



# FCC SAR TEST REPORT

Report No: BZT-1705013H01

Issued for

Inspero Inc.

Yanqi Street No.31, Yanqi Economic Development Zone,  
Huairou District, Beijing, China

|                              |                             |
|------------------------------|-----------------------------|
| <b>Product Name:</b>         | Vinci Hearable              |
| <b>Brand Name:</b>           | N/A                         |
| <b>Model Name:</b>           | Vinci Hearable 1.5          |
| <b>Series Model:</b>         | N/A                         |
| <b>FCC ID:</b>               | 2AHJ6VINCI015N              |
| <b>Test Standard:</b>        | ANSI/IEEE Std. C95.1        |
|                              | FCC 47 CFR Part 2 ( 2.1093) |
|                              | IEEE 1528: 2013             |
| <b>Max. Report SAR (1g):</b> | Head:0.577 W/kg             |

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## Test Report Certification

**Applicant's name** .....: Inspero Inc.  
**Address** .....: Yanqi Street No.31, Yanqi Economic Development Zone, Huairou District, Beijing, China  
**Manufacture's Name** .....: Inspero Inc.  
**Address** .....: Yanqi Street No.31, Yanqi Economic Development Zone, Huairou District, Beijing, China

### Product description

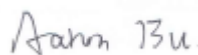
**Product name** .....: Vinci Hearable  
**Trademark** .....: N/A  
**Model and/or type reference** : Vinci Hearable 1.5  
**Series Model**.....: N/A

**Standards** .....: ANSI/IEEE Std. C95.1-1992  
FCC 47 CFR Part 2 ( 2.1093)  
IEEE 1528: 2013

The device was tested by Shenzhen BZT Test Services Co., Ltd. in accordance with the measurement methods and procedures specified in KDB 865664 The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

**Date of Test** .....:  
**Date (s) of performance of tests** .....: 15 May 2017  
**Date of Issue**.....: 17 May 2017  
**Test Result**.....: **Pass**

Testing Engineer :



( Aaron Bu)

Technical Manager :



(John Zou)

Authorized Signatory :



(Vita Li)

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## 1.General Information

Environmental evaluation measurements of specific absorption rate (SAR) distributions in emulated human head and body tissues exposed to radio frequency (RF) radiation from wireless portable devices for compliance with the rules and regulations of the U.S. Federal Communications Commission (FCC).

### 1.1 EUT Description

|                                                                                                                                                       |                                                                                                                                             |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Equipment                                                                                                                                             | Vinci Hearable                                                                                                                              |             |
| Brand Name                                                                                                                                            | N/A                                                                                                                                         |             |
| Model No.                                                                                                                                             | Vinci Hearable 1.5                                                                                                                          |             |
| Series Model                                                                                                                                          | N/A                                                                                                                                         |             |
| FCC ID                                                                                                                                                | 2AHJ6VINCI015N                                                                                                                              |             |
| Model Difference                                                                                                                                      | N/A                                                                                                                                         |             |
| Battery                                                                                                                                               | Rated Voltage: 3.7V;<br>Charge Limit: 4.2V;<br>Capacity: 1500mAh                                                                            |             |
| Device Category                                                                                                                                       | Portable                                                                                                                                    |             |
| Product stage                                                                                                                                         | Production unit                                                                                                                             |             |
| RF Exposure Environment                                                                                                                               | General Population / Uncontrolled                                                                                                           |             |
| Hardware Version                                                                                                                                      | N/A                                                                                                                                         |             |
| Software Version                                                                                                                                      | N/A                                                                                                                                         |             |
| Frequency Range                                                                                                                                       | WCDMA Band II:1852.4~1907.6MHz<br>WCDMA Band V:826.4~846.6MHz<br>WLAN 802.11b/g/n(HT20/40):2412~2462MHz<br>Bluetooth:2402~ 2480MHz          |             |
| Max. Reported SAR(1g):<br>(Limit:1.6W/kg)                                                                                                             | Mode                                                                                                                                        | Head (W/kg) |
|                                                                                                                                                       | WCDMA Band II                                                                                                                               | 0.577       |
|                                                                                                                                                       | WCDMA Band V                                                                                                                                | 0.121       |
|                                                                                                                                                       | WIFI                                                                                                                                        | 0.026       |
|                                                                                                                                                       | Bluetooth <sup>Note</sup>                                                                                                                   | 0.133       |
| FCC Equipment Class                                                                                                                                   | Licensed Portable Transmitter Held to Ear (PCE)<br>Part 15 Spread Spectrum Transmitter (DXX)<br>Digital Transmission System (DTS)           |             |
| Operating Mode:                                                                                                                                       | WCDMA:RMC,HSDPA,HSUPA Release 6;<br>WLAN: 802.11 b/g/n(HT20/40);<br>Bluetooth: V3.0 + EDR (GFSK, $\pi$ /4DQPSK, 8DPSK) ;<br>BT4.1-Dual mode |             |
| Antenna Specification:                                                                                                                                | WCDMA, BT, WIFI: PIFA Antenna                                                                                                               |             |
| SIM Card                                                                                                                                              | Support single card                                                                                                                         |             |
| Hotspot Mode:                                                                                                                                         | Not Support                                                                                                                                 |             |
| DTM Mode:                                                                                                                                             | Not Support                                                                                                                                 |             |
| Note:<br>1.The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power<br>2.Bluetooth SAR was estimated |                                                                                                                                             |             |

## 1.2 Test Environment

Ambient conditions in the SAR laboratory:

| Items            | Required | Actual |
|------------------|----------|--------|
| Temperature (°C) | 18-25    | 22~23  |
| Humidity (%RH)   | 30-70    | 55~65  |

## 1.3 Test Factory

BZT Testing Technology Co., Ltd

Add. : Buliding 17, Xinghua Road Xingwei industrial Park Fuyong, Baoan District,  
Shenzhen, Guangdong, China

FCC Registration No.: 701733

## 2. Test Standards And Limits

| No. | Identity                            | Document Title                                                                                                                                                              |
|-----|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | 47 CFR Part 2                       | Frequency Allocations and Radio Treaty Matters; General Rules and Regulations                                                                                               |
| 2   | ANSI/IEEE Std. C95.1-1992           | IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz                                                  |
| 3   | IEEE Std. 1528-2013                 | Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques |
| 4   | FCC KDB 447498 D01 v06              | Vinci Hearable and Portable Device RF Exposure Procedures and Equipment Authorization Policies                                                                              |
| 5   | FCC KDB 865664 D01 v01r04           | SAR Measurement 100 MHz to 6 GHz                                                                                                                                            |
| 6   | FCC KDB 865664 D02 v01r02           | RF Exposure Reporting                                                                                                                                                       |
| 7   | FCC KDB 941225 D01 v03r01           | SAR Measurement Procedures for 3G Devices                                                                                                                                   |
| 8   | FCC KDB 648474 D04 v01r03           | SAR Evaluation Considerations for Wireless Handsets                                                                                                                         |
| 9   | FCC KDB 248227 D01 Wi-Fi SAR v02r02 | SAR Considerations for 802.11 Devices                                                                                                                                       |

### (A). Limits for Occupational/Controlled Exposure (W/kg)

| Whole-Body | Partial-Body | Hands, Wrists, Feet and Ankles |
|------------|--------------|--------------------------------|
| 0.4        | 8.0          | 20.0                           |

### (B). Limits for General Population/Uncontrolled Exposure (W/kg)

| Whole-Body | Partial-Body | Hands, Wrists, Feet and Ankles |
|------------|--------------|--------------------------------|
| 0.08       | 1.6          | 4.0                            |

NOTE: Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

#### **Population/Uncontrolled Environments:**

are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

#### **Occupational/Controlled Environments:**

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

|                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;"><b>GENERAL POPULATION/UNCONTROLLED EXPOSURE</b></p> <p style="text-align: center;"><b>PARTIAL BODY LIMIT</b></p> <p style="text-align: center;"><b>1.6 W/kg</b></p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 3. SAR Measurement System

#### 3.1 Definition Of Specific Absorption Rate (SAR)

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.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

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

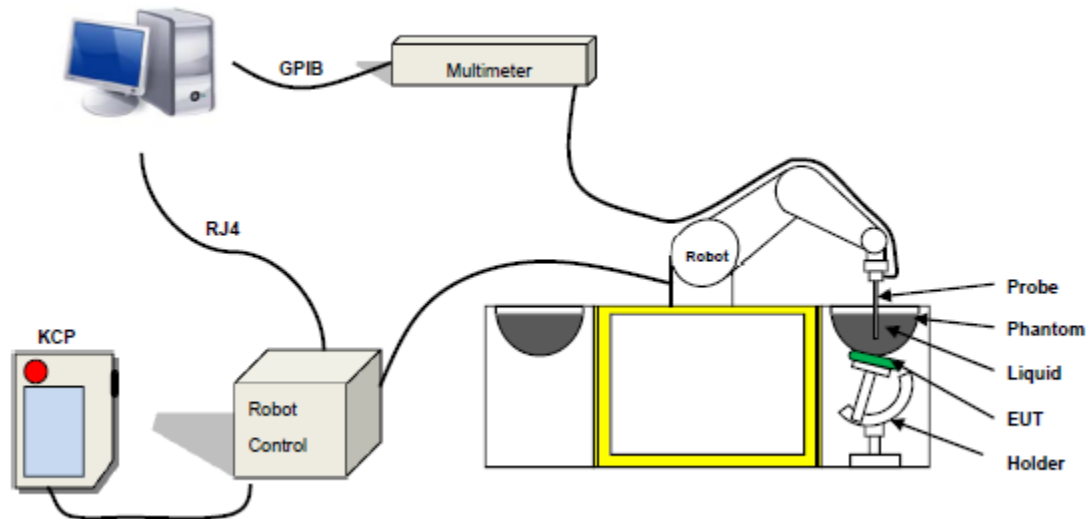
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue,  
ρ is the mass density of the tissue and E is the RMS electrical field strength.

#### 3.2 SAR System

SATIMO SAR System Diagram:



Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.



The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

### 3.2.1 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 14/16 EP309 with following specifications is used

- Dynamic range: 0.01-100 W/kg
- Tip Diameter: 5 mm
- Length of Individual Dipoles: 4.5 mm
- Maximum external diameter: 8 mm
- Distance between dipole/probe extremity: 8 mm (repeatability better than +/- 2.7mm)
- Probe linearity:  $0 \pm 2.27\%$  ( $\pm 0.10\text{dB}$ )
- Axial Isotropy:  $< 0.10\text{ dB}$
- Spherical Isotropy:  $< 0.10\text{ dB}$
- Calibration range: 400 MHz to 3 GHz for head & body simulating liquid.
- Angle between probe axis (evaluation axis) and surface normal line: less than  $30^\circ$



Figure 1-MVG COMOSAR Dosimetric E field Dipole

### 3.2.2 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

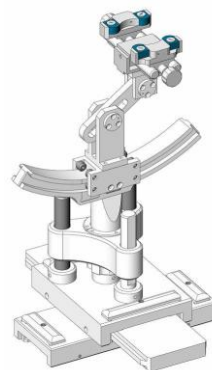


Figure-SN 32/14 SAM115



Figure-SN 32/14 SAM116

### 3.2.3 Device Holder



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

## 4. Tissue Simulating Liquids

### 4.1 Simulating Liquids Parameter Check

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 described in Reference [12] and extrapolated according to the head parameters specified in P1528.

| Frequency<br>(MHz) | Bactericide | DGBE  | HEC | NaCl | Sucrose | 1,2-Propanediol | X100  | Water | Conductivity | Permittivity |
|--------------------|-------------|-------|-----|------|---------|-----------------|-------|-------|--------------|--------------|
|                    | %           | %     | %   | %    | %       | %               | %     | %     | $\sigma$     | $\epsilon_r$ |
| 750                | /           | /     | /   | 0.79 | /       | 64.81           | /     | 34.40 | 0.97         | 41.8         |
| 835                | /           | /     | /   | 0.79 | /       | 64.81           | /     | 34.40 | 0.97         | 41.8         |
| 900                | /           | /     | /   | 0.79 | /       | 64.81           | /     | 34.40 | 0.97         | 41.8         |
| 1800               | /           | 13.84 | /   | 0.35 | /       | /               | 30.45 | 55.36 | 1.38         | 41.0         |
| 1900               | /           | 13.84 | /   | 0.35 | /       | /               | 30.45 | 55.36 | 1.38         | 41.0         |
| 2000               | /           | 7.99  | /   | 0.16 | /       | /               | 19.97 | 71.88 | 1.55         | 41.1         |
| 2450               | /           | 7.99  | /   | 0.16 | /       | /               | 19.97 | 71.88 | 1.88         | 40.3         |
| 2600               | /           | 7.99  | /   | 0.16 | /       | /               | 19.97 | 71.88 | 1.88         | 40.3         |

| Tissue dielectric parameters for head and body phantoms |              |      |                 |      |
|---------------------------------------------------------|--------------|------|-----------------|------|
| Frequency                                               | $\epsilon_r$ |      | $\sigma$<br>S/m |      |
|                                                         | Head         | Body | Head            | Body |
| 300                                                     | 45.3         | 58.2 | 0.87            | 0.92 |
| 450                                                     | 43.5         | 58.7 | 0.87            | 0.94 |
| 900                                                     | 41.5         | 55.0 | 0.97            | 1.05 |
| 1450                                                    | 40.5         | 54.0 | 1.20            | 1.30 |
| 1800                                                    | 40.0         | 53.3 | 1.40            | 1.52 |
| 2450                                                    | 39.2         | 52.7 | 1.80            | 1.95 |
| 3000                                                    | 38.5         | 52.0 | 2.40            | 2.73 |
| 5800                                                    | 35.3         | 48.2 | 5.27            | 6.00 |

### LIQUID MEASUREMENT RESULTS

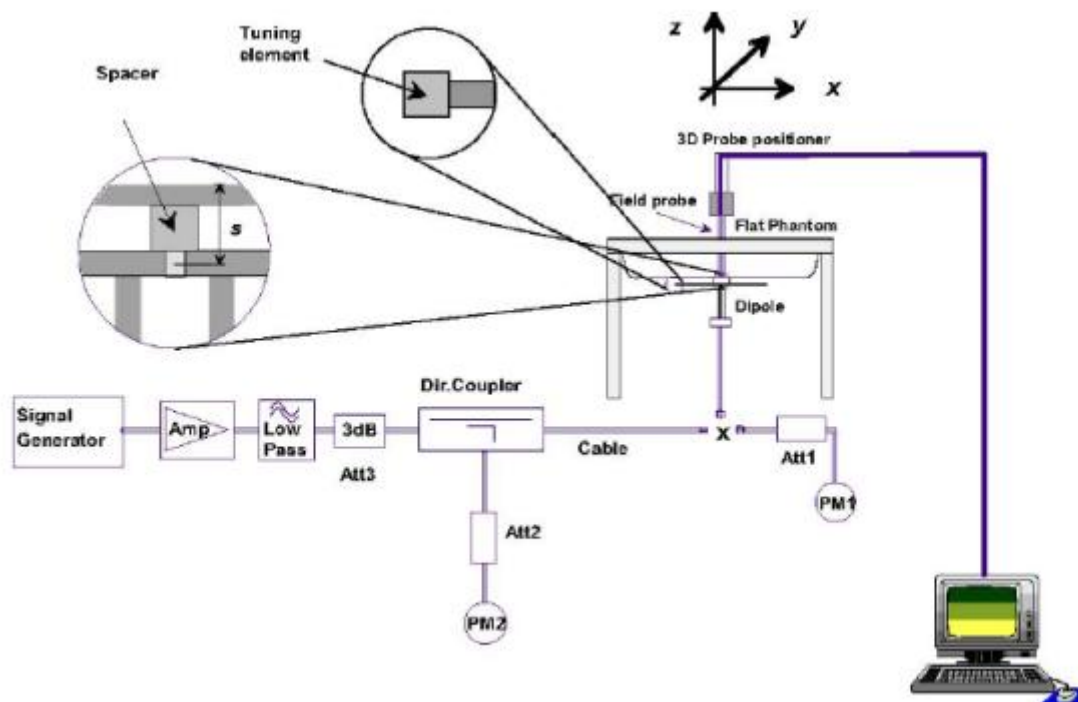
| Date       | Ambient condition |              | Head Simulating Liquid |            | Parameters    | Target | Measured | Deviation [%] | Limited [%] |
|------------|-------------------|--------------|------------------------|------------|---------------|--------|----------|---------------|-------------|
|            | Temp. [°C]        | Humidity [%] | Frequency              | Temp. [°C] |               |        |          |               |             |
| 2017-05-15 | 23.5              | 51           | 835 MHz                | 23.1       | Permittivity: | 41.50  | 40.10    | -3.38         | ±5          |
|            |                   |              |                        |            | Conductivity: | 0.90   | 0.92     | 2.22          | ± 5         |
| 2017-05-15 | 23.5              | 51           | 1900 MHz               | 23.1       | Permittivity: | 40.00  | 40.07    | 0.19          | ± 5         |
|            |                   |              |                        |            | Conductivity: | 1.40   | 1.46     | 4.50          | ± 5         |
| 2017-05-15 | 23.5              | 51           | 2450 MHz               | 23.1       | Permittivity: | 39.20  | 39.88    | 1.74          | ± 5         |
|            |                   |              |                        |            | Conductivity: | 1.80   | 1.79     | -0.61         | ± 5         |

## 5. SAR System Validation

### 5.1 Validation System

Each SATIMO system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the SATIMO software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system validation setup is shown as below.



### 5.2 Validation Result

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %.

| Freq.(MHz) | Power(mW) | Tested Value (W/Kg) | Normalized SAR (W/kg) | Target(W/Kg) | Tolerance(%) | Date       |
|------------|-----------|---------------------|-----------------------|--------------|--------------|------------|
| 835 Head   | 100       | 0.933               | 9.33                  | 9.56         | -2.41        | 2017-05-15 |
| 1900 Head  | 100       | 3.855               | 38.55                 | 39.7         | -2.90        | 2017-05-15 |
| 2450 Head  | 100       | 5.364               | 53.64                 | 52.4         | 2.37         | 2017-05-15 |

Note: The tolerance limit of System validation  $\pm 10\%$ .

## 6. SAR Evaluation Procedures

The procedure for assessing the average SAR value consists of the following steps:

The following steps are used for each test position

- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- Measurement of the SAR distribution with a grid of 8 to 16mm \* 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- Around this point, a cube of 30 \* 30 \* 30 mm or 32 \* 32 \* 32 mm is assessed by measuring 5 or 8 \* 5 or 8\*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

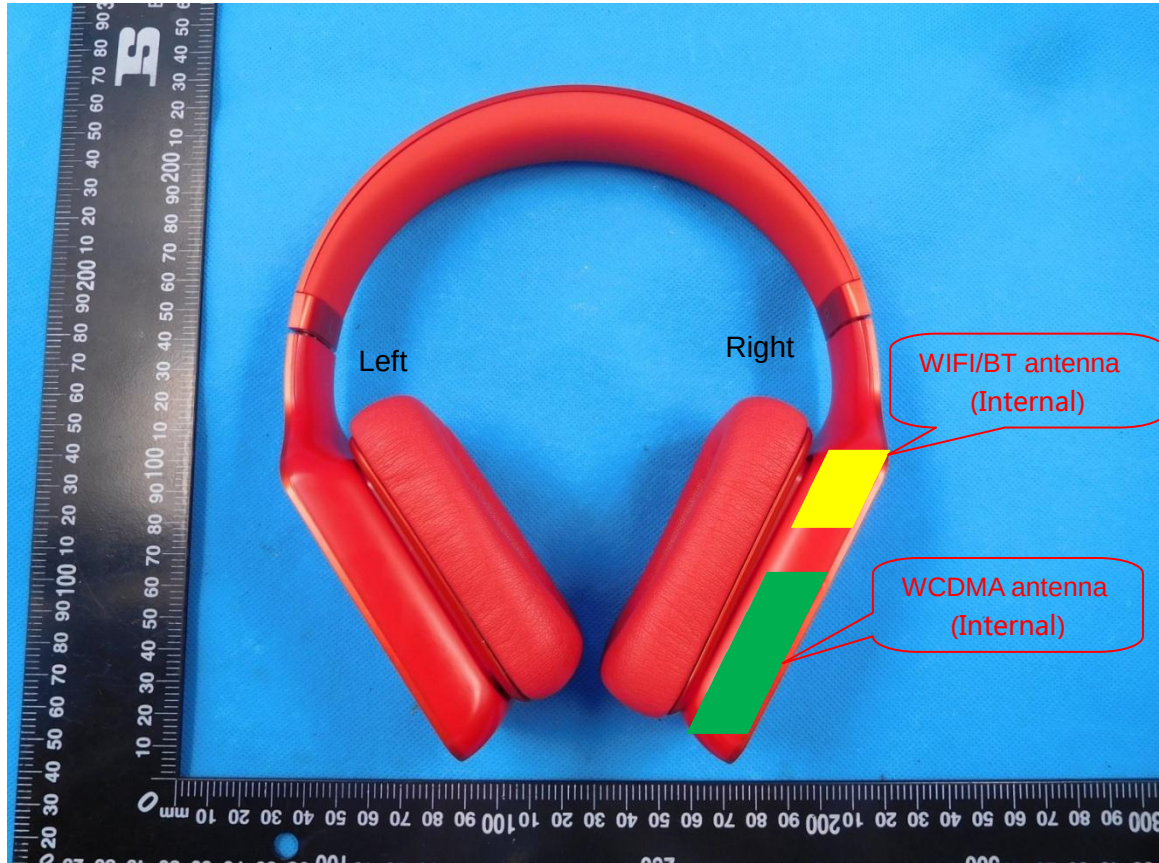
Area Scan& Zoom Scan:

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR -distribution over 10 g. Area scan and zoom scan resolution setting follows KDB 865664 D01v01r01 quoted below.

When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

## 7. EUT Antenna Location Sketch

It is a Vinci Hearable, support WCDMA/WIFI/BT mode.

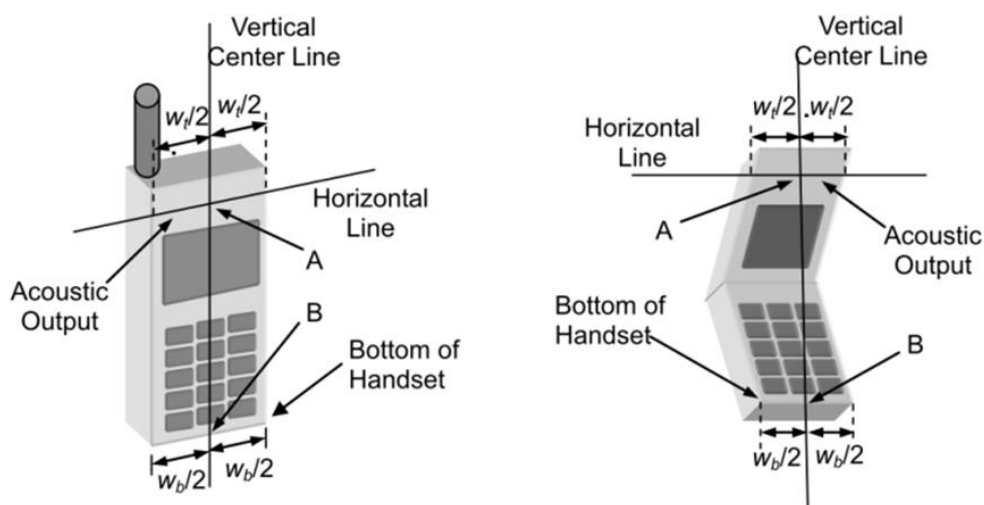


## 8. EUT Test Position

This EUT was tested in Right and Left

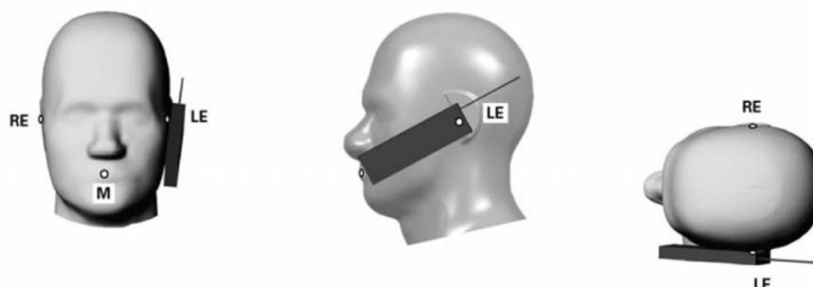
### 8.1 Define Two Imaginary Lines On The Handset

- (1) The vertical centerline passes through two points on the front side of the handset the midpoint of the width  $w_t$  of the handset at the level of the acoustic output, and the midpoint of the width  $w_b$  of the handset.
- (2) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
- (3) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



### Cheek Position

- 1) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
- 2) To move the device towards the phantom with the ear piece aligned with the the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost



## 9. Uncertainty

## 9.1 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in IEEE 1528: 2013. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

| NO                  | Source                                          | Tol(%) | Prob. Dist. | Div. k | ci (1g)               | ci (10g)              | 1gUi | 10gUi | Veff |
|---------------------|-------------------------------------------------|--------|-------------|--------|-----------------------|-----------------------|------|-------|------|
| Measurement System□ |                                                 |        |             |        |                       |                       |      |       |      |
| 1                   | Probe calibration                               | 5.8    | N           | 1      | 1                     | 1                     | 5.8  | 5.8   | ∞    |
| 2                   | Axial isotropy                                  | 3.5    | R           | √3     | (1-cp) <sup>1/2</sup> | (1-cp) <sup>1/2</sup> | 1.43 | 1.43  | ∞    |
| 3                   | Hemispherical isotropy                          | 5.9    | R           | √3     | √Cp                   | √Cp                   | 2.41 | 2.41  | ∞    |
| 4                   | Boundary effect                                 | 1.0    | R           | √3     | 1                     | 1                     | 0.58 | 0.58  | ∞    |
| 5                   | Linearity                                       | 4.7    | R           | √3     | 1                     | 1                     | 2.71 | 2.71  | ∞    |
| 6                   | System Detection limits                         | 1.0    | R           | √3     | 1                     | 1                     | 0.58 | 0.58  | ∞    |
| 7                   | Readout electronics                             | 0.5    | N           | 1      | 1                     | 1                     | 0.50 | 0.50  | ∞    |
| 8                   | Response time                                   | 0      | R           | √3     | 1                     | 1                     | 0    | 0     | ∞    |
| 9                   | Integration time                                | 1.4    | R           | √3     | 1                     | 1                     | 0.81 | 0.81  | ∞    |
| 10                  | Ambient noise                                   | 3.0    | R           | √3     | 1                     | 1                     | 1.73 | 1.73  | ∞    |
| 11                  | Ambient reflections                             | 3.0    | R           | √3     | 1                     | 1                     | 1.73 | 1.73  | ∞    |
| 12                  | Probe positioner mech. restrictions             | 1.4    | R           | √3     | 1                     | 1                     | 0.81 | 0.81  | ∞    |
| 13                  | Probe positioning with respect to phantom shell | 1.4    | R           | √3     | 1                     | 1                     | 0.81 | 0.81  | ∞    |
| 14                  | Max.SAR evaluation                              | 1.0    | R           | √3     | 1                     | 1                     | 0.6  | 0.6   | ∞    |
| Test sample related |                                                 |        |             |        |                       |                       |      |       |      |

|                              |                              |                  |     |                                         |      |      |        |        |    |
|------------------------------|------------------------------|------------------|-----|-----------------------------------------|------|------|--------|--------|----|
| 15                           | Device positioning           | 2.6              | N   | 1                                       | 1    | 1    | 2.6    | 2.6    | 11 |
| 16                           | Device holder                | 3                | N   | 1                                       | 1    | 1    | 3.0    | 3.0    | 7  |
| 17                           | Drift of output power        | 5.0              | R   | √3                                      | 1    | 1    | 2.89   | 2.89   | ∞  |
| Phantom and set-up           |                              |                  |     |                                         |      |      |        |        |    |
| 18                           | Phantom uncertainty          | 4.0              | R   | √3                                      | 1    | 1    | 2.31   | 2.31   | ∞  |
| 19                           | Liquid conductivity (target) | 2.5              | N   | 1                                       | 0.78 | 0.71 | 1.95   | 1.78   | 5  |
| 20                           | Liquid conductivity (meas)   | 4                | N   | 1                                       | 0.23 | 0.26 | 0.92   | 1.04   | 5  |
| 21                           | Liquid Permittivity (target) | 2.5              | N   | 1                                       | 0.78 | 0.71 | 1.95   | 1.78   | ∞  |
| 22                           | Liquid Permittivity (meas)   | 5.0              | N   | 1                                       | 0.23 | 0.26 | 1.15   | 1.30   | ∞  |
| Combined standard            |                              |                  | RSS | $U_c = \sqrt{\sum_{i=1}^n C_i^2 U_i^2}$ |      |      | 10.63% | 10.54% |    |
| Expanded uncertainty (P=95%) |                              | $U = k U_c, k=2$ |     |                                         |      |      | 21.26% | 21.08% |    |

## 9.2 System validation Uncertainty

| NO                                          | Source                                          | Tol(%) | Prob. Dist. | Div. k     | ci (1g)         | ci (10g)        | 1gUi | 10gUi | Veff     |
|---------------------------------------------|-------------------------------------------------|--------|-------------|------------|-----------------|-----------------|------|-------|----------|
| Measurement System <input type="checkbox"/> |                                                 |        |             |            |                 |                 |      |       |          |
| 1                                           | Probe calibration                               | 5.8    | N           | 1          | 1               | 1               | 5.8  | 5.8   | $\infty$ |
| 2                                           | Axial isotropy                                  | 3.5    | R           | $\sqrt{3}$ | $(1-c_p)^{1/2}$ | $(1-c_p)^{1/2}$ | 1.43 | 1.43  | $\infty$ |
| 3                                           | Hemispherical isotropy                          | 5.9    | R           | $\sqrt{3}$ | $\sqrt{C_p}$    | $\sqrt{C_p}$    | 2.41 | 2.41  | $\infty$ |
| 4                                           | Boundary effect                                 | 1.0    | R           | $\sqrt{3}$ | 1               | 1               | 0.58 | 0.58  | $\infty$ |
| 5                                           | Linearity                                       | 4.7    | R           | $\sqrt{3}$ | 1               | 1               | 2.71 | 2.71  | $\infty$ |
| 6                                           | System Detection limits                         | 1.0    | R           | $\sqrt{3}$ | 1               | 1               | 0.58 | 0.58  | $\infty$ |
| 7                                           | Modulation response                             | 0      | N           | 1          | 1               | 1               | 0    | 0     | $\infty$ |
| 8                                           | Readout electronics                             | 0.5    | N           | 1          | 1               | 1               | 0.50 | 0.50  | $\infty$ |
| 9                                           | Response time                                   | 0      | R           | $\sqrt{3}$ | 1               | 1               | 0    | 0     | $\infty$ |
| 10                                          | Integration time                                | 1.4    | R           | $\sqrt{3}$ | 1               | 1               | 0.81 | 0.81  | $\infty$ |
| 11                                          | Ambient noise                                   | 3.0    | R           | $\sqrt{3}$ | 1               | 1               | 1.73 | 1.73  | $\infty$ |
| 12                                          | Ambient reflections                             | 3.0    | R           | $\sqrt{3}$ | 1               | 1               | 1.73 | 1.73  | $\infty$ |
| 13                                          | Probe positioner mech. restrictions             | 1.4    | R           | $\sqrt{3}$ | 1               | 1               | 0.81 | 0.81  | $\infty$ |
| 14                                          | Probe positioning with respect to phantom shell | 1.4    | R           | $\sqrt{3}$ | 1               | 1               | 0.81 | 0.81  | $\infty$ |
| 15                                          | Max.SAR evaluation                              | 1.0    | R           | $\sqrt{3}$ | 1               | 1               | 0.6  | 0.6   | $\infty$ |
| Dipole                                      |                                                 |        |             |            |                 |                 |      |       |          |
| 16                                          | Deviation of experimental source from           | 4      | N           | 1          | 1               | 1               | 4.00 | 4.00  | $\infty$ |

|                              |                                                |                            |     |                                         |      |      |        |        |   |
|------------------------------|------------------------------------------------|----------------------------|-----|-----------------------------------------|------|------|--------|--------|---|
| 17                           | Input power and SAR drif measurement           | 5                          | R   | √3                                      | 1    | 1    | 2.89   | 2.89   | ∞ |
| 18                           | Dipole Axis to liquid Distance                 | 2                          | R   | √3                                      | 1    | 1    |        |        | ∞ |
| Phantom and set-up           |                                                |                            |     |                                         |      |      |        |        |   |
| 19                           | Phantom uncertainty                            | 4.0                        | R   | √3                                      | 1    | 1    | 2.31   | 2.31   | ∞ |
| 20                           | Uncertainty in SAR correction for deviation(in | 2.0                        | N   | 1                                       | 1    | 0.84 | 2      | 1.68   | ∞ |
| 21                           | Liquid conductivity (target)                   | 2                          | N   | 1                                       | 1    | 0.84 | 2.00   | 1.68   | ∞ |
| 22                           | Liquid conductivity (temperature uncertainty)  | 2.5                        | N   | 1                                       | 0.78 | 0.71 | 1.95   | 1.78   | 5 |
| 23                           | Liquid conductivity (meas)                     | 4                          | N   | 1                                       | 0.23 | 0.26 | 0.92   | 1.04   | 5 |
| 24                           | Liquid Permittivity (target)                   | 2.5                        | N   | 1                                       | 0.78 | 0.71 | 1.95   | 1.78   | ∞ |
| 25                           | Liquid Permittivity (temperature uncertainty)  | 2.5                        | N   | 1                                       | 0.78 | 0.71 | 1.95   | 1.78   | 5 |
| 26                           | Liquid Permittivity (meas)                     | 5.0                        | N   | 1                                       | 0.23 | 0.26 | 1.15   | 1.30   | ∞ |
| Combined standard            |                                                |                            | RSS | $U_C = \sqrt{\sum_{i=1}^n C_i^2 U_i^2}$ |      |      | 10.15% | 10.05% |   |
| Expanded uncertainty (P=95%) |                                                | $U = k \ U_C \text{ ,k=2}$ |     |                                         |      |      | 20.29% | 20.10% |   |

## 10. Conducted Power Measurement

### 10.1 Output power

| Band            | WCDMA Band V |       |       | WCDMA Band II |        |        |
|-----------------|--------------|-------|-------|---------------|--------|--------|
| Channel         | 4132         | 4183  | 4233  | 9262          | 9400   | 9538   |
| Frequency (MHz) | 826.4        | 836.6 | 846.6 | 1852.4        | 1880.0 | 1907.6 |
| RMC             | 22.62        | 22.88 | 22.84 | 24.77         | 24.85  | 24.72  |
| HSDPA Subtest-1 | 22.64        | 22.49 | 22.27 | 24.26         | 24.38  | 24.48  |
| HSDPA Subtest-2 | 22.17        | 22.54 | 22.46 | 24.55         | 24.54  | 24.35  |
| HSDPA Subtest-3 | 22.24        | 22.72 | 22.48 | 24.31         | 24.62  | 24.39  |
| HSDPA Subtest-4 | 22.31        | 22.67 | 22.77 | 24.65         | 24.57  | 24.44  |
| HSUPA Subtest-1 | 22.66        | 22.43 | 22.52 | 24.48         | 24.49  | 24.67  |
| HSUPA Subtest-2 | 22.13        | 22.55 | 22.46 | 24.54         | 24.68  | 24.35  |
| HSUPA Subtest-3 | 22.85        | 22.18 | 22.09 | 24.39         | 24.50  | 24.82  |
| HSUPA Subtest-4 | 22.60        | 22.51 | 22.34 | 24.27         | 24.63  | 24.47  |

According to 3GPP 25.101 sub-clause 6.2.2 , the maximum output power is allowed to be reduced by following the table.

Table 6.1A: UE maximum output power with HS-DPCCH and E-DCH

| UE Transmit Channel Configuration                                                                                                                                                                 | CM(db)               | MPR(db)       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------|
| For all combinations of ,DPDCH,DPCCH<br>HS-DPDCH,E-DPDCH and E-DPCCH                                                                                                                              | $0 \leq CM \leq 3.5$ | $MAX(CM-1,0)$ |
| Note: CM=1 for $\beta_{cl}/\beta_d=12/15$ , $\beta_{hs}/\beta_c=24/15$ .For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference. |                      |               |

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done .However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a compensation for the power back-off by increasing the gain of TX\_AGC in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

## WIFI

| Mode           | Channel Number | Frequency (MHz) | Average Power (dBm) |
|----------------|----------------|-----------------|---------------------|
| 802.11b        | 1              | 2412            | 9.72                |
|                | 6              | 2437            | 9.69                |
|                | 11             | 2462            | 9.83                |
| 802.11g        | 1              | 2412            | 8.72                |
|                | 6              | 2437            | 8.97                |
|                | 11             | 2462            | 8.83                |
| 802.11n(HT 20) | 1              | 2412            | 8.42                |
|                | 6              | 2437            | 8.35                |
|                | 11             | 2462            | 8.38                |
| 802.11n(HT 40) | 3              | 2422            | 7.92                |
|                | 6              | 2437            | 7.97                |
|                | 9              | 2452            | 7.84                |

## Bluetooth

| Mode                  | Channel Number | Frequency (MHz) | Average Power (dBm) |
|-----------------------|----------------|-----------------|---------------------|
| GFSK(1Mbps)           | 0              | 2402            | 3.61                |
|                       | 39             | 2441            | 3.58                |
|                       | 78             | 2480            | 3.72                |
| $\pi/4$ -DQPSK(2Mbps) | 0              | 2402            | 3.26                |
|                       | 39             | 2441            | 3.34                |
|                       | 78             | 2480            | 3.57                |
| 8DPSK(3Mbps)          | 0              | 2402            | 2.87                |
|                       | 39             | 2441            | 2.68                |
|                       | 78             | 2480            | 2.74                |

## BT 4.1

| Mode        | Channel Number | Frequency (MHz) | Average Power (dBm) |
|-------------|----------------|-----------------|---------------------|
| GFSK(1Mbps) | 0              | 2402            | 4.26                |
|             | 19             | 2440            | 4.13                |
|             | 39             | 2480            | 4.28                |

**10.2 Tune-up Power**

| Mode            | WCDMA Band V(AVG) | WCDMA Band II(AVG) |
|-----------------|-------------------|--------------------|
| RMC             | 22±1dBm           | 24±1dBm            |
| HSDPA Subtest-1 | 22±1dBm           | 24±1dBm            |
| HSDPA Subtest-2 | 22±1dBm           | 24±1dBm            |
| HSDPA Subtest-3 | 22±1dBm           | 24±1dBm            |
| HSDPA Subtest-4 | 22±1dBm           | 24±1dBm            |
| HSUPA Subtest-1 | 22±1dBm           | 24±1dBm            |
| HSUPA Subtest-2 | 22±1dBm           | 24±1dBm            |
| HSUPA Subtest-3 | 22±1dBm           | 24±1dBm            |
| HSUPA Subtest-4 | 22±1dBm           | 24±1dBm            |
| HSUPA Subtest-5 | 22±1dBm           | 24±1dBm            |

| Mode                | WIFI(AVG) |
|---------------------|-----------|
| IEEE 802.11b        | 9±1dBm    |
| IEEE 802.11g        | 8±1dBm    |
| IEEE 802.11n(HT 20) | 8±1dBm    |
| IEEE 802.11n (HT40) | 7±1dBm    |

| Mode           | BT(AVG) |
|----------------|---------|
| GFSK           | 3±1dBm  |
| $\pi/4$ -DQPSK | 3±1dBm  |
| 8DPSK          | 2±1dBm  |

| Mode | BT4.1(AVG) |
|------|------------|
| GFSK | 4±1dBm     |

### 10.3 SAR Test Exclusions Applied

Per FCC KDB 447498D01, the 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where:

- $f(\text{GHz})$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

$$\frac{\text{Max Power of Channel (mW)}}{\text{Test Separation Dist (mm)}} * \sqrt{\text{Frequency (GHz)}} \leq 3.0$$

Based on the maximum conducted power of **Bluetooth Head** (rounded to the nearest mW) and the antenna to user separation distance,

**Bluetooth Head SAR was not required;**  $[(3.126/5) * \sqrt{2.480}] = 1 < 3.0$ .

Based on the maximum conducted power of **2.4 GHz WIFI Head** (rounded to the nearest mW) and the antenna to user separation distance,

**2.4 GHz WIFI Head SAR was required;**  $[(10.000/5) * \sqrt{2.462}] = 3.14 > 3.0$ .

## 11. EUT And Test Setup Photo

### 11.1 EUT Photo

Photo 1



Photo 2

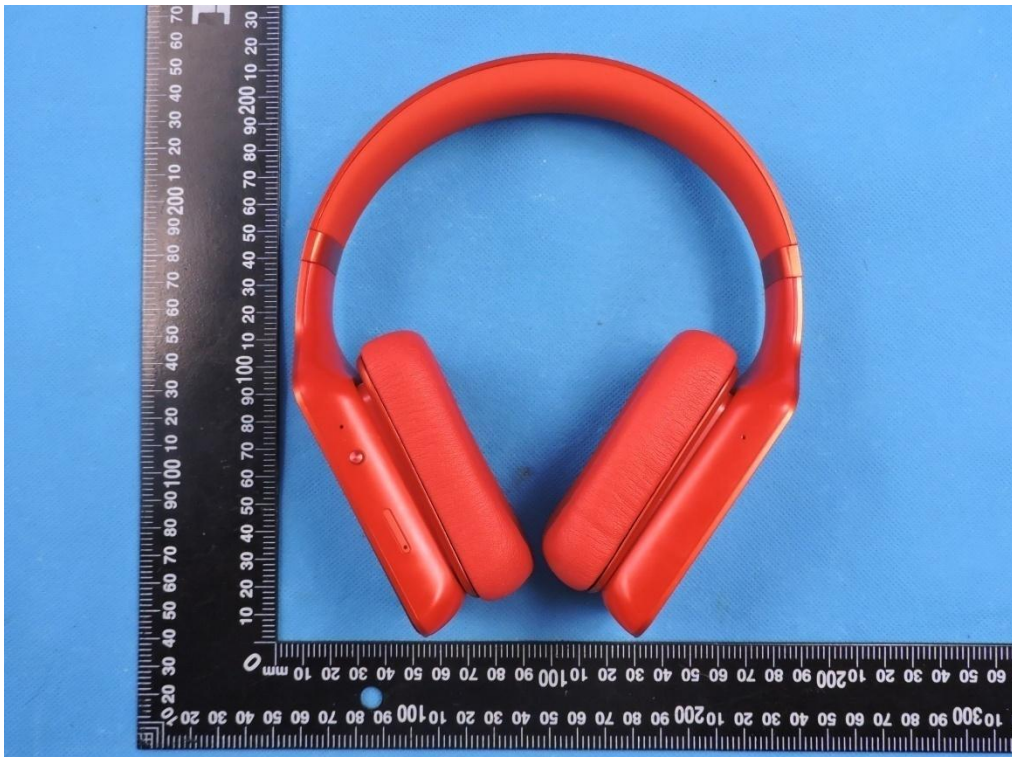


Photo 3



Photo 4

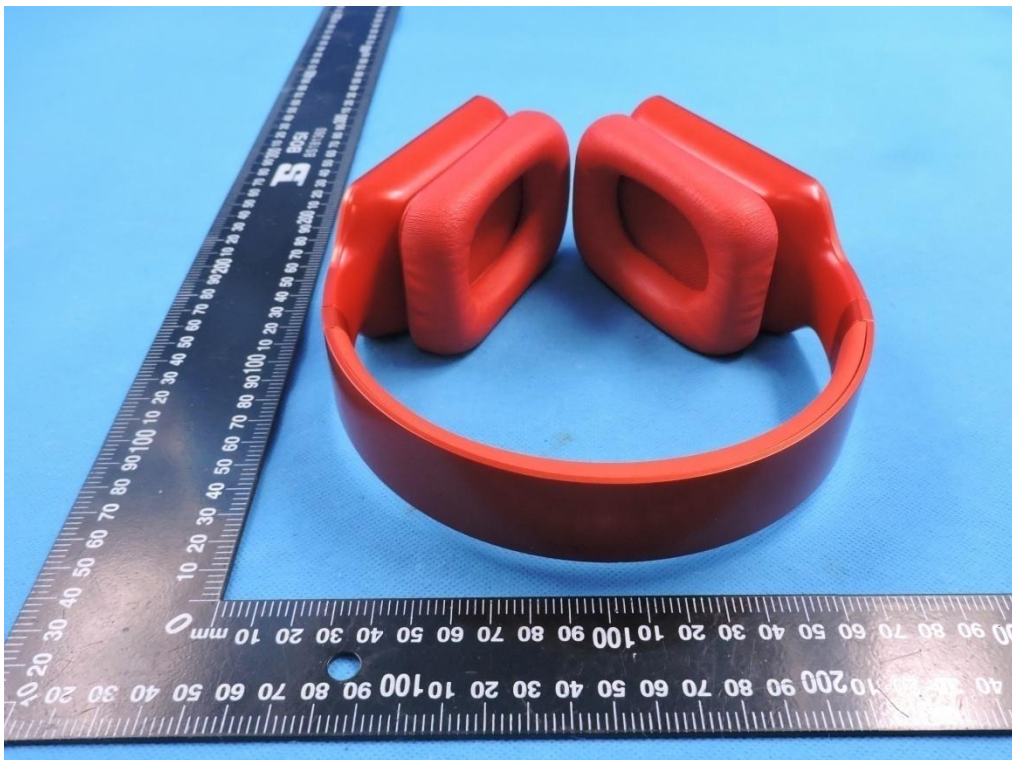


Photo 5

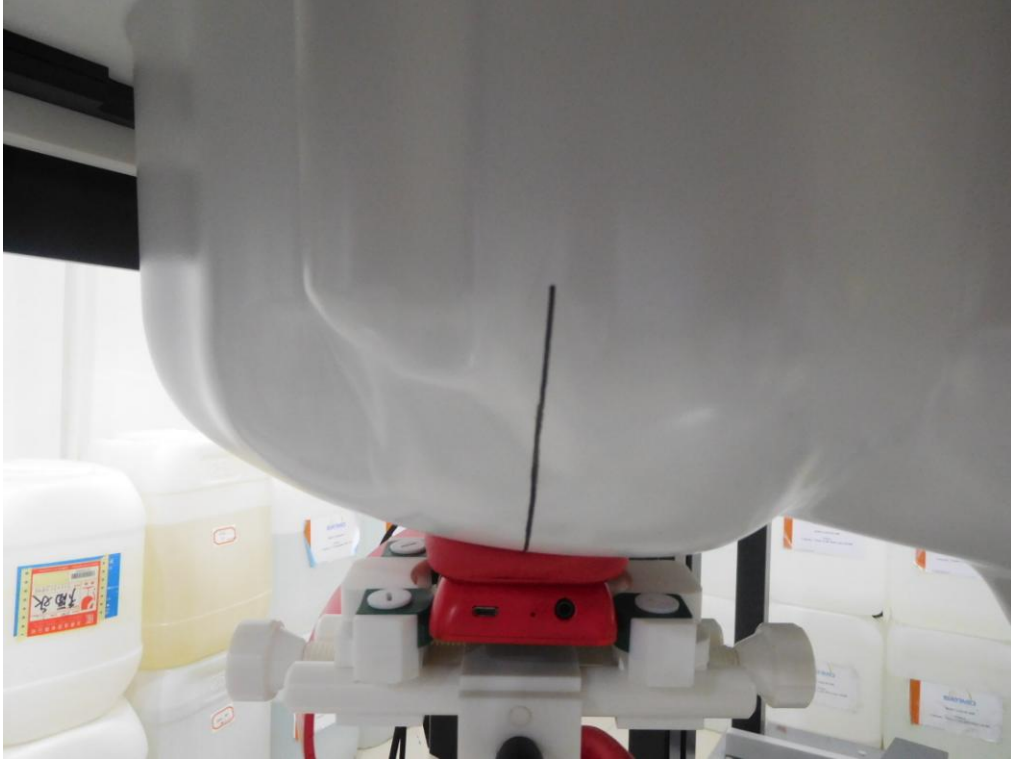


Photo 6

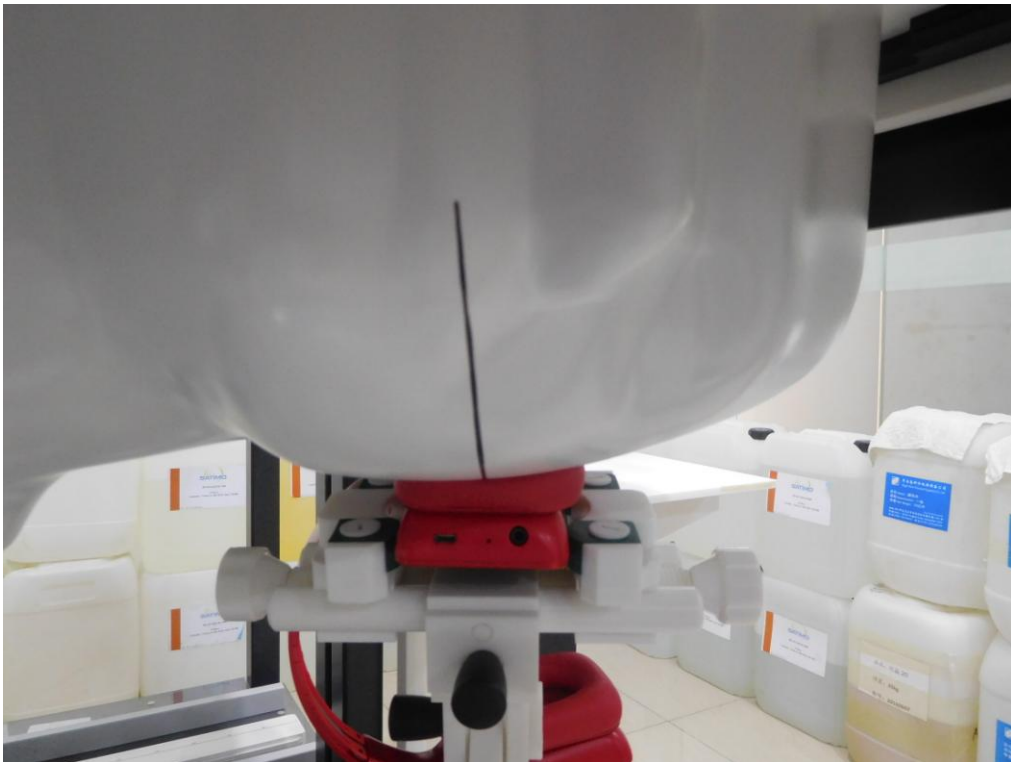


## 11.2 Setup Photo

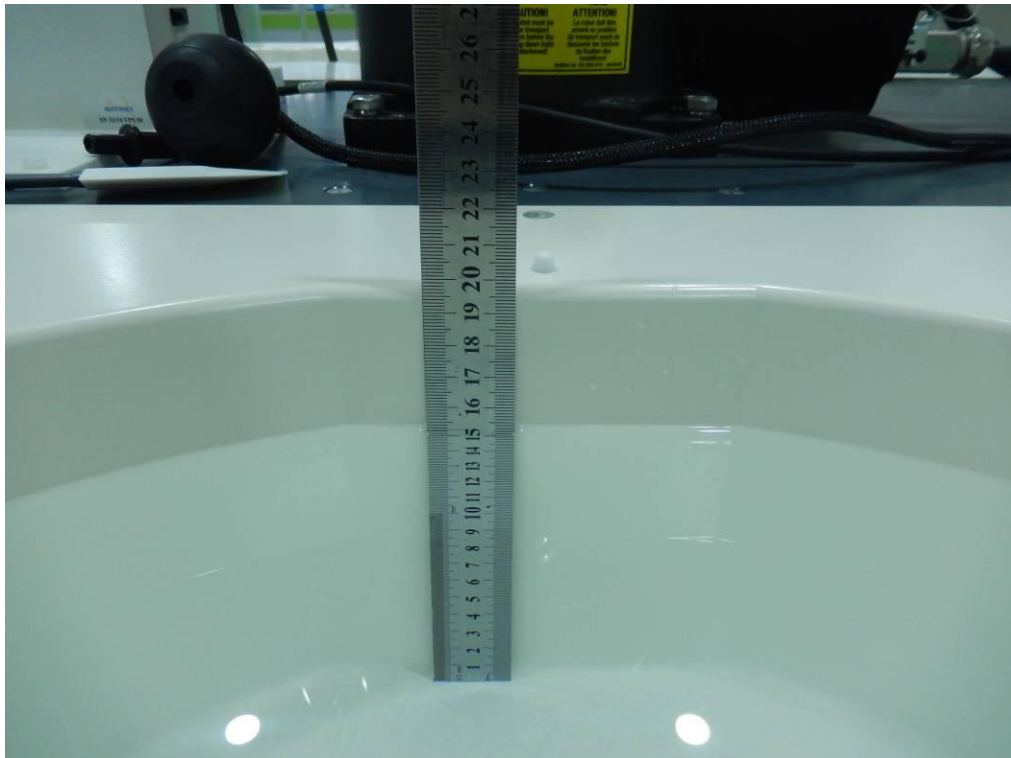
Right head



Left head



Liquid depth (15 cm)



## 12. SAR Result Summary

### 12.1 Head SAR

| Band     | Mode | Test Position | Ch.  | Result 1g (W/Kg) | Power Drift(%) | Max.Turn-up Power(dBm) | Meas.Output Power(dBm) | Scaled SAR (W/Kg) | Meas. No. |
|----------|------|---------------|------|------------------|----------------|------------------------|------------------------|-------------------|-----------|
| WCDMA II | RMC  | Right head    | 9400 | 0.557            | -1.77          | 25                     | 24.85                  | <b>0.577</b>      | 1         |
|          |      | Left head     | 9400 | 0.314            | 1.12           | 25                     | 24.85                  | 0.325             | -         |
| WCDMA V  | RMC  | Right head    | 4183 | 0.118            | -1.10          | 23                     | 22.88                  | <b>0.121</b>      | 2         |
|          |      | Left head     | 4183 | 0.098            | -0.82          | 23                     | 22.88                  | 0.101             | -         |

| Band | Mode | Test Position | Ch. | Result 1g (W/Kg) | Power Drift(%) | Max.Turn-up Power(dBm) | Meas.Output Power(dBm) | Duty cycle(%) | Scaled SAR (W/Kg) | Meas. No. |
|------|------|---------------|-----|------------------|----------------|------------------------|------------------------|---------------|-------------------|-----------|
| WIFI | DATA | Right head    | 11  | 0.021            | -2.53          | 10                     | 9.83                   | 100           | 0.022             | -         |
|      |      | Left head     | 11  | 0.025            | -2.46          | 10                     | 9.83                   | 100           | <b>0.026</b>      | 3         |

Note:

- 1.Per KDB 248227- When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is  $\leq 1.2$  W/kg. (The highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power was **0.021** W/Kg for Head)
2. Per KDB865664 D01, Repeated measurement is not required when the original highest measured SAR is <0.80 W/kg

### Simultaneous Multi-band Transmission Evaluation:

#### Application Simultaneous Transmission information

1. Bluetooth and WIFI can't simultaneous transmission at the same time.
2. Bluetooth and WCDMA can't simultaneous transmission at the same time.
3. WIFI and WCDMA can't simultaneous transmission at the same time.
4. KDB 447498 / 4.3.2 (2) when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
  - a) (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm) $\cdot [\sqrt{f} \text{ (GHz)} / x]$  W/kg for test separation distances  $\leq 50$  mm;  
Where  $x = 7.5$  for 1-g SAR, and  $x = 18.75$  for 10-g SAR.
  - b) 0.4W/Kg for 1-g SAR and 1.0W/Kg for 10-g SAR, when the separation distance is  $>50$ mm.

| Estimated SAR |      | Maximum Power |       | Antenna to user(mm) | Frequency(GHz) | Stand alone SAR(1g) [W/kg] |
|---------------|------|---------------|-------|---------------------|----------------|----------------------------|
|               |      | dBm           | mW    |                     |                |                            |
| BT            | Head | 5             | 0.631 | 5                   | 2.480          | 0.133                      |

### 13. Equipment List

| Kind of Equipment           | Manufacturer | Type No.                                   | Serial No.               | Last Calibration | Calibrated Until |
|-----------------------------|--------------|--------------------------------------------|--------------------------|------------------|------------------|
| 835MHz Dipole               | SATIMO       | SID835                                     | SN 30/14<br>DIP0G835-332 | 2014.09.01       | 2017.08.31       |
| 1900MHz Dipole              | SATIMO       | SID1900                                    | SN 30/14<br>DIP1G900-333 | 2014.09.01       | 2017.08.31       |
| 2450MHzDipole               | SATIMO       | SID2450                                    | SN 30/14<br>DIP2G450-335 | 2014.09.01       | 2017.08.31       |
| Antenna                     | SATIMO       | ANTA3                                      | SN 07/13<br>ZNTA52       | 2014.09.01       | 2017.08.31       |
| Waveguide                   | SATIMO       | SWG5500                                    | SN 13/14<br>WGA32        | 2014.09.01       | 2017.08.31       |
| E-Field Probe               | MVG          | SSE5                                       | SN 14/16 EP309           | 2016.12.05       | 2017.12.04       |
| Phantom1                    | SATIMO       | SAM                                        | SN 32/14<br>SAM115       | N/A              | N/A              |
| Phantom2                    | SATIMO       | SAM                                        | SN 32/14<br>SAM116       | N/A              | N/A              |
| SAR TEST BENCH              | SATIMO       | MOBILE<br>PHONE<br>POSITIONNIN<br>G SYSTEM | SN 32/14<br>MSH97        | N/A              | N/A              |
| SAR TEST BENCH              | SATIMO       | LAPTOP<br>POSITIONNIN<br>G SYSTEM          | SN 32/14<br>LSH29        | N/A              | N/A              |
| Dielectric Probe Kit        | SATIMO       | SCLMP                                      | SN 32/14<br>OCPG52       | 2016.08.30       | 2017.08.29       |
| Multi Meter                 | Keithley     | Multi Meter<br>2000                        | 4050073                  | 2016.10.23       | 2017.10.22       |
| Signal Generator            | Agilent      | N5182A                                     | MY50140530               | 2016.10.23       | 2017.10.22       |
| Power Meter                 | R&S          | NRP                                        | 100510                   | 2016.10.23       | 2017.10.22       |
| Power Meter                 | HP           | EPM-442A                                   | GB37170267               | 2016.10.23       | 2017.10.22       |
| Power Sensor                | R&S          | NRP-Z11                                    | 101919                   | 2016.10.23       | 2017.10.22       |
| Power Sensor                | HP           | 8481A                                      | 2702A65976               | 2016.10.23       | 2017.10.22       |
| Power Sensor                | R&S          | NRP-Z21                                    | 103971                   | 2016.10.23       | 2017.10.22       |
| Network Analyzer            | Agilent      | 8753ES                                     | US38432810               | 2017.03.16       | 2018.03.15       |
| Attenuator 1                | PE           | PE7005-10                                  | N/A                      | 2016.10.23       | 2017.10.22       |
| Attenuator 2                | PE           | PE7005-3                                   | N/A                      | 2016.10.23       | 2017.10.22       |
| Attenuator 3                | Woken        | WK0602-XX                                  | N/A                      | 2016.10.23       | 2017.10.22       |
| Dual Directional<br>Coupler | Agilent      | 778D                                       | 50422                    | 2016.10.23       | 2017.10.22       |

## Appendix A. System Validation Plots

### System Performance Check Data (835MHz Head)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

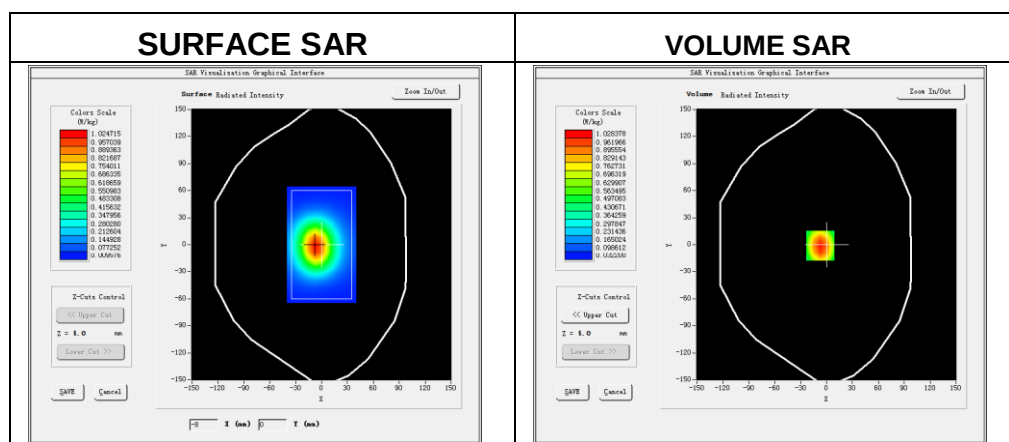
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2017-05-15

Measurement duration: 13 minutes 27 seconds

### Experimental conditions

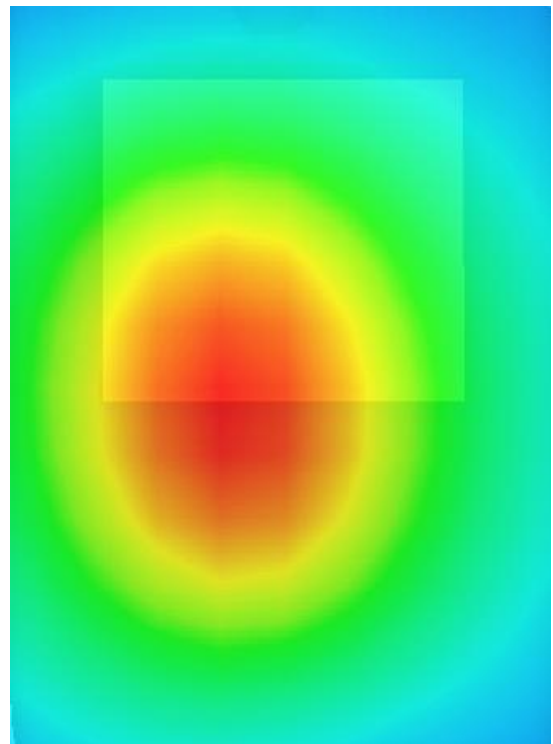
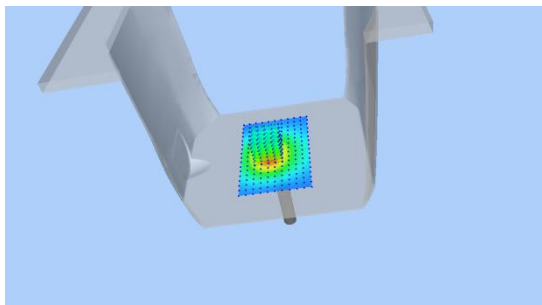
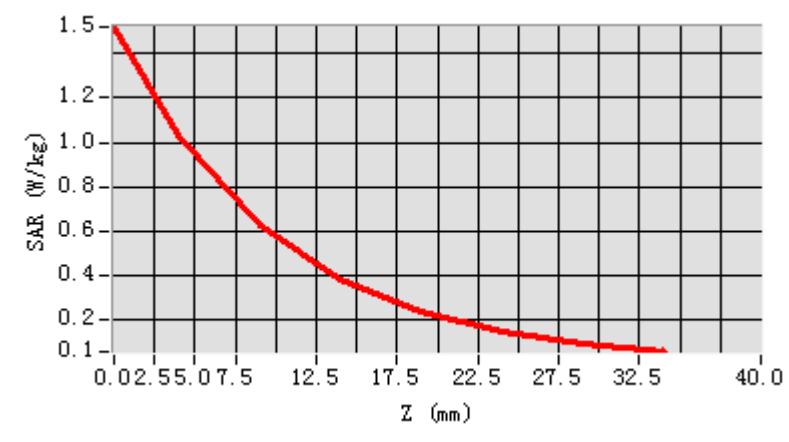
| Phantom               | Validation plane |
|-----------------------|------------------|
| Device Position       | -                |
| Band                  | 835MHz           |
| Channels              | -                |
| Signal                | CW               |
| Frequency (MHz)       | 835MHz           |
| Relative permittivity | 40.10            |
| Conductivity (S/m)    | 0.92             |
| Power drift (%)       | -0.37            |
| Probe                 | SN 14/16 EP309   |
| ConvF:                | 5.74             |
| Crest factor:         | 1:1              |



Maximum location: X=-7.00, Y=-1.00

|                |          |
|----------------|----------|
| SAR 10g (W/Kg) | 0.645865 |
| SAR 1g (W/Kg)  | 0.933254 |

## Z Axis Scan



## System Performance Check Data (1900MHz Head)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

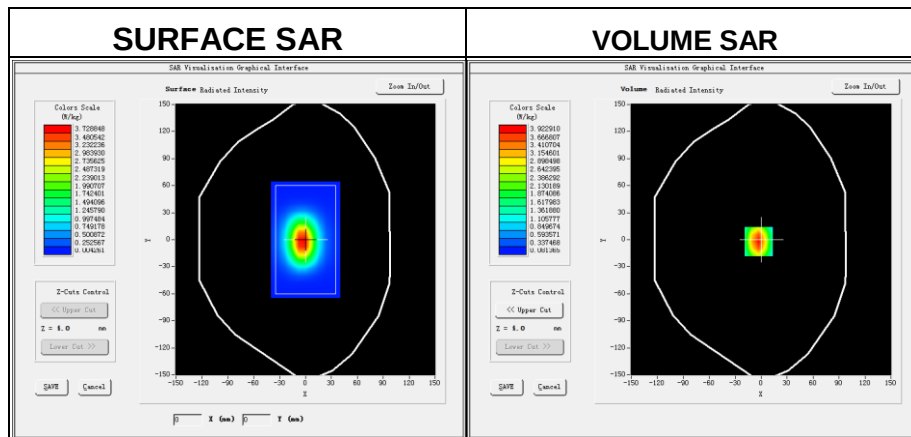
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2017-05-15

Measurement duration: 14 minutes 12 seconds

### Experimental conditions.

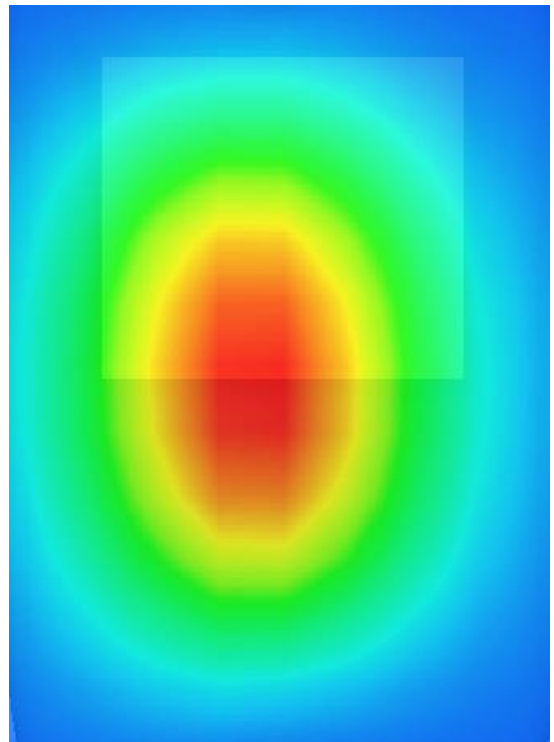
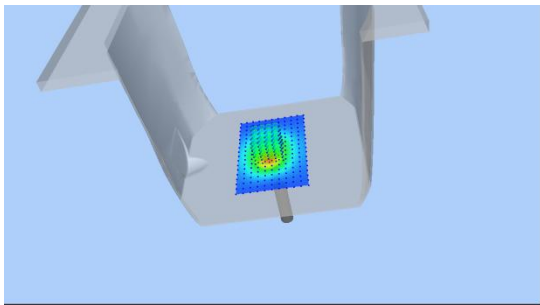
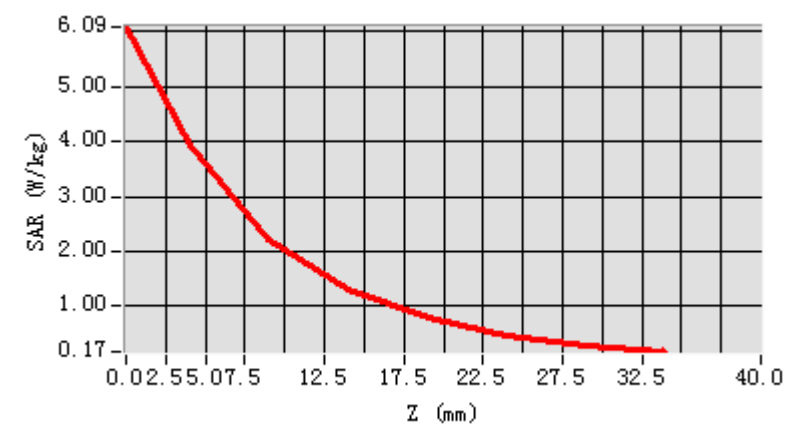
| Phantom               | Validation plane |
|-----------------------|------------------|
| Device Position       | -                |
| Band                  | 1900MHz          |
| Channels              | -                |
| Signal                | CW               |
| Frequency (MHz)       | 1900MHz          |
| Relative permittivity | 41.07            |
| Conductivity (S/m)    | 1.46             |
| Power drift (%)       | 0.79             |
| Probe                 | SN 14/16 EP309   |
| ConvF:                | 5.46             |
| Crest factor:         | 1:1              |



Maximum location: X=-3.00, Y=-2.00

|                |          |
|----------------|----------|
| SAR 10g (W/Kg) | 2.182459 |
| SAR 1g (W/Kg)  | 3.855148 |

## Z Axis Scan



## System Performance Check Data (2450MHz Head)

Type: Phone measurement (Complete)

Area scan resolution: dx=8mm,dy=8mm

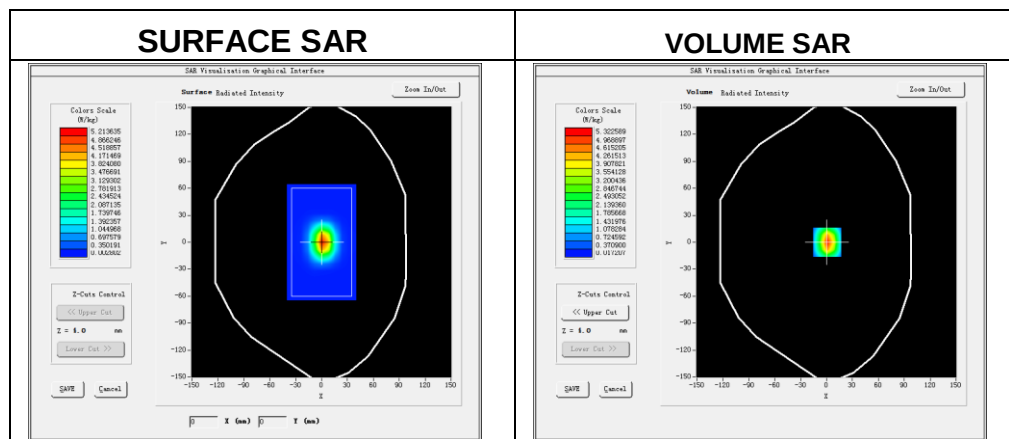
Zoom scan resolution: dx=8mm, dy=8mm, dz=5mm

Date of measurement: 2017-05-15

Measurement duration: 13 minutes 51seconds

### Experimental conditions.

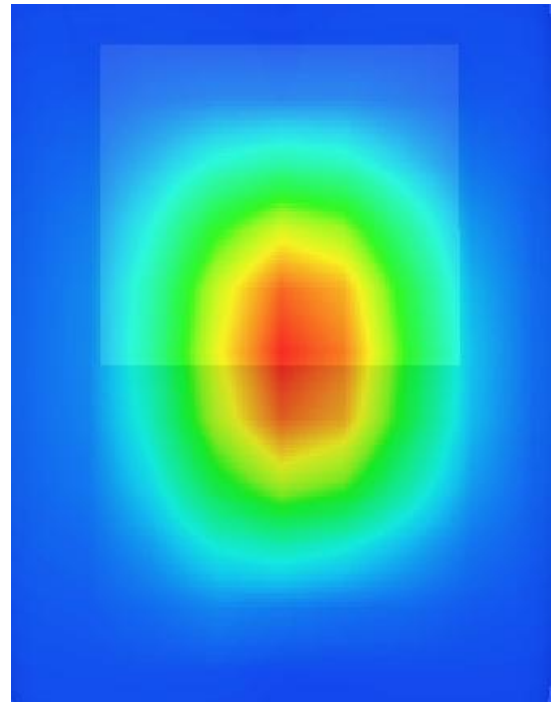
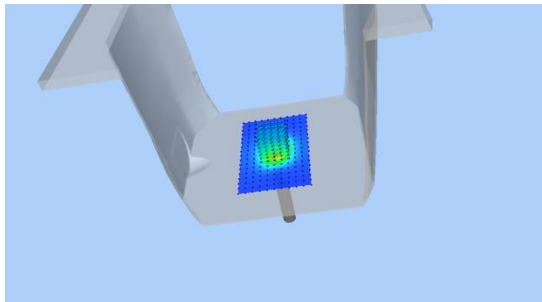
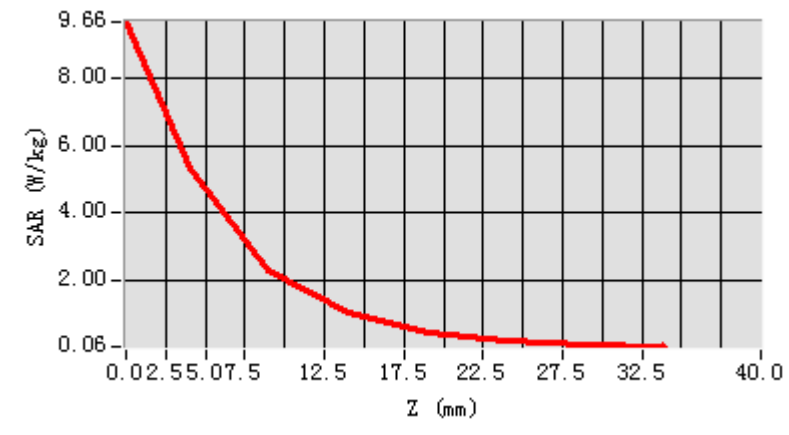
|                       |                  |
|-----------------------|------------------|
| Device Position       | Validation plane |
| Band                  | 2450 MHz         |
| Channels              | -                |
| Signal                | CW               |
| Frequency (MHz)       | 2450             |
| Relative permittivity | 39.88            |
| Conductivity (S/m)    | 1.79             |
| Power drift (%)       | -0.39            |
| Probe                 | SN 14/16 EP309   |
| ConvF                 | 5.09             |
| Crest factor:         | 1:1              |



Maximum location: X=1.00, Y=0.00

|                |          |
|----------------|----------|
| SAR 10g (W/Kg) | 2.548268 |
| SAR 1g (W/Kg)  | 5.364258 |

## Z Axis Scan



## Appendix B. SAR Test Plots

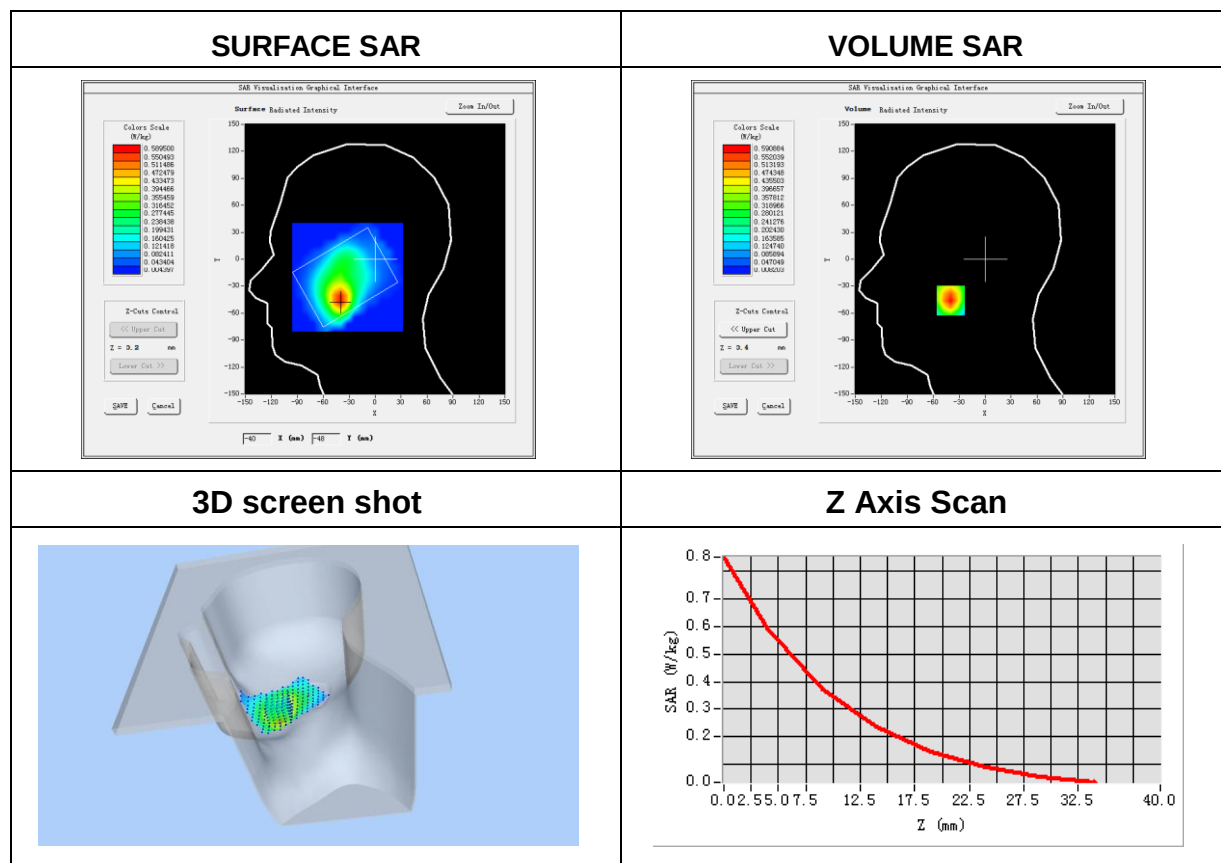
### Plot 1: DUT: Vinci Hearable; EUT Model: Vinci Hearable 1.5

|                                   |                                                                  |
|-----------------------------------|------------------------------------------------------------------|
| Test Date                         | 2017-05-15                                                       |
| Probe                             | SN 14/16 EP309                                                   |
| ConvF                             | 5.46                                                             |
| Area Scan                         | dx=8mm dy=8mm, h= 5.00 mm                                        |
| ZoomScan                          | 5x5x7, dx=8mm dy=8mm dz=5mm, Complete/ndx=8mm dy=8mm, h= 5.00 mm |
| Phantom                           | Right head                                                       |
| Device Position                   | Cheek                                                            |
| Band                              | WCDMA II                                                         |
| Channels                          | Middle                                                           |
| Signal                            | WCDMA (Crest factor: 1.0)                                        |
| Frequency (MHz)                   | 1880.0                                                           |
| Relative permittivity (real part) | 40.00                                                            |
| Conductivity (S/m)                | 1.40                                                             |
| Variation (%)                     | -1.77                                                            |

Maximum location: X=-40.00, Y=-46.00

SAR Peak: 0.84 W/kg

|                |          |
|----------------|----------|
| SAR 10g (W/Kg) | 0.319692 |
| SAR 1g (W/Kg)  | 0.557011 |



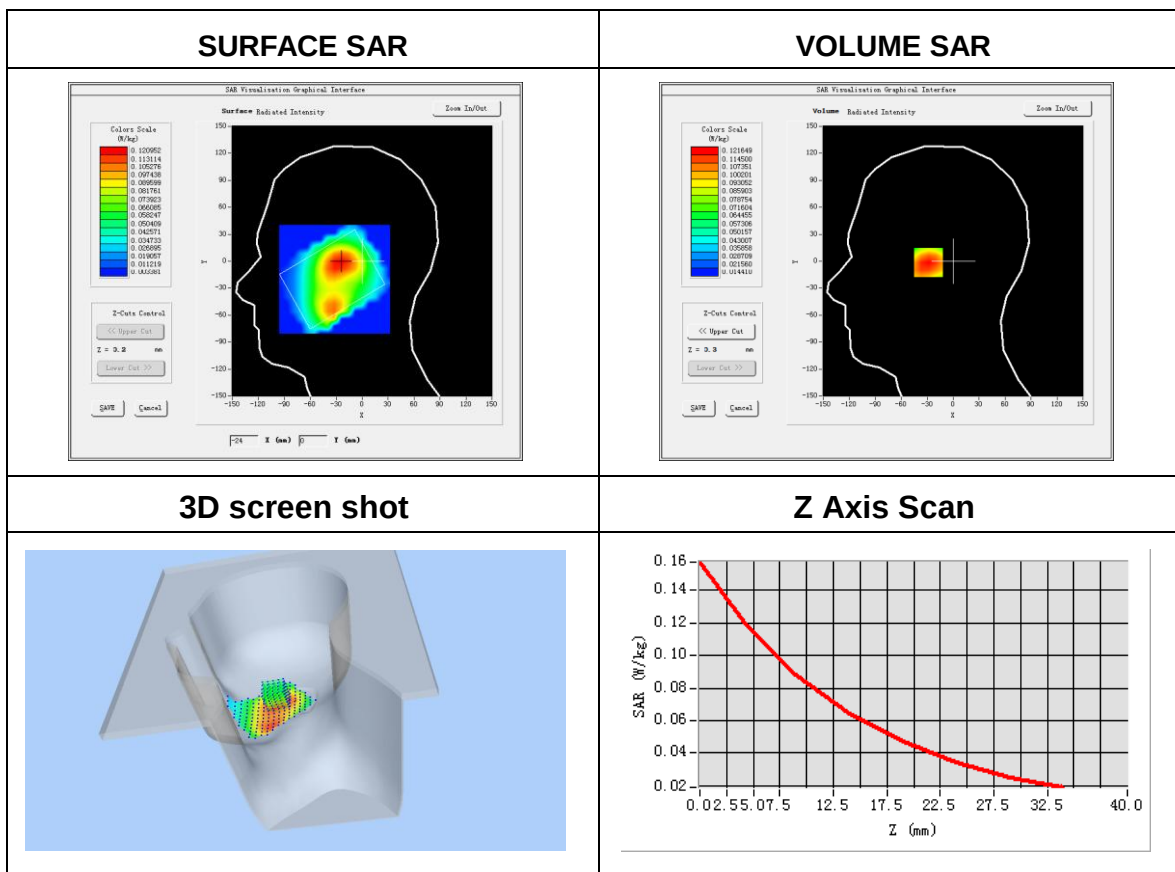
**Plot 2: DUT: Vinci Hearable; EUT Model: Vinci Hearable 1.5**

|                                   |                                                                    |
|-----------------------------------|--------------------------------------------------------------------|
| Test Date                         | 2017-05-15                                                         |
| Probe                             | SN 14/16 EP309                                                     |
| ConvF                             | 5.74                                                               |
| Area Scan                         | dx=8mm dy=8mm, h= 5.00 mm                                          |
| ZoomScan                          | 5x5x7,dx=8mm dy=8mm dz=5mm,<br>Complete/ndx=8mm dy=8mm, h= 5.00 mm |
| Phantom                           | Right head                                                         |
| Device Position                   | Cheek                                                              |
| Band                              | WCDMA V                                                            |
| Channels                          | Middle                                                             |
| Signal                            | WCDMA (Crest factor: 1.0)                                          |
| Frequency (MHz)                   | 836.6                                                              |
| Relative permittivity (real part) | 42.27                                                              |
| Conductivity (S/m)                | 0.91                                                               |
| Variation (%)                     | -1.10                                                              |

Maximum location: X=-25.00, Y=-1.00

SAR Peak: 0.16 W/kg

|                |          |
|----------------|----------|
| SAR 10g (W/Kg) | 0.081722 |
| SAR 1g (W/Kg)  | 0.117934 |



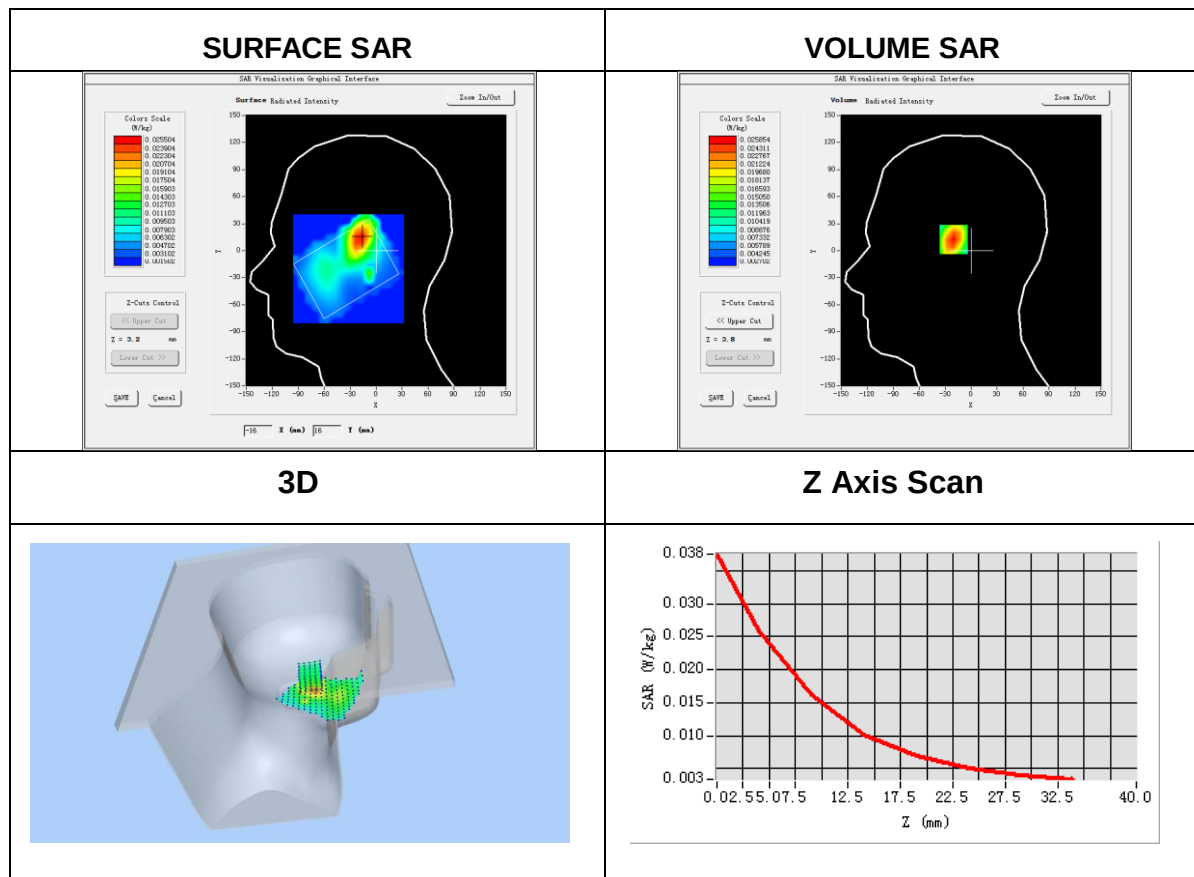
**Plot 3: DUT: Vinci Hearable; EUT Model: Vinci Hearable 1.5**

|                                   |                                                                    |
|-----------------------------------|--------------------------------------------------------------------|
| Test Date                         | 2017-05-15                                                         |
| Probe                             | SN 14/16 EP309                                                     |
| ConvF                             | 5.09                                                               |
| Area Scan                         | dx=8mm dy=8mm, h= 5.00 mm                                          |
| ZoomScan                          | 5x5x7,dx=8mm dy=8mm dz=5mm,<br>Complete/ndx=8mm dy=8mm, h= 5.00 mm |
| Phantom                           | Left head                                                          |
| Device Position                   | Cheek                                                              |
| Band                              | IEEE 802.11b ISM                                                   |
| Channels                          | High                                                               |
| Signal                            | IEEE802.b (Crest factor: 1.0)                                      |
| Frequency (MHz)                   | 2462                                                               |
| Relative permittivity (real part) | 39.23                                                              |
| Conductivity (S/m)                | 1.79                                                               |
| Variation (%)                     | -2.46                                                              |

Maximum location: X=-18.00, Y=14.00

SAR Peak: 0.04W/kg

|                |          |
|----------------|----------|
| SAR 10g (W/Kg) | 0.014564 |
| SAR 1g (W/Kg)  | 0.024613 |



## **Appendix C. Probe Calibration And Dipole Calibration Report**

Refer the appendix Calibration Report.

※※※※※END OF THE REPORT※※※※※