Specific Absorption Rate (SAR) Test Report

for

Mitac Technology Corp

on the

WLAN Module

Report Number	**:**	**FA8N2104**
Trade Name	**:**	**Getac**
Model Name	**:**	**WiFi Link 5300**
FCC ID	**:**	**MAU035**
Date of Testing	**:**	**Dec. 09, 2008 ~ Dec. 14, 2008**
Date of Report	**:**	**Jan. 17, 2009**
Date of Review	**:**	**Jan. 17, 2009**

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- Report Version: Rev. 02

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1. Statement of Compliance

The Specific Absorption Rate (SAR) maximum result found during testing for the **Mitac Technology Corp WLAN Module Getac WiFi Link 5300** on the laptop host GETAC V100 on the 802.11a/b/g/n body SAR are as follows (with expanded uncertainty 21.9% for 2.4GHz Band and 25.9% for 5GHz Band):

802.11b/g/n (2400MHz ~ 2483.5MHz) Body SAR (W/kg)	802.11a/n (5150MHz ~ 5350MHz) Body SAR (W/kg)	802.11a/n (5470MHz ~ 5720MHz) Body SAR (W/kg)	802.11a/n (5725MHz ~ 5850MHz) Body SAR (W/kg)
0.412	0.326	0.286	0.177

They are in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1999 and had been tested in accordance with the measurement methods and procedures specified in IEEE P1528-2003 and OET Bulletin 65 Supplement C (Edition 01-01).

Approved by

Roy Wu
Manager

2. Administration Data

2.1 Testing Laboratory

Company Name : Sporton International Inc.
Test Site : SAR01-HY
Address : No. 52, Hwa-Ya 1st RD., Hwa Ya Technology Park, Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.
Telephone Number : 886-3-327-3456
Fax Number : 886-3-328-4978

2.2 Applicant

Company Name : Mitac Technology Corp
Address : No. 1, R&D 2nd RD., HsinChu Science-Based Industrial Park, HsinChu, Taiwan, R.O.C.

2.3 Manufacturer

Company Name : Mitac Technology Corp
Address : No. 1, R&D 2nd RD., HsinChu Science-Based Industrial Park, HsinChu, Taiwan, R.O.C.
Company Name : Getac Technology (Kunshan) Co., Ltd
Address : No. 269, 2nd Road, Export Processing Zone, Changjiang South Road, Kunshan, Jiangsu, P.R.C. 215300

2.4 Application Details

Date of reception of application: Nov. 21, 2008
Start of test : Dec. 09, 2008
End of test : Dec. 14, 2008

3. General Information

3.1 Description of Device Under Test (DUT)

Product Feature & Specification	
DUT Type :	WLAN Module
Trade Name :	Getac
Model Name :	WiFi Link 5300
FCC ID :	MAU035
Frequency Range :	802.11b/g/n : 2400 MHz ~ 2483.5 MHz 802.11a/n : 5150 MHz ~ 5250 MHz, 5250 MHz ~ 5350 MHz 5470 MHz ~ 5725 MHz, 5725 MHz ~ 5850 MHz
Maximum Output Power to Antenna :	**<2400 MHz ~ 2483.5 MHz>** 802.11b : 17.62 dBm 802.11g : 16.83 dBm 802.11n : 17.36 dBm (BW 20M, 3Tx) 802.11n : 21.02 dBm (BW 40M, 3Tx) **<5150 MHz ~ 5350 MHz>** 802.11a : 16.79 dBm 802.11n : 22.10 dBm (BW 20M, 3Tx) 802.11n : 19.51 dBm (BW 40M, 2Tx) **<5470 MHz ~ 5725 MHz>** 802.11a : 17.51 dBm 802.11n : 22.30 dBm (BW 20M, 3Tx) 802.11n : 19.41 dBm (BW 40M, 2Tx) **<5725 MHz ~ 5850 MHz>** 802.11a : 16.17 dBm 802.11n : 19.44 dBm (BW 20M, 2Tx) 802.11n : 18.61 dBm (BW 40M, 3Tx)
Antenna Type :	802.11b/g/n : PIFA Antenna with gain 1.29 dBi 802.11a/n : PIFA Antenna with gain 2.79 dBi
Type of Modulation :	802.11b : DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
DUT Stage :	Identical Prototype

3.2 Description of Host

Product Feature & Specification	
DUT Type :	Convertible Tablet
Trade Name :	GETAC
Model Name :	V100
Sample A :	DUT with Panel 1(1200 cd/m2) and Battery 1(7800 mAh)
Sample B :	DUT with Panel 2(500 cd/m2) and Battery 2(5200 mAh)

Note: Sample A and sample B are almost the same. The differences between them are panel and battery. Therefore, the antenna location and distance to user in sample A and sample B are the same.

3.3 Product Photos

Refer to Appendix D.

3.4 Applied Standards

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

- 47 CFR Part 2 (2.1093)
- IEEE C95.1-1999
- IEEE P1528-2003
- OET Bulletin 65 Supplement C (Edition 01-01)
- KDB 248227 D01 r1.2
- KDB 447498 D01 v03r02
- KDB 616217 D01 v01

3.5 Device Category and SAR Limits

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

3.6 Test Conditions

3.6.1 Ambient Condition

Ambient Temperature	20-24℃
Humidity	<60 %

3.6.2 Test Configuration

For WLAN link mode, engineering testing software installed on the DUT can provide continuous transmitting RF signal. This RF signal utilized in SAR measurement has almost 100% duty cycle and its crest factor is 1.

The data rates for WLAN SAR testing were set in highest RF output power mode. The detail setting is as follow:

Mode	Setting	Mode	Setting
802.11b	1 Mbps	802.11a	6 Mbps
802.11g	6 Mbps	802.11n (20M, SISO)	HT0
802.11n (20M, SISO)	HT0	802.11n (20M, 2Tx)	HT8
802.11n (20M, 2Tx)	HT8	802.11n (20M, 3Tx)	HT16
802.11n (20M, 3Tx)	HT16	802.11n (40M, SISO)	HT0
802.11n (40M, SISO)	HT0	802.11n (40M, 2Tx)	HT8
802.11n (40M, 2Tx)	HT8	802.11n (40M, 3Tx)	HT16
802.11n (40M, 3Tx)	HT16	-	-

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 FCC 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:

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

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

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

$$\mathbf{SAR} = C\frac{\delta T}{\delta t}$$

, where C is the specific head capacity, δT is the temperature rise and δt the exposure duration,

or related to the electrical field in the tissue by

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

, where σ is the conductivity of the tissue, ρ is the mass density of the tissue and $\boldsymbol{E}$ is the rms electrical field strength.

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

5. SAR Measurement Setup

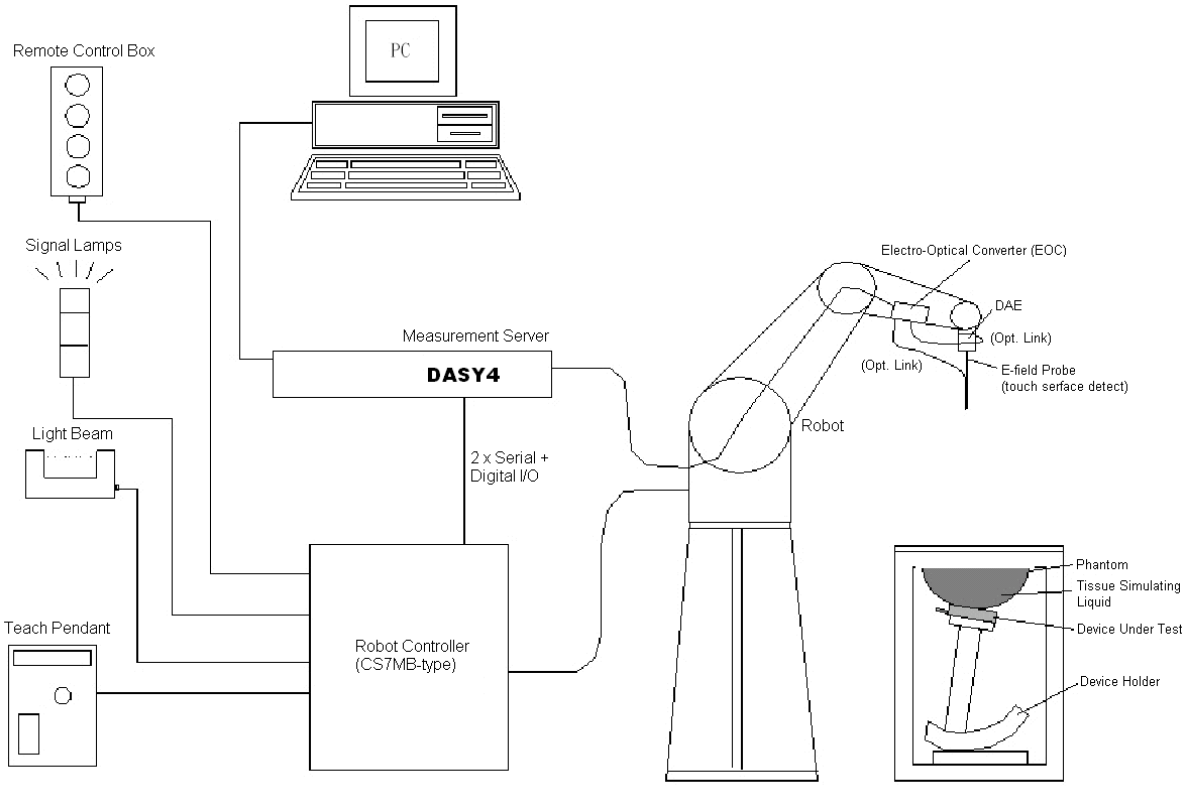


Fig. 5.1 DASY4 system

The DASY4 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
- DASY4 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 DASY4 E-Field Probe System

The SAR measurement is conducted with the dosimetric probe ET3DV6 and EX3DV3 (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 ET3DV6 E-Field Probe Specification

<ET3DV6>

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)
Frequency	10 MHz to 3 GHz
Directivity	± 0.2 dB in brain tissue (rotation around probe axis) ± 0.4 dB in brain tissue (rotation perpendicular to probe axis)
Dynamic Range	5 µ W/g to 100mW/g; Linearity: ±0.2dB
Surface Detection	± 0.2 mm repeatability in air and clear liquids on reflecting surface
Dimensions	Overall length: 330mm Tip length: 16mm Body diameter: 12mm Tip diameter: 6.8mm Distance from probe tip to dipole centers: 2.7mm
Application	General dosimetry up to 3GHz Compliance tests for mobile phones and Wireless LAN Fast automatic scanning in arbitrary phantoms

Fig. 5.2 Probe Setup on Robot

<EX3DV3 Probe>

Construction	Symmetrical design with triangular core
	Built-in shielding against static charges
	PEEK enclosure material (resistant to organic solvents)
Frequency	10 MHz to 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis)
	± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to 100 mW/g; Linearity: ± 0.2 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
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

Fig. 5.3 EX3DV3 E-field Probe

5.1.2 *ET3DV6 and EX3DV3 E-Field Probe Calibration*

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

- **ET3DV6 sn1787 (Cal: Aug. 26, 2008)**

Sensitivity	X axis : 1.63 μV		Y axis : 1.67 μV	Z axis : 2.18 μV
Diode compression point	X axis : 90 mV		Y axis : 93 mV	Z axis : 92 mV
Conversion factor (Head / Body)	**Frequency (MHz)**	**X axis**	**Y axis**	**Z axis**
	2350~2550	4.49 / 3.79	4.49 / 3.79	4.49 / 3.79
Boundary effect (Head / Body)	**Frequency (MHz)**	**Alpha**	**Depth**	
	2350~2550	0.77 / 0.90	1.57 / 1.51	

- **EX3DV3 sn3514 (Cal: Jan. 31, 2008)**

Sensitivity	X axis : 0.650 μV		Y axis : 0.690 μV	Z axis : 0.580 μV
Diode compression point	X axis : 95 mV		Y axis : 93 mV	Z axis : 96 mV
Conversion factor (Head / Body)	**Frequency (MHz)**	**X axis**	**Y axis**	**Z axis**
	5100~5300	- / 4.34	- / 4.34	- / 4.34
	5400~5600	- / 3.98	- / 3.98	- / 3.98
	5700~5900	- / 4.20	- / 4.20	- / 4.20
Boundary effect (Head / Body)	**Frequency (MHz)**	**Alpha**	**Depth**	
	5100~5300	- / 0.35	- / 1.70	
	5400~5600	- / 0.43	- / 1.70	
	5700~5900	- / 0.30	- / 1.70	

NOTE: The probe parameters have been calibrated by the SPEAG.

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 mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

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

5.3 Robot

The DASY4 system uses the high precision robots RX90BL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY4 system, the CS7MB robot controller version from Stäubli is used. The RX robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

5.4 Measurement Server

The DASY4 measurement server is based on a PC/104 CPU board with
166 MHz CPU
32 MB chipset and
64 MB RAM.

Communication with
the DAE electronic box
the 16-bit AD-converter system for optical detection and digital I/O interface.

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

5.5 SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

- Left head
- Right head
- Flat 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.

The phantom can be used with the following tissue simulating liquids:
*Water-sugar based liquid
*Glycol based liquids

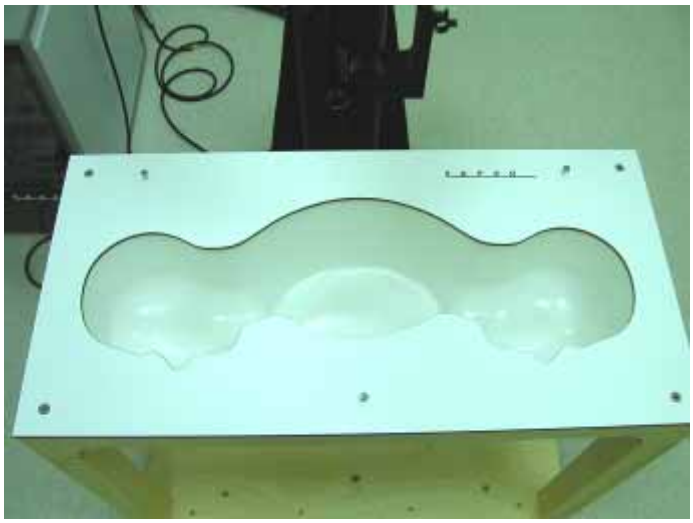


Fig. 5.3 Top View of Twin Phantom

Fig. 5.4 Bottom View of Twin Phantom

5.6 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 in 5 mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ± 20%. An accurate device position is therefore crucial for accurate and repeatable measurement. The position in which the devices must be measured, are defined by the standards.

The DASY4 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 DASY4 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\varepsilon_r = 3$ and loss tangent $\delta = 0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

Fig. 5.5 Device Holder

5.7 Data Storage and Evaluation

5.7.1 Data Storage

The DASY4 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 with the extension .DA4. 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-louse 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 DASY4 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：

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

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

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

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

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

$$E_{tot} = \sqrt{E_X^2 + E_Y^2 + E_Z^2}$$

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

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

with
SAR = local specific absorption rate in mW/g
Etot = 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.

The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = \frac{E_{tot}^2}{3770} \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with
P_{pwe} = equivalent power density of a plane wave in mW/cm^2
E_{tot} = total electric field strength in V/m
H_{tot} = total magnetic field strength in A/m

5.8 Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	Dosimetric E-Filed Probe	ET3DV6	1787	Aug. 26, 2008	Aug. 25, 2009
SPEAG	Dosimetric E-Filed Probe	EX3DV3	3514	Jan. 31, 2008	Jan. 30, 2009
SPEAG	2450MHz System Validation Kit	D2450V2	736	Jul. 12, 2007	Jul. 11, 2009
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Jan. 24, 2008	Jan. 23, 2010
SPEAG	Data Acquisition Electronics	DAE3	577	Nov. 12, 2008	Nov. 11, 2009
SPEAG	Data Acquisition Electronics	DAE4	679	May 21, 2008	May 20, 2009
SPEAG	Device Holder	N/A	N/A	NCR	NCR
SPEAG	ELI4 Phantom	QD 0VA 001 BB	1026	NCR	NCR
Agilent	PNA Series Network Analyzer	E8358A	US40260131	Apr. 02, 2008	Apr. 01, 2009
Agilent	Wireless Communication Test Set	E5515C	GB46311322	Dec. 22, 2006	Dec. 21, 2008
R&S	Universal Radio Communication Tester	CMU200	105934	Nov. 11, 2008	Nov. 10, 2009
Agilent	Dielectric Probe Kit	85070D	US01440205	NCR	NCR
Agilent	Dual Directional Coupler	778D	50422	NCR	NCR
AR	Power Amplifier	5S1G4M2	0328767	NCR	NCR
R&S	Power Meter	NRVD	101394	Oct. 20, 2008	Oct. 19, 2009
R&S	Power Sensor	NRV-Z1	100130	Oct. 20, 2008	Oct. 19, 2009

Table 5.1 Test Equipment List

6. Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY4, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. The liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is (head SAR) or from the flat phantom to the liquid top surface (body SAR) is 15.2cm.

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.

Table 6.1 shows the measuring results for muscle simulating liquid.

Band	Temperature (℃)	Frequency (MHz)	Conductivity (σ)	Permittivity (ε_r)	Measurement date
802.11b/g/n (2400~2450 MHz)	21.7	2412	1.95	51.3	Dec. 09, 2008
		2437	1.97	51.2	
		2462	2.01	51.1	
802.11a/n (5150~5350 MHz)	21.3	5180	5.30	48.7	Dec. 11, 2008
		5240	5.39	48.6	
		5260	5.42	48.6	
		5320	5.50	48.4	
	21.3	5180	5.30	48.7	Dec. 12, 2008
		5240	5.39	48.6	
		5260	5.42	48.6	
		5320	5.50	48.4	
	21.5	5180	5.30	48.7	Dec. 13, 2008
		5240	5.39	48.6	
		5260	5.42	48.6	
		5320	5.50	48.4	
802.11a/n (5470~5725 MHz)	21.3	5520	5.75	48.0	Dec. 11, 2008
		5580	5.82	47.8	
		5620	5.87	47.7	
		5680	5.94	47.5	
	21.3	5520	5.75	48.0	Dec. 12, 2008
		5580	5.82	47.8	
		5620	5.87	47.7	
		5680	5.94	47.5	
	21.5	5520	5.75	48.0	Dec. 13, 2008
		5580	5.82	47.8	
		5620	5.87	47.7	
		5680	5.94	47.5	

802.11a/n (5725~5850 MHz)	21.3	5745	6.05	47.5	Dec. 11, 2008
		5785	6.09	47.4	
		5825	6.13	47.2	
	21.3	5745	6.05	47.5	Dec. 12, 2008
		5785	6.09	47.4	
		5825	6.13	47.2	
	21.5	5745	6.05	47.5	Dec. 13, 2008
		5785	6.09	47.4	
		5825	6.13	47.2	

Table 6.1 Measuring Results for Muscle Simulating Liquid

The measuring data are consistent with $\varepsilon_r = 52.7 \pm 5\%$, $\sigma = 1.95 \pm 5\%$ for 2400~2483.5MHz, $\varepsilon_r = 49.0 \pm 5\%$ and $\sigma = 5.30 \pm 5\%$ for 5150~5350MHz, $\varepsilon_r = 48.6 \pm 5\%$ and $\sigma = 5.65 \pm 5\%$ for 5470~5725MHz and $\varepsilon_r = 48.2 \pm 5\%$, $6 = 6.00 \pm 5\%$ for body 5725~5850MHz.

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 A 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
Multiplying 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 DASY4 uncertainty Budget is showed in Table 7.2.

Error Description	Uncertainty Value ± %	Probability Distribution	Divisor	Ci (1g)	Standard Unc. (1g)	vi or Veff
Measurement Equipment						
Probe Calibration	±5.9 %	Normal	1	1	±5.9 %	∞
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	145
Device Holder	±3.6 %	Normal	1	1	±3.6	5
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					**±10.9**	**387**
Coverage Factor for 95 %		**K=2**				
Expanded uncertainty (Coverage factor = 2)					**±21.9**	

Table 7.2 Uncertainty Budget of DASY4 for 2.4GHz Band

Error Description	Uncertainty Value	Probability Distribution	Divisor	Ci (1g)	Standard Unc. (1g)	vi or Veff
Measurement System						
Probe Calibration	±6.8 %	Normal	1	1	±6.8 %	∞
Axial Isotropy	±4.7 %	Rectangular	√3	0.7	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	Rectangular	√3	0.7	±3.9 %	∞
Boundary Effect	±2.0 %	Rectangular	√3	1	±1.2 %	∞
Linearity	±4.7 %	Rectangular	√3	1	±2.7 %	∞
System Detection Limit	±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 %	145
Device Holder	±3.6 %	Normal	1	1	±3.6 %	5
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 Std. Uncertainty					**±12.9 %**	**330**
Coverage Factor for 95%	**Kp=2**					
Expanded STD Uncertainty					**±25.9 %**	

Table 7.3 Uncertainty Budget of DASY4 for 5GHz Band

8. SAR Measurement Evaluation

Each DASY4 system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY4 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 at frequency 2450 MHz, 5200 MHz, 5500 MHz, and 5800 MHz. 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:

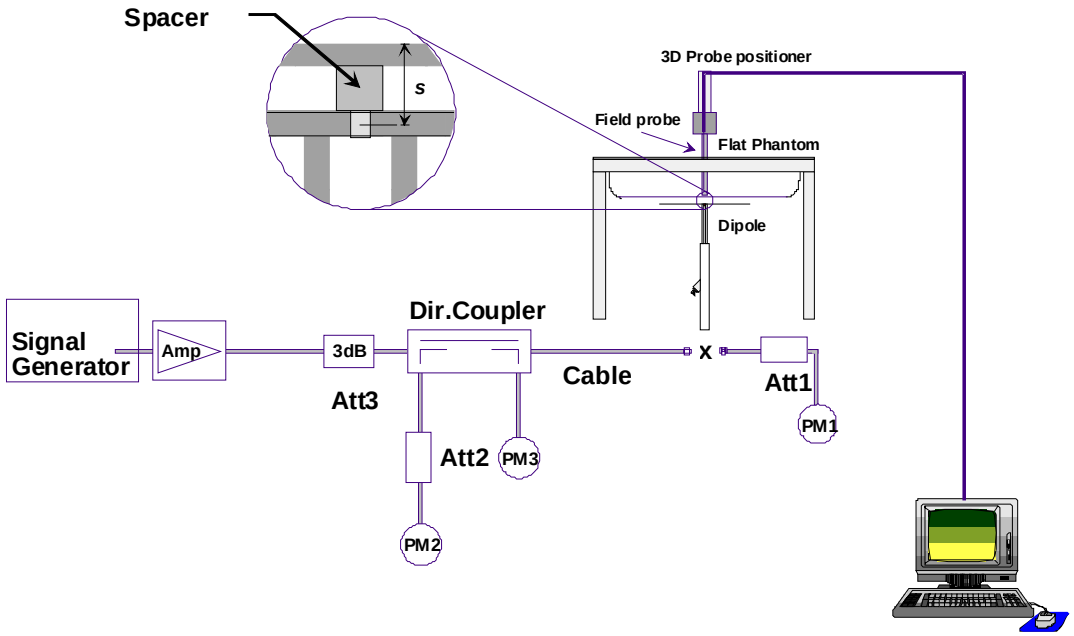


Fig. 8.1 System Setup for System Evaluation

1. Signal Generator
2. Amplifier
3. Directional Coupler
4. Power Meter
5. 2450 or 5200 or 5500 or 5800 MHz Dipole

The output power on dipole port must be calibrated to 100 mW (20 dBm) before dipole is connected.

Fig 8.2 Dipole Setup

8.3 Validation Results

Comparing to the original SAR value provided by SPEAG, the validation data should within its specification of 10 %. Table 8.1 shows the target SAR and measured SAR after normalized to 1W input power.

Frequency	SAR	Target (W/kg)	Measurement data (W/kg)	Variation	Measurement date
2450MHz	SAR (1g)	52.5	53.3	1.5 %	Dec. 09, 2008
	SAR (10g)	24.4	24.5	0.4 %	
5200MHz	SAR (1g)	76.8	76.8	0.0 %	Dec. 11, 2008
	SAR (10g)	21.6	21.4	-0.9 %	
	SAR (1g)	76.8	74.6	-2.9 %	Dec. 12, 2008
	SAR (10g)	21.6	20.7	-4.2 %	
	SAR (1g)	76.8	82.3	7.2 %	Dec. 13, 2008
	SAR (10g)	21.6	23.4	8.3 %	
5500MHz	SAR (1g)	80.1	82.3	2.7 %	Dec. 11, 2008
	SAR (10g)	22.3	23.0	3.1 %	
	SAR (1g)	80.1	80.7	0.7 %	Dec. 12, 2008
	SAR (10g)	22.3	22.6	1.3 %	
	SAR (1g)	80.1	81.1	1.2 %	Dec. 13, 2008
	SAR (10g)	22.3	22.8	2.2 %	
5800MHz	SAR (1g)	69.4	69.0	-0.6 %	Dec. 11, 2008
	SAR (10g)	19.3	19.4	0.5 %	
	SAR (1g)	69.4	70.7	1.9 %	Dec. 12, 2008
	SAR (10g)	19.3	19.9	3.1 %	
	SAR (1g)	69.4	71.0	2.3 %	Dec. 13, 2008
	SAR (10g)	19.3	19.9	3.1 %	

Table 8.1 Target and Measured SAR after Normalized

The table above indicates the system performance check can meet the variation criterion.

9. Description for DUT Testing Position

This DUT was tested in 6 different positions. They are “Top Side with 0cm Gap”, “Bottom Side with 0cm Gap”, “Rear Side with 0cm Gap”, “Right Side with 0cm Gap”, “Left Side with 0cm Gap” and “Notebook Bottom Touch”. The first 5 positions are in Tablet PC mode, and the last position is the normal notebook mode. There are 3 antennas. Antenna A and B are embedded in panel top, and Antenna C is embedded in panel side.

Remark: Please refer to Appendix E for the test setup photos.

10. Measurement Procedures

The measurement procedures are as follows:

- Use engineering software to transmit RF power continuously (continuous Tx) in the middle channel
- Place the DUT in the positions described in the last section
- Set scan area, grid size and other setting on the DASY4 software
- Take data for the middle channel on "Top Side" and "Left Side" testing position
- Find out the largest SAR result on these testing positions of each mode
- Repeat the previous steps for the lowest and highest channels.
- Measure SAR results for the maximum SAR channel for other testing positions

According to the OET Bulletin 65 Supplement C standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- Power reference measurement
- Area scan
- Zoom scan
- Power reference measurement

10.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the OET Bulletin 65 Supplement C standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY4 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:

- extraction of the measured data (grid and values) from the Zoom Scan
- calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- generation of a high-resolution mesh within the measured volume
- interpolation of all measured values form the measurement grid to the high-resolution grid
- extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- calculation of the averaged SAR within masses of 1g and 10g

10.2 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 2.45GHz, and 8x8x8 points with step size 4.3, 4.3 and 3 mm for 5GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 1 g.

10.3 SAR Averaged Methods

In DASY4, 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.

11. SAR Test Results

11.1 Conducted Power

<2400 MHz ~ 2483.5 MHz>

802.11b

Channel	Frequency (MHz)	RF Power (dBm)		
		1 Mbps		
		Chain A	Chain B	Chain C
01	2412	17.50	17.27	17.50
06	2437	16.82	16.73	17.62
11	2462	16.63	16.61	17.18

802.11g

Channel	Frequency (MHz)	RF Power (dBm)		
		6 Mbps		
		Chain A	Chain B	Chain C
01	2412	12.29	16.83	11.96
06	2437	15.63	15.38	15.63
11	2462	14.96	13.39	13.00

802.11n (BW 20M, SISO)

Channel	Frequency (MHz)	RF Power (dBm)		
		HT0		
		Chain A	Chain B	Chain C
01	2412	10.47	10.40	11.37
06	2437	15.18	14.78	15.96
11	2462	12.04	11.83	12.18

802.11n (BW 20M, 2Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT8				
		Combination	Chain A	Chain B	Chain C	Total
01	2412	A+B	14.02	14.21	-	17.13
06	2437	A+B	13.80	13.90	-	16.86
11	2462	A+B	13.33	13.54	-	16.45
01	2412	A+C	11.61	-	12.62	15.15
06	2437	A+C	12.54	-	13.48	16.05
11	2462	A+C	12.60	-	13.57	16.12
01	2412	B+C	-	12.48	13.16	15.84
06	2437	B+C	-	13.79	14.09	16.95
11	2462	B+C	-	13.48	14.41	16.98

802.11n (BW 20M, 3Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT16				
		Combination	Chain A	Chain B	Chain C	Total
01	2412	A+B+C	11.99	12.00	12.69	17.01
06	2437	A+B+C	12.40	12.03	13.24	17.36
11	2462	A+B+C	12.26	11.96	12.73	17.10

802.11n (BW 40M, SISO)

Channel	Frequency (MHz)	RF Power (dBm)		
		HT0		
		Chain A	Chain B	Chain C
03	2422	12.51	12.60	11.60
06	2437	12.44	13.06	13.70
09	2452	13.63	13.94	13.44

802.11n (BW 40M, 2Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT8				
		Combination	Chain A	Chain B	Chain C	Total
03	2422	A+B	12.01	11.90	-	14.97
06	2437	A+B	15.97	15.91	-	18.95
09	2452	A+B	12.89	12.51	-	15.71
03	2422	A+C	12.30	-	12.55	15.44
06	2437	A+C	16.41	-	16.58	19.51
09	2452	A+C	13.05	-	13.52	16.30
03	2422	B+C	-	10.68	11.11	13.91
06	2437	B+C	-	15.86	16.19	19.04
09	2452	B+C	-	12.39	13.67	16.09

802.11n (BW 40M, 3Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT16				
		Combination	Chain A	Chain B	Chain C	Total
03	2422	A+B+C	9.13	9.19	9.49	14.04
06	2437	A+B+C	16.14	15.69	16.83	21.02
09	2452	A+B+C	11.12	11.10	12.12	16.24

<5150 MHz ~ 5350 MHz>
802.11a

Channel	Frequency (MHz)	RF Power (dBm)		
		6 Mbps		
		Chain A	Chain B	Chain C
36	5180	15.22	15.30	13.12
48	5240	16.45	15.59	14.39
52	5260	16.24	16.14	16.79
64	5320	14.98	15.15	15.23

802.11n (BW 20M, SISO)

Channel	Frequency (MHz)	RF Power (dBm)		
		HT0		
		Chain A	Chain B	Chain C
36	5180	13.82	13.95	14.55
48	5240	14.06	14.19	14.85
52	5260	14.68	14.48	15.09
64	5320	14.35	14.79	14.98

802.11n (BW 20M, 2Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT8				
		Combination	Chain A	Chain B	Chain C	Total
36	5180	A+B	13.35	13.32	-	16.35
48	5240	A+B	14.03	13.74	-	16.79
52	5260	A+B	16.86	16.83	-	19.86
64	5320	A+B	12.83	13.24	-	16.05
36	5180	A+C	13.80	-	13.66	16.74
48	5240	A+C	13.56	-	13.86	16.72
52	5260	A+C	15.76	-	15.48	18.63
64	5320	A+C	12.69	-	13.68	16.22
36	5180	B+C	-	12.94	14.31	16.69
48	5240	B+C	-	13.03	13.02	16.04
52	5260	B+C	-	15.93	16.54	19.26
64	5320	B+C	-	12.53	13.39	15.99

802.11n (BW 20M, 3Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT16				
		Combination	Chain A	Chain B	Chain C	Total
36	5180	A+B+C	11.60	11.74	12.19	16.62
48	5240	A+B+C	11.87	12.00	12.20	16.80
52	5260	A+B+C	16.83	17.16	17.92	22.10
64	5320	A+B+C	11.79	12.03	13.01	17.08

802.11n (BW 40M, SISO)

Channel	Frequency (MHz)	RF Power (dBm)		
		HT0		
		Chain A	Chain B	Chain C
38	5190	11.63	11.08	10.01
46	5230	12.70	12.48	12.48
54	5270	13.33	14.07	13.67
62	5310	12.77	11.63	12.41

802.11n (BW 40M, 2Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT8				
		Combination	Chain A	Chain B	Chain C	Total
38	5190	A+B	13.63	13.32	-	16.49
46	5230	A+B	13.79	13.35	-	16.59
54	5270	A+B	13.35	13.19	-	16.28
62	5310	A+B	12.87	12.81	-	15.85
38	5190	A+C	13.45	-	13.26	16.37
46	5230	A+C	13.09	-	13.35	16.23
54	5270	A+C	16.55	-	16.44	19.51
62	5310	A+C	12.27	-	11.03	14.70
38	5190	B+C	-	11.76	11.48	14.63
46	5230	B+C	-	14.09	13.75	16.93
54	5270	B+C	-	14.21	14.46	17.35
62	5310	B+C	-	10.97	11.25	14.12

802.11n (BW 40M, 3Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT16				
		Combination	Chain A	Chain B	Chain C	Total
38	5190	A+B+C	10.38	10.22	9.70	14.88
46	5230	A+B+C	11.98	11.94	11.89	16.71
54	5270	A+B+C	14.13	14.45	14.37	19.09
62	5310	A+B+C	9.23	9.14	10.00	14.25

<5470 MHz ~ 5725 MHz>

802.11a

Channel	Frequency (MHz)	RF Power (dBm)		
		6 Mbps		
		Chain A	Chain B	Chain C
100	5500	16.71	16.25	16.50
120	5600	17.09	16.70	17.49
140	5700	**17.51**	17.29	16.84

802.11n (BW 20M, SISO)

Channel	Frequency (MHz)	RF Power (dBm)		
		HT0		
		Chain A	Chain B	Chain C
100	5500	12.86	13.55	14.21
120	5600	12.92	13.29	13.74
140	5700	13.43	15.46	15.22

802.11n (BW 20M, 2Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT8				
		Combination	Chain A	Chain B	Chain C	Total
100	5500	A+B	13.00	13.39	-	16.21
120	5600	A+B	16.25	16.48	-	19.38
140	5700	A+B	16.98	17.07	-	20.04
100	5500	A+C	12.44	-	13.06	15.77
120	5600	A+C	15.53	-	16.25	18.92
140	5700	A+C	16.09	-	15.98	19.05
100	5500	B+C	-	12.61	12.91	15.77
120	5600	B+C	-	15.65	16.78	19.26
140	5700	B+C	-	16.16	16.21	19.20

802.11n (BW 20M, 3Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT16				
		Combination	Chain A	Chain B	Chain C	Total
100	5500	A+B+C	12.81	12.64	13.88	17.92
120	5600	A+B+C	15.15	15.41	15.85	20.25
140	5700	A+B+C	17.27	17.06	18.17	22.30

802.11n (BW 40M, SISO)

Channel	Frequency (MHz)	RF Power (dBm)		
		HT0		
		Chain A	Chain B	Chain C
102	5510	13.24	13.18	13.77
118	5590	13.02	12.90	13.38
134	5670	13.03	13.34	13.30

802.11n (BW 40M, 2Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT8				
		Combination	Chain A	Chain B	Chain C	Total
102	5510	A+B	12.17	12.64	-	15.42
118	5590	A+B	13.14	12.65	-	15.91
134	5670	A+B	12.09	12.09	-	15.10
102	5510	A+C	12.32	-	12.13	15.24
118	5590	A+C	15.44	-	15.71	18.59
134	5670	A+C	16.39	-	16.40	19.41
102	5510	B+C	-	11.72	11.95	14.85
118	5590	B+C	-	12.31	12.24	15.29
134	5670	B+C	-	13.40	12.69	16.07

802.11n (BW 40M, 3Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT16				
		Combination	Chain A	Chain B	Chain C	Total
102	5510	A+B+C	9.54	9.46	9.84	14.39
118	5590	A+B+C	12.53	12.57	13.03	17.49
134	5670	A+B+C	13.49	12.99	13.02	17.94

<5725 MHz ~ 5850 MHz>

802.11a

Channel	Frequency (MHz)	RF Power (dBm)		
		6 Mbps		
		Chain A	Chain B	Chain C
149	5745	15.54	16.01	15.75
157	5785	15.62	16.03	15.81
165	5825	15.91	15.68	16.17

802.11n (BW 20M, SISO)

Channel	Frequency (MHz)	RF Power (dBm)		
		HT0		
		Chain A	Chain B	Chain C
149	5745	15.85	16.16	15.94
157	5785	15.79	15.50	15.23
165	5825	16.28	15.58	15.07

802.11n (BW 20M, 2Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT8				
		Combination	Chain A	Chain B	Chain C	Total
149	5745	A+B	14.03	14.07	-	17.06
157	5785	A+B	14.56	14.21	-	17.40
165	5825	A+B	14.30	14.11	-	17.22
149	5745	A+C	13.86	-	14.16	17.02
157	5785	A+C	14.78	-	14.02	17.43
165	5825	A+C	14.03	-	13.81	16.93
149	5745	B+C	-	16.38	16.48	19.44
157	5785	B+C	-	16.45	16.23	19.35
165	5825	B+C	-	16.46	16.27	19.38

802.11n (BW 20M, 3Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT16				
		Combination	Chain A	Chain B	Chain C	Total
149	5745	A+B+C	13.17	13.77	14.06	18.45
157	5785	A+B+C	14.40	14.43	14.38	19.17
165	5825	A+B+C	14.29	14.27	14.41	19.09

802.11n (BW 40M, SISO)

Channel	Frequency (MHz)	RF Power (dBm)		
		HT0		
		Chain A	Chain B	Chain C
151	5755	14.97	15.11	14.43
159	5795	14.73	14.31	14.10

802.11n (BW 40M, 2Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT8				
		Combination	Chain A	Chain B	Chain C	Total
151	5755	A+B	15.35	14.99	-	18.18
159	5795	A+B	15.14	15.20	-	18.18
151	5755	A+C	13.78	-	13.75	16.78
159	5795	A+C	14.76	-	14.44	17.61
151	5755	B+C	-	13.61	13.78	16.71
159	5795	B+C	-	13.75	13.54	16.66

802.11n (BW 40M, 3Tx)

Channel	Frequency (MHz)	RF Power (dBm)				
		HT16				
		Combination	Chain A	Chain B	Chain C	Total
151	5755	A+B+C	13.57	13.92	14.01	18.61
159	5795	A+B+C	13.47	13.57	14.05	18.48

Remark:

1. The EUT is programmed to transmit signal continuously for all testing.
2. SISO stands for only one chain transmit signals.
   2Tx stands for two chains transmit signals at the same time.
   3Tx stands for three chains transmit signals at the same time.

11.2 Test Records for Body SAR Test

Sample	Position	Band	Ch.	Freq. (MHz)	Modulation Type	Chain	Measured 1g SAR (W/kg)	Limit (W/kg)	Result
A	Top Side with 0cm Gap	802.11b	6	2437	DSSS	A	0.000756	2.0	Pass
A	Top Side with 0cm Gap	802.11b	6	2437	DSSS	B	0.247	2.0	Pass
A	Left Side with 0cm Gap	802.11b	6	2437	DSSS	C	0.039	2.0	Pass
A	Top Side with 0cm Gap	802.11g	6	2437	OFDM	B	0.043	2.0	Pass
A	Top Side with 0cm Gap	802.11n (BW20M)	6	2437	OFDM	ABC	0.015	2.0	Pass
A	Left Side with 0cm Gap	802.11n (BW20M)	6	2437	OFDM	ABC	0.00214	2.0	Pass
A	Top Side with 0cm Gap	802.11n (BW40M)	6	2437	OFDM	ABC	0.034	2.0	Pass
Note: The worse mode is 802.11b chosen from above pre-scan.									
A	Top Side with 0cm Gap	802.11b	1	2412	DSSS	B	0.326	2.0	Pass
A	Top Side with 0cm Gap	802.11b	11	2462	DSSS	B	0.264	2.0	Pass
Note: From the above pre-scan, the worst SAR is 802.11b ch1, which is used for all other test positions.									
A	NB Bottom touch with 0cm Gap	802.11b	1	2412	DSSS	C	0.00266	2.0	Pass
A	Bottom Side with 0cm Gap	802.11b	1	2412	DSSS	A	0.000632	2.0	Pass
A	Bottom Side with 0cm Gap	802.11b	1	2412	DSSS	B	0.017	2.0	Pass
A	Bottom Side with 0cm Gap	802.11b	1	2412	DSSS	C	0.00297	2.0	Pass
A	Rear Side with 0cm Gap	802.11b	1	2412	DSSS	C	0.011	2.0	Pass
A	Right Side with 0cm Gap	802.11b	1	2412	DSSS	A	0.00176	2.0	Pass
B	**Top Side with 0cm Gap**	**802.11b**	**1**	**2412**	**DSSS**	**B**	**0.412**	**2.0**	**Pass**

Sample	Position	Band	Ch.	Freq. (MHz)	Modulation Type	Chain	Measured 1g SAR (W/kg)	Limit (W/kg)	Result
A	Top Side with 0cm Gap	802.11a	48	5240	OFDM	A	0.012	2.0	Pass
A	Top Side with 0cm Gap	802.11a	48	5240	OFDM	B	0.142	2.0	Pass
A	Left Side with 0cm Gap	802.11a	48	5240	OFDM	C	0.234	2.0	Pass
A	Top Side with 0cm Gap	802.11a	124	5620	OFDM	A	0.016	2.0	Pass
A	Top Side with 0cm Gap	802.11a	124	5620	OFDM	B	0.069	2.0	Pass
A	**Left Side with 0cm Gap**	**802.11a**	**124**	**5620**	**OFDM**	**C**	**0.286**	**2.0**	**Pass**
A	Top Side with 0cm Gap	802.11a	157	5785	OFDM	A	0.017	2.0	Pass
A	Top Side with 0cm Gap	802.11a	157	5785	OFDM	B	0.053	2.0	Pass
A	Left Side with 0cm Gap	802.11a	157	5785	OFDM	C	0.157	2.0	Pass
A	Left Side with 0cm Gap	802.11n (BW20M)	48	5240	OFDM	ABC	0.149	2.0	Pass
A	Left Side with 0cm Gap	802.11n (BW20M)	124	5620	OFDM	ABC	0.125	2.0	Pass
A	Left Side with 0cm Gap	802.11n (BW20M)	157	5785	OFDM	ABC	0.074	2.0	Pass
A	Left Side with 0cm Gap	802.11n (BW40M)	46	5230	OFDM	ABC	0.123	2.0	Pass
Note: The worse mode is 802.11a chosen from above pre-scan.									
A	Left Side with 0cm Gap	802.11a	36	5180	OFDM	C	0.131	2.0	Pass
A	**Left Side with 0cm Gap**	**802.11a**	**52**	**5260**	**OFDM**	**C**	**0.326**	**2.0**	**Pass**
A	Left Side with 0cm Gap	802.11a	64	5320	OFDM	C	0.232	2.0	Pass
A	Left Side with 0cm Gap	802.11a	104	5520	OFDM	C	0.197	2.0	Pass
A	Left Side with 0cm Gap	802.11a	116	5580	OFDM	C	0.24	2.0	Pass
A	Left Side with 0cm Gap	802.11a	136	5680	OFDM	C	0.254	2.0	Pass
A	**Left Side with 0cm Gap**	**802.11a**	**149**	**5745**	**OFDM**	**C**	**0.177**	**2.0**	**Pass**
A	Left Side with 0cm Gap	802.11a	165	5825	OFDM	C	0.148	2.0	Pass
Note: From the above pre-scan, the worst SAR is 802.11a ch52, which is used for all other test positions.									
A	NB Bottom with 0cm Gap	802.11a	52	5260	OFDM	C	0.02	2.0	Pass
A	Bottom with 0cm Gap	802.11a	52	5260	OFDM	A	0.018	2.0	Pass
A	Bottom with 0cm Gap	802.11a	52	5260	OFDM	B	0.018	2.0	Pass
A	Bottom with 0cm Gap	802.11a	52	5260	OFDM	C	0.017	2.0	Pass
A	Rear Side with 0cm Gap	802.11a	52	5260	OFDM	C	0.014	2.0	Pass
A	Right Side with 0cm Gap	802.11a	52	5260	OFDM	A	0.026	2.0	Pass
B	Left Side with 0cm Gap	802.11a	52	5260	OFDM	C	0.015	2.0	Pass

Remark: Sample A is composed of Panel 1(1200 cd/m2) and Battery 1(7800mAh).
Sample B is composed of Panel 2(500 cd/m2) and Battery 2(5200mAh).

Test Engineer：Gordon Lin, Jason Wang, Eric Huang and Robert Liu

12. Reference

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

[2] IEEE Std. P1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, April 21, 2003.

[3] Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01), “Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to RF Emissions”, June 2001

[4] IEEE Std. C95.1-1999, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, 1999

[5] Robert J. Renka, “Multivariate Interpolation Of Large Sets Of Scattered Data”, University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148

[6] DASY4 System Handbook

[7] KDB 248227 r1.2 SAR Measurement Procedures for 802.11abg Transmitters

[8] KDB 447498 D01 v03r02 Mobile and Portable Device RF Exposure Procedures

Appendix A - System Performance Check Data

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/9

System Check_Body_2450MHz_081209

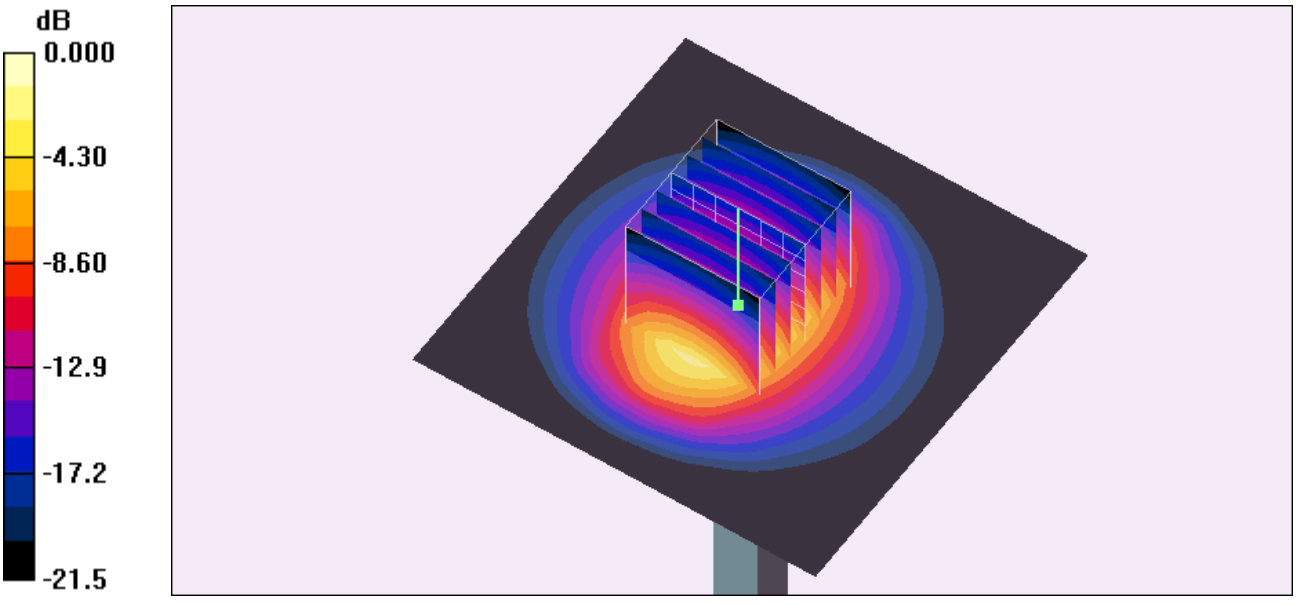
DUT: Dipole 2450 MHz

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.99 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3
Ambient Temperature：22.7 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: ET3DV6 - SN1787; ConvF(3.79, 3.79, 3.79); Calibrated: 2008/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 6.08 mW/g

Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.4 V/m; Power Drift = 0.050 dB
Peak SAR (extrapolated) = 12.3 W/kg
SAR(1 g) = 5.33 mW/g; SAR(10 g) = 2.45 mW/g
Maximum value of SAR (measured) = 5.94 mW/g



0 dB = 5.94mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/11

System Check_Body_5200MHz_081211

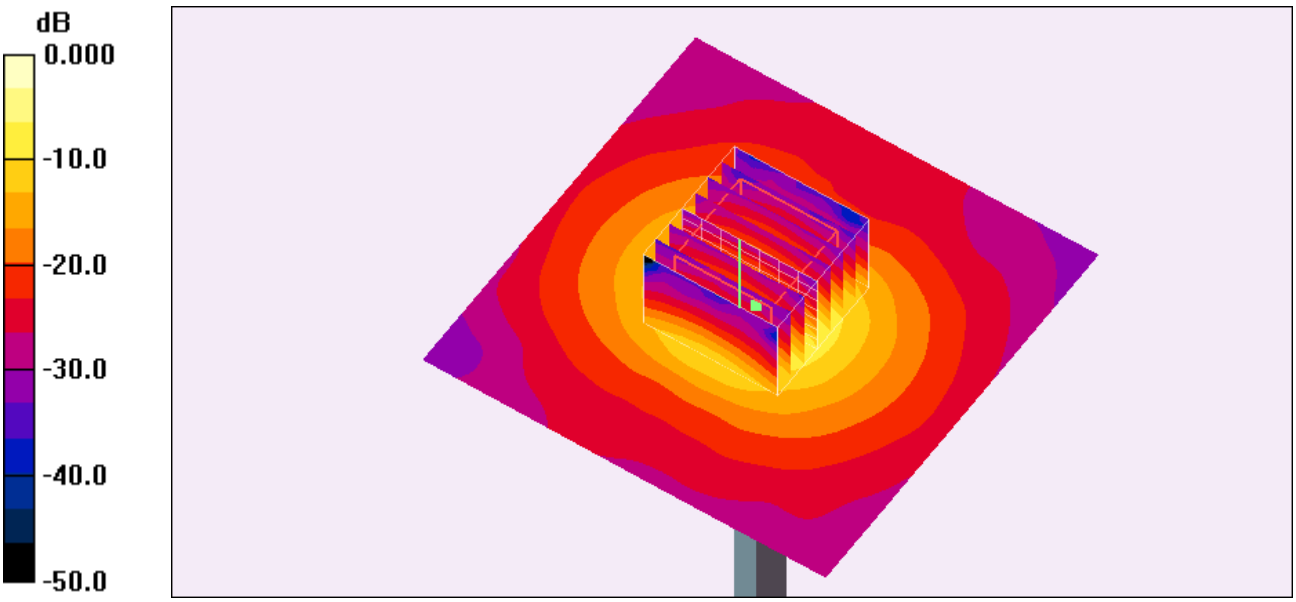
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5200 MHz; σ = 5.33 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.3 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.34, 4.34, 4.34); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2008/5/21
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 13.1 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 53.1 V/m; Power Drift = 0.098 dB
Peak SAR (extrapolated) = 30.4 W/kg
SAR(1 g) = 7.68 mW/g; SAR(10 g) = 2.14 mW/g
Maximum value of SAR (measured) = 12.9 mW/g



0 dB = 12.9mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/12

System Check_Body_5200MHz_081212

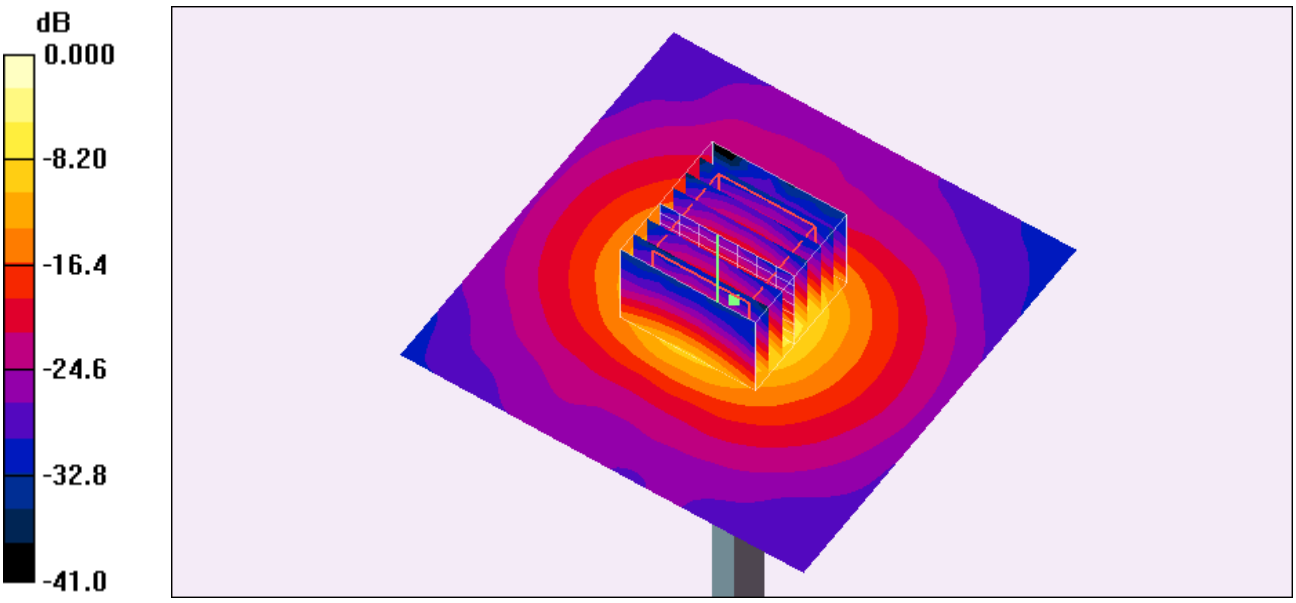
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5200 MHz; σ = 5.33 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.3 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.34, 4.34, 4.34); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2008/5/21
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 12.7 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 52.2 V/m; Power Drift = 0.095 dB
Peak SAR (extrapolated) = 29.9 W/kg
SAR(1 g) = 7.46 mW/g; SAR(10 g) = 2.07 mW/g
Maximum value of SAR (measured) = 12.5 mW/g



0 dB = 12.5mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/13

System Check_Body_5200MHz_081213

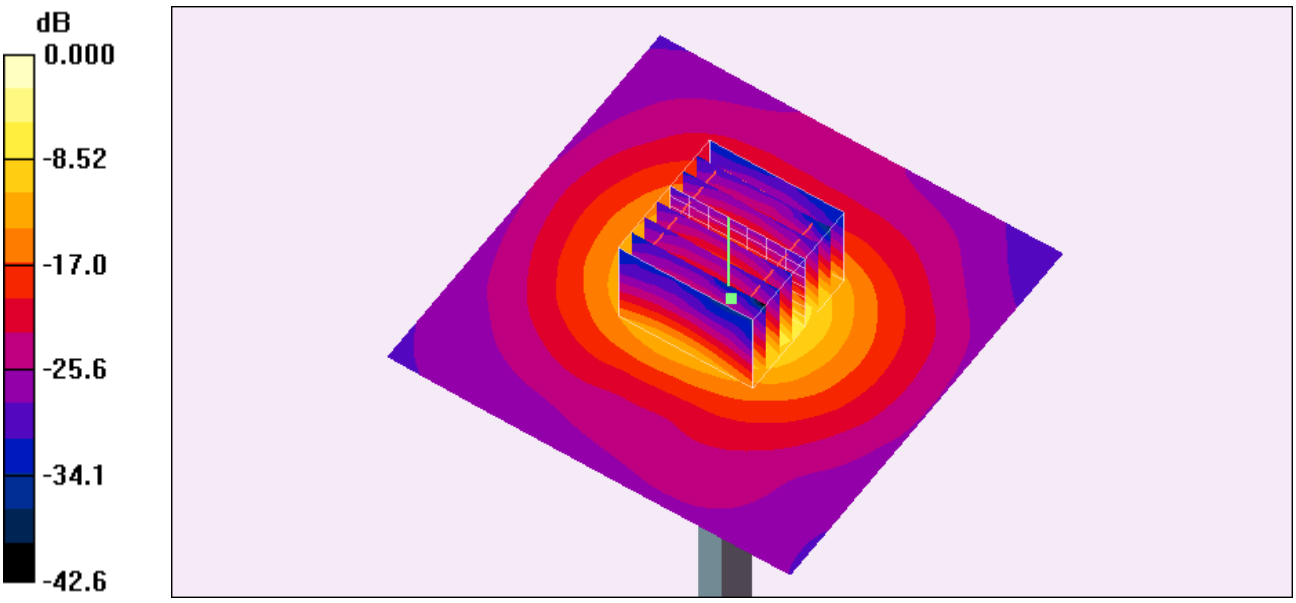
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5200 MHz; σ = 5.33 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.34, 4.34, 4.34); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.0 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 53.7 V/m; Power Drift = -0.103 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 8.23 mW/g; SAR(10 g) = 2.34 mW/g
Maximum value of SAR (measured) = 14.0 mW/g



0 dB = 14.0mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/11

System Check_Body_5500MHz_081211

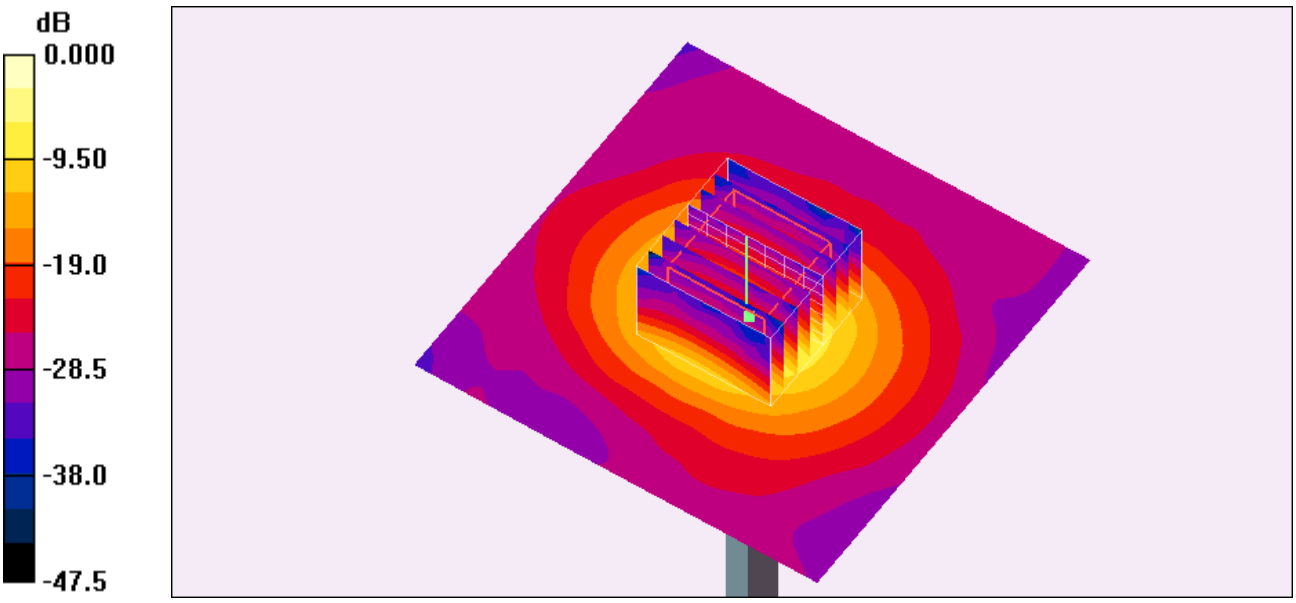
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5500 MHz; σ = 5.74 mho/m; ε_r = 48.1; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(3.98, 3.98, 3.98); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2008/5/21
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 14.3 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 54.1 V/m; Power Drift = 0.002 dB
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 8.23 mW/g; SAR(10 g) = 2.3 mW/g
Maximum value of SAR (measured) = 13.8 mW/g



0 dB = 13.8mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/12

System Check_Body_5500MHz_081212

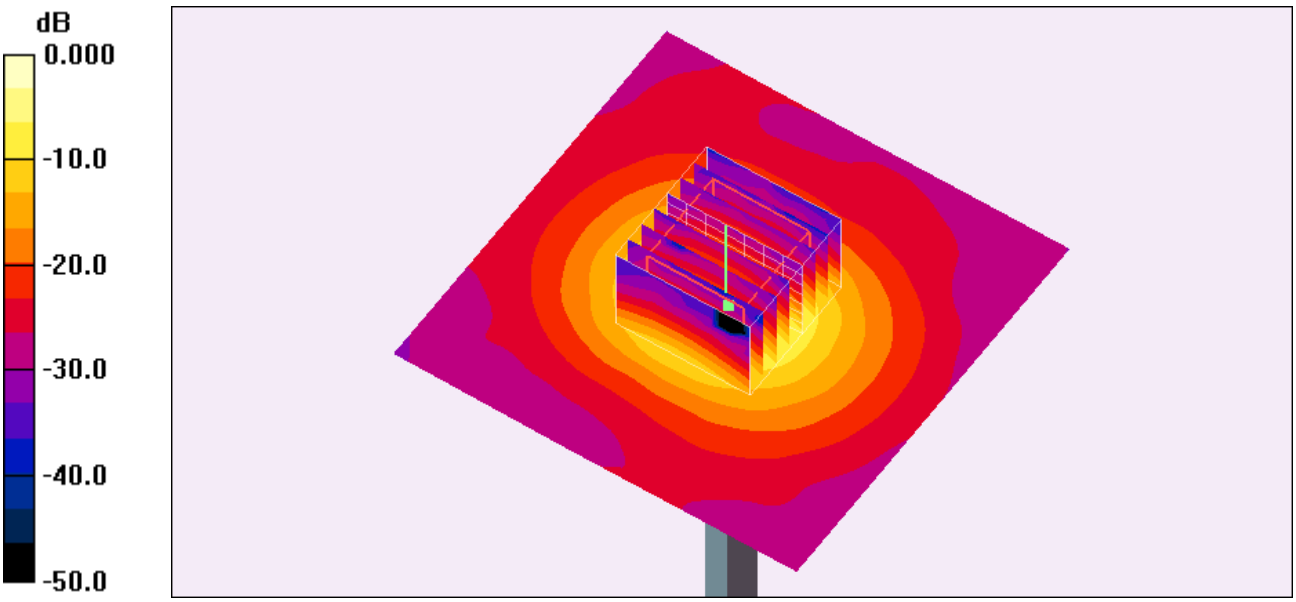
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5500 MHz; σ = 5.74 mho/m; ε_r = 48.1; ρ = 1000 kg/m^3
Ambient Temperature：22.7 ℃; Liquid Temperature：21.3 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(3.98, 3.98, 3.98); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2008/5/21
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 14.2 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 53.4 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 32.7 W/kg
SAR(1 g) = 8.07 mW/g; SAR(10 g) = 2.26 mW/g
Maximum value of SAR (measured) = 13.3 mW/g



0 dB = 13.3mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/13

System Check_Body_5500MHz_081213

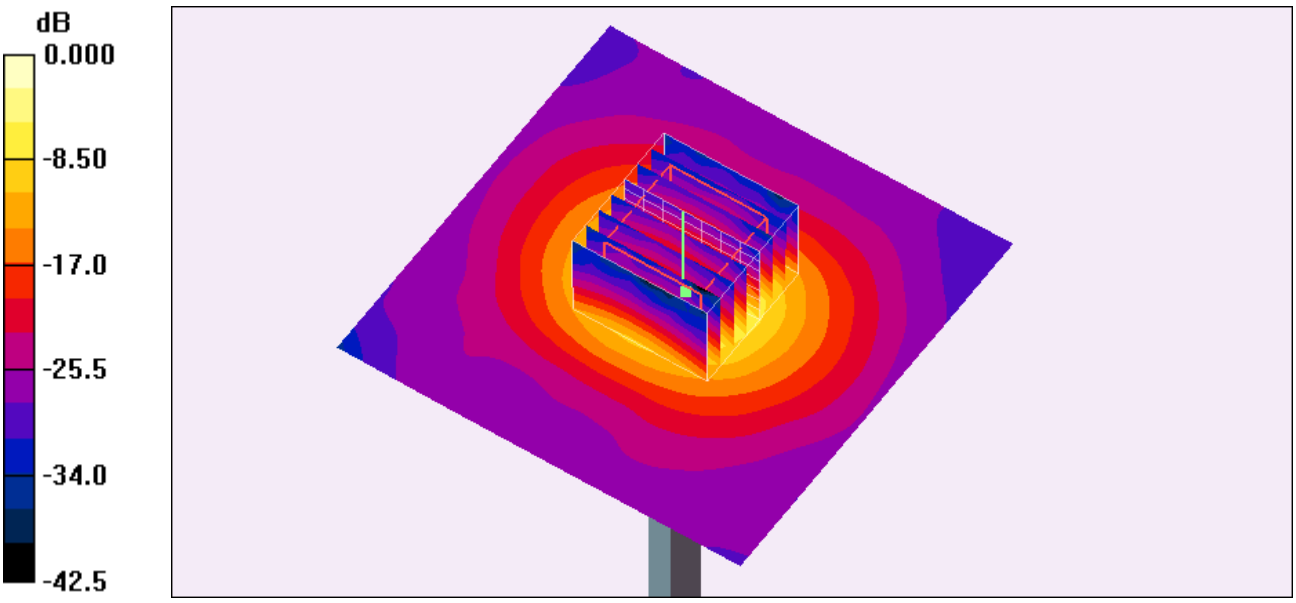
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5500 MHz; σ = 5.74 mho/m; ε_r = 48.1; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(3.98, 3.98, 3.98); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 14.5 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 52.0 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 31.8 W/kg
SAR(1 g) = 8.11 mW/g; SAR(10 g) = 2.28 mW/g
Maximum value of SAR (measured) = 13.5 mW/g



0 dB = 13.5mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/11

System Check_Body_5800MHz_081211

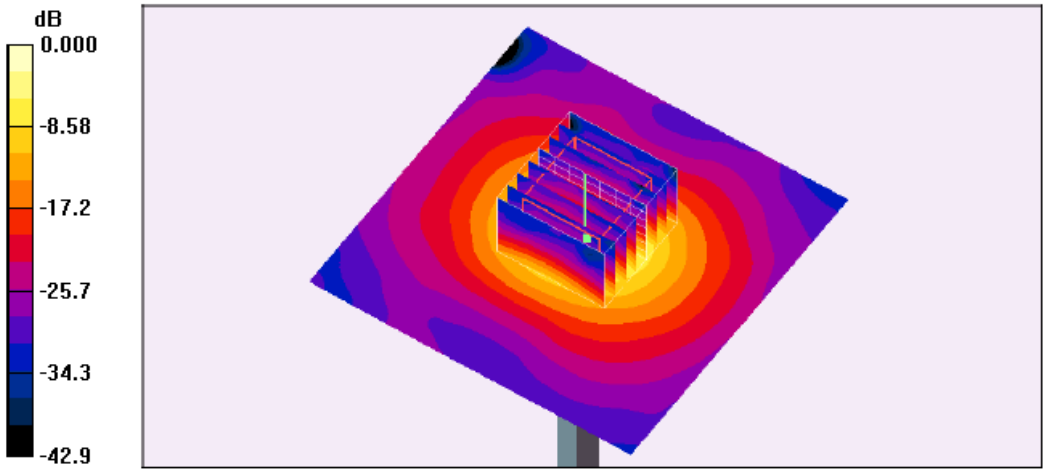
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5800 MHz; σ = 6.11 mho/m; ε_r = 47.4; ρ = 1000 kg/m^3
Ambient Temperature：22.2 ℃; Liquid Temperature：21.3 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2008/5/21
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 12.0 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 45.3 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 31.1 W/kg
SAR(1 g) = 6.9 mW/g; SAR(10 g) = 1.94 mW/g
Maximum value of SAR (measured) = 11.4 mW/g



0 dB = 11.4mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/12

System Check_Body_5800MHz_081212

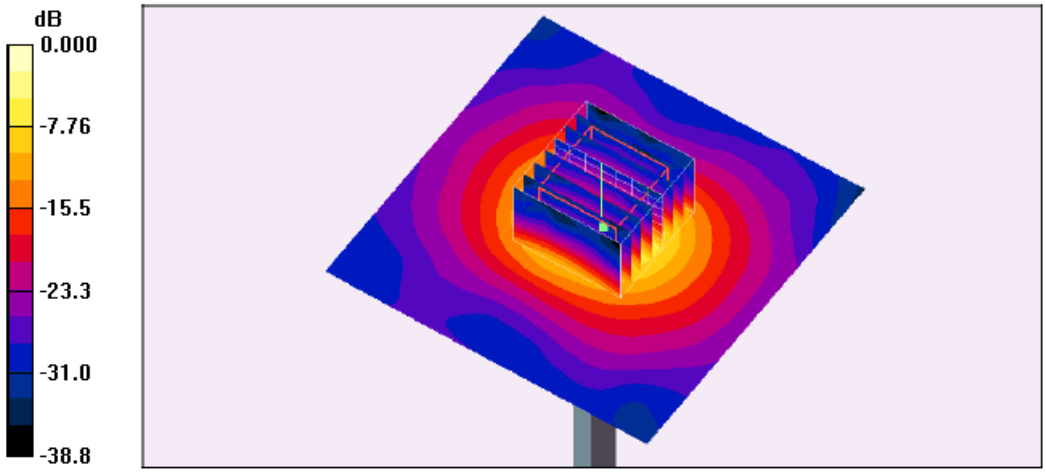
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5800 MHz; σ = 6.11 mho/m; ε_r = 47.4; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.3 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2008/5/21
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 12.5 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 45.9 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 31.3 W/kg
SAR(1 g) = 7.07 mW/g; SAR(10 g) = 1.99 mW/g
Maximum value of SAR (measured) = 11.6 mW/g



0 dB = 11.6mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/13

System Check_Body_5800MHz_081213

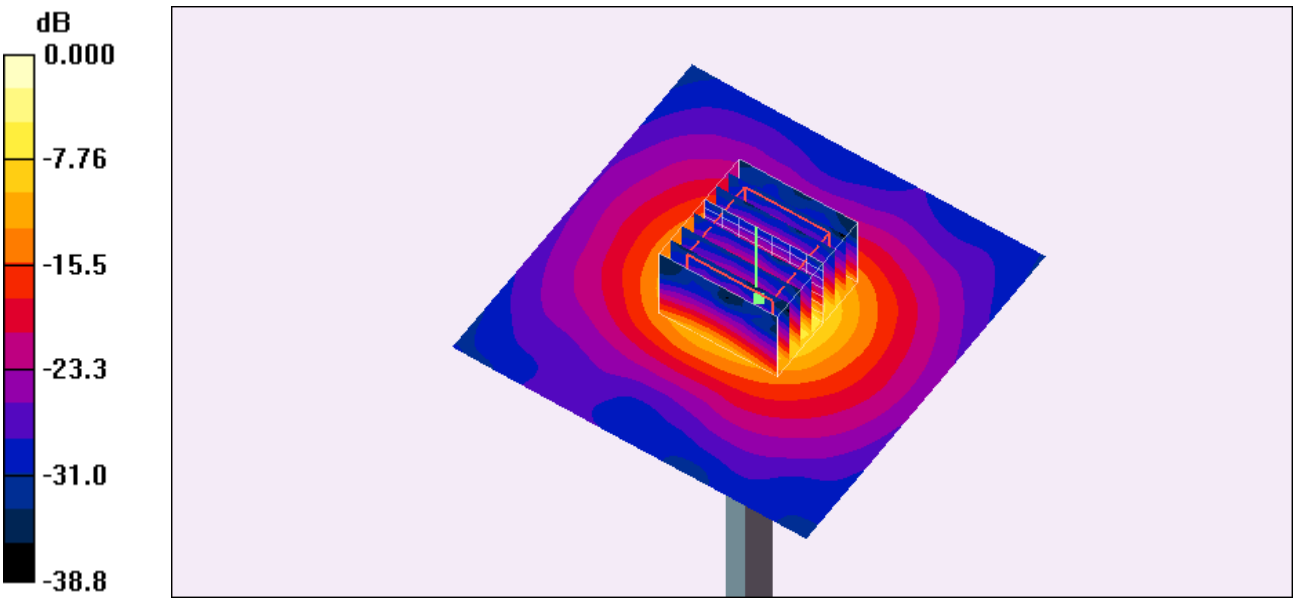
DUT: Dipole 5GHz

Communication System: CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5800 MHz; σ = 6.11 mho/m; ε_r = 47.4; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Pin=100mW/Area Scan (91x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 12.5 mW/g

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 45.8 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 7.1 mW/g; SAR(10 g) = 1.99 mW/g
Maximum value of SAR (measured) = 11.7 mW/g



0 dB = 11.7mW/g

Appendix B - SAR Measurement Data

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/10

Body_802.11b Ch1_Top Side with 0cm Gap_ANT.B_Panel2_5200mA

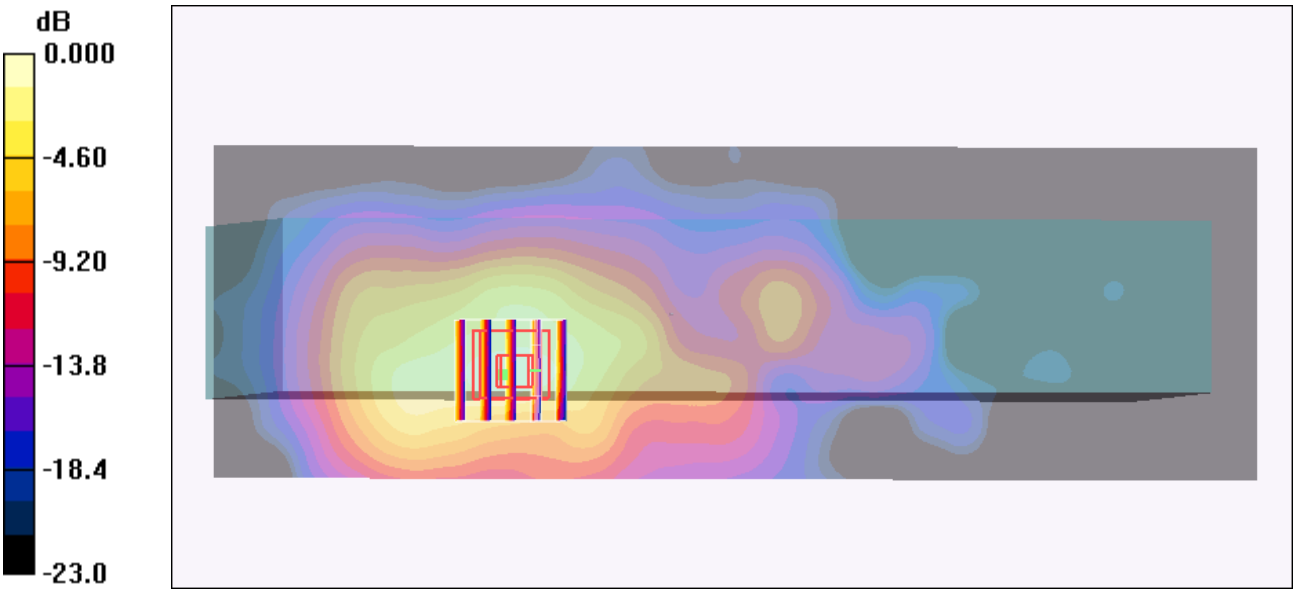
DUT: 8N2104

Communication System: 802.11b ; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2412 MHz; σ = 1.95 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: ET3DV6 - SN1787; ConvF(3.79, 3.79, 3.79); Calibrated: 2008/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch1/Area Scan (71x221x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.459 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.70 V/m; Power Drift = 0.196 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.412 mW/g; SAR(10 g) = 0.200 mW/g
Maximum value of SAR (measured) = 0.458 mW/g



0 dB = 0.458mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/10

Body_802.11b Ch1_Bottom with 0cm Gap_ANT B

DUT: 8N2104

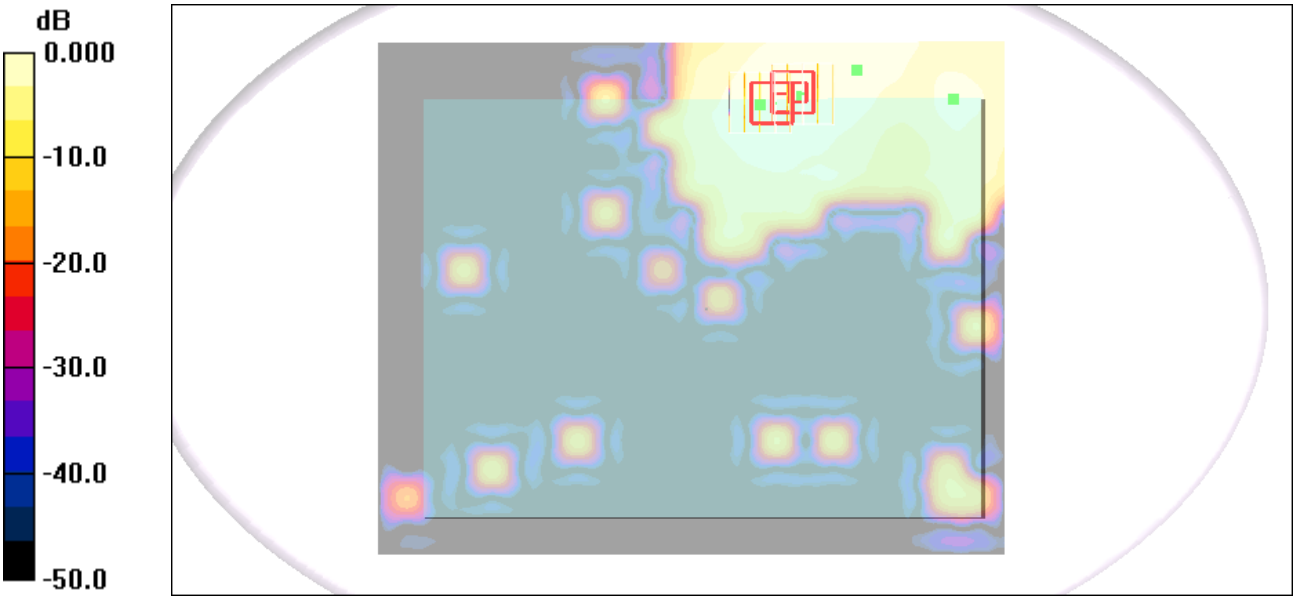
Communication System: 802.11b ; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2412 MHz; σ = 1.95 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: ET3DV6 - SN1787; ConvF(3.79, 3.79, 3.79); Calibrated: 2008/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch1/Area Scan (181x221x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.019 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.348 V/m; Power Drift = 0.161 dB
Peak SAR (extrapolated) = 0.037 W/kg
SAR(1 g) = 0.017 mW/g; SAR(10 g) = 0.010 mW/g
Maximum value of SAR (measured) = 0.019 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.348 V/m; Power Drift = 0.161 dB
Peak SAR (extrapolated) = 0.031 W/kg
SAR(1 g) = 0.016 mW/g; SAR(10 g) = 0.00964 mW/g
Maximum value of SAR (measured) = 0.018 mW/g



0 dB = 0.018mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/9

Body_802.11b Ch1_Rear Side with 0cm Gap_ANT.C

DUT: 8N2104

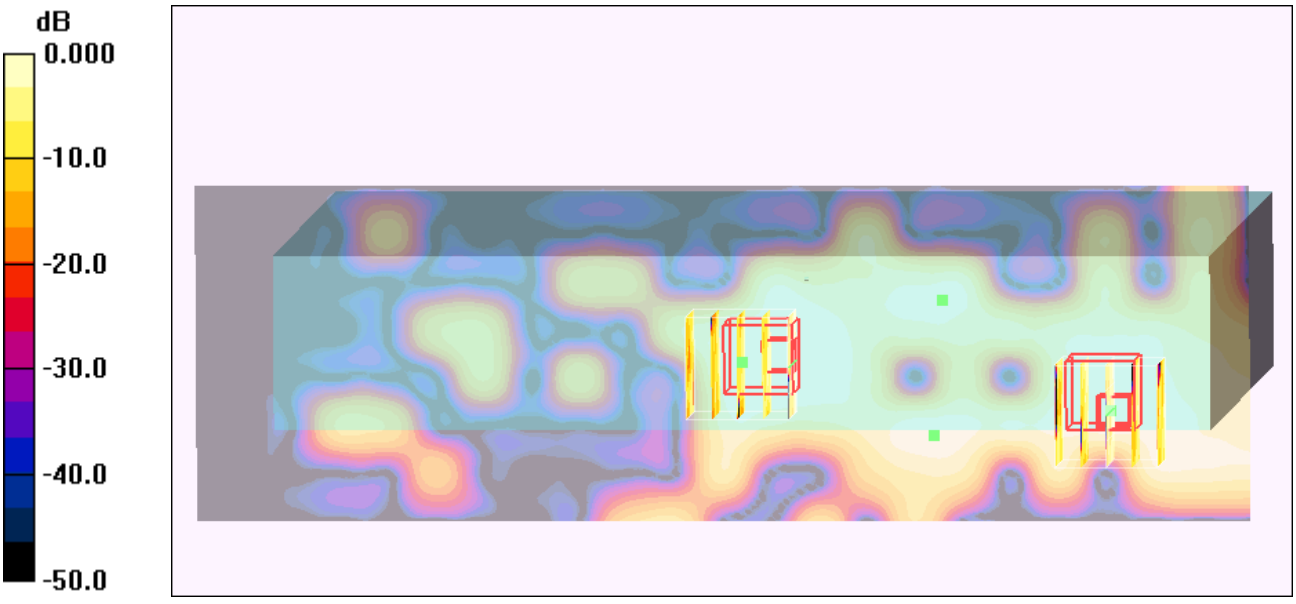
Communication System: 802.11b ; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2412 MHz; σ = 1.95 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: ET3DV6 - SN1787; ConvF(3.79, 3.79, 3.79); Calibrated: 2008/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch1/Area Scan (71x221x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.013 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.97 V/m; Power Drift = -0.153 dB
Peak SAR (extrapolated) = 0.033 W/kg
SAR(1 g) = 0.011 mW/g; SAR(10 g) = 0.00445 mW/g
Maximum value of SAR (measured) = 0.012 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.97 V/m; Power Drift = -0.153 dB
Peak SAR (extrapolated) = 0.014 W/kg
SAR(1 g) = 0.00713 mW/g; SAR(10 g) = 0.00365 mW/g
Maximum value of SAR (measured) = 0.009 mW/g



0 dB = 0.009mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/9

Body_802.11b Ch1_Right Side with 0cm Gap_ANT.A

DUT: 8N2104

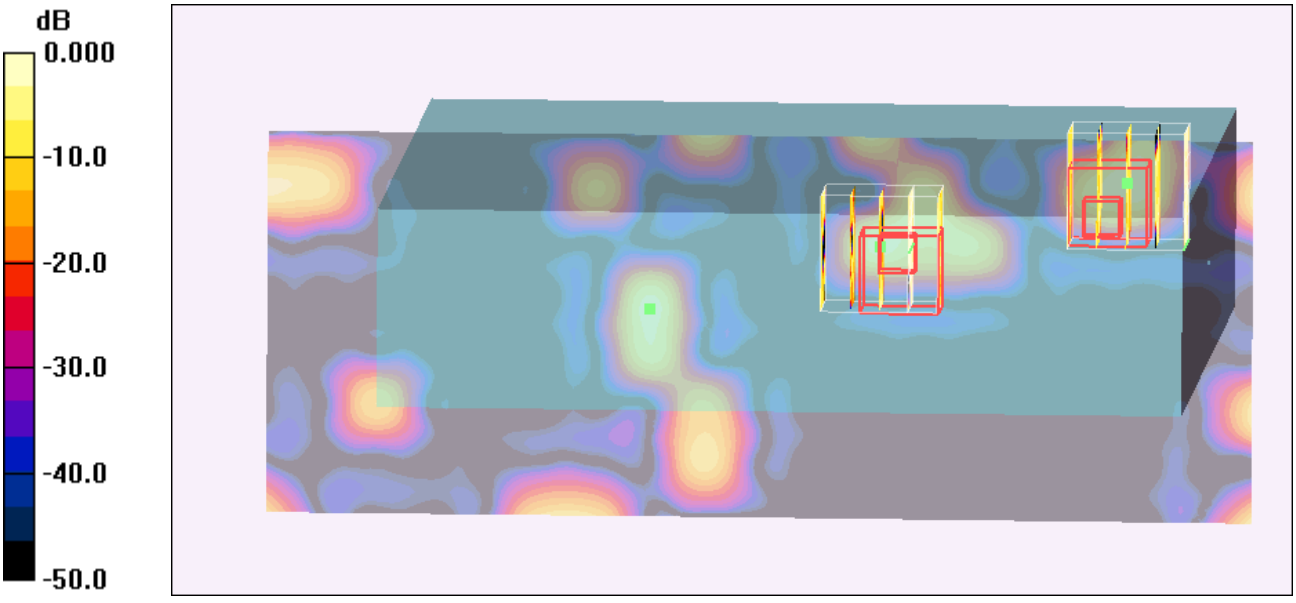
Communication System: 802.11b ; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2412 MHz; σ = 1.95 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Ambient Temperature：22.9 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: ET3DV6 - SN1787; ConvF(3.79, 3.79, 3.79); Calibrated: 2008/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch1/Area Scan (71x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.003 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.298 V/m; Power Drift = 0.152 dB
Peak SAR (extrapolated) = 0.007 W/kg
SAR(1 g) = 0.00176 mW/g; SAR(10 g) = 0.000339 mW/g
Maximum value of SAR (measured) = 0.006 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.298 V/m; Power Drift = 0.152 dB
Peak SAR (extrapolated) = 0.007 W/kg
SAR(1 g) = 0.0014 mW/g; SAR(10 g) = 0.000416 mW/g
Maximum value of SAR (measured) = 0.007 mW/g



0 dB = 0.006mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/9

Body_802.11b Ch6_Left Side with 0cm Gap_ANT.C

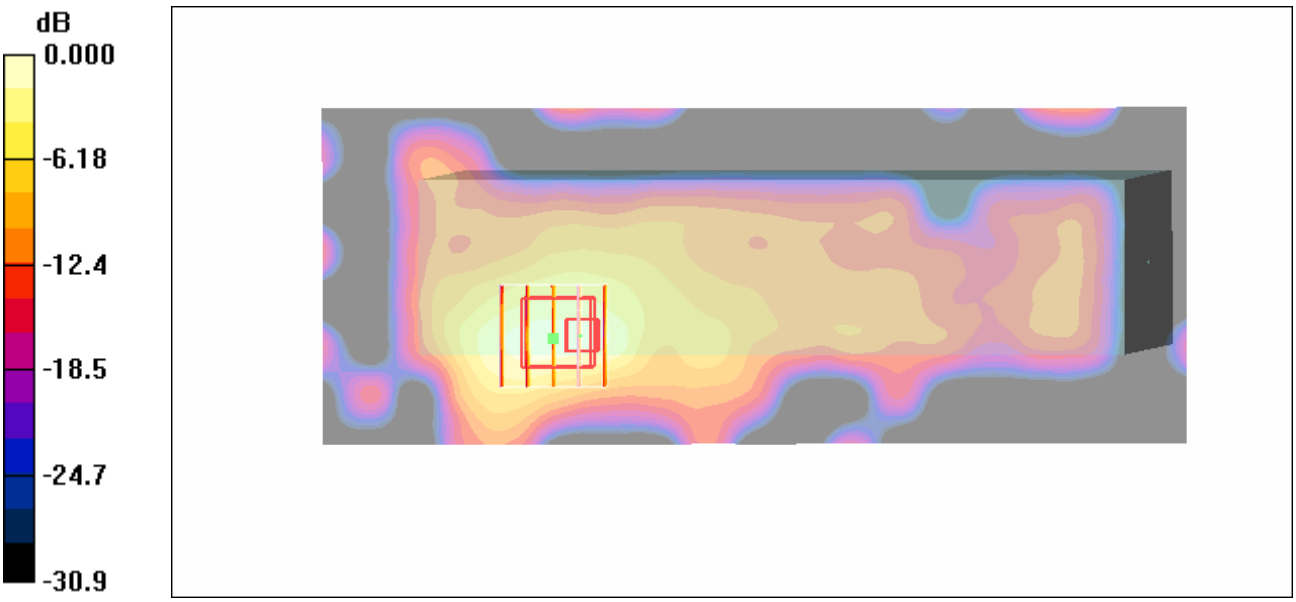
DUT: 8N2104

Communication System: 802.11b ; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2437 MHz; σ = 1.97 mho/m; ε_r = 51.2; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: ET3DV6 - SN1787; ConvF(3.79, 3.79, 3.79); Calibrated: 2008/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch6/Area Scan (71x181x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.041 mW/g

Ch6/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.47 V/m; Power Drift = -0.116 dB
Peak SAR (extrapolated) = 0.093 W/kg
SAR(1 g) = 0.039 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.049 mW/g



0 dB = 0.049mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/10

Body_802.11b Ch1_NB_Bottom with 0cm Gap_ANT.C

DUT: 8N2104

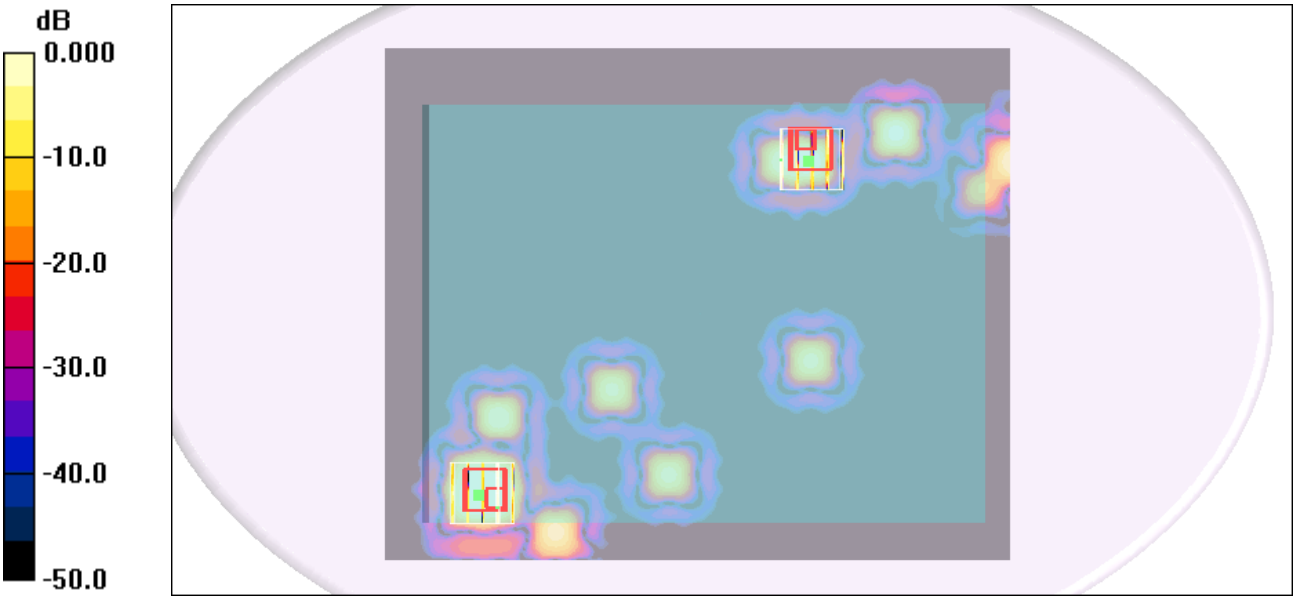
Communication System: 802.11b ; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2412 MHz; σ = 1.95 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: ET3DV6 - SN1787; ConvF(3.79, 3.79, 3.79); Calibrated: 2008/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch1/Area Scan (181x221x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.005 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.393 V/m; Power Drift = 0.140 dB
Peak SAR (extrapolated) = 0.006 W/kg
SAR(1 g) = 0.00266 mW/g; SAR(10 g) = 0.00129 mW/g
Maximum value of SAR (measured) = 0.005 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.393 V/m; Power Drift = 0.140 dB
Peak SAR (extrapolated) = 0.003 W/kg
SAR(1 g) = 0.000156 mW/g; SAR(10 g) = 4.69e-005 mW/g
Maximum value of SAR (measured) = 0.004 mW/g



0 dB = 0.004mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/12

Body_802.11a Ch48_Top Side with 0cm Gap_ANT.B

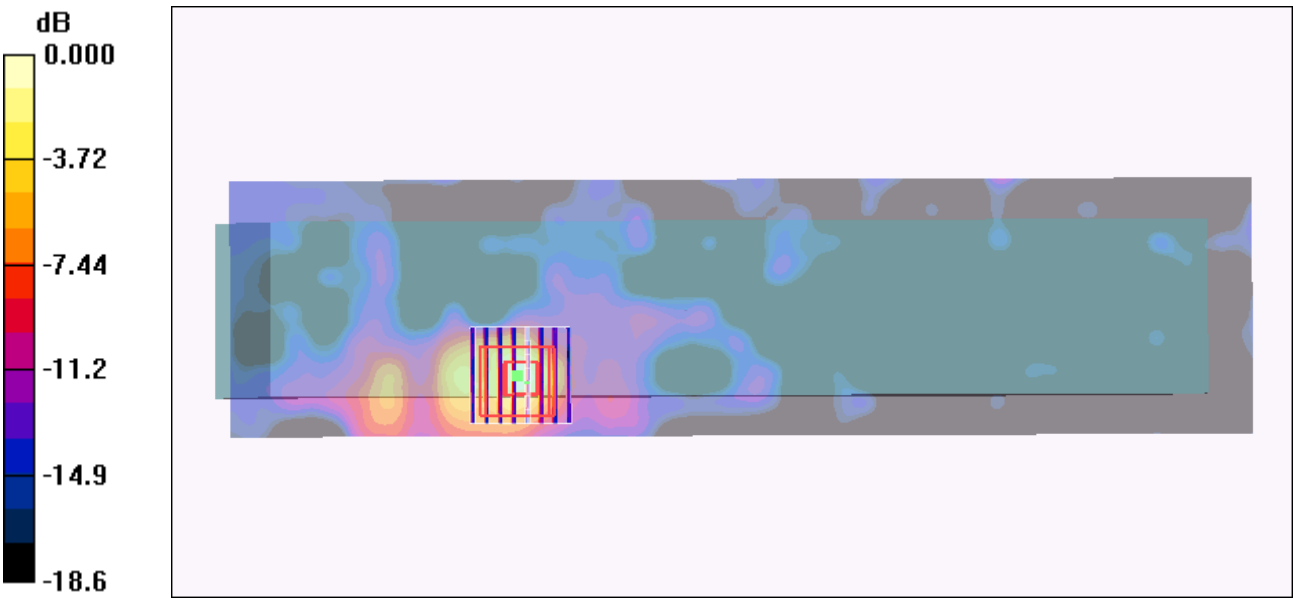
DUT: 8N2104

Communication System: 802.11a; Frequency: 5240 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5240 MHz; σ = 5.39 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.34, 4.34, 4.34); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2008/5/21
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch48/Area Scan (81x321x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.276 mW/g

Ch48/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.34 V/m; Power Drift = 0.127 dB
Peak SAR (extrapolated) = 0.571 W/kg
SAR(1 g) = 0.142 mW/g; SAR(10 g) = 0.050 mW/g
Maximum value of SAR (measured) = 0.274 mW/g



0 dB = 0.274mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/13

Body_802.11a Ch52_Bottom with 0cm Gap_ANT A

DUT: 8N2104

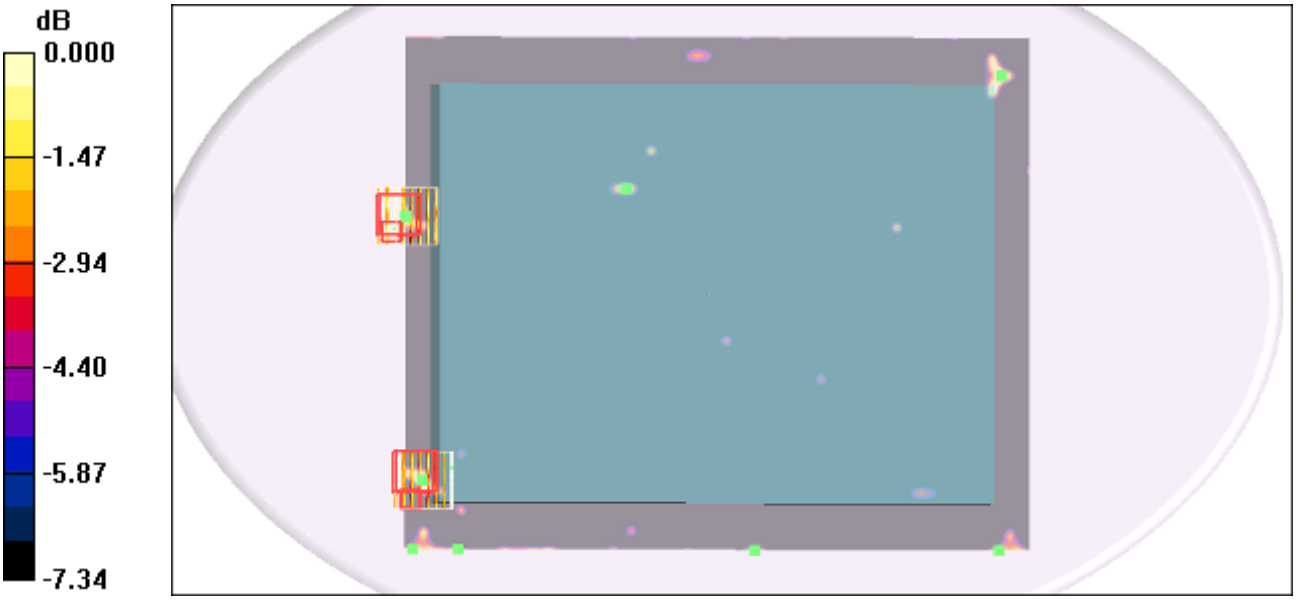
Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5260 MHz; σ = 5.42 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.06, 4.06, 4.06); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch52/Area Scan (271x331x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.033 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.72 V/m; Power Drift = -0.169 dB
Peak SAR (extrapolated) = 0.032 W/kg
SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.015 mW/g
Maximum value of SAR (measured) = 0.028 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.72 V/m; Power Drift = -0.169 dB
Peak SAR (extrapolated) = 0.026 W/kg
SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.012 mW/g
Maximum value of SAR (measured) = 0.021 mW/g



0 dB = 0.021mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/14

Body_802.11a Ch52_Rear Side with 0cm Gap_ANT C

DUT: 8N2104

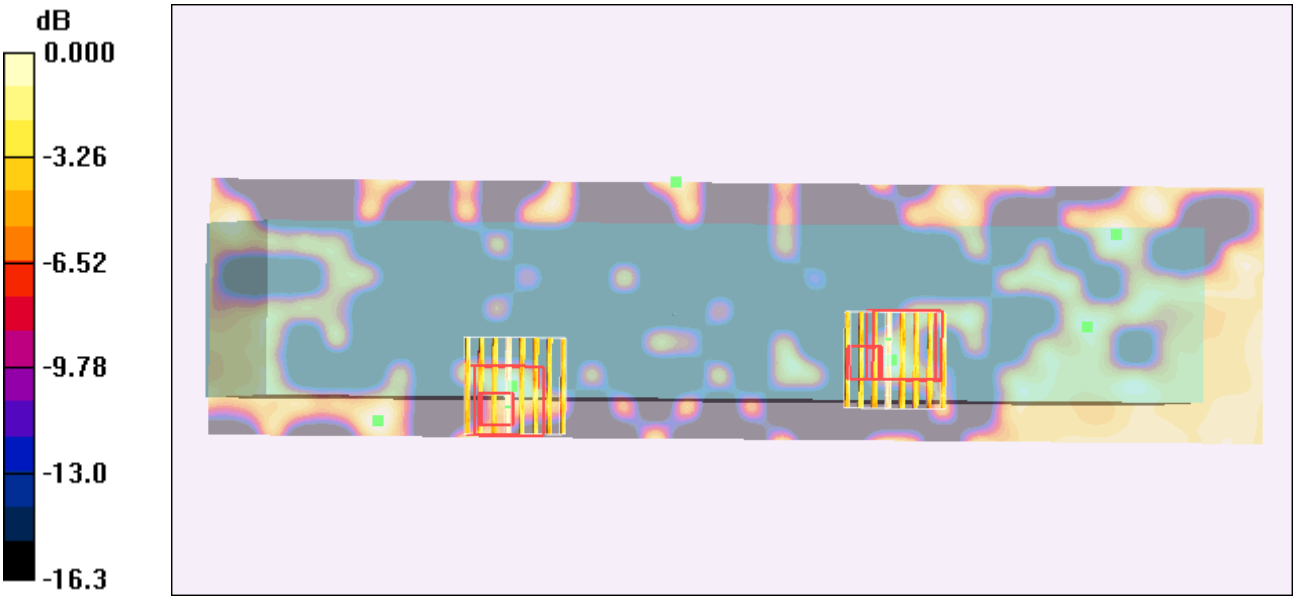
Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5260 MHz; σ = 5.42 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.7 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.06, 4.06, 4.06); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch52/Area Scan (81x331x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.033 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.29 V/m; Power Drift = 0.142 dB
Peak SAR (extrapolated) = 0.022 W/kg
SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.00916 mW/g
Maximum value of SAR (measured) = 0.021 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.29 V/m; Power Drift = 0.142 dB
Peak SAR (extrapolated) = 0.027 W/kg
SAR(1 g) = 0.011 mW/g; SAR(10 g) = 0.006 mW/g
Maximum value of SAR (measured) = 0.022 mW/g



0 dB = 0.022mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/14

Body_802.11a Ch52_Right Side with 0cm Gap_ANT A

DUT: 8N2104

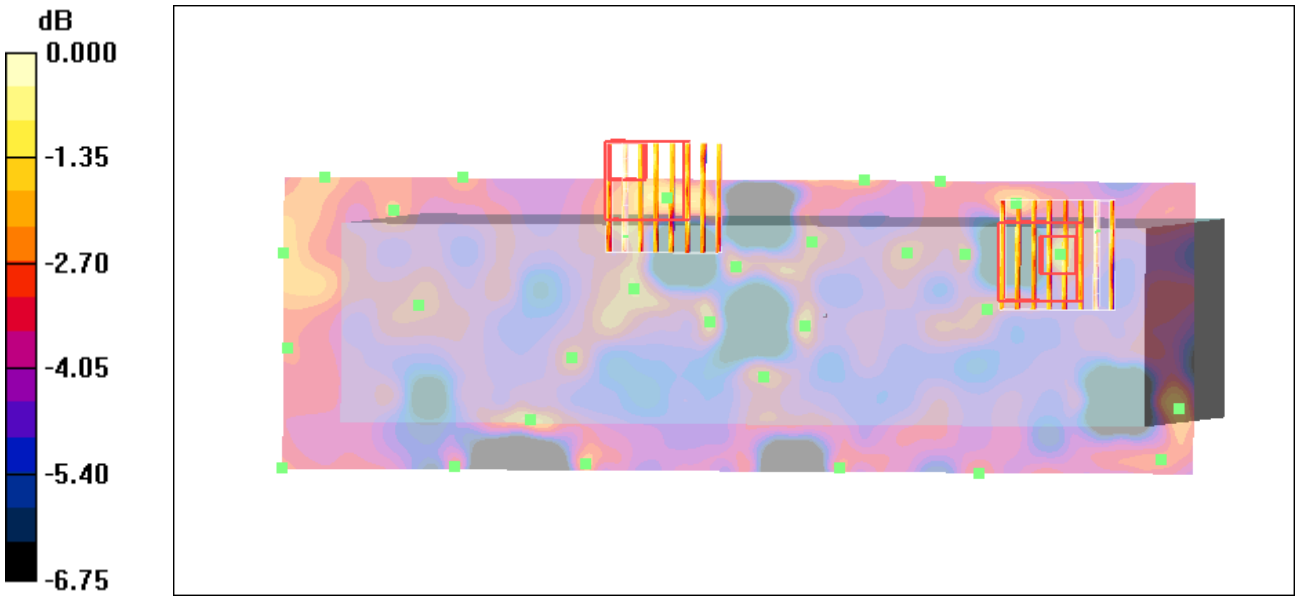
Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5260 MHz; σ = 5.42 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.5 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.06, 4.06, 4.06); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch52/Area Scan (81x251x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.026 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.83 V/m; Power Drift = 0.112 dB
Peak SAR (extrapolated) = 0.034 W/kg
SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.021 mW/g
Maximum value of SAR (measured) = 0.033 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.83 V/m; Power Drift = 0.112 dB
Peak SAR (extrapolated) = 0.033 W/kg
SAR(1 g) = 0.026 mW/g; SAR(10 g) = 0.021 mW/g



0 dB = 0.033mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/13

Body_802.11a Ch52_Left Side with 0cm Gap_ANT C

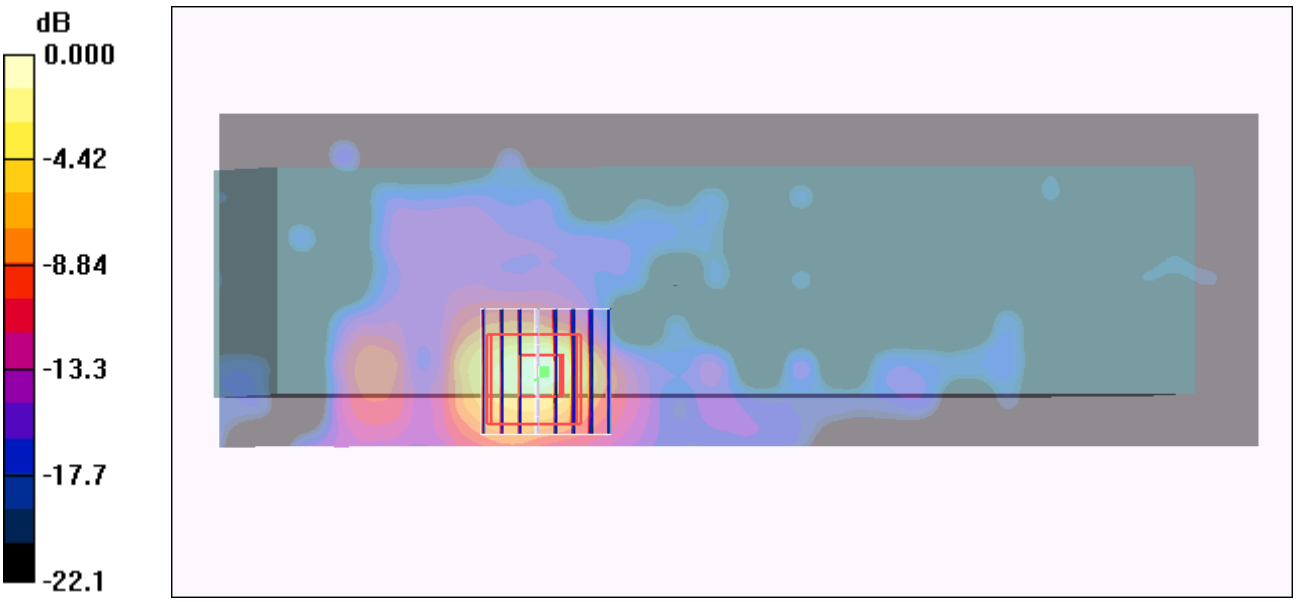
DUT: 8N2104

Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5260 MHz; σ = 5.42 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.06, 4.06, 4.06); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch52/Area Scan (81x251x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.661 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.33 V/m; Power Drift = -0.198 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.326 mW/g; SAR(10 g) = 0.098 mW/g
Maximum value of SAR (measured) = 0.647 mW/g



0 dB = 0.647mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/14

Body_802.11a Ch52_NB_Bottom with 0cm Gap_ANT C

DUT: 8N2104

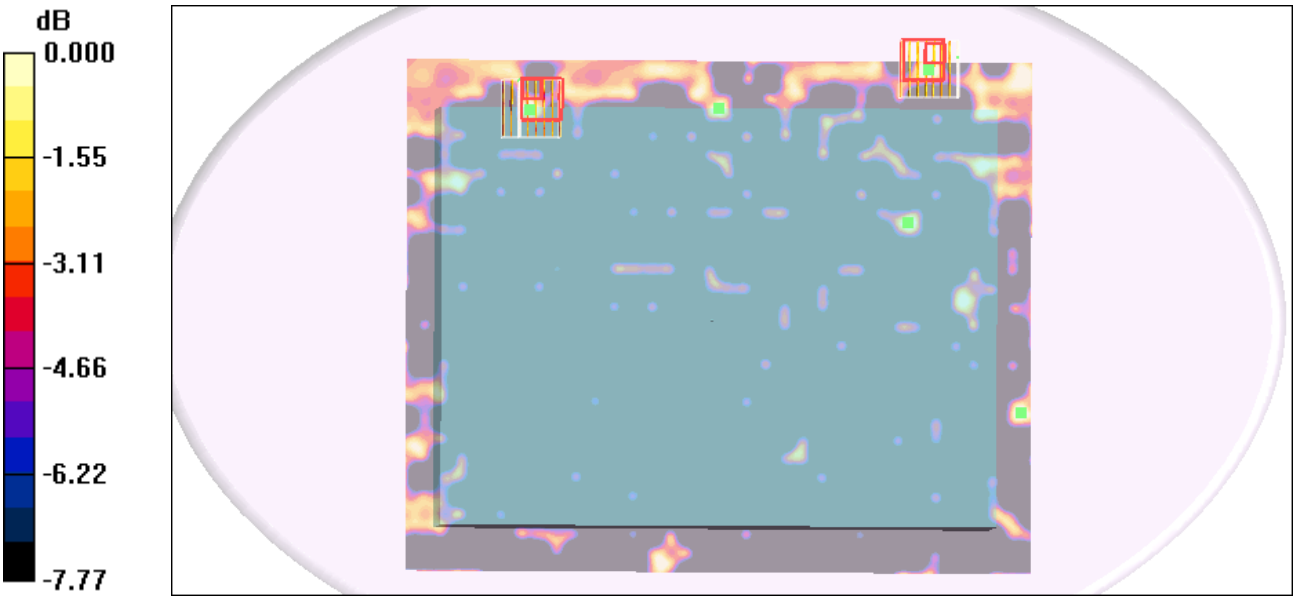
Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5260 MHz; σ = 5.42 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.06, 4.06, 4.06); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch52/Area Scan (271x331x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.055 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.43 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 0.032 W/kg
SAR(1 g) = 0.020 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.032 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.43 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 0.029 W/kg
SAR(1 g) = 0.019 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.029 mW/g



0 dB = 0.029mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/10

Body_802.11b Ch1_Top Side with 0cm Gap_ANT.B_Panel2_5200mA_2D

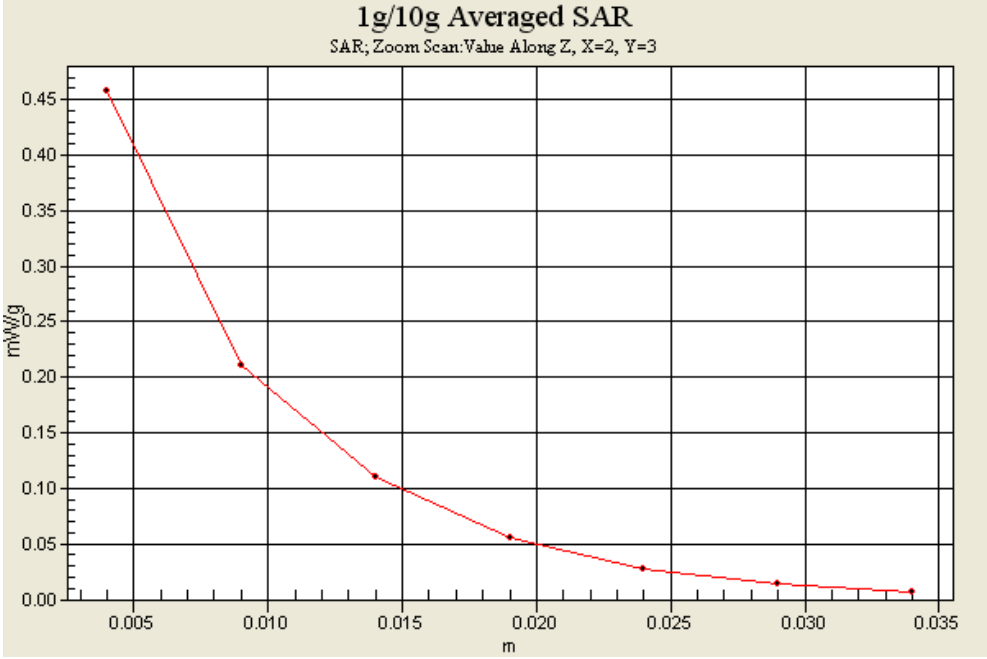
DUT: 8N2104

Communication System: 802.11b ; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: MSL_2450 Medium parameters used: f = 2412 MHz; σ = 1.95 mho/m; ε_r = 51.3; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.7 ℃

DASY4 Configuration:
- Probe: ET3DV6 - SN1787; ConvF(3.79, 3.79, 3.79); Calibrated: 2008/8/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch1/Area Scan (71x221x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.459 mW/g

Ch1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.70 V/m; Power Drift = 0.196 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.412 mW/g; SAR(10 g) = 0.200 mW/g
Maximum value of SAR (measured) = 0.458 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/13

Body_802.11a Ch52_Left Side with 0cm Gap_ANT C_2D

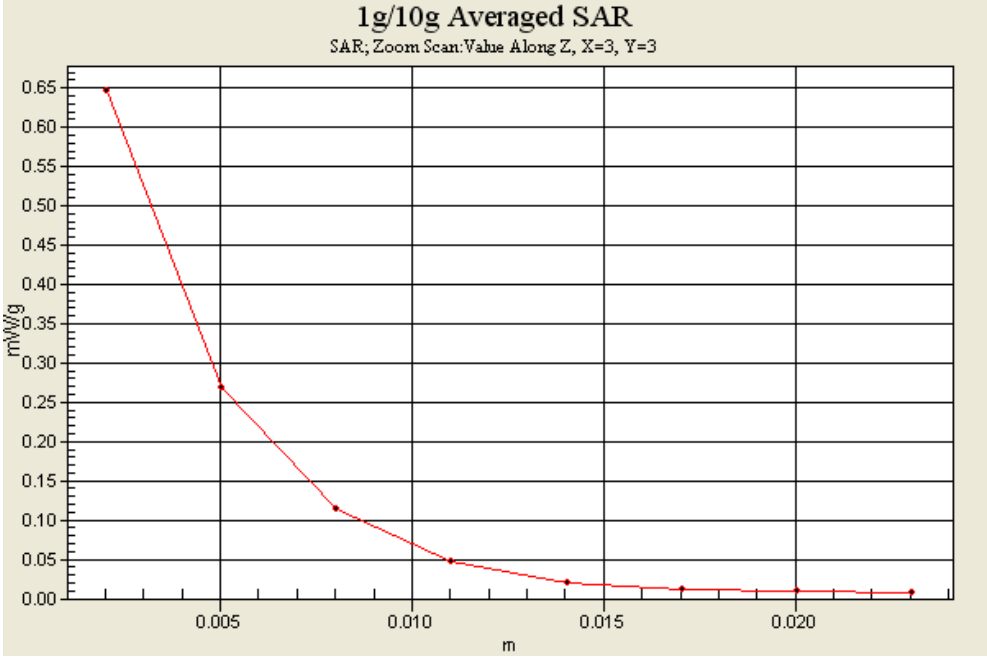
DUT: 8N2104

Communication System: 802.11a; Frequency: 5260 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5260 MHz; σ = 5.42 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3
Ambient Temperature：22.8 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.06, 4.06, 4.06); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch52/Area Scan (81x251x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.661 mW/g

Ch52/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.33 V/m; Power Drift = -0.198 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.326 mW/g; SAR(10 g) = 0.098 mW/g
Maximum value of SAR (measured) = 0.647 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/12

Body_802.11a Ch124_Left Side with 0cm Gap_ANT.C_2D

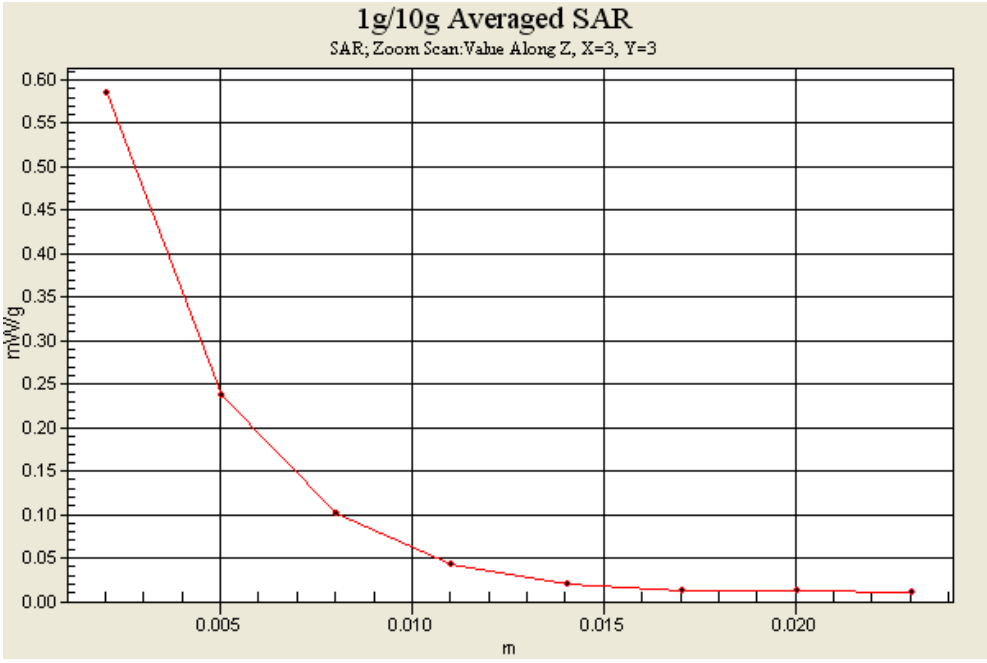
DUT: 8N2104

Communication System: 802.11a; Frequency: 5620 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5620 MHz; σ = 5.87 mho/m; ε_r = 47.7; ρ = 1000 kg/m^3
Ambient Temperature：22.4 ℃; Liquid Temperature：21.3 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.19, 4.19, 4.19); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn679; Calibrated: 2008/5/21
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch124/Area Scan (81x251x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.482 mW/g

Ch124/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.10 V/m; Power Drift = 0.135 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.286 mW/g; SAR(10 g) = 0.092 mW/g
Maximum value of SAR (measured) = 0.585 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2008/12/13

Body_802.11a Ch149_Left Side with 0cm Gap_ANT C_2D

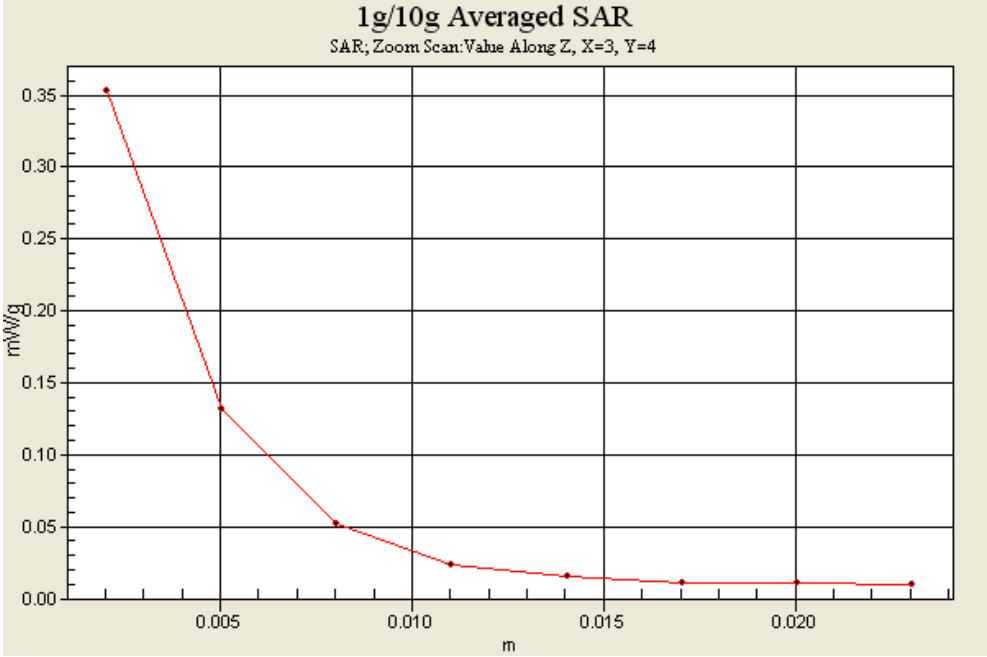
DUT: 8N2104

Communication System: 802.11a; Frequency: 5745 MHz;Duty Cycle: 1:1
Medium: MSL_5000~6000 Medium parameters used: f = 5745 MHz; σ = 6.05 mho/m; ε_r = 47.5; ρ = 1000 kg/m^3
Ambient Temperature：22.6 ℃; Liquid Temperature：21.5 ℃

DASY4 Configuration:
- Probe: EX3DV3 - SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2008/11/12
- Phantom: ELI 4.0_Front; Type: QDOVA001BB; Serial: 1026
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Ch149/Area Scan (81x251x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.370 mW/g

Ch149/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.18 V/m; Power Drift = 0.151 dB
Peak SAR (extrapolated) = 0.881 W/kg
SAR(1 g) = 0.177 mW/g; SAR(10 g) = 0.058 mW/g
Maximum value of SAR (measured) = 0.353 mW/g



Appendix C – Calibration Data

Please refer to the calibration certificates of DASY as below.