SAR TEST REPORT

The following samples were submitted and identified on behalf of the client as:

Equipment Under Test	PDA Phone
Model Name	PM-0120-BV
Brand Name	SONY
Marketing Name	ST21a
Company Name	Sony Mobile Communications AB
Company Address	Nya Vattentornet 22188 Lund/SWEDEN
Standards	FCC- OET 65 supplement C,IEEE /ANSI C95.1 , C95.3, IEEE 1528, RSS-102
FCC ID	PY7PM-0120
IC ID	4170B-PM0120
Date of Receipt	January 16, 2012
Date of Test(s)	January 20 ~ Jun. 05, 2012
Date of Issue	Jul. 13, 2012

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Electronic & Communication Laboratory or testing done by SGS Taiwan Electronic & Communication Laboratory in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Electronic & Communication Laboratory in writing.

Signed for on the behalf of SGS

Supervisor

Ricky Huang

Ricky Huang

Date: Jul. 13, 2012

Supervisor

Nick Hsu

Nick Hsu

Date: Jul. 13, 2012

Version

Report Number	Revision	Date	Memo
ES/2012/20001-01	00	2012/05/28	Initial creation of test report.
ES/2012/20001-01	01	2012/06/07	1st modification
ES/2012/20001-01	02	2012/06/20	2nd modification
ES/2012/20001-01	03	2012/06/28	3rd modification
ES/2012/20001-01	04	2012/07/04	4th modification
ES/2012/20001-01	05	2012/07/05	5th modification
ES/2012/20001-01	06	2012/07/06	6th modification
ES/2012/20001-01	07	2012/07/12	7th modification
ES/2012/20001-01	08	2012/07/12	8th modification
ES/2012/20001-01	09	2012/07/13	9th modification

This test report contains a reference to the previous version test report that it replaces.

Contents

1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd. Electronics & Communication Laboratory	
134, Wu Kung Road, Wuku industrial zone	
Taipei county, Taiwan, R.O.C.	
Tel	+886-2-2299-3279
Fax	+886-2-2298-0488
Internet	http://www.tw.sgs.com/

1.2 Details of Applicant

Company Name	Sony Mobile Communications AB
Company Address	Nya Vattentornet 22188 Lund/SWEDEN
Contact Person	Mats Hansson/Head of Regulatory Compliance
Tel	+46 10 8023357
Fax	+46 10 8002441
E-mail	Mats.Hansson@sonymobile.com

1.3 Description of EUT

EUT Name	PDA Phone		
Model Name	PM-0120-BV		
Marketing Name	ST21a		
HW Version	A		
SW Version	EMC_1.*.J.0.5_userdebug		
IMEI Code	004402144458621		
FCC ID	PY7PM-0120		
IC ID	4170B-PM0120		
Mode of Operation	☒GSM ☒GPRS ☒EDGE ☒WCDMA ☒HSDPA ☒WLAN802.11 b/g/n ☒Bluetooth		
Definition	Production unit		
Duty Cycle	GSM	1/8.3	
	GPRS (multi class 12)	1/2 (1Dn4UP) 1/3 (1Dn3UP) 1/4 (1Dn2UP) 1/8.3(1Dn1UP)	
	EDGE (multi class 12)	1/2 (1Dn4UP) 1/3 (1Dn3UP) 1/4 (1Dn2UP) 1/8.3(1Dn1UP)	
	WCDMA	1	
	WLAN 802.11 b/g/n(H20)	1	
	Bluetooth	1	
TX Frequency Range (MHz)	GSM850	824.2 —	848.8
	GSM1900	1850.2 —	1909.8
	WCDMA Band II	1852.4 —	1907.6
	WCDMA Band V	826.4 —	846.6
	WLAN 802.11 b/g/n(H20)	2412 —	2462
	Bluetooth	2402 —	2480

Channel Number (ARFCN)	GSM850		128 —	251
	GSM1900		512 —	810
	WCDMA Band II		9262 —	9538
	WCDMA Band V		4132 —	4233
	WLAN 802.11 b		1 —	11
	Bluetooth		0 —	78
VOIP Function	☐YES ☒NO			
Max. SAR Measured(1 g) (Unit: mW/g)	Head	GSM850	1.28	☒Left ☐Right ☒Cheek ☐Tilt 251 Channel
		GSM1900	0.76	☐Left ☒Right ☒Cheek ☐Tilt 512 Channel
		WCDMA Band II	1.2	☐Left ☒Right ☒Cheek ☐Tilt 9262 Channel
		WCDMA Band V	1.14	☒Left ☐Right ☒Cheek ☐Tilt 4183 Channel
		WLAN802.11 b	0.00922	☐Left ☒Right ☐Cheek ☒Tilt 1 Channel
	Body worn (speech mode)	GSM 850	0.548	☐Front ☒Back 251 Channel - with headset
		GSM 1900	0.53	☐Front ☒Back 512 Channel - with headset
		WCDMA Band II	0.576	☐Front ☒Back 9262 Channel - with headset
		WCDMA Band V	0.742	☐Front ☒Back 4233 Channel - with headset

Max. SAR Measured(1 g) (Unit: mW/g)	Hotspot mode	GSM850	1.27	☐Front ☒Back ☐Bottom ☐Right ☐Left __251__Channel
		GSM1900	1.11	☐Front ☐Back ☒Bottom ☐Right ☐Left __512__Channel
		WCDMA Band II	1.37	☐Front ☒Back ☐Bottom ☐Right ☐Left __9262__Channel
		WCDMA Band V	1.36	☐Front ☒Back ☐Bottom ☐Right ☐Left 4183 Channel
		WLAN802.11 b	0.013	☐Front ☒Back ☐Top ☐Right ☐Left __1__Channel With headset

Scaling SAR table:

Mode		Band	Channel	Power (dBm)	Target Power (dBm)	Scaling	Max. SAR Measured (1 g)(W/Kg)	Calculated SAR (1 g)(W/Kg)
Head		GSM 850	251	33.1	33.5	9.65%	1.28	**1.40**
		GSM 1900	512	29.9	30.5	14.82%	0.76	0.87
		WCDMA Band II	9262	22.6	22.5	0%	1.20	1.20
		WCDMA Band V	4183	23.91	24	2.09%	1.14	1.16
Body	Body worn (speech mode)	GSM 850	251	33.1	33.5	9.65%	0.55	0.60
		GSM 1900	512	29.9	30.5	14.82%	0.53	0.61
		WCDMA Band II	9262	22.6	22.5	0%	0.58	0.58
		WCDMA Band V	4233	23.63	24	8.89%	0.74	0.81
	Hotspot mode	GPRS 850 1Dn2UP	251	30.2	30.5	7.15%	1.27	1.36
		GPRS1900 1Dn4UP	512	25	25	0%	1.11	1.11
		WCDMA Band II	9262	22.6	22.5	0%	1.37	1.37
		WCDMA Band V	4183	23.91	24	2.09%	1.36	**1.39**

#. GSM/GPRS/EDGE conducted power table:

EUT mode	Frequency (MHz)	CH	Burst average power	Source-based time average power
			Avg.(dBm)	Avg.(dBm)
GSM 850 (GMSK)	824.2	128	33.00	23.97
	836.6	190	33.10	24.07
	848.8	251	33.10	24.07
The division factor compared to the number of TX time slot				
Division factor			1 TX time slot	
			-9.03	

Burst average power						
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 850 (GMSK)	824.2	128	32.80	30.00	28.00	26.60
	836.6	190	32.80	30.10	28.00	26.60
	848.8	251	32.80	30.20	28.00	26.60
Source-based time average powe						
GPRS 850 (GMSK)	824.2	128	23.77	23.98	23.74	23.59
	836.6	190	23.77	24.08	23.74	23.59
	848.8	251	23.77	24.18	23.74	23.59
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS 5)	824.2	128	27.20	27.10	27.00	26.00
	836.6	190	27.20	27.10	27.00	26.00
	848.8	251	27.20	27.10	27.10	26.00
Source-based time average powe						
EDGE 850 (MCS 5)	824.2	128	18.17	21.08	22.74	22.99
	836.6	190	18.17	21.08	22.74	22.99
	848.8	251	18.17	21.08	22.84	22.99
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS 4)	824.2	128	26.90	26.80	26.80	26.70
	836.6	190	27.10	27.00	26.90	26.90
	848.8	251	27.20	27.10	27.00	27.00
Source-based time average powe						
EDGE 850 (MCS 4)	824.2	128	17.87	20.78	22.54	23.69
	836.6	190	18.07	20.98	22.64	23.89
	848.8	251	18.17	21.08	22.74	23.99
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850 (MCS 9)	824.2	128	27.10	27.00	27.00	25.90
	836.6	190	27.30	27.20	27.10	26.10
	848.8	251	27.40	27.30	27.30	26.20
Source-based time average powe						
EDGE 850 (MCS 9)	824.2	128	18.07	20.98	22.74	22.89
	836.6	190	18.27	21.18	22.84	23.09
	848.8	251	18.37	21.28	23.04	23.19
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

EUT mode	Frequency (MHz)	CH	Burst average power	Source-based time average power
			Avg.(dBm)	Avg.(dBm)
GSM 1900 (GMSK)	1850.2	512	29.90	20.87
	1880	661	29.90	20.87
	1909.8	810	30.10	21.07
The division factor compared to the number of TX time slot				
Division factor			1 TX time slot	
			-9.03	

Burst average power						
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS 1900 (GMSK)	1850.2	512	29.90	27.80	25.70	25.00
	1880	661	30.00	27.70	25.70	25.00
	1909.8	810	30.10	27.70	25.70	25.00
Source-based time average powe						
GPRS 1900 (GMSK)	1850.2	512	20.87	21.78	21.44	21.99
	1880	661	20.97	21.68	21.44	21.99
	1909.8	810	21.07	21.68	21.44	21.99
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 5)	1850.2	512	26.50	26.30	25.50	24.50
	1880	661	26.50	26.40	25.40	24.50
	1909.8	810	26.50	26.40	25.40	24.50
Source-based time average powe						
EDGE 1900 (MCS 5)	1850.2	512	17.47	20.28	21.24	21.49
	1880	661	17.47	20.38	21.14	21.49
	1909.8	810	17.47	20.38	21.14	21.49
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 4)	1850.2	512	26.30	26.20	25.20	24.70
	1880	661	26.60	26.50	25.60	24.80
	1909.8	810	26.60	26.50	25.60	24.80
Source-based time average powe						
EDGE 1900 (MCS 4)	1850.2	512	17.27	20.18	20.94	21.69
	1880	661	17.57	20.48	21.34	21.79
	1909.8	810	17.57	20.48	21.34	21.79
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

Burst average power						
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	CH	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 1900 (MCS 9)	1850.2	512	26.40	25.30	24.70	23.60
	1880	661	26.70	25.60	25.00	24.00
	1909.8	810	26.60	25.60	25.00	24.00
Source-based time average powe						
EDGE 1900 (MCS 9)	1850.2	512	17.37	19.28	20.44	20.59
	1880	661	17.67	19.58	20.74	20.99
	1909.8	810	17.57	19.58	20.74	20.99
The division factor compared to the number of TX time slot						
Division factor			1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot
			-9.03	-6.02	-4.26	-3.01

#. WCDMA Band II & V HSDPA conducted power table:

Band	Channel	Rel99 AV(dBm)	HSDPA mode AV(dBm)_rel 5			
			sub-test 1	sub-test 2	sub-test 3	sub-test 4
WCDMA Band II	9262	22.60	22.77	22.48	22.29	22.36
	9400	22.67	22.56	22.53	22.11	22.12
	9538	22.40	22.26	22.25	21.73	21.85
WCDMA Band V	4132	23.93	23.72	23.86	23.26	23.31
	4183	23.91	23.77	23.8	23.29	23.33
	4233	23.63	23.75	23.5	23.26	23.32

Sub-test	β_c	β_d	β_d ***(SF)***	β_c / β_d	β_{HS}	**CM (dB)**	**MPR (dB)**
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15	15/15	64	12/15	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

#. WLAN802.11 b/g/n (20M) conducted power table:

802.11b		Average Power Output (dBm)			
CH	Frequency (MHz)	Data Rate (Mbps)			
		1	2	5.5	11
1	2412	12.51	12.44	12.50	12.36
6	2437	12.47	12.41	12.42	12.39
11	2462	12.39	12.36	12.35	12.31

802.11g		Average Power Output(dBm)							
CH	Frequency (MHz)	Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
1	2412	12.43	12.35	12.22	12.1	11.88	11.62	11.49	11.31
6	2437	12.52	12.46	12.43	12.28	12.03	11.93	11.88	11.84
11	2462	12.49	12.43	12.42	12.22	12.05	11.95	11.82	11.77

802.11n (20M)		Average Power Output(dBm)								
CH	Frequency (MHz)	Data Rate (Mbps)								
		6.5	13	19.5	26	39	52	58.5	65	72.2
1	2412	10.44	10.11	9.82	9.67	9.25	9.07	8.91	8.87	10.44
6	2437	10.32	10.05	9.91	9.82	9.55	9.36	9.01	8.92	10.32
11	2462	10.37	10.15	10.01	9.81	9.44	9.28	9.02	8.88	10.37

#. Bluetooth conducted power table:

Channel	Peak Power (dBm)		Average Power (dBm)	
	BDR	EDR	BDR	EDR
2402	8.96	9.61	7.85	5.98
2441	9.71	10.11	8.57	6.76
2480	9.3	9.5	7.83	5.92

1.4 Test Environment

Ambient Temperature : 22±2° C
Tissue Simulating Liquid: 22±2° C

1.5 Operation Description

General:

1. The EUT is controlled by using a Radio Communication Tester (R&S CMU200), and the communication between the EUT and the tester is established by air link.
2. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the batt¯ery is fully charged.
3. During the SAR testing, the DASY5 system checks power drift by comparing the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.
4. Testing Head SAR at lowest, middle and highest channel for all bands with LET/LEC/RET/REC conditions.
5. Testing body-worn speech mode SAR by separating **15mm** for GSM850, GSM1900, WCDMA Band II and WCDMA Band V. (Front side & back side)

6. Testing hotspot mode SAR by separating **10mm.**

   #. The SAR testing for portable devices with wireless router capability is refered as test guidance of **KDB 941225 D06** (SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities).

   #. The following procedures are applicable when the overall device length and width are ≥9 cm x 5 cm respectively. A test separation of 10 mm is required. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25 mm from that surface or edge, for the data modes, wireless technologies and frequency bands supporting hotspot mode.

   # For GPRS body-worn (15mm separation): the testing device support mobile hotspot function, the separation distance is **10mm (No need to perform SAR testing with Body worn accessory (15mm separation distance) due to the hotspot mode(10mm separation distance) is more conservative than Body worn accessory mode.)**

   Test configurations:

   (1) Front side
   (2) Back side
   (3) Top side.(WWAN antenna to edge distance >25mm_No SAR)
   (4) Bottom side. (WLAN antenna to edge distance >25mm_No SAR)
   (5) Right side.
   (6) Left side.

7. When the maximum transmitter and antenna output power are ≦ 60/f(GHz) (mW) SAR evaluation is typically not required for FCC or TCB approval **(Bluetooth average power= 8.57dBm)**
8. According to **KDB248227**-SAR is not required for 802.11 g/HT20/HT40 channels when the maximum average output power is less than 1/4 dB hight than that measured on the corresponding 802.11b channels.
9. Using **KDB941225 D01** to exclude SAR test requirements for HSDPA modes due to the maximum average output power of HSDPA active is less than 1/4 dB higher than that measured without HSDPA using 12.2kbps RMC

10. For Head, The highest 1-g SAR for WLAN is 0.00922 W/kg and the highest 1-g SAR for WWAN is 1.28W/kg. The sum of 1-g for simultaneous transmitting WLAN and WWAN antenna pair is 0.00922+1.28 = 1.28922 W/kg.
11. For Body, The highest 1-g SAR for WLAN is 0.013 W/kg and the highest 1-g SAR for WWAN is 1.37W/kg. The sum of 1-g for simultaneous transmitting WLAN and WWAN antenna pair is 0.013+1.37 = 1.383 W/kg.
12. For both head & body, summing 1-g SAR for WLAN and WWAN **were lower than the limit 1.6W/kg.** According to **KDB648474/KDB447498** Simultaneous SAR evaluation is not required.
13. WLAN / WWAN – Antenna separation is 79.65mm> 5cm, Sum of SAR is less than 1.6W/kg, hence no simultaneous SAR is needed.

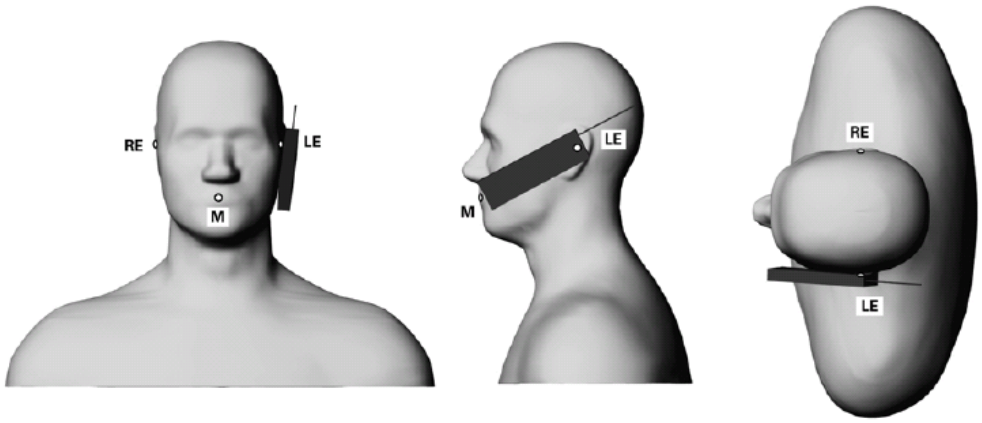
Additional configuration(Head):

14. For highest SAR configuration in this band repeated with external Memory card inside.
15. For highest SAR configuration in this band repeated with 2nd Battery(Supplier: Samsung).

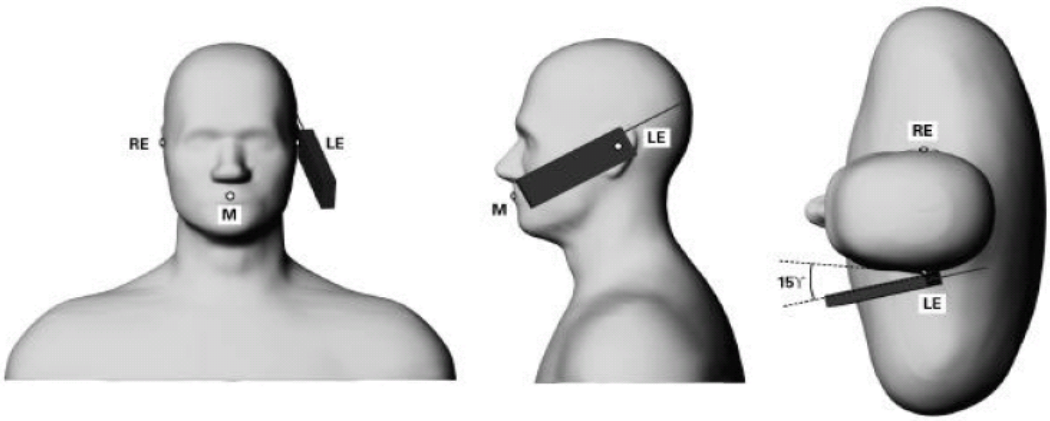
Additional configuration(Body):

16. For highest SAR configuration in this band repeated with external Memory card inside.
17. For highest SAR configuration in this band repeated with Headset.
18. For highest SAR configuration in this band repeated with 2nd Battery(Supplier: Samsung).

1.6 Positioning Procedure



Phone position 1, “cheek” or “touch” position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.



Phone position 2, “tilted position.” The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.

Cheek/Touch Position:
The handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.
Ear/Tilt Position:
With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.

1.7 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. The extraction of the measured data (grid and values) from the Zoom Scan.
2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
3. The generation of a high-resolution mesh within the measured volume.
4. The interpolation of all measured values from the measurement grid to the high-resolution grid.
5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface.
6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It

is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans.

The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found.

If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

1.8 The SAR Measurement System

A photograph of the SAR measurement System is given in Fig. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). Model ES3DV3/ EX3DV4 field probe are used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ ($|Ei|^2$)/ ρ where σ and ρ are the conductivity and mass density of the tissue-simulant.

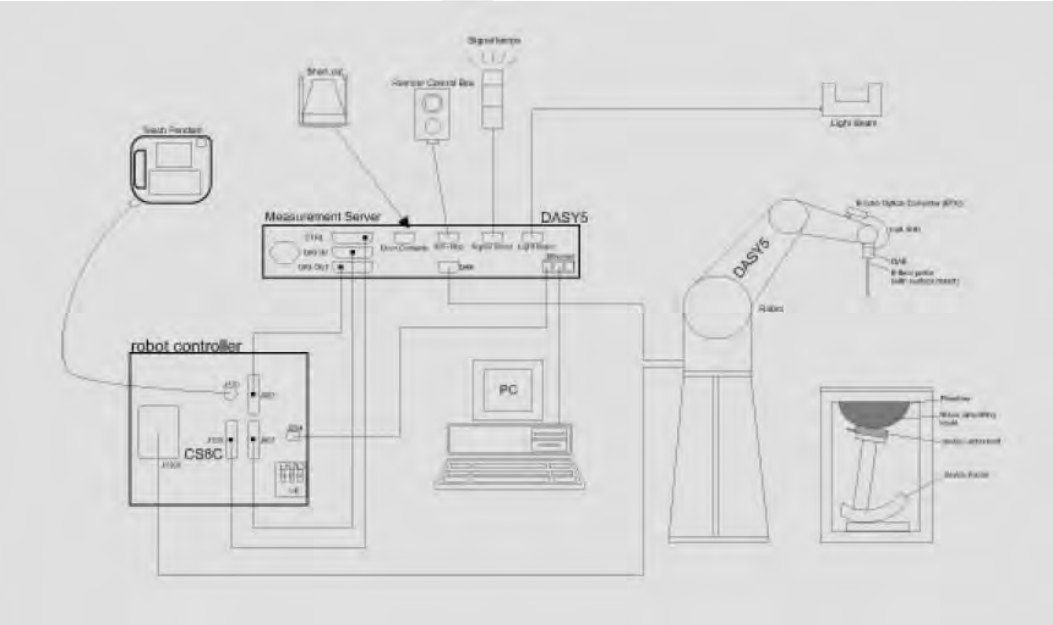


Fig.a The block diagram of SAR system

The DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal

multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows7.
- DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

1.9 System Components

ES3DV3/EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL835/1900/2450MHz Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz; Linearity: ± 0.6 dB (30 MHz to 4 GHz)	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to > 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Tip diameter: 2.5 mm (EX3DV4) Tip diameter: 4 mm (ES3DV3)	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

SAM PHANTOM V4.0C

Construction:	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X, CENELEC 50361 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.	
Shell Thickness:	2 ± 0.2 mm	
Filling Volume:	Approx. 25 liters	
Dimensions:	Height: 810 mm; Length: 1000 mm; Width: 500 mm	

DEVICE HOLDER

Construction	In combination with the Twin SAM Phantom V4.0/V4.0C or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).	 Device Holder

1.10 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 5% from the target SAR values.

These tests were done at 835/1900/2450 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. During the tests, the ambient temperature of the laboratory was 21.7°C, the relative humidity was 62% and the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

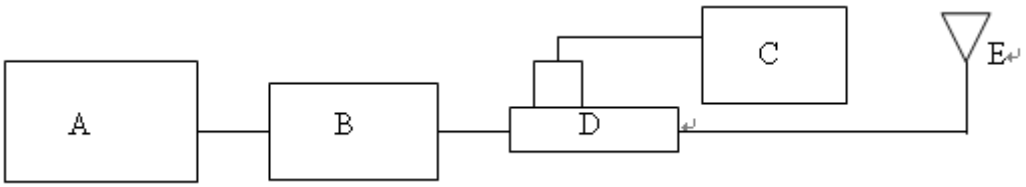
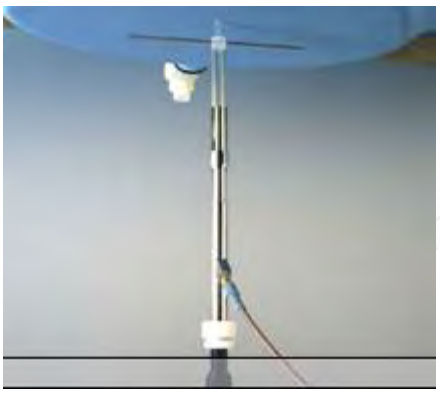


Fig.b The block diagram of system verification

A. Agilent Model 8648D/N5181A Signal Generator
B. Mini circuits Model ZHL-42 Amplifier
C. Agilent Model U2001B/E4417A Power Sensor
D. Agilent Model 778D/777D Dual directional coupling
E. Reference dipole antenna



Photograph of the dipole Antenna

Validation Kit	S/N	Frequency (MHz)		Target SAR (1g) (Pin=250mW) (mW/g)	Measured SAR (1g)(mW/g)	Measured Date
D835V2	4d063	835	Head	2.31	2.38	Jan. 21, 2012
			Body	2.43	2.43	Jan. 21, 2012
D1900V2	5d027	1900	Head	10.1	10.2	Jan. 20, 2012
			Body	9.93	9.75	Jan. 20, 2012
D2450V2	727	2450	Head	13.7	13.8	Jan. 25, 2012
			Body	12.7	12.8	Jan. 25, 2012
D1900V2	5d027	1900	Body	10	10.1	May 25, 2012
D835V2	4d120	835	Body	2.43	2.44	Jun. 05, 2012
D1900V2	5d027	1900	Body	10	9.9	Jun. 05, 2012

Table 1. System validation (follow manufacture target value)

1.11 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Head-simulant fluid were measured by using the HP Model 85070D Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjuncation with HP 8753D Network Analyzer (30 KHz-6000MHz).

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant iin the flat section of the phantom was 15cm±5mm during all tests. (Appendix Fig .2)

Frequency (MHz)	Tissue type	Dielectric Parameters		Recommended Limits	Measured	Measurement date
835	Head	Verification	ρ	38.38-42.42	42.174	Jan. 21, 2012
			σ (S/m)	0.84-0.92	0.898	
		Test CH (L)_GSM	P	38.38-42.42	42.327	
			σ (S/m)	0.84-0.92	0.888	
		Test CH (M)_GSM	P	38.38-42.42	42.142	
			σ (S/m)	0.84-0.92	0.901	
		Test CH (H)_GSM	P	38.38-42.42	41.984	
			σ (S/m)	0.84-0.92	0.912	
		Test CH (L)_WCDMA	P	38.38-42.42	42.284	
			σ (S/m)	0.84-0.92	0.89	
		Test CH (M)_ WCDMA	P	38.38-42.42	42.142	
			σ (S/m)	0.84-0.92	0.901	
		Test CH (H)_ WCDMA	P	38.38-42.42	42.021	
			σ (S/m)	0.84-0.92	0.911	
		Simulated Tissue Temp.(°C)		20-24	21.7	

835	Body	Verification	P	51.21-56.60	55.605	Jan. 21, 2012
			σ (S/m)	0.95-1.05	0.965	
		Test CH (L)_GSM	P	51.21-56.60	55.716	
			σ (S/m)	0.95-1.05	0.954	
		Test CH (M)_GSM	P	51.21-56.60	55.56	
			σ (S/m)	0.95-1.05	0.966	
		Test CH (H)_GSM	P	51.21-56.60	55.49	
			σ (S/m)	0.95-1.05	0.976	
		Test CH (L)_WCDMA	P	51.21-56.60	55.67	
			σ (S/m)	0.95-1.05	0.957	
		Test CH (M)_ WCDMA	P	51.21-56.60	55.56	
			σ (S/m)	0.95-1.05	0.966	
		Test CH (H)_ WCDMA	P	51.21-56.60	55.509	
			σ (S/m)	0.95-1.05	0.974	
		Simulated Tissue Temp.(°C)		20-24	21.7	
1900	Head	Verification	P	36.96-40.85	40.157	Jan. 20, 2012
			σ (S/m)	1.34-1.48	1.459	
		Test CH (L)_GSM	P	36.96-40.85	40.291	
			σ (S/m)	1.34-1.48	1.412	
		Test CH (M)_GSM	P	36.96-40.85	40.235	
			σ (S/m)	1.34-1.48	1.442	
		Test CH (H)_GSM	P	36.96-40.85	40.124	
			σ (S/m)	1.34-1.48	1.468	
		Test CH (L)_WCDMA	P	36.96-40.85	40.296	
			σ (S/m)	1.34-1.48	1.414	
		Test CH (M)_ WCDMA	P	36.96-40.85	40.235	
			σ (S/m)	1.34-1.48	1.442	
		Test CH (H)_ WCDMA	P	36.96-40.85	40.133	
			σ (S/m)	1.34-1.48	1.467	
		Simulated Tissue Temp.(°C)		20-24	21.7	

1900	Body	Verification	P	50.64-55.97	51.657	May 25, 2012
			σ (S/m)	1.43-1.59	1.512	
		Test CH (L)_GSM	P	50.64-55.97	51.77	
			σ (S/m)	1.43-1.59	1.46	
		Test CH (M)_GSM	P	50.64-55.97	51.638	
			σ (S/m)	1.43-1.59	1.49	
		Test CH (H)_GSM	P	50.64-55.97	51.622	
			σ (S/m)	1.43-1.59	1.522	
		Test CH (H)_WCDMA	P	48.55-53.66	51.881	Jan. 20, 2012
			σ (S/m)	1.44-1.60	1.572	
		Test CH (H)_WCDMA	P	48.55-53.66	51.812	
			σ (S/m)	1.44-1.60	1.598	
		Test CH (H)_WCDMA	P	48.55-53.66	51.732	
			σ (S/m)	1.44-1.60	1.55	
		Simulated Tissue Temp.(°C)		20-24	21.7	
2450	Head	Verification	P	36.77-40.64	40.189	Jan. 25, 2012
			σ (S/m)	1.63-1.81	1.778	
		Test CH (L)_WLAN	P	36.77-40.64	40.329	
			σ (S/m)	1.63-1.81	1.741	
		Test CH (M)_WLAN	P	36.77-40.64	40.232	
			σ (S/m)	1.63-1.81	1.763	
		Test CH (H)_WLAN	P	36.77-40.64	40.145	
			σ (S/m)	1.63-1.81	1.798	
		Simulated Tissue Temp.(°C)		20-24	21.7	

2450	Body	Verification	P	48.07-53.13	52.991	Jan. 25, 2012
			σ (S/m)	1.81-2.01	1.995	
		Test CH (L)_WLAN	P	48.07-53.13	53.078	
			σ (S/m)	1.81-2.01	1.946	
		Test CH (M)_WLAN	P	48.07-53.13	53.024	
			σ (S/m)	1.81-2.01	1.98	
		Test CH (H)_WLAN	P	48.07-53.13	52.977	
			σ (S/m)	1.81-2.01	2.006	
		Simulated Tissue Temp.(°C)		20-24	21.7	
835	Body	Verification	P	51.11-56.49	53.762	Jun. 05, 2012
			σ (S/m)	0.93-1.03	0.987	
		Test CH (L)_GSM	P	51.11-56.49	53.917	
			σ (S/m)	0.93-1.03	0.983	
		Test CH (M)_GSM	P	51.11-56.49	53.658	
			σ (S/m)	0.93-1.03	0.996	
		Test CH (H)_GSM	P	51.11-56.49	53.688	
			σ (S/m)	0.93-1.03	1.008	
		Test CH (L)_WCDMA	P	51.11-56.49	53.849	
			σ (S/m)	0.93-1.03	0.99	
		Test CH (M)_WCDMA	P	51.11-56.49	53.658	
			σ (S/m)	0.93-1.03	0.996	
		Test CH (H)_WCDMA	P	51.11-56.49	53.664	
			σ (S/m)	0.93-1.03	0.997	
		Simulated Tissue Temp.(°C)		20-24	21.7	

1900	Body	Verification	P	50.64-55.97	51.215	Jun. 05, 2012
			σ (S/m)	1.43-1.59	1.544	
		Test CH (L)_GSM	P	50.64-55.97	51.32	
			σ (S/m)	1.43-1.59	1.478	
		Test CH (M)_GSM	P	50.64-55.97	51.19	
			σ (S/m)	1.43-1.59	1.52	
		Test CH (H)_GSM	P	50.64-55.97	51.12	
			σ (S/m)	1.43-1.59	1.551	
		Test CH (H)_WCDMA	P	50.64-55.97	51.21	
			σ (S/m)	1.43-1.59	1.506	
		Test CH (H)_WCDMA	P	50.64-55.97	51.19	
			σ (S/m)	1.43-1.59	1.52	
		Test CH (H)_WCDMA	P	50.64-55.97	51.16	
			σ (S/m)	1.43-1.59	1.546	
		Simulated Tissue Temp.(°C)		20-24	21.7	

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the brain tissue simulating liquid:

Frequency (MHz)	Mode	Ingredient						Total amount
		DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	
850	Head	—	532.63	18.29	2.40	3.20	765.49	1.0L(Kg)
	Body	—	633.91	11.76	1.20	—	602.12	1.0L(Kg)
1900	Head	445.08	554.12	0.80	—	—	—	1.0L(Kg)
	Body	300.03	697.94	2.03	—	—	—	1.0L(Kg)
2450	Head	450.00	550.00	—	—	—	—	1.0L(Kg)
	Body	313.65	686.35	—	—	—	—	1.0L(Kg)

Table 3. Recipes for tissue simulating liquid (Unit: g)

1.12 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (“SAR”) in Section 4.2 of “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” ANSI/IEEE C95.1–1992, Copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in “Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields,” NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter.

Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

(1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube).

Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels

or by specific training or education through appropriate means, such as an RF safety program in a work environment.

(2) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube).

Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube).

General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure.

Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .6)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR (Brain)	1.60 m W/g	8.00 m W/g
Spatial Average SAR (Whole Body)	0.08 m W/g	0.40 m W/g
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 m W/g	20.00 m W/g

Table 4. RF exposure limits

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

2. Summary of Results

GSM 850 MHz

Band	Mode	EUT Position	Test Configuration	Averaged SAR over 1g (W/kg)			SAR Limit 1g (W/kg)
				CH 128	CH 190	CH 251	
				824.20 MHz	836.60 MHz	848.80 MHz	
				Source-based time average power (dBm) GSM			
				23.97	24.07	24.07	
				Source-based time average power (dBm) GPRS			
				23.98	24.08	24.18	
GSM850	GSM	Right	Cheek	0.721	0.922	1.17	1.6
			Tilt	—	0.516	—	1.6
		Left	Cheek	0.702	0.995	1.28	1.6
			- With Memory card	—	—	1.23	1.6
			- With 2nd Battery	—	—	1.27	1.6
			Tilt	—	0.493	—	1.6
		Body worn (speech mode)	Front	—	0.293	—	1.6
			Back	0.319	0.413	0.548	1.6
	GPRS 1Dn2UP	Hotspot mode	Front	—	0.787	—	1.6
			Back	0.857	1.17	1.27	1.6
			Bottom	—	0.080	—	1.6
			Right	—	0.491	—	1.6
			Left	—	0.506	—	1.6

Using KDB941225 D03 and KDB941225 D04 to exclude SAR test requirements for EDGE modes due to the source-based time-averaged output power for edge mode is lower

than that in the GPRS mode.

According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

GSM 1900 MHz

Band	Mode	EUT Position	Test Configuration	Averaged SAR over 1g (W/kg)			SAR Limit 1g (W/kg)
				CH 512	CH 661	CH 810	
				1850.20 MHz	1800.00 MHz	1909.80 MHz	
				Source-based time average power (dBm) GSM			
				20.87	20.87	21.07	
				Source-based time average power (dBm) GPRS			
				21.99	21.99	21.99	
GSM 1900	GSM	Right	Cheek	0.760	0.586	0.350	1.6
			Tilt	—	0.247	—	1.6
		Left	Cheek	—	0.500	—	1.6
			Tilt	—	0.247	—	1.6
		Body worn (speech mode)	Front	—	0.305	—	1.6
			Back	0.53	0.449	0.352	1.6
	GPRS 1Dn4UP	Hotspot mode	Front	—	0.605	—	1.6
			Back	0.984	0.849	0.64	1.6
			Bottom	1.11	1.04	0.833	1.6
			Right	—	0.182	—	1.6
			Left	—	0.315	—	1.6

Using KDB941225 D03 and KDB941225 D04 to exclude SAR test requirements for EDGE modes due to the source-based time-averaged output power for edge mode is lower than that in the GPRS mode.

According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

WCDMA Band II

Band	Mode	EUT Position	Test Configuration	Averaged SAR over 1g (W/kg)			SAR Limit 1g (W/kg)
				CH 9262	CH 9400	CH 9538	
				1852.40 MHz	1880.00 MHz	1907.60 MHz	
				R99 Average power (dBm)			
				22.6	22.67	22.4	
WCDMA Band Ⅱ	R99	Right	Cheek	1.2	0.894	0.787	1.6
			Tilt	—	0.420	—	1.6
		Left	Cheek	1.06	0.816	0.776	1.6
			Tilt	—	0.440	—	1.6
		Body worn (speech mode)	Front	—	0.313	—	1.6
			Back	0.576	0.49	0.509	1.6
	Hotspot mode		Front	—	0.687	—	1.6
			Back	1.37	1.09	0.928	1.6
			- With Headset	1.27	—	—	1.6
			- With Memory card	1.3	—	—	1.6
			- With 2nd Battery	1.2	—	—	1.6
			Bottom	1.32	1.03	0.952	1.6
			Right	—	0.221	—	1.6
			Left	—	0.395	—	1.6

Using KDB941225 D01 to exclude SAR test requirements for HSDPA modes due to the maximum average output power of HSDPA active is less than 1/4 dB higher than that measured without HSDPA using 12.2kbps RMC

According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

WCDMA Band V

Band	Mode	EUT Position	Test Configuration	Averaged SAR over 1g (W/kg)			SAR Limit 1g (W/kg)
				CH 4132	CH 4183	CH 4233	
				826.40 MHz	836.60 MHz	846.60 MHz	
				R99 Average power (dBm)			
				23.93	23.91	23.63	
WCDMA Band V	R99	Right	Cheek	1.02	1.08	1.05	1.6
			Tilt	—	0.593	—	1.6
		Left	Cheek	1.08	1.14	1.11	1.6
			Tilt	—	0.537	—	1.6
		Body worn (speech mode)	Front	—	0.485	—	1.6
			Back	0.601	0.701	0.742	1.6
	Hotspot mode		Front	0.839	0.910	0.844	1.6
			Back	1.26	1.36	1.21	1.6
			Bottom	—	0.095	—	1.6
			Right	—	0.530	—	1.6
			Left	—	0.549	—	1.6

Using KDB941225 D01 to exclude SAR test requirements for HSDPA modes due to the maximum average output power of HSDPA active is less than 1/4 dB higher than that measured without HSDPA using 12.2kbps RMC

According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

WLAN802.11 b

Band	EUT Position	Test Configuration	Averaged SAR over 1g (W/kg)			SAR Limit 1g (W/kg)
			CH 1	CH 6	CH 11	
			2412 MHz	2437 MHz	2462 MHz	
			Average Power Output (dBm)			
			12.51	12.47	12.39	
WLAN 802.11 b	Right	Cheek	—	0.00587	—	1.6
		Tilt	0.00922	0.00807	0.00772	1.6
		- With Memory card	0.00902	—	—	1.6
		- With 2nd Battery	0.00813	—	—	1.6
	Left	Cheek	—	0.00348	—	1.6
		Tilt	—	0.0058	—	1.6
	Hotspot mode	Front	—	0.0025	—	1.6
		Back	0.012	0.00995	0.011	1.6
		- With Headset	0.013	—	—	1.6
		- With Memory card	0.011	—	—	1.6
		- With 2nd Battery	0.00901	—	—	1.6
		Top	—	0.00872	—	1.6
		Bottom	—	—	—	1.6
		Right	—	0.00105	—	1.6
		Left	—	0.0044	—	1.6

Using KDB248227-SAR is not required for 802.11 g/HT20 channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding 802.11b channels.

According to KDB447498 the 1-g SAR for the highest output channel is less than 0.8 W/kg, where the transmission band corresponding to all channels is ≤ 100 MHz, testing for the other channels is not required.

3. Instruments List

Device	Manufacturer	Type	Serial number	Date of last calibration	Date of next calibration
Dosimetric E-Field Probe	Schmid & Partner Engineering AG	ES3DV3 EX3DV4	3172 3831	Aug.23,2011 Jan.04,2012	Aug.22,2012 Jan.03,2013
835/1900/2450 MHz System Validation Dipole	Schmid & Partner Engineering AG	D835V2	4d063 4d120	May25.2011 Jul.19.2011	May24.2012 Jul.18.2012
		D1900V2	5d027	Apr.19,2011 Apr.26,2012	Apr.18,2012 Apr.25,2013
		D2450V2	727	Apr.19,2011	Apr.18,2012
Data acquisition Electronics	Schmid & Partner Engineering AG	DAE4	1260 914	Aug.22,2011 Dec.08,2011	Aug.21,2012 Dec.07,2012
Software	Schmid & Partner Engineering AG	DASY 5 V52.8	N/A	Calibration not required	Calibration not required
Phantom	Schmid & Partner Engineering AG	SAM	N/A	Calibration not required	Calibration not required
Network Analyzer	HP	8753D	3410A05547	Mar.16,2011 Mar.15,2012	Mar.15,2012 Mar.14,2013
Dielectric Probe Kit	HP	85070D	US01440168	Calibration not required	Calibration not required
Dual-directional coupler	Agilent	778D 777D	50313 50114	Aug.19,2011 Aug.18,2011	Aug.18,2012 Aug.17,2012
RF Signal Generator	Agilent	8648D N5181A	3847M00432 MY50141235	Jun.01,2011 Jan.06,2012	May 31,2012 Jan.05,2013
Power Sensor	Agilent	U2001B E4417A	MY48100169 MY51410006	Apr.28,2011 Oct.24,2011	Apr.27,2012 Oct.23,2012

Device	Manufacturer	Type	Serial number	Date of last calibration	Date of next calibration
Radio Communication Test	R&S	CMU200	113505	May 31,2011 May 11,2012	May 30,2012 May 10,2013
TECPEL	Digital thermometer	DTM-303A	TP102615	Mar.08.2012	Mar.07.2013
Power Sensor	Anritsu	ML2495A	1005007	Feb.17.2010	Feb.16.2012
Power Meter	Anritsu	MA2411B	917032	Jan.16.2012	Jan.15.2014
Spectrum Analyzer	Agilent	E4446A	MY43360126	Apr.19.2010	Apr.18.2012
Spectrum Analyzer	Agilent	E4440A	MY45304525	Jan.25.2011	Jan.24.2013

4. Measurements

Date: 2012/1/21

Re Cheek_CH128

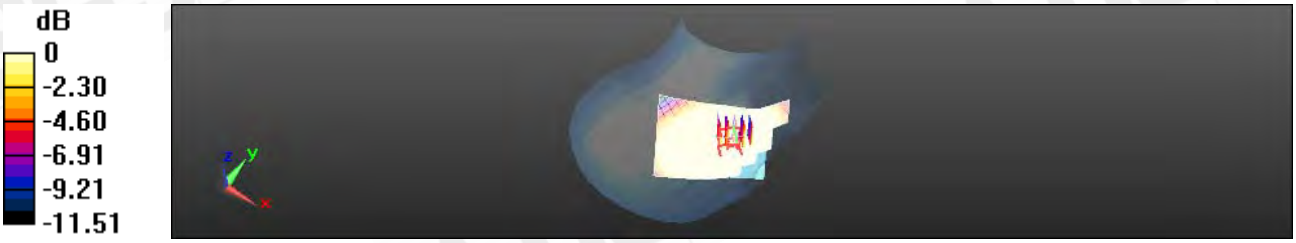
Communication System: GSM; Communication System Band: GSM850; Frequency: 824.2 MHz;
Medium parameters used: f = 824.2 MHz; σ = 0.888 mho/m; ε_r = 42.327; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 4.215 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.939 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.9550
SAR(1 g) = 0.721 mW/g; SAR(10 g) = 0.527 mW/g
Maximum value of SAR (measured) = 0.775 mW/g



0 dB = 0.770mW/g m = -2.27 dB mW/g m

Re Cheek_CH190

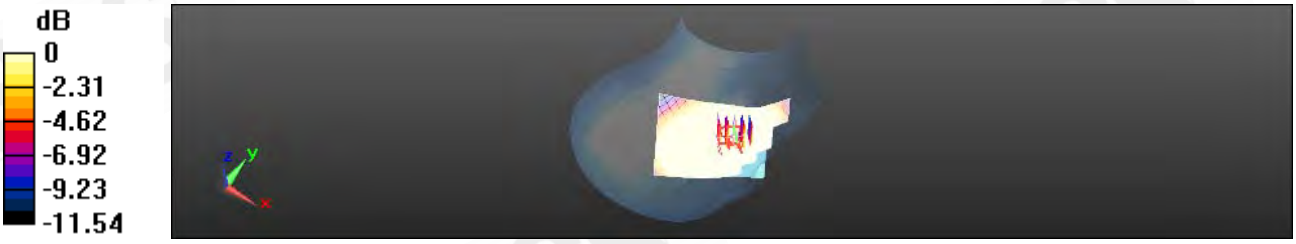
Communication System: GSM; Communication System Band: GSM850; Frequency: 836.6 MHz; Medium parameters used: f = 837 MHz; σ = 0.901 mho/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 5.441 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.494 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.2280
SAR(1 g) = 0.922 mW/g; SAR(10 g) = 0.677 mW/g
Maximum value of SAR (measured) = 1.001 mW/g



0 dB = 1.000mW/g m = 0 dB mW/g m

Re Cheek_CH251

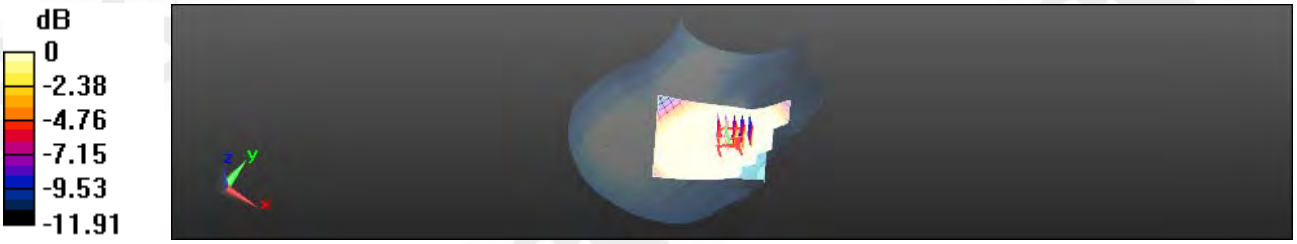
Communication System: GSM; Communication System Band: GSM850; Frequency: 848.8 MHz;
Medium parameters used: f = 849 MHz; σ = 0.912 mho/m; ε_r = 41.984; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 6.847 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.819 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.5560
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.852 mW/g
Maximum value of SAR (measured) = 1.261 mW/g



0 dB = 1.260mW/g m = 2.01 dB mW/g m

Re Tilt_CH190

Communication System: GSM; Communication System Band: GSM850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.901 mho/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 3.096 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.503 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.6710
SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.381 mW/g
Maximum value of SAR (measured) = 0.563 mW/g

0 dB = 0.560mW/g m = -5.04 dB mW/g m

Le Cheek_CH128

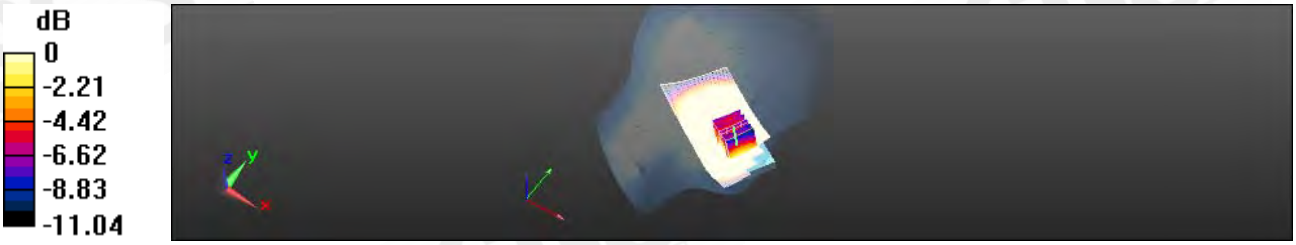
Communication System: GSM; Communication System Band: GSM850; Frequency: 824.2 MHz;
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.888 mho/m; ε_r = 42.327; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 3.945 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.138 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.8920
SAR(1 g) = 0.702 mW/g; SAR(10 g) = 0.522 mW/g
Maximum value of SAR (measured) = 0.768 mW/g



0 dB = 0.770mW/g m = -2.27 dB mW/g m

Le Cheek_CH190

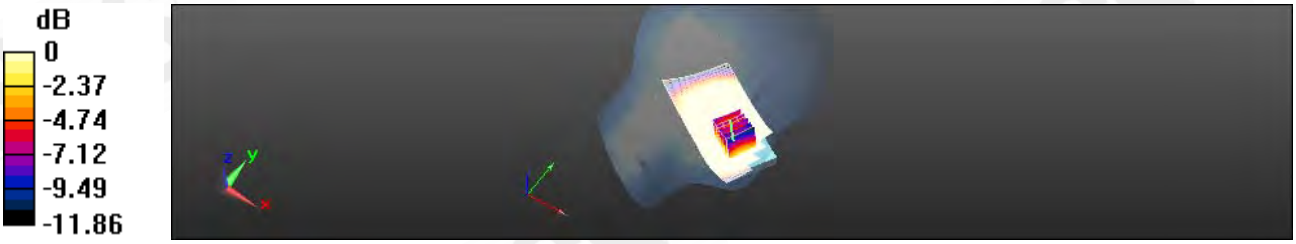
Communication System: GSM; Communication System Band: GSM850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.901 mho/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 5.572 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.529 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.2650
SAR(1 g) = 0.995 mW/g; SAR(10 g) = 0.733 mW/g
Maximum value of SAR (measured) = 1.076 mW/g



0 dB = 1.080mW/g m = 0.67 dB mW/g m

Le Cheek_CH251

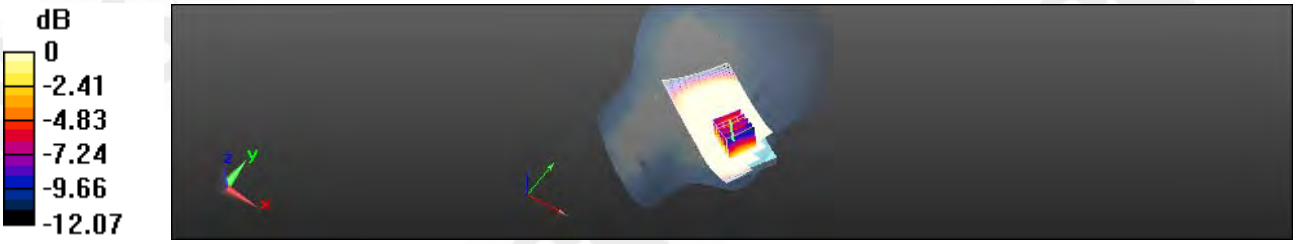
Communication System: GSM; Communication System Band: GSM850; Frequency: 848.8 MHz;
Medium parameters used: f = 849 MHz; σ = 0.912 mho/m; ε_r = 41.984; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

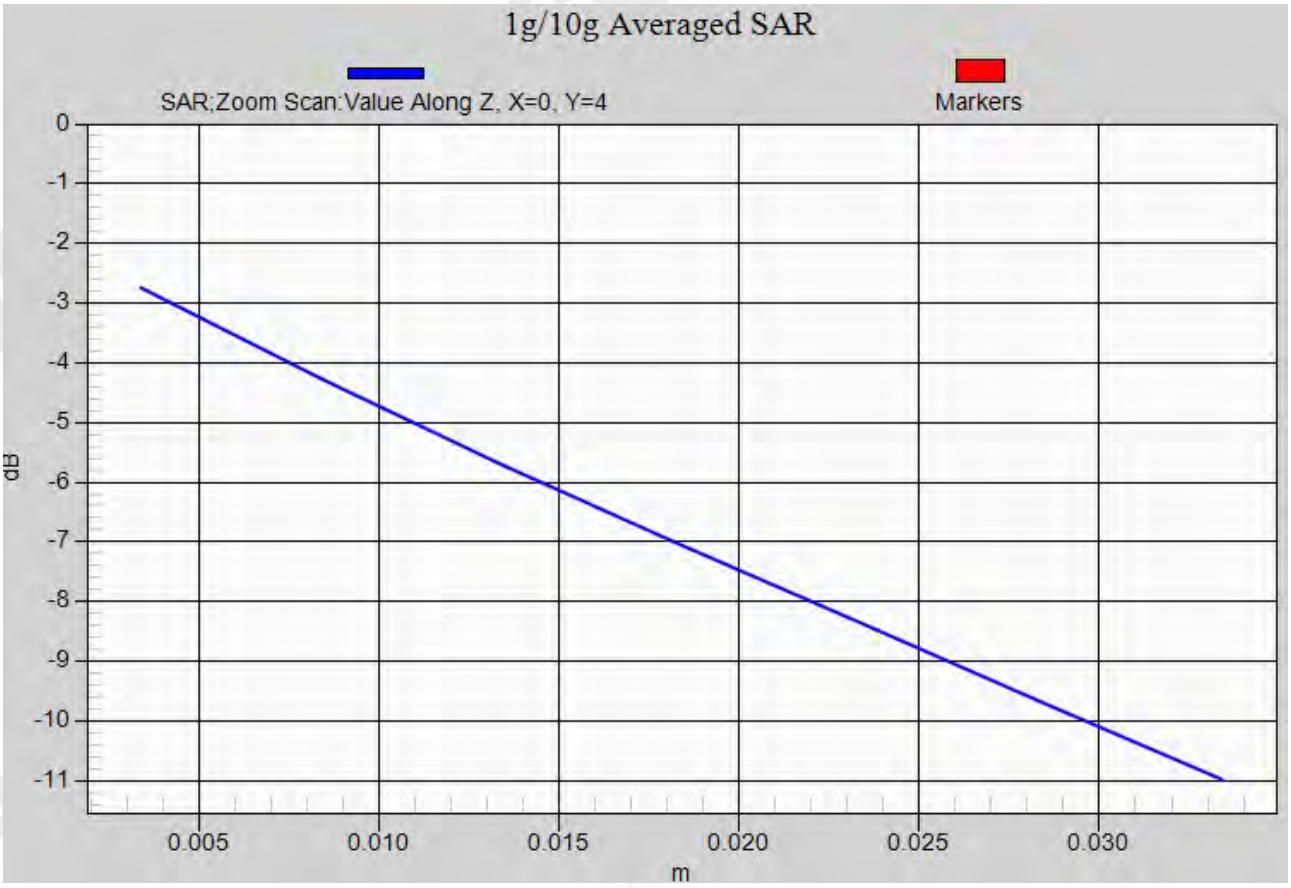
- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 7.064 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.166 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.6400
SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.939 mW/g
Maximum value of SAR (measured) = 1.389 mW/g



0 dB = 1.390mW/g m = 2.86 dB mW/g m



Date: 2012/1/21

Le Cheek_CH251_repeated with memory card

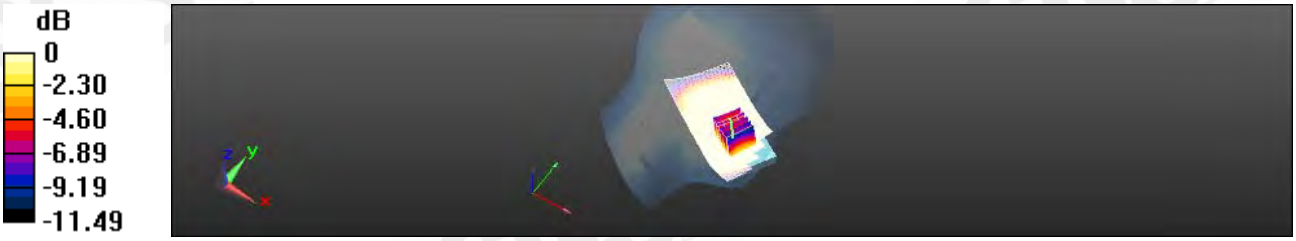
Communication System: GSM; Communication System Band: GSM850; Frequency: 848.8 MHz;
Medium parameters used: f = 849 MHz; σ = 0.912 mho/m; ε_r = 41.984; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 7.008 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.858 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.5490
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.905 mW/g
Maximum value of SAR (measured) = 1.321 mW/g



0 dB = 1.320mW/g m = 2.41 dB mW/g m

Le Cheek_GSM 850_CH251_repeated with 2nd Battery

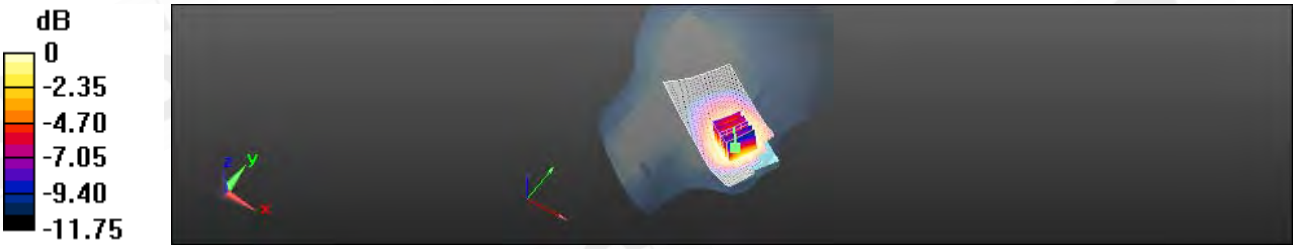
Communication System: GSM; Communication System Band: GSM850; Frequency: 848.8 MHz;
Medium parameters used: f = 849 MHz; σ = 0.912 mho/m; ε_r = 41.984; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.433 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.863 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.6690
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.935 mW/g
Maximum value of SAR (measured) = 1.405 mW/g



0 dB = 1.400mW/g = 2.92 dB mW/g

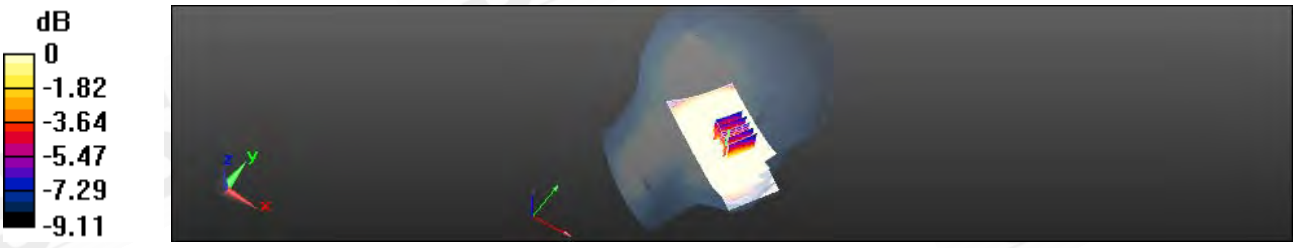
Le Tilt_CH190

Communication System: GSM; Communication System Band: GSM850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.901 mho/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 3.690 mW/g m

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.676 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.6470
SAR(1 g) = 0.493 mW/g; SAR(10 g) = 0.364 mW/g
Maximum value of SAR (measured) = 0.535 mW/g



0 dB = 0.530mW/g m = -5.51 dB mW/g m

Speech mode_Front side_CH190_repeated with headset

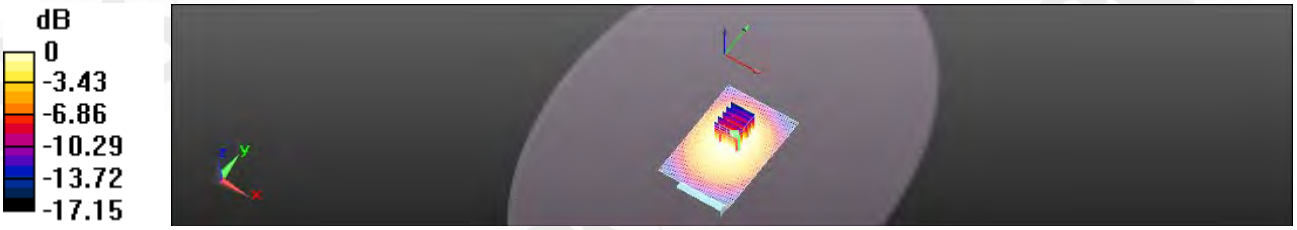
Communication System: GSM; Communication System Band: GSM850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 53.658; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.344 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.562 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.380 mW/g
SAR(1 g) = 0.293 mW/g; SAR(10 g) = 0.215 mW/g
Maximum value of SAR (measured) = 0.341 mW/g



0 dB = 0.344 mW/g = -9.28 dB mW/g

Speech mode_Back side_CH128_CH190_repeated with headset

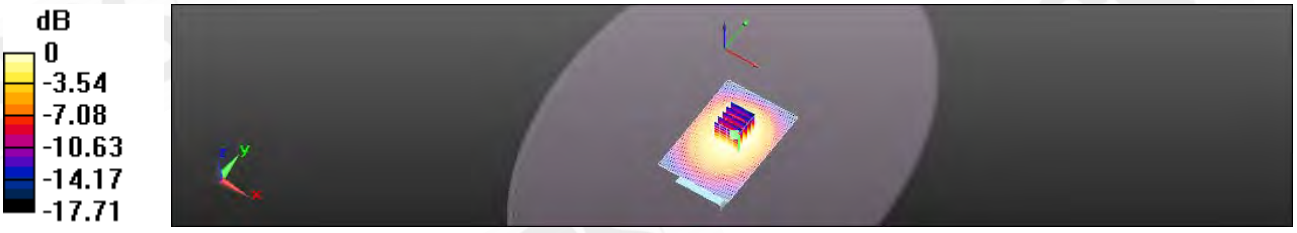
Communication System: GSM; Communication System Band: GSM850; Frequency: 824.2 MHz;
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.983 mho/m; ε_r = 53.917; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.380 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.049 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.435 mW/g
SAR(1 g) = 0.319 mW/g; SAR(10 g) = 0.228 mW/g
Maximum value of SAR (measured) = 0.382 mW/g



0 dB = 0.380 mW/g = -8.41 dB mW/g

Speech mode_Back side_CH190_repeated with headset

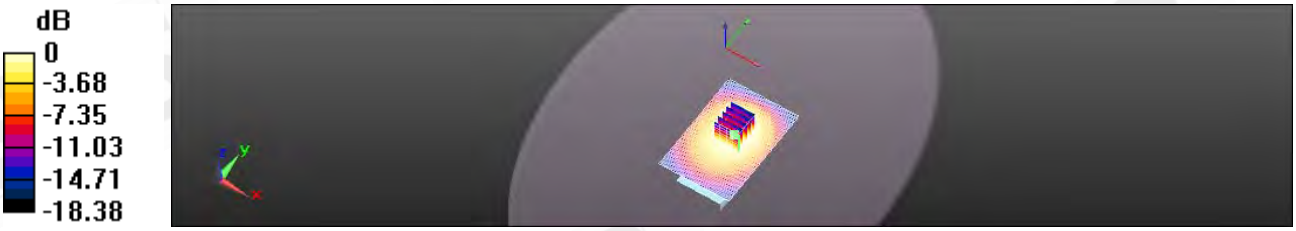
Communication System: GSM; Communication System Band: GSM850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 53.658; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.494 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.637 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.557 mW/g
SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.295 mW/g
Maximum value of SAR (measured) = 0.493 mW/g



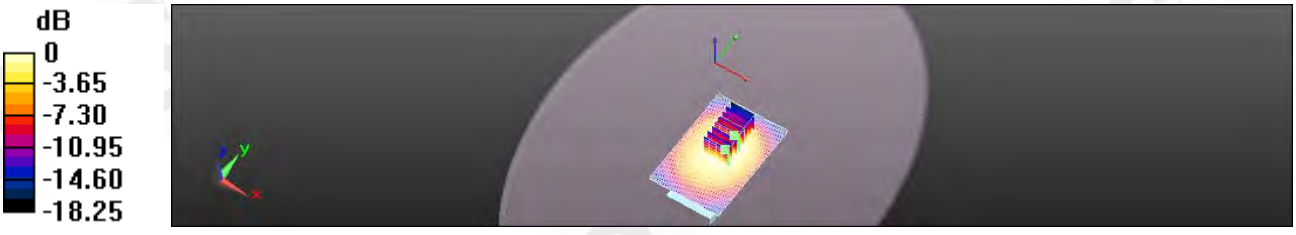
0 dB = 0.494 mW/g = -6.12 dB mW/g

Speech mode_Back side_CH251_repeated with headset

Communication System: GSM; Communication System Band: GSM850; Frequency: 848.8 MHz;
Medium parameters used: f = 849 MHz; σ = 1.008 mho/m; ε_r = 53.688; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.653 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.867 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.739 mW/g
SAR(1 g) = 0.548 mW/g; SAR(10 g) = 0.391 mW/g
Maximum value of SAR (measured) = 0.653 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.867 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.731 mW/g
SAR(1 g) = 0.504 mW/g; SAR(10 g) = 0.335 mW/g
Maximum value of SAR (measured) = 0.630 mW/g



0 dB = 0.653 mW/g = -3.70 dB mW/g

Front side_CH190

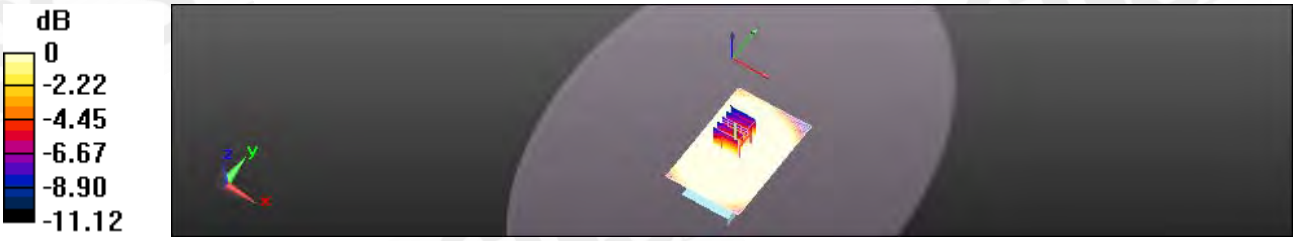
Communication System: GPRS-10; Communication System Band: GPRS850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 3.998 mW/g m

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.336 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.0220
SAR(1 g) = 0.787 mW/g; SAR(10 g) = 0.579 mW/g
Maximum value of SAR (measured) = 0.851 mW/g



0 dB = 0.850mW/g m = -1.41 dB mW/g m

Back side_CH128

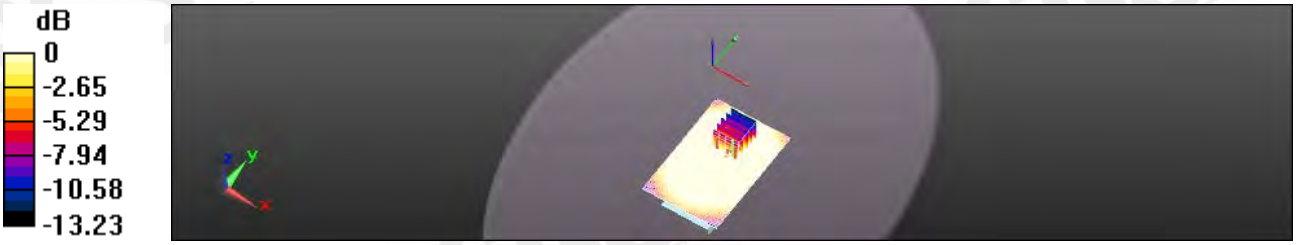
Communication System: GPRS-10; Communication System Band: GPRS850; Frequency: 824.2 MHz;
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.954 mho/m; ε_r = 55.716; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 7.715 mW/g m

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.365 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.2510
SAR(1 g) = 0.857 mW/g; SAR(10 g) = 0.584 mW/g
Maximum value of SAR (measured) = 0.984 mW/g



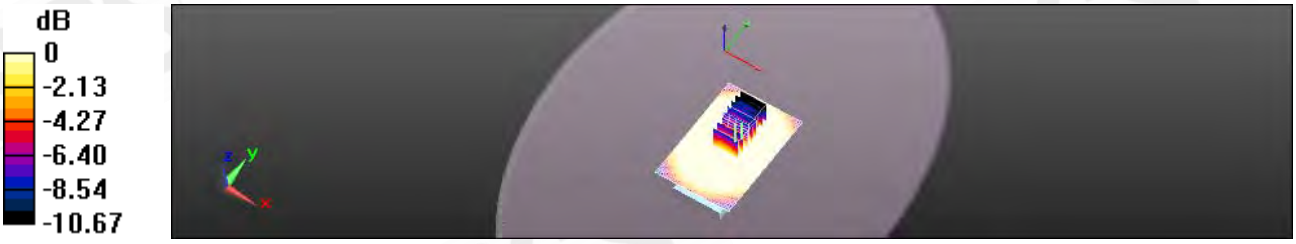
0 dB = 0.980mW/g m = -0.18 dB mW/g m

Back side_CH190

Communication System: GPRS-10; Communication System Band: GPRS850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of Total (interpolated) = 9.531 mW/g m
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.599 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.5740
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.725 mW/g
Maximum value of SAR (measured) = 1.202 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.599 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.6380
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.812 mW/g
Maximum value of SAR (measured) = 1.284 mW/g



0 dB = 1.280mW/g m = 2.14 dB mW/g m

Back side_CH251

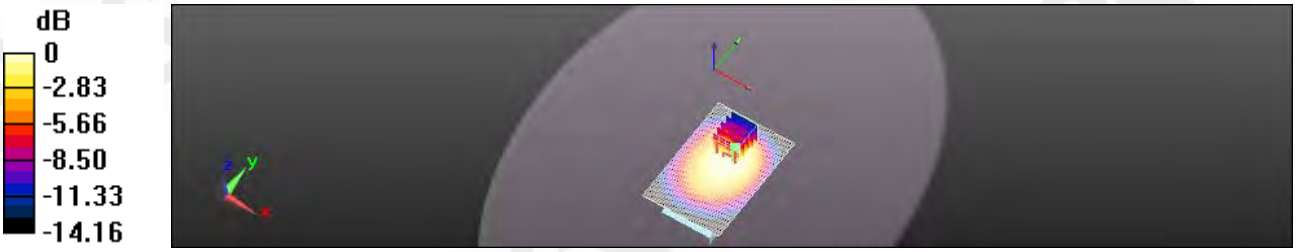
Communication System: GPRS-10; Communication System Band: GPRS850; Frequency: 848.8 MHz;
Medium parameters used: f = 849 MHz; σ = 0.976 mho/m; ε_r = 55.49; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.499 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.271 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.8370
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.860 mW/g
Maximum value of SAR (measured) = 1.427 mW/g



0 dB = 1.430mW/g = 3.11 dB mW/g

Bottom side_CH190

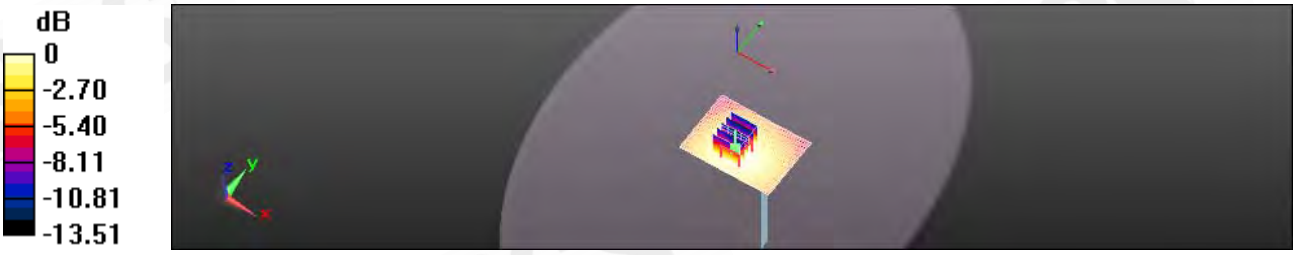
Communication System: GPRS-10; Communication System Band: GPRS850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.094 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.304 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.1570
SAR(1 g) = 0.080 mW/g; SAR(10 g) = 0.050 mW/g
Maximum value of SAR (measured) = 0.094 mW/g



0 dB = 0.090mW/g = -20.92 dB mW/g

Right side_CH190

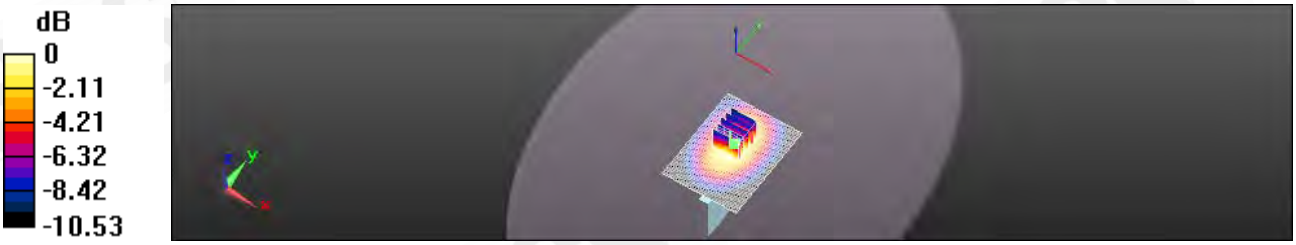
Communication System: GPRS-10; Communication System Band: GPRS850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.505 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.988 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.7210
SAR(1 g) = 0.491 mW/g; SAR(10 g) = 0.328 mW/g
Maximum value of SAR (measured) = 0.537 mW/g



0 dB = 0.540mW/g = -5.35 dB mW/g

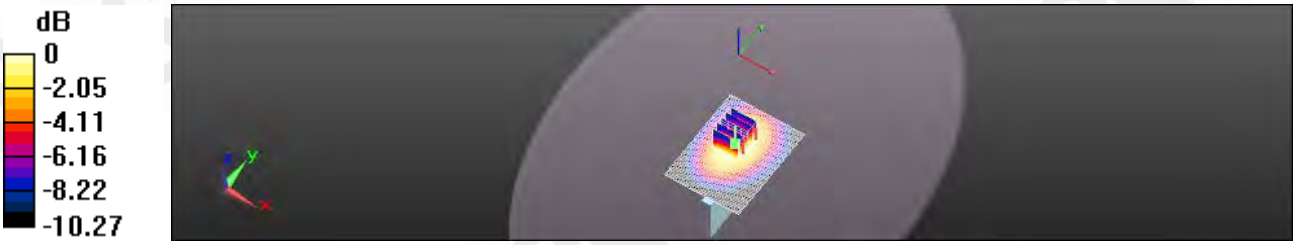
Left side_CH190

Communication System: GPRS-10; Communication System Band: GPRS850; Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.531 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.819 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.7200
SAR(1 g) = 0.506 mW/g; SAR(10 g) = 0.346 mW/g
Maximum value of SAR (measured) = 0.558 mW/g



0 dB = 0.560mW/g = -5.04 dB mW/g

Re Cheek_CH512

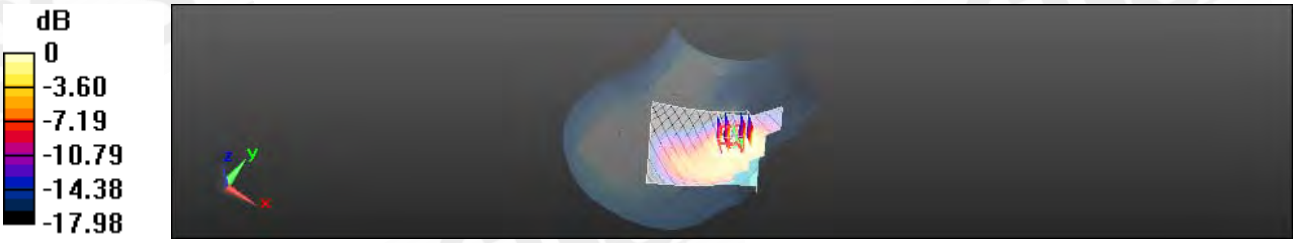
Communication System: GSM; Communication System Band: GSM1900; Frequency: 1850.2 MHz;
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.412 mho/m; ε_r = 40.291; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.950 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.330 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.3220
SAR(1 g) = 0.760 mW/g; SAR(10 g) = 0.414 mW/g
Maximum value of SAR (measured) = 0.884 mW/g



0 dB = 0.880mW/g = -1.11 dB mW/g

Re Cheek_CH661

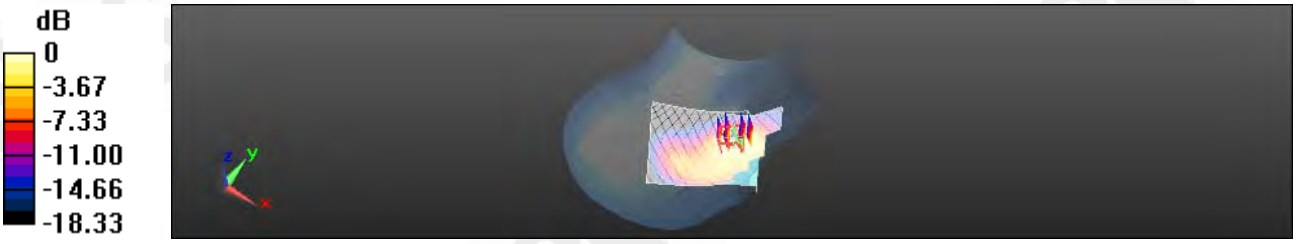
Communication System: GSM; Communication System Band: GSM1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.442 mho/m; ε_r = 40.235; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.720 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.264 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.0320
SAR(1 g) = 0.586 mW/g; SAR(10 g) = 0.316 mW/g
Maximum value of SAR (measured) = 0.684 mW/g



0 dB = 0.680mW/g = -3.35 dB mW/g

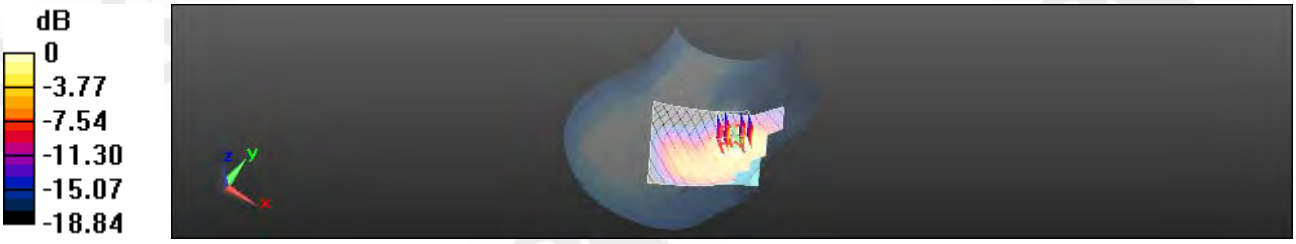
Re Cheek_CH810

Communication System: GSM; Communication System Band: GSM1900; Frequency: 1909.8 MHz;
Medium parameters used: f = 1910 MHz; σ = 1.468 mho/m; ε_r = 40.124; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.435 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.008 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.6010
SAR(1 g) = 0.350 mW/g; SAR(10 g) = 0.191 mW/g
Maximum value of SAR (measured) = 0.418 mW/g



0 dB = 0.420mW/g = -7.54 dB mW/g

Re Tilt_CH661

Communication System: GSM; Communication System Band: GSM1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.442 mho/m; ε_r = 40.235; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

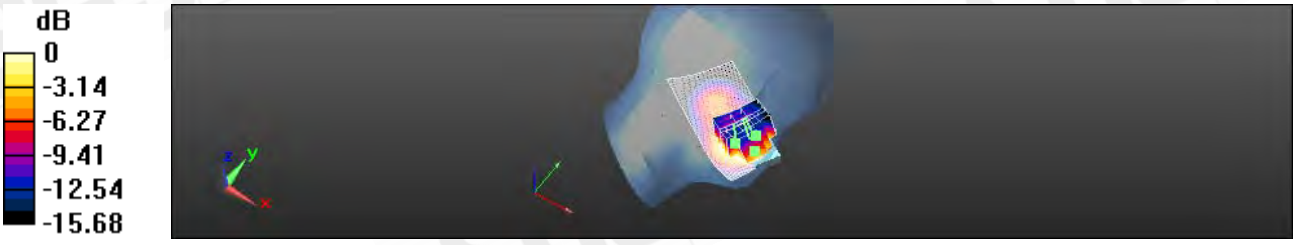
Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.299 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.870 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.3940
SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.147 mW/g
Maximum value of SAR (measured) = 0.274 mW/g

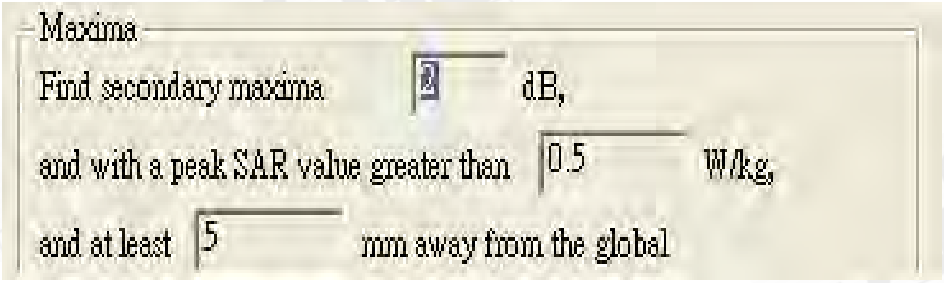
0 dB = 0.270mW/g = -11.37 dB mW/g

Le Cheek_CH661

Communication System: GSM; Communication System Band: GSM1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.442 mho/m; ε_r = 40.235; ρ = 1000 kg/m^3
Phantom section: Left Section
Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.569 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.160 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.7880
SAR(1 g) = 0.497 mW/g; SAR(10 g) = 0.300 mW/g
Maximum value of SAR (measured) = 0.566 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.160 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.7790
SAR(1 g) = 0.446 mW/g; SAR(10 g) = 0.253 mW/g
Maximum value of SAR (measured) = 0.540 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 2: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.160 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.7860
SAR(1 g) = 0.500 mW/g; SAR(10 g) = 0.298 mW/g
Maximum value of SAR (measured) = 0.567 mW/g



0 dB = 0.570mW/g = -4.88 dB mW/g



Le Tilt_CH661

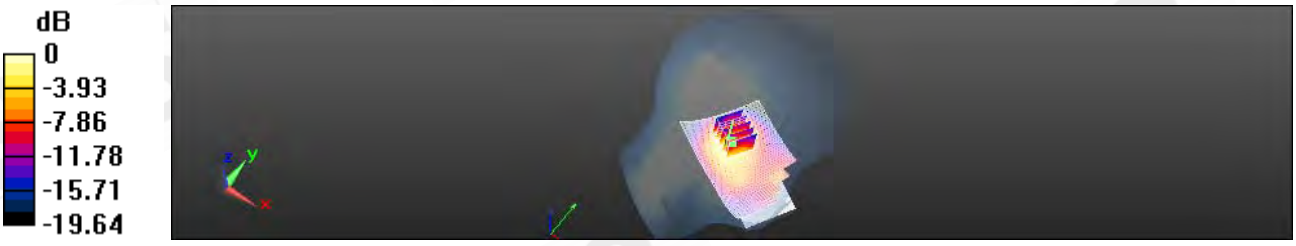
Communication System: GSM; Communication System Band: GSM1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.442 mho/m; ε_r = 40.235; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.306 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.593 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.4090
SAR(1 g) = 0.247 mW/g; SAR(10 g) = 0.140 mW/g
Maximum value of SAR (measured) = 0.277 mW/g



0 dB = 0.280mW/g = -11.06 dB mW/g

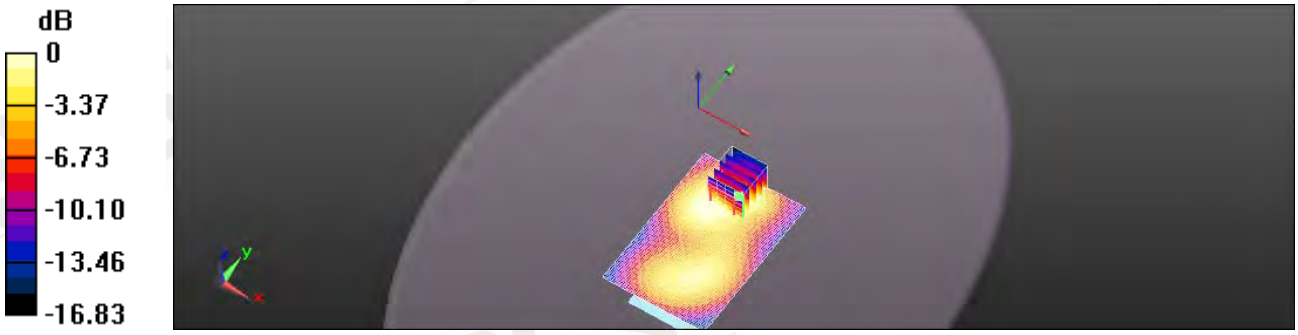
Speech mode_Front side_CH661_repeated with headset

Communication System: GSM; Communication System Band: GSM1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.188; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.386 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.673 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.475 mW/g
SAR(1 g) = 0.305 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 0.387 mW/g



0 dB = 0.386 mW/g = -8.27 dB mW/g

Speech mode_Back side_CH512_repeated with headset

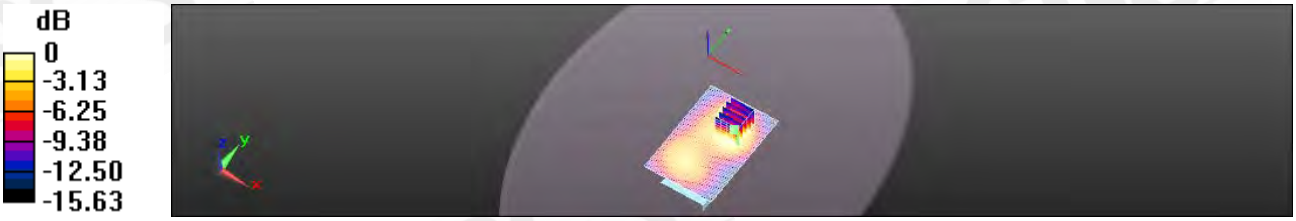
Communication System: GSM; Communication System Band: GSM1900; Frequency: 1850.2 MHz;
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.478 mho/m; ε_r = 51.319; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.723 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.042 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.852 mW/g
SAR(1 g) = 0.530 mW/g; SAR(10 g) = 0.322 mW/g
Maximum value of SAR (measured) = 0.695 mW/g



0 dB = 0.723 mW/g = -2.81 dB mW/g

Speech mode_Back side_CH661_repeated with headset

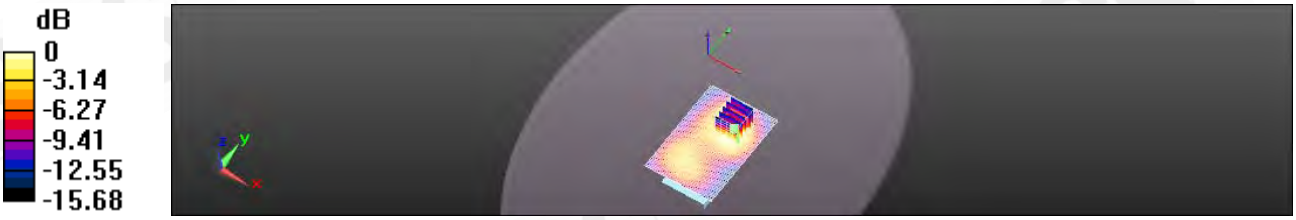
Communication System: GSM; Communication System Band: GSM1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.188; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.619 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.493 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.734 mW/g
SAR(1 g) = 0.449 mW/g; SAR(10 g) = 0.273 mW/g
Maximum value of SAR (measured) = 0.595 mW/g



0 dB = 0.619 mW/g = -4.17 dB mW/g

Speech mode_Back side_CH810_repeated with headset

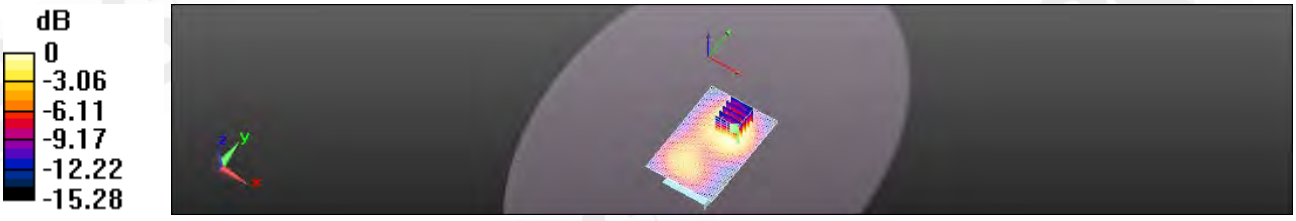
Communication System: GSM; Communication System Band: GSM1900; Frequency: 1909.8 MHz;
Medium parameters used: f = 1910 MHz; σ = 1.551 mho/m; ε_r = 51.119; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.481 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.805 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.575 mW/g
SAR(1 g) = 0.352 mW/g; SAR(10 g) = 0.211 mW/g
Maximum value of SAR (measured) = 0.468 mW/g



0 dB = 0.481 mW/g = -6.36 dB mW/g

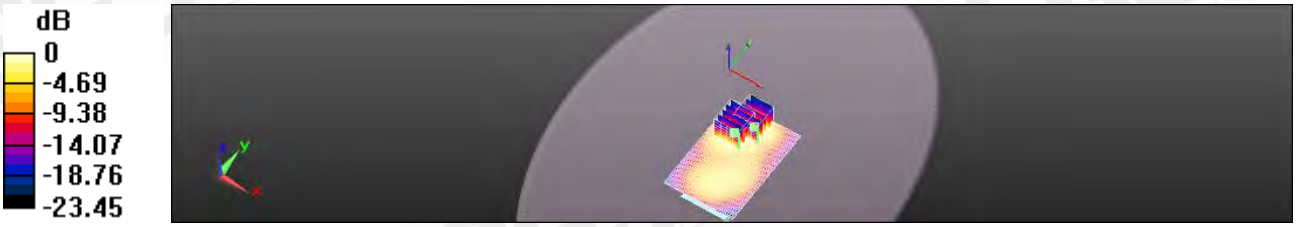
Front side_CH661

Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 51.638; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.738 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.143 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.984 mW/g
SAR(1 g) = 0.605 mW/g; SAR(10 g) = 0.341 mW/g
Maximum value of SAR (measured) = 0.760 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.143 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 0.962 mW/g
SAR(1 g) = 0.573 mW/g; SAR(10 g) = 0.323 mW/g
Maximum value of SAR (measured) = 0.800 mW/g



0 dB = 0.738 mW/g = -2.64 dB mW/g

Back side_CH512

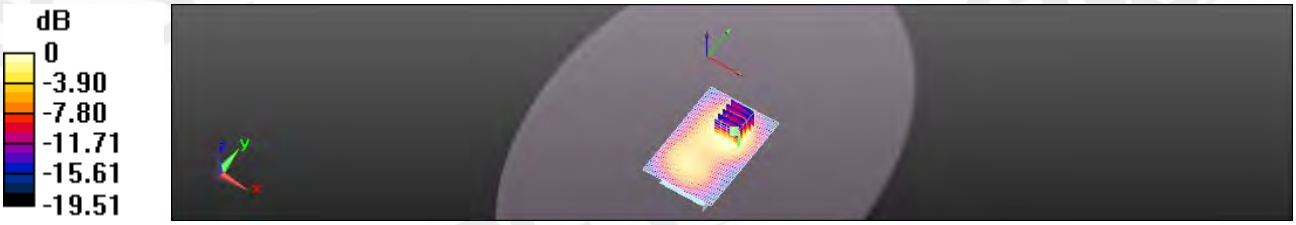
Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1850.2 MHz;
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 51.77; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.42 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.174 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.646 mW/g
SAR(1 g) = 0.984 mW/g; SAR(10 g) = 0.588 mW/g
Maximum value of SAR (measured) = 1.31 mW/g



0 dB = 1.42 mW/g = 3.07 dB mW/g

Back side_CH661

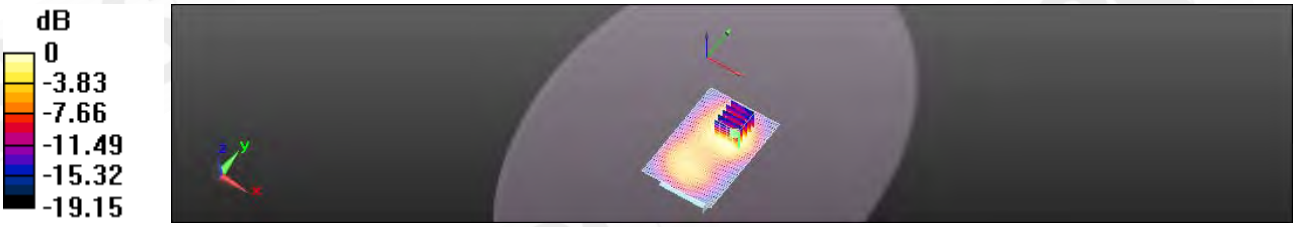
Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 51.638; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.24 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.022 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.430 mW/g
SAR(1 g) = 0.849 mW/g; SAR(10 g) = 0.502 mW/g
Maximum value of SAR (measured) = 1.13 mW/g



0 dB = 1.24 mW/g = 1.87 dB mW/g

Back side_CH810

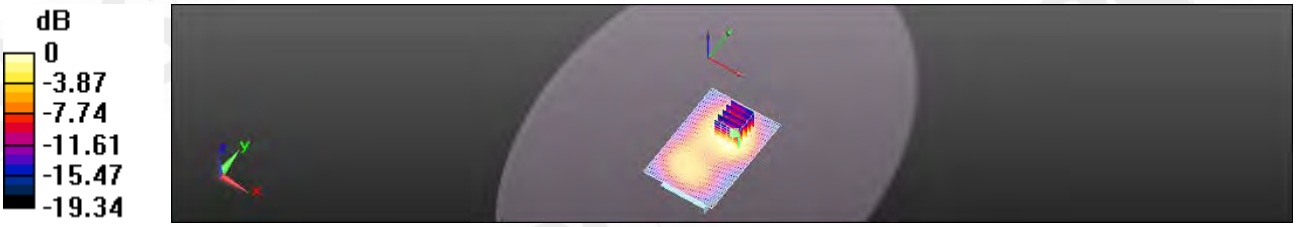
Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1909.8 MHz;
Medium parameters used: f = 1910 MHz; σ = 1.522 mho/m; ε_r = 51.622; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.915 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.817 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.088 mW/g
SAR(1 g) = 0.640 mW/g; SAR(10 g) = 0.373 mW/g
Maximum value of SAR (measured) = 0.847 mW/g



0 dB = 0.915 mW/g = -0.77 dB mW/g

Bottom side_CH512

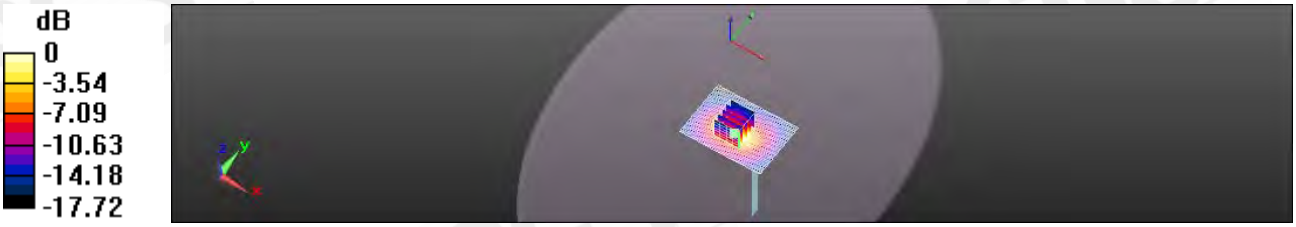
Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1850.2 MHz;
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.46 mho/m; ε_r = 51.77; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.55 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.354 V/m; Power Drift = -0.18 dB
Peak SAR (extrapolated) = 1.874 mW/g
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.589 mW/g
Maximum value of SAR (measured) = 1.54 mW/g



0 dB = 1.55 mW/g = 3.81 dB mW/g

Bottom side_CH661

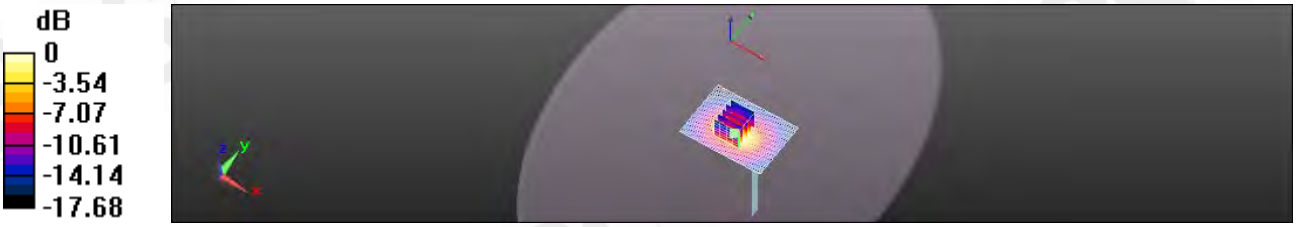
Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 51.638; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.42 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.997 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.778 mW/g
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.544 mW/g
Maximum value of SAR (measured) = 1.46 mW/g



0 dB = 1.42 mW/g = 3.02 dB mW/g

Bottom side_CH810

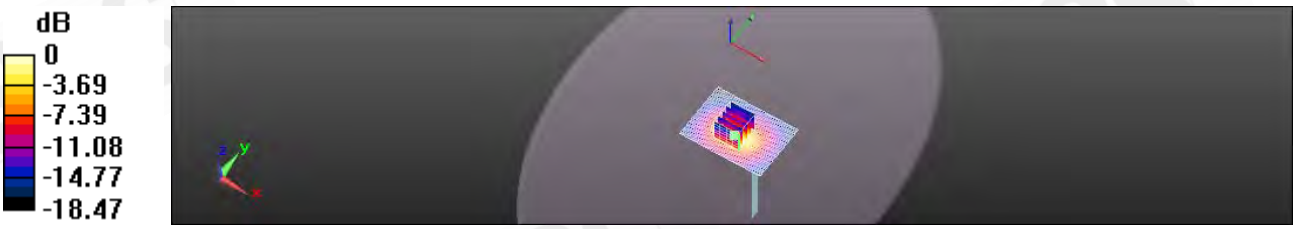
Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1909.8 MHz;
Medium parameters used: f = 1910 MHz; σ = 1.522 mho/m; ε_r = 51.622; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.15 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.626 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.420 mW/g
SAR(1 g) = 0.833 mW/g; SAR(10 g) = 0.434 mW/g
Maximum value of SAR (measured) = 1.17 mW/g



0 dB = 1.15 mW/g = 1.20 dB mW/g

Right side_CH661

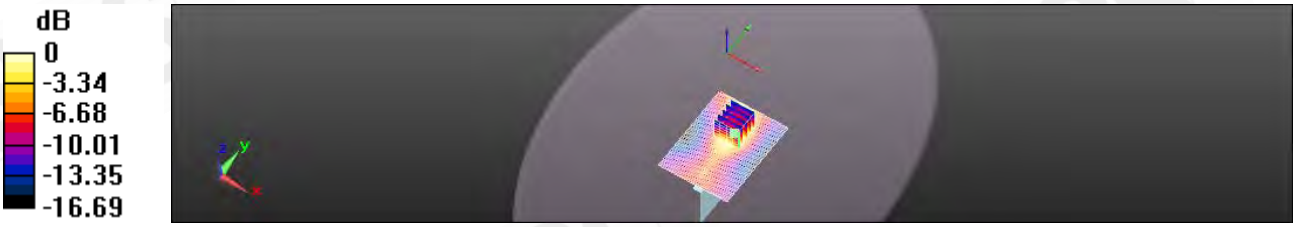
Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r =51.638; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.257 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.206 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.304 mW/g
SAR(1 g) = 0.182 mW/g; SAR(10 g) = 0.103 mW/g
Maximum value of SAR (measured) = 0.245 mW/g



0 dB = 0.257 mW/g = -11.81 dB mW/g

Left side_CH661

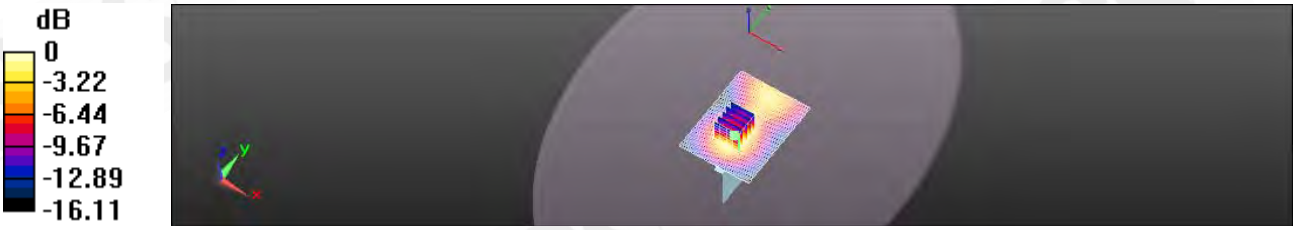
Communication System: GPRS-12; Communication System Band: GPRS1900; Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.49 mho/m; ε_r = 51.638; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.422 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.381 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.510 mW/g
SAR(1 g) = 0.315 mW/g; SAR(10 g) = 0.186 mW/g
Maximum value of SAR (measured) = 0.416 mW/g



0 dB = 0.422 mW/g = -7.50 dB mW/g

Re Cheek_CH9262

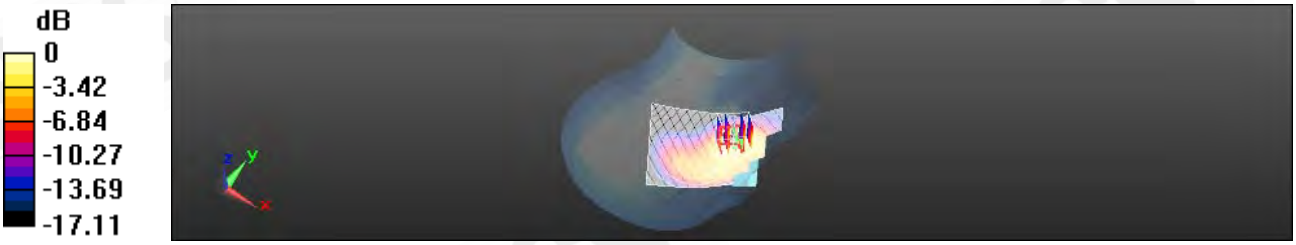
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1852.4 MHz;
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.414 mho/m; ε_r = 40.296; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.454 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.581 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 2.0610
SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.655 mW/g
Maximum value of SAR (measured) = 1.394 mW/g



0 dB = 1.390mW/g = 2.86 dB mW/g

Re Cheek_CH9400

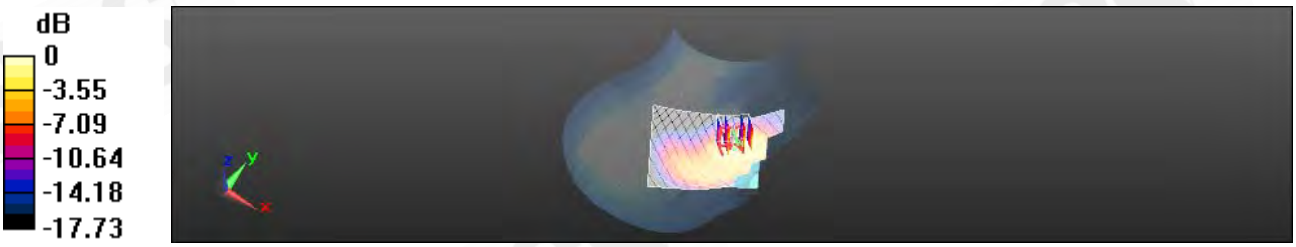
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.442 mho/m; ε_r = 40.235; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.084 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.402 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.5220
SAR(1 g) = 0.894 mW/g; SAR(10 g) = 0.488 mW/g
Maximum value of SAR (measured) = 1.054 mW/g



0 dB = 1.050mW/g = 0.42 dB mW/g

Re Cheek_CH9538

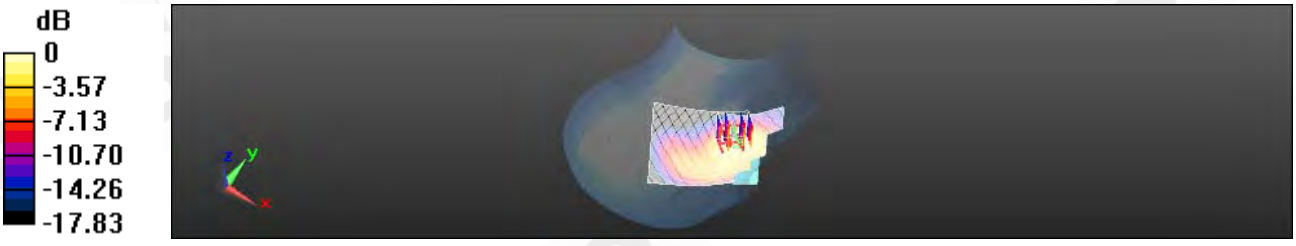
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1907.6 MHz;
Medium parameters used: f = 1908 MHz; σ = 1.467 mho/m; ε_r = 40.133; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.965 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.720 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.3320
SAR(1 g) = 0.787 mW/g; SAR(10 g) = 0.430 mW/g
Maximum value of SAR (measured) = 0.917 mW/g



0 dB = 0.920mW/g = -0.72 dB mW/g

Re Tilt_CH9400

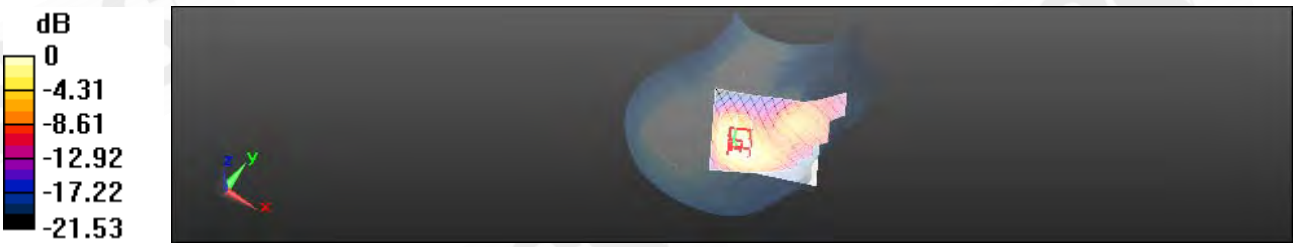
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.442 mho/m; ε_r = 40.235; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.512 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.734 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.6600
SAR(1 g) = 0.420 mW/g; SAR(10 g) = 0.254 mW/g
Maximum value of SAR (measured) = 0.470 mW/g



0 dB = 0.470mW/g = -6.56 dB mW/g

Le Cheek_CH9262

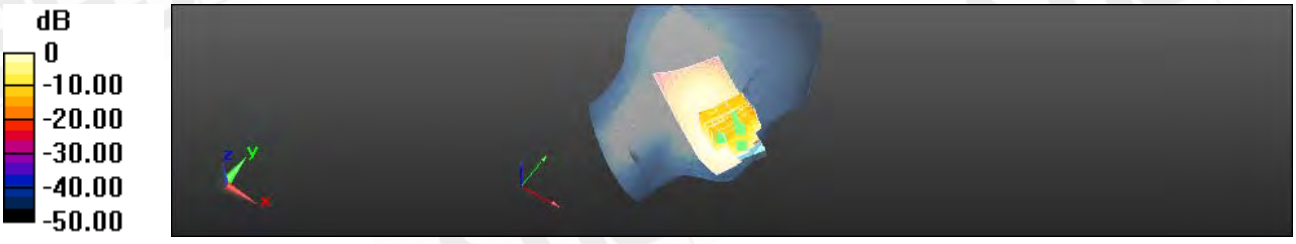
Communication System: WCDMA; Communication System Band: WCDMA Band 2; Frequency: 1852.4 MHz;
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.414 mho/m; ε_r = 40.296; ρ = 1000 kg/m^3
Phantom section: Left Section

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.241 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.252 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.6710
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.642 mW/g
Maximum value of SAR (measured) = 1.211 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.252 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.6490
SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.629 mW/g
Maximum value of SAR (measured) = 1.192 mW/g

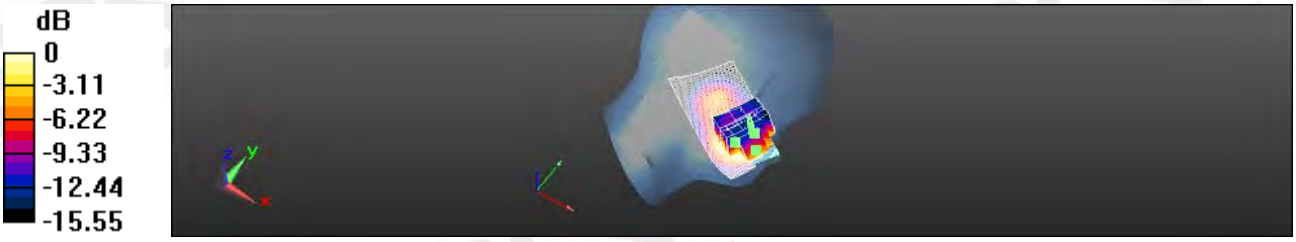
Configuration/Head/Zoom Scan (5x5x7)/Cube 2: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.252 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.6020
SAR(1 g) = 0.917 mW/g; SAR(10 g) = 0.531 mW/g
Maximum value of SAR (measured) = 1.118 mW/g



0 dB = 1.120mW/g = 0.98 dB mW/g

Le Cheek_CH9400

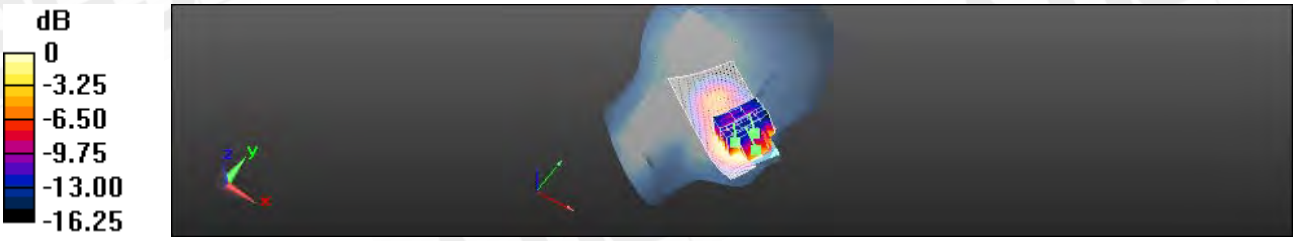
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.442 mho/m; ε_r = 40.235; ρ = 1000 kg/m^3
Phantom section: Left Section
Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.944 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.606 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.2900
SAR(1 g) = 0.816 mW/g; SAR(10 g) = 0.493 mW/g
Maximum value of SAR (measured) = 0.935 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.606 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.2300
SAR(1 g) = 0.718 mW/g; SAR(10 g) = 0.410 mW/g
Maximum value of SAR (measured) = 0.856 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 2: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.606 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.2520
SAR(1 g) = 0.798 mW/g; SAR(10 g) = 0.476 mW/g
Maximum value of SAR (measured) = 0.908 mW/g



0 dB = 0.910mW/g = -0.82 dB mW/g

Le Cheek_CH9538

Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1907.6 MHz;
Medium parameters used: f = 1908 MHz; σ = 1.467 mho/m; ε_r = 40.133; ρ = 1000 kg/m^3
Phantom section: Left Section
Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.902 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.662 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.2340
SAR(1 g) = 0.776 mW/g; SAR(10 g) = 0.465 mW/g
Maximum value of SAR (measured) = 0.893 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.662 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.2060
SAR(1 g) = 0.705 mW/g; SAR(10 g) = 0.391 mW/g
Maximum value of SAR (measured) = 0.836 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 2: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.662 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.2130
SAR(1 g) = 0.763 mW/g; SAR(10 g) = 0.451 mW/g
Maximum value of SAR (measured) = 0.873 mW/g



0 dB = 0.870mW/g = -1.21 dB mW/g

Le Tilt_CH9400

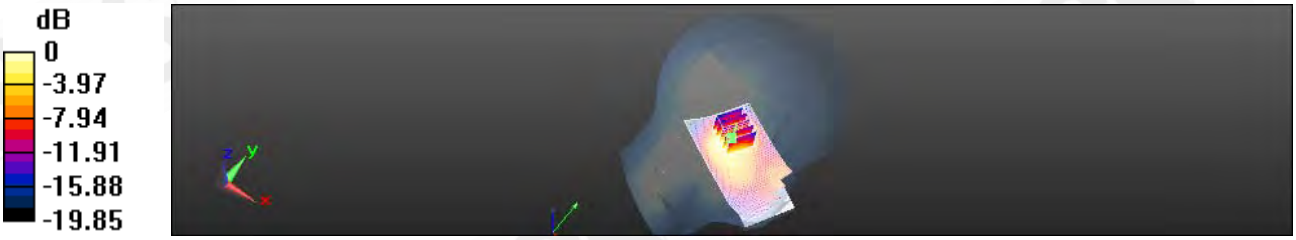
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.442 mho/m; ε_r = 40.235; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.559 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.246 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.7250
SAR(1 g) = 0.440 mW/g; SAR(10 g) = 0.253 mW/g
Maximum value of SAR (measured) = 0.500 mW/g



0 dB = 0.500mW/g = -6.02 dB mW/g

Speech mode_Front side_CH9400_repeated with headset

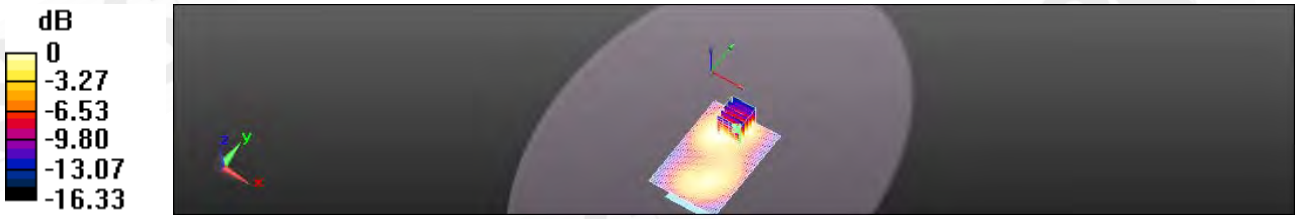
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.188; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.394 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.470 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.486 mW/g
SAR(1 g) = 0.313 mW/g; SAR(10 g) = 0.189 mW/g
Maximum value of SAR (measured) = 0.395 mW/g



0 dB = 0.394 mW/g = -8.09 dB mW/g

Speech mode_Back side_CH9262_repeated with headset

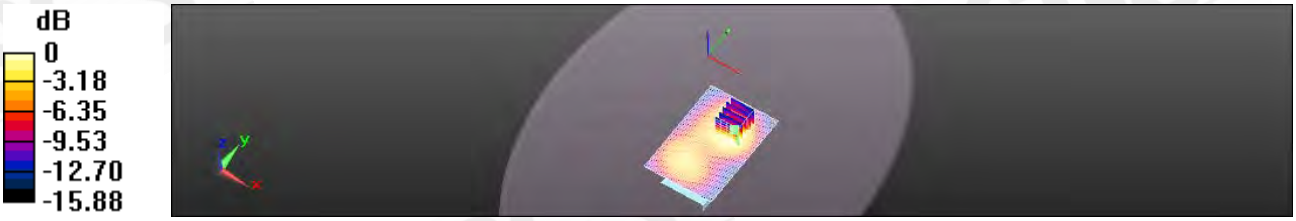
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1852.4 MHz;
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.506 mho/m; ε_r = 51.208; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.781 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.334 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.931 mW/g
SAR(1 g) = 0.576 mW/g; SAR(10 g) = 0.350 mW/g
Maximum value of SAR (measured) = 0.755 mW/g



0 dB = 0.781 mW/g = -2.15 dB mW/g

Speech mode_Back side_CH9400_repeated with headset

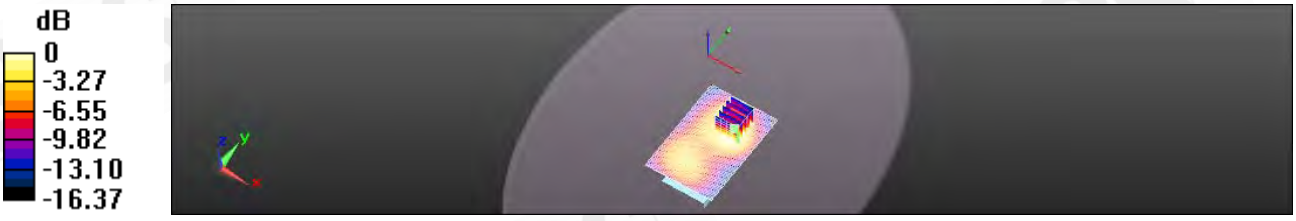
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.52 mho/m; ε_r = 51.188; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.665 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.857 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.797 mW/g
SAR(1 g) = 0.490 mW/g; SAR(10 g) = 0.299 mW/g
Maximum value of SAR (measured) = 0.647 mW/g



0 dB = 0.665 mW/g = -3.54 dB mW/g

Speech mode_Back side_CH9538_repeated with headset

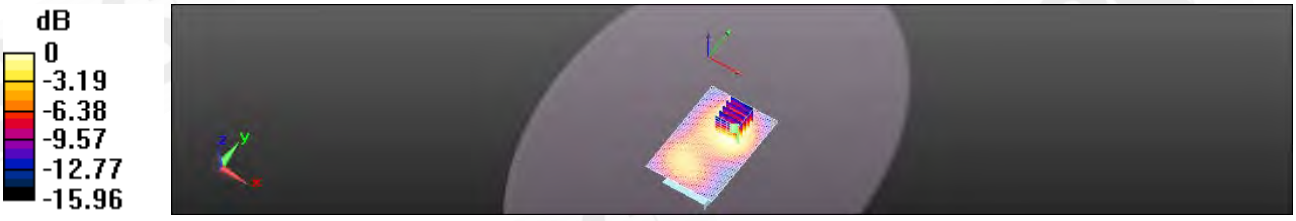
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1907.6 MHz;
Medium parameters used: f = 1908 MHz; σ = 1.546 mho/m; ε_r = 51.156; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.688 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.677 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.827 mW/g
SAR(1 g) = 0.509 mW/g; SAR(10 g) = 0.307 mW/g
Maximum value of SAR (measured) = 0.675 mW/g



0 dB = 0.688 mW/g = -3.25 dB mW/g

Front side_CH9400

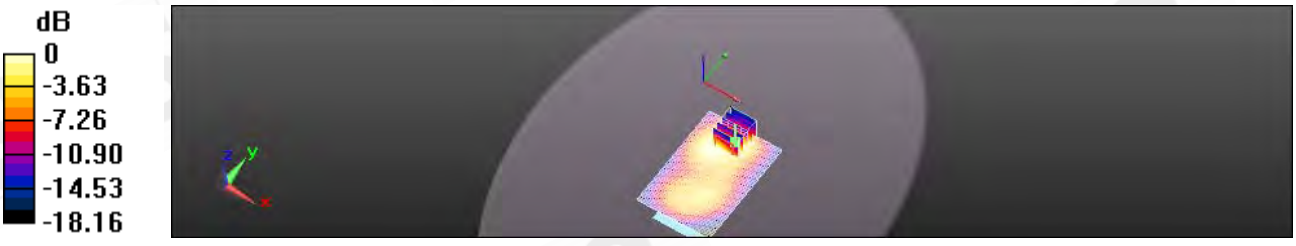
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.598 mho/m; ε_r = 51.812; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.777 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.825 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.1500
SAR(1 g) = 0.687 mW/g; SAR(10 g) = 0.381 mW/g
Maximum value of SAR (measured) = 0.779 mW/g



0 dB = 0.780mW/g = -2.16 dB mW/g

Back side_CH9262

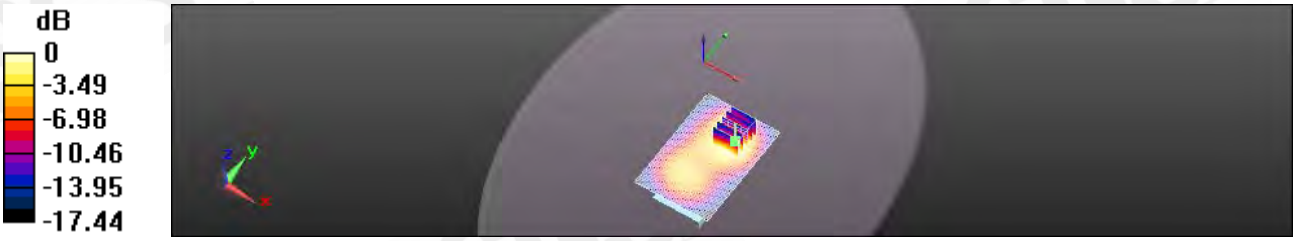
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1852.4 MHz;
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.572 mho/m; ε_r = 51.881; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

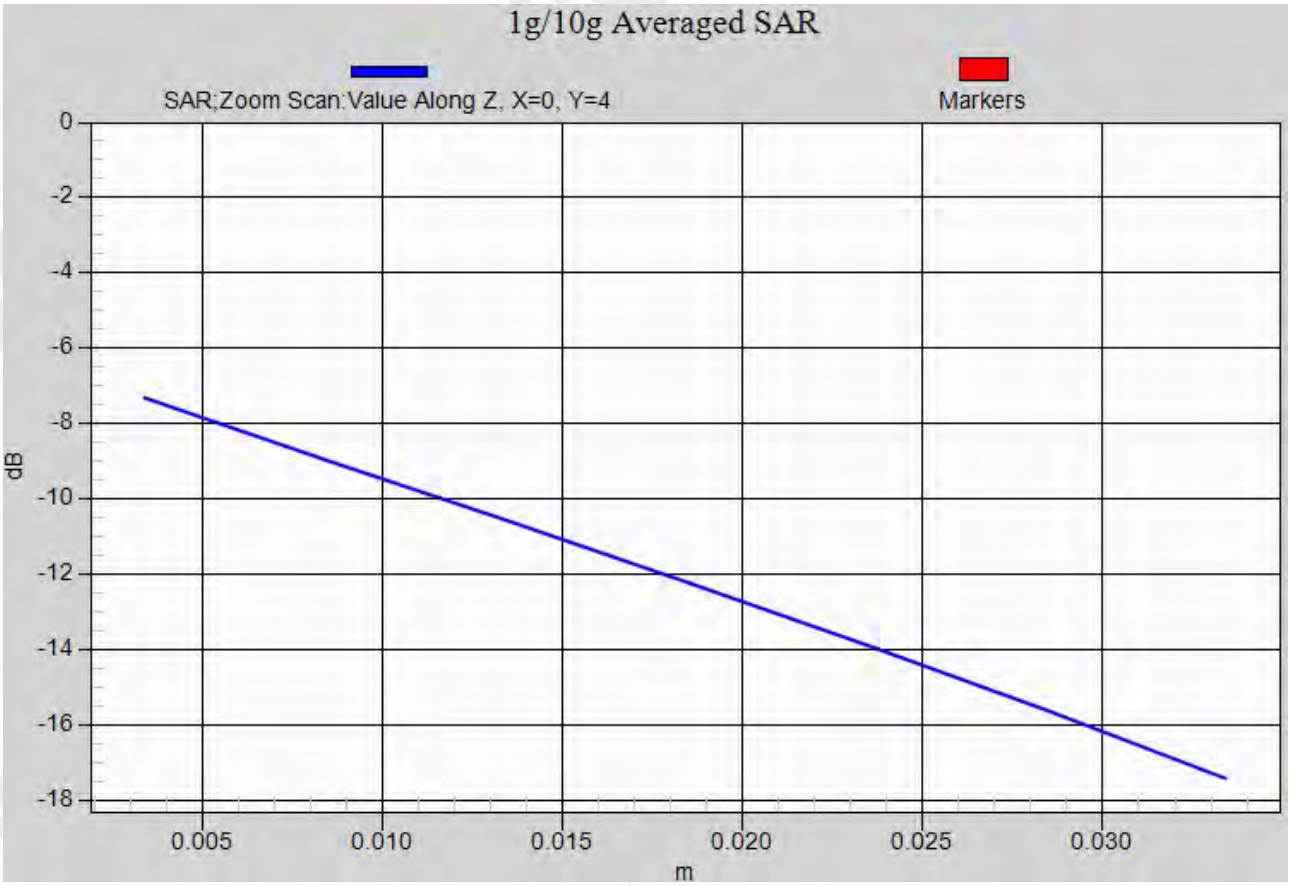
- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.695 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.773 V/m; Power Drift = 0.002 dB
Peak SAR (extrapolated) = 2.3700
SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.782 mW/g
Maximum value of SAR (measured) = 1.604 mW/g



0 dB = 1.600mW/g = 4.08 dB mW/g



Date: 2012/1/20

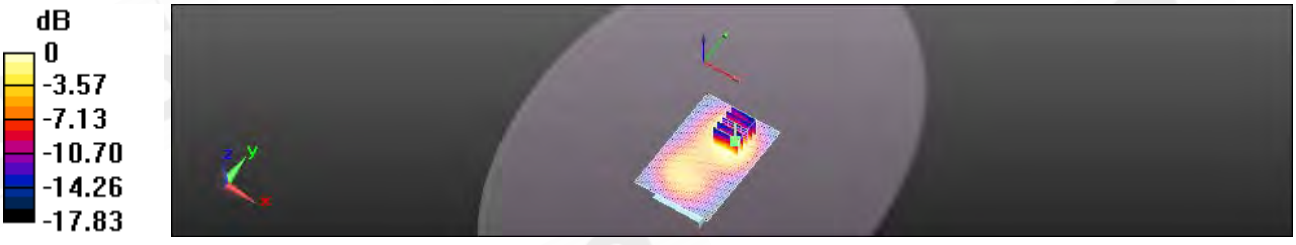
Back side_CH9400

Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.598 mho/m; ε_r = 51.812; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.344 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.691 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.8980
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.618 mW/g
Maximum value of SAR (measured) = 1.278 mW/g



0 dB = 1.280mW/g = 2.14 dB mW/g

Back side_CH9538

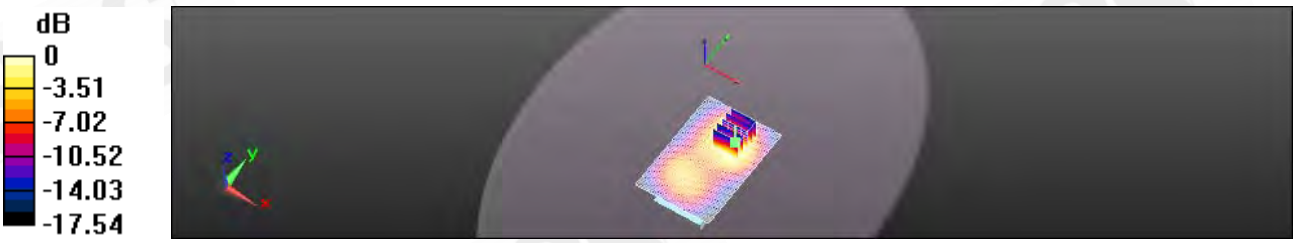
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1907.6 MHz;
Medium parameters used: f = 1908 MHz; σ = 1.55 mho/m; ε_r = 51.732; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.142 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.735 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.6310
SAR(1 g) = 0.928 mW/g; SAR(10 g) = 0.520 mW/g
Maximum value of SAR (measured) = 1.071 mW/g



0 dB = 1.070mW/g = 0.59 dB mW/g

Back side_CH9262_repeated with headset

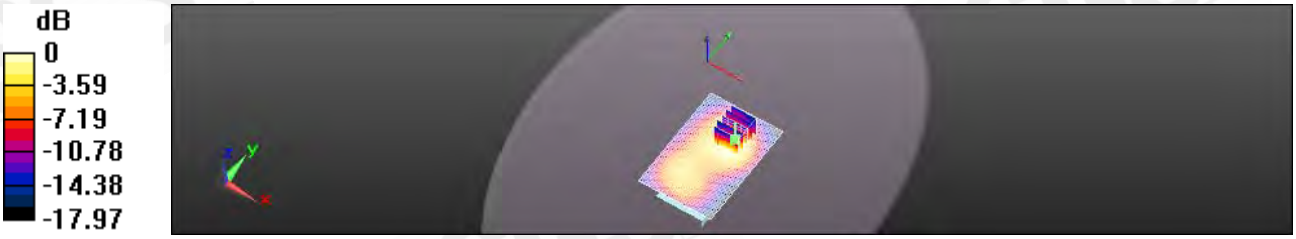
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1852.4 MHz;
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.572 mho/m; ε_r = 51.881; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.542 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.931 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.2000
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.724 mW/g
Maximum value of SAR (measured) = 1.505 mW/g



0 dB = 1.500mW/g = 3.52 dB mW/g

Back side_CH9262_repeated with memory card

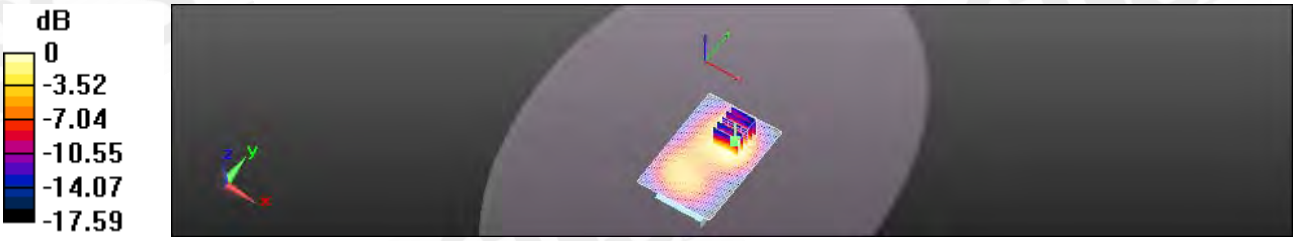
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1852.4 MHz;
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.572 mho/m; ε_r = 51.881; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.618 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.442 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 2.2500
SAR(1 g) = 1.3 mW/g; SAR(10 g) = 0.744 mW/g
Maximum value of SAR (measured) = 1.540 mW/g



0 dB = 1.540mW/g = 3.75 dB mW/g

Back side_CH9262_repeated with 2nd Battery

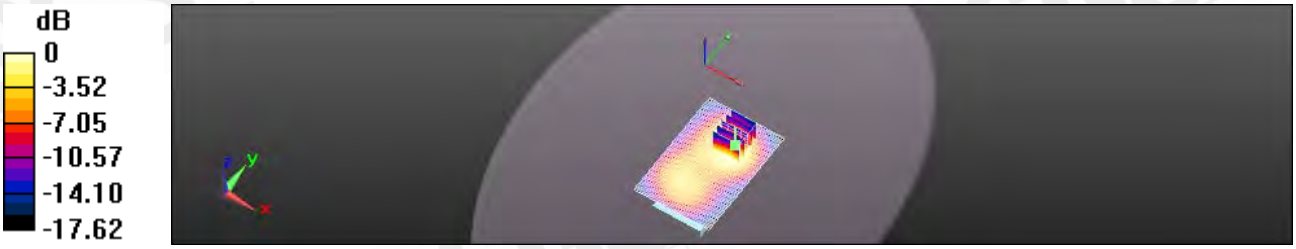
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1852.4 MHz;
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.572 mho/m; ε_r = 51.881; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.469 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.243 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 2.0520
SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.688 mW/g
Maximum value of SAR (measured) = 1.413 mW/g



0 dB = 1.410mW/g = 2.98 dB mW/g

Bottom side_CH9262

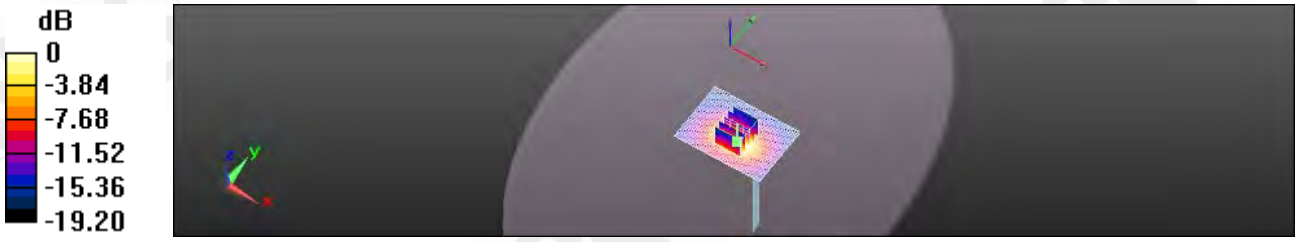
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1852.4 MHz;
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.572 mho/m; ε_r = 51.881; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.582 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.590 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 2.3030
SAR(1 g) = 1.32 mW/g; SAR(10 g) = 0.670 mW/g
Maximum value of SAR (measured) = 1.619 mW/g



0 dB = 1.620mW/g = 4.19 dB mW/g

Bottom side_CH9400

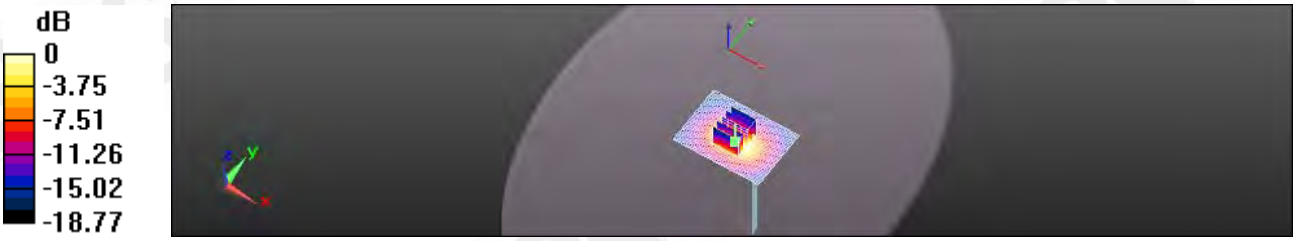
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.598 mho/m; ε_r = 51.812; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.245 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.501 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.7750
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.533 mW/g
Maximum value of SAR (measured) = 1.234 mW/g



0 dB = 1.230mW/g = 1.80 dB mW/g

Bottom side_CH9538

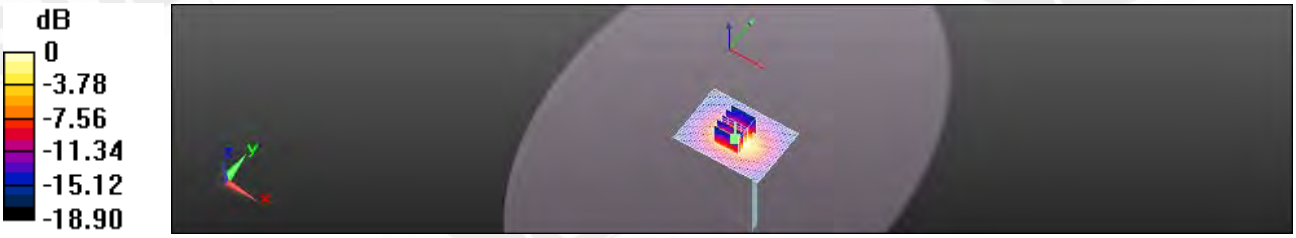
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1907.6 MHz;
Medium parameters used: f = 1908 MHz; σ = 1.55 mho/m; ε_r = 51.732; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.166 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.231 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.6630
SAR(1 g) = 0.952 mW/g; SAR(10 g) = 0.491 mW/g
Maximum value of SAR (measured) = 1.146 mW/g



0 dB = 1.150mW/g = 1.21 dB mW/g

Right side_CH9400

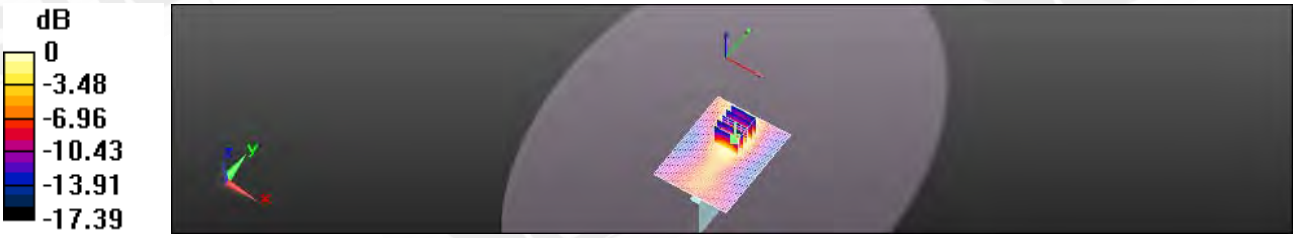
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.598 mho/m; ε_r = 51.812; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.267 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.223 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.3740
SAR(1 g) = 0.221 mW/g; SAR(10 g) = 0.124 mW/g
Maximum value of SAR (measured) = 0.258 mW/g



0 dB = 0.260mW/g = -11.70 dB mW/g

Left side_CH9400

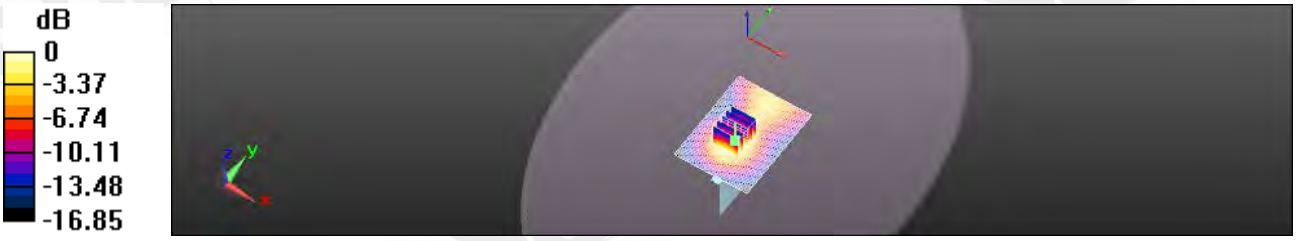
Communication System: WCDMA; Communication System Band: WCDMA Band 2;
Frequency: 1880 MHz;
Medium parameters used: f = 1880 MHz; σ = 1.598 mho/m; ε_r = 51.812; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.469 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.632 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.6540
SAR(1 g) = 0.395 mW/g; SAR(10 g) = 0.227 mW/g
Maximum value of SAR (measured) = 0.458 mW/g



0 dB = 0.460mW/g = -6.74 dB mW/g

Re Cheek_CH4132

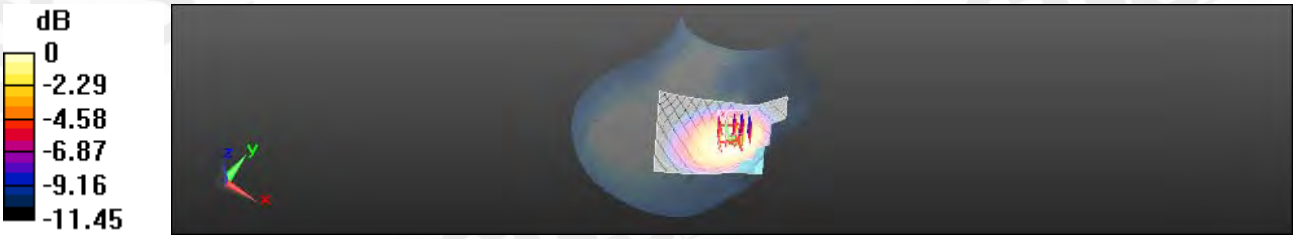
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 826.4 MHz;
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.89 mho/m; ε_r = 42.284; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.113 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.029 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.3490
SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.752 mW/g
Maximum value of SAR (measured) = 1.099 mW/g



0 dB = 1.100mW/g = 0.83 dB mW/g

Date: 2012/1/21

Re Cheek_CH4183

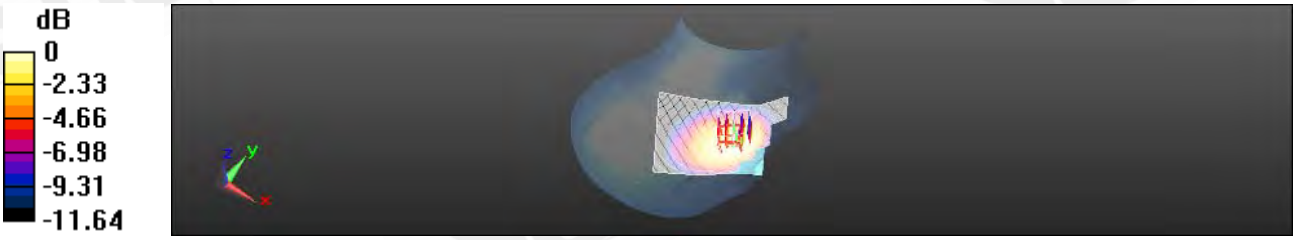
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.901 mho/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.172 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.862 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.4330
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.792 mW/g
Maximum value of SAR (measured) = 1.162 mW/g



0 dB = 1.160mW/g = 1.29 dB mW/g

Date: 2012/1/21

Re Cheek_CH4233

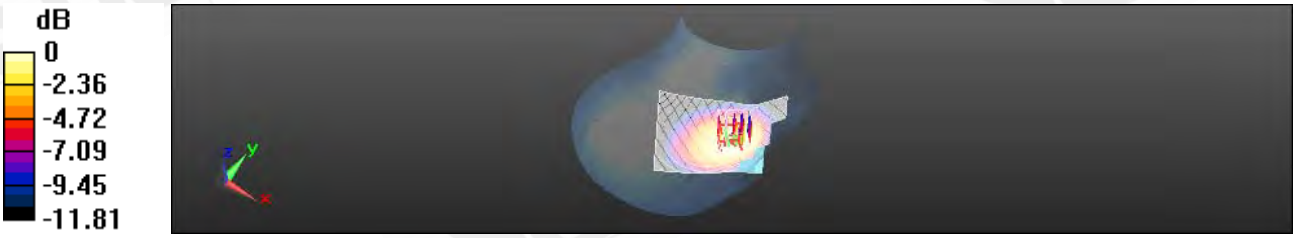
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 846.6 MHz;Communication System PAR: 0 dB; PMF: 1.12202
Medium parameters used: f = 847 MHz; σ = 0.911 mho/m; ε_r = 42.021; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.132 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.000 V/m; Power Drift = 0.0075 dB
Peak SAR (extrapolated) = 1.3820
SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.769 mW/g
Maximum value of SAR (measured) = 1.139 mW/g



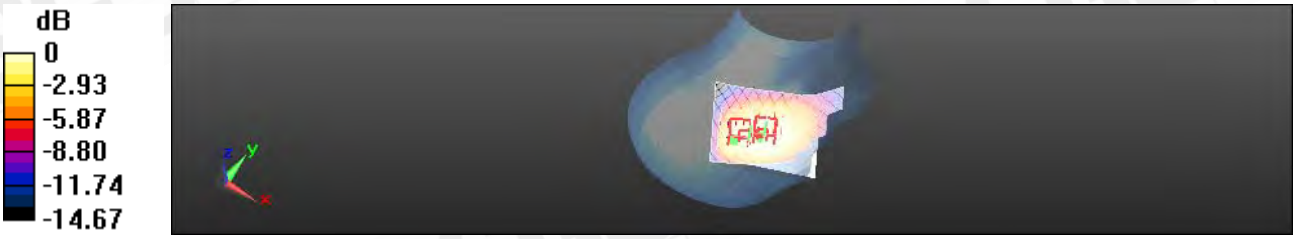
0 dB = 1.140mW/g = 1.14 dB mW/g

Re Tilt_CH4183

Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.901 mho/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.632 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.560 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.7750
SAR(1 g) = 0.593 mW/g; SAR(10 g) = 0.439 mW/g
Maximum value of SAR (measured) = 0.647 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.560 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.6470
SAR(1 g) = 0.457 mW/g; SAR(10 g) = 0.313 mW/g
Maximum value of SAR (measured) = 0.555 mW/g



0 dB = 0.550mW/g = -5.19 dB mW/g

Le Cheek_CH4132

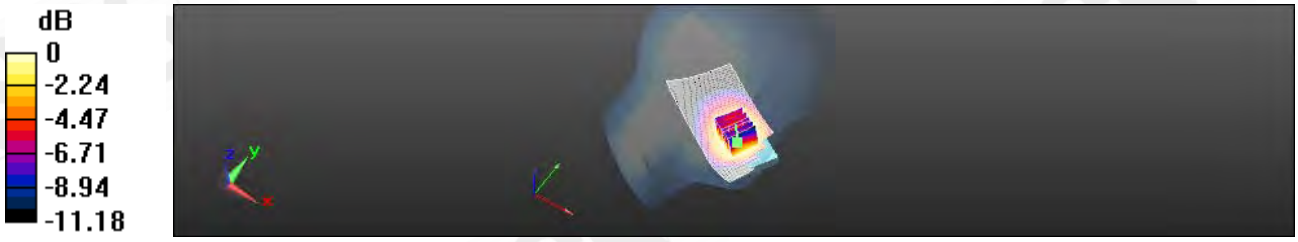
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 826.4 MHz;
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.89 mho/m; ε_r = 42.284; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.181 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.122 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.3740
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.802 mW/g
Maximum value of SAR (measured) = 1.168 mW/g



0 dB = 1.170mW/g = 1.36 dB mW/g

Le Cheek_CH4183

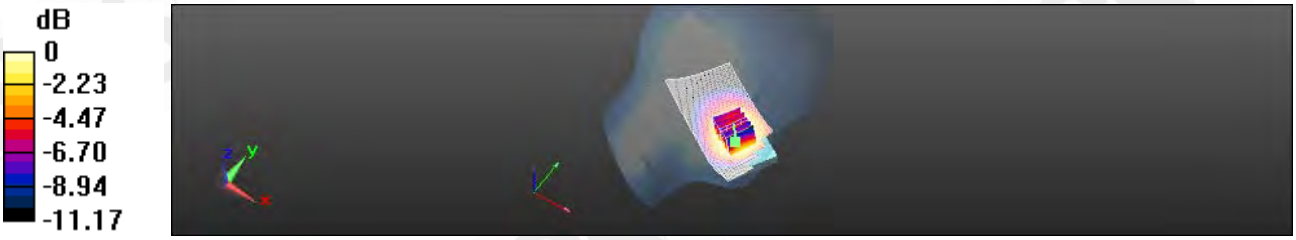
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.901 mho/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.232 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.313 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 1.4380
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.848 mW/g
Maximum value of SAR (measured) = 1.236 mW/g



0 dB = 1.240mW/g = 1.87 dB mW/g

Le Cheek_CH4233

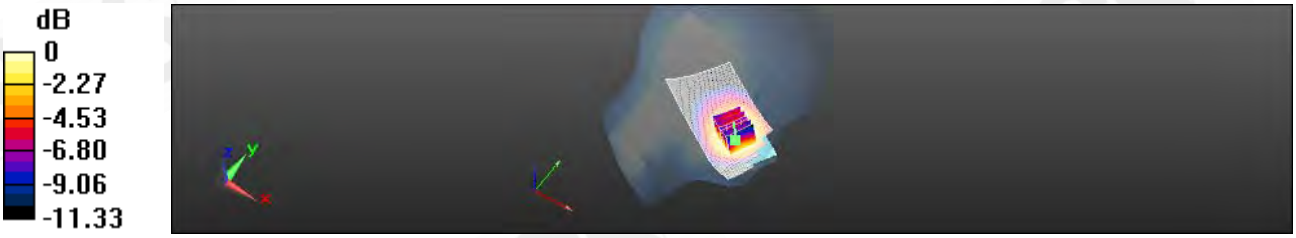
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 846.6 MHz;
Medium parameters used: f = 847 MHz; σ = 0.911 mho/m; ε_r = 42.021; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.213 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.009 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.4050
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.819 mW/g
Maximum value of SAR (measured) = 1.201 mW/g



0 dB = 1.200mW/g = 1.58 dB mW/g

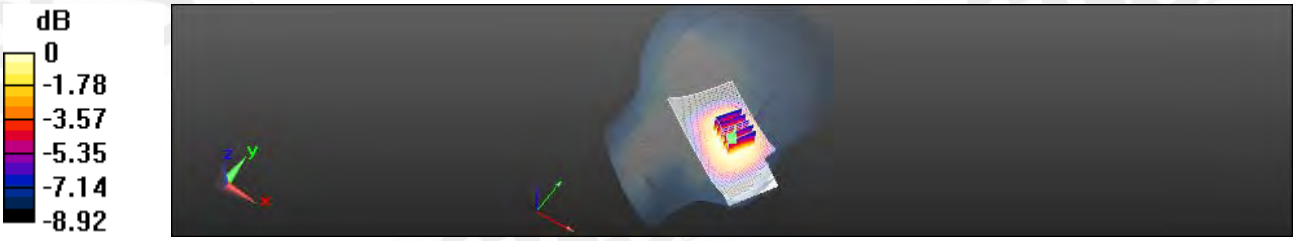
Le Tilt_CH4183

Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.901 mho/m; ε_r = 42.142; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.580 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.290 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.6940
SAR(1 g) = 0.537 mW/g; SAR(10 g) = 0.400 mW/g
Maximum value of SAR (measured) = 0.584 mW/g



0 dB = 0.580mW/g = -4.73 dB mW/g

Speech mode_Front side_CH4183_repeated with headset

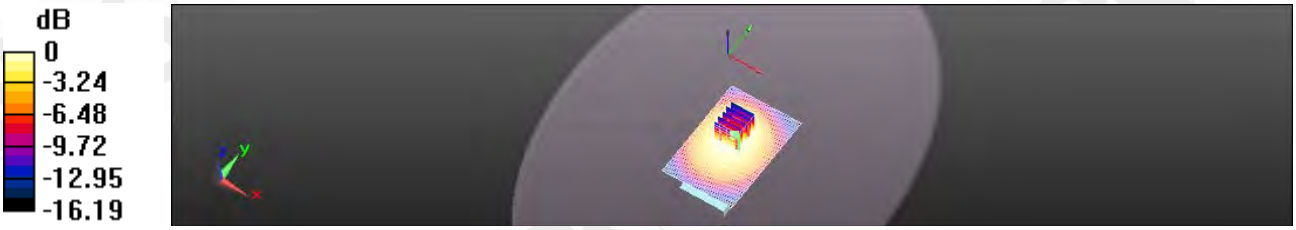
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 53.658; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.565 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.982 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.631 mW/g
SAR(1 g) = 0.485 mW/g; SAR(10 g) = 0.357 mW/g
Maximum value of SAR (measured) = 0.565 mW/g



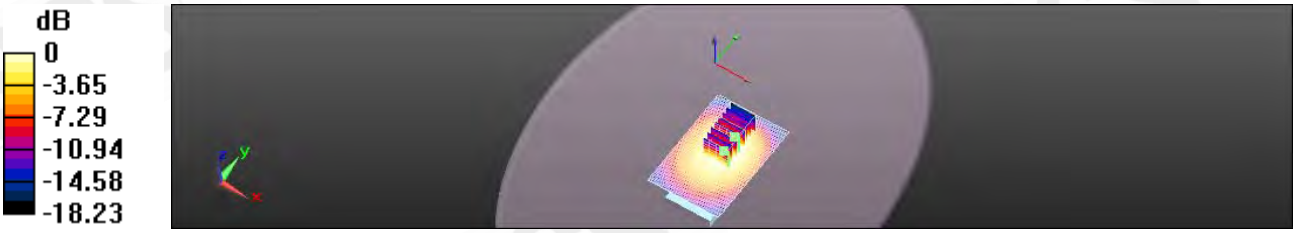
0 dB = 0.565 mW/g = -4.96 dB mW/g

Speech mode_Back side_CH4132_repeated with headset

Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 826.4 MHz;
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.99 mho/m; ε_r = 53.849; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.725 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.087 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.807 mW/g
SAR(1 g) = 0.601 mW/g; SAR(10 g) = 0.431 mW/g
Maximum value of SAR (measured) = 0.715 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.087 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.792 mW/g
SAR(1 g) = 0.556 mW/g; SAR(10 g) = 0.372 mW/g
Maximum value of SAR (measured) = 0.691 mW/g



0 dB = 0.725 mW/g = -2.80 dB mW/g

Speech mode_Back side_CH4183_repeated with headset

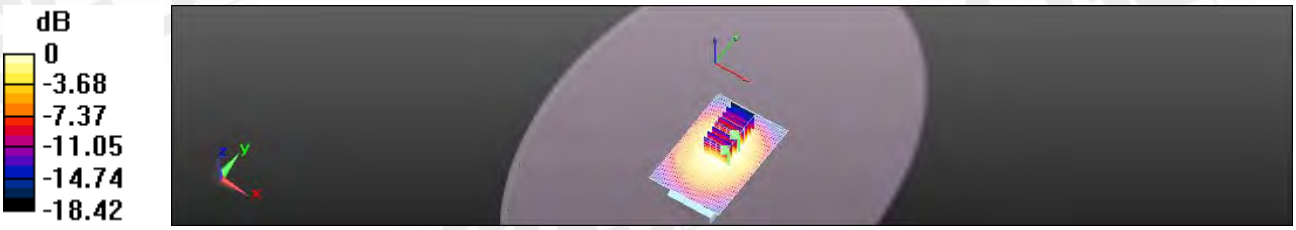
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 53.658; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.843 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.173 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.947 mW/g
SAR(1 g) = 0.701 mW/g; SAR(10 g) = 0.502 mW/g
Maximum value of SAR (measured) = 0.835 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.173 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.956 mW/g
SAR(1 g) = 0.660 mW/g; SAR(10 g) = 0.440 mW/g
Maximum value of SAR (measured) = 0.825 mW/g



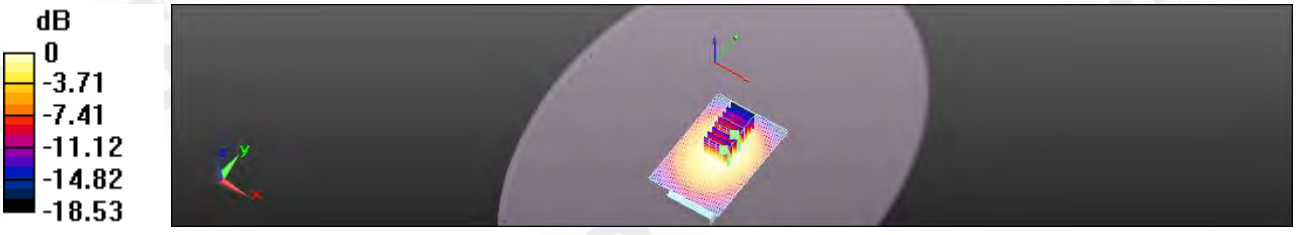
0 dB = 0.843 mW/g = -1.48 dB mW/g

Speech mode_Back side_CH4233_repeated with headset

Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 846.6 MHz;
Medium parameters used: f = 847 MHz; σ = 0.997 mho/m; ε_r = 53.664; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.882 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.350 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.003 mW/g
SAR(1 g) = 0.742 mW/g; SAR(10 g) = 0.530 mW/g
Maximum value of SAR (measured) = 0.886 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.350 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.974 mW/g
SAR(1 g) = 0.675 mW/g; SAR(10 g) = 0.446 mW/g
Maximum value of SAR (measured) = 0.845 mW/g



0 dB = 0.882 mW/g = -1.09 dB mW/g

Front side_CH4132

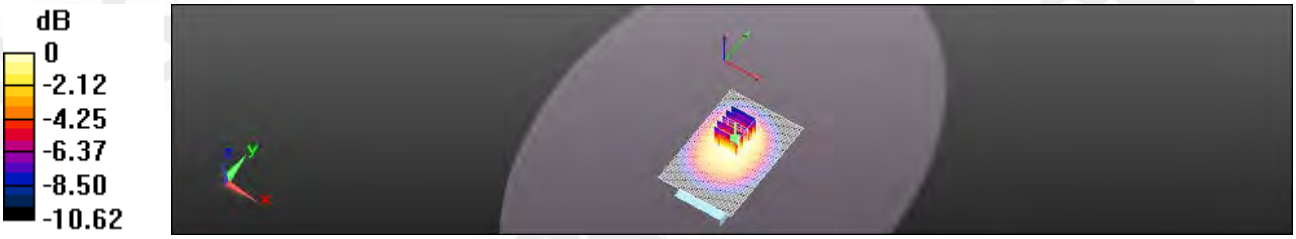
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 826.4 MHz;
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.957 mho/m; ε_r = 55.67; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.912 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.775 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.1000
SAR(1 g) = 0.839 mW/g; SAR(10 g) = 0.615 mW/g
Maximum value of SAR (measured) = 0.909 mW/g



0 dB = 0.910mW/g = -0.82 dB mW/g

Front side_CH4183

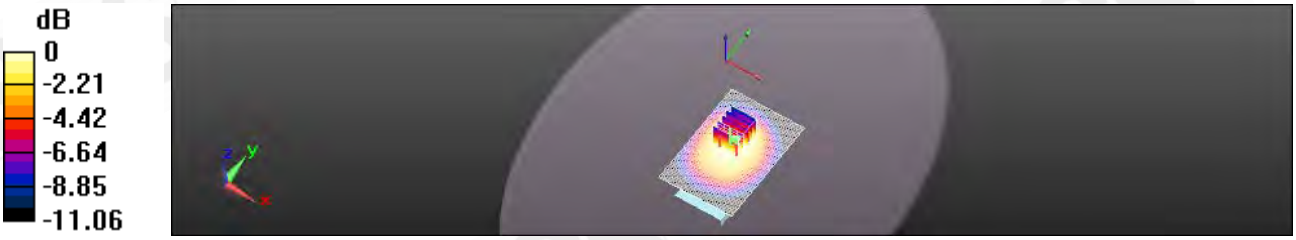
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.972 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.610 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.1920
SAR(1 g) = 0.910 mW/g; SAR(10 g) = 0.667 mW/g
Maximum value of SAR (measured) = 0.984 mW/g



0 dB = 0.980mW/g = -0.18 dB mW/g

Front side_CH4233

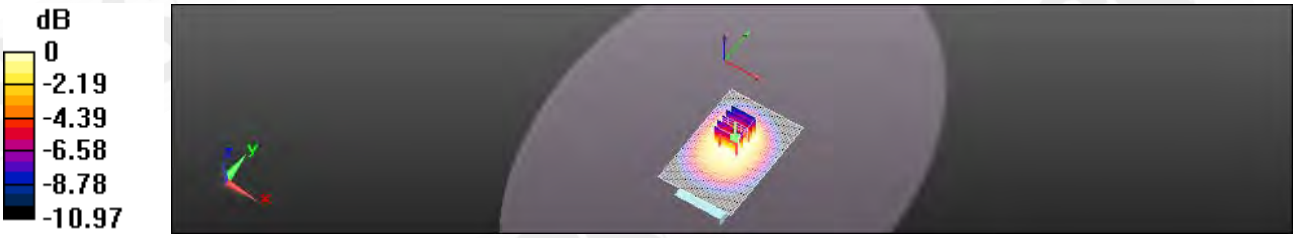
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 846.6 MHz;
Medium parameters used: f = 847 MHz; σ = 0.974 mho/m; ε_r = 55.509; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.913 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.855 V/m; Power Drift = 0.0097 dB
Peak SAR (extrapolated) = 1.1160
SAR(1 g) = 0.844 mW/g; SAR(10 g) = 0.617 mW/g
Maximum value of SAR (measured) = 0.914 mW/g



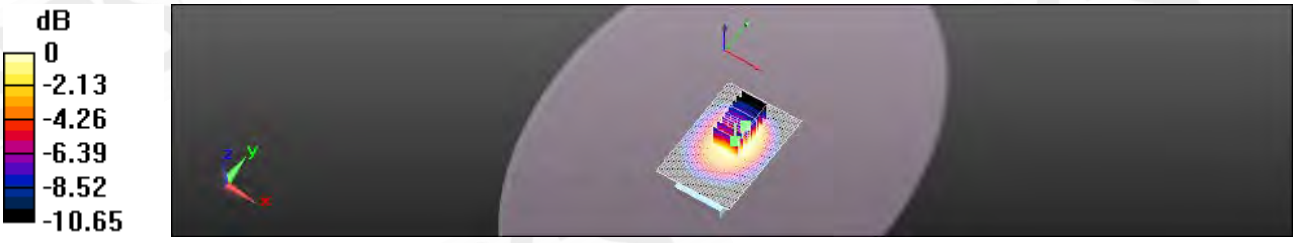
0 dB = 0.910mW/g = -0.82 dB mW/g

Back side_CH4132

Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 826.4 MHz;
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.957 mho/m; ε_r = 55.67; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.543 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.980 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.8780
SAR(1 g) = 1.26 mW/g; SAR(10 g) = 0.854 mW/g
Maximum value of SAR (measured) = 1.433 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.980 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.8640
SAR(1 g) = 1.20 mW/g; SAR(10 g) = 0.83 mW/g
Maximum value of SAR (measured) = 1.459 mW/g



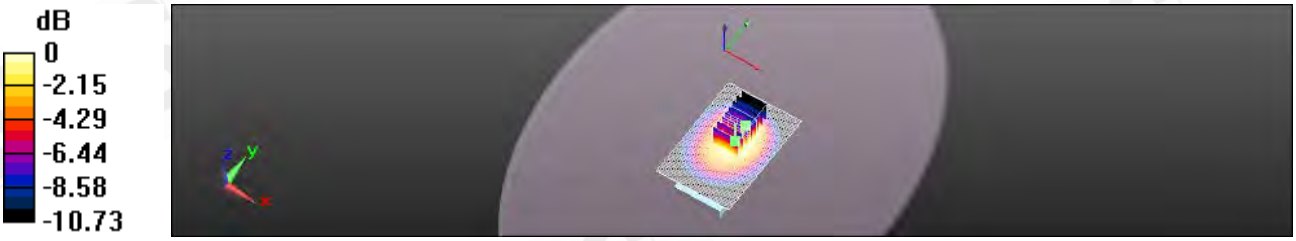
0 dB = 1.460mW/g = 3.29 dB mW/g

Back side_CH4183

Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.664 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.326 V/m; Power Drift = -0.0089 dB
Peak SAR (extrapolated) = 2.0390
SAR(1 g) = 1.36 mW/g; SAR(10 g) = 0.918 mW/g
Maximum value of SAR (measured) = 1.535 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.326 V/m; Power Drift = -0.0089 dB
Peak SAR (extrapolated) = 1.9980
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.9 mW/g
Maximum value of SAR (measured) = 1.565 mW/g



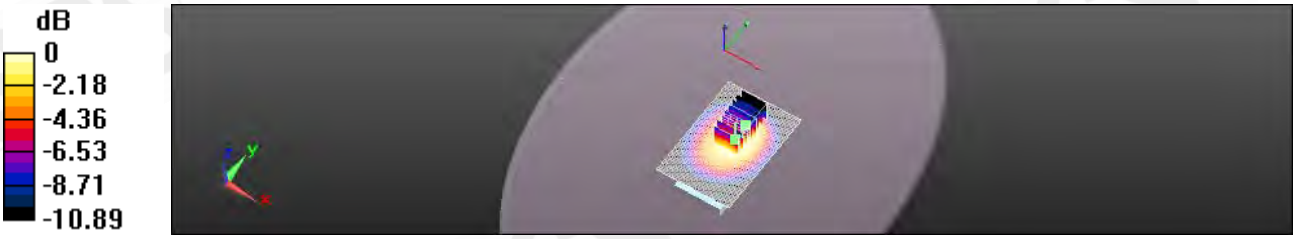
0 dB = 1.570mW/g = 3.92 dB mW/g

Back side_CH4233

Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 846.6 MHz;
Medium parameters used: f = 847 MHz; σ = 0.974 mho/m; ε_r = 55.509; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.495 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.188 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.8270
SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.815 mW/g
Maximum value of SAR (measured) = 1.364 mW/g
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.188 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.8040
SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.8 mW/g
Maximum value of SAR (measured) = 1.406 mW/g



0 dB = 1.410mW/g = 2.98 dB mW/g

Bottom side_CH4183

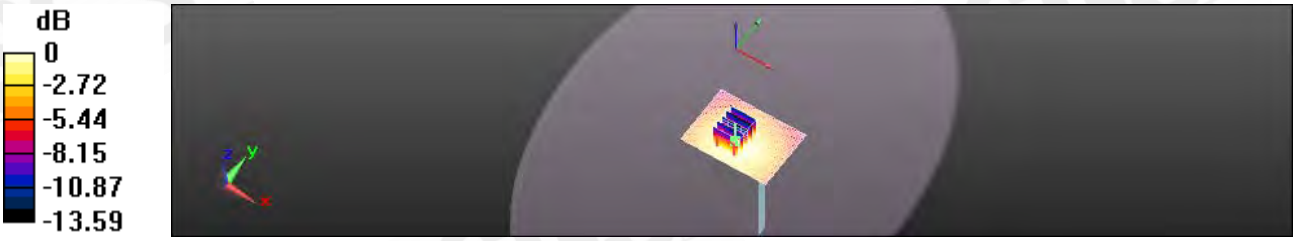
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.110 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.831 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.1850
SAR(1 g) = 0.095 mW/g; SAR(10 g) = 0.058 mW/g
Maximum value of SAR (measured) = 0.111 mW/g



0 dB = 0.110mW/g = -19.17 dB mW/g

Right side_CH4183

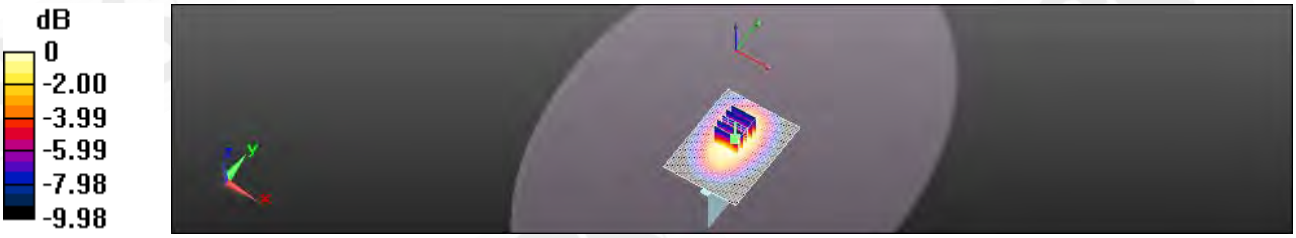
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.597 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.746 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.7650
SAR(1 g) = 0.530 mW/g; SAR(10 g) = 0.361 mW/g
Maximum value of SAR (measured) = 0.592 mW/g



0 dB = 0.590mW/g = -4.58 dB mW/g

Left side_CH4183

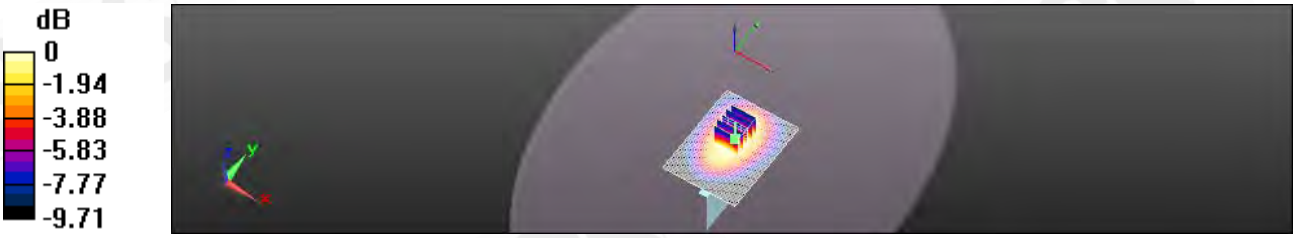
Communication System: WCDMA; Communication System Band: WCDMA Band 5;
Frequency: 836.6 MHz;
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 55.56; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.611 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.814 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.7860
SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.378 mW/g
Maximum value of SAR (measured) = 0.609 mW/g



0 dB = 0.610mW/g = -4.29 dB mW/g

Re Cheek_CH6

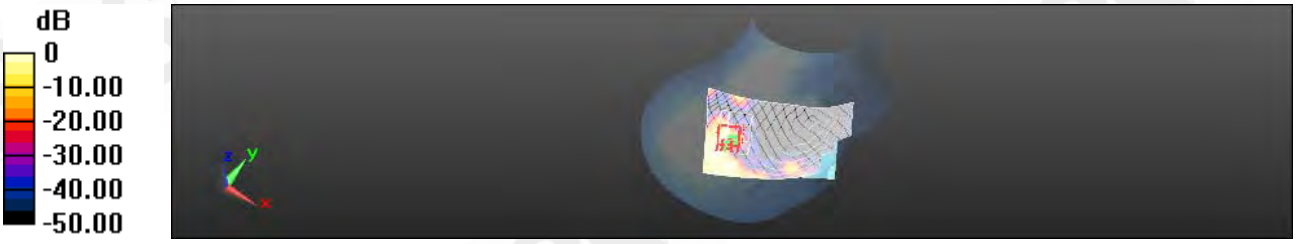
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.763 mho/m; ε_r = 40.232; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.00707 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.900 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.0120
SAR(1 g) = 0.00587 mW/g; SAR(10 g) = 0.00232 mW/g
Maximum value of SAR (measured) = 0.00724 mW/g



0 dB = 0.0072mW/g = -42.85 dB mW/g

Re Tilt_CH1

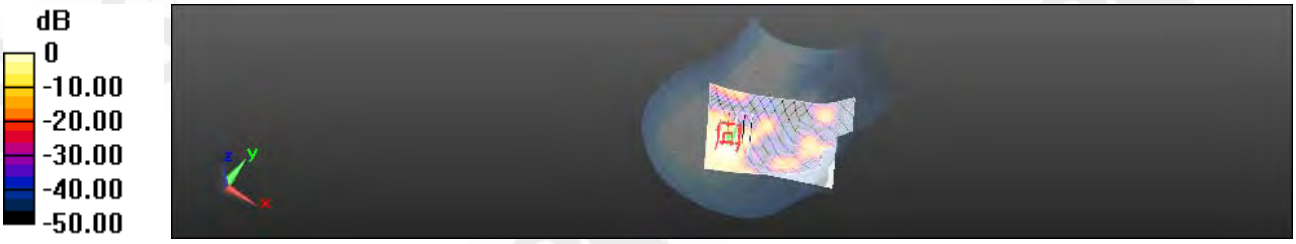
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2412 MHz;
Medium parameters used: f = 2412 MHz; σ = 1.741 mho/m; ε_r = 40.329; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.017 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.404 V/m; Power Drift = 0.20 dB
Peak SAR (extrapolated) = 0.0250
SAR(1 g) = 0.00922 mW/g; SAR(10 g) = 0.00393 mW/g
Maximum value of SAR (measured) = 0.011 mW/g



0 dB = 0.010mW/g = -40.00 dB mW/g

Re Tilt_CH6

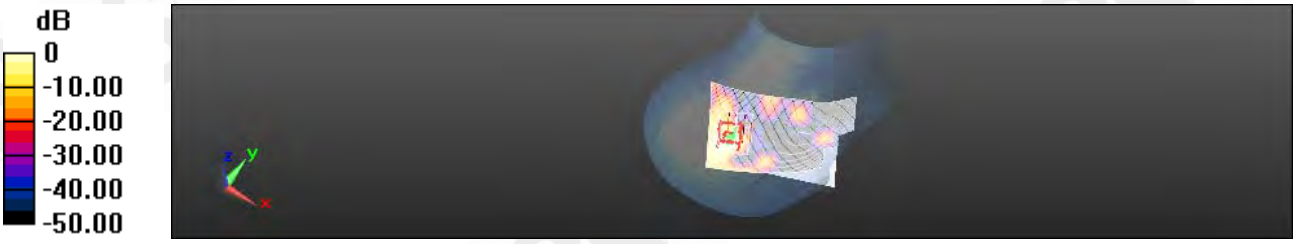
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.763 mho/m; ε_r = 40.232; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.024 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.183 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.0170
SAR(1 g) = 0.00807 mW/g; SAR(10 g) = 0.0035 mW/g
Maximum value of SAR (measured) = 0.00987 mW/g



0 dB = 0.0099mW/g = -40.09 dB mW/g

Re Tilt_CH11

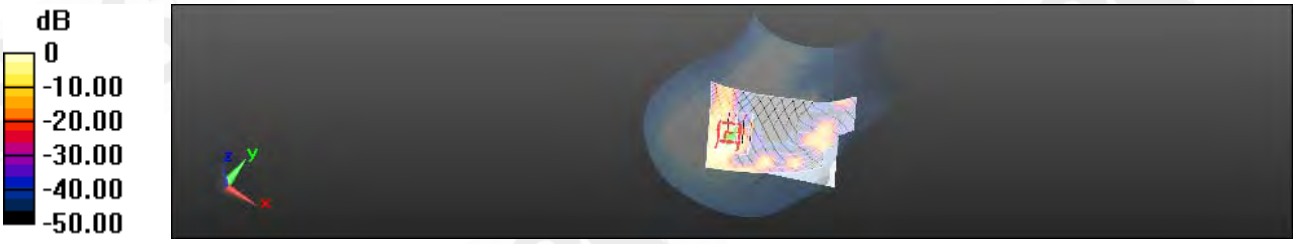
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2462 MHz;
Medium parameters used: f = 2462 MHz; σ = 1.798 mho/m; ε_r = 40.145; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.021 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.222 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.0170
SAR(1 g) = 0.00772 mW/g; SAR(10 g) = 0.00325 mW/g
Maximum value of SAR (measured) = 0.00968 mW/g



0 dB = 0.0097mW/g = -40.26 dB mW/g

Re Tilt_CH1_repeated with memory card

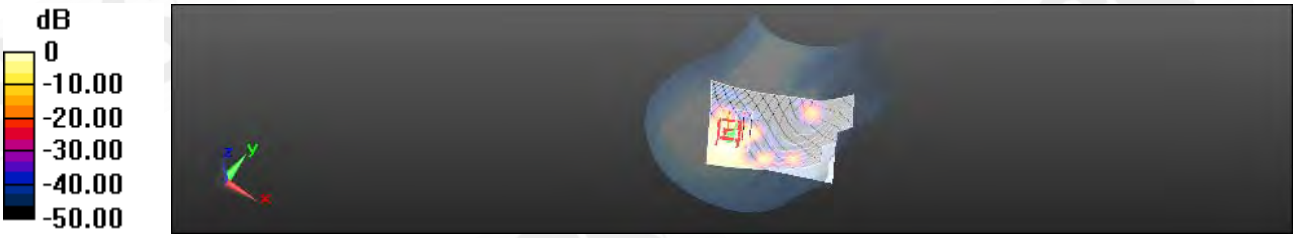
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2412 MHz;
Medium parameters used: f = 2412 MHz; σ = 1.741 mho/m; ε_r = 40.329; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.015 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.442 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.0200
SAR(1 g) = 0.00902 mW/g; SAR(10 g) = 0.00396 mW/g
Maximum value of SAR (measured) = 0.011 mW/g



0 dB = 0.010mW/g = -40.00 dB mW/g

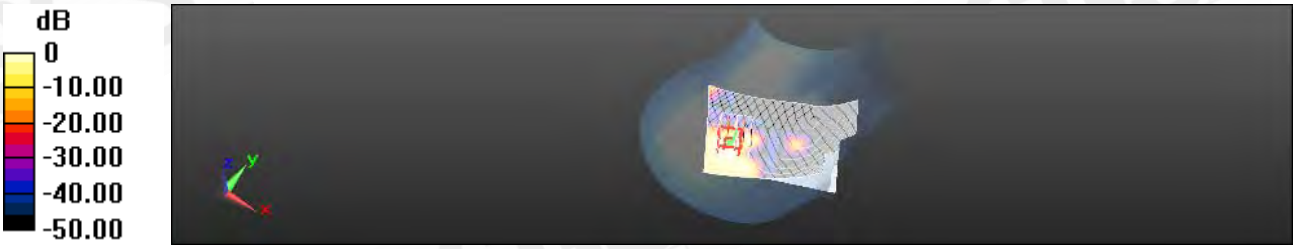
Re Tilt_CH1_repeated with 2nd Battery

Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2412 MHz;
Medium parameters used: f = 2412 MHz; σ = 1.741 mho/m; ε_r = 40.329; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.017 mW/g
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.897 V/m; Power Drift = -0.117 dB
Peak SAR (extrapolated) = 0.0170
SAR(1 g) = 0.00813 mW/g; SAR(10 g) = 0.00361 mW/g
Maximum value of SAR (measured) = 0.011 mW/g



0 dB = 0.010mW/g = -40.00 dB mW/g

Le Cheek_CH6

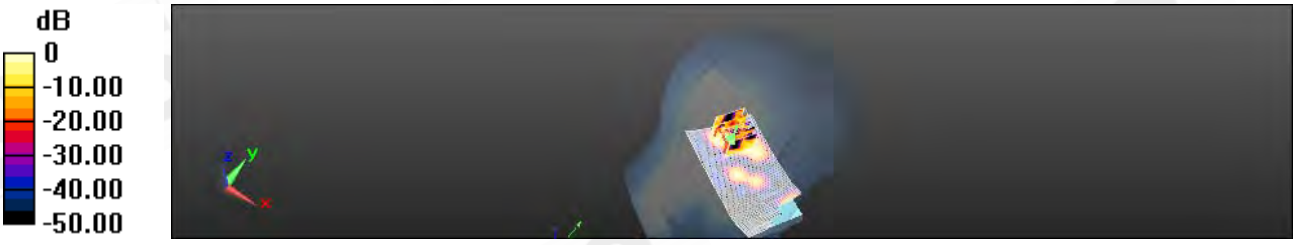
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.763 mho/m; ε_r = 40.232; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.0053 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.935 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.0130
SAR(1 g) = 0.00348 mW/g; SAR(10 g) = 0.0013 mW/g
Maximum value of SAR (measured) = 0.00421 mW/g



0 dB = 0.0042mW/g = -47.54 dB mW/g

Le Tilt_CH6

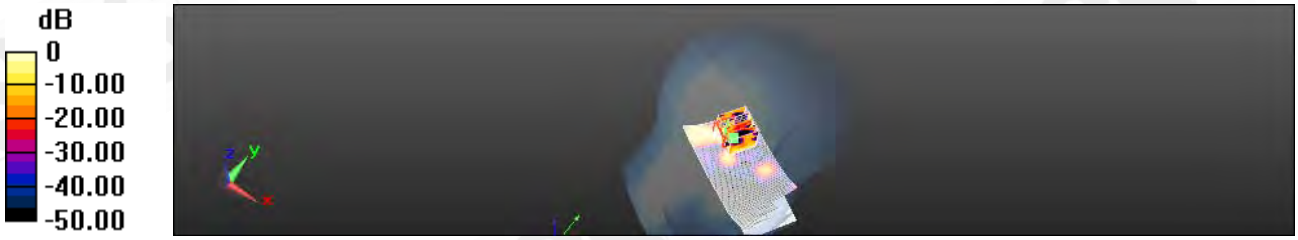
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.763 mho/m; ε_r = 40.232; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Head/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.00684 mW/g

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.140 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.0160
SAR(1 g) = 0.0058 mW/g; SAR(10 g) = 0.00197 mW/g
Maximum value of SAR (measured) = 0.00731 mW/g



0 dB = 0.0073mW/g = -42.73 dB mW/g

Front side_CH6

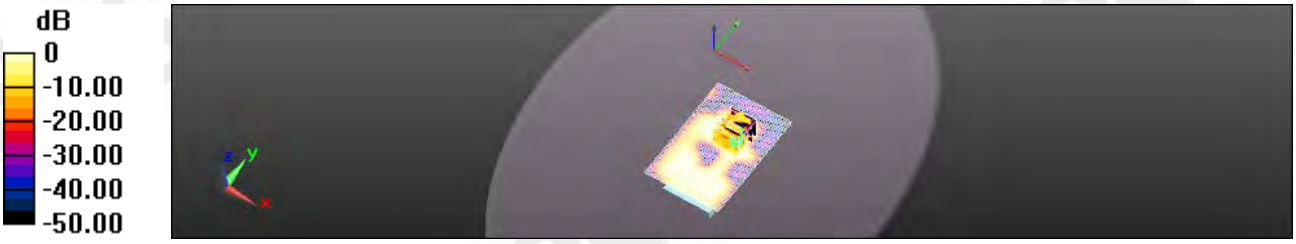
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.98 mho/m; ε_r = 53.024; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.00607 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.531 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.008450
SAR(1 g) = 0.0025 mW/g; SAR(10 g) = 0.00103 mW/g
Maximum value of SAR (measured) = 0.003 mW/g



0 dB = 0.003mW/g = -50.46 dB mW/g

Back side_CH1

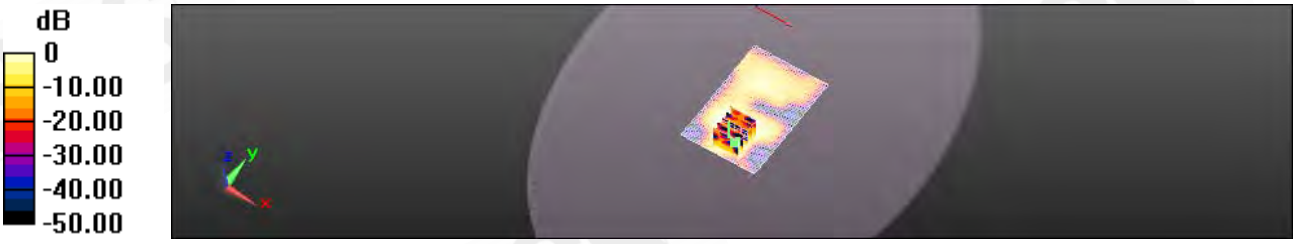
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2412 MHz;
Medium parameters used: f = 2412 MHz; σ = 1.946 mho/m; ε_r = 53.078; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.017 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.616 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.0290
SAR(1 g) = 0.012 mW/g; SAR(10 g) = 0.00511 mW/g
Maximum value of SAR (measured) = 0.018 mW/g



0 dB = 0.020mW/g = -33.98 dB mW/g

Back side_CH6

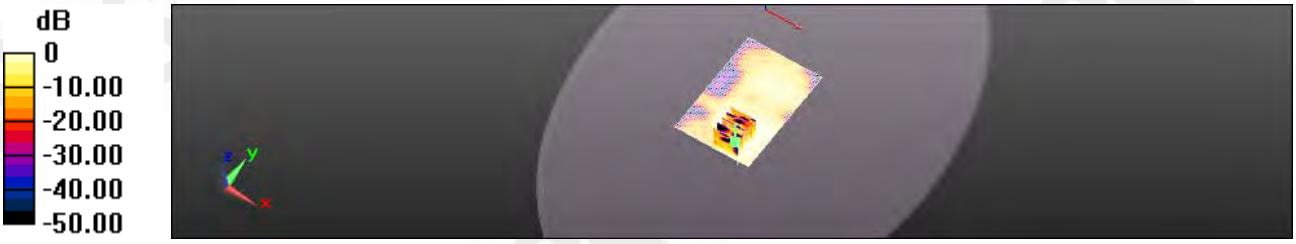
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.98 mho/m; ε_r = 53.024; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.012 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.720 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.0240
SAR(1 g) = 0.00995 mW/g; SAR(10 g) = 0.00412 mW/g
Maximum value of SAR (measured) = 0.013 mW/g



0 dB = 0.010mW/g = -40.00 dB mW/g

Back side_CH11

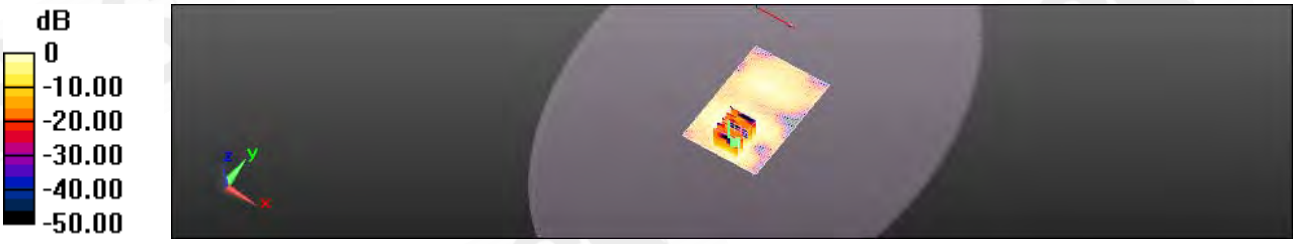
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2462 MHz;
Medium parameters used: f = 2462 MHz; σ = 2.006 mho/m; ε_r = 52.977; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.013 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.554 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.0220
SAR(1 g) = 0.011 mW/g; SAR(10 g) = 0.00487 mW/g
Maximum value of SAR (measured) = 0.016 mW/g



0 dB = 0.020mW/g = -33.98 dB mW/g

Back side_CH1_repeated with headset

Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2412 MHz;
Medium parameters used: f = 2412 MHz; σ = 1.946 mho/m; ε_r = 53.078; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.012 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.540 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.0240
SAR(1 g) = 0.013 mW/g; SAR(10 g) = 0.00494 mW/g
Maximum value of SAR (measured) = 0.016 mW/g

0 dB = 0.020mW/g = -33.98 dB mW/g

Back side_CH1_repeated with memory card

Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2412 MHz;
Medium parameters used: f = 2412 MHz; σ = 1.946 mho/m; ε_r = 53.078; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.016 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.824 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 0.0250
SAR(1 g) = 0.011 mW/g; SAR(10 g) = 0.00496 mW/g
Maximum value of SAR (measured) = 0.013 mW/g

0 dB = 0.010mW/g = -40.00 dB mW/g

Back side_CH1_repeated with 2nd Battery

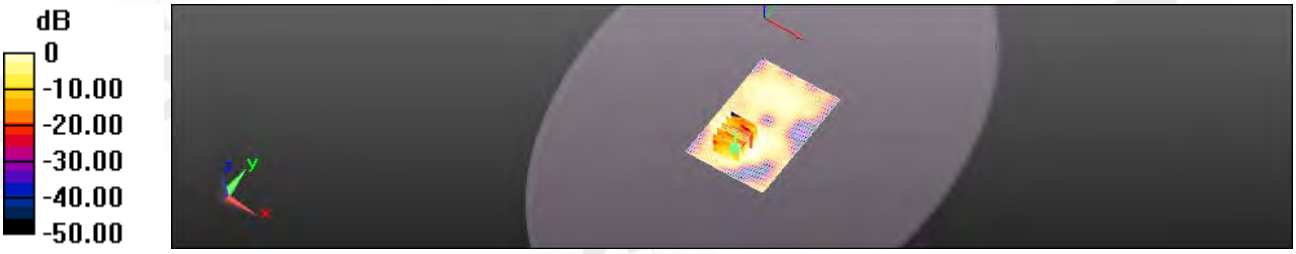
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2412 MHz;
Medium parameters used: f = 2412 MHz; σ = 1.946 mho/m; ε_r = 53.078; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.012 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.224 V/m; Power Drift = -0.174 dB
Peak SAR (extrapolated) = 0.0160
SAR(1 g) = 0.00901 mW/g; SAR(10 g) = 0.00374 mW/g
Maximum value of SAR (measured) = 0.011 mW/g



0 dB = 0.010mW/g = -40.00 dB mW/g

Top side_CH6

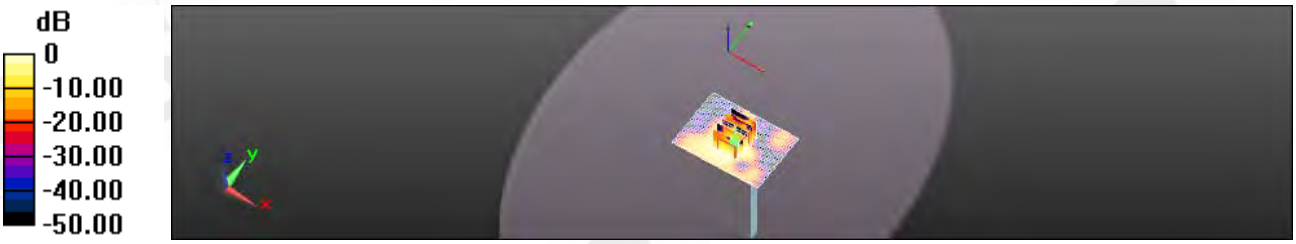
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.98 mho/m; ε_r = 53.024; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (71x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.013 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.692 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.0170
SAR(1 g) = 0.00872 mW/g; SAR(10 g) = 0.00382 mW/g
Maximum value of SAR (measured) = 0.011 mW/g



0 dB = 0.010mW/g = -40.00 dB mW/g

Right side_CH6

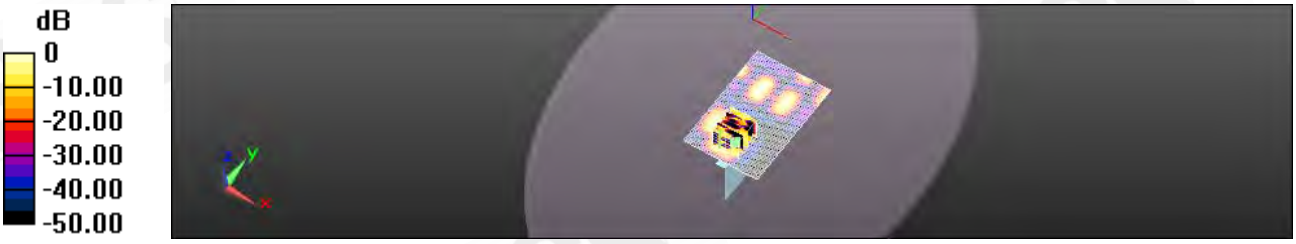
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.98 mho/m; ε_r = 53.024; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.00168 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.261 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.005230
SAR(1 g) = 0.00105 mW/g; SAR(10 g) = 0.000437 mW/g
Maximum value of SAR (measured) = 0.00147 mW/g



0 dB = 0.0015mW/g = -56.48 dB mW/g

Left side_CH6

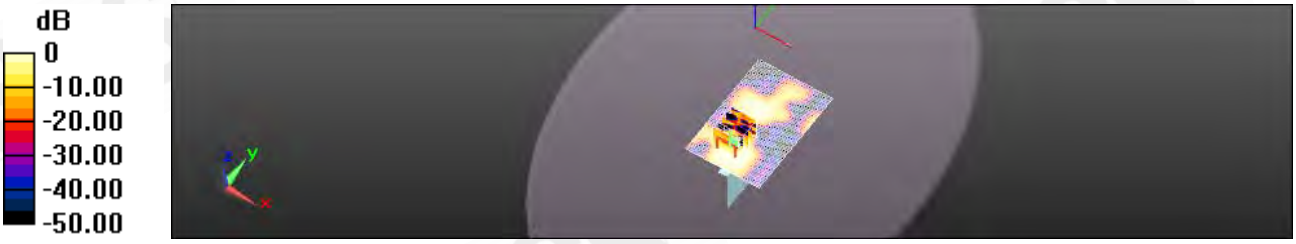
Communication System: WLAN(2.45G); Communication System Band: WLAN802.11 b_FCC; Frequency: 2437 MHz;
Medium parameters used: f = 2437 MHz; σ = 1.98 mho/m; ε_r = 53.024; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Body/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.00899 mW/g

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.453 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.0100
SAR(1 g) = 0.0044 mW/g; SAR(10 g) = 0.00179 mW/g
Maximum value of SAR (measured) = 0.00551 mW/g



0 dB = 0.0055mW/g = -45.19 dB mW/g

5. System Verification

Date: 2012/1/21

DUT: Dipole 835 MHz; (Head)

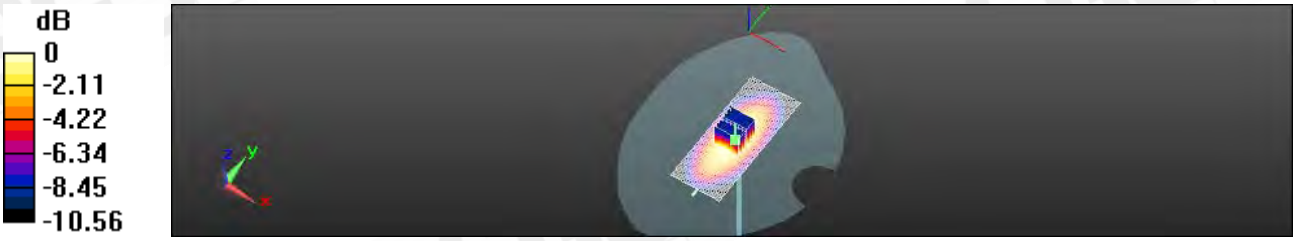
Communication System: CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;
Medium parameters used: f = 835 MHz; σ = 0.898 mho/m; ε_r = 42.174; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Pin=250mW/Area Scan (41x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.672 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.203 V/m; Power Drift = -0.00047 dB
Peak SAR (extrapolated) = 3.7590
SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.51 mW/g
Maximum value of SAR (measured) = 2.672 mW/g



0 dB = 2.670mW/g = 8.53 dB mW/g

DUT: Dipole 835 MHz; (Body)

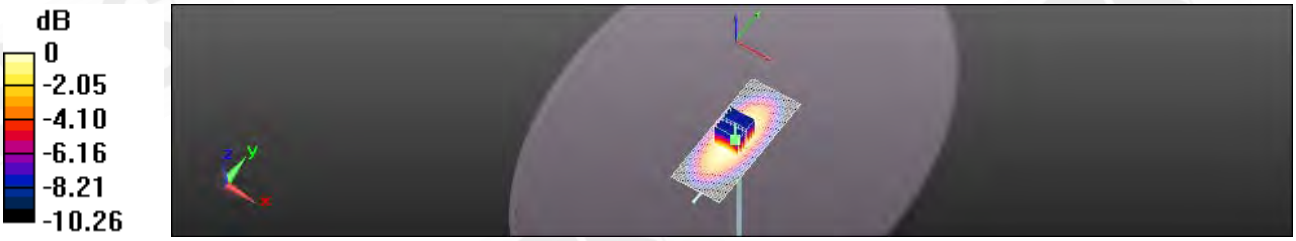
Communication System: CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;
Medium parameters used: f = 835 MHz; σ = 0.965 mho/m; ε_r = 55.605; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(5.83, 5.83, 5.83); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Pin=250mW/Area Scan (41x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.646 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.113 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 3.6480
SAR(1 g) = 2.43 mW/g; SAR(10 g) = 1.62 mW/g
Maximum value of SAR (measured) = 2.625 mW/g



0 dB = 2.620mW/g = 8.37 dB mW/g

DUT: Dipole 1900 MHz; (Head)

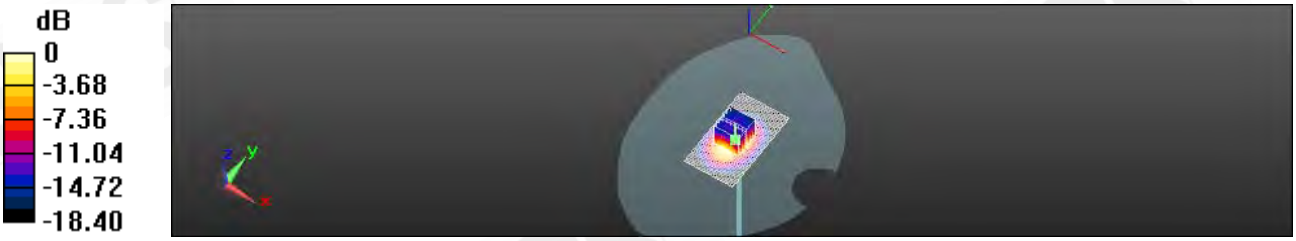
Communication System: CW; Communication System Band: D1900 (1900.0 MHz);
Frequency: 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.459 mho/m; ε_r = 40.157; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.78, 4.78, 4.78); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Pin=250mW/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.084 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.876 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 19.5600
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.22 mW/g
Maximum value of SAR (measured) = 11.485 mW/g



0 dB = 11.480mW/g = 21.20 dB mW/g

DUT: Dipole 1900 MHz; (Body)

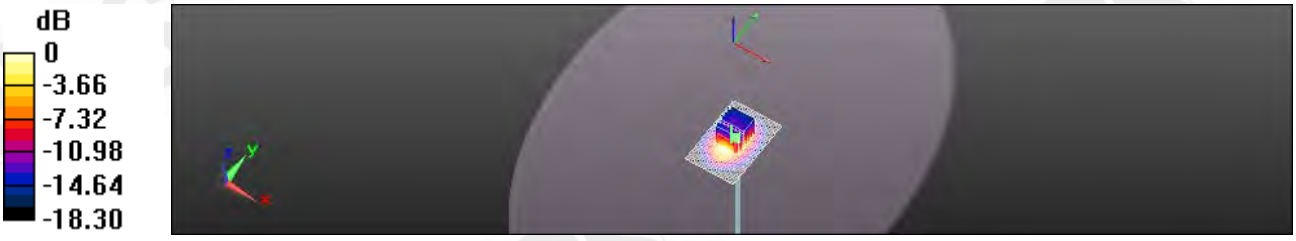
Communication System: CW; Communication System Band: D1900 (1900.0 MHz);
Frequency: 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.568 mho/m; ε_r = 51.76; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.38, 4.38, 4.38); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Pin=250mW/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.207 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 82.613 V/m; Power Drift = 0.0056 dB
Peak SAR (extrapolated) = 18.1260
SAR(1 g) = 9.75 mW/g; SAR(10 g) = 5 mW/g
Maximum value of SAR (measured) = 11.027 mW/g



0 dB = 11.030mW/g = 20.85 dB mW/g

DUT: Dipole 2450 MHz; (Head)

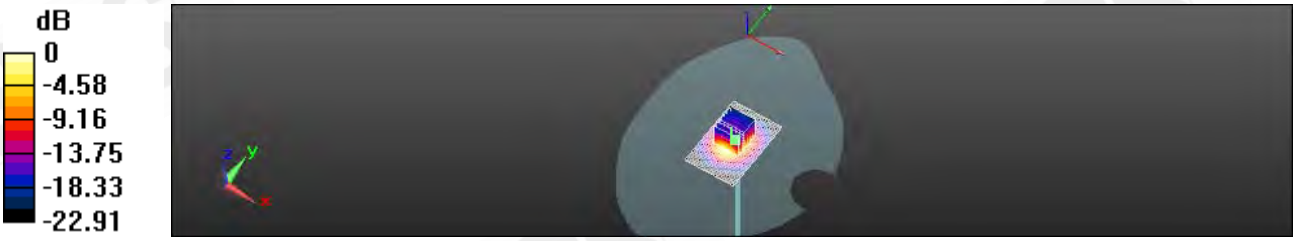
Communication System: CW; Communication System Band: D2450 (2450.0 MHz);
Frequency: 2450 MHz;
Medium parameters used: f = 2450 MHz; σ = 1.778 mho/m; ε_r = 40.189; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(4.17, 4.17, 4.17); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Head; Type: SAM;
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Pin=250mW/Area Scan (41x61x1): Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 17.914 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.201 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 29.3370
SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.36 mW/g
Maximum value of SAR (measured) = 17.077 mW/g



0 dB = 17.080mW/g = 24.65 dB mW/g

DUT: Dipole 2450 MHz; (Body)

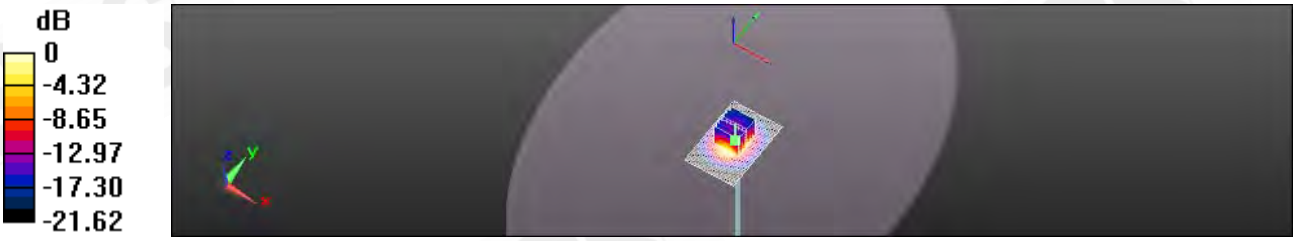
Communication System: CW; Communication System Band: D2450 (2450.0 MHz);
Frequency: 2450 MHz;
Medium parameters used: f = 2450 MHz; σ = 1.995 mho/m; ε_r = 52.991; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: ES3DV3 - SN3172; ConvF(3.99, 3.99, 3.99); Calibrated: 2011/8/23
- Sensor-Surface: 3.4mm (Mechanical Surface Detection), z = 2.0, 32.0
- Electronics: DAE4 Sn1260; Calibrated: 2011/8/22
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Configuration/Pin=250mW/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.373 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.754 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 26.4700
SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.93 mW/g
Maximum value of SAR (measured) = 14.523 mW/g



0 dB = 14.520mW/g = 23.24 dB mW/g

DUT: Dipole 1900 MHz; (Body)

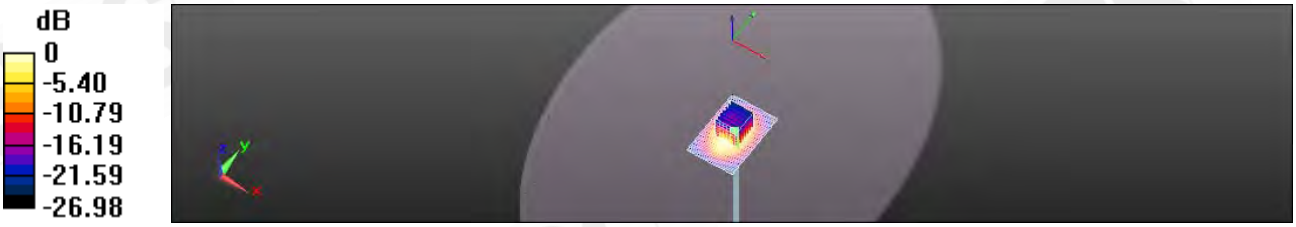
Communication System: CW; Communication System Band: D1900 (1900.0 MHz);
Frequency: 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.512 mho/m; ε_r = 51.657; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA;
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Pin=250mW/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.3 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.538 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.024 mW/g
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.21 mW/g
Maximum value of SAR (measured) = 12.2 mW/g



0 dB = 12.3 mW/g = 21.81 dB mW/g

DUT: Dipole 835 MHz; (Body)

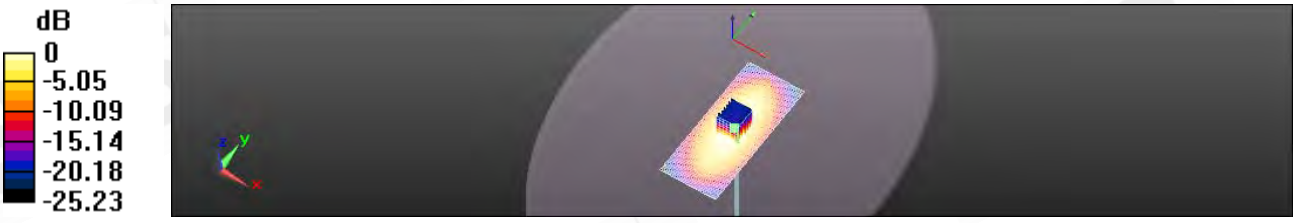
Communication System: CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;
Medium parameters used: f = 835 MHz; σ = 0.987 mho/m; ε_r = 53.762; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(9.02, 9.02, 9.02); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Pin=250mW/Area Scan (51x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.73 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.939 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.673 mW/g
SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.59 mW/g
Maximum value of SAR (measured) = 2.77 mW/g



0 dB = 2.73 mW/g = 8.72 dB mW/g

DUT: Dipole 1900 MHz; (Body)

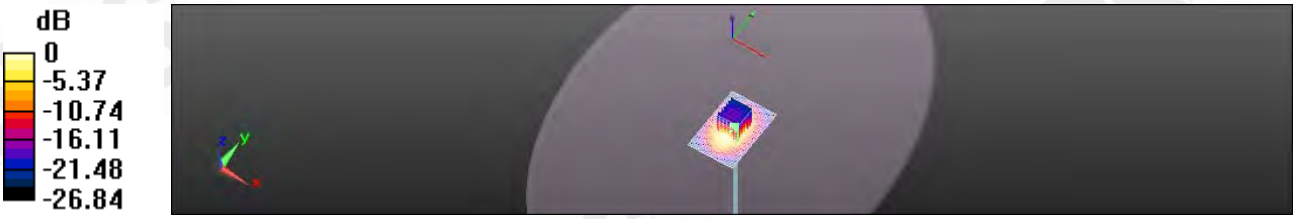
Communication System: CW; Communication System Band: D1900 (1900.0 MHz);
Frequency: 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.544 mho/m; ε_r = 51.215; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN3831; ConvF(7.25, 7.25, 7.25); Calibrated: 2012/1/4;
- Sensor-Surface: 2mm (Mechanical Surface Detection),
- Electronics: DAE4 Sn914; Calibrated: 2011/12/8
- Phantom: Body; Type: QDOVA002AA; Serial: TP:xxxx
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Pin=250mW/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.3 mW/g

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.339 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 17.985 mW/g
SAR(1 g) = 9.9 mW/g; SAR(10 g) = 5.2 mW/g
Maximum value of SAR (measured) = 12.1 mW/g



0 dB = 12.3 mW/g = 21.78 dB mW/g

6. DAE & Probe Calibration Certificate

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client SGS (Auden)

Certificate No: DAE4-1260_Aug11

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BJ - SN: 1260
Calibration procedure(s)	QA CAL-06.v23 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	August 22, 2011

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
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-10 (No:10376)	Sep-11
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Calibrator Box V1.1	SE UMS 006 AB 1004	08-Jun-11 (in house check)	In house check: Jun-12

	Name	Function	Signature
Calibrated by:	Eric Hainfeld	Technician	
Approved by:	Fin Bomholt	R&D Director	i.V.

Issued: August 22, 2011

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

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	406.004 ± 0.1% (k=2)	404.956 ± 0.1% (k=2)	405.556 ± 0.1% (k=2)
Low Range	3.95601 ± 0.7% (k=2)	4.01927 ± 0.7% (k=2)	4.00399 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	179.0 ° ± 1 °

SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 | No.134, Wu Kung Road, Wuku Industrial Zone, Taipei County, Taiwan /台北縣五股工業區五工路 134 號
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Appendix

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199997.7	5.90	0.00
Channel X	+ Input	20002.71	3.31	0.02
Channel X	- Input	-19996.91	2.89	-0.01
Channel Y	+ Input	199990.1	-0.85	-0.00
Channel Y	+ Input	19999.25	-0.35	-0.00
Channel Y	- Input	-19999.22	0.58	-0.00
Channel Z	+ Input	199999.4	-3.57	-0.00
Channel Z	+ Input	19998.93	-0.47	-0.00
Channel Z	- Input	-20000.48	-0.68	0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2000.2	0.06	0.00
Channel X	+ Input	200.93	1.13	0.57
Channel X	- Input	-199.54	0.66	-0.33
Channel Y	+ Input	1999.6	-0.56	-0.03
Channel Y	+ Input	200.02	0.12	0.06
Channel Y	- Input	-200.40	-0.40	0.20
Channel Z	+ Input	1999.9	-0.28	-0.01
Channel Z	+ Input	199.09	-0.91	-0.46
Channel Z	- Input	-200.84	-0.94	0.47

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-0.15	-2.12
	- 200	4.13	1.79
Channel Y	200	12.24	11.93
	- 200	-13.72	-13.81
Channel Z	200	-2.45	-1.93
	- 200	-0.71	-0.36

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	5.11	-1.01
Channel Y	200	2.60	-	5.42
Channel Z	200	1.73	0.39	-

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4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15925	16002
Channel Y	15815	15768
Channel Z	16047	16670

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-0.44	-2.66	0.28	0.41
Channel Y	-0.80	-2.28	0.37	0.41
Channel Z	-1.59	-2.59	-0.14	0.44

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	–0.01	-8	-9

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Accreditation No.: **SCS 108**

Client **Auden**

Certificate No: **DAE4-914_Dec11**

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BK - SN: 914
Calibration procedure(s)	QA CAL-06.v23 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	December 8, 2011

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
Keithley Multimeter Type 2001	SN: 0810278	28-Sep-11 (No:11450)	Sep-12
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Calibrator Box V1.1	SE UMS 006 AB 1004	08-Jun-11 (in house check)	In house check: Jun-12

	Name	Function	Signature
Calibrated by:	Dominique Steffen	Technician	
Approved by:	Fin Bomholt	R&D Director	i.V.

Issued: December 8, 2011

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Accreditation No.: **SCS 108**

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information: Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.430 ± 0.1% (k=2)	404.471 ± 0.1% (k=2)	403.724 ± 0.1% (k=2)
Low Range	3.99253 ± 0.7% (k=2)	3.95785 ± 0.7% (k=2)	3.98845 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	65.0 ° ± 1 °

Appendix

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200001.0	-0.18	-0.00
Channel X	+ Input	19998.80	-1.00	-0.00
Channel X	- Input	-19997.26	2.34	-0.01
Channel Y	+ Input	200007.4	-1.88	-0.00
Channel Y	+ Input	19994.57	-5.03	-0.03
Channel Y	- Input	-20001.70	-2.50	0.01
Channel Z	+ Input	200005.3	-3.10	-0.00
Channel Z	+ Input	19996.23	-3.17	-0.02
Channel Z	- Input	-20002.05	-2.85	0.01

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	1998.8	-1.15	-0.06
Channel X	+ Input	199.72	-0.18	-0.09
Channel X	- Input	-199.83	0.17	-0.08
Channel Y	+ Input	1999.3	-0.71	-0.04
Channel Y	+ Input	199.51	-0.49	-0.25
Channel Y	- Input	-201.93	-2.03	1.01
Channel Z	+ Input	2000.1	-0.03	-0.00
Channel Z	+ Input	198.84	-0.96	-0.48
Channel Z	- Input	-201.32	-1.32	0.66

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-0.86	-2.25
	- 200	3.38	1.61
Channel Y	200	-5.83	-6.16
	- 200	4.37	4.28
Channel Z	200	-15.57	-15.83
	- 200	14.89	14.76

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	4.16	0.70
Channel Y	200	2.79	-	5.86
Channel Z	200	2.87	-2.21	-

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4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16315	13913
Channel Y	15862	15284
Channel Z	16146	16142

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-1.48	-2.38	-0.31	0.40
Channel Y	-0.09	-1.61	0.82	0.47
Channel Z	-0.45	-1.69	0.81	0.40

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

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Accreditation No.: SCS 108

Client SGS-TW (Auden) **Certificate No: ES3-3172_Aug11**

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3172

Calibration procedure(s): QA CAL-01.v8, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: August 23, 2011

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	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

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

Issued: August 23, 2011

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

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
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:

a) 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

b) 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:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,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*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; VRx,y,z:* A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 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 *NORMx,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.

Probe ES3DV3

SN:3172

Manufactured: January 23, 2008
Calibrated: August 23, 2011

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3172

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.38	1.15	0.97	± 10.1 %
DCP (mV)[B]	100.5	105.1	95.2	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	117.7	±2.7 %
			Y	0.00	0.00	1.00	110.5	
			Z	0.00	0.00	1.00	93.7	

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 E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3172

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	6.06	6.06	6.06	1.00	1.00	± 12.0 %
835	41.5	0.90	5.83	5.83	5.83	1.00	1.00	± 12.0 %
900	41.5	0.97	5.77	5.77	5.77	1.00	1.00	± 12.0 %
1750	40.1	1.37	4.94	4.94	4.94	0.95	1.09	± 12.0 %
1900	40.0	1.40	4.78	4.78	4.78	0.95	1.12	± 12.0 %
2000	40.0	1.40	4.77	4.77	4.77	0.97	1.08	± 12.0 %
2300	39.5	1.67	4.50	4.50	4.50	0.76	1.24	± 12.0 %
2450	39.2	1.80	4.17	4.17	4.17	0.80	1.19	± 12.0 %
2600	39.0	1.96	4.11	4.11	4.11	0.64	1.46	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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DASY/EASY - Parameters of Probe: ES3DV3- SN:3172

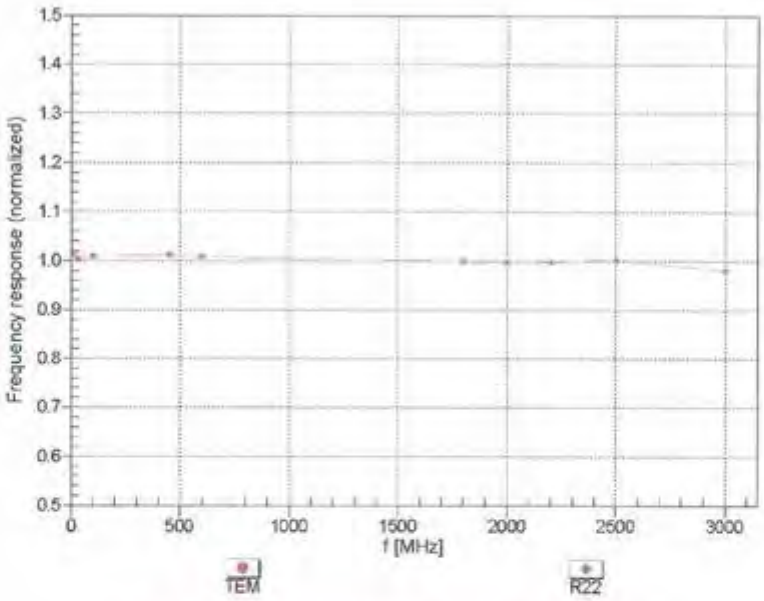
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	5.89	5.89	5.89	1.00	1.00	± 12.0 %
835	55.2	0.97	5.83	5.83	5.83	1.00	1.00	± 12.0 %
900	55.0	1.05	5.72	5.72	5.72	1.00	1.00	± 12.0 %
1750	53.4	1.49	4.60	4.60	4.60	0.88	1.25	± 12.0 %
1900	53.3	1.52	4.38	4.38	4.38	0.78	1.34	± 12.0 %
2000	53.3	1.52	4.46	4.46	4.46	0.77	1.32	± 12.0 %
2300	52.9	1.81	4.18	4.18	4.18	1.00	1.05	± 12.0 %
2450	52.7	1.95	3.99	3.99	3.99	1.00	1.00	± 12.0 %
2600	52.5	2.16	3.90	3.90	3.90	1.00	1.00	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

ES3DV3- SN:3172 August 23, 2011

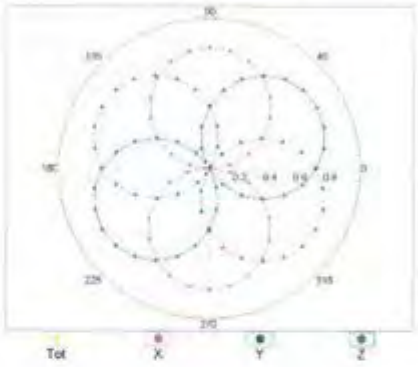
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



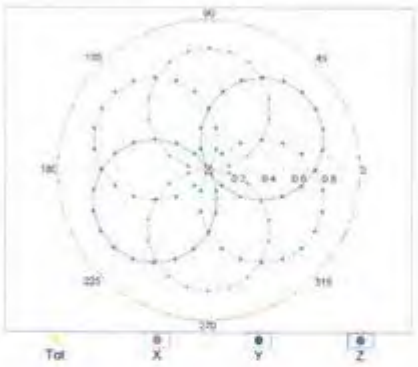
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

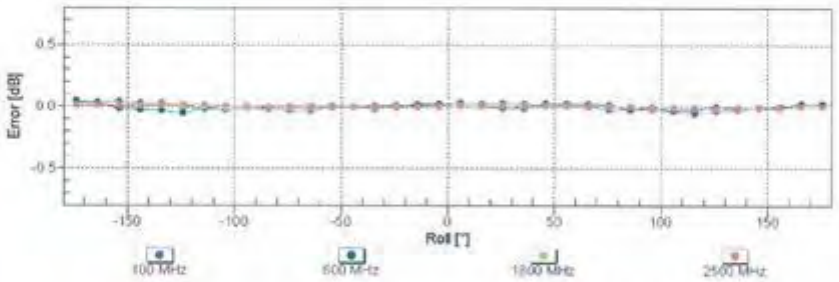
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



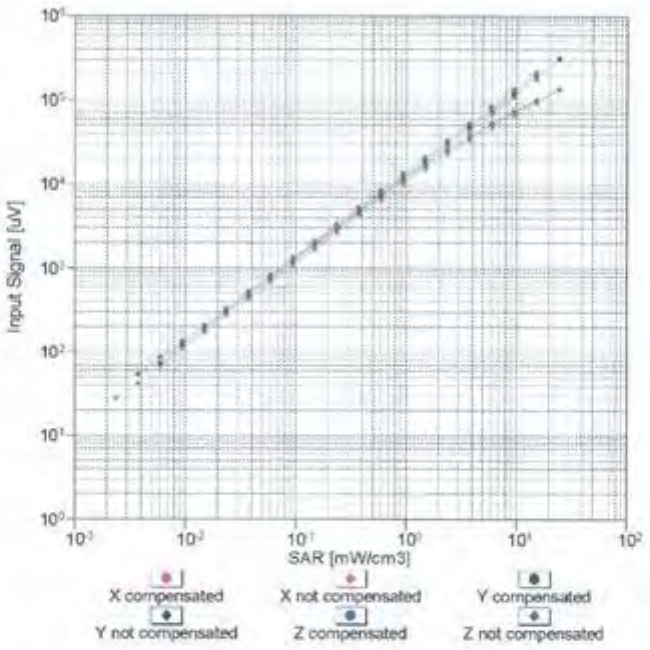
f=1800 MHz,R22

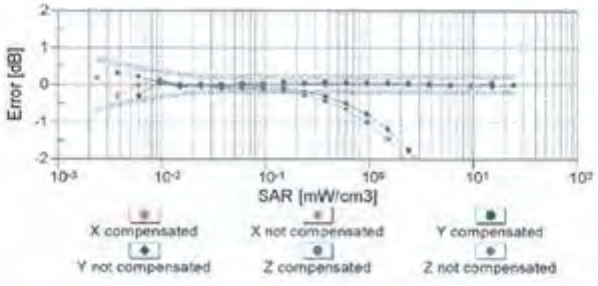




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)



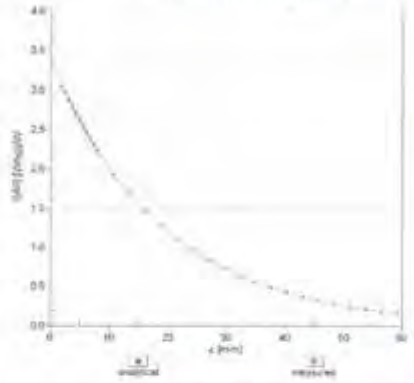


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

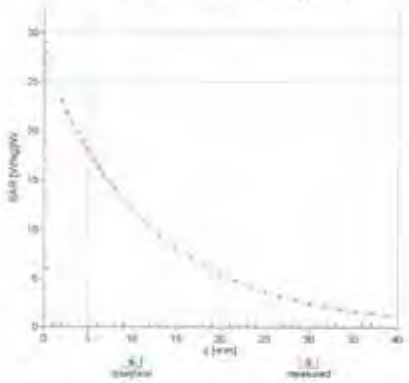
ES3DV3- SN:3172 August 23, 2011

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

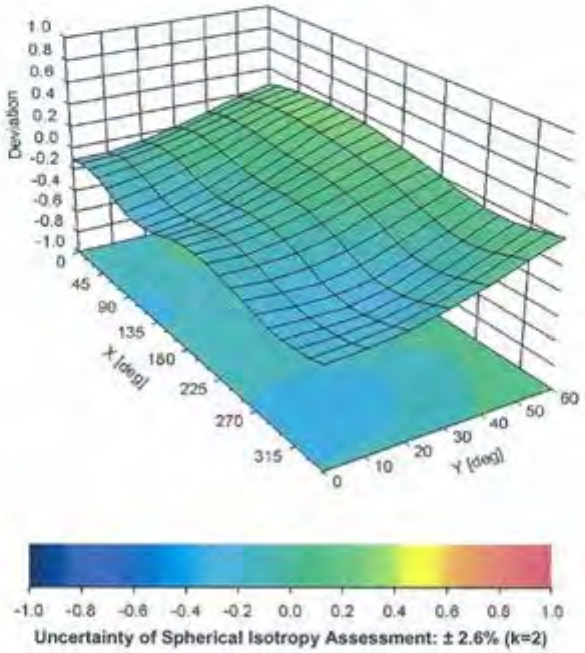


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (φ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3172

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Client SGS-TW (Auden)

Certificate No: EX3-3831_Jan12

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3831

Calibration procedure(s) QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: January 4, 2012

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	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 5, 2012

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

Certificate No: EX3-3831_Jan12 Page 1 of 11

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
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., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) 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
b) 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:

- *NORMx,y,z*: Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,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*.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; VRx,y,z*: *A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 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 *NORMx,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.

Probe EX3DV4

SN:3831

Manufactured: September 6, 2011
Calibrated: January 4, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.44	0.41	0.43	± 10.1 %
DCP (mV)[B]	101.7	101.4	99.5	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	111.7	±3.0 %
			Y	0.00	0.00	1.00	96.2	
			Z	0.00	0.00	1.00	106.7	

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 E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.32	9.32	9.32	0.44	0.84	± 12.0 %
835	41.5	0.90	8.82	8.82	8.82	0.19	1.48	± 12.0 %
900	41.5	0.97	8.71	8.71	8.71	0.22	1.38	± 12.0 %
1750	40.1	1.37	8.03	8.03	8.03	0.39	0.81	± 12.0 %
1900	40.0	1.40	7.76	7.76	7.76	0.44	0.77	± 12.0 %
2000	40.0	1.40	7.65	7.65	7.65	0.61	0.63	± 12.0 %
2300	39.5	1.67	7.44	7.44	7.44	0.41	0.83	± 12.0 %
2450	39.2	1.80	6.84	6.84	6.84	0.49	0.73	± 12.0 %
2600	39.0	1.96	6.67	6.67	6.67	0.33	0.96	± 12.0 %
5200	36.0	4.66	4.64	4.64	4.64	0.42	1.80	± 13.1 %
5300	35.9	4.76	4.37	4.37	4.37	0.44	1.80	± 13.1 %
5600	35.5	5.07	4.10	4.10	4.10	0.48	1.80	± 13.1 %
5800	35.3	5.27	4.12	4.12	4.12	0.45	1.80	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

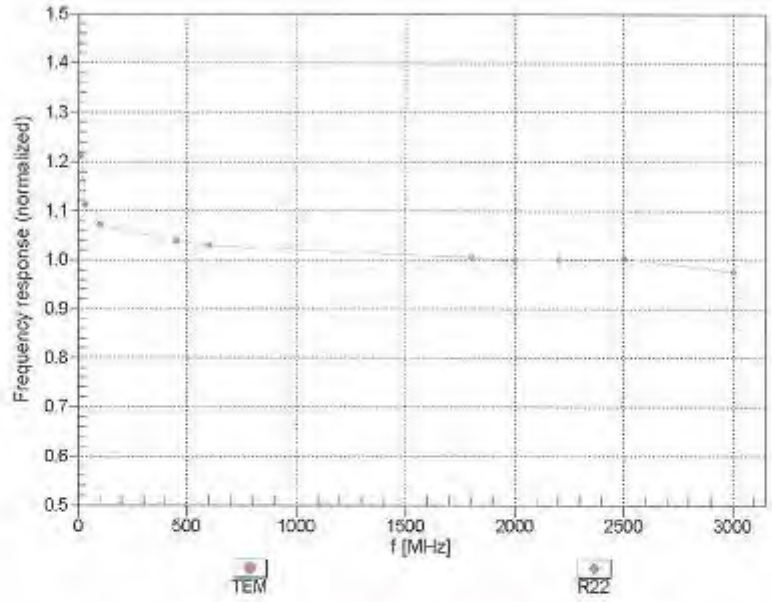
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.24	9.24	9.24	0.23	1.25	± 12.0 %
835	55.2	0.97	9.02	9.02	9.02	0.28	1.13	± 12.0 %
900	55.0	1.05	8.93	8.93	8.93	0.25	1.28	± 12.0 %
1750	53.4	1.49	7.67	7.67	7.67	0.38	0.87	± 12.0 %
1900	53.3	1.52	7.25	7.25	7.25	0.57	0.70	± 12.0 %
2000	53.3	1.52	7.31	7.31	7.31	0.27	1.09	± 12.0 %
2300	52.9	1.81	7.26	7.26	7.26	0.71	0.66	± 12.0 %
2450	52.7	1.95	6.82	6.82	6.82	0.74	0.62	± 12.0 %
2600	52.5	2.16	6.63	6.63	6.63	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.12	4.12	4.12	0.50	1.90	± 13.1 %
5300	48.9	5.42	3.92	3.92	3.92	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.30	3.30	3.30	0.65	1.90	± 13.1 %
5800	48.2	6.00	3.77	3.77	3.77	0.60	1.90	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

EX3DV4- SN:3831 January 4, 2012

Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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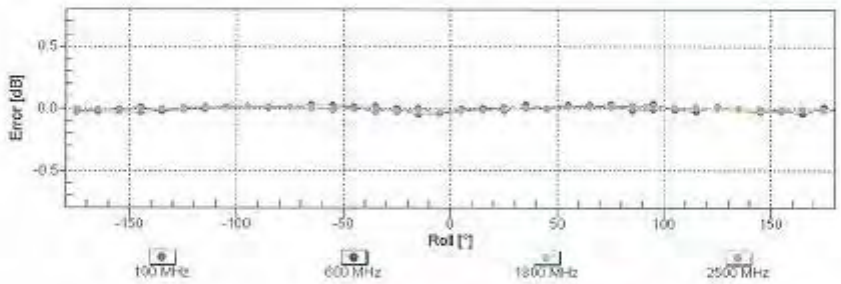
t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
Member of SGS Group

Receiving Pattern (ϕ), ϑ = 0°

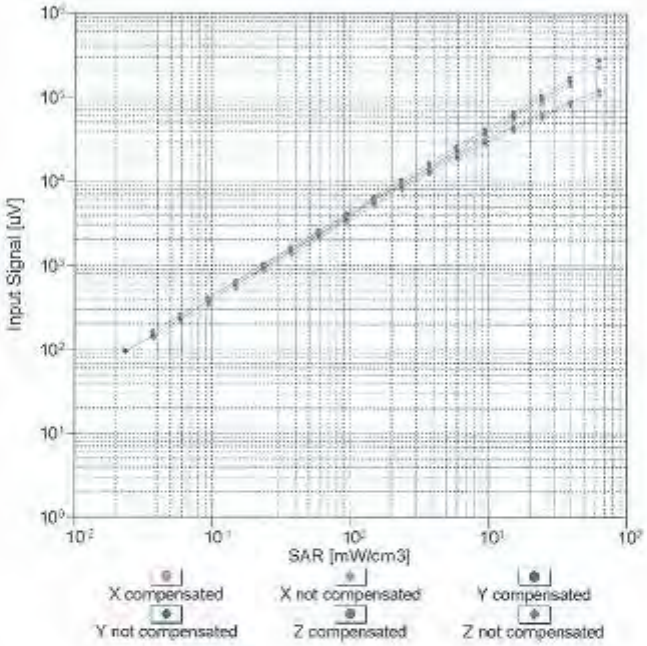
f=600 MHz,TEM

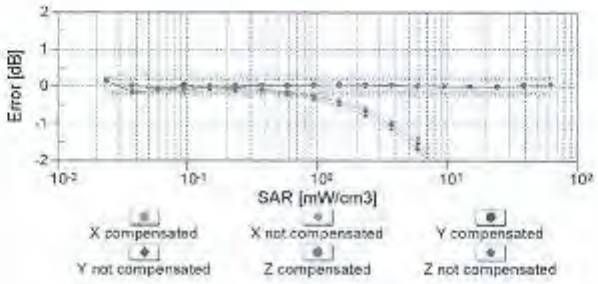
f=1800 MHz,R22



Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)



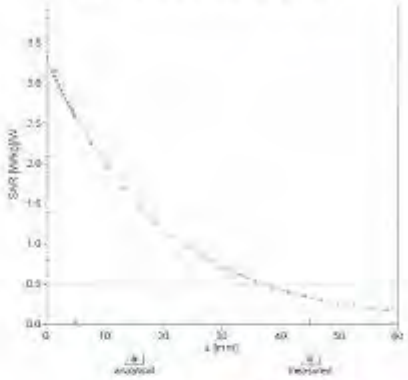


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

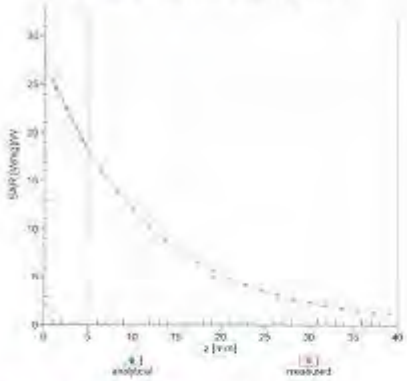
EX3DV4- SN:3831 January 4, 2012

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

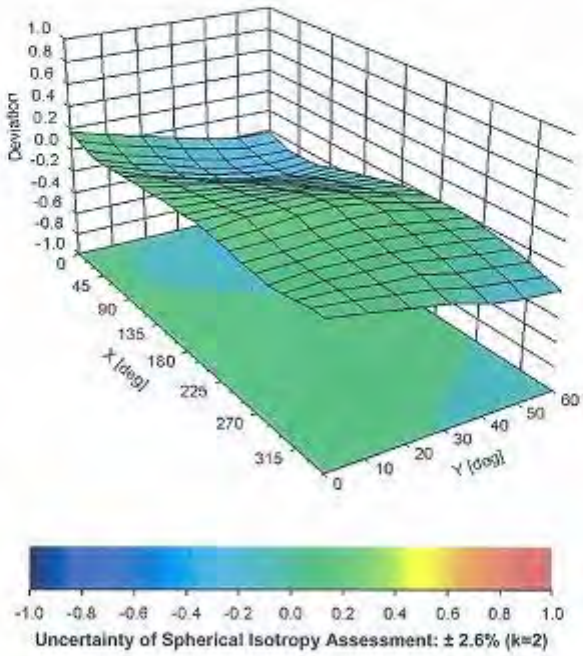


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

7. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test
IEEE 1528

A	c	D	e	f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty %	Probability Distributioin	Div	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system								
Probe calibration(under 2.6Ghz)	6.00%	N	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	√3	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1	1	5.54%	5.54%	∞
Boundary Effect	1.00%	R	√3	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	√3	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1	1	0.58%	0.58%	∞
Test Sample related								
Test sample positioning	2.90%	N	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1	1	2.89%	2.89%	∞
Phantom and Setup								
Phantom Uncertainty	4.00%	R	√3	1	1	2.31%	2.31%	∞
Liquid conductivity(meas.) Max at 1900 band	4.60%	N	1	0.64	0.43	2.94%	1.98%	M
Liquid permitivity(meas.) Max at 835 band	2.17%	N	1	0.6	0.49	1.30%	1.06%	M
Combined standard uncertainty		RSS				11.72%	11.49%	
Expant uncertainty (95% confidence interval), K=2						23.44%	22.98%	

8. Phantom Description

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Certificate of Conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 C
Series No	TP-1150 and higher
Manufacturer	SPEAG Zeughausstrasse 43 CH-8004 Zürich Switzerland

Tests
The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series items (called samples) or are tested at each item.

Test	Requirement	Details	Units tested
Dimensions	Compliant with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness of shell	Compliant with the requirements according to the standards	2mm +/- 0.2mm in flat and specific areas of head section	First article, Samples, TP-1314 ff.
Material thickness at ERP	Compliant with the requirements according to the standards	6mm +/- 0.2mm at ERP	First article, All items
Material parameters	Dielectric parameters for required frequencies	300 MHz – 6 GHz: Relative permittivity < 5, Loss tangent < 0.05	Material samples
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility.	DEGMBE based simulating liquids	Pre-series, First article, Material samples
Sagging	Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating liquid.	< 1% typical < 0.8% if filled with 155mm of HSL900 and without DUT below	Prototypes, Sample testing

Standards
[1] CENELEC EN 50361
[2] IEEE Std 1528-2003
[3] IEC 62209 Part I
[4] FCC OET Bulletin 65, Supplement C, Edition 01-01
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

Conformity
Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4].

Date 07.07.2005

Signature / Stamp

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Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Doc No 681 – QD 000 P40 C – F Page 1 (1)

9. System Validation from Original Equipment Supplier

Calibration Laboratory of
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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client SGS-TW (Auden)

Certificate No: D835V2-4d063_May11

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d063
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	May 25, 2011

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 EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 25, 2011

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

Certificate No: D835V2-4d063_May11 Page 1 of 8

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Accredited by the Swiss Accreditation Service (SAS)
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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) 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
b) 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
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.4 ± 6 %	0.88 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.31 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.34 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.52 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.13 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.9 ± 6 %	1.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.43 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.45 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.60 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.27 mW / g ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.4 Ω - 1.5 jΩ
Return Loss	- 28.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.7 Ω - 4.1 jΩ
Return Loss	- 27.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.426 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 27, 2006

DASY5 Validation Report for Head TSL

Date: 25.05.2011

Test Laboratory: SPEAG, Zurich, Switzerland

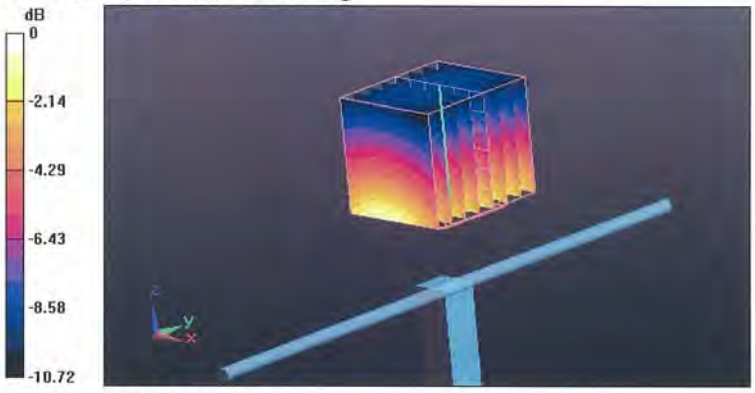
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL900
Medium parameters used: f = 835 MHz; σ = 0.88 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

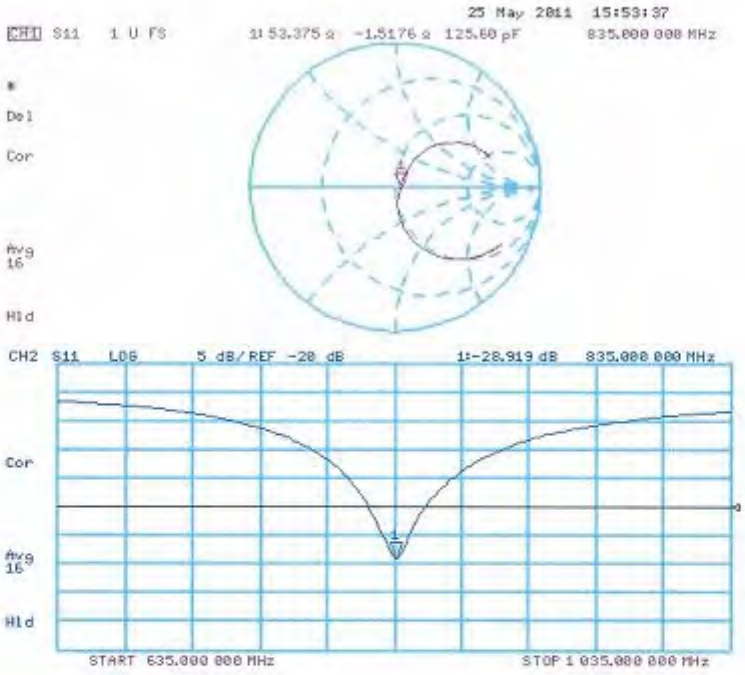
- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.554 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.427 W/kg
SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.52 mW/g
Maximum value of SAR (measured) = 2.669 mW/g



0 dB = 2.670mW/g

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 25.05.2011

Test Laboratory: SPEAG, Zurich, Switzerland

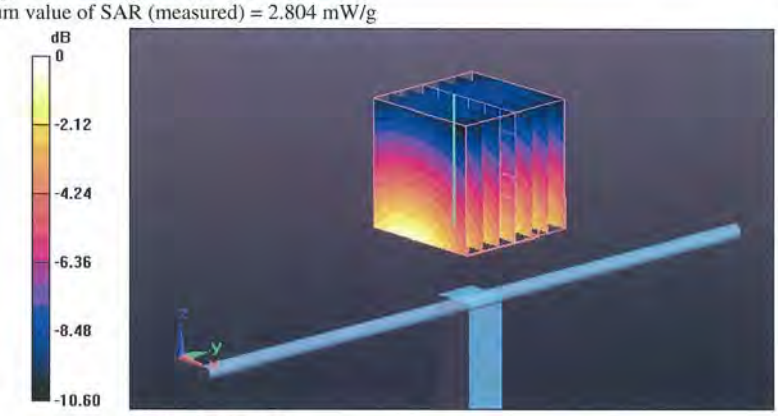
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL900
Medium parameters used: f = 835 MHz; σ = 1 mho/m; ε_r = 53.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

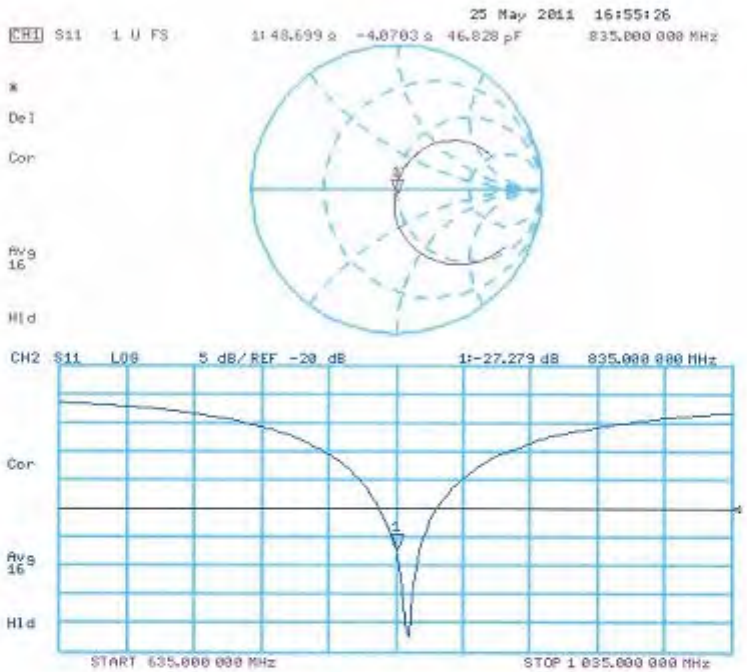
- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.4 Build (2829)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.297 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 3.530 W/kg
SAR(1 g) = 2.43 mW/g; SAR(10 g) = 1.6 mW/g
Maximum value of SAR (measured) = 2.804 mW/g



0 dB = 2.800mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: **SCS 108**

Client **Auden**

Certificate No: **D835V2-4d120_Jul11**

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d120
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	July 19, 2011

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 EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 19, 2011

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) 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
b) 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
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields: Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.0 ± 6 %	0.88 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.30 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.33 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.51 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.11 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.8 ± 6 %	0.98 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.43 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.59 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.60 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.34 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.0 Ω - 3.4 jΩ
Return Loss	- 28.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.7 Ω - 5.2 jΩ
Return Loss	- 24.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.397 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 29, 2010

DASY5 Validation Report for Head TSL

Date: 18.07.2011

Test Laboratory: SPEAG, Zurich, Switzerland

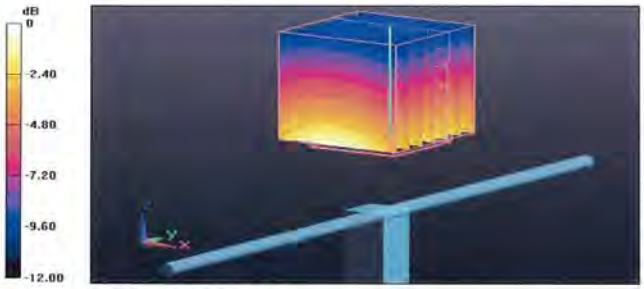
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d120

Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.88 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

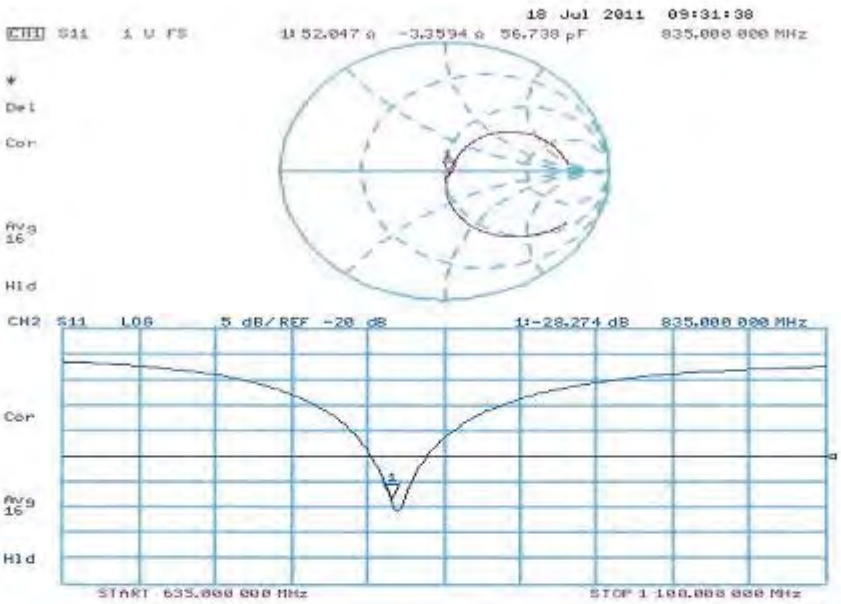
- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.919 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.366 W/kg
SAR(1 g) = 2.3 mW/g; SAR(10 g) = 1.51 mW/g
Maximum value of SAR (measured) = 2.672 mW/g



0 dB = 2.670mW/g

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 19.07.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d120

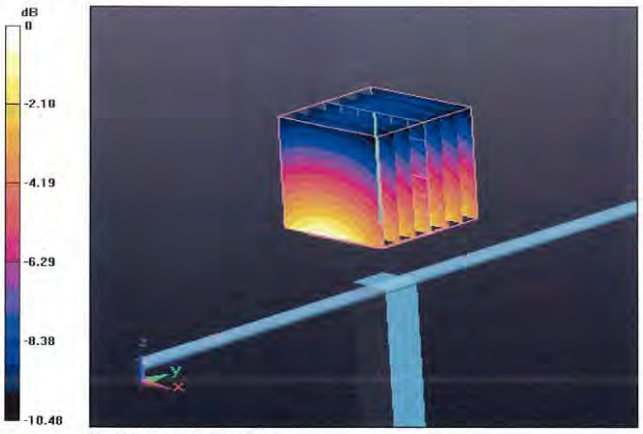
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

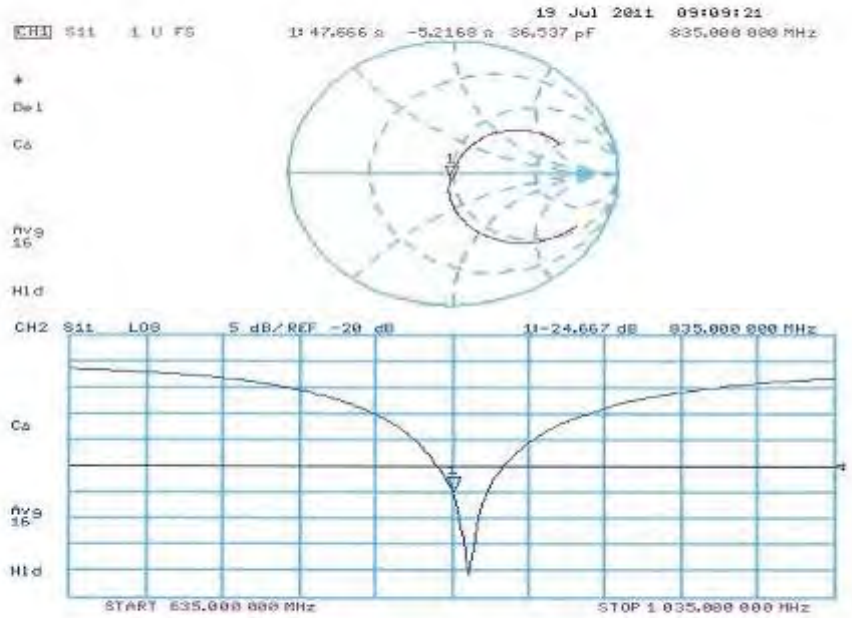
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.302 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.528 W/kg
SAR(1 g) = 2.43 mW/g; SAR(10 g) = 1.6 mW/g
Maximum value of SAR (measured) = 2.787 mW/g



0 dB = 2.790mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client SGS TW (Auden)

Certificate No: D1900V2-5d027_Apr11

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d027
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits
Calibration date:	April 19, 2011

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 EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 19, 2011

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) 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
b) 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
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.41 mho/m ± 6 %
Head TSL temperature during test	(21.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 mW / g
SAR normalized	normalized to 1W	40.4 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**40.1 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.26 mW / g
SAR normalized	normalized to 1W	21.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**20.9 mW /g ± 16.5 % (k=2)**

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Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.1 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature during test	(21.8 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.93 mW / g
SAR normalized	normalized to 1W	39.7 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**39.4 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.18 mW / g
SAR normalized	normalized to 1W	20.7 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.6 mW / g ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.8 Ω + 6.4 jΩ
Return Loss	- 23.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.1 Ω + 6.6 jΩ
Return Loss	- 23.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.194 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

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DASY5 Validation Report for Head TSL

Date/Time: 18.04.2011 15:27:22

Test Laboratory: SPEAG, Zurich, Switzerland

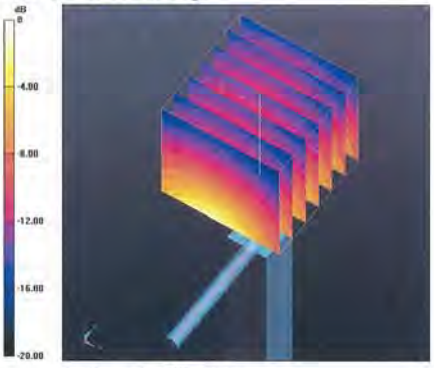
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL U12 BB
Medium parameters used: f = 1900 MHz; σ = 1.41 mho/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2829)

Pin=250 mW, Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.235 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 18.650 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.26 mW/g
Maximum value of SAR (measured) = 12.424 mW/g



0 dB = 12.420mW/g

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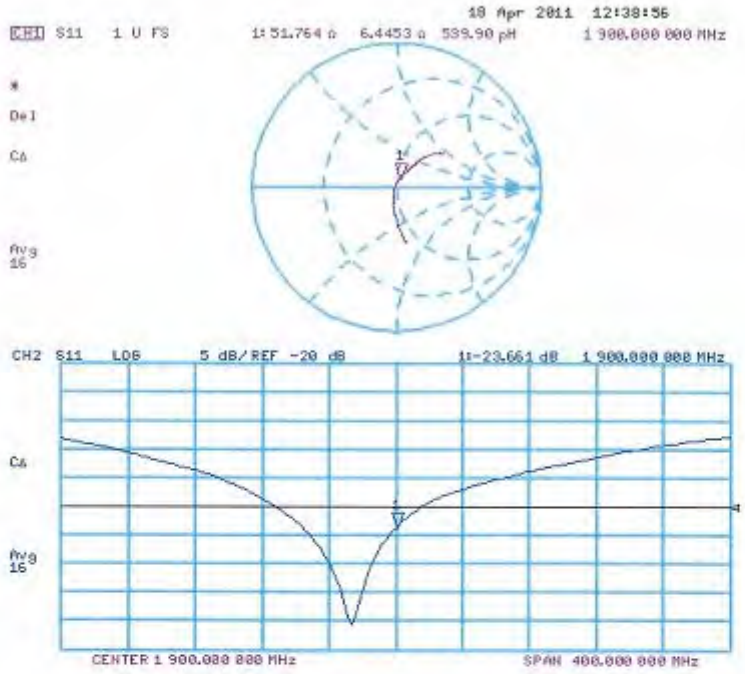
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date/Time: 19.04.2011 12:53:51

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL U12 BB
Medium parameters used: f = 1900 MHz; σ = 1.52 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

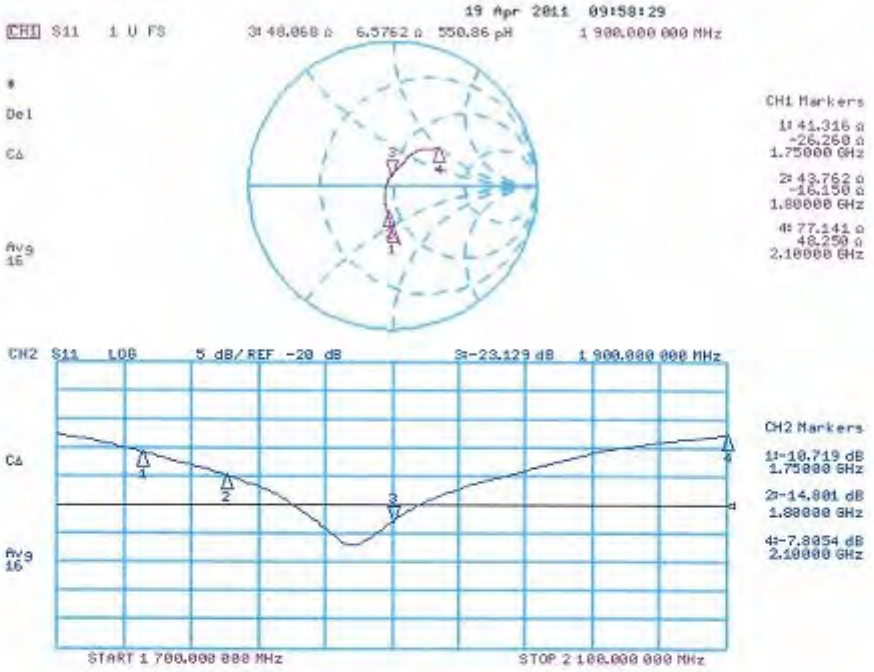
DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2829)

Pin=250 mW, Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.170 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.156 W/kg
SAR(1 g) = 9.93 mW/g; SAR(10 g) = 5.18 mW/g
Maximum value of SAR (measured) = 12.615 mW/g

0 dB = 12.610mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client SGS-TW (Auden)

Certificate No: D1900V2-5d027_Apr12

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d027
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	April 26, 2012

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 EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 26, 2012

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) 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
b) 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
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.8 ± 6 %	1.37 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.43 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**38.4 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.96 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**20.1 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.3 ± 6 %	1.51 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**40.2 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.30 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.3 mW / g ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.5 Ω + 4.5 jΩ
Return Loss	- 26.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.2 Ω + 4.5 jΩ
Return Loss	- 24.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

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DASY5 Validation Report for Head TSL

Date: 26.04.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

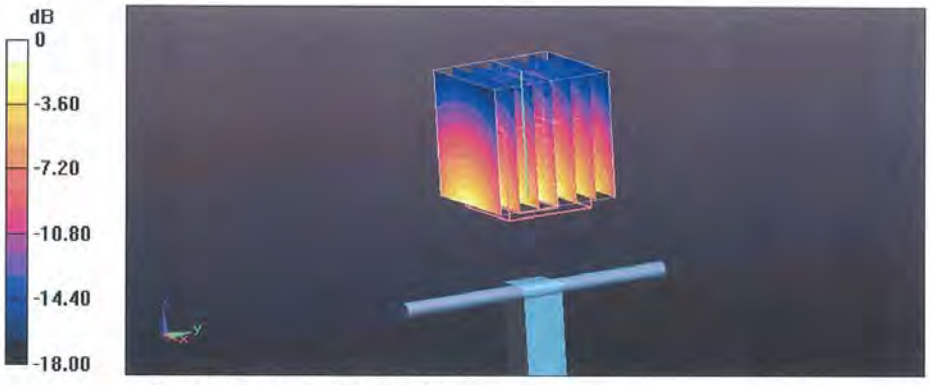
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.37 mho/m; ε_r = 40.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

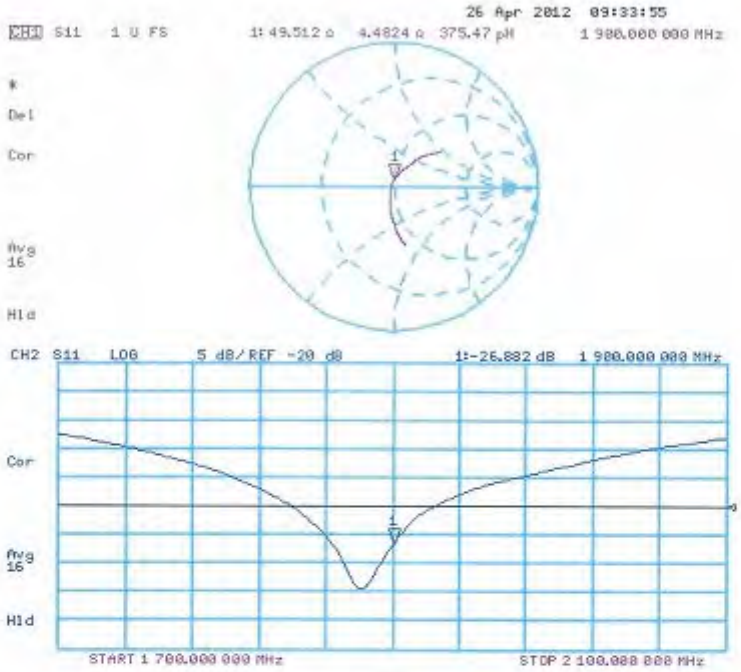
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.127 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 16.890 mW/g
SAR(1 g) = 9.43 mW/g; SAR(10 g) = 4.96 mW/g
Maximum value of SAR (measured) = 11.8 mW/g



0 dB = 11.8 mW/g = 21.44 dB mW/g

Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 26.04.2012

Test Laboratory: SPEAG, Zurich, Switzerland

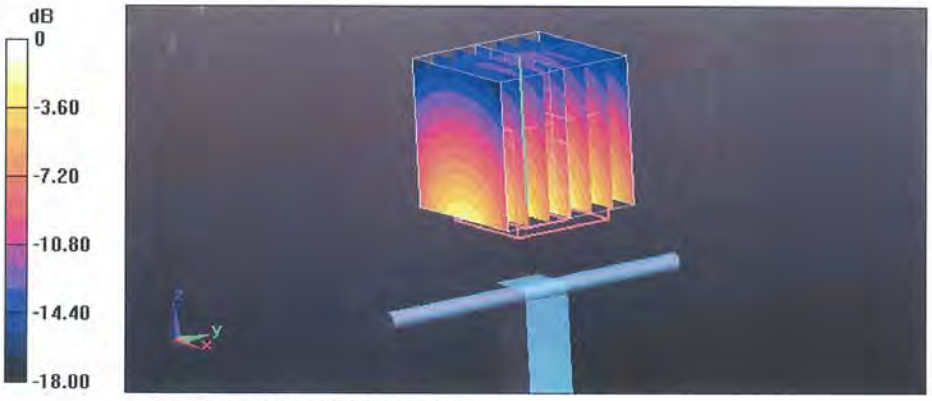
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.51 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

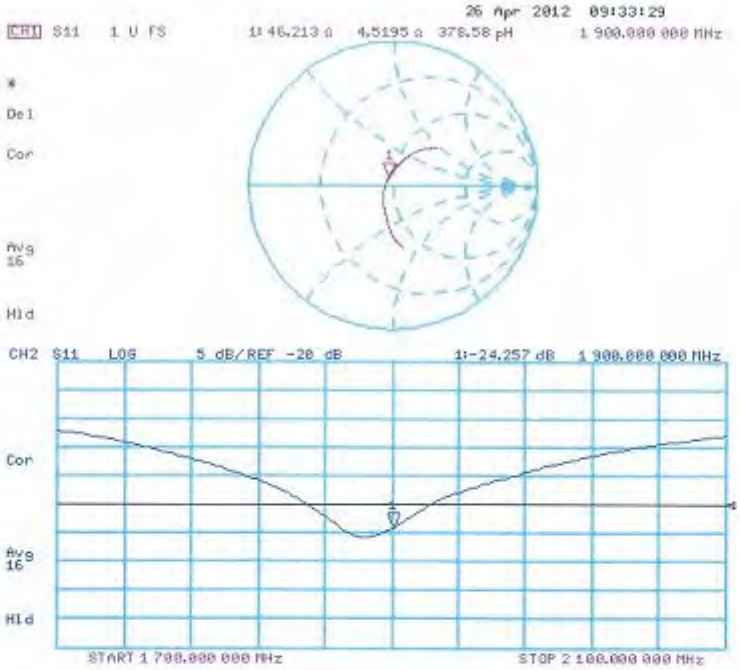
- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.355 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 17.593 mW/g
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.3 mW/g
Maximum value of SAR (measured) = 12.7 mW/g



0 dB = 12.7 mW/g = 22.08 dB mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client SGS TW (Auden)

Certificate No: D2450V2- 727_Apr11

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 727
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits
Calibration date:	April 19, 2011

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 EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 19, 2011

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

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) 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
b) 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
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.7 ± 6 %	1.72 mho/m ± 6 %
Head TSL temperature during test	(21.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.7 mW / g
SAR normalized	normalized to 1W	54.8 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**55.8 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.39 mW / g
SAR normalized	normalized to 1W	25.6 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**25.7 mW /g ± 16.5 % (k=2)**

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Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.6 ± 6 %	1.91 mho/m ± 6 %
Body TSL temperature during test	(21.5 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.7 mW / g
SAR normalized	normalized to 1W	50.8 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**50.8 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.84 mW / g
SAR normalized	normalized to 1W	23.4 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**23.3 mW / g ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.3 Ω + 2.0 jΩ
Return Loss	- 26.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.9 Ω + 3.7 jΩ
Return Loss	- 28.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 9, 2003

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DASY5 Validation Report for Head TSL

Date/Time: 18.04.2011 16:55:19

Test Laboratory: SPEAG, Zurich, Switzerland

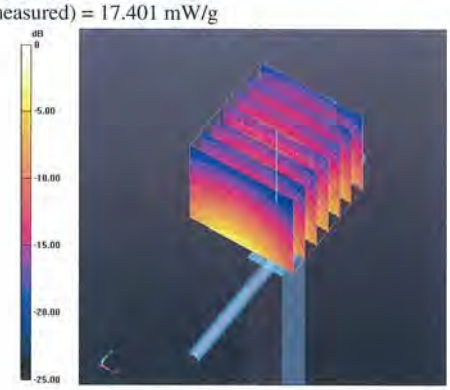
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:727

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL U12 BB
Medium parameters used: f = 2450 MHz; σ = 1.74 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

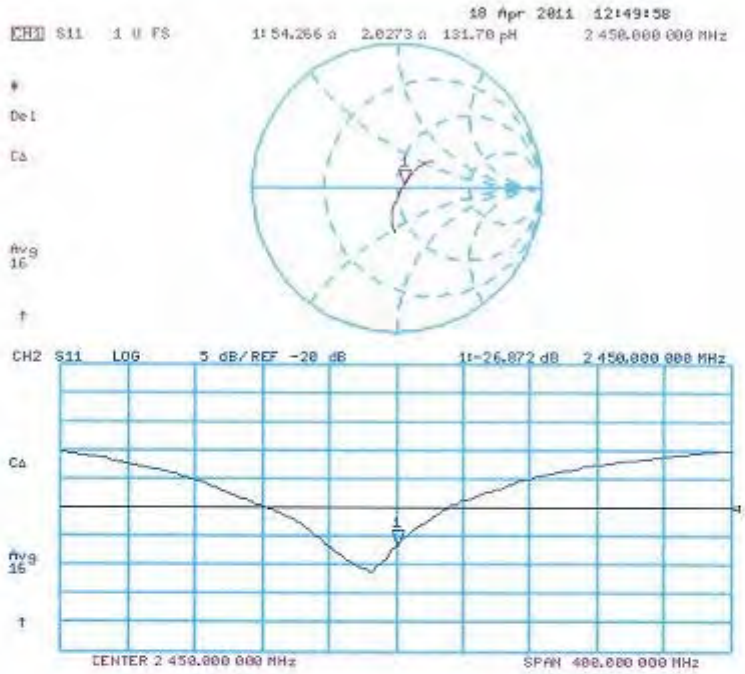
- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2829)

Pin=250 mW, Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 103.6 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 27.919 W/kg
SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.39 mW/g
Maximum value of SAR (measured) = 17.401 mW/g



0 dB = 17.400mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date/Time: 19.04.2011 14:37:11

Test Laboratory: SPEAG, Zurich, Switzerland

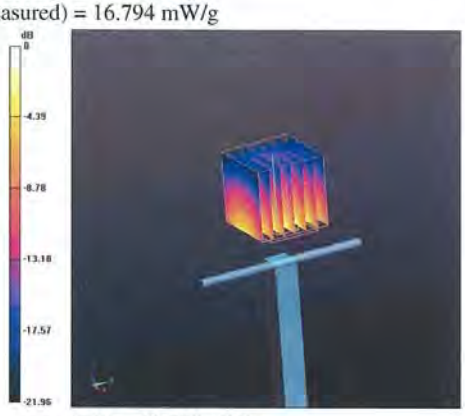
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:727

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: MSL U12 BB
Medium parameters used: f = 2450 MHz; σ = 1.91 mho/m; ε_r = 50.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

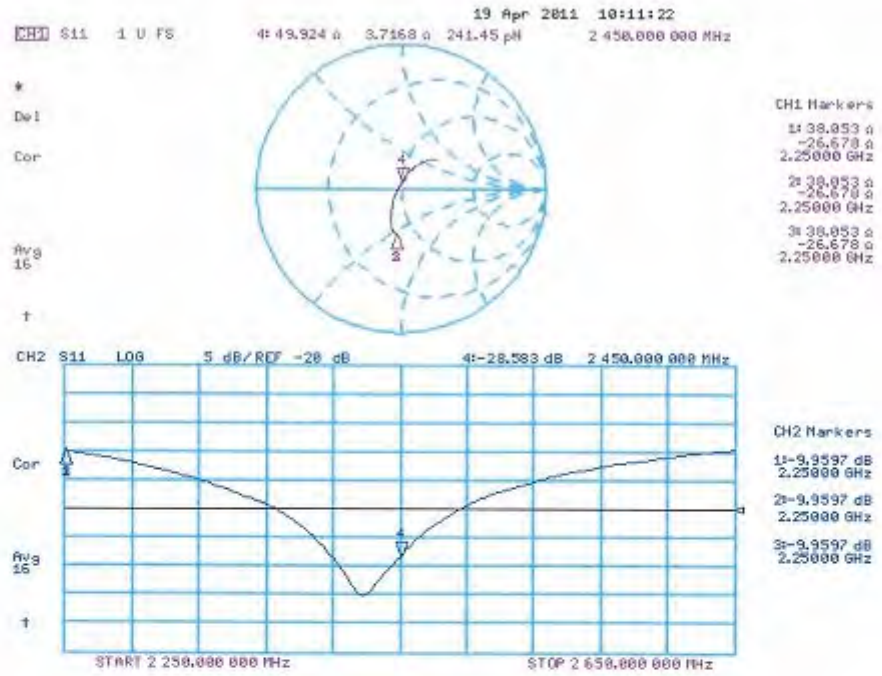
- Probe: ES3DV3 - SN3205; ConvF(4.31, 4.31, 4.31); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2829)

Pin=250 mW, Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.949 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 26.888 W/kg
SAR(1 g) = 12.7 mW/g; SAR(10 g) = 5.84 mW/g
Maximum value of SAR (measured) = 16.794 mW/g



0 dB = 16.790mW/g

Impedance Measurement Plot for Body TSL



End of 1st part of report

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