Prepared (also subject responsible if other)		No.		
KI/EAB/TFF Martin Siegbahn		EAB/TF-04:000065 UEN		
Approved	Checked	Date	Rev	Reference
EAB/TF [Christer Tornevik]		2004-07-02	A	

SAR Test Report: Type Number FAB-1031012; FCC ID PY7FB031012; IC 4170B-FB031012

Date of test	June 10-30, 2004
Laboratory	Ericsson EMF Research Laboratory Ericsson AB Torshamnsgatan 23 SE-164 80 Stockholm Sweden
Job No	2004 – 2
Customer	Kristina Gold Sony Ericsson Mobile Communications AB Torshamnsgatan 27 Box 64 SE-164 94 Kista Sweden

Test responsible

……

Martin Siegbahn
Senior Research Engineer
martin.siegbahn@ericsson.com
Tel: +46 8 7570811

Test approval

……

Christer Törnevik
Director, EMF Health and Safety
christer.tornevik@ericsson.com
Tel: +46 8 7641235

This laboratory is accredited to ISO/IEC 17025 (SWEDAC accreditation no. 1761).

SWEDAC ACKREDITERING 1761 ISO/IEC 17025

Laboratories are accredited by the Swedish Board for Accreditation and Conformity Assessment (SWEDAC) under the terms of Swedish legislation. The accredited laboratory activities meet the requirements in SS-EN ISO/IEC 17025 (2000). This report shall not be reproduced except in full, without written approval of the laboratory.

The results and statements contained herein relate only to the items tested. The names of individuals involved may be mentioned only in connection with the statements or results from this report.

Ericsson encourages all feedback, both positive and negative, on this report.
© Telefonaktiebolaget LM Ericsson, 2004

1 Table of Contents

Test report summary 3

2 General information 3

3 Device under test 3

4 Test equipment 4
4.1 Dosimetric system 4
4.2 Additional equipment 4

5 Electrical parameters of the tissue simulating liquids 5

6 SAR system performance check 6

7 Test results 7
7.1 Results for the GSM850 mode (head) 7
7.2 Results for the GSM850 mode (body) 8
7.3 Results for the GSM1800 mode 9
7.4 Results for the GSM1900 mode (head) 10
7.5 Results for the GSM1900 mode (body) 11

8 Conclusion 11

9 References 12

APPENDIX 1: Photographs of the DUT 13

APPENDIX 2: Photographs of the DUT when positioned for SAR measurements 15

APPENDIX 3: SAR distribution plots 17

APPENDIX 4: Probe calibration parameters for ET3DV6, SN: 1394 28

APPENDIX 5: Probe calibration parameters for ET3DV6, SN: 1572 29

Test report summary

The table below summarizes the SAR measurement results obtained for the Sony Ericsson FAB-1031012 mobile phone model. The results show that the maximum SAR values are below the 1.6 W/kg (1g) and 2 W/kg (10g) limits and thus the Sony Ericsson FAB-1031012 mobile phone is in compliance with the appropriate RF exposure standards and recommendations.

Mode	***Maximum SAR_{1g} (W/kg)***	***Maximum SAR_{10g} (W/kg)***
GSM 850 (Head)	*1.46*	*1.04*
GSM 850 (Body)	*0.97*	*0.72*
GSM 1800	*1.35*	*0.83*
GSM1900 (Head)	*1.50*	*0.88*
GSM 1900 (Body)	*0.42*	*0.27*

2 General information

The tests reported in this document have been performed in accordance with the SAR measurement standards CENELEC EN 50361 [1], IEEE Standard 1528 [2] and the FCC Supplement C [5]. The purpose of the tests was to verify that the Sony Ericsson FAB-1031012 mobile phone model is in compliance with the appropriate RF exposure standards, recommendations and limits [3-8].

3 Device under test

The table below summarizes the technical data for the tested device. Photographs of the device are presented in Appendix 1.

Device model	Type Number FAB-1031012; FCC ID PY7FB031012; IC 4170B-FB031012
Serial number of tested unit	ALW4PWTERQ
Mode	GSM850, GSM1800, GSM1900
Antenna	Internal
Maximum output power level[1] (dBm)	GSM850: 33.0 GSM1800: 30.0 GSM1900: 30.5
Duty cycle	1:8 (GSM), 1:8 (GPRS)
Transmitter frequency range (MHz)	GSM850: 824.2-848.8 GSM1800: 1710.2-1784.8 GSM1900: 1850.2-1909.8
Bluetooth	Power class 3 (0dBm)
Prototype or production unit	Prototype FP1
Tested accessories	Stereo headset, CCA-0001002 Carry case, KRY 104 164 Portable handsfree, 5050029 Bluetooth headset, 8505002 Battery: 3000054

1 Output power level of the phone model at the antenna port for the maximum power setting. This equals the nominal output power level plus the factory variation.

4 Test equipment

4.1 Dosimetric system

The SAR measurements were made using the DASY4 professional near-field scanner by Schmid & Partner Engineering AG that was installed in December 2002. The total SAR assessment uncertainty (k=1) of the system is ±10.3% for 1g SAR assessments and 9.7% for 10g SAR assessments. The corresponding extended uncertainties (k=2) are ±20.6% and ±19.3%, respectively. The equipment list is given below. In Appendix 4 calibration parameters for the SAR test probe are listed.

Description	Asset number	Calibration due date
DAE3	S/N 304	2004-10-07
E-field probe, ET3DV6	S/N 1394	2004-10-10
E-field probe, ET3DV6[2]	S/N 1572	2005-05-24
Dipole validation kit, D835V2	S/N 413	NA
Dipole validation kit, D1800V2	S/N 203	NA
SAM Phantom[3]	S/N TP-1004	NA
SAM Phantom[4]	S/N TP-1204	NA

4.2 Additional equipment

Description	Asset number	Calibration due date
Signal generator, R&S SMHU58	S/N 843863/034	2005-01-03
Dielectric probe kit, HP 85070C	S/N US99360060	NA
Network analyzer, HP 8752C	S/N 3410A03732	2004-12-19
Power meter, R&S NRVS	S/N 848888/052	2006-05-24
Power sensor, R&S NRV-Z5	S/N 849895/030	2006-05-24
Digital radio tester, R&S CTS-55	S/N 827443/012	2004-10-16
Digital radio tester, R&S CMU200	S/N 104844	2005-05-01
Digital radio tester, R&S CMU200	S/N 837261/013	2005-02-01
Thermometer, EBRO TFX-392SKWT	S/N 10130918	2004-12-09
Thermo/Hygrometer, Testo 608-H2	S/N 60013082	2005-02-10

[2] This equipment was used for the tests at 835 MHz with muscle tissue simulating liquid.
[3] This equipment was used for the tests at 835 MHz.
[4] This equipment was used for the tests at 1800 MHz and 1900 MHz and for 835 MHz body usage.

5 Electrical parameters of the tissue simulating liquids

The parameters of the tissue simulating liquids were measured with the dielectric probe kit prior to the SAR measurement and the results are shown in the table below. Specified standard values for the permittivity and the conductivity are also given [1][2][5]. The measured values are within 5% of the standard values. The mass density of the liquid entered into the DASY4 program was 1000 kg/m^3. The depth of the tissue simulating liquid was 15 cm.

f (MHz)	Liquid type	Measured/Specification	ε_r	σ (S/m)
835	Head tissue	Measured	41.9/41.2[5]	0.90/0.89[5]
		Specified value	41.5	0.90
		Difference (%)	+1/-1	0/-1
835	Body tissue (muscle)	Measured	56.5	0.97
		Specified value	55.2	0.97
		Difference (%)	+2	0
1800	Head tissue	Measured	38.0/38.4[5]	1.37/1.39[5]
		Specified value	40.0	1.40
		Difference (%)	-5/-4	-2/-1
1900	Head tissue	Measured	38.2/38.0[5]	1.43/1.45[5]
		Specified value	40.0	1.40
		Difference (%)	-4/-5	+2/+4
1900	Body tissue (muscle)	Measured	51.8/51.7[5]	1.59/1.56[5]
		Specified value	53.3	1.52
		Difference (%)	-3/-3	+5/+3

[5] Testing was conducted over two consecutive days with the same test setup.

6 SAR system performance check

System performance checks for the DASY4 were conducted before the SAR measurements with the D835V2 and D1800V2 dipole kits and the obtained results are displayed in the table below. The results are within 10% of the reference values [2][10]. Evaluations prior to the SAR testing showed that the maximum SAR system noise was 3.3 mW/kg, which is below the standard requirements. The temperature of the test facility during the performance checks was in the range 21°C to 22°C and the relative humidity was 34%-55%.

f (MHz)	Tissue	Measured/ Reference	SAR 1g (W/kg)	SAR 10g (W/kg)	ε_r	σ (S/m)	Liquid temp (°C)	Date
835	Head	Measured	10.1	6.6	41.9	0.90	20.3	2004-06-14
		Reference [2]	9.5	6.1	41.5	0.90	-	-
		Difference (%)	+6	+8	+1	0	-	-
835	Body	Measured	10.4	6.9	56.5	0.97	20.8	2004-06-30
		Reference [10]	9.8	6.4	55.2	0.97	-	-
		Difference (%)	+6	+8	+2	0	-	-
1800	Head	Measured	38.4	20.3	38.6	1.39	20.5	2004-06-09
		Reference [2]	38.1	19.8	40.0	1.40	-	-
		Difference (%)	+1	+3	-3	-1	-	-
1800[6]	Head	Measured	39.2	21.0	38.7	1.34	22.1	2004-06-16
		Reference [2]	38.1	19.8	40	1.40	-	-
		Difference (%)	+3	+6	-3	-4	-	-
1800[6]	Body	Measured	37.8	20.5	52.2	1.46	22.1	2004-06-28
		Reference [10]	38.5	19.5	53.3	1.52	-	-
		Difference (%)	-2	+5	-2	-4	-	-

[6] This system performance check was conducted prior to the SAR testing for the GSM1900 mode.

7 Test results

The tables in this section show the measured 1g and 10g averaged SAR for the device and the corresponding values normalized to 33.0 dBm maximum output power level for the GSM850 mode and 30.0 dBm for the GSM1800 mode. For the GSM1900 mode the output power of the tested device was equal to the maximum output power level (30.5 dBm). A digital radio tester was used to control the device during the SAR measurements. The phone was supplied with a fully charged battery for the tests. The temperature of the test facility during the tests was in the range 20 to 24°C and the relative humidity was 31% to 53%.

The device was tested on the right-hand phantom (corresponding to the right side of the head) and the left-hand phantom for the cheek and tilt phone positions in the middle of the transmit band, corresponding to the traffic channel 190 for GSM850, channel 699 for GSM1800 and channel 661 for GSM1900. In Appendix 2 pictures of the device when positioned on the left-hand phantom are shown. Tests were performed with the flip opened, closed and removed. For the position giving the highest SAR result, the device was tested at the lowest, middle and the highest frequencies of the transmit bands corresponding to the traffic channels 128 and 251 for GSM850, channels 512 and 885 for GSM1800 and channels 512 and 810 for GSM1900. Finally, for the position and frequency giving the highest SAR result in each band, tests were performed with the Bluetooth transmitter turned on.

The device was also tested in body worn positions with muscle tissue for the GSM850 and GSM1900 modes. Tests were performed with the stereo headset attached and with a carry case or a 15 mm separation between the device and the liquid. In Appendix 2 pictures of the device when positioned under the flat section of the phantom are shown.

7.1 Results for the GSM850 mode (head)

Configuration	Hand side	Phone position	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 33.0 dBm (W/kg)	
					SAR_{1g}	SAR_{10g}	SAR_{1g}	SAR_{10g}
Flip Closed	Left	Cheek	836.6	32.92	1.15	0.83	1.17	0.85
		Tilt	836.6	32.92	0.79	0.53	0.80	0.54
	Right	Cheek	824.2	32.95	1.14	0.83	1.15	0.84
			836.6	32.92	1.18	0.85	1.20	0.87
			848.8	32.87	1.09	0.79	1.12	0.81
		Tilt	836.6	32.92	0.79	0.53	0.80	0.54
Flip Open	Left	Cheek	836.6	32.92	1.32	0.95	1.34	0.96
		Tilt	836.6	32.92	0.98	0.66	0.99	0.67
	Right	Cheek	824.2	32.95	1.36	0.96	1.38	0.97
			836.6	32.92	1.42	1.00	1.45	1.02
			848.8	32.87	1.34	0.94	1.38	0.97
		Tilt	836.6	32.92	0.90	0.61	0.92	0.62
Flip Removed	Left	Cheek	836.6	32.92	1.38	0.99	1.41	1.01
		Tilt	836.6	32.92	0.94	0.65	0.95	0.66
	Right	Cheek	824.2	32.95	1.36	0.97	1.38	0.98
			836.6	32.92	1.43	1.02	**1.46**	**1.04**
			848.8	32.87	1.34	0.96	1.38	0.98
		Tilt	836.6	32.92	0.89	0.61	0.91	0.62
Flip Removed Bluetooth on	Right	Cheek	836.6	32.92	1.37	0.98	1.40	1.00

During the tests the temperature of the tissue simulating liquid was in the range 20.3 to 21.1°C, which is within ±2°C from the temperature at system performance check.

Appendix 3 (a-d) shows the maximum SAR distributions giving the maximum 1g SAR for the phone positions cheek and tilt at the right and left-hand phantoms.

7.2 Results for the GSM850 mode (body)

Separation	Configuration/ Accessory	Phone position (Front/Back towards the phantom)	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 33.0 dBm (W/kg)	
					SAR_{1g}	SAR_{10g}	SAR_{1g}	SAR_{10g}
Carry case touching the phantom	Flip Closed Stereo headset	Front	836.6	32.92	0.45	0.34	0.45	0.34
		Back	824.2	32.95	0.67	0.50	0.67	0.50
			836.6	32.92	0.63	0.47	0.64	0.48
			848.8	32.87	0.56	0.41	0.57	0.42
	Flip Removed Stereo headset	Front	836.6	32.92	0.52	0.39	0.53	0.40
		Back	824.2	32.95	0.66	0.49	0.66	0.50
			836.6	32.92	0.62	0.46	0.63	0.47
			848.8	32.87	0.55	0.41	0.56	0.42
	Flip Closed Portable hands-free	Back	824.2	32.95	0.47	0.36	0.47	0.36
	Flip Closed Bluetooth on	Back	824.2	32.95	0.73	0.55	0.74	0.55
15mm between the device and the tissue simulating liquid	Flip Closed Stereo headset	Front	836.6	32.92	0.51	0.39	0.52	0.39
		Back	824.2	32.95	0.89	0.66	0.90	0.67
			836.6	32.92	0.85	0.63	0.86	0.64
			848.8	32.87	0.77	0.57	0.79	0.59
	Flip Removed Stereo headset	Front	836.6	32.92	0.65	0.49	0.66	0.50
		Back	824.2	32.95	0.79	0.59	0.80	0.59
			836.6	32.92	0.75	0.56	0.76	0.57
			848.8	32.87	0.64	0.48	0.66	0.49
	Flip Closed Portable hands-free	Back	824.2	32.95	0.76	0.56	0.76	0.56
	Flip Closed Bluetooth on	Back	824.2	32.95	0.96	0.71	**0.97**	**0.72**

During the tests the temperature of the tissue simulating liquid was in the range 20.7 to 21.6°C, which is within ±2°C from the temperature at system performance check.

Appendix 3 (e) shows the maximum SAR distribution for the flat section of the phantom giving the maximum 1g SAR of 0.97 W/kg and the maximum 10g averaged SAR of 0.72 W/kg at 835 MHz (body).

7.3 Results for the GSM1800 mode

Configuration	Hand side	Phone position	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 30.0 dBm (W/kg)	
					SAR_{1g}	SAR_{10g}	SAR_{1g}	SAR_{10g}
Flip Closed	Left	Cheek	1747.6	29.53	1.05	0.59	1.17	0.66
		Tilt	1710.2	29.45	0.96	0.54	1.09	0.61
			1747.6	29.53	1.08	0.60	1.20	0.67
			1784.8	29.34	0.91	0.50	1.05	0.58
	Right	Cheek	1747.6	29.53	0.98	0.61	1.09	0.68
		Tilt	1710.2	29.45	0.91	0.55	1.03	0.62
			1747.6	29.53	1.04	0.63	1.16	0.70
			1784.8	29.34	0.84	0.50	0.98	0.59
Flip Open	Left	Cheek	1747.6	29.53	0.78	0.45	0.86	0.50
		Tilt	1747.6	29.53	1.01	0.55	1.13	0.61
	Right	Cheek	1710.2	29.45	1.02	0.64	1.16	0.73
			1747.6	29.53	1.18	0.72	1.31	0.80
			1784.8	29.34	1.00	0.61	1.16	0.71
		Tilt	1747.6	29.53	0.89	0.55	0.99	0.61
Flip Removed	Left	Cheek	1747.6	29.53	0.88	0.51	0.98	0.57
		Tilt	1747.6	29.53	1.13	0.63	1.26	0.70
	Right	Cheek	1710.2	29.45	1.06	0.66	1.20	0.75
			1747.6	29.53	1.19	0.73	1.33	0.82
			1784.8	29.34	1.04	0.63	1.21	0.73
		Tilt	1747.6	29.53	1.05	0.64	1.17	0.71
Flip Removed, Bluetooth on	Right	Cheek	1747.6	29.53	1.21	0.74	**1.35**	**0.83**

During the tests the temperature of the tissue simulating liquid was in the range 20.7 to 22.0°C, which is within ±2°C from the temperature at system performance check.

Appendix 3 (f) shows the maximum SAR distribution for the right-hand phantom giving the maximum 1g SAR of 1.35 W/kg and the maximum 10g averaged SAR of 0.83 W/kg at 1800 MHz.

7.4 Results for the GSM1900 mode (head)

Configuration	Hand side	Phone position	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 30.5 dBm (W/kg)	
					SAR_{1g}	SAR_{10g}	SAR_{1g}	SAR_{10g}
Flip Closed	Left	Cheek	1880.0	30.4	1.00	0.55	1.02	0.57
		Tilt	1880.0	30.4	1.01	0.55	1.03	0.56
	Right	Cheek	1850.2	30.5	0.82	0.51	0.82	0.51
			1880.0	30.4	1.03	0.63	1.05	0.64
			1909.8	30.6	1.13	0.68	1.10	0.67
		Tilt	1880.0	30.4	0.97	0.57	0.99	0.58
Flip Open	Left	Cheek	1880.0	30.4	0.89	0.48	0.91	0.49
		Tilt	1880.0	30.4	1.01	0.54	1.03	0.55
	Right	Cheek	1850.2	30.5	1.08	0.64	1.08	0.64
			1880.0	30.4	1.24	0.73	1.27	0.74
			1909.8	30.6	1.53	0.90	**1.50**	**0.88**
		Tilt	1880.0	30.4	0.89	0.53	0.91	0.55
Flip Removed	Left	Cheek	1880.0	30.4	0.83	0.46	0.85	0.47
		Tilt	1880.0	30.4	1.03	0.57	1.05	0.58
	Right	Cheek	1850.2	30.5	0.98	0.59	0.98	0.59
			1880.0	30.4	1.27	0.74	1.30	0.75
			1909.8	30.6	1.40	0.82	1.37	0.80
		Tilt	1880.0	30.4	0.96	0.59	0.98	0.60
Flip Open, Bluetooth on	Right	Cheek	1909.8	30.6	1.46	0.85	1.43	0.83

During the tests the temperature of the tissue simulating liquid was in the range 21.7 to 22.4°C, which is within ±2°C from the temperature at system performance check.

Appendix 3 (g-j) shows the maximum SAR distributions giving the maximum 1g SAR for the phone positions cheek and tilt at the right and left-hand phantoms.

7.5 Results for the GSM1900 mode (body)

Separation	Configuration/ Accessory	Phone position (Front/Back towards the phantom)	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 30.5 dBm (W/kg)	
					SAR_{1g}	SAR_{10g}	SAR_{1g}	SAR_{10g}
Carry case touching the phantom	Flip Closed Stereo headset	Front	1880.0	30.4	0.21	0.14	0.22	0.14
		Back	1850.2	30.5	0.34	0.22	0.34	0.22
			1880.0	30.4	0.38	0.25	0.39	0.25
			1909.8	30.6	0.40	0.25	0.39	0.25
	Flip Removed Stereo headset	Front	1880.0	30.4	0.22	0.14	0.23	0.14
		Back	1850.2	30.5	0.32	0.21	0.32	0.21
			1880.0	30.4	0.35	0.22	0.36	0.23
			1909.8	30.6	0.36	0.23	0.35	0.22
	Flip Closed Portable hands-free	Back	1909.8	30.6	0.30	0.19	0.29	0.19
	Flip Closed Bluetooth on	Back	1909.8	30.6	0.36	0.23	0.36	0.23
15mm between the device and the tissue simulating liquid	Flip Closed Stereo headset	Front	1880.0	30.4	0.21	0.13	0.22	0.14
		Back	1850.2	30.5	0.40	0.25	0.40	0.25
			1880.0	30.4	0.42	0.26	**0.42**[7]	**0.27**
			1909.8	30.6	0.43	0.27	0.42	0.26
	Flip Removed Stereo headset	Front	1880.0	30.4	0.36	0.22	0.37	0.23
		Back	1850.2	30.5	0.37	0.24	0.37	0.24
			1880.0	30.4	0.39	0.25	0.40	0.25
			1909.8	30.6	0.41	0.26	0.40	0.25
	Flip Closed Portable hands-free	Back	1909.8	30.6	0.37	0.24	0.36	0.23
	Flip Closed Bluetooth on	Back	1909.8	30.6	0.42	0.27	0.41	0.26

During the tests the temperature of the tissue simulating liquid was in the range 21.8 to 22.9°C, which is within ±2°C from the temperature at system performance check.

Appendix 3 (k) shows the maximum SAR distribution for the flat section of the phantom giving the maximum 1g SAR of 0.42 W/kg and the maximum 10g averaged SAR of 0.27 W/kg at 1900 MHz (body).

8 Conclusion

The results above show that the maximum SAR for the Sony Ericsson FAB-1031012 mobile phone is below the 1.6 W/kg (1g) and 2.0 W/kg (10g) limits. Consequently, the Sony Ericsson FAB-1031012 mobile phone model is in compliance with the appropriate RF exposure standards and recommendations.

[7] Maximum value when all decimals given in DASY4 were considered.

9 References

[1] CENELEC, European Standard EN 50361, “Basic Standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz – 3 GHz)”, European Committee for Electrotechnical Standardization (CENELEC), July 2001.

[2] IEEE, Standard 1528, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.”, The Institute for Electrical and Electronics Engineers (IEEE) Inc., June 2003

[3] CENELEC, European Standard EN 50360, “Product standard to demonstrate the compliance of mobile telephones with basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz), European Committee for Electrotechnical Standardization (CENELEC), July 2001.

[4] European Council Recommendation 1999/519/EC.

[5] FCC, "Evaluating Compliance with FCC Guidelines from Human Exposure To Radiofrequency Electromagnetic Fields", Supplement C Edition 01-01 to OET Bulletin 65 Edition 97-01, June 2001.

[6] ANSI/IEEE C95.1-1999, “Safety levels with respect to human exposure to radio frequency electromagnetic fields, 3 kHz to 300 GHz”, The Institute of Electrical and Electronics Engineers Inc., New York, 1999.

[7] ACA, Radiocommunications (Electromagnetic Radiation Human Exposure) Standard 2003, Australian Communications Authority (ACA), 2003.

[8] ARPANSA, “Radiation Protection Standard for Maximum Exposure Levels for Radiofrequency Fields – 3 kHz to 300 GHz (2002)”, Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), May 2002.

[9] ARIB Standard STD-T56, “Method of Measuring the Specific Absorption Rate from Portable Wireless Terminals”, 2nd Edition, Association of Radio Industries and Businesses, January 24th, 2002. (Translation by Asia Technical Translation Pty Ltd 10/04/02).

[10] Lennart Hamberg, “Calculation of reference SAR values for system performance checks with muscle tissue simulating liquid”, Ericsson wide internal, Report, EAB/TF-03:090, Rev C, July 2004.

APPENDIX 1: Photographs of the DUT

(a) Front view of the Sony Ericsson FAB-1031012 mobile phone.

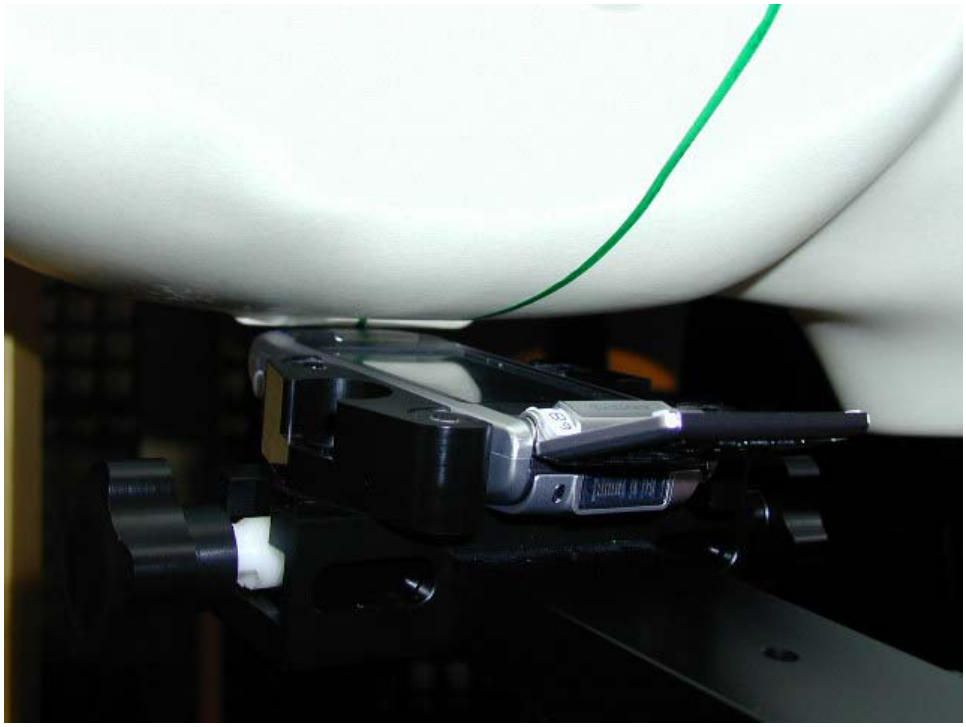
(b) Side views and back view of the Sony Ericsson FAB-1031012 mobile phone.

(c) Carry case

(d) Battery

APPENDIX 2: Photographs of the DUT when positioned for SAR measurements

(a) Device on head phantom in the cheek position with the flip closed.



(b) Device on head phantom in the tilt position with the flip open.

(c) Device on flat section of the phantom with the carry case and the stereo headset. The clip was opened 3 mm with a piece of paper.

(d) Device on flat section of the phantom with the stereo headset. The separation was 15 mm between the device and the tissue simulating liquid.

APPENDIX 3: SAR distribution plots

Date: 06/14/04

DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

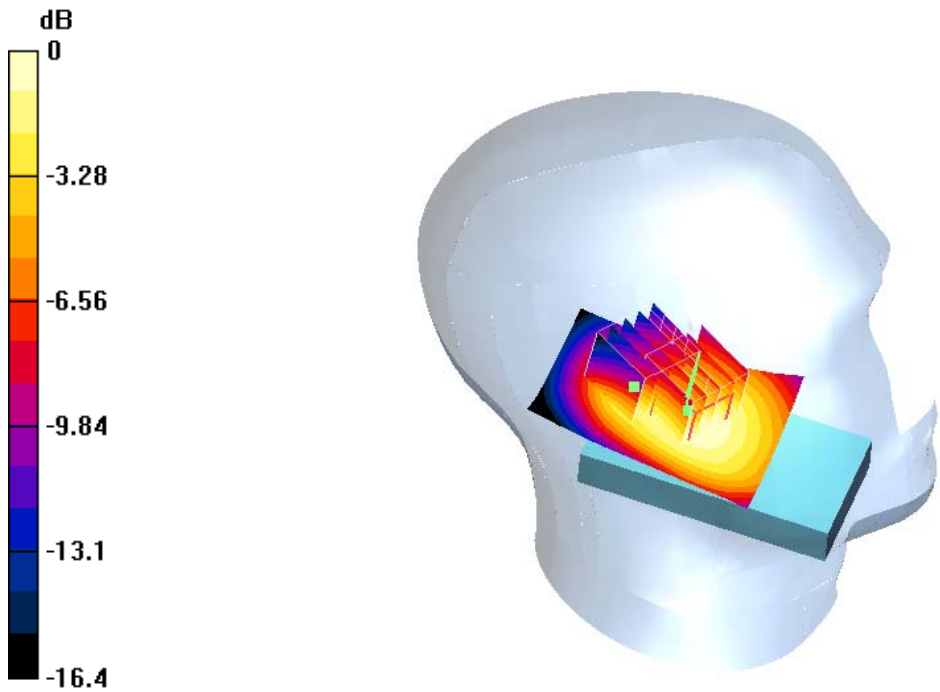
Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Head 835 MHz; $\sigma = 0.9$ mho/m; $\varepsilon_r = 41.9$; $\rho = 1000$ kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(6.9, 6.9, 6.9); Calibrated: 2003-10-31
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 1; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Cheek Left Middle/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 35.6 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 1.47 mW/g

Cheek Left Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 35.6 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 1.45 mW/g
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.99 mW/g

Cheek Left Middle/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 35.6 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 1.39 mW/g
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 1.26 mW/g; SAR(10 g) = 0.80 mW/g



0 dB = 1.39mW/g

(a) Distribution of SAR in the GSM850 mode giving the maximum 1g SAR in the left hand side phantom for the cheek position

Date: 06/15/04

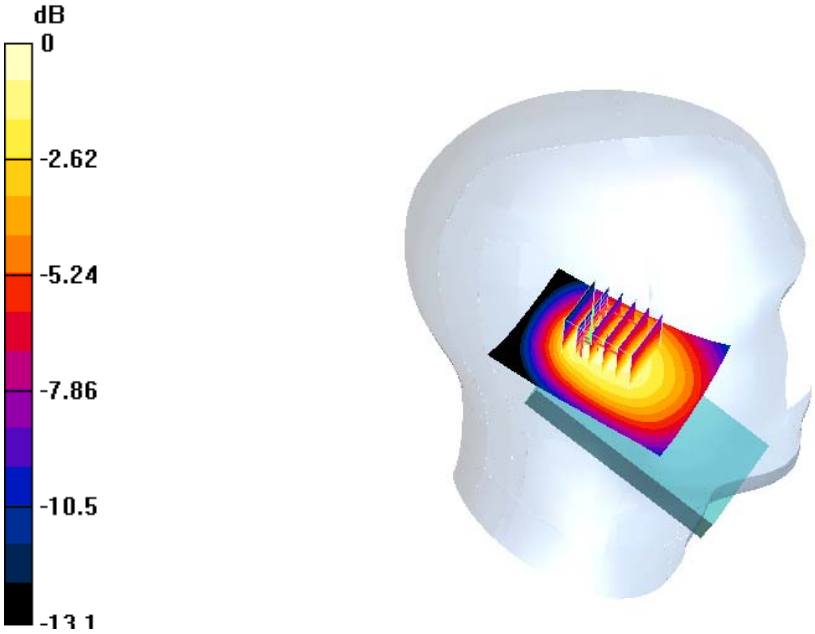
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Head 835 MHz; $\sigma = 0.89$ mho/m; $\varepsilon_r = 41.2$; $\rho = 1000$ kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(6.9, 6.9, 6.9); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 1; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt Left Middle/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 34.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 1.1 mW/g

Tilt Left Middle/Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 1.06 mW/g
Peak SAR (extrapolated) = 1.6 W/kg
SAR(1 g) = 0.98 mW/g; SAR(10 g) = 0.66 mW/g



0 dB = 1.06mW/g

(b) Distribution of SAR in the GSM850 mode giving the maximum 1g SAR in the left hand side phantom for the tilt position

Date: 06/14/04

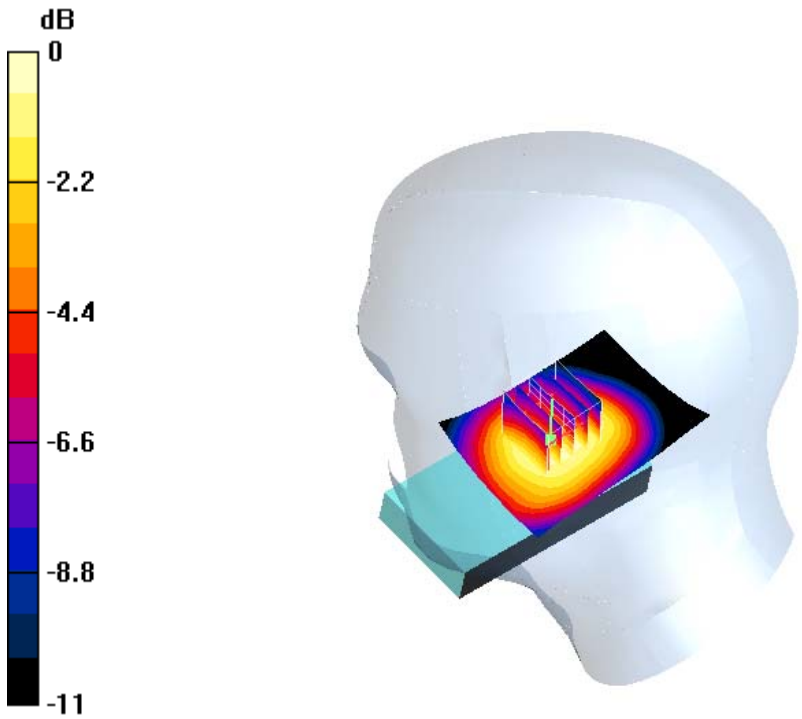
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Head 835 MHz; $\sigma = 0.9$ mho/m; $\varepsilon_r = 41.9$; $\rho = 1000$ kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(6.9, 6.9, 6.9); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 1; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Cheek Right Middle/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 36.7 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 1.57 mW/g

Cheek Right Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.7 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 1.52 mW/g
Peak SAR (extrapolated) = 1.9 W/kg
SAR(1 g) = 1.43 mW/g; SAR(10 g) = 1.02 mW/g



0 dB = 1.52mW/g

(c) Distribution of SAR in the GSM850 mode giving the maximum 1g SAR in the right hand side phantom for the cheek position

Date: 06/15/04

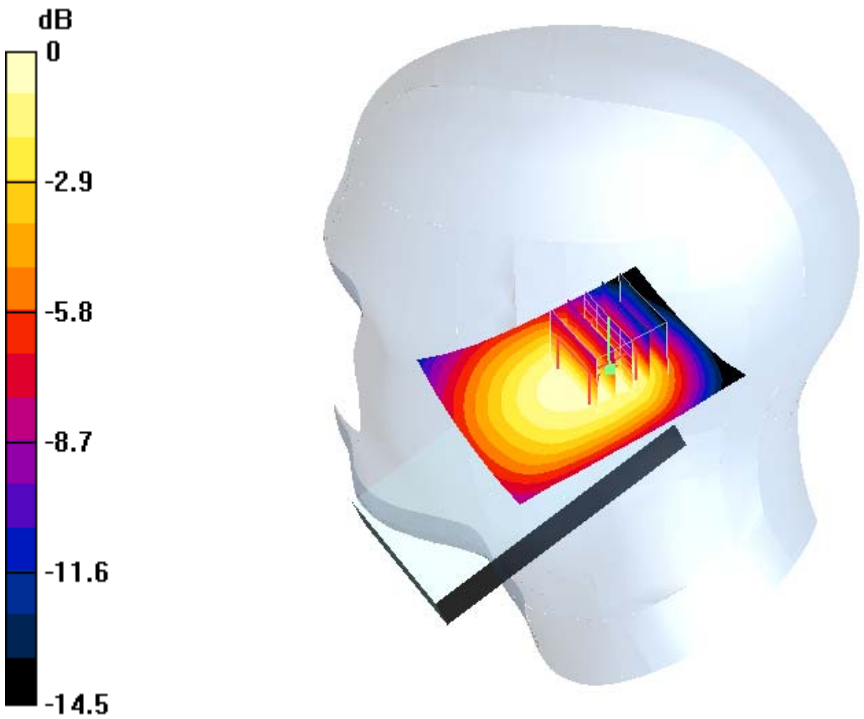
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: Head 835 MHz; σ = 0.89 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(6.9, 6.9, 6.9); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 1; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt Right Middle/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 34.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 0.989 mW/g

Tilt Right Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.959 mW/g
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.90 mW/g; SAR(10 g) = 0.61 mW/g



0 dB = 0.959mW/g

(d) Distribution of SAR in the GSM850 mode giving the maximum 1g SAR in the right hand side phantom for the tilt position

Date: 06/30/04

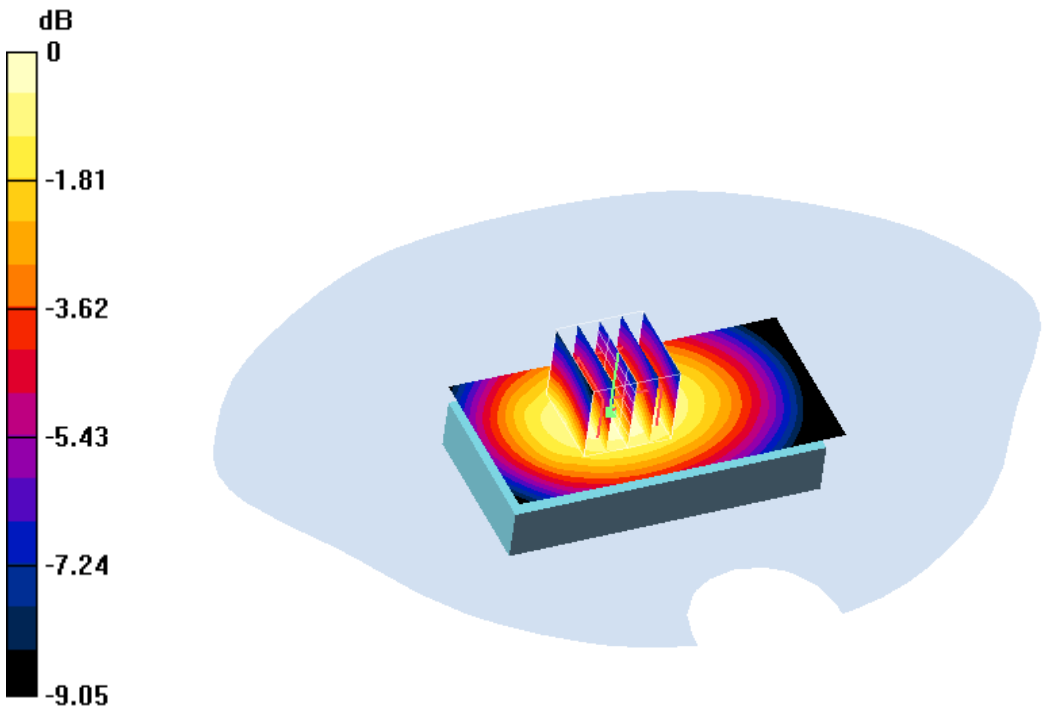
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3
Medium: Musle 835 MHz; σ = 0.97 mho/m; ε_r = 56.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1572; ConvF(6.32, 6.32, 6.32); Calibrated: 2004-05-24
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 2; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Back to Phantom - Flip Closed - Low - Bluetooth/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 32.6 V/m; Power Drift = -0.0 dB
Maximum value of SAR (interpolated) = 1.02 mW/g

Back to Phantom - Flip Closed - Low - Bluetooth/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.6 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 1.01 mW/g
Peak SAR (extrapolated) = 1.2 W/kg
SAR(1 g) = 0.96 mW/g; SAR(10 g) = 0.71 mW/g



0 dB = 1.01mW/g

(e) Distribution of maximum SAR in GSM850 mode with muscle tissue simulating liquid giving the maximum 1g and 10g averaged SAR. Measured against the flat section of the phantom with the back of the device facing the phantom and with a 15 mm separation between the device and the liquid.

Date/Time: 06/11/04

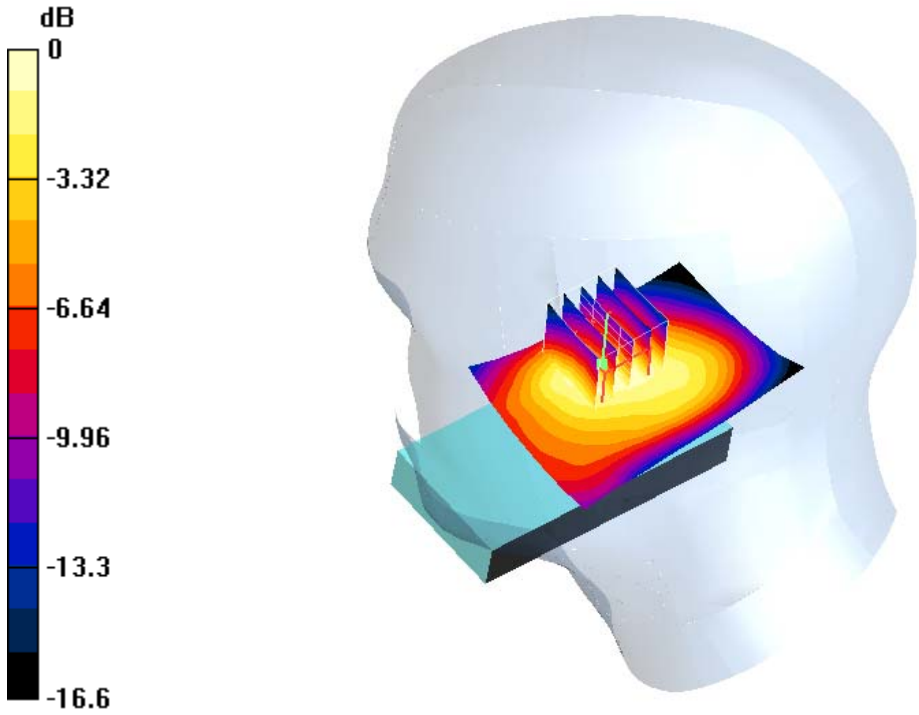
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 1800; Frequency: 1747.6 MHz; Duty Cycle: 1:8.3
Medium: Head 1800 MHz; σ = 1.39 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(5.5, 5.5, 5.5); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 2; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Cheek Right Middle Bluetooth/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 26.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 1.4 mW/g

Cheek Right Middle Bluetooth/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 1.31 mW/g
Peak SAR (extrapolated) = 1.78 W/kg
SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.74 mW/g



0 dB = 1.31mW/g

(f) Distribution of maximum SAR in GSM1800 mode giving the maximum 1g and 10g averaged SAR. Measured against the right-hand side phantom for the cheek phone position.

Date: 06/18/04

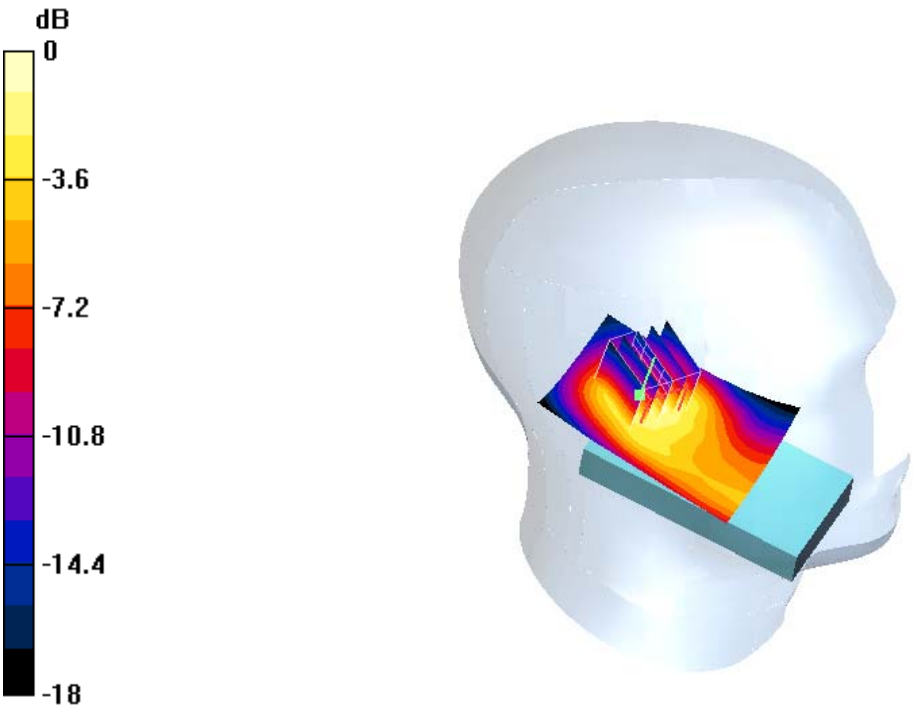
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz; σ = 1.45 mho/m; ε_r = 38; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(5.5, 5.5, 5.5); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 2; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Cheek Left Middle/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 27.6 V/m; Power Drift = -0.0 dB
Maximum value of SAR (interpolated) = 1.13 mW/g

Cheek Left Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.6 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 1.13 mW/g
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 1 mW/g; SAR(10 g) = 0.55 mW/g



0 dB = 1.13mW/g

(g) Distribution of SAR in the GSM1900 mode giving the maximum 1g SAR in the left hand side phantom for the cheek position

Date: 06/17/04

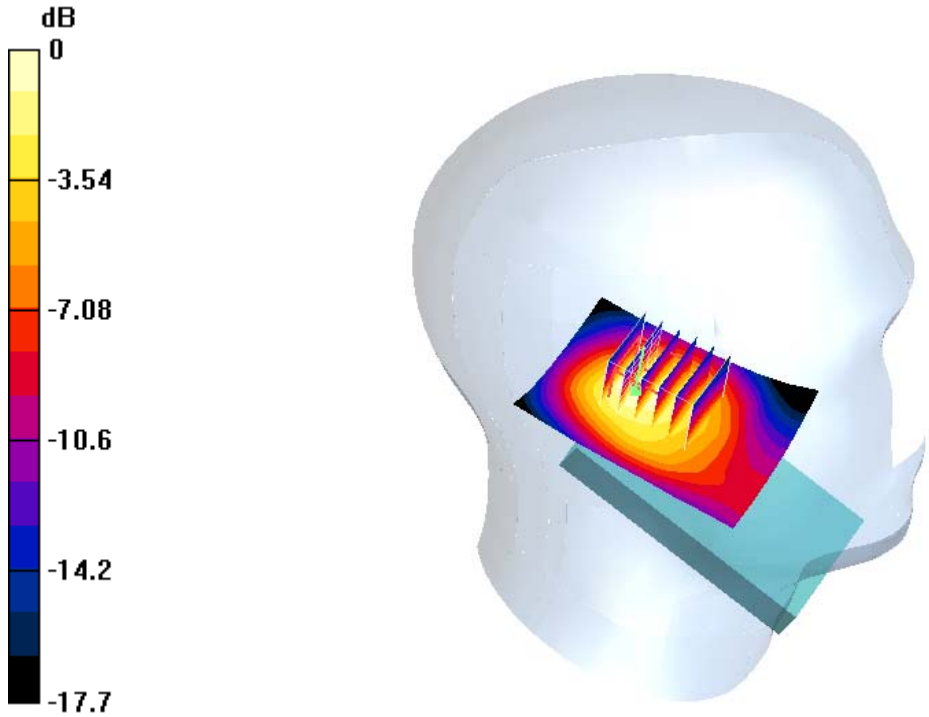
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz; σ = 1.43 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(5.5, 5.5, 5.5); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 2; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt Left Middle/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 28.2 V/m; Power Drift = -0.0 dB
Maximum value of SAR (interpolated) = 1.19 mW/g

Tilt Left Middle/Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.2 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 1.13 mW/g
Peak SAR (extrapolated) = 1.84 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.57 mW/g



0 dB = 1.13mW/g

(h) Distribution of SAR in the GSM1900 mode giving the maximum 1g SAR in the left hand side phantom for the tilt position

Date: 06/17/04

DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

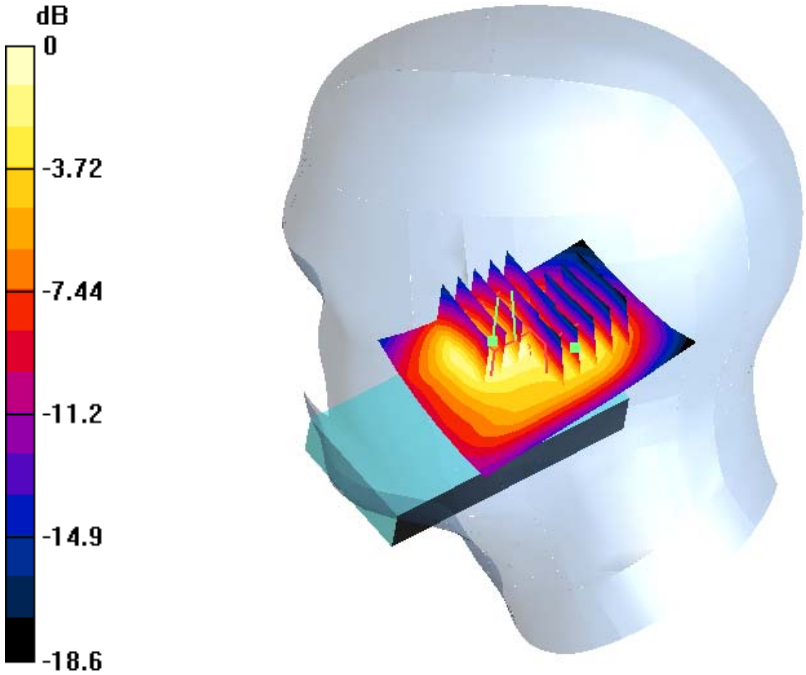
Communication System: GSM 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz; σ = 1.43 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(5.5, 5.5, 5.5); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 2; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Cheek Right High/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 27.1 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 1.81 mW/g

Cheek Right High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.1 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 1.68 mW/g
Peak SAR (extrapolated) = 2.35 W/kg
SAR(1 g) = 1.53 mW/g; SAR(10 g) = 0.90 mW/g

Cheek Right High/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.1 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 1.52 mW/g
Peak SAR (extrapolated) = 2 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.58 mW/g



0 dB = 1.52mW/g

(i) Distribution of SAR in the GSM1900 mode giving the maximum 1g SAR in the right hand side phantom for the cheek position

Date: 06/18/04

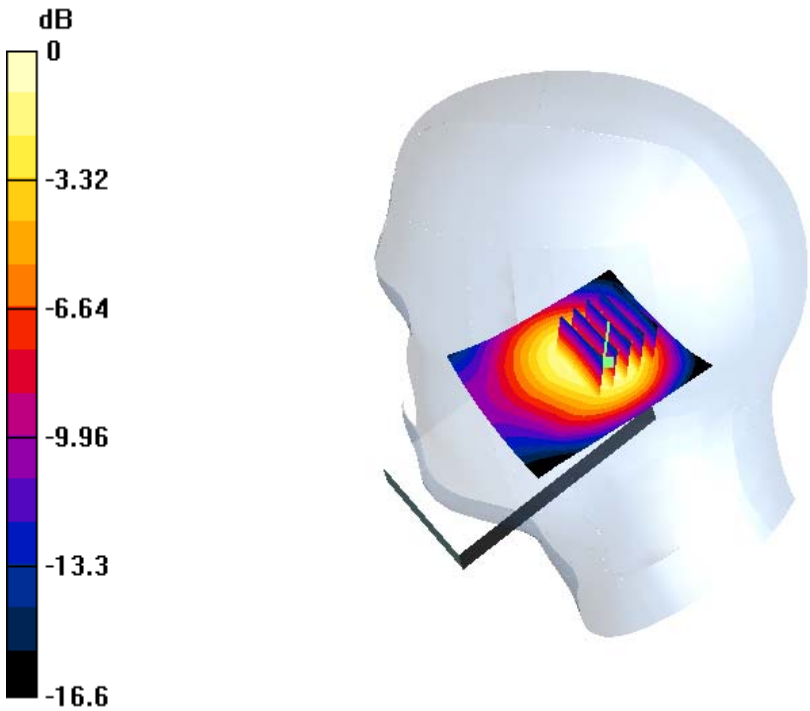
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Head 1900 MHz;σ = 1.45 mho/m; ε_r = 38; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(5.5, 5.5, 5.5); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 2; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt Right Middle/Area Scan (51x71x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 28.1 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 1.13 mW/g

Tilt Right Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.1 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 1.04 mW/g
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 0.97 mW/g; SAR(10 g) = 0.57 mW/g



0 dB = 1.04mW/g

(j) Distribution of SAR in the GSM1900 mode giving the maximum 1g SAR in the right hand side phantom for the tilt position

Date: 06/29/04

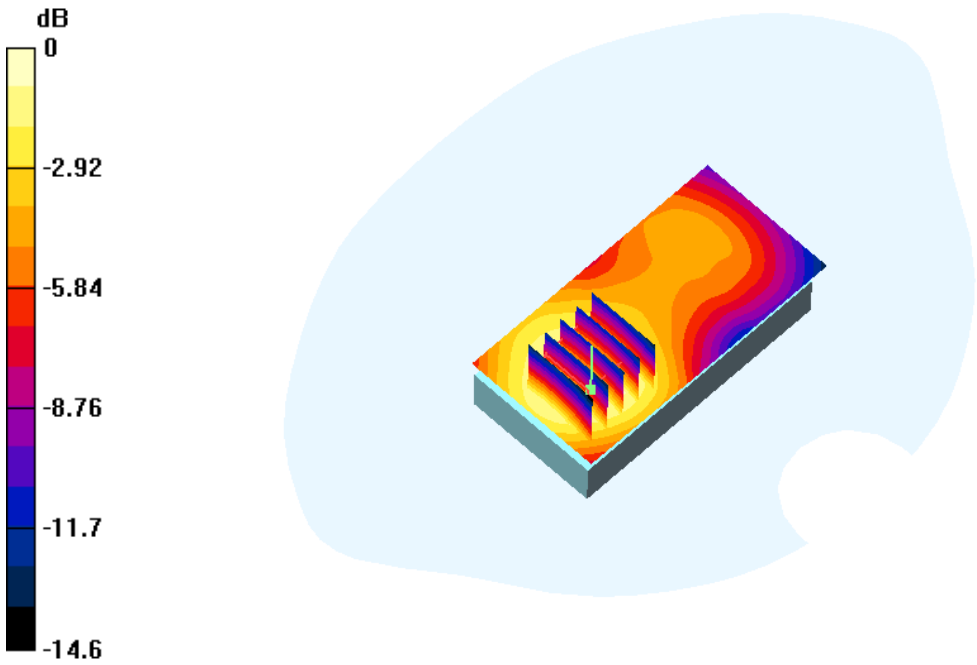
DUT: FAB-1031012; Type: Mobile Terminal; Serial: ALWPW4TERQ

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: Muscle 1900 MHz; σ = 1.56 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1394; ConvF(5.1, 5.1, 5.1); Calibrated: 2003-10-31
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))
- Electronics: DAE3 Sn304; Calibrated: 2003-10-07
- Phantom: SAM 2; ;
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 109

Back to Phantom - Flip Closed - Middle - Stereo/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 11.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 0.447 mW/g

Back to Phantom - Flip Closed - Middle - Stereo/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.445 mW/g
Peak SAR (extrapolated) = 0.641 W/kg
SAR(1 g) = 0.42 mW/g; SAR(10 g) = 0.26 mW/g



0 dB = 0.445mW/g

(k) Distribution of maximum SAR in GSM1900 mode with muscle tissue simulating liquid giving the maximum 1g and 10g averaged SAR. Measured against the flat section of the phantom with the back of the device facing the phantom and with a 15 mm separation between the device and the liquid.

APPENDIX 4: Probe calibration parameters for ET3DV6, SN: 1394

Diode compression

Parameter	Value in mV
DCP X	96
DCP Y	96
DCP Z	96

Sensitivity in free space:

Parameter	Value in $\mu V/(V/m)^2$
Norm X	1.87
Norm Y	1.91
Norm Z	1.65

Sensitivity in tissue simulating liquid

Head 900 MHz; ε_r=41.5 ± 5%, σ=0.97± 5% S/m.

Parameter	Value
ConvF X	6.9
ConvF Y	6.9
ConvF Z	6.9

Head 1800 MHz / 1900MHz; ε_r=40 ± 5%, σ=1.40± 5% S/m.

Parameter	Value
ConvF X	5.5
ConvF Y	5.5
ConvF Z	5.5

Muscle 1900 MHz; ε_r=53.3 ± 5%, σ=1.52± 5% S/m.

Parameter	Value
ConvF X	5.1
ConvF Y	5.1
ConvF Z	5.1

Probe tip to sensor center: 2.7 mm

Optical Surface Detection: 1.3 ± 0.2 mm

APPENDIX 5: Probe calibration parameters for ET3DV6, SN: 1572

Diode compression

Parameter	Value in mV
DCP X	95
DCP Y	95
DCP Z	95

Sensitivity in free space:

Parameter	Value in $\mu V/(V/m)^2$
Norm X	2.02
Norm Y	1.90
Norm Z	2.10

Sensitivity in tissue simulating liquid

Head 900 MHz; ε_r=41.5 ± 5%, σ=0.97± 5% S/m.

Parameter	Value
ConvF X	6.64
ConvF Y	6.64
ConvF Z	6.64

Head 1800 MHz / 1900MHz; ε_r=40 ± 5%, σ=1.40± 5% S/m.

Parameter	Value
ConvF X	5.35
ConvF Y	5.35
ConvF Z	5.35

Muscle 900 MHz; ε_r=55.0 ± 5%, σ=1.05± 5% S/m.

Parameter	Value
ConvF X	6.32
ConvF Y	6.32
ConvF Z	6.32

Probe tip to sensor center: 2.7 mm

Optical Surface Detection: In tolerance