FCC SAR Test Report

APPLICANT	:	SparkLAN Communications, Inc.
EQUIPMENT	:	802.11abgn, USB Dongle
BRAND NAME	:	SparkLAN
MODEL NAME	:	WUBR-508N
FCC ID	:	RYK-WUBR508N-D
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 received on May 08, 2012 and completely tested on May 09, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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

Reviewed by:

Jones Tsai

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Testing Laboratory 1190

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA232843-01	Rev. 01	Initial issue of report	May 29, 2012

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **SparkLAN Communications, Inc. 802.11abgn, USB Dongle WUBR-508N** are as follows.

Band	Position	SAR_{1g} (W/kg)
WLAN2.4G 802.11 b/g/n	**Body (0.5 cm)**	**0.952**
WLAN5G 802.11 a/n	**Body (0.5 cm)**	**0.549**

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

2. Administration Data

2.1 Testing Laboratory

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

2.2 Applicant

Company Name	SparkLAN Communications, Inc.
Address	8F., No. 257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan

2.3 Manufacturer

Company Name	SparkLAN Communications, Inc.
Address	8F., No. 257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan

2.4 Application Details

Date of Receipt of Application	May 08, 2012
Date of Start during the Test	May 08, 2012
Date of End during the Test	May 09, 2012

3. General Information

3.1 Description of Device Under Test (DUT)

Product Feature & Specification	
EUT	802.11abgn, USB Dongle
Brand Name	SparkLAN
Model Name	WUBR-508N
FCC ID	RYK-WUBR508N-D
Tx Frequency	802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz; 5745 MHz ~ 5825 MHz
Rx Frequency	802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz; 5745 MHz ~ 5825 MHz
Maximum Average Output Power to Antenna	802.11b: 20.38 dBm 802.11g: 17.27 dBm 802.11n (2.4GHz): 15.98 dBm (BW 20MHz) 802.11n (2.4GHz): 13.88 dBm (BW 40MHz) 802.11a: 17.21 dBm 802.11n (5GHz): 19.82 dBm (BW 20MHz) 802.11n (5GHz): 18.54 dBm (BW 40MHz)
Antenna Type	Printed Antenna
Type of Modulation	802.11b: DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
DUT Stage	Identical Prototype
Remark: 1. The above DUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. 2. Voice call is not supported.	

3.2 Product Photos

Please refer to Appendix D.

3.3 Applied Standards

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

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC OET Bulletin 65 Supplement C (Edition 01-01)
- FCC KDB 447498 D01 v04
- FCC KDB 447498 D02 v02
- FCC KDB 248227 D01 v01r02

3.4 Device Category and SAR Limits

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

3.5 Test Conditions

3.5.1 Ambient Condition

Ambient Temperature	20 to 24 ℃
Humidity	< 60 %

3.5.2 Test Configuration

For WLAN SAR testing, WLAN engineering testing software installed on the DUT can provide continuous transmitting RF signal. This RF signal utilized in SAR measurement has over 99% duty cycle and is treated as 1.

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

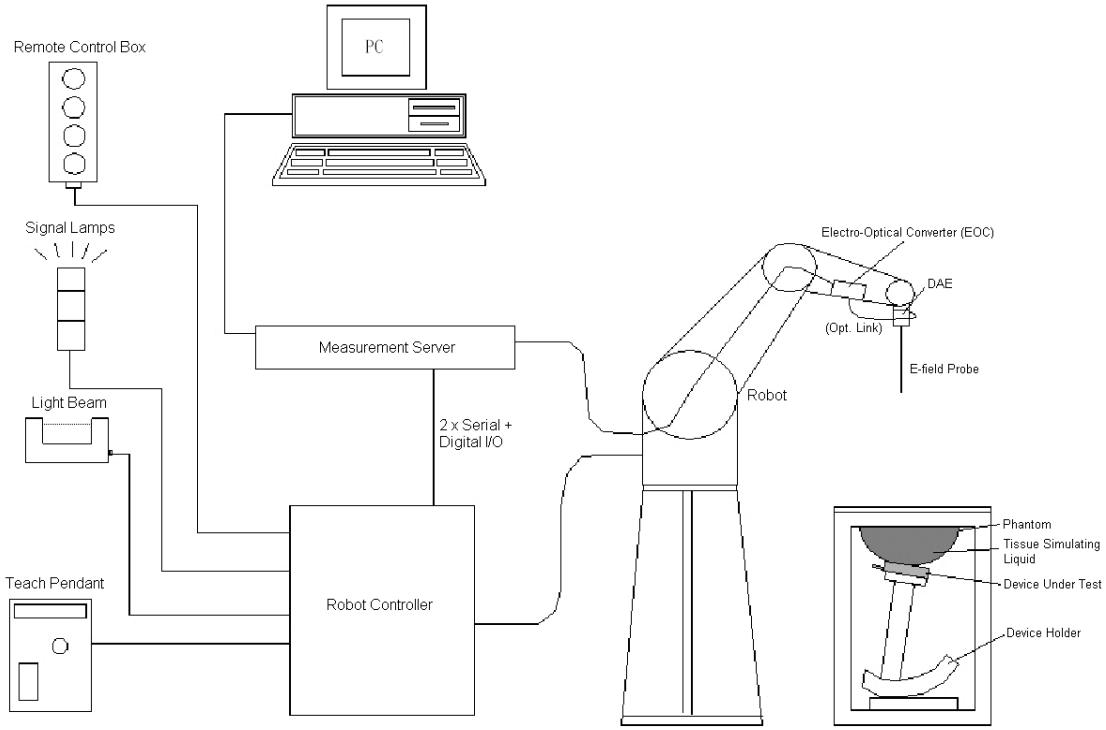


Fig 5.1 SPEAG DASY System Configurations

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 (ECO) 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

Some of the components are described in details 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

<ET3DV6 / ET3DV6R Probe >

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	10 MHz to 3 GHz; Linearity: ± 0.2 dB
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic Range	5 µW/g to 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 16 mm) Tip diameter: 6.8 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.7 mm

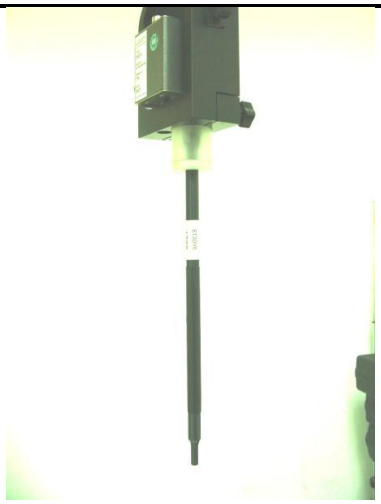


Fig 5.2 Photo of ET3DV6/ET3DV6R

<EX3DV4 / ES3DV4 Probe>

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

Fig 5.3 Photo of EX3DV4/ES3DV4

5.1.2 E-Field Probe Calibration

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

5.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Fig 5.4 Photo of DAE

5.3 Robot

The SPEAG DASY system uses the high precision robots (DASY4: RX90BL; DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB; DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

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

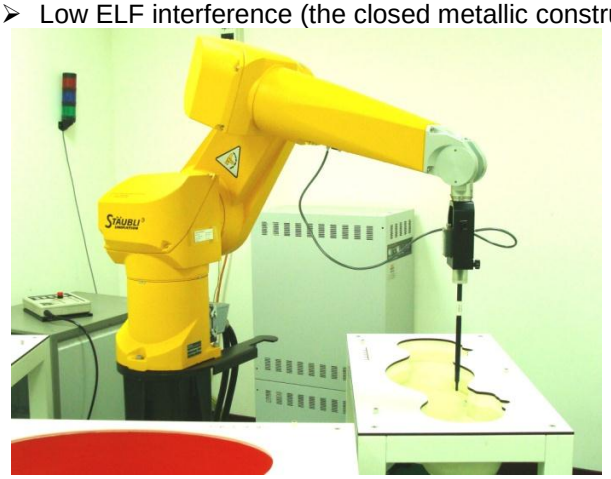


Fig 5.1 Photo of DASY4

Fig 5.2 Photo of DASY5

5.4 Measurement Server

The measurement server is based on a PC/104 CPU board with CPU (DASY4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chipdisk (DASY4: 32 MB; DASY5: 128 MB), RAM (DASY4: 64 MB, DASY5: 128 MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

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

Fig 5.1 Photo of Server for DASY4

Fig 5.2 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 5.3 Photo of SAM Phantom

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

<ELI4 Phantom>

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

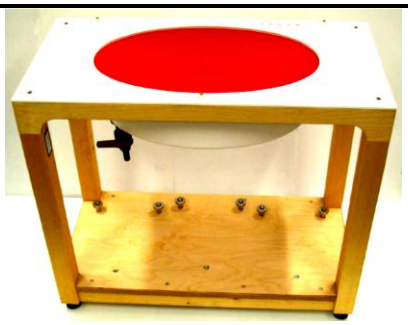


Fig 5.4 Photo of ELI4 Phantom

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

5.6 Device Holder

<Device Holder for SAM Twin Phantom>

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

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

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity 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 5.5 Device Holder

<Laptop Extension Kit>

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

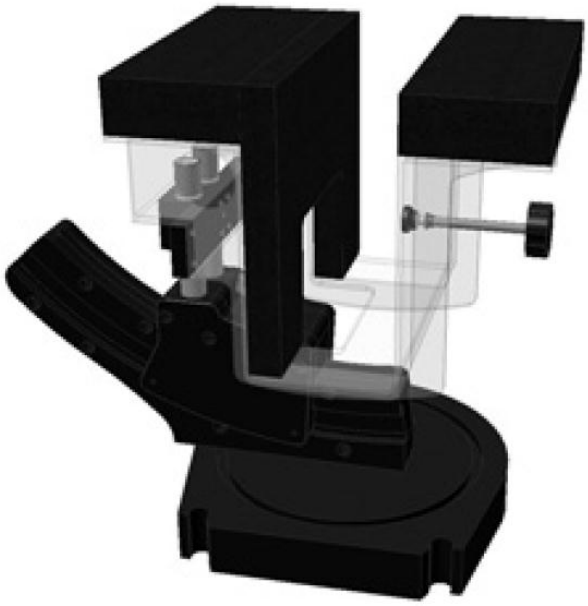


Fig 5.6 Laptop Extension Kit

5.7 Data Storage and Evaluation

5.7.1 Data Storage

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

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

5.7.2 Data Evaluation

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

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

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

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

The formula for each channel can be given as：

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

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

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

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

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

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

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

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

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

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

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

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

5.8 Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	Dosimetric E-Field Probe	EX3DV4	3792	Jun. 20, 2011	Jun. 19, 2012
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 25, 2011	Jul. 24, 2012
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Jan. 18, 2012	Jan. 17, 2013
SPEAG	Data Acquisition Electronics	DAE4	913	Dec. 23, 2011	Dec. 22, 2012
SPEAG	Data Acquisition Electronics	DAE4	910	Dec. 07, 2011	Dec. 06, 2012
SPEAG	Device Holder	N/A	N/A	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1303	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1383	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1446	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 C	TP-1478	NCR	NCR
SPEAG	SAM Phantom	QD 000 P41 C	TP-1150	NCR	NCR
SPEAG	SAM Phantom	QD 000 P40 CD	TP-1644	NCR	NCR
SPEAG	SAM Phantom	SM 000 T01 DA	TP-1542	NCR	NCR
SPEAG	ELI4 Phantom	QD 0VA 001 BB	1026	NCR	NCR
SPEAG	ELI4 Phantom	QD 0VA 001 BA	1029	NCR	NCR
SPEAG	ELI4 Phantom	QD 0VA 002 AA	TP-1127	NCR	NCR
SPEAG	ELI4 Phantom	QD 0VA 002 AA	TP-1131	NCR	NCR
Agilent	ENA Series Network Analyzer	E5071C	MY46100746	Jun. 10, 2011	Jun. 09, 2012
Agilent	ESG Vector Series Signal Generator	E4438C	MY49070755	Oct. 17, 2011	Oct. 16, 2012
Anritsu	Power Meter	ML2495A	0932001	Sep. 21, 2011	Sep. 20, 2012
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Dec. 21, 2011	Dec. 20, 2012
Agilent	Wireless Communication Test Set	E5515C	MY48360820	Jan. 05, 2012	Jan. 04, 2014
Agilent	Wireless Communication Test Set	E5515C	GB46311322	Mar. 23, 2011	Mar. 22, 2013
Agilent	Wireless Communication Test Set	E5515C	MY50264370	Apr. 19, 2011	Apr. 18, 2013
Agilent	Wireless Communication Test Set	E5515C	MY50266977	Nov. 13, 2011	Nov. 12, 2013
R&S	Universal Digital Radio communication Tester	CMU200	117995	Jul. 28, 2011	Jul. 27, 2012
R&S	Spectrum Analyzer	FSP7	101131	Jul. 29, 2011	Jul. 28, 2012

Table 5.1 Test Equipment List

Note: The calibration certificate of DASY can be referred to appendix C of this report.

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.

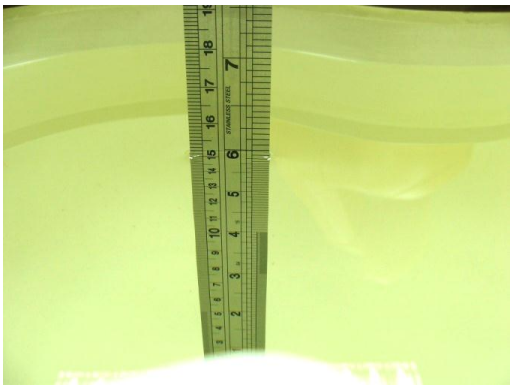


Fig 6.1 Photo of Liquid Height for Head SAR

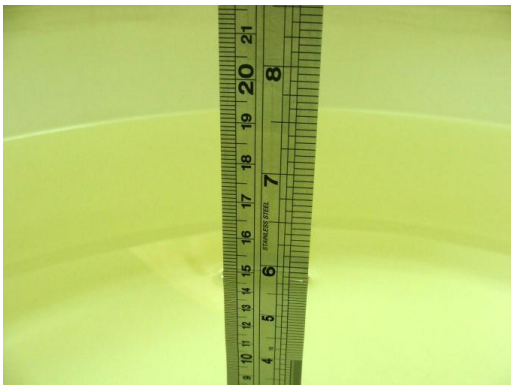


Fig 6.2 Photo of Liquid Height for Body SAR

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								
2450	55.0	0	0	0	0	45.0	1.80	39.2
For Body								
2450	68.6	0	0	0	0	31.4	1.95	52.7

Table 6.1 Recipes of Tissue Simulating Liquid

Simulating Liquid for 5G, Manufactured by SPEAG

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

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

The following table shows the measuring results for simulating liquid.

Freq. (MHz)	Liquid Type	Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
2450	Body	21.5	1.966	52.714	1.95	52.7	0.82	0.03	±5	May 08, 2012
5200	Body	21.6	5.138	47.493	5.3	49	-3.06	-3.08	±5	May 08, 2012
5200	Body	21.9	5.336	47.488	5.3	49	0.68	-3.09	±5	May 09, 2012
5200	Body	21.6	5.336	47.476	5.3	49	0.68	-3.11	±5	May 09, 2012
5500	Body	21.6	5.516	47.024	5.65	48.6	-2.37	-3.24	±5	May 08, 2012
5500	Body	21.9	5.734	46.943	5.65	48.6	1.49	-3.41	±5	May 09, 2012
5500	Body	21.6	5.734	46.922	5.65	48.6	1.49	-3.45	±5	May 09, 2012
5800	Body	21.6	5.991	46.521	6	48.2	-0.15	-3.48	±5	May 08, 2012
5800	Body	21.9	6.243	46.387	6	48.2	4.05	-3.76	±5	May 09, 2012
5800	Body	21.6	6.243	46.372	6	48.2	4.05	-3.79	±5	May 09, 2012

Table 6.2 Measuring Results for Simulating Liquid

7. 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 7.1

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

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

(b) κ is the coverage factor

Table 7.1 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 showed in Table 7.2.

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

Table 7.2 Uncertainty Budget of DASY for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Standard Uncertainty (1g)
Measurement System					
Probe Calibration	6.55	Normal	1	1	± 6.55 %
Axial Isotropy	4.7	Rectangular	√3	0.7	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	± 3.9 %
Boundary Effects	2.0	Rectangular	√3	1	± 1.2 %
Linearity	4.7	Rectangular	√3	1	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	± 0.6 %
Readout Electronics	0.3	Normal	1	1	± 0.3 %
Response Time	0.8	Rectangular	√3	1	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	± 1.7 %
Probe Positioner	0.8	Rectangular	√3	1	± 0.5 %
Probe Positioning	9.9	Rectangular	√3	1	± 5.7 %
Max. SAR Eval.	4.0	Rectangular	√3	1	± 2.3 %
Test Sample Related					
Device Positioning	2.9	Normal	1	1	± 2.9 %
Device Holder	3.6	Normal	1	1	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	± 2.9 %
Phantom and Setup					
Phantom Uncertainty	4.0	Rectangular	√3	1	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	± 1.8 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	± 1.6 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	± 1.7 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	± 1.5 %
Combined Standard Uncertainty					± 12.8 %
Coverage Factor for 95 %					K = 2
Expanded Uncertainty					**± 25.3 %**

Table 7.3 Uncertainty Budget of DASY for frequency range 3 GHz to 6 GHz

8. SAR Measurement Evaluation

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

8.1 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.

8.2 System Setup

In the simplified setup for system evaluation, the DUT 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:

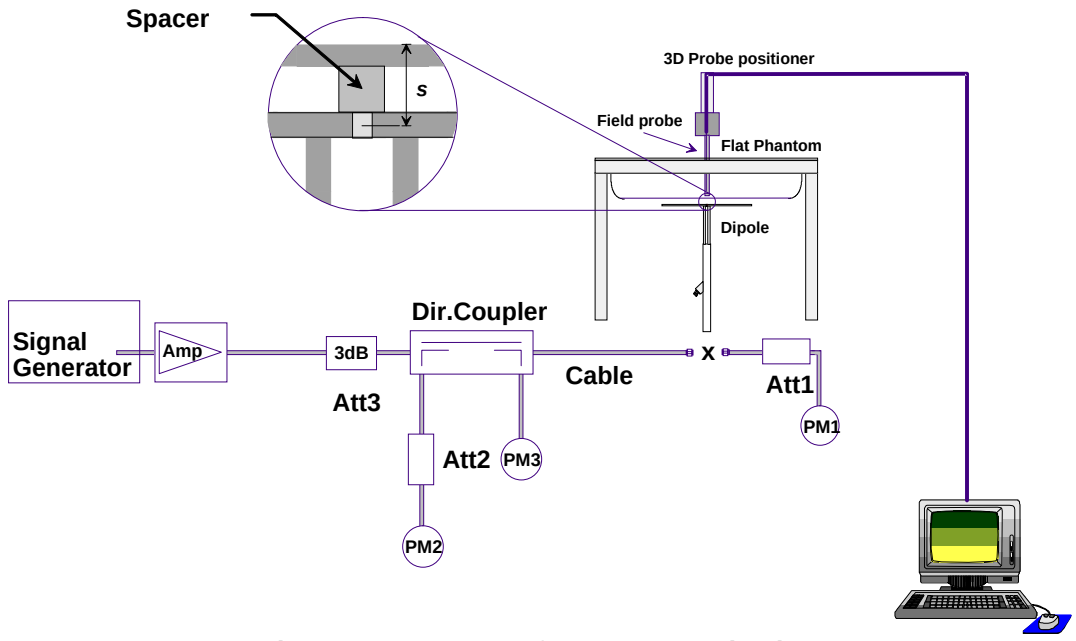


Fig 8.1 System Setup for System Evaluation

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

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

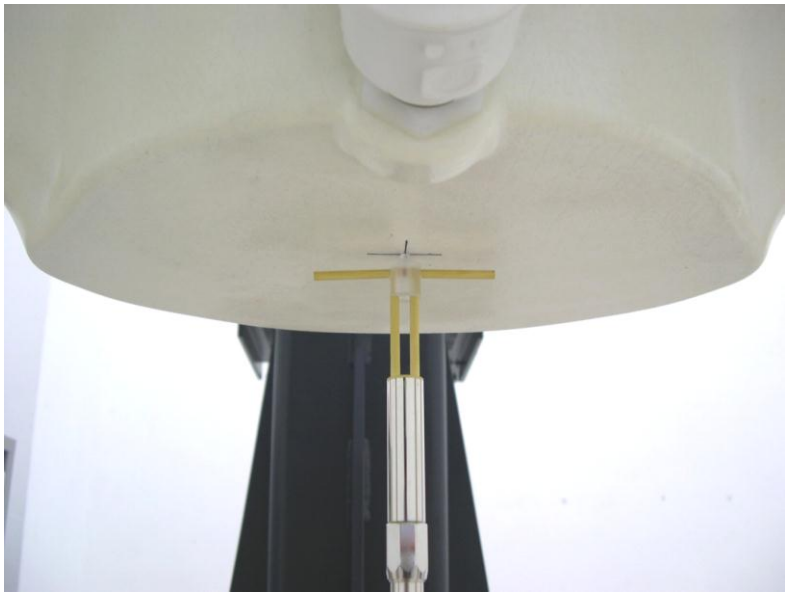


Fig 8.2 Photo of Dipole Setup

8.3 Validation Results

Comparing to the original SAR value provided by SPEAG, the validation data should be within its specification of 10 %. Table 8.1 shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Measurement Date	Frequency (MHz)	Liquid Type	Targeted SAR_{1g} (W/kg)	Measured SAR_{1g} (W/kg)	Normalized SAR_{1g} (W/kg)	Deviation (%)
May 08, 2012	2450	Body	52.3	13.2	52.80	0.96
May 08, 2012	5200	Body	72.6	18.1	72.40	-0.28
May 09, 2012	5200	Body	72.6	18.7	74.80	3.03
May 09, 2012	5200	Body	72.6	18.5	74.00	1.93
May 08, 2012	5500	Body	78.8	21.1	84.40	7.11
May 09, 2012	5500	Body	78.8	20.6	82.40	4.57
May 09, 2012	5500	Body	78.8	20.1	80.40	2.03
May 08, 2012	5800	Body	73.1	18.7	74.80	2.33
May 09, 2012	5800	Body	73.1	19.3	77.20	5.61
May 09, 2012	5800	Body	73.1	19.7	78.80	7.80

Table 8.1 Target and Measurement SAR after Normalized

9. DUT Testing Position

This DUT was tested in four different USB configurations. They are “direct laptop plug-in for configuration 1 and 4”, “USB cable plug-in for configuration 2 and 3”, and “direct laptop plug-in for Tip Mode (the tip of the DUT)” shown as below. Both direct laptop plug-in and USB cable plug-in test configurations are tested with 5 cm separation between the particular dongle orientation and the flat phantom. Please refer to Appendix E for the test setup photos.

			
Configuration 1 (Horizontal Up)	**Configuration 2 (Horizontal Down)**	**Configuration 3 (Vertical Front)**	**Configuration 4 (Vertical Back)**

Fig 9.1 Illustration for USB Connector Orientations

10. Measurement Procedures

The measurement procedures are as follows:

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

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

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

10.1 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

10.2 Area & Zoom Scan Procedures

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

10.3 Volume Scan Procedures

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

10.4 SAR Averaged Methods

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

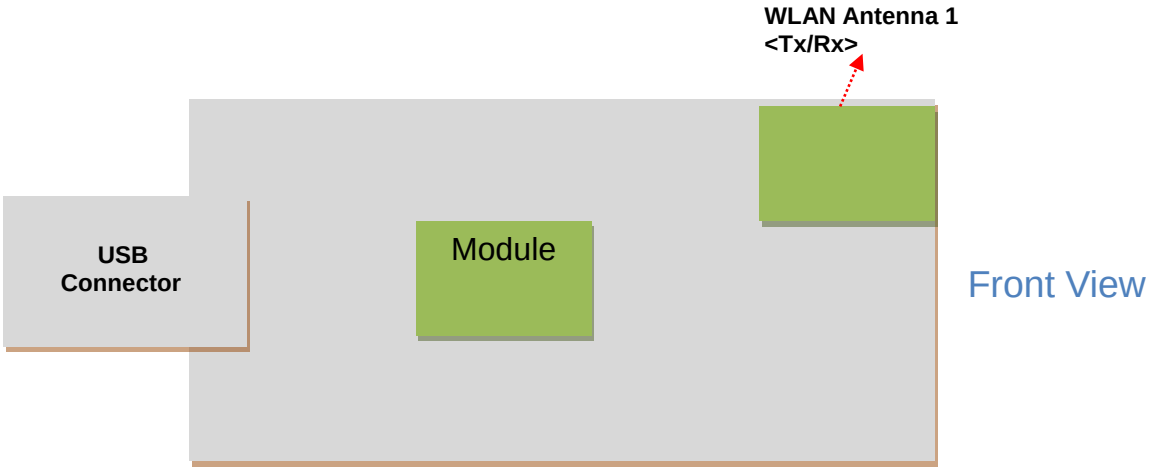
Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty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

10.5 Power Drift Monitoring

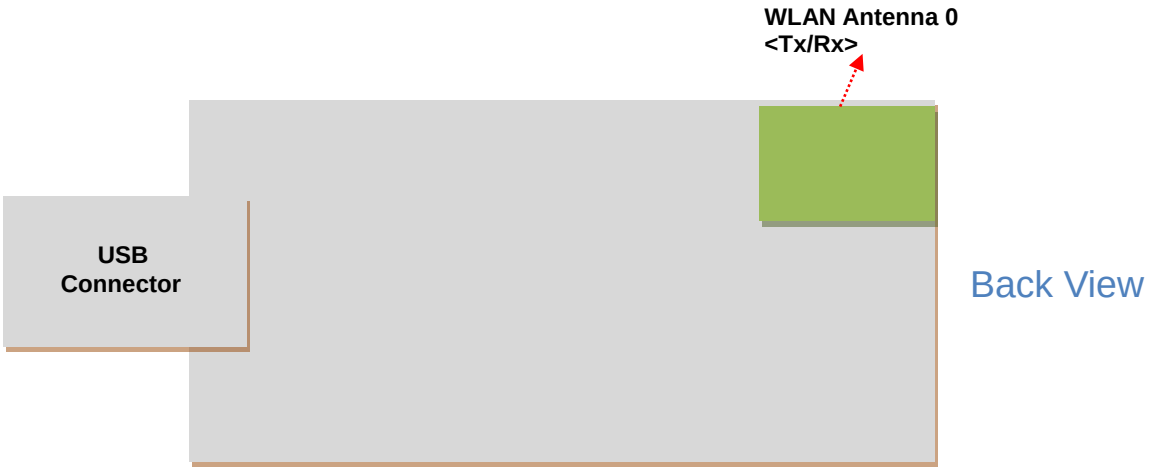
All SAR testing is under the DUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of DUT during SAR test. Both these procedures measure the field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

11. SAR Test Configurations

11.1 Exposure Positions Consideration



Front View



Back View

Antenna characteristics

Mode	Antenna 0	Antenna 1	Antenna 0+1
2.4GHz 802.11b	X	V	X
2.4GHz 802.11g	X	V	X
2.4GHz 802.11n	X	X	V
5GHz 802.11a	X	V	X
5GHz 802.11n	X	X	V

12. SAR Test Results

12.1 Conducted Power (Unit: dBm)

<WLAN 2.4GHz>
<Ant. 1>

Band			802.11b			
Data Rate (bps)			1M			
Channel			1	6		11
Frequency (MHz)			2412	2437		2462
Average Power			20.38	19.67		18.13
Mode	Channel	Frequency (MHz)	Average power (dBm)			
			Data Rate (bps)			
			1M	2M	5.5M	11M
802.11b	CH 01	2412 MHz	20.38	20.3	20.27	20.21

Band			802.11g							
Data Rate(bps)			6M							
Channel			1			6			11	
Frequency (MHz)			2412			2437			2462	
Average Power			17.27			16.74			15.03	
Mode	Channel	Frequency (MHz)	Average power (dBm)							
			Data Rate (bps)							
			6M	9M	12M	18M	24M	36M	48M	54M
802.11g	CH 01	2412 MHz	17.27	17.15	17.1	17.12	17.08	17.05	17.14	17.01

Note:

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

<Ant. 0 + 1>

Band			802.11n (BW 20MHz)							
Data Rate(bps)			MCS0							
Channel			1			6			11	
Frequency (MHz)			2412			2437			2462	
Average Power			15.98			15.41			15.59	
Mode	Channel	Frequency (MHz)	Average power (dBm)							
			Data Rate (bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n 20M	CH 01	2412 MHz	**15.98**	15.89	15.76	15.69	15.63	15.52	15.44	15.39

Band			802.11n (BW 40MHz)							
Data Rate(bps)			MCS8							
Channel			1			6			11	
Frequency (MHz)			2412			2437			2462	
Average Power			13.88			13.01			12.79	
Mode	Channel	Frequency (MHz)	Average power (dBm)							
			Data Rate (bps)							
			MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
802.11n 40M	CH 01	2412 MHz	**13.88**	13.74	13.68	13.58	13.49	13.52	13.43	13.37

Note:

1. Per KDB 248227, choose the highest output power channel to test SAR and determine further SAR exclusion
2. For each frequency band, testing at higher data rates and higher order modulations is not requirement when the maximum average output power for each of these configurations is less than 1/4 dB higher than those measured at the lowest data rate.
3. Per KDB 248227, 11n(40M) output power is less than 1/4 dB higher than 11n(20M) mode, thus the SAR can be excluded.

<WLAN 5GHz>
<Ant. 1>

Band	802.11a											
Data Rate(bps)	6M											
Channel	36	40	44	48	52	56	60	64	100	104	108	112
Frequency (MHz)	5180	5200	5220	5240	5260	5280	5300	5320	5500	5520	5540	5560
Average Power	12.94	**13.02**	12.50	12.68	17.19	**17.21**	16.58	16.29	13.57	13.43	13.15	13.31
Data Rate(bps)	6M											
Channel	116	120	124	128	132	136	140	149	153	157	161	165
Frequency (MHz)	5580	5600	5620	5640	5660	5680	5700	5745	5765	5785	5805	5825
Average Power	**13.68**	13.31	12.87	12.34	11.79	11.50	10.67	10.68	10.59	**10.76**	9.79	8.67

Mode	Channel	Frequency (MHz)	Average Power (dBm)							
			Data Rate (bps)							
			6M	9M	12M	18M	24M	36M	48M	54M
802.11a	CH 040	5200 MHZ	**13.02**	12.89	12.93	12.83	12.67	12.71	12.62	12.51
	CH 056	5280 MHz	**17.21**	17.2	17.17	17.19	17.12	17.08	17.02	17.05
	CH 116	5580 MHz	**13.68**	13.65	13.58	13.44	13.48	13.38	13.27	13.19
	CH 157	5785 MHz	**10.76**	10.74	10.56	10.63	10.61	10.52	10.46	10.44

Note: For each frequency band, testing at higher data rates and higher order modulations is not requirement when the maximum average output power for each of these configurations is less than 1/4 dB higher than those measured at the lowest data rate.

<Ant. 0 + 1>

Band	802.11n (BW 20MHz)											
Data Rate(bps)	MCS0											
Channel	36	40	44	48	52	56	60	64	100	104	108	112
Frequency (MHz)	5180	5200	5220	5240	5260	5280	5300	5320	5500	5520	5540	5560
Average Power	12.18	**12.53**	12.32	12.38	**19.82**	19.31	19.16	17.29	19.18	19.23	19.09	19.14
Data Rate(bps)	MCS0											
Channel	116	120	124	128	132	136	140	149	153	157	161	165
Frequency (MHz)	5580	5600	5620	5640	5660	5680	5700	5745	5765	5785	5805	5825
Average Power	**19.24**	19.10	18.97	19.07	18.87	18.74	18.63	**16.95**	16.76	14.27	13.82	13.46

Mode	Channel	Frequency (MHz)	Average Power (dBm)							
			Data Rate (bps)							
			MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n 20M	CH 040	5200 MHZ	**12.53**	12.51	12.5	12.49	12.47	12.47	12.49	12.48
	CH 052	5260 MHz	**19.82**	19.79	19.77	19.77	19.73	19.74	19.72	19.74
	CH 116	5580 MHz	**19.24**	19.2	19.21	19.19	19.17	19.17	19.18	19.16
	CH 149	5745 MHz	**16.95**	16.92	16.92	16.93	16.9	16.91	16.58	16.56

Band	802.11n (BW 40MHz)								
Data Rate(bps)	MCS8								
Channel	38	46	54	62	102	118	134	151	159
Frequency (MHz)	5190	5230	5270	5310	5510	5590	5670	5755	5795
Average Power	**15.58**	14.57	**18.33**	17.49	**18.54**	17.68	16.28	**14.28**	14.26

Mode	Channel	Frequency (MHz)	Average Power (dBm)							
			Data Rate (bps)							
			MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
802.11n 40M	CH 038	5190 MHz	**15.58**	15.53	15.51	15.47	15.47	15.42	15.46	15.44
	CH 054	5270 MHz	**18.33**	18.26	18.25	18.22	18.27	18.19	18.17	18.19
	CH 102	5510 MHz	**18.54**	18.51	18.47	18.48	18.46	18.42	18.44	18.45
	CH 151	5755 MHz	**14.28**	14.21	14.22	14.22	14.17	14.14	14.13	14.15

Note:

1. Per KDB 248227, choose the highest output power channel to test SAR and determine further SAR exclusion
2. Since 11n (40M) 5180 MHz ~ 5240MHz power is 1/4dB higher than 11n(20M) 5180 MHz ~ 5240MHz, 11n (40M)SAR will be verified.
3. Since 11n (40M) 5260 MHz ~ 5320MHz output power is less than 1/4 dB higher than 11n (20M) 5260 MHz ~ 5320MHz mode, thus the SAR can be excluded.
4. Since 11n (40M) 5500 MHz ~ 5700MHz output power is less than 1/4 dB higher than 11n (20M) 5500 MHz ~ 5700MHz mode, thus the SAR can be excluded.
5. Since 11n (40M) 5745 MHz ~ 5825MHz output power is less than 1/4 dB higher than 11n (20M) 5745 MHz ~ 5825MHz mode, thus the SAR can be excluded.
6. For each frequency band, testing at higher data rates and higher order modulations is not requirement when the maximum average output power for each of these configurations is less than 1/4 dB higher than those measured at the lowest data rate.

12.2 Test Records for Body SAR Test

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Ant. Status	SAR_{1g} (W/kg)
1	**802.11b**	**-**	**Horizontal Up**	**0.5**	**1**	**1**	**0.952**
2	802.11b	-	Horizontal Down	0.5	1	1	0.769
3	802.11b	-	Vertical Front	0.5	1	1	0.16
4	802.11b	-	Vertical Back	0.5	1	1	0.488
5	802.11b	-	Tip Mode	0.5	1	1	0.057
6	802.11b	-	Horizontal Up	0.5	6	1	0.896
7	802.11b	-	Horizontal Up	0.5	11	1	0.672
8	802.11n	20M	Horizontal Up	0.5	1	0+1	0.502
9	802.11n	20M	Horizontal Down	0.5	1	0+1	0.31
10	802.11n	20M	Vertical Front	0.5	1	0+1	0.132
11	802.11n	20M	Vertical Back	0.5	1	0+1	0.151
12	802.11n	20M	Tip Mode	0.5	1	0+1	0.035
13	802.11a	-	Horizontal Up	0.5	40	1	0.218
14	802.11a	-	Horizontal Down	0.5	40	1	0.312
15	802.11a	-	Vertical Front	0.5	40	1	0.034
16	802.11a	-	Vertical Back	0.5	40	1	0.299
17	802.11a	-	Tip Mode	0.5	40	1	0.031
18	802.11a	-	Horizontal Up	0.5	56	1	0.421
19	802.11a	-	Horizontal Down	0.5	56	1	0.54
20	802.11a	-	Vertical Front	0.5	56	1	0.049
21	**802.11a**	**-**	**Vertical Back**	**0.5**	**56**	**1**	**0.549**
22	802.11a	-	Tip Mode	0.5	56	1	0.057
23	802.11a	-	Horizontal Up	0.5	116	1	0.328
24	802.11a	-	Horizontal Down	0.5	116	1	0.17
25	802.11a	-	Vertical Front	0.5	116	1	0.025
26	802.11a	-	Vertical Back	0.5	116	1	0.386
27	802.11a	-	Tip Mode	0.5	116	1	0.03
28	802.11a	-	Horizontal Up	0.5	157	1	0.271
29	802.11a	-	Horizontal Down	0.5	157	1	0.218
30	802.11a	-	Vertical Front	0.5	157	1	0.033
31	802.11a	-	Vertical Back	0.5	157	1	0.379
32	802.11a	-	Tip Mode	0.5	157	1	0.044
33	802.11n	20M	Horizontal Up	0.5	40	0+1	0.104
34	802.11n	20M	Horizontal Down	0.5	40	0+1	0.044
35	802.11n	20M	Vertical Front	0.5	40	0+1	0.102
36	802.11n	20M	Vertical Back	0.5	40	0+1	0.024
37	802.11n	20M	Tip Mode	0.5	40	0+1	0.000514
38	802.11n	40M	Horizontal Up	0.5	38	0+1	0.267

Plot No.	Band	Mode	Test Position	Gap (cm)	Ch.	Ant. Status	SAR_{1g} (W/kg)
39	802.11n	20M	Horizontal Up	0.5	52	0+1	0.209
40	802.11n	20M	Horizontal Down	0.5	52	0+1	0.148
41	802.11n	20M	Vertical Front	0.5	52	0+1	0.358
42	802.11n	20M	Vertical Back	0.5	52	0+1	0.133
43	802.11n	20M	Tip Mode	0.5	52	0+1	0.031
44	802.11n	20M	Horizontal Up	0.5	116	0+1	0.159
45	802.11n	20M	Horizontal Down	0.5	116	0+1	0.084
46	802.11n	20M	Vertical Front	0.5	116	0+1	0.304
47	802.11n	20M	Vertical Back	0.5	116	0+1	0.056
48	802.11n	20M	Tip Mode	0.5	116	0+1	0.022
49	802.11n	20M	Horizontal Up	0.5	149	0+1	0.271
50	802.11n	20M	Horizontal Down	0.5	149	0+1	0.158
51	802.11n	20M	Vertical Front	0.5	149	0+1	0.337
52	802.11n	20M	Vertical Back	0.5	149	0+1	0.139
53	802.11n	20M	Tip Mode	0.5	149	0+1	0.04

Note: Per KDB447498, if the highest output channel SAR for each exposure position ≤ 0.8 W/kg other channels SAR tests are not necessary.

Test Engineer： San Lin, Nick Yu, Michael Yang, and Jack Wu

13. References

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

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

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

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

[5] SPEAG DASY System Handbook

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

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

[8] FCC KDB 447498 D02 v02, "SAR Measurement Procedures for USB Dongle Transmitters", November 2009

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

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

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

[12] FCC KDB 941225 D05 v01, “SAR Test Considerations for LTE Handsets and Data Modems”, December 2010

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

[14] FCC KDB 388624 D02, "Permit But Ask List", 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: 2012/5/8

System Check_Body_2450MHz_120508

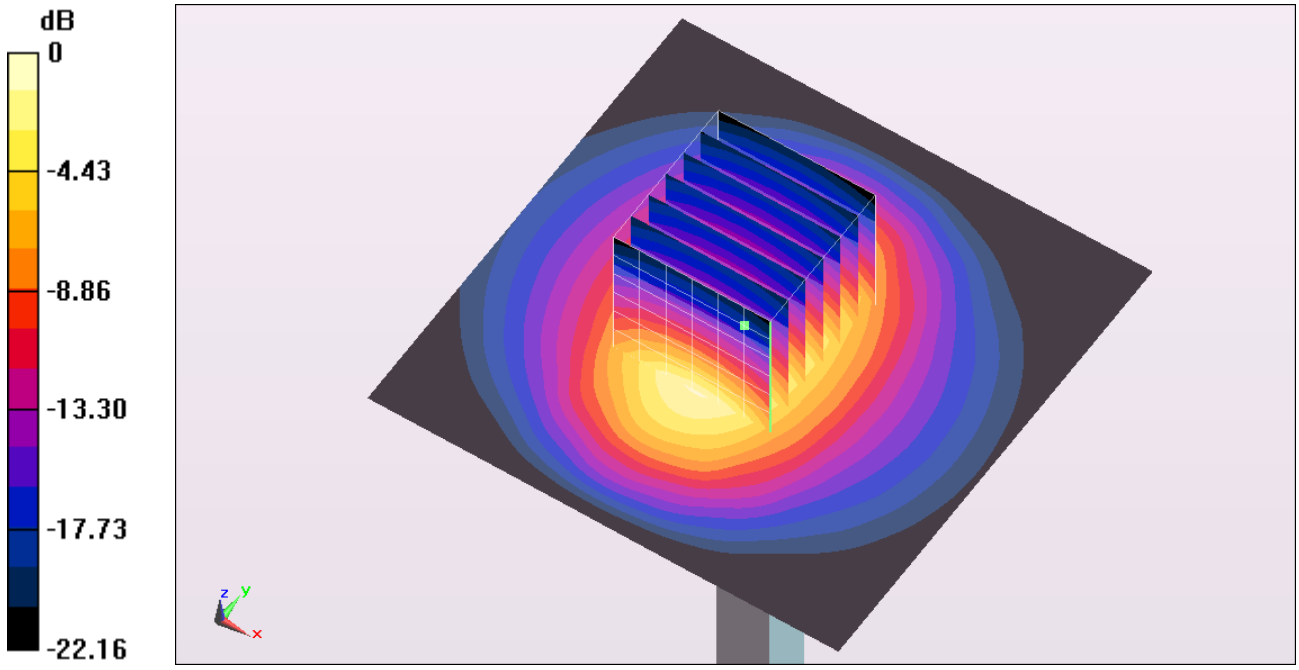
DUT: D2450V2-SN:736

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2450 MHz; σ = 1.966 mho/m; ε_r = 52.714; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃； Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 14.9 mW/g

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.532 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 29.036 mW/g
SAR(1 g) = 13.2 mW/g; SAR(10 g) = 6.27 mW/g
Maximum value of SAR (measured) = 14.6 mW/g



0 dB = 14.6 mW/g = 23.29 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

System Check_Body_5200MHz_120508

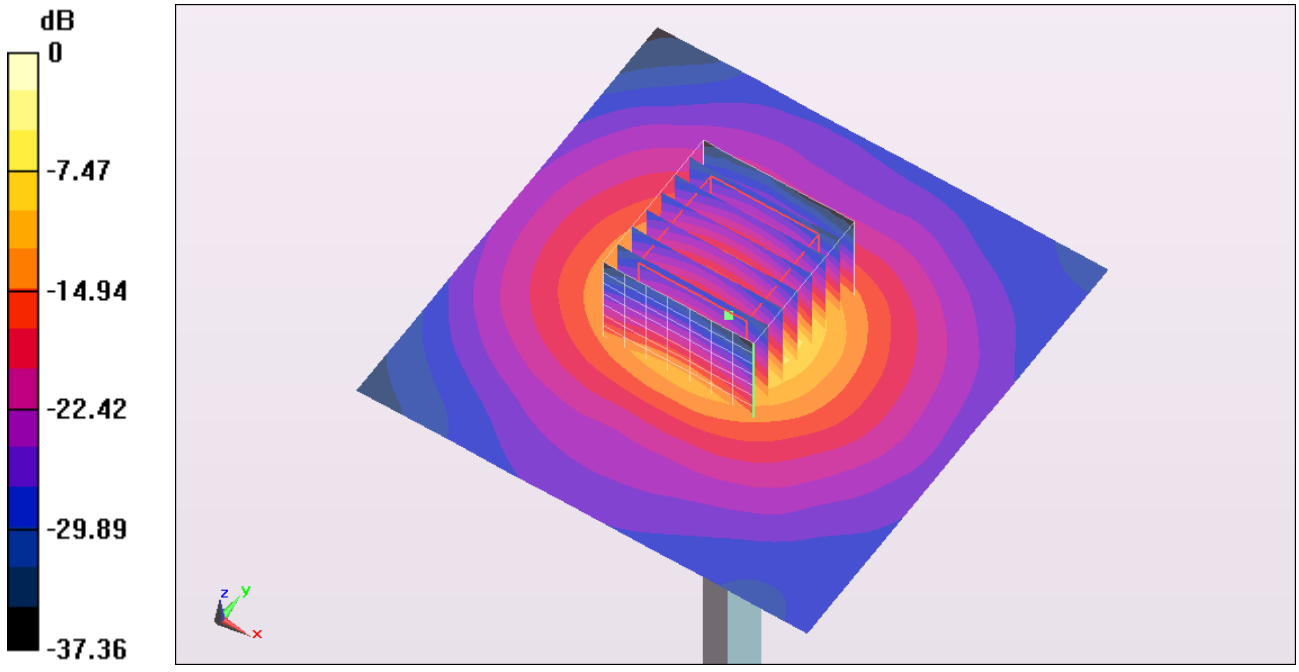
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5200 MHz; σ = 5.138 mho/m; ε_r = 47.493; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 32.3 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 82.437 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 60.068 mW/g
SAR(1 g) = 18.1 mW/g; SAR(10 g) = 5.13 mW/g
Maximum value of SAR (measured) = 30.0 mW/g



0 dB = 30.0 mW/g = 29.54 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

System Check_Body_5200MHz_120509

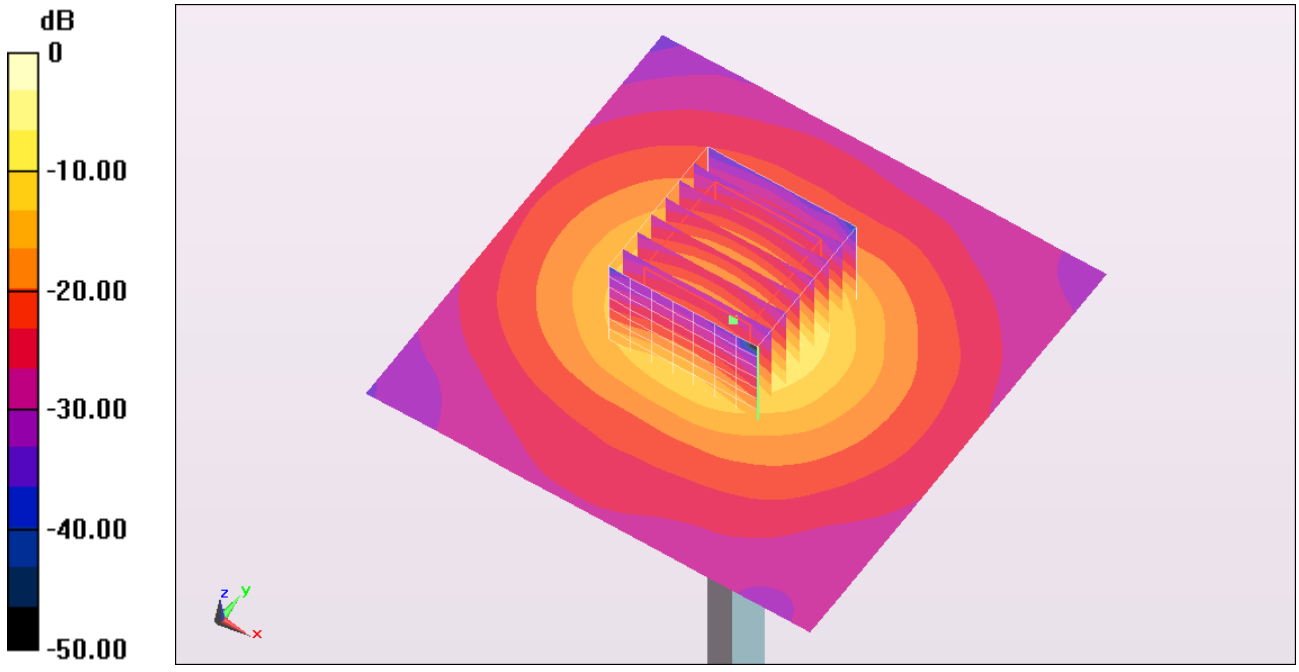
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5200 MHz; σ = 5.336 mho/m; ε_r = 47.488; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 34.0 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 82.231 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 59.970 mW/g
SAR(1 g) = 18.7 mW/g; SAR(10 g) = 5.34 mW/g
Maximum value of SAR (measured) = 31.1 mW/g



0 dB = 31.1 mW/g = 29.86 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

System Check_Body_5200MHz_120509

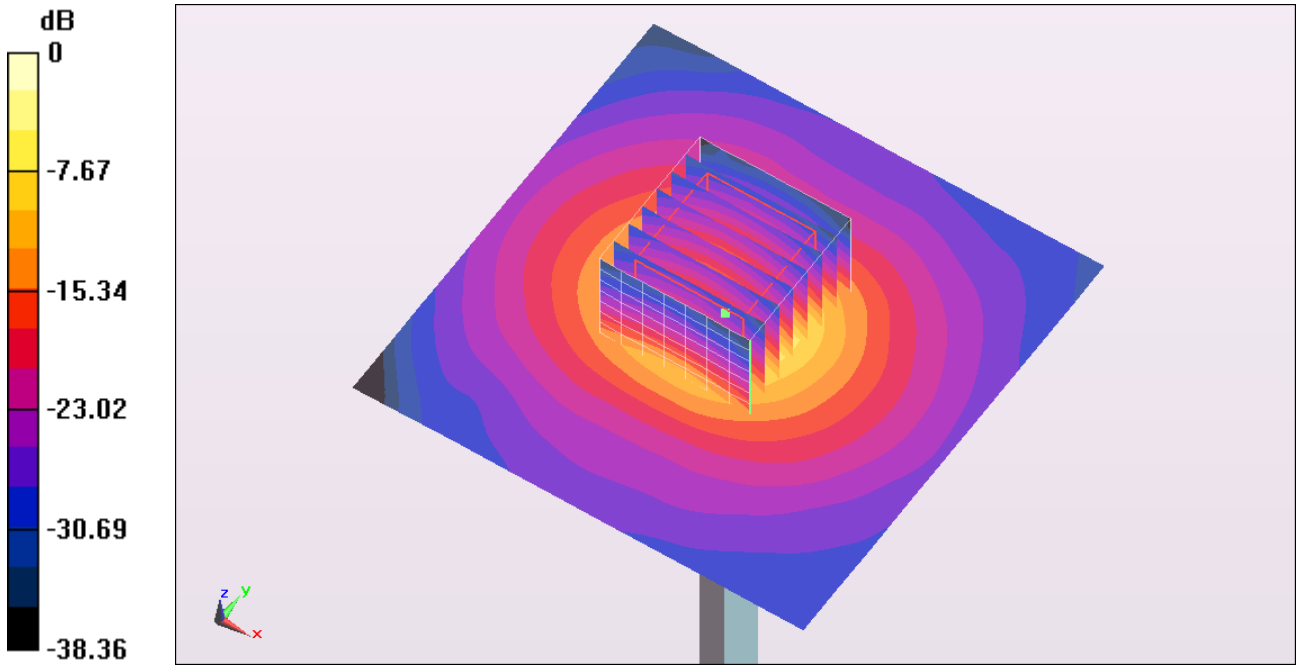
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5200 MHz; σ = 5.336 mho/m; ε_r = 47.476
ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 33.2 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 82.014 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 60.637 mW/g
SAR(1 g) = 18.5 mW/g; SAR(10 g) = 5.26 mW/g
Maximum value of SAR (measured) = 31.6 mW/g



0 dB = 31.6 mW/g = 29.99 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

System Check_Body_5500MHz_120508

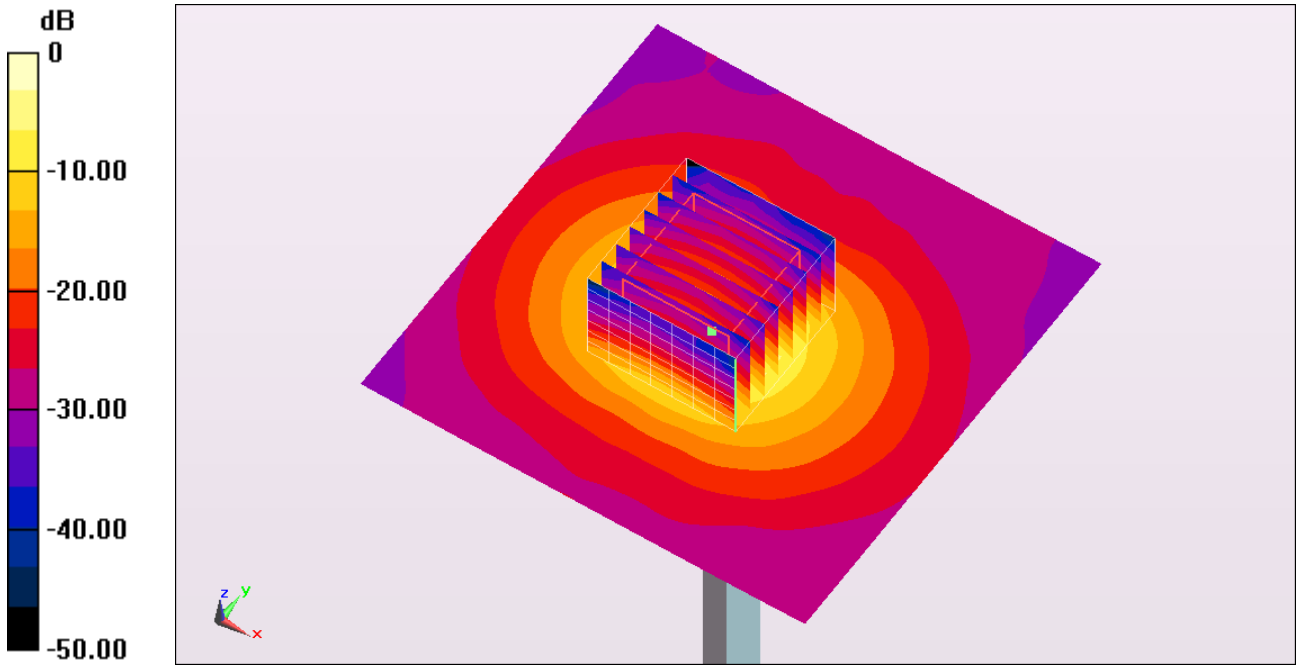
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5500 MHz; σ = 5.516 mho/m; ε_r = 47.024; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.76, 3.76, 3.76); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 36.7 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 86.476 V/m; Power Drift = 0.123 dB
Peak SAR (extrapolated) = 75.409 mW/g
SAR(1 g) = 21.1 mW/g; SAR(10 g) = 5.9 mW/g
Maximum value of SAR (measured) = 36.2 mW/g



0 dB = 36.2 mW/g = 31.17 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

System Check_Body_5500MHz_120509

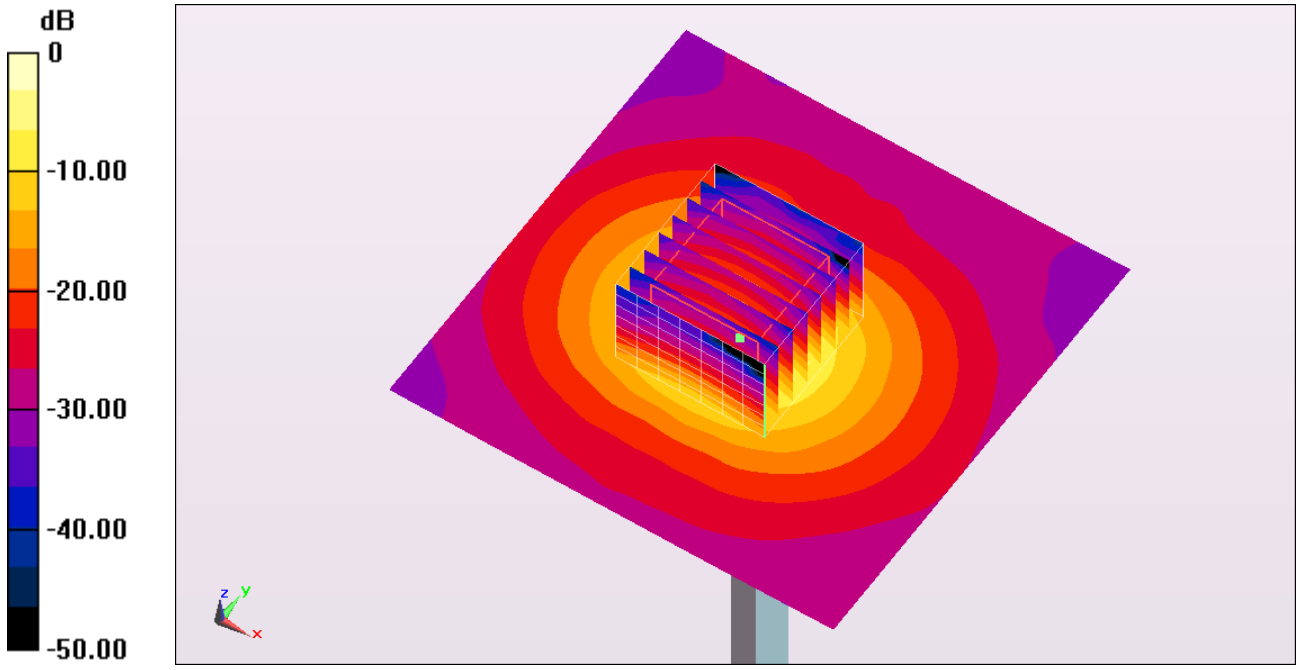
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5500 MHz; σ = 5.734 mho/m; ε_r = 46.943; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.76, 3.76, 3.76); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 35.6 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 82.637 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 76.623 mW/g
SAR(1 g) = 20.6 mW/g; SAR(10 g) = 5.73 mW/g
Maximum value of SAR (measured) = 35.2 mW/g



0 dB = 35.2 mW/g = 30.93 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

System Check_Body_5500MHz_120509

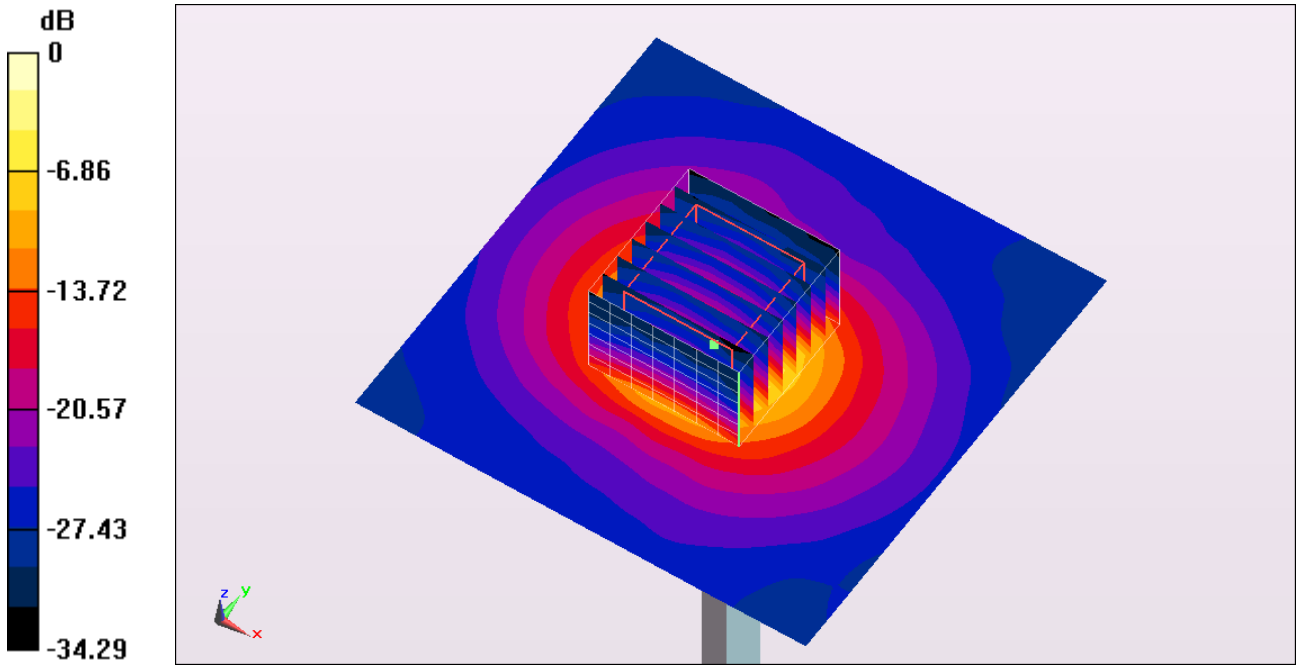
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5500 MHz; σ = 5.734 mho/m; ε_r = 46.943; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.76, 3.76, 3.76); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 35.4 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 84.447 V/m; Power Drift = 0.120 dB
Peak SAR (extrapolated) = 75.836 mW/g
SAR(1 g) = 20.1 mW/g; SAR(10 g) = 5.6 mW/g
Maximum value of SAR (measured) = 34.3 mW/g



0 dB = 34.3 mW/g = 30.71 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

System Check_Body_5800MHz_120508

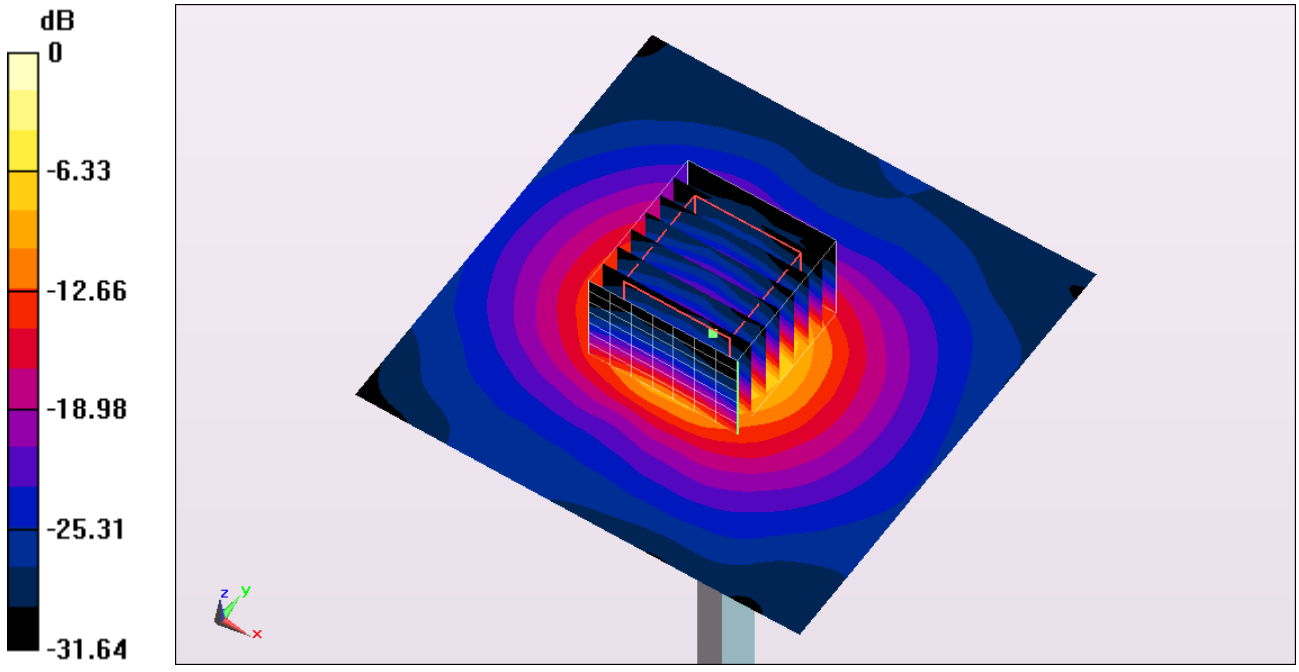
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5800 MHz; σ = 5.991 mho/m; ε_r = 46.521; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 33.5 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 81.263 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 72.926 mW/g
SAR(1 g) = 18.7 mW/g; SAR(10 g) = 5.25 mW/g
Maximum value of SAR (measured) = 32.4 mW/g



0 dB = 32.4 mW/g = 30.21 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

System Check_Body_5800MHz_120509

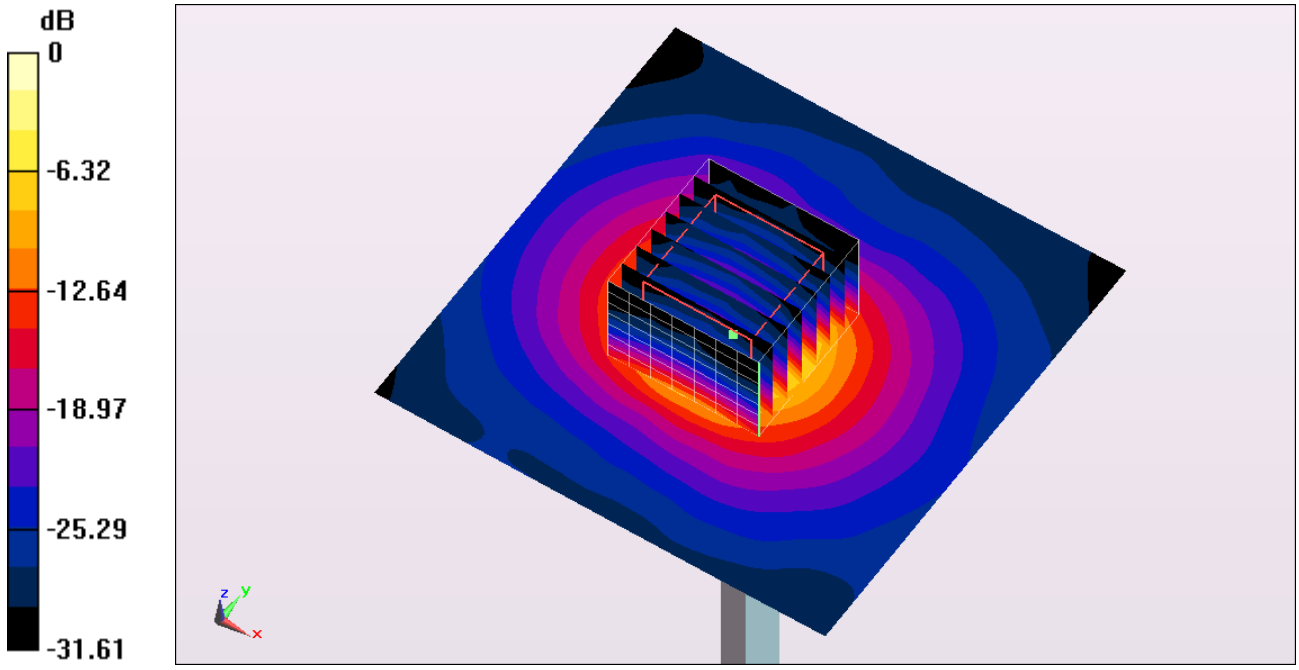
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5800 MHz; σ = 6.243 mho/m; ε_r = 46.387; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 34.2 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 80.185 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 74.579 mW/g
SAR(1 g) = 19.3 mW/g; SAR(10 g) = 5.4 mW/g
Maximum value of SAR (measured) = 33.5 mW/g



0 dB = 33.5 mW/g = 30.50 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

System Check_Body_5800MHz_120509

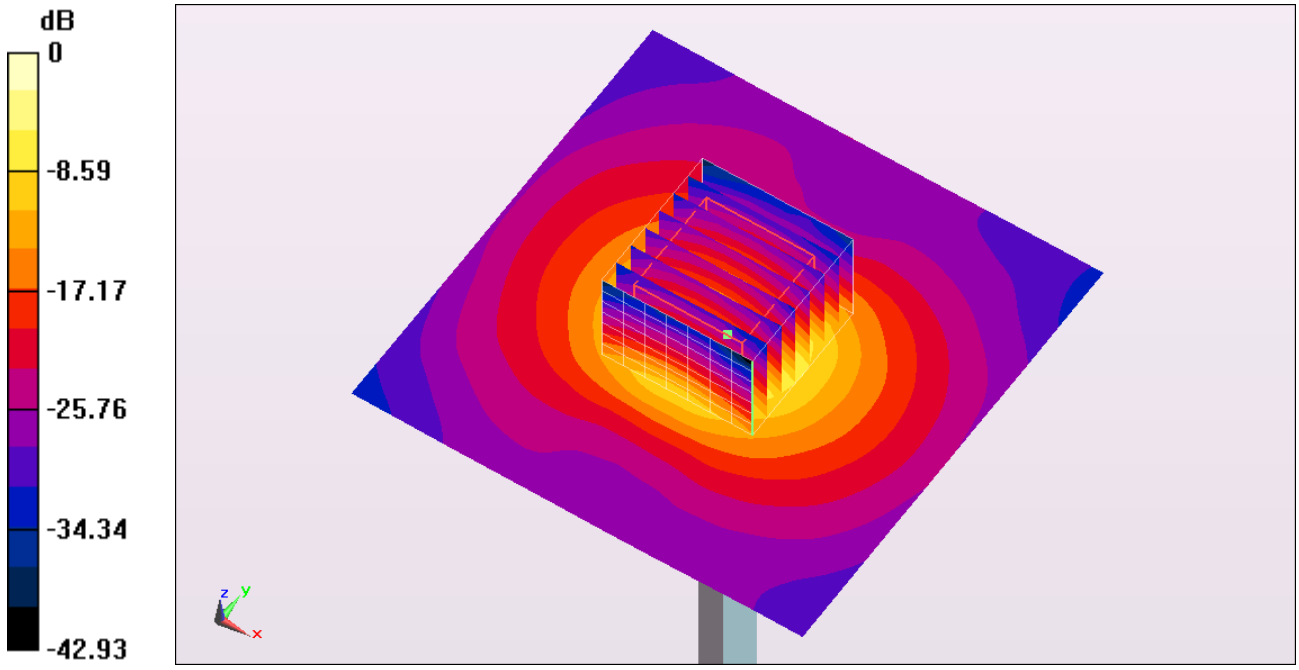
DUT: D5GHzV2-SN:1006

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5800 MHz; σ = 6.243 mho/m; ε_r = 46.387; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Pin=250mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 36.2 mW/g

Pin=250mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 82.414 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 57.750 mW/g
SAR(1 g) = 19.7 mW/g; SAR(10 g) = 5.7 mW/g
Maximum value of SAR (measured) = 33.5 mW/g



0 dB = 33.5 mW/g = 30.50 dB mW/g

Appendix B. Plots of SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#01 802.11b_Horizontal Up_0.5cm_Ch1_Ant 1

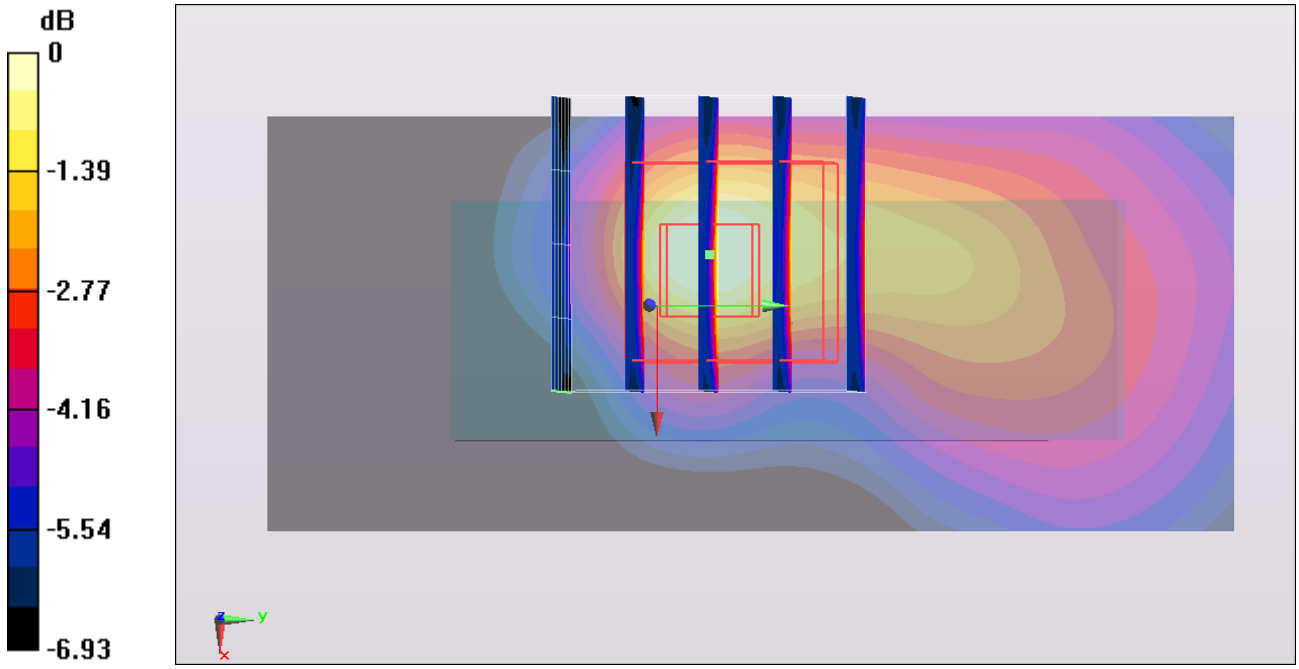
DUT: 232843-01

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.01 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.379 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.429 mW/g
SAR(1 g) = 0.952 mW/g; SAR(10 g) = 0.507 mW/g
Maximum value of SAR (measured) = 0.940 mW/g



0 dB = 0.940 mW/g = -0.54 dB mW/g

#01 802.11b_Horizontal Up_0.5cm_Ch1_Ant 1_2D

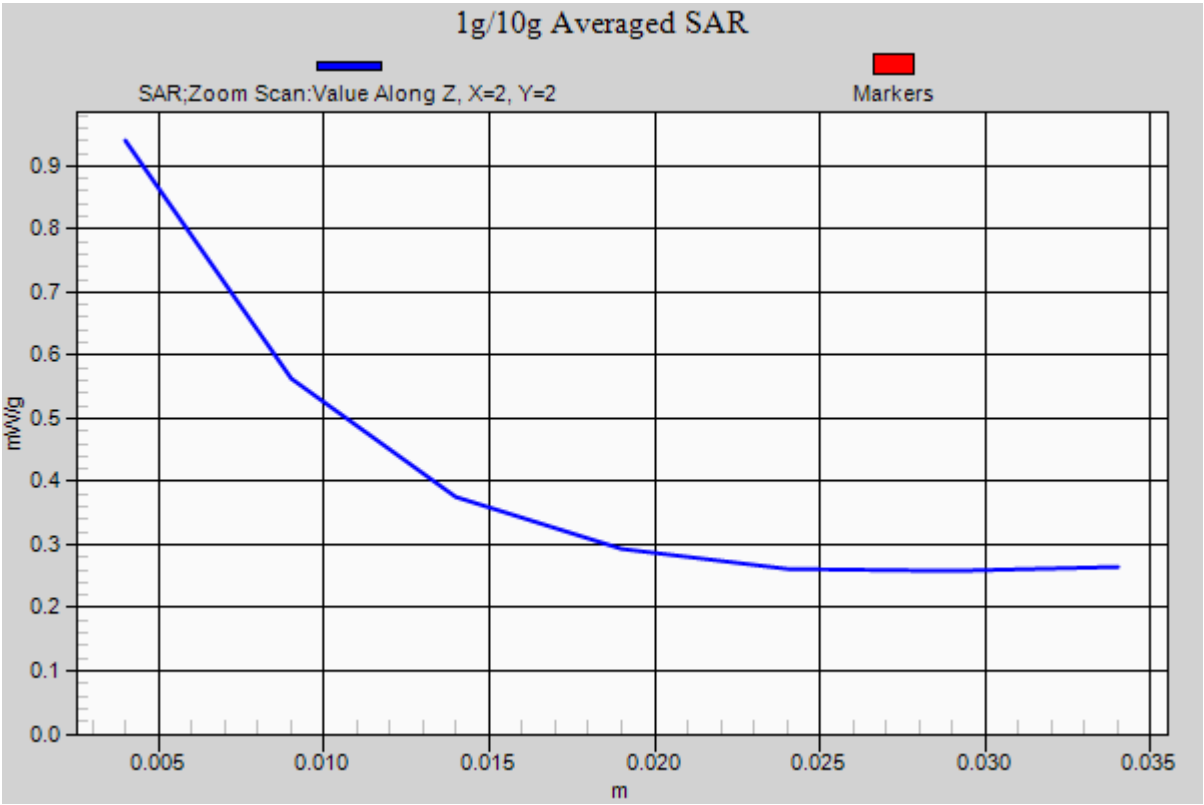
DUT: 232843-01

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.01 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.379 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.429 mW/g
SAR(1 g) = 0.952 mW/g; SAR(10 g) = 0.507 mW/g
Maximum value of SAR (measured) = 0.940 mW/g



#02 802.11b_Horizontal Down_0.5cm_Ch1_Ant 1

DUT: 232843-01

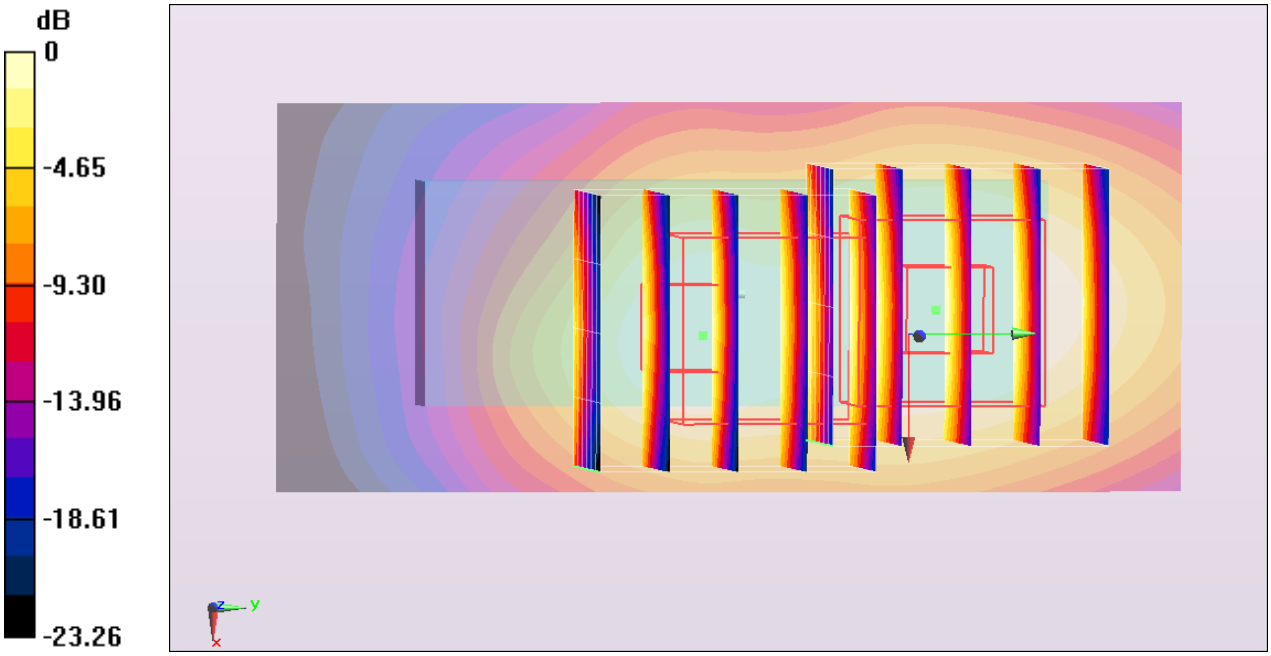
Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.881 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.218 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.517 mW/g
SAR(1 g) = 0.769 mW/g; SAR(10 g) = 0.373 mW/g
Maximum value of SAR (measured) = 0.870 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.218 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.272 mW/g
SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.275 mW/g
Maximum value of SAR (measured) = 0.633 mW/g



0 dB = 0.633 mW/g = -3.97 dB mW/g

#03 802.11b_Vertical Front_0.5cm_Ch1_Ant 1

DUT: 232843-01

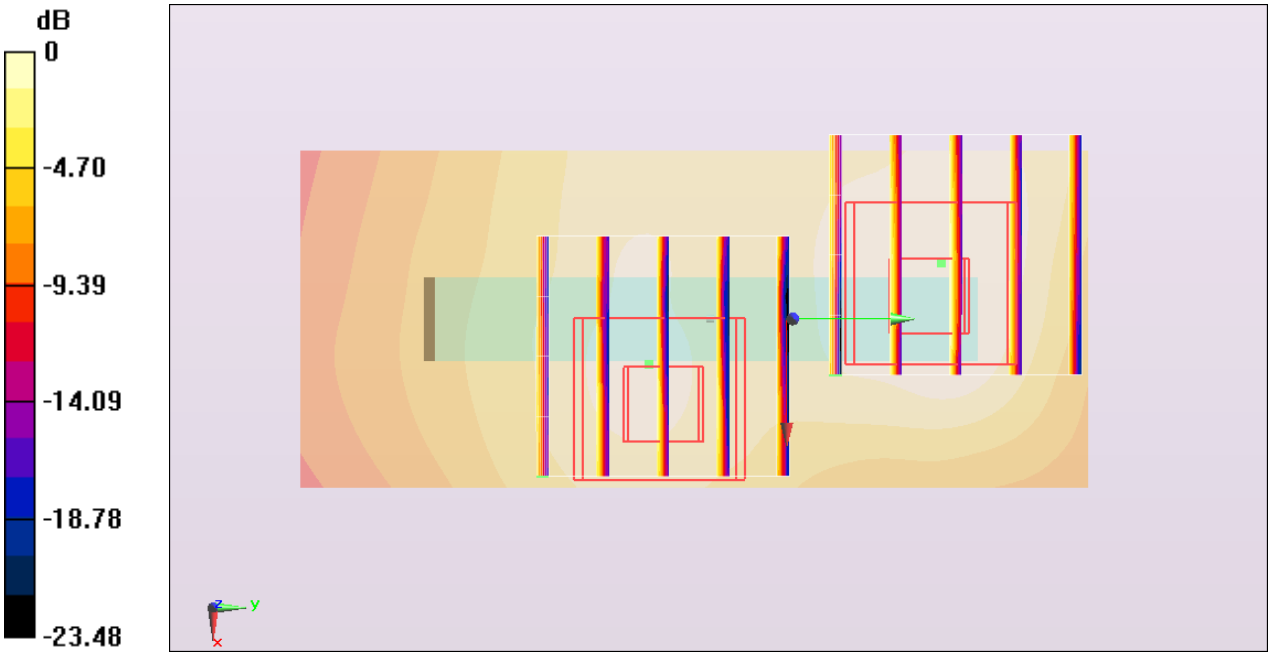
Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.165 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.397 V/m; Power Drift = 0.128 dB
Peak SAR (extrapolated) = 0.318 mW/g
SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.079 mW/g
Maximum value of SAR (measured) = 0.171 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.397 V/m; Power Drift = 0.128 dB
Peak SAR (extrapolated) = 0.230 mW/g
SAR(1 g) = 0.111 mW/g; SAR(10 g) = 0.054 mW/g
Maximum value of SAR (measured) = 0.123 mW/g



0 dB = 0.123 mW/g = -18.20 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#04 802.11b_Vertical Back_0.5cm_Ch1_Ant 1

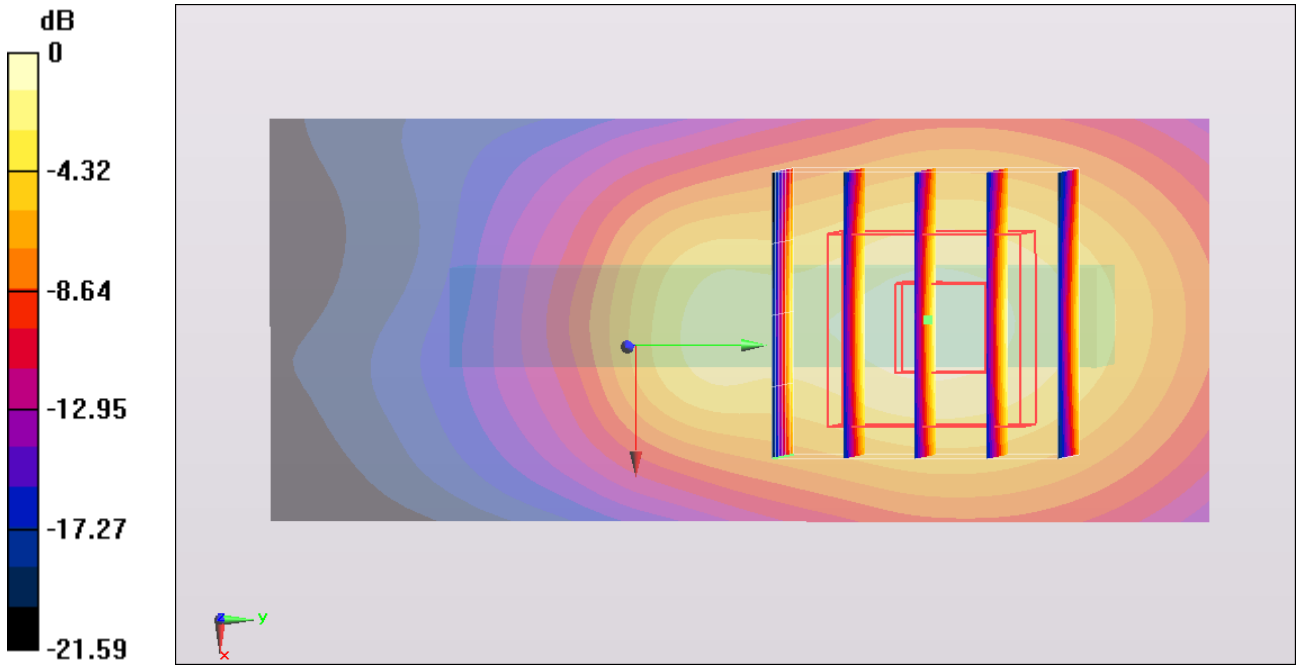
DUT: 232843-01

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.464 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.795 V/m; Power Drift = 0.137 dB
Peak SAR (extrapolated) = 0.938 mW/g
SAR(1 g) = 0.488 mW/g; SAR(10 g) = 0.245 mW/g
Maximum value of SAR (measured) = 0.541 mW/g



0 dB = 0.541 mW/g = -5.34 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#05 802.11b_Tip Mode_0.5cm_Ch1_Ant 1

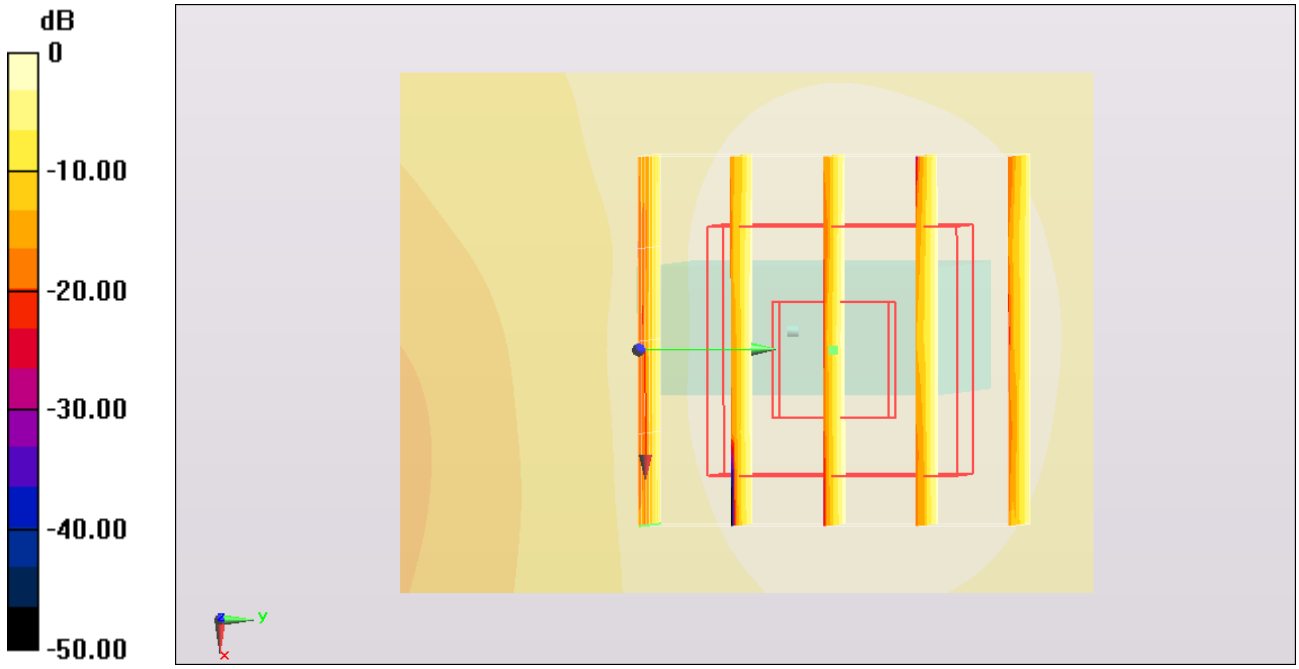
DUT: 232843-01

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x41x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.0634 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.473 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.106 mW/g
SAR(1 g) = 0.057 mW/g; SAR(10 g) = 0.030 mW/g
Maximum value of SAR (measured) = 0.0613 mW/g



0 dB = 0.0613 mW/g = -24.25 dB mW/g

#06 802.11b_Horizontal Up_0.5cm_Ch6_Ant 1

DUT: 232843-01

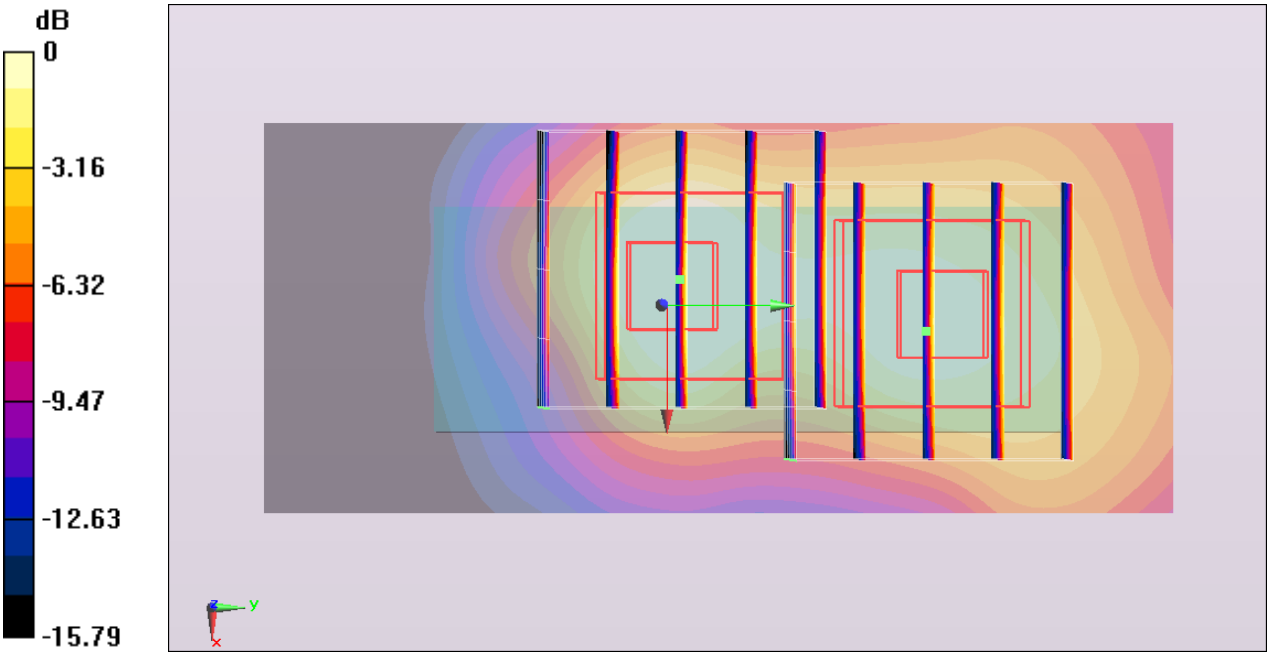
Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2437 MHz; σ = 1.948 mho/m; ε_r = 52.756; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch6/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.01 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.990 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 2.035 mW/g
SAR(1 g) = 0.896 mW/g; SAR(10 g) = 0.391 mW/g
Maximum value of SAR (measured) = 0.962 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.990 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 1.192 mW/g
SAR(1 g) = 0.612 mW/g; SAR(10 g) = 0.311 mW/g
Maximum value of SAR (measured) = 0.695 mW/g



0 dB = 0.695 mW/g = -3.16 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#07 802.11b_Horizontal Up_0.5cm_Ch11_Ant 1

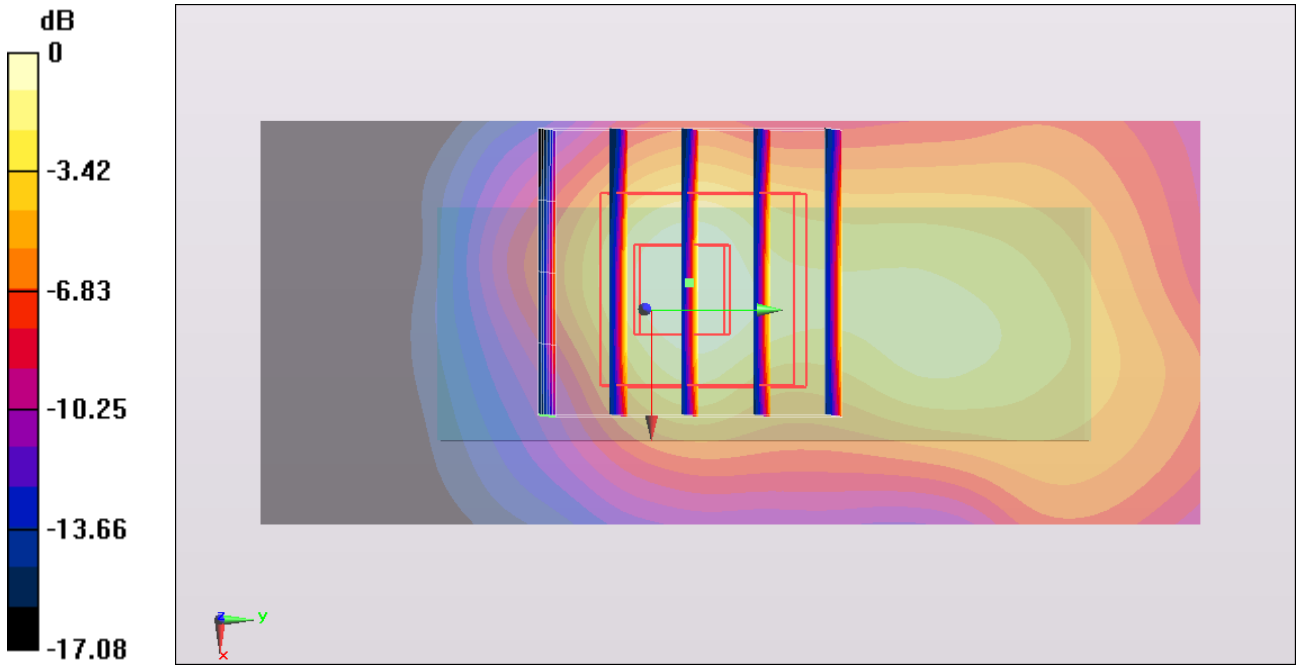
DUT: 232843-01

Communication System: 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2462 MHz; σ = 1.983 mho/m; ε_r = 52.67; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch11/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.807 mW/g

Ch11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.760 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 1.520 mW/g
SAR(1 g) = 0.672 mW/g; SAR(10 g) = 0.298 mW/g
Maximum value of SAR (measured) = 0.722 mW/g



0 dB = 0.722 mW/g = -2.83 dB mW/g

#08 802.11n_20M_Horizontal Up_0.5cm_Ch1_Ant 0+1

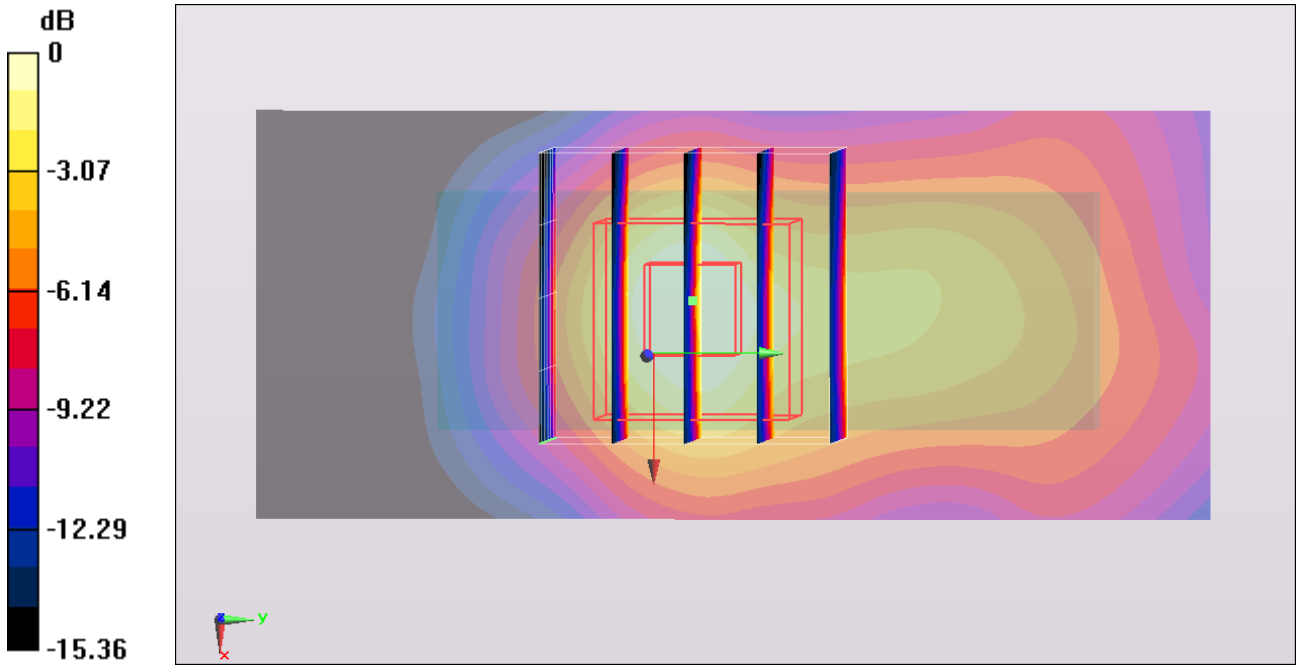
DUT: 232843-01

Communication System: 802.11n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.635 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.749 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.068 mW/g
SAR(1 g) = 0.502 mW/g; SAR(10 g) = 0.234 mW/g
Maximum value of SAR (measured) = 0.560 mW/g



0 dB = 0.560 mW/g = -5.04 dB mW/g

#08 802.11n_20M_Horizontal Up_0.5cm_Ch1_Ant 0+1_2D

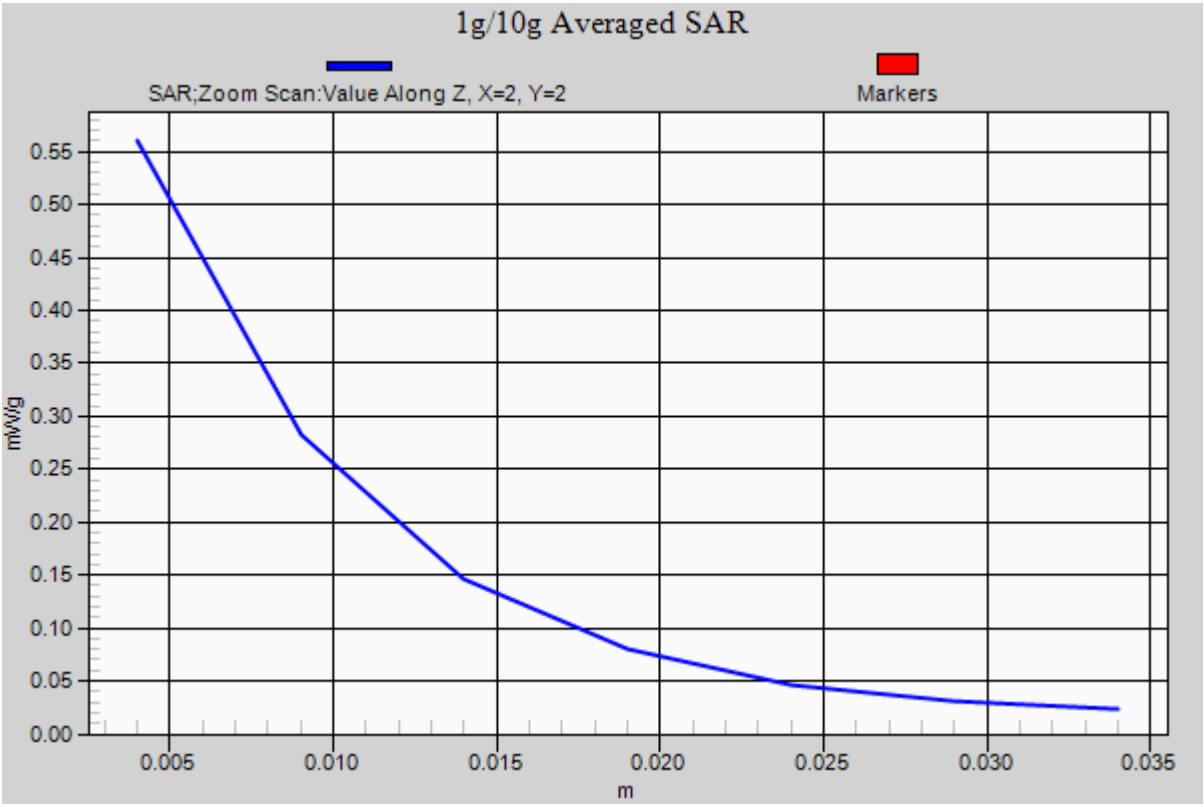
DUT: 232843-01

Communication System: 802.11n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃； Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.635 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.749 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.068 mW/g
SAR(1 g) = 0.502 mW/g; SAR(10 g) = 0.234 mW/g
Maximum value of SAR (measured) = 0.560 mW/g



#09 802.11n_20M_Horizontal Down_0.5cm_Ch1_Ant 0+1

DUT: 232843-01

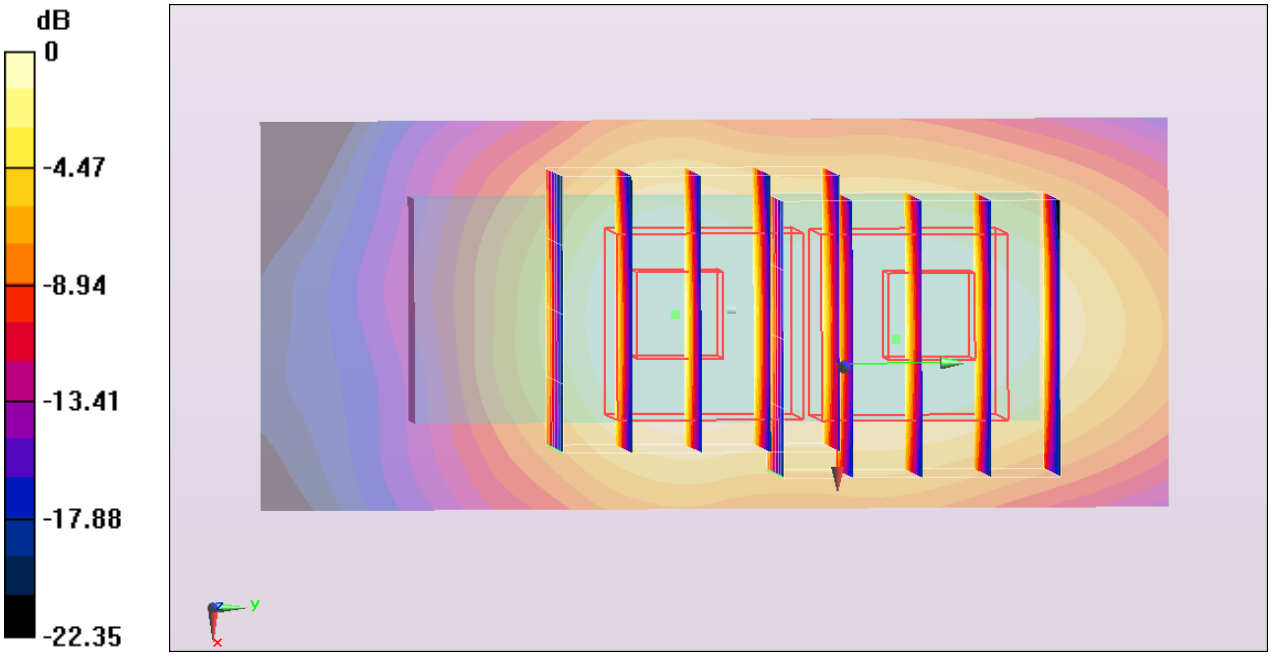
Communication System: 802.11n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.439 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.250 V/m; Power Drift = -0.059 dB
Peak SAR (extrapolated) = 0.647 mW/g
SAR(1 g) = 0.310 mW/g; SAR(10 g) = 0.147 mW/g
Maximum value of SAR (measured) = 0.348 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.250 V/m; Power Drift = -0.059 dB
Peak SAR (extrapolated) = 0.576 mW/g
SAR(1 g) = 0.277 mW/g; SAR(10 g) = 0.135 mW/g
Maximum value of SAR (measured) = 0.295 mW/g



0 dB = 0.295 mW/g = -10.60 dB mW/g

#10 802.11n_20M_Vertical Front_0.5cm_Ch1_Ant 0+1

DUT: 232843-01

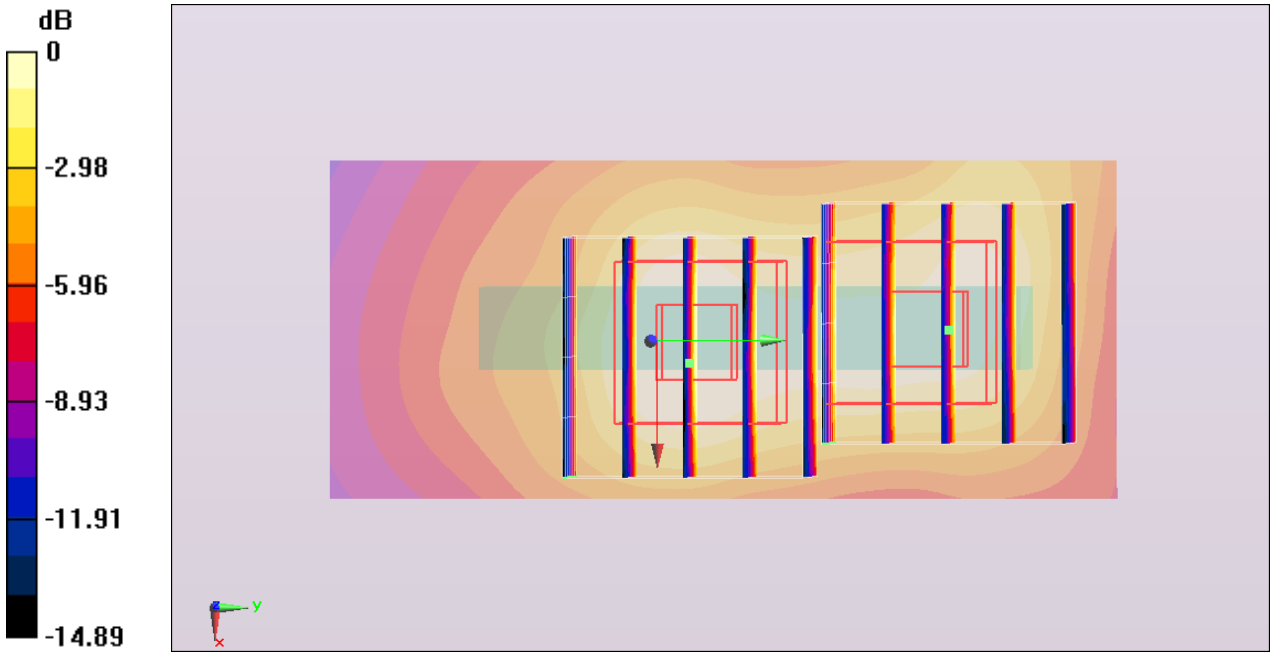
Communication System: 802.11n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.127 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.263 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.289 mW/g
SAR(1 g) = 0.132 mW/g; SAR(10 g) = 0.060 mW/g
Maximum value of SAR (measured) = 0.151 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.263 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.152 mW/g
SAR(1 g) = 0.091 mW/g; SAR(10 g) = 0.049 mW/g
Maximum value of SAR (measured) = 0.0985 mW/g



0 dB = 0.0985 mW/g = -20.13 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#11 802.11n_20M_Vertical Back_0.5cm_Ch1_Ant 0+1

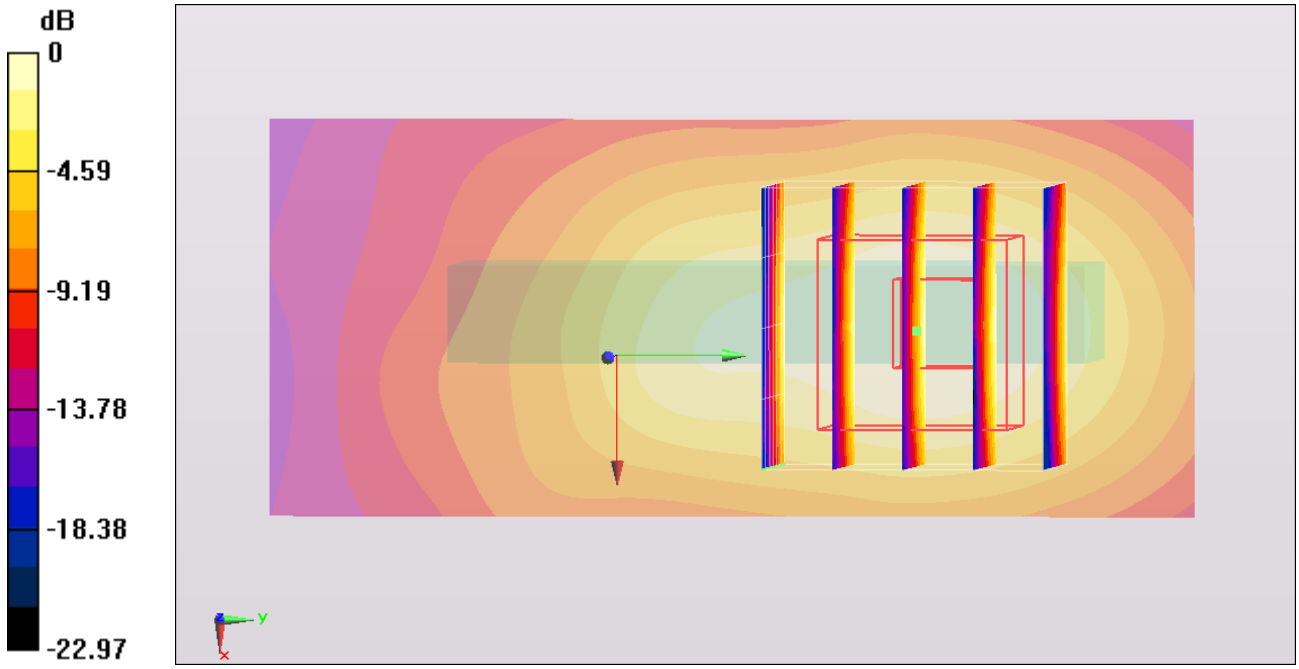
DUT: 232843-01

Communication System: 802.11n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.202 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.800 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.270 mW/g
SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.077 mW/g
Maximum value of SAR (measured) = 0.173 mW/g



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

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#12 802.11n_20M_Tip Mode_0.5cm_Ch1_Ant 0+1

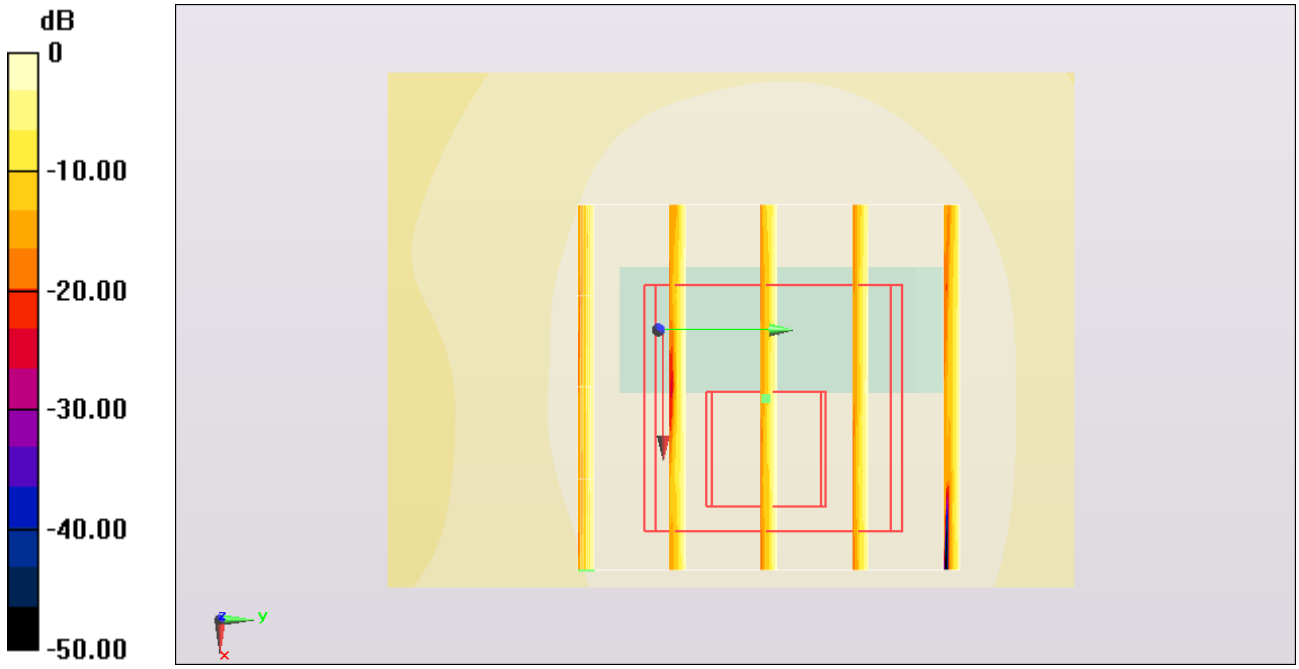
DUT: 232843-01

Communication System: 802.11n; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450_120508 Medium parameters used: f = 2412 MHz; σ = 1.914 mho/m; ε_r = 52.837; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(6.67, 6.67, 6.67); Calibrated: 2011/6/20;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch1/Area Scan (31x41x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.0544 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.297 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.070 mW/g
SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.0373 mW/g



0 dB = 0.0373 mW/g = -28.57 dB mW/g

#13 802.11a_Horizontal Up_0.5cm_Ch40_Ant 1

DUT: 232843-01

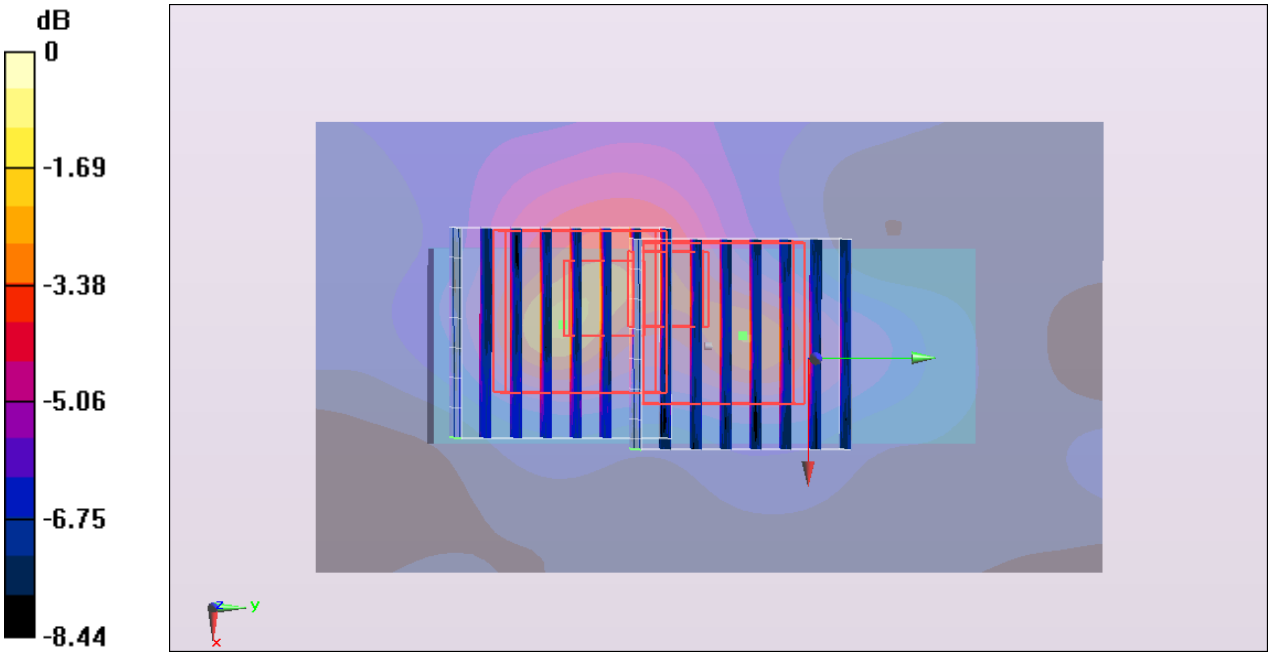
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5200 MHz; σ = 5.138 mho/m; ε_r = 47.493; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.186 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.219 V/m; Power Drift = 0.132 dB
Peak SAR (extrapolated) = 0.649 mW/g
SAR(1 g) = 0.218 mW/g; SAR(10 g) = 0.109 mW/g
Maximum value of SAR (measured) = 0.358 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.219 V/m; Power Drift = 0.132 dB
Peak SAR (extrapolated) = 0.647 mW/g
SAR(1 g) = 0.172 mW/g; SAR(10 g) = 0.096 mW/g
Maximum value of SAR (measured) = 0.338 mW/g



0 dB = 0.338 mW/g = -9.42 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#14 802.11a_Horizontal Down_0.5cm_Ch40_Ant 1

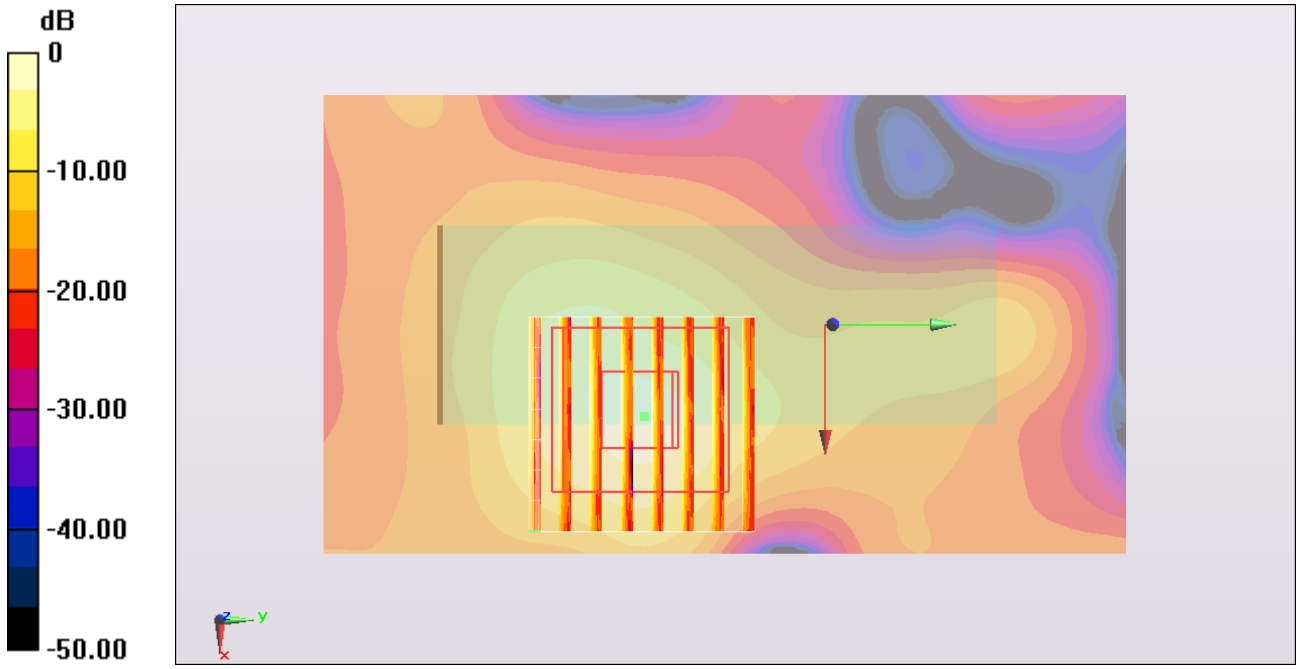
DUT: 232843-01

Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5200 MHz; σ = 5.138 mho/m; ε_r = 47.493; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.389 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.244 V/m; Power Drift = -0.191 dB
Peak SAR (extrapolated) = 1.074 mW/g
SAR(1 g) = 0.312 mW/g; SAR(10 g) = 0.107 mW/g
Maximum value of SAR (measured) = 0.591 mW/g



0 dB = 0.591 mW/g = -4.57 dB mW/g

#14 802.11a_Horizontal Down_0.5cm_Ch40_Ant 1_2D

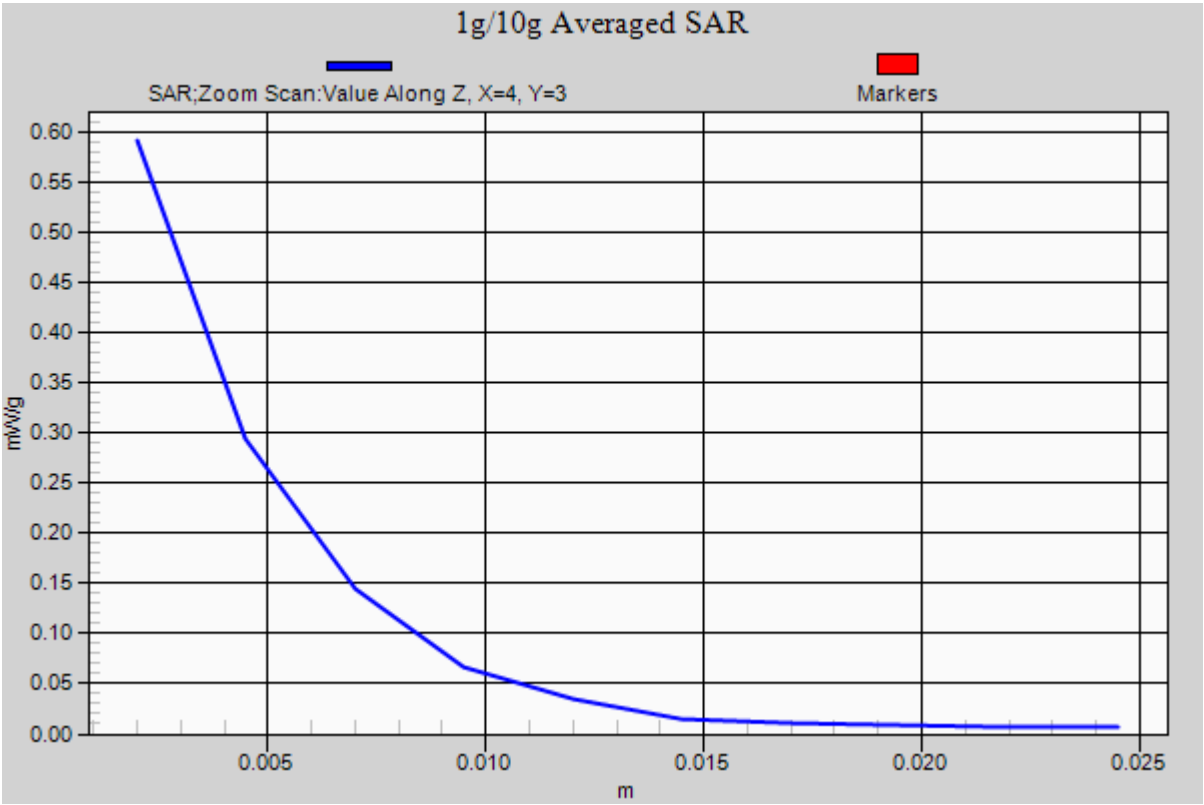
DUT: 232843-01

Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5200 MHz; σ = 5.138 mho/m; ε_r = 47.493; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.389 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.244 V/m; Power Drift = -0.191 dB
Peak SAR (extrapolated) = 1.074 mW/g
SAR(1 g) = 0.312 mW/g; SAR(10 g) = 0.107 mW/g
Maximum value of SAR (measured) = 0.591 mW/g



#15 802.11a_Vertical Front_0.5cm_Ch40_Ant 1

DUT: 232843-01

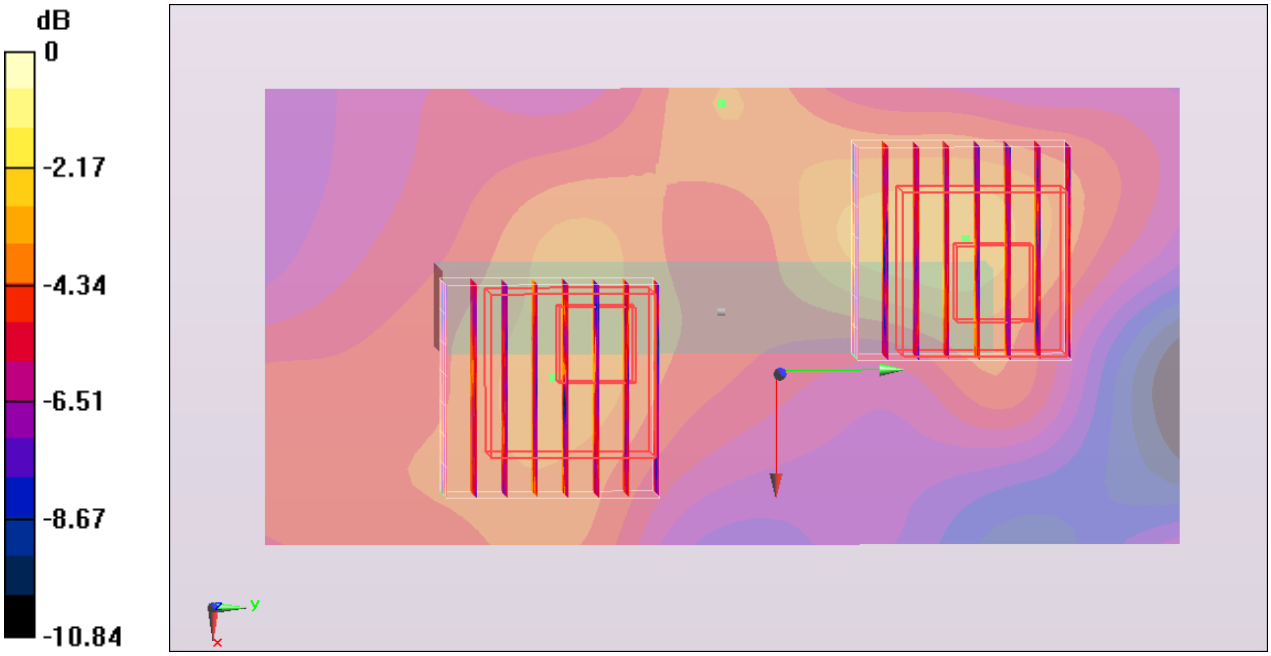
Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5200 MHz; σ = 5.138 mho/m; ε_r = 47.493; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0304 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.442 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.122 mW/g
SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.020 mW/g
Maximum value of SAR (measured) = 0.0530 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.442 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.184 mW/g
SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.00665 mW/g
Maximum value of SAR (measured) = 0.0519 mW/g



0 dB = 0.0519 mW/g = -25.70 dB mW/g

#16 802.11a_Vertical Back_0.5cm_Ch40_Ant 1

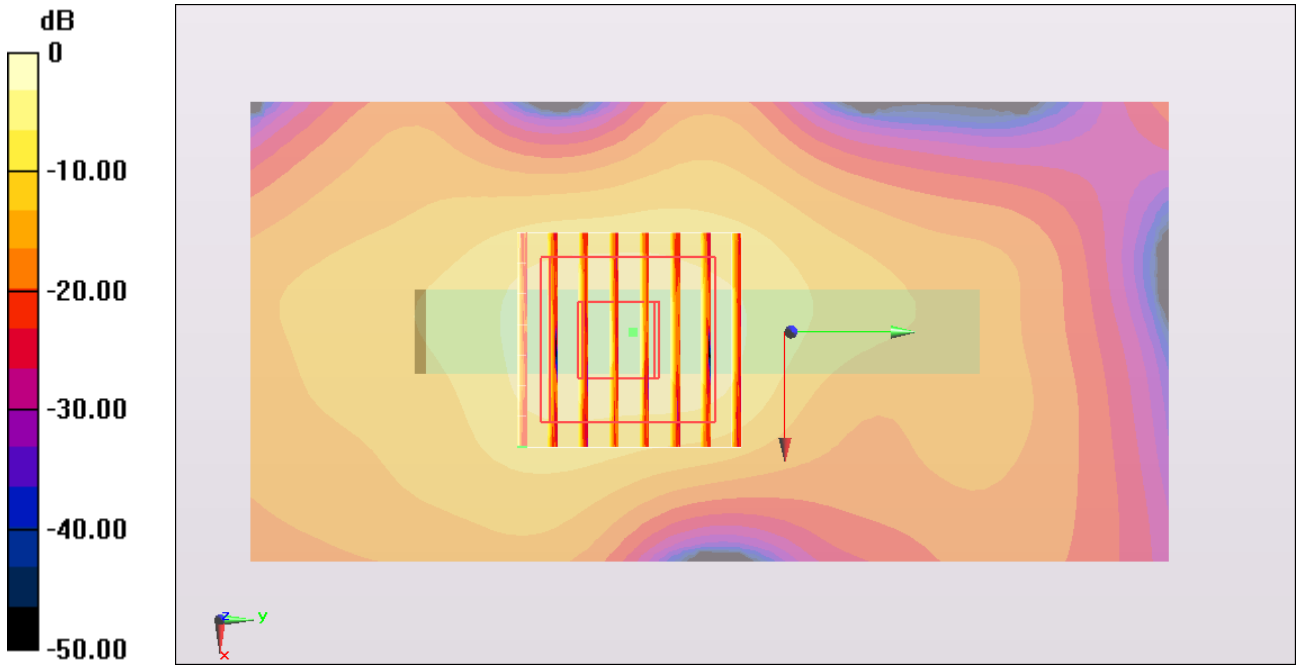
DUT: 232843-01

Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5200 MHz; σ = 5.138 mho/m; ε_r = 47.493; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.261 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 7.013 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.083 mW/g
SAR(1 g) = 0.299 mW/g; SAR(10 g) = 0.102 mW/g
Maximum value of SAR (measured) = 0.561 mW/g



0 dB = 0.561 mW/g = -5.02 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#17 802.11a_Tip Mode_0.5cm_Ch40_Ant 1

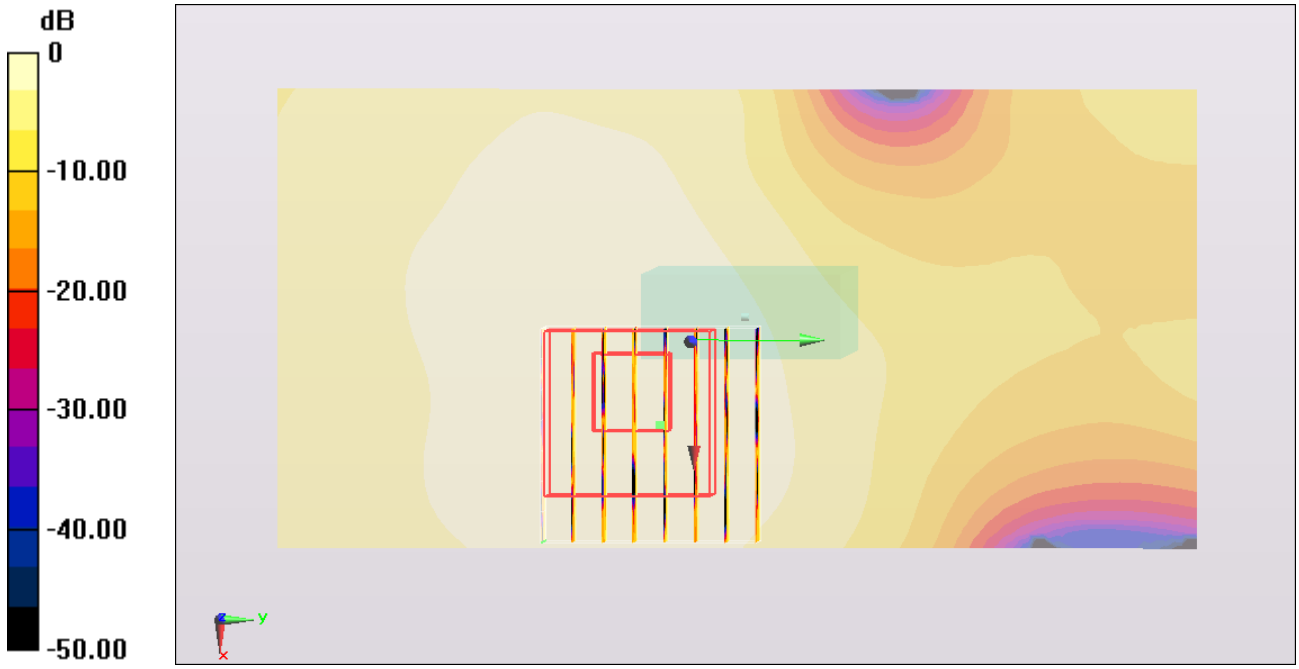
DUT: 232843-01

Communication System: 802.11a; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5200 MHz; σ = 5.138 mho/m; ε_r = 47.493; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0491 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.753 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.156 mW/g
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.012 mW/g
Maximum value of SAR (measured) = 0.0633 mW/g



0 dB = 0.0633 mW/g = -23.97 dB mW/g

#18 802.11a_Horizontal Up_0.5cm_Ch56_Ant 1

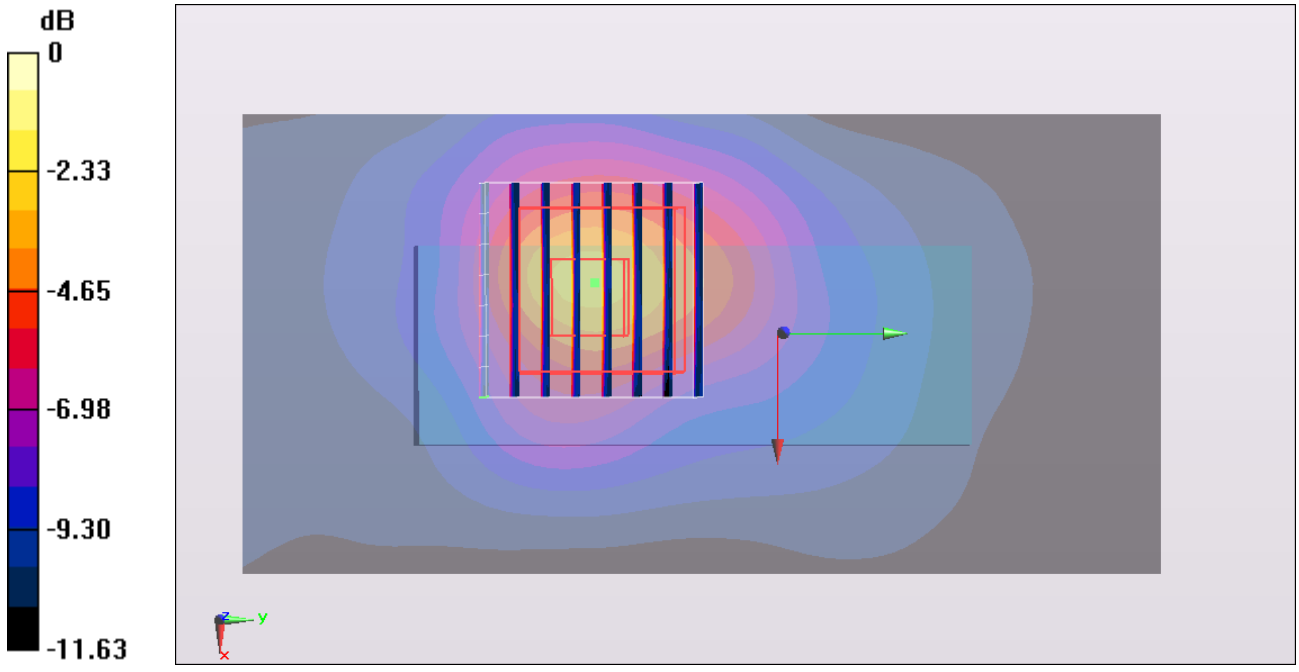
DUT: 232843-01

Communication System: 802.11a; Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5280 MHz; σ = 5.231 mho/m; ε_r = 47.294; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch56/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.393 mW/g

Ch56/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.697 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.384 mW/g
SAR(1 g) = 0.421 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 0.734 mW/g



0 dB = 0.734 mW/g = -2.69 dB mW/g

#19 802.11a_Horizontal Down_0.5cm_Ch56_Ant 1

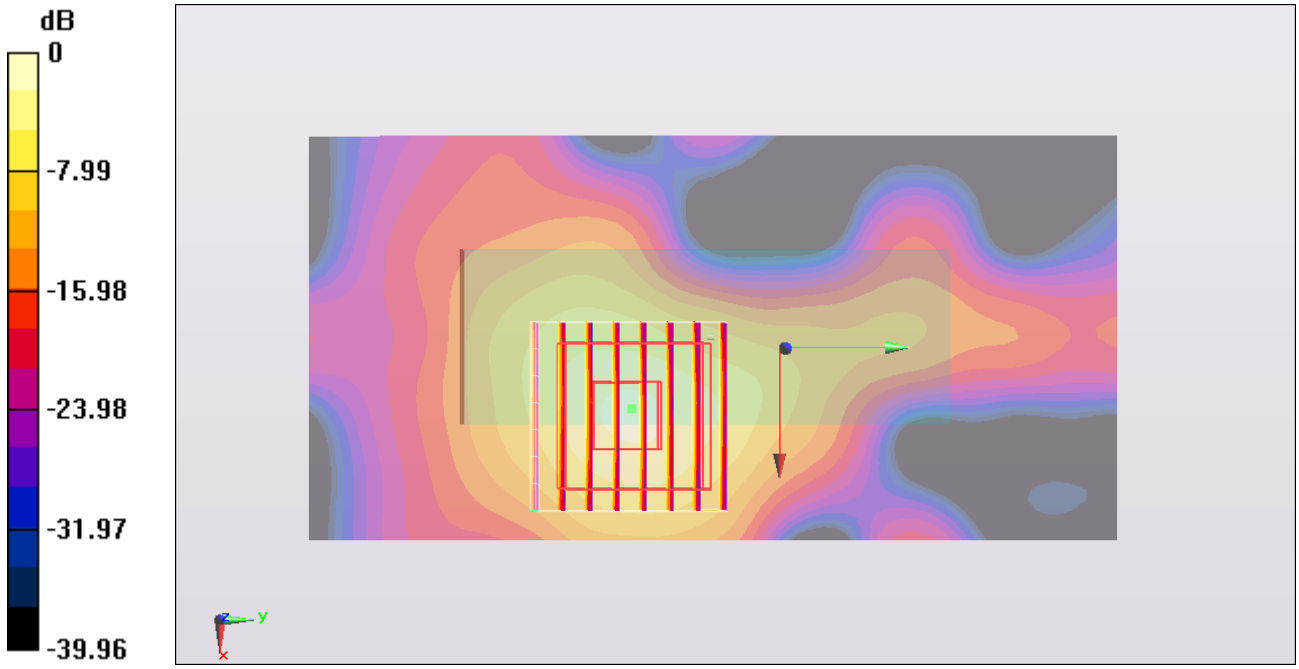
DUT: 232843-01

Communication System: 802.11a; Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5280 MHz; σ = 5.231 mho/m; ε_r = 47.294; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch56/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.622 mW/g

Ch56/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.299 V/m; Power Drift = -0.120 dB
Peak SAR (extrapolated) = 1.854 mW/g
SAR(1 g) = 0.540 mW/g; SAR(10 g) = 0.191 mW/g
Maximum value of SAR (measured) = 1.01 mW/g



0 dB = 1.01 mW/g = 0.09 dB mW/g

#20 802.11a_Vertical Front_0.5cm_Ch56_Ant 1

DUT: 232843-01

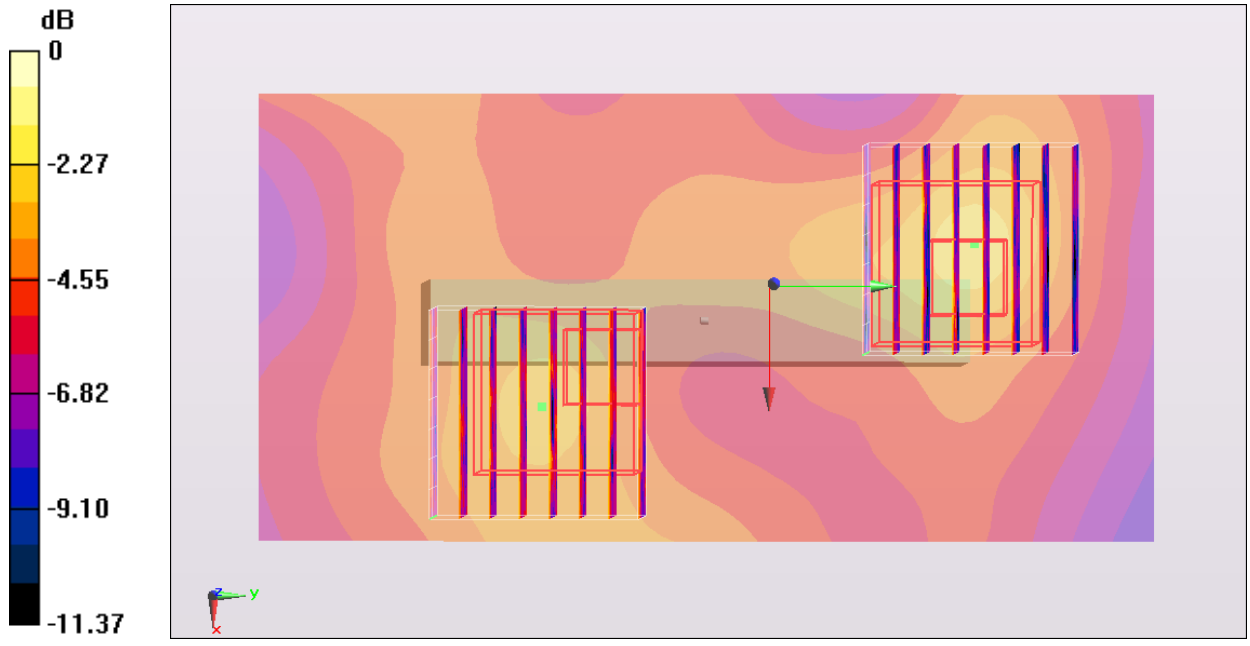
Communication System: 802.11a; Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5280 MHz; σ = 5.231 mho/m; ε_r = 47.294; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch56/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0511 mW/g

Ch56/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.745 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.182 mW/g
SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.027 mW/g
Maximum value of SAR (measured) = 0.0800 mW/g

Ch56/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.745 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.139 mW/g
SAR(1 g) = 0.048 mW/g; SAR(10 g) = 0.028 mW/g
Maximum value of SAR (measured) = 0.0763 mW/g



0 dB = 0.0763 mW/g = -22.35 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#21 802.11a_Vertical Back_0.5cm_Ch56_Ant 1

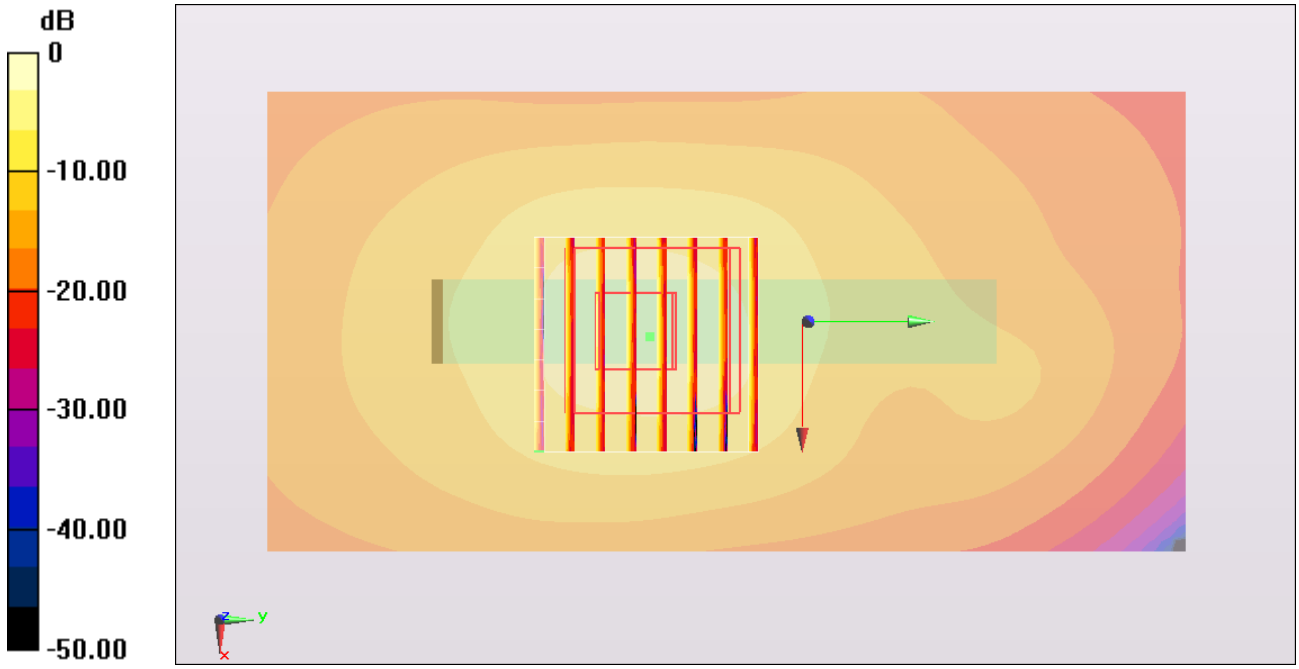
DUT: 232843-01

Communication System: 802.11a; Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5280 MHz; σ = 5.231 mho/m; ε_r = 47.294; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch56/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.373 mW/g

Ch56/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.453 V/m; Power Drift = -0.180 dB
Peak SAR (extrapolated) = 2.015 mW/g
SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.190 mW/g
Maximum value of SAR (measured) = 1.09 mW/g



0 dB = 1.09 mW/g = 0.75 dB mW/g

#21 802.11a_Vertical Back_0.5cm_Ch56_Ant 1_2D

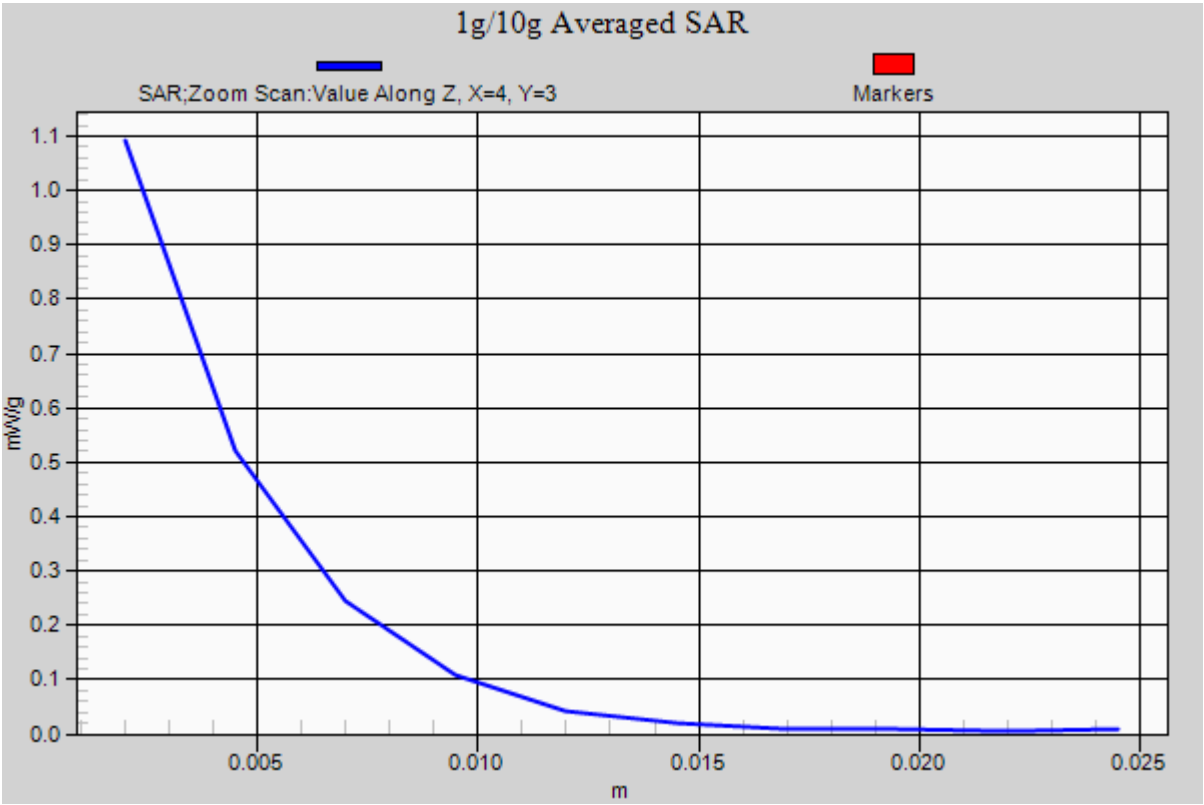
DUT: 232843-01

Communication System: 802.11a; Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5280 MHz; σ = 5.231 mho/m; ε_r = 47.294; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch56/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.373 mW/g

Ch56/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.453 V/m; Power Drift = -0.180 dB
Peak SAR (extrapolated) = 2.015 mW/g
SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.190 mW/g
Maximum value of SAR (measured) = 1.09 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#22 802.11a_Tip Mode_0.5cm_Ch56_Ant 1

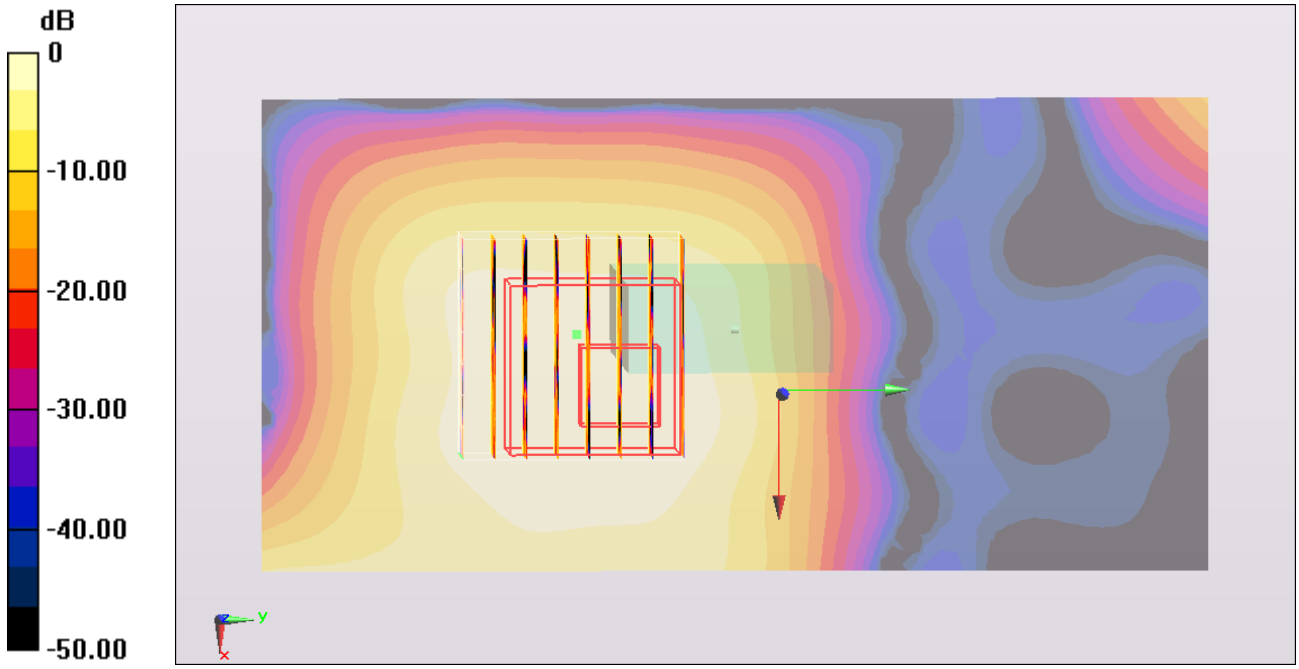
DUT: 232843-01

Communication System: 802.11a; Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5280 MHz; σ = 5.231 mho/m; ε_r = 47.294; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch56/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.109 mW/g

Ch56/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.358 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.314 mW/g
SAR(1 g) = 0.057 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.118 mW/g



0 dB = 0.118 mW/g = -18.56 dB mW/g

#23 802.11a_Horizontal Up_0.5cm_Ch116_Ant 1

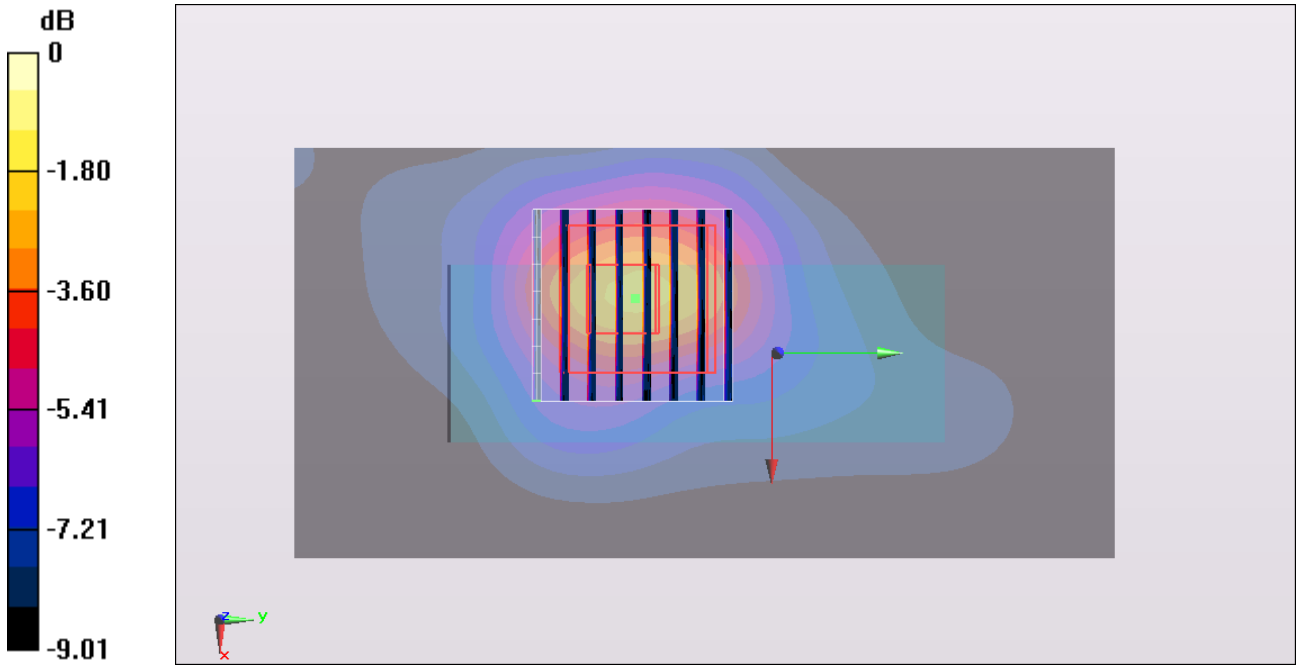
DUT: 232843-01

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5580 MHz; σ = 5.628 mho/m; ε_r = 46.865; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.333 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.913 V/m; Power Drift = -0.148 dB
Peak SAR (extrapolated) = 1.079 mW/g
SAR(1 g) = 0.328 mW/g; SAR(10 g) = 0.165 mW/g
Maximum value of SAR (measured) = 0.549 mW/g



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

#24 802.11a_Horizontal Down_0.5cm_Ch116_Ant 1

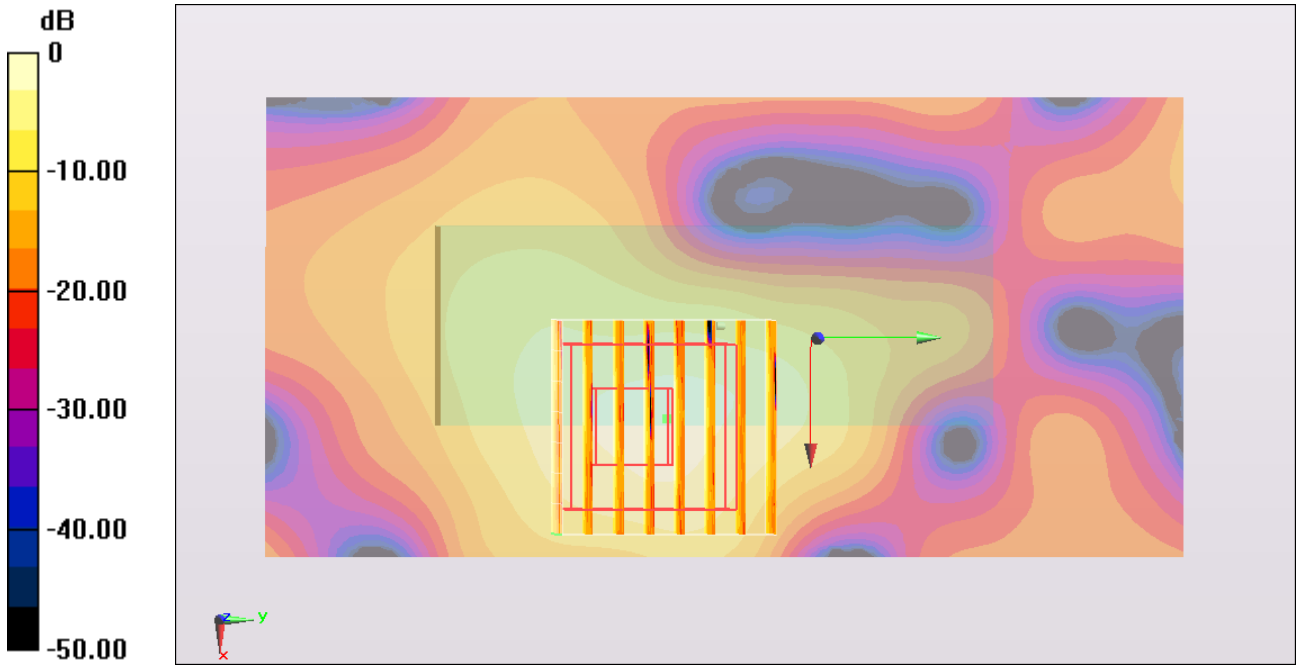
DUT: 232843-01

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5580 MHz; σ = 5.628 mho/m; ε_r = 46.865; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.208 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.224 V/m; Power Drift = 0.171 dB
Peak SAR (extrapolated) = 0.638 mW/g
SAR(1 g) = 0.170 mW/g; SAR(10 g) = 0.062 mW/g
Maximum value of SAR (measured) = 0.324 mW/g



0 dB = 0.324 mW/g = -9.79 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#25 802.11a_Vertical Front_0.5cm_Ch116_Ant 1

DUT: 232843-01

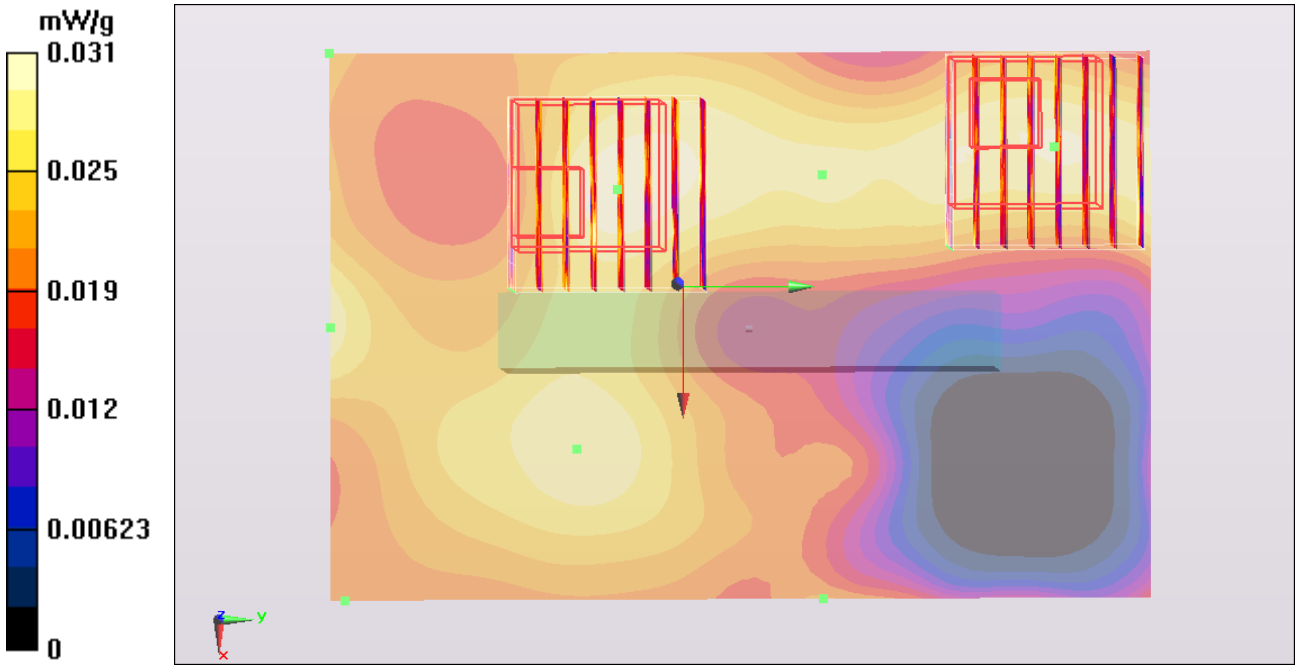
Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5580 MHz; σ = 5.628 mho/m; ε_r = 46.865; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0311 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.559 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.146 mW/g
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.019 mW/g
Maximum value of SAR (measured) = 0.0383 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.559 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 0.069 mW/g
SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.015 mW/g
Maximum value of SAR (measured) = 0.0336 mW/g



#26 802.11a_Vertical Back_0.5cm_Ch116_Ant 1

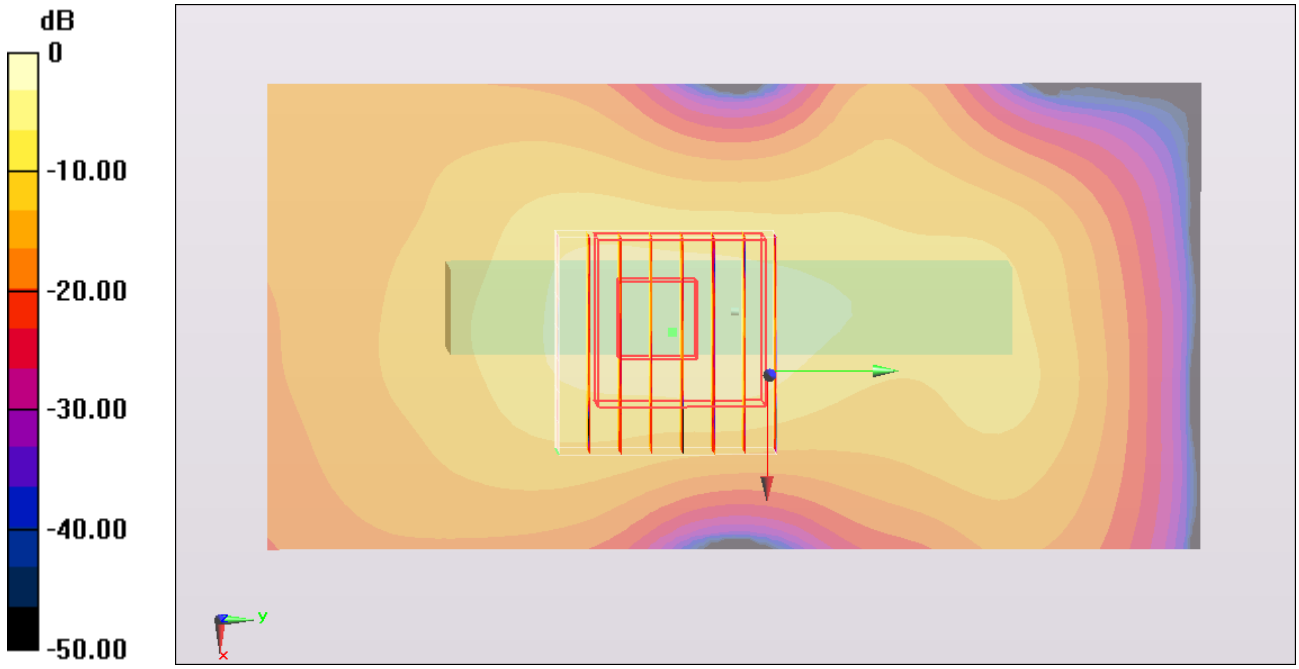
DUT: 232843-01

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5580 MHz; σ = 5.628 mho/m; ε_r = 46.865; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.315 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 9.028 V/m; Power Drift = -0.124 dB
Peak SAR (extrapolated) = 1.464 mW/g
SAR(1 g) = 0.386 mW/g; SAR(10 g) = 0.130 mW/g
Maximum value of SAR (measured) = 0.767 mW/g



0 dB = 0.767 mW/g = -2.30 dB mW/g

#26 802.11a_Vertical Back_0.5cm_Ch116_Ant 1_2D

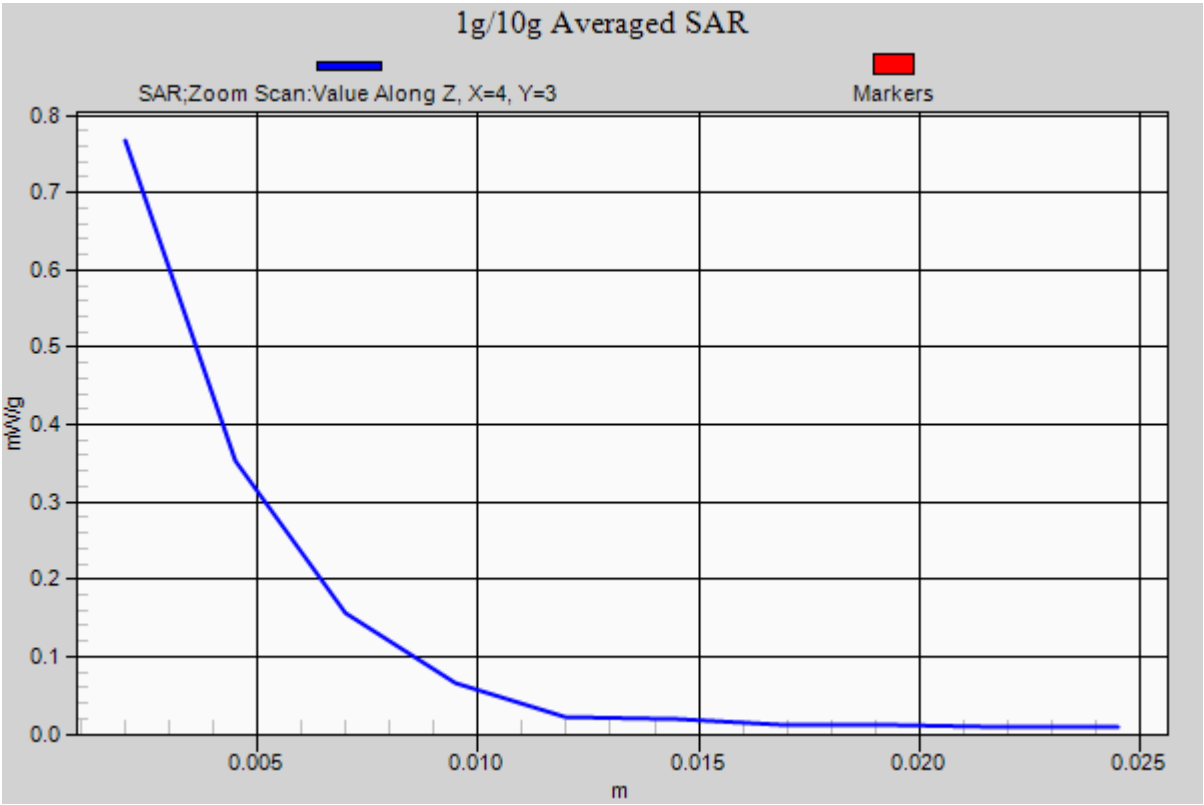
DUT: 232843-01

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5580 MHz; σ = 5.628 mho/m; ε_r = 46.865; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.315 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 9.028 V/m; Power Drift = -0.124 dB
Peak SAR (extrapolated) = 1.464 mW/g
SAR(1 g) = 0.386 mW/g; SAR(10 g) = 0.130 mW/g
Maximum value of SAR (measured) = 0.767 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#27 802.11a_Tip Mode_0.5cm_Ch116_Ant 1

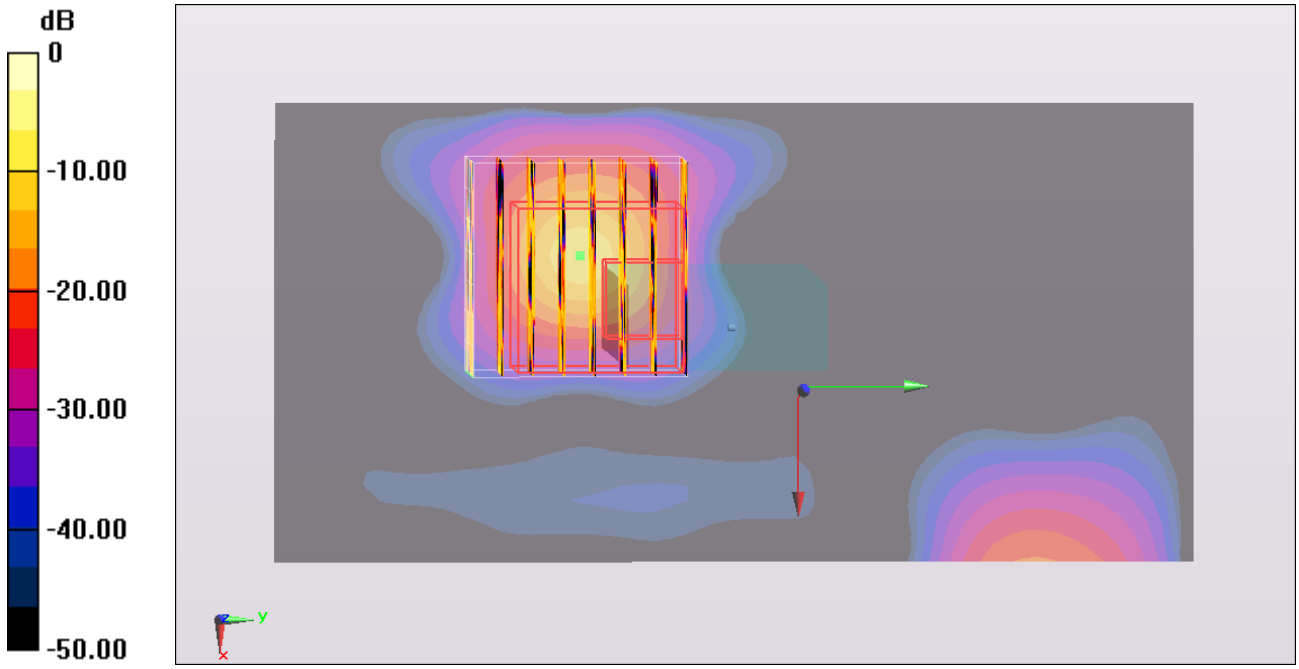
DUT: 232843-01

Communication System: 802.11a; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5580 MHz; σ = 5.628 mho/m; ε_r = 46.865; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0123 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.989 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.266 mW/g
SAR(1 g) = 0.030 mW/g; SAR(10 g) = 0.00947 mW/g
Maximum value of SAR (measured) = 0.0654 mW/g



0 dB = 0.0654 mW/g = -23.69 dB mW/g

#28 802.11a_Horizontal Up_0.5cm_Ch157_Ant 1

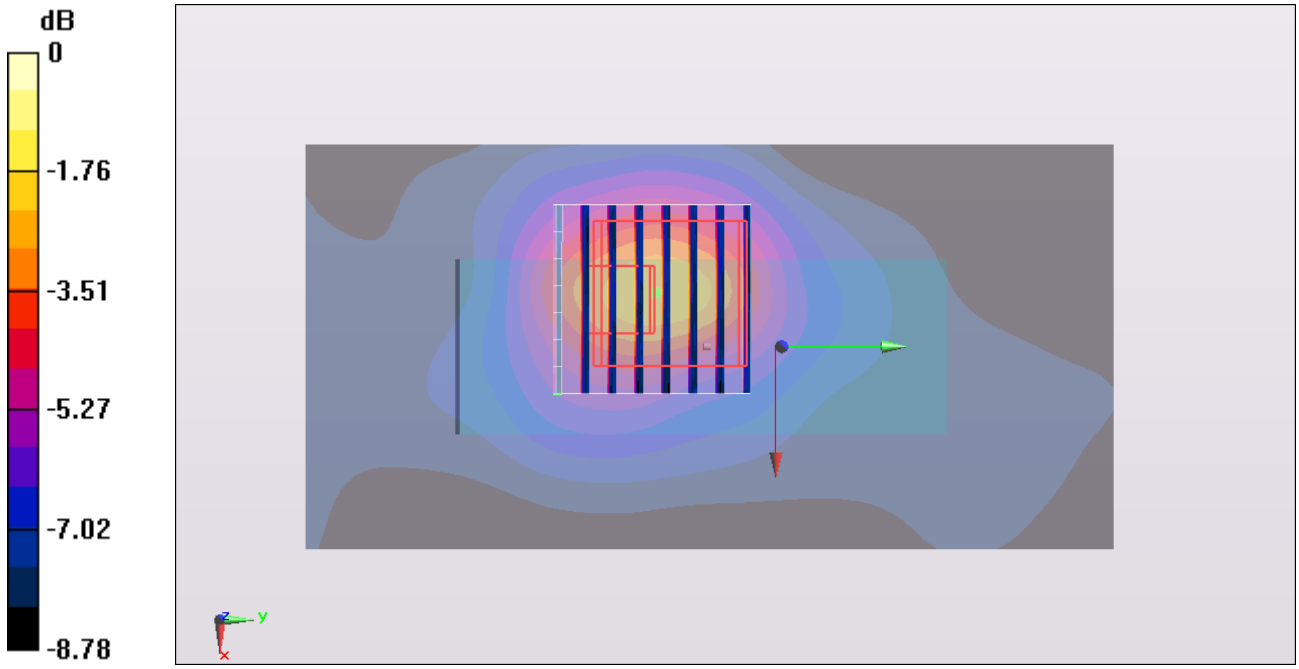
DUT: 232843-01

Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5785 MHz; σ = 5.978 mho/m; ε_r = 46.584; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch157/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.272 mW/g

Ch157/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.989 V/m; Power Drift = 0.149 dB
Peak SAR (extrapolated) = 0.967 mW/g
SAR(1 g) = 0.271 mW/g; SAR(10 g) = 0.148 mW/g
Maximum value of SAR (measured) = 0.462 mW/g



0 dB = 0.462 mW/g = -6.71 dB mW/g

#29 802.11a_Horizontal Down_0.5cm_Ch157_Ant 1

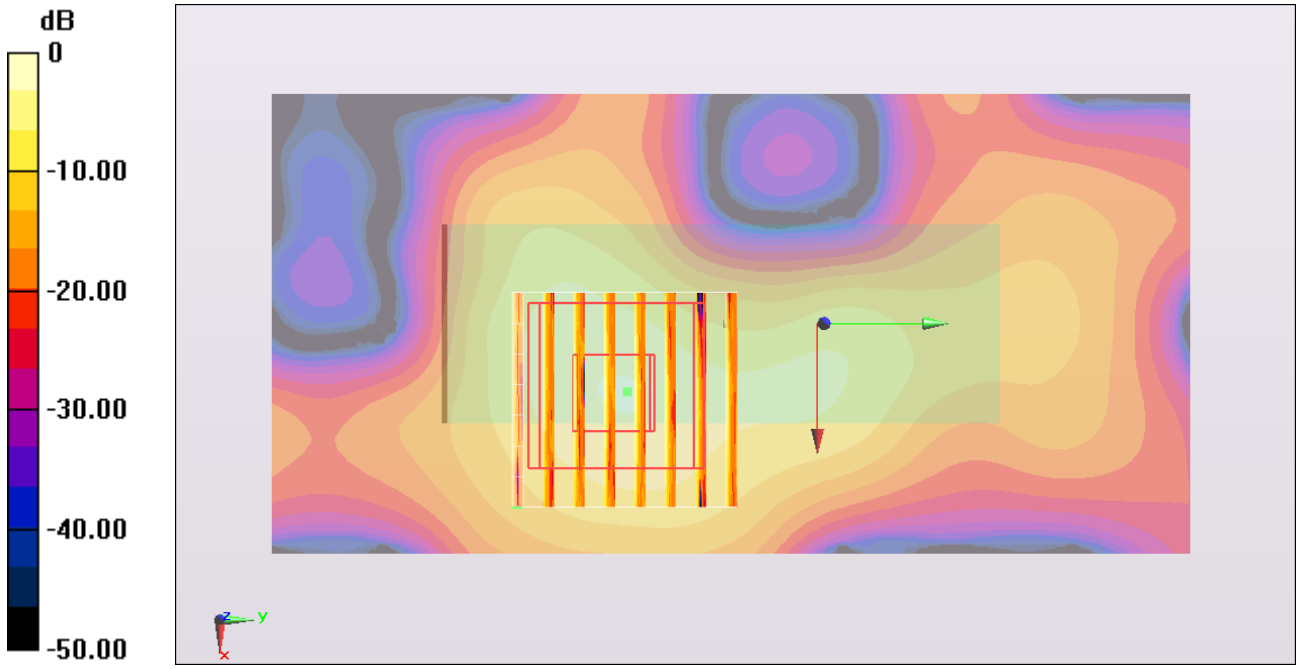
DUT: 232843-01

Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used: f = 5785 MHz; σ = 5.978 mho/m; ε_r = 46.584; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch157/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.214 mW/g

Ch157/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.592 V/m; Power Drift = 0.127 dB
Peak SAR (extrapolated) = 0.898 mW/g
SAR(1 g) = 0.218 mW/g; SAR(10 g) = 0.071 mW/g
Maximum value of SAR (measured) = 0.437 mW/g



0 dB = 0.437 mW/g = -7.19 dB mW/g

#30 802.11a_Vertical Front_0.5cm_Ch157_Ant 1

DUT: 232843-01

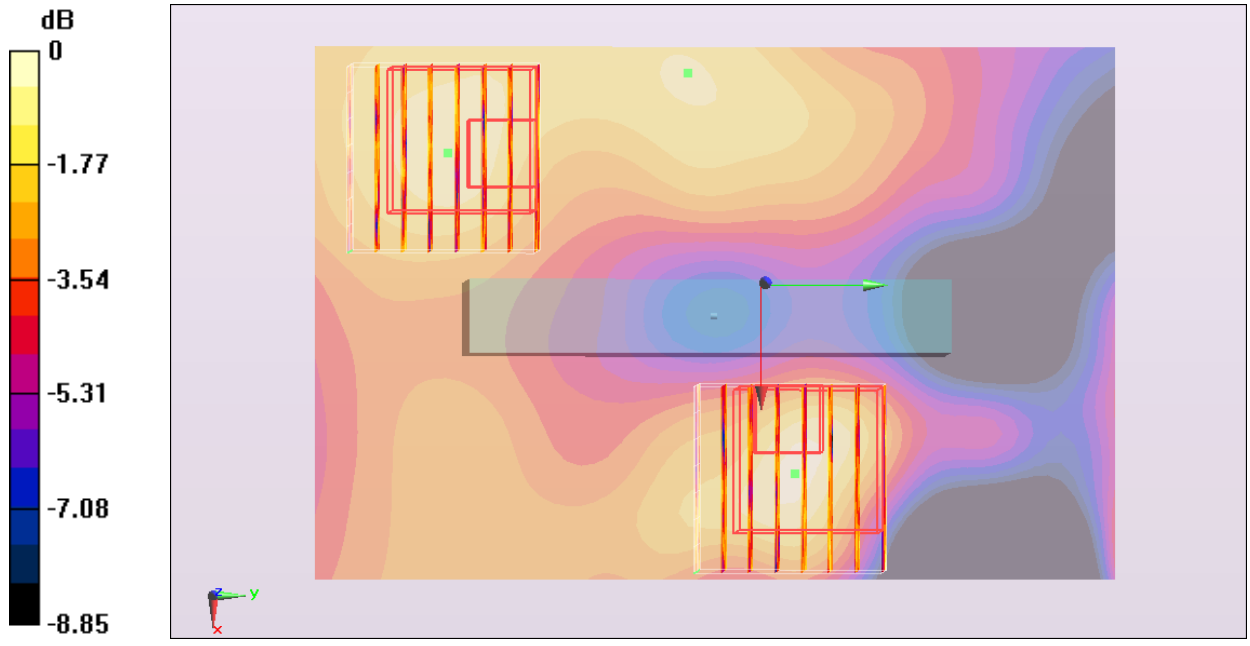
Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5785 MHz; σ = 5.978 mho/m; ε_r = 46.584; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch157/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0359 mW/g

Ch157/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.341 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.092 mW/g
SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.0545 mW/g

Ch157/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.341 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.106 mW/g
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.020 mW/g
Maximum value of SAR (measured) = 0.0389 mW/g



0 dB = 0.0389 mW/g = -28.20 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#31 802.11a_Vertical Back_0.5cm_Ch157_Ant 1

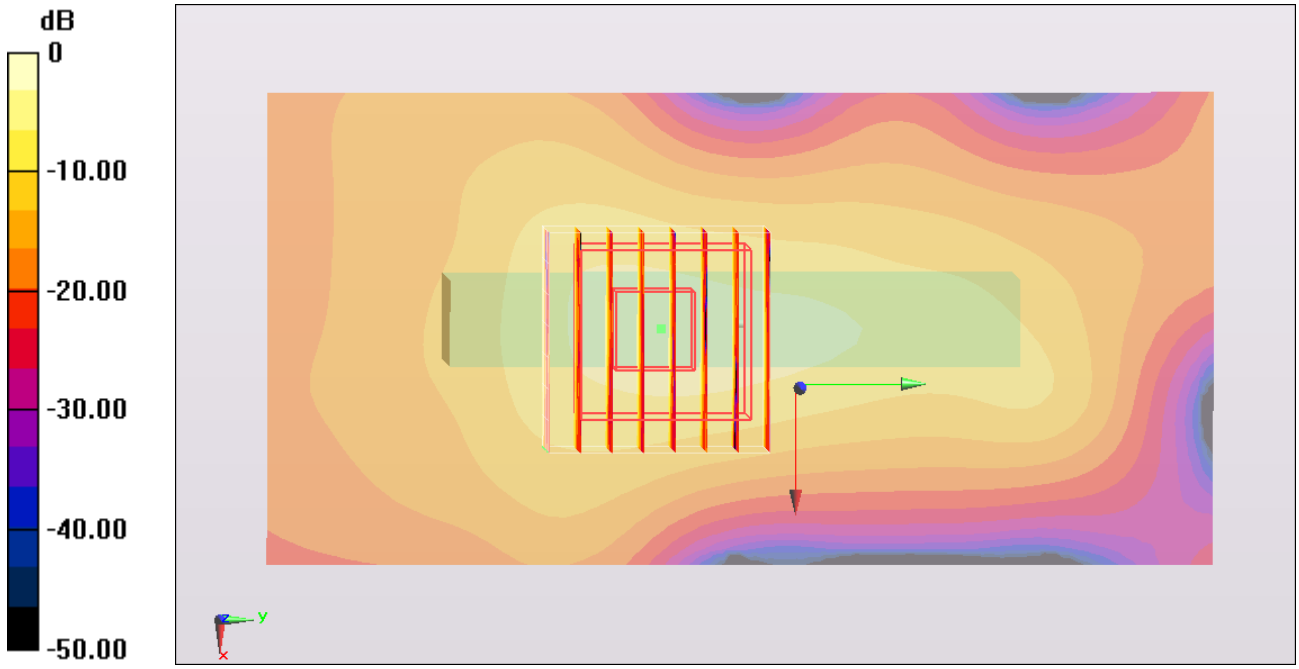
DUT: 232843-01

Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5785 MHz; σ = 5.978 mho/m; ε_r = 46.584; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch157/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.257 mW/g

Ch157/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.926 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.587 mW/g
SAR(1 g) = 0.379 mW/g; SAR(10 g) = 0.122 mW/g
Maximum value of SAR (measured) = 0.751 mW/g



0 dB = 0.751 mW/g = -2.49 dB mW/g

#31 802.11a_Vertical Back_0.5cm_Ch157_Ant 1_2D

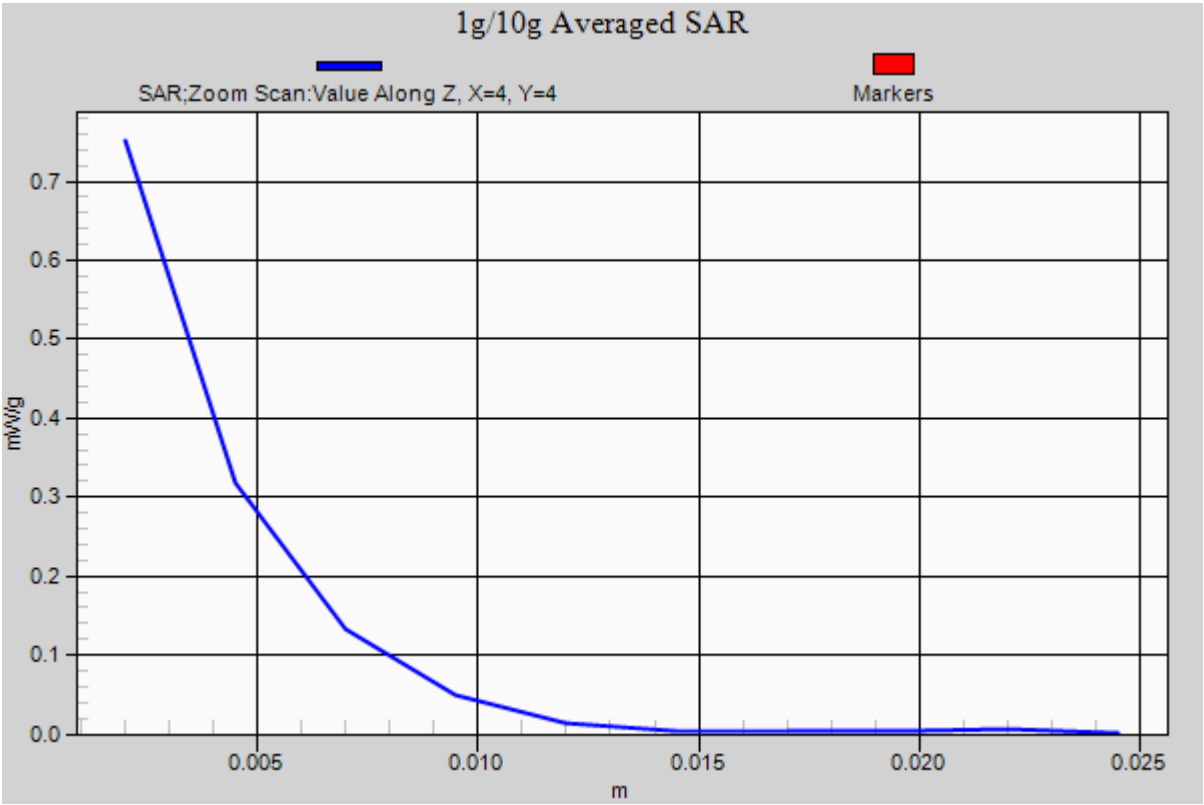
DUT: 232843-01

Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5785 MHz; σ = 5.978 mho/m; ε_r = 46.584; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch157/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.257 mW/g

Ch157/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.926 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.587 mW/g
SAR(1 g) = 0.379 mW/g; SAR(10 g) = 0.122 mW/g
Maximum value of SAR (measured) = 0.751 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/8

#32 802.11a_Tip Mode_0.5cm_Ch157_Ant 1

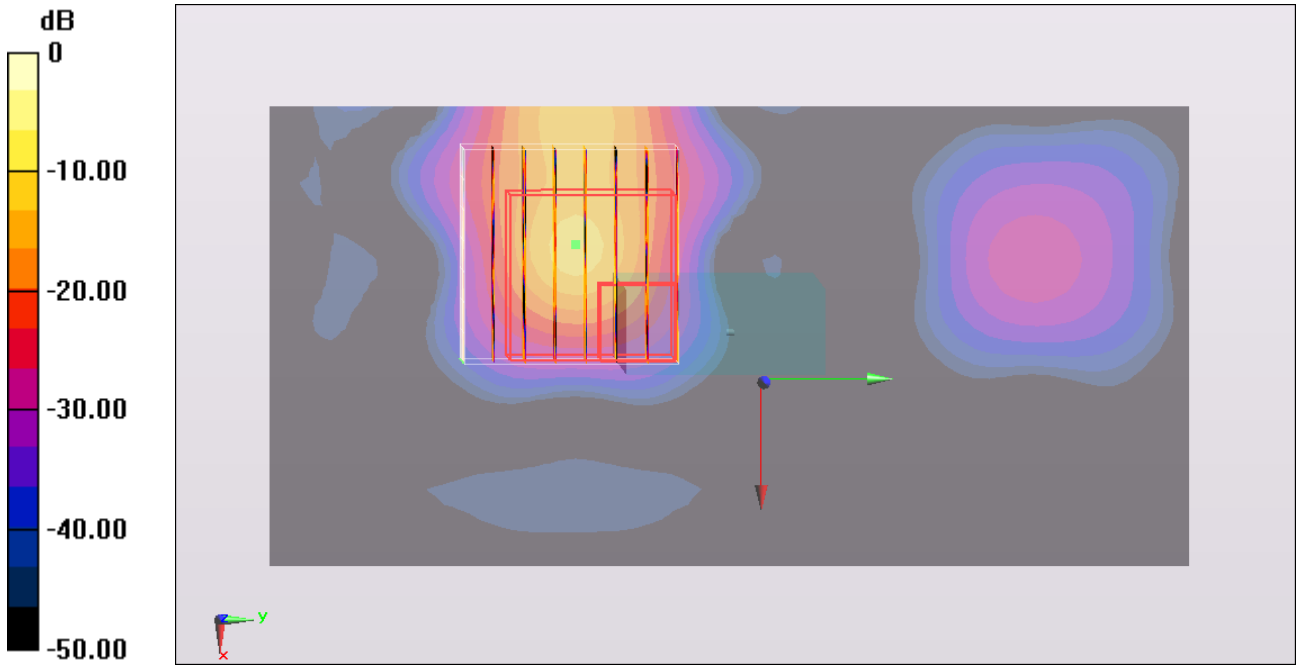
DUT: 232843-01

Communication System: 802.11a; Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120508 Medium parameters used : f = 5785 MHz; σ = 5.978 mho/m; ε_r = 46.584; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch157/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0164 mW/g

Ch157/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.309 V/m; Power Drift = 0.107 dB
Peak SAR (extrapolated) = 0.355 mW/g
SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.105 mW/g



0 dB = 0.105 mW/g = -19.58 dB mW/g

#33 802.11n_20M_Horizontal Up_0.5cm_Ch40_Ant 0+1

DUT: 232843-01

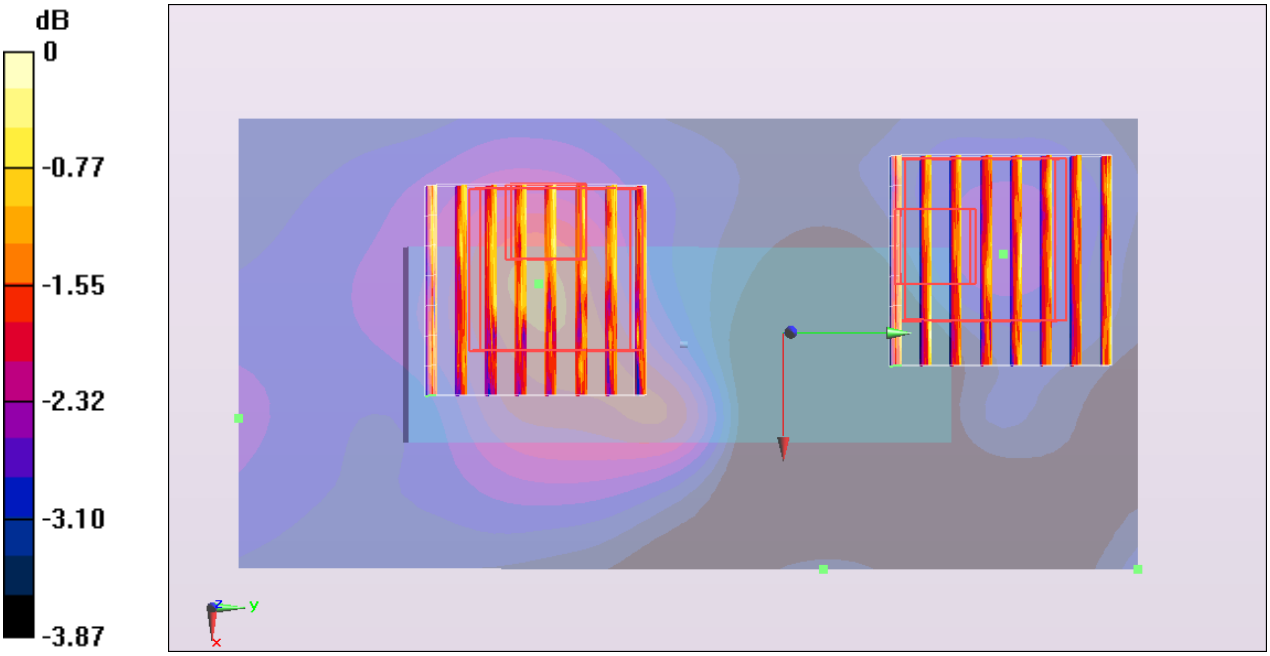
Communication System: 802.11n; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5200 MHz; σ = 5.336 mho/m; ε_r = 47.488; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0884 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.743 V/m; Power Drift = 0.174 dB
Peak SAR (extrapolated) = 0.160 mW/g
SAR(1 g) = 0.104 mW/g; SAR(10 g) = 0.091 mW/g
Maximum value of SAR (measured) = 0.126 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.743 V/m; Power Drift = 0.174 dB
Peak SAR (extrapolated) = 0.123 mW/g
SAR(1 g) = 0.095 mW/g; SAR(10 g) = 0.085 mW/g
Maximum value of SAR (measured) = 0.123 mW/g



0 dB = 0.123 mW/g = -18.20 dB mW/g

#34 802.11n_20M_Horizontal Down_0.5cm_Ch40_Ant 0+1

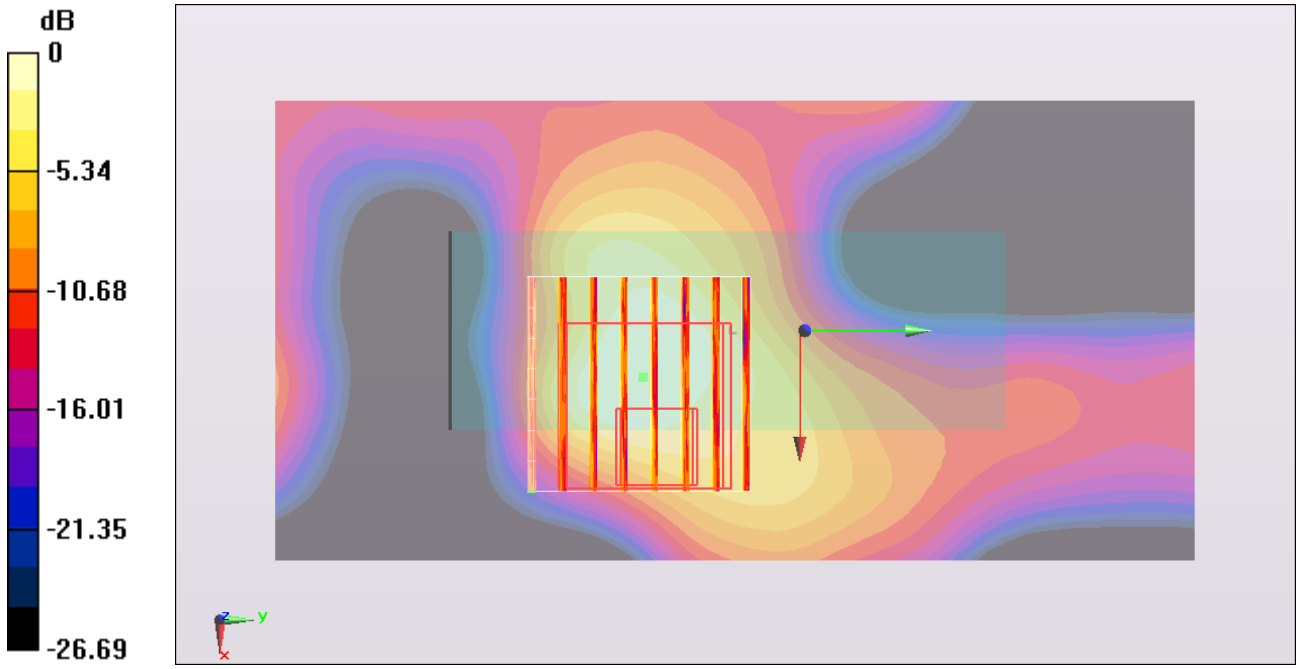
DUT: 232843-01

Communication System: 802.11n; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5200 MHz; σ = 5.336 mho/m; ε_r = 47.488; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.123 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.663 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.187 mW/g
SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.014 mW/g
Maximum value of SAR (measured) = 0.0928 mW/g



0 dB = 0.0928 mW/g = -20.65 dB mW/g

#35 802.11n_20M_Vertical Front_0.5cm_Ch40_Ant 0+1

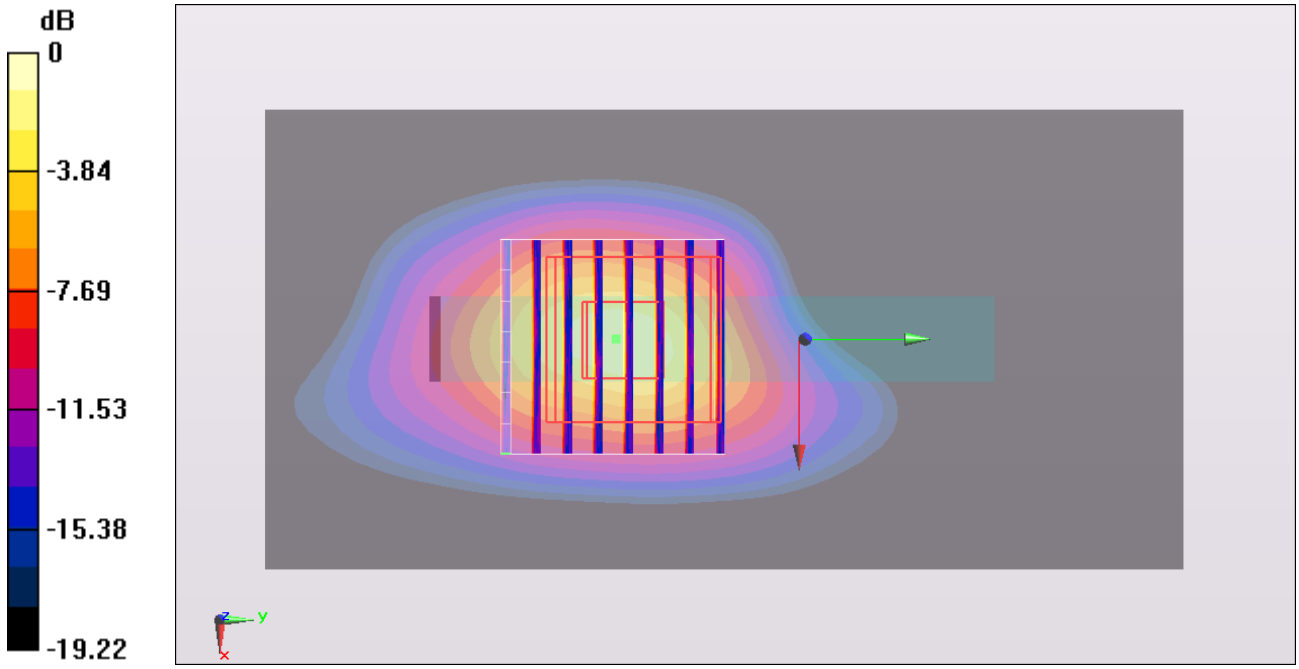
DUT: 232843-01

Communication System: 802.11n; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5200 MHz; σ = 5.336 mho/m; ε_r = 47.488; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.146 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.591 V/m; Power Drift = -0.161 dB
Peak SAR (extrapolated) = 0.336 mW/g
SAR(1 g) = 0.102 mW/g; SAR(10 g) = 0.038 mW/g
Maximum value of SAR (measured) = 0.198 mW/g



0 dB = 0.198 mW/g = -14.07 dB mW/g

#36 802.11n_20M_Vertical Back_0.5cm_Ch40_Ant 0+1

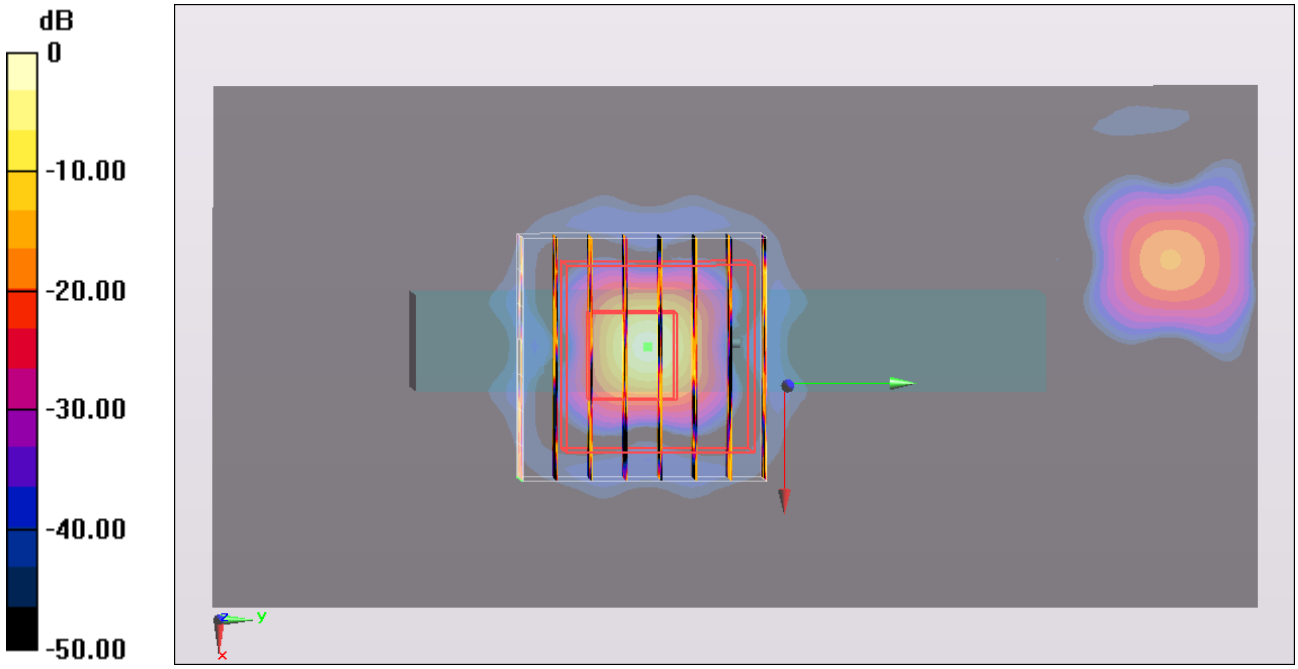
DUT: 232843-01

Communication System: 802.11n; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5200 MHz; σ = 5.336 mho/m; ε_r = 47.488; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0403 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.265 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.168 mW/g
SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.00615 mW/g
Maximum value of SAR (measured) = 0.0559 mW/g



0 dB = 0.0559 mW/g = -25.05 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

#37 802.11n_20M_Tip Mode_0.5cm_Ch40_Ant 0+1

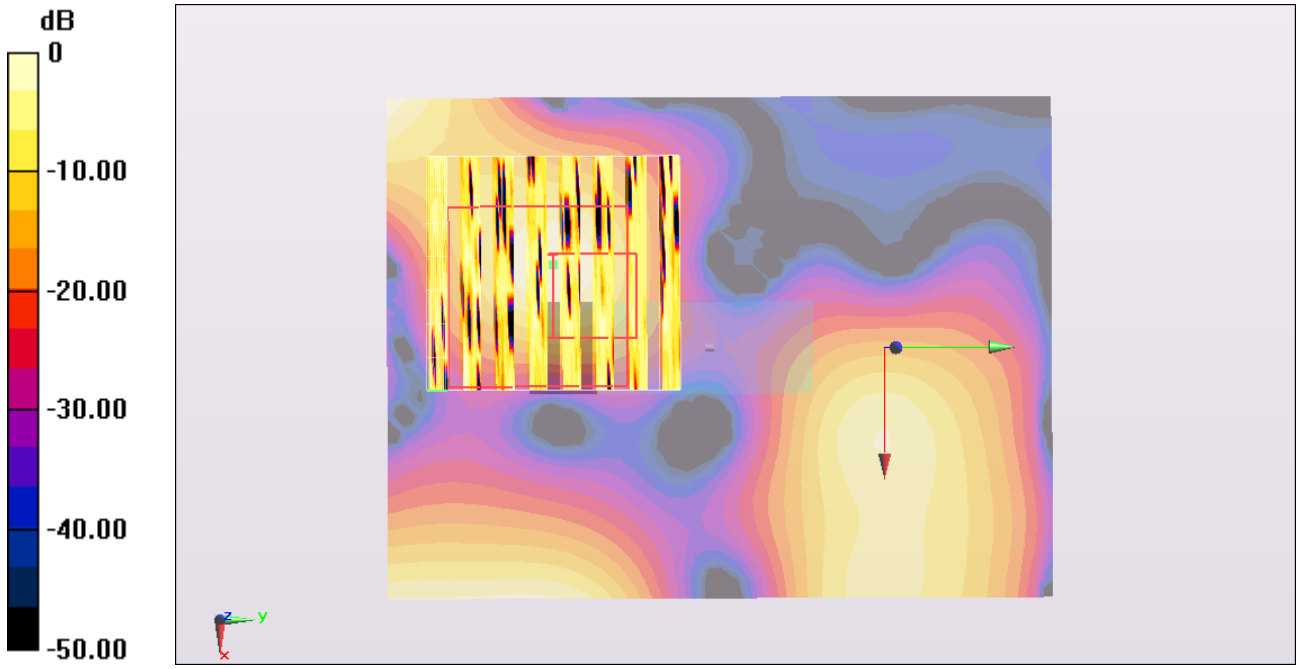
DUT: 232843-01

Communication System: 802.11n; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5200 MHz; σ = 5.336 mho/m; ε_r = 47.488; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch40/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0160 mW/g

Ch40/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 1.960 V/m; Power Drift = -0.144 dB
Peak SAR (extrapolated) = 0.023 mW/g
SAR(1 g) = 0.000514 mW/g; SAR(10 g) = 0.000168 mW/g
Maximum value of SAR (measured) = 0.0120 mW/g



0 dB = 0.0120 mW/g = -38.42 dB mW/g

#38 802.11n_40M_Horizontal Up_0.5cm_Ch38_Ant 0+1

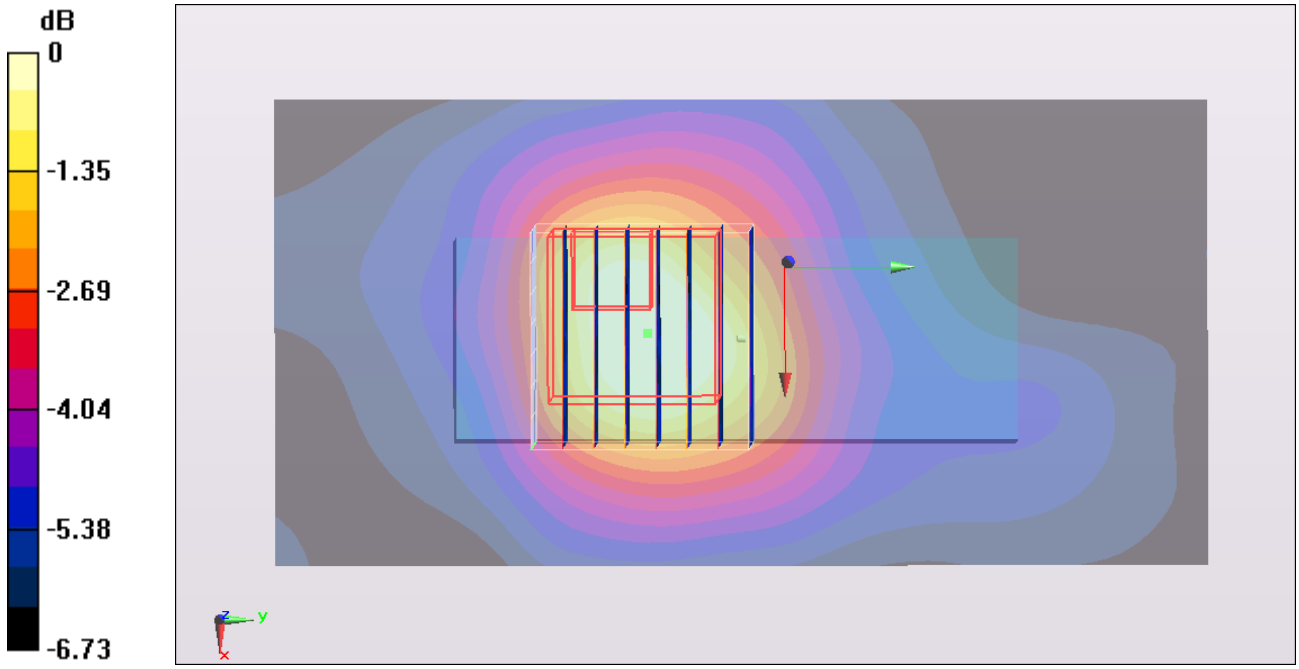
DUT: 232843-01

Communication System: 802.11n; Frequency: 5190 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used : f = 5190 MHz; σ = 5.318 mho/m; ε_r = 47.49; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch38/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.492 mW/g

Ch38/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 9.152 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.741 mW/g
SAR(1 g) = 0.267 mW/g; SAR(10 g) = 0.168 mW/g
Maximum value of SAR (measured) = 0.417 mW/g



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

#38 802.11n_40M_Horizontal Up_0.5cm_Ch38_Ant 0+1_2D

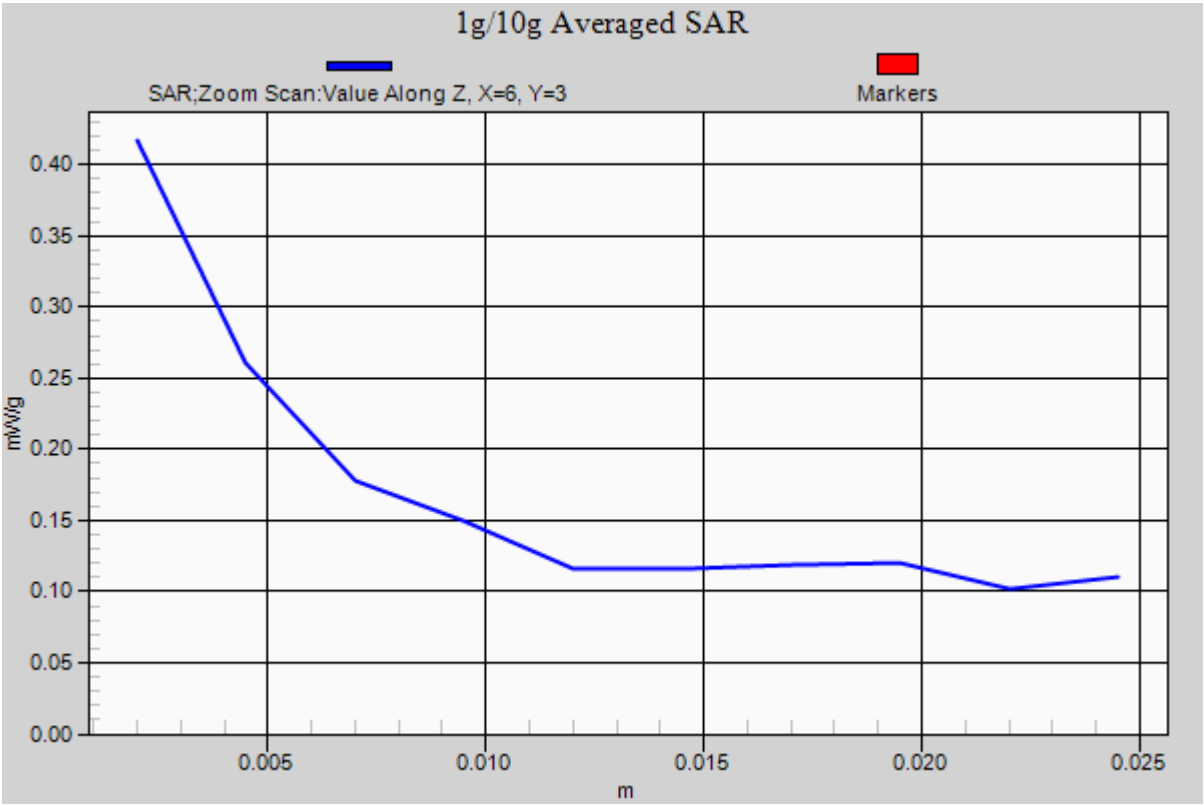
DUT: 232843-01

Communication System: 802.11n; Frequency: 5190 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used : f = 5190 MHz; σ = 5.318 mho/m; ε_r = 47.49; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(4.22, 4.22, 4.22); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch38/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.492 mW/g

Ch38/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 9.152 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.741 mW/g
SAR(1 g) = 0.267 mW/g; SAR(10 g) = 0.168 mW/g
Maximum value of SAR (measured) = 0.417 mW/g



#39 802.11n_20M_Horizontal Up_0.5cm_Ch52_Ant 0+1

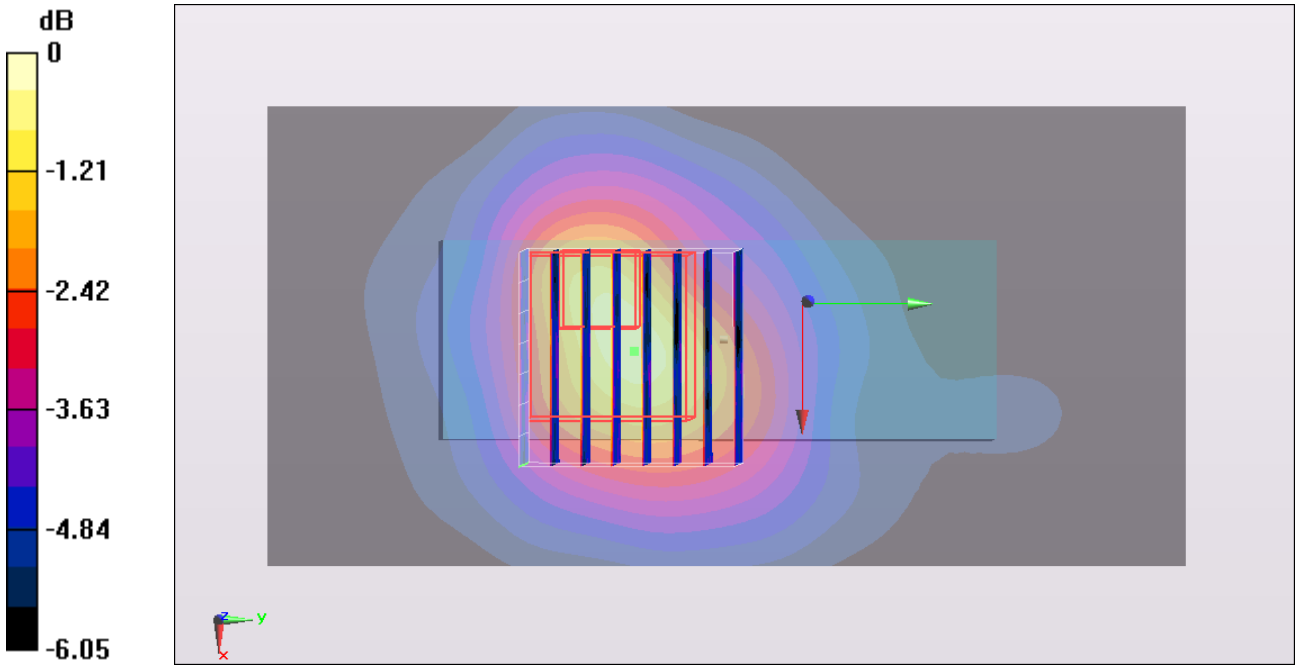
DUT: 232843-01

Communication System: 802.11n; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5260 MHz; σ = 5.395 mho/m; ε_r = 47.311; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch52/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.282 mW/g

Ch52/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.105 V/m; Power Drift = -0.186 dB
Peak SAR (extrapolated) = 0.592 mW/g
SAR(1 g) = 0.209 mW/g; SAR(10 g) = 0.136 mW/g
Maximum value of SAR (measured) = 0.317 mW/g



0 dB = 0.317 mW/g = -9.98 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

#40 802.11n_20M_Horizontal Down_0.5cm_Ch52_Ant 0+1

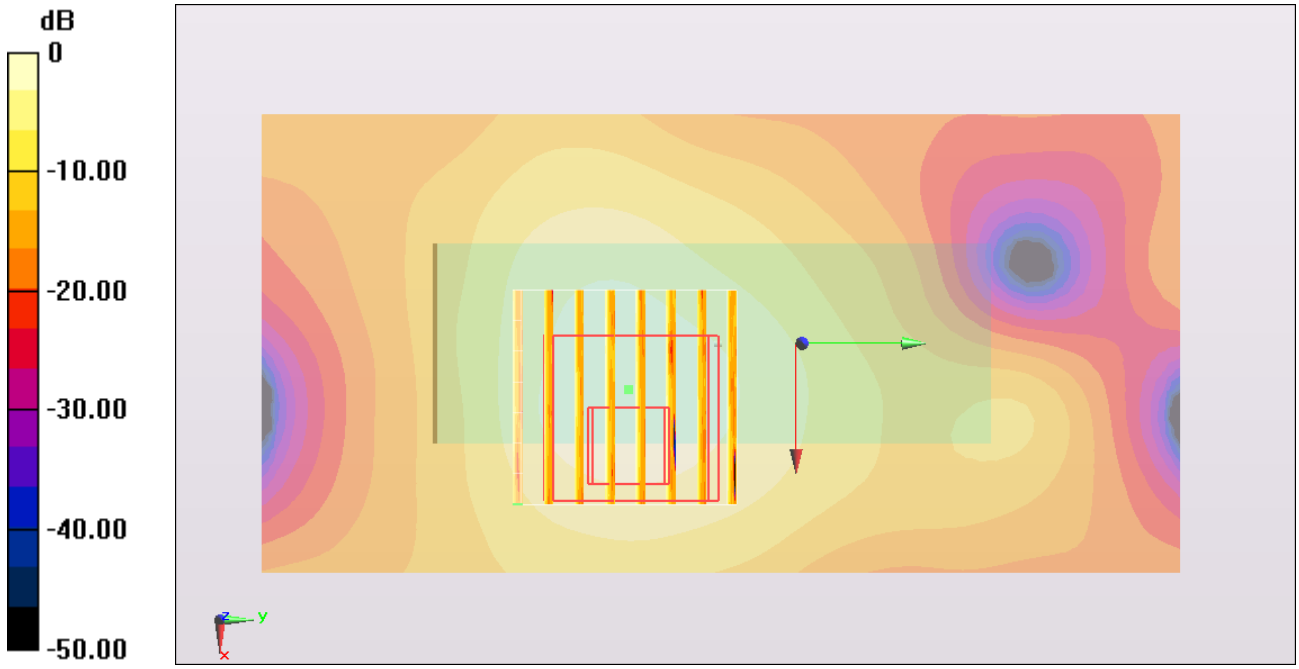
DUT: 232843-01

Communication System: 802.11n; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5260 MHz; σ = 5.395 mho/m; ε_r = 47.311; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch52/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.232 mW/g

Ch52/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.805 V/m; Power Drift = -0.163 dB
Peak SAR (extrapolated) = 0.535 mW/g
SAR(1 g) = 0.148 mW/g; SAR(10 g) = 0.054 mW/g
Maximum value of SAR (measured) = 0.272 mW/g



0 dB = 0.272 mW/g = -11.31 dB mW/g

#41 802.11n_20M_Vertical Front_0.5cm_Ch52_Ant 0+1

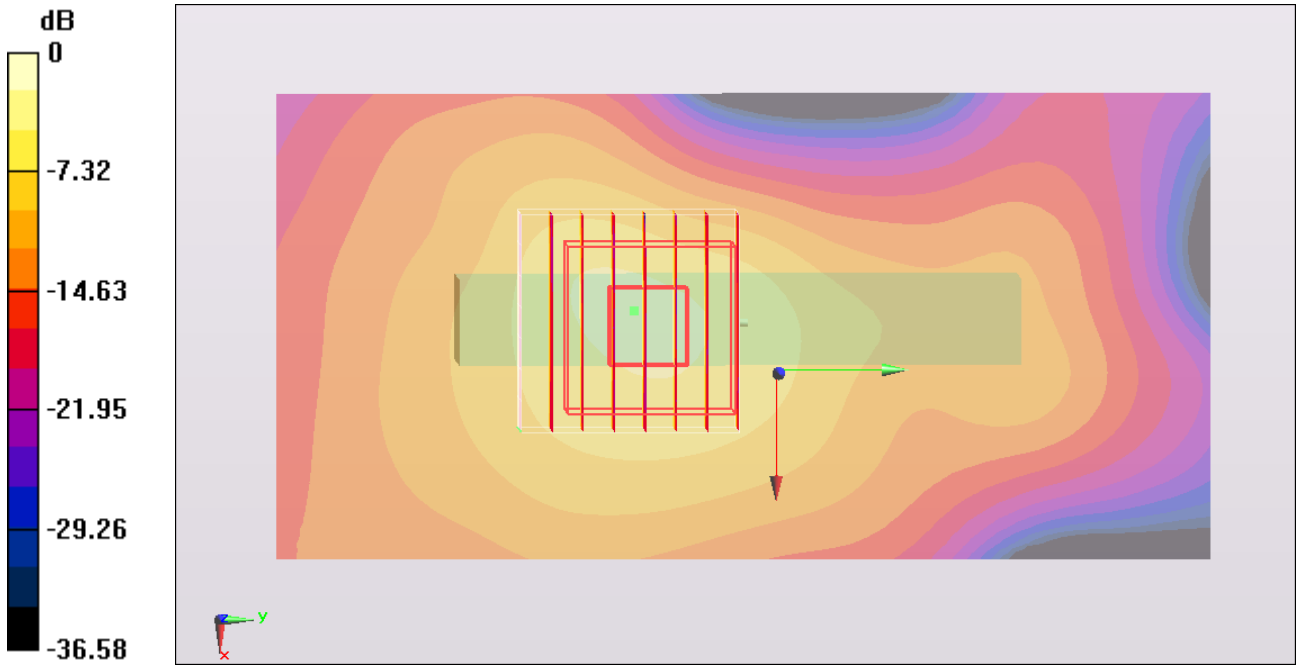
DUT: 232843-01

Communication System: 802.11n; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used : f = 5260 MHz; σ = 5.395 mho/m; ε_r = 47.311; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch52/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.266 mW/g

Ch52/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 8.769 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.241 mW/g
SAR(1 g) = 0.358 mW/g; SAR(10 g) = 0.128 mW/g
Maximum value of SAR (measured) = 0.673 mW/g



0 dB = 0.673 mW/g = -3.44 dB mW/g

#41 802.11n_20M_Vertical Front_0.5cm_Ch52_Ant 0+1_2D

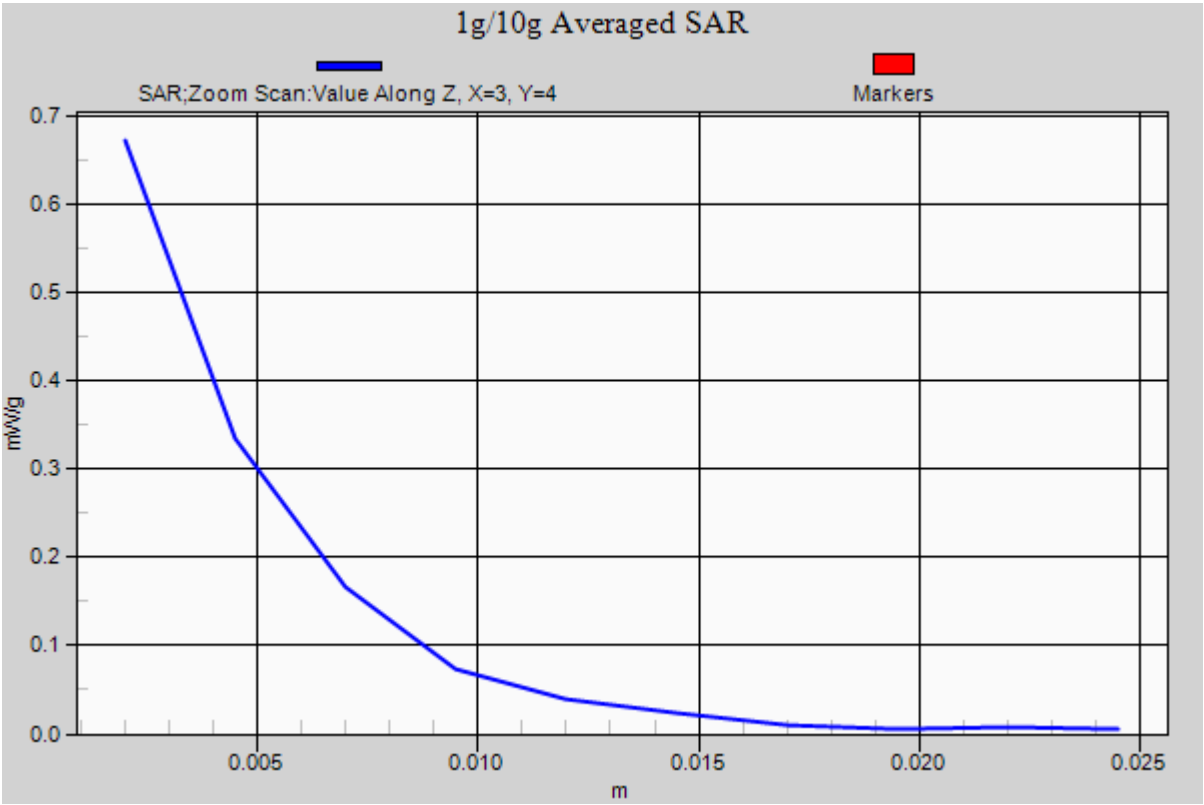
DUT: 232843-01

Communication System: 802.11n; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used : f = 5260 MHz; σ = 5.395 mho/m; ε_r = 47.311; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch52/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.266 mW/g

Ch52/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 8.769 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.241 mW/g
SAR(1 g) = 0.358 mW/g; SAR(10 g) = 0.128 mW/g
Maximum value of SAR (measured) = 0.673 mW/g



#42 802.11n_20M_Vertical Back_0.5cm_Ch52_Ant 0+1

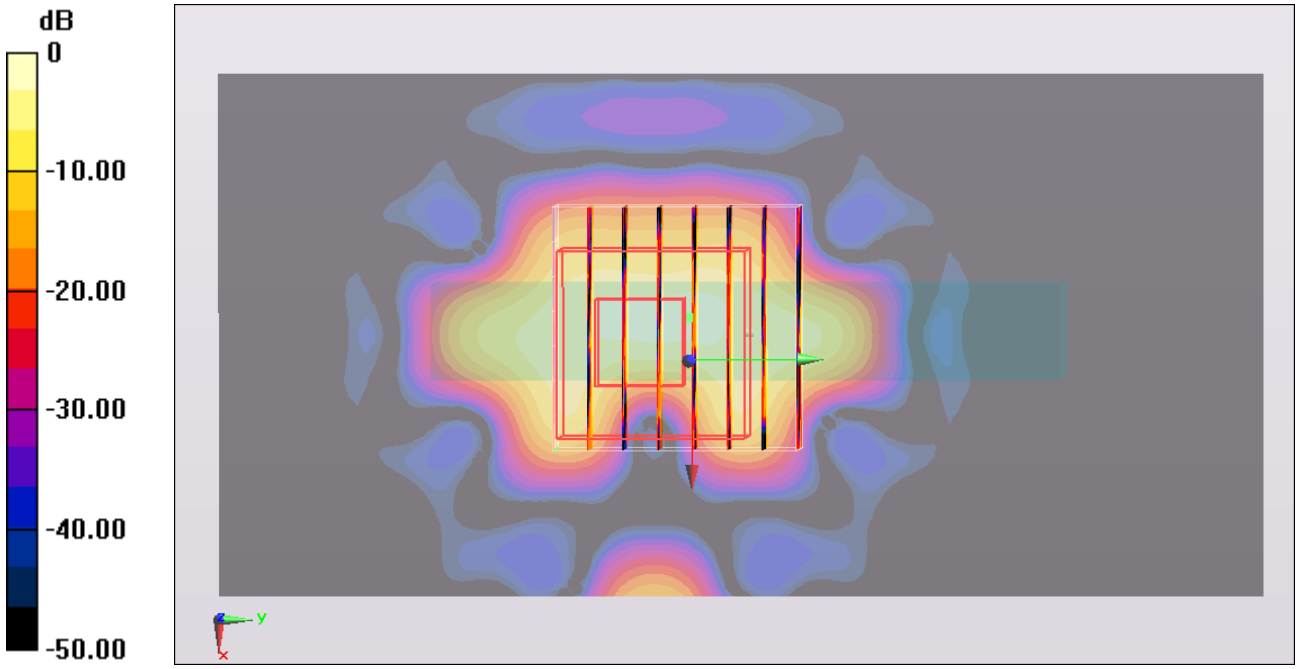
DUT: 232843-01

Communication System: 802.11n; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5260 MHz; σ = 5.395 mho/m; ε_r = 47.311; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch52/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.189 mW/g

Ch52/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.375 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.492 mW/g
SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.039 mW/g
Maximum value of SAR (measured) = 0.291 mW/g



0 dB = 0.291 mW/g = -10.72 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

#43 802.11n_20M_Tip Mode_0.5cm_Ch52_Ant 0+1

DUT: 232843-01

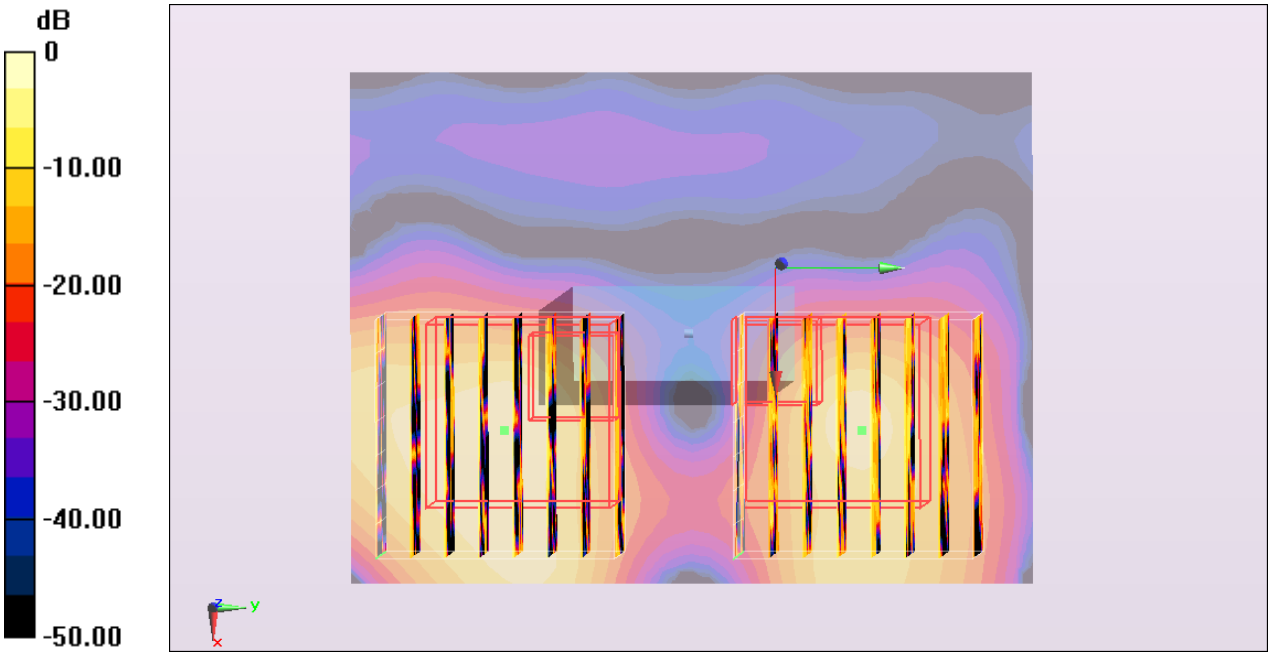
Communication System: 802.11n; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5260 MHz; σ = 5.395 mho/m; ε_r = 47.311; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.93, 3.93, 3.93); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch52/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0230 mW/g

Ch52/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.751 V/m; Power Drift = -0.171 dB
Peak SAR (extrapolated) = 0.303 mW/g
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.012 mW/g
Maximum value of SAR (measured) = 0.0591 mW/g

Ch52/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.751 V/m; Power Drift = -0.171 dB
Peak SAR (extrapolated) = 0.282 mW/g
SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.00916 mW/g
Maximum value of SAR (measured) = 0.0502 mW/g



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

#44 802.11n_20M_Horizontal Up_0.5cm_Ch116_Ant 0+1

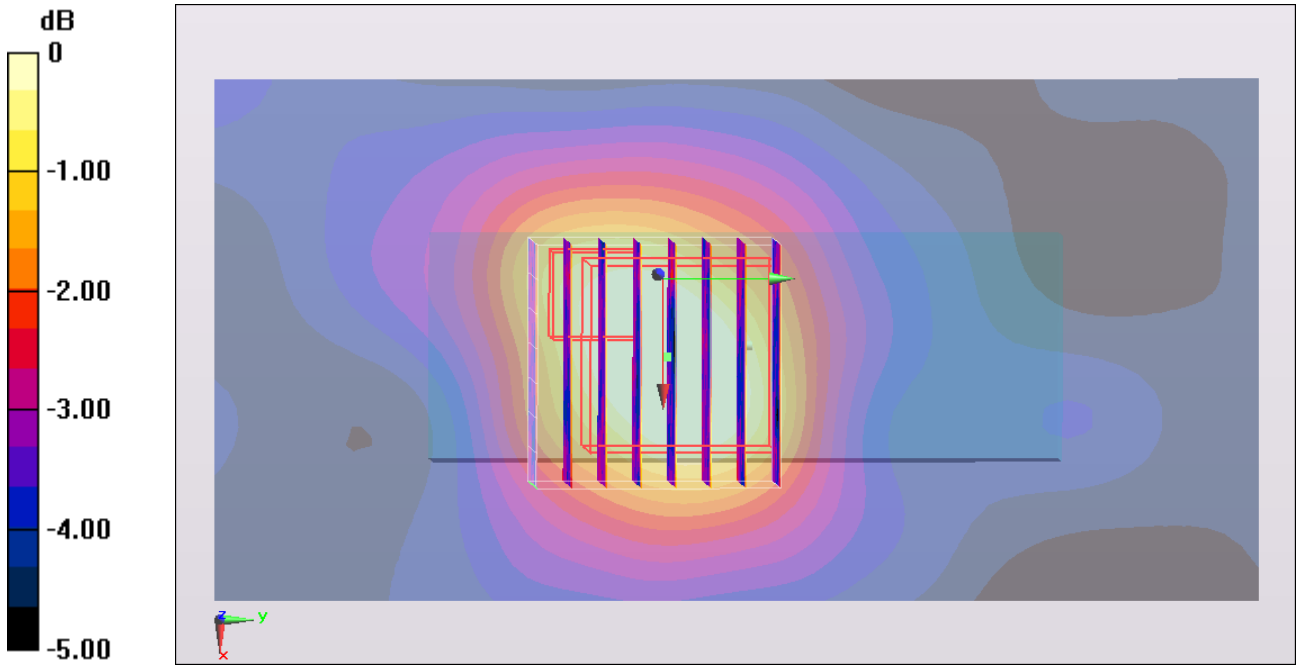
DUT: 232843-01

Communication System: 802.11n; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5580 MHz; σ = 5.856 mho/m; ε_r = 46.769; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.270 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.369 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.879 mW/g
SAR(1 g) = 0.159 mW/g; SAR(10 g) = 0.121 mW/g
Maximum value of SAR (measured) = 0.225 mW/g



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

#45 802.11n_20M_Horizontal Down_0.5cm_Ch116_Ant 0+1

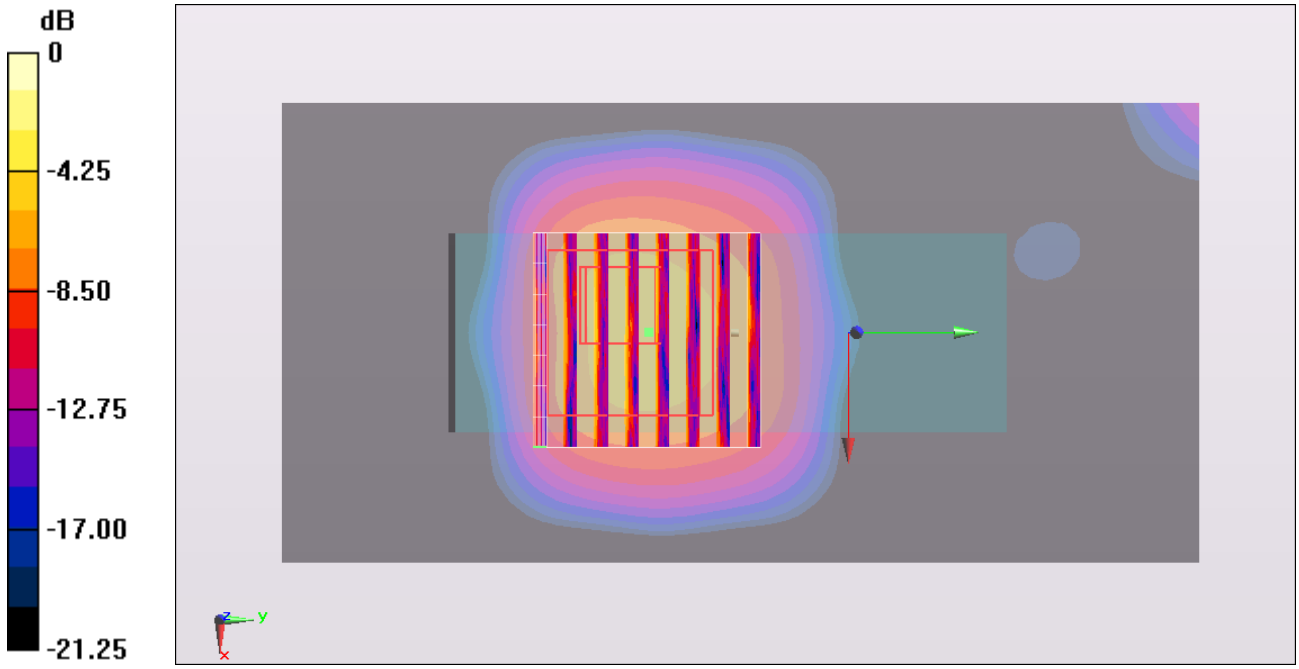
DUT: 232843-01

Communication System: 802.11n; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5580 MHz; σ = 5.856 mho/m; ε_r = 46.769; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0424 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.465 V/m; Power Drift = 0.171 dB
Peak SAR (extrapolated) = 0.307 mW/g
SAR(1 g) = 0.084 mW/g; SAR(10 g) = 0.033 mW/g
Maximum value of SAR (measured) = 0.168 mW/g



0 dB = 0.168 mW/g = -15.49 dB mW/g

#46 802.11n_20M_Vertical Front_0.5cm_Ch116_Ant 0+1

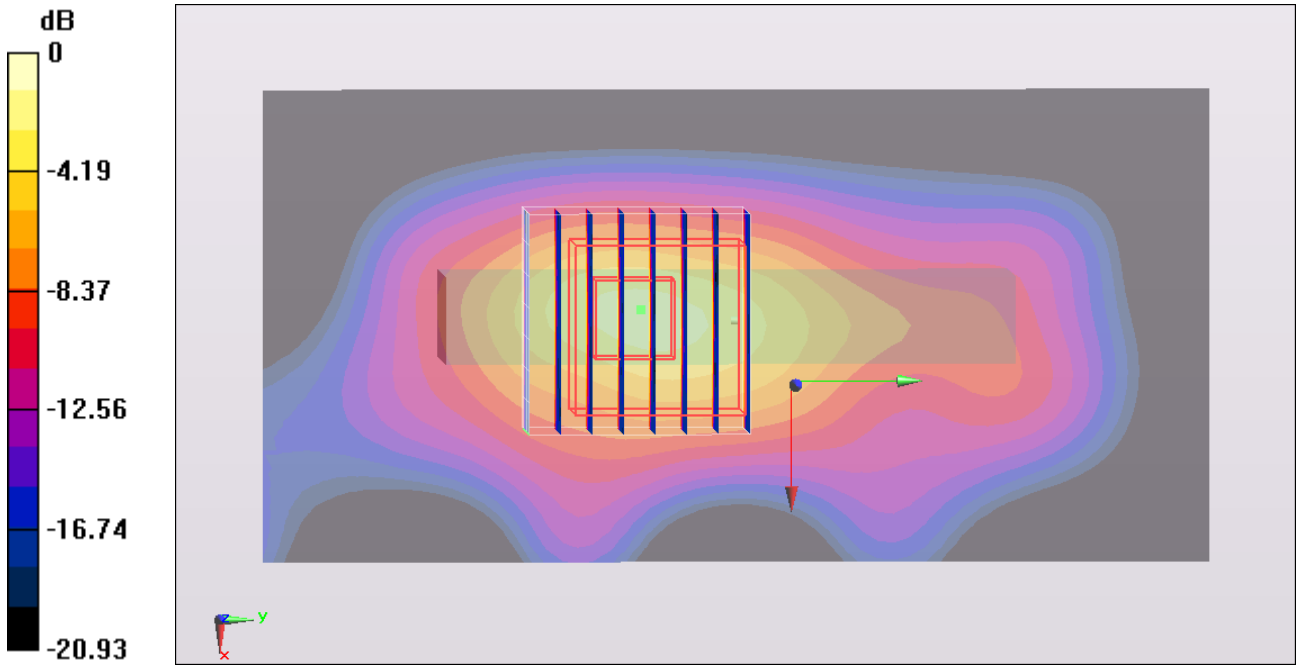
DUT: 232843-01

Communication System: 802.11n; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used : f = 5580 MHz; σ = 5.856 mho/m; ε_r = 46.769; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.355 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.732 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.105 mW/g
SAR(1 g) = 0.304 mW/g; SAR(10 g) = 0.111 mW/g
Maximum value of SAR (measured) = 0.573 mW/g



0 dB = 0.573 mW/g = -4.84 dB mW/g

#46 802.11n_20M_Vertical Front_0.5cm_Ch116_Ant 0+1_2D

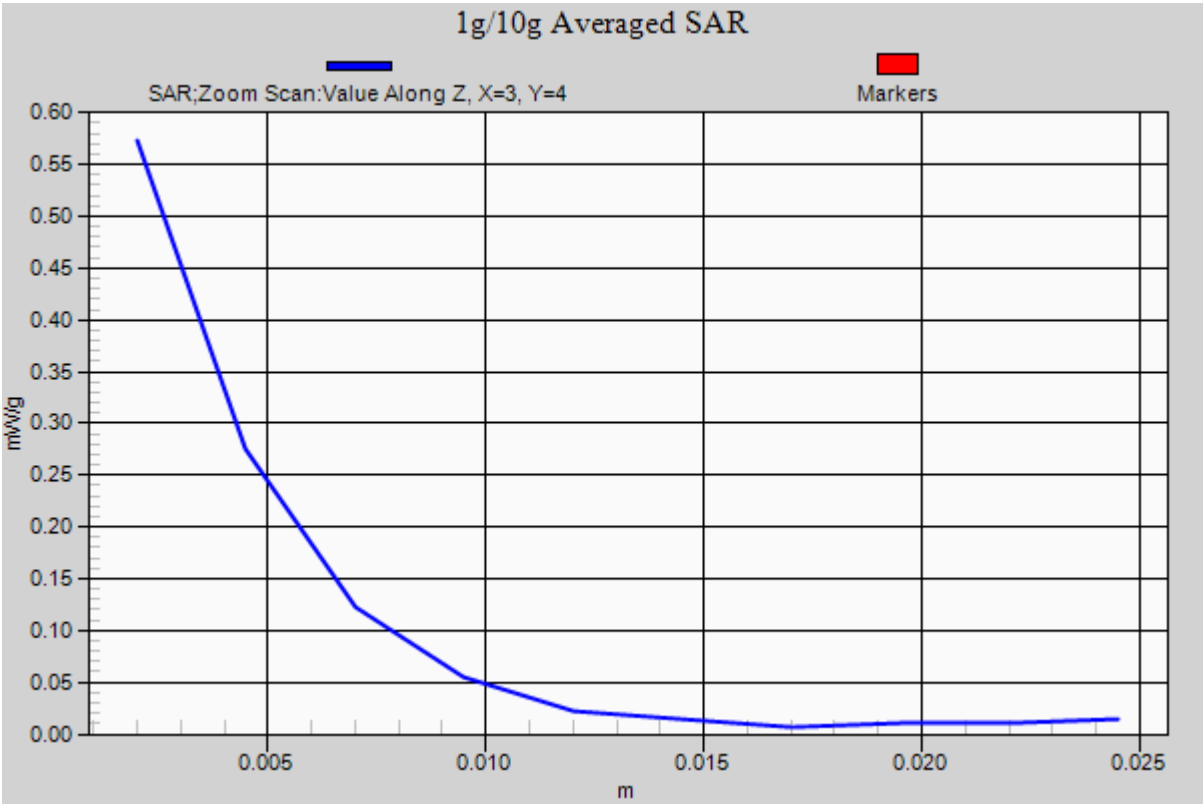
DUT: 232843-01

Communication System: 802.11n; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used : f = 5580 MHz; σ = 5.856 mho/m; ε_r = 46.769; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.355 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 6.732 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.105 mW/g
SAR(1 g) = 0.304 mW/g; SAR(10 g) = 0.111 mW/g
Maximum value of SAR (measured) = 0.573 mW/g



#47 802.11n_20M_Vertical Back_0.5cm_Ch116_Ant 0+1

DUT: 232843-01

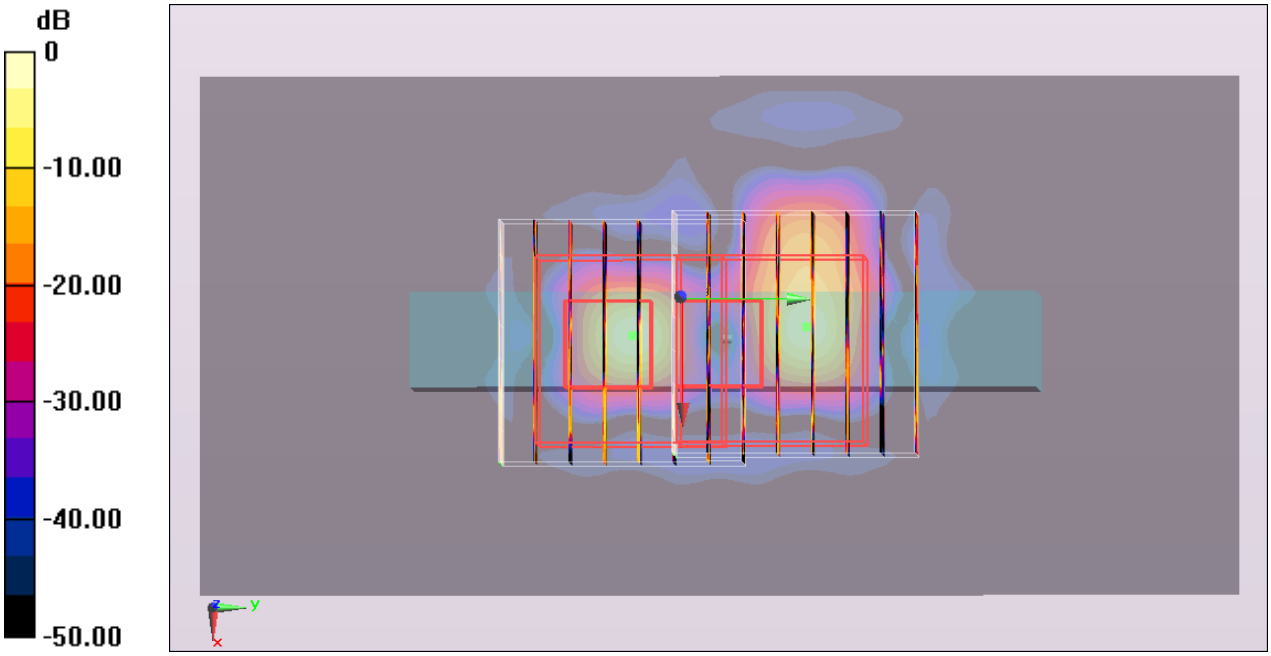
Communication System: 802.11n; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5580 MHz; σ = 5.856 mho/m; ε_r = 46.769; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0460 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.972 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.385 mW/g
SAR(1 g) = 0.056 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.137 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.972 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.238 mW/g
SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.103 mW/g



0 dB = 0.103 mW/g = -19.74 dB mW/g

#48 802.11n_20M_Tip Mode_0.5cm_Ch116_Ant 0+1

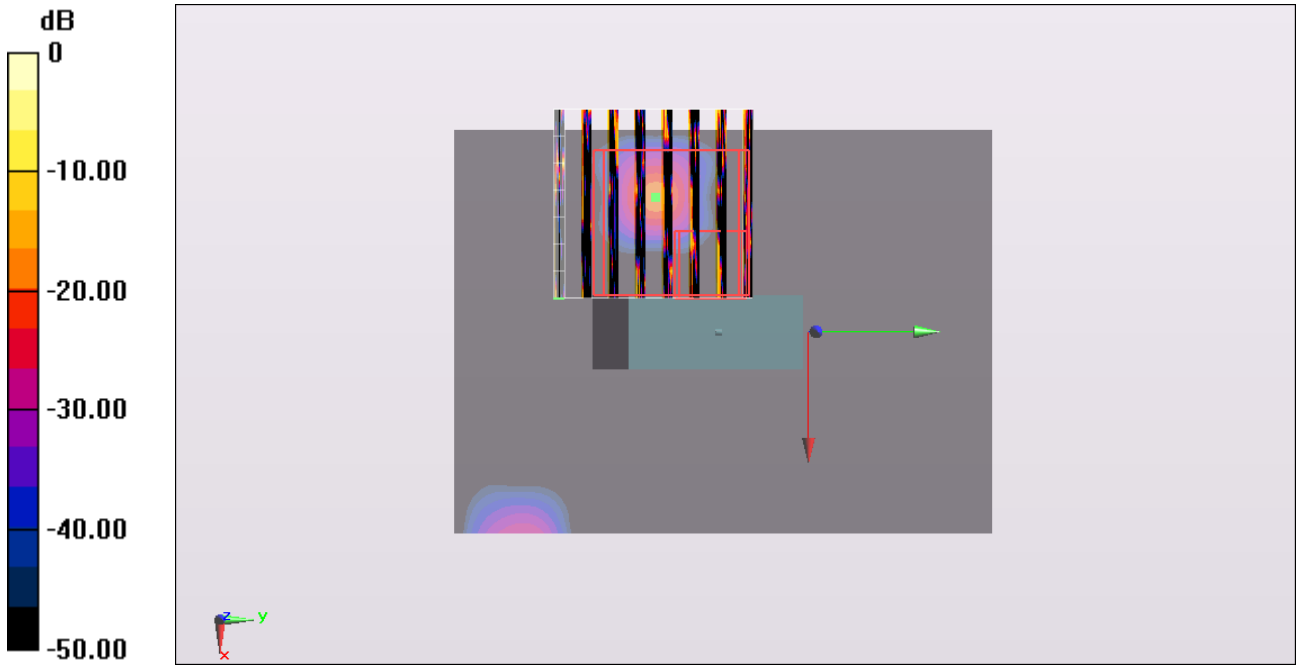
DUT: 232843-01

Communication System: 802.11n; Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5580 MHz; σ = 5.856 mho/m; ε_r = 46.769; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.53, 3.53, 3.53); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch116/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.00100 mW/g

Ch116/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 2.333 V/m; Power Drift = 0.192 dB
Peak SAR (extrapolated) = 0.283 mW/g
SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.00542 mW/g
Maximum value of SAR (measured) = 0.0505 mW/g



0 dB = 0.0505 mW/g = -25.93 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

#49 802.11n_20M_Horizontal Up_0.5cm_Ch149_Ant 0+1

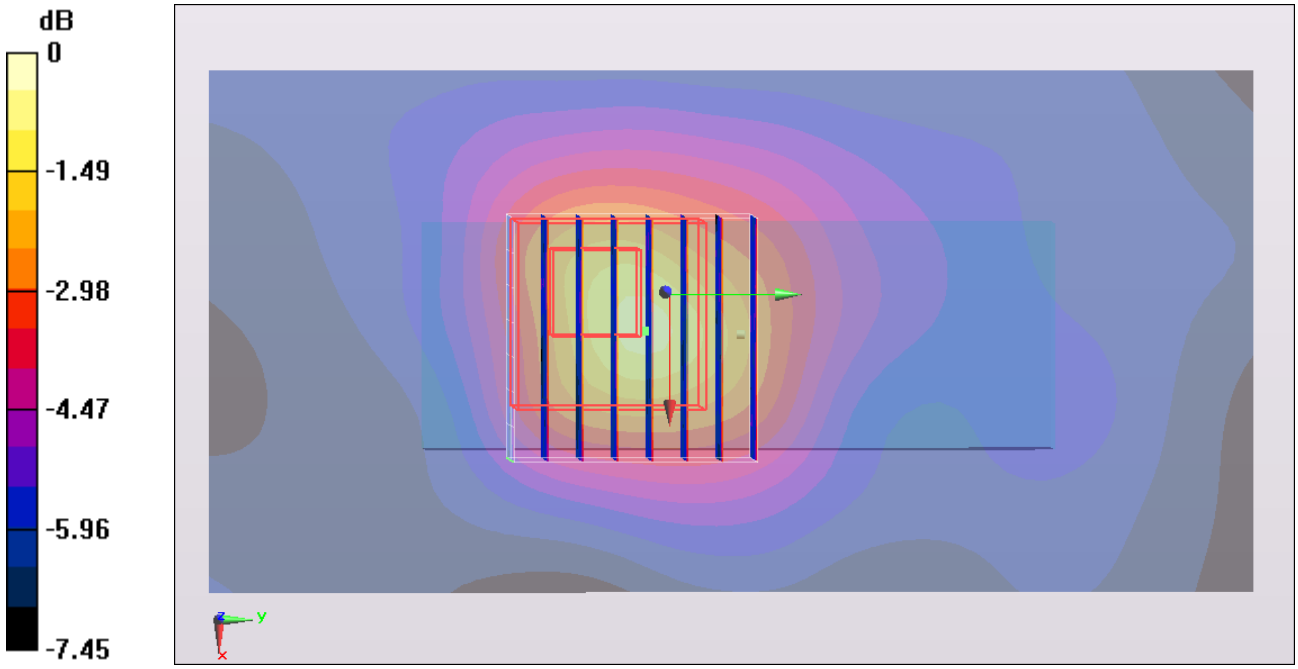
DUT: 232843-01

Communication System: 802.11n; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5745 MHz; σ = 6.184 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch149/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.352 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.794 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.215 mW/g
SAR(1 g) = 0.271 mW/g; SAR(10 g) = 0.158 mW/g
Maximum value of SAR (measured) = 0.421 mW/g



0 dB = 0.421 mW/g = -7.51 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

#50 802.11n_20M_Horizontal Down_0.5cm_Ch149_Ant 0+1

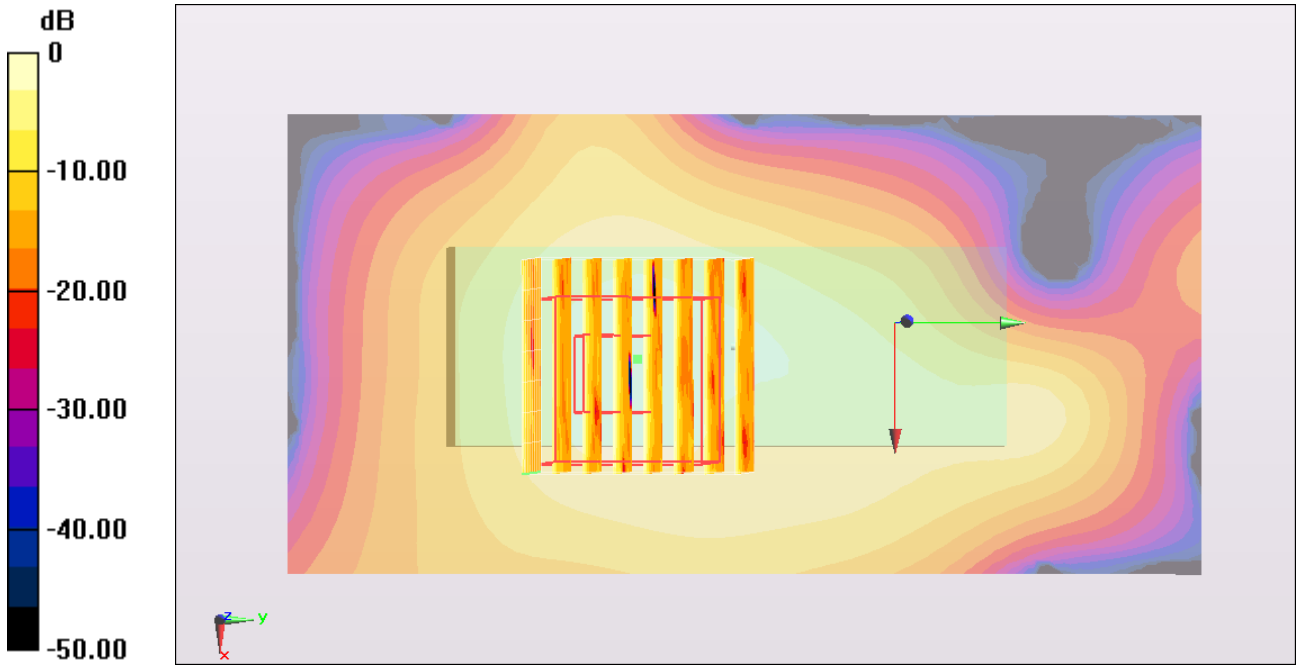
DUT: 232843-01

Communication System: 802.11n; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5745 MHz; σ = 6.184 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch149/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.240 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 5.969 V/m; Power Drift = -0.191 dB
Peak SAR (extrapolated) = 0.647 mW/g
SAR(1 g) = 0.158 mW/g; SAR(10 g) = 0.056 mW/g
Maximum value of SAR (measured) = 0.295 mW/g



0 dB = 0.295 mW/g = -10.60 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

#51 802.11n_20M_Vertical Front_0.5cm_Ch149_Ant 0+1

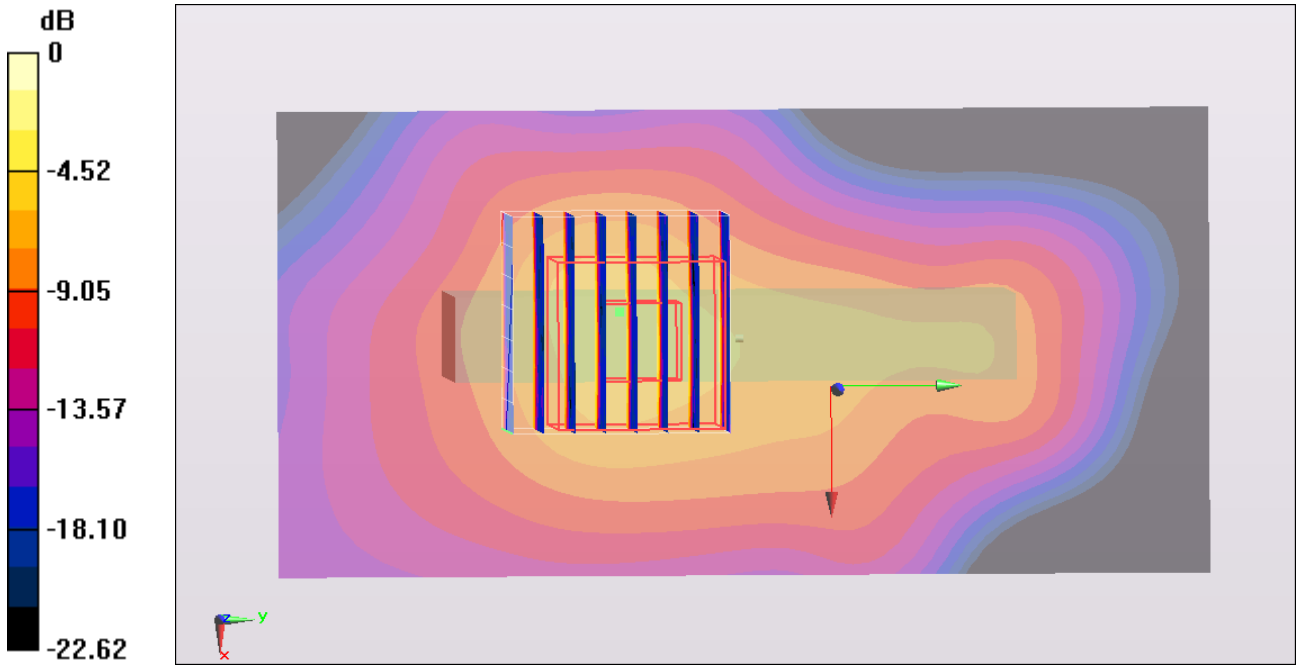
DUT: 232843-01

Communication System: 802.11n; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used : f = 5745 MHz; σ = 6.184 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch149/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.219 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 8.574 V/m; Power Drift = -0.175 dB
Peak SAR (extrapolated) = 1.249 mW/g
SAR(1 g) = 0.337 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.664 mW/g



0 dB = 0.664 mW/g = -3.56 dB mW/g

#51 802.11n_20M_Vertical Front_0.5cm_Ch149_Ant 0+1_2D

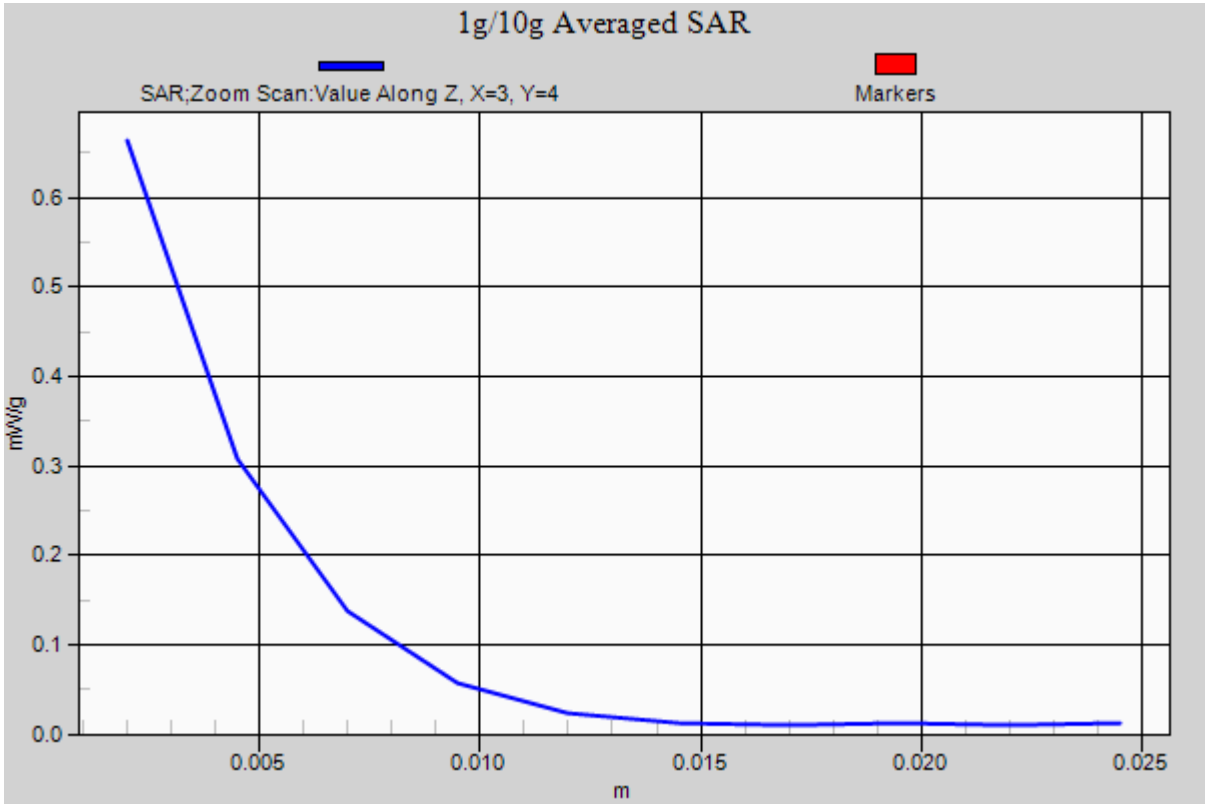
DUT: 232843-01

Communication System: 802.11n; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used : f = 5745 MHz; σ = 6.184 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃； Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch149/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.219 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 8.574 V/m; Power Drift = -0.175 dB
Peak SAR (extrapolated) = 1.249 mW/g
SAR(1 g) = 0.337 mW/g; SAR(10 g) = 0.118 mW/g
Maximum value of SAR (measured) = 0.664 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

#52 802.11n_20M_Vertical Back_0.5cm_Ch149_Ant 0+1

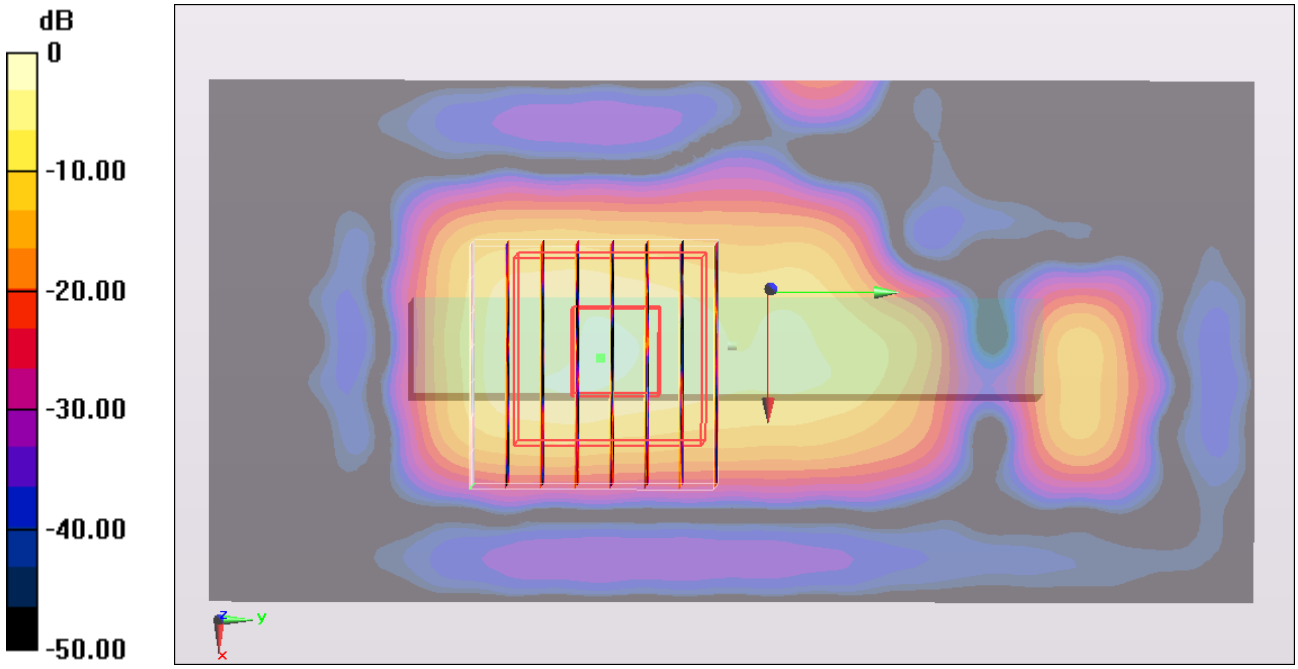
DUT: 232843-01

Communication System: 802.11n; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5745 MHz; σ = 6.184 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn913; Calibrated: 2011/12/23
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch149/Area Scan (61x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.169 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 4.705 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.543 mW/g
SAR(1 g) = 0.139 mW/g; SAR(10 g) = 0.040 mW/g
Maximum value of SAR (measured) = 0.314 mW/g



0 dB = 0.314 mW/g = -10.06 dB mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2012/5/9

#53 802.11n_20M_Tip Mode_0.5cm_Ch149_Ant 0+1

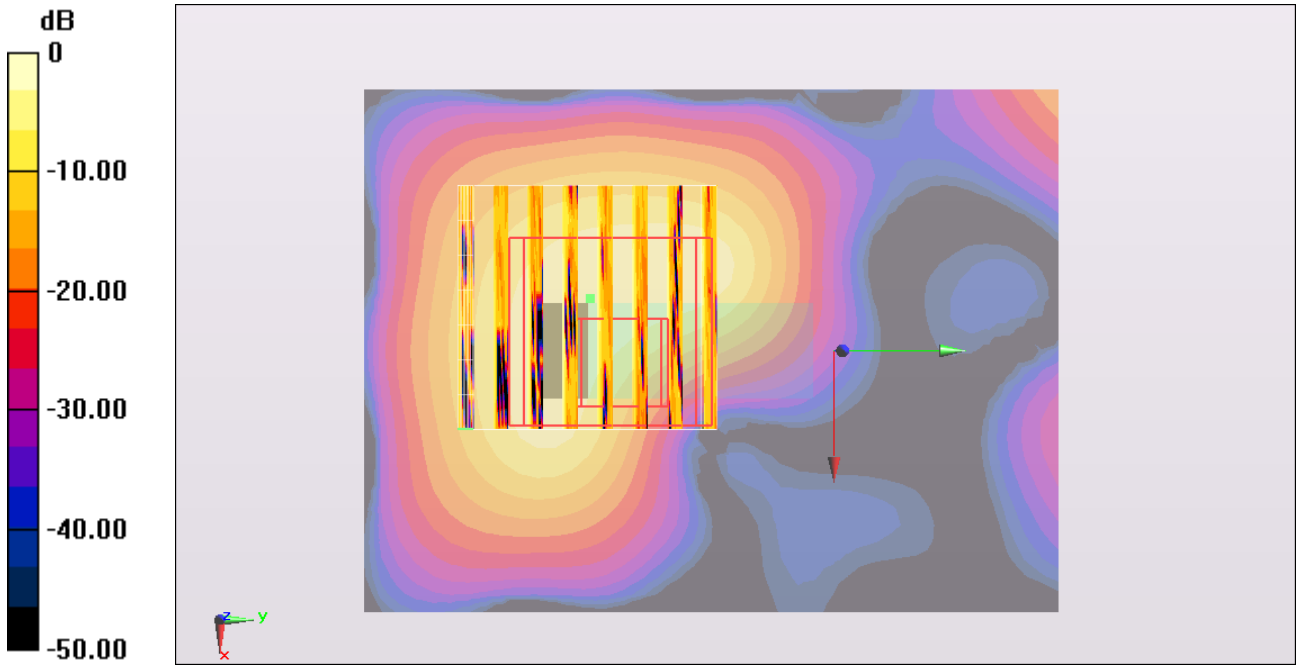
DUT: 232843-01

Communication System: 802.11n; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5G_120509 Medium parameters used: f = 5745 MHz; σ = 6.184 mho/m; ε_r = 46.6; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3792; ConvF(3.78, 3.78, 3.78); Calibrated: 2011/6/20;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn910; Calibrated: 2011/12/7
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP1127
- Measurement SW: DASY52, Version 52.8 (1); SEMCAD X Version 14.6.5 (6469)

Ch149/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.0437 mW/g

Ch149/Zoom Scan (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 3.283 V/m; Power Drift = -0.131 dB
Peak SAR (extrapolated) = 0.365 mW/g
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.0931 mW/g



0 dB = 0.0931 mW/g = -20.62 dB mW/g

Appendix C. DASY Calibration Certificate

The DASY calibration certificates are shown as follows.

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

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

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

Accreditation No.: SCS 108

Client Sporton (Auden)

Certificate No: D2450V2-736_Jul11

CALIBRATION CERTIFICATE

Object: D2450V2 - SN: 736

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

Calibration date: July 25, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: July 25, 2011

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

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

Accredited by the Swiss Accreditation Service (SAS)
Accreditation No.: SCS 108
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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