FCC SAR Test Report

APPLICANT	:	**CT Asia**
EQUIPMENT	:	**GSM / WCDMA mobile phone**
BRAND NAME	:	**BLU**
MODEL NAME	:	**VIVO 4.3**
FCC ID	:	**YHLBLUVIVO43**
STANDARD	:	**FCC 47 CFR Part 2 (2.1093)** **ANSI/IEEE C95.1-1992** **IEEE 1528-2003** **FCC OET Bulletin 65 Supplement C (Edition 01-01)**

The product was completely tested on Aug. 27, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

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Testing Laboratory
1190

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA281501	Rev. 01	Initial issue of report	Aug. 29, 2012

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **CT Asia, EUT: GSM / WCDMA mobile phone, Brand Name: BLU, Model Name: VIVO 4.3** are as follows.

<Standalone SAR>

Band	Position	SAR_{1g} (W/kg)
GSM850	Head	0.695
GSM1900	Head	1.190
WCDMA Band V	Head	0.443
WCDMA Band II	Head	1.240
WLAN 2.4G	Head	0.426
GSM850	Body-worn (1.5 cm Gap)	0.831
GSM1900	Body-worn (1.5 cm Gap)	0.515
WCDMA Band V	Body-worn (1.5 cm Gap)	0.572
WCDMA Band II	Body-worn (1.5 cm Gap)	0.527
WLAN 2.4G	Body-worn (1.5 cm Gap)	0.095

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2003 and FCC OET Bulletin 65 Supplement C (Edition 01-01).

2. Administration Data

2.1 Testing Laboratory

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958

2.2 Applicant

Company Name	CT Asia
Address	RMA2011, 20/F, GOLDEN CENTRAL TOWER, NO.3037# JINTIAN ROAD, FUTIAN DISTRICT

2.3 Manufacturer

Company Name	Gionee Communication Equipment Co., Ltd.
Address	32F, Tower A, East Pacific International Center, No.7888, Shennan Avenue, Futian District, Shenzhen-518040, China

2.4 Application Details

Date of Start during the Test	Aug. 16, 2012
Date of End during the Test	Aug. 27, 2012

3. General Information

3.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT	GSM / WCDMA mobile phone
Brand Name	BLU
Model Name	VIVO 4.3
FCC ID	YHLBLUVIVO43
IMEI Code	354147040037872
Tx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WLAN2.4G: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Rx Frequency	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz WLAN2.4G: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Maximum Average Output Power to Antenna	GSM850: 32.63 dBm GSM1900: 29.62 dBm WCDMA Band V: 23.79 dBm WCDMA Band II: 22.98 dBm 802.11b: 15.97 dBm 802.11g: 9.23 dBm Bluetooth: 2.30 dBm
Antenna Type	WWAN: Fixed Internal Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna
HW Version	GN868H_Mainboard_P3
SW Version	GN868H_0301_v1014
Uplink Modulation	GSM / GPRS: GMSK EDGE: GMSK / 8PSK WCDMA (Rel 5): QPSK (Uplink) HSDPA (Cat 8): QPSK (Uplink) HSUPA (Cat 6): QPSK (Uplink) 802.11b: DSSS (BPSK / QPSK / CCK) 802.11g: OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth (1Mbps): GFSK Bluetooth EDR (2Mbps): π/4-DQPSK Bluetooth EDR (3Mbps): 8-DPSK
Dual Transfer Mode (DTM) Category	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Production Unit

Remark:
1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This is a dual SIM card mobile, there are SIM1 card and SIM2 card, after pre-scan two SIM cards, we found test result with SIM1 card was the worst, so we choose SIM1 card to perform all test.

3.2 Product Photos

Please refer to Appendix D.

3.3 Applied Standard

The Specific Absorption Rate (SAR) testing specification, method and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC OET Bulletin 65 Supplement C (Edition 01-01)
- FCC KDB 447498 D01 v04
- FCC KDB 648474 D01 v01r05
- FCC KDB 941225 D01 v02
- FCC KDB 941225 D03 v01
- FCC KDB 248227 D01 v01r02

3.4 Device Category and SAR Limits

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. Limit for General Population/Uncontrolled exposure should be applied for this device, it is 1.6 W/kg as averaged over any 1 gram of tissue.

3.5 Test Conditions

3.5.1 Ambient Condition

Ambient Temperature	20 to 24 ℃
Humidity	< 60 %

3.5.2 Test Configuration

The device was controlled by using a base station emulator. Communication between the device and the emulator was established by air link. The distance between the EUT and the antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during all tests.

For WLAN SAR testing, WLAN engineering testing software installed on the EUT can provide continuous transmitting RF signal.

4. Specific Absorption Rate (SAR)

4.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

4.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific heat capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

5. SAR Measurement System

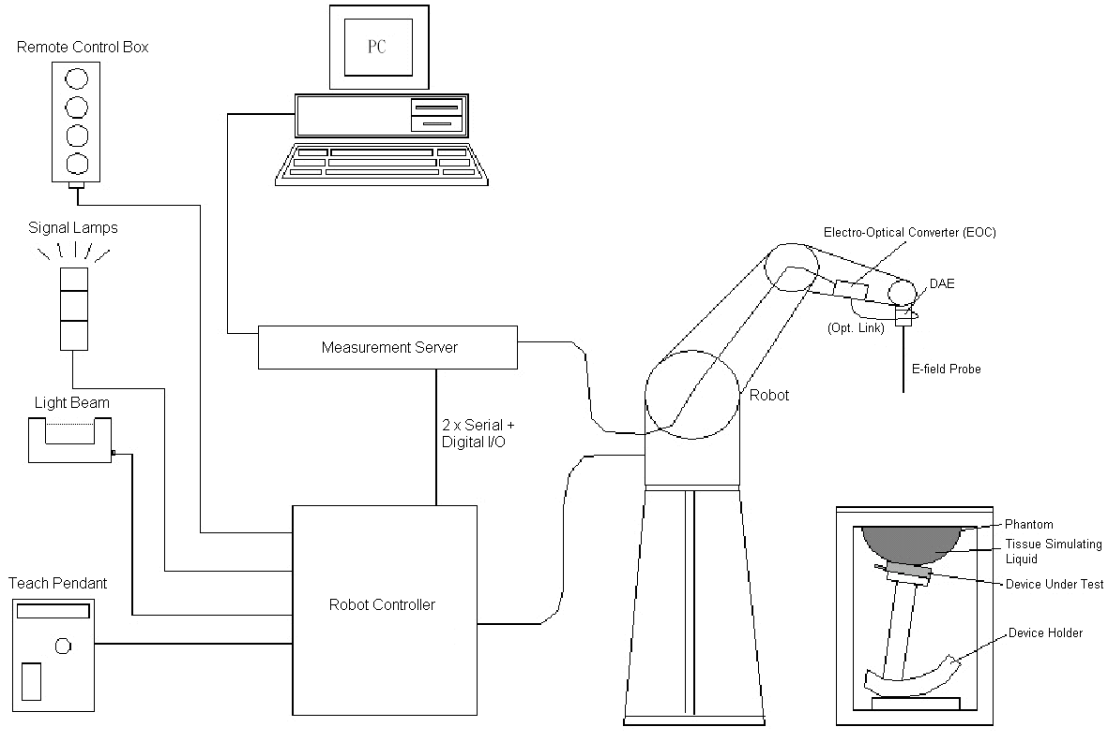


Fig 5.1 SPEAG DASY System Configurations

The DASY system for performance compliance tests is illustrated above graphically. This system consists of the following items:

- A standard high precision 6-axis robot with controller, a teach pendant and software
- A data acquisition electronic (DAE) attached to the robot arm extension
- A dosimetric probe equipped with an optical surface detector system
- The electro-optical converter (EOC) performs the conversion between optical and electrical signals
- A measurement server performs the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the accuracy of the probe positioning
- A computer operating Windows XP
- DASY software
- Remove control with teach pendant and additional circuitry for robot safety such as warming lamps, etc.
- The SAM twin phantom
- A device holder
- Tissue simulating liquid
- Dipole for evaluating the proper functioning of the system

Component details are described in in the following sub-sections.

5.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

5.1.1 E-Field Probe Specification

< ES3DV3 >

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	 **Fig 5.2 Photo of ES3DV3**
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	5 µW/g to 100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm	

5.1.2 E-Field Probe Calibration

Each probe needs to be calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy shall be evaluated and within ± 0.25 dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested. The calibration data can be referred to appendix C of this report.

5.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.3 Photo of DAE

5.3 Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Fig 5.4 Photo of DASY5

5.4 Measurement Server

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

The measurement server performs all the real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operations.

Fig 5.5 Photo of Server for DASY5

5.5 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom

Fig 5.6 Photo of SAM Phantom

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

5.6 Device Holder

<Device Holder for SAM Twin Phantom>

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\varepsilon = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

Fig 5.7 Device Holder

5.7 Data Storage and Evaluation

5.7.1 Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing 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 erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m], [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a non-lose media, will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

5.7.2 Data Evaluation

The DASY post-processing software (SEMCAD) 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	$Norm_i$, 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	σ
	- Density	ρ

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 DASY components. In the direct measuring mode of the multi-meter 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：

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

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：$\mathbf{E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}}$

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

with V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), μV/(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)：

$$\mathbf{E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}}$$

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

$$\mathbf{SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}}$$

with SAR = local specific absorption rate in mW/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

Note that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

5.8 Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 18, 2011	Nov. 17, 2012
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2011	Nov. 20, 2012
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 25, 2011	Jul. 24, 2014
SPEAG	Data Acquisition Electronics	DAE4	1303	Nov. 10, 2011	Nov. 09, 2012
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 12, 2011	Sep. 11, 2012
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1670	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1671	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8820C	6201091028	Jun. 10, 2012	Jun. 09, 2013
Agilent	Base Station	E5515C	MY50267224	Dec. 29, 2011	Dec. 28, 2012
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	Apr. 13, 2012	Apr. 12, 2013
R&S	Signal Generator	SMR40	100455	Dec. 30, 2011	Dec. 29, 2012
Agilent	Power Meter	E4416A	MY45101555	Aug. 23, 2011 Aug. 22, 2012	Aug. 22, 2012 Aug. 21, 2013
Agilent	Power Sensor	E9327A	MY44421198	Aug. 23, 2011 Aug. 22, 2012	Aug. 22, 2012 Aug. 21, 2013
R&S	Spectrum Analyzer	FSP30	101400	Jun. 01, 2012	May. 31, 2013

Table 5.1 Test Equipment List

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. Referring to KDB 450824 D02, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D2450V2, SN: 736, can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 6.2.

Fig 6.1 Photo of Liquid Height for Head SAR

Fig 6.2 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquid.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ε_r)
For Head								
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
For Body								
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7

Table 6.1 Recipes of Tissue Simulating Liquid

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an Agilent 85070D Dielectric Probe Kit and an Agilent Network Analyzer.

The following table shows the measuring results for simulating liquid.

Freq. (MHz)	Liquid Type	Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Head	21.7	0.93	42.77	0.90	41.5	3.33	3.06	±5	Aug. 18, 2012
1900	Head	21.5	1.415	40.527	1.40	40.0	1.07	1.32	±5	Aug. 16, 2012
1900	Head	21.5	1.427	41.191	1.40	40.0	1.93	2.98	±5	Aug. 18, 2012
2450	Head	21.5	1.856	37.685	1.80	39.2	3.11	-3.86	±5	Aug. 27, 2012
835	Body	21.6	0.976	54.369	0.97	55.2	0.62	-1.51	±5	Aug. 20, 2012
1900	Body	21.5	1.519	53.569	1.52	53.3	-0.07	0.50	±5	Aug. 20, 2012
2450	Body	21.4	1.976	54.13	1.95	52.7	1.33	2.71	±5	Aug. 27, 2012

Table 6.2 Measuring Results for Simulating Liquid

7. SAR Measurement Evaluation

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix it underneath the flat phantom and a corresponding distance holder.

7.1 Purpose of System Performance check

The system performance check verifies that the system operates within its specifications. System and operator errors can be detected and corrected. It is recommended that the system performance check be performed prior to any usage of the system in order to guarantee reproducible results. The system performance check uses normal SAR measurements in a simplified setup with a well characterized source. This setup was selected to give a high sensitivity to all parameters that might fail or vary over time. The system check does not intend to replace the calibration of the components, but indicates situations where the system uncertainty is exceeded due to drift or failure.

7.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:

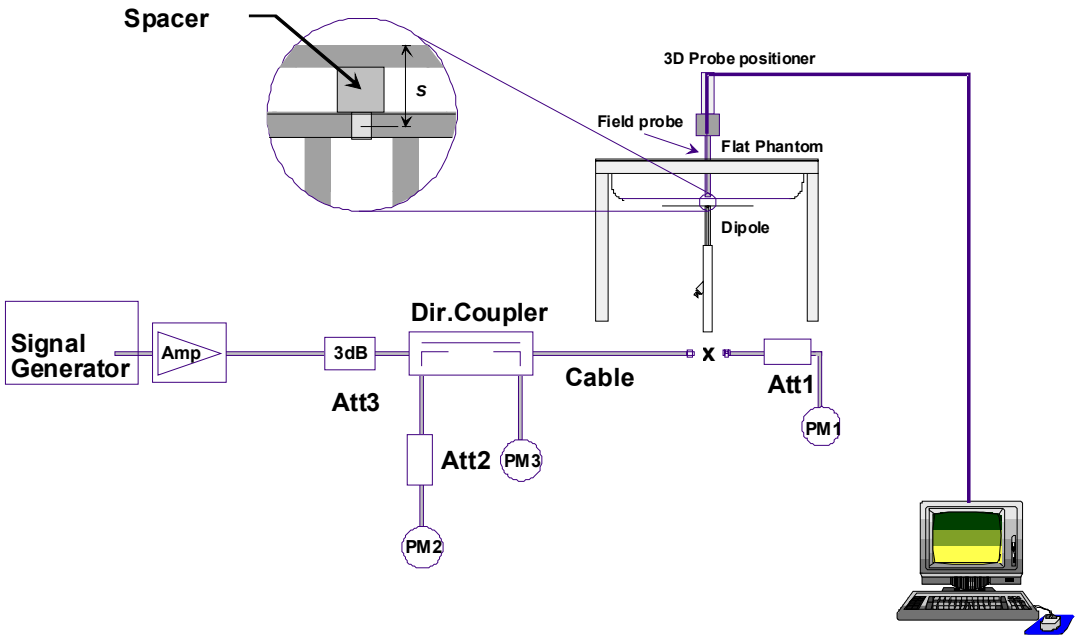


Fig 7.1 System Setup for System Evaluation

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. Calibrated Dipole

The output power on dipole port must be calibrated to 24 dBm (250 mW) before dipole is connected.

Fig 7.2 Photo of Dipole Setup

7.3 Validation Results

Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification of 10 %. Table 7.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Measurement Date	Frequency (MHz)	Liquid Type	Targeted SAR_{1g} (W/kg)	Measured SAR_{1g} (W/kg)	Normalized SAR_{1g} (W/kg)	Deviation (%)
Aug. 18, 2012	835	Head	9.4	2.52	10.08	7.23
Aug. 16, 2012	1900	Head	40.30	9.7	38.80	-3.72
Aug. 18, 2012	1900	Head	40.30	10.1	40.40	0.25
Aug. 27, 2012	2450	Head	54.8	13.5	54.00	-1.46
Aug. 20, 2012	835	Body	9.42	2.39	9.56	1.49
Aug. 20, 2012	1900	Body	41.80	10.6	42.40	1.44
Aug. 27, 2012	2450	Body	52.3	13.1	52.40	0.19

Table 7.1 Target and Measurement SAR after Normalized

8. EUT Testing Position

This EUT was tested in six different positions. They are right cheek, right tilted, left cheek, left tilted, Front of the EUT with phantom 1.5 cm gap, and Back of the EUT with phantom 1.5 cm gap, as illustrated below:

8.1 Define two imaginary lines on the handset

(a) The vertical centerline passes through two points on the front side of the handset - the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the bottom of the handset.

(b) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.

(c) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.

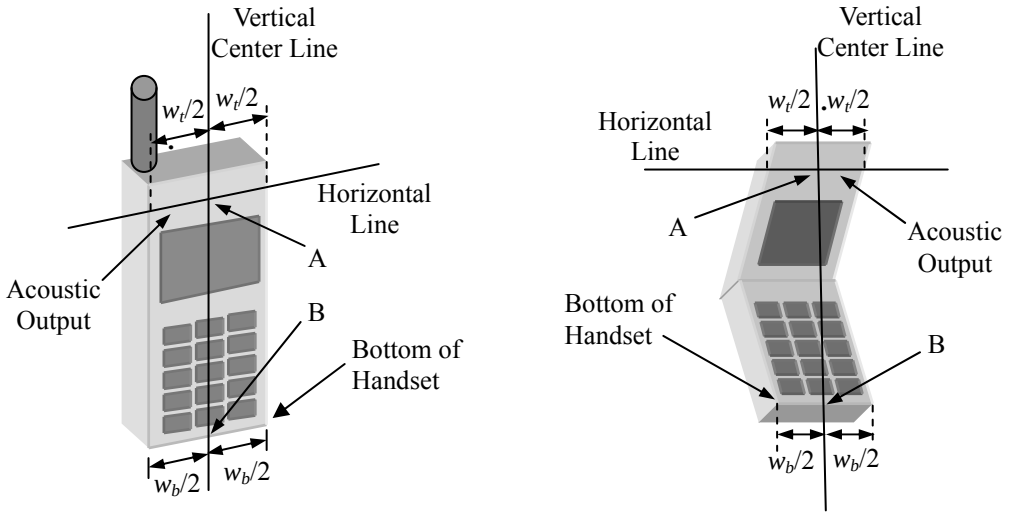


Fig 8.1 Illustration for Handset Vertical and Horizontal Reference Lines

8.2 Cheek Position

(a) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the three ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.

(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 9.2).

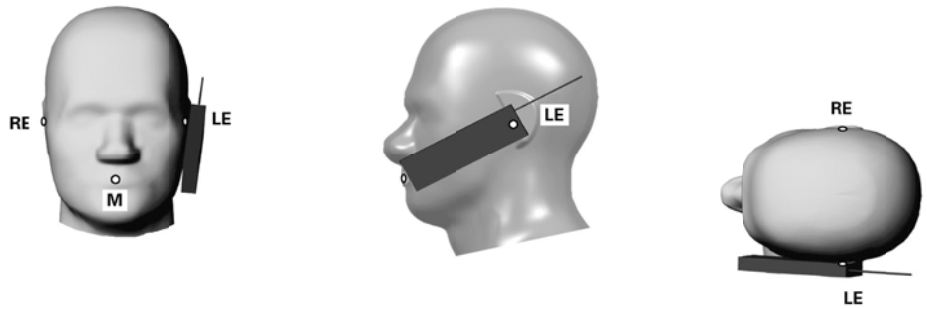


Fig 8.2 Illustration for Cheek Position

8.3 Tilted Position

(a) To position the device in the "cheek" position described above.

(b) While maintaining the device the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until contact with the ear is lost (see Fig. 9.3).

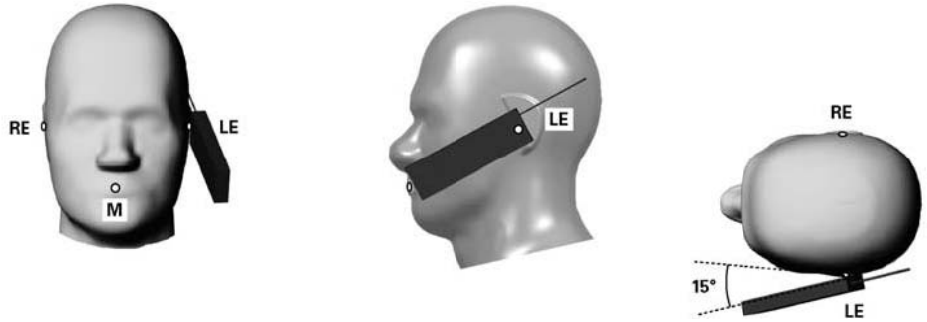


Fig 8.3 Illustration for Tilted Position

8.4 Body Worn Position

(a) To position the device parallel to the phantom surface with either keypad up or down.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device surface and the flat phantom to 1.5 cm.

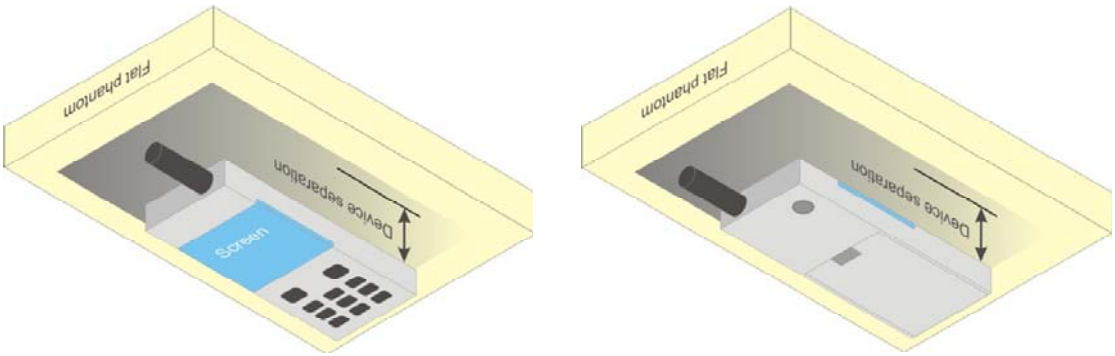


Fig 8.4 Illustration for Body Worn Position

<EUT Setup Photos>

Please refer to Appendix E for the test setup photos.

9. Measurement Procedures

The measurement procedures are as follows:

(a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
(b) Keep EUT to radiate maximum output power or 100% EUTy factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as Appendix E demonstrates.
(e) Set scan area, grid size and other setting on the DASY software.
(f) Measure SAR results for the highest power channel on each testing position.
(g) Find out the largest SAR result on these testing positions of each band
(h) Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

9.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

9.3 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.4 SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

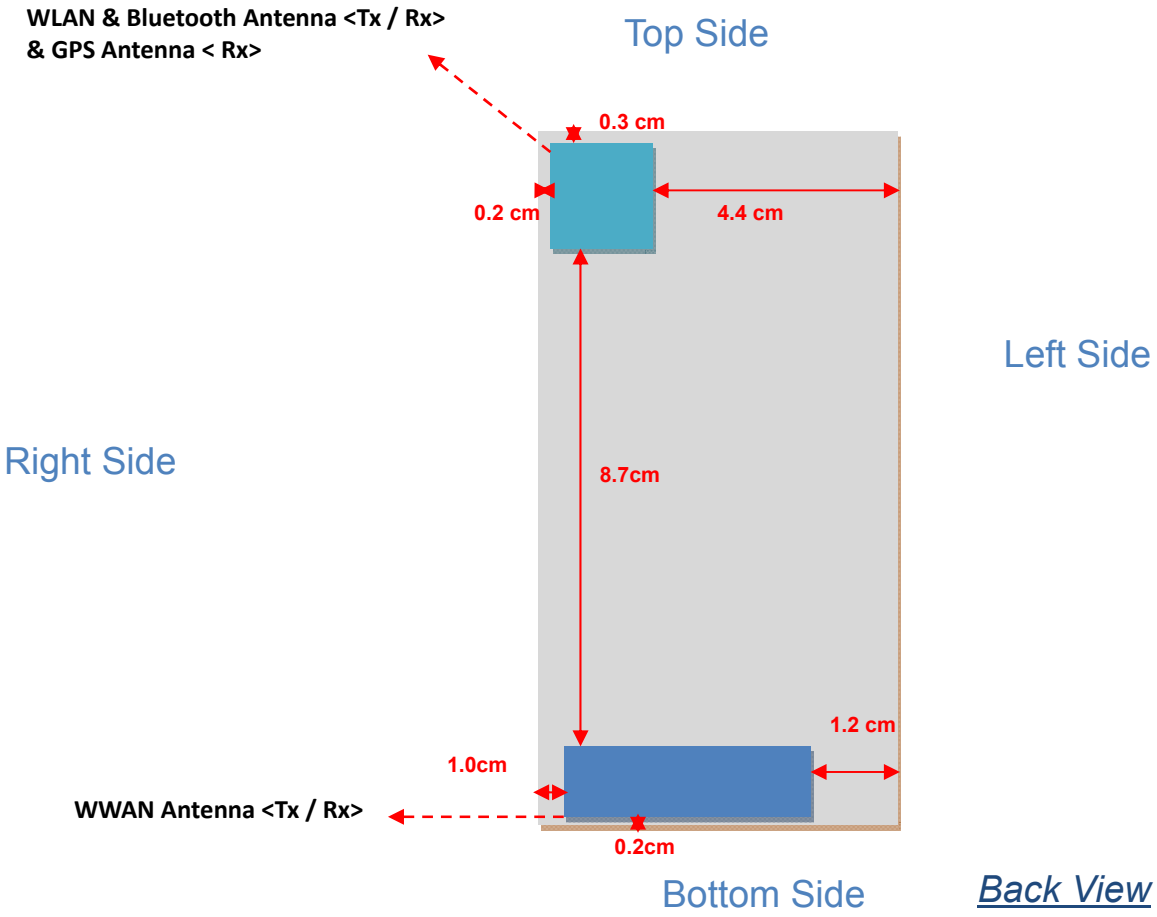
Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

9.5 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

10. SAR Test Configurations

10.1 Exposure Positions Consideration



Antennas	Wireless Interface
WWAN Antenna (Tx / Rx)	GPRS/EDGE 850 GPRS/EDGE 1900 WCDMA Band V WCDMA Band II
WLAN & BT Antenna (Tx / Rx)	WiFi 2.4GHz 802.11 b/g Bluetooth

10.2 Conducted RF Output Power (Unit: dBm)

<GSM/GPRS/EDGE>

Burst Average Power						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**1850.2**	**1880.0**	**1909.8**
GSM (1 Uplink)	**32.63**	32.48	32.44	28.96	29.29	**29.62**
GPRS 8 (1 Uplink) – CS1	32.62	32.47	32.43	28.96	29.28	29.61
GPRS 10 (2 Uplink) – CS1	31.92	31.76	31.55	28.11	28.43	28.78
GPRS 11 (3 Uplink) – CS1	29.93	29.76	29.66	26.39	26.70	27.03
GPRS 12 (4 Uplink) – CS1	28.87	28.71	28.61	25.57	25.91	26.24
EDGE 8 (GMSK, 1 Uplink) – MCS1	32.62	32.47	32.43	28.96	29.28	29.61
EDGE 10 (GMSK, 2 Uplink) – MCS1	31.92	31.74	31.54	28.10	28.41	28.78
EDGE 11 (GMSK, 3 Uplink) – MCS1	29.93	29.75	29.66	26.38	26.68	27.02
EDGE 12 (GMSK, 4 Uplink) – MCS1	28.85	28.68	28.61	25.56	25.90	26.24
EDGE 8 (8PSK, 1 Uplink) – MCS9	26.27	26.12	26.15	24.90	24.73	25.00
EDGE 10 (8PSK, 2 Uplink) – MCS9	25.32	25.06	25.20	23.90	23.67	24.01
EDGE 11 (8PSK, 3 Uplink) – MCS9	23.18	22.92	23.03	21.90	21.67	22.00
EDGE 12 (8PSK, 4 Uplink) – MCS9	22.07	21.90	21.95	20.72	20.58	20.84

Source-Based Time-Averaged Power						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**1850.2**	**1880.0**	**1909.8**
GSM (1 Uplink)	23.63	23.48	23.44	19.96	20.29	20.62
GPRS 8 (1 Uplink) – CS1	23.62	23.47	23.43	19.96	20.28	20.61
GPRS 10 (2 Uplink) – CS1	**25.92**	25.76	25.55	22.11	22.43	22.78
GPRS 11 (3 Uplink) – CS1	25.67	25.50	25.40	22.13	22.44	22.77
GPRS 12 (4 Uplink) – CS1	25.87	25.71	25.61	22.57	22.91	**23.24**
EDGE 8 (GMSK, 1 Uplink) – MCS1	23.62	23.47	23.43	19.96	20.28	20.61
EDGE 10 (GMSK, 2 Uplink) – MCS1	**25.92**	25.74	25.54	22.10	22.41	22.78
EDGE 11 (GMSK, 3 Uplink) – MCS1	25.67	25.49	25.40	22.12	22.42	22.76
EDGE 12 (GMSK, 4 Uplink) – MCS1	25.85	25.68	25.61	22.56	22.90	**23.24**
EDGE 8 (8PSK, 1 Uplink) – MCS9	17.27	17.12	17.15	15.90	15.73	16.00
EDGE 10 (8PSK, 2 Uplink) – MCS9	19.32	19.06	19.20	17.90	17.67	18.01
EDGE 11 (8PSK, 3 Uplink) – MCS9	18.92	18.66	18.77	17.64	17.41	17.74
EDGE 12 (8PSK, 4 Uplink) – MCS9	19.07	18.90	18.95	17.72	17.58	17.84

Remark: The source-based time-averaged power is linearly scaled the maximum burst averaged power based on time slots. The calculated method are shown as below:
Source based time averaged power = Maximum burst averaged power (1 Uplink) - 9 dB
Source based time averaged power = Maximum burst averaged power (2 Uplink) - 6 dB
Source based time averaged power = Maximum burst averaged power (3 Uplink) - 4.26 dB
Source based time averaged power = Maximum burst averaged power (4 Uplink) - 3 dB

Note:

1. For Head SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS 10 for GSM850 and set in GPRS 12 for GSM1900 due to its highest source-based time-average power.
2. For Body SAR testing, GPRS should be evaluated, therefore the EUT was set in GPRS 10 for GSM850 and set in GPRS 12 for GSM1900 due to its highest source-based time-average power.
3. Per KDB 447498, the maximum output power channel is used for SAR testing and for further SAR test reduction.
4. EDGE tests with MCS1 setting, GMSK modulation. Burst average power with MCS9 setting 8 PSK modulation, is provided voluntary for reference.
5. The EUT do not support DTM function.

<WCDMA>

Band	WCDMA Band V			WCDMA Band II		
Channel	4132	4182	4233	9262	9400	9538
Frequency (MHz)	826.4	836.4	846.6	1852.4	1880.0	1907.6
AMR	23.75	23.78	23.61	22.95	22.70	22.76
RMC 12.2K	23.75	23.79	23.63	22.98	22.71	22.80
HSDPA Subtest-1	23.69	23.74	23.64	22.95	22.71	22.79
HSDPA Subtest-2	22.59	22.70	22.62	21.82	21.63	21.66
HSDPA Subtest-3	22.10	22.22	22.14	21.31	21.16	21.22
HSDPA Subtest-4	22.08	22.23	22.11	21.32	21.12	21.24
HSUPA Subtest-1	20.86	20.92	20.85	20.65	20.41	20.52
HSUPA Subtest-2	19.69	19.78	19.68	19.55	19.35	19.45
HSUPA Subtest-3	20.71	20.70	20.55	20.26	20.06	20.22
HSUPA Subtest-4	19.78	19.76	19.66	19.55	19.23	19.33
HSUPA Subtest-5	20.90	20.88	20.77	20.75	20.43	20.61

MPR (dB)							
3GPP MPR	Subtest	WCDMA Band V			WCDMA Band II		
0	HSDPA Subtest-1	0.00	0.00	0.00	0.00	0.00	0.00
0	HSDPA Subtest-2	1.10	1.04	1.02	1.13	1.08	1.13
≤ 0.5	HSDPA Subtest-3	1.59	1.52	1.50	1.64	1.55	1.57
≤ 0.5	HSDPA Subtest-4	1.61	1.51	1.53	1.63	1.59	1.55
0	HSUPA Subtest-1	0.04	-0.04	-0.08	0.10	0.02	0.09
2	HSUPA Subtest-2	1.21	1.10	1.09	1.20	1.08	1.16
1	HSUPA Subtest-3	0.19	0.18	0.22	0.49	0.37	0.39
2	HSUPA Subtest-4	1.12	1.12	1.11	1.20	1.20	1.28
0	HSUPA Subtest-5	0.00	0.00	0.00	0.00	0.00	0.00

Note:

1. For Head SAR, per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If AMR 12.2kbps power is < 1/4 dB higher than RMC, SAR tests with AMR 12.2kbps can be excluded.
2. For Body SAR, per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA subset-1 and HSUPA subset-5 output power is < 1/4 dB higher than RMC, and SAR with RMC 12.2kbps setting is ≦1.2W/kg, HSDPA and HSUPA SAR evaluation can be excluded.
3. EUT is designed to follow the MPR of 3GPP Table 5.2B.1 specification. In production units, MPR result deviation from 3GPP is expected; the implementation and expected deviation is detailed in tune-up procedure exhibit.

<WLAN 2.4GHz>

Mode	Channel	Frequency (MHz)	Average power (dBm)			
			Data Rate (bps)			
			1M	2M	5.5M	11M
802.11b	CH 01	2412	15.76	15.69	15.96	**15.97**
	CH 06	2437	15.36	15.38	15.60	15.69
	CH 11	2462	15.17	15.12	15.38	15.40

Mode	Channel	Frequency (MHz)	Average power (dBm)							
			Data Rate (bps)							
			6M	9M	12M	18M	24M	36M	48M	54M
802.11g	CH 01	2412	8.82	8.87	8.91	8.98	9.00	9.09	**9.23**	8.97
	CH 06	2437	8.36	8.41	8.48	8.56	8.59	8.70	8.77	8.57
	CH 11	2462	7.97	7.88	7.97	8.15	8.28	8.48	8.58	8.35

Note:

1. Per KDB 248227, choose the highest output power channel to test SAR and determine further SAR exclusion
2. Per KDB 248227, 11g output power is less than 1/4 dB higher than 11b mode, thus the SAR can be excluded.
3. For each frequency band, testing at higher data rates and higher order modulations is not required when the maximum average output power for each of these configurations is less than 1/4 dB higher than those measured at the lowest data rate.

<Bluetooth>

Band	Bluetooth		
Channel	**00**	**39**	**78**
Frequency (MHz)	**2402**	**2441**	**2480**
Average Power (dBm)	1.93	2.25	**2.30**

Note: Per KDB 447498, Bluetooth SAR is excluded due to highest output power ≤ $2P_{ref}$ (GHz) mW, where $2P_{ref}$ (GHz) = 24mW = 13.8dBm.

11. SAR Test Results

11.1 Test Records for Head SAR Test

<GSM>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Power Drift (dB)	SAR_{1g} (W/kg)
13	GSM850	GPRS10	Right Cheek	128	824.2	31.92	-0.04	0.692
14	GSM850	GPRS10	Right Tilted	128	824.2	31.92	0.13	0.495
15	**GSM850**	**GPRS10**	**Left Cheek**	**128**	**824.2**	**31.92**	**-0.07**	**0.695**
16	GSM850	GPRS10	Left Tilted	128	824.2	31.92	-0.04	0.481
7	**GSM1900**	**GPRS12**	**Right Cheek**	**810**	**1909.8**	**26.24**	**0.07**	**1.190**
8	GSM1900	GPRS12	Right Tilted	810	1909.8	26.24	0.01	0.417
9	GSM1900	GPRS12	Left Cheek	810	1909.8	26.24	0.02	0.705
10	GSM1900	GPRS12	Left Tilted	810	1909.8	26.24	0.01	0.389
11	GSM1900	GPRS12	Right Cheek	512	1850.2	25.57	0.01	1.140
12	GSM1900	GPRS12	Right Cheek	661	1880	25.91	-0.01	1.180

Note: Per KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

<WCDMA>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Power Drift (dB)	SAR_{1g} (W/kg)
17	WCDMA V	RMC 12.2K	Right Cheek	4182	836.4	23.79	-0.09	0.438
18	WCDMA V	RMC 12.2K	Right Tilted	4182	836.4	23.79	0.14	0.361
19	**WCDMA V**	**RMC 12.2K**	**Left Cheek**	**4182**	**836.4**	**23.79**	**0.01**	**0.443**
20	WCDMA V	RMC 12.2K	Left Tilted	4182	836.4	23.79	0.09	0.310
1	**WCDMA II**	**RMC 12.2K**	**Right Cheek**	**9262**	**1852.4**	**22.98**	**0.09**	**1.240**
2	WCDMA II	RMC 12.2K	Right Tilted	9262	1852.4	22.98	-0.02	0.388
3	WCDMA II	RMC 12.2K	Left Cheek	9262	1852.4	22.98	0.08	0.626
4	WCDMA II	RMC 12.2K	Left Tilted	9262	1852.4	22.98	-0.05	0.367
5	WCDMA II	RMC 12.2K	Right Cheek	9400	1880	22.71	-0.13	1.210
6	WCDMA II	RMC 12.2K	Right Cheek	9538	1907.6	22.80	0.05	1.090

Note: Per KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

<WLAN>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Data Rate	Power Setting	Power Drift (dB)	SAR_{1g} (W/kg)
33	WLAN2.4G	802.11b	Right Cheek	1	2412	15.97	11M	20	0.08	0.205
34	WLAN2.4G	802.11b	Right Tilted	1	2412	15.97	11M	20	-0.14	0.157
35	**WLAN2.4G**	**802.11b**	**Left Cheek**	**1**	**2412**	**15.97**	**11M**	**20**	**0.01**	**0.426**
36	WLAN2.4G	802.11b	Left Tilted	1	2412	15.97	11M	20	-0.02	0.289

Note: Per KDB 248227, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

11.2 Test Records for Body-worn SAR Test

<GSM>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Headset	Power Drift (dB)	SAR_{1g} (W/kg)
25	GSM850	GPRS10	Front	1.5	128	824.2	31.92	V	0.03	0.712
26	**GSM850**	**GPRS10**	**Back**	**1.5**	**128**	**824.2**	**31.92**	**V**	**0.06**	**0.831**
27	GSM850	GPRS10	Back	1.5	189	836.4	31.76	V	0.01	0.778
28	GSM850	GPRS10	Back	1.5	251	848.8	31.55	V	0.02	0.731
23	**GSM1900**	**GPRS12**	**Front**	**1.5**	**810**	**1909.8**	**26.24**	**V**	**-0.07**	**0.515**
24	GSM1900	GPRS12	Back	1.5	810	1909.8	26.24	V	0.10	0.498

Note:
1. Per KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
2. "V" in the headset column means the headset is plugged during SAR testing.

<WCDMA>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Headset	Power Drift (dB)	SAR_{1g} (W/kg)
29	WCDMA V	RMC 12.2K	Front	1.5	4182	836.4	23.79	V	0.15	0.438
30	**WCDMA V**	**RMC 12.2K**	**Back**	**1.5**	**4182**	**836.4**	**23.79**	**V**	**0.12**	**0.572**
21	WCDMA II	RMC 12.2K	Front	1.5	9262	1852.4	22.98	V	0.06	0.519
22	**WCDMA II**	**RMC 12.2K**	**Back**	**1.5**	**9262**	**1852.4**	**22.98**	**V**	**0.07**	**0.527**

Note:
1. Per KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
2. "V" in the headset column means the headset is plugged during SAR testing.

<WLAN>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Headset	Data Rate	Power Setting	Power Drift (dB)	SAR_{1g} (W/kg)
31	WLAN2.4G	802.11b	Front	1.5	1	2412	15.97	V	11M	20	0.17	0.065
32	**WLAN2.4G**	**802.11b**	**Back**	**1.5**	**1**	**2412**	**15.97**	**V**	**11M**	**20**	**0.05**	**0.095**

Note:
1. Per KDB 248227, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
2. "V" in the headset column means the headset is plugged during SAR testing.

11.3 Simultaneous Multi-band Transmission Analysis

No.	Applicable Simultaneous Transmission Combination
1	GSM + BT
2	WCDMA + BT
3	GSM + WLAN 2.4G
4	WCDMA + WLAN 2.4G

Note:

1. WLAN and BT share the same antenna, and cannot transmit simultaneously.
2. GSM and WCDMA share the same antenna, and cannot transmit simultaneously.
3. EUT will choose either GSM or WCDMA according to the network signal condition, therefore, they will not transmit simultaneously.
4. Per KDB KDB 648474 D01, Bluetooth (2.30 dBm) output power ≤ $2P_{ref}$ and the distance to WWAN transmitting antenna ≥ 5cm, therefore, stand-alone SAR is not required; the simultaneous transmission SAR for WWAN and Bluetooth were not required, because Bluetooth standalone SAR is not required and the maximum WWAN SAR (1.240 W/kg), so the SAR summation is less than 1.6 W/kg.
5. According to KDB 648474, the simultaneous transmission SAR for WWAN and WLAN was not required, because the SAR summation (Head: 1.45 W/kg; Body: 0.93 W/kg) is less than 1.6 W/kg.

<Head SAR>

Position	WWAN			WLAN		Max. SAR Sum	Scale WWAN				Scaled WLAN				Scaled WWAN + Scaled WLAN
	WWAN Band	Plot No	Max. WWAN SAR (W/kg)	Plot No	Max. WLAN SAR (W/kg)		Average Power (dBm)	Tune-up Limit (dBm)	Scaling Factor	Scaled WWAN (W/kg)	Average Power (dBm)	Tune-up Limit (dBm)	Scaling Factor	Scaled WLAN (W/kg)	
Right Cheek	GSM850	13	0.692	33	0.205	**0.90**	31.92	32.5	1.14	0.791	15.97	16	1.01	0.206	1.00
	GSM1900	7	1.19	33	0.205	**1.40**	26.24	26.4	1.04	1.235	15.97	16	1.01	0.206	1.44
	GSM1900	11	1.14	33	0.205	**1.35**	25.57	26.4	1.21	1.380	15.97	16	1.01	0.206	1.59
	WCDMA V	17	0.438	33	0.205	**0.64**	23.79	25	1.32	0.579	15.97	16	1.01	0.206	0.79
	WCDMA II	1	1.24	33	0.205	**1.45**	22.98	23.3	1.08	1.335	15.97	16	1.01	0.206	1.54
	WCDMA II	5	1.21	33	0.205	**1.42**	22.71	23.3	1.15	1.386	15.97	16	1.01	0.206	1.59
Right Tilted	GSM850	14	0.495	34	0.157	**0.65**	31.92	32.5	1.14	0.566	15.97	16	1.01	0.158	0.72
	GSM1900	8	0.417	34	0.157	**0.57**	26.24	26.4	1.04	0.433	15.97	16	1.01	0.158	0.59
	WCDMA V	18	0.361	34	0.157	**0.52**	23.79	25	1.32	0.477	15.97	16	1.01	0.158	0.64
	WCDMA II	2	0.388	34	0.157	**0.55**	22.98	23.3	1.08	0.418	15.97	16	1.01	0.158	0.58
Left Cheek	GSM850	15	0.695	35	0.426	**1.12**	31.92	32.5	1.14	0.794	15.97	16	1.01	0.429	1.22
	GSM1900	9	0.705	35	0.426	**1.13**	26.24	26.4	1.04	0.731	15.97	16	1.01	0.429	1.16
	WCDMA V	19	0.443	35	0.426	**0.87**	23.79	25	1.32	0.585	15.97	16	1.01	0.429	1.01
	WCDMA II	3	0.626	35	0.426	**1.05**	22.98	23.3	1.08	0.674	15.97	16	1.01	0.429	1.10
Left Tilted	GSM850	16	0.481	36	0.289	**0.77**	31.92	32.5	1.14	0.550	15.97	16	1.01	0.291	0.84
	GSM1900	10	0.389	36	0.289	**0.68**	26.24	26.4	1.04	0.404	15.97	16	1.01	0.291	0.70
	WCDMA V	20	0.31	36	0.289	**0.60**	23.79	25	1.32	0.410	15.97	16	1.01	0.291	0.70
	WCDMA II	4	0.367	36	0.289	**0.66**	22.98	23.3	1.08	0.395	15.97	16	1.01	0.291	0.69

Note:

1. The maximum SAR summation is calculated based on the same configuration and test position.
2. When stand-alone 1-g SAR is not required for a transmitter or antenna, its SAR is considered zero in the 1-g SAR summing process to determine simultaneous transmission SAR evaluation requirements.
3. If 1g-SAR scalar summation < 1.6W/kg, simultaneous SAR measurement is not necessary.
4. The WWAN scaling factor is calculated according to the difference between measured output power and maximum tolerance power on this device.

<Body-worn SAR>

Position	WWAN			WLAN		Max. SAR Sum	Scale WWAN				Scaled WLAN				Scaled WWAN + Scaled WLAN
	WWAN Band	Plot No	Max. WWAN SAR (W/kg)	Plot No	Max. WLAN SAR (W/kg)		Average Power (dBm)	Tune-up Limit (dBm)	Scaling Factor	Scaled WWAN (W/kg)	Average Power (dBm)	Tune-up Limit (dBm)	Scaling Factor	Scaled WLAN (W/kg)	
Front (with headset)	GSM850	25	0.712	31	0.065	**0.78**	31.92	32.5	1.14	0.814	15.97	16	1.01	0.065	0.88
	GSM1900	23	0.515	31	0.065	**0.58**	26.24	26.4	1.04	0.534	15.97	16	1.01	0.065	0.60
	WCDMA V	29	0.438	31	0.065	**0.50**	23.79	25	1.32	0.579	15.97	16	1.01	0.065	0.64
	WCDMA II	21	0.519	31	0.065	**0.58**	22.98	23.3	1.08	0.559	15.97	16	1.01	0.065	0.62
Back (with headset)	GSM850	26	0.831	32	0.095	**0.93**	31.92	32.5	1.14	0.950	15.97	16	1.01	0.096	1.05
	GSM1900	24	0.498	32	0.095	**0.59**	26.24	26.4	1.04	0.517	15.97	16	1.01	0.096	0.61
	WCDMA V	30	0.572	32	0.095	**0.67**	23.79	25	1.32	0.756	15.97	16	1.01	0.096	0.85
	WCDMA II	22	0.527	32	0.095	**0.62**	22.98	23.3	1.08	0.567	15.97	16	1.01	0.096	0.66

Note:

1. The maximum SAR summation is calculated based on the same configuration and test position.
2. When stand-alone 1-g SAR is not required for a transmitter or antenna, its SAR is considered zero in the 1-g SAR summing process to determine simultaneous transmission SAR evaluation requirements
3. If 1g-SAR scalar summation < 1.6W/kg, simultaneous SAR measurement is not necessary.
4. The WWAN scaling factor is calculated according to the difference between measured output power and maximum tolerance power on this device.

Test Engineer： Kat Yin

12. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in Table 12.1

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 12.1 Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 12.2 Uncertainty Budget of DASY for frequency range 300 MHz to 3 GHz

13. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003

[4] FCC OET Bulletin 65 (Edition 97-01) Supplement C (Edition 01-01), “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”, June 2001

[5] SPEAG DASY System Handbook

[6] FCC KDB 248227 D01 v01r02, “SAR Measurement Procedures for 802.11 a/b/g Transmitters”, May 2007

[7] FCC KDB 447498 D01 v04, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, November 2009

[8] FCC KDB 648474 D01 v01r05, “SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas”, September 2008

[9] FCC KDB 941225 D01 v02, “SAR Measurement Procedures for 3G Devices – CDMA 2000 / Ev-Do / WCDMA / HSDPA / HSPA”, October 2007

[10] FCC KDB 941225 D02 v02 "3GPP R6 HSPA and R7 HSPA+ SAR Guidance", December 2009.

[11] FCC KDB 941225 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008

[12] FCC KDB 941225 D04 v01, “Evaluating SAR for GSM/(E)GPRS Dual Transfer Mode”, January 27 2010

[13] FCC KDB 941225 D06 v01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", April 2011

[14] FCC KDB 388624 D02, "Permit But Ask List", December 2011.

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

System Check_Head_835MHz_120818

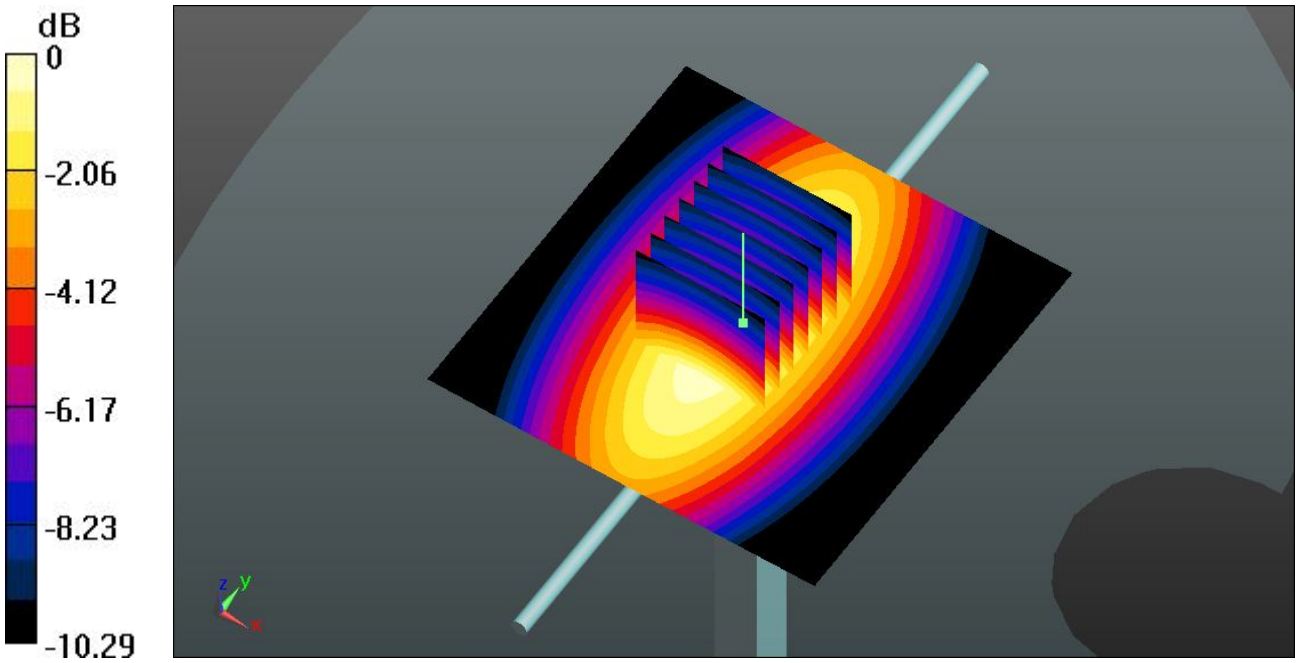
DUT: D835V2-SN: 4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_120818 Medium parameters used: f = 835 MHz; σ = 0.93 mho/m; ε_r = 42.77; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.70 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.148 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.816 mW/g
SAR(1 g) = 2.52 mW/g; SAR(10 g) = 1.65 mW/g
Maximum value of SAR (measured) = 2.72 mW/g



0 dB = 2.72 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

System Check_Body_835MHz_120820

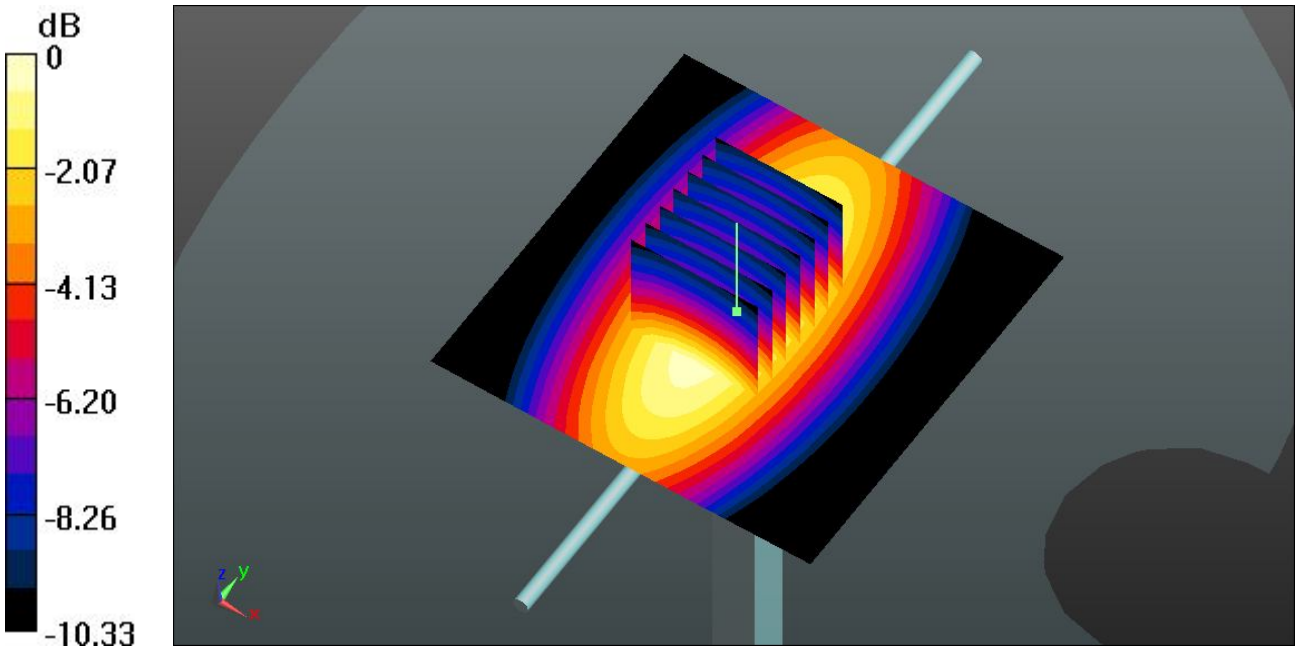
DUT: D835V2-SN: 4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_120820 Medium parameters used: f = 835 MHz; σ = 0.976 mho/m; ε_r = 54.369; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.57 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.441 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.608 mW/g
SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.56 mW/g
Maximum value of SAR (measured) = 2.58 W/kg



0 dB = 2.58 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 16.08.2012

System Check_Head_1900MHz_120816

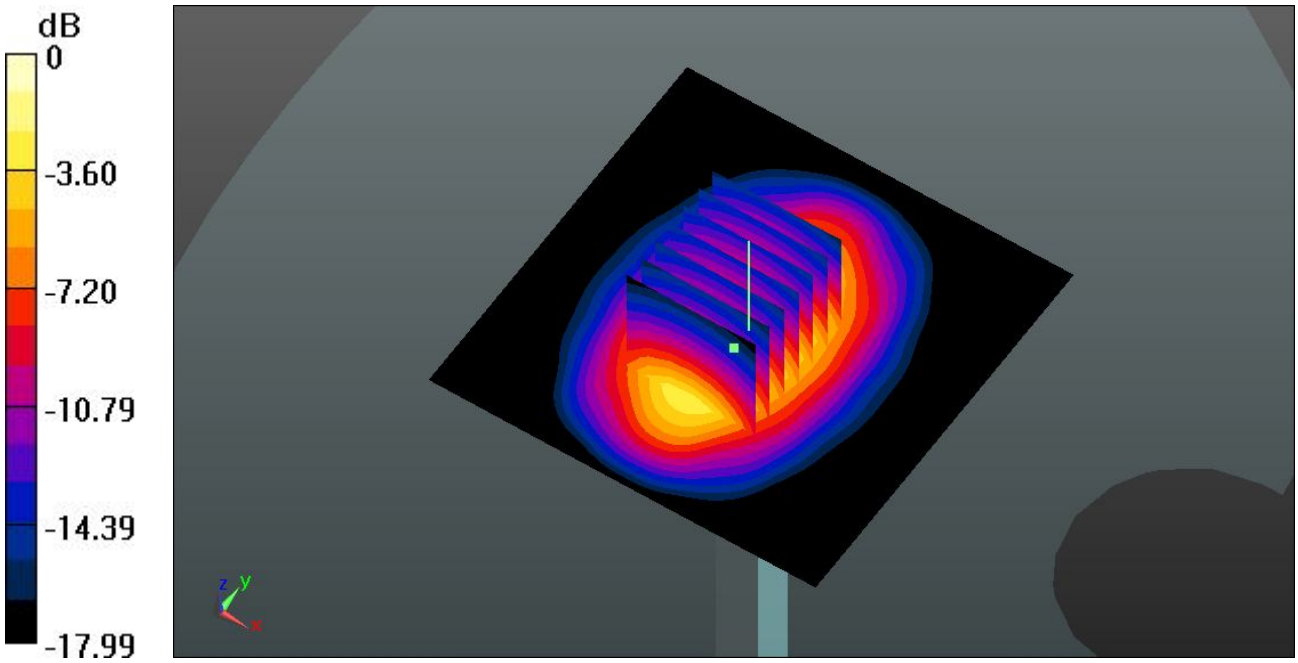
DUT: D1900V2-SN: 5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120816 Medium parameters used: f = 1900 MHz; σ = 1.415 mho/m; ε_r = 40.527; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.2 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.165 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 17.908 mW/g
SAR(1 g) = 9.7 mW/g; SAR(10 g) = 5.04 mW/g
Maximum value of SAR (measured) = 10.9 mW/g



0 dB = 10.9 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

System Check_Head_1900MHz_120818

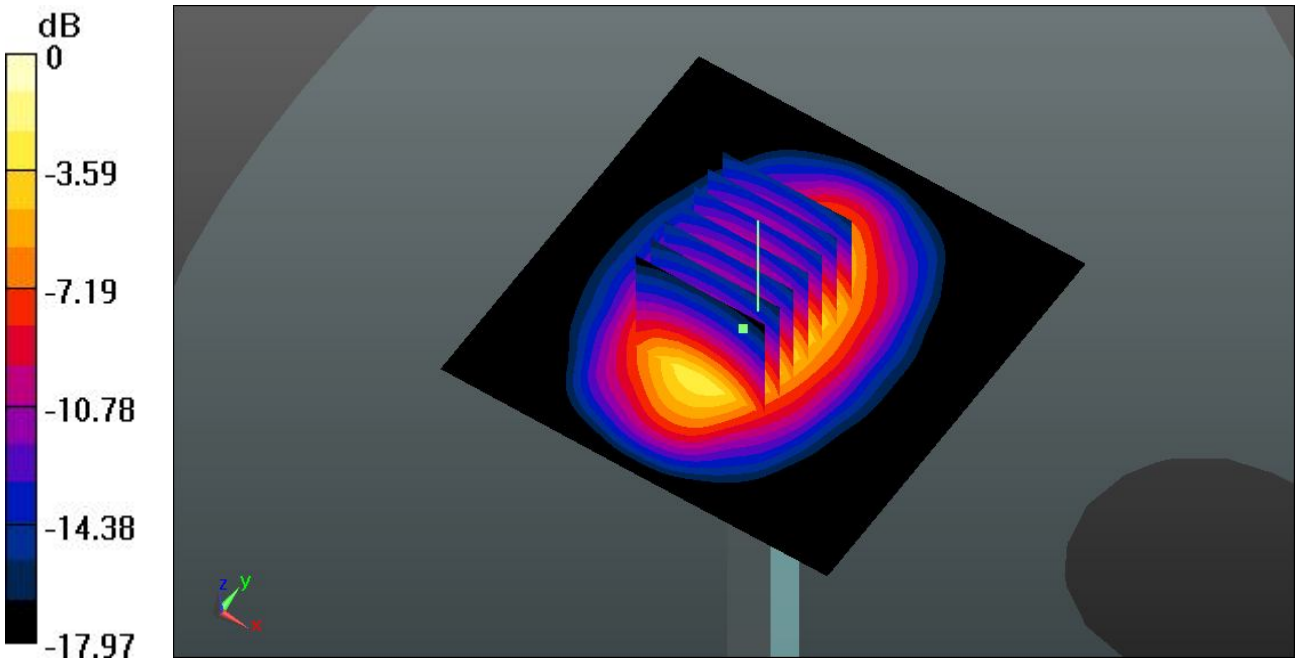
DUT: D1900V2-SN: 5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120818 Medium parameters used: f = 1900 MHz; σ = 1.427 mho/m; ε_r = 41.191; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.4 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.847 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 18.757 mW/g
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.22 mW/g
Maximum value of SAR (measured) = 11.4 mW/g



0 dB = 11.4 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

System Check_Body_1900MHz_120820

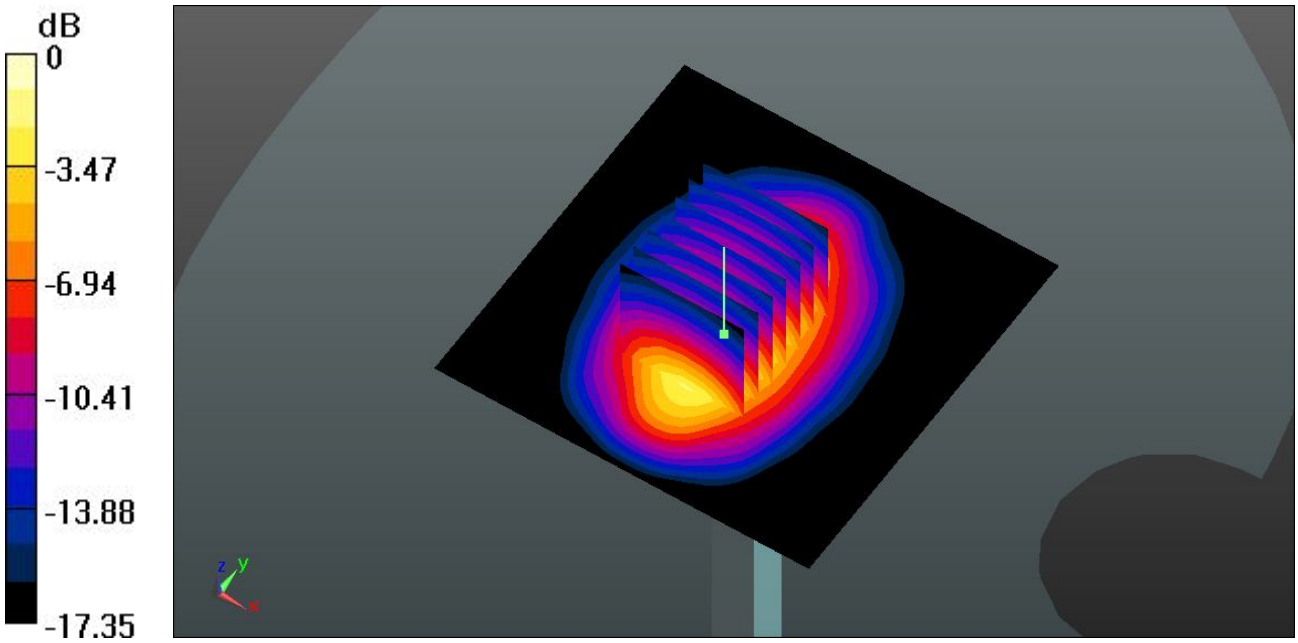
DUT: D1900V2-SN: 5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_120820 Medium parameters used: f = 1900 MHz; σ = 1.519 mho/m; ε_r = 53.569; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.64, 4.64, 4.64); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.4 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.882 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 19.317 mW/g
SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.5 mW/g
Maximum value of SAR (measured) = 11.9 mW/g



0 dB = 11.9 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 27.08.2012

System Check_Head_2450MHz_120827

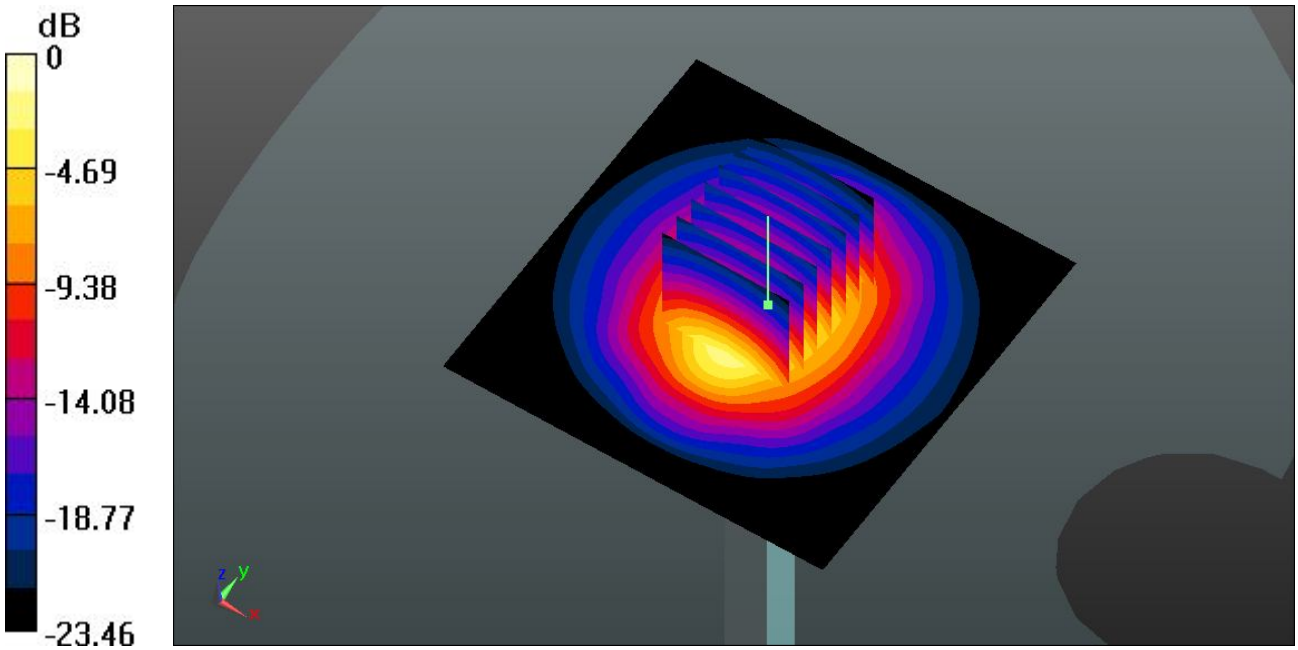
DUT: D2450V2-SN: 736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_120827 Medium parameters used: f = 2450 MHz; σ = 1.856 mho/m; ε_r = 37.685; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.52, 4.52, 4.52); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.4 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.707 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 29.804 mW/g
SAR(1 g) = 13.5 mW/g; SAR(10 g) = 6.09 mW/g
Maximum value of SAR (measured) = 15.4 mW/g



0 dB = 15.4 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 27.08.2012

System Check_Body_2450MHz_120827

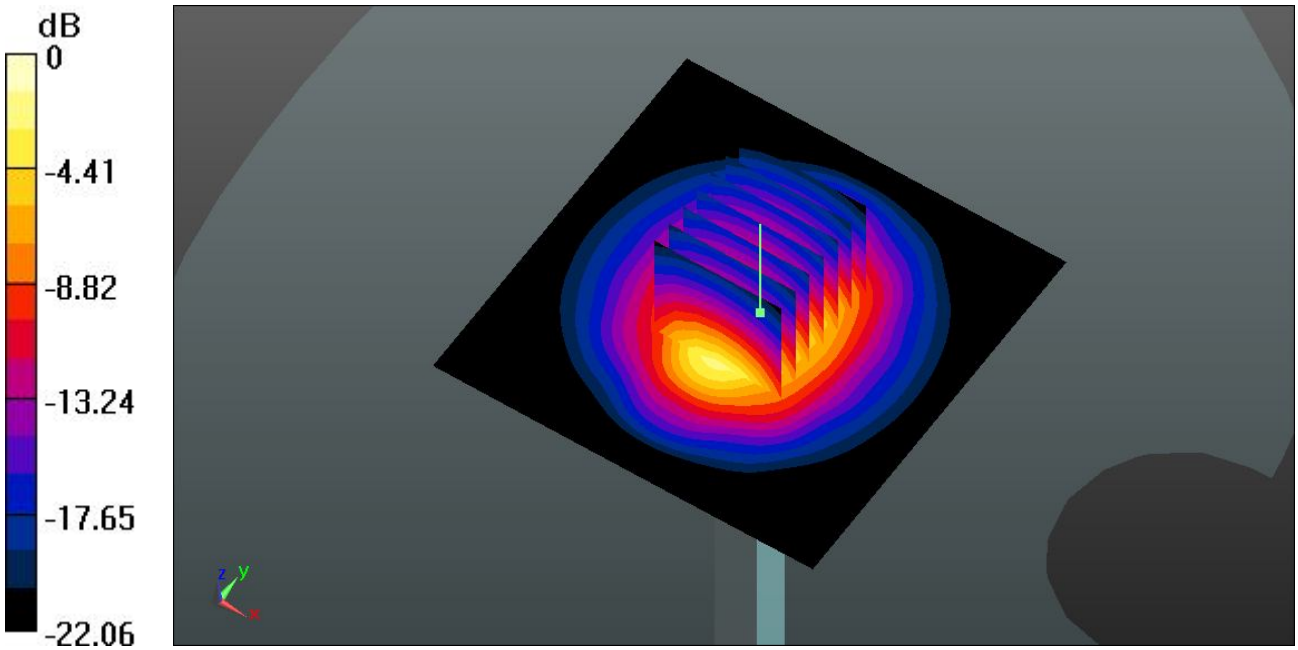
DUT: D2450V2-SN: 736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120827 Medium parameters used: f = 2450 MHz; σ = 1.976 mho/m; ε_r = 54.13; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.28, 4.28, 4.28); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.0 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.329 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 28.282 mW/g
SAR(1 g) = 13.1 mW/g; SAR(10 g) = 5.95 mW/g
Maximum value of SAR (measured) = 15.0 mW/g



0 dB = 15.0 mW/g

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

13 GSM850_GPRS10_Right Cheek_Ch128

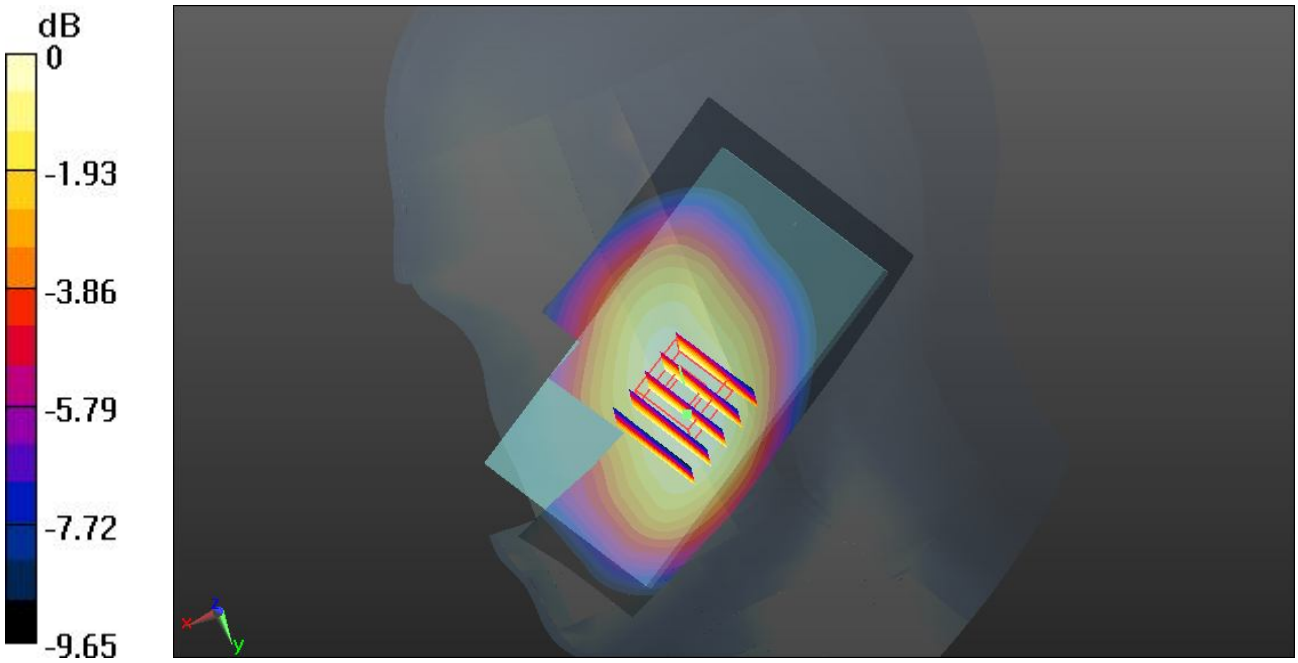
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: HSL_835_120818 Medium parameters used: f = 824.2 MHz; σ = 0.919 mho/m; ε_r = 42.9; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.734 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.355 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.934 mW/g
SAR(1 g) = 0.692 mW/g; SAR(10 g) = 0.524 mW/g
Maximum value of SAR (measured) = 0.727 mW/g



0 dB = 0.727 mW/g

14 GSM850_GPRS10_Right Tilted_Ch128

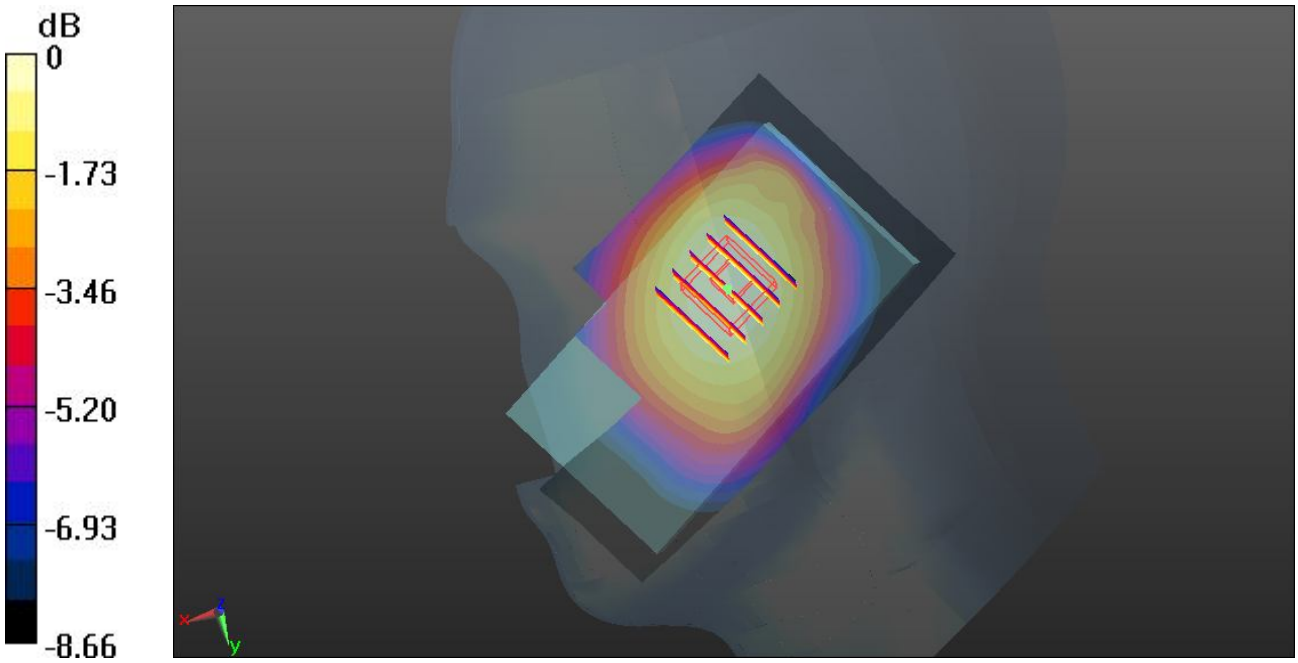
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: HSL_835_120818 Medium parameters used: f = 824.2 MHz; σ = 0.919 mho/m; ε_r = 42.9; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.512 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.534 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.616 mW/g
SAR(1 g) = 0.495 mW/g; SAR(10 g) = 0.382 mW/g
Maximum value of SAR (measured) = 0.513 mW/g



0 dB = 0.513 mW/g

15 GSM850_GPRS10_Left Cheek_Ch128

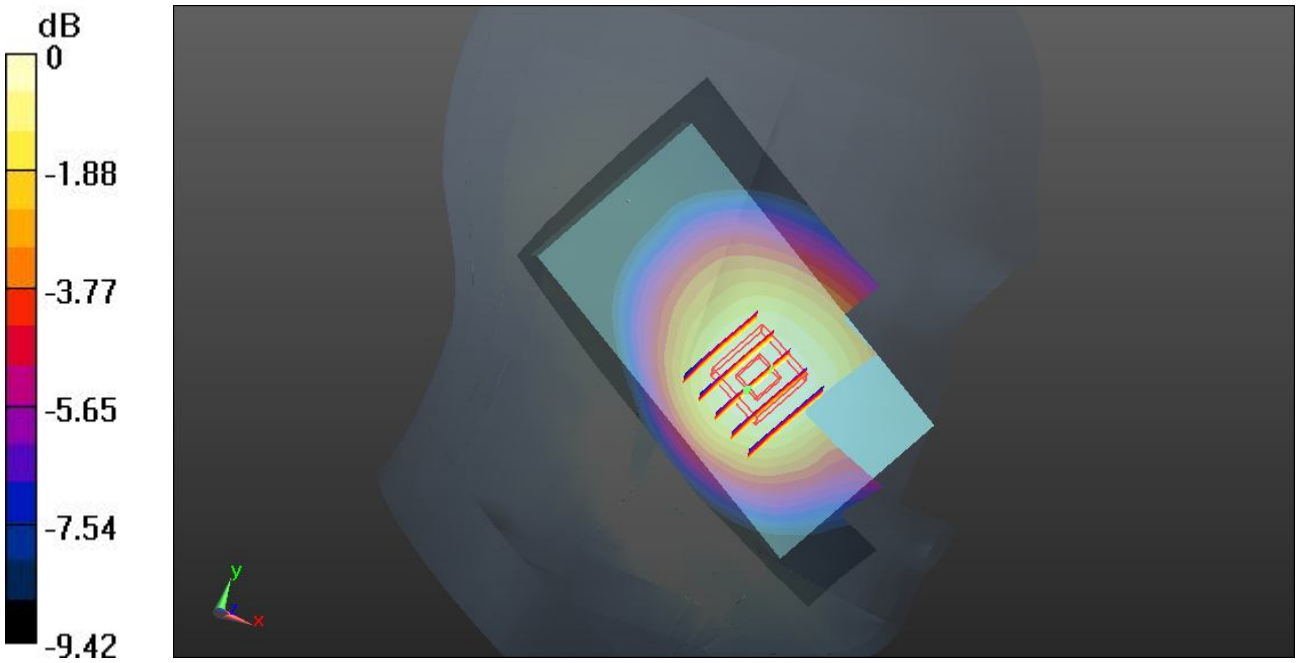
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: HSL_835_120818 Medium parameters used: f = 824.2 MHz; σ = 0.919 mho/m; ε_r = 42.9; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.726 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.526 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.842 mW/g
SAR(1 g) = 0.695 mW/g; SAR(10 g) = 0.540 mW/g
Maximum value of SAR (measured) = 0.719 mW/g



0 dB = 0.719 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

15 GSM850_GPRS10_Left Cheek_Ch128_2D

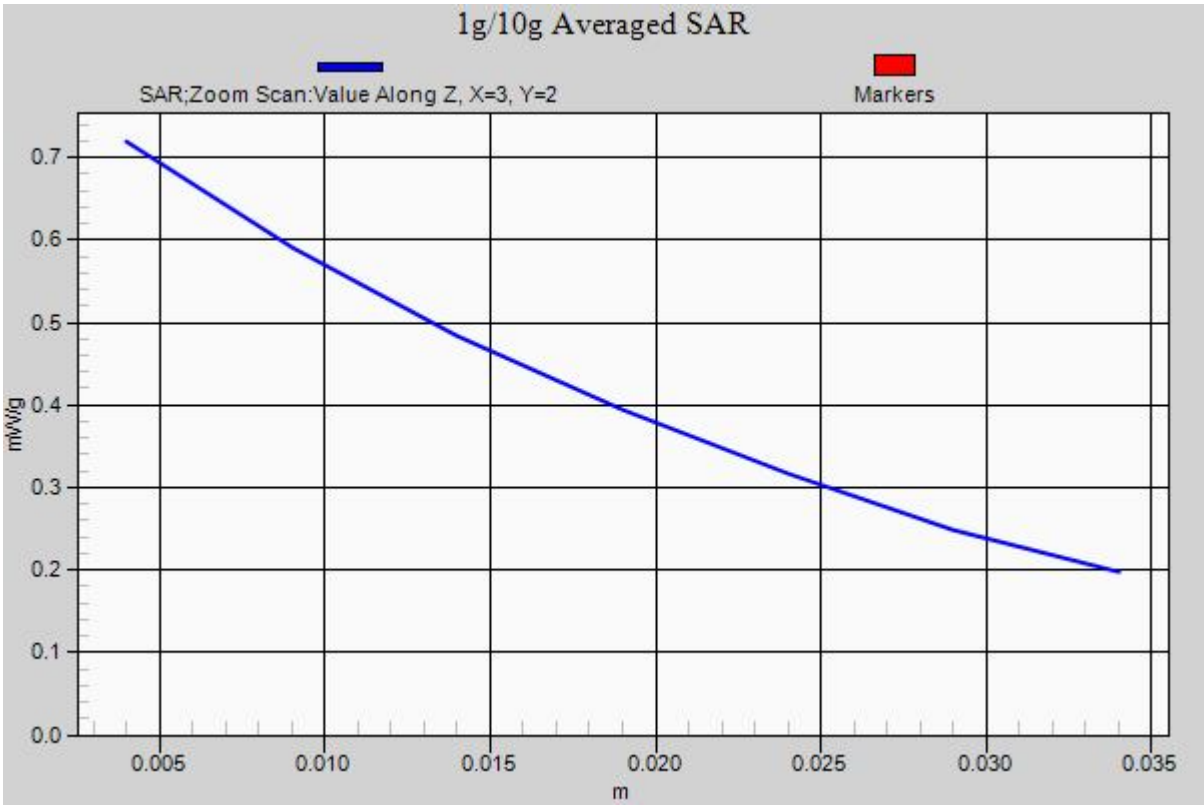
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: HSL_835_120818 Medium parameters used: f = 824.2 MHz; σ = 0.919 mho/m; ε_r = 42.9; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.726 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.526 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.842 mW/g
SAR(1 g) = 0.695 mW/g; SAR(10 g) = 0.540 mW/g
Maximum value of SAR (measured) = 0.719 mW/g



16 GSM850_GPRS10_Left Tilted_Ch128

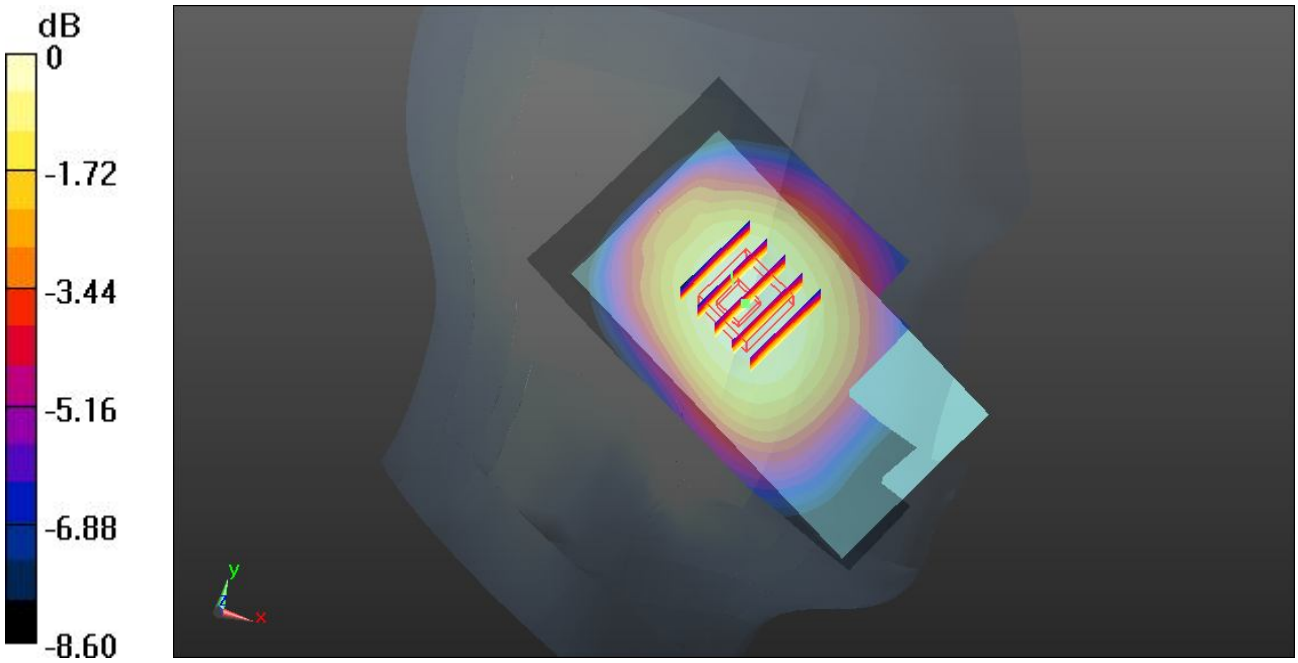
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: HSL_835_120818 Medium parameters used: f = 824.2 MHz; σ = 0.919 mho/m; ε_r = 42.9; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.497 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.324 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.600 mW/g
SAR(1 g) = 0.481 mW/g; SAR(10 g) = 0.372 mW/g
Maximum value of SAR (measured) = 0.498 mW/g



0 dB = 0.498 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

07 GSM1900_GPRS12_Right Cheek_Ch810

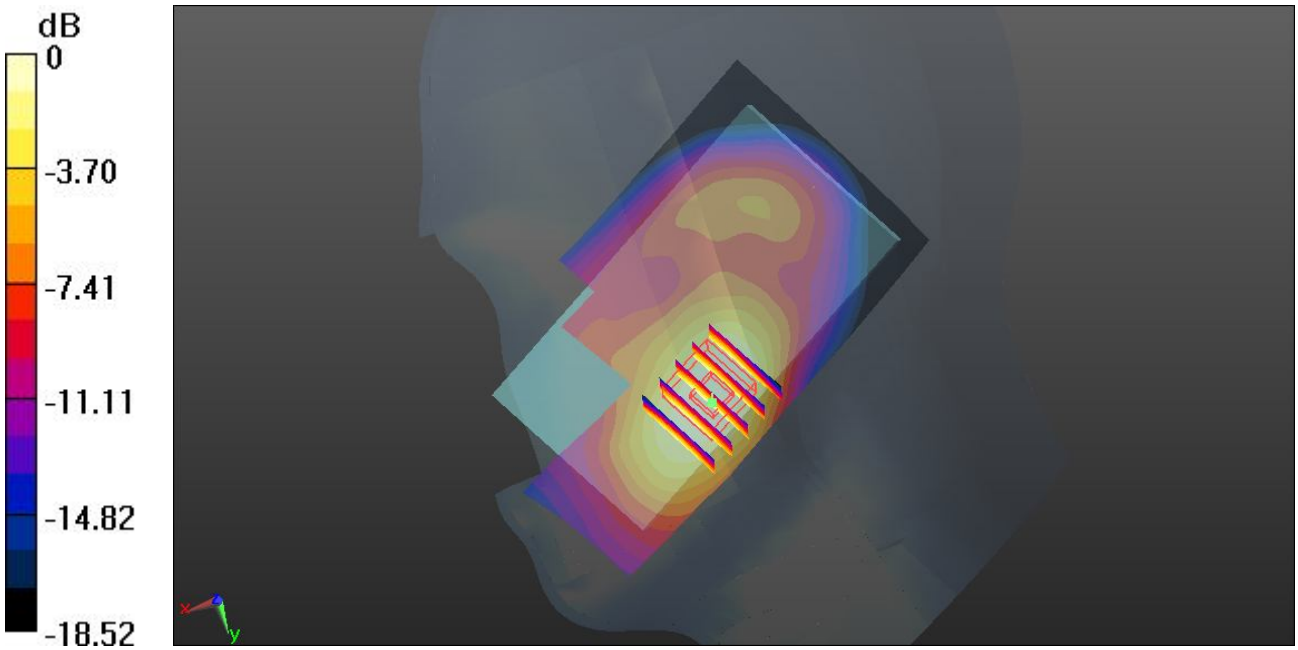
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1909.8 MHz;Duty Cycle: 1:2
Medium: HSL_1900_120818 Medium parameters used: f = 1910 MHz; σ = 1.436 mho/m; ε_r = 41.187; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch810/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.34 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.878 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.850 mW/g
SAR(1 g) = 1.190 mW/g; SAR(10 g) = 0.715 mW/g
Maximum value of SAR (measured) = 1.27 mW/g



0 dB = 1.27 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

07 GSM1900_GPRS12_Right Cheek_Ch810_2D

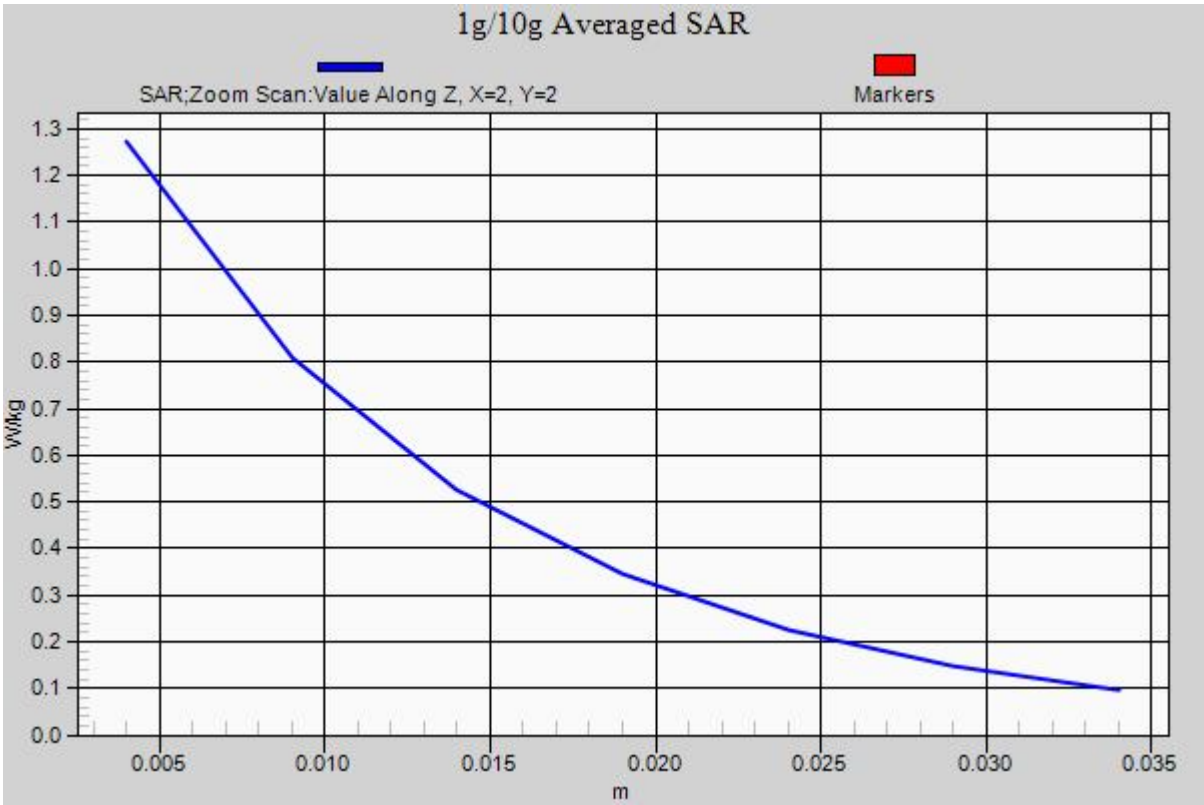
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1909.8 MHz;Duty Cycle: 1:2
Medium: HSL_1900_120818 Medium parameters used: f = 1910 MHz; σ = 1.436 mho/m; ε_r = 41.187; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch810/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.34 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.878 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.850 mW/g
SAR(1 g) = 1.190 mW/g; SAR(10 g) = 0.715 mW/g
Maximum value of SAR (measured) = 1.27 mW/g



08 GSM1900_GPRS12_Right Tilted_Ch810

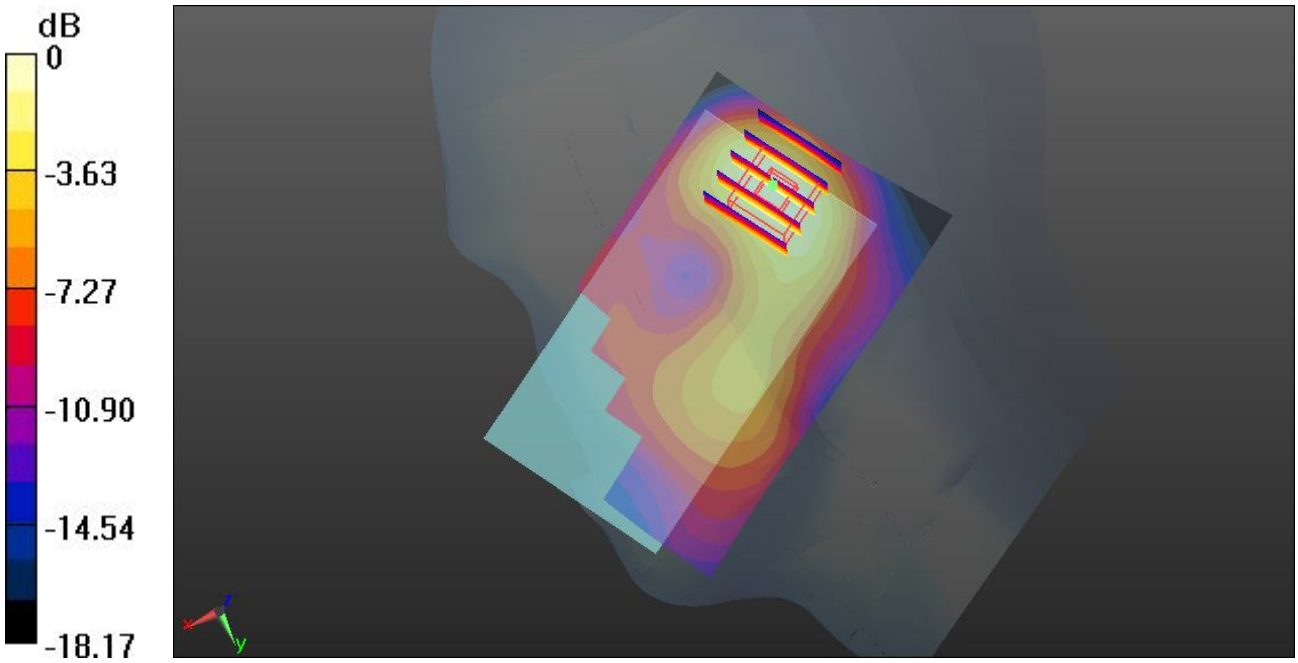
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1909.8 MHz;Duty Cycle: 1:2
Medium: HSL_1900_120818 Medium parameters used: f = 1910 MHz; σ = 1.436 mho/m; ε_r = 41.187; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch810/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.476 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.531 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.682 mW/g
SAR(1 g) = 0.417 mW/g; SAR(10 g) = 0.239 mW/g
Maximum value of SAR (measured) = 0.462 mW/g



0 dB = 0.462 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

09 GSM1900_GPRS12_Left Cheek_Ch810

DUT: 281501

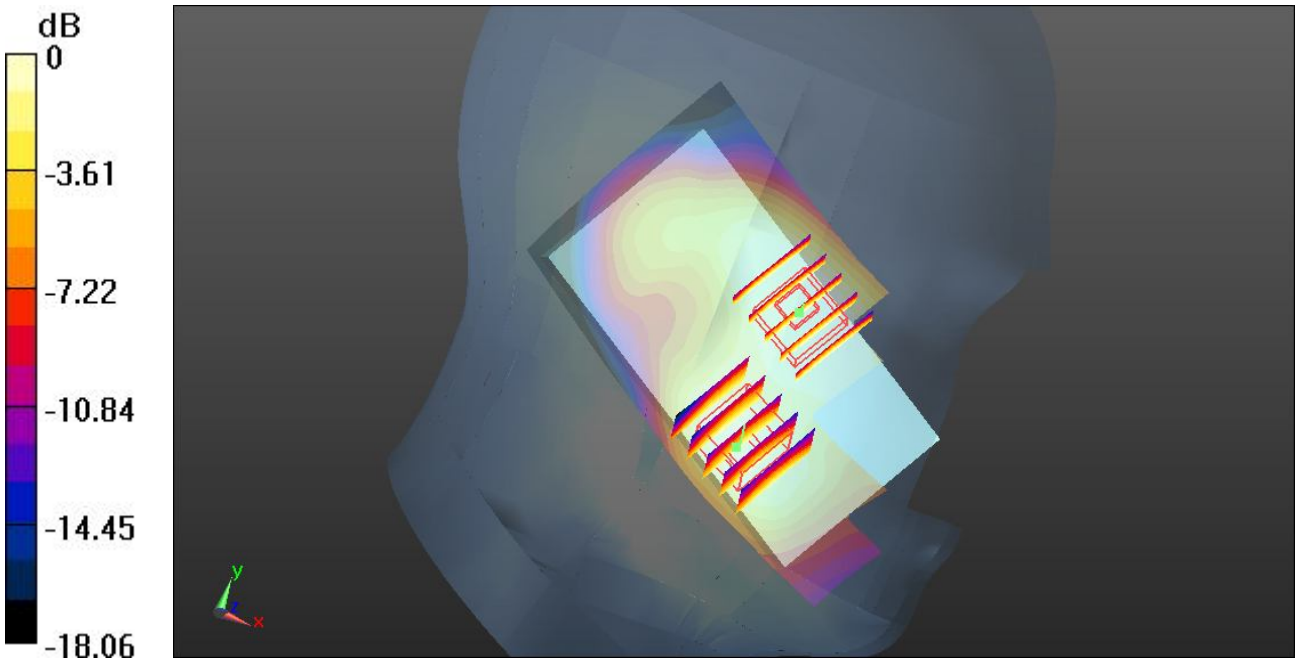
Communication System: GPRS/EDGE12; Frequency: 1909.8 MHz;Duty Cycle: 1:2
Medium: HSL_1900_120818 Medium parameters used: f = 1910 MHz; σ = 1.436 mho/m; ε_r = 41.187; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch810/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.737 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.754 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.091 mW/g
SAR(1 g) = 0.705 mW/g; SAR(10 g) = 0.439 mW/g
Maximum value of SAR (measured) = 0.766 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.754 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.761 mW/g
SAR(1 g) = 0.498 mW/g; SAR(10 g) = 0.309 mW/g
Maximum value of SAR (measured) = 0.542 mW/g



0 dB = 0.542 mW/g

10 GSM1900_GPRS12_Left Tilted_Ch810

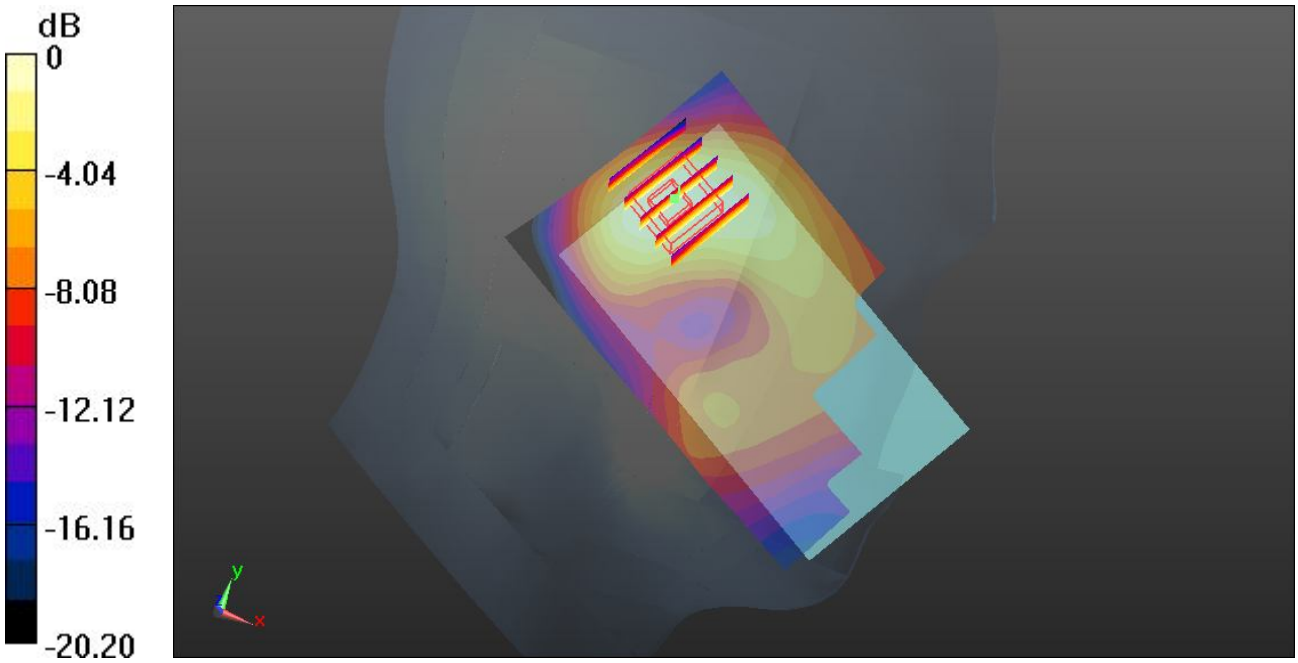
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1909.8 MHz;Duty Cycle: 1:2
Medium: HSL_1900_120818 Medium parameters used: f = 1910 MHz; σ = 1.436 mho/m; ε_r = 41.187; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch810/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.450 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.052 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.624 mW/g
SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.229 mW/g
Maximum value of SAR (measured) = 0.422 mW/g



0 dB = 0.422 mW/g

11 GSM1900_GPRS12_Right Cheek_Ch512

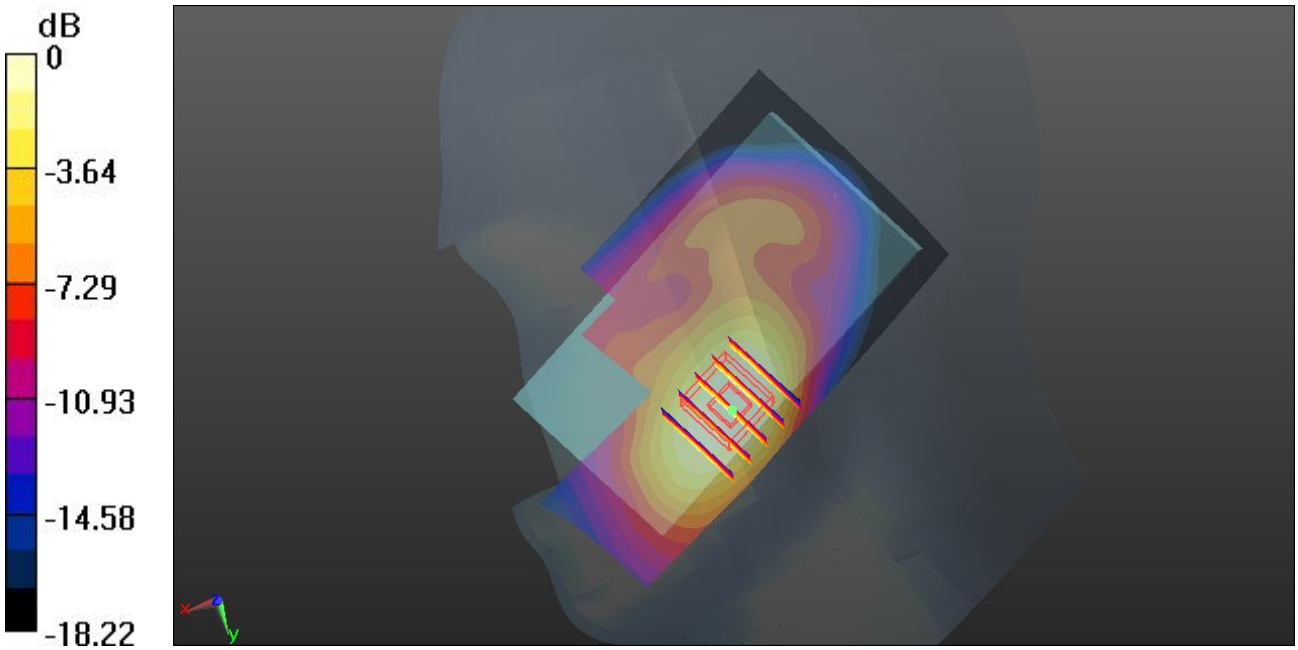
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1850.2 MHz;Duty Cycle: 1:2
Medium: HSL_1900_120818 Medium parameters used: f = 1850.2 MHz; σ = 1.365 mho/m; ε_r = 41.266; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch512/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.27 mW/g

Ch512/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.230 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.726 mW/g
SAR(1 g) = 1.140 mW/g; SAR(10 g) = 0.696 mW/g
Maximum value of SAR (measured) = 1.22 mW/g



0 dB = 1.22 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

12 GSM1900_GPRS12_Right Cheek_Ch661

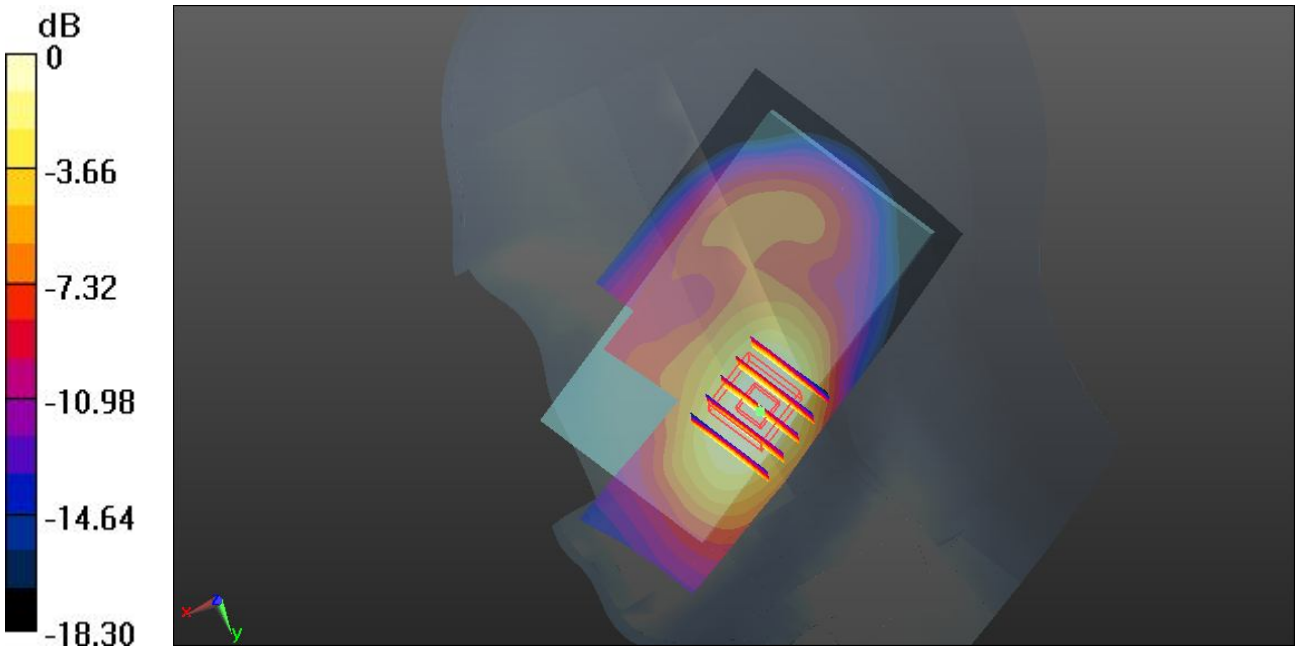
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium: HSL_1900_120818 Medium parameters used: f = 1880 MHz; σ = 1.402 mho/m; ε_r = 41.184; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch661/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.29 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.309 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.822 mW/g
SAR(1 g) = 1.180 mW/g; SAR(10 g) = 0.716 mW/g
Maximum value of SAR (measured) = 1.27 mW/g



0 dB = 1.27 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

17 WCDMA V_RMC 12.2K_Right Cheek_Ch4128

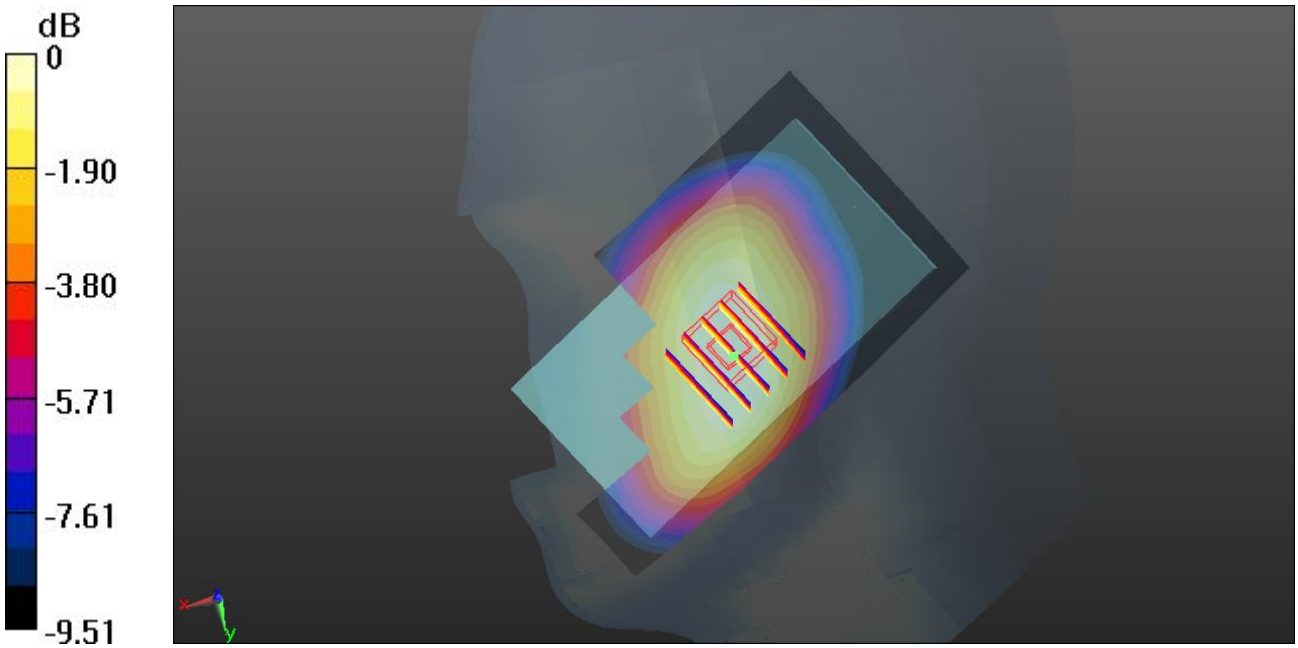
DUT: 281501

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_850_120818 Medium parameters used: f = 836.4 MHz; σ = 0.932 mho/m; ε_r = 42.753; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch4128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.467 mW/g

Ch4128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.721 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.584 mW/g
SAR(1 g) = 0.438 mW/g; SAR(10 g) = 0.335 mW/g
Maximum value of SAR (measured) = 0.457 mW/g



0 dB = 0.457 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

18 WCDMA V_RMC 12.2K_Right Tilted_Ch4128

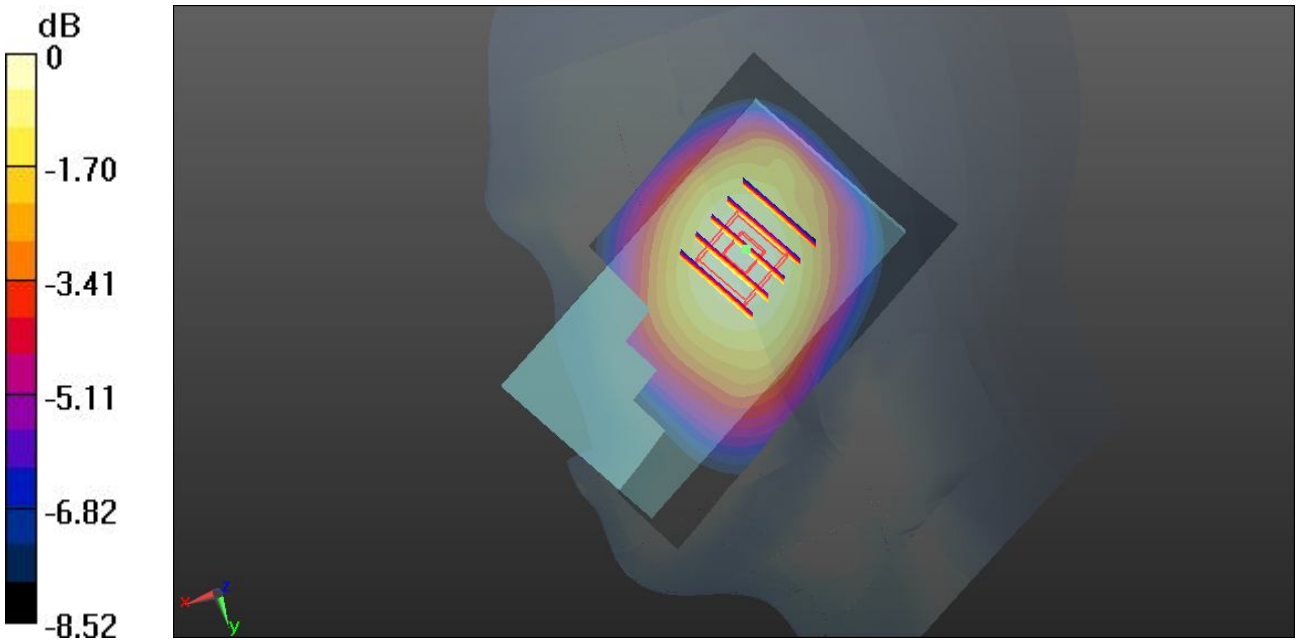
DUT: 281501

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_850_120818 Medium parameters used: f = 836.4 MHz; σ = 0.932 mho/m; ε_r = 42.753; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch4128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.372 mW/g

Ch4128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.065 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.445 mW/g
SAR(1 g) = 0.361 mW/g; SAR(10 g) = 0.280 mW/g
Maximum value of SAR (measured) = 0.379 mW/g



0 dB = 0.379 mW/g

19 WCDMA V_RMC 12.2K_Left Cheek_Ch4128

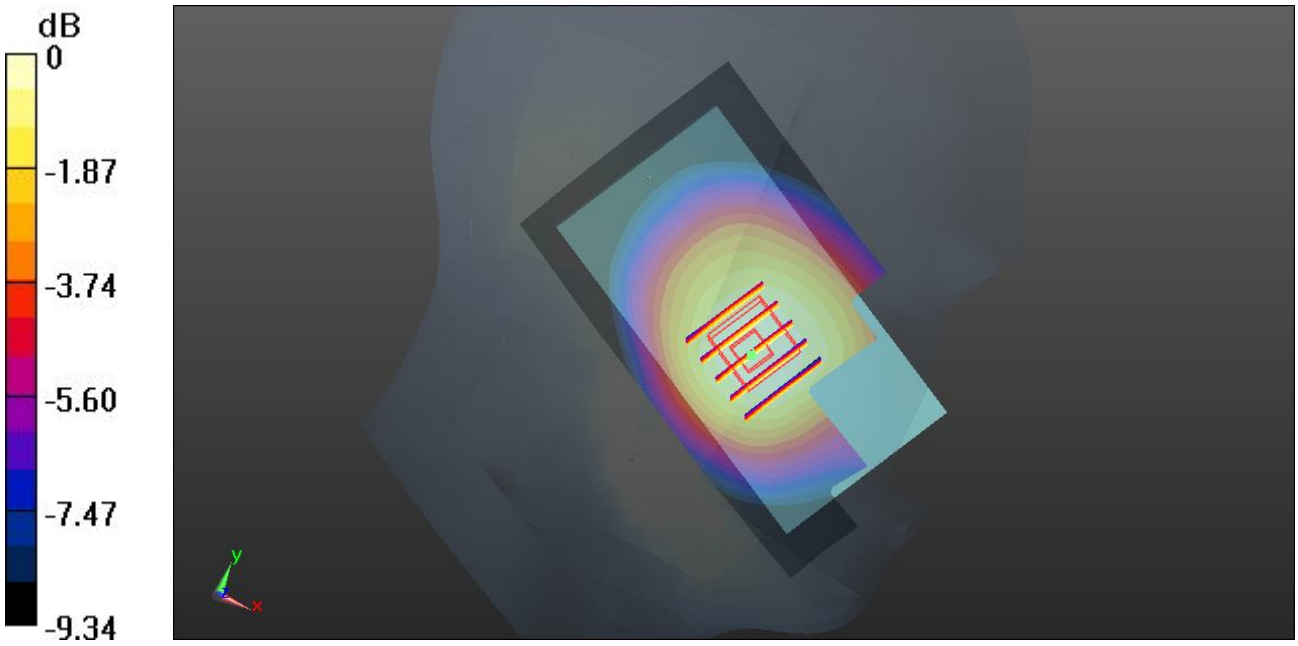
DUT: 281501

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_850_120818 Medium parameters used: f = 836.4 MHz; σ = 0.932 mho/m; ε_r = 42.753; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch4128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.464 mW/g

Ch4128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.984 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.535 mW/g
SAR(1 g) = 0.443 mW/g; SAR(10 g) = 0.346 mW/g
Maximum value of SAR (measured) = 0.461 mW/g



0 dB = 0.461 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

19 WCDMA V_RMC 12.2K_Left Cheek_Ch4128_2D

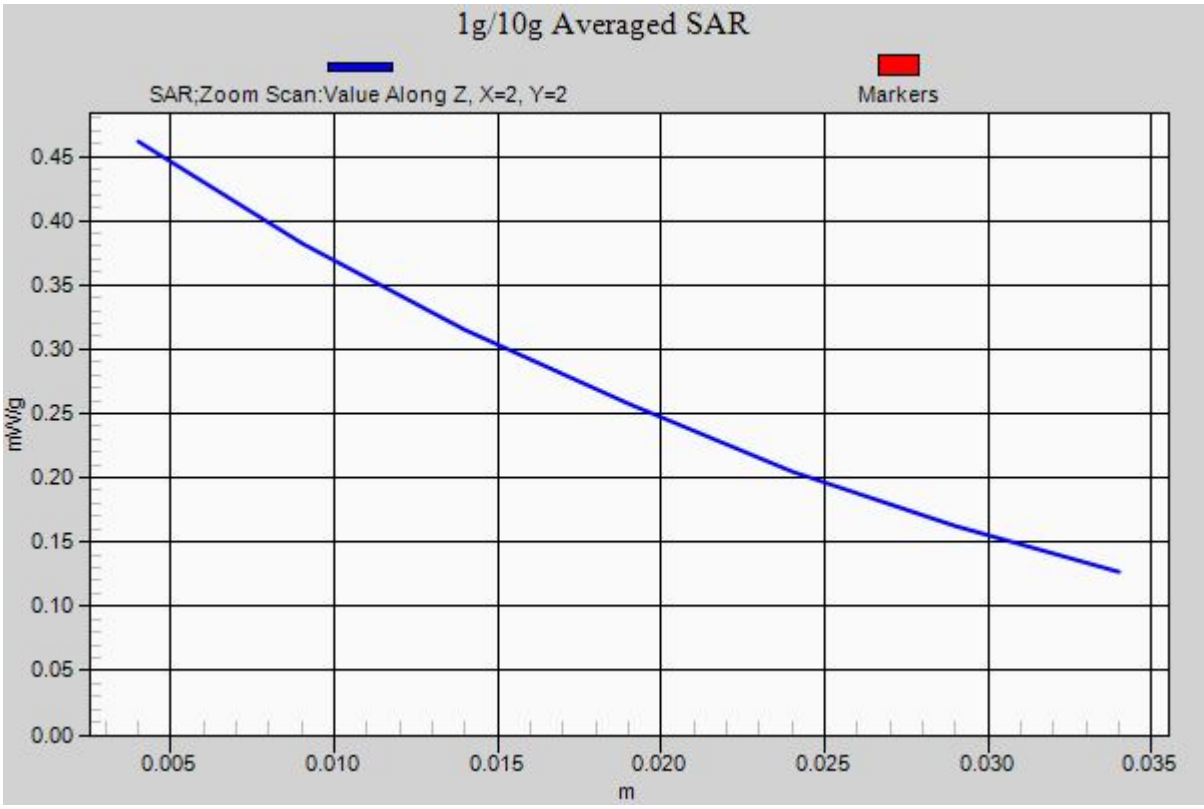
DUT: 281501

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_850_120818 Medium parameters used: f = 836.4 MHz; σ = 0.932 mho/m; ε_r = 42.753; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch4128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.464 mW/g

Ch4128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.984 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.535 mW/g
SAR(1 g) = 0.443 mW/g; SAR(10 g) = 0.346 mW/g
Maximum value of SAR (measured) = 0.461 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 18.08.2012

20 WCDMA V_RMC 12.2K_Left Tilted_Ch4128

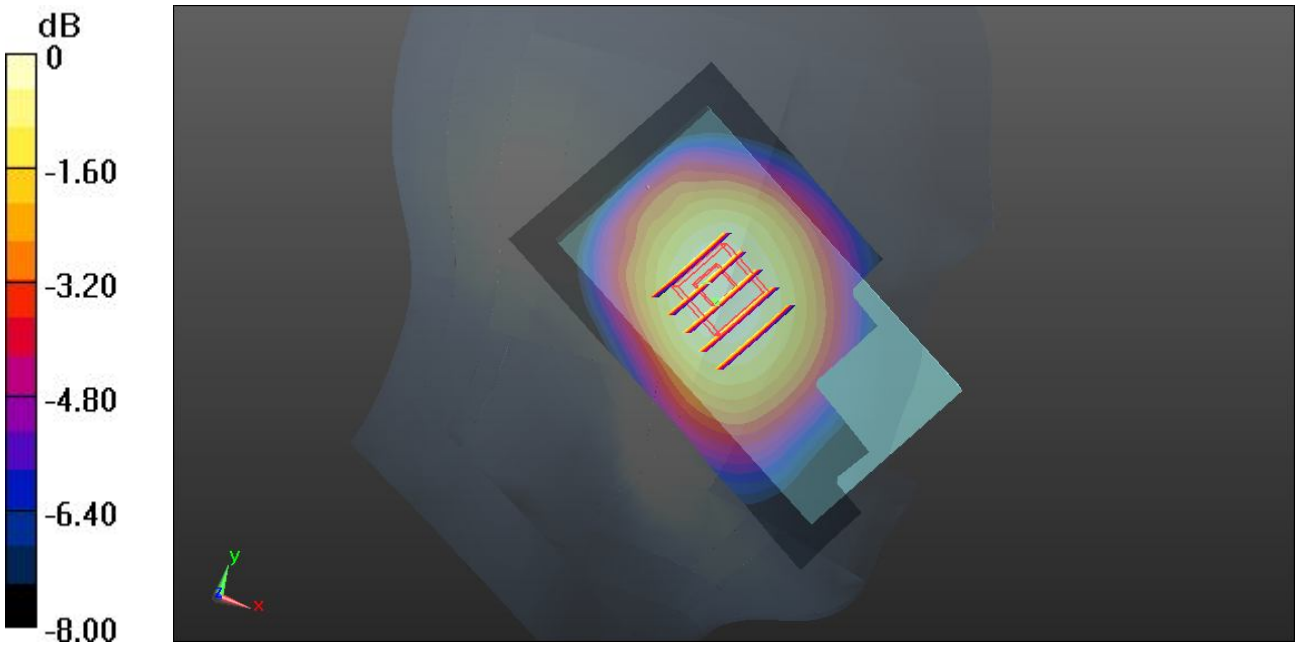
DUT: 281501

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: HSL_850_120818 Medium parameters used: f = 836.4 MHz; σ = 0.932 mho/m; ε_r = 42.753; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.04, 6.04, 6.04); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch4128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.318 mW/g

Ch4128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.612 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.382 mW/g
SAR(1 g) = 0.310 mW/g; SAR(10 g) = 0.242 mW/g
Maximum value of SAR (measured) = 0.322 mW/g



0 dB = 0.322 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 16.08.2012

01 WCDMA II_RMC 12.2K_Right Cheek_Ch9262

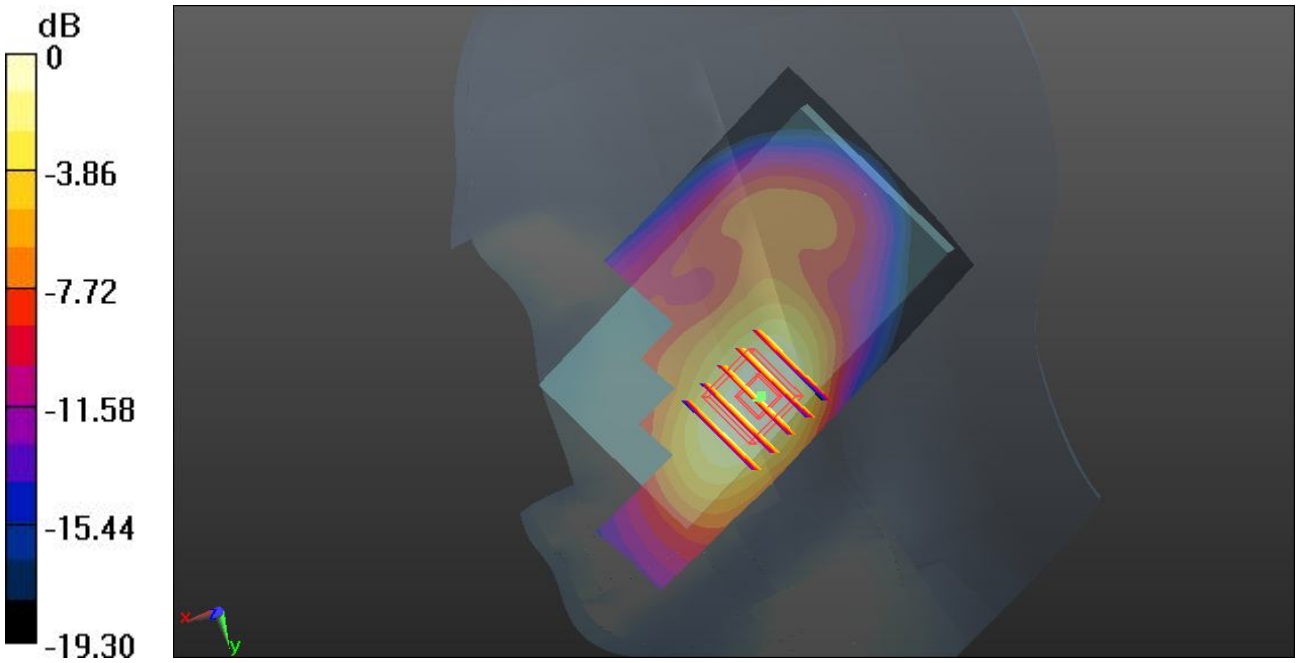
DUT: 281501

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120816 Medium parameters used: f = 1852.4 MHz; σ = 1.371 mho/m; ε_r = 40.687; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9262/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.37 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.198 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.887 mW/g
SAR(1 g) = 1.240 mW/g; SAR(10 g) = 0.755 mW/g
Maximum value of SAR (measured) = 1.34 mW/g



0 dB = 1.34 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 16.08.2012

01 WCDMA II_RMC 12.2K_Right Cheek_Ch9262_2D

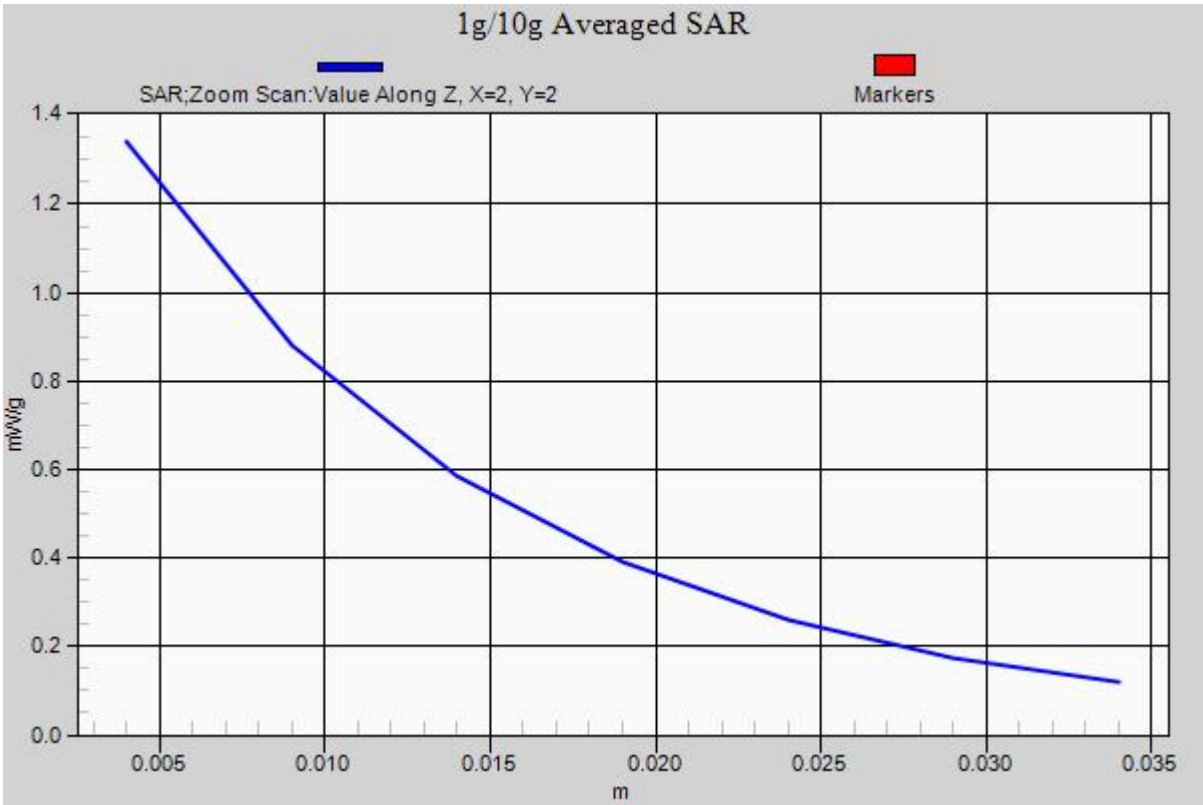
DUT: 281501

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120816 Medium parameters used: f = 1852.4 MHz; σ = 1.371 mho/m; ε_r = 40.687; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9262/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.37 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.198 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.887 mW/g
SAR(1 g) = 1.240 mW/g; SAR(10 g) = 0.755 mW/g
Maximum value of SAR (measured) = 1.34 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 16.08.2012

02 WCDMA II_RMC 12.2K_Right Tilted_Ch9262

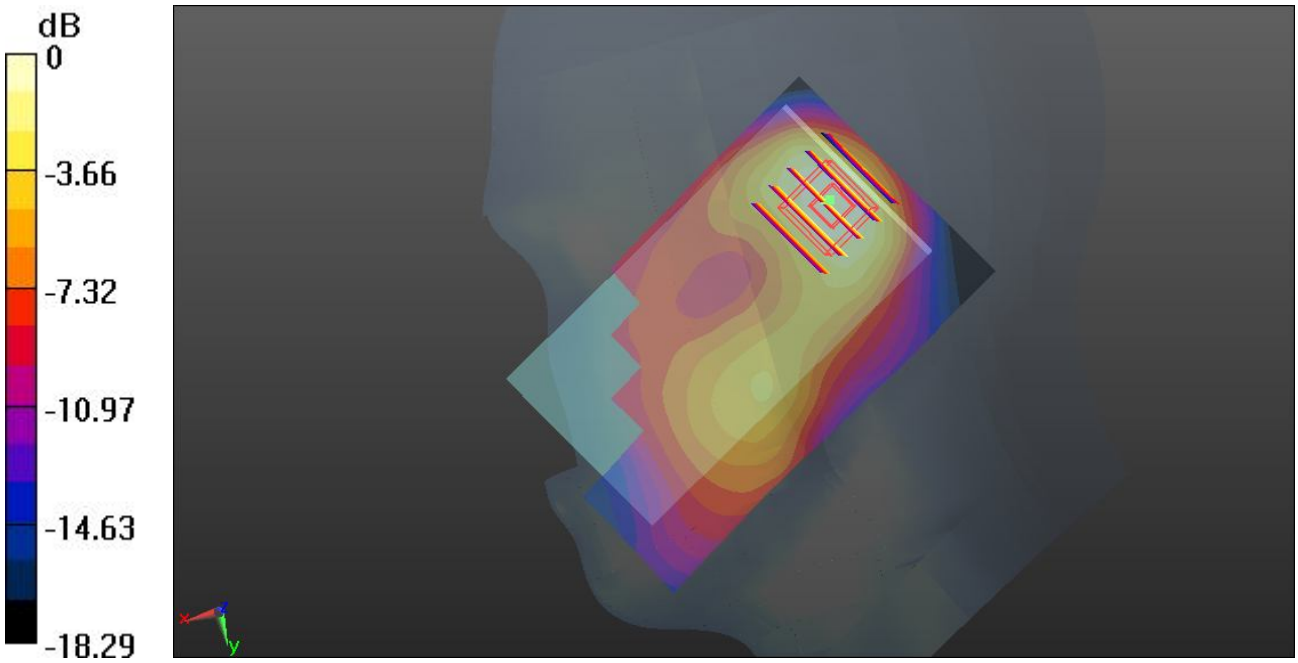
DUT: 281501

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120816 Medium parameters used: f = 1852.4 MHz; σ = 1.371 mho/m; ε_r = 40.687; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9262/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.445 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.501 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.618 mW/g
SAR(1 g) = 0.388 mW/g; SAR(10 g) = 0.226 mW/g
Maximum value of SAR (measured) = 0.428 mW/g



0 dB = 0.428 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 16.08.2012

03 WCDMA II_RMC 12.2K_Left Cheek_Ch9262

DUT: 281501

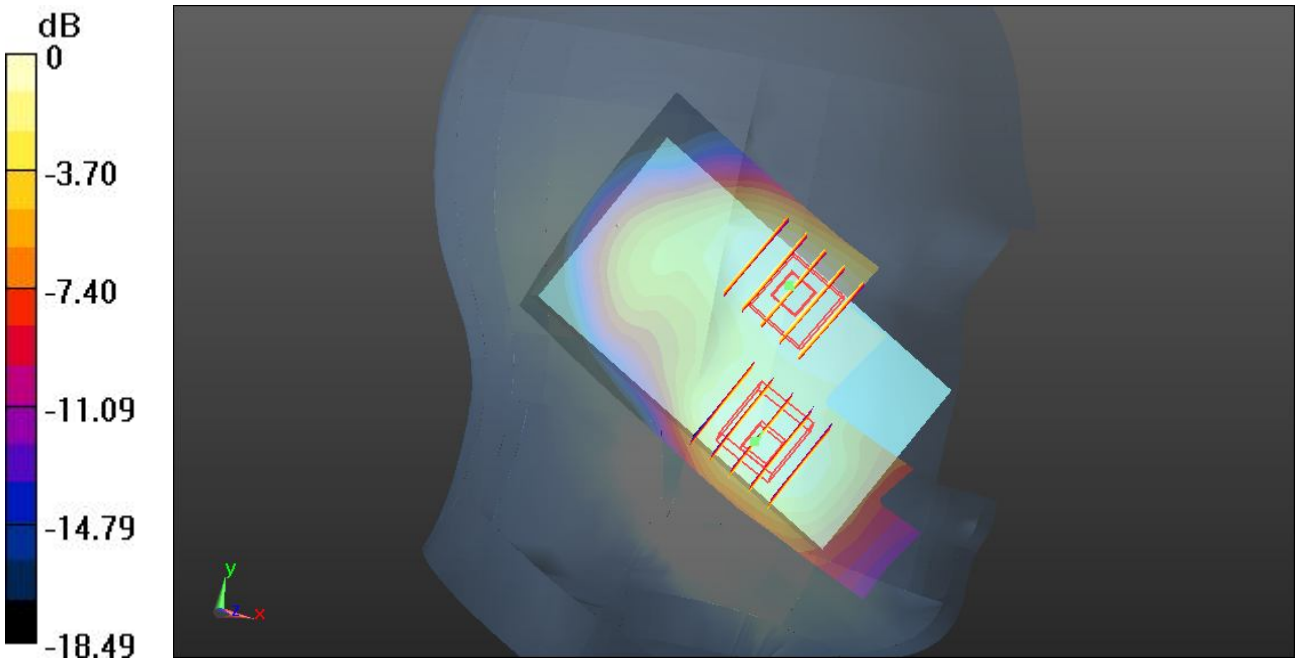
Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120816 Medium parameters used: f = 1852.4 MHz; σ = 1.371 mho/m; ε_r = 40.687; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9262/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.658 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.921 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.941 mW/g
SAR(1 g) = 0.626 mW/g; SAR(10 g) = 0.397 mW/g
Maximum value of SAR (measured) = 0.676 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.921 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.693 mW/g
SAR(1 g) = 0.465 mW/g; SAR(10 g) = 0.295 mW/g
Maximum value of SAR (measured) = 0.504 mW/g



0 dB = 0.504 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 16.08.2012

04 WCDMA II_RMC 12.2K_Left Tilted_Ch9262

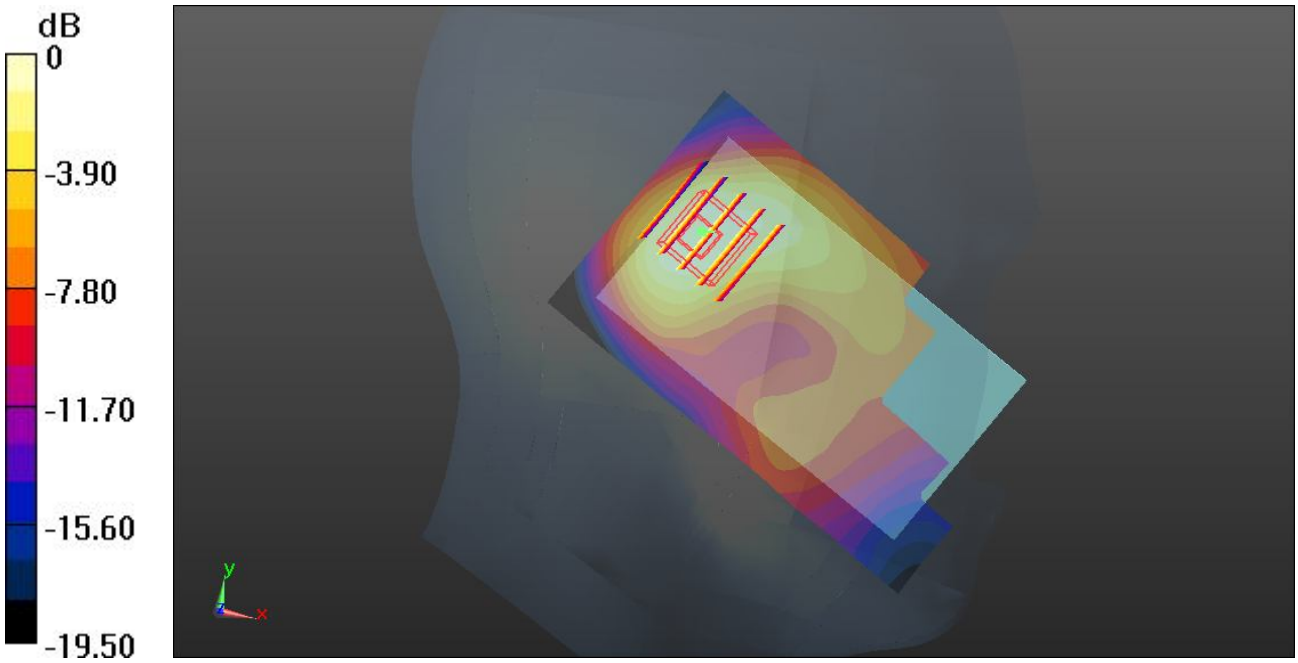
DUT: 281501

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120816 Medium parameters used: f = 1852.4 MHz; σ = 1.371 mho/m; ε_r = 40.687; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9262/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.402 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.471 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.579 mW/g
SAR(1 g) = 0.367 mW/g; SAR(10 g) = 0.218 mW/g
Maximum value of SAR (measured) = 0.396 mW/g



0 dB = 0.396 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 16.08.2012

05 WCDMA II_RMC 12.2K_Right Cheek_Ch9400

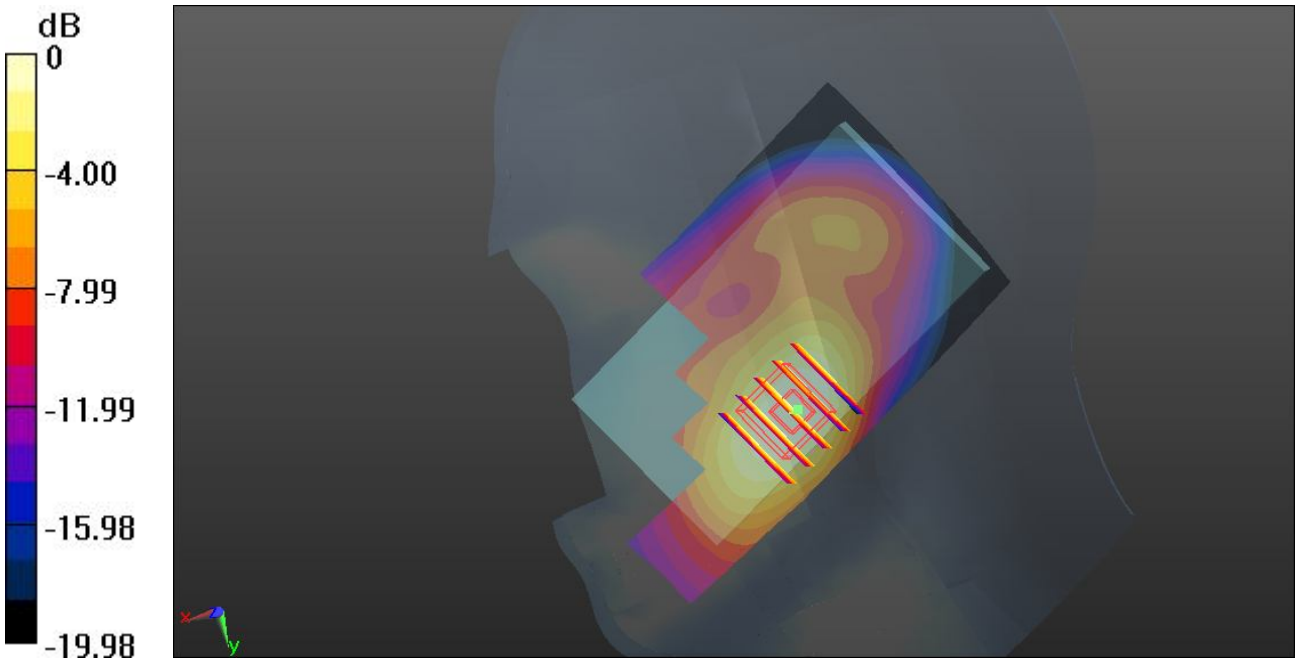
DUT: 281501

Communication System: UMTS; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120816 Medium parameters used: f = 1880 MHz; σ = 1.397 mho/m; ε_r = 40.608; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9400/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.34 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.180 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.879 mW/g
SAR(1 g) = 1.210 mW/g; SAR(10 g) = 0.733 mW/g
Maximum value of SAR (measured) = 1.32 mW/g



0 dB = 1.32 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 16.08.2012

06 WCDMA II_RMC 12.2K_Right Cheek_Ch9538

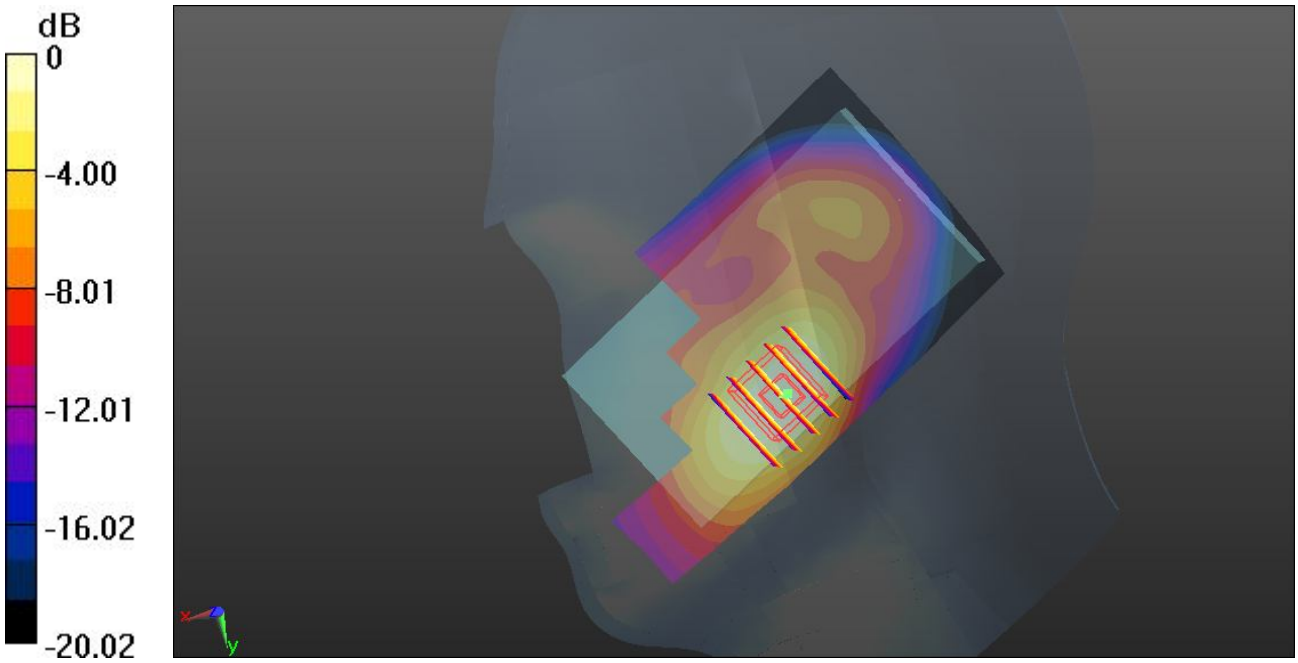
DUT: 281501

Communication System: UMTS; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: HSL_1900_120816 Medium parameters used: f = 1908 MHz; σ = 1.423 mho/m; ε_r = 40.497; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(5.14, 5.14, 5.14); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9538/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.21 mW/g

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.867 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.700 mW/g
SAR(1 g) = 1.090 mW/g; SAR(10 g) = 0.656 mW/g
Maximum value of SAR (measured) = 1.19 mW/g



0 dB = 1.19 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 27.08.2012

33 802.11b_Right Cheek_Ch1

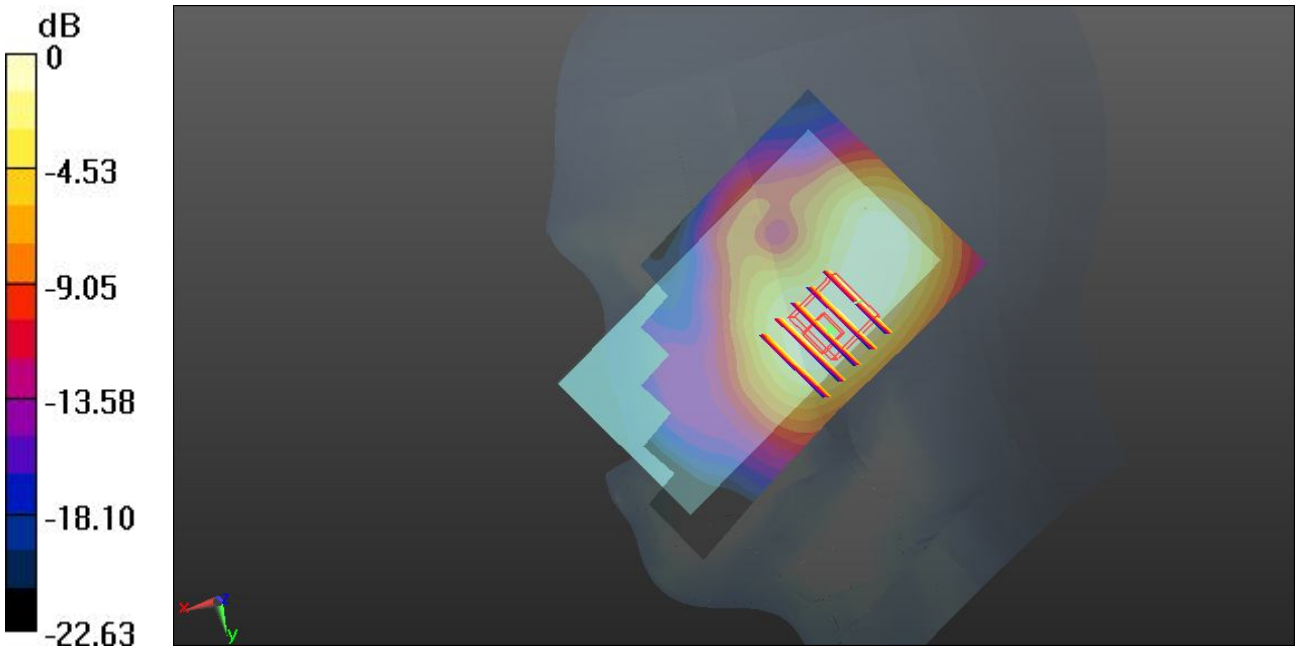
DUT: 281501

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1.12
Medium: HSL_2450_120827 Medium parameters used: f = 2412 MHz; σ = 1.814 mho/m; ε_r = 37.834; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.52, 4.52, 4.52); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.229 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.019 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.375 mW/g
SAR(1 g) = 0.205 mW/g; SAR(10 g) = 0.117 mW/g
Maximum value of SAR (measured) = 0.226 mW/g



0 dB = 0.226 mW/g

34 802.11b_Right Tilted_Ch1

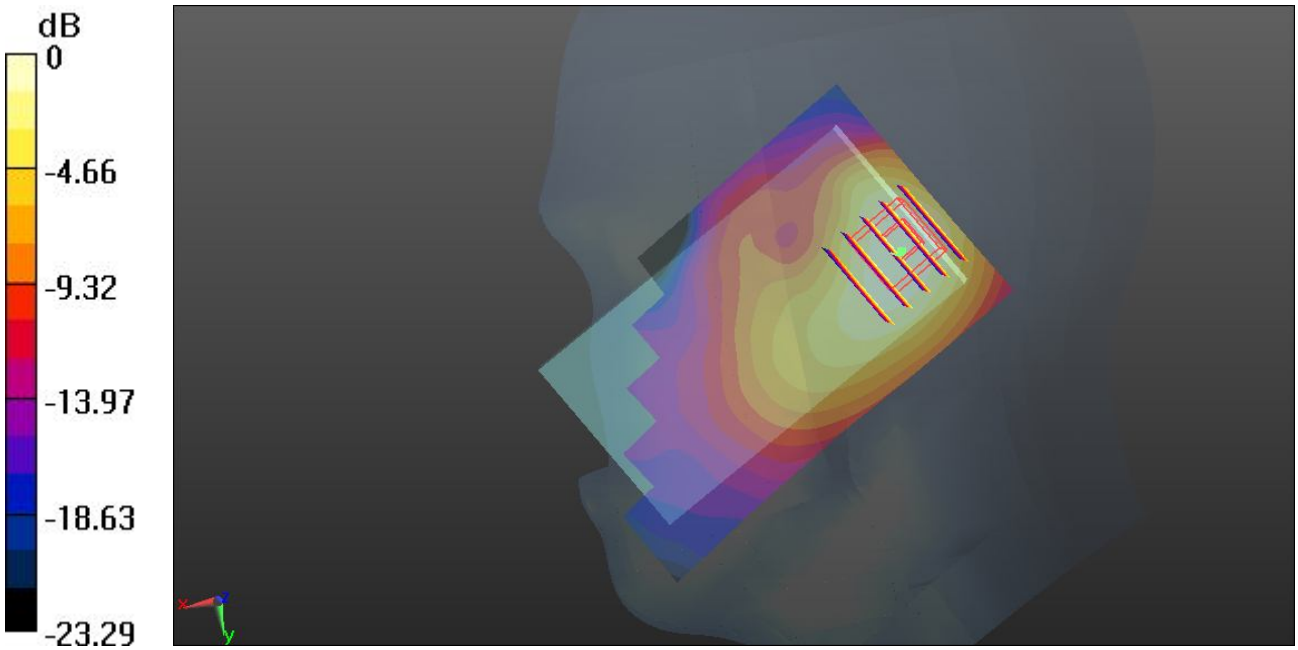
DUT: 281501

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1.12
Medium: HSL_2450_120827 Medium parameters used: f = 2412 MHz; σ = 1.814 mho/m; ε_r = 37.834; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.52, 4.52, 4.52); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.175 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.943 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.322 mW/g
SAR(1 g) = 0.157 mW/g; SAR(10 g) = 0.079 mW/g
Maximum value of SAR (measured) = 0.163 mW/g



0 dB = 0.163 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 27.08.2012

35 802.11b_Left Cheek_Ch1

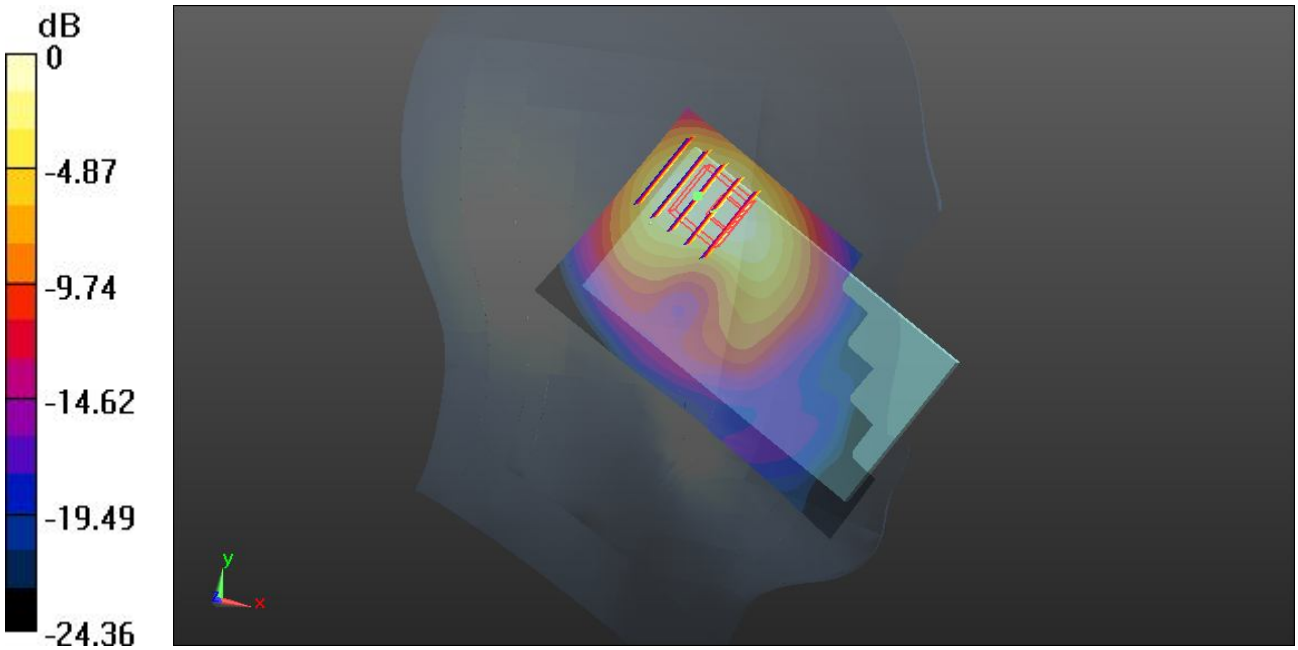
DUT: 281501

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1.12
Medium: HSL_2450_120827 Medium parameters used: f = 2412 MHz; σ = 1.814 mho/m; ε_r = 37.834; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.52, 4.52, 4.52); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.516 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.765 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.848 mW/g
SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.213 mW/g
Maximum value of SAR (measured) = 0.455 mW/g



0 dB = 0.455 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 27.08.2012

35 802.11b_Left Cheek_Ch1_2D

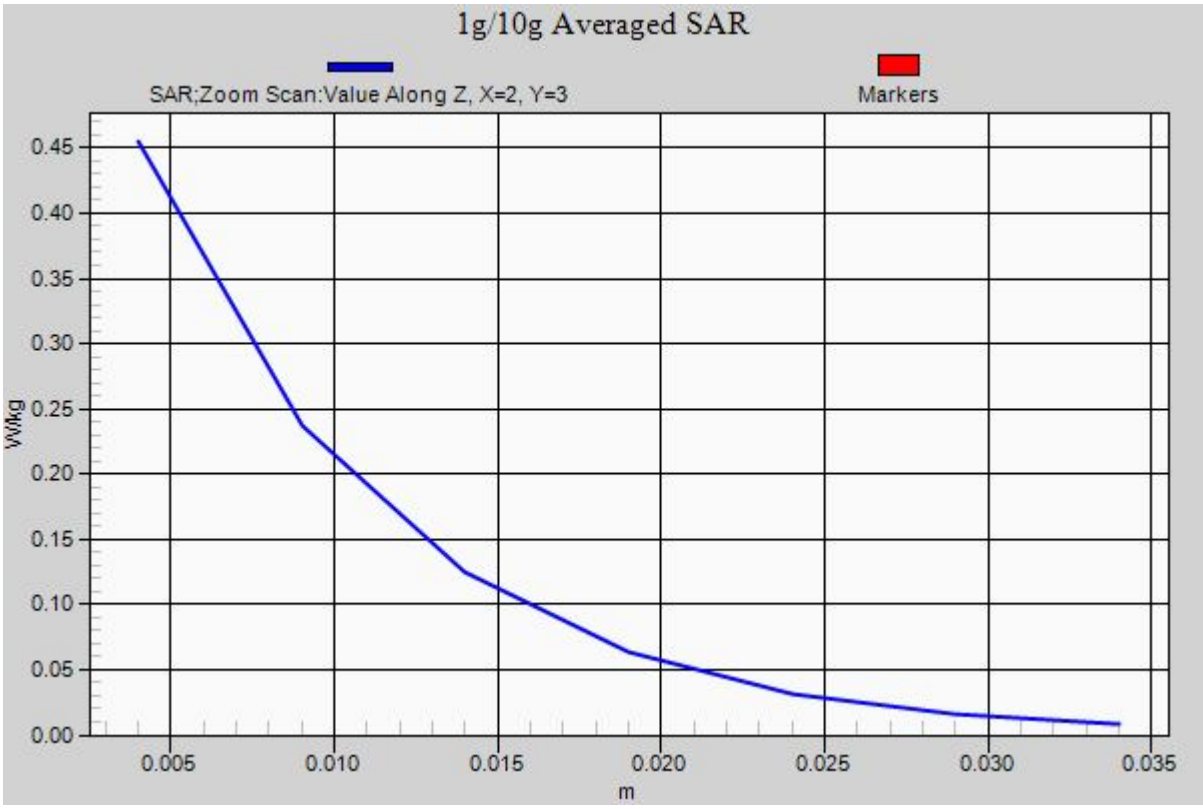
DUT: 281501

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1.12
Medium: HSL_2450_120827 Medium parameters used: f = 2412 MHz; σ = 1.814 mho/m; ε_r = 37.834; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.52, 4.52, 4.52); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.516 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.765 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.848 mW/g
SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.213 mW/g
Maximum value of SAR (measured) = 0.455 mW/g



36 802.11b_Left Tilted_Ch1

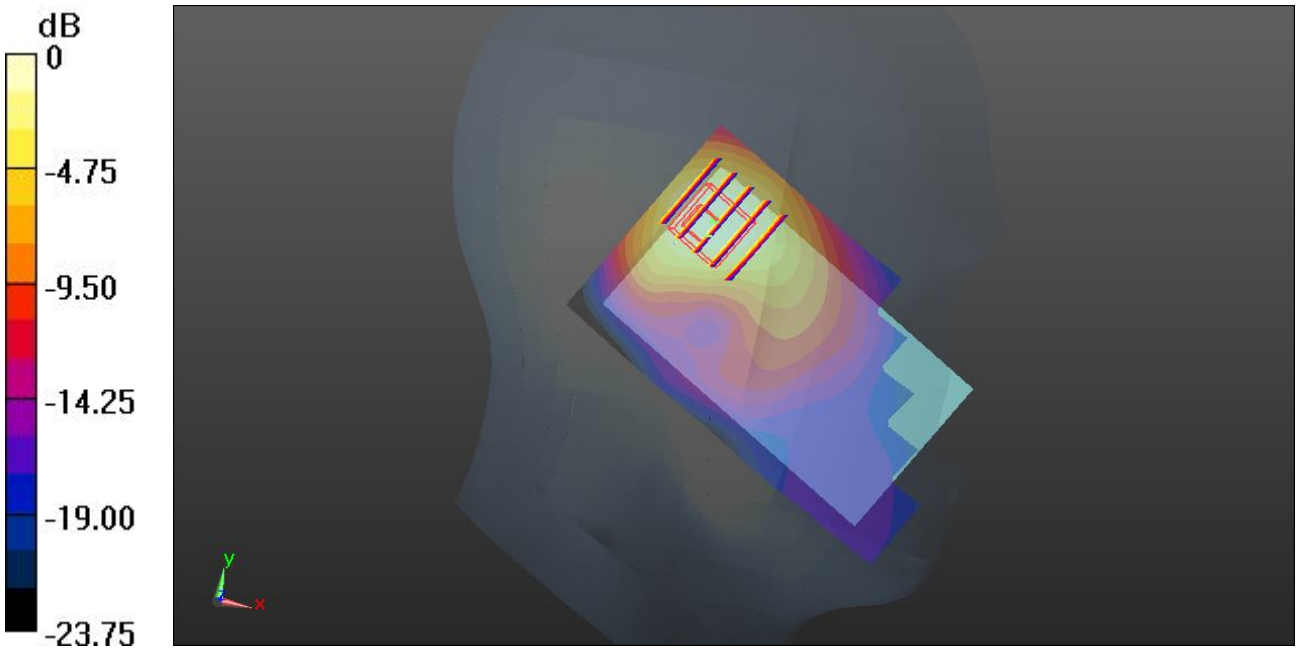
DUT: 281501

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1.12
Medium: HSL_2450_120827 Medium parameters used: f = 2412 MHz; σ = 1.814 mho/m; ε_r = 37.834; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.52, 4.52, 4.52); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.349 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.908 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.624 mW/g
SAR(1 g) = 0.289 mW/g; SAR(10 g) = 0.144 mW/g
Maximum value of SAR (measured) = 0.311 mW/g



0 dB = 0.311 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

25 GSM850_GPRS10_Front_1.5cm_Ch128_Headset

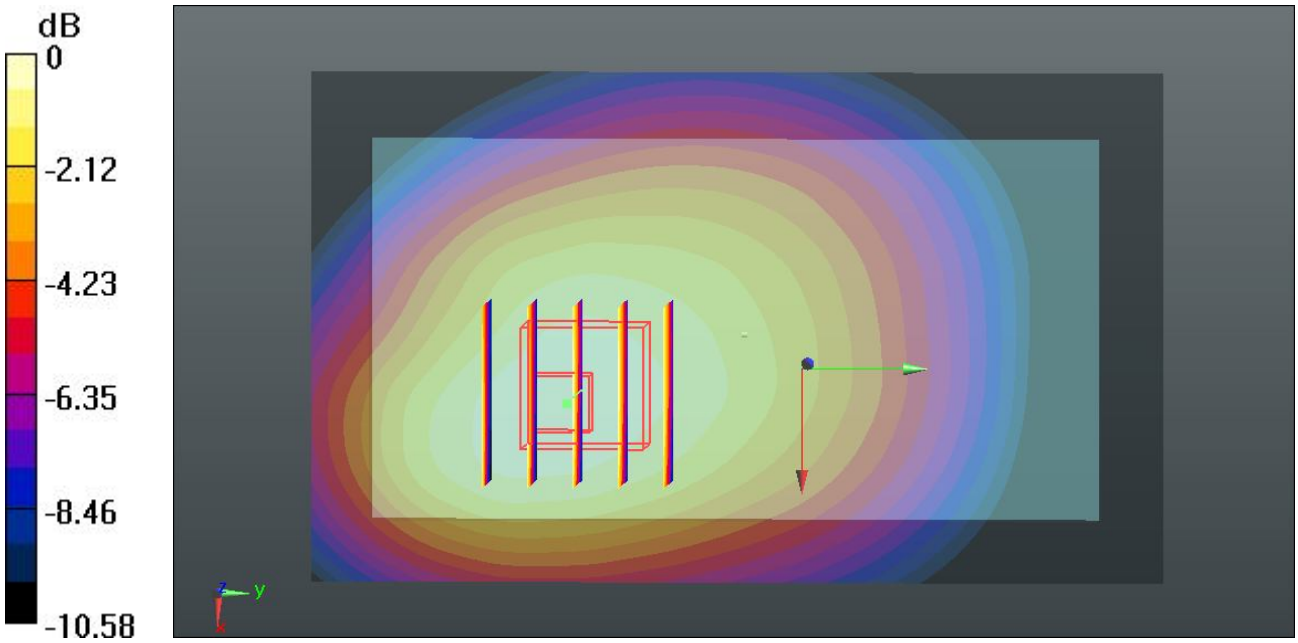
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: MSL_835_120820 Medium parameters used: f = 824.2 MHz; σ = 0.966 mho/m; ε_r = 54.448; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.749 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.070 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.011 mW/g
SAR(1 g) = 0.712 mW/g; SAR(10 g) = 0.503 mW/g
Maximum value of SAR (measured) = 0.753 mW/g



0 dB = 0.753 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

26 GSM850_GPRS10_Back_1.5cm_Ch128_Headset

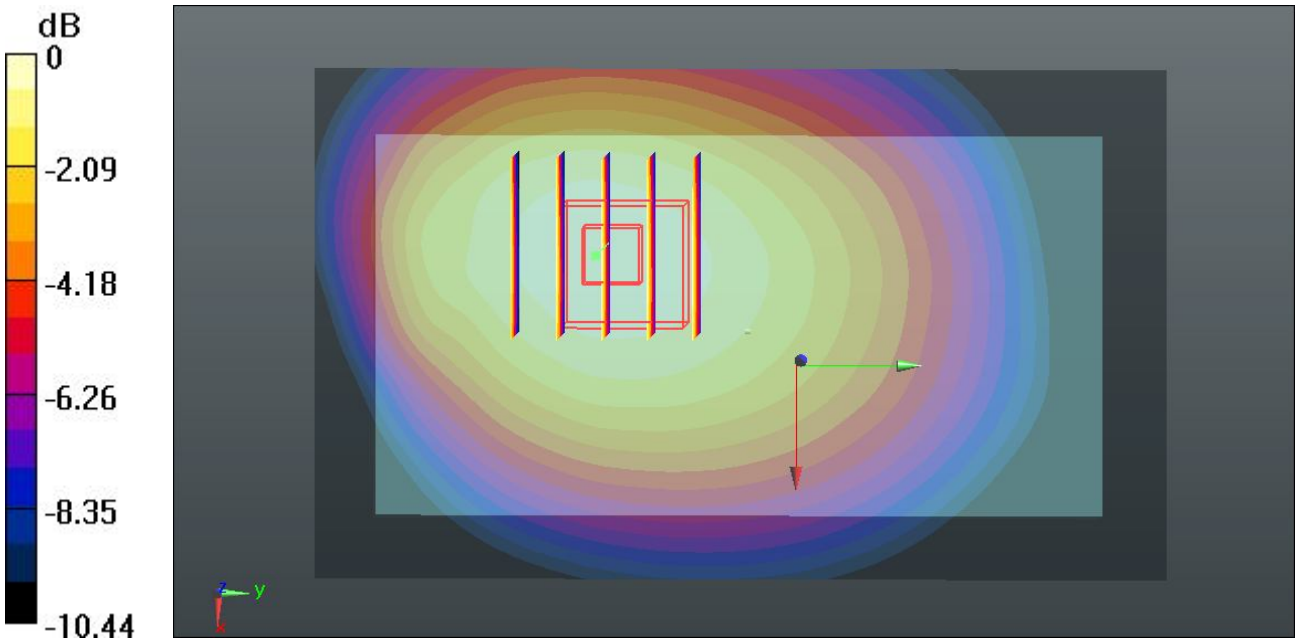
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: MSL_835_120820 Medium parameters used: f = 824.2 MHz; σ = 0.966 mho/m; ε_r = 54.448; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.865 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.271 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.140 mW/g
SAR(1 g) = 0.831 mW/g; SAR(10 g) = 0.603 mW/g
Maximum value of SAR (measured) = 0.880 mW/g



0 dB = 0.880 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

26 GSM850_GPRS10_Back_1.5cm_Ch128_Headset_2D

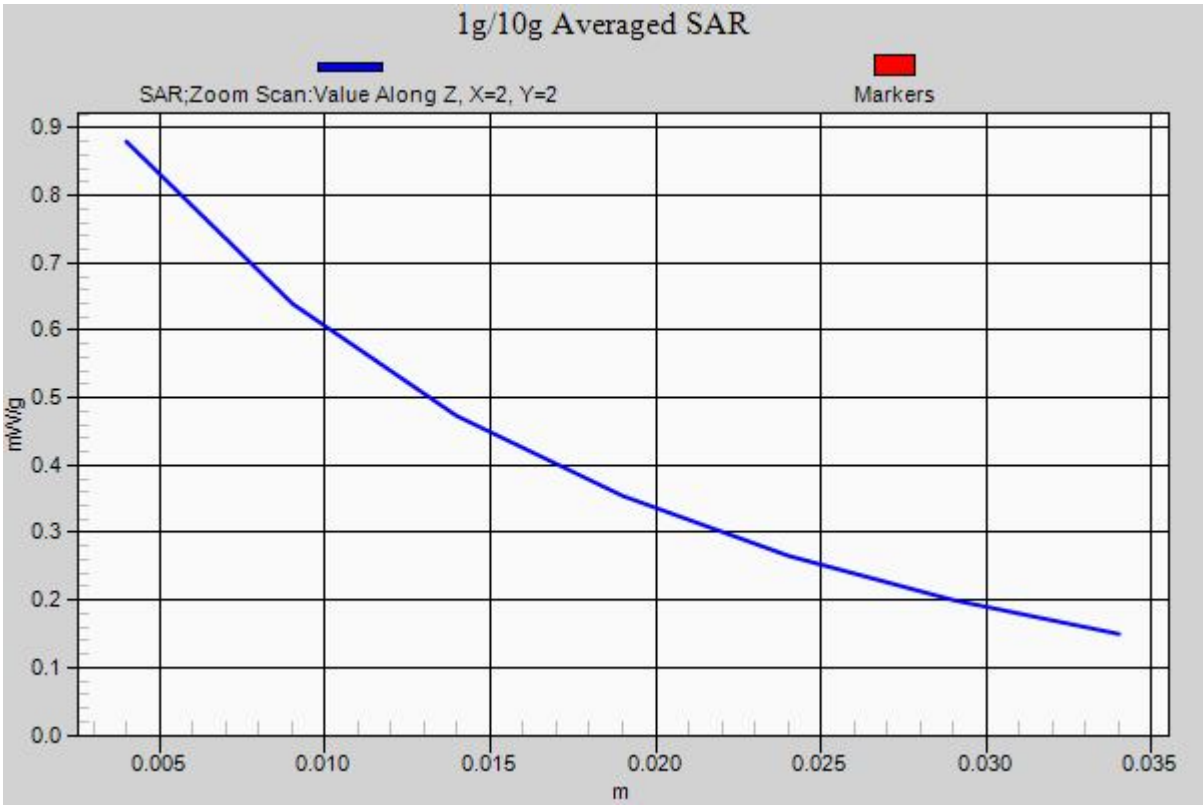
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 824.2 MHz;Duty Cycle: 1:4
Medium: MSL_835_120820 Medium parameters used: f = 824.2 MHz; σ = 0.966 mho/m; ε_r = 54.448; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch128/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.865 mW/g

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.271 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.140 mW/g
SAR(1 g) = 0.831 mW/g; SAR(10 g) = 0.603 mW/g
Maximum value of SAR (measured) = 0.880 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

27 GSM850_GPRS10_Back_1.5cm_Ch189_Headset

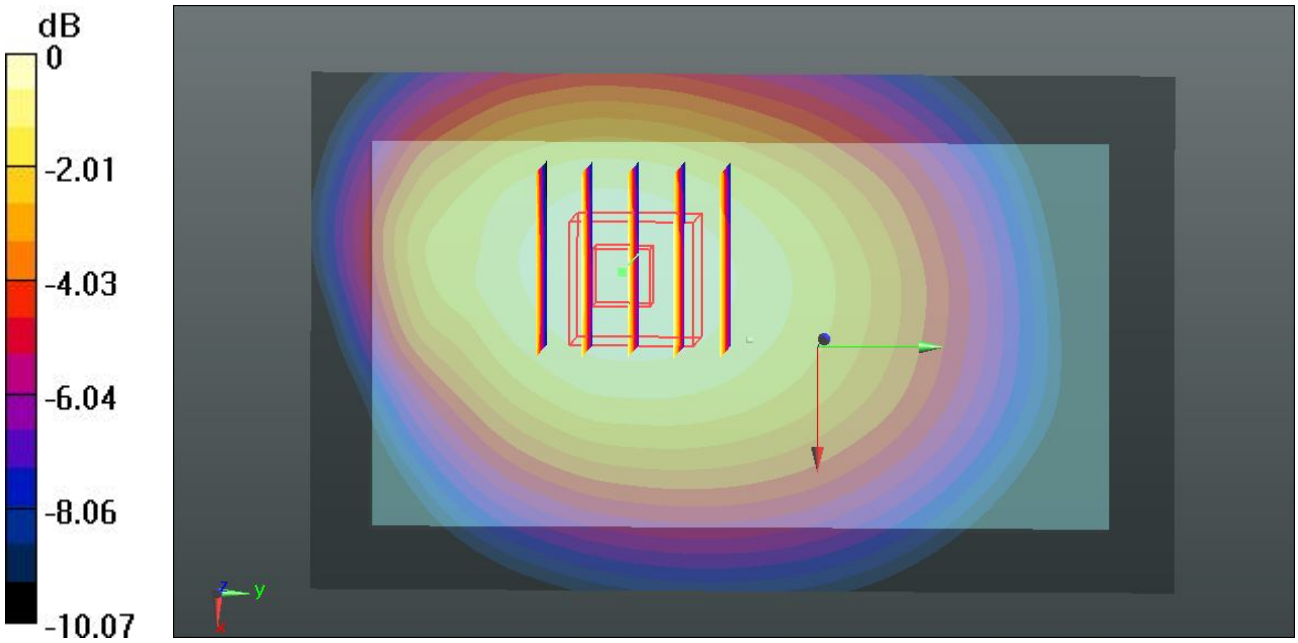
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 836.4 MHz;Duty Cycle: 1:4
Medium: MSL_835_120820 Medium parameters used: f = 836.4 MHz; σ = 0.978 mho/m; ε_r = 54.357; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch189/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.818 mW/g

Ch189/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.237 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.050 mW/g
SAR(1 g) = 0.778 mW/g; SAR(10 g) = 0.569 mW/g
Maximum value of SAR (measured) = 0.819 mW/g



0 dB = 0.819 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

28 GSM850_GPRS10_Back_1.5cm_Ch251_Headset

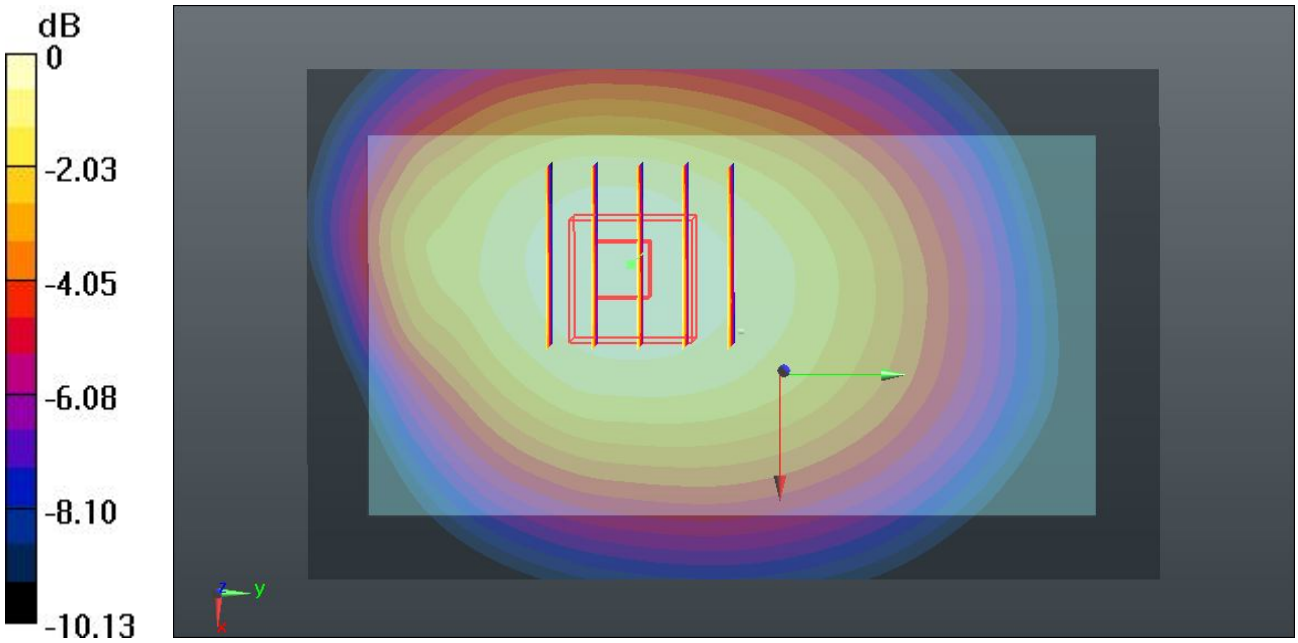
DUT: 281501

Communication System: GPRS/EDGE10; Frequency: 848.8 MHz;Duty Cycle: 1:4
Medium: MSL_835_120820 Medium parameters used: f = 849 MHz; σ = 0.989 mho/m; ε_r = 54.251; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch251/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.768 mW/g

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.660 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.982 mW/g
SAR(1 g) = 0.731 mW/g; SAR(10 g) = 0.532 mW/g
Maximum value of SAR (measured) = 0.766 mW/g



0 dB = 0.766 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

23 GSM1900_GPRS12_Front_1.5cm_Ch810_Headset

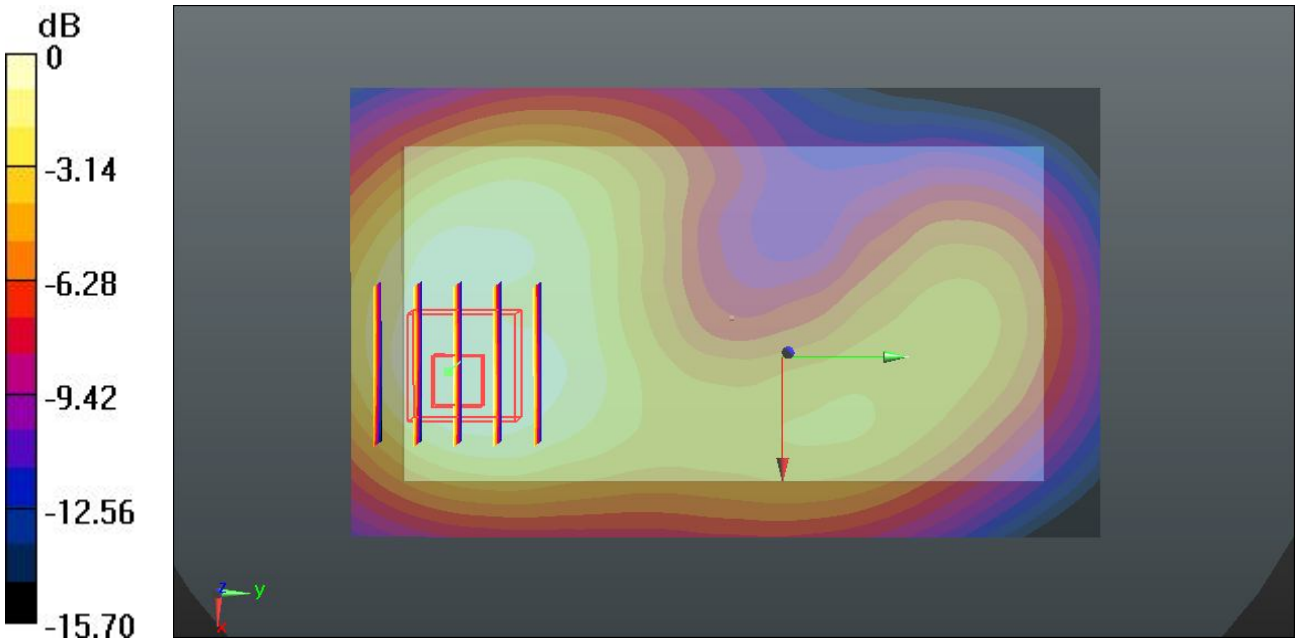
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1909.8 MHz;Duty Cycle: 1:2
Medium: MSL_1900_120820 Medium parameters used: f = 1910 MHz; σ = 1.529 mho/m; ε_r = 53.552; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.64, 4.64, 4.64); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch810/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.583 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.352 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.827 mW/g
SAR(1 g) = 0.515 mW/g; SAR(10 g) = 0.318 mW/g
Maximum value of SAR (measured) = 0.546 mW/g



0 dB = 0.546 mW/g

23 GSM1900_GPRS12_Front_1.5cm_Ch810_Headset_2D

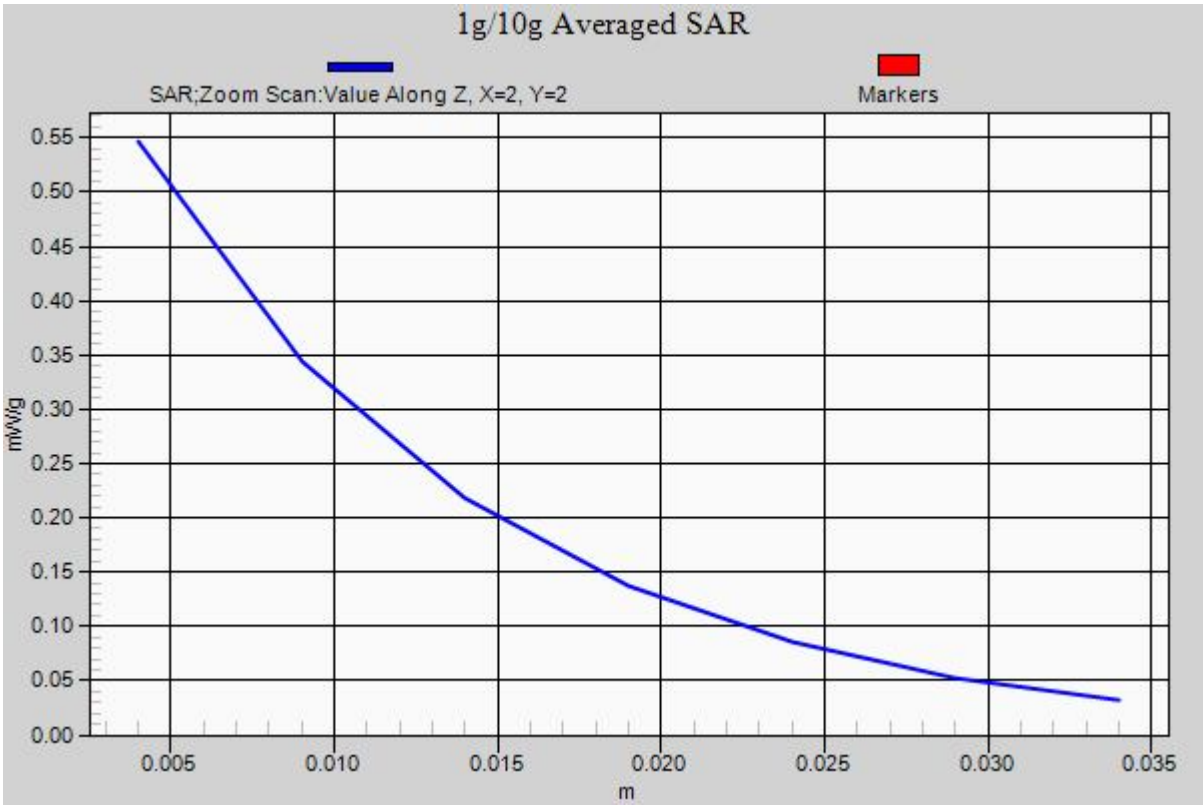
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1909.8 MHz;Duty Cycle: 1:2
Medium: MSL_1900_120820 Medium parameters used: f = 1910 MHz; σ = 1.529 mho/m; ε_r = 53.552; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.64, 4.64, 4.64); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch810/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.583 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.352 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.827 mW/g
SAR(1 g) = 0.515 mW/g; SAR(10 g) = 0.318 mW/g
Maximum value of SAR (measured) = 0.546 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

24 GSM1900_GPRS12_Back_1.5cm_Ch810_Headset

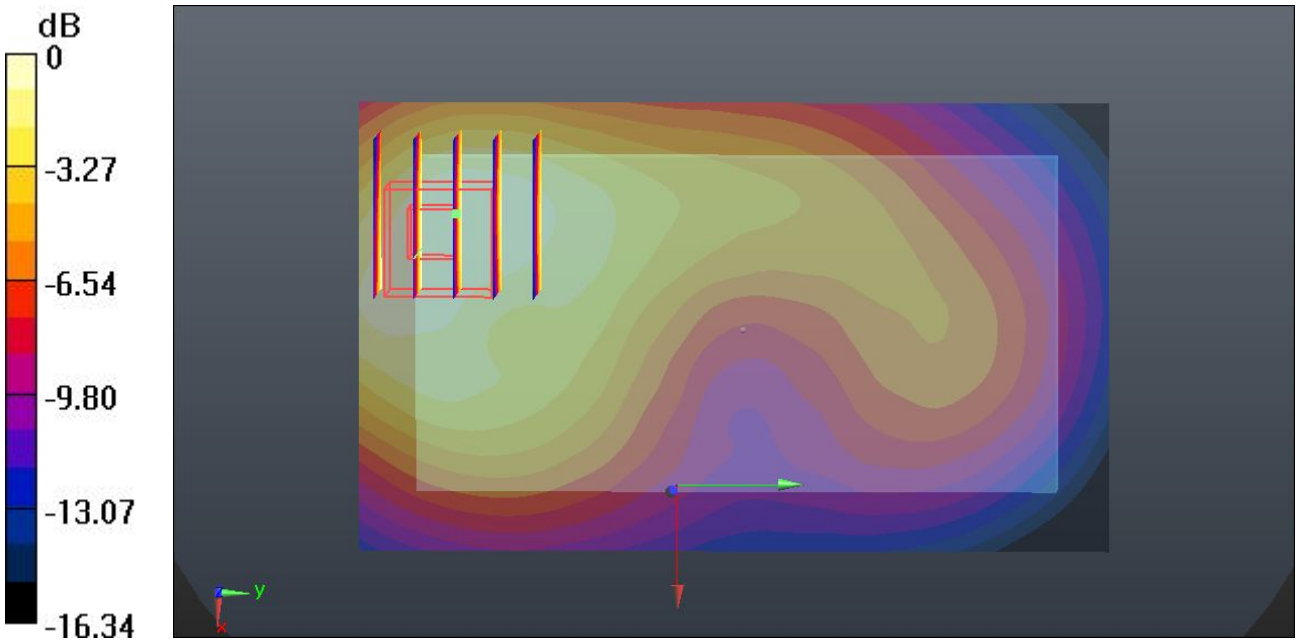
DUT: 281501

Communication System: GPRS/EDGE12; Frequency: 1909.8 MHz;Duty Cycle: 1:2
Medium: MSL_1900_120820 Medium parameters used: f = 1910 MHz; σ = 1.529 mho/m; ε_r = 53.552; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.64, 4.64, 4.64); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch810/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.535 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.932 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.816 mW/g
SAR(1 g) = 0.498 mW/g; SAR(10 g) = 0.304 mW/g
Maximum value of SAR (measured) = 0.538 mW/g



0 dB = 0.538 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

29 WCDMA V_RMC 12.2K_Front_1.5cm_Ch4182_Headset

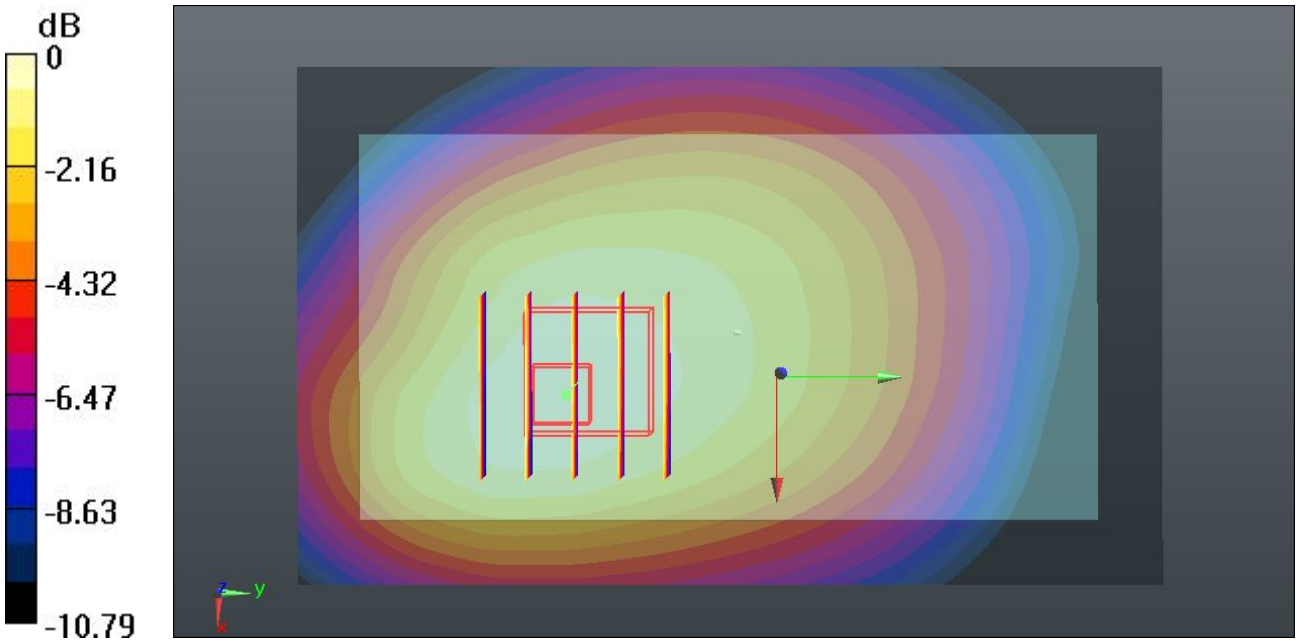
DUT: 281501

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_120820 Medium parameters used: f = 836.4 MHz; σ = 0.978 mho/m; ε_r = 54.357; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch4182/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.461 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.945 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.616 mW/g
SAR(1 g) = 0.438 mW/g; SAR(10 g) = 0.316 mW/g
Maximum value of SAR (measured) = 0.463 mW/g



0 dB = 0.463 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

30 WCDMA V_RMC 12.2K_Back_1.5cm_Ch4182_Headset

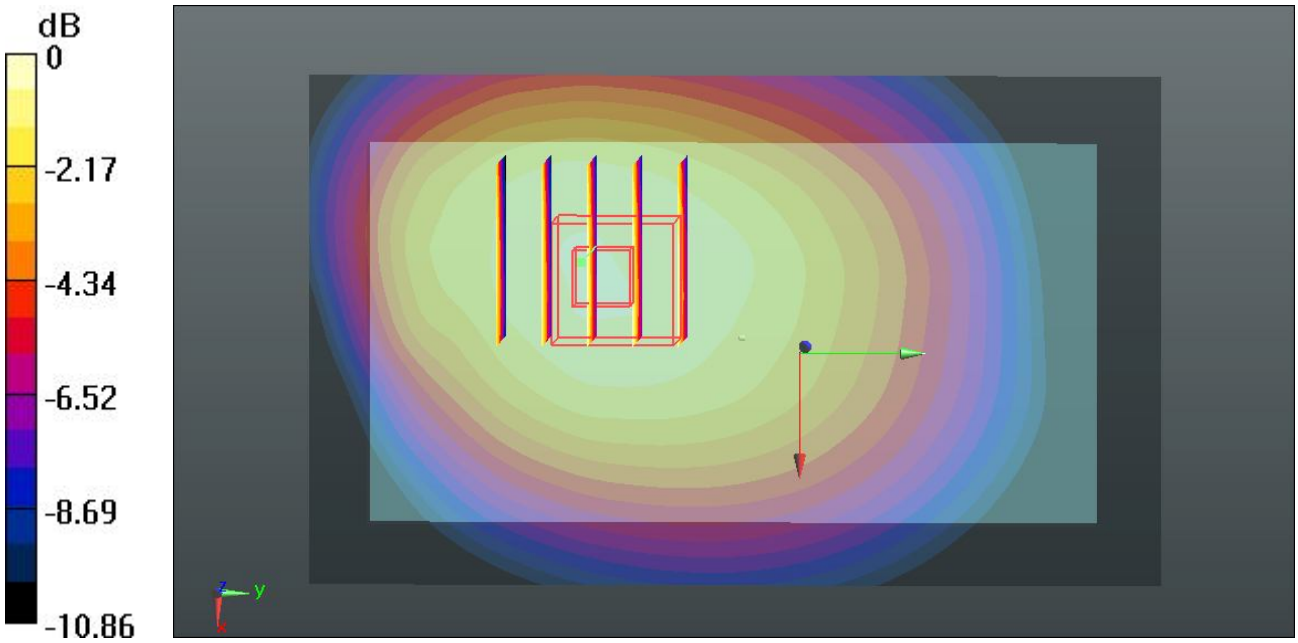
DUT: 281501

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_120820 Medium parameters used: f = 836.4 MHz; σ = 0.978 mho/m; ε_r = 54.357; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch4182/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.518 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.525 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.773 mW/g
SAR(1 g) = 0.572 mW/g; SAR(10 g) = 0.417 mW/g
Maximum value of SAR (measured) = 0.600 mW/g



0 dB = 0.600 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

30 WCDMA V_RMC 12.2K_Back_1.5cm_Ch4182_Headset_2D

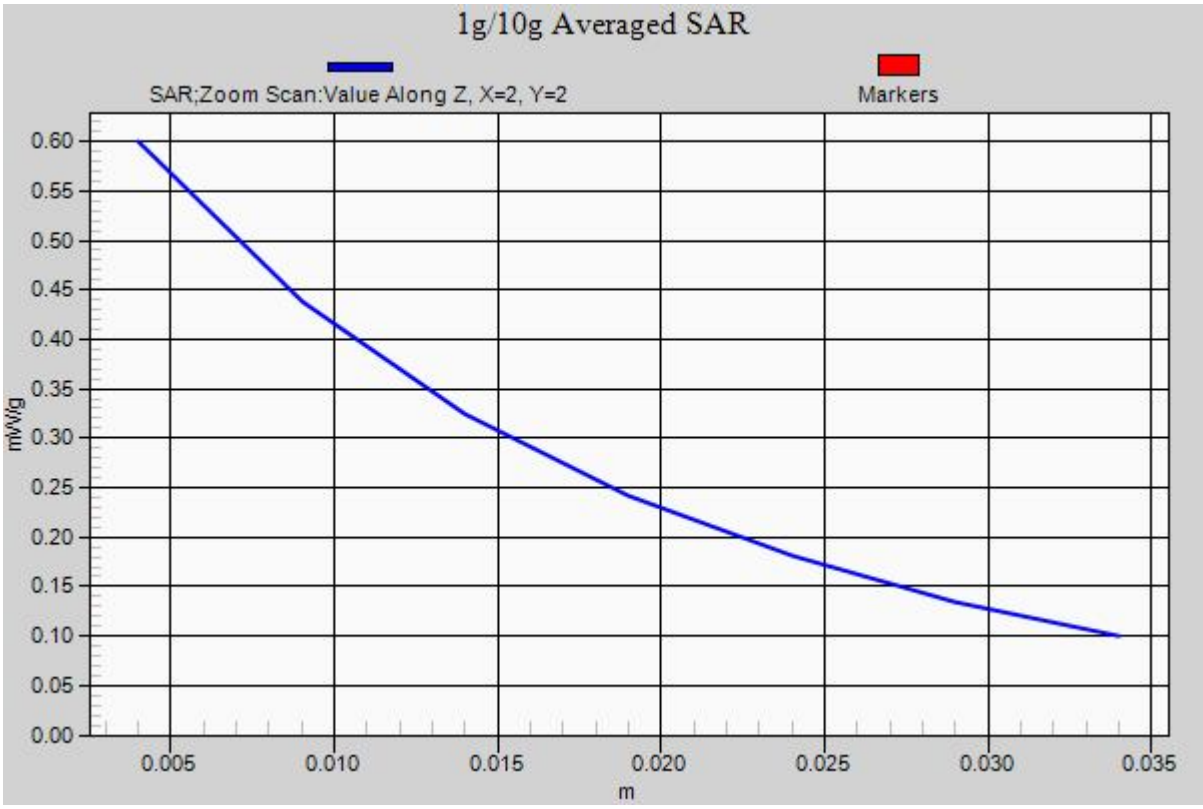
DUT: 281501

Communication System: UMTS; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_120820 Medium parameters used: f = 836.4 MHz; σ = 0.978 mho/m; ε_r = 54.357; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(6.16, 6.16, 6.16); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch4182/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.518 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.525 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.773 mW/g
SAR(1 g) = 0.572 mW/g; SAR(10 g) = 0.417 mW/g
Maximum value of SAR (measured) = 0.600 mW/g



21 WCDMA II_RMC 12.2K_Front_1.5cm_Ch9262_Headset

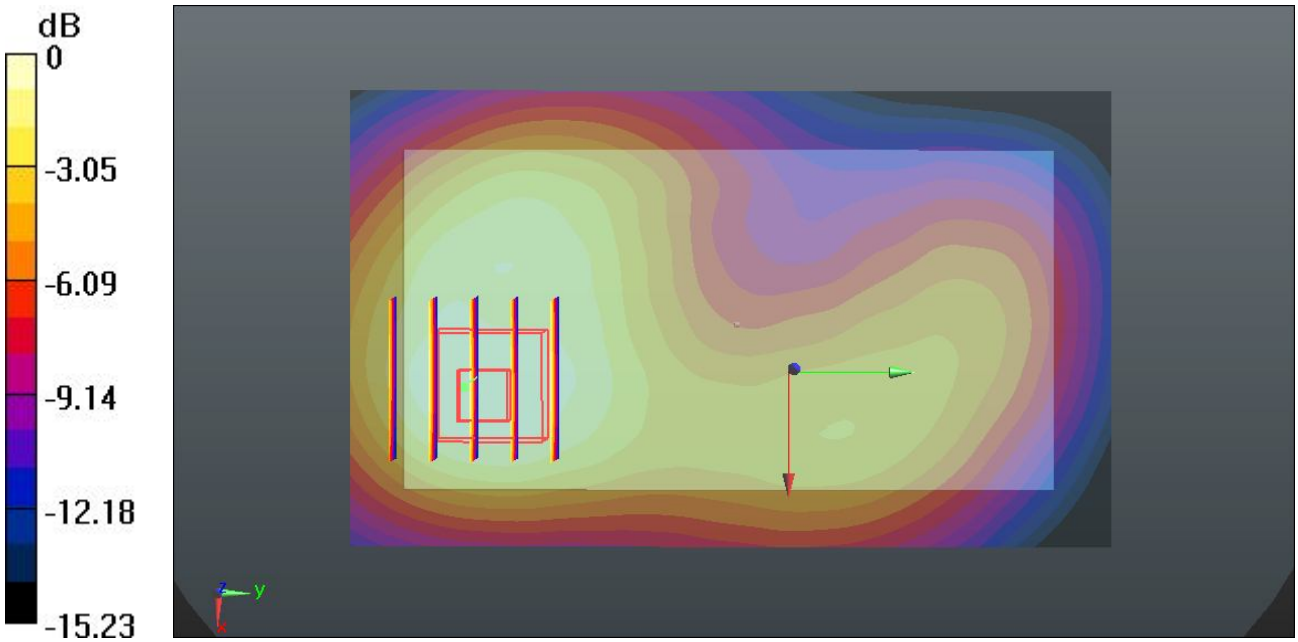
DUT: 281501

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_120820 Medium parameters used: f = 1852.4 MHz; σ = 1.462 mho/m; ε_r = 53.584; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.64, 4.64, 4.64); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9262/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.564 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.663 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.820 mW/g
SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.321 mW/g
Maximum value of SAR (measured) = 0.550 mW/g



0 dB = 0.550 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

22 WCDMA II_RMC 12.2K_Back_1.5cm_Ch9262_Headset

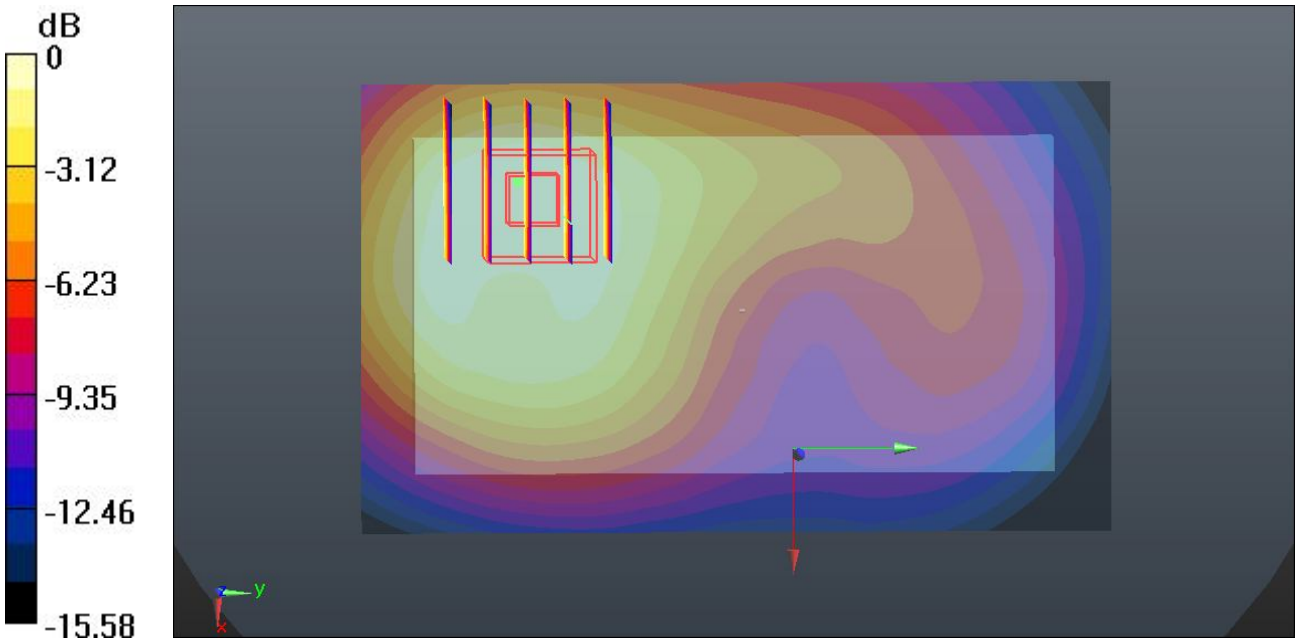
DUT: 281501

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_120820 Medium parameters used: f = 1852.4 MHz; σ = 1.462 mho/m; ε_r = 53.584; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.64, 4.64, 4.64); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9262/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.558 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.316 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.843 mW/g
SAR(1 g) = 0.527 mW/g; SAR(10 g) = 0.327 mW/g
Maximum value of SAR (measured) = 0.554 mW/g



0 dB = 0.554 mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 20.08.2012

22 WCDMA II_RMC 12.2K_Back_1.5cm_Ch9262_Headset_2D

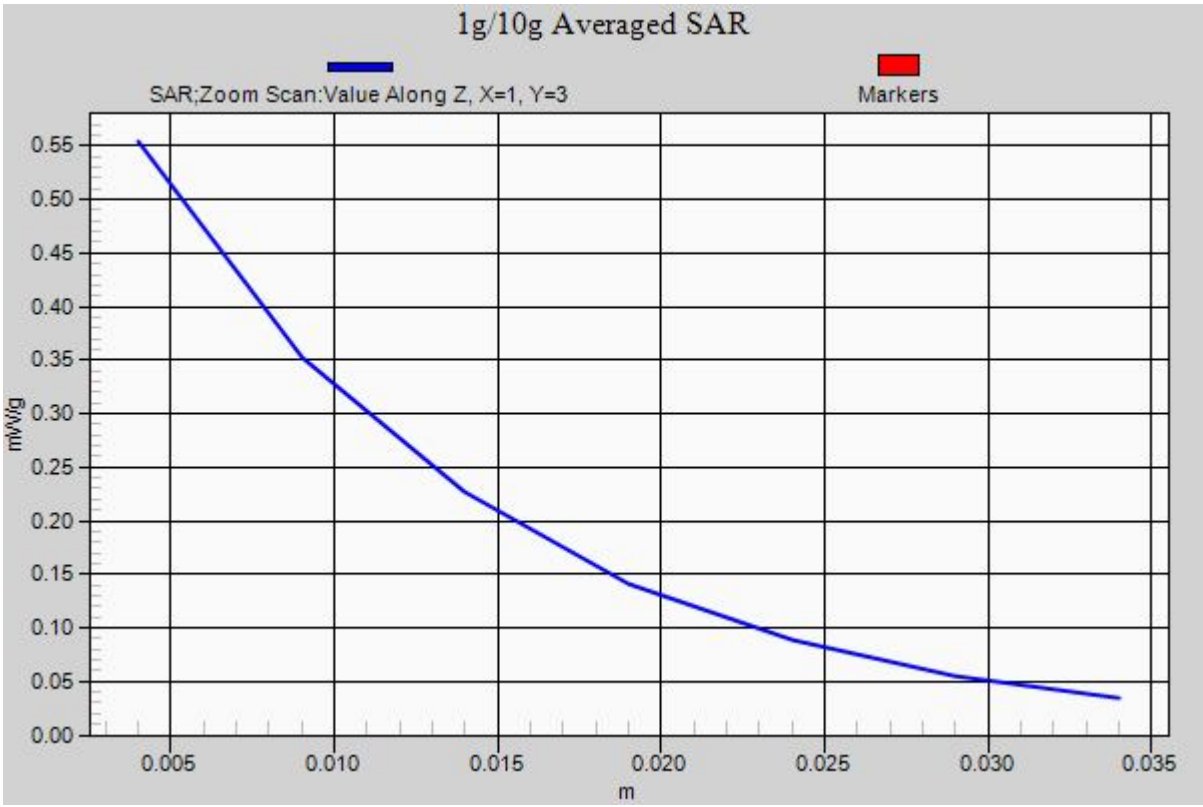
DUT: 281501

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_120820 Medium parameters used: f = 1852.4 MHz; σ = 1.462 mho/m; ε_r = 53.584; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.64, 4.64, 4.64); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch9262/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.558 mW/g

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.316 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.843 mW/g
SAR(1 g) = 0.527 mW/g; SAR(10 g) = 0.327 mW/g
Maximum value of SAR (measured) = 0.554 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 27.08.2012

31 802.11b_Front_1.5cm_Ch1_Headset

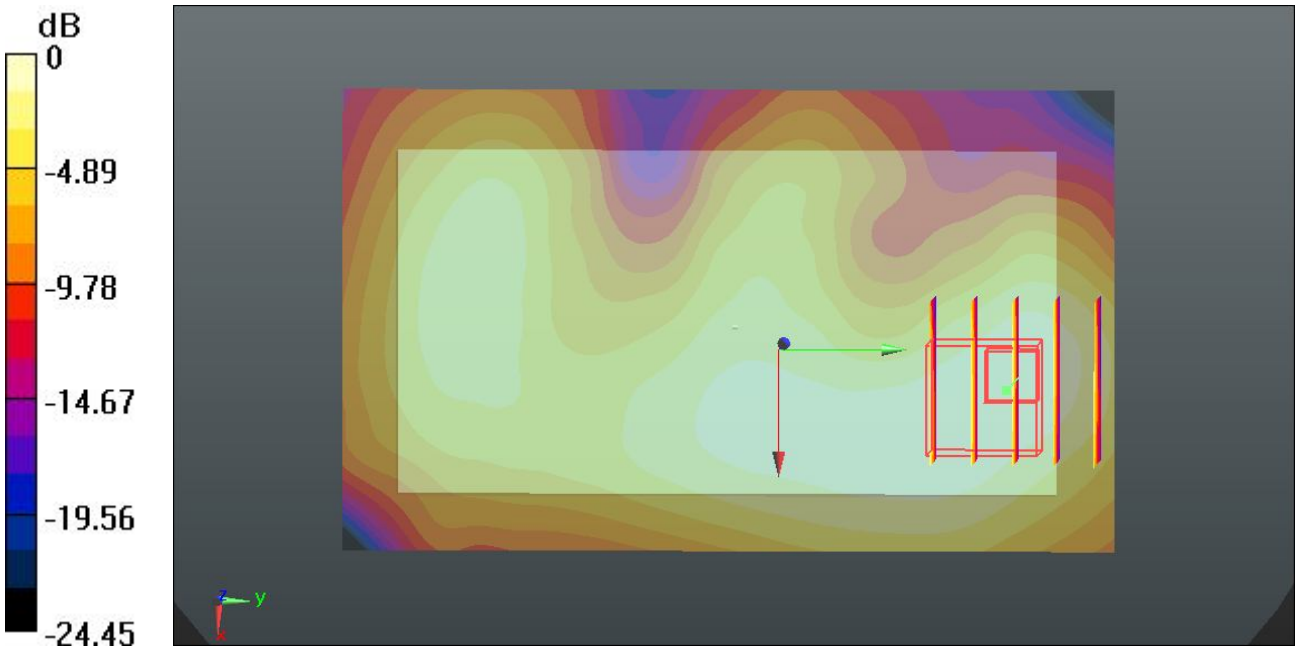
DUT: 281501

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1.12
Medium: MSL_2450_120827 Medium parameters used: f = 2412 MHz; σ = 1.906 mho/m; ε_r = 54.182; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.28, 4.28, 4.28); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.0706 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.343 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.124 mW/g
SAR(1 g) = 0.065 mW/g; SAR(10 g) = 0.036 mW/g
Maximum value of SAR (measured) = 0.0699 mW/g



0 dB = 0.0699 mW/g

32 802.11b_Back_1.5cm_Ch1_Headset

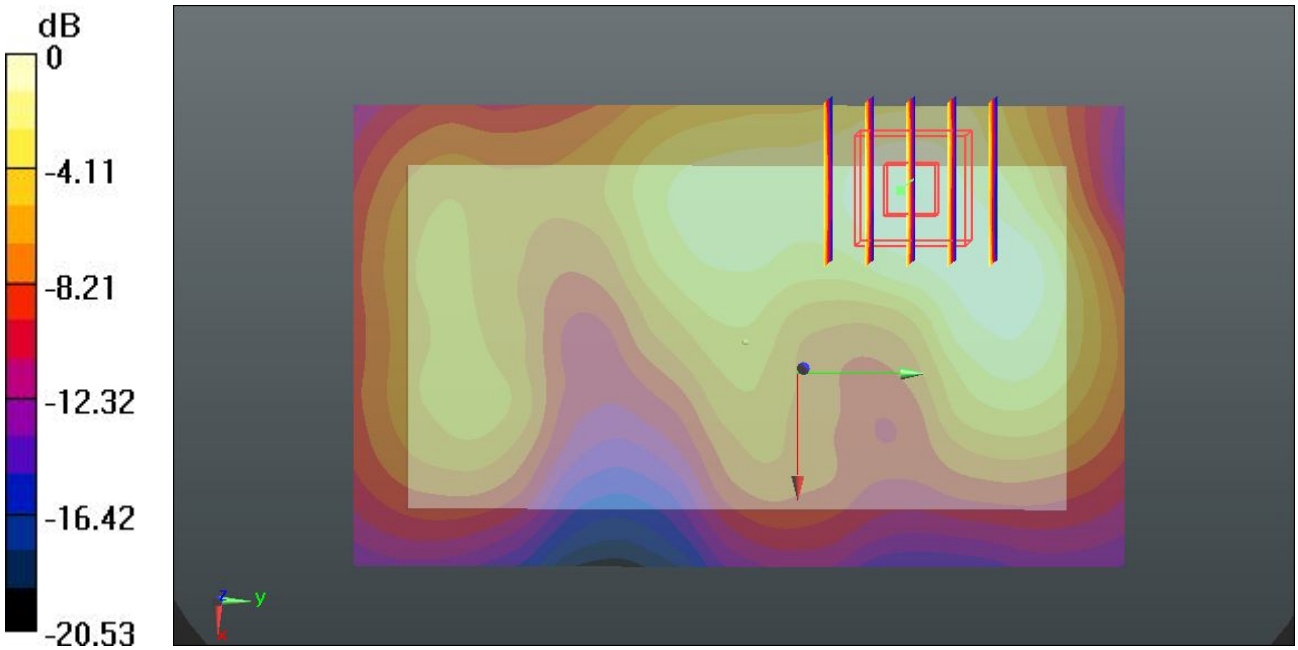
DUT: 281501

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1.12
Medium: MSL_2450_120827 Medium parameters used: f = 2412 MHz; σ = 1.906 mho/m; ε_r = 54.182; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.28, 4.28, 4.28); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.101 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.488 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.182 mW/g
SAR(1 g) = 0.095 mW/g; SAR(10 g) = 0.052 mW/g
Maximum value of SAR (measured) = 0.103 mW/g



0 dB = 0.103 mW/g

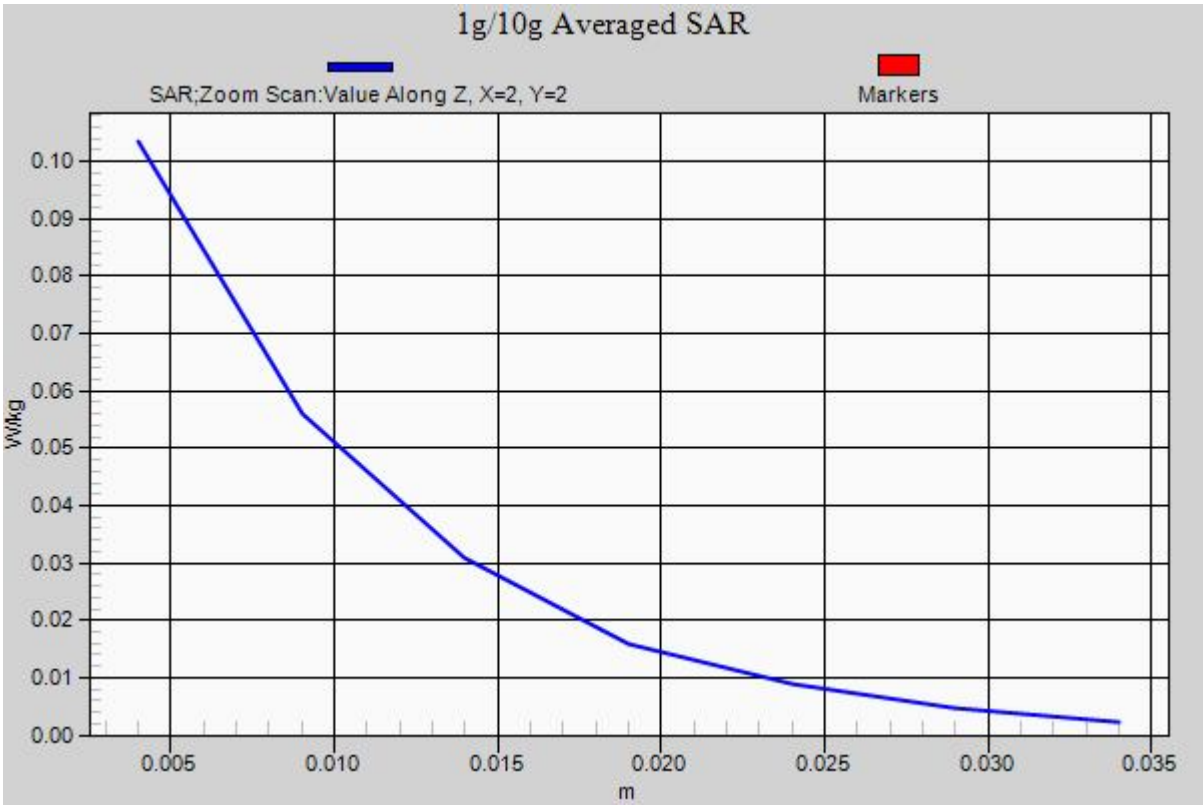
Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 27.08.2012

32 802.11b_Back_1.5cm_Ch1_Headset_2D

DUT: 281501

Communication System: WIFI; Frequency: 2412 MHz;Duty Cycle: 1:1.12
Medium: MSL_2450_120827 Medium parameters used: f = 2412 MHz; σ = 1.906 mho/m; ε_r = 54.182; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: ES3DV3 - SN3270; ConvF(4.28, 4.28, 4.28); Calibrated: 12.09.2011;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 10.11.2011
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.101 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.488 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.182 mW/g
SAR(1 g) = 0.095 mW/g; SAR(10 g) = 0.052 mW/g
Maximum value of SAR (measured) = 0.103 mW/g