A Test Lab Techno Corp.

Changan Lab：No. 140 -1, Changan Street, Bade City, Taoyuan County, Taiwan R.O.C.
Tel：886-271-0188 / Fax：886-271-0190

SAR EVALUATION REPORT

Test Report No.：	**0710FS18**
Applicant：	**Zipit Wireless, Inc.**
FCC ID：	**VGUZWM2**
Trade Name：	**Zipit**
Model Name：	**Z2**
EUT Type：	**Wireless Messenger 2**
Dates of Test：	**Aug. 26-27, 2007**
Test Environment：	**Ambient Temperature： 22 ± 3 ℃**
	Relative Humidity： 40 - 70 ％
Test Specification：	**Standard C95.1-1999**
	IEEE Std. 1528-2003
Max. SAR：	**0.118W/kg 802.11b Body SAR_close 0mm**
	0.074 W/kg 802.11g Body SAR_close 0mm
	0.616W/kg 802.11b Body SAR_open 15mm
	0.455 W/kg 802.11g Body SAR_open 15mm
	0.375W/kg 802.11b Body SAR_close 15mm
	0.296 W/kg 802.11g Body SAR_close 15mm
Test Lab ：	**Changan Lab**

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
3. The measurement report has to be written approval of A Test Lab Techno Corp. It may only be reproduced or published in full.

Country Huang   20071105
Measurement Center Manager

Sam Chuang   20071105
Testing Engineer

Contents

1. _Description of Equipment Under Test (EUT)_

Applicant：	**Zipit Wireless, Inc.** **200 North Main St. Greenville, SC 29601**

Manufacturer：	Inventec Multimedia & Telecom(Tianjin) Co., Ltd
Manufacturer Address：	No. 51 The Ninth Avenue, Tianjin Economic Technological Development Area (TEDA) Tianjin 300457, P.R. China.
FCC ID：	VGUZWM2
Trade Name：	Zipit
Model Name：	Z2
EUT Type：	Wireless Messenger 2
Test Device：	Production Unit
Tx Frequency：	2412 -2462 MHz (Wi-Fi)
Max. RF Conducted Output Power：	802.11b 0.048 W (16.83 dBm) Wi-Fi 802.11g 0.029 W (14.59 dBm) Wi-Fi
Max. SAR Measurement：	0.118W/kg 802.11b Body SAR_close 0mm 0.074 W/kg 802.11g Body SAR_close 0mm 0.616W/kg 802.11b Body SAR_open 15mm 0.455 W/kg 802.11g Body SAR_open 15mm 0.375W/kg 802.11b Body SAR_close 15mm 0.296 W/kg 802.11g Body SAR_close 15mm
Antenna Type：	2.4GHz Cable
Device Category：	Portable
RF Exposure Environment：	General Population / Uncontrolled
Battery Option：	Standard
Application Type：	Certification

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment / general population exposure limits specified in Standard C95.1-1999 and had been tested in accordance with the measurement procedures specified in IEEE Std. 1528-2003.

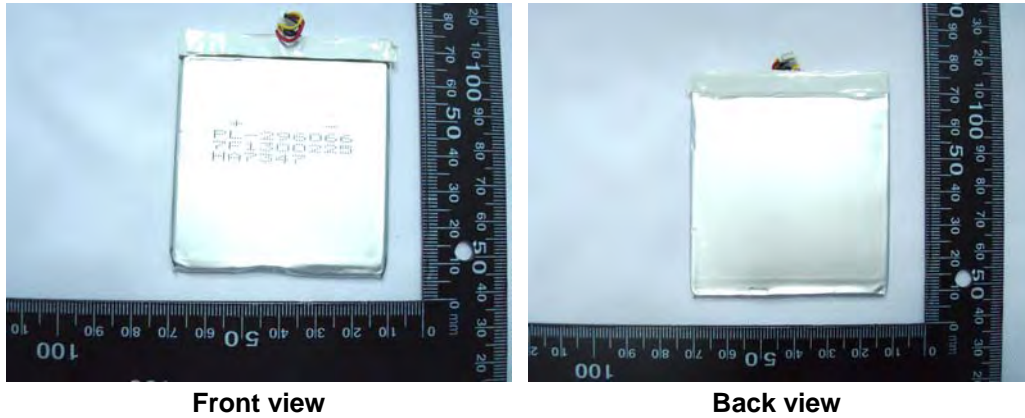|		
Front view	**Back view**	**Open view**
Figure 1. EUT Photo		

Other Accessories

| Front view | Back view |

Figure 2. Battery

| Front view | Back view |
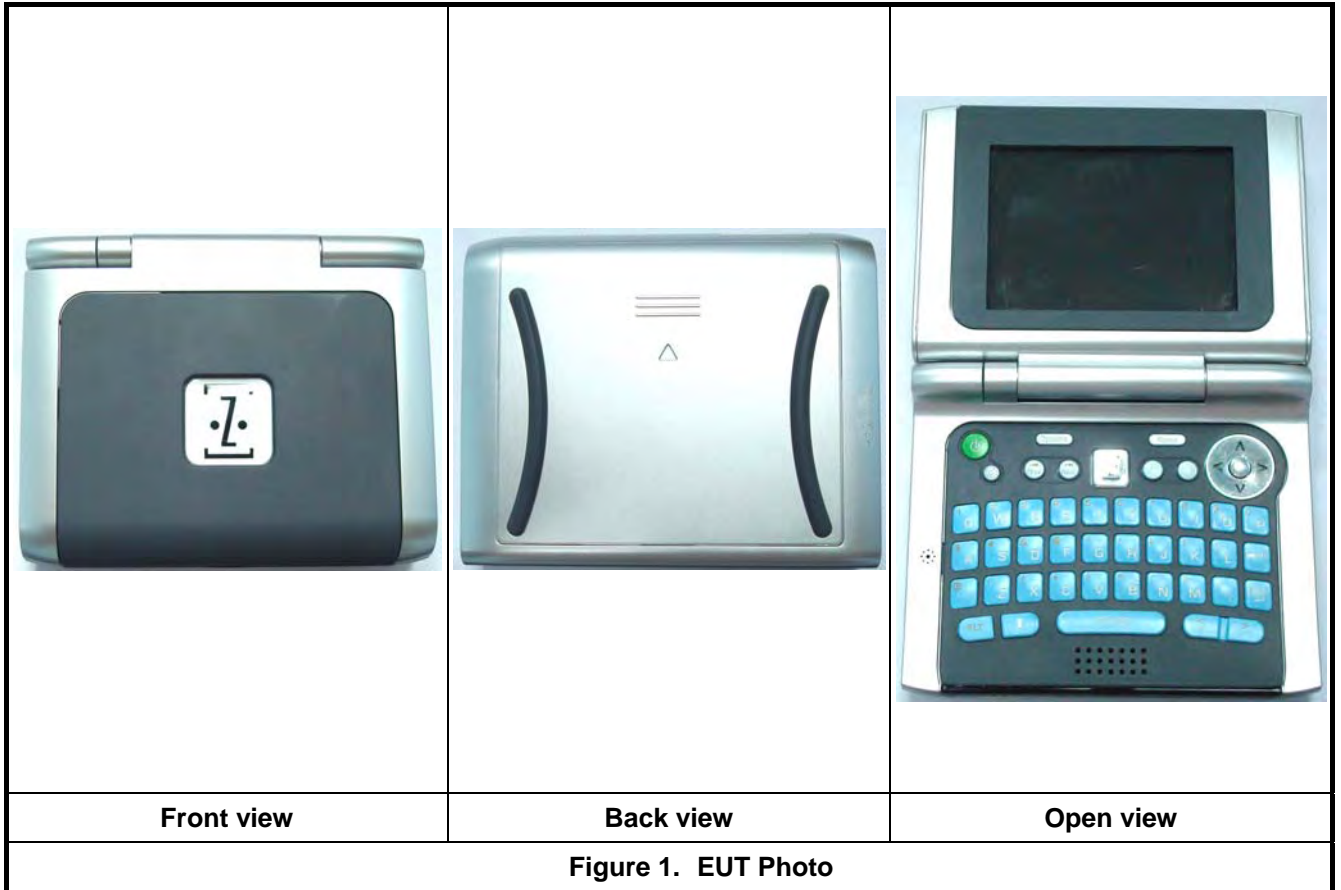
Figure 3. AC Adapter

2. Introduction

The A Test Lab Techno. Corp. RF Testing Laboratory has performed measurements of the maximum potential exposure to the user of **Zipit Wireless, Inc. Trade Name：Zipit Model(s)：Z2**. The test procedures, as described in American National Standards, , Institute C95.1 - 1999〔1〕, FCC/OET Bulletin 65 Supplement C [July 2001] were employed and they specify the maximum exposure limit of 1.6mW/g as averaged over any 1 gram of tissue for portable devices being used within 20cm between user and EUT in the uncontrolled environment. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment used are included within this test report.

3. *SAR Definition*

Specific Absorption Rate (SAR) is defined as 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). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Figure 2).

$$\text{SAR} \;=\; \frac{d}{dt}\left(\frac{dw}{dm}\right) \;=\; \frac{d}{dt}\left(\frac{dw}{\rho dv}\right)$$

Figure 4. SAR Mathematical Equation

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

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

Where：

σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m^3)

E = RMS electric field strength (V/m)

1. **Note**：

The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane〔2〕

4. SAR Measurement Setup

These measurements were performed with the automated near-field scanning system DASY4 from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision robot (working range greater than 0.9m) which positions the probes with a positional repeatability of better than ±0.025mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length = 300mm) to the data acquisition unit.

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Measurement Server is based on a PC/104 CPU board with a 166MHz low-power Pentium, 32MB chipdisk and 64MB RAM. The necessary circuits for communication with either the DAE3 electronic box as well as the 16-bit AD-converter system for optical detection and digital I/O interface are contained on the DASY4 I/O-board, which is directly connected to the PC/104 bus of the CPU board. The PC consists of the Intel Pentium 4 2.4GHz computer with Windows2000 system and SAR Measurement Software DASY4, Post Processor SEMCAD, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection…etc. is connected to the Electro-optical converter (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the Measurement Server.
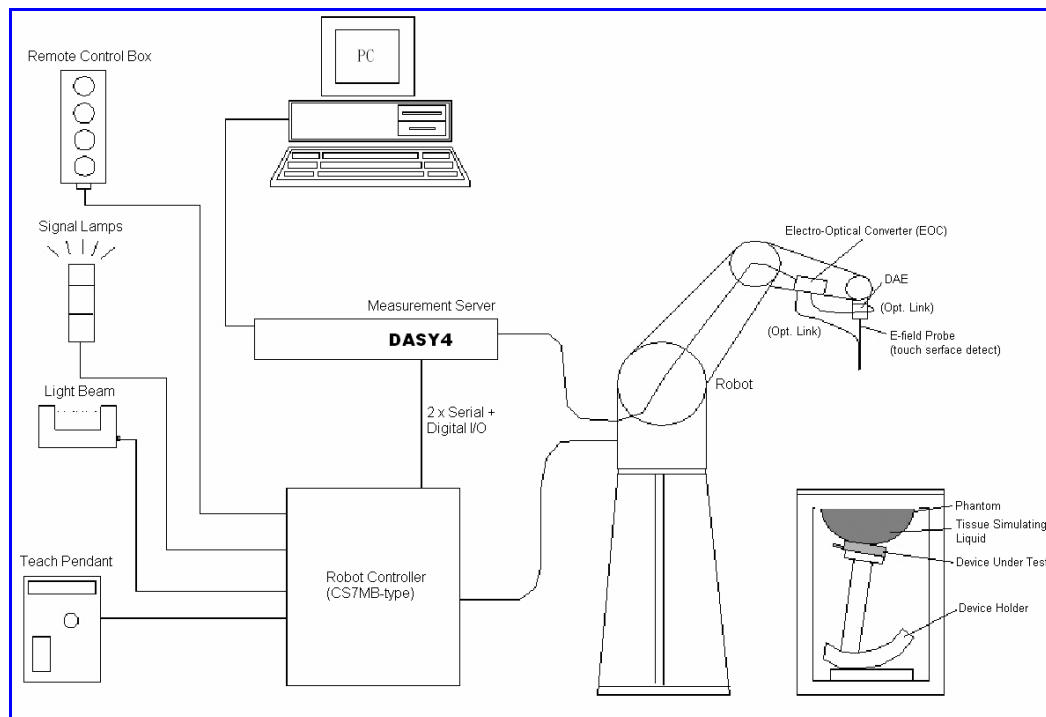

Figure 5. SAR Lab Test Measurement Setup

The DAE3 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 PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in〔3〕.

5. _System Components_

5.1 DASY4 E-Field Probe System

The SAR measurements were conducted with the dosimetric probe ET3DV6 (manufactured by SPEAG), designed in the classical triangular configuration〔3〕and optimized for dosimetric evaluation. The probes is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped when reaching the maximum.

5.1.1 ET3DV6 E-Field Probe Specification

Construction	Symmetrical design with triangular core
	Built-in optical fiber for surface detection
	System (ET3DV6 only)
	Built-in shielding against static charges
	PEEK enclosure material
	(resistant to organic solvents, e.q., glycol)
Calibration	In air from 10 MHz to 6 GHz
	In brain and muscle simulating tissue at
	frequencies of 900MHz, 1800MHz, 2000MHz and
	2450MHz (accuracy $\pm 8\%$)
	Calibration for other liquids and frequencies upon request
Frequency	10 MHz to > 6 GHz; Linearity: ±0.2 dB
	(30 MHz to 3 GHz)
Directivity	± 0.3 dB in brain tissue (rotation around probe axis)
	± 0.5 dB in brain tissue (rotation normal probe axis)
Dynamic Range	10 μ W/g to > 100mW/g; Linearity: ±0.2dB
Surface Detection	± 0.2 mm repeatability in air and clear liquids
	over diffuse reflecting surface(ET3DV6 only)
Dimensions	Overall length: 330mm
	Tip length: 20mm
	Body diameter: 12mm
	Tip diameter: 2.5mm
	Distance from probe tip to dipole centers: 1.0mm
Application	General dosimetry up to 6GHz
	Compliance tests of mobile phones
	Fast automatic scanning in arbitrary phantoms

Figure 6.
ET3DV6 E-field Probe

Figure 7.
Probe setup on robot

5.1.2 ET3DV6 E-Field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure described in〔4〕with accuracy better than ± 10%. The spherical isotropy was evaluated with the procedure described in〔5〕and found to be better than ± 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 free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1GHz, and in a wave guide above 1GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C \frac{\Delta T}{\Delta t}$$

Where：

Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (head or body),

ΔT = Temperature increase due to RF exposure.

$$\text{Or} \qquad SAR = \frac{|E|^2 \, \sigma}{\rho}$$

Where：

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

5.2 Data Acquisition Electronic (DAE) System

Cell Controller

Processor： Intel Pentium 4

Clock Speed： 2.4GHz

Operating System： Windows 2000 Professional

Data Converter

Features： Signal Amplifier, multiplexer, A/D converter, and control logic

Software： DASY4 v4.7 (Build 53) & SEMCAD v1.8 (Build 172)

Connecting Lines： Optical downlink for data and status info

Optical uplink for commands and clock

5.3 Robot

Positioner： Stäubli Unimation Corp. Robot Model: RX90L

Repeatability： ±0.025 mm

No. of Axis： 6

5.4 Measurement Server

Processor： PC/104 with a 166MHz low-power Pentium

I/O-board： Link to DAE3

16-bit A/D converter for surface detection system

Digital I/O interface

Serial link to robot

Direct emergency stop output for robot

5.5 Device Holder for Transmitters

In combination with the SAM Twin Phantom V4.0, the Mounting Device (POM) enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation points is the ear opening. The devices can be easily, accurately, and repeat ably positioned according to the IEEE SCC34-SC2 and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, and flat phantom).

Note：A simulating human hand is not used due to the complex anatomical and geometrical structure of the hand that may produced infinite number of configurations〔6〕. To produce the worst-case condition (the hand absorbs antenna output power), the hand is omitted during the tests.

Larger DUT cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values. Therefore those devices are normally only tested at the flat part of the SAM.
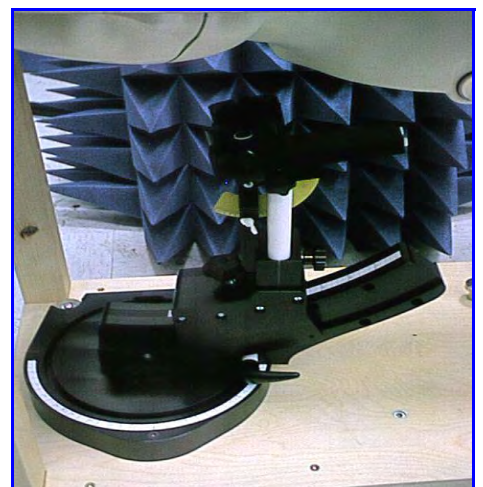

Figure 8. Device Holder

5.6 Phantom - SAM v4.0

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-2003, CENELEC 50361 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.
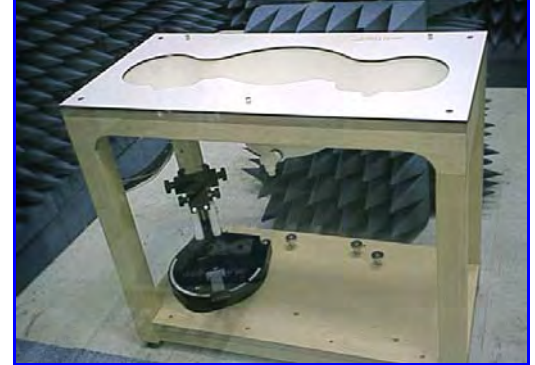

Figure 9. SAM Twin Phantom

Shell Thickness	2 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	810×1000×500 mm (H×L×W)

Table 1.   Specification of SAM v4.0

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 postprocessing 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.

5.7.2 Data Evaluation

The DASY4 postprocessing 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   Normi, ai0, ai1, ai2

                    - Conversion factor   ConvFi

                    - Diode compression point   dcpi

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 multimeter 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：

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

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：

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

H-field probes：

$$H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1}f + a_{i2}f^2}{f}$$

with V_i = compensated signal of channel i (i = x, y, z)

   $Norm_i$ = sensor sensitivity of channel i (i = x, y, z)

   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

   Hi = 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

   E_{tot} = total field strength in V/m

   σ = conductivity in [mho/m] or [Siemens/m]

   ρ = equivalent tissue density in g/cm^3

1. **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.

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

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

6. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	Dosimetric E-Filed Probe	ET3DV6	1531	Jan. 22, 2007	Jan. 22, 2008
SPEAG	2450MHz System Validation Kit	D2450V2	712	Feb. 20, 2007	Feb. 20, 2008
SPEAG	Data Acquisition Electronics	DAE4	541	Oct. 16, 2006	Oct. 16, 2007
SPEAG	Device Holder	N/A	N/A	NCR	NCR
SPEAG	Phantom	SAM V4.0	1009	NCR	NCR
SPEAG	Robot	Staubli RX90L	F00/589B1/A/01	NCR	NCR
SPEAG	Software	DASY4 V4.7 Build 53	N/A	NCR	NCR
SPEAG	Software	SEMCAD V1.8 Build 172	N/A	NCR	NCR
SPEAG	Measurement Server	SE UMS 001 BA	1021	NCR	NCR
R & S	Wireless Communication Test Set	CMU200	112387	Apr. 02, 2007	Apr. 02, 2008
Agilent	ENA Series Network Analyzer	E5071B	MY42404650	Jan. 19, 2007	Jan. 19, 2008
Agilent	Dielectric Probe Kit	85070C	US99360094	NCR	NCR
Agilent	Power Meter	E4418B	GB40206143	May. 23, 2007	May. 23, 2008
Agilent	Power Sensor	8481H	3318A20779	May. 28, 2007	May. 28, 2008
Agilent	Signal Generator	8648C	3847A05201	May. 28, 2007	May. 28, 2008
Agilent	Dual Directional Coupler	778D	50334	NCR	NCR
Mini-Circuits	Power Amplifier	ZHL-42W-SMA	D111103#5	NCR	NCR
Mini-Circuits	Power Amplifier	ZVE-8G-SMA	D042005 671800514	NCR	NCR

Table 2.   Test Equipment List

Tissue Simulating Liquids

The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an 85070C Dielectric Probe Kit and an 8720ES Network Analyzer.

INGREDIENT	FREQUENCY	
	HSL5G (Head)	MSL5G (Body)
Water	64%	78%
Mineral Oil	18%	11%
Emulsifiers	15%	9%
Additives and Salt	3%	2%

Table 3.   Recipes for Head & Body Tissue Simulating Liquids

IEEE SCC-34/SC-2 in 1528 recommended Tissue Dielectric Parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in 1528 have been incorporated in the following table.   These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in human head.   Other head and body tissue parameters that have not been specified in 1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equation and extrapolated according to the head parameter specified in 1528.

Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 - 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00
(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)				

Table 4. Tissue dielectric parameters for head and body phantoms

6.1 Liquid Confirmation

6.1.1 Parameters

Liquid Verify								
Ambient Temperature： 22±3 ℃；Relative Humidity：40-70%								
Liquid Type	**Frequency**	**Temp (℃)**	**Parameters**	**Target Value**	**Measured Value**	**Deviation (%)**	**Limit (%)**	**Measured Date**
2450MHz Body	2450MHz	22.0	εr	53.7	**51.80**	-3.54	±5	Aug. 26, 2007
			σ	1.97	**1.96**	-0.51	±5	
2450MHz Body	2450MHz	22.0	εr	53.7	**51.80**	-3.54	±5	Aug. 27, 2007
			σ	1.97	**1.96**	-0.51	±5	

Table 5. Measured Tissue dielectric parameters for head and body phantoms

6.1.2 Liquid Depth

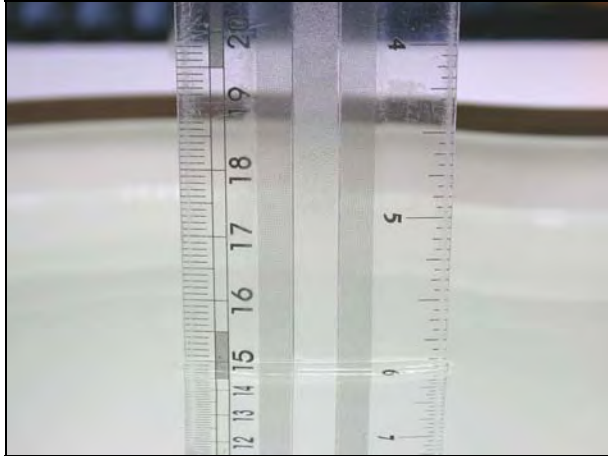The liquid level was during measurement 15cm ±0.5cm.

Figure 10. Head-Tissue-Simulating-Liquid

Figure 11. Body-Tissue-Simulating-Liquid

7. Measurement Process

7.1 Device and Test Conditions

The Test Device was provided by **Zipit Wireless, Inc.** for this evaluation. The spatial peak SAR values were assessed for the lowest, middle and highest channels defined by WI-FI 802.11b and 802.11g (Ch1 = 2412MHz , Ch6 = 2437MHz , Ch11 = 2462MHz) systems. The antenna(s), battery and accessories shall be those specified by the manufacturer. The battery shall be fully charged before each measurement and there shall be no external connections.

Usage	Operates with a built-in test mode by client		Distance between antenna axis at the joint and the liquid surface:	For Body, EUT front to phantom, 0mm separation. EUT front to phantom, 15mm separation. EUT back to phantom, 15mm separation.	
Simulating human Head/Body	Body		EUT Battery	Fully-charged with Li-ion battery.	
Output Power (Wi-Fi)	**Channel**		Frequency MHz	Before SAR Test (dBm)	After SAR Test (dBm)
	802.11b	Highest - 1	2412	**16.83**	16.82
		Middle - 6	2437	16.52	16.51
		Lowest - 11	2462	16.57	16.56
	802.11g	Highest - 1	2412	**14.59**	14.58
		Middle - 6	2437	13.81	13.80
		Lowest - 11	2462	13.08	13.07

System Performance Check

7.1.1 Symmetric Dipoles for System Validation

Construction Symmetrical dipole with l/4 balun enables measurement of feed point impedance with NWA matched for use near flat phantoms filled with head simulating solutions Includes distance holder and tripod adaptor Calibration Calibrated SAR value for specified position and input power at the flat phantom in head simulating solutions.

Frequency 450, 900, 1800, 2000, 2450, 5000MHz

Return Loss > 20 dB at specified validation position

Power Capability > 100 W (f < 1GHz); > 40 W (f > 1GHz)

Options Dipoles for other frequencies or solutions and other calibration conditions are available upon request

Dimensions D450V2：dipole length 270 mm; overall height 330 mm

D900V2：dipole length 149 mm; overall height 330 mm

D1800V2：dipole length 72 mm; overall height 300 mm

D2000V2：dipole length 65 mm; overall height 300 mm

D2450V2：dipole length 51.5 mm; overall height 300 mm

D5GHzV2：dipole length 20.6 mm; overall height 450 mm

Figure 12. Validation Kit

7.1.2 Validation

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ± 7%. The validation was performed at 2450MHz and 5200MHz.

Validation kit	Mixture Type		SAR$_{1g}$ [mW/g]	SAR$_{10g}$ [mW/g]		Date of Calibration	
D2450V2-SN712	Body		53.6	24.76		Feb. 20, 2007	

Frequency (MHz)	Power (dBm)	SAR$_{1g}$ (mW/g)	SAR$_{10g}$ (mW/g)	Drift (dB)	Difference percentage		Date
					1g	10g	
2450 (Body)	250mW	13.8	6.47	-0.048	3.0 %	4.5 %	Aug. 26 , 2007
	Normalize to 1 Watt	55.2	25.88				
2450 (Body)	250mW	13.1	6.12	0.102	-2.2 %	-1.1 %	Aug. 27 , 2008
	Normalize to 1 Watt	52.4	24.48				

7.2 Dosimetric Assessment Setup

7.2.1 Headset Test Position - Body-Worn

Body-Worn Configuration

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a handset output should be tested with a handset connected to the device.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances.

For this test：

☐　The EUT is placed into the holster/Leather Case and the holster is positioned against the surface of the phantom in a normal operating position.

■　Since this EUT doesn't supply any body-worn accessory to the end user, a distance of 15 mm was tested to confirm the necessary "minimum SAR separation distance".
（＊**Note**：this distance includes the 2 mm phantom shell thickness.)

7.2.2 Measurement Procedures

The evaluation was performed with the following procedures：

Surface Check： A surface check job gathers data used with optical surface detection. It determines the distance from the phantom surface where the reflection from the optical detector has its peak. Any following measurement jobs using optical surface detection will then rely on this value. The surface check performs its search a specified number of times, so that the repeatability can be verified. The probe tip distance is 1.3mm to phantom inner surface during scans.

Reference： The reference job measures the field at a specified reference position, at 4 mm from the selected section's grid reference point.

Area Scan： The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hot spot. The sophisticated interpolation routines can find the maximum locations even in relatively coarse grids. When an area scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. Any following zoom scan within the same procedure will then perform fine scans around these maxima. The area covered the entire dimension of the EUT and the horizontal grid spacing was 15 mm × 15 mm.

Zoom Scan： Zoom scans are used to assess the highest averaged SAR for cubic averaging volumes with 1 g and 10 g of simulated tissue. The zoom scan measures 5 x 5 x 7 points in a 32 x 32 x 30 mm cube whose base faces are centered around the maxima returned from a preceding area scan within the same procedure.

Drift： The drift job measures the field at the same location as the most recent reference job within the same procedure, with the same settings. The drift measurement gives the field difference in dB from the last reference measurement. Several drift measurements are possible for each reference measurement. This allows monitoring of the power drift of the device in the batch process. If the value changed by more than 5%, the evaluation was repeated.

7.3 Spatial Peak SAR Evaluation

The DASY4 software includes all numerical procedures necessary to evaluate the spatial peak SAR values. Based on the Draft: SCC-34, SC-2, WG-2 - Computational Dosimetry, IEEE P1529/D0.0 (Draft Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) Associated with the Use of Wireless Handsets - Computational Techniques), a new algorithm has been implemented. The spatial-peak SAR can be computed over any required mass.

The base for the evaluation is a "cube" measurement in a volume of $(32x32x30)mm^3$ (5x5x7 points). 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. If the 10g cube or both cubes are not entirely inside the measured volumes, the system issues a warning regarding the evaluated spatial peak values within the Postprocessing engine (SEMCAD). This means that if the measured volume is shifted, higher values might be possible. To get the correct values you can use a finer measurement grid for the area scan. In complicated field distributions, a large grid spacing for the area scan might miss some details and give an incorrectly interpolated peak location.

The entire evaluation of the spatial peak values is performed within the Postprocessing 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 three stages:

Interpolation and Extrapolation

The probe is calibrated at the center of the dipole sensors which is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated.

In DASY4, the choice of the coordinate system defining the location of the measurement points has no influence on the uncertainty of the interpolation, Maxima Search and SAR extrapolation routines. The interpolation, Maxima Search and extrapolation routines are all based on the modified Quadratic Shepard's method [7].

8. Measurement Uncertainty

Measurement uncertainties in SAR measurements are difficult to quantify due to several variables including biological, physiological, and environmental. However, we estimate the measurement uncertainties in SAR to be less than ± 27 % 〔8〕.

According to Std. C95.3 〔9〕, the overall uncertainties are difficult to assess and will vary with the type of meter and usage situation. However, accuracy's of ±1 to 3 dB can be expected in practice, with greater uncertainties in near-field situations and at higher frequencies (shorter wavelengths), or areas where large reflecting objects are present. Under optimum measurement conditions, SAR measurement uncertainties of at least ±2dB can be expected.

According to CENELEC 〔10〕, typical worst-case uncertainty of field measurements is ±5 dB. For well-defined modulation characteristics the uncertainty can be reduced to ±3 dB.

Source of Uncertainty	Uncertainty Value	Probability Distribution	Divisor	c_i	Standard Uncertainty ±1% (1-g)	v_i or V_{eff}
Type-A	0.9 %	Normal	1	1	0.9	9
Measurement System						
Probe Calibration	7 %	Normal	2	1	3.5	∞
Axial Isotropy	0.2dB	Rectangular	$\sqrt{3}$	$\sqrt{0.5}$	1.9	∞
Hemispherical Isotropy	9.6 %	Rectangular	$\sqrt{3}$	$\sqrt{0.5}$	3.9	∞
Spatial Resolution	0 %	Rectangular	$\sqrt{3}$	1	0	∞
Boundary Effect	11.0 %	Rectangular	$\sqrt{3}$	1	6.4	∞
Linearity	0.2dB	Rectangular	$\sqrt{3}$	1	2.7	∞
Detection Limit	1.0 %	Rectangular	$\sqrt{3}$	1	0.6	∞
Readout Electronics	1.0 %	Normal	1	1	1.0	∞
RF Ambient Conditions	3.0 %	Rectangular	$\sqrt{3}$	1	1.73	∞
Probe Positioner Mech. Const.	0.4 %	Rectangular	$\sqrt{3}$	1	0.2	∞
Probe Positioning	0.35 %	Rectangular	$\sqrt{3}$	1	0.2	∞
Extrapolation and Integration	3.9 %	Rectangular	$\sqrt{3}$	1	2.3	∞
Test sample Related						
Test sample Positioning	4.7 %	Normal	1	1	4.7	5
Device Holder Uncertainty	6.1 %	Normal	1	1	6.1	5
Drift of Output Power	5.0 %	Rectangular	$\sqrt{3}$	1	2.9	∞
Phantom and Setup						
Phantom Uncertainty (Including temperature effects)	4.0%	Rectangular	$\sqrt{3}$	1	2.3	∞
Liquid Conductivity (target)	5.0%	Rectangular	$\sqrt{3}$	0.6	1.7	∞
Liquid Conductivity (meas.)	10.0%	Rectangular	$\sqrt{3}$	0.6	3.4	∞
Liquid Permittivity (target)	5.0%	Rectangular	$\sqrt{3}$	0.6	1.7	∞
Liquid Permittivity (meas.)	5.0%	Rectangular	$\sqrt{3}$	0.6	1.7	∞
Combined standard uncertainty		RSS			13.5	88.7
Expanded uncertainty (Coverage factor = 2)		Normal (k=2)			27	

Table 6. Uncertainty Budget of DASY

9. *SAR Test Results Summary*

9.1 802.11b Wi-Fi Body SAR - close _ space 0mm

Ambient：

Temperature (℃)：	22 ± 3	Relative HUMIDITY (%)：	40-70

Liquid：

Mixture Type：	MSL2450	Liquid Temperature (℃)：	22.0
		Depth of liquid (cm)：	15

Measurement：

Crest Factor：	1	Probe S/N：	1531

Frequency		Battery	Phantom Position	Accessory	SAR$_{1g}$ [mW/g]	Power Drift	Temp.		Remark
MHz	CH						Amb.	Liq.	
2412	1	Li-ion	Flat	N/A	0.118	-0.128	22.1	22	-
2437	6	Li-ion	Flat	N/A	0.063	0.096	22.2	22	-
2462	11	Li-ion	Flat	N/A	0.052	-0.007	22.1	22	-

Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population	1.6 W/kg (mW/g) Averaged over 1 gram

9.2 802.11g Wi-Fi Body SAR - close _ space 0mm

Ambient：

Temperature (℃)：	22 ± 3	Relative HUMIDITY (%)：	40-70

Liquid：

Mixture Type：	MSL2450	Liquid Temperature (℃)：	22.0
		Depth of liquid (cm)：	15

Measurement：

Crest Factor：	1	Probe S/N：	1531

Frequency		Battery	Phantom Position	Accessory	SAR$_{1g}$ [mW/g]	Power Drift	Temp.		Remark
MHz	CH						Amb.	Liq.	
2412	1	Li-ion	Flat	N/A	0.074	-0.173	22.1	22	-
2437	6	Li-ion	Flat	N/A	0.046	-0.034	22.2	22	-
2462	11	Li-ion	Flat	N/A	0.033	0.080	22.1	22	-

Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population	1.6 W/kg (mW/g) Averaged over 1 gram

Note： (a) The test setup is "EUT close LCD Panel"

(b) The EUT back to phantom, space 0mm.

9.3   802.11b Wi-Fi Body SAR - open _ Space 15mm

Ambient：

Temperature (℃)：	22 ± 3	Relative HUMIDITY (%)：	40-70

Liquid：

Mixture Type：	MSL2450	Liquid Temperature (℃)：	22.0
		Depth of liquid (cm)：	15

Measurement：

Crest Factor：	1	Probe S/N：	1531

Frequency		Battery	Phantom Position	Accessory	SAR$_{1g}$ [mW/g]	Power Drift	Temp.		Remark
MHz	CH						Amb.	Liq.	
2412	1	Li-ion	Flat	N/A	0.616	-0.037	22.5	22	Right
2412	1	Li-ion	Flat	N/A	0.014	0.012	22.5	22	Left
2437	6	Li-ion	Flat	N/A	0.410	-0.036	22.5	22	Right
2462	11	Li-ion	Flat	N/A	0.263	-0.033	22.7	22	Right
Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1 gram**				

9.4   802.11g Wi-Fi Body SAR - open _ Space 15mm

Ambient：

Temperature (℃)：	22 ± 3	Relative HUMIDITY (%)：	40-70

Liquid：

Mixture Type：	MSL2450	Liquid Temperature (℃)：	22.0
		Depth of liquid (cm)：	15

Measurement：

Crest Factor：	1	Probe S/N：	1531

Frequency		Battery	Phantom Position	Accessory	SAR$_{1g}$ [mW/g]	Power Drift	Temp.		Remark
MHz	CH						Amb.	Liq.	
2412	1	Li-ion	Flat	N/A	0.455	-0.040	22.5	22	Right
2412	1	Li-ion	Flat	N/A	0.008	0.139	22.5	22	Left
2437	6	Li-ion	Flat	N/A	0.208	-0.015	22.5	22	Right
2462	11	Li-ion	Flat	N/A	0.137	-0.068	22.7	22	Right
Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1 gram**				

Note : (a) The test setup is "EUT open LCD Panel 90°"

(b) Right - EUT Panel Right side to phantom

(c) Left - EUT Panel Left side to phantom

9.5 802.11b Wi-Fi Body SAR - close_15mm

Ambient：

Temperature (℃)：	**22 ± 3**	Relative HUMIDITY (%)：	**40-70**

Liquid：

Mixture Type：	**MSL2450**	Liquid Temperature (℃)：	**22.0**
		Depth of liquid (cm)：	**15**

Measurement：

Crest Factor：	**1**	Probe S/N：	**1531**

Frequency		Battery	Phantom Position	Accessory	SAR$_{1g}$ [mW/g]	Power Drift	Temp.		Remark
MHz	CH						Amb.	Liq.	
2412	1	Li-ion	Flat	N/A	0.375	-0.039	22.1	22	Right
2437	6	Li-ion	Flat	N/A	0.248	-0.088	22.2	22	Right
2462	11	Li-ion	Flat	N/A	0.208	-0.011	22.1	22	Right
Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1 gram**				

.

9.6 802.11g Wi-Fi Body SAR - close_15mm

Ambient：

Temperature (℃)：	**22 ± 3**	Relative HUMIDITY (%)：	**40-70**

Liquid：

Mixture Type：	**MSL2450**	Liquid Temperature (℃)：	**22.0**
		Depth of liquid (cm)：	**15**

Measurement：

Crest Factor：	**1**	Probe S/N：	**1531**

Frequency		Battery	Phantom Position	Accessory	SAR$_{1g}$ [mW/g]	Power Drift	Temp.		Remark
MHz	CH						Amb.	Liq.	
2412	1	Li-ion	Flat	N/A	0.296	-0.027	22.1	22	Right
2437	6	Li-ion	Flat	N/A	0.155	-0.039	22.2	22	Right
2462	11	Li-ion	Flat	N/A	0.099	-0.068	22.1	22	Right
Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population					**1.6 W/kg (mW/g) Averaged over 1 gram**				

Note : (a) The test setup is "EUT close LCD Panel"

(b) Right - EUT Panel Right side to phantom.

Figure 5. SAR Test Setup_ Close_ Space 0mm (Flat Section)

Figure 6. SAR Test Setup_ Open_ Space 15mm Right (Flat Section)

Figure 7. Body SAR Test Setup_ Open_ Space 15mm Left (Flat Section)

Figure 8. SAR Test Setup_ close_ Space 15mm (Flat Section)

9.7 Std. C95.1-1999 RF Exposure Limit

Human Exposure	Population Uncontrolled Exposure (W/kg) or (mW/g)	Occupational Controlled Exposure (W/kg) or (mW/g)
Spatial Peak SAR* (head)	1.60	8.00
Spatial Peak SAR** (Whole Body)	0.08	0.40
Spatial Peak SAR*** (Partial-Body)	1.60	8.00
Spatial Peak SAR**** (Hands / Feet / Ankle / Wrist)	4.00	20.00

Table 7. Safety Limits for Partial Body Exposure

Notes：

*   The Spatial Peak value of the SAR averaged over any 1 gram of tissue.

         (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

**   The Spatial Average value of the SAR averaged over the whole - body.

***   The Spatial Average value of the SAR averaged over the partial - body.

****   The Spatial Peak value of the SAR averaged over any 10 grams of tissue.

         (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Population / Uncontrolled Environments： are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational / Controlled Environments： are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

10. <u>Conclusion</u>

The SAR test values found for the portable mobile phone **Zipit Wireless, Inc. Trade Name：Zipit Model(s)： Z2** are below the maximum recommended level of 1.6 W/kg (mW/g).

11. <u>References</u>

[1] Std. C95.1-1999, "*American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300KHz to 100GHz",* New York.

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[6] N. Kuster, and Q. Balzano, "*Energy absorption mechanism by biological bodies in the near field of dipole antennas above 300MHz"*, IEEE Transaction on Vehicular Technology, vol. 41, no. 1, Feb. 1992, pp. 17-23.

[7] 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.

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[9] Std. C95.3-1991, "*IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave,* New York: IEEE, Aug. 1992.

[10] CENELEC CLC/SC111B, European Prestandard (prENV 50166-2), *Human Exposure to Electromagnetic Fields High-frequency*: 10KHz-300GHz, Jan. 1995.

Appendix A - System Performance Check

See following Attached Pages for System Performance Check.

System Performance Check at 2450MHz_Body_20070826

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:712

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.96 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

System Performance Check at 2450MHz/Area Scan (61x101x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.9 mW/g

System Performance Check at 2450MHz/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.2 V/m; Power Drift = -0.048 dB
Peak SAR (extrapolated) = 30.6 W/kg
SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.47 mW/g
Maximum value of SAR (measured) = 15.4 mW/g
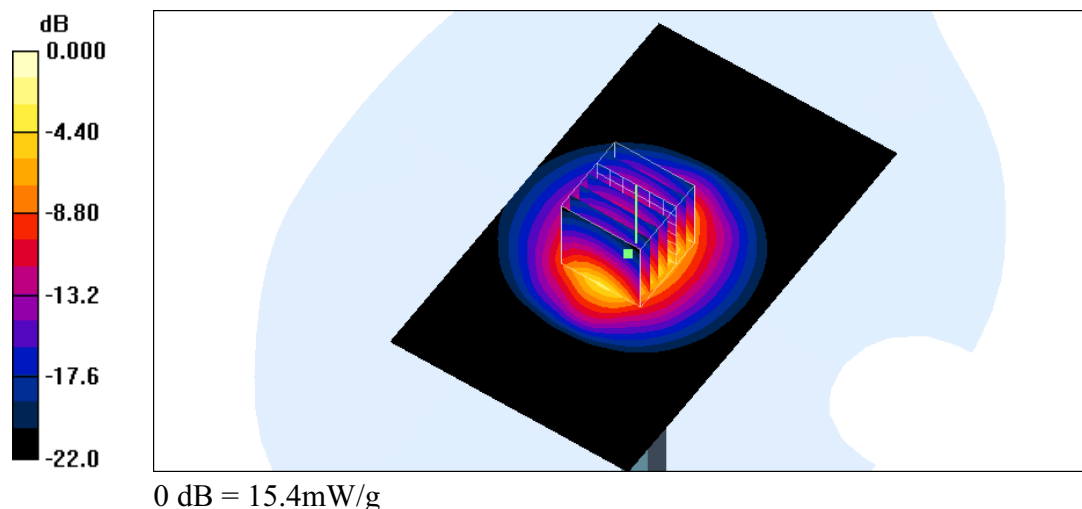
0 dB = 15.4mW/g

System Performance Check at 2450MHz_Body_20070827

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:712

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 1.96 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

System Performance Check at 2450MHz/Area Scan (61x71x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.2 mW/g

System Performance Check at 2450MHz/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.2 V/m; Power Drift = 0.102 dB
Peak SAR (extrapolated) = 29.3 W/kg
SAR(1 g) = 13.1 mW/g; SAR(10 g) = 6.12 mW/g
Maximum value of SAR (measured) = 14.4 mW/g

0 dB = 14.4mW/g
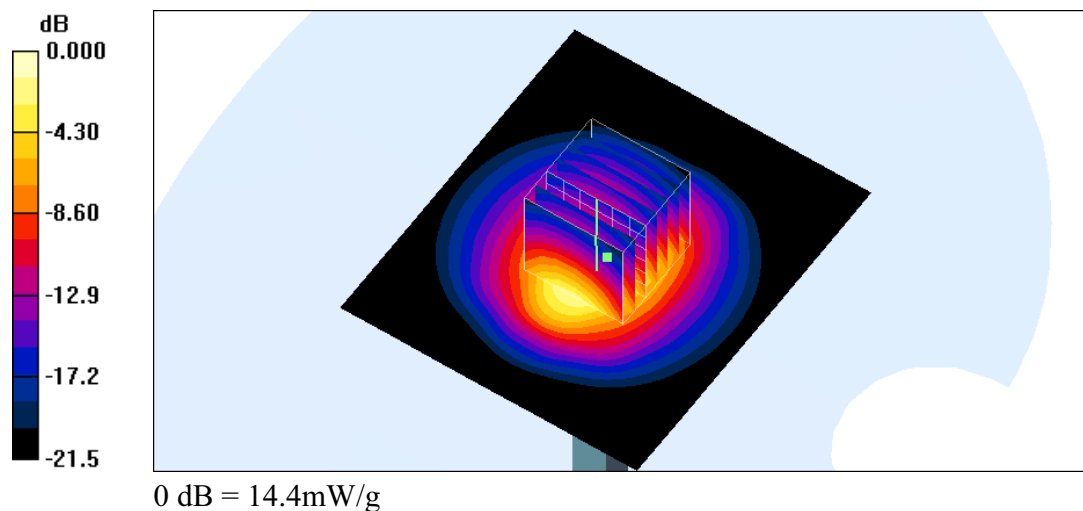
Z-axis Plot of System Performance Check

1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=3, Y=4

Body-Tissue-Simulating-Liquid 2.4GHz

1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=3, Y=2
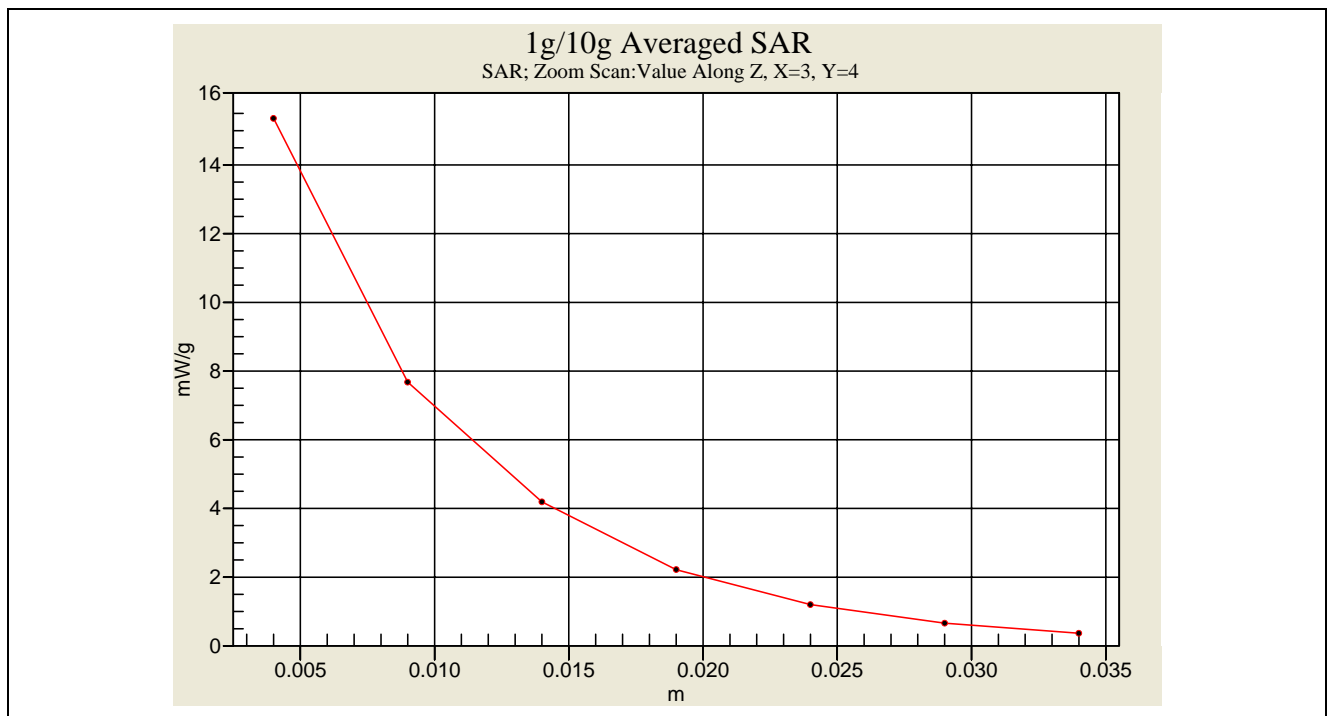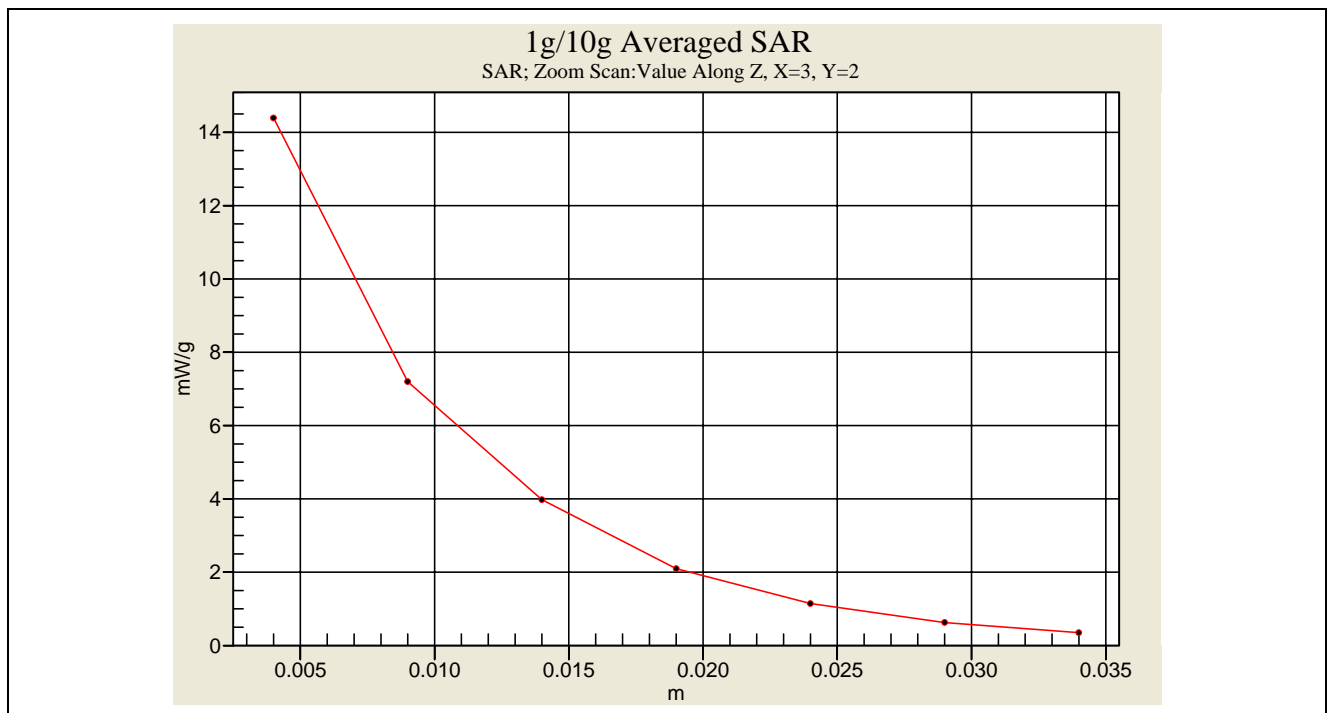
Body-Tissue-Simulating-Liquid 2.4GHz

Appendix B - *SAR Measurement Data*

See following Attached Pages for SAR Measurement Data.

Flat_IEEE 802.11b CH1_close_LCD Panel+close Body

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.92 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x141x1):
Measurement grid: dx=15mm, dy=15mm
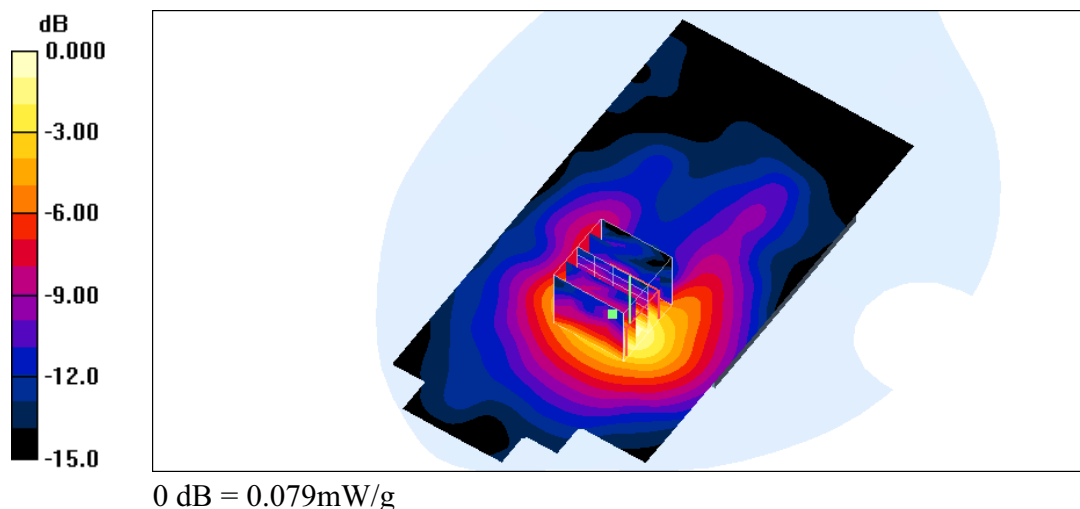Maximum value of SAR (interpolated) = 0.113 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.71 V/m; Power Drift = -0.128 dB
Peak SAR (extrapolated) = 0.275 W/kg
SAR(1 g) = 0.118 mW/g; SAR(10 g) = 0.061 mW/g
Maximum value of SAR (measured) = 0.122 mW/g

0 dB = 0.122mW/g

Flat_IEEE 802.11b CH6_close_LCD Panel+close Body

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x141x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.061 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.72 V/m; Power Drift = 0.096 dB
Peak SAR (extrapolated) = 0.139 W/kg
SAR(1 g) = 0.063 mW/g; SAR(10 g) = 0.033 mW/g
Maximum value of SAR (measured) = 0.061 mW/g

0 dB = 0.061mW/g

Flat_IEEE 802.11b CH11_close_LCD Panel+close Body

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; σ = 1.98 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x141x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.053 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.63 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 0.117 W/kg
SAR(1 g) = 0.052 mW/g; SAR(10 g) = 0.028 mW/g
Maximum value of SAR (measured) = 0.056 mW/g

0 dB = 0.056mW/g

Flat_IEEE 802.11g CH1_close_LCD Panel+close Body

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.92 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x141x1):
Measurement grid: dx=15mm, dy=15mm
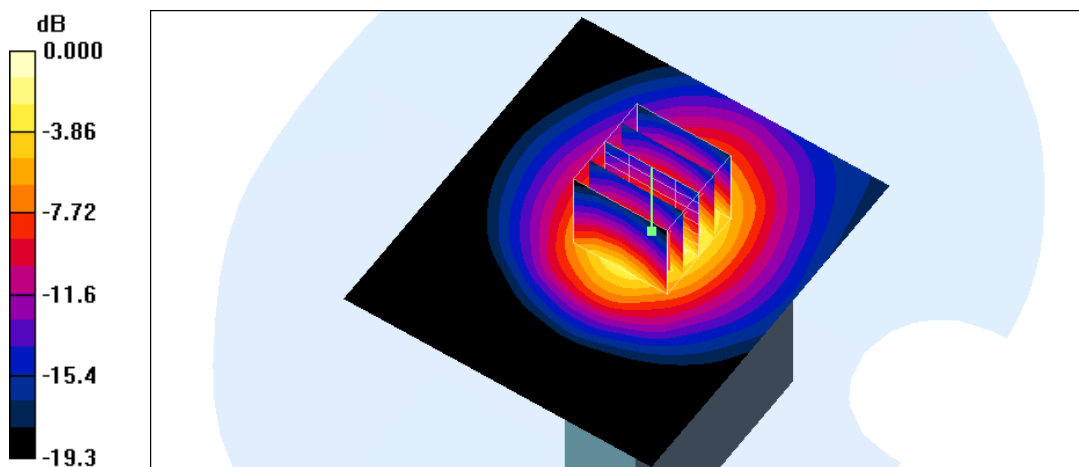Maximum value of SAR (interpolated) = 0.071 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.86 V/m; Power Drift = -0.173 dB
Peak SAR (extrapolated) = 0.159 W/kg
SAR(1 g) = 0.074 mW/g; SAR(10 g) = 0.038 mW/g
Maximum value of SAR (measured) = 0.079 mW/g

0 dB = 0.079mW/g

Flat_IEEE 802.11g CH6_close_LCD Panel+close Body

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.054 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.41 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 0.107 W/kg
SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.048 mW/g

0 dB = 0.048mW/g
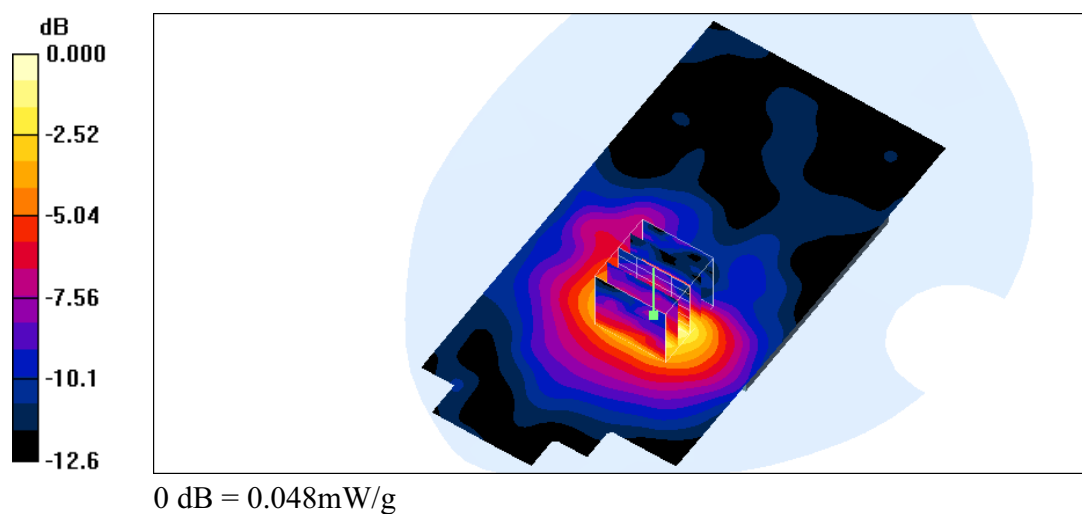
Test Laboratory: A Test Lab Techno Corp. Date/Time: 8/27/2007 5:07:20 PM

Flat_IEEE 802.11g CH11_close_LCD Panel+close Body

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; σ = 1.98 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x141x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.036 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.36 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 0.073 W/kg
SAR(1 g) = 0.033 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.034 mW/g
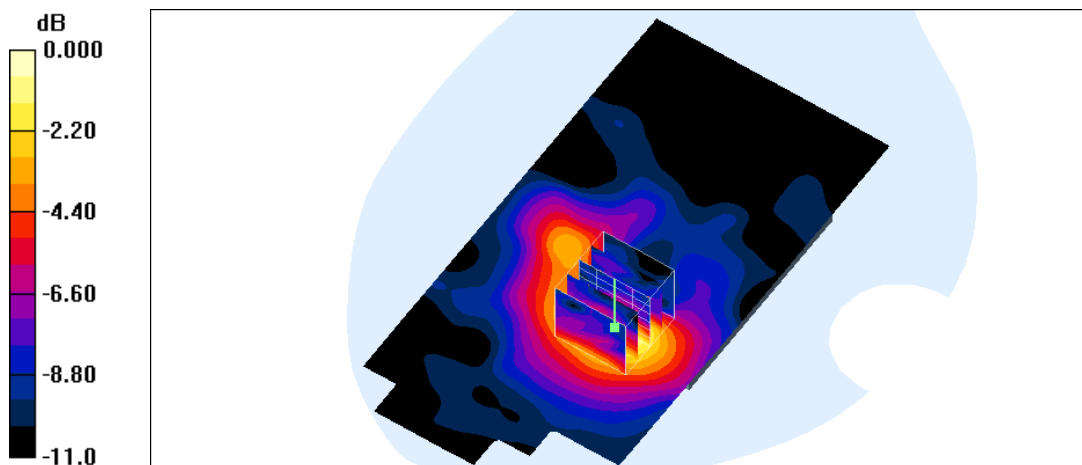
0 dB = 0.034mW/g

Test Laboratory: A Test Lab Techno Corp. Date/Time: 8/26/2007 6:22:49 PM

Flat_IEEE 802.11b CH1_open_LCD Panel(90)+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.92 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.675 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.8 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.616 mW/g; SAR(10 g) = 0.324 mW/g
Maximum value of SAR (measured) = 0.663 mW/g

0 dB = 0.663mW/g

Flat_IEEE 802.11b CH1_open LCD Panel(90)+15mm for Body_Left Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.92 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.015 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.84 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 0.022 W/kg
SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.00855 mW/g
Maximum value of SAR (measured) = 0.015 mW/g

0 dB = 0.015mW/g
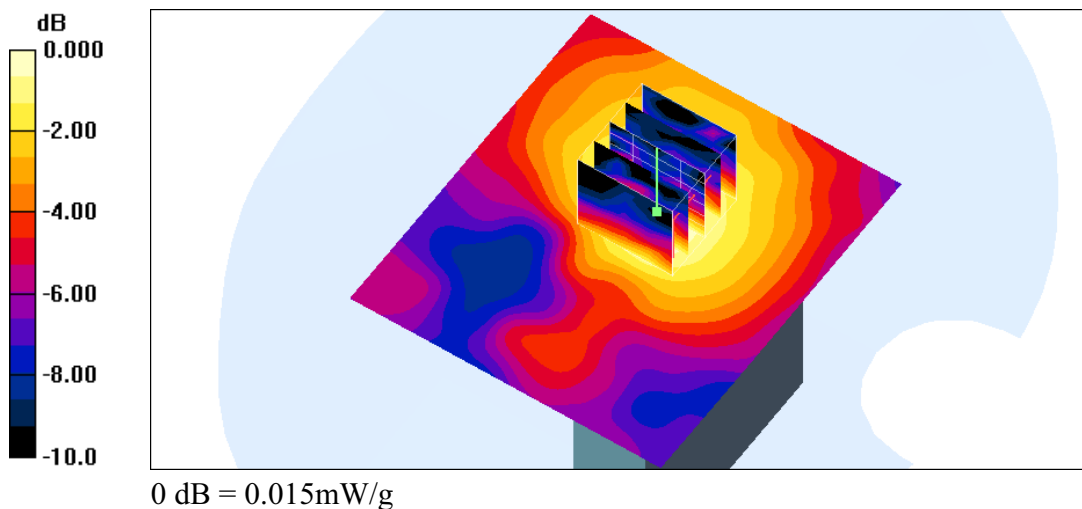
Flat_IEEE 802.11b CH6_open LCD Panel(90)+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x71x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.461 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.8 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 0.868 W/kg
SAR(1 g) = 0.410 mW/g; SAR(10 g) = 0.212 mW/g
Maximum value of SAR (measured) = 0.443 mW/g

0 dB = 0.443mW/g
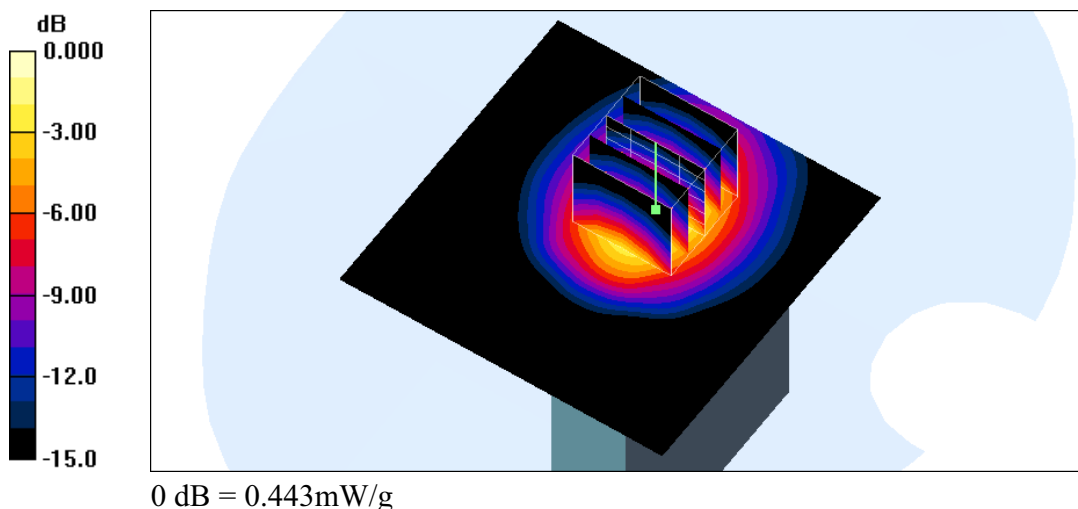
Test Laboratory: A Test Lab Techno Corp. Date/Time: 8/27/2007 11:34:32 AM

Flat_IEEE 802.11b CH11_open_LCD Panel(90)+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; σ = 1.98 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.286 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.9 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 0.559 W/kg
SAR(1 g) = 0.263 mW/g; SAR(10 g) = 0.136 mW/g
Maximum value of SAR (measured) = 0.284 mW/g

0 dB = 0.284mW/g
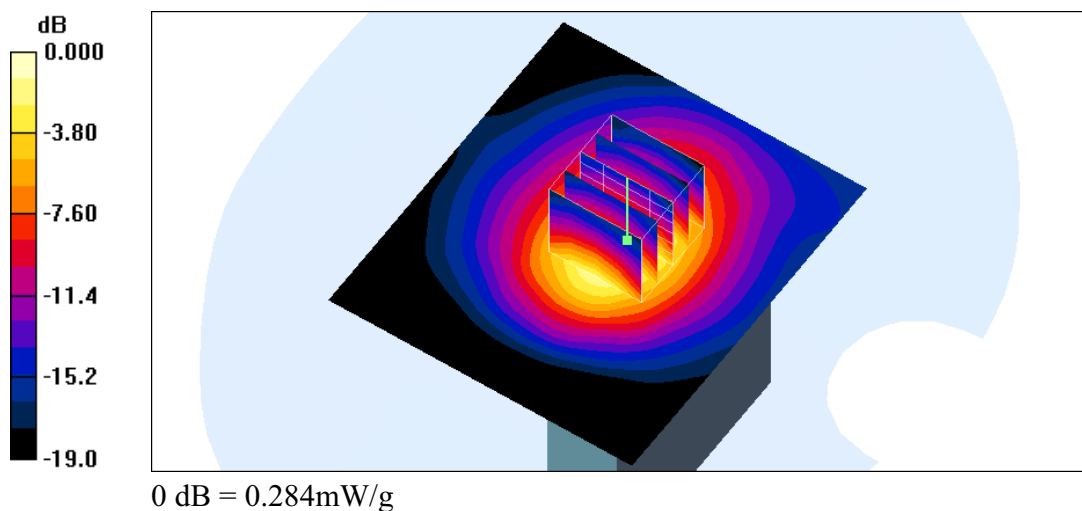
Test Laboratory: A Test Lab Techno Corp. Date/Time: 8/27/2007 1:42:28 PM

Flat_IEEE 802.11g CH1_open_LCD Panel(90)+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.92 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.493 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.4 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 0.945 W/kg
SAR(1 g) = 0.455 mW/g; SAR(10 g) = 0.237 mW/g
Maximum value of SAR (measured) = 0.491 mW/g

0 dB = 0.491mW/g
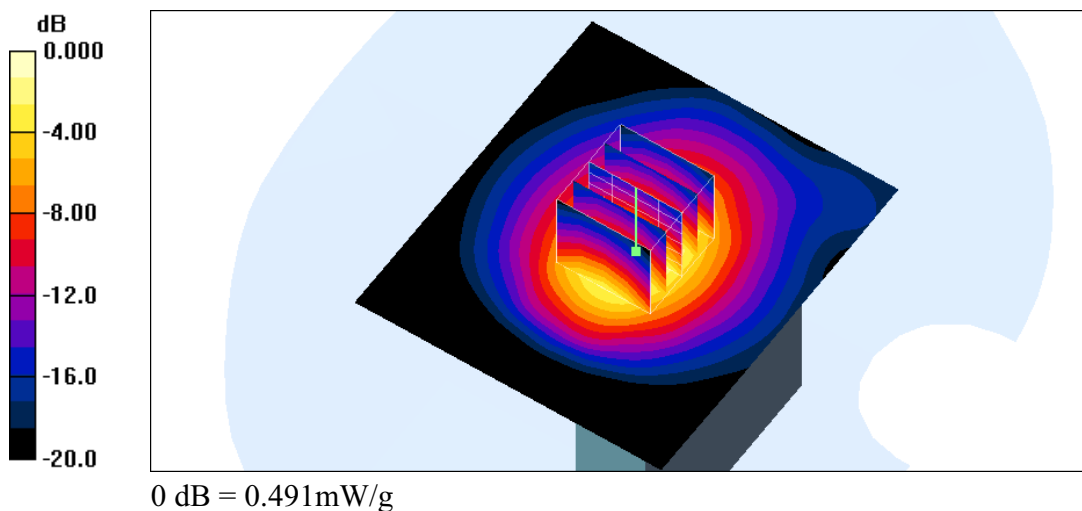
Test Laboratory: A Test Lab Techno Corp. Date/Time: 8/27/2007 5:33:58 PM

Flat_IEEE 802.11g CH1_open LCD Panel(90)+15mm for Body_Left Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.92 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.009 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
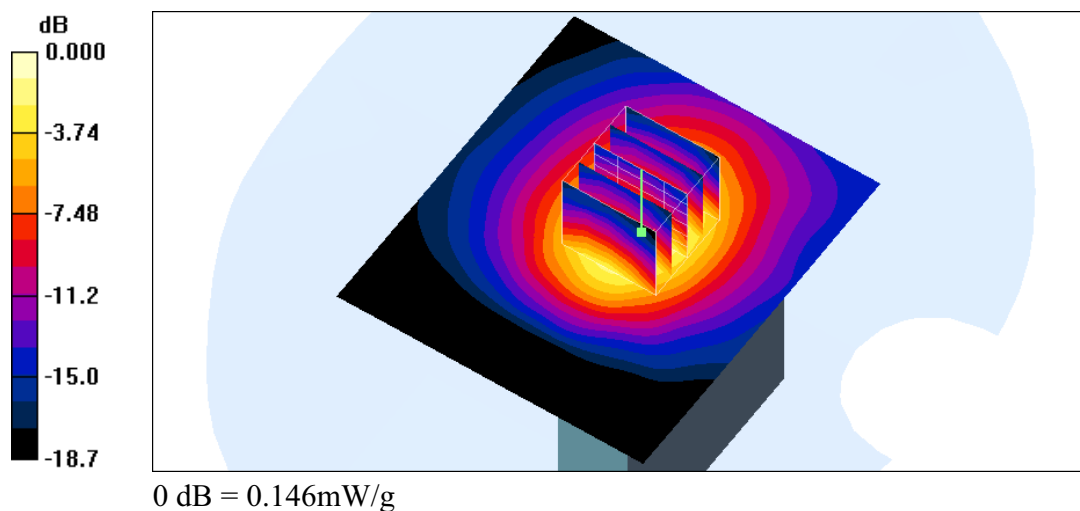Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.02 V/m; Power Drift = 0.139 dB
Peak SAR (extrapolated) = 0.015 W/kg
SAR(1 g) = 0.0079 mW/g; SAR(10 g) = 0.0047 mW/g
Maximum value of SAR (measured) = 0.009 mW/g

0 dB = 0.009mW/g
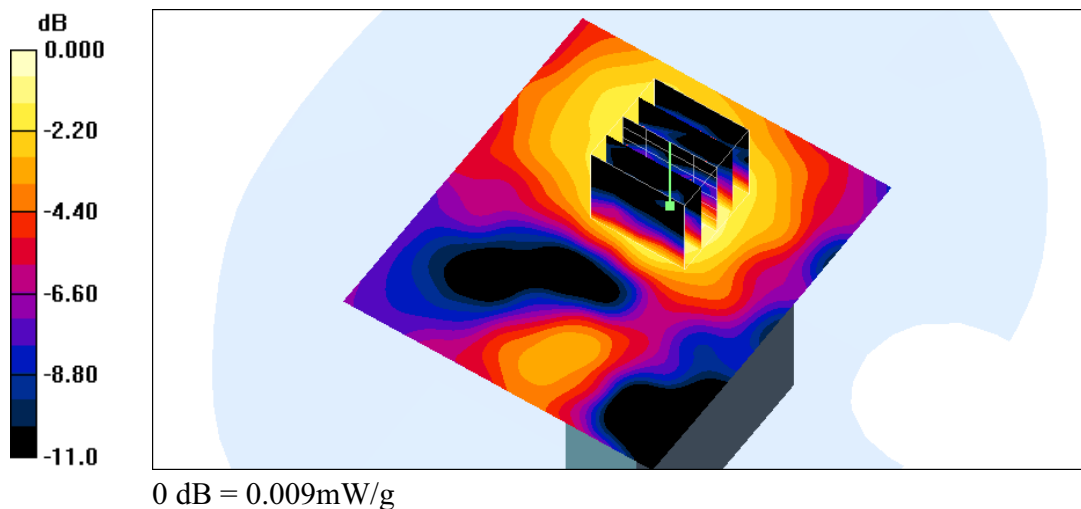
Flat_IEEE 802.11g CH6_open_LCD Panel(90)+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; $ε_r$ = 51.9; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.224 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.0 V/m; Power Drift = -0.015 dB
Peak SAR (extrapolated) = 0.428 W/kg
SAR(1 g) = 0.208 mW/g; SAR(10 g) = 0.110 mW/g
Maximum value of SAR (measured) = 0.224 mW/g

0 dB = 0.224mW/g
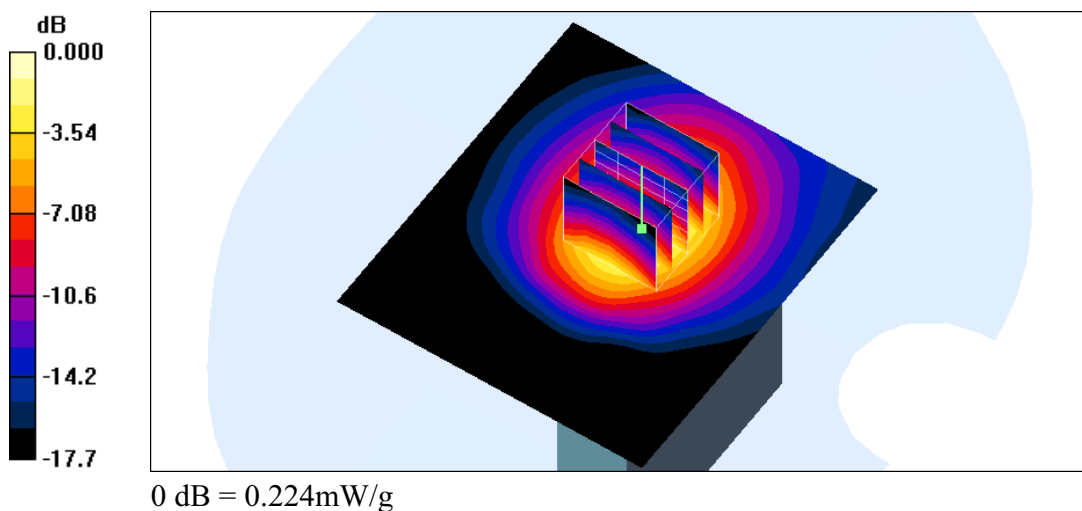
Test Laboratory: A Test Lab Techno Corp. Date/Time: 8/27/2007 4:31:39 PM

Flat_IEEE 802.11g CH11_open_LCD Panel(90)+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; σ = 1.98 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.152 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.06 V/m; Power Drift = -0.068 dB
Peak SAR (extrapolated) = 0.284 W/kg
SAR(1 g) = 0.137 mW/g; SAR(10 g) = 0.073 mW/g
Maximum value of SAR (measured) = 0.146 mW/g

0 dB = 0.146mW/g

Flat_IEEE 802.11b CH1_close_LCD Panel+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.92 mho/m; $ε_r$ = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.416 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
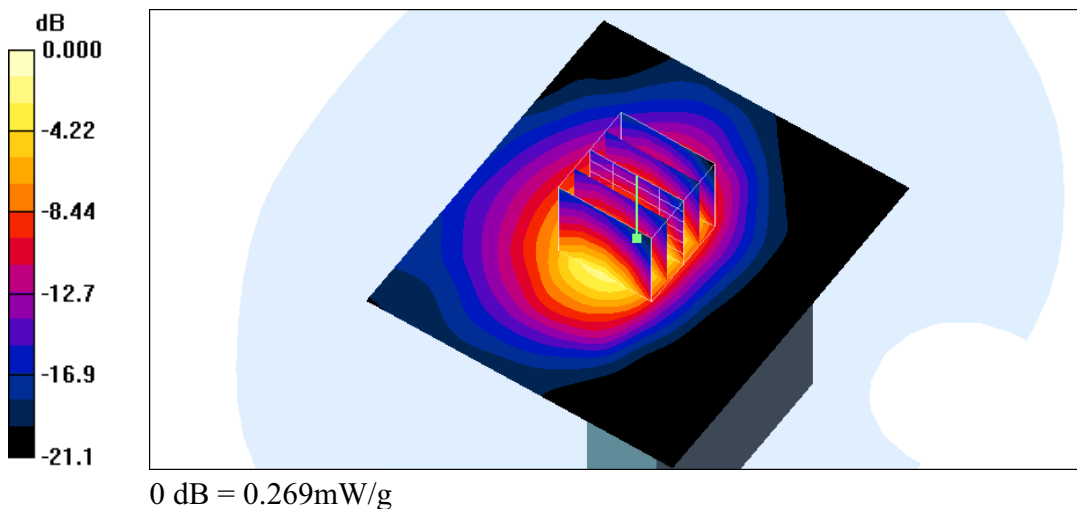Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.3 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 0.774 W/kg
SAR(1 g) = 0.375 mW/g; SAR(10 g) = 0.193 mW/g
Maximum value of SAR (measured) = 0.406 mW/g
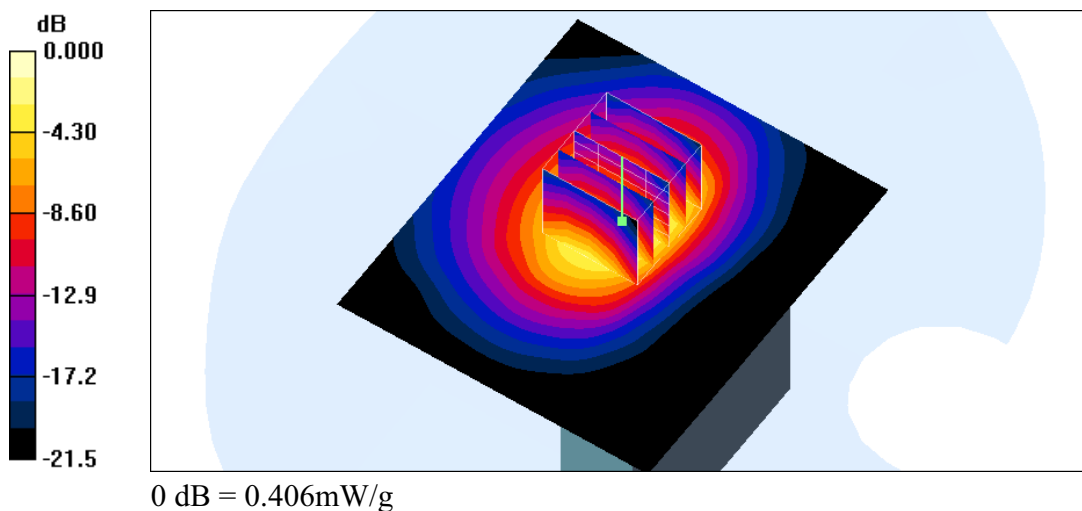
0 dB = 0.406mW/g

Flat_IEEE 802.11b CH6_close_LCD Panel+15mm for Body_Right Side

DUT: Z22; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.263 mW/g
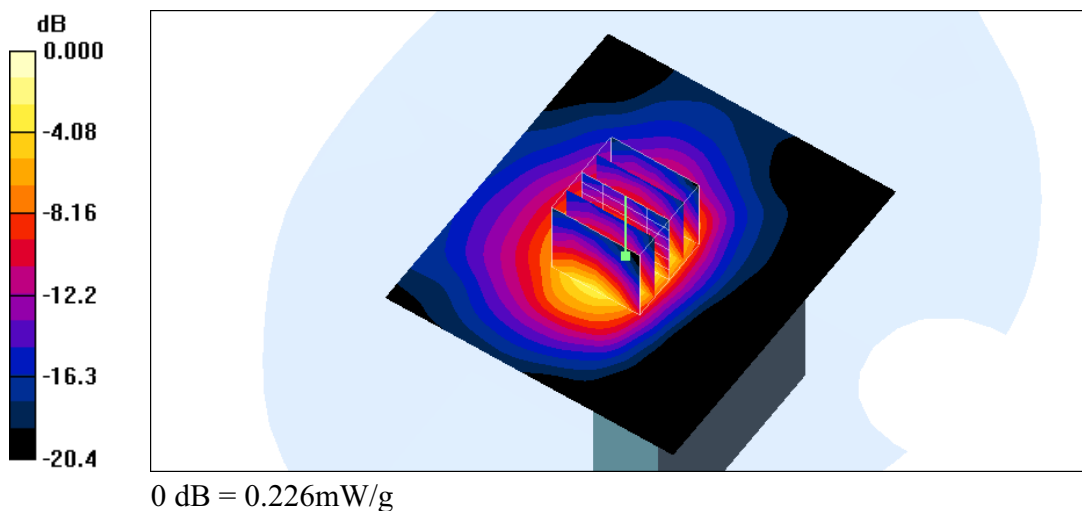
Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = -0.088 dB
Peak SAR (extrapolated) = 0.525 W/kg
SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.125 mW/g
Maximum value of SAR (measured) = 0.269 mW/g

0 dB = 0.269mW/g

Flat_IEEE 802.11b CH11_close_LCD Panel+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; σ = 1.98 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.229 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.31 V/m; Power Drift = -0.011 dB
Peak SAR (extrapolated) = 0.450 W/kg
SAR(1 g) = 0.208 mW/g; SAR(10 g) = 0.103 mW/g
Maximum value of SAR (measured) = 0.226 mW/g

0 dB = 0.226mW/g

Flat_IEEE 802.11g CH1_close_LCD Panel+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2412 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; σ = 1.92 mho/m; ε_r = 52; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.332 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.0 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.631 W/kg
SAR(1 g) = 0.296 mW/g; SAR(10 g) = 0.149 mW/g
Maximum value of SAR (measured) = 0.320 mW/g

0 dB = 0.320mW/g
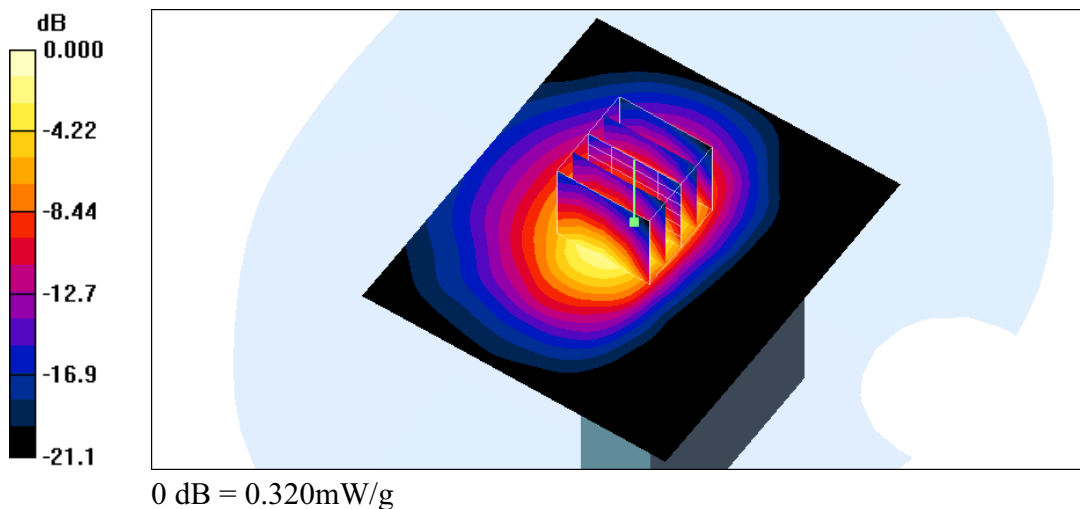
Test Laboratory: A Test Lab Techno Corp. Date/Time: 8/27/2007 3:35:10 PM

Flat_IEEE 802.11g CH6_close_LCD Panel+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2437 MHz; σ = 1.95 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.181 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.75 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 0.329 W/kg
SAR(1 g) = 0.155 mW/g; SAR(10 g) = 0.079 mW/g
Maximum value of SAR (measured) = 0.170 mW/g

0 dB = 0.170mW/g
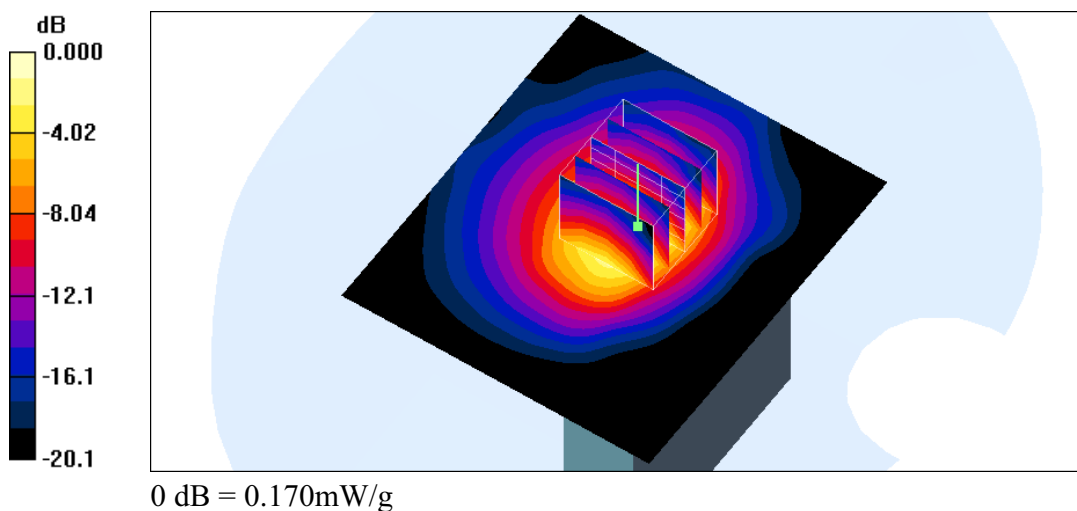
Test Laboratory: A Test Lab Techno Corp. Date/Time: 8/27/2007 4:46:54 PM

Flat_IEEE 802.11g CH11_close_LCD Panel+15mm for Body_Right Side

DUT: Z2; Type: Wireless Messenger 2; FCC ID:VGUZWM2

Communication System: IEEE 802.11g; Frequency: 2462 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; σ = 1.98 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1531; ConvF(4.09, 4.09, 4.09); Calibrated: 1/22/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 10/16/2006
- Phantom: SAM 12; Type: SAM v4.0; Serial: TP:1009
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Flat/Area Scan (71x81x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.114 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.60 V/m; Power Drift = -0.068 dB
Peak SAR (extrapolated) = 0.206 W/kg
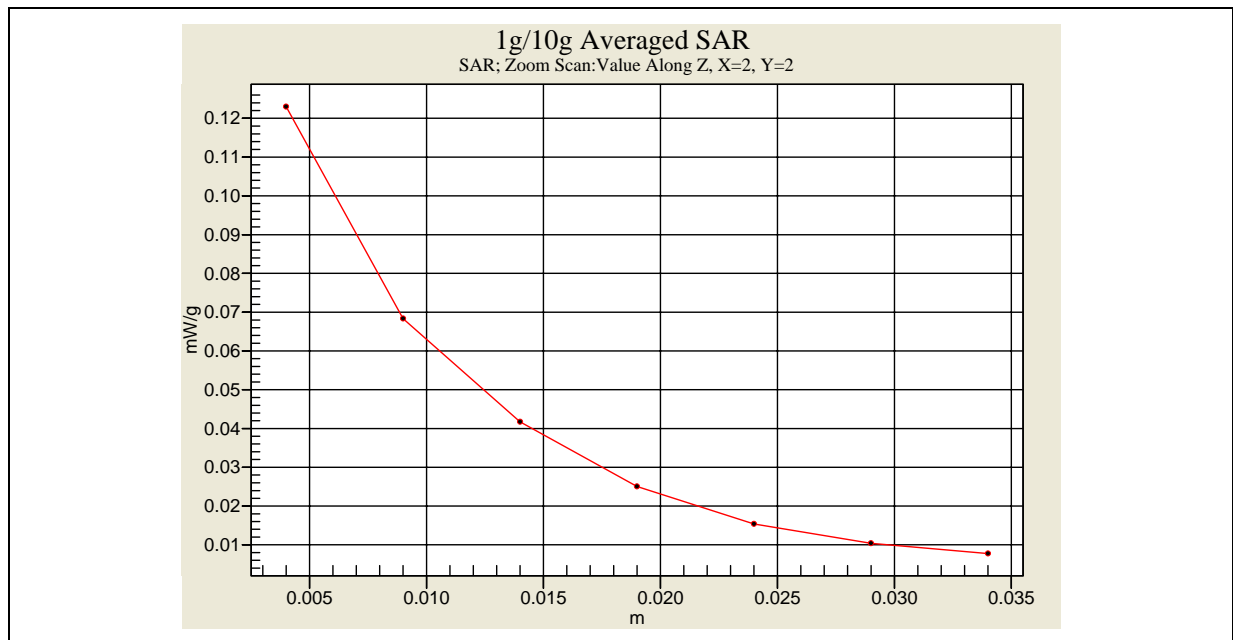**SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.051 mW/g**
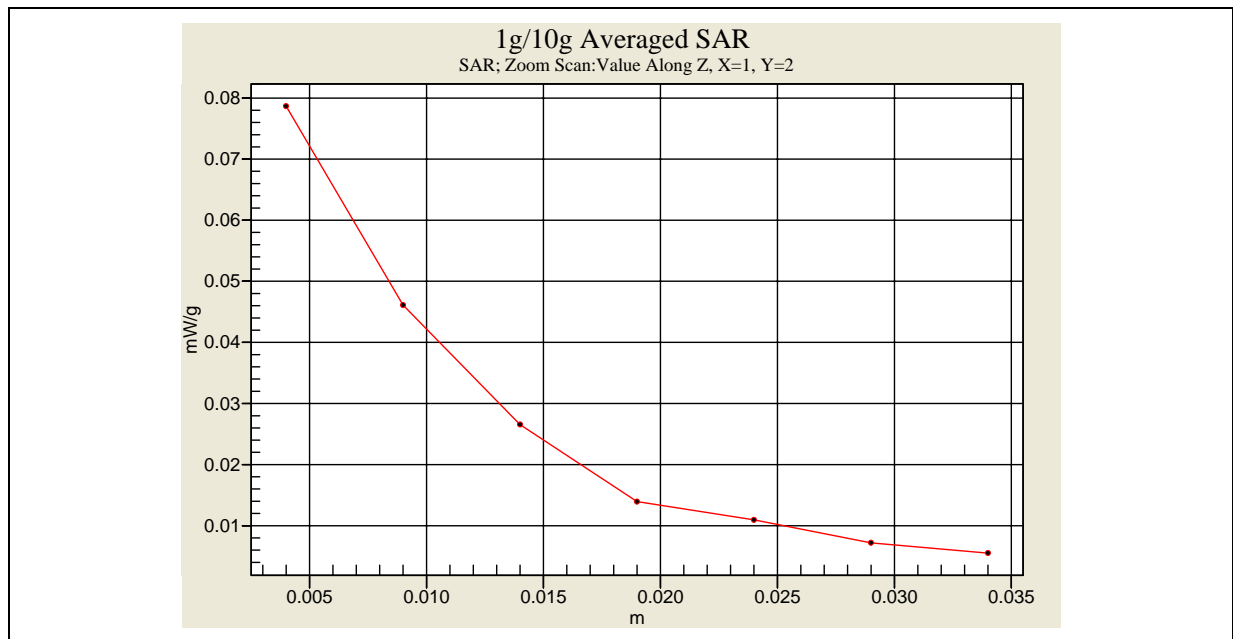Maximum value of SAR (measured) = 0.107 mW/g

0 dB = 0.107mW/g
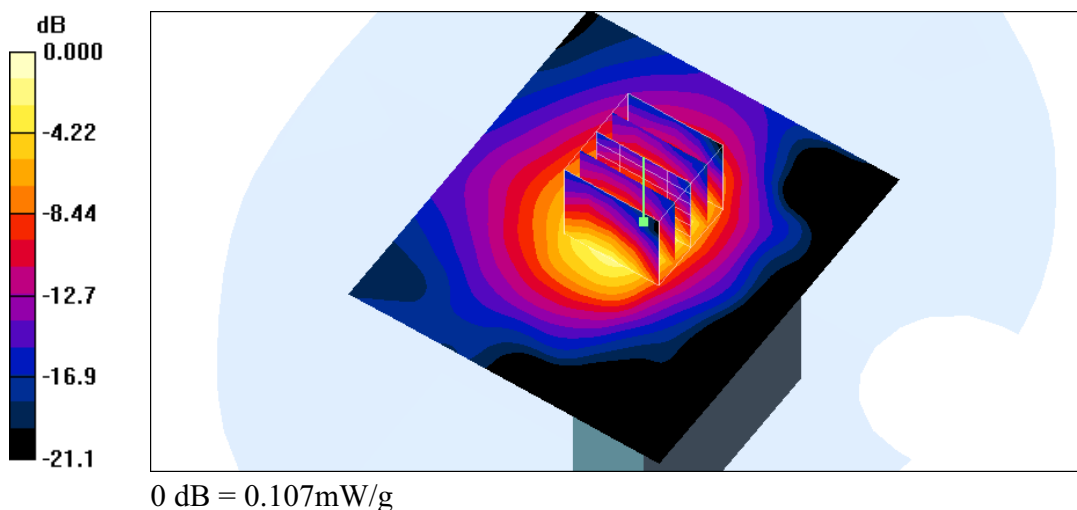
Z-axis Plot of SAR Measurement
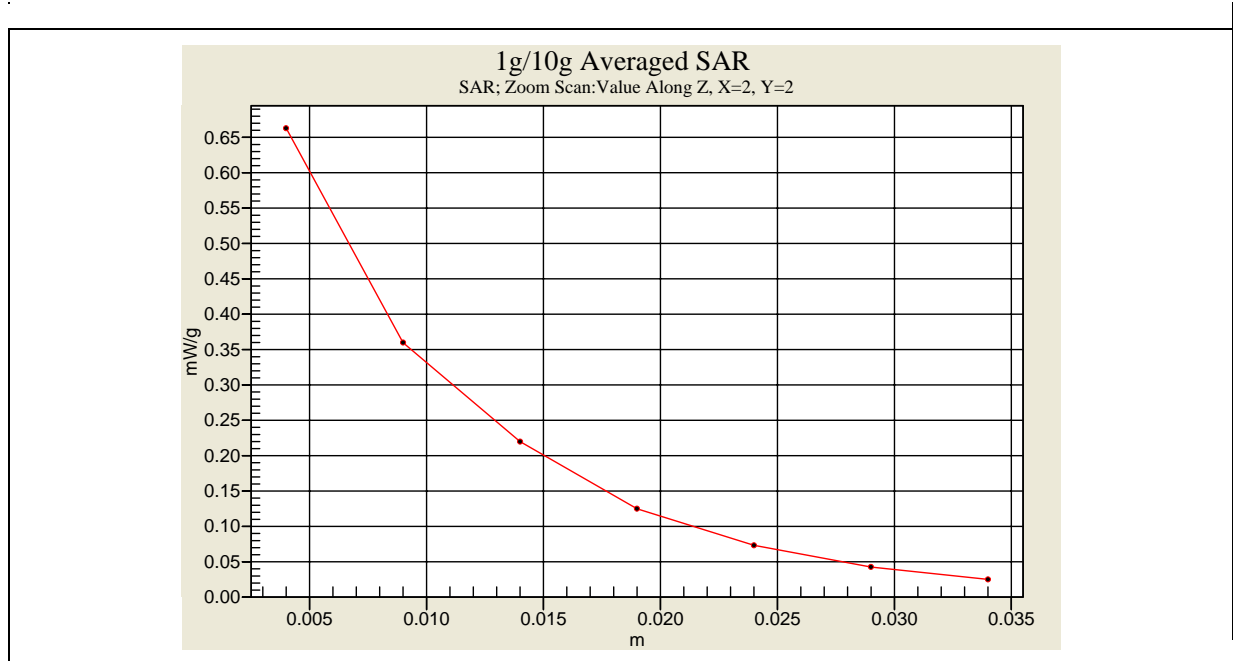
Z-axis Plot of 802.11b

802.11b Wi-Fi body SAR of CH1_close

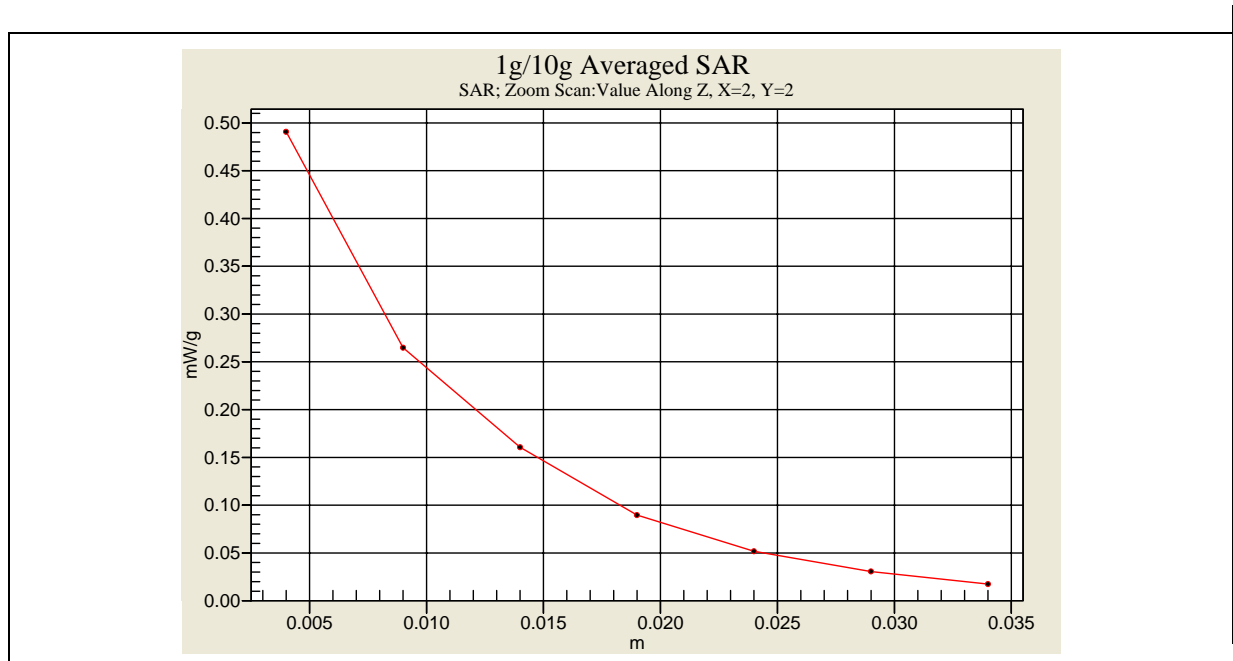### *Z-axis Plot of 802.11g*

802.11g Wi-Fi body SAR of CH1_close
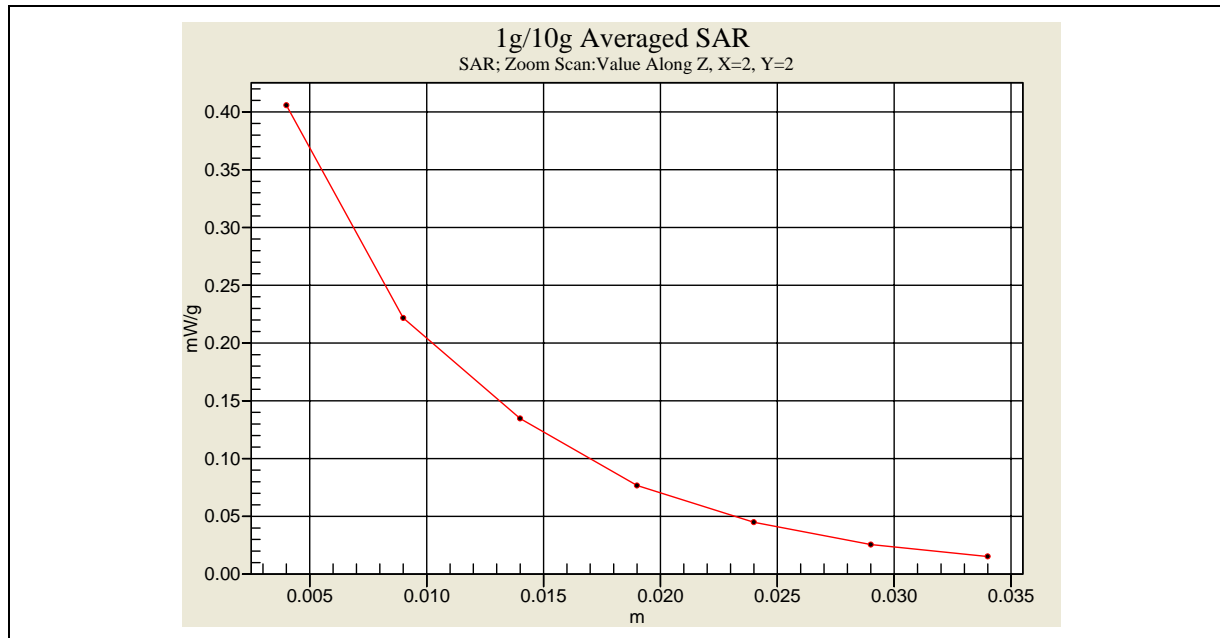
Z-axis Plot of 802.11b

802.11b Wi-Fi body SAR of CH1_open 15mm_Right
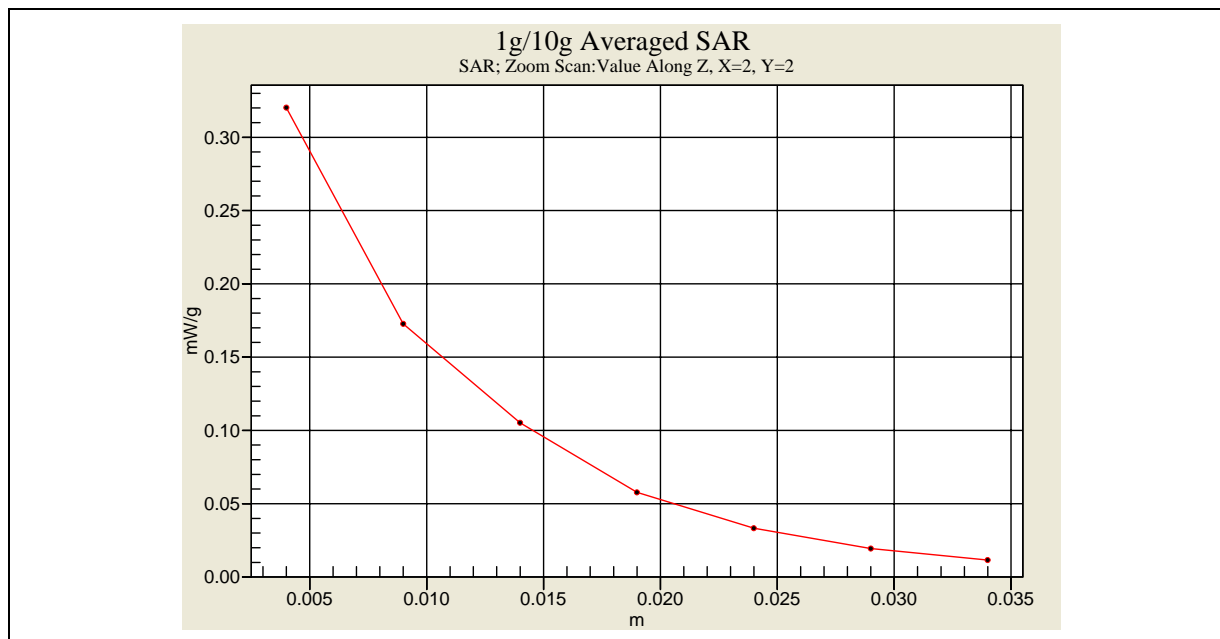
Z-axis Plot of 802.11g

802.11g Wi-Fi body SAR of CH1_open 15mm_Left

Z-axis Plot of 802.11b

802.11b Wi-Fi body SAR of CH1_close_15mm

Z-axis Plot of 802.11g

802.11g Wi-Fi body SAR of CH1_close_15mm

Appendix C - Calibration

All of the instruments Calibration information are listed below.

- Dipole _ D2450V2 SN:712 Calibration No.D2450V2-712_Feb07
- Probe _ ET3DV6 SN:1531 Calibration No.ET3-1531_Jan07
- DAE _ DAE3 SN:541 Calibration No.DAE3-541_Oct06