TESTING
CNAS L4963

SAR TEST REPORT

No. 2011SAR042

FCC ID: Q78-009Z

Applicant: ZTE CORPORATION

Product: WCDMA/GSM (GPRS)
Mobile Phone

Model: 009Z

Issued Date: 2011-09-30

Test Laboratory:
Shanghai Tejet Communications Technology Co., Ltd Testing Center.
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Note:
The following test results relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of the test laboratory.

General Information

Product Name	WCDMA/GSM (GPRS) Mobile Phone	Model Name	009Z
Applicant	ZTE CORPORATION		
Manufacturer	ZTE CORPORATION		
Reference Standard	**ANSI/IEEE C95.1-2005** SAFETY LEVELS WITH RESPECT TO HUMAN EXPOSURE TO RADIO FREQUENCY ELECTROMAGNETIC FIELDS. 3 KHZ TO 300 GHZ		
	IEEE Std 1528™-2003: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques		
	OET Bulletin 65-(Edition 97-01) Supplement C（edition01-01） Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields---Additional Supplement C (Edition 01-01)Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions		
	ANSI/IEEE C95.3-2002 RECOMMENDED PRACTICE FOR MEASUREMENTS AND COMPUTATIONS OF RADIO FREQUENCY ELECTROMAGNETIC FIELDS WITH RESPECT TO HUMAN EXPOSURE TOSUCH FIELDS. 100 KHZ-300 GHZ		
Test Results	Pass		

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Approved by Date 2011.9.30
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Wang Jianrong

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CONTENTS:

1. Test Laboratory

1.1 Testing Location:

Company: Shanghai Tejet Communications Technology Co., Ltd Testing Center.
Address: Room 6205-6208, Building 6, No.399 Cailun Rd. Zhangjiang Hi-Tech Park, Shanghai, China
Post Code : 210203
Tel: +86-21-61650880
Fax: +86-21-61650881
Website: www.tejet.cn

1.2 Laboratory Environment

Temperature	20° C～ 25 ° C
Relative humidity	20%～70%

1.3 Testing date

The test is performed on Jul 29th~Sep 30th 2011.

2. Client Information

2.1 Applicant information

Company Name:	ZTE Corporation
Address:	#68 Zijin Hua Road Nanjing,Jiangsu Province，China
contact :	Fang yanbo
email:	Fang yanbo@zte.com.cn
Tel:	+8613770690695

2.2 Manufacturer Information

Company Name:	ZTE Corporation
Address:	#68 Zijin Hua Road Nanjing,Jiangsu Province，China
contact :	Fang yanbo
email:	Fang yanbo@zte.com.cn
Tel:	+8613770690695

3.Equipment Under Test (EUT) and Accessory Equipment (AE)

3.1 Information of EUT

Device type	Portable device		
Product name	WCDMA/GSM (GPRS) Mobile Phone		
Exposure category	Uncontrolled environment / general population		
Device operation configuration:			
Operation mode	GSM1900		
Test modulation	(GSM)GMSK		
GPRS	Class B		
GPRS multislot Class	12		
EDGE multislot Class	12		
Wlan AP	Support		
Rated output power	GSM1900: 30dBm		
Antenna type:	Internal antenna		
Operating frequency range(s):	Band	Tx(MHz)	Rx(MHz)
	GSM1900	1850.2～1909.8	1930.2～1989.8
Power class	GSM850: 4,test with power level 5		
	GSM1900: 1,test with power level 0		
HW Version	P855D10		
SW Version	009Z_3.0		

Note: Equipment under test (EUT) is WCDMA/GSM(GPRS) Mobile Phone with internal antenna. It consists of mobile phone ,battery and adaptor and the detail about these is in this report. SAR is tested for GSM1900,WIFI ,

3.2 Information Of AE

AE ID*	Description
AE1	Battery
AE2	Travel Adaptor
AE3	Earphone

AE1

Model	ZEBAK1
Manufacturer	ZTE CORPORATION
Capacitance	1500mAh
Nominal Voltage	3.7V

AE2

Model	STC-A22O501700USBA-Z
Manufacturer	ZTE CORPORATION
Length of DC line	120cm

AE3

Model	HMZ8-C4-OMTP
Manufacturer	ZTE CORPORATION
Length of DC line	120cm

*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents

4.1 Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference **Title**

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

EN 62209-1-2006 Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures – Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)

YD/T 1643-2007 Technical Specification and Testing Methods for compatibility between wireless communication devices and hearing aids

YD/T 1644.1-2007 Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures Part1:procedure to determine the specific absorption rate (sar)for hand-held devices used in close proximity to the ear (frequency range of 300MHz~3GHz)

EN 50360-2001 Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz)

IEC 62209-2-2010 Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices -Human models, Instrumentation, and Procedures -Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)

OET Bulletin 65-(Edition 97-01) Supplement C（edition01-01） Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields---Additional Supplement C (Edition 01-01)Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions

47 CFR Ch. I- Hearing aid-compatible mobile handsets.

ANSI/IEEE C95.1-2005 SAFETY LEVELS WITH RESPECT TO HUMAN EXPOSURE TO RADIO FREQUENCY ELECTROMAGNETIC FIELDS. 3 KHZ TO 300 GHZ

ANSI/IEEE C95.3-2002 RECOMMENDED PRACTICE FOR MEASUREMENTS AND COMPUTATIONS OF RADIO FREQUENCY ELECTROMAGNETIC FIELDS WITH RESPECT TO HUMAN EXPOSURE TOSUCH FIELDS. 100 KHZ-300 GHZ

ANSI C63.19-2007 Methods of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids -Test Plan for Hearing Aid Compatibility-2006 Revision 1.0-Test Plan for Hearing Aid Compatibility

RSS-102-2005 Spectrum Management and Telecommunications Radio Standards Specification Radio Frequency Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

5. Operational Conditions During Test

5.1 General description of test procedures

A communication link is set up with a system simulator by air link， and a call is established. The absolute radio frequency channel number(ARFCN) is allocated to to 512,661 and 810 respectively in the case of GSM 1900.The EUT is commanded to operate at maximum transmitting power.
Connection to the EUT is established via air interface with CMU200, and the EUT is set to maximum output power by CMU200. The antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the EUT. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the EUT by at least 30 dB .

5.2 GSM Test Configuration

SAR test for GSM 850 and GSM 1900, a communication link is set up with a system simulator by air link. Using CMU200 the power level is set to “0” in SAR of GSM1900. The tests in the band of GSM 1900 are performed in the mode of speech transfer function and GPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink.DTM is not supported, so the testing of GPRS with head is not required.

5.3 Bluetooth Test Configuration

The Bluetooth transmitter of the device under test can be excluded from stand-alone and simultaneous SAR evaluation, per the requirements from FCC KDB 648474, as follows:
1.The separation between the Bluetooth antenna and the main antenna is 8.3cm≥5cm.
2.The maximum conducted output power of Bluetooth is 6.5mW <2·P(Ref)=24mW.
According to FCC KDB648474, stand along SAR and Simultaneous Transmission SAR are not required.

5.4 Wifi (802.11b/g/n) Test Configuration

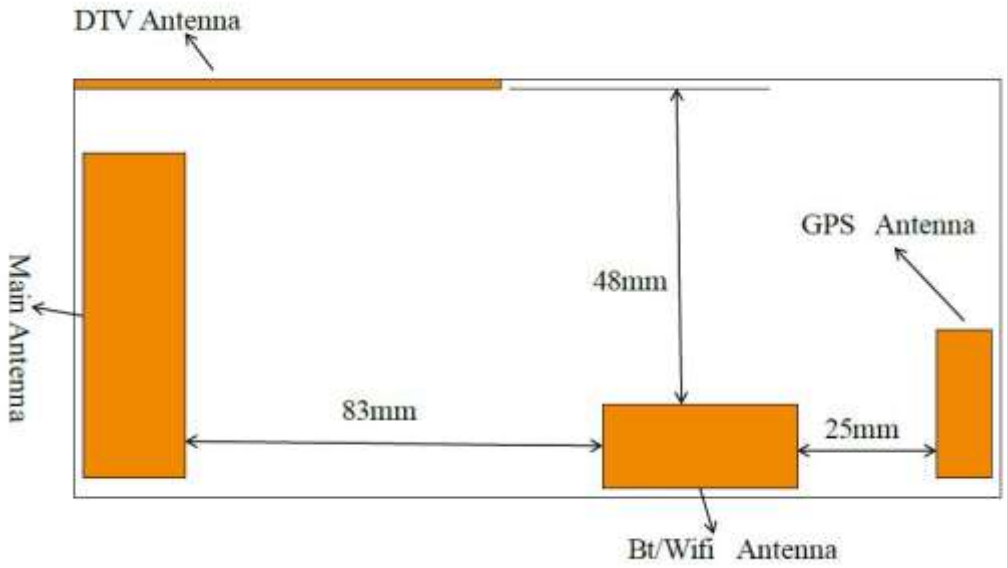
The wifi is set to different data rate and channels by the software.
According to KDB248227:
1.The separation between the Bluetooth antenna and the main antenna is 8.3cm≥5cm,
2.The maximum conducted output power of wifi is 33.03mW >2·P(Ref)=24mW.

so simultaneous transmission is not required and stand along SAR is needed。

SAR is not required for 802.11g channels when the maximum average output power is less than 025 dB higher than that measured on the corresponding 802.11b channels. The AP is supported，According to KDB941225 D06,

1. The device size is 12.2 cm x6.1 cm > 9 cm x 5 cm, so test separation distance was 10mm.

2. SAR must be tested for all surfaces and edges with a transmit antenna within 2.5cm, at a test separation distance of 10mm. And also the worst position of head are tested with wifi keep transmitting.



Picture：position of antenna

So that, wifi only test for 3 surface.

6. SAR Measurements system configuration

6.1 SAR Measurement set-up

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

·A standard high precision 6-axis robot (Staubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
·An isotropic _field probe optimized and calibrated for the targeted measurement.
·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 function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
·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 generic twin phantom enabling the testing of left-hand and right-hand usage.
·The device holder for handheld mobile phones.
·Tissue simulating liquid mixed according to the given recipes.
· System validation dipoles allowing to validate the proper functioning of the system.

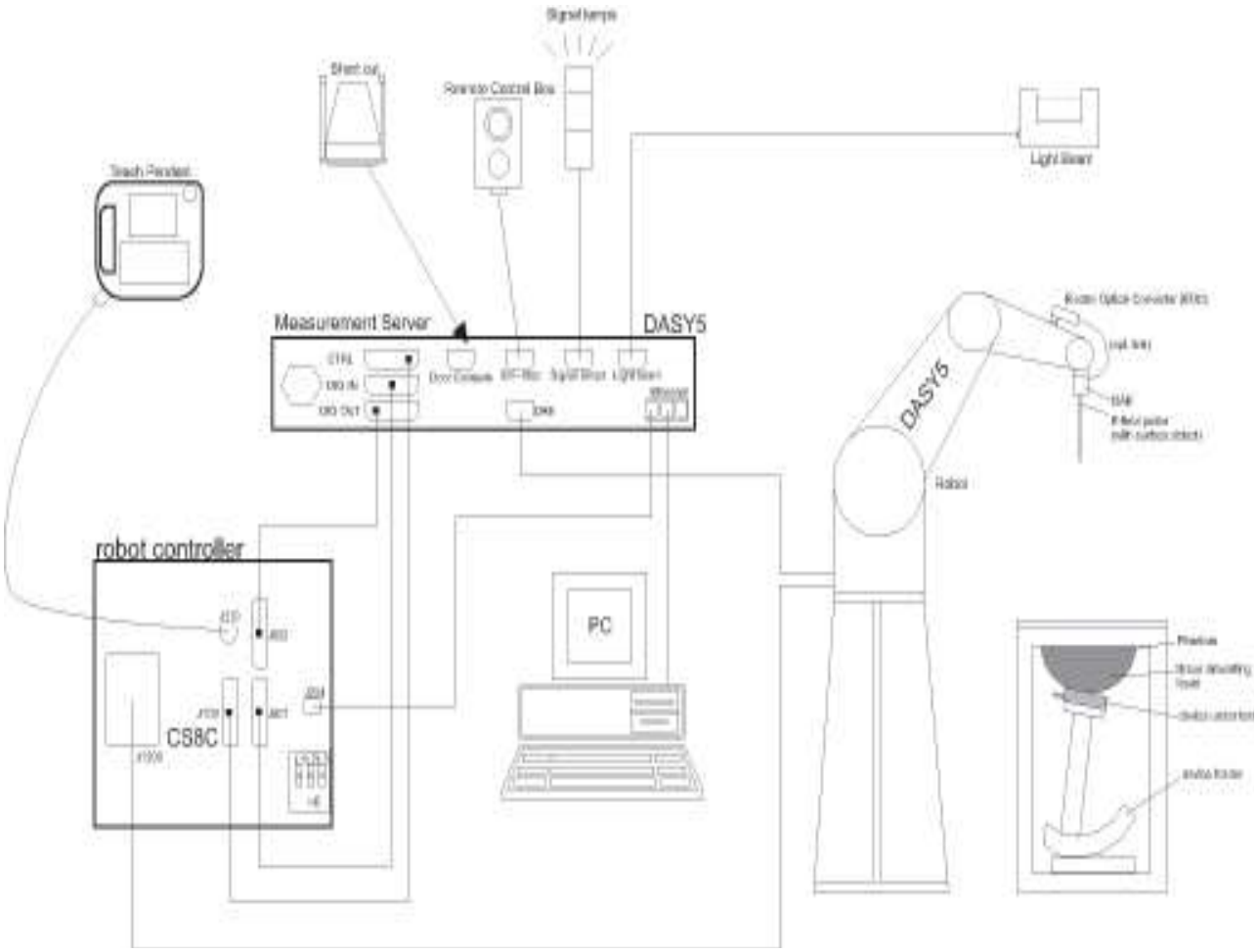


Figure 1. SAR Lab Test Measurement Set-up

6.2. DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe ES3DV3 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

6.2.1. Ex3DV3 Probe Specification

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 850 and HSL 1750 Additional CF for other liquids and frequencies upon request
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: ± 0.2dB (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%.

Figure 2.ES3DV3 E-field Probe

Figure 3. ES3DV3 E-field probe

6.2.2. E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ±10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where: Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.
Or

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

Where:
σ = Simulated tissue conductivity,
ρ = Tissue density (kg/m3).

6.3. Other Test Equipment

6.3.1. Device Holder for Transmitters

The DASY5 device holder is designed to cope with the die rent positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the inference of the clamp on the test results could thus be lowered.

Figure 4.Device Holder

6.3.2. Phantom

The Generic Twin Phantom is constructed of a fiberglass shell integrated in a wooden Figure. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid. Reference markings on

the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Shell Thickness	2±0.1 mm
Filling Volume	Approx. 20 liters
Dimensions	810 x l000 x 500 mm (H x L x W)
Aailable	Special

Figure 5.Generic Twin Phantom

6.4. Scanning procedure

The DASY5 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

• The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. ± 5 %.

• The “surface check” measurement tests the optical surface detection system of the DASY5 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles.The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

• Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values before running a detailed measurement around the hot spot.Before starting the area scan a grid spacing of 15 mm x 15 mm is set. During the scan the distance of the probe to the phantom remains unchanged.
After finishing area scan, the field maxima within a range of 2 dB will be ascertained.

• Zoom Scan

Zoom Scans are used to estimate the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default Zoom Scan is done by 7x7x7 points within a cube whose base is centered around the maxima found in the preceding area scan.

• Spatial Peak Detection

The procedure for spatial peak SAR evaluation has been implemented and can determine values of masses of 1g and 10g, as well as for user-specific masses. The DASY5 system allows evaluations that combine measured data and robot positions, such as:
• maximum search
• extrapolation
• boundary correction
• peak search for averaged SAR

During a maximum search, global and local maxima searches are automatically performed in 2-D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard's method. The algorithm will find the global maximum and all local maxima within -2 dB of the global maxima for all SAR distributions.
Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. Several measurements at different distances are necessary for the extrapolation. Extrapolation routines require at least 10 measurement points in 3-D space.
They are used in the Zoom Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the modified Quadratic Shepard's method for extrapolation. For a grid using 7x7x7 measurement points with 5mm resolution amounting to 343 measurement points, the uncertainty of the extrapolation routines is less than 1% for 1g and 10g cubes.

• A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube 7x7x7 scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 5mm steps.

6.5. Data Storage and Evaluation

6.5.1. Data Storage

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DA4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated. The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

6.5.2. Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Normi, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	Dcp_i
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	
	- Density	

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.
The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.
If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf / dcp_i$$

With V_i = compensated signal of channel i (i = x, y, z)

U_i = input signal of channel i (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

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

E-field probes: $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes: $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1} f + a_{i2} f^2) / f$

With V_i = compensated signal of channel i (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i (i = x, y, z)

[mV/(V/m)^2] for E-field Probes

$ConvF$ = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_Y^2 + E_z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \quad) / (\cdot 1000)$$

with SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

= conductivity in [mho/m] or [Siemens/m]

= equivalent tissue density in g/cm3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the
density of the simulation liquid. The power flow density is calculated assuming the excitation field to
be a free space field.

$P_{pwe} = E_{tot}^2 / 3770$ or $\boldsymbol{P_{pwe} = H_{tot}^2 \cdot 37.7}$

with P_{pwe} = equivalent power density of a plane wave in mW/cm2

$\boldsymbol{E_{tot}}$ = total electric field strength in V/m

$\boldsymbol{H_{tot}}$ = total magnetic field strength in A/m

6.6. System check

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulates were measured every day using the dielectric probe kit and the network analyzer. A system check measurement was made following the determination of the dielectric parameters of the simulates, using the dipole validation kit. A power level of 250 mW was supplied to the dipole antenna, which was placed under the flat section of the twin SAM phantom. The system check results (dielectric parameters and SAR values) are given in the 9.1 and 9.2.
System check results have to be equal or near the values determined during dipole calibration with the relevant liquids and test system (±10 %).
System check is performed regularly on all frequency bands where tests are performed with the DASY 5 system.

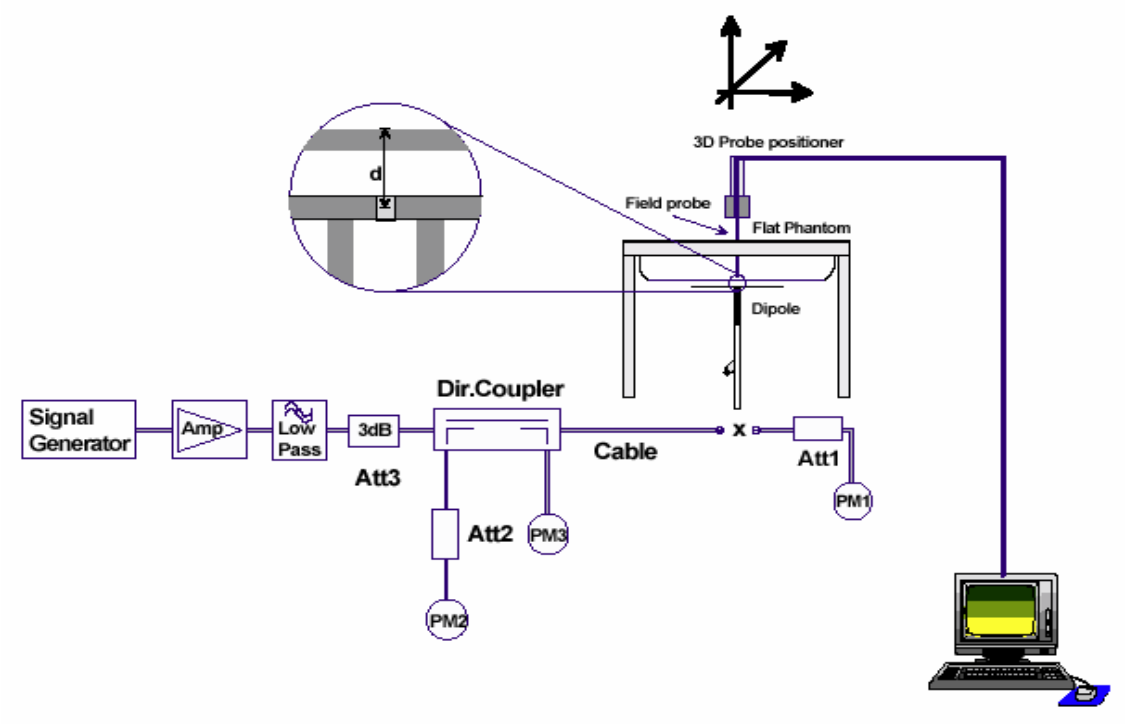


Figure 6. System Check Set-up

6.7. Equivalent Tissues

The liquid is consisted of water, salt, Glycol, Sugar, Preventol and Cellulose.The liquid has previously been proven to be suited for worst-case. The Table 1 and Table 2 show the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the OET 65.

MIXTURE%	**FREQUENCY(head)1900MHz**
Water	**55.242**
Glycol monobutyl	**44.452**
Salt	**0.306**
Dielectric Parameters Target Value	**f=1950MHz ε=40.0 σ=1.40**
MIXTURE%	**FREQUENCY(body)1900MHz**
Water	**69.91**
Glycol monobutyl	**29.96**
Salt	**0.13**
Dielectric Parameters Target Value	**f=1950MHz ε=53.3 σ=1.52**

MIXTURE%	FREQUENCY(body)2450MHz
Water	70
Glycol monobutyl	30
Salt	0
Dielectric Parameters Target Value	f=2450MHz ε=52.7 σ=1.95
MIXTURE%	FREQUENCY(head)2450MHz
Water	56
Glycol monobutyl	44
Salt	0
Dielectric Parameters Target Value	f=2450MHz ε=39.2 σ=1.8

7. Characteristics of the Test

7.1. Applicable Limit Regulations

ANSI/IEEE C95.1-2005 SAFETY LEVELS WITH RESPECT TO HUMAN EXPOSURE TO RADIO FREQUENCY ELECTROMAGNETIC FIELDS. 3 KHZ TO 300 GHZ

7.2. Applicable Measurement Standards

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8. Conducted Output Power Measurement

8.1. Summary

The DUT is tested using an CMU200 communications tester as controller unit to set test channels
and maximum output power to the DUT, as well as for measuring the conducted power.
Conducted output power was measured using an integrated RF connector and attached RF cable.
This result contains conducted output power for the EUT.

8.2. Conducted Power Results

GSM1900	Conducted power		
	Channel 512	Channel 661	Channel 810
Results（dBm）	29.9	30.2	29.9

GSM1900+GPRS	CONDUCTED POWER						
	Ch 512	Ch 661	Ch 810	(dB)	Ch 512	Ch 661	Ch 810
1 TX-slot result	29.4	30.0	29.9	-9.03	20.37	20.97	20.87
2 TX-slot result	29.4	30.0	29.9	-6.02	23.38	23.98	23.88
3 TX-slot result	29.4	30.0	29.9	-4.26	25.14	25.74	25.64
4 TX-slot result	29.4	30.0	29.9	-3.01	**26.39**	**26.99**	**26.89**

GSM1900+EDGE	CONDUCTED POWER						
	Ch 975	Ch 37	Ch124	(dB)	Ch 975	Ch 37	Ch124
1 TX-slot result	24.42	24.61	24.37	-9.03	15.39	15.58	15.34
2 TX-slot result	24.42	24.61	24.37	-6.02	18.4	18.59	18.35
3 TX-slot result	24.42	24.61	24.37	-4.26	20.16	20.35	20.11
4 TX-slot result	24.42	24.61	24.37	-3.01	**21.41**	**21.6**	**21.36**

Note:
To average the power, the division factor is as follows:
1 TX-slot =1 transmit time slot of 8 time slots
=>conducted power divided by (8/1) =>-9.03dB
2 TX-slot =2 transmit time slot of 8 time slots

=>conducted power divided by (8/2) =>-6.02dB

3 TX-slot =3 transmit time slot of 8 time slots

=>conducted power divided by (8/3) =>-4.26dB

4 TX-slot =4 transmit time slot of 8 time slots

=>conducted power divided by (8/4) =>-3.01dB

802.11b（dBm）

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1	13.62	13.61	14.03	13.84
6	14.19	14.22	14.66	14.44
11	14.65	14.70	15.19	14.90

802.11g（dBm）

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1	9.97	9.96	9.97	9.86	9.88	9.84	9.76	9.84
6	10.22	10.22	10.23	10.22	10.29	10.25	10.11	10.13
11	10.35	10.33	10.34	10.31	10.34	10.32	10.25	10.23

20M 802.11n（dBm）

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1	8.82	8.81	8.80	8.82	8.80	8.70	8.70	8.69
6	9.35	9.33	9.32	9.35	9.32	9.23	9.24	9.21
11	9.46	9.45	9.44	9.45	9.44	9.37	9.36	9.36

9 Test Results

9.1. Dielectric Performance

Dielectric Performance of Head and body Tissue Simulating Liquid

Frequency	Description	Dielectric Parameters εr	σ(s/m)	temp ℃
1900MHz (head)	Target value 5% window	40.0 38-42	1.40 1.33 — 1.47	/
	Measurement value 2011-07-29	39.1	1.36	21.6
1950MHz (body)	Target value 5% window	53.3 50.63-55.96	1.52 1.44 — 1.60	/
	Measurement value 2011-09-25	52.4	1.49	21.6
2450MHz (body)	Target value 5% window	52.7 50.06-55.33	1.95 1.85 — 2.05	/
	Measurement value 2011-08-03	51.9	1.93	21.6
2450MHz (head)	Target value 5% window	39.2 37.24-41.16	1.8 1.71-1.89	/
	Measurement value 2011-09-30	37.86	1.785	21.7

9.2. System Check Results

System Check for Head and body tissue simulation liquid

Frequency	Description	SAR(W/kg)		Dielectric Parameters εr	σ(s/m)	Temp ℃
		10g	1g			
1950MHz(head)	Recommended result ±10% window	5.27 4.73-5.79	10 8.93-10.91	40.0	1.40	/
	Measurement value 2011-07-29	5.16	10.1	39.12	1.44	21.4
1950MHz(body)	Recommended result ±10% window	5.14 4.63-5.65	9.75 8.77-10.72	53.3	1.52	/
	Measurement value 2011-09-25	5.14	9.92	52.4	1.49	21.4
2450MHz(body)	Recommended result ±10% window	6.14 5.53-6.75	13.1 11.79-14.41	52.7	1.95	/
	Measurement value 2011-08-03	5.72	12.3	51.9	1.93	21.4
2450MHz(head)	Recommended result ±10% window	6.05 5.45-6.65	13.3 11.97-14.63	39.2	1.8	/
	Measurement value 2011-09-30	5.92	12.87	37.86	1.785	21.6

Note: 1. the graph results see ANNEX D.

2 .Recommended Values used derive from the calibration certificate and 250 mW is used as feeding power to the calibrated dipole.

9.3. Test Results

9.3.1. Summary of Measurement Results (GSM1900)

SAR Values (GSM1900)

Test Case		Measurement Result(W/kg)		Power Drift(dB)	Note
Different Test Position	Channel	10 g Average	1 g Average		
Test position of Head					
Right head, Touch cheek	middle	0.186	0.297	0.126	
Right head, Tilt 15 Degree	middle	0.069	0.117	-0.063	
Left head, Touch cheek	middle	0.229	0.383	0.041	
Left head, Tilt 15 Degree	middle	0.073	0.118	0.00423	
left head, Touch cheek	low	0.239	**0.402**	-0.033	max
	high	0.184	0.308	0.119	
Test position of Body (Distance 10mm)					
Towards phantom	middle	0.260	0.437	0.119	
Towards Ground	middle	0.341	**0.543**	0.00509	max
Towards Ground	low	0.331	0.526	0.019	
	high	0.250	0.411	-0.010	
Test position of Body with Earphone （Distance 10mm)					
Towards Ground	middle	0.289	0.464	-0.036	
Test position of Body with GPRS（4up） （Distance 10mm)					
Towards Ground	middle	0.338	0.539	0.151	
Test position of Body with EDGE（Distance 10mm)					
Towards Ground	middle	0.336	0.535	-0.073	
Worst position of body with wifi （Distance 10mm)					
Towards Ground	middle	0.290	0.486	0.147	

Note: 1.The value with blue color is the maximum SAR Value of test case of head and body in each test band.

2. Upper and lower frequencies were measured at the worst position.
3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8W/kg), testing at the high and low channels is optional.

9.3.2. Summary of Measurement Results (WIFI)

SAR Values (wifi 802.11b/g/n)

Test Case			Measurement Result(W/kg)		Power Drift(dB)	Note
Different Test Position	Channel	Data Rate(Mbps)	10 g Average	1 g Average		
Test position of body (Distance 10mm)						
Towards phantom	middle	1	0.025	0.041	-0.675	
Towards Ground	middle	1	0.036	0.062	0.217	
left side	middle	1	0.048	**0.103**	0.154	max
left side	Low	1	0.046	0.097	0.661	
	High	1	0.043	0.092	0.491	
left side	middle	6	0.021	0.042	0.635	802.11g
left side	middle	6.5	0.015	0.032	0.420	802.11n
Test position of Head						
Left head, Touch cheek	middle	1	0.066	0.118	0.327	
Left head, Tilt 15 Degree	middle	1	0.056	0.104	0.065	
Right head, Touch cheek	middle	1	0.105	0.212	0.034	
Right head, Tilt 15 Degree	middle	1	0.053	0.099	-0.079	
Right head, Touch cheek	low	1	0.114	**0.229**	0.016	max
	high	1	0.097	0.200	0.082	

Right head, Touch cheek	low	6	0.041	0.083	-0.978	802.11g
Right head, Touch cheek	low	6.5	0.033	0.066	-0.142	802.11n

Note: 1.The value with blue color is the maximum SAR Value of test case of head and body in each test band.

2. Upper and lower frequencies were measured at the worst position.
3. The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8W/kg), testing at the high and low channels is optional.

9.4. Conclusion

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 5.2 of this report. Maximum localized SAR_{1g} **of GSM 1900** is **0.402** W/kg (head) and **0.543** W/kg (body), and maximum localized SAR_{1g} **of WIFI** is **0.103** W/kg (body) and **0.229** W/kg (head) ，they are below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report.

General Judgment： PASS

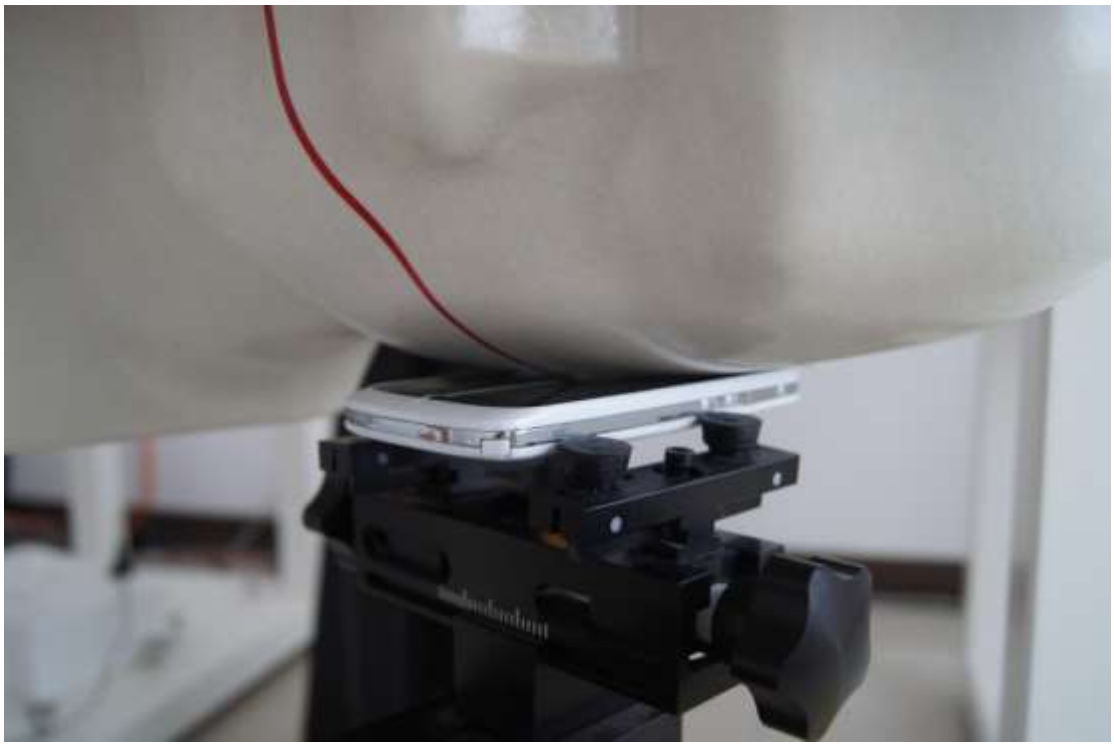
ANNEX A: EUT Photograph

EUT

Battery

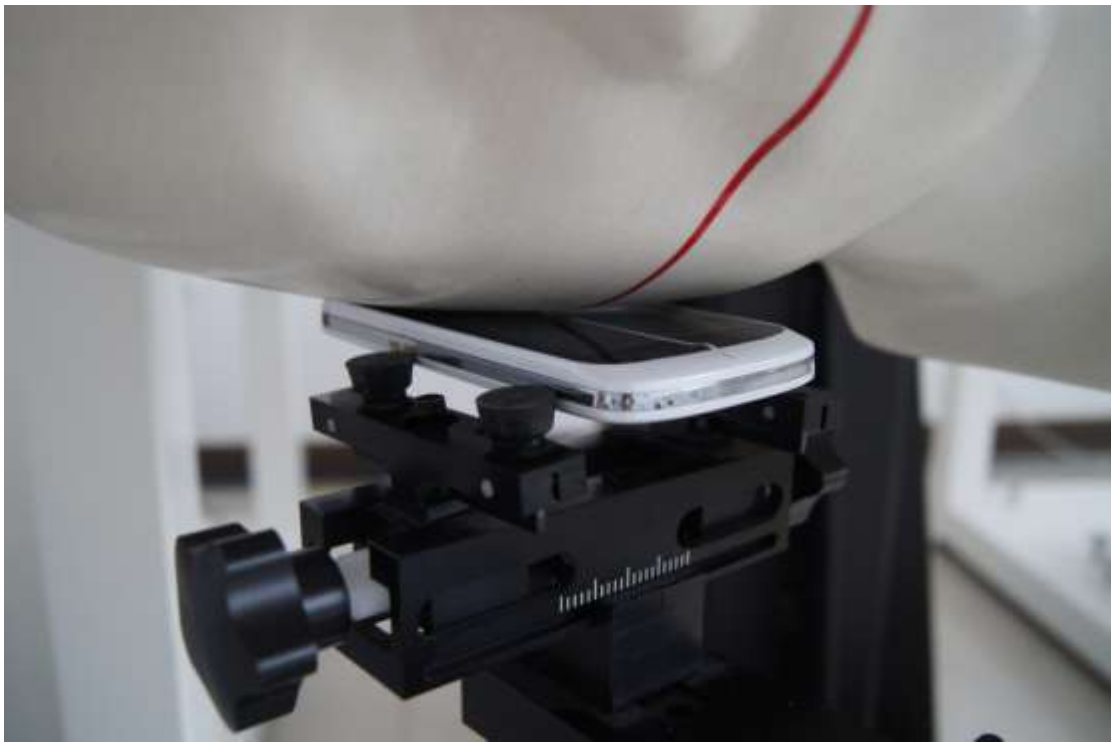
Travel Adaptor

Earphone



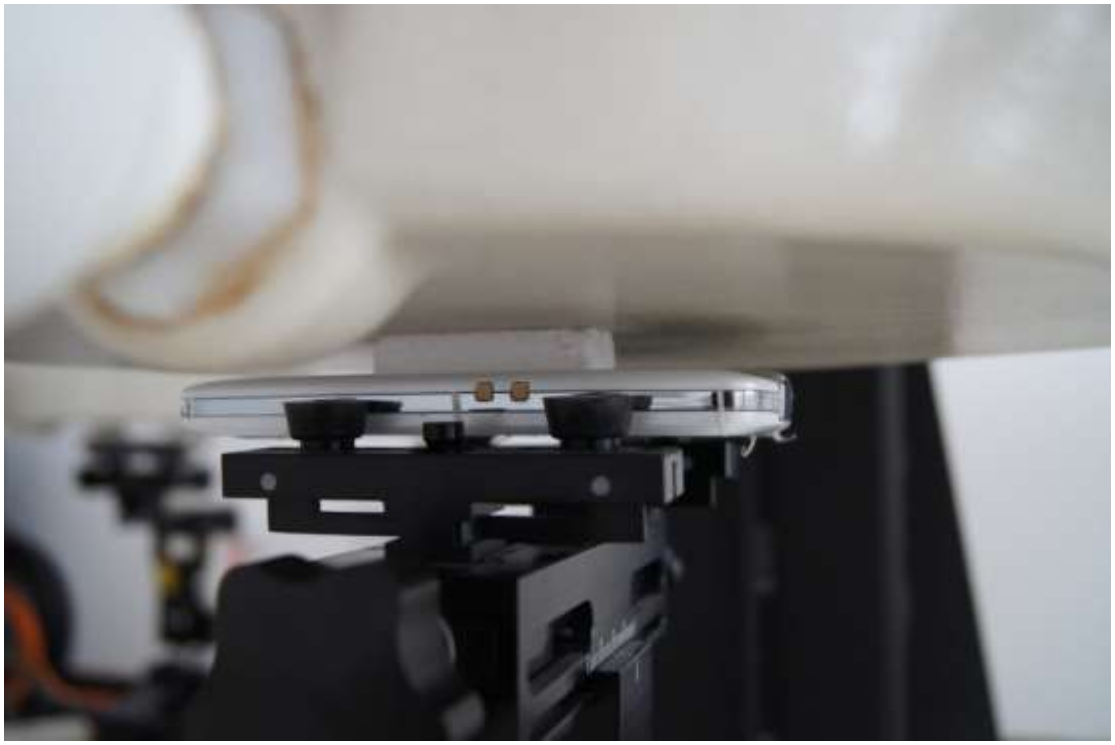
POSITION OF LEFT HEAD TOUCH

POSITION OF LEFT HEAD TILT



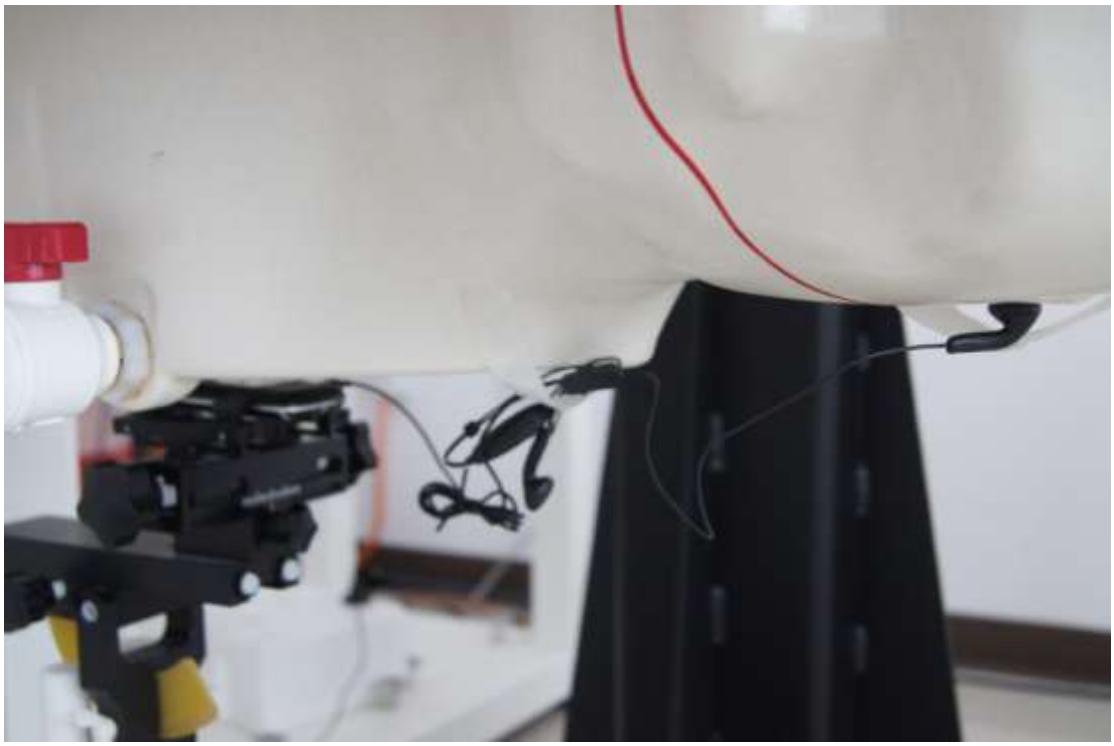
POSITION OF RIGHT HEAD TOUCH

POSITION OF RIGHT HEAD TILT



POSITION OF BODY TOWARDS PHANTOM WITH 10mm DISTANCE

POSITION OF BODY TOWARDS GROUND WITH 10mm DISTANCE



POSITION OF BODY TOWARDS GROUND WITH 10mm DISTANCE (WITH EARPHONE)

POSITION OF wifi test right-side WITH 10mm DISTANCE

ANNEX B: Measurement Uncertainty

No.	source	type	Uncertainty Value (%)	Probability Distribution	k	c_i	Standard ncertainty u_i (%	Degree of freedom V_{eff} or v_i
1	-System repetivity	A	0.3	N	1	1	0.3	9
Measurement system								
2	－probe calibration	B	7	N	2	1	3.5	∞
3	－axial isotropy of the probe	B	4.7	R	$\sqrt{3}$	0.5	4.3	∞
4	－Hemispherical isotropy of the probe	B	9.4	R	$\sqrt{3}$			
5	－probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
6	－System detection limits	B	1.0	R	$\sqrt{3}$	1	0.6	∞
7	－boundary effect	B	11.0	R	$\sqrt{3}$	1	6.4	∞
8	－response time	B	0	R	$\sqrt{3}$	1	0	∞
9	－noise	B	0	N	$\sqrt{3}$	1	0	∞
10	－integration time	B	5.0	R	$\sqrt{3}$	1	2.9	∞
11	-readout Electronics	B	0.4	R	$\sqrt{3}$	1	0.2	∞
12	－-phantom	B	2.9	R	$\sqrt{3}$	1	1.7	∞
13	－Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
14	－Device Holder Uncertainty	A	4.9	R	1	1	4.9	5
物理参数								
15	-liquid density	B	0	R	$\sqrt{3}$	1	0	∞
16	-liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.5	2.9	∞
17	-liquid conductivity (measurement uncertainty)	A	0.23	N	1	1	0.23	9

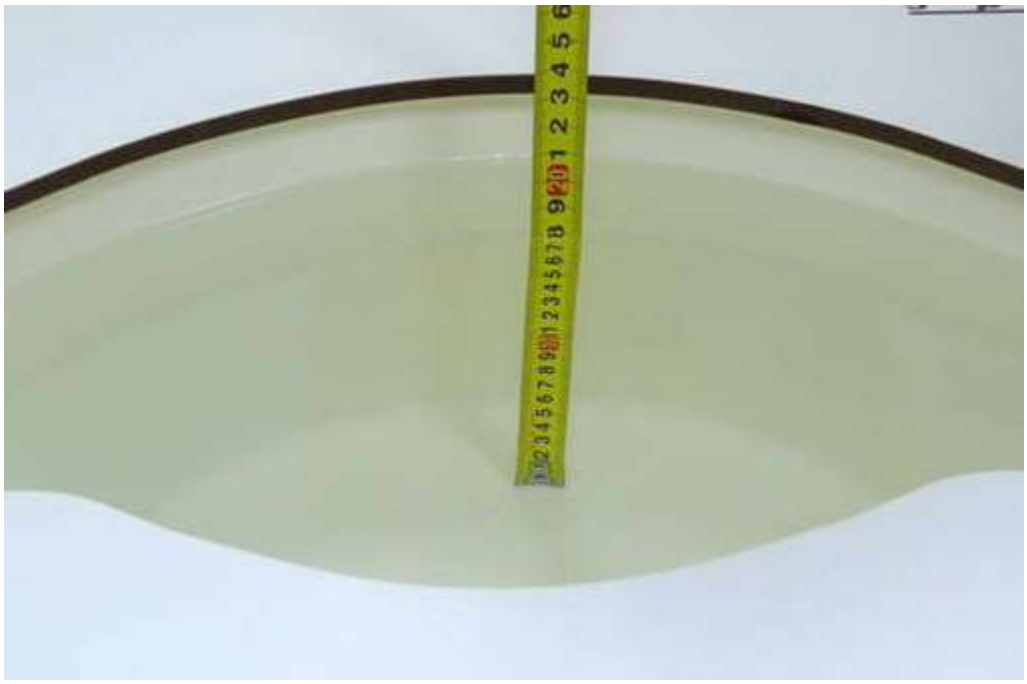
18	-liquid permittivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.5	2.9	∞
19	-liquid permittivity (measurement uncertainty)	A	0.46	N	1	1	0.46	9
20	－Probe Positioner Mechanical Tolerance	B	5.0	R	$\sqrt{3}$	1	2.9	∞
21	－Environment	B	3.0	R	$\sqrt{3}$	1	1.7	∞
22	－Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$					11.2	83.4
Expanded uncertainty (confidence interval of95 %)		$u_e = 2u_c$		N	K=2		22.4	

ANNEX C: Main Test Instruments

No.	Name	Type	Calibration Date	Valid Period
01	Network analyzer	Agilent E5071E	Dec 23th，2010	One year
02	Dielectric Probe Kit	Agilent 85070E	No Calibration Requested	
03	Power meter	Agilent E4418B	Sep 19th，2011	One year
04	Power sensor	Agilent E9200B	June 14th，2011	One year
05	Signal Generator	Agilent N5182A	Nov 30th，2010	One year
06	Amplifier	ZHL-42W	No Calibration Requested	
07	BTS	CMU200	Oct 1st，2010	One year
08	E-field Probe	ES3DV3	June 13th，2011	One year
09	DAE	DAE4	June 13th，2011	One year
10	Validation Kit 1950MHz	D1950V3	June 17th，2011	One year
11	Validation Kit 2450MHz	D2450V2	June 14th，2011	One year

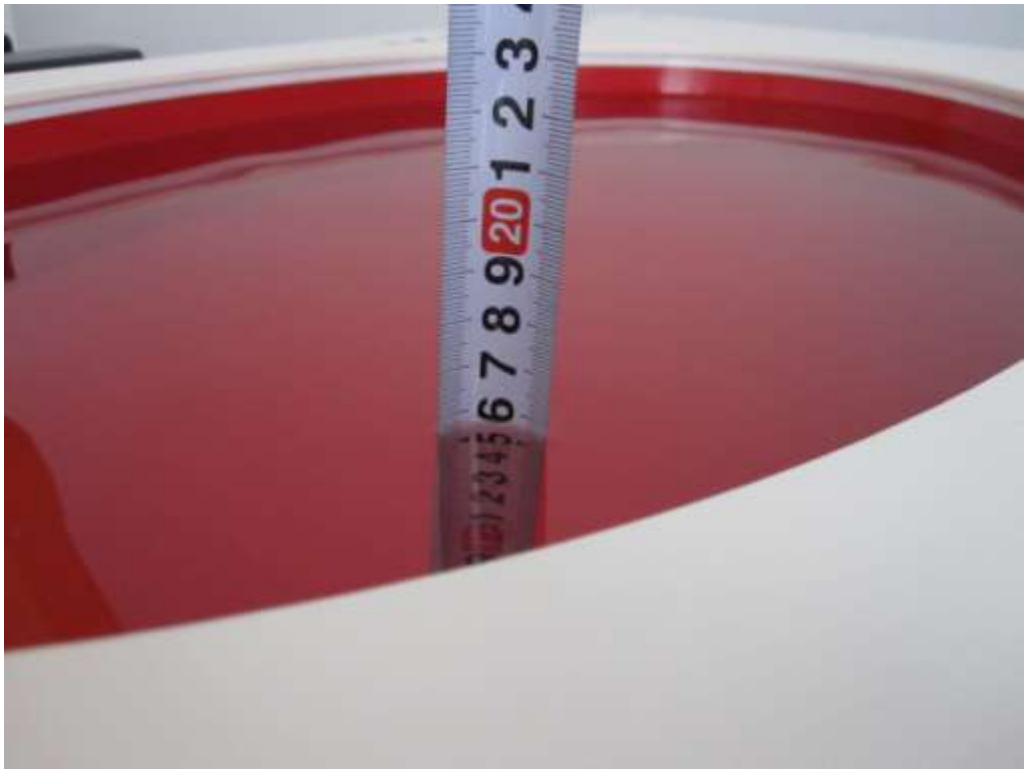
ANNEX D: Test Layout

Picture 1: Specific Absorption Rate Test Layout



Picture 2: Liquid depth in the flat Phantom (1900 MHz) (16cm deep)

Picture 3: liquid depth in the head Phantom (1900 MHz) (15.2cm deep)



Picture 4: Liquid depth in the EL14 Phantom (2450 MHz) (15.4cm deep)

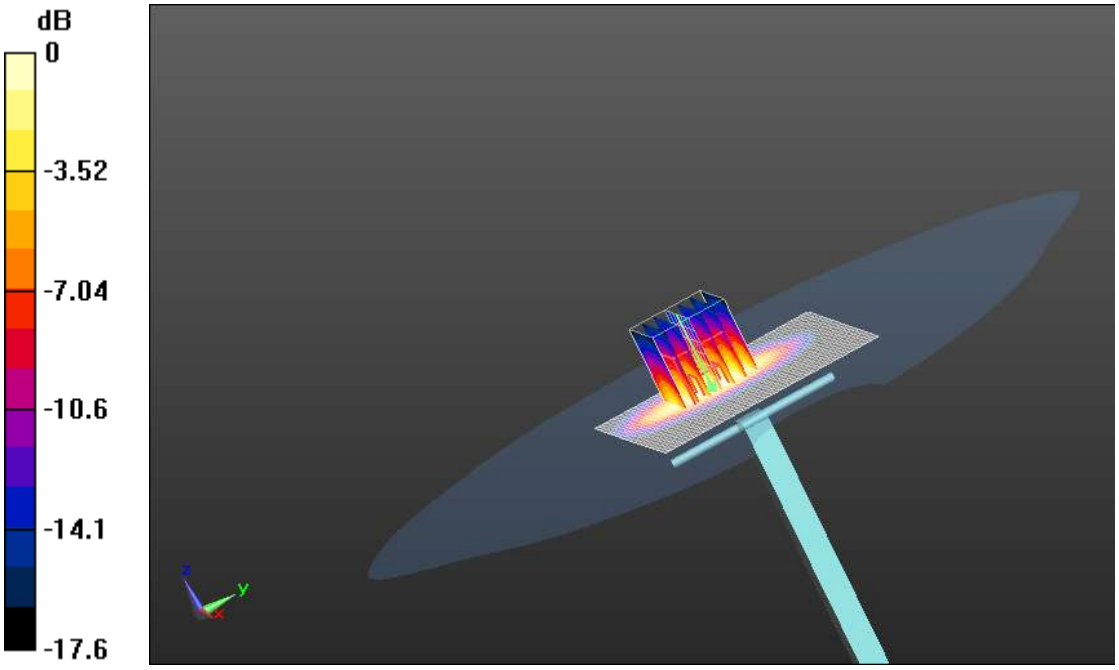
ANNEX E: System Check Results

system check 1950MHz Head Date/Time: 7/29/2011 9:05:04 AM

Communication System: CW; Communication System Band: D1950 (1950.0 MHz); Frequency: 1900 MHz; Communication System PAR: 0 dB
Medium parameters used: f = 1950 MHz; σ = 1.38 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.96, 4.96, 4.96); Calibrated: 6/13/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

1900/head d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.5 mW/g
1900/head d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 77.9 V/m; Power Drift = 0.039 dB
Peak SAR (extrapolated) = 18.8 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.16 mW/g
Maximum value of SAR (measured) = 13 mW/g



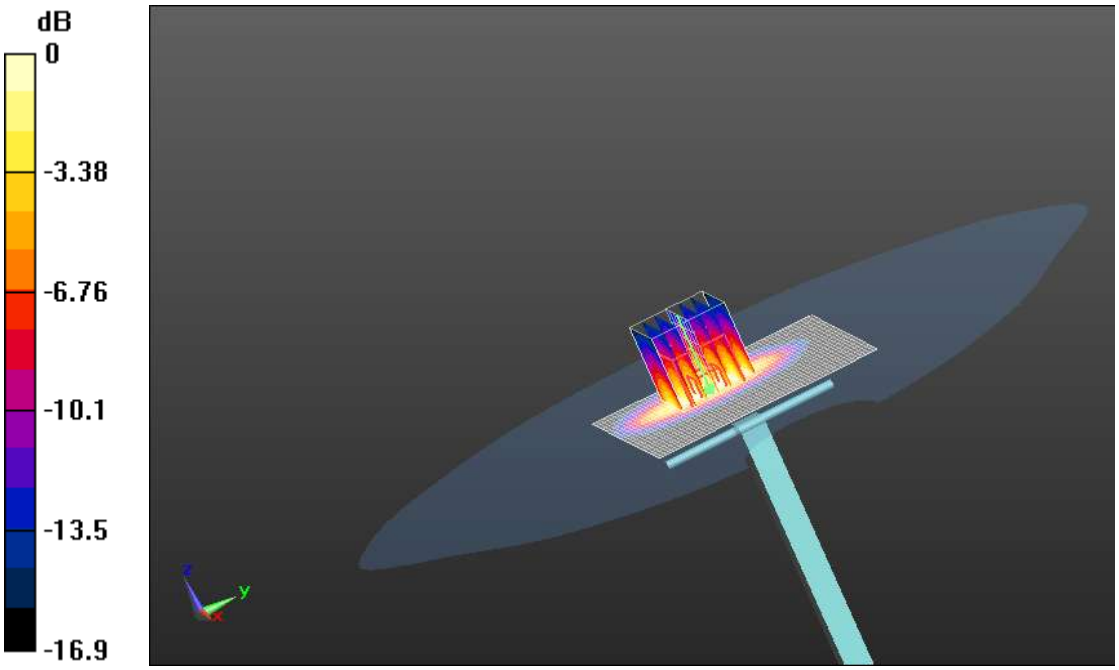
0 dB = 13mW/g

System Check 1950MHz Body Date/Time: 9/25/2011 7:21:23 AM

Communication System: CW; Communication System Band: D1950 (1950.0 MHz); Frequency: 1950 MHz; Communication System PAR: 0 dB
Medium parameters used: f = 1950 MHz; σ = 1.49 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

1900body/ d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.7 mW/g
1900body/ d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 68.7 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 9.92 mW/g; SAR(10 g) = 5.14 mW/g
Maximum value of SAR (measured) = 12.7 mW/g



0 dB = 12.7mW/g

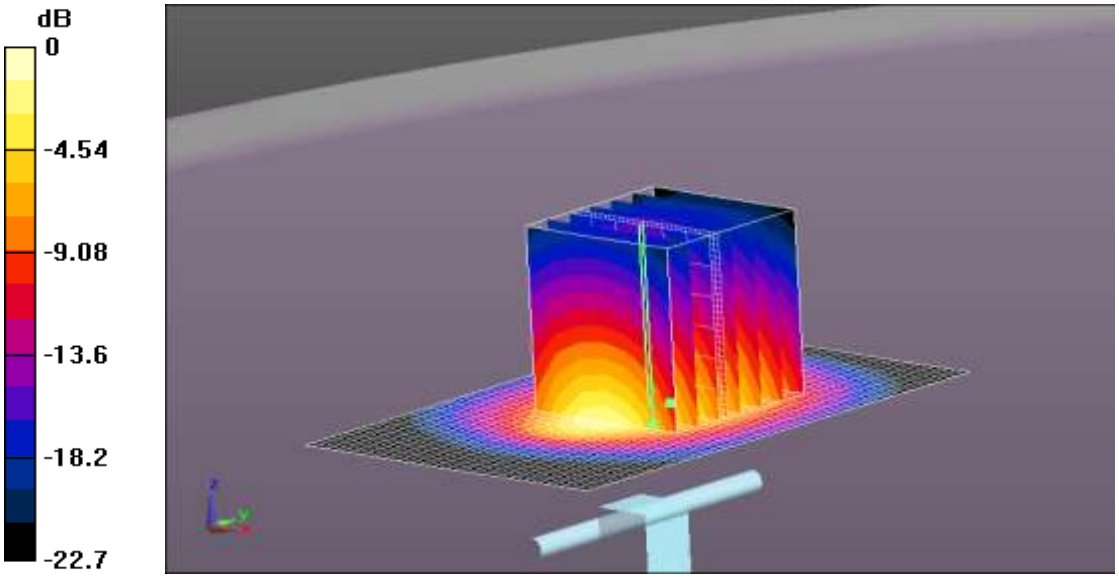
System Check 2450MHz Body Date/Time: 8/3/2011 8:43:16AM

Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.92 mho/m; εr = 51.9; ρ = 1000 kg/m3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.19, 4.19, 4.19); Calibrated: 6/13/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/16/2010
- Phantom: ELI4; Type: QDOVA001BA; Serial: 1086
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/d=10mm, Pin=250mW, dist=3.0mm (ES-Probe)/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 17.7 mW/g

Configuration/d=10mm, Pin=250mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube : Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.3 V/m; Power Drift = -0.00359 dB
Peak SAR (extrapolated) = 25.7 W/kg
SAR(1 g) = 12.3 mW/g; SAR(10 g) = 5.72 mW/g
Maximum value of SAR (measured) = 16.1 mW/g



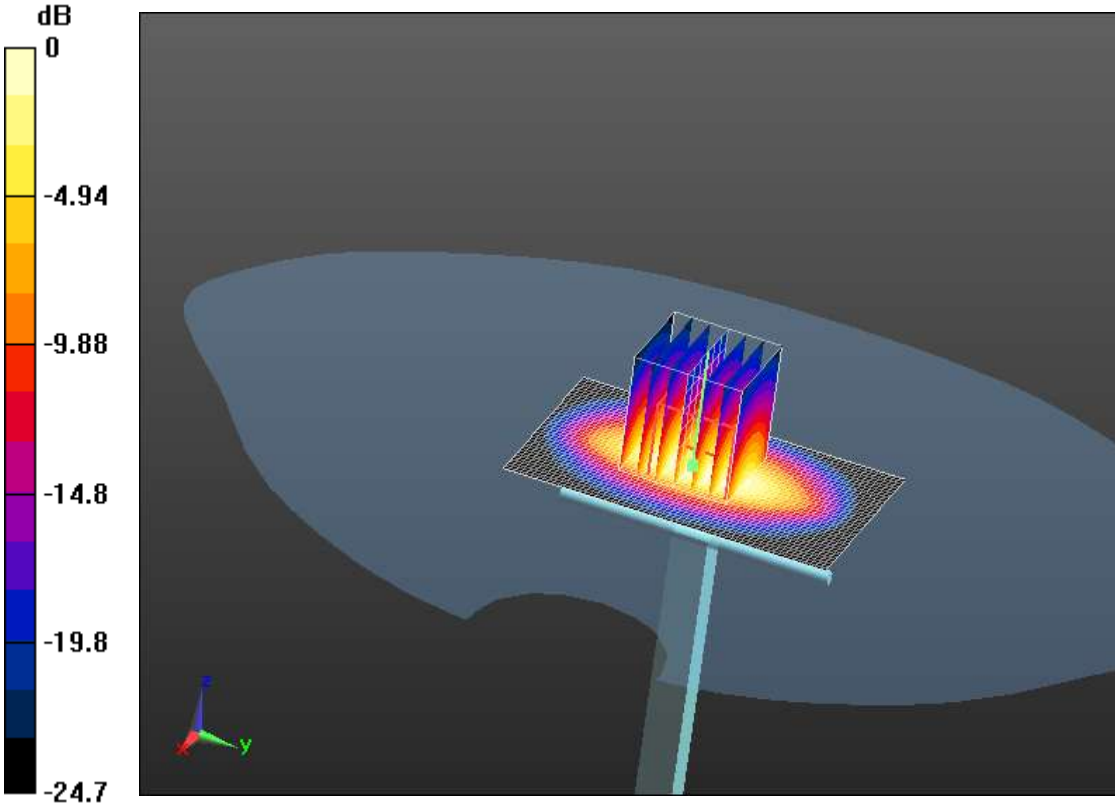
0 dB = 16.1mW/g

System Check 2450MHz head Date/Time: 9/30/2011 7:26:37 AM

Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.78 mho/m; εr = 37.9; ρ = 1000 kg/m3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration 2/(head)d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR = 18.4 mW/g
Configuration 2/(head)d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.7 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 26 W/kg
SAR(1 g) = 12.87mW/g; SAR(10 g) = 5.92 mW/g
Maximum value of SAR (measured) = 16.5 mW/g



0 dB = 16.5mW/g

ANNEX F: Graph Result

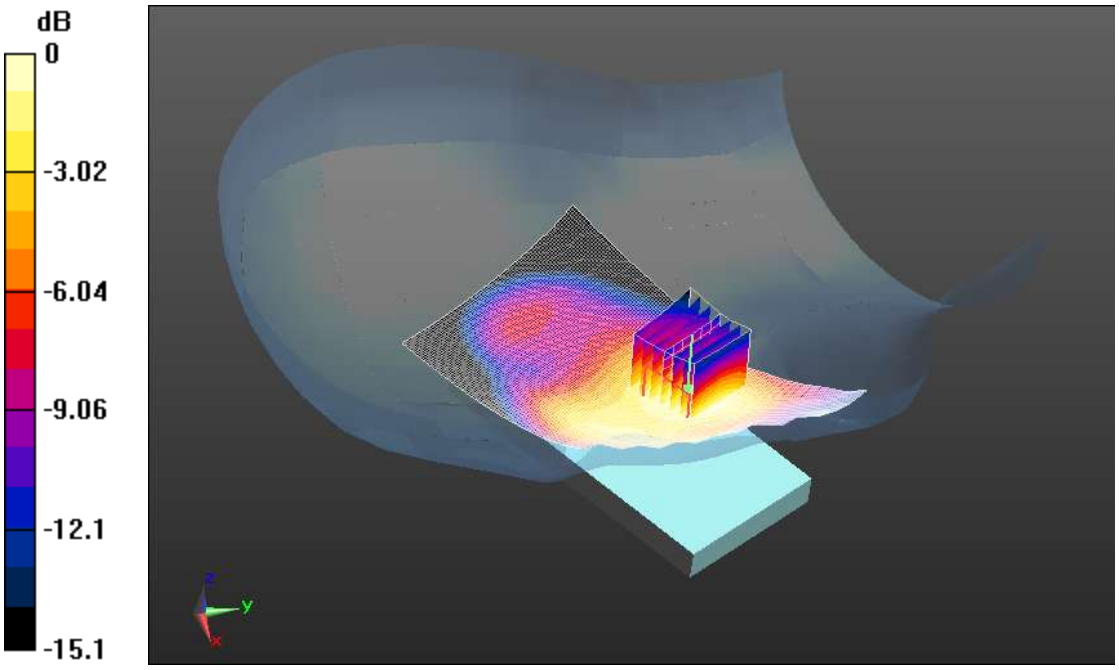
GSM 1900 Right Touch Mid Date/Time: 7/29/2011 2:10:33 PM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 39.1; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.96, 4.96, 4.96); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

right/Touch Position - Mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.342 mW/g

right/Touch Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.88 V/m; Power Drift = 0.126 dB
Peak SAR (extrapolated) = 0.447 W/kg
SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.186 mW/g
Maximum value of SAR (measured) = 0.324 mW/g



0 dB = 0.324mW/g

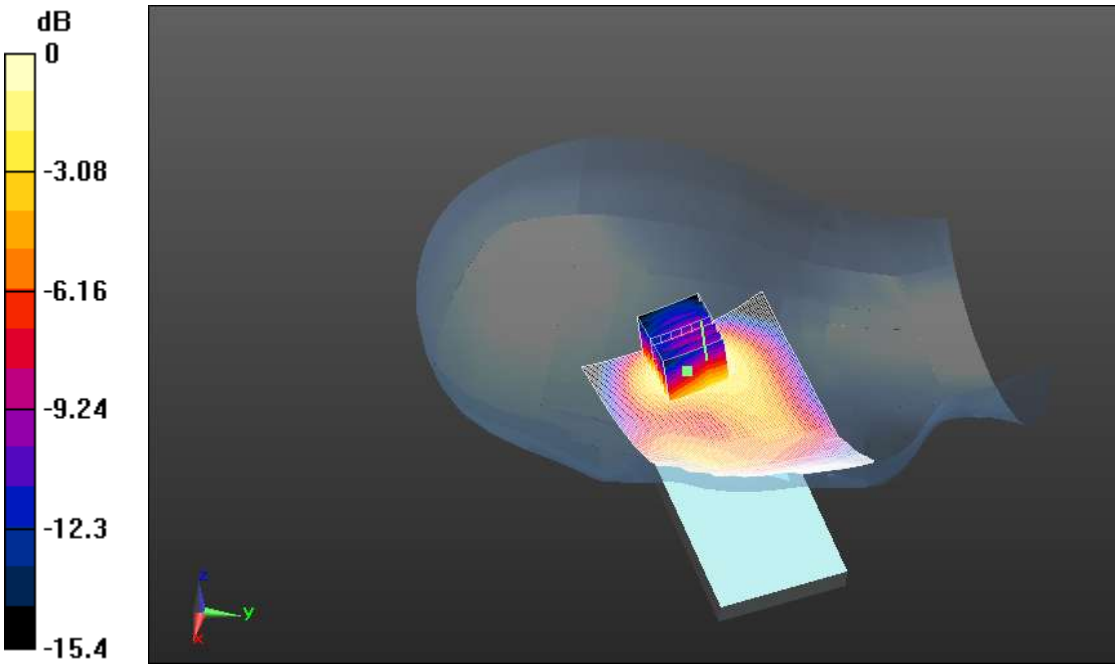
GSM 1900 Right Tilt Mid Date/Time: 7/29/2011 2:42:26 PM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 39.1; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.96, 4.96, 4.96); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

right/Tilt Position - Mid/Area Scan (91x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.126 mW/g

right/Tilt Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.94 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 0.180 W/kg
SAR(1 g) = 0.117 mW/g; SAR(10 g) = 0.069 mW/g
Maximum value of SAR (measured) = 0.127 mW/g



0 dB = 0.127mW/g

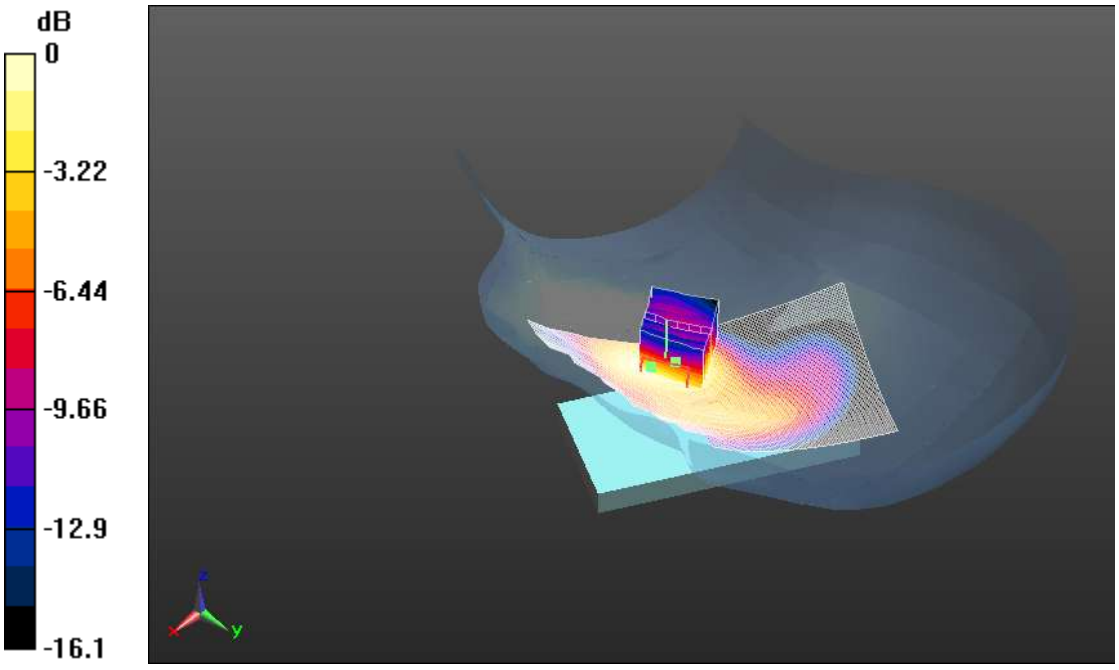
GSM 1900 Left Touch Mid Date/Time: 7/29/2011 3:16:48 PM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 39.1; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.96, 4.96, 4.96); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

left/Touch Position - Mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.430 mW/g

left/Touch Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.02 V/m; Power Drift = 0.041 dB
Peak SAR (extrapolated) = 0.632 W/kg
SAR(1 g) = 0.383 mW/g; SAR(10 g) = 0.229 mW/g
Maximum value of SAR (measured) = 0.416 mW/g



0 dB = 0.416mW/g

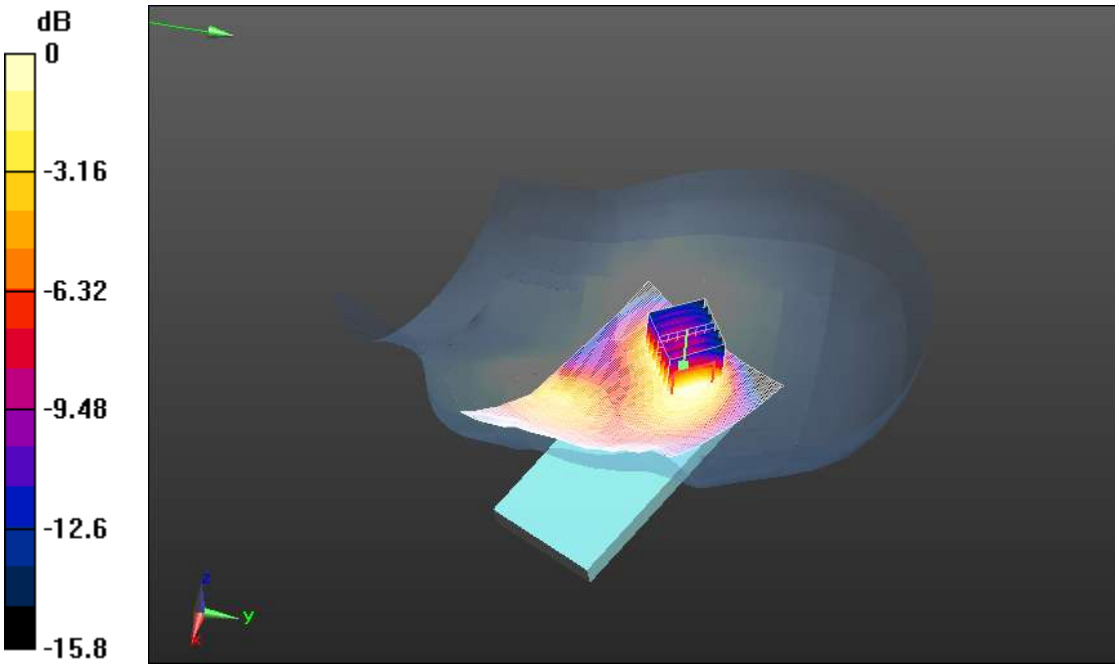
GSM 1900 Left Tilt Mid Date/Time: 7/29/2011 3:58:24 PM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz;Communication System PAR: 9.191 dB
Medium parameters used: f = 1880 MHz; σ = 1.36 mho/m; ε_r = 39.1; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.96, 4.96, 4.96); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

left/Tilt Position - Mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.131 mW/g

left/Tilt Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.82 V/m; Power Drift = 0.00423 dB
Peak SAR (extrapolated) = 0.176 W/kg
SAR(1 g) = 0.118 mW/g; SAR(10 g) = 0.073 mW/g
Maximum value of SAR (measured) = 0.129 mW/g



0 dB = 0.129mW/g

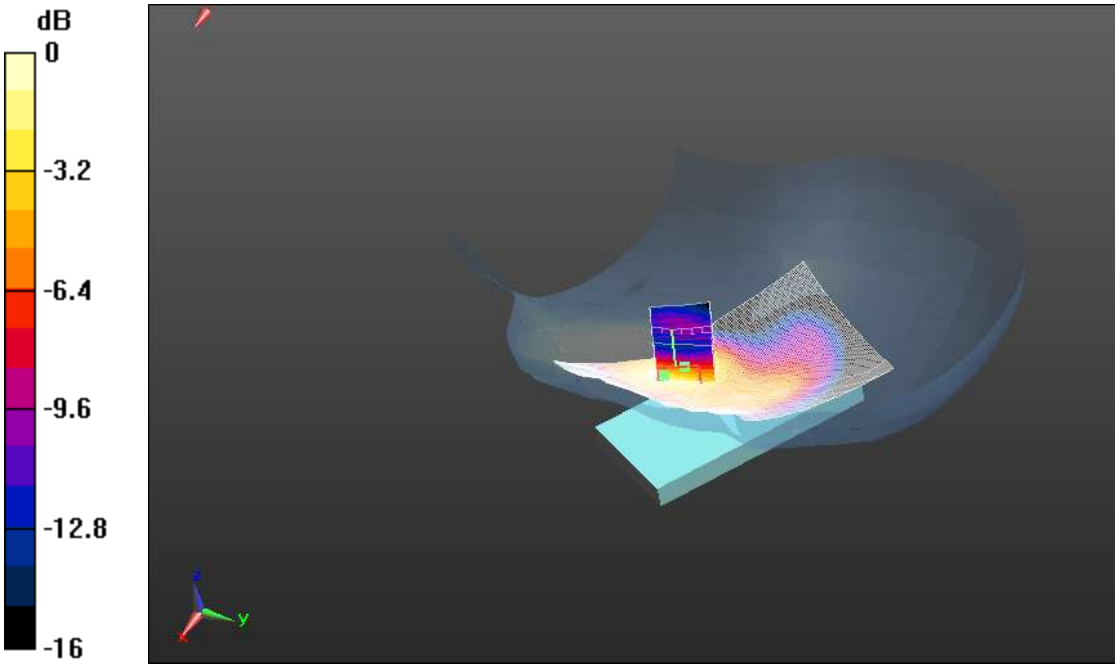
GSM 1900 Left Touch low Date/Time: 7/29/2011 4:33:48 PM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1850.2 MHz; Communication System PAR: 9.191 dB
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.34 mho/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

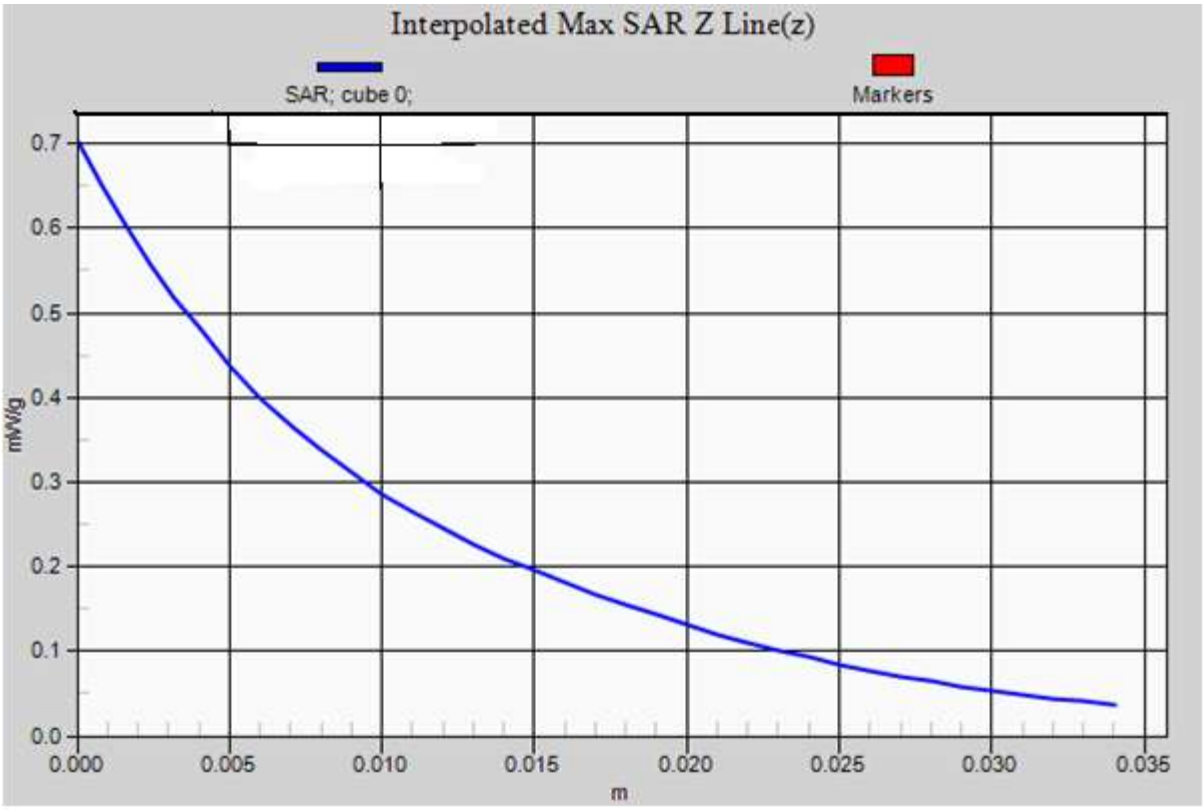
- Probe: ES3DV3 - SN3241; ConvF(4.96, 4.96, 4.96); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

left/Touch Position - low/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.437 mW/g

left/Touch Position - low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.1 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 0.679 W/kg
SAR(1 g) = 0.402 mW/g; SAR(10 g) = 0.239 mW/g
Maximum value of SAR (measured) = 0.457 mW/g



0 dB = 0.457mW/g


Interpolated Max SAR Z Line(z)
SAR; cube 0;
Markers
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
mW/g
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
m

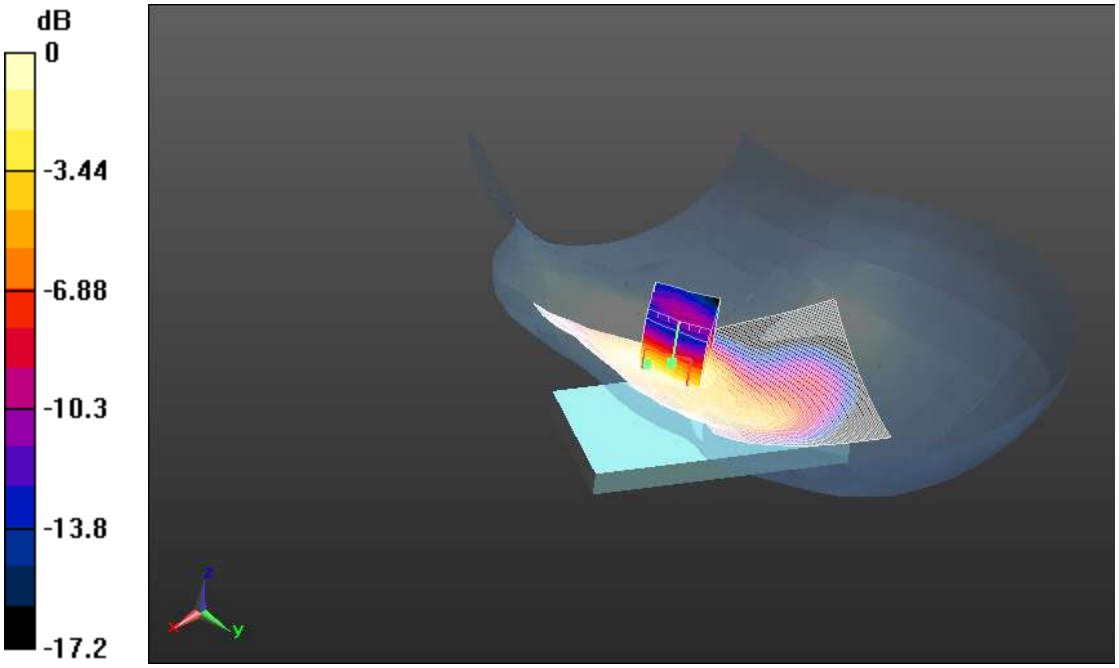
GSM 1900 Left Touch high Date/Time:7/29/2011 5:13:19 PM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1909.8 MHz; Communication System PAR: 9.191 dB
Medium parameters used: f = 1910 MHz; σ = 1.39 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.96, 4.96, 4.96); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

left/Touch Position -high/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.342 mW/g

left/Touch Position -high/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.92 V/m; Power Drift = 0.119 dB
Peak SAR (extrapolated) = 0.497 W/kg
SAR(1 g) = 0.308 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 0.337 mW/g



0 dB = 0.337mW/g

GSM1900 Toward phantom - Mid

Date/Time: 9/25/2011 7:55:57 AM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz; Communication System PAR: 9.191 dB

Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward phantom - Mid/Area Scan (91x151x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR = 0.462 mW/g

Configuration/Toward phantom - Mid/Zoom Scan (7x7x7)/Cube 0:

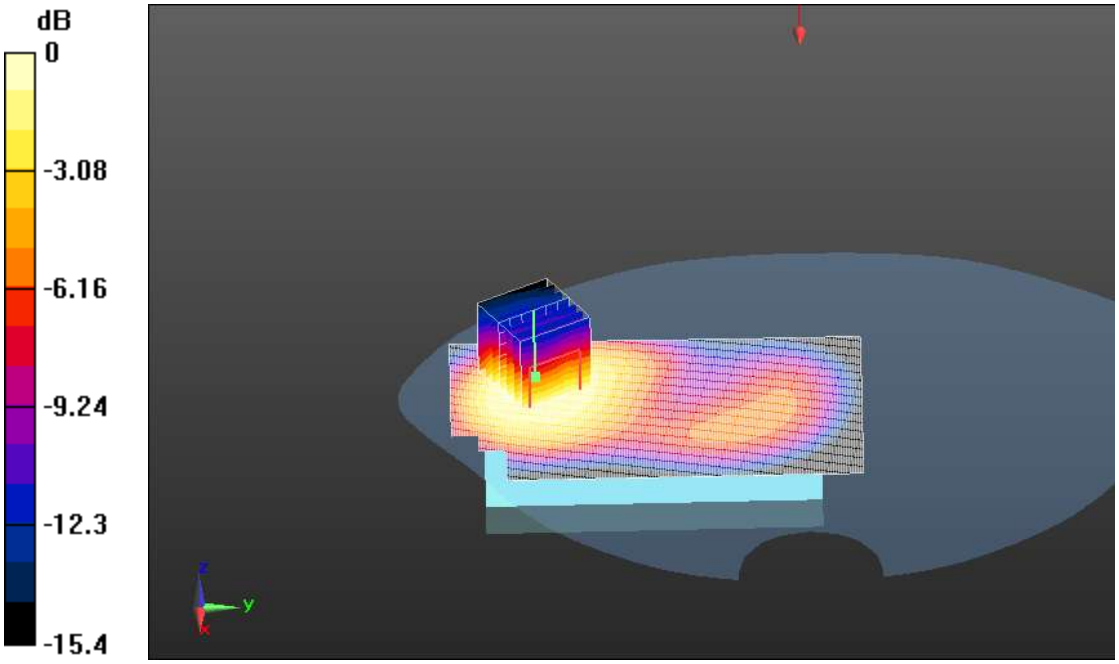
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.47 V/m; Power Drift = 0.119 dB

Peak SAR (extrapolated) = 0.756 W/kg

SAR(1 g) = 0.437 mW/g; SAR(10 g) = 0.260 mW/g

Maximum value of SAR (measured) = 0.482 mW/g



0 dB = 0.482mW/g

GSM1900 Toward Ground - Mid

Date/Time: 9/25/2011 8:27:44 AM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz; Communication System PAR: 9.191 dB

Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward Ground - Mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR = 0.604 mW/g

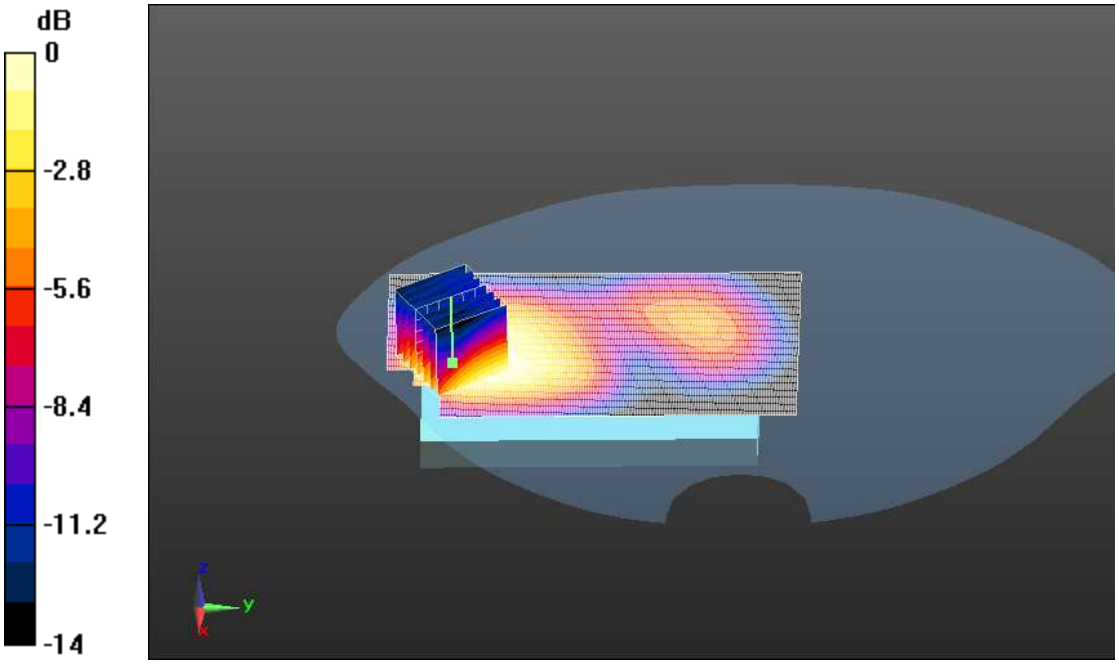
Configuration/Toward Ground - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.25 V/m; Power Drift = 0.00509 dB

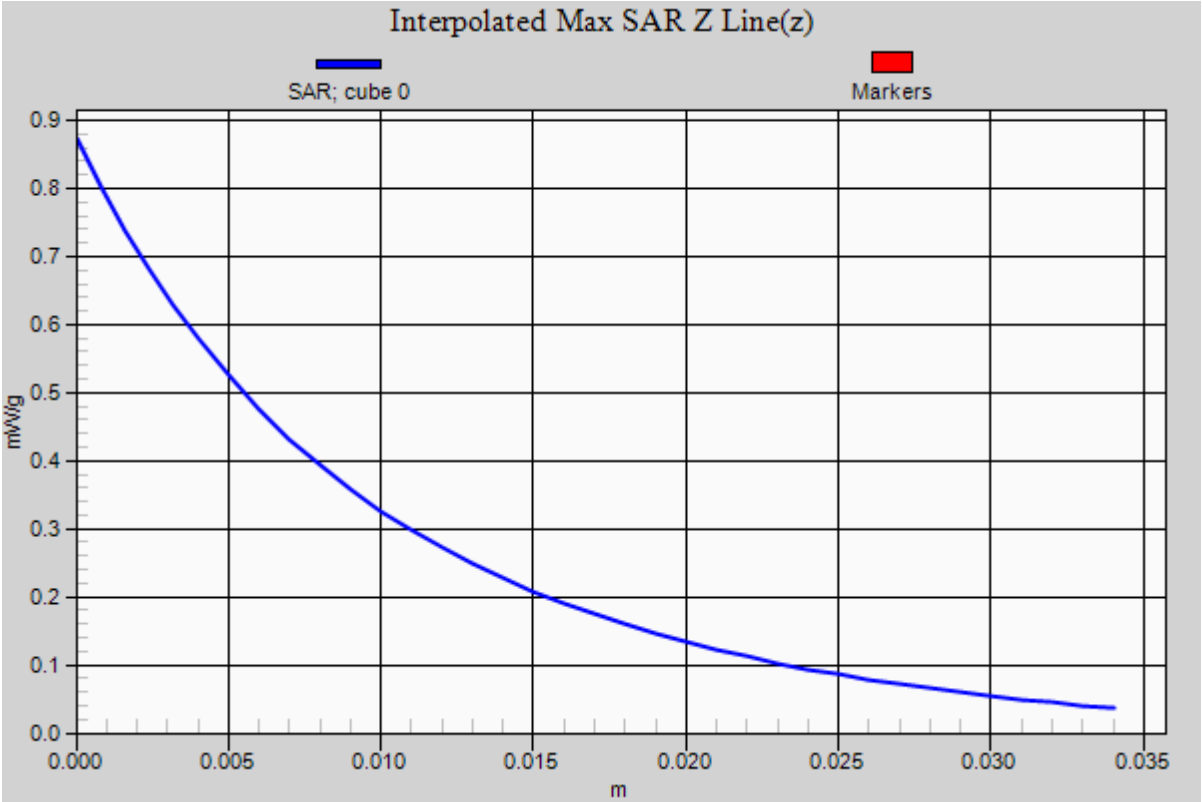
Peak SAR (extrapolated) = 0.873 W/kg

SAR(1 g) = 0.543 mW/g; SAR(10 g) = 0.341 mW/g

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



0 dB = 0.580mW/g


Interpolated Max SAR Z Line(z)
SAR; cube 0
Markers
mW/g
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

]

GSM1900 Toward Ground - low

Date/Time: 9/25/2011 10:10:45 AM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1850.2 MHz; Communication System PAR: 9.191 dB

Medium parameters used : f = 1850.2 MHz; σ = 1.45 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward Ground - low/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR = 0.577 mW/g

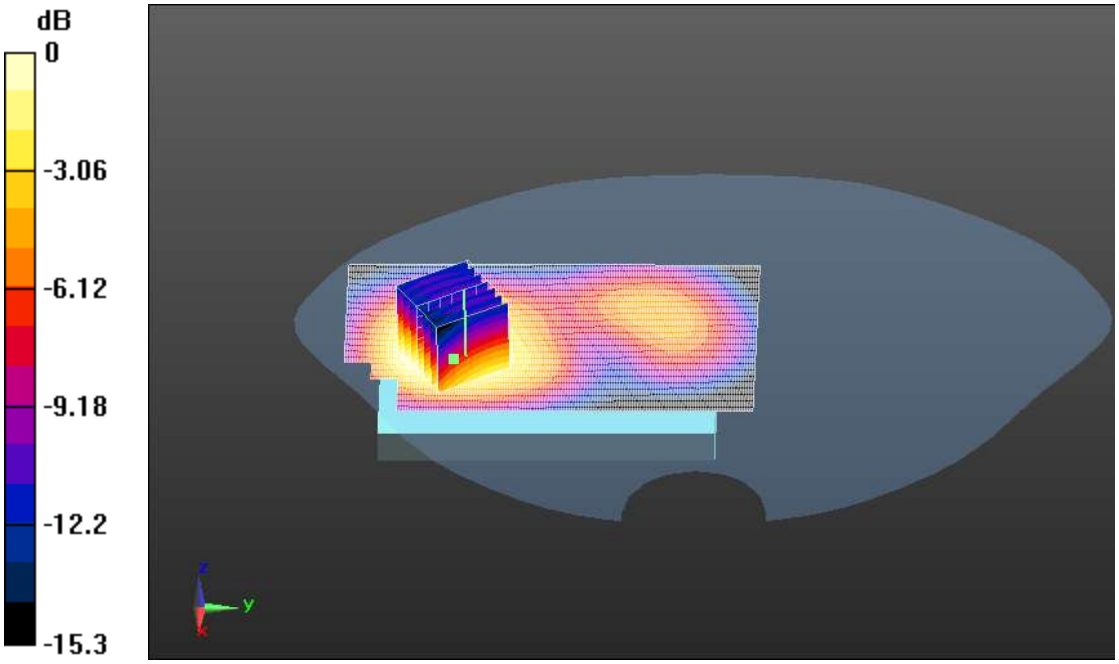
Configuration/Toward Ground - low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.3 V/m; Power Drift = 0.019 dB

Peak SAR (extrapolated) = 0.836 W/kg

SAR(1 g) = 0.526 mW/g; SAR(10 g) = 0.331 mW/g

Maximum value of SAR (measured) = 0.565 mW/g



0 dB = 0.565mW/g

GSM1900 Toward Ground - high

Date/Time: 9/25/2011 9:37:17 AM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1909.8 MHz; Communication System PAR: 9.191 dB

Medium parameters used: f = 1910 MHz; σ = 1.5 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward Ground - high/Area Scan (91x161x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR = 0.462 mW/g

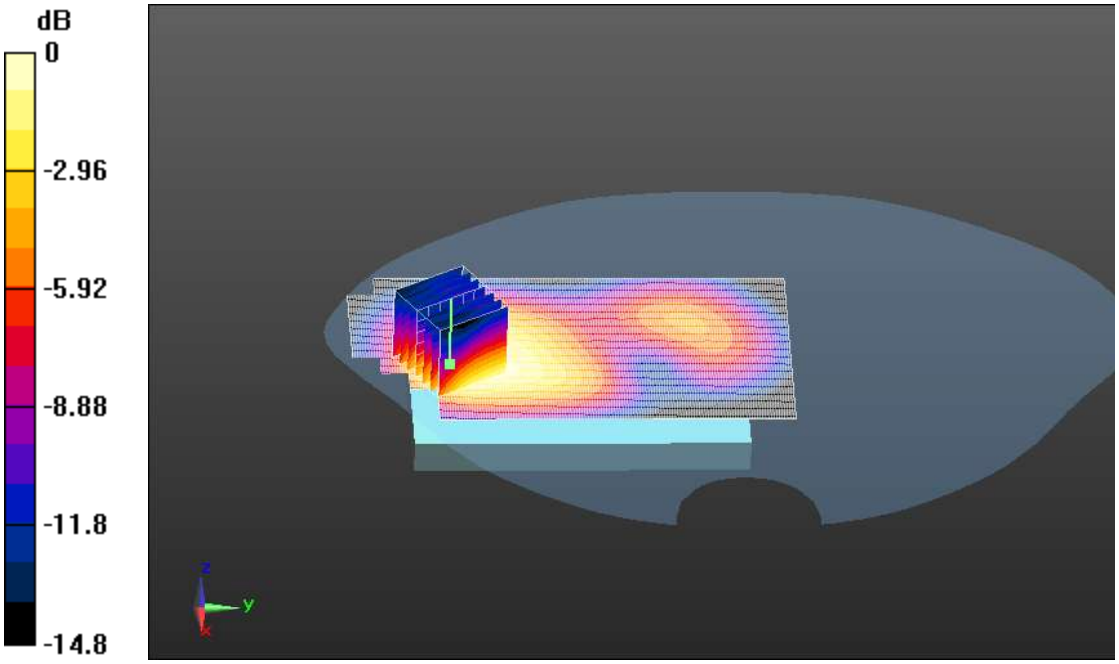
Configuration/Toward Ground - high/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.49 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 0.658 W/kg

SAR(1 g) = 0.411 mW/g; SAR(10 g) = 0.250 mW/g

Maximum value of SAR (measured) = 0.446 mW/g



0 dB = 0.446mW/g

GSM1900 Toward Ground with earphone - mid

Date/Time: 9/25/2011 10:49:26 AM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz; Communication System PAR: 9.191 dB

Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward Ground with earphone - mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR = 0.519 mW/g

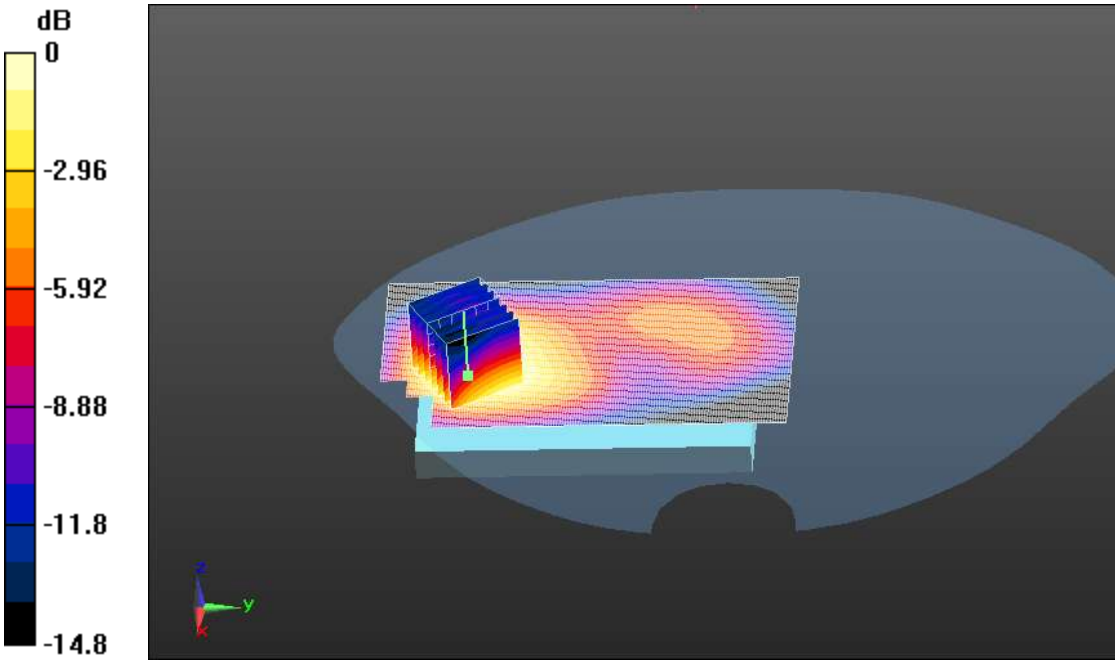
Configuration/Toward Ground with earphone - mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.93 V/m; Power Drift = -0.036 dB

Peak SAR (extrapolated) = 0.751 W/kg

SAR(1 g) = 0.464 mW/g; SAR(10 g) = 0.289 mW/g

Maximum value of SAR (measured) = 0.499 mW/g



0 dB = 0.499mW/g

GSM1900 Toward Ground with GPRS - mid

Date/Time: 9/25/2011 11:23:54 AM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz; Communication System PAR: 9.191 dB

Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward Ground with GPRS - mid/Area Scan (91x151x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR = 0.664 mW/g

Configuration/Toward Ground with GPRS - mid/Zoom Scan (7x7x7)/Cube 0:

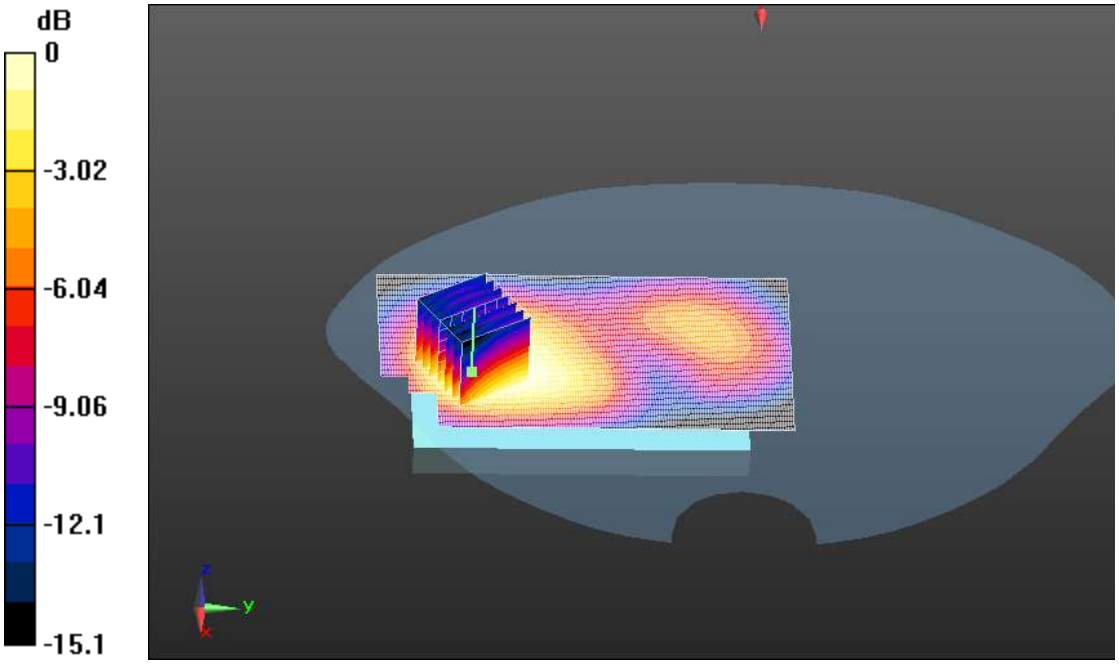
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.9 V/m; Power Drift = 0.151 dB

Peak SAR (extrapolated) = 0.869 W/kg

SAR(1 g) = 0.539 mW/g; SAR(10 g) = 0.338 mW/g

Maximum value of SAR (measured) = 0.581 mW/g



0 dB = 0.581mW/g

GSM1900 Toward Ground With EDGE - mid

Date/Time: 9/25/2011 11:57:13 AM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz; Communication System PAR: 9.191 dB

Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward Ground With EDGE - mid/Area Scan (91x151x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR = 0.608 mW/g

Configuration/Toward Ground With EDGE - mid/Zoom Scan (7x7x7)/Cube 0:

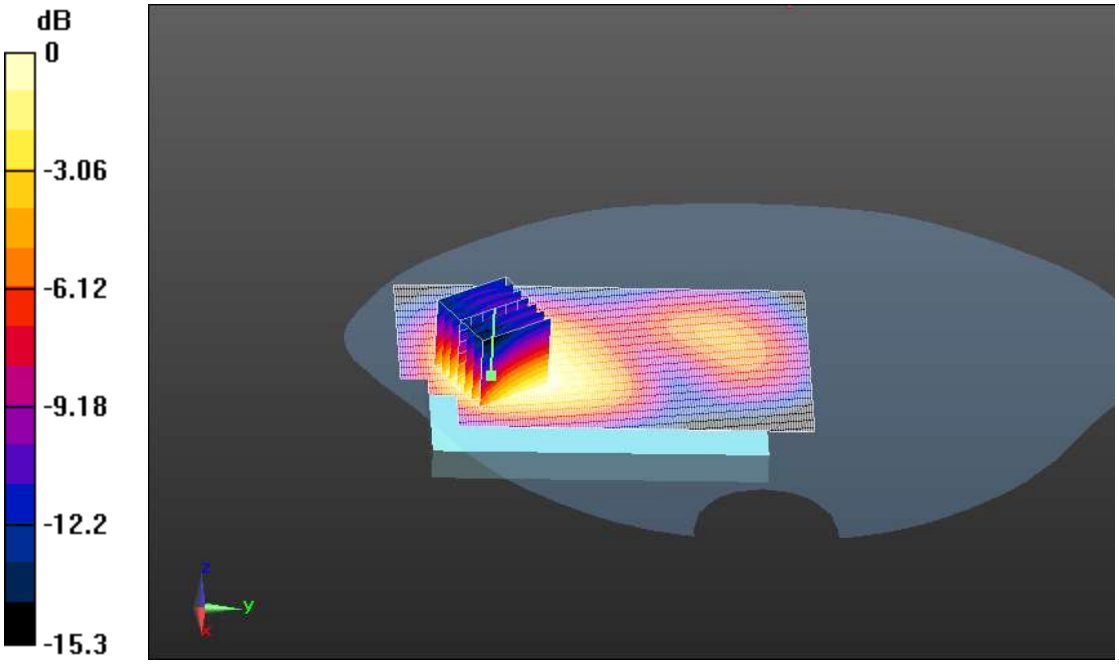
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.5 V/m; Power Drift = -0.073 dB

Peak SAR (extrapolated) = 0.868 W/kg

SAR(1 g) = 0.535 mW/g; SAR(10 g) = 0.336 mW/g

Maximum value of SAR (measured) = 0.572 mW/g



0 dB = 0.572mW/g

GSM1900 Toward Ground - Mid with wifi

Date/Time: 9/25/2011 12:56:58 PM

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz); Frequency: 1880 MHz; Communication System PAR: 9.191 dB

Medium parameters used: f = 1880 MHz; σ = 1.48 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.32, 4.32, 4.32); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward Ground - Mid with wifi/Area Scan (91x151x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR = 0.573 mW/g

Configuration/Toward Ground - Mid with wifi/Zoom Scan (7x7x7)/Cube 0:

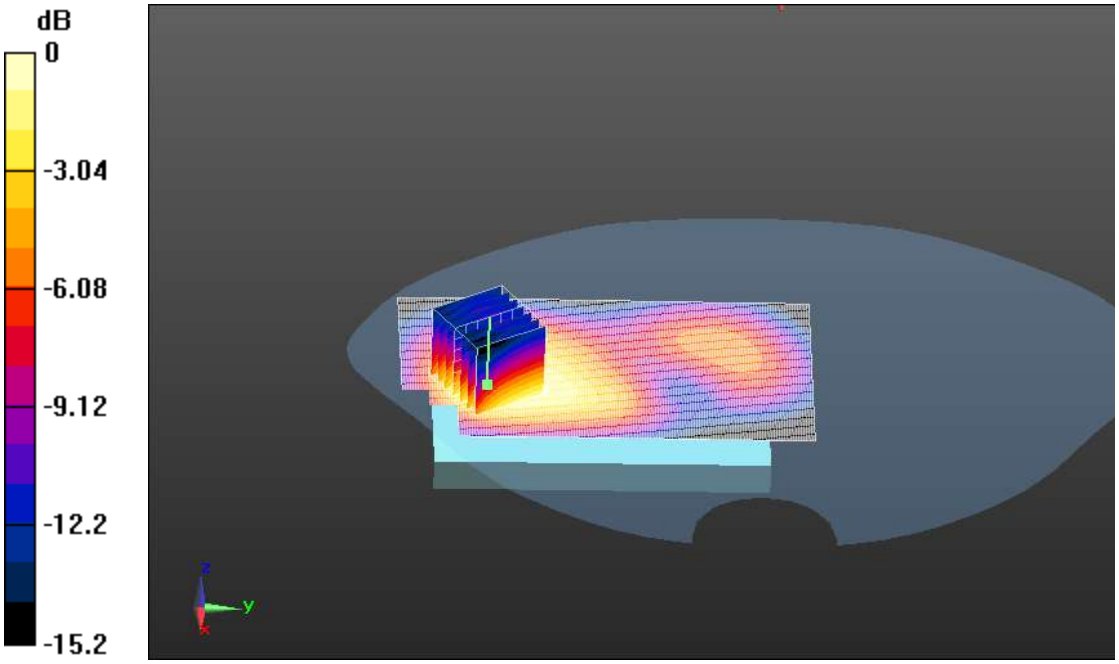
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.13 V/m; Power Drift = 0.147 dB

Peak SAR (extrapolated) = 0.799 W/kg

SAR(1 g) = 0.486 mW/g; SAR(10 g) = 0.290 mW/g

Maximum value of SAR (measured) = 0.528 mW/g



0 dB = 0.528mW/g

WIFI 802.11b Data rate:1 Mbps Toward phantom - Mid

Date/Time: 8/3/2011 9:26:46 AM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2437 MHz; σ = 1.91 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.19, 4.19, 4.19); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: ELI4; Type: QDOVA001BA; Serial: 1086
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward phantom - Mid/Area Scan (91x151x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.044 mW/g

Configuration/Toward phantom - Mid/Zoom Scan (7x7x7)/Cube 0:

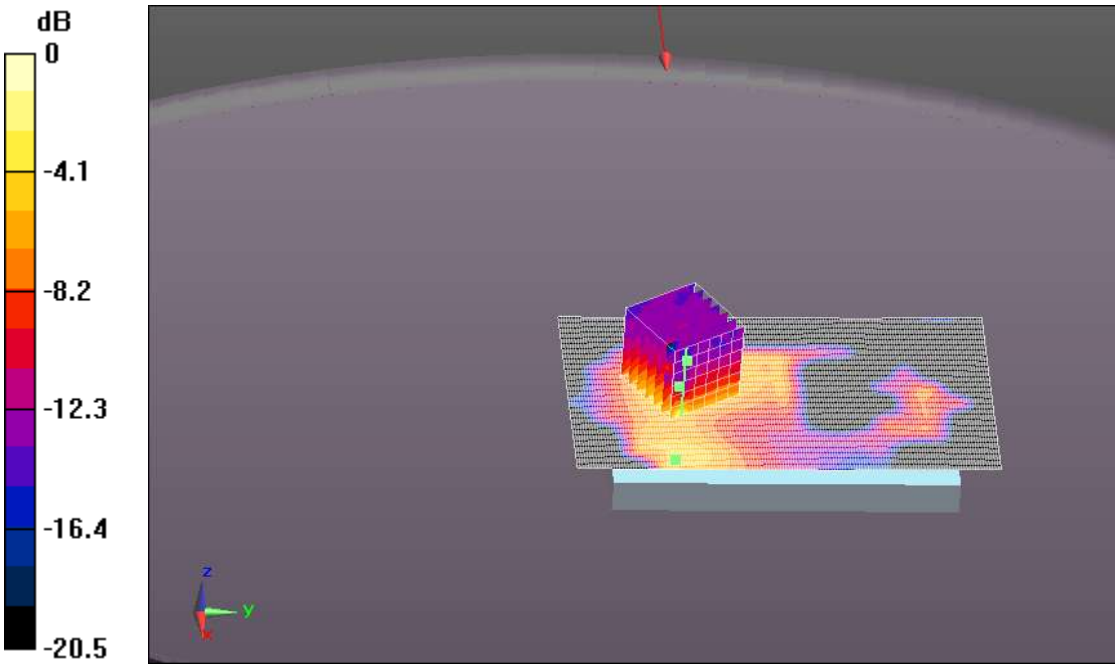
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.43 V/m; Power Drift = -0.675 dB

Peak SAR (extrapolated) = 0.257 W/kg

SAR(1 g) = 0.041 mW/g; SAR(10 g) = 0.025 mW/g

Maximum value of SAR (measured) = 0.109 mW/g



0 dB = 0.109mW/g

WIFI 802.11b Data rate:1 Mbps Toward ground – Mid

Date/Time: 8/3/2011 10:10:48 AM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2437 MHz; σ = 1.91 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.19, 4.19, 4.19); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: ELI4; Type: QDOVA001BA; Serial: 1086
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration/Toward ground - Mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.070 mW/g

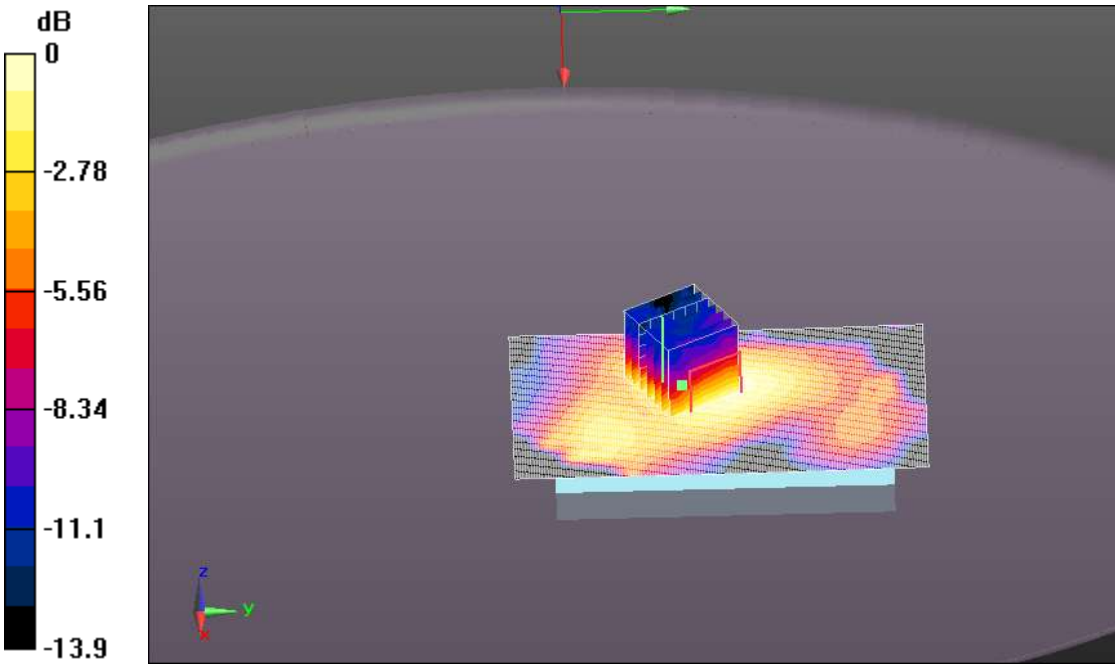
Configuration/Toward ground - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.34 V/m; Power Drift = 0.217 dB

Peak SAR (extrapolated) = 0.134 W/kg

SAR(1 g) = 0.062 mW/g; SAR(10 g) = 0.036 mW/g

Maximum value of SAR (measured) = 0.069 mW/g



0 dB = 0.069mW/g

WIFI 802.11b Data rate:1 Mbps Left side - Mid

Date/Time: 8/3/2011 10:52:06 AM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2437 MHz; σ = 1.91 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.19, 4.19, 4.19); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: ELI4; Type: QDOVA001BA; Serial: 1086
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration 2/Left side - Mid/Area Scan (51x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.122 mW/g

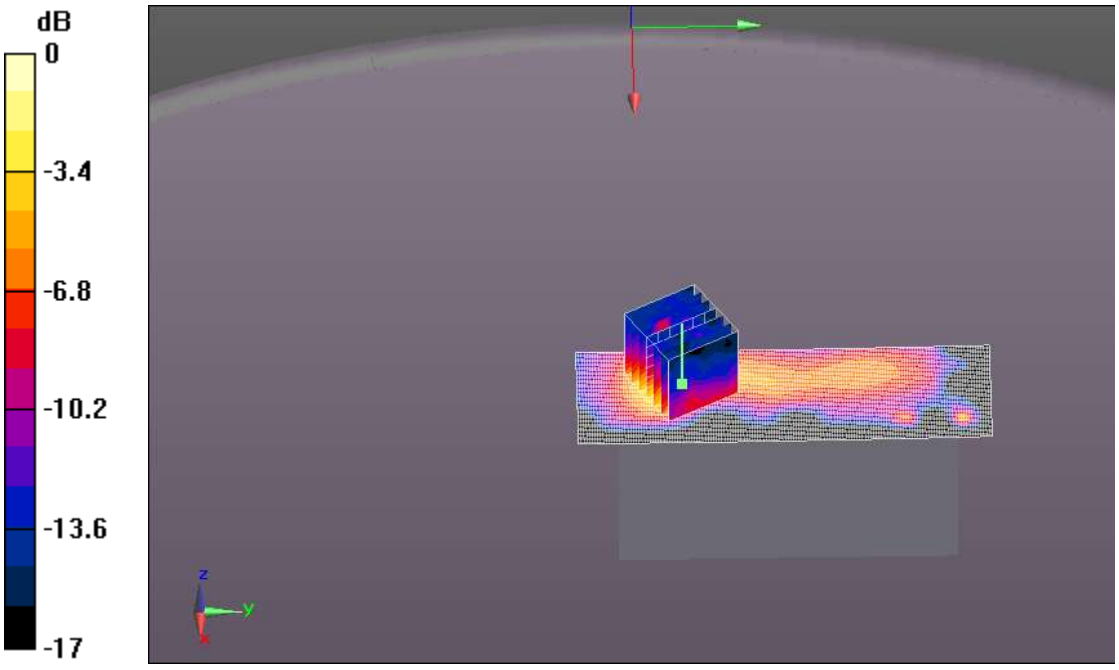
Configuration 2/Left side - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.53 V/m; Power Drift = 0.154 dB

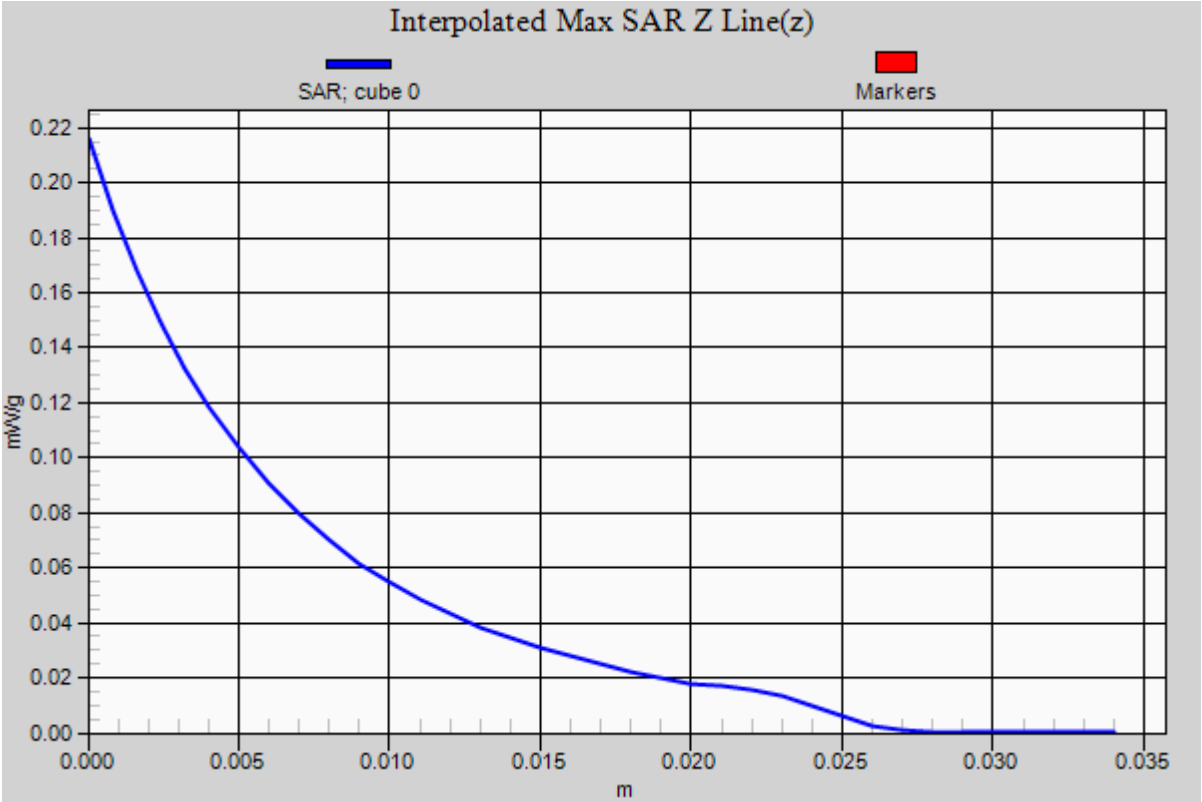
Peak SAR (extrapolated) = 0.216 W/kg

SAR(1 g) = 0.103 mW/g; SAR(10 g) = 0.048 mW/g

Maximum value of SAR (measured) = 0.118 mW/g



0 dB = 0.118mW/g


Interpolated Max SAR Z Line(z)
SAR; cube 0
Markers
mW/g
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
m

WIFI 802.11b Data rate:1 Mbps Left side – low

Date/Time: 8/3/2011 11:21:43 AM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2412 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2412 MHz; σ = 1.87 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.19, 4.19, 4.19); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: ELI4; Type: QDOVA001BA; Serial: 1086
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration 2/Left side - low/Area Scan (51x151x1): Measurement grid: dx=10mm, dy=10mm

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

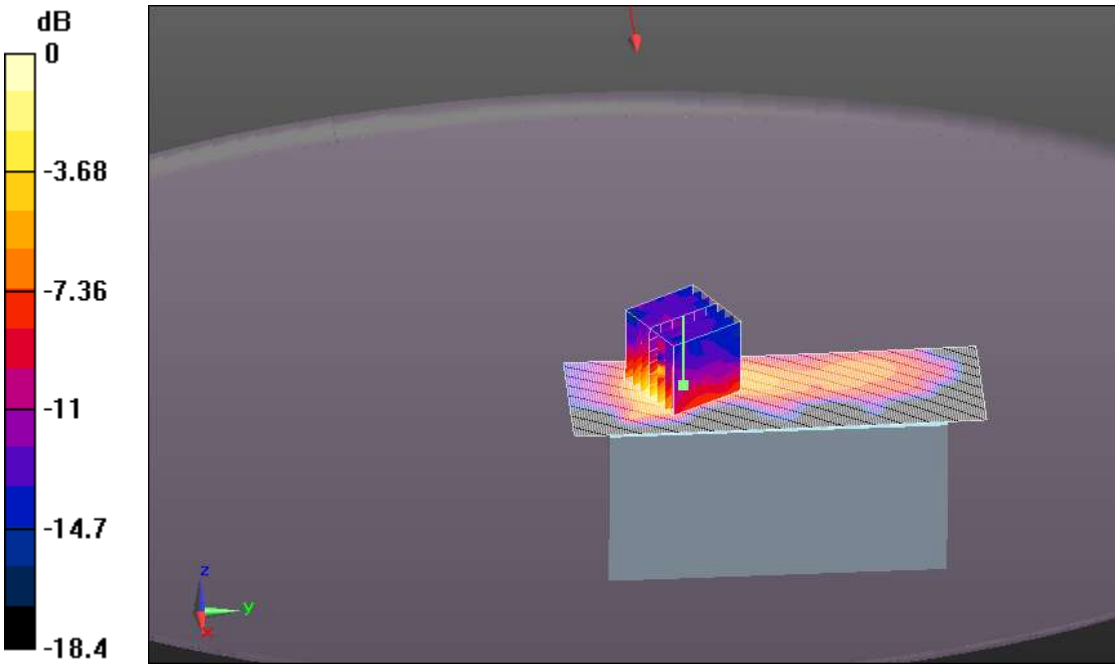
Configuration 2/Left side - low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.48 V/m; Power Drift = 0.661 dB

Peak SAR (extrapolated) = 0.194 W/kg

SAR(1 g) = 0.097 mW/g; SAR(10 g) = 0.046 mW/g

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



0 dB = 0.111mW/g

WIFI 802.11b Data rate:1 Mbps Left side – high

Date/Time: 8/3/2011 12:31:20 PM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2462 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2462 MHz; σ = 1.93 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.19, 4.19, 4.19); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: ELI4; Type: QDOVA001BA; Serial: 1086
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration 2/Left side - high/Area Scan (51x151x1): Measurement grid: dx=10mm, dy=10mm

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

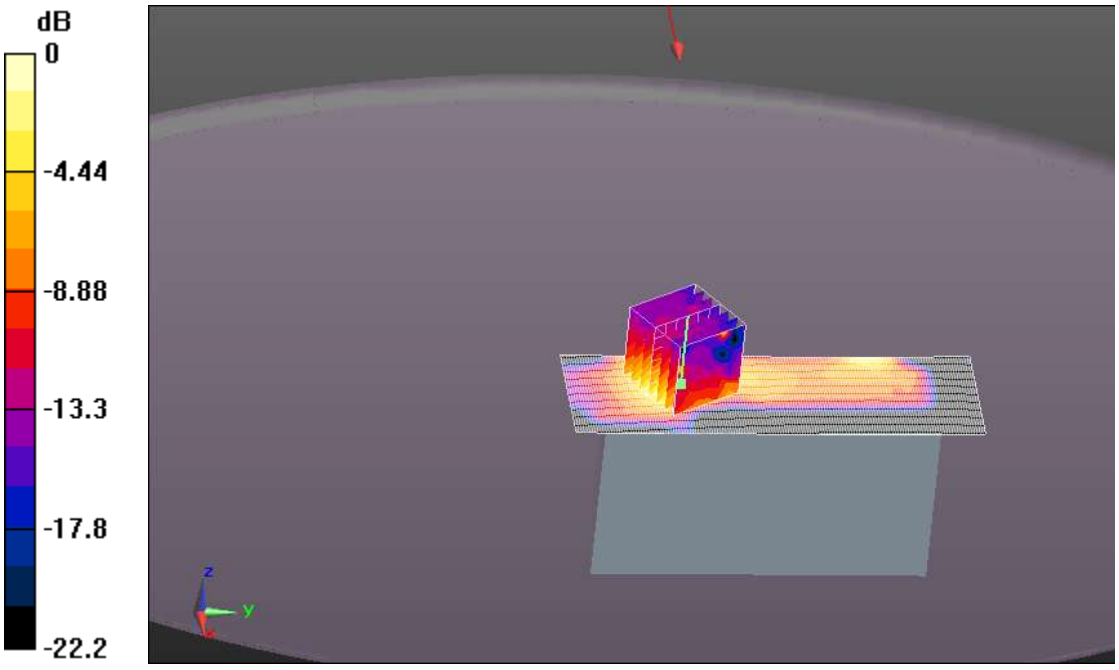
Configuration 2/Left side - high/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.44 V/m; Power Drift = 0.491 dB

Peak SAR (extrapolated) = 0.188 W/kg

SAR(1 g) = 0.092 mW/g; SAR(10 g) = 0.043 mW/g

Maximum value of SAR (measured) = 0.105 mW/g



0 dB = 0.105mW/g

WIFI 802.11g Data rate:6 Mbps Left side - Mid

Date/Time: 8/3/2011 12:59:54 PM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2437 MHz; σ = 1.91 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.19, 4.19, 4.19); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: ELI4; Type: QDOVA001BA; Serial: 1086
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration 2/Left side g - Mid/Area Scan (51x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.057 mW/g

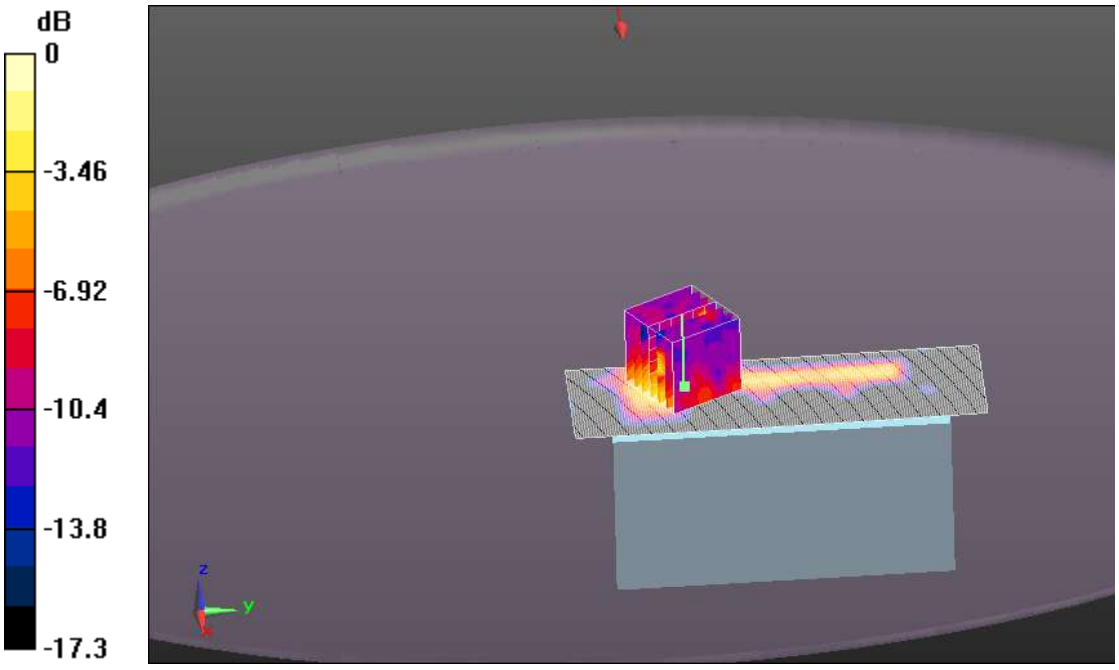
Configuration 2/Left side g - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.35 V/m; Power Drift = 0.635 dB

Peak SAR (extrapolated) = 0.077 W/kg

SAR(1 g) = 0.042 mW/g; SAR(10 g) = 0.021 mW/g

Maximum value of SAR (measured) = 0.049 mW/g



0 dB = 0.049mW/g

WIFI 802.11n Data rate:6.5 Mbps Left side - Mid

Date/Time: 8/3/2011 1:29:45 PM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2437 MHz; σ = 1.91 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3241; ConvF(4.19, 4.19, 4.19); Calibrated: 6/13/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: ELI4; Type: QDOVA001BA; Serial: 1086
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Configuration 2/Left side n - Mid/Area Scan (51x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.037 mW/g

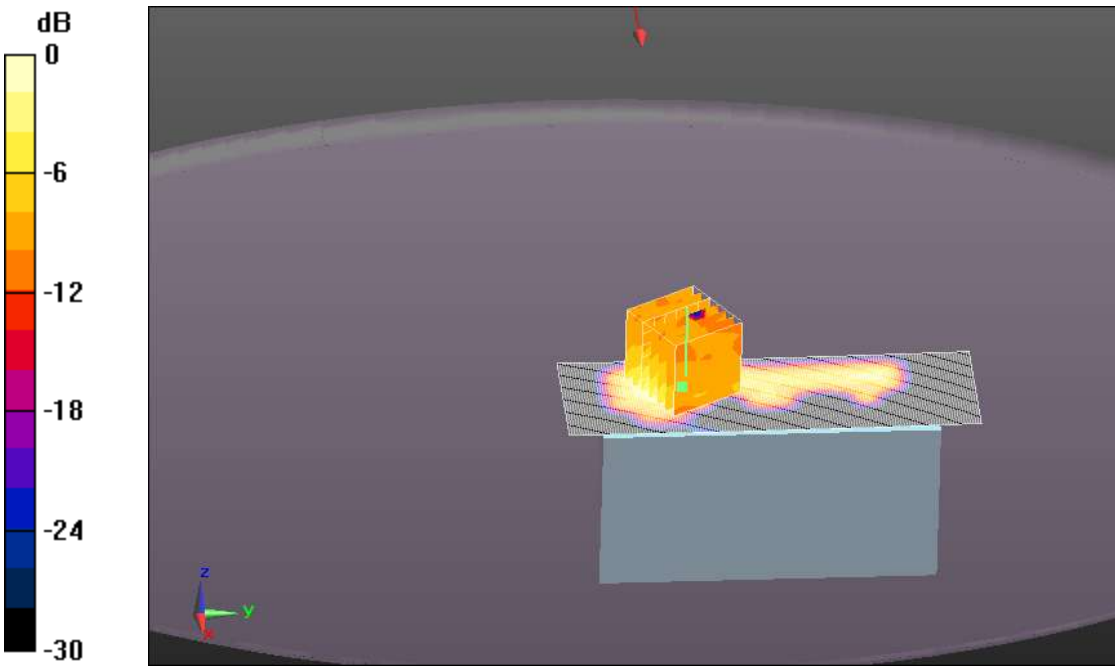
Configuration 2/Left side n - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.84 V/m; Power Drift = 0.420 dB

Peak SAR (extrapolated) = 0.069 W/kg

SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.015 mW/g

Maximum value of SAR (measured) = 0.037 mW/g



0 dB = 0.037mW/g

WIFI 802.11b Data Rate: 1 Mbps left touch mid
Date/Time: 9/30/2011 9:41:48 AM

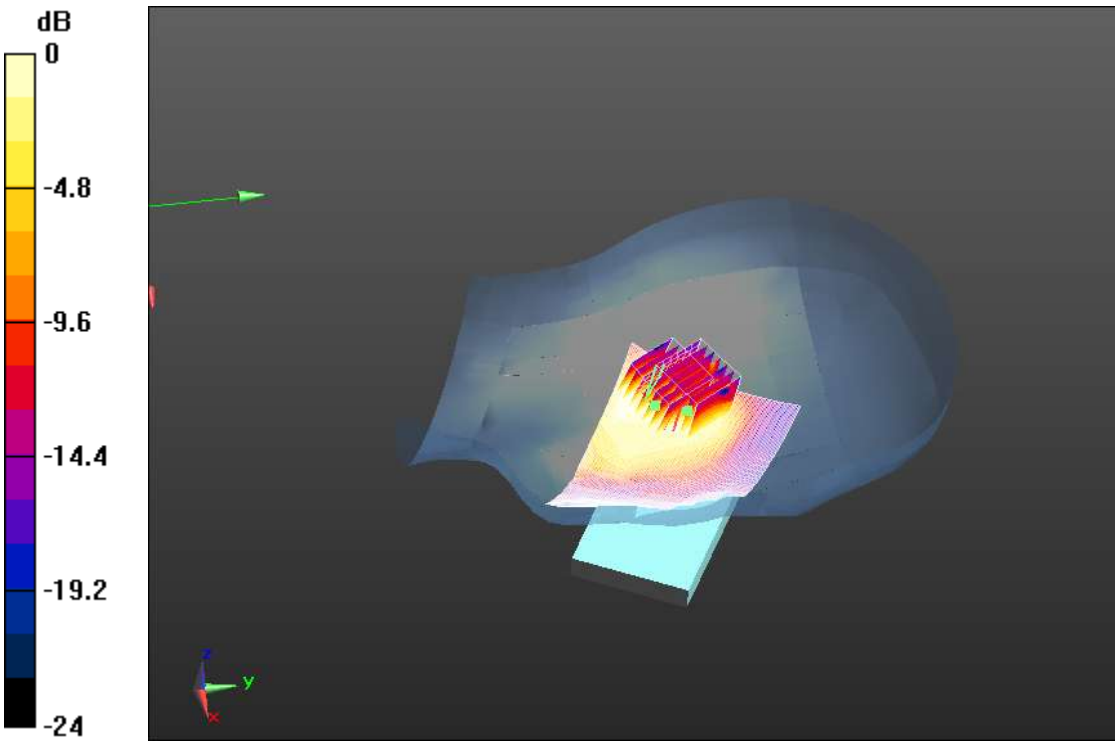
Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB
Medium parameters used: f = 2437 MHz; σ = 1.78 mho/m; ε_r = 37.8; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

LEFT/Touch Position - Mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.125 mW/g

LEFT/Touch Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.32 V/m; Power Drift = 0.327 dB
Peak SAR (extrapolated) = 0.267 W/kg
SAR(1 g) = 0.118 mW/g; SAR(10 g) = 0.066 mW/g
Maximum value of SAR (measured) = 0.127 mW/g

LEFT/Touch Position - Mid/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.32 V/m; Power Drift = 0.327 dB
Peak SAR (extrapolated) = 0.216 W/kg
SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.066 mW/g
Maximum value of SAR (measured) = 0.125 mW/g



0 dB = 0.125mW/g

WIFI 802.11b Data Rate: 1 Mbps left tilt mid

Date/Time: 9/30/2011 10:39:58 AM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2437 MHz; σ = 1.78 mho/m; ε_r = 37.8; ρ = 1000 kg/m^3

Phantom section: Left Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

LEFT/Tilt Position - Mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.118 mW/g

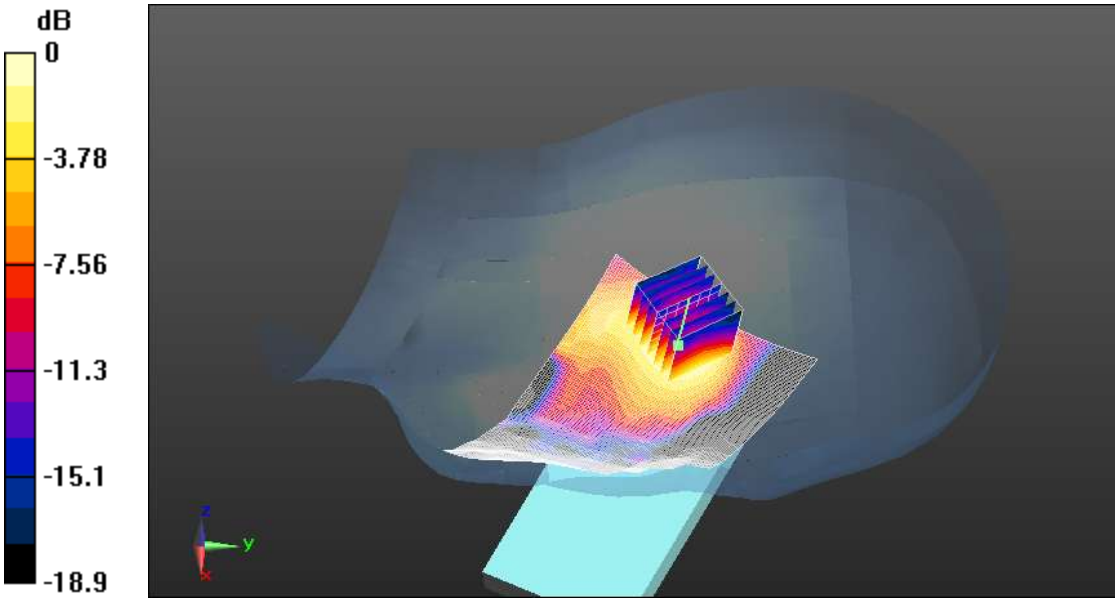
LEFT/Tilt Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.94 V/m; Power Drift = 0.065 dB

Peak SAR (extrapolated) = 0.184 W/kg

SAR(1 g) = 0.104 mW/g; SAR(10 g) = 0.056 mW/g

Maximum value of SAR (measured) = 0.115 mW/g



0 dB = 0.115mW/g

WIFI 802.11b Data Rate: 1 Mbps right touch mid

Date/Time: 9/30/2011 11:12:16 AM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2437 MHz; σ = 1.78 mho/m; ε_r = 37.8; ρ = 1000 kg/m^3

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

RIGHT/Touch Position - Mid/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.234 mW/g

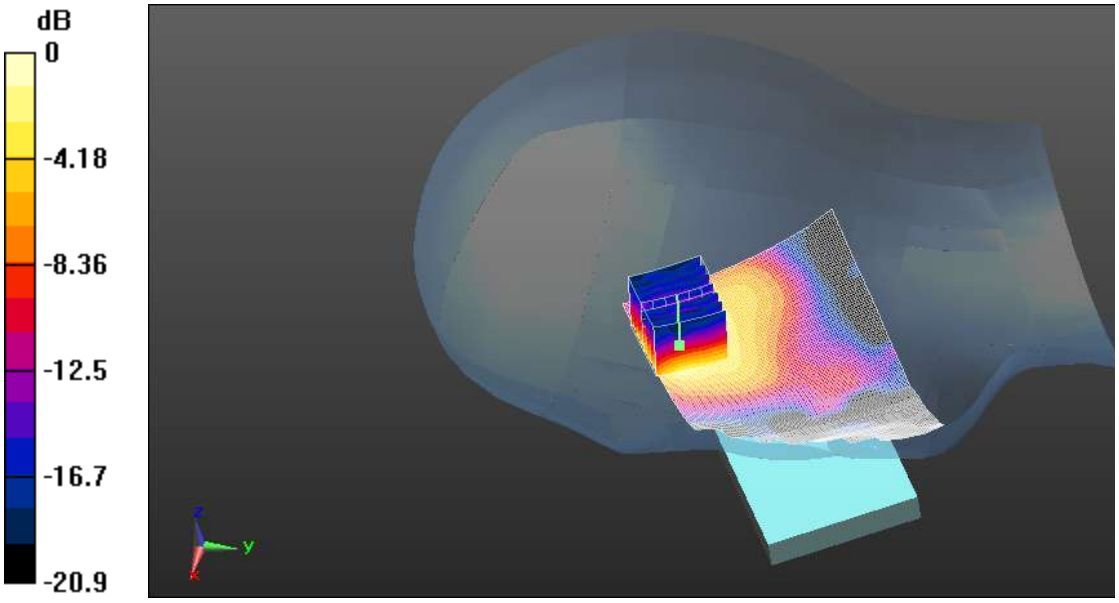
RIGHT/Touch Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.76 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 0.466 W/kg

SAR(1 g) = 0.212 mW/g; SAR(10 g) = 0.105 mW/g

Maximum value of SAR (measured) = 0.235 mW/g



0 dB = 0.235mW/g

WIFI 802.11b Data Rate: 1 Mbps right tilt mid

Date/Time: 9/30/2011 11:46:15 AM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2437 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2437 MHz; σ = 1.78 mho/m; ε_r = 37.8; ρ = 1000 kg/m^3

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

RIGHT/Tilt Position - Mid/Area Scan (91x141x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.112 mW/g

RIGHT/Tilt Position - Mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.63 V/m; Power Drift = -0.079 dB

Peak SAR (extrapolated) = 0.186 W/kg

SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.053 mW/g

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

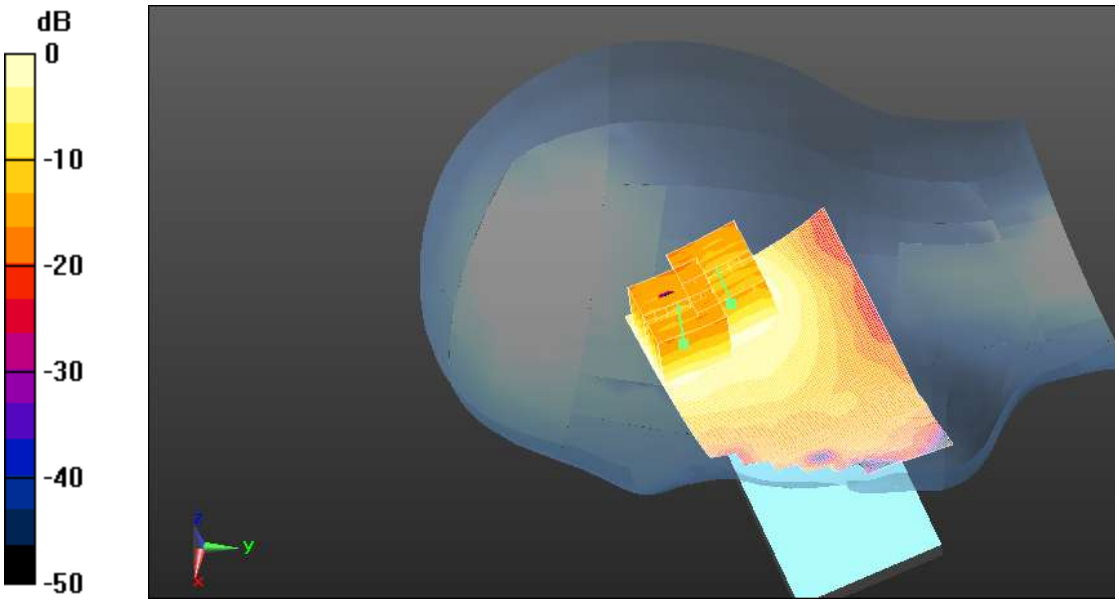
RIGHT/Tilt Position - Mid/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.63 V/m; Power Drift = -0.079 dB

Peak SAR (extrapolated) = 0.200 W/kg

SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.045 mW/g

Maximum value of SAR (measured) = 0.116 mW/g



0 dB = 0.116mW/g

WIFI 802.11b Data Rate: 1 Mbps right touch low

Date/Time: 9/30/2011 12:56:53 PM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2412 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2412 MHz; σ = 1.74 mho/m; ε_r = 37.9; ρ = 1000 kg/m^3

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

RIGHT/Touch Position - low/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

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

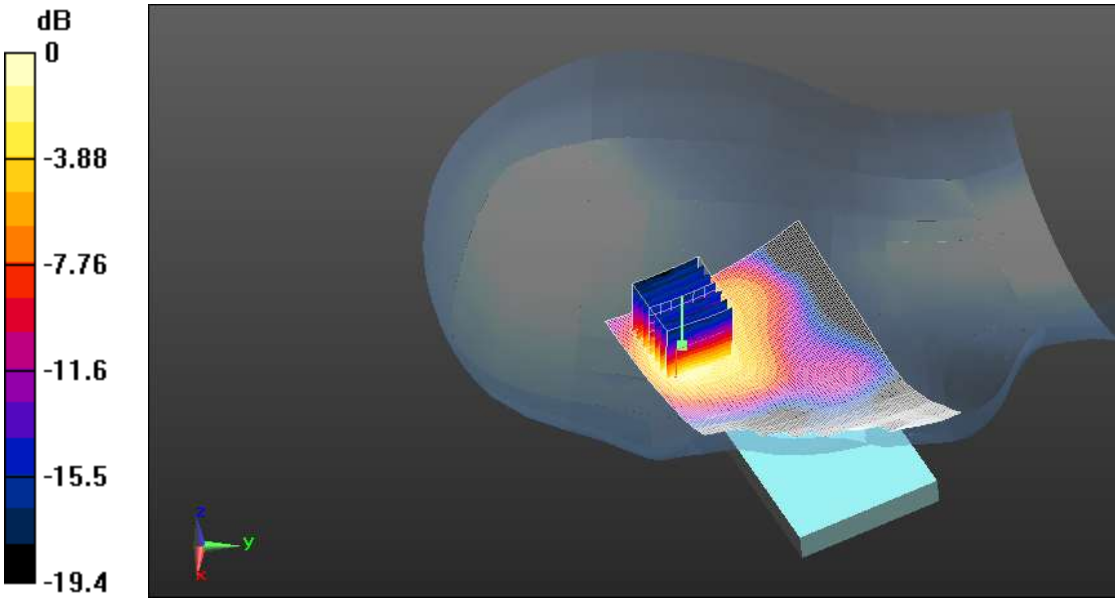
RIGHT/Touch Position - low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.01 V/m; Power Drift = 0.016 dB

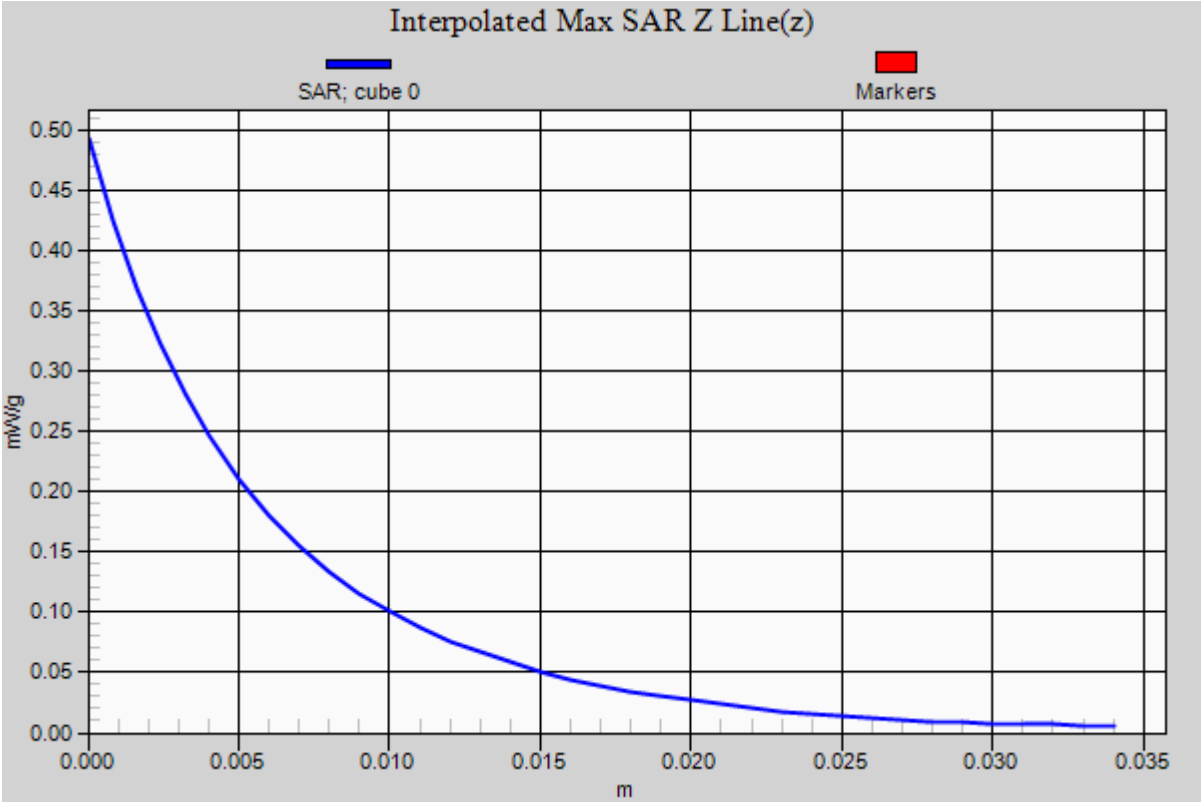
Peak SAR (extrapolated) = 0.494 W/kg

SAR(1 g) = 0.229 mW/g; SAR(10 g) = 0.114 mW/g

Maximum value of SAR (measured) = 0.254 mW/g



0 dB = 0.254mW/g


Interpolated Max SAR Z Line(z)
SAR; cube 0
Markers
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
mW/g
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
m

WIFI 802.11b Data Rate: 1 Mbps right touch high

Date/Time: 9/30/2011 1:28:10 PM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2462 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2462 MHz; σ = 1.79 mho/m; ε_r = 37.9; ρ = 1000 kg/m^3

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

RIGHT/Touch Position - high/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

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

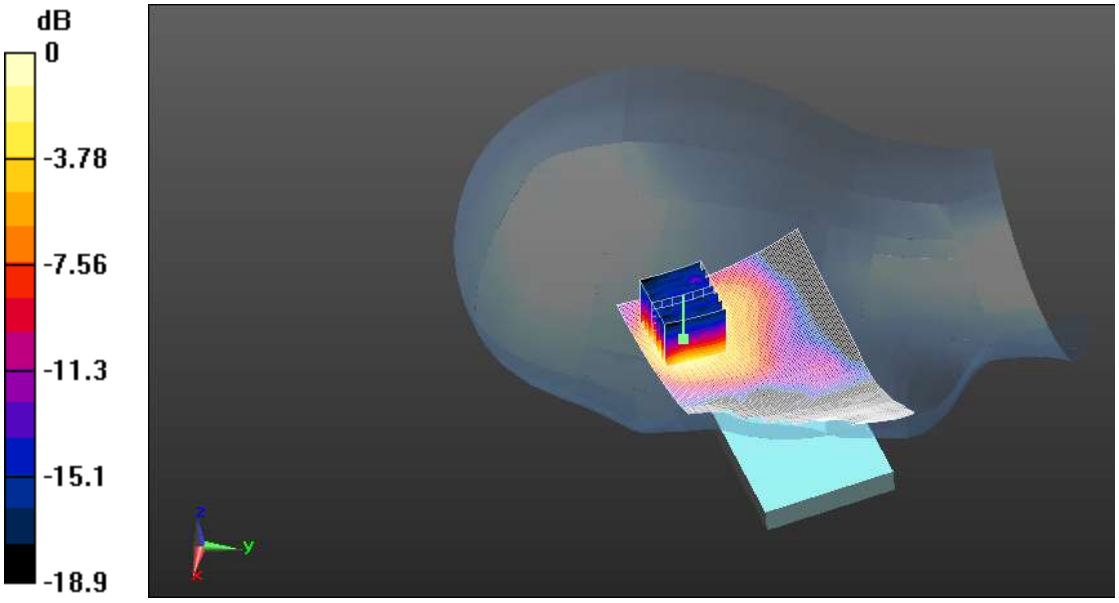
RIGHT/Touch Position - high/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.11 V/m; Power Drift = 0.082 dB

Peak SAR (extrapolated) = 0.449 W/kg

SAR(1 g) = 0.200 mW/g; SAR(10 g) = 0.097 mW/g

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



0 dB = 0.220mW/g

WIFI 802.11gData Rate:6 Mbps right touch low

Date/Time: 9/30/2011 2:04:15 PM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2412 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2412 MHz; σ = 1.74 mho/m; ε_r = 37.9; ρ = 1000 kg/m^3

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

RIGHT/Touch Position - low g/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.100 mW/g

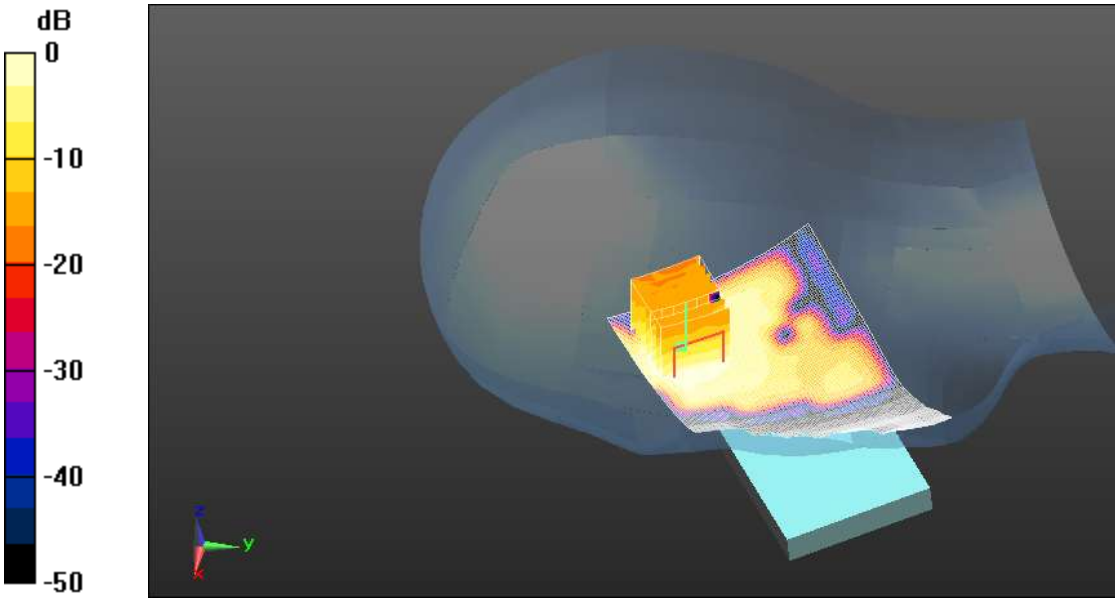
RIGHT/Touch Position - low g/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.81 V/m; Power Drift = -0.978 dB

Peak SAR (extrapolated) = 0.172 W/kg

SAR(1 g) = 0.083 mW/g; SAR(10 g) = 0.041 mW/g

Maximum value of SAR (measured) = 0.090 mW/g



0 dB = 0.090mW/g

WIFI 802.11n Data Rate: 6.5 Mbps right touch low

Date/Time: 9/30/2011 2:37:58 PM

Communication System: 802.11b/g wifi 2.45GHz; Communication System Band: 2400-2483.5; Frequency: 2412 MHz; Communication System PAR: 11.132 dB

Medium parameters used: f = 2412 MHz; σ = 1.74 mho/m; ε_r = 37.9; ρ = 1000 kg/m^3

Phantom section: Right Section

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

DASY5 Configuration:

- Probe: ES3DV3 - SN3071; ConvF(4.19, 4.19, 4.19); Calibrated: 6/22/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 6/13/2011
- Phantom: SAM2; Type: SAM; Serial: TP-1575
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

RIGHT/Touch Position - low n/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.072 mW/g

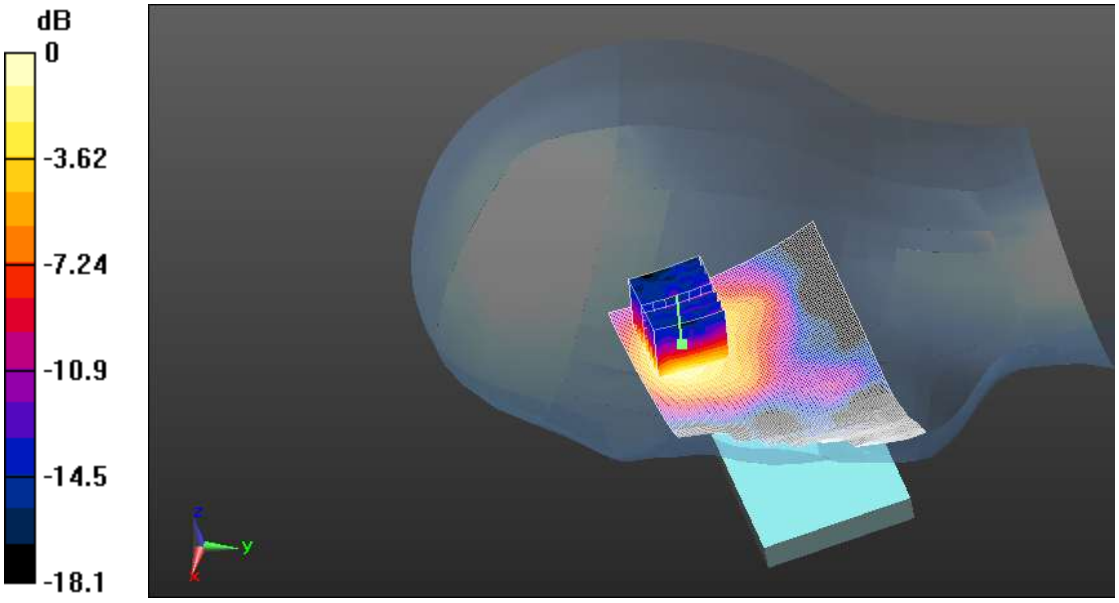
RIGHT/Touch Position - low n/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.79 V/m; Power Drift = -0.142 dB

Peak SAR (extrapolated) = 0.141 W/kg

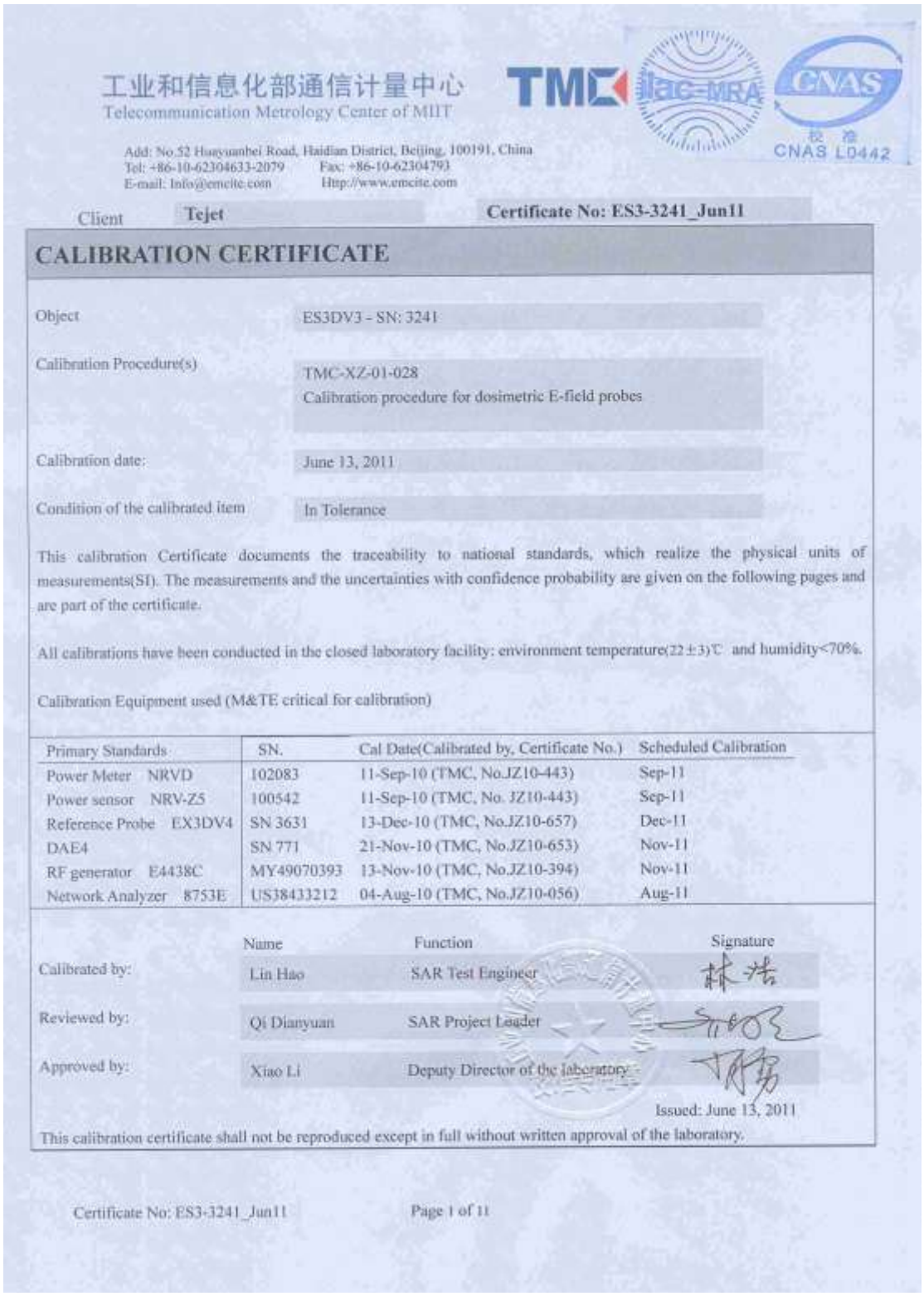
SAR(1 g) = 0.066 mW/g; SAR(10 g) = 0.033 mW/g

Maximum value of SAR (measured) = 0.073 mW/g



0 dB = 0.073mW/g

ANNEX G: Probe Calibration Certificate



工业和信息化部通信计量中心
Telecommunication Metrology Center of MIIT

TMC ilac-MRA CNAS 校准 CNAS L0442

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Client Tejet Certificate No: ES3-3241_Jun11

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN: 3241
Calibration Procedure(s)	TMC-XZ-01-028 Calibration procedure for dosimetric E-field probes
Calibration date:	June 13, 2011
Condition of the calibrated item	In Tolerance

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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	SN.	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	102083	11-Sep-10 (TMC, No.JZ10-443)	Sep-11
Power sensor NRV-Z5	100542	11-Sep-10 (TMC, No. JZ10-443)	Sep-11
Reference Probe EX3DV4	SN 3631	13-Dec-10 (TMC, No.JZ10-657)	Dec-11
DAE4	SN 771	21-Nov-10 (TMC, No.JZ10-653)	Nov-11
RF generator E4438C	MY49070393	13-Nov-10 (TMC, No.JZ10-394)	Nov-11
Network Analyzer 8753E	US38433212	04-Aug-10 (TMC, No.JZ10-056)	Aug-11

	Name	Function	Signature
Calibrated by:	Lin Hao	SAR Test Engineer	
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Xiao Li	Deputy Director of the laboratory	

Issued: June 13, 2011

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

Certificate No: ES3-3241_Jun11 Page 1 of 11

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Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
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 300MHz to 3GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORMx,y,z: Assessed for E-field polarization θ =0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z* frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha,depth) of which typical uncertainty valued 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±50MHz to±100MHz.
- 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.

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Probe ES3DV3

SN: 3241

Manufactured:	May 5, 2009
Last Calibrated:	June 16, 2010
Recalibrated:	June 13, 2011

Calibrated for DASY System

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DASY – Parameters of Probe: ES3DV3 SN:3241

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μ V/(V/m)^2)^A	1.24	1.36	1.37	±10.1%
DCP (mV)^B	98.2	94.4	92	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300.0	±1.5%
			Y	0.00	0.00	1.00	300.0	
			Z	0.00	0.00	1.00	300.0	

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 Page 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

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DASY – Parameters of Probe: ES3DV3 SN:3241

Calibration Parameter Determined in Body Tissue Simulating Media

f[MHz]	Validity[MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth	Uncertainty
835	±50 /±100	55.2±5%	0.97±5%	6.08	6.08	6.08	0.83	1.15	±11.0% (k=2)
900	±50 /±100	55.0±5%	1.05±5%	6.02	6.02	6.02	0.84	1.14	±11.0% (k=2)
1750	±50 /±100	53.4±5%	1.49±5%	4.77	4.77	4.77	0.33	2.12	±11.0% (k=2)
1810	±50 /±100	53.3±5%	1.52±5%	4.66	4.66	4.66	0.36	2.04	±11.0% (k=2)
1900	±50 /±100	53.3±5%	1.52±5%	4.51	4.51	4.51	0.33	2.39	±11.0% (k=2)
2000	±50 /±100	53.3±5%	1.52±5%	4.59	4.59	4.59	0.35	2.25	±11.0% (k=2)
2450	±50 /±100	52.7±5%	1.95±5%	4.19	4.19	4.19	0.79	1.21	±11.0% (k=2)

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

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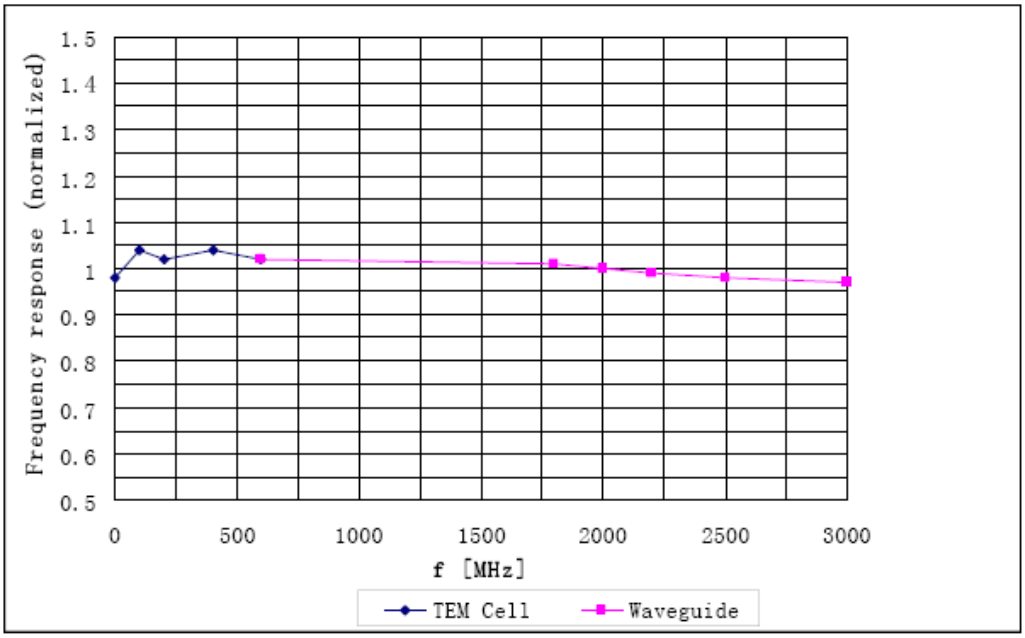
Frequency Response of E-Field



Uncertainty of Frequency Response of E-field: ±5.0% (k=2)

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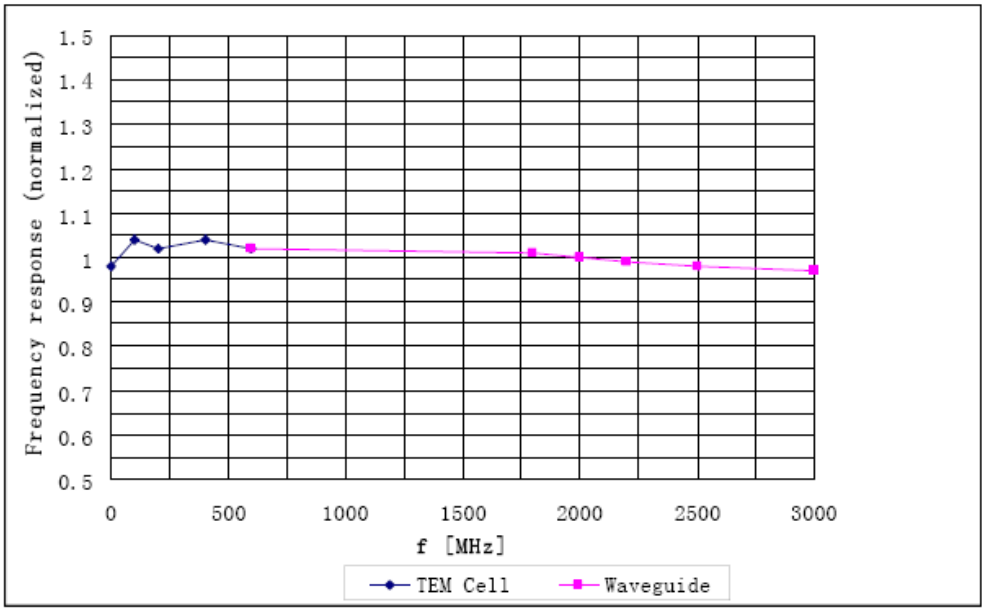
Frequency Response of E-Field



Uncertainty of Frequency Response of E-field: ±5.0% (k=2)

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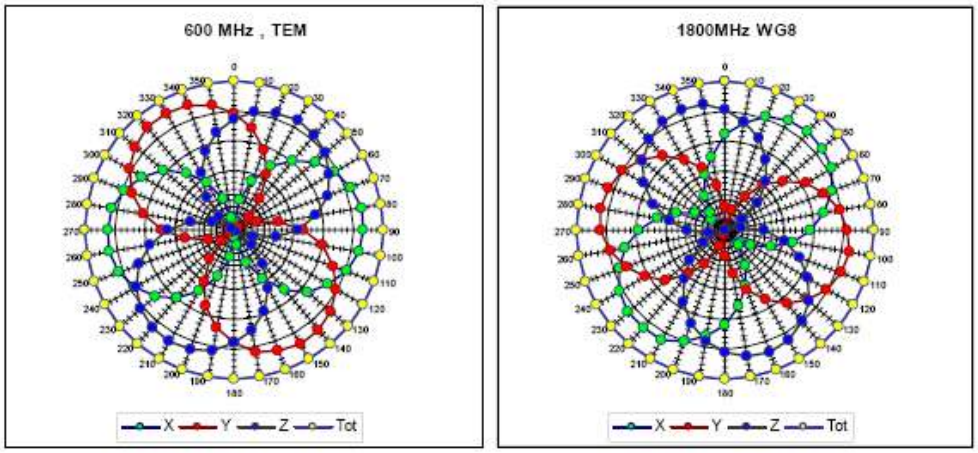
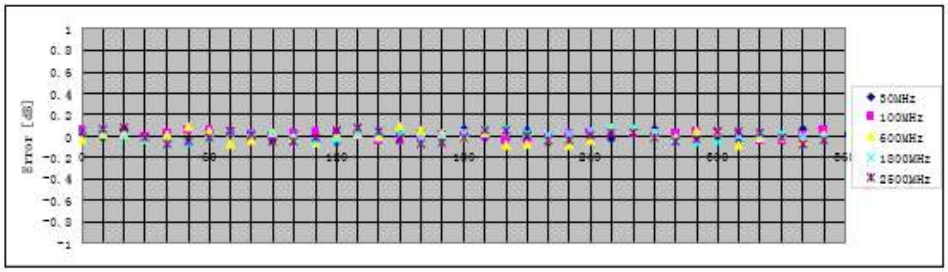
Receiving Pattern (ϕ), θ =0°





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

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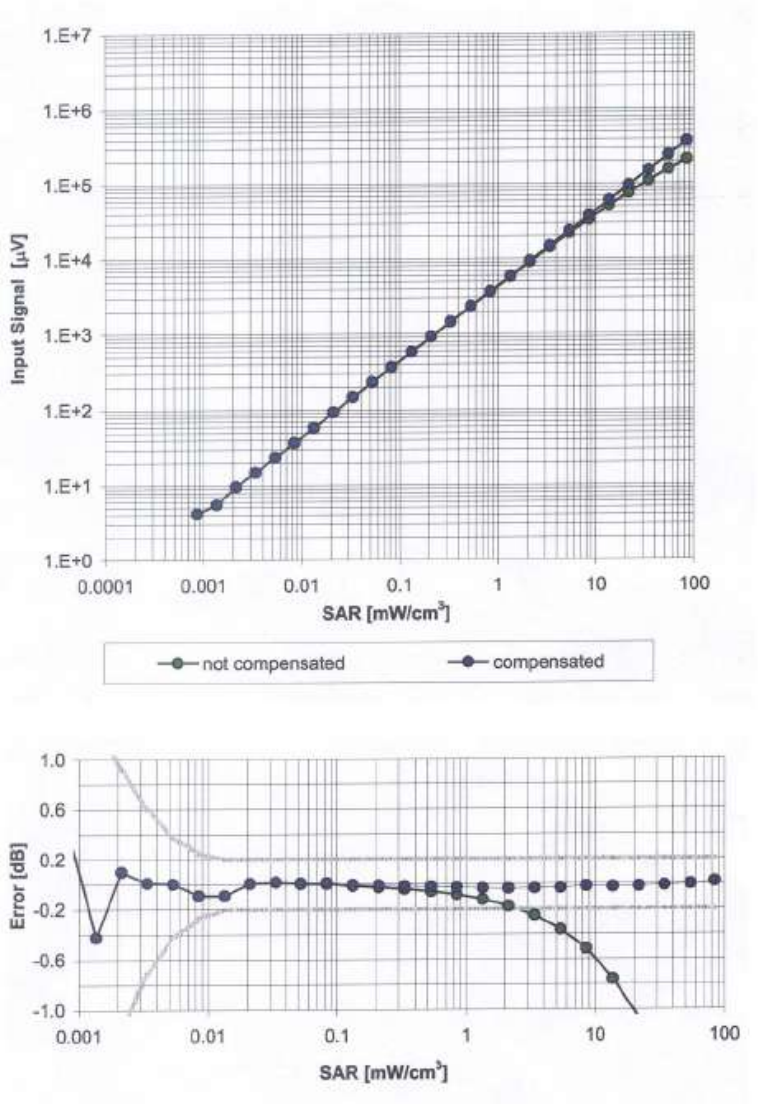
Dynamic Range f(SAR_{head})

(Waveguide: R22, f = 1900 MHz)



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

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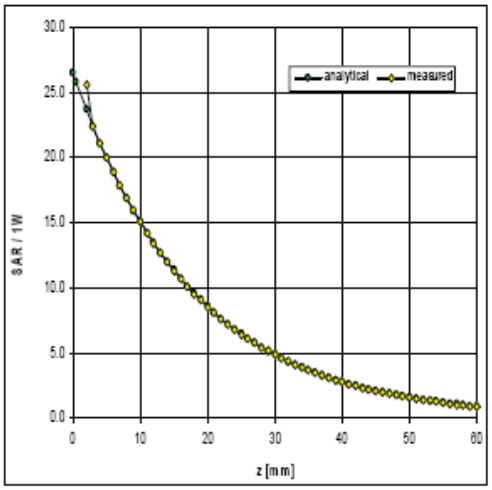
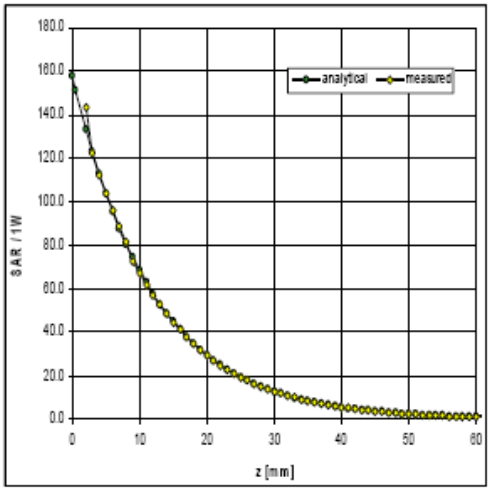
Conversion Factor Assessment



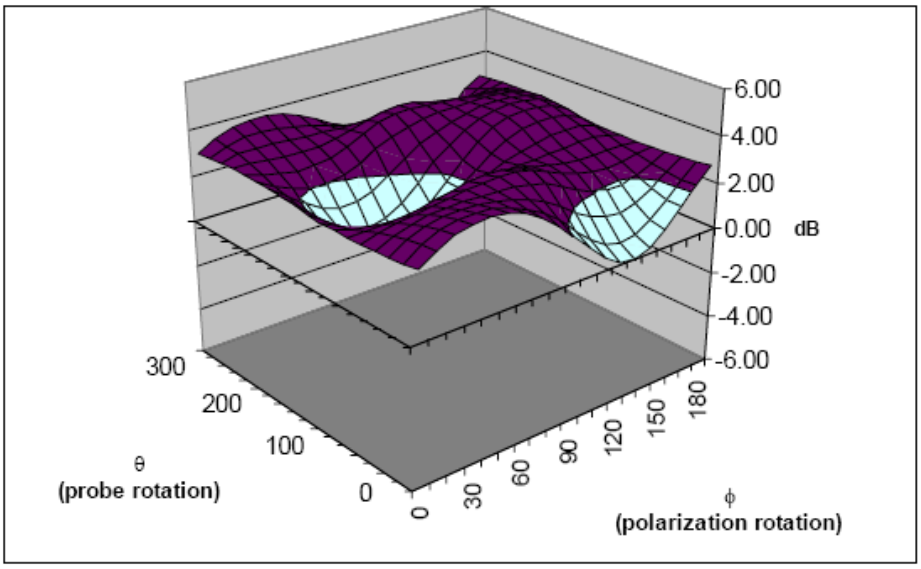
Head 900 MHz (R9)



Head 1900 MHz (R22)

Deviation from Isotropy

Error (ϕ , θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ±2.5% (k=2)

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Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4.0 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Calibration Laboratory of
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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
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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 Auden

Certificate No: ES3-3071_Jun11

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3071
Calibration procedure(s)	QA CAL-01.v8, QA CAL-23.v4, QA CAL-25.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	June 22, 2011

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	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

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

Issued: June 23, 2011

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., 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, VRx,y,z*: *A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 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 ES3DV3

SN:3071

Manufactured: December 14, 2004
Calibrated: June 22, 2011

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

ES3DV3– SN:3071 June 22, 2011

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3071

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.12	1.21	0.96	± 10.1 %
DCP (mV)[B]	101.2	101.2	97.4	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	102.4	±3.0 %
			Y	0.00	0.00	1.00	110.9	
			Z	0.00	0.00	1.00	130.0	

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: ES3DV3 - SN:3071

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)
750	41.9	0.89	6.00	6.00	6.00	0.90	1.10	± 12.0 %
835	41.5	0.90	5.78	5.78	5.78	0.90	1.10	± 12.0 %
900	41.5	0.97	5.67	5.67	5.67	0.90	1.10	± 12.0 %
1450	40.5	1.20	5.22	5.22	5.22	0.83	1.23	± 12.0 %
1750	40.1	1.37	5.03	5.03	5.03	0.90	1.15	± 12.0 %
1900	40.0	1.40	4.83	4.83	4.83	0.86	1.19	± 12.0 %
2000	40.0	1.40	4.80	4.80	4.80	0.89	1.14	± 12.0 %
2450	39.2	1.80	4.19	4.19	4.19	0.74	1.29	± 12.0 %

[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: ES3DV3- SN:3071

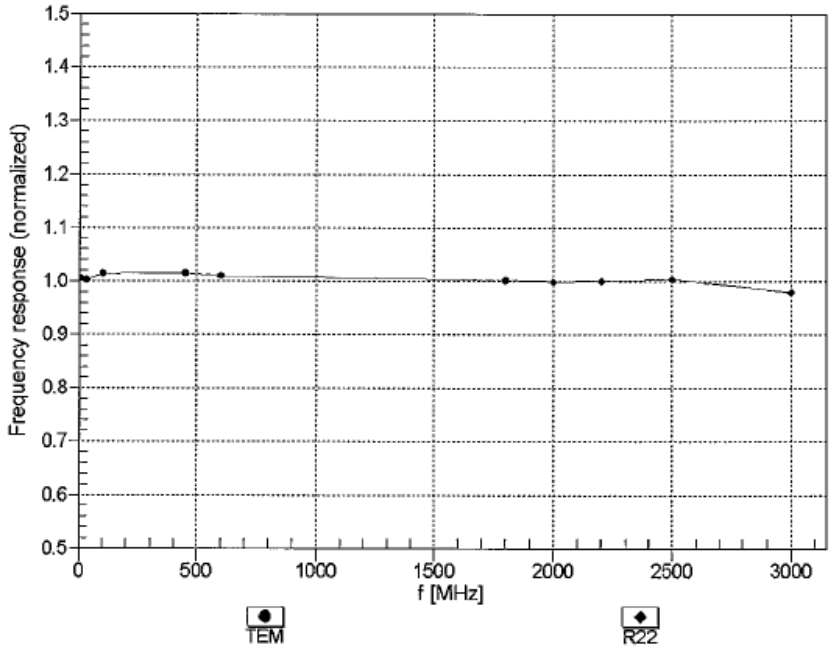
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	5.78	5.78	5.78	0.80	1.20	± 12.0 %
835	55.2	0.97	5.68	5.68	5.68	0.80	1.20	± 12.0 %
900	55.0	1.05	5.63	5.63	5.63	0.90	1.10	± 12.0 %
1450	54.0	1.30	5.22	5.22	5.22	1.00	1.21	± 12.0 %
1750	53.4	1.49	4.66	4.66	4.66	0.72	1.43	± 12.0 %
1900	53.3	1.52	4.32	4.32	4.32	0.72	1.37	± 12.0 %
2000	53.3	1.52	4.29	4.29	4.29	0.74	1.30	± 12.0 %
2450	52.7	1.95	3.89	3.89	3.89	0.75	1.22	± 12.0 %

[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.

ES3DV3– SN:3071 June 22, 2011

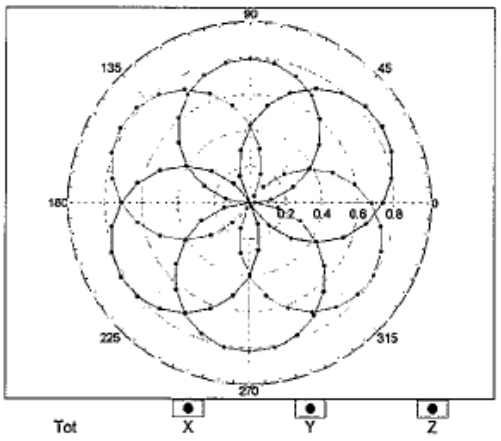
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



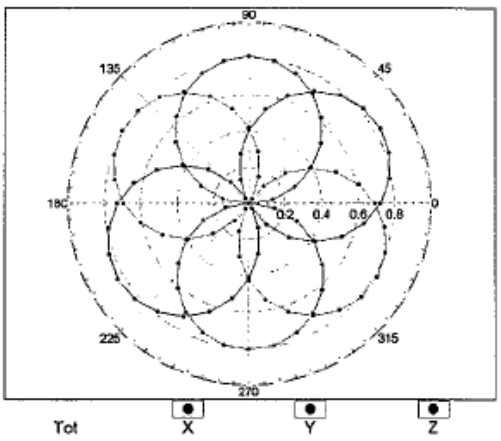
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

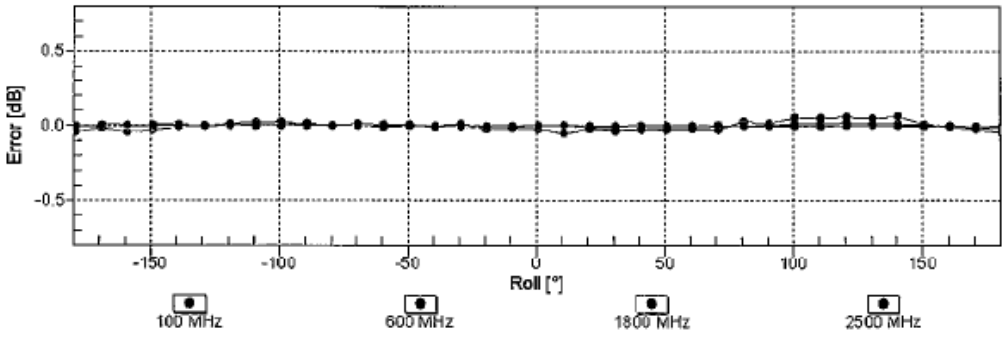
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



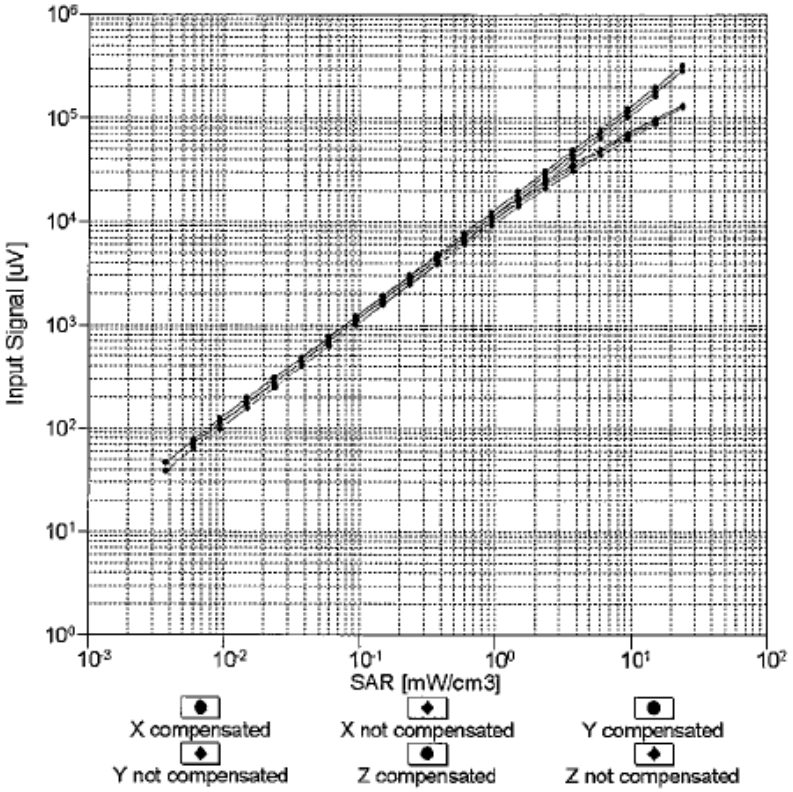
f=1800 MHz,R22

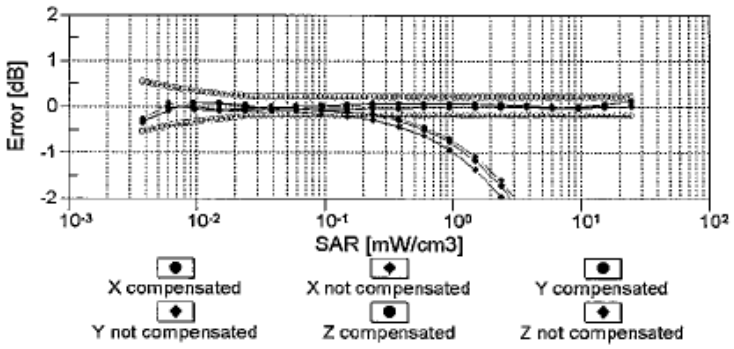




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR$_{head}$)
(TEM cell , f = 900 MHz)



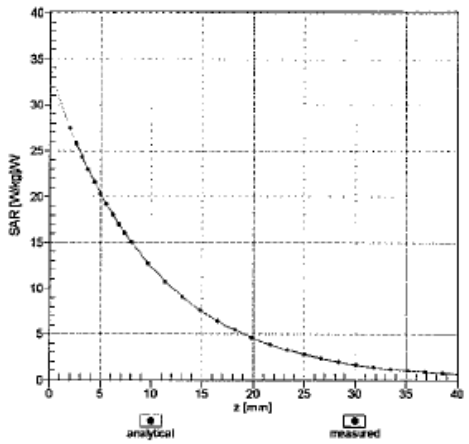


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

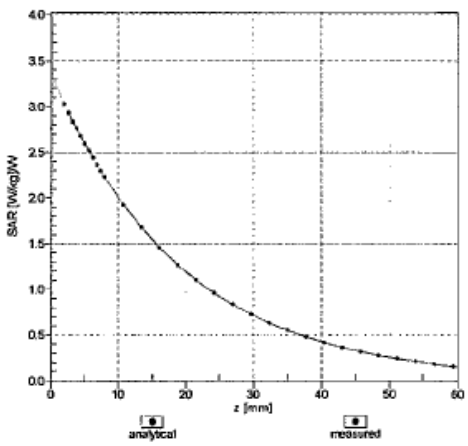
ES3DV3– SN:3071 June 22, 2011

Conversion Factor Assessment

f = 2450 MHz,WGLS R22 (H_convF)

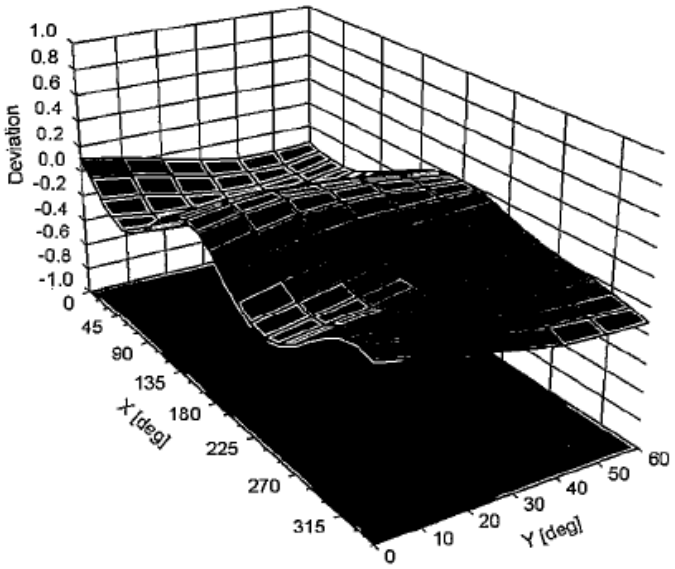


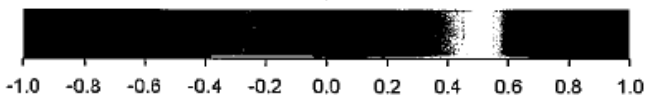
f = 835 MHz,WGLS R9 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





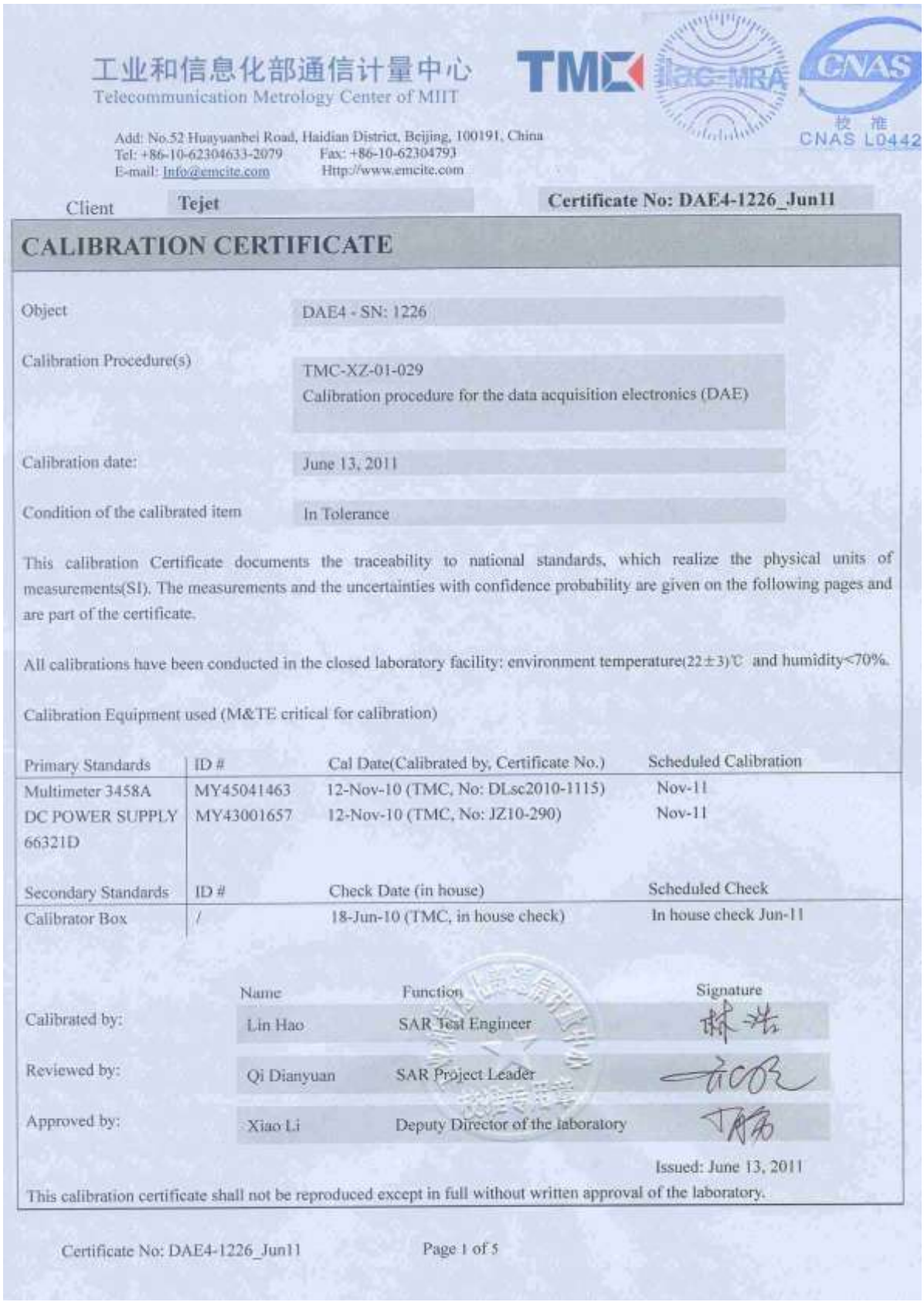
Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3071

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

ANNEX H:DAE4 Calibration Certificate



工业和信息化部通信计量中心
Telecommunication Metrology Center of MIIT

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E-mail: Info@emcite.com Http://www.emcite.com

CNAS 校准 CNAS L0442

Client Tejet Certificate No: DAE4-1226_Jun11

CALIBRATION CERTIFICATE

Object	DAE4 - SN: 1226
Calibration Procedure(s)	TMC-XZ-01-029 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	June 13, 2011
Condition of the calibrated item	In Tolerance

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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Multimeter 3458A	MY45041463	12-Nov-10 (TMC, No: DLsc2010-1115)	Nov-11
DC POWER SUPPLY 66321D	MY43001657	12-Nov-10 (TMC, No: JZ10-290)	Nov-11
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Calibrator Box	/	18-Jun-10 (TMC, in house check)	In house check Jun-11

	Name	Function	Signature
Calibrated by:	Lin Hao	SAR Test Engineer	
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Xiao Li	Deputy Director of the laboratory	

Issued: June 13, 2011

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

Certificate No: DAE4-1226_Jun11 Page 1 of 5

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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 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.

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DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V , 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	405.837 ± 0.1% (k=2)	405.272 ± 0.1% (k=2)	405.326 ± 0.1% (k=2)
Low Range	3.99601 ± 0.7% (k=2)	4.01768 ± 0.7% (k=2)	4.02083 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	112.5 ° ± 1 °

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Appendix

1. DC Voltage Linearity

High Range		Input (μV)	Reading (μV)	Error (%)
Channel X	+ Input	200000	200000	0.00
Channel X	+ Input	20000	20003.91	0.03
Channel X	- Input	20000	-20002.26	0.01
Channel Y	+ Input	200000	200000	0.00
Channel Y	+ Input	20000	20004.30	0.02
Channel Y	- Input	20000	-20001.84	0.01
Channel Z	+ Input	200000	200000.6	0.00
Channel Z	+ Input	20000	20002.05	0.01
Channel Z	- Input	20000	-20003.32	0.02

Low Range		Input (μV)	Reading (μV)	Error (%)
Channel X	+ Input	2000	1999.9	0.00
Channel X	+ Input	200	199.61	-0.19
Channel X	- Input	200	-200.68	0.36
Channel Y	+ Input	2000	1999.9	0.00
Channel Y	+ Input	200	199.40	-0.29
Channel Y	- Input	200	-200.46	0.23
Channel Z	+ Input	2000	2000	0.00
Channel Z	+ Input	200	199.33	-0.34
Channel Z	- Input	200	-201.29	0.66

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	3.40	3.47
	- 200	-2.47	-3.10
Channel Y	200	0.15	-0.51
	- 200	-0.60	-1.12
Channel Z	200	-9.89	-10.17
	- 200	7.71	8.15

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3. Channel separation

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

	Input Voltage (mV)	Channel X (μ V)	Channel Y (μ V)	Channel Z (μ V)
Channel X	200	-	2.59	-0.31
Channel Y	200	0.57	-	2.47
Channel Z	200	-1.89	0.23	-

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	16128	16441
Channel Y	15957	16202
Channel Z	15979	16032

5. Input Offset Measurement

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

	Average (μ V)	min. Offset (μ V)	max. Offset (μ V)	Std. Deviation(μ V)
Channel X	0.57	-1.05	2.02	0.41
Channel Y	-1.02	-1.96	-0.02	0.39
Channel Z	1.15	-0.07	1.94	0.34

6. Input Offset Current

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

7. Input Resistance

	Zeroing (MOhm)	Measuring (MOhm)
Channel X	0.2000	200.0
Channel Y	0.2000	200.0
Channel Z	0.2000	200.0

ANNEX I: D1950V3 Calibration Certificate

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 Tejet (Auden)

Certificate No: D1950V3-1139_Jun11

CALIBRATION CERTIFICATE

Object D1950V3 - SN1139

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

Calibration date: June 17, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	8-Jun-11 (No. DAE4-601_Jun11)	Jun-12

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

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

Issued: June 17, 2011

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

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

Accreditation No.: SCS 108

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

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	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1950 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.9 ± 6 %	1.34 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	10.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**41.0 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.27 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**21.3 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	53.1 ± 6 %	1.49 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	9.75 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**39.4 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.14 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.7 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.6 Ω - 3.0 jΩ
Return Loss	- 30.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.2 Ω - 3.0 jΩ
Return Loss	- 26.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.195 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 04, 2009

DASY5 Validation Report for Head TSL

Date: 17.06.2011

Test Laboratory: SPEAG, Zurich, Switzerland

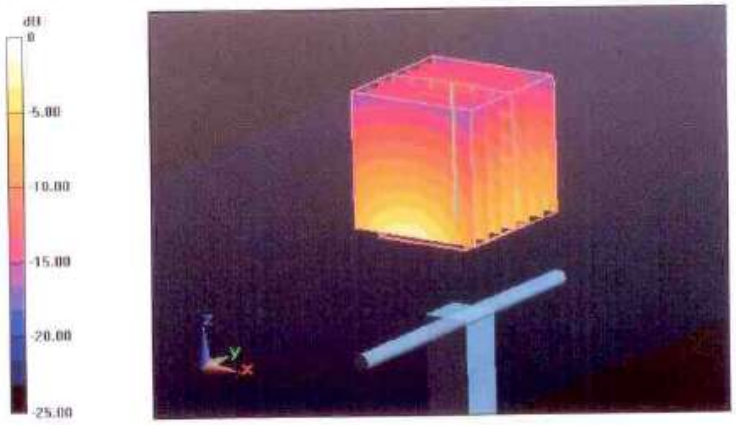
DUT: Dipole 1950 MHz; Type: D1950V3; Serial: D1950V3 - SN1139

Communication System: CW; Frequency: 1950 MHz
Medium: HSL BB1.9
Medium parameters used: f = 1950 MHz; σ = 1.34 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

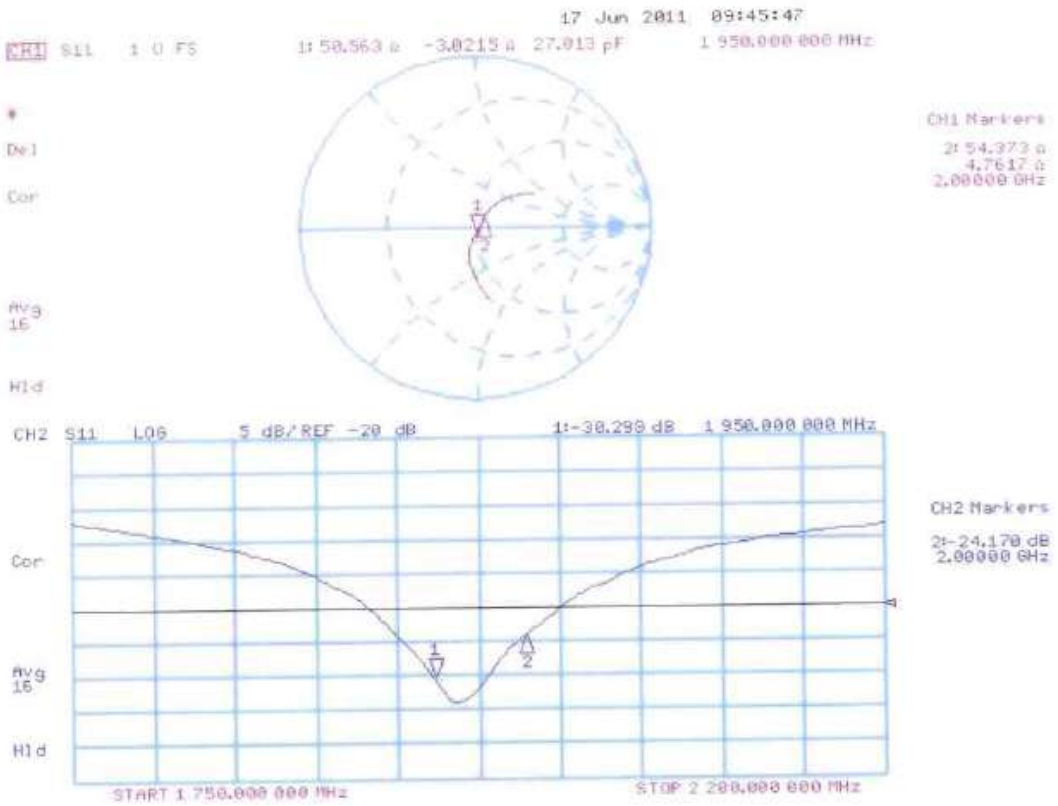
- Probe: ES3DV3 - SN3205; ConvF(4.86, 4.86, 4.86); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 08.06.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

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 = 99.975 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 17.741 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.27 mW/g
Maximum value of SAR (measured) = 12.442 mW/g



0 dB = 12.440mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 17.06.2011

Test Laboratory: SPEAG, Zurich, Switzerland

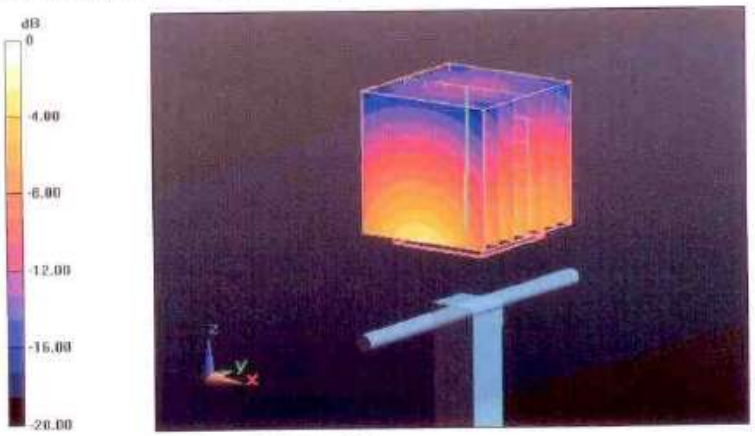
DUT: Dipole 1950 MHz; Type: D1950V3; Serial: D1950V3 - SN1139

Communication System: CW; Frequency: 1950 MHz
Medium: MSL BB1.9
Medium parameters used: f = 1950 MHz; σ = 1.49 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

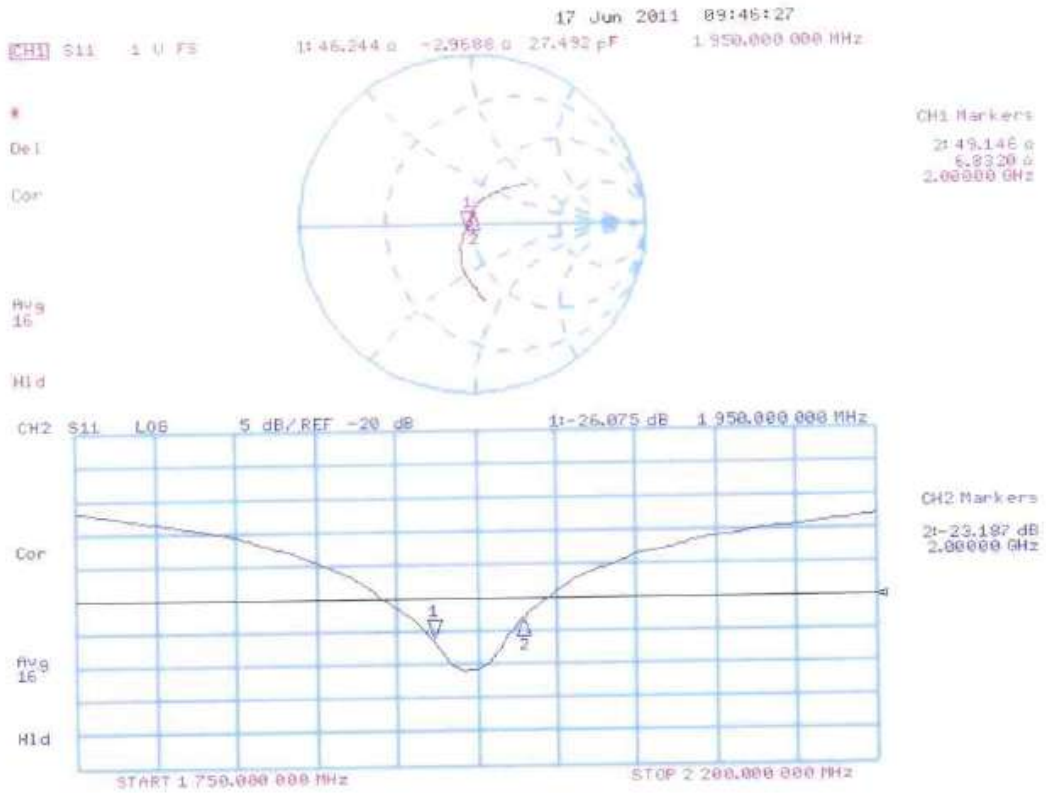
- Probe: ES3DV3 - SN3205; ConvF(4.73, 4.73, 4.73); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 08.06.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

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 = 94.484 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.095 W/kg
SAR(1 g) = 9.75 mW/g; SAR(10 g) = 5.14 mW/g
Maximum value of SAR (measured) = 12.262 mW/g



0 dB = 12.260mW/g

Impedance Measurement Plot for Body TSL



ANNEX J: D2450V2 Calibration Certificate

工业和信息化部通信计量中心
Telecommunication Metrology Center of MIIT

TMC

CNAS 校准 CNAS L0442

Client Tejet Certificate No: D2450V2-845_ Jun11

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 845
Calibration Procedure(s)	TMC-XZ-01-027 Calibration procedure for dipole validation kits
Calibration date:	June 14, 2011
Condition of the calibrated item	In Tolerance

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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	SN.	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRVD	102083	11-Sep-10 (TMC, No.JZ10-443)	Sep-11
Power sensor NRV-Z5	100542	11-Sep-10 (TMC, No. JZ10-443)	Sep-11
Reference Probe EX3DV4	SN 3617	09-Jul-10 (SPEAG, No. EX3-3617_Jul10)	Jul-11
DAE4	SN 771	21-Nov-10 (SPEAG, No.DAE4-771_Nov10)	Nov-11
RF generator E4438C	MY49070393	13-Nov-10 (TMC, No.JZ10-394)	Nov-11
Network Analyzer 8753E	US38433212	28-Aug-10 (TMC, No.JZ10-056)	Aug-11

	Name	Function	Signature
Calibrated by:	Lin Hao	SAR Test Engineer	
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Xiao Li	Deputy Director of the laboratory	

Issued: July 5, 2011

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

Certificate No: D2450V2-845_Jun11 Page 1 of 9

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,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 300MHz to 3GHz)", 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) DASY System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	2mm Oval Phantom ELI4	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.9 ± 6 %	1.87mho/m ± 6 %
Head TSL temperature during test	(22.1 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.3 mW / g
SAR normalized	normalized to 1W	53.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**52.8 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.05 mW / g
SAR normalized	normalized to 1W	24.2 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**24.2 mW /g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.0 ± 6%	1.94mho/m ± 6 %
Body TSL temperature during test	(21.9 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.1 mW / g
SAR normalized	normalized to 1W	52.4 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**51.6 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	6.14 mW / g
SAR normalized	normalized to 1W	24.6 mW / g
SAR for nominal Body TSL parameters [2]	normalized to 1W	**24.3 mW /g ± 16.5 % (k=2)**

[2] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.9Ω - 1.1 jΩ
Return Loss	- 32.3dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.3Ω - 3.8 jΩ
Return Loss	- 27.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	3.004 ns

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

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

DASY5 Validation Report for Head TSL

Date/Time: 2011-6-14 14:29:40

Test Laboratory: TMC, Beijing, China

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: SN: 845

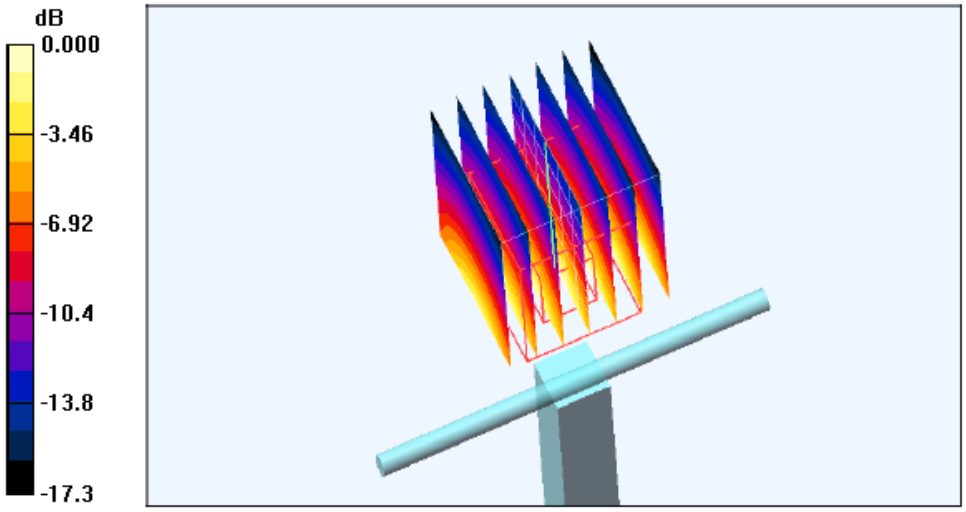
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Medium: Head 2450MHz
Medium parameters used: f = 2450 MHz; σ = 1.87 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.19, 7.19, 7.19); Calibrated: 09.07.10
- Electronics: DAE4 Sn771; Calibration: 21.11.10
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

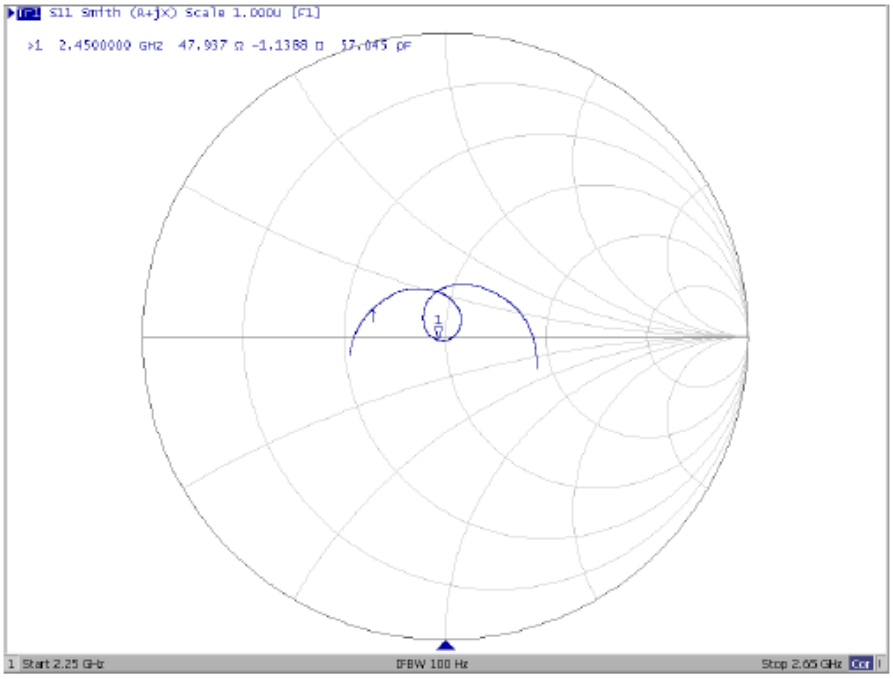
Pin=250mW; d=10mm/Zoom Scan (7x7x7)/Cube 0:

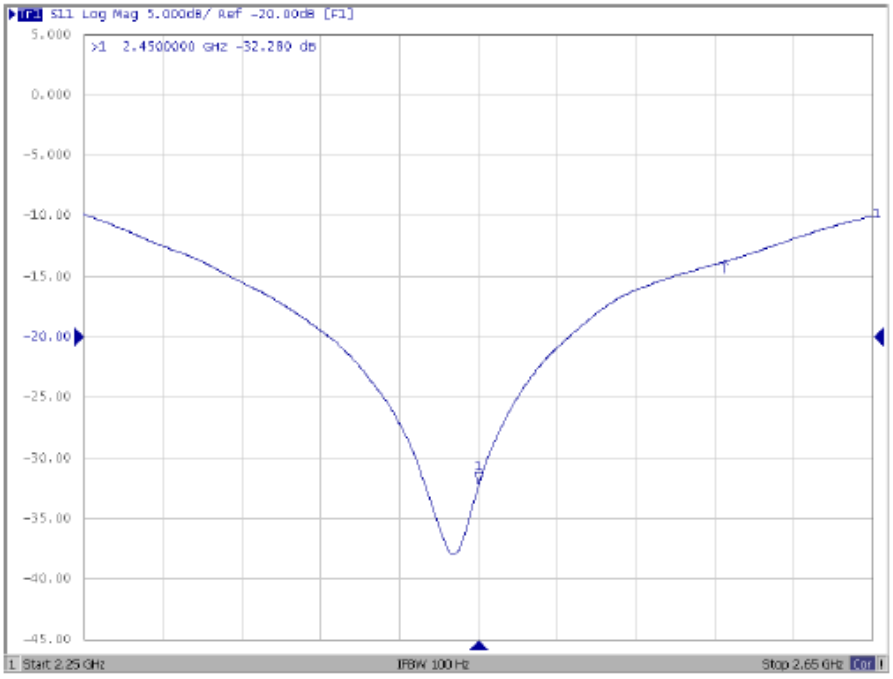
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.5 V/m; Power Drift = 0.066 dB
Peak SAR (extrapolated) = 26.4 W/kg
SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.05 mW/g
Maximum value of SAR (measured) = 16.0 mW/g



0 dB = 16.0mW/g

Impedance Measurement Plot for Head TSL





DASY5 Validation Report for Body TSL

Date/Time: 2011-6-14 13:50:27

Test Laboratory: TMC, Beijing, China

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: SN: 845

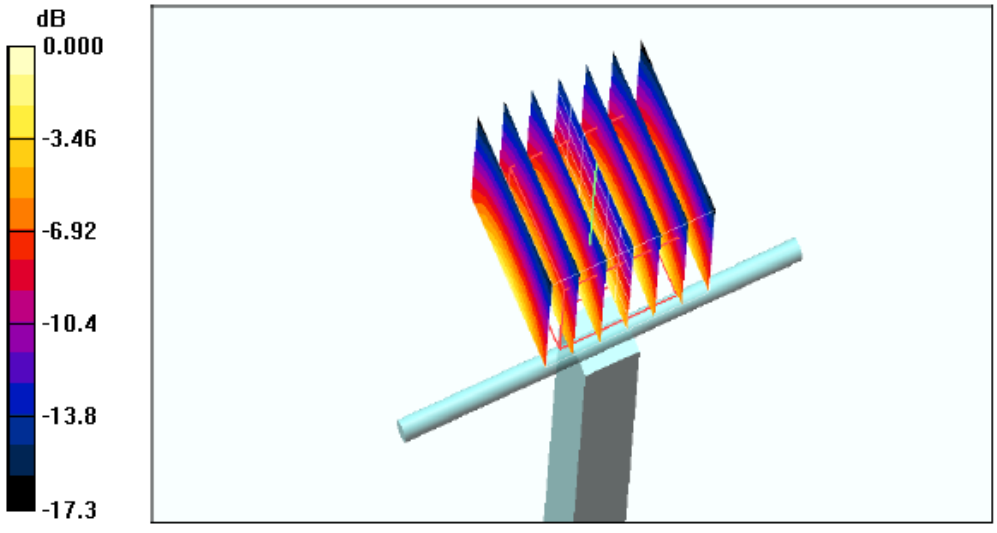
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Medium: Body 2450MHz
Medium parameters used: f = 2450 MHz; σ = 1.94 mho/m; ε_r = 51.0; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(6.88, 6.88, 6.88); Calibrated: 09.07.10
- Electronics: DAE4 Sn771; Calibration: 21.11.10
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

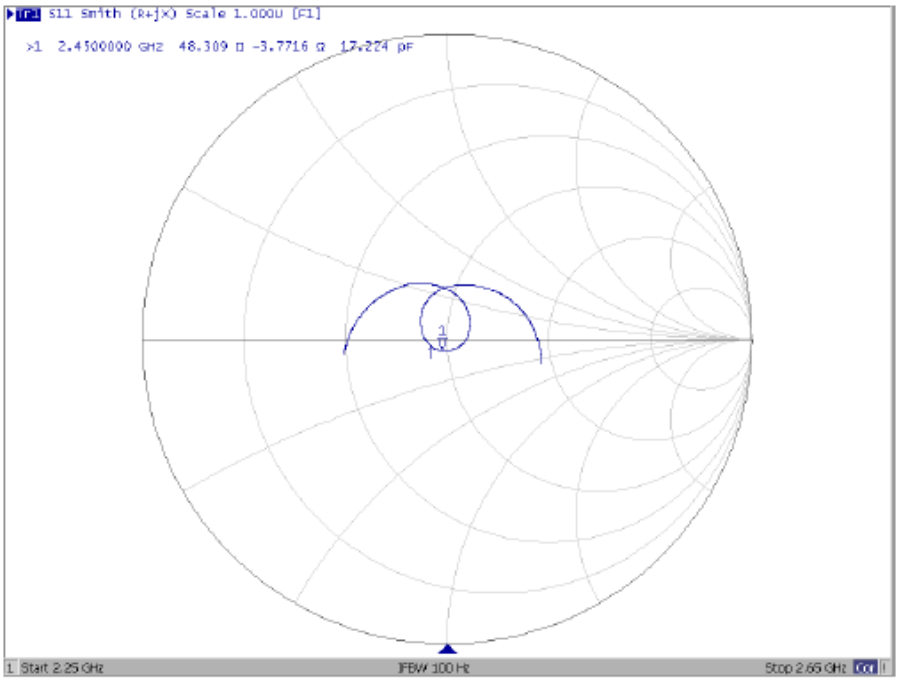
Pin=250mW; d=10mm/Zoom Scan (7x7x7)/Cube 0:

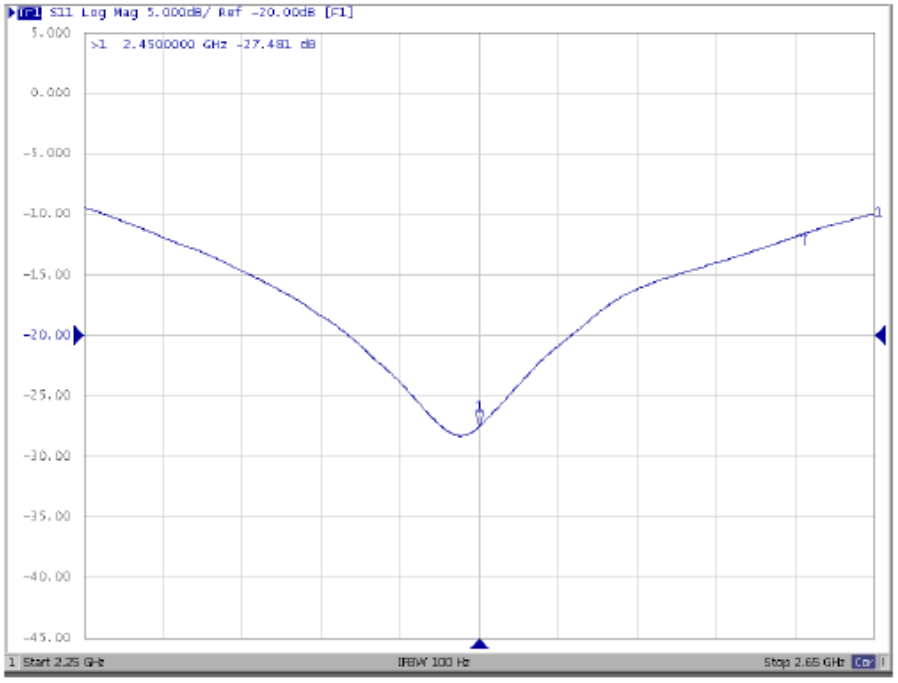
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.2 V/m; Power Drift = -0.075 dB
Peak SAR (extrapolated) = 24.8 W/kg
SAR(1 g) = 13.1 mW/g; SAR(10 g) = 6.14 mW/g
Maximum value of SAR (measured) = 15.7 mW/g



0 dB = 15.7mW/g

Impedance Measurement Plot for Body TSL





ANNEX K: Change History

Version	Change Contents	Author	Date
V1.0	First edition	Yinxiaoming	2011-8-23
V2.0	1. Retest BODY of GSM1900.with 10mm distance。	Yinxiaoming	2011-9-26
V3.0	Add head of wifi test.	Yinxiaoming	2011-9-30
V3.1	1.Remove the test of head with wifi of GSM1900. 2.Page 31 , change the maximum localized SAR_{1g} **of GSM 1900**(head) to **0.402** W/kg	Yinxiaoming	2011-9-30

----------END OF REPORT----------