FCC SAR Test Report

APPLICANT	:	**Huawei Technologies Co., Ltd.**
EQUIPMENT	:	**Smart Phone**
BRAND NAME	:	**HUAWEI**
MODEL NAME	:	**HUAWEI MT1-U06, MT1-U06**
FCC ID	:	**QISMT1-U06**
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 Mar. 08, 2013. We, SPORTON INTERNATIONAL (SHENZHEN) 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by:

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Testing Laboratory
2353

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA331303B	Rev. 01	EUT is variant version of HUAWEI MT1-U06, MT1-U06 (FCC ID: QISMT1-U06N which support NFC function), and now the variant sample with FCC ID: QISMT1-U06 is not support NFC function. Due to the similarity, the parent sample SAR performance is representative and part of test data (Sporton Report Number FA331303A for FCC ID: QISMT1-U06N) is referenced; only all the worst cases were verified for the differences for the variant sample.	Mar. 13, 2013
FA331303B	Rev. 02	Update report for adding test data of WLAN 5.8GHz Band hotspot mode.	Apr. 07, 2013

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found based on with NFC sample test data (Sporton Report Number FA331303 for FCC ID: QISMT1-U06N) and no NFC sample verify test data for **Huawei Technologies Co., Ltd. DUT: Smart Phone, Brand Name: HUAWEI, Model Name: HUAWEI MT1-U06, MT1-U06** are as follows.

<Highest Reported Standalone SAR Summary>

Exposure Position	Frequency Band	Highest Reported 1g-SAR (W/kg) For with NFC sample	Highest Reported 1g-SAR (W/kg) For No NFC sample	Equipment Class	Highest Reported 1g-SAR (W/kg)
Head	GSM850	0.46	0.41	PCE	0.46
	GSM1900	0.14	0.13		
	WCDMA Band V	0.39	0.31		
	WCDMA Band IV	0.24	0.22		
	WCDMA Band II	0.18	0.18		
	WLAN 2.4GHz Band	0.05	0.05	DTS	0.06
	WLAN 5.8GHz Band	0.06	0.04		
	WLAN 5.2GHz Band	0.05	0.05	NII	0.09
	WLAN 5.3GHz Band	0.09	0.05		
	WLAN 5.5GHz Band	0.06	0.05		
Hotspot (1cm Gap)	GSM850	1.07	1.08	PCE	1.49
	GSM1900	1.44	1.25		
	WCDMA Band V	0.69	0.66		
	WCDMA Band IV	1.49	1.29		
	WCDMA Band II	1.48	1.47		
	WLAN 2.4GHz Band	0.13	0.10	DTS	0.65
	WLAN 5.8GHz Band	0.62	0.65		
	WLAN 5.2GHz Band	0.59	0.63	NII	0.63
Body-worn (1cm Gap)	GSM850	0.64	-	PCE	1.49
	GSM1900	0.94	-		
	WCDMA Band V	0.53	-		
	WCDMA Band IV	1.49	1.29		
	WCDMA Band II	1.21	-		
	WLAN 2.4GHz Band	0.13	0.10	DTS	0.65
	WLAN 5.8GHz Band	0.62	0.65		
	WLAN 5.2GHz Band	0.59	0.63	NII	0.75
	WLAN 5.3GHz Band	0.51	0.48		
	WLAN 5.5GHz Band	0.61	0.75		

Remark:

The highest simultaneous transmission is scalar summation of reported standalone SAR per FCC KDB 690783 D01 v01r02, and scalar SAR summation of all possible simultaneous transmission scenarios are < 1.6W/kg.

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 (SHENZHEN) INC.
Test Site Location	No. 101, Complex Building C, Guanglong Village, Xili Town, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755-8637-9589 FAX: +86-755-8637-9595

2.2 Applicant

Company Name	Huawei Technologies Co., Ltd.
Address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

2.3 Manufacturer

Company Name	Huawei Technologies Co., Ltd.
Address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

2.4 Application Details

Date of Start during the Test	Feb. 07, 2013
Date of End during the Test	Mar. 08, 2013

3. General Information

3.1 Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT	Smart Phone
Brand Name	HUAWEI
Model Name	HUAWEI MT1-U06, MT1-U06
FCC ID	QISMT1-U06
Sample	#2 sample without NFC function and old battery #4 sample without NFC function and new battery
TX Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Antenna Type	WWAN: Fixed Internal Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna
HW Version	HD1U9900M
SW Version	MT1-U06V100R001C00B104SP03
Uplink Modulations	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK WCDMA (Rel 99): QPSK HSDPA (Rel 6): QPSK HSUPA (Rel 6): QPSK 802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth BDR (1Mbps): GFSK Bluetooth EDR (2Mbps): π/4-DQPSK Bluetooth EDR (3Mbps): 8-DPSK Bluetooth v4.0 - LE: GFSK
Transfer Mode Category	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.

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. The model names (HUAWEI MT1-U06, MT1-U06) are identical on hardware. The only difference is the label of different branding for different customer.
4. This device, WLAN 2.4GHz Band and WLAN 5.2GHz Band supports hotspot; WLAN 5.3GHz Band/WLAN 5.5GHz Band/ WLAN 5.8GHz Band does not support this operation.

3.2 Maximum RF output power among production units

Maximum Target Burst Average power for Production Unit		
Mode	GSM 850	GSM 1900
GSM (GMSK, 1 Tx slot)	34	31.5
GPRS/EDGE (GMSK, 1 Tx slot)	34	31.5
GPRS/EDGE (GMSK, 2 Tx slots)	32	29.5
EDGE (8PSK, 1 Tx slot)	28.5	27.5
EDGE (8PSK, 2 Tx slots)	26.5	25.5

Maximum Target Power for Production Unit			
Mode	WCDMA Band V	WCDMA Band IV	WCDMA Band II
RMC 12.2K	24.5	23	23.8
HSDPA Subtest-1	24.5	23	23.3
HSDPA Subtest-2	24.5	23	23.3
HSDPA Subtest-3	24	23	22.8
HSDPA Subtest-4	24	23	22.8
HSUPA Subtest-1	24	22.5	23.3
HSUPA Subtest-2	22.5	21	21.8
HSUPA Subtest-3	23	22.5	22.3
HSUPA Subtest-4	23	21.5	22.3
HSUPA Subtest-5	24	23	23.3

Maximum Target Average Power for Production Unit					
Mode / Band	IEEE 802.11				
	a	b	g	n-HT20	n-HT40
WLAN 2.4 GHz Band		18	15	13	13
WLAN 5.2GHz Band	14			12	12
WLAN 5.3GHz Band	14			12	12
WLAN 5.5GHz Band	14			12	12
WLAN 5.8GHz Band	14			12	12

Mode / Band	Bluetooth Average Power(dBm)
Bluetooth	8

3.3 Product Photos

Please refer to Appendix D.

3.4 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 v05
- FCC KDB 648474 D04v01
- FCC KDB 248227 D01 v01r02
- FCC KDB 941225 D01 v02
- FCC KDB 941225 D03 v01
- FCC KDB 941225 D06 v01
- FCC KDB 865664 D01 v01

3.5 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.

3.6 Test Conditions

3.6.1 Ambient Condition

Ambient Temperature	20 to 24 ℃
Humidity	< 60 %

3.6.2 Test Configuration

For WWAN SAR testing, 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.

During WLAN SAR testing EUT is configured with the WLAN continuous TX tool, and the transmission duty factor was monitored on the spectrum analyzer with zero-span setting

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

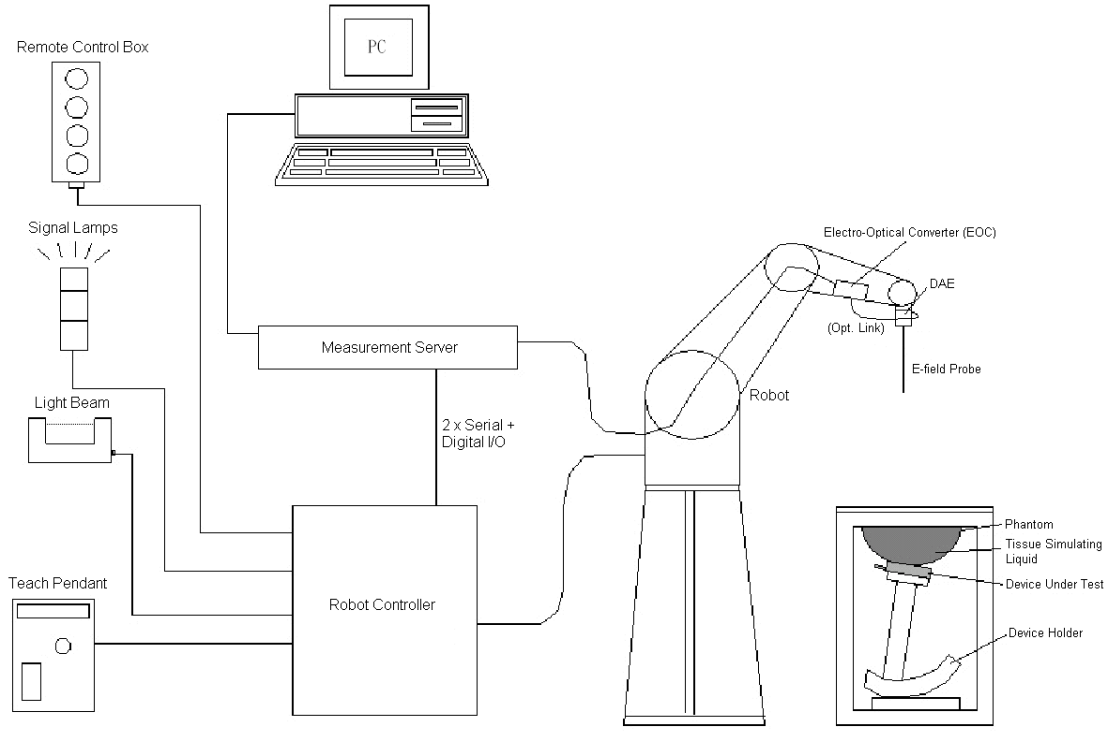


Fig 5.1 SPEAG DASY System Configurations

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 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

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

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

Fig 5.4 Photo of DASY5

5.4 Measurement Server

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

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

Fig 5.5 Photo of Server for DASY5

5.5 Phantom

<SAM Twin Phantom>

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

Fig 5.6 Photo of SAM Phantom

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

5.6 Device Holder

<Device Holder for SAM Twin Phantom>

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

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (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 5.7 Device Holder

5.7 Data Storage and Evaluation

5.7.1 Data Storage

The DASY software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files. The post-processing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

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

5.7.2 Data Evaluation

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

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

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power.

The formula for each channel can be given as：

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

with V_i = compensated signal of channel i, (i = x, y, z)
U_i = input signal of channel i, (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression point (DASY parameter)

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

E-field Probes：$\mathbf{E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}}$

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

with V_i = compensated signal of channel i, (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i, (i = x, y, z), μV/(V/m)^2 for E-field Probes
ConvF = sensitivity enhancement in solution
a_{ij} = sensor sensitivity factors for H-field probes
f = carrier frequency [GHz]
E_i = electric field strength of channel i in V/m
H_i = magnetic field strength of channel i in A/m

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

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

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

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

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

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

5.8 Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 18, 2011	Nov. 16, 2013
SPEAG	1750MHz System Validation Kit	D1750V2	1023	Jun. 20, 2012	Jun. 19, 2013
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 18, 2011	Nov. 16, 2013
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 25, 2011	Jul. 24, 2013
SPEAG	5000MHz System Validation Kit	D5GHzV2	1006	Dec. 11, 2012	Dec. 10, 2013
SPEAG	Data Acquisition Electronics	DAE4	1303	Nov. 22, 2012	Nov. 21, 2013
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Nov. 26, 2012	Nov. 25, 2013
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1670	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1671	NCR	NCR
Agilent	Base Station	E5515C	MY50267224	Dec. 29, 2012	Dec. 28, 2013
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	Apr. 13, 2012	Apr. 12, 2013
Anritsu	Power Sensor	MA2411B	1207253	May 08, 2012	May 07, 2013
Woken	Attenuator 1	WK0602-XX	N/A	Note 4	
PE	Attenuator 2	PE7005-10	N/A	Note 4	
PE	Attenuator 3	PE7005- 3	N/A	Note 4	
Agilent	Dual Directional Coupler	778D	50422	Note 4	
Agilent	Dielectric Probe Kit	85070D	US01440205	Note 5	
AR	Power Amplifier	5S1G4M2	0328767	Note 6	
R&S	Spectrum Analyzer	FSP30	101400	Jun. 01, 2012	May 31, 2013

Table 5.1 Test Equipment List

Note:

1. The calibration certificate of DASY can be referred to appendix C of this report.
2. Referring to KDB 865664 D01v01, 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 D835V2, SN: 4d091, D1900V2, SN: 5d118 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.
4. The Insertion Loss calibration of Dual Directional Coupler and Attenuator were characterized via the network analyzer and compensated during system check.
5. The dielectric probe kit was calibrated via the network analyzer, with the specified procedure (calibrated in pure water) and calibration kit (standard) short circuit, before the dielectric measurement. The specific procedure and calibration kit are provided by Agilent.
6. In system check we need to monitor the level on the power meter, and adjust the power amplifier level to have precise power level to the dipole; the measured SAR will be normalized to 1W input power according to the ratio of 1W to the input power to the dipole. For system check, the calibration of the power amplifier is deemed not critically required for correct measurement; the power meter is critical and we do have calibration for it
7. Attenuator 1 insertion loss is calibrated by the network Analyzer, which the calibration is valid, before system check.

6. Tissue Simulating Liquids

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

Fig 6.1 Photo of Liquid Height for Head SAR

Fig 6.2 Photo of Liquid Height for Body SAR

The following table gives the recipes for tissue simulating liquid.

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

Table 6.1 Recipes of Tissue Simulating Liquid

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.

Frequency (MHz)	Liquid Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Head	21.1	0.888	40.631	0.90	41.5	-1.33	-2.09	±5	Feb. 21, 2013
835	Head	21.8	0.912	41.941	0.90	41.5	1.33	1.06	±5	Mar. 07, 2013
1750	Head	21.8	1.407	41.718	1.37	40.1	2.70	4.03	±5	Feb. 23, 2013
1750	Head	21.8	1.375	41.375	1.37	40.1	0.36	3.18	±5	Mar. 07, 2013
1900	Head	21.5	1.415	40.527	1.40	40.0	1.07	1.32	±5	Feb. 06, 2013
1900	Head	21.7	1.427	41.191	1.40	40.0	1.93	2.98	±5	Mar. 07, 2013
2450	Head	21.3	1.81	37.626	1.8	39.2	0.56	-4.02	±5	Mar. 05, 2013
2450	Head	21.4	1.809	37.604	1.8	39.2	0.50	-4.07	±5	Mar. 08, 2013
5200	Head	21.6	4.805	35.479	4.66	36.0	3.11	-1.45	±5	Mar. 07, 2013
5200	Head	21.7	4.791	35.422	4.66	36.0	2.81	-1.61	±5	Mar. 08, 2013
5300	Head	21.6	4.911	35.352	4.76	35.9	3.17	-1.53	±5	Mar. 07, 2013
5300	Head	21.7	4.894	35.28	4.76	35.9	2.82	-1.73	±5	Mar. 08, 2013
5600	Head	21.6	5.22	34.749	5.07	35.5	2.96	-2.12	±5	Mar. 07, 2013
5600	Head	21.7	5.199	34.704	5.07	35.5	2.54	-2.24	±5	Mar. 08, 2013
5800	Head	21.6	5.407	34.377	5.27	35.3	2.60	-2.61	±5	Mar. 07, 2013
5800	Head	21.7	5.39	34.35	5.27	35.3	2.28	-2.69	±5	Mar. 08, 2013
835	Body	21.4	0.976	54.36	0.97	55.2	0.62	-1.52	±5	Feb. 07, 2013
835	Body	21.7	0.978	54.413	0.97	55.2	0.82	-1.43	±5	Mar. 07, 2013
1750	Body	21.9	1.517	55.044	1.49	53.4	1.81	3.08	±5	Feb. 19, 2013
1750	Body	21.9	1.51	55.728	1.49	53.4	1.34	4.36	±5	Mar. 07, 2013
1900	Body	21.5	1.501	53.849	1.52	53.3	-1.25	1.03	±5	Feb. 08, 2013
1900	Body	21.9	1.542	54.484	1.52	53.3	1.45	2.22	±5	Mar. 07, 2013
2450	Body	21.5	1.94	53.374	1.95	52.7	-0.51	1.28	±5	Mar. 05, 2013
2450	Body	21.1	1.939	53.98	1.95	52.7	-0.56	2.43	±5	Mar. 08, 2013
5200	Body	21.5	5.279	48.534	5.3	49.0	-0.40	-0.95	±5	Mar. 06, 2013
5200	Body	21.2	5.373	48.526	5.3	49.0	1.38	-0.97	±5	Mar. 08, 2013
5300	Body	21.5	5.418	48.319	5.42	48.9	-0.04	-1.19	±5	Mar. 06, 2013
5300	Body	21.2	5.515	48.269	5.42	48.9	1.75	-1.29	±5	Mar. 08, 2013
5600	Body	21.5	5.849	47.666	5.77	48.5	1.37	-1.72	±5	Mar. 06, 2013
5600	Body	21.2	5.945	47.571	5.77	48.5	3.03	-1.92	±5	Mar. 08, 2013
5800	Body	21.5	6.113	47.156	6.0	48.2	1.88	-2.17	±5	Mar. 06, 2013
5800	Body	21.2	6.219	47.128	6.0	48.2	3.65	-2.22	±5	Mar. 08, 2013

Table 6.2 Measuring Results for Simulating Liquid

7. SAR System Verification

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

7.1 Purpose of System Performance check

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

7.2 System Setup

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

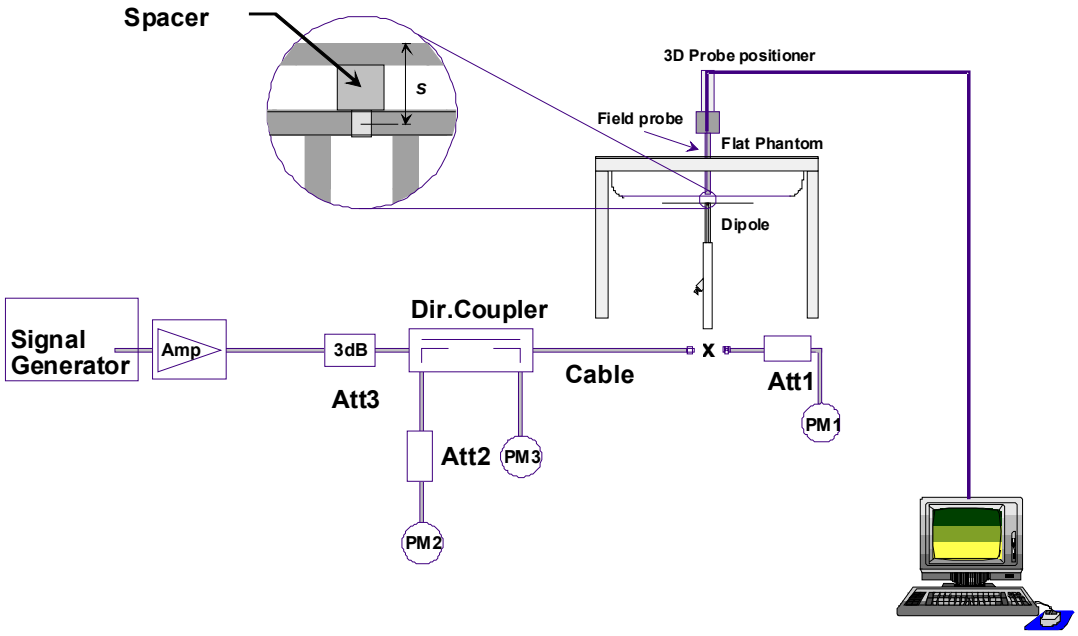


Fig 7.1 System Setup for System Evaluation

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

Fig 7.2 Photo of Dipole Setup

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	Input power fed to dipole (mW)	Targeted SAR_{1g} (W/kg)	Measured SAR_{1g} (W/kg)	Normalized SAR_{1g} (W/kg)	Deviation (%)
Feb. 21, 2013	835	Head	250	9.4	2.44	9.76	3.83
Mar. 07, 2013	835	Head	250	9.4	2.48	9.92	5.53
Feb. 23, 2013	1750	Head	250	35.8	9.47	37.88	5.81
Mar. 07, 2013	1750	Head	250	35.8	9.11	36.44	1.79
Feb. 06, 2013	1900	Head	250	40.3	10.1	40.4	0.25
Mar. 07, 2013	1900	Head	250	40.3	10.2	40.8	1.24
Mar. 05, 2013	2450	Head	250	54.8	13.9	55.6	1.46
Mar. 08, 2013	2450	Head	250	54.8	13.6	54.4	-0.73
Mar. 07, 2013	5200	Head	100	79.8	8.23	82.3	3.13
Mar. 08, 2013	5200	Head	100	79.8	7.55	75.5	-5.39
Mar. 07, 2013	5300	Head	100	82.6	8.07	80.7	-2.30
Mar. 08, 2013	5300	Head	100	82.6	7.65	76.5	-7.38
Mar. 07, 2013	5600	Head	100	83.6	8.25	82.50	-1.32
Mar. 08, 2013	5600	Head	100	83.6	7.81	78.10	-6.58
Mar. 07, 2013	5800	Head	100	78.9	8.57	85.7	8.62
Mar. 08, 2013	5800	Head	100	78.9	7.61	76.1	-3.55
Feb. 07, 2013	835	Body	250	9.42	2.47	9.88	4.88
Mar. 07, 2013	835	Body	250	9.42	2.32	9.28	-1.49
Feb. 19, 2013	1750	Body	250	37	9.52	38.08	2.92
Mar. 07, 2013	1750	Body	250	37	9.35	37.4	1.08
Feb. 08, 2013	1900	Body	250	41.8	10.2	40.8	-2.39
Mar. 07, 2013	1900	Body	250	41.8	10.3	41.2	-1.44
Mar. 05, 2013	2450	Body	250	52.3	12.8	51.2	-2.10
Mar. 08, 2013	2450	Body	250	52.3	13.1	52.4	0.19
Mar. 06, 2013	5200	Body	100	71.4	7.52	75.2	5.32
Mar. 08, 2013	5200	Body	100	71.4	7.65	76.5	7.14
Mar. 06, 2013	5300	Body	100	73.5	7.69	76.9	4.63
Mar. 08, 2013	5300	Body	100	73.5	7.83	78.3	6.53
Mar. 06, 2013	5600	Body	100	76.8	8.15	81.5	6.12
Mar. 08, 2013	5600	Body	100	76.8	8.29	82.9	7.94
Mar. 06, 2013	5800	Body	100	71.7	7.74	77.4	7.95
Mar. 08, 2013	5800	Body	100	71.7	7.87	78.7	9.76

Table 7.1 Target and Measurement SAR after Normalized

8. EUT Testing Position

This EUT was tested in five different positions. They are right cheek, left cheek, Front of the EUT with phantom 1 cm gap, Back of the EUT with phantom 1 cm gap, and Bottom Side of the EUT with phantom 1 cm gap, as illustrated below.

8.1 Define two imaginary lines on the handset

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

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

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

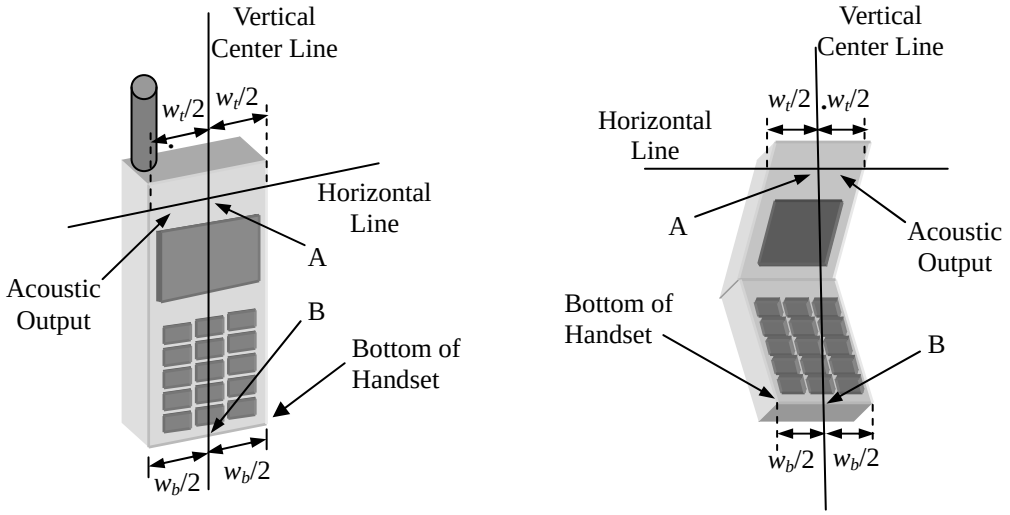


Fig 8.1 Illustration for Handset Vertical and Horizontal Reference Lines

8.2 Cheek Position

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

(b) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with the ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost (see Fig. 8.2).

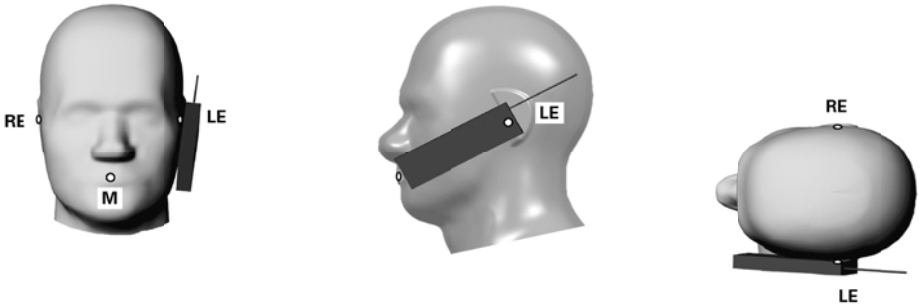


Fig 8.2 Illustration for Cheek Position

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).

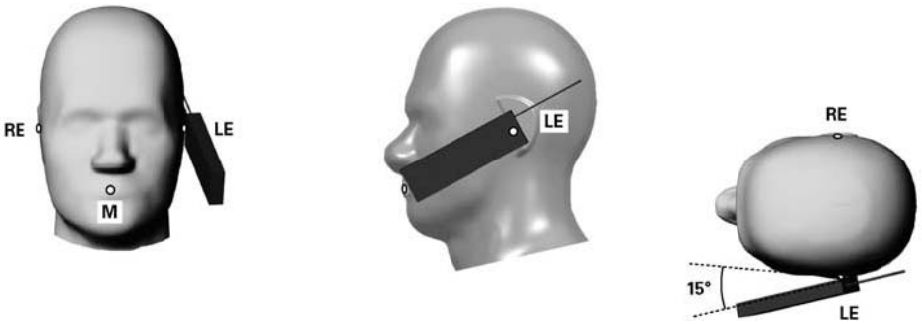


Fig 8.3 Illustration for Tilted Position

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.

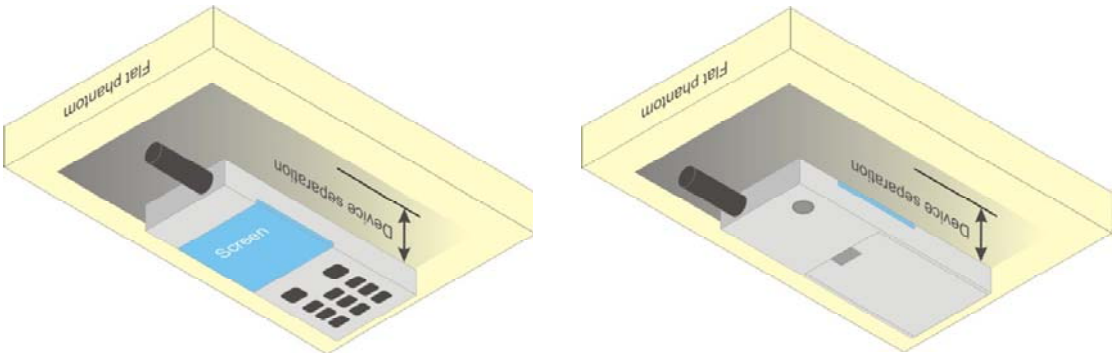


Fig 8.4 Illustration for Body Worn Position

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 cm.

<EUT Setup Photos>

Please refer to Appendix E for the test setup photos.

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) Place the EUT in the positions as Appendix E demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported 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 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.3 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 is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01 quoted below.

For any secondary peaks found in the area scan which are within 2 dB of the maximum peak and are not within this zoom scan, the zoom scan should be repeated

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the area scan based *1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

9.4 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. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.5 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.

9.6 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. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

Band: GSM850	Burst Average Power (dBm)			Frame-Average Power (dBm)		
Channel	128	190	251	128	190	251
Frequency (MHz)	824.2	836.6	848.8	824.2	836.6	848.8
GSM (GMSK, 1 Tx slot)	32.48	32.52	32.59	23.48	23.52	23.59
GPRS (GMSK, 1 Tx slot) – CS1	32.46	32.51	32.61	23.46	23.51	23.61
GPRS (GMSK, 2 Tx slots) – CS1	30.58	30.64	30.68	24.58	24.64	24.68
EDGE (GMSK, 1 Tx slot) – MCS1	32.48	32.55	32.67	23.48	23.55	23.67
EDGE (GMSK, 2 Tx slots) – MCS1	30.56	30.61	30.62	24.56	24.61	24.62
EDGE (8PSK, 1 Tx slot) – MCS5	27.18	27.28	27.32	18.18	18.28	18.32
EDGE (8PSK, 2 Tx slots) – MCS5	25.22	25.39	25.38	19.22	19.39	19.38

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

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)	30.04	29.93	29.81	21.04	20.93	20.81
GPRS (GMSK, 1 Tx slot) – CS1	30.02	29.94	29.76	21.02	20.94	20.76
GPRS (GMSK, 2 Tx slots) – CS1	28.04	27.98	27.79	22.04	21.98	21.79
EDGE (GMSK, 1 Tx slot) – MCS1	30.09	29.97	29.78	21.09	20.97	20.78
EDGE (GMSK, 2 Tx slots) – MCS1	28.12	27.96	27.74	22.12	21.96	21.74
EDGE (8PSK, 1 Tx slot) – MCS5	25.89	25.81	25.64	16.89	16.81	16.64
EDGE (8PSK, 2 Tx slots) – MCS5	23.89	23.81	23.63	17.89	17.81	17.63

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

<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 Agilent E5515C referred to the 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 Agilent E5515C referred to the 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	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 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 Conducted Power>

WCDMA Average power (dBm)										
Band		WCDMA Band V			WCDMA Band II			WCDMA Band IV		
Channel		4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)		826.4	836.4	846.6	1852.4	1880.0	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	RMC 12.2K	23.56	23.41	23.41	22.93	22.82	22.63	22.89	22.82	22.87
3GPP Rel 6	HSDPA Subtest-1	23.72	23.57	23.57	23.09	23.01	22.85	22.96	22.89	22.93
3GPP Rel 6	HSDPA Subtest-2	23.01	22.84	22.83	22.61	22.48	22.33	22.63	22.47	22.49
3GPP Rel 6	HSDPA Subtest-3	22.39	22.24	22.29	22.23	22.09	21.92	22.32	22.13	22.28
3GPP Rel 6	HSDPA Subtest-4	22.09	21.97	21.94	21.93	21.81	21.63	22.02	21.83	21.97
3GPP Rel 6	HSUPA Subtest-1	22.71	22.54	22.52	21.94	21.91	21.64	22.15	21.96	22.02
3GPP Rel 6	HSUPA Subtest-2	20.81	20.63	20.62	20.65	20.71	20.55	20.76	20.71	20.78
3GPP Rel 6	HSUPA Subtest-3	21.58	21.42	21.39	21.35	21.31	21.05	21.58	21.41	21.53
3GPP Rel 6	HSUPA Subtest-4	21.08	20.93	20.92	20.91	20.88	20.63	21.05	20.88	20.98
3GPP Rel 6	HSUPA Subtest-5	22.78	22.61	22.59	22.61	22.56	22.36	22.81	22.61	22.74

MPR (dB)											
3GPP MPR	Subtest		WCDMA Band V			WCDMA Band II			WCDMA Band IV		
0	3GPP Rel 6	HSDPA Subtest-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	3GPP Rel 6	HSDPA Subtest-2	0.71	0.73	0.74	0.48	0.53	0.52	0.33	0.42	0.44
≤ 0.5	3GPP Rel 6	HSDPA Subtest-3	1.33	1.33	1.28	0.86	0.92	0.93	0.64	0.76	0.65
≤ 0.5	3GPP Rel 6	HSDPA Subtest-4	1.63	1.60	1.63	1.16	1.20	1.22	0.94	1.06	0.96
0	3GPP Rel 6	HSUPA Subtest-1	0.07	0.07	0.07	0.67	0.65	0.72	0.66	0.65	0.72
≤ 2	3GPP Rel 6	HSUPA Subtest-2	1.97	1.98	1.97	1.96	1.85	1.81	2.05	1.90	1.96
≤ 1	3GPP Rel 6	HSUPA Subtest-3	1.20	1.19	1.20	1.26	1.25	1.31	1.23	1.20	1.21
≤ 2	3GPP Rel 6	HSUPA Subtest-4	1.70	1.68	1.67	1.70	1.68	1.73	1.76	1.73	1.76
0	3GPP Rel 6	HSUPA Subtest-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<WLAN 2.4GHz Band Conducted Power>

802.11b Average Power (dBm)					
Channel	Frequency (MHz)	Data Rate (bps)			
		1M bps	2M bps	5.5M bps	11M bps
CH 01	2412	16.42	16.25	15.87	15.05
CH 06	2437	16.80	16.41	16.05	15.37
CH 11	2462	16.64	16.30	15.98	15.00

802.11g Average Power (dBm)									
Channel	Frequency (MHz)	Data Rate (bps)							
		6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
CH 01	2412	12.84	12.66	12.13	11.30	10.46	10.00	8.84	8.33
CH 06	2437	13.22	13.06	12.39	11.61	10.59	10.11	9.00	8.58
CH 11	2462	13.02	12.93	12.32	11.38	10.47	9.93	8.91	8.50

WLAN 2.4GHz Band 802.11n-HT20 Average Power (dBm)									
Channel	Frequency (MHz)	MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412	12.72	11.99	11.33	10.75	10.04	9.34	8.4	8.31
CH 06	2437	13.27	12.53	11.71	11.20	10.50	9.70	8.79	8.76
CH 11	2462	13.10	12.4	11.62	11.05	10.66	9.54	8.45	8.58

WLAN 2.4GHz Band 802.11n-HT40 Average Power (dBm)									
Channel	Frequency (MHz)	MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 03	2422	10.52	9.01	8.20	7.90	6.93	6.11	5.67	5.58
CH 06	2437	11.80	10.20	8.66	8.09	7.24	6.62	6.14	5.85
CH 09	2452	10.9	9.77	8.47	8.17	7.56	6.77	6.19	5.74

<Bluetooth Conducted Power>

Bluetooth Average Power (dBm)				
Channel	Frequency (MHz)	Mode		
		1Mbps (GFSK)	2Mbps (π/4-DQPSK)	3Mbps (8-DPSK)
CH 00	2402	2.03	-0.88	-0.88
CH 39	2441	4.13	1.19	1.21
CH 78	2480	4.14	1.42	1.41

Channel	Frequency (MHz)	Average power (dBm)
		Mode
		BT v4.0 LE, GFSK
CH 00	2402	4.90
CH 19	2440	6.51
CH 39	2480	7.03

<WLAN 5GHz Band Conducted Power>

802.11a Average Power (dBm)									
Channel	Frequency (MHz)	Average Power (dBm)							
		Data Rate (bps)							
		6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
CH 36	5180	12.01	11.37	11.12	10.36	9.39	8.59	7.38	6.99
CH 40	5200	11.86	11.34	11.05	10.23	9.30	8.62	7.46	6.81
CH 44	5220	11.82	11.31	11.16	10.32	9.24	8.48	7.34	7.00
CH 48	5240	11.76	11.36	11.03	10.18	9.21	8.56	7.42	6.86
CH 52	5260	11.78	11.32	11.10	10.26	9.35	8.37	7.29	6.84
CH 56	5280	11.73	11.26	11.17	10.31	9.42	8.49	7.38	6.80
CH 60	5300	11.80	11.30	11.15	10.22	9.27	8.45	7.36	6.92
CH 64	5320	11.69	11.02	10.89	10.15	9.21	8.47	7.12	6.81
CH 100	5500	10.85	10.25	10.03	9.37	8.43	7.51	6.68	6.26
CH 104	5520	10.93	10.29	10.08	9.32	8.48	7.38	6.69	6.32
CH 108	5540	10.82	10.26	10.02	9.39	8.53	7.46	6.71	6.29
CH 112	5560	10.91	10.34	10.15	9.41	8.57	7.42	6.65	6.24
CH 116	5580	10.99	10.37	10.21	9.53	8.46	7.55	6.52	6.38
CH 136	5680	11.16	10.82	10.20	9.47	8.63	7.65	6.87	6.55
CH 140	5700	11.07	10.71	10.27	9.53	8.72	7.72	6.89	6.52
CH 149	5745	11.05	10.85	10.34	9.87	8.69	7.51	6.68	6.51
CH 153	5765	10.99	10.43	10.12	9.56	8.54	7.88	7.12	6.39
CH 157	5785	10.90	10.37	10.05	9.42	8.47	7.56	7.08	6.41
CH 161	5805	10.94	10.55	10.17	9.47	8.42	7.49	7.18	6.32
CH 165	5825	10.77	10.32	10.07	9.55	8.41	7.37	6.91	6.25

WLAN 5GHz Band 802.11n-HT20 Average Power (dBm)									
Channel	Frequency (MHz)	Average Power (dBm)							
		MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	10.05	9.17	8.42	7.81	6.66	5.87	5.23	4.81
CH 40	5200	9.89	9.02	8.25	7.62	6.57	5.65	5.18	4.74
CH 44	5220	9.97	9.11	8.37	7.56	6.69	5.71	5.07	4.86
CH 48	5240	9.89	9.05	8.35	7.59	6.52	5.64	5.12	4.69
CH 52	5260	9.90	9.08	8.29	7.55	6.48	5.67	5.03	4.66
CH 56	5280	9.89	8.97	8.25	7.49	6.39	5.45	4.99	4.74
CH 60	5300	9.78	8.86	8.31	7.54	6.47	5.51	5.02	4.8
CH 64	5320	9.85	8.75	8.12	7.61	6.42	5.58	4.87	4.62
CH 100	5500	9.47	8.52	7.76	7.10	5.97	5.31	4.62	4.36
CH 104	5520	9.51	8.45	7.81	7.05	5.86	5.37	4.59	4.38
CH 108	5540	9.36	8.41	7.73	6.97	5.74	5.41	4.44	4.21
CH 112	5560	9.35	8.37	7.68	7.06	5.68	5.32	4.51	4.18
CH 116	5580	9.46	8.35	7.57	7.07	5.63	5.37	4.58	4.32
CH 136	5680	9.71	8.92	7.92	7.26	5.91	5.60	4.77	4.64
CH 140	5700	9.53	8.57	7.94	7.31	6.09	5.42	4.86	4.47
CH 149	5745	9.49	8.72	8.01	7.17	6.31	5.43	4.97	4.54
CH 153	5765	9.46	8.67	7.98	6.98	6.37	5.35	4.83	4.23
CH 157	5785	9.37	8.78	7.91	6.96	6.29	5.28	4.68	4.29
CH 161	5805	9.35	8.65	7.82	7.06	6.35	5.17	4.56	4.27
CH 165	5825	9.05	8.43	7.31	6.77	6.21	5.27	4.43	4.13

WLAN 5GHz Band 802.11n-H40 Average Power (dBm)									
Channel	Frequency (MHz)	Average Power (dBm)							
		MCS Index							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	**8.32**	7.00	5.99	5.36	4.17	3.52	3.28	2.92
CH 46	5230	8.26	6.95	6.01	5.24	4.22	3.58	3.25	2.81
CH 54	5270	**8.11**	6.84	5.92	5.21	4.26	3.64	3.20	2.86
CH 62	5310	8.04	6.87	5.89	5.09	4.11	3.47	3.14	2.64
CH 102	5510	7.77	6.46	5.37	4.68	3.73	3.02	2.72	2.49
CH 110	5550	8.00	6.91	5.88	5.01	4.07	3.43	3.12	2.70
CH 134	5670	**8.23**	6.89	5.85	5.27	4.02	3.38	3.01	2.85
CH 151	5755	**10.09**	9.27	8.18	7.09	6.54	5.98	5.43	4.75
CH 159	5795	10.06	9.12	8.13	7.11	6.42	5.87	5.45	4.82

11. SAR Test Results

Note:

1. Per KDB 447498 D01v05, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   Scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   Reported SAR(W/kg)= Measured SAR(W/kg) Scaling Factor*
2. Per KDB 447498 D01v05, for each exposure position, if the highest output channel reported SAR ≤0.8W/kg, other channels SAR testing are not necessary

11.1 Test Records for Head SAR Test

<GSM SAR>

Plot No.	Band	Mode	Test Position	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#86	GSM850	GSM Voice	Left Cheek	#2	251	848.8	32.59	34	1.384	-0.07	0.253	0.350
#182	**GSM850**	**GSM Voice**	**Left Cheek**	**#4**	**251**	**848.8**	**32.59**	**34**	**1.384**	**0.02**	**0.297**	**0.411**
#05	**GSM1900**	**GSM Voice**	**Right Cheek**	**#2**	**512**	**1850.2**	**30.04**	**31.5**	**1.400**	**0.06**	**0.095**	**0.133**
#186	GSM1900	GSM Voice	Right Cheek	#4	512	1850.2	30.04	31.5	1.400	0.01	0.093	0.130

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#91	WCDMA V	RMC 12.2K	Left Cheek	#2	4132	826.4	23.56	24.5	1.242	-0.02	0.218	0.271
#184	**WCDMA V**	**RMC 12.2K**	**Left Cheek**	**#4**	**4132**	**826.4**	**23.56**	**24.5**	**1.242**	**-0.04**	**0.252**	**0.313**
#96	WCDMA IV	RMC 12.2K	Right Cheek	#2	1312	1712.4	22.89	23	1.026	0.14	0.193	0.198
#190	**WCDMA IV**	**RMC 12.2K**	**Right Cheek**	**#4**	**1312**	**1712.4**	**22.89**	**23**	**1.026**	**0.11**	**0.210**	**0.215**
#10	WCDMA II	RMC 12.2K	Right Cheek	#2	9262	1852.4	22.93	23.8	1.222	-0.02	0.131	0.160
#188	**WCDMA II**	**RMC 12.2K**	**Right Cheek**	**#4**	**9262**	**1852.4**	**22.93**	**23.8**	**1.222**	**0.09**	**0.150**	**0.183**

<WLAN 2.4GHz Band SAR>

Plot No.	Band	Mode	Test Position	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#107	**WLAN 2.4GHz Band**	**802.11b**	**Left Cheek**	**#2**	**6**	**2437**	**16.8**	**18**	**1.318**	**0.15**	**0.04**	**0.053**
#192	WLAN 2.4GHz Band	802.11b	Left Cheek	#4	6	2437	16.8	18	1.318	0.07	0.023	0.030

<WLAN 5GHz Band SAR>

Plot No.	Band	Mode	Test Position	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#136	WLAN 5.2GHz Band	802.11a	Left Cheek	#2	36	5180	12.01	14	1.581	-0.01	0.019	0.030
#194	**WLAN 5.2GHz Band**	**802.11a**	**Left Cheek**	**#4**	**36**	**5180**	**12.01**	**14**	**1.581**	**-0.09**	**0.03**	**0.047**
#141	WLAN 5.3GHz Band	802.11a	Left Cheek	#2	60	5300	11.8	14	1.660	0.11	0.013	0.022
#196	**WLAN 5.3GHz Band**	**802.11a**	**Left Cheek**	**#4**	**60**	**5300**	**11.8**	**14**	**1.660**	**0.03**	**0.029**	**0.048**
#146	WLAN 5.5GHz Band	802.11a	Left Cheek	#2	136	5680	11.16	14	1.923	0.08	0.019	0.037
#198	**WLAN 5.5GHz Band**	**802.11a**	**Left Cheek**	**#4**	**136**	**5680**	**11.16**	**14**	**1.923**	**0.01**	**0.027**	**0.052**
#151	WLAN 5.8GHz Band	802.11a	Left Cheek	#2	149	5745	11.05	14	1.972	0.08	0.017	0.034
#200	**WLAN 5.8GHz Band**	**802.11a**	**Left Cheek**	**#4**	**149**	**5745**	**11.05**	**14**	**1.972**	**0.02**	**0.022**	**0.043**

11.2 Test Records for Hotspot SAR Test

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#21	GSM850	GPRS (2 Tx slots)	Bottom Side	1	#2	190	836.6	30.64	32	1.368	-0.01	0.663	0.907
#22	GSM850	GPRS (2 Tx slots)	Bottom Side	1	#2	128	836.8	30.58	32	1.387	-0.07	0.575	0.797
#23	GSM850	GPRS (2 Tx slots)	Bottom Side	1	#2	251	836.8	30.68	32	1.355	-0.04	0.726	0.984
#178	GSM850	GPRS (2 Tx slots)	Bottom Side	1	#4	190	836.6	30.64	32	1.368	-0.02	0.668	0.914
#179	GSM850	GPRS (2 Tx slots)	Bottom Side	1	#4	128	824.2	30.58	32	1.387	0.09	0.520	0.721
#180	**GSM850**	**GPRS (2 Tx slots)**	**Bottom Side**	**1**	**#4**	**251**	**836.8**	**30.68**	**32**	**1.355**	**0.04**	**0.798**	**1.081**
#42	GSM1900	EDGE(2 Tx slots)	Bottom Side	1	#2	661	1850.2	27.96	29.5	1.426	0.02	0.797	1.136
#43	GSM1900	EDGE(2 Tx slots)	Bottom Side	1	#2	512	1850.2	28.12	29.5	1.374	0.04	0.772	1.061
#44	GSM1900	EDGE(2 Tx slots)	Bottom Side	1	#2	810	1909.8	27.74	29.5	1.500	-0.04	0.809	1.213
#158	GSM1900	EDGE(2 Tx slots)	Bottom Side	1	#4	661	1850.2	27.96	29.5	1.426	-0.01	0.818	1.166
#159	GSM1900	EDGE(2 Tx slots)	Bottom Side	1	#4	512	1850.2	28.12	29.5	1.374	0.01	0.777	1.068
#160	**GSM1900**	**EDGE(2 Tx slots)**	**Bottom Side**	**1**	**#4**	**810**	**1909.8**	**27.74**	**29.5**	**1.500**	**0.02**	**0.830**	**1.245**

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#29	WCDMA V	RMC 12.2K	Bottom Side	1	#2	4132	826.4	23.56	24.5	1.242	-0.08	0.492	0.611
#174	**WCDMA V**	**RMC 12.2K**	**Bottom Side**	**1**	**#4**	**4132**	**826.4**	**23.56**	**24.5**	**1.242**	**0.03**	**0.528**	**0.656**
#78	**WCDMA IV**	**RMC 12.2K**	**Front**	**1**	**#2**	**1413**	**1732.6**	**22.82**	**23**	**1.042**	**-0.02**	**1.24**	**1.292**
#79	WCDMA IV	RMC 12.2K	Front	1	#2	1312	1712.4	22.89	23	1.026	-0.02	1.04	1.067
#80	WCDMA IV	RMC 12.2K	Front	1	#2	1513	1752.6	22.87	23	1.030	-0.04	1.16	1.195
#169	WCDMA IV	RMC 12.2K	Front	1	#4	1413	1732.6	22.82	23	1.042	0.01	1.19	1.240
#170	WCDMA IV	RMC 12.2K	Front	1	#4	1312	1712.4	22.89	23	1.026	0.05	1.02	1.046
#171	WCDMA IV	RMC 12.2K	Front	1	#4	1513	1752.6	22.87	23	1.030	0.01	1.09	1.123
#60	WCDMA II	RMC 12.2K	Bottom Side	1	#2	9262	1852.4	22.93	23.8	1.222	-0.1	1.17	1.430
#61	WCDMA II	RMC 12.2K	Bottom Side	1	#2	9400	1880	22.82	23.8	1.253	0.08	1.03	1.291
#62	WCDMA II	RMC 12.2K	Bottom Side	1	#2	9538	1907.6	22.63	23.8	1.309	0.02	1.05	1.375
#161	**WCDMA II**	**RMC 12.2K**	**Bottom Side**	**1**	**#4**	**9262**	**1852.4**	**22.93**	**23.8**	**1.222**	**0.01**	**1.20**	**1.466**
#162	WCDMA II	RMC 12.2K	Bottom Side	1	#4	9400	1880	22.82	23.8	1.253	0.02	1.09	1.366
#163	WCDMA II	RMC 12.2K	Bottom Side	1	#4	9538	1907.6	22.63	23.8	1.309	-0.01	1.10	1.440

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#102	**WLAN 2.4GHz Band**	**802.11b**	**Back**	**1**	**#2**	**6**	**2437**	**16.8**	**18**	**1.318**	**-0.06**	**0.073**	**0.096**
#202	WLAN 2.4GHz Band	802.11b	Back	1	#4	6	2437	16.8	18	1.318	0.04	0.052	0.069

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#113	**WLAN 5.2GHz Band**	**802.11a**	**Back**	**1**	**#2**	**36**	**5180**	**12.01**	**14**	**1.581**	**0.06**	**0.396**	**0.626**
#204	WLAN 5.2GHz Band	802.11a	Back	1	#4	36	5180	12.01	14	1.581	0.09	0.356	0.563
#131	**WLAN 5.8GHz Band**	**802.11a**	**Back**	**1**	**#2**	**149**	**5745**	**11.05**	**14**	**1.972**	**0.03**	**0.327**	**0.645**
#210	WLAN 5.8GHz Band	802.11a	Back	1	#4	149	5745	11.05	14	1.972	0.07	0.313	0.617

11.3 Test Records for Body-worn SAR Test

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#78	**WCDMA IV**	**RMC 12.2K**	**Front**	**1**	**#2**	**1413**	**1732.6**	**22.82**	**23**	**1.042**	**-0.02**	**1.24**	**1.292**
#79	WCDMA IV	RMC 12.2K	Front	1	#2	1312	1712.4	22.89	23	1.026	-0.02	1.04	1.067
#80	WCDMA IV	RMC 12.2K	Front	1	#2	1513	1752.6	22.87	23	1.030	-0.04	1.16	1.195
#169	WCDMA IV	RMC 12.2K	Front	1	#4	1413	1732.6	22.82	23	1.042	0.01	1.19	1.240
#170	WCDMA IV	RMC 12.2K	Front	1	#4	1312	1712.4	22.89	23	1.026	0.05	1.02	1.046
#171	WCDMA IV	RMC 12.2K	Front	1	#4	1513	1752.6	22.87	23	1.030	0.01	1.09	1.123

<WLAN 2.4GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#102	**WLAN 2.4GHz Band**	**802.11b**	**Back**	**1**	**#2**	**6**	**2437**	**16.8**	**18**	**1.318**	**-0.06**	**0.073**	**0.096**
#202	WLAN 2.4GHz Band	802.11b	Back	1	#4	6	2437	16.8	18	1.318	0.04	0.052	0.069

<WLAN 5GHz SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#113	**WLAN 5.2GHz Band**	**802.11a**	**Back**	**1**	**#2**	**36**	**5180**	**12.01**	**14**	**1.581**	**0.06**	**0.396**	**0.626**
#204	WLAN 5.2GHz Band	802.11a	Back	1	#4	36	5180	12.01	14	1.581	0.09	0.356	0.563
#119	**WLAN 5.3GHz Band**	**802.11a**	**Back**	**1**	**#2**	**60**	**5300**	**11.8**	**14**	**1.660**	**-0.01**	**0.288**	**0.478**
#206	WLAN 5.3GHz Band	802.11a	Back	1	#4	60	5300	11.8	14	1.660	0.15	0.265	0.440
#125	**WLAN 5.5GHz Band**	**802.11a**	Back	1	#2	136	5680	11.16	14	1.923	0.07	0.285	0.548
#208	WLAN 5.5GHz Band	802.11a	**Back**	**1**	**#4**	**136**	**5680**	**11.16**	**14**	**1.923**	**0.14**	**0.388**	**0.746**
#131	**WLAN 5.8GHz Band**	**802.11a**	**Back**	**1**	**#2**	**149**	**5745**	**11.05**	**14**	**1.972**	**0.03**	**0.327**	**0.645**
#210	WLAN 5.8GHz Band	802.11a	Back	1	#4	149	5745	11.05	14	1.972	0.07	0.313	0.617

11.4 Repeated SAR Measurement

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Ratio	Reported SAR_{1g} (W/kg)
#160	GSM1900	EDGE(2 Tx slots)	Bottom Side	1	#4	810	1909.8	27.74	29.5	1.500	0.02	0.830	1	1.245
#164	GSM1900	EDGE(2 Tx slots)	Bottom Side	1	#4	810	1909.8	27.74	29.5	1.500	0.05	0.818	1.015	1.227
#78	WCDMA IV	RMC 12.2K	Front	1	#2	1413	1732.6	22.82	23	1.042	-0.02	1.24	1	1.292
#172	WCDMA IV	RMC 12.2K	Front	1	#2	1413	1732.6	22.82	23	1.042	0.03	1.14	1.088	1.188
#161	WCDMA II	RMC 12.2K	Bottom Side	1	#4	9262	1852.4	22.93	23.8	1.222	0.01	1.20	1	1.466
#165	WCDMA II	RMC 12.2K	Bottom Side	1	#4	9262	1852.4	22.93	23.8	1.222	0.05	1.18	1.017	1.442

Note:

1. Per KDB 865664 D01v01, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg
2. Per KDB 865664 D01v01, if the deviation among the repeated measurement is ≤20% and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The deviation is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

11.5 Highest SAR Plot

Plot No.	Band	Mode	Test Position	Gap (cm)	Sample	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR_{1g} (W/kg)	Reported SAR_{1g} (W/kg)
#180	GSM850	GPRS (2 Tx slots)	Bottom Side	1	#4	251	836.8	30.68	32	1.355	0.04	0.798	1.081
#160	GSM1900	EDGE(2 Tx slots)	Bottom Side	1	#4	810	1909.8	27.74	29.5	1.500	0.02	0.830	1.245
#174	WCDMA V	RMC 12.2K	Bottom Side	1	#4	4132	826.4	23.56	24.5	1.242	0.03	0.528	0.656
#78	WCDMA IV	RMC 12.2K	Front	1	#2	1413	1732.6	22.82	23	1.042	-0.02	1.24	1.292
#161	WCDMA II	RMC 12.2K	Bottom Side	1	#4	9262	1852.4	22.93	23.8	1.222	0.01	1.20	1.466
#102	WLAN 2.4GHz Band	802.11b	Back	1	#2	6	2437	16.8	18	1.318	-0.06	0.073	0.096
#113	WLAN 5.2GHz Band	802.11a	Back	1	#2	36	5180	12.01	14	1.581	0.06	0.396	0.626
#119	WLAN 5.3GHz Band	802.11a	Back	1	#2	60	5300	11.8	14	1.660	-0.01	0.288	0.478
#208	WLAN 5.5GHz Band	802.11a	Back	1	#4	136	5680	11.16	14	1.923	0.14	0.388	0.746
#131	WLAN 5.8GHz Band	802.11a	Back	1	#2	149	5745	11.05	14	1.972	0.03	0.327	0.645

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

#180 GSM850_GPRS (2 Tx slots)_Bottom Side_1cm_Ch251_#4

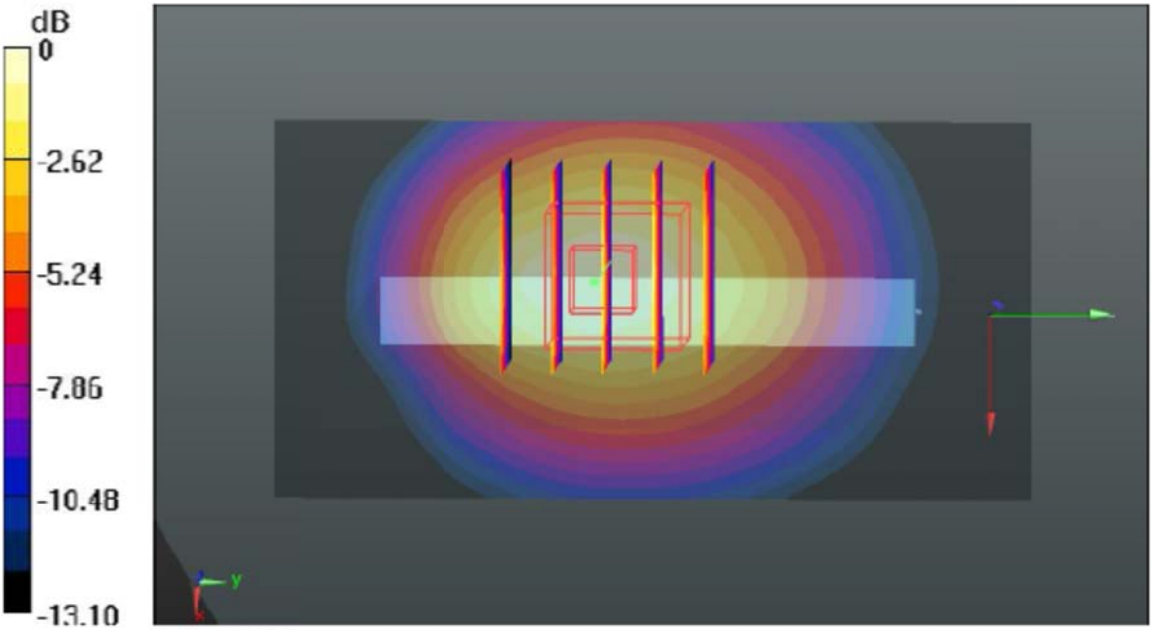
DUT: MT1-U06

Communication System: GPRS/EDGE10; Frequency: 848.8 MHz;Duty Cycle: 1:4
Medium: MSL_835_130307 Medium parameters used: f = 849 MHz; σ = 0.991 mho/m; ε_r = 54.291; ρ = 1000 kg/m^3
Ambient Temperature : 23.2 ℃; Liquid Temperature : 21.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch251/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.04 W/kg

Ch251/Zoom Scan (5x5x7)/Cube0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.166 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.245 mW/g
SAR(1 g) = 0.798 mW/g; SAR(10 g) = 0.501 mW/g
Maximum value of SAR (measured) = 1.03 W/kg



0 dB = 1.03 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

#160 GSM1900_EDGE (2 Tx slots)_Bottom Side_1cm_Ch810_#4

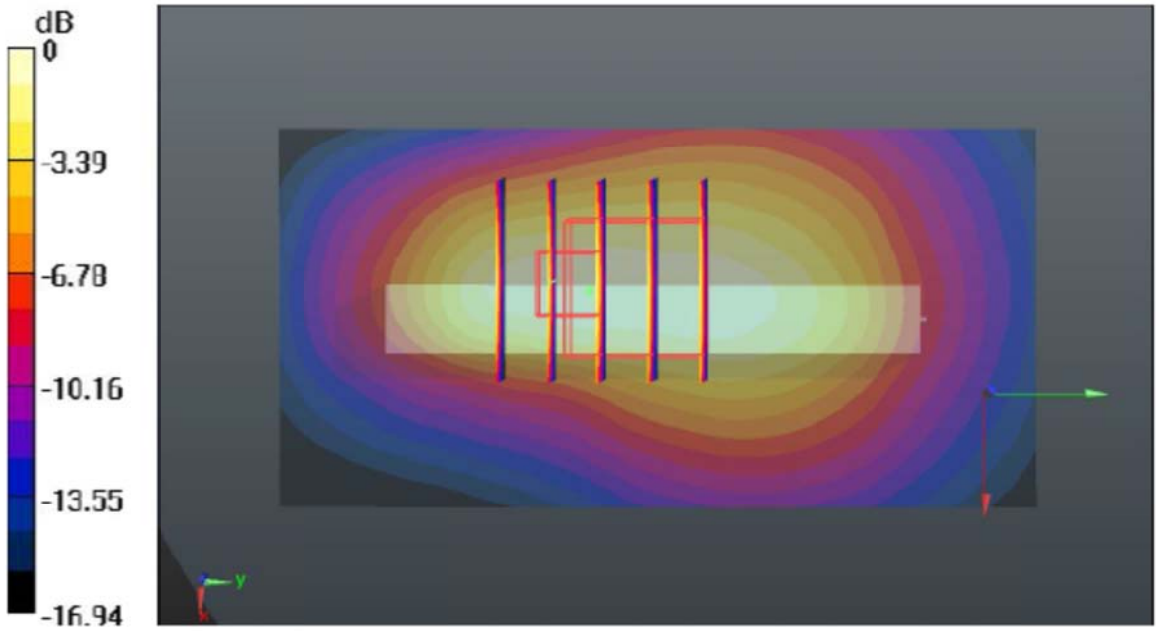
DUT: MT1-U06

Communication System: GPRS/EDGE10; Frequency: 1909.8 MHz;Duty Cycle: 1:4
Medium: MSL_1900_130307 Medium parameters used: f = 1910 MHz; σ = 1.551 mho/m; ε_r = 54.465; ρ = 1000 kg/m^3
Ambient Temperature : 23.1 ℃; Liquid Temperature : 21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch810/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.15 W/kg

Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.383 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.417 mW/g
SAR(1 g) = 0.830 mW/g; SAR(10 g) = 0.472 mW/g
Maximum value of SAR (measured) = 1.14 W/kg



0 dB = 1.14 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

#174 WCDMA V_RMC 12.2K_Bottom Side_1cm_Ch4132_#4

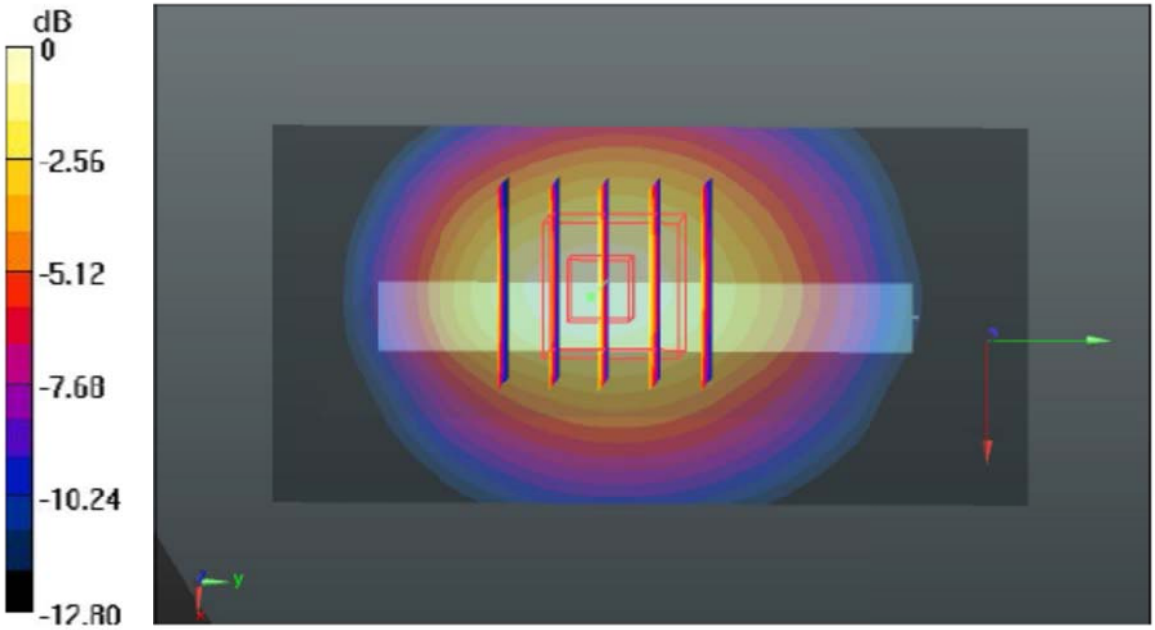
DUT: MT1-U06

Communication System: UMTS; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_130307 Medium parameters used: f = 826.4 MHz; σ = 0.97 mho/m; ε_r = 54.473; ρ = 1000 kg/m^3
Ambient Temperature : 23.2 ℃; Liquid Temperature : 21.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch4132/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.677 W/kg

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.040 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.818 mW/g
SAR(1 g) = 0.528 mW/g; SAR(10 g) = 0.333 mW/g
Maximum value of SAR (measured) = 0.682 W/kg



0 dB = 0.682 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 19.02.2013

#78 WCDMA IV_RMC 12.2K_Front_1cm_Ch1413_#2

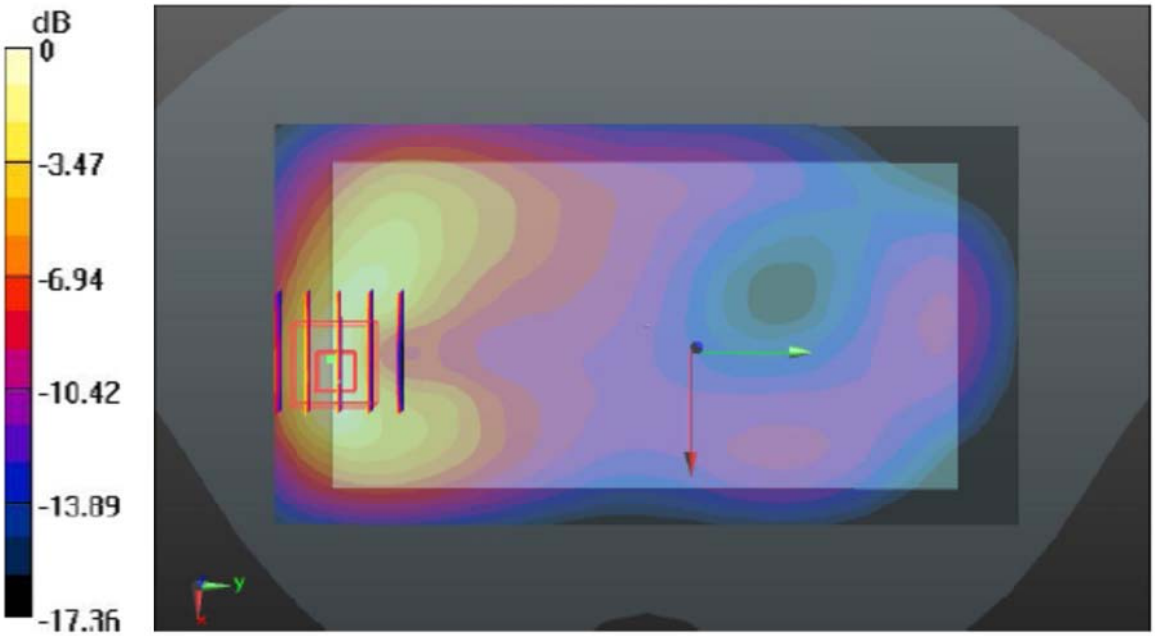
DUT: MT1-U06

Communication System: UMTS; Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: MSL_1800_130219 Medium parameters used: f = 1733 MHz; σ = 1.498 mho/m; ε_r = 55.07; ρ = 1000 kg/m^3
Ambient Temperature : 23.5 ℃; Liquid Temperature : 21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(8, 8, 8); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch1413/Area Scan (71x131x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.58 W/kg

Ch1413/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.666 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 2.049 mW/g
SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.679 mW/g
Maximum value of SAR (measured) = 1.71 W/kg



0 dB = 1.71 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

#161 WCDMA II_RMC 12.2K_Bottom Side_1cm_Ch9262_#4

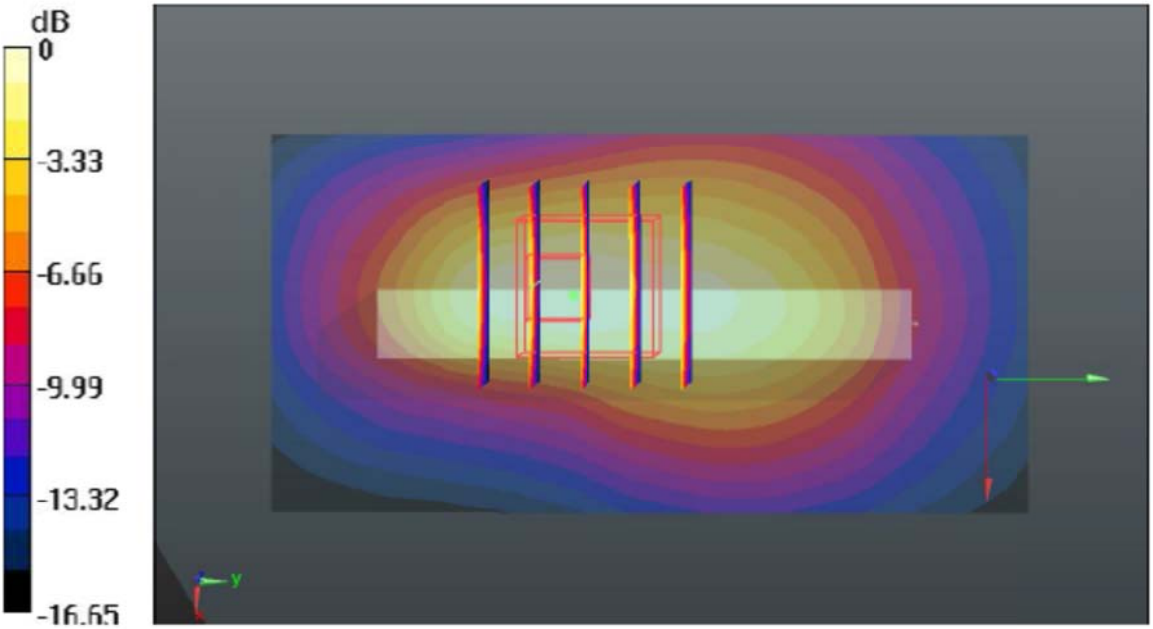
DUT: MT1-U06

Communication System: UMTS; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130307 Medium parameters used: f = 1852.4 MHz; σ = 1.482 mho/m; ε_r = 54.583; ρ = 1000 kg/m^3
Ambient Temperature : 23.1 ℃ ; Liquid Temperature : 21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch9262/Area Scan (41x81x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.66 W/kg

Ch9262/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.637 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.022 mW/g
SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.666 mW/g
Maximum value of SAR (measured) = 1.63 W/kg



0 dB = 1.63 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 05.03.2013

#102 WLAN 2.4GHz Band_802.11b_Back_1cm_Ch6_#2

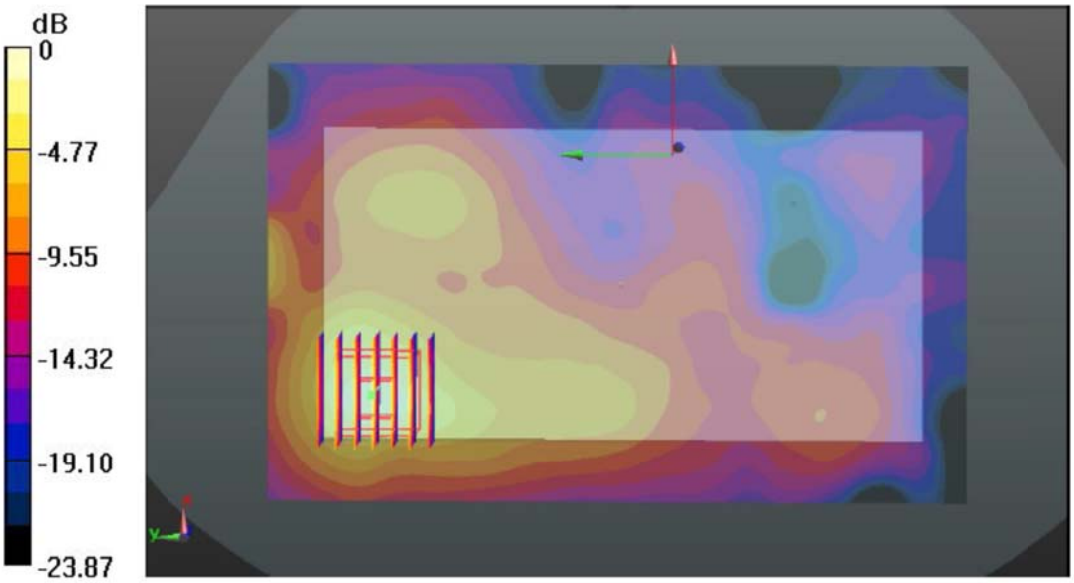
DUT: MT1-U06

Communication System: WIFI; Frequency: 2437 MHz;Duty Cycle: 1:1.55
Medium: MSL_2450_130305 Medium parameters used: f = 2437 MHz; σ = 1.913 mho/m; ε_r = 53.395; ρ = 1000 kg/m^3
Ambient Temperature : 23.5 ℃; Liquid Temperature : 21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch6/Area Scan (101x161x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.105 W/kg

Ch6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.603 V/m; Power Drift= -0.06 dB
Peak SAR (extrapolated) = 0.150 mW/g
SAR(1 g) = 0.073 mW/g; SAR(10 g) = 0.034 mW/g
Maximum value of SAR (measured) = 0.109 W/kg



0 dB = 0.109 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 06.03.2013

#113_WLAN 5.2GHz Band_802.11a_Back_1cm_Ch36_#2

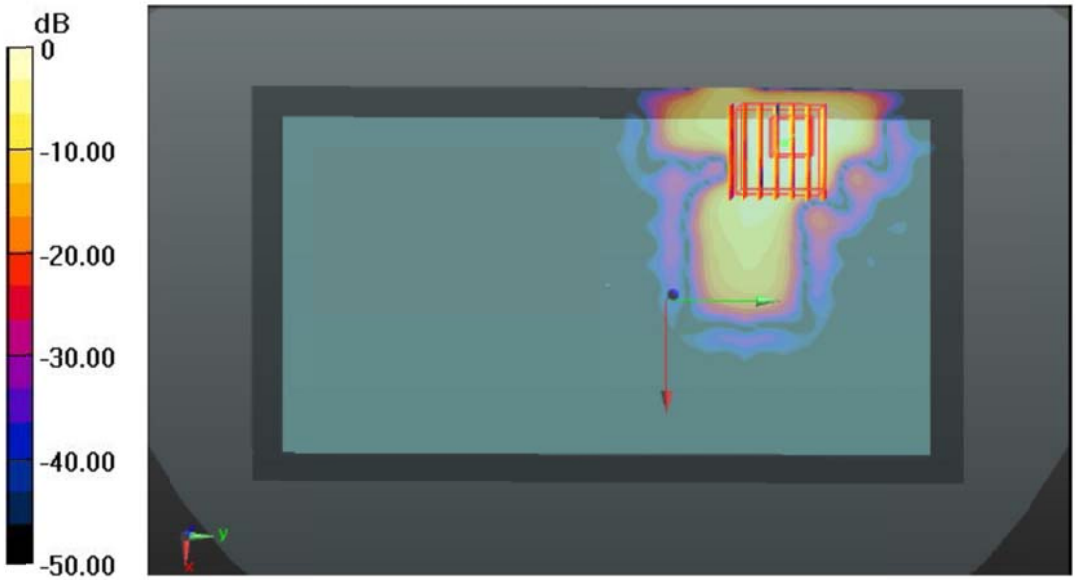
DUT: MT1-U06

Communication System: WIFI; Frequency: 5180 MHz;Duty Cycle: 1:1.36
Medium: MSL_5G_130306 Medium parameters used: f = 5180 MHz; σ = 5.248 mho/m; ε_r = 48.573; ρ = 1000 kg/m^3
Ambient Temperature : 23.5 ℃; Liquid Temperature : 21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.63, 4.63, 4.63); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch36/Area Scan (101x181x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.790 W/kg

Ch36/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 12.903 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.475 mW/g
SAR(1 g) = 0.396 mW/g; SAR(10 g) = 0.127 mW/g
Maximum value of SAR (measured) = 0.761 W/kg



0 dB = 0.761 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 06.03.2013

#119_WLAN 5.3GHz Band_802.11a_Back_1cm_Ch60_#2

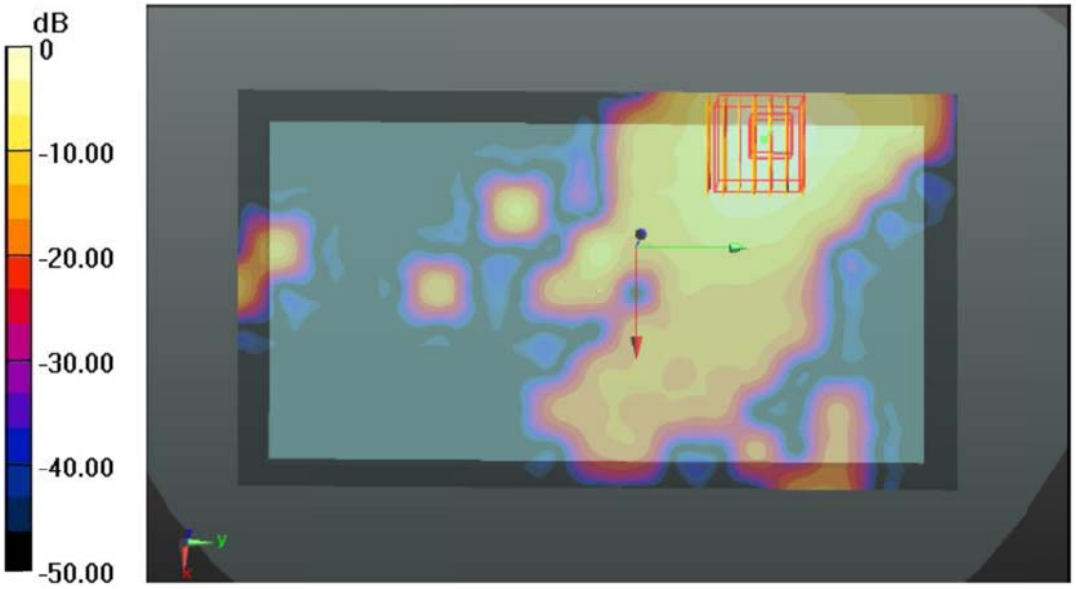
DUT: MT1-U06

Communication System: WIFI; Frequency: 5300 MHz;Duty Cycle: 1:1.36
Medium: MSL_5G_130306 Medium parameters used: f = 5300 MHz; σ = 5.418 mho/m; ε_r = 48.319; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.31, 4.31, 4.31); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch60/Area Scan (101x181x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.551 W/kg

Ch60/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 11.120 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.054 mW/g
SAR(1 g) = 0.288 mW/g; SAR(10 g) = 0.091 mW/g
Maximum value of SAR (measured) = 0.562 W/kg



0 dB = 0.562 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

#208_WLAN 5.5GHz Band_802.11a_Back_1cm_Ch136_#4

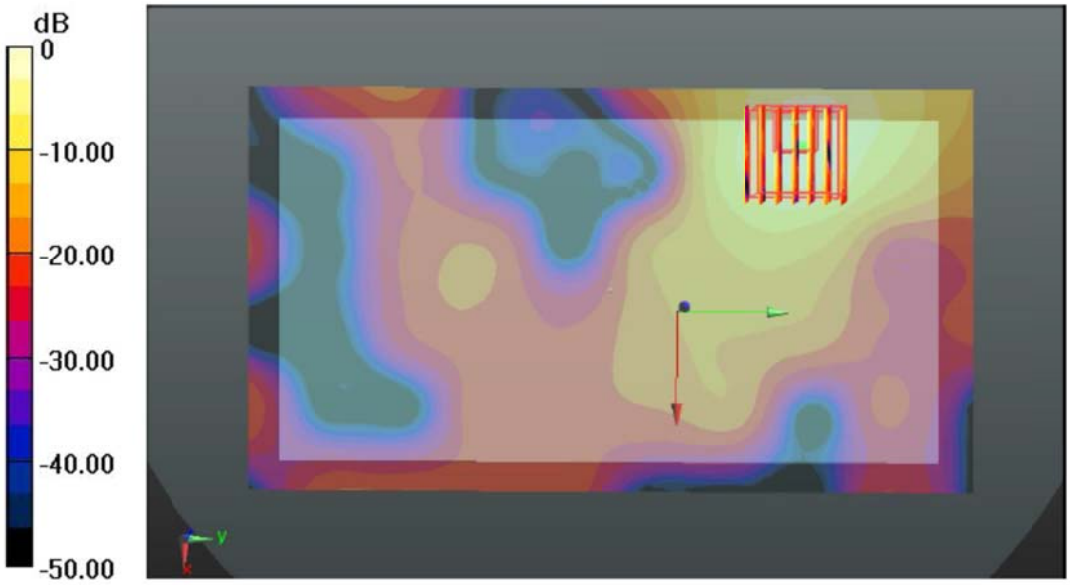
DUT: MT1-U06

Communication System: WIFI; Frequency: 5680 MHz;Duty Cycle: 1:1.36
Medium: MSL_5G_130308 Medium parameters used: f = 5680 MHz; σ = 6.058 mho/m; ε_r = 47.409; ρ = 1000 kg/m^3
Ambient Temperature : 23.5 ℃; Liquid Temperature : 21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(3.86, 3.86, 3.86); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch136/Area Scan (101x181x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.603 W/kg

Ch136/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 11.533 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 1.533 mW/g
SAR(1 g) = 0.388 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.732 W/kg



0 dB = 0.732 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 06.03.2013

#131_WLAN 5.8GHz Band_802.11a_Back_1cm_Ch149_#2

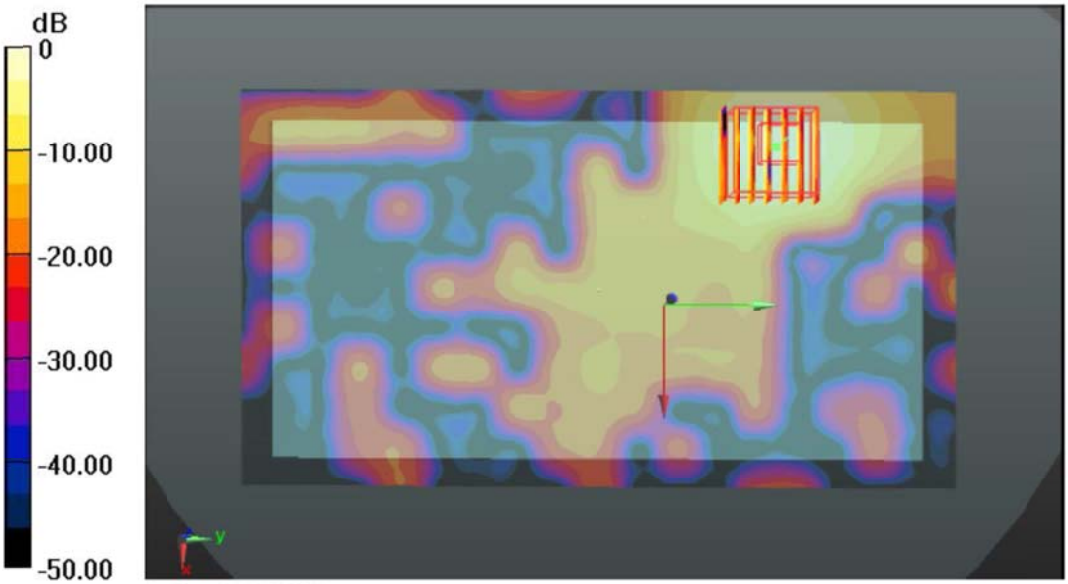
DUT: MT1-U06

Communication System: WIFI; Frequency: 5745 MHz;Duty Cycle: 1:1.36
Medium: MSL_5G_130306 Medium parameters used: f = 5745 MHz; σ = 6.051 mho/m; ε_r = 47.358; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.09, 4.09, 4.09); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Ch149/Area Scan (101x181x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.629 W/kg

Ch149/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 11.234 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.320 mW/g
SAR(1 g) = 0.327 mW/g; SAR(10 g) = 0.101 mW/g
Maximum value of SAR (measured) = 0.645 W/kg



0 dB = 0.645 W/kg

Test Engineer： Kat Yin

12. Uncertainty Assessment

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

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

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

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[(a)]	1/k[(b)]	1/√3	1/√6	1/√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 from IEEE Std 1528™-2003

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 from IEEE Std 1528™-2003

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 v05, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, October 2012

[8] FCC KDB 865664 D01 v01, “SAR Measurement Requirements for 100MHz to 6 GHz”, October 2012

[9] FCC KDB 648474 D04 v01, “SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas”, October 2012

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

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

[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.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 21.02.2013

System Check_Head_835MHz_130221

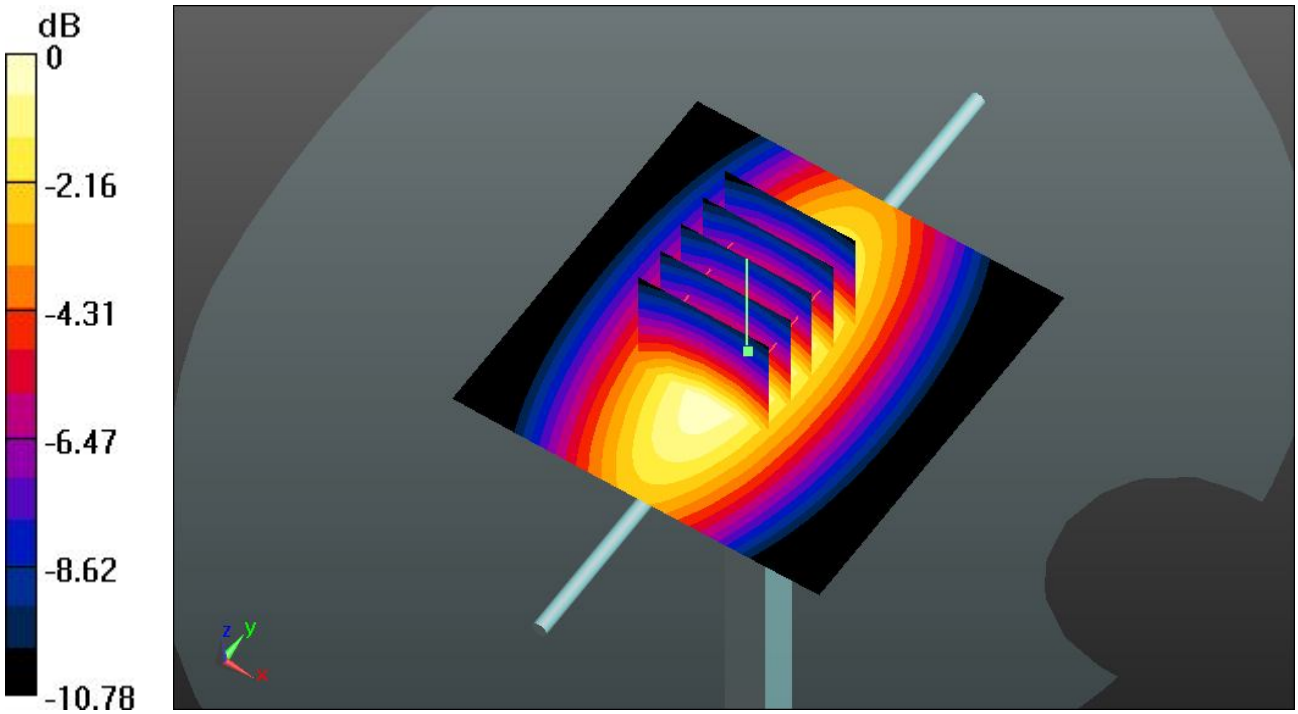
DUT: D835V2 - SN: 4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_130221 Medium parameters used: f = 835 MHz; σ = 0.888 mho/m; ε_r = 40.631; ρ = 1000 kg/m^3
Ambient Temperature：23.6 ℃; Liquid Temperature：21.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.56, 9.56, 9.56); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.10 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 60.019 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.666 mW/g
SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.6 mW/g
Maximum value of SAR (measured) = 3.08 W/kg



0 dB = 3.08 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Head_835MHz_130307

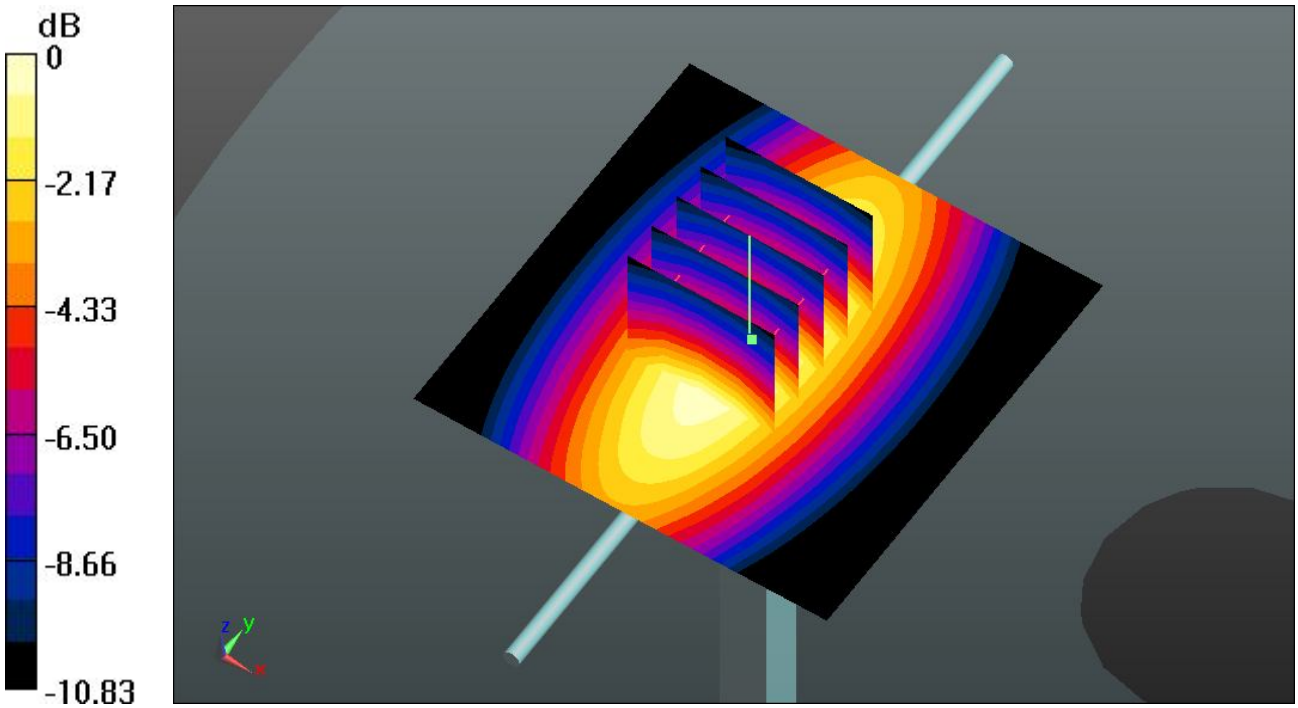
DUT: D835V2 - SN: 4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_130307 Medium parameters used: f = 835 MHz; σ = 0.912 mho/m; ε_r = 41.941; ρ = 1000 kg/m^3
Ambient Temperature：23.3 ℃; Liquid Temperature：21.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.56, 9.56, 9.56); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.15 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.796 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.734 mW/g
SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.62 mW/g
Maximum value of SAR (measured) = 3.15 W/kg



0 dB = 3.15 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 23.02.2013

System Check_Head_1750MHz_130223

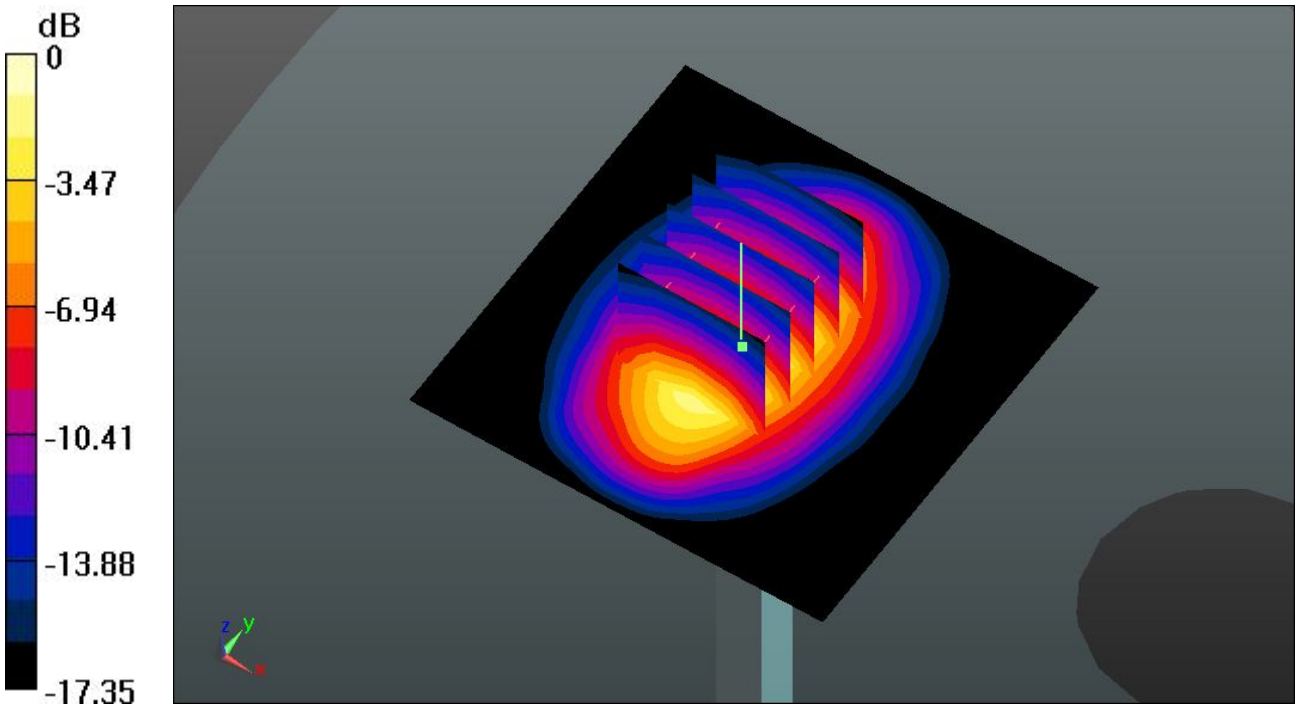
DUT: D1750V2 - SN: 1023

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1800_130223 Medium parameters used: f = 1750 MHz; σ = 1.407 mho/m; ε_r = 41.718; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(8.2, 8.2, 8.2); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 98.604 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.268 mW/g
SAR(1 g) = 9.47 mW/g; SAR(10 g) = 4.99 mW/g
Maximum value of SAR (measured) = 13.6 W/kg



0 dB = 13.6 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Head_1750MHz_130307

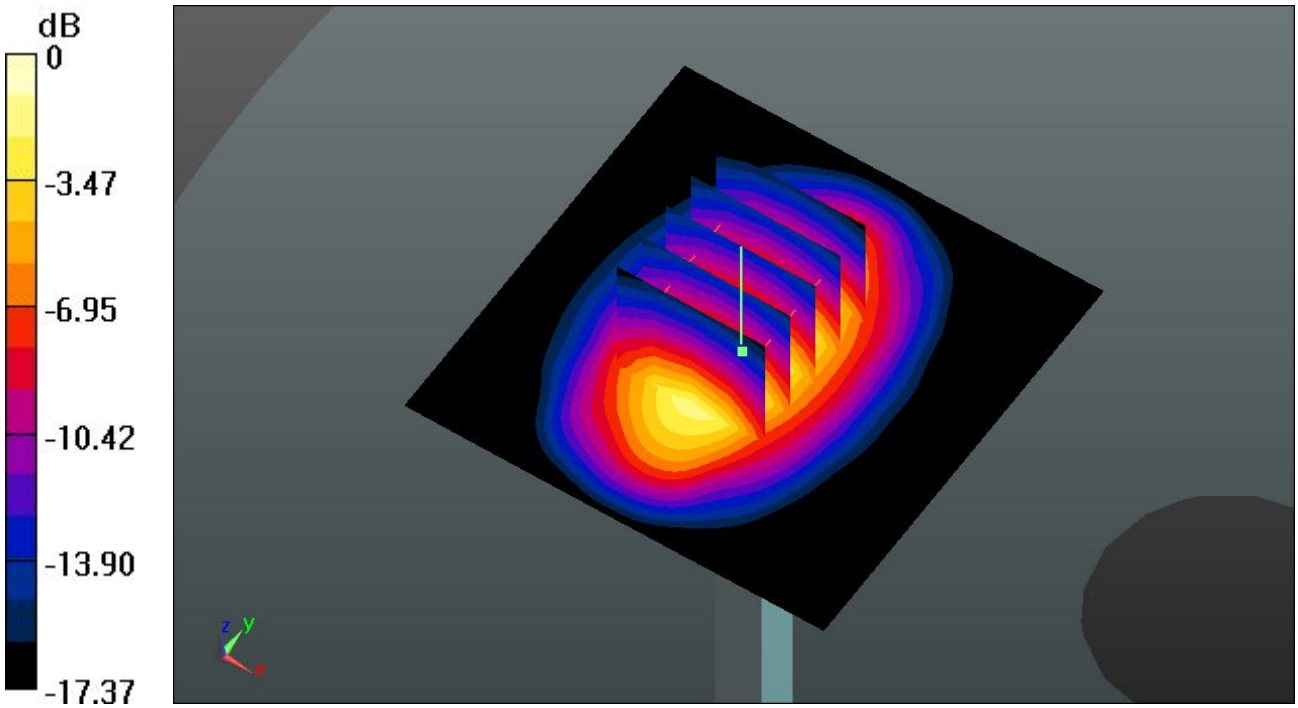
DUT: D1750V2 - SN: 1023

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1800_130307 Medium parameters used: f = 1750 MHz; σ = 1.375 mho/m; ε_r = 41.375; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：21.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(8.2, 8.2, 8.2); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.0 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 97.709 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 16.618 mW/g
SAR(1 g) = 9.11 mW/g; SAR(10 g) = 4.8 mW/g
Maximum value of SAR (measured) = 13.0 W/kg



0 dB = 13.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 06.02.2013

System Check_Head_1900MHz_130206

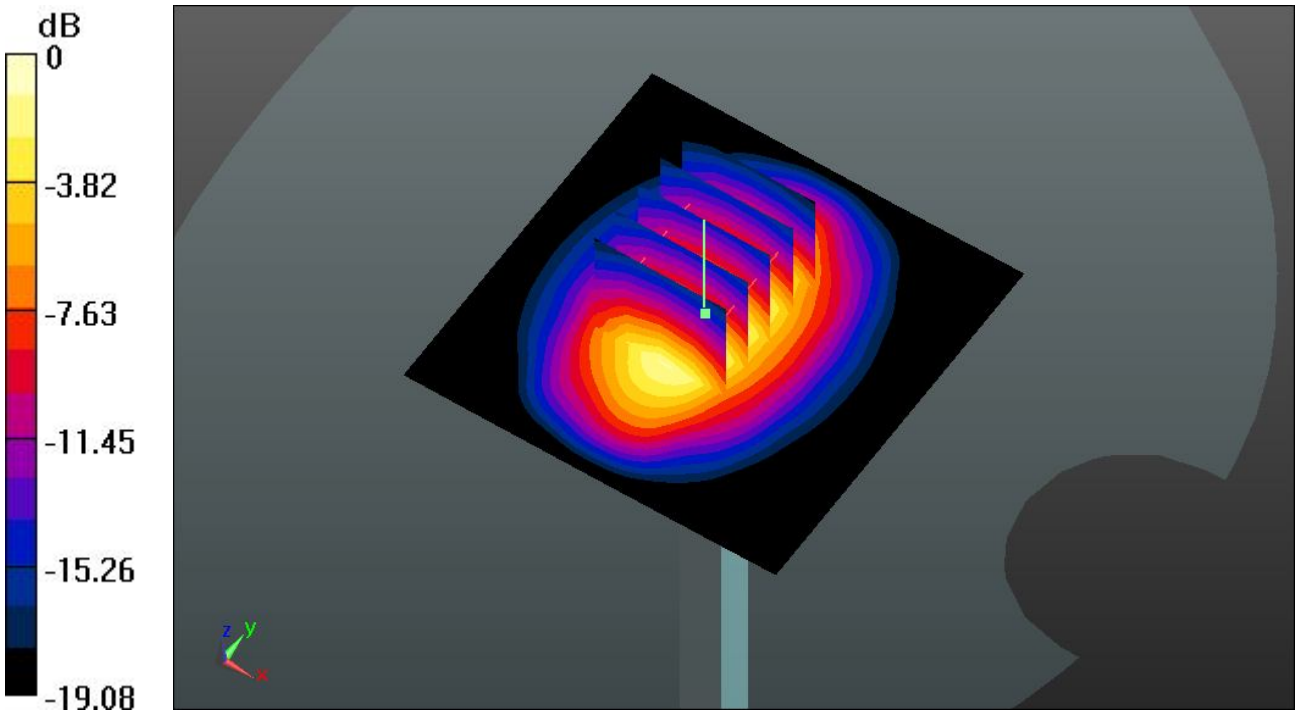
DUT: D1900V2 - SN: 5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_130206 Medium parameters used: f = 1900 MHz; σ = 1.415 mho/m; ε_r = 40.527; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.84, 7.84, 7.84); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 101.9 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 18.749 mW/g
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.18 mW/g
Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.1 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Head_1900MHz_130307

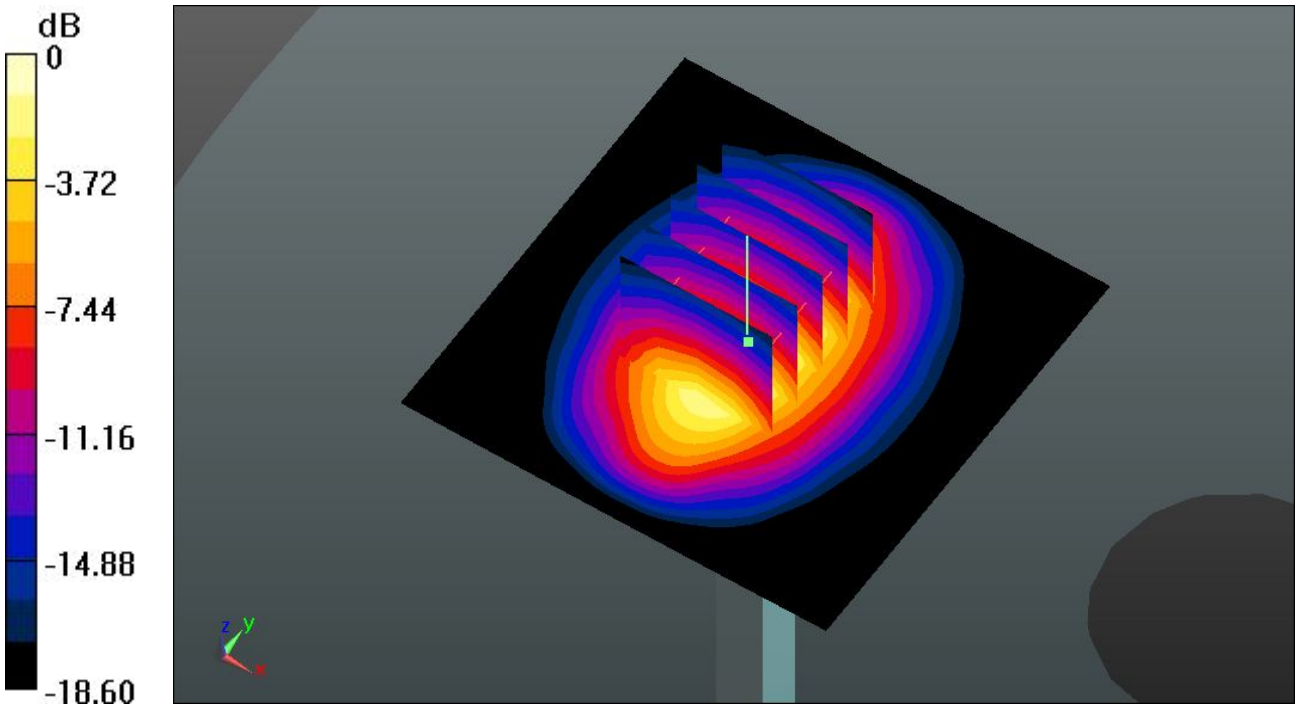
DUT: D1900V2 - SN: 5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_130307 Medium parameters used: f = 1900 MHz; σ = 1.427 mho/m; ε_r = 41.191; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.84, 7.84, 7.84); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.7 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 103.3 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 18.790 mW/g
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.24 mW/g
Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 05.03.2013

System Check_Head_2450MHz_130305

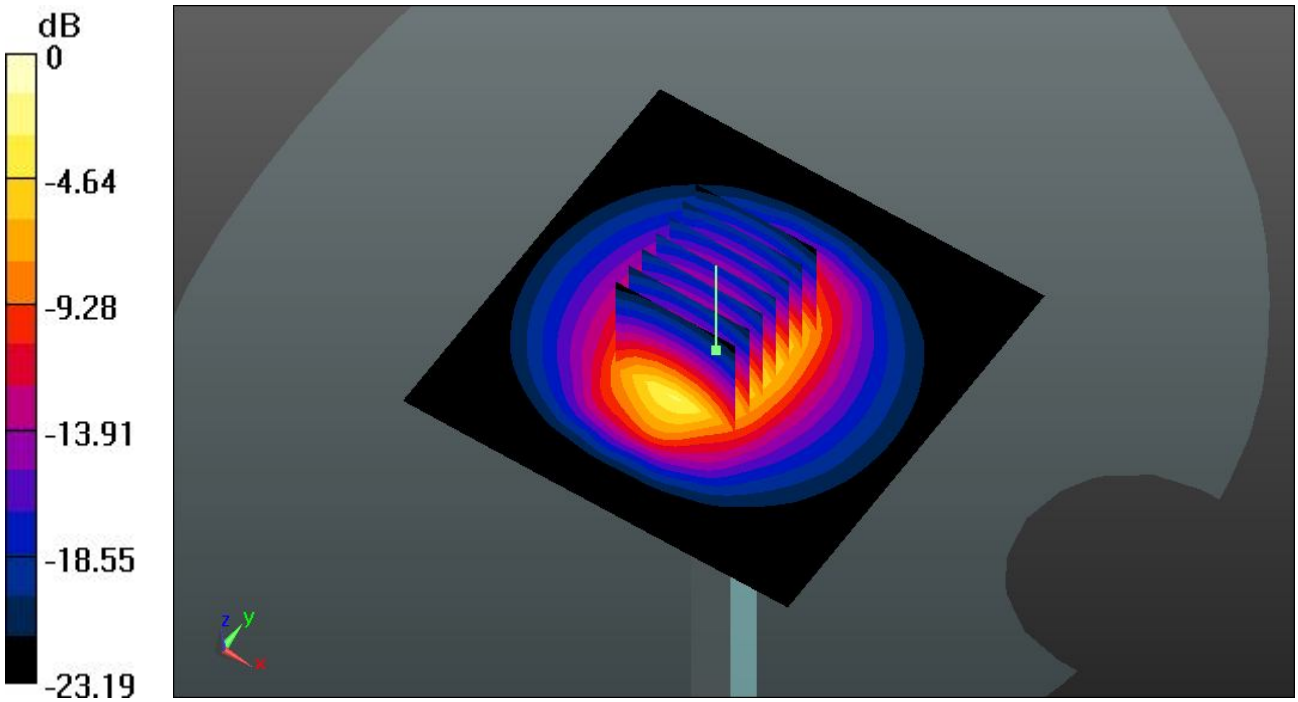
DUT: D2450V2 - SN: 736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_130305 Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 37.626; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.3 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.99, 6.99, 6.99); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 21.4 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.333 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 29.737 mW/g
SAR(1 g) = 13.9 mW/g; SAR(10 g) = 6.3 mW/g
Maximum value of SAR (measured) = 21.6 W/kg



0 dB = 21.6 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Head_2450MHz_130308

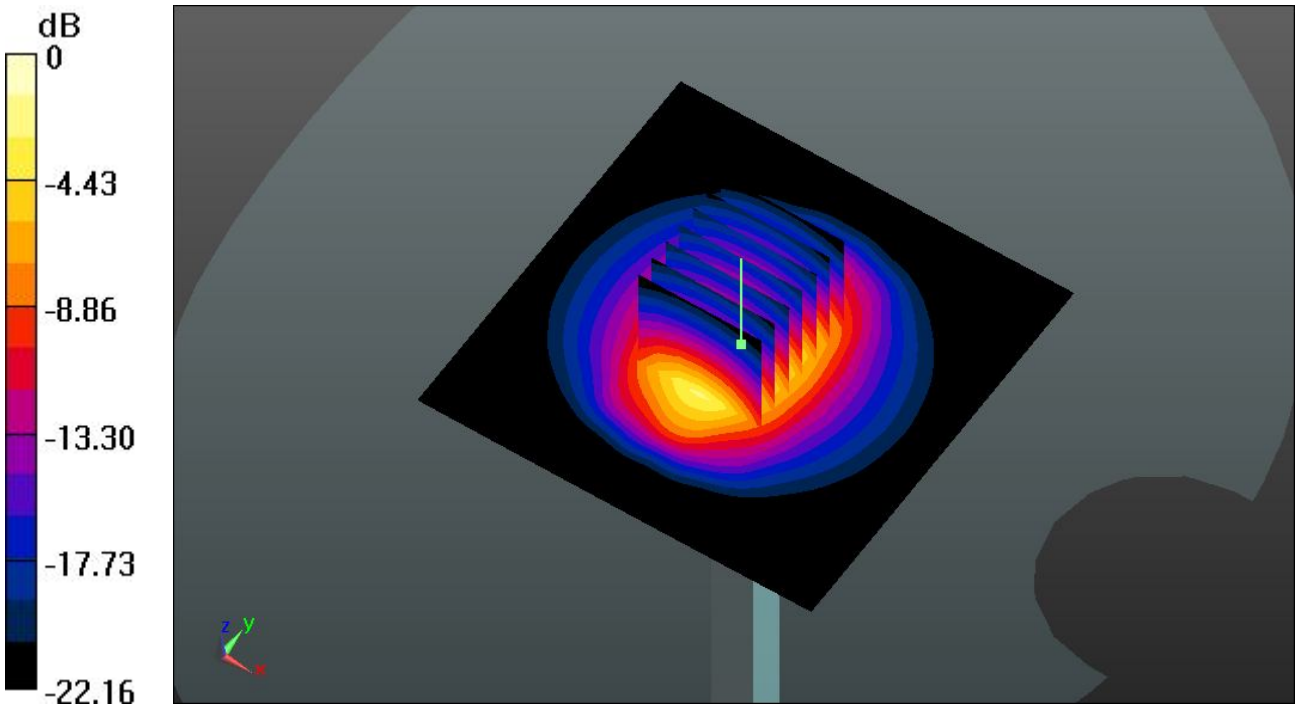
DUT: D2450V2 - SN: 736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_130308 Medium parameters used: f = 2450 MHz; σ = 1.809 mho/m; ε_r = 37.604; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.99, 6.99, 6.99); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 21.2 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.205 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 29.079 mW/g
SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.17 mW/g
Maximum value of SAR (measured) = 21.3 W/kg



0 dB = 21.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Head_5200MHz_130307

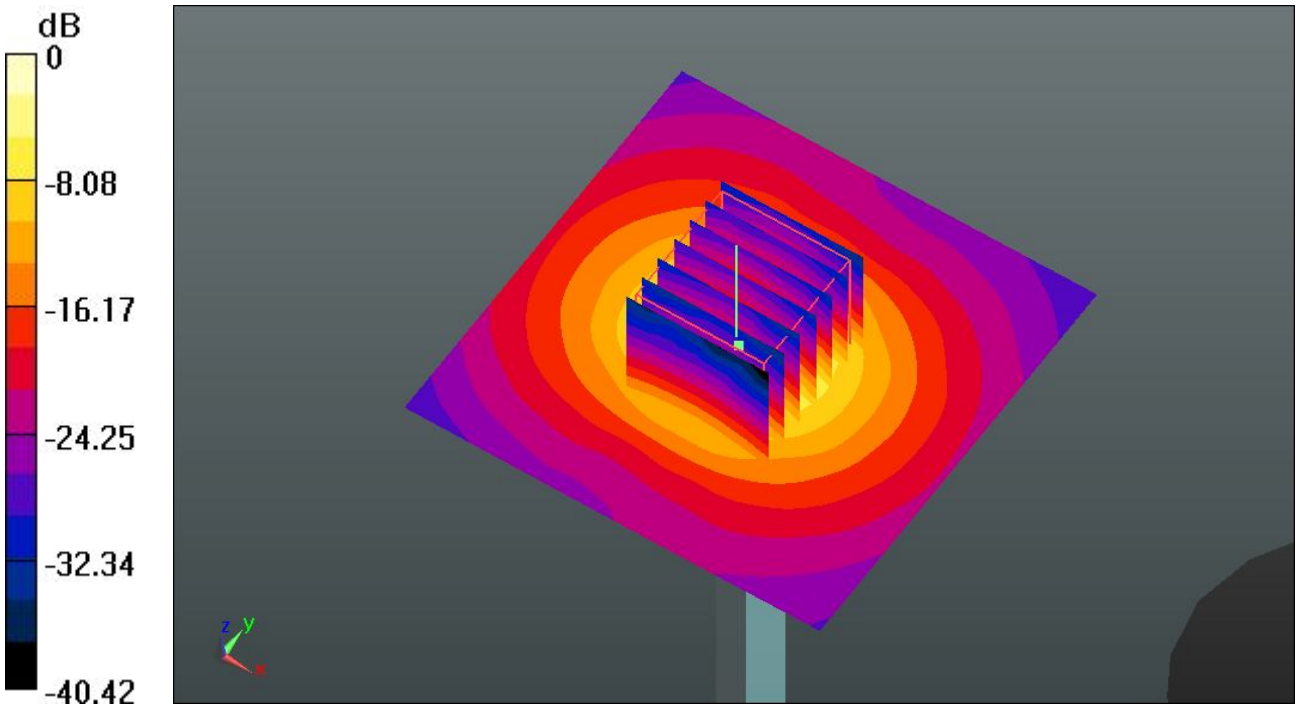
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: HSL_5G_130307 Medium parameters used: f = 5200 MHz; σ = 4.805 mho/m; ε_r = 35.479; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(5.11, 5.11, 5.11); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.5 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 57.100 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 33.354 mW/g
SAR(1 g) = 8.23 mW/g; SAR(10 g) = 2.3 mW/g
Maximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Head_5200MHz_130308

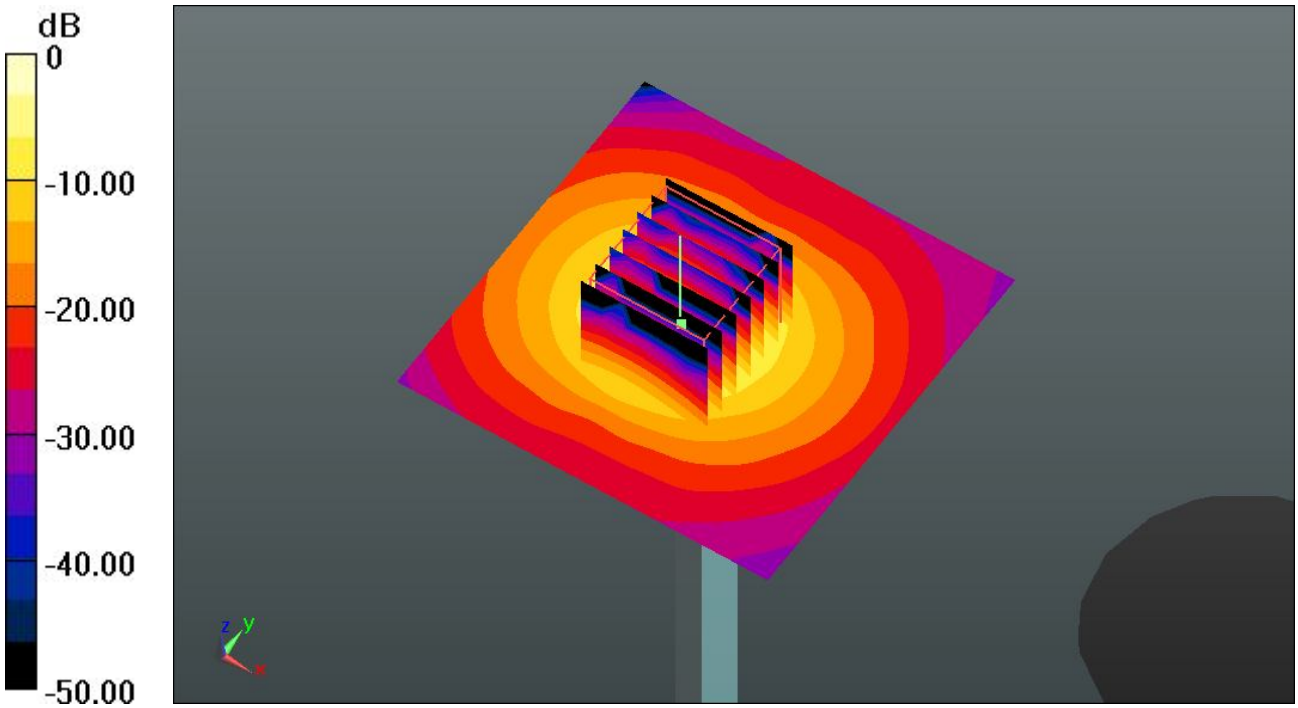
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: HSL_5G_130308 Medium parameters used: f = 5200 MHz; σ = 4.791 mho/m; ε_r = 35.422; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(5.11, 5.11, 5.11); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 18.2 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.380 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 31.056 mW/g
SAR(1 g) = 7.55 mW/g; SAR(10 g) = 2.07 mW/g
Maximum value of SAR (measured) = 18.7 W/kg



0 dB = 18.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Head_5300MHz_130307

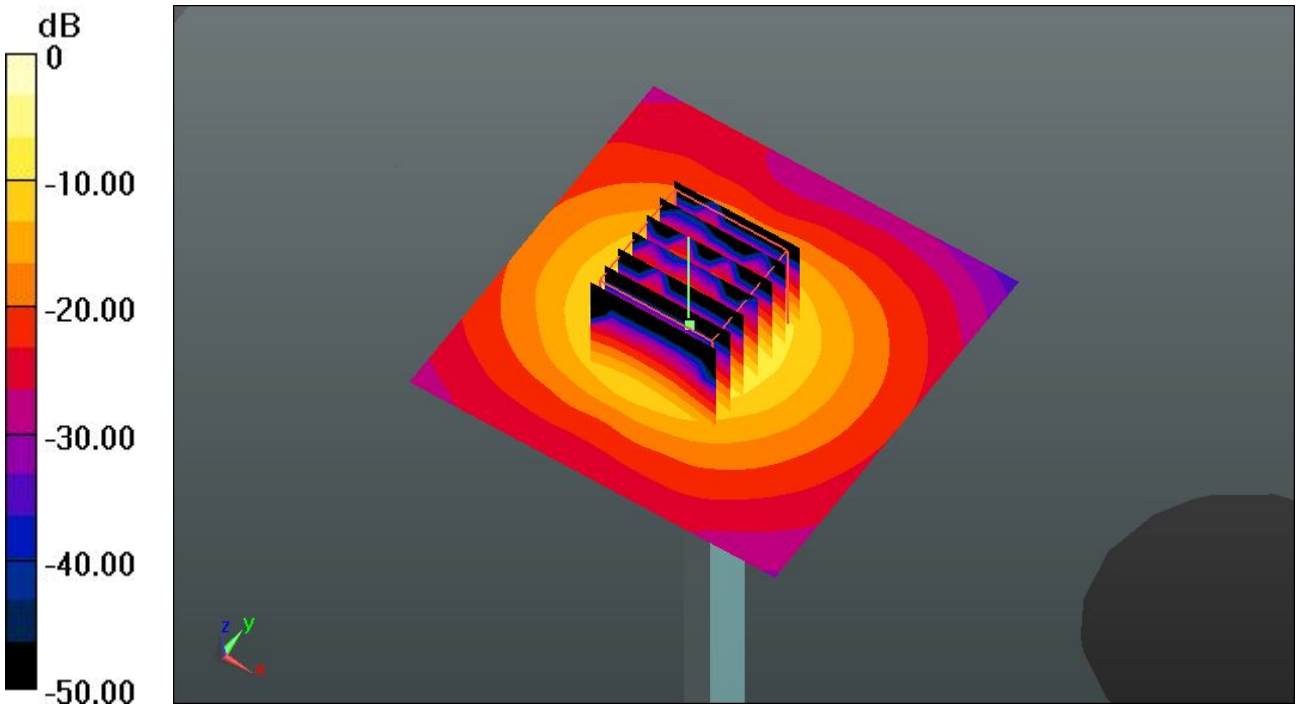
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: HSL_5G_130307 Medium parameters used: f = 5300 MHz; σ = 4.911 mho/m; ε_r = 35.352; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.85, 4.85, 4.85); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.7 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.253 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 32.849 mW/g
SAR(1 g) = 8.07 mW/g; SAR(10 g) = 2.21 mW/g
Maximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Head_5300MHz_130308

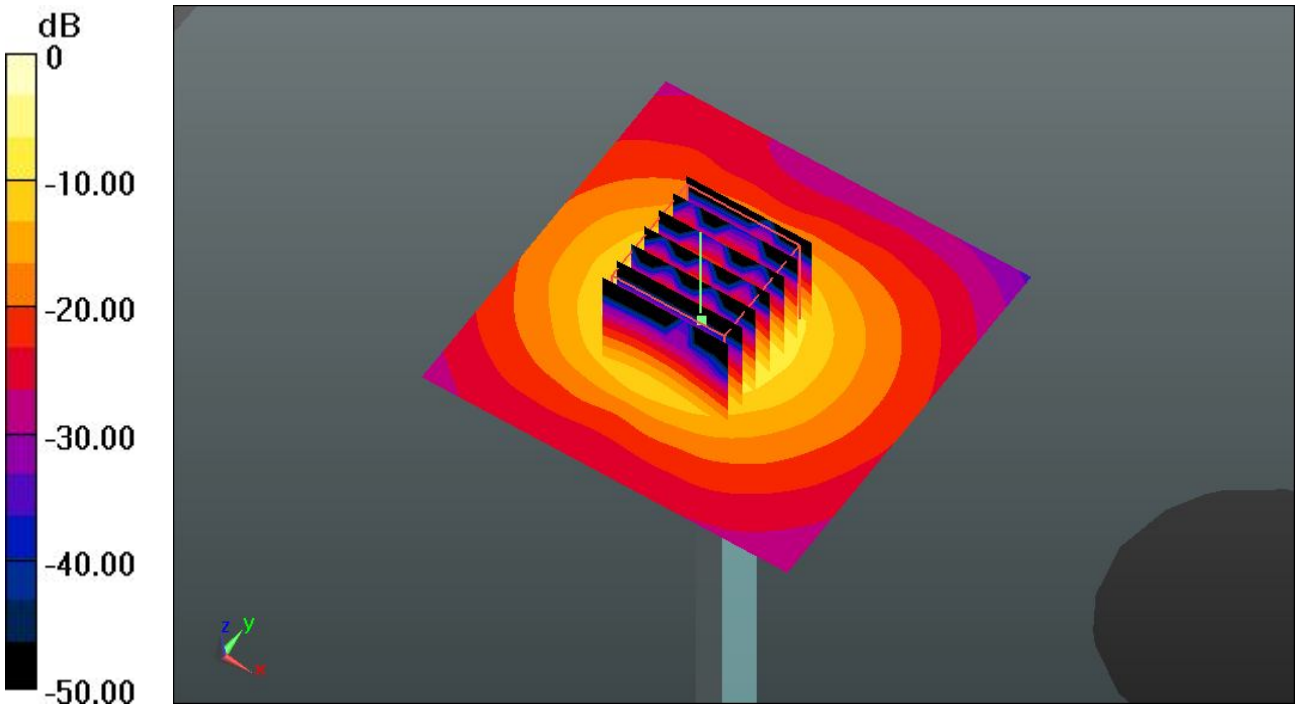
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: HSL_5G_130308 Medium parameters used: f = 5300 MHz; σ = 4.894 mho/m; ε_r = 35.28; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.85, 4.85, 4.85); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 18.6 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 62.018 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 31.131 mW/g
SAR(1 g) = 7.65 mW/g; SAR(10 g) = 2.1 mW/g
Maximum value of SAR (measured) = 19.0 W/kg



0 dB = 19.0 W/kg =

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Head_5600MHz_130307

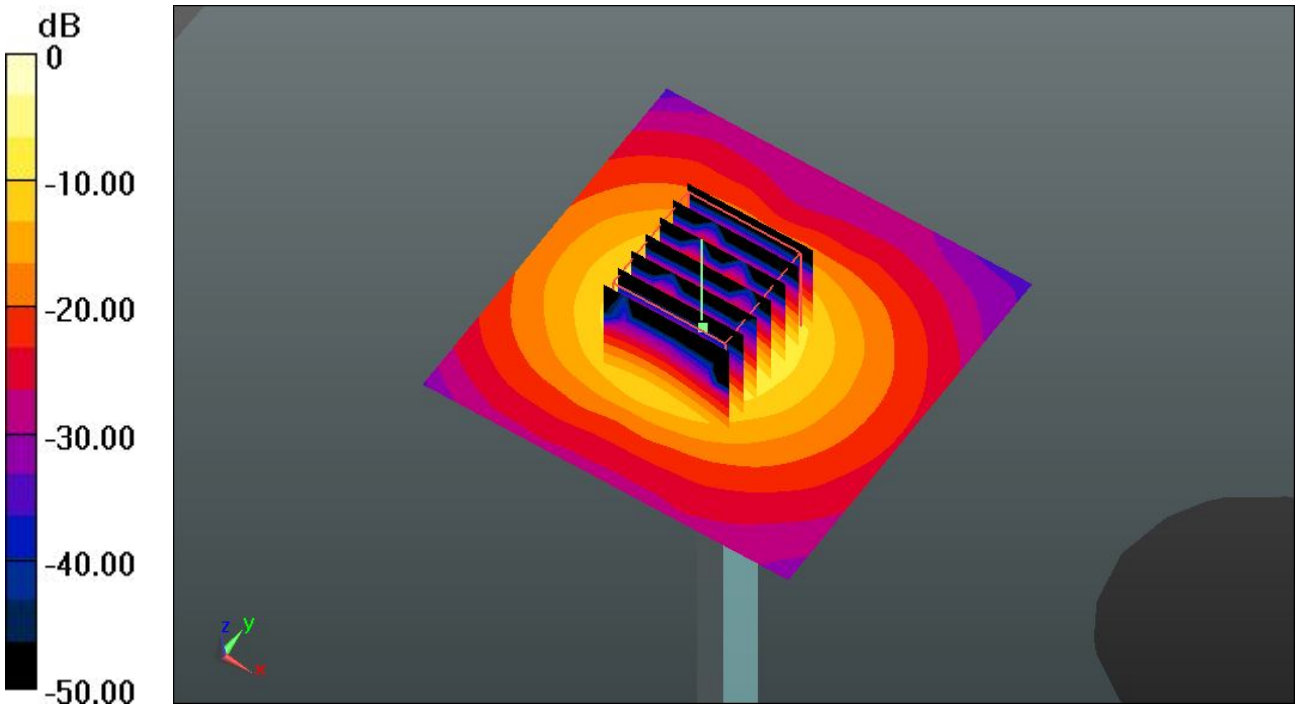
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5G_130307 Medium parameters used: f = 5600 MHz; σ = 5.22 mho/m; ε_r = 34.749; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.34, 4.34, 4.34); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 20.5 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.028 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 33.345 mW/g
SAR(1 g) = 8.25 mW/g; SAR(10 g) = 2.26 mW/g
Maximum value of SAR (measured) = 20.6 W/kg



0 dB = 20.6 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Head_5600MHz_130308

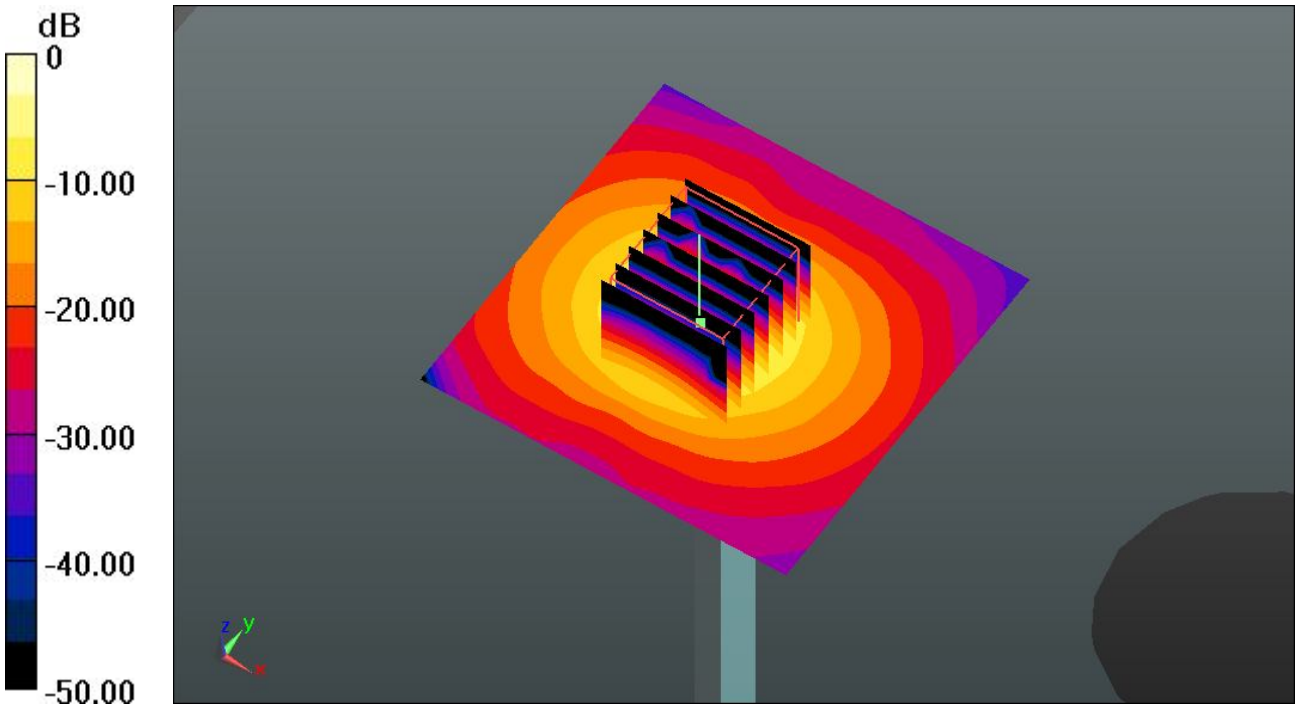
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5G_130308 Medium parameters used: f = 5600 MHz; σ = 5.199 mho/m; ε_r = 34.704; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.34, 4.34, 4.34); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.1 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.559 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 31.959 mW/g
SAR(1 g) = 7.81 mW/g; SAR(10 g) = 2.13 mW/g
Maximum value of SAR (measured) = 19.7 W/kg



0 dB = 19.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Head_5800MHz_130307

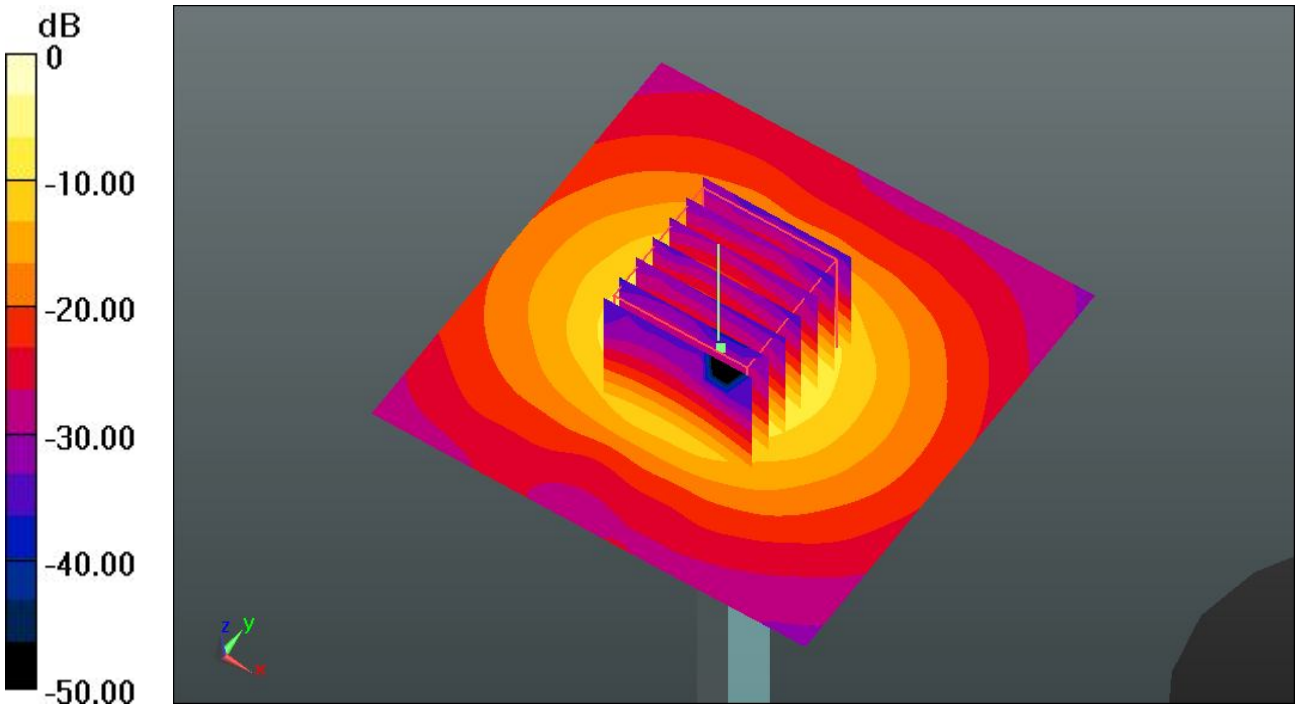
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: HSL_5G_130307 Medium parameters used: f = 5800 MHz; σ = 5.407 mho/m; ε_r = 34.377; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.57, 4.57, 4.57); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 21.6 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 54.371 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 38.539 mW/g
SAR(1 g) = 8.57 mW/g; SAR(10 g) = 2.34 mW/g
Maximum value of SAR (measured) = 22.3 W/kg



0 dB = 22.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Head_5800MHz_130308

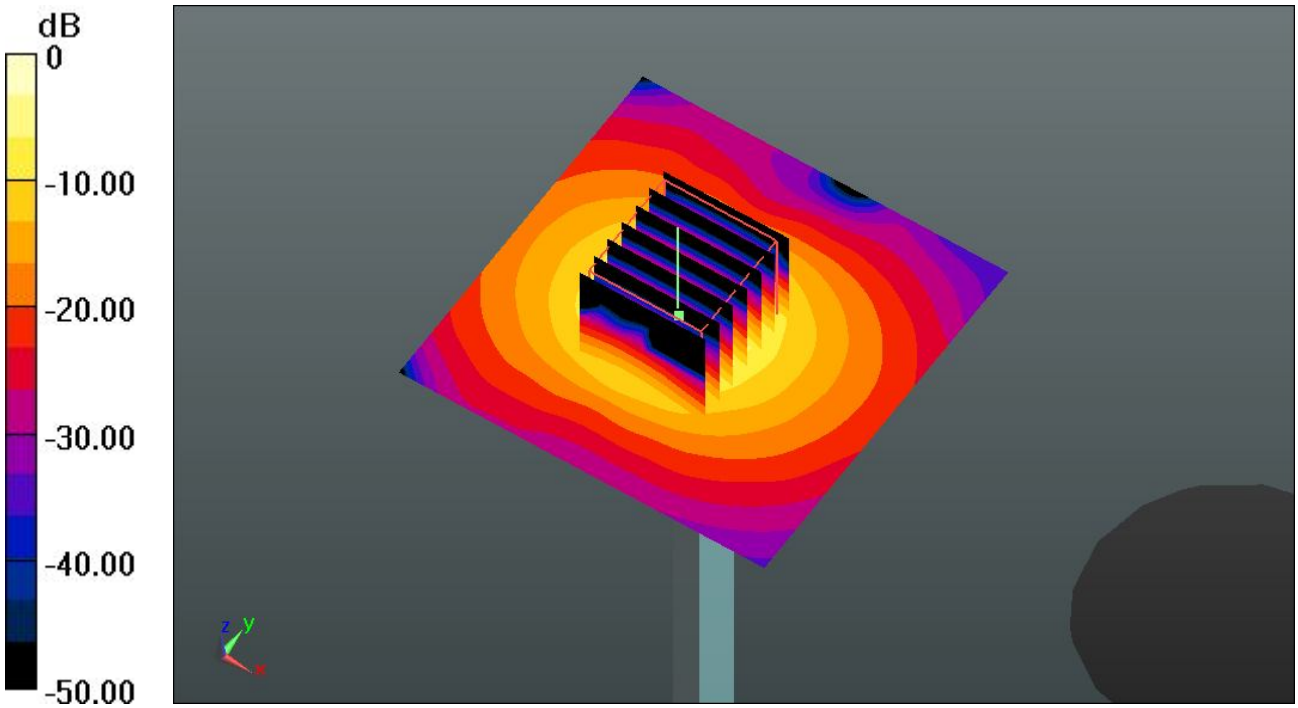
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: HSL_5G_130308 Medium parameters used: f = 5800 MHz; σ = 5.39 mho/m; ε_r = 34.35; ρ = 1000 kg/m^3
Ambient Temperature：23.7 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.57, 4.57, 4.57); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.3 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 60.908 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 34.779 mW/g
SAR(1 g) = 7.61 mW/g; SAR(10 g) = 2.08 mW/g
Maximum value of SAR (measured) = 19.5 W/kg



0 dB = 19.5 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.02.2013

System Check_Body_835MHz_130207

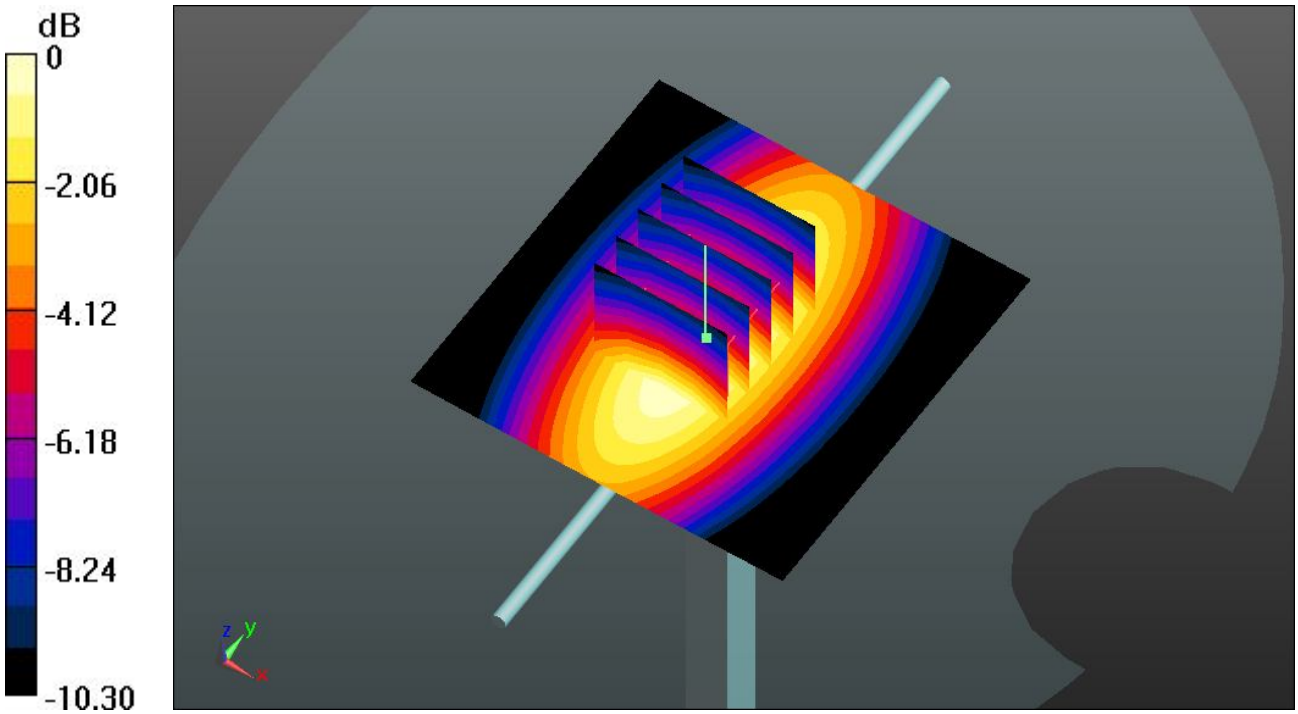
DUT: D835V2 - SN: 4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_130207 Medium parameters used: f = 835 MHz; σ = 0.976 mho/m; ε_r = 54.36; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.4 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.68 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.601 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.627 mW/g
SAR(1 g) = 2.47 mW/g; SAR(10 g) = 1.63 mW/g
Maximum value of SAR (measured) = 2.65 W/kg



0 dB = 2.65 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Body_835MHz_130307

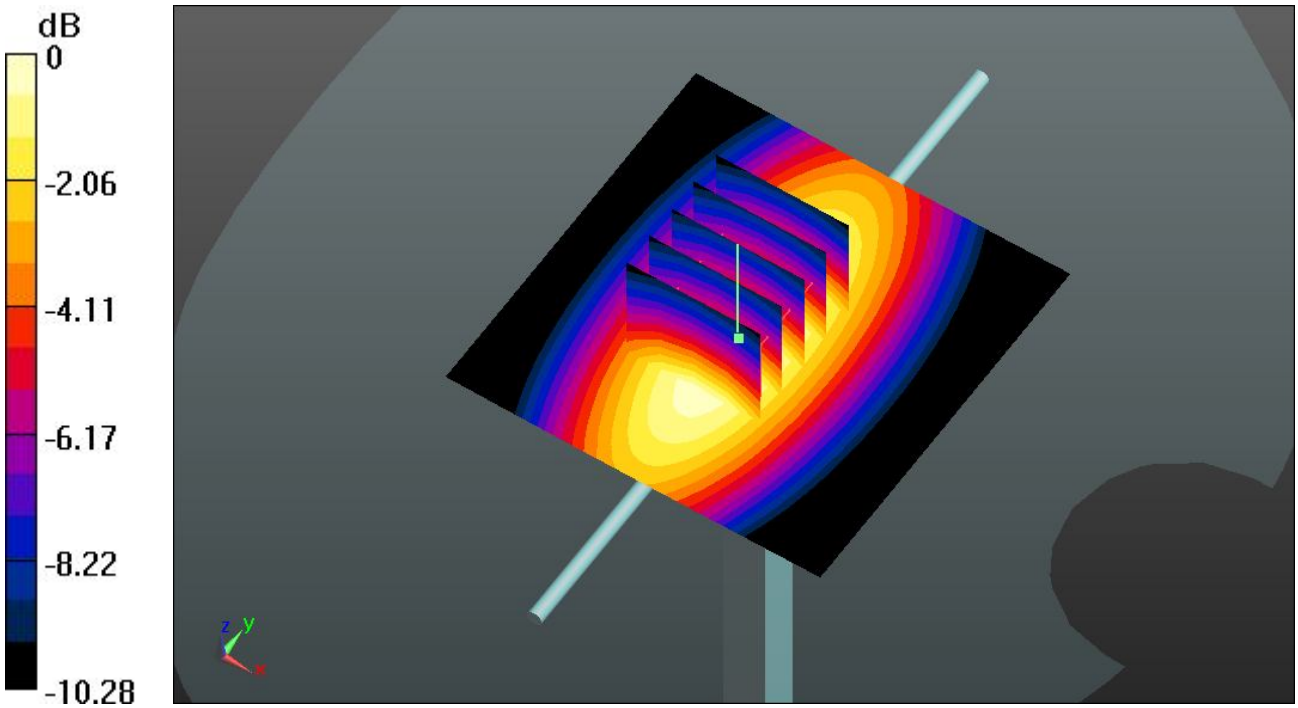
DUT: D835V2 - SN: 4d091

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_130307 Medium parameters used: f = 835 MHz; σ = 0.978 mho/m; ε_r = 54.413; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：21.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.5, 9.5, 9.5); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.50 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.614 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.411 mW/g
SAR(1 g) = 2.32 mW/g; SAR(10 g) = 1.53 mW/g
Maximum value of SAR (measured) = 2.49 W/kg



0 dB = 2.49 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 19.02.2013

System Check_Body_1750MHz_130219

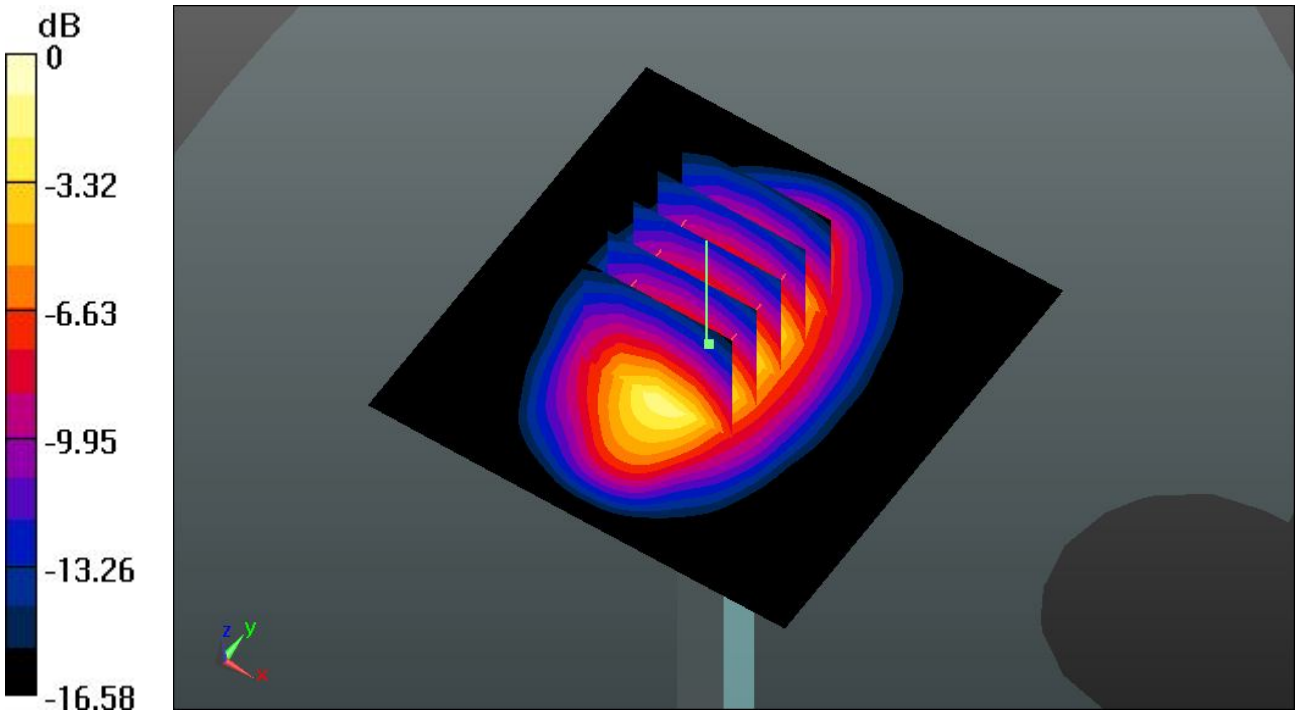
DUT: D1750V2 - SN: 1023

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1800_130219 Medium parameters used: f = 1750 MHz; σ = 1.517 mho/m; ε_r = 55.044; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(8, 8, 8); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 95.184 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 16.594 mW/g
SAR(1 g) = 9.52 mW/g; SAR(10 g) = 5.09 mW/g
Maximum value of SAR (measured) = 13.3 W/kg



0 dB = 13.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Body_1750MHz_130307

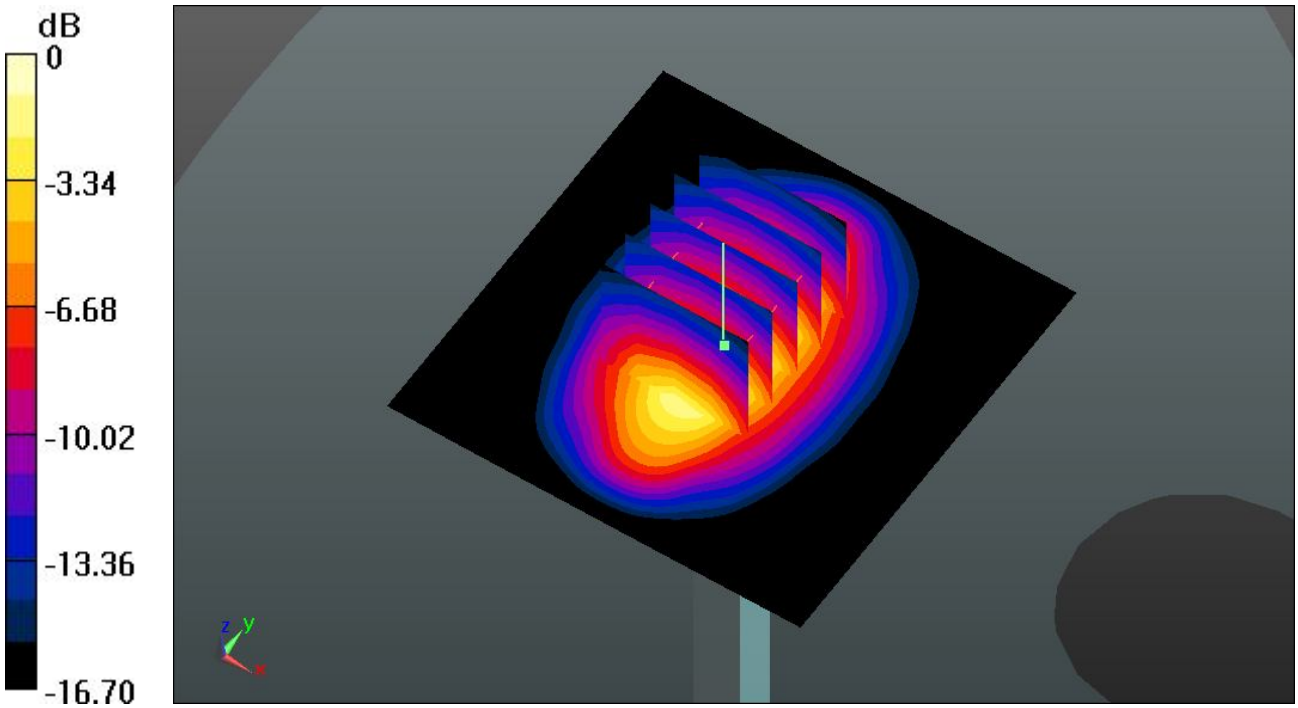
DUT: D1750V2 - SN: 1023

Communication System: CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1800_130307 Medium parameters used: f = 1750 MHz; σ = 1.51 mho/m; ε_r = 55.728; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(8, 8, 8); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.2 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 94.701 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 16.365 mW/g
SAR(1 g) = 9.35 mW/g; SAR(10 g) = 5 mW/g
Maximum value of SAR (measured) = 13.0 W/kg



0 dB = 13.0 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.02.2013

System Check_Body_1900MHz_130208

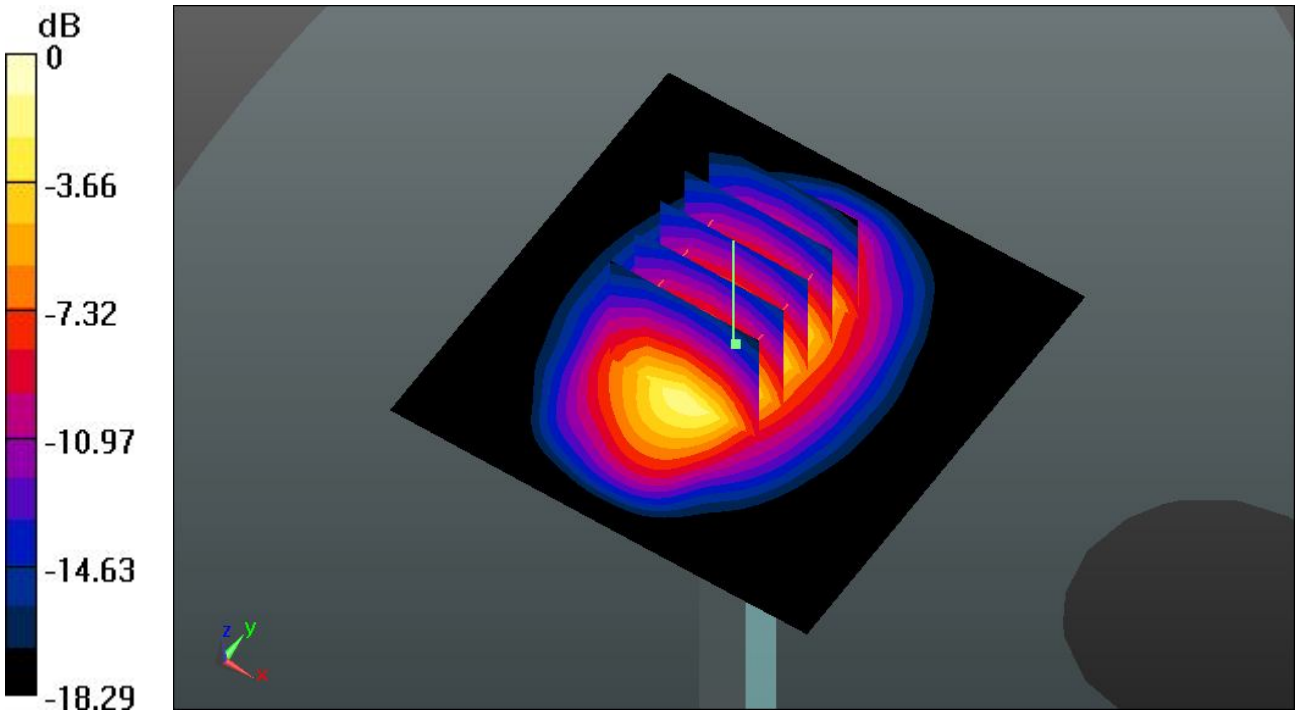
DUT: D1900V2 - SN: 5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130208 Medium parameters used: f = 1900 MHz; σ = 1.501 mho/m; ε_r = 53.849; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.4 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 86.748 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 18.391 mW/g
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.24 mW/g
Maximum value of SAR (measured) = 14.6 W/kg



0 dB = 14.6 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 07.03.2013

System Check_Body_1900MHz_130307

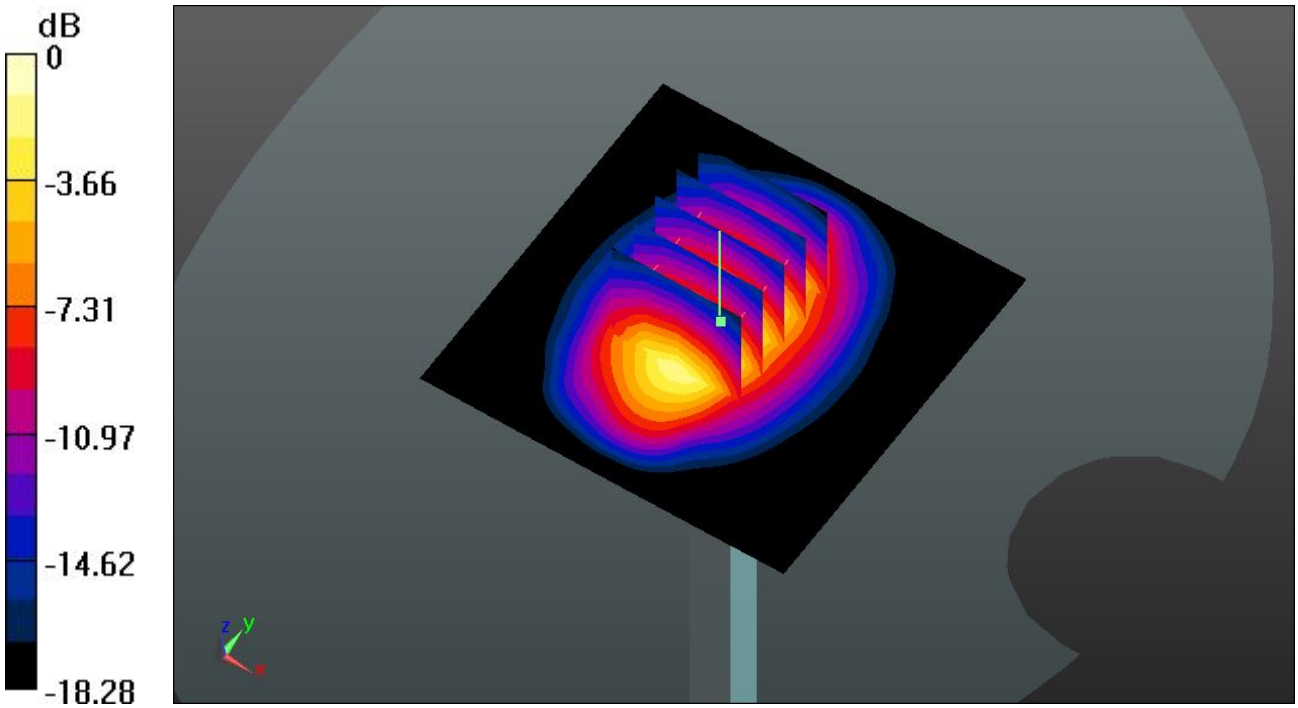
DUT: D1900V2 - SN: 5d118

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_130307 Medium parameters used: f = 1900 MHz; σ = 1.542 mho/m; ε_r = 54.484; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.67, 7.67, 7.67); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.6 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 85.872 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.611 mW/g
SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.32 mW/g
Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 05.03.2013

System Check_Body_2450MHz_130305

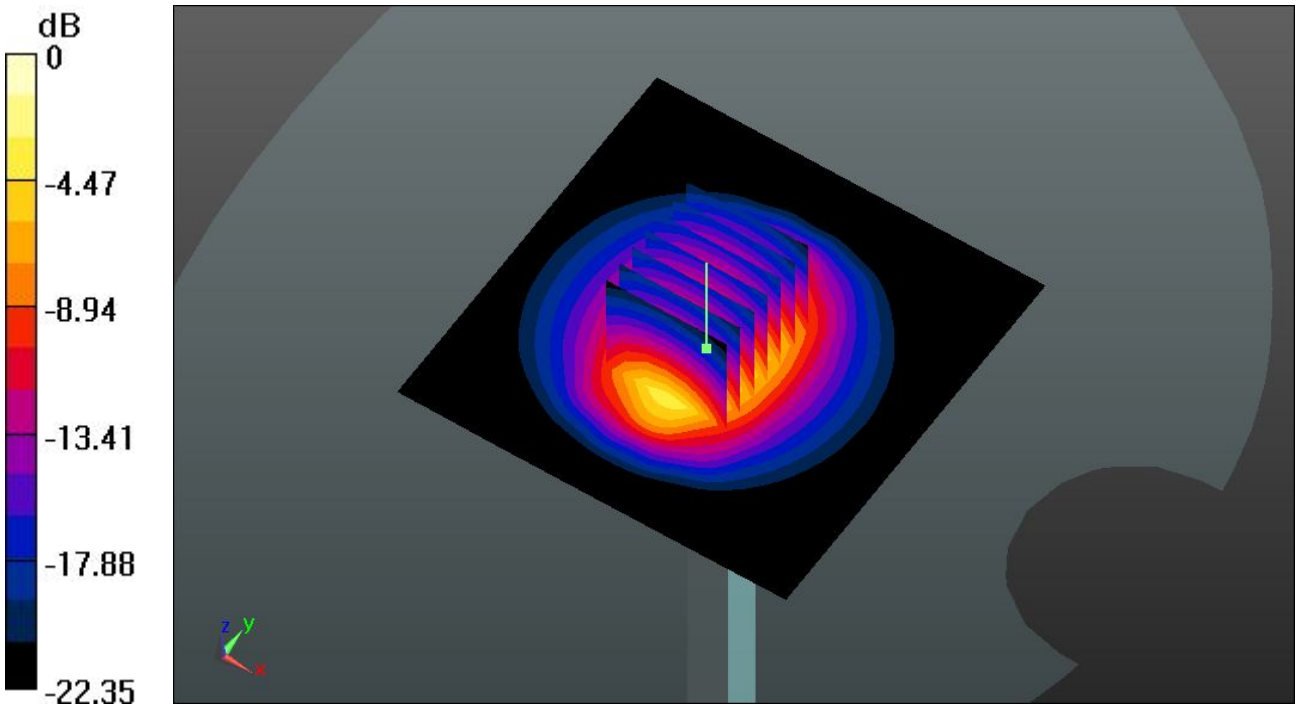
DUT: D2450V2 - SN: 736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130305 Medium parameters used: f = 2450 MHz; σ = 1.94 mho/m; ε_r = 53.374; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 19.8 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.952 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 26.834 mW/g
SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.9 mW/g
Maximum value of SAR (measured) = 19.7 W/kg



0 dB = 19.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Body_2450MHz_130308

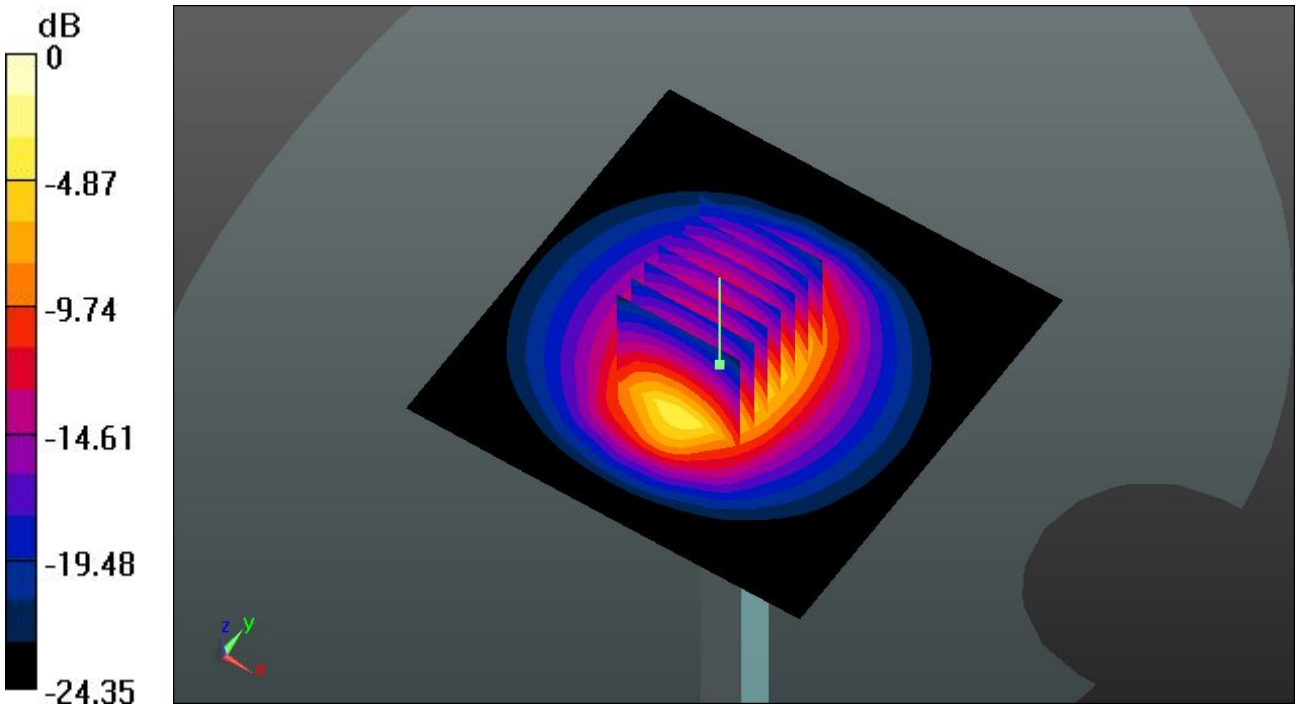
DUT: D2450V2 - SN: 736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_130308 Medium parameters used: f = 2450 MHz; σ = 1.939 mho/m; ε_r = 53.98; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.1 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.21, 7.21, 7.21); Calibrated: 26.11.2012;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM1; Type: QD000P40CD; Serial: TP:1670
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 20.1 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.952 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 26.827 mW/g
SAR(1 g) = 13.1 mW/g; SAR(10 g) = 5.9 mW/g
Maximum value of SAR (measured) = 19.6 W/kg



0 dB = 19.6 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 06.03.2013

System Check_Body_5200MHz_130306

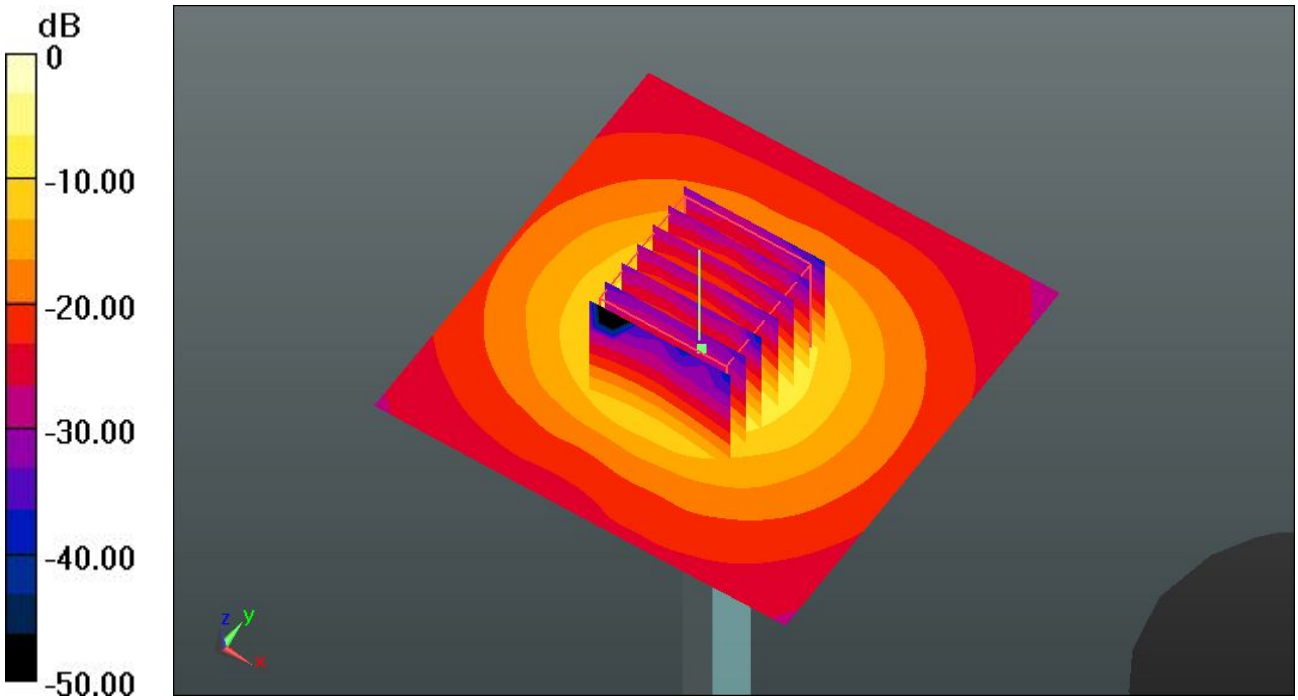
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_130306 Medium parameters used: f = 5200 MHz; σ = 5.279 mho/m; ε_r = 48.534; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.63, 4.63, 4.63); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 17.8 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.009 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 30.047 mW/g
SAR(1 g) = 7.52 mW/g; SAR(10 g) = 2.06 mW/g
Maximum value of SAR (measured) = 18.3 W/kg



0 dB = 18.3 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Body_5200MHz_130308

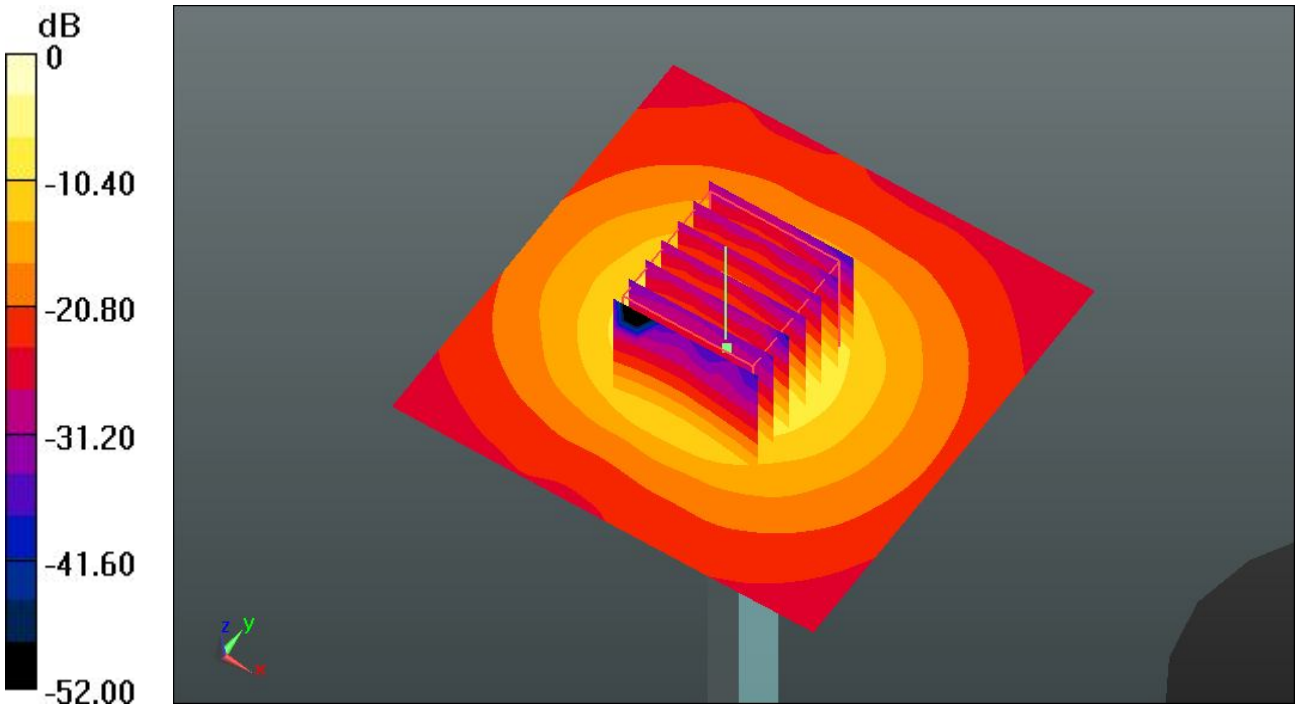
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_130308 Medium parameters used: f = 5200 MHz; σ = 5.373 mho/m; ε_r = 48.526; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.63, 4.63, 4.63); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 18.1 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.009 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 30.580 mW/g
SAR(1 g) = 7.65 mW/g; SAR(10 g) = 2.1 mW/g
Maximum value of SAR (measured) = 18.7 W/kg



0 dB = 18.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 06.03.2013

System Check_Body_5300MHz_130306

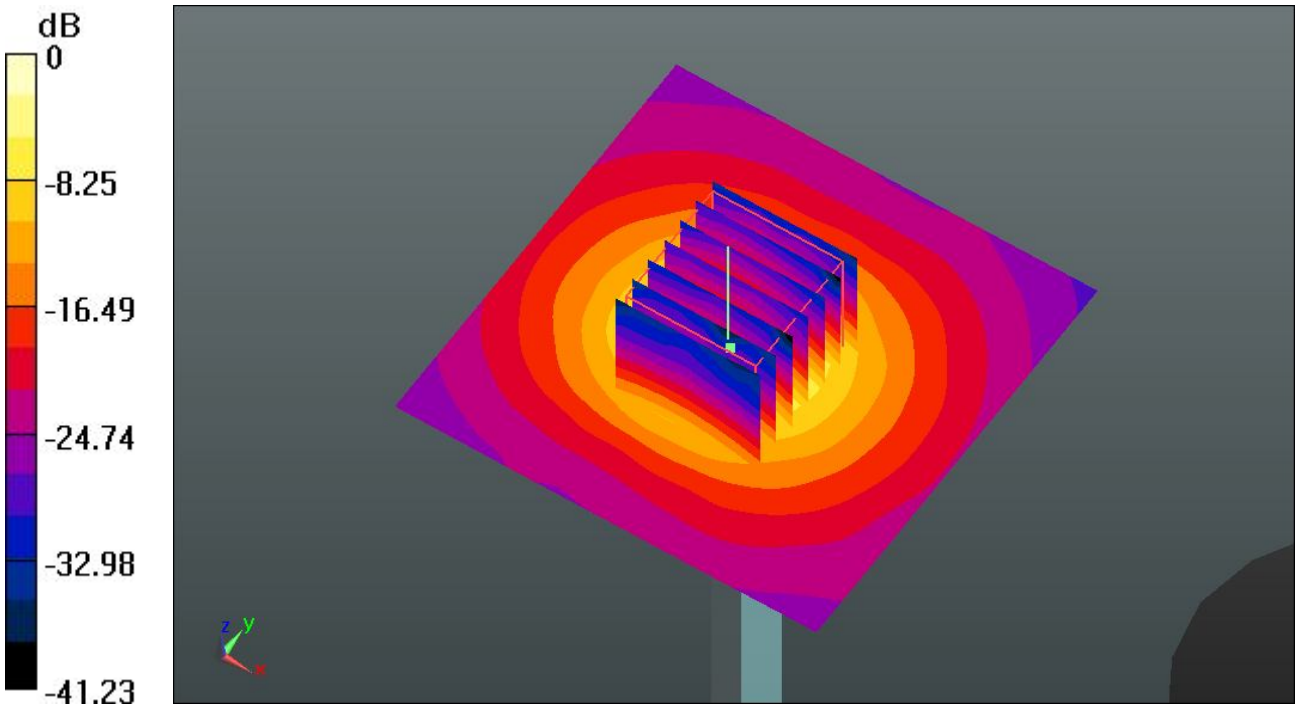
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: MSL_5G_130306 Medium parameters used: f = 5300 MHz; σ = 5.418 mho/m; ε_r = 48.319; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.31, 4.31, 4.31); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 17.9 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.455 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 29.857 mW/g
SAR(1 g) = 7.69 mW/g; SAR(10 g) = 2.11 mW/g
Maximum value of SAR (measured) = 18.9 W/kg



0 dB = 18.9 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Body_5300MHz_130308

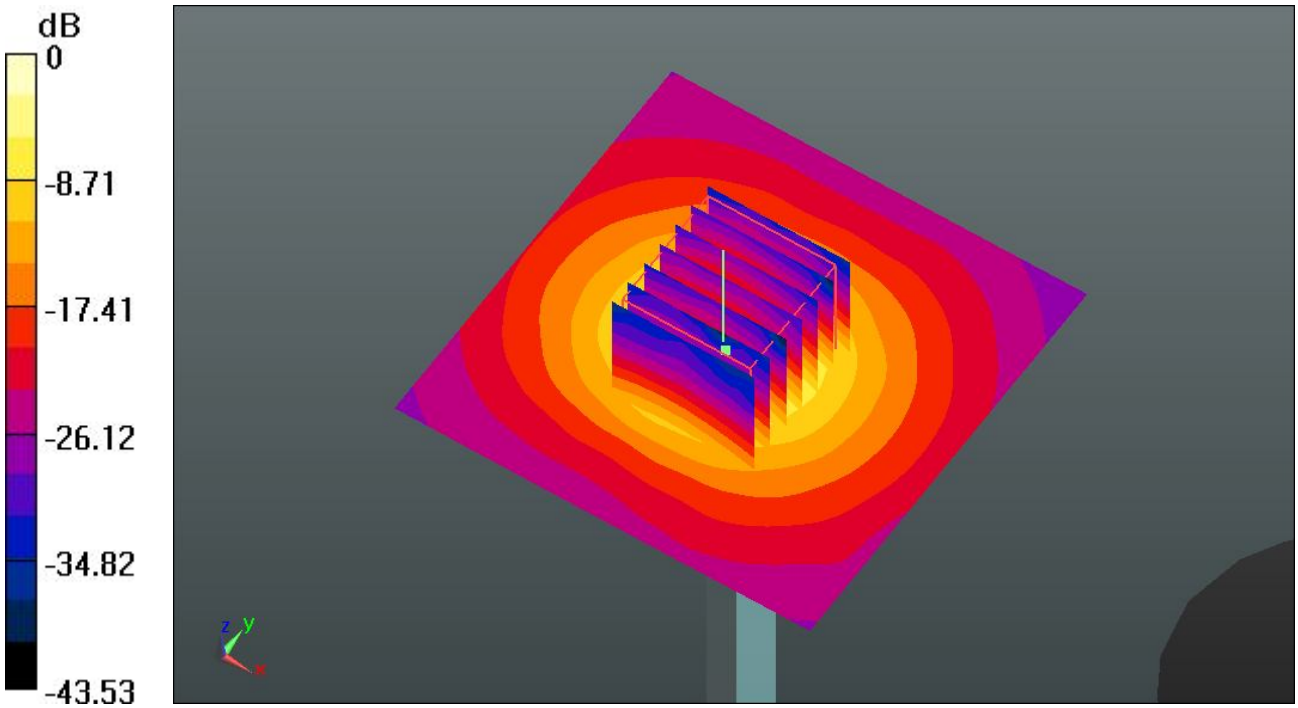
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5300 MHz;Duty Cycle: 1:1
Medium: MSL_5G_130308 Medium parameters used: f = 5300 MHz; σ = 5.515 mho/m; ε_r = 48.269; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.31, 4.31, 4.31); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 18.2 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 48.455 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 30.393 mW/g
SAR(1 g) = 7.83 mW/g; SAR(10 g) = 2.15 mW/g
Maximum value of SAR (measured) = 19.2 W/kg



0 dB = 19.2 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 06.03.2013

System Check_Body_5600MHz_130306

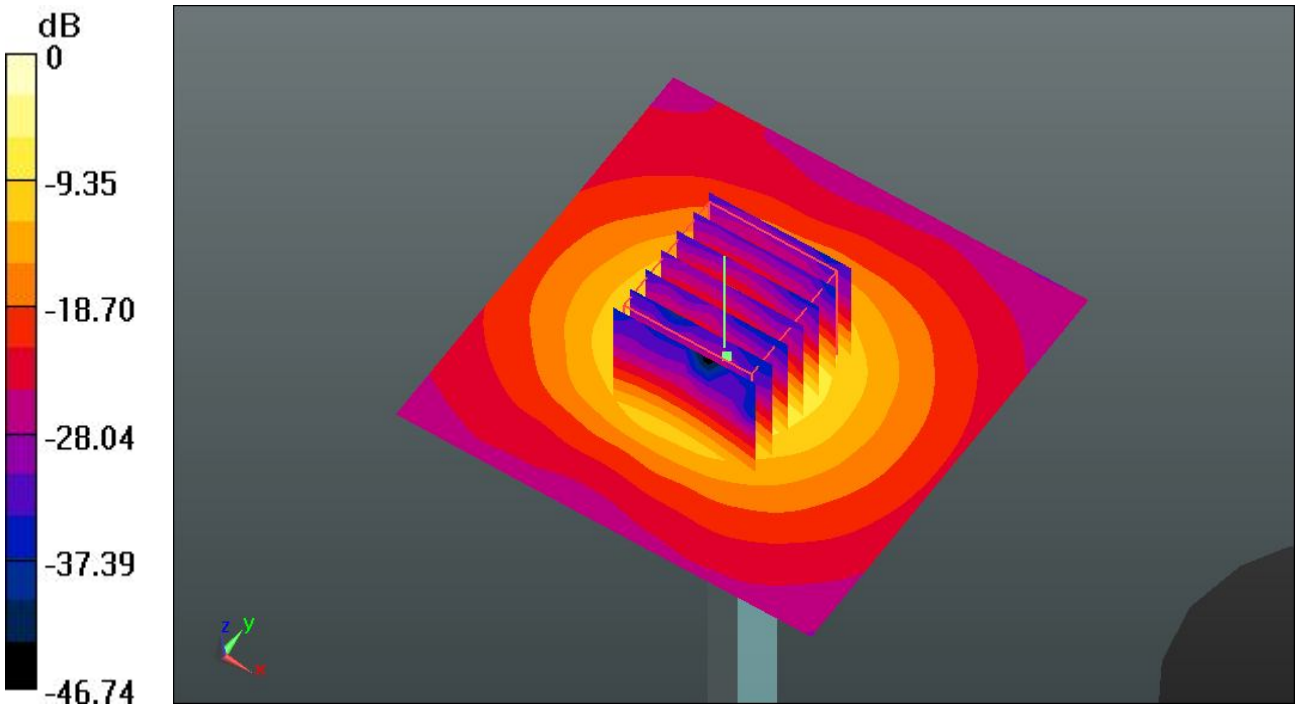
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: MSL_5G_130306 Medium parameters used: f = 5600 MHz; σ = 5.849 mho/m; ε_r = 47.666; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(3.86, 3.86, 3.86); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 20.1 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 47.308 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 33.490 mW/g
SAR(1 g) = 8.15 mW/g; SAR(10 g) = 2.23 mW/g
Maximum value of SAR (measured) = 20.4 W/kg



0 dB = 20.4 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Body_5600MHz_130308

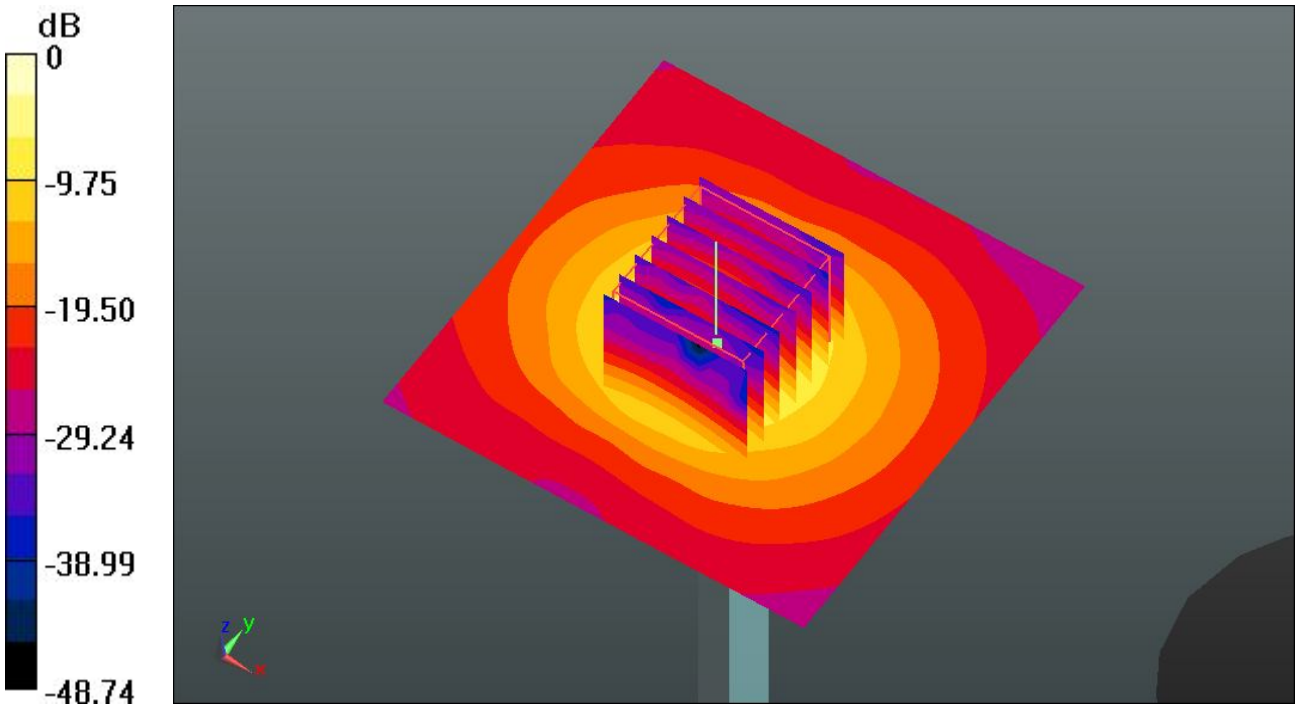
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: MSL_5G_130308 Medium parameters used: f = 5600 MHz; σ = 5.945 mho/m; ε_r = 47.571; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(3.86, 3.86, 3.86); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 20.4 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 47.308 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 34.037 mW/g
SAR(1 g) = 8.29 mW/g; SAR(10 g) = 2.26 mW/g
Maximum value of SAR (measured) = 20.7 W/kg



0 dB = 20.7 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 06.03.2013

System Check_Body_5800MHz_130306

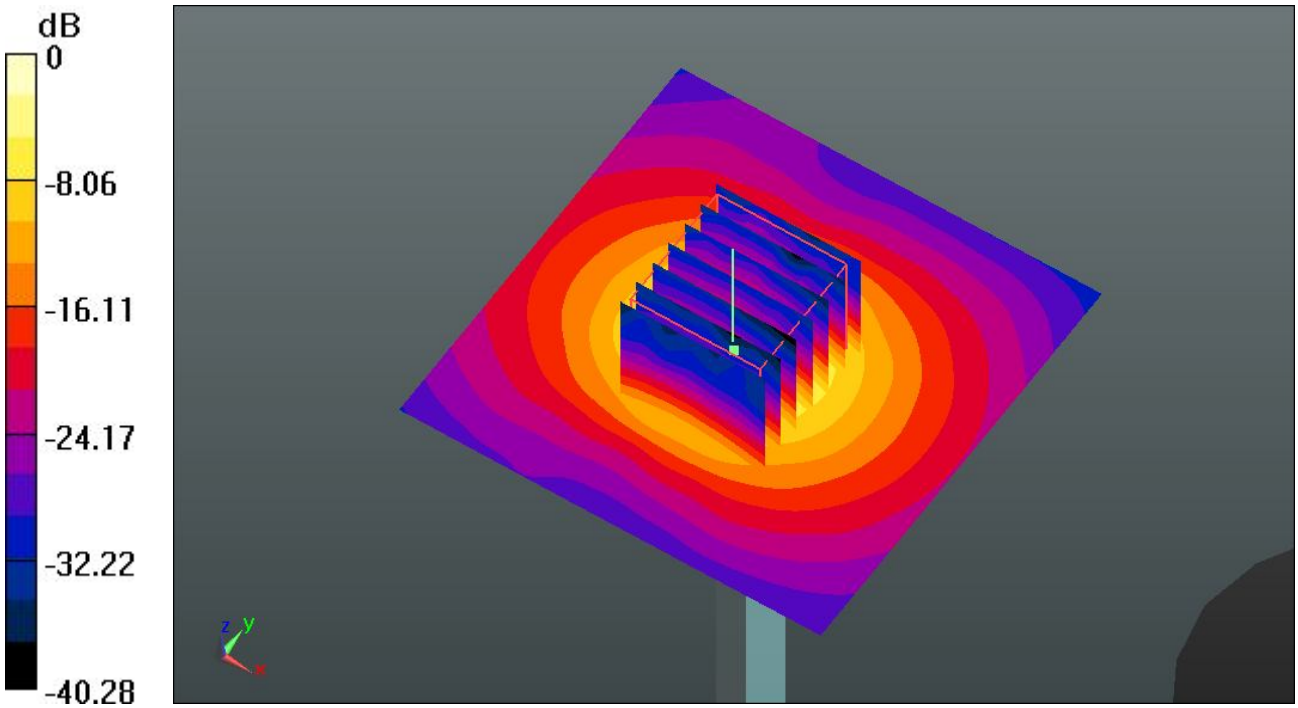
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5G_130306 Medium parameters used: f = 5800 MHz; σ = 6.113 mho/m; ε_r = 47.156; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.09, 4.09, 4.09); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.3 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 45.840 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 32.859 mW/g
SAR(1 g) = 7.74 mW/g; SAR(10 g) = 2.12 mW/g
Maximum value of SAR (measured) = 19.6 W/kg



0 dB = 19.6 W/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 08.03.2013

System Check_Body_5800MHz_130308

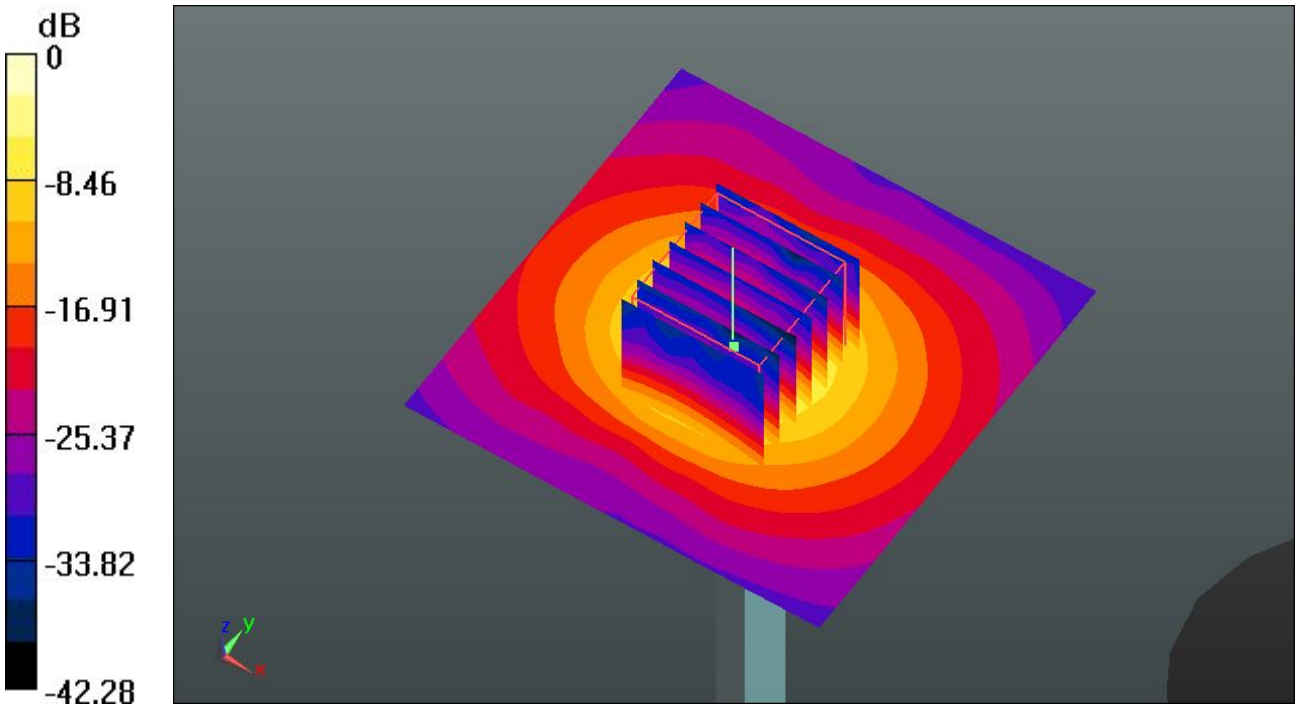
DUT: D5GHzV2 - SN: 1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5G_130308 Medium parameters used: f = 5800 MHz; σ = 6.219 mho/m; ε_r = 47.128; ρ = 1000 kg/m^3
Ambient Temperature：23.5 ℃; Liquid Temperature：21.2 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(4.09, 4.09, 4.09); Calibrated: 26.11.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 22.11.2012
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

Pin=100mW/Area Scan (71x71x1): Interpolated grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 19.7 W/kg

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 45.840 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 33.429 mW/g
SAR(1 g) = 7.87 mW/g; SAR(10 g) = 2.15 mW/g
Maximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.0 W/kg