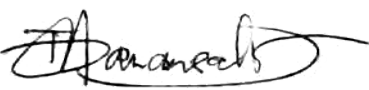



# RF TEST REPORT



Report No.: FCC/IC\_SAR\_SL15081301-SLX-018  
Supersede Report No.:

|   |  |                   |       |
|---|--|-------------------|-------|
| Applicant   | Stryker Medical  |                   |       |
| Host Product Name   | Stryker Critical Care Bed System   |                   |       |
| Host Model No.  | Gateway 2.0  |                   |       |
| Module Product Name   | SDIO Wireless Module   |                   |       |
| Module Model No.  | SX-SDMAN   |                   |       |
| Test Standard   | 47CFR 2.1093, IEEE C95.1-2005<br>RSS 102 Issue 5.0, IEEE 1528: 2013, IEC 62209-2: 2010   |                   |       |
| Test Method   | IEEE 1528: 2013, IEC 62209-2: 2010<br>KDB 447498 D01 General RF Exposure Guidance v06<br>KDB 248227 D01 802.11 Wi-Fi SAR v02r02<br>KDB 865664 D01 SAR Measurement 100MHz to 6 GHz v01r04<br>KDB 941225 D06 Hot Spot SAR v02r01 |                   |       |
| FCC ID  | Z7A-SDMAN  |                   |       |
| IC ID   | 4919E-SDMAN  |                   |       |
| Date of test  | 2/9/2016 - 2/25/2016   |                   |       |
| Issue Date  | 3/28/2016  |                   |       |
| Test Result   | <u>Pass</u> Fail   |                   |       |
| Equipment complied with the specification   |  |                   | [ x ] |
| Equipment did not comply with the specification   |  |                   | [   ] |
|   |  |                   |       |
| Teody Manansala   |  | Arthur Tie        |       |
| Test Engineer   |  | Engineer Reviewer |       |
| <p>This test report may be reproduced in full only<br/>Test result presented in this test report is applicable to the tested sample only</p>                              |  |                   |       |

Issued By:  
SIEMIC Laboratories  
775 Montague Expressway, Milpitas, 95035 CA



## Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

### Accreditations for Conformity Assessment

| Country/Region | Accreditation Body     | Scope                              |
|----------------|------------------------|------------------------------------|
| USA            | FCC, A2LA              | EMC , RF/Wireless , Telecom        |
| Canada         | IC, A2LA, NIST         | EMC, RF/Wireless , Telecom         |
| Taiwan         | BSMI , NCC , NIST      | EMC, RF, Telecom , Safety          |
| Hong Kong      | OFTA , NIST            | RF/Wireless ,Telecom               |
| Australia      | NATA, NIST             | EMC, RF, Telecom , Safety          |
| Korea          | KCC/RRA, NIST          | EMI, EMS, RF , Telecom, Safety     |
| Japan          | VCCI, JATE, TELEC, RFT | EMI, RF/Wireless, Telecom          |
| Mexico         | NOM, COFETEL, Caniety  | Safety, EMC , RF/Wireless, Telecom |
| Europe         | A2LA, NIST             | EMC, RF, Telecom , Safety          |
| Israel         | MOC, NIST              | EMC, RF, Telecom, Safety           |

### Accreditations for Product Certifications

| Country   | Accreditation Body | Scope                 |
|-----------|--------------------|-----------------------|
| USA       | FCC TCB, NIST      | EMC , RF , Telecom    |
| Canada    | IC FCB , NIST      | EMC , RF , Telecom    |
| Singapore | iDA, NIST          | EMC , RF , Telecom    |
| EU        | NB                 | EMC & R&TTE Directive |
| Japan     | MIC (RCB 208)      | RF , Telecom          |
| Hong Kong | OFTA (US002)       | RF , Telecom          |

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## 1 Report Revision History

| Report No.                    | Report Version | Description | Issue Date |
|-------------------------------|----------------|-------------|------------|
| FCC/IC_SAR_SL15081301-SLX-018 | Original       | Original    | 3/28/2016  |

## 2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company: Stryker Medical  
Product: Stryker Critical Care Bed System  
Model: Gateway 2.0

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance as a spot check with the Stipulated Standard listed on 1<sup>st</sup> page. The derived result is summarized in following table,

| Rated, Measured conducted RF output Power and SAR | : | Mode               | Highest 1g SAR          |
|---|---|--------------------|-------------------------|
|   |   | 802.11b (2.4GHz)   | <b>0.962 w/kg(body)</b> |
|   |   | 802.11n-40 (5 GHz) | <b>1.337 w/kg(body)</b> |

## 3 Customer information

|                      |   |
|----------------------|---|
| Applicant Name       | Stryker Medical   |
| Applicant Address    | 3800 East Centre Ave, Portage, MI 49002 USA                 |
| Manufacturer Name    | Silex Technology, Inc                                       |
| Manufacturer Address | 2-3-1 Hikaridai, Seika-cho Sourakugun, Kyoto 619-0237 Japan |

## 4 Test site information

|                      |   |
|----------------------|---|
| Lab performing tests | SIEMIC Laboratories                         |
| Lab Address          | 775 Montague Expressway, Milpitas, CA 95035 |
| FCC Test Site No.    | 881796                                      |
| IC Test Site No.     | 4842D-2                                     |
| VCCI Test Site No.   | A0133                                       |

## 5 Modification

| Index | Item | Description | Note |
|-------|------|-------------|------|
| -     | -    | -           | -    |

## 6 EUT Information

### 6.1 EUT Description

|                           |                                  |
|---------------------------|----------------------------------|
| Host Product Name         | Stryker Critical Care Bed System |
| Host Model No.            | Gateway 2.0                      |
| Module Product Name       | SDIO Wireless Module             |
| Module Model No.          | SX-SDMAN                         |
| Trade Name                | Stryker                          |
| Serial No.                | 008092 721E00                    |
| Input Power               | 3.3VDC                           |
| Power Adapter Manu/Model  | 100-240VAC                       |
| Power Adapter SN          | N/A                              |
| Hardware version          | N/A                              |
| Software version          | N/A                              |
| Date of EUT received      | 02/01/2016                       |
| Equipment Class/ Category | UNII                             |
| Clock Frequencies         | N/A                              |
| Port/Connectors           | N/A                              |
| Antenna Model             | Ethertronics 1000418             |

#### Additional EUT Information

|  |
|--|
| Any variants of the primary device? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>If yes, please list the different models & differences:                                   |
| Accessories (Sold with device):<br>Power adapter   |
| The device uses configuration: <input type="checkbox"/> Handheld Device <input checked="" type="checkbox"/> Body worn Device <input type="checkbox"/> Held to ear <input type="checkbox"/> Data Grip |
| Is the device being sold with multiple antenna options? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  |
| Power Adaptor: <input type="checkbox"/> With DC Adaptor <input checked="" type="checkbox"/> With AC Adaptor  |
| Battery Configuration: <input type="checkbox"/> Fixed Battery <input checked="" type="checkbox"/> Removable/Swappable  |

### 6.2 Radio Description

| Radio Type             | 802.11b  | 802.11g                                      | 802.11a  | 802.11n-20M  | 802.11n-40M  |
|------------------------|--|--|--|--|--|
| Operating Frequency    | 2412-2462MHz   | 2412-2462MHz                                 | 5180-5240MHz<br>5260-5320MHz<br>5500-5700MHz<br>5725-5825MHz | 2412-2462MHz<br>5180-5240MHz<br>5240-5320MHz<br>5500-5700MHz<br>5725-5825MHz | 2422-2452MHz<br>5190-5230MHz<br>5270-5310MHz<br>5510-5670MHz<br>5755-5795MHz |
| Modulation             | DSSS<br>(CCK, DQPSK,<br>DBPSK)                                     | OFDM-CCK<br>(BPSK, QPSK,<br>16QAM,<br>64QAM) | OFDM (BPSK,<br>QPSK, 16QAM,<br>64QAM)                        | OFDM (BPSK,<br>QPSK, 16QAM,<br>64QAM)  | OFDM (BPSK,<br>QPSK, 16QAM,<br>64QAM)  |
| Channel Spacing        | 5MHz   | 5MHz   | 20MHz  | 5MHz(2.4GHz),<br>20MHz(5GHz)   | 40MHz  |
| Number of Channels     | 11   | 11   | 24   | 11(2.4GH)<br>24(5GHz)  | 11(5GHz)   |
| Antenna Type           | Embedded PCB   |  |  |  |  |
| Antenna Gain           | 2.5dBi (for 2.4GHz), 3.5dBi (for 5GHz)                             |  |  |  |  |
| Antenna Connector Type | U.FL   |  |  |  |  |
| Note                   | EUT only has one Antenna and there is no simultaneous transmitting |  |  |  |  |

**6.3 EUT Photos - External**



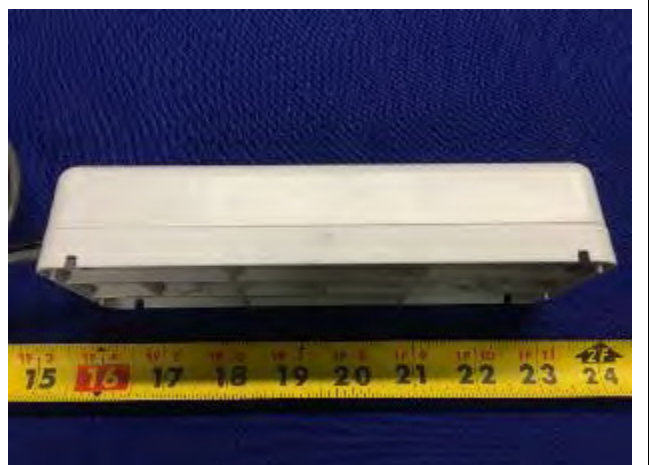
**Front View**



**Rear View**



**Left View**



**Right View**



**EUT with Cable View**



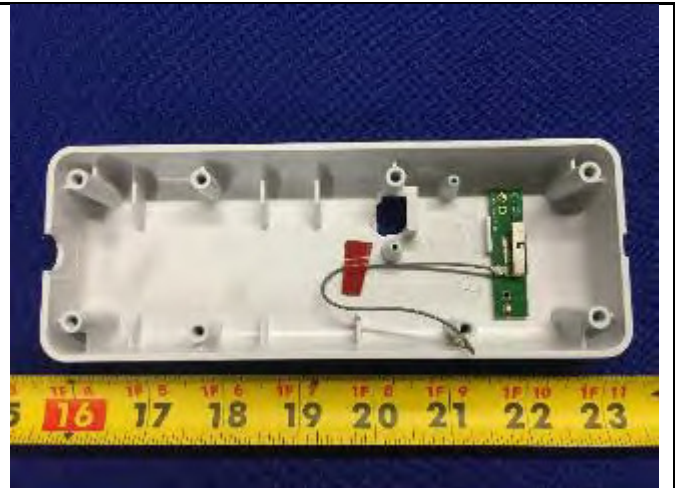
**Power Adapter View**



**6.4 EUT Photos - Internal**



**Top view with EUT Opened**



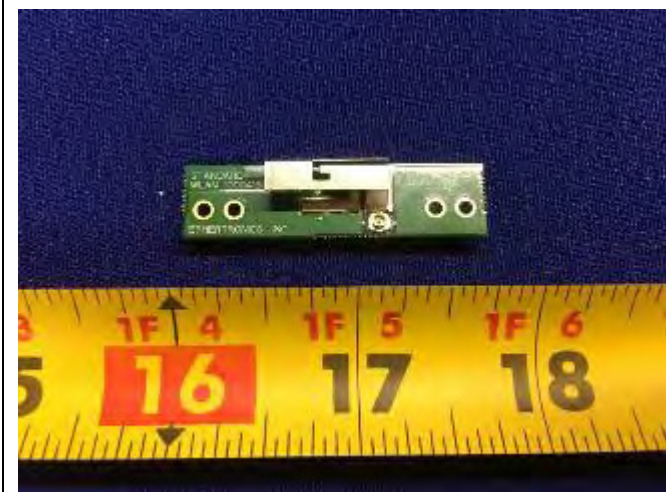
**Antenna Inside EUT View**



**EUT- Board Top View**



**EUT-Board Bottom View**

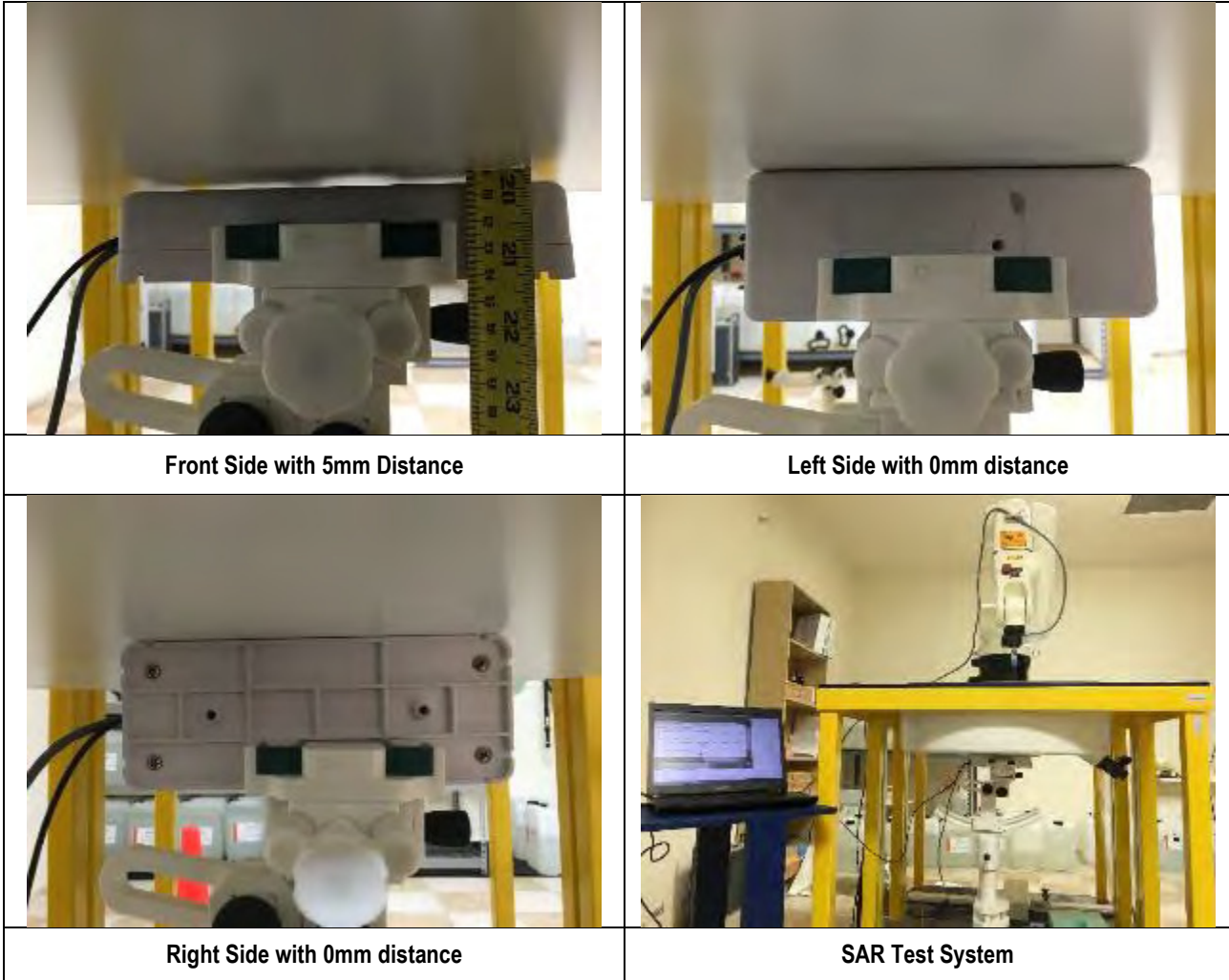


**Antenna - Top View**



**Antenna - Bottom View**

**6.5 EUT Test Setup Photos**



## 7 Supporting Equipment/Software and cabling Description

### 7.1 Supporting Equipment

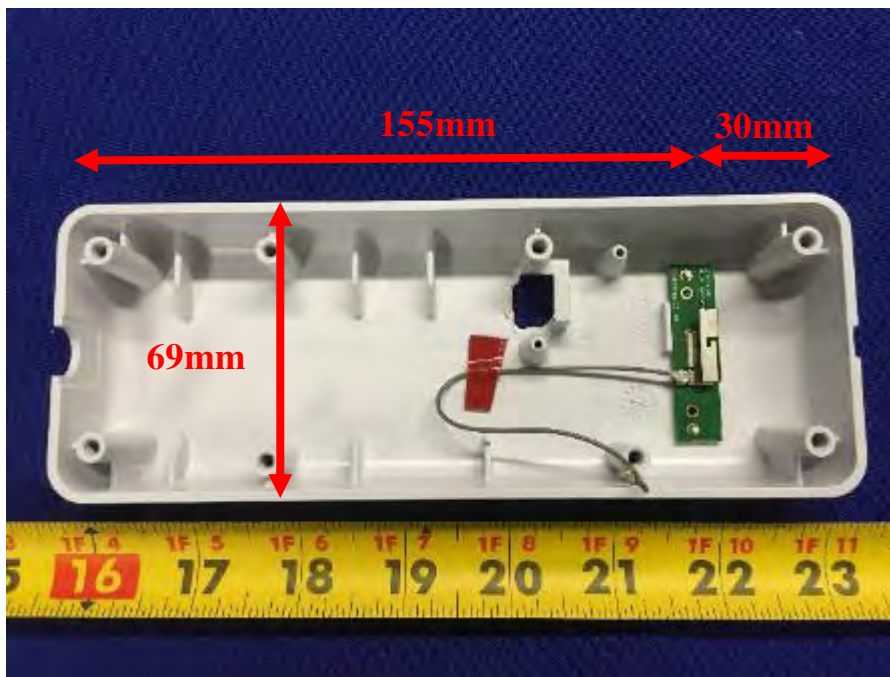
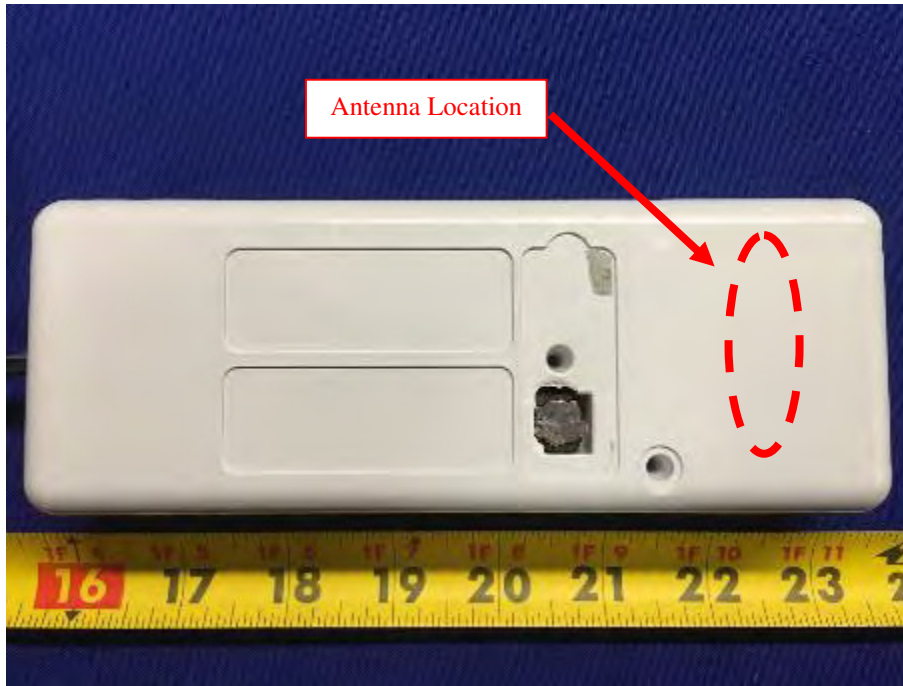
| Item | Supporting Equipment Description | Model          | Serial Number | Manufacturer | Note |
|------|----------------------------------|----------------|---------------|--------------|------|
| 1    | Laptop                           | Latitude E6500 | N/a           | Dell         | -    |

### 7.2 Test Software Description

| Test Item   | Software                     | Description   |
|-------------|------------------------------|---|
| SAR Testing | Windows Mobile Device Center | Set the EUT to Connect with Laptop                          |
| SAR Testing | ActiveSync Remote Display    | Set the EUT to transmit continuously in different test mode |

## 8 Setup and Test Configuration Consideration

### Radio & Antenna Location



**Remark:**

SAR is not required because the distance from the antenna to the edge is  $> 25$  mm as per KDB 941225 D06 Hotspot Mode SAR. So Top side and bottom side are not required.

**EUT Test Position for SAR**



**Test Position-1 (Right Side with 0mm distance)**



**Test Position-2 (Left Side with 0mm distance)**



**Test Position-3 (Front Side with 5mm distance)**

**Note: Test Position 1 and 2 were tested at 0mm distance to consider worst case as a normal usage.**

## 9 Test Summary

| Test Item | Test standard |                                 | Test Method/Procedure |                         | Pass / Fail   |
|-----------|---------------|---------------------------------|-----------------------|-------------------------|---|
| SAR       | FCC           | OET Bulletin 65<br>Supplement C | IEEE                  | Std 1528-2013, FCC KDBs | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A |

## 10 SAR Introduction

### Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

### SAR Definition

Specific Absorption Rate 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 ( $\rho$ ).

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

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

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

Where:

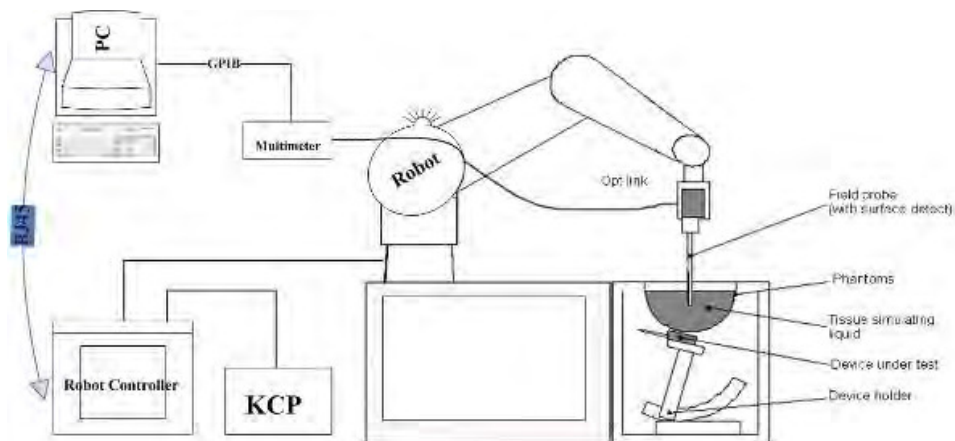
$\sigma$  = conductivity of the tissue (S/m)  
 $\rho$  = mass density of the tissue (kg/m<sup>3</sup>)  
E = RMS electric field strength (V/m)

## 11 SAR Measurement Setup

### Dosimetric Assessment System

These measurements were performed with the automated near-field scanning system OPENSAR from SATIMO. The system is based on a high precision robot (working range: 850 mm), which positions the probes with a positional repeatability of better than  $\pm 0.02$  mm. 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 to the data acquisition unit.

### Measurement System Diagram



### The OPENSAR system for performing compliance tests consist of the following items:

- A standard high precision 6-axis robot (KUKA) with controller and software.
- KUKA Control Panel (KCP).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A computer operating Windows XP.
- OPENSAR software.
- Remote control with teaches pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM phantom enabling testing left-hand right-hand and body usage.
- The Position device for handheld EUT.
- Tissue simulating liquid mixed according to the given recipes.
- System validation dipoles to validate the proper functioning of the system.



## EPGO259 Probe

The SAR measurements were conducted with dosimetric probe (manufactured by SATIMO), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the procedure described in SAR standard with accuracy of better than  $\pm 10\%$ .



It is connected to the KRC box on the robot arm and provides an automatic detection of the phantom surface. The 3D file of the phantom is include in OpenSAR software. The Video Positioning System allow the system to take the automatic reference and to move the probe safely and accurately on the phantom.

| Parameter                                 | Description   |
|---|---|
| Frequency Range                           | 100 MHz to 6 GHz  |
| Linearity                                 | 0.25 dB (100 MHz to 6 GHz)  |
| Directivity                               | 0.25 dB in brain tissue (rotation around probe axis)<br>0.5 dB in brain tissue (rotation normal probe axis) |
| Dynamic                                   | 0.001W/kg to > 100W/kg  |
| Range Linearity                           | 0.25 dB   |
| Surface                                   | 0.2 mm repeatability in air and liquids   |
| Dimensions Overall length                 | 330 mm  |
| Tip length                                | 16 mm   |
| Body diameter                             | 8 mm  |
| Tip diameter                              | 2.6 mm  |
| Distance from probe tip to dipole centers | <1.5 mm   |

### **E-Field Probe Calibration**

Each probe is calibrated according to a dosimetric assessment procedure described in SAR standard with accuracy better than  $\pm 10\%$ . The spherical isotropy was evaluated with the procedure described in SAR standard and found to be better than  $\pm 0.25\text{dB}$ . The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 0.8 GHz, and in a waveguide above 0.8 GHz 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. E-field correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue.

## SAM Phantom

The SAM Phantom SAM29 is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is in compliance with the specification set in IEEE P1528 and CENELEC EN62209-1.

The phantom 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 the 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 in the robot.

Shell Thickness: 0.2 mm

Filling Volume: Approx. 25 liters

Dimensions (H x L x W): 810 x 1000 x 500 mm

Liquid is filled to at least 15mm from the bottom of Phantom.



## Device Holder

In combination with the Generic Twin Phantom V3.0, the Mounting Device 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 repeatedly positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

*Note: A simulating human hand is not used due to the complex anatomical and geometrical structure of the hand that may produce infinite number of configurations [10]. To produce the worst-case condition. (the hand absorbs antenna output power), the hand is omitted during the tests.*



## Data Evaluation

The OPENSAR software automatically executes the following procedure to calculate the field units from the microvolt readings at the probe connector. The parameters used in the valuation are stored in the configuration modules of the software:

|                  |                           |                   |
|------------------|---------------------------|-------------------|
| Probe Parameters | - Sensitivity             | Norm <sub>i</sub> |
|                  | - Conversion factor       | ConvFi            |
|                  | - Diode compression point | Dcpi              |
| Device Parameter | - Frequency               | f                 |
|                  | - Crest factor            | cf                |
| Media Parameters | - Conductivity            | σ                 |
|                  | - Density                 | ρ                 |

These parameters must be set correctly in the software. They can either be found in the component documents or are imported into the software from the configuration files issued for the OPENSAR components.

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

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

Where  $V_i$  = 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:

$$\text{E-field probes: } E = \sqrt{\frac{V_i}{\text{Norm}_i \cdot \text{ConvFi}}}$$

$$\text{H-field probes: } H_i = \sqrt{V_i} \frac{a_{0i} + a_{1i}f + a_{2i}f^2}{f}$$

Where  $V_i$  = Compensated signal of channel  $i$  ( $i = x, y, z$ )

$\text{Norm}_i$  = Sensor sensitivity of channel  $i$  ( $i = x, y, z$ )  
μV/(V/m)<sup>2</sup> for E-field Probes

$\text{ConvFi}$  = 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):

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

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

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

where  $\text{SAR}$  = local specific absorption rate in mW/g

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

$\sigma$  = conductivity in [mho/m] or [siemens/m]

$\rho$  = equivalent tissue density in g/cm<sup>3</sup>

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.

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

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

where  $P_{\text{ave}}$  = Equivalent power density of a plane wave in mW/cm<sup>2</sup>

$E_{\text{tot}}$  = total electric field strength in V/m

$H_{\text{tot}}$  = total magnetic field strength in A/m

## SAR Evaluation – Peak Spatial - Average

The procedure for assessing the peak spatial-average SAR value consists of the following steps

- **Power Reference Measurement**  
The reference and drift jobs are useful jobs for monitoring the power drift of the device under test in the batch process. Both jobs measure the field at a specified reference position, at a selectable distance from the phantom surface. The reference position can be either the selected section's grid reference point or a user point in this section. The reference job projects the selected point onto the phantom surface, orients the probe perpendicularly to the surface, and approaches the surface using the selected detection method.
- **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 implemented in OPENSAR software can find the maximum locations even in relatively coarse grids. The scan area is defined by an editable grid. This grid is anchored at the grid reference point of the selected section in the phantom. When the area scan's property sheet is brought-up, grid was at to 15 mm by 15 mm and can be edited by a user.
- **Zoom Scan**  
Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default zoom scan measures 5 x 5 x 7 points within a cube whose base faces are centered on the maximum found in a preceding area scan job within the same procedure. If the preceding Area Scan job indicates more than one maximum, the number of Zoom Scans has to be enlarged accordingly (The default number inserted is 1).
- **Power Drift measurement**  
The drift job measures the field at the same location as the most recent reference job within the same procedure, and with the same settings. The drift measurement gives the field difference in dB from the reading conducted within the last reference measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under test within a batch process. In the properties of the Drift job, the user can specify a limit for the drift and have OPENSAR software stop the measurements if this limit is exceeded.

## SAR Evaluation – Peak SAR

The procedure for spatial peak SAR evaluation has been implemented according to the IEEE1529 standard. It can be conducted for 1 g and 10 g. The OPENSAR system allows evaluations that combine measured data and robot positions, such as:

- Maximum search
- Extrapolation
- Boundary correction
- Peak search for averaged SAR

During a maximum search, global and local maximum searches are automatically performed in 2-D after each Area Scan measurement with at least 6 measurement points. It is based on the evaluation of the local SAR gradient calculated by the Quadratic Shepard's method. The algorithm will find the global maximum and all local maxima within -2 dB of the global maxima for all SAR distributions.

### Extrapolation

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. Several measurements at different distances are necessary for the extrapolation.

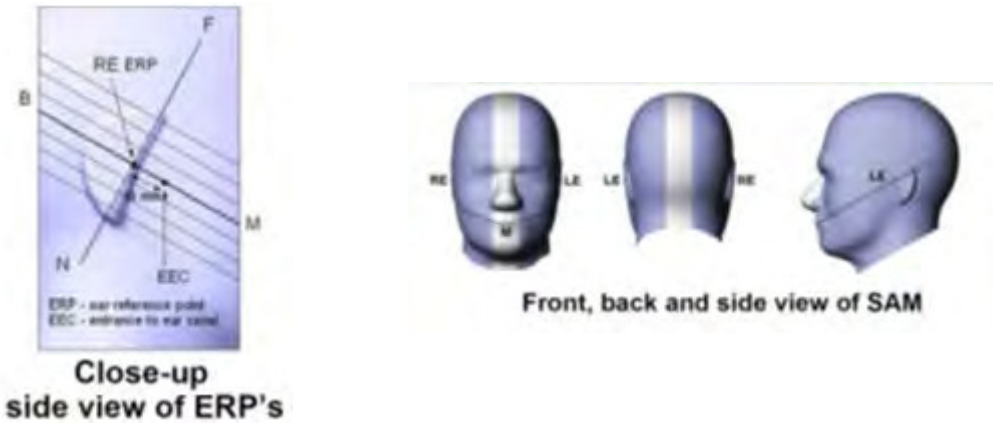
They are used in the Cube Scan to obtain SAR values between the lowest measurement points and the inner phantom surface. The routine uses the fourth order least square polynomial method for extrapolation. For a grid using 5x5x7 measurement points with 5mm resolution amounting to 343 measurement points, the uncertainty of the extrapolation routines is less than 1% for 1 g and 10 g cubes.

## Device Reference Points

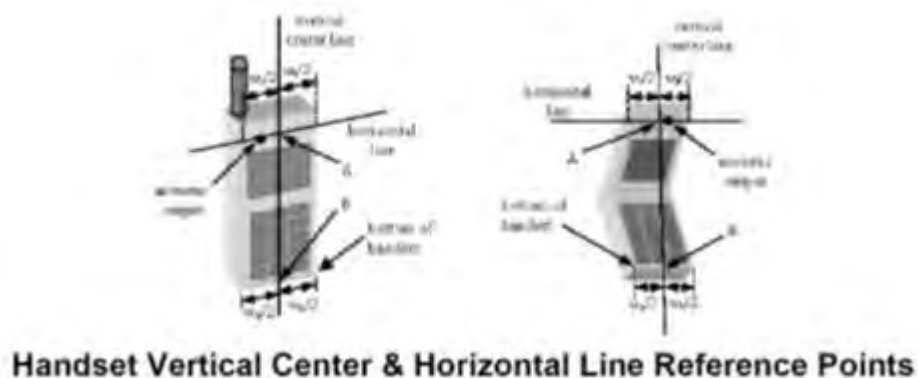
### Definition of Reference Points

#### Ear Reference Point

Figure 6.2 shows the front, back and side views of the SAM Phantom. The point "M" is the reference point for the center of the mouth, "LE" is the left ear reference point (ERP), and "RE" is the right ERP. The ERPs are 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 6.1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front) is perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 6.1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].



Two imaginary lines on the device need to be established: the vertical centerline and the horizontal line. The test device is placed in a normal operating position with the "test device reference point" located along the "vertical centerline" on the front of the device aligned to the "ear reference point" (See Fig. 6.3). The "test device reference point" is then located at the same level as the center of the ear reference point. The test device is positioned so that the "vertical centerline" is bisecting the front surface of the device at its top and bottom edges, positioning the "ear reference point" on the outer surface of both the left and right head phantoms on the ear reference point.



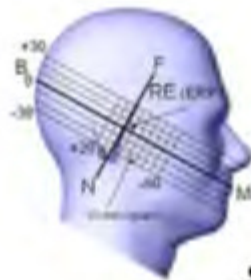
## Test Configuration – Positioning for Cheek / Touch

1. Position the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure below), such that the plane defined by the vertical center line and the horizontal line of the device is approximately parallel to the sagittal plane of the phantom



**Front, Side and Top View of Cheek/Touch Position**

2. Translate the device towards the phantom along the line passing through RE and LE until the device touches the ear.
3. While maintaining the device in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to MB-NF including the line MB (called the reference plane).
4. Rotate the device around the vertical centerline until the device (horizontal line) is symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE and maintaining the device contact with the ear, rotate the device about the line NF until any point on the device is in contact with a phantom point below the ear (cheek). See Figure below.

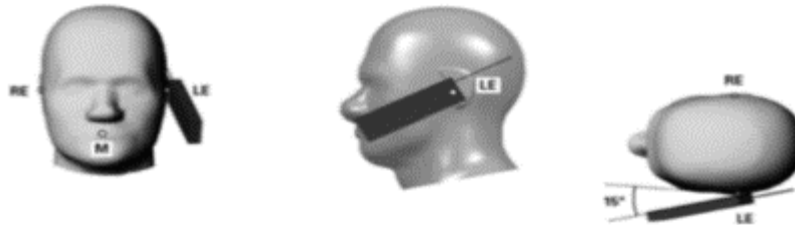


**Side view w/ relevant markings**

## Test Configuration – Positioning for Ear / 15° Tilt

With the test device aligned in the Cheek/Touch Position”:

1. While maintaining the orientation of the device, retract the device parallel to the reference plane far enough to enable a rotation of the device by 15 degrees.
2. Rotate the device around the horizontal line by 15 degrees.
3. While maintaining the orientation of the device, move the device parallel to the reference plane until any part of the device touches the head. (In this position, point A is located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact is at any location other than the pinna, the angle of the device shall be reduced. The tilted position is obtained when any part of the device is in contact with the ear as well as a second part of the device is in contact with the head (see Figure below).



Front, Side and Top View of Ear/15° Tilt Position

**Test  
Body**

**Position –  
Worn**

### Configurations

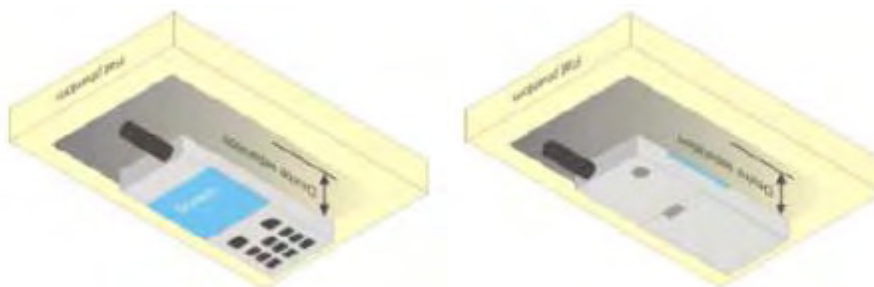
Body-worn operating configurations are tested with the accessories attached to the device and positioned against a flat phantom in a normal use configuration. A device with a headset output is tested with a headset connected to the device. Body dielectric parameters are used.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then, when multiple accessories that contain metallic components are supplied with the device, the device is tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration where a separation distance between the back of the device and the flat phantom is used. All test position spacing are documented.

Transmitters that are designed to operate in front of a person’s face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessory(ies), including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

In all cases SAR measurements are performed to investigate the worst-case positioning. Worst-case positioning is then documented and used to perform Body SAR testing.



## 12 Measurement Uncertainty

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty 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 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 below:

| Uncertainty Distribution           | Normal             | Rectangle | Triangular | U Shape |
|------------------------------------|--------------------|-----------|------------|---------|
| Multi-plying Factor <sup>(a)</sup> | 1/k <sup>(b)</sup> | 1/√3      | 1/√6       | 1/√2    |

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

(b) K is the coverage factor

### 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 -sum-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 COMOSAR Uncertainty Budget is show in below table:

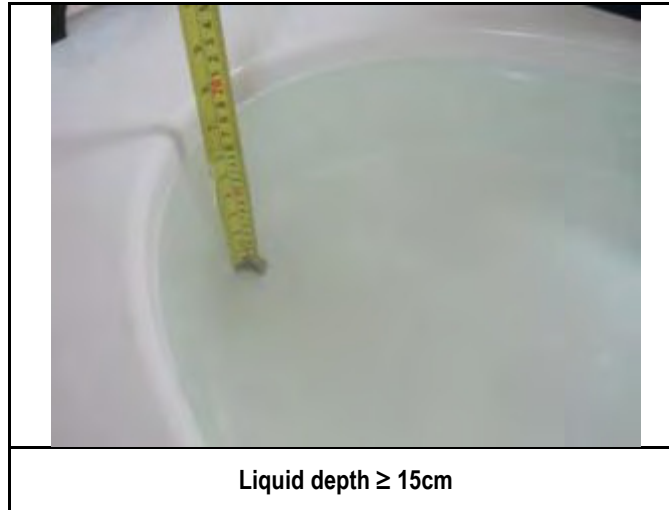
**Uncertainty Budget of COMOSAR for frequency range 300 MHz to 6 GHz**

| Uncertainty Component  | Tolerances % | Probability Distribution | Divisor    | Ci (1g)         | Ci (10g)        | Uncertainty 1g(%) | Uncertainty 10g(%) |
|--|--------------|--------------------------|------------|-----------------|-----------------|-------------------|--------------------|
| <b>Measurement System Related</b>  |              |                          |            |                 |                 |                   |                    |
| Probe Calibration  | 6            | N                        | 1          | 1               | 1               | 6                 | 6                  |
| Axial Isotropy   | 3            | R                        | $\sqrt{3}$ | $\sqrt{(1-Cp)}$ | $\sqrt{(1-Cp)}$ | 1.22474           | 1.22474            |
| Hemispherical Isotropy   | 4            | R                        | $\sqrt{3}$ | $\sqrt{Cp}$     | $\sqrt{Cp}$     | 1.63299           | 1.63299            |
| Boundary Effect  | 1            | R                        | $\sqrt{3}$ | 1               | 1               | 0.57735           | 0.57735            |
| Linearity  | 5            | R                        | $\sqrt{3}$ | 1               | 1               | 2.88675           | 2.88675            |
| System Detection Limits  | 1            | R                        | $\sqrt{3}$ | 1               | 1               | 0.57735           | 0.57735            |
| Readout Electronics  | 0.5          | N                        | 1          | 1               | 1               | 0.5               | 0.5                |
| Response Time  | 0.2          | R                        | $\sqrt{3}$ | 1               | 1               | 0.11547           | 0.11547            |
| Integration Time   | 2            | R                        | $\sqrt{3}$ | 1               | 1               | 1.1547            | 1.1547             |
| RF Ambient Conditions  | 3            | R                        | $\sqrt{3}$ | 1               | 1               | 1.73205           | 1.73205            |
| Probe Positioner Mechanical Tolerances   | 2            | R                        | $\sqrt{3}$ | 1               | 1               | 1.1547            | 1.1547             |
| Probe Positioning with respect to Phantom Shell                                  | 1            | R                        | $\sqrt{3}$ | 1               | 1               | 0.57735           | 0.57735            |
| Extrapolation, Interpolation and integration Algorithms for Max. SAR Evaluation. | 1.5          | R                        | $\sqrt{3}$ | 1               | 1               | 0.86603           | 0.86603            |
| <b>Test Sample Related</b>   |              |                          |            |                 |                 |                   |                    |
| Test Sample Positioning  | 1.5          | N                        | 1          | 1               | 1               | 1.5               | 1.5                |
| Device Holder Uncertainty  | 5            | N                        | 1          | 1               | 1               | 5                 | 5                  |
| Output Power Variation – SAR Drift measurement                                   | 3            | R                        | $\sqrt{3}$ | 1               | 1               | 1.73205           | 1.73205            |
| <b>Phantom and Tissue Parameters Related</b>                                     |              |                          |            |                 |                 |                   |                    |
| Phantom Uncertainty (Shape and thickness Tolerances)                             | 4            | R                        | $\sqrt{3}$ | 1               | 1               | 2.3094            | 2.394              |
| Liquid Conductivity – deviation from target value                                | 5            | R                        | $\sqrt{3}$ | 0.64            | 0.43            | 1.84752           | 1.2413             |
| Liquid Conductivity – Measurement Uncertainty                                    | 2.5          | N                        | 1          | 0.64            | 0.43            | 1.6               | 1.075              |
| Liquid Permittivity – deviation from target value                                | 3            | R                        | $\sqrt{3}$ | 0.6             | 0.49            | 1.03923           | 0.8487             |
| Liquid Permittivity – Measurement Uncertainty                                    | 2.5          | N                        | 1          | 0.6             | 0.49            | 1.5               | 1.225              |
| Combined Standard Uncertainty  |              |                          |            |                 |                 | 9.66051 %         | 9.52428 %          |
| Expanded Standard Uncertainty ( K=2 , confidence 95%)                            |              |                          |            |                 |                 | 18.9346 %         | 18.6676 %          |

## 13 Liquid Validation

### Liquid Validation

The dielectric parameters were checked prior to assessment using the HP85070C dielectric probe kit. The dielectric parameters measured are reported in each correspondent section.



### IEEE SCC-34/SC-2 P1528 recommended Tissue Dielectric Parameters

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 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 a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in P1528

| Target Frequency | Head         |                | Body         |                |
|------------------|--------------|----------------|--------------|----------------|
| MHz              | $\epsilon_r$ | $\sigma$ (S/m) | $\epsilon_r$ | $\sigma$ (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           | 53.19        | 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           |

**Note:**  $\epsilon_r$  = relative permittivity,  $\sigma$  = conductivity and  $\rho = 1000 \text{ kg/m}^3$

**Liquid Validation Result:**

| Liquid type/Band(MHz) | Measured Date | Parameters   | Measured | Target | Deviation (%) | Limit (%) |
|-----------------------|---------------|--------------|----------|--------|---------------|-----------|
| 2450 Body             | 02/09/2016    | Permittivity | 51.47    | 52.70  | -2.33         | ±5.00     |
|                       |               | Conductivity | 1.94     | 1.95   | -0.71         | ±5.00     |
| 5200 Body             | 02/11/2016    | Permittivity | 48.78    | 49.01  | -0.47         | ±5.00     |
|                       |               | Conductivity | 5.38     | 5.30   | 3.39          | ±5.00     |
| 5600 Body             | 02/15/2016    | Permittivity | 48.79    | 48.47  | 0.66          | ±5.00     |
|                       |               | Conductivity | 6.01     | 5.77   | 4.17          | ±5.00     |
| 5800 Body             | 02/17/2016    | Permittivity | 47.96    | 48.20  | -0.49         | ±5.00     |
|                       |               | Conductivity | 6.14     | 6.00   | 2.33          | ±5.00     |

## 14 System Validation and System Verification

### 14.1 System Validation

The system validation procedure evaluates the system against reference SAR values and the performance of the probe, readout electronics, and software. The test setup utilizes a flat phantom and a reference dipole.

Thus, the system validation process does not include data scatter due to the use of anthropomorphic phantoms or uncertainty due to handset positioning variability. System validation should be performed annually, or when a new system is put into operation, or whenever modifications have been made to the system, such as a new software release, different readout electronics or different types of probes. The probe used in the test system to be validated should be properly calibrated.

System validation provides a means of system-level validation. The test system utilizes a flat phantom and a reference dipole. Thus, system validation verifies the system accuracy against its specifications but does not include the uncertainty due to the use of anthropomorphic phantoms, nor does it include the uncertainty due to handset positioning variability. This test is performed annually (e.g., after probe calibration), before measurements related to inter laboratory comparison and every time modifications have been made to the system, such as a new software release, different readout electronics, and for different types of probes.

System Validation procedure is at below,

- a) **SAR evaluation:** A complete 1 g or 10 g averaged SAR measurement is performed. The reference dipole input power is adjusted to produce a 1 g averaged SAR value falling in the range of 0.4–10 W/kg. The 1 g or 10 g averaged SAR is measured at frequencies in reference table within the range to be used in compliance tests. The results are normalized to 1 W forward input power and compared with the reference SAR values shown in reference value. The differences from the reference values should be less than the tolerance specified for the SAR measurement system by the manufacturer or designer, i.e., within the expanded uncertainty for the system validation.
- b) **Extrapolation routine:** Local SAR values are measured along a vertical axis directly above the reference dipole feed-point using the same test grid-point spacing as used for handset SAR evaluations. This measurement is repeated along another vertical axis with a 2 cm transverse offset from the reference dipole feed-point. SAR values at the phantom surface are extrapolated and compared with the numerical values given in reference table. The difference from the reference values should be less than the tolerance specified for the SAR measurement system by the manufacturer or designer, i.e., within the expanded uncertainty for system validation.
- c) **Probe linearity:** The measurement in step a) is repeated using different reference dipole input power levels. The power levels are selected for each frequency to produce 1 g averaged SAR values of approximately 10 W/kg, 2 W/kg, and 0.4 W/kg. The measured SAR values are normalized to 1 W forward input power and compared with the 1 W normalized value from step a). The difference between these values should be less than the tolerance specified for the SAR measurement system by the manufacturer or designer, i.e., within the expanded uncertainty for the linearity component.
- d) **Modulation response:** The measurements in step a) are repeated with pulse-modulated signals having a duty factor of 0.1 and pulse repetition rate of 10 Hz. The power is adjusted to produce a 1 g-averaged SAR of approximately 8 W/kg with the pulse modulated signal (corresponding to a peak spatial-average SAR of approximately 80 W/kg). The measured SAR values are normalized to 1 W forward input power and duty factor of 1, and compared with the 1 W normalized values from step a). The difference between these values should be less than the tolerance specified for the SAR measurement system by the manufacturer or designer, i.e., within the expanded uncertainty for system validation.
- e) **System offset:** The measurements in step a) are repeated with a reference dipole input forward power that produces a 1 g or 10 g averaged SAR of approximately 0.05 W/kg. The measured SAR values are normalized to 1 W forward input power and compared with the 1 W normalized values from step a). The difference between these values should be less than the tolerance specified for the SAR measurement system by the manufacturer or designer, i.e., within the expanded uncertainty for system validation.
- f) **Probe axial isotropy:** The center point of the probe's sensors is placed directly above the reference dipole center at a measurement distance of approximately 5–10 mm from the phantom inner surface. The probe (or reference dipole, if precise rotations are supported by the dipole fixture) is rotated around its axis  $\pm 180^\circ$  in steps no larger than  $15^\circ$ . The maximum and minimum SAR readings are recorded. The difference between these values should be less than the tolerance specified for the SAR measurement system by the manufacturer or designer, i.e., within the expanded uncertainty for the axial isotropy component.

### Numerical reference SAR values (W/kg) for reference dipole and flat phantom

| Frequency (MHz) | 1 g SAR | 10 g SAR | Local SAR at surface (above feed-point) | Local SAR at surface (y = 2 cm offset from feed-point) <sup>a</sup> |
|-----------------|---------|----------|---|---|
| 300             | 3.0     | 2.0      | 4.4                                     | 2.1   |
| 450             | 4.9     | 3.3      | 7.2                                     | 3.2   |
| 835             | 9.5     | 6.2      | 4.1                                     | 4.9   |
| 900             | 10.8    | 6.9      | 16.4                                    | 5.4   |
| 1450            | 29.0    | 16.0     | 50.2                                    | 6.5   |
| 1800            | 38.1    | 19.8     | 69.5                                    | 6.8   |
| 1900            | 39.7    | 20.5     | 72.1                                    | 6.6   |
| 2000            | 41.1    | 21.1     | 74.6                                    | 6.5   |
| 2450            | 52.4    | 24.0     | 104.2                                   | 7.7   |
| 3000            | 63.8    | 25.7     | 140.2                                   | 9.5   |

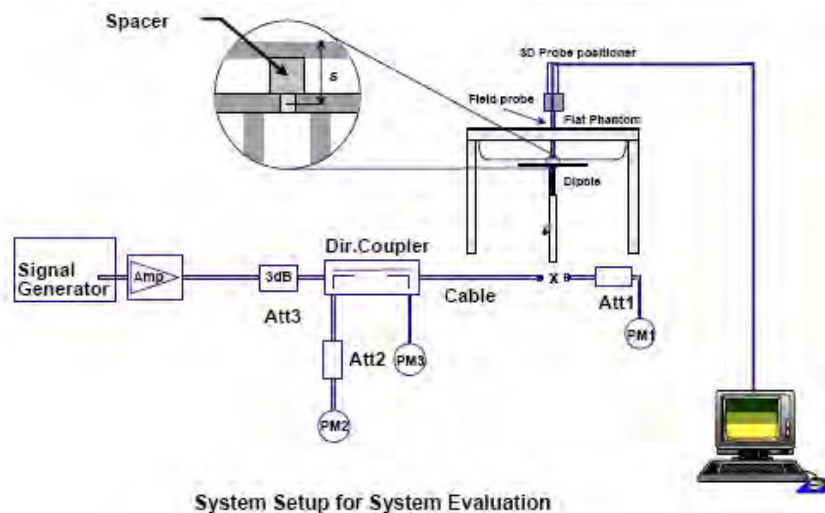
#### System Validation Status

| Frequency (MHz) | Temp (°C) | Humidity (%) | Validation Date | Probe SN      | Validation Cycle | Validation Due |
|-----------------|-----------|--------------|-----------------|---------------|------------------|----------------|
| 835             | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 900             | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 1800            | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 1900            | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 2000            | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 2450            | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 5200            | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 5400            | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 5600            | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |
| 5800            | 22        | 58           | Oct 23rd, 2015  | 27/14 EPGO259 | 1 year           | Oct 23rd, 2016 |

## 14.2 System Verification

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.

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



Note: Equipment description


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

### System Verification Results

| Test Date  | Test Condition |      | Freq. (MHz) | Target (W/kg) | Input Power (dBm) | Measured (W/kg) | 1W Normalized SAR1g (W/kg) | Delta (%) | Limit (%) |
|------------|----------------|------|-------------|---------------|-------------------|-----------------|----------------------------|-----------|-----------|
| 02/09/2016 | Temp (°C)      | 21   | 2450        | 52.4          | 20                | 5.430           | 54.30                      | 3.60      | ±10.00    |
|            | Humidity (%)   | 48   |             |               |                   |                 |                            |           |           |
|            | ATM (mbar)     | 1009 |             |               |                   |                 |                            |           |           |
| 02/11/2016 | Temp (°C)      | 21   | 5200        | 159.00        | 20                | 15.886          | 158.86                     | -0.09     | ±10.00    |
|            | Humidity (%)   | 51   |             |               |                   |                 |                            |           |           |
|            | ATM (mbar)     | 1009 |             |               |                   |                 |                            |           |           |
| 02/11/2016 | Temp (°C)      | 21   | 5400        | 166.40        | 20                | 16.776          | 167.76                     | 0.82      | ±10.00    |
|            | Humidity (%)   | 51   |             |               |                   |                 |                            |           |           |
|            | ATM (mbar)     | 1009 |             |               |                   |                 |                            |           |           |
| 02/15/2016 | Temp (°C)      | 21   | 5600        | 173.80        | 20                | 17.671          | 176.71                     | 1.68      | ±10.00    |
|            | Humidity (%)   | 51   |             |               |                   |                 |                            |           |           |
|            | ATM (mbar)     | 1009 |             |               |                   |                 |                            |           |           |
| 02/17/2016 | Temp (°C)      | 21   | 5800        | 181.20        | 20                | 18.536          | 185.36                     | 2.30      | ±10.00    |
|            | Humidity (%)   | 51   |             |               |                   |                 |                            |           |           |
|            | ATM (mbar)     | 1009 |             |               |                   |                 |                            |           |           |

## 15 Output Power Measurement Results

### Requirement(s):

| Spec           | Item  | Requirement   | Applicable   |
|----------------|---|---|--|
| -              | -   | Time averaged conducted output power to be measured | <input checked="" type="checkbox"/>  |
| Test Setup     |   |   |  |
| Test Procedure | <p><u>Measurement using an Average Power Meter (PM)</u></p> <p>Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.</p> <ul style="list-style-type: none"> <li>- Connect EUT's RF output power to power meter</li> <li>- Set EUT to be continuous transmission mode</li> <li>- Measurement the average output power using power meter and record the result</li> </ul> <p>Repeat above steps for different test channel and other modulation type.</p> |   |  |
| Test Date      | 02/09/2016  | Environmental condition                             | Temperature 22°C<br>Relative Humidity 55%<br>Atmospheric Pressure 1008mbar |
| Remark         | -   |   |  |
| Result         | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail  |   |  |

Test Data     Yes       N/A

## Output Power measurement result

### 802.11b - 2.4GHz

| Mode | Description                     | Measured Power (dBm) | Declared (dBm) | Tune-up Low (dBm) | Tune-up High (dBm) |
|------|---------------------------------|----------------------|----------------|-------------------|--------------------|
| 11b  | 11b @ 2412 MHz, 1Mbps data rate | 13.41                | 13             | 10.5              | 15                 |
| 11b  | 11b @ 2437 MHz, 1Mbps data rate | 13.65                | 13             | 10.5              | 15                 |
| 11b  | 11b @ 2462 MHz, 1Mbps data rate | 13.59                | 13             | 10.5              | 15                 |

### 802.11g - 2.4GHz

| Mode | Description                     | Measured Power (dBm) | Declared (dBm) | Tune-up Low (dBm) | Tune-up High (dBm) |
|------|---------------------------------|----------------------|----------------|-------------------|--------------------|
| 11g  | 11g @ 2412 MHz, 6Mbps data rate | 8.27                 | 8.0            | 5.5               | 10                 |
| 11g  | 11g @ 2437 MHz, 6Mbps data rate | 11.27                | 11.0           | 8.5               | 13                 |
| 11g  | 11g @ 2462 MHz, 6Mbps data rate | 8.18                 | 8.5            | 8.5               | 10.5               |

### 802.11HT20 – 2.4GHz

| Mode    | Description                        | Measured Power (dBm) | Declared (dBm) | Tune-up Low (dBm) | Tune-up High (dBm) |
|---------|------------------------------------|----------------------|----------------|-------------------|--------------------|
| 11n-20M | 11n-20M @ 2412 MHz, MCS0 data rate | 8.35                 | 7              | 4.5               | 9                  |
| 11n-20M | 11n-20M @ 2437 MHz, MCS0 data rate | 10.95                | 10             | 7.5               | 12                 |
| 11n-20M | 11n-20M @ 2462 MHz, MCS0 data rate | 8.35                 | 7.5            | 5                 | 9.5                |

### 802.11na - 5.0GHz

| Mode | Description                        | Measured Power (dBm) | Declared (dBm) | Tune-up Low (dBm) | Tune-up High (dBm) |
|------|------------------------------------|----------------------|----------------|-------------------|--------------------|
| 11a  | 11n-20M @ 5180 MHz, MCS0 data rate | 13.12                | 14             | 11.5              | 16                 |
| 11a  | 11n-20M @ 5260 MHz, MCS0 data rate | 13.72                | 14             | 11.5              | 16                 |
| 11a  | 11n-20M @ 5320 MHz, MCS0 data rate | 13.26                | 14             | 11.5              | 16                 |
| 11a  | 11n-20M @ 5550 MHz, MCS0 data rate | 13.03                | 14             | 11.5              | 16                 |
| 11a  | 11n-20M @ 5580 MHz, MCS0 data rate | 13.87                | 14             | 11.5              | 16                 |
| 11a  | 11n-20M @ 5700 MHz, MCS0 data rate | 13.24                | 14             | 11.5              | 16                 |
| 11a  | 11n-20M @ 5745 MHz, MCS0 data rate | 12.70                | 13             | 10.5              | 15                 |
| 11a  | 11n-20M @ 5785 MHz, MCS0 data rate | 12.43                | 13             | 10.5              | 15                 |
| 11a  | 11n-20M @ 5825 MHz, MCS0 data rate | 12.78                | 13             | 10.5              | 15                 |

### 802.11HT20 - 5.0GHz

| Mode    | Description                        | Measured Power (dBm) | Declared (dBm) | Tune-up Low (dBm) | Tune-up High (dBm) |
|---------|------------------------------------|----------------------|----------------|-------------------|--------------------|
| 11n-20M | 11n-20M @ 5180 MHz, MCS0 data rate | 12.15                | 13             | 10.5              | 15                 |
| 11n-20M | 11n-20M @ 5260 MHz, MCS0 data rate | 13.72                | 14             | 11.5              | 16                 |
| 11n-20M | 11n-20M @ 5320 MHz, MCS0 data rate | 13.63                | 14             | 11.5              | 16                 |
| 11n-20M | 11n-20M @ 5500 MHz, MCS0 data rate | 13.33                | 14             | 11.5              | 16                 |
| 11n-20M | 11n-20M @ 5580 MHz, MCS0 data rate | 13.62                | 14             | 11.5              | 16                 |
| 11n-20M | 11n-20M @ 5700 MHz, MCS0 data rate | 13.58                | 14             | 11.5              | 16                 |
| 11n-20M | 11n-20M @ 5745 MHz, MCS0 data rate | 13.87                | 13             | 10.5              | 15                 |
| 11n-20M | 11n-20M @ 5785 MHz, MCS0 data rate | 13.24                | 13             | 10.5              | 15                 |
| 11n-20M | 11n-20M @ 5825 MHz, MCS0 data rate | 13.43                | 13             | 10.5              | 15                 |



**802.11HT40 - 5.0GHz**

| Mode    | Description                        | Measured Power (dBm) | Declared (dBm) | Tune-up Low (dBm) | Tune-up High (dBm) |
|---------|------------------------------------|----------------------|----------------|-------------------|--------------------|
| 11n-40M | 11n-40M @ 5190 MHz, MCS0 data rate | 9.68                 | 9.5            | 7.0               | 11.5               |
| 11n-40M | 11n-40M @ 5230 MHz, MCS0 data rate | 13.77                | 14             | 11.5              | 16                 |
| 11n-40M | 11n-40M @ 5270 MHz, MCS0 data rate | 13.03                | 14             | 11.5              | 16                 |
| 11n-40M | 11n-40M @ 5310 MHz, MCS0 data rate | 12.03                | 11.5           | 9.00              | 13.5               |
| 11n-40M | 11n-40M @ 5510 MHz, MCS0 data rate | 13.77                | 14             | 11.5              | 16                 |
| 11n-40M | 11n-40M @ 5550 MHz, MCS0 data rate | 13.03                | 14             | 11.5              | 16                 |
| 11n-40M | 11n-40M @ 5590 MHz, MCS0 data rate | 13.68                | 14             | 11.5              | 16                 |
| 11n-40M | 11n-40M @ 5630 MHz, MCS0 data rate | 13.77                | 14             | 11.5              | 16                 |
| 11n-40M | 11n-40M @ 5670 MHz, MCS0 data rate | 13.03                | 14             | 11.5              | 16                 |
| 11n-40M | 11n-40M @ 5710 MHz, MCS0 data rate | 13.77                | 14             | 11.5              | 16                 |
| 11n-40M | 11n-40M @ 5755 MHz, MCS0 data rate | 13.03                | 13             | 10.5              | 15                 |
| 11n-40M | 11n-40M @ 5795 MHz, MCS0 data rate | 13.77                | 13             | 10.5              | 15                 |

## 16 SAR Test Results

### Requirement(s):

| Spec            | Item  | Requirement   | Applicable   |
|-----------------|---|---|--|
| IEEE 1528: 2013 | 1   | SAR limit for devices used by the General public (Uncontrolled Environment) in localized Head and Trunk is 1.6 W/kg | <input checked="" type="checkbox"/>  |
|                 | 2   | SAR limit for Controlled Use Devices (Controlled Environment) in localized Head and Trunk is 8 W/kg                 | <input type="checkbox"/>   |
| Test Method     | IEEE 1528: 2013<br>IEC 62209-2: 2010<br>447498 D01 General RF Exposure Guidance v05r02<br>248227 SAR measurement procedures for 802.11 a/b/g v01r02<br>KDB 865664 SAR Measurement Requirements for 3 to 6 GHz v01r03  |   |  |
| Test Setup      | Refer to Section 6: SAR Measurement Setup   |   |  |
| Test Procedure  | <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Use client test software to set EUT transmit RF power in cont-TX mode in the highest power channel</li> <li>2. Measure output power through spectrum analyzer</li> <li>3. Place the DUT in the positions selected</li> <li>4. Set scan area, grid size and other setting on the SATIMO software</li> <li>5. Make SAR measurement for the selected highest output power channel at each testing position</li> <li>6. Find out the position with highest SAR result</li> <li>7. Measure additional SAR for other modes at the highest SAR position</li> </ol> <p>SAR measurement system will proceed the following basic steps:</p> <ol style="list-style-type: none"> <li>1. Initial power reference measurement</li> <li>2. Area Scan</li> <li>3. Zoom Scan</li> <li>4. Power drift measurement</li> </ol> |   |  |
| Test Date       | 02/09/2016 - 02/25/2016   | Environmental condition   | Temperature 22oC<br>Relative Humidity 55%<br>Atmospheric Pressure 1008mbar |
| Remark          | SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hotspot Mode SAR. So SAR is not required for Left, Top and Bottom sides.   |   |  |
| Result          | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail  |   |  |

Test Data     Yes       N/A

Test Plot     Yes       N/A

**SAR Measurement for 2.4GHz result to determine the worst case position configuration**

| Freq Band        | Freq (MHz)  | Position     | Distance   | Rated Max Power (dBm) | Measured Output Power (dBm) | Raw SAR 1g(W/kg) | Crest factor | Power Drift (%) | Scaled SAR (Tune-up & Duty Cycle) (W/kg) | 1g SAR Limit (W/kg) |
|------------------|-------------|--------------|------------|-----------------------|-----------------------------|------------------|--------------|-----------------|--|---------------------|
| 802.11-b         | 2412        | Front        | 5mm        | 15                    | 13.41                       | 0.7682           | 1            | 1.17            | 0.959                                    | 1.6                 |
|                  | <b>2437</b> | <b>Front</b> | <b>5mm</b> | <b>15</b>             | <b>13.65</b>                | <b>0.7984</b>    | <b>1</b>     | <b>-1.48</b>    | <b>0.962</b>                             | <b>1.6</b>          |
|                  | 2462        | Front        | 5mm        | 15                    | 13.59                       | 0.7582           | 1            | -1.05           | 0.896                                    | 1.6                 |
|                  | 2437        | Left         | 0mm        | 15                    | 13.65                       | 0.0818           | 1            | -1.01           | 0.026                                    | 1.6                 |
|                  | 2437        | Right        | 0mm        | 15                    | 13.65                       | 0.0216           | 1            | -0.05           | 0.099                                    | 1.6                 |
| 802.11-g         | 2412        | Front        | 5mm        | 15                    | 6.27                        | 0.3197           | 1            | -0.81           | 0.391                                    | 1.6                 |
|                  | 2437        | Front        | 5mm        | 15                    | 8.87                        | 0.5462           | 1            | -2.21           | 0.690                                    | 1.6                 |
|                  | 2462        | Front        | 5mm        | 15                    | 8.18                        | 0.3131           | 1            | -3.25           | 0.376                                    | 1.6                 |
|                  | 2437        | Left         | 0mm        | 15                    | 8.87                        | 0.0632           | 1            | 1.92            | 0.080                                    | 1.6                 |
|                  | 2437        | Right        | 0mm        | 15                    | 8.87                        | 0.0466           | 1            | -0.87           | 0.059                                    | 1.6                 |
| 802.11-HT20-2.4G | 2412        | Front        | 5mm        | 14.5                  | 8.35                        | 0.2664           | 1            | 3.88            | 0.335                                    | 1.6                 |
|                  | 2437        | Front        | 5mm        | 14.5                  | 10.95                       | 0.4653           | 1            | -0.57           | 0.608                                    | 1.6                 |
|                  | 2462        | Front        | 5mm        | 14.5                  | 8.35                        | 0.2520           | 1            | -0.97           | 0.317                                    | 1.6                 |
|                  | 2437        | Left         | 0mm        | 14.5                  | 10.95                       | 0.0616           | 1            | -0.10           | 0.076                                    | 1.6                 |
|                  | 2437        | Right        | 0mm        | 14.5                  | 10.95                       | 0.0465           | 1            | 3.08            | 0.058                                    | 1.6                 |

**SAR Measurement for 5GHz result based on worse case position**

| Freq Band | Freq (MHz) | Position | Distance | Rated Max Power (dBm) | Measured Output Power (dBm) | Raw SAR 1g(W/kg) | Crest factor | Power Drift (%) | Scaled SAR (Tune-up & Duty Cycle) (W/kg) | 1g SAR Limit (W/kg) |
|-----------|------------|----------|----------|-----------------------|-----------------------------|------------------|--------------|-----------------|--|---------------------|
| 802.11a   | 5180       | Front    | 5mm      | 16                    | 13.12                       | 0.5671           | 1            | -1.31           | 0.69                                     | 1.6                 |
|           | 5200       | Front    | 5mm      | 16                    | 13.22                       | 0.5658           | 1            | -1.22           | 0.69                                     | 1.6                 |
|           | 5200       | Left     | 0mm      | 16                    | 13.27                       | 0.2613           | 1            | -3.01           | 0.32                                     | 1.6                 |
|           | 5200       | Right    | 0mm      | 16                    | 13.23                       | 0.2232           | 1            | 4.67            | 0.27                                     | 1.6                 |
|           | 5240       | Front    | 5mm      | 16                    | 13.72                       | 0.6198           | 1            | -1.43           | 0.72                                     | 1.6                 |
|           | 5260       | Front    | 5mm      | 16                    | 13.72                       | 0.5771           | 1            | -4.22           | 0.67                                     | 1.6                 |
|           | 5300       | Front    | 5mm      | 16                    | 13.95                       | 1.0830           | 1            | -2.59           | 1.26                                     | 1.6                 |
|           | 5300       | Left     | 0mm      | 16                    | 13.71                       | 0.4352           | 1            | -4.39           | 0.51                                     | 1.6                 |
|           | 5300       | Right    | 0mm      | 16                    | 13.26                       | 0.2568           | 1            | 1.83            | 0.31                                     | 1.6                 |
|           | 5320       | Front    | 5mm      | 16                    | 13.26                       | 0.6041           | 1            | 1.16            | 0.73                                     | 1.6                 |
|           | 5500       | Front    | 5mm      | 16                    | 13.26                       | 0.5709           | 1            | 1.31            | 0.69                                     | 1.6                 |
|           | 5560       | Front    | 5mm      | 16                    | 13.24                       | 0.6128           | 1            | -0.41           | 0.74                                     | 1.6                 |
|           | 5560       | Left     | 0mm      | 16                    | 13.58                       | 0.2814           | 1            | -3.68           | 0.33                                     | 1.6                 |
|           | 5560       | Right    | 0mm      | 16                    | 13.58                       | 0.2768           | 1            | -2.8            | 0.33                                     | 1.6                 |
|           | 5700       | Front    | 5mm      | 16                    | 13.87                       | 0.4806           | 1            | -1.83           | 0.55                                     | 1.6                 |
|           | 5745       | Front    | 5mm      | 15                    | 13.87                       | 0.4754           | 1            | -2.32           | 0.55                                     | 1.6                 |
|           | 5785       | Front    | 5mm      | 15                    | 13.24                       | 0.4699           | 1            | -3.29           | 0.57                                     | 1.6                 |
|           | 5785       | Left     | 0mm      | 15                    | 13.24                       | 0.3004           | 1            | -4.11           | 0.34                                     | 1.6                 |
|           | 5785       | Right    | 0mm      | 15                    | 13.43                       | 0.2609           | 1            | -0.98           | 0.31                                     | 1.6                 |
|           | 5825       | Front    | 5mm      | 15                    | 13.43                       | 0.5313           | 1            | -4.61           | 0.64                                     | 1.6                 |

|                          |             |              |            |           |              |               |          |              |             |            |
|--------------------------|-------------|--------------|------------|-----------|--------------|---------------|----------|--------------|-------------|------------|
| 802.11-<br>HT20-5G       | 5200        | Front        | 5mm        | 16        | 13.17        | 0.5638        | 1        | 2.94         | 0.74        | 1.6        |
|                          | 5200        | Left         | 0mm        | 16        | 13.17        | 0.2368        | 1        | -3.25        | 0.31        | 1.6        |
|                          | 5200        | Right        | 0mm        | 16        | 13.19        | 0.2455        | 1        | -1.19        | 0.30        | 1.6        |
|                          | 5300        | Front        | 5mm        | 16        | 13.19        | 0.6482        | 1        | -1.45        | 0.79        | 1.6        |
|                          | 5300        | Left         | 0mm        | 16        | 13.62        | 0.2689        | 1        | 0.08         | 0.32        | 1.6        |
|                          | 5300        | Right        | 0mm        | 16        | 13.62        | 0.2723        | 1        | -1.25        | 0.32        | 1.6        |
|                          | 5560        | Front        | 5mm        | 16        | 13.23        | 0.6267        | 1        | 0.08         | 0.77        | 1.6        |
|                          | 5560        | Left         | 0mm        | 16        | 13.23        | 0.2940        | 1        | -1.25        | 0.36        | 1.6        |
|                          | 5560        | Right        | 0mm        | 16        | 13.77        | 0.3101        | 1        | -1.19        | 0.36        | 1.6        |
|                          | 5785        | Front        | 5mm        | 15        | 13.77        | 0.4593        | 1        | -1.45        | 0.53        | 1.6        |
|                          | 5785        | Left         | 0mm        | 15        | 13.03        | 0.2862        | 1        | 0.08         | 0.35        | 1.6        |
|                          | 5785        | Right        | 0mm        | 15        | 13.03        | 0.2635        | 1        | -1.25        | 0.32        | 1.6        |
| 802.11-<br>HT40-<br>5.5G | 5190        | Front        | 5mm        | 11.5      | 12.68        | 0.4599        | 1        | -0.35        | 0.53        | 1.6        |
|                          | 5230        | Front        | 5mm        | 16        | 13.77        | 1.0207        | 1        | -3.28        | 1.19        | 1.6        |
|                          | 5230        | Left         | 0mm        | 16        | 13.03        | 0.3260        | 1        | -1.06        | 0.40        | 1.6        |
|                          | 5230        | Right        | 0mm        | 16        | 13.03        | 0.2548        | 1        | -1.8         | 0.31        | 1.6        |
|                          | <b>5270</b> | <b>Front</b> | <b>5mm</b> | <b>16</b> | <b>13.68</b> | <b>1.1433</b> | <b>1</b> | <b>-0.59</b> | <b>1.32</b> | <b>1.6</b> |
|                          | 5270        | Left         | 0mm        | 16        | 13.68        | 0.3404        | 1        | -1.39        | 0.39        | 1.6        |
|                          | 5270        | Right        | 0mm        | 16        | 13.77        | 0.2645        | 1        | 0.28         | 0.31        | 1.6        |
|                          | 5310        | Front        | 5mm        | 13.5      | 13.77        | 0.7278        | 1        | -3.28        | 0.85        | 1.6        |
|                          | 5510        | Front        | 5mm        | 16        | 13.68        | 0.9953        | 1        | -0.59        | 1.15        | 1.6        |
|                          | 5510        | Left         | 0mm        | 16        | 13.68        | 0.3464        | 1        | -1.39        | 0.40        | 1.6        |
|                          | 5510        | Right        | 0mm        | 16        | 13.77        | 0.2755        | 1        | 0.28         | 0.32        | 1.6        |
|                          | 5550        | Front        | 5mm        | 16        | 13.77        | 1.0045        | 1        | -3.28        | 1.17        | 1.6        |
|                          | 5550        | Left         | 0mm        | 16        | 13.03        | 0.3864        | 1        | -1.06        | 0.47        | 1.6        |
|                          | 5550        | Right        | 0mm        | 16        | 13.03        | 0.3082        | 1        | -1.8         | 0.38        | 1.6        |

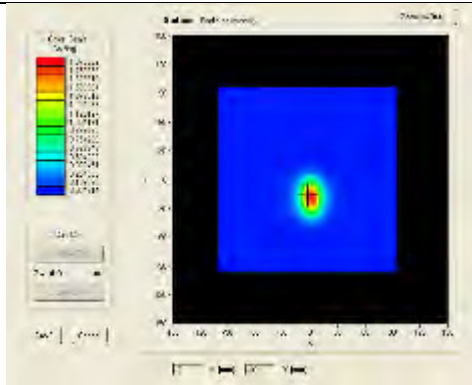
|      |       |     |    |       |        |   |       |      |     |
|------|-------|-----|----|-------|--------|---|-------|------|-----|
| 5590 | Front | 5mm | 16 | 13.68 | 1.0161 | 1 | -0.59 | 1.17 | 1.6 |
| 5590 | Left  | 0mm | 16 | 13.68 | 0.3994 | 1 | -1.39 | 0.46 | 1.6 |
| 5590 | Right | 0mm | 16 | 13.77 | 0.3044 | 1 | 0.28  | 0.35 | 1.6 |
| 5630 | Front | 5mm | 16 | 13.77 | 1.0578 | 1 | -3.28 | 1.23 | 1.6 |
| 5630 | Left  | 0mm | 16 | 13.03 | 0.4519 | 1 | -1.06 | 0.55 | 1.6 |
| 5630 | Right | 0mm | 16 | 13.03 | 0.3056 | 1 | -1.8  | 0.38 | 1.6 |
| 5670 | Front | 5mm | 16 | 13.68 | 0.9498 | 1 | -0.59 | 1.10 | 1.6 |
| 5670 | Left  | 0mm | 16 | 13.68 | 0.4576 | 1 | -1.39 | 0.53 | 1.6 |
| 5670 | Right | 0mm | 16 | 13.77 | 0.1872 | 1 | 0.28  | 0.22 | 1.6 |
| 5755 | Front | 5mm | 15 | 13.77 | 0.7674 | 1 | -3.28 | 0.89 | 1.6 |
| 5755 | Left  | 0mm | 15 | 13.03 | 0.4008 | 1 | -1.06 | 0.49 | 1.6 |
| 5755 | Right | 0mm | 15 | 13.03 | 0.2513 | 1 | -1.8  | 0.31 | 1.6 |
| 5795 | Front | 5mm | 15 | 13.68 | 0.7169 | 1 | -0.59 | 0.83 | 1.6 |
| 5795 | Left  | 0mm | 15 | 13.68 | 0.3799 | 1 | -1.39 | 0.44 | 1.6 |
| 5795 | Right | 0mm | 15 | 13.77 | 0.2923 | 1 | 0.28  | 0.34 | 1.6 |

Note: Front position (Top side touch) was used as 5mm to consider worse position as normal usage.

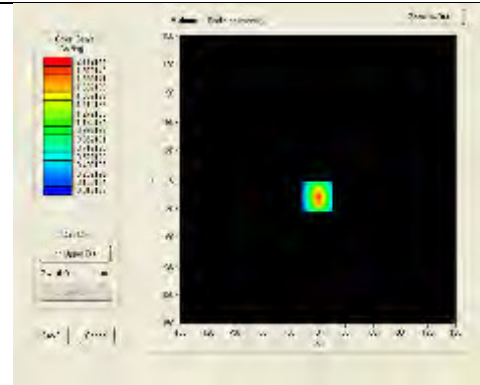
## 17 System Performance Plots

|                     |   |      |         |      |  |
|---------------------|---|------|---------|------|--|
| Test specification: | System Verification                                 |      |         |      |  |
| Environ Conditions: | Temp(oC):   | 23   | Result: | Pass |  |
|                     | Humidity (%):                                       | 58   |         |      |  |
|                     | Atmospheric(mPa):                                   | 1009 |         |      |  |
| Mains Power:        | N/A   |      |         |      |  |
| Test Date:          | 02/09/2016  |      |         |      |  |
| Tested by:          | Arthur Tie  |      |         |      |  |
| Remarks:            | System Validation, dipole, CW signal, duty cycle =1 |      |         |      |  |

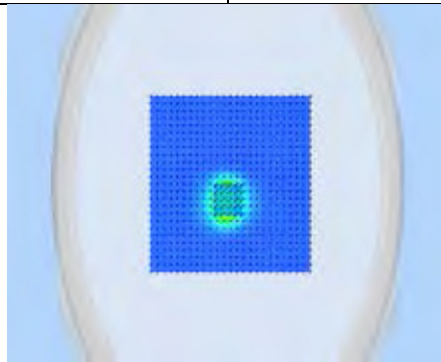
|                                   |                        |
|-----------------------------------|------------------------|
| Frequency (MHz)                   | 2450.000000            |
| Relative permittivity (real part) | 51.48                  |
| Conductivity (S/m)                | 1.94                   |
| Transmission Duty Factor          | 1.00                   |
| Probe SN                          | 2715_EPGO259           |
| Conversion Factor (dB)            | 2.7                    |
| Area Scan Resolution              | 8 mm                   |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm |
| Zoom Scan Size                    | 24x24x24 mm            |
| Measurement Drifts (%)            | 2.84                   |
| Highest Extrapolated SAR (W/Kg)   | 3.242                  |
| SAR 1g (W/Kg)                     | 5.43                   |
| Peak SAR Location                 | 0mm(x),-18mm(y),4mm(z) |



SURFACE SAR



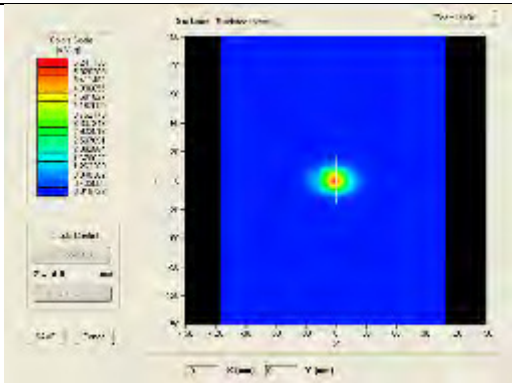
VOLUME SAR



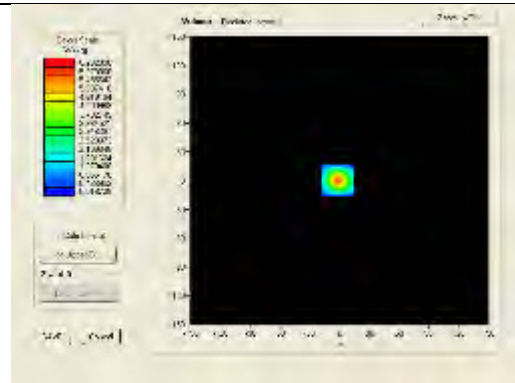
3D View

|                     |   |      |              |
|---------------------|---|------|--------------|
| Test specification: | System Validation                                   |      |              |
| Environ Conditions: | Temp(oC):   | 23   | Result: Pass |
|                     | Humidity (%):                                       | 58   |              |
|                     | Atmospheric(mPa):                                   | 1009 |              |
| Mains Power:        | N/A   |      |              |
| Test Date:          | 02/11/2016  |      |              |
| Tested by:          | Arthur Tie  |      |              |
| Remarks:            | System Validation, dipole, CW signal, duty cycle =1 |      |              |

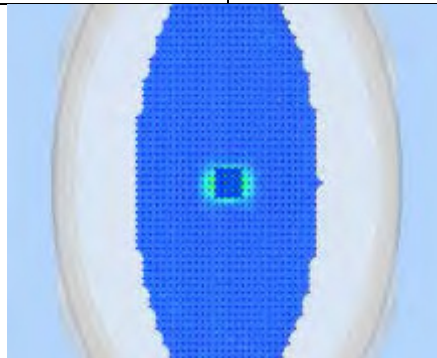
|                                   |                        |
|-----------------------------------|------------------------|
| Frequency (MHz)                   | 5200.000000            |
| Relative permittivity (real part) | 48.89                  |
| Conductivity (S/m)                | 5.48                   |
| Transmission Duty Factor          | 1.00                   |
| Probe SN                          | 2715_EPG0259           |
| Conversion Factor (dB)            | 2.39                   |
| Area Scan Resolution              | 4 mm                   |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm |
| Zoom Scan Size                    | 24x24x24 mm            |
| Measurement Drifts (%)            | 3.74                   |
| Highest Extrapolated SAR (W/Kg)   | 9.41                   |
| SAR 1g (W/Kg)                     | 15.78                  |
| Peak SAR Location                 | -2mm(x),0mm(y),4mm(z)  |



SURFACE SAR



VOLUME SAR

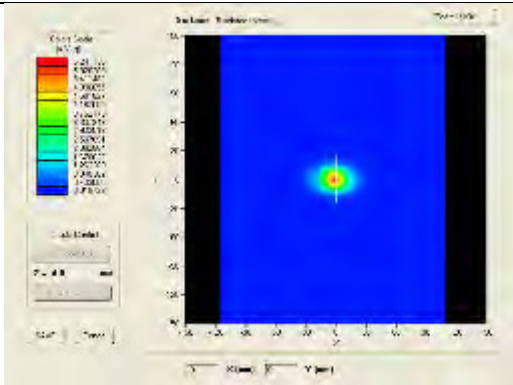


3D View

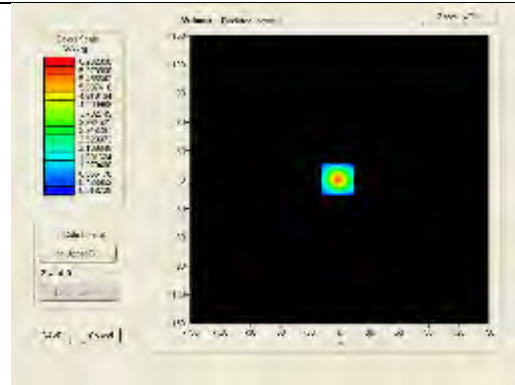


|                     |   |      |              |
|---------------------|---|------|--------------|
| Test specification: | System Validation                                   |      |              |
| Environ Conditions: | Temp(oC):   | 23   | Result: Pass |
|                     | Humidity (%):                                       | 58   |              |
|                     | Atmospheric(mPa):                                   | 1009 |              |
| Mains Power:        | N/A   |      |              |
| Test Date:          | 02/11/2016  |      |              |
| Tested by:          | Arthur Tie  |      |              |
| Remarks:            | System Validation, dipole, CW signal, duty cycle =1 |      |              |

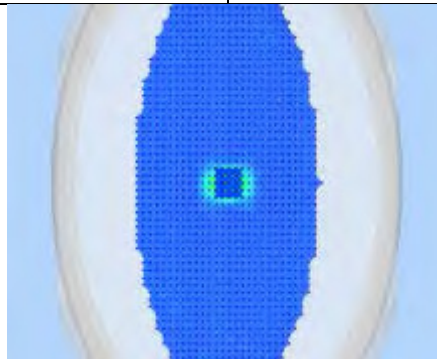
|                                   |                        |
|-----------------------------------|------------------------|
| Frequency (MHz)                   | 5400.000000            |
| Relative permittivity (real part) | 48.65                  |
| Conductivity (S/m)                | 5.58                   |
| Transmission Duty Factor          | 1.00                   |
| Probe SN                          | 2715_EPGO259           |
| Conversion Factor (dB)            | 2.54                   |
| Area Scan Resolution              | 4 mm                   |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm |
| Zoom Scan Size                    | 24x24x24 mm            |
| Measurement Drifts (%)            | 1.74                   |
| Highest Extrapolated SAR (W/Kg)   | 19.23                  |
| SAR 1g (W/Kg)                     | 16.62                  |
| Peak SAR Location                 | -2mm(x),0mm(y),4mm(z)  |



SURFACE SAR



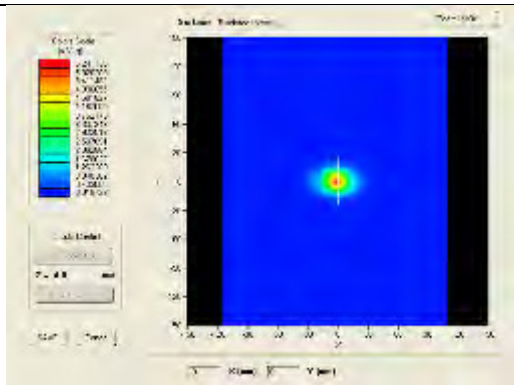
VOLUME SAR



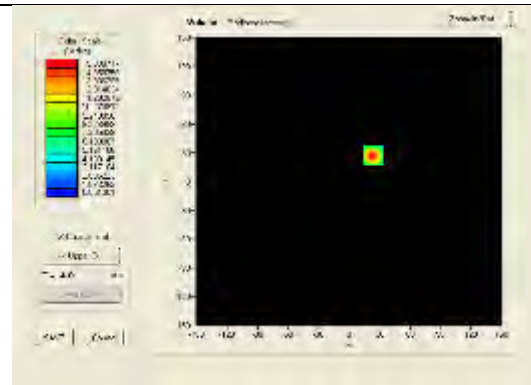
3D View

|                     |   |      |              |
|---------------------|---|------|--------------|
| Test specification: | System Validation                                   |      |              |
| Environ Conditions: | Temp(oC):   | 23   | Result: Pass |
|                     | Humidity (%):                                       | 58   |              |
|                     | Atmospheric(mPa):                                   | 1009 |              |
| Mains Power:        | N/A   |      |              |
| Test Date:          | 02/11/2016  |      |              |
| Tested by:          | Arthur Tie  |      |              |
| Remarks:            | System Validation, dipole, CW signal, duty cycle =1 |      |              |

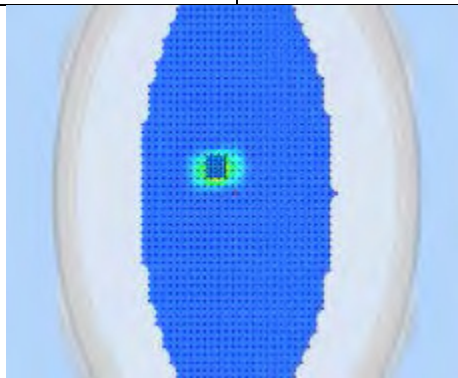
|                                   |                        |
|-----------------------------------|------------------------|
| Frequency (MHz)                   | 5600.000000            |
| Relative permittivity (real part) | 48.59                  |
| Conductivity (S/m)                | 6.01                   |
| Transmission Duty Factor          | 1.00                   |
| Probe SN                          | 2715_EPGO259           |
| Conversion Factor (dB)            | 2.71                   |
| Area Scan Resolution              | 4 mm                   |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm |
| Zoom Scan Size                    | 24x24x24 mm            |
| Measurement Drifts (%)            | -4.09                  |
| Highest Extrapolated SAR (W/Kg)   | 28.621                 |
| SAR 1g (W/Kg)                     | 17.651                 |
| Peak SAR Location                 | 21mm(x),22mm(y),4mm(z) |



SURFACE SAR



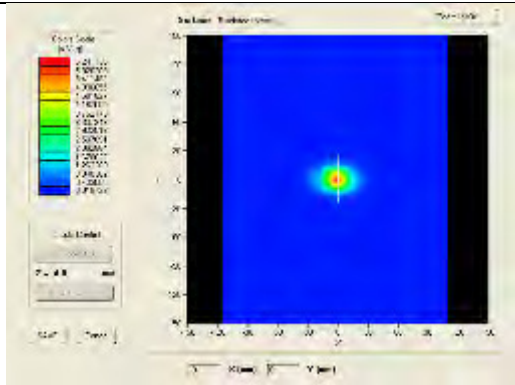
VOLUME SAR



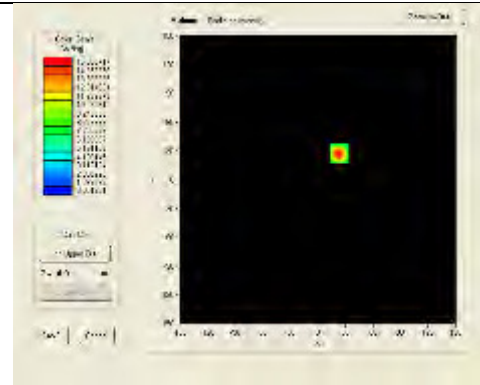
3D View

|                     |   |      |              |
|---------------------|---|------|--------------|
| Test specification: | System Validation                                   |      |              |
| Environ Conditions: | Temp(oC):   | 23   | Result: Pass |
|                     | Humidity (%):                                       | 58   |              |
|                     | Atmospheric(mPa):                                   | 1009 |              |
| Mains Power:        | N/A   |      |              |
| Test Date:          | 02/11/2016  |      |              |
| Tested by:          | Arthur Tie  |      |              |
| Remarks:            | System Validation, dipole, CW signal, duty cycle =1 |      |              |

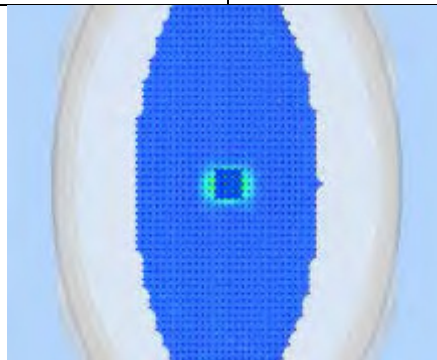
|                                   |                        |
|-----------------------------------|------------------------|
| Frequency (MHz)                   | 5800.000000            |
| Relative permittivity (real part) | 48.00                  |
| Conductivity (S/m)                | 6.24                   |
| Transmission Duty Factor          | 1.00                   |
| Probe SN                          | 2715_EPGO259           |
| Conversion Factor (dB)            | 2.65                   |
| Area Scan Resolution              | 4 mm                   |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm |
| Zoom Scan Size                    | 24x24x24 mm            |
| Measurement Drifts (%)            | 2.93                   |
| Highest Extrapolated SAR (W/Kg)   | 33.182                 |
| SAR 1g (W/Kg)                     | 18.52                  |
| Peak SAR Location                 | 21mm(x),22mm(y),4mm(z) |



SURFACE SAR



VOLUME SAR

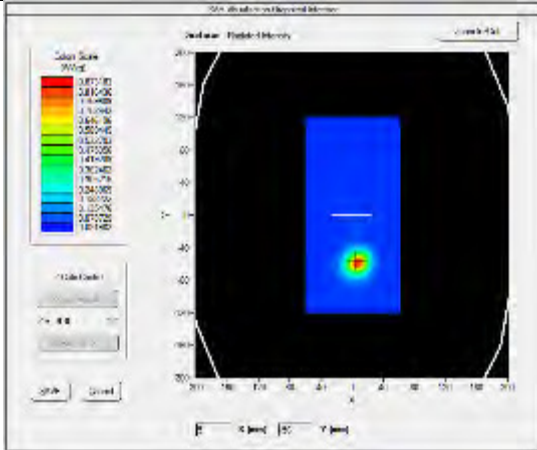


3D View

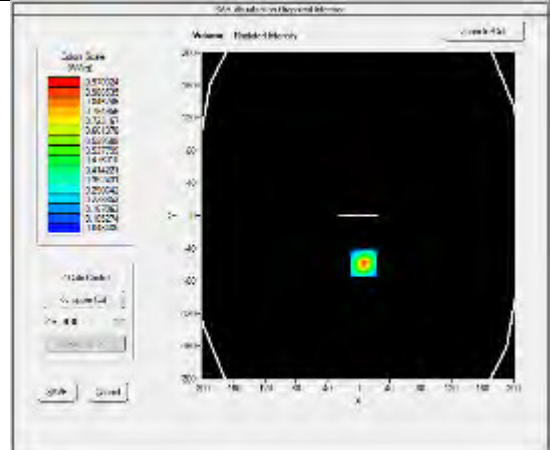
### 18 SAR Test Plots

|                     |                                       |         |      |
|---------------------|---------------------------------------|---------|------|
| Test specification: | Plane_Body_Low_802.11b_2412_Front_5mm |         |      |
| Environ Conditions: | Temp(oC): 21.4                        | Result: | Pass |
|                     | Humidity(%): 45                       |         |      |
|                     | Atmospheric(mPa): 1210.4              |         |      |
| Mains Power:        | N/A                                   |         |      |
| Test Date:          | 02/09/2016                            |         |      |
| Tested by:          | Arthur Tie                            |         |      |
| Remarks:            |                                       |         |      |

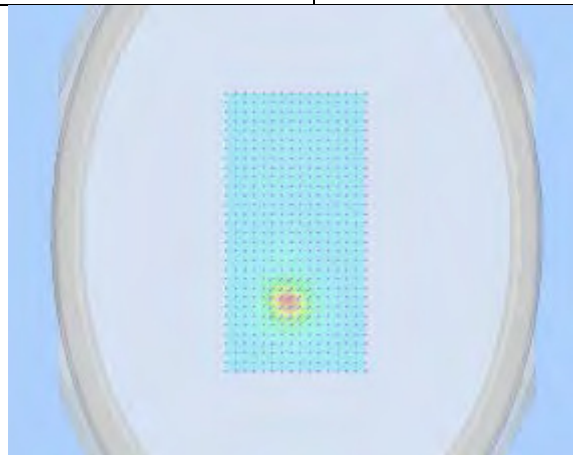
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2412.000000 (Channel 1) |
| Relative permittivity (real part) | 52.04                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPGO259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | 4.10                    |
| Highest Extrapolated SAR (W/Kg)   | 1.5394                  |
| SAR 1g (W/Kg)                     | 0.8682                  |
| Peak SAR Location                 | 8mm(x),-32mm(y),4mm(z)  |



SURFACE SAR



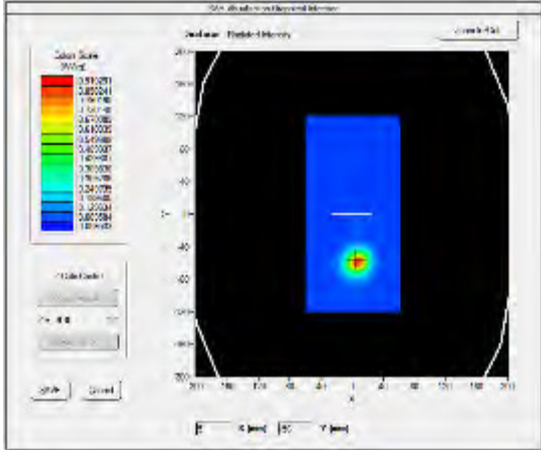
VOLUME SAR



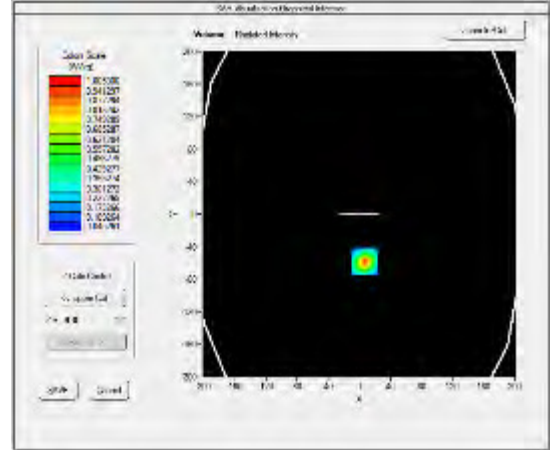
3D View Plot

|                     |  |         |      |
|---------------------|--|---------|------|
| Test specification: | Plane_Body_Middle_802.11b_2437_Front_5mm |         |      |
| Environ Conditions: | Temp(oC): 21.4                           | Result: | Pass |
|                     | Humidity(%): 45                          |         |      |
|                     | Atmospheric(mPa): 1210.4                 |         |      |
| Mains Power:        | N/A                                      |         |      |
| Test Date:          | 02/09/2016                               |         |      |
| Tested by:          | Arthur Tie                               |         |      |
| Remarks:            |  |         |      |

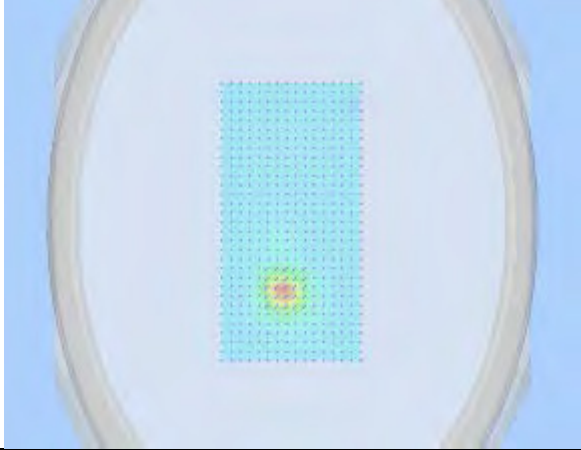
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6) |
| Relative permittivity (real part) | 51.97                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPGO259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | -4.30                   |
| Highest Extrapolated SAR (W/Kg)   | 1.5965                  |
| SAR 1g (W/Kg)                     | 0.8984                  |
| Peak SAR Location                 | 8mm(x),-31mm(y),4mm(z)  |



SURFACE SAR



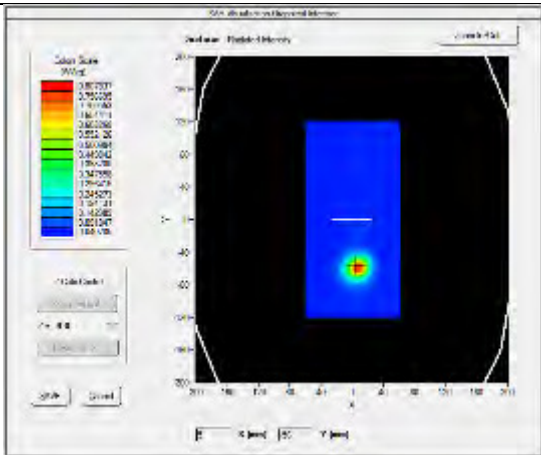
VOLUME SAR



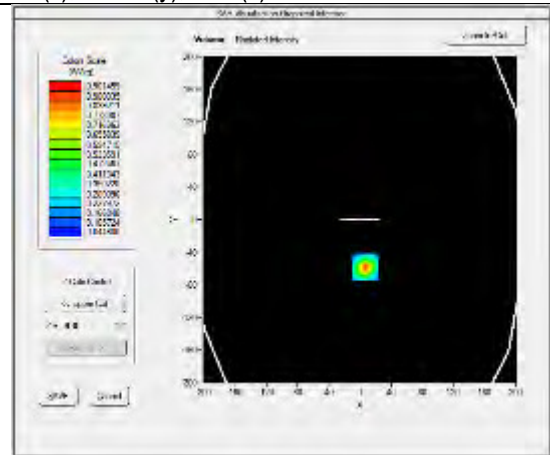
3D View Plot

|                     |  |         |      |
|---------------------|--|---------|------|
| Test specification: | Plane_Body_High_802.11b_2462_Front_5mm |         |      |
| Environ Conditions: | Temp(oC): 21.4                         | Result: | Pass |
|                     | Humidity(%): 45                        |         |      |
|                     | Atmospheric(mPa): 1210.4               |         |      |
| Mains Power:        | N/A                                    |         |      |
| Test Date:          | 02/09/2016                             |         |      |
| Tested by:          | Arthur Tie                             |         |      |
| Remarks:            |  |         |      |

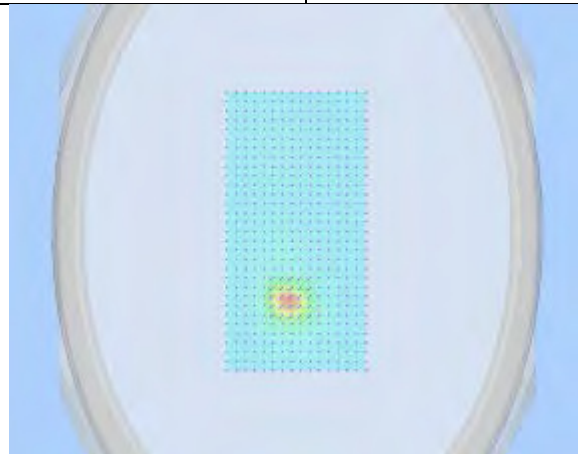
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 2462.000000 (Channel 11) |
| Relative permittivity (real part) | 51.67                    |
| Conductivity (S/m)                | 1.89                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPGO259             |
| Conversion Factor (dB)            | 2.7                      |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | 2.91                     |
| Highest Extrapolated SAR (W/Kg)   | 1.5378                   |
| SAR 1g (W/Kg)                     | 0.8582                   |
| Peak SAR Location                 | 11mm(x),-31mm(y),4mm(z)  |



SURFACE SAR



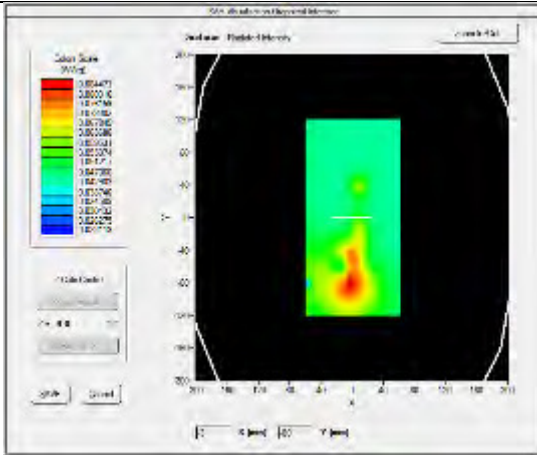
VOLUME SAR



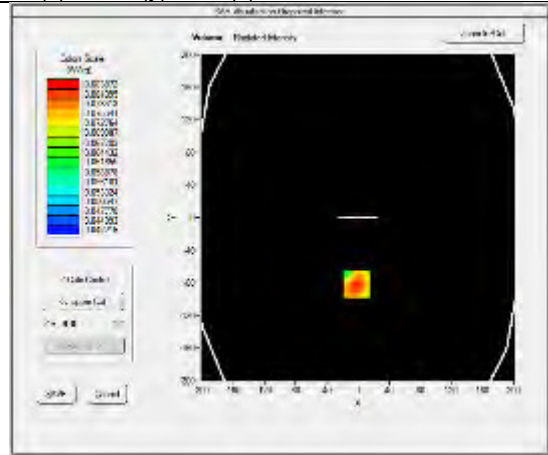
3D View Plot

|                     |   |         |      |
|---------------------|---|---------|------|
| Test specification: | Plane_Body_Middle_802.11b_2437_Left_0mm |         |      |
| Environ Conditions: | Temp(oC): 21.4                          | Result: | Pass |
|                     | Humidity(%): 45                         |         |      |
|                     | Atmospheric(mPa): 1210.4                |         |      |
| Mains Power:        | N/A                                     |         |      |
| Test Date:          | 02/09/2016                              |         |      |
| Tested by:          | Arthur Tie                              |         |      |
| Remarks:            |   |         |      |

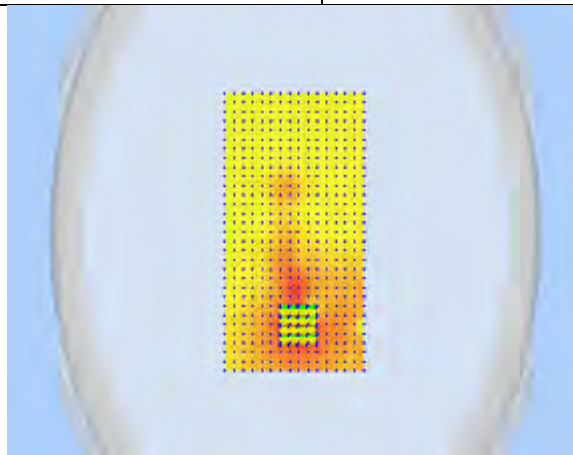
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6) |
| Relative permittivity (real part) | 51.97                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPGO259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | -2.86                   |
| Highest Extrapolated SAR (W/Kg)   | 0.1064                  |
| SAR 1g (W/Kg)                     | 0.0818                  |
| Peak SAR Location                 | -9mm(x),17mm(y),4mm(z)  |



SURFACE SAR



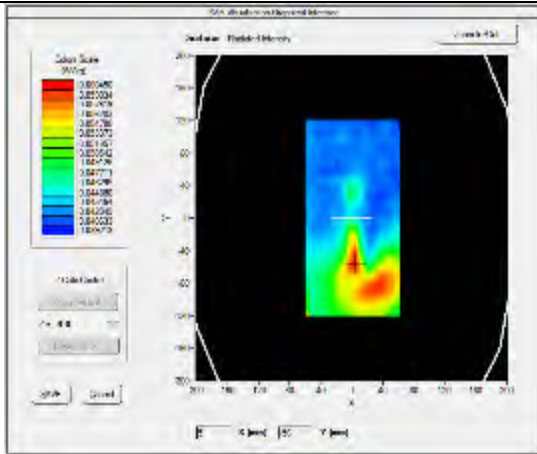
VOLUME SAR



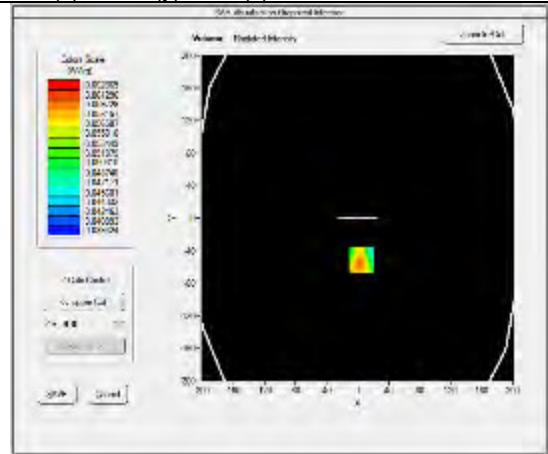
3D View Plot

|                     |  |  |              |
|---------------------|--|--|--------------|
| Test specification: | Plane_Body_Middle_802.11b_2437_Right_0mm |  |              |
| Environ Conditions: | Temp(oC): 21.4                           |  | Result: Pass |
|                     | Humidity(%): 45                          |  |              |
|                     | Atmospheric(mPa): 1210.4                 |  |              |
| Mains Power:        | N/A                                      |  |              |
| Test Date:          | 02/09/2016                               |  |              |
| Tested by:          | Arthur Tie                               |  |              |
| Remarks:            |  |  |              |

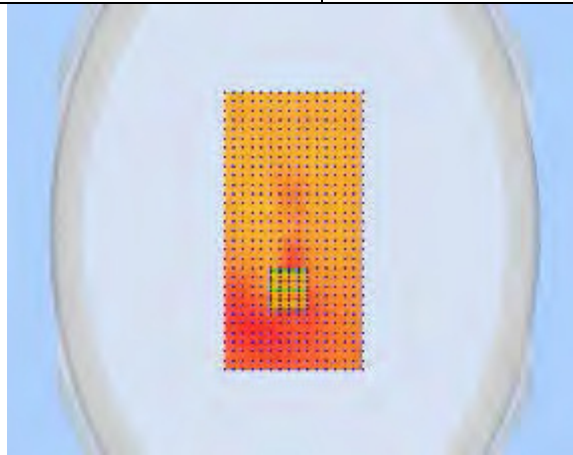
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6) |
| Relative permittivity (real part) | 51.97                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPGO259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | 0.00                    |
| Highest Extrapolated SAR (W/Kg)   | 0.0216                  |
| SAR 1g (W/Kg)                     | 0.0216                  |
| Peak SAR Location                 | -10mm(x),17mm(y),4mm(z) |



SURFACE SAR



VOLUME SAR

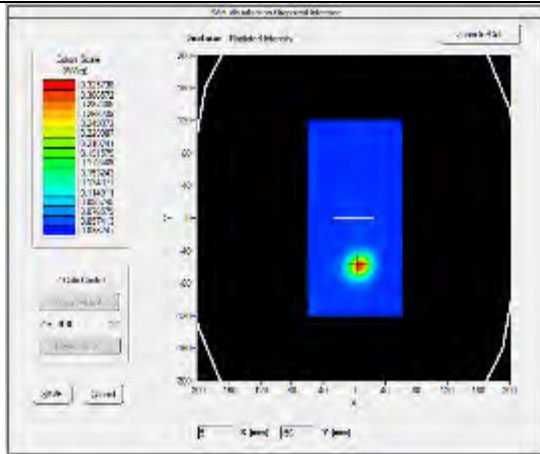


3D View Plot

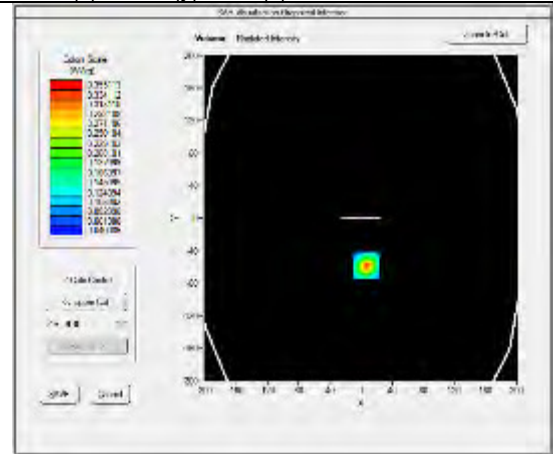


|                     |                                       |         |      |
|---------------------|---------------------------------------|---------|------|
| Test specification: | Plane_Body_Low_802.11g_2412_Front_5mm |         |      |
| Environ Conditions: | Temp(oC): 21.4                        | Result: | Pass |
|                     | Humidity(%): 45                       |         |      |
|                     | Atmospheric(mPa): 1210.4              |         |      |
| Mains Power:        | N/A                                   |         |      |
| Test Date:          | 02/09/2016                            |         |      |
| Tested by:          | Arthur Tie                            |         |      |
| Remarks:            |                                       |         |      |

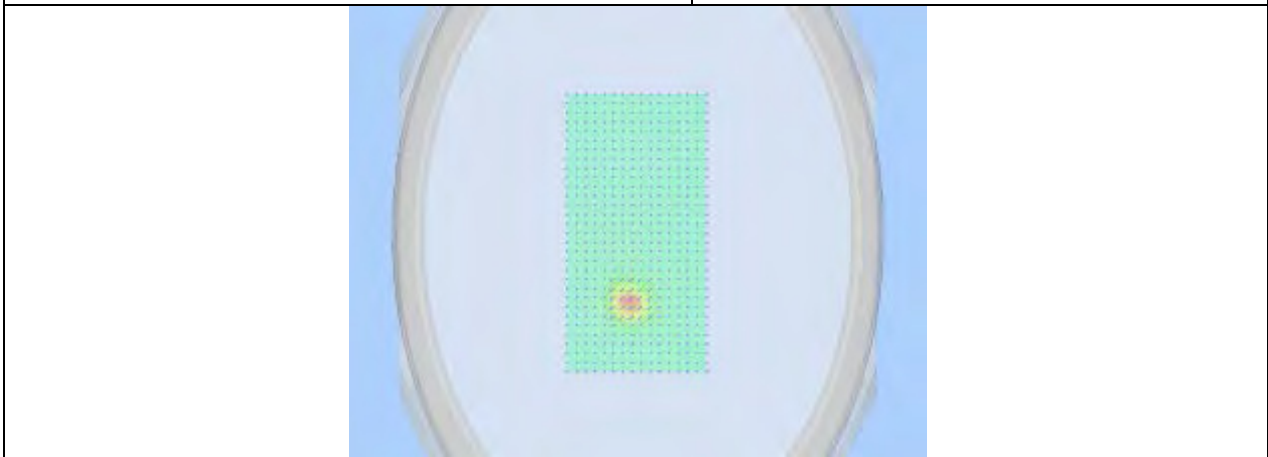
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2412.000000 (Channel 1) |
| Relative permittivity (real part) | 52.04                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPGO259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | -1.66                   |
| Highest Extrapolated SAR (W/Kg)   | 0.5447                  |
| SAR 1g (W/Kg)                     | 0.3197                  |
| Peak SAR Location                 | -9mm(x),18mm(y),4mm(z)  |



SURFACE SAR



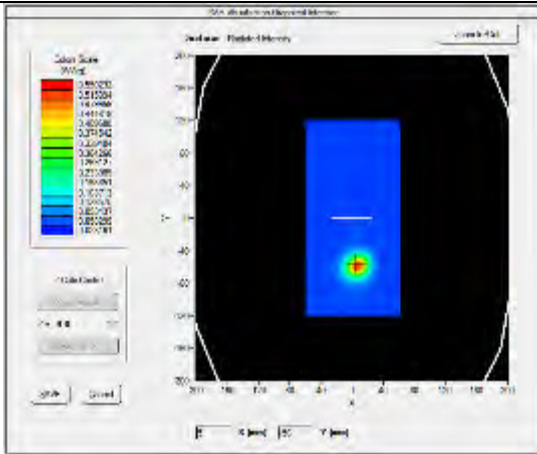
VOLUME SAR



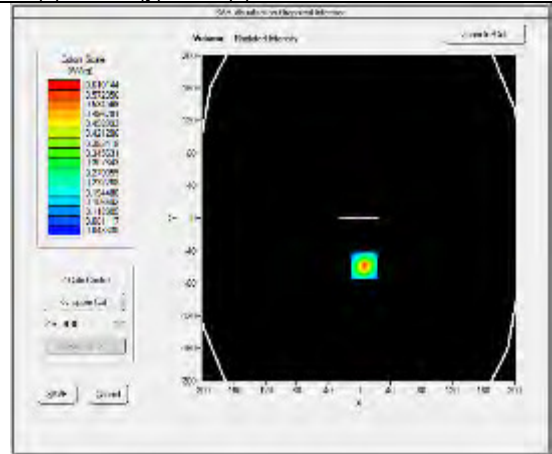
3D View Plot

|                     |  |         |      |
|---------------------|--|---------|------|
| Test specification: | Plane_Body_Middle_802.11g_2437_Front_5mm |         |      |
| Environ Conditions: | Temp(oC): 21.4                           | Result: | Pass |
|                     | Humidity(%): 45                          |         |      |
|                     | Atmospheric(mPa): 1210.4                 |         |      |
| Mains Power:        | N/A                                      |         |      |
| Test Date:          | 02/09/2016                               |         |      |
| Tested by:          | Arthur Tie                               |         |      |
| Remarks:            |  |         |      |

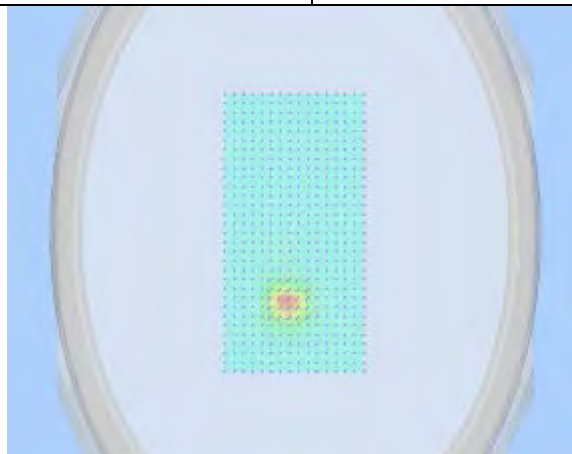
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6) |
| Relative permittivity (real part) | 51.97                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPGO259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | -3.08                   |
| Highest Extrapolated SAR (W/Kg)   | 0.9592                  |
| SAR 1g (W/Kg)                     | 0.5462                  |
| Peak SAR Location                 | 22mm(x),23mm(y),4mm(z)  |



SURFACE SAR



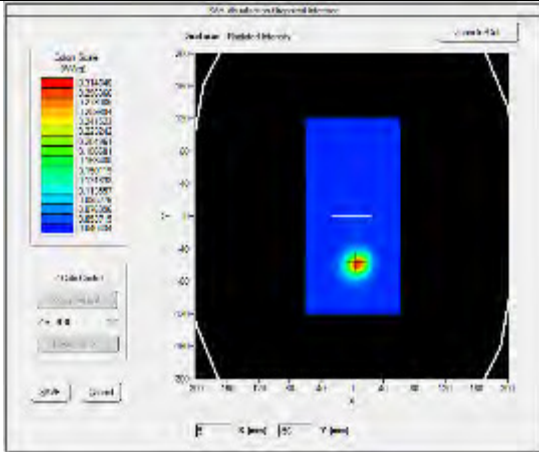
VOLUME SAR



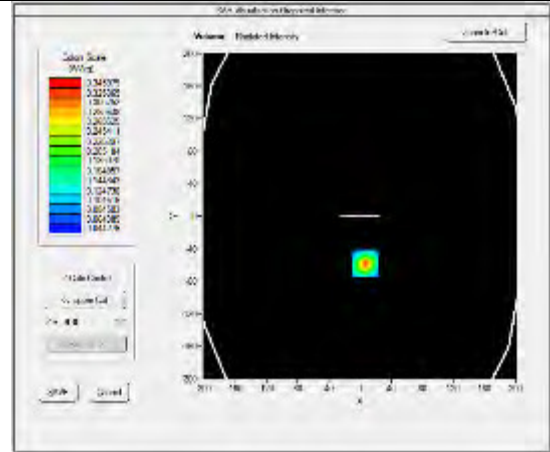
3D View Plot

|                     |  |         |      |
|---------------------|--|---------|------|
| Test specification: | Plane_Body_High_802.11g_2462_Front_5mm |         |      |
| Environ Conditions: | Temp(oC): 21.4                         | Result: | Pass |
|                     | Humidity(%): 45                        |         |      |
|                     | Atmospheric(mPa): 1210.4               |         |      |
| Mains Power:        | N/A                                    |         |      |
| Test Date:          | 02/10/2016                             |         |      |
| Tested by:          | Arthur Tie                             |         |      |
| Remarks:            |  |         |      |

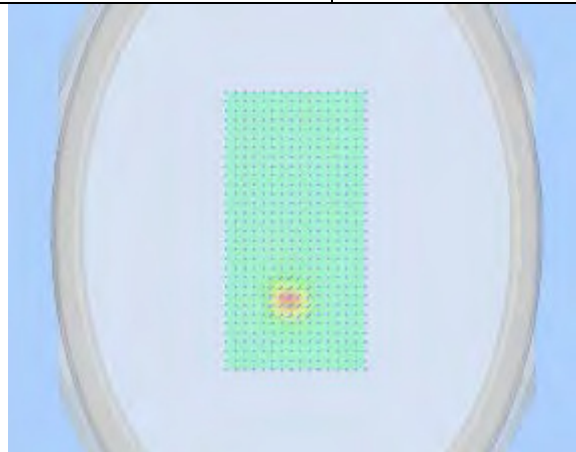
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 2462.000000 (Channel 11) |
| Relative permittivity (real part) | 51.67                    |
| Conductivity (S/m)                | 1.89                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPG0259             |
| Conversion Factor (dB)            | 2.7                      |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | -4.84                    |
| Highest Extrapolated SAR (W/Kg)   | 0.5324                   |
| SAR 1g (W/Kg)                     | 0.3131                   |
| Peak SAR Location                 | -9mm(x),7mm(y),4mm(z)    |



SURFACE SAR



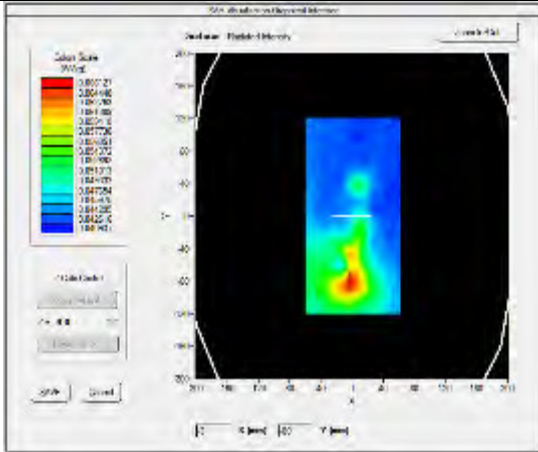
VOLUME SAR



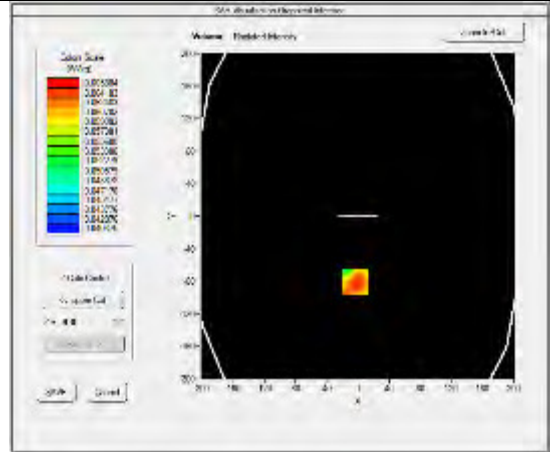
3D View Plot

|                     |   |         |      |
|---------------------|---|---------|------|
| Test specification: | Plane_Body_Middle_802.11g_2437_Left_0mm |         |      |
| Environ Conditions: | Temp(oC): 20.7                          | Result: | Pass |
|                     | Humidity(%): 43.9                       |         |      |
|                     | Atmospheric(mPa): 1012.3                |         |      |
| Mains Power:        | N/A                                     |         |      |
| Test Date:          | 02/10/2016                              |         |      |
| Tested by:          | Arthur Tie                              |         |      |
| Remarks:            |   |         |      |

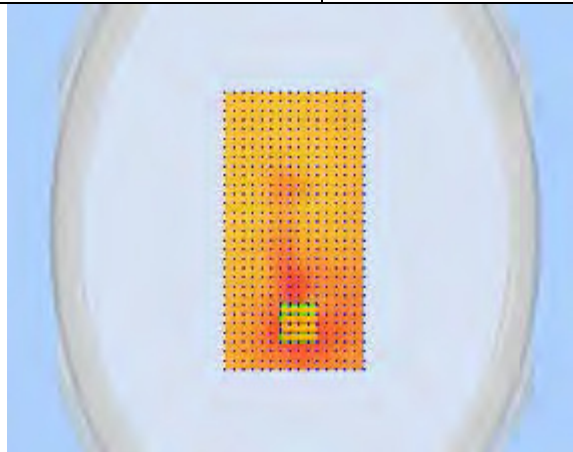
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6) |
| Relative permittivity (real part) | 51.97                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPGO259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | 0.90                    |
| Highest Extrapolated SAR (W/Kg)   | 0.0874                  |
| SAR 1g (W/Kg)                     | 0.0632                  |
| Peak SAR Location                 | 10mm(x),-32mm(y),4mm(z) |



SURFACE SAR



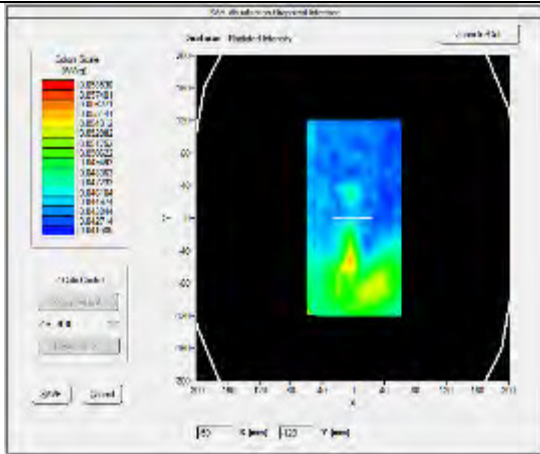
VOLUME SAR



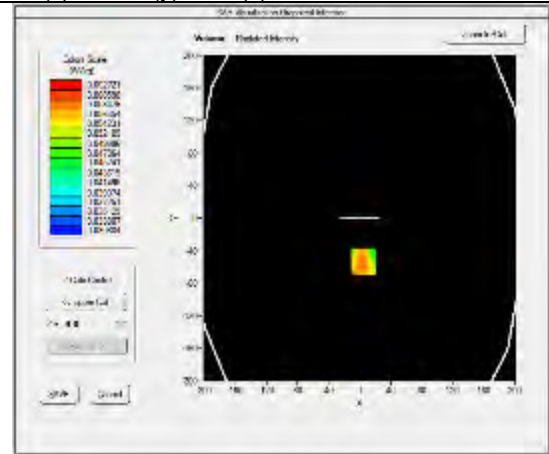
3D View Plot

|                     |  |  |         |      |  |
|---------------------|--|--|---------|------|--|
| Test specification: | Plane_Body_Middle_802.11g_2437_Right_0mm |  |         |      |  |
| Environ Conditions: | Temp(oC): 20.7                           |  | Result: | Pass |  |
|                     | Humidity(%): 43.9                        |  |         |      |  |
|                     | Atmospheric(mPa): 1012.3                 |  |         |      |  |
| Mains Power:        | N/A                                      |  |         |      |  |
| Test Date:          | 02/10/2016                               |  |         |      |  |
| Tested by:          | Arthur Tie                               |  |         |      |  |
| Remarks:            |  |  |         |      |  |

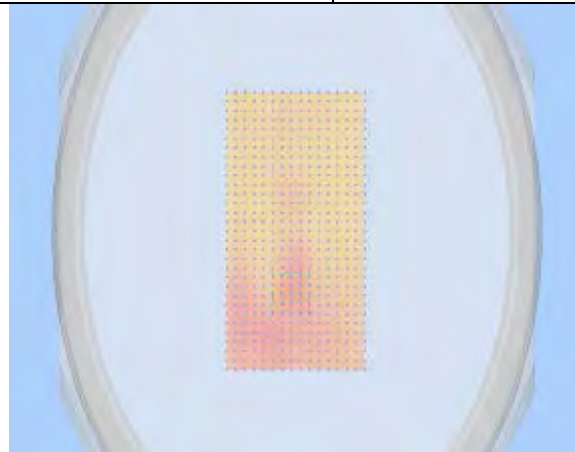
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6) |
| Relative permittivity (real part) | 51.97                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPG0259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | 5.07                    |
| Highest Extrapolated SAR (W/Kg)   | 0.0713                  |
| SAR 1g (W/Kg)                     | 0.0466                  |
| Peak SAR Location                 | 8mm(x),-31mm(y),4mm(z)  |



SURFACE SAR



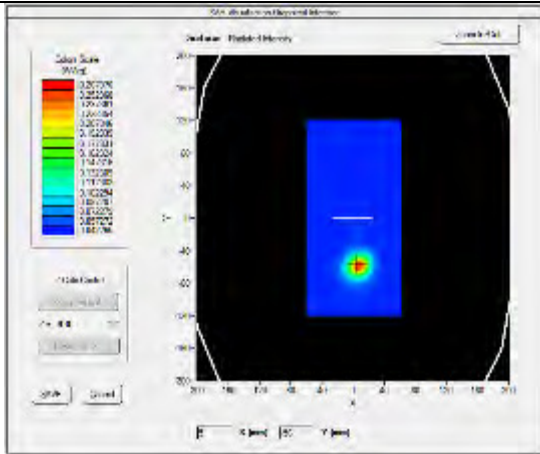
VOLUME SAR



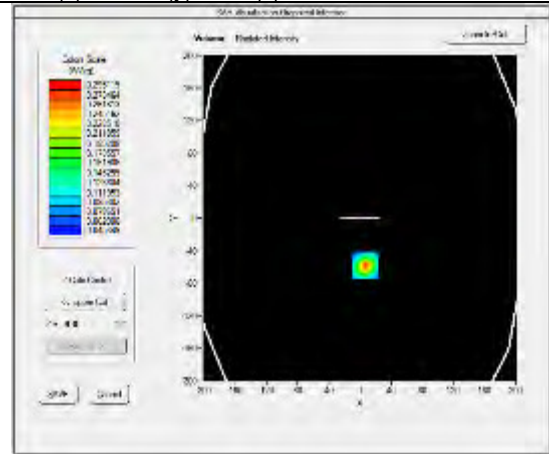
3D View Plot

|                     |                                    |  |              |
|---------------------|------------------------------------|--|--------------|
| Test specification: | Plane_Body_Low_HT20_2412_Front_5mm |  |              |
| Environ Conditions: | Temp(oC): 20.7                     |  | Result: Pass |
|                     | Humidity(%): 43.9                  |  |              |
|                     | Atmospheric(mPa): 1012.3           |  |              |
| Mains Power:        | N/A                                |  |              |
| Test Date:          | 02/10/2016                         |  |              |
| Tested by:          | Arthur Tie                         |  |              |
| Remarks:            |                                    |  |              |

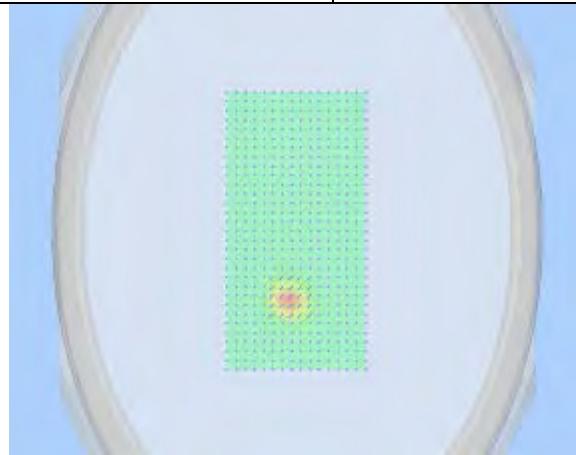
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2412.000000 (Channel 1) |
| Relative permittivity (real part) | 52.04                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPG0259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | -2.06                   |
| Highest Extrapolated SAR (W/Kg)   | 0.4452                  |
| SAR 1g (W/Kg)                     | 0.2664                  |
| Peak SAR Location                 | 11mm(x),-31mm(y),4mm(z) |



SURFACE SAR



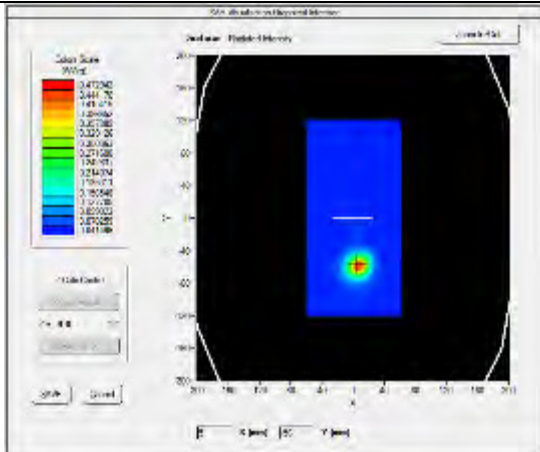
VOLUME SAR



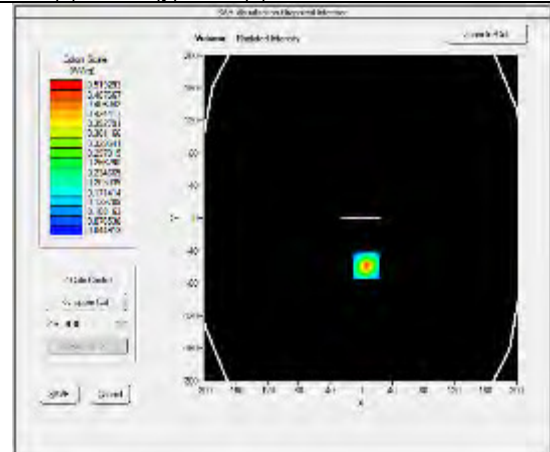
3D View Plot

|                     |                                       |         |      |
|---------------------|---------------------------------------|---------|------|
| Test specification: | Plane_Body_Middle_HT20_2437_Front_5mm |         |      |
| Environ Conditions: | Temp(oC): 20.7                        | Result: | Pass |
|                     | Humidity(%): 43.9                     |         |      |
|                     | Atmospheric(mPa): 1012.3              |         |      |
| Mains Power:        | N/A                                   |         |      |
| Test Date:          | 02/10/2016                            |         |      |
| Tested by:          | Arthur Tie                            |         |      |
| Remarks:            |                                       |         |      |

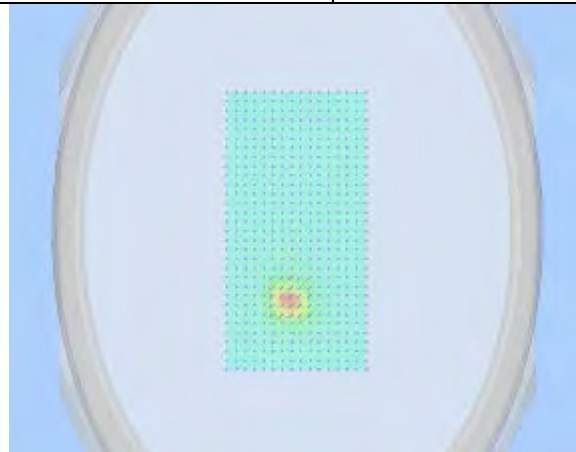
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6) |
| Relative permittivity (real part) | 51.97                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPGO259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | 0.31                    |
| Highest Extrapolated SAR (W/Kg)   | 0.8047                  |
| SAR 1g (W/Kg)                     | 0.4653                  |
| Peak SAR Location                 | -9mm(x),17mm(y),4mm(z)  |



SURFACE SAR



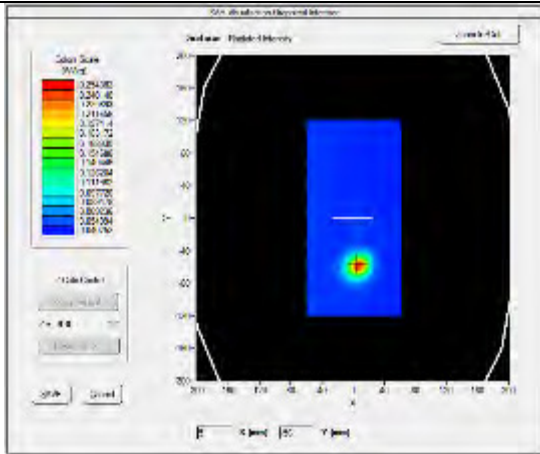
VOLUME SAR



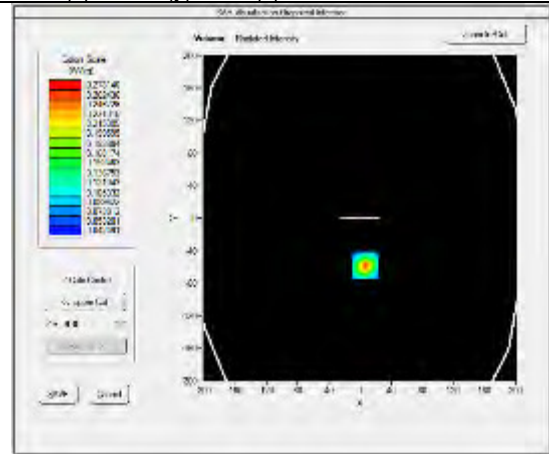
3D View Plot

|                     |                                     |  |              |
|---------------------|-------------------------------------|--|--------------|
| Test specification: | Plane_Body_High_HT20_2462_Front_5mm |  |              |
| Environ Conditions: | Temp(oC): 20.7                      |  | Result: Pass |
|                     | Humidity(%): 43.9                   |  |              |
|                     | Atmospheric(mPa): 1012.3            |  |              |
| Mains Power:        | N/A                                 |  |              |
| Test Date:          | 02/10/2016                          |  |              |
| Tested by:          | Arthur Tie                          |  |              |
| Remarks:            |                                     |  |              |

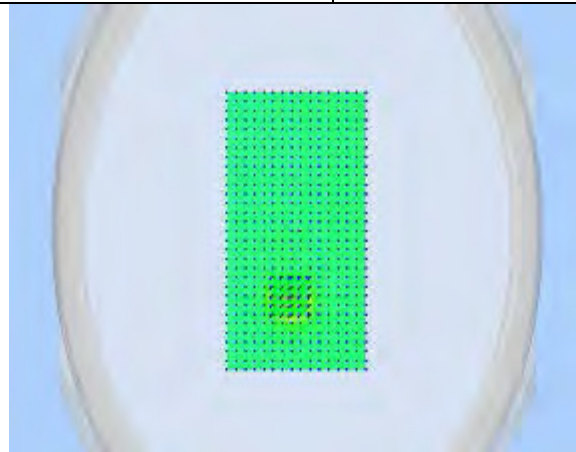
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 2462.000000 (Channel 11) |
| Relative permittivity (real part) | 51.67                    |
| Conductivity (S/m)                | 1.89                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPG0259             |
| Conversion Factor (dB)            | 2.7                      |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | 2.18                     |
| Highest Extrapolated SAR (W/Kg)   | 0.8047                   |
| SAR 1g (W/Kg)                     | 0.4653                   |
| Peak SAR Location                 | -10mm(x),17mm(y),4mm(z)  |



SURFACE SAR



VOLUME SAR

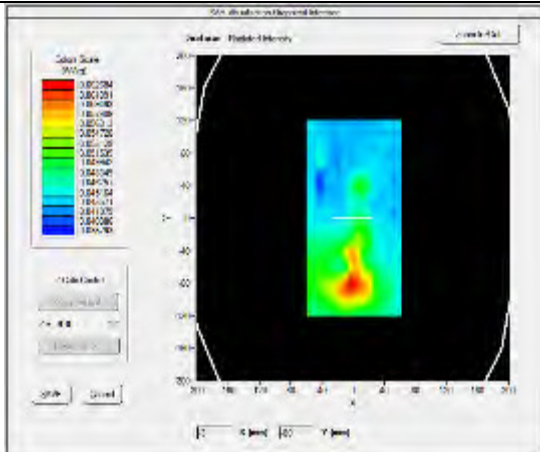


3D View Plot

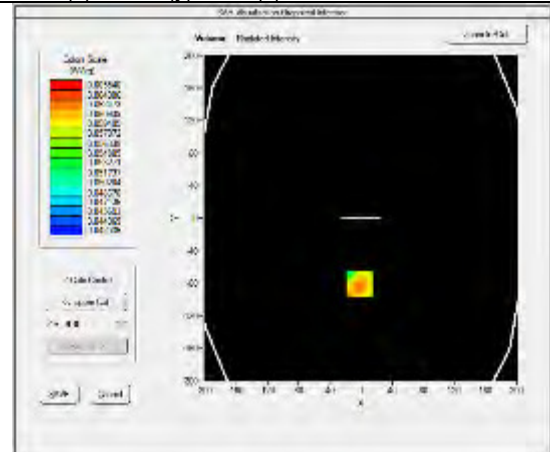


|                     |                                      |         |      |
|---------------------|--------------------------------------|---------|------|
| Test specification: | Plane_Body_Middle_HT20_2437_Left_0mm |         |      |
| Environ Conditions: | Temp(oC): 20.7                       | Result: | Pass |
|                     | Humidity(%): 43.9                    |         |      |
|                     | Atmospheric(mPa): 1012.3             |         |      |
| Mains Power:        | N/A                                  |         |      |
| Test Date:          | 02/10/2016                           |         |      |
| Tested by:          | Arthur Tie                           |         |      |
| Remarks:            |                                      |         |      |

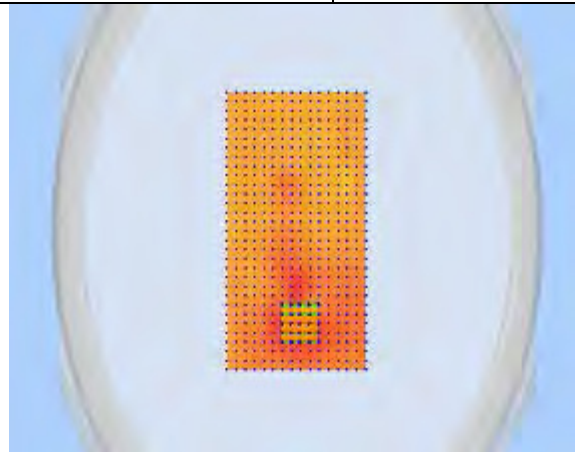
|                                   |                         |
|-----------------------------------|-------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6) |
| Relative permittivity (real part) | 51.97                   |
| Conductivity (S/m)                | 1.85                    |
| Transmission Duty Factor          | 1.0                     |
| Probe SN                          | 2715_EPG0259            |
| Conversion Factor (dB)            | 2.7                     |
| Area Scan Resolution              | 8 mm                    |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm  |
| Zoom Scan Size                    | 24x24x24 mm             |
| Measurement Drifts (%)            | 4.05                    |
| Highest Extrapolated SAR (W/Kg)   | 0.0856                  |
| SAR 1g (W/Kg)                     | 0.0616                  |
| Peak SAR Location                 | -10mm(x),17mm(y),4mm(z) |



SURFACE SAR



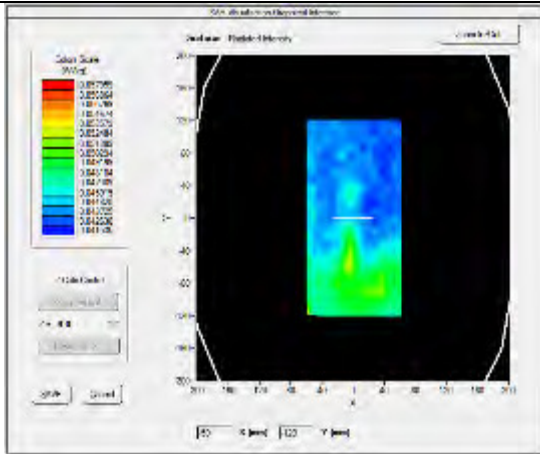
VOLUME SAR



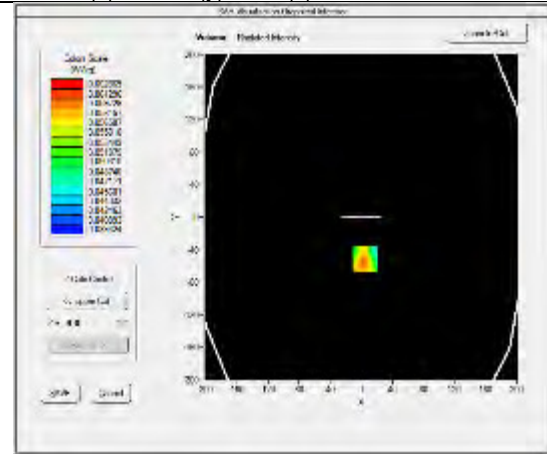
3D View Plot

|                     |                                       |  |              |
|---------------------|---------------------------------------|--|--------------|
| Test specification: | Plane_Body_Middle_HT20_2437_Right_0mm |  |              |
| Environ Conditions: | Temp(oC): 20.7                        |  | Result: Pass |
|                     | Humidity(%): 43.9                     |  |              |
|                     | Atmospheric(mPa): 1012.3              |  |              |
| Mains Power:        | N/A                                   |  |              |
| Test Date:          | 02/10/2016                            |  |              |
| Tested by:          | Arthur Tie                            |  |              |
| Remarks:            |                                       |  |              |

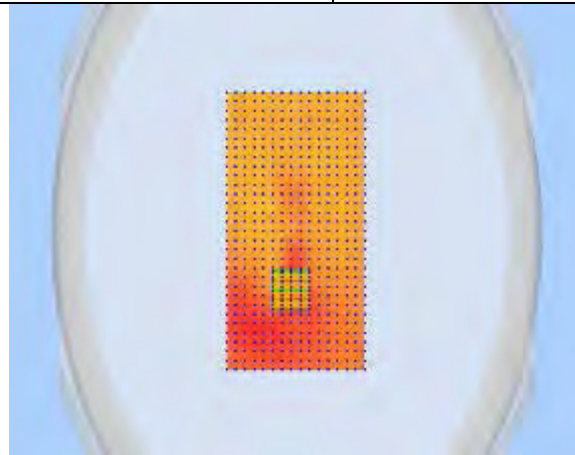
|                                   |                            |
|-----------------------------------|----------------------------|
| Frequency (MHz)                   | 2437.000000 (Channel 6)    |
| Relative permittivity (real part) | 51.97                      |
| Conductivity (S/m)                | 1.85                       |
| Transmission Duty Factor          | 1.0                        |
| Probe SN                          | 2715_EPG0259               |
| Conversion Factor (dB)            | 2.7                        |
| Area Scan Resolution              | 8 mm                       |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm     |
| Zoom Scan Size                    | 24x24x24 mm                |
| Measurement Drifts (%)            | 4.06                       |
| Highest Extrapolated SAR (W/Kg)   | 0.0681                     |
| SAR 1g (W/Kg)                     | 0.0465                     |
| Peak SAR Location                 | -59mm(x), -48mm(y), 4mm(z) |



SURFACE SAR



VOLUME SAR

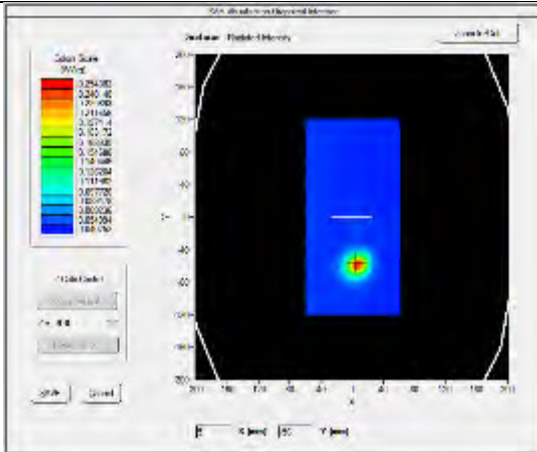


3D View Plot

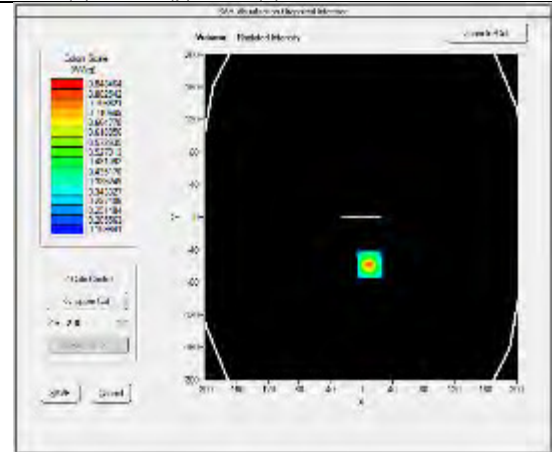
**802.11-a 5G**

|                     |  |      |         |      |  |
|---------------------|--|------|---------|------|--|
| Test specification: | Plane_Body_Middle_802.11a_5180_Front_5mm |      |         |      |  |
| Environ Conditions: | Temp(oC):                                | 23   | Result: | Pass |  |
|                     | Humidity (%):                            | 58   |         |      |  |
|                     | Atmospheric(mPa):                        | 1009 |         |      |  |
| Mains Power:        | N/A                                      |      |         |      |  |
| Test Date:          | 02/11/2016                               |      |         |      |  |
| Tested by:          | Arthur Tie                               |      |         |      |  |
| Remarks:            |  |      |         |      |  |

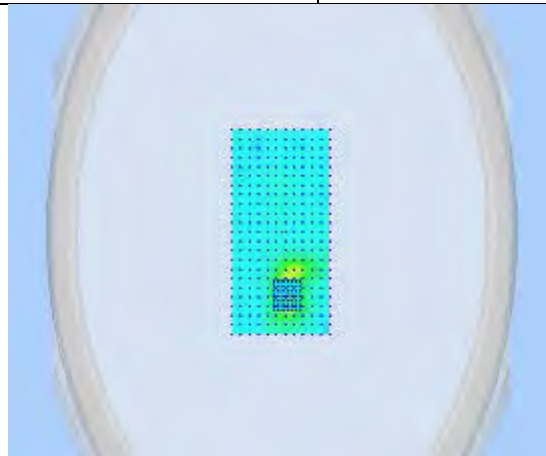
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 5180.000000 (Channel 36) |
| Relative permittivity (real part) | 46.27                    |
| Conductivity (S/m)                | 5.55                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPGO259             |
| Conversion Factor (dB)            | 2.39                     |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | -1.50                    |
| Highest Extrapolated SAR (W/Kg)   | 1.2277                   |
| SAR 1g (W/Kg)                     | 0.5671                   |
| Peak SAR Location                 | -11mm(x),16mm(y),4mm(z)  |



SURFACE SAR



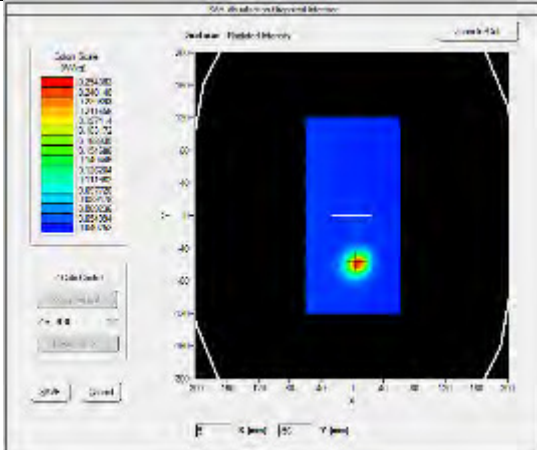
VOLUME SAR



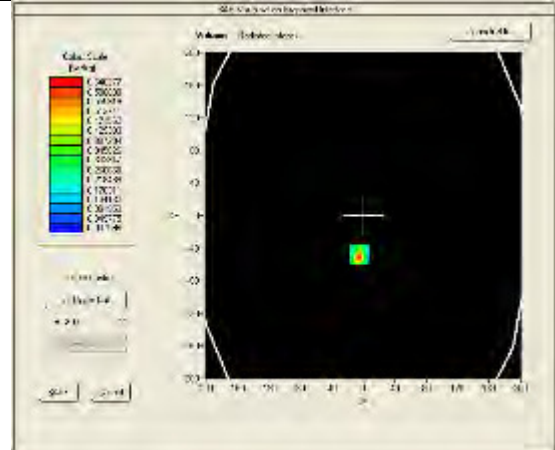
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5200_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity (%):                            | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/11/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

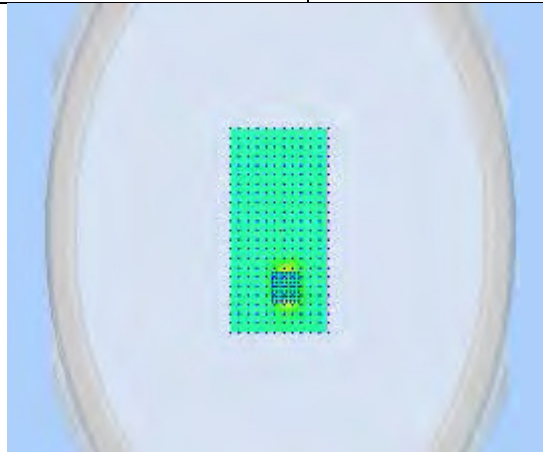
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5200.000000 (Channel 40)  |
| Relative permittivity (real part) | 46.18                     |
| Conductivity (S/m)                | 5.56                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | -2.23                     |
| Highest Extrapolated SAR (W/Kg)   | 1.2299                    |
| SAR 1g (W/Kg)                     | 0.5658                    |
| Peak SAR Location                 | -5mm(x), -49mm(y), 4mm(z) |



SURFACE SAR



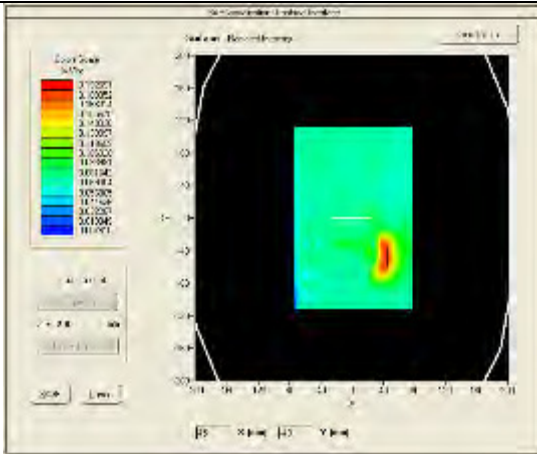
VOLUME SAR



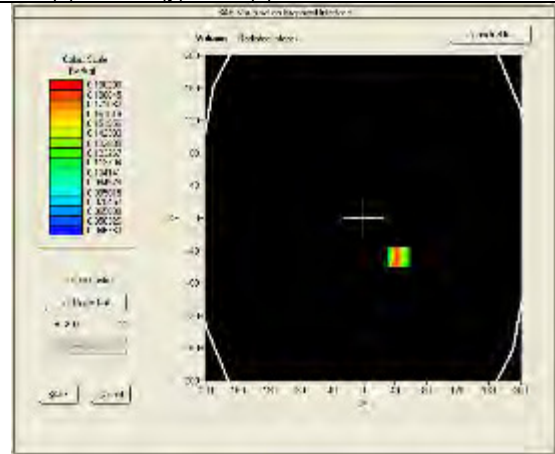
3D View Plot

|                     |   |      |              |
|---------------------|---|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5200_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                               | 23   | Result: Pass |
|                     | Humidity (%):                           | 58   |              |
|                     | Atmospheric(mPa):                       | 1009 |              |
| Mains Power:        | N/A                                     |      |              |
| Test Date:          | 02/11/2016                              |      |              |
| Tested by:          | Arthur Tie                              |      |              |
| Remarks:            |   |      |              |

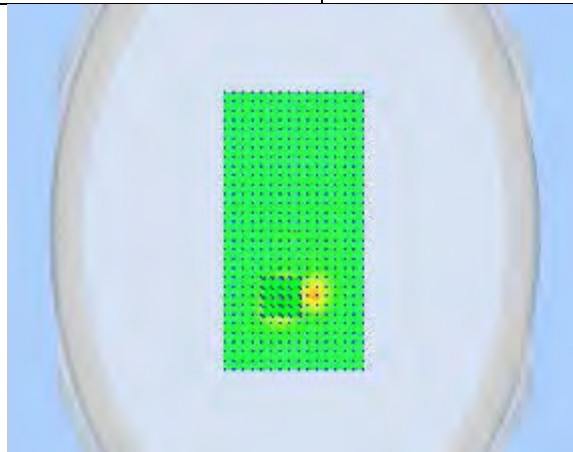
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5200.000000 (Channel 40)  |
| Relative permittivity (real part) | 46.18                     |
| Conductivity (S/m)                | 5.56                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 4.71                      |
| Highest Extrapolated SAR (W/Kg)   | 0.4094                    |
| SAR 1g (W/Kg)                     | 0.2613                    |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z) |



SURFACE SAR



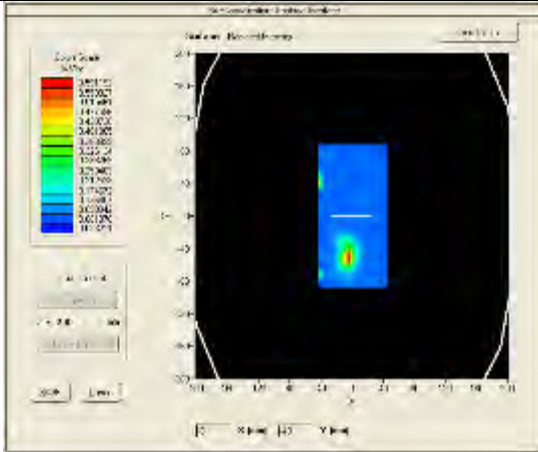
VOLUME SAR



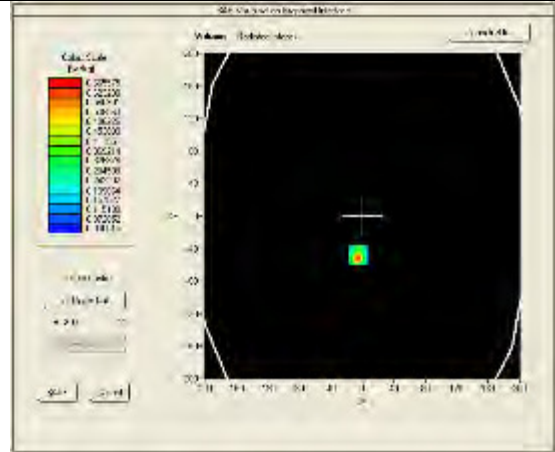
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5200_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity (%):                            | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/11/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

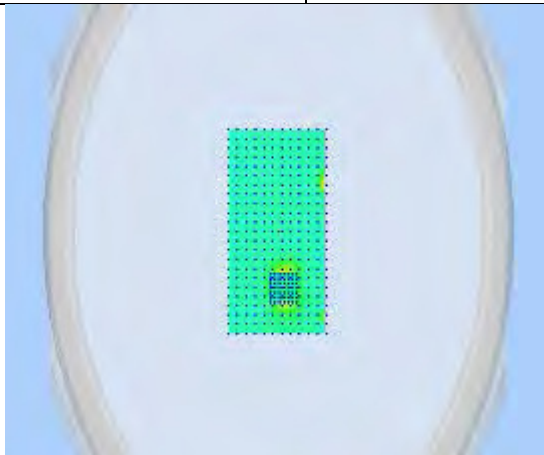
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5200.000000 (Channel 40)  |
| Relative permittivity (real part) | 46.18                     |
| Conductivity (S/m)                | 5.56                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | -3.12                     |
| Highest Extrapolated SAR (W/Kg)   | 0.3220                    |
| SAR 1g (W/Kg)                     | 0.2232                    |
| Peak SAR Location                 | -5mm(x), -49mm(y), 4mm(z) |



SURFACE SAR



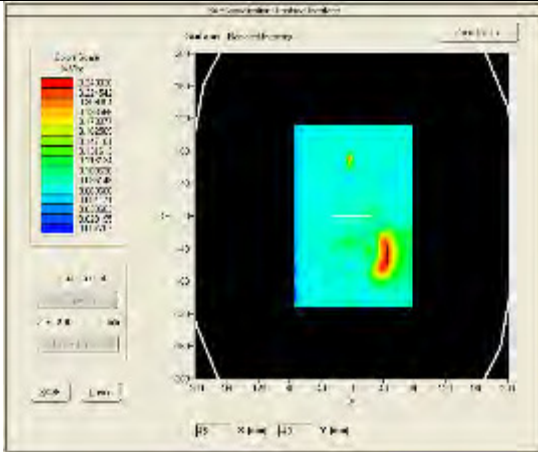
VOLUME SAR



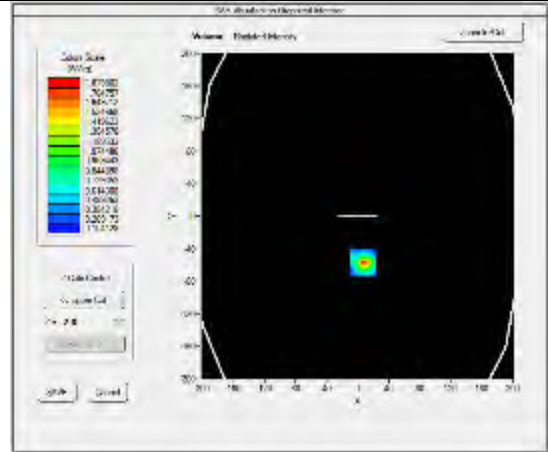
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5240_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity(%):                             | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/11/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

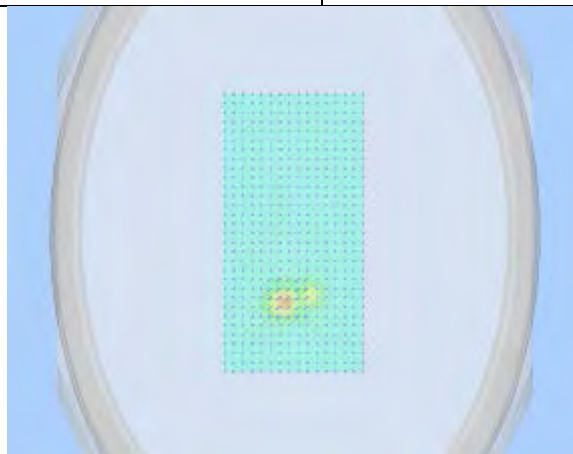
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 5240.000000 (Channel 48) |
| Relative permittivity (real part) | 46.12                    |
| Conductivity (S/m)                | 5.63                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPGO259             |
| Conversion Factor (dB)            | 2.39                     |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | 3.29                     |
| Highest Extrapolated SAR (W/Kg)   | 1.3672                   |
| SAR 1g (W/Kg)                     | 0.6198                   |
| Peak SAR Location                 | 44mm(x),-55mm(y),4mm(z)  |



SURFACE SAR



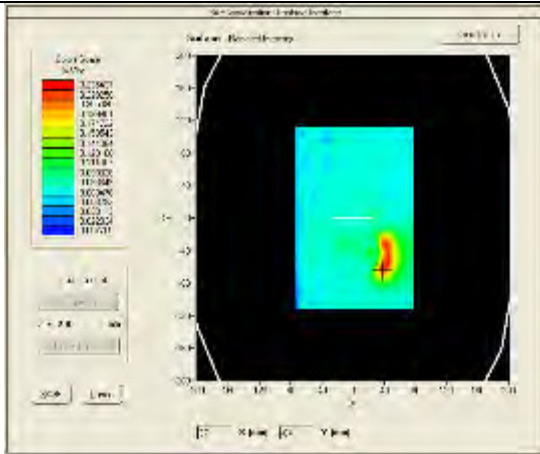
VOLUME SAR



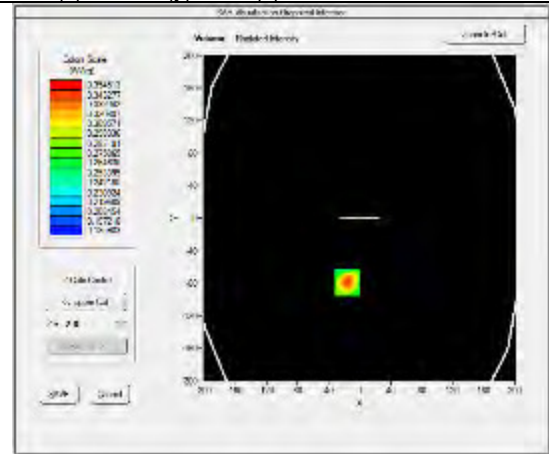
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5260_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity(%):                             | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/12/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

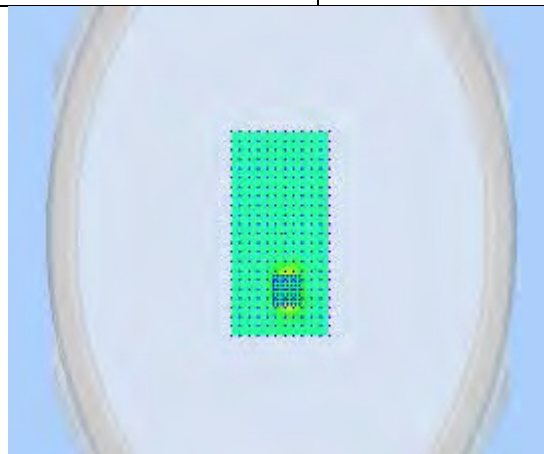
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 5260.000000 (Channel 52) |
| Relative permittivity (real part) | 46.09                    |
| Conductivity (S/m)                | 5.66                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPG0259             |
| Conversion Factor (dB)            | 2.39                     |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | -4.54                    |
| Highest Extrapolated SAR (W/Kg)   | 0.5771                   |
| SAR 1g (W/Kg)                     | 0.5771                   |
| Peak SAR Location                 | 39mm(x),-62mm(y),4mm(z)  |



SURFACE SAR



VOLUME SAR

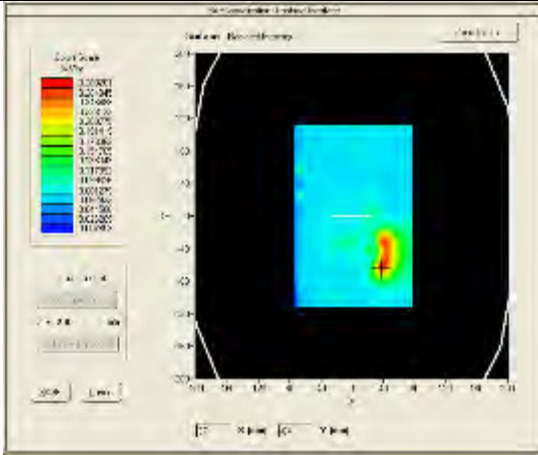


3D View Plot

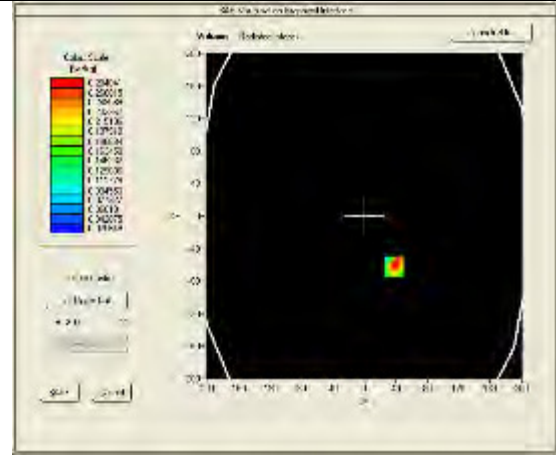


|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5300_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity(%):                             | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/12/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

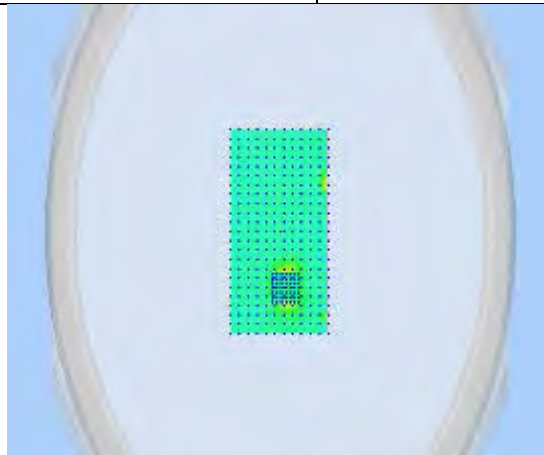
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 5300.000000 (Channel 60) |
| Relative permittivity (real part) | 46.03                    |
| Conductivity (S/m)                | 5.74                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPG0259             |
| Conversion Factor (dB)            | 2.39                     |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | 4.37                     |
| Highest Extrapolated SAR (W/Kg)   | 2.4527                   |
| SAR 1g (W/Kg)                     | 1.1830                   |
| Peak SAR Location                 | 38mm(x),-63mm(y),4mm(z)  |



SURFACE SAR



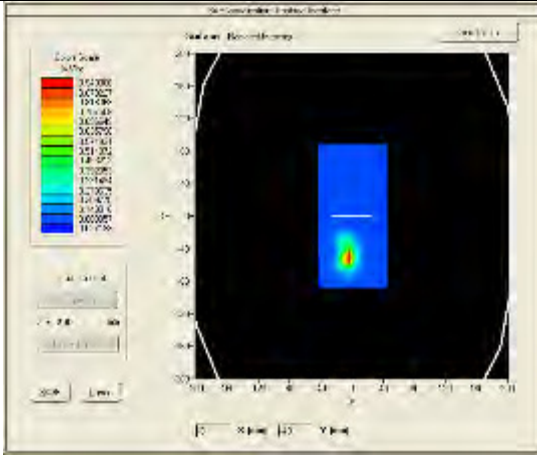
VOLUME SAR



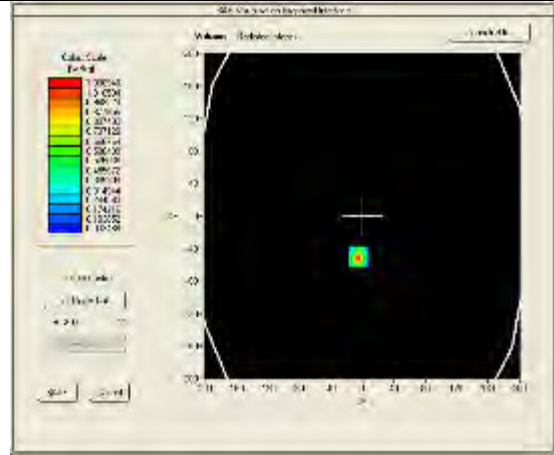
3D View Plot

|                     |   |      |              |
|---------------------|---|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5300_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                               | 23   | Result: Pass |
|                     | Humidity(%):                            | 58   |              |
|                     | Atmospheric(mPa):                       | 1009 |              |
| Mains Power:        | N/A                                     |      |              |
| Test Date:          | 02/12/2016                              |      |              |
| Tested by:          | Arthur Tie                              |      |              |
| Remarks:            |   |      |              |

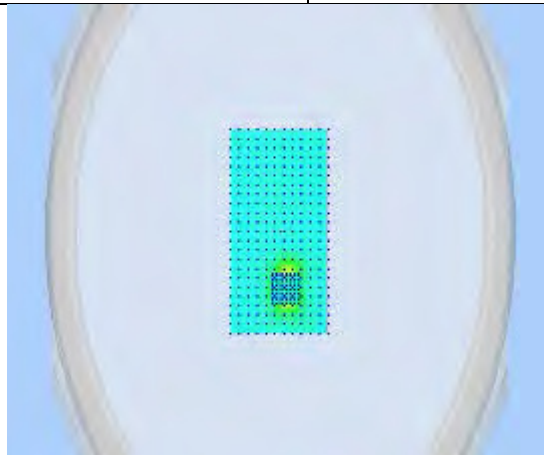
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 5300.000000 (Channel 60) |
| Relative permittivity (real part) | 46.03                    |
| Conductivity (S/m)                | 5.74                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPGO259             |
| Conversion Factor (dB)            | 2.39                     |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | 3.87                     |
| Highest Extrapolated SAR (W/Kg)   | 0.2756                   |
| SAR 1g (W/Kg)                     | 0.4352                   |
| Peak SAR Location                 | -5mm(x),-50mm(y),4mm(z)  |



SURFACE SAR



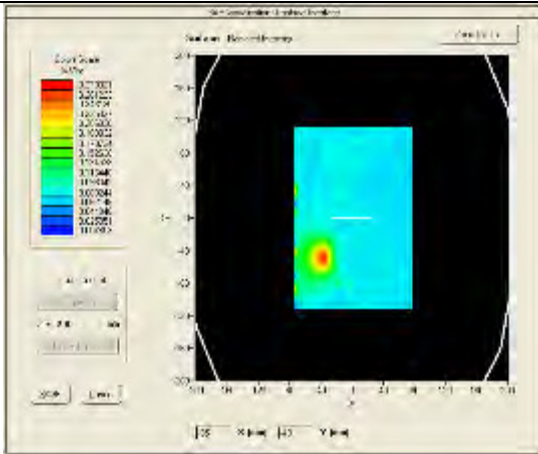
VOLUME SAR



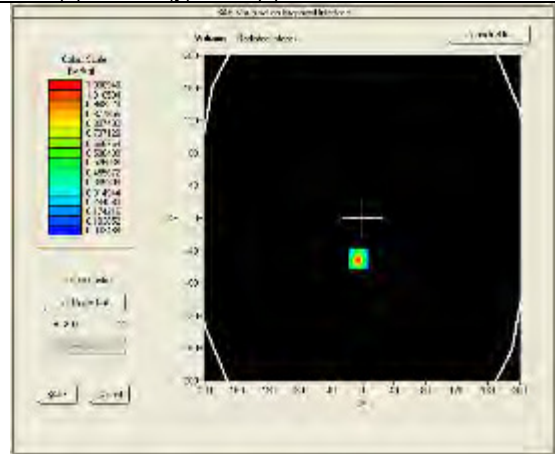
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5300_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity(%):                             | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/12/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

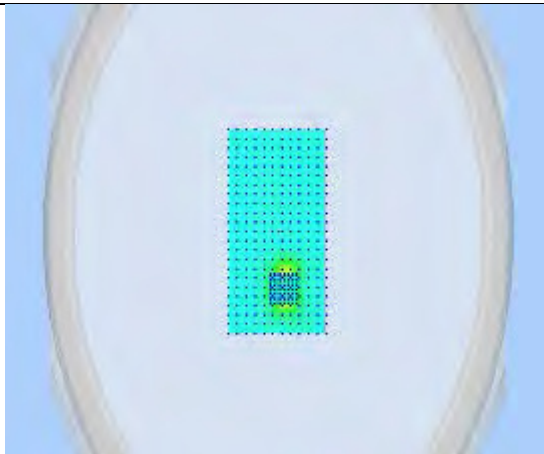
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 5300.000000 (Channel 60) |
| Relative permittivity (real part) | 46.03                    |
| Conductivity (S/m)                | 5.74                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPGO259             |
| Conversion Factor (dB)            | 2.39                     |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | -1.07                    |
| Highest Extrapolated SAR (W/Kg)   | 0.3995                   |
| SAR 1g (W/Kg)                     | 0.2568                   |
| Peak SAR Location                 | -36mm(x),-49mm(y),4mm(z) |



SURFACE SAR



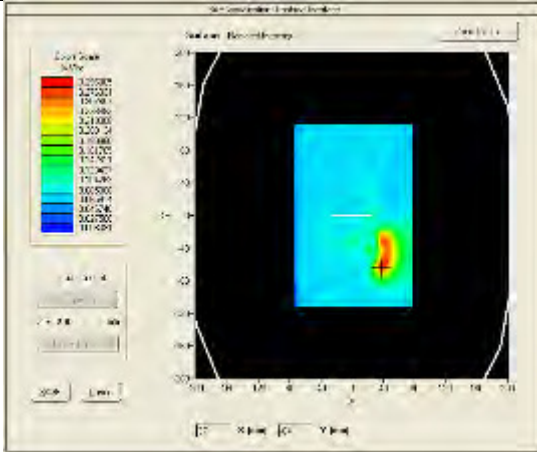
VOLUME SAR



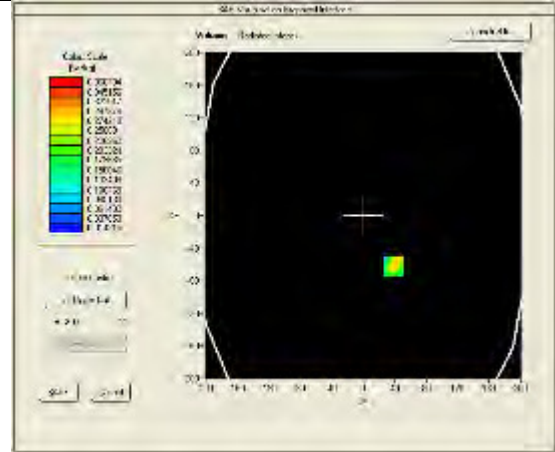
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5320_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity (%):                            | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/15/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

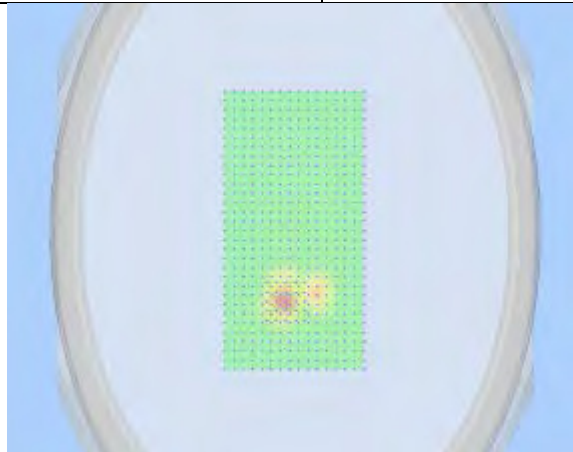
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 5320.000000 (Channel 64) |
| Relative permittivity (real part) | 45.96                    |
| Conductivity (S/m)                | 5.77                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPG0259             |
| Conversion Factor (dB)            | 2.63                     |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | 2.28                     |
| Highest Extrapolated SAR (W/Kg)   | 1.4699                   |
| SAR 1g (W/Kg)                     | 0.6041                   |
| Peak SAR Location                 | 39mm(x),-62mm(y),4mm(z)  |



SURFACE SAR



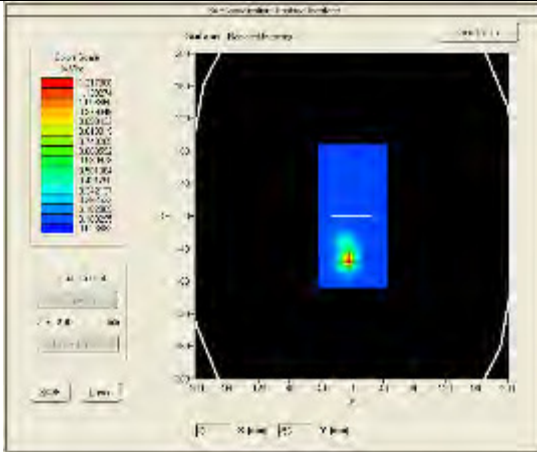
VOLUME SAR



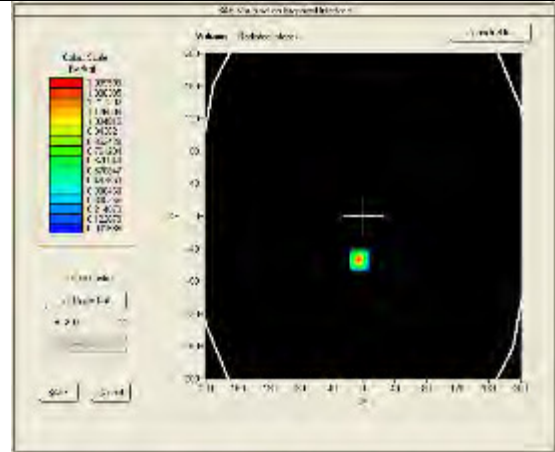
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5500_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity (%):                            | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/15/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

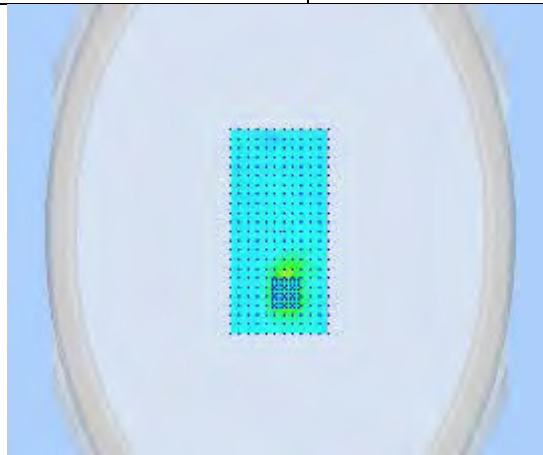
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5500.000000 (Channel 100) |
| Relative permittivity (real part) | 45.16                     |
| Conductivity (S/m)                | 6.04                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.63                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | -0.46                     |
| Highest Extrapolated SAR (W/Kg)   | 1.2337                    |
| SAR 1g (W/Kg)                     | 0.5709                    |
| Peak SAR Location                 | -5mm(x),-54mm(y),4mm(z)   |



SURFACE SAR



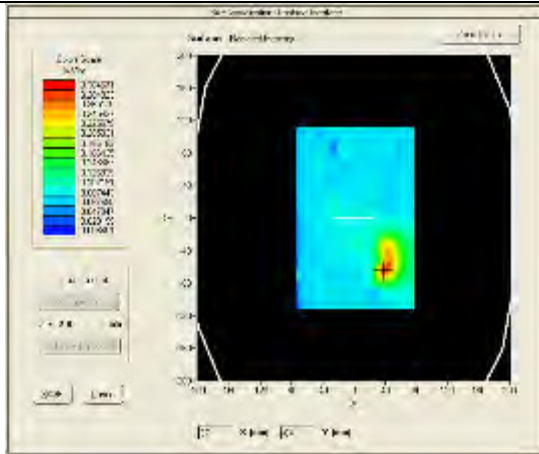
VOLUME SAR



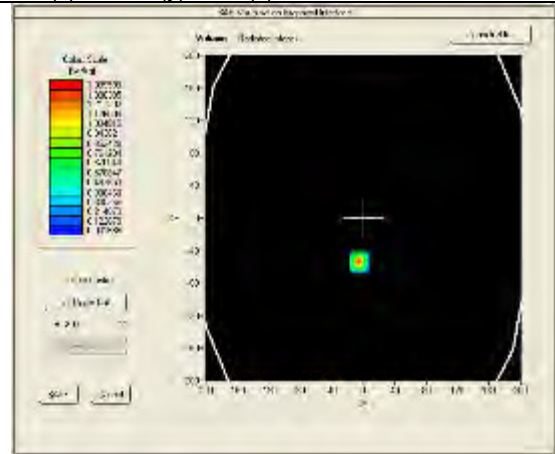
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5560_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity(%):                             | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/15/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

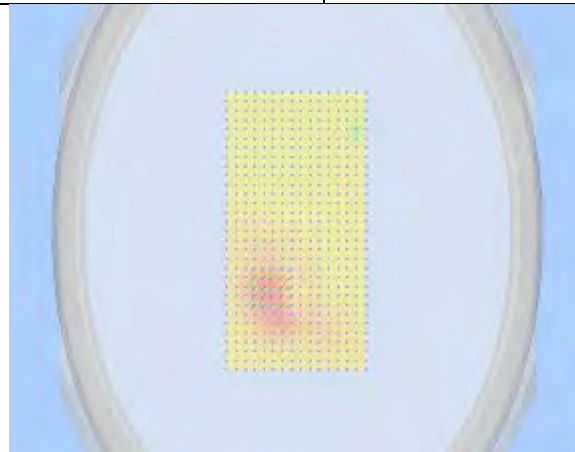
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5560.000000 (Channel 112) |
| Relative permittivity (real part) | 44.97                     |
| Conductivity (S/m)                | 6.17                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.71                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 3.09                      |
| Highest Extrapolated SAR (W/Kg)   | 1.3604                    |
| SAR 1g (W/Kg)                     | 0.6128                    |
| Peak SAR Location                 | 38mm(x),-64mm(y),4mm(z)   |



SURFACE SAR



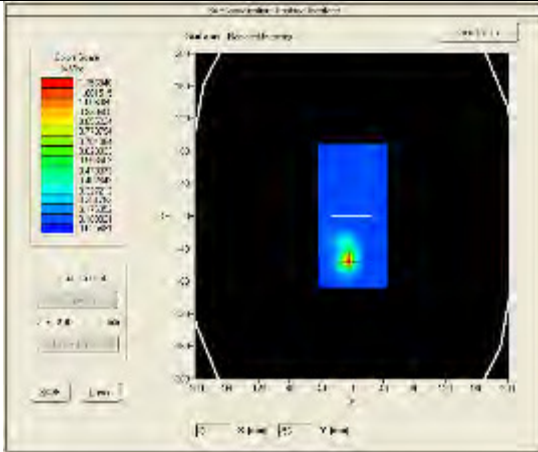
VOLUME SAR



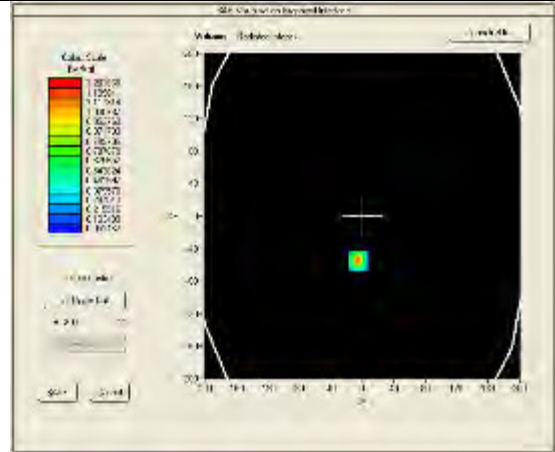
3D View Plot

|                     |   |      |              |
|---------------------|---|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5560_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                               | 23   | Result: Pass |
|                     | Humidity(%):                            | 58   |              |
|                     | Atmospheric(mPa):                       | 1009 |              |
| Mains Power:        | N/A                                     |      |              |
| Test Date:          | 02/15/2016                              |      |              |
| Tested by:          | Arthur Tie                              |      |              |
| Remarks:            |   |      |              |

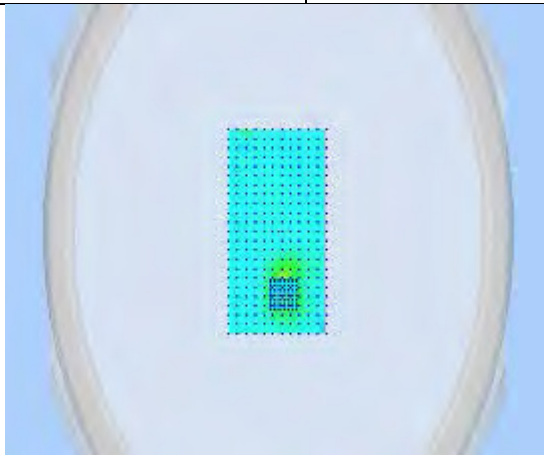
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5560.000000 (Channel 112) |
| Relative permittivity (real part) | 44.97                     |
| Conductivity (S/m)                | 6.17                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.71                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | -1.20                     |
| Highest Extrapolated SAR (W/Kg)   | 0.4338                    |
| SAR 1g (W/Kg)                     | 0.2814                    |
| Peak SAR Location                 | -5mm(x), -55mm(y), 4mm(z) |



SURFACE SAR

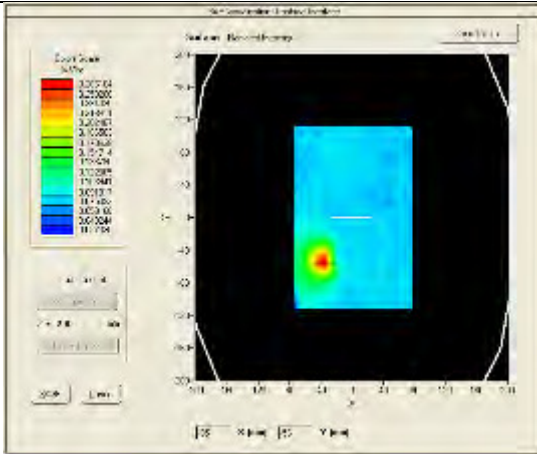


VOLUME SAR

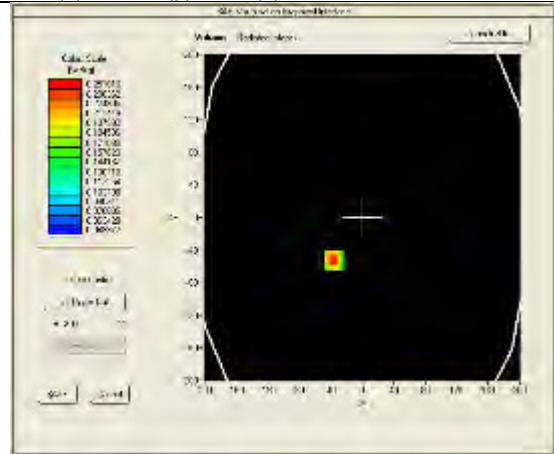


3D View Plot

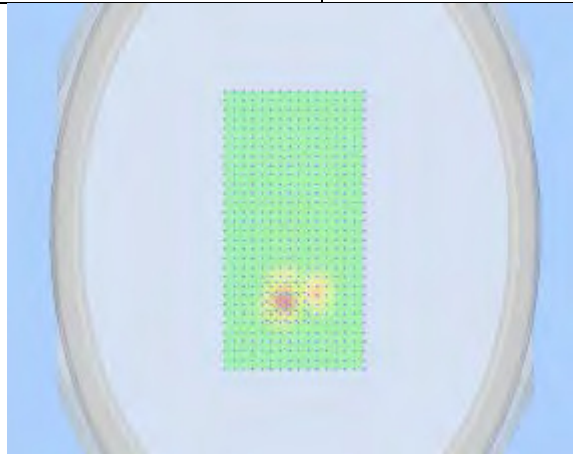
|                                   |  |      |              |
|-----------------------------------|--|------|--------------|
| Test specification:               | Plane_Body_Middle_802.11a_5560_Right_0mm |      |              |
| Environ Conditions:               | Temp(oC):                                | 23   | Result: Pass |
|                                   | Humidity(%):                             | 58   |              |
|                                   | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:                      | N/A                                      |      |              |
| Test Date:                        | 02/15/2016                               |      |              |
| Tested by:                        | Arthur Tie                               |      |              |
| Remarks:                          |  |      |              |
| Frequency (MHz)                   | 5560.000000 (Channel 112)                |      |              |
| Relative permittivity (real part) | 44.97                                    |      |              |
| Conductivity (S/m)                | 6.17                                     |      |              |
| Transmission Duty Factor          | 1.0                                      |      |              |
| Probe SN                          | 2715_EPGO259                             |      |              |
| Conversion Factor (dB)            | 2.71                                     |      |              |
| Area Scan Resolution              | 8 mm                                     |      |              |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm                   |      |              |
| Zoom Scan Size                    | 24x24x24 mm                              |      |              |
| Measurement Drifts (%)            | 2.37                                     |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.4383                                   |      |              |
| SAR 1g (W/Kg)                     | 0.2768                                   |      |              |
| Peak SAR Location                 | -36mm(x),-53mm(y),4mm(z)                 |      |              |



SURFACE SAR



VOLUME SAR

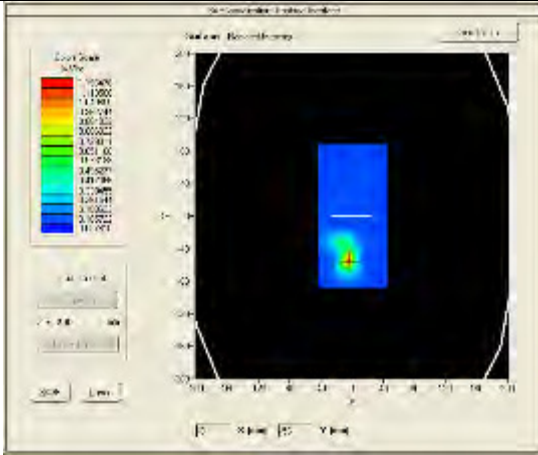


3D View Plot

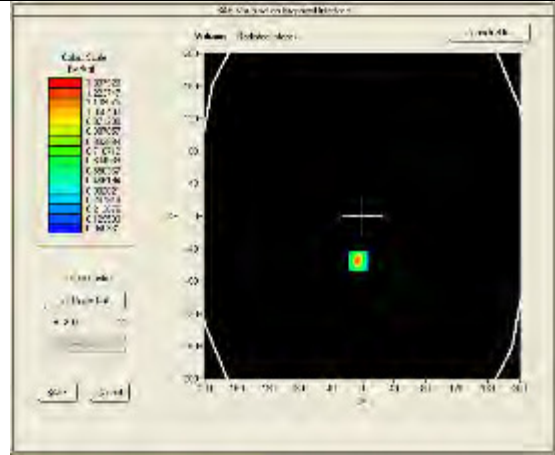


|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5700_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity(%):                             | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/16/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

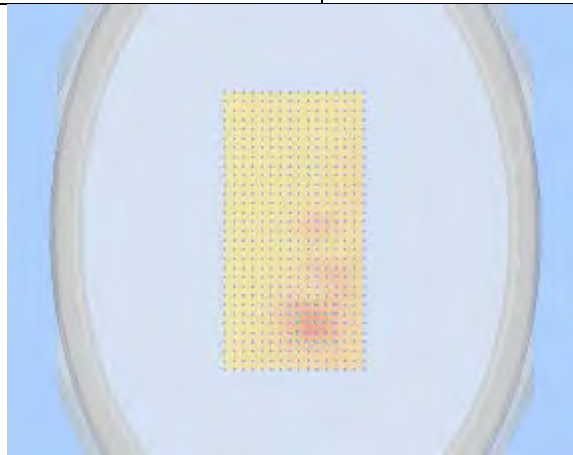
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5700.000000 (Channel 140) |
| Relative permittivity (real part) | 44.66                     |
| Conductivity (S/m)                | 6.43                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.71                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 0.61                      |
| Highest Extrapolated SAR (W/Kg)   | 0.9971                    |
| SAR 1g (W/Kg)                     | 0.4806                    |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)   |



SURFACE SAR



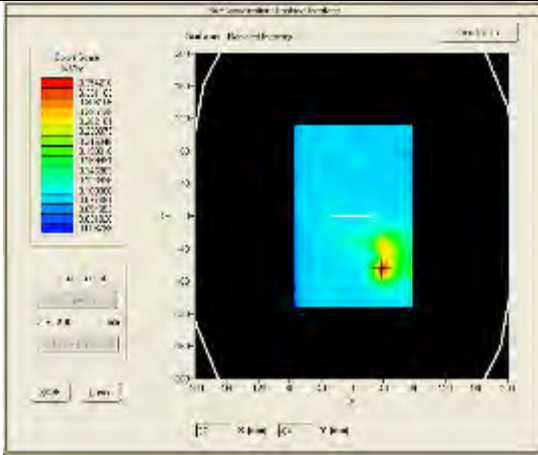
VOLUME SAR



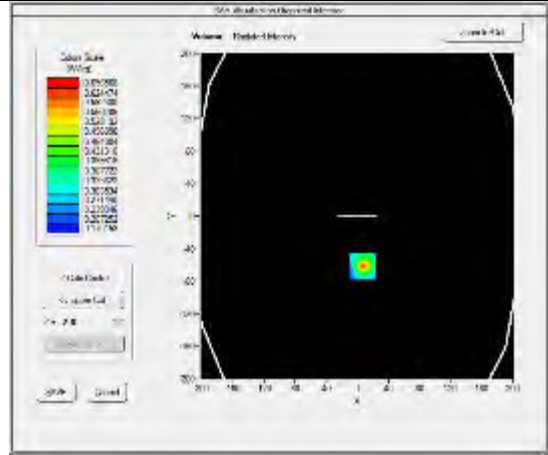
3D View Plot

|                     |  |      |              |
|---------------------|--|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5745_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                                | 23   | Result: Pass |
|                     | Humidity(%):                             | 58   |              |
|                     | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:        | N/A                                      |      |              |
| Test Date:          | 02/16/2016                               |      |              |
| Tested by:          | Arthur Tie                               |      |              |
| Remarks:            |  |      |              |

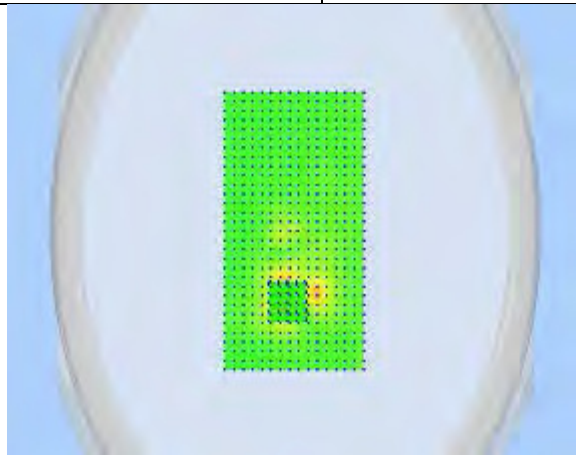
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5745.000000 (Channel 149) |
| Relative permittivity (real part) | 44.50                     |
| Conductivity (S/m)                | 6.43                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.65                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 3.40                      |
| Highest Extrapolated SAR (W/Kg)   | 0.9872                    |
| SAR 1g (W/Kg)                     | 0.4754                    |
| Peak SAR Location                 | 41mm(x),-35mm(y),4mm(z)   |



SURFACE SAR

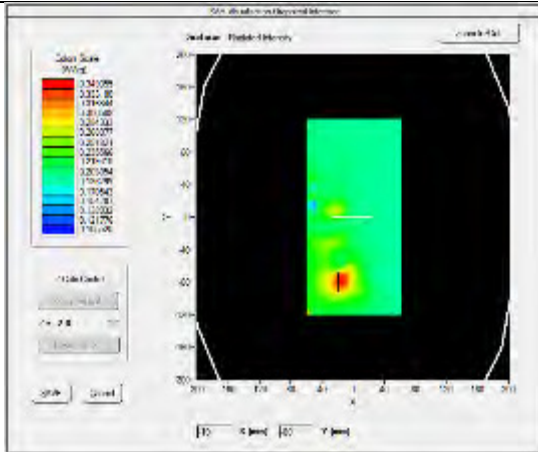


VOLUME SAR

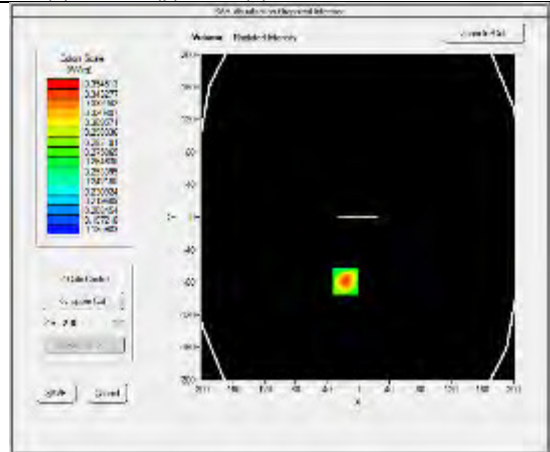


3D View Plot

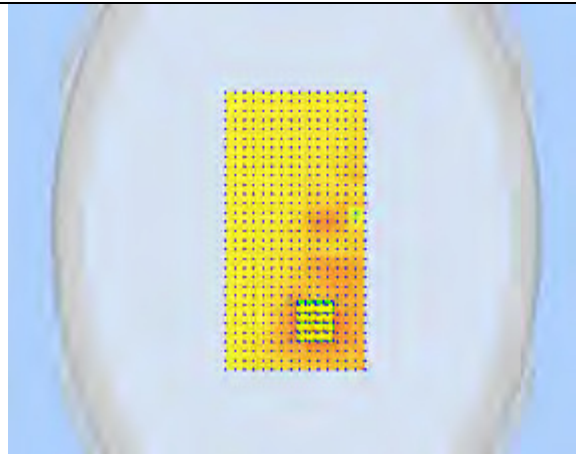
|                                   |  |      |              |
|-----------------------------------|--|------|--------------|
| Test specification:               | Plane_Body_Middle_802.11a_5785_Front_5mm |      |              |
| Environ Conditions:               | Temp(oC):                                | 23   | Result: Pass |
|                                   | Humidity(%):                             | 58   |              |
|                                   | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:                      | N/A                                      |      |              |
| Test Date:                        | 02/16/2016                               |      |              |
| Tested by:                        | Arthur Tie                               |      |              |
| Remarks:                          |  |      |              |
| Frequency (MHz)                   | 5785.000000 (Channel 157)                |      |              |
| Relative permittivity (real part) | 44.36                                    |      |              |
| Conductivity (S/m)                | 6.43                                     |      |              |
| Transmission Duty Factor          | 1.0                                      |      |              |
| Probe SN                          | 2715_EPGO259                             |      |              |
| Conversion Factor (dB)            | 2.65                                     |      |              |
| Area Scan Resolution              | 8 mm                                     |      |              |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm                   |      |              |
| Zoom Scan Size                    | 24x24x24 mm                              |      |              |
| Measurement Drifts (%)            | -4.98                                    |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.9802                                   |      |              |
| SAR 1g (W/Kg)                     | 0.4699                                   |      |              |
| Peak SAR Location                 | 41mm(x), -35mm(y), 4mm(z)                |      |              |



SURFACE SAR



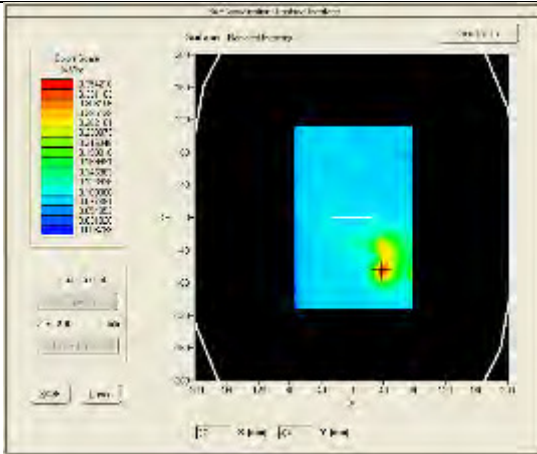
VOLUME SAR



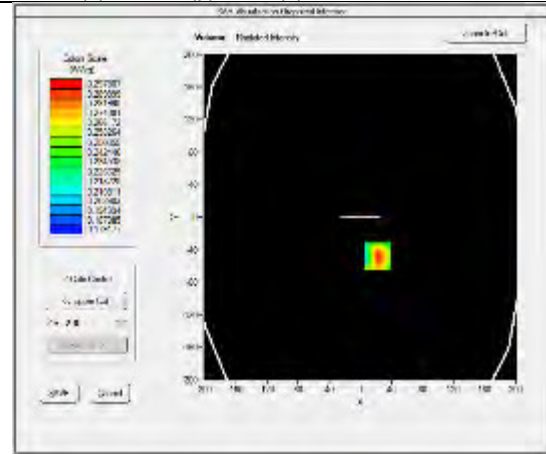
3D View Plot

|                     |   |      |              |
|---------------------|---|------|--------------|
| Test specification: | Plane_Body_Middle_802.11a_5785_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                               | 23   | Result: Pass |
|                     | Humidity(%):                            | 58   |              |
|                     | Atmospheric(mPa):                       | 1009 |              |
| Mains Power:        | N/A                                     |      |              |
| Test Date:          | 02/16/2016                              |      |              |
| Tested by:          | Arthur Tie                              |      |              |
| Remarks:            |   |      |              |

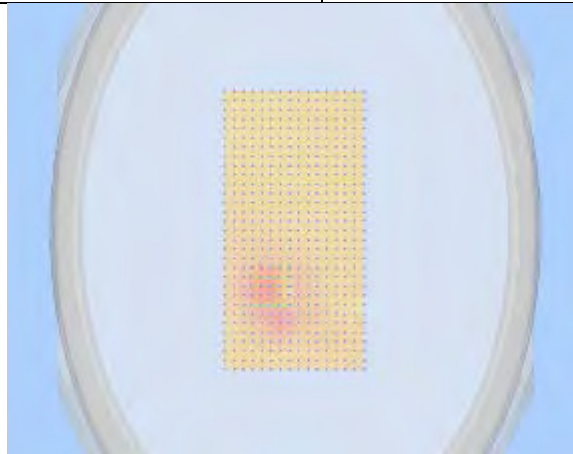
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5785.000000 (Channel 157) |
| Relative permittivity (real part) | 44.36                     |
| Conductivity (S/m)                | 6.43                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.65                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | -4.27                     |
| Highest Extrapolated SAR (W/Kg)   | 0.4683                    |
| SAR 1g (W/Kg)                     | 0.3004                    |
| Peak SAR Location                 | 41mm(x), -35mm(y), 4mm(z) |



SURFACE SAR

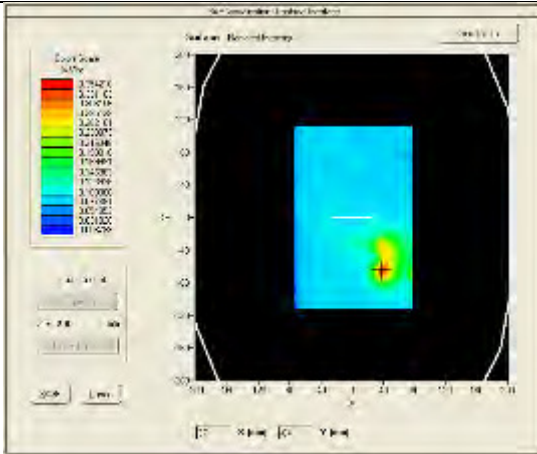


VOLUME SAR

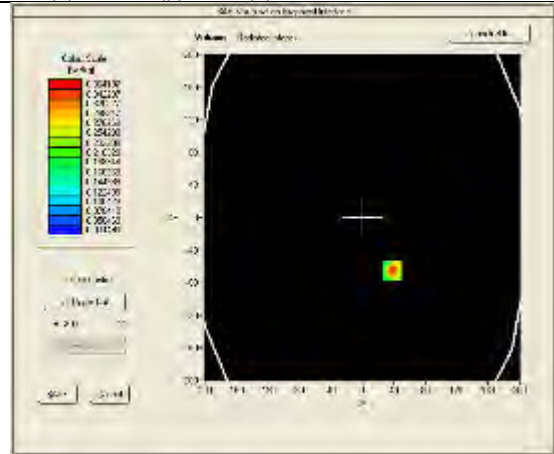


3D View Plot

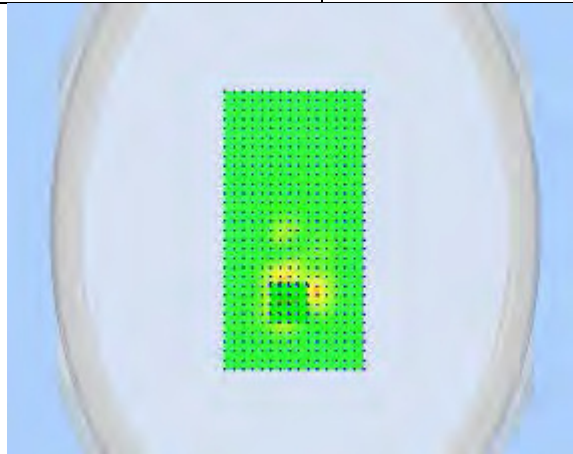
|                                   |  |      |              |
|-----------------------------------|--|------|--------------|
| Test specification:               | Plane_Body_Middle_802.11a_5785_Right_0mm |      |              |
| Environ Conditions:               | Temp(oC):                                | 23   | Result: Pass |
|                                   | Humidity(%):                             | 58   |              |
|                                   | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:                      | N/A                                      |      |              |
| Test Date:                        | 02/16/2016                               |      |              |
| Tested by:                        | Arthur Tie                               |      |              |
| Remarks:                          |  |      |              |
| Frequency (MHz)                   | 5785.000000 (Channel 157)                |      |              |
| Relative permittivity (real part) | 44.36                                    |      |              |
| Conductivity (S/m)                | 6.43                                     |      |              |
| Transmission Duty Factor          | 1.0                                      |      |              |
| Probe SN                          | 2715_EPGO259                             |      |              |
| Conversion Factor (dB)            | 2.65                                     |      |              |
| Area Scan Resolution              | 8 mm                                     |      |              |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm                   |      |              |
| Zoom Scan Size                    | 24x24x24 mm                              |      |              |
| Measurement Drifts (%)            | 4.36                                     |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.3762                                   |      |              |
| SAR 1g (W/Kg)                     | 0.2609                                   |      |              |
| Peak SAR Location                 | 41mm(x),-35mm(y),4mm(z)                  |      |              |



SURFACE SAR

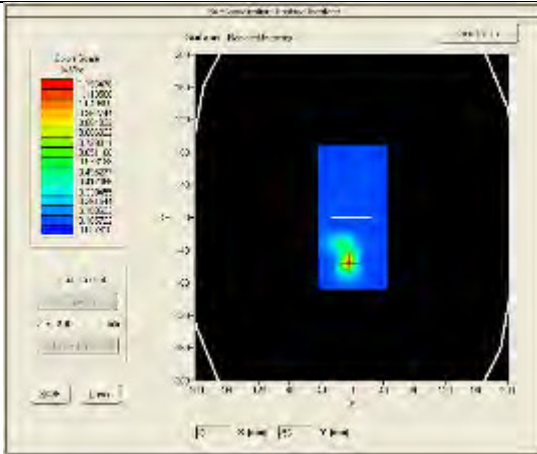


VOLUME SAR

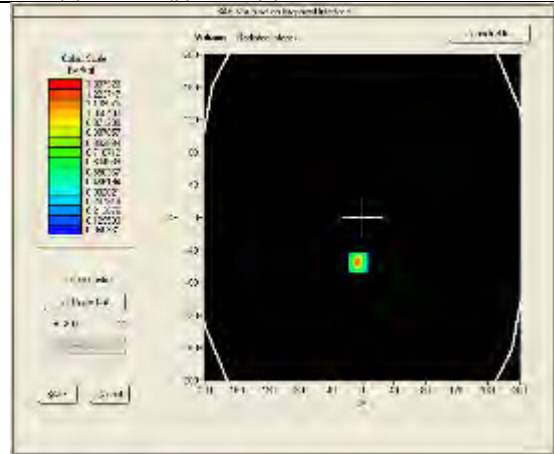


3D View Plot

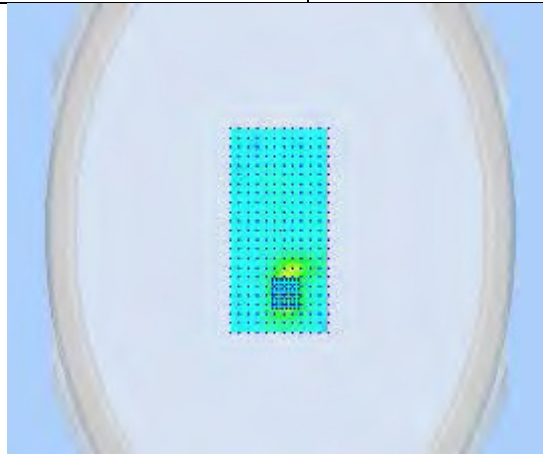
|                                   |  |      |              |
|-----------------------------------|--|------|--------------|
| Test specification:               | Plane_Body_Middle_802.11a_5825_Front_5mm |      |              |
| Environ Conditions:               | Temp(oC):                                | 23   | Result: Pass |
|                                   | Humidity (%):                            | 58   |              |
|                                   | Atmospheric(mPa):                        | 1009 |              |
| Mains Power:                      | N/A                                      |      |              |
| Test Date:                        | 02/16/2016                               |      |              |
| Tested by:                        | Arthur Tie                               |      |              |
| Remarks:                          |  |      |              |
| Frequency (MHz)                   | 5825.000000 (Channel 165)                |      |              |
| Relative permittivity (real part) | 44.17                                    |      |              |
| Conductivity (S/m)                | 6.48                                     |      |              |
| Transmission Duty Factor          | 1.0                                      |      |              |
| Probe SN                          | 2715_EPGO259                             |      |              |
| Conversion Factor (dB)            | 2.39                                     |      |              |
| Area Scan Resolution              | 8 mm                                     |      |              |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm                   |      |              |
| Zoom Scan Size                    | 24x24x24 mm                              |      |              |
| Measurement Drifts (%)            | 4.610                                    |      |              |
| Highest Extrapolated SAR (W/Kg)   | 1.1540                                   |      |              |
| SAR 1g (W/Kg)                     | 0.5313                                   |      |              |
| Peak SAR Location                 | -15mm(x),-45mm(y),4mm(z)                 |      |              |



SURFACE SAR



VOLUME SAR

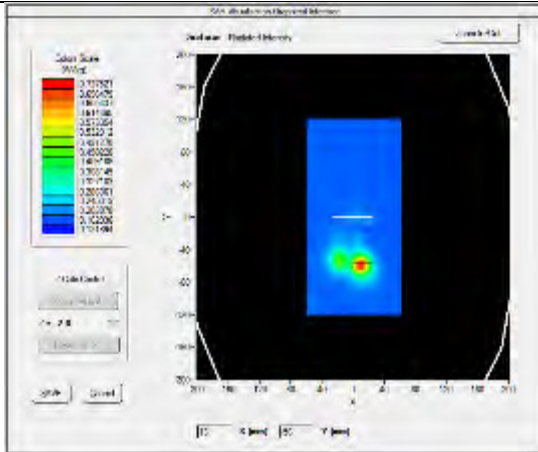


3D View Plot

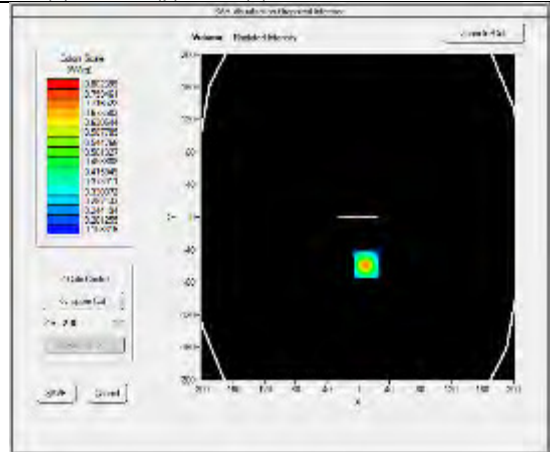
**802.11-HT20-5G**

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5200_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity (%):                         | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/16/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

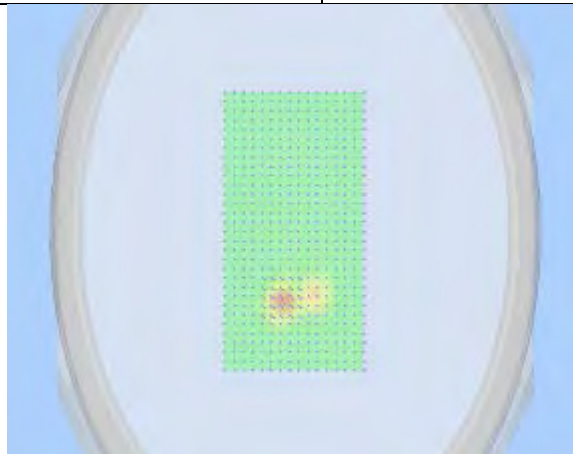
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5200.000000 (Channel 40)  |
| Relative permittivity (real part) | 46.18                     |
| Conductivity (S/m)                | 5.56                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 3.31                      |
| Highest Extrapolated SAR (W/Kg)   | 1.2261                    |
| SAR 1g (W/Kg)                     | 0.5638                    |
| Peak SAR Location                 | 45mm(x), -47mm(y), 4mm(z) |



SURFACE SAR

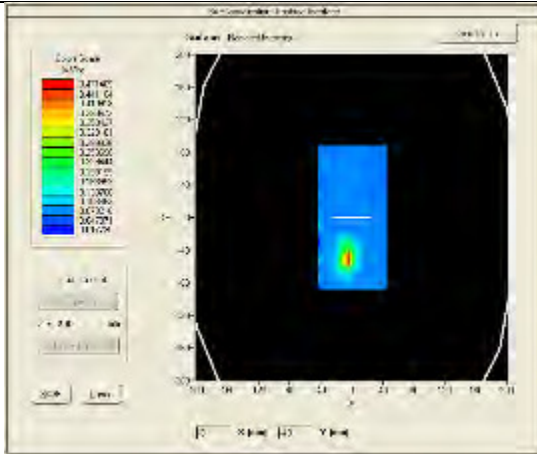


VOLUME SAR

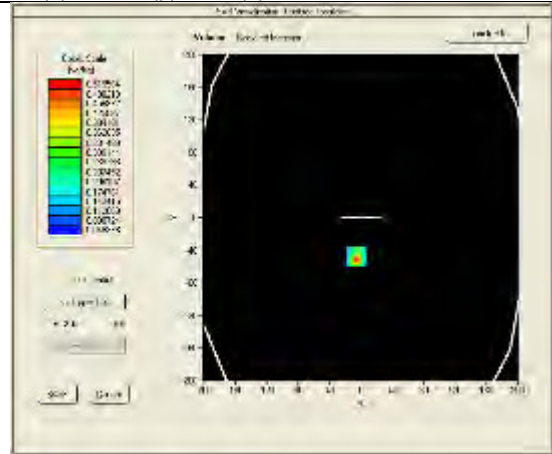


3D View Plot

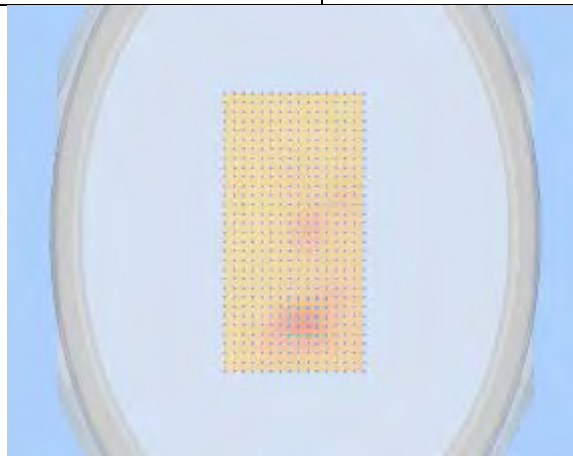
|                                   |                                      |      |              |
|-----------------------------------|--------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT20_5200_Left_0mm |      |              |
| Environ Conditions:               | Temp(oC):                            | 23   | Result: Pass |
|                                   | Humidity (%):                        | 58   |              |
|                                   | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:                      | N/A                                  |      |              |
| Test Date:                        | 02/16/2016                           |      |              |
| Tested by:                        | Arthur Tie                           |      |              |
| Remarks:                          |                                      |      |              |
| Frequency (MHz)                   | 5200.000000 (Channel 40)             |      |              |
| Relative permittivity (real part) | 46.18                                |      |              |
| Conductivity (S/m)                | 5.56                                 |      |              |
| Transmission Duty Factor          | 1.0                                  |      |              |
| Probe SN                          | 2715_EPGO259                         |      |              |
| Conversion Factor (dB)            | 2.39                                 |      |              |
| Area Scan Resolution              | 8 mm                                 |      |              |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm               |      |              |
| Zoom Scan Size                    | 24x24x24 mm                          |      |              |
| Measurement Drifts (%)            | -1.82                                |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.3369                               |      |              |
| SAR 1g (W/Kg)                     | 0.2368                               |      |              |
| Peak SAR Location                 | -5mm(x), -49mm(y), 4mm(z)            |      |              |



SURFACE SAR



VOLUME SAR

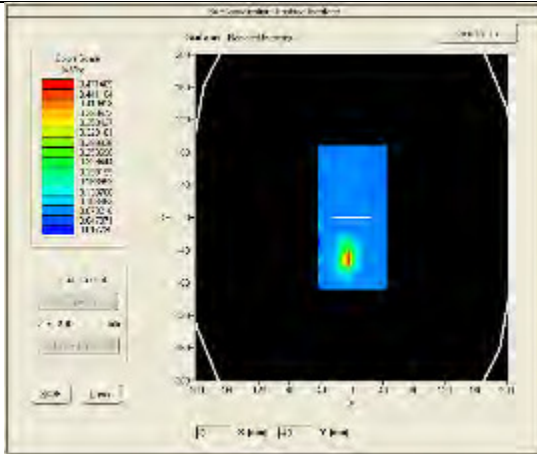


3D View Plot

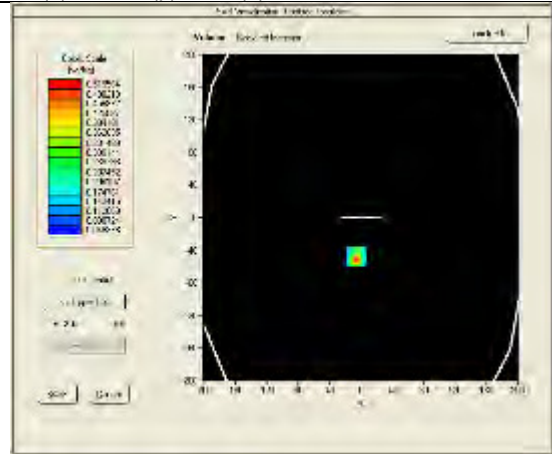


|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5200_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity (%):                         | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/16/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

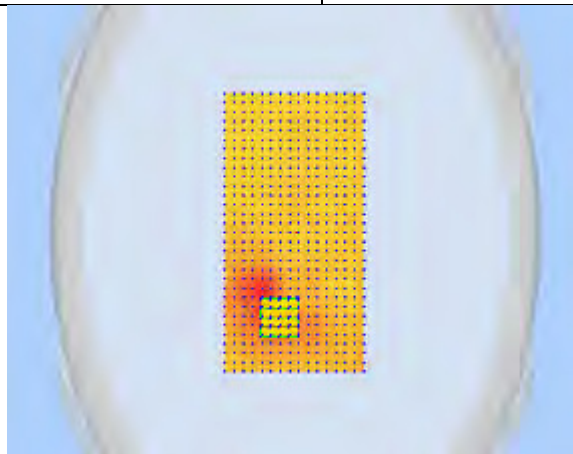
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5200.000000 (Channel 40)  |
| Relative permittivity (real part) | 46.18                     |
| Conductivity (S/m)                | 5.56                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 0.56                      |
| Highest Extrapolated SAR (W/Kg)   | 0.3521                    |
| SAR 1g (W/Kg)                     | 0.2455                    |
| Peak SAR Location                 | -5mm(x), -49mm(y), 4mm(z) |



SURFACE SAR



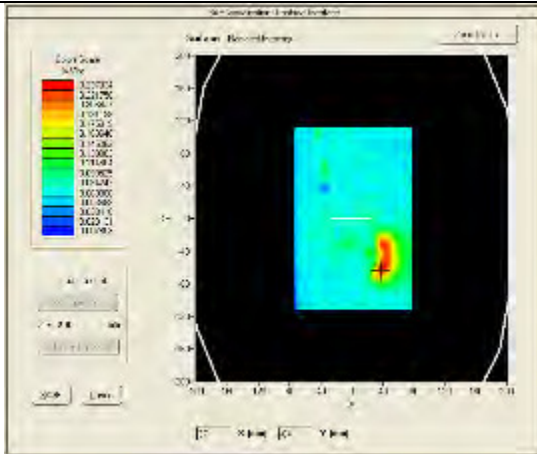
VOLUME SAR



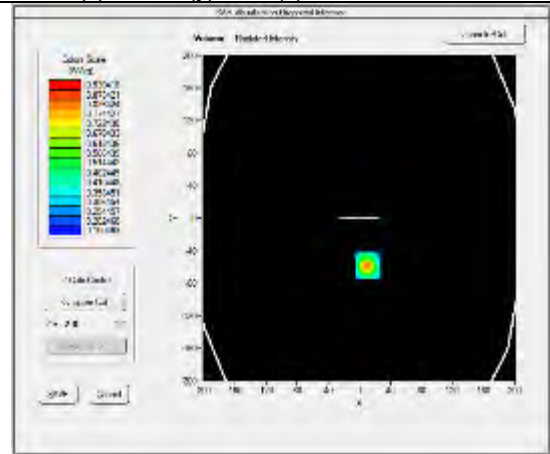
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5300_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity (%):                         | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/16/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

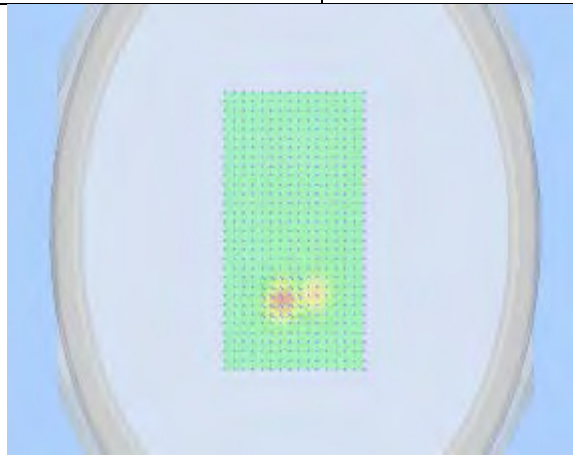
|                                   |                          |
|-----------------------------------|--------------------------|
| Frequency (MHz)                   | 5300.000000 (Channel 60) |
| Relative permittivity (real part) | 46.03                    |
| Conductivity (S/m)                | 5.74                     |
| Transmission Duty Factor          | 1.0                      |
| Probe SN                          | 2715_EPGO259             |
| Conversion Factor (dB)            | 2.39                     |
| Area Scan Resolution              | 8 mm                     |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm   |
| Zoom Scan Size                    | 24x24x24 mm              |
| Measurement Drifts (%)            | 2.67                     |
| Highest Extrapolated SAR (W/Kg)   | 1.4556                   |
| SAR 1g (W/Kg)                     | 0.6482                   |
| Peak SAR Location                 | 39mm(x),-62mm(y),4mm(z)  |



SURFACE SAR

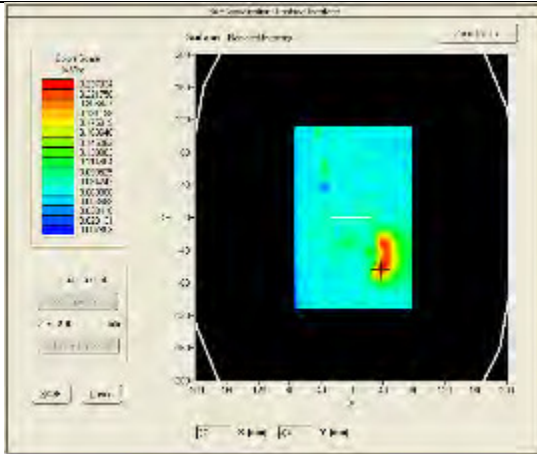


VOLUME SAR

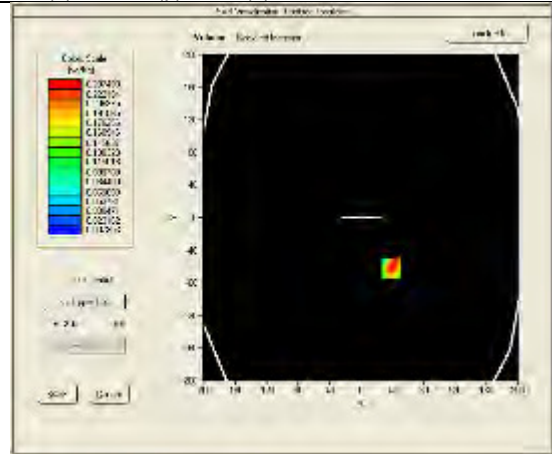


3D View Plot

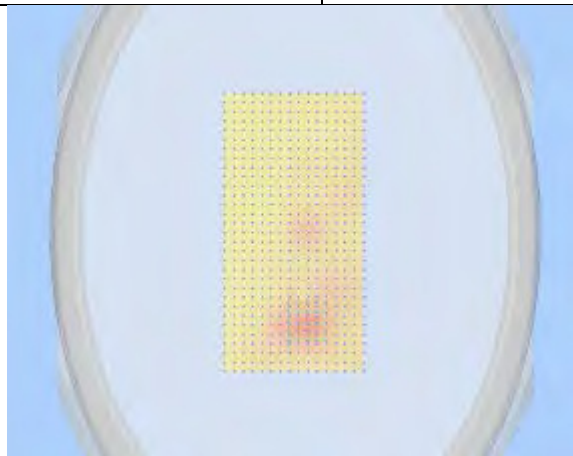
|                                   |                                      |      |              |
|-----------------------------------|--------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT20_5300_Left_0mm |      |              |
| Environ Conditions:               | Temp(oC):                            | 23   | Result: Pass |
|                                   | Humidity (%):                        | 58   |              |
|                                   | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:                      | N/A                                  |      |              |
| Test Date:                        | 02/16/2016                           |      |              |
| Tested by:                        | Arthur Tie                           |      |              |
| Remarks:                          |                                      |      |              |
| Frequency (MHz)                   | 5300.000000 (Channel 60)             |      |              |
| Relative permittivity (real part) | 46.03                                |      |              |
| Conductivity (S/m)                | 5.74                                 |      |              |
| Transmission Duty Factor          | 1.0                                  |      |              |
| Probe SN                          | 2715_EPGO259                         |      |              |
| Conversion Factor (dB)            | 2.39                                 |      |              |
| Area Scan Resolution              | 8 mm                                 |      |              |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm               |      |              |
| Zoom Scan Size                    | 24x24x24 mm                          |      |              |
| Measurement Drifts (%)            | 2.09                                 |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.4139                               |      |              |
| SAR 1g (W/Kg)                     | 0.2689                               |      |              |
| Peak SAR Location                 | 39mm(x),-62mm(y),4mm(z)              |      |              |



SURFACE SAR



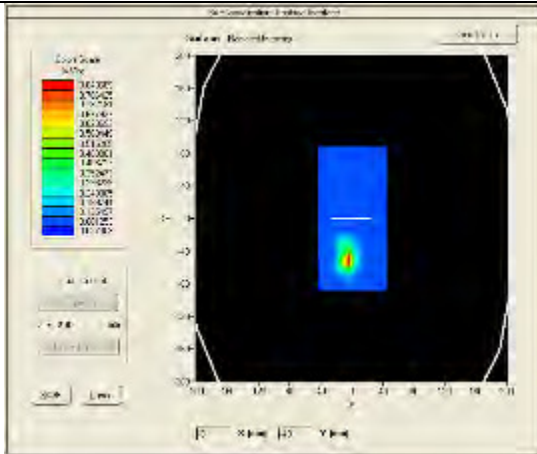
VOLUME SAR



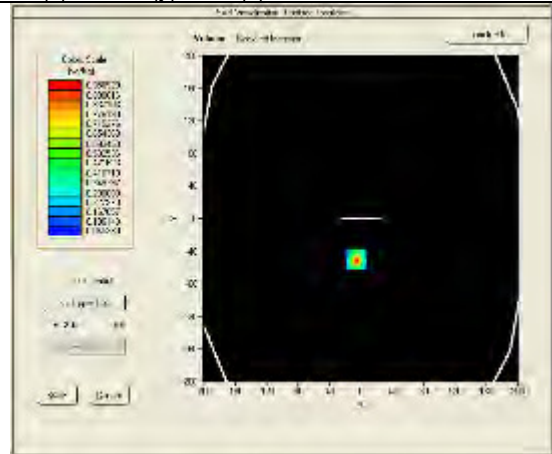
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5300_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity (%):                         | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/16/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

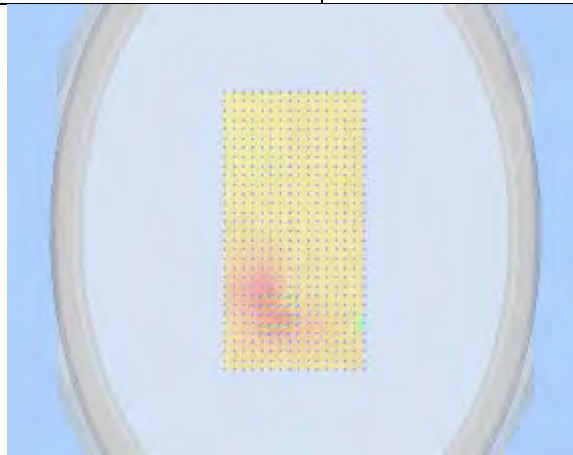
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5300.000000 (Channel 60)  |
| Relative permittivity (real part) | 46.03                     |
| Conductivity (S/m)                | 5.74                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | -3.09                     |
| Highest Extrapolated SAR (W/Kg)   | 0.4286                    |
| SAR 1g (W/Kg)                     | 0.2723                    |
| Peak SAR Location                 | -5mm(x), -50mm(y), 4mm(z) |



SURFACE SAR



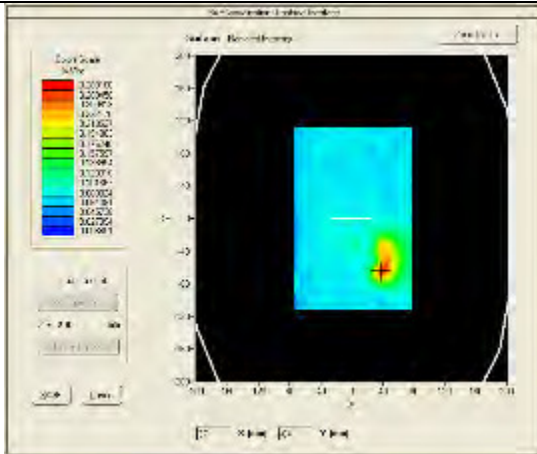
VOLUME SAR



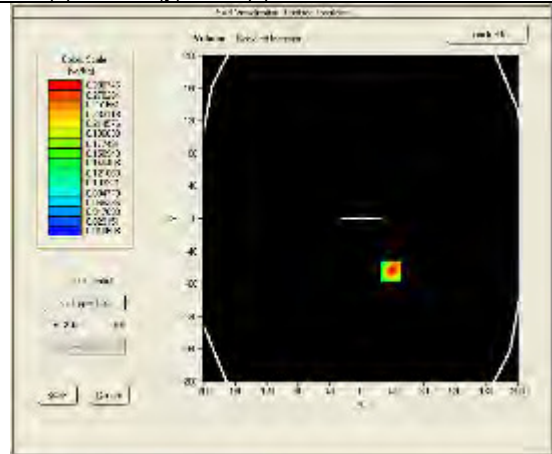
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5560_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity (%):                         | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/16/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

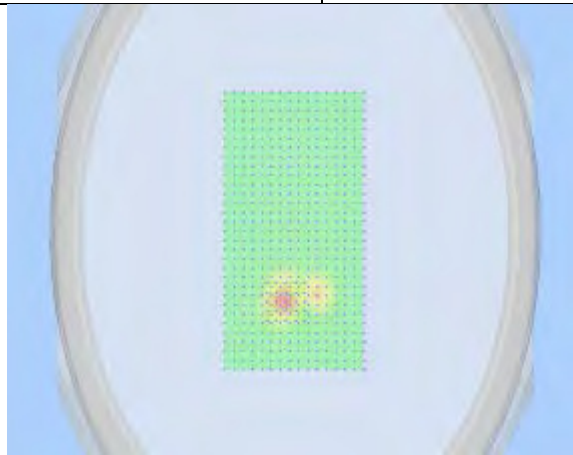
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5560.000000 (Channel 112) |
| Relative permittivity (real part) | 44.97                     |
| Conductivity (S/m)                | 6.17                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.71                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | -2.38                     |
| Highest Extrapolated SAR (W/Kg)   | 1.3900                    |
| SAR 1g (W/Kg)                     | 0.6267                    |
| Peak SAR Location                 | 38mm(x),-64mm(y),4mm(z)   |



SURFACE SAR



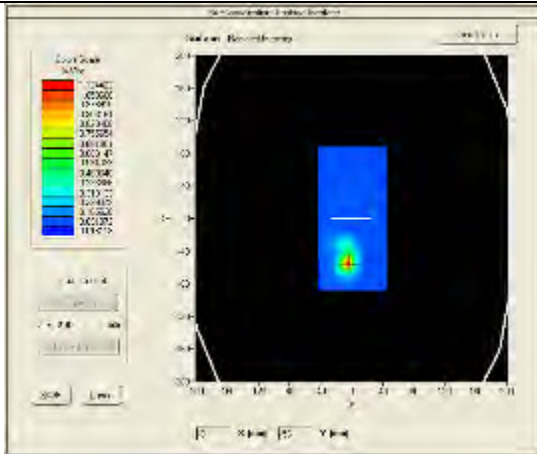
VOLUME SAR



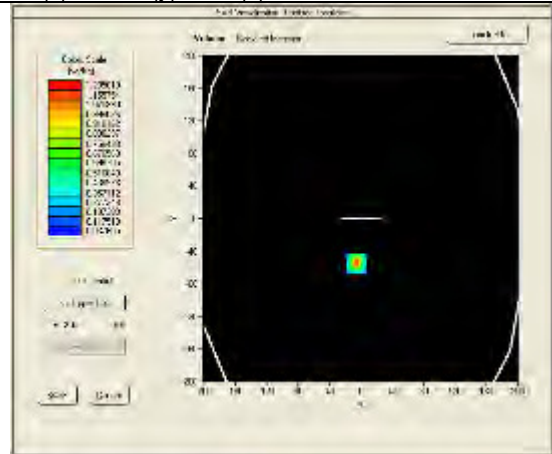
3D View Plot

|                     |                                      |      |              |
|---------------------|--------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5560_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                            | 23   | Result: Pass |
|                     | Humidity (%):                        | 58   |              |
|                     | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:        | N/A                                  |      |              |
| Test Date:          | 02/17/2016                           |      |              |
| Tested by:          | Arthur Tie                           |      |              |
| Remarks:            |                                      |      |              |

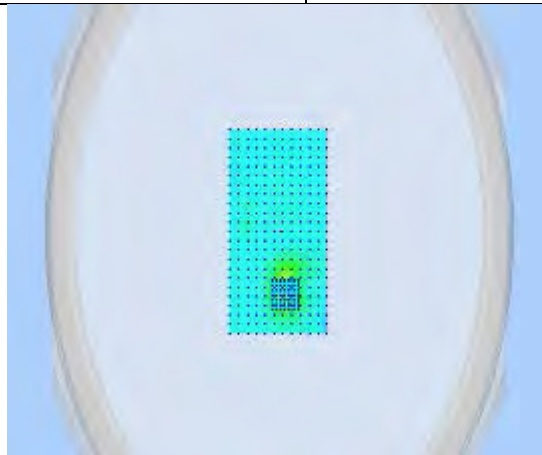
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5560.000000 (Channel 112) |
| Relative permittivity (real part) | 44.97                     |
| Conductivity (S/m)                | 6.17                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.71                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 4.05                      |
| Highest Extrapolated SAR (W/Kg)   | 0.4717                    |
| SAR 1g (W/Kg)                     | 0.2940                    |
| Peak SAR Location                 | -5mm(x), -55mm(y), 4mm(z) |



SURFACE SAR



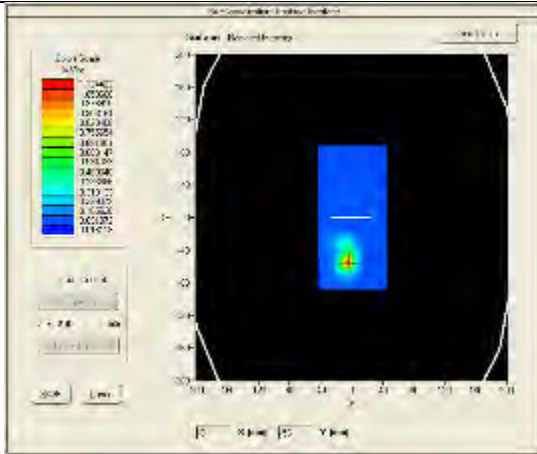
VOLUME SAR



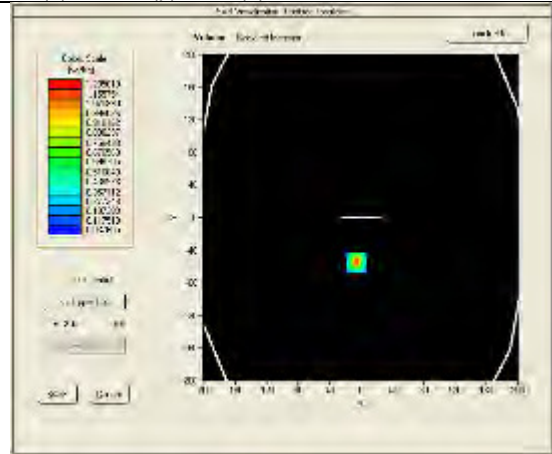
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5560_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity (%):                         | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/17/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

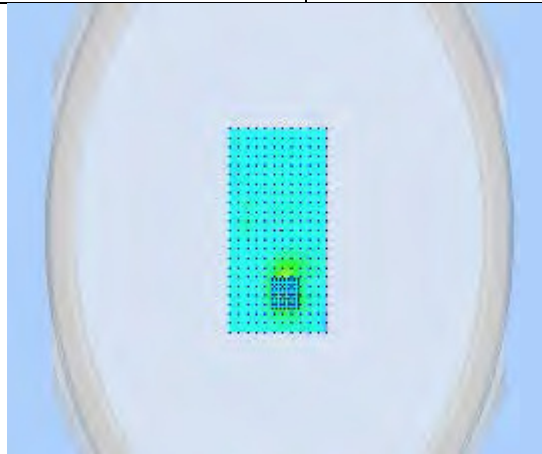
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5560.000000 (Channel 112) |
| Relative permittivity (real part) | 44.97                     |
| Conductivity (S/m)                | 6.17                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.71                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | -1.95                     |
| Highest Extrapolated SAR (W/Kg)   | 0.4981                    |
| SAR 1g (W/Kg)                     | 0.3101                    |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)   |



SURFACE SAR



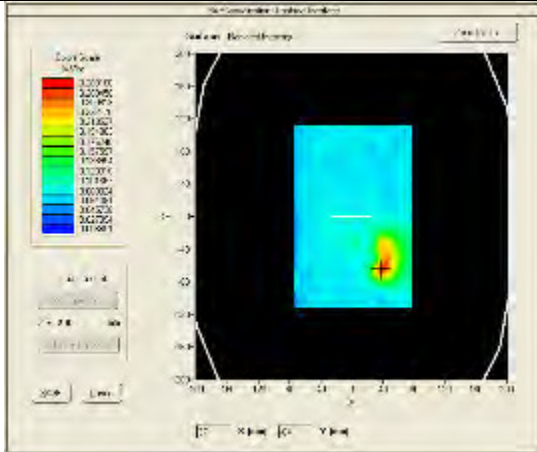
VOLUME SAR



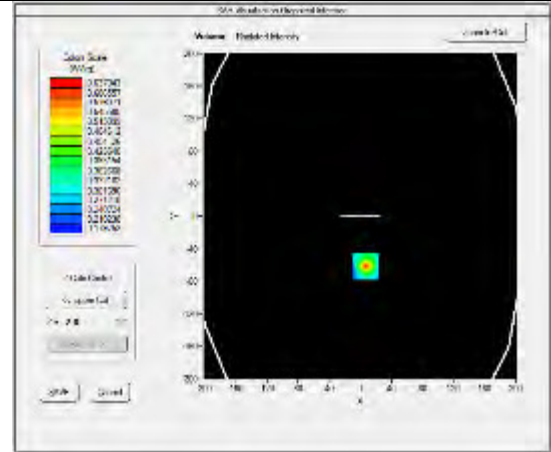
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5785_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/17/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

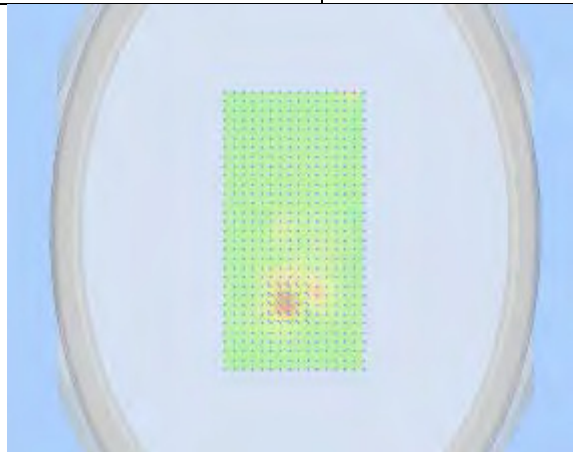
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5785.000000 (Channel 157) |
| Relative permittivity (real part) | 44.36                     |
| Conductivity (S/m)                | 6.43                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.65                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 0.60                      |
| Highest Extrapolated SAR (W/Kg)   | 0.9528                    |
| SAR 1g (W/Kg)                     | 0.4593                    |
| Peak SAR Location                 | 38mm(x),-64mm(y),4mm(z)   |



SURFACE SAR



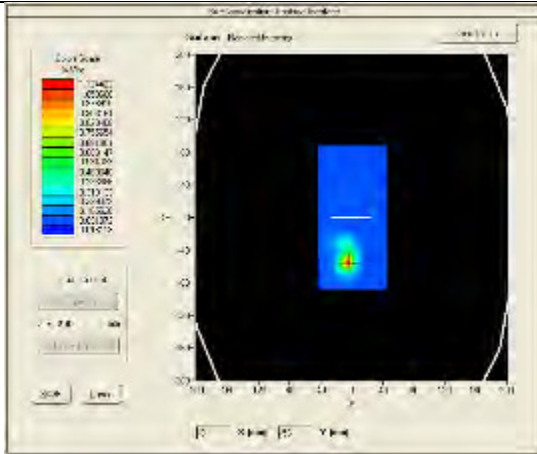
VOLUME SAR



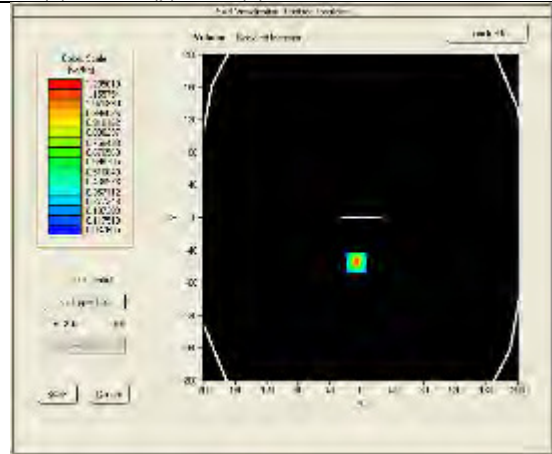
3D View Plot



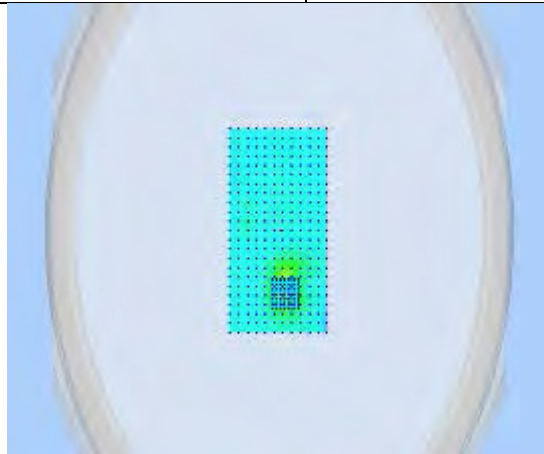
|                                   |                                      |      |              |
|-----------------------------------|--------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT20_5785_Left_0mm |      |              |
| Environ Conditions:               | Temp(oC):                            | 23   | Result: Pass |
|                                   | Humidity (%):                        | 58   |              |
|                                   | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:                      | N/A                                  |      |              |
| Test Date:                        | 02/17/2016                           |      |              |
| Tested by:                        | Arthur Tie                           |      |              |
| Remarks:                          |                                      |      |              |
| Frequency (MHz)                   | 5785.000000 (Channel 157)            |      |              |
| Relative permittivity (real part) | 44.36                                |      |              |
| Conductivity (S/m)                | 6.43                                 |      |              |
| Transmission Duty Factor          | 1.0                                  |      |              |
| Probe SN                          | 2715_EPGO259                         |      |              |
| Conversion Factor (dB)            | 2.65                                 |      |              |
| Area Scan Resolution              | 8 mm                                 |      |              |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm               |      |              |
| Zoom Scan Size                    | 24x24x24 mm                          |      |              |
| Measurement Drifts (%)            | -1.81                                |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.4404                               |      |              |
| SAR 1g (W/Kg)                     | 0.2862                               |      |              |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)              |      |              |



SURFACE SAR



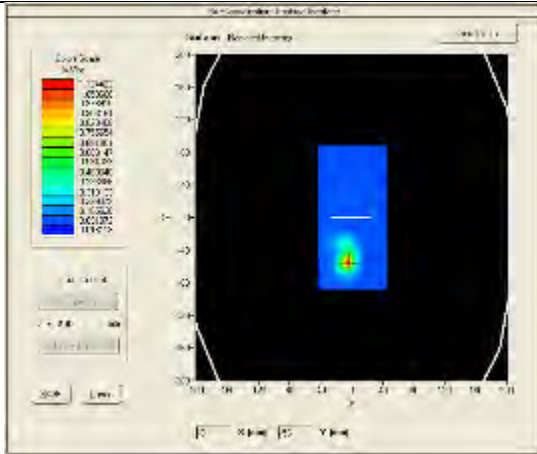
VOLUME SAR



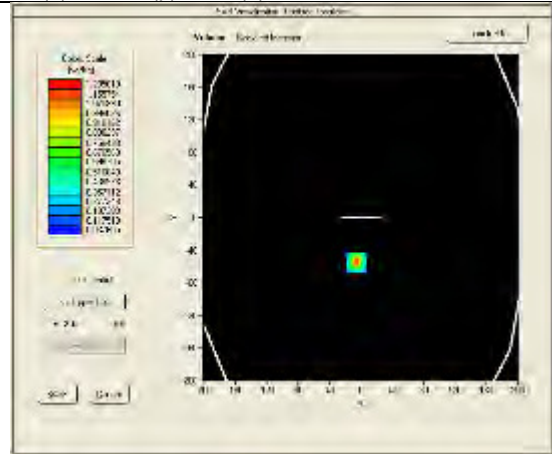
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT20_5785_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity (%):                         | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/17/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

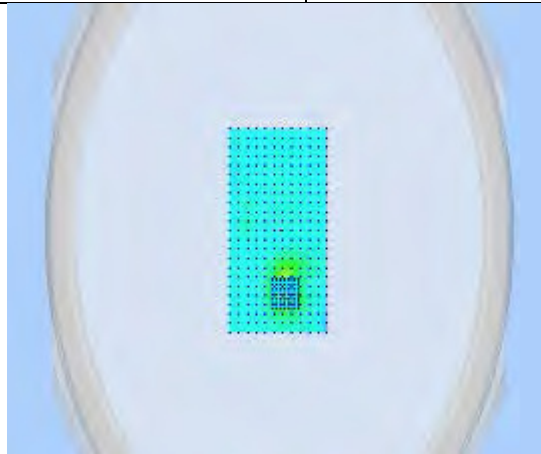
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5785.000000 (Channel 157) |
| Relative permittivity (real part) | 44.36                     |
| Conductivity (S/m)                | 6.43                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.65                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=4mm, dy=4mm, dz=2mm    |
| Zoom Scan Size                    | 24x24x24 mm               |
| Measurement Drifts (%)            | 0.50                      |
| Highest Extrapolated SAR (W/Kg)   | 0.3789                    |
| SAR 1g (W/Kg)                     | 0.2635                    |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)   |



SURFACE SAR



VOLUME SAR

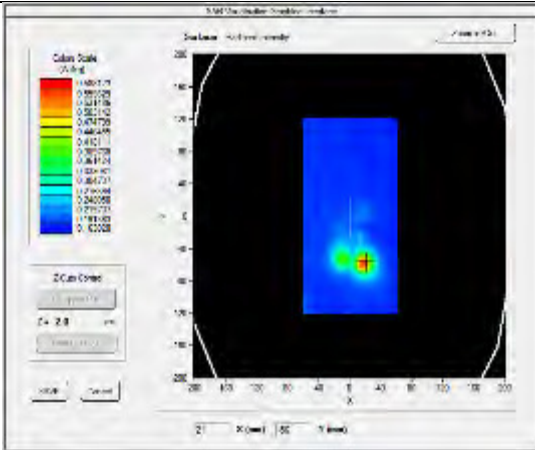


3D View Plot

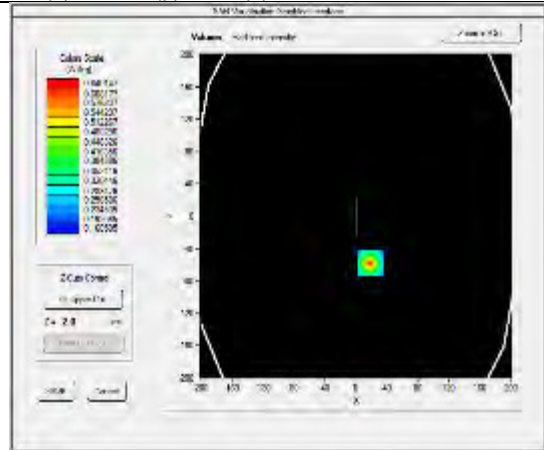
**802.11-HT40-5G**

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5190_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/18/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

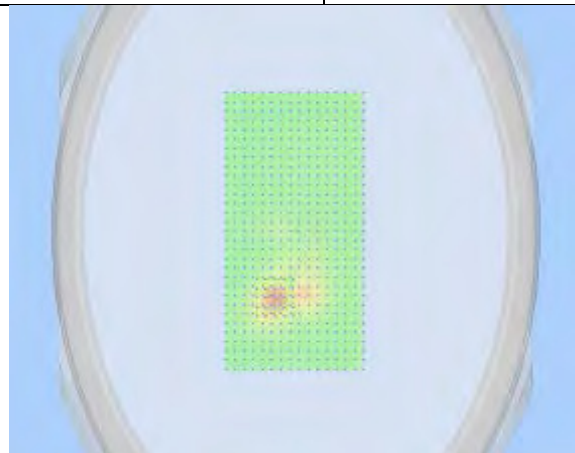
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5190.000000 (Channel 38)  |
| Relative permittivity (real part) | 46.22                     |
| Conductivity (S/m)                | 5.55                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -0.35                     |
| Highest Extrapolated SAR (W/Kg)   | 0.9222                    |
| SAR 1g (W/Kg)                     | 0.4599                    |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z) |



SURFACE SAR



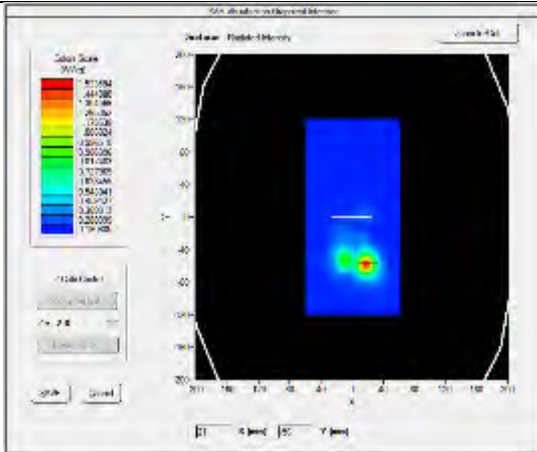
VOLUME SAR



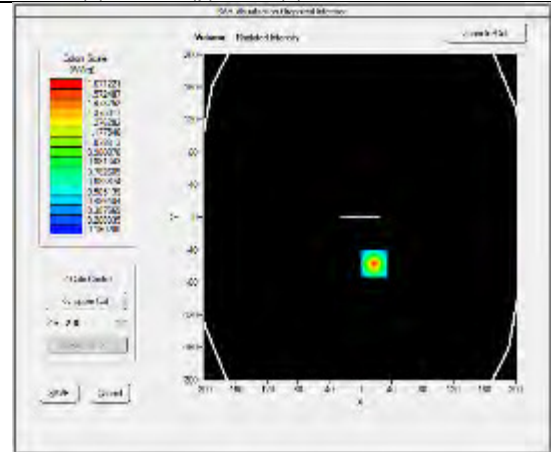
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5230_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/18/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

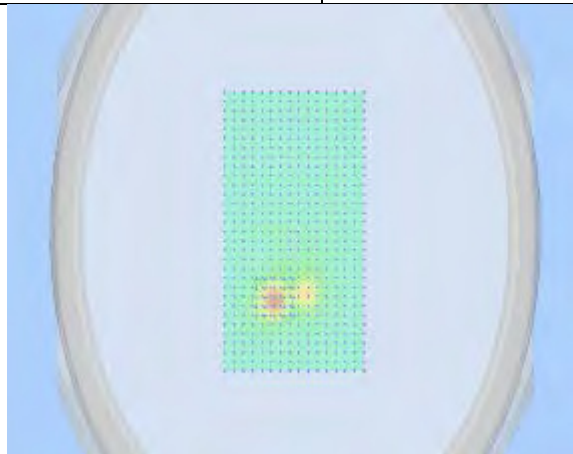
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5230.000000 (Channel 46)  |
| Relative permittivity (real part) | 46.13                     |
| Conductivity (S/m)                | 5.61                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | 2.67                      |
| Highest Extrapolated SAR (W/Kg)   | 2.5868                    |
| SAR 1g (W/Kg)                     | 1.0207                    |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z) |



SURFACE SAR



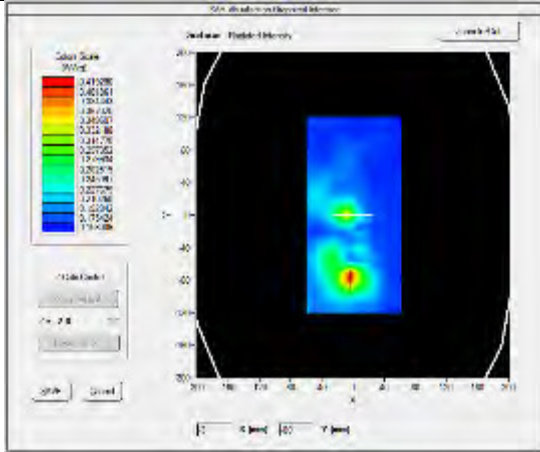
VOLUME SAR



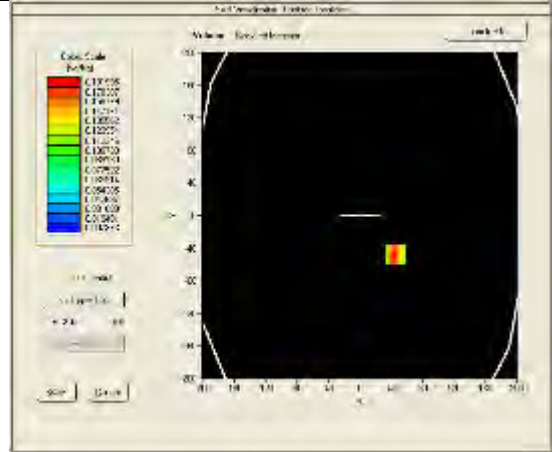
3D View Plot

|                     |                                      |      |              |
|---------------------|--------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5230_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                            | 23   | Result: Pass |
|                     | Humidity(%):                         | 58   |              |
|                     | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:        | N/A                                  |      |              |
| Test Date:          | 02/18/2016                           |      |              |
| Tested by:          | Arthur Tie                           |      |              |
| Remarks:            |                                      |      |              |

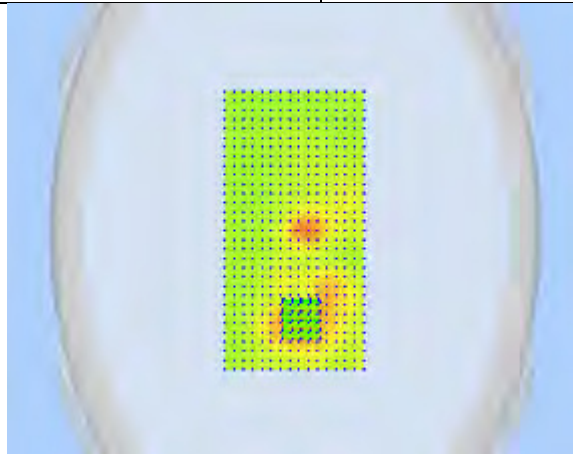
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5230.000000 (Channel 46)  |
| Relative permittivity (real part) | 46.13                     |
| Conductivity (S/m)                | 5.61                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -4.01                     |
| Highest Extrapolated SAR (W/Kg)   | 0.5688                    |
| SAR 1g (W/Kg)                     | 0.3260                    |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z) |



SURFACE SAR



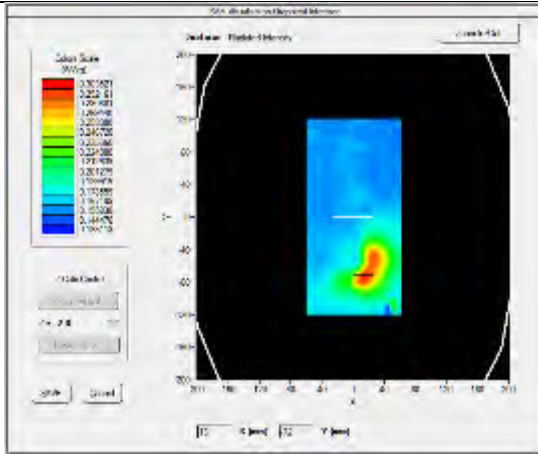
VOLUME SAR



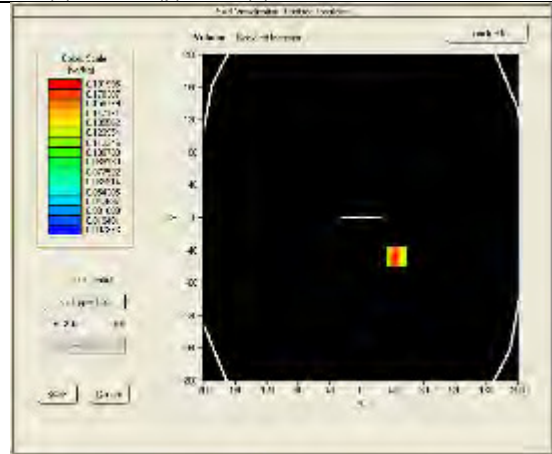
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5230_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/18/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

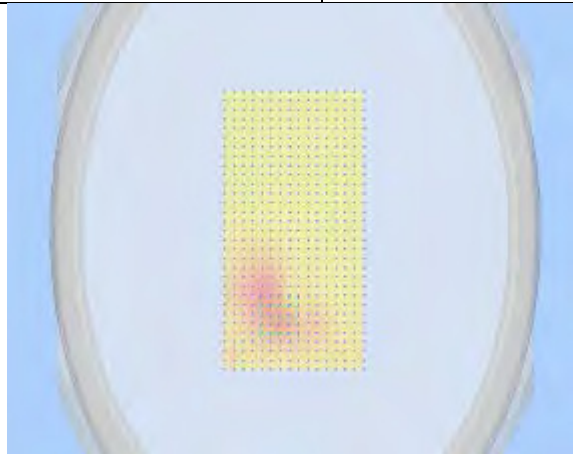
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5230.000000 (Channel 46)  |
| Relative permittivity (real part) | 46.13                     |
| Conductivity (S/m)                | 5.61                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -4.36                     |
| Highest Extrapolated SAR (W/Kg)   | 0.4404                    |
| SAR 1g (W/Kg)                     | 0.2548                    |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z) |



SURFACE SAR

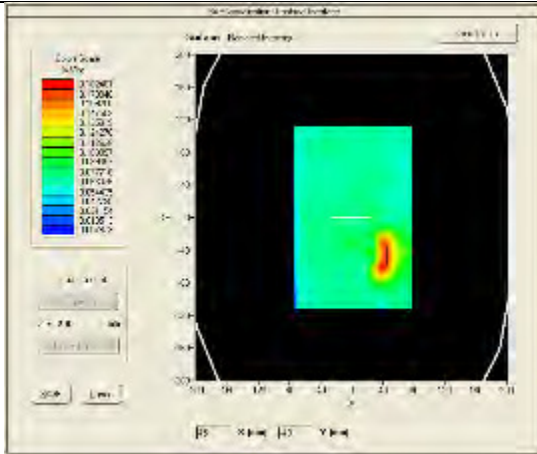


VOLUME SAR

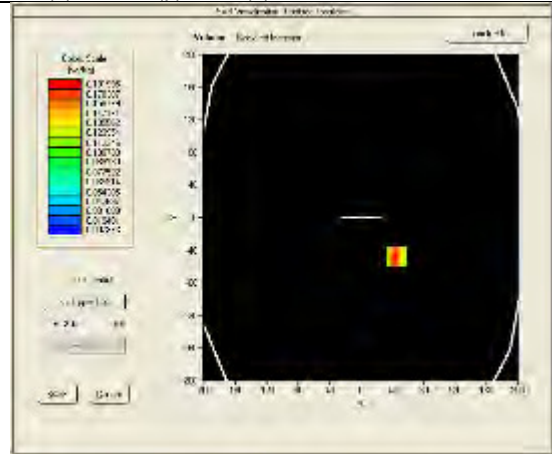


3D View Plot

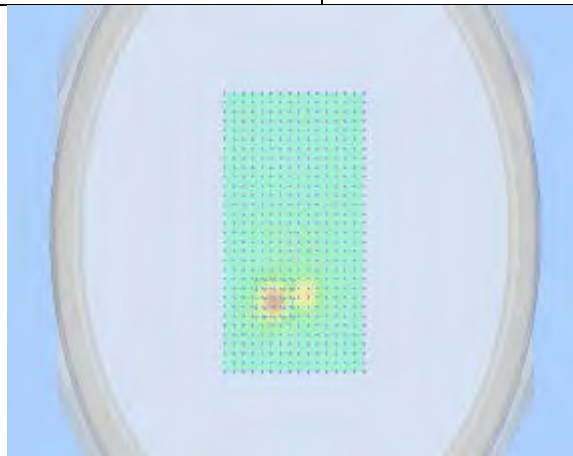
|                                   |                                       |      |              |
|-----------------------------------|---------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT40_5270_Front_5mm |      |              |
| Environ Conditions:               | Temp(oC):                             | 23   | Result: Pass |
|                                   | Humidity(%):                          | 58   |              |
|                                   | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:                      | N/A                                   |      |              |
| Test Date:                        | 02/18/2016                            |      |              |
| Tested by:                        | Arthur Tie                            |      |              |
| Remarks:                          |                                       |      |              |
| Frequency (MHz)                   | 5270.000000 (Channel 54)              |      |              |
| Relative permittivity (real part) | 46.07                                 |      |              |
| Conductivity (S/m)                | 5.68                                  |      |              |
| Transmission Duty Factor          | 1.0                                   |      |              |
| Probe SN                          | 2715_EPGO259                          |      |              |
| Conversion Factor (dB)            | 2.39                                  |      |              |
| Area Scan Resolution              | 8 mm                                  |      |              |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm                |      |              |
| Zoom Scan Size                    | 32x32x34 mm                           |      |              |
| Measurement Drifts (%)            | 4.23                                  |      |              |
| Highest Extrapolated SAR (W/Kg)   | 2.6436                                |      |              |
| SAR 1g (W/Kg)                     | 1.1433                                |      |              |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z)             |      |              |



SURFACE SAR

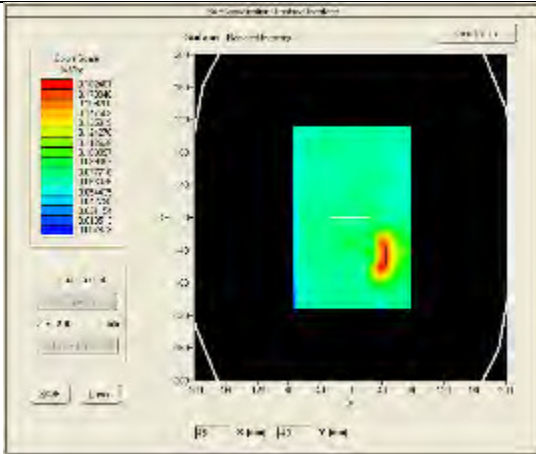


VOLUME SAR

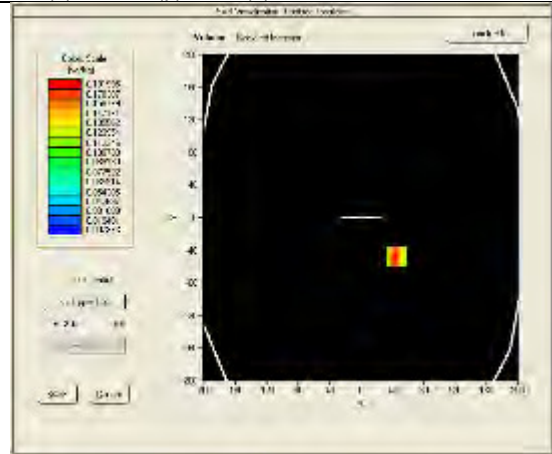


3D View Plot

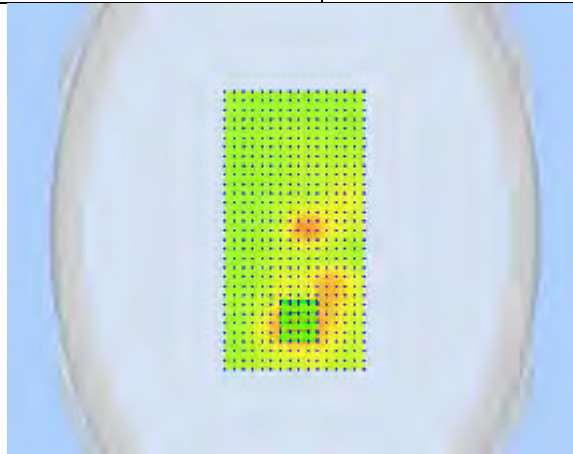
|                                   |                                      |      |              |
|-----------------------------------|--------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT40_5270_Left_0mm |      |              |
| Environ Conditions:               | Temp(oC):                            | 23   | Result: Pass |
|                                   | Humidity(%):                         | 58   |              |
|                                   | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:                      | N/A                                  |      |              |
| Test Date:                        | 02/18/2016                           |      |              |
| Tested by:                        | Arthur Tie                           |      |              |
| Remarks:                          |                                      |      |              |
| Frequency (MHz)                   | 5270.000000 (Channel 54)             |      |              |
| Relative permittivity (real part) | 46.07                                |      |              |
| Conductivity (S/m)                | 5.68                                 |      |              |
| Transmission Duty Factor          | 1.0                                  |      |              |
| Probe SN                          | 2715_EPGO259                         |      |              |
| Conversion Factor (dB)            | 2.39                                 |      |              |
| Area Scan Resolution              | 8 mm                                 |      |              |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm               |      |              |
| Zoom Scan Size                    | 32x32x34 mm                          |      |              |
| Measurement Drifts (%)            | -0.19                                |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.6075                               |      |              |
| SAR 1g (W/Kg)                     | 0.3404                               |      |              |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z)            |      |              |



SURFACE SAR



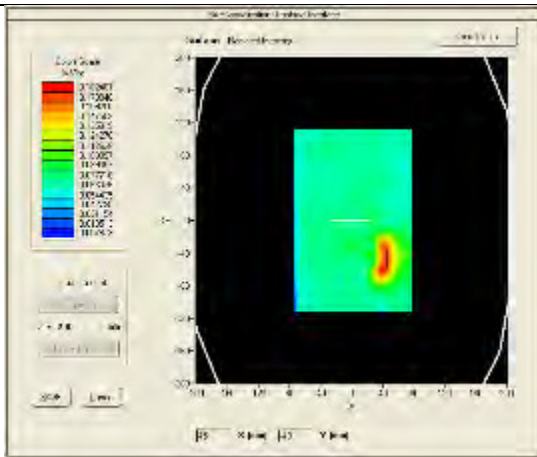
VOLUME SAR



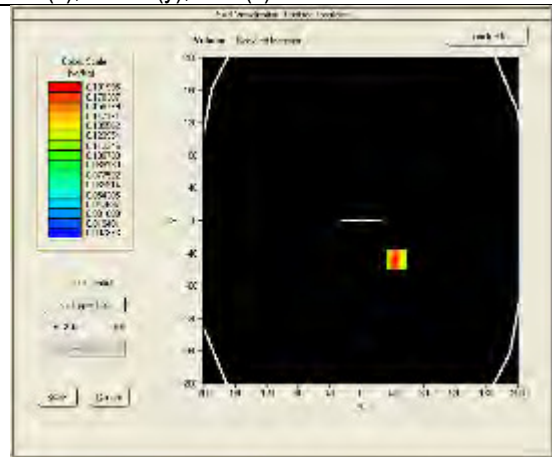
3D View Plot



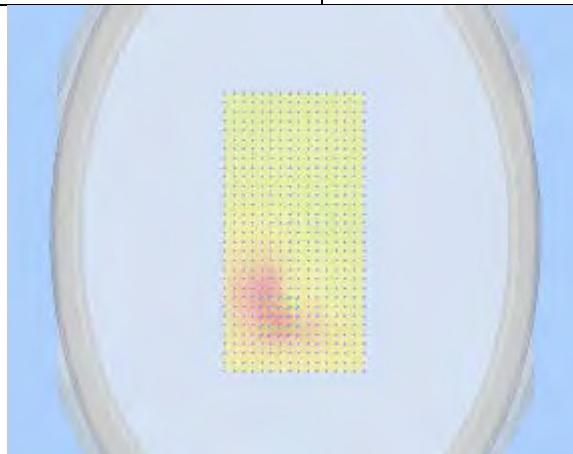
|                                   |                                       |      |              |
|-----------------------------------|---------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT40_5270_Right_0mm |      |              |
| Environ Conditions:               | Temp(oC):                             | 23   | Result: Pass |
|                                   | Humidity(%):                          | 58   |              |
|                                   | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:                      | N/A                                   |      |              |
| Test Date:                        | 02/18/2016                            |      |              |
| Tested by:                        | Arthur Tie                            |      |              |
| Remarks:                          |                                       |      |              |
| Frequency (MHz)                   | 5270.000000 (Channel 54)              |      |              |
| Relative permittivity (real part) | 46.07                                 |      |              |
| Conductivity (S/m)                | 5.68                                  |      |              |
| Transmission Duty Factor          | 1.0                                   |      |              |
| Probe SN                          | 2715_EPGO259                          |      |              |
| Conversion Factor (dB)            | 2.39                                  |      |              |
| Area Scan Resolution              | 8 mm                                  |      |              |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm                |      |              |
| Zoom Scan Size                    | 32x32x34 mm                           |      |              |
| Measurement Drifts (%)            | -3.33                                 |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.4246                                |      |              |
| SAR 1g (W/Kg)                     | 0.2645                                |      |              |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z)             |      |              |



SURFACE SAR



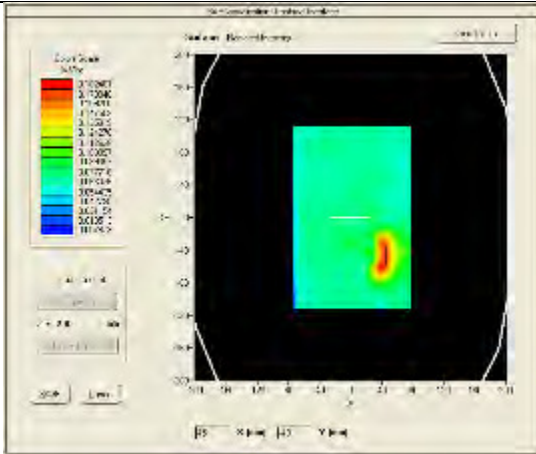
VOLUME SAR



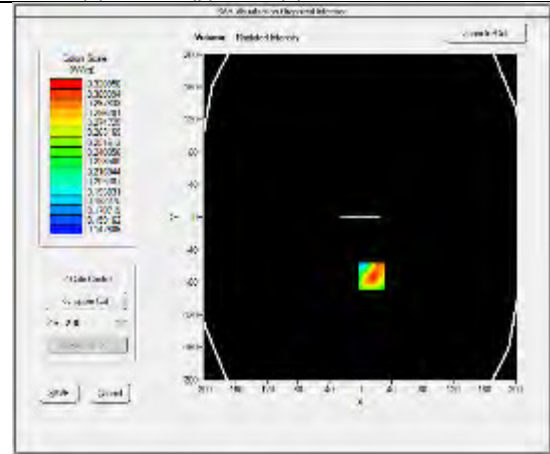
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5310_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/18/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

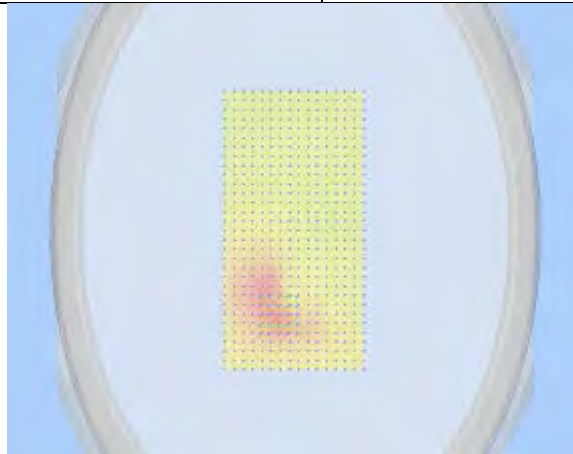
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5310.000000 (Channel 62)  |
| Relative permittivity (real part) | 46.00                     |
| Conductivity (S/m)                | 5.75                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -0.18                     |
| Highest Extrapolated SAR (W/Kg)   | 1.6215                    |
| SAR 1g (W/Kg)                     | 0.7278                    |
| Peak SAR Location                 | 45mm(x), -48mm(y), 4mm(z) |



SURFACE SAR



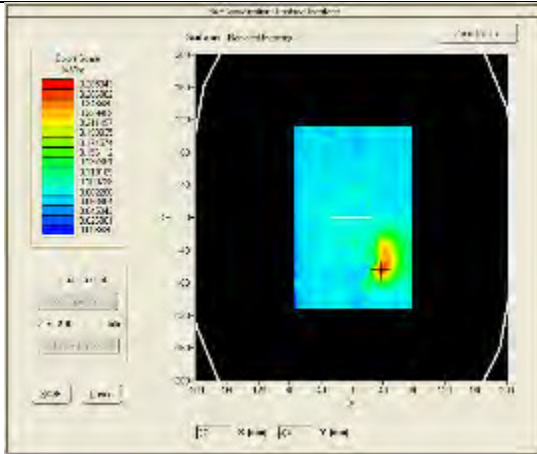
VOLUME SAR



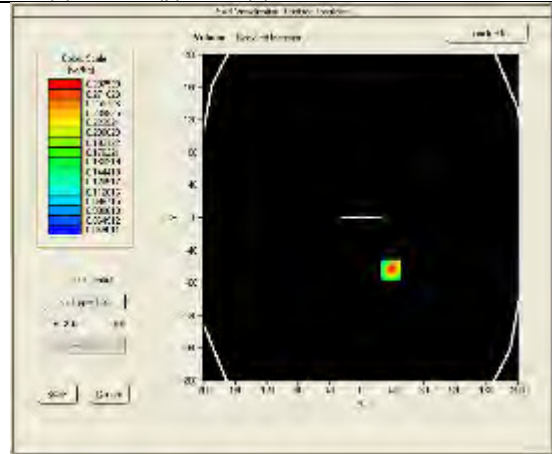
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5510_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/21/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

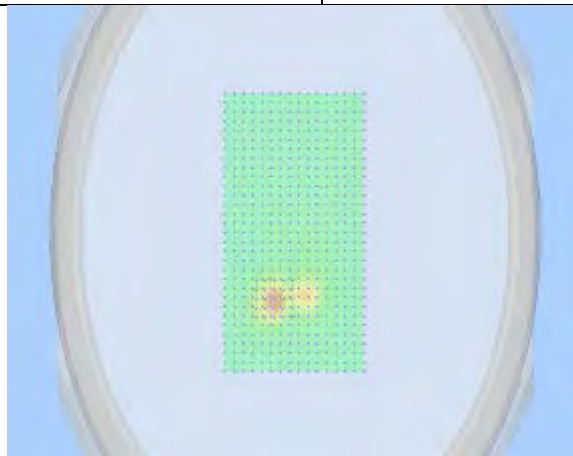
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5510.000000 (Channel 102) |
| Relative permittivity (real part) | 45.12                     |
| Conductivity (S/m)                | 6.06                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -4.50                     |
| Highest Extrapolated SAR (W/Kg)   | 2.3385                    |
| SAR 1g (W/Kg)                     | 0.9953                    |
| Peak SAR Location                 | 38mm(x), -64mm(y), 4mm(z) |



SURFACE SAR



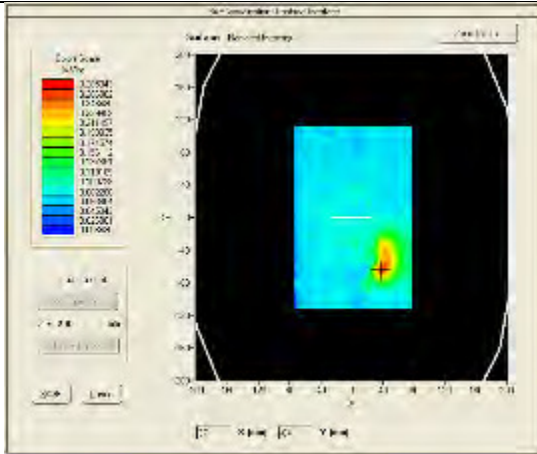
VOLUME SAR



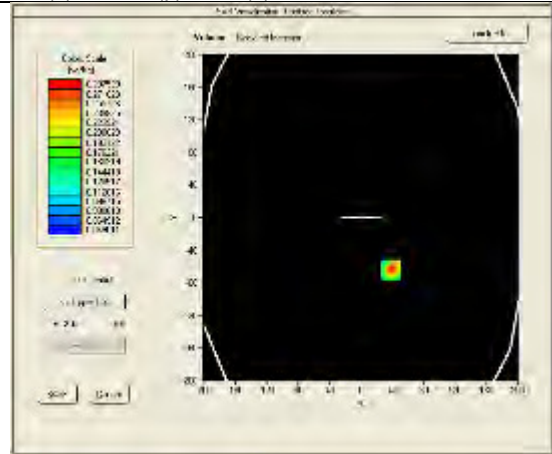
3D View Plot

|                     |                                      |      |              |
|---------------------|--------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5510_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                            | 23   | Result: Pass |
|                     | Humidity(%):                         | 58   |              |
|                     | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:        | N/A                                  |      |              |
| Test Date:          | 02/21/2016                           |      |              |
| Tested by:          | Arthur Tie                           |      |              |
| Remarks:            |                                      |      |              |

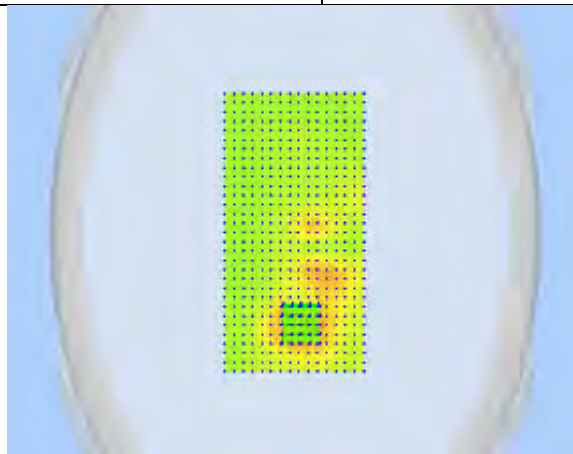
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5510.000000 (Channel 102) |
| Relative permittivity (real part) | 45.12                     |
| Conductivity (S/m)                | 6.06                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -4.03                     |
| Highest Extrapolated SAR (W/Kg)   | 0.6192                    |
| SAR 1g (W/Kg)                     | 0.3464                    |
| Peak SAR Location                 | 38mm(x), -64mm(y), 4mm(z) |



SURFACE SAR



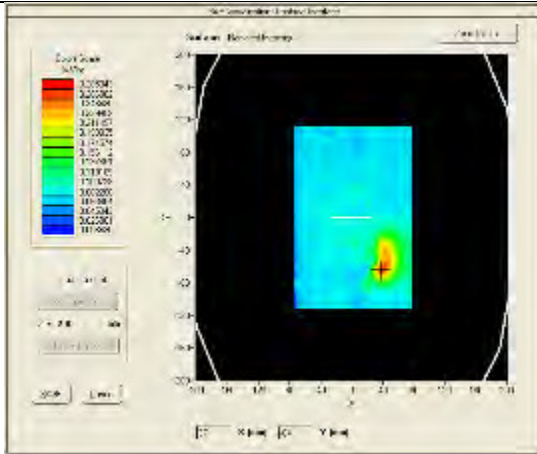
VOLUME SAR



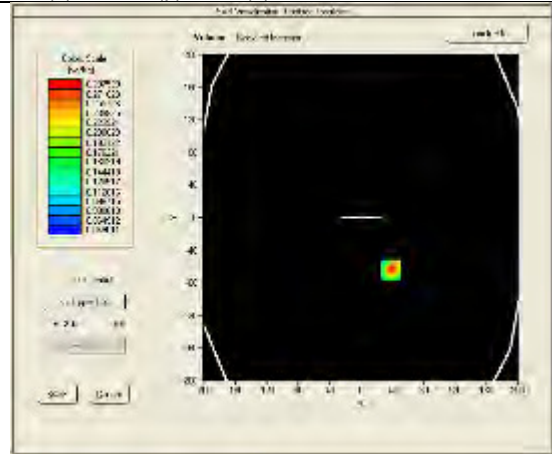
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5510_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/21/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

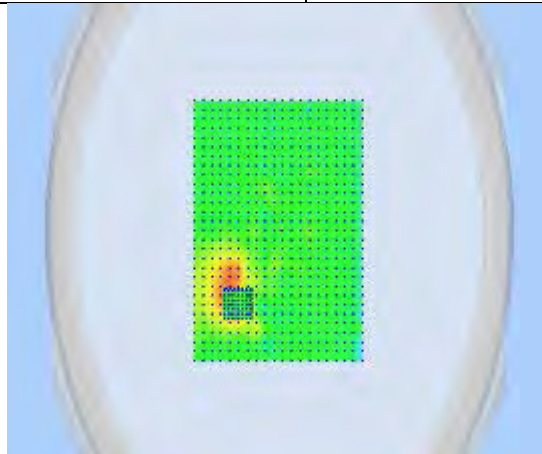
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5510.000000 (Channel 102) |
| Relative permittivity (real part) | 45.12                     |
| Conductivity (S/m)                | 6.06                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -4.16                     |
| Highest Extrapolated SAR (W/Kg)   | 0.4483                    |
| SAR 1g (W/Kg)                     | 0.2755                    |
| Peak SAR Location                 | 38mm(x), -64mm(y), 4mm(z) |



SURFACE SAR



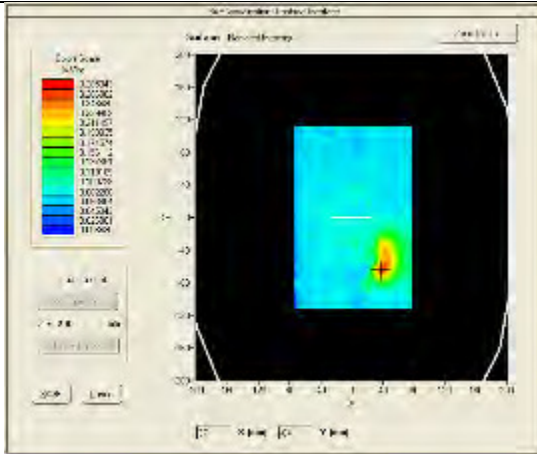
VOLUME SAR



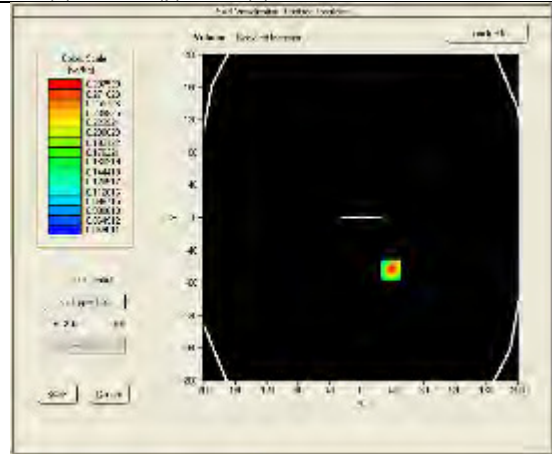
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5550_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/21/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

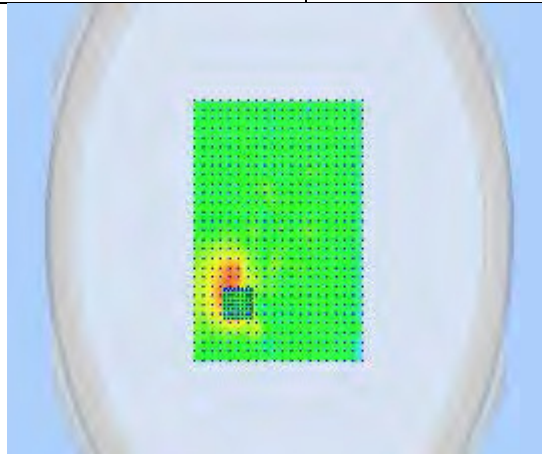
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5550.000000 (Channel 110) |
| Relative permittivity (real part) | 45.00                     |
| Conductivity (S/m)                | 6.15                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | 2.35                      |
| Highest Extrapolated SAR (W/Kg)   | 2.7855                    |
| SAR 1g (W/Kg)                     | 1.2045                    |
| Peak SAR Location                 | 38mm(x), -64mm(y), 4mm(z) |



SURFACE SAR



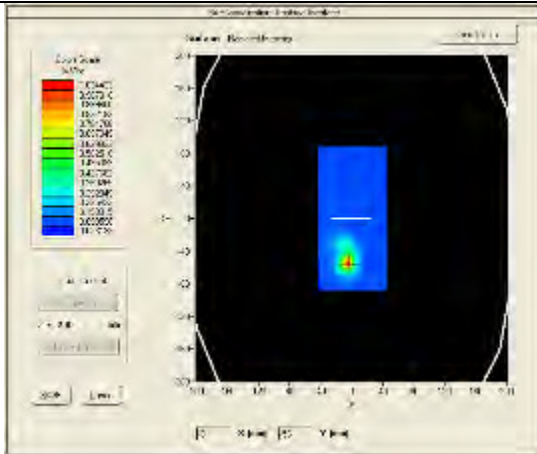
VOLUME SAR



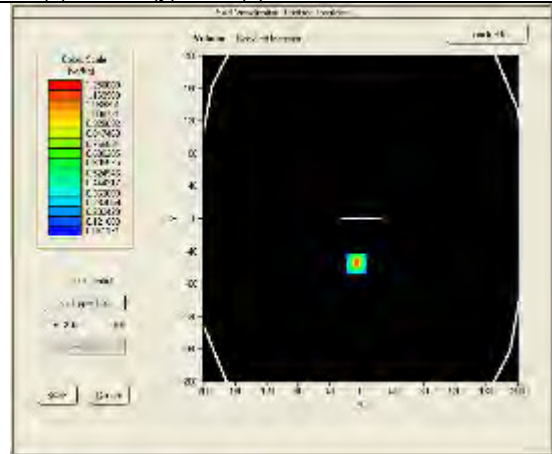
3D View Plot

|                     |                                      |      |              |
|---------------------|--------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5550_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                            | 23   | Result: Pass |
|                     | Humidity(%):                         | 58   |              |
|                     | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:        | N/A                                  |      |              |
| Test Date:          | 02/21/2016                           |      |              |
| Tested by:          | Arthur Tie                           |      |              |
| Remarks:            |                                      |      |              |

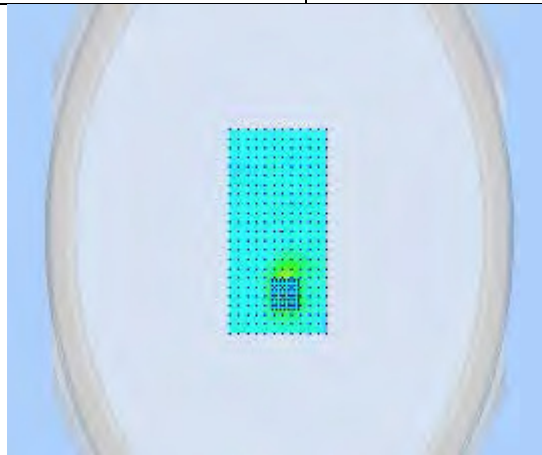
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5550.000000 (Channel 110) |
| Relative permittivity (real part) | 45.00                     |
| Conductivity (S/m)                | 6.15                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -3.38                     |
| Highest Extrapolated SAR (W/Kg)   | 0.7153                    |
| SAR 1g (W/Kg)                     | 0.2504                    |
| Peak SAR Location                 | -5mm(x), -55mm(y), 4mm(z) |



SURFACE SAR

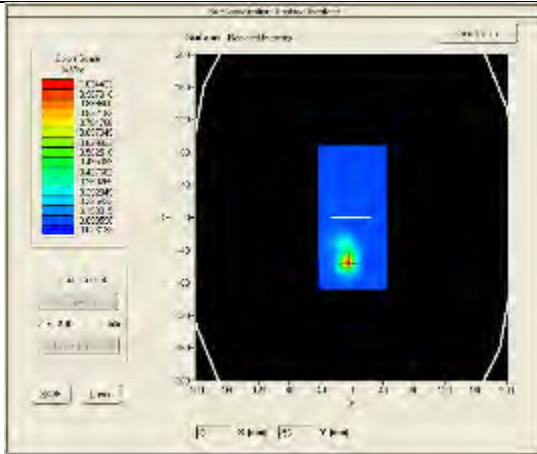


VOLUME SAR

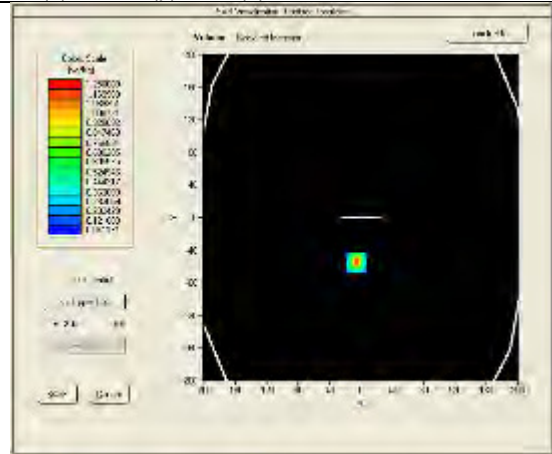


3D View Plot

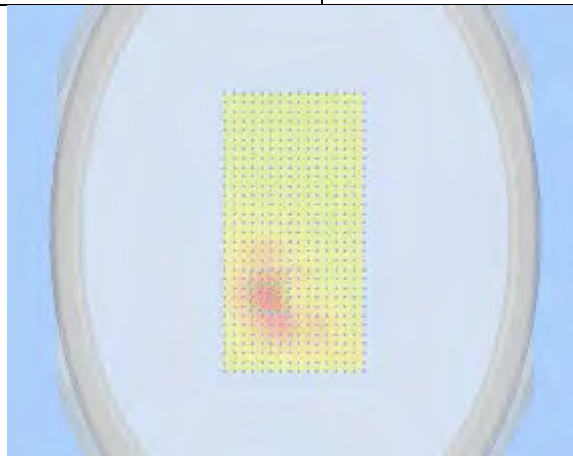
|                                   |                                       |      |              |
|-----------------------------------|---------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT40_5550_Right_0mm |      |              |
| Environ Conditions:               | Temp(oC):                             | 23   | Result: Pass |
|                                   | Humidity(%):                          | 58   |              |
|                                   | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:                      | N/A                                   |      |              |
| Test Date:                        | 02/21/2016                            |      |              |
| Tested by:                        | Arthur Tie                            |      |              |
| Remarks:                          |                                       |      |              |
| Frequency (MHz)                   | 5550.000000 (Channel 110)             |      |              |
| Relative permittivity (real part) | 45.00                                 |      |              |
| Conductivity (S/m)                | 6.15                                  |      |              |
| Transmission Duty Factor          | 1.0                                   |      |              |
| Probe SN                          | 2715_EPGO259                          |      |              |
| Conversion Factor (dB)            | 2.39                                  |      |              |
| Area Scan Resolution              | 8 mm                                  |      |              |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm                |      |              |
| Zoom Scan Size                    | 32x32x34 mm                           |      |              |
| Measurement Drifts (%)            | -0.61                                 |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.5184                                |      |              |
| SAR 1g (W/Kg)                     | 0.3082                                |      |              |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)               |      |              |



SURFACE SAR



VOLUME SAR

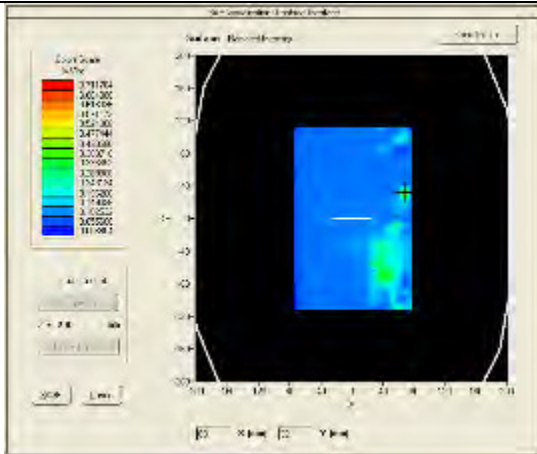


3D View Plot

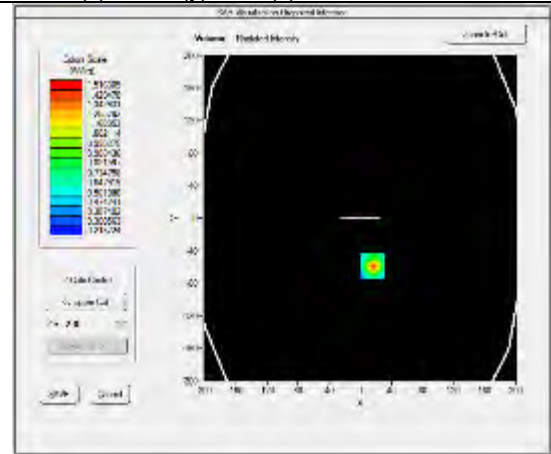


|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5590_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/22/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

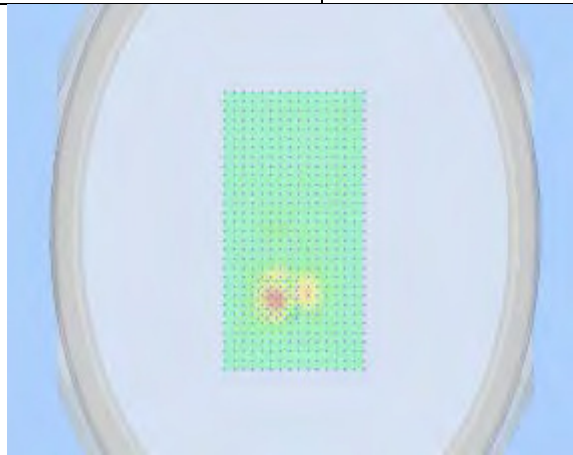
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5590.000000 (Channel 118) |
| Relative permittivity (real part) | 44.88                     |
| Conductivity (S/m)                | 6.24                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -1.91                     |
| Highest Extrapolated SAR (W/Kg)   | 2.3879                    |
| SAR 1g (W/Kg)                     | 1.0161                    |
| Peak SAR Location                 | 69mm(x),32mm(y),4mm(z)    |



SURFACE SAR



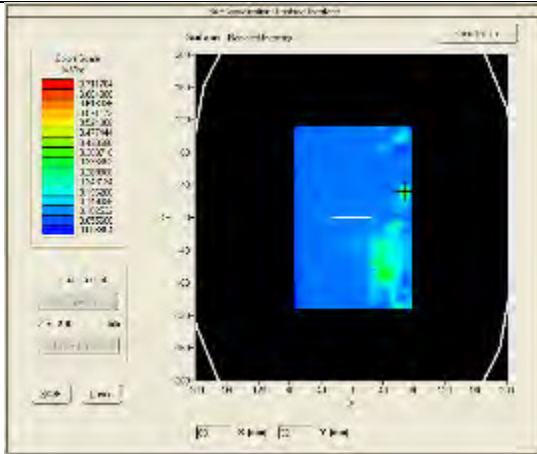
VOLUME SAR



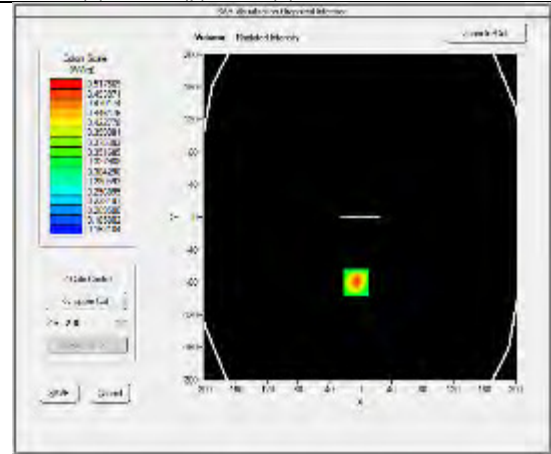
3D View Plot

|                     |                                      |      |              |
|---------------------|--------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5590_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                            | 23   | Result: Pass |
|                     | Humidity(%):                         | 58   |              |
|                     | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:        | N/A                                  |      |              |
| Test Date:          | 02/22/2016                           |      |              |
| Tested by:          | Arthur Tie                           |      |              |
| Remarks:            |                                      |      |              |

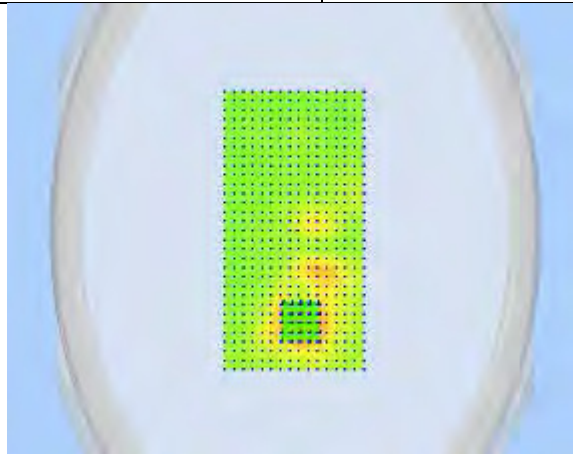
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5590.000000 (Channel 118) |
| Relative permittivity (real part) | 44.88                     |
| Conductivity (S/m)                | 6.24                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -3.70                     |
| Highest Extrapolated SAR (W/Kg)   | 0.7538                    |
| SAR 1g (W/Kg)                     | 0.3994                    |
| Peak SAR Location                 | 69mm(x),32mm(y),4mm(z)    |



SURFACE SAR



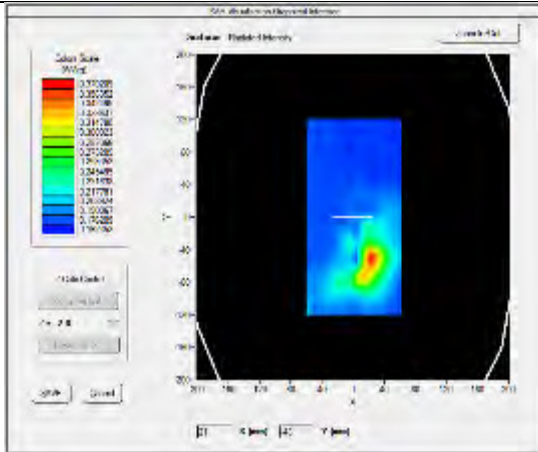
VOLUME SAR



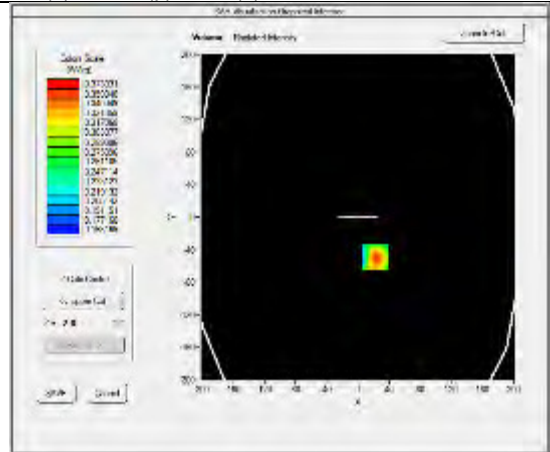
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5590_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/22/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

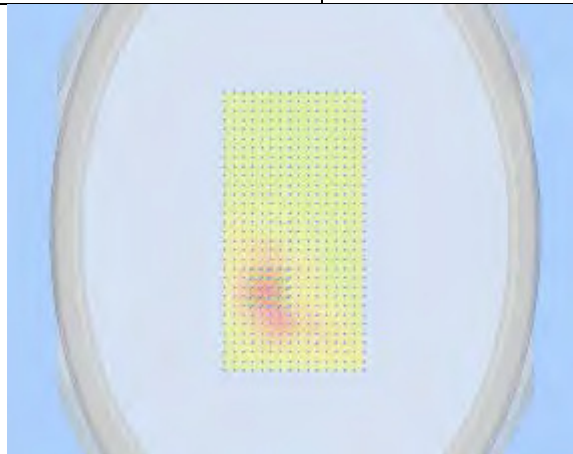
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5590.000000 (Channel 118) |
| Relative permittivity (real part) | 44.88                     |
| Conductivity (S/m)                | 6.24                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -4.18                     |
| Highest Extrapolated SAR (W/Kg)   | 0.5071                    |
| SAR 1g (W/Kg)                     | 0.3044                    |
| Peak SAR Location                 | 69mm(x),32mm(y),4mm(z)    |



SURFACE SAR



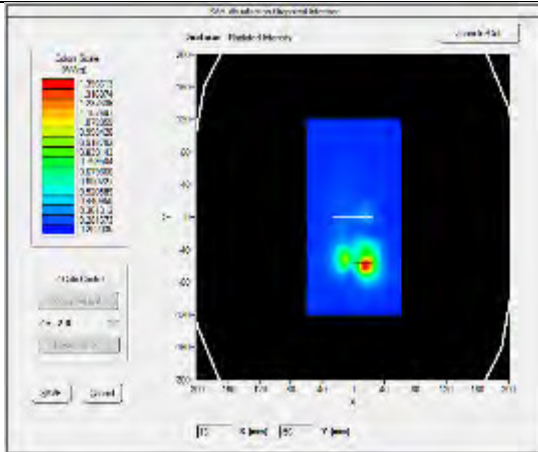
VOLUME SAR



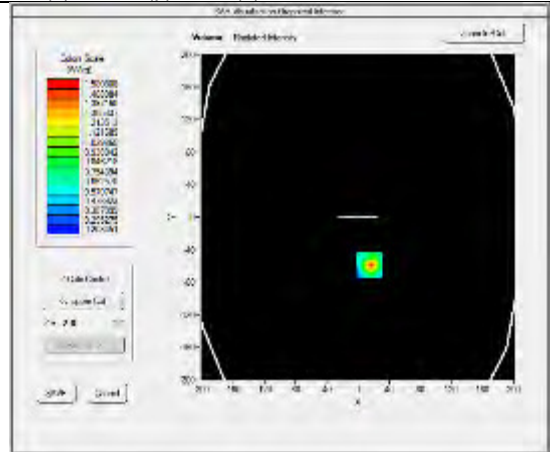
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5630_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/22/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

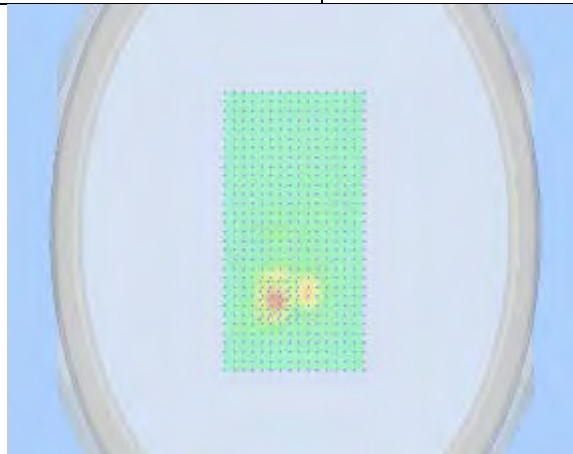
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5630.000000 (Channel 126) |
| Relative permittivity (real part) | 44.79                     |
| Conductivity (S/m)                | 6.31                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -2.49                     |
| Highest Extrapolated SAR (W/Kg)   | 2.5398                    |
| SAR 1g (W/Kg)                     | 1.0578                    |
| Peak SAR Location                 | 69mm(x),32mm(y),4mm(z)    |



SURFACE SAR



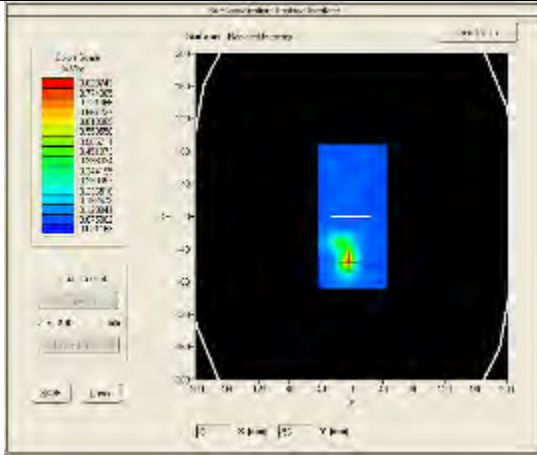
VOLUME SAR



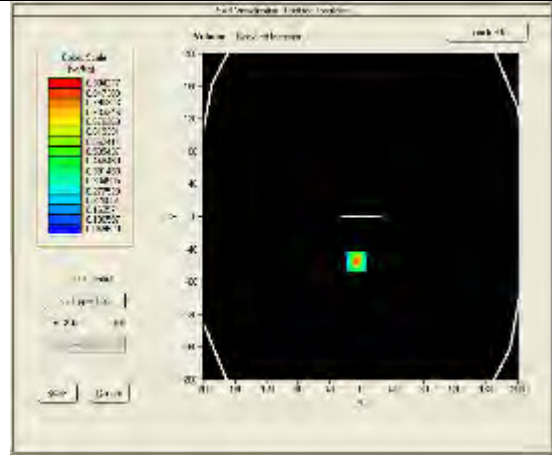
3D View Plot

|                     |                                      |      |              |
|---------------------|--------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5630_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                            | 23   | Result: Pass |
|                     | Humidity(%):                         | 58   |              |
|                     | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:        | N/A                                  |      |              |
| Test Date:          | 02/22/2016                           |      |              |
| Tested by:          | Arthur Tie                           |      |              |
| Remarks:            |                                      |      |              |

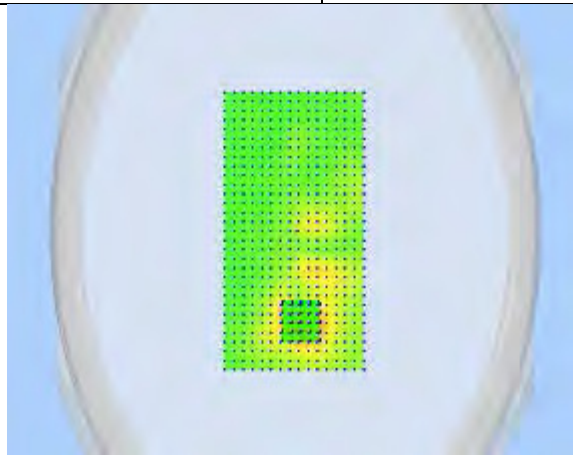
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5630.000000 (Channel 126) |
| Relative permittivity (real part) | 44.79                     |
| Conductivity (S/m)                | 6.31                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -2.70                     |
| Highest Extrapolated SAR (W/Kg)   | 0.8805                    |
| SAR 1g (W/Kg)                     | 0.4519                    |
| Peak SAR Location                 | -5mm(x), -55mm(y), 4mm(z) |



SURFACE SAR



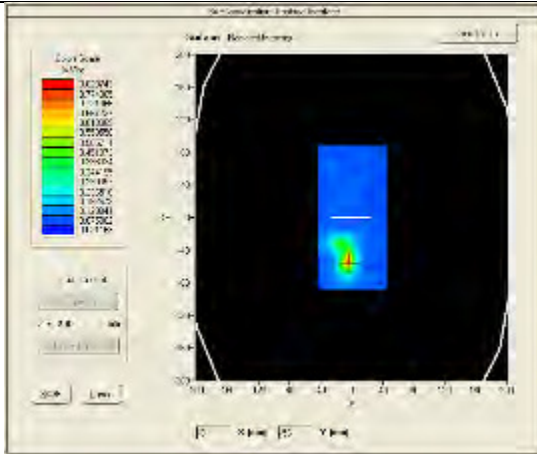
VOLUME SAR



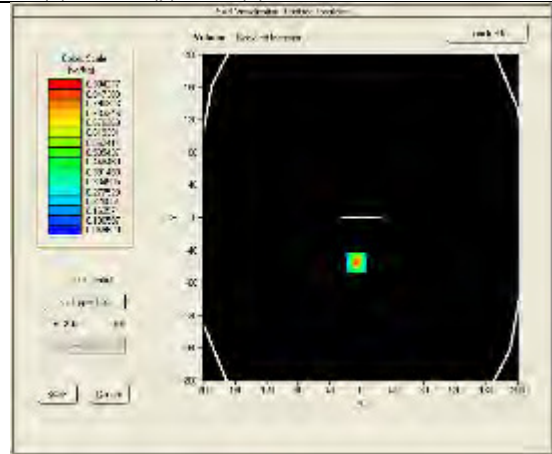
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5630_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/22/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

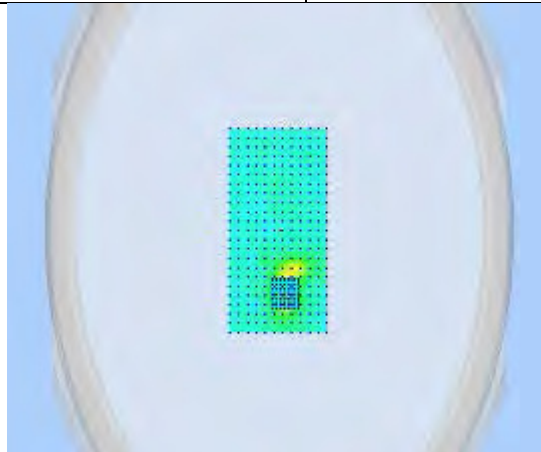
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5630.000000 (Channel 126) |
| Relative permittivity (real part) | 44.79                     |
| Conductivity (S/m)                | 6.31                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -3.12                     |
| Highest Extrapolated SAR (W/Kg)   | 0.4991                    |
| SAR 1g (W/Kg)                     | 0.3056                    |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)   |



SURFACE SAR



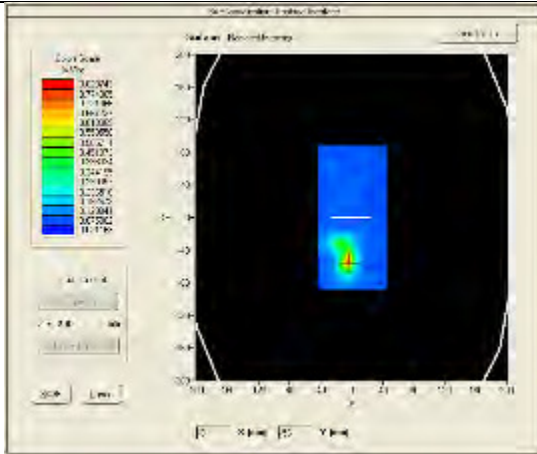
VOLUME SAR



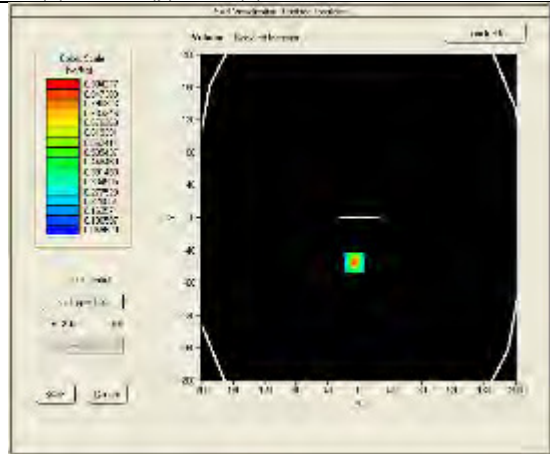
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5670_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/23/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

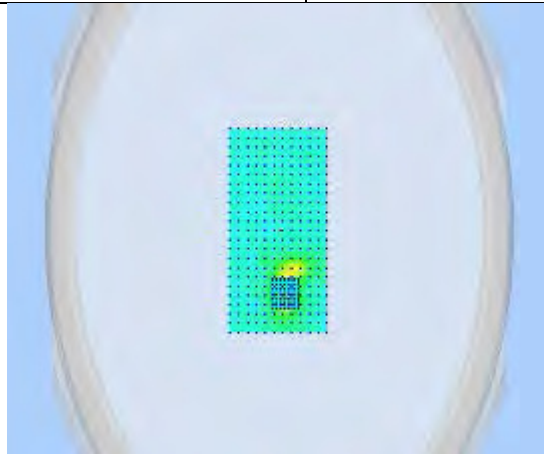
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5670.000000 (Channel 134) |
| Relative permittivity (real part) | 44.72                     |
| Conductivity (S/m)                | 6.38                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -4.12                     |
| Highest Extrapolated SAR (W/Kg)   | 2.2698                    |
| SAR 1g (W/Kg)                     | 0.9498                    |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)   |



SURFACE SAR



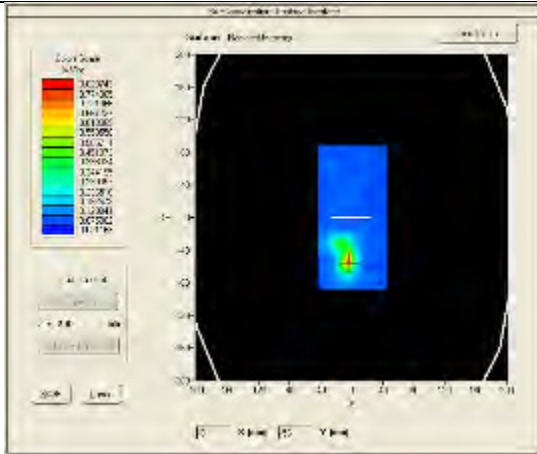
VOLUME SAR



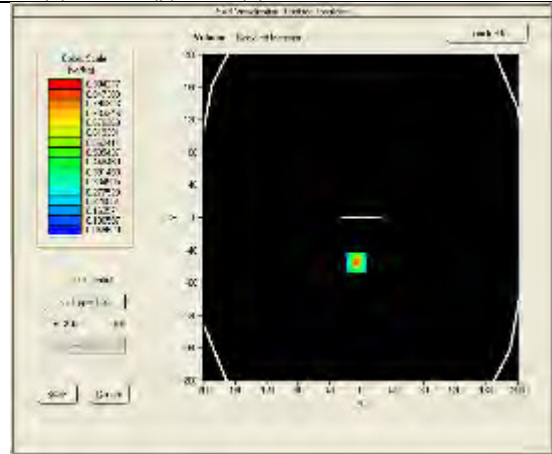
3D View Plot

|                     |                                      |      |              |
|---------------------|--------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5670_Left_0mm |      |              |
| Environ Conditions: | Temp(oC):                            | 23   | Result: Pass |
|                     | Humidity(%):                         | 58   |              |
|                     | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:        | N/A                                  |      |              |
| Test Date:          | 02/23/2016                           |      |              |
| Tested by:          | Arthur Tie                           |      |              |
| Remarks:            |                                      |      |              |

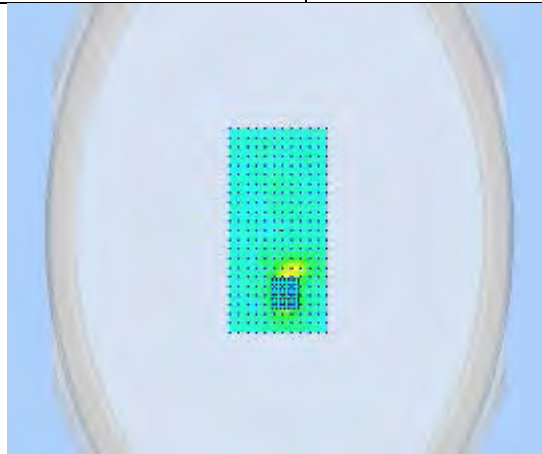
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5670.000000 (Channel 134) |
| Relative permittivity (real part) | 44.72                     |
| Conductivity (S/m)                | 6.38                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -3.59                     |
| Highest Extrapolated SAR (W/Kg)   | 0.8988                    |
| SAR 1g (W/Kg)                     | 0.4576                    |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)   |



SURFACE SAR



VOLUME SAR

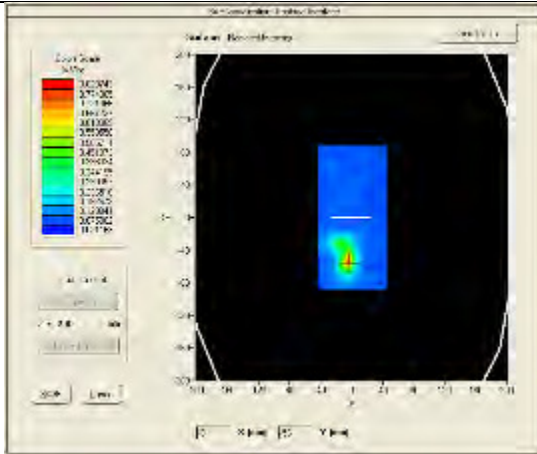


3D View Plot

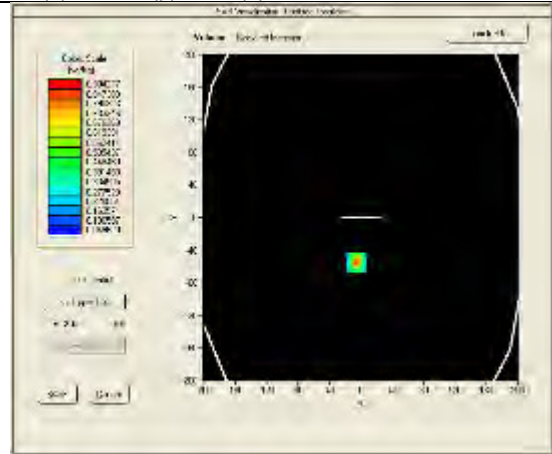


|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5670_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/23/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

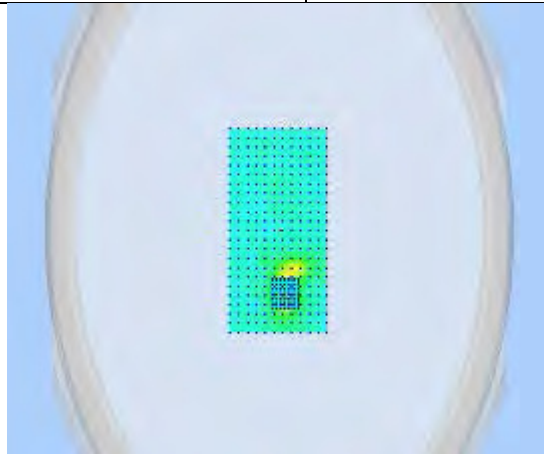
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5670.000000 (Channel 134) |
| Relative permittivity (real part) | 44.72                     |
| Conductivity (S/m)                | 6.38                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -1.93                     |
| Highest Extrapolated SAR (W/Kg)   | 0.2504                    |
| SAR 1g (W/Kg)                     | 0.1872                    |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)   |



SURFACE SAR



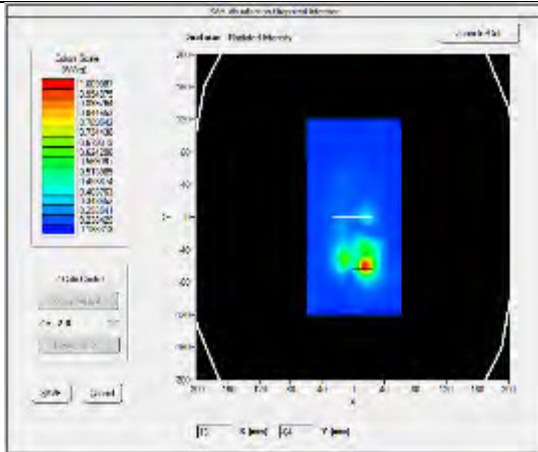
VOLUME SAR



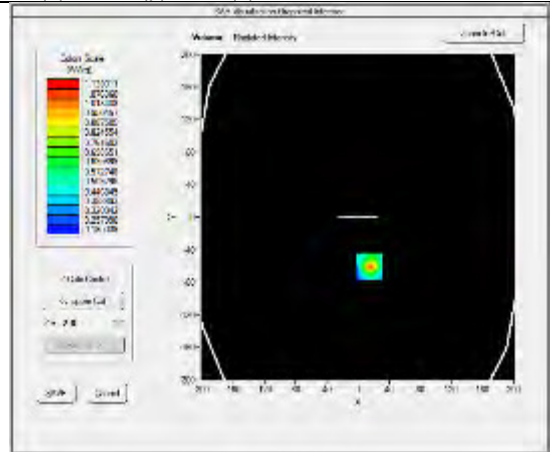
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5755_Front_5mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/23/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

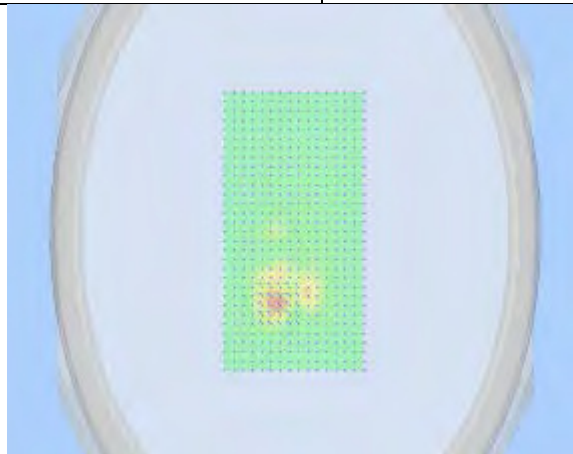
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5755.000000 (Channel 151) |
| Relative permittivity (real part) | 44.47                     |
| Conductivity (S/m)                | 6.43                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -2.96                     |
| Highest Extrapolated SAR (W/Kg)   | 1.7778                    |
| SAR 1g (W/Kg)                     | 0.7674                    |
| Peak SAR Location                 | -6mm(x),32mm(y),4mm(z)    |



SURFACE SAR

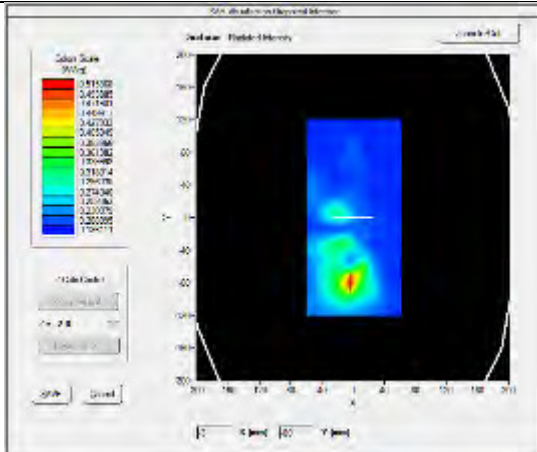


VOLUME SAR

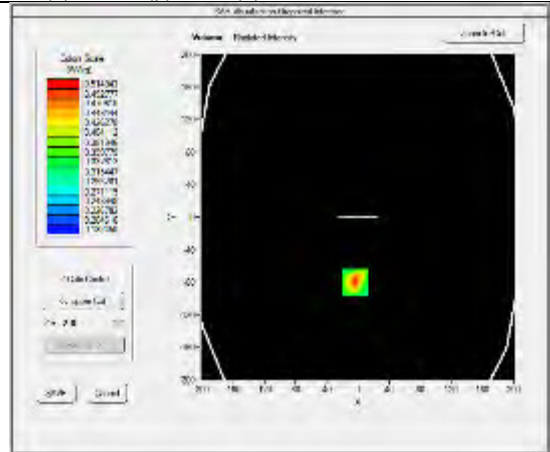


3D View Plot

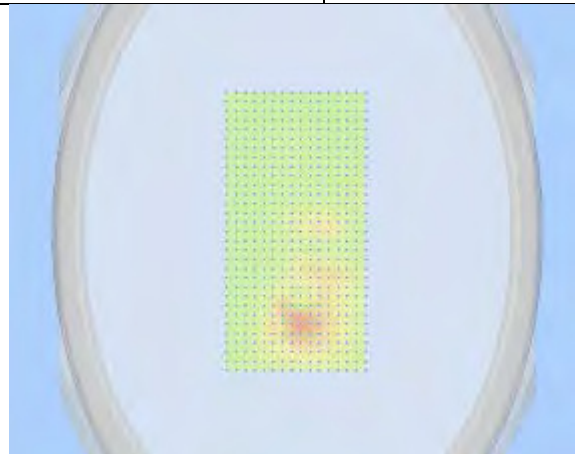
|                                   |                                      |      |              |
|-----------------------------------|--------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT40_5755_Left_0mm |      |              |
| Environ Conditions:               | Temp(oC):                            | 23   | Result: Pass |
|                                   | Humidity(%):                         | 58   |              |
|                                   | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:                      | N/A                                  |      | Result: Pass |
| Test Date:                        | 02/23/2016                           |      |              |
| Tested by:                        | Arthur Tie                           |      |              |
| Remarks:                          |                                      |      |              |
| Frequency (MHz)                   | 5755.000000 (Channel 151)            |      |              |
| Relative permittivity (real part) | 44.47                                |      |              |
| Conductivity (S/m)                | 6.43                                 |      |              |
| Transmission Duty Factor          | 1.0                                  |      |              |
| Probe SN                          | 2715_EPGO259                         |      |              |
| Conversion Factor (dB)            | 2.39                                 |      |              |
| Area Scan Resolution              | 8 mm                                 |      |              |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm               |      |              |
| Zoom Scan Size                    | 32x32x34 mm                          |      |              |
| Measurement Drifts (%)            | -1.11                                |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.7447                               |      |              |
| SAR 1g (W/Kg)                     | 0.4008                               |      |              |
| Peak SAR Location                 | 69mm(x),32mm(y),4mm(z)               |      |              |



SURFACE SAR



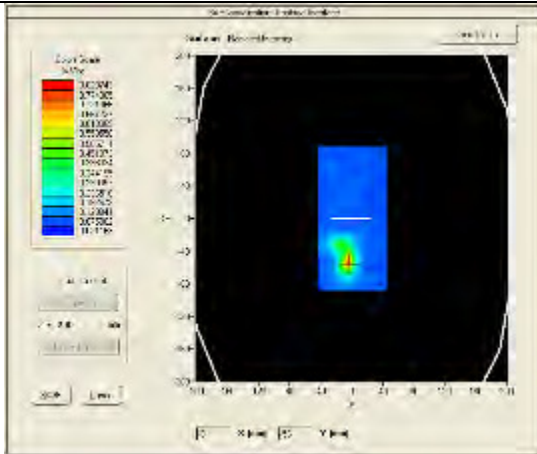
VOLUME SAR



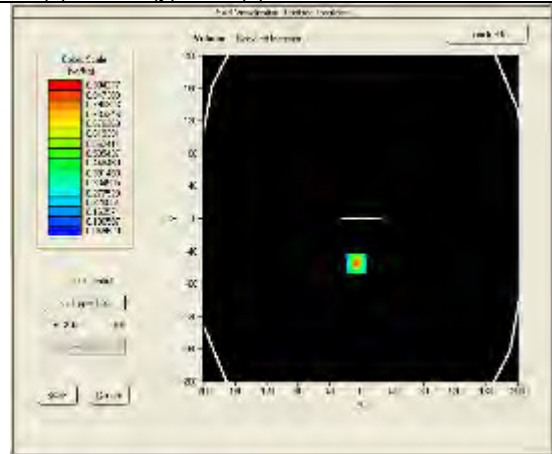
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5755_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/17/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

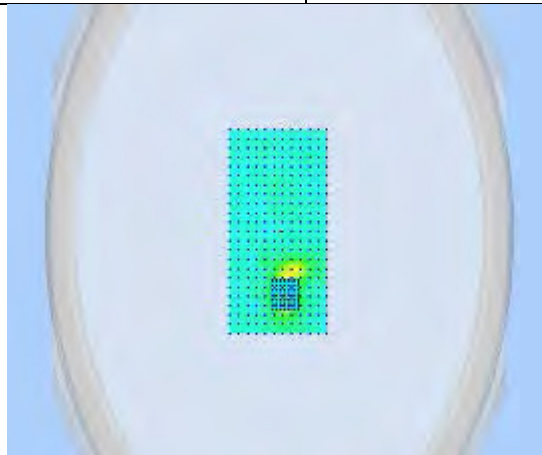
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 02/23/2016                |
| Relative permittivity (real part) | 44.47                     |
| Conductivity (S/m)                | 6.43                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -1.72                     |
| Highest Extrapolated SAR (W/Kg)   | 0.3619                    |
| SAR 1g (W/Kg)                     | 0.2513                    |
| Peak SAR Location                 | -5mm(x), -55mm(y), 4mm(z) |



SURFACE SAR

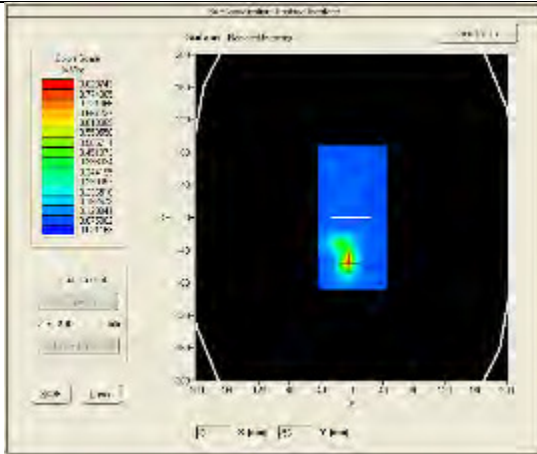


VOLUME SAR

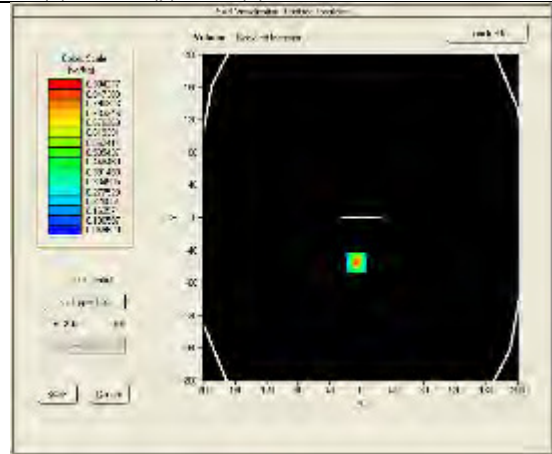


3D View Plot

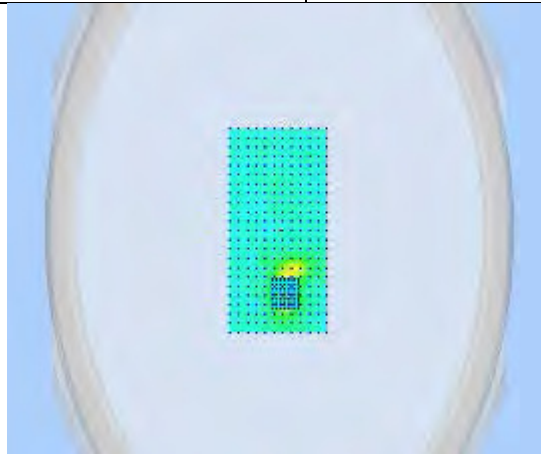
|                                   |                                       |      |              |
|-----------------------------------|---------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT40_5795_Front_5mm |      |              |
| Environ Conditions:               | Temp(oC):                             | 23   | Result: Pass |
|                                   | Humidity(%):                          | 58   |              |
|                                   | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:                      | N/A                                   |      |              |
| Test Date:                        | 02/17/2016                            |      |              |
| Tested by:                        | Arthur Tie                            |      |              |
| Remarks:                          |                                       |      |              |
| Frequency (MHz)                   | 5795.000000 (Channel 159)             |      |              |
| Relative permittivity (real part) | 44.32                                 |      |              |
| Conductivity (S/m)                | 6.43                                  |      |              |
| Transmission Duty Factor          | 1.0                                   |      |              |
| Probe SN                          | 2715_EPGO259                          |      |              |
| Conversion Factor (dB)            | 2.39                                  |      |              |
| Area Scan Resolution              | 8 mm                                  |      |              |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm                |      |              |
| Zoom Scan Size                    | 32x32x34 mm                           |      |              |
| Measurement Drifts (%)            | -4.10                                 |      |              |
| Highest Extrapolated SAR (W/Kg)   | 1.6488                                |      |              |
| SAR 1g (W/Kg)                     | 0.7169                                |      |              |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)               |      |              |



SURFACE SAR

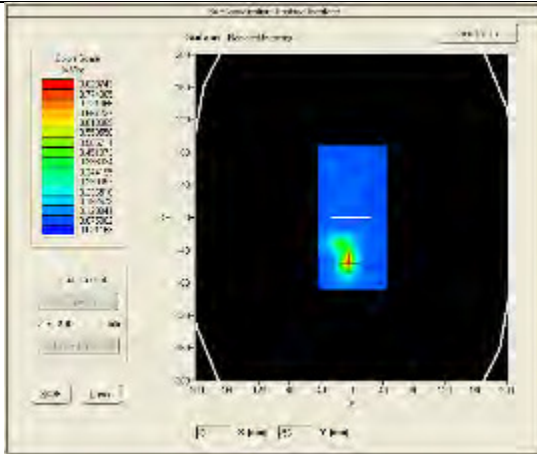


VOLUME SAR

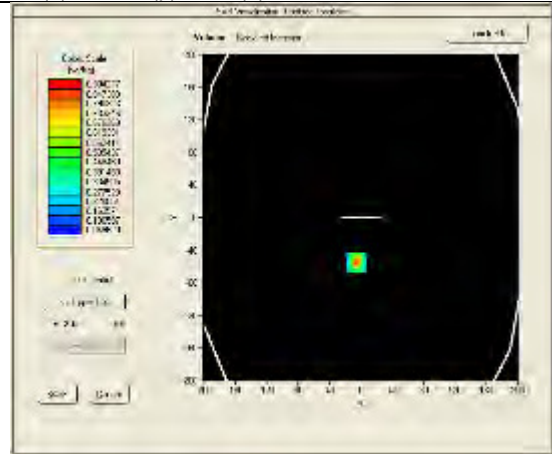


3D View Plot

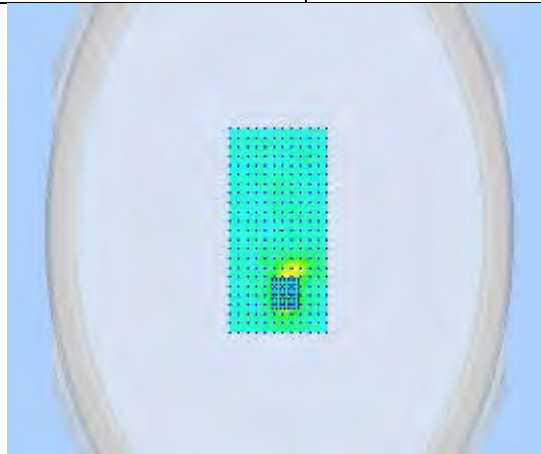
|                                   |                                      |      |              |
|-----------------------------------|--------------------------------------|------|--------------|
| Test specification:               | Plane_Body_Middle_HT40_5795_Left_0mm |      |              |
| Environ Conditions:               | Temp(oC):                            | 23   | Result: Pass |
|                                   | Humidity(%):                         | 58   |              |
|                                   | Atmospheric(mPa):                    | 1009 |              |
| Mains Power:                      | N/A                                  |      |              |
| Test Date:                        | 02/24/2016                           |      |              |
| Tested by:                        | Arthur Tie                           |      |              |
| Remarks:                          |                                      |      |              |
| Frequency (MHz)                   | 5795.000000 (Channel 159)            |      |              |
| Relative permittivity (real part) | 44.32                                |      |              |
| Conductivity (S/m)                | 6.43                                 |      |              |
| Transmission Duty Factor          | 1.0                                  |      |              |
| Probe SN                          | 2715_EPGO259                         |      |              |
| Conversion Factor (dB)            | 2.39                                 |      |              |
| Area Scan Resolution              | 8 mm                                 |      |              |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm               |      |              |
| Zoom Scan Size                    | 32x32x34 mm                          |      |              |
| Measurement Drifts (%)            | --3.45                               |      |              |
| Highest Extrapolated SAR (W/Kg)   | 0.6963                               |      |              |
| SAR 1g (W/Kg)                     | 0.3799                               |      |              |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)              |      |              |



SURFACE SAR



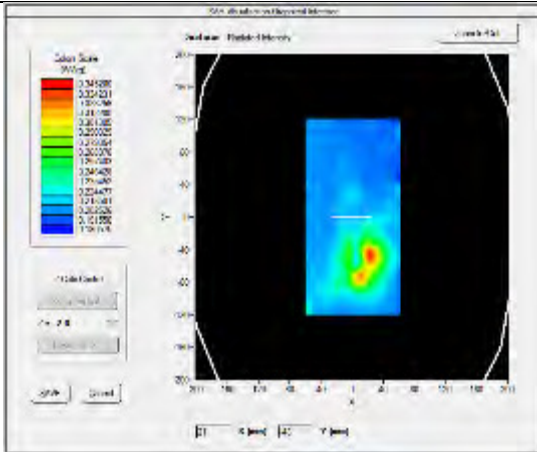
VOLUME SAR



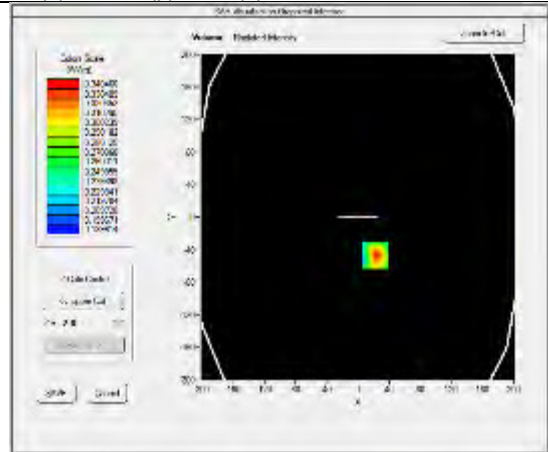
3D View Plot

|                     |                                       |      |              |
|---------------------|---------------------------------------|------|--------------|
| Test specification: | Plane_Body_Middle_HT40_5795_Right_0mm |      |              |
| Environ Conditions: | Temp(oC):                             | 23   | Result: Pass |
|                     | Humidity(%):                          | 58   |              |
|                     | Atmospheric(mPa):                     | 1009 |              |
| Mains Power:        | N/A                                   |      |              |
| Test Date:          | 02/24/2016                            |      |              |
| Tested by:          | Arthur Tie                            |      |              |
| Remarks:            |                                       |      |              |

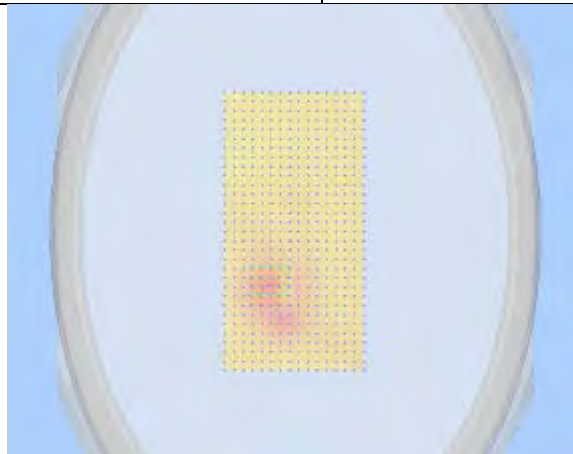
|                                   |                           |
|-----------------------------------|---------------------------|
| Frequency (MHz)                   | 5795.000000 (Channel 159) |
| Relative permittivity (real part) | 44.32                     |
| Conductivity (S/m)                | 6.43                      |
| Transmission Duty Factor          | 1.0                       |
| Probe SN                          | 2715_EPGO259              |
| Conversion Factor (dB)            | 2.39                      |
| Area Scan Resolution              | 8 mm                      |
| Zoom Scan Resolution              | dx=8mm, dy=8mm, dz=5mm    |
| Zoom Scan Size                    | 32x32x34 mm               |
| Measurement Drifts (%)            | -0.80                     |
| Highest Extrapolated SAR (W/Kg)   | 0.4476                    |
| SAR 1g (W/Kg)                     | 0.2923                    |
| Peak SAR Location                 | -5mm(x),-55mm(y),4mm(z)   |



SURFACE SAR



VOLUME SAR


















3D View Plot








## Annex A. TEST INSTRUMENT

| Instrument                                      | Model                | Serial #             | Cal Date   | Cal Cycle | Cal Due    | In use                              |
|---|----------------------|----------------------|------------|-----------|------------|-------------------------------------|
| <b>SAR</b>                                      |                      |                      |            |           |            |                                     |
| P C   | PV 3.06GHz           | 375052-AA1           | N/A        | N/A       | N/A        | <input checked="" type="checkbox"/> |
| MXG Vector Signal Generator                     | N5182A               | MY47071065           | 04/06/2015 | 1 Year    | 04/06/2017 | <input checked="" type="checkbox"/> |
| Multi-meter                                     | Multi-meter<br>2000  | 1259033              | 09/18/2015 | 1 Year    | 09/18/2016 | <input checked="" type="checkbox"/> |
| S-Parameter Network Analyzer                    | 8753ES               | US38161019           | 08/17/2015 | 1 Year    | 08/17/2016 | <input checked="" type="checkbox"/> |
| E-field PROBE                                   | EPGO 259             | SN 27/15<br>EPGO259  | 07/08/2015 | 1 Year    | 07/08/2016 | <input checked="" type="checkbox"/> |
| E-field PROBE                                   | EP 204               | SN 07/14 EP204       | 10/06/2015 | 1 Year    | 10/06/2016 | <input checked="" type="checkbox"/> |
| DIPOLE 900                                      | DIPOLE<br>900MHz     | SN 31/10<br>DIPD134  | 10/06/2015 | 1 Year    | 10/06/2016 | <input type="checkbox"/>            |
| DIPOLE 1800                                     | DIPOLE<br>2450MHz    | SN 31/10<br>DIPF135  | 10/06/2015 | 1 Year    | 10/06/2016 | <input type="checkbox"/>            |
| DIPOLE 2000                                     | DIPOLE<br>2000MHz    | SN 31/10 DIPI137     | 10/06/2015 | 1 Year    | 10/06/2016 | <input checked="" type="checkbox"/> |
| DIPOLE 2450                                     | DIPOLE<br>2450MHz    | SN 31/10<br>DIPJ138  | 10/06/2015 | 1 Year    | 10/06/2016 | <input checked="" type="checkbox"/> |
| Wave Guide 5/6 GHz                              | Wave Guide<br>5/6GHz | SN 31/10<br>DIPWGA13 | 07/08/2015 | 1 Year    | 07/08/2016 | <input checked="" type="checkbox"/> |
| COMOSAR Open Coaxial Probe                      | OCP36                | SN 31/10 OCP36       | 07/08/2015 | 1 Year    | 07/08/2016 | <input checked="" type="checkbox"/> |
| Communication Antenna                           | ANTA30               | SN 31/10 ANTA30      | N/A        | N/A       | N/A        | <input type="checkbox"/>            |
| Laptop POSITIONING DEVICE                       | LSH63                | SN 31/10 LSH13       | N/A        | N/A       | N/A        | <input checked="" type="checkbox"/> |
| Mobile Phone POSITIONING                        | MSH63                | SN 31/10 MSH63       | N/A        | N/A       | N/A        | <input checked="" type="checkbox"/> |
| DUMMY PROBE                                     | None                 | SN 31/10             | N/A        | N/A       | N/A        | <input type="checkbox"/>            |
| SAM PHANTOM                                     | SAM77                | SN 31/10 SAM77       | N/A        | N/A       | N/A        | <input type="checkbox"/>            |
| Elliptic Phantom                                | ELLI17               | SN 31-10 ELLI17      | N/A        | N/A       | N/A        | <input checked="" type="checkbox"/> |
| PHANTOM TABLE                                   | N/A                  | N/A                  | N/A        | N/A       | N/A        | <input checked="" type="checkbox"/> |
| 6 AXIS ROBOT                                    | KR5                  | 949319               | N/A        | N/A       | N/A        | <input checked="" type="checkbox"/> |
| Medium Power Solid State Amplifier (0.8~4.2GHz) | S41-25               | M629-0408            | N/A        | N/A       | N/A        | <input type="checkbox"/>            |



## Annex B. SIEMIC Accreditation

| Accreditations                          | Document  | Scope / Remark  |
|---|---|---|
| ISO 17025 (A2LA)                        |    | Please see the documents for the detailed scope   |
| ISO Guide 65 (A2LA)                     |    | Please see the documents for the detailed scope   |
| TCB Designation                         |   | A1, A2, A3, A4, B1, B2, B3, B4, C   |
| FCC DoC Accreditation                   |    | FCC Declaration of Conformity Accreditation   |
| FCC Site Registration                   |    | 3 meter site  |
| FCC Site Registration                   |    | 10 meter site   |
| IC Site Registration                    |    | 3 meter site  |
| IC Site Registration                    |    | 10 meter site   |
| EU NB                                   |    | <b>Radio &amp; Telecommunications Terminal Equipment:</b><br>EN45001 – EN ISO/IEC 17025 |
|   |  | <b>Electromagnetic Compatibility:</b><br>EN45001 – EN ISO/IEC 17025                     |
| Singapore iDA<br>CB(Certification Body) |  | Phase I, Phase II   |
| Vietnam MIC<br>CAB Accreditation        |  | Please see the document for the detailed scope  |
| Hong Kong OFCA                          |  | <b>(Phase II)</b> OFCA Foreign Certification Body for Radio and Telecom                 |
|   |  | <b>(Phase I)</b> Conformity Assessment Body for Radio and Telecom                       |
| Industry Canada CAB                     |  | <b>Radio:</b> Scope A – All Radio Standard Specification in Category I                  |
|   |  | <b>Telecom:</b> CS-03 Part I, II, V, VI, VII, VIII                                      |

|   |   |   |
|---|---|---|
| Japan Recognized Certification Body Designation |    | <p><b>Radio:</b> A1. Terminal equipment for purpose of calling</p> <p><b>Telecom:</b> B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law</p>   |
| Korea CAB Accreditation                         |    | <p><b>EMI:</b> KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI<br/>KN22: Test Method for EMI<br/><b>EMS:</b> KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS<br/>KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS</p> <p><b>Radio:</b> RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68</p> <p><b>Telecom:</b> President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4</p> |
| Taiwan NCC CAB Recognition                      |   | LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08  |
| Taiwan BSMI CAB Recognition                     |  | CNS 13438   |
| Japan VCCI                                      |  | <p>R-3083: Radiation 3 meter site</p> <p>C-3421: Main Ports Conducted Interference Measurement</p> <p>T-1597: Telecommunication Ports Conducted Interference Measurement</p>  |
| Australia CAB Recognition                       |  | <p><b>EMC:</b> AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4</p> <p><b>Radio communications:</b> AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771</p> <p><b>Telecommunications:</b> AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1</p>   |
| Australia NATA Recognition                      |  | AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016, AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2  |

## Annex C. Probe Calibration Report



## COMOSAR E-Field Probe Calibration Report

Ref: ACR.190.1.15.SATU.B

**SIEMIC TESTING AND CERTIFICATION SERVICES**  
775 MONTAGUE EXPRESSWAY  
MILPITAS, CA 95035, USA  
**MVG COMOSAR DOSIMETRIC E-FIELD PROBE**  
SERIAL NO.: SN 27/15 EPG0259

Calibrated at MVG US  
2105 Barrett Park Dr. - Kennesaw, GA 30144



ACCREDITED  
CALIBRATION LABORATORY

Calibration Date: 07/08/2015

*Summary:*

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed in MVG USA using the CALISAR / CALIBAIR test bench, for use with a COMOSAR system only. All calibration results are traceable to national metrology institutions.





COMOSAR II-FIELD PROBE CALIBRATION REPORT

REF: ACR-1907133ALL018

|              | Name          | Function        | Date     | Signature          |
|--------------|---------------|-----------------|----------|--------------------|
| Prepared by: | Jérôme LUC    | Product Manager | 7/9/2015 | <i>[Signature]</i> |
| Checked by:  | Jérôme LUC    | Product Manager | 7/9/2015 | <i>[Signature]</i> |
| Approved by: | Kim RUTKOWSKI | Quality Manager | 7/9/2015 | <i>[Signature]</i> |

|                |   |
|----------------|---|
|                | Customer Name:                            |
| Distribution : | SIEMIC Testing and Certification Services |

| Issue | Date      | Modifications     |
|-------|-----------|-------------------|
| A     | 7/9/2015  | Initial release   |
| B     | 6/10/2015 | Add 750MHz factor |
|       |           |                   |
|       |           |                   |



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**1 DEVICE UNDER TEST**

| Device Under Test                         |   |
|---|---|
| Device Type                               | COMOSAR DOSIMETRIC E-FIELD PROBE  |
| Manufacturer                              | MVG   |
| Model                                     | SSE2  |
| Serial Number                             | SN 27715 EPG0259  |
| Product Condition (new / used)            | New   |
| Frequency Range of Probe                  | 0.7 GHz-6GHz  |
| Resistances of Three Dipoles at Connector | Dipole 1: R1=0.230 MΩ<br>Dipole 2: R2=0.211 MΩ<br>Dipole 3: R3=0.216 MΩ |

A yearly calibration interval is recommended.

**2 PRODUCT DESCRIPTION**

**2.1 GENERAL INFORMATION**

MVG's COMOSAR E field Probes are built in accordance to the IEEE 1528, OET 65 Bulletin C and CENELEC 62209 standards.



**Figure 1 – MVG COMOSAR Dosimetric E field Dipole**

|  |        |
|--|--------|
| Probe Length                               | 330 mm |
| Length of Individual Dipoles               | 2 mm   |
| Maximum external diameter                  | 8 mm   |
| Probe Tip External Diameter                | 2.5 mm |
| Distance between dipoles / probe extremity | 1 mm   |

**3 MEASUREMENT METHOD**

The IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CENELEC 62209 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their affect. All calibrations / measurements performed meet the fore mentioned standards.

**3.1 LINEARITY**

The evaluation of the linearity was done in free space using the waveguide, performing a power sweep to cover the SAR range 0.01 W/kg to 100W/kg.

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### 3.2 SENSITIVITY

The sensitivity factors of the three dipoles were determined using a two step calibration method (air and tissue simulating liquid) using waveguides as outlined in the standards.

### 3.3 LOWER DETECTION LIMIT

The lower detection limit was assessed using the same measurement set up as used for the linearity measurement. The required lower detection limit is 10 mW/kg.

### 3.4 ISOTROPY

The axial isotropy was evaluated by exposing the probe to a reference wave from a standard dipole with the dipole mounted under the flat phantom in the test configuration suggested for system validations and checks. The probe was rotated along its main axis from 0 - 360 degrees in 15 degree steps. The hemispherical isotropy is determined by inserting the probe in a thin plastic box filled with tissue-equivalent liquid, with the plastic box illuminated with the fields from a half wave dipole. The dipole is rotated about its axis (0°-180°) in 15° increments. At each step the probe is rotated about its axis (0°-360°).

### 3.5 BOUNDARY EFFECT

The boundary effect is defined as the deviation between the SAR measured data and the expected exponential decay in the liquid when the probe is oriented normal to the interface. To evaluate this effect, the liquid filled flat phantom is exposed to fields from either a reference dipole or waveguide. With the probe normal to the phantom surface, the peak spatial average SAR is measured and compared to the analytical value at the surface.

## 4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEEE 1528, OET 65 Bulletin C, CENELEC EN50361 and CEITEC 02209 standards were followed to generate the measurement uncertainty associated with an E-field probe calibration using the waveguide technique. All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

| Uncertainty analysis of the probe calibration in waveguide |                       |                          |            |    |                          |
|--|-----------------------|--------------------------|------------|----|--------------------------|
| ERROR SOURCES  | Uncertainty value (%) | Probability Distribution | Divisor    | ci | Standard Uncertainty (%) |
| Irradiated or forward power                                | 3.00%                 | Rectangular              | $\sqrt{3}$ | 1  | 1.732%                   |
| Reflected power  | 3.00%                 | Rectangular              | $\sqrt{3}$ | 1  | 1.732%                   |
| Liquid conductivity  | 5.00%                 | Rectangular              | $\sqrt{3}$ | 1  | 2.887%                   |
| Liquid permittivity  | 4.00%                 | Rectangular              | $\sqrt{3}$ | 1  | 2.309%                   |
| Field homogeneity  | 3.00%                 | Rectangular              | $\sqrt{3}$ | 1  | 1.732%                   |
| Field probe positioning                                    | 5.00%                 | Rectangular              | $\sqrt{3}$ | 1  | 2.887%                   |

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COMOSAR II-FIELD PROBE CALIBRATION REPORT

Ref: ACR-190715081301-R

|  |       |             |            |   |        |
|--|-------|-------------|------------|---|--------|
| field probe linearity                                | 3,00% | Rectangular | $\sqrt{3}$ | 1 | 1,732% |
| Combined standard uncertainty                        |       |             |            |   | 5,831% |
| Expanded uncertainty<br>95% confidence level $k = 2$ |       |             |            |   | 12,0%  |

5 CALIBRATION MEASUREMENT RESULTS

| Calibration Parameters |       |
|------------------------|-------|
| Liquid Temperature     | 21 °C |
| Lab Temperature        | 21 °C |
| Lab Humidity           | 45 %  |

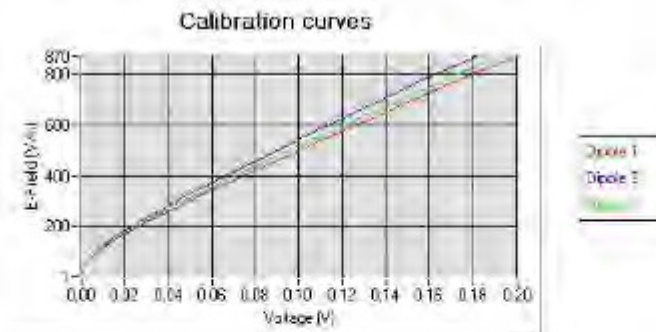
5.1 SENSITIVITY IN AIR

| Norm1 dipole<br>1 ( $\mu V/(V/m)^2$ ) | Norm2 dipole<br>2 ( $\mu V/(V/m)^2$ ) | Norm3 dipole<br>3 ( $\mu V/(V/m)^2$ ) |
|---------------------------------------|---------------------------------------|---------------------------------------|
| 0.83                                  | 0.71                                  | 0.75                                  |

| DCP dipole 1<br>(mV) | DCP dipole 2<br>(mV) | DCP dipole 3<br>(mV) |
|----------------------|----------------------|----------------------|
| 93                   | 92                   | 90                   |

Calibration curves  $e_i=f(V)$  ( $i=1,2,3$ ) allow to obtain H-field value using the formula:

$$E^2 = \sqrt{E_1^2 + E_2^2 + E_3^2}$$



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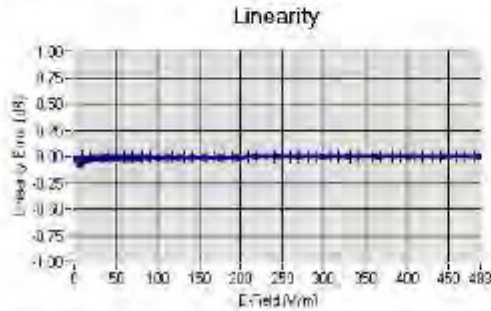
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COMOSAR II-FIELD PROBE CALIBRATION REPORT

Ref: ACR19071538A11-B

5.2 LINEARITY



Linearity:  $\pm 1.72\%$  ( $\pm 0.06$  dB)

5.3 SENSITIVITY IN LIQUID

| Liquid | Frequency<br>(MHz $\pm 1$<br>100MHz) | Permittivity | Epsilon (S/m) | CentF |
|--------|--------------------------------------|--------------|---------------|-------|
| HL750  | 750                                  | 42.24        | 0.90          | 1.89  |
| BL750  | 750                                  | 56.85        | 0.99          | 1.97  |
| HL850  | 855                                  | 42.59        | 0.90          | 2.15  |
| BL850  | 855                                  | 53.19        | 0.97          | 2.21  |
| HL900  | 900                                  | 42.05        | 0.98          | 1.96  |
| BL900  | 900                                  | 56.41        | 1.06          | 2.03  |
| HL1800 | 1800                                 | 41.82        | 1.38          | 2.33  |
| BL1800 | 1800                                 | 53.00        | 1.52          | 2.42  |
| HL1900 | 1900                                 | 40.38        | 1.41          | 2.59  |
| BL1900 | 1900                                 | 53.93        | 1.55          | 2.67  |
| HL2000 | 2000                                 | 40.12        | 1.43          | 2.48  |
| BL2000 | 2000                                 | 53.65        | 1.54          | 2.53  |
| HL2450 | 2450                                 | 38.34        | 1.80          | 2.62  |
| BL2450 | 2450                                 | 52.70        | 1.94          | 2.70  |
| HL3500 | 3500                                 | 37.20        | 2.87          | 2.62  |
| BL3500 | 3500                                 | 52.65        | 3.21          | 2.72  |
| HL5200 | 5200                                 | 36.44        | 4.79          | 2.51  |
| BL5200 | 5200                                 | 50.70        | 5.11          | 2.59  |
| HL5400 | 5400                                 | 35.99        | 4.91          | 2.54  |
| BL5400 | 5400                                 | 50.01        | 5.64          | 2.63  |
| HL5600 | 5600                                 | 35.22        | 5.18          | 2.55  |
| BL5600 | 5600                                 | 49.34        | 5.85          | 2.71  |
| HL5800 | 5800                                 | 34.95        | 5.42          | 2.53  |
| BL5800 | 5800                                 | 48.54        | 6.22          | 2.65  |

LOWER DETECTION LIMIT: 7mW/kg

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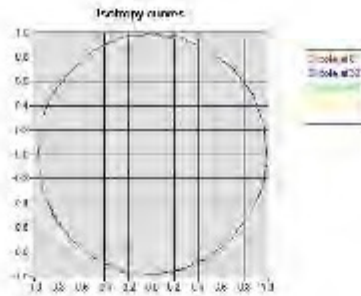
COMOSAR E-FIELD PROBE CALIBRATION REPORT

REF: ACR15001538A1118

5.4 ISOTROPY

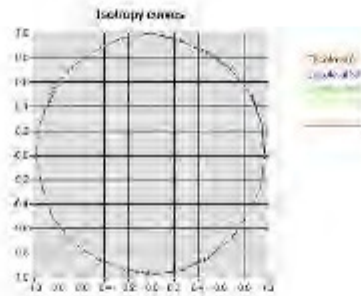
**HL 900 MHz**

- Axial isotropy: 0.04 dB
- Hemispherical isotropy: 0.06 dB



**III 1800 MHz**

- Axial isotropy: 0.04 dB
- Hemispherical isotropy: 0.07 dB



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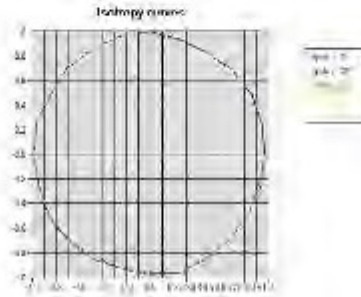


COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR15071538A1118

**HL 5600 MHz**

- Axial isotropy: 0.06 dB
- Hemispherical isotropy: 0.09 dB



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**6 LIST OF EQUIPMENT**

| Equipment Summary Sheet       |                      |                    |   |   |
|-------------------------------|----------------------|--------------------|---|---|
| Equipment Description         | Manufacturer / Model | Identification No. | Current Calibration Date                      | Next Calibration Date                         |
| Flat Phantom                  | MVG                  | SN-20/09-SAM71     | Validated. No cal required.                   | Validated. No cal required.                   |
| COMOSAR Test Bench            | Version 3            | NA                 | Validated. No cal required.                   | Validated. No cal required.                   |
| Network Analyzer              | Rhode & Schwarz ZVA  | SN100132           | 02/2013                                       | 02/2016                                       |
| Reference Probe               | MVG                  | EP 94.SN 37/08     | 10/2014                                       | 10/2015                                       |
| Multimeter                    | Keithley 2001        | 11B8656            | 12/2013                                       | 12/2016                                       |
| Signal Generator              | Agilent E4436C       | MY49070581         | 12/2013                                       | 12/2016                                       |
| Amplifier                     | Aetherecomm          | SN 048             | Characterized prior to test. No cal required. | Characterized prior to test. No cal required. |
| Power Meter                   | HP E4418A            | US38261496         | 12/2013                                       | 12/2016                                       |
| Power Sensor                  | HP ECP-E26A          | US371B1460         | 12/2013                                       | 12/2016                                       |
| Directional Coupler           | Narda 4216-20        | 01386              | Characterized prior to test. No cal required. | Characterized prior to test. No cal required. |
| Waveguide                     | Mega Industries      | 089Y7-158-13-712   | Validated. No cal required.                   | Validated. No cal required.                   |
| Waveguide Transition          | Mega Industries      | 089Y7-158-13-701   | Validated. No cal required.                   | Validated. No cal required.                   |
| Waveguide Terminator          | Mega Industries      | 089Y7-158-13-701   | Validated. No cal required.                   | Validated. No cal required.                   |
| Temperature / Humidity Sensor | Control Company      | 11-861-S           | 8/2012  | 8/2016  |

**Annex D. Dipoles Calibration Report**



**SAR Reference Dipole Calibration Report**

Ref : ACR.279.7.15.SATILA

**SIEMIC TESTING AND CERTIFICATION SERVICES**  
775 MONTAGUE EXPRESSWAY  
MILPITAS, CA 95035, USA  
**MVG COMOSAR REFERENCE DIPOLE**  
FREQUENCY: 2450 MHZ  
SERIAL NO.: SN 31/10 DIPJ138

Calibrated at MVG US  
2105 Barrett Park Dr. - Kennesaw, GA 30144



Calibration Date: 10/06/2015

*Summary:*

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutes.



SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: AEM299-183A001A

|              | Name          | Function        | Date      | Signature            |
|--------------|---------------|-----------------|-----------|----------------------|
| Prepared by: | Jérôme LUC    | Product Manager | 10/6/2015 | <i>JS</i>            |
| Checked by:  | Jérôme LUC    | Product Manager | 10/6/2015 | <i>JS</i>            |
| Approved by: | Kim RUTKOWSKI | Quality Manager | 10/6/2015 | <i>Kim Rutkowski</i> |

|                |   |
|----------------|---|
|                | Customer Name                             |
| Distribution : | SIEMIC Testing and Certification Services |

| Issue | Date      | Modifications   |
|-------|-----------|-----------------|
| A     | 10/6/2015 | Initial release |
|       |           |                 |
|       |           |                 |

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**1 INTRODUCTION**

This document contains a summary of the requirements set forth by the IEEE 1528, FCC KDBs and CE/IEC 62209 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the fore mentioned standards.

**2 DEVICE UNDER TEST**

| Device Under Test              |                                   |
|--------------------------------|-----------------------------------|
| Device Type                    | COMOSAR 2450 MHz REFERENCE DIPOLE |
| Manufacturer                   | MVG                               |
| Model                          | SID2450                           |
| Serial Number                  | SN 31/10 DIPJ138                  |
| Product Condition (new / used) | Used                              |

A yearly calibration interval is recommended.

**3 PRODUCT DESCRIPTION**

**3.1 GENERAL INFORMATION**

MVG's COMOSAR Validation Dipoles are built in accordance to the IEEE 1528, FCC KDBs and CE/IEC 62209 standards. The product is designed for use with the COMOSAR test bench only.



**Figure 1** MVG COMOSAR Validation Dipole



#### 4 MEASUREMENT METHOD

The IEEE 1528, FCC KDBs and CENELEC 62209 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore mentioned standards.

##### 4.1 RETURN LOSS REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a return loss of -20 dB or better. The return loss measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards.

##### 4.2 MECHANICAL REQUIREMENTS

The IEEE Std. 1528 and CENELEC 62209 standards specify the mechanical components and dimensions of the validation dipoles, with the dimensions frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness.

#### 5 MEASUREMENT UNCERTAINTY

All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

##### 5.1 RETURN LOSS

The following uncertainties apply to the return loss measurement:

| Frequency band | Expanded Uncertainty on Return Loss |
|----------------|-------------------------------------|
| 400-6000MHz    | 0.1 dB                              |

##### 5.2 DIMENSION MEASUREMENT

The following uncertainties apply to the dimension measurements:

| Length (mm) | Expanded Uncertainty on Length |
|-------------|--------------------------------|
| 3 - 300     | 0.05 mm                        |

##### 5.3 VALIDATION MEASUREMENT

The guidelines outlined in the IEEE 1528, FCC KDBs, CENELEC EN50361 and CENELEC 62209 standards were followed to generate the measurement uncertainty for validation measurements.

| Scan Volume | Expanded Uncertainty |
|-------------|----------------------|
| 1 g         | 20.3 %               |

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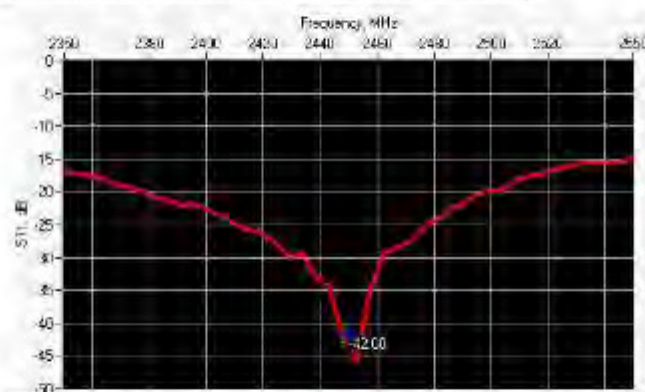
**SAR REFERENCE DIPOLE CALIBRATION REPORT**

Ref: AGR299218.SAR.DU.A

|      |        |
|------|--------|
| 10 g | 20,1 % |
|------|--------|

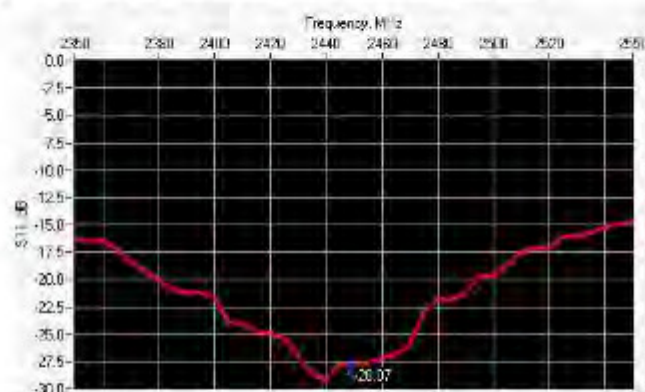
**6 CALIBRATION MEASUREMENT RESULTS**

**6.1 RETURN LOSS AND IMPEDANCE IN HEAD LIQUID**



| Frequency (MHz) | Return Loss (dB) | Requirement (dB) | Impedance       |
|-----------------|------------------|------------------|-----------------|
| 2450            | -42.00           | -20              | 49.5 Ω - 0.6 jΩ |

**6.2 RETURN LOSS AND IMPEDANCE IN BODY LIQUID**



| Frequency (MHz) | Return Loss (dB) | Requirement (dB) | Impedance       |
|-----------------|------------------|------------------|-----------------|
| 2450            | -28.07           | -20              | 54.1 Ω - 0.5 jΩ |

**6.3 MECHANICAL DIMENSIONS**

| Frequency MHz | L mm       |          | h mm       |          | d mm      |          |
|---------------|------------|----------|------------|----------|-----------|----------|
|               | required   | measured | required   | measured | required  | measured |
| 300           | 420.0 ±1 % |          | 250.0 ±1 % |          | 6.35 ±1 % |          |

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SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR299-18000004

|      |            |      |            |      |           |      |
|------|------------|------|------------|------|-----------|------|
| 450  | 290.0 ±1 % |      | 166.7 ±1 % |      | 6.35 ±1 % |      |
| 750  | 176.0 ±1 % |      | 100.0 ±1 % |      | 6.35 ±1 % |      |
| 835  | 161.0 ±1 % |      | 89.8 ±1 %  |      | 3.6 ±1 %  |      |
| 900  | 149.0 ±1 % |      | 81.3 ±1 %  |      | 3.6 ±1 %  |      |
| 1450 | 89.1 ±1 %  |      | 51.7 ±1 %  |      | 3.6 ±1 %  |      |
| 1500 | 80.5 ±1 %  |      | 50.0 ±1 %  |      | 3.6 ±1 %  |      |
| 1640 | 79.0 ±1 %  |      | 45.7 ±1 %  |      | 3.6 ±1 %  |      |
| 1750 | 75.2 ±1 %  |      | 42.9 ±1 %  |      | 3.6 ±1 %  |      |
| 1800 | 72.0 ±1 %  |      | 41.7 ±1 %  |      | 3.6 ±1 %  |      |
| 1900 | 68.0 ±1 %  |      | 39.5 ±1 %  |      | 3.6 ±1 %  |      |
| 1950 | 66.5 ±1 %  |      | 38.5 ±1 %  |      | 3.6 ±1 %  |      |
| 2000 | 64.5 ±1 %  |      | 37.5 ±1 %  |      | 3.6 ±1 %  |      |
| 2100 | 61.0 ±1 %  |      | 35.7 ±1 %  |      | 3.6 ±1 %  |      |
| 2300 | 55.5 ±1 %  |      | 32.6 ±1 %  |      | 3.6 ±1 %  |      |
| 2450 | 51.5 ±1 %  | PASS | 30.6 ±1 %  | PASS | 3.6 ±1 %  | PASS |
| 2600 | 48.5 ±1 %  |      | 28.8 ±1 %  |      | 3.6 ±1 %  |      |
| 3000 | 41.5 ±1 %  |      | 25.0 ±1 %  |      | 3.6 ±1 %  |      |
| 3500 | 37.0 ±1 %  |      | 26.4 ±1 %  |      | 3.6 ±1 %  |      |
| 3700 | 34.7 ±1 %  |      | 26.4 ±1 %  |      | 3.6 ±1 %  |      |

7 VALIDATION MEASUREMENT

The IEEE Std. 1528, FCC KDBs and CEPT/ETC 62209 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.

7.1 HEAD LIQUID MEASUREMENT

| Frequency MHz | Relative permittivity (ε <sub>r</sub> ) |          | Conductivity (σ) S/m |          |
|---------------|---|----------|----------------------|----------|
|               | required                                | measured | required             | measured |
| 300           | 45.3 ±5 %                               |          | 0.87 ±5 %            |          |
| 450           | 43.5 ±5 %                               |          | 0.87 ±5 %            |          |
| 750           | 41.9 ±5 %                               |          | 0.89 ±5 %            |          |
| 835           | 41.5 ±5 %                               |          | 0.90 ±5 %            |          |
| 900           | 41.5 ±5 %                               |          | 0.92 ±5 %            |          |
| 1450          | 40.5 ±5 %                               |          | 1.20 ±5 %            |          |
| 1500          | 40.4 ±5 %                               |          | 1.23 ±5 %            |          |
| 1640          | 40.2 ±5 %                               |          | 1.33 ±5 %            |          |
| 1750          | 40.1 ±5 %                               |          | 1.37 ±5 %            |          |

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SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR299-1.000004

|      |           |      |           |      |
|------|-----------|------|-----------|------|
| 1800 | 40.0 ±5 % |      | 1.40 ±5 % |      |
| 1900 | 40.0 ±5 % |      | 1.40 ±5 % |      |
| 2050 | 40.0 ±5 % |      | 1.40 ±5 % |      |
| 2200 | 40.0 ±5 % |      | 1.40 ±5 % |      |
| 2400 | 39.8 ±5 % |      | 1.49 ±5 % |      |
| 2500 | 39.5 ±5 % |      | 1.67 ±5 % |      |
| 2450 | 39.2 ±5 % | PASS | 1.80 ±5 % | PASS |
| 2600 | 39.0 ±5 % |      | 1.96 ±5 % |      |
| 3000 | 38.5 ±5 % |      | 2.40 ±5 % |      |
| 3500 | 37.9 ±5 % |      | 2.91 ±5 % |      |

7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements should produce the SAR values shown below (for phantom thickness of 2 mm), within the uncertainty for the system validation. All SAR values are normalized to 1 W forward power. In bracket, the measured SAR is given with the used input power.

|   |  |
|---|--|
| Software                                  | OPTENSAR V4                                |
| Phantom                                   | SN 2009 SAM71                              |
| Probe                                     | SN 18-11 F3G125                            |
| Liquid                                    | Head Liquid Values: eps= 38.2, sigma= 1.81 |
| Distance between dipole center and liquid | 10.0 mm                                    |
| Area scan resolution                      | dx=8mm, dy=8mm                             |
| Z-axis Scan Resolution                    | dz=5mm, dy=5mm, dx=5mm                     |
| Frequency                                 | 2450 MHz                                   |
| Input power                               | 20 dBm                                     |
| Liquid Temperature                        | 21 °C                                      |
| Lab Temperature                           | 21 °C                                      |
| Lab Humidity                              | 45 %                                       |

| Frequency<br>MHz | 1 g SAR (W/kg/W) |          | 10 g SAR (W/kg/W) |          |
|------------------|------------------|----------|-------------------|----------|
|                  | required         | measured | required          | measured |
| 300              | 2.85             |          | 1.86              |          |
| 350              | 4.58             |          | 3.06              |          |
| 450              | 8.49             |          | 5.55              |          |
| 600              | 9.56             |          | 6.22              |          |
| 900              | 10.9             |          | 6.99              |          |
| 1450             | 29               |          | 18                |          |
| 1500             | 30.5             |          | 16.8              |          |
| 1600             | 34.2             |          | 18.4              |          |
| 1750             | 36.4             |          | 19.4              |          |
| 1800             | 38.4             |          | 20.1              |          |

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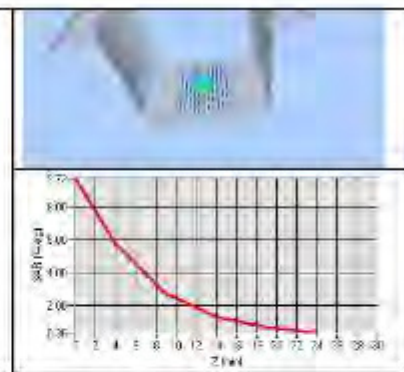
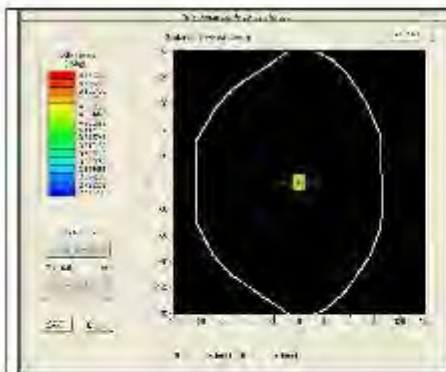
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SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR299215.SAR.DU.A

|      |      |              |      |              |
|------|------|--------------|------|--------------|
| 1500 | 38.7 |              | 20.5 |              |
| 1950 | 40.5 |              | 20.9 |              |
| 2000 | 41.2 |              | 21.1 |              |
| 2100 | 43.0 |              | 21.9 |              |
| 2300 | 48.7 |              | 23.3 |              |
| 2450 | 52.4 | 54.09 (5.41) | 24   | 24.38 (2.44) |
| 2600 | 55.3 |              | 24.6 |              |
| 3000 | 63.8 |              | 25.7 |              |
| 3500 | 67.1 |              | 25   |              |



7.3 BODY LIQUID MEASUREMENT

| Frequency MHz | Relative permittivity (ε <sub>r</sub> ) |          | Conductivity (σ) S/m |          |
|---------------|---|----------|----------------------|----------|
|               | required                                | measured | required             | measured |
| 150           | 61.9 ±5 %                               |          | 0.80 ±5 %            |          |
| 300           | 58.2 ±5 %                               |          | 0.92 ±5 %            |          |
| 450           | 56.7 ±5 %                               |          | 0.94 ±5 %            |          |
| 750           | 55.5 ±5 %                               |          | 0.96 ±5 %            |          |
| 835           | 55.2 ±5 %                               |          | 0.97 ±5 %            |          |
| 900           | 55.0 ±5 %                               |          | 1.05 ±5 %            |          |
| 915           | 55.0 ±5 %                               |          | 1.06 ±5 %            |          |
| 1450          | 54.0 ±5 %                               |          | 1.30 ±5 %            |          |
| 1610          | 53.8 ±5 %                               |          | 1.40 ±5 %            |          |
| 1800          | 53.3 ±5 %                               |          | 1.52 ±5 %            |          |
| 1900          | 53.3 ±5 %                               |          | 1.52 ±5 %            |          |
| 2000          | 53.3 ±5 %                               |          | 1.52 ±5 %            |          |
| 2100          | 53.2 ±5 %                               |          | 1.62 ±5 %            |          |
| 2450          | 52.7 ±5 %                               | PASS     | 1.95 ±5 %            | PASS     |

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**SAR REFERENCE DIPOLE CALIBRATION REPORT**

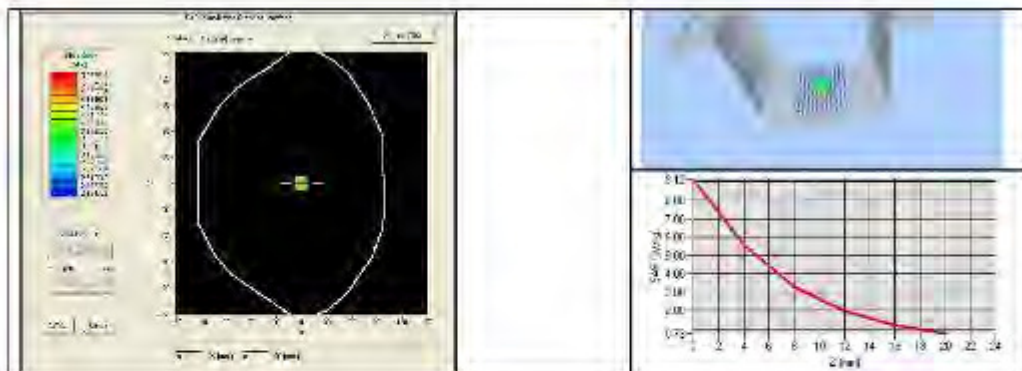
Ref: ACR299215.SARSLX

|      |            |  |            |
|------|------------|--|------------|
| 2600 | 52.5 ±5 %  |  | 2.16 ±5 %  |
| 3000 | 52.0 ±5 %  |  | 2.73 ±5 %  |
| 3500 | 51.3 ±5 %  |  | 3.31 ±5 %  |
| 5200 | 49.0 ±10 % |  | 5.30 ±10 % |
| 5300 | 48.9 ±10 % |  | 5.42 ±10 % |
| 5400 | 48.7 ±10 % |  | 5.53 ±10 % |
| 5500 | 48.6 ±10 % |  | 5.65 ±10 % |
| 5600 | 48.5 ±10 % |  | 5.77 ±10 % |
| 5800 | 48.2 ±10 % |  | 6.00 ±10 % |

**7.4 SAR MEASUREMENT RESULT WITH BODY LIQUID**

|   |  |
|---|--|
| Software                                  | OPENSAR V4                                   |
| Phantom                                   | SN 2009 SAM71                                |
| Probe                                     | SN 1811 FPG122                               |
| Liquid                                    | Body Liquid Values: eps' : 53.2 sigma : 1.96 |
| Distance between dipole center and liquid | 19.0 mm                                      |
| Area scan resolution                      | dx=8mm/dy=8mm                                |
| Zeen Scan Resolution                      | dx=5mm/dy=3mm/dz=5mm                         |
| Frequency                                 | 2450 MHz                                     |
| Input power                               | 20 dFm                                       |
| Liquid Temperature                        | 21 °C  |
| Lab Temperature                           | 21 °C  |
| Lab Humidity                              | 45 %   |

| Frequency MHz | 1 g SAR (W/kg/W) | 10 g SAR (W/kg/W) |
|---------------|------------------|-------------------|
|               | measured         | measured          |
| 2450          | 50.75 (5.06)     | 23.64 (2.36)      |



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**8 LIST OF EQUIPMENT**

| Equipment Summary Sheet |                      |                    |   |   |
|-------------------------|----------------------|--------------------|---|---|
| Equipment Description   | Manufacturer / Model | Identification No. | Current Calibration Date                      | Next Calibration Date                         |
| SAM Phantom             | MVG                  | SN-2009-SAM71      | Validated. No cal required.                   | Validated. No cal required.                   |
| COMOSAR Test Bench      | Version 3            | NA                 | Validated. No cal required.                   | Validated. No cal required.                   |
| Network Analyzer        | Rhode & Schwarz ZVA  | SN100132           | 02/2013                                       | 02/2016                                       |
| Calipers                | Carrera              | CALIPER-01         | 12/2013                                       | 12/2016                                       |
| Reference Probe         | MVG                  | EPG121 SN 16/11    | 10/2015                                       | 10/2016                                       |
| Multimeter              | Keithley 2000        | 1188856            | 12/2013                                       | 12/2016                                       |
| Signal Generator        | Agilent E4438C       | MY48070581         | 12/2013                                       | 12/2016                                       |
| Amplifier               | Aethercomm           | SN D46             | Characterized prior to test. No cal required. | Characterized prior to test. No cal required. |
| Power Meter             | HP E4418A            | US38261496         | 12/2013                                       | 12/2016                                       |
| Power Sensor            | HP EOP-E26A          | US37181400         | 12/2013                                       | 12/2016                                       |
| Directional Coupler     | Narda 4216-20        | 01386              | Characterized prior to test. No cal required. | Characterized prior to test. No cal required. |

## Annex E. Waveguide Calibration Report



## SAR Reference Waveguide Calibration Report

Ref: ACR.190.2.15.SATUA

### SIEMIC TESTING AND CERTIFICATION SERVICES

775 MONTAGUE EXPRESSWAY  
MILPITAS, CA 95035, USA

### MVG COMOSAR REFERENCE WAVEGUIDE

FREQUENCY: 5000-6000 MHZ  
SERIAL NO.: SN 31/10 WGA13

Calibrated at MVG US

2105 Barrett Park Dr. - Kennesaw, GA 30144



07/08/2015

#### Summary:

This document presents the method and results from an accredited SAR reference waveguide calibration performed in MVG USA using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.





SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Ref: ACM 190315 SAR01A

|                     | <i>Nome</i>   | <i>Function</i> | <i>Date</i> | <i>Signature</i>     |
|---------------------|---------------|-----------------|-------------|----------------------|
| <i>Prepared by:</i> | Jérôme LUC    | Product Manager | 7/9/2015    | <i>JS</i>            |
| <i>Checked by:</i>  | Jérôme LUC    | Product Manager | 7/9/2015    | <i>JS</i>            |
| <i>Approved by:</i> | Kim RUTKOWSKI | Quality Manager | 7/9/2015    | <i>Kim Rutkowski</i> |

|                       |   |
|-----------------------|---|
| <i>Distribution :</i> | <i>Customer Name</i><br>SIEMIC Testing<br>and Certification<br>Services |
|-----------------------|---|

| <i>Issue</i> | <i>Date</i> | <i>Modifications</i> |
|--------------|-------------|----------------------|
| A            | 7/9/2015    | Initial release      |
|              |             |                      |
|              |             |                      |





SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Ref: ACC190215 SAR01A

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**1 INTRODUCTION**

This document contains a summary of the requirements set forth by the IEEE 1528 and CEI/IEC 62209 standards for reference waveguides used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the fore mentioned standards.

**2 DEVICE UNDER TEST**

| Device Under Test              |   |
|--------------------------------|---|
| Device Type                    | COMOSAR 5000-6000 MHz REFERENCE WAVEGUIDE |
| Manufacturer                   | MVG                                       |
| Model                          | SWG5500                                   |
| Serial Number                  | SN 31/10 WGAL3                            |
| Product Condition (new / used) | New                                       |

A yearly calibration interval is recommended.

**3 PRODUCT DESCRIPTION**

**3.1 GENERAL INFORMATION**

MVG's COMOSAR Validation Waveguides are built in accordance to the IEEE 1528 and CEI/IEC 62209 standards.

**4 MEASUREMENT METHOD**

The IEEE 1528 and CEI/IEC 62209 standards provide requirements for reference waveguides used for system validation measurements. The following measurements were performed to verify that the product complies with the fore mentioned standards.

**4.1 RETURN LOSS REQUIREMENTS**

The waveguide used for SAR system validation measurements and checks must have a return loss of -8 dB or better. The return loss measurement shall be performed with matching layer placed in the open end of the waveguide, with the waveguide and matching layer in direct contact with the phantom shell as outlined in the fore mentioned standards.

**4.2 MECHANICAL REQUIREMENTS**

The IEEE 1528 and CEI/IEC 62209 standards specify the mechanical dimensions of the validation waveguide, the specified dimensions are as shown in Section 6.2. Figure 1 shows how the dimensions relate to the physical construction of the waveguide.



**5 MEASUREMENT UNCERTAINTY**

All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

**5.1 RETURN LOSS**

The following uncertainties apply to the return loss measurement:

| Frequency band | Expanded Uncertainty on Return Loss |
|----------------|-------------------------------------|
| 400-6000MHz    | 0,1 dB                              |

**5.2 DIMENSION MEASUREMENT**

The following uncertainties apply to the dimension measurements:

| Length (mm) | Expanded Uncertainty on Length |
|-------------|--------------------------------|
| 3 - 300     | 0,05 mm                        |

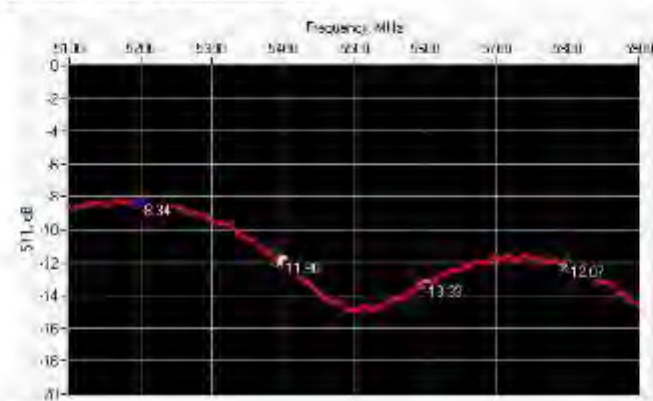
**5.3 VALIDATION MEASUREMENT**

The guidelines outlined in the IEEE 1528 and CEMTEC 62209 standards were followed to generate the measurement uncertainty for validation measurements.

| Scan Volume | Expanded Uncertainty |
|-------------|----------------------|
| 1 g         | 20,3 %               |
| 10 g        | 20,1 %               |

**6 CALIBRATION MEASUREMENT RESULTS**

**6.1 RETURN LOSS IN HEAD LIQUID**



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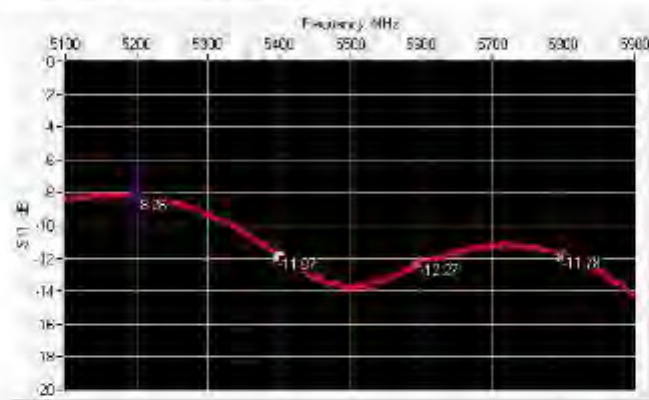


SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Ref: ACC190315 SAR01A

| Frequency (MHz) | Return Loss (dB) | Requirement (dB) | Impedance          |
|-----------------|------------------|------------------|--------------------|
| 5200            | -8.34            | -8               | 22.88 Ω - 7.83 jΩ  |
| 5400            | -11.90           | -8               | 49.72 Ω - 26.23 jΩ |
| 5600            | -13.33           | -8               | 42.04 Ω - 18.94 jΩ |
| 5800            | -12.07           | -8               | 32.11 Ω - 10.39 jΩ |

6.2 RETURN LOSS IN BODY LIQUID



| Frequency (MHz) | Return Loss (dB) | Requirement (dB) | Impedance          |
|-----------------|------------------|------------------|--------------------|
| 5200            | -8.26            | -8               | 20.85 Ω - 7.88 jΩ  |
| 5400            | -11.87           | -8               | 52.62 Ω - 29.88 jΩ |
| 5600            | -12.27           | -8               | 38.27 Ω - 21.30 jΩ |
| 5800            | -11.78           | -8               | 30.88 Ω - 13.05 jΩ |

6.3 MECHANICAL DIMENSIONS

| Frequency (MHz) | L (mm)       |           | W (mm)       |           | L <sub>2</sub> (mm) |           | W <sub>2</sub> (mm) |           | T (mm)    |           |
|-----------------|--------------|-----------|--------------|-----------|---------------------|-----------|---------------------|-----------|-----------|-----------|
|                 | Require d    | Measure d | Require d    | Measure d | Require d           | Measure d | Require d           | Measure d | Require d | Measure d |
| 5200            | 40.39 ± 0.13 | PASS      | 20.19 ± 0.13 | PASS      | 81.05 ± 0.15        | PASS      | 61.98 ± 0.13        | PASS      | 5.3*      | PASS      |
| 5800            | 40.39 ± 0.13 | PASS      | 20.19 ± 0.13 | PASS      | 81.05 ± 0.15        | PASS      | 61.98 ± 0.13        | PASS      | 4.3*      | PASS      |

\* The tolerance for the matching layer is included in the return loss measurement.





SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Ref: ACM 190 2.15 SAR01A



Figure 1: Validation Waveguide Dimensions

7 VALIDATION MEASUREMENT

The IEEE Std. 1528 and CEI/IEC 62209 standards state that the system validation measurements must be performed using a reference waveguide meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed with the matching layer placed in the open end of the waveguide, with the waveguide and matching layer in direct contact with the phantom shell.

7.1 HEAD LIQUID MEASUREMENT

| Frequency MHz | Relative permittivity ( $\epsilon_r$ ) |          | Conductivity ( $\sigma$ ) S/m |          |
|---------------|--|----------|-------------------------------|----------|
|               | required                               | measured | required                      | measured |
| 5000          | 36,2 ±10 %                             |          | 4,45 ±10 %                    |          |
| 5100          | 36,1 ±10 %                             |          | 4,56 ±10 %                    |          |
| 5200          | 36,0 ±10 %                             | PASS     | 4,66 ±10 %                    | PASS     |
| 5300          | 35,9 ±10 %                             |          | 4,76 ±10 %                    |          |
| 5400          | 35,8 ±10 %                             | PASS     | 4,86 ±10 %                    | PASS     |
| 5500          | 35,6 ±10 %                             |          | 4,97 ±10 %                    |          |
| 5600          | 35,5 ±10 %                             | PASS     | 5,07 ±10 %                    | PASS     |
| 5700          | 35,4 ±10 %                             |          | 5,17 ±10 %                    |          |
| 5800          | 35,3 ±10 %                             | PASS     | 5,27 ±10 %                    | PASS     |
| 5900          | 35,2 ±10 %                             |          | 5,38 ±10 %                    |          |
| 6000          | 35,1 ±10 %                             |          | 5,48 ±10 %                    |          |

7.2 SAR MEASUREMENT RESULT WITH HEAD LIQUID

At those frequencies, the target SAR value can not be generic. Hereunder is the target SAR value defined by MTVG, within the uncertainty for the system validation. All SAR values are normalized to 1 W net power. In bracket, the measured SAR is given with the used input power.

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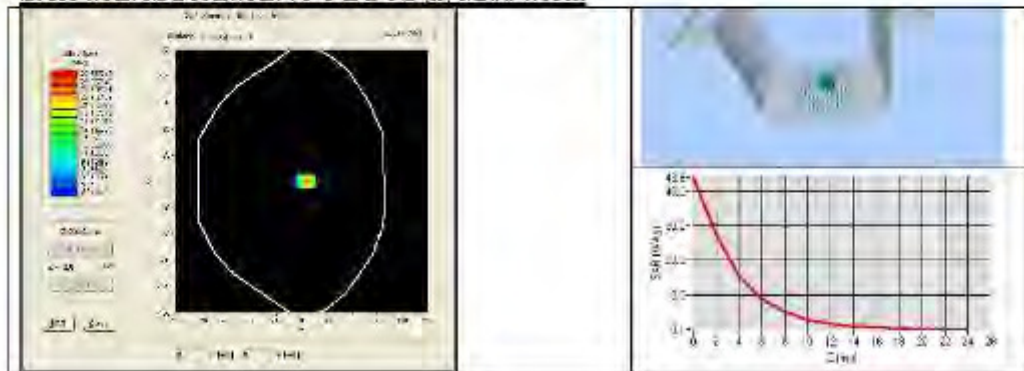
**SAR REFERENCE WAVEGUIDE CALIBRATION REPORT**

Ref: ACC190315 SAR1.A

|  |  |
|--|--|
| Software                                     | OPEN SAR V4  |
| Phantom                                      | SN 2009 SAM71  |
| Probe  | SN 1811 ETC122   |
| Liquid                                       | Head Liquid Values 5200 MHz: eps: 36.44 sigma: 4.70<br>Head Liquid Values 5400 MHz: eps: 35.99 sigma: 4.94<br>Head Liquid Values 5600 MHz: eps: 35.22 sigma: 5.18<br>Head Liquid Values 5800 MHz: eps: 34.85 sigma: 5.42 |
| Distance between dipole waveguide and liquid | 0 mm   |
| Area scan resolution                         | dx=8mm/dy=8mm  |
| Zoon Scan Resolution                         | dx=4mm/dy=4mm/dz=2mm   |
| Frequency                                    | 5200 MHz<br>5400 MHz<br>5600 MHz<br>5800 MHz   |
| Input power                                  | 20 dBm   |
| Liquid Temperature                           | 21 °C  |
| Lab Temperature                              | 21 °C  |
| Lab Humidity                                 | 45 %   |

| Frequency (MHz) | 1 g SAR (W/kg) |                | 10 g SAR (W/kg) |              |
|-----------------|----------------|----------------|-----------------|--------------|
|                 | required       | measured       | required        | measured     |
| 5200            | 159.00         | 158.86 (15.89) | 56.90           | 55.60 (5.56) |
| 5400            | 166.40         | 167.76 (16.78) | 58.43           | 58.22 (5.82) |
| 5600            | 173.80         | 176.71 (17.67) | 59.97           | 60.69 (6.07) |
| 5800            | 181.20         | 185.36 (18.54) | 61.50           | 62.25 (6.22) |

**SAR MEASUREMENT PLOTS @ 5200 MHz**



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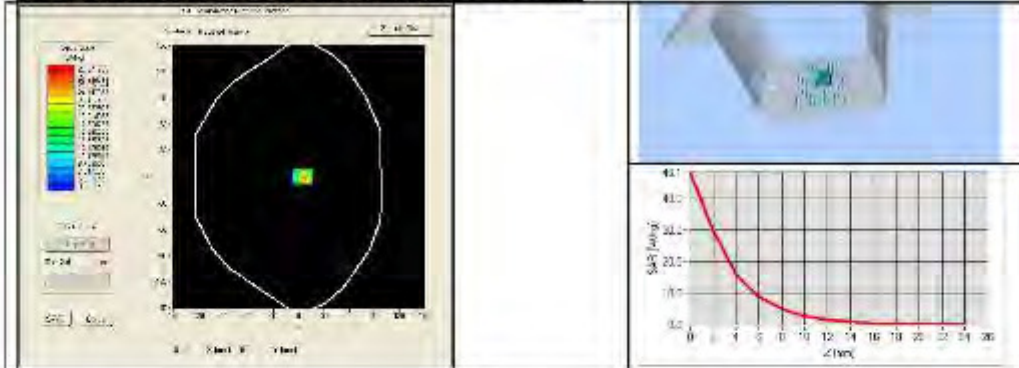
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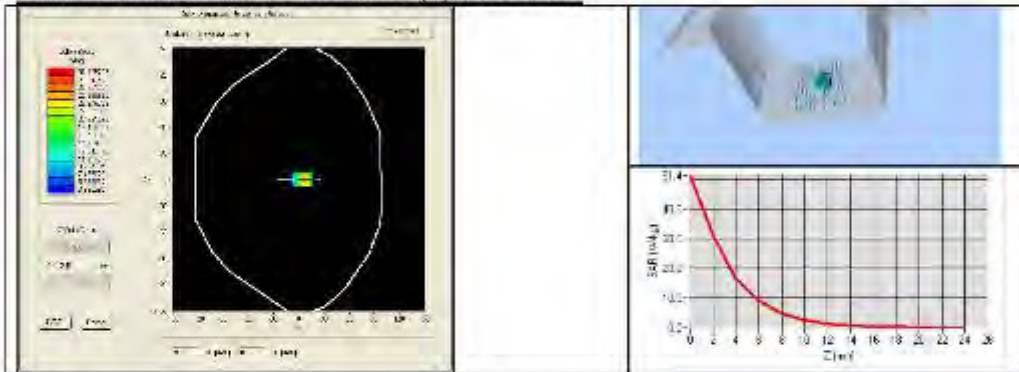
SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Ref: ACR190315 SAR1.A

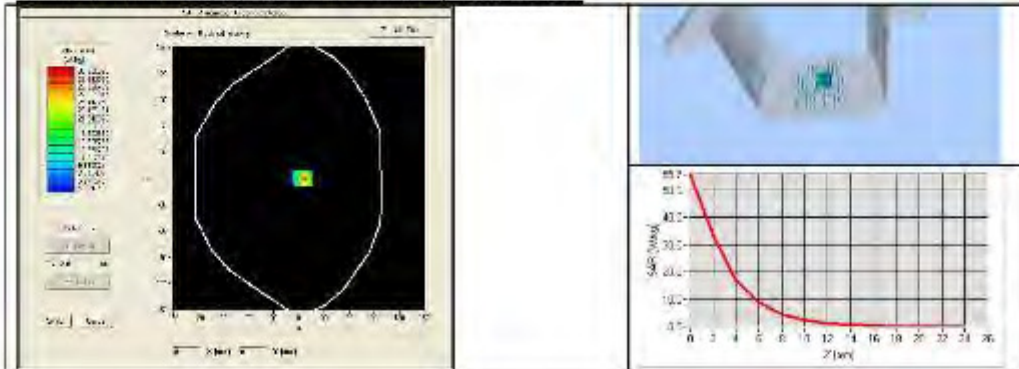
**SAR MEASUREMENT PLOTS @ 5400 MHz**



**SAR MEASUREMENT PLOTS @ 5600 MHz**



**SAR MEASUREMENT PLOTS @ 5800 MHz**



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**SAR REFERENCE WAVEGUIDE CALIBRATION REPORT**

REP: ACC-150715-B-V01-A

**7.3 BODY LIQUID MEASUREMENT**

| Frequency MHz | Relative permittivity ( $\epsilon_r$ ) |          | Conductivity ( $\sigma$ ) S/m |          |
|---------------|--|----------|-------------------------------|----------|
|               | required                               | measured | required                      | measured |
| 5200          | 49.0 $\pm$ 10 %                        | PASS     | 5.30 $\pm$ 10 %               | PASS     |
| 5300          | 48.9 $\pm$ 10 %                        |          | 5.42 $\pm$ 10 %               |          |
| 5400          | 48.7 $\pm$ 10 %                        | PASS     | 5.54 $\pm$ 10 %               | PASS     |
| 5500          | 48.6 $\pm$ 10 %                        |          | 5.65 $\pm$ 10 %               |          |
| 5600          | 48.5 $\pm$ 10 %                        | PASS     | 5.77 $\pm$ 10 %               | PASS     |
| 5800          | 48.2 $\pm$ 10 %                        | PASS     | 6.09 $\pm$ 10 %               | PASS     |

**7.4 SAR MEASUREMENT RESULT WITH BODY LIQUID**

|   |  |
|---|--|
| Software                                      | OPEN SAR V4  |
| Phantom                                       | SN 2009 SAM71  |
| Probe   | SN 18/11 EXH122  |
| Liquid  | Body Liquid Values 5200 MHz: $\epsilon_r$ : 50.70 sigma: 5.11<br>Body Liquid Values 5400 MHz: $\epsilon_r$ : 50.01 sigma: 5.64<br>Body Liquid Values 5600 MHz: $\epsilon_r$ : 49.34 sigma: 5.65<br>Body Liquid Values 5800 MHz: $\epsilon_r$ : 48.54 sigma: 6.22 |
| Distance between dipoles waveguide and liquid | 0 mm   |
| Area scan resolution                          | dx=8mm/dy=8mm  |
| Zoom Scan Resolution                          | dx=4mm/dy=4mm/dz=2mm   |
| Frequency                                     | 5200 MHz<br>5400 MHz<br>5600 MHz<br>5800 MHz   |
| Input power                                   | 20 dBm   |
| Liquid Temperature                            | 31 °C  |
| Lab Temperature                               | 21 °C  |
| Lab Humidity                                  | 45 %   |

| Frequency (MHz) | 1 g SAR (W/kg)<br>measured | 10 g SAR (W/kg)<br>measured |
|-----------------|----------------------------|-----------------------------|
| 5200            | 153.22 (15.32)             | 54.43 (5.44)                |
| 5400            | 164.37 (16.44)             | 57.80 (5.78)                |
| 5600            | 168.24 (16.82)             | 58.67 (5.87)                |
| 5800            | 173.65 (17.37)             | 59.92 (5.99)                |

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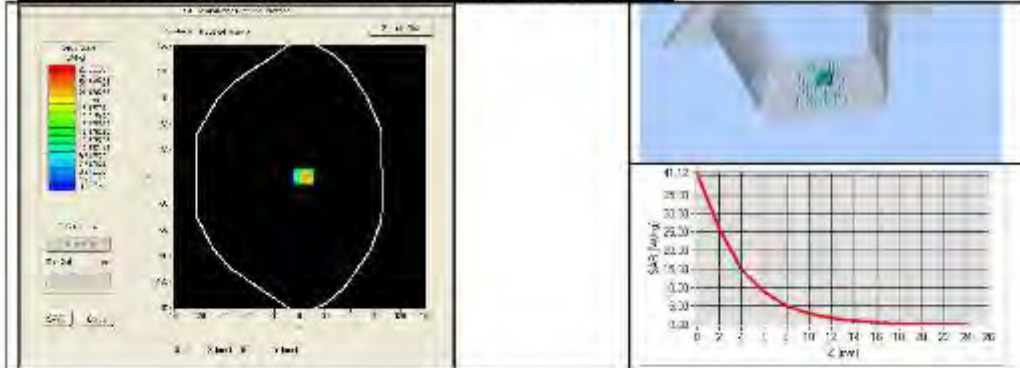
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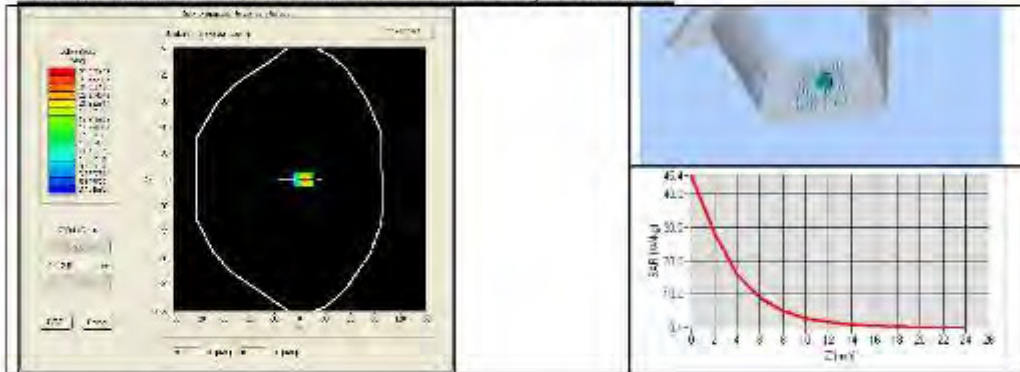
SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Ref: ACR190315 SAR1.A

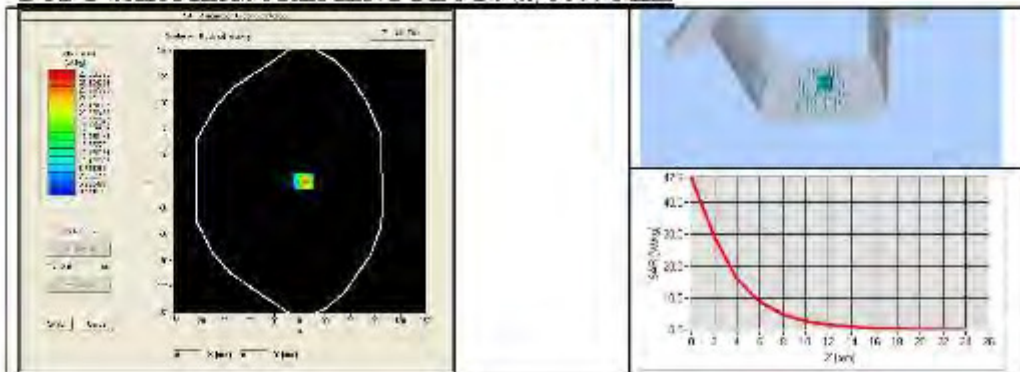
**BODY SAR MEASUREMENT PLOTS @ 5200 MHz**



**BODY SAR MEASUREMENT PLOTS @ 5400 MHz**



**BODY SAR MEASUREMENT PLOTS @ 5600 MHz**



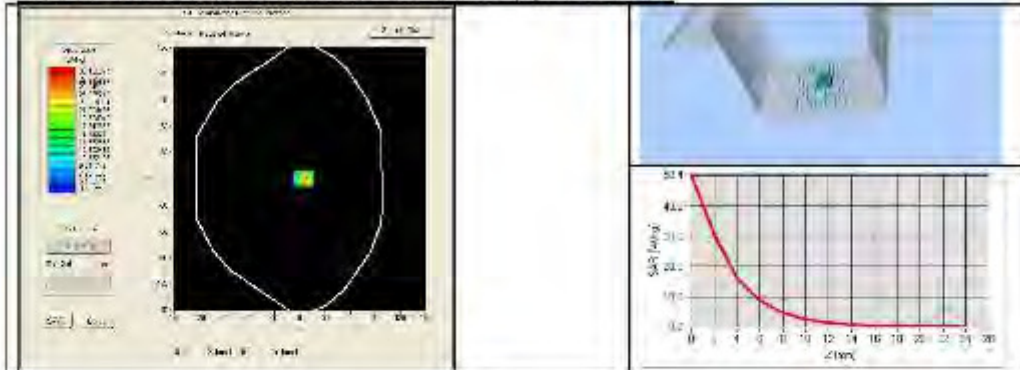
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SAR REFERENCE WAVEGUIDE CALIBRATION REPORT

Ref: ACR190315 SAR11A

**BODY SAR MEASUREMENT PLOTS @ 5800 MHz**



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**8 LIST OF EQUIPMENT**

| Equipment Summary Sheet         |                      |                    |   |   |
|---------------------------------|----------------------|--------------------|---|---|
| Equipment Description           | Manufacturer / Model | Identification No. | Current Calibration Date                      | Next Calibration Date                         |
| Fiat Phantom                    | MVG                  | SN-20/09-SAM/1     | Validated. No cal required.                   | Validated. No cal required.                   |
| COMOSAR Test Bench              | Version 5            | NA                 | Validated. No cal required.                   | Validated. No cal required.                   |
| Network Analyzer                | Rhode & Schwarz ZVA  | SN100132           | 02/2013                                       | 02/2016                                       |
| Calipers                        | Camera               | CALIPER-01         | 12/2013                                       | 12/2016                                       |
| Reference Probe                 | MVG                  | EPG122 SN 18/11    | 10/2014                                       | 10/2015                                       |
| Multimeter                      | Keithley 2000        | 1188656            | 12/2013                                       | 12/2016                                       |
| Signal Generator                | Agilent E4438C       | MY49070581         | 12/2013                                       | 12/2016                                       |
| Amplifier                       | Aethercomm           | SN 046             | Characterized prior to test. No cal required. | Characterized prior to test. No cal required. |
| Power Meter                     | HP E6618A            | US3828149B         | 12/2013                                       | 12/2016                                       |
| Power Sensor                    | HP ECH-E26A          | US37181460         | 12/2013                                       | 12/2016                                       |
| Directional Coupler             | Narda 4216-20        | 01386              | Characterized prior to test. No cal required. | Characterized prior to test. No cal required. |
| Temperature and Humidity Sensor | Control Company      | 11-661-3           | 8/2012  | 8/2015  |