A Test Lab Techno Corp.

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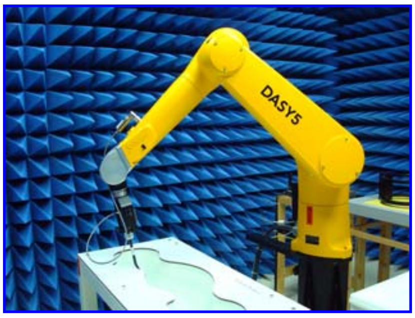
SAR EVALUATION REPORT

Test Report No.	:	**0901FS14**
Applicant	:	**Acer Incorporated**
FCC ID	:	**HLZZG53GQ**
Trade Name	:	**acer**
Model Number	:	**ZG5, Aspire One**
Product Type	:	**Notebook PC**
Dates of Test	:	**Sep. 05 ~ 08, 2008 ; Jan. 17 ~ 21, 2009**
Test Environment	:	**Ambient Temperature： 22 ± 2 ° C**
		Relative Humidity：40 - 70 %
Test Specification	:	**Standard C95.1-2005**
		2.1093;FCC/OET Bulletin 65 Supplement C [July 2001]
		IEEE Std. 1528-2003
Max. SAR	:	**0.123 W/kg Body SAR**
Test Lab	:	**Chang-an Lab**



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

Country Huang	**20090123**	**Sam Chuang**	**20090123**
Measurement Center Manager		**Testing Engineer**	

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Appendix

1. Description of Equipment Under Test (EUT)

Applicant : **Acer Incorporated**
8F, 88, Sec.1, Hsin Tai Wu Rd. Hsichih, Taipei Hsien 221 Taiwan, R.O.C.

Manufacturer	:	Quanta Computer Inc.
Manufacturer Address	:	No.211, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan, R.O.C.
Product Type	:	Notebook PC
Trade Name	:	acer
Model Number	:	ZG5, Aspire One
FCC ID	:	HLZZG53GQ
Test Device	:	Production Unit
Tx Frequency	:	824.2 - 848.8 MHz (GPRS/EGPRS 850) 1850.2 - 1909.8 MHz (GPRS/EGPRS 1900) 826.6 - 846.4 MHz (WCDMA/HSDPA/HSUPA Band V) 1852.6 - 1907.4 MHz (WCDMA/HSDPA/HSUPA Band II)
Max. RF Conducted Power	:	1.738 W (32.40 dBm) GPRS 850 Class 10 0.454 W (26.57 dBm) EGPRS 850 Class 10 0.767 W (28.85 dBm) GPRS 1900 Class 10 0.378 W (25.78 dBm) EGPRS 1900 Class 10 0.253 W (24.03 dBm) WCDMA Band V 0.135 W (21.30 dBm) HSDPA Band V 0.226 W (23.55 dBm) HSUPA Band V 0.228 W (23.58 dBm) WCDMA Band II 0.145 W (21.60 dBm) HSDPA Band II 0.236 W (23.73 dBm) HSUPA Band II
Max. SAR Measurement	:	0.123 W/kg Body SAR
HW Version	:	F
SW Version	:	3.5
Antenna Type	:	Internal Type
Antenna Gain	:	0.56 dBi GPRS/EGPRS 850 / WCDMA Band V -0.65 dBi GPRS/EGPRS 1900 / WCDMA Band II
Device Category	:	Portable
RF Exposure Environment	:	General Population / Uncontrolled
Battery Option	:	Standard
Application Type	:	Certification

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

Class 2 permissive change description

The model (acer_ZG5, Aspire One_0901FS14) is the variant product of acer_ZG5, Aspire One_0809FS12; acer_ZG5, Aspire One_0809FS12 FCC ID is HLZZG53GQ. acer_ZG5, Aspire One_0901FS14 is changed from acer_ZG5, Aspire One_0809FS12; The RF module is the same as acer_ZG5, Aspire One_0809FS12. The difference from acer_ZG5 is that Aspire One_0901FS14 adds HSUPA function because of the difference of software.

Add test mode of HSUPA Band II and Band V. The other test mode reference original report (Report number: 0809FS12)

Figure 1. EUT Photo

2. Other Accessories

Figure 2. Li-ion Battery_ UM08B74 5200mAh

Figure 3. Li-ion Battery_ UM08A73 2200mAh

Figure 4. Li-ion Battery_UM08B72 4400mAh

Figure 5. AC Adapter

3. Introduction

The A Test Lab Techno Corp. has performed measurements of the maximum potential exposure to the user of **Acer Incorporated Trade Name：acer Model(s)：ZG5, Aspire One.** The test procedures, as described in American National Standards, Institute C95.1 - 2005〔1〕, FCC/OET Bulletin 65 Supplement C [July 2001] were employed and they specify the maximum exposure limit of 1.6mW/g as averaged over any 1 gram of tissue for portable devices being used within 20cm between user and EUT in the uncontrolled environment. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the equipment used are included within this test report.

4. SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (dw) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Figure 6).

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

Figure 6. SAR Mathematical Equation

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

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

Where：

σ = conductivity of the tissue (S/m)

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

E = RMS electric field strength (V/m)

＊**Note**：

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

5. SAR Measurement Setup

These measurements were performed with the automated near-field scanning system DASY5 from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision robot (working range greater than 0.9m) which positions the probes with a positional repeatability of better than ±0.02mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length = 300mm) to the data acquisition unit.

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Measurement Server is based on a PC/104 CPU board with a 400MHz intel ULV Celeron, 128MB chipdisk and 128MB RAM. The necessary circuits for communication with either the DAE4 (or DAE3) electronic box as well as the 16-bit AD-converter system for optical detection and digital I/O interface are contained on the DASY5 I/O-board, which is directly connected to the PC/104 bus of the CPU board. The PC consists of the Intel Core(TM)2 CPU @1.86GHz computer with Windows XP system and SAR Measurement Software DASY5, Post Processor SEMCAD, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection…etc. is connected to the Electro-optical converter (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the Measurement Server.

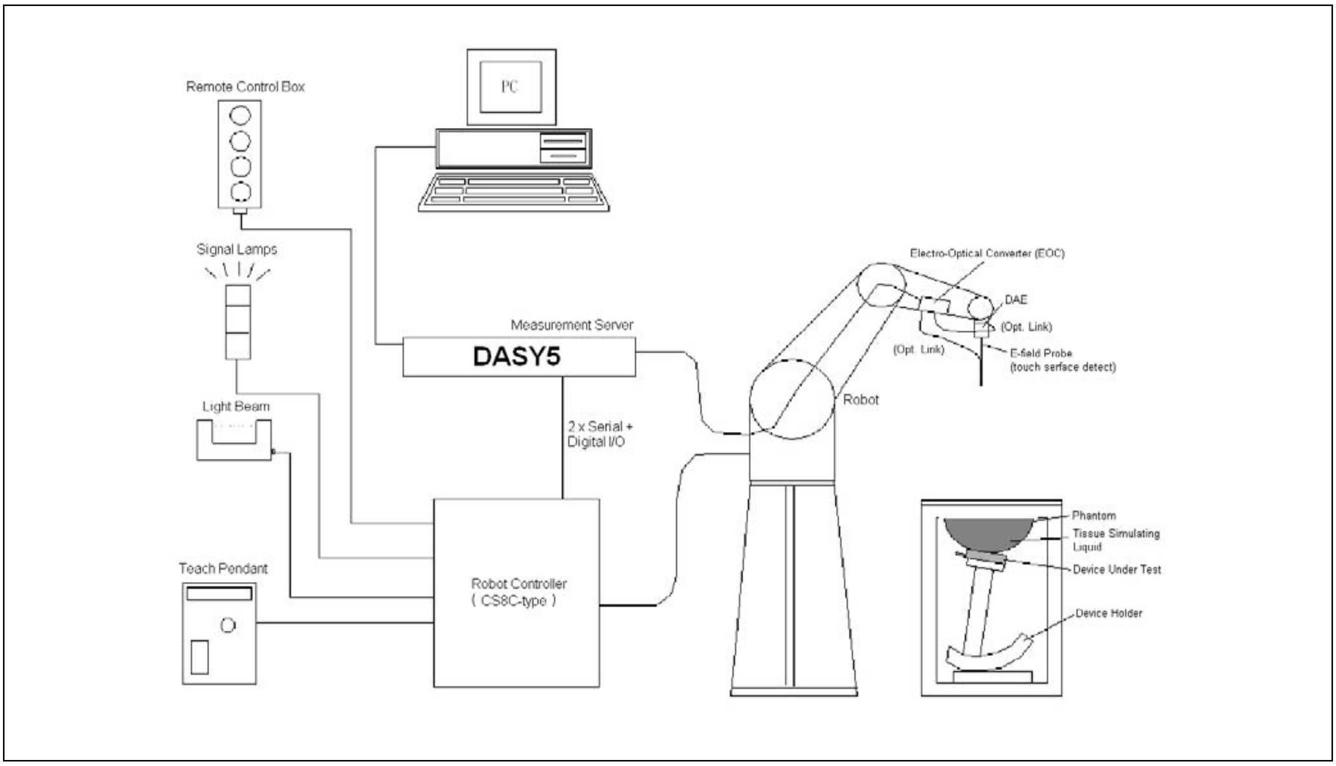


Figure 5. SAR Lab Test Measurement Setup

The DAE4 (or DAE3) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in〔3〕.

6. System Components

6.1 DASY5 E-Field Probe System

The SAR measurements were conducted with the dosimetric probe ES3DV3 or ET3DV6 (manufactured by SPEAG), designed in the classical triangular configuration〔3〕and optimized for dosimetric evaluation. The probes is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi-fiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY5 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped when reaching the maximum.

6.1.1 E-Field Probe Specification

Construction	Symmetrical design with triangular core
	Built-in optical fiber for surface detection System
	Built-in shielding against static charges
	PEEK enclosure material (resistant to organic solvents, e.q., glycol)
Calibration	In air from 10 MHz to 6 GHz
	In brain and muscle simulating tissue at frequencies of 900MHz, 1800MHz, 1950MHz, 2000MHz and 2450MHz (accuracy ±8%)
	Calibration for other liquids and frequencies upon request
Frequency	10 MHz to > 6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity	±0.3 dB in brain tissue (rotation around probe axis)
	±0.5 dB in brain tissue (rotation normal probe axis)
Dynamic Range	10 μW/g to > 100mW/g; Linearity: ±0.2dB
Surface Detection	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surface(EX3DV3 only)
Dimensions	Overall length: 330mm
	Tip length: 20mm
	Body diameter: 12mm
	Tip diameter: 2.5mm
	Distance from probe tip to dipole centers: 1.0mm
Application	General dosimetry up to 6GHz
	Compliance tests of mobile phones
	Fast automatic scanning in arbitrary phantoms

Figure 6.

E-field Probe

Figure 7.

Probe setup on robot

6.1.2 E-Field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure described in〔4〕with accuracy better than ±10%. The spherical isotropy was evaluated with the procedure described in〔5〕and found to be better than ±0.25dB. The sensitivity parameters (NormX, NormY, and NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1GHz, and in a wave guide above 1GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

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

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

Where：

Δt = Exposure time (30 seconds),

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

ΔT = Temperature increase due to RF exposure.

Or

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

Where：

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

6.2 Data Acquisition Electronic (DAE) System

Cell Controller

Processor：	Intel Core(TM)2 CPU
Clock Speed：	@ 1.86GHz
Operating System：	Windows XP Professional

Data Converter

Features：	Signal Amplifier, multiplexer, A/D converter, and control logic
Software：	DASY5 v5.0 (Build 119) & SEMCAD X Version 13.2 Build 87
Connecting Lines：	Optical downlink for data and status info
	Optical uplink for commands and clock

6.3 Robot

Positioner：	Stäubli Unimation Corp. Robot Model: TX90XL
Repeatability：	±0.02 mm
No. of Axis：	6

6.4 Measurement Server

Processor：	PC/104 with a 400MHz intel ULV Celeron
I/O-board：	Link to DAE4(or DAE3)
	16-bit A/D converter for surface detection system
	Digital I/O interface
	Serial link to robot
	Direct emergency stop output for robot

6.5 Device Holder for Transmitters

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

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

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

Figure 8. Device Holder

6.6 Phantom - SAM v4.0

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

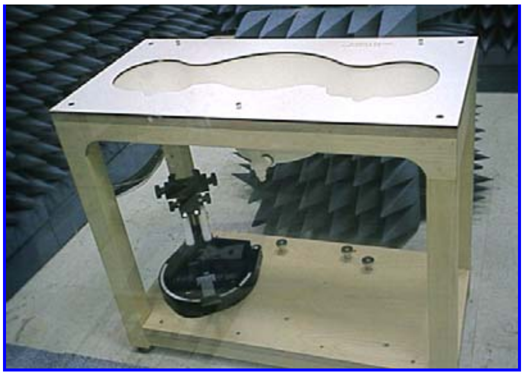


Figure 9. SAM Twin Phantom

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

Table 1. Specification of SAM v4.0

6.7 Data Storage and Evaluation

6.7.1 Data Storage

The DASY5 software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension .DA5. The postprocessing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings. For example, if a measurement has been performed with an incorrect crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be reevaluated.

6.7.2 Data Evaluation

The DASY5 post processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software：

Probe parameters：	- Sensitivity	Normi, ai0, ai1, ai2
	- Conversion factor	ConvFi
	- Diode compression point	dcpi
Device parameters：	- Frequency	f
	- Crest factor	cf
Media parameters：	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as：

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

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

U_i = input signal of channel i (i = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp_i = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated：

E-field probes：

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

H-field probes：

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

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

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

μ V/(V/m)^2 for E-field Probes

$ConvF$ = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

Hi = magnetic field strength of channel i in A/m

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

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

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

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

with SAR = local specific absorption rate in mW/g

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

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

ρ = equivalent tissue density in g/cm^3

∗**Note**：that the density is set to 1, to account for actual head tissue density rather than the density of the tissue simulating liquid.

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

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

with P_{pwe} = equivalent power density of a plane wave in mW/cm^2

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

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

7. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	Dosimetric E-Filed Probe	ES3DV3	3150	Jan. 09, 2008	Jan. 09, 2009
SPEAG	Dosimetric E-Filed Probe	EX3DV4	3578	May. 20, 2008	May. 20, 2009
SPEAG	900MHz System Validation Kit	D900V2	SN:1d053	Dec. 12, 2007	Dec. 12, 2008
SPEAG	900MHz System Validation Kit	D900V2	SN:073	Mar. 17, 2008	Mar. 17, 2009
SPEAG	1800MHz System Validation Kit	D1950V2	1117	Dec. 20, 2007	Dec. 20, 2008
SPEAG	1800MHz System Validation Kit	D1900V2	SN:5d018	May. 08, 2008	May. 08, 2009
SPEAG	Data Acquisition Electronics	DAE4	779	Nov. 30, 2007	Nov. 30, 2008
SPEAG	Data Acquisition Electronics	DAE4	779	Nov. 11, 2008	Nov. 11, 2009
SPEAG	Device Holder	N/A	N/A	NCR	NCR
SPEAG	Phantom	SAM V4.0	TP-1150	NCR	NCR
SPEAG	Robot	Staubli TX90XL	F07/564ZA1/C/01	NCR	NCR
SPEAG	Software	DASY5 V5.0 Build 119	N/A	NCR	NCR
SPEAG	Software	DASY5 V5.0 Build 120	N/A	NCR	NCR
SPEAG	Software	SEMCAD X V13.2 Build 87	N/A	NCR	NCR
SPEAG	Measurement Server	SE UMS 011 AA	1025	NCR	NCR
Agilent	Wireless Communication Test Set	CMU200	112387	Oct. 24, 2007	Oct. 24, 2008
Agilent	Wireless Communication Test Set	CMU200	112387	Oct. 31, 2008	Oct. 31, 2009
Agilent	ENA Series Network Analyzer	E5071B	MY42402996	Oct. 23, 2007	Oct. 23, 2008
Agilent	ENA Series Network Analyzer	E5071B	MY42402996	Nov. 04, 2008	Nov. 04, 2009
Agilent	Dielectric Probe Kit	85070C	US99360094	NCR	NCR
R&S	Power Sensor	NRP-Z22	100179	May. 03, 2008	May. 03, 2009
Agilent	Signal Generator	E8257D	MY44320425	Jul. 03, 2008	Jul. 03, 2009
Agilent	Dual Directional Coupler	778D	50334	NCR	NCR
Mini-Circuits	Power Amplifier	ZHL-42W-SMA	D111103#5	NCR	NCR
Mini-Circuits	Power Amplifier	ZVE-8G-SMA	D042005 671800514	NCR	NCR

Table 2. Test Equipment List

8. Tissue Simulating Liquids

The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.
The dielectric parameters of the liquids were verified prior to the SAR evaluation using an 85070C Dielectric Probe Kit and an 8720ES Network Analyzer.

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

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

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

Table 3. Tissue dielectric parameters for head and body phantoms

8.1 Liquid Confirmation

8.1.1 Parameters

Liquid Verify								
Ambient Temperature： 22 ± 2 °C；Relative Humidity：40 -70%								
Liquid Type	**Frequency**	**Temp (°C)**	**Parameters**	**Target Value**	**Measured Value**	**Deviation (%)**	**Limit (%)**	**Measured Date**
900MHz Body	900MHz	22.0	**εr**	55.0	**53.9**	**-2.00**	± 5	Sep. 05, 2008
			σ	1.05	**1.04**	**-0.95**	± 5	
900MHz Body	900MHz	22.0	**εr**	55.0	**53.9**	**-2.00**	± 5	Sep. 08, 2008
			σ	1.05	**1.04**	**-0.95**	± 5	
900MHz Body	900MHz	22.0	**εr**	55.0	**55.4**	**0.73**	± 5	Jan. 17, 2009
			σ	1.05	**1.03**	**-1.90**	± 5	
1900MHz Body	1900MHz	22.0	**εr**	53.3	**53.1**	**-0.38**	± 5	Jan. 17, 2009
			σ	1.52	**1.50**	**-1.32**	± 5	
1900MHz Body	1900MHz	22.0	**εr**	53.3	**53.1**	**-0.38**	± 5	Jan. 21, 2009
			σ	1.52	**1.50**	**-1.32**	± 5	
1950MHz Body	1950MHz	22.0	**εr**	53.3	**51.6**	**-3.19**	± 5	Sep. 07, 2008
			σ	1.52	**1.56**	**2.63**	± 5	

Table 4. Measured Tissue dielectric parameters for head and body phantoms

8.1.2 Liquid Depth

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

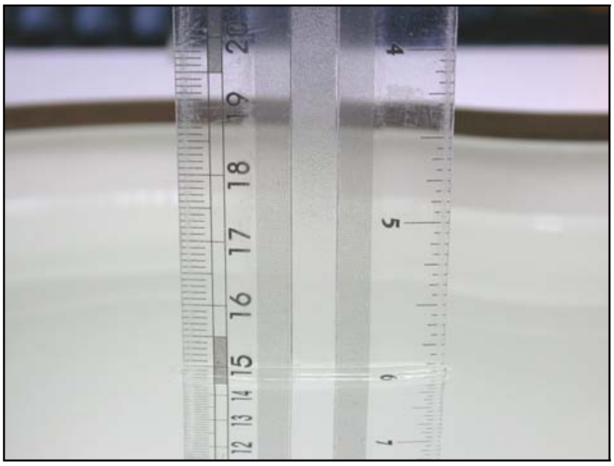


Figure 10. Head-Tissue-Simulating-Liquid

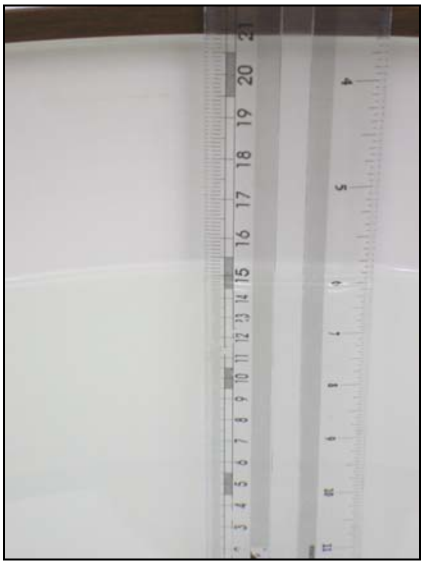


Figure 11. Body-Tissue-Simulating-Liquid

9. Measurement Process

9.1 Device and Test Conditions

The Test Device was provided by **Acer Incorporated** for this evaluation. The spatial peak SAR values were assessed for the lowest, middle and highest channels defined by **GSM/GPRS 850** (#128=824.2MHz, #190=836.6MHz, #251=848.8MHz), **PCS / GPRS 1900** (#512=1850.2MHz, #661=1880.0MHz, #810=1909.8MHz) , **WCDMA/HSDPA/HSUPA Band V** (#4132=826.4MHz, #4183=836.6MHz, #4233=846.6MHz), **WCDMA/HSDPA/HSUAP Band II** (#9262=1852.4MHz, #9400=1880.0MHz, #9538=1907.6MHz) systems . The antenna(s), battery and accessories shall be those specified by the manufacturer. The battery shall be fully charged before each measurement and there shall be no external connections.

HSDPA Date Devices setup for SAR Measurement.

HSDPA should be configured according to the UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) should be set according to values indicated in the Table below.[32] The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.[33]

Sub-test	βc	βd	Bd (SF)	Bc/βd	Bhs[(1)]	CM (dB)[(2)]
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15[(3)]	15/15[(3)]	64	12/15[(3)]	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note

1. ΔACK, ΔNACK and ΔCQI = 8 ⇔ Ahs = βhs/βc = 30/15 ⇔ βhs= 30/15 *βc
2. CM = 1 for βc/βd =12/15, βhs/βc=24/15.
3. For subtest 2 the βc/βd ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 11/15 and βd = 15/15.

Table 5. Setup for Release 5 HSDPA

Table 6.

The antenna(s), battery and accessories shall be those specified by the manufacturer. The battery shall be fully charged before each measurement and there shall be no external connections.

HSPA Date Devices setup for SAR Measurement.

The following procedures are applicable to HSPA (HSUPA/HSDPA) data devices operating under 3GPP Release 6. Body exposure conditions generally apply to these devices, including handsets and data modems operating in various electronic devices. HSUPA operates in conjunction with WCDMA and HSDPA. SAR is initially measured in WCDMA test configurations without HSPA. The default test configuration is to establish a radio link between the DUT and a communication test set to configure a 12.2 kbps RMC (reference measurement channel) in Test Loop Mode 1. SAR for HSPA is selectively measured with HS-DPCCH, EDPCCH and E-DPDCH, all enabled, along with a 12.2 kbps RMC using the highest SAR configuration in WCDMA with 12.2 kbps RMC only. An FRC is configured according to HSDPCCH Sub-test 1 using H-set 1 and QPSK. HSPA is configured according to E-DCH Subtest 5 requirements. SAR for other HSPA sub-test configurations is also confirmed selectively according to output power, exposure conditions and E-DCH UE Category. Maximum output power is verified according to procedures in applicable versions of 3GPP TS 34.121 and SAR must be measured according to these maximum output conditions. The UE Categories for HSDPCCH and HSPA should be clearly identified in the SAR report. The following procedures are applicable only if Maximum Power Reduction (MPR) is implemented according to Cubic Metric (CM) requirements.

When voice transmission and head exposure conditions are applicable to a WCDMA/HSPA data device, head exposure is measured according to the 'Head SAR Measurements' procedures in the 'WCDMA Handsets' section of this document. SAR for body exposure configurations are measured according to the 'Body SAR Measurements' procedures in the 'WCDMA Handsets' section of this document. In addition, body SAR is also measured for HSPA when the maximum average output of each RF channel with HSPA active is at least ¼ dB higher than that measured without HSPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is above 75% of the SAR limit. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP is applicable for head exposure, SAR is not required when the maximum output of each RF channel with HSPA is less than ¼ dB higher than that measured using 12.2 kbps RMC; otherwise, the same HSPA configuration used for body measurements should be used to test for head exposure.

Due to inner loop power control requirements in HSPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA should be configured according to the β values indicated below as well as other applicable procedures described in the 'WCDMA Handset' and 'Release 5 HSDPA Data Devices' sections of this document.

The highest body SAR measured in Antenna Extended & Retracted configurations on a channel in 12.2 kbps RMC. The possible channels are the High, Middle & Low channel. Contact the FCC Laboratory for test and approval requirements if the maximum output power measured in E-DCH Sub-test 2 - 4 is higher than Sub-test 5.

Sub-test	βc	βd	βd (SF)	βc/βd	βhs(1)	βec	βed	Bed (SF)	Bed (codes)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	βed1: 47/15 βed2: 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: ∆ACK, ∆NACK and ∆CQI = 8 ⇔ Ahs = βhs/βc = 30/15 ⇔ βhs= 30/15 *βc.

Note 2: CM = 1 for βc/βd =12/15, βhs/βc=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.

Note 3: For subtest 1 the βc/βd ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 10/15 and βd = 15/15.

Note 4: For subtest 5 the βc/βd ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 14/15 and βd = 15/15.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

Note 6: βed can not be set directly; it is set by Absolute Grant Value.

Usage	Operates with a Normal mode by client (GSM/PCS/WCDMA) Operates with a built-in test mode by client (802.11b/g)
Simulating human Head/Body	Head & Body
EUT Battery	Fully-charged with Li-ion batteries.

Band	Date Rate	CH	Conducted Power		Worst
			Before	After	
GPRS850	**3Down 2up**	Lowest	32.25	32.24	☐
		Middle	32.28	32.27	☐
		Highest	**32.40**	32.39	■
	3Down 1up	Lowest	31.95	31.93	☐
		Middle	32.00	31.99	☐
		Highest	32.10	32.09	☐
EGPRS850	**3Down 2up**	Lowest	26.35	26.34	☐
		Middle	26.40	26.48	☐
		Highest	**26.57**	26.56	■
	3Down 1up	Lowest	26.30	26.29	☐
		Middle	26.30	26.29	☐
		Highest	26.40	26.39	☐
GPRS1900	**3Down 2up**	Lowest	**28.85**	28.85	■
		Middle	28.75	28.74	☐
		Highest	28.65	28.64	☐
	3Down 1up	Lowest	28.35	28.34	☐
		Middle	28.25	28.24	☐
		Highest	28.15	28.14	☐
EGPRS1900	**3Down 2up**	Lowest	**25.78**	25.77	■
		Middle	25.65	25.64	☐
		Highest	25.60	25.59	☐
	3Down 1up	Lowest	25.55	25.54	☐
		Middle	25.30	25.28	☐
		Highest	25.30	25.29	☐

Band	Date Rate or Sub-test	CH	Conducted Power		Worst
			Before	After	
WCDMA V	---	Lowest	23.63	23.62	□
		Middle	24.03	24.02	■
		Highest	23.99	23.98	□
HSDPA V	1	Lowest	20.90	20.89	□
		Middle	21.30	21.29	■
		Highest	20.30	20.29	□
	2	Lowest	20.00	20.00	□
		Middle	20.30	20.29	□
		Highest	20.30	20.29	□
	3	Lowest	18.30	18.29	□
		Middle	18.60	18.59	□
		Highest	18.60	18.58	□
	4	Lowest	17.70	17.69	□
		Middle	17.90	17.89	□
		Highest	17.90	17.89	□
HSUPA V	1	Lowest	23.51	23.50	□
		Middle	23.56	23.54	■
		Highest	23.26	23.25	□
	2	Lowest	21.45	21.44	□
		Middle	21.59	21.57	□
		Highest	21.28	21.27	□
	3	Lowest	22.62	22.60	□
		Middle	22.60	22.58	□
		Highest	22.35	22.33	□
	4	Lowest	21.52	21.50	□
		Middle	21.62	21.59	□
		Highest	21.38	21.35	□
	5	Lowest	23.38	23.35	□
		Middle	23.56	23.54	□
		Highest	23.19	23.18	□

Band	Date Rate or Sub-test	CH	Conducted Power		Worst
			Before	After	
WCDMA II	---	Lowest	23.58	23.57	☐
		Middle	23.31	23.30	☐
		Highest	23.07	23.06	☐
HSDPA II	1	Lowest	21.50	20.49	☐
		Middle	21.60	21.59	■
		Highest	21.40	21.39	☐
	2	Lowest	20.50	20.49	☐
		Middle	20.70	20.69	☐
		Highest	20.30	20.29	☐
	3	Lowest	18.80	18.79	☐
		Middle	19.00	18.99	☐
		Highest	18.60	18.59	☐
	4	Lowest	18.20	18.19	☐
		Middle	18.40	18.39	☐
		Highest	18.08	18.06	☐
HSUPA II	1	Lowest	23.36	23.34	☐
		Middle	23.07	23.05	☐
		Highest	23.41	23.40	■
	2	Lowest	21.43	21.42	☐
		Middle	21.18	21.17	☐
		Highest	21.42	21.40	☐
	3	Lowest	22.50	22.48	☐
		Middle	22.20	22.19	☐
		Highest	22.52	22.50	☐
	4	Lowest	21.43	21.41	☐
		Middle	21.16	21.15	☐
		Highest	21.35	21.33	☐
	5	Lowest	23.24	23.22	☐
		Middle	22.98	22.95	☐
		Highest	23.38	23.36	☐

Note: The EUT take Li-ion batteries as its power source. Each test was preceded under the condition of fully-charged EUT.

9.2 System Performance Check

9.2.1 Symmetric Dipoles for System Validation

Construction	Symmetrical dipole with l/4 balun enables measurement of feed point impedance with NWA matched for use near flat phantoms filled with head simulating solutions Includes distance holder and tripod adaptor Calibration Calibrated SAR value for specified position and input power at the flat phantom in head simulating solutions.
Frequency	450, 900, 1800, 1950, 2000 and 2450MHz
Return Loss	＞20 dB at specified validation position
Power Capability	＞100 W (f＜1GHz); ＞40 W (f＞1GHz)
Options	Dipoles for other frequencies or solutions and other calibration conditions are available upon request
Dimensions	D450V2：dipole length 270 mm; overall height 330 mm D900V2：dipole length 149 mm; overall height 330 mm D1800V2：dipole length 72 mm; overall height 300 mm D1950V2：dipole length 62 mm; overall height 300 mm D2000V2：dipole length 65 mm; overall height 300 mm D2450V2：dipole length 51.5 mm; overall height 300 mm

Figure 12. Validation Kit

9.2.2 Validation

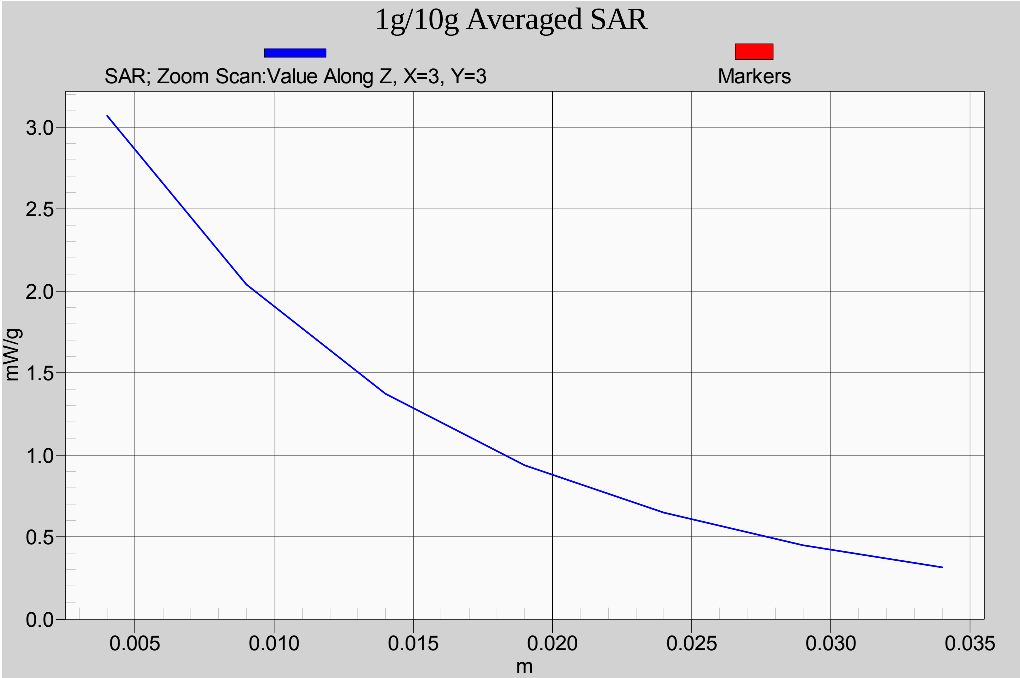
Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ± 7%. The validation was performed at 900MHz and 1950MHz.

Validation kit	Mixture Type	SAR_{1g} [mW/g]	SAR_{10g} [mW/g]	Date of Calibration
D900V2-SN1d053	Body	11.56	7.48	Dec. 12, 2007
D900V2-SN073	Body	11.28	7.28	Mar. 17, 2008
D1950V2-SN1117	Body	41.2	21.76	Dec. 20, 2007
D1900V2-SN5d018	Body	38.4	20.16	May. 22, 2008

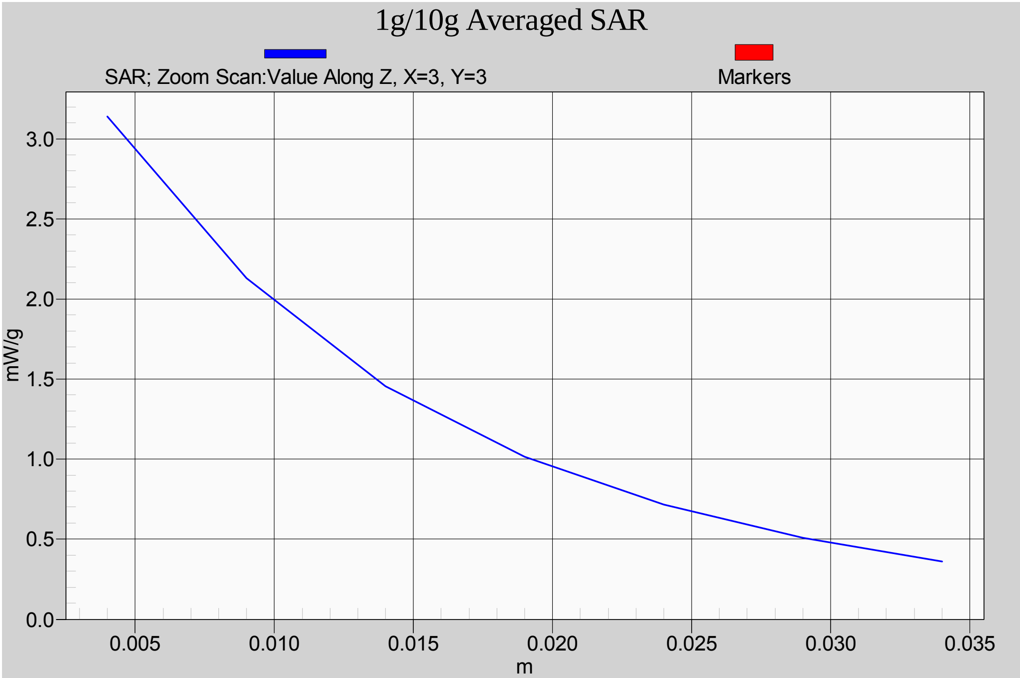
Frequency (MHz)	Power	SAR_{1g} (mW/g)	SAR_{10g} (mW/g)	Drift (dB)	Difference percentage 1g	Difference percentage 10g	Date
900 (Body)	250mW	2.82	1.8	**-0.020**	**-2.4 %**	**-3.7 %**	**Sep. 05, 2008**
	Normalize to 1 Watt	**11.28**	**7.2**				
900 (Body)	250mW	2.9	1.89	**-0.057**	**0.3 %**	**1.1 %**	**Sep. 08, 2008**
	Normalize to 1 Watt	**11.6**	**7.56**				
900 (Body)	250mW	2.7	1.78	**-0.094**	**-4.3 %**	**-2.2 %**	**Jan. 17, 2009**
	Normalize to 1 Watt	**10.8**	**7.12**				
1900 (Body)	250mW	9.8	5.06	**-0.10700**	**2.1 %**	**0.4 %**	**Jan. 17, 2009**
	Normalize to 1 Watt	**39.2**	**20.24**				
1900 (Body)	250mW	9.57	4.97	**-0.033**	**-0.3 %**	**-1.4 %**	**Jan. 21, 2009**
	Normalize to 1 Watt	**38.28**	**19.88**				
1950 (Body)	250mW	10.5	5.39	**-0.031**	**1.9 %**	**-0.9 %**	**Sep. 07, 2008**
	Normalize to 1 Watt	**42**	**21.56**				

Detail results see Appendix A.

Z-axis Plot of System Performance Check

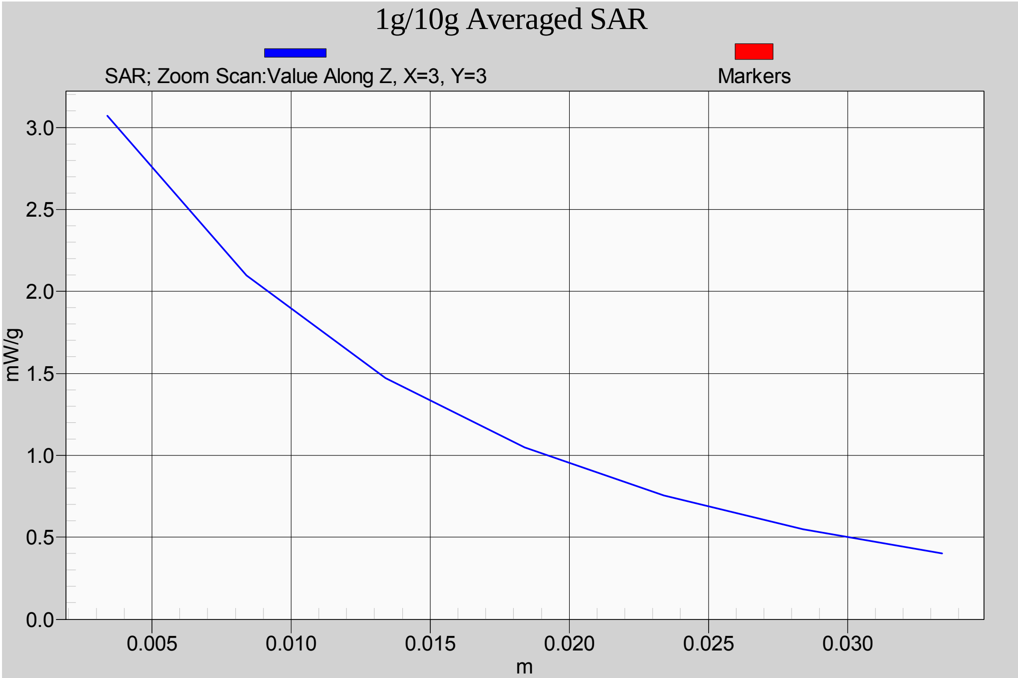


Head-Tissue-Simulating-Liquid 900MHz (2008.09.05)

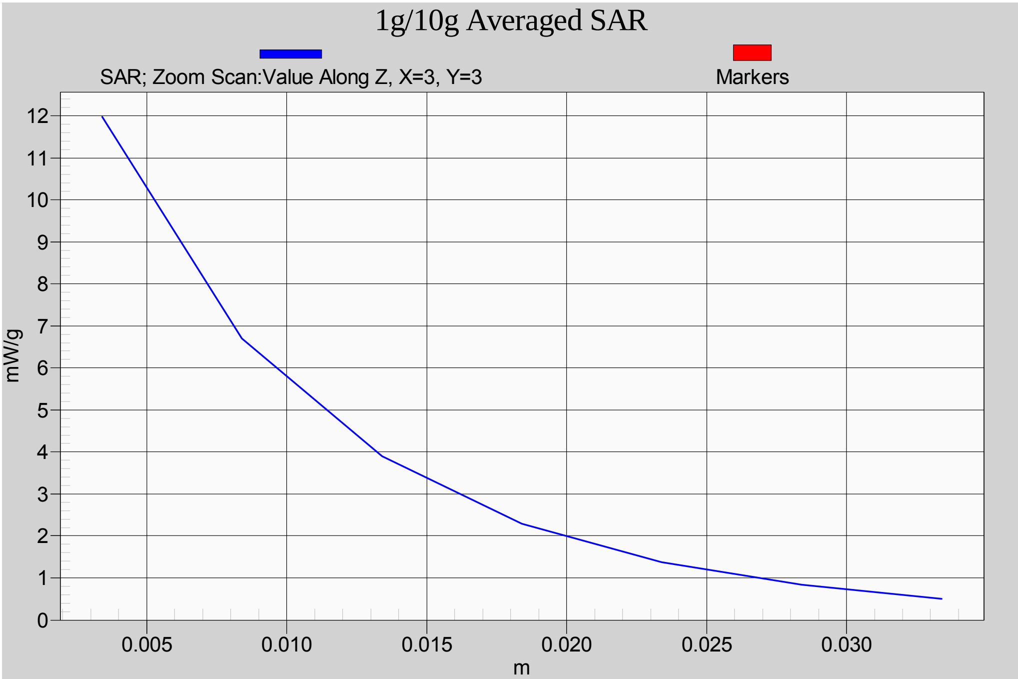


Head-Tissue-Simulating-Liquid 900MHz (2008.09.08)

Z-axis Plot of System Performance Check

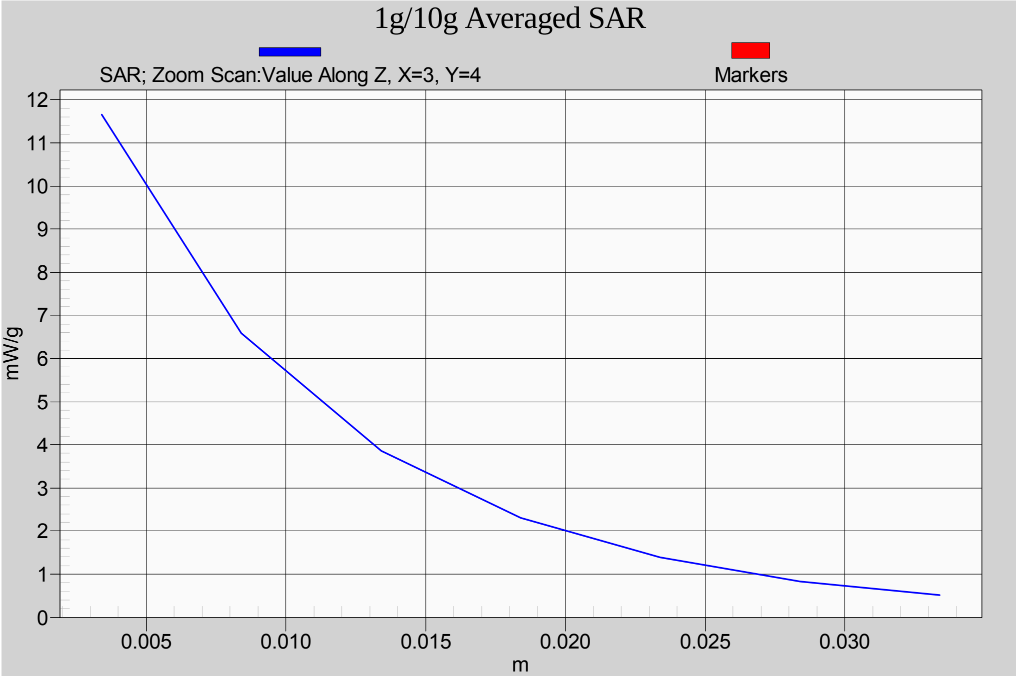


Body-Tissue-Simulating-Liquid 900MHz(2009.01.17)

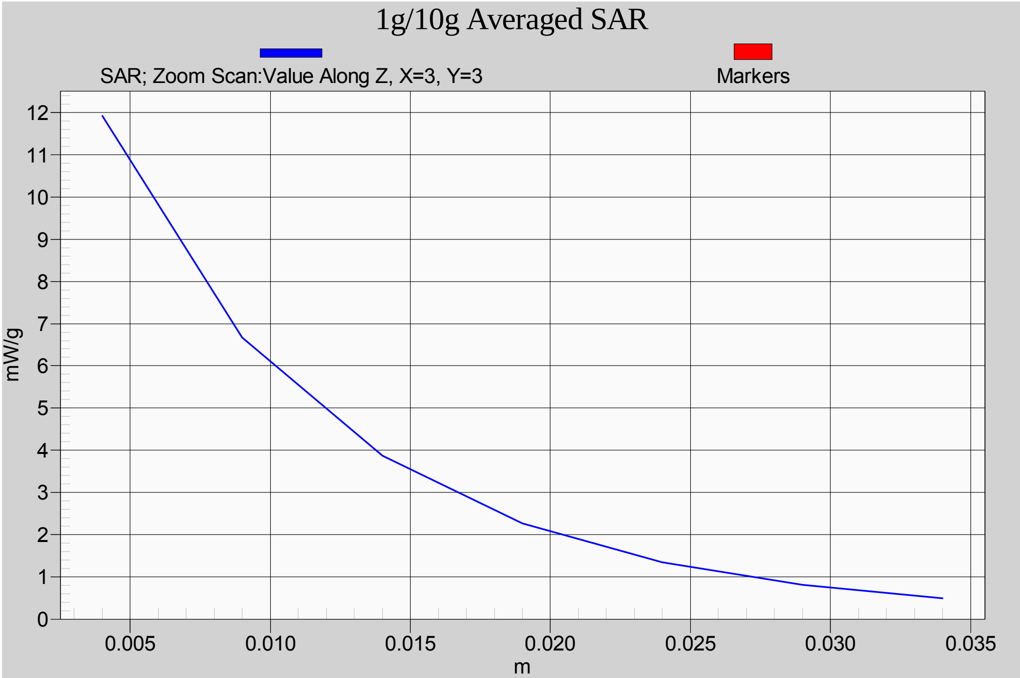


Body-Tissue-Simulating-Liquid 1900MHz(2009.01.17)

Z-axis Plot of System Performance Check



Body-Tissue-Simulating-Liquid 1900MHz(2009.01.21)



Body-Tissue-Simulating-Liquid 1950MHz

9.3 Dosimetric Assessment Setup

9.3.1 Body Worn Test Position

Body-Worn Configuration

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

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

For this test：

□ The EUT is placed into the holster/belt clip and the holster is positioned against the surface of the phantom in a normal operating position.

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

9.3.2 Measurement Procedures

The evaluation was performed with the following procedures：

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

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

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

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

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

9.4 Spatial Peak SAR Evaluation

The DASY5 software includes all numerical procedures necessary to evaluate the spatial peak SAR values. Based on the Draft: SCC-34, SC-2, WG-2 - Computational Dosimetry, IEEE P1529/D0.0 (Draft Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) Associated with the Use of Wireless Handsets - Computational Techniques), a new algorithm has been implemented. The spatial-peak SAR can be computed over any required mass.

The base for the evaluation is a ”cube” measurement in a volume of $(32\times32\times30)mm^3$ ($5\times5\times7$ points). The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan. If the 10g cube or both cubes are not entirely inside the measured volumes, the system issues a warning regarding the evaluated spatial peak values within the Postprocessing engine (SEMCAD). This means that if the measured volume is shifted, higher values might be possible. To get the correct values you can use a finer measurement grid for the area scan. In complicated field distributions, a large grid spacing for the area scan might miss some details and give an incorrectly interpolated peak location.
The entire evaluation of the spatial peak values is performed within the Postprocessing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into three stages:

Interpolation and Extrapolation

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

In DASY5, the choice of the coordinate system defining the location of the measurement points has no influence on the uncertainty of the interpolation, Maxima Search and SAR extrapolation routines. The interpolation, Maxima Search and extrapolation routines are all based on the modified Quadratic Shepard's method [7].

10. Measurement Uncertainty

Measurement uncertainties in SAR measurements are difficult to quantify due to several variables including biological, physiological, and environmental. However, we estimate the measurement uncertainties in SAR to be less than ±21.9 %〔8〕.

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

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

Error Description	Uncertainty value	Prob. Dist.	Div.	(*ci*) 1g	(*ci*) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(*vi*) *veff*
Measurement System								
Probe Calibration	±5.9 %	N	1	1	1	±5.9 %	±5.9 %	
Axial Isotropy	±4.7 %	R		0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Readout Electronics	±0.3 %	N	1	1	1	±0.3 %	±0.3 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	±1.5 %	±1.5 %	∞
RF Ambient Noise	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
RF Ambient Reflections	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.4 %	R	$\sqrt{3}$	1	1	±0.2 %	±0.2 %	∞
Probe Positioning	±2.9 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Max. SAR Eval.	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Test Sample Related								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Phantom and Setup								
Phantom Uncertainty	±4.0 %	R	$\sqrt{3}$	1	1	±2.3 %	2.3 %	∞
Liquid Conductivity (target)	±5.0 %	R	$\sqrt{3}$	0.64	0.43	±1.8 %	1.2 %	∞
Liquid Conductivity (meas.)	±2.5 %	N	1	0.64	0.43	±1.6 %	1.1 %	∞
Liquid Permittivity (target)	±5.0 %	R	$\sqrt{3}$	0.6	0.49	±1.7 %	1.4 %	∞
Liquid Permittivity (meas.)	±2.5 %	N	1	0.6	0.49	±1.5 %	1.2 %	∞
Combined Std. Uncertainty						**±10.9 %**	**±10.7 %**	387
Expanded STD Uncertainty						**±21.9 %**	**±21.4 %**	

Table 7. Uncertainty Budget of DASY

11. SAR Test Results Summary

The model is tested for all frequency with 5500mAh battery. The most test data make of 4400mAh and 2200mAh battery test. Some frequency is tested again with 4400 and 2200mAh batteries.

11.1 GPRS/EGPRS 850 Results _ EUT Bottom to phantom 2mm space

Ambient：

Temperature (℃)： 22 ± 2 | Relative HUMIDITY (%)： 40-70

Liquid：

Mixture Type： MSL900 | Liquid Temperature (℃)： 22.0

Depth of liquid (cm)： 15

Measurement：

Crest Factor： 4.2(3Down2Up) 8.3(3Down1up) | Probe S/N： 3150

Frequency		Band	Power (dBm)	Phantom Position	Antenna Position	Accessory	SAR_{1g} [mW/g]	Power Drift (dB)	Remark
MHz	CH								
824.2	128	GPRS 850	32.25	Flat	Internal	N/A	0.035	0.040	3Down2Up
836.6	190	GPRS 850	32.28	Flat	Internal	N/A	0.046	0.156	3Down2Up
848.8	251	GPRS 850	32.40	Flat	Internal	N/A	0.066	0.020	3Down2Up
848.8	251	EGPRS 850	26.40	Flat	Internal	N/A	0.021	0.000	3Down2Up
848.8	251	GPRS 850	32.10	Flat	Internal	N/A	0.035	-0.137	3Down1Up
848.8	251	EGPRS 850	26.40	Flat	Internal	N/A	0.010	0.000	3Down1Up
Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population					1.6 W/kg (mW/g) Averaged over 1 gram				

Detail results see Appendix B.

Z-axis Plot of SAR Measurement

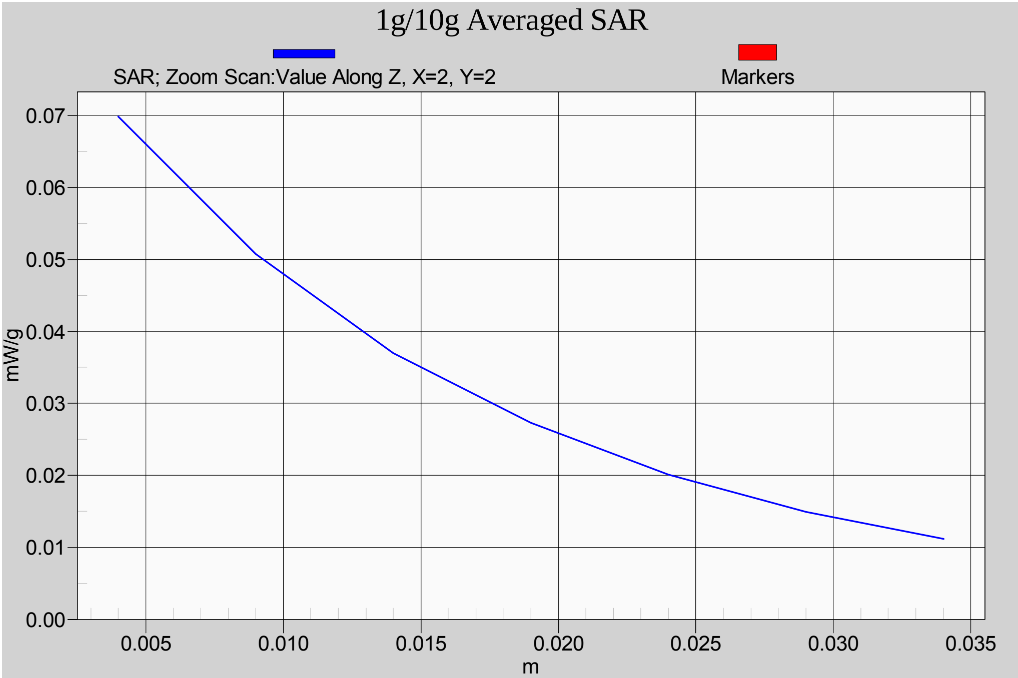


Figure 13. Z-axis Plot of Flat GPRS 850 CH251 (3Down2Up)

11.2 GPRS/EGPRS 1900 Results _ EUT Bottom to phantom 2mm space

Ambient：

Temperature (℃)： **22 ± 2** Relative HUMIDITY (%)： **40-70**

Liquid：

Mixture Type： **MSL1950** Liquid Temperature (℃)： **22.0**

Depth of liquid (cm)： **15**

Measurement：

Crest Factor： **4.2(3Down2Up) 8.3(3Down1up)** Probe S/N： **3150**

Frequency		Band	Power (dBm)	Phantom Position	Antenna Position	Accessory	SAR_{1g} [mW/g]	Power Drift (dB)	Remark
MHz	CH								
1850.2	512	GPRS 1900	28.85	Flat	Internal	N/A	0.100	-0.049	3Down2Up
1850.2	512	EGPRS 1900	25.78	Flat	Internal	N/A	0.040	-0.021	3Down2Up
1850.2	512	GPRS 1900	28.35	Flat	Internal	N/A	0.052	0.176	3Down1Up
1850.2	512	EGPRS 1900	25.55	Flat	Internal	N/A	0.021	0.000	3Down1Up
1880.0	661	GPRS 1900	28.75	Flat	Internal	N/A	0.094	0.115	3Down2Up
1909.8	810	GPRS 1900	28.65	Flat	Internal	N/A	0.079	0.071	3Down2Up
Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population					1.6 W/kg (mW/g) Averaged over 1 gram				

Detail results see Appendix B.

Z-axis Plot of SAR Measurement

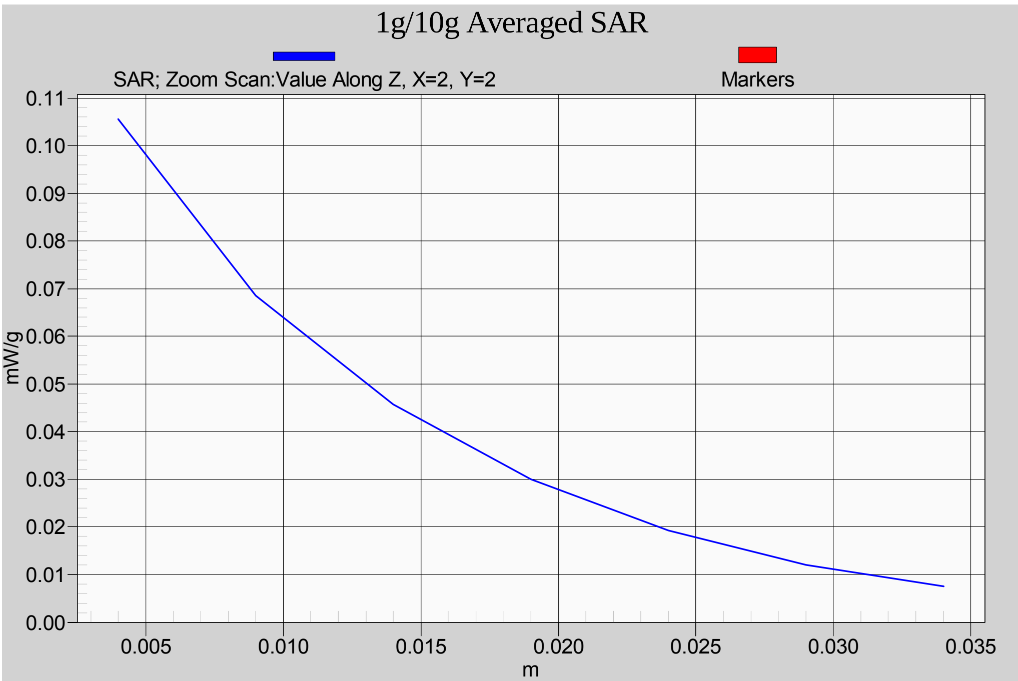


Figure 14. Z-axis Plot of Flat GPRS1900 CH512 (3Down2Up)

11.3 WCDMA/HSDPA Band V _ EUT Bottom to phantom 2mm space

Ambient：

Temperature (℃)： **22 ± 2**   Relative HUMIDITY (%)： **40-70**

Liquid：

Mixture Type： **MSL900**   Liquid Temperature (℃)： **22.0**

Depth of liquid (cm)： **15**

Measurement：

Crest Factor： **1**   Probe S/N： **3150/3578**

Frequency		Band	Power (dBm)	Phantom Position	Antenna Position	Accessory	SAR_{1g} [mW/g]	Power Drift (dB)	Remark
MHz	CH								
826.6	4132	WCDMA V	23.63	Flat	Internal	N/A	0.025	0.139	-
836.6	4183	WCDMA V	24.03	Flat	Internal	N/A	0.034	0.097	-
836.6	4183	HSDPA V	21.30	Flat	Internal	N/A	0.031	0.196	-
836.6	4183	HSUPA V	23.56	Flat	Internal	N/A	0.017	0.096	-
846.6	4233	WCDMA V	23.99	Flat	Internal	N/A	0.030	0.180	-
Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population					1.6 W/kg (mW/g) Averaged over 1 gram				

Detail results see Appendix B.

Z-axis Plot of SAR Measurement

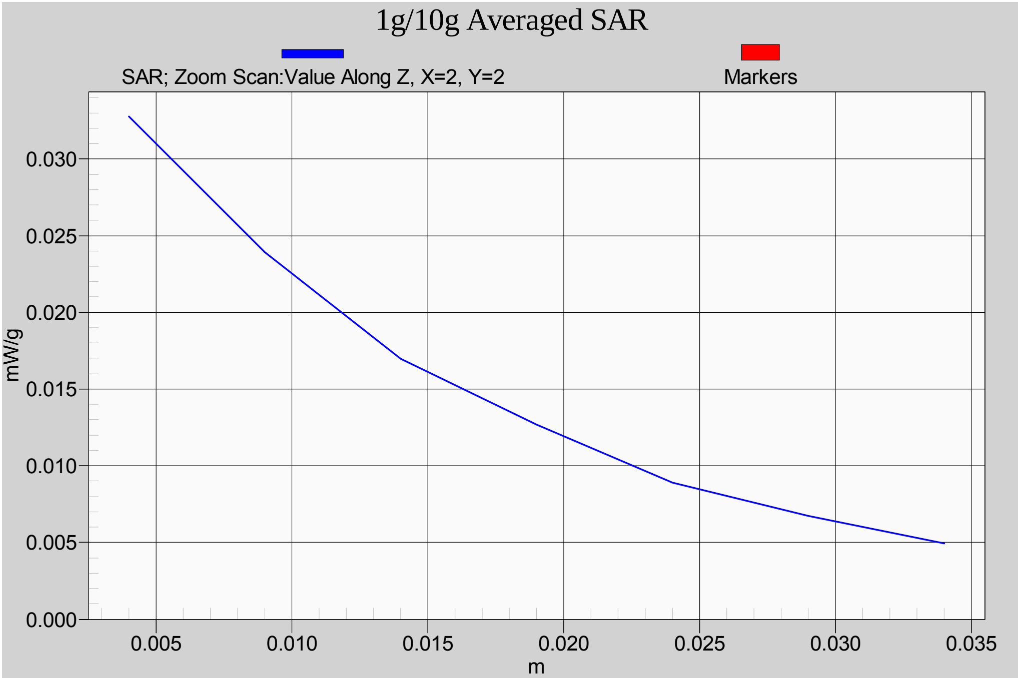


Figure 15. Z-axis Plot of Flat WCDMA Band V CH4180

Spectrum Analyzer Setup Photo

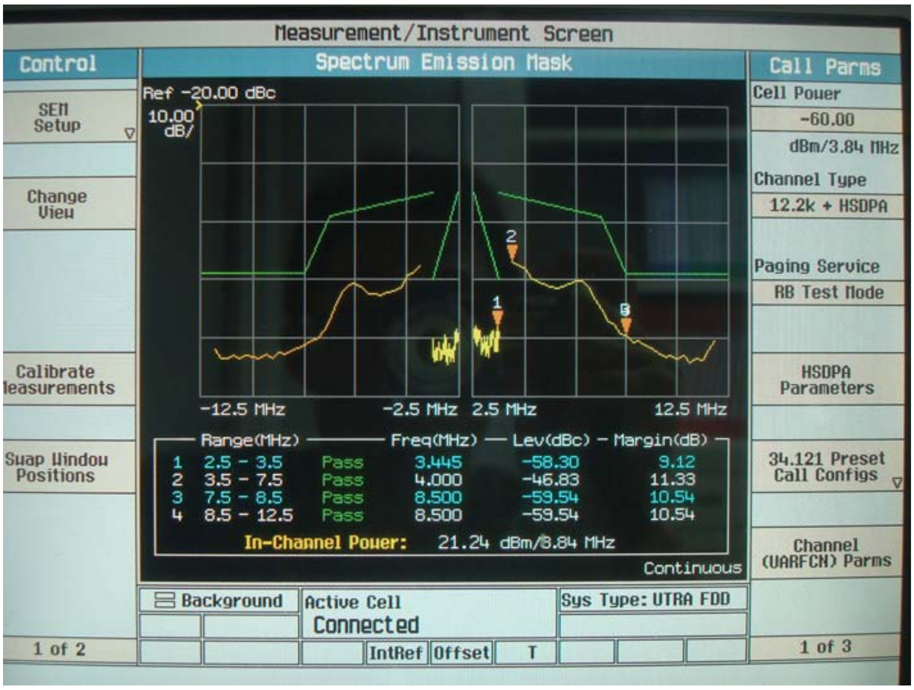


Figure 16. Spectrum Analyzer Flat HSDPA Band V CH4183

Spectrum Analyzer Setup Picture

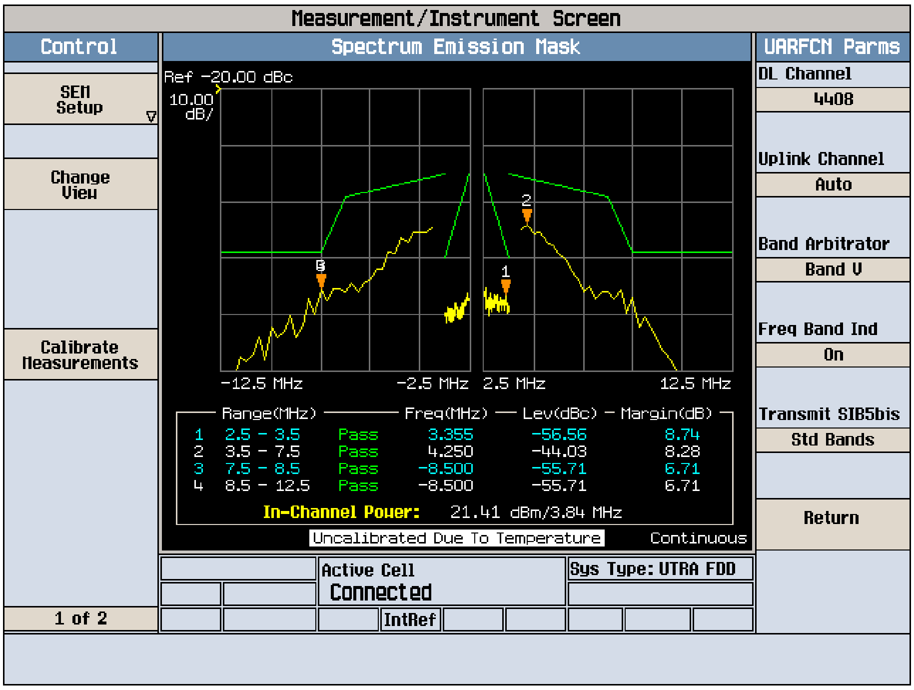


Figure 17. Spectrum Analyzer Flat HSUPA Band V CH4183

11.4 WCDMA/HSDPA /HSUPA Band II _ EUT Bottom to phantom 2mm space

Ambient：

Temperature (℃)： **22 ± 2** Relative HUMIDITY (%)： **40-70**

Liquid：

Mixture Type： **MSL1950 /MSL1900** Liquid Temperature (℃)： **22.0**

Depth of liquid (cm)： **15**

Measurement：

Crest Factor： **1** Probe S/N： **3150/3578**

Frequency MHz	CH	Band	Power (dBm)	Phantom Position	Antenna Position	Accessory	SAR_{1g} [mW/g]	Power Drift (dB)	Remark
1852.4	9262	WCDMA II	23.58	Flat	Internal	N/A	0.123	0.105	-
1852.4	9262	WCDMA II	23.58	Flat	Internal	N/A	0.094	0.164	4400mAh Battery
1852.4	9262	WCDMA II	23.58	Flat	Internal	N/A	0.104	0.132	2200mAh Battery
1852.4	9262	HSDPA II	21.50	Flat	Internal	N/A	0.107	0.165	-
1852.4	9262	HSUPA II	23.36	Flat	Internal	N/A	0.098	-0.038	-
1880.0	9400	WCDMA II	23.31	Flat	Internal	N/A	0.120	0.103	-
1907.6	9538	WCDMA II	23.07	Flat	Internal	N/A	0.101	0.059	-
Std. C95.1-1999 - Safety Limit Spatial Peak Uncontrolled Exposure/General Population					1.6 W/kg (mW/g) Averaged over 1 gram				

Detail results see Appendix B.

Z-axis Plot of SAR Measurement

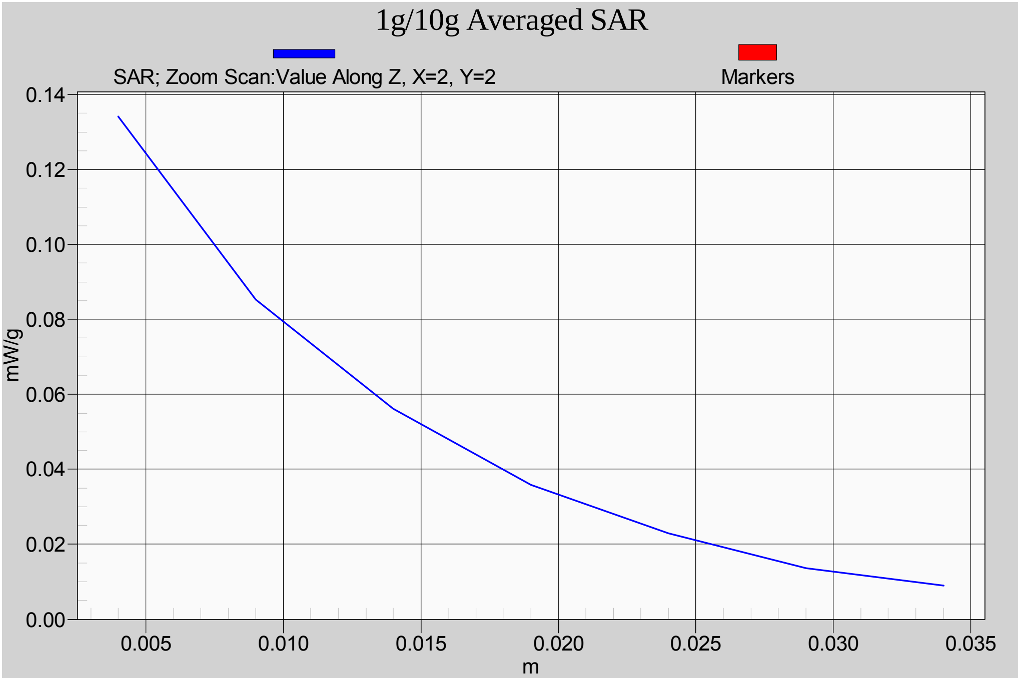


Figure 18. Z-axis Plot of Flat WCDMA Band II CH9262

Spectrum Analyzer Setup Photo

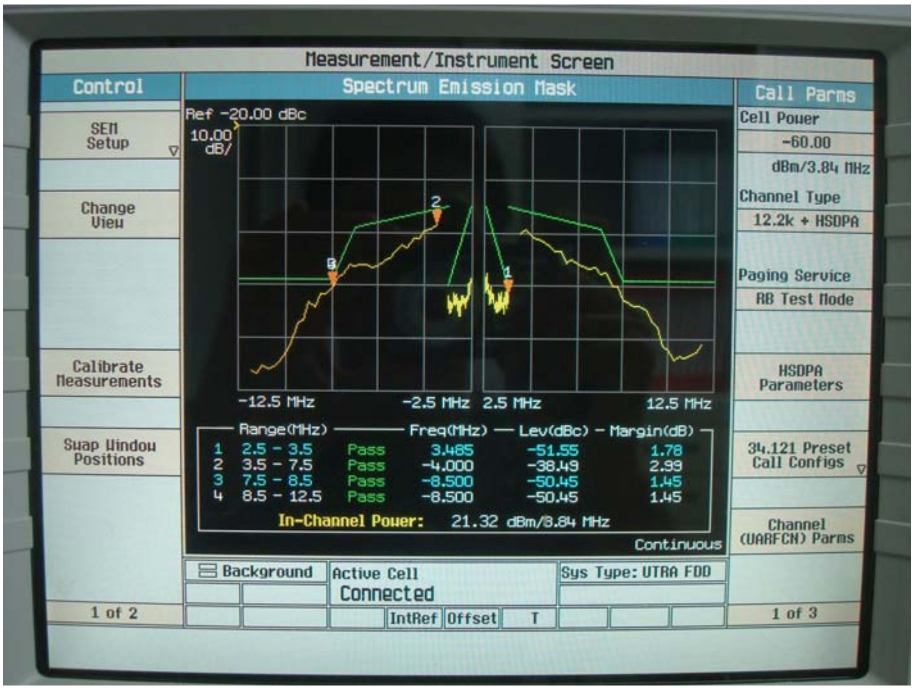


Figure 19. Spectrum Analyzer Flat HSDPA Band II CH9262

Spectrum Analyzer Setup Picture

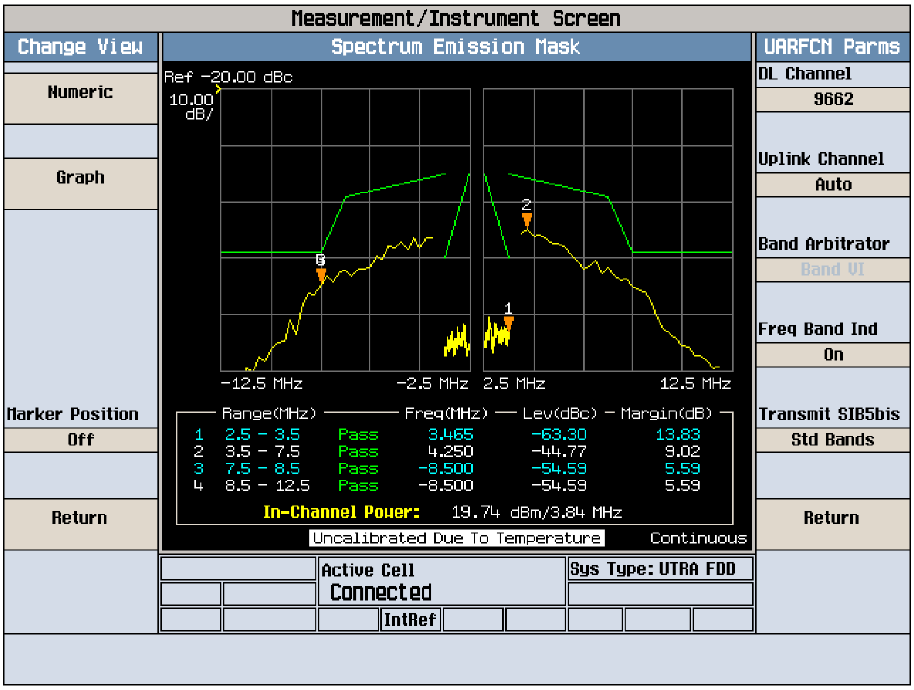


Figure 20. Spectrum Analyzer Flat HSUPA Band II CH9262

11.5 Setup Photo

Figure 21. Body SAR Test Setup (Flat Section) _ EUT Bottom to Phantom 2mm space (3G Antenna to phantom 81.54mm space)

11.6 Std. C95.1-1999 RF Exposure Limit

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

Table 8. Safety Limits for Partial Body Exposure

Notes：

* The Spatial Peak value of the SAR averaged over any 1 gram of tissue.
(defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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

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

**** The Spatial Peak value of the SAR averaged over any 10 grams of tissue.
(defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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

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

12. Conclusion

The SAR test values found for the portable mobile phone **Acer Incorporated Trade Name：acer　Model(s)：ZG5, Aspire One** are below the maximum recommended level of 1.6 W/kg (mW/g).

13. References

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

[2] NCRP, National Council on Radiation Protection and Measurements, "*Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields"*, NCRP report NO. 86, 1986.

[3] T. Schmid, O. Egger, and N. Kuster, "*Automatic E-field scanning system for dosimetric assessments*", IEEE Transactions on Microwave Theory and Techniques, vol. 44, pp, 105-113, Jan. 1996.

[4] K. Poković, T. Schmid, and N. Kuster, "*Robust setup for precise calibration of E-field probes in tissue simulating liquids at mobile communications frequency*", in ICECOM'97, Dubrovnik, October 15-17, 1997, pp.120-124.

[5] K. Poković, T. Schmid, and N. Kuster, "*E-field probe with improved isotropy in brain simulating liquids*", in Proceedings of the ELMAR, Zadar, Croatia, 23-25 June, 1996, pp.172-175.

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

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

[8] N. Kuster, R. Kastle, T. Schmid, *Dosimetric evaluation of mobile communications equipment with known precision*, IEEE Transaction on Communications, vol. E80-B, no. 5, May 1997, pp. 645-652.

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

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

Appendix A - System Performance Check

See following Attached Pages for System Performance Check.

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/5/2008 11:23:07 AM

System Performance Check at 900MHz_20080905_Body

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:1d053

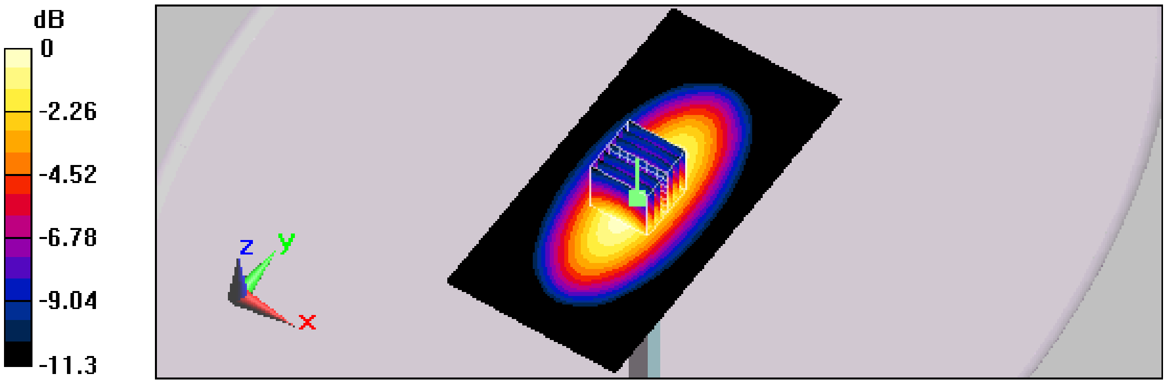
Communication System: CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 1.04 mho/m; ε_r = 53.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

System Performance Check at 900MHz/Area Scan (61x121x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.08 mW/g

System Performance Check at 900MHz/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.3 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 4.24 W/kg
SAR(1 g) = 2.82 mW/g; SAR(10 g) = 1.8 mW/g
Maximum value of SAR (measured) = 3.07 mW/g



0 dB = 3.07mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/8/2008 10:11:34 AM

System Performance Check at 900MHz_20080908_Body

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:1d053

Communication System: CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 1.04 mho/m; ε_r = 53.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

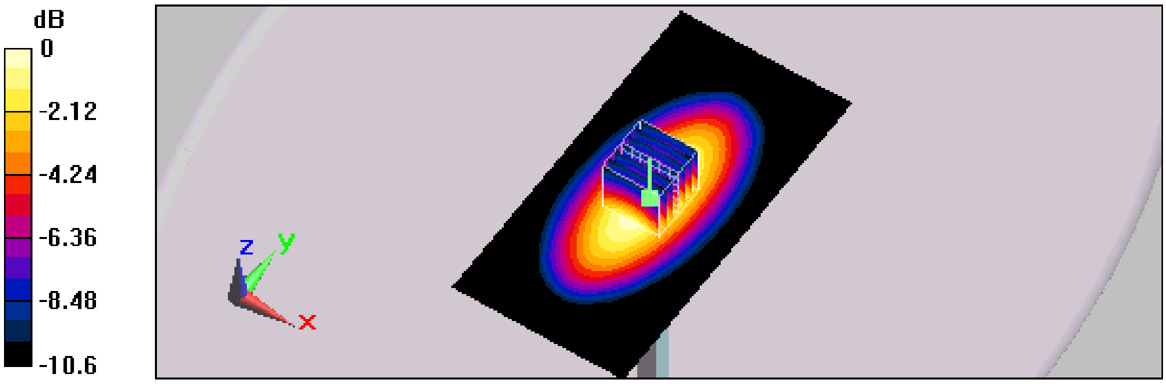
- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

System Performance Check at 900MHz/Area Scan (61x121x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.17 mW/g

System Performance Check at 900MHz/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.3 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 4.24 W/kg
SAR(1 g) = 2.9 mW/g; SAR(10 g) = 1.89 mW/g
Maximum value of SAR (measured) = 3.14 mW/g



0 dB = 3.14mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 1/17/2009 10:12:39 AMDate/Time: 1/17/2009 10:21:58 AM

System Performance Check at 900MHz_20090117_Body

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:073

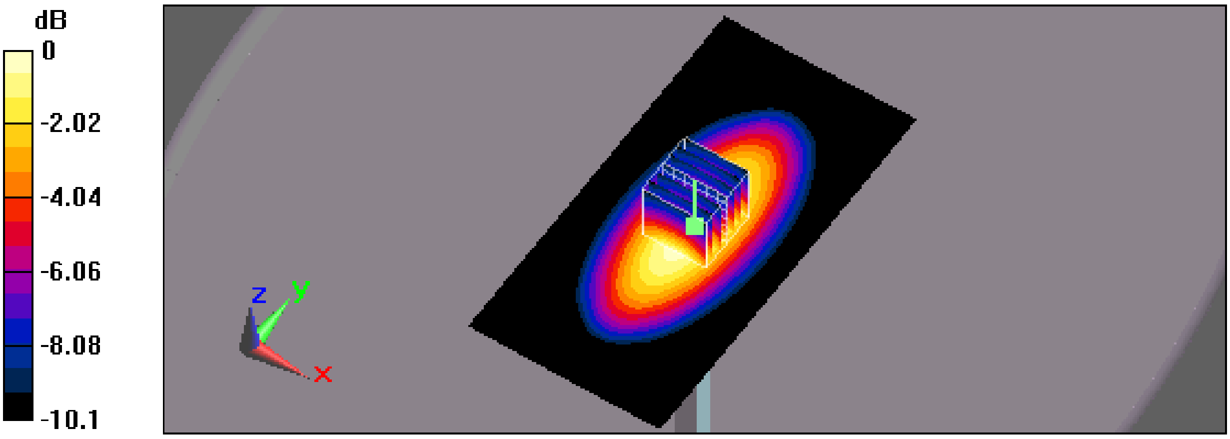
Communication System: CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 1.03 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.42, 8.42, 8.42); Calibrated: 5/20/2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/11/2008
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.2 Build 87

System Performance Check at 900MHz/Area Scan (61x121x1):
Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.08 mW/g

System Performance Check at 900MHz/Zoom Scan (7x7x7)/Cube 0:
Measurement grid:
dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.7 V/m; Power Drift = -0.094 dB
Peak SAR (extrapolated) = 4.02 W/kg
SAR(1 g) = 2.7 mW/g; SAR(10 g) = 1.78 mW/g
Maximum value of SAR (measured) = 3.07 mW/g



0 dB = 3.07mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 1/17/2009 9:04:57 PMDate/Time: 1/17/2009 9:14:11 PM

System Performance Check at 1900MHz_20090117_Body

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d018

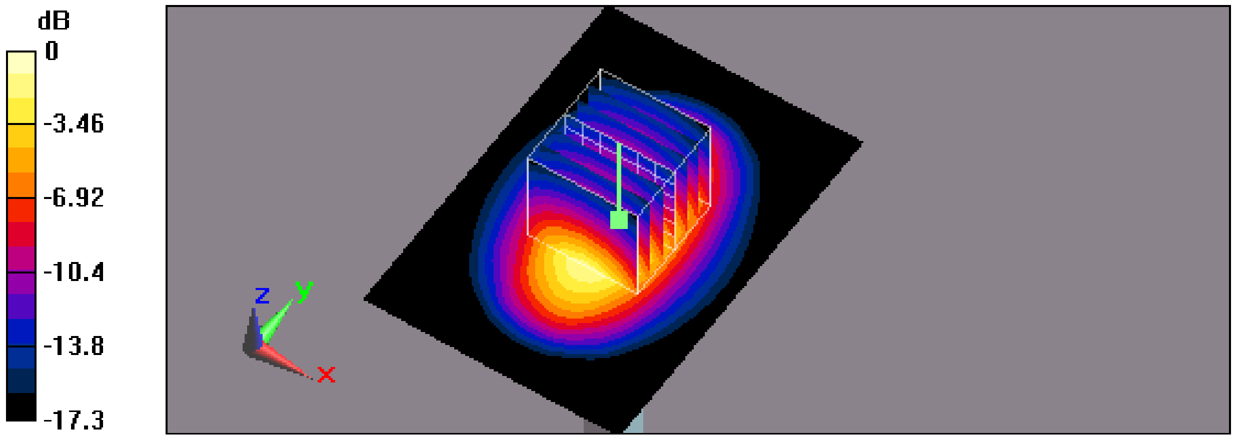
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.5 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.41, 7.41, 7.41); Calibrated: 5/20/2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/11/2008
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.2 Build 87

System Performance Check at 1900MHz/Area Scan (71x101x1):
Measurement grid:
dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 12.2 mW/g

System Performance Check at 1900MHz/Zoom Scan (7x7x7)/Cube 0:
Measurement
grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.5 V/m; Power Drift = -0.107 dB
Peak SAR (extrapolated) = 18.1 W/kg
SAR(1 g) = 9.8 mW/g; SAR(10 g) = 5.06 mW/g
Maximum value of SAR (measured) = 12 mW/g



0 dB = 12mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 1/21/2009 10:20:51 AMDate/Time: 1/21/2009 10:27:14 AM

System Performance Check at 1900MHz_20090121_Body

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d018

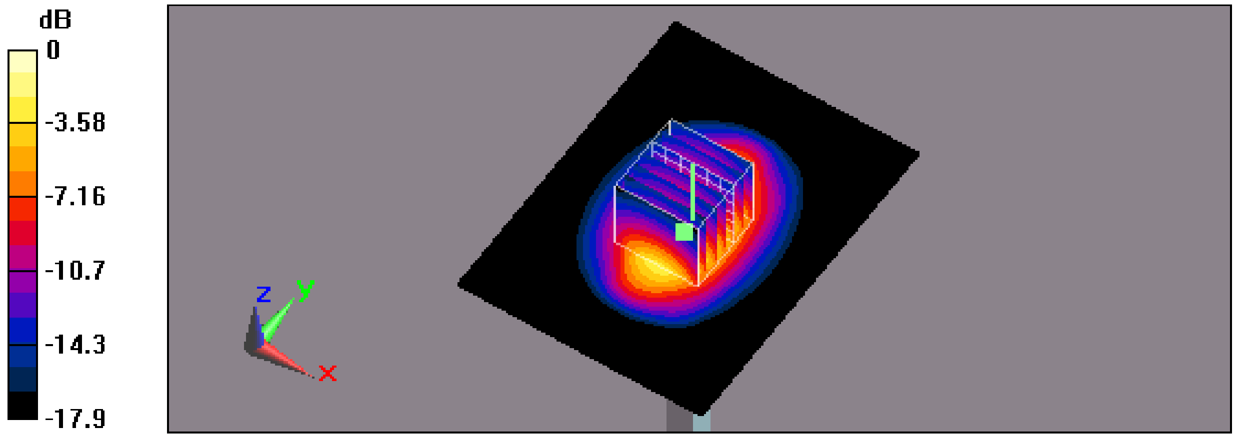
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.5 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.41, 7.41, 7.41); Calibrated: 5/20/2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/11/2008
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.2 Build 87

System Performance Check at 1900MHz/Area Scan (61x81x1):
Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.8 mW/g

System Performance Check at 1900MHz/Zoom Scan (7x7x7)/Cube 0:
Measurement
grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.8 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 9.57 mW/g; SAR(10 g) = 4.97 mW/g
Maximum value of SAR (measured) = 11.7 mW/g



0 dB = 11.7mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 6:47:35 AM

System Performance Check at 1950MHz_20080907_Body

DUT: Dipole 1950 MHz; Type: D1950V3; Serial: D1950V3 - SN:1117

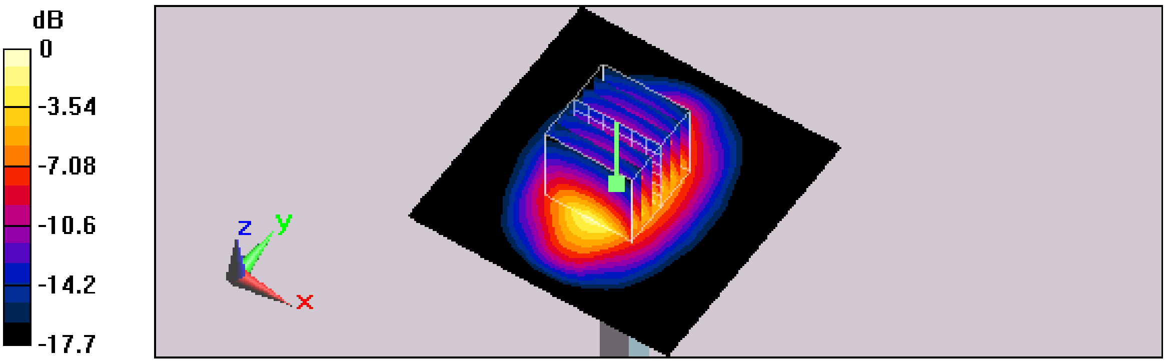
Communication System: CW; Frequency: 1950 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1950 MHz; σ = 1.56 mho/m; ε_r = 51.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(4.55, 4.55, 4.55); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

System Performance Check at 1950MHz/Area Scan (61x61x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12 mW/g

System Performance Check at 1950MHz/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.2 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 19.6 W/kg
SAR(1 g) = 10.5 mW/g; SAR(10 g) = 5.39 mW/g
Maximum value of SAR (measured) = 11.9 mW/g



0 dB = 11.9mW/g

Appendix B - SAR Measurement Data

See following Attached Pages for SAR Measurement Data.

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/8/2008 12:21:23 PM

Flat_GSM850 GPRS CH128_Open 90_3Down2Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

Communication System: GSM 850 GPRS(3Down, 2Up); Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.955 mho/m; ε_r = 54.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

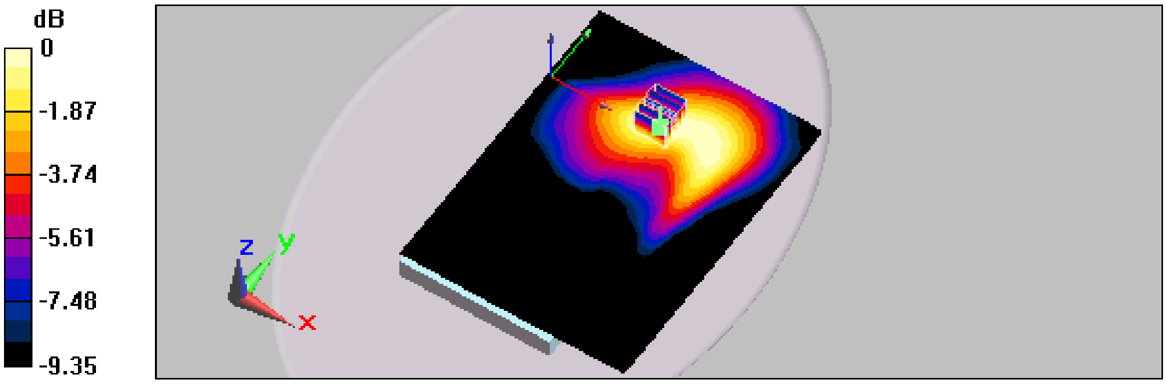
- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.037 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.830 V/m; Power Drift = 0.040 dB
Peak SAR (extrapolated) = 0.048 W/kg
SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.025 mW/g
Maximum value of SAR (measured) = 0.037 mW/g



0 dB = 0.037mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/8/2008 1:18:10 PM

Flat_GSM850 GPRS CH190_Open 90_3Down2Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

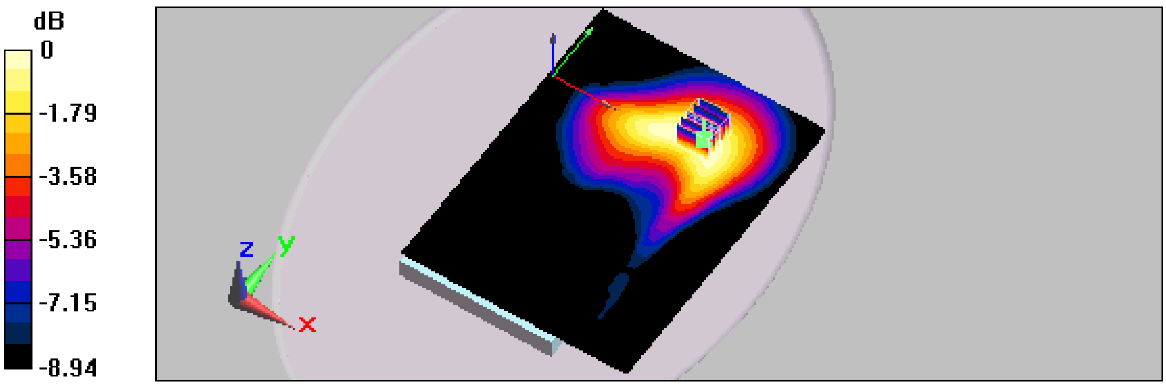
Communication System: GSM 850 GPRS(3Down, 2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 837 MHz; σ = 0.968 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.049 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.838 V/m; Power Drift = 0.156 dB
Peak SAR (extrapolated) = 0.063 W/kg
SAR(1 g) = 0.046 mW/g; SAR(10 g) = 0.033 mW/g
Maximum value of SAR (measured) = 0.049 mW/g



0 dB = 0.049mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/8/2008 2:07:57 PM

Flat_GSM850 GPRS CH251_Open 90_3Down2Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

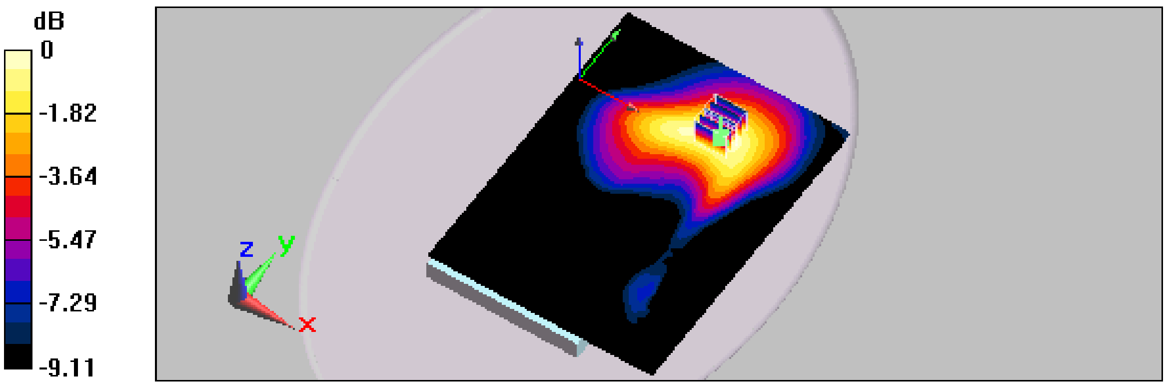
Communication System: GSM 850 GPRS(3Down, 2Up); Frequency: 848.8 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 849 MHz; σ = 0.982 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.070 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.36 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 0.091 W/kg
SAR(1 g) = 0.066 mW/g; SAR(10 g) = 0.047 mW/g
Maximum value of SAR (measured) = 0.070 mW/g



0 dB = 0.070mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/8/2008 4:38:16 PM

Flat_GSM850 EGPRS CH251_Open 90_3Down2Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

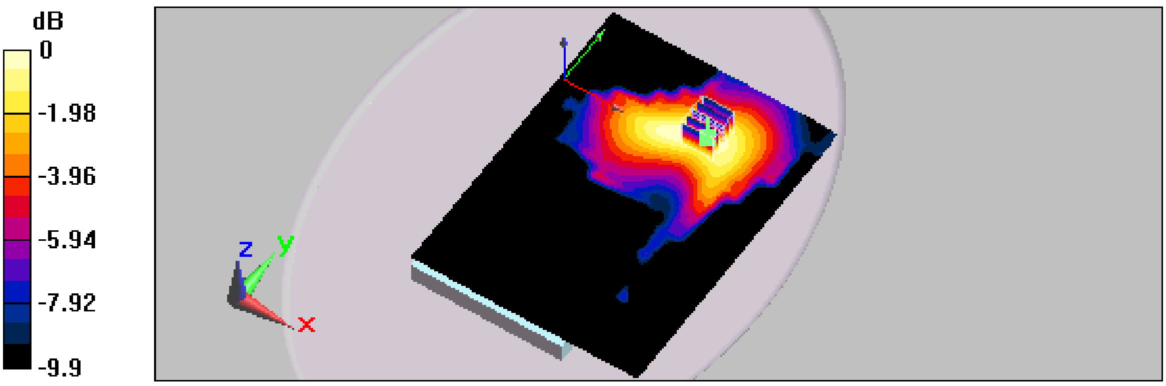
Communication System: GSM 850 EGPRS (3Down, 2Up); Frequency: 848.8 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 849 MHz; σ = 0.982 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.021 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0 dB
Peak SAR (extrapolated) = 0.029 W/kg
SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.015 mW/g
Maximum value of SAR (measured) = 0.022 mW/g



0 dB = 0.022mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/8/2008 2:57:41 PM

Flat_GSM850 GPRS CH251_Open 90_3Down1Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

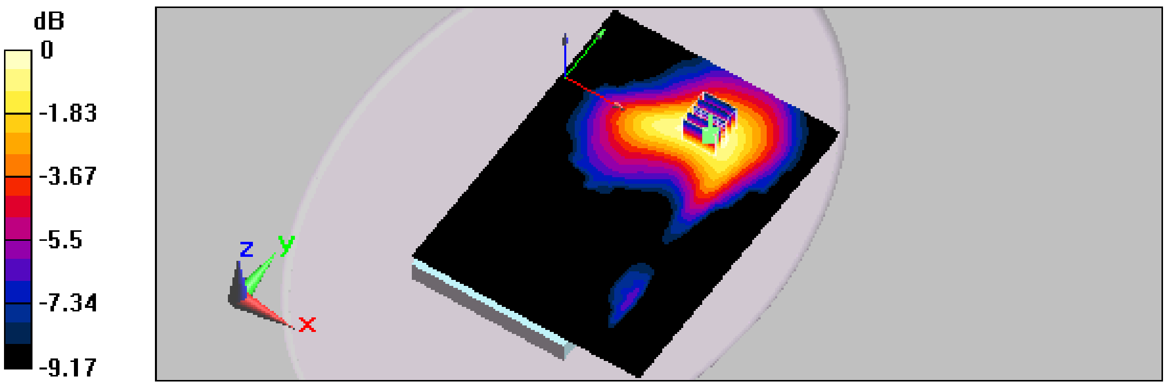
Communication System: GSM 850 GPRS(3Down, 1Up); Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 849 MHz; σ = 0.982 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.037 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.116 V/m; Power Drift = -0.137 dB
Peak SAR (extrapolated) = 0.047 W/kg
SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.025 mW/g
Maximum value of SAR (measured) = 0.037 mW/g



0 dB = 0.037mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/8/2008 5:27:28 PM

Flat_GSM850 EGPRS CH251_Open 90_3Down1Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

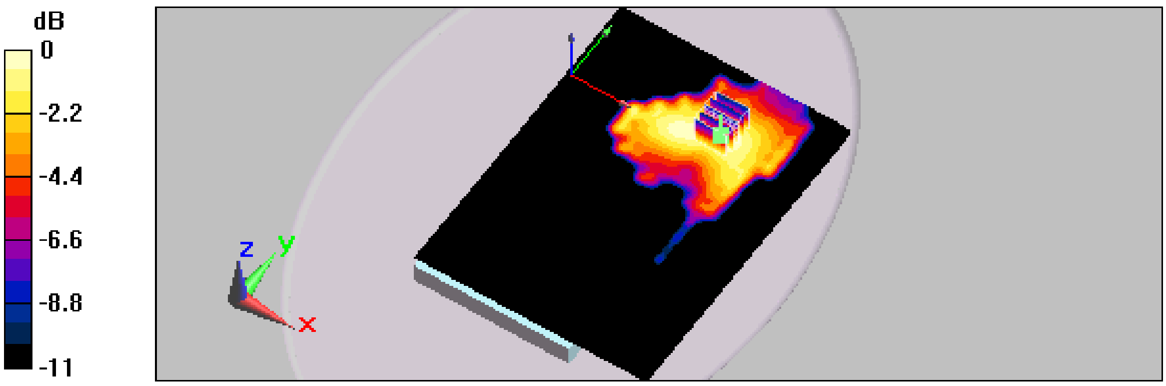
Communication System: GSM 850 EGPRS (3Down, 1Up); Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 849 MHz; σ = 0.982 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.011 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0 dB
Peak SAR (extrapolated) = 0.015 W/kg
SAR(1 g) = 0.010 mW/g; SAR(10 g) = 0.00724 mW/g
Maximum value of SAR (measured) = 0.011 mW/g



0 dB = 0.011mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 1:52:00 PM

Flat_PCS GPRS CH512_Open 90_3Down2Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

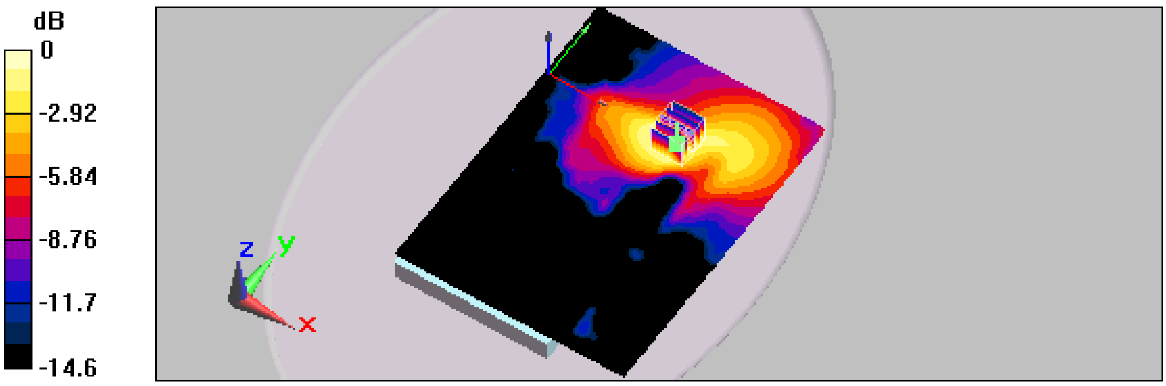
Communication System: PCS GPRS(3Down,2Up); Frequency: 1850.2 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.104 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.300 V/m; Power Drift = -0.049 dB
Peak SAR (extrapolated) = 0.153 W/kg
SAR(1 g) = 0.100 mW/g; SAR(10 g) = 0.063 mW/g
Maximum value of SAR (measured) = 0.106 mW/g



0 dB = 0.106mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 6:26:30 PM

Flat_PCS EGPRS CH512_Open 90_3Down2Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

Communication System: PCS EGPRS (3Down, 2Up); Frequency: 1850.2 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

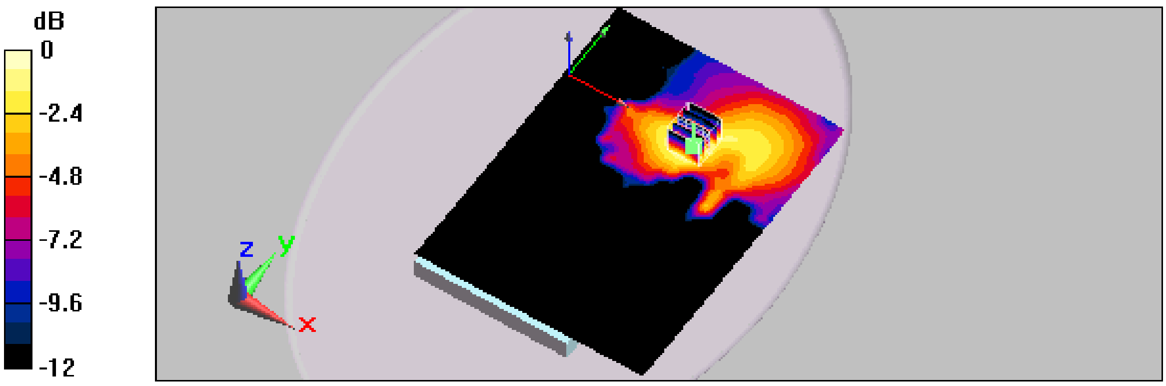
- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.043 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.341 V/m; Power Drift = -0.021 dB
Peak SAR (extrapolated) = 0.062 W/kg
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.025 mW/g
Maximum value of SAR (measured) = 0.043 mW/g



0 dB = 0.043mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 5:11:17 PM

Flat_PCS GPRS CH512_Open 90_3Down1Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

Communication System: PCS GPRS(3Down,1Up); Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

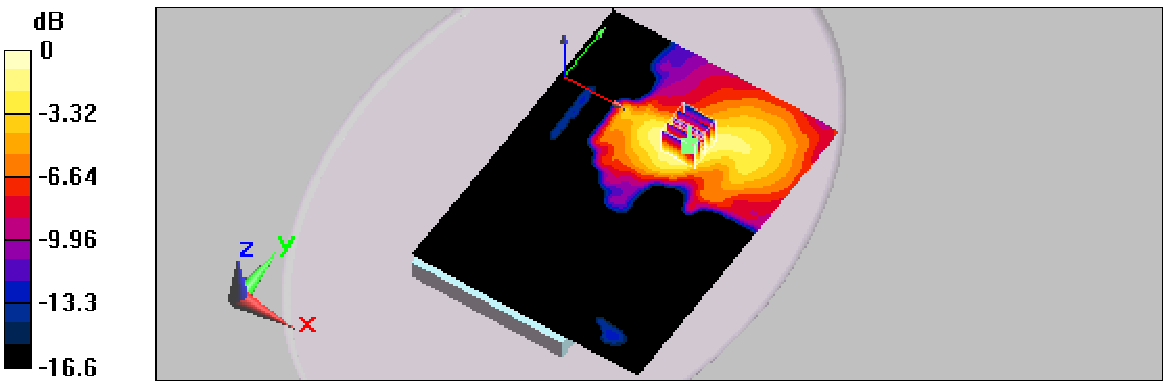
- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.058 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.301 V/m; Power Drift = 0.176 dB
Peak SAR (extrapolated) = 0.081 W/kg
SAR(1 g) = 0.052 mW/g; SAR(10 g) = 0.033 mW/g
Maximum value of SAR (measured) = 0.056 mW/g



0 dB = 0.056mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 8:13:45 PM

Flat_PCS EGPRS CH512_Open 90_3Down1Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

Communication System: PCS EGPRS (3Down, 1Up); Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

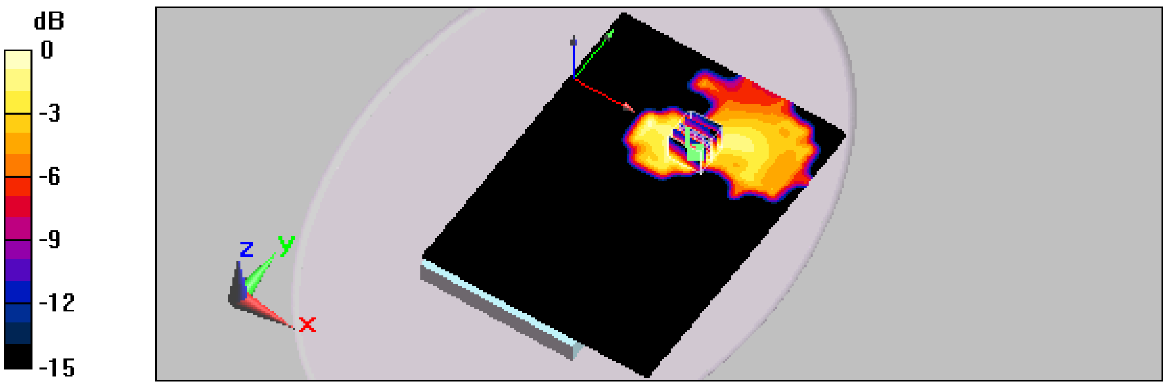
- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.023 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0 dB
Peak SAR (extrapolated) = 0.032 W/kg
SAR(1 g) = 0.021 mW/g; SAR(10 g) = 0.013 mW/g
Maximum value of SAR (measured) = 0.022 mW/g



0 dB = 0.022mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 3:16:24 PM

Flat_PCS GPRS CH661_Open 90_3Down2Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

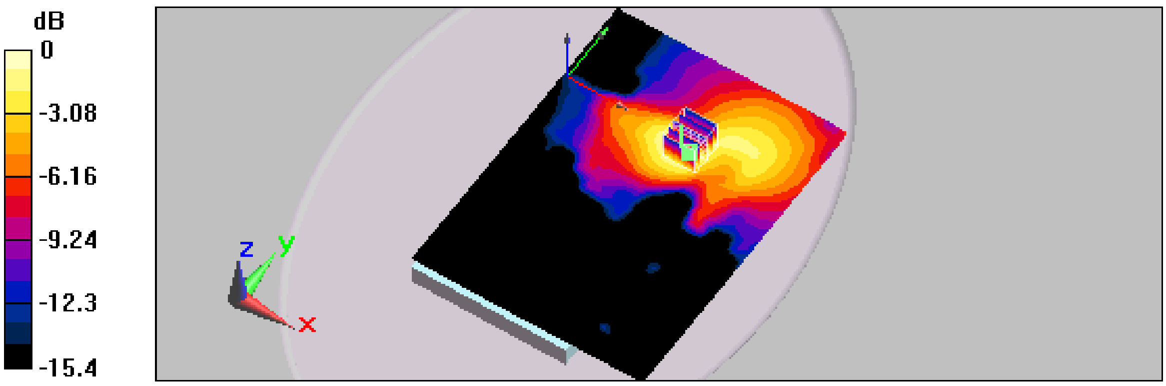
Communication System: PCS GPRS(3Down,2Up); Frequency: 1880 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.101 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.476 V/m; Power Drift = 0.115 dB
Peak SAR (extrapolated) = 0.148 W/kg
SAR(1 g) = 0.094 mW/g; SAR(10 g) = 0.058 mW/g
Maximum value of SAR (measured) = 0.106 mW/g



0 dB = 0.106mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 4:14:34 PM

Flat_PCS GPRS CH810_Open 90_3Down2Up_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

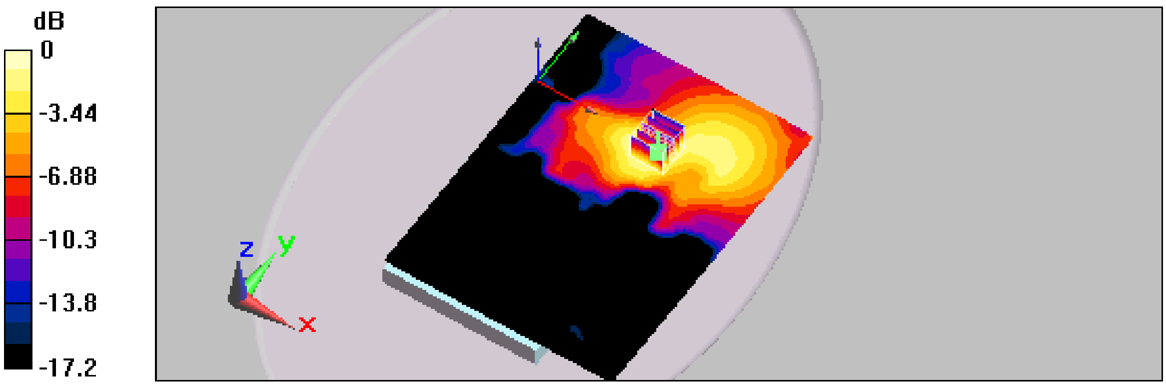
Communication System: PCS GPRS(3Down,2Up); Frequency: 1909.8 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1910 MHz; $\sigma = 1.52$ mho/m; $\varepsilon_r = 51.8$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.079 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.691 V/m; Power Drift = 0.071 dB
Peak SAR (extrapolated) = 0.123 W/kg
SAR(1 g) = 0.079 mW/g; SAR(10 g) = 0.049 mW/g
Maximum value of SAR (measured) = 0.086 mW/g



0 dB = 0.086mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/5/2008 2:49:17 PM

Flat_WCDMA Band V CH4132_Open 90_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

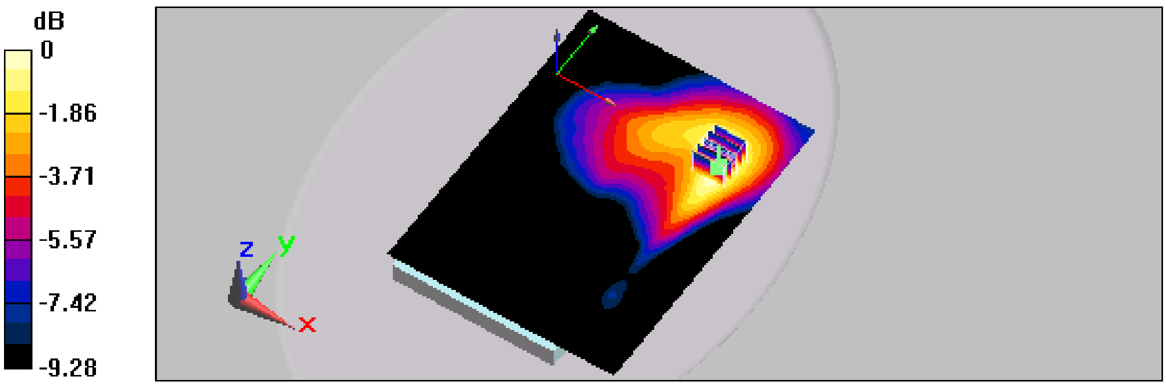
Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.956 mho/m; ε_r = 54.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.028 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.733 V/m; Power Drift = 0.139 dB
Peak SAR (extrapolated) = 0.035 W/kg
SAR(1 g) = 0.025 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.027 mW/g



0 dB = 0.027mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/5/2008 3:44:21 PM

Flat_WCDMA Band V CH4183_Open 90_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

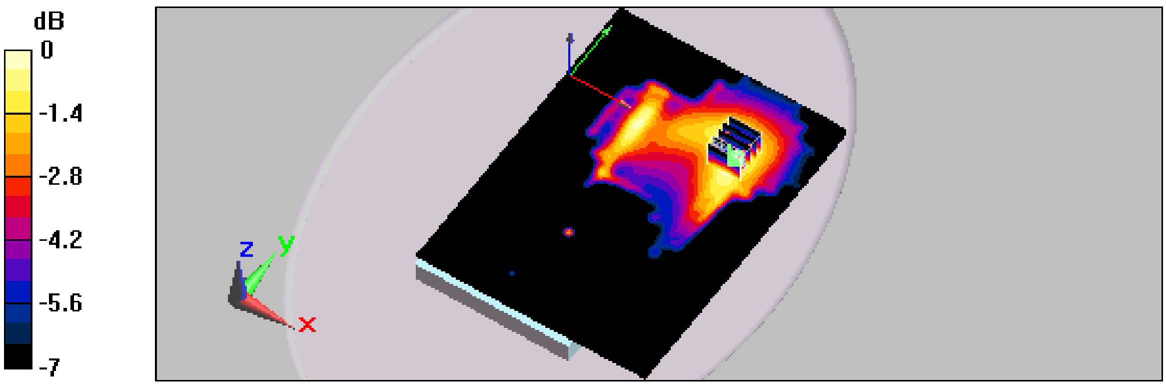
Communication System: WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.968 mho/m; ε_r = 54.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.035 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.19 V/m; Power Drift = 0.097 dB
Peak SAR (extrapolated) = 0.047 W/kg
SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.024 mW/g
Maximum value of SAR (measured) = 0.036 mW/g



0 dB = 0.036mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/8/2008 10:45:05 PM

Flat_HSDPA Band V CH4183_Open 90_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

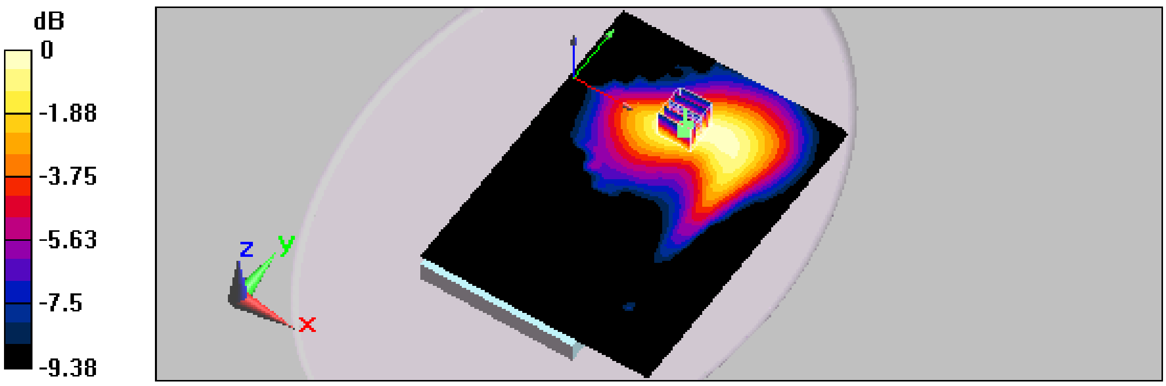
Communication System: WCDMA HSDPA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; $\sigma = 0.968$ mho/m; $\varepsilon_r = 54.6$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.032 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.755 V/m; Power Drift = 0.196 dB
Peak SAR (extrapolated) = 0.041 W/kg
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.033 mW/g



0 dB = 0.033mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 1/17/2009 5:26:24 PM

Flat_HSUPA WCDMA Band V CH4183_Sub-Test1_LCD Open 90_Bottom Close Body

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

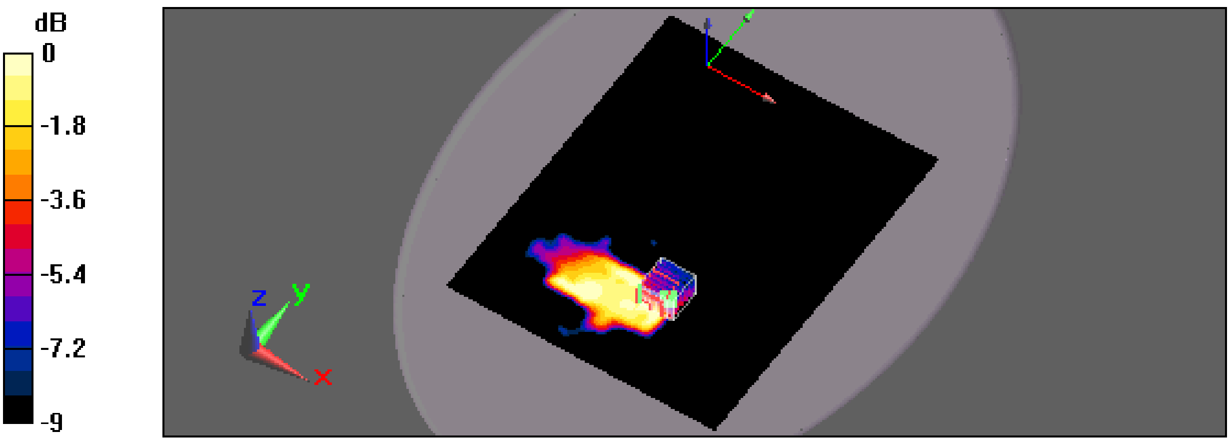
Communication System: HSUPA WCDMA Band V; Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.975 mho/m; ε_r = 56.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(8.42, 8.42, 8.42); Calibrated: 5/20/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/11/2008
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (161x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.029 mW/g

Flat/Zoom Scan (7x7x9)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 0.860 V/m; Power Drift = 0.096 dB
Peak SAR (extrapolated) = 0.025 W/kg
SAR(1 g) = 0.017 mW/g; SAR(10 g) = 0.011 mW/g
Maximum value of SAR (measured) = 0.021 mW/g



0 dB = 0.021mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/5/2008 4:30:31 PM

Flat_WCDMA Band V CH4233_Open 90_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

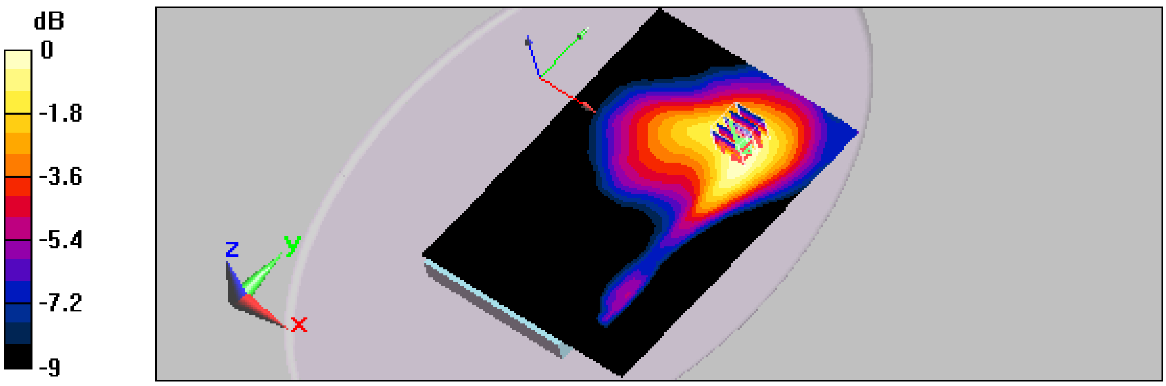
Communication System: WCDMA Band V; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; $\sigma = 0.979$ mho/m; $\varepsilon_r = 54.4$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(6, 6, 6); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.032 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.24 V/m; Power Drift = 0.180 dB
Peak SAR (extrapolated) = 0.040 W/kg
SAR(1 g) = 0.030 mW/g; SAR(10 g) = 0.022 mW/g
Maximum value of SAR (measured) = 0.032 mW/g



0 dB = 0.032mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 8:12:00 AM

Flat_WCDMA Band II CH9262_Open 90_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

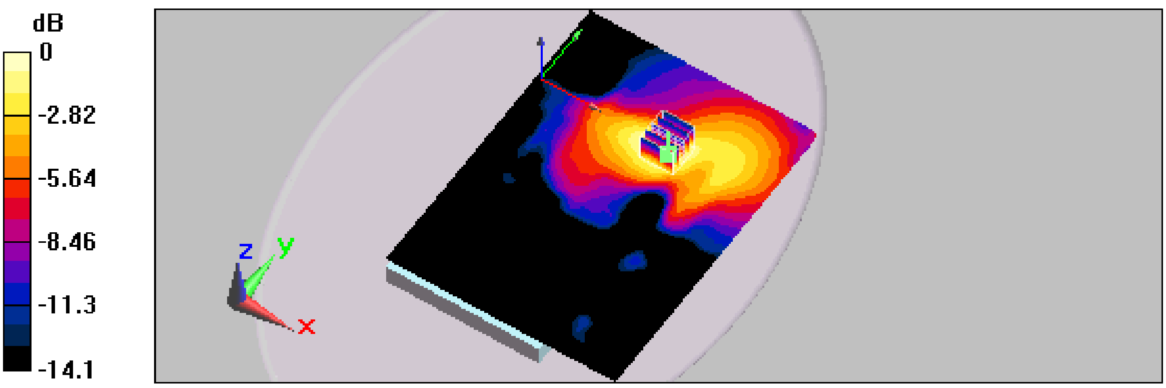
Communication System: WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.46 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.129 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.17 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 0.194 W/kg
SAR(1 g) = 0.123 mW/g; SAR(10 g) = 0.077 mW/g
Maximum value of SAR (measured) = 0.134 mW/g



0 dB = 0.134mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 1/21/2009 3:31:24 PMDate/Time: 1/21/2009 4:24:14 PM

Flat_WCDMA Band II CH9262_Open 90_Bottom of the Base_ with 0mm Gap_2200mAh

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

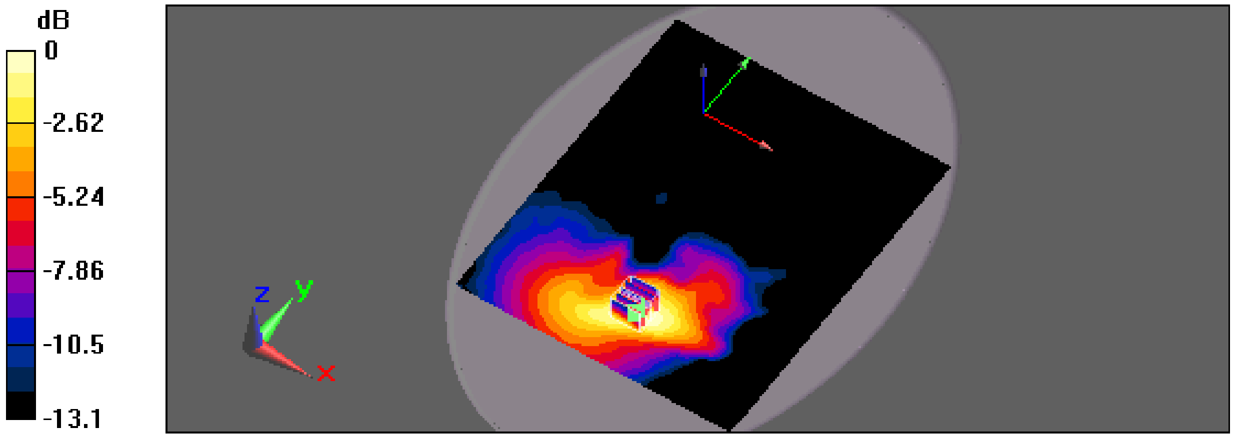
Communication System: WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.46 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.41, 7.41, 7.41); Calibrated: 5/20/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/11/2008
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (201x241x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.122 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.5 V/m; Power Drift = 0.132 dB
Peak SAR (extrapolated) = 0.145 W/kg
SAR(1 g) = 0.104 mW/g; SAR(10 g) = 0.071 mW/g
Maximum value of SAR (measured) = 0.120 mW/g



0 dB = 0.120mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 1/21/2009 12:31:45 PMDate/Time: 1/21/2009 1:24:00 PM

Flat_WCDMA Band II CH9262_Open 90_Bottom of the Base_ with 0mm Gap_4400mAh

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

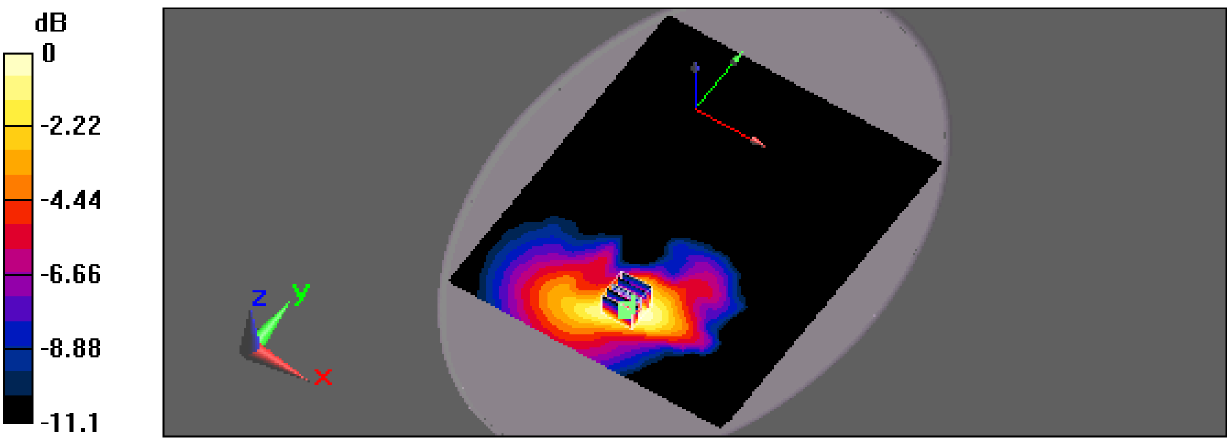
Communication System: WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.4 MHz; $\sigma = 1.46$ mho/m; $\varepsilon_r = 53.3$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: EX3DV4 - SN3578; ConvF(7.41, 7.41, 7.41); Calibrated: 5/20/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/11/2008
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (201x241x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.101 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.75 V/m; Power Drift = 0.164 dB
Peak SAR (extrapolated) = 0.145 W/kg
SAR(1 g) = 0.094 mW/g; SAR(10 g) = 0.062 mW/g
Maximum value of SAR (measured) = 0.100 mW/g



0 dB = 0.100mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 12:03:00 PM

Flat_HSDPA Band II CH9262_Open 90_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

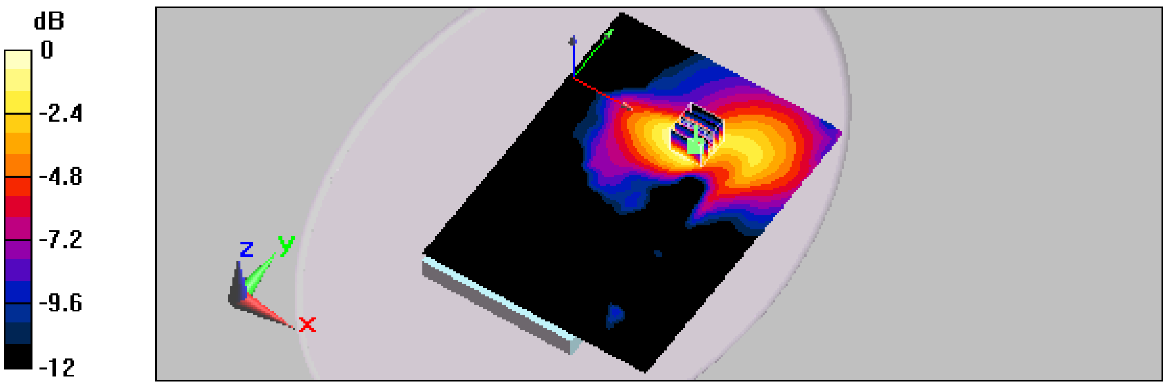
Communication System: WCDMA HSDPA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.46 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.112 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.540 V/m; Power Drift = 0.165 dB
Peak SAR (extrapolated) = 0.169 W/kg
SAR(1 g) = 0.107 mW/g; SAR(10 g) = 0.067 mW/g
Maximum value of SAR (measured) = 0.117 mW/g



0 dB = 0.117mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 1/17/2009 10:54:04 PM

Flat_HSUPA WCDMA Band II CH9262_Sub-Test1_LCD Open 90_Bottom Close Body

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

Communication System: HSUPA WCDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.46 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

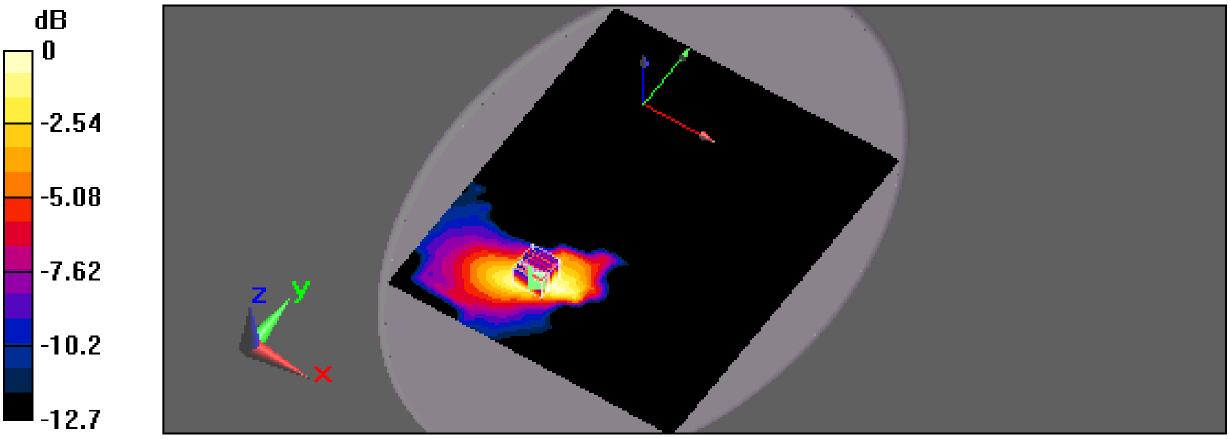
- Probe: EX3DV4 - SN3578; ConvF(7.41, 7.41, 7.41); Calibrated: 5/20/2008
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/11/2008
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (201x241x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.115 mW/g

Flat/Zoom Scan (7x7x9)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=3mm
Reference Value = 0.928 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 0.152 W/kg
SAR(1 g) = 0.098 mW/g; SAR(10 g) = 0.062 mW/g
Maximum value of SAR (measured) = 0.116 mW/g



0 dB = 0.116mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 8:29:23 AM

Flat_WCDMA Band II CH9400_Open 90_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

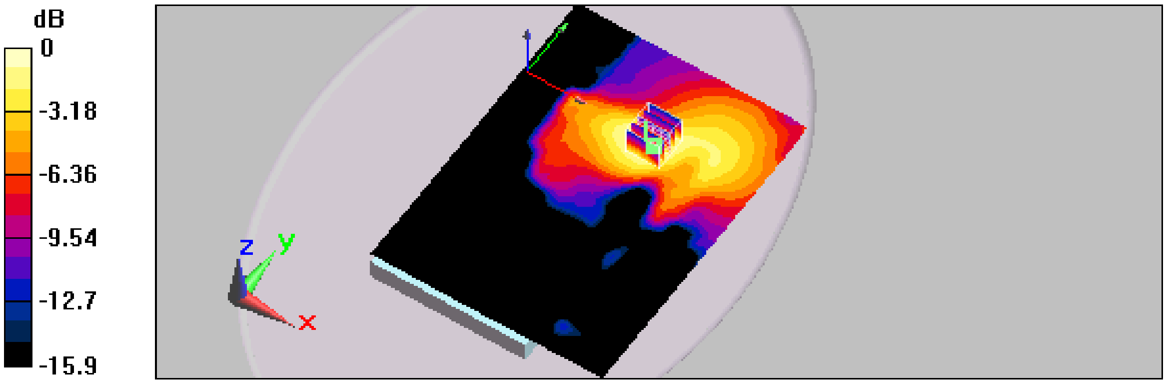
Communication System: WCDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.128 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.601 V/m; Power Drift = 0.103 dB
Peak SAR (extrapolated) = 0.189 W/kg
SAR(1 g) = 0.120 mW/g; SAR(10 g) = 0.073 mW/g
Maximum value of SAR (measured) = 0.132 mW/g



0 dB = 0.132mW/g

Test Laboratory: A Test Lab Techno Corp.

Date/Time: 9/7/2008 9:48:05 AM

Flat_WCDMA Band II CH9538_Open 90_Bottom of the Base_ with 0mm Gap

DUT: ZG5; Type: Notebook PC; FCC ID: HLZZG53GQ

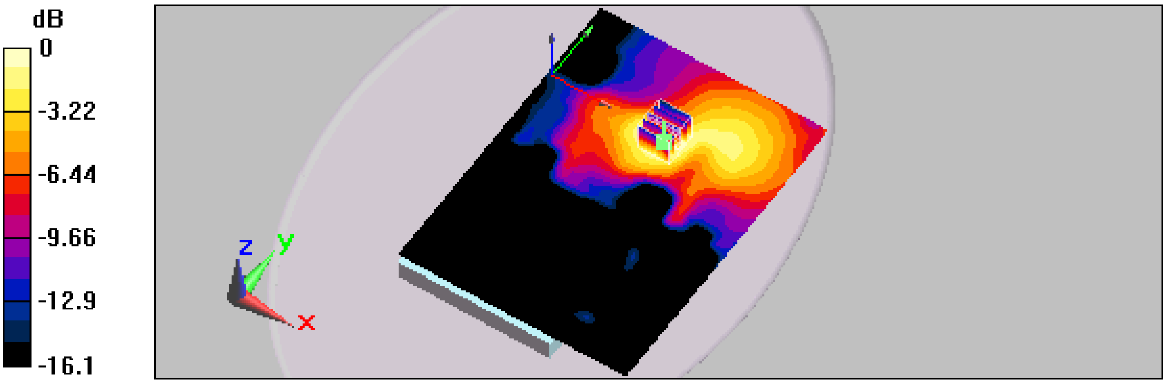
Communication System: WCDMA Band II; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1908 MHz; σ = 1.52 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV3 - SN3150; ConvF(4.95, 4.95, 4.95); Calibrated: 1/9/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn779; Calibrated: 11/30/2007
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1036
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Flat/Area Scan (151x201x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.103 mW/g

Flat/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.515 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 0.160 W/kg
SAR(1 g) = 0.101 mW/g; SAR(10 g) = 0.062 mW/g
Maximum value of SAR (measured) = 0.111 mW/g



0 dB = 0.111mW/g

Appendix C - Application Different Descriptio

See following Attached Pages.

晶復科技股份有限公司
A Test Lab Techno Corp.

DATE: 2009/01/19

LETTER EXPLAINING PURPOSE OF APPLICATION
Difference Description

APPLICANT : Acer Incorporated

REG. NO : HLZZG53GQ

EQUIPMENT : Notebook PC

Model Name / Estimation	Original ZG5, Aspire One	Variant ZG5, Aspire One	Remark
Electric Circuit	○	○	
PCB Layout	○	○	
Components, Module, Materials	○	○	
Product Structure	○	○	
Model, Appearance, Color	○	○	
Key Pad	○	○	
Other : Add HSUPA Function. Same module, but the software is different.			
Notice：(1) There is nothing different please mark 〝○〞。 (2) There is something different please mark〝×〞, and kindly indicate the difference on the form.			

Easy Lai

Acer Incorporated
Easy Lai / Regulation Center Manager
TEL : +886-2-86913089
FAX : +886-2-86913000

Appendix D - 3G SAR Measurement Procedures

See following Attached Pages.

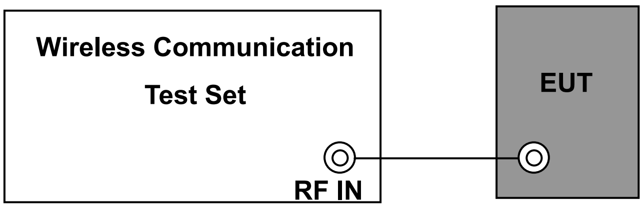
3G SAR Measurement Procedures

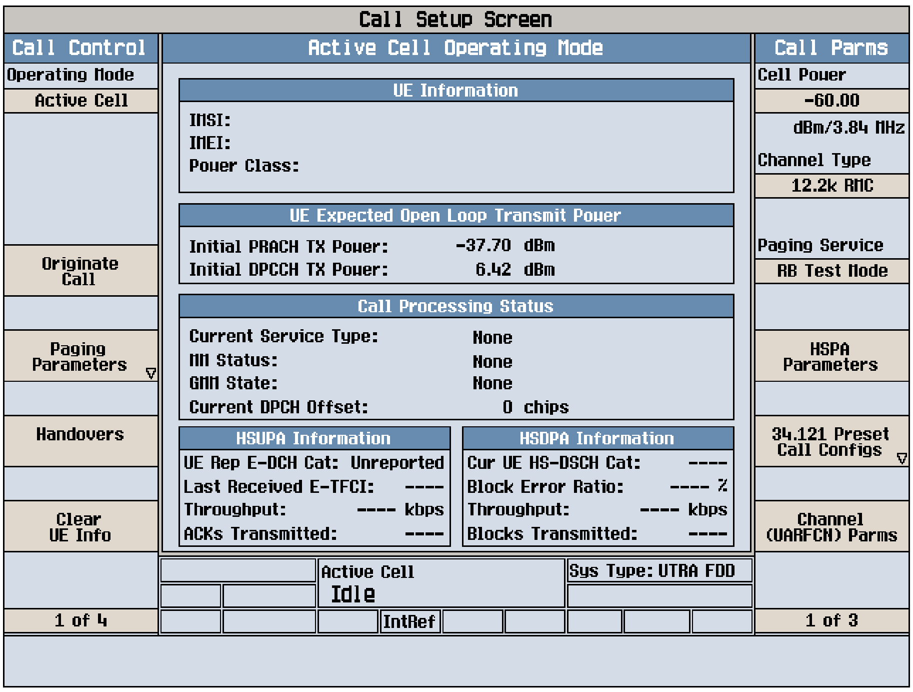
Conducted Output Power

The EUT was tested according to the requirements of the FCC 3G procedures and the TS 34.121. The EUT's WCDMA and HSPA function is Release6 version supporting HSDPA and HSUPA. A detailed analysis of the output power for all WCDDMA, HSDPA and HSUPA mode is provided in the table below. According to the FCC 3G procedures, handsets with both HSDPA and HSUPA should be tested according to release 6 HSPA test procedures, and EUT dose not support VOIP function over the HSPA function. The HSPA output levels are less than 1/4dB higher than the basic 12.2kbps RMC configurations in WCDMA, as required by FCC 3G SAR procedures and the PBA is fulfilled.

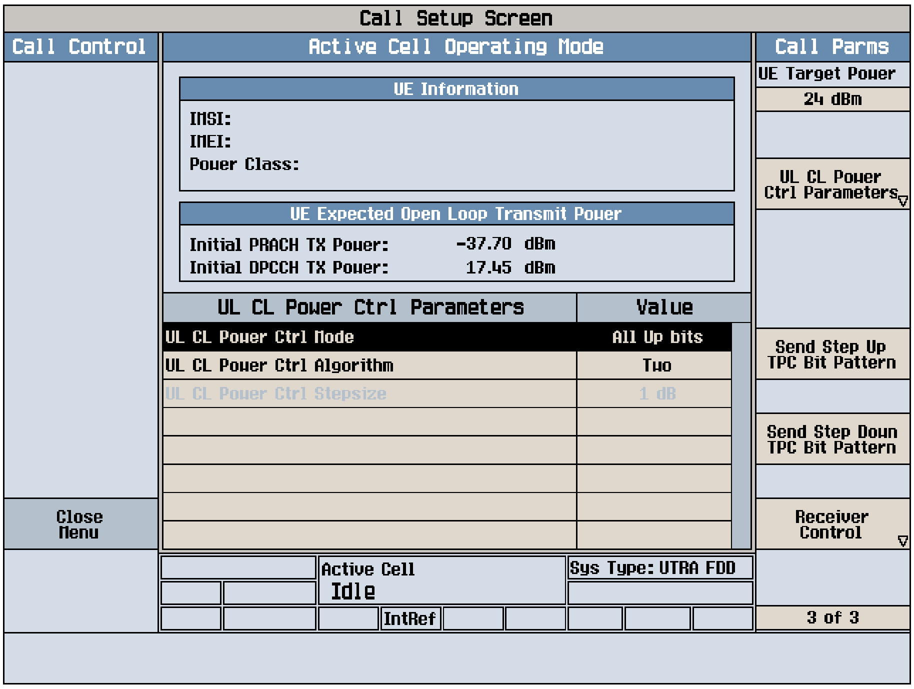
WCDMA Setup Configuration

1. The EUT was connected to Base Station referred to the drawing of Setup Configuration.
2. The RF path losses were compensated into measurements.
3. A call was established between EUT and Base Station with following setting
   a、 set Cell Power = -60dBm
   b、 set RMC 12.2K
   c、 set UE Target Power = 24dBm
   d、 set Power Ctrl Mode = All Up bit
4. The transmitted maximum output power was recorded.





WCDMA Setup Configuration : Step 3 – a & b



WCDMA Setup Configuration : Step 3 – c & d

HSDPA Setup Configuration

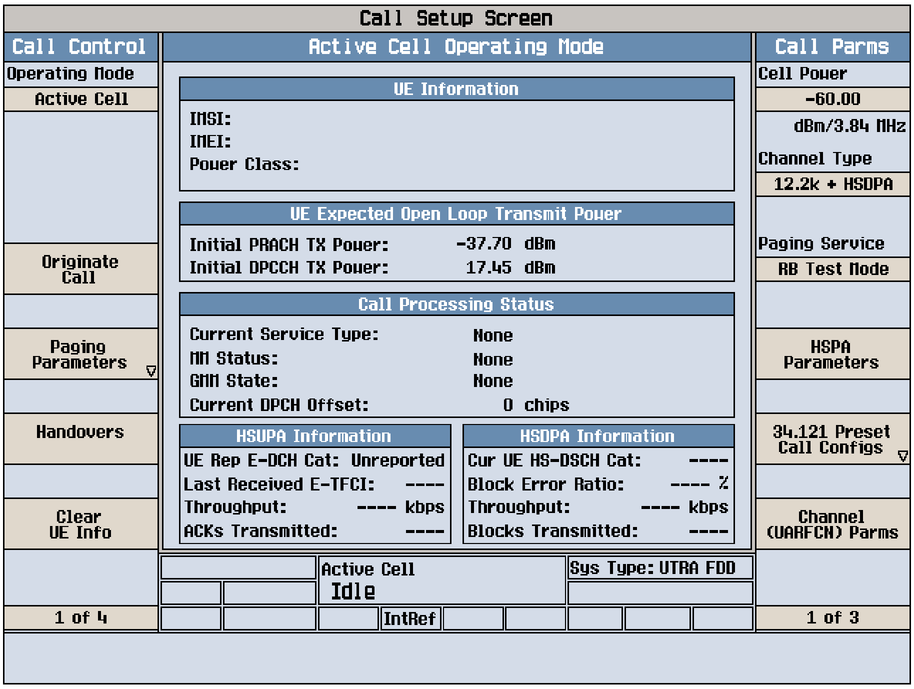
1. The EUT was connected to Base Station referred to the drawing of Setup Configuration.
2. The RF path losses were compensated into measurements.
3. A call was established between EUT and Base Station with following setting
   a、 Set Gain Factors (βc and βd) and parameters were set according to each specific sub-test in the following table quoted from the TS 34.121.
   b、 Set Cell Power = -60dBm
   c、 Set RMC 12.2K+HSDPA
   d、 Set HS-DSCH Configuration Type to FRC(H-set 1,QPSK)
   e、 Set UE Target Power = 24dBm
   f、 Set Power Ctrl Mode = All Up bit
   g、 Select Uplink Parameter
   h、 Set Gain Factor(βc and βd) Parameters were set according to each
   i、 Ex. Sub-test 1 : βc=2, βd=15
   j、 Set PS Domain
4. The transmitted maximum output power was recorded.

Sub-test	βc	βd	βd (SF)	βc/βd	βhs(1,2)	CM (dB)(3)	MRP (dB)(3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15(4)	15/15(4)	64	12/15(4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

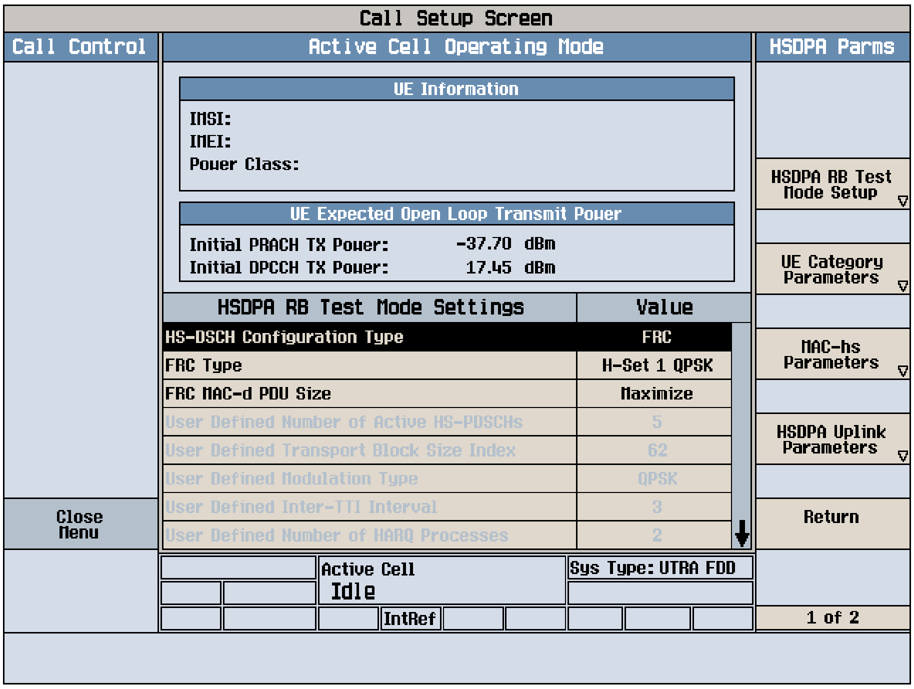
Note

1. Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 8 ⇔ Ahs = βhs/βc = 30/15 ⇔ βhs= 30/15 *βc
2. For theHS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude(EVM) with HS-DPCCH test in clause 5.13.1A and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with βhs = 30/15 *βc and Δ_{CQI} = 24/15 with βhs = 24/15*βc
3. CM = 1 for βc/βd =12/15, βhs/βc=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.
4. For subtest 2 the βc/βd ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 11/15 and βd = 15/15.

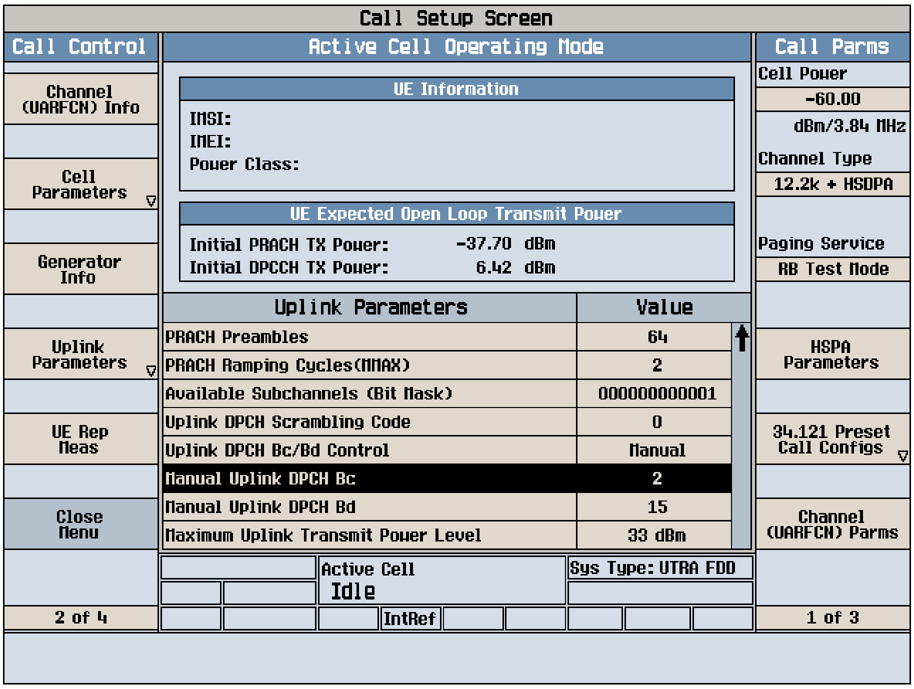
Table 1. Setup for Release 5 HSDPA



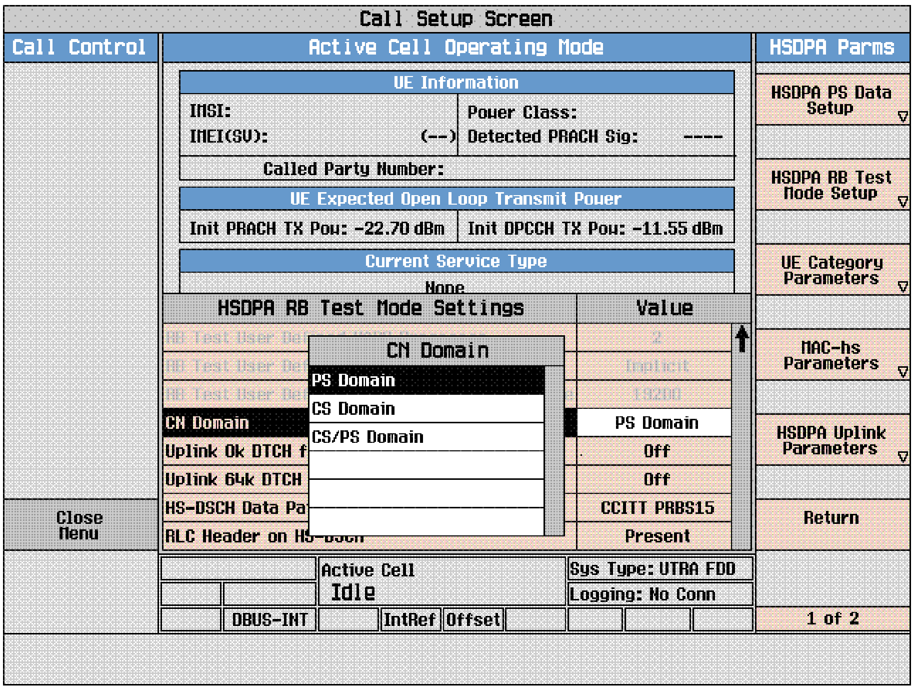
HSDPA Setup Configuration : Step 3 – b & c



HSDPA Setup Configuration : Step 3 - d



HSDPA Setup Configuration : Step 3 – i



HSDPA Setup Configuration : Step 3 - j

HSUPA Setup Configuration

1. The EUT was connected to Base Station referred to the drawing of Setup Configuration.
2. The RF path losses were compensated into measurements.
3. A call was established between EUT and Base Station with following setting
   a、 Set the Gain Factors (βc and βd) and parameters (AG Index) were set according to each specific sub-test in the following table quoted from the TS 34.121.
   b、 Set Cell Power = -75dBm
   c、 Set RMC 12.2K+HSPA
   d、 Set HS-DSCH Configuration Type to FRC(H-set 1,QPSK)
   e、 Set UE Target Power = 24dBm
   f、 Set Power Ctrl Mode = Alternating bits
   g、 Select Uplink Parameter
   h、 Set Gain Factor(βc,and βd) Parameters were set according to each
   i、 Ex. Sub-test 1 : βc=11, βd=15
   j、 Set AG Ex. Sub-test 1 :AG =20
   k、 Set E-TFCI Ex. Sub-test 1 : 75
   l、 Set PS Domain
4. The transmitted maximum output power was recorded.

Sub-test	βc	βd	βd (SF)	βc/βd	βhs[1]	βec	βed	Bed (SF)	Bed (codes)	CM[2] (dB)	MPR (dB)	AG[4] Index	E-TFCI
1	11/15[3]	15/15[3]	64	11/15[3]	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	βed1: 47/15 βed2: 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15[4]	15/15[4]	64	15/15[4]	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: ∆ACK, ∆NACK and ∆CQI = 8 ⇔ Ahs = βhs/βc = 30/15 ⇔ βhs= 30/15 *βc.

Note 2: CM = 1 for βc/βd =12/15, βhs/βc=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.

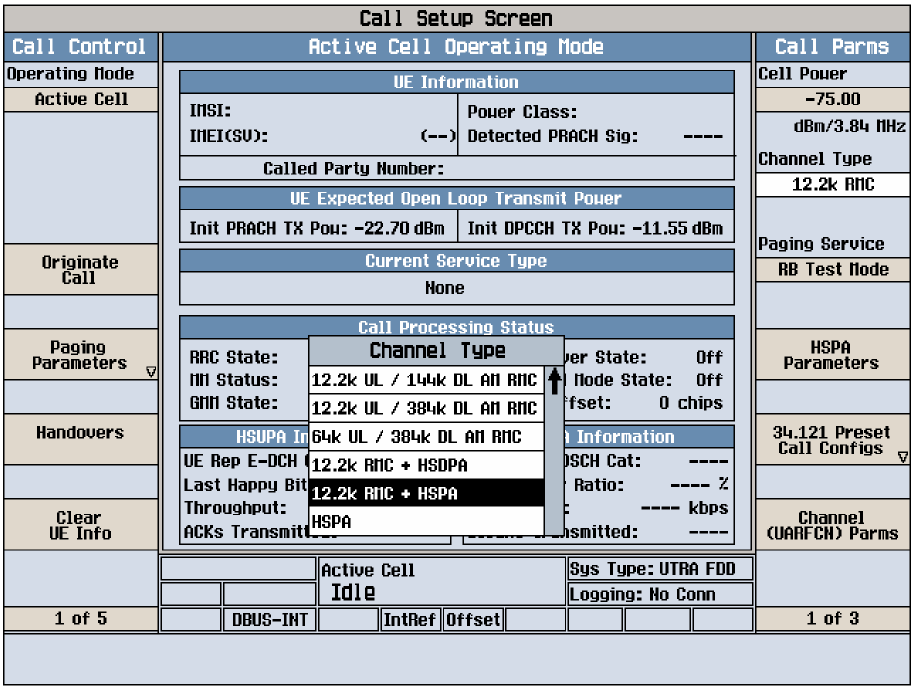
Note 3: For subtest 1 the βc/βd ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 10/15 and βd = 15/15.

Note 4: For subtest 5 the βc/βd ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 14/15 and βd = 15/15.

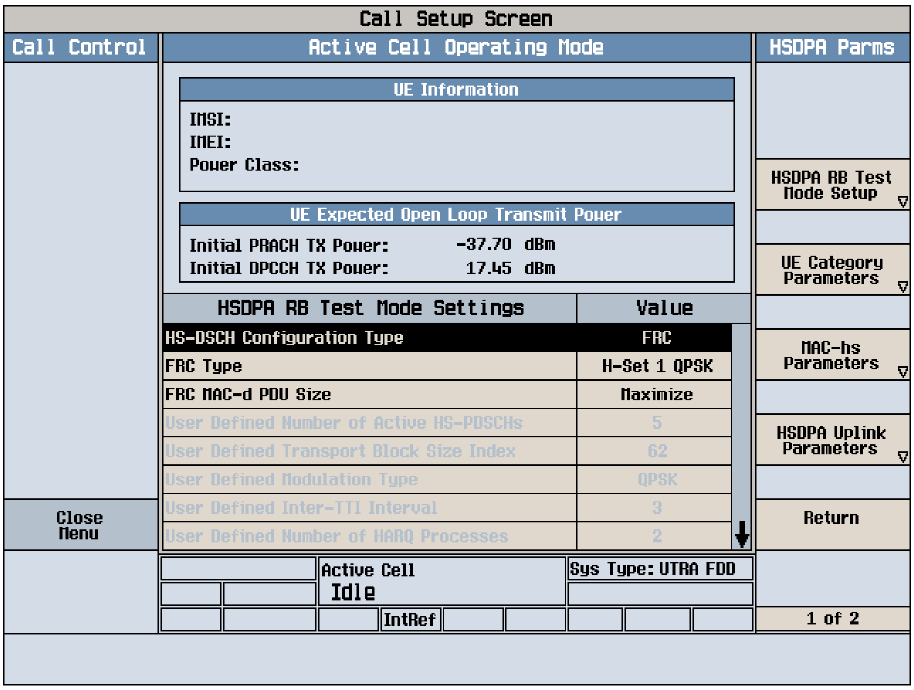
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.

Note 6: βed can not be set directly; it is set by Absolute Grant Value.

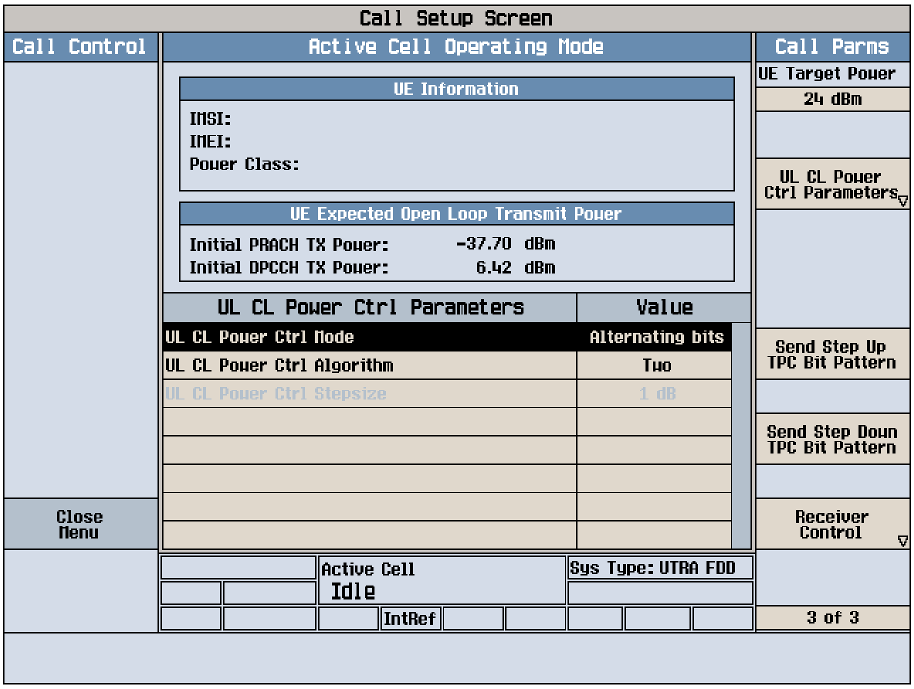
Table 2. Setup for Release 6 HSUPA



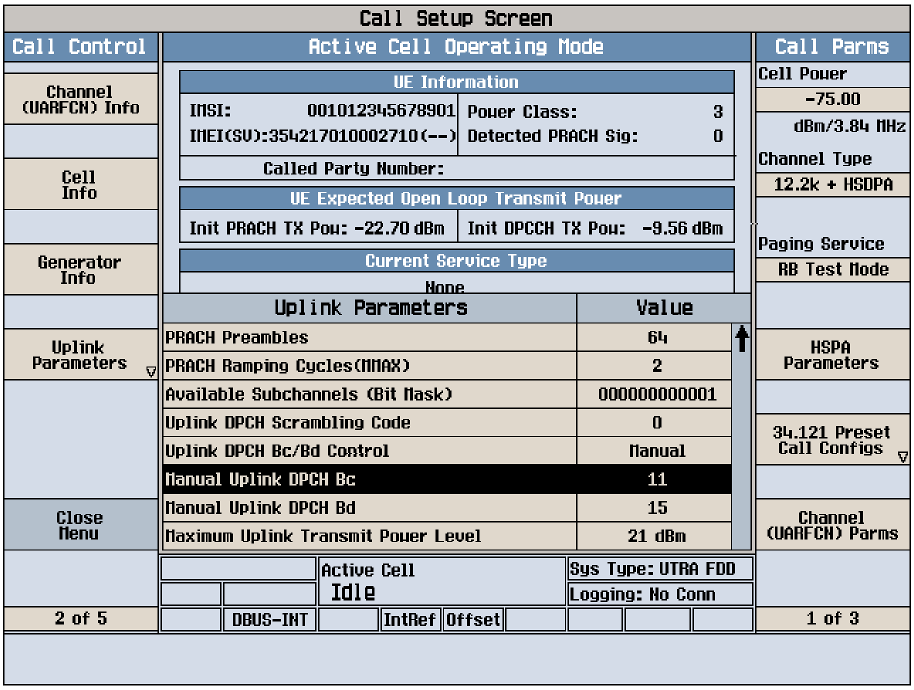
HSUPA Setup Configuration : Step 3 – b & c



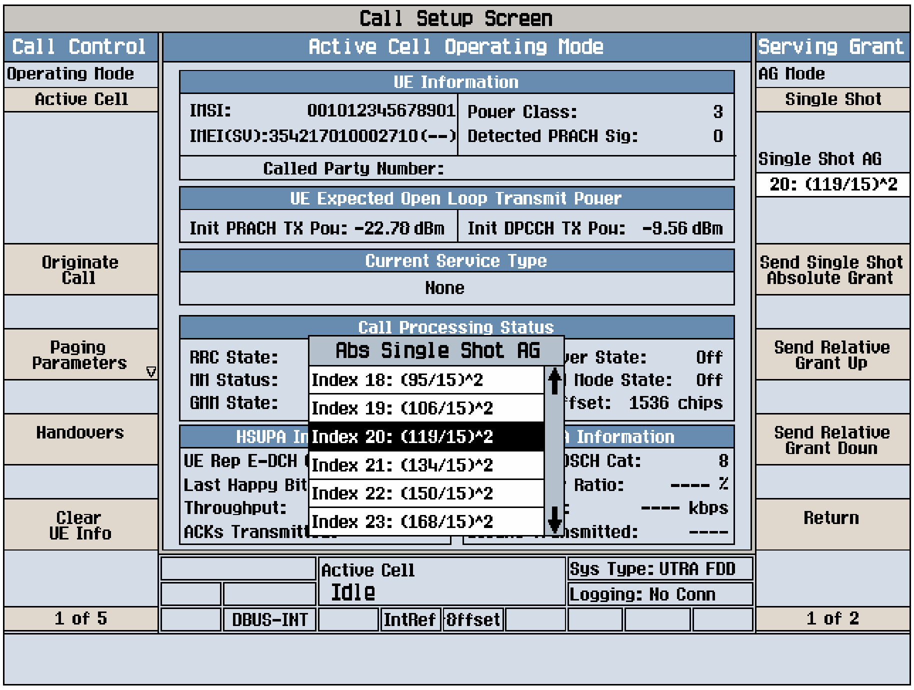
HSUPA Setup Configuration : Step 3 - d



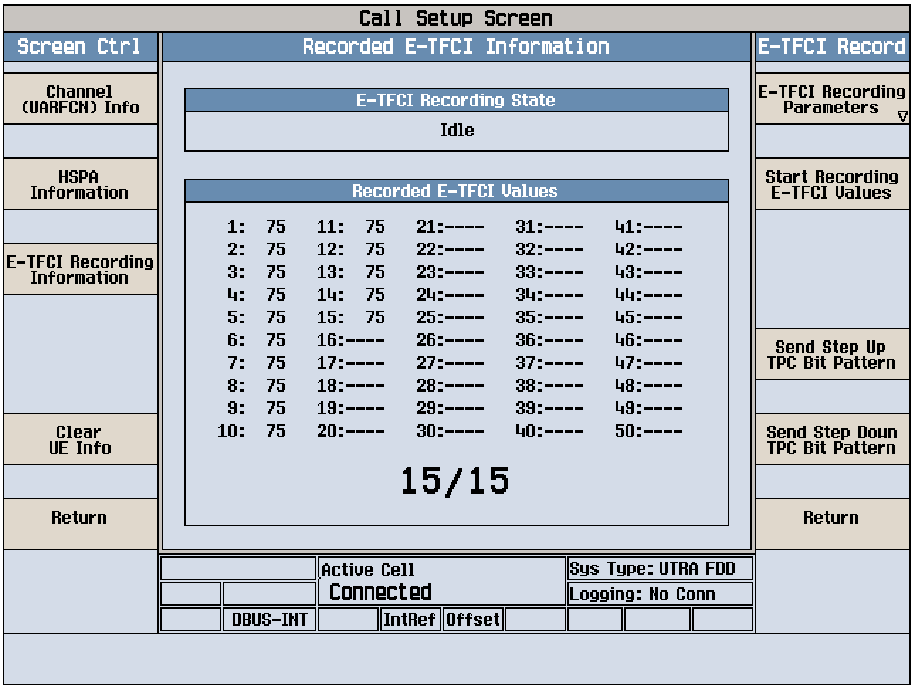
HSUPA Setup Configuration : Step 3 – e & f



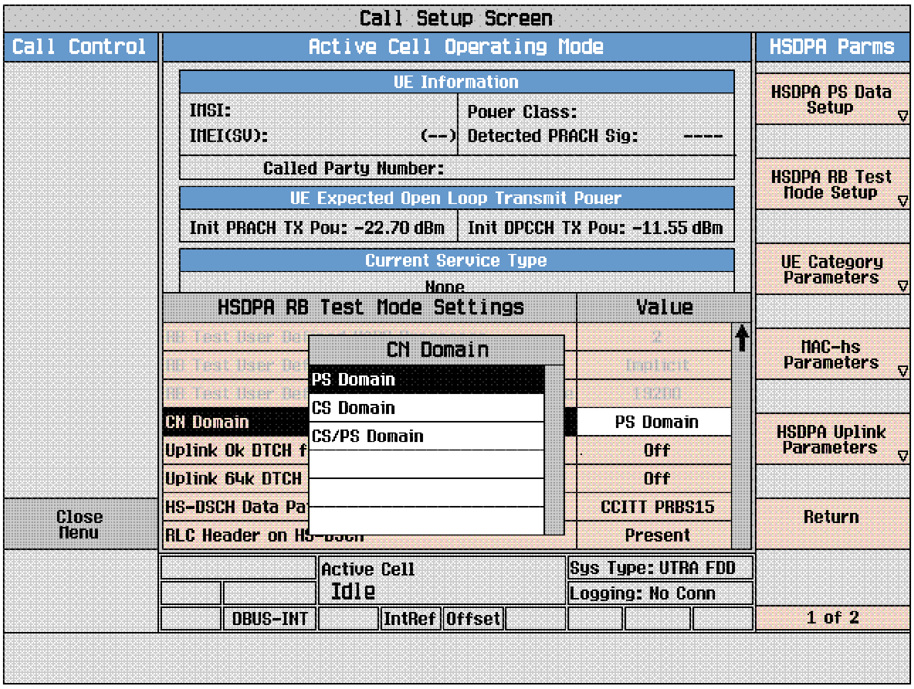
HSUPA Setup Configuration : Step 3 – i



HSUPA Setup Configuration : Step 3 – j



HSUPA Setup Configuration : Step 3 – k



HSUPA Setup Configuration : Step 3 – I

Appendix E - Calibration

All of the instruments Calibration information are listed below.

- Dipole _ D900V2 SN:1d053 Calibration No.D900V2-1d053_Dec07
- Dipole _ D900V2 SN:073 Calibration No.D900V2-073_Mar08
- Dipole _ D1900V2 SN: 5d018 Calibration No.D1950V5d018_May08
- Dipole _ D1950V2 SN: 1117 Calibration No.D1950V1117_Dec07
- Probe _ ES3DV3 SN:3150 Calibration No.ES3-3150_Jan08
- Probe _ EX3DV4 SN:3578 Calibration No.EX4-3578_May08
- DAE _ DAE4 SN:779 Calibration No.DAE4-779_Nov07
- DAE _ DAE4 SN:779 Calibration No.DAE4-779_Nov08