

SAR Test Report

Product Name : vooma peel
Model No. : T166, T168
FCC ID : Y3B-T166-T168

Applicant : LINNAEA TECHNOLOGY CO., LTD.
Address : Rm. 1909-1910, Block West, ShengTang Building,
TaiRan road9, Futian District, ShenZhen, GuangDong

Date of Receipt : Dec. 09, 2010
Date of Test : Dec. 13, 2010
Issued Date : Dec. 14, 2010
Report No. : 10CS015R-HP-US-P03V01
Report Version : V1.2

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Test Report Certification

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Manufacturer : LINNAEA TECHNOLOGY CO., LTD.

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FCC ID : Y3B-T166-T168

Model No. : T166, T168

EUT Voltage : DC 3.7V

Applicable Standard : FCC OET65 Supplement C June 2001
IEEE Std. 1528-2003, 47CFR § 2.1093

Test Result : Max. SAR Measurement (1g)
Head: 0.234 W/kg
Body: 0.326 W/kg

Performed Location : Suzhou EMC Laboratory
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Hi-Tech Development Zone., Suzhou, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Registration Number: 800392

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(Engineering Manager: Dream Cao)

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	: BSMI, NCC, TAF
Germany	: TUV Rheinland
Norway	: Nemko, DNV
USA	: FCC, NVLAP
Japan	: VCCI

The related certificate for our laboratories about the test site and management system can be downloaded from QuiteTek Corporation's Web Site : <http://www.quietek.com/tw/ctg/cts/accreditations.htm>
The address and introduction of QuiteTek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

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1. General Information

1.1. EUT Description

Product Name	vooma peel
FCC ID	Y3B-T166-T168
Model No.	T166, T168
IMEI	888166350012817
SW Version	V2.1
HW Version	V1.3
Tx Frequency Range	GSM 850: 824~849MHz PCS 1900: 1850~1910MHz
Rx Frequency Range	GSM 850: 869~894MHz PCS 1900: 1930~1990MHz
Antenna Type	Internal
GPRS Class	N/A
Type of Modulation	GMSK for GSM
Device Category	Portable
Peak Antenna Gain	1.5dBi
Max. Output Power (Conducted)	GSM850: 32.48dBm PCS1900: 29.96dBm
Max. Output Power (Radiated)	GSM850: 30.10 - ERP PCS1900: 25.63 - EIRP

Host use condition: Only use iPod Touch plug into the host-carrier, other device can't be used within the host-carrier. The iPod touch's WiFi function will be disabled by software when the Host-carrier detect iPod touch plug into it and using GSM communication. The host-carrier only uses GSM function as mobile phone. The host-carrier and host can not transmit simultaneously.

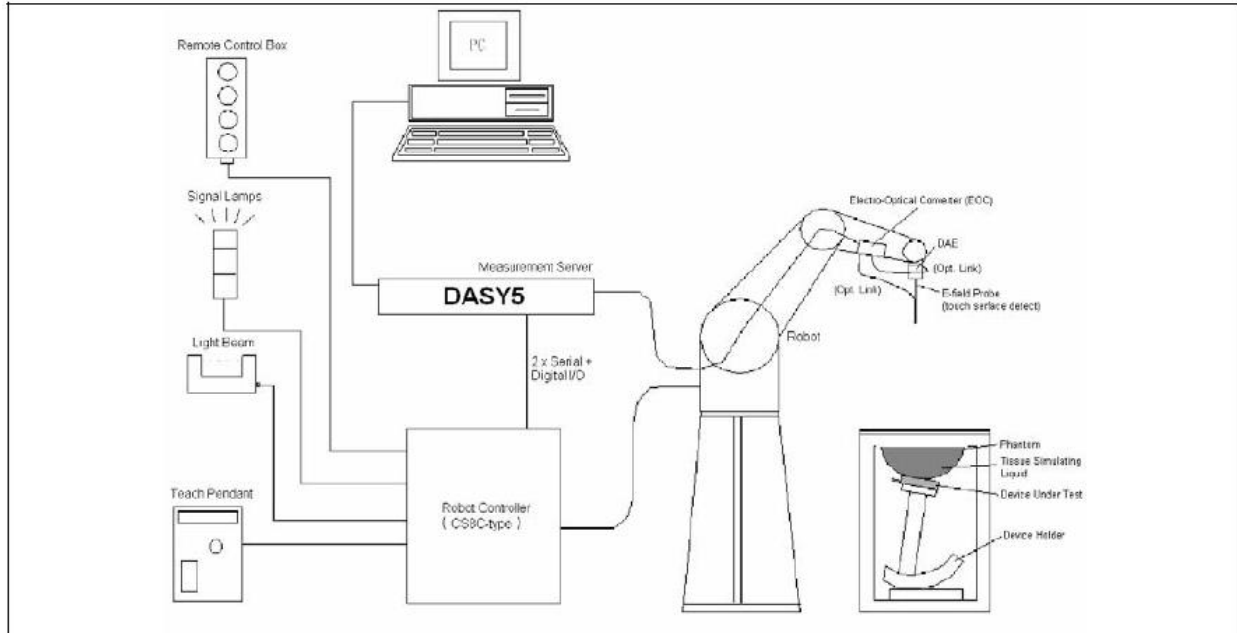
1.2. Test Environment

Ambient conditions in the laboratory:

Items	Required	Actual
Temperature (°C)	18-25	21.3± 2
Humidity (%RH)	30-70	52

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 utilize a physical step of $7\times 7\times 7$ (5mmx5mmx5mm) providing a volume of 30mm 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.

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

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


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

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 μ W/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/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 $\epsilon_r \approx 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.



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
Water	40.45	52.4	54.90	40.5
Salt	1.45	1.40	0.18	0.50
Sugar	57.6	45.0	0.00	58.0
HEC	0.40	1.00	0.00	0.50
Preventol	0.10	0.20	0.00	0.50
DGBE	0.00	0.00	44.92	0.00

3.2. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using DASY5 Dielectric Probe Kit and Agilent Vector Network Analyzer E5071C

Head Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ϵ_r	σ [s/m]	
835 MHz	Reference result ± 5% window	41.50 39.43 to 43.58	0.90 0.86 to 0.95	N/A
	13-Dec-2010	41.7	0.88	21.0

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ϵ_r	σ [s/m]	
835 MHz	Reference result ± 5% window	55.20 52.44 to 57.96	0.97 0.92 to 1.02	N/A
	13-Dec-2010	54.3	1.01	21.0

Head Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ϵ_r	σ [s/m]	
1900 MHz	Reference result ± 5% window	40.0 38.00 to 42.00	1.40 1.33 to 1.47	N/A
	13-Dec-2010	39.0	1.46	21.2

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ϵ_r	σ [s/m]	
1900 MHz	Reference result ± 5% window	53.30 50.64 to 55.97	1.52 1.44 to 1.60	N/A
	13-Dec-2010	53.0	1.58	21.2

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.

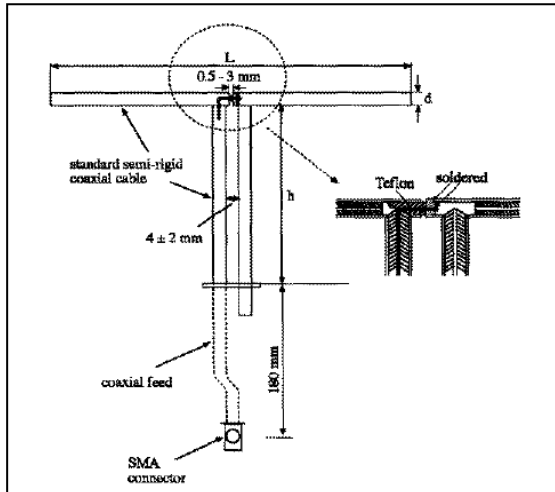
Target Frequency	Head		Body	
(MHz)	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	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 $\rho = 1000 \text{ kg/m}^3$)

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

4.1.2. Validation Result

System Performance Check at 835MHz &1900MHz for Head				
Validation Kit: D835V2-SN 4d094				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
835 MHz	Reference result ± 10% window	9.70 8.73 to 10.67	6.30 5.67 to 6.93	N/A
	13-Dec-2010	10.28	6.72	21.0
Validation Kit: D1900V2-SN 5d121				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
1900 MHz	Reference result ± 10% window	39.8 35.82 to 43.78	21.1 18.99 to 23.21	N/A
	13-Dec-2010	41.60	21.24	21.0
Note: All SAR values are normalized to 1W forward power.				
System Performance Check at 835MHz &1900MHz for Body				
Validation Kit: D835V2-SN 4d094				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
835 MHz	Reference result ± 10% window	9.90 8.91 to 10.89	6.53 5.88 to 7.18	N/A
	13-Dec-2010	10.56	6.84	21.0
Validation Kit: D1900V2-SN 5d121				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
1900 MHz	Reference result ± 10% window	41.4 37.26 to 45.54	22.3 20.07 to 24.53	N/A
	13-Dec-2010	40.00	20.48	21.0
Note: All SAR values are normalized to 1W forward power.				

4.2. 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).

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	F10/5C90A1/A/01	Mar. 2010	only once
Controller	Stäubli	SP1	S-0034	Mar. 2010	only once
Dipole Validation Kits	SPEAG	D835V2	4d094	Apr. 2010	Apr. 2012
Dipole Validation Kits	SPEAG	D1900V2	5d121	Apr. 2010	Apr. 2012
SAM Twin Phantom	Speag	SAM	TP-1561/1562	N/A	N/A
Device Holder	Speag	SD 000 H01 HA	N/A	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1220	Mar. 2010	Mar. 2011
E-Field Probe	Speag	EX3DV4	3710	Mar. 2010	Mar. 2011
SAR Software	Speag	DASY5	V5.2 Build 162	N/A	N/A
Power Amplifier	Mini-Circuit	ZVA-183-S+	N657400950	N/A	N/A
Directional Coupler	Agilent	778D	20160	N/A	N/A
Universal Radio Communication Tester	R&S	CMU 200	117088	Jul. 2010	Jul. 2011
Vector Network	Agilent	E5071C	MY48367267	Mar. 2010	Mar. 2011
Signal Generator	Agilent	E4438C	MY49070163	Apr. 2010	Apr. 2011
Power Meter	Anritsu	ML2495A	0905006	Jan. 2010	Jan. 2011
Wide Bandwidth Sensor	Anritsu	MA2411B	0846014	Jan. 2010	Jan. 2011

7. Measurement Uncertainty

DASY5 Uncertainty								
Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(vi) V _{eff}
Measurement System								
Probe Calibration	±5.5%	N	1	1	1	±5.5%	±5.5%	∞
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						±10.7%	±10.5%	387
Expanded STD Uncertainty						±21.5%	±21.0%	

8. Conducted Power Measurement

Mode	Frequency (MHz)	Output Power (dBm)	Path Loss (dB)	Result (dBm)
Maximum Power				
GSM850	824.2	31.60	0.7	32.30
	836.6	31.72	0.7	32.42
	848.8	31.78	0.7	32.48
PCS1900	1850.2	28.68	1.0	29.68
	1880.0	28.96	1.0	29.96
	1909.8	28.78	1.0	29.78

9. Test Results

9.1. SAR Test Results Summary

9.1.1. Test position and configuration

Head SAR was performed with the device configured in the positions according to IEEE1528, and Body SAR was performed with the device 15mm from the phantom. Body SAR was also performed with the headset attached and without.



Check position according to IEEE 1528 6.4.1 b)

iPod touch used for auxiliary test, FCC ID: BCGA1288.

9.1.2. Body SAR without Headset

Testing without the headset was performed at the position and channels that resulted in the highest body SAR. SAR without the headset attached was significantly higher than with the headset, and also was verified several times and confirmed, so the final test data shown were the worst case without headset.

In the Body SAR test result table, body-worn means display of device down, body-front means display of device up.

9.1.3. Referenced Documents

FCC KDB 447498 D01 V04 and KDB 941225 D03 V01

9.1.4. Test Result

SAR MEASUREMENT							
Ambient Temperature (°C) : 21.5 ±2				Relative Humidity (%): 54			
Liquid Temperature (°C) : 21.0 ±2				Depth of Liquid (cm):>15			
Product: vooma peel							
Test Mode: GSM850							
Test Position Head	Antenna Position	Frequency		Conducted Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Limit (W/kg)
		Channel	MHz				
Left-Cheek	Fixed	128	824.2	32.30	0.179	0.090	1.6
Left-Cheek	Fixed	189	836.6	32.42	-0.178	0.104	1.6
Left-Cheek	Fixed	251	848.8	32.48	-0.076	0.129	1.6
Left-Tilted	Fixed	189	836.6	32.42	-0.114	0.079	1.6
Right-Cheek	Fixed	128	824.2	32.30	-0.104	0.101	1.6
Right-Cheek	Fixed	189	836.6	32.42	-0.171	0.133	1.6
Right-Cheek	Fixed	251	848.8	32.48	-0.175	0.164	1.6
Right-Tilted	Fixed	189	836.6	32.42	-0.153	0.103	1.6

SAR MEASUREMENT							
Ambient Temperature (°C) : 21.5 ±2				Relative Humidity (%): 54			
Liquid Temperature (°C) : 21.0 ±2				Depth of Liquid (cm):>15			
Product: vooma peel							
Test Mode: GSM850							
Test Position Body	Antenna Position	Frequency		Conducted Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Limit (W/kg)
		Channel	MHz				
Body-worn	Fixed	128	824.2	32.30	0.141	0.168	1.6
Body-worn	Fixed	189	836.6	32.42	-0.020	0.289	1.6
Body-worn	Fixed	251	848.8	32.48	0.063	0.326	1.6
Body-front	Fixed	189	836.6	32.42	-0.063	0.183	1.6
Body-worn (with headset)	Fixed	189	836.6	32.42	-0.136	0.288	1.6

SAR MEASUREMENT							
Ambient Temperature (°C) : 21.5 ±2				Relative Humidity (%): 52			
Liquid Temperature (°C) : 21.0 ±2				Depth of Liquid (cm):>15			
Product: vooma peel							
Test Mode: PCS1900							
Test Position Head	Antenna Position	Frequency		Conducted Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Limit (W/kg)
		Channel	MHz				
Left-Cheek	Fixed	512	1850.2	29.68	0.075	0.204	1.6
Left-Cheek	Fixed	661	1880.0	29.96	-0.038	0.234	1.6
Left-Cheek	Fixed	810	1909.8	29.78	0.069	0.224	1.6
Left-Tilted	Fixed	661	1880.0	29.96	-0.003	0.177	1.6
Right-Cheek	Fixed	512	1850.2	29.68	-0.018	0.163	1.6
Right-Cheek	Fixed	661	1880.0	29.96	-0.080	0.192	1.6
Right-Cheek	Fixed	810	1909.8	29.78	0.005	0.172	1.6
Right-Tilted	Fixed	661	1880.0	29.96	-0.117	0.189	1.6

SAR MEASUREMENT							
Ambient Temperature (°C) : 21.5 ±2				Relative Humidity (%): 52			
Liquid Temperature (°C) : 21.0 ±2				Depth of Liquid (cm):>15			
Product: vooma peel							
Test Mode: PCS1900							
Test Position Body	Antenna Position	Frequency		Conducted Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Limit (W/kg)
		Channel	MHz				
Body-worn	Fixed	512	1850.2	29.68	-0.113	0.217	1.6
Body-worn	Fixed	661	1880.0	29.96	-0.050	0.245	1.6
Body-worn	Fixed	810	1909.8	29.78	-0.094	0.284	1.6
Body-front	Fixed	661	1880.0	29.96	-0.030	0.218	1.6
Body-worn (with headset)	Fixed	661	1880.0	29.96	-0.037	0.223	1.6

Appendix A. SAR System Validation Data

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

System Check Head 835MHz

DUT: Dipole 835 MHz D835V2; Type: D835V2

Communication System: CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1;

Frequency: 835 MHz; Medium parameters used: $f = 835$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 41.7$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

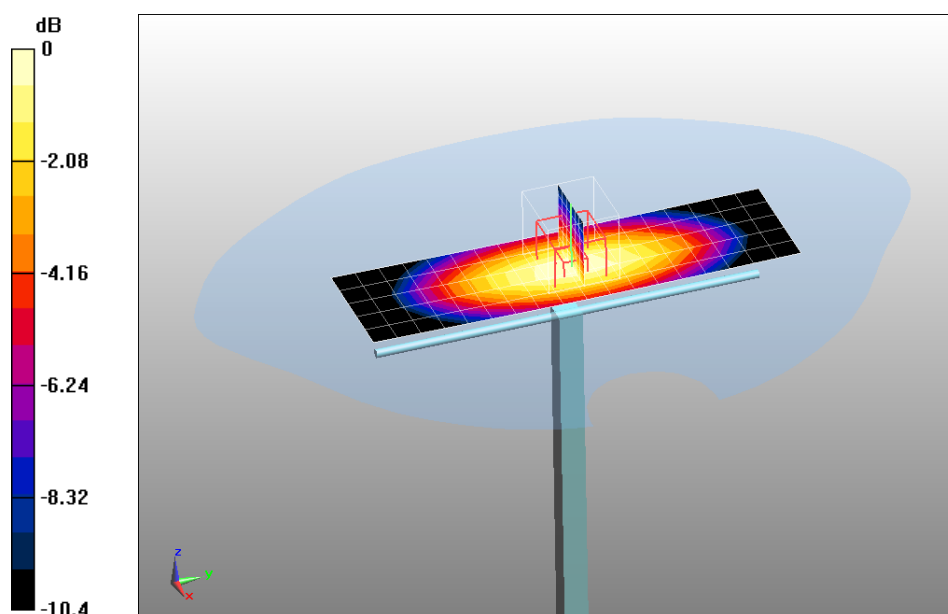
- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/System Check GSM850 Head/Area Scan (6x19x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (measured) = 2.63 mW/g

Configuration/System Check GSM850 Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 56 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 3.87 W/kg

SAR(1 g) = 2.57 mW/g; SAR(10 g) = 1.68 mW/g Maximum value of SAR (measured) = 2.76 mW/g



0 dB = 2.76mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

System Check Body 835MHz

DUT: Dipole 835 MHz D835V2; Type: D835V2

Communication System: CW; Communication System Band: D835 (835.0 MHz); Duty Cycle: 1:1;

Frequency: 835 MHz; Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 1.01 \text{ mho/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature ($^{\circ}\text{C}$): 21.5, Liquid temperature ($^{\circ}\text{C}$): 21.0

DASY5 Configuration:

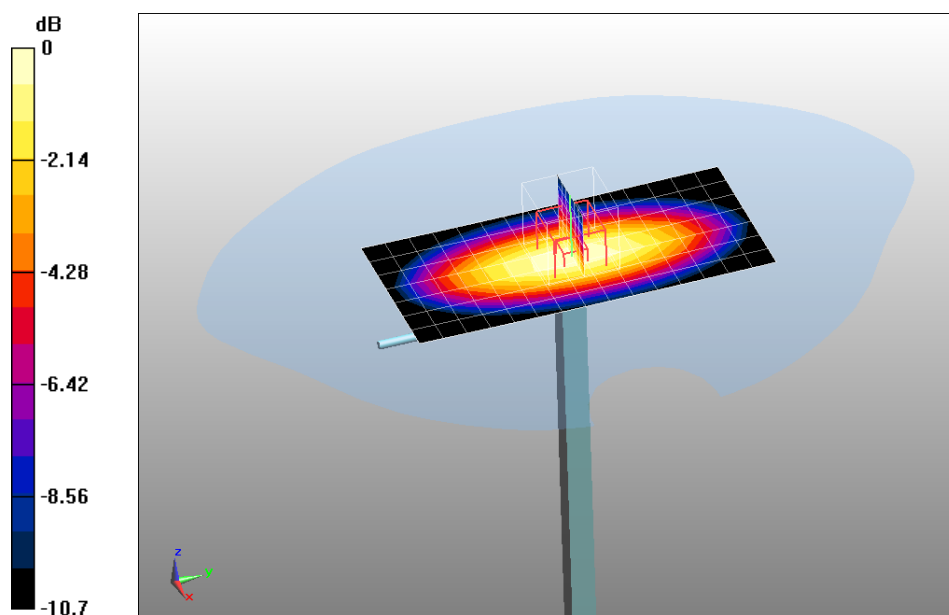
- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/System Check GSM835 Body/Area Scan (8x16x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$, Maximum value of SAR (measured) = 2.73 mW/g

Configuration/System Check GSM835 Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$, Reference Value = 53.1 V/m; Power Drift = -0.021 dB

Peak SAR (extrapolated) = 4.02 W/kg

SAR(1 g) = 2.64 mW/g; SAR(10 g) = 1.71 mW/g Maximum value of SAR (measured) = 2.85 mW/g



0 dB = 2.85mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

System Check Head 1900MHz

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle: 1:1;

Frequency: 1900 MHz; Medium parameters used: $f = 1900$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

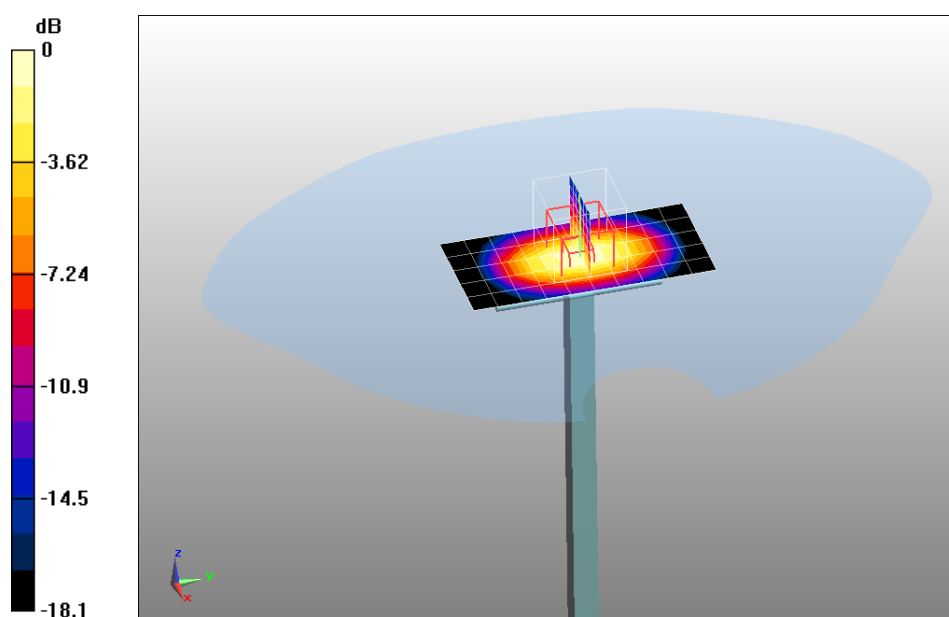
- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/System Check PCS1900 Head/Area Scan (6x11x1): Measurement grid: dx=10mm, dy=10mm, Maximum value of SAR (measured) = 10.4 mW/g

Configuration/System Check PCS1900 Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 90.8 V/m; Power Drift = -0.170 dB

Peak SAR (extrapolated) = 20.1 W/kg

SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.31 mW/g Maximum value of SAR (measured) = 11.8 mW/g



0 dB = 11.8mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

System Check Body 1900MHz

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Duty Cycle: 1:1;

Frequency: 1900 MHz; Medium parameters used: $f = 1900$ MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³ ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

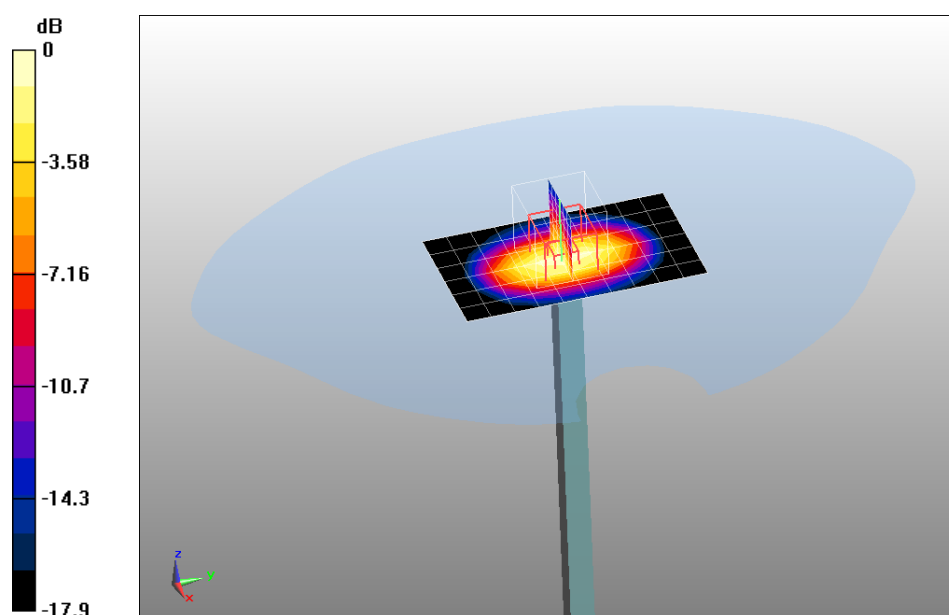
- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/System Check PCS1900 Body/Area Scan (7x11x1): Measurement grid: dx=10mm, dy=10mm, Maximum value of SAR (measured) = 11.1 mW/g

Configuration/System Check PCS1900 Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 83.8 V/m; Power Drift = 0.00285 dB

Peak SAR (extrapolated) = 18.8 W/kg

SAR(1 g) = 10 mW/g; SAR(10 g) = 5.12 mW/g Maximum value of SAR (measured) = 11.3 mW/g



0 dB = 11.3mW/g

Appendix B. SAR measurement Data

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Low Touch-Left

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 824.2 MHz; Medium parameters used: $f = 824.2$ MHz; $\sigma = 0.86$ mho/m; $\epsilon_r = 41.9$; $\rho = 1000$ kg/m³ ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

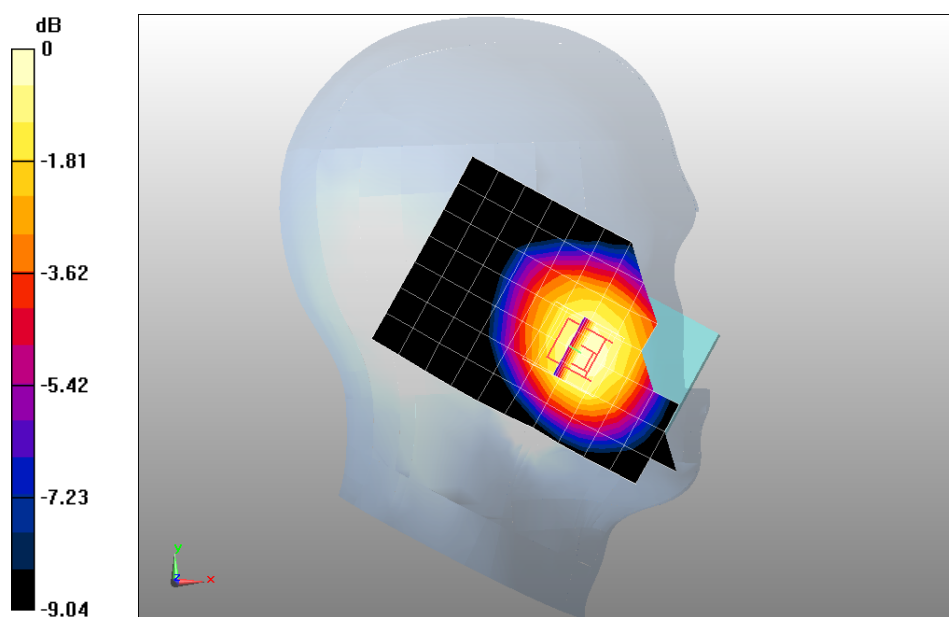
Configuration/GSM850 Low Touch-Left/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

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

Configuration/GSM850 Low Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 2.18 V/m; Power Drift = 0.179 dB

Peak SAR (extrapolated) = 0.110 W/kg

SAR(1 g) = 0.090 mW/g; SAR(10 g) = 0.071 mW/g Maximum value of SAR (measured) = 0.094 mW/g



0 dB = 0.094mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Mid Touch-Left

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used: $f = 836.6$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 41.7$; $\rho = 1000$ kg/m³; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

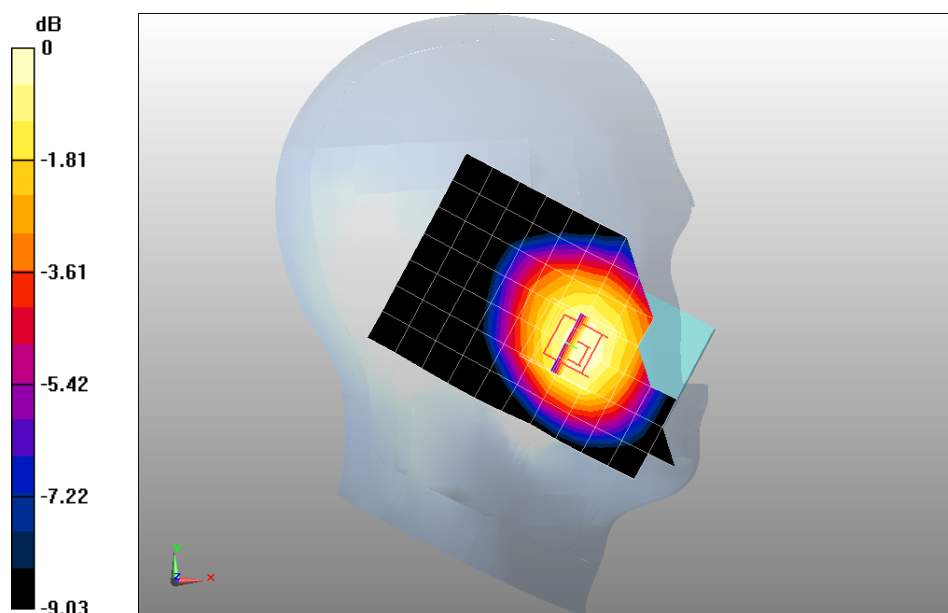
Configuration/GSM850 Mid Touch-Left/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.108 mW/g

Configuration/GSM850 Mid Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 2.67 V/m; Power Drift = -0.178 dB

Peak SAR (extrapolated) = 0.129 W/kg

SAR(1 g) = 0.104 mW/g; SAR(10 g) = 0.081 mW/g Maximum value of SAR (measured) = 0.109 mW/g



0 dB = 0.109mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 High Touch-Left

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 848.6 MHz; Medium parameters used: $f = 848.6$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.5$; $\rho = 1000$ kg/m³ ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

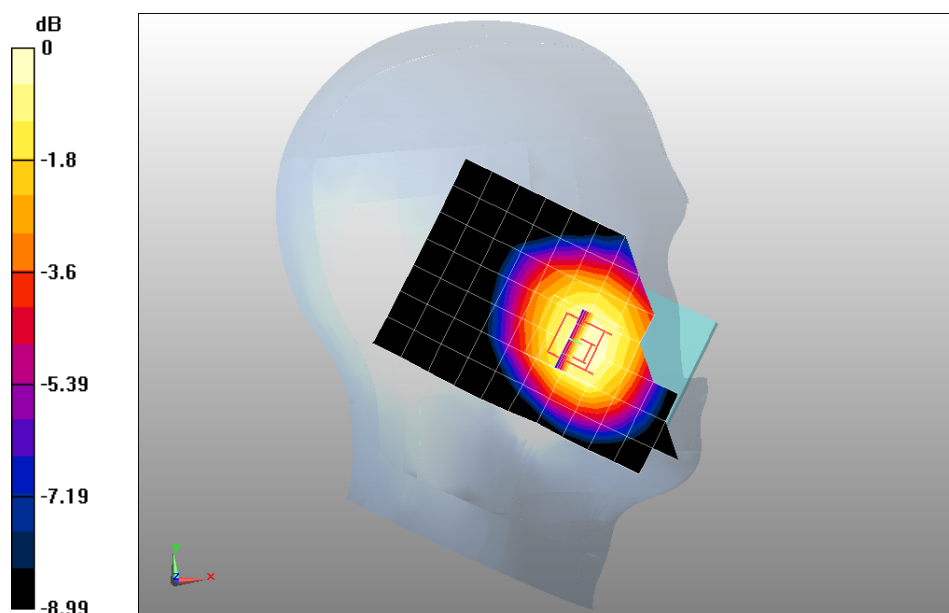
Configuration/GSM850 High Touch-Left/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.132 mW/g

Configuration/GSM850 High Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 2.55 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 0.160 W/kg

SAR(1 g) = 0.129 mW/g; SAR(10 g) = 0.100 mW/g Maximum value of SAR (measured) = 0.134 mW/g



0 dB = 0.134mW/g

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Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Mid Tilt-Left

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used: $f = 836.6$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 41.7$; $\rho = 1000$ kg/m³; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

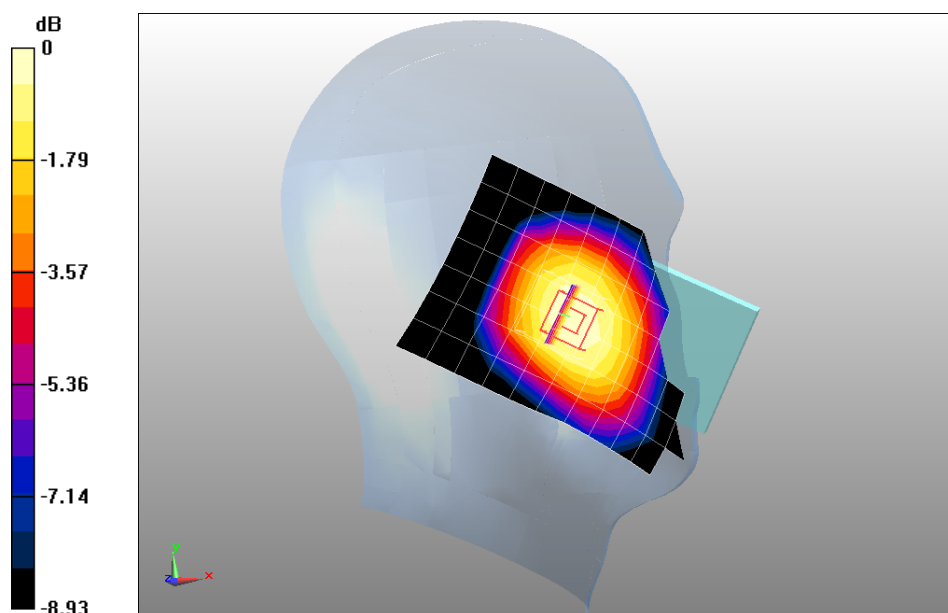
Configuration/GSM850 Mid Tilt-Left/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.081 mW/g

Configuration/GSM850 Mid Tilt-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 4.56 V/m; Power Drift = -0.114 dB

Peak SAR (extrapolated) = 0.097 W/kg

SAR(1 g) = 0.079 mW/g; SAR(10 g) = 0.061 mW/g Maximum value of SAR (measured) = 0.082 mW/g



0 dB = 0.082mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Low Touch-Right

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 824.2 MHz; Medium parameters used: $f = 824.2$ MHz; $\sigma = 0.86$ mho/m; $\epsilon_r = 41.9$; $\rho = 1000$ kg/m³; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

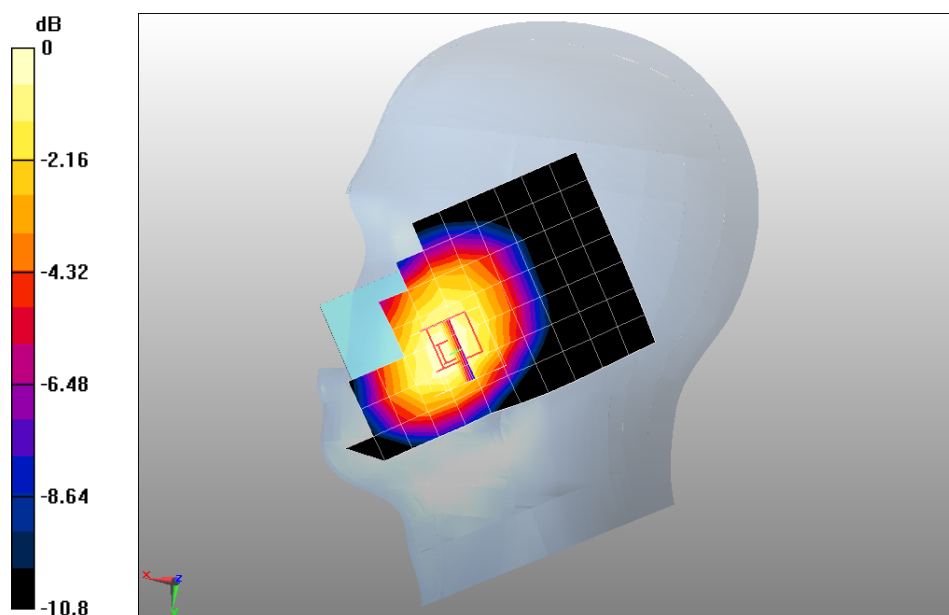
Configuration/GSM850 Low Touch-Right/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.103 mW/g

Configuration/GSM850 Low Touch-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 1.75 V/m; Power Drift = -0.104 dB

Peak SAR (extrapolated) = 0.122 W/kg

SAR(1 g) = 0.101 mW/g; SAR(10 g) = 0.080 mW/g Maximum value of SAR (measured) = 0.105 mW/g



0 dB = 0.105mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Mid Touch-Right

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used: $f = 836.6$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 41.7$; $\rho = 1000$ kg/m³; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

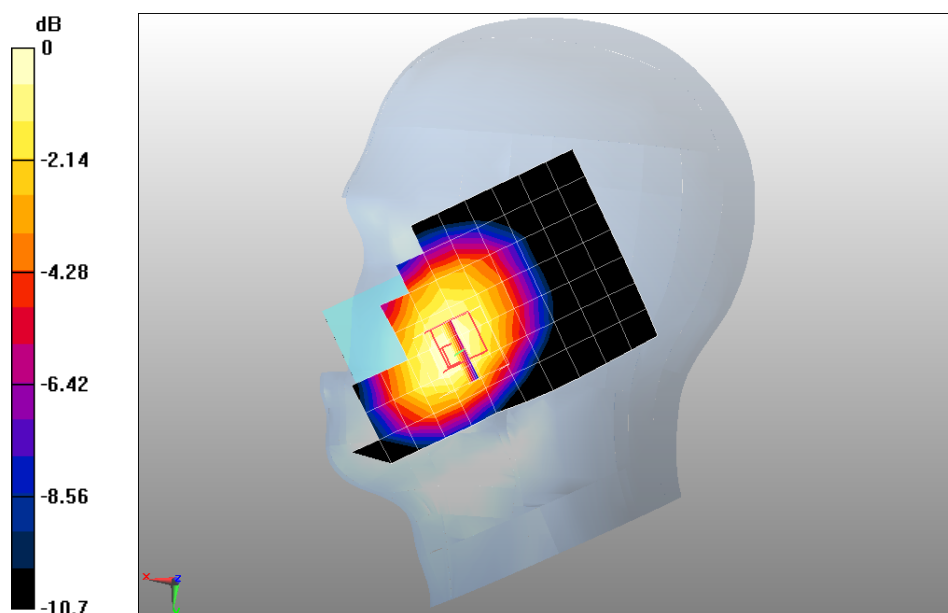
Configuration/GSM850 Mid Touch-Right/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.134 mW/g

Configuration/GSM850 Mid Touch-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 2.33 V/m; Power Drift = -0.171 dB

Peak SAR (extrapolated) = 0.180 W/kg

SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.099 mW/g Maximum value of SAR (measured) = 0.141 mW/g



0 dB = 0.141mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 High Touch-Right

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 848.6 MHz; Medium parameters used: $f = 848.6$ MHz; $\sigma = 0.89$ mho/m; $\epsilon_r = 41.5$; $\rho = 1000$ kg/m³; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

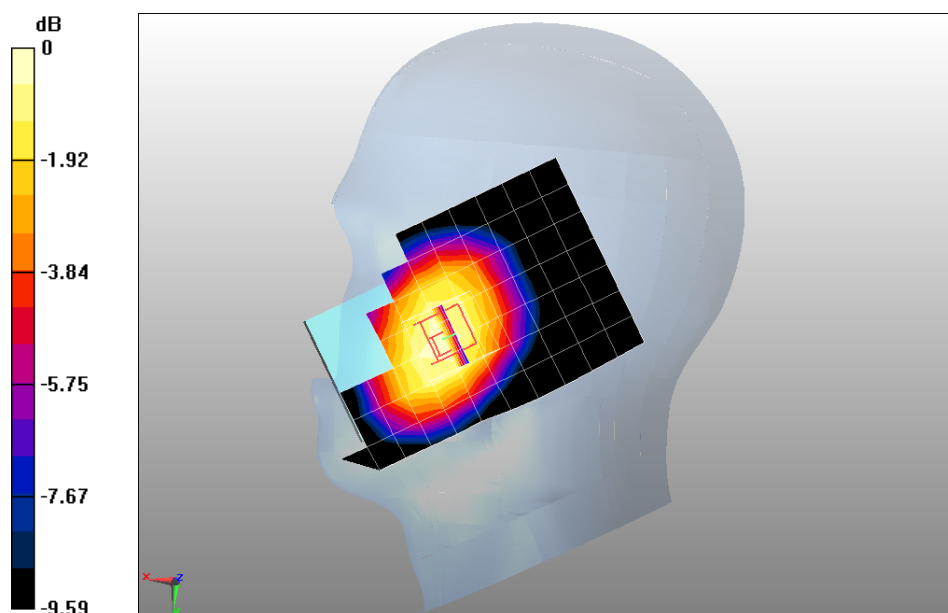
Configuration/GSM850 High Touch-Right/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.172 mW/g

Configuration/GSM850 High Touch-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 3.15 V/m; Power Drift = -0.175 dB

Peak SAR (extrapolated) = 0.212 W/kg

SAR(1 g) = 0.164 mW/g; SAR(10 g) = 0.125 mW/g Maximum value of SAR (measured) = 0.172 mW/g



0 dB = 0.172mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Mid Tilt-Right

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used: $f = 836.6$ MHz; $\sigma = 0.88$ mho/m; $\epsilon_r = 41.7$; $\rho = 1000$ kg/m³; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.83, 8.83, 8.83); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

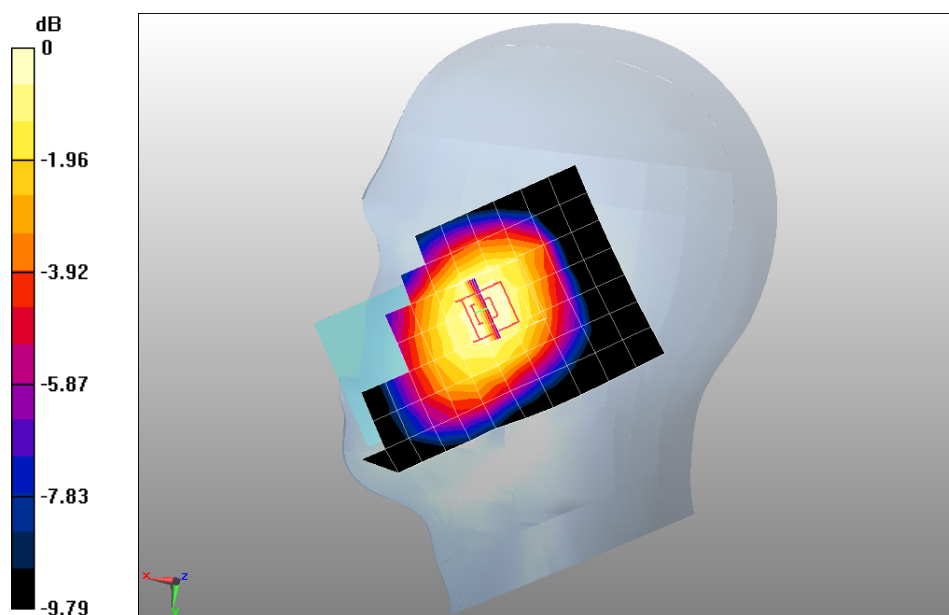
Configuration/GSM850 Mid Tilt-Right/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.104 mW/g

Configuration/GSM850 Mid Tilt-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 4.96 V/m; Power Drift = -0.153 dB

Peak SAR (extrapolated) = 0.126 W/kg

SAR(1 g) = 0.103 mW/g; SAR(10 g) = 0.080 mW/g Maximum value of SAR (measured) = 0.107 mW/g



0 dB = 0.107mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Low Body-Back

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 824.2 MHz; Medium parameters used: $f = 824.2$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 54.4$; $\rho = 1000$ kg/m³ ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

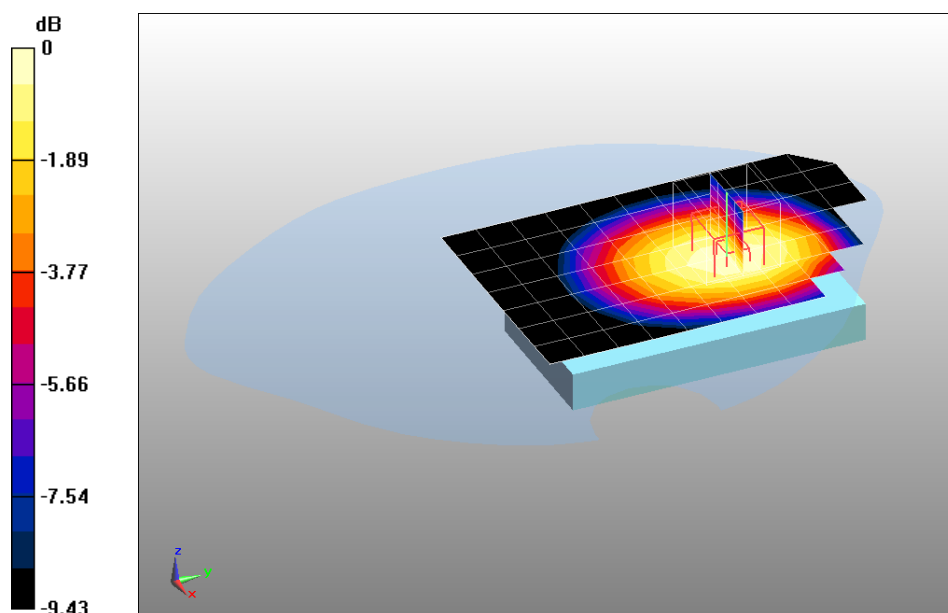
Configuration/GSM850 Low Body-Back/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.173 mW/g

Configuration/GSM850 Low Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 4.04 V/m; Power Drift = 0.141 dB

Peak SAR (extrapolated) = 0.222 W/kg

SAR(1 g) = 0.168 mW/g; SAR(10 g) = 0.123 mW/g Maximum value of SAR (measured) = 0.177 mW/g



0 dB = 0.177mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Mid Body-Back

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used: $f = 836.6$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 54.2$; $\rho = 1000$ kg/m³ ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

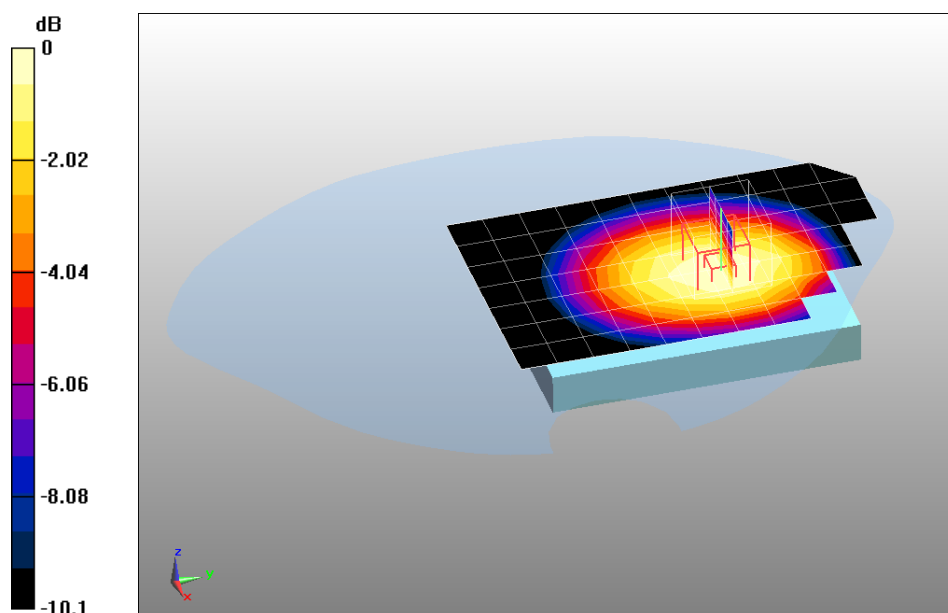
Configuration/GSM850 Mid Body-Back/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.300 mW/g

Configuration/GSM850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 5.94 V/m; Power Drift = -0.020 dB

Peak SAR (extrapolated) = 0.382 W/kg

SAR(1 g) = 0.289 mW/g; SAR(10 g) = 0.212 mW/g Maximum value of SAR (measured) = 0.304 mW/g



0 dB = 0.304mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 High Body-Back

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 848.6 MHz; Medium parameters used: $f = 848.6$ MHz; $\sigma = 1.02$ mho/m; $\epsilon_r = 54.1$; $\rho = 1000$ kg/m³; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

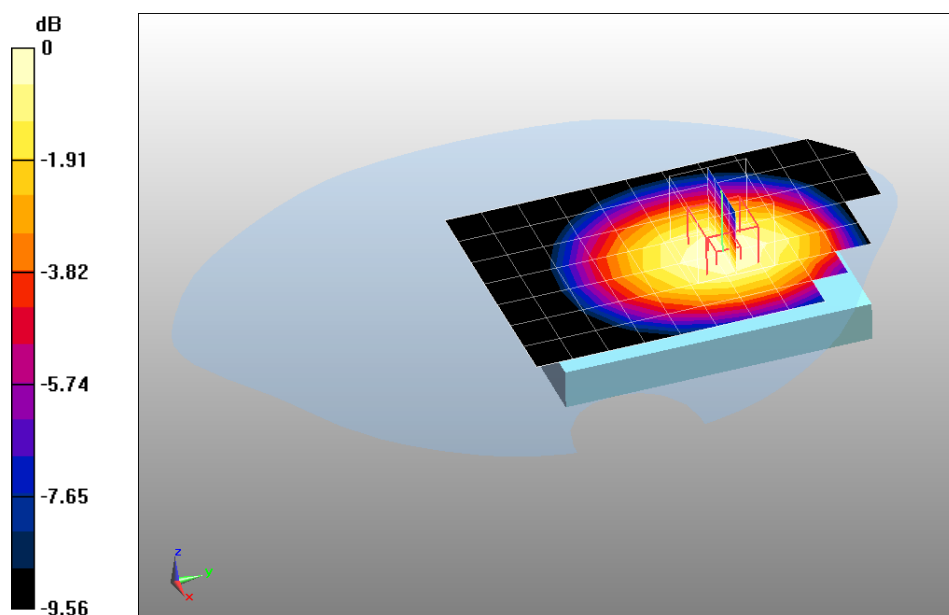
Configuration/GSM850 High Body-Back/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.341 mW/g

Configuration/GSM850 High Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 6.17 V/m; Power Drift = 0.063 dB

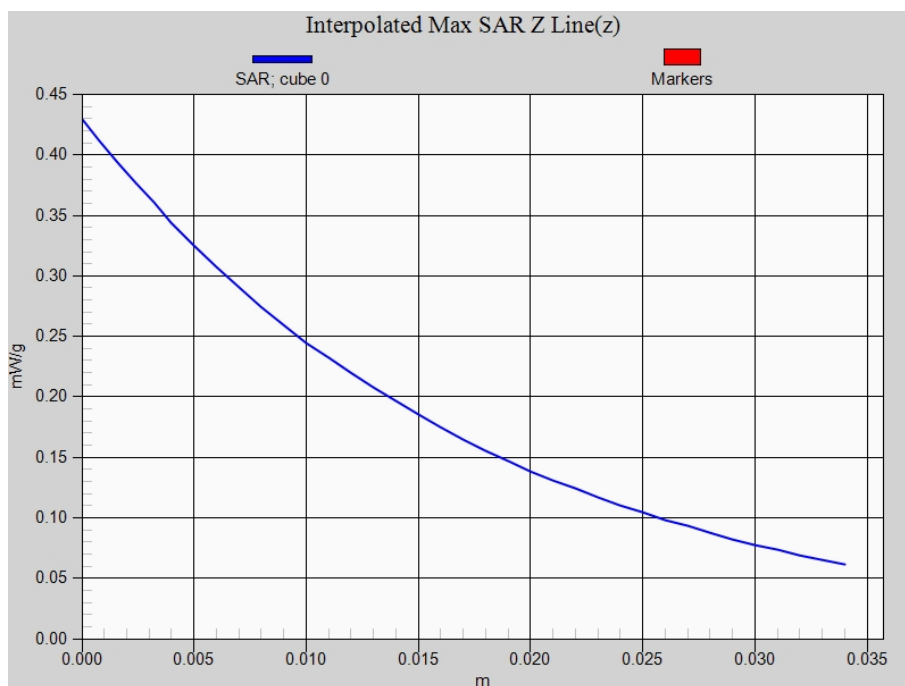
Peak SAR (extrapolated) = 0.429 W/kg

SAR(1 g) = 0.326 mW/g; SAR(10 g) = 0.239 mW/g Maximum value of SAR (measured) = 0.344 mW/g



0 dB = 0.344mW/g

Z-Axis Plot



Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

GSM850 Mid Body-Front

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used: $f = 836.6$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 54.2$; $\rho = 1000$ kg/m³ ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

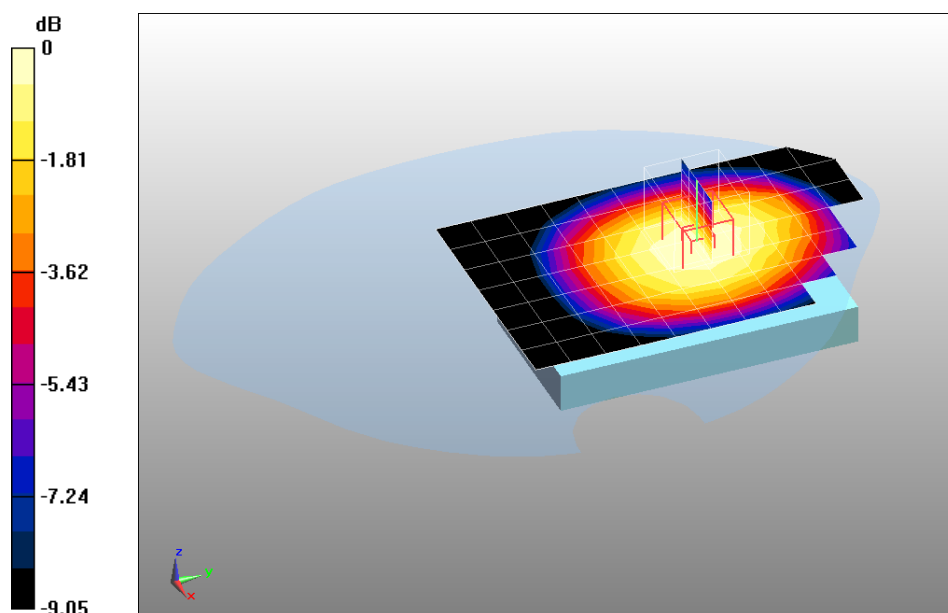
Configuration/GSM850 Mid Body-Front/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.191 mW/g

Configuration/GSM850 Mid Body-Front/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 5.17 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 0.238 W/kg

SAR(1 g) = 0.183 mW/g; SAR(10 g) = 0.138 mW/g Maximum value of SAR (measured) = 0.193 mW/g



0 dB = 0.193mW/g

Date/Time: 27-Sep-2010

Test Laboratory: QuieTek Lab

GSM850 Mid Body-Back (With Headset)

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz); Duty Cycle: 1:8.3; Frequency: 836.6 MHz; Medium parameters used: $f = 836.6$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 54.2$; $\rho = 1000$ kg/m³; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(8.95, 8.95, 8.95); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

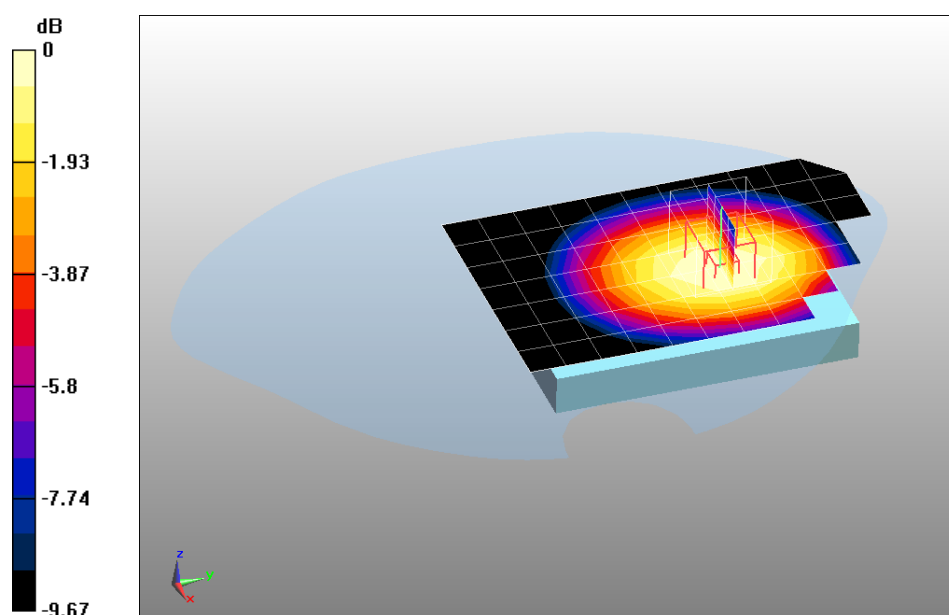
Configuration/GSM850 Mid Body-Back/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.305 mW/g

Configuration/GSM850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 5.77 V/m; Power Drift = -0.136 dB

Peak SAR (extrapolated) = 0.379 W/kg

SAR(1 g) = 0.288 mW/g; SAR(10 g) = 0.212 mW/g Maximum value of SAR (measured) = 0.302 mW/g



0 dB = 0.302mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Low Touch-Left

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1850.2 MHz; Medium parameters used: $f = 1850.2$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.2$; $\rho = 1000$ kg/m³; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

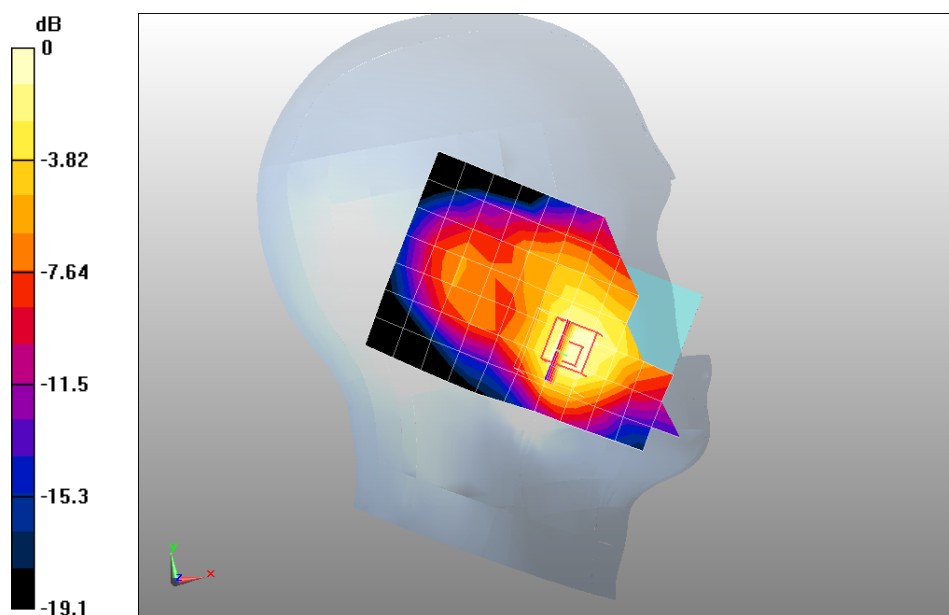
Configuration/PCS1900 Low Touch-Left/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.192 mW/g

Configuration/PCS1900 Low Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 6.24 V/m; Power Drift = 0.075 dB

Peak SAR (extrapolated) = 0.307 W/kg

SAR(1 g) = 0.204 mW/g; SAR(10 g) = 0.127 mW/g Maximum value of SAR (measured) = 0.220 mW/g



0 dB = 0.220mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Mid Touch-Left

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r =$

39.1; $\rho = 1000$ kg/m³ ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/PCS1900 Mid Touch-Left/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

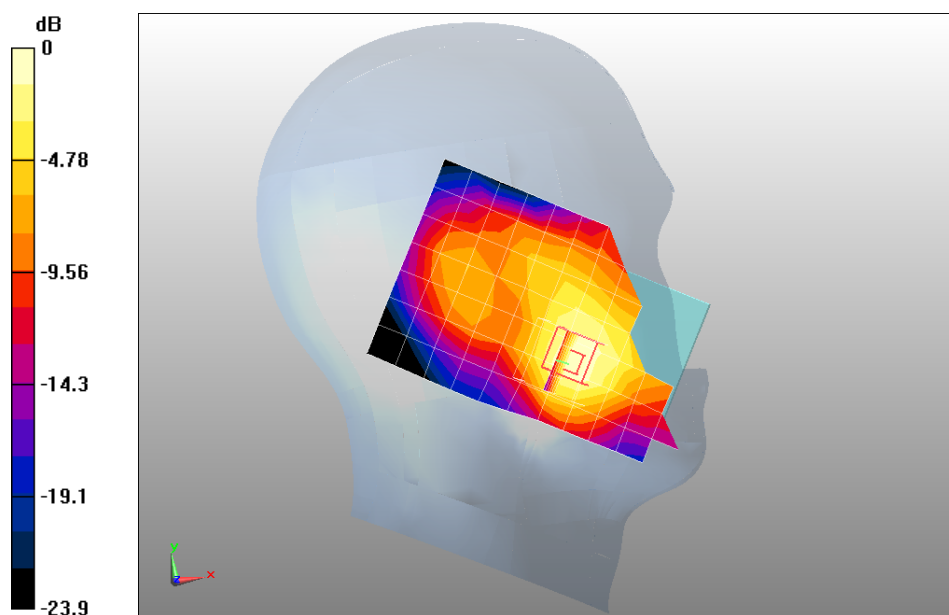
Maximum value of SAR (measured) = 0.220 mW/g

Configuration/PCS1900 Mid Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 6.85 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 0.363 W/kg

SAR(1 g) = 0.234 mW/g; SAR(10 g) = 0.143 mW/g Maximum value of SAR (measured) = 0.252 mW/g



0 dB = 0.252mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 High Touch-Left

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1909.8 MHz; Medium parameters used: $f = 1909.8$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³ ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

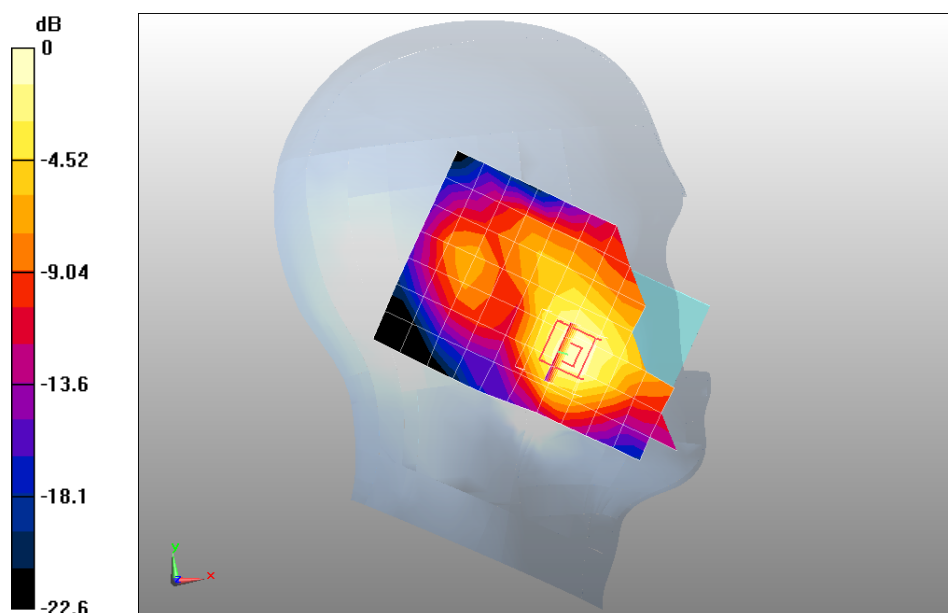
Configuration/PCS1900 High Touch-Left/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.218 mW/g

Configuration/PCS1900 High Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 6.52 V/m; Power Drift = 0.069 dB

Peak SAR (extrapolated) = 0.348 W/kg

SAR(1 g) = 0.224 mW/g; SAR(10 g) = 0.136 mW/g Maximum value of SAR (measured) = 0.243 mW/g



0 dB = 0.243mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Mid Tilt-Left

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r =$

39.1; $\rho = 1000$ kg/m³ ; Phantom section: Left Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/PCS1900 Mid Tilt-Left/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

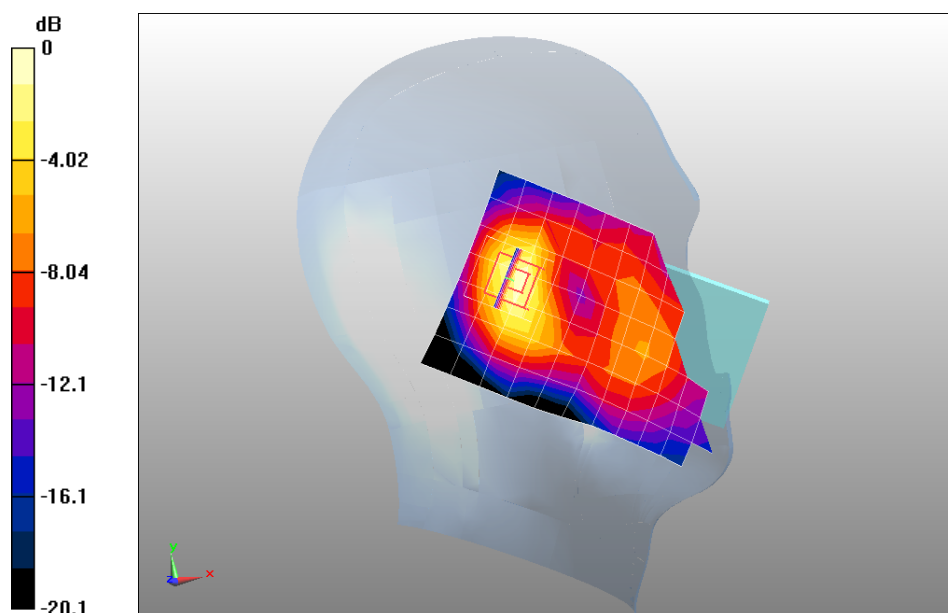
Maximum value of SAR (measured) = 0.174 mW/g

Configuration/PCS1900 Mid Tilt-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm,

dz=5mm, Reference Value = 11.4 V/m; Power Drift = -0.003 dB

Peak SAR (extrapolated) = 0.343 W/kg

SAR(1 g) = 0.177 mW/g; SAR(10 g) = 0.089 mW/g Maximum value of SAR (measured) = 0.197 mW/g



0 dB = 0.197mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Low Touch-Right

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1850.2 MHz; Medium parameters used: $f = 1850.2$ MHz; $\sigma = 1.42$ mho/m; $\epsilon_r = 39.2$; $\rho = 1000$ kg/m³; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

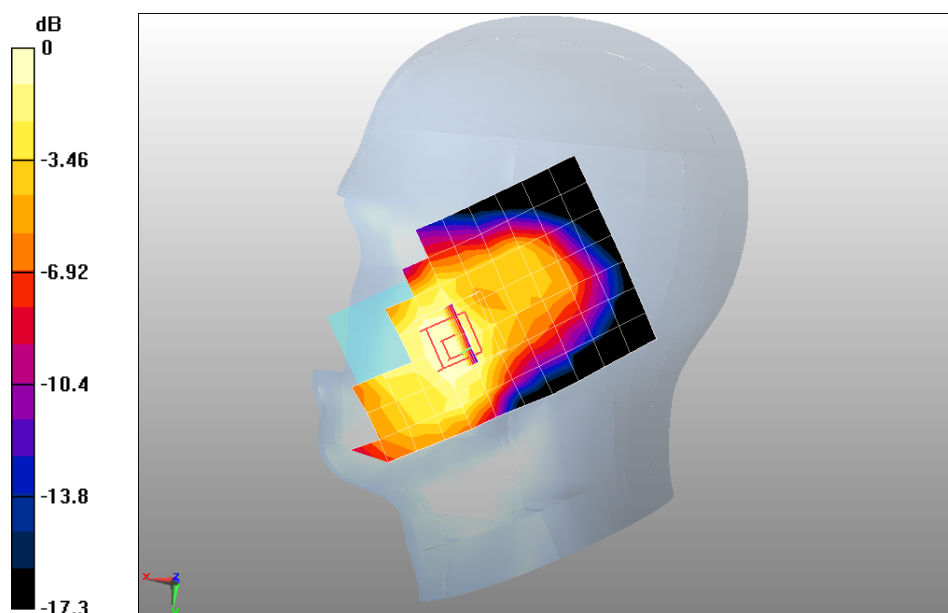
Configuration/PCS1900 Low Touch-Right/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.161 mW/g

Configuration/PCS1900 Low Touch-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 5.58 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 0.226 W/kg

SAR(1 g) = 0.163 mW/g; SAR(10 g) = 0.109 mW/g Maximum value of SAR (measured) = 0.174 mW/g



0 dB = 0.174mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Mid Touch-Right

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r =$

39.1; $\rho = 1000$ kg/m³ ; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/PCS1900 Mid Touch-Right/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

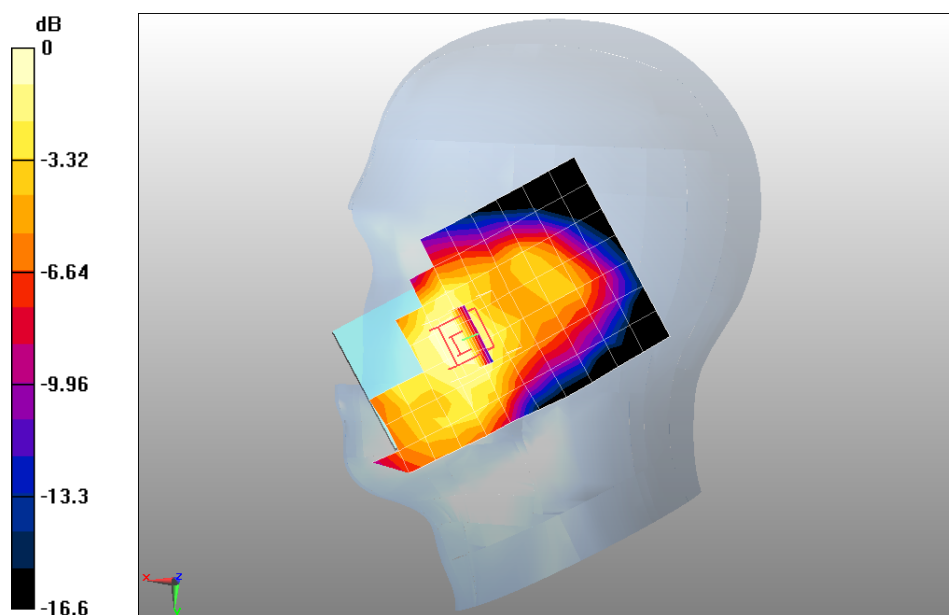
Maximum value of SAR (measured) = 0.203 mW/g

Configuration/PCS1900 Mid Touch-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 6.83 V/m; Power Drift = -0.080 dB

Peak SAR (extrapolated) = 0.282 W/kg

SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.128 mW/g Maximum value of SAR (measured) = 0.206 mW/g



0 dB = 0.206mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 High Touch-Right

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1909.8 MHz; Medium parameters used: $f = 1909.8$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³ ; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

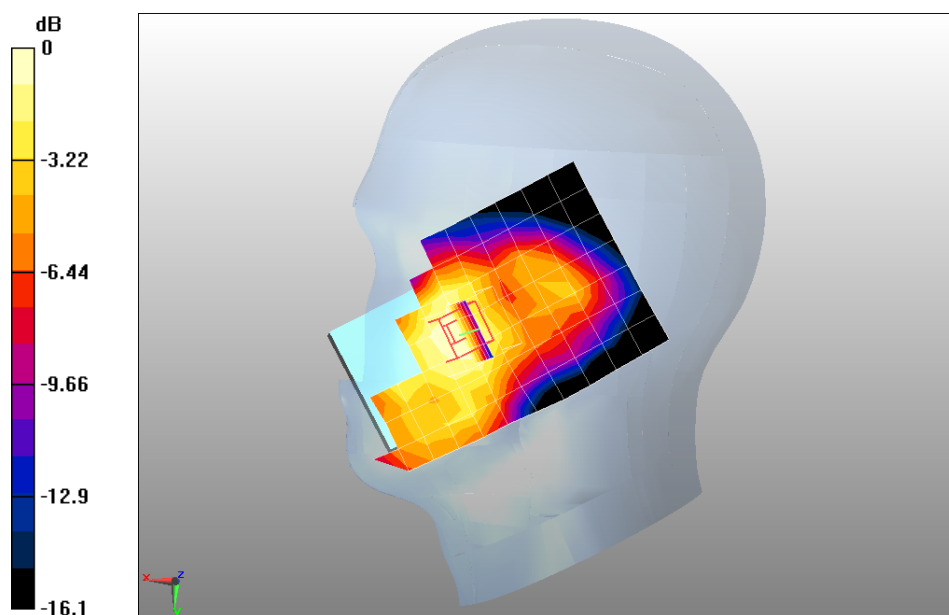
- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/PCS1900 High Touch-Right/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.182 mW/g

Configuration/PCS1900 High Touch-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 6.67 V/m; Power Drift = 0.005 dB

Peak SAR (extrapolated) = 0.253 W/kg

SAR(1 g) = 0.172 mW/g; SAR(10 g) = 0.113 mW/g Maximum value of SAR (measured) = 0.184 mW/g



0 dB = 0.184mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Mid Tilt-Right

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used: $f = 1880$ MHz; $\sigma = 1.44$ mho/m; $\epsilon_r =$

39.1; $\rho = 1000$ kg/m³ ; Phantom section: Right Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.69, 7.69, 7.69); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/PCS1900 Mid Tilt-Right/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

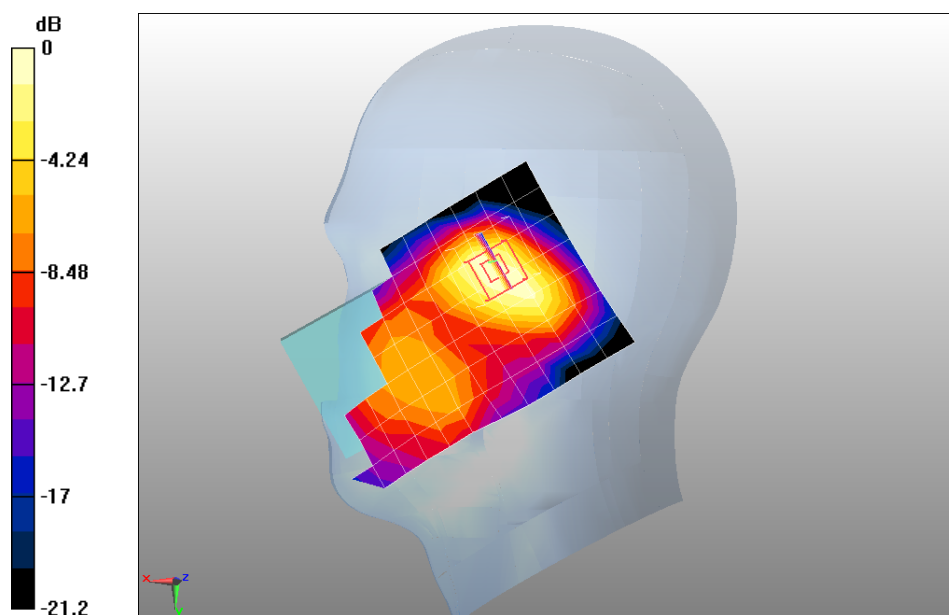
Maximum value of SAR (measured) = 0.173 mW/g

Configuration/PCS1900 Mid Tilt-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 9.67 V/m; Power Drift = -0.117 dB

Peak SAR (extrapolated) = 0.318 W/kg

SAR(1 g) = 0.189 mW/g; SAR(10 g) = 0.108 mW/g Maximum value of SAR (measured) = 0.205 mW/g



0 dB = 0.205mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Low Body-Back

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1850.2 MHz; Medium parameters used: $f = 1850.2$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 53.1$; $\rho = 1000$ kg/m³; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

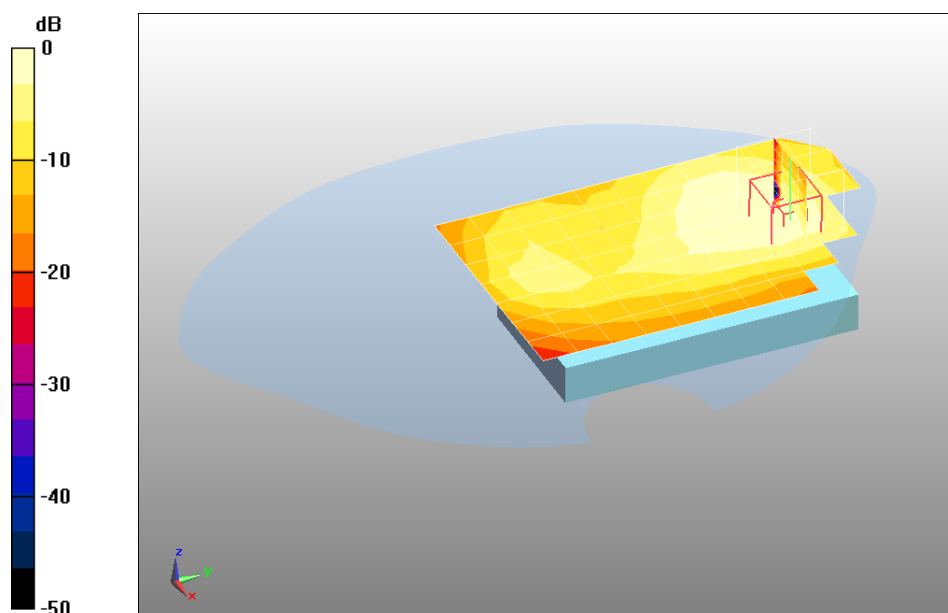
Configuration/PCS1900 Low Body-Back/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.218 mW/g

Configuration/PCS1900 Low Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.27 V/m; Power Drift = -0.113 dB

Peak SAR (extrapolated) = 0.492 W/kg

SAR(1 g) = 0.217 mW/g; SAR(10 g) = 0.117 mW/g Maximum value of SAR (measured) = 0.220 mW/g



0 dB = 0.220mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Mid Body-Back

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used: $f = 1880$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 53$;

$\rho = 1000$ kg/m³ ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/PCS1900 Mid Body-Back/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

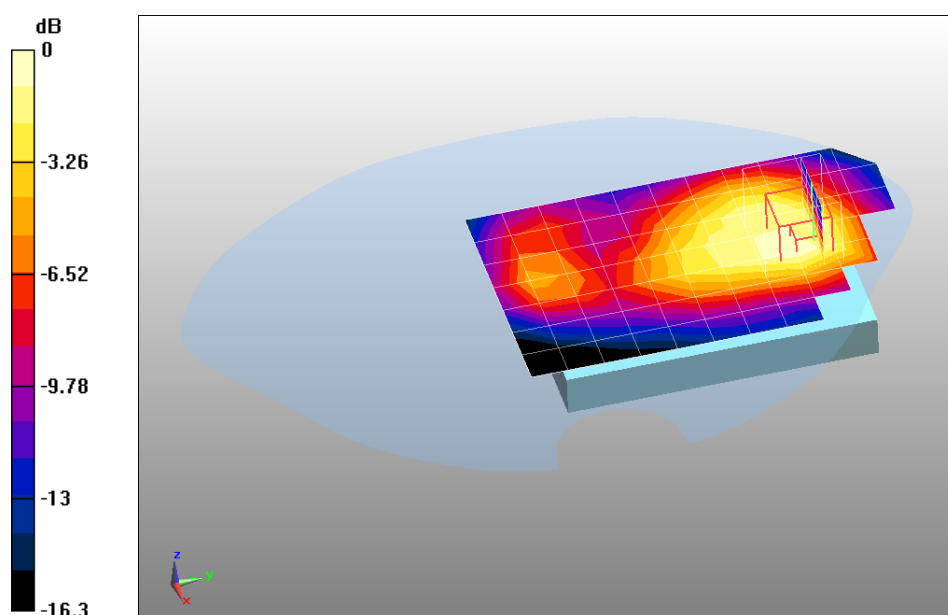
Maximum value of SAR (measured) = 0.253 mW/g

Configuration/PCS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 7.51 V/m; Power Drift = -0.050 dB

Peak SAR (extrapolated) = 0.419 W/kg

SAR(1 g) = 0.245 mW/g; SAR(10 g) = 0.142 mW/g Maximum value of SAR (measured) = 0.262 mW/g



0 dB = 0.262mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 High Body-Back

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1909.8 MHz; Medium parameters used: $f = 1909.8$ MHz; $\sigma = 1.59$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³ ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

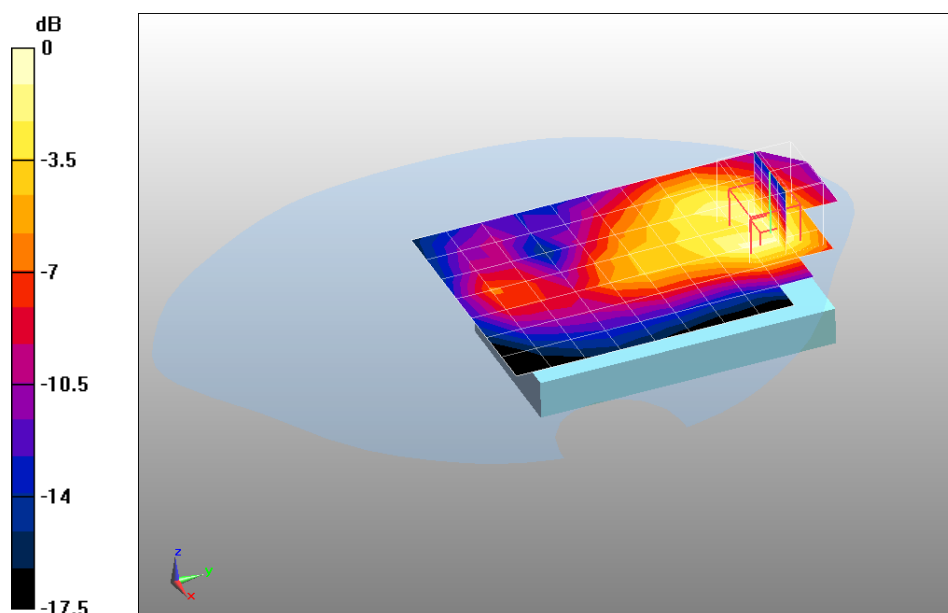
Configuration/PCS1900 High Body-Back/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.270 mW/g

Configuration/PCS1900 High Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 6.9 V/m; Power Drift = -0.094 dB

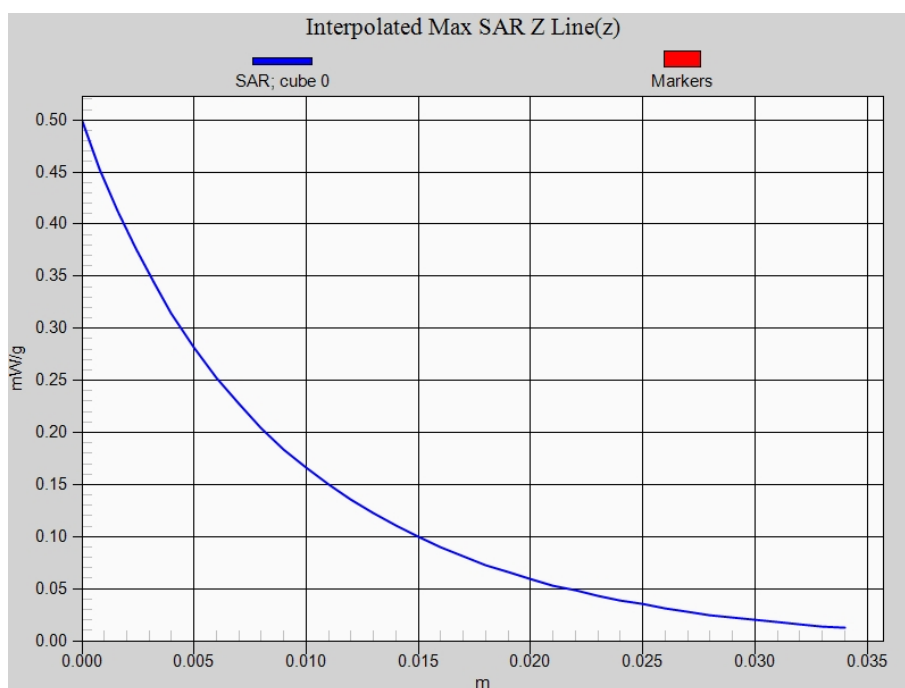
Peak SAR (extrapolated) = 0.498 W/kg

SAR(1 g) = 0.284 mW/g; SAR(10 g) = 0.157 mW/g Maximum value of SAR (measured) = 0.313 mW/g



0 dB = 0.313mW/g

Z-Axis Plot



Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Mid Body-Front

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used: $f = 1880$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 53$;

$\rho = 1000$ kg/m³ ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

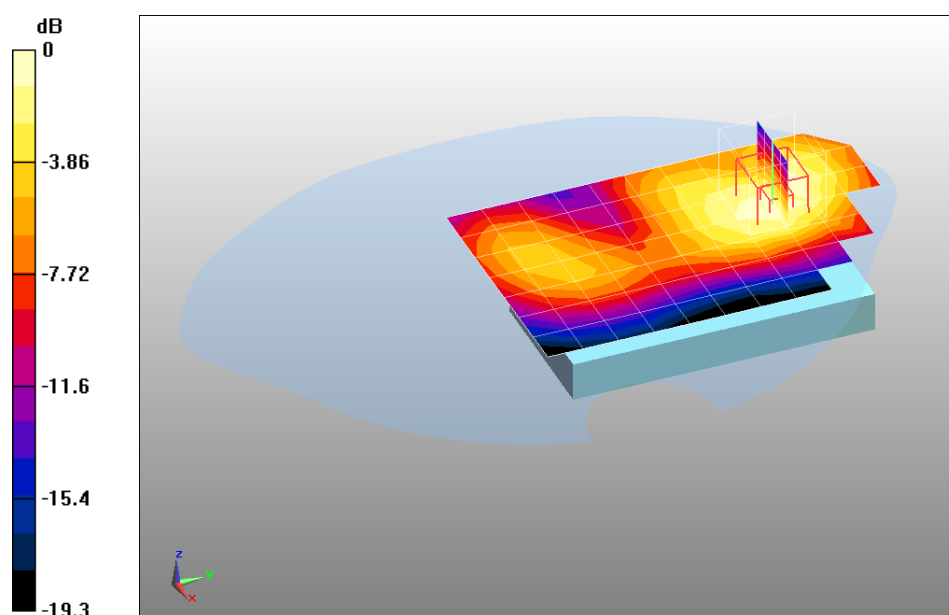
Configuration/PCS1900 Mid Body-Front/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.230 mW/g

Configuration/PCS1900 Mid Body-Front/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.23 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.356 W/kg

SAR(1 g) = 0.218 mW/g; SAR(10 g) = 0.131 mW/g Maximum value of SAR (measured) = 0.236 mW/g



0 dB = 0.236mW/g

Date/Time: 13-Dec-2010

Test Laboratory: QuieTek Lab

PCS1900 Mid Body-Back (With Headset)

DUT: vooma peel; Type: T166,T168

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used: $f = 1880$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 53$;

$\rho = 1000$ kg/m³ ; Phantom section: Flat Section

Ambient temperature (°C): 21.5, Liquid temperature (°C): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.71, 7.71, 7.71); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/PCS1900 Mid Body-Back/Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

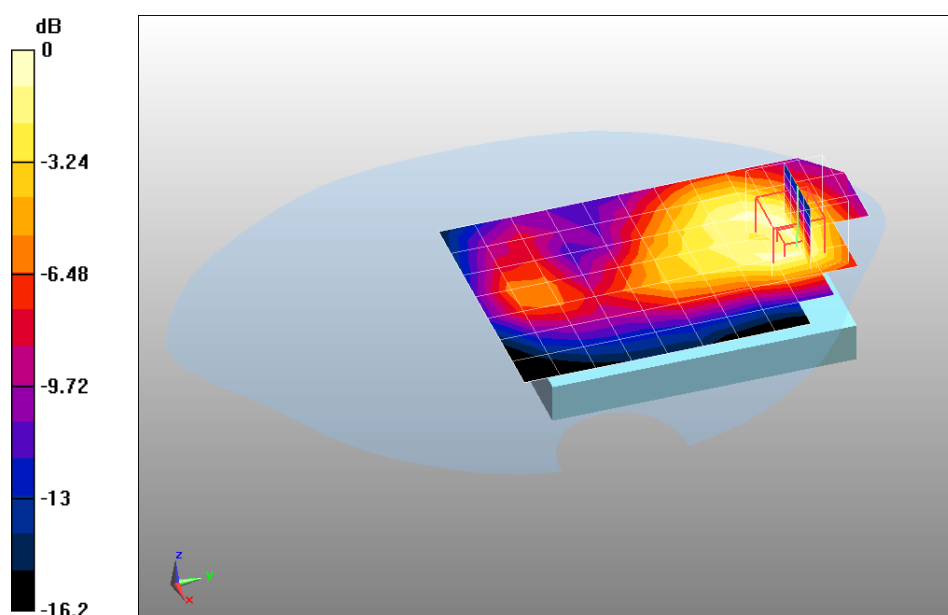
Maximum value of SAR (measured) = 0.229 mW/g

Configuration/PCS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm, Reference Value = 7.15 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 0.382 W/kg

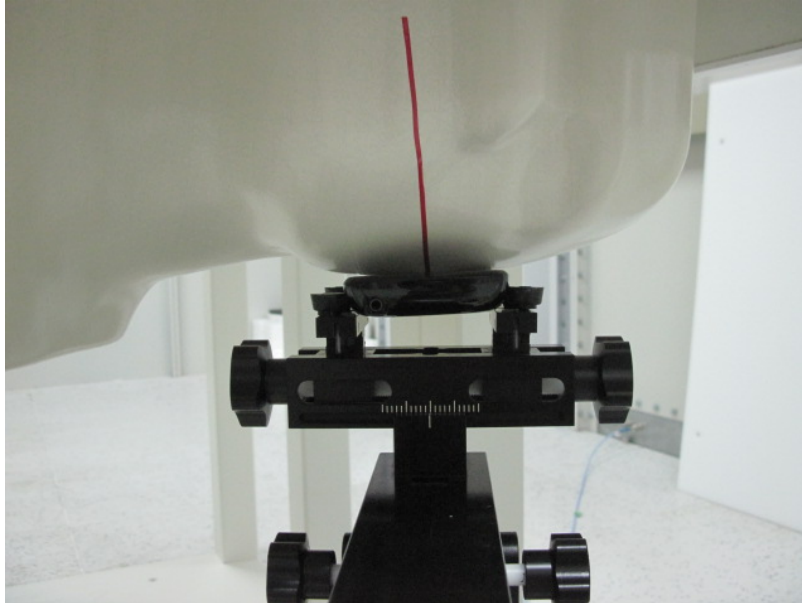
SAR(1 g) = 0.223 mW/g; SAR(10 g) = 0.126 mW/g Maximum value of SAR (measured) = 0.246 mW/g



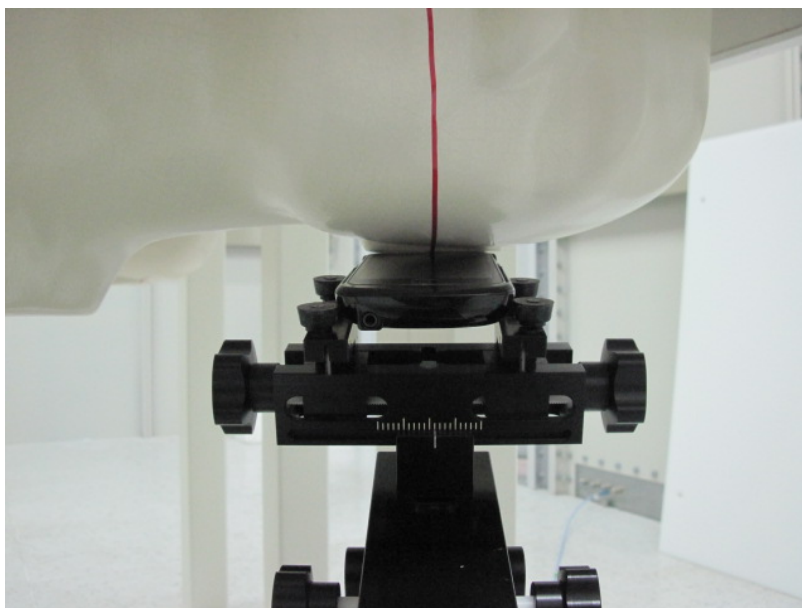
0 dB = 0.246mW/g

Appendix C. Test Setup Photographs & EUT Photographs

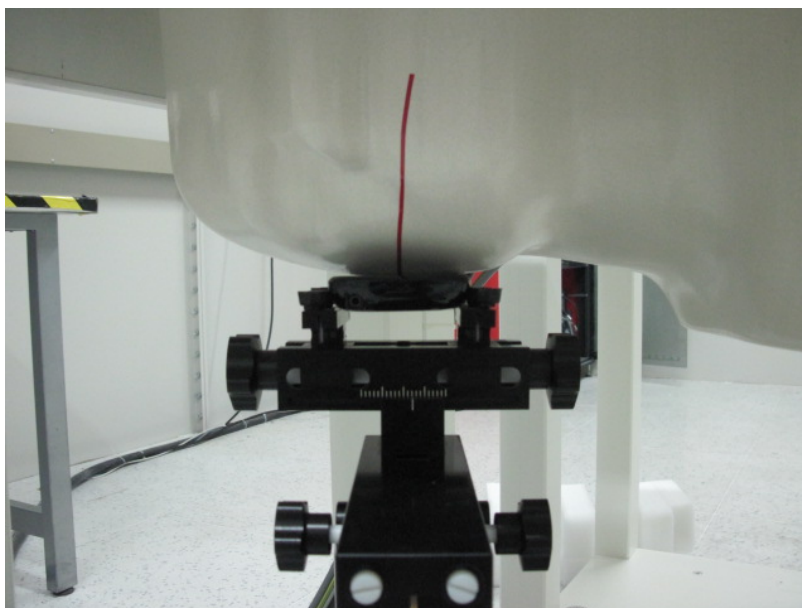
Test Setup Photographs



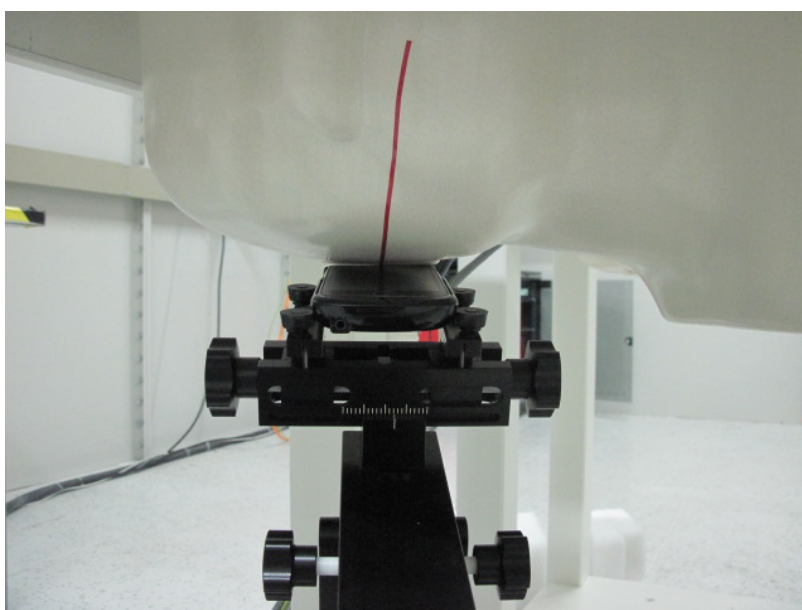
Left-Cheek Touch



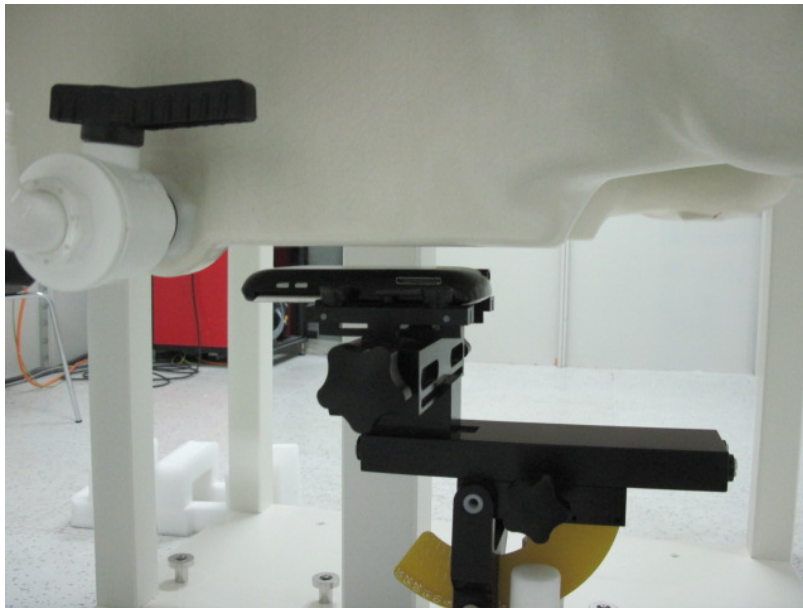
Left-Tilt 15°



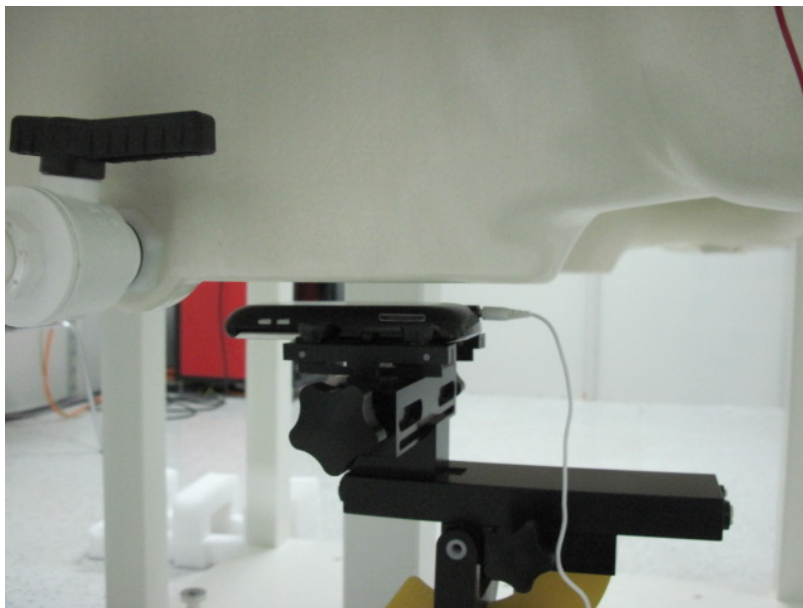
Right-Cheek Touch



Right-Tilt 15°



Body SAR back 15mm



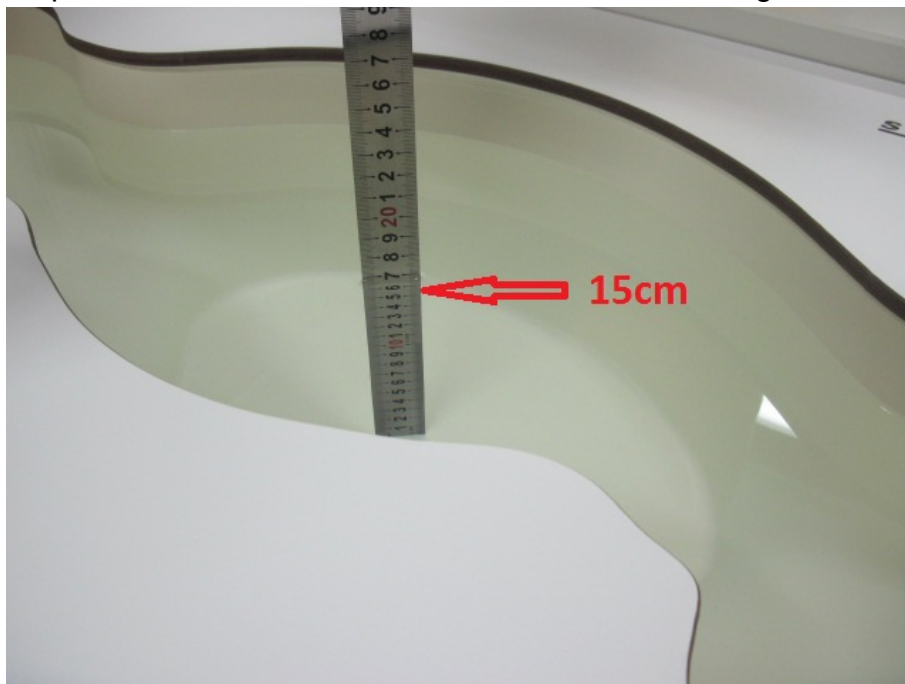
Body SAR Back 15mm with Headset



Body SAR Front 15mm

Depth of the liquid in the phantom – Zoom in

Note: The position used in the measurements were according to IEEE 1528 - 2003



EUT Photographs



Appendix D. Probe Calibration Data

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: EX3-3710_Mar10

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3710**

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: **March 5, 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-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10

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

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

Issued: March 5, 2010

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX3-3710_Mar10

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



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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,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:

- 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
- 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:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E²-field uncertainty inside TSL (see below *ConvF*).
- NORM(f)_{x,y,z}** = NORM_{x,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 NORM_{x,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.

EX3DV4 SN:3710

March 5, 2010

Probe EX3DV4

SN:3710

Manufactured:	July 21, 2009
Calibrated:	March 5, 2010

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

EX3DV4 SN:3710

March 5, 2010

DASY - Parameters of Probe: EX3DV4 SN:3710

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$) ^A	0.48	0.58	0.60	± 10.1%
DCP (mV) ^B	90.8	94.4	91.8	

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 E²-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.

EX3DV4 SN:3710

March 5, 2010

DASY - Parameters of Probe: EX3DV4 SN:3710

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)
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	8.83	8.83	8.83	0.68	0.64 ± 11.0%
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	8.73	8.73	8.73	0.83	0.58 ± 11.0%
1810	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.69	7.69	7.69	0.62	0.63 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.35	7.35	7.35	0.70	0.60 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	6.96	6.96	6.96	0.46	0.75 ± 11.0%
2600	± 50 / ± 100	39.0 ± 5%	1.96 ± 5%	6.88	6.88	6.88	0.31	0.92 ± 11.0%
3500	± 50 / ± 100	37.9 ± 5%	2.91 ± 5%	6.64	6.64	6.64	0.33	1.18 ± 13.1%
5200	± 50 / ± 100	36.0 ± 5%	4.66 ± 5%	4.92	4.92	4.92	0.40	1.90 ± 13.1%
5300	± 50 / ± 100	35.9 ± 5%	4.76 ± 5%	4.60	4.60	4.60	0.40	1.90 ± 13.1%
5500	± 50 / ± 100	35.6 ± 5%	4.96 ± 5%	4.42	4.42	4.42	0.50	1.90 ± 13.1%
5600	± 50 / ± 100	35.5 ± 5%	5.07 ± 5%	4.42	4.42	4.42	0.40	1.90 ± 13.1%
5800	± 50 / ± 100	35.3 ± 5%	5.27 ± 5%	4.26	4.26	4.26	0.50	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.

EX3DV4 SN:3710

March 5, 2010

DASY - Parameters of Probe: EX3DV4 SN:3710

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)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	8.95	8.95	8.95	0.84	0.62 ± 11.0%
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	8.80	8.80	8.80	0.65	0.69 ± 11.0%
1810	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	7.71	7.71	7.71	0.57	0.72 ± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	7.45	7.45	7.45	0.38	0.87 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	7.00	7.00	7.00	0.32	0.95 ± 11.0%
2600	± 50 / ± 100	52.5 ± 5%	2.16 ± 5%	6.90	6.90	6.90	0.47	0.79 ± 11.0%
3500	± 50 / ± 100	51.3 ± 5%	3.31 ± 5%	6.19	6.19	6.19	0.31	1.44 ± 13.1%
5200	± 50 / ± 100	49.0 ± 5%	5.30 ± 5%	4.13	4.13	4.13	0.50	1.90 ± 13.1%
5300	± 50 / ± 100	48.5 ± 5%	5.42 ± 5%	3.91	3.91	3.91	0.55	1.90 ± 13.1%
5500	± 50 / ± 100	48.6 ± 5%	5.65 ± 5%	3.81	3.81	3.81	0.55	1.90 ± 13.1%
5600	± 50 / ± 100	48.5 ± 5%	5.77 ± 5%	3.58	3.58	3.58	0.60	1.90 ± 13.1%
5800	± 50 / ± 100	48.2 ± 5%	6.00 ± 5%	3.97	3.97	3.97	0.60	1.90 ± 13.1%

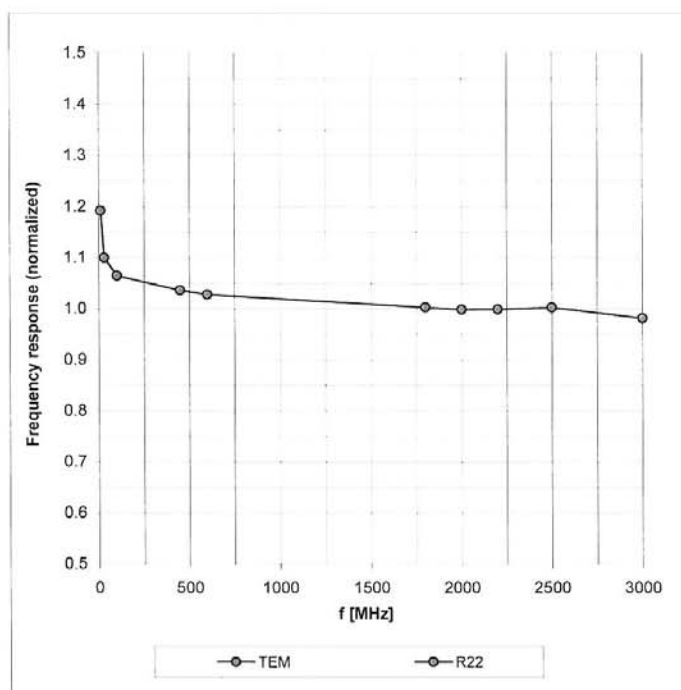
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

EX3DV4 SN:3710

March 5, 2010

Frequency Response of E-Field

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

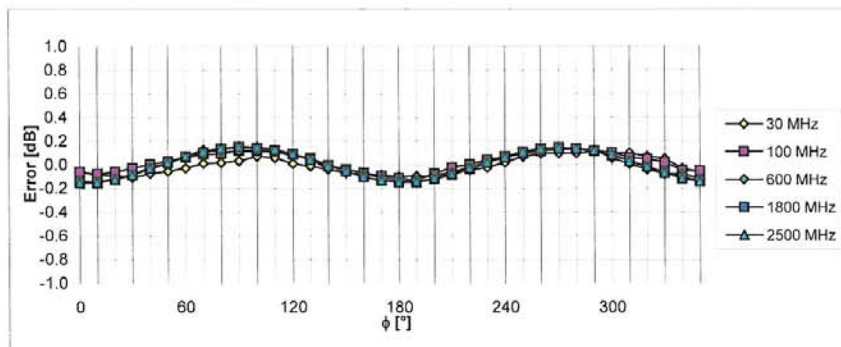
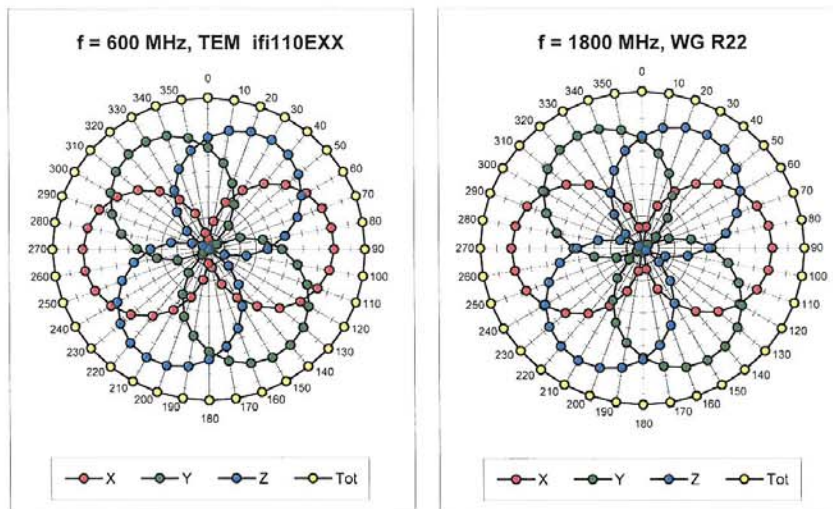


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

EX3DV4 SN:3710

March 5, 2010

Receiving Pattern (ϕ), $\vartheta = 0^\circ$

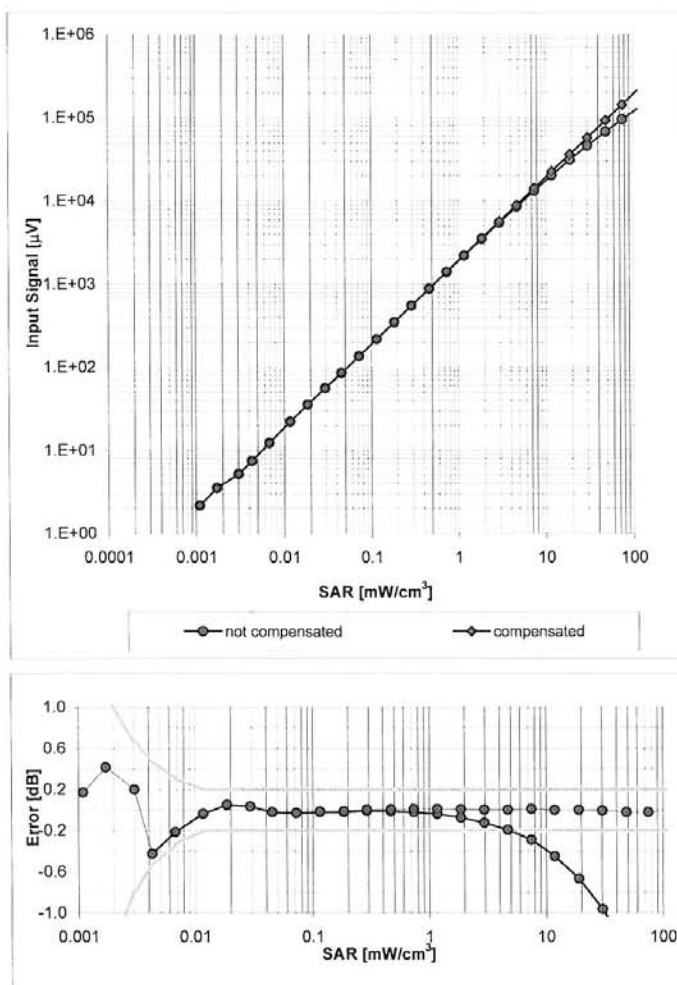


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

EX3DV4 SN:3710

March 5, 2010

Dynamic Range $f(\text{SAR}_{\text{head}})$ (Waveguide R22, $f = 1800 \text{ MHz}$)

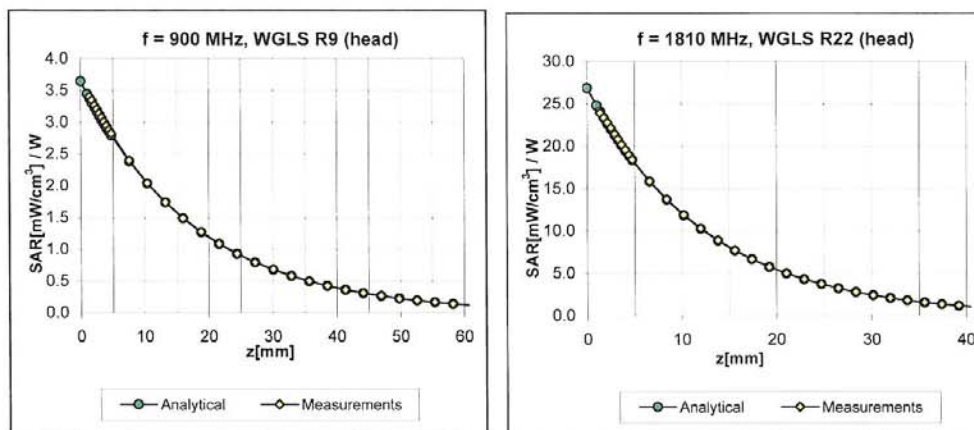


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

EX3DV4 SN:3710

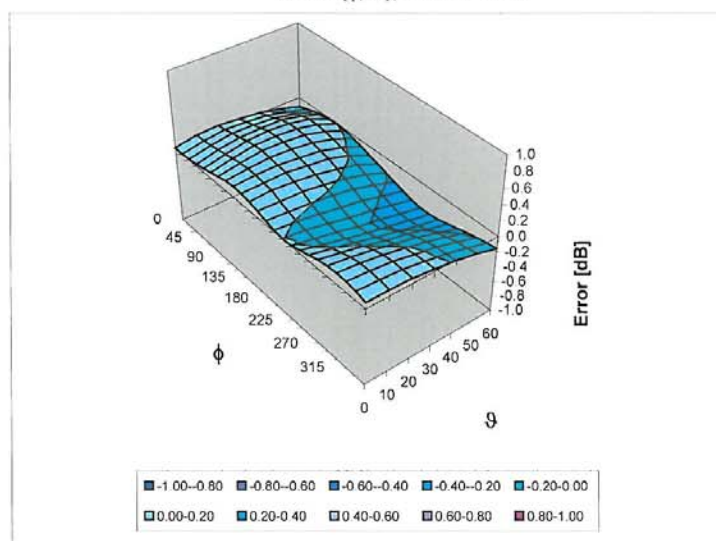
March 5, 2010

Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ , θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)

EX3DV4 SN:3710

March 5, 2010

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