SAR Test Report

Product Name	:	2G Phone Tablet PC
Model No.	:	TB-650, TB-726G, TB-782G, TB-M77, TB-798M, TB-677M, TB-720M, TB-A31G
FCC ID	:	Z75TB650

Applicant	:	DORRY ELECTRONICS INTERNATIONAL CO., LTD
Address	:	F/2, 3-4 lane, Guangya Yuan, Bantian Town, Longgang District, Shenzhen City, China

Date of Receipt	:	Dec. 23, 2013
Date of Test	:	Dec. 23, 2013
Issued Date	:	Dec. 24, 2013
Report No.	:	13C0557R-HP-US-P03V01
Report Version	:	V1.1

Testing Laboratory
1596

TESTING
CNAS L5313

Test Report Certification

Issued Date: Dec. 24, 2013

Report No.: 13C0557R-HP-US-P03V01

QuieTek

Product Name	:	2G Phone Tablet PC
Applicant	:	DORRY ELECTRONICS INTERNATIONAL CO., LTD
Address	:	F/2, 3-4 lane, Guangya Yuan, Bantian Town, Longgang District, Shenzhen City, China
Manufacturer	:	DORRY ELECTRONICS INTERNATIONAL CO., LTD
Address	:	F/2, 3-4 lane, Guangya Yuan, Bantian Town, Longgang District, Shenzhen City, China
Model No.	:	TB-650, TB-726G, TB-782G, TB-M77, TB-798M, TB-677M, TB-720M, TB-A31G
FCC ID	:	Z75TB650
Brand Name	:	N/A
EUT Voltage	:	DC 3.7V
Applicable Standard	:	KDB 447498 D01v05r01 KDB 648474 D04v01r02 KDB 865664 D01v01r02 KDB 941225 D06v01r01 KDB 941225 D07v01r01
Test Result	:	Max. SAR Measurement (1g) Head: 0.659W/kg Body: 0.777W/kg
Performed Location	:	Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392
Documented By	:	Alice Ni
Reviewed By	:	Jame Yuan
Approved By	:	Jeff Chen

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**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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TABLE OF CONTENTS

Description **Page**

1. General Information

1.1. EUT Description

Product Name	2G Phone Tablet PC
Model No.	TB-650, TB-726G, TB-782G, TB-M77, TB-798M, TB-677M, TB-720M, TB-A31G
Device Category	Portable
RF Exposure Environment	Uncontrolled
Antenna Type	Internal
2G	
Support Band	GSM850/PCS1900
GPRS Type	Class B
GPRS Class	Class 12
Uplink	GSM 850: 824~849MHz PCS 1900: 1850~1910MHz
Downlink	GSM 850: 869~894MHz PCS 1900: 1930~1990MHz
Release Version	R99
Type of modulation	GMSK for GSM/GPRS 8PSK for EDGE
Antenna Gain	0dBi
Bluetooth	
Bluetooth Frequency	2402~2480MHz
Bluetooth Version	V3.0 + HS
Type of modulation	FHSS
Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps (8DPSK)
Antenna Gain	-2dBi
Wi-Fi	
Hotspots Function	Yes
Wi-Fi Frequency	802.11b/g/n(20MHz): 2412 ~ 2462 MHz
Type of modulation	802.11b: DSSS; 802.11g/n: OFDM
Data Rate	802.11b: 1/2/5.5/11 Mbps 802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 65 Mbps
Antenna Gain	-2dBi

Note: They are only different marketing requirements.

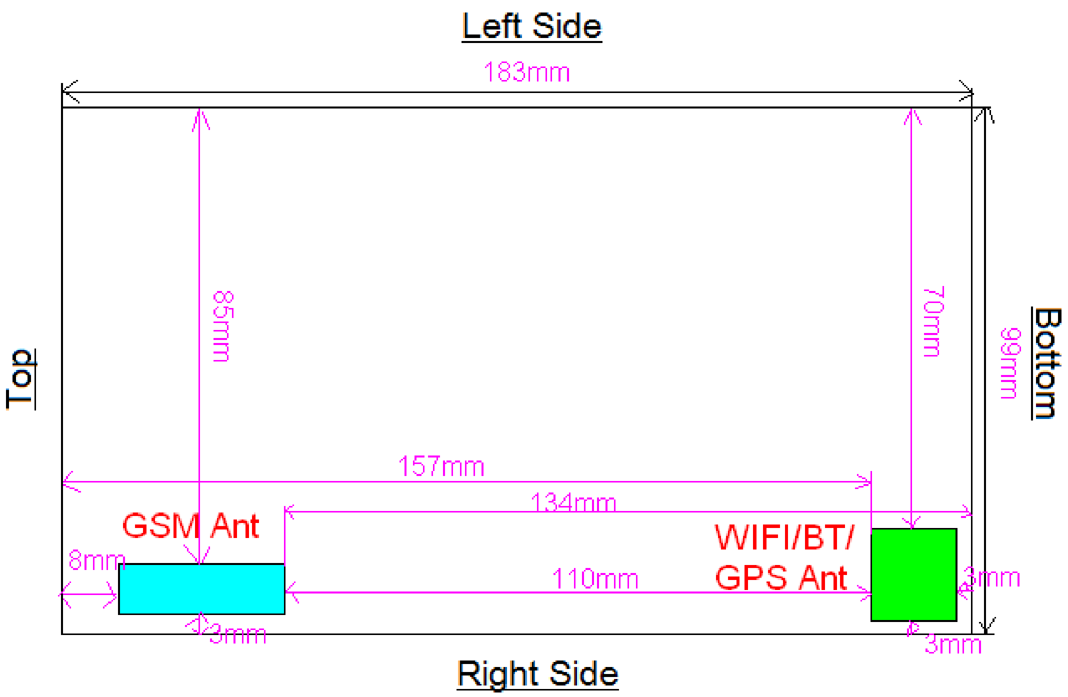
1.2. Test Environment

Ambient conditions in the laboratory:

Items	Required	Actual
Temperature (°C)	18-25	21.5± 2
Humidity (%RH)	30-70	52

1.3. EUT Antenna Locations

Back View of Tablet



Phablet Hotspot Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
GPRS850	Yes	Yes	Yes	No	Yes	No
GPRS1900	Yes	Yes	Yes	No	Yes	No

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06v01r01 guidance, page 2. The antenna photo shows the distances between the transmit antennas and the edges of the device.

1.4. Simultaneous Transmission Configurations

According to FCC KDB Publication 447498 D01v05r01, transmitter are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneously transmission analysis according to FCC KDB Publication 447498 D01v05r01 3) procedures.

Table 1-1
Simultaneous Transmission Scenarios

Ref.	Simultaneous Transmit Configurations	Head	Body-Worn Accessory	Hotspot	Note
		IEEE1528 Supp C	FCC KDB447498 D01v05	FCC KDB941225 D06	
1	GSM850 Voice + 2.4GHz Bluetooth	Yes	Yes	No	
2	GSM1900 Voice + 2.4GHz Bluetooth	Yes	Yes	No	
3	GSM850 Voice + 2.4GHz Wi-Fi	Yes	Yes	No	
4	GSM1900 Voice + 2.4GHz Wi-Fi	Yes	Yes	No	
5	GPRS850 Data + 2.4GHz Wi-Fi	No	No	Yes	GPRS + Wi-Fi Hotspot
6	GPRS1900 Data + 2.4GHz Wi-Fi	No	No	Yes	GPRS + Wi-Fi Hotspot
Note: Bluetooth and Wi-Fi share the same antenna and cannot transmit simultaneously.					

1.5. SAR Test Exclusions Applied

(A) Wi-Fi/Bluetooth

Per FCC KDB 447498 D01v05r01, the SAR exclusion threshold for distances<50mm is defined by the following equation:

$$\frac{Max\ Power\ of\ Channel\ (mW)}{Test\ Separation\ Dist\ (mm)} * \sqrt{Frequency(GHz)} \leq 3.0$$

Based on the maximum conducted power of Bluetooth and the antenna to use separation distance, Bluetooth SAR was not required;

[(1.26mW/5)* √2.480]= 0.40< 3.0 for Head; [(1.26mW/10)* √2.480]=0.20< 3.0 for Body.

Based on the maximum conducted power of WIFI and the antenna to use separation distance, WIFI SAR was not required;

[(7.94mW/5)* √2.437]= 2.48< 3.0 for Head; [(7.94mW/10)* √2.437]=1.24< 3.0 for Body.

(B) Licensed Transmitter(s)

GSM/GPRS/EDGE DTM is not supported for US bands. Therefore, the GSM Voice modes in this report do not transmit simultaneously with GPRS/EDGE Data.

1.6. Power Reduction for SAR

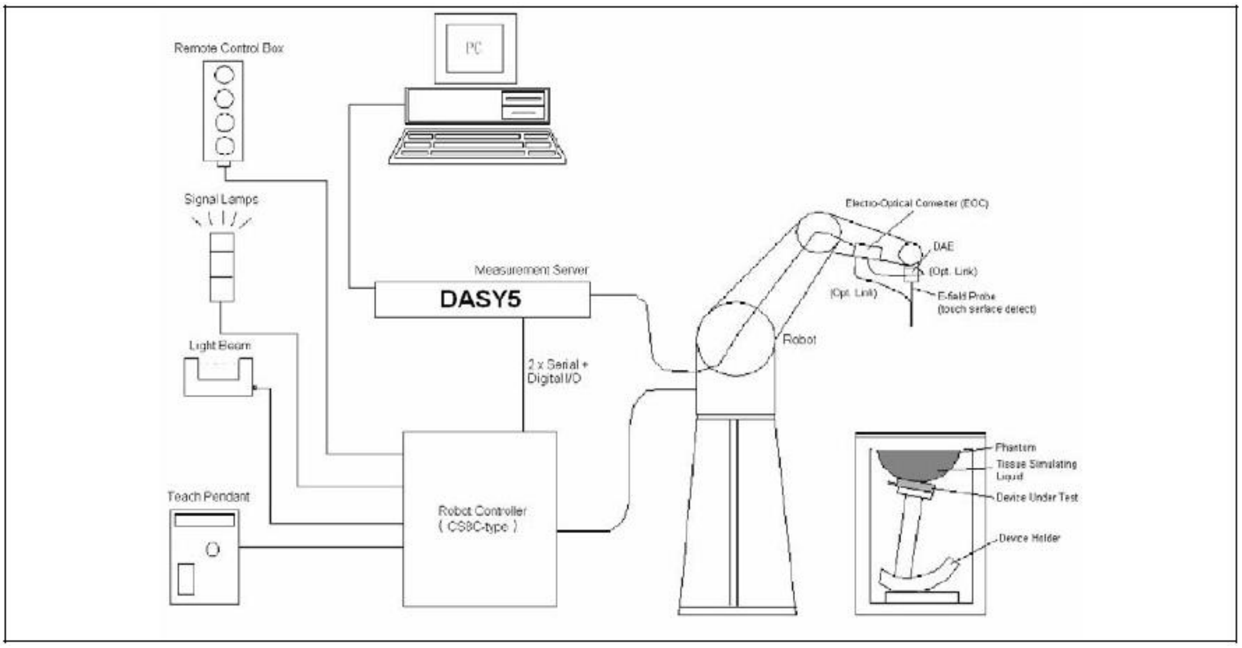
There is no power reduction used for any band/mode implemented in this device for SAR purposes.

1.7. Guidance Documents

1) FCC KDB Publication 941225 D01-D07 (2G/3G and Hotspot)
2) FCC KDB Publication 447498 D01v05r01 (General SAR Guidance)
3) FCC KDB Publication 865664 D01v01r02 (SAR measurement 100 MHz to 6 GHz)
4) FCC KDB Publication 648474 D04v01r02 (Handset SAR)

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 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 7x7x7 (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.

$$f_1(x,y,z) = Ae^{-\frac{z}{2a}} \cos^2\left(\frac{\pi}{2}\frac{\sqrt{x'^2+y'^2}}{5a}\right)$$
$$f_2(x,y,z) = Ae^{-\frac{z}{a}} \frac{a^2}{a^2+x'^2}\left(3-e^{-\frac{2z}{a}}\right)\cos^2\left(\frac{\pi}{2}\frac{y'}{3a}\right)$$
$$f_3(x,y,z) = A\frac{a^2}{\frac{a^2}{4}+x'^2+y'^2}\left(e^{-\frac{2z}{a}}+\frac{a^2}{2(a+2z)^2}\right)$$

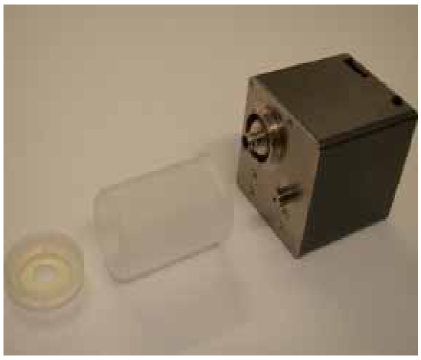
2.2. DASY5 E-Field Probe

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

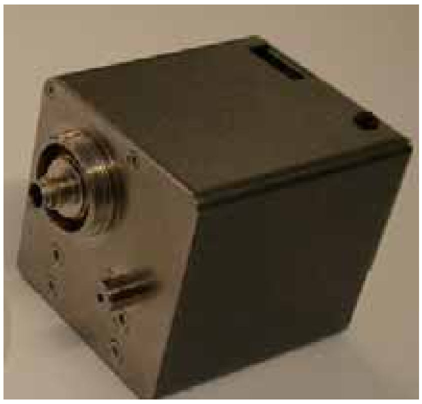
Model	EX3DV4	
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 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 DASY5 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
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
	23-12-2013	42.08	0.89	21.0
1900 MHz	Reference result ± 5% window	40.00 38.00 to 42.00	1.40 1.33 to 1.47	N/A
	23-12-2013	39.14	1.45	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	55.2 52.44 to 57.96	0.97 0.92 to 1.02	N/A
	23-12-2013	54.46	0.95	21.0
1900 MHz	Reference result ± 5% window	53.3 50.64 to 55.97	1.52 1.44 to 1.60	N/A
	23-12-2013	53.57	1. 51	21.0

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.

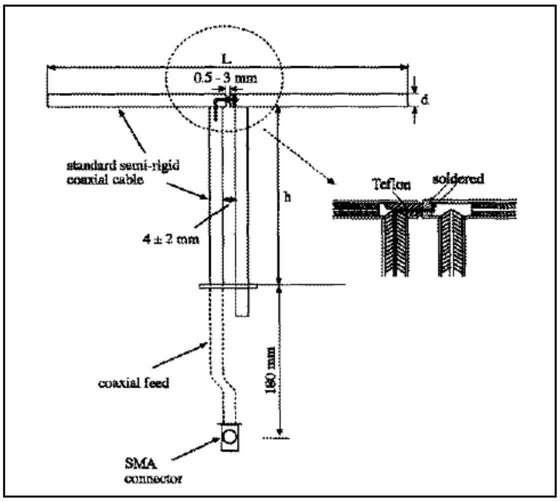
Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	**41.5**	**0.90**	**55.2**	**0.97**
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	**40.0**	**1.40**	**53.3**	**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	161.0	89.8	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 4d120

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
835 MHz	Reference result ± 10% window	9.41 8.47 to 10.35	6.15 5.54 to 6.77	N/A
	23-12-2013	9.28	6.04	21.0

Validation Kit: D1900V2-SN 5d142

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
1900 MHz	Reference result ± 10% window	39.4 35.46 to 43.34	20.8 18.72 to 22.88	N/A
	23-12-2013	43.20	21.80	21.0

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

System Performance Check at 835MHz, 1900MHz for Body

Validation Kit: D835V2-SN 4d120

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
835 MHz	Reference result ± 10% window	9.57 8.61 to 10.53	6.33 5.70 to 6.96	N/A
	23-12-2013	9.40	6.12	21.0

Validation Kit: D1900V2-SN 5d142

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
1900 MHz	Reference result ± 10% window	38.7 34.83 to 42.57	20.4 18.36 to 22.44	N/A
	23-12-2013	40.80	21.08	21.0

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

4.2. SAR Measurement Procedure

The DASY5 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 $1mm^3$).

4.3. Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration. Per FCC KDB Publication 648474 D04v01r02, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01v05r01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented. Transmitters that are designed to operate in front of a person’s face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

4.4. Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of Wi-Fi simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06v01r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the Wi-Fi transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the Wi-Fi transmitter according to FCC KDB Publication 447498 D01v05r01 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

4.5. SAR Measurement Conditions for Phablet

The UMPC mini -tablets SAR procedures are primarily intended for devices with an overall diagonal dimensions ≤ 20 cm that operate like a tablet and mainly support hand-held interactive use next to or near the body of users, with no provision for next to the ear voice mode operations. Early generation mini-tablets are typically designed and optimized for mobile web access and multimedia support ; whereas earlier smart phones are primarily intended for voice communication with varying data capabilities . As the use conditions for recent generation UMPC mini -tablets and smart phones are gradually merging ; some UMPC mini -tablets are also supporting next to the ear voice mode operations and smart phones are incorporating certain mini -tablet operating characteristics. This new generation of devices has been referred to by industry as “phablets” .

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini -tablets or UMPC mini -tablets that support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance.

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

2. The UMPC mini -tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions . The UMPC mini -tablet 1 -g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg. The normal tablet procedures in KDB 616217 are required when the over diagonal dimension of the device is > 20.0 cm . Hotspot mode SAR is not required when normal tablet procedures are applied. Extremity 10-g SAR is also not required for the front (top) surface of large form factor full size tablets. The more conservative tablet SAR results can be used to support the 10 -g extremity SAR for phablet mode .

3. The simultaneous transmission operating configurations applicable to voice and data transmissions for both phone and mini-tablet modes must be taken into consideration separately for 1-g and 10-g SAR to determine the simultaneous transmission SAR test exclusion and measurement requirements for the relevant wireless modes and exposure conditions .

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.	Cali. Due Date
Stäubli Robot TX60L	Stäubli	TX60L	F10/5C90A1/A/01	only once
Controller	Stäubli	SP1	S-0034	only once
Dipole Validation Kits	Speag	D835V2	4d094	2014.02.17
Dipole Validation Kits	Speag	D1900V2	5d121	2014.02.22
SAM Twin Phantom	Speag	SAM	TP-1561/1562	N/A
Device Holder	Speag	SD 000 H01 HA	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1220	2014.01.23
E-Field Probe	Speag	EX3DV4	3710	2014.03.27
SAR Software	Speag	DASY5	V5.2 Build 162	N/A
Power Amplifier	Mini-Circuit	ZVA-183-S+	N657400950	N/A
Directional Coupler	Agilent	778D	20160	N/A
Universal Radio Communication Tester	R&S	CMU 200	117088	2014.03.30
Vector Network	Agilent	E5071C	MY48367267	2014.03.30
Signal Generator	Agilent	E4438C	MY49070163	2014.03.30
Power Meter	Anritsu	ML2495A	0905006	2014.11.01
Wide Bandwidth Sensor	Anritsu	MA2411B	0846014	2014.11.01

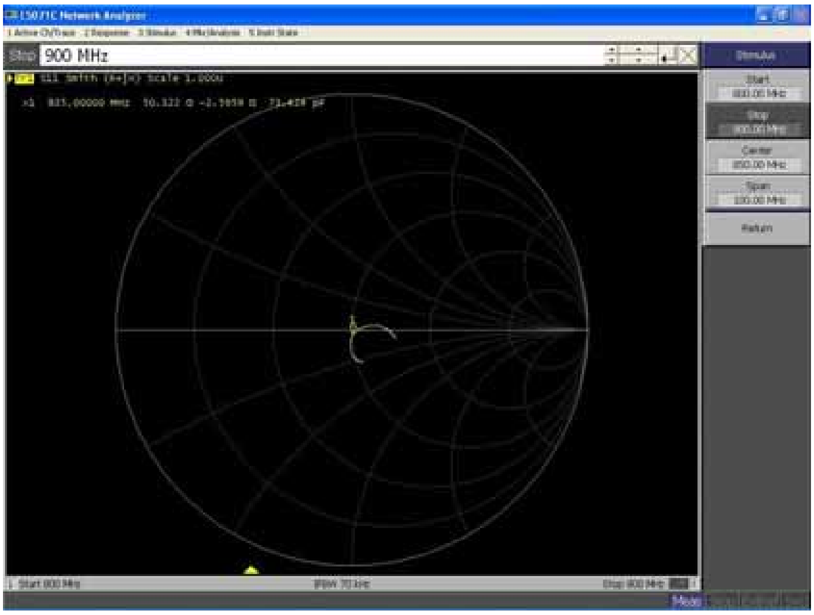
Note: Per KDB 865664 D01 v01r02, Section 3.2.2 requirements for dipole calibration, QuieTek Lab has adopted two years calibration intervals. On annual basis, every measurement dipole has been evaluated and is in compliance with the following criteria:

1. There is no physical damage on the dipole;
2. System validation with specific dipole is within 10% of calibrated value;
3. Return-loss is within 20% of calibrated measurement (Show below);
4. Impedance is within 5Ω of calibrated measurement (Show below).

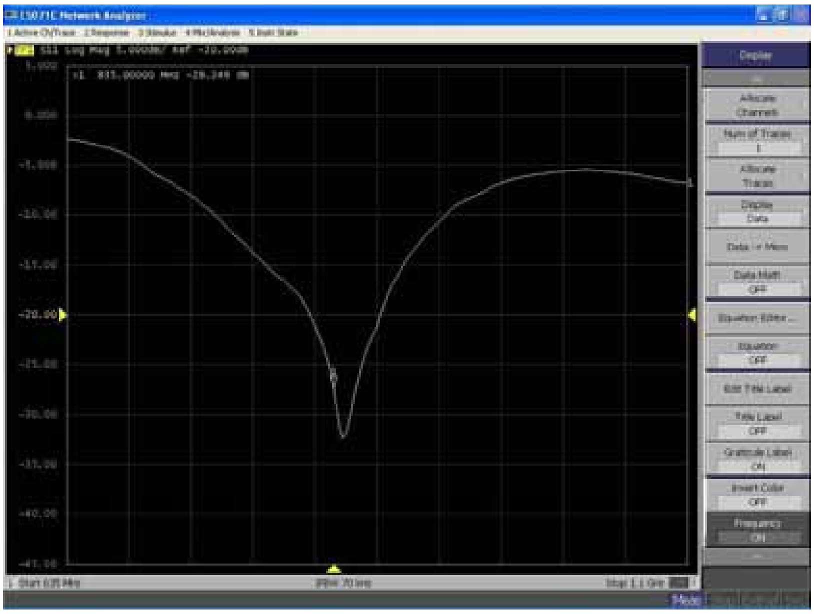
Impedance Plot for D835V2

835 Head

Calibrated impedance: 53.5 Ω; Measured impedance: 50.322 Ω (within 5Ω)

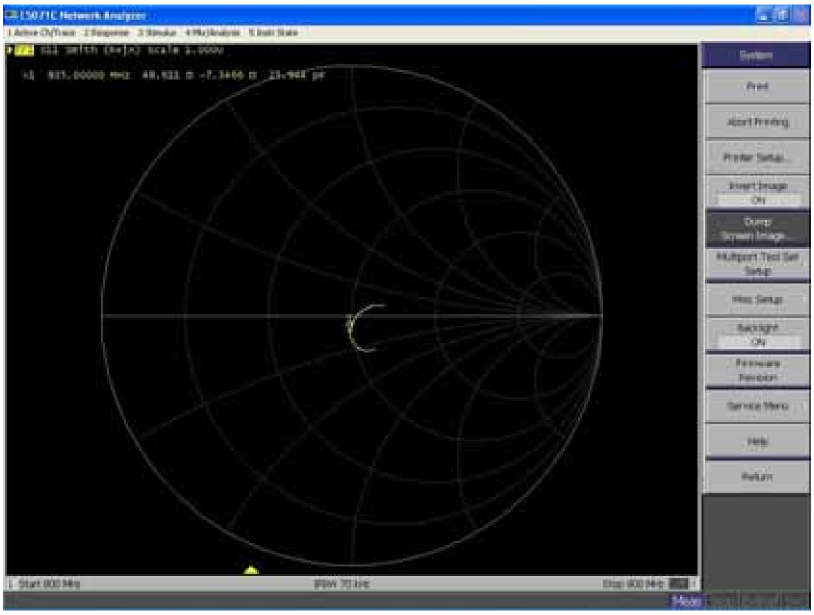


Calibrated return loss: -28.1 dB; Measured return loss: -28.246 dB (within 20%)

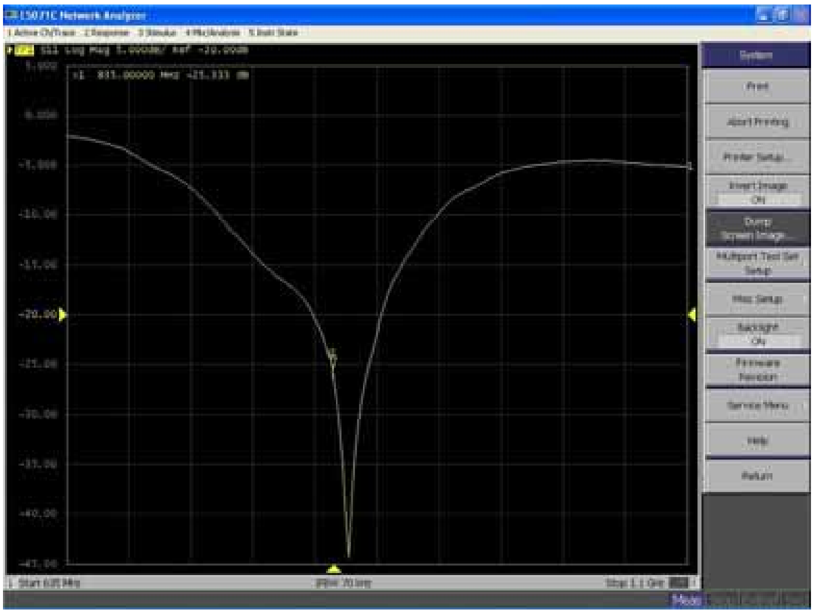


835 Body

Calibrated impedance: 47.7 Ω; Measured impedance: 48.611 Ω (within 5Ω)



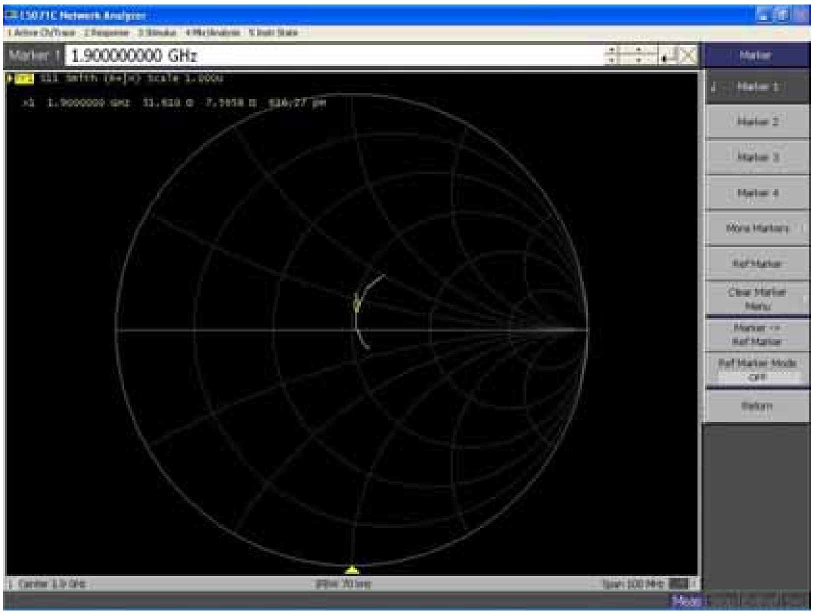
Calibrated return loss: -24.5 dB; Measured return loss: -25.333 dB (within 20%)



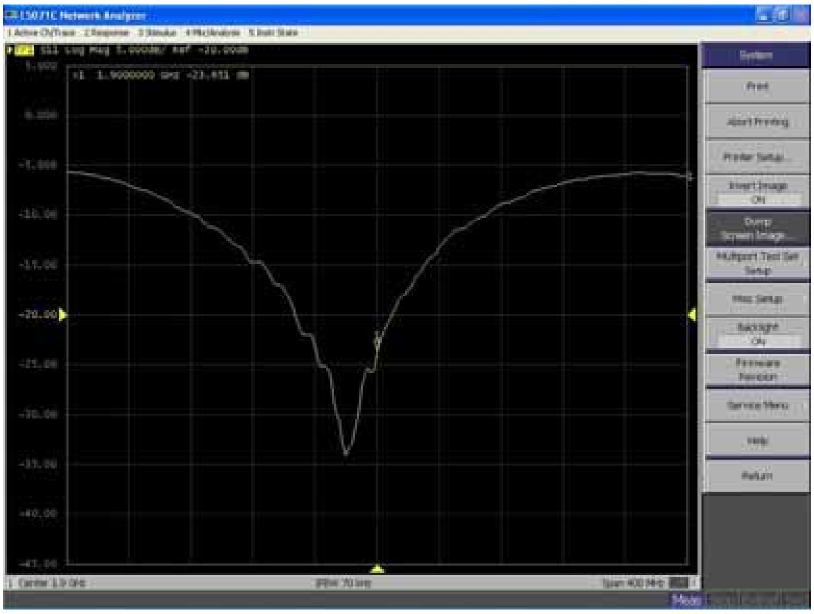
Impedance Plot for D1900V2

1900 Head

Calibrated impedance: 51.6 Ω; Measured impedance: 51.610 Ω (within 5Ω)

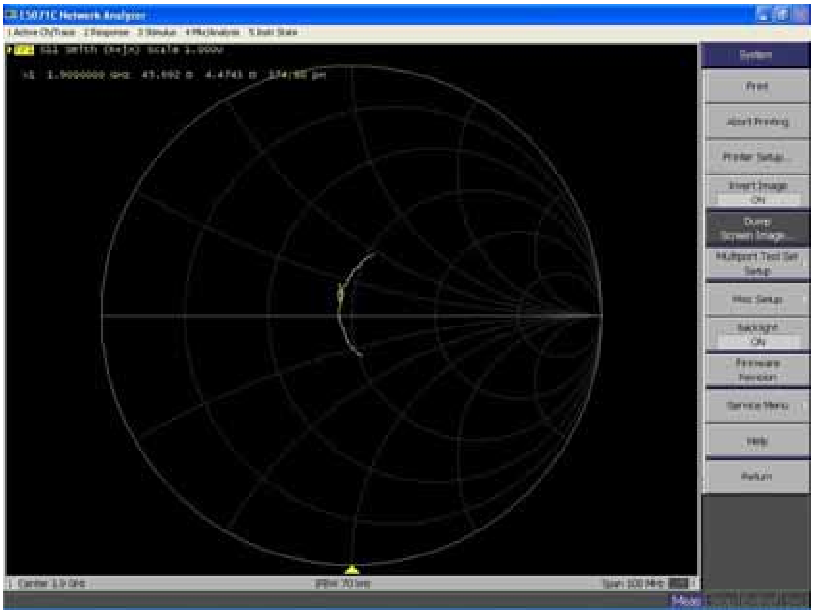


Calibrated return loss: -22.8 dB; Measured return loss: -23.651 dB (within 20%)

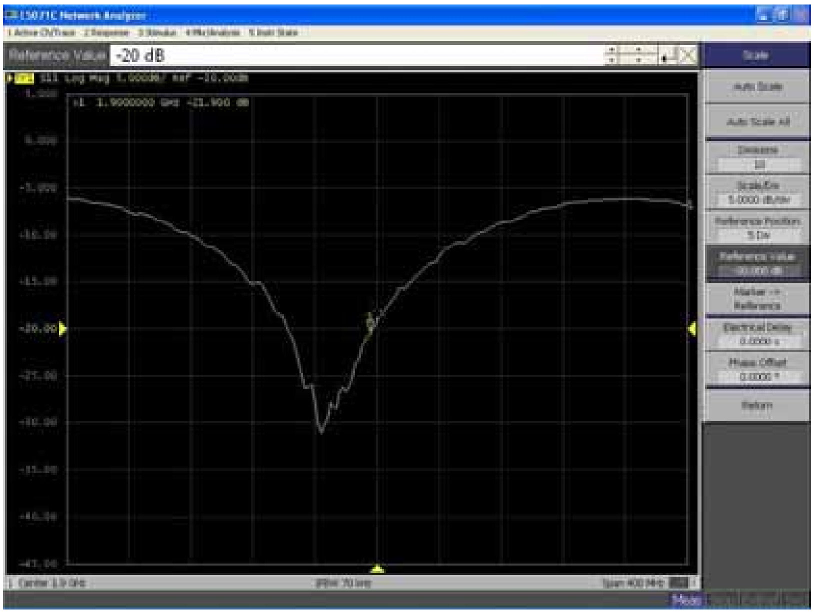


1900 Body

Calibrated impedance: 47.4 Ω; Measured impedance: 45.692 Ω (within 5Ω)



Calibrated return loss: -21.9 dB; Measured return loss: -21.900 dB (within 20%)



7. Measurement Uncertainty

DASY5 Uncertainty Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram / 10 gram.								
Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) veff
Measurement System								
Probe Calibration	±6.0%	N	1	1	1	±6.0%	±6.0%	∞
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						±11.0%	±10.8%	387
Expanded STD Uncertainty						±22.0%	±21.5%	

8. Conducted Power Measurement

Mode	Frequency (MHz)	Avg. Burst Power (dBm)	Duty Cycle Factor (dB)	Frame Power (dBm)	Max. Power (dBm)	Scaling Factor
Maximum Power <SIM 1>						
GSM850	824.2	32.98	-9	23.98	33.0	1.005
	836.4	32.79	-9	23.79	33.0	1.050
	848.8	32.57	-9	23.57	33.0	1.104
GPRS850(1 Slot)	824.2	32.97	-9	23.97	33.0	1.007
	836.4	32.75	-9	23.75	33.0	1.059
	848.8	32.51	-9	23.51	33.0	1.119
GPRS850(2 Slot)	824.2	32.28	-6	26.28	32.5	1.052
	836.4	32.09	-6	26.09	32.5	1.099
	848.8	31.89	-6	25.89	32.5	1.151
GPRS850(3 Slot)	824.2	31.26	-4.25	27.01	31.5	1.057
	836.4	31.05	-4.25	26.80	31.5	1.109
	848.8	30.81	-4.25	26.56	31.5	1.172
GPRS850(4 Slot)	824.2	30.75	-3	27.75	31.0	1.059
	836.4	30.56	-3	27.56	31.0	1.107
	848.8	30.32	-3	27.32	31.0	1.169
EDGE850(1 Slot)	824.2	24.11	-9	15.11	24.5	1.094
	836.4	24.00	-9	15.00	24.5	1.122
	848.8	24.12	-9	15.12	24.5	1.091
EDGE850(2 Slot)	824.2	22.62	-6	16.62	23.0	1.091
	836.4	22.61	-6	16.61	23.0	1.094
	848.8	22.66	-6	16.66	23.0	1.081
EDGE850(3 Slot)	824.2	22.52	-4.25	18.27	23.0	1.117
	836.4	22.53	-4.25	18.28	23.0	1.114
	848.8	22.50	-4.25	18.25	23.0	1.122
EDGE850(4 Slot)	824.2	22.56	-3	19.56	23.0	1.107
	836.4	22.55	-3	19.55	23.0	1.109
	848.8	22.50	-3	19.50	23.0	1.122
PCS1900	1850.2	24.54	-9	15.54	25.0	1.112
	1880.0	24.24	-9	15.24	25.0	1.191
	1909.8	24.01	-9	15.01	25.0	1.256
GPRS1900(1 Slot)	1850.2	24.41	-9	15.41	25.0	1.146
	1880.0	24.06	-9	15.06	25.0	1.242

	1909.8	23.83	-9	14.83	25.0	1.309
GPRS1900(2 Slot)	1850.2	24.49	-6	18.49	24.5	1.002
	1880.0	24.17	-6	18.17	24.5	1.079
	1909.8	24.02	-6	18.02	24.5	1.117
GPRS1900(3 Slot)	1850.2	23.87	-4.25	19.62	24.0	1.030
	1880.0	23.59	-4.25	19.34	24.0	1.099
	1909.8	23.33	-4.25	19.08	24.0	1.167
GPRS1900(4 Slot)	1850.2	23.42	-3	20.42	23.5	1.019
	1880.0	23.36	-3	20.36	23.5	1.033
	1909.8	23.12	-3	20.12	23.5	1.091
EDGE1900(1 Slot)	1850.2	19.89	-9	11.00	20.0	1.000
	1880.0	19.74	-9	10.74	20.0	1.062
	1909.8	19.17	-9	10.17	20.0	1.211
EDGE1900(2 Slot)	1850.2	18.17	-6	12.17	18.5	1.079
	1880.0	17.69	-6	11.69	18.5	1.205
	1909.8	17.52	-6	11.52	18.5	1.253
EDGE1900(3 Slot)	1850.2	15.39	-4.25	11.14	15.5	1.026
	1880.0	14.90	-4.25	10.65	15.5	1.148
	1909.8	14.40	-4.25	10.15	15.5	1.288
EDGE1900(4 Slot)	1850.2	14.01	-3	11.01	14.5	1.119
	1880.0	13.46	-3	10.46	14.5	1.271
	1909.8	13.11	-3	10.11	14.5	1.377
Maximum Power <SIM 2>						
GSM850	836.4	32.67	-9	23.67	33.0	1.079
PCS1900	1880.0	24.16	-9	15.16	25.0	1.213

Note 1: Scaling Factor = Max. Power(mW) / Avg. Burst Power(mW)

2: This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v05r01.

3: Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged powers were calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.

5: GPRS/EDGE(GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.

6: EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

7: All SAR testing was done in SIM 1.

WLAN output power

Test Mode	Channel No.	Frequency (MHz)	Average Power (dBm)	Max. Power (dBm)	Scaling Factor
802.11b	01	2412	8.64	9.0	1.086
	06	2437	8.73	9.0	1.064
	11	2462	8.52	9.0	1.117
802.11g	01	2412	7.88	8.0	1.028
	06	2437	7.91	8.0	1.021
	11	2462	7.64	8.0	1.086
802.11n(20MHz)	01	2412	6.69	7.0	1.074
	06	2437	6.85	7.0	1.035
	11	2462	6.57	7.0	1.104

BT output power

Test Mode	Channel No.	Frequency (MHz)	Average Power (dBm)	Max. Power (dBm)	Scaling Factor
DH5	01	2402	-3.53	0	2.254
	40	2441	-2.36	0	1.722
	79	2480	-1.47	0	1.403
2DH5	01	2402	-0.36	1	1.368
	40	2441	-0.04	1	1.271
	79	2480	0.57	1	1.104
3DH5	01	2402	-0.53	1	1.422
	40	2441	0.26	1	1.186
	79	2480	0.94	1	1.014

9. Test Results

9.1. SAR Test Results Summary

SAR MEASUREMENT									
Ambient Temperature (°C) : 21.5 ± 2						Relative Humidity (%): 52			
Liquid Temperature (°C) : 21.0 ± 2						Depth of Liquid (cm):>15			
Product: 2G Phone Tablet PC									
Test Mode: GSM850 <SIM 1>									
Test Position Head	Antenna Position	Frequency		Frame Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Scaling Factor	Scaled SAR 1g (W/kg)	Limit (W/kg)
		Channel	MHz						
Left-Cheek	Fixed	128	824.2	23.98	--	--	1.005	--	1.6
Left-Cheek	Fixed	189	836.4	23.79	-0.09	0.252	1.050	0.265	1.6
Left-Cheek	Fixed	251	848.8	23.57	--	--	1.104	--	1.6
Left-Tilted	Fixed	189	836.4	23.79	0.02	0.156	1.050	0.164	1.6
Right-Cheek	Fixed	128	824.2	23.98	--	--	1.005	--	1.6
Right-Cheek	Fixed	189	836.4	23.79	0.07	0.127	1.050	0.133	1.6
Right-Cheek	Fixed	251	848.8	23.57	--	--	1.104	--	1.6
Right-Tilted	Fixed	189	836.4	23.79	-0.09	0.099	1.050	0.104	1.6
Test Mode: GSM850 <SIM 2>									
Left-Cheek	Fixed	189	836.4	23.67	-0.02	0.168	1.079	0.181	1.6
Note: when the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498.									

SAR MEASUREMENT									
Ambient Temperature (°C): 21.5 ± 2					Relative Humidity (%): 52				
Liquid Temperature (°C): 21.0 ± 2					Depth of Liquid (cm):>15				
Product: 2G Phone Tablet PC									
Body-worn Accessory SAR Configurations									
Test Mode: GSM850									
Test Position Body (10mm gap)	Antenna Position	Frequency		Frame Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Scaling Factor	Scaled SAR 1g (W/kg)	Limit (W/kg)
		Channel	MHz						
Body-worn	Fixed	128	824.2	23.98	--	--	1.005	--	1.6
Body-worn	Fixed	189	836.4	23.79	-0.04	0.458	1.050	0.481	1.6
Body-worn	Fixed	251	848.8	23.57	--	--	1.104	--	1.6
Test Mode: GPRS850-2slot									
Body-worn	Fixed	189	836.4	26.09	-0.07	0.469	1.099	0.515	1.6
Test Mode: GPRS850-3slot									
Body-worn	Fixed	189	836.4	26.80	0.02	0.535	1.109	0.593	1.6
Test Mode: GPRS850-4slot									
Body-worn	Fixed	128	824.2	27.75	--	--	1.059	--	1.6
Body-worn	Fixed	189	836.4	27.56	-0.09	0.631	1.107	0.699	1.6
Body-worn	Fixed	251	848.8	27.32	--	--	1.169	--	1.6
Body-Front	Fixed	189	836.4	27.56	0.16	0.249	1.107	0.276	1.6
Hotspot SAR Configurations									
Test Mode: GPRS850-4slot									
Body-worn	Fixed	128	824.2	27.75	--	--	1.059	--	1.6
Body-worn	Fixed	189	836.4	27.56	-0.09	0.631	1.107	0.699	1.6
Body-worn	Fixed	251	848.8	27.32	--	--	1.169	--	1.6
Body-front	Fixed	189	836.4	27.56	0.16	0.249	1.107	0.276	1.6
Body-right side	Fixed	189	836.4	27.56	0.06	0.083	1.107	0.092	1.6
Body-top	Fixed	189	836.4	27.56	-0.07	0.108	1.107	0.120	1.6
Note: when the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498.									

<table>
<tr><td colspan="10">SAR MEASUREMENT</td></tr>
<tr><td colspan="5">Ambient Temperature (°C) : 21.5 ± 2</td><td colspan="5">Relative Humidity (%): 52</td></tr>
<tr><td colspan="5">Liquid Temperature (°C) : 21.0 ± 2</td><td colspan="5">Depth of Liquid (cm):>15</td></tr>
<tr><td colspan="10">Product: 2G Phone Tablet PC</td></tr>
<tr><td colspan="10">Test Mode: PCS1900 <SIM 1></td></tr>
<tr><th rowspan="2">Test Position Head</th><th rowspan="2">Antenna Position</th><th colspan="2">Frequency</th><th rowspan="2">Frame Power (dBm)</th><th rowspan="2">Power Drift (<±0.2)</th><th rowspan="2">SAR 1g (W/kg)</th><th rowspan="2">Scaling Factor</th><th rowspan="2">Scaled SAR 1g (W/kg)</th><th rowspan="2">Limit (W/kg)</th></tr>
<tr><th>Channel</th><th>MHz</th></tr>
<tr><td>Left-Cheek</td><td>Fixed</td><td>512</td><td>1850.2</td><td>15.54</td><td>--</td><td>--</td><td>1.112</td><td>--</td><td>1.6</td></tr>
<tr><td>Left-Cheek</td><td>Fixed</td><td>661</td><td>1880.0</td><td>15.24</td><td>-0.01</td><td>0.553</td><td>1.191</td><td>0.659</td><td>1.6</td></tr>
<tr><td>Left-Cheek</td><td>Fixed</td><td>810</td><td>1909.8</td><td>15.01</td><td>--</td><td>--</td><td>1.256</td><td>--</td><td>1.6</td></tr>
<tr><td>Left-Tilted</td><td>Fixed</td><td>661</td><td>1880.0</td><td>15.24</td><td>-0.01</td><td>0.380</td><td>1.191</td><td>0.453</td><td>1.6</td></tr>
<tr><td>Right-Cheek</td><td>Fixed</td><td>512</td><td>1850.2</td><td>15.54</td><td>--</td><td>--</td><td>1.112</td><td>--</td><td>1.6</td></tr>
<tr><td>Right-Cheek</td><td>Fixed</td><td>661</td><td>1880.0</td><td>15.24</td><td>-0.19</td><td>0.233</td><td>1.191</td><td>0.278</td><td>1.6</td></tr>
<tr><td>Right-Cheek</td><td>Fixed</td><td>810</td><td>1909.8</td><td>15.01</td><td>--</td><td>--</td><td>1.256</td><td>--</td><td>1.6</td></tr>
<tr><td>Right-Tilted</td><td>Fixed</td><td>661</td><td>1880.0</td><td>15.24</td><td>-0.05</td><td>0.233</td><td>1.191</td><td>0.278</td><td>1.6</td></tr>
<tr><td colspan="10">Test Mode: PCS1900 <SIM 2></td></tr>
<tr><td>Left-Cheek</td><td>Fixed</td><td>661</td><td>1880.0</td><td>15.16</td><td>-0.02</td><td>0.408</td><td>1.213</td><td>0.495</td><td>1.6</td></tr>
<tr><td colspan="10">Note: when the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498.</td></tr>
</table>

SAR MEASUREMENT

Ambient Temperature (°C) : 21.5 ± 2 | Relative Humidity (%): 52

Liquid Temperature (°C) : 21.0 ± 2 | Depth of Liquid (cm):>15

Product: 2G Phone Tablet PC

Body-worn Accessory SAR Configurations

Test Mode: PCS1900

Test Position Body (10mm gap)	Antenna Position	Frequency		Frame Power (dBm)	Power Drift (<±0.2)	SAR 1g (W/kg)	Scaling Factor	Scaled SAR 1g (W/kg)	Limit (W/kg)
		Channel	MHz						
Body-worn	Fixed	512	1850.2	15.54	--	--	1.112	--	1.6
Body-worn	Fixed	661	1880.0	15.24	-0.01	0.319	1.191	0.380	1.6
Body-worn	Fixed	810	1909.8	15.01	--	--	1.256	--	1.6
Test Mode: GPRS1900-2slot									
Body-worn	Fixed	661	1880.0	18.17	-0.18	0.524	1.079	0.565	1.6
Test Mode: GPRS1900-3slot									
Body-worn	Fixed	661	1880.0	19.34	0.10	0.632	1.099	0.695	1.6
Test Mode: GPRS1900-4slot									
Body-worn	Fixed	512	1850.2	20.42	--	--	1.019	--	1.6
Body-worn	Fixed	661	1880.0	20.36	-0.09	0.752	1.033	0.777	1.6
Body-worn	Fixed	810	1909.8	20.12	--	--	1.091	--	1.6
Body-Front	Fixed	661	1880.0	20.36	-0.04	0.400	1.033	0.413	1.6
Hotspot SAR Configurations									
Test Mode: GPRS1900-4slot									
Body-worn	Fixed	512	1850.2	20.42	--	--	1.019	--	1.6
Body-worn	Fixed	661	1880.0	20.36	-0.09	0.752	1.033	0.777	1.6
Body-worn	Fixed	810	1909.8	20.12	--	--	1.091	--	1.6
Body-front	Fixed	661	1880.0	20.36	-0.04	0.400	1.033	0.413	1.6
Body-right side	Fixed	661	1880.0	20.36	0.08	0.571	1.033	0.590	1.6
Body-top	Fixed	661	1880.0	20.36	0.17	0.206	1.033	0.213	1.6

Note: when the 1-g SAR is ≤ 0.8 W/kg, testing for low and high channel is optional, refer to KDB 447498.

9.2. SAR Test Notes

9.2.1. Test position and configuration

Head SAR was performed with the device configured in the positions according to IEEE1528. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.

9.2.2. Body SAR with Headset

Per FCC KDB Publication 648474 D04v01r02, SAR was evaluated without a headset connected to the device. Since the standalone reported SAR was ≤ 1.2 W/kg, no additional SAR evaluations using a headset cable were required.

9.2.3. Hotspot Operation Mode

During SAR Testing for the Wireless Router conditions per FCC KDB Publication 941225 D06v01r01, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with Wi-Fi) was not activated.

9.2.4. 10-g extremity SAR

Per FCC KDB Publication 648474 D04v01r02, When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg.

9.2.5. Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v05r01, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is≤1.6W/kg. When standalone SAR is not required to be measured, per FCC KDB 447498 D01v05r01 4.3.2 2, the following equation must be used to estimate the standalone 1g SAR for simultaneous transmission assessment involving that transmitter.

$$\text{Estimated SAR}=\frac{\sqrt{f(GHz)}}{7.5}*\frac{(\text{Max Power of channel, mW})}{\text{Min. Separation Distance, mm}}$$

Estimated SAR for BT/WIFI

Mode	Frequency	Maximum Allowed Power	Separation Distance (Head)	Estimated SAR (Head)	Separation Distance (Body)	Estimated SAR (Body)
	[MHz]	[dBm]	[mm]	[W/kg]	[mm]	[W/kg]
Bluetooth	2480	1.0	5	0.053	10	0.026
Wi-Fi	2437	9.0	5	0.331	10	0.165

Estimated Hotspot SAR for WIFI

Configuration	Frequency	Maximum Allowed Power	Separation Distance	Estimated SAR
	[MHz]	[dBm]	[mm]	[W/kg]
Back	2437	9.0	10	0.165
Front	2437	9.0	10	0.165
Top	2437	9.0	167	0.0099
Bottom	2437	9.0	10	0.165
Left-side	2437	9.0	80	0.021
Right-side	2437	9.0	10	0.165

9.2.6. Simultaneous Transmission Analysis

Simultaneous Transmission Scenario with Bluetooth

Configuration	Mode	Max. Scaled SAR (W/kg)	Bluetooth SAR (W/kg)	∑ SAR (W/kg)
Head	GSM850	0.265	0.053	0.318
Head	PCS1900	0.659	0.053	0.712
Body-Worn	GSM850	0.699	0.026	0.725
Body-Worn	PCS1900	0.777	0.026	0.805

Note: Body worn at 10mm.

Simultaneous Transmission Scenario with Wi-Fi

Configuration	Mode	Max. Scaled SAR (W/kg)	Wi-Fi SAR (W/kg)	∑ SAR (W/kg)
Head	GSM850	0.265	0.331	0.596
Head	PCS1900	0.659	0.331	0.990
Body-Worn	GSM850	0.699	0.165	0.864
Body-Worn	PCS1900	0.777	0.165	0.942

Note 1: WIFI/Bluetooth SAR was not required to be measured per FCC KDB 447498. Estimated SAR results were used in the above table to determine simultaneous transmission SAR test exclusion.

2: Body worn at 10mm.

Simultaneous Transmission Scenario (Hotspot)

Simult Tx	Configuration	GPRS850 SAR (W/kg)	Wi-Fi SAR (W/kg)	∑ SAR (W/kg)
Body	Back	0.699	0.165	0.864
	Front	0.276	0.165	0.441
	Top	0.092	0.0099	0.102
	Bottom	--	0.165	0.165
	Left	--	0.021	0.021
	Right	0.120	0.165	0.285
Simult Tx	Configuration	GPRS1900 SAR (W/kg)	Wi-Fi SAR (W/kg)	∑ SAR (W/kg)
Body	Back	0.777	0.165	0.942
	Front	0.413	0.165	0.578
	Top	0.590	0.0099	0.600
	Bottom	--	0.165	0.165
	Left	--	0.021	0.021
	Right	0.213	0.165	0.378

9.2.7. Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v05r01.

Appendix A. SAR System Validation Data

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

System Check Head 835MHz

DUT: Dipole 835 MHz D835V2; Type: D835V2

Communication System: CW; Communication System Band: D835(835.0MHz); Duty Cycle: 1:1; Frequency: 835 MHz; Medium parameters used: f = 835 MHz; σ = 0.89 mho/m; εr = 42.08; ρ = 1000 kg/m³ ; Phantom section: Flat Section ; Input Power=250mW

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

DASY5 Configuration:

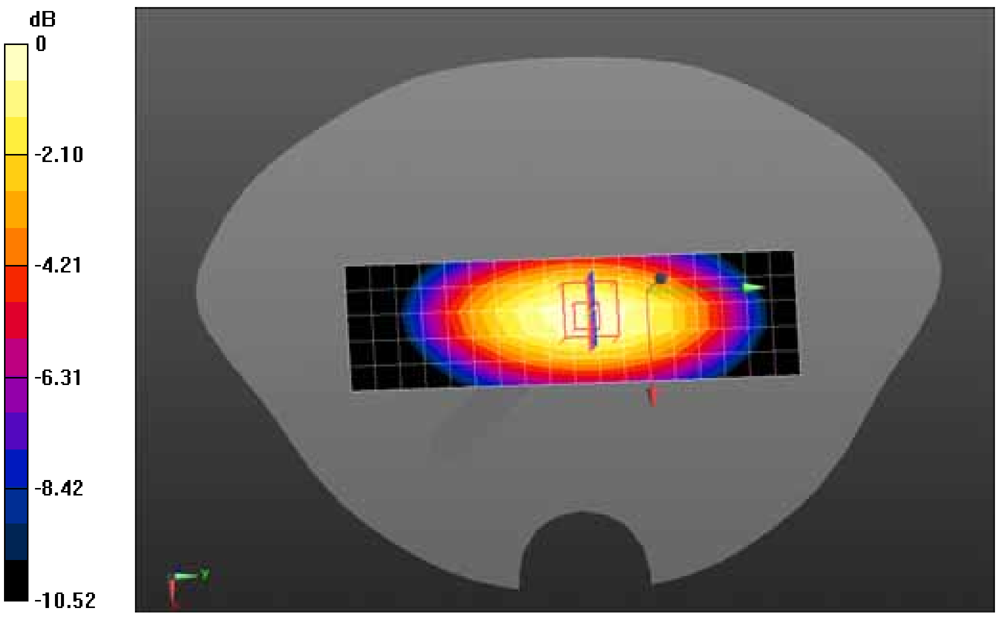
- Probe: EX3DV4 - SN3710; ConvF(9.52, 9.52, 9.52); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Configuration/System Check Head 835MHz/Area Scan (6x19x1): Measurement grid: dx=10mm, dy=10mm, Maximum value of SAR (measured) = 2.40 mW/g

Configuration/System Check Head 835MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 52.554 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.520 mW/g

SAR(1 g) = 2.32 mW/g; SAR(10 g) = 1.51 mW/g Maximum value of SAR (measured) = 2.50 mW/g



0 dB = 2.50 mW/g = 7.96 dB mW/g

Date/Time: 23-12-2013

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 MHz; σ = 0.95 mho/m; εr = 54.46; ρ = 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(9.41, 9.41, 9.41); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

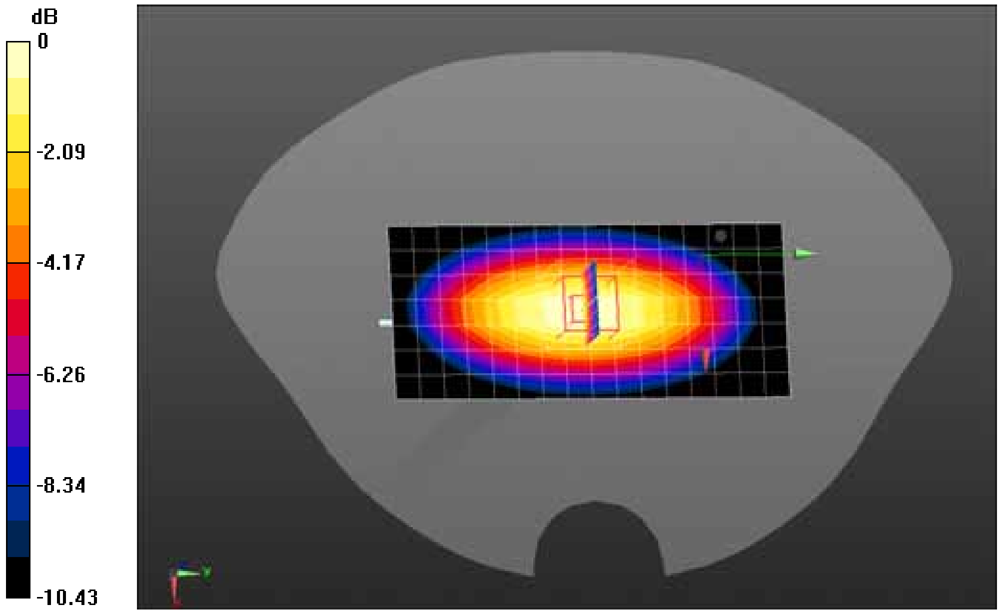
Configuration/System Check Body 835MHz/Area Scan (8x17x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.36 mW/g

Configuration/System Check Body 835MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 51.594 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 3.537 mW/g

SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.53 mW/g Maximum value of SAR (measured) = 2.54 mW/g



0 dB = 2.54 mW/g = 8.10 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

System Check Head 1900MHz

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

Communication System: CW; Communication System Band: D1900(1900MHz); Duty Cycle: 1:1; Frequency: 1900 MHz; Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; εr = 39.14; ρ = 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(7.75, 7.75, 7.75); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

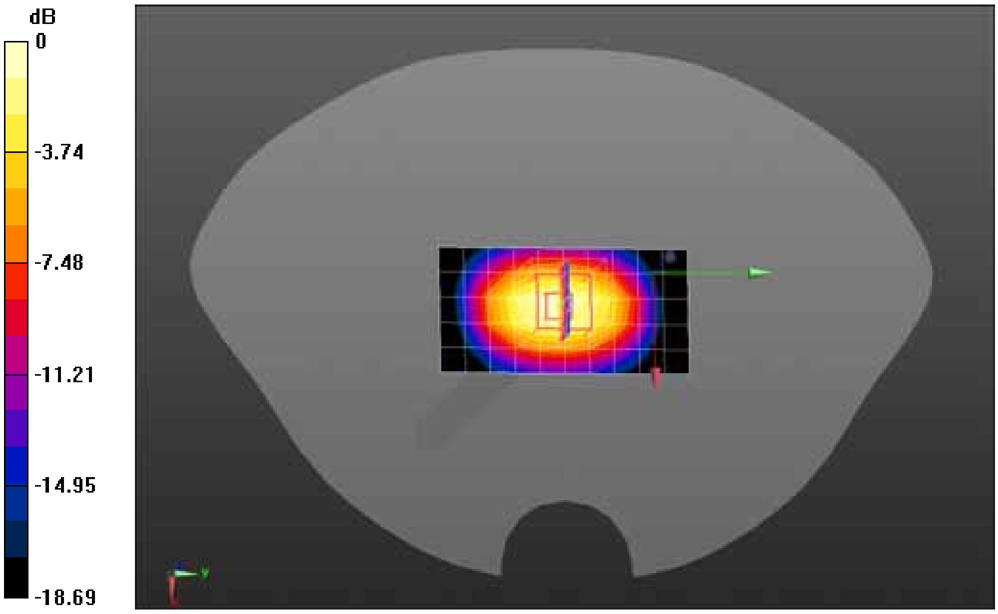
Configuration/System Check Head 1900MHz/Area Scan (6x11x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 10.9 mW/g

Configuration/System Check Head 1900MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 90.210 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 20.912 mW/g

SAR(1 g) = 10.8 mW/g; SAR(10 g) = 5.45 mW/g Maximum value of SAR (measured) = 12.1 mW/g



0 dB = 12.1 mW/g = 21.66 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

System Check Body 1900MHz

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2

Communication System: CW; Communication System Band: D1900(1900MHz); Duty Cycle: 1:1; Frequency: 1900 MHz; Medium parameters used: f = 1900 MHz; σ = 1.51 mho/m; εr = 53.57; ρ = 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(7.6, 7.6, 7.6); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

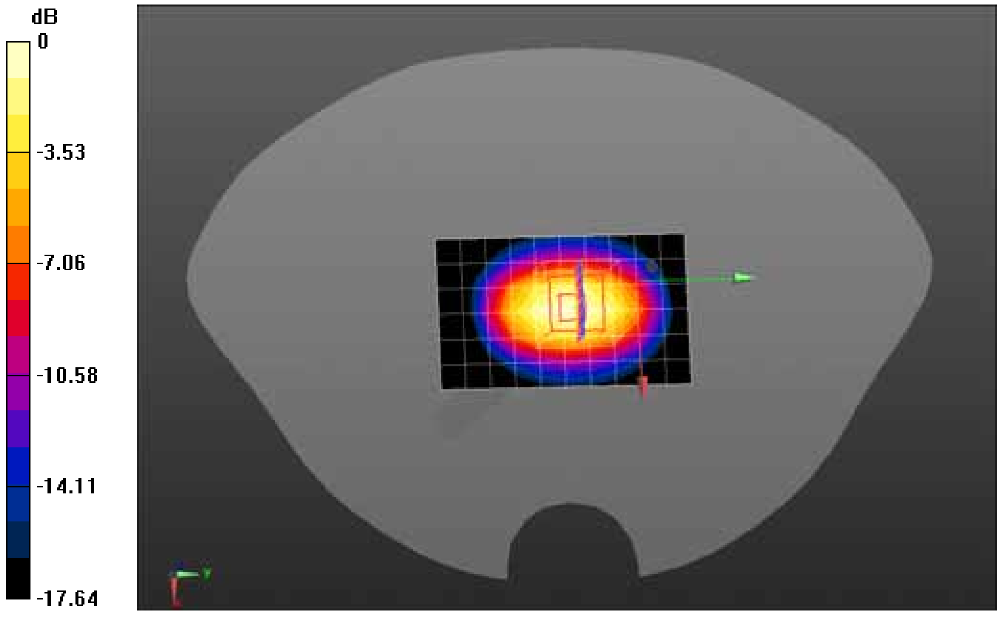
Configuration/System Check Body 1900MHz/Area Scan (7x11x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 11.3 mW/g

Configuration/System Check Body 1900MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 86.584 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 18.918 mW/g

SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.27 mW/g Maximum value of SAR (measured) = 11.5 mW/g



0 dB = 11.5 mW/g = 21.21 dB mW/g

Appendix B. SAR measurement Data

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GSM850 Mid Touch-Left

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: GSM850; Duty Cycle: 1:8.3; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.9 mho/m; εr = 42.09; ρ = 1000 kg/m^3 ; Phantom section: Left Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.52, 9.52, 9.52); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

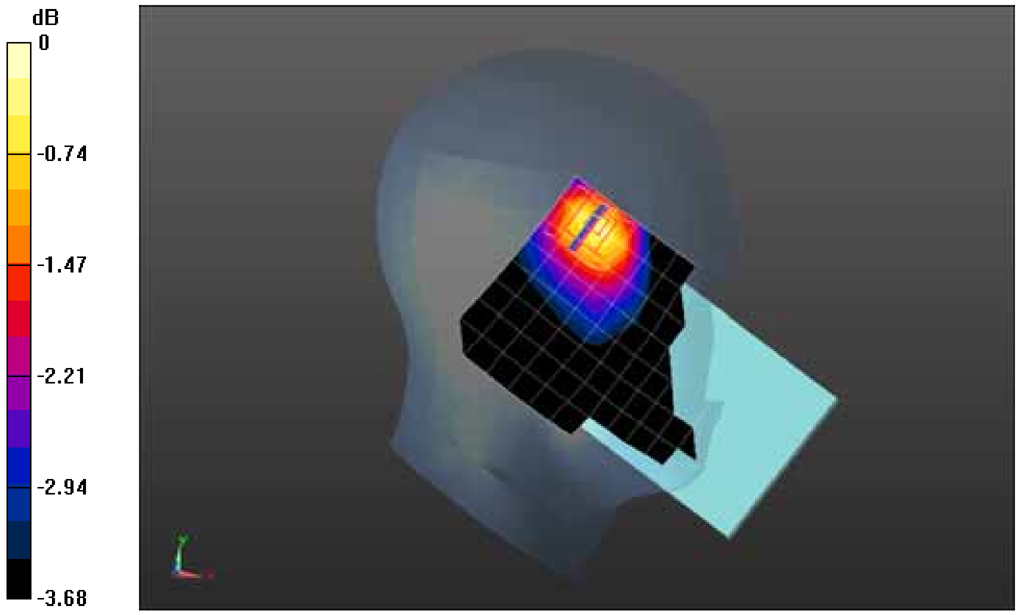
Configuration/GSM850 Mid Touch-Left/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.250 mW/g

Configuration/GSM850 Mid Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.044 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.336 mW/g

SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.200 mW/g Maximum value of SAR (measured) = 0.261 mW/g



0 dB = 0.261 mW/g = -11.67 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GSM850 Mid Tilt-Left

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: GSM850; Duty Cycle: 1:8.3;

Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.9 mho/m; εr = 42.09; ρ = 1000 kg/m³ ; Phantom section: Left Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.52, 9.52, 9.52); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

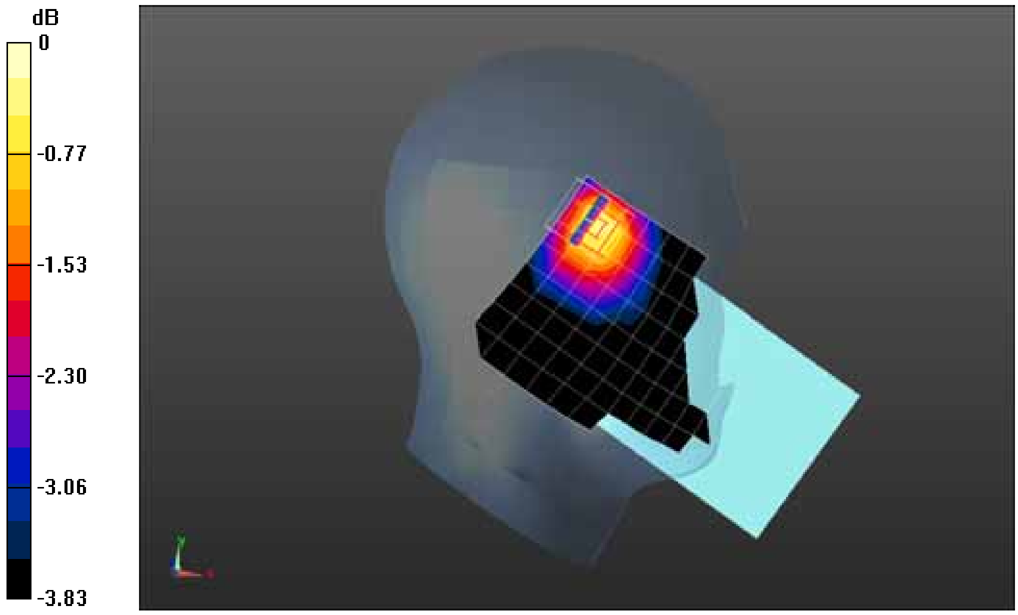
Configuration/GSM850 Mid Tilt-Left/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.153 mW/g

Configuration/GSM850 Mid Tilt-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.062 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.216 mW/g

SAR(1 g) = 0.156 mW/g; SAR(10 g) = 0.122 mW/g Maximum value of SAR (measured) = 0.162 mW/g



0 dB = 0.162 mW/g = -15.81 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GSM850 Mid Touch-Right

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: GSM850; Duty Cycle: 1:8.3; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.9 mho/m; εr = 42.09; ρ = 1000 kg/m³ ; Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.52, 9.52, 9.52); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

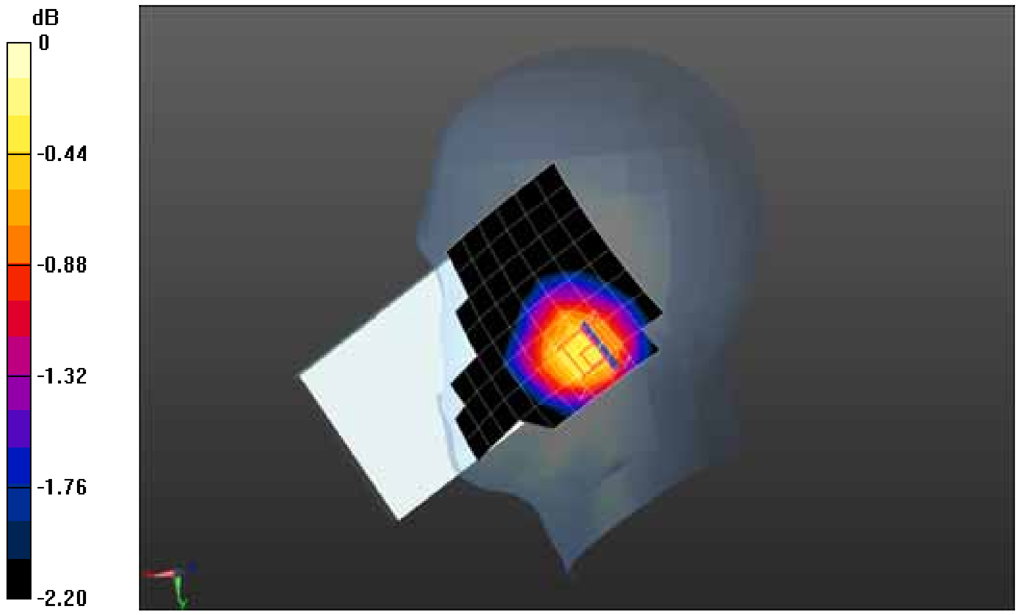
Configuration/GSM850 Mid Touch-Right/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.121 mW/g

Configuration/GSM850 Mid Touch-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.922 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.155 mW/g

SAR(1 g) = 0.127 mW/g; SAR(10 g) = 0.111 mW/g Maximum value of SAR (measured) = 0.130 mW/g



0 dB = 0.130 mW/g = -17.72 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GSM850 Mid Tilt-Right

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: GSM850; Duty Cycle: 1:8.3; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.9 mho/m; εr = 42.09; ρ = 1000 kg/m³ ; Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.52, 9.52, 9.52); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

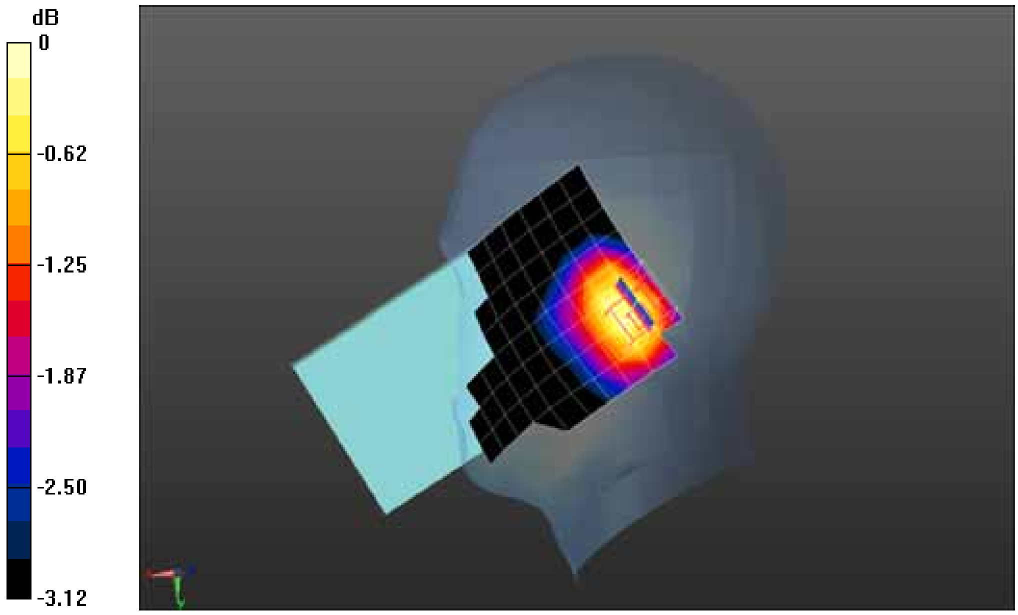
Configuration/GSM850 Mid Tilt-Right/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0980 mW/g

Configuration/GSM850 Mid Tilt-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.667 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.125 mW/g

SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.082 mW/g Maximum value of SAR (measured) = 0.102 mW/g



0 dB = 0.102 mW/g = -19.83 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GSM850 Mid Touch-Left<SIM2>

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: GSM850; Duty Cycle: 1:8.3;

Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.9 mho/m; εr = 42.09; ρ = 1000 kg/m³ ; Phantom section: Left Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.52, 9.52, 9.52); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

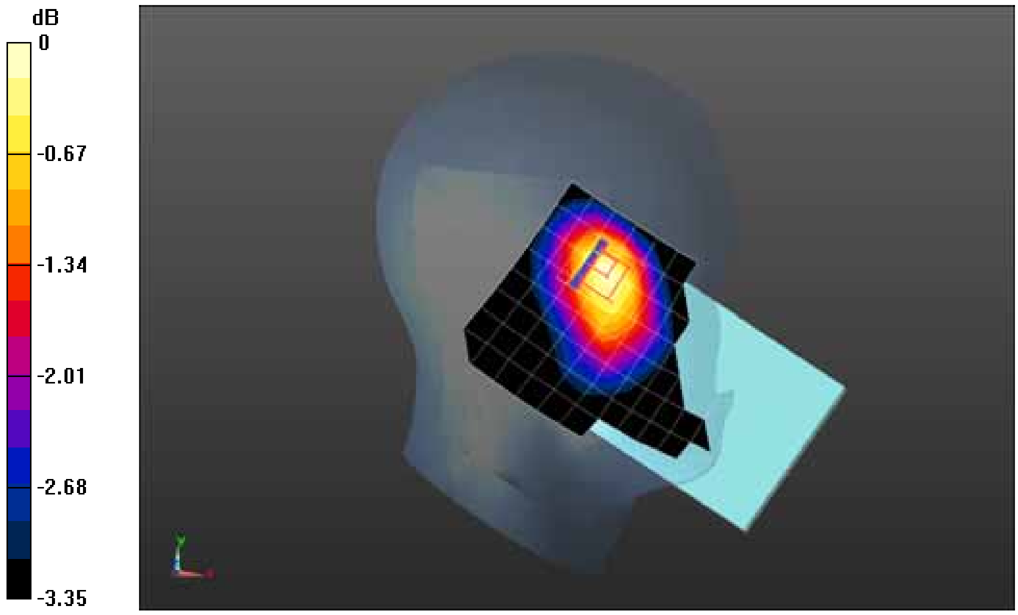
Configuration/GSM850 Mid Touch-Left/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.177 mW/g

Configuration/GSM850 Mid Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.568 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.209 mW/g

SAR(1 g) = 0.168 mW/g; SAR(10 g) = 0.140 mW/g Maximum value of SAR (measured) = 0.175 mW/g



0 dB = 0.175 mW/g = -15.14 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GSM850 Mid Body-Back

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: GSM850; Duty Cycle: 1:8.3; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.96 mho/m; εr = 54.44; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.41, 9.41, 9.41); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

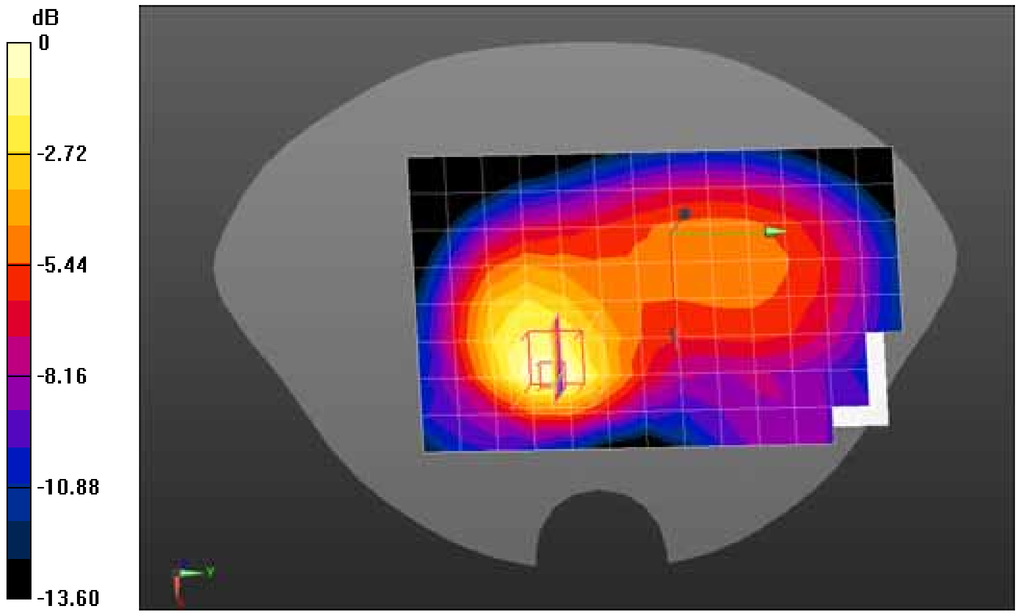
Configuration/GSM850 Mid Body-Back/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.451 mW/g

Configuration/GSM850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.761 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.713 mW/g

SAR(1 g) = 0.458 mW/g; SAR(10 g) = 0.290 mW/g Maximum value of SAR (measured) = 0.476 mW/g



0 dB = 0.476 mW/g = -6.45 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS850 Mid Body-Back(2up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: GSM850; Duty Cycle: 1:4.2 ; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.96 mho/m; εr = 54.44; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.41, 9.41, 9.41); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

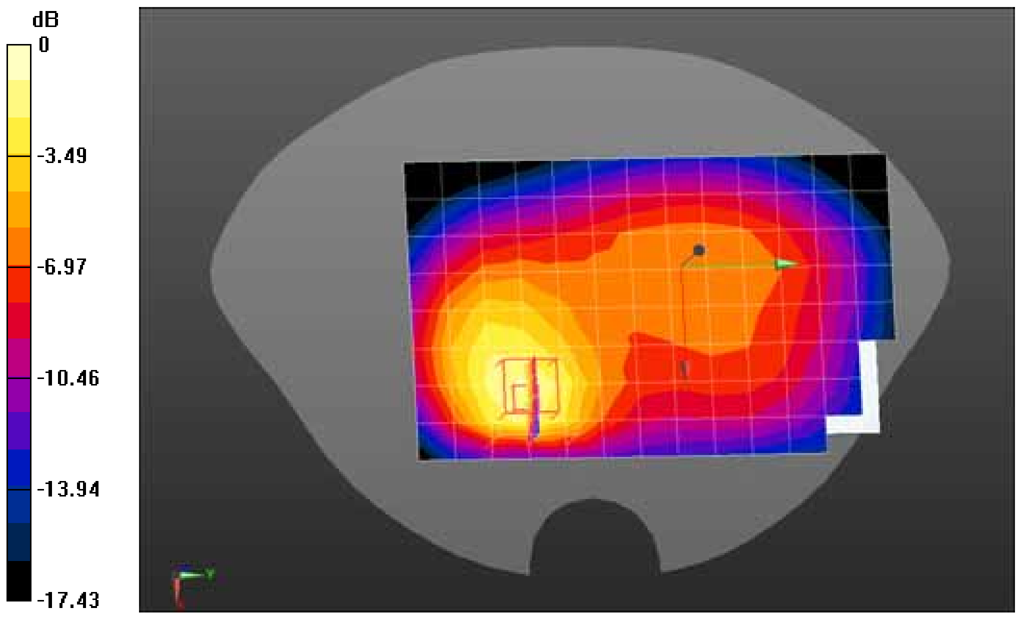
Configuration/GPRS850 Mid Body-Back/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.430 mW/g

Configuration/GPRS850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.803 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.775 mW/g

SAR(1 g) = 0.469 mW/g; SAR(10 g) = 0.283 mW/g Maximum value of SAR (measured) = 0.520 mW/g



0 dB = 0.520 mW/g = -5.68 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS850 Mid Body-Back(3up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-3 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.8 ; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.96 mho/m; εr = 54.44; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.41, 9.41, 9.41); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

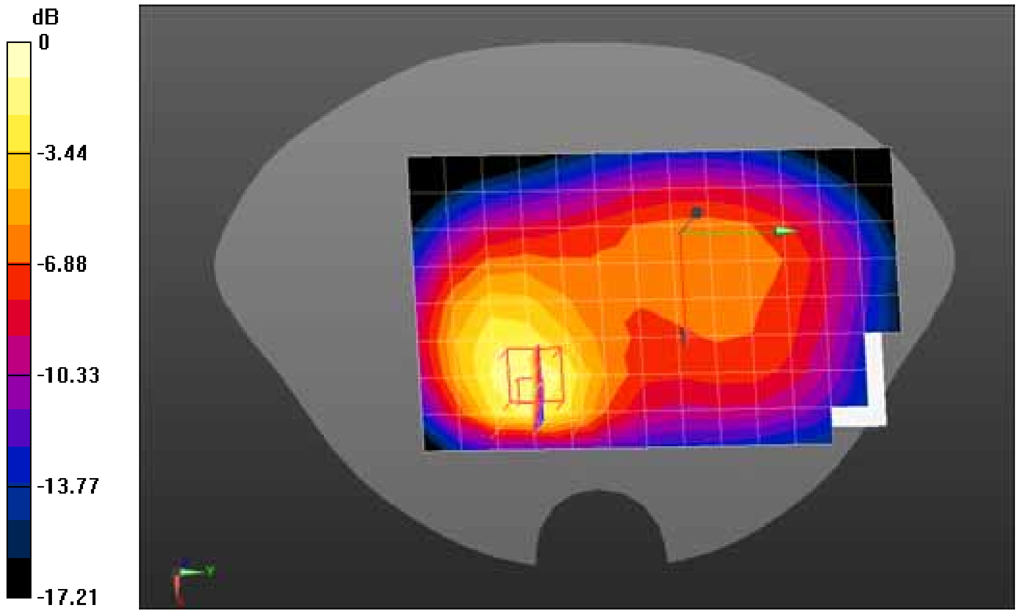
Configuration/GPRS850 Mid Body-Back/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.487 mW/g

Configuration/GPRS850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.227 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.857 mW/g

SAR(1 g) = 0.535 mW/g; SAR(10 g) = 0.325 mW/g Maximum value of SAR (measured) = 0.596 mW/g



0 dB = 0.596 mW/g = -4.50 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS850 Mid Body-Back(4up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1 ; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.96 mho/m; εr = 54.44; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.41, 9.41, 9.41); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

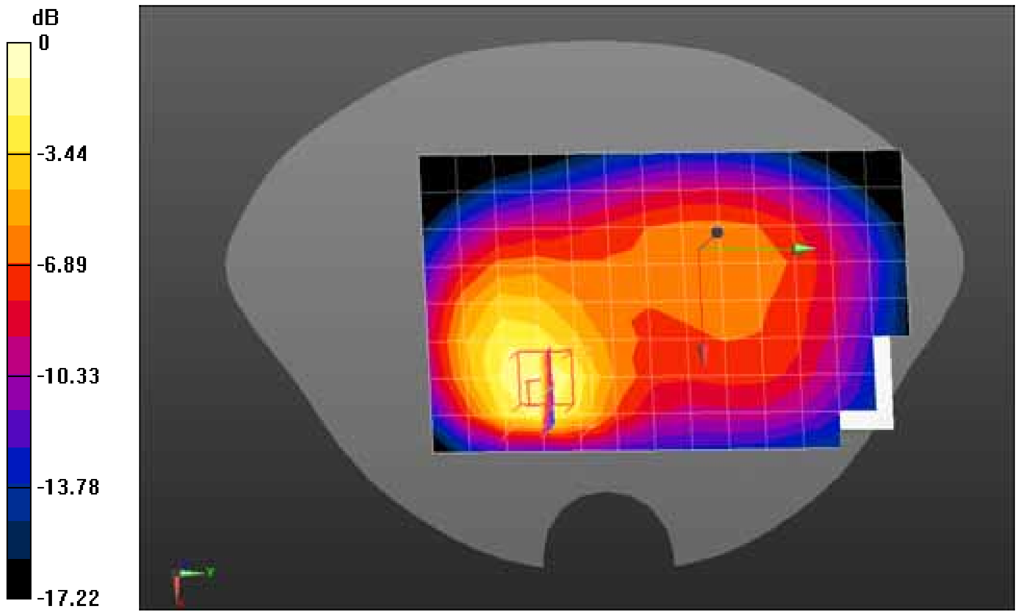
Configuration/GPRS850 Mid Body-Back/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.574 mW/g

Configuration/GPRS850 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.303 V/m; Power Drift = -0.09 dB

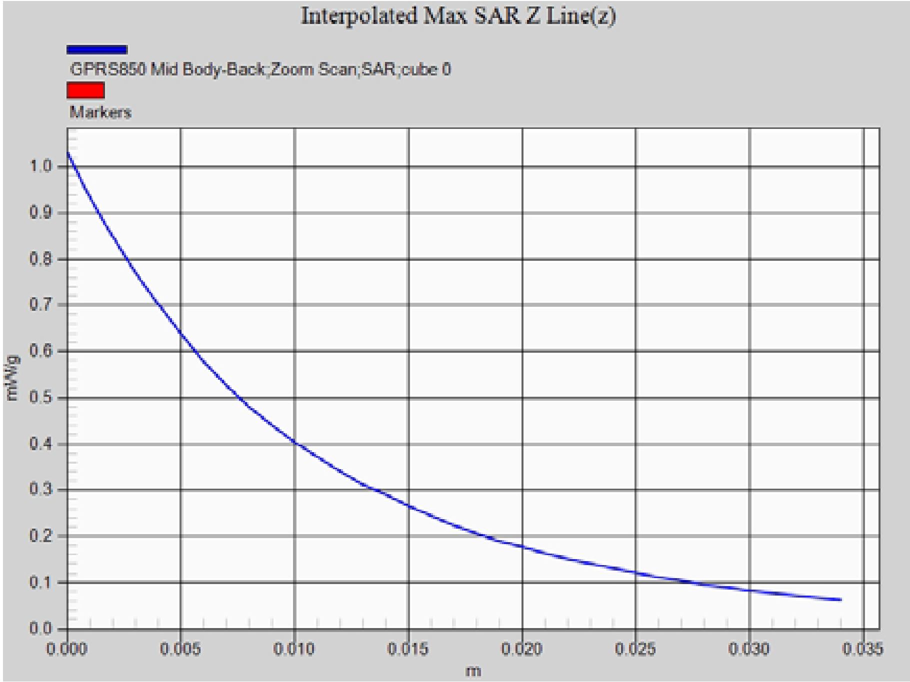
Peak SAR (extrapolated) = 1.033 mW/g

SAR(1 g) = 0.631 mW/g; SAR(10 g) = 0.381 mW/g Maximum value of SAR (measured) = 0.706 mW/g



0 dB = 0.706 mW/g = -3.02 dB mW/g

Z-Axis Plot


Interpolated Max SAR Z Line(z)
GPRS850 Mid Body-Back;Zoom Scan;SAR;cube 0
Markers
mW/g
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
m

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS850 Mid Body-Front(4up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1 ; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.96 mho/m; εr = 54.44; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.41, 9.41, 9.41); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

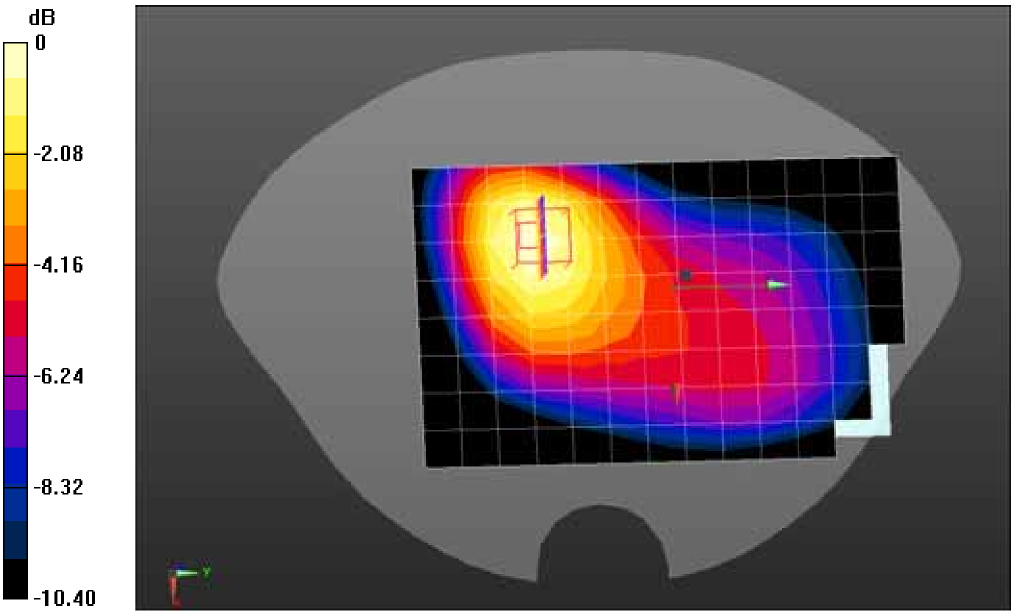
Configuration/GPRS850 Mid Body-Front/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.260 mW/g

Configuration/GPRS850 Mid Body-Front/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.736 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.351 mW/g

SAR(1 g) = 0.249 mW/g; SAR(10 g) = 0.176 mW/g Maximum value of SAR (measured) = 0.262 mW/g



0 dB = 0.262 mW/g = -11.63 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS850 Mid Body-Right side(4up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1 ; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.96 mho/m; εr = 54.44; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.41, 9.41, 9.41); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

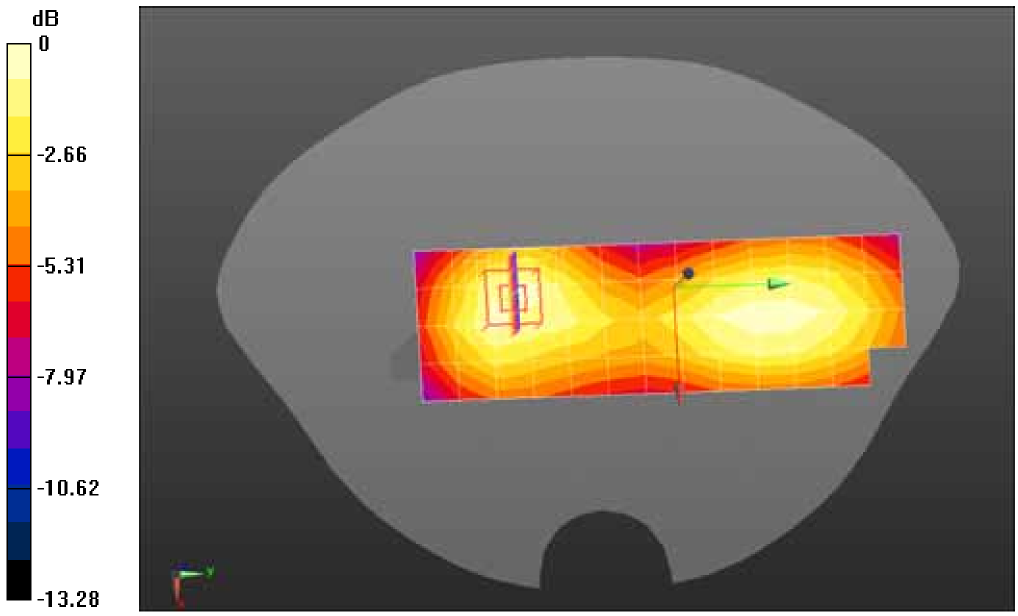
Configuration/GPRS850 Mid Body-Right side/Area Scan (5x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.0845 mW/g

Configuration/GPRS850 Mid Body-Right side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.568 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.131 mW/g

SAR(1 g) = 0.083 mW/g; SAR(10 g) = 0.052 mW/g Maximum value of SAR (measured) = 0.0908 mW/g



0 dB = 0.0908 mW/g = -20.84 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS850 Mid Body-Top(4up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: GSM 850; Duty Cycle: 1:2.1 ; Frequency: 836.4 MHz; Medium parameters used: f = 836.4 MHz; σ = 0.96 mho/m; εr = 54.44; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(9.41, 9.41, 9.41); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

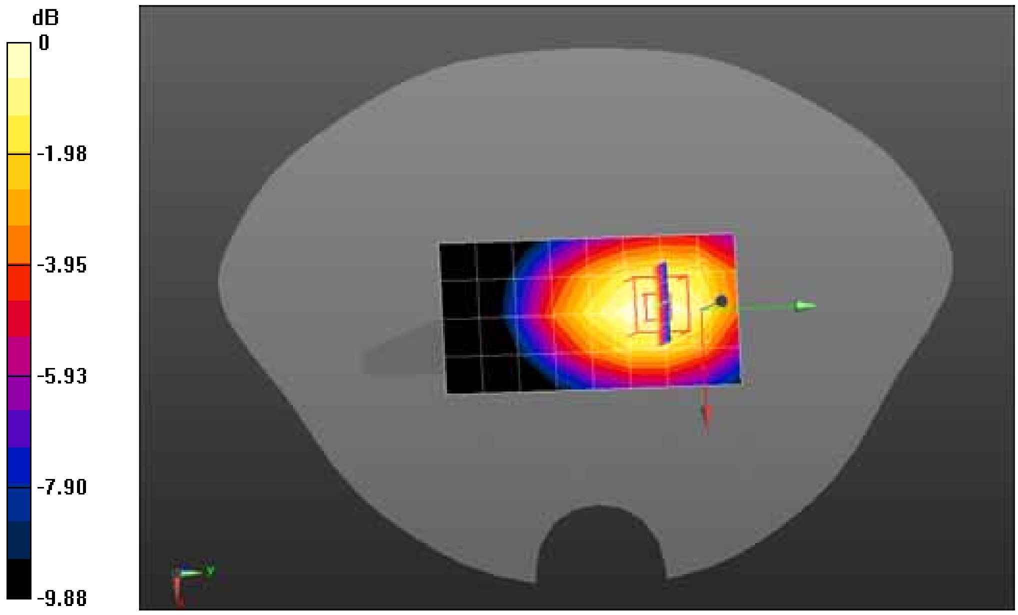
Configuration/GPRS850 Mid Body-Top/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.114 mW/g

Configuration/GPRS850 Mid Body-Top/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.350 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.153 mW/g

SAR(1 g) = 0.108 mW/g; SAR(10 g) = 0.074 mW/g Maximum value of SAR (measured) = 0.115 mW/g



0 dB = 0.115 mW/g = -18.79 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

PCS1900 Mid Touch-Left

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: PCS1900; Duty Cycle: 1:8.3;

Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; εr = 39.2; ρ = 1000 kg/m^3 ;

Phantom section: Left Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.75, 7.75, 7.75); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

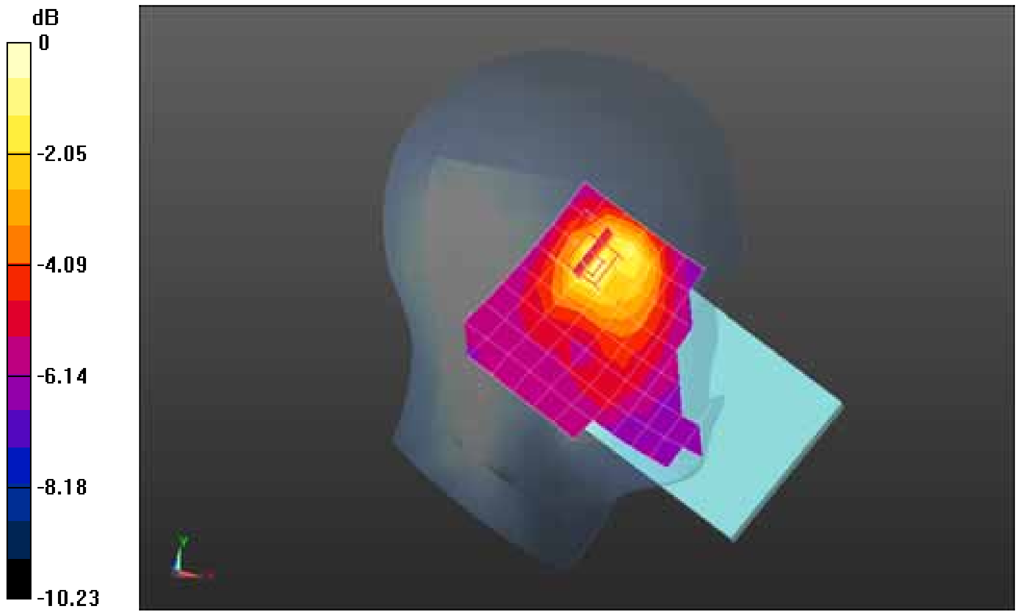
Configuration/PCS1900 Mid Touch-Left/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.568 mW/g

Configuration/PCS1900 Mid Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.609 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.051 mW/g

SAR(1 g) = 0.553 mW/g; SAR(10 g) = 0.347 mW/g Maximum value of SAR (measured) = 0.588 mW/g



0 dB = 0.588 mW/g = -4.61 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

PCS1900 Mid Tilt-Left

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: PCS1900; Duty Cycle: 1:8.3;

Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; εr = 39.2; ρ = 1000 kg/m^3 ;

Phantom section: Left Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.75, 7.75, 7.75); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

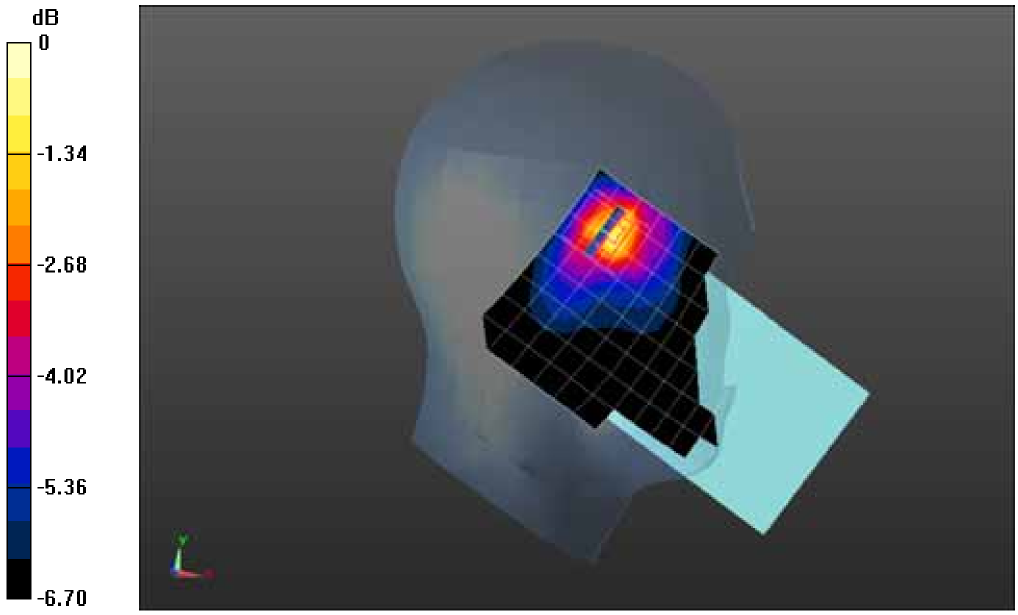
Configuration/PCS1900 Mid Tilt-Left/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.359 mW/g

Configuration/PCS1900 Mid Tilt-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.168 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.757 mW/g

SAR(1 g) = 0.380 mW/g; SAR(10 g) = 0.223 mW/g Maximum value of SAR (measured) = 0.404 mW/g



0 dB = 0.404 mW/g = -7.87 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

PCS1900 Mid Touch-Right

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: PCS1900; Duty Cycle: 1:8.3;

Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; εr = 39.2; ρ = 1000 kg/m^3 ;

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.75, 7.75, 7.75); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

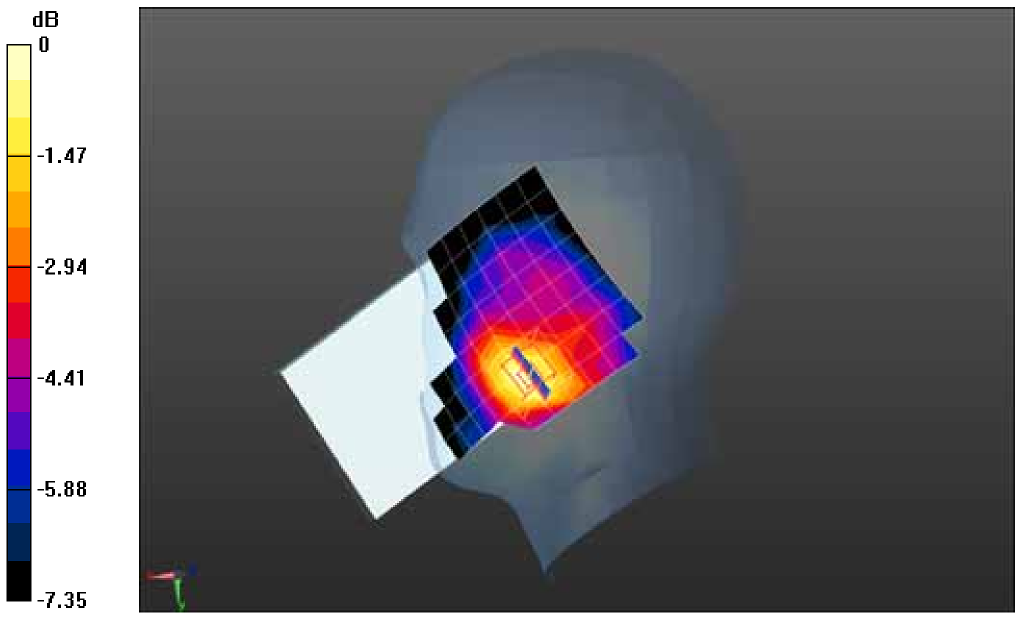
Configuration/PCS1900 Mid Touch-Right/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.237 mW/g

Configuration/PCS1900 Mid Touch-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 8.047 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 0.376 mW/g

SAR(1 g) = 0.233 mW/g; SAR(10 g) = 0.154 mW/g Maximum value of SAR (measured) = 0.245 mW/g



0 dB = 0.245 mW/g = -12.22 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

PCS1900 Mid Tilt-Right

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: PCS1900; Duty Cycle: 1:8.3;

Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; εr = 39.2; ρ = 1000 kg/m^3 ;

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.75, 7.75, 7.75); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

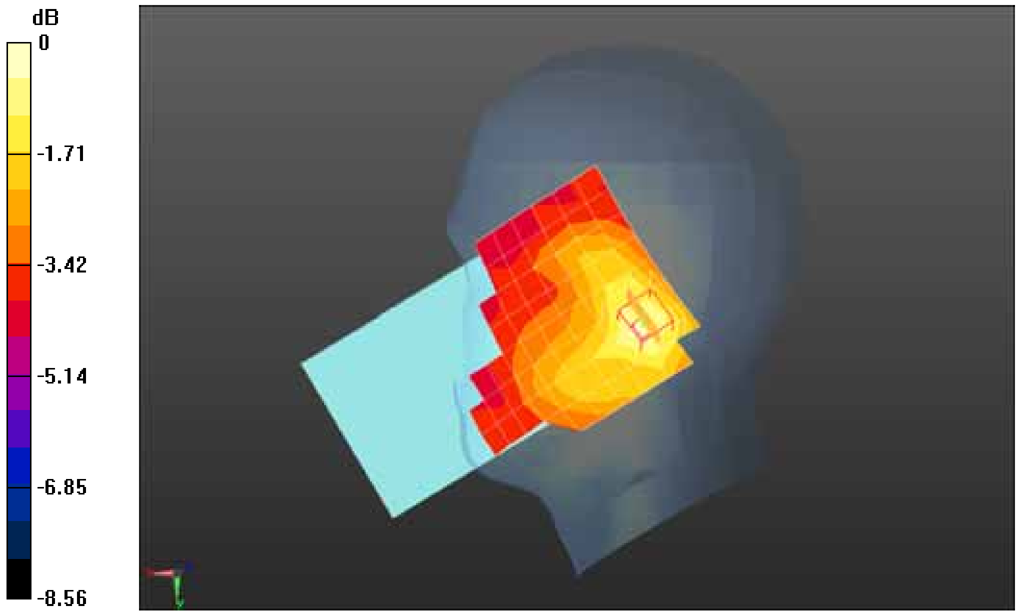
Configuration/PCS1900 Mid Tilt-Right/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.228 mW/g

Configuration/PCS1900 Mid Tilt-Right/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.293 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.336 mW/g

SAR(1 g) = 0.233 mW/g; SAR(10 g) = 0.179 mW/g Maximum value of SAR (measured) = 0.240 mW/g



0 dB = 0.240 mW/g = -12.40 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

PCS1900 Mid Touch-Left<SIM2>

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: PCS1900; Duty Cycle: 1:8.3;

Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.43 mho/m; εr = 39.2; ρ = 1000 kg/m^3 ;

Phantom section: Left Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.75, 7.75, 7.75); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

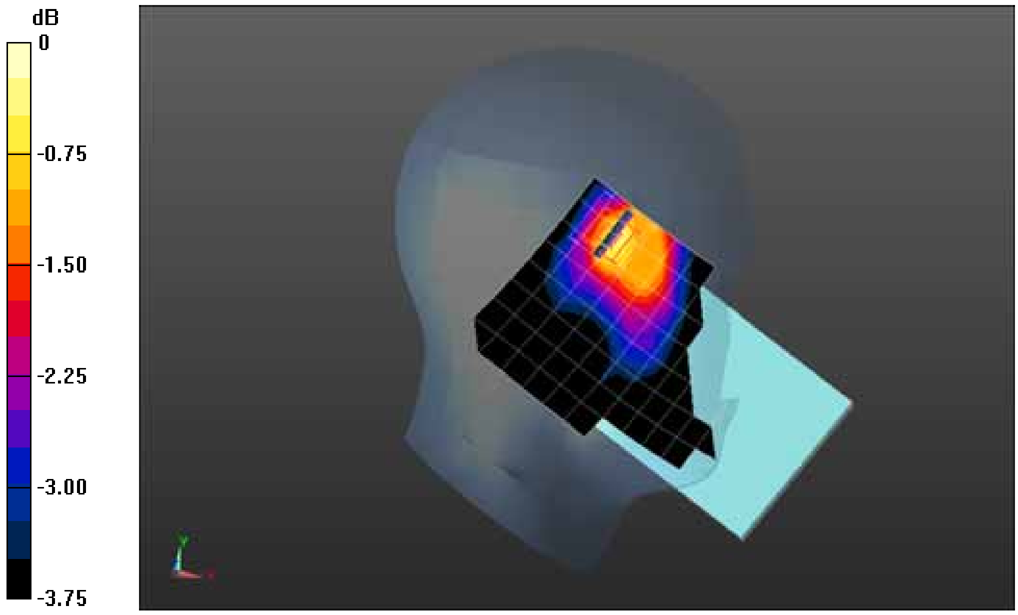
Configuration/PCS1900 Mid Touch-Left/Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

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

Configuration/PCS1900 Mid Touch-Left/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.401 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.666 mW/g

SAR(1 g) = 0.408 mW/g; SAR(10 g) = 0.286 mW/g Maximum value of SAR (measured) = 0.417 mW/g



0 dB = 0.417 mW/g = -7.60 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

DCS1900 Mid Body-Back

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: Generic GSM; Communication System Band: PCS1900; Duty Cycle: 1:8.3; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 53.61; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.6, 7.6, 7.6); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

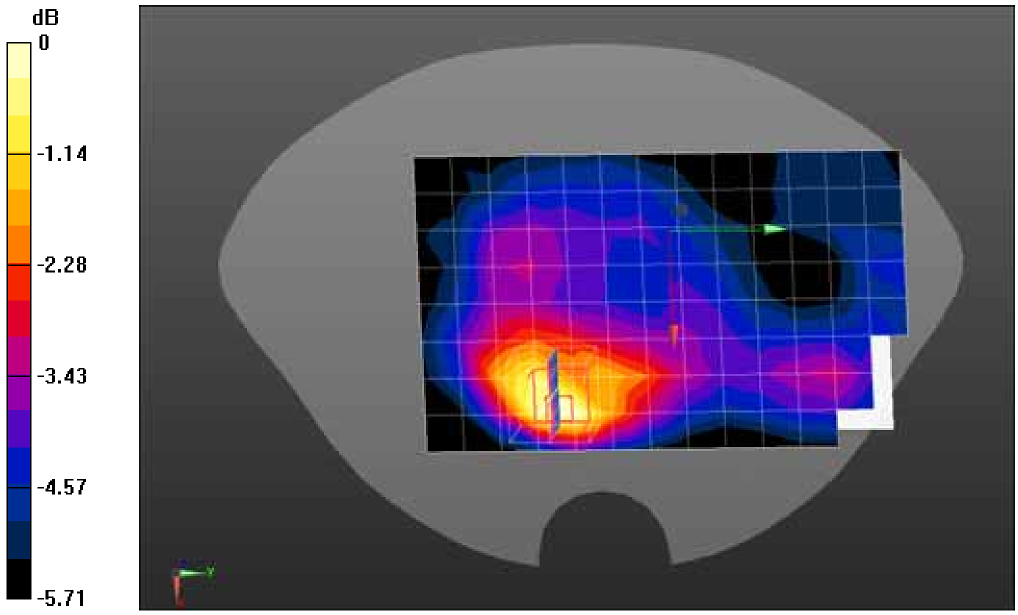
Configuration/DCS1900 Mid Body-Back/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Configuration/DCS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 9.306 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.491 mW/g

SAR(1 g) = 0.319 mW/g; SAR(10 g) = 0.212 mW/g Maximum value of SAR (measured) = 0.334 mW/g



0 dB = 0.334 mW/g = -9.53 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS1900 Mid Body-Back(2up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-2 Slot; Communication System Band: PCS1900; Duty Cycle: 1:4.2 ; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 53.61; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.6, 7.6, 7.6); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

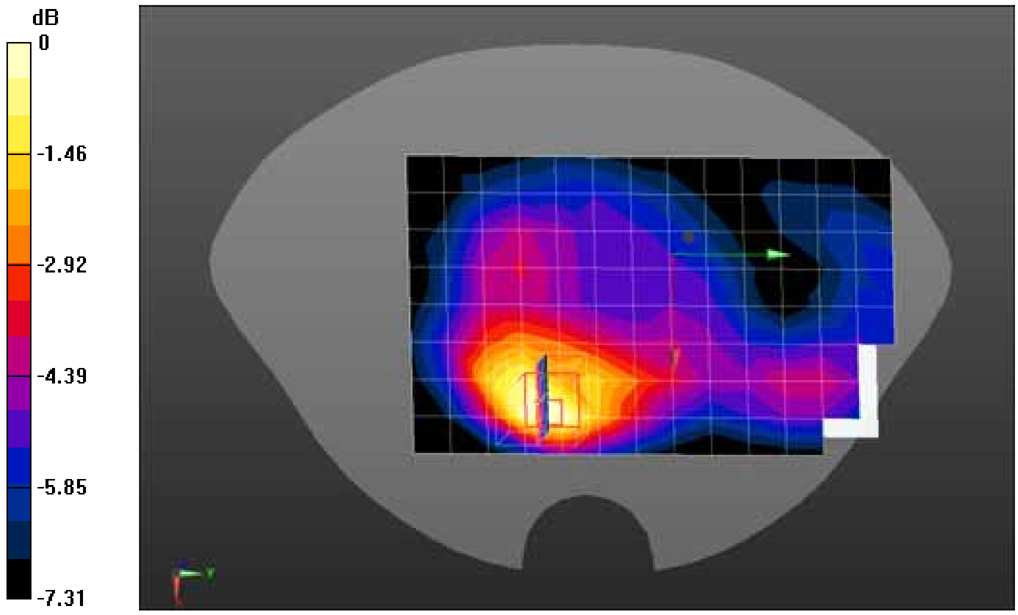
Configuration/GPRS1900 Mid Body-Back/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.564 mW/g

Configuration/GPRS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.759 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 0.864 mW/g

SAR(1 g) = 0.524 mW/g; SAR(10 g) = 0.325 mW/g Maximum value of SAR (measured) = 0.549 mW/g



0 dB = 0.549 mW/g = -5.21 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS1900 Mid Body-Back(3up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-3 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:2.8 ; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 53.61; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.6, 7.6, 7.6); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

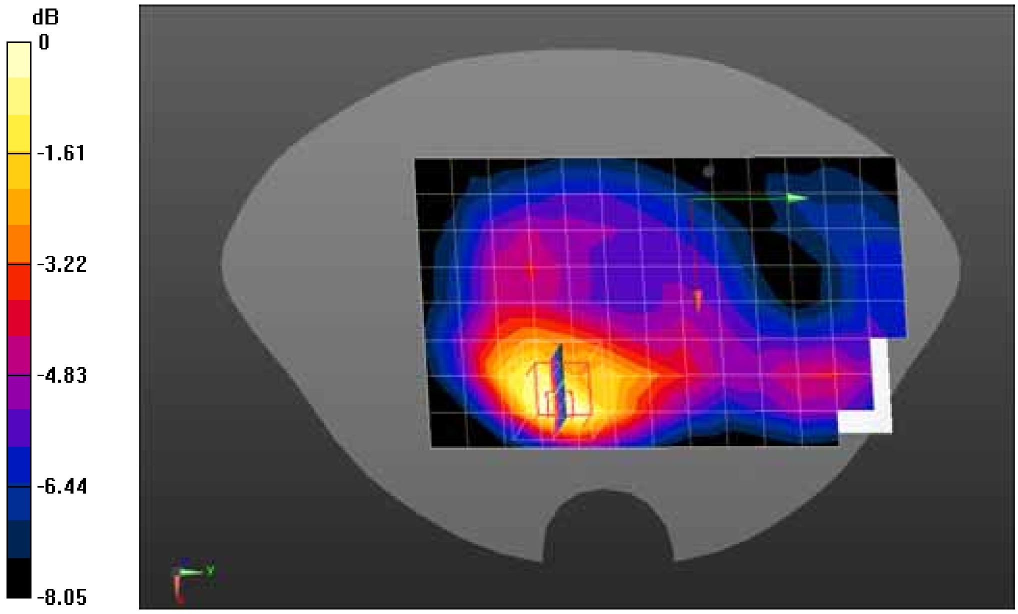
Configuration/GPRS1900 Mid Body-Back/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.685 mW/g

Configuration/GPRS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.282 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 1.037 mW/g

SAR(1 g) = 0.632 mW/g; SAR(10 g) = 0.387 mW/g Maximum value of SAR (measured) = 0.675 mW/g



0 dB = 0.675 mW/g = -3.41 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS1900 Mid Body-Back(4up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:2.1 ; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 53.61; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.6, 7.6, 7.6); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

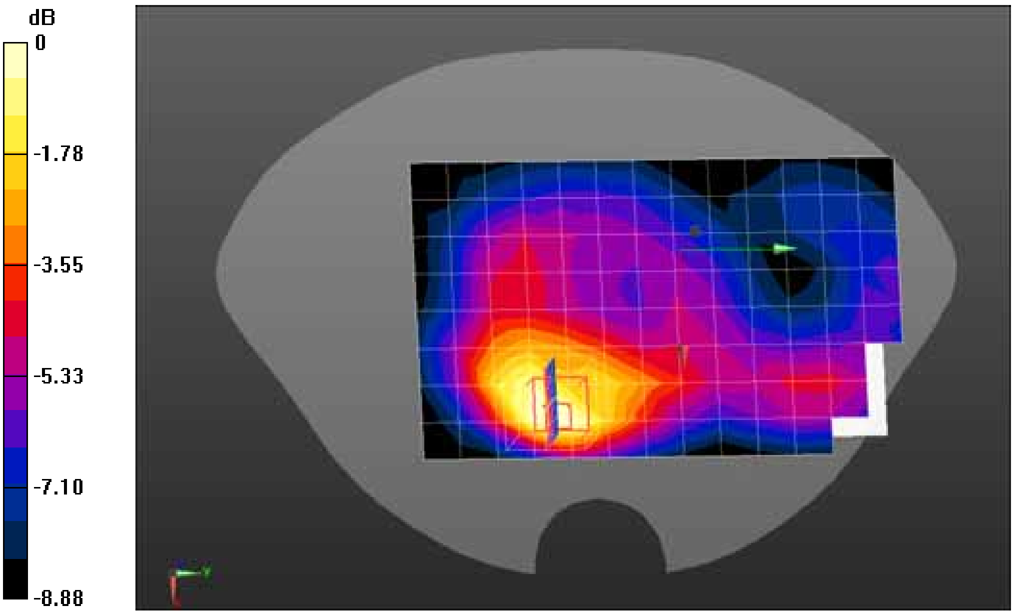
Configuration/GPRS1900 Mid Body-Back/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.819 mW/g

Configuration/GPRS1900 Mid Body-Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.139 V/m; Power Drift = -0.09 dB

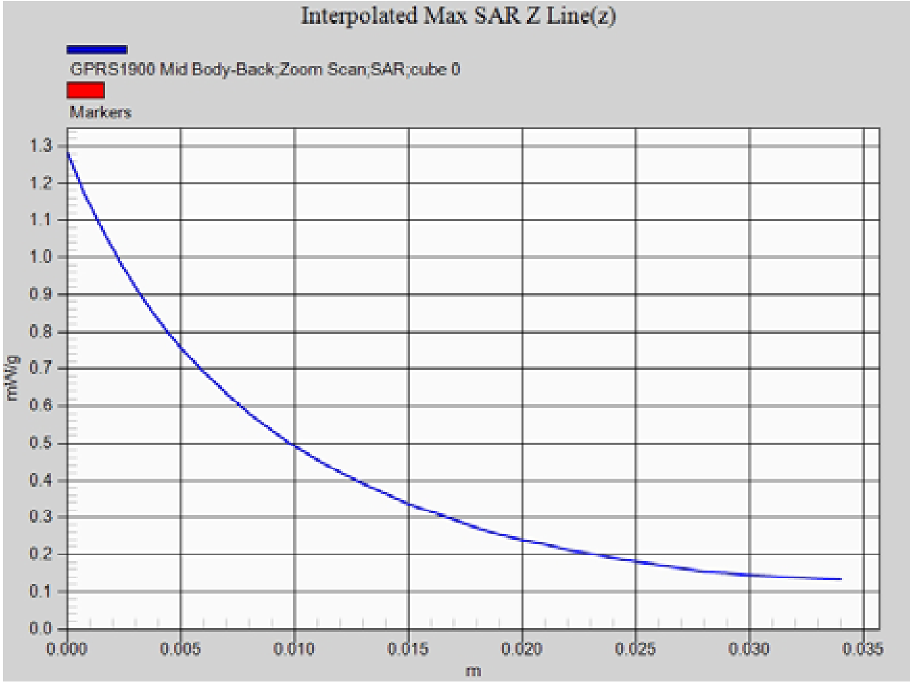
Peak SAR (extrapolated) = 1.286 mW/g

SAR(1 g) = 0.752 mW/g; SAR(10 g) = 0.450 mW/g Maximum value of SAR (measured) = 0.795 mW/g



0 dB = 0.795 mW/g = -1.99 dB mW/g

Z-Axis Plot


Interpolated Max SAR Z Line(z)
GPRS1900 Mid Body-Back;Zoom Scan;SAR;cube 0
Markers
mW/g
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
m

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS1900 Mid Body-Front(4up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:2.1 ; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 53.61; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.6, 7.6, 7.6); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

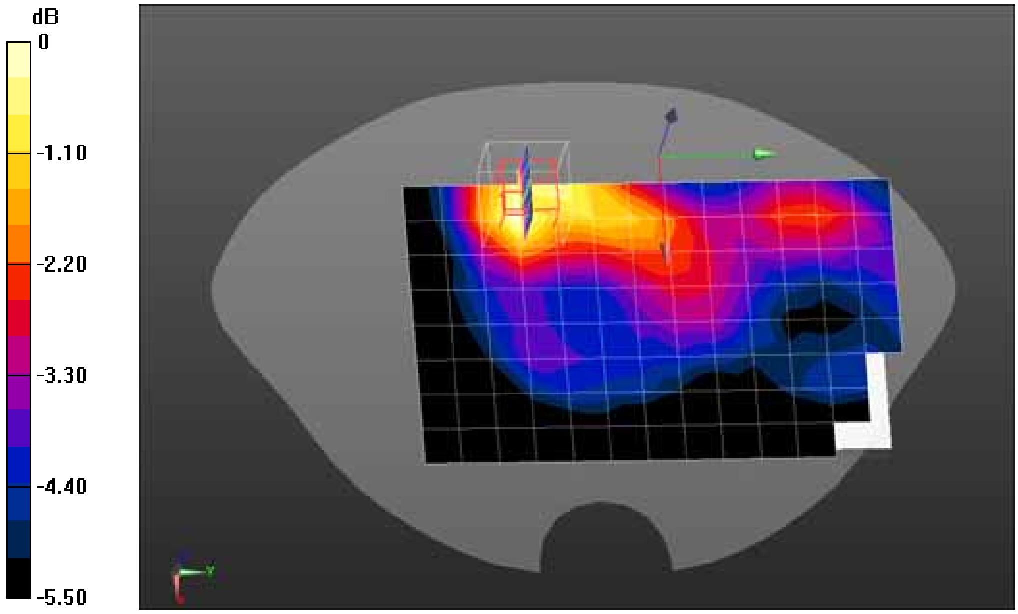
Configuration/GPRS1900 Mid Body-Front/Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.420 mW/g

Configuration/GPRS1900 Mid Body-Front/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 10.111 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.627 mW/g

SAR(1 g) = 0.400 mW/g; SAR(10 g) = 0.281 mW/g Maximum value of SAR (measured) = 0.419 mW/g



0 dB = 0.419 mW/g = -7.56 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS1900 Mid Body-Right side(4up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:2.1 ; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 53.61; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.6, 7.6, 7.6); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

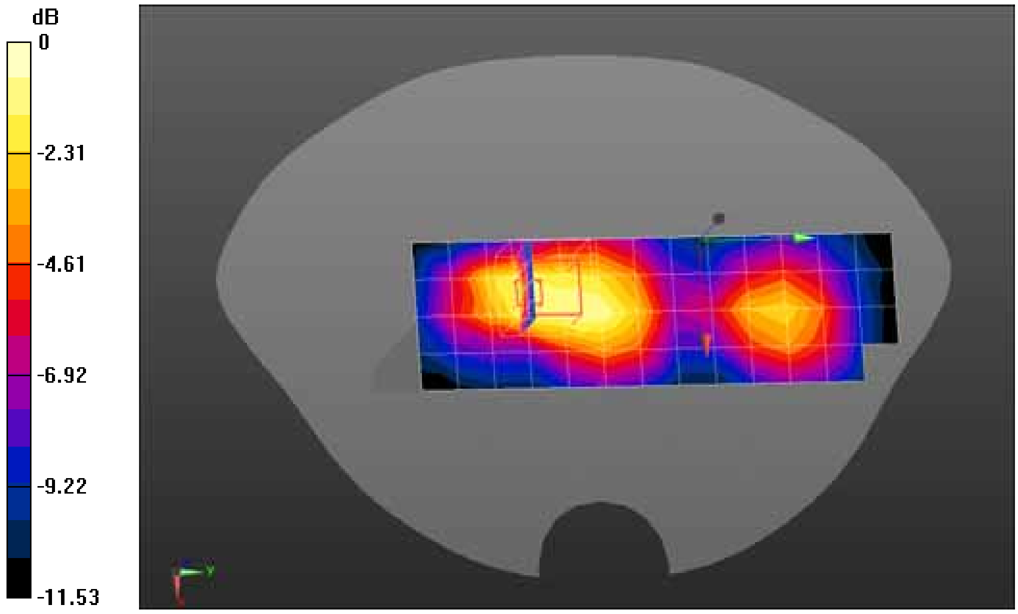
Configuration/GPRS1900 Mid Body-Right side/Area Scan (5x14x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.529 mW/g

Configuration/GPRS1900 Mid Body-Right side/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 18.879 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.947 mW/g

SAR(1 g) = 0.571 mW/g; SAR(10 g) = 0.340 mW/g Maximum value of SAR (measured) = 0.641 mW/g



0 dB = 0.641 mW/g = -3.86 dB mW/g

Date/Time: 23-12-2013

Test Laboratory: QuieTek Lab

GPRS1900 Mid Body-Top(4up)

DUT: 2G Phone Tablet PC; Type: TB-650

Communication System: GPRS/EGPRS-4 Slot; Communication System Band: PCS 1900; Duty Cycle: 1:2.1 ; Frequency: 1880 MHz; Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; εr = 53.61; ρ = 1000 kg/m³ ; Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7.6, 7.6, 7.6); Calibrated: 27/03/2013;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 24/01/2013
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

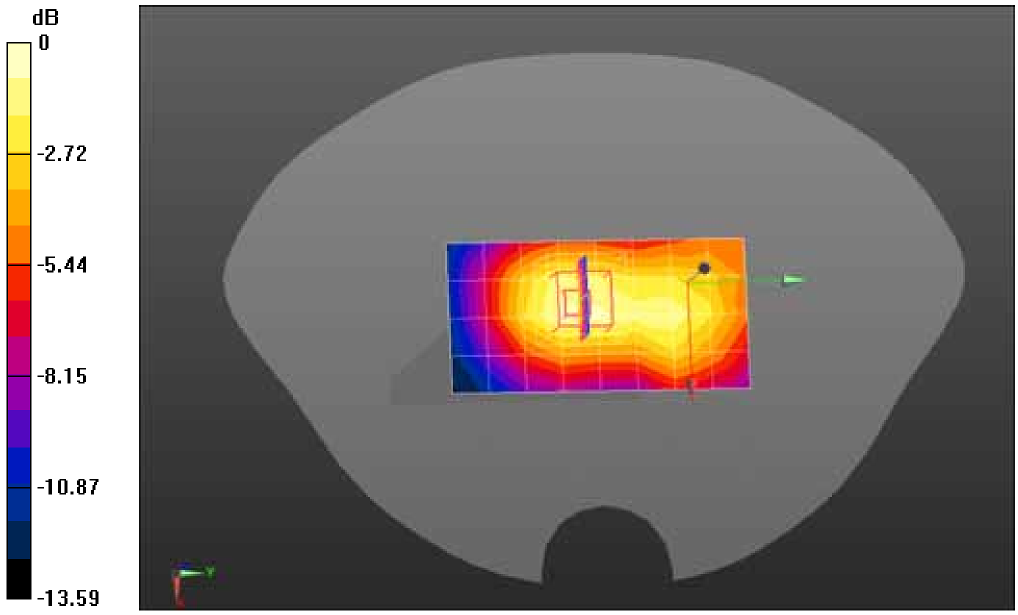
Configuration/GPRS1900 Mid Body-Top/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.194 mW/g

Configuration/GPRS1900 Mid Body-Top/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.369 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.319 mW/g

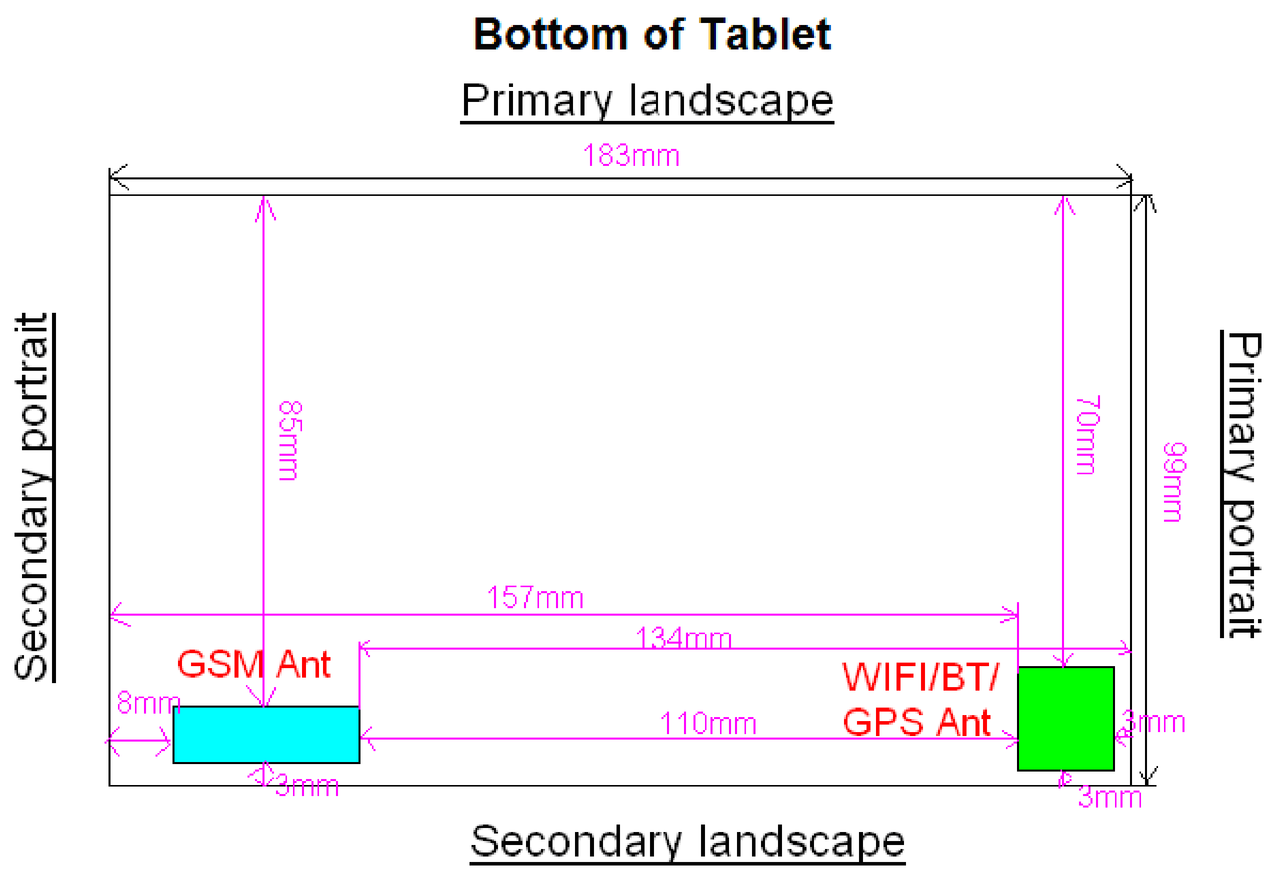
SAR(1 g) = 0.206 mW/g; SAR(10 g) = 0.127 mW/g Maximum value of SAR (measured) = 0.225 mW/g



0 dB = 0.225 mW/g = -12.96 dB mW/g

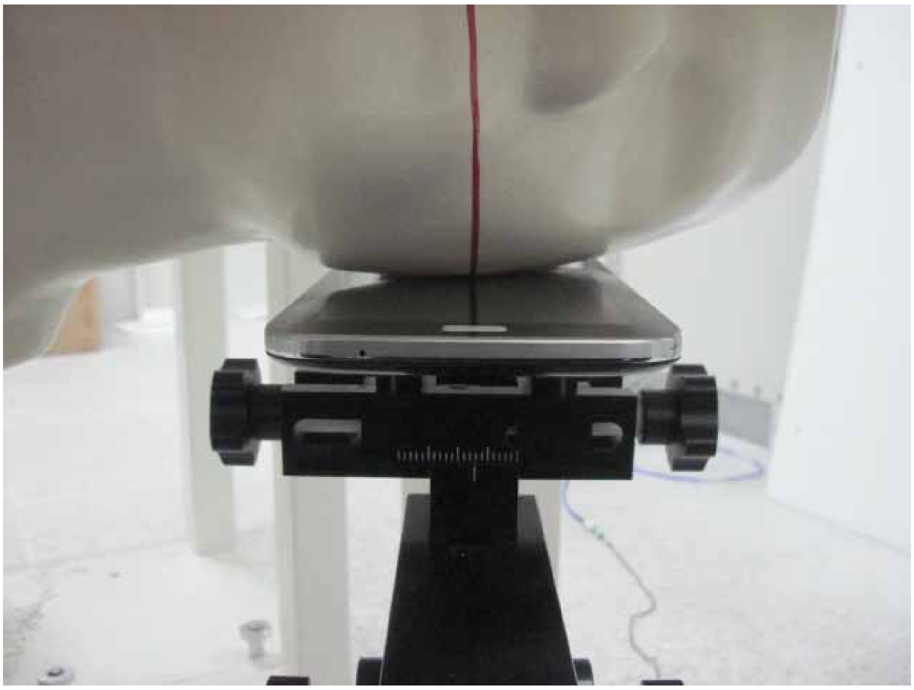
Appendix C. Test Setup Photographs & EUT Photographs

Antenna to Antenna/User Separation Distances

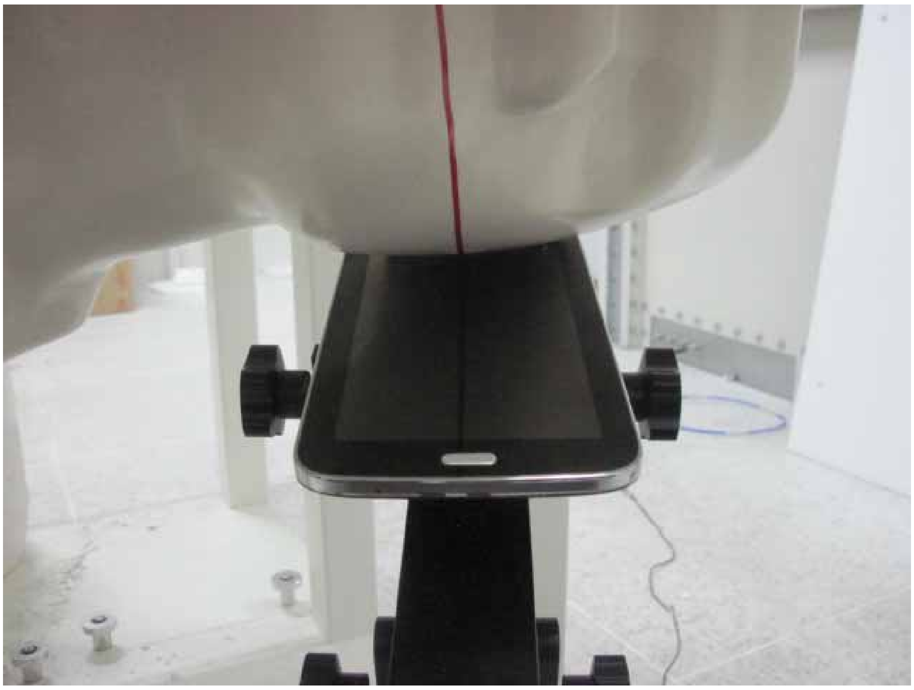


Antenna-to-user separation distances:	**GSM/GPRS Antenna** Tablet-Bottom face: 2mm from WIFI Antenna-to-user Tablet-Edges with the following configurations ● Primary landscape: 85mm from WIFI Antenna-to-user ● Secondary landscape: 3mm from WIFI Antenna-to-user ● Primary portrait: 134mm from WIFI Antenna-to-user ● Secondary portrait: 8mm from WIFI Antenna-to-user

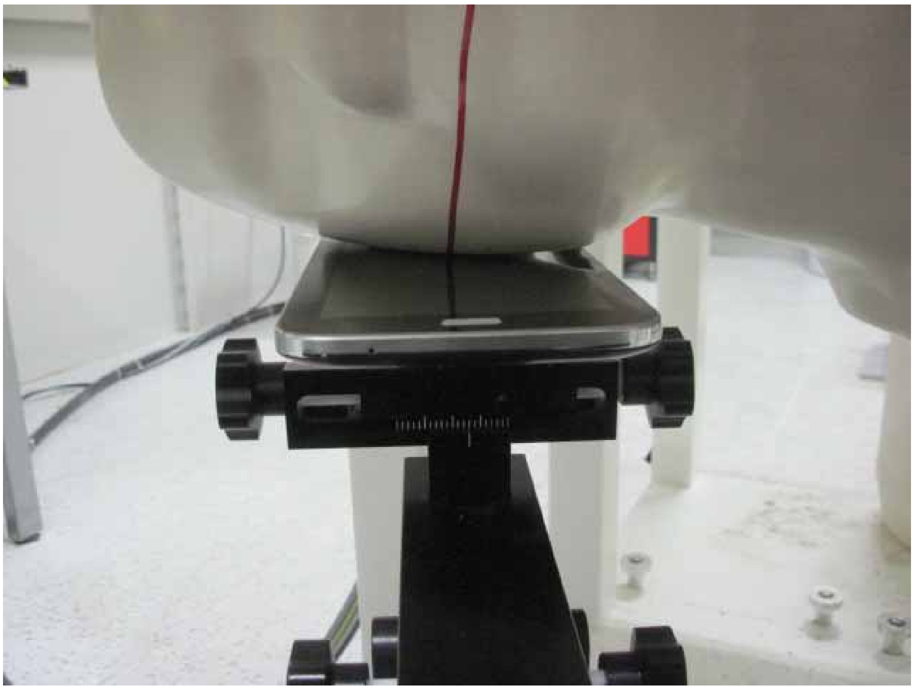
Test Setup Photographs



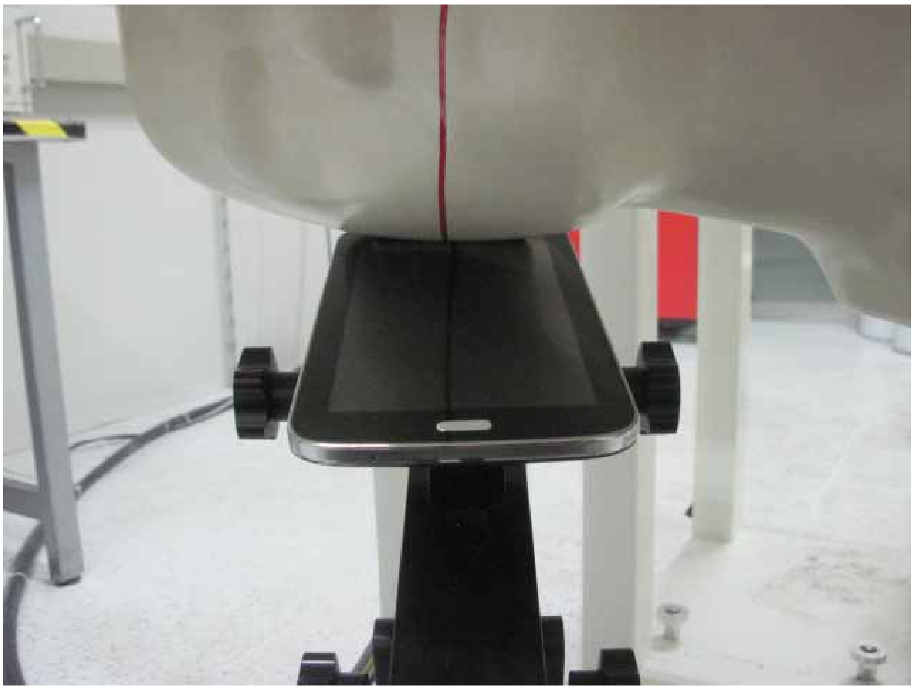
Left-Cheek Touch



Left-Tilt 15°



Right-Cheek Touch



Right-Tilt 15°

Body SAR Back 10mm

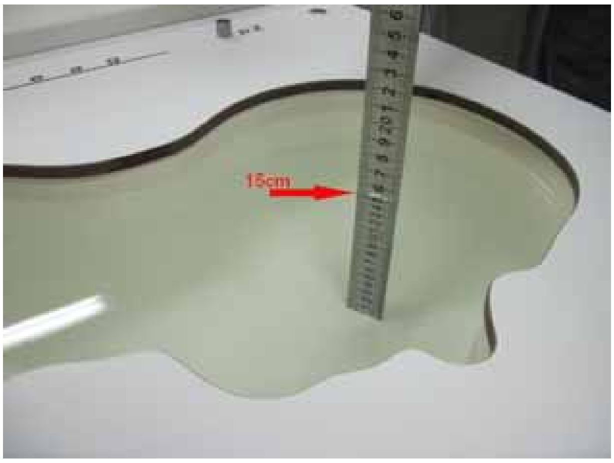
Body SAR Front 10mm

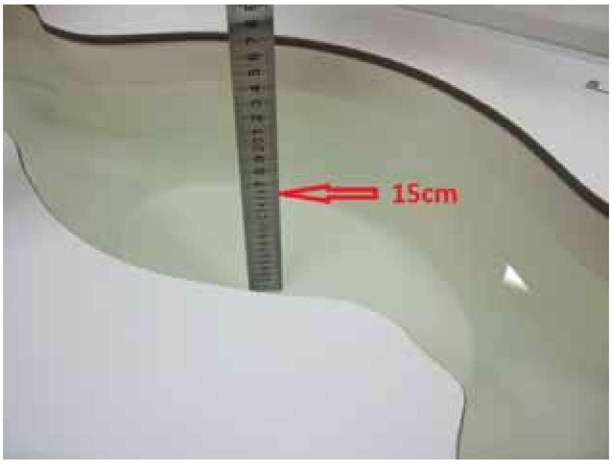
Body SAR Top 10mm for GSM/GPRS

Body SAR Right Side 10mm for GSM/GPRS

Depth of the liquid in the phantom – Zoom in

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





EUT Photographs

(1) EUT Photo

(2) EUT Photo

(3) EUT Photo

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
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-CN (Auden)   Certificate No: EX3-3710_Mar13

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3710

Calibration procedure(s): QA CAL-01.v8, QA CAL-12.v7, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: March 27, 2013

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	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41498087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 2, 2013

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

Certificate No: EX3-3710_Mar13   Page 1 of 11

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
Swiss Calibration Service

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

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	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., ϑ = 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 ϑ = 0 (f ≤ 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 affect 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.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* 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 ≤ 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:3710

Manufactured: July 21, 2009
Calibrated: March 27, 2013

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - 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]	0.51	0.56	0.45	± 10.1 %
DCP (mV)[B]	101.3	99.6	98.6	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	159.5	±2.7 %
		Y	0.0	0.0	1.0		182.9	
		Z	0.0	0.0	1.0		159.4	

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 max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3710

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	43.5	0.87	9.87	9.87	9.87	0.14	1.30	± 13.4 %
750	41.9	0.89	9.94	9.94	9.94	0.29	0.99	± 12.0 %
835	41.5	0.90	9.52	9.52	9.52	0.39	0.83	± 12.0 %
900	41.5	0.97	9.50	9.50	9.50	0.70	0.63	± 12.0 %
1810	40.0	1.40	7.75	7.75	7.75	0.66	0.63	± 12.0 %
1950	40.0	1.40	7.47	7.47	7.47	0.75	0.59	± 12.0 %
2450	39.2	1.80	7.03	7.03	7.03	0.63	0.64	± 12.0 %
2600	39.0	1.96	6.83	6.83	6.83	0.50	0.74	± 12.0 %
3500	37.9	2.91	6.81	6.81	6.81	0.82	0.73	± 13.1 %
5200	36.0	4.66	4.86	4.86	4.86	0.45	1.80	± 13.1 %
5300	35.9	4.76	4.74	4.74	4.74	0.45	1.80	± 13.1 %
5500	35.6	4.96	4.50	4.50	4.50	0.50	1.80	± 13.1 %
5600	35.5	5.07	4.42	4.42	4.42	0.45	1.80	± 13.1 %
5800	35.3	5.27	4.43	4.43	4.43	0.50	1.80	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3710

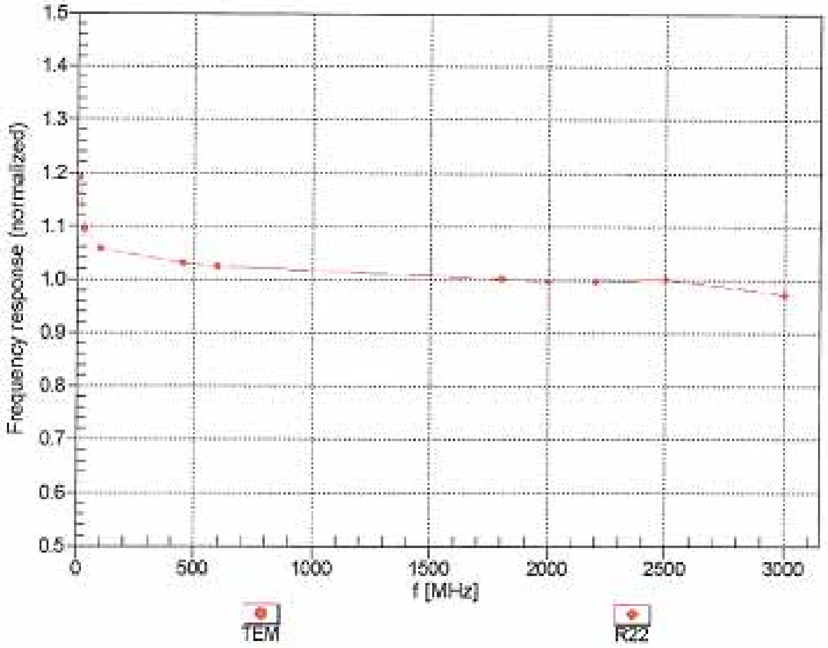
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	56.7	0.94	10.89	10.89	10.89	0.05	1.20	± 13.4 %
750	55.5	0.96	9.60	9.60	9.60	0.48	0.83	± 12.0 %
835	55.2	0.97	9.41	9.41	9.41	0.38	0.90	± 12.0 %
900	55.0	1.05	9.30	9.30	9.30	0.80	0.63	± 12.0 %
1810	53.3	1.52	7.60	7.60	7.60	0.42	0.81	± 12.0 %
1950	53.3	1.52	7.62	7.62	7.62	0.34	0.98	± 12.0 %
2450	52.7	1.95	7.08	7.08	7.08	0.76	0.56	± 12.0 %
2600	52.5	2.16	6.88	6.88	6.88	0.80	0.50	± 12.0 %
3500	51.3	3.31	6.38	6.38	6.38	1.00	0.57	± 13.1 %
5200	49.0	5.30	4.32	4.32	4.32	0.45	1.90	± 13.1 %
5300	48.9	5.42	4.16	4.16	4.16	0.45	1.90	± 13.1 %
5500	48.6	5.65	3.87	3.87	3.87	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.89	3.89	3.89	0.40	1.90	± 13.1 %
5800	48.2	6.00	4.05	4.05	4.05	0.50	1.90	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

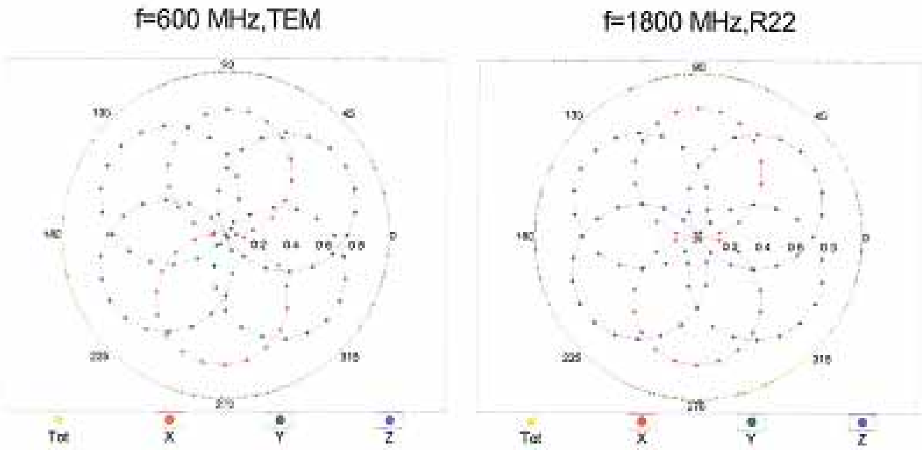
Frequency Response of E-Field

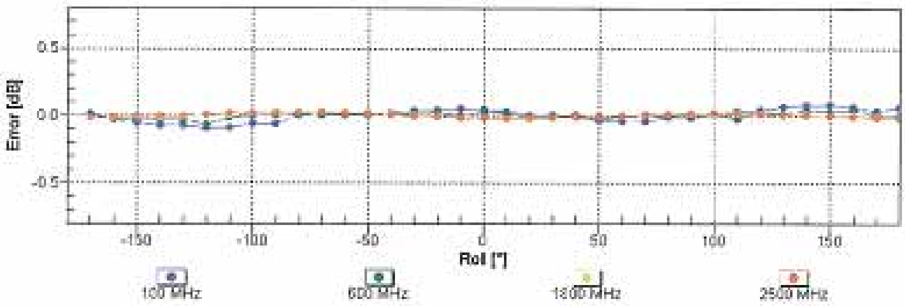
(TEM-Cell:ifi110 EXX, Waveguide: R22)



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

Receiving Pattern (ϕ), $\vartheta = 0°$

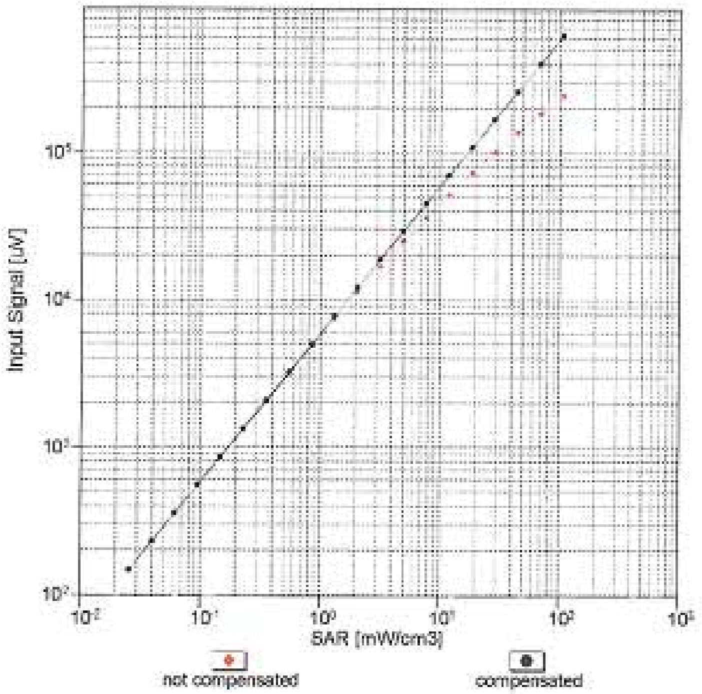


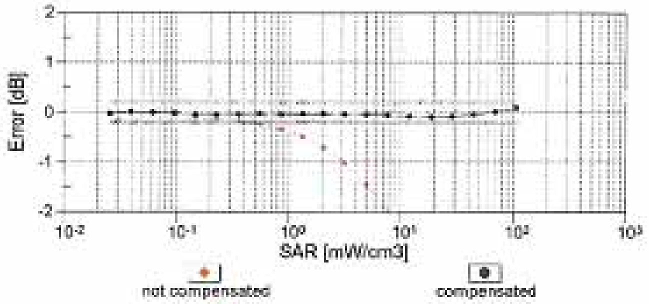


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR$_{head}$)

(TEM cell , f = 900 MHz)

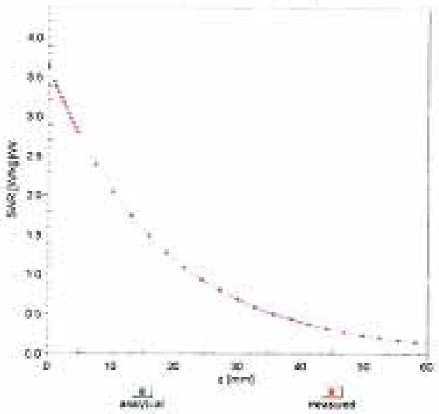




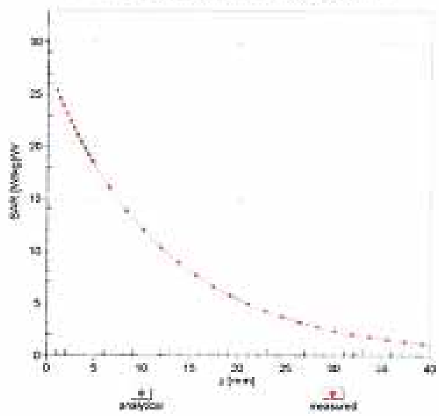
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 900 MHz,WGLS R9 (H_convF)

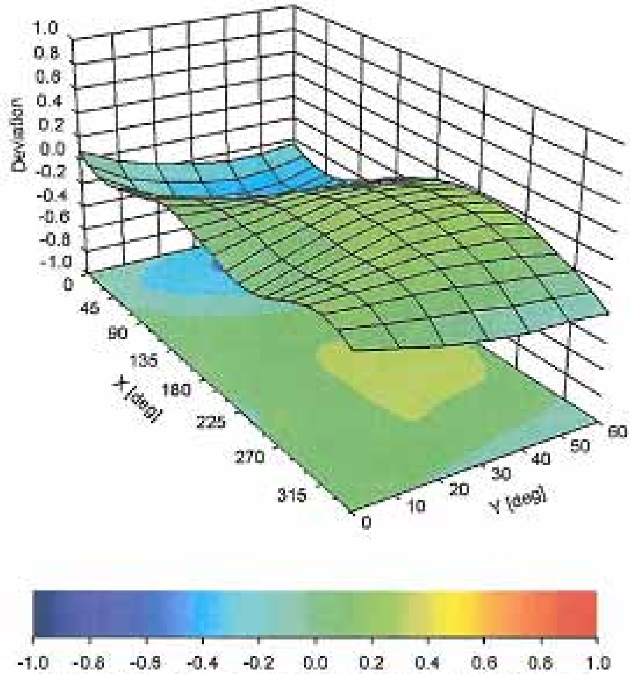


f = 1810 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3710

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-20.2
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

Appendix E. Dipole Calibration Data

Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Quietek-CN (Auden)**

Certificate No: **D835V2-4d094_Feb12**

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 4d094

Calibration procedure(s): QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: February 17, 2012

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	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	Israe El-Naouq
Approved by:	Katja Pokovic	Technical Manager	[signature]

Issued: February 17, 2012

Calibration Laboratory of
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Engineering AG
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Accreditation No.: **SCS 108**

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	V52.8.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
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	41.0 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.34 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.41 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.53 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.15 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	55.7 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °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 for nominal Body TSL parameters	normalized to 1W	**9.57 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.62 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.33 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.5 Ω - 2.0 jΩ
Return Loss	- 28.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.7 Ω - 5.3 jΩ
Return Loss	- 24.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.387 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	SPEAG
Manufactured on	September 15, 2009

DASY5 Validation Report for Head TSL

Date: 17.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

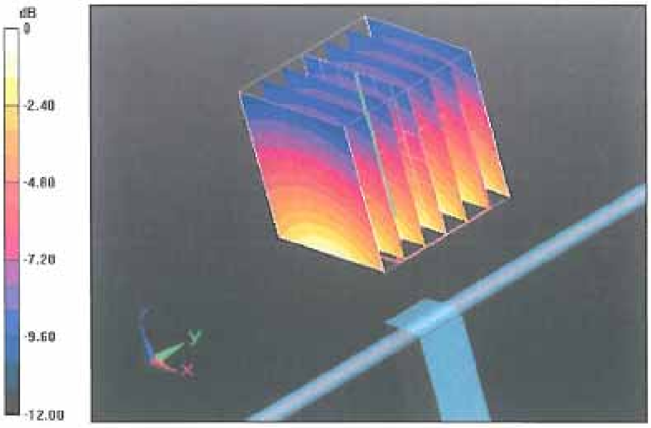
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d094

Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; $\sigma = 0.89$ mho/m; $\varepsilon_r = 41$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

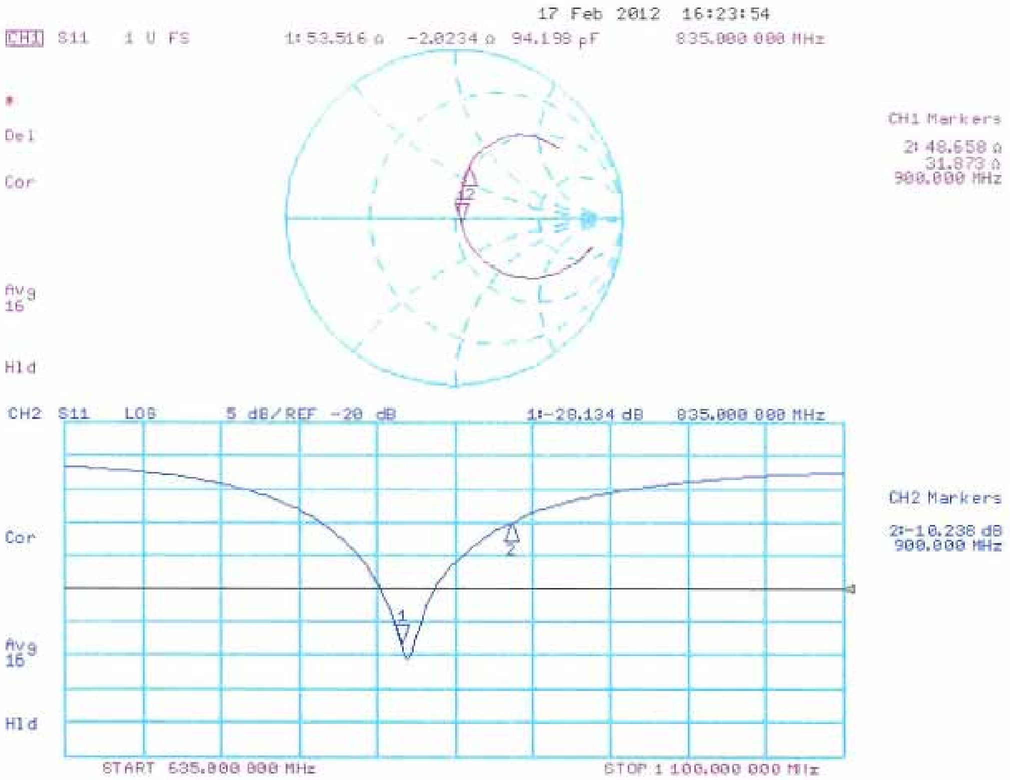
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.027 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.4380
SAR(1 g) = 2.34 mW/g; SAR(10 g) = 1.53 mW/g
Maximum value of SAR (measured) = 2.712 mW/g



0 dB = 2.710mW/g = 8.66 dB mW/g

Certificate No: D835V2-4d094_Feb12 Page 5 of 8

Impedance Measurement Plot for Head TSL



Certificate No: D835V2-4d094_Feb12 Page 6 of 8

DASY5 Validation Report for Body TSL

Date: 17.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d094

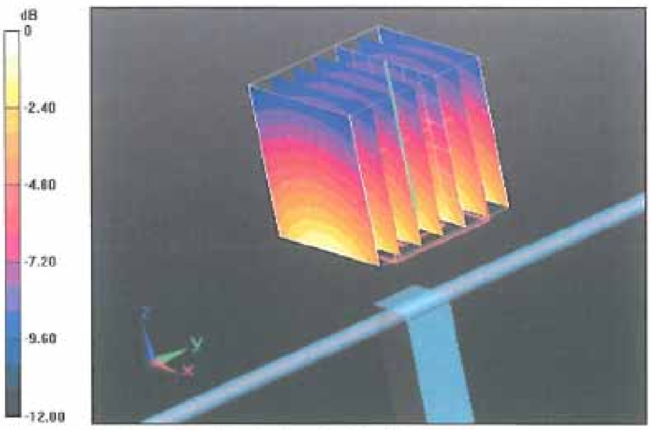
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.01 mho/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

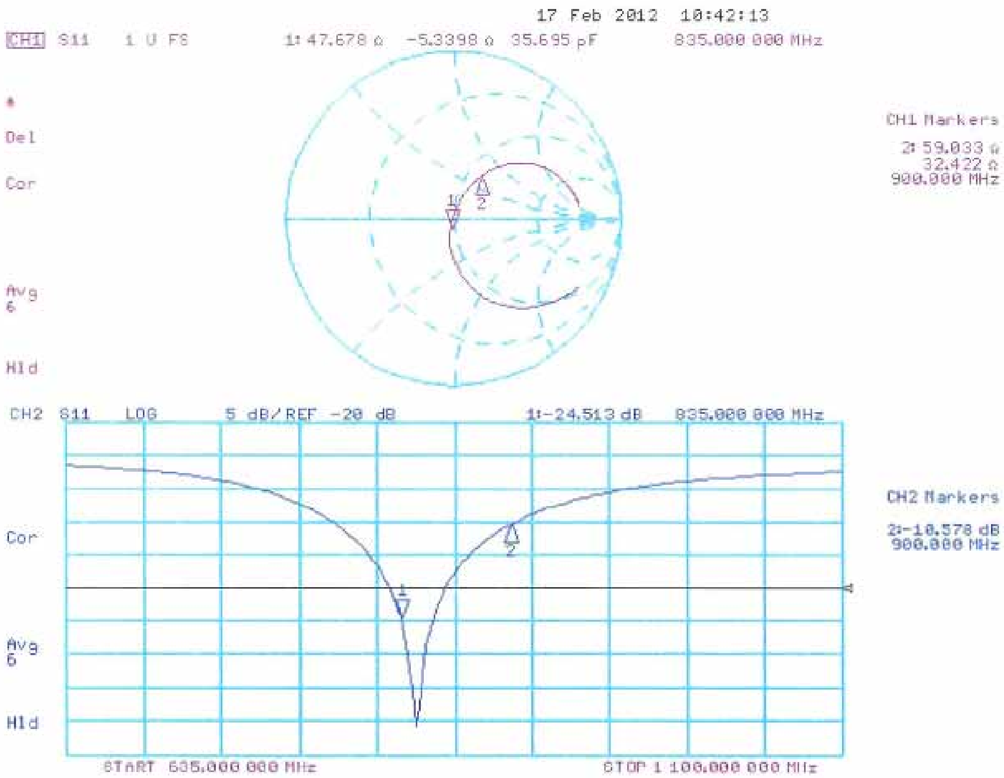
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.114 V/m; Power Drift = 0.0041 dB
Peak SAR (extrapolated) = 3.5590
SAR(1 g) = 2.46 mW/g; SAR(10 g) = 1.62 mW/g
Maximum value of SAR (measured) = 2.861 mW/g



0 dB = 2.860mW/g = 9.13 dB mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: **SCS 108**

Client **Quietek-CN (Auden)**

Certificate No: **D1900V2-5d121_Feb12**

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d121
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	February 22, 2012

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	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	Israe El-Naouq
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 22, 2012

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

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Accreditation No.: **SCS 108**

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	V52.8.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
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	40.4 ± 6 %	1.40 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.84 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**39.4 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.19 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**20.8 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	53.0 ± 6 %	1.56 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.84 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**38.7 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.15 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.4 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.6 Ω + 7.2 jΩ
Return Loss	- 22.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.4 Ω + 7.4 jΩ
Return Loss	- 21.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.205 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	SPEAG
Manufactured on	August 25, 2009

DASY5 Validation Report for Head TSL

Date: 22.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d121

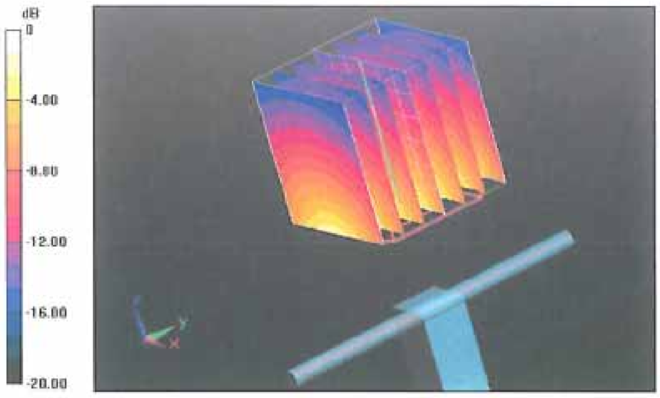
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.4 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

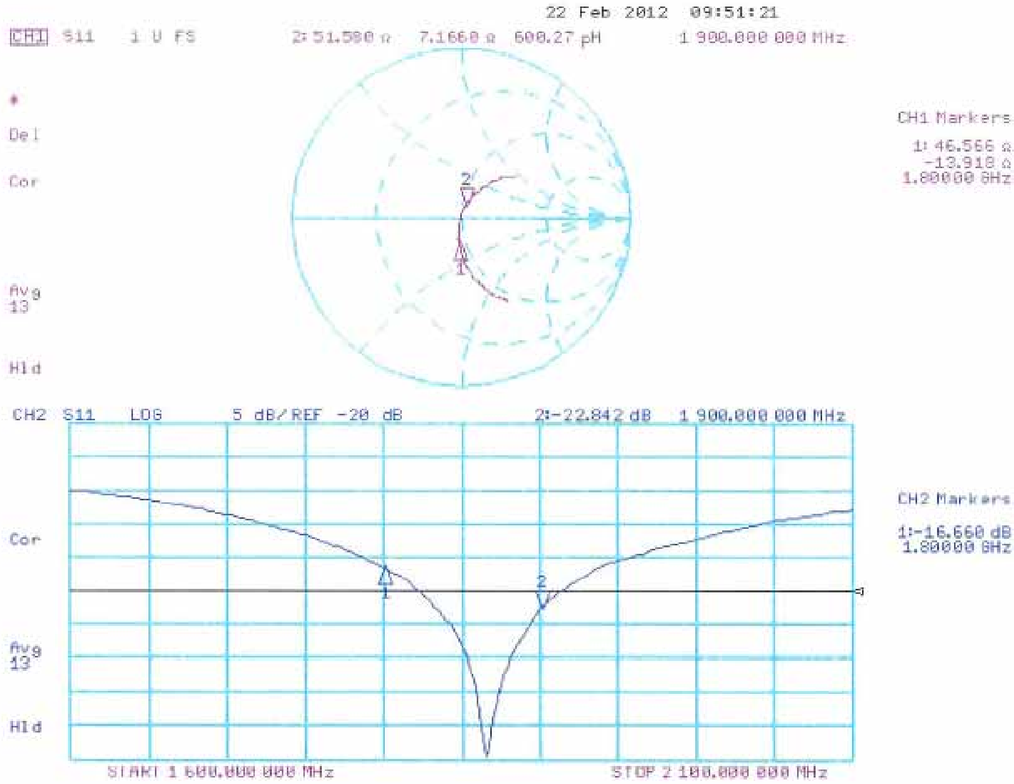
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.900 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 17.5160
SAR(1 g) = 9.84 mW/g; SAR(10 g) = 5.19 mW/g
Maximum value of SAR (measured) = 12.195 mW/g



0 dB = 12.200mW/g = 21.73 dB mW/g

Impedance Measurement Plot for Head TSL



Certificate No: D1900V2-5d121_Feb12 Page 6 of 8

DASY5 Validation Report for Body TSL

Date: 22.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

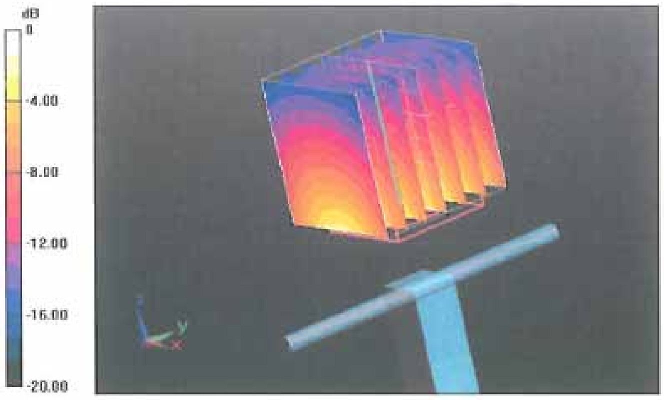
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d121

Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.56 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

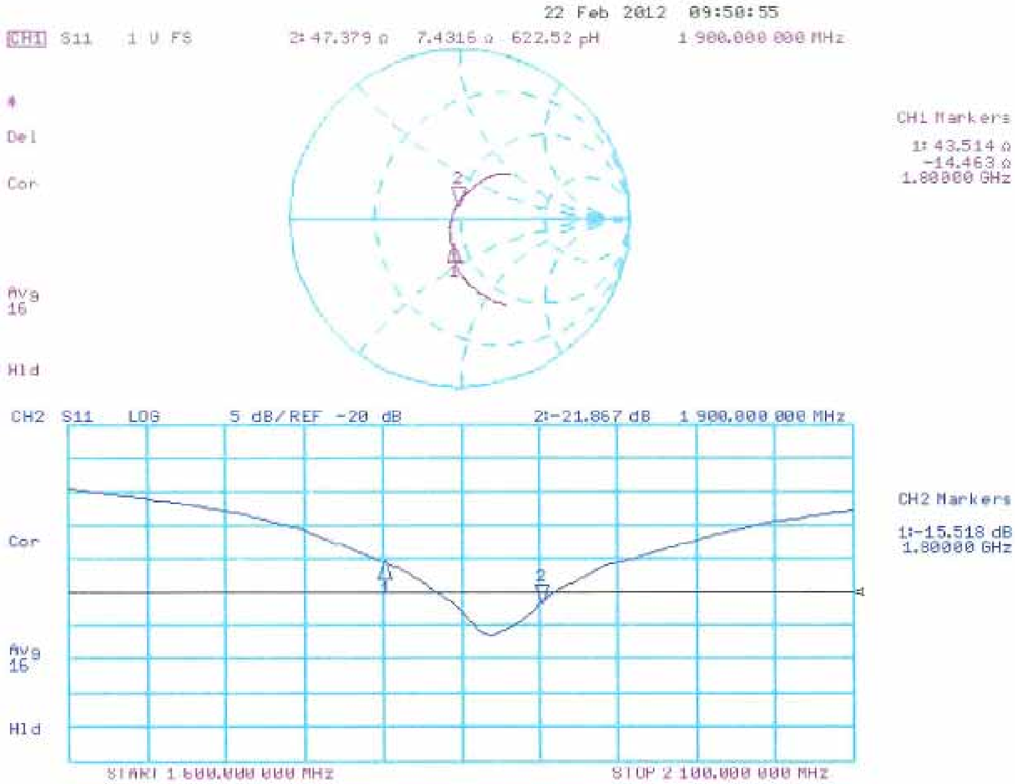
- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.537 V/m; Power Drift = 0.0039 dB
Peak SAR (extrapolated) = 17.3450
SAR(1 g) = 9.84 mW/g; SAR(10 g) = 5.15 mW/g
Maximum value of SAR (measured) = 12.473 mW/g



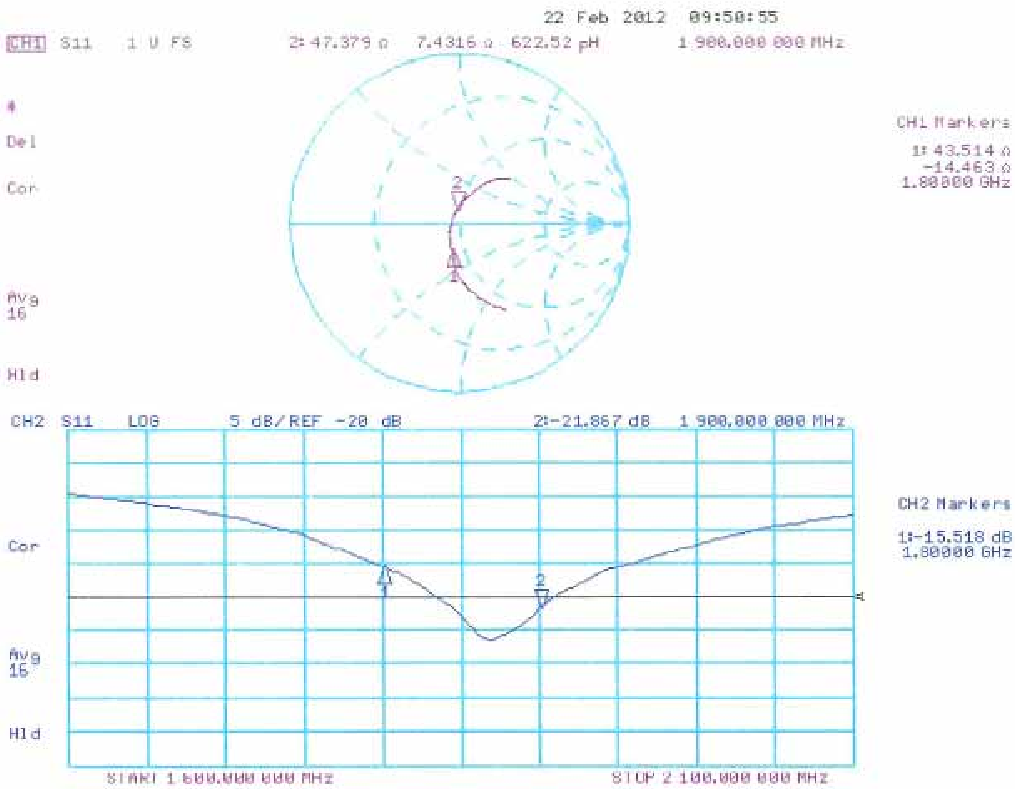
0 dB = 12.470mW/g = 21.92 dB mW/g

Impedance Measurement Plot for Body TSL



Certificate No: D1900V2-5d121_Feb12 Page 8 of 8

Impedance Measurement Plot for Body TSL



Certificate No: D1900V2-5d121_Feb12 Page 8 of 8

Appendix F. DAE 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: Quie Tek (Auden)

Certificate No: DAE4-1220_Jan13

CALIBRATION CERTIFICATE

Object: DAE4 - SD 000 D04 BJ - SN: 1220

Calibration procedure(s): QA CAL-06.v25
Calibration procedure for the data acquisition electronics (DAE)

Calibration date: January 24, 2013

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
Keithley Multimeter Type 2001	SN: 0810278	02-Oct-12 (No:12728)	Oct-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Auto DAE Calibration Unit	SE UWS 053 AA 1001	07-Jan-13 (in house check)	In house check: Jan-14
Calibrator Box V2.1	SE UMS 006 AA 1002	07-Jan-13 (in house check)	In house check: Jan-14

	Name	Function	Signature
Calibrated by:	R.Mayoraz	Technician	
Approved by:	Fin Bomholt	Deputy Technical Manager	i.V.

Issued: January 24, 2013

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

Certificate No: DAE4-1220_Jan13 Page 1 of 5

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

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1μV , full range = -100…+300 mV

Low Range: 1LSB = 61nV , full range = -1…….+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	405.203 ± 0.02% (k=2)	404.925 ± 0.02% (k=2)	404.155 ± 0.02% (k=2)
Low Range	3.97823 ± 1.55% (k=2)	3.99494 ± 1.55% (k=2)	3.98678 ± 1.55% (k=2)

Connector Angle

Connector Angle to be used in DASY system	176.5 ° ± 1 °

Appendix

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199994.51	-0.20	-0.00
Channel X	+ Input	20002.32	2.74	0.01
Channel X	- Input	-19999.37	2.24	-0.01
Channel Y	+ Input	199995.12	0.58	0.00
Channel Y	+ Input	19999.79	0.15	0.00
Channel Y	- Input	-20001.15	0.37	-0.00
Channel Z	+ Input	199993.80	-0.47	-0.00
Channel Z	+ Input	19998.06	-1.59	-0.01
Channel Z	- Input	-20003.12	-1.65	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.11	0.30	0.02
Channel X	+ Input	199.89	-0.29	-0.15
Channel X	- Input	-199.74	-0.14	0.07
Channel Y	+ Input	2000.30	0.54	0.03
Channel Y	+ Input	200.19	0.06	0.03
Channel Y	- Input	-199.81	-0.14	0.07
Channel Z	+ Input	1999.40	-0.47	-0.02
Channel Z	+ Input	199.41	-0.98	-0.49
Channel Z	- Input	-200.25	-0.72	0.36

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	9.11	7.73
	- 200	-8.18	-9.59
Channel Y	200	-9.61	-9.37
	- 200	8.21	8.45
Channel Z	200	12.18	11.90
	- 200	-15.16	-14.84

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	2.08	-4.00
Channel Y	200	7.59	-	2.69
Channel Z	200	9.59	6.24	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15892	15975
Channel Y	16014	16213
Channel Z	15705	16067

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	1.05	-0.80	2.18	0.45
Channel Y	-0.16	-1.22	0.92	0.45
Channel Z	-0.69	-2.22	0.60	0.48

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	–0.01	-8	-9