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Global Product Certification
EMC-EMF-Safety Approvals

SAR Test Report

Report Number: M110307

Test Sample: Cellsafe RF reduction Case for iPhone 4

Model Number: Cellsafe

Tested For: Panasales Pty Ltd

Date of Issue: 17th March 2011

ilac-MRA NATA Accreditation No. 5292	This document is issued in accordance with NATA's accreditation requirements. The results of tests, calibration and/or measurements included in this document are traceable to Australian/national standards. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing and calibration reports.

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SAR Test Report

Cellsafe RF reduction Case for iPhone 4, **Model:** Cellsafe **Report Number:** M110307

1.0 GENERAL INFORMATION

Test Sample:	Cellsafe RF reduction Case for iPhone 4
Model Number:	Cellsafe
Serial Number:	Prototype
Manufacturer:	Shenzen Xishui Silicone Co LTD
Device Category:	Portable Transmitter
Test Device:	Production Unit
RF exposure Category:	General Public/Unaware user
Tested for:	Panasales Pty Ltd
Address:	14/1866 Princes Hwy Clayton
Contact:	Aaron Leibovich
Phone:	03 9544 4886
Fax:	03 9544 6886
Email:	aaron@panasales.com.au

Test Standard/s:

1. Radiocommunications (Electromagnetic Radiation — Human Exposure) Standard 2003, Amdt (No. 1) 2007, ACMA
2. Maximum Exposure Levels to Radiofrequency Fields – 3kHz to 300GHz, ARPANSA
3. **EN 62209-1:2006**
   Human exposure to radio frequency fields from hand-held and body-mounted devices-Human models, instrumentation and procedures.
   Part 1: Procedure to determine the specific absorption rate (SAR) for hand- held devices used in close proximity to the ear (frequency range 300 MHz to 3 GHz)

Statement Of Compliance: The Cellsafe RF reduction Case for iPhone 4, Model: Cellsafe, was tested in accordance with ACMA SAR standards and procedure provided by the customer. The Cellsafe RF reduction Case for iPhone 4 was found to reduce SAR while used at the Head.

Test Dates:

Test Officer:

Peter Jakubiec

Authorised Signature:

Peter Jakubiec

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2.0 DESCRIPTION OF DEVICE

2.1 Description of Test Sample

The device tested is used with iPhone 4 Mobile Phone operating in the E-GSM, DCS and WCDMA frequency bands that has one internal antenna. The iPhone 4 Mobile Phone will be referred to as the Device Under Test (DUT) throughout this report. The DUT was tested in the Touch position (right and left), with and without the Cellsafe.

Table: DUT (Device Under Test) Parameters

Operating Mode during Testing	: See Clause 2.3
Operating Mode production sample	: WCDMA, E-GSM
Modulation:	: TDMA for GSM
	: QPSK for W-CDMA
Antenna type	: Internal
Applicable Head Configurations	: Touch Left Touch Right

2.2 Test sample Accessories

2.2.1 Battery Types

SAR measurements were performed with the standard iPhone 4 battery.

2.3 Test Signal, Frequency and Output Power

The DUT was provided by Panasales Pty Ltd. It was put into operation using a Rhodes & Schwarz Radio Communication Tester CMU200. The channels utilised in the measurements were the traffic channels shown in the table below. The power level was set to Class 4 for 900 MHz, Class 1 for 1800 MHz band and class 3 for 850 MHz and 2100 MHz bands.

The SAR level of the test sample was measured for the frequency bands as shown in the table below. Communication between the tester and the DUT was maintained by an air link using the CMU200.

Table: Test Frequencies

Band	Frequency	Traffic Channel	Band Power Class	Nominal Power (dBm)
1	898 MHz	37	4	33
2	836.6 MHz	4183	1	30
3	1747 MHz	698	3	24
4	1950 MHz	9750	3	24

2.4 Conducted Power Measurements

The conducted power of the DUT was not measured because it did not have easily accessible RF test port.

2.5 Battery Status

The DUT battery was fully charged prior to commencement of each measurement. Each SAR test was completed within 30 minutes. The battery condition was monitored by measuring the RF power at a defined position inside the phantom before the commencement of each test and again after the completion of the test.

2.6 Details of Test Laboratory

2.6.1 Location

EMC Technologies Pty Ltd
176 Harrick Road
Keilor Park, (Melbourne) Victoria
Australia 3042

Telephone: +61 3 9365 1000
Facsimile: +61 3 9331 7455
email: melb@emctech.com.au
website: www.emctech.com.au

2.6.2 Accreditations

EMC Technologies Pty. Ltd. is accredited by the National Association of Testing Authorities, Australia (NATA). **NATA Accredited Laboratory Number: 5292**

EMC Technologies Pty Ltd is NATA accredited for the following standards:

ARPANSA Standard	Maximum exposure levels to Radio Frequency fields, 3 kHz – 300 GHz.
AS/NZS 2772.2:	RF and microwave radiation hazard measurement-methodology
ACMA:	Radiocommunications (Electromagnetic Radiation — Human Exposure) Standard 2003 + Amdt (No. 1):2007
FCC:	Guidelines for Human Exposure to RF Electromagnetic Field OET65C 01/01
EN 50360: 2001	Product standard to demonstrate the compliance of Mobile Phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz)
IEC/EN 62209-1:2006	Human exposure to radio frequency fields from hand-held and body-mounted devices-Human models, instrumentation and procedures. **Part 1:** Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range 300 MHz to 3 GHz)
IEEE 1528: 2003	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head Due to Wireless Communications Devices: Measurement Techniques.

Refer to NATA website www.nata.asn.au for the full scope of accreditation.

2.6.3 Environmental Factors

The measurements were performed in a shielded room with no background RF signals. The temperature in the laboratory was controlled to within 20± 1 °C, the humidity was as in the range 42% to 60%.See section 3.5.1 for measured temperature and humidity. The liquid parameters were measured daily prior to the commencement of each test. Tests were performed to check that reflections within the environment did not influence the SAR measurements. The noise floor of the DASY5 SAR measurement system using the SN1380 probe is less than 5μV in both air and liquid mediums.

3.0 DESCRIPTION OF SAR MEASUREMENT SYSTEM

3.1 Probe Positioning System

The measurements were performed with the state of the art automated near-field scanning system **DASY5 Version V52** from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision 6-axis robot (working range greater that 1.1m), which positions the SAR measurement probes with a positional repeatability of better than ±0.02 mm. The DASY5 fully complies with the OET65 C (01-01), IEEE 1528 and EN62209-1 SAR measurement requirements.

3.2 E-Field Probe Type and Performance

The SAR measurements were conducted with the dosimetric probe ET3DV6 Serial: 1380 (manufactured by SPEAG) designed in the classical triangular configuration and optimised for dosimetric evaluation. The probe has been calibrated and found to be accurate to better than ±0.25 dB. The probe is suitable for measurements close to material discontinuity at the surface of the phantom.

3.3 Data Acquisition Electronics

The data acquisition electronics (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. The input impedance of the DAE3 box is 200 MΩ; the inputs are symmetrical and floating. Common mode rejection is above 80dB.Transmission to the PC-card is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The mechanical probe-mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

3.4 Calibration and Validation Procedures and Data

Prior to the SAR assessment, the system validation kit was used to verify that the DASY5 was operating within its specifications. The validation was performed at 900 MHz, 1800 MHz, and 1950 MHz with the SPEAG calibrated dipoles. The validation dipoles are highly symmetric and matched at the centre frequency for the specified liquid and distance to the phantom. The accurate distance between the liquid surface and the dipole centre is achieved with a distance holder that snaps onto the dipole. System validation is performed by feeding a known power level into a reference dipole, set at a know distance from the phantom. The measured SAR is compared to the theoretically derived level, and must be within 10%.

3.4.1 Validation Results (900 MHz, 1800 MHz, and 1950 MHz)

The following table lists the dielectric properties of the tissue simulating liquid measured prior to each SAR validation. The results of the validation for each day are listed in columns 5 and 6. The forward power into the reference dipole for each SAR validation was adjusted to 250 mW.

Table: Validation Results (SPEAG calibrated dipoles)

1. Validation Date	2. Frequency (MHz)	3. ϵr (measured)	4. σ (mho/m) (measured)	5. Measured SAR 1g	6. Measured SAR 10g
3/03/2011	900	41.645	0.939	2.79 mW/g	1.8 mW/g
9/03/2011	900	43.343	0.956	2.85 mW/g	1.84 mW/g
4/03/2011	1800	41.299	1.369	9.08 mW/g	4.87 mW/g
8/03/2011	1950	38.812	1.44	10.7 mW/g	5.54 mW/g

3.4.2 Deviation from reference validation values

The reference SAR values are derived using a reference dipole and flat phantom suitable for centre frequencies of 900 MHz, 1800 MHz and 1950 MHz. These reference SAR values are obtained from the IEEE Std 1528-2003 and are normalized to 1W.

The SPEAG calibration reference SAR value is the SAR validation result obtained in a specific dielectric liquid using the validation dipole during calibration. The measured ten-gram SAR should be within 10% of the expected target reference values shown in table below.

Table: Deviation from reference validation values

Date and Validation Frequency (MHz)	Measured SAR 10g (input power = 250mW)	Measured SAR 10g (Normalized to 1W)	SPEAG Calibration Reference SAR Value 10g (mW/g)	Deviation From SPEAG 10g (%)	IEEE Std 1528 Reference SAR Value 10g (mW/g)	Deviation From IEEE 10g (%)
3/03/2011 900 MHz	1.8	7.20	7.11	1.27	6.9	4.35
9th March 900 MHz	1.84	7.36	7.11	3.52	6.9	6.67
4/03/2011 1800 MHz	4.87	19.48	20.4	-4.51	19.8	-1.62
8/03/2011 1950 MHz	5.54	22.16	21.1	5.02	20.9	6.03

Note: All reference validation values are referenced to 1W input power.

3.4.3 Liquid Depth 15cm

During the SAR measurement process the liquid level was maintained to a level of a least 15cm with a tolerance of $\pm$ 0.5cm.

3.5 Phantom Properties (Size, Shape, Shell Thickness, Tissue Material Properties)

The phantom used during the SAR testing and validation was the "SAM" phantom from SPEAG. The phantom thickness is 2.0mm+/-0.2 mm and was filled with the required tissue simulating liquid.

The dielectric parameters of the simulating liquid were measured prior to SAR assessment using the HP85070A dielectric probe kit and HP8714B Network Analyser. The actual dielectric parameters are shown in the following table.

Table: Measured Simulating Liquid Dielectric Values at 900MHz

Frequency Band	∈r (measured range)	∈r (target)	σ (mho/m) (measured range)	σ (target)	ρ kg/m^3
898 MHz Brain	41.669	41.5 ±5% (39.4 to 43.6)	0.935	0.97 ±5% (0.92 to 1.02)	1000

Note: The brain and body liquid parameters were within the required tolerances of ±5%.

Table: Measured Simulating Liquid Dielectric Values at 1800MHz

Frequency Band	∈r (measured range)	∈r (target)	σ (mho/m) (measured range)	σ (target)	ρ kg/m^3
1746 MHz Brain	41.489	40.1 ±5% (38.1 to 42.1)	1.336	1.37 ±5% (1.30 to 1.44)	1000

Note: The brain and body liquid parameters were within the required tolerances of ±5%.

Table: Measured Simulating Liquid Dielectric Values at 1950MHz

Frequency Band	∈r (measured range)	∈r (target)	σ (mho/m) (measured range)	σ (target)	ρ kg/m^3
1950 MHz Brain	38.812	40.0 ±5% (38.0 to 42.0)	1.44	1.40 ±5% (1.33 to 1.47)	1000

Note: The brain and body liquid parameters were within the required tolerances of ±5%.

Table: Measured Simulating Liquid Dielectric Values at 850MHz

Frequency Band	∈r (measured range)	∈r (target)	σ (mho/m) (measured range)	σ (target)	ρ kg/m^3
836.6 MHz Brain	42.382	41.5 ±5% (39.4 to 43.6)	0.875	0.90 ±5% (0.86 to 0.95)	1000

Note: The brain and body liquid parameters were within the required tolerances of ±5%.

3.5.1 Temperature and Humidity

The humidity and dielectric/ambient temperatures are recorded during the assessment of the tissue material dielectric parameters. The difference between the ambient temperature of the liquid during the dielectric measurement and the temperature during tests was less than |2|°C.

Table: Temperature and Humidity recorded for each day

Date	Ambient Temperature (°C)	Liquid Temperature (°C)	Humidity (%)
3/03/2011	20.9	20.4	42
4/03/2011	20.8	20.5	49
8/03/2011	20	19.5	56
9/03/2011	20.1	19.7	60

3.6 Simulated Tissue Composition Used for SAR Test

The tissue simulating liquids are created prior to the SAR evaluation and often require slight modification each day to obtain the correct dielectric parameters.

Table: Tissue Type: Brain @ 850/900MHz
Volume of Liquid: 30 Litres

Approximate Composition	% By Weight
Distilled Water	41.05
Salt	1.35
Sugar	56.5
HEC	1.0
Bactericide	0.1

Table: Tissue Type: Brain @ 1800/1950MHz
Volume of Liquid: 30 Litres

Approximate Composition	% By Weight
Distilled Water	61.17
Salt	0.31
Bactericide	0.29
Triton X-100	38.23

**Refer "OET Bulletin 65 97/01 P38"*

3.7 Device Holder for DASY5

The DASY5 device holder supplied by SPEAG is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The rotation centres for both scales is the ear opening. Thus the device needs no repositioning when changing the angles.

The DASY5 device holder is made of low-loss material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, to reduce the influence on the clamp on the test results.

Refer to Appendix A for photograph of device positioning.

4.0 SAR MEASUREMENT PROCEDURE USING DASY5

The SAR evaluation was performed with the SPEAG DASY5 System (**Version 52**). A summary of the procedure follows:

a) A measurement of the SAR value at a fixed location is used as a reference value for assessing the power drop of the DUT. The SAR at this point is measured at the start of the test and then again at the end of the test.

b) The SAR distribution at the exposed side of the head or the flat section of the flat phantom is measured at a distance of 3.9 mm from the inner surface of the shell. The area covers the entire dimension of the head and the horizontal grid spacing is 210 mm x 90 mm. The actual Area Scan has dimensions of 15 mm x 15 mm surrounding the test device. Based on this data, the area of the maximum absorption is determined by Spline interpolation.

c) Around this point, a volume of 30 mm x 30 mm x 30 mm is assessed by measuring 7 x 7 x 7 points. On the basis of this data set, the spatial peak SAR value is evaluated with the following procedure:

   (i) The data at the surface are extrapolated, since the centre of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation is based on a least square algorithm. A polynomial of the fourth order is calculated through the points in z-axes. This polynomial is then used to evaluate the points between the surface and the probe tip.

   (ii) The maximum interpolated value is searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g and 10 g) are computed using the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one-dimensional splines with the “Not a knot”- condition (in x, y and z-direction). The volume is integrated with the trapezoidal – algorithm. One thousand points (10 x 10 x 10) are interpolated to calculate the averages.

   (iii) All neighbouring volumes are evaluated until no neighbouring volume with a higher average value is found.

   (iv) The SAR value at the same location as in Step (a) is again measured and the power drift is recorded.

5.0 MEASUREMENT UNCERTAINTY

The uncertainty analysis is based on the template listed in the IEEE Std 1528-2003 for both Handset SAR tests and Validation uncertainty. The measurement uncertainty of a specific device is evaluated independently and the total uncertainty for both evaluations (95% confidence level) must be less than 30%.

Table: Uncertainty Budget for DASY5 Version V52 – DUT SAR test

Uncertainty Component	Tol. (6%)	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g u_i (6%)	10g u_i (6%)	v_i
Measurement System								
Probe Calibration	5.5	N	1	1	1	5.5	5.5	∞
Axial Isotropy	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effects	1	R	1.73	1	1	0.6	0.6	∞
Linearity	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	1	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Noise	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning	2.9	R	1.73	1	1	1.7	1.7	∞
Max. SAR Eval.	1	R	1.73	1	1	0.6	0.6	∞
Test Sample Related								
Test Sample Positioning	1.61	N	1	1	1	1.6	1.6	11
Device Holder Uncertainty	3.6	N	1	1	1	3.6	3.6	7
Output Power Variation – SAR Drift Measurement	2.95	R	1.73	1	1	1.7	1.7	∞
Phantom and Setup								
Phantom Uncertainty	4	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity – Deviation from target values	5	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity – Measurement uncertainty	2.5	N	1.00	0.64	0.43	1.6	1.1	5
Liquid Permittivity – Deviation from target values	5	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity – Measurement uncertainty	2.5	N	1.00	0.6	0.49	1.5	1.2	5
Combined standard Uncertainty		RSS				10.1	9.9	154
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				20.2	19.75	

Estimated total measurement uncertainty for the DASY5 measurement system was ±9.9%. The extended uncertainty (K = 2) was assessed to be ±19.75% based on 95% confidence level. The uncertainty is not added to the measurement result.

Table: Uncertainty Budget for DASY5 Version V52 - Validation

Uncertainty Component	Tol. (6%)	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g u_i (6%)	10g u_i (6%)	v_i
Measurement System								
Probe Calibration	5.5	N	1	1	1	5.5	5.5	∞
Axial Isotropy	4.7	R	1.73	1	1	2.7	2.7	∞
Hemispherical Isotropy	9.6	R	1.73	0	0	0.0	0.0	∞
Boundary Effects	1	R	1.73	1	1	0.6	0.6	∞
Linearity	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	1	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	0.3	N	1	1	1	0.3	0.3	∞
Response Time	0	R	1.73	1	1	0.0	0.0	∞
Integration Time	0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Noise	3	R	1.73	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	1.73	1	1	1.7	1.7	∞
Probe Positioner	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning	2.9	R	1.73	1	1	1.7	1.7	∞
Max. SAR Eval.	1	R	1.73	1	1	0.6	0.6	∞
Dipole								
Dipole Axis to Liquid Distance	2	N	1.73	1	1	1.2	1.2	11
Input Power and SAR drift meas.	4.7	R	1.73	1	1	2.7	2.7	∞
Phantom and Tissue Param.								
Phantom Uncertainty	4	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity – Deviation from target values	5	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity – Measurement uncertainty	2.5	N	1.00	0.64	0.43	1.6	1.1	5
Liquid Permittivity – Deviation from target values	5	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity – Measurement uncertainty	2.5	N	1.00	0.6	0.49	1.5	1.2	5
Combined standard Uncertainty		RSS				9.0	8.7	154
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2				17.9	17.34	

Estimated total measurement uncertainty for the DASY5 measurement system was ±8.7%. The extended uncertainty (K = 2) was assessed to be ±17.34% based on 95% confidence level. The uncertainty is not added to the Validation measurement result.

6.0 EQUIPMENT LIST AND CALIBRATION DETAILS

Table: SPEAG DASY5 Version V52

Equipment Type	Manufacturer	Model Number	Serial Number	Calibration Due	Used For this Test?
Robot - Six Axes	Staubli	RX90BL	N/A	Not applicable	✓
Robot Remote Control	SPEAG	CS7MB	RX90B	Not applicable	✓
SAM Phantom	SPEAG	N/A	1260	Not applicable	✓
SAM Phantom	SPEAG	N/A	1060	Not applicable	✓
Flat Phantom	AndreT	10.1	P 10.1	Not Applicable	
Flat Phantom	AndreT	9.1	P 9.1	Not Applicable	
Flat Phantom	SPEAG	PO1A 6mm	1003	Not Applicable	
Data Acquisition Electronics	SPEAG	DAE3 V1	359	07-July-2011	
Data Acquisition Electronics	SPEAG	DAE3 V1	442	09-Dec-2011	✓
Probe E-Field - Dummy	SPEAG	DP1	N/A	Not applicable	
Probe E-Field	SPEAG	ET3DV6	1380	09-Dec-2011	✓
Probe E-Field	SPEAG	ET3DV6	1377	7-July-2011	
Probe E-Field	SPEAG	ES3DV6	3029	Not Used	
Probe E-Field	SPEAG	EX3DV4	3563	16-July-2011	
Probe E-Field	SPEAG	EX3DV4	3657	13-Dec-2011	
Antenna Dipole 300 MHz	SPEAG	D300V2	1005	15-Dec-2011	
Antenna Dipole 450 MHz	SPEAG	D450V2	1009	17-Dec-2010	
Antenna Dipole 900 MHz	SPEAG	D900V2	047	5-July-2012	✓
Antenna Dipole 1640 MHz	SPEAG	D1640V2	314	9-July-2012	
Antenna Dipole 1800 MHz	SPEAG	D1800V2	242	13-July-2012	✓
Antenna Dipole 1950 MHz	SPEAG	D1950V3	1113	10-Dec -2012	✓
Antenna Dipole 3500 MHz	SPEAG	D3500V2	1002	17-July-2010	
Antenna Dipole 2450 MHz	SPEAG	D2450V2	724	09-Dec-2012	
Antenna Dipole 5600 MHz	SPEAG	D5GHzV2	1008	16-Dec-2011	
RF Amplifier	EIN	603L	N/A	*In test	
RF Amplifier	Mini-Circuits	ZHL-42	N/A	*In test	✓
RF Amplifier	Mini-Circuits	ZVE-8G	N/A	*In test	
Synthesized signal generator	Hewlett Packard	ESG-D3000A	GB37420238	*In test	✓
RF Power Meter	Hewlett Packard	437B	3125012786	9-Aug-2011	✓
RF Power Sensor 0.01 - 18 GHz	Hewlett Packard	8481H	1545A01634	13-Aug-2011	✓
RF Power Meter	Rohde & Schwarz	NRP	101415	5-May-2011	
RF Power Sensor	Rohde & Schwarz	NRP - Z81	100174	16-July-2011	
RF Power Meter Dual	Hewlett Packard	435A	1733A05847	*In test	✓
RF Power Sensor	Hewlett Packard	8482A	2349A10114	*In test	✓
Network Analyser	Hewlett Packard	8714B	GB3510035	22-Sept-2011	
Network Analyser	Hewlett Packard	8753ES	JP39240130	10-Nov-2011	✓
Dual Directional Coupler	Hewlett Packard	778D	1144 04700	*In test	
Dual Directional Coupler	NARDA	3022	75453	*In test	✓

* Calibrated during the test for the relevant parameters.

7.0 SAR TEST METHOD

7.1 Description of the Test Positions (Head Section)

The SAR measurements are performed on the left and right sides of the head in the Touch positions (with and without the Cellsafe RF reduction Case) using the centre frequency of each operating band. The configuration giving the maximum mass-averaged SAR is used to test the low-end and high-end frequencies of the transmitting band.
See Appendix A for photos of test positions.

7.1.1 "Touch Position"

The device was positioned with the vertical centre line of the body of the device and the horizontal line crossing the centre of the earpiece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, the vertical centre line was aligned with the reference plane containing the three ear and mouth reference points. (Left Ear, Right Ear and Mouth). The centre of the earpiece was then aligned with the Right Ear and Left Ear.

The Mobile Phone was then moved towards the phantom with the earpiece aligned with the line between the Left Ear and the Right Ear, until the Mobile Phone just touched the ear. With the device maintained in the reference plane, and the Mobile Phone in contact with the ear, the bottom of the Mobile Phone was moved until the front side of the Mobile Phone was in contact with the cheek of the phantom, or until contact with the ear was lost.

8.0 SAR EVALUATION RESULTS

The SAR values averaged over 1 g and 10 g tissue masses were determined for the sample device for the Left and Right ear configurations of the phantom. The results (900 MHz, 1800 MHz, 850 MHz and 1950 MHz) are given in the tables below.
The plots with the corresponding SAR distributions are contained in Appendix B of this report.

8.1 SAR Measurement Results for 900 MHz

Table: SAR Measurement Results – 900 MHz

Test Position	Plot Number	Test Channel	Test Freq. (MHz)	SAR Level for (10g) mW/g	DASY5 Measured Drift (dB)
Touch Left No Cellsafe	1	37	898	0.524	-0.02
Touch Left With Cellsafe	2	37	898	0.135	0.06
Touch Right No Cellsafe	3	37	898	0.404	-0.13
Touch Right with Cellsafe	4	37	898	0.104	-0.09

Note: The uncertainty of the system (± 19.75%) has not been added to the result.

8.2 SAR Measurement Results for 1800 MHz

Table: SAR Measurement Results – 1800 MHz

Test Position	Plot Number	Test Channel	Test Freq. (MHz)	SAR Level for (10g) mW/g	DASY5 Measured Drift (dB)
Touch Left No Cellsafe	5	698	1747	0.539	0.04
Touch Left With Cellsafe	6	698	1747	0.442	0.24
Touch Right No Cellsafe	7	698	1747	0.437	-0.0097
Touch Right With Cellsafe	8	698	1747	0.256	-0.03

Note: The uncertainty of the system (± 19.75%) has not been added to the result.

8.3 SAR Measurement Results for 1950 MHz

Table: SAR Measurement Results – 1950 MHz

Test Position	Plot Number	Test Channel	Test Freq. (MHz)	SAR Level for (10g) mW/g	DASY5 Measured Drift (dB)
Touch Left No Cellsafe	9	9750	1950	0.850	-0.02
Touch Left With Cellsafe	10	9750	1950	0.719	-0.09
Touch Right No Cellsafe	11	9750	1950	0.754	0.02
Touch Right With Cellsafe	12	9750	1950	0.656	-0.07

Note: The uncertainty of the system (± 19.75%) has not been added to the result.

8.4 SAR Measurement Results for 850 MHz

Table: SAR Measurement Results – 850 MHz

Test Position	Plot Number	Test Channel	Test Freq. (MHz)	SAR Level for (10g) mW/g	DASY5 Measured Drift (dB)
Touch Left No Cellsafe	13	4183	836.6	0.806	0.0077
Touch Left With Cellsafe	14	4183	836.6	0.493	-0.03
Touch Right No Cellsafe	15	4183	836.6	0.602	0.02
Touch Right With Cellsafe	16	4183	836.6	0.467	-0.05

Note: The uncertainty of the system (± 19.75%) has not been added to the result.

9.0 COMPLIANCE STATEMENT

The Cellsafe RF reduction Case for iPhone 4, Model: Cellsafe, was tested in accordance with ACMA SAR standards and procedure provided by the customer. The Cellsafe RF reduction Case for iPhone 4 was found to reduce SAR while used at the Head. The effect of the Cellsafe RF reduction Case for iPhone 4 on the transmitted RF power (connectivity) of the phone is not known.

This document is issued in accordance with NATA's accreditation requirements. The results of tests, calibration and/or measurements included in this document are traceable to Australian/national standards. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing and calibration reports.

APPENDIX A1 Test Sample Photographs

DUT

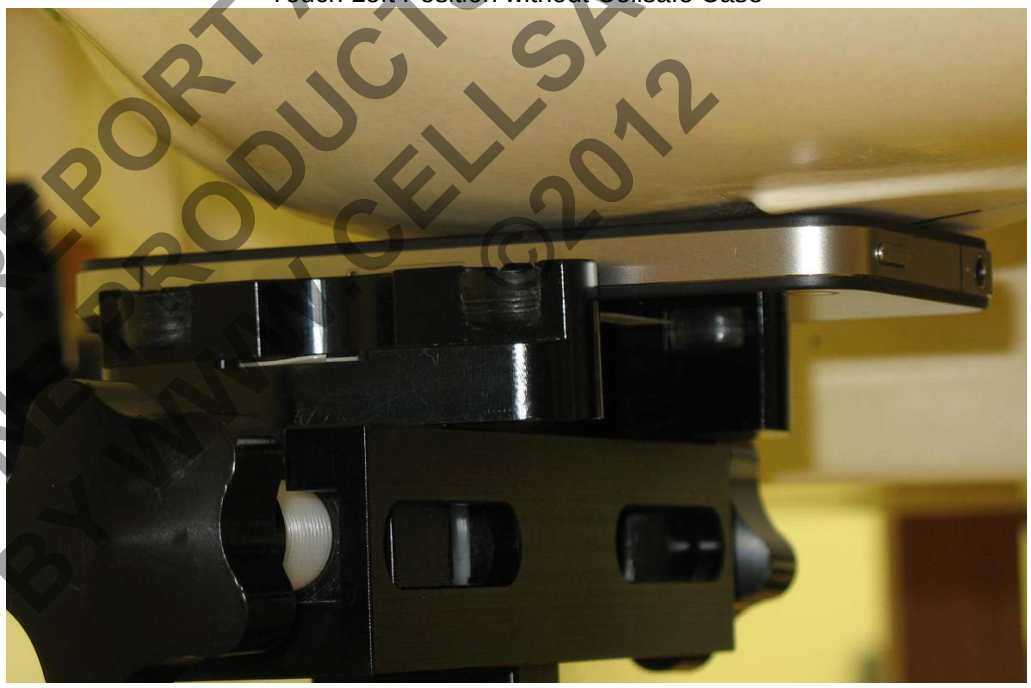
DUT

DUT

APPENDIX A2 Test Setup Photographs

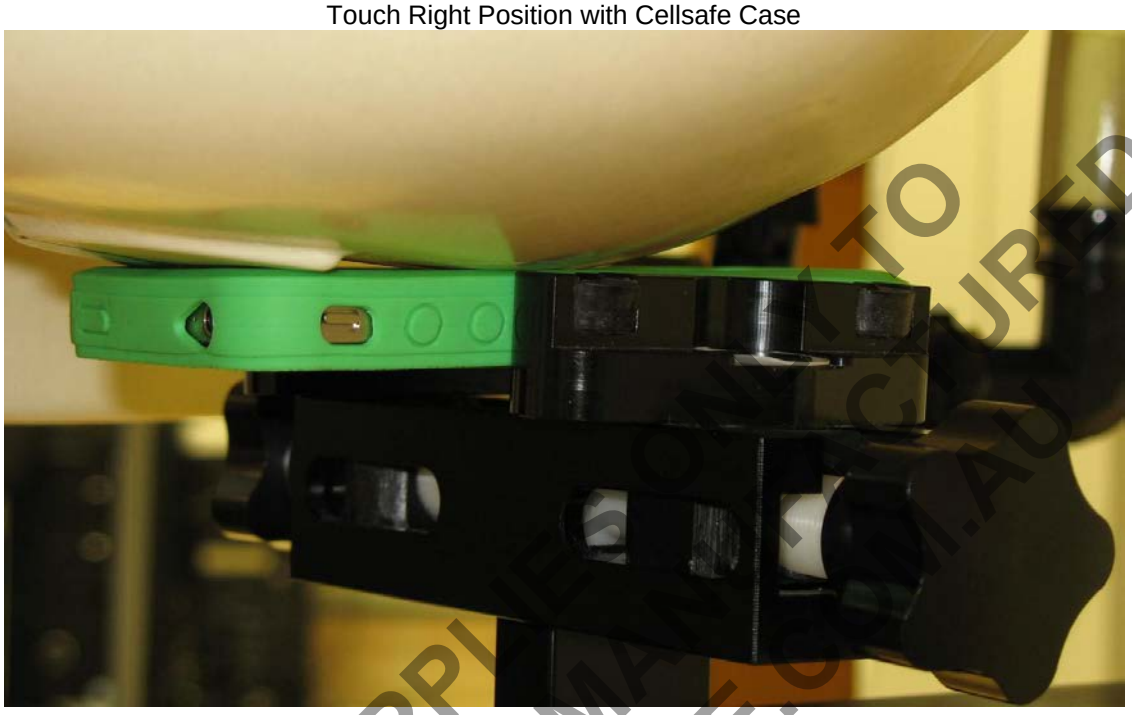
Touch Right Position without Cellsafe Case

Touch Left Position without Cellsafe Case

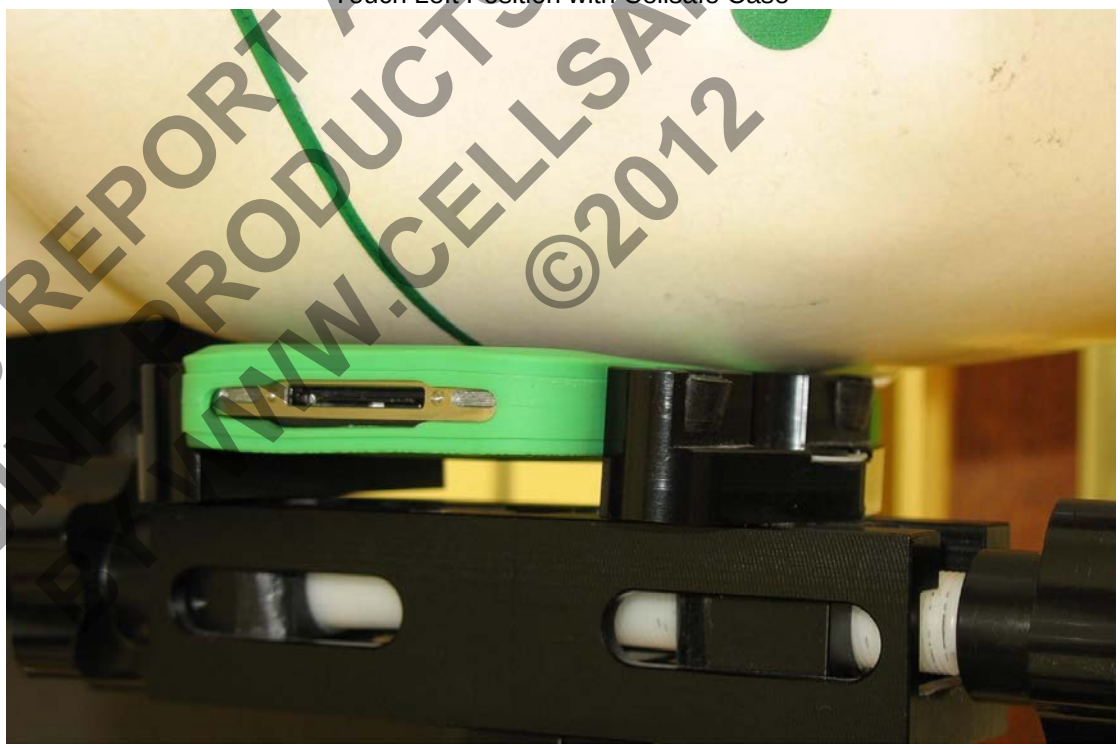


APPENDIX A3 Test Setup Photographs

Touch Right Position with Cellsafe Case



Touch Left Position with Cellsafe Case



APPENDIX B Plots Of The SAR Measurements

Plots of the measured SAR distributions inside the phantom are given in this Appendix for all tested configurations. The spatial peak SAR values were assessed with the procedure described in this report.

Table: 900 MHz SAR Plots

Test Position	Plot Number	Test Channel
Touch Left No Cellsafe	1	37
Touch Left With Cellsafe	2	37
Touch Right No Cellsafe	3	37
Touch Right with Cellsafe	4	37

Table: 1800 MHz SAR Plots

Test Position	Plot Number	Test Channel
Touch Left No Cellsafe	5	698
Touch Left With Cellsafe	6	698
Touch Right No Cellsafe	7	698
Touch Right With Cellsafe	8	698

Table: 1950 MHz SAR Plots

Test Position	Plot Number	Test Channel
Touch Left No Cellsafe	9	9750
Touch Left With Cellsafe	10	9750
Touch Right No Cellsafe	11	9750
Touch Right With Cellsafe	12	9750

Table: 850 MHz SAR Plots

Test Position	Plot Number	Test Channel
Touch Left No Cellsafe	13	4183
Touch Left With Cellsafe	14	4183
Touch Right No Cellsafe	15	4183
Touch Right With Cellsafe	16	4183

Table: SAR Validation Plots

Date	Plot Number	Frequency
9th March	**17**	900 MHz
3rd March	**18**	900 MHz
4th March	**19**	1800 MHz
8th March	**20**	1950 MHz

Test Date: 3 March 2011

File Name: M110307 Touch Left No Cellsafe 900 MHz GSM (DAE442 Probe1380) -03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: E-GSM-DCS; Frequency: 898 MHz; Duty Cycle: 1:8.3
* Medium parameters used: f = 898 MHz; σ = 0.935 mho/m; ε_r = 41.669; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Left Section

Configuration/Channel 037 Test/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.785 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.014 W/kg
SAR(1 g) = 0.751 mW/g; SAR(10 g) = 0.524 mW/g
Maximum value of SAR (measured) = 0.801 mW/g

Configuration/Channel 037 Test/Area Scan (141x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.799 mW/g

0 dB = 0.800mW/g

SAR MEASUREMENT PLOT 1

Ambient Temperature	**20.9 Degrees Celsius**
Liquid Temperature	**20.4 Degrees Celsius**
Humidity	**42.0 %**

Test Date: 3 March 2011

File Name: M110307 Touch Left With Cellsafe 900 MHz GSM (DAE442 Probe1380) -03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: E-GSM-DCS; Frequency: 898 MHz; Duty Cycle: 1:8.3
* Medium parameters used: f = 898 MHz; σ = 0.935 mho/m; ε_r = 41.669; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Left Section

Configuration/Channel 037 Test/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.828 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.265 W/kg
SAR(1 g) = 0.195 mW/g; SAR(10 g) = 0.135 mW/g
Maximum value of SAR (measured) = 0.210 mW/g

Configuration/Channel 037 Test/Area Scan (141x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.210 mW/g

0 dB = 0.210mW/g

SAR MEASUREMENT PLOT 2

Ambient Temperature	**20.9 Degrees Celsius**
Liquid Temperature	**20.4 Degrees Celsius**
Humidity	**42.0 %**

Test Date: 3 March 2011

File Name: M110307 Touch Right No Cellsafe 900 MHz GSM (DAE442 Probe1380) 03-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: E-GSM-DCS; Frequency: 898 MHz; Duty Cycle: 1:8.3
* Medium parameters used: f = 898 MHz; σ = 0.935 mho/m; ε_r = 41.669; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Right Section

Configuration/Channel 037 Test/Zoom Scan (10x10x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.679 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.764 W/kg
SAR(1 g) = 0.542 mW/g; SAR(10 g) = 0.404 mW/g
Maximum value of SAR (measured) = 0.569 mW/g

Configuration/Channel 037 Test/Area Scan (141x61x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.584 mW/g

0 dB = 0.570mW/g

SAR MEASUREMENT PLOT 3

Ambient Temperature	**20.9 Degrees Celsius**
Liquid Temperature	**20.4 Degrees Celsius**
Humidity	**42.0 %**

Test Date: 3 March 2011

File Name: M110307 Touch Right With Cellsafe 900 MHz GSM (DAE442 Probe1380) -03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: E-GSM-DCS; Frequency: 898 MHz; Duty Cycle: 1:8.3
* Medium parameters used: f = 898 MHz; σ = 0.935 mho/m; ε_r = 41.669; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Right Section

Configuration/Channel 037 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.646 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.171 W/kg
SAR(1 g) = 0.136 mW/g; SAR(10 g) = 0.104 mW/g
Maximum value of SAR (measured) = 0.144 mW/g

Configuration/Channel 037 Test/Area Scan (141x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.148 mW/g

0 dB = 0.150mW/g

SAR MEASUREMENT PLOT 4

Ambient Temperature	**20.9 Degrees Celsius**
Liquid Temperature	**20.4 Degrees Celsius**
Humidity	**42.0 %**

Test Date: 4 March 2011

File Name: M110307 Touch Left No Cellsafe 1800 MHz GSM (DAE442 Probe1380) 04-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: E-GSM-DCS; Frequency: 1747 MHz; Duty Cycle: 1:8.3
* Medium parameters used: f = 1747.6 MHz; σ = 1.336 mho/m; ε_r = 41.489; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(5.21, 5.21, 5.21)
- Phantom: SAM 22; Serial: 1260; Phantom section: Left Section

Configuration/Channel 698 Test/Area Scan (141x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.924 mW/g

Configuration/Channel 698 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.097 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.166 W/kg
SAR(1 g) = 0.832 mW/g; SAR(10 g) = 0.539 mW/g
Maximum value of SAR (measured) = 0.899 mW/g

0 dB = 0.900mW/g

SAR MEASUREMENT PLOT 5

Ambient Temperature	**20.8 Degrees Celsius**
Liquid Temperature	**20.5 Degrees Celsius**
Humidity	**49.0 %**

Test Date: 4 March 2011

File Name: M110307 Touch Left With Cellsafe 1800 MHz GSM (DAE442 Probe1380) 04-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: E-GSM-DCS; Frequency: 1747 MHz; Duty Cycle: 1:8.3
* Medium parameters used: f = 1747.6 MHz; σ = 1.336 mho/m; ε_r = 41.489; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(5.21, 5.21, 5.21)
- Phantom: SAM 22; Serial: 1260; Phantom section: Left Section

Configuration/Channel 698 Test 2/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.464 V/m; Power Drift = 0.24 dB
Peak SAR (extrapolated) = 1.022 W/kg
SAR(1 g) = 0.703 mW/g; SAR(10 g) = 0.442 mW/g
Maximum value of SAR (measured) = 0.770 mW/g

Configuration/Channel 698 Test 2/Area Scan (141x61x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.764 mW/g

0 dB = 0.760mW/g

SAR MEASUREMENT PLOT 6

Ambient Temperature	**20.8 Degrees Celsius**
Liquid Temperature	**20.5 Degrees Celsius**
Humidity	**49.0 %**

Test Date: 4 March 2011

File Name: M110307 Touch Right No Cellsafe 1800 MHz GSM (DAE442 Probe1380) 04-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: E-GSM-DCS; Frequency: 1747 MHz; Duty Cycle: 1:8.3
* Medium parameters used: f = 1747.6 MHz; σ = 1.336 mho/m; ε_r = 41.489; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(5.21, 5.21, 5.21)
- Phantom: SAM 22; Serial: 1260; Phantom section: Right Section

Configuration/Channel 698 Test/Area Scan (141x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.695 mW/g

Configuration/Channel 698 Test/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.221 V/m; Power Drift = -0.0097 dB
Peak SAR (extrapolated) = 0.854 W/kg
SAR(1 g) = 0.638 mW/g; SAR(10 g) = 0.437 mW/g
Maximum value of SAR (measured) = 0.683 mW/g

0 dB = 0.680mW/g

SAR MEASUREMENT PLOT 7

Ambient Temperature	**20.8 Degrees Celsius**
Liquid Temperature	**20.5 Degrees Celsius**
Humidity	**49.0 %**

Test Date: 4 March 2011

File Name: M110307 Touch Right With Cellsafe 1800 MHz GSM (DAE442 Probe1380) 04-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: E-GSM-DCS; Frequency: 1747 MHz; Duty Cycle: 1:8.3
* Medium parameters used: f = 1747.6 MHz; σ = 1.336 mho/m; ε_r = 41.489; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(5.21, 5.21, 5.21)
- Phantom: SAM 22; Serial: 1260; Phantom section: Right Section

Configuration/Channel 698 Test/Area Scan (141x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.401 mW/g

Configuration/Channel 698 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.199 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.491 W/kg
SAR(1 g) = 0.369 mW/g; SAR(10 g) = 0.256 mW/g
Maximum value of SAR (measured) = 0.392 mW/g

0 dB = 0.390mW/g

SAR MEASUREMENT PLOT 8

Ambient Temperature	**20.8 Degrees Celsius**
Liquid Temperature	**20.5 Degrees Celsius**
Humidity	**49.0 %**

Test Date: 8 March 2011

File Name: M110307 Touch Left No Cellsafe 2100 MHz 3G (DAE442 Probe1380) 08-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: 2100 MHz 3G; Frequency: 1950 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 1949.2 MHz; σ = 1.44 mho/m; ε_r = 38.812; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(4.92, 4.92, 4.92)
- Phantom: SAM 22; Serial: 1260; Phantom section: Left Section

Configuration/Channel 9750 Test/Area Scan (141x61x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.467 mW/g

Configuration/Channel 9750 Test/Zoom Scan (8x8x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.805 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.853 W/kg
SAR(1 g) = 1.32 mW/g; SAR(10 g) = 0.850 mW/g
Maximum value of SAR (measured) = 1.438 mW/g

0 dB = 1.440mW/g

SAR MEASUREMENT PLOT 9

Ambient Temperature	**20.0 Degrees Celsius**
Liquid Temperature	**19.5 Degrees Celsius**
Humidity	**56.0 %**

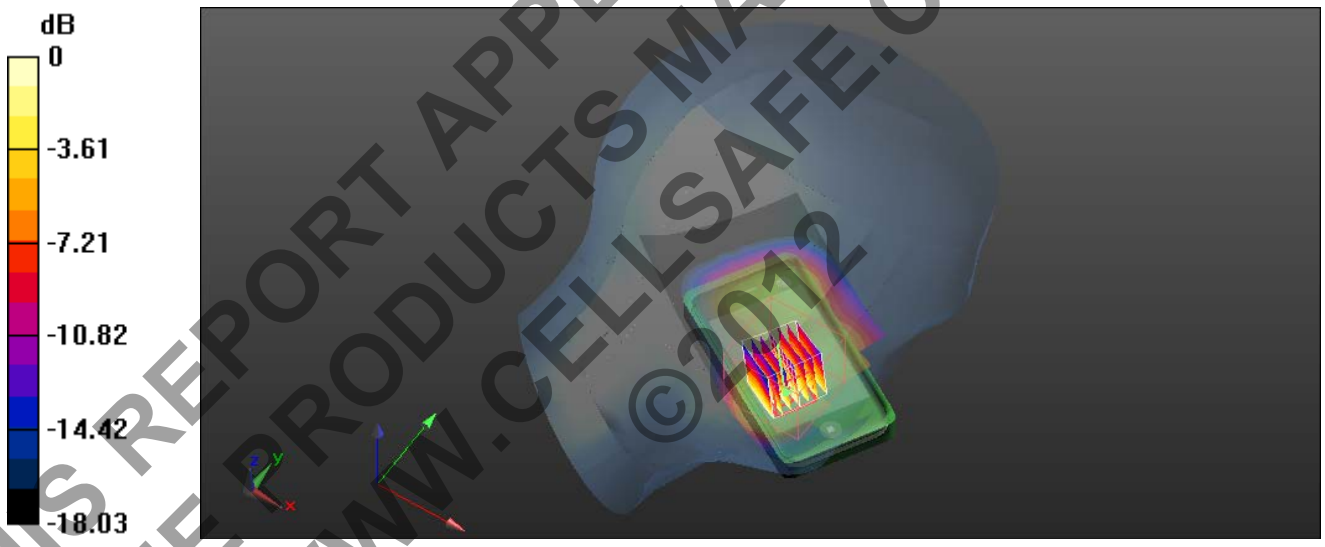
Test Date: 8 March 2011

File Name: M110307 Touch Left With Cellsafe 2100 MHz 3G (DAE442 Probe1380) 08-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: 2100 MHz 3G; Frequency: 1950 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 1949.2 MHz; σ = 1.44 mho/m; ε_r = 38.812; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(4.92, 4.92, 4.92)
- Phantom: SAM 22; Serial: 1260; Phantom section: Left Section

Configuration/Channel 9750 Test/Area Scan (141x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.290 mW/g

Configuration/Channel 9750 Test/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.718 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.703 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.719 mW/g
Maximum value of SAR (measured) = 1.232 mW/g



0 dB = 1.230mW/g

SAR MEASUREMENT PLOT 10

Ambient Temperature	**20.0 Degrees Celsius**
Liquid Temperature	**19.5 Degrees Celsius**
Humidity	**56.0 %**

Test Date: 8 March 2011

File Name: M110307 Touch Right No Cellsafe 2100 MHz 3G (DAE442 Probe1380) 08-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: 2100 MHz 3G; Frequency: 1950 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 1949.2 MHz; σ = 1.44 mho/m; ε_r = 38.812; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(4.92, 4.92, 4.92)
- Phantom: SAM 22; Serial: 1260; Phantom section: Right Section

Configuration/Channel 9750 Test/Area Scan (141x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.255 mW/g

Configuration/Channel 9750 Test/Zoom Scan (7x8x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.096 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.613 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.754 mW/g
Maximum value of SAR (measured) = 1.221 mW/g

0 dB = 1.220mW/g

SAR MEASUREMENT PLOT 11

Ambient Temperature	**20.0 Degrees Celsius**
Liquid Temperature	**19.5 Degrees Celsius**
Humidity	**56.0 %**

Test Date: 8 March 2011

File Name: M110307 Touch Right With Cellsafe 2100 MHz 3G (DAE442 Probe1380) 08-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: 2100 MHz 3G; Frequency: 1950 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 1949.2 MHz; σ = 1.44 mho/m; ε_r = 38.812; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(4.92, 4.92, 4.92)
- Phantom: SAM 22; Serial: 1260; Phantom section: Right Section

Configuration/Channel 9750 Test/Area Scan (141x61x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.033 mW/g

Configuration/Channel 9750 Test/Zoom Scan (8x8x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.647 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.334 W/kg
SAR(1 g) = 0.965 mW/g; SAR(10 g) = 0.656 mW/g
Maximum value of SAR (measured) = 1.024 mW/g

0 dB = 1.020mW/g

SAR MEASUREMENT PLOT 12

Ambient Temperature	**20.0 Degrees Celsius**
Liquid Temperature	**19.5 Degrees Celsius**
Humidity	**56.0 %**

Test Date: 9 March 2011

File Name: M110307 Touch Left No Cellsafe 850 MHz 3G (DAE442 Probe1380) 09-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: 850 MHz 3G; Frequency: 836.6 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 836 MHz; σ = 0.875 mho/m; ε_r = 42.382; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Left Section

Configuration/Channel 4183 Test/Area Scan (141x61x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.232 mW/g

Configuration/Channel 4183 Test/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 37.418 V/m; Power Drift = 0.0077 dB
Peak SAR (extrapolated) = 1.521 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.806 mW/g
Maximum value of SAR (measured) = 1.235 mW/g

0 dB = 1.230mW/g

SAR MEASUREMENT PLOT 13

Ambient Temperature	**20.1 Degrees Celsius**
Liquid Temperature	**19.7 Degrees Celsius**
Humidity	**60.0 %**

Test Date: 9 March 2011

File Name: M110307 Touch Left With Cellsafe 850 MHz 3G (DAE442 Probe1380) 09-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: 850 MHz 3G; Frequency: 836.6 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 836 MHz; σ = 0.875 mho/m; ε_r = 42.382; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Left Section

Configuration/Channel 4183 Test/Area Scan (141x61x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.719 mW/g

Configuration/Channel 4183 Test/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.176 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.849 W/kg
SAR(1 g) = 0.673 mW/g; SAR(10 g) = 0.493 mW/g
Maximum value of SAR (measured) = 0.710 mW/g

0 dB = 0.710mW/g

SAR MEASUREMENT PLOT 14

Ambient Temperature	**20.1 Degrees Celsius**
Liquid Temperature	**19.7 Degrees Celsius**
Humidity	**60.0 %**

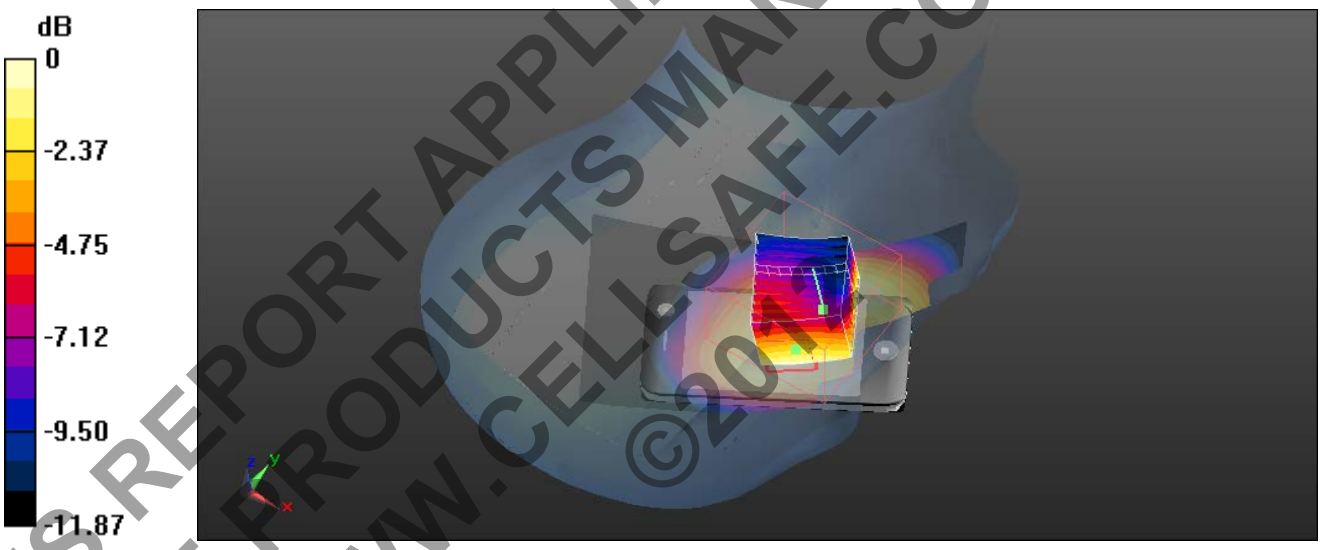
Test Date: 9 March 2011

File Name: M110307 Touch Right No Cellsafe 850 MHz 3G (DAE442 Probe1380) 09-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: 850 MHz 3G; Frequency: 836.6 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 836 MHz; σ = 0.875 mho/m; ε_r = 42.382; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Right Section

Configuration/Channel 4183 Test/Area Scan (141x61x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.836 mW/g

Configuration/Channel 4183 Test/Zoom Scan (9x10x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.581 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.080 W/kg
SAR(1 g) = 0.794 mW/g; SAR(10 g) = 0.602 mW/g
Maximum value of SAR (measured) = 0.838 mW/g



0 dB = 0.840mW/g

SAR MEASUREMENT PLOT 15

Ambient Temperature	**20.1 Degrees Celsius**
Liquid Temperature	**19.7 Degrees Celsius**
Humidity	**60.0 %**

Test Date: 9 March 2011

File Name: M110307 Touch Right With Cellsafe 850 MHz 3G (DAE442 Probe1380) 09-03-11.da52:0
DUT: Apple iPhone 4 with Cellsafe; Type: A1332; Serial: Production Sample

* Communication System: 850 MHz 3G; Frequency: 836.6 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 836 MHz; σ = 0.875 mho/m; ε_r = 42.382; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Right Section

Configuration/Channel 4183 Test/Area Scan (141x61x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.642 mW/g

Configuration/Channel 4183 Test/Zoom Scan (9x10x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.132 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.830 W/kg
SAR(1 g) = 0.606 mW/g; SAR(10 g) = 0.467 mW/g
Maximum value of SAR (measured) = 0.641 mW/g

0 dB = 0.640mW/g

SAR MEASUREMENT PLOT 16

Ambient Temperature	**20.1 Degrees Celsius**
Liquid Temperature	**19.7 Degrees Celsius**
Humidity	**60.0 %**

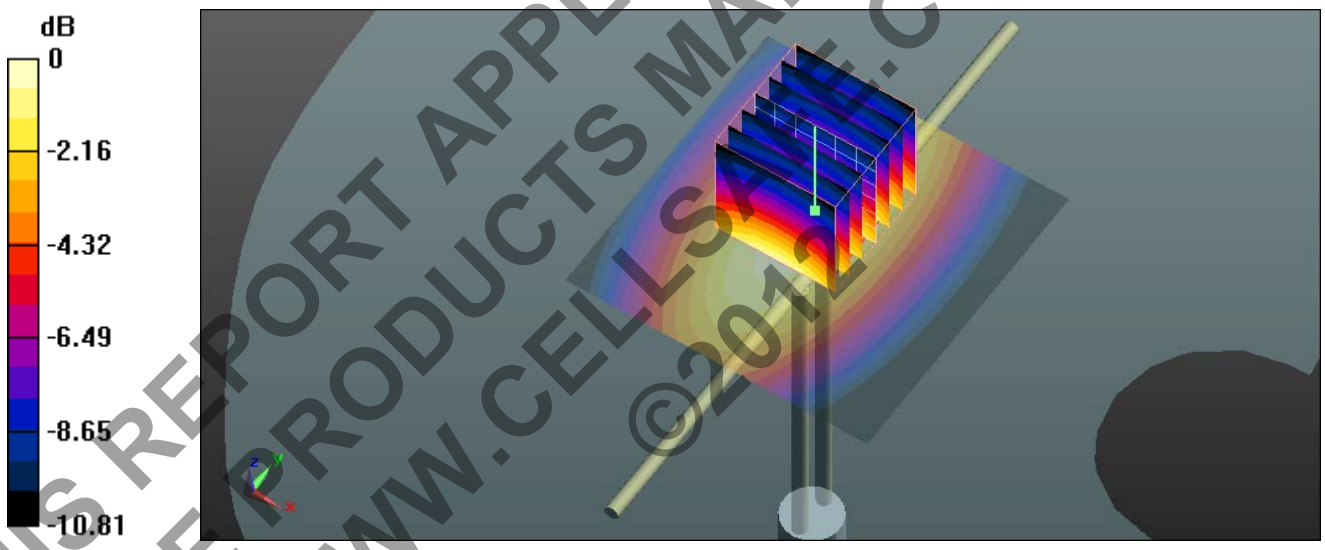
Test Date: 9 March 2011

File Name: System Check 900 MHz (DAE442 Probe1380) 09-03-11.da52:0
DUT: Dipole 900 MHz; Type: DV900V2; Serial: 047

* Communication System: CW 900 MHz; Frequency: 900 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 900 MHz; σ = 0.956 mho/m; ε_r = 43.343; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Flat Section

Configuration/Channel 1 Test/Area Scan (51x51x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.065 mW/g

Configuration/Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.923 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 4.257 W/kg
SAR(1 g) = 2.85 mW/g; SAR(10 g) = 1.84 mW/g
Maximum value of SAR (measured) = 3.095 mW/g



0 dB = 3.090mW/g

SAR MEASUREMENT PLOT 17

Ambient Temperature	**20.1 Degrees Celsius**
Liquid Temperature	**19.7 Degrees Celsius**
Humidity	**60.0 %**

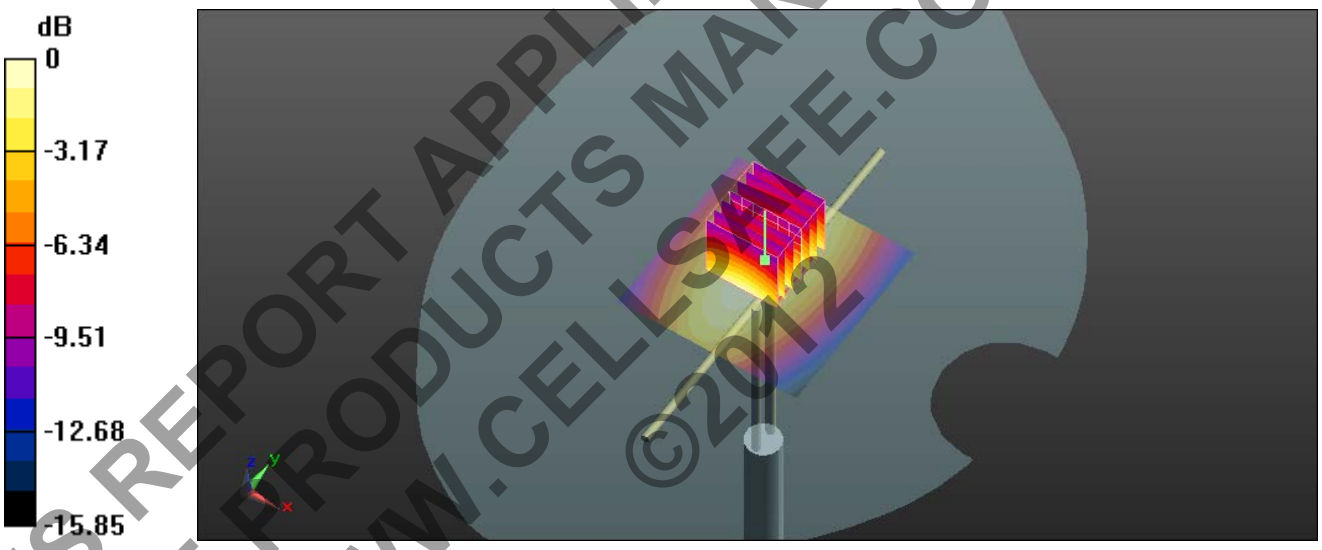
Test Date: 3 March 2011

File Name: System Check 900 MHz (DAE442 Probe1380) 03-03-11.da52:0
DUT: Dipole 900 MHz; Type: DV900V2; Serial: 047

* Communication System: CW 900 MHz; Frequency: 900 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 900 MHz; σ = 0.939 mho/m; ε_r = 41.645; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(6.03, 6.03, 6.03)
- Phantom: SAM 12; Serial: 1060; Phantom section: Flat Section

Configuration/Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.359 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 4.167 W/kg
SAR(1 g) = 2.79 mW/g; SAR(10 g) = 1.8 mW/g
Maximum value of SAR (measured) = 3.031 mW/g

Configuration/Channel 1 Test/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.017 mW/g



0 dB = 3.020mW/g

SAR MEASUREMENT PLOT 18

Ambient Temperature	**20.9 Degrees Celsius**
Liquid Temperature	**20.4 Degrees Celsius**
Humidity	**42.0 %**

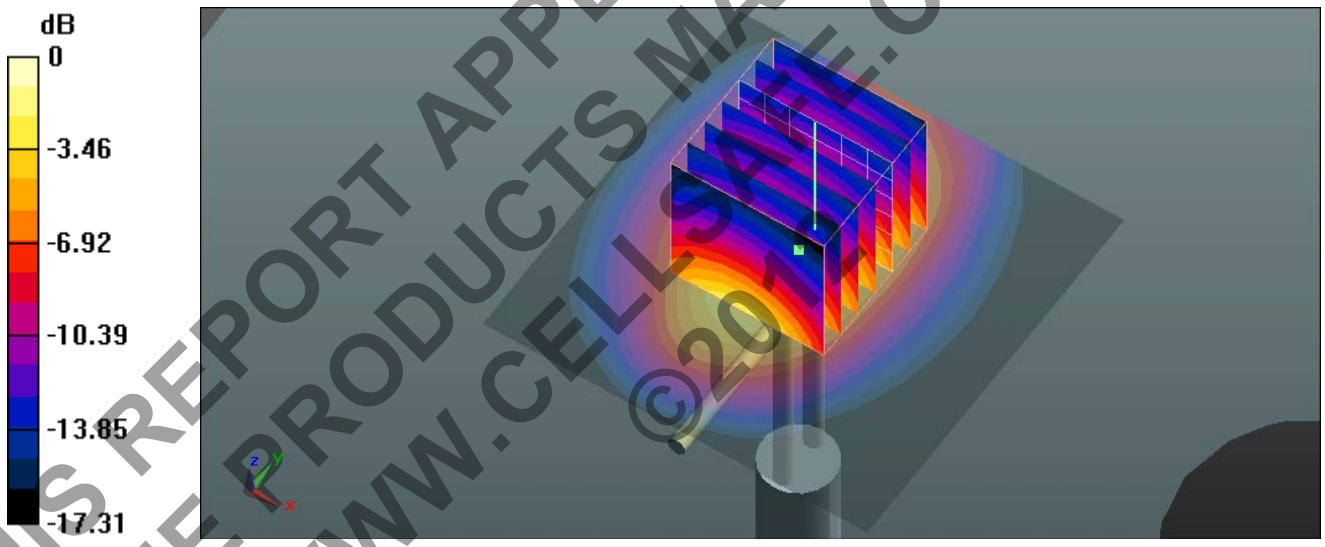
Test Date: 4 March 2011

File Name: System Check 1800 MHz (DAE442 Probe1380) 04-03-11.da52:0
DUT: Dipole 1800 MHz; Type: DV1800V2; Serial: 242

* Communication System: CW 1800 MHz; Frequency: 1800 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 1800.8 MHz; σ = 1.369 mho/m; ε_r = 41.299; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(5.21, 5.21, 5.21)
- Phantom: SAM 22; Serial: 1260; Phantom section: Flat Section

Configuration/Channel 1 Test/Area Scan (51x51x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 10.857 mW/g

Configuration/Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.193 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 15.414 W/kg
SAR(1 g) = 9.08 mW/g; SAR(10 g) = 4.87 mW/g
Maximum value of SAR (measured) = 10.086 mW/g



0 dB = 10.090mW/g

SAR MEASUREMENT PLOT 19

Ambient Temperature	**20.8 Degrees Celsius**
Liquid Temperature	**20.5 Degrees Celsius**
Humidity	**49.0 %**

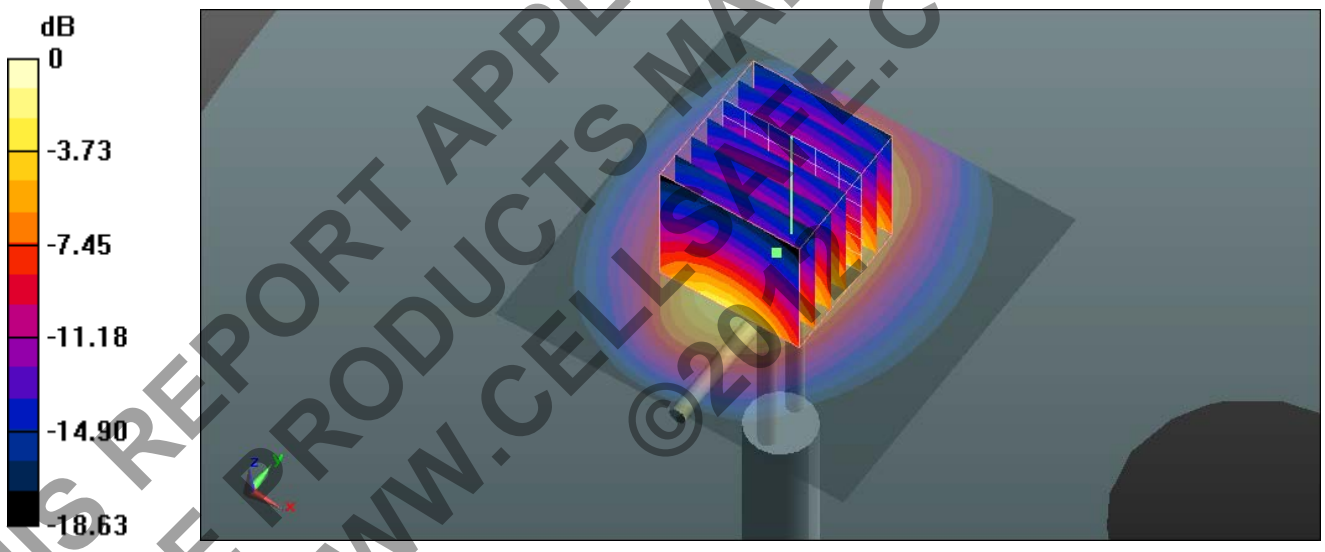
Test Date: 8 March 2011

File Name: System Check 1950 MHz (DAE442 Probe1380) 08-03-11.da52:0
DUT: Dipole 1950 MHz; Type: DV1950V3; Serial: 1113

* Communication System: CW 1950 MHz; Frequency: 1950 MHz; Duty Cycle: 1:1
* Medium parameters used: f = 1949.2 MHz; σ = 1.44 mho/m; ε_r = 38.812; ρ = 1000 kg/m^3
- Electronics: DAE3 Sn442; Probe: ET3DV6 - SN1380; ConvF(4.92, 4.92, 4.92)
- Phantom: SAM 22; Serial: 1260; Phantom section: Flat Section

Configuration/Channel 1 Test/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 13.649 mW/g

Configuration/Channel 1 Test/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.060 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 19.655 W/kg
SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.54 mW/g
Maximum value of SAR (measured) = 11.947 mW/g



0 dB = 11.950mW/g

SAR MEASUREMENT PLOT 20

Ambient Temperature	**20.0 Degrees Celsius**
Liquid Temperature	**19.5 Degrees Celsius**
Humidity	**56.0 %**