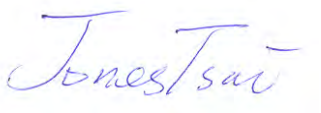
FCC SAR Test Report

APPLICANT	:	SAMSUNG Electronics Co., LTD.
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	Samsung
MODEL NAME	:	SHV-E270L
MARKETING NAME	:	BAFFIN
FCC ID	:	A3LSHVE270L
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 Oct. 27, 2012. We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA2O0922	Rev. 01	Initial issue of report	Nov. 06, 2012
FA2O0922	Rev. 02	Remove 5G hotspot SAR and scaled SAR.	Nov. 23, 2012

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **SAMSUNG Electronics Co., LTD. Mobile Phone, Samsung, SHV-E270L, BAFFIN** are as follows.

<Standalone SAR>

Band	Position	SAR_{1g} (W/kg)
GSM1900	Head	0.192
WCDMA Band II	Head	0.266
WLAN 2.4G	Head	0.181
WLAN 5G	Head	0.177
GSM1900	Hotspot (1 cm Gap)	0.434
WCDMA Band II	Hotspot (1 cm Gap)	0.452
WLAN 2.4G	Hotspot (1 cm Gap)	0.025
GSM1900	Body-worn (1 cm Gap)	0.434
WCDMA Band II	Body-worn (1 cm Gap)	0.466
WLAN 2.4G	Body-worn (1 cm Gap)	0.025
WLAN 5G	Body-worn (1 cm Gap)	0.082

<Highest Simultaneous transmission SAR>

	Band	Position	Multi-Band SAR_{1g} (W/kg)
Head	WCDMA II WLAN 2.4G	Left Cheek	0.447
	Band	**Position**	**Multi-Band SAR_{1g} (W/kg)**
Hotspot	WCDMA Band II WLAN 2.4G	Back (1 cm Gap)	0.477
	Band	**Position**	**Multi-Band SAR_{1g} (W/kg)**
Body-worn	WCDMA Band II WLAN 5G	Back with headset (1 cm Gap)	0.547

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 INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

2.2 Applicant

Company Name	SAMSUNG Electronics Co., LTD.
Address	IT center, 416, Maetan-3dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, Korea

2.3 Manufacturer

Company Name	SAMSUNG Electronics Co., LTD.
Address	IT center, 416, Maetan-3dong, Yeongtong-gu, Suwon-city, Gyeonggi-do, Korea

2.4 Application Details

Date of Start during the Test	Oct. 20, 2012
Date of End during the Test	Oct. 27, 2012

3. General Information

3.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT	Mobile Phone
Brand Name	Samsung
Model Name	SHV-E270L
Marketing Name	BAFFIN
FCC ID	A3LSHVE270L
Tx Frequency	GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WLAN2.4G: 2412 MHz ~ 2462 MHz WLAN5G: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz; 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Measure Maximum Average Output Power to Antenna	GSM1900: 30.50 dBm WCDMA Band II: 23.05 dBm 802.11b: 17.41 dBm 802.11g: 13.76 dBm 802.11n-HT20 (2.4GHz) : 11.87 dBm 802.11a : 14.31 dBm 802.11n-HT20 (5GHz) : 12.29 dBm 802.11n-HT40 (5GHz) : 12.47 dBm Bluetooth: 9.66 dBm
Antenna Type	WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna NFC: PIFA Antenna
HW Version	REV0.1
SW Version	E270L.001
Uplink Modulations	GSM: GMSK GPRS: GMSK WCDMA (Rel 99): QPSK HSDPA (Rel 8): QPSK HSUPA (Rel 8): QPSK 802.11b: DSSS (BPSK / QPSK / CCK) 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth : GFSK Bluetooth EDR : π/4-DQPSK, 8-DPSK Bluetooth 4.0 LE: GFSK NFC : ASK
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	Identical Prototype
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. 5600 MHz ~ 5650 MHz is notched.	

3.2 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 941225 D06 v01
- FCC KDB 248227 D01 v01r02

3.3 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.

3.4 Test Conditions

3.4.1 Ambient Condition

Ambient Temperature	20 to 24 ℃
Humidity	< 60 %

3.4.2 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

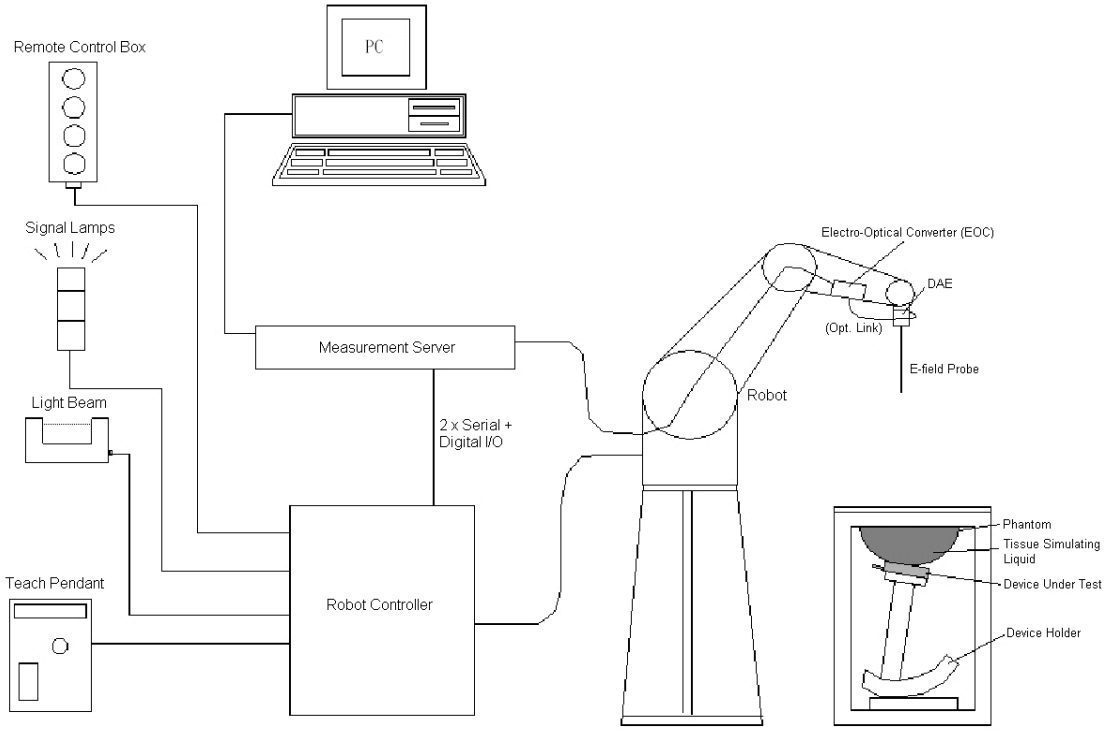


Fig 5.1 SPEAG DASY System Configurations

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

<EX3DV4 / ES3DV4 Probe>

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

Fig 5.2 Photo of EX3DV4/ES3DV4

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 ± 0.25dB. 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 (DASY4: RX90BL; DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB; 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)

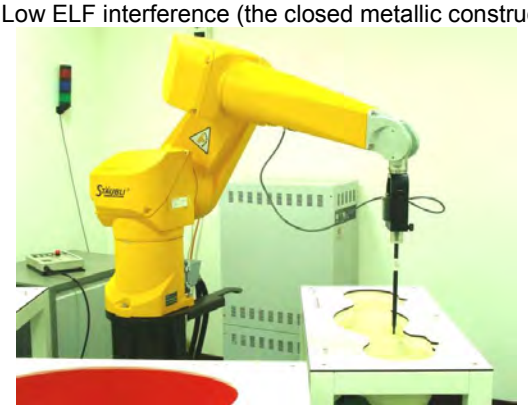


Fig 5.4 Photo of DASY4

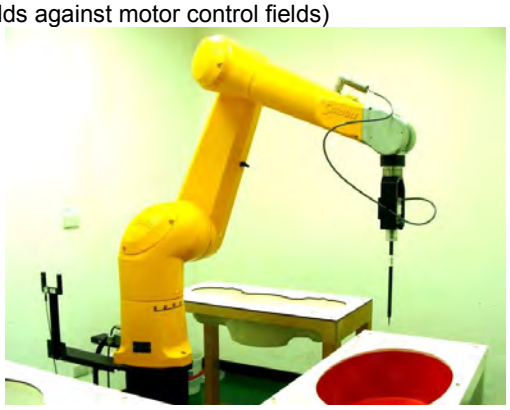


Fig 5.5 Photo of DASY5

5.4 Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chipdisk (DASY4: 32 MB; DASY5: 128 MB), RAM (DASY4: 64 MB, 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 5.6 Photo of Server for DASY4

Fig 5.7 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 5.8 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.

<ELI4 Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm

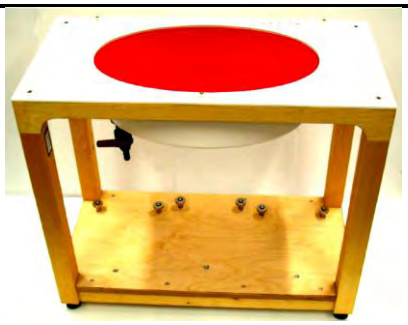


Fig 5.9 Photo of ELI4 Phantom

The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

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 (ERP). 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 ε = 3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

Fig 5.10 Device Holder

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

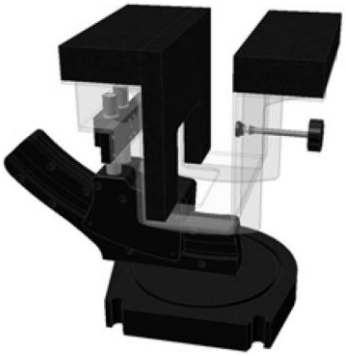


Fig 5.11 Laptop Extension Kit

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	1900MHz System Validation Kit	D1900V2	5d041	Mar. 23, 2010	Mar. 22, 2013
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 25, 2011	Jul. 24, 2013
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Jan. 18, 2012	Jan. 17, 2013
SPEAG	Data Acquisition Electronics	DAE4	1279	May 03, 2012	May 02, 2013
SPEAG	Data Acquisition Electronics	DAE3	495	Apr. 23, 2012	Apr. 22, 2013
SPEAG	Dosimetric E-Field Probe	EX3DV4	3801	Jun. 22, 2012	Jun. 21, 2013
SPEAG	Dosimetric E-Field Probe	EX3DV4	3697	Sep. 28, 2012	Sep. 27, 2013
Wisewind	Thermometer	ETP-101	TM560	Nov. 16, 2011	Nov. 15, 2012
Wisewind	Thermometer	HTC-1	TM685	Nov. 16, 2011	Nov. 15, 2012
Wisewind	Thermometer	HTC-1	TM659	Nov. 16, 2011	Nov. 15, 2012
H.M.IRIS	Thermometer	TH-08	TM658	Nov. 16, 2011	Nov. 15, 2012
SPEAG	Device Holder	N/A	N/A	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1383	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1477	NCR	NCR
Agilent	Network Analyzer	E5071C	MY46101588	May 11, 2012	May 10, 2013
Agilent	ESG Vector Series Signal Generator	E4438C	MY49070755	Oct. 02, 2012	Oct. 01, 2013
Anritsu	Power Meter	ML2495A	1132003	Aug. 14, 2012	Aug. 13, 2013
Agilent	Wireless Communication Test Set	E5515C	MY48360820	Jan. 05, 2012	Jan. 04, 2014
Agilent	Dual Directional Coupler	778D	50422	NCR	NCR
Woken	Attenuator	WK0602-XX	N/A	NCR	NCR
AR	Power Amplifier	5S1G4M2	0328767	NCR	NCR
R&S	Spectrum Analyzer	FSP	101131	Jul. 23, 2012	Jul. 22, 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 D1900V2, SN: 5d041 and 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.

5.9 Justification Procedure of Dipole Calibration

1. Setup a Network Analyzer (Agilent N5230A) and set the start frequency and stop frequency to Network Analyzer according to the dipole frequency, at least +/- 200MHz around the calibration point.
2. Using calibration kit to perform Network Analyzer Open, Short and Load calibration.
3. Connect the dipole with the calibrated Network Analyzer.
4. Set the Network Analyzer frequency by the dipole calibration frequency. Monitor the return-loss and impedance results with Log Magnitude format and Smith Chart, respectively.
5. Record the result and compare with the 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.

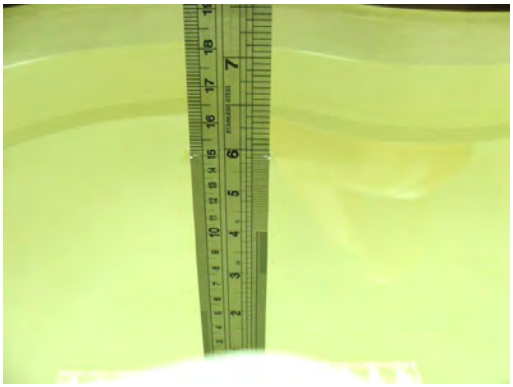


Fig 6.1 Photo of Liquid Height for Head SAR

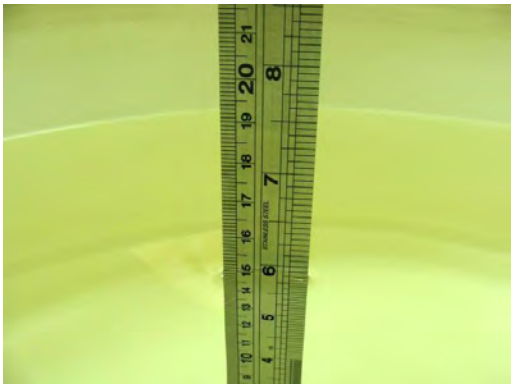


Fig 6.2 Photo of Liquid Height for Body SAR

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								
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								
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

Simulating Liquid for 5G, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

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
1900	Head	21.3	1.432	38.828	1.4	40	2.29	-2.93	±5	Oct. 25, 2012
1900	Body	21.5	1.534	51.914	1.52	53.3	0.92	-2.60	±5	Oct. 26, 2012
2450	Head	21.3	1.854	39.572	1.8	39.2	3.00	0.95	±5	Oct. 20, 2012
2450	Body	21.3	1.968	53.802	1.95	52.7	0.92	2.09	±5	Oct. 20, 2012
5200	Head	21.9	4.814	35.458	4.66	36.0	3.30	-1.51	±5	Oct. 27, 2012
5200	Body	21.6	5.287	48.755	5.30	49.0	-0.25	-0.50	±5	Oct. 26, 2012
5500	Head	21.9	5.136	34.965	4.96	35.6	3.55	-1.78	±5	Oct. 27, 2012
5500	Body	21.6	5.727	48.178	5.65	48.6	1.36	-0.87	±5	Oct. 26, 2012
5800	Head	21.9	5.423	34.346	5.27	35.3	2.90	-2.70	±5	Oct. 27, 2012
5800	Body	21.6	6.12	47.381	6.00	48.2	2.00	-1.70	±5	Oct. 26, 2012

Table 6.2 Measuring Results for Simulating Liquid

7. SAR Measurement Evaluation

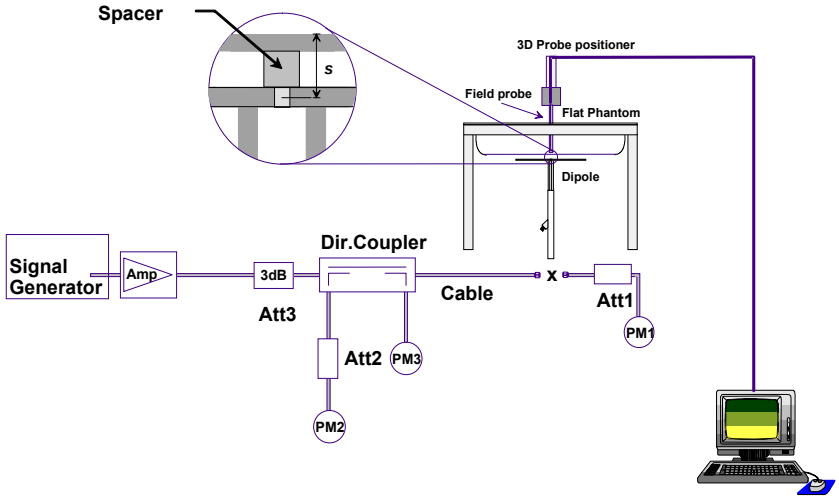
Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System validation kit includes a dipole, tripod holder to fix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



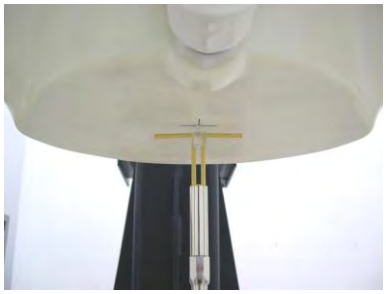


Fig 7.1 System Setup for System Evaluation

Fig 7.2 Photo of Dipole Setup

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.

7.3 SAR System Verification Results

Comparing to the original SAR value provided by SPEAG, the verification 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 (%)
Oct. 25, 2012	1900	Head	39.8	9.64	38.56	-3.12
Oct. 26, 2012	1900	Body	40.00	9.97	39.88	-0.30
Oct. 20, 2012	2450	Head	54.8	13.6	54.40	-0.73
Oct. 20, 2012	2450	Body	52.3	12.4	49.60	-5.16
Oct. 27, 2012	5200	Head	79.2	20.4	81.60	3.03
Oct. 26, 2012	5200	Body	72.6	16.8	67.20	-7.44
Oct. 27, 2012	5500	Head	85.2	21.9	87.60	2.82
Oct. 26, 2012	5500	Body	78.8	18.3	73.20	-7.11
Oct. 27, 2012	5800	Head	79	20.9	83.60	5.82
Oct. 26, 2012	5800	Body	73.1	17	68.00	-6.98

Table 7.1 Target and Measurement SAR after Normalized

8. EUT Testing Position

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.

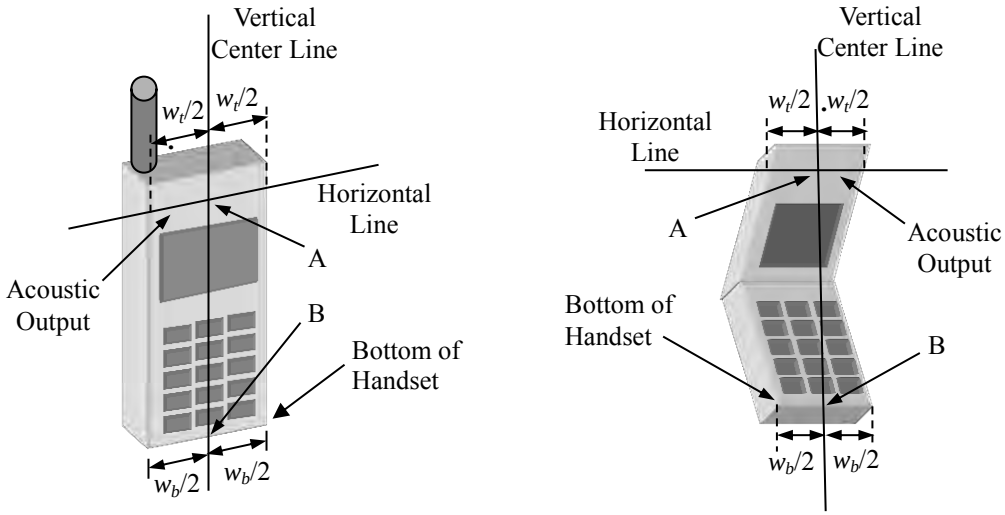


Fig 8.1 Illustration for Handset Vertical and Horizontal Reference Lines

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. 8.2).

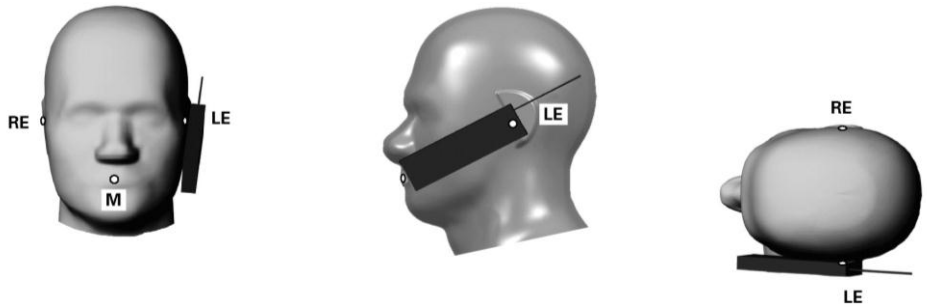


Fig 8.2 Illustration for Cheek Position

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. 8.3).

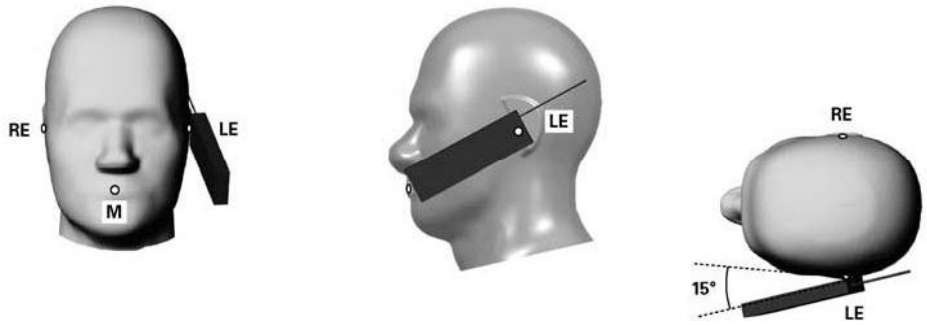


Fig 8.3 Illustration for Tilted Position

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 cm.

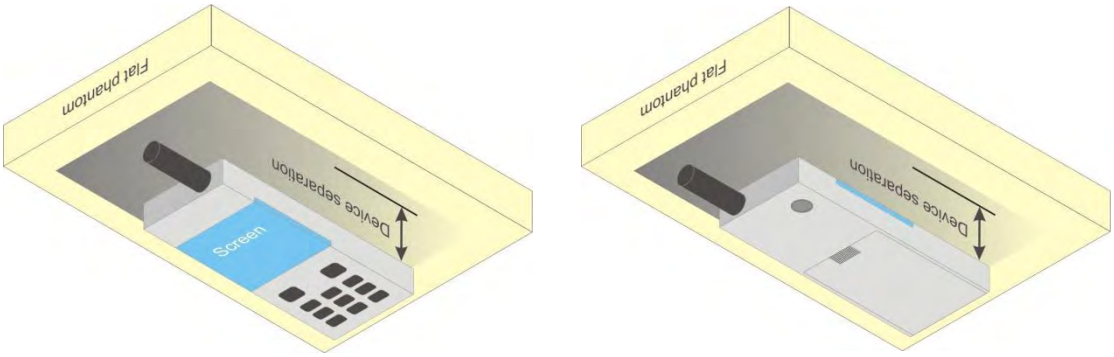


Fig 8.4 Illustration for Body Worn Position

8.5 Hotspot Position

(a) To position the device parallel to the phantom surface with all sides and either keypad up or down.
(b) To adjust the device parallel to the flat phantom.
(c) To adjust the distance between the device and the flat phantom to 1.0cm.

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Set scan area, grid size and other setting on the DASY software.
(c) Measure SAR results for the highest power channel on each testing position.
(d) Find out the largest SAR result on these testing positions of each band
(e) 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.

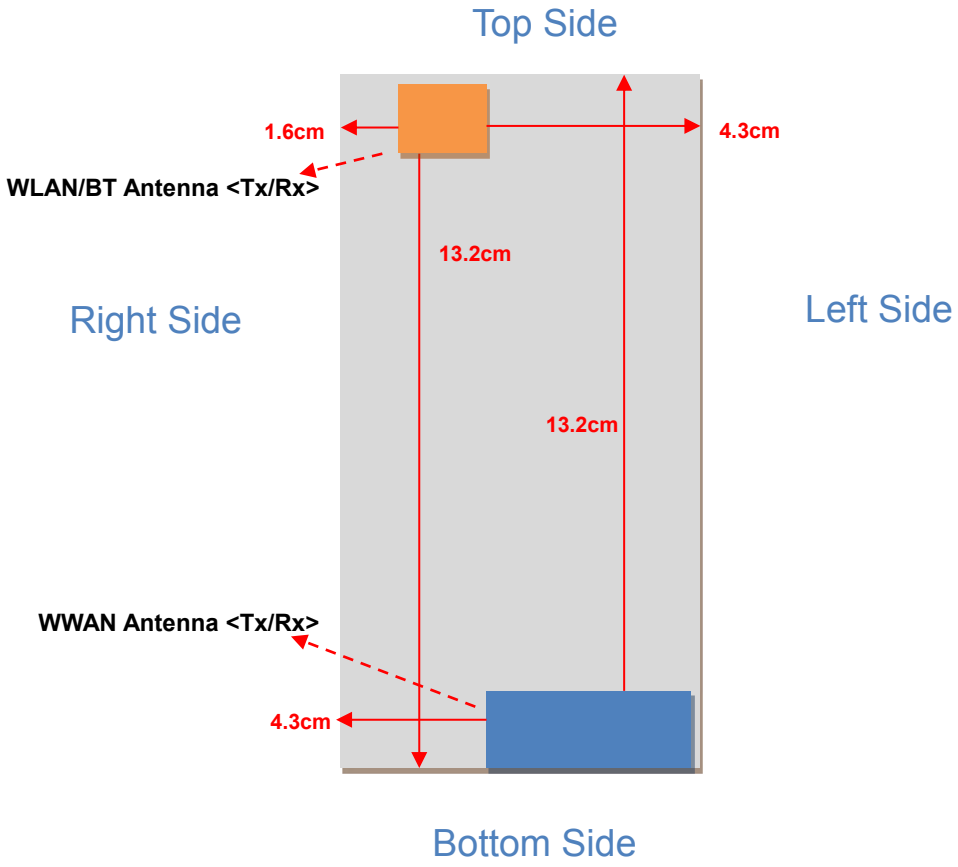
Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty 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 drifts more than 5%, the SAR will be retested.

10. SAR Test Configurations

10.1 Exposure Positions Consideration



Back View

Antennas	Wireless Interface
WWAN Antenna (Tx / Rx)	GSM1900 WCDMA Band II
BT&WLAN Antenna (Tx / Rx)	WLAN 2.4GHz WLAN 5GHz Bluetooth

Sides for SAR tests; Hotspot mode Test distance: 10 mm						
Antennas	**Back**	**Front**	**Top Side**	**Bottom Side**	**Right Side**	**Left Side**
WWAN	YES	YES	NO	YES	NO	YES
BT&WLAN	YES	YES	YES	NO	YES	NO

Note:

1. Head/Body-worn/Hotspot mode SAR assessments are required.
2. Referring to KDB 941225 D06, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge.
3. For WWAN antenna, SAR measurements at Top side/Right side are not required since the distance between the transmitting antenna and surface of device is > 25mm.
4. For BT&WLAN antenna, SAR measurements Bottom/Left side are not required since the distance between the transmitting antenna and surface of device is > 25mm.
5. Per KDB 648474 D01, Bluetooth output power 9.66dBm ≤ 2*P_{Ref} and the distance to other antennas ≥ 5cm, therefore, stand-alone SAR is not required.
6. Mobile hotspot only supports 2.4GHz WLAN operation; mobile hotspot of 5GHz WLAN operation is disabled.

10.2 Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

Band: GSM1900	Burst Average Power (dBm)			Frame-Average Power (dBm)		
Channel	**512**	**661**	**810**	**512**	**661**	**810**
Frequency (MHz)	**1850.2**	**1880.0**	**1909.8**	**1850.2**	**1880.0**	**1909.8**
GSM (GMSK, 1 Tx slot)	29.82	30.38	30.50	20.82	21.38	**21.50**
GPRS (GMSK, 1 Tx slot) – CS1	29.81	30.37	30.49	20.81	21.37	21.49
GPRS (GMSK, 2 Tx slots) – CS1	27.51	28.05	28.13	21.51	22.05	**22.13**
Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots. The calculated method are shown as below: Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB						

Note:

1. For Head SAR testing, Chosen GSM due to its voice mode.
2. For Body-worn SAR testing, Chosen GPRS 2TX slots due to its highest frame-average power and according GPRS test results pick worst position to test GSM with headset due to its the voice mode.
3. For hotspot mode SAR testing, Chosen GPRS 2 TX slots due to its highest frame-average power
4. Per KDB 648474, the maximum output power channel is used for SAR testing and for further SAR test reduction.
5. The EUT do not support DTM function.

<WCDMA Conducted Power>

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station referred to the drawing of Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station referred to the drawing of Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

WCDMA Average power (dBm)				
Band		WCDMA Band II		
Channel		9262	9400	9538
Frequency (MHz)		1852.4	1880.0	1907.6
3GPP Rel 99	AMR 12.2K	23.04	23.03	23.01
3GPP Rel 99	RMC 12.2K	23.04	**23.05**	23.02
3GPP Rel 6	HSDPA Subtest-1	20.42	20.55	20.44
3GPP Rel 6	HSDPA Subtest-2	20.32	20.51	20.32
3GPP Rel 6	HSDPA Subtest-3	20.38	20.45	20.35
3GPP Rel 6	HSDPA Subtest-4	19.55	19.86	19.58
3GPP Rel 6	HSUPA Subtest-1	19.74	19.96	19.93
3GPP Rel 6	HSUPA Subtest-2	18.57	18.92	18.74
3GPP Rel 6	HSUPA Subtest-3	19.38	19.88	19.72
3GPP Rel 6	HSUPA Subtest-4	18.53	18.95	18.81
3GPP Rel 6	HSUPA Subtest-5	19.78	20.27	20.24

MPR (dB)					
3GPP MPR	Subtest		WCDMA Band II		
0	3GPP Rel 6	HSDPA Subtest-1	0.00	0.00	0.00
0	3GPP Rel 6	HSDPA Subtest-2	0.10	0.04	0.12
≤ 0.5	3GPP Rel 6	HSDPA Subtest-3	0.04	0.10	0.09
≤ 0.5	3GPP Rel 6	HSDPA Subtest-4	0.87	0.69	0.86
0	3GPP Rel 6	HSUPA Subtest-1	0.04	0.31	0.31
≤ 2	3GPP Rel 6	HSUPA Subtest-2	1.21	1.35	1.50
≤ 1	3GPP Rel 6	HSUPA Subtest-3	0.40	0.39	0.52
≤ 2	3GPP Rel 6	HSUPA Subtest-4	1.25	1.32	1.43
0	3GPP Rel 6	HSUPA Subtest-5	0.00	0.00	0.00

Note:

1. Applying the subtest setup in Table C.11.1.3 of 3GPP TS 34.121-1 V9.1.0 to Rel. 6 HSPA.
2. For Head SAR, per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If AMR 12.2kbps power is < 0.25dB higher than RMC 12.2kbps, SAR tests with AMR 12.2kbps can be excluded.
3. For Body SAR, per KDB 941225 D01, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA output power is < 0.25dB higher than RMC, or SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA SAR evaluation can be excluded.
4. By design, AMR, HSDPA/HSUPA RF power will not be larger than RMC 12.2kbps, detailed information is included in Tune-up Procure exhibit.
5. It is expected by the manufacturer that MPR for some HSDPA/HSUPA subtests may differ from the specification of 3GPP, according to the chipset implementation in this model. The implementation and expected deviation are detailed in tune-up procedure exhibit.

<WLAN 2.4GHz Conducted Power>

WLAN 2.4G 802.11b Average Power (dBm)						
Power vs. Channel			Power vs. Data Rate			
Channel	Frequency (MHz)	Data Rate (bps)	Channel	Data Rate (bps)		
		1M		2M	5.5M	11M
CH 01	2412	17.37	CH 6	17.38	17.38	17.38
CH 06	2437	**17.41**				
CH 11	2462	17.26				

WLAN 2.4G 802.11g Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate (bps)	Channel	Data Rate (bps)					
		6M		9M	12M	18M	24M	36M	48M	54M
CH 01	2412	13.60	CH 6	13.69	13.75	13.71	13.68	13.73	13.73	13.75
CH 06	2437	**13.76**								
CH 11	2462	13.61								

WLAN 2.4G 802.11n (BW 20MHz) Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	MCS Index	Channel	MCS Index					
		MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	**11.87**	CH 1	11.86	11.78	11.86	11.86	11.84	11.86	11.85
CH 06	2437	11.75								
CH 11	2462	11.66								

Note:

1. Per KDB 248227, choose the highest output power channel to test SAR and determine further SAR exclusion
2. Per KDB 248227, 11g and 11n-HT20 output power is less than 0.25dB 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 0.25dB higher than those measured at the lowest data rate.

<Bluetooth Conducted Power>

Channel	Frequency (MHz)	Average power (dBm)		
		Mode		
		GFSK	π/4-DQPSK	8-DPSK
CH 0	2402	8.74	5.80	5.76
CH 39	2441	9.55	6.71	6.74
CH 78	2480	**9.66**	6.57	6.53

Channel	Frequency (MHz)	Average power (dBm)
		Mode
		BT v4.0 LE, GFSK
CH 0	2402	5.51
CH 19	2440	6.49
CH 39	2480	**6.82**

Note: Per KDB 648474 D01, Bluetooth output power 9.66dBm ≤ 2*P_{Ref} and the distance to other antennas ≥ 5cm, therefore, stand-alone SAR is not required.

<WLAN 5GHz Conducted Power>

WLAN 5G 802.11a Average Power (dBm)											
Power vs. Channel			Power vs. Data Rate								
Channel	Frequency (MHz)	Data Rate (bps)	Channel	Data Rate (bps)							
		6M		9M	12M	18M	24M	36M	48M	54M
CH 36	5180	**14.17**	CH 36	14.12	14.11	14.11	14.12	14.11	14.16	14.16
CH 40	5200	14.10								
CH 44	5220	14.07								
CH 48	5240	13.97								
CH 52	5260	13.92	CH 60	14.26	14.24	14.25	14.26	14.25	14.25	14.24
CH 56	5280	14.03								
CH 60	5300	**14.27**								
CH 64	5320	14.06								
CH 100	5500	14.18	CH 140	14.26	14.26	14.26	14.26	14.25	14.27	14.27
CH 104	5520	14.17								
CH 108	5540	14.05								
CH 112	5560	13.90								
CH 116	5580	14.20								
CH 132	5660	14.07								
CH 136	5680	14.14								
CH 140	5700	**14.28**								
CH 149	5745	**14.31**	CH 149	14.30	14.19	14.29	14.29	14.28	14.30	14.29
CH 153	5765	14.27								
CH 157	5785	13.62								
CH 161	5805	14.26								
CH 165	5825	14.26								

WLAN 5G 802.11n (BW 20M) Average Power (dBm)											
Power vs. Channel			Power vs. Data Rate								
Channel	Frequency (MHz)	MCS Index	Channel	MCS Index							
		MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	**12.20**	CH 36	12.19	12.18	12.18	12.18	12.18	12.16	12.18
CH 40	5200	12.18								
CH 44	5220	12.05								
CH 48	5240	12.03								
CH 52	5260	11.85	CH 60	12.20	12.22	12.22	12.21	12.18	12.20	12.21
CH 56	5280	12.22								
CH 60	5300	**12.23**								
CH 64	5320	12.05								
CH 100	5500	12.24	CH 140	12.26	12.24	12.26	12.24	12.24	12.23	12.25
CH 104	5520	12.13								
CH 108	5540	11.99								
CH 112	5560	11.96								
CH 116	5580	12.17								
CH 132	5660	12.14								
CH 136	5680	12.26								
CH 140	5700	**12.28**								
CH 149	5745	12.22	CH 165	12.27	12.28	12.26	12.28	12.24	12.26	12.22
CH 153	5765	12.27								
CH 157	5785	11.66								
CH 161	5805	12.28								
CH 165	5825	**12.29**								

WLAN 5G 802.11n (BW 40M) Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	MCS Index	Channel	MCS Index					
		MCS0		MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	**12.16**	CH 38	12.13	12.15	12.15	12.13	12.13	12.12	12.13
CH 46	5230	12.07								
CH 54	5270	11.95	CH 62	12.16	12.17	12.16	12.16	12.17	12.12	12.13
CH 62	5310	**12.18**								
CH 102	5510	12.34	CH 134	12.33	12.33	12.36	12.36	12.35	12.36	12.27
CH 110	5550	12.13								
CH 134	5670	**12.37**								
CH 151	5755	**12.47**	CH 151	12.44	12.45	12.44	12.44	12.46	12.42	12.40
CH 159	5795	11.74								

Note:

1. Per KDB 248227, choose the highest output power channel to test SAR and determine further SAR exclusion
2. Per KDB 248227, 11n-HT20 and 11n-HT40 output power is less than 0.25dB higher than 11a 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 0.25dB higher than those measured at the lowest data rate.

11. SAR Test Results

11.1 Test Records for Head SAR Test

<GSM SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Burst Average Power (dBm)	Power Drift (dB)	SAR_{1g} (W/kg)
28	GSM1900	GSM Voice	Right Cheek	810	1909.8	30.50	0.134	0.119
29	GSM1900	GSM Voice	Right Tilted	810	1909.8	30.50	0.12	0.087
30	**GSM1900**	**GSM Voice**	**Left Cheek**	**810**	**1909.8**	**30.50**	**0.06**	**0.192**
31	GSM1900	GSM Voice	Left Tilted	810	1909.8	30.50	-0.05	0.08

Note: Per KDB 648474 and KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Burst Average Power (dBm)	Power Drift (dB)	SAR_{1g} (W/kg)
45	WCDMA II	RMC12.2K	Right Cheek	9400	1880	23.05	0.01	0.193
46	WCDMA II	RMC12.2K	Right Tilted	9400	1880	23.05	0.19	0.146
47	**WCDMA II**	**RMC12.2K**	**Left Cheek**	**9400**	**1880**	**23.05**	**-0.035**	**0.266**
48	WCDMA II	RMC12.2K	Left Tilted	9400	1880	23.05	-0.01	0.113

Note: Per KDB 648474 and KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Duty Cycle %	Duty Cycle Compensate Factor	Power Drift (dB)	SAR_{1g} (W/kg)	Duty Cycle Compensated 1g SAR
1	WLAN2.4G	802.11b	Right Cheek	6	2437	17.41	98.63	1.014	0.17	0.063	0.064
2	WLAN2.4G	802.11b	Right Tilted	6	2437	17.41	98.63	1.014	0.13	0.084	0.085
3	**WLAN2.4G**	**802.11b**	**Left Cheek**	**6**	**2437**	**17.41**	**98.63**	**1.014**	**0.124**	**0.179**	**0.181**
4	**WLAN2.4G**	**802.11b**	**Left Tilted**	**6**	**2437**	**17.41**	**98.63**	**1.014**	0.01	0.103	0.104
63	WLAN5G	802.11a	Right Cheek	36	5180	14.17	93.46	1.070	0.008	0.072	0.077
64	WLAN5G	802.11a	Right Tilted	36	5180	14.17	93.46	1.070	-0.03	0.022	0.024
65	**WLAN5G**	**802.11a**	**Left Cheek**	**36**	**5180**	**14.17**	**93.46**	**1.070**	**0.01**	**0.165**	**0.177**
66	WLAN5G	802.11a	Left Tilted	36	5180	14.17	93.46	1.070	0.06	0.057	0.061
67	WLAN5G	802.11a	Right Cheek	60	5300	14.27	93.46	1.070	-0.101	0.065	0.070
68	WLAN5G	802.11a	Right Tilted	60	5300	14.27	93.46	1.070	-0.07	0.026	0.028
69	WLAN5G	802.11a	Left Cheek	60	5300	14.27	93.46	1.070	-0.111	0.068	0.073
70	WLAN5G	802.11a	Left Tilted	60	5300	14.27	93.46	1.070	-0.04	0.043	0.046
71	WLAN5G	802.11a	Right Cheek	140	5700	14.28	93.46	1.070	-0.077	0.049	0.052
72	WLAN5G	802.11a	Right Tilted	140	5700	14.28	93.46	1.070	0.104	0.046	0.049
73	WLAN5G	802.11a	Left Cheek	140	5700	14.28	93.46	1.070	-0.177	0.027	0.029
74	WLAN5G	802.11a	Left Tilted	140	5700	14.28	93.46	1.070	0.056	0.019	0.020
75	WLAN5G	802.11a	Right Cheek	149	5745	14.31	93.46	1.070	-0.139	0.067	0.072
76	WLAN5G	802.11a	Right Tilted	149	5745	14.31	93.46	1.070	0.177	0.044	0.047
77	WLAN5G	802.11a	Left Cheek	149	5745	14.31	93.46	1.070	-0.124	0.067	0.072
78	WLAN5G	802.11a	Left Tilted	149	5745	14.31	93.46	1.070	-0.09	0.033	0.035

Note: Per KDB 648474 and 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 Hotspot SAR Test

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Burst Average Power (dBm)	Power Drift (dB)	SAR_{1g} (W/kg)
32	**GSM1900**	**GPRS (2 Tx slots)**	**Front**	**1**	**810**	**1909.8**	**28.13**	**-0.08**	**0.434**
33	GSM1900	GPRS (2 Tx slots)	Back	1	810	1909.8	28.13	-0.11	0.388
34	GSM1900	GPRS (2 Tx slots)	Left Side	1	810	1909.8	28.13	-0.05	0.198
35	GSM1900	GPRS (2 Tx slots)	Bottom Side	1	810	1909.8	28.13	-0.07	0.299

Note:
1. Per KDB 941225 D06, for EUT dimension ≥ 9cm*5cm, the test distance is 1cm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.
2. As in (1), SAR for Front / Back / Bottom Side / Left Side is necessary.
3. Per KDB 648474 and KDB 447498 if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Burst Average Power (dBm)	Power Drift (dB)	SAR_{1g} (W/kg)
39	WCDMA II	RMC12.2K	Front	1	9400	1880	23.05	0	0.448
40	**WCDMA II**	**RMC12.2K**	**Back**	**1**	**9400**	**1880**	**23.05**	**-0.02**	**0.452**
41	WCDMA II	RMC12.2K	Left Side	1	9400	1880	23.05	0.07	0.228
42	WCDMA II	RMC12.2K	Bottom Side	1	9400	1880	23.05	-0.04	0.366

Note:
1. Per KDB 941225 D06, for EUT dimension ≥ 9cm*5cm, the test distance is 1cm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.
2. As in (1), SAR for Front / Back / Bottom Side / Left Side is necessary.
3. Per KDB 648474 and KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Duty Cycle %	Duty Cycle Compensate Factor	Power Drift (dB)	SAR_{1g} (W/kg)	Duty Cycle Compensated 1g SAR
5	WLAN2.4G	802.11b	Front	1	6	2437	17.41	98.63	1.014	-0.083	0.00195	0.002
6	**WLAN2.4G**	**802.11b**	**Back**	**1**	**6**	**2437**	**17.41**	**98.63**	**1.014**	**0.155**	**0.025**	**0.025**
8	WLAN2.4G	802.11b	Right Side	1	6	2437	17.41	98.63	1.014	0.097	0.00154	0.002
9	WLAN2.4G	802.11b	Top Side	1	6	2437	17.41	98.63	1.014	-0.094	0.0014	0.001

Note:
1. Per KDB 941225 D06, for EUT dimension ≥ 9cm*5cm, the test distance is 1cm. SAR must be measured for all surfaces and sides with a transmitting antenna located within 2.5cm from that surface or edge.
2. As in (1), SAR for Front / Back / Top Side / Right Side is necessary.
3. Per KDB 648474 and KDB 248227, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

11.3 Test Records for Body-worn SAR Test

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Burst Average Power (dBm)	Power Drift (dB)	SAR_{1g} (W/kg)
32	**GSM1900**	**GPRS (2 Tx slots)**	**Front**	**1**	**-**	**810**	**1909.8**	**28.13**	**-0.08**	**0.434**
33	GSM1900	GPRS (2 Tx slots)	Back	1	-	810	1909.8	28.13	-0.11	0.388
37	GSM1900	GSM Voice	Front	1	v	810	1909.8	30.50	-0.05	0.329

Note:
1. Per KDB 648474 and KDB 447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.
2. Per KDB 941225 D06, hotspot SAR data in front/back positions can be considered as body-worn accessory SAR test data. GSM voice mode body-worn SAR was repeated at the worst position of hotspot SAR data, back position of this device
3. "V" in the Headset column means the Headset is plugged during SAR testing.

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Burst Average Power (dBm)	Power Drift (dB)	SAR_{1g} (W/kg)
39	WCDMA II	RMC12.2K	Front	1	-	9400	1880	23.05	0	0.448
40	WCDMA II	RMC12.2K	Back	1	-	9400	1880	23.05	-0.02	0.452
44	**WCDMA II**	**RMC12.2K**	**Back**	**1**	**v**	**9400**	**1880**	**23.05**	**-0.06**	**0.466**

Note:
1. Per KDB 648474 and 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 SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Headset	Ch.	Freq. (MHz)	Average Power (dBm)	Duty Cycle %	Duty Cycle Compensate Factor	Power Drift (dB)	SAR_{1g} (W/kg)	Duty Cycle Compensated 1g SAR
5	WLAN2.4G	802.11b	Front	1	-	6	2437	17.41	98.63	1.014	-0.083	0.00195	0.002
6	WLAN2.4G	802.11b	Back	1	-	6	2437	17.41	98.63	1.014	0.155	0.025	0.025
11	**WLAN2.4G**	**802.11b**	**Back**	**1**	**v**	**6**	**2437**	**17.41**	**98.63**	**1.014**	**0.199**	**0.025**	**0.025**
49	WLAN5G	802.11a	Front	1	-	36	5180	14.17	93.46	1.070	0.008	0.00109	0.001
50	WLAN5G	802.11a	Back	1	-	36	5180	14.17	93.46	1.070	0.005	0.031	0.033
51	**WLAN5G**	**802.11a**	**Back**	**1**	**v**	**36**	**5180**	**14.17**	**93.46**	**1.070**	**0.13**	**0.032**	**0.034**
52	WLAN5G	802.11a	Front	1	-	60	5300	14.27	93.46	1.070	0.083	n.a.	n.a.
53	WLAN5G	802.11a	Back	1	-	60	5300	14.27	93.46	1.070	-0.17	0.023	0.025
54	**WLAN5G**	**802.11a**	**Back**	**1**	**v**	**60**	**5300**	**14.27**	**93.46**	**1.070**	**-0.1**	**0.024**	**0.026**
55	WLAN5G	802.11a	Front	1	-	140	5700	14.28	93.46	1.070	-0.073	0.000712	0.001
56	**WLAN5G**	**802.11a**	**Back**	**1**	**-**	**140**	**5700**	**14.28**	**93.46**	**1.070**	**0.015**	**0.034**	**0.037**
57	WLAN5G	802.11a	Back	1	v	140	5700	14.28	93.46	1.070	0.05	0.027	0.029
58	WLAN5G	802.11a	Front	1	-	149	5745	14.31	93.46	1.070	-0.048	n.a.	n.a.
59	**WLAN5G**	**802.11a**	**Back**	**1**	**-**	**149**	**5745**	**14.31**	**93.46**	**1.070**	**-0.111**	**0.077**	**0.082**
60	WLAN5G	802.11a	Back	1	v	149	5745	14.31	93.46	1.070	-0.063	0.076	0.081

Note:
1. Per KDB 648474 and 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.

11.4 Simultaneous Multi-band Transmission Analysis

No.	Applicable Simultaneous Transmission Combination
1.	GSM/WCDMA + BT
2.	GSM/WCDMA + WLAN

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 WLAN2.4G or WLAN5G according to the network signal condition; therefore, they will not transmit simultaneously.
4. EUT will choose either GSM or WCDMA according to the network signal condition; therefore, they will not transmit simultaneously.
5. The maximum SAR summation is calculated based on the same configuration and test position.
6. If 1g-SAR scalar summation < 1.6W/kg, simultaneous SAR measurement is not necessary.
7. Mobile hotspot only supports 2.4GHz WLAN operation; mobile hotspot of 5GHz WLAN operation is disabled, therefore WWAN and WLAN5G hotspot simultaneous is not supported.

<Head SAR>

	WWAN			WLAN2.4G		WWAN + WLAN
Position	WWAN Band	Plot No	Max. WWAN SAR (W/kg)	Plot No	Max. WLAN SAR (W/kg)	
Right Cheek	GSM1900	28	0.119	1	0.064	0.183
	WCDMA II	45	0.193	1	0.064	0.257
Right Tilted	GSM1900	29	0.087	2	0.085	0.172
	WCDMA II	46	0.146	2	0.085	0.231
Left Cheek	GSM1900	30	0.192	3	0.181	0.373
	WCDMA II	47	0.266	3	0.181	0.447
Left Tilted	GSM1900	31	0.080	4	0.104	0.184
	WCDMA II	48	0.113	4	0.104	0.217

	WWAN			WLAN5G		WWAN + WLAN
Position	WWAN Band	Plot No	Max. WWAN SAR (W/kg)	Plot No	Max. WLAN SAR (W/kg)	
Right Cheek	GSM1900	28	0.119	63	0.077	0.196
	WCDMA II	45	0.193	63	0.077	0.270
Right Tilted	GSM1900	29	0.087	72	0.049	0.136
	WCDMA II	46	0.146	72	0.049	0.195
Left Cheek	GSM1900	30	0.192	65	0.177	0.369
	WCDMA II	47	0.266	65	0.177	0.443
Left Tilted	GSM1900	31	0.080	66	0.061	0.141
	WCDMA II	48	0.113	66	0.061	0.174

<Hotspot SAR>

Position	WWAN			WLAN2.4G		WWAN + WLAN
	WWAN Band	Plot No	Max. WWAN SAR (W/kg)	Plot No	Max. WLAN SAR (W/kg)	
Front	GSM1900	32	0.434	5	0.002	0.436
	WCDMA II	39	0.448	5	0.002	0.45
Back	GSM1900	33	0.388	6	0.025	0.413
	WCDMA II	40	0.452	6	0.025	**0.477**
Left Side	GSM1900	34	0.198	-	-	0.198
	WCDMA II	41	0.228	-	-	0.228
Right Side	GSM1900	-	-	8	0.002	0.002
	WCDMA II	-	-	8	0.002	0.002
Top Side	GSM1900	-	-	9	0.001	0.001
	WCDMA II	-	-	9	0.001	0.001
Bottom Side	GSM1900	35	0.299	-	-	0.299
	WCDMA II	42	0.366	-	-	0.366

<Body-worn SAR>

Position	WWAN			WLAN2.4G		WWAN + WLAN
	WWAN Band	Plot No	Max. WWAN SAR (W/kg)	Plot No	Max. WLAN SAR (W/kg)	
Front	GSM1900	32	0.434	5	0.002	0.436
	WCDMA II	39	0.448	5	0.002	0.450
Back	GSM1900	33	0.388	6	0.025	0.413
	WCDMA II	40	0.452	6	0.025	0.477
Back (w/ Headset)	WCDMA II	44	0.466	11	0.025	0.481

Position	WWAN			WLAN5G		WWAN + WLAN
	WWAN Band	Plot No	Max. WWAN SAR (W/kg)	Plot No	Max. WLAN SAR (W/kg)	
Front	GSM1900	32	0.434	49	0.001	0.435
	WCDMA II	39	0.448	49	0.001	0.449
Back	GSM1900	33	0.388	59	0.082	0.470
	WCDMA II	40	0.452	59	0.082	0.534
Back (w/ Headset)	WCDMA II	44	0.466	60	0.081	**0.547**

Test Engineer : Vic Yang, Cona Huang, Aaron Chen, and Ted Sun

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

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.55	Normal	1	1	1	± 6.55 %	± 6.55 %
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	2.0	Rectangular	√3	1	1	± 1.2 %	± 1.2 %
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	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Probe Positioning	9.9	Rectangular	√3	1	1	± 5.7 %	± 5.7 %
Max. SAR Eval.	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
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						± 12.8 %	± 12.6 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 25.6 %**	**± 25.2 %**

Table 12.3 Uncertainty Budget of DASY for frequency range 3 GHz to 6 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 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008

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

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

Appendix A. Plots of System Performance Check

The plots are shown as follows.

System Check_Head_1900MHz_121025

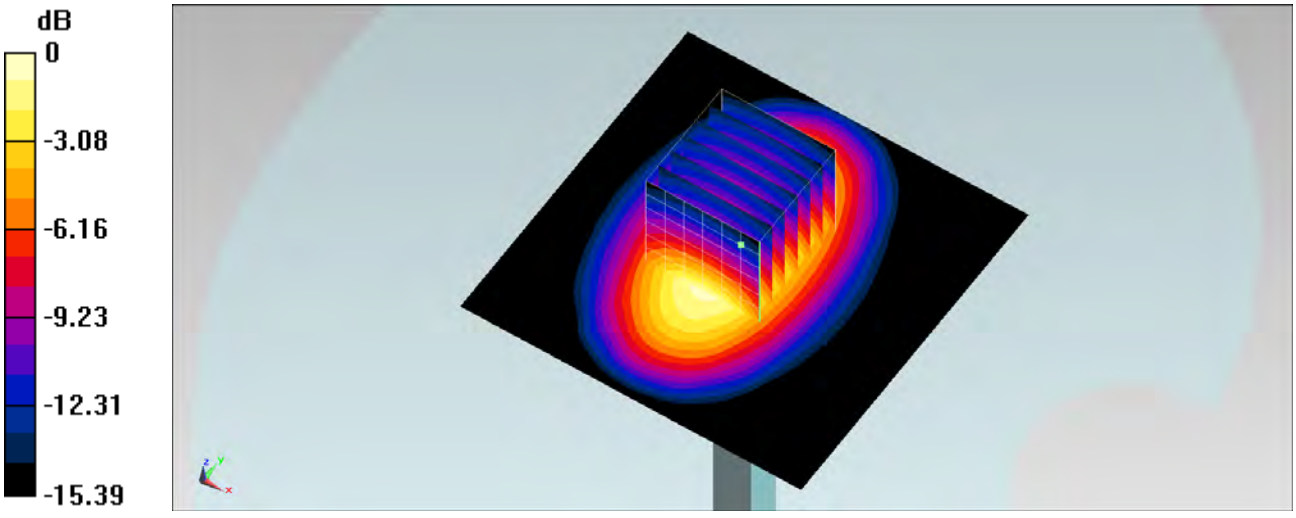
DUT: D1900V2-SN:5d041

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_121025 Medium parameters used: f = 1900 MHz; σ = 1.432 mho/m; ε_r = 38.828; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 10.7 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 83.819 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 17.491 mW/g
SAR(1 g) = 9.64 mW/g; SAR(10 g) = 5.36 mW/g
Maximum value of SAR (measured) = 10.7 mW/g



0 dB = 10.7 mW/g = 20.59 dB mW/g

System Check_Body_1900MHz_121026

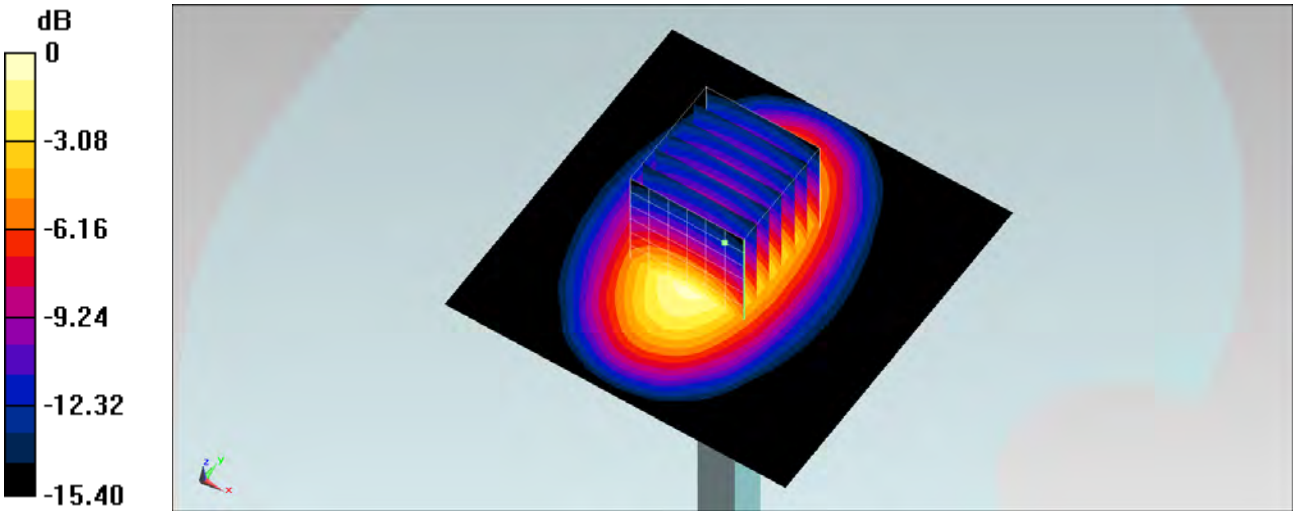
DUT: D1900V2-SN:5d041

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_121026 Medium parameters used: f = 1900 MHz; σ = 1.534 mho/m; ε_r = 51.914; ρ = 1000 kg/m^3
Ambient Temperature：22.2 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.0 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 82.180 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 18.292 mW/g
SAR(1 g) = 9.97 mW/g; SAR(10 g) = 5.53 mW/g
Maximum value of SAR (measured) = 11.0 mW/g



0 dB = 11.0 mW/g = 20.83 dB mW/g

System Check_Head_2450MHz_121020

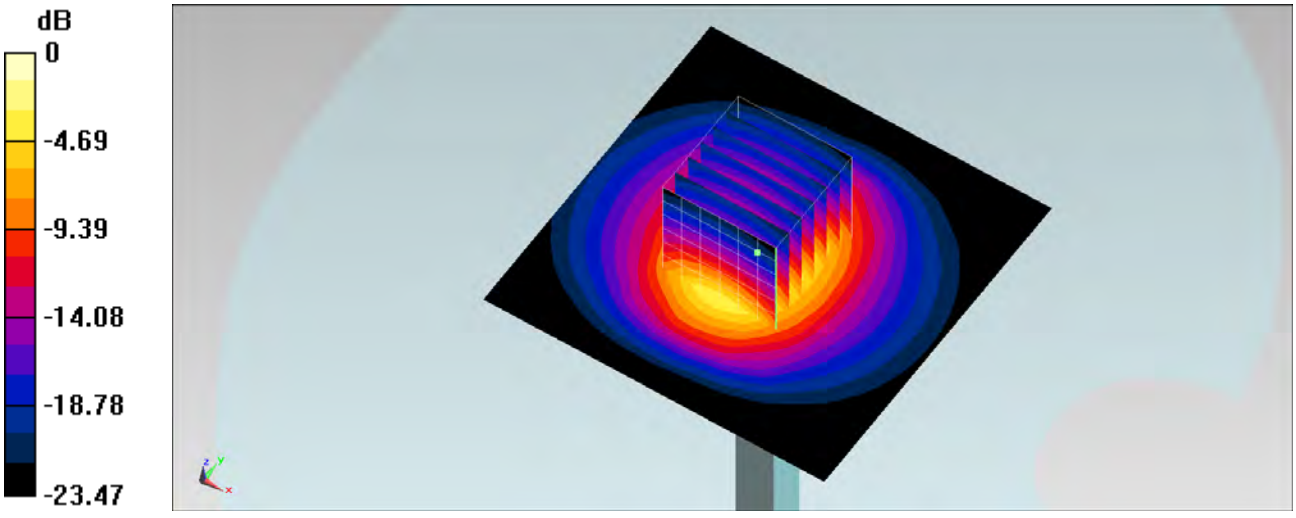
DUT: D2450V2-SN:736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_121020 Medium parameters used: f = 2450 MHz; σ = 1.854 mho/m; ε_r = 39.572; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.7, 6.7, 6.7); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.8 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.850 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 30.535 mW/g
SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.03 mW/g
Maximum value of SAR (measured) = 15.4 mW/g



0 dB = 15.4 mW/g = 23.75 dB mW/g

System Check_Body_2450MHz_121020

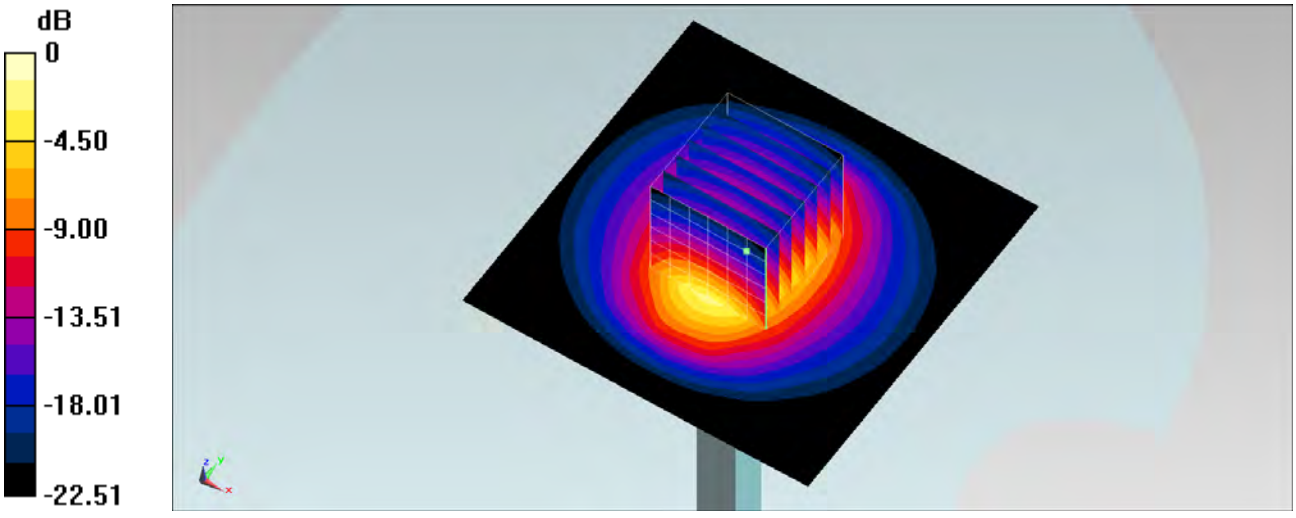
DUT: D2450V2-SN:736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_121020 Medium parameters used: f = 2450 MHz; σ = 1.968 mho/m; ε_r = 53.802; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.59, 6.59, 6.59); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 14.6 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.786 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 26.496 mW/g
SAR(1 g) = 12.4 mW/g; SAR(10 g) = 5.62 mW/g
Maximum value of SAR (measured) = 14.2 mW/g



0 dB = 14.2 mW/g = 23.05 dB mW/g

System Check_Head_5200MHz_121027

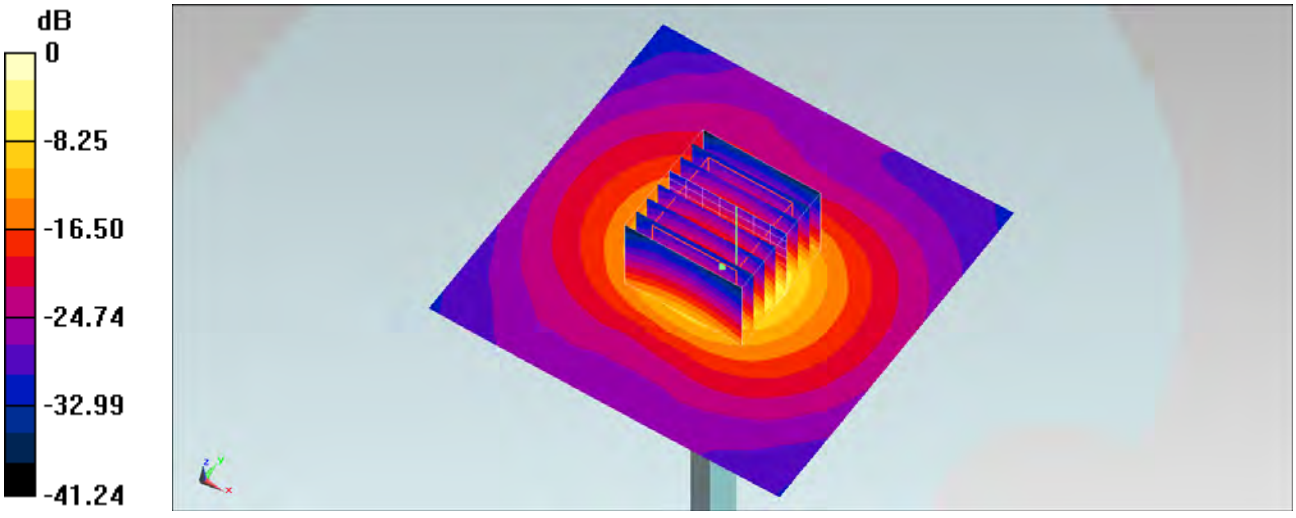
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5200 MHz; σ = 4.814 mho/m; ε_r = 35.458; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 34.8 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 90.305 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 79.765 mW/g
SAR(1 g) = 20.4 mW/g; SAR(10 g) = 5.78 mW/g
Maximum value of SAR (measured) = 33.7 mW/g



0 dB = 33.7 mW/g = 30.55 dB mW/g

System Check_Body_5200MHz_121026

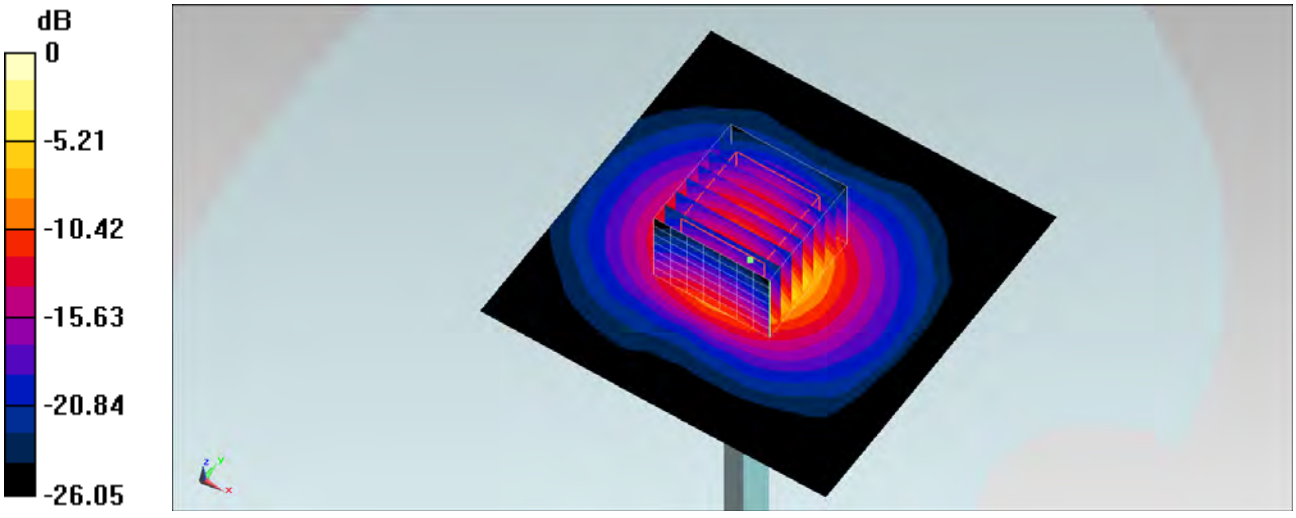
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5200 MHz; σ = 5.287 mho/m; ε_r = 48.755; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 28.5 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 0.601 V/m; Power Drift = 0.032 dB
Peak SAR (extrapolated) = 43.509 mW/g
SAR(1 g) = 16.8 mW/g; SAR(10 g) = 5.61 mW/g
Maximum value of SAR (measured) = 25.2 mW/g



0 dB = 25.2 mW/g = 28.03 dB mW/g

System Check_Head_5500MHz_121027

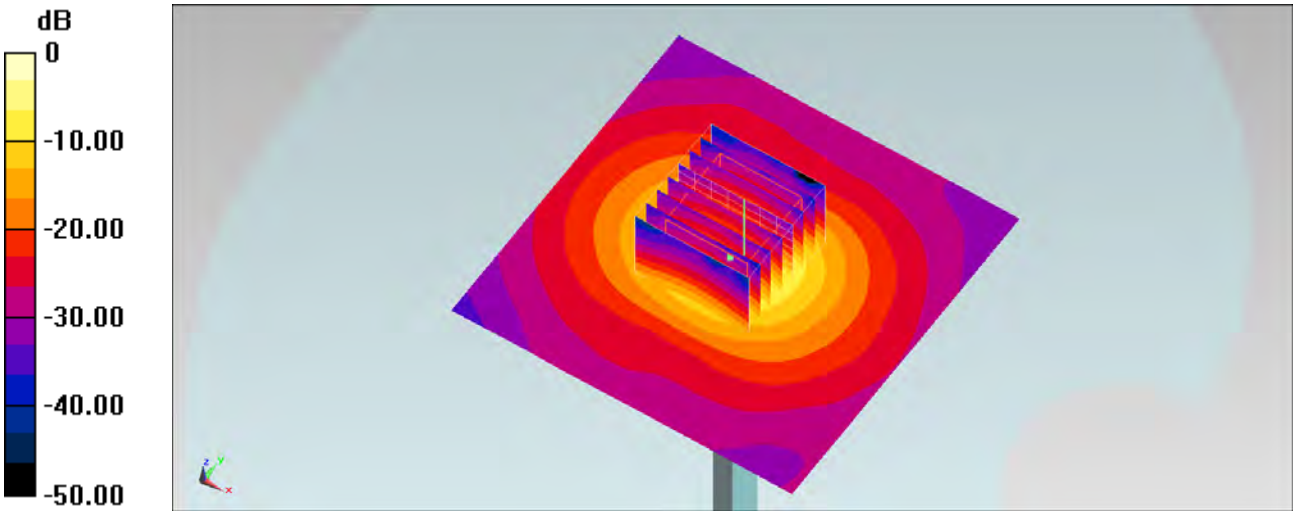
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5500 MHz; σ = 5.136 mho/m; ε_r = 34.965; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.6, 4.6, 4.6); Calibrated: 2012/9/28;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 38.5 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 86.558 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 99.183 mW/g
SAR(1 g) = 21.9 mW/g; SAR(10 g) = 5.97 mW/g
Maximum value of SAR (measured) = 39.1 mW/g



0 dB = 39.1 mW/g = 31.84 dB mW/g

System Check_Body_5500MHz_121026

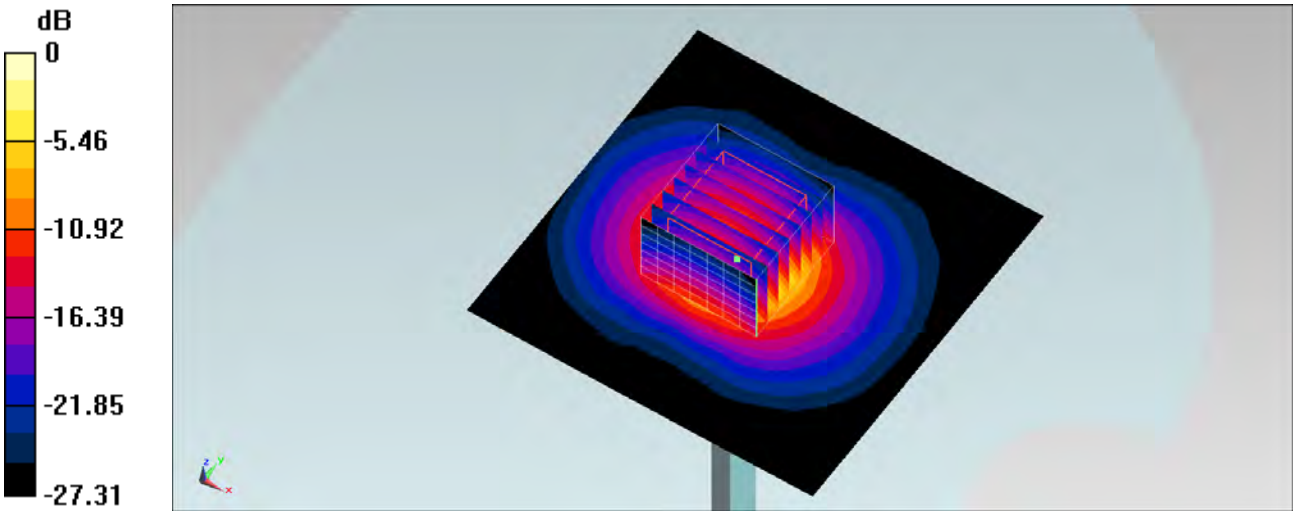
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5500 MHz; σ = 5.727 mho/m; ε_r = 48.178; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(3.91, 3.91, 3.91); Calibrated: 2012/9/28;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 30.2 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 70.064 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 48.465 mW/g
SAR(1 g) = 18.3 mW/g; SAR(10 g) = 5.96 mW/g
Maximum value of SAR (measured) = 28.0 mW/g



0 dB = 28.0 mW/g = 28.94 dB mW/g

System Check_Head_5800MHz_121027

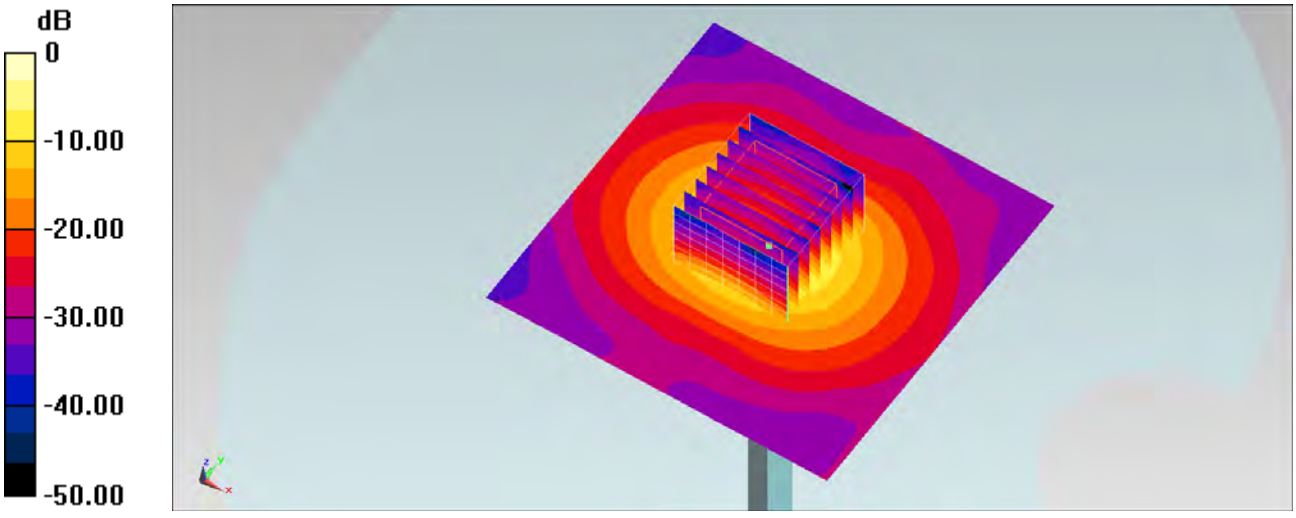
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5800 MHz; σ = 5.423 mho/m; ε_r = 34.346; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 36.6 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 84.990 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 89.209 mW/g
SAR(1 g) = 20.9 mW/g; SAR(10 g) = 5.77 mW/g
Maximum value of SAR (measured) = 36.4 mW/g



0 dB = 36.4 mW/g = 31.22 dB mW/g

System Check_Body_5800MHz_121026

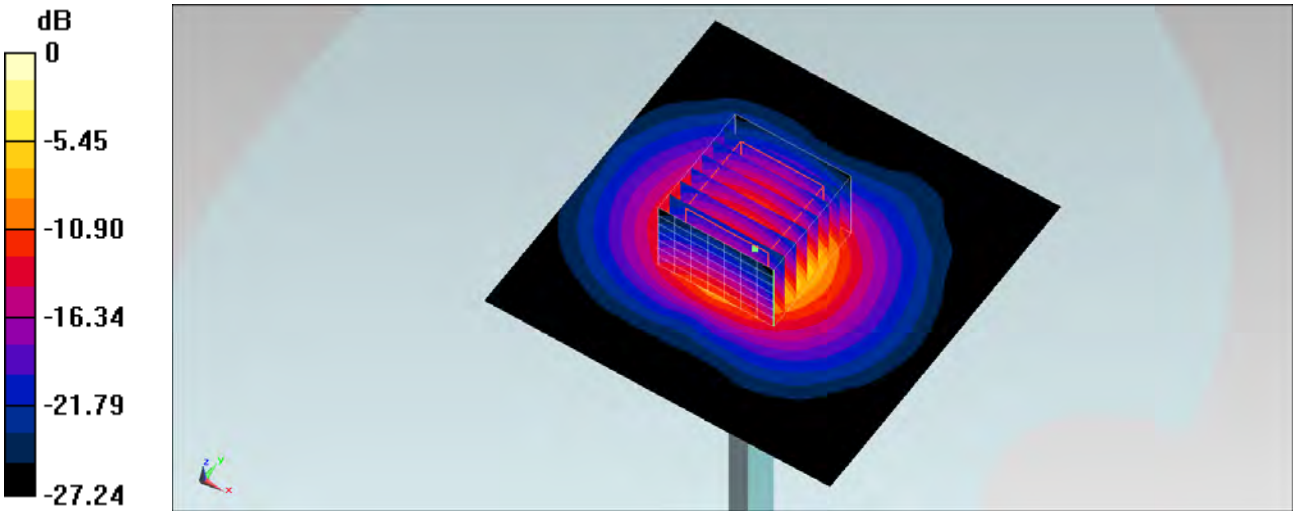
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5800 MHz; σ = 6.12 mho/m; ε_r = 47.381; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.06, 4.06, 4.06); Calibrated: 2012/9/28;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 28.2 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 66.243 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 42.130 mW/g
SAR(1 g) = 17 mW/g; SAR(10 g) = 5.58 mW/g
Maximum value of SAR (measured) = 25.8 mW/g



0 dB = 25.8 mW/g = 28.23 dB mW/g

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

#28_GSM1900_GSM Voice_Right Cheek_Ch810

DUT: 2O0922

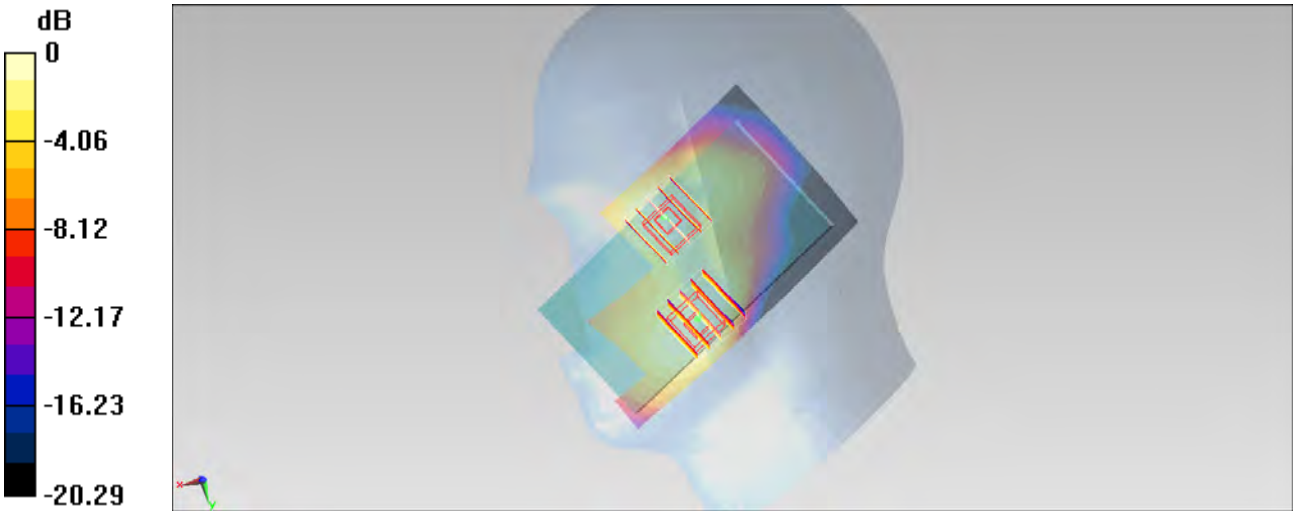
Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900_121025 Medium parameters used: f = 1910 MHz; σ = 1.442 mho/m; ε_r = 38.774; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.139 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.322 V/m; Power Drift = 0.134 dB
Peak SAR (extrapolated) = 0.186 mW/g
SAR(1 g) = 0.119 mW/g; SAR(10 g) = 0.073 mW/g
Maximum value of SAR (measured) = 0.131 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.322 V/m; Power Drift = 0.134 dB
Peak SAR (extrapolated) = 0.180 mW/g
SAR(1 g) = 0.118 mW/g; SAR(10 g) = 0.074 mW/g
Maximum value of SAR (measured) = 0.127 mW/g



0 dB = 0.127 mW/g = -17.92 dB mW/g

#29_GSM1900_GSM Voice_Right Tilted_Ch810

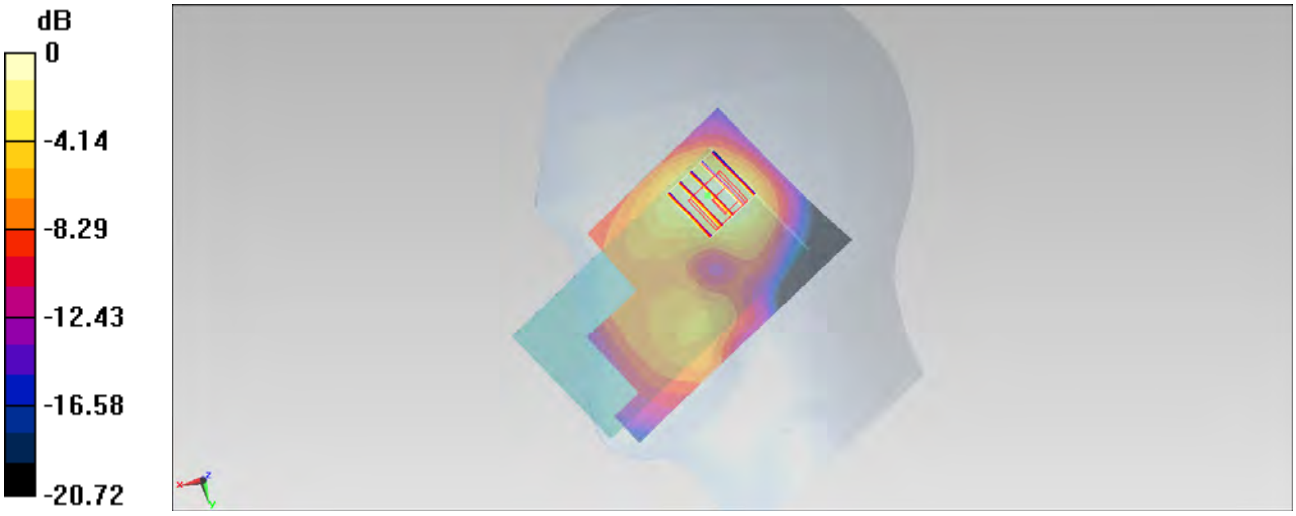
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900_121025 Medium parameters used: f = 1910 MHz; σ = 1.442 mho/m; ε_r = 38.774; ρ = 1000 kg/m^3
Ambient Temperature：22.4℃； Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.0883 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.164 V/m; Power Drift = 0.120 dB
Peak SAR (extrapolated) = 0.143 mW/g
SAR(1 g) = 0.087 mW/g; SAR(10 g) = 0.051 mW/g
Maximum value of SAR (measured) = 0.0945 mW/g



0 dB = 0.0945 mW/g = -20.49 dB mW/g

#30_GSM1900_GSM Voice_Left Cheek_Ch810

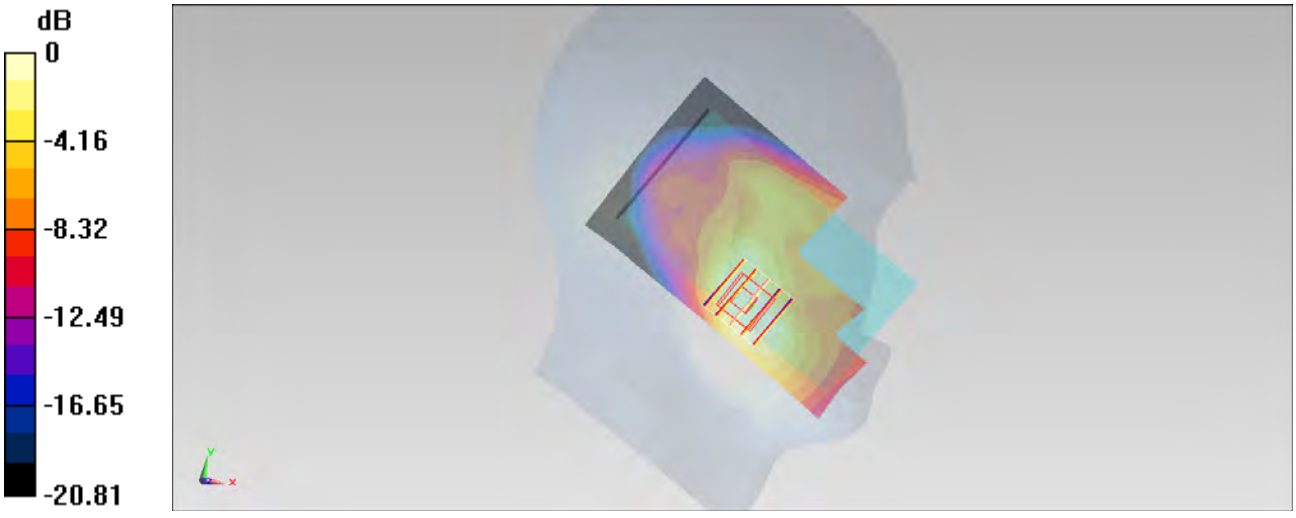
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900_121025 Medium parameters used: f = 1910 MHz; σ = 1.442 mho/m; ε_r = 38.774; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.209 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.071 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.297 mW/g
SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.116 mW/g
Maximum value of SAR (measured) = 0.203 mW/g



0 dB = 0.203 mW/g = -13.85 dB mW/g

#30_GSM1900_GSM Voice_Left Cheek_Ch810_2D

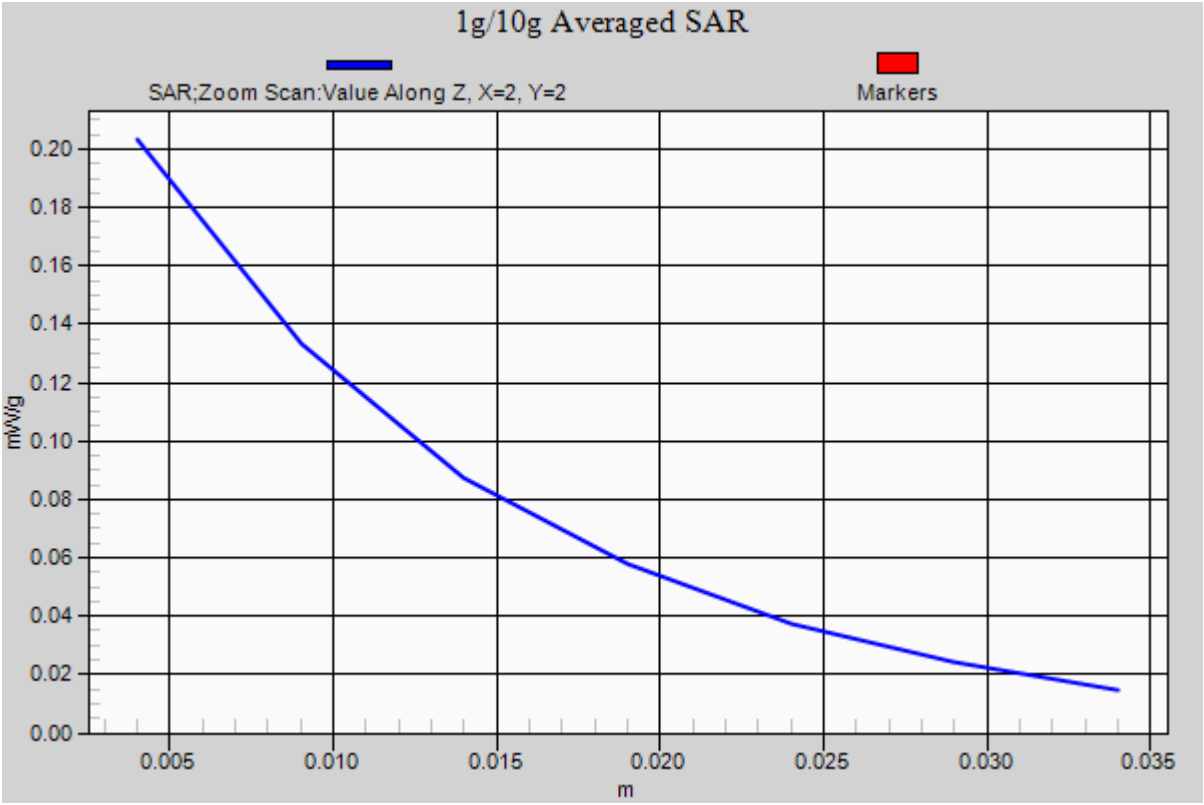
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900_121025 Medium parameters used: f = 1910 MHz; σ = 1.442 mho/m; ε_r = 38.774; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.209 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.071 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.297 mW/g
SAR(1 g) = 0.192 mW/g; SAR(10 g) = 0.116 mW/g
Maximum value of SAR (measured) = 0.203 mW/g



#31_GSM1900_GSM Voice_Left Tilted_Ch810

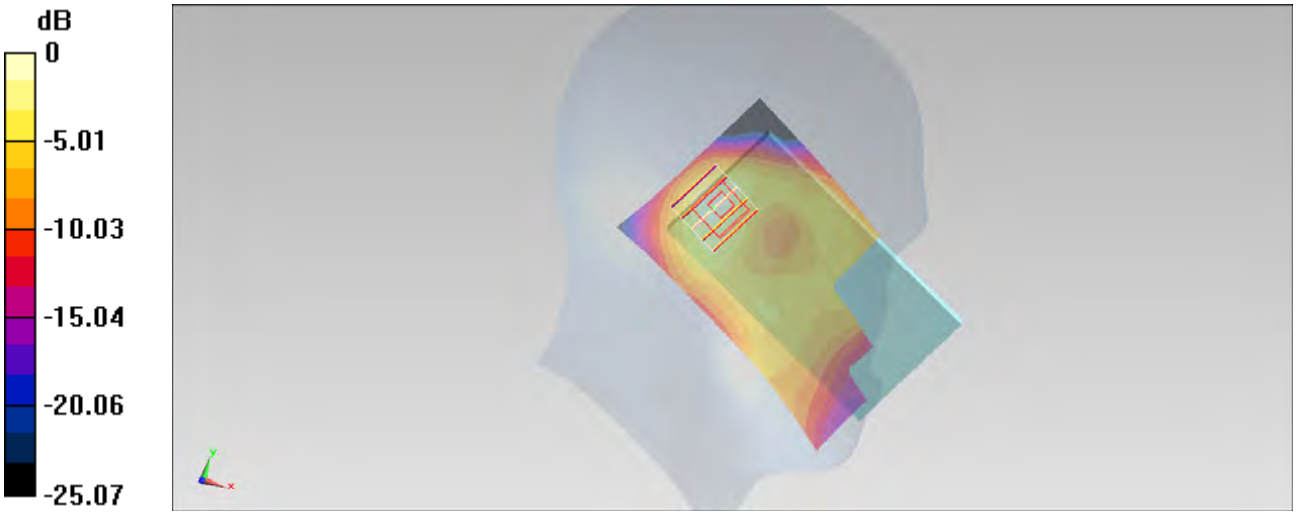
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: HSL_1900_121025 Medium parameters used: f = 1910 MHz; σ = 1.442 mho/m; ε_r = 38.774; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.0792 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.646 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.138 mW/g
SAR(1 g) = 0.080 mW/g; SAR(10 g) = 0.043 mW/g
Maximum value of SAR (measured) = 0.0874 mW/g



0 dB = 0.0874 mW/g = -21.17 dB mW/g

#45_WCDMA II_ RMC12.2K_Right Cheek_Ch9400

DUT: 2O0922

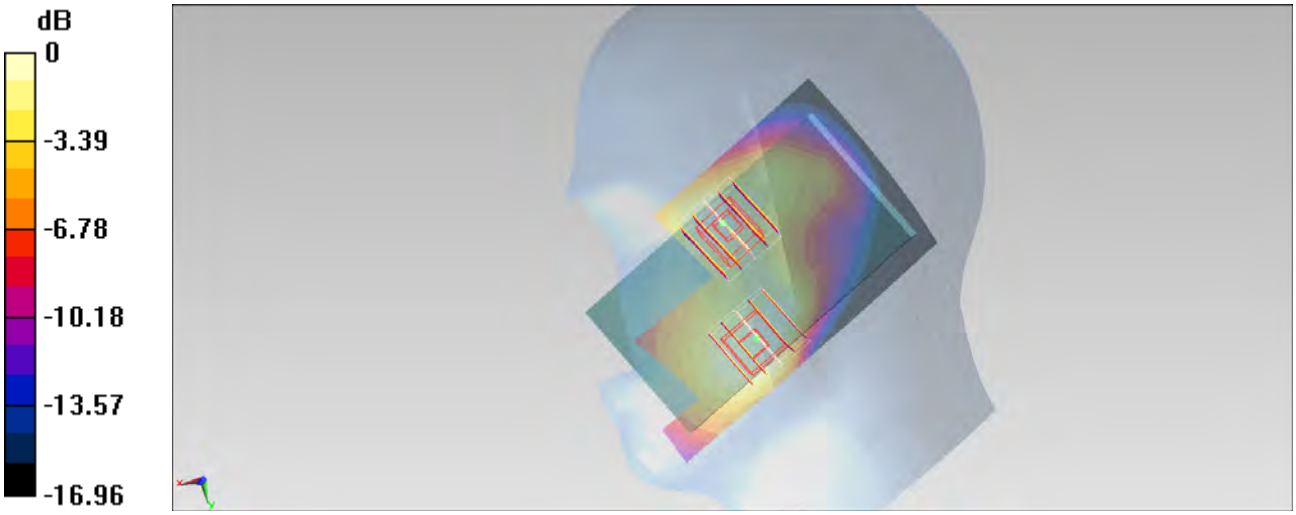
Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_121025 Medium parameters used: f = 1880 MHz; σ = 1.412 mho/m; ε_r = 38.934; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.229 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.846 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.294 mW/g
SAR(1 g) = 0.193 mW/g; SAR(10 g) = 0.121 mW/g
Maximum value of SAR (measured) = 0.208 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.846 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.254 mW/g
SAR(1 g) = 0.171 mW/g; SAR(10 g) = 0.108 mW/g
Maximum value of SAR (measured) = 0.188 mW/g



0 dB = 0.188 mW/g = -14.52 dB mW/g

#46_WCDMA II_ RMC12.2K_Right Tilted_Ch9400

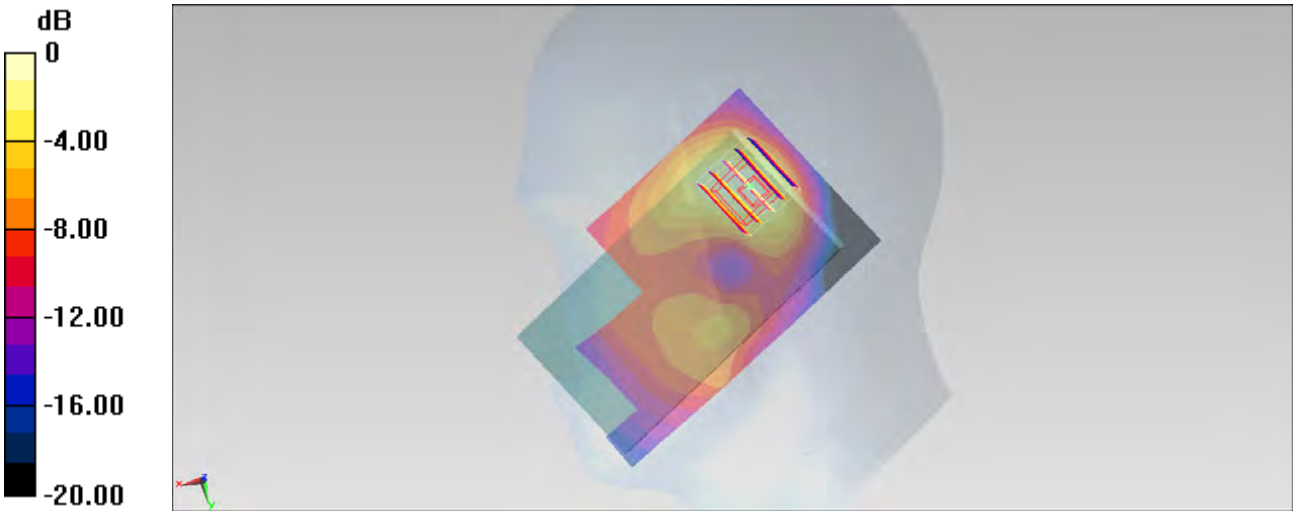
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_121025 Medium parameters used: f = 1880 MHz; σ = 1.412 mho/m; ε_r = 38.934; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.153 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.695 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.237 mW/g
SAR(1 g) = 0.146 mW/g; SAR(10 g) = 0.084 mW/g
Maximum value of SAR (measured) = 0.162 mW/g



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

#47_WCDMA II_ RMC12.2K_Left Cheek_Ch9400

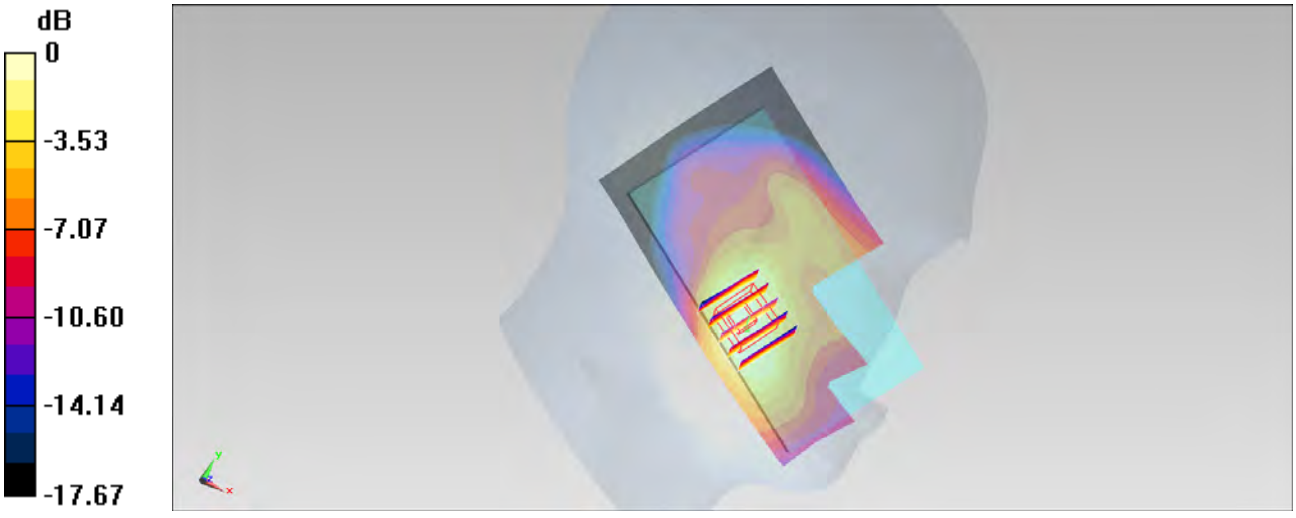
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_121025 Medium parameters used: f = 1880 MHz; σ = 1.412 mho/m; ε_r = 38.934; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.288 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.084 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 0.407 mW/g
SAR(1 g) = 0.266 mW/g; SAR(10 g) = 0.164 mW/g
Maximum value of SAR (measured) = 0.286 mW/g



0 dB = 0.286 mW/g = -10.87 dB mW/g

#47_WCDMA II_ RMC12.2K_Left Cheek_Ch9400_2D

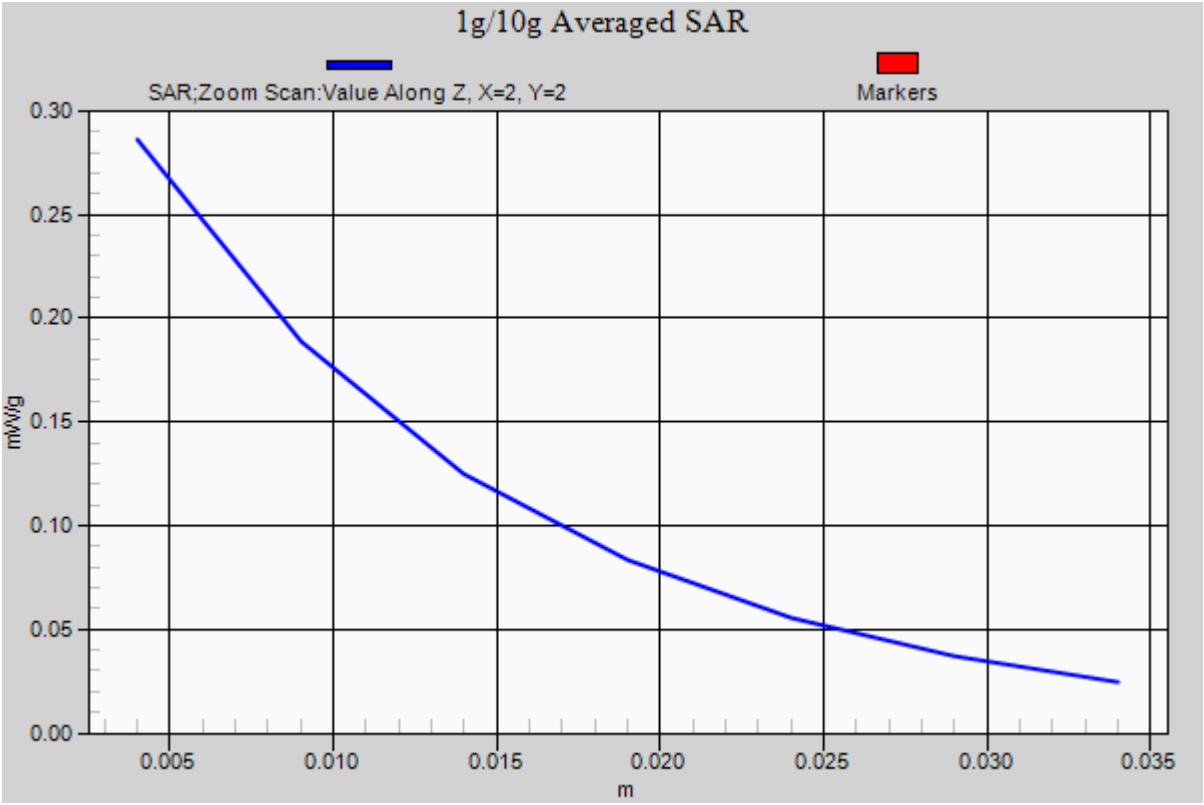
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_121025 Medium parameters used: f = 1880 MHz; σ = 1.412 mho/m; ε_r = 38.934; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.288 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.084 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 0.407 mW/g
SAR(1 g) = 0.266 mW/g; SAR(10 g) = 0.164 mW/g
Maximum value of SAR (measured) = 0.286 mW/g



#48_WCDMA II_ RMC12.2K_Left Tilted_Ch9400

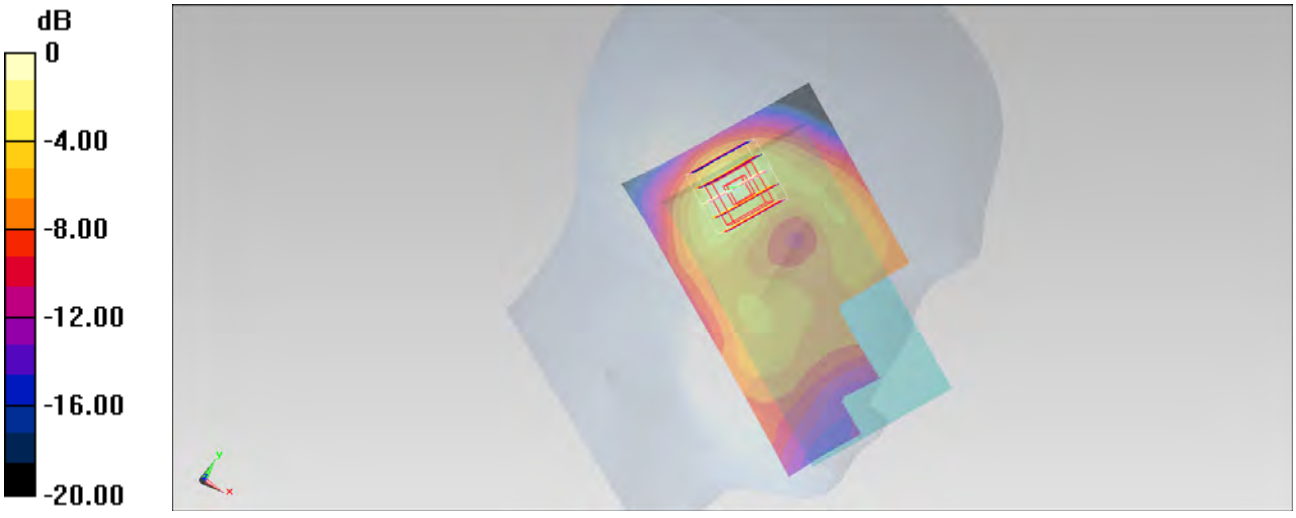
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: HSL_1900_121025 Medium parameters used: f = 1880 MHz; σ = 1.412 mho/m; ε_r = 38.934; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.42, 7.42, 7.42); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.106 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.253 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.193 mW/g
SAR(1 g) = 0.113 mW/g; SAR(10 g) = 0.060 mW/g
Maximum value of SAR (measured) = 0.124 mW/g



0 dB = 0.124 mW/g = -18.13 dB mW/g

#01_WLAN2.4G_802.11b_Right Cheek_Ch6

DUT: 2O0922

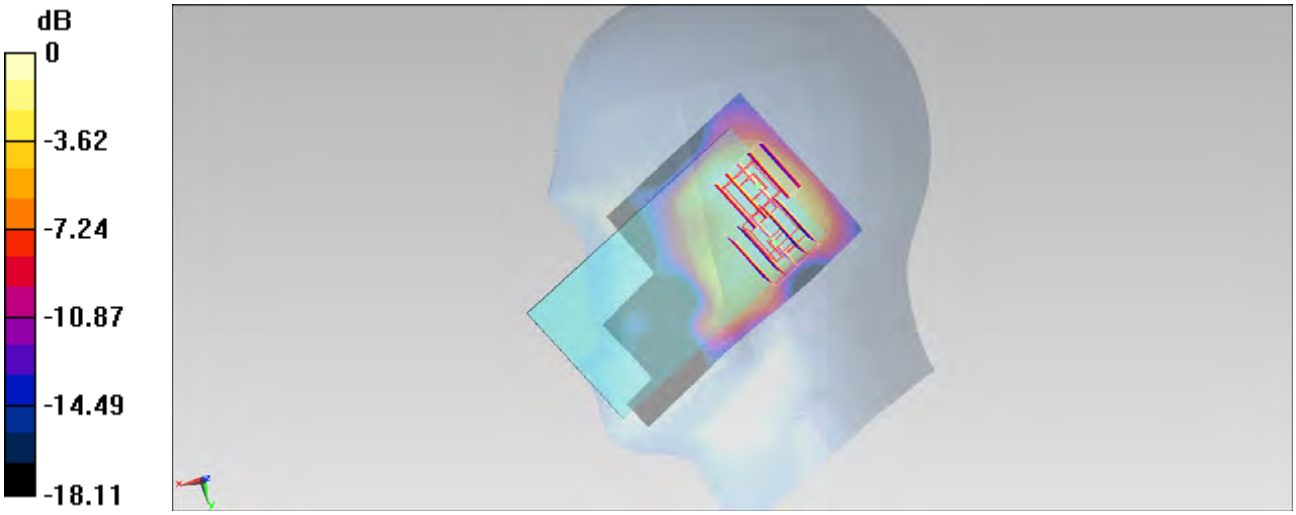
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: HSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.839 mho/m; ε_r = 39.619; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.7, 6.7, 6.7); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.0634 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.004 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.119 mW/g
SAR(1 g) = 0.063 mW/g; SAR(10 g) = 0.033 mW/g
Maximum value of SAR (measured) = 0.0667 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.004 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.092 mW/g
SAR(1 g) = 0.045 mW/g; SAR(10 g) = 0.023 mW/g
Maximum value of SAR (measured) = 0.0502 mW/g



0 dB = 0.0502 mW/g = -25.99 dB mW/g

#02_WLAN2.4G_802.11b_Right Tilted_Ch6

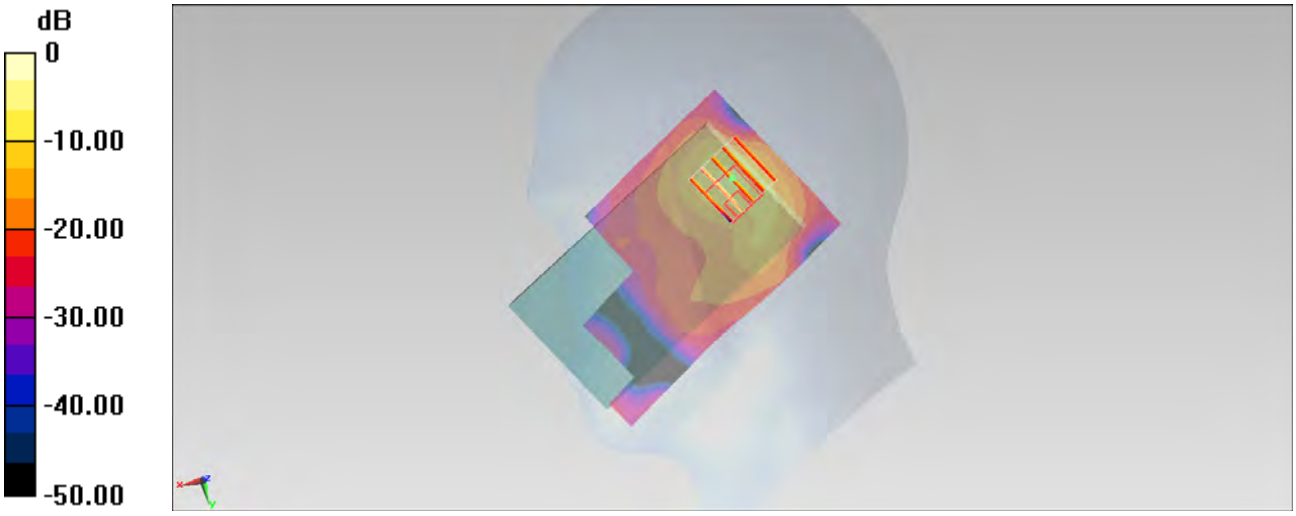
DUT: 2O0922

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: HSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.839 mho/m; ε_r = 39.619; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.7, 6.7, 6.7); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.0907 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.628 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.319 mW/g
SAR(1 g) = 0.084 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.640 mW/g



0 dB = 0.640 mW/g = -3.88 dB mW/g

#03_WLAN2.4G_802.11b_Left Cheek_Ch6

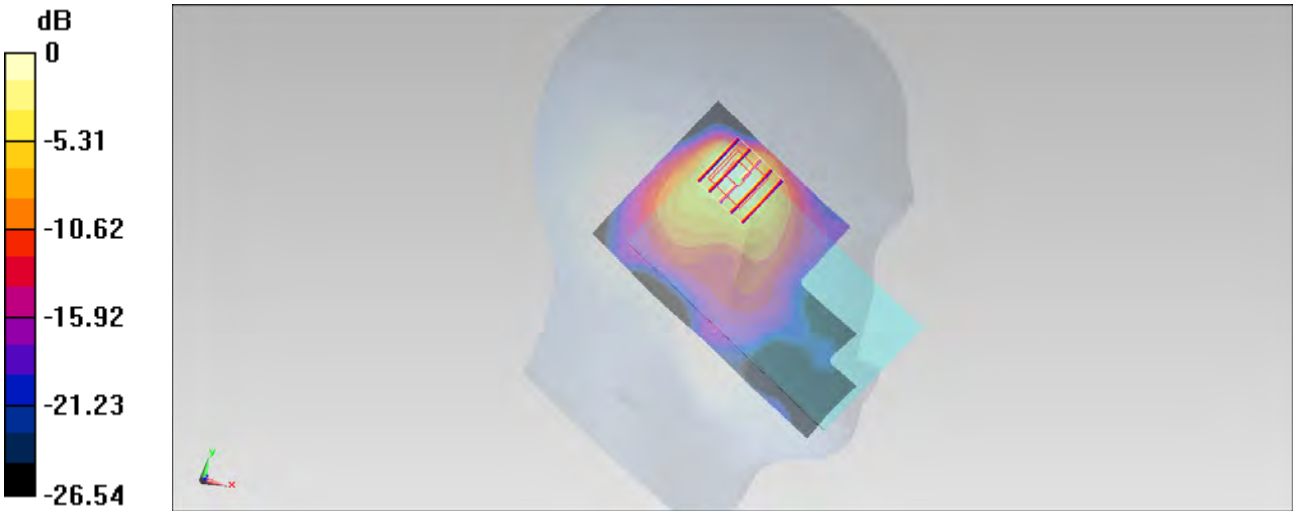
DUT: 2O0922

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: HSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.839 mho/m; ε_r = 39.619; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.7, 6.7, 6.7); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.198 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.019 V/m; Power Drift = 0.124 dB
Peak SAR (extrapolated) = 0.437 mW/g
SAR(1 g) = 0.179 mW/g; SAR(10 g) = 0.074 mW/g
Maximum value of SAR (measured) = 0.192 mW/g



0 dB = 0.192 mW/g = -14.33 dB mW/g

#03_WLAN2.4G_802.11b_Left Cheek_Ch6_2D

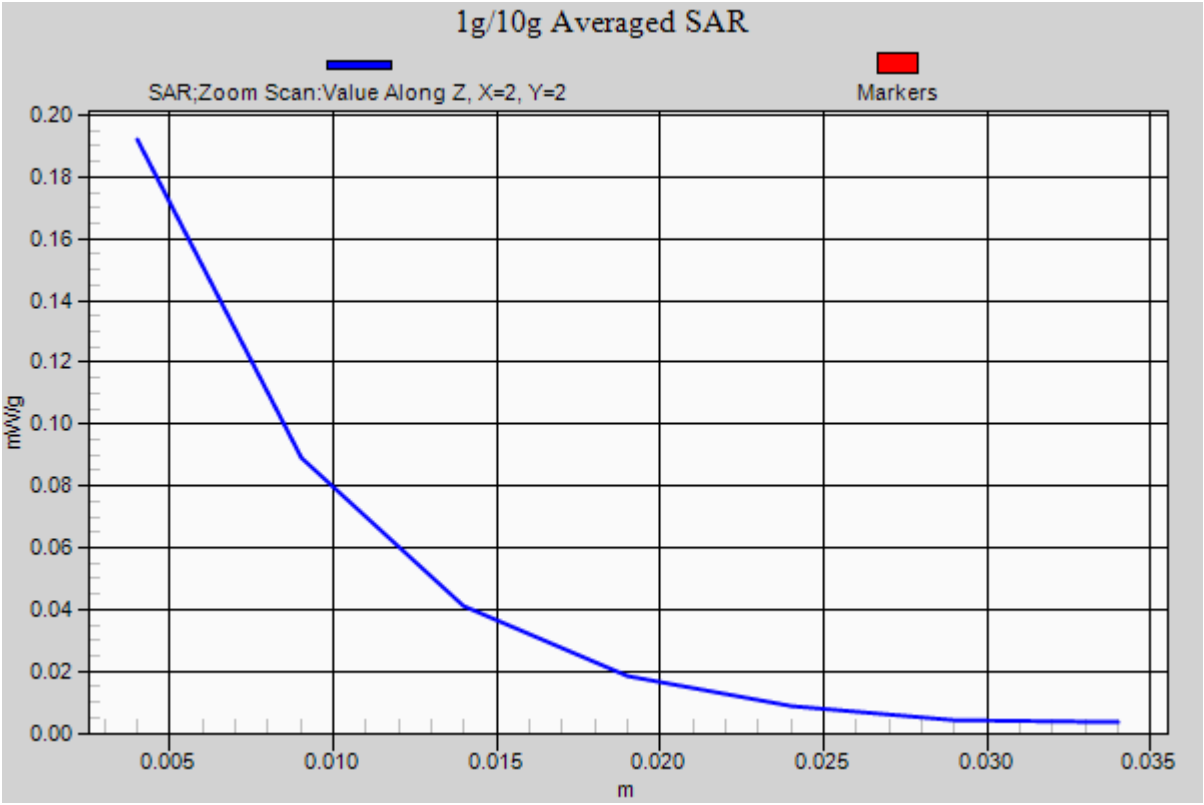
DUT: 2O0922

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: HSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.839 mho/m; ε_r = 39.619; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.7, 6.7, 6.7); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.198 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.019 V/m; Power Drift = 0.124 dB
Peak SAR (extrapolated) = 0.437 mW/g
SAR(1 g) = 0.179 mW/g; SAR(10 g) = 0.074 mW/g
Maximum value of SAR (measured) = 0.192 mW/g



#04_WLAN2.4G_802.11b_Left Tilted_Ch6

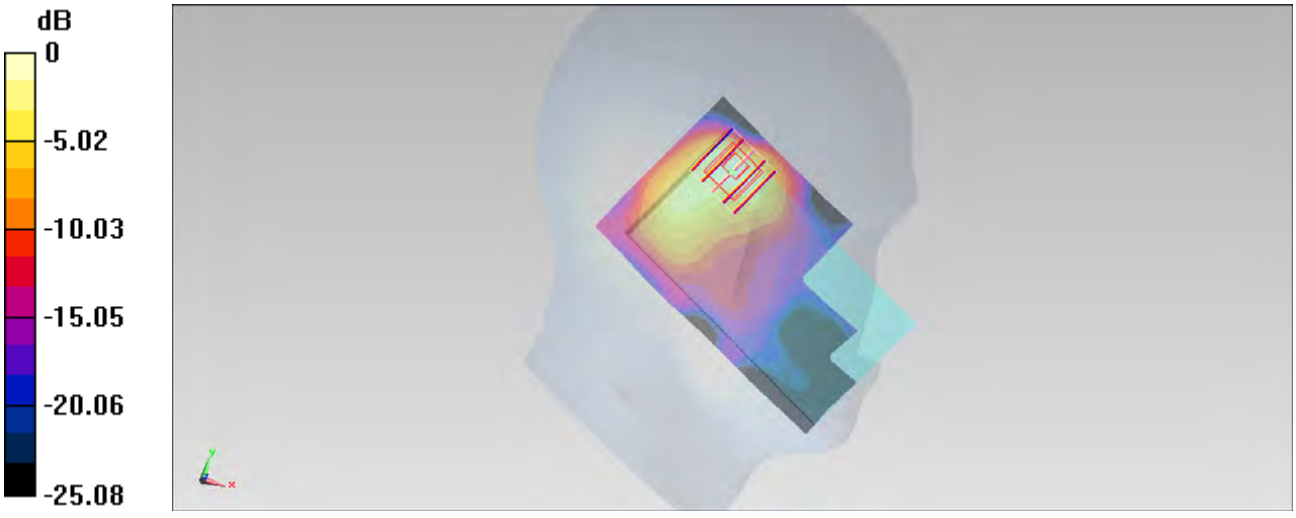
DUT: 2O0922

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: HSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.839 mho/m; ε_r = 39.619; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.7, 6.7, 6.7); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.116 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.221 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.240 mW/g
SAR(1 g) = 0.103 mW/g; SAR(10 g) = 0.045 mW/g
Maximum value of SAR (measured) = 0.114 mW/g



0 dB = 0.114 mW/g = -18.86 dB mW/g

#63_WLAN5G_802.11a_Right Cheek_Ch36

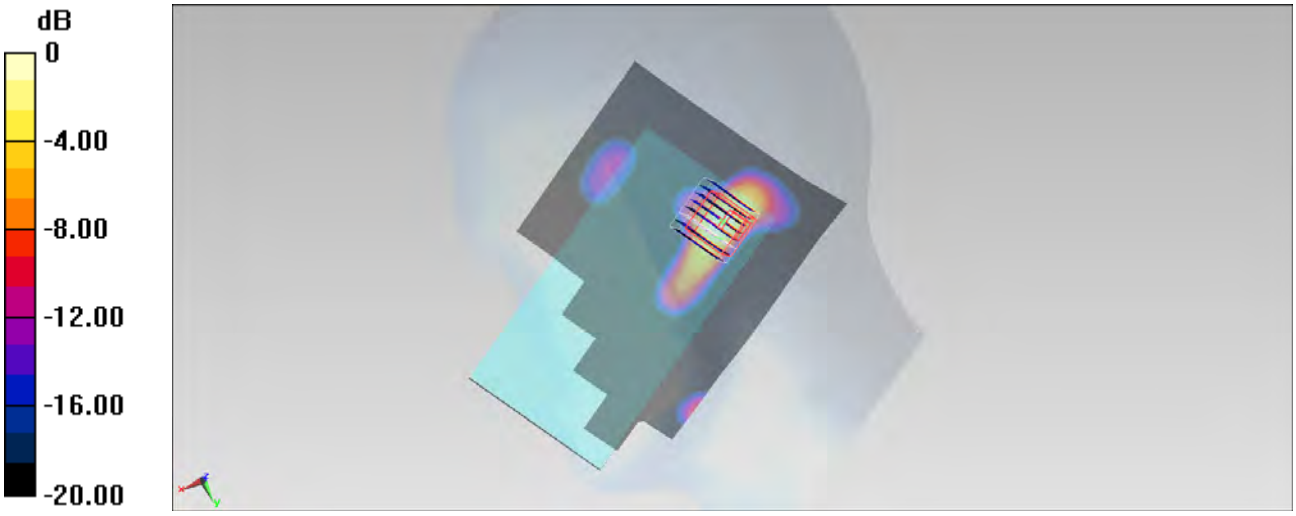
DUT: 2O0922

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5180 MHz; σ = 4.792 mho/m; ε_r = 35.506; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.121 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.580 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 0.190 mW/g
SAR(1 g) = 0.072 mW/g; SAR(10 g) = 0.021 mW/g
Maximum value of SAR (measured) = 0.129 mW/g



0 dB = 0.129 mW/g = -17.79 dB mW/g

#64_WLAN5G_802.11a_Right Tilted_Ch36

DUT: 2O0922

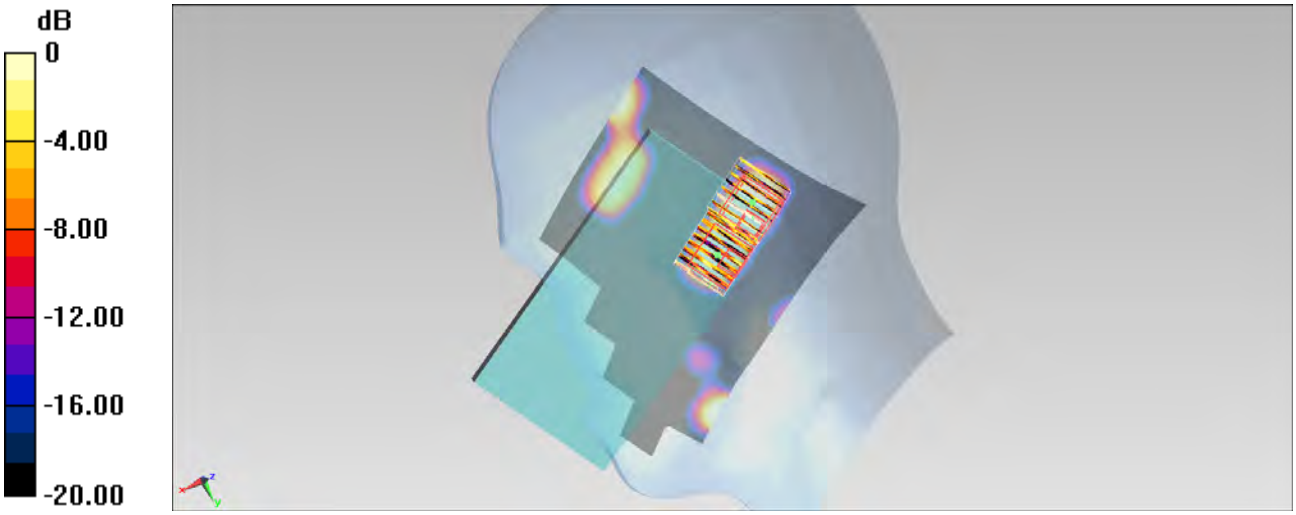
Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5180 MHz; σ = 4.792 mho/m; ε_r = 35.506; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0416 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.303 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.112 mW/g
SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.00335 mW/g
Maximum value of SAR (measured) = 0.0566 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.303 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.00634 mW/g
SAR(1 g) = 0.000157 mW/g; SAR(10 g) = 3.06e-005 mW/g
Maximum value of SAR (measured) = 0.00759 mW/g



0 dB = 0.00759 mW/g = -42.40 dB mW/g

#65_WLAN5G_802.11a_Left Cheek_Ch36

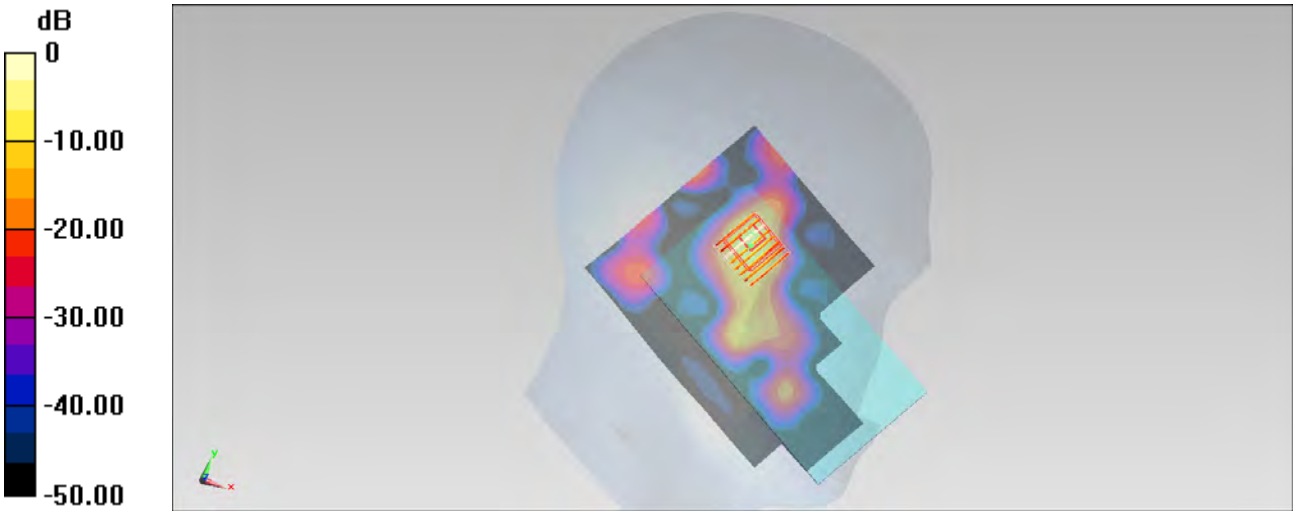
DUT: 2O0922

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used : f = 5180 MHz; σ = 4.792 mho/m; ε_r = 35.506; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0832 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.714 mW/g
SAR(1 g) = 0.165 mW/g; SAR(10 g) = 0.044 mW/g
Maximum value of SAR (measured) = 0.368 mW/g



0 dB = 0.368 mW/g = -8.68 dB mW/g

#65_WLAN5G_802.11a_Left Cheek_Ch36_2D

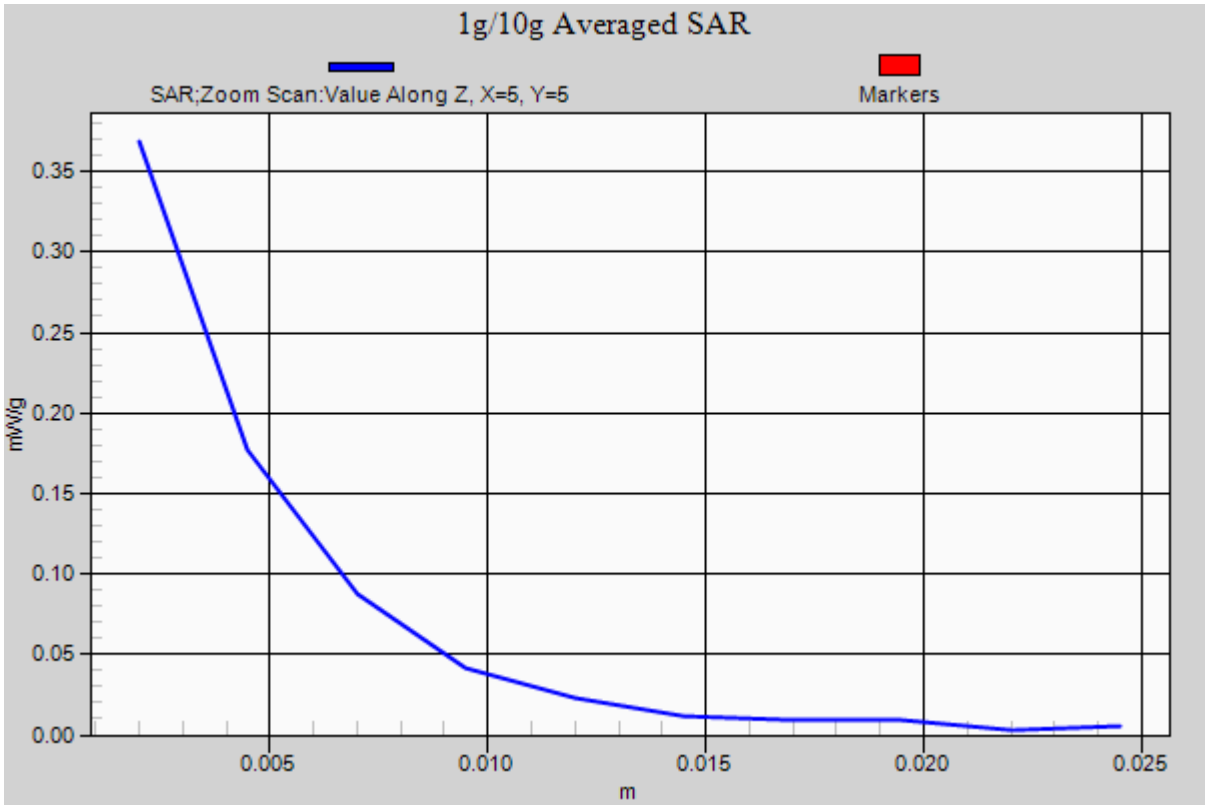
DUT: 2O0922

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used : f = 5180 MHz; σ = 4.792 mho/m; ε_r = 35.506; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0832 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.714 mW/g
SAR(1 g) = 0.165 mW/g; SAR(10 g) = 0.044 mW/g
Maximum value of SAR (measured) = 0.368 mW/g



#66_WLAN5G_802.11a_Left Tilted_Ch36

DUT: 2O0922

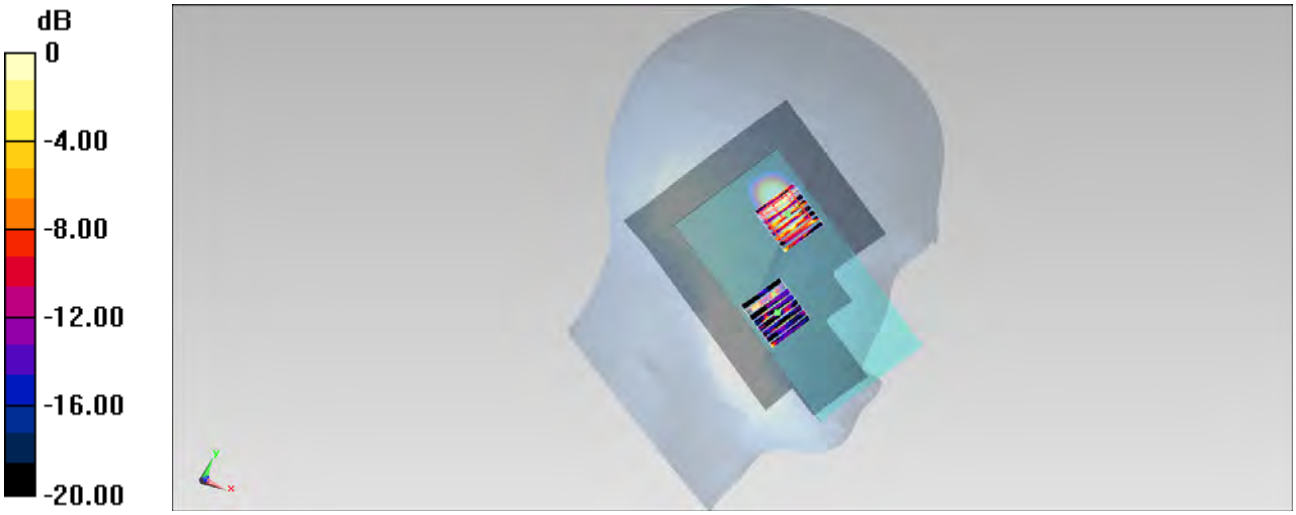
Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5180 MHz; σ = 4.792 mho/m; ε_r = 35.506; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.189 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 0.450 mW/g
SAR(1 g) = 0.057 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.183 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 0 mW/g
SAR(1 g) = n.a. ; SAR(10 g) = n.a.
Maximum value of SAR (measured) = 0.0628 mW/g



0 dB = 0.0628 mW/g = -24.04 dB mW/g

#67_WLAN5G_802.11a_Right Cheek_Ch60

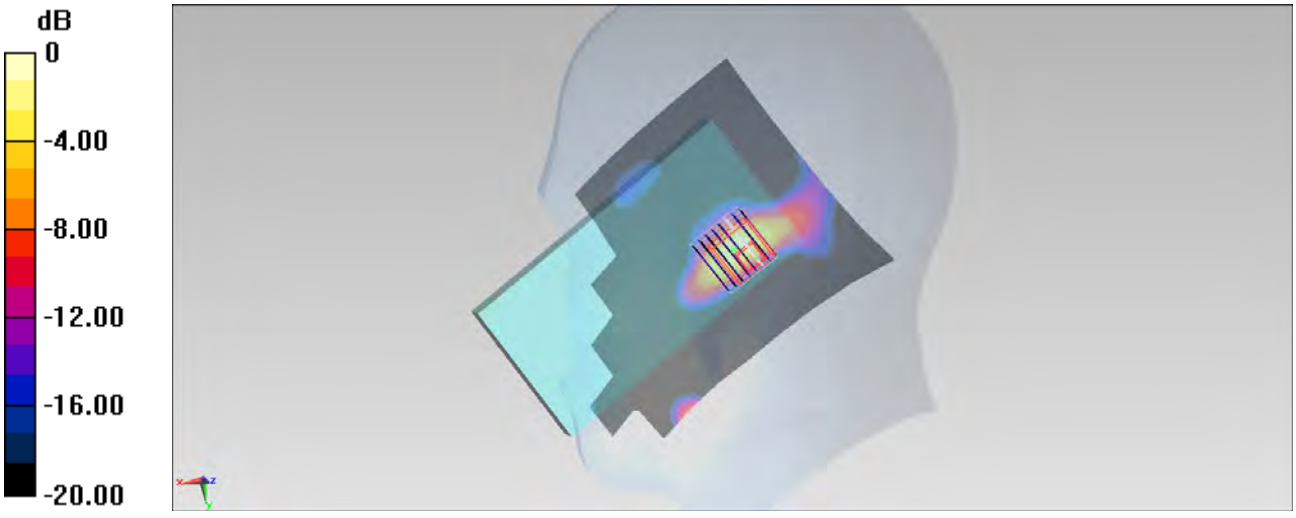
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5300 MHz; σ = 4.721 mho/m; ε_r = 35.33; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0987 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.282 V/m; Power Drift = -0.101 dB
Peak SAR (extrapolated) = 0.194 mW/g
SAR(1 g) = 0.065 mW/g; SAR(10 g) = 0.015 mW/g
Maximum value of SAR (measured) = 0.129 mW/g



0 dB = 0.129 mW/g = -17.79 dB mW/g

#68_WLAN5G_802.11a_Right Tilted_Ch60

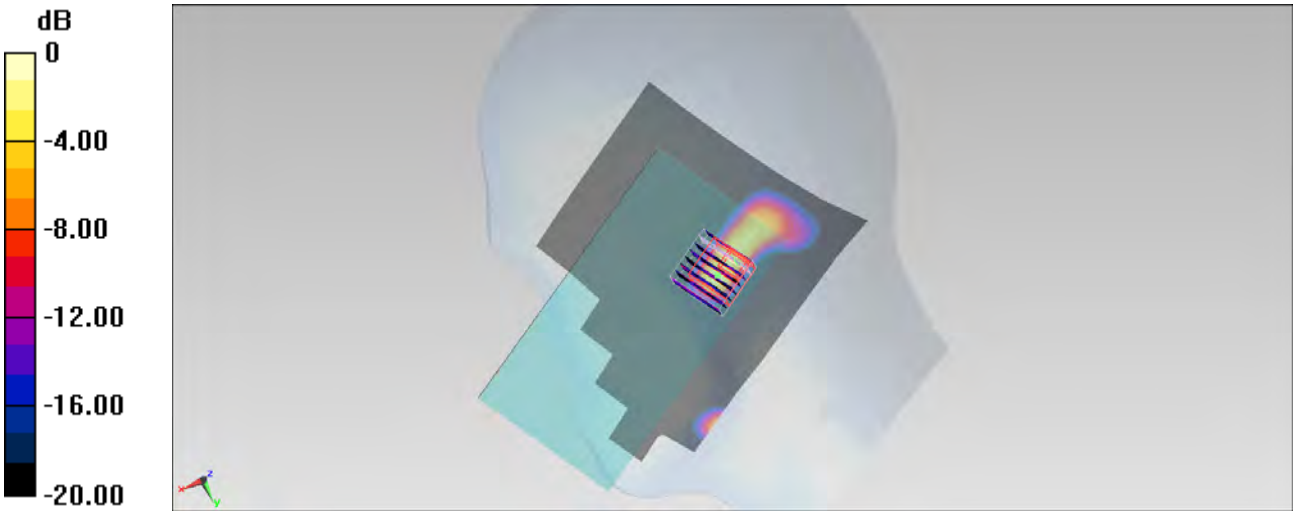
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5300 MHz; σ = 4.721 mho/m; ε_r = 35.33; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0466 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.619 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.146 mW/g
SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.00643 mW/g
Maximum value of SAR (measured) = 0.0642 mW/g



0 dB = 0.0642 mW/g = -23.85 dB mW/g

#69_WLAN5G_802.11a_Left Cheek_Ch60

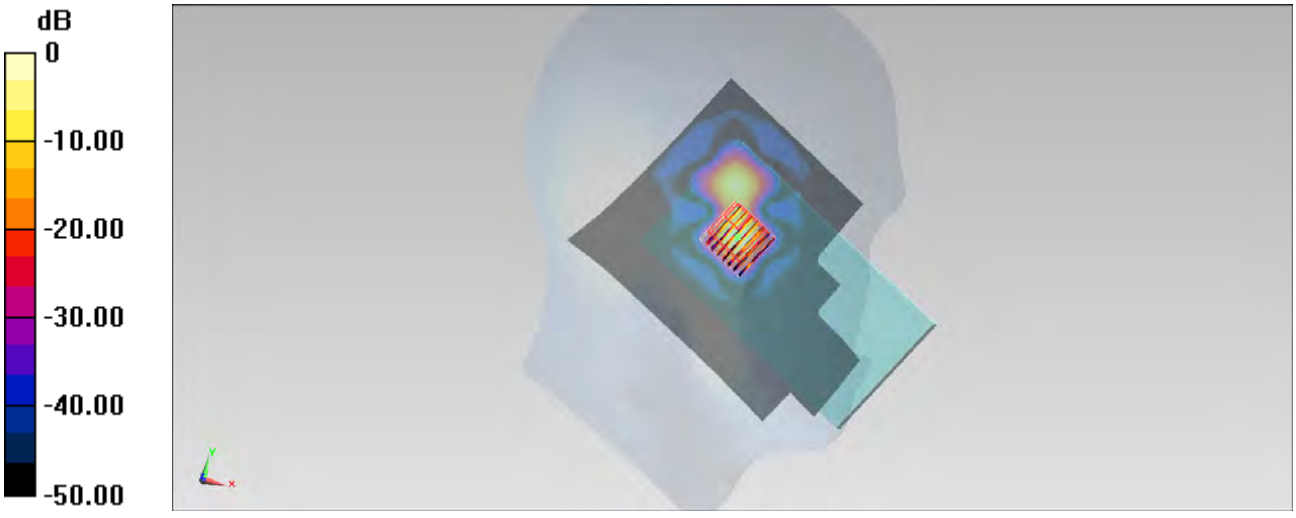
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5300 MHz; σ = 4.721 mho/m; ε_r = 35.33; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0990 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.280 V/m; Power Drift = -0.111 dB
Peak SAR (extrapolated) = 0.455 mW/g
SAR(1 g) = 0.068 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.177 mW/g



0 dB = 0.177 mW/g = -15.04 dB mW/g

#69_WLAN5G_802.11a_Left Cheek_Ch60_2D

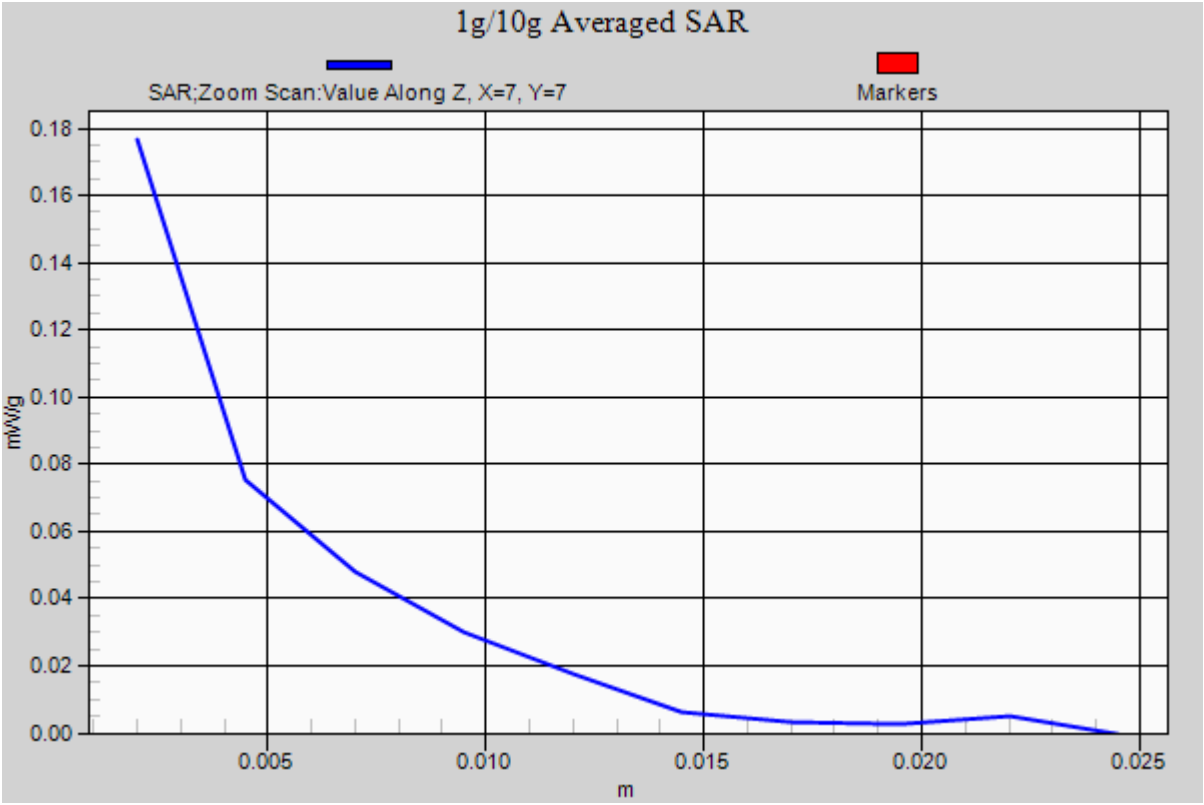
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5300 MHz; σ = 4.721 mho/m; ε_r = 35.33; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0990 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.280 V/m; Power Drift = -0.111 dB
Peak SAR (extrapolated) = 0.455 mW/g
SAR(1 g) = 0.068 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.177 mW/g



#70_WLAN5G_802.11a_Left Tilted_Ch60

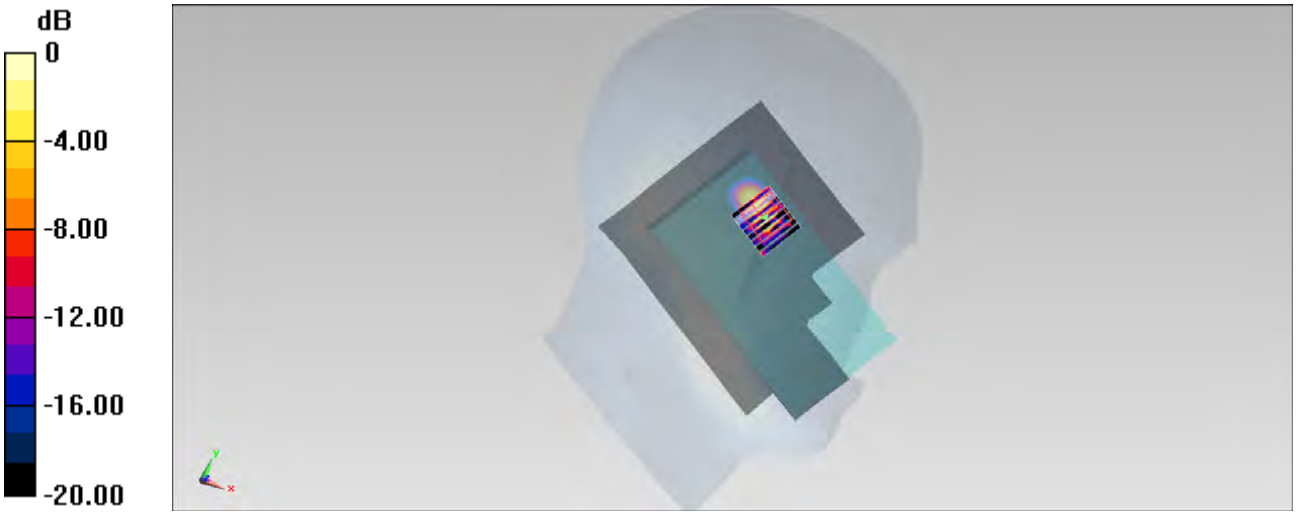
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5300 MHz; σ = 4.721 mho/m; ε_r = 35.33; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.86, 4.86, 4.86); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0901 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.949 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.227 mW/g
SAR(1 g) = 0.043 mW/g; SAR(10 g) = 0.0084 mW/g
Maximum value of SAR (measured) = 0.107 mW/g



0 dB = 0.107 mW/g = -19.41 dB mW/g

#71_WLAN5G_802.11a_Right Cheek_Ch140

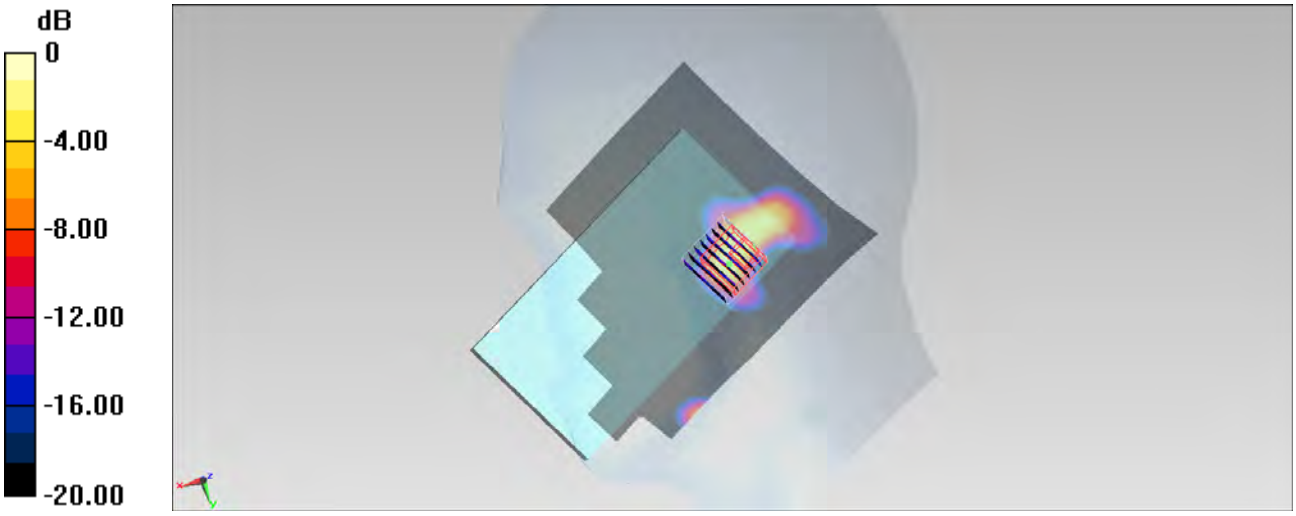
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5700 MHz; σ = 5.335 mho/m; ε_r = 34.519; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0686 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.236 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 0.148 mW/g
SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.104 mW/g



0 dB = 0.104 mW/g = -19.66 dB mW/g

#71_WLAN5G_802.11a_Right Cheek_Ch140_2D

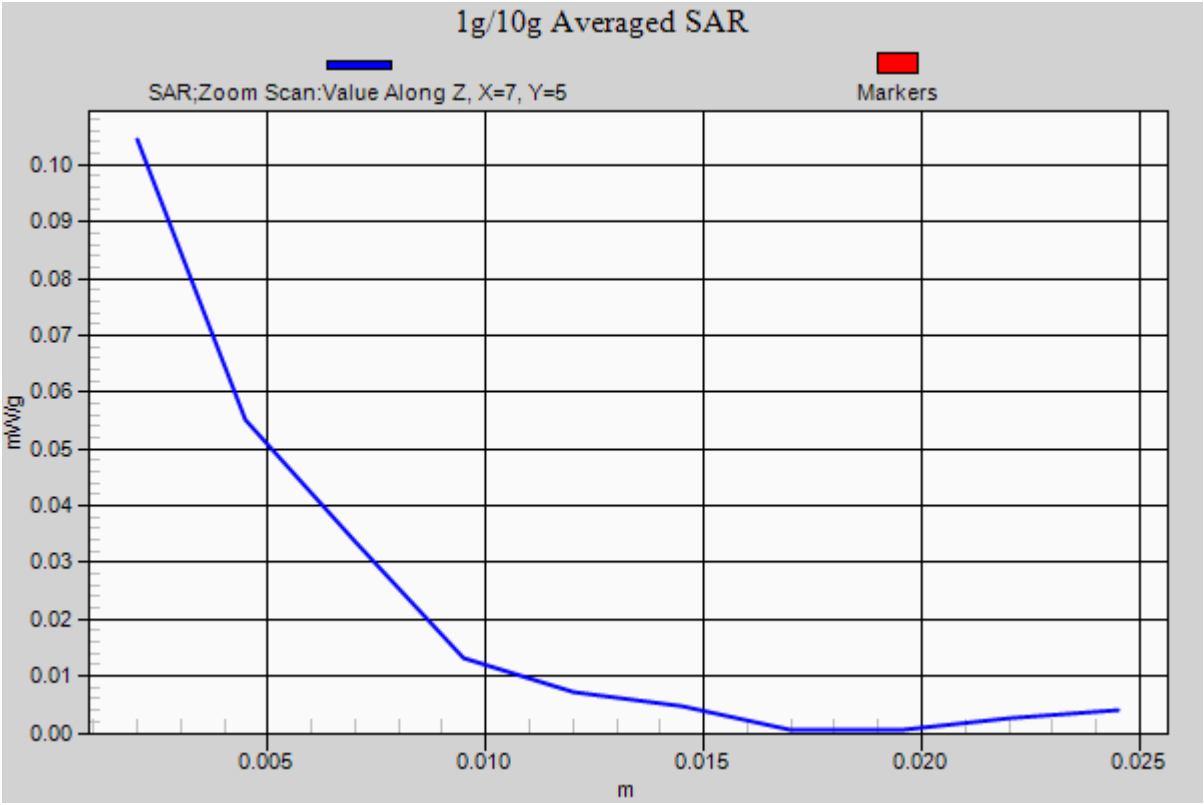
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5700 MHz; σ = 5.335 mho/m; ε_r = 34.519; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0686 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.236 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 0.148 mW/g
SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.104 mW/g



#72_WLAN5G_802.11a_Right Tilted_Ch140

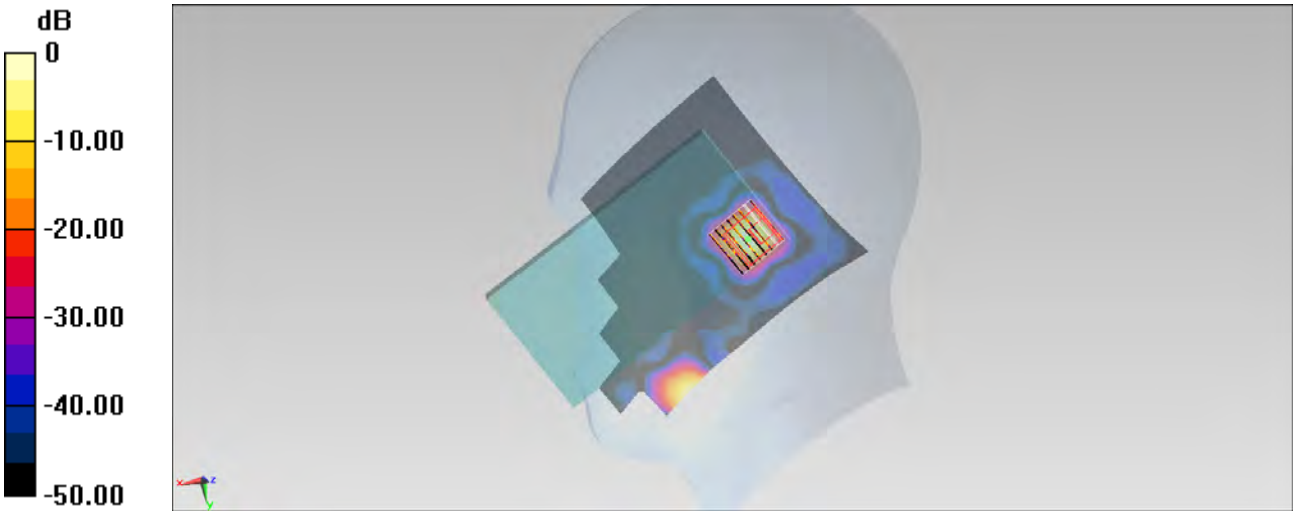
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5700 MHz; σ = 5.335 mho/m; ε_r = 34.519; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0656 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.104 dB
Peak SAR (extrapolated) = 0.499 mW/g
SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.0795 mW/g



0 dB = 0.0795 mW/g = -21.99 dB mW/g

#73_WLAN5G_802.11a_Left Cheek_Ch140

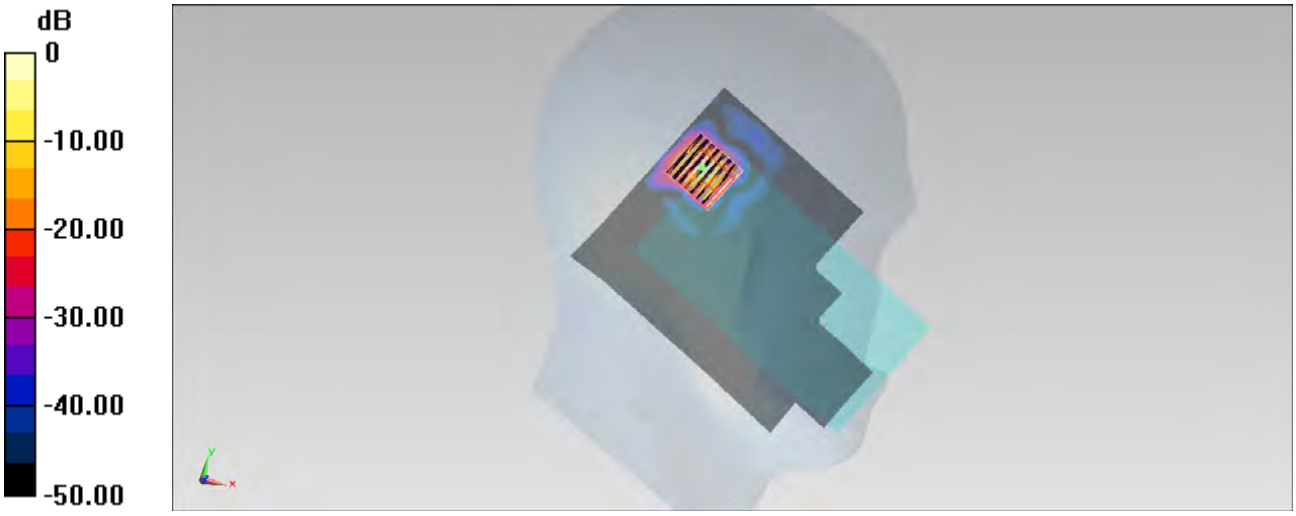
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5700 MHz; σ = 5.335 mho/m; ε_r = 34.519; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0499 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.030 V/m; Power Drift = -0.177 dB
Peak SAR (extrapolated) = 0.204 mW/g
SAR(1 g) = 0.027 mW/g; SAR(10 g) = 0.00431 mW/g
Maximum value of SAR (measured) = 0.0999 mW/g



0 dB = 0.0999 mW/g = -20.01 dB mW/g

#74_WLAN5G_802.11a_Left Tilted_Ch140

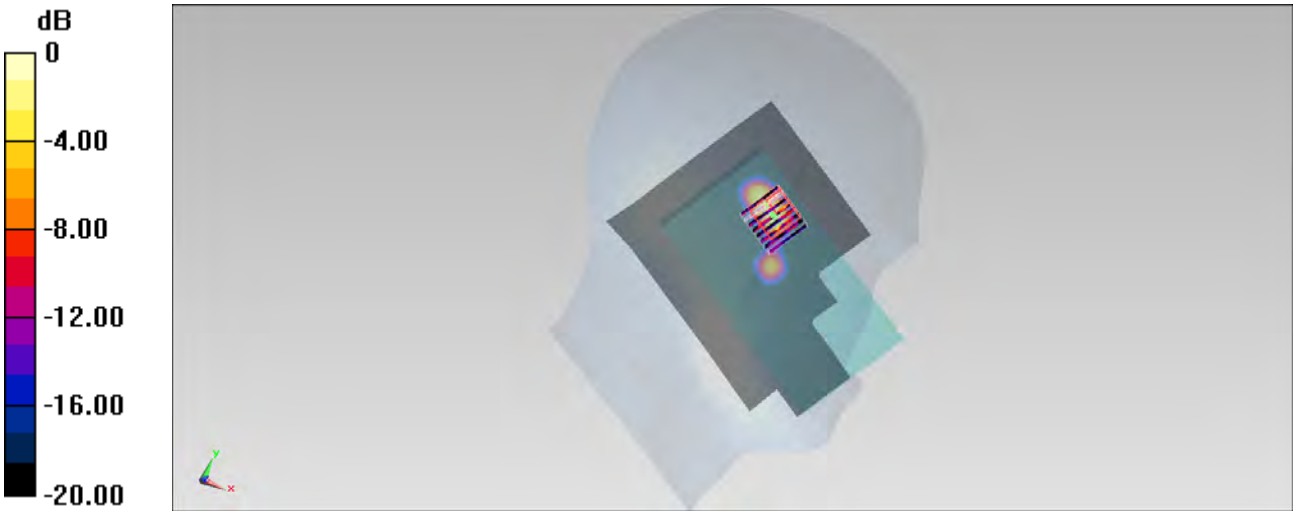
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5700 MHz; σ = 5.335 mho/m; ε_r = 34.519; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0434 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.540 V/m; Power Drift = 0.056 dB
Peak SAR (extrapolated) = 0.243 mW/g
SAR(1 g) = 0.019 mW/g; SAR(10 g) = 0.00253 mW/g
Maximum value of SAR (measured) = 0.0522 mW/g



0 dB = 0.0522 mW/g = -25.65 dB mW/g

#75_WLAN5G_802.11a_Right Cheek_Ch149

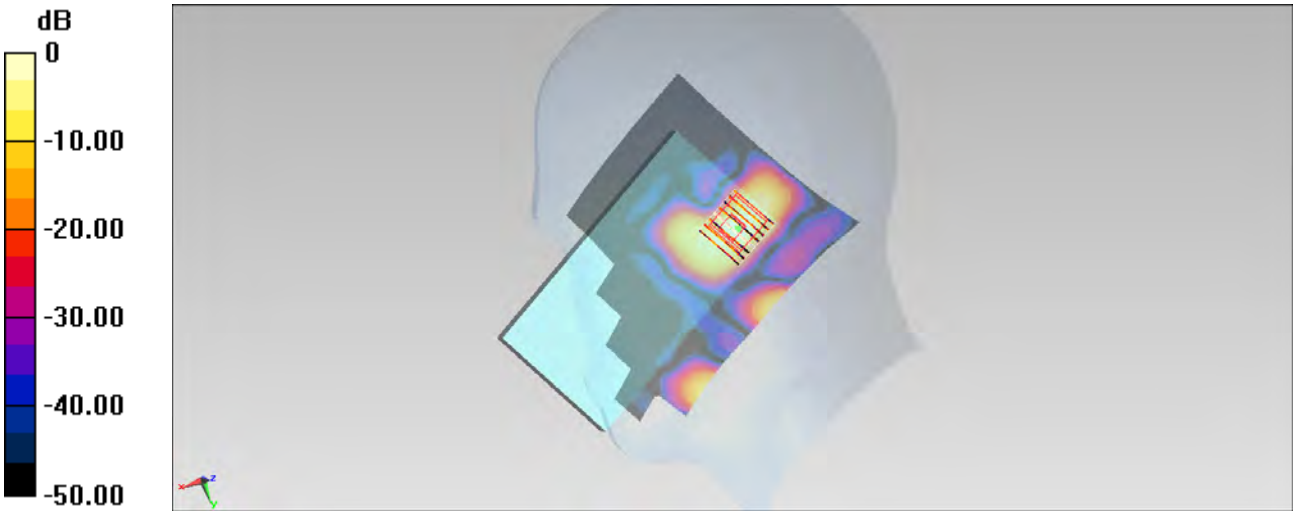
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5745 MHz; σ = 5.386 mho/m; ε_r = 34.488; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.136 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.576 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 0.224 mW/g
SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.019 mW/g
Maximum value of SAR (measured) = 0.156 mW/g



0 dB = 0.156 mW/g = -16.14 dB mW/g

#76_WLAN5G_802.11a_Right Tilted_Ch149

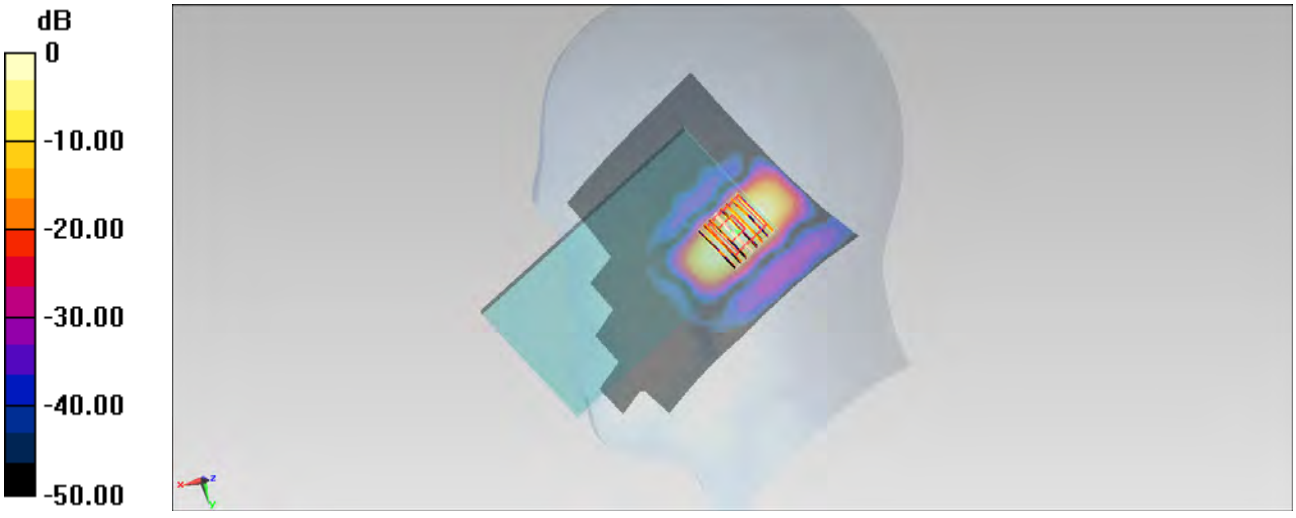
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5745 MHz; σ = 5.386 mho/m; ε_r = 34.488; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0795 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.177
eak SAR (extrapolated) = 0.315 mW/g
SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.016 mW/g
Maximum value of SAR (measured) = 0.102 mW/g



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

#77_WLAN5G_802.11a_Left Cheek_Ch149

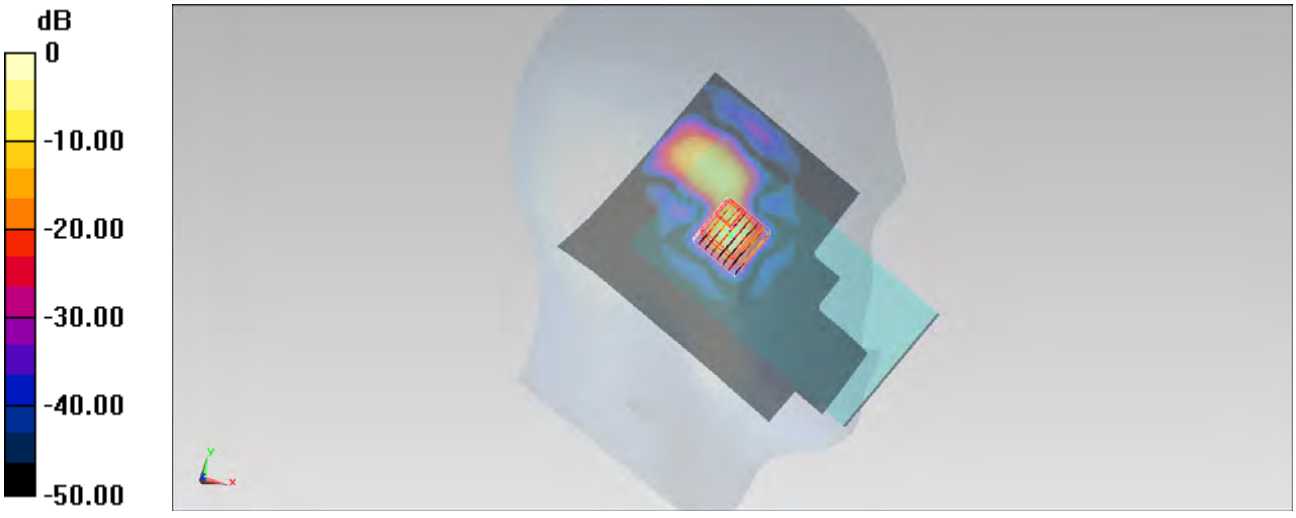
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5745 MHz; σ = 5.386 mho/m; ε_r = 34.488; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.102 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.840 V/m; Power Drift = -0.124 dB
Peak SAR (extrapolated) = 0.404 mW/g
SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.00953 mW/g
Maximum value of SAR (measured) = 0.173 mW/g



0 dB = 0.173 mW/g = -15.24 dB mW/g

#77_WLAN5G_802.11a_Left Cheek_Ch149_2D

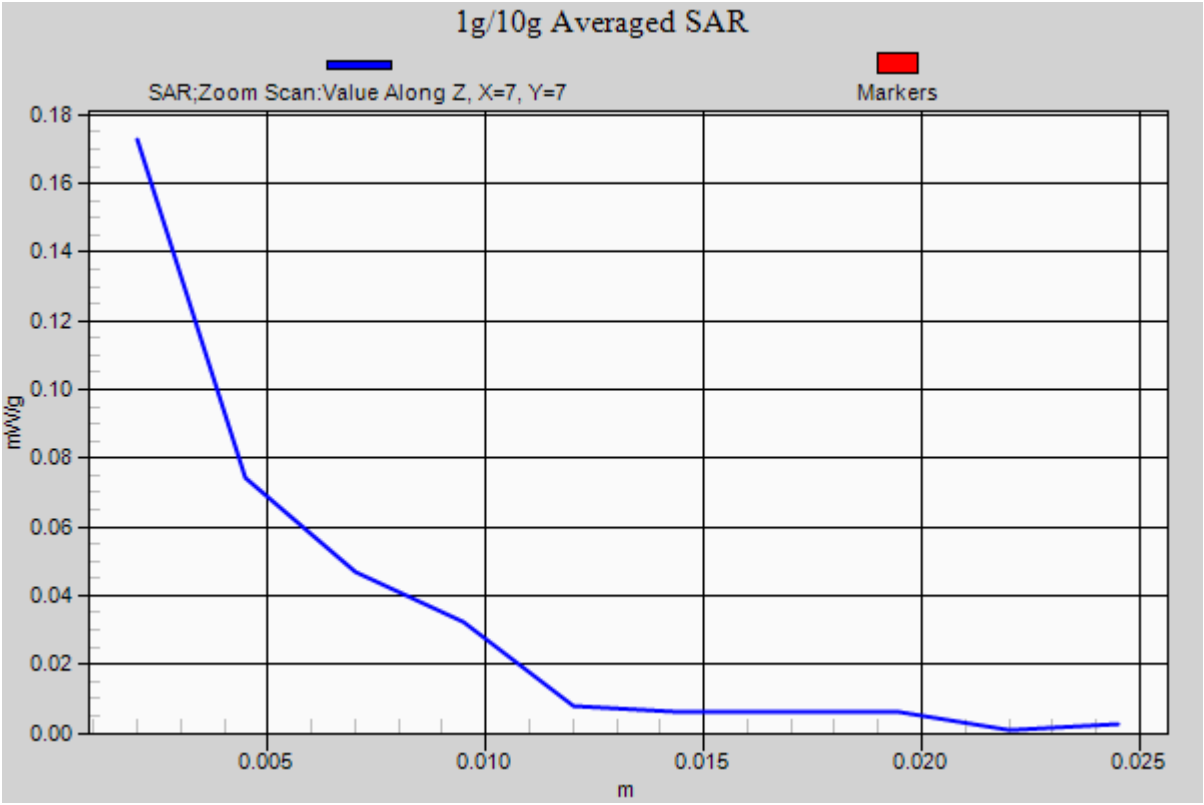
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5745 MHz; σ = 5.386 mho/m; ε_r = 34.488; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.102 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.840 V/m; Power Drift = -0.124 dB
Peak SAR (extrapolated) = 0.404 mW/g
SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.00953 mW/g
Maximum value of SAR (measured) = 0.173 mW/g



#78_WLAN5G_802.11a_Left Tilted_Ch149

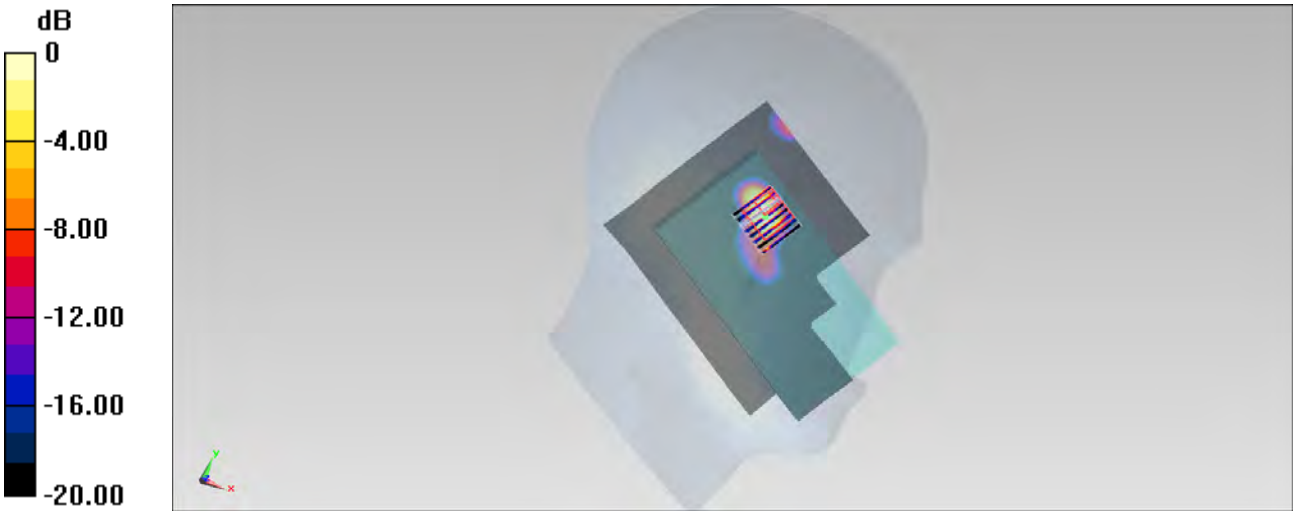
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: HSL_5G_121027 Medium parameters used: f = 5745 MHz; σ = 5.386 mho/m; ε_r = 34.488; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.28, 4.28, 4.28); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Left; Type: QD 000 P40 C; Serial: TP-1477
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x181x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.175 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.280 V/m; Power Drift = -0.090 dB
Peak SAR (extrapolated) = 0.253 mW/g
SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.021 mW/g
Maximum value of SAR (measured) = 0.165 mW/g



0 dB = 0.165 mW/g = -15.65 dB mW/g

#32_GSM1900_GPRS (2 Tx slots)_Front_1cm_Ch810

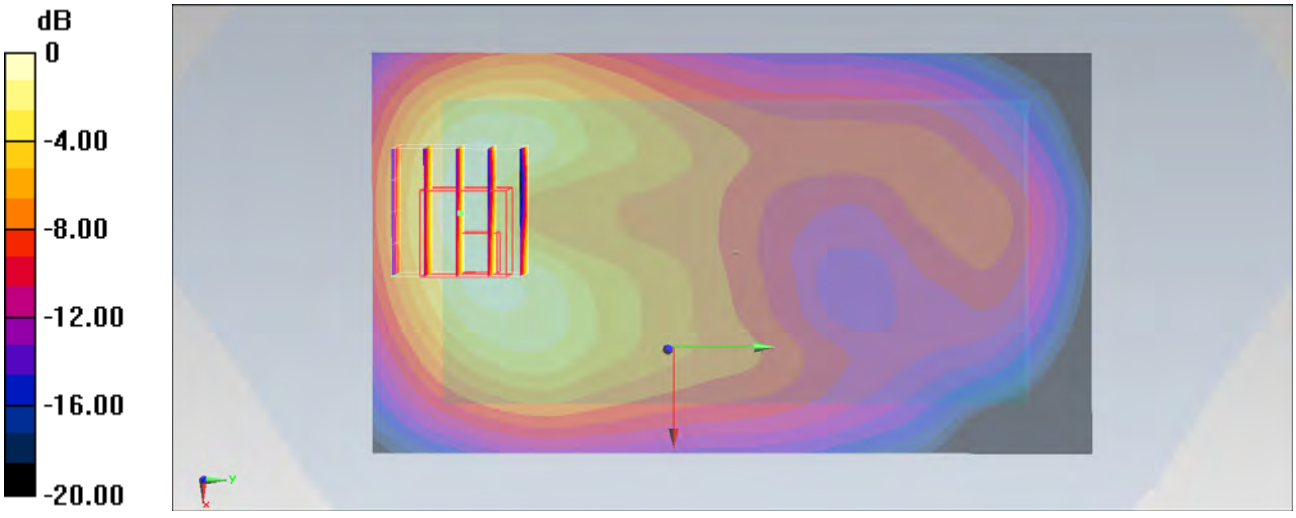
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_121026 Medium parameters used: f = 1910 MHz; σ = 1.546 mho/m; ε_r = 51.917; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.427 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.865 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.708 mW/g
SAR(1 g) = 0.434 mW/g; SAR(10 g) = 0.234 mW/g
Maximum value of SAR (measured) = 0.467 mW/g



0 dB = 0.467 mW/g = -6.61 dB mW/g

#32_GSM1900_GPRS (2 Tx slots)_Front_1cm_Ch810_2D

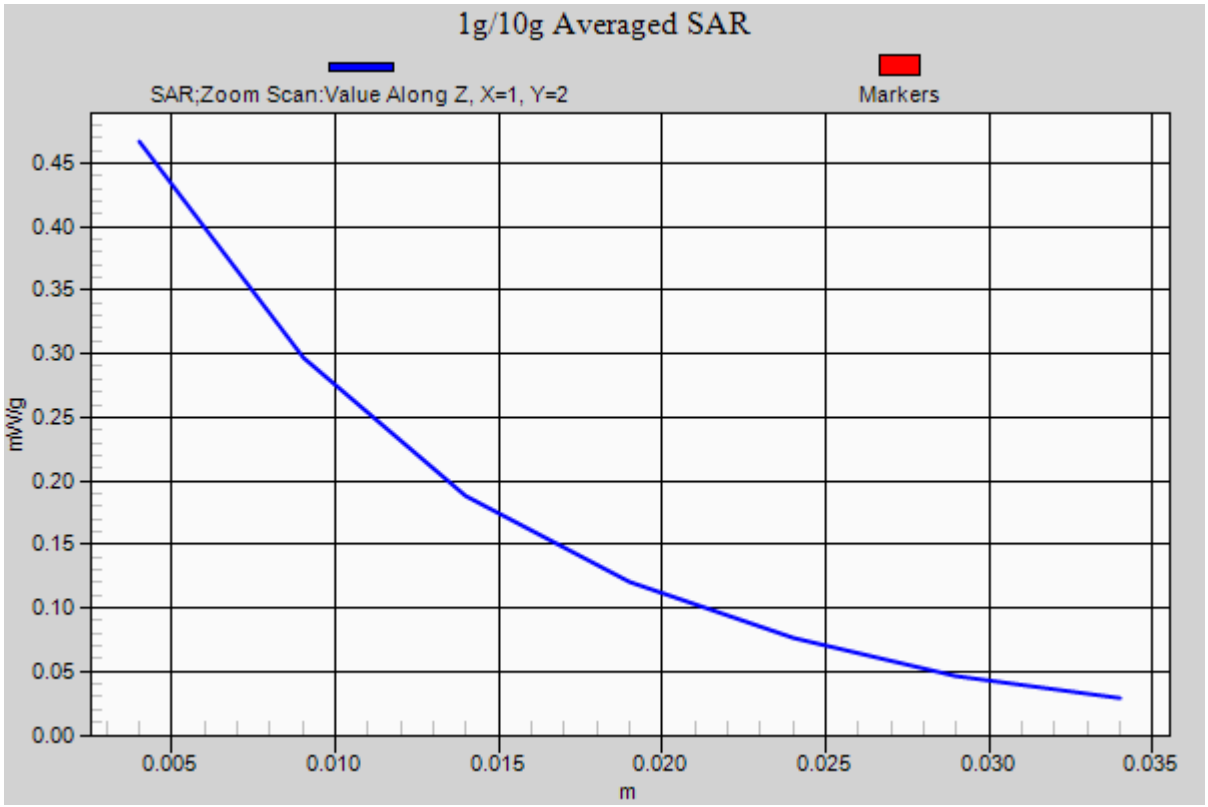
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_121026 Medium parameters used: f = 1910 MHz; σ = 1.546 mho/m; ε_r = 51.917; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.427 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.865 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.708 mW/g
SAR(1 g) = 0.434 mW/g; SAR(10 g) = 0.234 mW/g
Maximum value of SAR (measured) = 0.467 mW/g



#33_GSM1900_GPRS (2 Tx slots)_Back_1cm_Ch810

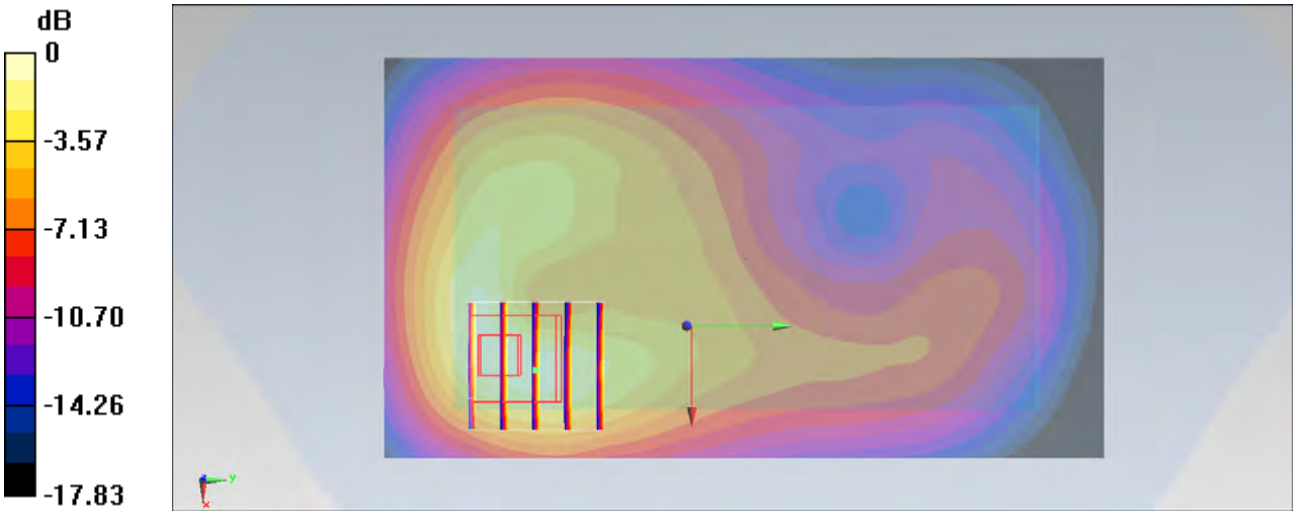
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_121026 Medium parameters used: f = 1910 MHz; σ = 1.546 mho/m; ε_r = 51.917; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.392 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.438 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.648 mW/g
SAR(1 g) = 0.388 mW/g; SAR(10 g) = 0.218 mW/g
Maximum value of SAR (measured) = 0.429 mW/g



0 dB = 0.429 mW/g = -7.35 dB mW/g

#34_GSM1900_GPRS (2 Tx slots)_Left Side_1cm_Ch810

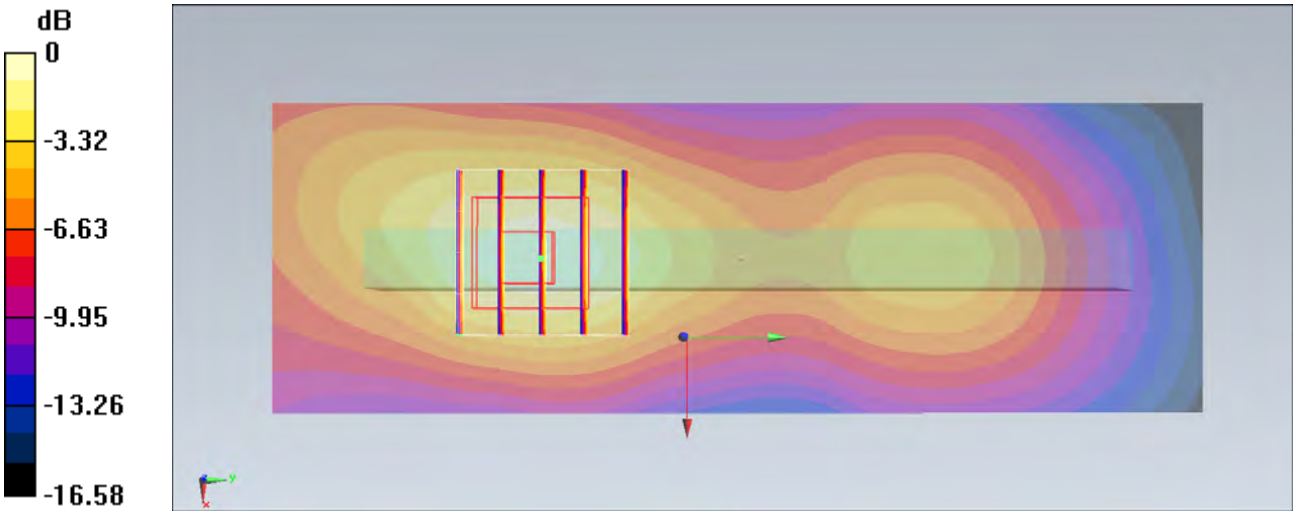
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_121026 Medium parameters used: f = 1910 MHz; σ = 1.546 mho/m; ε_r = 51.917; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (31x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.206 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.981 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.322 mW/g
SAR(1 g) = 0.198 mW/g; SAR(10 g) = 0.115 mW/g
Maximum value of SAR (measured) = 0.217 mW/g



0 dB = 0.217 mW/g = -13.27 dB mW/g

#35_GSM1900_GPRS (2 Tx slots)_Bottom Side_1cm_Ch810

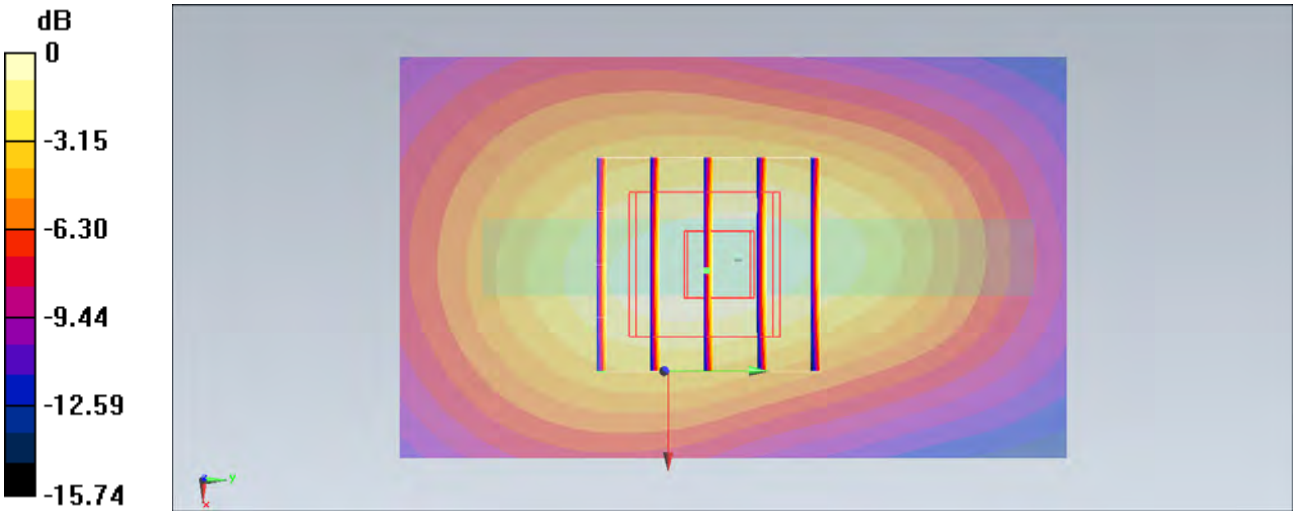
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_121026 Medium parameters used: f = 1910 MHz; σ = 1.546 mho/m; ε_r = 51.917; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (31x51x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.325 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.581 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.486 mW/g
SAR(1 g) = 0.299 mW/g; SAR(10 g) = 0.178 mW/g
Maximum value of SAR (measured) = 0.328 mW/g



0 dB = 0.328 mW/g = -9.68 dB mW/g

#37_GSM1900_GSM Voice_Front_1cm_Ch810;Headset

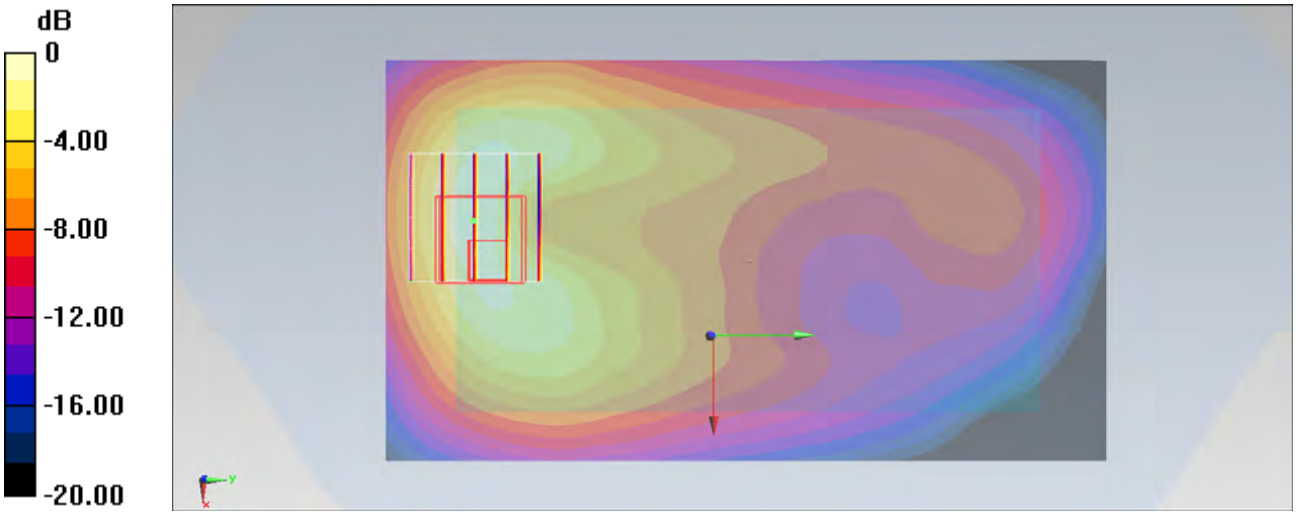
DUT: 2O0922

Communication System: PCS; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: MSL_1900_121026 Medium parameters used: f = 1910 MHz; σ = 1.546 mho/m; ε_r = 51.917; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch810/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.338 mW/g

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.643 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.544 mW/g
SAR(1 g) = 0.329 mW/g; SAR(10 g) = 0.181 mW/g
Maximum value of SAR (measured) = 0.362 mW/g



0 dB = 0.362 mW/g = -8.83 dB mW/g

#39_WCDMA II_RMC12.2K_Front_1cm_Ch9400

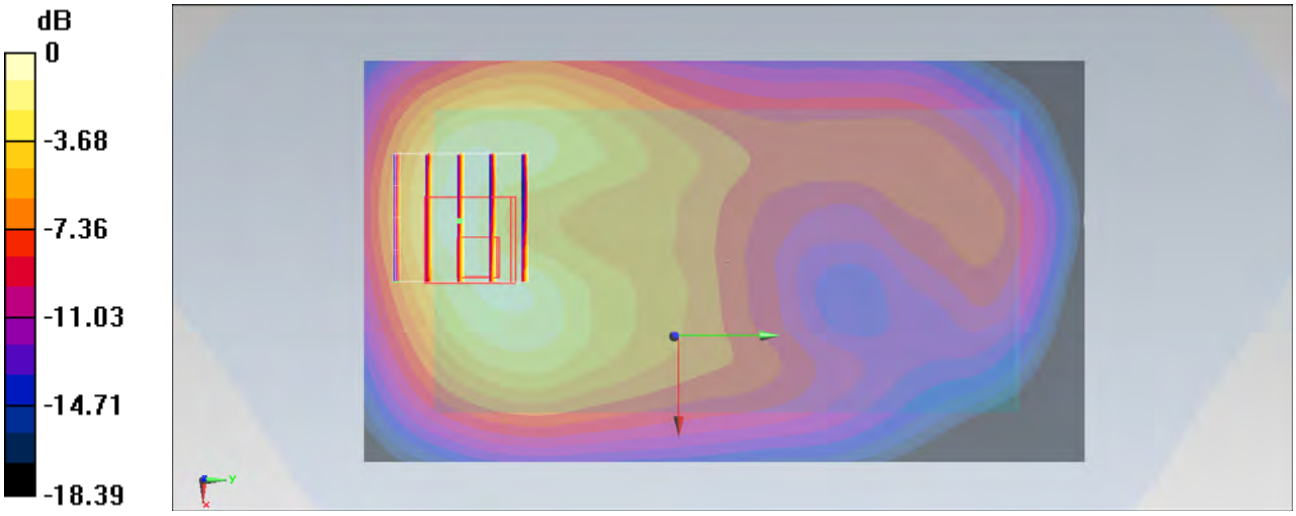
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_121026 Medium parameters used: f = 1880 MHz; σ = 1.511 mho/m; ε_r = 51.934; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.439 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.668 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.729 mW/g
SAR(1 g) = 0.448 mW/g; SAR(10 g) = 0.247 mW/g
Maximum value of SAR (measured) = 0.480 mW/g



0 dB = 0.480 mW/g = -6.38 dB mW/g

#40_WCDMA II_RMC12.2K_Back_1cm_Ch9400

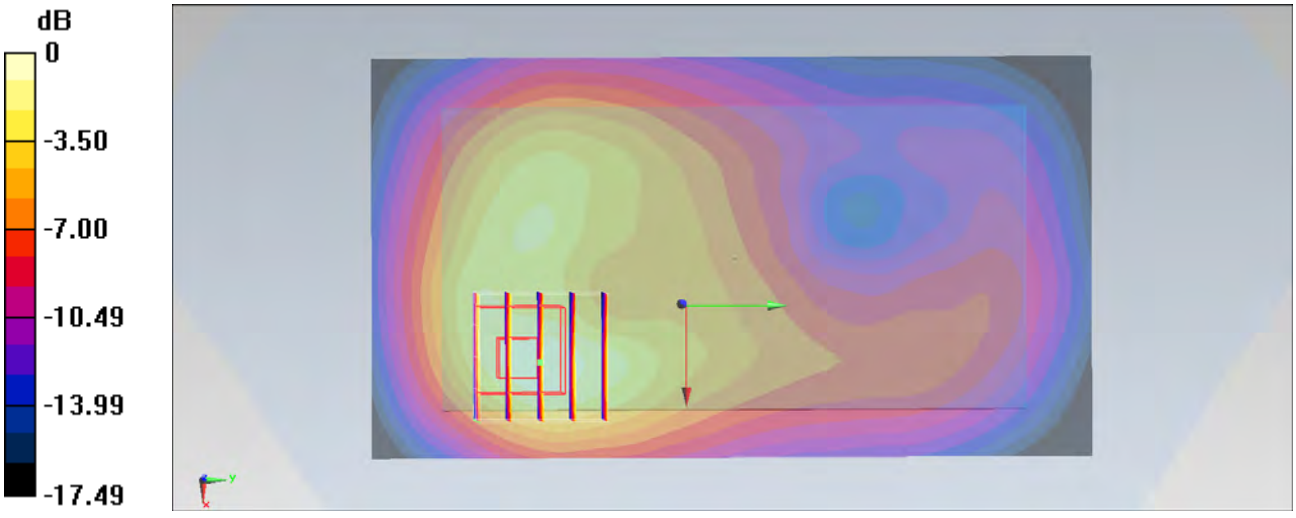
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_121026 Medium parameters used: f = 1880 MHz; σ = 1.511 mho/m; ε_r = 51.934; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.516 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.961 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.756 mW/g
SAR(1 g) = 0.452 mW/g; SAR(10 g) = 0.257 mW/g
Maximum value of SAR (measured) = 0.502 mW/g



0 dB = 0.502 mW/g = -5.99 dB mW/g

#41_WCDMA II_RMC12.2K_Left Side_1cm_Ch9400

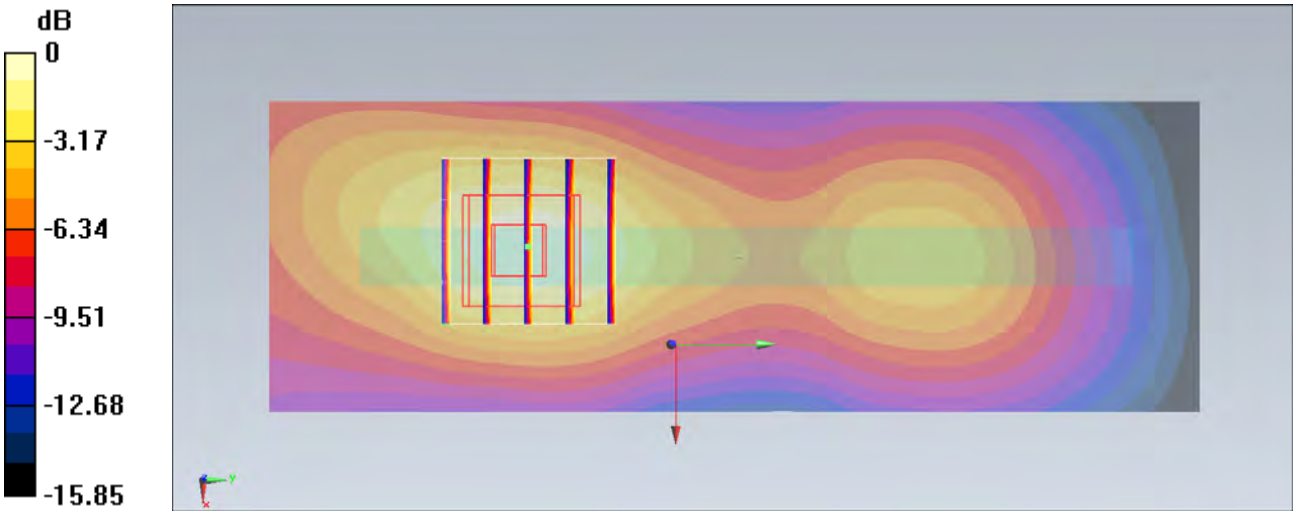
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_121026 Medium parameters used: f = 1880 MHz; σ = 1.511 mho/m; ε_r = 51.934; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (31x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.235 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.279 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.367 mW/g
SAR(1 g) = 0.228 mW/g; SAR(10 g) = 0.134 mW/g
Maximum value of SAR (measured) = 0.247 mW/g



0 dB = 0.247 mW/g = -12.15 dB mW/g

#42_WCDMA II_RMC12.2K_Bottom Side_1cm_Ch9400

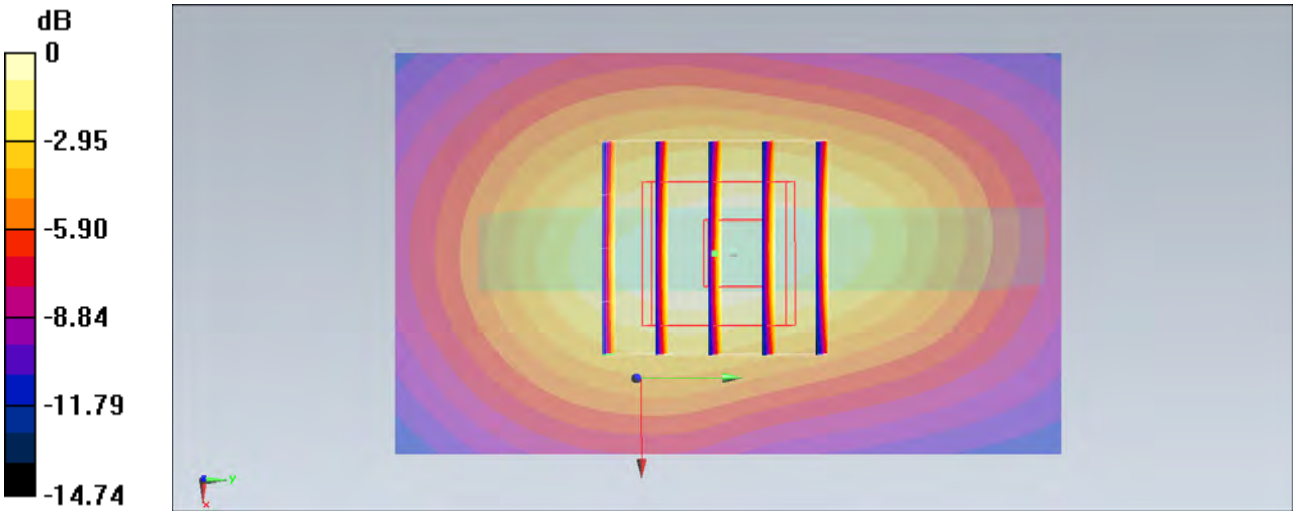
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_121026 Medium parameters used: f = 1880 MHz; σ = 1.511 mho/m; ε_r = 51.934; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (31x51x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.404 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.354 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.585 mW/g
SAR(1 g) = 0.366 mW/g; SAR(10 g) = 0.220 mW/g
Maximum value of SAR (measured) = 0.397 mW/g



0 dB = 0.397 mW/g = -8.02 dB mW/g

#44_WCDMA II_RMC12.2K_Back_1cm_Ch9400;Headset

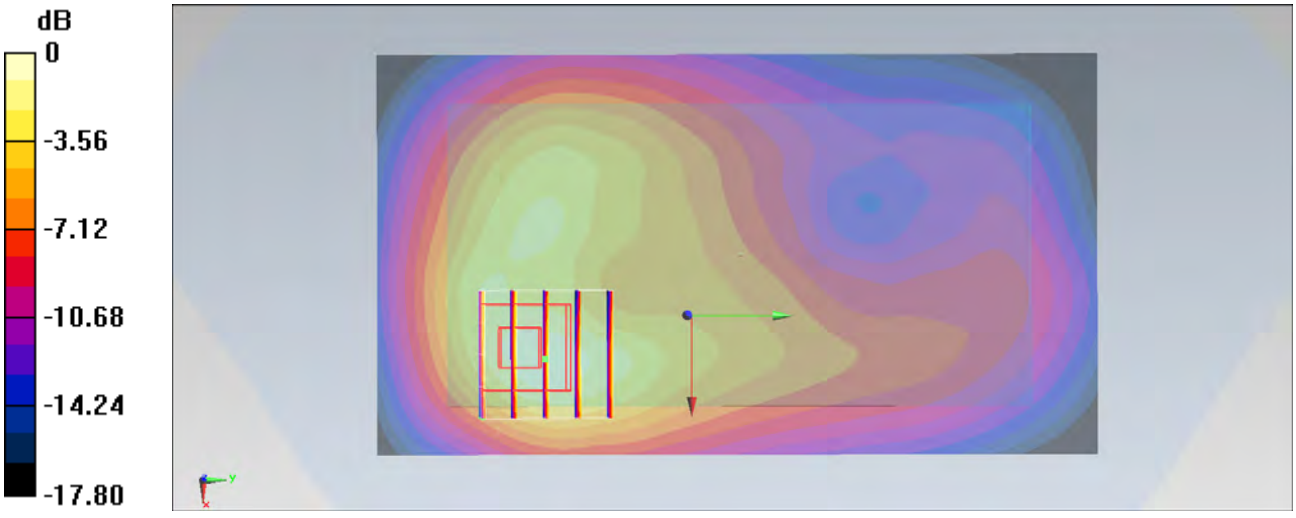
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_121026 Medium parameters used: f = 1880 MHz; σ = 1.511 mho/m; ε_r = 51.934; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.535 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.699 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.771 mW/g
SAR(1 g) = 0.466 mW/g; SAR(10 g) = 0.265 mW/g
Maximum value of SAR (measured) = 0.516 mW/g



0 dB = 0.516 mW/g = -5.75 dB mW/g

#44_WCDMA II_RMC12.2K_Back_1cm_Ch9400;Headset_2D

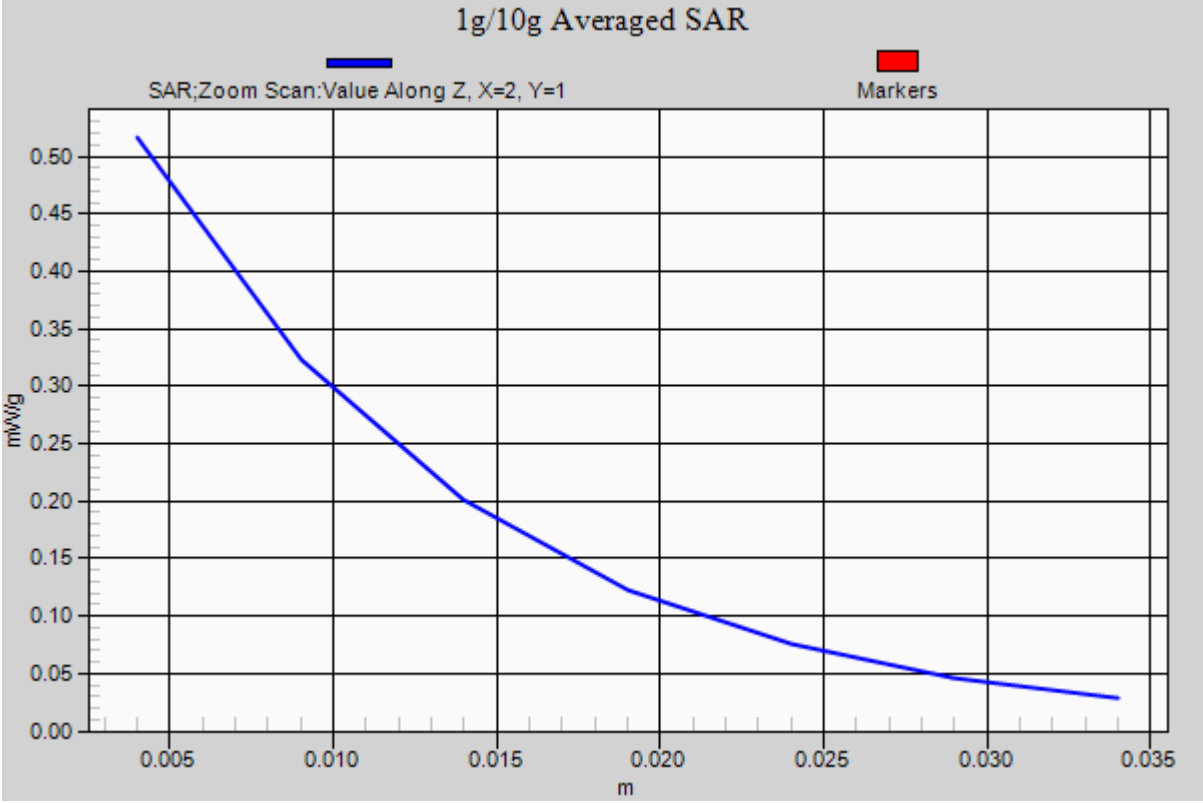
DUT: 2O0922

Communication System: WCDMA; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: MSL_1900_121026 Medium parameters used: f = 1880 MHz; σ = 1.511 mho/m; ε_r = 51.934; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(7.13, 7.13, 7.13); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch9400/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.535 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.699 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.771 mW/g
SAR(1 g) = 0.466 mW/g; SAR(10 g) = 0.265 mW/g
Maximum value of SAR (measured) = 0.516 mW/g



#05_WLAN2.4G_802.11b_Front_1cm_Ch6

DUT: 2O0922

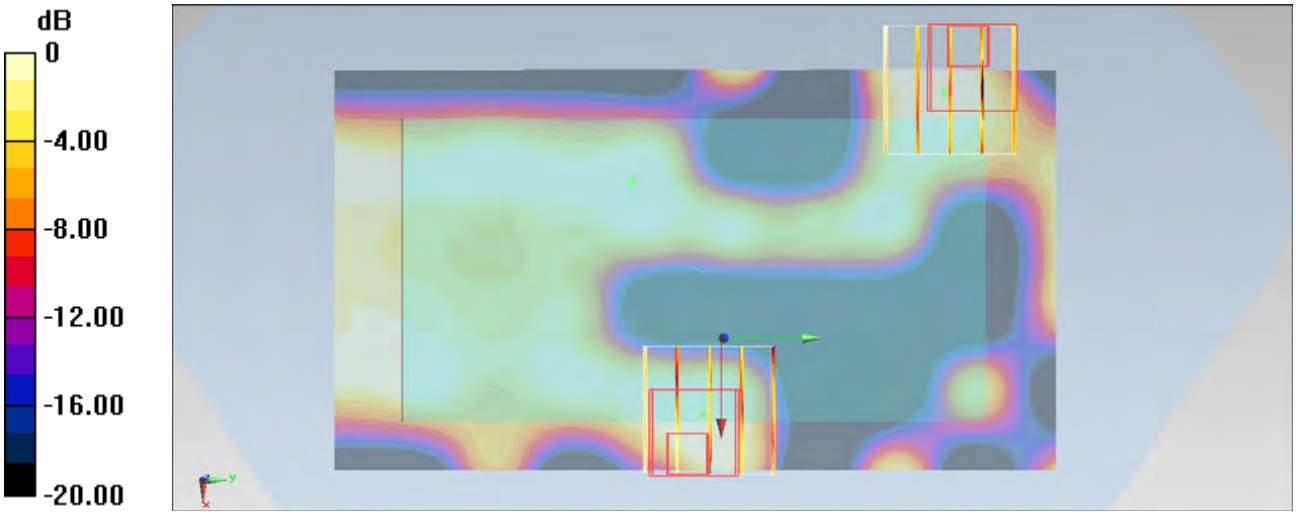
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 53.846; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.59, 6.59, 6.59); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.00807 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.323 V/m; Power Drift = -0.083 dB
Peak SAR (extrapolated) = 0.00279 mW/g
SAR(1 g) = 0.00195 mW/g; SAR(10 g) = 0.00108 mW/g
Maximum value of SAR (measured) = 0.00249 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.323 V/m; Power Drift = -0.083 dB
Peak SAR (extrapolated) = 0.00387 mW/g
SAR(1 g) = 0.00133 mW/g; SAR(10 g) = 0.000647 mW/g
Maximum value of SAR (measured) = 0.00299 mW/g



0 dB = 0.00299 mW/g = -50.49 dB mW/g

#06_WLAN2.4G_802.11b_Back_1cm_Ch6

DUT: 2O0922

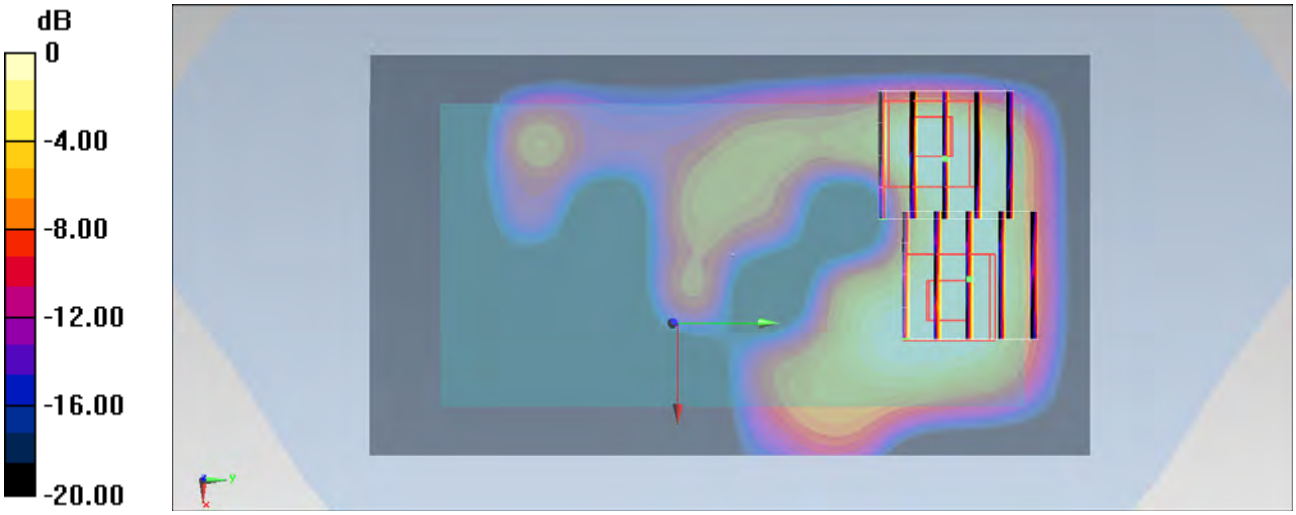
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 53.846; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.59, 6.59, 6.59); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.0441 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.123 V/m; Power Drift = 0.155 dB
Peak SAR (extrapolated) = 0.043 mW/g
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.0273 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.123 V/m; Power Drift = 0.155 dB
Peak SAR (extrapolated) = 0.042 mW/g
SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.0239 mW/g



0 dB = 0.0239 mW/g = -32.43 dB mW/g

#08_WLAN2.4G_802.11b_Right Side_1cm_Ch6

DUT: 2O0922

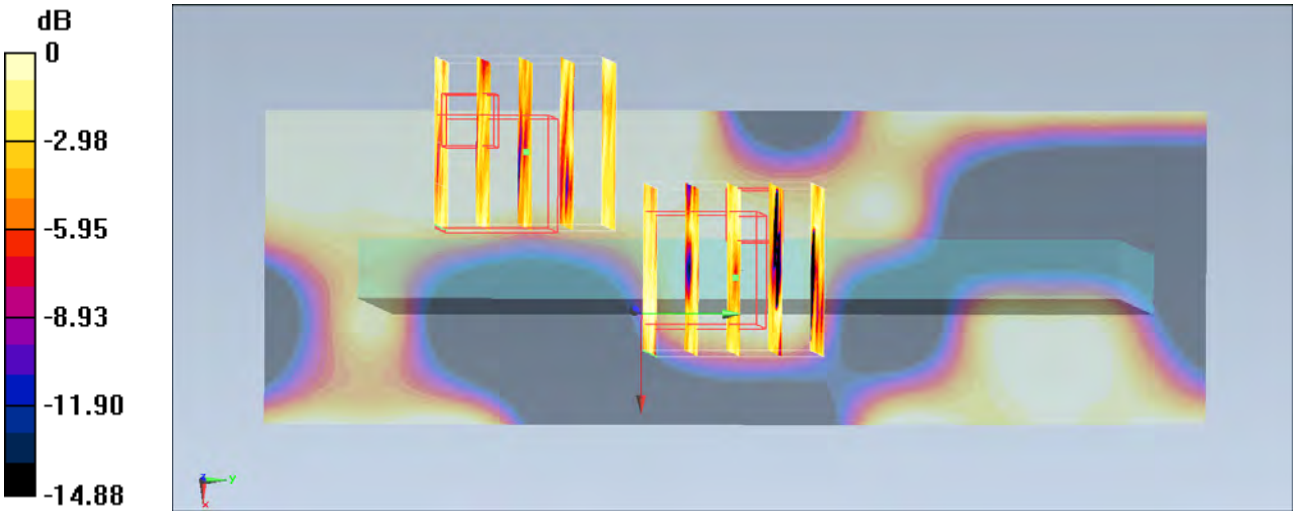
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 53.846; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.59, 6.59, 6.59); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (31x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.00625 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.438 V/m; Power Drift = 0.097 dB
Peak SAR (extrapolated) = 0.00322 mW/g
SAR(1 g) = 0.00154 mW/g; SAR(10 g) = 0.000875 mW/g
Maximum value of SAR (measured) = 0.00269 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.438 V/m; Power Drift = 0.097 dB
Peak SAR (extrapolated) = 0.00303 mW/g
SAR(1 g) = 0.00145 mW/g; SAR(10 g) = 0.00074 mW/g
Maximum value of SAR (measured) = 0.00241 mW/g



0 dB = 0.00241 mW/g = -52.36 dB mW/g

#09_WLAN2.4G_802.11b_Top Side_1cm_Ch6

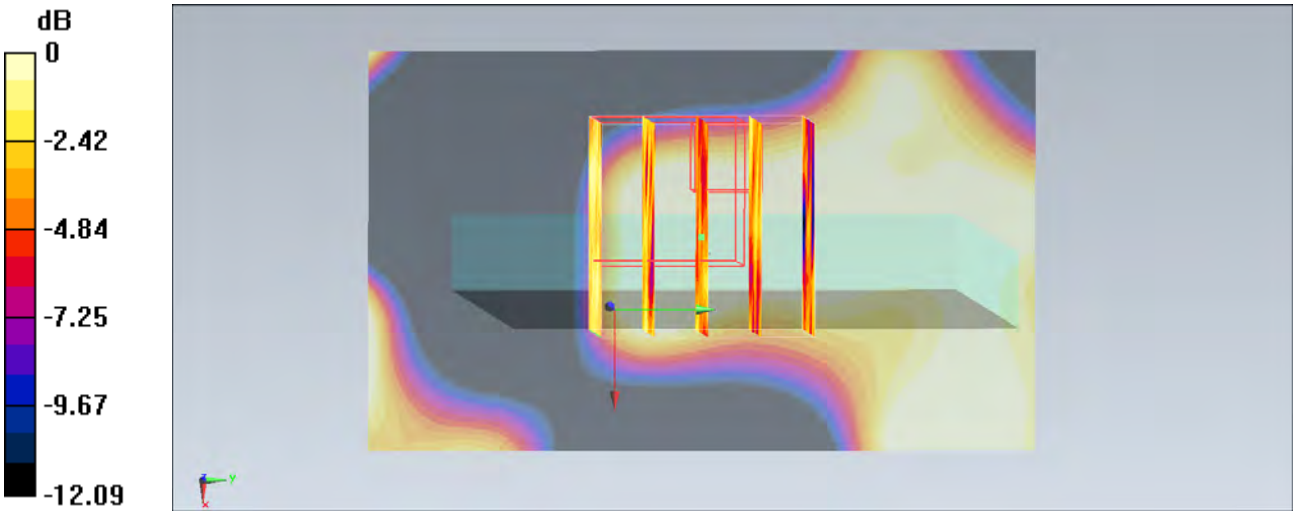
DUT: 2O0922

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 53.846; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.59, 6.59, 6.59); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (31x51x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.0110 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.773 V/m; Power Drift = -0.094 dB
Peak SAR (extrapolated) = 0.00556 mW/g
SAR(1 g) = 0.0014 mW/g; SAR(10 g) = 0.000833 mW/g
Maximum value of SAR (measured) = 0.00264 mW/g



0 dB = 0.00264 mW/g = -51.57 dB mW/g

#11_WLAN2.4G_802.11b_Back_1cm_Ch6;Headset

DUT: 2O0922

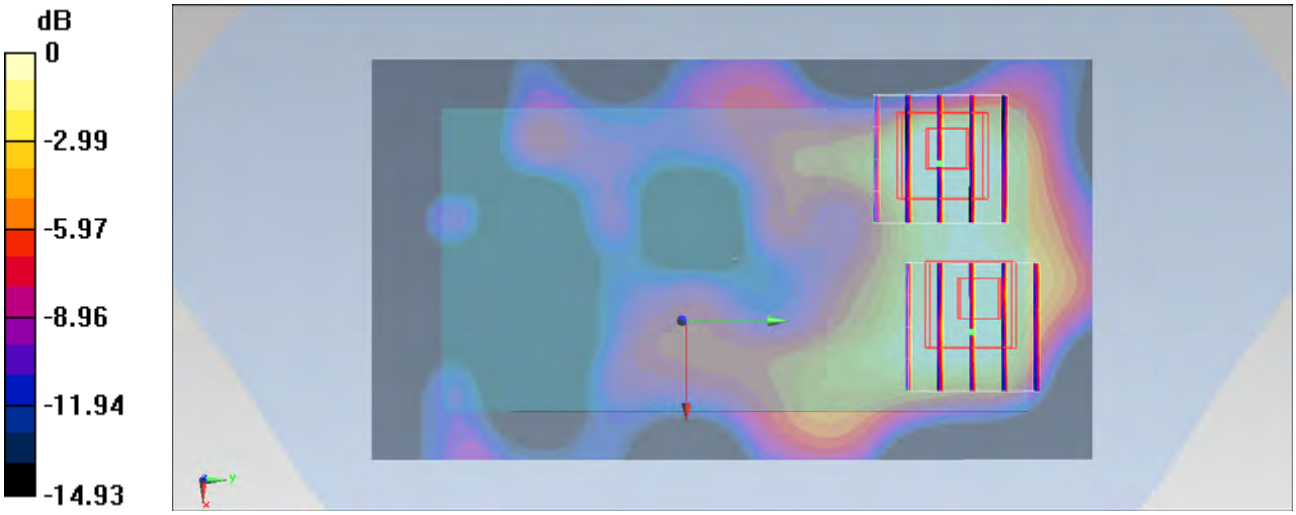
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 53.846; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.59, 6.59, 6.59); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.0378 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.209 V/m; Power Drift = 0.199 dB
Peak SAR (extrapolated) = 0.055 mW/g
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.012 mW/g
Maximum value of SAR (measured) = 0.0267 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.209 V/m; Power Drift = 0.199 dB
Peak SAR (extrapolated) = 0.034 mW/g
SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.0221 mW/g



0 dB = 0.0221 mW/g = -33.11 dB mW/g

#11_WLAN2.4G_802.11b_Back_1cm_Ch6;Headset_2D

DUT: 2O0922

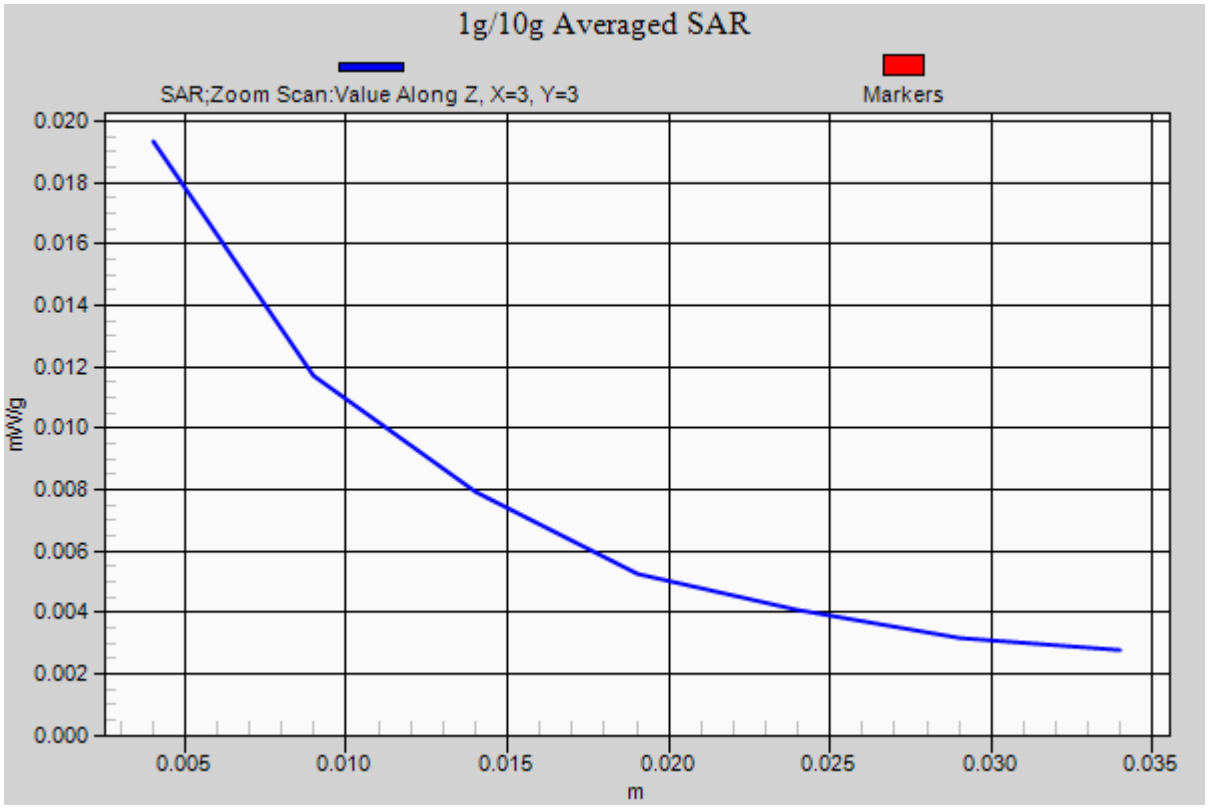
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450_121020 Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 53.846; ρ = 1000 kg/m^3
Ambient Temperature：22.3 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3801; ConvF(6.59, 6.59, 6.59); Calibrated: 2012/6/22;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn495; Calibrated: 2012/4/23
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch6/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 0.0378 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.209 V/m; Power Drift = 0.199 dB
Peak SAR (extrapolated) = 0.055 mW/g
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.012 mW/g
Maximum value of SAR (measured) = 0.0267 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.209 V/m; Power Drift = 0.199 dB
Peak SAR (extrapolated) = 0.034 mW/g
SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.0221 mW/g



#49_WLAN5G_802.11a_Front_1cm_Ch36

DUT: 2O0922

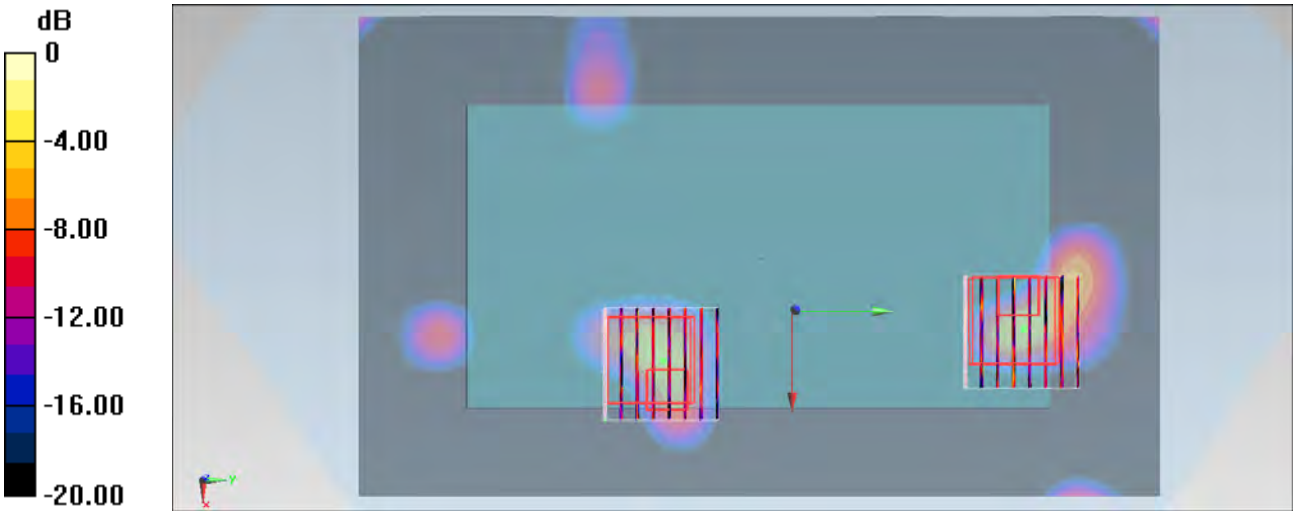
Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used : f = 5180 MHz; σ = 5.257 mho/m; ε_r = 48.801; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0124 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.301 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 0.568 mW/g
SAR(1 g) = 0.00109 mW/g; SAR(10 g) = 5.04e-005 mW/g
Maximum value of SAR (measured) = 0.568 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.301 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 0.022 mW/g
SAR(1 g) = 0.000591 mW/g; SAR(10 g) = 9.5e-005 mW/g
Maximum value of SAR (measured) = 0.0357 mW/g



0 dB = 0.0357 mW/g = -28.95 dB mW/g

#50_WLAN5G_802.11a_Back_1cm_Ch36

DUT: 2O0922

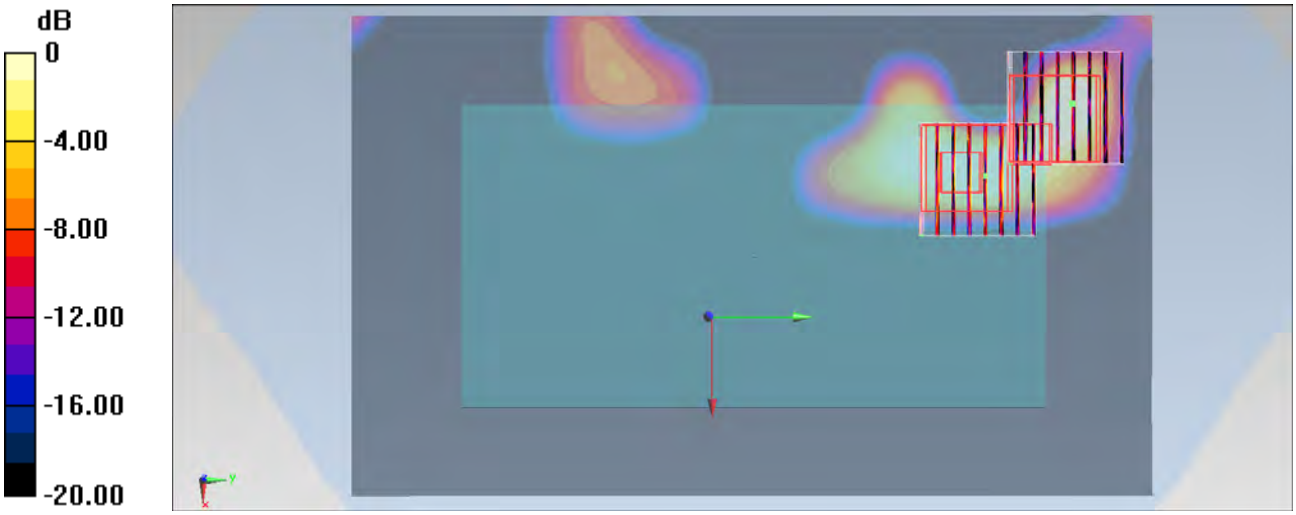
Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used : f = 5180 MHz; σ = 5.257 mho/m; ε_r = 48.801; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0608 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 0.143 mW/g
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.00937 mW/g
Maximum value of SAR (measured) = 0.0673 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 0.098 mW/g
SAR(1 g) = 0.00582 mW/g; SAR(10 g) = 0.000892 mW/g
Maximum value of SAR (measured) = 0.0309 mW/g



0 dB = 0.0309 mW/g = -30.20 dB mW/g

#51_WLAN5G_802.11a_Back_1cm_Ch36;Headset

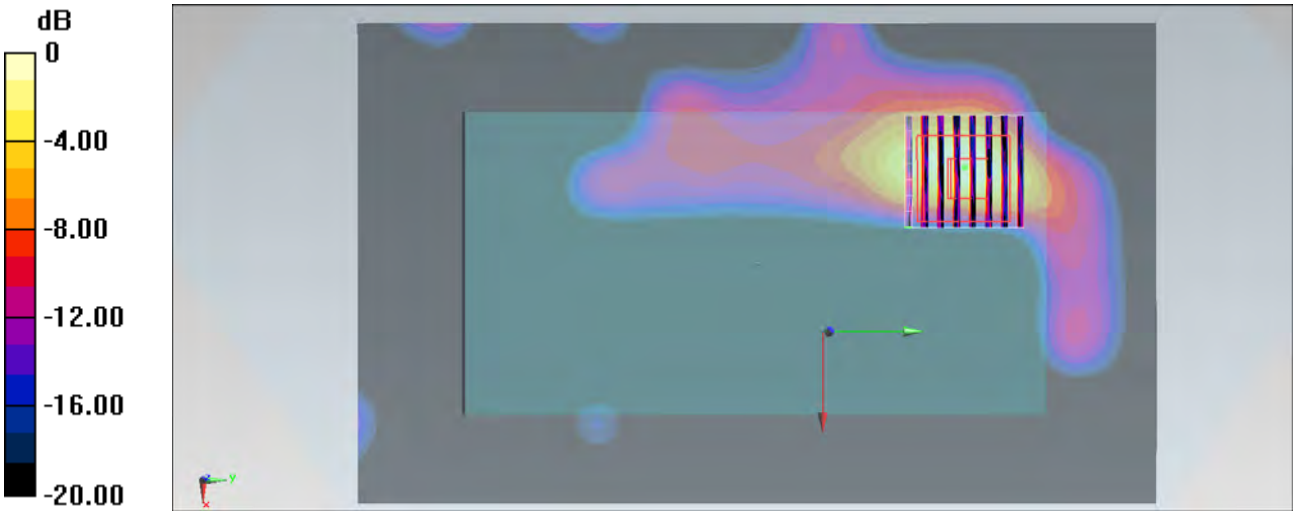
DUT: 2O0922

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used : f = 5180 MHz; σ = 5.257 mho/m; ε_r = 48.801; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0734 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.458 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.119 mW/g
SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.00961 mW/g
Maximum value of SAR (measured) = 0.0712 mW/g



0 dB = 0.0712 mW/g = -22.95 dB mW/g

#51_WLAN5G_802.11a_Back_1cm_Ch36;Headset_2D

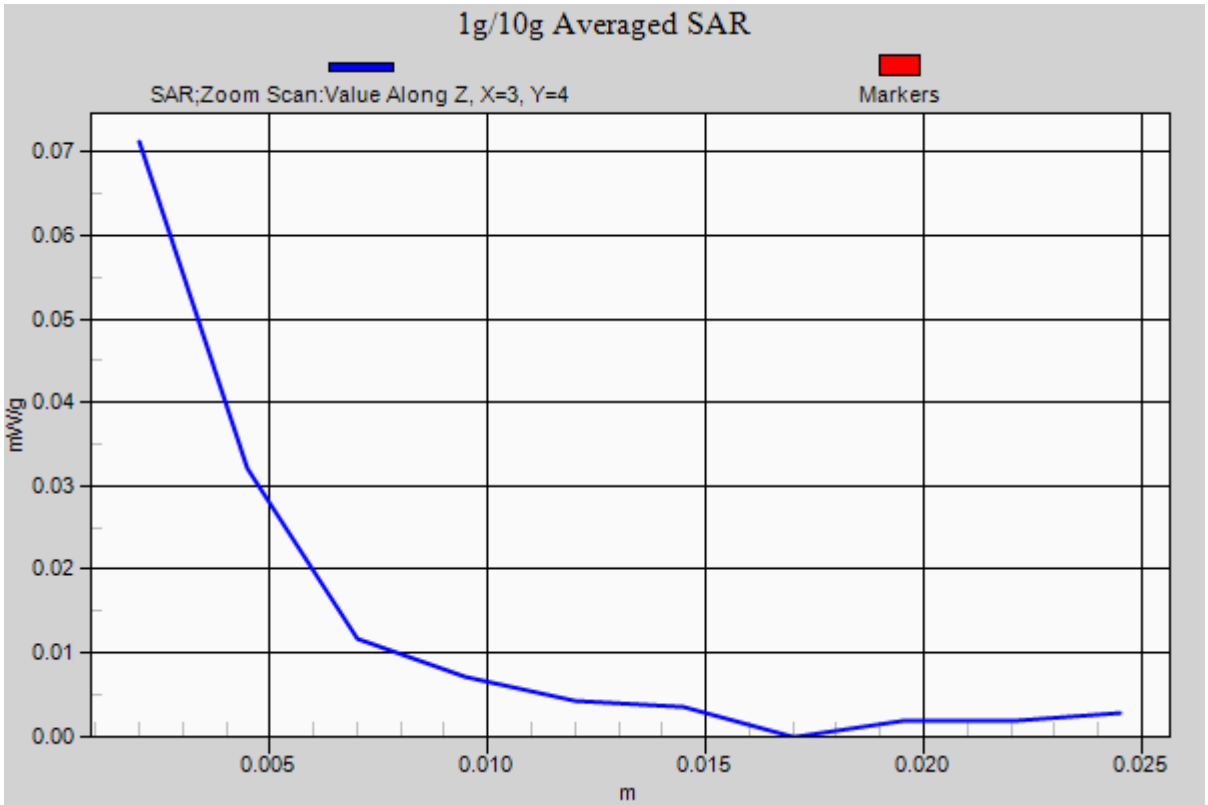
DUT: 2O0922

Communication System: 802.11a; Frequency: 5180 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used : f = 5180 MHz; σ = 5.257 mho/m; ε_r = 48.801; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch36/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0734 mW/g

Ch36/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.458 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.119 mW/g
SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.00961 mW/g
Maximum value of SAR (measured) = 0.0712 mW/g



#52_WLAN5G_802.11a_Front_1cm_Ch60

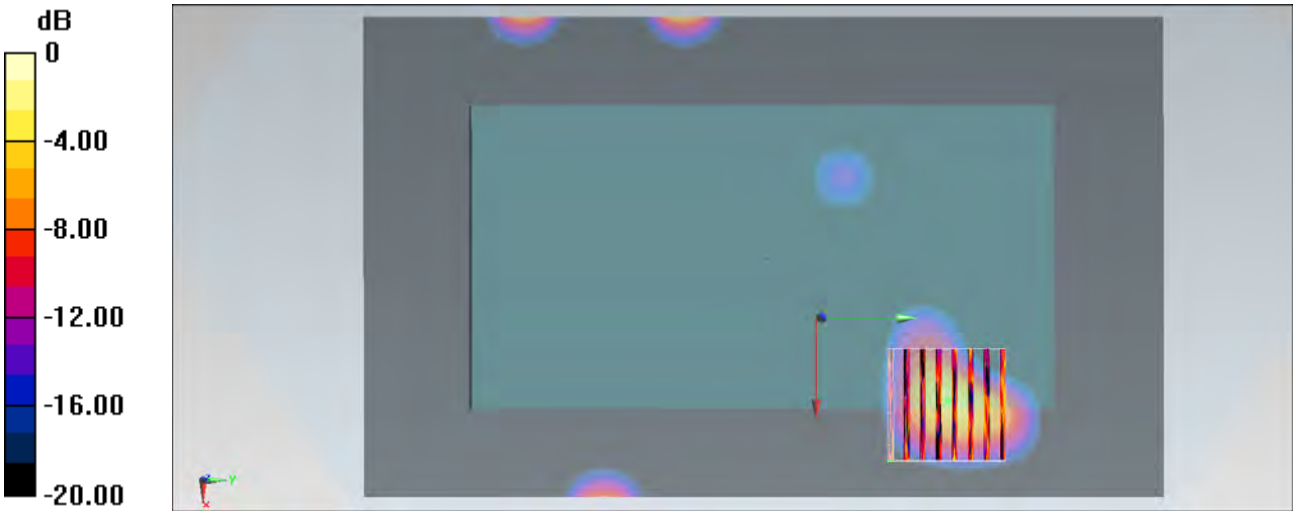
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5300 MHz; σ = 5.429 mho/m; ε_r = 48.56; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0127 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.806 V/m; Power Drift = 0.083 dB
Peak SAR (extrapolated) = 0 mW/g
SAR(1 g) = n.a. ; SAR(10 g) = n.a.
Maximum value of SAR (measured) = 0.0248 mW/g



0 dB = 0.0248 mW/g = -32.11 dB mW/g

#53_WLAN5G_802.11a_Back_1cm_Ch60

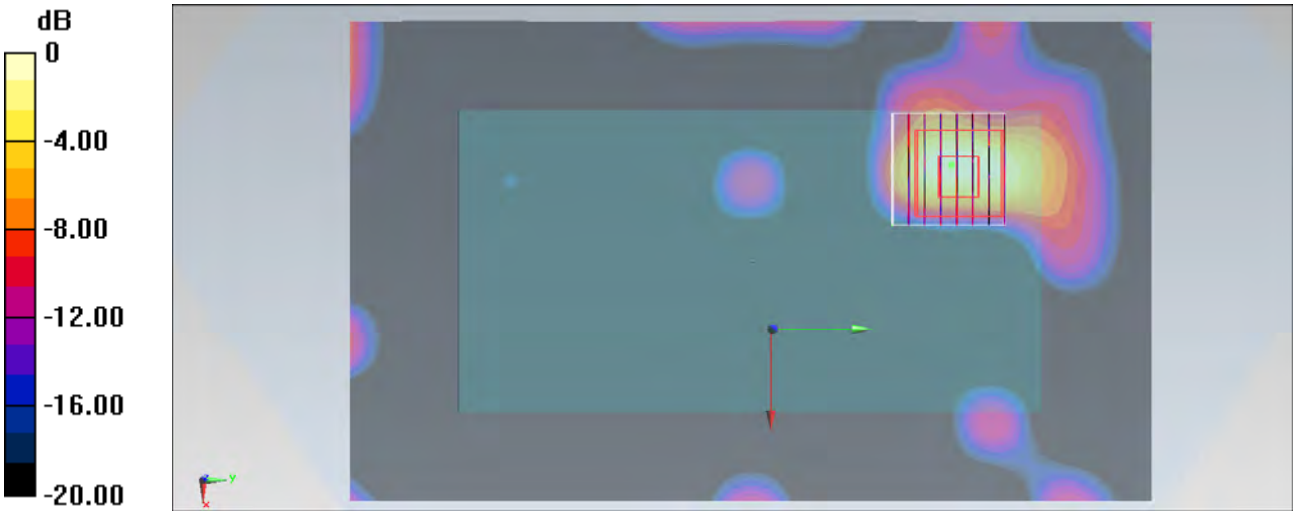
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5300 MHz; σ = 5.429 mho/m; ε_r = 48.56; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0502 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.898 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 0.104 mW/g
SAR(1 g) = 0.023 mW/g; SAR(10 g) = 0.00791 mW/g
Maximum value of SAR (measured) = 0.0521 mW/g



0 dB = 0.0521 mW/g = -25.66 dB mW/g

#54_WLAN5G_802.11a_Back_1cm_Ch60;Headset

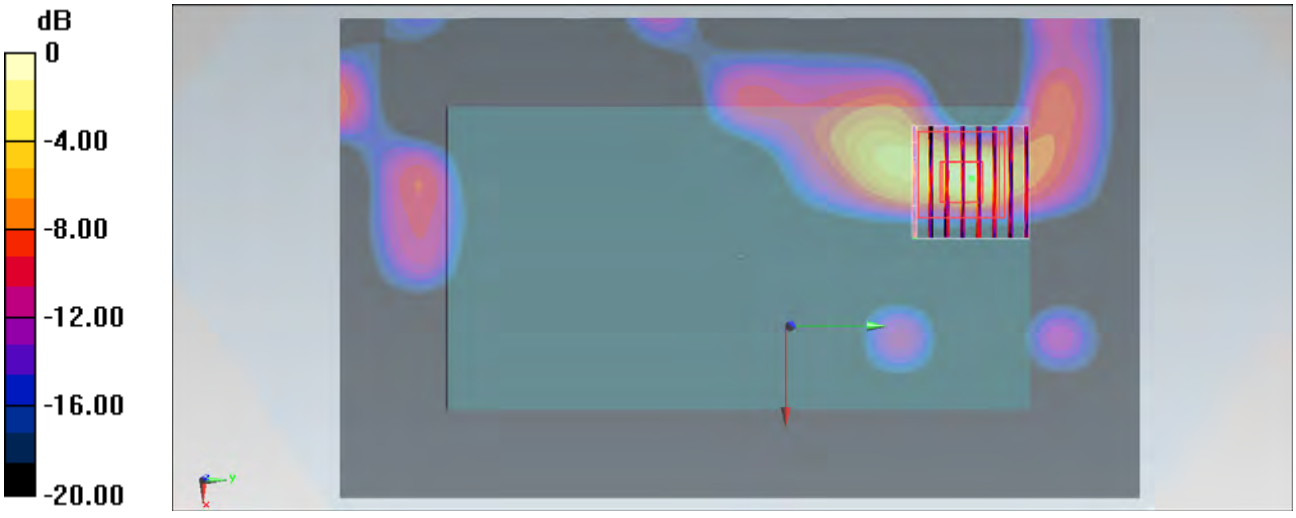
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5300 MHz; σ = 5.429 mho/m; ε_r = 48.56; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0401 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.615 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.095 mW/g
SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.00823 mW/g
Maximum value of SAR (measured) = 0.0508 mW/g



0 dB = 0.0508 mW/g = -25.88 dB mW/g

#54_WLAN5G_802.11a_Back_1cm_Ch60;Headset_2D

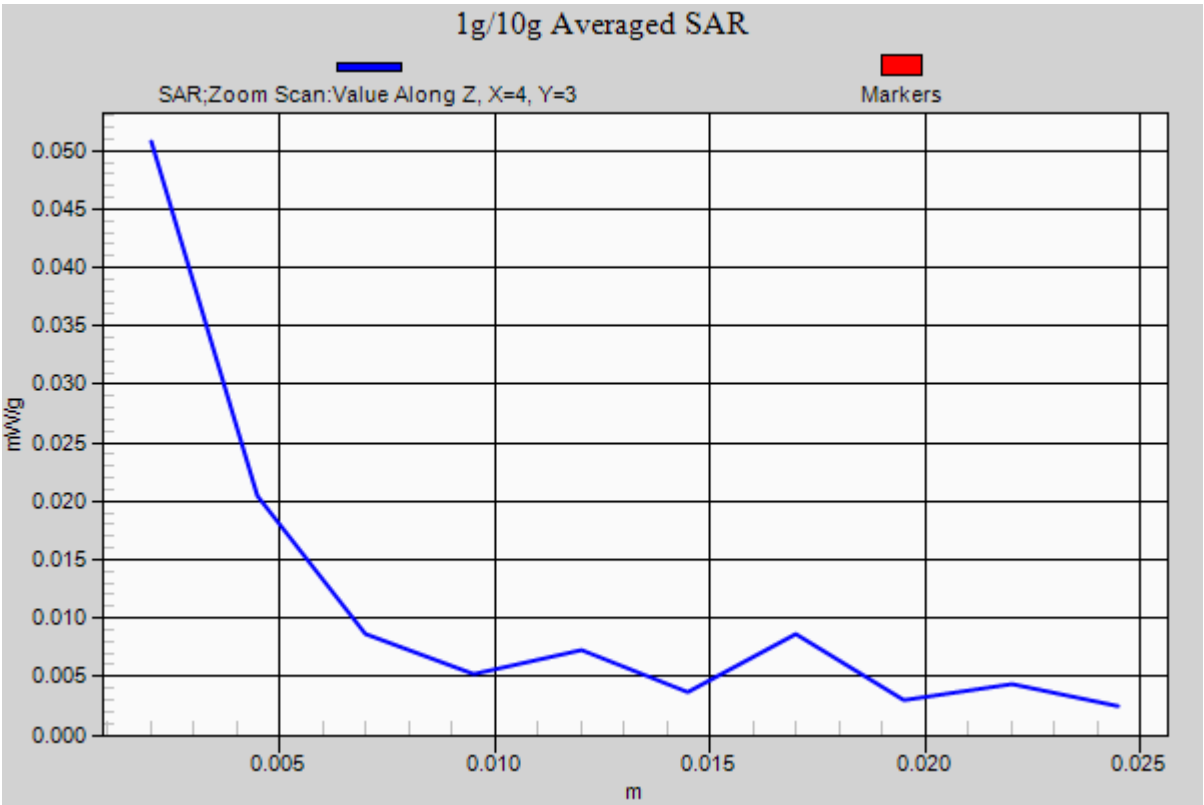
DUT: 2O0922

Communication System: 802.11a; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5300 MHz; σ = 5.429 mho/m; ε_r = 48.56; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.29, 4.29, 4.29); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch60/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0401 mW/g

Ch60/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.615 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.095 mW/g
SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.00823 mW/g
Maximum value of SAR (measured) = 0.0508 mW/g



#55_WLAN5G_802.11a_Front_1cm_Ch140

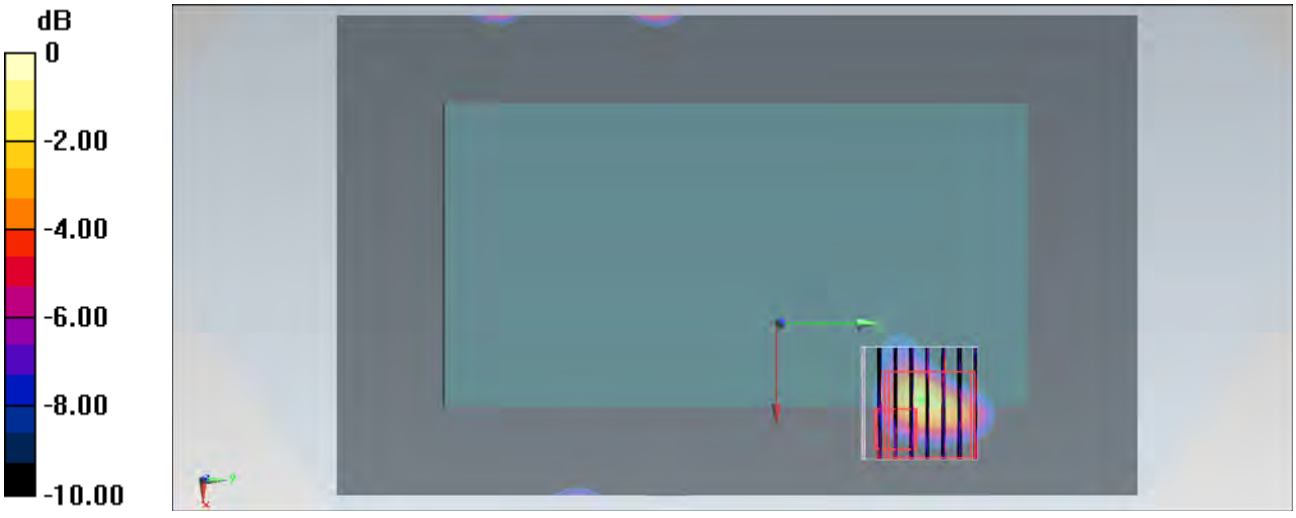
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5700 MHz; σ = 6.011 mho/m; ε_r = 47.685; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(3.75, 3.75, 3.75); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0133 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.801 V/m; Power Drift = -0.073 dB
Peak SAR (extrapolated) = 0.045 mW/g
SAR(1 g) = 0.000712 mW/g; SAR(10 g) = 0.000139 mW/g
Maximum value of SAR (measured) = 0.0184 mW/g



0 dB = 0.0184 mW/g = -34.70 dB mW/g

#56_WLAN5G_802.11a_Back_1cm_Ch140

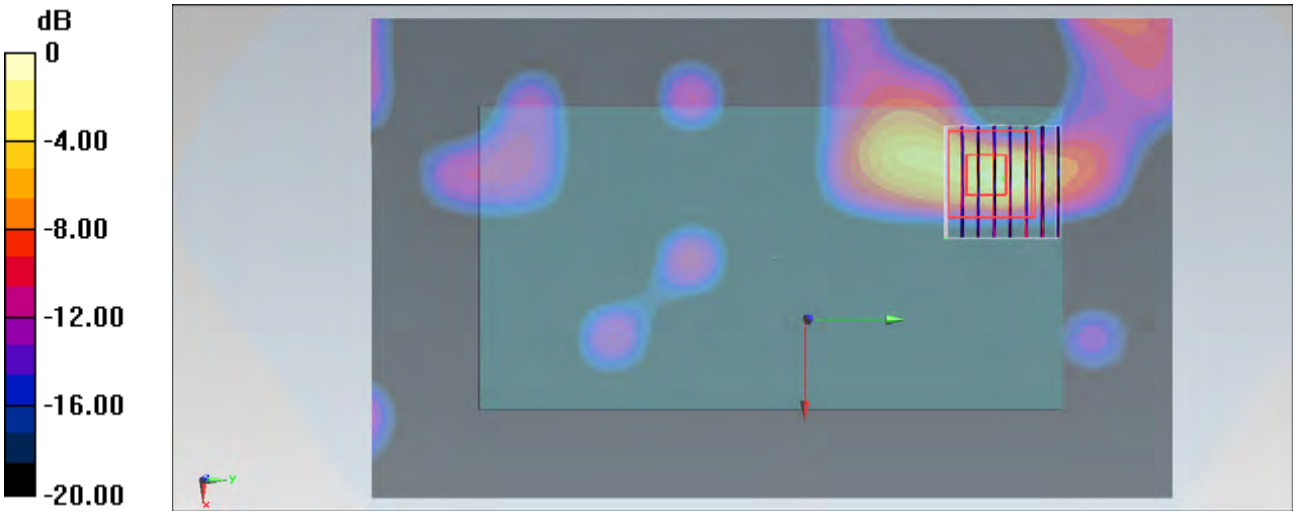
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5700 MHz; σ = 6.011 mho/m; ε_r = 47.685; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(3.75, 3.75, 3.75); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0548 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.015 dB
Peak SAR (extrapolated) = 0.137 mW/g
SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.0767 mW/g



0 dB = 0.0767 mW/g = -22.30 dB mW/g

#56_WLAN5G_802.11a_Back_1cm_Ch140_2D

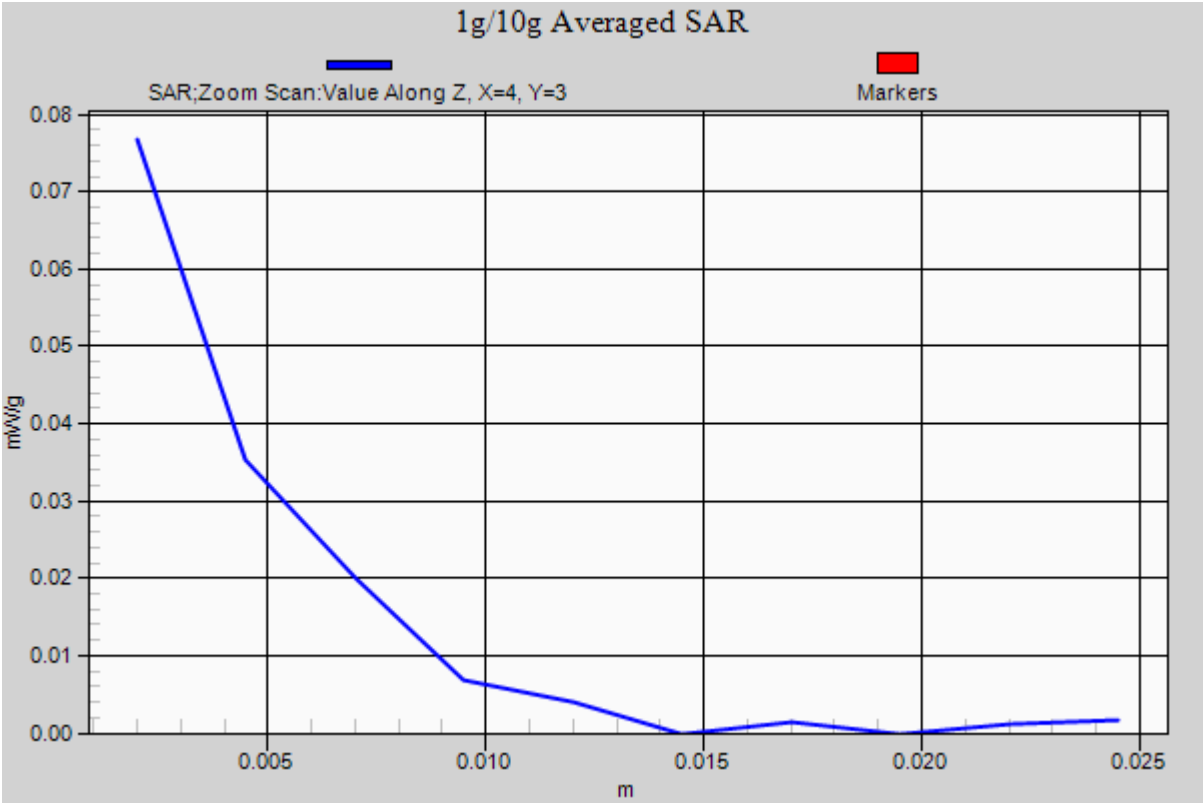
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5700 MHz; σ = 6.011 mho/m; ε_r = 47.685; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(3.75, 3.75, 3.75); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0548 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.015 dB
Peak SAR (extrapolated) = 0.137 mW/g
SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.0767 mW/g



#57_WLAN5G_802.11a_Back_1cm_Ch140;Headset

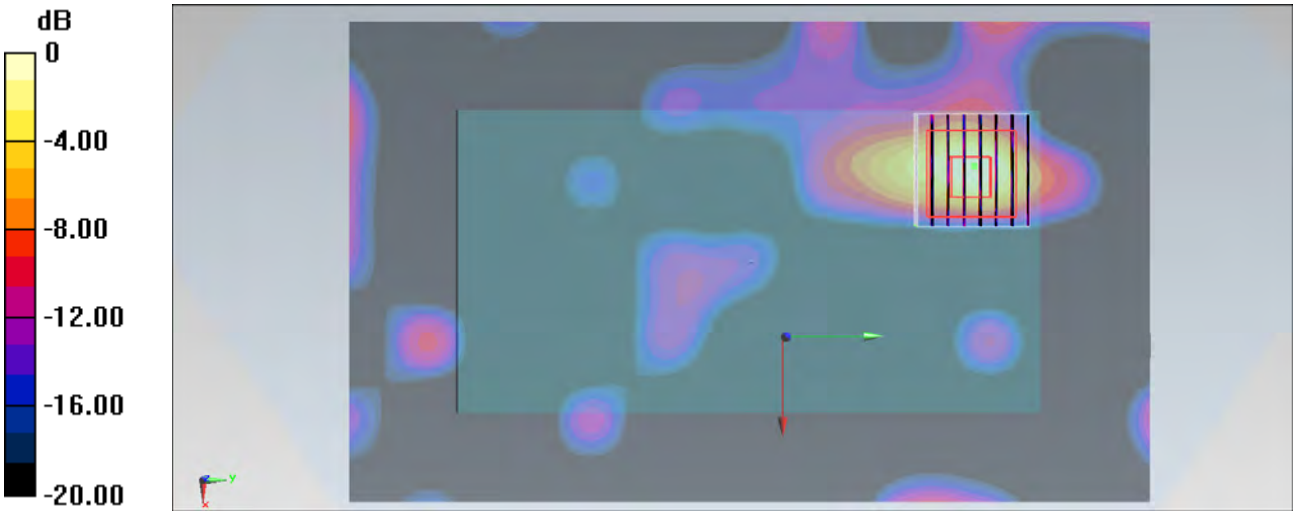
DUT: 2O0922

Communication System: 802.11a; Frequency: 5700 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5700 MHz; σ = 6.011 mho/m; ε_r = 47.685; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(3.75, 3.75, 3.75); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch140/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0793 mW/g

Ch140/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.127 mW/g
SAR(1 g) = 0.027 mW/g; SAR(10 g) = 0.00856 mW/g
Maximum value of SAR (measured) = 0.0831 mW/g



0 dB = 0.0831 mW/g = -21.61 dB mW/g

#58_WLAN5G_802.11a_Front_1cm_Ch149

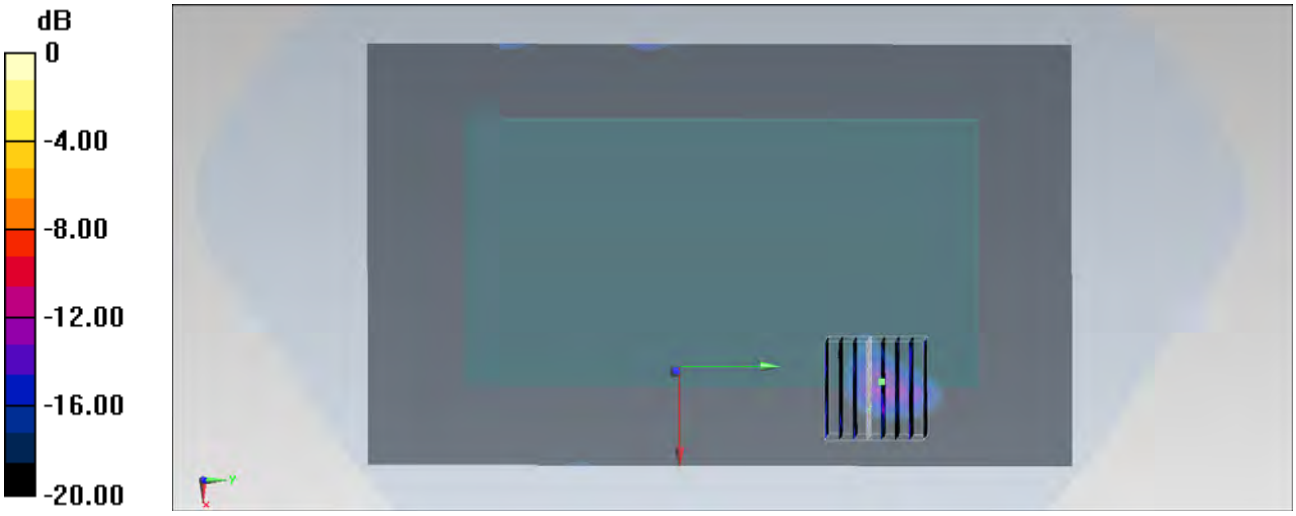
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5745 MHz; σ = 6.062 mho/m; ε_r = 47.59; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.06, 4.06, 4.06); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0136 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 0.807 V/m; Power Drift = -0.048 dB
Peak SAR (extrapolated) = 0 mW/g
SAR(1 g) = n.a. ; SAR(10 g) = n.a.
Maximum value of SAR (measured) = 0.225 mW/g



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

#59_WLAN5G_802.11a_Back_1cm_Ch149

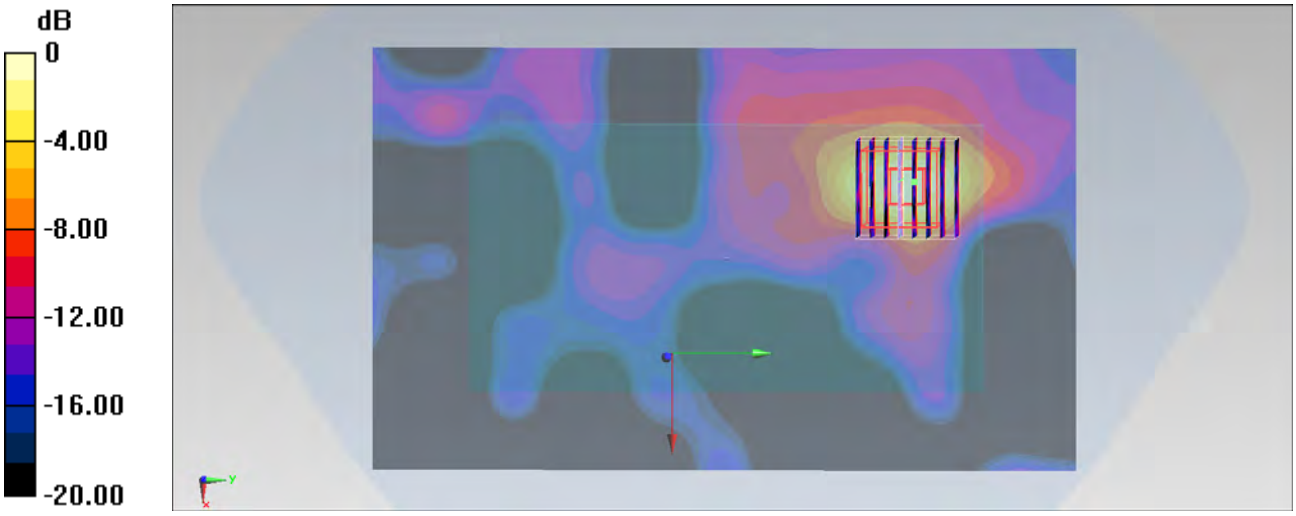
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5745 MHz; σ = 6.062 mho/m; ε_r = 47.59; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.06, 4.06, 4.06); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.135 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.306 V/m; Power Drift = -0.111 dB
Peak SAR (extrapolated) = 0.699 mW/g
SAR(1 g) = 0.077 mW/g; SAR(10 g) = 0.026 mW/g
Maximum value of SAR (measured) = 0.150 mW/g



0 dB = 0.150 mW/g = -16.48 dB mW/g

#60_WLAN5G_802.11a_Back_1cm_Ch149;Headset

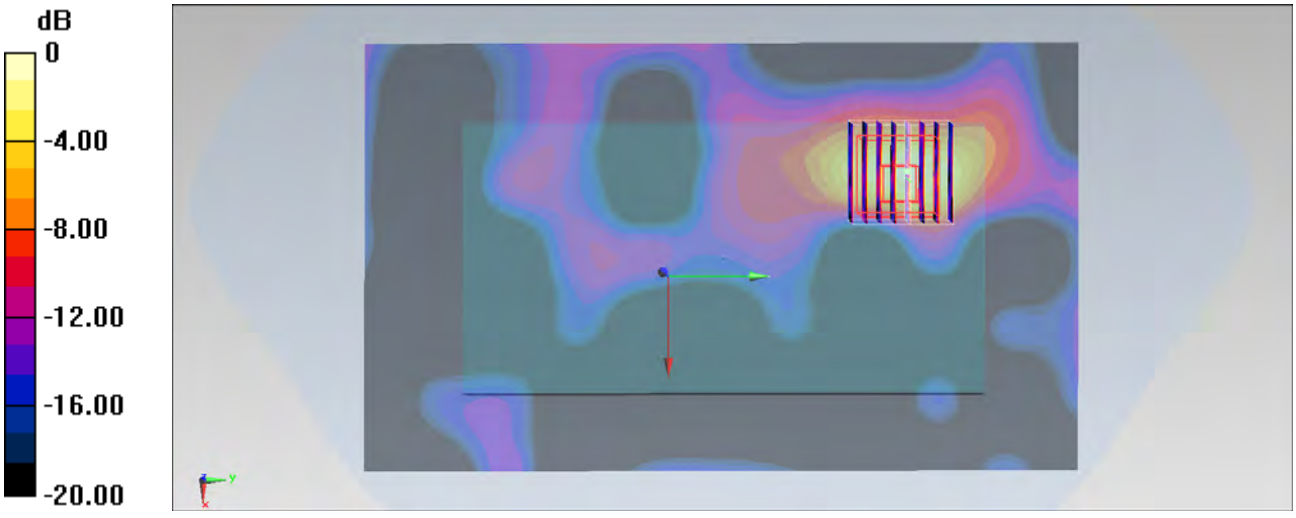
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used: f = 5745 MHz; σ = 6.062 mho/m; ε_r = 47.59; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.06, 4.06, 4.06); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.124 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.126 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 0.267 mW/g
SAR(1 g) = 0.076 mW/g; SAR(10 g) = 0.026 mW/g
Maximum value of SAR (measured) = 0.153 mW/g



0 dB = 0.153 mW/g = -16.31 dB mW/g

#60_WLAN5G_802.11a_Back_1cm_Ch149;Headset_2D

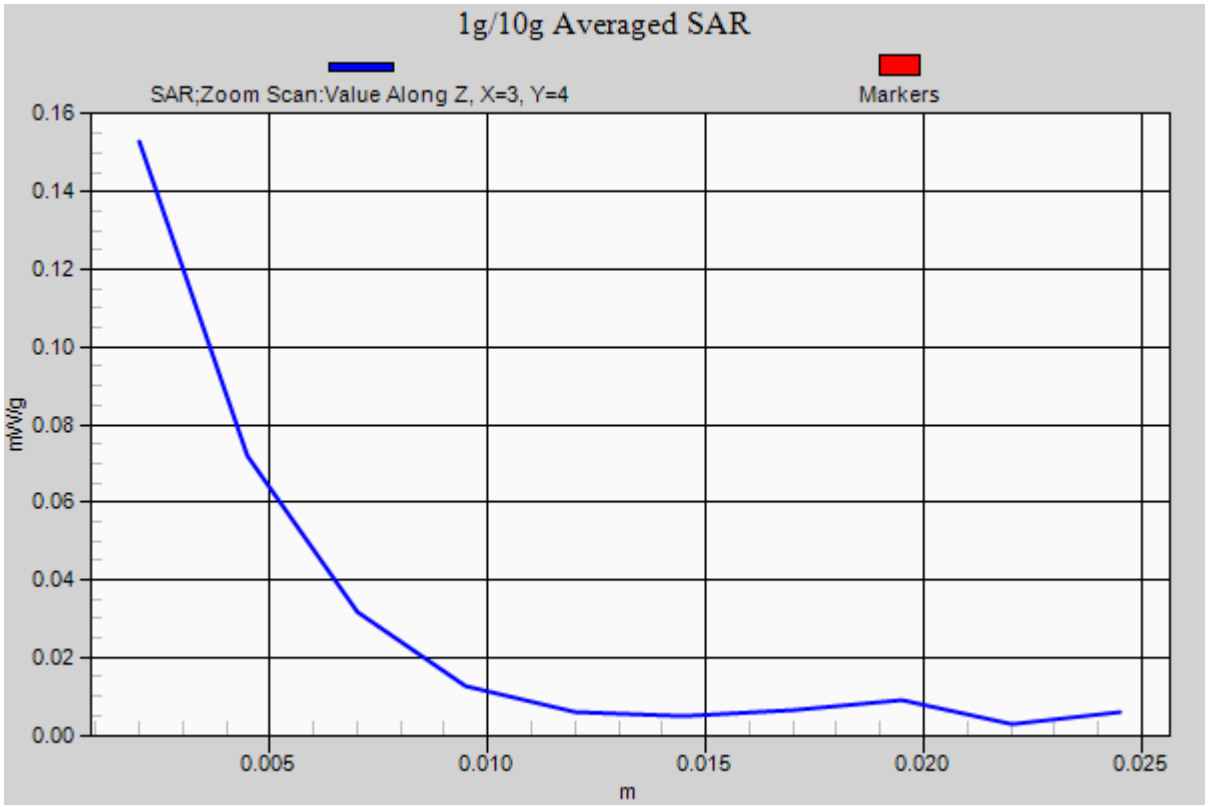
DUT: 2O0922

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_121026 Medium parameters used : f = 5745 MHz; σ = 6.062 mho/m; ε_r = 47.59; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3697; ConvF(4.06, 4.06, 4.06); Calibrated: 2012/9/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2012/5/3
- Phantom: SAM-Right; Type: QD 000 P40 C; Serial: TP-1383
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6477)

Ch149/Area Scan (121x201x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.124 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.126 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 0.267 mW/g
SAR(1 g) = 0.076 mW/g; SAR(10 g) = 0.026 mW/g
Maximum value of SAR (measured) = 0.153 mW/g



Appendix C. DASY Calibration Certificate

The DASY calibration certificates are shown as follows.

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

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

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

Accreditation No.: SCS 108

Client Sporton (Auden)

Certificate No: D1900V2-5d041_Mar10

CALIBRATION CERTIFICATE

Object D1900V2 - SN: 5d041

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

Calibration date: March 23, 2010

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV3	SN: 3205	26-Jun-09 (No. ES3-3205_Jun09)	Jun-10
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11

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

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

Issued: March 23, 2010

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.1 ± 6 %	1.45 mho/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 mW / g
SAR normalized	normalized to 1W	40.4 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**39.8 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.25 mW / g
SAR normalized	normalized to 1W	21.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**20.9 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.9 ± 6 %	1.58 mho/m ± 6 %
Body TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.4 mW / g
SAR normalized	normalized to 1W	41.6 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**40.0 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.57 mW / g
SAR normalized	normalized to 1W	22.3 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**22.1 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.9 Ω + 5.9 jΩ
Return Loss	- 24.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3 Ω + 5.7 jΩ
Return Loss	- 23.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.202 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 04, 2003

DASY5 Validation Report for Head TSL

Date/Time: 23.03.2010 12:03:30

Test Laboratory: SPEAG, Zurich, Switzerland

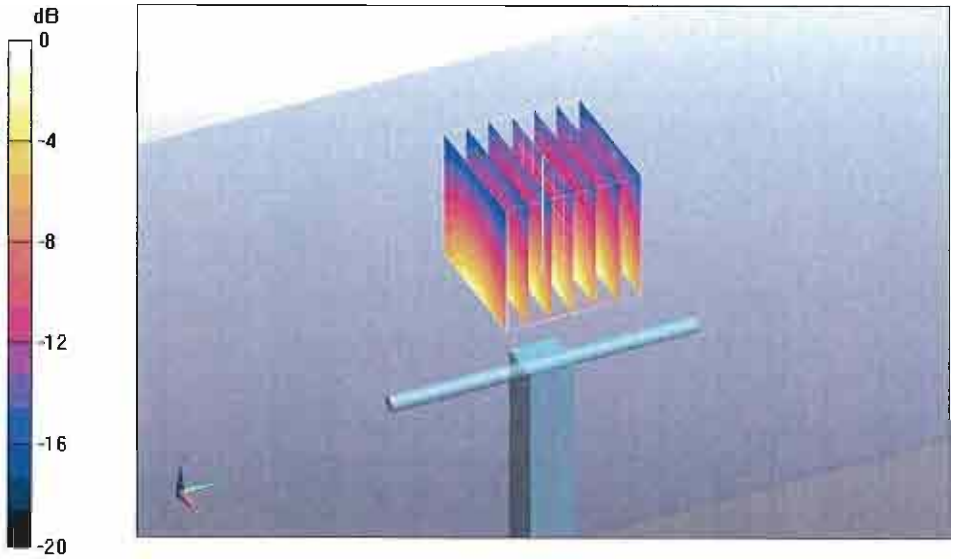
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d041

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL U11 BB
Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

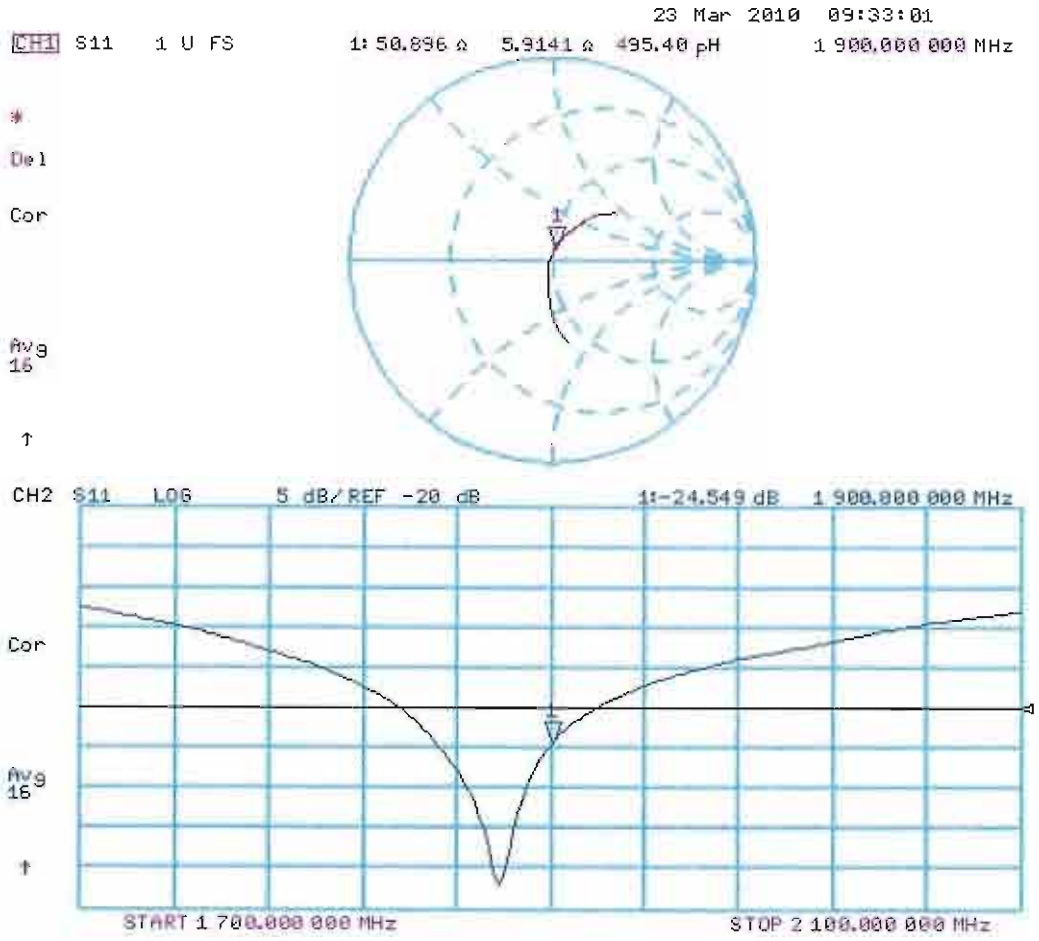
- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.8 V/m; Power Drift = 0.040 dB
Peak SAR (extrapolated) = 18.4 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.25 mW/g
Maximum value of SAR (measured) = 12.7 mW/g



0 dB = 12.7mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 17.03.2010 12:43:32

Test Laboratory: SPEAG, Zurich, Switzerland

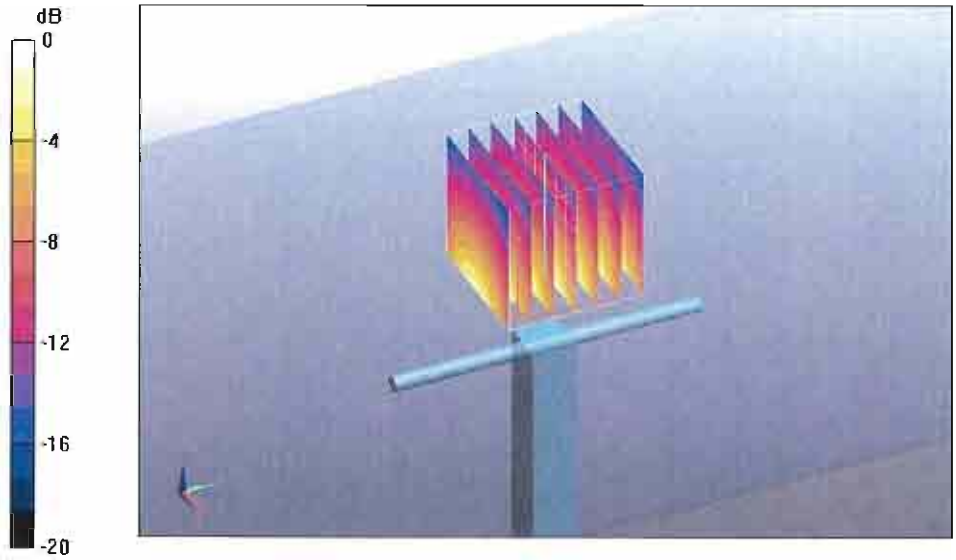
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d041

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL U11 BB
Medium parameters used: f = 1900 MHz; σ = 1.58 mho/m; ε_r = 55; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

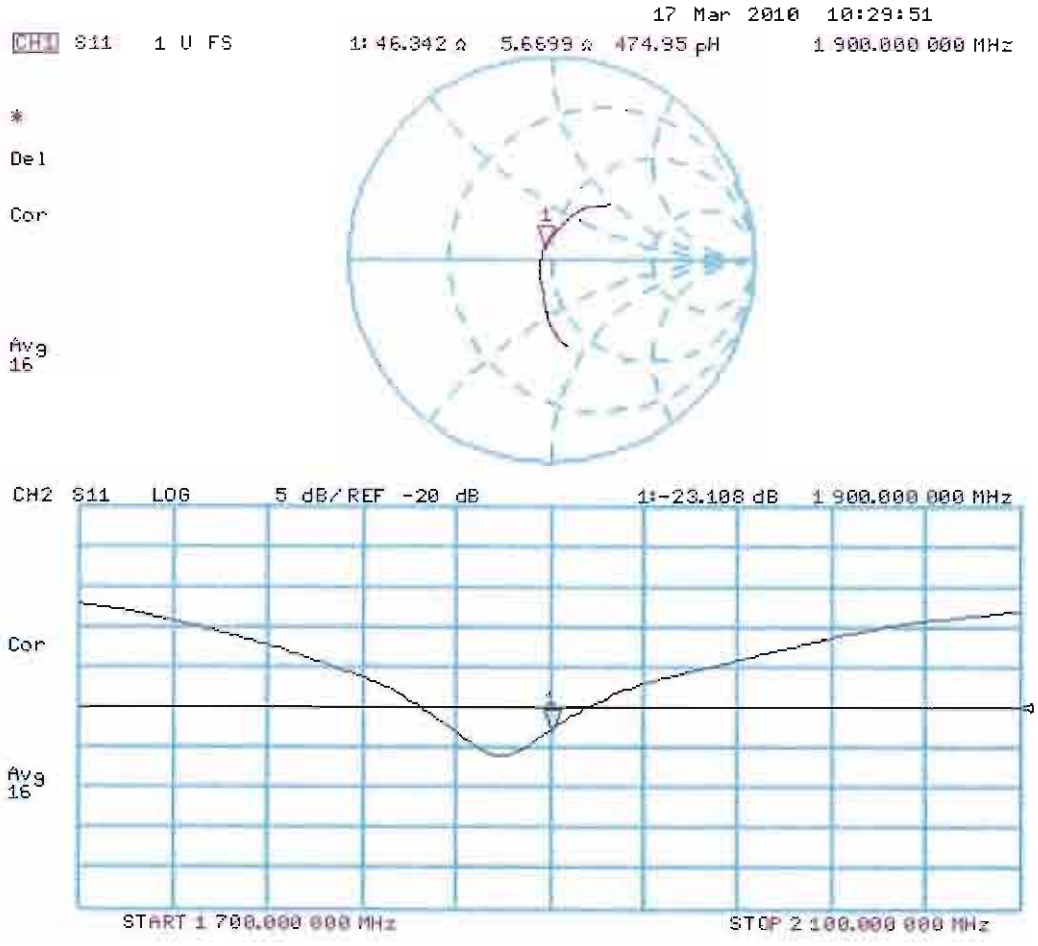
- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Pin250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.1 V/m; Power Drift = 0.017 dB
Peak SAR (extrapolated) = 17.5 W/kg
SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.57 mW/g
Maximum value of SAR (measured) = 13.1 mW/g



0 dB = 13.1mW/g

Impedance Measurement Plot for Body TSL



D1900V2, serial no. 5D041 Extended Dipole Calibrations

Referring to KDB 450824, if dipoles are verified in return loss (<-20dB, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

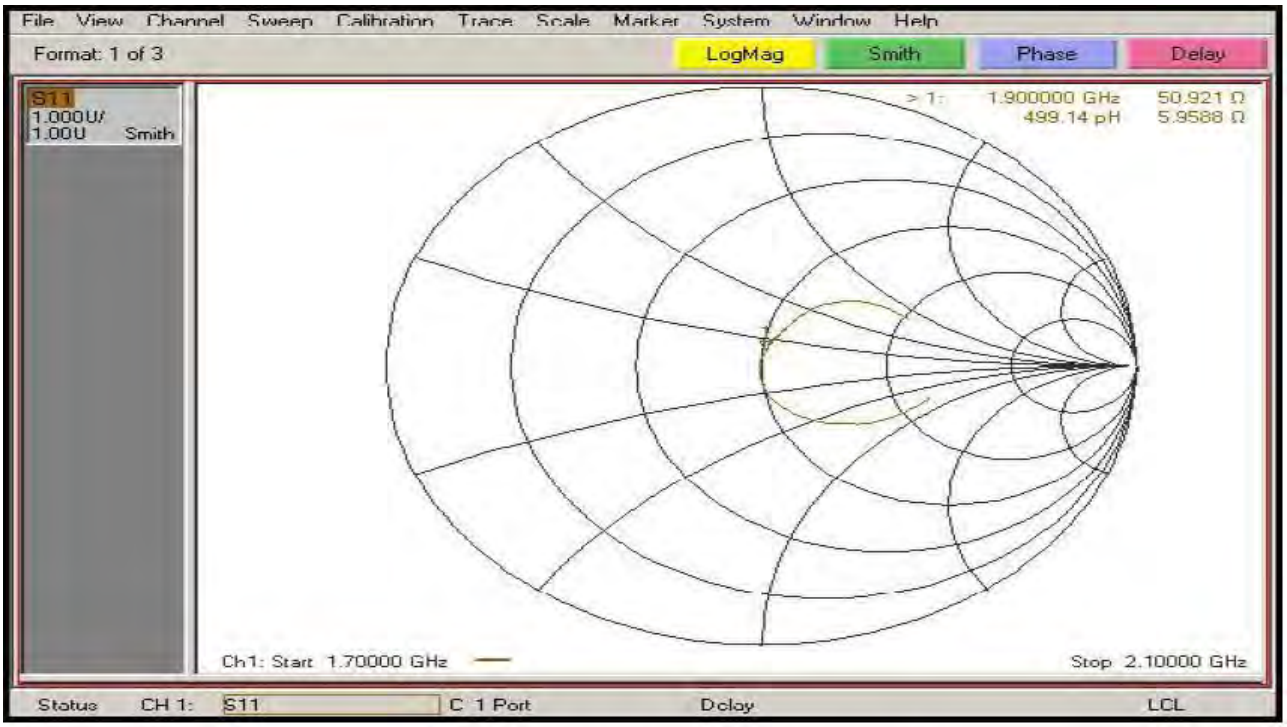
<Justification of the extended calibration>

D**1900**V2 – serial no. **5D041**												
	1900 Head						**1900** Body					
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
3.23.2010	-24.549		50.896		5.9141		-23.108		46.342		5.669	
3.23.2011	-24.489	0.244	50.921	-0.025	5.9588	-0.045	-23.022	0.372	48.808	-2.466	6.991	-1.322

Therefore the verification result should support extended calibration.

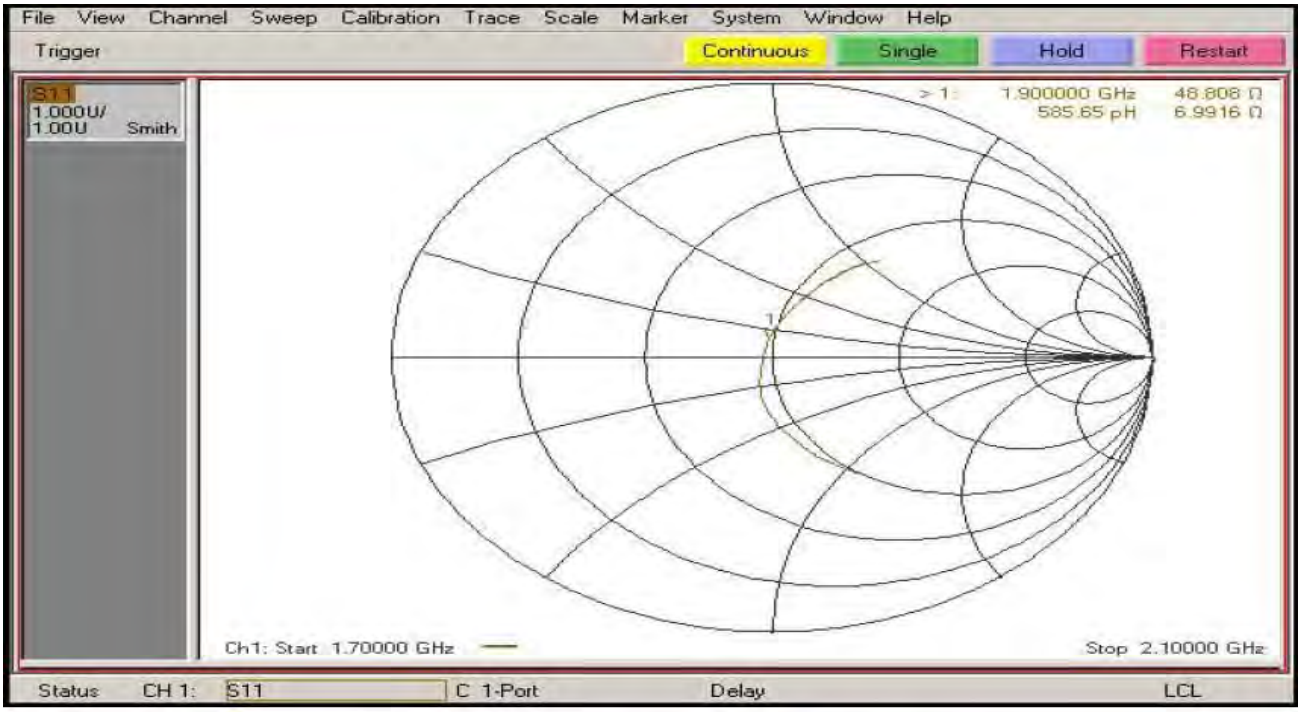
<Dipole Verification Data> - D1900 V2, serial no. 5D041 (Date of Measurement : 3.23.2011)

1900 MHz - Head



SPORTON INTERNATIONAL INC.
TEL : 886-3-327-3456
FAX : 886-3-328-4978

1900 MHz – Body



SPORTON INTERNATIONAL INC.
TEL : 886-3-327-3456
FAX : 886-3-328-4978

D1900V2, serial no. 5D041 Extended Dipole Calibrations

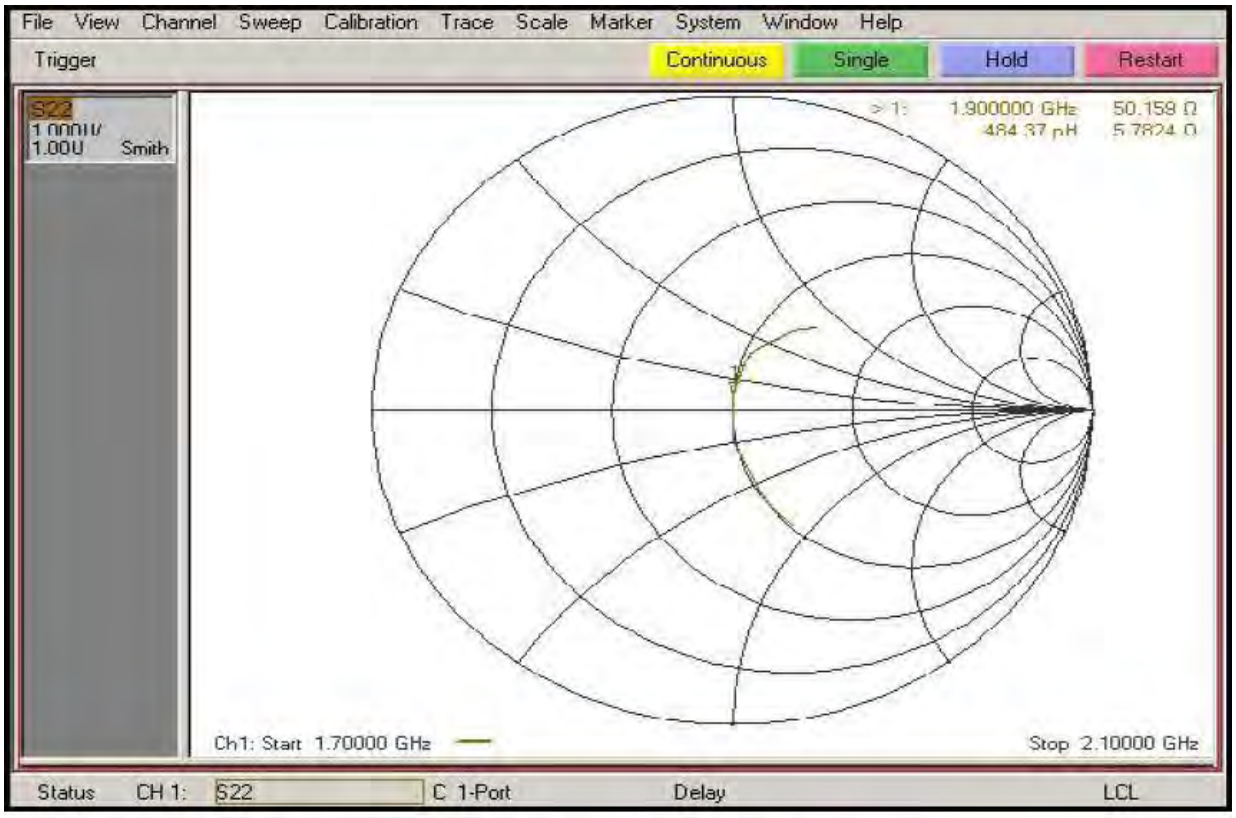
Referring to KDB 450824, if dipoles are verified in return loss (<-20dB, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

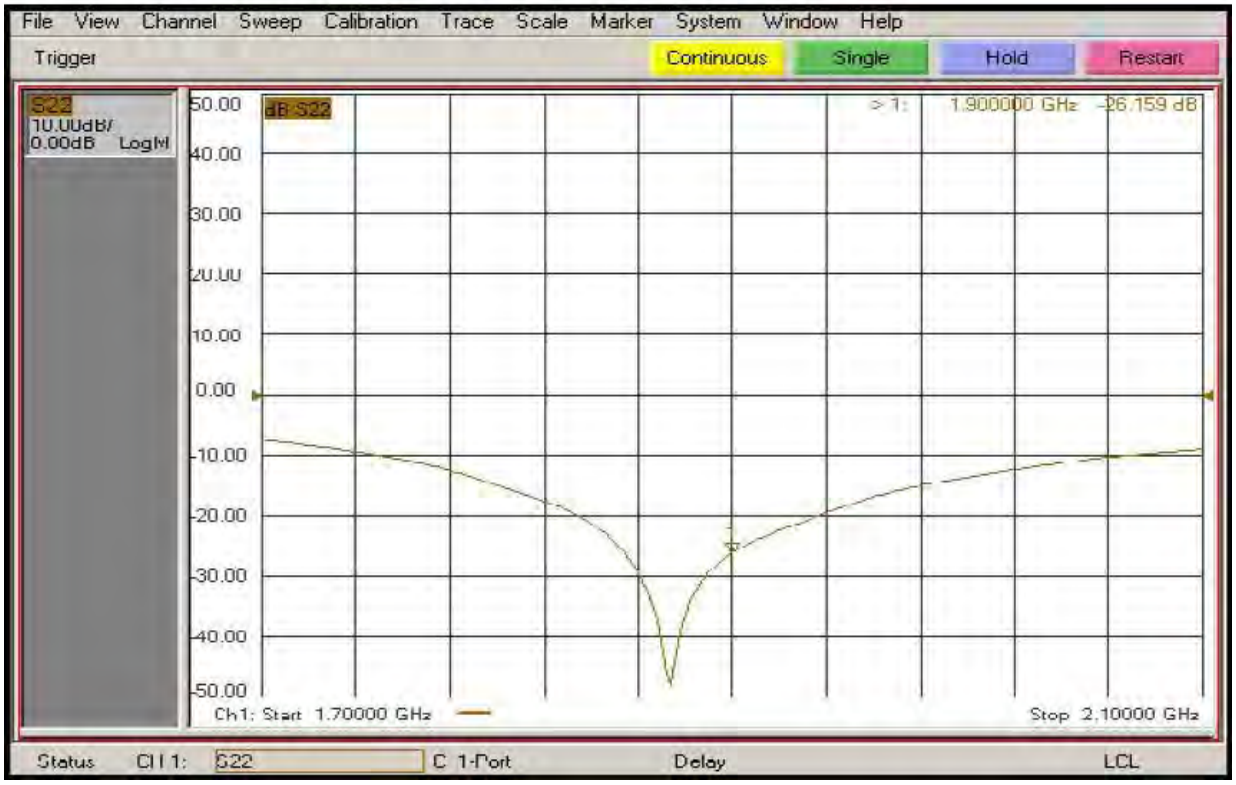
<Justification of the extended calibration>

D**1900**V2 – serial no. **5D041**												
	1900 Head						**1900** Body					
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
3.23.2010	-24.549		50.896		5.9141		-23.108		46.342		5.669	
3.23.2011	-24.489	0.244	50.921	-0.025	5.9588	-0.045	-23.022	0.372	48.808	-2.466	6.991	-1.322
3.23.2012	-26.159	6.56	50.159	0.737	5.7824	0.1317	-24.341	5.33	47.059	-0.707	4.8668	0.8022

<Dipole Verification Data> - D1900 V2, serial no. 5D041 (Date of Measurement : 3.23.2012)

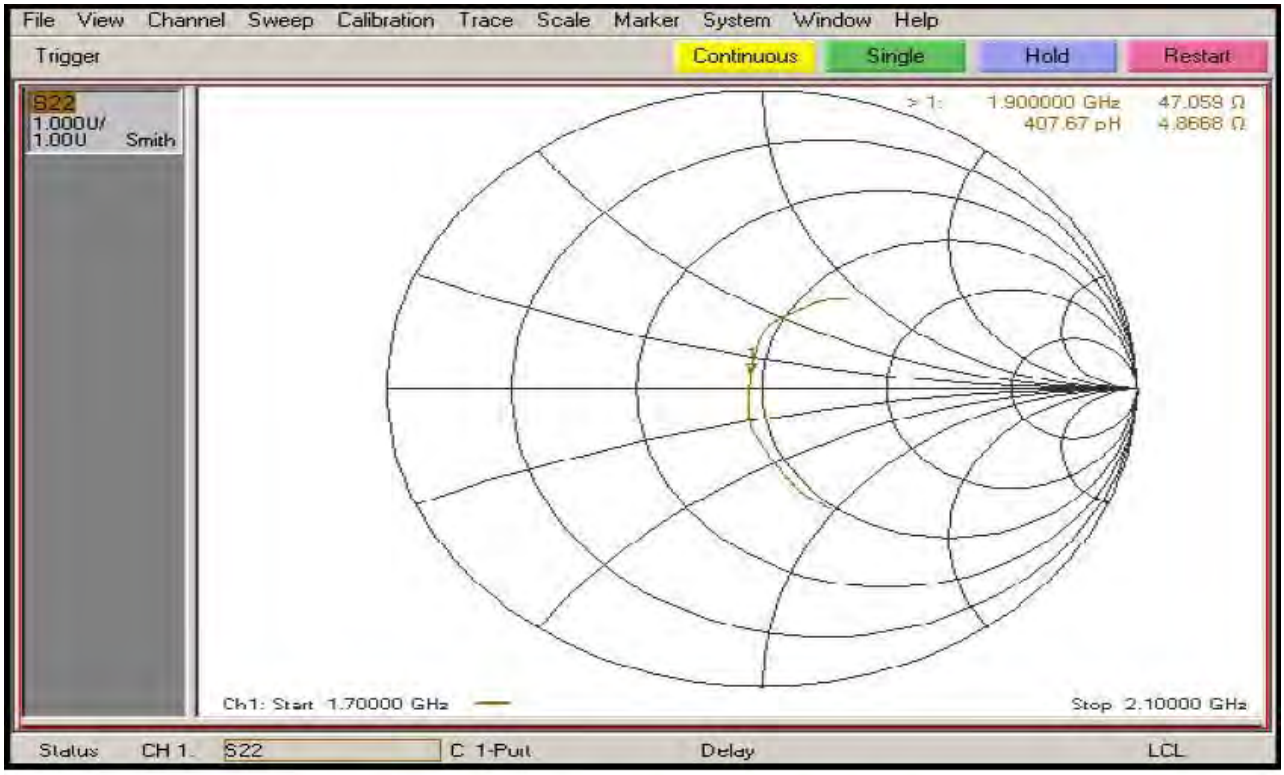
1900 MHz - Head





SPORTON INTERNATIONAL INC.
TEL : 886-3-327-3456
FAX : 886-3-328-4978

1900 MHz - Body



SPORTON INTERNATIONAL INC.
TEL : 886-3-327-3456
FAX : 886-3-328-4978

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

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

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

Accreditation No.: SCS 108

Client **Sporton (Auden)**

Certificate No: D2450V2-736_Jul11

CALIBRATION CERTIFICATE

Object: D2450V2 - SN: 736

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

Calibration date: July 25, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

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

Issued: July 25, 2011

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.85 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.9 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**54.8 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.44 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**25.6 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.7 ± 6 %	2.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.3 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**52.3 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.18 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**24.5 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.4 Ω + 1.5 jΩ
Return Loss	- 27.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.8 Ω + 2.8 jΩ
Return Loss	- 30.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.159 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	August 26, 2003

DASY5 Validation Report for Head TSL

Date: 25.07.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 736

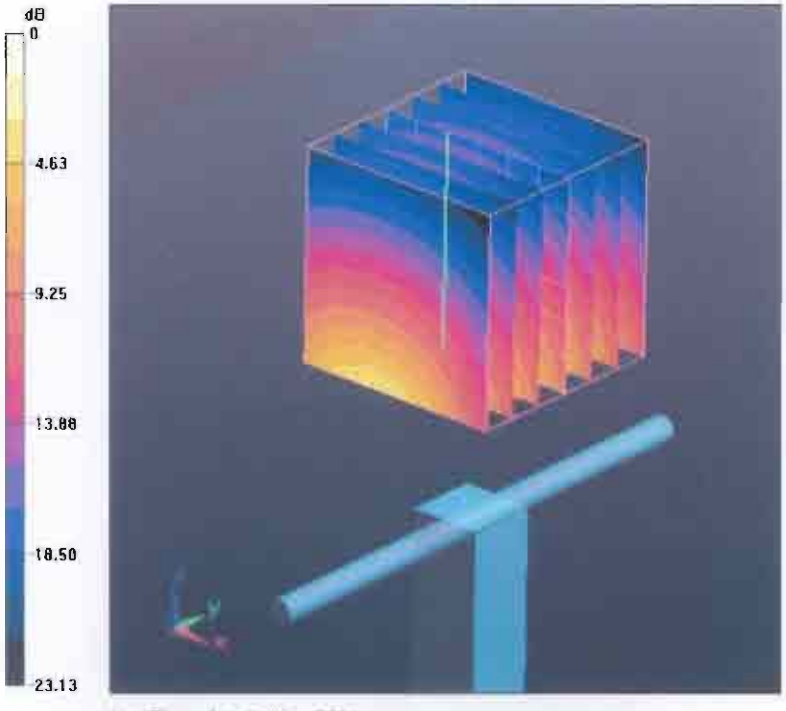
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.85 mho/m; ε_r = 38.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.45, 4.45, 4.45); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

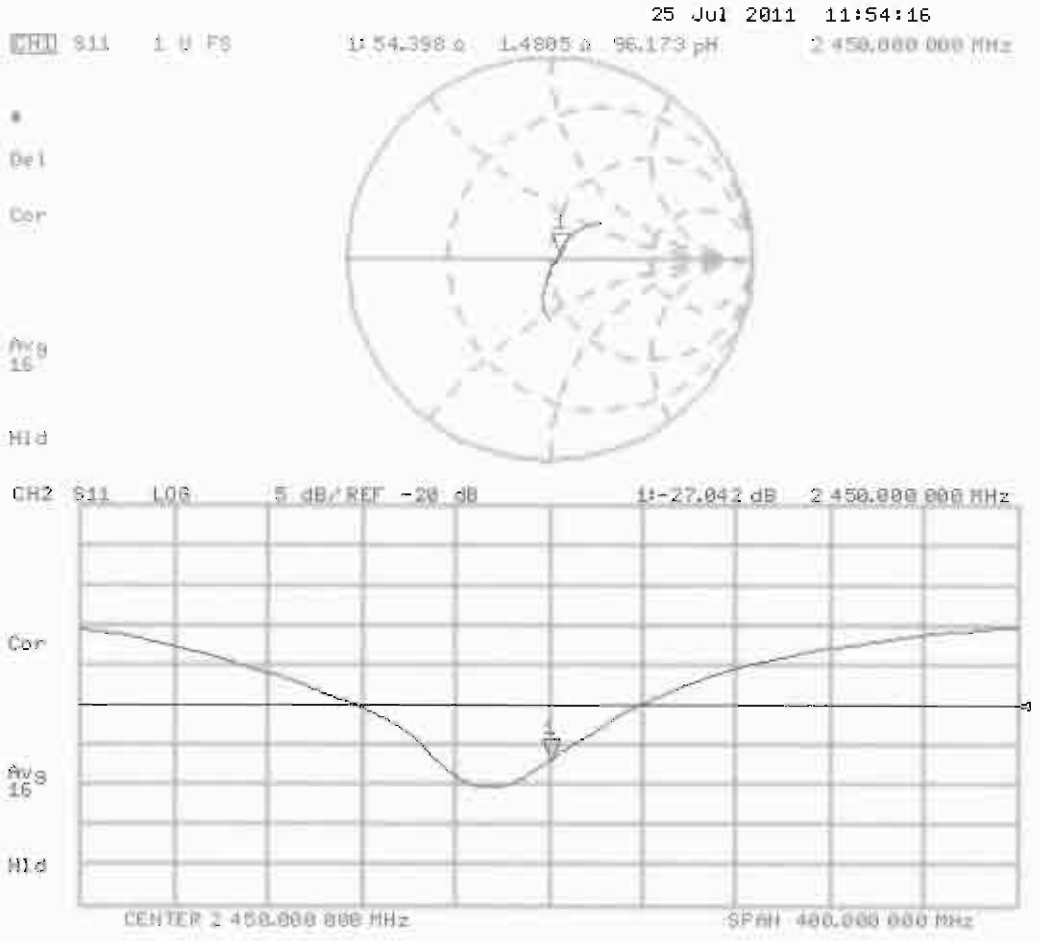
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.095 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 28.615 W/kg
SAR(1 g) = 13.9 mW/g; SAR(10 g) = 6.44 mW/g
Maximum value of SAR (measured) = 18.121 mW/g



0 dB = 18.120mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 25.07.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 736

Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

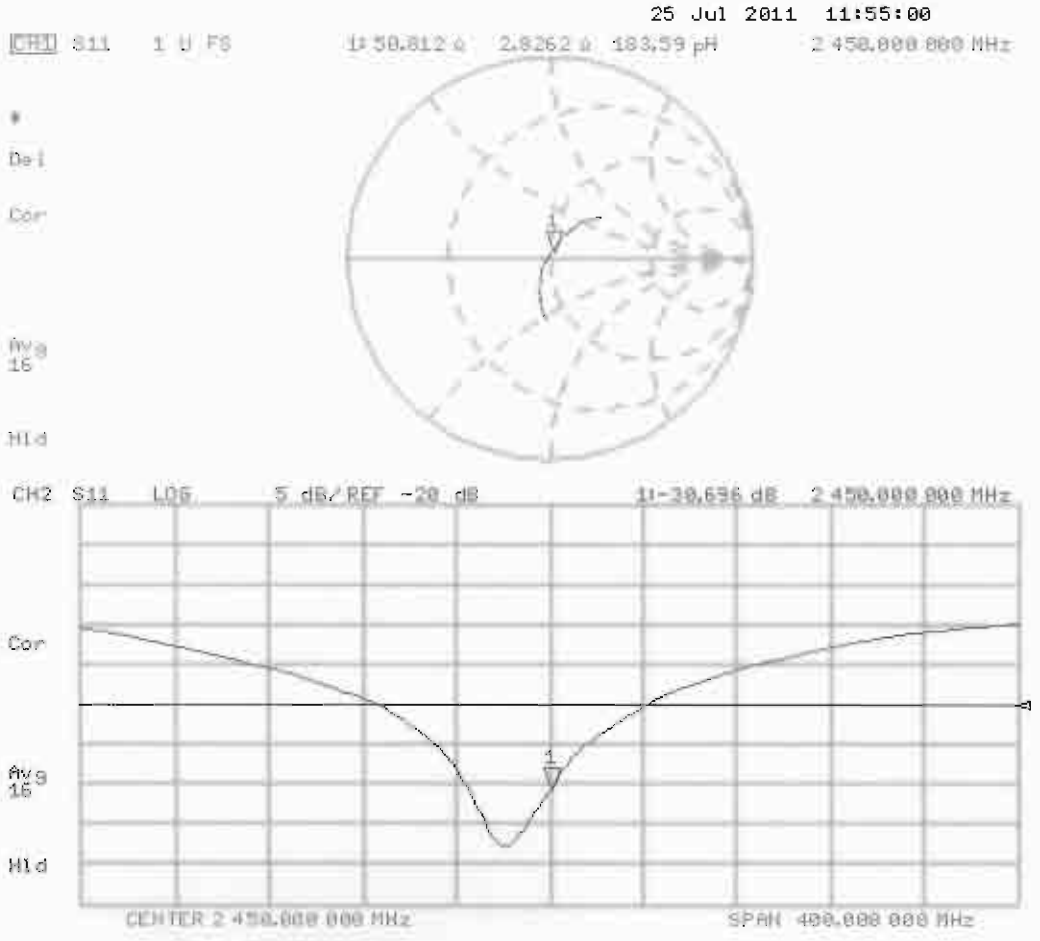
- Probe: ES3DV3 - SN3205; ConvF(4.26, 4.26, 4.26); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.550 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 27.432 W/kg
SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.18 mW/g
Maximum value of SAR (measured) = 17.294 mW/g

0 dB = 17.290mW/g

Impedance Measurement Plot for Body TSL



D2450V2, serial no. 736 Extended Dipole Calibrations

Referring to KDB 450824, if dipoles are verified in return loss (<-20dB, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

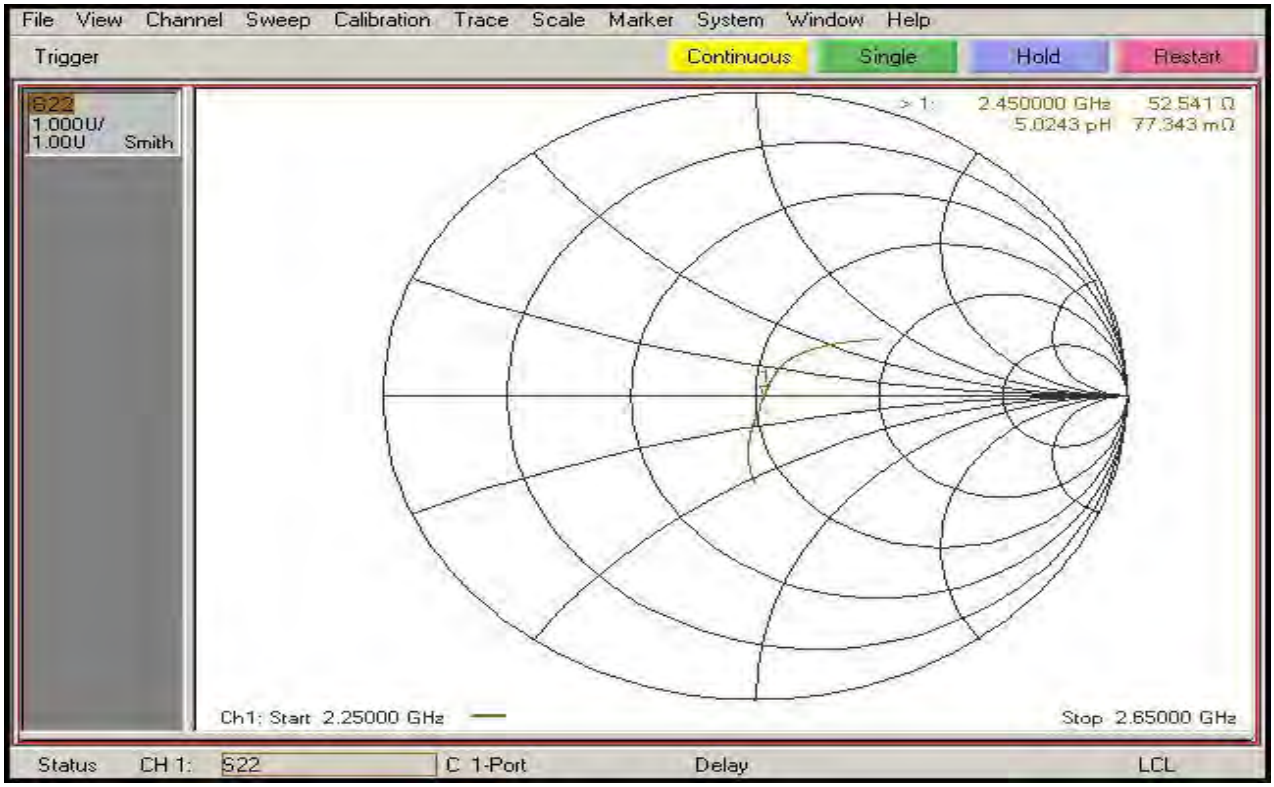
<Justification of the extended calibration>

D**2450**V2 – serial no. **736**												
	2450 Head						**2450** Body					
Date of Measurement	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)	Return-Loss (dB)	Delta (%)	Real Impedance (ohm)	Delta (ohm)	Imaginary Impedance (ohm)	Delta (ohm)
7.25.2011	-27.042		54.398		1.4805		-30.696		50.812		2.8262	
7.25.2012	-27.950	-3.365	52.541	1.857	0.77343	0.707	-31.781	-3.535	50.572	0.24	1.5953	1.2309

The return loss is < -20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

<Dipole Verification Data> - D2450 V2, serial no. 736 (Date of Measurement : 7.25.2012)

2450 MHz - Head

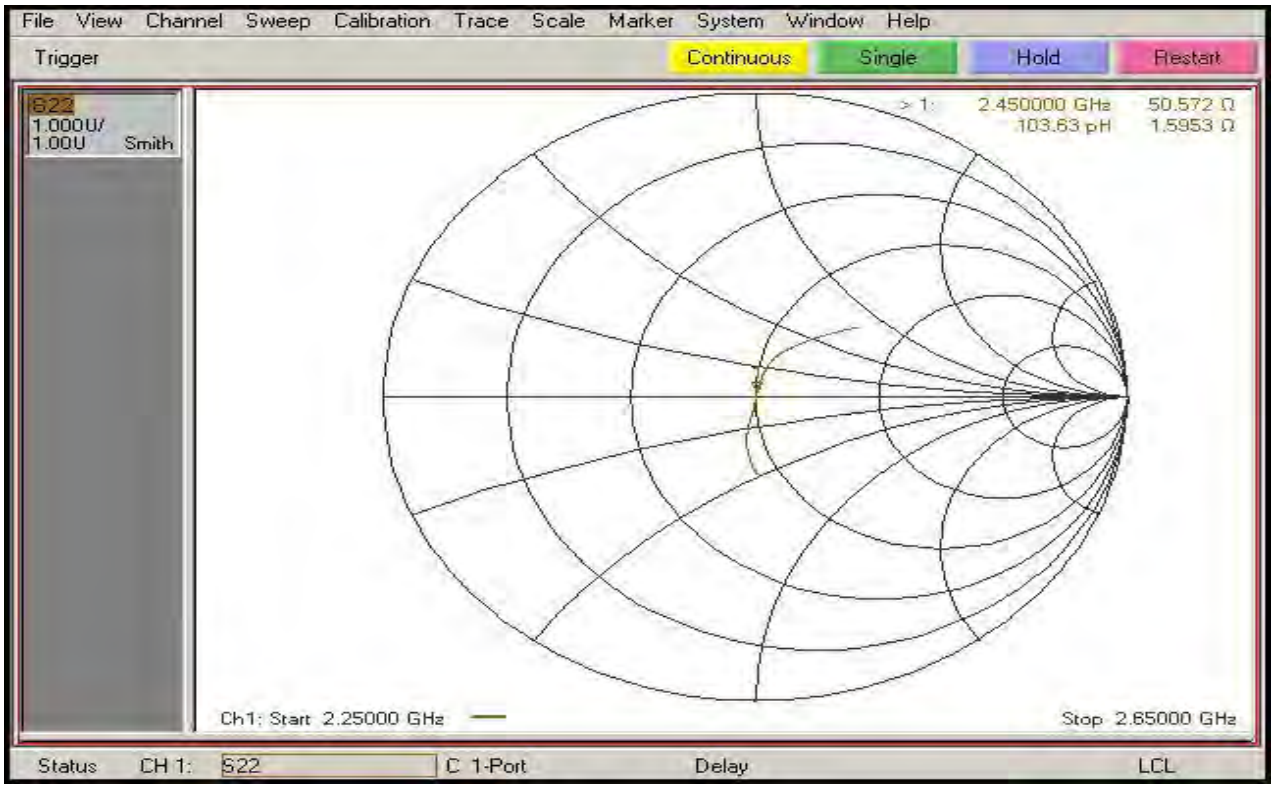


SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

2450 MHz – Body



SPORTON INTERNATIONAL INC.
TEL : 886-3-327-3456
FAX : 886-3-328-4978

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

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

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

Accreditation No.: **SCS 108**

Client **Sporton (Auden)**

Certificate No: **D5GHzV2-1006_Jan12**

CALIBRATION CERTIFICATE

Object: D5GHzV2 - SN: 1006

Calibration procedure(s): QA CAL-22.v1
Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date: January 18, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe EX3DV4	SN: 3503	30-Dec-11 (No. EX3-3503_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

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

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

Issued: January 18, 2012

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY5	V52.8.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5500 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.3 ± 6 %	4.60 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.91 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**79.2 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.26 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**22.6 mW /g ± 16.5 % (k=2)**

Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.8 ± 6 %	4.90 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.52 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**85.2 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.42 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**24.2 mW / g ± 16.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.3 ± 6 %	5.22 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.90 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**79.0 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.24 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**22.4 mW / g ± 16.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	49.2 ± 6 %	5.46 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.25 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**72.6 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.04 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.5 mW / g ± 17.6 % (k=2)**

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.7 ± 6 %	5.86 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.86 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**78.8 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.19 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.9 mW / g ± 17.6 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.2 ± 6 %	6.28 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.30 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**73.1 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.03 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.3 mW / g ± 17.6 % (k=2)**

Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	52.3 Ω - 9.6 jΩ
Return Loss	- 20.3 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	50.8 Ω - 2.8 jΩ
Return Loss	- 30.7 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	58.1 Ω + 1.6 jΩ
Return Loss	- 22.4 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	52.7 Ω - 9.1 jΩ
Return Loss	- 20.7 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	48.9 Ω + 0.1 jΩ
Return Loss	- 39.3 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	60.1 Ω - 1.1 jΩ
Return Loss	- 20.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.104 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	August 28, 2003

DASY5 Validation Report for Head TSL

Date: 17.01.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.6 mho/m; ε_r = 36.3; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 4.9 mho/m; ε_r = 35.8; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.22 mho/m; ε_r = 35.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

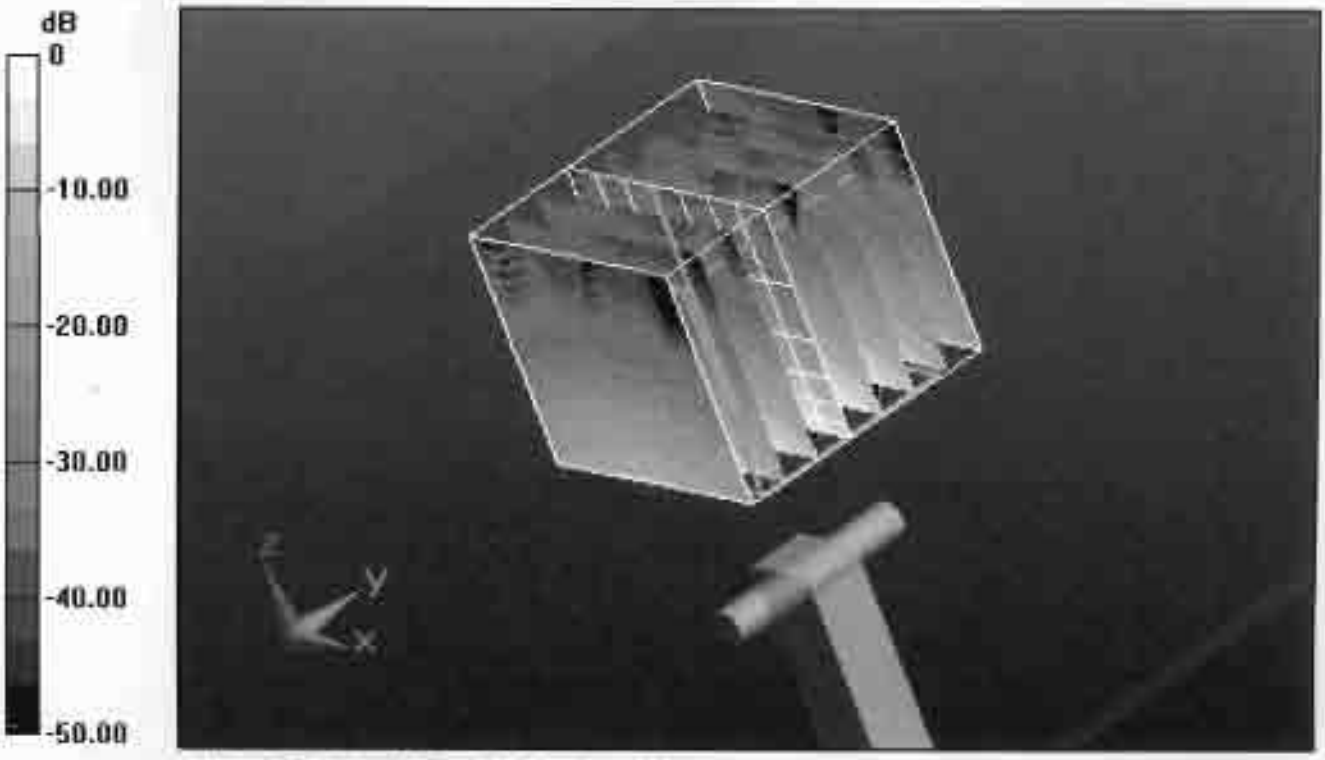
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.41, 5.41, 5.41), ConvF(4.91, 4.91, 4.91), ConvF(4.81, 4.81, 4.81); Calibrated: 30.12.2011
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.826 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 29.2570
SAR(1 g) = 7.91 mW/g; SAR(10 g) = 2.26 mW/g
Maximum value of SAR (measured) = 17.937 mW/g

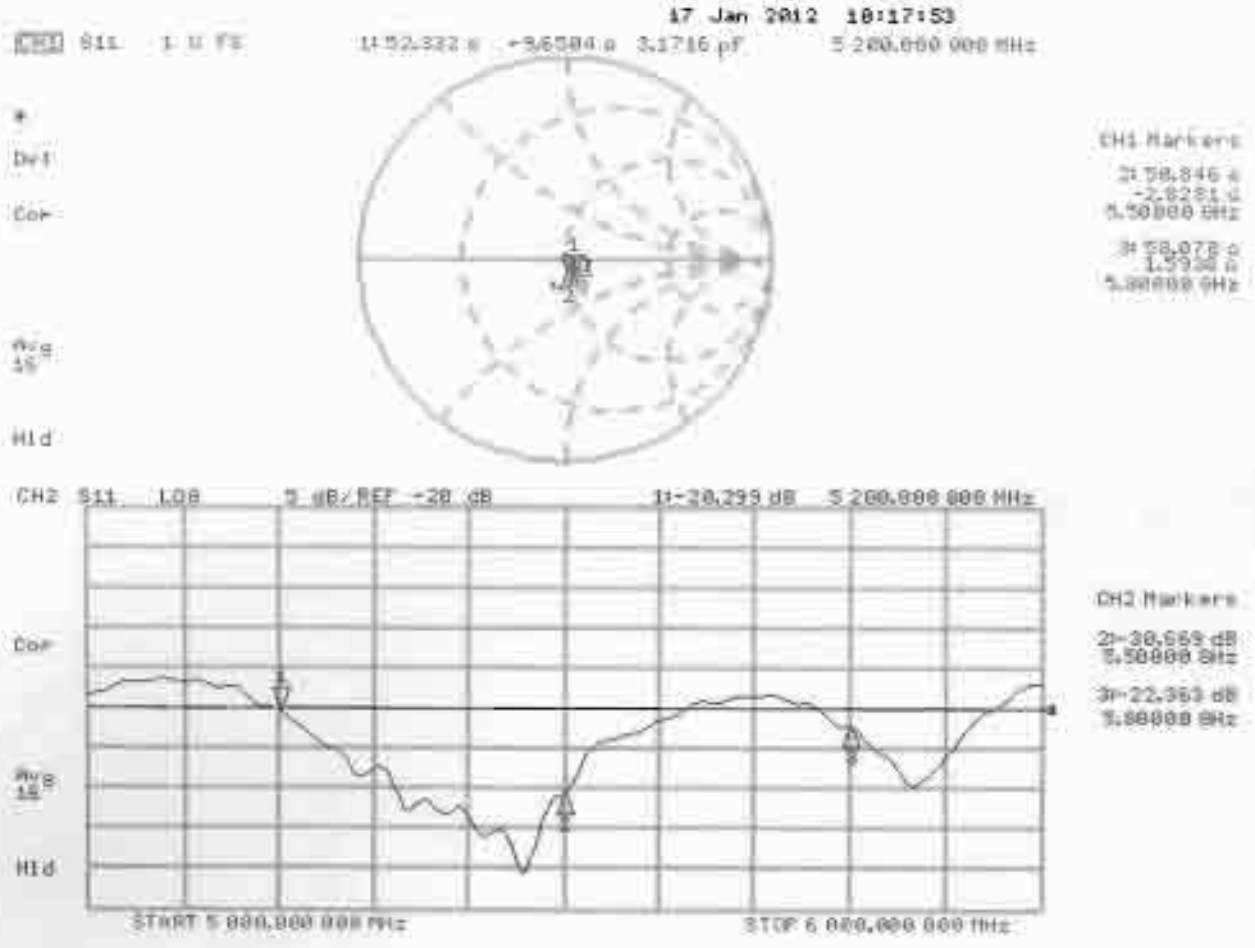
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.861 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 33.9880
SAR(1 g) = 8.52 mW/g; SAR(10 g) = 2.42 mW/g
Maximum value of SAR (measured) = 19.922 mW/g

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.585 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 33.3960
SAR(1 g) = 7.9 mW/g; SAR(10 g) = 2.24 mW/g
Maximum value of SAR (measured) = 18.961 mW/g



0 dB = 18.960mW/g = 25.56 dB mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 18.01.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.46 mho/m; ε_r = 49.2; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 5.86 mho/m; ε_r = 48.7; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.28 mho/m; ε_r = 48.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

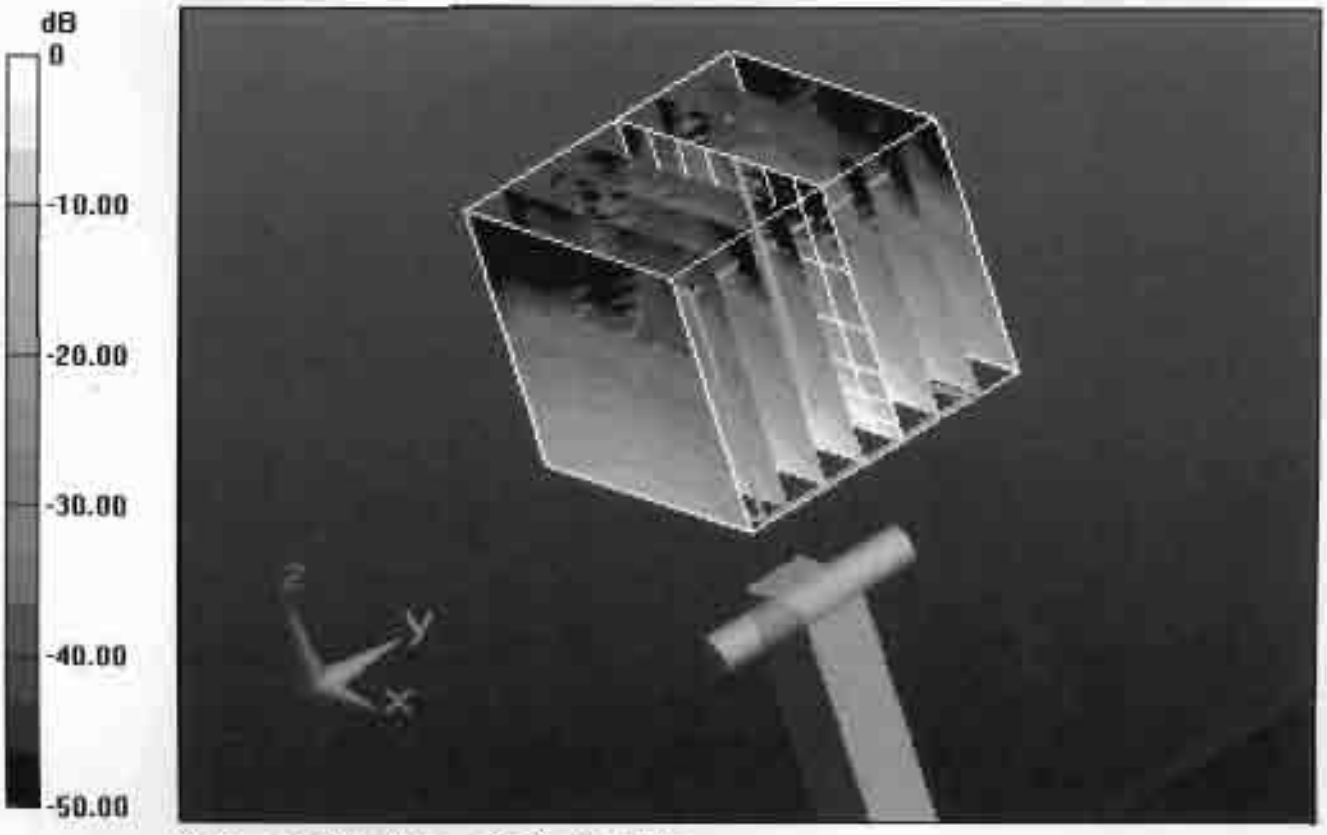
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.91, 4.91, 4.91), ConvF(4.43, 4.43, 4.43), ConvF(4.38, 4.38, 4.38); Calibrated: 30.12.2011
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 57.425 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 28.4360
SAR(1 g) = 7.25 mW/g; SAR(10 g) = 2.04 mW/g
Maximum value of SAR (measured) = 17.037 mW/g

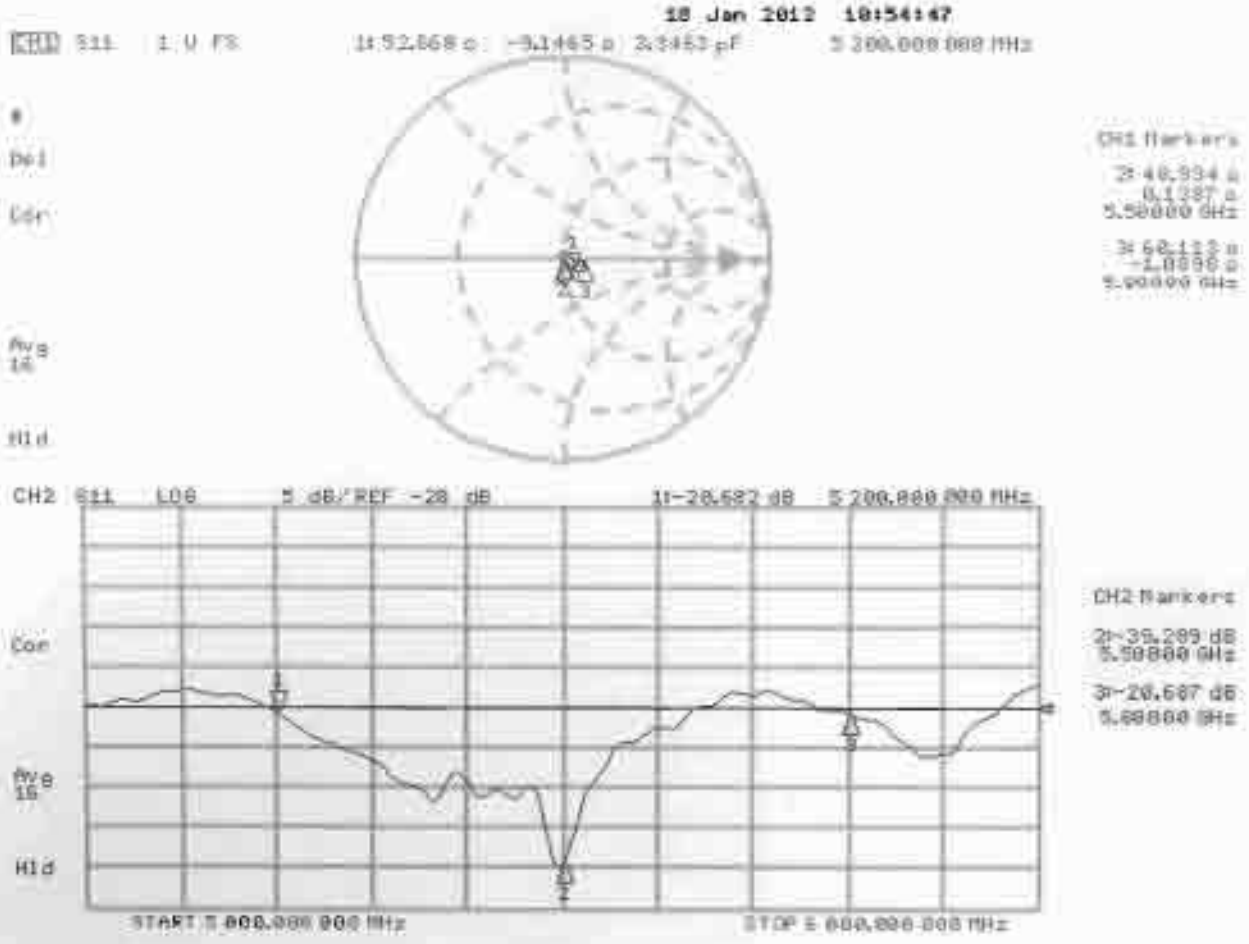
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 57.904 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 33.5870
SAR(1 g) = 7.86 mW/g; SAR(10 g) = 2.19 mW/g
Maximum value of SAR (measured) = 19.044 mW/g

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 54.193 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 33.8240
SAR(1 g) = 7.3 mW/g; SAR(10 g) = 2.03 mW/g
Maximum value of SAR (measured) = 18.191 mW/g



0 dB = 18.190mW/g = 25.20 dB mW/g

Impedance Measurement Plot for Body TSL



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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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S Swiss Calibration Service

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

Accreditation No.: SCS 108

Client Sporton (Auden)

Certificate No: DAE4-1279_May12

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BJ - SN: 1279
Calibration procedure(s)	QA CAL-06.v24 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	May 03, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-11 (No:11450)	Sep-12
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Calibrator Box V2.1	SE UWS 053 AA 1001	05-Jan-12 (in house check)	In house check: Jan-13

	Name	Function	Signature
Calibrated by:	Dominique Steffen	Technician	
Approved by:	Fin Bomholt	R&D Director	

Issued: May 3, 2012

Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.....+3mV

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

Calibration Factors	X	Y	Z
High Range	405.179 ± 0.1% (k=2)	404.974 ± 0.1% (k=2)	404.316 ± 0.1% (k=2)
Low Range	3.98658 ± 0.7% (k=2)	3.98731 ± 0.7% (k=2)	3.99734 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	117.0 ° ± 1 °

Appendix

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199991.33	-3.98	-0.00
Channel X	+ Input	20000.42	1.05	0.01
Channel X	- Input	-20000.99	0.62	-0.00
Channel Y	+ Input	199992.57	-2.48	-0.00
Channel Y	+ Input	20000.37	1.13	0.01
Channel Y	- Input	-20001.77	-0.06	0.00
Channel Z	+ Input	199995.61	0.39	0.00
Channel Z	+ Input	19999.27	0.00	0.00
Channel Z	- Input	-20002.85	-1.22	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	1999.48	-0.32	-0.02
Channel X	+ Input	200.41	0.23	0.11
Channel X	- Input	-199.28	0.50	-0.25
Channel Y	+ Input	2000.24	0.55	0.03
Channel Y	+ Input	200.58	0.44	0.22
Channel Y	- Input	-199.75	-0.01	0.00
Channel Z	+ Input	1998.83	-0.82	-0.04
Channel Z	+ Input	198.55	-1.51	-0.75
Channel Z	- Input	-201.15	-1.30	0.65

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	17.08	15.93
	- 200	-15.69	-16.88
Channel Y	200	8.48	8.38
	- 200	-9.22	-9.58
Channel Z	200	-0.67	-0.84
	- 200	-0.62	-0.65

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	3.17	-3.15
Channel Y	200	7.76	-	3.57
Channel Z	200	8.98	6.44	-

4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	15658	14778
Channel Y	16426	15731
Channel Z	15918	15544

5. Input Offset Measurement

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

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.78	-0.61	2.27	0.58
Channel Y	0.16	-1.45	2.45	0.76
Channel Z	-0.63	-2.21	0.54	0.54

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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

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Accreditation No.: SCS 108

Client Amphenol (Auden)

Certificate No: DAE3-495_Apr12

CALIBRATION CERTIFICATE

Object	DAE3 - SD 000 D03 AD - SN: 495
Calibration procedure(s)	QA CAL-06.v24 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	April 23, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-11 (No:11450)	Sep-12
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Calibrator Box V2.1	SE UWS 053 AA 1001	05-Jan-12 (in house check)	In house check: Jan-13

	Name	Function	Signature
Calibrated by:	Eric Hainfeld	Technician	
Approved by:	Fin Bomholt	R&D Director	

Issued: April 23, 2012

Glossary

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

Methods Applied and Interpretation of Parameters

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

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.....+3mV

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

Calibration Factors	X	Y	Z
High Range	404.352 ± 0.1% (k=2)	405.327 ± 0.1% (k=2)	405.654 ± 0.1% (k=2)
Low Range	3.95463 ± 0.7% (k=2)	3.99214 ± 0.7% (k=2)	3.96716 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	147.5 ° ± 1 °

Appendix

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199997.08	-0.41	-0.00
Channel X	+ Input	20003.46	2.34	0.01
Channel X	- Input	-19997.49	2.47	-0.01
Channel Y	+ Input	199999.33	2.06	0.00
Channel Y	+ Input	20001.56	0.65	0.00
Channel Y	- Input	-19999.50	0.75	-0.00
Channel Z	+ Input	199996.88	-0.61	-0.00
Channel Z	+ Input	20002.89	1.96	0.01
Channel Z	- Input	-19998.27	1.91	-0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2003.09	1.65	0.08
Channel X	+ Input	202.47	0.71	0.35
Channel X	- Input	-197.92	0.18	-0.09
Channel Y	+ Input	2001.21	0.06	0.00
Channel Y	+ Input	201.12	-0.45	-0.22
Channel Y	- Input	-199.11	-0.70	0.35
Channel Z	+ Input	2002.44	1.11	0.06
Channel Z	+ Input	200.50	-1.13	-0.56
Channel Z	- Input	-198.21	-0.02	0.01

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	3.65	2.03
	- 200	-1.07	-2.24
Channel Y	200	-0.86	-1.37
	- 200	0.62	0.64
Channel Z	200	1.94	1.92
	- 200	-2.48	-2.59

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-2.83	-1.94
Channel Y	200	4.87	-	-5.00
Channel Z	200	14.63	-0.87	-

4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	15807	16448
Channel Y	15754	16462
Channel Z	15889	15649

5. Input Offset Measurement

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

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-0.14	-1.77	1.06	0.51
Channel Y	0.58	-1.02	2.16	0.57
Channel Z	-0.65	-2.31	1.22	0.68

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

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

9. Power Consumption (Typical values for information)

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

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Accreditation No.: SCS 108

Client **Auden**

Certificate No: EX3-3801_Jun12

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3801

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

Calibration date: June 22, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41498087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 660	10-Jan-12 (No. DAE4-660_Jan12)	Jan-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: June 22, 2012

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Accreditation No.: **SCS 108**

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

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

Probe EX3DV4

SN:3801

Manufactured: April 5, 2011
Calibrated: June 22, 2012

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3801

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.55	0.60	0.54	± 10.1 %
DCP (mV)[B]	98.6	101.4	102.0	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
0	CW	0.00	X	0.00	0.00	1.00	177.5	±3.8 %
			Y	0.00	0.00	1.00	184.0	
			Z	0.00	0.00	1.00	175.5	

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

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3801

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.09	9.09	9.09	0.80	0.61	± 12.0 %
835	41.5	0.90	8.71	8.71	8.71	0.42	0.82	± 12.0 %
900	41.5	0.97	8.68	8.68	8.68	0.63	0.73	± 12.0 %
1750	40.1	1.37	7.70	7.70	7.70	0.35	1.02	± 12.0 %
1900	40.0	1.40	7.42	7.42	7.42	0.35	1.01	± 12.0 %
2000	40.0	1.40	7.37	7.37	7.37	0.60	0.74	± 12.0 %
2450	39.2	1.80	6.70	6.70	6.70	0.41	0.93	± 12.0 %

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3801

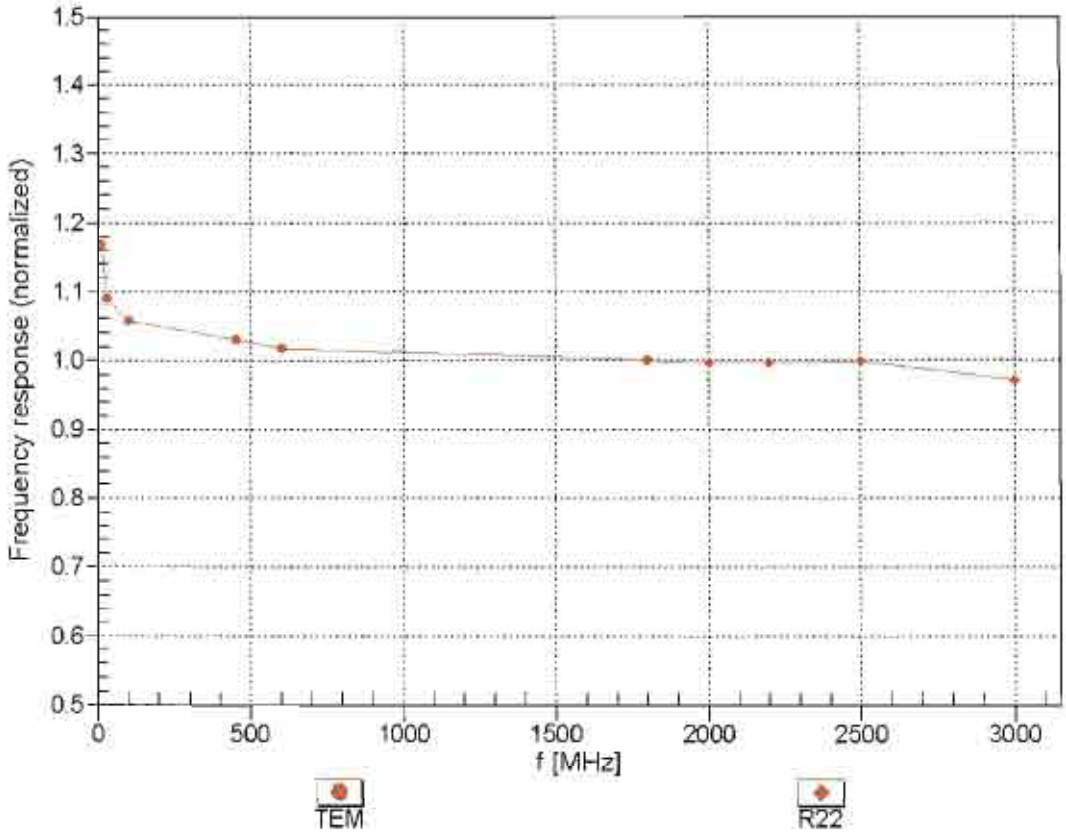
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.00	9.00	9.00	0.80	0.66	± 12.0 %
835	55.2	0.97	8.82	8.82	8.82	0.53	0.78	± 12.0 %
900	55.0	1.05	8.72	8.72	8.72	0.80	0.61	± 12.0 %
1750	53.4	1.49	7.50	7.50	7.50	0.77	0.68	± 12.0 %
1900	53.3	1.52	7.13	7.13	7.13	0.51	0.79	± 12.0 %
2000	53.3	1.52	7.13	7.13	7.13	0.70	0.68	± 12.0 %
2450	52.7	1.95	6.59	6.59	6.59	0.80	0.59	± 12.0 %

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

Frequency Response of E-Field

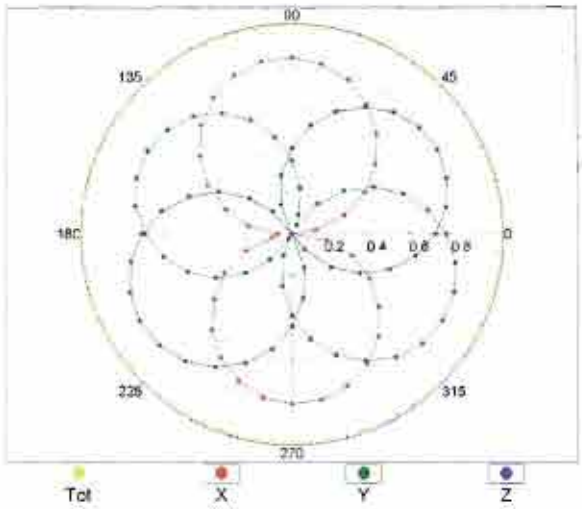
(TEM-Cell:ifi110 EXX, Waveguide: R22)



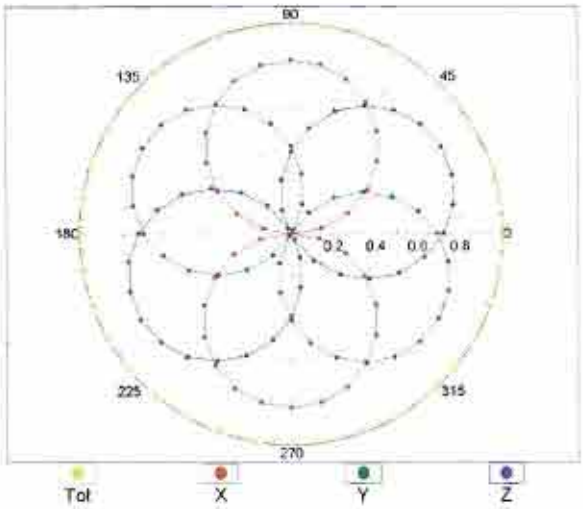
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

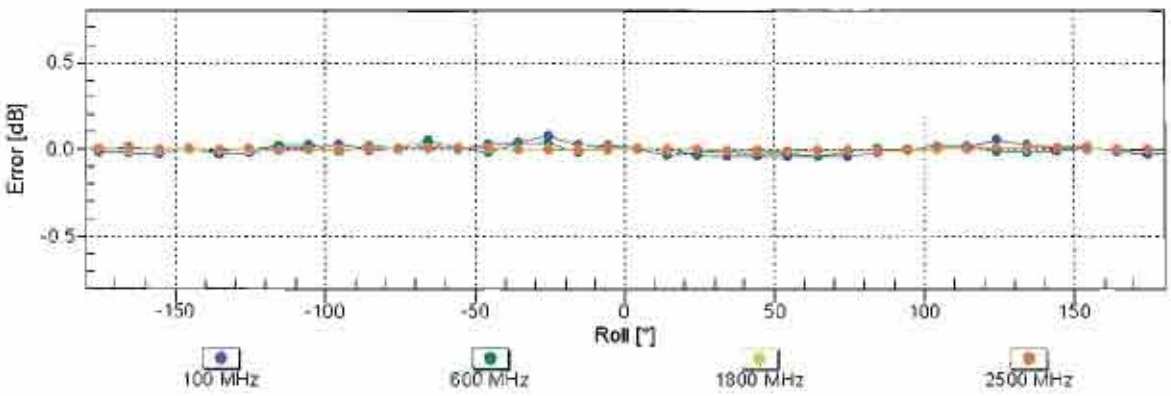
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



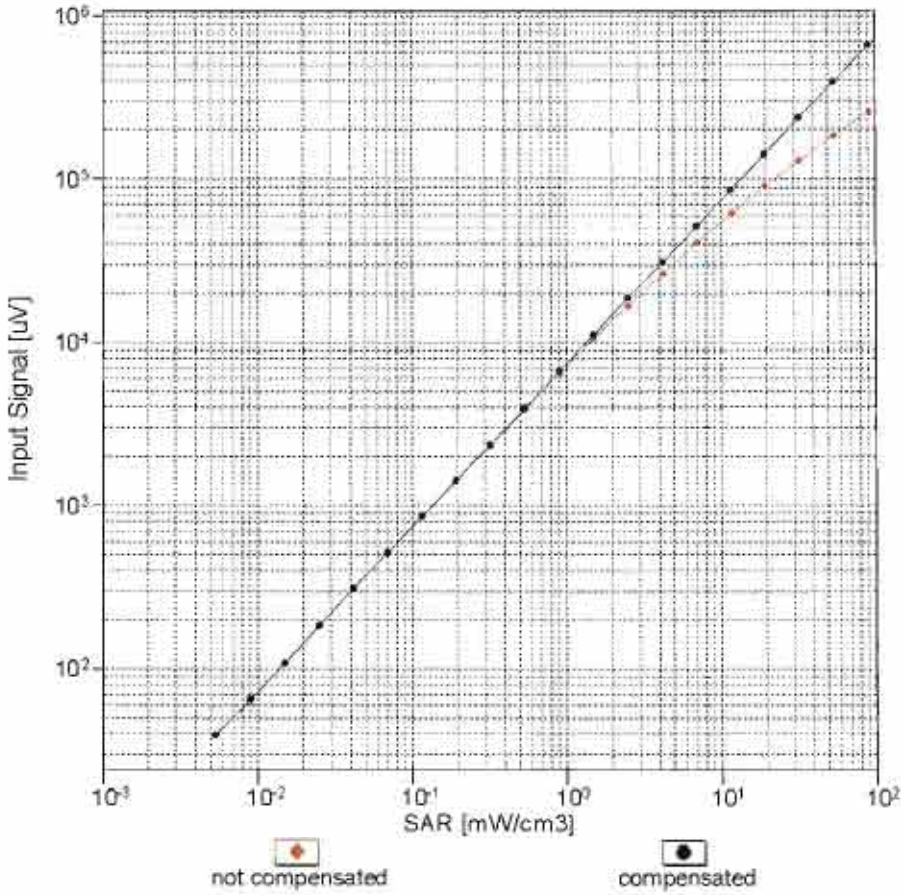
f=1800 MHz,R22

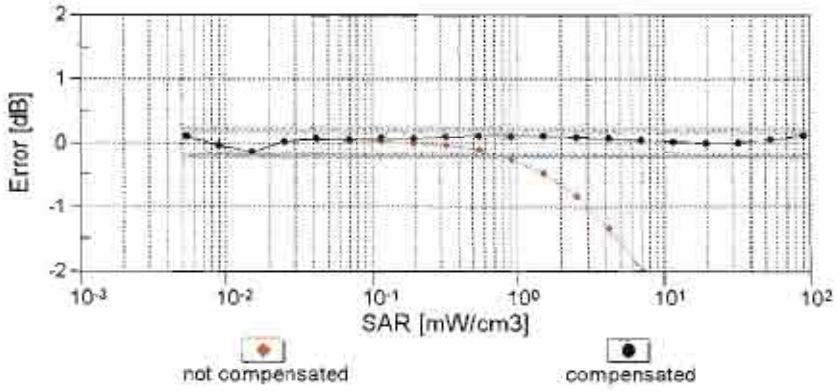




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

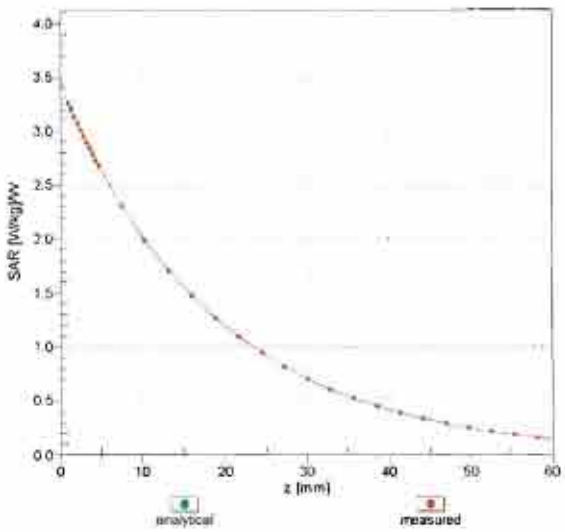




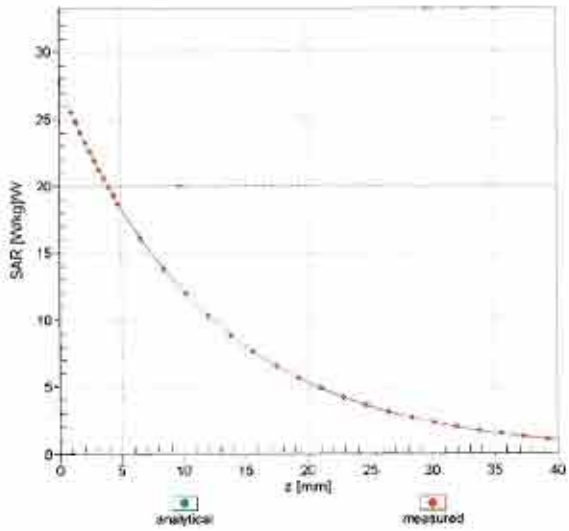
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

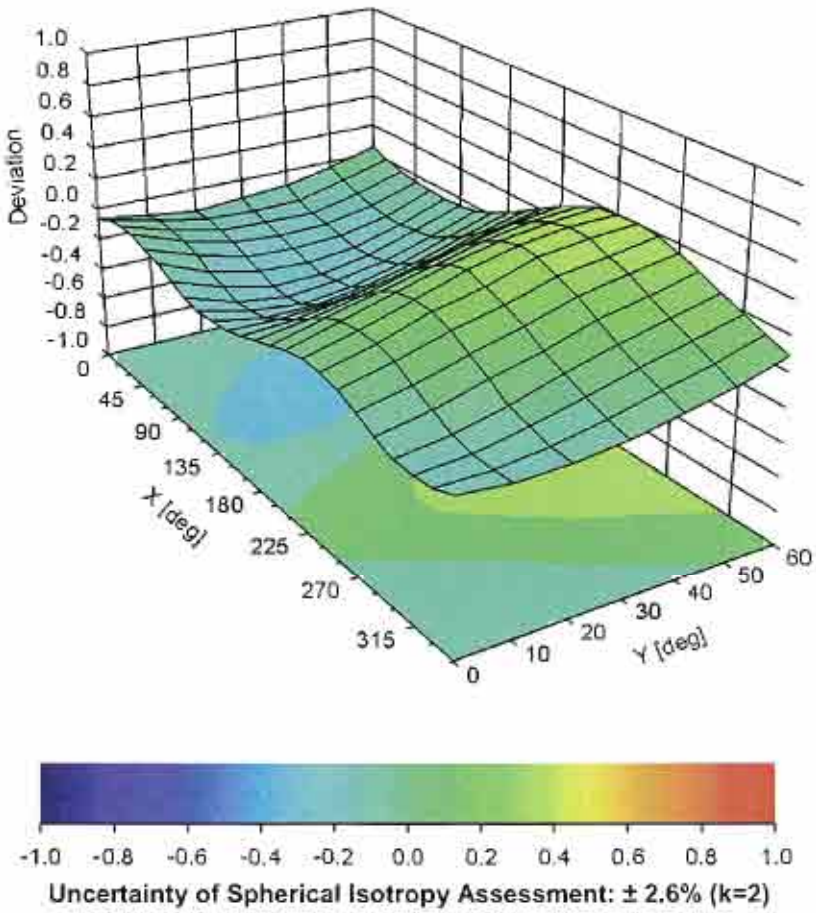


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3801

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	124.4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

S C S Schweizerischer Kalibrierdienst
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Accreditation No.: SCS 108

Client Sporton-CN (Auden)

Certificate No: **EX3-3697_Sep12**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3697

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

Calibration date: September 28, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41498087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 660	20-Jun-12 (No. DAE4-660_Jun12)	Jun-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: September 28, 2012

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

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

Probe EX3DV4

SN:3697

Manufactured: April 22, 2009
Calibrated: September 28, 2012

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3697

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.47	0.47	0.52	± 10.1 %
DCP (mV)[B]	99.1	99.9	98.4	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
0	CW	0.00	X	0.00	0.00	1.00	154.0	±3.5 %
			Y	0.00	0.00	1.00	154.1	
			Z	0.00	0.00	1.00	157.5	

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

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3697

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity (S/m)[F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	8.98	8.98	8.98	0.18	1.41	± 12.0 %
835	41.5	0.90	8.64	8.64	8.64	0.34	0.95	± 12.0 %
900	41.5	0.97	8.66	8.66	8.66	0.53	0.69	± 12.0 %
1450	40.5	1.20	8.19	8.19	8.19	0.16	1.83	± 12.0 %
1750	40.1	1.37	7.70	7.70	7.70	0.60	0.69	± 12.0 %
1900	40.0	1.40	7.43	7.43	7.43	0.51	0.74	± 12.0 %
2000	40.0	1.40	7.36	7.36	7.36	0.63	0.66	± 12.0 %
2300	39.5	1.67	6.93	6.93	6.93	0.34	0.91	± 12.0 %
2450	39.2	1.80	6.58	6.58	6.58	0.28	1.01	± 12.0 %
2600	39.0	1.96	6.42	6.42	6.42	0.40	0.81	± 12.0 %
5200	36.0	4.66	4.86	4.86	4.86	0.30	1.80	± 13.1 %
5500	35.6	4.96	4.60	4.60	4.60	0.30	1.80	± 13.1 %
5600	35.5	5.07	4.25	4.25	4.25	0.35	1.80	± 13.1 %
5800	35.3	5.27	4.28	4.28	4.28	0.45	1.80	± 13.1 %

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3697

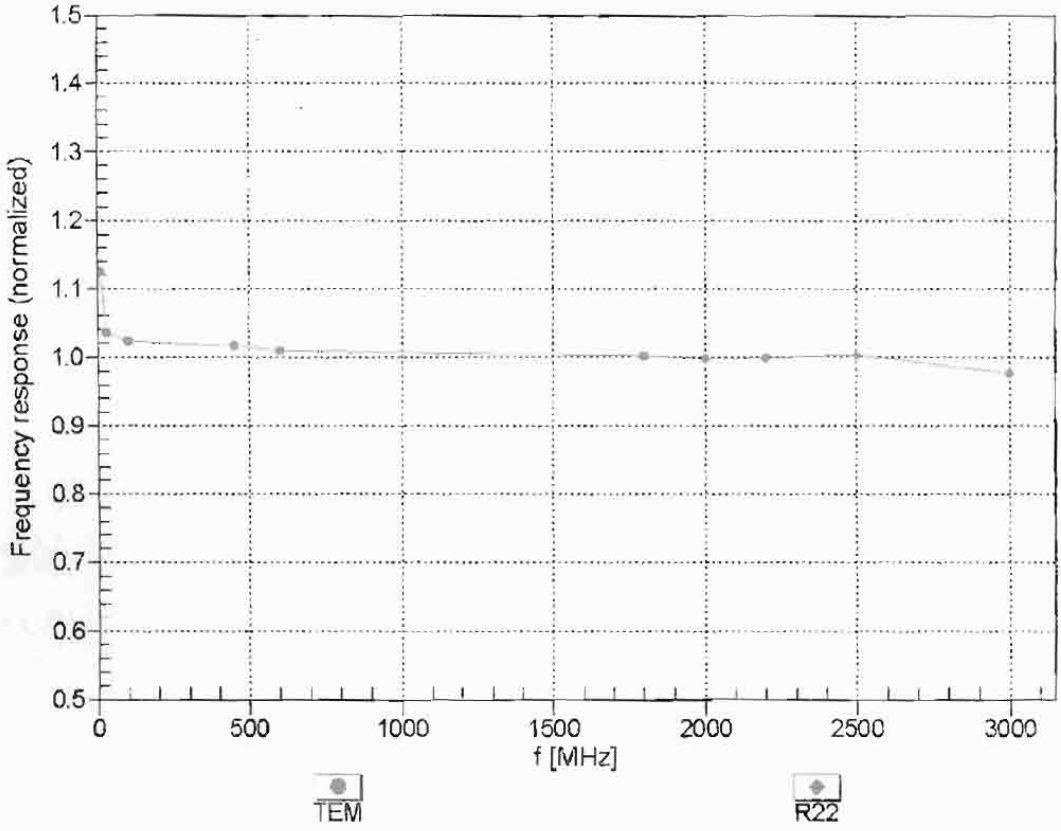
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	8.86	8.86	8.86	0.49	0.78	± 12.0 %
835	55.2	0.97	8.65	8.65	8.65	0.30	1.08	± 12.0 %
900	55.0	1.05	8.57	8.57	8.57	0.33	1.01	± 12.0 %
1450	54.0	1.30	7.80	7.80	7.80	0.19	1.80	± 12.0 %
1750	53.4	1.49	7.26	7.26	7.26	0.46	0.79	± 12.0 %
1900	53.3	1.52	6.96	6.96	6.96	0.40	0.83	± 12.0 %
2000	53.3	1.52	7.10	7.10	7.10	0.33	0.90	± 12.0 %
2300	52.9	1.81	6.76	6.76	6.76	0.54	0.72	± 12.0 %
2450	52.7	1.95	6.57	6.57	6.57	0.75	0.57	± 12.0 %
2600	52.5	2.16	6.40	6.40	6.40	0.80	0.56	± 12.0 %
5200	49.0	5.30	4.29	4.29	4.29	0.40	1.90	± 13.1 %
5500	48.6	5.65	3.91	3.91	3.91	0.40	1.90	± 13.1 %
5600	48.5	5.77	3.75	3.75	3.75	0.40	1.90	± 13.1 %
5800	48.2	6.00	4.06	4.06	4.06	0.50	1.90	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

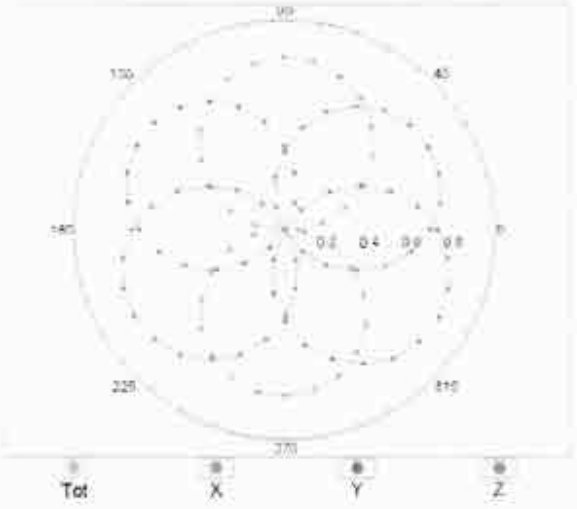
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



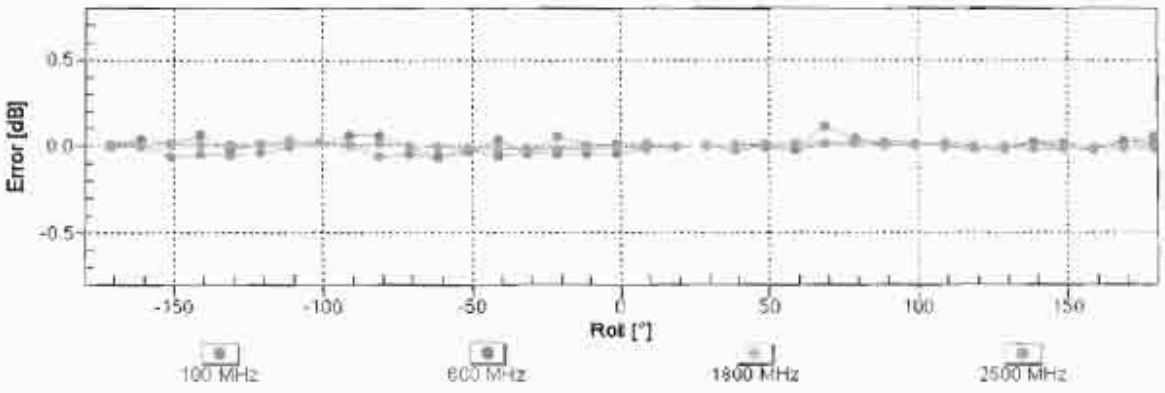
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM

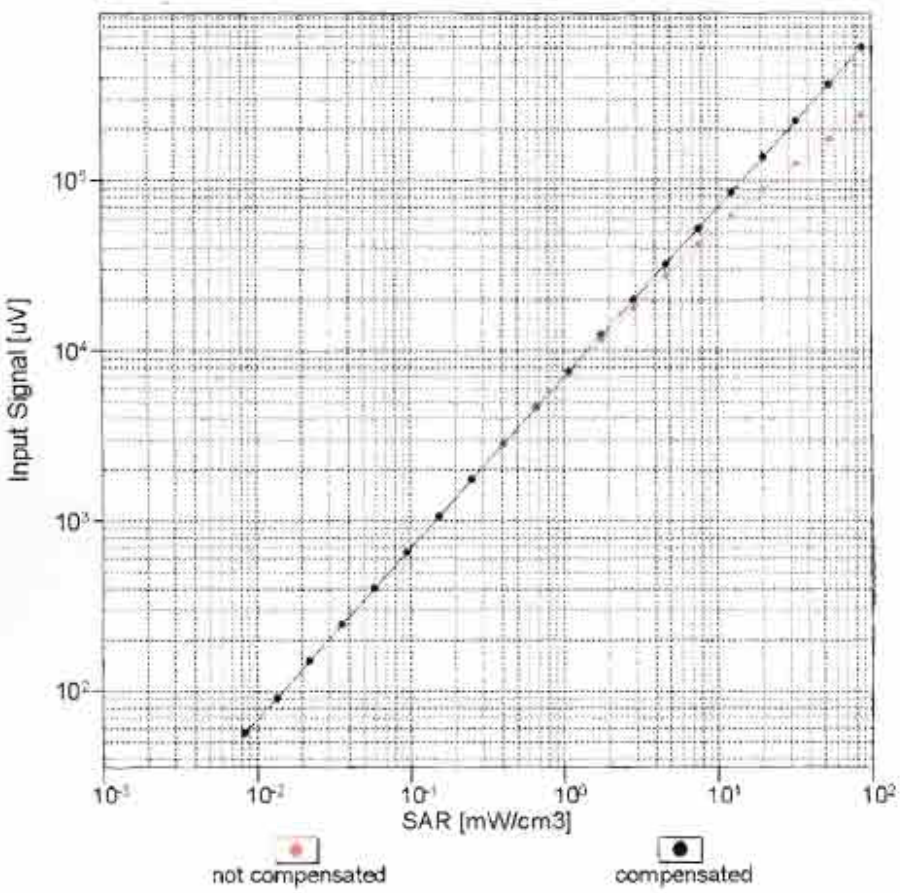


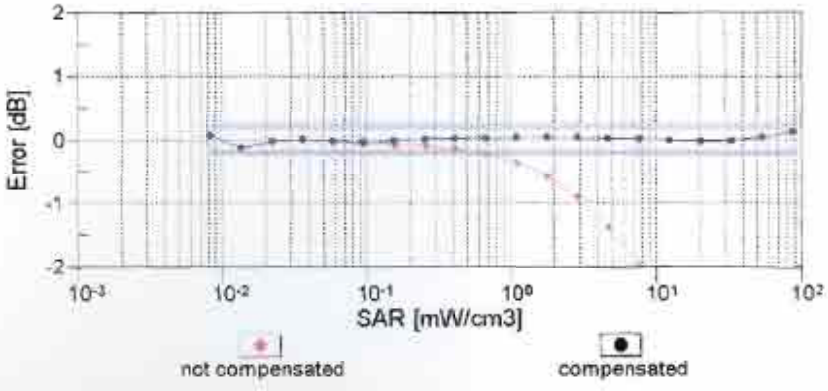
f=1800 MHz,R22



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

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

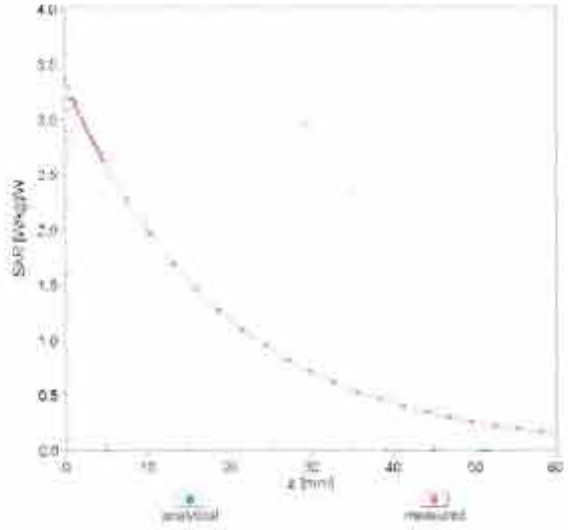




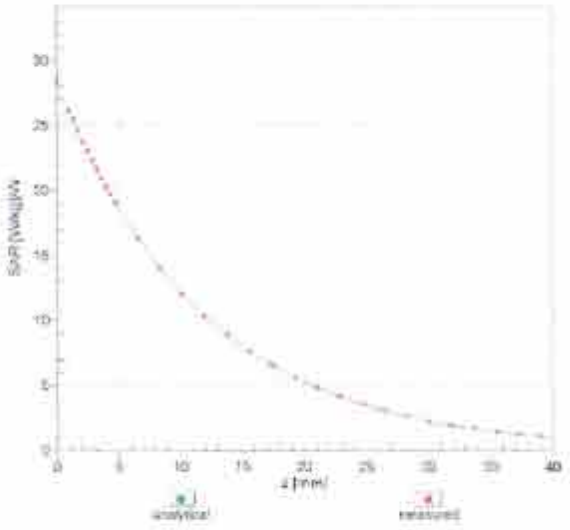
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

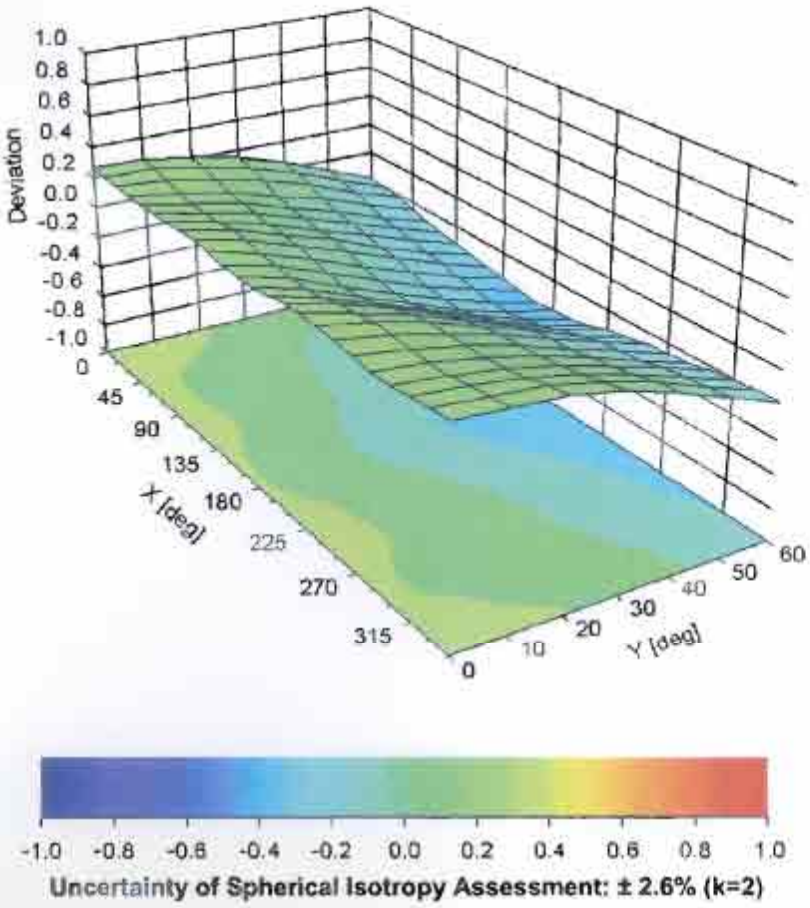


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3697

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-91.1
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm