SAR Evaluation Report
for
FCC OET Bulletin 65 Supplement C

Report No.: 08-12-MAS-013-03

Client:	LIGHTSPEED INTERNATIONAL CO.
Product:	GPRS Modem
Model:	GPRS-100S
FCC ID:	NGJGPRS-100S
Manufacturer/supplier:	LIGHTSPEED INTERNATIONAL CO.
Date test item received:	2008/12/02
Date test campaign completed:	2008/12/17
Date of issue:	2008/12/24
Test Result:	■ Compliance ☐ Not Compliance

Statement of Compliance:
The SAR values measured for the test sample are below the maximum recommended level of 1.6 W/kg averaged over any 1g tissue according to FCC OET Bulletin 65 Supplement C (Edition 01-01).

The test result only corresponds to the tested sample. It is not permitted to copy this report, in part or in full, without the permission of the test laboratory.

Total number of pages of this test report: 71 pages

Test Engineer	Checked by	Approved by
Eric Lin	Joe Hsieh	Winpo Tsai

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

Applicant Information

Client	:	LIGHTSPEED INTERNATIONAL CO.
Address	:	No.20 LANE 526 NIUPU EAST ROAD, HSIN CHU, TAIWAN
Manufacturer	:	LIGHTSPEED INTERNATIONAL CO.
Address	:	No.20 LANE 526 NIUPU EAST ROAD, HSIN CHU, TAIWAN
EUT	:	GPRS Modem
Trade Name	:	LIGHTSPEED
Model No.	:	NGJGPRS-100S
Standard Applied	:	FCC OET 65 Supplement C (Edition 01-01, June 2001)

The GPRS Modem is in compliance with the FCC Report and Order 96-326 and the tests were performed according to the FCC OET65 Supplement C.

Laboratory Introduction:

Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

- ❶ *ISO9001: TüV Product Service*
- ❷ *ISO/IEC 17025: BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance*
- ❸ *Filing: FCC, Industry Canada, VCCI*
- ❹ *MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through TAF*

Laboratory Information:

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Executive Summary

The product GPRS Modem is a new product and operating in the 850/1900 MHz frequency ranges. It can be used as a wireless modem for data service or as a device for a voice service. The measurements was conducted by ETC and carried out with the dosimetric assessment system – DASY4.

The measurements were conducted according to FCC OET 65 Supplement C [Reference 5] for evaluating compliance with requirements of FCC Report and Order 96-326 [Reference 3].

The product under test was controlled with one typical external personal computer (hereafter called the Test Host) via PCMCIA interface. The test operator can use Hyperterminal in Test Host and use specific AT commends to setup a data call or a voice call via air interface with a external GSM/GPRS network simulator.

Normally, SAR evaluation was performed on Middle frequency channel for all GSM, GPRS modes and for the Test Host. Check the worse case, if the SAR value is less than 0.8 mW/g, then low and high channel can be waived. Otherwise, the SAR evaluation should be performed on low and high channel.

1 General Information

1.1 Description of Equipment Under Test

EUT Type	GPRS Modem
Trade Name	LIGHTSPEED
Model Name	GPRS-100S
Hardware version	N/A
Software version	N/A
Tx Frequency	824.2 ~ 848.8 MHz；1850.2 ~ 1909.8 MHz
Rx Frequency	869.2 ~ 893.8 MHz；1930.2 ~ 1989.8 MHz
Antenna Type	Internal Type
Device Category	Portable Part
RF Exposure Environment	General Population / Uncontrolled
Power supply	DC 5V (From PCMCIA of Notebook PC)
Crest Factor	4

1.2 Characteristics of Device

GPRS Modem is an PCMCIA CARD that is compatible with 850/1900MHz GPRS/GSM NETWORK. It can send/receive data, fax, voice, SMS & MMS.

Mode	GSM (Class8)		GPRS (Class 10)	
Band(MHz)	850	1900	850	1900
Frequency Range(MHz)	824-849	1850-1910	824-849	1850-1910
Modulation Mode	GMSK		GMSK	
Crast Factor	1:8.3		1:4	

1.3 Test Host

The SAR evaluation was performed on the following hosts:

Host #	Description	Manufacturer	Model	Overall Dimension
1	Laptop Computer	HP COMPAQ	NX6320	32cm x 26.5cm x 4cm

1.4 Photograph of EUT

Front	Back
	

1.5 Environment Conditions

Item	Target	Measured
Ambient Temperature (°C)	18 ~ 25	22 ± 1
Temperature of Simulant (°C)	20 ~ 24	22 ± 1
Relative Humidity (%RH)	30 ~ 70	60 ~ 70

1.6 FCC Requirements for SAR Compliance Testing

According to the FCC order “Guidelines for Evaluating the Environmental Effects of RF Radiation”, for consumer products, the SAR limit is **1.6W/kg** for an uncontrolled environment and **8.0 W/kg** for an occupational/controlled environment. Pursuant to the Supplement C of OET Bulletin 65 “Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields”, released on June 29, 2001 by FCC, the equipment under test should be evaluated at maximum output power (radiated from the antenna) under “worst-case” conditions for intended or normal operation, incorporating normal antenna operating positions, equipment under test peak performance frequencies and positions for maximum RF power coupling.

1.6.1 RF Exposure Limits

	Whole-Body	Partial-Body	Arms and Legs
Population/Uncontrolled Environments (W/kg)	0.08	1.6	4.0
Occupational/Controlled Environments (W/kg)	0.4	8.0	2.0

Notes:

1. Population/Uncontrolled Environments: Locations where there is the exposure of individuals who have no sense or control of their exposure.
2. Occupational/Controlled Environments: Locations where there is exposure that may be incurred by people who have knowledge of the potential for exposure.
3. Whole-Body: SAR is averaged over the entire body.
4. Partial-Body: SAR is averaged over any 1g of tissue volume as defined in specification.
5. Arms and Legs: SAR is averaged over 10g of tissue volume as defined in specification.

1.7 The SAR Measurement Procudure for PCMCIA Wireless Device

1.7.1 General Requirements

The test should be performance in a laboratory without influence on SAR measurements by ambient RF sources and any reflection from the environment inside. The ambient temperature should be kept in the range of 18°C to 25°C with a maximum variation within ± 2°C during the test.

1.7.2 Phantom Requirements

The phantoms used in test are simplified representations of the human head and body as a specific shaped container for the head or body simulating liquids. The physical characteristics of the phantom models should resemble the head and the body of a mobile user sice the shape is a dominant parameter for exposure. The shell of the phantom should be made of low loss and low permittivity material and the thickness tolerance should be less than 0.2 mm. In addition, the phantoms should provide simulations of both right and left hand operations.

1.7.3 Test Positions

Measurements were performed with one host laptop computer, using the test sample and SAR system. For the laptop computer having multiple card slots, RF exposure was evaluated with the transmitter installed in the slots producing the highest SAR. One test position was evaluated for the laptop computer. The laptop bottom is placed in parallel and in contact with the flat phantom. (As shown in Fig.1)

1.7.4 Test Procedures

As the Fig. 1 displays, the PC was initially positioned such that PC bottom is placed against the flat phantom. The antenna is pointing straight, the position suggested by the manufacturer. The distance between antenna and flatphantom is determined by the PCMCIA slot in the PC.

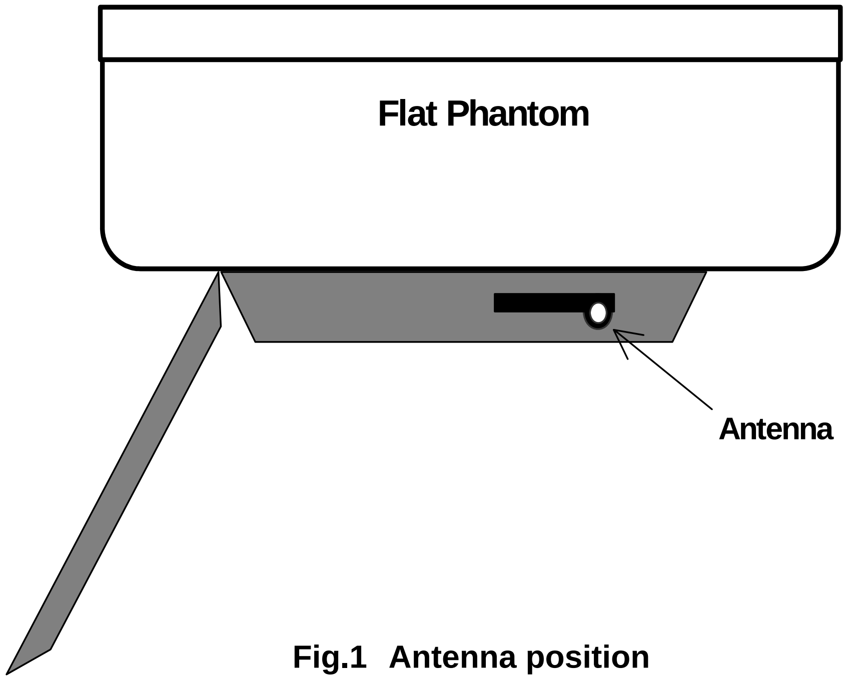


Fig.1 Antenna position

2 Description of the Test Equipment

The measurements were performed using an automated near-field scanning system, DASY4 software, manufactured by Schmid & Partner Engineering AG (SPEAG) in Switzerland.
The SAR extrapolation algorithm used in all measurements on the test device was the ‘worstcase extrapolation’ algorithm.

2.1 Test Equipment List

Equipment	Manufacturer	Type	S/N	Calibration Expiry
Robot	Staubli	RX90B L	F03/5W16A1/A/01	(not necessary)
Robot Controller	Staubli	CS7MB	F03/5W16A1/C/01	(not necessary)
Teach Pendant	Staubli	------------	D221340061	(not necessary)
DAE4	Schmid & Partner Engineering AG	------------	629	2009-09-22
E-field Probe	Schmid & Partner Engineering AG	EX3DV4	3555	2009-09-18
Dipole Validation Kit	Schmid & Partner Engineering AG	D900V2	1d010	2009-09-21
Dipole Validation Kit	Schmid & Partner Engineering AG	D1900V2	5d054	2009-09-22
Digital Thermometer	DER EE	K-TYPE	DE-3003	2009-01-14
Directional Coupler	Amplifier Research	DC7420	310569	2009-08-13
DASY4 Software	Schmid & Partner Engineering AG	------------	Version 4.6B23	To automatically control the robot and perform the SAR measurement
SEMCAD Software	Schmid & Partner Engineering AG	------------	Version 1.8B160	Post-processing and report management
Signal Generator	Agilent	83640B	3844A01143	2009-09-18
Amplifier	Mini-Circuits	ZHL-42W	D111704-01-02	2009-01-29
Power Meter	BOONTON	4532-0102	136601	2009-05-04
Power Sensor	BOONTON	51011-EMC	32861	2009-05-04
Power Sensor	BOONTON	56518	3233	2009-05-04
S-Parameter Network Analyzer	Agilent	8753ES	MY40001340	2009-12-01
Calibration Kit	Agilent	85033C	2920A03287	(not necessary)
Dielectric Probe Kit	Agilent	85070E	MY44300101	(not necessary)

2.2 DASY4 Measurement System Diagram

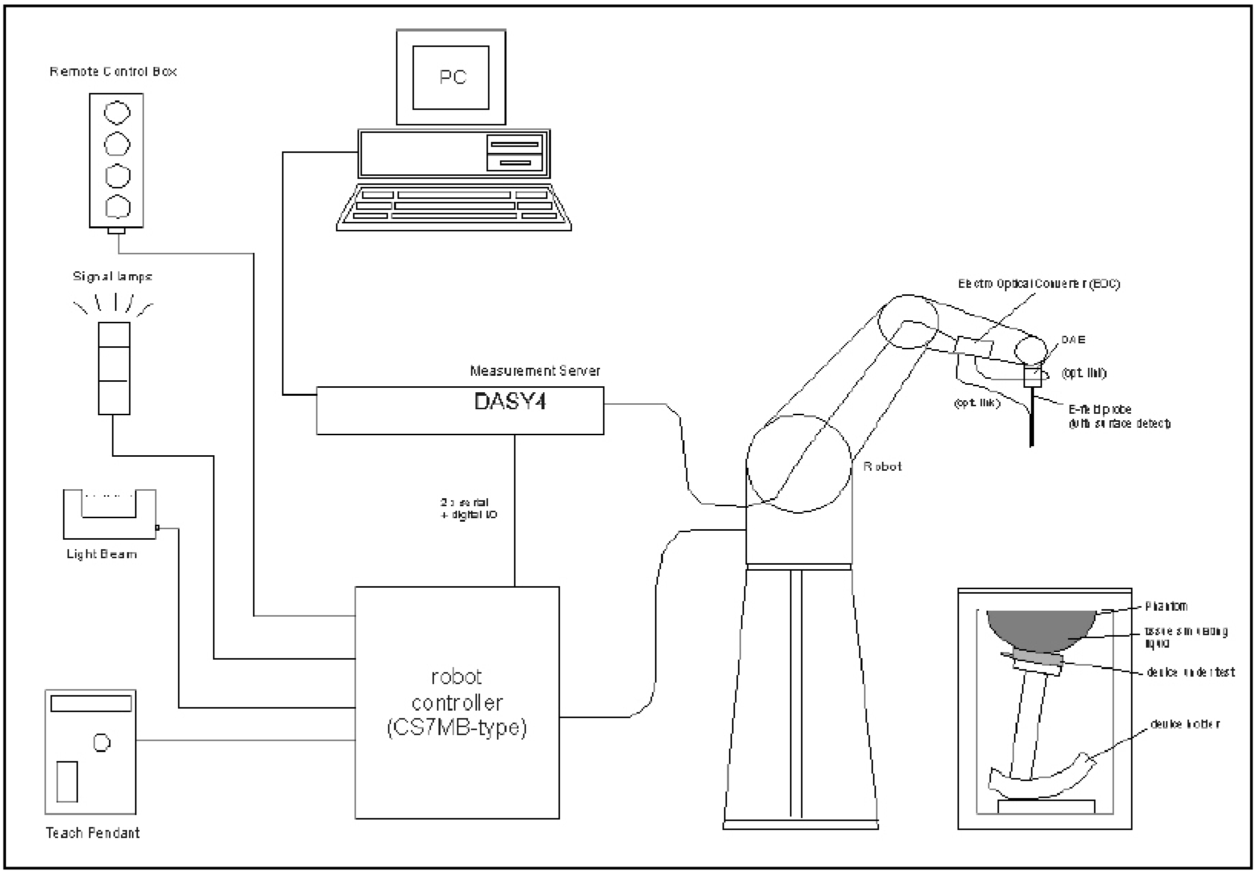


Fig. 2 The DASY4 Measurement System

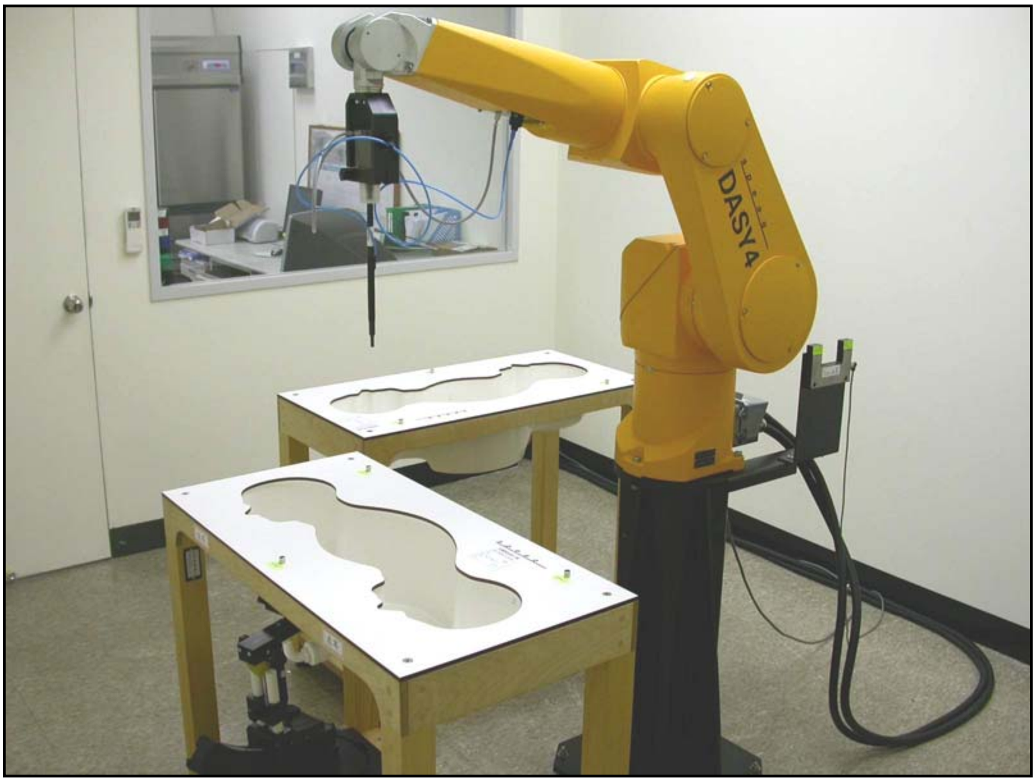


Fig. 3 The DASY4 System used in ETC set-up with two phantoms

The DASY4 system consists of the following items:

- A fixed-on-ground high precision 6-axis robot with controller and software and an arm extension for moving the Data Acquisition Electronics (DAE) and Probe.
- A dosimetric probe, an isotropic E-field probe optimized and calibrated for usage in head or body tissue simulating liquids. Some of the probes are equipped with an optical surface detector system.
- A Data Acquisition Electronic (DAE) performing the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. DAE is powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- A unit to operate the optical surface detector which is connected to Electro-Optical Coupler (EOC).
- The EOC performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY4 measurement server.
- The DASY4 measurement server performing all real-time data evaluation for field measurements and surface detection, controling robot movements and handling safety operation. A computer with operating Windows 2000 is used for server.
- DASY4 software and SEMCAD data evaluation software are installed in PC.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed well according to the given recipes.
- System validation dipoles is used to validate the proper functioning of the system

2.3 DASY4 Measurement Server

Fig. 4 DASY4 Measurement Server

The DASY4 measurement server is based on a PC/104 CPU board with a 166MHz low-power pentium, 32MB chipdisk and 64MB RAM. The necessary circuits for communication with either the 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 DASY4 I/O-board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. The PC-operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with two expansion slots which are reserved for future applications. Please note that the expansion slots do not have a standardized pinout and therefore only the expansion cards provided by SPEAG can be inserted. Expansion cards from any other supplier could seriously damage the measurement server.

2.4 DAE (Data Acquisition Electronics)

Fig. 5 DAE used in ETC

Some probes are equipped with an optical multifiber line, ending at the front of the probe tip. This line is connected to the EOC box on the robot arm and provides automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. If the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases during the approach, reaches a maximum and then decreases. If the probe perpendicularly touches the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 software reads the reflection during a software approach and looks for the maximum using a 2^{nd} order fitting. The approach is stopped upon reaching the maximum.
The optical surface detection works in transparent liquids and on di_use reflecting surfaces with a repeatability of better than ±0.1mm. The distance of the maximum depends on the fiber and the surrounding media. It is typically 1.0mm to 2.0mm in tissue simulating mixtures. The distance can be measured with the surface check job (described in the reference guide).

2.5 Phantom

The phantom used for all tests i.e. for both system performance checking and device testing, was the twinheaded "SAM Twin Phantom V4.0", manufactured by SPEAG. The phantom conforms to the requirements of IEEE 1528 - 2003.

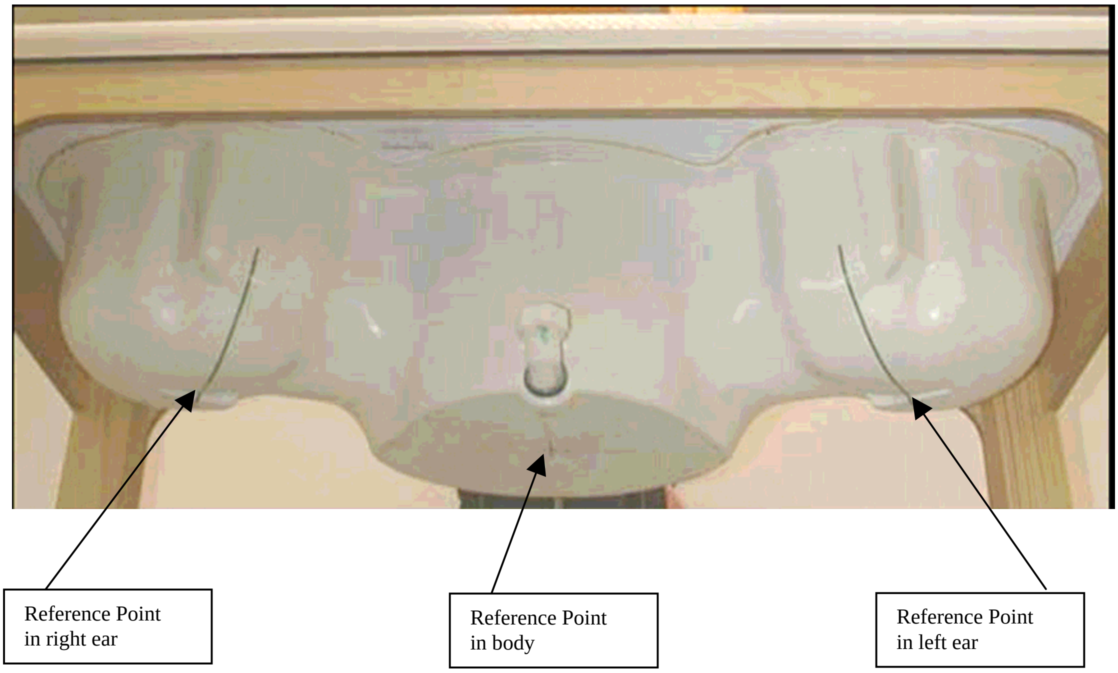


Fig. 6 SAM Twin Phantom and the definition points

2.6 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integrated part of the Dasy system.

Fig. 7 Device holder supplied by SPEAG

2.7 Specifications of Probes

The E-Field Probes ET3DV6 or EX3DV4, manufactured and calibrated annually by Schmid & Partner Engineering AG with following specification are used for the dosimetric measurements.

ET3DV6:

- Dynamic range: 5 μ W/g ~ 100 mW/g
- Tip diameter: 6.8 mm
- Probe linearity: ± 0.2 dB (30MHz to 3 GHz)
- Axial isotropy: ± 0.2 dB
- Spherical isotropy: ± 0.4 dB
- Distance from probe tip to dipole centers: 2.7 mm
- Calibration range: 900MHz/1750MHz/1900MHz/ /2450MHz for head and body simulating liquids.

EX3DV4:

- Dynamic range: 10 μ W/g ~ 100 mW/g
- Tip diameter: 2.5 mm
- Probe linearity: ± 0.2 dB (30MHz to 3 GHz)
- Axial isotropy: ± 0.2 dB
- Spherical isotropy: ± 0.4 dB
- Distance from probe tip to dipole centers: 1.0 mm
- Calibration range: 900MHz/1810MHz for head simulating liquid and

2.8 SAR Measurement Procedures in DASY4

Step 1 Setup a Call Connection

Establish a call in handset at the maximum power level with a base station simulator via air interface.

Step 2 Power Reference Measurement

To measure the local E-field value at a fixed location which value will be taken as a reference value for calculating a possible power drift.

Step 3 Area Scan

To measure the SAR distribution with a grid with spacing of 15 mm x 15 mm and kept with a constant distance to the inner surface of the phantom. Additional all peaks within 3 dB of the maximum SAR are searched.

Step 4 Zoom Scan

At these points (maximum number of SAR peaks is two), a cube of 32 mm x 32 mm x 30 mm is applied to and measured with 5 x 5 x 7 points. With these measured data, a peak spatial-average SAR value can be calculated by SEMCAD software.

Step 5 Power Drift Measurement

Repetition of the E-field measurement at the fixed location mentioned in Step 1 to make sure the two results differ by less than ± 0.2 dB.

2.9 Simulating Liquids

2.9.1 Liquid Recipes

BSL 835MHz band (Body)

Ingredient	% by weight
Water	50.17
Sugar	47.96
Salt	1.77
Preventol	0.1

BSL 1900MHz band (Body)

Ingredient	% by weight
Water	69.61
DGBE	30.23
Salt	0.16

2.9.2 Liquid Measurement Results

Body 835 MHz Reference Value	Dielectric Parameters		Temperature [℃]
	ε_r	σ [S/m]	
Target	55.2 ± 5% [52.44 ~ 57.96]	0.97 ± 5% [0.9215 ~ 1.0185]	22.0 ± 2 [20 ~ 24]
Measured	54.9	0.96	21.5
Body 1900 MHz Reference Value	Dielectric Parameters		Temperature [℃]
	ε_r	σ [S/m]	
Target	53.3 ± 5% [50.635 ~ 55.965]	1.52 ± 5% [1.444 ~ 1.596]	22.0 ± 2 [20 ~ 24]
Measured	55.8	1.52	21.8

2.10 System Performance Check

2.10.1 Purpose

1. To verify the simulating liquids are valid for testing.

2. To verify the performance of testing system is valid for testing.

2.10.2 System Performance Check Procedure

The DASY4 installation includes predefined files with recommended procedures for measurements and the system performance check. They are read-only document files and destined as fully defined but unmeasured masks, so the finished system performance check must be saved under a different name. The system performance check document requires the SAM Twin Phantom, so this phantom must be properly installed in your system. (User defined measurement procedures can be created by opening a new document or editing an existing document file). Before you start the system performance check, you need only to tell the system with which components (probe, medium, and device) you are performing the system performance check; the system will take care of all parameters.

• **The Power Reference Measurement and Power Drift Measurement** jobs are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the amplifier output power. If it is too high (above ±0.1 dB), the system performance check should be repeated; some amplifiers have very high drift during warm-up. A stable amplifier gives drift results in the DASY system below ±0.02 dB.

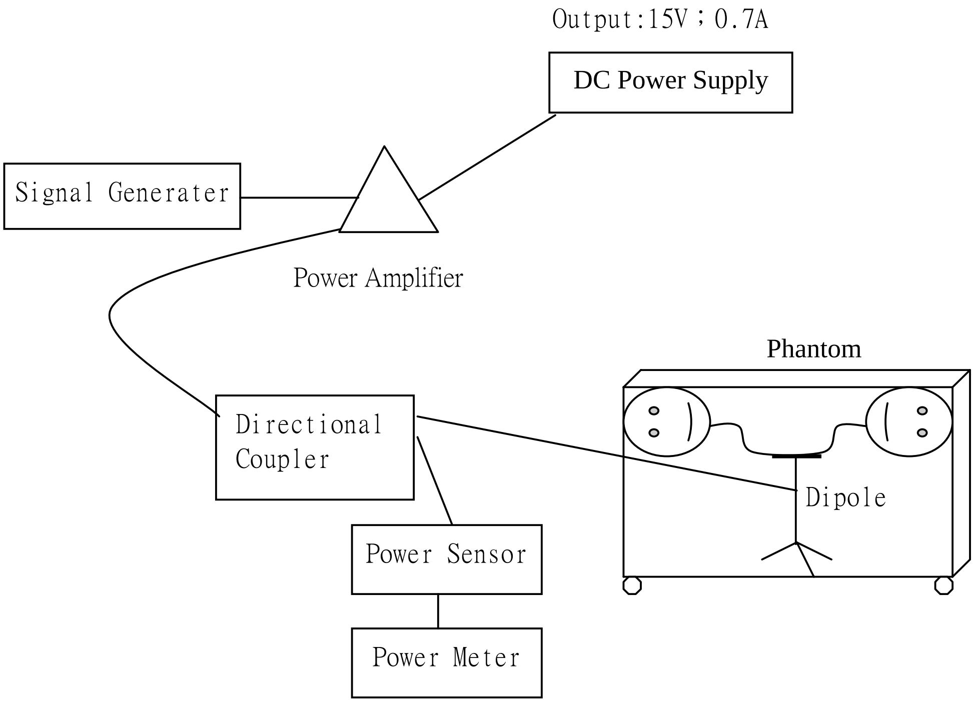
• **The Surface Check** job tests the optical surface detection system of the DASY system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the di_erence between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ±0.1mm). In that case it is better to abort the system performance check and stir the liquid.

• **The Area Scan** job measures the SAR above the dipole on a plane parallel to the surface. It is used to locate the approximate location of the peak SAR. The proposed scan uses large grid
spacing for faster measurement; due to the symmetric field, the peak detection is reliable.
Schmid & Partner Engineering AG, DASY4 Manual, February 2005 16-2
System Performance Check Application Notes
If a finer graphic is desired, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result.

• **The Zoom Scan** job measures the field in a volume around the peak SAR value assessed in the previous Area Scan job (for more information see the application note on SAR evaluation).

If the system performance check gives reasonable results, the SAR peak, 1 g and 10 g spatial average SAR values normalized to 1W dipole input power give reference data for comparisons. The next sections analyze the expected uncertainties of these values, as well as additional checks for further information or troubleshooting.

2.10.3 System Performance Check Setup



Note：

1. Power Meter is used to make sure whether the input power is 250mW for target frequency.
2. Power Amplifier is used to input the measured power to dipole antenna.

2.10.4 Result of System Performance Check

Diepole Antenna: D900V2 SN:1d010；D1900V2 SN:5d054

Date of Measurement And Reference Value	SAR@1g [W/kg]	Dielectric Parameters		Temperature [℃]
		ε r	σ [S/m]	
Body 900 MHz Reference Value	2.85 ± 10% [2.565 ~ 3.135]	55.0 ± 5% [52.25 ~ 57.75]	1.05 ± 5% [0.9975 ~ 1.1025]	22.0 ± 2 [20 ~ 24]
2008-12-16	2.89	54.4	1.02	21.5
Body 1900 MHz Reference Value	10.3 ±10% [9.27 ~ 11.33]	53.3 ± 5% [50.635 ~ 55.965]	1.52 ± 5% [1.444 ~ 1.596]	22.0 ± 2 [20 ~ 24]
2008-12-17	11	55.8	1.52	21.8

3 Results

3.1 Summary of Test Results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.	■
The deviations as specified in this chapter were ascertained in the course of the tests Performed.	□

3.2 Test Results of GSM 850MHz

Frequency		Mode	Conducted Power (dBm)			SAR@1g [W/kg]	Power Drift (dB)	Note
CH	MHz		Before	After	Drift			
190	836.6	GPRS-Mid	30.0	29.9	-0.1	0.343	0.115	
251	848.8	GPRS-High	30.0	29.8	-0.2	0.339	0.028	
128	824.2	GPRS-Low	29.9	29.8	-0.1	0.373	-0.053	Worst

The Max Body SAR@850MHz@1g was 0.373 W/kg, less than limitation of 1.6 W/kg.

3.3 Test Results of GSM 1900MHz

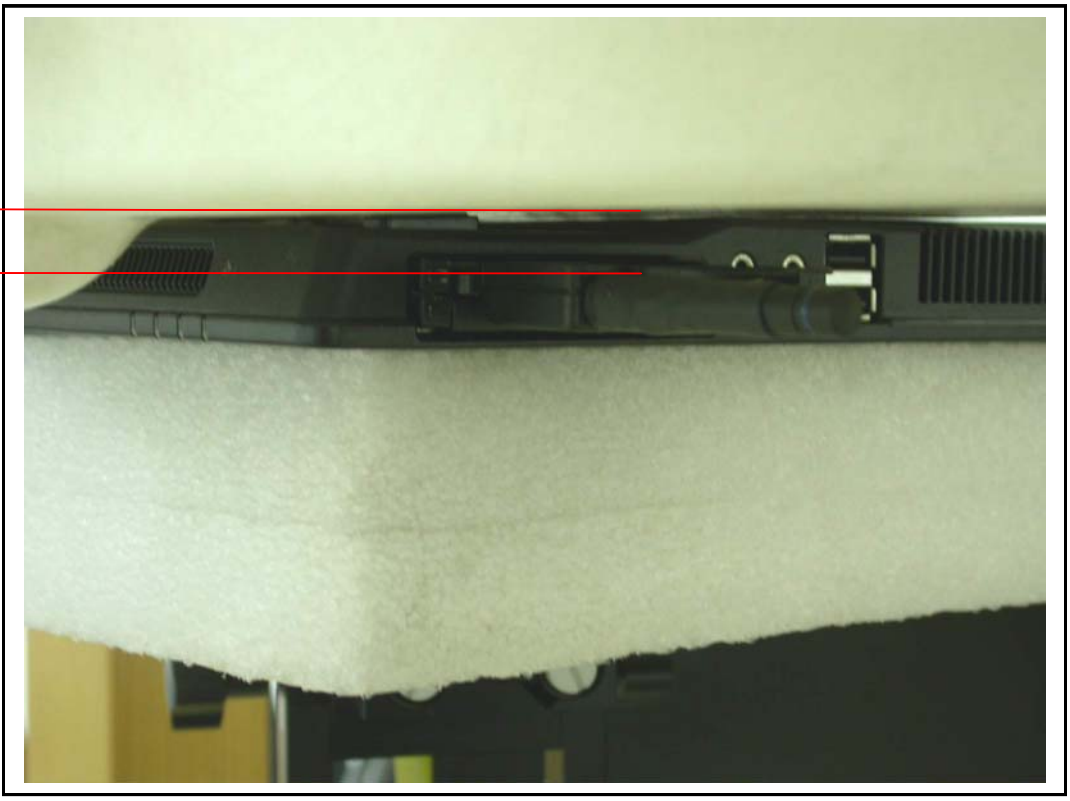
Frequency		Mode	Conducted Power (dBm)			SAR@1g [W/kg]	Power Drift (dB)	Note
CH	MHz		Before	After	Drift			
661	1880.0	GPRS-Mid	28.0	27.9	-0.1	0.128	0.101	Worst
810	1909.8	GPRS-High	27.9	27.8	-0.1	0.111	0.114	
512	1850.2	GPRS-Low	27.9	27.8	-0.1	0.122	0.111	

The Max Body SAR@1900MHz@1g was 0.128 W/kg, less than limitation of 1.6 W/kg.

3.4 Measurement Position

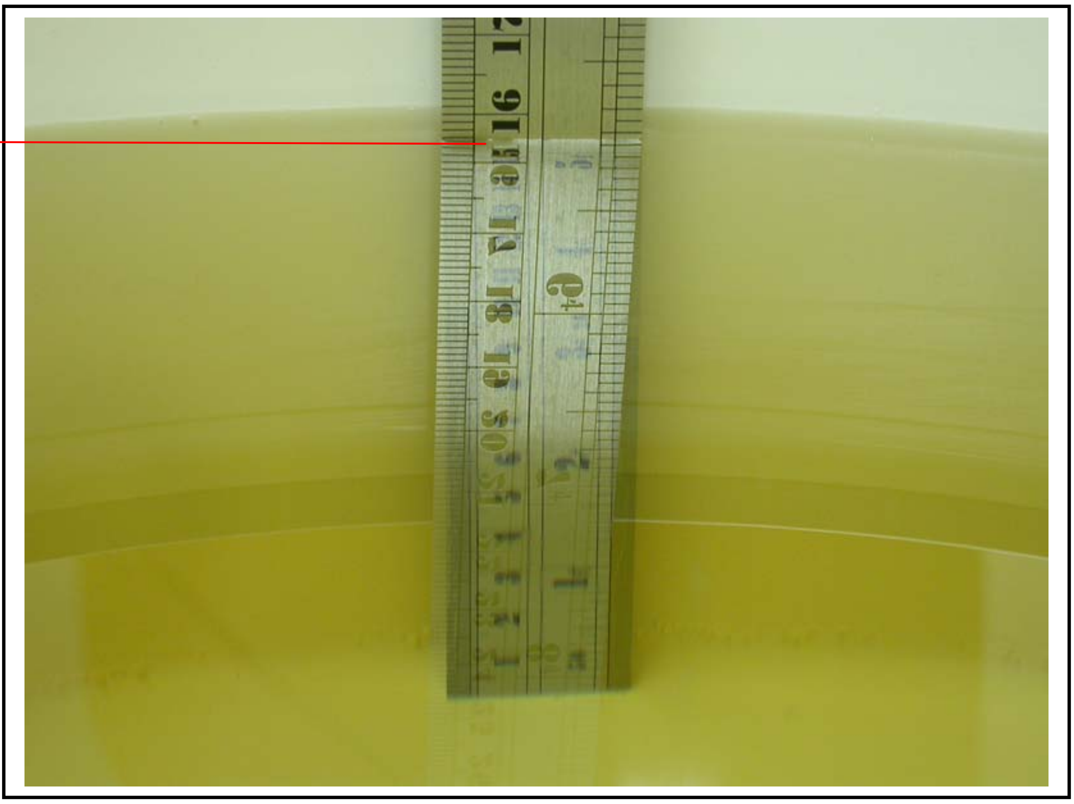
3.4.1 Body Position

1 cm



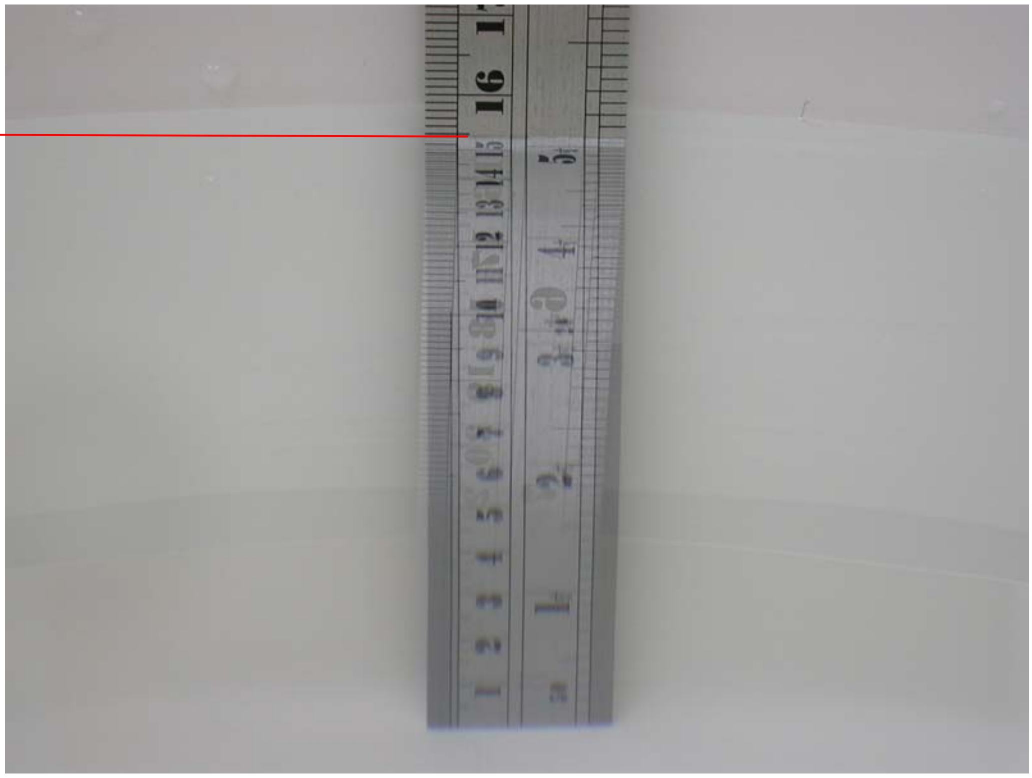
3.4.2 The Depth of 835MHz Liquid

15.5 cm



3.4.3 The Depth of 1900MHz Liquid

15.5 cm



4 Description of the Test Procedure for FCC

4.1 Scan Procedure

First coarse scans were used for determination of the field distribution. Next a cube scan, 5x5x7 points covering a volume of 32x32x30mm was performed around the highest E-field value to determine the averaged SAR value. Drift was determined by measuring the same point at the start of the coarse scan and again at the end of the cube scan.

4.2 SAR Averaging Methods

The maximum SAR value was averaged over a cube of tissue using interpolation and extrapolation. The interpolation, extrapolation and maximum search routines within Dasy4 are all based on the modified Quadratic Shepard's method (Robert J. Renka, "Multivariate Interpolation Of Lagre Sets Of Scattered Data", University of North Texas ACM Transactions on Mathematical Software, vol. 14, no. 2, June 1988, pp. 139-148).

The interpolation scheme combines a least-square fitted function method with a weighted average method. A trivariate 3-D / bivariate 2-D quadratic function is computed for each measurement point and fitted to neighbouring points by a least-square method. For the cube scan, inverse distance weighting is incorporated to fit distant points more accurately. The interpolating function is finally calculated as a weighted average of the quadratics.
In the cube scan, the interpolation function is used to extrapolate the Peak SAR from the deepest measurement points to the inner surface of the phantom.

4.3 Data Storage

The DASY4 software stores the assessed data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all the necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension .DA4. The postprocessing software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of erroneous parameter settings.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type (e.g., [V/m], [A/m] or [mW/g]). Some of these units are not available in certain situations or give meaningless results, e.g., a SAR-output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

4.4 Data Evaluation

The DASY4 postprocessing software (SEMCAD) automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
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:

$$\text{E} - \text{fieldprobes}: \qquad E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

$$\text{H} - \text{fieldprobes}: \qquad H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

with V_i = compensated signal of channel i (i = x, y, z)
$Norm_i$ = sensor sensitivity of channel i (i = x, y, z)
$\mu V/(V/m)^2$ 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
H_i = magnetic field strength of channel i in A/m

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

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

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

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1'000}$$

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.

5 Measurement Uncertainty

5.1 Measurement Uncertainty I (According to IEEE 1528)

DASY4 Uncertainty Budget
According to IEEE 1528 [2]

Error Description	Uncertainty value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±5.9 %	N	1	1	1	±5.9 %	±5.9 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	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 Conditions	±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						±10.8 %	±10.6 %	330
Expanded STD Uncertainty						**±21.6 %**	**±21.1 %**	

5.2 Measurement Uncertainty II (According to IEC 62209)

DASY4 Uncertainty Budget
According to IEC 62209 [3]

Error Description	Uncertainty value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±5.9 %	N	1	1	1	±5.9 %	±5.9 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	±1.9 %	±1.9 %	∞
Spherical 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 %	∞
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 %	∞
Perturbation of the Environment	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner Mech. Restr.	±0.4 %	R	$\sqrt{3}$	1	1	±0.2 %	±0.2 %	∞
Probe Positioning	±2.9 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Post-Processing	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Test Sample Related								
Test Sample Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9,%	145
Device Holder Uncertainty	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Drift of Output Power	±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	$\sqrt{3}$	0.7	0.5	±2.0 %	±1.4 %	∞
Liquid Conductivity (meas.)	±4.3 %	R	$\sqrt{3}$	0.7	0.5	±1.7,%	±1.2 %	∞
Liquid Permittivity (target)	±5.0 %	R	$\sqrt{3}$	0.6	0.5	±1.7 %	±1.4 %	∞
Liquid Permittivity (meas.)	±4.3 %	R	$\sqrt{3}$	0.6	0.5	±1.5 %	±1.2 %	∞
Combined Std. Uncertainty						±10.5 %	±10.2 %	330
Expanded Uncertainty						**±21.0 %**	**±20.5 %**	

6 References

1. [ANSI/IEEE C95.1-1992]

Safety Levels with Respect to Human Exposure to Radio Frrequency Electromagnetic Fields, 3 kHz to 300 GHz. The Institute of Electrical and Electronics Engineers, Inc. (IEEE), 1992.

2. [ANSI/IEEE C95.3-1992]

Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave”. The Institute of Electrical and Electronics Engineers, Inc. (IEEE), 1992.

3. [FCC Report and Order 96-326]

Federal Communications Commission, \Report and order: Guidelines for evaluating the environmental effects of radiofrequency radiation”, Tech. Rep. FCC 96-326, 1996.

4. [FCC OET Bulletin 65]

Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. OET Bulletin 65 Edition 97-01, August 1997. Federal Communications Commission (FCC), Office of Engineering & Technology. (OET)

5. [FCC OET Bulletin 65 Supplement C]

Additional Information for Evaluating Compliance of Mobile and Portable Device with FCC Limits for Human Exposure to Radiofrequency Emissions. Supplement C (Edition 01-01) to OET Bulletin 65, June 2001. Federal Communications Commission (FCC), Office of Engineering & Technology. (OET)

6. [DASY 4]

Schmid & Partner Engineering AG: DASY 4 Manual, September 2005.

7. [IEEE 1528-2003]

IEEE Std 1528-2003: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wirless Communications Devices: Measurement Techniques. 1528-2003, 19th December, 2003, The Institute of Electrical and Electronics Engineers, Inc. (IEEE).

7 Annex：Test Results of DASY4 (Refer to ANNEX)

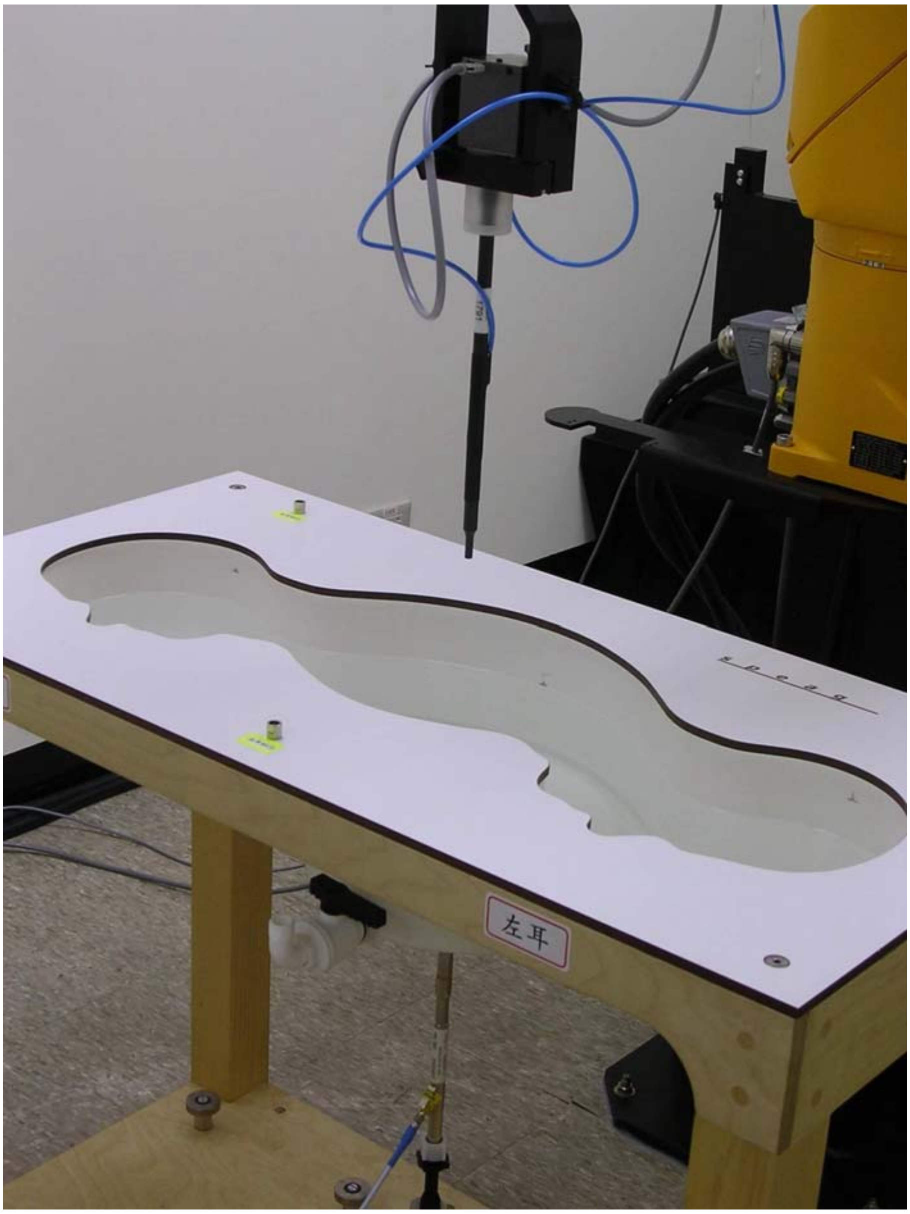
ANNEX

Index of Annex

ANNEX A: SAR RESULTS

System Performance Check

Body



Date/Time: 12/16/2008 9:06:43 AM

Test Laboratory: Electronics Testing Center, Taiwan

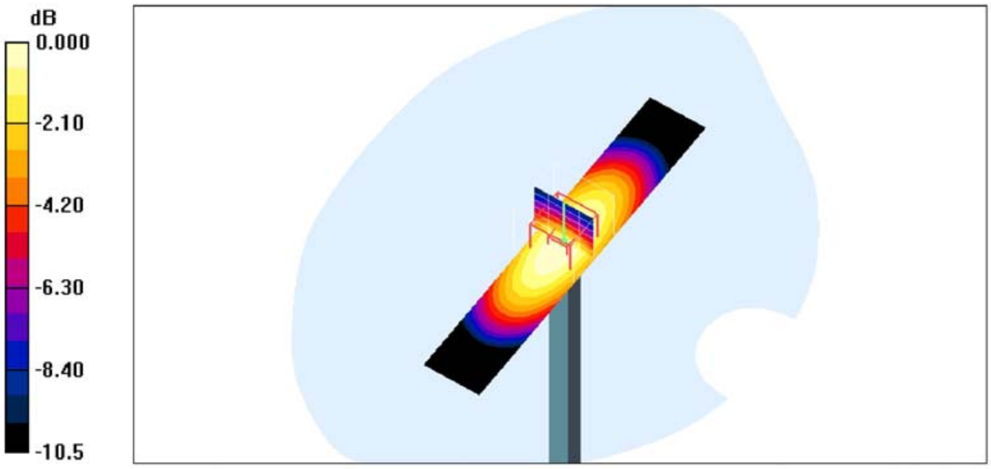
DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:xxx

Communication System: CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 1.02 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Air temperature: 22 degC; Liquid temperature: 21.5 degC;
Phantom section: Flat Section

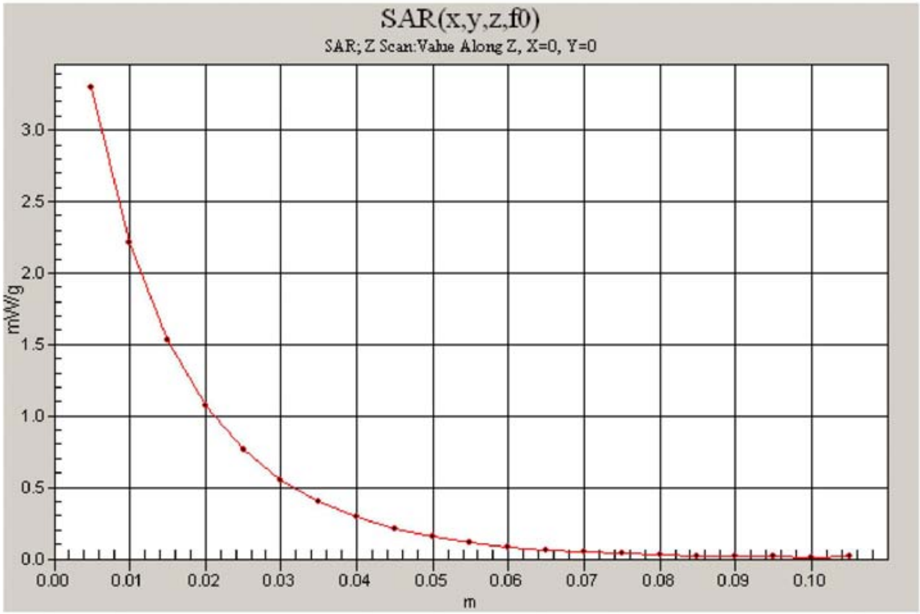
DASY4 Configuration:
- Probe: EX3DV4 - SN3555; ConvF(8.01, 8.01, 8.01); Calibrated: 9/19/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn629; Calibrated: 9/23/2008
- Phantom: SAM 12-2; Type: SAM4.0; Serial: TP-1347
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

SPC-900MHz/Area Scan (21x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.15 mW/g

SPC-900MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 55.7 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 4.28 W/kg
SAR(1 g) = 2.89 mW/g; SAR(10 g) = 1.89 mW/g
Maximum value of SAR (measured) = 3.14 mW/g



0 dB = 3.14mW/g


SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
m
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10

Date/Time: 12/17/2008 9:32:39 AM

Test Laboratory: Electronics Testing Center, Taiwan

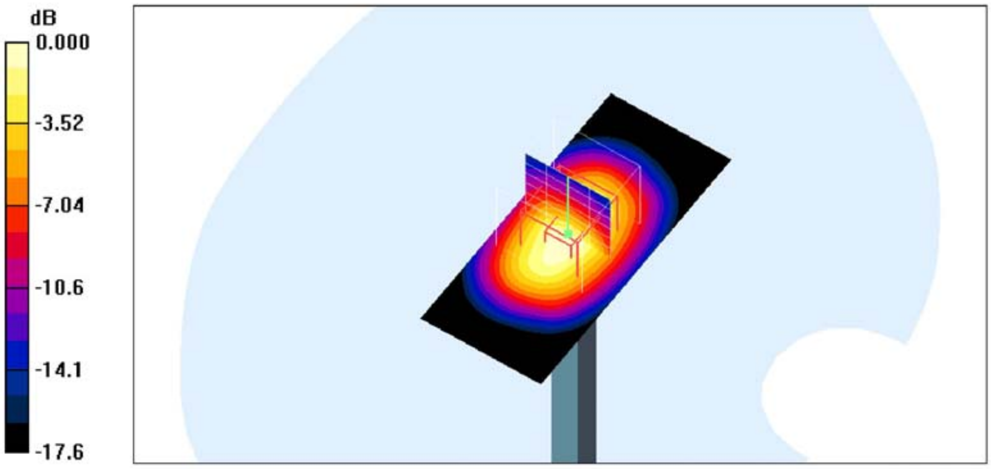
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:xxx

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900.1 MHz; σ = 1.52 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Air temperature: 20 degC; Liquid temperature: 21.8 degC;
Phantom section: Flat Section

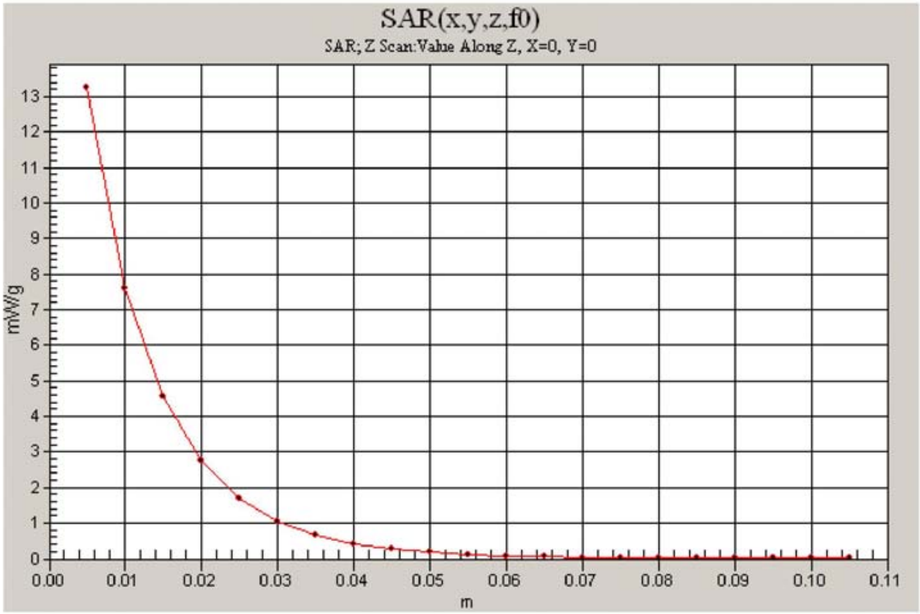
DASY4 Configuration:
- Probe: EX3DV4 - SN3555; ConvF(6.7, 6.7, 6.7); Calibrated: 9/19/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn629; Calibrated: 9/23/2008
- Phantom: SAM 12-2; Type: SAM4.0; Serial: TP-1347
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

SPC-1900MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 89.4 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 19.8 W/kg
SAR(1 g) = 11 mW/g; SAR(10 g) = 5.71 mW/g
Maximum value of SAR (measured) = 12.3 mW/g

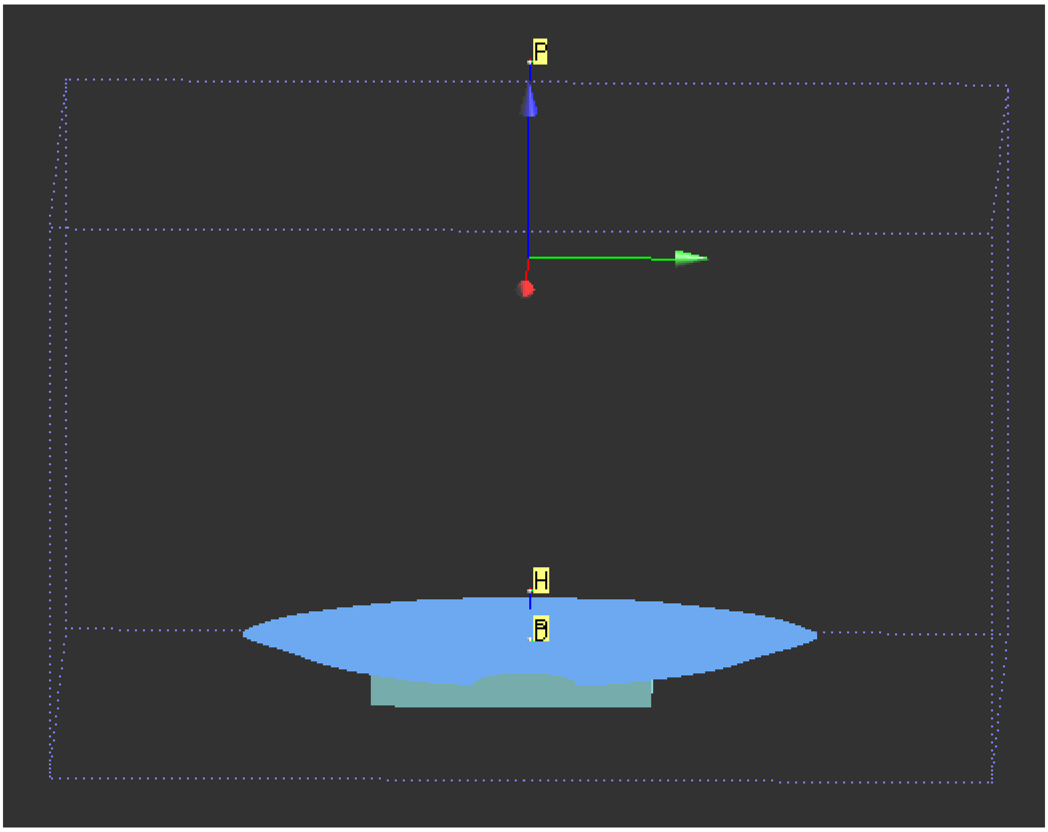
SPC-1900MHz/Area Scan (31x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.7 mW/g



0 dB = 13.7mW/g


SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
m
0
1
2
3
4
5
6
7
8
9
10
11
12
13
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
0.11

Body – GSM 850MHz



Date/Time: 12/16/2008 9:37:38 AM

Test Laboratory: Electronics Testing Center, Taiwan

DUT: GPRS Modem; Type: GPRS-100S; Serial: N/A

Communication System: GSM 850MHz; Frequency: 836.6 MHz;Duty Cycle: 1:4
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.958 mho/m; ε_r = 54.9; ρ = 1000 kg/m^3
Air temperature: 22 degC; Liquid temperature: 21.5 degC;
Phantom section: Flat Section

DASY4 Configuration:
- Probe: EX3DV4 - SN3555; ConvF(8.01, 8.01, 8.01); Calibrated: 9/19/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn629; Calibrated: 9/23/2008
- Phantom: SAM 12-2; Type: SAM4.0; Serial: TP-1347
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

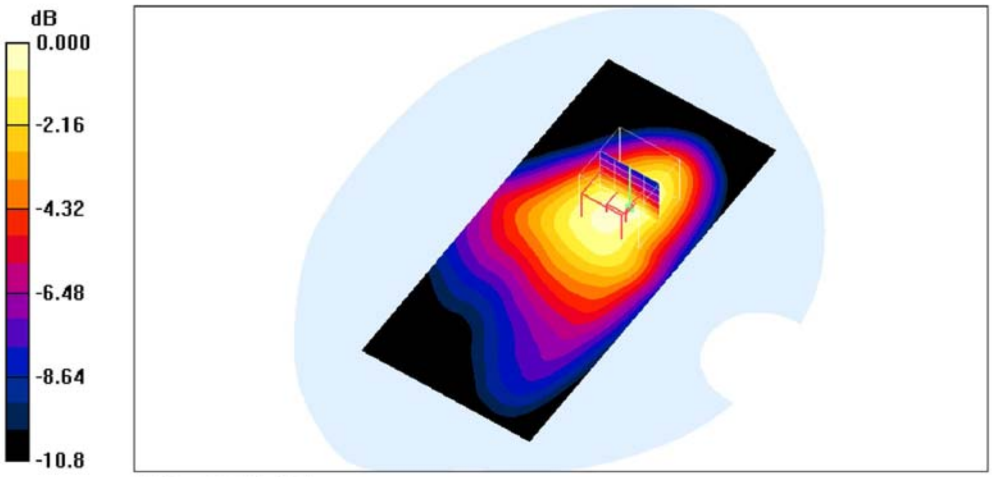
GPRS-MID/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.340 mW/g

GPRS-MID/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.1 V/m; Power Drift = 0.115 dB
Peak SAR (extrapolated) = 0.486 W/kg
SAR(1 g) = 0.343 mW/g; SAR(10 g) = 0.239 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.
Maximum value of SAR (measured) = 0.365 mW/g



0 dB = 0.365mW/g

Date/Time: 12/16/2008 10:07:34 AM

Test Laboratory: Electronics Testing Center, Taiwan

DUT: GPRS Modem; Type: GPRS-100S; Serial: N/A

Communication System: GSM 850MHz; Frequency: 836.6 MHz;Duty Cycle: 1:4
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.958 mho/m; ε_r = 54.9; ρ = 1000 kg/m^3
Air temperature: 22 degC; Liquid temperature: 21.5 degC;
Phantom section: Flat Section

DASY4 Configuration:
- Probe: EX3DV4 - SN3555; ConvF(8.01, 8.01, 8.01); Calibrated: 9/19/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn629; Calibrated: 9/23/2008
- Phantom: SAM 12-2; Type: SAM4.0; Serial: TP-1347
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

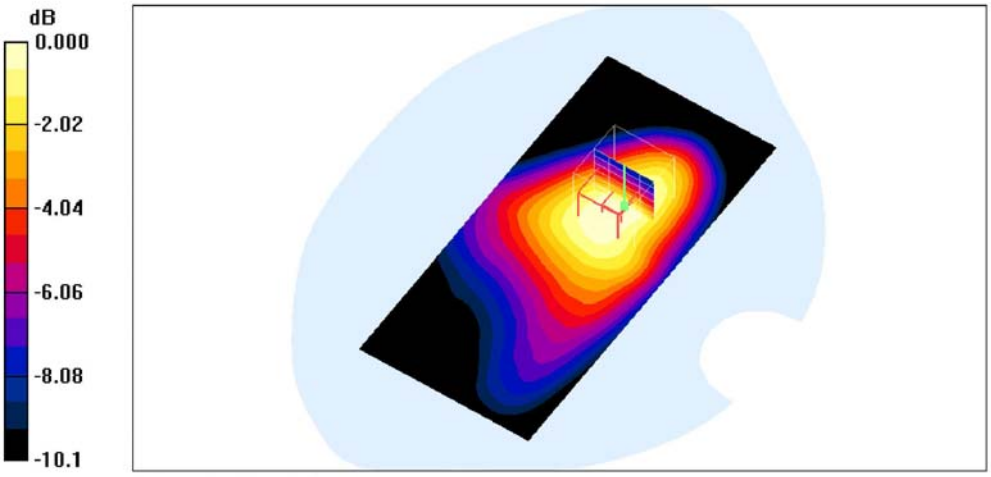
GPRS-HIGH/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.7 V/m; Power Drift = 0.028 dB
Peak SAR (extrapolated) = 0.480 W/kg
SAR(1 g) = 0.339 mW/g; SAR(10 g) = 0.236 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.
Maximum value of SAR (measured) = 0.361 mW/g

GPRS-HIGH/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.362 mW/g



0 dB = 0.361mW/g

Date/Time: 12/16/2008 10:24:41 AM

Test Laboratory: Electronics Testing Center, Taiwan

DUT: GPRS Modem; Type: GPRS-100S; Serial: N/A

Communication System: GSM 850MHz; Frequency: 836.6 MHz;Duty Cycle: 1:4
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.958 mho/m; ε_r = 54.9; ρ = 1000 kg/m^3
Air temperature: 22 degC; Liquid temperature: 21.5 degC;
Phantom section: Flat Section

DASY4 Configuration:
- Probe: EX3DV4 - SN3555; ConvF(8.01, 8.01, 8.01); Calibrated: 9/19/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn629; Calibrated: 9/23/2008
- Phantom: SAM 12-2; Type: SAM4.0; Serial: TP-1347
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

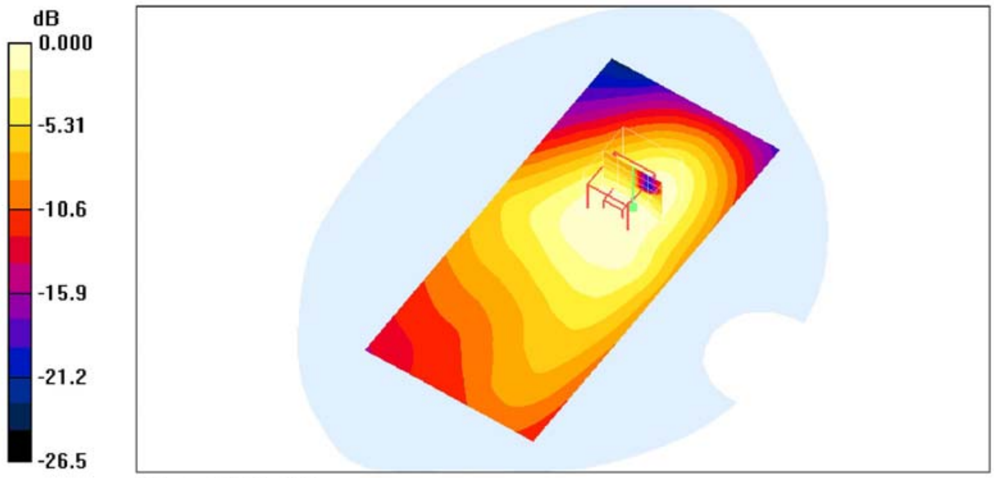
GPRS-LOW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.0 V/m; Power Drift = -0.053 dB
Peak SAR (extrapolated) = 0.623 W/kg
SAR(1 g) = 0.373 mW/g; SAR(10 g) = 0.232 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

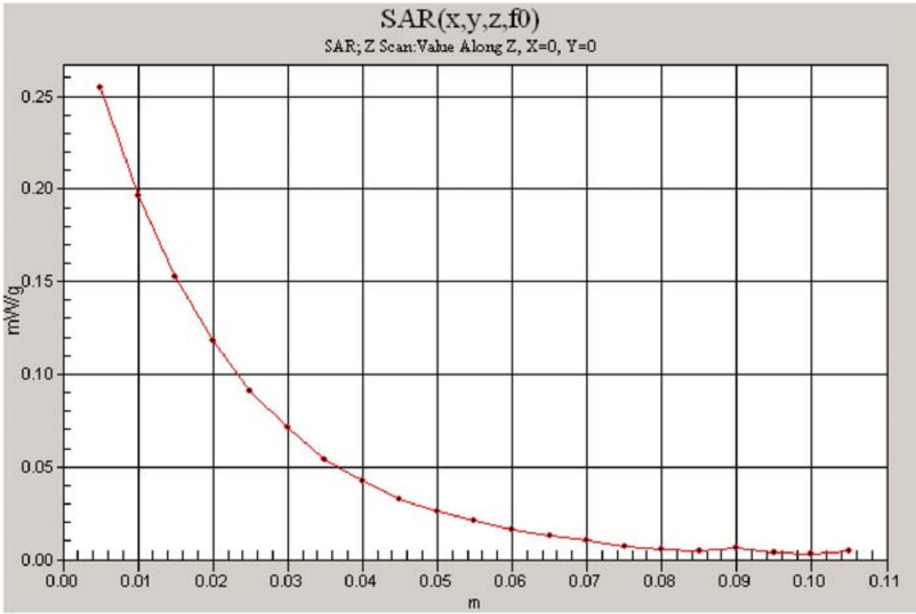
Warning: Maximum averaged SAR over 10 g is located on the boundary of the measurement cube. This cube might not incorporate the absolute averaged SAR. Please consider a refinement of the Area Scan measurement.
Maximum value of SAR (measured) = 0.374 mW/g

GPRS-LOW/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

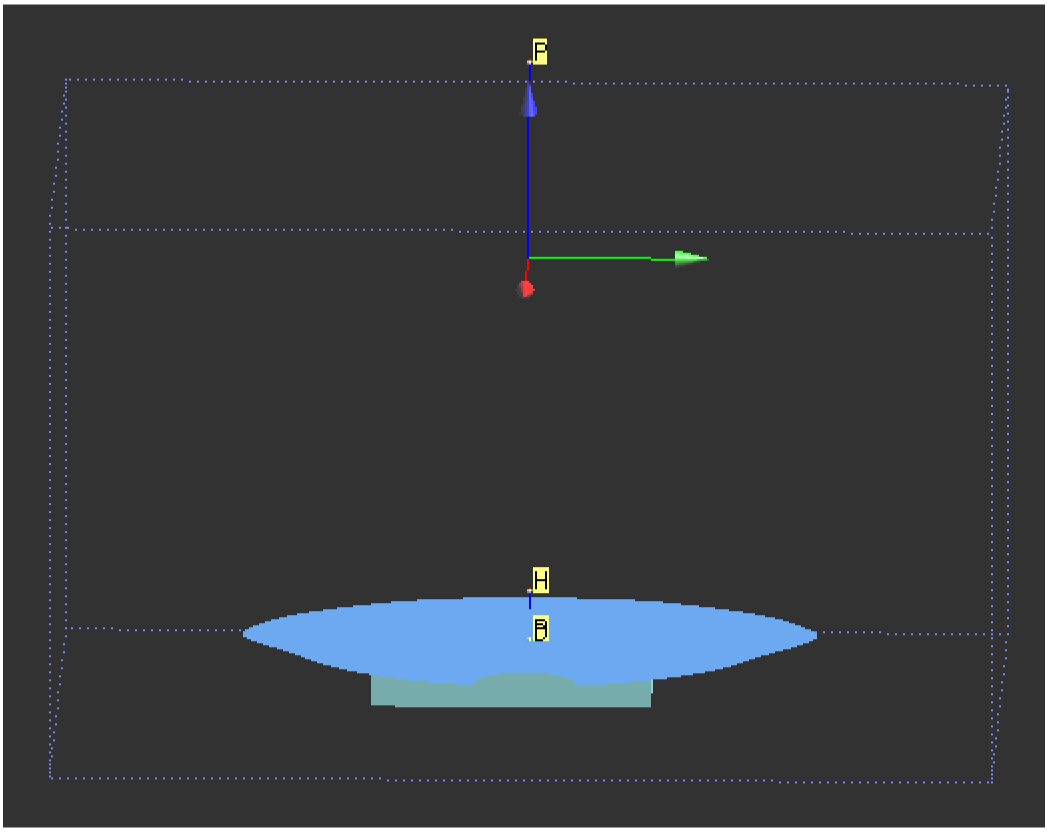
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.375 mW/g



0 dB = 0.374mW/g


SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
0.25
0.20
0.15
0.10
0.05
0.00
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
0.11
m

Body – GSM 1900MHz



Date/Time: 12/17/2008 11:41:32 AM

Test Laboratory: Electronics Testing Center, Taiwan

DUT: GPRS Modem; Type: GPRS-100S; Serial: N/A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:4
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.49 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Air temperature: 20 degC; Liquid temperature: 21.8 degC;
Phantom section: Flat Section

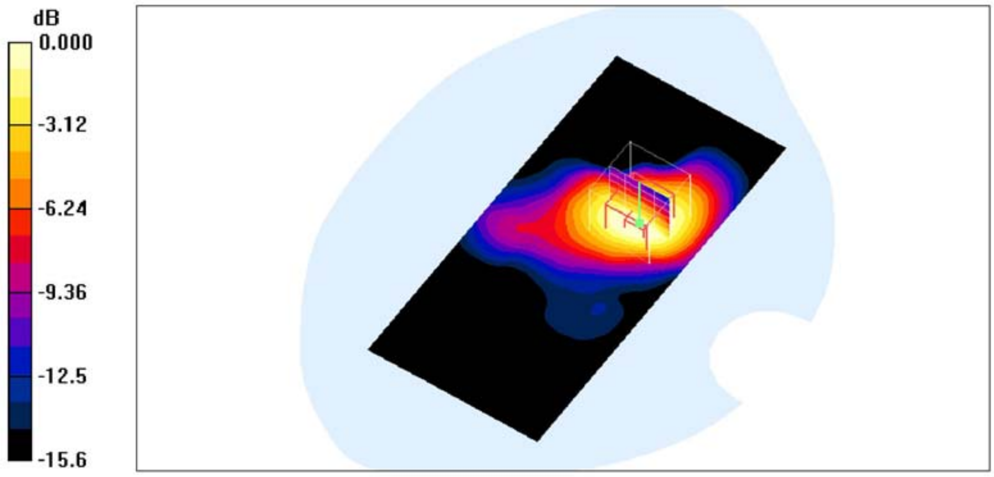
DASY4 Configuration:
- Probe: EX3DV4 - SN3555; ConvF(6.7, 6.7, 6.7); Calibrated: 9/19/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn629; Calibrated: 9/23/2008
- Phantom: SAM 12-2; Type: SAM4.0; Serial: TP-1347
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

GPRS-MID/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.03 V/m; Power Drift = 0.101 dB
Peak SAR (extrapolated) = 0.197 W/kg
SAR(1 g) = 0.128 mW/g; SAR(10 g) = 0.078 mW/g

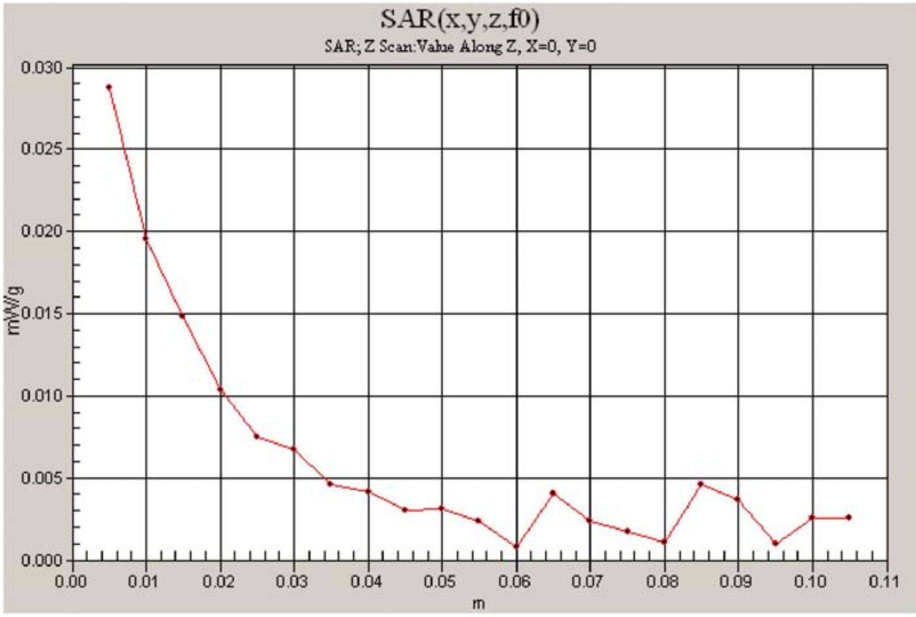
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.137 mW/g

GPRS-MID/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.148 mW/g



0 dB = 0.137mW/g


SAR(x,y,z,f0)
SAR; Z Scan:Value Along Z, X=0, Y=0
mW/g
0.030
0.025
0.020
0.015
0.010
0.005
0.000
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
0.11
m

Date/Time: 12/17/2008 12:00:52 PM

Test Laboratory: Electronics Testing Center, Taiwan

DUT: GPRS Modem; Type: GPRS-100S; Serial: N/A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:4
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.49 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Air temperature: 20 degC; Liquid temperature: 21.8 degC;
Phantom section: Flat Section

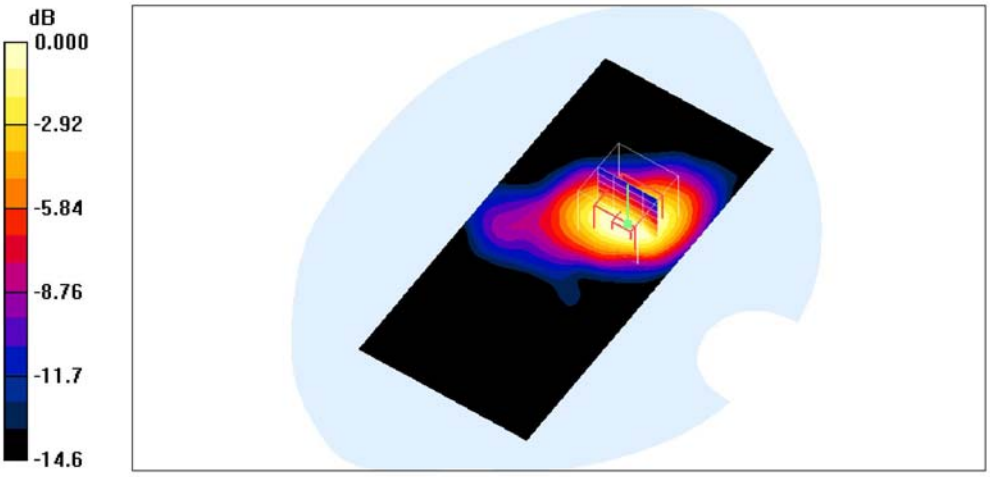
DASY4 Configuration:
- Probe: EX3DV4 - SN3555; ConvF(6.7, 6.7, 6.7); Calibrated: 9/19/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn629; Calibrated: 9/23/2008
- Phantom: SAM 12-2; Type: SAM4.0; Serial: TP-1347
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

GPRS-HIGH/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.39 V/m; Power Drift = 0.114 dB
Peak SAR (extrapolated) = 0.179 W/kg
SAR(1 g) = 0.111 mW/g; SAR(10 g) = 0.066 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.119 mW/g

GPRS-HIGH/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.129 mW/g



0 dB = 0.119mW/g

Date/Time: 12/17/2008 12:19:05 PM

Test Laboratory: Electronics Testing Center, Taiwan

DUT: GPRS Modem; Type: GPRS-100S; Serial: N/A

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:4
Medium parameters used (interpolated): f = 1880 MHz; σ = 1.49 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Air temperature: 20 degC; Liquid temperature: 21.8 degC;
Phantom section: Flat Section

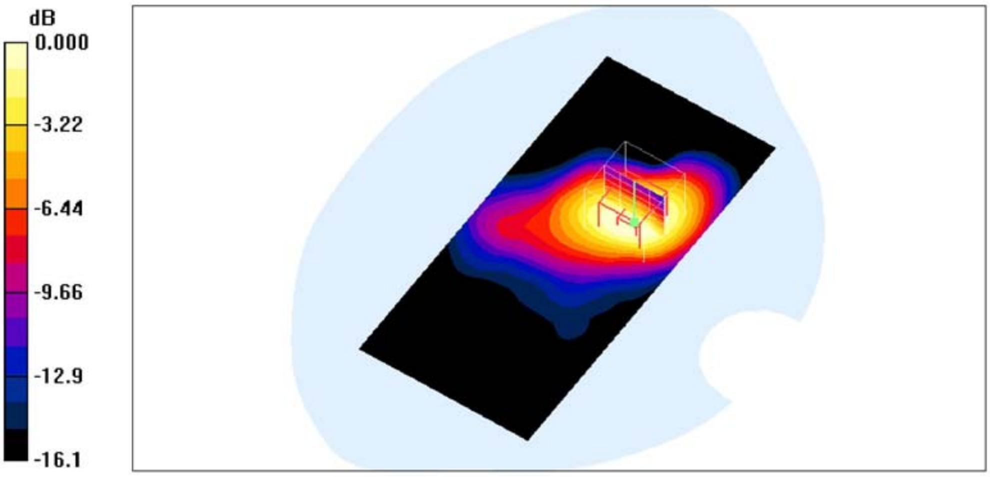
DASY4 Configuration:
- Probe: EX3DV4 - SN3555; ConvF(6.7, 6.7, 6.7); Calibrated: 9/19/2008
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn629; Calibrated: 9/23/2008
- Phantom: SAM 12-2; Type: SAM4.0; Serial: TP-1347
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

GPRS-LOW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.92 V/m; Power Drift = 0.111 dB
Peak SAR (extrapolated) = 0.198 W/kg
SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.077 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.135 mW/g

GPRS-LOW/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.145 mW/g



0 dB = 0.135mW/g