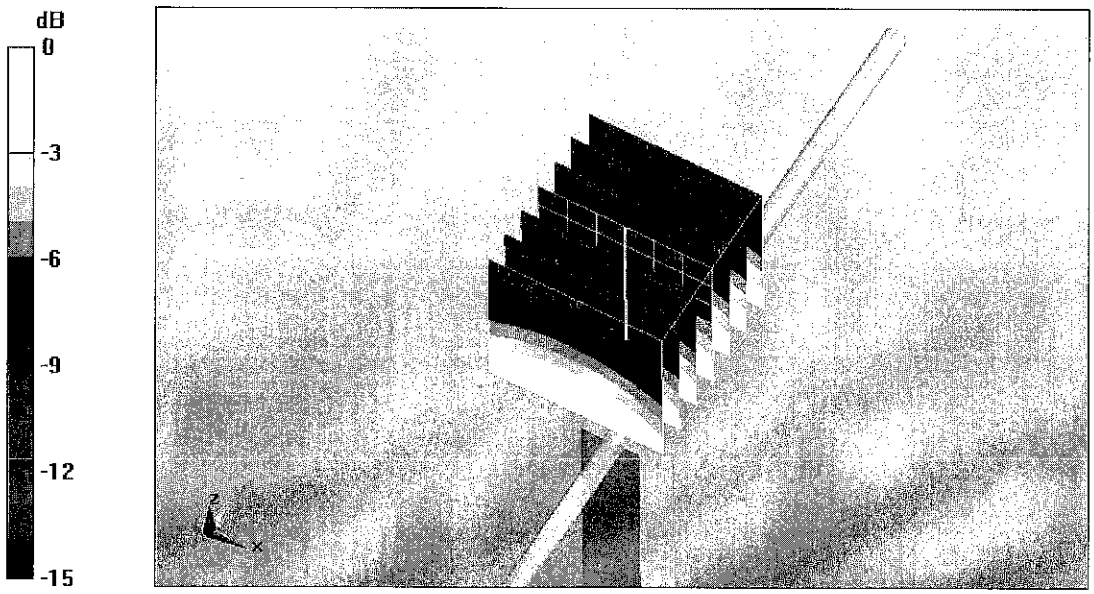
DUT: Dipole 835 MHz; Type: ALS-D-835; Serial: ALS-D-835 - SN:QTK-315

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL900
Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 41.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

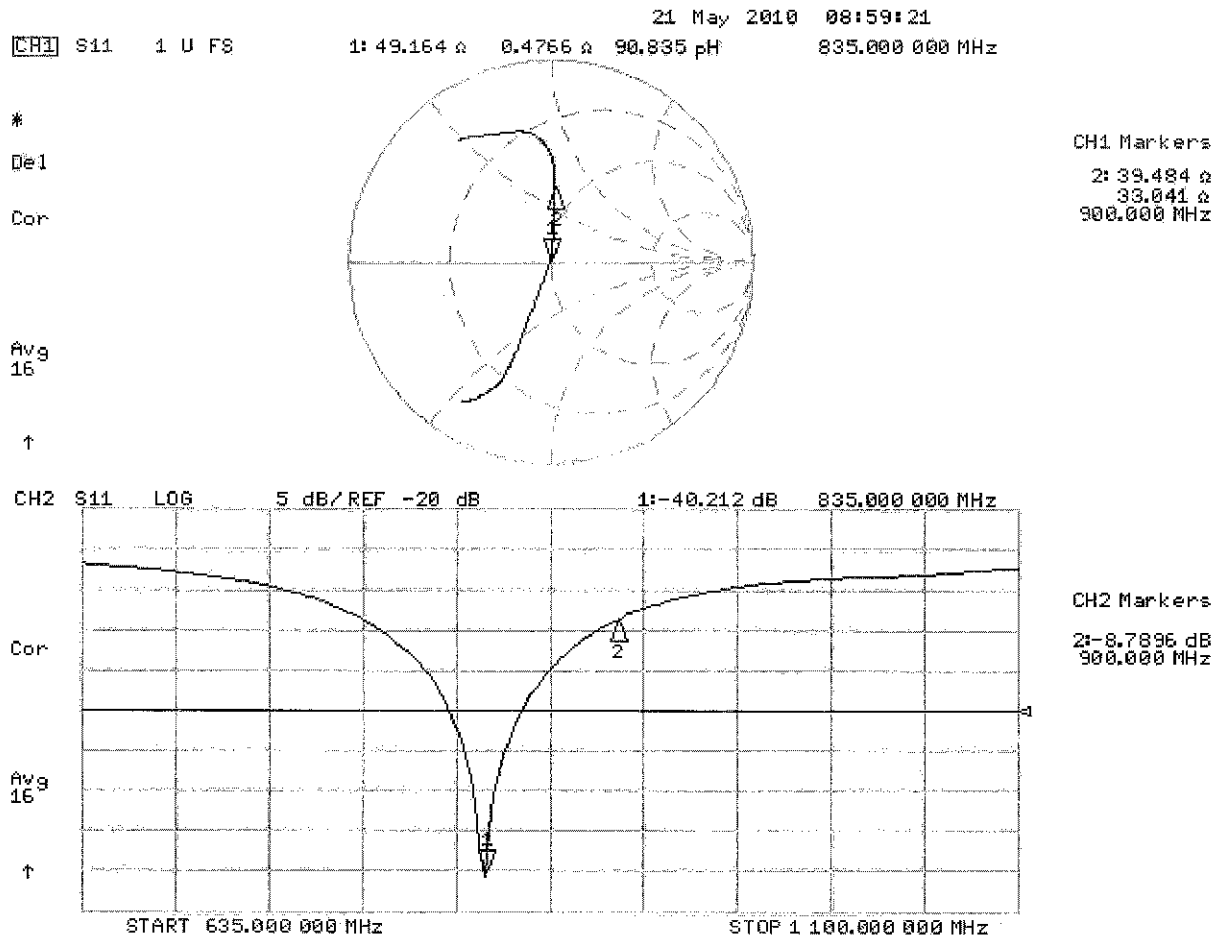
- Probe: ES3DV3 - SN3205; ConvF(6.03, 6.03, 6.03); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.1 V/m; Power Drift = -0.023 dB
Peak SAR (extrapolated) = 3.46 W/kg
SAR(1 g) = 2.32 mW/g; SAR(10 g) = 1.51 mW/g
Maximum value of SAR (measured) = 2.71 mW/g



0 dB = 2.71mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 21.05.2010 14:29:41

Test Laboratory: SPEAG, Zurich, Switzerland

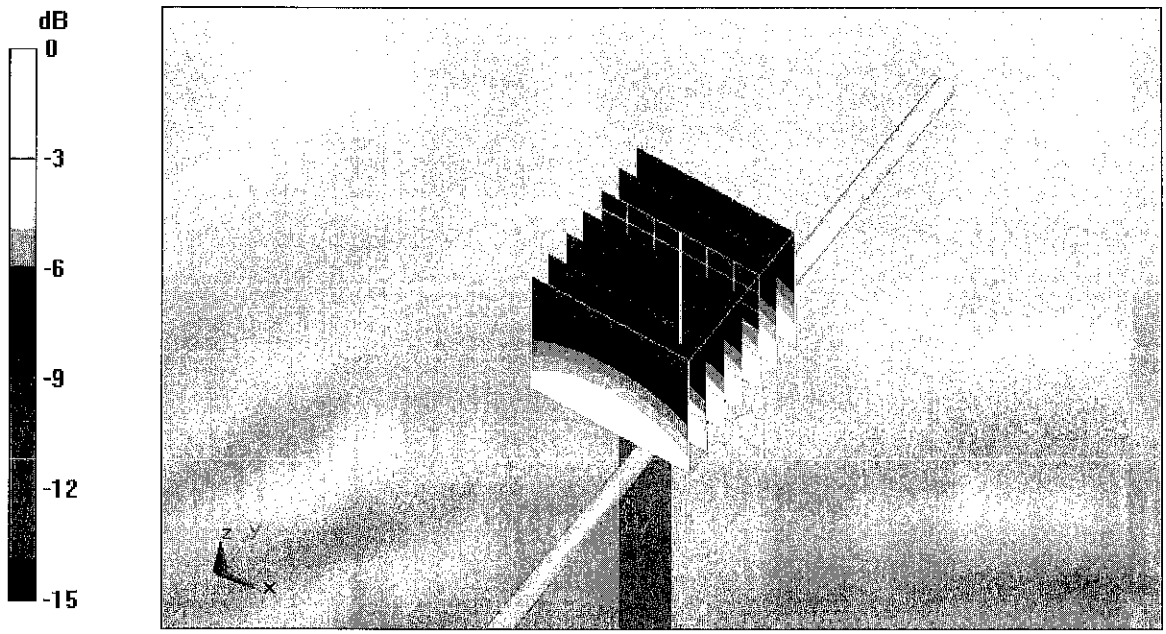
DUT: Dipole 835 MHz; Type: ALS-D-835; Serial: ALS-D-835 - SN:QTK-315

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL900
Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

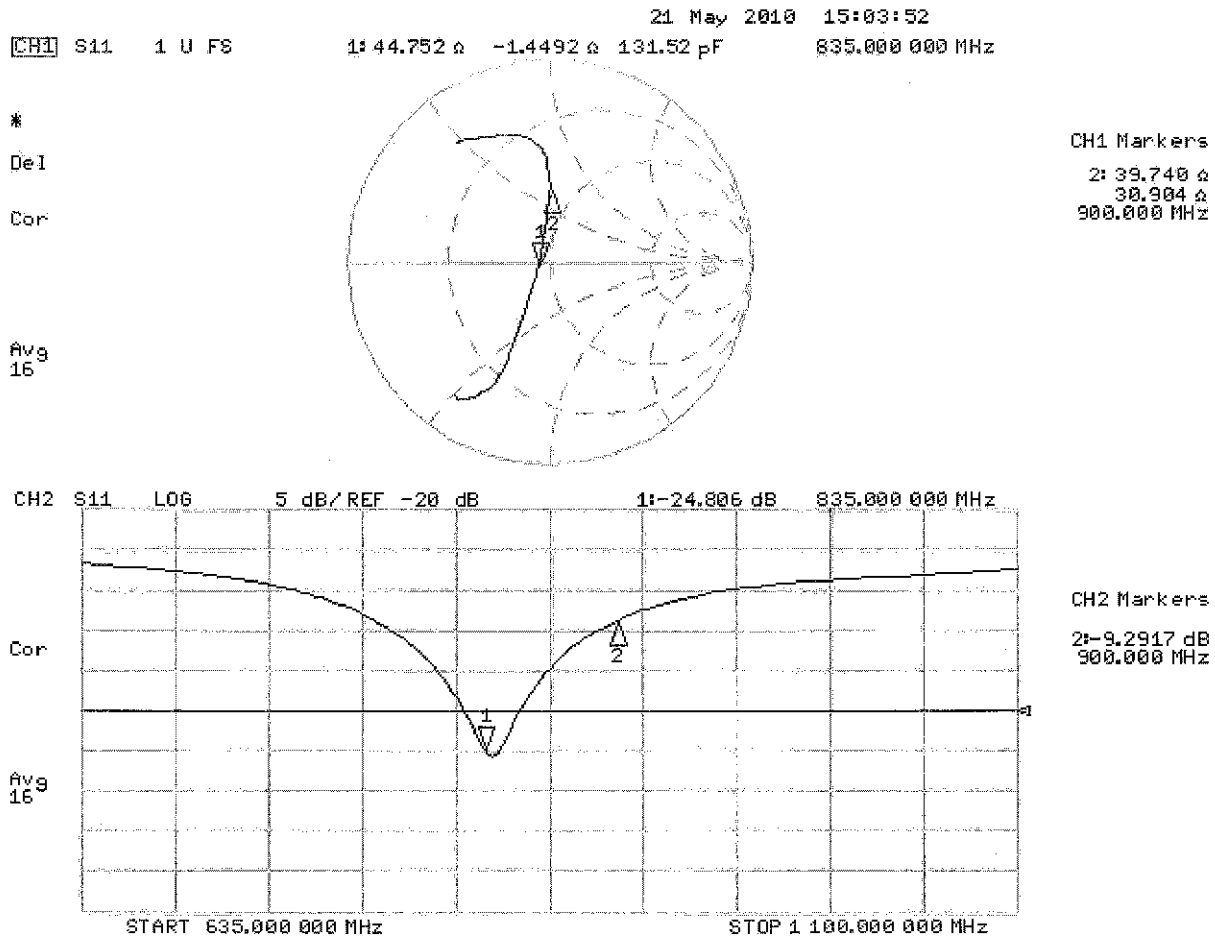
- Probe: ES3DV3 - SN3205; ConvF(5.86, 5.86, 5.86); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin250 mW/d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.7 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 3.62 W/kg
SAR(1 g) = 2.46 mW/g; SAR(10 g) = 1.61 mW/g
Maximum value of SAR (measured) = 2.87 mW/g



0 dB = 2.87mW/g

Impedance Measurement Plot for Body TSL



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

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

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Quietek (Auden)

Certificate No: ALS-1900-QTK-318_May10

CALIBRATION CERTIFICATE

Object: ALS-D-1900-SN: QTK-318

Calibration procedure(s): QA CAL-05.v7
Calibration procedure for dipole validation kits

Calibration date: May 26, 2010

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 28, 2010

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003

b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY5	V5.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.7 ± 6 %	1.41 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.65 mW / g
SAR normalized	normalized to 1W	38.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**38.4 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.00 mW / g
SAR normalized	normalized to 1W	20.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**19.9 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.1 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature during test	(21.6 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.1 mW / g
SAR normalized	normalized to 1W	40.4 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**40.5 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.42 mW / g
SAR normalized	normalized to 1W	21.7 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.7 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.2 Ω + 6.3 jΩ
Return Loss	- 23.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.2 Ω + 7.9 jΩ
Return Loss	- 20.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.246 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	APREL
Manufactured on	Not available

DASY5 Validation Report for Head TSL

Date/Time: 25.05.2010 12:56:48

Test Laboratory: SPEAG, Zurich, Switzerland

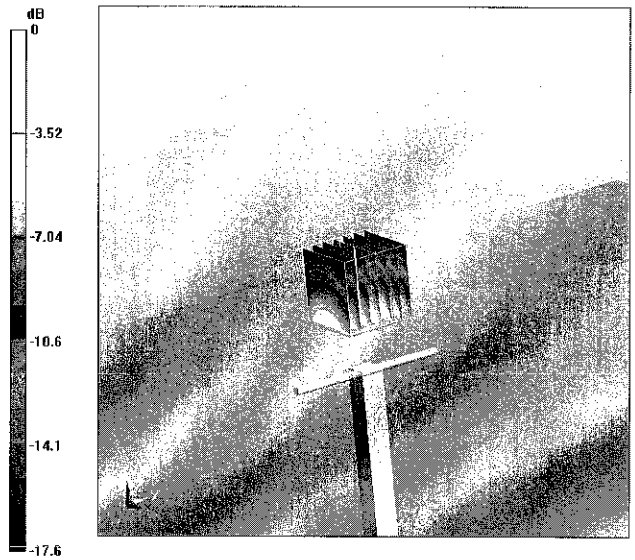
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:QTK-318

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL U11 BB
Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 39.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

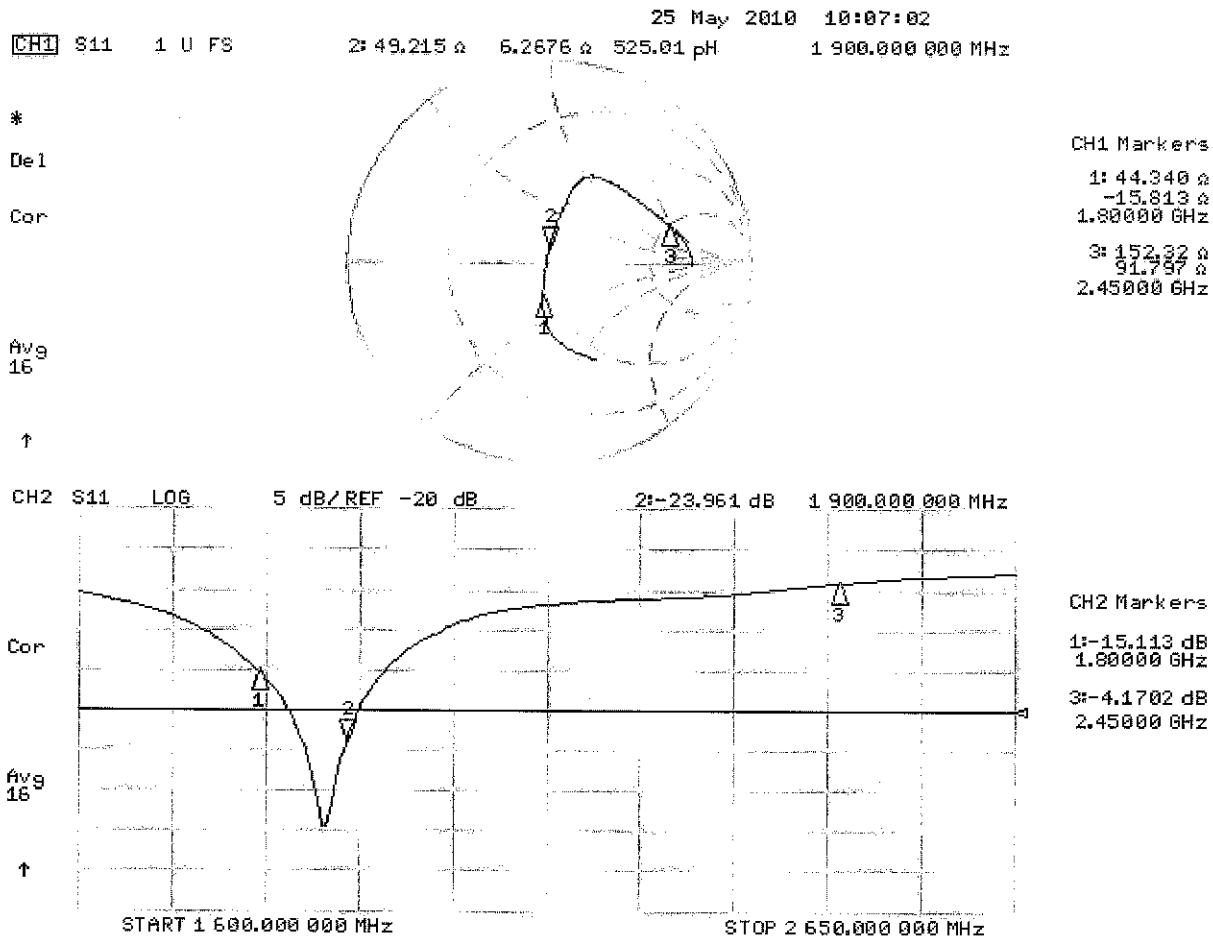
- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.8 V/m; Power Drift = 0.052 dB
Peak SAR (extrapolated) = 17.8 W/kg
SAR(1 g) = 9.65 mW/g; SAR(10 g) = 5 mW/g
Maximum value of SAR (measured) = 12.1 mW/g



0 dB = 12.1mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 26.05.2010 15:36:22

Test Laboratory: SPEAG, Zurich, Switzerland

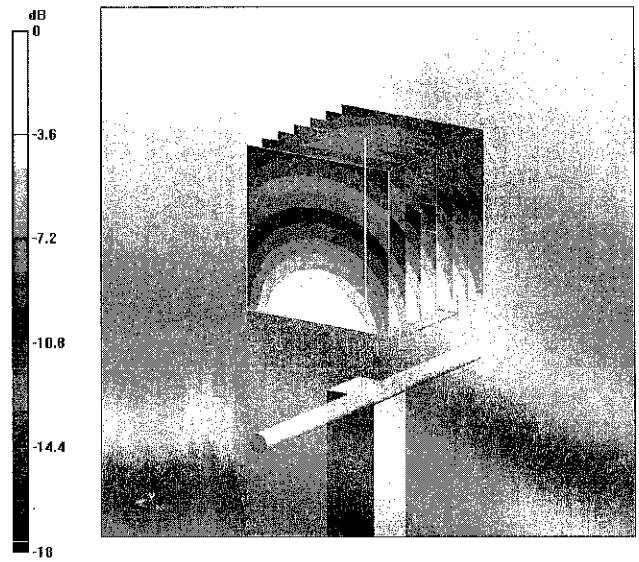
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:QTK-318

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL U11 BB
Medium parameters used: f = 1900 MHz; σ = 1.52 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 61

Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.5 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.42 mW/g
Maximum value of SAR (measured) = 12.7 mW/g



0 dB = 12.7mW/g

Impedance Measurement Plot for Body TSL