

**Rapport utfärdad av ackrediterat provningslaboratorium**
*Test report issued by an Accredited Testing Laboratory***SAR Test Report, FCC ID: PY7A3880029**



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Testing laboratory:	Ericsson EMF Research Laboratory Ericsson AB SE-164 80 Stockholm Sweden	Company/Client:	Sun Yuyong Sony Ericsson Mobile Communications (China) Inc. Beijing, China
Test performed by:	Lovisa Nord Daniel Göker	Date of tests:	March 4 –19, 2009
Manufacturer and market name(s) of device:	Sony Ericsson Mobile Communications (China) Inc, T707		
Testing has been performed in accordance with:	IEEE Std 1528, IEC 62209-1, FCC OET Bulletin 65 Supplement C		
Test results:	The tested device complies with the requirements in respect of all parameters subject to the test.		
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1 Summary of SAR Test Report¹

1.1 Equipment under test (EUT)

Serial Number	BX900H9GNR
Type Number	AAD-3880029-BV
Device ID	FCC ID: PY7A3880029 IC: 4170B- A3880029
Accessories used in testing	Handsfree HPM-62, Battery BST-39
Hardware status	AP1
Notes	-

Frequency Band [MHz]	850		900	1800	1900		2100	2450
Modes	GSM GPRS EDGE	WCDMA HSDPA	GSM GPRS EDGE	GSM GPRS EDGE	GSM GPRS EDGE	WCDMA HSDPA	WCDMA HSDPA	WLAN
Supported	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Covered by report	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data and connectivity	<i>GPRS class 10, GPRS capability class B, EDGE class 10, Bluetooth class 1</i>							
Exposure environment	<i>General public</i>							

¹ This page and the next contain a summary of the test results. The full report provides a complete description of all test details and results

1.2 Results

The maximum SAR values are given in the table below. The device conforms to the requirements of the relevant standards when the maximum SAR value is less than or equal to the limit.

1.2.1 Results applicable to the 1g SAR limit

	Mode	Channel/ Frequency (MHz)	Position	Max SAR _{1g}	SAR _{1g} limit ²	Result
HEAD	GSM 850	190/836.6	Right, Cheek	0.86 W/kg	1.6 W/kg	PASSED
BODY	GSM 850	128/824.2	Back, 15 mm	0.60 W/kg	1.6 W/kg	PASSED
BODY	GPRS 850	128/824.2	Back, 15 mm	0.61 W/kg	1.6 W/kg	PASSED
BODY	EDGE 850	128/824.2	Back, 15 mm	0.40 W/kg	1.6 W/kg	PASSED
HEAD	GSM 1900	512/1850.2	Left, Cheek	0.73 W/kg	1.6 W/kg	PASSED
BODY	GSM 1900	810/1909.8	Back, 15 mm	0.48 W/kg	1.6 W/kg	PASSED
BODY	GPRS 1900	810/1909.8	Back, 15 mm	0.43 W/kg	1.6 W/kg	PASSED
BODY	EDGE 1900	810/1909.8	Back, 15 mm	0.37 W/kg	1.6 W/kg	PASSED
Extended Uncertainty (k=2) 95%				± 21.9 %		

² SAR limit applicable in USA and Canada

2 General information

The tests reported in this document have been performed in accordance with the SAR measurement standards IEC 62209-1 [1], IEEE Standard 1528 [2] and the FCC OET Bulletin 65 Supplement C [3]. The purpose of the tests was to verify that the EUT is in compliance with the appropriate RF exposure standards, recommendations and limits [3-4].

3 Equipment under test

The tables below summarize the technical data for the equipment under test. Photographs of the device are presented in Appendix A.

Device model	Type No: AAD-A3880029-BV FCC ID: PY7A3880029 IC: 4170B- A3880029
Serial number of tested unit(s)	BX900H9GNR
Mode(s) covered by this report	GSM/GPRS/EDGE 850, 1900
Antenna(s)	Internal
Maximum output power level³ (dBm)	GSM/GPRS/EDGE: See table below Bluetooth: 4.5
GPRS/EDGE Class, GPRS capability class	10, B
Duty cycle(s)	1:8 (GSM), 1:4 (GPRS/EDGE)
Transmitter frequency range (MHz)	GSM850: 824.2 – 848.8 GSM1900: 1850.2 – 1909.8 Bluetooth: 2402.0 – 2480.0
Hardware status	AP1
Software(s)	NA
Tested accessories	Stereo handsfree HPM-62
Tested batteries	BST-39

Mode	Maximum power level (dBm)	EUT power (dBm)		
		Low Channel	Middle Channel	High Channel
GSM(1TS ⁴)850	33.0	32.9	32.9	33.0
GPRS(2TS)850	30.0	30.0	30.0	30.0
EDGE(2TS)850	28.0	27.9	27.8	27.8
GSM(1TS)1900	31.0	30.9	30.9	30.7
GPRS(2TS)1900	28.0	27.9	27.9	27.9
EDGE(2TS)1900	27.0	27.0	26.8	26.8

³ Output power level of the phone at the antenna port for the maximum power setting. This equals the nominal output power level plus the tolerance in production.

⁴ TS=Time slot

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. An uncertainty budget including total uncertainty ($k=1$) and expanded uncertainty ($k=2$) for 1g and 10g SAR assessments is found in section 7. The equipment list is given below. Appendices E and F contain the calibration certificates for the SAR test probes.

Description	Serial number	Calibration due date	Calibration interval
Probe electronics, DAE3	S/N 422	2009-04-14	12 months
E-field probe, ES3DV3	S/N 3155	2009-03-17	12 months
E-field probe, ES3DV3	S/N 3113	2009-04-14	12 months
Dipole validation kit, D835V2	S/N 413	NA	NA
Dipole validation kit, D1900V2	S/N 510	NA	NA
SAM Phantom (SAM1)	S/N TP-1390	NA	NA
SAM Phantom (SAM2)	S/N TP-1004	NA	NA

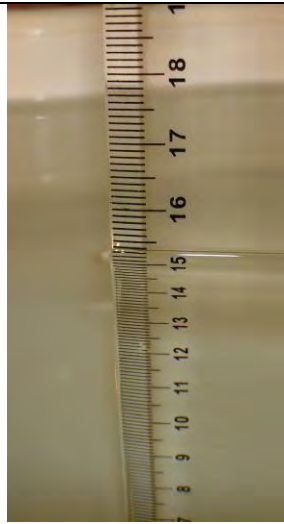

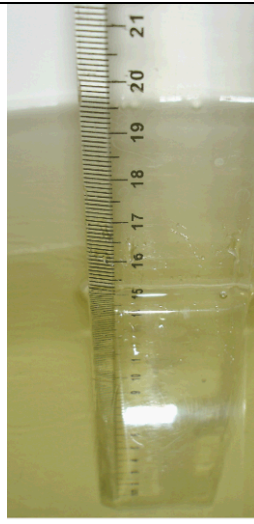
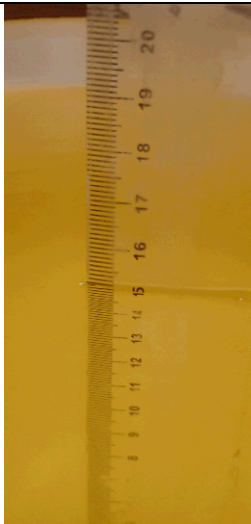
4.2 Additional equipment

Description	Serial number	Calibration due date	Calibration interval
Dielectric probe kit, HP 85070C	S/N US99360060	NA	NA
Network analyzer, Agilent E5071C	S/N MY46104892	2009-07-02	12 months
Power meter, R&S NRVS	S/N 848888/052	2009-05-28	24 months
Power sensor, R&S NRV-Z5	S/N 849895/030	2009-05-28	24 months
Universal radio communication tester, R&S CMU 200	S/N 107639	2009-05-27	12 months
Thermometer, EBRO TFX-392SKWT	S/N 10130918	2009-10-20	12 months

5 Electrical parameters of the tissue simulating liquids

The parameters of the tissue simulating liquids were measured using the network analyzer and the dielectric probe kit prior to the SAR measurements. The results are shown in the table below. Specified standard values for the permittivity and the conductivity are given in [1-3]. The measured values are within 5% of the standard values. The mass density of the liquid entered into the DASY4 program was 1000 kg/m³. The depth of the tissue simulating liquid was 15.0 to 15.5 cm as shown in the figures below.

f (MHz)	Liquid type	Measured/Specification	ϵ_r	σ (S/m)
850	Head	Measured	42.7 to 43.4 ⁵	0.91 to 0.92 ⁵
		Specified value	41.5	0.90
		Difference (%)	+2.9 to +4.6	+1.1 to +2.2
	Body (muscle)	Measured	54.3 to 54.6 ⁵	0.96 to 0.97 ⁵
		Specified value	55.2	0.97
		Difference (%)	-1.1 to -1.6	+1.0 to 0
1900	Head	Measured	38.4	1.34
		Specified value	40.0	1.40
		Difference (%)	-4.0	-4.3
	Body (muscle)	Measured	51.2	1.58
		Specified value	53.3	1.52
		Difference (%)	-3.9	+3.9

			
Measured level (153 mm, head section) of 1900 MHz head tissue simulating liquid in phantom.	Measured level (152 mm, flat section) of 1900 MHz muscle tissue simulating liquid in phantom	Measured level (153 mm, flat section) of 850 MHz muscle tissue simulating liquid in phantom	Measured level (150 mm, head section) of 850 MHz head tissue simulating liquid in phantom

⁵ Measurements were conducted over more than one day and the parameters were in the stated range.

6 SAR system performance check

System performance checks for the DASY4 were conducted before the SAR measurements with the D835V2 and D1900V2 dipole kits and the obtained results are displayed in the table below. The results are within 10% of the reference values [2][5]. Evaluations prior to the SAR testing showed that the maximum SAR system noise was below 2 mW/kg, which is below the standard requirements. The temperature of the test facility during the system performance checks was in the range 20°C to 25°C.

f (MHz)	Liquid type	Measured/ Reference	SAR 1g (W/kg)	SAR 10g (W/kg)	ϵ_r	σ (S/m)	Liquid temp (°C)	Date
835	Head	Measured	10.2	6.6	43.4	0.92	21.6	2009-03-05
		Reference [2]	9.5	6.2	41.5	0.90	-	-
		Difference (%)	+7.4	+6.5	+4.6	+2.2	-	-
		Measured	10.0	6.5	42.7	0.91	22.5	2009-03-17
		Reference [2]	9.5	6.2	41.5	0.90	-	-
		Difference (%)	+5.3	+4.8	+2.9	+1.1	-	-
	Body (muscle)	Measured	10.6	7.0	54.3	0.96	21.4	2009-03-05
		Reference [5]	9.8	6.4	55.2	0.97	-	-
		Difference (%)	+8.2	+9.4	-1.6	-1.0	-	-
		Measured	10.6	7.0	54.6	0.97	22.2	2009-03-09
		Reference [5]	9.8	6.4	55.2	0.97	-	-
		Difference (%)	+8.2	+9.4	-1.1	0	-	-
1900	Head	Measured	35.8	18.7	38.4	1.34	23.0	2009-03-10
		Reference [2]	39.7	20.5	40.0	1.40	-	-
		Difference (%)	-9.8	-8.8	-4.0	-4.3	-	-
	Body (muscle)	Measured	44.1	22.8	51.2	1.58	23.5	2009-03-10
		Reference [5]	40.4	21.1	53.3	1.52	-	-
		Difference (%)	+9.2	+8.1	-3.9	+3.9	-	-

7 Uncertainty evaluation of SAR measurement system DASY4 according to IEC 62209-1 [1] and IEEE 1528 [2]

Uncertainty Component	Section in IEEE 1528	Uncer. (%)	Prob Dist.	Div.	C _{i,1g}	C _{i,10g}	Std. Uncer. (1g) (%)	Std. Uncer. (10g) (%)
Measurement System								
Probe Calibration	E2.1	±5.9	N	1	1	1	±5.9	±5.9
Axial Isotropy	E2.2	±4.7	R	√3	0.7	0.7	±1.9	±1.9
Spherical Isotropy	E2.2	±9.6	R	√3	0.7	0.7	±3.9	±3.9
Boundary Effect	E2.3	±1.0	R	√3	1	1	±0.6	±0.6
Linearity	E2.4	±4.7	R	√3	1	1	±2.7	±2.7
System Detection Limits	E2.5	±1.0	R	√3	1	1	±0.6	±0.6
Readout electronics	E2.6	±0.3	N	1	1	1	±0.3	±0.3
Response time	E2.7	±0.8	R	√3	1	1	±0.5	±0.5
Integration time	E2.8	±2.6	R	√3	1	1	±1.5	±1.5
RF Ambient Noise	E6.1	±3.0	R	√3	1	1	±1.7	±1.7
RF Ambient Reflections	E6.1	±3.0	R	√3	1	1	±1.7	±1.7
Probe Positioner	E6.2	±0.4	R	√3	1	1	±0.2	±0.2
Probe Positioning	E6.3	±2.9	R	√3	1	1	±1.7	±1.7
Max. SAR Evaluation	E5	±1.0	R	√3	1	1	±0.6	±0.6
<i>Measurement System Uncertainty</i>							±8.6	±8.6
Test Sample Related								
Device positioning	E4.2	±2.9	N	1	1	1	±2.9	±2.9
Device holder uncertainty	E4.1	±3.6	N	1	1	1	±3.6	±3.6
Power drift	6.6.3	±5.0	R	√3	1	1	±2.9	±2.9
<i>Test Sample Related Uncertainty</i>							±5.5	±5.5
Phantom and Tissue Parameters								
Phantom uncertainty	E3.1	±4.0	R	√3	1	1	±2.3	±2.3
Liquid conductivity (meas uncertainty)	E3.3	±2.5	N	1	0.64	0.43	±1.6	±1.1
Liquid conductivity (target)	E3.2	±5.0	R	√3	0.64	0.43	±1.8	±1.2
Liquid Permittivity (meas uncertainty)	E3.3	±2.5	N	1	0.6	0.49	±1.5	±1.2
Liquid Permittivity (target)	E3.2	±5.0	R	√3	0.6	0.49	±1.7	±1.4
<i>Phantom and Tissue Parameters Uncertainty</i>							±4.9	±3.4
Combined standard uncertainty							±10.9	±10.7
Extended standard uncertainty (k=2)							±21.9	±21.4

Uncertainty budget is applicable for both head and body measurements

8 Test results

The tables in this section show the measured 1g and 10g averaged SAR for the device and the corresponding values normalized to the maximum output power level. A universal radio communication 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 25°C. During the tests, the temperature of the tissue simulating liquid was within $\pm 2^\circ\text{C}$ from the liquid temperature at system performance check.

The EUT was tested on the right-hand side phantom (corresponding to the right side of the head) and the left-hand side phantom for the cheek and tilt phone positions at the middle channel of each transmit band. For the phone position giving the highest SAR result, the EUT was then tested at the lowest and the highest channels of each transmit band. In Appendix B, pictures of the EUT positioned at the head phantom are shown.

For the head test positions the SAR maxima were often found in the jaw region where in one case all required measurement points could not be reached. For the GSM850 mode some points in the zoom scans for the left side cheek position could therefore not be measured. However, a close inspection of the SAR distribution (Appendix D, Figure a) clearly shows that the two maxima were within the measurement area. The 1g averaged SAR cube is placed near the main maximum location, which implies that the SAR value found is accurate. This value was also significantly lower than the right side cheek value which constituted the maximum SAR for this mode. Furthermore, the peak local SAR value found for the left side cheek was less than the 1g averaged SAR for the right side cheek, which excludes the possibility that a differently positioned 1g cube on the left side cheek could have given the maximum SAR value for the mode. The flat phantom measurement procedure proposed in [6], for cases where measurements are required in tight regions of the SAM phantom, was tested for the EUT with unsatisfactory results. The SAR maxima were located on the edge of the flat phantom and a 1g averaged SAR value could thus not be obtained with this procedure.

The EUT was also tested in body worn positions with the front and back side facing the phantom at the middle channel of each transmit band. For the phone position giving the highest SAR result, the EUT was then tested at the lowest and the highest channels of each transmit band. All tests in body worn positions were performed at 15 mm separation between the device and the flat phantom, with the stereo handsfree attached for speech and data modes. One measurement was made without the handsfree attached, for the maximum SAR configuration found at each band. Finally, a measurement for the EDGE mode was made for the maximum SAR configuration found at each band. In Appendix B, a picture of the EUT when positioned under the flat section of the phantom is shown.

Testing of Bluetooth was not conducted since the Bluetooth output power was less than 12 mW and all 1g SAR values were found to be less than 1.2 W/kg [6].

8.1 Results for the GSM850 mode (head)

Configuration	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}
Open	Left	Cheek	836.6	32.9	0.54 ⁶	0.40 ⁶	0.55 ⁶	0.41 ⁶
		Tilt	836.6	32.9	0.38	0.29	0.39	0.30
	Right	Cheek	824.2	32.9	0.75	0.47	0.77	0.48
			836.6	32.9	0.85	0.52	0.86	0.53
			848.8	33.0	0.73	0.46	0.73	0.46
		Tilt	836.6	32.9	0.38	0.28	0.39	0.29

Appendix D, Figures a-d, shows SAR distributions for Left Cheek, Right Cheek, Left Tilt, and Right Tilt positions, including the configuration giving the maximum SAR for GSM850 head measurements.

8.2 Results for the GSM850 mode (body)

Separation	Configuration	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}
15mm between EUT and flat phantom	Closed, Stereo handsfree HPM-62	Front	836.6	32.9	0.30	0.21	0.30	0.22
		Back	824.2	32.9	0.59	0.41	0.60	0.42
			836.6	32.9	0.50	0.35	0.52	0.36
			848.8	33.0	0.44	0.30	0.44	0.30
	Closed, No handsfree	Back	824.2	32.9	0.57	0.40	0.57	0.40

Appendix D, Figure e, shows the SAR distribution for the configuration giving the maximum SAR for GSM850 body measurements.

⁶ For this configuration all points in the zoom scan could not be reached by the probe. See the discussion in section 8 above.

8.3 Results for the GPRS(2TS)850 mode (body)

Separation	Configuration	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}
15mm between EUT and flat phantom	Closed, Stereo handsfree HPM-62	Front	836.6	30.0	-	-	-	-
		Back	824.2	30.0	0.61	0.42	0.61	0.42
			836.6	30.0	0.49	0.34	0.49	0.34
			848.8	30.0	0.40	0.28	0.40	0.28
	Closed, No handsfree	Back	824.2	30.0	0.61	0.43	0.61	0.43

Appendix D, Figure f, shows the SAR distribution for the configuration giving the maximum SAR for GPRS(2TS)850 body measurements.

8.4 Results for the EDGE(2TS)850 mode (body)

Separation	Configuration	Phone position	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 28.0 dBm (W/kg)	
					SAR _{1g}	SAR _{10g}	SAR _{1g}	SAR _{10g}
15mm between EUT and flat phantom	Closed, No handsfree	Back	824.2	27.9	0.39	0.27	0.40	0.28

Appendix D, Figure g, shows the SAR distribution for the EDGE(2TS)850 body measurement.

8.5 Results for the GSM1900 mode (head)

Configuration	Phone position		f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 31.0 dBm (W/kg)		
					SAR _{1g}	SAR _{10g}	SAR _{1g}	SAR _{10g}	
Open	Left	Cheek	1850.2	30.9	0.71	0.43	0.73	0.44	
			1880.0	30.9	0.70	0.42	0.72	0.43	
			1909.8	30.7	0.58	0.34	0.62	0.37	
	Right	Cheek	1880.0	30.9	0.09	0.06	0.09	0.06	
			Tilt	1880.0	30.9	0.51	0.32	0.52	0.33
				1880.0	30.9	0.09	0.06	0.10	0.06

Appendix D, Figures h-k, show SAR distributions for Left Cheek, Right Cheek, Left Tilt and Right Tilt positions, including the configuration giving the maximum SAR for GSM1900 head measurements.

8.6 Results for the GSM1900 mode (body)

Separation	Configuration	Phone position	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 31.0 dBm (W/kg)	
					SAR _{1g}	SAR _{10g}	SAR _{1g}	SAR _{10g}
15mm between EUT and flat phantom	Closed, Stereo handsfree HPM-62	Front	1880.0	30.9	0.12	0.07	0.12	0.08
		Back	1850.2	30.9	0.37	0.23	0.37	0.23
			1880.0	30.9	0.40	0.24	0.41	0.25
			1909.8	30.7	0.45	0.27	0.48	0.29
	Closed, No handsfree	Back	1909.8	30.7	0.45	0.27	0.48	0.29

Appendix D, Figure l, shows the SAR distributions for the configuration giving the maximum SAR for GSM1900 body measurements.

8.7 Results for the GPRS(2TS)1900 mode (body)

Separation	Configuration	Phone position	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 28.0 dBm (W/kg)	
					SAR _{1g}	SAR _{10g}	SAR _{1g}	SAR _{10g}
15mm between EUT and flat phantom	Closed, Stereo handsfree HPM-62	Front	1880.0	27.9	-	-	-	-
		Back	1850.2	27.9	0.33	0.20	0.34	0.21
			1880.0	27.9	0.36	0.22	0.37	0.22
			1909.8	27.9	0.42	0.25	0.43	0.26
	Closed, No handsfree	Back	1909.8	27.9	0.42	0.25	0.43	0.26

Appendix D, Figure m, shows the SAR distributions for the configuration giving the maximum SAR for GPRS(2TS)1900 body measurements.

8.8 Results for the EDGE(2TS)1900 mode (body)

Separation	Configuration	Phone position	f (MHz)	Measured output power (dBm)	Measured (W/kg)		Normalized to max power, 27.0 dBm (W/kg)	
					SAR _{1g}	SAR _{10g}	SAR _{1g}	SAR _{10g}
15mm between EUT and flat phantom	Closed, No handsfree	Back	1909.8	26.8	0.35	0.21	0.37	0.22

Appendix D, Figure n, shows the SAR distribution for the EDGE(2TS)1900 body measurement.

9 Conclusion

The results above show that the maximum SAR for the EUT is below the applicable SAR limits. Consequently, the EUT is in compliance with the appropriate RF exposure standards and recommendations.

10 References

- [1] IEC 62209-1, International Standard, "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Humans models, instrumentation, and procedures – Part 1: Procedure to determine the Specific Absorption Rate (SAR) for hand-held mobile devices used in close proximity of the ear (frequency range of 300 MHz to 3 GHz)", IEC, February 2005.
- [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] 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.
- [4] ANSI/IEEE Std C95.1-2005 (Revision of IEEE Std C95.1-1991), "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, 2006.
- [5] EAB/TF-03:090, "Calculation of reference SAR values for system performance checks with muscle tissue simulating liquid", Ericsson technical report, December 2006.
- [6] FCC KDB648474 D01, "SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas", May 2008.

11 Revision History

Rev.	Date	Description
A	2009-03-27	First revision
B	2009-04-23	Lists of probe calibration parameters replaced by probe calibration certificates (Appendices E and F)

APPENDIX A: Photographs of the EUT



(a) Right, Front, Left and Back view of the EUT in the closed position.



(b) The EUT in the open position.



(c) Battery BST-39

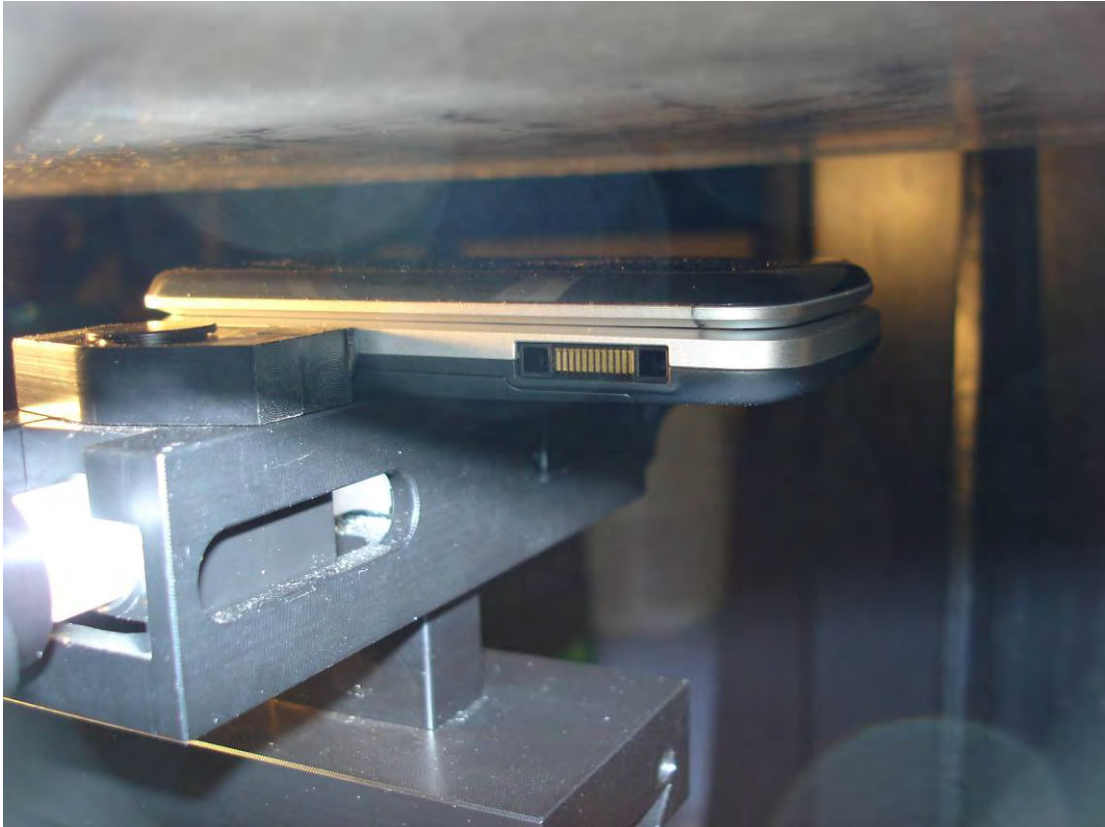
APPENDIX B: Photographs of the EUT when positioned for SAR measurements



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



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



(c) Device on flat section of the phantom. The separation was 15 mm between the device and the flat phantom.

APPENDIX C: SAR distribution plots for the system performance checks**System performance check at 835 MHz (Head) conducted March 5th**

Date/Time: 2009-03-05 08:58:30

-Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
-Medium: Head 835 MHz; $\sigma = 0.916$ mho/m; $\epsilon_r = 43.4$; $\rho = 1000$ kg/m³

DASY4 Configuration:

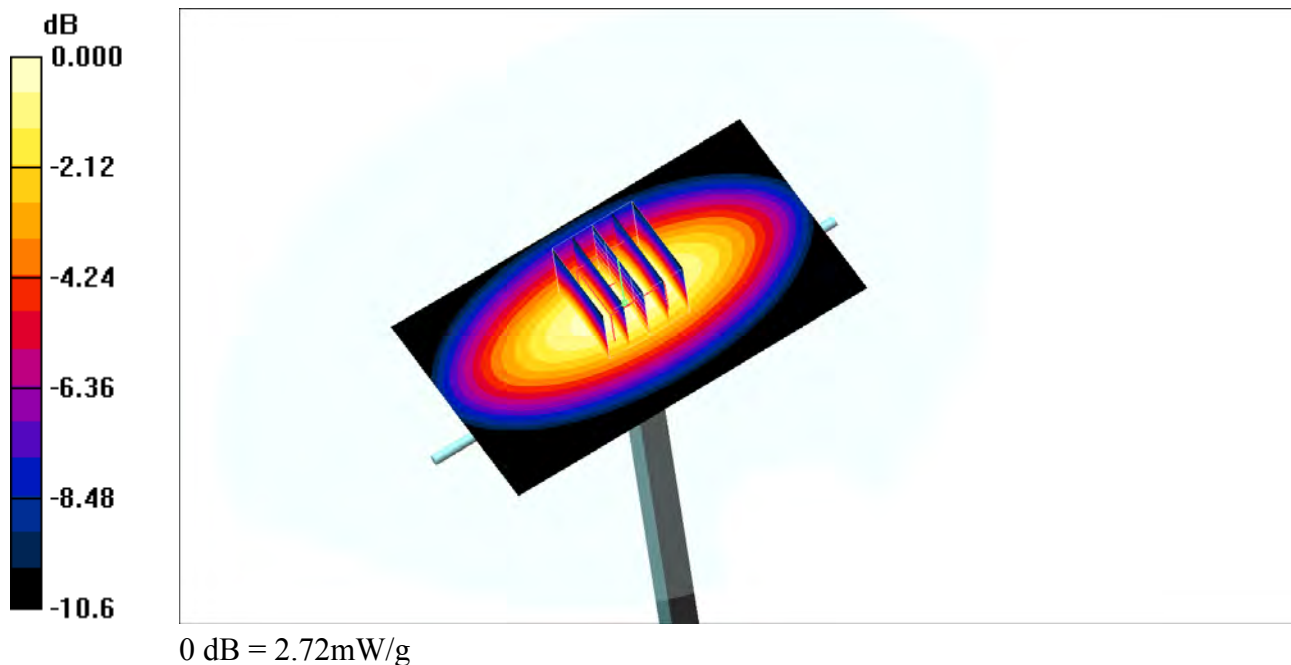
-Probe: ES3DV3 - SN3155; ConvF(6.01, 6.01, 6.01)
-Electronics: DAE3 Sn422
-Phantom: SAM 1; Serial: TP1390
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

d=15mm, Pin=247.0 mW/Area Scan (81x141x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.71 mW/g

d=15mm, Pin=247.0 mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.9 V/m; Power Drift = -0.043 dB
Peak SAR (extrapolated) = 3.72 W/kg
SAR(1 g) = 2.51 mW/g; SAR(10 g) = 1.64 mW/g
Maximum value of SAR (measured) = 2.72 mW/g



System performance check at 835 MHz (Head) conducted March 17th

Date/Time: 2009-03-17 11:07:31

-Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
-Medium: Head 835 MHz; $\sigma = 0.912$ mho/m; $\epsilon_r = 42.7$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3113; ConvF(6.01, 6.01, 6.01)

-Electronics: DAE3 Sn422

-Phantom: SAM 1; Serial: TP1390

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

d=15mm, Pin= 250.7 mW/Area Scan (81x141x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 2.72 mW/g

d=15mm, Pin= 250.7 mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

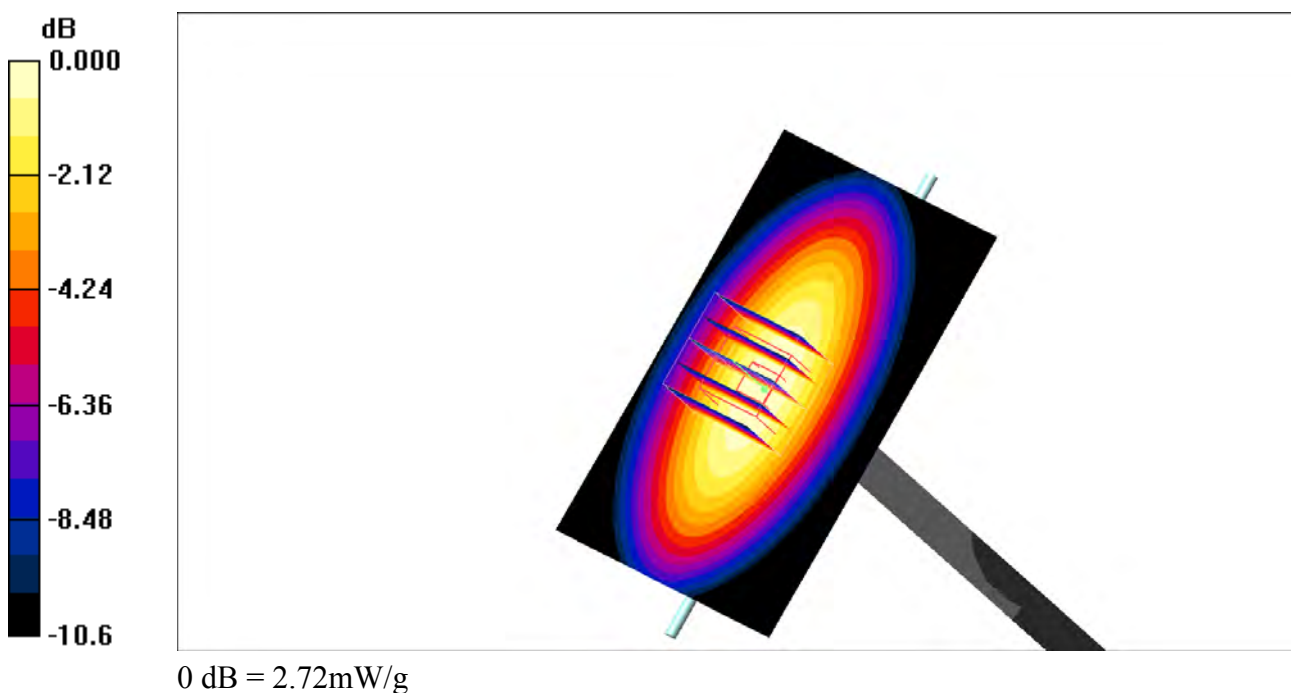
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.6 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 3.71 W/kg

SAR(1 g) = 2.51 mW/g; SAR(10 g) = 1.64 mW/g

Maximum value of SAR (measured) = 2.72 mW/g



System performance check at 835 MHz (Body) conducted March 5th

Date/Time: 2009-03-05 17:15:20

-Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
-Medium: Body 835 MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(5.64, 5.64, 5.64)

-Electronics: DAE3 Sn422

-Phantom: SAM 2; Serial: TP1004

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

d=15mm, Pin= 249 mW/Area Scan (81x141x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 2.87 mW/g

d=15mm, Pin= 249 mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

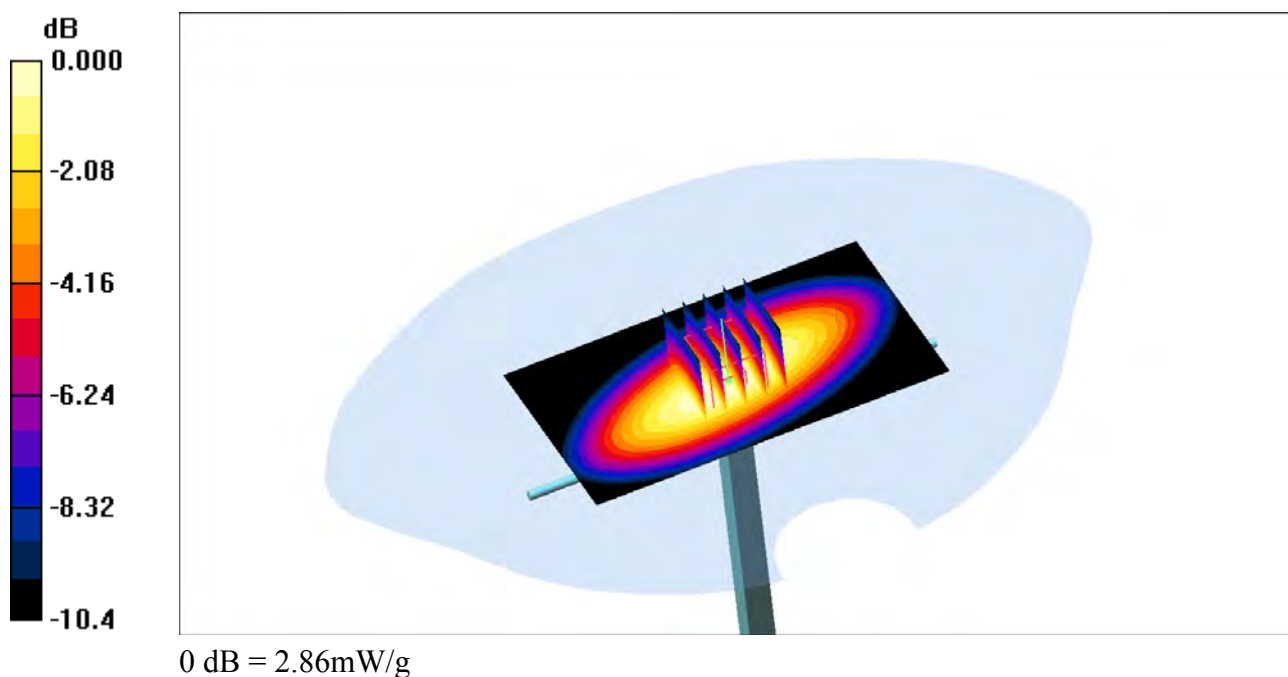
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.8 V/m; Power Drift = -0.095 dB

Peak SAR (extrapolated) = 3.87 W/kg

SAR(1 g) = 2.65 mW/g; SAR(10 g) = 1.75 mW/g

Maximum value of SAR (measured) = 2.86 mW/g



System performance check at 835 MHz (Body) conducted March 9th

Date/Time: 2009-03-09 12:46:09

-Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
-Medium: Body 835 MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 54.6$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(5.64, 5.64, 5.64)

-Electronics: DAE3 Sn422

-Phantom: SAM 2; Serial: TP1004

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

d=15mm, Pin= 248 mW/Area Scan (81x141x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 2.83 mW/g

d=15mm, Pin= 248 mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

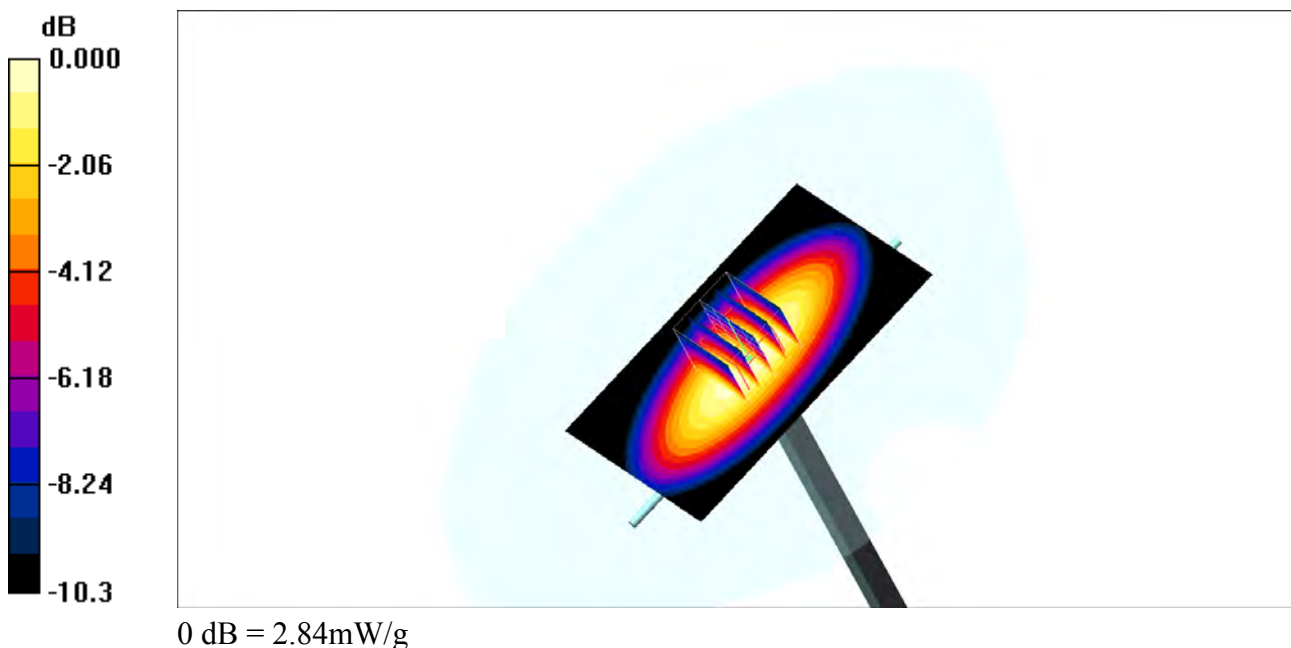
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 54.5 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 3.83 W/kg

SAR(1 g) = 2.62 mW/g; SAR(10 g) = 1.73 mW/g

Maximum value of SAR (measured) = 2.84 mW/g



System performance check at 1900 MHz (Head) conducted March 10th

Date/Time: 2009-03-10 17:00:53

-Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
-Medium: Head 1900 MHz; $\sigma = 1.34$ mho/m; $\epsilon_r = 38.4$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(5.1, 5.1, 5.1)

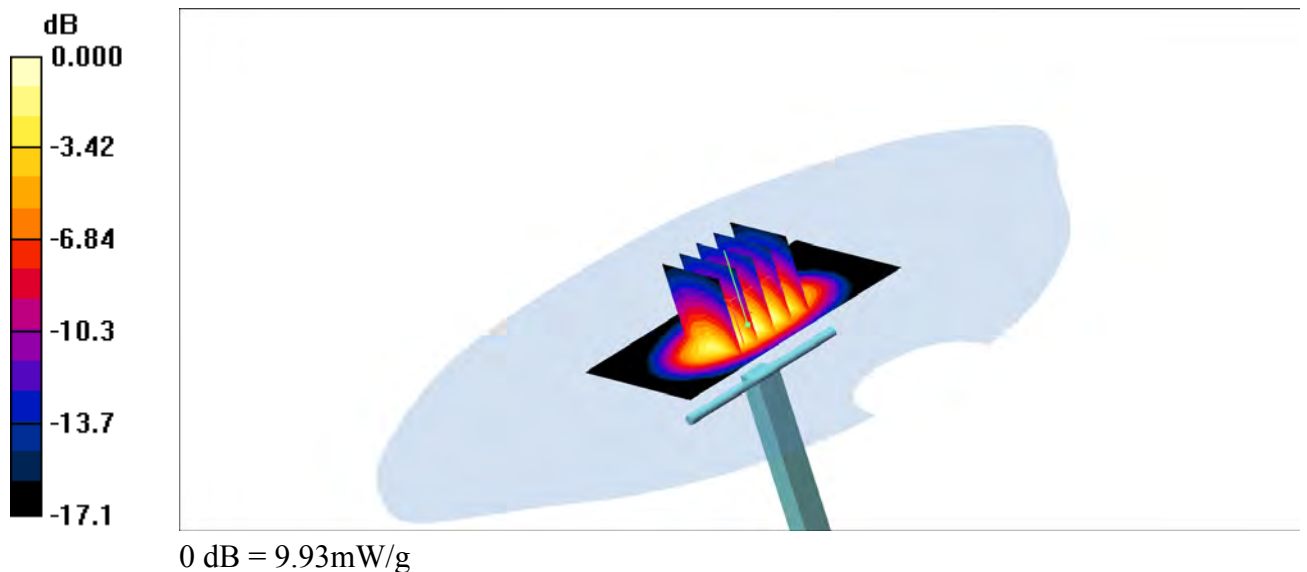
-Electronics: DAE3 Sn422

-Phantom: SAM 2; Serial: TP1004

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

d=10mm, Pin= 248 mW/Area Scan (61x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 10.0 mW/g

d=10mm, Pin= 248 mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid:
dx=8mm, dy=8mm, dz=5mm
Reference Value = 81.6 V/m; Power Drift = -0.072 dB
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 8.85 mW/g; SAR(10 g) = 4.64 mW/g
Maximum value of SAR (measured) = 9.93 mW/g



System performance check at 1900 MHz (Body) conducted March 10th

Date/Time: 2009-03-10 09:28:49

-Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
-Medium: Body 1900 MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 51.2$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(5.05, 5.05, 5.05)

-Electronics: DAE3 Sn422

-Phantom: SAM 2; Serial: TP1004

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

d=10mm, Pin= 249 mW/Area Scan (61x101x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 12.5 mW/g

d=10mm, Pin= 249 mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

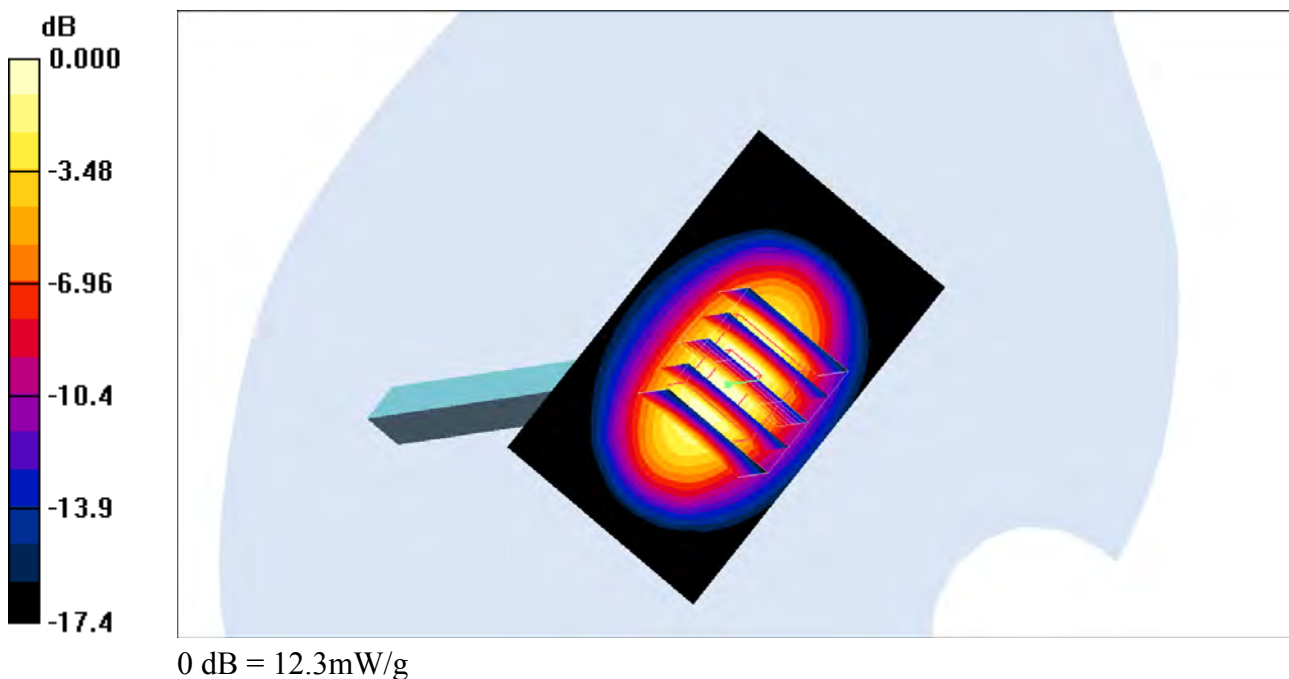
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 86.3 V/m; Power Drift = 0.017 dB

Peak SAR (extrapolated) = 20.3 W/kg

SAR(1 g) = 11 mW/g; SAR(10 g) = 5.68 mW/g

Maximum value of SAR (measured) = 12.3 mW/g



APPENDIX D: SAR distribution plots

Date/Time: 2009-03-05 12:24:08

-Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
 -Medium: Head 835 MHz; $\sigma = 0.916$ mho/m; $\epsilon_r = 43.4$; $\rho = 1000$ kg/m³

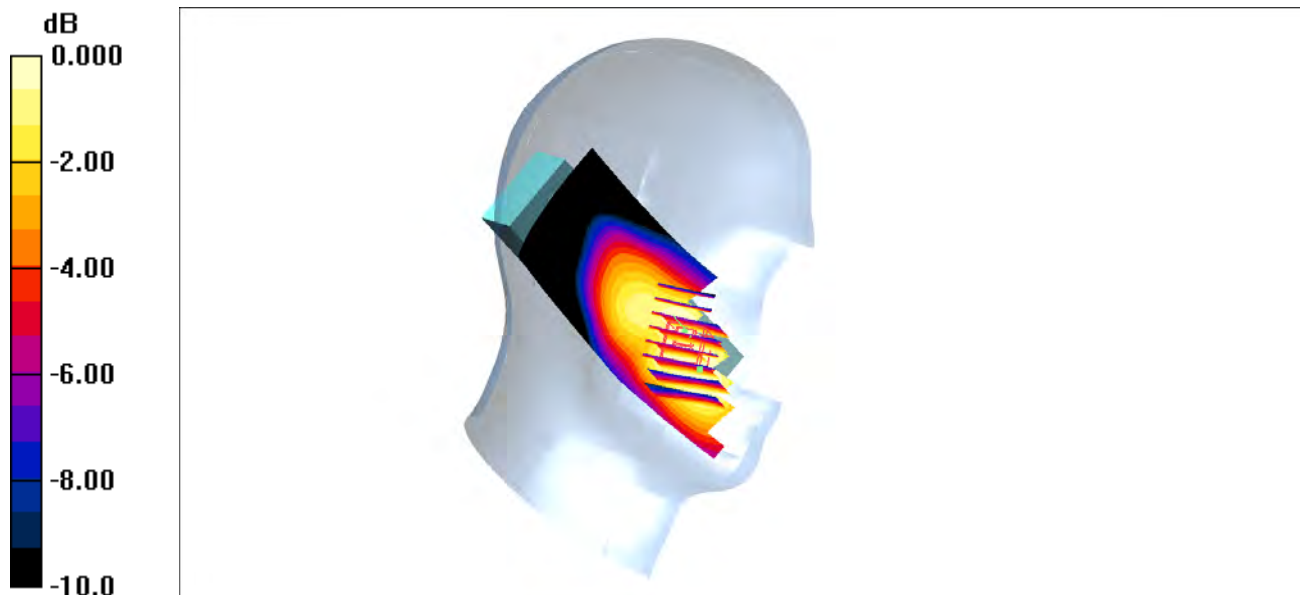
DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(6.01, 6.01, 6.01)
 -Electronics: DAE3 Sn422
 -Phantom: SAM 1; Serial: TP1390
 -Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Left Cheek Mid Ch190/Area Scan (171x81x1): Measurement grid: dx=10mm, dy=10mm
 Maximum value of SAR (interpolated) = 0.573 mW/g

Left Cheek Mid Ch190/Zoom Scan 5x5x7 (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 7.00 V/m; Power Drift = -0.080 dB
 Peak SAR (extrapolated) = 0.785 W/kg
SAR(1 g) = 0.54 mW/g; SAR(10 g) = 0.40 mW/g
 Maximum value of SAR (measured) = 0.562 mW/g

Left Cheek Mid Ch190/Zoom Scan 5x5x7 (6x6x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 7.00 V/m; Power Drift = -0.080 dB
 Peak SAR (extrapolated) = 0.700 W/kg
SAR(1 g) = 0.54 mW/g; SAR(10 g) = 0.40 mW/g
 Maximum value of SAR (measured) = 0.561 mW/g



0 dB = 0.561mW/g

(a) SAR distribution for EUT in GSM850 mode measured against the left hand side phantom for the cheek phone position.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-05 10:56:48

-Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
-Medium: Head 835 MHz; $\sigma = 0.916$ mho/m; $\epsilon_r = 43.4$; $\rho = 1000$ kg/m³

DASY4 Configuration:

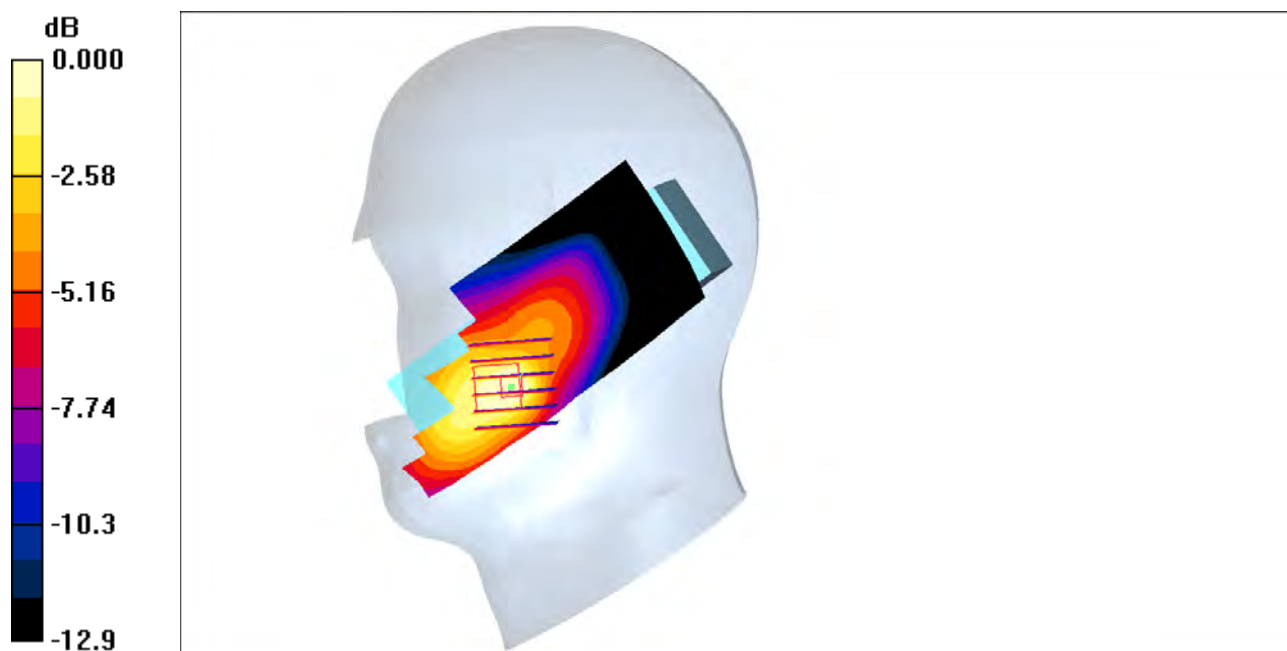
-Probe: ES3DV3 - SN3155; ConvF(6.01, 6.01, 6.01)
-Electronics: DAE3 Sn422
-Phantom: SAM 1; Serial: TP1390
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Right Cheek Mid Ch190/Area Scan (171x81x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.972 mW/g

Right Cheek Mid Ch190/Zoom Scan 5x5x7 (6x6x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.41 V/m; Power Drift = -0.133 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 0.85 mW/g; SAR(10 g) = 0.52 mW/g
Maximum value of SAR (measured) = 0.870 mW/g



0 dB = 0.870mW/g

(b) SAR distribution for EUT in GSM850 mode measured against the right hand side phantom for the cheek phone position.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-17 12:13:40

-Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
-Medium: Head 835 MHz; $\sigma = 0.912$ mho/m; $\epsilon_r = 42.7$; $\rho = 1000$ kg/m³

DASY4 Configuration:

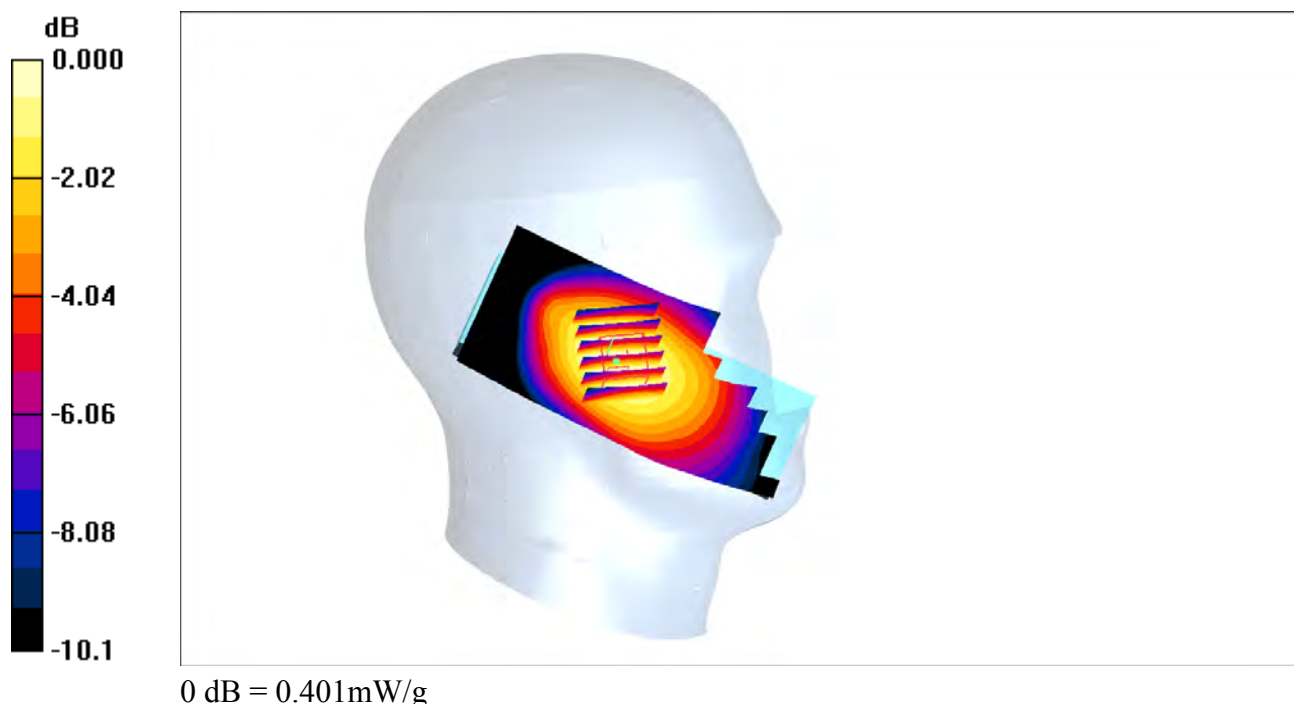
-Probe: ES3DV3 - SN3113; ConvF(6.01, 6.01, 6.01)
-Electronics: DAE3 Sn422
-Phantom: SAM 1; Serial: TP1390
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Left Tilt Mid Ch190/Area Scan (171x81x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.402 mW/g

Left Tilt Mid Ch190/Zoom Scan 5x5x7 (6x6x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.0 V/m; Power Drift = -0.270 dB
Peak SAR (extrapolated) = 0.485 W/kg
SAR(1 g) = 0.38 mW/g; SAR(10 g) = 0.29 mW/g
Maximum value of SAR (measured) = 0.401 mW/g



(c) SAR distribution for EUT in GSM850 mode measured against the left hand side phantom for the tilt phone position.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-05 11:33:53

-Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
-Medium: Head 835 MHz; $\sigma = 0.916$ mho/m; $\epsilon_r = 43.4$; $\rho = 1000$ kg/m³

DASY4 Configuration:

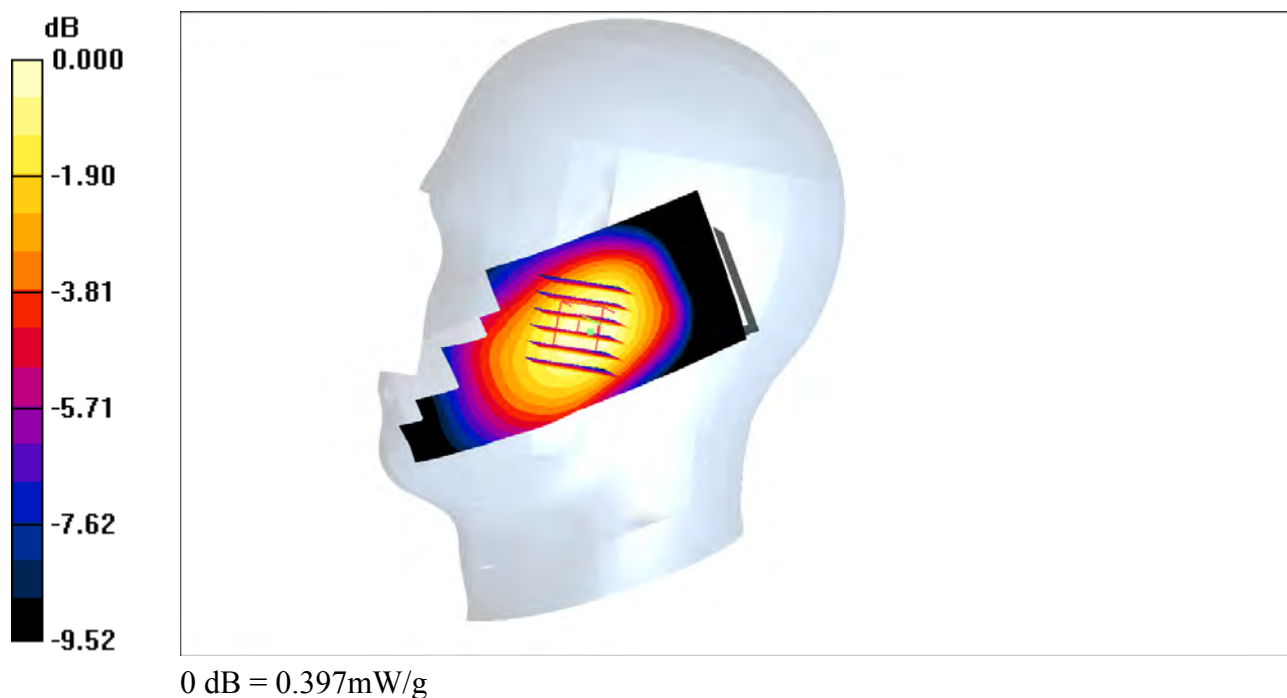
-Probe: ES3DV3 - SN3155; ConvF(6.01, 6.01, 6.01)
-Electronics: DAE3 Sn422
-Phantom: SAM 1; Serial: TP1390
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Right Tilt Mid Ch190/Area Scan (171x81x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.404 mW/g

Right Tilt Mid Ch190/Zoom Scan 5x5x7 (6x6x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.9 V/m; Power Drift = -0.075 dB
Peak SAR (extrapolated) = 0.471 W/kg
SAR(1 g) = 0.38 mW/g; SAR(10 g) = 0.28 mW/g
Maximum value of SAR (measured) = 0.397 mW/g



(d) SAR distribution for EUT in GSM850 mode measured against the right hand side phantom for the tilt phone position.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-05 18:46:00

-Communication System: GSM 850; Frequency: 824.2 MHz; Duty Cycle: 1:8.3
-Medium: Body 835 MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³

DASY4 Configuration:

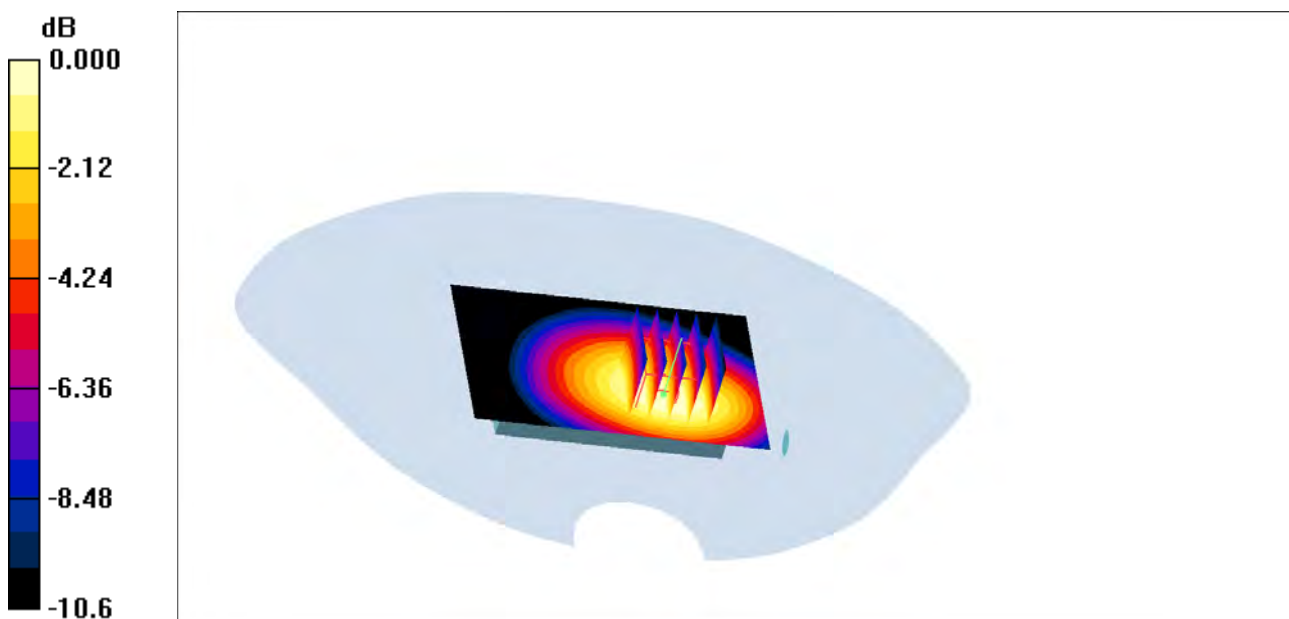
-Probe: ES3DV3 - SN3155; ConvF(5.64, 5.64, 5.64)
-Electronics: DAE3 Sn422
-Phantom: SAM 2; Serial: TP1004
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Back st HF Low Ch128/Area Scan (81x121x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.636 mW/g

Back st HF Low Ch128/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.4 V/m; Power Drift = -0.085 dB
Peak SAR (extrapolated) = 0.796 W/kg
SAR(1 g) = 0.59 mW/g; SAR(10 g) = 0.41 mW/g
Maximum value of SAR (measured) = 0.626 mW/g



0 dB = 0.626mW/g

(e) Maximum SAR distribution for EUT in GSM850 mode measured with the back of the phone facing the flat section of phantom.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-06 12:56:50

-Communication System: GPRS 850 (2ts); Frequency: 824.2 MHz; Duty Cycle: 1:4.15
-Medium: Body 835 MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 54.3$; $\rho = 1000$ kg/m³

DASY4 Configuration:

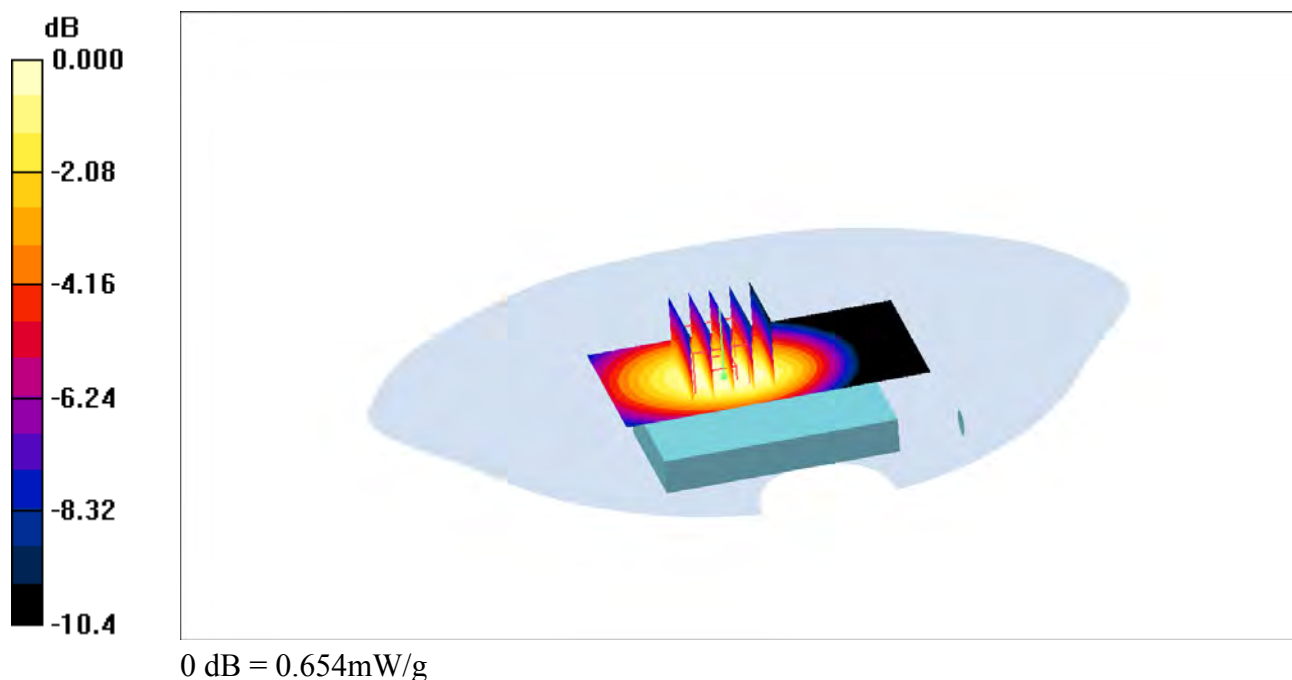
-Probe: ES3DV3 - SN3155; ConvF(5.64, 5.64, 5.64)
-Electronics: DAE3 Sn422
-Phantom: SAM 2; Serial: TP1004
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Back no HF Low Ch128/Area Scan (61x121x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.659 mW/g

Back no HF Low Ch128/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.6 V/m; Power Drift = -0.112 dB
Peak SAR (extrapolated) = 0.837 W/kg
SAR(1 g) = 0.61 mW/g; SAR(10 g) = 0.43 mW/g
Maximum value of SAR (measured) = 0.654 mW/g



(f) Maximum SAR distribution for EUT in GPRS(2TS)850 mode measured with the back of the phone facing the flat section of phantom.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-09 15:04:25

-Communication System: GPRS 850 (2ts); Frequency: 824.2 MHz; Duty Cycle: 1:4.15
-Medium: Body 835 MHz; $\sigma = 0.968$ mho/m; $\epsilon_r = 54.6$; $\rho = 1000$ kg/m³

DASY4 Configuration:

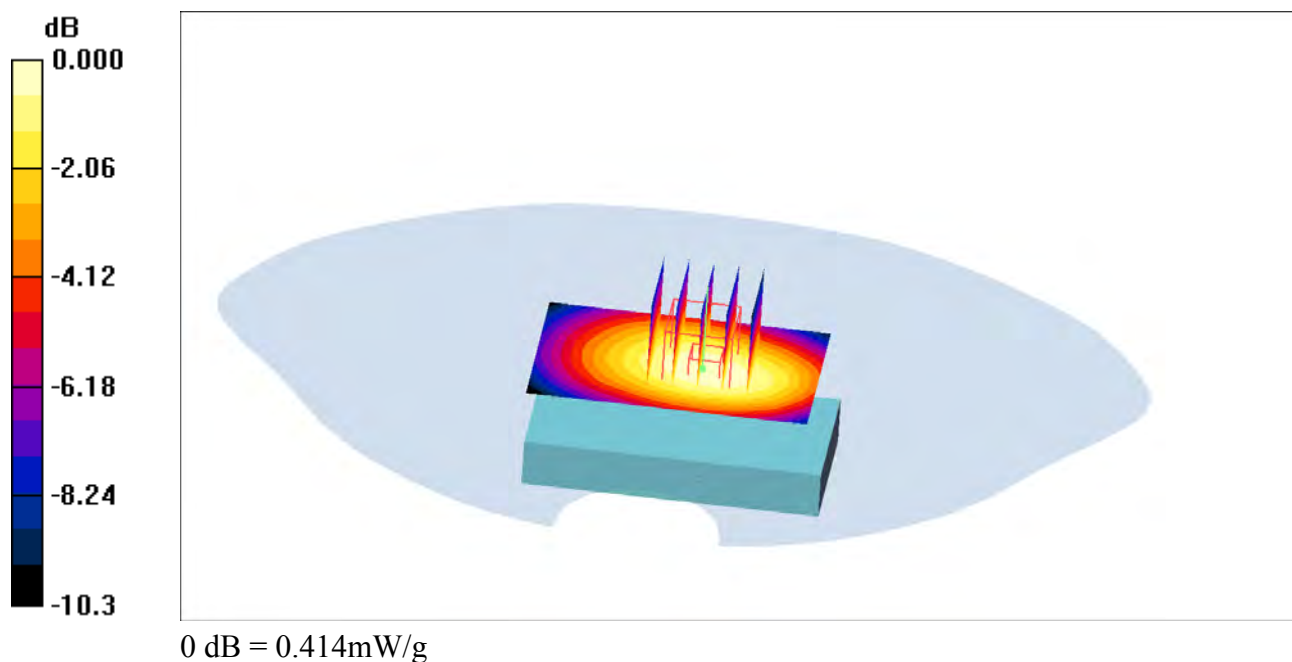
-Probe: ES3DV3 - SN3155; ConvF(5.64, 5.64, 5.64)
-Electronics: DAE3 Sn422
-Phantom: SAM 2; Serial: TP1004
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Back EDGE no HF Low Ch128/Area Scan (61x91x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.413 mW/g

Back EDGE no HF Low Ch128/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.2 V/m; Power Drift = -0.051 dB
Peak SAR (extrapolated) = 0.537 W/kg
SAR(1 g) = 0.39 mW/g; SAR(10 g) = 0.27 mW/g
Maximum value of SAR (measured) = 0.414 mW/g



(g) Maximum SAR distribution for EUT in EDGE850 mode measured with the back of the phone facing the flat section of phantom.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-11 16:25:37

-Communication System: GSM 1900; Frequency: 1850.2 MHz; Duty Cycle: 1:8.3
-Medium: Head 1900 MHz; $\sigma = 1.34$ mho/m; $\epsilon_r = 38.4$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(5.1, 5.1, 5.1)

-Electronics: DAE3 Sn422

-Phantom: SAM 2; Serial: TP1004

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Left Cheek Low Ch512/Area Scan (171x81x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.806 mW/g

Left Cheek Low Ch512/Zoom Scan 5x5x7 2 (6x6x7)/Cube 0:

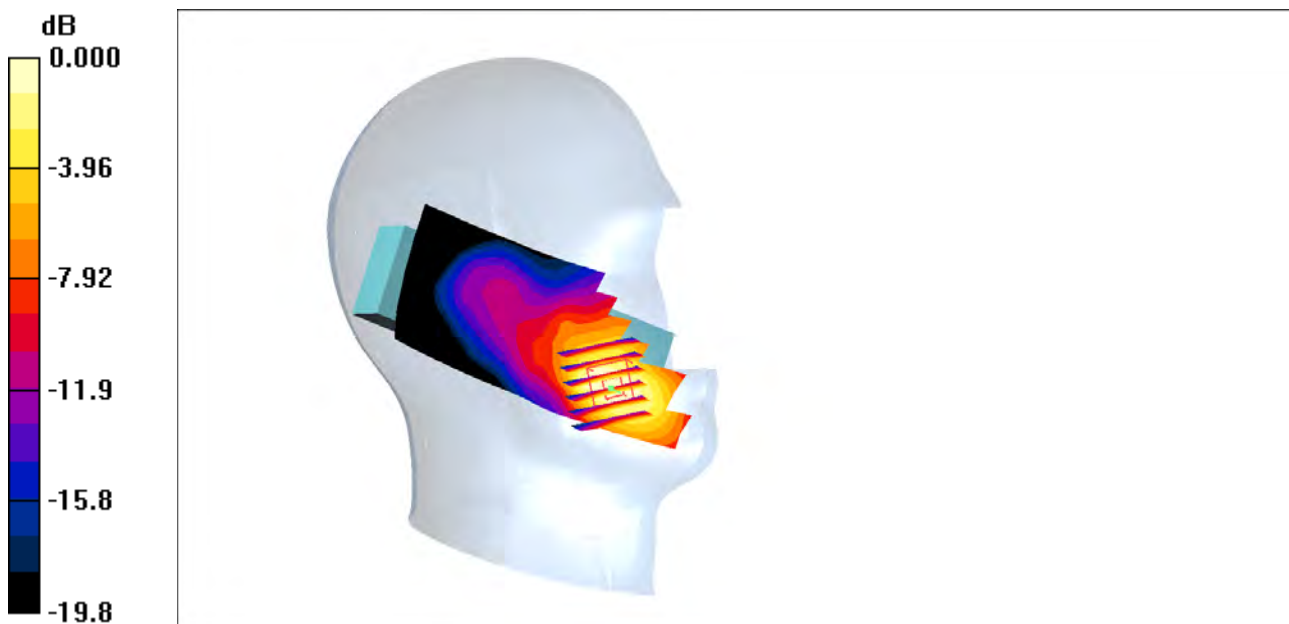
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.5 V/m; Power Drift = -0.009 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.71 mW/g; SAR(10 g) = 0.43 mW/g

Maximum value of SAR (measured) = 0.769 mW/g



0 dB = 0.769mW/g

(h) SAR distribution for EUT in GSM1900 mode measured against the left hand side phantom for the cheek phone position.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-10 17:36:06

-Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
-Medium: Head 1900 MHz; $\sigma = 1.34$ mho/m; $\epsilon_r = 38.4$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(5.1, 5.1, 5.1)

-Electronics: DAE3 Sn422

-Phantom: SAM 2; Serial: TP1004

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Right Cheek Mid Ch661/Area Scan (131x81x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.559 mW/g

Right Cheek Mid Ch661/Zoom Scan 5x5x7 2 (5x5x7)/Cube 0:

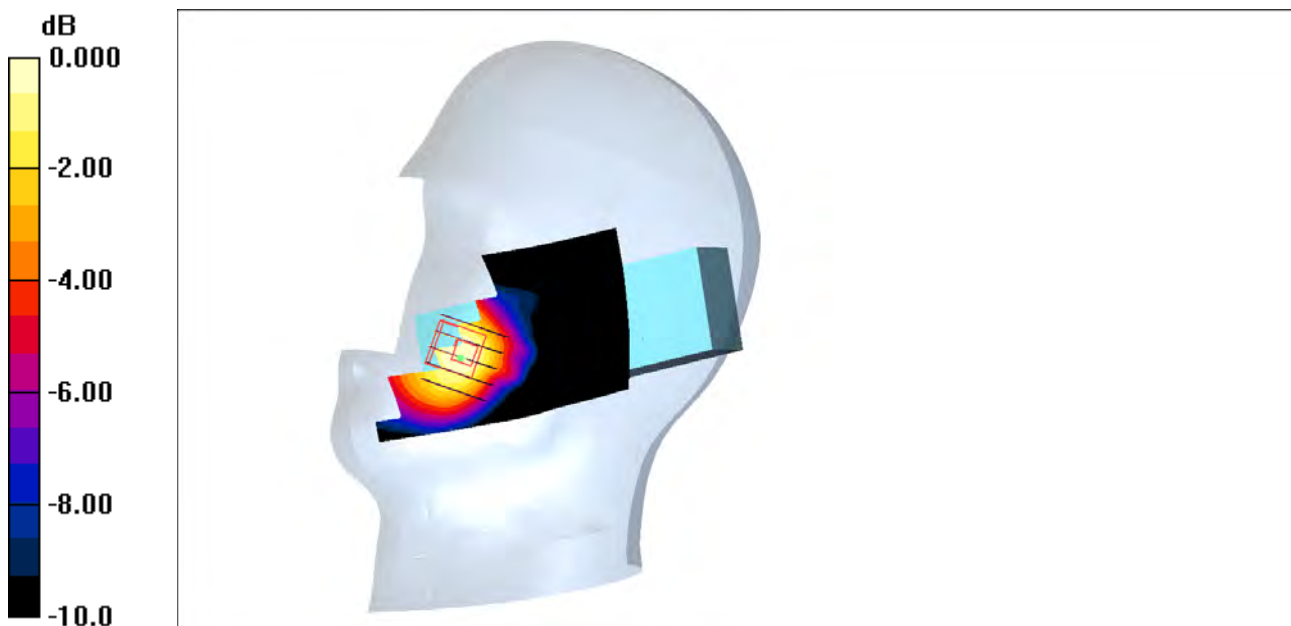
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.45 V/m; Power Drift = 0.059 dB

Peak SAR (extrapolated) = 0.937 W/kg

SAR(1 g) = 0.51 mW/g; SAR(10 g) = 0.32 mW/g

Maximum value of SAR (measured) = 0.533 mW/g



0 dB = 0.533mW/g

(i) SAR distribution for EUT in GSM1900 mode measured against the right hand side phantom for the cheek phone position.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-11 16:07:52

-Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
-Medium: Head 1900 MHz; $\sigma = 1.34$ mho/m; $\epsilon_r = 38.4$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(5.1, 5.1, 5.1)

-Electronics: DAE3 Sn422

-Phantom: SAM 2; Serial: TP1004

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Left Tilt Mid Ch661/Area Scan (171x81x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.096 mW/g

Left Tilt Mid Ch661/Zoom Scan 5x5x7 (6x6x7)/Cube 0:

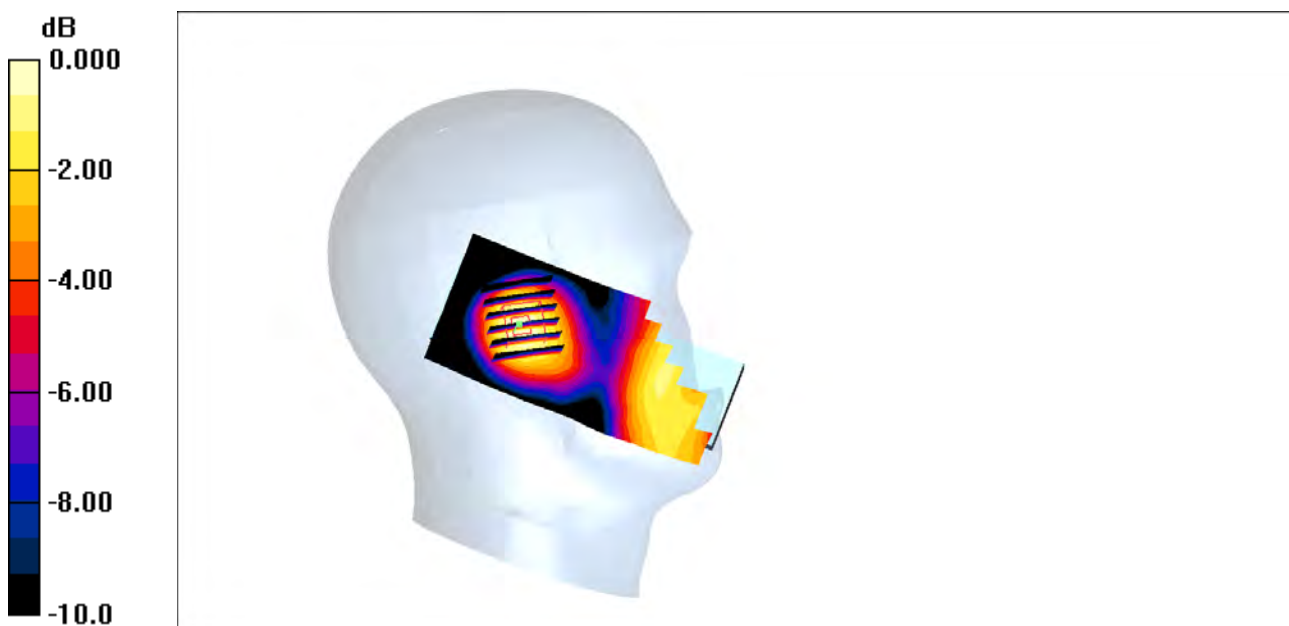
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.49 V/m; Power Drift = 0.005 dB

Peak SAR (extrapolated) = 0.132 W/kg

SAR(1 g) = 0.09 mW/g; SAR(10 g) = 0.06 mW/g

Maximum value of SAR (measured) = 0.092 mW/g



0 dB = 0.092mW/g

(j) SAR distribution for EUT in GSM1900 mode measured against the left hand side phantom for the tilt phone position.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-10 18:02:52

-Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
-Medium: Head 1900 MHz; $\sigma = 1.34$ mho/m; $\epsilon_r = 38.4$; $\rho = 1000$ kg/m³

DASY4 Configuration:

-Probe: ES3DV3 - SN3155; ConvF(5.1, 5.1, 5.1)

-Electronics: DAE3 Sn422

-Phantom: SAM 2; Serial: TP1004

-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Right Tilt Mid Ch661/Area Scan (131x81x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.108 mW/g

Right Tilt Mid Ch661/Zoom Scan 5x5x7 (6x6x7)/Cube 0:

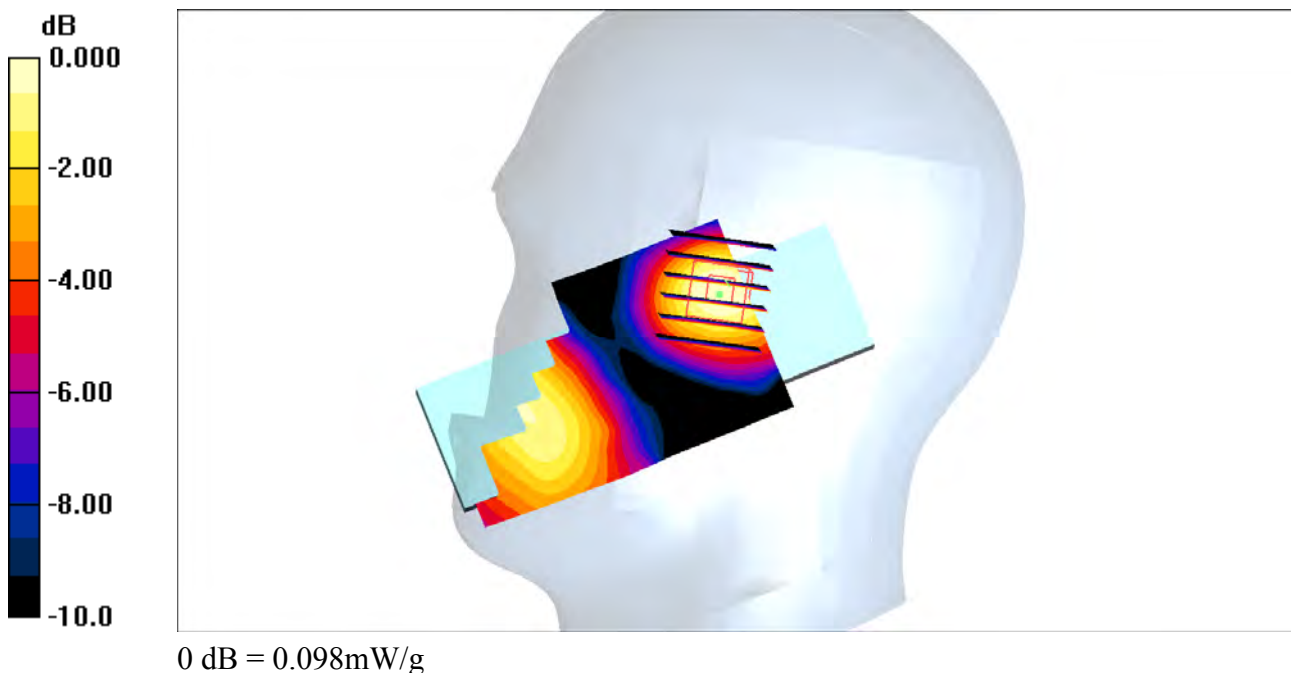
Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.01 V/m; Power Drift = 0.016 dB

Peak SAR (extrapolated) = 0.135 W/kg

SAR(1 g) = 0.09 mW/g; SAR(10 g) = 0.06 mW/g

Maximum value of SAR (measured) = 0.098 mW/g



(k) SAR distribution for EUT in GSM1900 mode measured against the right hand side phantom for the tilt phone position.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-10 13:05:59

-Communication System: GSM 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3
-Medium: Body 1900 MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 51.2$; $\rho = 1000$ kg/m³

DASY4 Configuration:

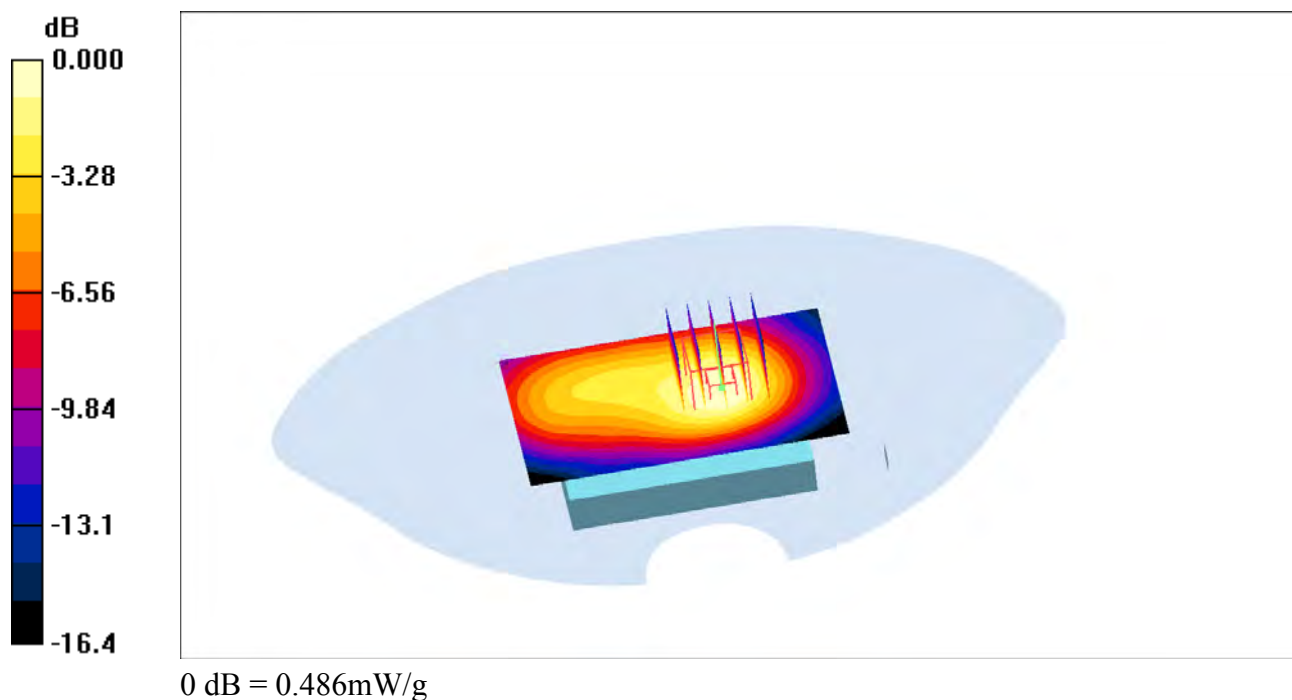
-Probe: ES3DV3 - SN3155; ConvF(5.05, 5.05, 5.05)
-Electronics: DAE3 Sn422
-Phantom: SAM 2; Serial: TP1004
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Back, No st HF, High Ch810/Area Scan (81x121x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.502 mW/g

Back, No st HF, High Ch810/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.7 V/m; Power Drift = -0.051 dB
Peak SAR (extrapolated) = 0.742 W/kg
SAR(1 g) = 0.45 mW/g; SAR(10 g) = 0.27 mW/g
Maximum value of SAR (measured) = 0.486 mW/g



(I) Maximum SAR distribution for EUT in GSM1900 mode measured with the back of the phone facing the flat section of phantom.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-10 15:03:38

-Communication System: GPRS 1900 (2ts); Frequency: 1909.8 MHz; Duty Cycle: 1:4.15
-Medium: Body 1900 MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 51.2$; $\rho = 1000$ kg/m³

DASY4 Configuration:

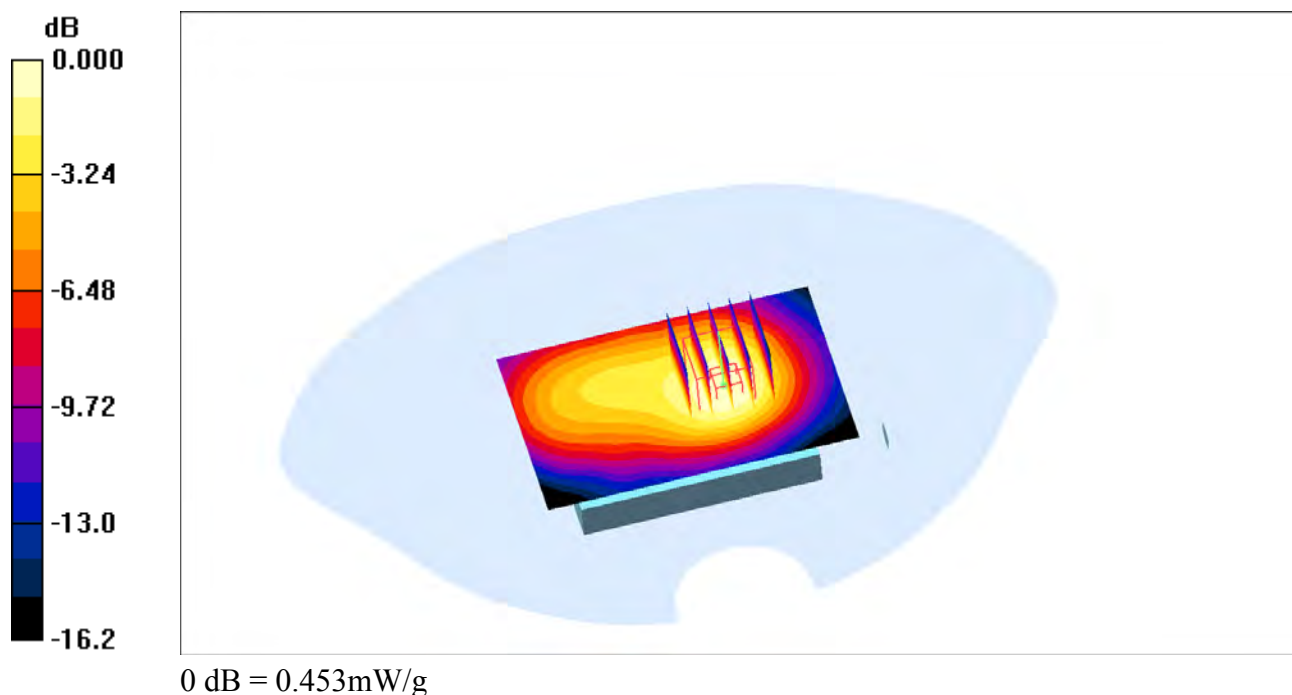
-Probe: ES3DV3 - SN3155; ConvF(5.05, 5.05, 5.05)
-Electronics: DAE3 Sn422
-Phantom: SAM 2; Serial: TP1004
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Back, No st HF, High Ch810/Area Scan (81x121x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.468 mW/g

Back, No st HF, High Ch810/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.2 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 0.697 W/kg
SAR(1 g) = 0.42 mW/g; SAR(10 g) = 0.25 mW/g
Maximum value of SAR (measured) = 0.453 mW/g



(m) Maximum SAR distribution for EUT in GPRS(2TS)1900 mode measured with the back of the phone facing the flat section of phantom.

EAB-09:021089 Uen, Rev B, 2009-04-23

Date/Time: 2009-03-10 15:19:01

-Communication System: GPRS 1900 (2ts); Frequency: 1909.8 MHz; Duty Cycle: 1:4.15
-Medium: Body 1900 MHz; $\sigma = 1.58$ mho/m; $\epsilon_r = 51.2$; $\rho = 1000$ kg/m³

DASY4 Configuration:

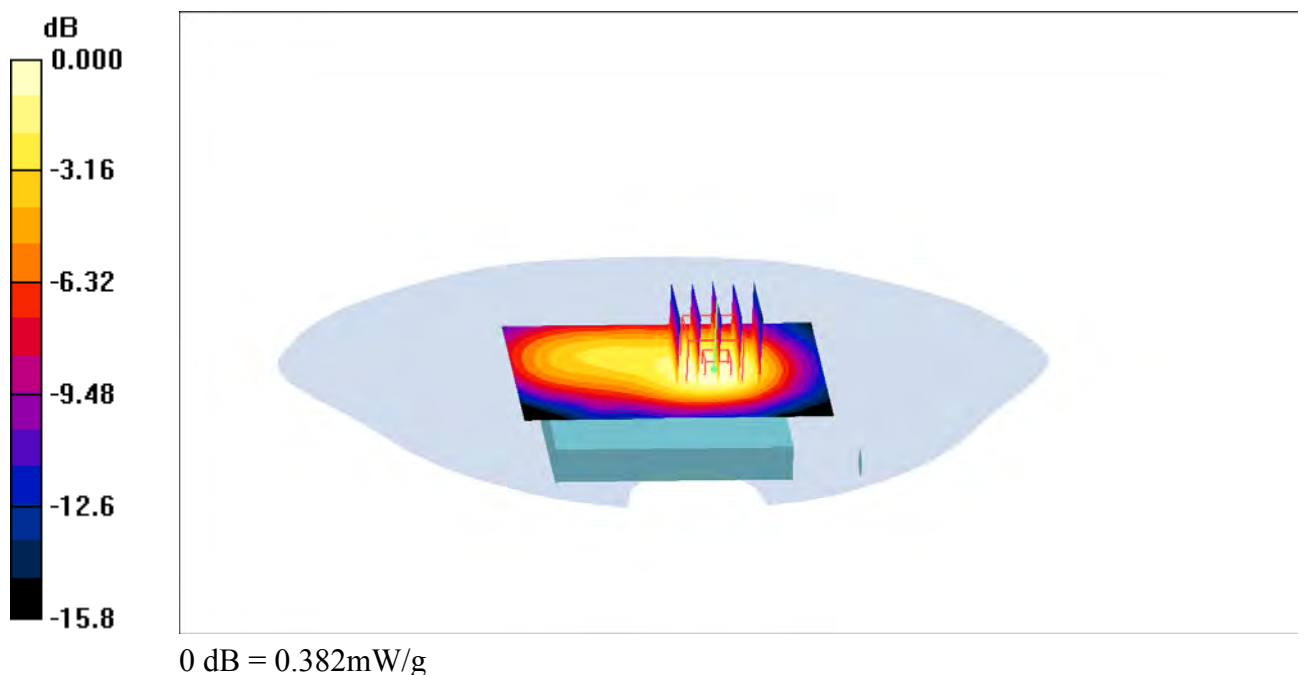
-Probe: ES3DV3 - SN3155; ConvF(5.05, 5.05, 5.05)
-Electronics: DAE3 Sn422
-Phantom: SAM 2; Serial: TP1004
-Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

Back, EDGE, No st HF, High Ch810/Area Scan (81x121x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.391 mW/g

Back, EDGE, No st HF, High Ch810/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.058 dB
Peak SAR (extrapolated) = 0.583 W/kg
SAR(1 g) = 0.35 mW/g; SAR(10 g) = 0.21 mW/g
Maximum value of SAR (measured) = 0.382 mW/g



(n) Maximum SAR distribution for EUT in EDGE1900 mode measured with the back of the phone facing the flat section of phantom.

APPENDIX E: Probe calibration certificate for ES3DV3, S/N: 3113

**Calibration Laboratory of
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Engineering AG**
Zeughausstrasse 43, 8004 Zurich, Switzerland



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Ericsson AB**

Certificate No: **ES3-3113_Apr08**

CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3113**

Calibration procedure(s) **QA CAL-01.v6 and QA CAL-23.v3
Calibration procedure for dosimetric E-field probes**

Calibration date: **April 14, 2008**

Condition of the calibrated item **In Tolerance**


This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41495277	1-Apr-08 (No. 217-00788)	Apr-09
Power sensor E4412A	MY41498087	1-Apr-08 (No. 217-00788)	Apr-09
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-08 (No. 217-00787)	Apr-09
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 654	20-Apr-07 (No. DAE4-654_Apr07)	Apr-08

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-07)	In house check: Oct-08

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: April 16, 2008

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Accredited by the Swiss Accreditation Service (SAS)
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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
Polarization ϕ	ϕ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E^2 -field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * *frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

ES3DV3 SN:3113

April 14, 2008

Probe ES3DV3

SN:3113

Manufactured:	June 3, 2006
Last calibrated:	June 14, 2007
Recalibrated:	April 14, 2008

Calibrated for DASY Systems

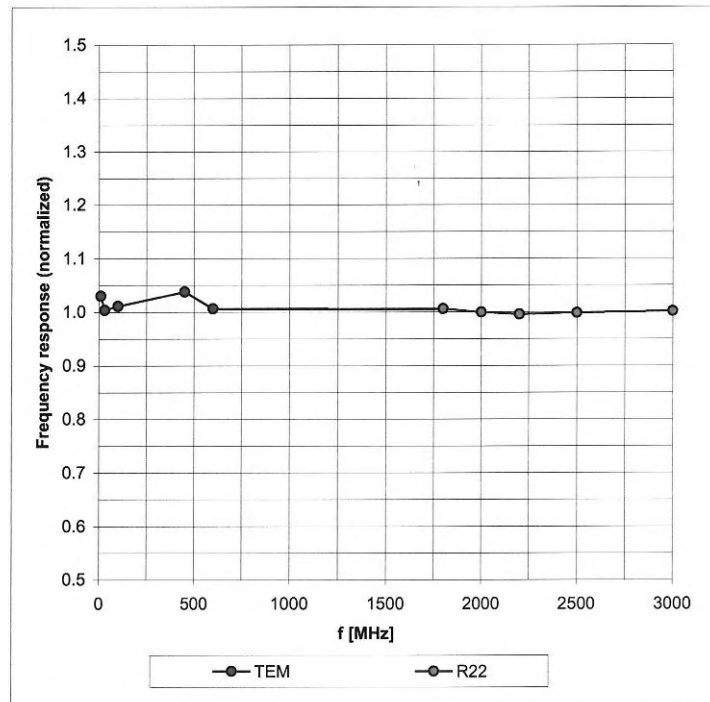
(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3113

April 14, 2008

Frequency Response of E-Field

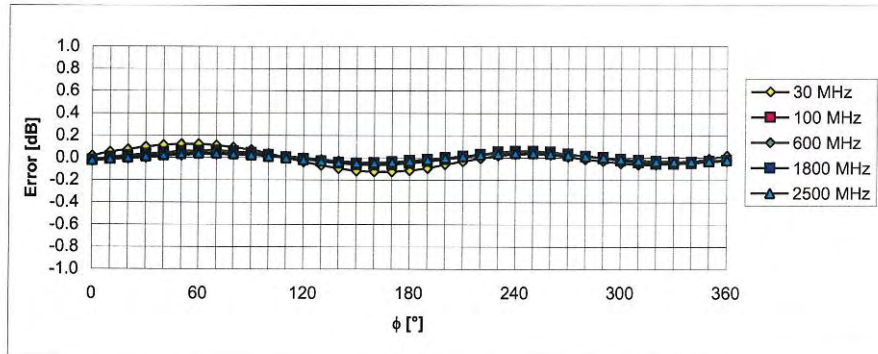
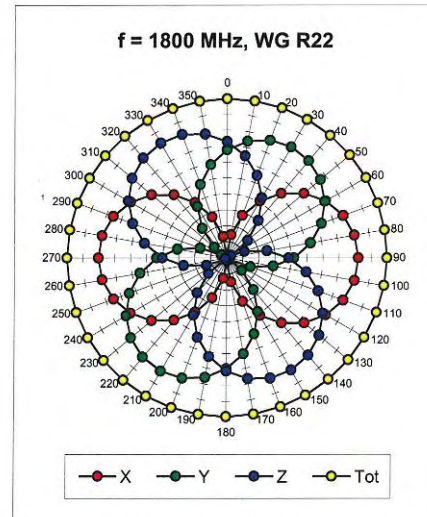
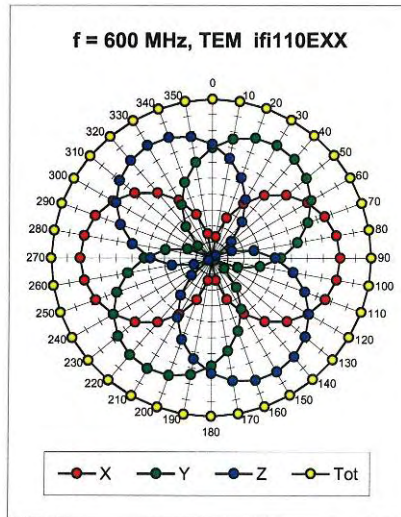
(TEM-Cell: ifi110 EXX, Waveguide: R22)

Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

ES3DV3 SN:3113

April 14, 2008

Receiving Pattern (ϕ), $\vartheta = 0^\circ$

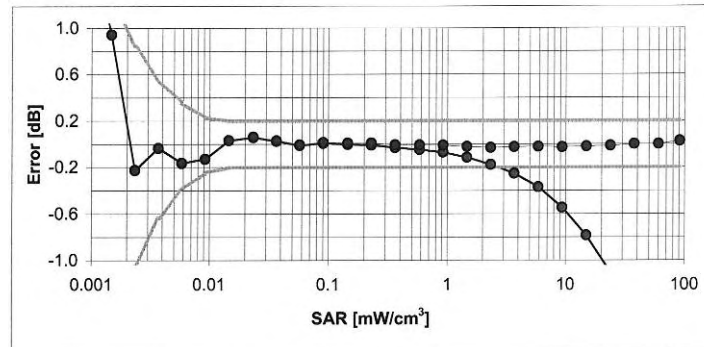
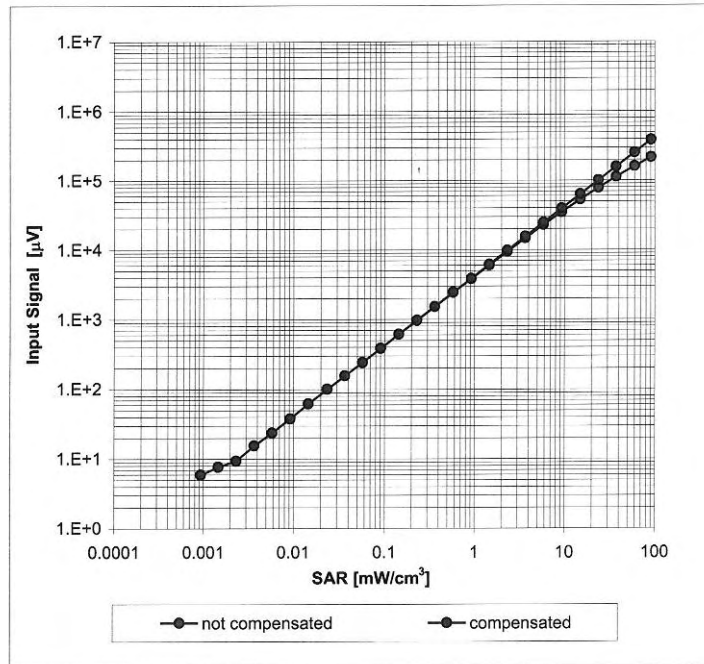


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

ES3DV3 SN:3113

April 14, 2008

Dynamic Range $f(\text{SAR}_{\text{head}})$ (Waveguide R22, $f = 1800 \text{ MHz}$)

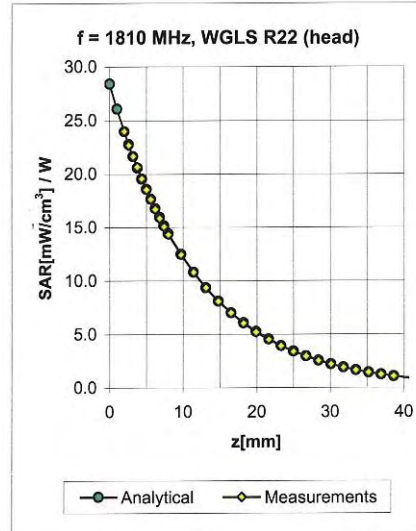
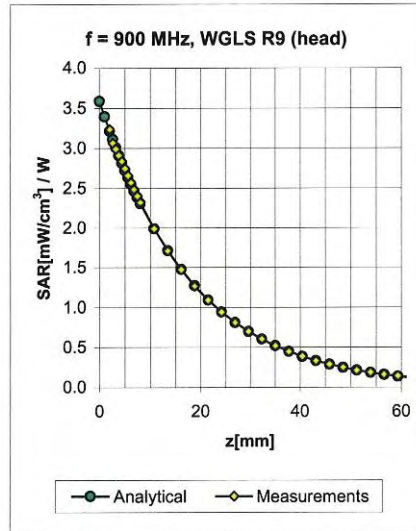


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

ES3DV3 SN:3113

April 14, 2008

Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.97	1.15	6.01 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.92	1.16	5.00 ± 11.0% (k=2)
2000	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.83	1.18	4.85 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.69	1.34	4.49 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	1.00	1.15	5.56 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.92	1.20	4.98 ± 11.0% (k=2)
2000	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.80	1.29	4.55 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.73	1.29	4.09 ± 11.0% (k=2)

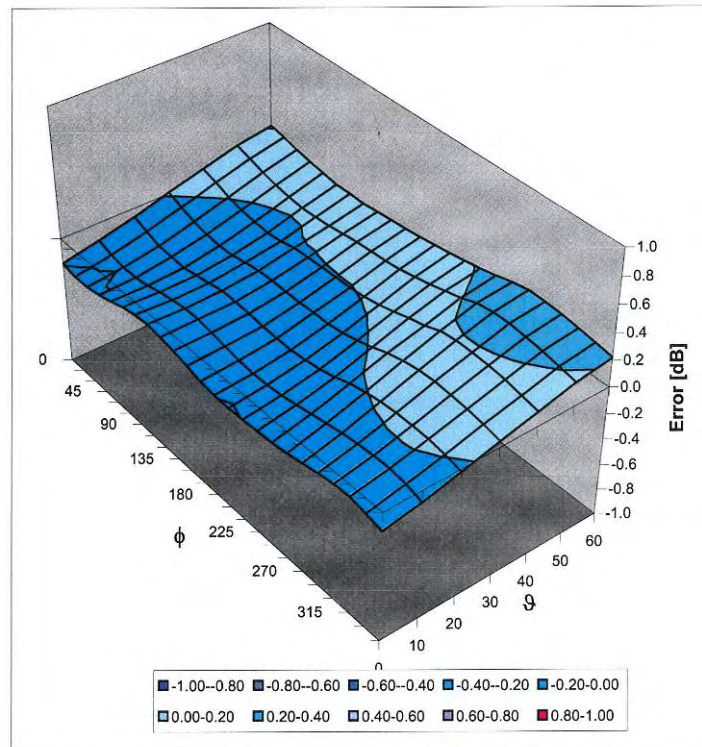
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

ES3DV3 SN:3113

April 14, 2008

Deviation from Isotropy in HSL

Error (ϕ , θ), $f = 900$ MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)

APPENDIX F: Probe calibration certificate for ES3DV3, S/N: 3155

**Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland



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Accreditation No.: **SCS 108**

Client **Ericsson AB**

Certificate No: **ES3-3155_Mar08**

CALIBRATION CERTIFICATE

Object: **ES3DV3 - SN:3155**

Calibration procedure(s): **QA CAL-01.v6
Calibration procedure for dosimetric E-field probes**

Calibration date: **March 17, 2008**

Condition of the calibrated item: **In Tolerance**

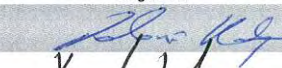

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41495277	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41498087	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (METAS, No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-07 (METAS, No. 217-00671)	Mar-08
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (METAS, No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	2-Jan-08 (SPEAG, No. ES3-3013_Jan08)	Jan-09
DAE4	SN: 654	20-Apr-07 (SPEAG, No. DAE4-654_Apr07)	Apr-08

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-07)	In house check: Oct-08

Calibrated by:	Name: Katja Pokovic	Function: Technical Manager	Signature: 
Approved by:	Name: Niels Kuster	Function: Quality Manager	Signature: 

Issued: March 17, 2008

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

ES3DV3 SN:3155

March 17, 2008

Probe ES3DV3

SN:3155

Manufactured:	June 12, 2007
Calibrated:	March 17, 2008

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3155

March 17, 2008

DASY - Parameters of Probe: ES3DV3 SN:3155

Sensitivity in Free Space^A

Diode Compression^B

NormX	1.25 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	91 mV
NormY	1.18 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	94 mV
NormZ	1.16 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	94 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.0 mm	4.0 mm
SAR _{be} [%]	Without Correction Algorithm	9.9	5.8
SAR _{be} [%]	With Correction Algorithm	0.8	0.6

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.0 mm	4.0 mm
SAR _{be} [%]	Without Correction Algorithm	11.1	6.4
SAR _{be} [%]	With Correction Algorithm	0.8	0.4

Sensor Offset

Probe Tip to Sensor Center 2.0 mm

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).

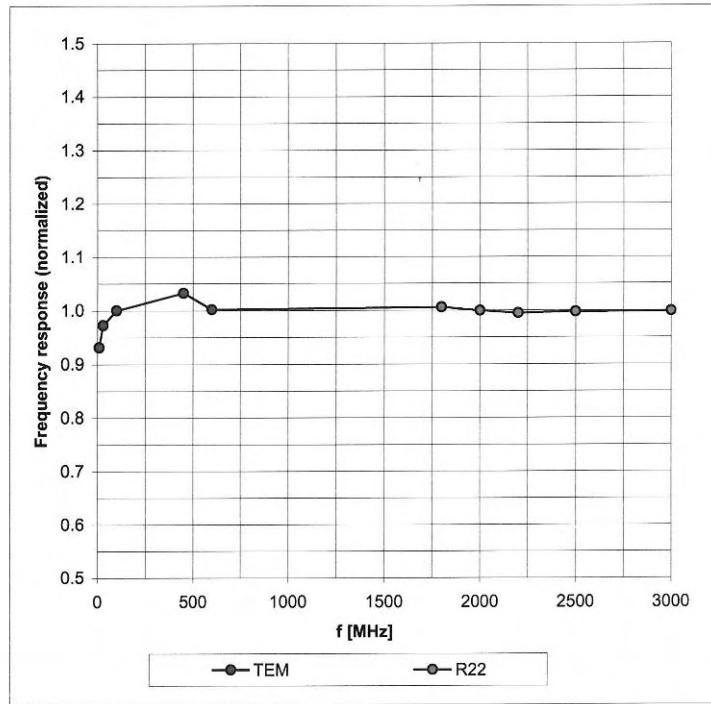
^B Numerical linearization parameter: uncertainty not required.

ES3DV3 SN:3155

March 17, 2008

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)

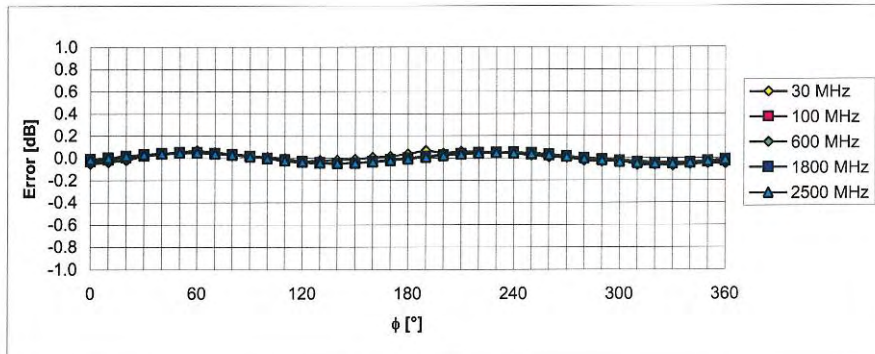
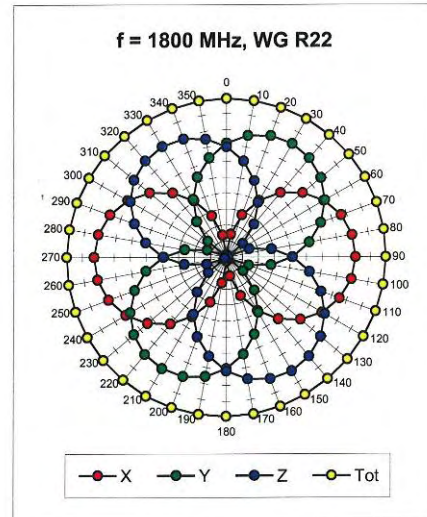
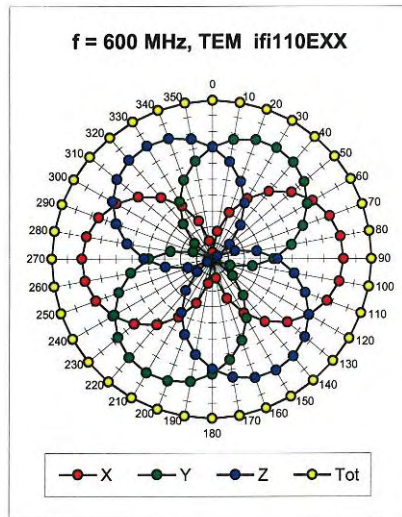


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

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Receiving Pattern (ϕ), $\vartheta = 0^\circ$

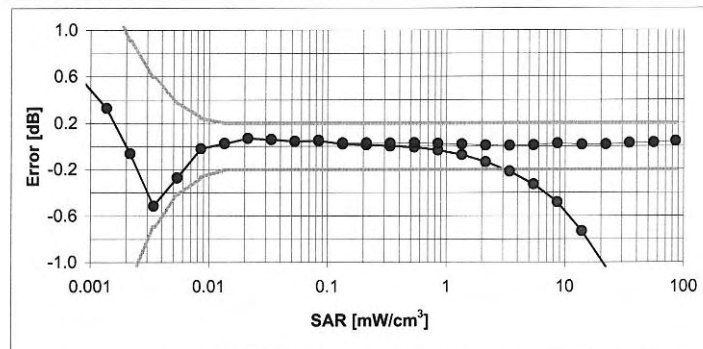
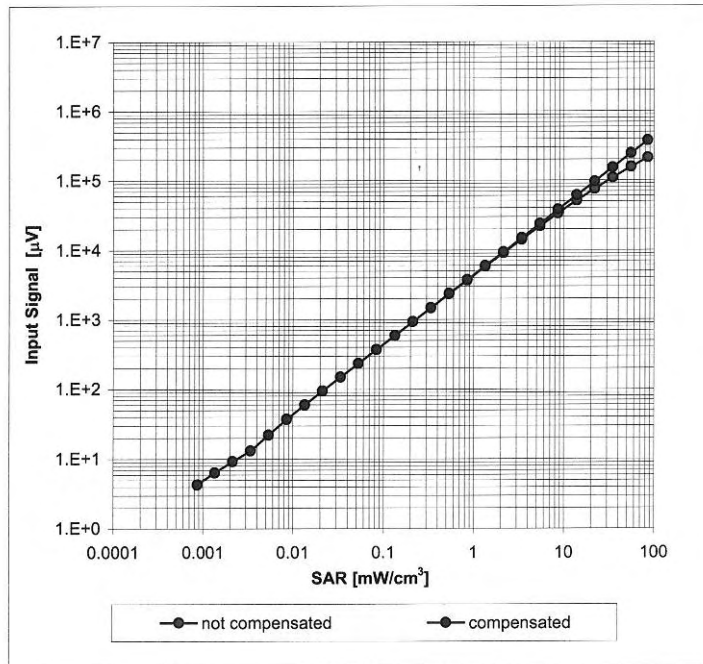


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

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Dynamic Range $f(SAR_{head})$
 (Waveguide R22, $f = 1800$ MHz)

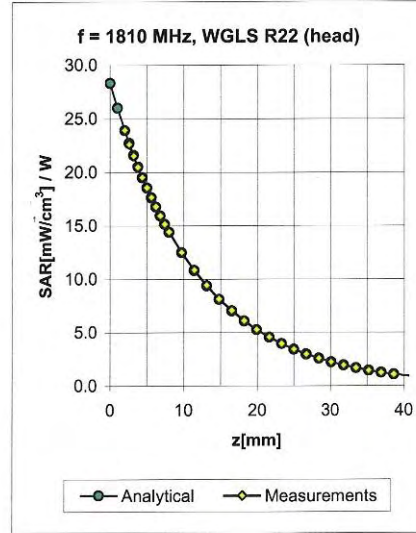
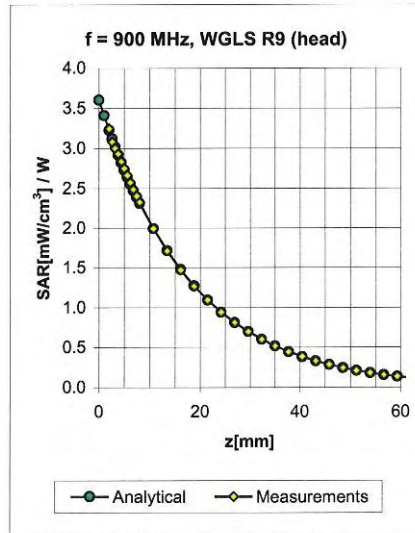


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

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Conversion Factor Assessment



f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.98	1.14	6.01 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.88	1.20	5.10 ± 11.0% (k=2)
2000	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.84	1.21	4.93 ± 11.0% (k=2)
2150	± 50 / ± 101	Head	39.7 ± 5%	1.53 ± 5%	0.80	1.25	4.88 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.64	1.45	4.55 ± 11.8% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	1.00	1.12	5.64 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.96	1.10	5.05 ± 11.0% (k=2)
2000	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.76	1.34	4.60 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.71	1.37	4.16 ± 11.8% (k=2)

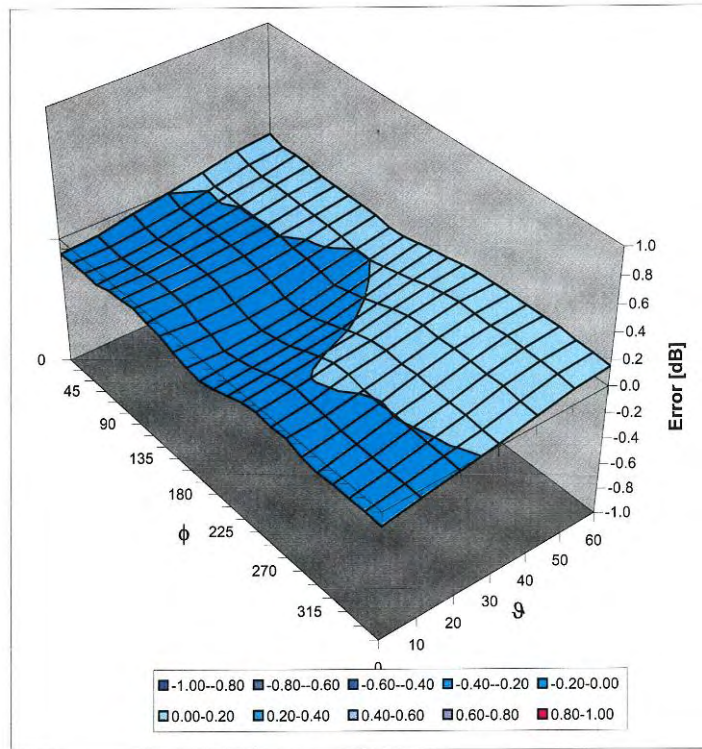
^c The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

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Deviation from Isotropy in HSL

Error (ϕ , ϑ), $f = 900$ MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)