# SAR TEST REPORT

| | |
|---|---|
| **Equipment Under Test** | PDA phone |
| **Model Name** | WING200 |
| **Company Name** | High Tech Computer Corp. |
| **Company Address** | 23 Hsin Hua Rd., Taoyuan 330, Taiwan, R.O.C. |
| **Date of Receipt** | 2007.07.10 |
| **Date of Test(s)** | 2007.07.25-2007.12.17 |
| **Date of Issue** | 2007.12.18 |

Standards:

**FCC OET Bulletin 65 supplement C,**
**ANSI/IEEE C95.1, C95.3, IEEE 1528**

In the configuration tested, the EUT complied with the standards specified above.

**Remarks:**

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Electronic & Communication Laboratory Services or testing done by SGS Taiwan Electronic & Communication Laboratory Services in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Electronic & Communication Laboratory Services in writing.

**Tested by** : **Ricky Huang** **Date** : **2007.12.18**
**Sr. Engineer**

**Approved by** : **Robert Chang** **Date** : **2007.12.18**
**Tech. Manager**

# Contents

## WCDMA B2



## WCDMA B5

## WiFi b



## WiFi g



**Second solution measurement result (changed PCM & Camera)**

## GSM 850MHz



## PCS 1900MHz



## WCDMA B2

# 1. General Information

## 1.1 Testing Laboratory

| | |
|---|---|
| SGS Taiwan Ltd. Electronics & Communication Laboratory | |
| 134, Wu Kung Road, Wuku industrial zone | |
| Taipei county, Taiwan, R.O.C. | |
| Telephone | +886-2-2299-3279 |
| Fax | +886-2-2298-0488 |
| Internet | http://www.tw.sgs.com/ |

## 1.2 Details of Applicant

| | |
|---|---|
| Company Name | High Tech Computer Corp. |
| Company Address | 23 Hsin Hua Rd., Taoyuan 330, Taiwan, R.O.C. |
| Telephone | 886-3-3753252 |
| Fax | 886-3-3755530 |
| Contact Person | Emily Shih |
| E-mail | Emily_Shih@HTC.com.tw |
| Web site | http://www.htc.com/tw/ |

## 1.3 Description of EUT

| | | | | | |
|---|---|---|---|---|---|
| EUT Name | PDA phone | | | | |
| Model number | Wing200 | | | | |
| FCC ID | NM8WG | | | | |
| Mode of Operation | GSM/GPRS/EDGE, Band 850/1900/WCDMA B2/WCDMA B5 | | | | |
| Duty Cycle | GSM | GPRS | WCDMA B2 | WCDMA B5 | WiFi b+g |
| | 1/8 | 1/4 | 1 | | |
| Modulation Mode | GSM/GPRS | EDGE | WCDMA B2 | WCDMA B5 | WiFi b+g |
| | GMSK | 8PSK | WCDMA | | B:DBPSK G:BPSK |
| Maximum RF Conducted | EGSM 850 | DCS 1900 | WCDMA B2 | WCDMA B5 | WiFi b+g |

| | | | | | |
|---|---|---|---|---|---|
| Power(Average) | 32.76dbm | 30.10dbm | 23.30dbm | 23.24dbm | 14.12 dBm |
| TX Frequency range (MHz) | EGSM 850 | DCS 1900 | WCDMA B2 | WCDMA B5 | WiFi b+g |
| | 824.2-848.8 | 1850-1910 | 1852.4-1907.6 | 826.4-846.6 | 2412-2472 |
| Channel Number (ARFCN) | EGSM 850 | DCS 1900 | WCDMA B2 | WCDMA B5 | WiFi b+g |
| | 128-251 | 512-810 | 9262-9538 | 4132-4233 | 1-11 |
| Antenna Gain | EGSM 850 | DCS 1900 | WCDMA B2 | WCDMA B5 | WiFi b+g |
| | -2 ~ +2 dBi | | | | |
| Antenna Type | PIFA | | | | |
| Battery Type | 1. Simplo, Model number:LIBR160<br>3.7V 1050mAh Lithium-Ion<br>2. Sanyo, Model number:LIBR160<br>3.7V 1050mAh Lithium-Ion<br>3. Samsung, Model number: WING160<br>3.7V 1050mAh Lithium-Ion | | | | |
| Definition | Production unit | | | | |
| IMEI | 353486010020240(TY722FY00163)<br>353486010022477(TY722FY00207) | | | | |
| Max. SAR Measurement value (1 g)<br>1st solution | For Head part | | For Body Part | | |
| | 1.06 W/kg<br>(At WCDMA B2, Left Head Slider-on ,Cheek Position channel 9400) | | 1.42 W/kg<br>(At GSM 850 GPRS mode, Channel 251 with Sanyo Battery) | | |
| Max. SAR Measurement value (1 g)<br>2nd solution | 1.05 W/kg<br>(At WCDMA B2, Left Head Slider-on ,Cheek Position channel 9400 with Samsung Battery) | | 1.58 W/kg<br>(At GSM 850 GPRS mode, Channel 251) | | |

Note:

1. EGPRS mode was not measured because maximum averaged output power is more than 3 dB lower in EGPRS mode than in GPRS mode.
   (In EDGE mode, its power class level is E2 and output power less than 24dBm)

| | 850 Band | | | 1900 Band | | |
|---|---|---|---|---|---|---|
| EDGE Conducted output Power | Frequency (MHz) | CH Number | Peak Power (dBm) | Frequency (MHz) | CH Number | Peak Power (dBm) |
| | 1850.2 | 512 | 23.5 | 1850.2 | 512 | 23.5 |
| | 1880 | 661 | 23.8 | 1880 | 661 | 23.8 |
| | 1909.8 | 810 | 24.3 | 1909.8 | 810 | 24.3 |

## 1.4 Test Environment

Ambient Temperature: 22.2° C
Tissue Simulating Liquid: 21.7° C
Relative Humidity: 62 %

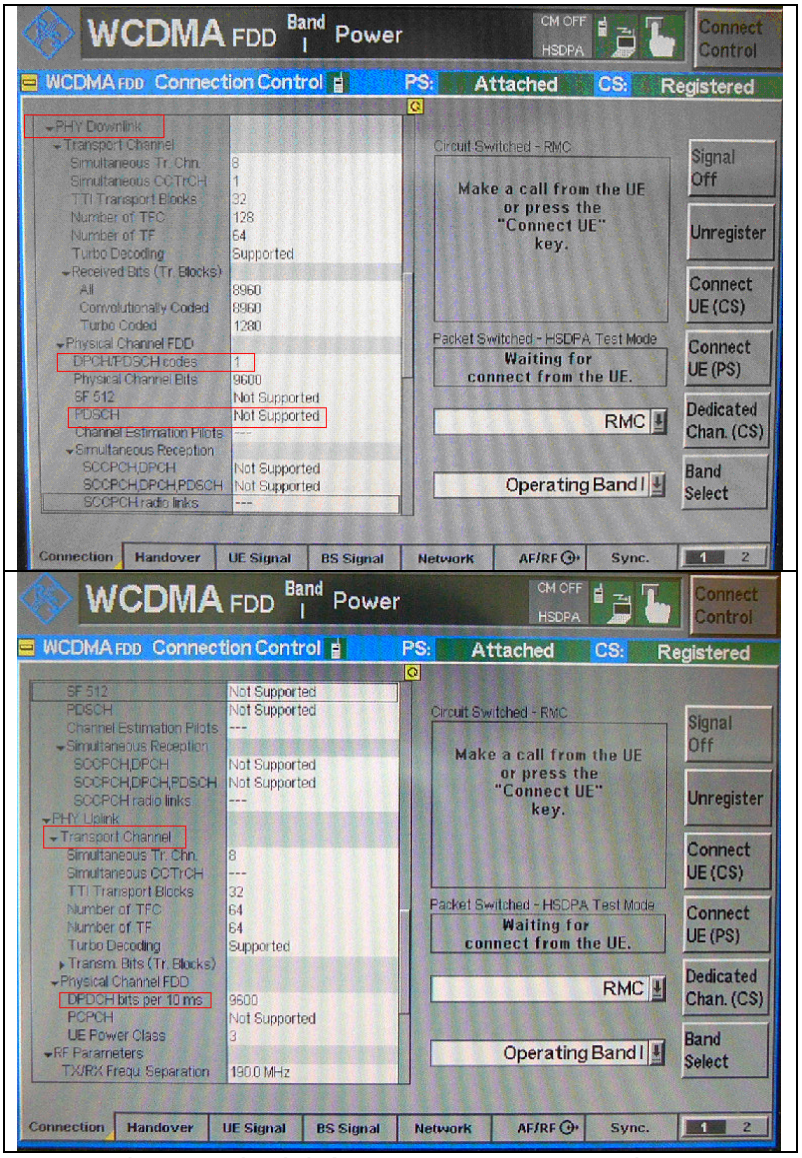
## 1.5 Operation description

1. The EUT controlled by using a Wireless Communication Tester (Agilent 8960), and the communication between the EUT and the tester is established by air link. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.
2. In each band perform SAR testing for each operation mode using the center frequency on both the left and right sides of the head, cheek and tilt positions to find the maximum mass-averaged SAR value of these configurations (the worst case configuration).
3. Measure the low-end and the high-end frequencies of the configuration giving rise to the maximum mass-averaged SAR in head positions.
4. For highest SAR configuration in this band repeated with Memory Card & Bluetooth active on & handset_1 & headset_2 & Samsung Battery & Sanyo Battery & WiFi b/g active and EDGE mode.
5. During the SAR testing, the DASY4 system checks power drift by comparing the -field strength of one specific location measured at the beginning with that measured at the end of the SAR testing

Note:

1. Follow document KDB 941225, we verified maximum output power on high, middle and low channels in WCDMA & HSDPA function.
2. Perfromed SAR testing in WCDMA mode (set in 12.2kbps RMC mode & Test Loop Mode1) to found the highest SAR value in Head & Body position.
3. In HSDPA function with 12.2kbps RMC using the highest SAR configurations to perform SAR testing in Body position.
4. The SAR is not required for other spreading codes and multiple $DPDCH_n$ since the output power for each of theseother configurations 1/4 dB higher than 12.2kbps RMC.

| | Channel Bit Rate (kbps) | Channel Symbol Rate (ksps) | Spreading Factor | Spreading Code Number | Bits/Slot |
|---|---|---|---|---|---|
| DPCCH | 15 | 15 | 256 | 0 | 10 |
| $DPDCH_1$ | 15 | 15 | 256 | 64 | 10 |
| | 30 | 30 | 128 | 32 | 20 |
| | 60 | 60 | 64 | 16 | 40 |
| | 120 | 120 | 32 | 8 | 80 |
| | 240 | 240 | 16 | 4 | 160 |
| | 480 | 480 | 8 | 2 | 320 |
| | 960 | 960 | 4 | 1 | 640 |
| $DPDCH_n$ | 960 | 960 | 4 | 1, 2, 3 | 640 |



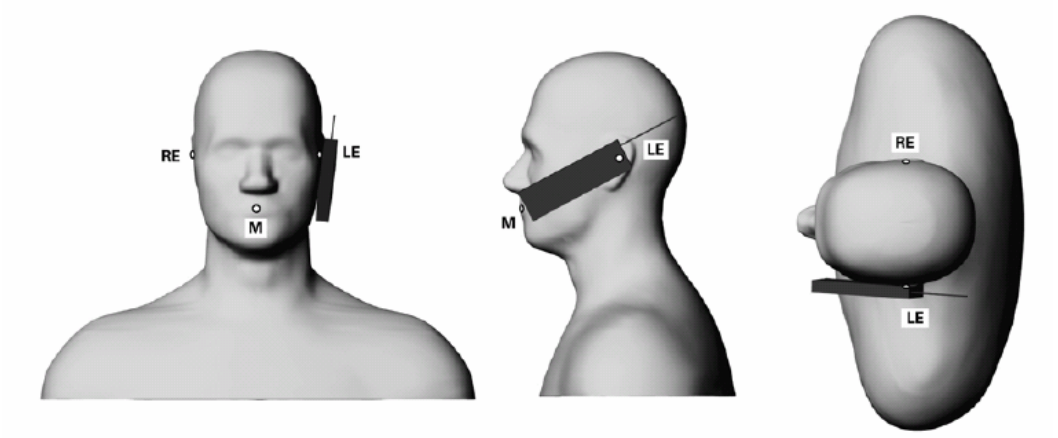

The sample didn't support $DPDCH_n$ mode.

2. For Wifi part, use the software to control the EUT channel and transmission power and record the conducted power value before the testing.

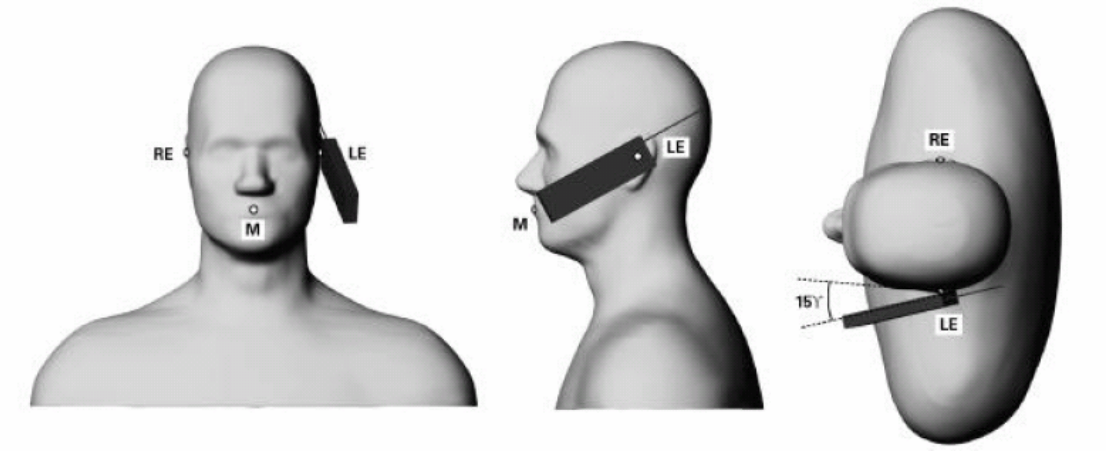
| Wifi Channel Frequency Under Test And Its Conducted Output Power (Peak) | 802.11b | 802.11g |
|---|---|---|
| | 13.78 dBm (2412MHz)<br>13.75 dBm (2437MHz)<br>14.12 dBm (2462MHz) | 10.97 dBm (2412MHz)<br>11.23 dBm (2437MHz)<br>11.48 dBm (2462MHz) |

After finish the SAR testing, we found the High channel is the worst with single mode, so we chosen high channel (worst channel) to do Co-location testing.

## 1.6 Positioning Procedure




Phone position 1, "cheek" or "touch" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning




Phone position 2, "tilted position." The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning

Cheek/Touch Position: the handset was brought toward the mouth of the head phantom

by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.

Ear/Tilt Position: With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.

## 1.7 EVALUATION PROCEDURES

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

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

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans. The routines are

verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

## 1.8 The SAR Measurement System

A photograph of the SAR measurement System is given in Fig. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY 4 professional system ). A Model EX3DV3 3526-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= $\sigma$ ($|Ei|^2$)/ $\rho$ where $\sigma$ and $\rho$ are the conductivity and mass density of the tissue-simulant.

The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).

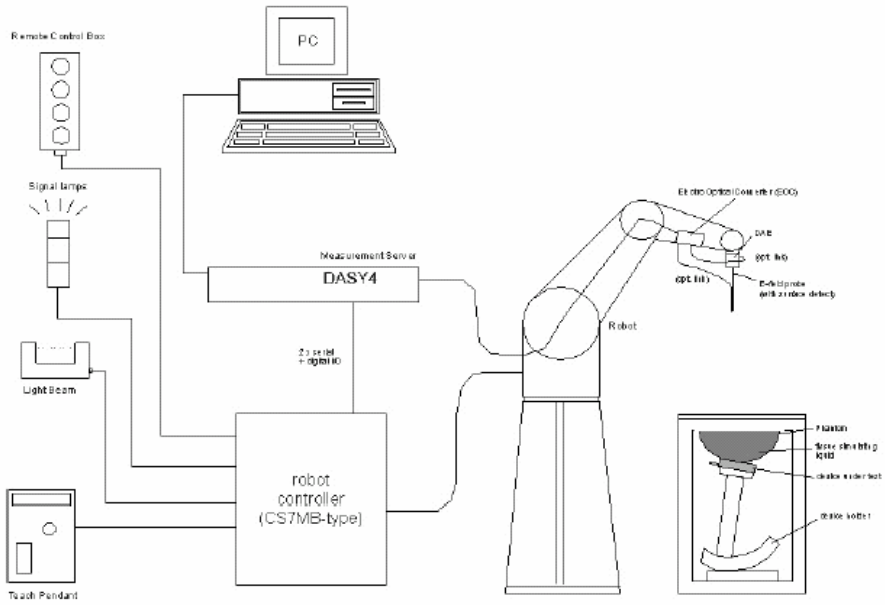



Fig.a The microwave circuit arrangement used for SAR system verification

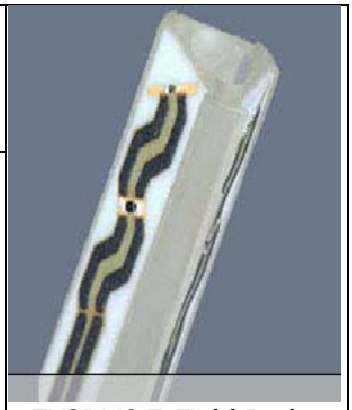
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal

multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
  - A computer operating Windows 2000 or Windows XP.
  - DASY4 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
  - The SAM twin phantom enabling testing left-hand and right-hand usage.
  - The device holder for handheld mobile phones.
  - Tissue simulating liquid mixed according to the given recipes.
  - Validation dipole kits allowing to validate the proper functioning of the system.

## 1.9 System Components

**ET3DV6 E-Field Probe**

| | | |
|---|---|---|
| Construction | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g. glycol). |  <br>EX3DV6 E-Field Probe |
| Calibration | In air from 10 MHz to 2.5 GHz In brain simulating tissue (accuracy ± 8%) | |
| Frequency | 10 MHz to >6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz) | |
| Directivity | ±0.2 dB in brain tissue (rotation around probe axis)<br>±0.4 dB in brain tissue (rotation normal to probe axis) | |
| Dynamic Range: | 5 µW/g to >100 mW/g; Linearity: ±0.2 dB | |
| Dimensions | Overall length: 330 mm<br>Tip length: 16 mm<br>Body diameter: 12 mm<br>Tip diameter: 6.8 mm<br>Distance from probe tip to dipole centers: 2.7 mm | |
| Application | General dosimetry up to 3 GHz Compliance tests of mobile phone | |

**EX3DV3 E-Field Probe**

| | | |
|---|---|---|
| Construction | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |  <br>EX3DV3 E-Field Probe |
| Calibration | Basic Broad Band Calibration in air<br>Conversion Factors (CF) for HSL850/1900<br>Additional CF for other liquids and frequencies upon request | |
| Frequency | 10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz) | |
| Directivity | ± 0.3 dB in HSL (rotation around probe axis)<br>± 0.5 dB in tissue material (rotation normal to probe axis) | |
| Dynamic Range | 10 µW/g to > 100 mW/g;<br>Linearity: ± 0.2 dB (noise: typically < 1 µW/g) | |
| Dimension | Overall length: 330 mm (Tip: 20 mm)<br>Tip diameter: 2.5 mm (Body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm | |
| Application | High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%. | |

**SAM PHANTOM V4.0C**

| | | |
|---|---|---|
| Construction | The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X, CENELEC 50361 and IEC 62209.<br>It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot. | |
| Shell Thickness | 2 ± 0.2 mm |  |
| Filling Volume | Approx. 25 liters | |
| Dimensions | Height: 251 mm;<br>Length: 1000 mm;<br>Width: 500 mm | |

**DEVICE HOLDER**

| | | |
|---|---|---|
| Construction | In combination with the Twin SAM Phantom V4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom). |  Device Holder |

## 1.10 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 900/1900MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. During the tests, the ambient temperature of the laboratory was in the range 22.2°C, the relative humidity was in the range 62% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

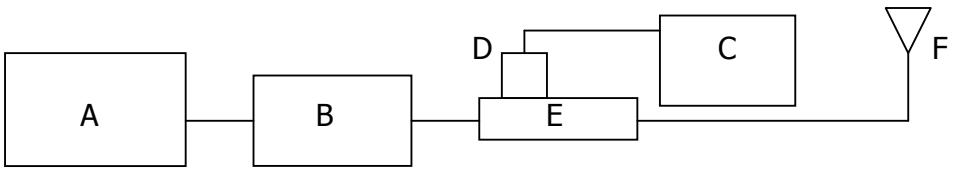
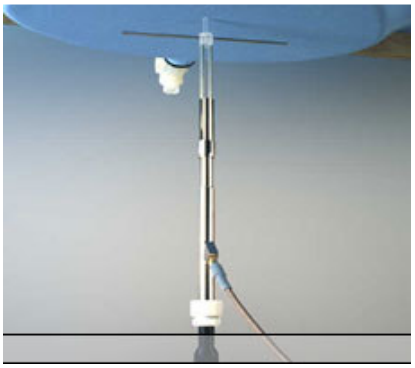



Fig.b The microwave circuit arrangement used for SAR system verification

A. Agilent Model 8648D Signal Generator
B. Mini circuits Model ZHL-42 Amplifier
C. Agilent Model E4416A Power Meter
D. Agilent Model 8481H Power Sensor
E. Agilent Model 777D/778D Dual directional coupling
F. Reference dipole antenna



Photograph of the dipole Antenna

G. Agilent Model E4421B Signal Generator

H. EMPOWER Model 2001-BBS3Q7ECK Amplifier

I. Agilent Model E4419B Power Meter

J. Agilent Model 9300H Power Sensor

| Validation Kit | Frequency | Target SAR(1g) | Measured | Variation | Measured |
|---|---|---|---|---|---|
| | (MHz) | (Pin=250mW) | SAR(1g) | (%) | Date |
| D835V2 | 835 MHz | 2.36m W/g | 2.43m W/g | 2.96 | 2007/7/25 |
| S/N: 490 | (Head) | | | | |
| D835V2 | 835 MHz | 2.36m W/g | 2.37m W/g | 0.4 | 2007/8/6 |
| S/N: 490 | (Head) | | | | |
| D835V2 | 835 MHz | 2.36m W/g | 2.36m W/g | 0 | 2007/8/10 |
| S/N: 490 | (Head) | | | | |
| D900V2 | 900 MHz | 2.66m W/g | 2.68m W/g | 0.75 | 2007/9/29 |
| S/N: 178 | (Head) | | | | |
| D900V2 | 900 MHz | 2.69m W/g | 2.68m W/g | -0.37 | 2007/9/23 |
| S/N: 178 | (Body) | | | | |
| D900V2 | 900 MHz | 2.69m W/g | 2.70m W/g | 0.37 | 2007/9/29 |
| S/N: 178 | (Body) | | | | |
| D900V2 | 900 MHz | 2.69m W/g | 2.67m W/g | -0.74 | 2007/11/13 |
| S/N: 178 | (Body) | | | | |
| D1900V2 | 1900 MHz | 9.66m W/g | 9.70m W/g | 0.41 | 2007/7/26 |
| S/N: 5d033 | (Head) | | | | |
| D1900V2 | 1900 MHz | 9.66m W/g | 9.82m W/g | 1.66 | 2007/8/13 |
| S/N: 5d033 | (Head) | | | | |
| D1900V2 | 1900 MHz | 9.28 m W/g | 9.71m W/g | 4.6 | 2007/9/30 |
| S/N: 5d027 | (Head) | | | | |
| D1900V2 | 1900 MHz | 9.67 m W/g | 9.84m W/g | 1.75 | 2007/9/12 |
| S/N: 5d027 | (Body) | | | | |
| D1900V2 | 1900 MHz | 9.67 m W/g | 9.82m W/g | 1.55 | 2007/9/30 |
| S/N: 5d027 | (Body) | | | | |
| D1900V2 | 1900 MHz | 9.67 m W/g | 9.53m W/g | -1.44 | 2007/11/14 |
| S/N: 5d027 | (Body) | | | | |
| D2450V2 | 2450MHz | 14 m W/g | 13.4m W/g | -4.28 | 2007/12/17 |
| S/N: 727 | (Body) | | | | |

Table 1. System validation (follow manufacture target value)

## 1.11 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Head-simulant fluid were measured by using the HP Model 85070D Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjuncation with HP 8753D Network Analyzer (30 KHz-6000MHz) by using a procedure detailed in Section V.
All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the ear reference point of the phantom was 15cm±5mm during all tests. (Fig .2)

| Frequency (MHz) | Tissue type | Measurement date/ Limits | Dielectric Parameters | | |
|---|---|---|---|---|---|
| | | | ρ | σ (S/m) | Simulated Tissue Temperature(° C) |
| 835 | Head | Measured, 2007.07.25 | 42.2 | 0.884 | 22.2 |
| | | Recommended Limits | 39.4-43.6 | 0.86-1.05 | 20-24 |
| 835 | Head | Measured, 2007.08.06 | 42.3 | 0.881 | 22.2 |
| | | Recommended Limits | 39.4-43.6 | 0.86-1.05 | 20-24 |
| 835 | Head | Measured, 2007.08.10 | 42.3 | 0.878 | 22.3 |
| | | Recommended Limits | 39.4-43.6 | 0.86-1.05 | 20-24 |
| 900 | Head | Measured, 2007.09.29 | 40.9 | 1 | 21.7 |
| | | Recommended Limits | 39.4-43.6 | 0.86-1.03 | 20-24 |
| 900 | Body | Measured, 2007.09.23 | 55.5 | 1.03 | 21.7 |
| | | Recommended Limits | 52.3-58 | 0.92-1.1 | 20-24 |
| 900 | Body | Measured, 2007.09.29 | 55.3 | 0.994 | 21.7 |
| | | Recommended Limits | 52.3-58 | 0.92-1.1 | 20-24 |
| 900 | Body | Measured, 2007.11.13 | 55.5 | 1.03 | 21.7 |
| | | Recommended Limits | 52.3-58 | 0.92-1.1 | 20-24 |
| 1900 | Head | Measured, 2007.07.26 | 41 | 1.37 | 21.7 |
| | | Recommended Limits | 38-42 | 1.33-1.47 | 20-24 |
| 1900 | Head | Measured, 2007.08.13 | 41 | 1.37 | 21.7 |
| | | Recommended Limits | 38-42 | 1.33-1.47 | 20-24 |
| 1900 | Head | Measured, 2007.09.30 | 39.5 | 1.42 | 21.7 |
| | | Recommended Limits | 38-42 | 1.33-1.47 | 20-24 |
| 1900 | Body | Measured, 2007.09.12 | 52.4 | 1.58 | 21.7 |
| | | Recommended Limits | 50.6-56 | 1.38-1.6 | 20-24 |
| 1900 | Body | Measured, 2007.09.30 | 52.3 | 1.58 | 21.7 |
| | | Recommended Limits | 50.6-56 | 1.38-1.6 | 20-24 |

| | | | | | |
|---|---|---|---|---|---|
| 1900 | Body | Measured, 2007.11.14 | 53.2 | 1.58 | 21.7 |
| | | Recommended Limits | 50.6-56 | 1.38-1.6 | 20-24 |
| 2450 | Body | Measured, 2007.12.17 | 54.3 | 1.97 | 21.7 |
| | | Recommended Limits | 50.1-55.3 | 1.85-2.12 | 20-24 |

Table 2. Dielectric Parameters of Tissue Simulant Fluid

| Band 850(Body) Frequency (MHz) | Channel | Target | Permittivity Measurement Date | Variation | Target | Conductivity Measurement Date | Variation |
|---|---|---|---|---|---|---|---|
| Low(824.2) | 128 | 55.2 | 54 | 2.22% | 0.97 | 0.925 | 4.86% |
| Mid(836.6) | 190 | | 53.9 | 2.41% | | 0.925 | 4.86% |
| High(848.8) | 251 | | 53.5 | 3.17% | | 0.944 | 2.75% |

Table 3. Dielectric Parameters of Tissue Simulant Fluid (follow P1528 target value)

The composition of the brain tissue simulating liquid:

| **Ingredients** (% by weight) | **Frequency (MHz)** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 450 | | 835 | | 915 | | 1900 | | 2450 | |
| Tissue Type | Head | Body | Head | Body | Head | Body | Head | Body | Head | Body |
| Water | 38.56 | 51.16 | 41.45 | 52.4 | 41.05 | 56.0 | 54.9 | 40.4 | 62.7 | 73.2 |
| Salt (NaCl) | 3.95 | 1.49 | 1.45 | 1.4 | 1.35 | 0.76 | 0.18 | 0.5 | 0.5 | 0.04 |
| Sugar | 56.32 | 46.78 | 56.0 | 45.0 | 56.5 | 41.76 | 0.0 | 58.0 | 0.0 | 0.0 |
| HEC | 0.98 | 0.52 | 1.0 | 1.0 | 1.0 | 1.21 | 0.0 | 1.0 | 0.0 | 0.0 |
| Bactericide | 0.19 | 0.05 | 0.1 | 0.1 | 0.1 | 0.27 | 0.0 | 0.1 | 0.0 | 0.0 |
| Triton X-100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 36.8 | 0.0 |
| DGBE | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 44.92 | 0.0 | 0.0 | 26.7 |
| Dielectric Constant | 43.42 | 58.0 | 42.54 | 56.1 | 42.0 | 56.8 | 39.9 | 54.0 | 39.8 | 52.5 |
| Conductivity (S/m) | 0.85 | 0.83 | 0.91 | 0.95 | 1.0 | 1.07 | 1.42 | 1.45 | 1.88 | 1.78 |

The composition of the brain tissue simulating liquid for 900 & 1900 & 2450 band:

| Ingredient | 900MHz(Head) | 900Mhz(Body) | 1900MHz(Head) | 1900Mhz(Body) | 2450Mhz(Body) |
|---|---|---|---|---|---|
| DGMBE | X | X | 444.52 g | 300.67 | 301.7 ml |
| Water | 532.98 g | 631.68 g | 552.42 g | 716.56 g | 698.3 ml |
| Salt | 18.3 g | 11.72 g | 3.06 g | 4.0 g | X |
| Preventol D-7 | 2.4 g | 1.2g | X | X | X |
| Cellulose | 3.2 g | X | X | X | X |
| Sugar | 766.0 g | 600 g | X | X | X |
| Total amount | 1 L (1.0kg) | 1 L (1.0kg) | 1 L (1.0kg) | 1 L (1.0kg) | 1 L (1.0kg) |

Table 4. Recipes for tissue simulating liquid

### 1.12 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate ("SAR") in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1–1992, Copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter. Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

(1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube). Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or

by specific training or education through appropriate means, such as an RF safety program in a work environment.

(2) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .5)

| **Human Exposure** | **Uncontrolled Environment General Population** | **Controlled Environment Occupational** |
|---|---|---|
| **Spatial Peak SAR** (Brain) | 1.60 m W/g | 8.00 m W/g |
| **Spatial Average SAR** (Whole Body) | 0.08 m W/g | 0.40 m W/g |
| **Spatial Peak SAR** (Hands/Feet/Ankle/Wrist) | 4.00 m W/g | 20.00 m W/g |

Table .5 RF exposure limits

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

# 2.Summary of Results

## GSM 850 MHZ

| Right Head Slider-off(Cheek Position) | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.66dbm | 0.317 | 22.1 | 21.7 |
| **Left Head Slider-off (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.66dbm | 0.295 | 22.1 | 21.7 |
| **Right Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.66dbm | 0.238 | 22.1 | 21.7 |
| **Left Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.66dbm | 0.229 | 22.1 | 21.7 |
| **Right Head Slider-on(Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.66dbm | 0.220 | 22.1 | 21.7 |
| **Left Head Slider-on (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.66dbm | 0.294 | 22.1 | 21.7 |
| **Right Head Slider-on(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.66dbm | 0.194 | 22.1 | 21.7 |
| **Left Head Slider-on(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.66dbm | 0.269 | 22.1 | 21.7 |
| **Body worn (testing in GPRS mode)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |

| | | | | | | |
|---|---|---|---|---|---|---|
| 850 MHz | 128 | 824.2 | 32.46dbm | 1.25 | 22.1 | 21.7 |
| | 190 | 836.6 | 32.66dbm | 1.24 | 22.1 | 21.7 |
| | 251 | 848.8 | 32.76dbm | 1.3 | 22.1 | 21.7 |
| **Body worn- repeated for EUT front to phantom** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 0.535 | 22.1 | 21.7 |
| **Body worn-repeated with Memory card** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 1.37 | 22.1 | 21.7 |
| **Body worn-repeated with Bluetooth active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 1.32 | 22.1 | 21.7 |
| **Body worn-repeated with Samsung Battery** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 1.38 | 22.1 | 21.7 |
| **Body worn-repeated with Sanyo Battery** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| **850 MHz** | **251** | **848.8** | **32.76dbm** | **1.42** | 22.1 | 21.7 |
| **Body worn-repeated with Headset 1** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 1.28 | 22.1 | 21.7 |
| **Body worn-repeated with Headset 2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 1.27 | 22.1 | 21.7 |
| **Body worn-repeated with WiFi b active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 1.05 | 22.1 | 21.7 |
| **Body worn-repeated with WiFi g active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |

| | | | | | | |
|---|---|---|---|---|---|---|
| 850 MHz | 251 | 848.8 | 32.76dbm | 1.01 | 22.1 | 21.7 |
| **Body worn-repeated with EGPRS mode** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 0.355 | 22.1 | 21.7 |
| **Body worn-repeated with Sanyo Battery & Holster_2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.76dbm | 1.1 | 22.1 | 21.7 |

# PCS 1900 MHZ

| **Right Head Slider-off(Cheek Position)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.358 | 22.1 | 21.7 |
| **Left Head Slider-off (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.384 | 22.1 | 21.7 |
| **Right Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.571 | 22.1 | 21.7 |
| **Left Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.489 | 22.1 | 21.7 |
| **Right Head Slider-on(Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.355 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.521 | 22.1 | 21.7 |
| **Right Head Slider- on (15° Tilt Position)** | | | | | | |

| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
|---|---|---|---|---|---|---|
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.463 | 22.1 | 21.7 |
| **Left Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.518 | 22.1 | 21.7 |
| **Body worn (testing in GPRS mode)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 512 | 1850.2 | 29.79dbm | 0.944 | 22.1 | 21.7 |
| | 661 | 1880 | 29.88dbm | 0.951 | 22.1 | 21.7 |
| | 810 | 1909.8 | 30.08dbm | 0.907 | 22.1 | 21.7 |
| **Body worn-repeated with Holster_2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.376 | 22.1 | 21.7 |

# WCDMA B2

| **Right Head Slider-off(Cheek Position)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.664 | 22.1 | 21.7 |
| **Left Head Slider-off (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.752 | 22.1 | 21.7 |
| **Right Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9262 | 1852.4 | 22.95dbm | 0.865 | 22.1 | 21.7 |
| | 9400 | 1880.0 | 23.16dbm | 0.983 | 22.1 | 21.7 |
| | 9538 | 1907.6 | 22.98dbm | 0.963 | 22.1 | 21.7 |
| **Left Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9262 | 1852.4 | 22.95dbm | 0.866 | 22.1 | 21.7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 9400 | 1880.0 | 23.16dbm | 0.925 | 22.1 | 21.7 |
| | 9538 | 1907.6 | 22.98dbm | 0.876 | 22.1 | 21.7 |
| **Right Head Slider-on(Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.759 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9262 | 1852.4 | 22.95dbm | 1.02 | 22.1 | 21.7 |
| | **9400** | **1880.0** | **23.16dbm** | **1.06** | 22.1 | 21.7 |
| | 9538 | 1907.6 | 22.98dbm | 1.04 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Samsung Battery** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 1.04 | 22.1 | 21.7 |
| **Right Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9262 | 1852.4 | 22.95dbm | 0.813 | 22.1 | 21.7 |
| | 9400 | 1880.0 | 23.16dbm | 0.864 | 22.1 | 21.7 |
| | 9538 | 1907.6 | 22.98dbm | 0.917 | 22.1 | 21.7 |
| **Left Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA_ B2 | 9262 | 1852.4 | 22.95dbm | 1.00 | 22.1 | 21.7 |
| | 9400 | 1880.0 | 23.16dbm | 1.05 | 22.1 | 21.7 |
| | 9538 | 1907.6 | 22.98dbm | 1.01 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Bluetooth active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.904 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with MemoryCard active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.907 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Samsung Battery active** | | | | | | |

| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
|---|---|---|---|---|---|---|
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.855 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Sanyo Battery active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.856 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Wibi b active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.833 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Wibi g active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.830 | 22.1 | 21.7 |
| **Body worn (testing in GPRS mode)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9262 | 1852.4 | 22.95dbm | 0.789 | 22.1 | 21.7 |
| | 9400 | 1880.0 | 23.16dbm | 0.862 | 22.1 | 21.7 |
| | 9538 | 1907.6 | 22.98dbm | 0.832 | 22.1 | 21.7 |
| **Body worn-repeated with Holster_2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.16dbm | 0.786 | 22.1 | 21.7 |
| **Body worst case-repeated with HSDPA mode** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.04dbm | 0.884 | 22.1 | 21.7 |

# WCDMA B5

| **Right Head Slider-off(Cheek Position)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.16dbm | 0.466 | 22.1 | 21.7 |
| **Left Head Slider-off (Cheek Position)** | | | | | | |

| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
|---|---|---|---|---|---|---|
| WCDMA B5 | 4183 | 836.6 | 23.16dbm | 0.453 | 22.1 | 21.7 |
| **Right Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.16dbm | 0.348 | 22.1 | 21.7 |
| **Left Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.16dbm | 0.352 | 22.1 | 21.7 |
| **Right Head Slider-on(Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.16dbm | 0.315 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.16dbm | 0.433 | 22.1 | 21.7 |
| **Right Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.16dbm | 0.282 | 22.1 | 21.7 |
| **Left Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.16dbm | 0.416 | 22.1 | 21.7 |
| **Body worn (testing in GPRS mode)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4132 | 826.4 | 23.20dbm | 0.877 | 22.1 | 21.7 |
| | 4183 | 836.6 | 23.16dbm | 0.796 | 22.1 | 21.7 |
| | 4233 | 846.6 | 23.02dbm | 0.843 | 22.1 | 21.7 |
| **Body worn-repeated with Holster_2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4132 | 826.4 | 23.20dbm | 0.840 | 22.1 | 21.7 |
| **Body worst case-repeat with HSDPA mode** | | | | | | |

| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
|---|---|---|---|---|---|---|
| WCDMA B5 | 4132 | 826.4 | 23.57dbm | 1.09 | 22.1 | 21.7 |

# WiFi b

| **Body worn (testing in WiFi b mode)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WiFi b | 1 | 2412 | 13.78dbm | 0.352 | 22.1 | 21.7 |
| | 6 | 2437 | 13.75dbm | 0.411 | 22.1 | 21.7 |
| | 11 | 2462 | 14.12dbm | 0.442 | 22.1 | 21.7 |

# WiFi g

| **Body worn (testing in WiFi g mode)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WiFi g | 1 | 2412 | 10.97dbm | 0.127 | 22.1 | 21.7 |
| | 6 | 2437 | 11.23dbm | 0.127 | 22.1 | 21.7 |
| | 11 | 2462 | 11.48dbm | 0.148 | 22.1 | 21.7 |

Note: SAR measurement results for the Mobile Phone at maximum output power.

### Second solution measurement result (changed PCM & Camera)

# GSM 850 MHZ

| **Right Head Slider-off(Cheek Position)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850MHZ | 190 | 836.6 | 32.6dbm | 0.380 | 22.1 | 21.7 |
| **Left Head Slider-off (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.6dbm | 0.364 | 22.1 | 21.7 |
| **Right Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |

| | | | | | | |
|---|---|---|---|---|---|---|
| 850 MHz | 190 | 836.6 | 32.6dbm | 0.265 | 22.1 | 21.7 |
| **Left Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.6dbm | 0.249 | 22.1 | 21.7 |
| **Right Head Slider-on(Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.6dbm | 0.223 | 22.1 | 21.7 |
| **Left Head Slider-on (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.6dbm | 0.319 | 22.1 | 21.7 |
| **Right Head Slider-on(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.6dbm | 0.182 | 22.1 | 21.7 |
| **Left Head Slider-on(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 190 | 836.6 | 32.6dbm | 0.316 | 22.1 | 21.7 |
| **Body worn (testing in GPRS mode)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 128 | 824.2 | 32.5dbm | 1.51 | 22.1 | 21.7 |
| | 190 | 836.6 | 32.6dbm | 1.55 | 22.1 | 21.7 |
| | **251** | **848.8** | **32.5dbm** | **1.58** | 22.1 | 21.7 |
| **Body worn- repeated for EUT front to phantom** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 0.56 | 22.1 | 21.7 |
| **Body worn-repeated with Memory card** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.56 | 22.1 | 21.7 |
| **Body worn-repeated with Bluetooth active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |

| | | | | | | |
|---|---|---|---|---|---|---|
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.57 | 22.1 | 21.7 |
| **Body worn-repeated with Samsung Battery** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.49 | 22.1 | 21.7 |
| **Body worn-repeated with Sanyo Battery** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.54 | 22.1 | 21.7 |
| **Body worn-repeated with Headset 1** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.28 | 22.1 | 21.7 |
| **Body worn-repeated with Headset 2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.29 | 22.1 | 21.7 |
| **Body worn-repeated with WiFi b active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.24 | 22.1 | 21.7 |
| **Body worn-repeated with WiFi g active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.19 | 22.1 | 21.7 |
| **Body worn-repeated with EGPRS mode** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 0.311 | 22.1 | 21.7 |
| **Body worn-repeated with Holster_2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 850 MHz | 251 | 848.8 | 32.5dbm | 1.24 | 22.1 | 21.7 |

# PCS 1900 MHZ

| **Right Head Slider-off(Cheek Position)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1900 MHz | 661 | 1880 | 30.0dbm | 0.272 | 22.1 | 21.7 |
| **Left Head Slider-off (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 30.0dbm | 0.318 | 22.1 | 21.7 |
| **Right Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.403 | 22.1 | 21.7 |
| **Left Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 29.88dbm | 0.381 | 22.1 | 21.7 |
| **Right Head Slider-on(Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 30.0dbm | 0.292 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 30.0dbm | 0.527 | 22.1 | 21.7 |
| **Right Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 30.0dbm | 0.377 | 22.1 | 21.7 |
| **Left Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 661 | 1880 | 30.0dbm | 0.474 | 22.1 | 21.7 |
| **Body worn (testing in GPRS mode)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| 1900 MHz | 512 | 1850.2 | 29.8dbm | 0.713 | 22.1 | 21.7 |
| | 661 | 1880 | 30.0dbm | 0.695 | 22.1 | 21.7 |
| | 810 | 1909.8 | 30.1dbm | 0.638 | 22.1 | 21.7 |
| **Body worn-repeated with Holster_2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1900 MHz | 512 | 1850.2 | 29.8dbm | 0.518 | 22.1 | 21.7 |

# WCDMA B2

| **Right Head Slider-off(Cheek Position)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.547 | 22.1 | 21.7 |
| **Left Head Slider-off (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.607 | 22.1 | 21.7 |
| **Right Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.769 | 22.1 | 21.7 |
| **Left Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.727 | 22.1 | 21.7 |
| **Right Head Slider-on(Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.533 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9262 | 1852.4 | 23.14dbm | 0.842 | 22.1 | 21.7 |
| | 9400 | 1880.0 | 23.3dbm | 1 | 22.1 | 21.7 |
| | 9538 | 1907.6 | 23.15dbm | 0.892 | 22.1 | 21.7 |
| **Right Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA_ B2 | 9400 | 1880.0 | 23.3dbm | 0.680 | 22.1 | 21.7 |
| **Left Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |

| | | | | | | |
|---|---|---|---|---|---|---|
| WCDMA_ B2 | 9262 | 1852.4 | 23.14dbm | 0.822 | 22.1 | 21.7 |
| | 9400 | 1880.0 | 23.3dbm | 0.905 | 22.1 | 21.7 |
| | 9538 | 1907.6 | 23.15dbm | 0.811 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Bluetooth active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.995 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with MemoryCard active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.988 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Samsung Battery active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| **WCDMA B2** | **9400** | **1880.0** | **23.3dbm** | **1.05** | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Sanyo Battery active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 1 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Wibi b active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 1.01 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position) -repeated with Wibi g active** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.990 | 22.1 | 21.7 |
| **Body worn (testing in GPRS mode)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9262 | 1852.4 | 23.14dbm | 0.857 | 22.1 | 21.7 |
| | 9400 | 1880.0 | 23.3dbm | 0.934 | 22.1 | 21.7 |
| | 9538 | 1907.6 | 23.15dbm | 0.779 | 22.1 | 21.7 |
| **Body worn-repeated with Holster_2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B2 | 9400 | 1880.0 | 23.3dbm | 0.759 | 22.1 | 21.7 |
| **Body worst case-repeated with HSDPA mode** | | | | | | |

| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
|---|---|---|---|---|---|---|
| WCDMA B2 | 9400 | 1880.0 | 23.11dbm | 0.829 | 22.1 | 21.7 |

# WCDMA B5

| **Right Head Slider-off(Cheek Position)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.12dbm | 0.488 | 22.1 | 21.7 |
| **Left Head Slider-off (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.12dbm | 0.471 | 22.1 | 21.7 |
| **Right Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.12dbm | 0.373 | 22.1 | 21.7 |
| **Left Head Slider-off(15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.12dbm | 0.354 | 22.1 | 21.7 |
| **Right Head Slider-on(Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.12dbm | 0.367 | 22.1 | 21.7 |
| **Left Head Slider- on (Cheek Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.12dbm | 0.470 | 22.1 | 21.7 |
| **Right Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.12dbm | 0.302 | 22.1 | 21.7 |
| **Left Head Slider- on (15° Tilt Position)** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4183 | 836.6 | 23.12dbm | 0.461 | 22.1 | 21.7 |

| **Body worn (testing in GPRS mode)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4132 | 826.4 | 23.24dbm | 1.07 | 22.1 | 21.7 |
| | 4183 | 836.6 | 23.16dbm | 0.818 | 22.1 | 21.7 |
| | 4233 | 846.6 | 23.07dbm | 0.934 | 22.1 | 21.7 |
| **Body worn-repeated with Holster_2** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4132 | 826.4 | 23.24dbm | 0.910 | 22.1 | 21.7 |
| **Body worst case-repeat with HSDPA mode** | | | | | | |
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WCDMA B5 | 4132 | 826.4 | 23.63dbm | 1.1 | 22.1 | 21.7 |

# WiFi b

| **Body worn (testing in WiFi b mode)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WiFi b | 1 | 2412 | 13.78dbm | 0.394 | 22.1 | 21.7 |
| | 6 | 2437 | 13.75dbm | 0.429 | 22.1 | 21.7 |
| | 11 | 2462 | 14.12dbm | 0.474 | 22.1 | 21.7 |

# WiFi g

| **Body worn (testing in WiFi g mode)** | | | | | | |
|---|---|---|---|---|---|---|
| Frequency | Channel | MHz | Conducted Output Power (Average) | Measured(W/kg) 1g | Amb. Temp[˚C] | Liquid Temp[˚C] |
| WiFi g | 1 | 2412 | 10.97dbm | 0.104 | 22.1 | 21.7 |
| | 6 | 2437 | 11.23dbm | 0.120 | 22.1 | 21.7 |
| | 11 | 2462 | 11.48dbm | 0.157 | 22.1 | 21.7 |

Note: SAR measurement results for the Mobile Phone at maximum output power.

# 3. Instruments List

| Maunfacturer | Device | Type | Serial Number | Due date of Calibration |
|---|---|---|---|---|
| Stäubli | Robot | RX90BL | F03/5W05A1/A/01 | N/A |
| Schmid& Partner Engineering AG | Dosimetric E-Field Probe | ET3DV6 | 1782 | April 23, 2008 |
| Schmid& Partner Engineering AG | 835 MHz System Validation Dipole | D835V2 | 490 | August 14, 2007 |
| Schmid& Partner Engineering AG | 1900 MHz System Validation Dipole | D1900V2 | 5d033 | August 16, 2007 |
| Schmid& Partner Engineering AG | Data acquisition Electronics | DAE3 | 567 | September 22, 2007 |
| Schmid& Partner Engineering AG | Software | DASY 4 V4.7 | N/A | N/A |
| Schmid& Partner Engineering AG | Phantom | SAM Phantom V4.0 | TP-1299 TP-1300 | N/A |
| Agilent | Network Analyzer | E5070B | MY42100282 | May 11, 2008 |
| Agilent | Dielectric Probe Kit | 85070D | 2184 | N/A |
| Agilent | Power Meter | E4419B | GB43311126 | December 8, 2007 |
| Agilent | Power Sensor | E9300H | MY41495308 MY41495314 | December 8, 2007 |
| Agilent | Signal Generator | E4421B | MY43350132 | December 8, 2007 |
| Empower RF Systems | Power Amplifier | 2001-BBS3Q7ECK | 1032 D/C 0336 | May 11, 2008 |
| Agilent | Dual Directional Coupler | 777D 778D | 50128 50454 | December 8, 2007 |
| Microlab | LP Filter | LA-15N LA-30N | N/A | December 8, 2007 |
| R & S | Mobile Test Unit | CMU200 | GB43345198 | December 28, |

| | | | | |
|---|---|---|---|---|
| | | | | 2007 |

| | | | | |
|---|---|---|---|---|
| Schmid & Partner Engineering AG | Dosimetric E-Field Probe | EX3DV3 | 3526 | Aug.29.2008 |
| Schmid & Partner Engineering AG | 900/1900 MHz System Validation Dipole | D900V2<br>D1900V2<br>D2450V2 | 178<br>5d027<br>727 | Feb.19.2008<br>Mar.20.2008<br>Mar.13.2008 |
| Schmid & Partner Engineering AG | Data acquisition Electronics | DAE4<br>DAE4 | 679<br>547 | Apr.20.2008<br>Oct.01.2008 |
| Schmid & Partner Engineering AG | Software | DASY 4 V4.7 Build 53 | N/A | Calibration isn't necessary |
| Schmid & Partner Engineering AG | Phantom | SAM | N/A | Calibration isn't necessary |
| Agilent | Network Analyzer | 8753D | 3410A05547 | Nov.14.2008 |
| Agilent | Dielectric Probe Kit | 85070D | US01440168 | Calibration isn't necessary |
| Agilent | Dual-directional coupler | 778D | 50313 | Aug.21.2008 |
| Agilent | RF Signal Generator | 8648D | 3847M00432 | May.22.2008 |
| Agilent | Power Sensor | 8481H | MY41091361 | Jun.04.2008 |
| Agilent | 8960 Series 10 Wireless Communication Tester | 8960 | GB44051912 | Nov.27.2008 |

# 4.Measurements

Date/Time: 2007-07-25 11:43:56

Test Laboratory: SGS Testing Korea
File Name: GSM850_Right Ear.da4

**DUT: WING200; Type: Slide Keyboard; Serial: TY722FY00163**
**Program Name: GSM850_Right Ear**

Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.886 mho/m; $\varepsilon_r$ = 42.2; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

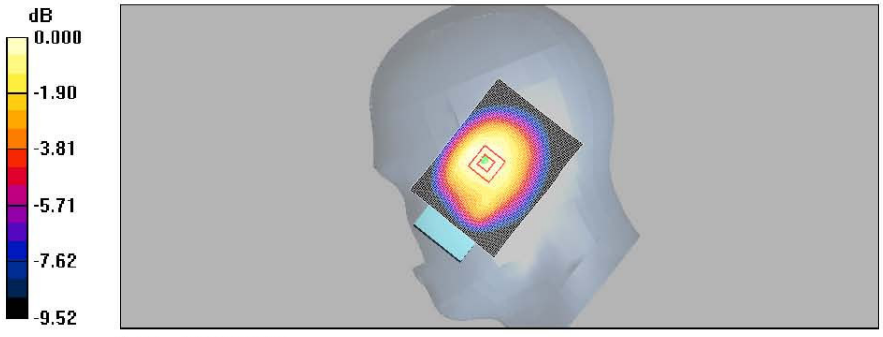
DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(6.18, 6.18, 6.18); Calibrated: 2007-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2006-09-22
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

**GSM850_RE_Cheek_Slide Close_Mid/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.336 mW/g

**GSM850_RE_Cheek_Slide Close_Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.4 V/m; Power Drift = 0.133 dB
Peak SAR (extrapolated) = 0.410 W/kg
**SAR(1 g) = 0.317 mW/g; SAR(10 g) = 0.238 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.336 mW/g




0 dB = 0.336mW/g

Date/Time: 2007-07-25 10:23:48

Test Laboratory: SGS Testing Korea
File Name: GSM850_Left Ear.da4

**DUT: WING200; Type: Slide Keyboard; Serial: TY722FY00163**
**Program Name: GSM850_Left Ear**

Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.886 mho/m; $\varepsilon_r$ = 42.2; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

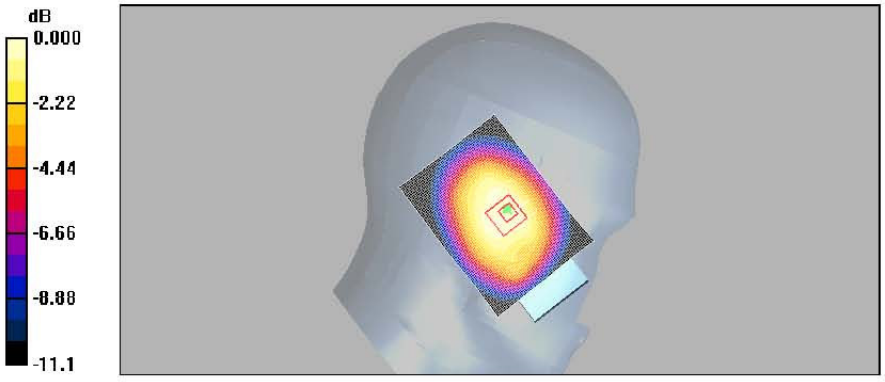
DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(6.18, 6.18, 6.18); Calibrated: 2007-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2006-09-22
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

**GSM850_LE_Cheek_Slide Close_Mid/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.334 mW/g

**GSM850_LE_Cheek_Slide Close_Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.4 V/m; Power Drift = -0.192 dB
Peak SAR (extrapolated) = 0.418 W/kg
**SAR(1 g) = 0.295 mW/g; SAR(10 g) = 0.219 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.311 mW/g




0 dB = 0.311mW/g

Date/Time: 2007-07-25 12:02:56

Test Laboratory: SGS Testing Korea
File Name: GSM850_Right Ear.da4

**DUT: WING200; Type: Slide Keyboard; Serial: TY722FY00163**
**Program Name: GSM850_Right Ear**

Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.886 mho/m; $\varepsilon_r$ = 42.2; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(6.18, 6.18, 6.18); Calibrated: 2007-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2006-09-22
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

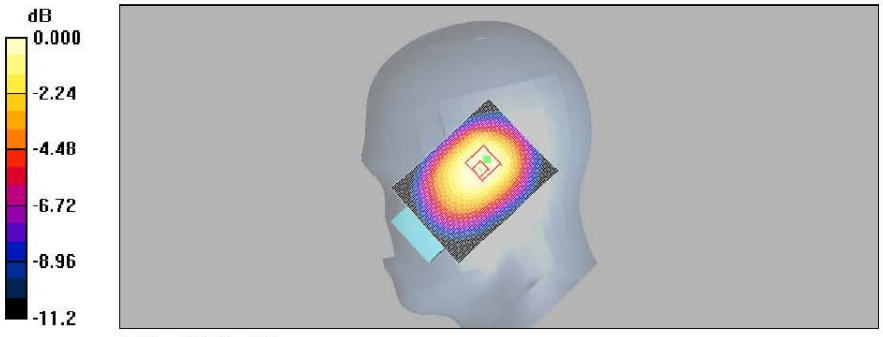
**GSM850_RE_Tilt_Slide Close_Mid/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.250 mW/g

**GSM850_RE_Tilt_Slide Close_Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.9 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.297 W/kg
**SAR(1 g) = 0.238 mW/g; SAR(10 g) = 0.170 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.251 mW/g




0 dB = 0.251mW/g

Date/Time: 2007-07-25 10:42:27

Test Laboratory: SGS Testing Korea
File Name: GSM850_Left Ear.da4

**DUT: WING200; Type: Slide Keyboard; Serial: TY722FY00163**
**Program Name: GSM850_Left Ear**

Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.886 mho/m; $\varepsilon_r$ = 42.2; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(6.18, 6.18, 6.18); Calibrated: 2007-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2006-09-22
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

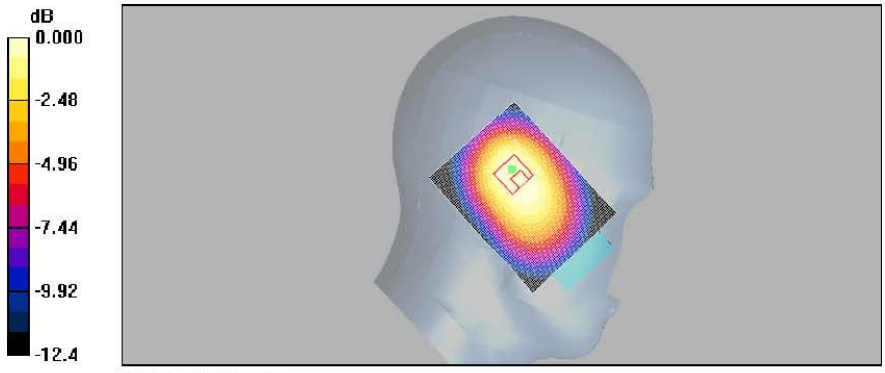
**GSM850_LE_Tilt_Slide Close_Mid/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.249 mW/g

**GSM850_LE_Tilt_Slide Close_Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.4 V/m; Power Drift = -0.066 dB
Peak SAR (extrapolated) = 0.316 W/kg
**SAR(1 g) = 0.229 mW/g; SAR(10 g) = 0.159 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.244 mW/g




0 dB = 0.244mW/g

Date/Time: 2007-07-25 1:12:42

Test Laboratory: SGS Testing Korea
File Name: GSM850_Right Ear.da4

**DUT: WING200; Type: Slide Keyboard; Serial: TY722FY00163**
**Program Name: GSM850_Right Ear**

Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.886 mho/m; $\varepsilon_r$ = 42.2; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

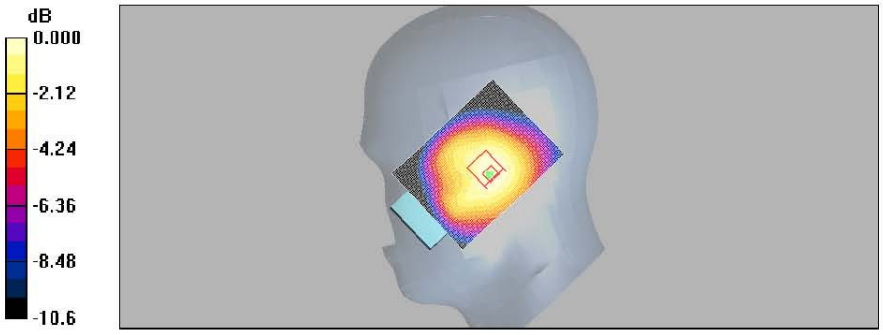
DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(6.18, 6.18, 6.18); Calibrated: 2007-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2006-09-22
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

**GSM850_RE_Cheek_Slide Open_Mid/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.233 mW/g

**GSM850_RE_Cheek_Slide Open_Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.9 V/m; Power Drift = 0.025 dB
Peak SAR (extrapolated) = 0.284 W/kg
**SAR(1 g) = 0.220 mW/g; SAR(10 g) = 0.164 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.233 mW/g




0 dB = 0.233mW/g

Date/Time: 2007-07-25 11:01:34

Test Laboratory: SGS Testing Korea
File Name: GSM850_Left Ear.da4

**DUT: WING200; Type: Slide Keyboard; Serial: TY722FY00163**
**Program Name: GSM850_Left Ear**

Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.886 mho/m; $\varepsilon_r$ = 42.2; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

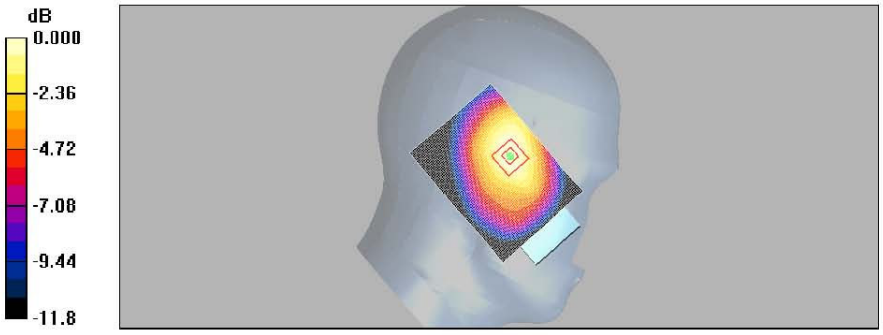
DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(6.18, 6.18, 6.18); Calibrated: 2007-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2006-09-22
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

**GSM850_LE_Cheek_Slide Open_Mid/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.314 mW/g

**GSM850_LE_Cheek_Slide Open_Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = 0.064 dB
Peak SAR (extrapolated) = 0.431 W/kg
**SAR(1 g) = 0.294 mW/g; SAR(10 g) = 0.197 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.319 mW/g




0 dB = 0.319mW/g

Date/Time: 2007-07-25 1:31:44

Test Laboratory: SGS Testing Korea
File Name: GSM850_Right Ear.da4

**DUT: WING200; Type: Slide Keyboard; Serial: TY722FY00163**
**Program Name: GSM850_Right Ear**

Communication System: GSM850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.6 MHz; $\sigma$ = 0.886 mho/m; $\varepsilon_r$ = 42.2; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

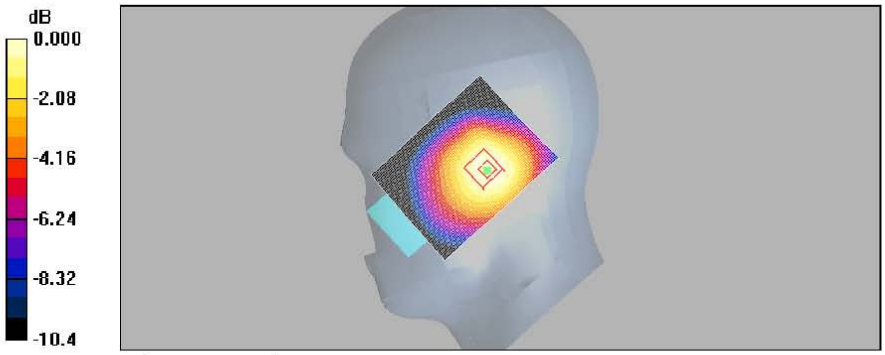
DASY4 Configuration:
- Probe: ET3DV6 - SN1782; ConvF(6.18, 6.18, 6.18); Calibrated: 2007-04-23
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn567; Calibrated: 2006-09-22
- Phantom: SAM MIC #2000-93 with CRP_900MHz; Type: SAM MIC #2000-93; Serial: TP-1300
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

**GSM850_RE_Tilt_Slide Open_Mid/Area Scan (61x81x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.207 mW/g

**GSM850_RE_Tilt_Slide Open_Mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.6 V/m; Power Drift = -0.043 dB
Peak SAR (extrapolated) = 0.242 W/kg
**SAR(1 g) = 0.194 mW/g; SAR(10 g) = 0.141 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.207 mW/g




0 dB = 0.207mW/g