SAR TEST REPORT

Equipment Under Test	Mini-PCIe Wireless WAN (Gobi3000) card installed in an HP HSTNN-I06C NB
Model Number of Host	HSTNN-I06C
Company Name	Hewlett Packard
Company Address	11445 Compaq Center Dr W, Houston, Texas 77070, United States
FCC ID	B94HNI06C
Pre PBA no.	KDB#452883
Date of Receipt	2011.08.23
Date of Test(s)	2011.08.25, 08.28, 08.29
Date of Issue	2012.04.06

Standards:

FCC OET 65 supplement C,
IEEE / ANSI C95.1, C95.3, IEEE 1528

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.

Chris Tsung

Tested by : Chris Tsung **Date : 2012.04.06**
Engineer

Kelly Tsai

Approved by : Kelly Tsai **Date : 2012.04.06**
Supervisor

Revision Version

Report Number	Revision	Date	Memo
EN/2011/80020	00	2011/09/05	Initial creation of test report.
EN/2011/80020	01	2011/10/21	1st modification
EN/2011/80020	02	2011/10/24	2nd modification
EN/2011/80020	03	2011/11/01	3rd modification
EN/2011/80020	04	2011/11/08	4th modification
EN/2011/80020	05	2011/11/15	5th modification
EN/2011/80020	06	2011/11/16	6th modification
EN/2011/80020	07	2011/12/02	7th modification
EN/2011/80020	08	2011/12/05	8th modification
EN/2011/80020	09	2012/01/06	9th modification
EN/2011/80020	10	2012/01/31	10th modification
EN/2011/80020	11	2012/02/01	11th modification
EN/2011/80020	12	2012/02/03	12th modification
EN/2011/80020	13	2012/03/02	13th modification
EN/2011/80020	14	2012/03/03	14th modification
EN/2011/80020	15	2012/03/09	15th modification
EN/2011/80020	16	2012/04/05	16th modification
EN/2011/80020	17	2012/04/06	17th modification

This test repot 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.	
Telephone	+886-2-2299-3279
Fax	+886-2-2298-0488
Internet	http://www.tw.sgs.com

Testing Location	1F,No.8, Alley 15, Lane 120, Sec .1, NeiHu Road NeiHu District Taipei City 114, Taiwan

1.2 Details of Applicant

Name	Hewlett Packard
Address	11445 Compaq Center Dr W, Houston, Texas 77070, United States
Telephone	+1 281 514 7658
Contact Person	Joe M Evans/Comm Program Manager
E-mail	joe.m.evans@hp.com

1.3 Description of EUT

EUT Name	Mini-PCIe Wireless WAN (Gobi3000) card installed in an HP HSTNN-I06C NB
Model No.	HSTNN-I06C
WWAN Module Name	Gobi3000
FCC ID	B94HNI06C
HW Version	1.0
SW Version	1580

Definition	Production unit						
Mode of Operation	GPRS\EDGE\WCDMA\HSDPA\HSUPA\1xEVDO band						
Duty Cycle	GPRS 850 (Class 10)		GPRS 1900 (Class 10)			WCDMA/1xEVDO	
	1/4.1					1	
TX Frequency range (MHz)	GPRS 850	GPRS 1900	WCDMA Band II	WCDMA Band IV	WCDMA Band V	Cellular 850	US PCS 1900
	824.2 -848.8	1850.2 -1909.8	1852.4 -1907.6	1712.4- 1752.6	826.4 -846.6	824.7 -848.31	1851.25 -1908.75
Channel Number (ARFCN)	GPRS 850	GPRS 1900	WCDMA Band II	WCDMA Band IV	WCDMA Band V	Cellular 850	US PCS 1900
	128-251	512-810	9262 -9538	1312 -1513	4132 -4233	1013 -777	25-1175
Max. SAR Measured (1g)	**GPRS 850**						
	1.46 W/kg (At GPRS mode 850_1DOWN_1UP_CH251 Configuration 2)						

Conducted power (Average):

GPRS850	1Dn1UP (class 8)		1Dn2UP (class 10)	
	PK(dBm)	AV(dBm)	PK(dBm)	AV(dBm)
CH 128	31.80	31.59	31.80	31.47
CH 190	31.70	31.48	31.70	31.32
CH 251	32.30	31.82	32.20	31.70
EDGE850(8PSK)	1Dn1UP (class 8)		1Dn2UP (class 10)	
	PK(dBm)	AV(dBm)	PK(dBm)	AV(dBm)
CH 128	30.30	27.20	30.20	27.10
CH 190	30.20	27.20	30.30	27.10
CH 251	30.30	27.20	30.30	27.20
GPRS1900	1Dn1UP (class 8)		1Dn2UP (class 10)	
	PK(dBm)	AV(dBm)	PK(dBm)	AV(dBm)
CH 512	30.50	30.34	30.50	30.29
CH 661	30.70	30.57	30.50	30.51
CH 810	30.70	30.58	30.70	30.53
EDGE1900(8PSK)	1Dn1UP (class 8)		1Dn2UP (class 10)	
	PK(dBm)	AV(dBm)	PK(dBm)	AV(dBm)
CH 512	29.30	26.10	29.20	26.00
CH 661	29.40	26.20	29.40	26.10
CH 810	29.30	26.10	29.10	25.90

CDMA 850	RC3 (SO55)		EVDO Rel0	
	PK(dBm)	AV(dBm)	PK(dBm)	AV(dBm)
CH 1013	24.3	23.85	24.22	23.77
CH 384	24.22	23.84	24.19	23.81
CH 777	24.77	23.68	25.06	23.97
CDMA 1900	RC3 (SO55)		EVDO Rel0	
	PK(dBm)	AV(dBm)	PK(dBm)	AV(dBm)
CH 25	24.31	23.76	23.95	23.5
CH 600	24.15	23.67	23.78	23.4
CH 1175	24.71	23.69	24.29	23.2

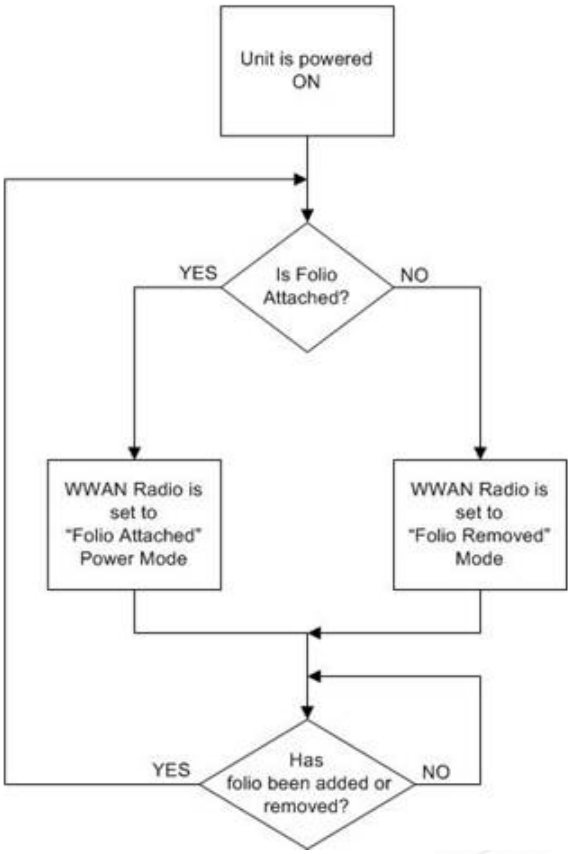
		WCDMA Band II Channel			WCDMA Band IV Channel			WCDMA Band V Channel		
Mode	**Subtest**	**9262**	**9400**	**9538**	**1312**	**1412**	**1513**	**4132**	**4182**	**4233**
Rel99	R99	23.49	23.58	23.11	23.77	23.65	23.68	23.03	23.01	23.1
Rel6 HSDPA	1	23.66	23.47	22.97	23.48	23.75	23.52	22.82	22.87	23.22
	2	23.37	23.44	22.96	23.65	23.51	23.53	22.96	22.9	22.97
	3	23.18	23.02	22.44	23	23.3	22.99	22.36	22.39	22.73
	4	23.25	23.03	22.56	23.07	23.31	23.11	22.41	22.43	22.79
Rel6 HSUPA	1	23.41	23.56	23.05	23.69	23.63	23.62	22.99	22.94	23.02
	2	21.46	21.63	21.09	21.74	21.7	21.66	21.05	21.02	21.06
	3	22.47	22.58	22.13	22.75	22.65	22.7	22.03	22	22.1
	4	21.59	21.68	21.13	21.87	21.75	21.7	21.1	21.08	21.14
	5	23.3	23.42	22.96	23.58	23.49	23.53	22.85	22.77	22.91

Power Reduction Operation:

The folio will include a hidden magnet, which will trigger a magnetic switch on the unit.
Anytime the folio IS attached, the WWAN module is placed into the “Folio Attached” power mode.
Anytime the folio IS NOT attached the WWAN module is placed into the “Folio Removed” power mode. The power back-off levels associated with either “Folio Attached” or Folio Removed” will limit the transmit power appropriately in order to meet the SAR limits

Steps for folio detection…

1) Unit is powered on or resume from sleep
2) Check for status of folio presence.
3) a) If Folio present, then WWAN operation is set to “Folio Attached” power mode.
   b) If Folio is missing, then WWAN power is reduced to “Folio Removed ” power mode
4) Continue to monitor folio presence status.
5) If folio presence status has changed, return to step 2 for processing.



Mode	Channel	Original (module report)	without power reduction	with power reduction
CDMA 850	1013	24.56	23.85	20.03
	384	24.62	23.84	19.77
	777	24.57	23.68	19.49
CDMA 1900	25	24.64	23.76	19.66
	600	24.57	23.67	19.63
	1175	24.52	23.69	19.59
EVDO Rel0 850	1013	24.49	23.77	19.95
	384	24.54	23.81	19.74
	777	24.59	23.97	19.78
EVDO Rel0 1900	25	24.48	23.50	19.40
	600	24.37	23.40	19.36
	1175	24.46	23.20	19.10
WCDMA Band II R99	9262	23.08	23.49	19.75
	9400	24.32	23.58	19.78
	9538	24.52	23.11	19.36
WCDMA Band IV R99	1312	24.58	23.77	19.99
	1412	24.34	23.65	19.94
	1513	24.56	23.68	20.09
WCDMA Band V R99	4132	24.36	23.03	20.03
	4183	24.23	23.01	20.08
	4233	24.48	23.10	20.11
WCDMA Band II HSDPA	9262	23.32	23.66	19.92
	9400	23.75	23.47	19.67
	9538	24.47	22.97	19.22
WCDMA Band IV HSDPA	1312	23.66	23.48	19.72
	1412	23.57	23.75	19.55
	1513	23.62	23.52	19.25

	4132	23.48	22.82	19.82
	4183	23.63	22.87	19.94
WCDMA Band V HSDPA	4233	23.75	23.22	20.23
	9262	24.09	23.41	19.56
	9400	24.33	23.56	19.62
WCDMA Band II HSUPA	9538	24.51	23.05	19.21
	1312	23.21	23.69	19.60
	1412	23.26	23.63	19.65
WCDMA Band IV HSUPA	1513	23.36	23.62	19.44
	4132	24.44	22.99	19.85
	4183	24.45	22.94	19.84
WCDMA Band V HSUPA	4233	23.55	23.02	19.92
	128	32.73	31.59	31.59
	190	32.88	31.48	31.48
GPRS/ 1UL 850	251	33.04	31.82	31.82
	512	30.18	30.34	28.33
	661	30.12	30.57	28.42
GPRS/ 1UL1900	810	30.12	30.58	28.69
	128	32.5	31.47	27.07
	190	32.62	31.32	26.90
GPRS/ 2UL 850	251	32.79	31.70	27.14
	512	28.49	30.29	25.74
	661	29.91	30.51	26.04
GPRS/ 2UL1900	810	30.79	30.53	26.29
	128	27.25	27.20	27.20
	190	27.18	27.20	27.20
EGPRS(8PSK) / 1UL 850	251	27.21	27.20	27.20
	512	26.23	26.10	26.10
	661	27.12	26.20	26.20
EGPRS(8PSK) / 1UL1900	810	27.3	26.10	26.10

	128	27.25	27.10	27.10
	190	27.18	27.10	27.10
EGPRS(8PSK) / 2UL 850	251	27.21	27.20	27.20
	512	26.23	26.00	26.00
	661	27.12	26.10	26.10
EGPRS(8PSK)/ 2UL1900	810	27.3	25.90	25.90

According to **KDB447498**-When the maximum output power variation across H, M and L channels is ≤ ½ dB, start with the middle channel; otherwise, start with the highest output power channel. When the measured 1-g SAR for the middle or highest output power channel is ≤ 0.8 W/kg, testing of the remaining two channels in that device and exposure configuration is not necessary.

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

Using **KDB941225 D03** 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

1.4 Antenna information and Collocated Transmitter Analysis

1.4.1 Collocated Transmitter Analysis

Collocated Transmission Introduction

The following devices may be installed in the host device HP HSTNN-I06C slate computer and are capable of transmitting simultaneously with the Gobi3000™ module. Atheros WLAN/BT modules can be used providing the average transmit power and technology support is identical to the modules addressed in Table1.4.1-1 below, and does not result in greater RF exposure to the user.

Table1.4.1-1 Collocated FCC IDs

Technology	FCC ID
WLAN+BT combo	PPD-ARS263

Per the analysis below, the FCC IDs listed in Table1.4.1-1 are authorized for the following simultaneous transmission configurations:

- WWAN 850 + WLAN + Bluetooth
- WWAN1750 + WLAN + Bluetooth
- WWAN1900 + WLAN + Bluetooth

Collocated Transmitter Evaluation

Table1.4.1-2 and Table 1.4.1-3 summarize antenna separation distances and evaluation criteria used for determining test reductions. The maximum WWAN SAR measurement for model HSTNN-I06C was in tablet mode in lap-held position, thus all collocated device SAR data is also for tablet lap-held position.

Antenna separation distances

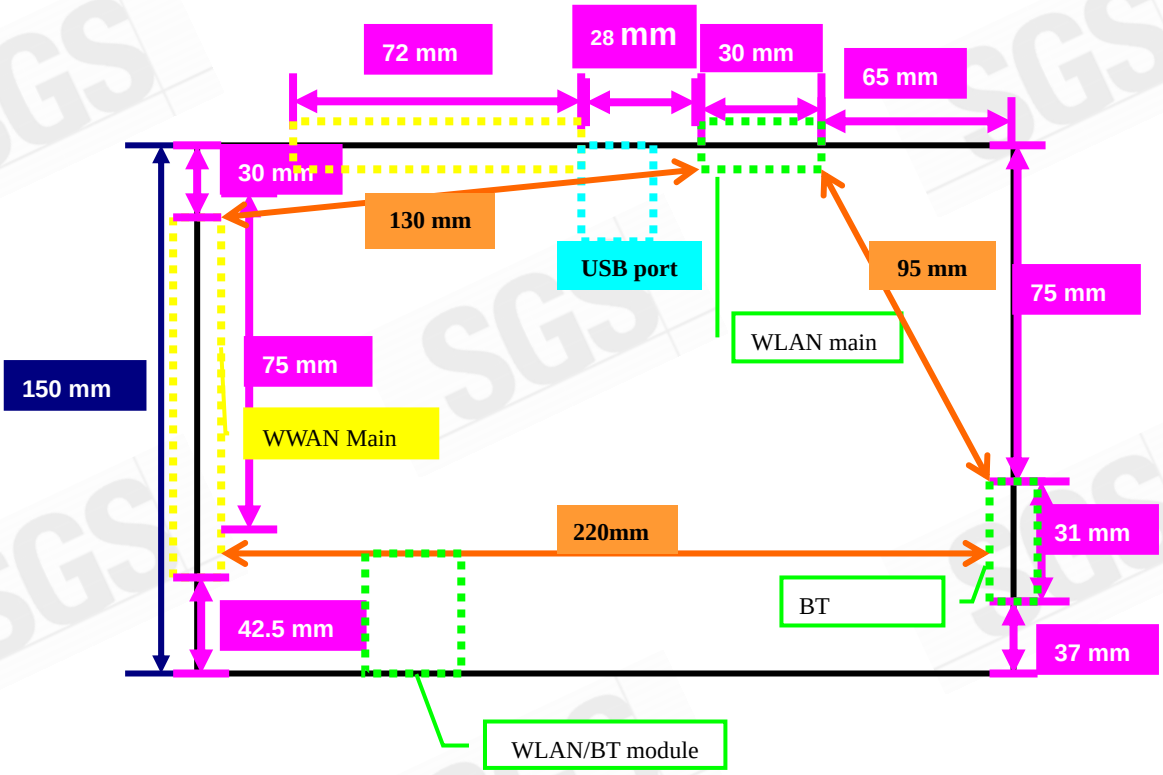
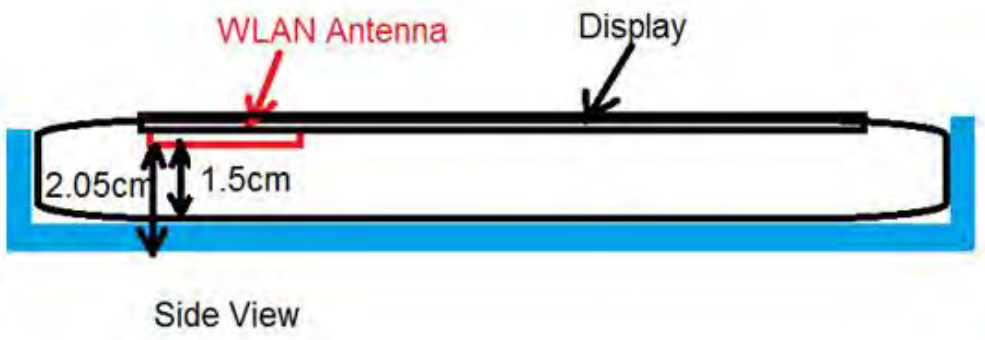


Table1.4.1-2 Antenna Separation Distances

Antenna	Distance (cm)
WLAN Main-to-user	1.5
WWAN main-to-user	1.2
BT-to-WWAN main	22
WLAN main-to-WWAN main	13
WLAN MAIN-to-User with Folio Attached	2.05
WWAN MAIN-to-user with Folio Attached	1.75



Side View

Side View

Table1.4.1-3 Individual Transmitter SAR Evaluation

Technology	Freq (MHz)	Average Power (dBm)	Measured Average Power (mW)	60/f(GHz) (mW)	Highest Measured Individual SAR (mW/g 1g) (Tablet lap-held position)
GPRS 850, 1Down_1UP	848.8	31.82	1520.54	70.68	1.46
WCDMA Band IV	1752.6	20.09	102.09	34.23	1.2
EV-DO 1900 MHz	1851.25	19.4	87.09	32.41	1.42
WLAN b/g/n	2400	14.95	31.26	25	1.12
WLAN a	5805	14.95	31.26	10.33	1.16
BT	2400	10.11	10.25	25	N/A (P<60/f)

Per KDB 447498, section 3) b) ii) 1) b), testing of simultaneous transmission may be omitted if pairs of transmitting antennas meet the SAR peak to location ratio calculation or the sum of SAR is <1.6 mW/g.

It was determined that the SAR peak locations were centered over the respective transmitting antennas by reviewing the SAR distribution plots in both the WWAN and WLAN SAR reports. To provide a conservative the analysis, the distances between the edge of the physical antennas was used in the SAR Peak to location ratio calculations in Table 1.4.1-4 Simultaneous Transmitter SAR Requirements.

The highest measured WLAN SAR data boldfaced in.Table 1.4.1-3 Induvidual Transmitter SAR Evaluation

SAR peak to location ratio is calculated per the following equation:

$$\text{SAR Peak to location ratio} = \frac{SAR_{WWAN} + SAR_{WLAN}}{dist_{SAR-peaks(cm)}} < 0.3$$

Table1.4.1-4 Simultaneous Transmitter SAR Requirements

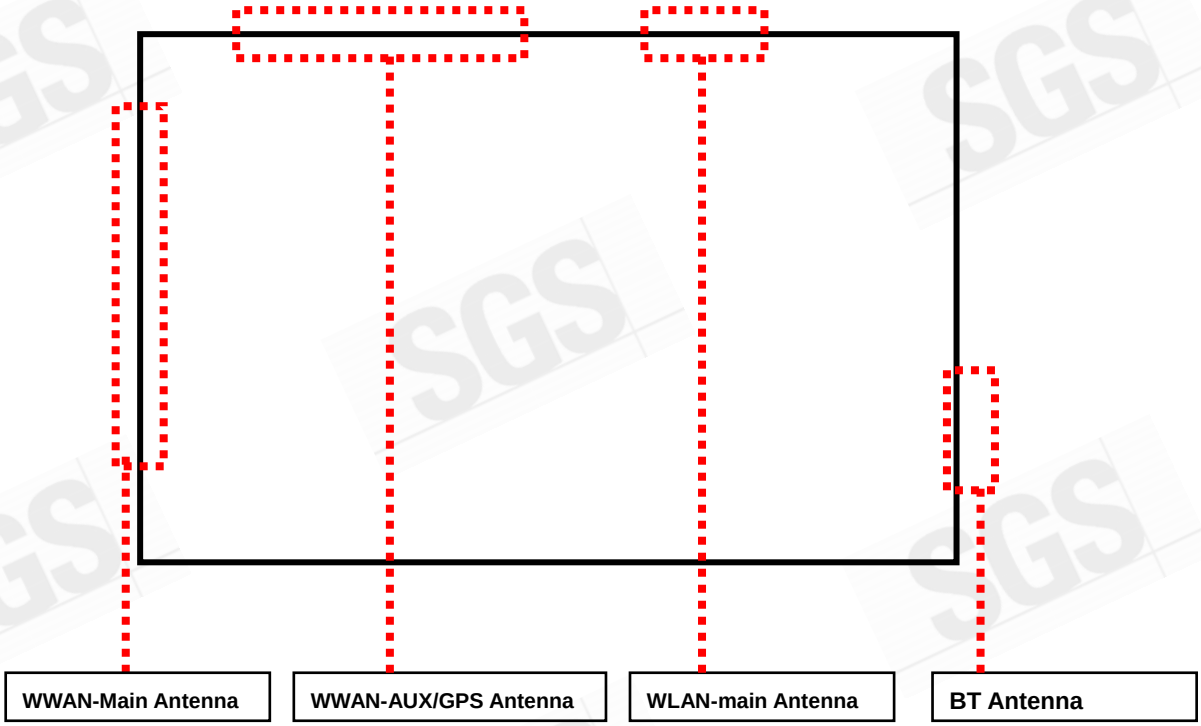
Lap-held mode_ repeated without folio						
WWAN SAR (W/kg)		WLAN 2.4GHz SAR (W/kg)	WLAN 5GHz SAR (W/kg)	Antenna-to-antenna edge separation (cm)	Sum SAR (W/kg)	SPSLR
GPRS/2up 850	1.23	0.384		13	1.614	0.12
			0.584	13	1.814	0.14
GPRS/1up 850	1.46	0.384		13	1.844	0.14
			0.584	13	2.044	0.16
GPRS/2up 1900	1.08	0.384		13	1.464	-
			0.584	13	1.664	0.13
GPRS/1up 1900	0.99	0.384		13	1.374	-
			0.584	13	1.574	-
WCDMA Band II	1.41	0.384		13	1.794	0.14
			0.584	13	1.994	0.15
WCDMA Band IV	1.2	0.384		13	1.584	-
			0.584	13	1.784	0.14
WCDMA Band V	1.13	0.384		13	1.514	-
			0.584	13	1.714	0.13
1xEVDO 850	0.906	0.384		13	1.29	-
			0.584	13	1.49	-
1xEVDO 1900	1.42	0.384		13	1.804	0.14
			0.584	13	2.004	0.15
As the SPSLR < 0.3, no simultaneous SAR measurement required.						

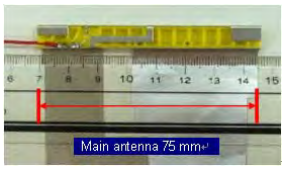
Secondary landscape mode.						
WWAN SAR (W/kg)		WLAN 2.4GHz SAR (W/kg)	WLAN 5GHz SAR (W/kg)	Antenna-to-antenna edge separation (cm)	Sum SAR (W/kg)	SPSLR
GPRS/2up 850	0.196	1.12		13	1.316	-
			1.16	13	1.356	-
GPRS/1up 850	0.098	1.12		13	1.218	-
			1.16	13	1.258	-
GPRS/2up 1900	0.096	1.12		13	1.216	-
			1.16	13	1.256	-
GPRS/1up 1900	0.052	1.12		13	1.172	-
			1.16	13	1.212	-
WCDMA Band II	0.096	1.12		13	1.216	-
			1.16	13	1.256	-
WCDMA Band IV	0.075	1.12		13	1.195	-
			1.16	13	1.235	-
WCDMA Band V	0.146	1.12		13	1.266	-
			1.16	13	1.306	-
1xEVDO 850	0.117	1.12		13	1.237	-
			1.16	13	1.277	-
1xEVDO 1900	0.093	1.12		13	1.213	-
			1.16	13	1.253	-
As the SPSLR < 0.3, no simultaneous SAR measurement required.						

Simultaneous transmission analysis is not required for Primary Landscape and Secondary Portrait because WLAN antenna does not require standalone SAR for these orientations

1.4.2 Antenna type and dimension

Photo of antenna location:

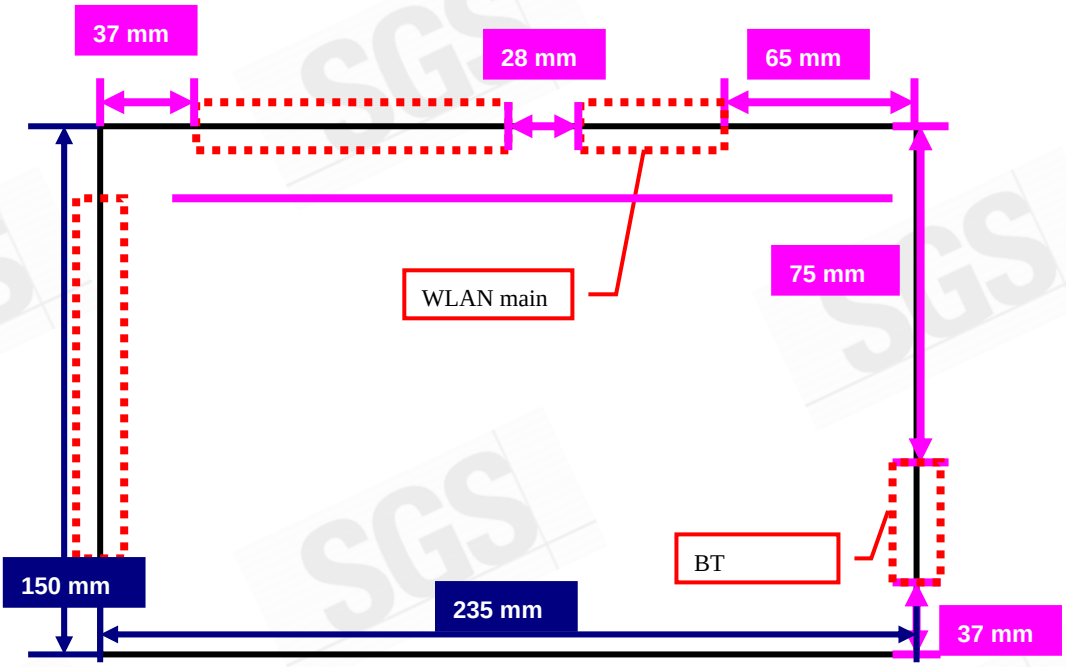




Host Platform Antenna Location Information

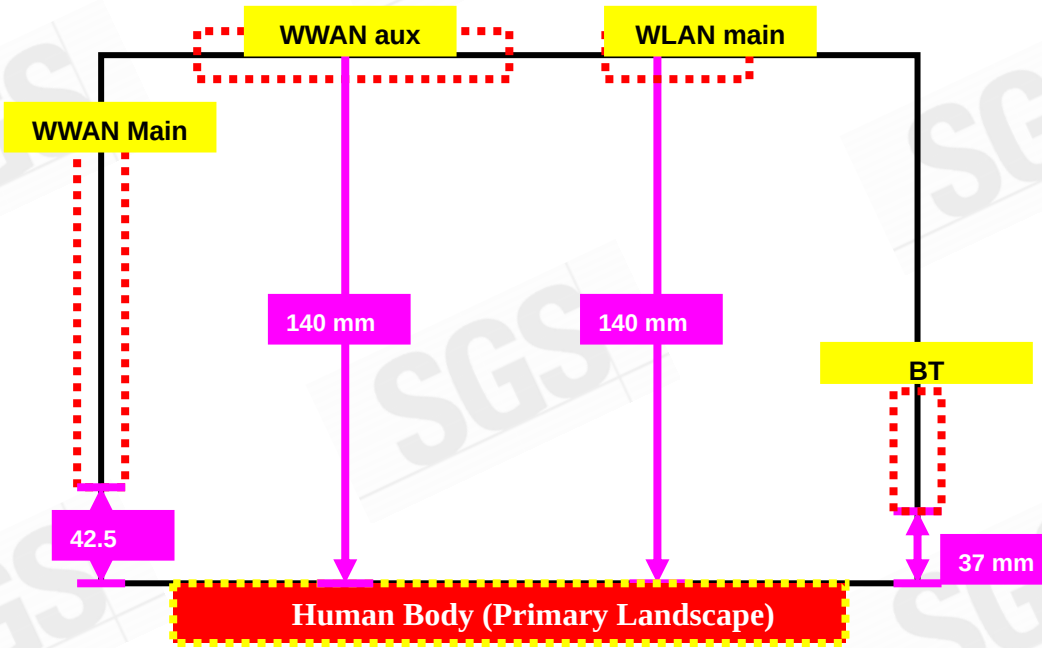
Dimensioned photo or dimensioned drawing of Tx1, Tx2 and Tx3 antenna placements (measurements are not required for receive-only antenna). Any antenna that transmits must show dimensions to bottom of laptop.

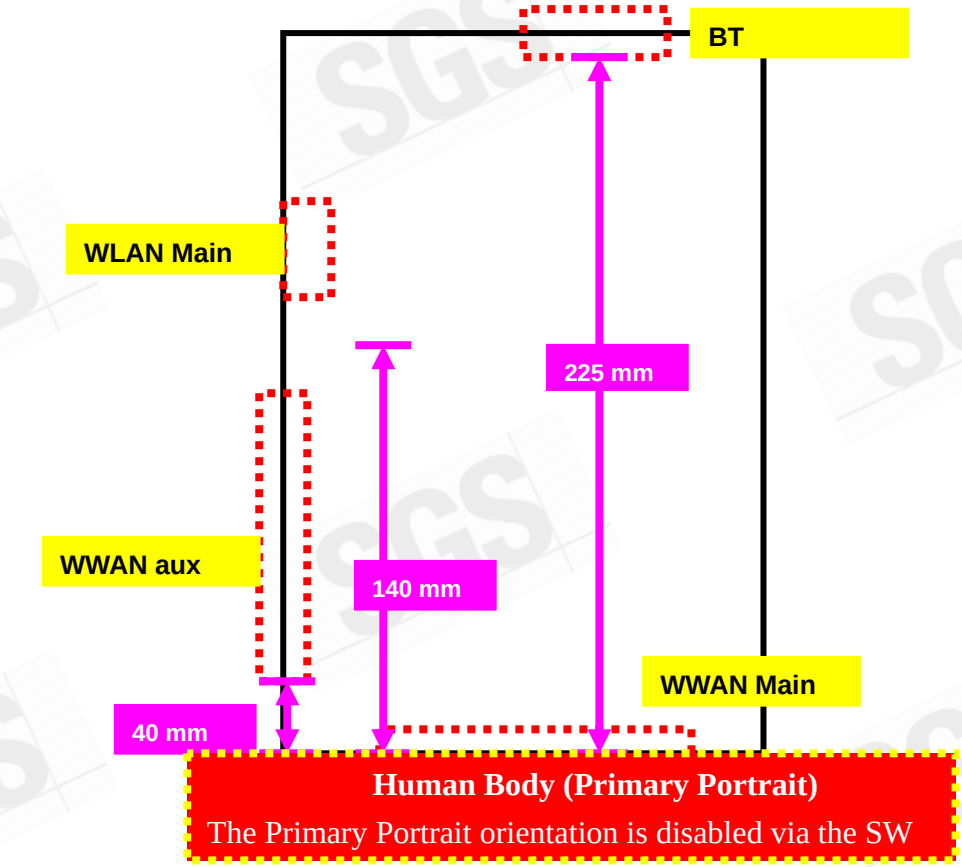
Tablet mode:

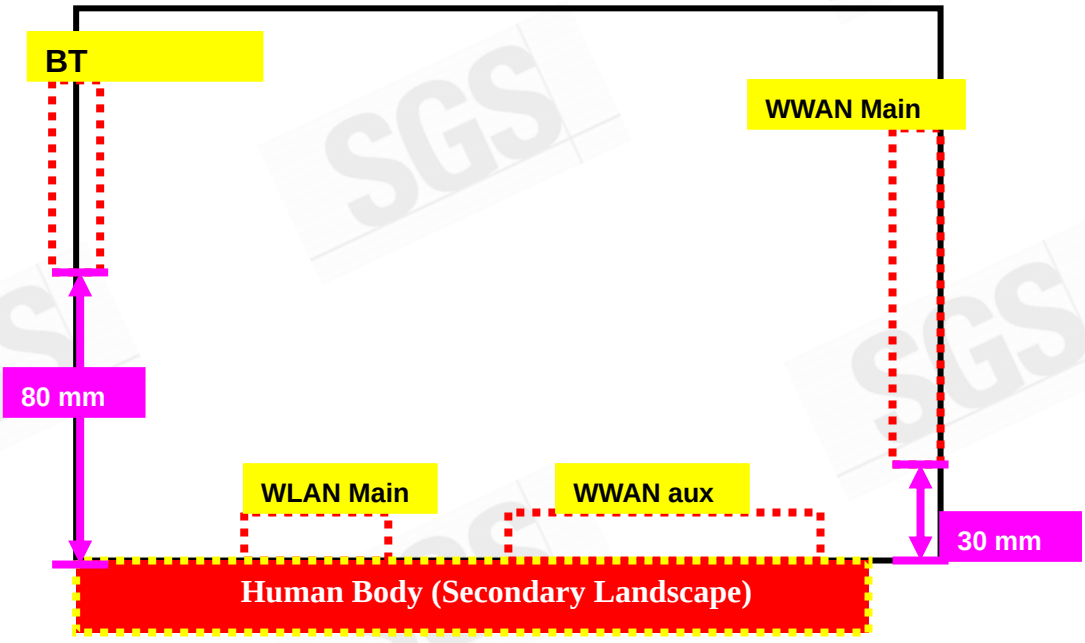


Antenna dimensional information for SAR evaluation

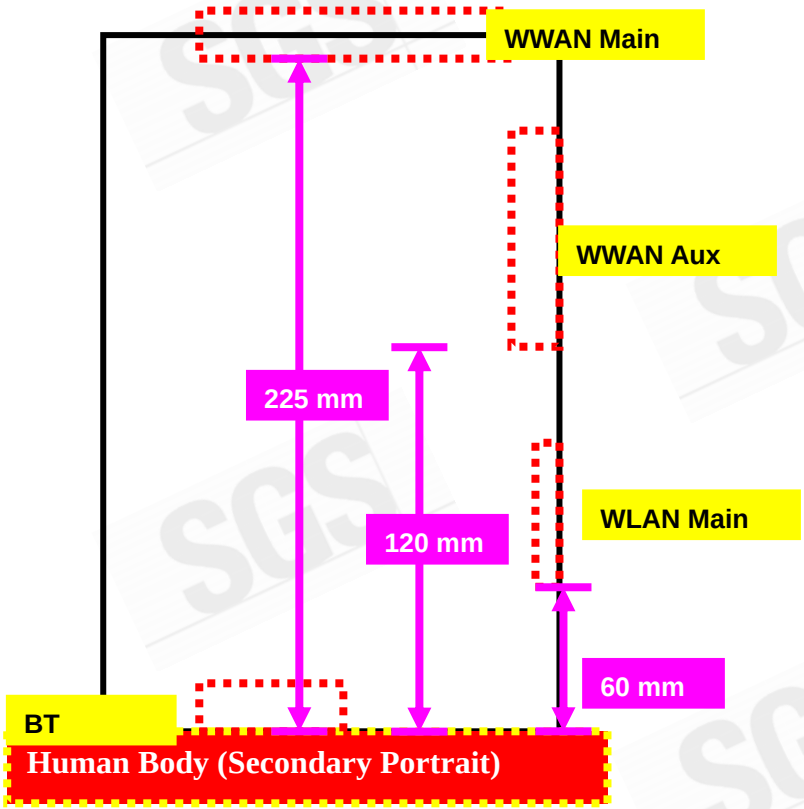
Dimensioned photo or dimensioned drawing showing the distance (mm) between the transmit antennas and the user (excluding hands, wrist, feet, lap/ thigh, and ankle)







Secondary Portrait



1.5 Test Environment

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

1.6 Operation description

1. The EUT is controlled by using a Radio Communication Tester (Agilent 8960), 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 battery 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.

We will test it with 4 configurations:

Configuration 1: Lap-held mode. (WWAN/main –to-user separation distance is 12.75 mm) (Appendix-Fig.3&4)

Configuration 2: Lap-held mode_ repeated without folio. (WWAN/main –to-user separation distance is 7.25 mm) (Appendix-Fig.5&6)

Configuration 3: Primary portrait mode. (WWAN/Main-to-user separation distance about 1.25mm, but SW Disable, so SAR test is not required)

Configuration 4: Secondary portrait mode. (WWAN/Main-to-user separation distance is 225 mm, so SAR test is not required)

Configuration 5: Primary Landscape mode. (WWAN/main –to-user separation distance is 42.5 mm) (Appendix-Fig.7&8)

Configuration 6: Secondary landscape mode. (WWAN/Main-to-user separation distance is 30 mm) (Appendix-Fig.9&10)

For larger tablets with a display or overall diagonal dimension > 20 cm, the SAR procedures in **KDB 447498** should be used.

The following procedures are applicable to tablet computers with antennas installed along the tablet edges while operating in Tablet Mode.21 When the output power of an antenna is > 60/f(GHz) mW, SAR is required for both bottom face and edge exposure conditions.

For edge configuration: SAR is required for each antenna located within 5 cm of the tablet edge closet to the user for the applicable display orientation

All the test positions of device relative to body were measured placing the device in direct contact with the phantom surface, so the requirements mentioned at RSS-102 Supplementary Procedures (SPR)-001 - SAR TESTING REQUIREMENTS WITH REGARD TO BYSTANDERS FOR LAPTOP TYPE COMPUTERS WITH ANTENNAS BUILT-IN ON DISPLAY SCREEN (LAPTOP MODE/TABLET MODE) are covered.

1.7 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). A Model EX3DV4 field probe is 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.

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.

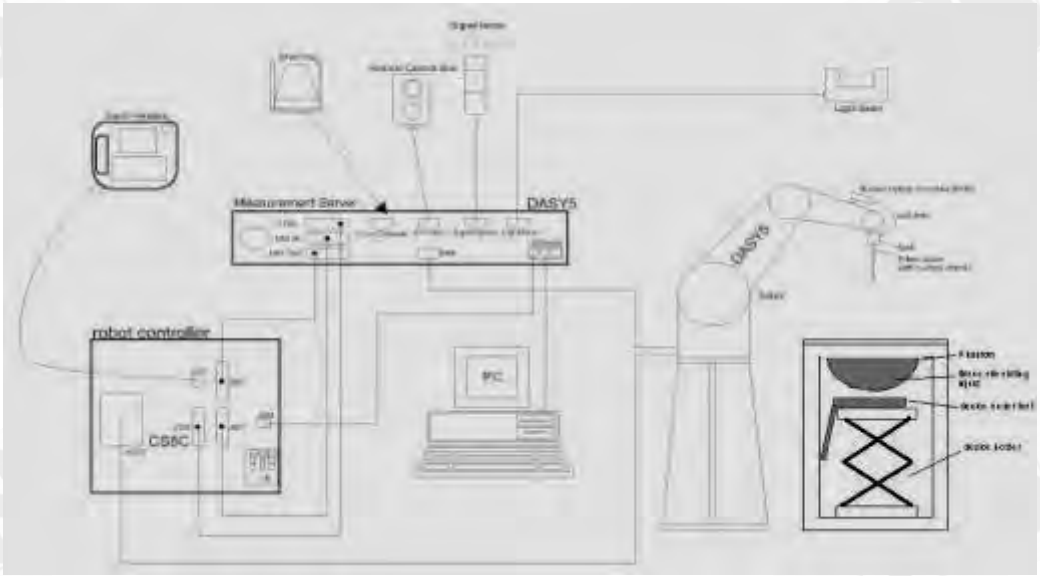


Fig.a The block diagram of SAR system

- 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 Windows 2000 or Windows XP.
  - 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.

1.8 System Components

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 MSL835 /1750/1900 MHZ Additional CF for other liquids and frequencies upon request	
Frequency	10 MHz to > 6 GHz, Linearity: ± 0.2 dB (30 MHz to 6 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	Overall length: 337 mm (Tip: 10 mm) Tip diameter: 2.5 mm (Body: 10 mm) Typical distance from probe tip to dipole centers: 1 mm	
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: 850 mm; Length: 1000 mm; Width: 500 mm	

DEVICE HOLDER

Construction	The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin) , which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks.	 Device Holder

1.9 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 850/1750/1900 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 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was in the range 22.1°C, the relative humidity was in the range 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.

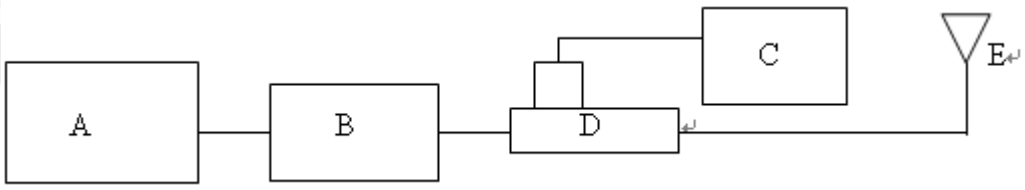
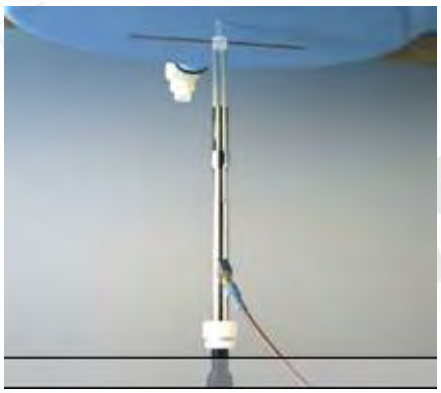


Fig.b The block diagram of system verification

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



Photograph of the dipole Antenna

Validation Kit	Frequency (MHz)	Target SAR (1g) (Pin=250mW)	Measured SAR (1g)	Deviation	Measured Date
D835V2 S/N: 4d063	850 MHz (Body)	2.43 mW/g	2.48 mW/g	2.0%	2011.08.25
D1750V2 S/N: 1008	1750 MHz (Body)	9.04 mW/g	9.43 mW/g	4.3%	2011.08.28
D1900V2 S/N: 5d027	1900 MHz (Body)	9.93 mW/g	9.86 mW/g	-0.7%	2011.08.29

Table 1. Results of system validation

1.10 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this body-simulant fluid were measured by using the HP Model 85070D Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with HP 8753D Network Analyzer (30 KHz-6000 MHz) by using a procedure detailed in Section V. All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the body reference point of the phantom was 15cm±5mm during all tests. (Fig .2)

Frequency (MHz)	Tissue type	Measurement date/ Limits	Dielectric Parameters		
			Er	σ (S/m)	Simulated Tissue Temperature(° C)
850	Body	Measured, 2011.08.25	53.195	1.008	21.7
		Recommended Limits	51.21-56.60	0.95-1.05	20-24
1750	Body	Measured, 2011.08.28	53.377	1.5	21.7
		Recommended Limits	49.69-54.92	1.37-1.51	20-24
1900	Body	Measured, 2011.08.29	51.12	1.525	21.7
		Recommended Limits	48.55-53.66	1.44-1.60	20-24

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the body tissue simulating liquid is:

Ingredient	850MHz (Body)	1750MHz (Body)	1900MHz (Body)
DGMBE	X	300.67g	300.67g
Water	631.68 g	716.56 g	716.56 g
Salt	11.72 g	4.0 g	4.0 g
Preventol D-7	1.2 g	X	X
Cellulose	X	X	X
Sugar	600 g	X	X
Total amount	1 L (1.0kg)	1 L (1.0kg)	1 L (1.0kg)

Table 3. Recipes for tissue simulating liquid

1.11 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.

1.12 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).

(2) 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.

(3) 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 .4)

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

GPRS850, 1DOWN_2UP (Class 10)

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	128	824.2	31.47 dBm	1.39	22.1	21.7
	190	836.6	31.32 dBm	1.37	22.1	21.7
	251	848.8	31.70 dBm	1.36	22.1	21.7
Configuration 2: Lap-held mode_ repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	128	824.2	27.07 dBm	0.921	22.1	21.7
	190	836.6	26.90 dBm	1.03	22.1	21.7
	251	848.8	27.14 dBm	1.23	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	190	836.6	31.32 dBm	0.170	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	190	836.6	31.32 dBm	0.196	22.1	21.7

(GPRS850 1down 2up) - low and high channels not tested for landscape modes because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE)

GPRS850, 1DOWN_1UP (Class 8)

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	128	824.2	31.59 dBm	0.639	22.1	21.7
Configuration 2: Lap-held mode_ repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	128	824.2	31.59 dBm	1.27	22.1	21.7
	190	836.6	31.48 dBm	1.42	22.1	21.7
	251	848.8	31.82 dBm	**1.46**	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	190	836.6	31.48 dBm	0.084	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	190	836.6	31.48 dBm	0.098	22.1	21.7

(GPRS850 1down, 1up) - low and high channels not tested for landscape modes and lap-held folio mode because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE)

GPRS1900, 1DOWN_2UP (Class 10)

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	512	1850.2	30.29 dBm	0.921	22.1	21.7
	661	1880	30.51 dBm	1.11	22.1	21.7
	810	1909.8	30.53 dBm	1.27	22.1	21.7
Configuration 2: Lap-held mode_repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	512	1850.2	25.74 dBm	0.682	22.1	21.7
	661	1880	26.04 dBm	0.843	22.1	21.7
	810	1909.8	26.29 dBm	1.08	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	661	1880	30.51 dBm	0.124	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	661	1880	30.51 dBm	0.096	22.1	21.7

(GPRS1900 1down 2up) - low and high channels not tested for landscape modes because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE)

GPRS1900, 1DOWN_1UP (Class 8)

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	810	1909.8	30.58 dBm	0.640	22.1	21.7
Configuration 2: Lap-held mode_repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	512	1850.2	28.33 dBm	0.572	22.1	21.7
	661	1880	28.42 dBm	0.731	22.1	21.7
	810	1909.8	28.69 dBm	0.990	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	661	1880	30.57 dBm	0.082	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	661	1880	30.57 dBm	0.052	22.1	21.7

(GPRS850 1down, 1up) - low and high channels not tested for landscape modes because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE).

WCDMA Band II

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	9262	1852.4	23.49 dBm	1.21	22.1	21.7
	9400	1880	23.58 dBm	1.11	22.1	21.7
	9538	1907.6	23.11 dBm	1.21	22.1	21.7
Configuration 2: Lap-held mode_repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	9262	1852.4	19.75 dBm	1.41	22.1	21.7
	9400	1880	19.78 dBm	1.2	22.1	21.7
	9538	1907.6	19.36 dBm	1.29	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	9400	1880	23.58 dBm	0.122	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	9400	1880	23.58 dBm	0.096	22.1	21.7

(WCDMA Band II) - low and high channels not tested for landscape modes because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE).

WCDMA Band IV

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1750MHz	1312	1712.4	23.77 dBm	1.08	22.1	21.7
	1412	1732.4	23.65 dBm	1.19	22.1	21.7
	1513	1752.6	23.68 dBm	1.15	22.1	21.7
Configuration 2: Lap-held mode_repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1750MHz	1312	1712.4	19.99 dBm	1.03	22.1	21.7
	1412	1732.4	19.94 dBm	1.19	22.1	21.7
	1513	1752.6	20.09 dBm	1.2	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1750MHz	1412	1732.4	23.65 dBm	0.204	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1750MHz	1412	1732.4	23.65 dBm	0.075	22.1	21.7

(WCDMA Band IV) - low and high channels not tested for landscape modes because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE).

WCDMA Band V

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	4132	826.4	23.03 dBm	1.11	22.1	21.7
	4183	836.6	23.01 dBm	1.13	22.1	21.7
	4233	846.8	23.10 dBm	1.23	22.1	21.7
Configuration 2: Lap-held mode_repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	4132	826.4	20.03 dBm	0.915	22.1	21.7
	4183	836.6	20.08 dBm	1	22.1	21.7
	4233	846.8	20.11 dBm	1.13	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	4183	836.6	23.01 dBm	0.123	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	4183	836.6	23.01 dBm	0.146	22.1	21.7

(WCDMA Band V) - low and high channels not tested for landscape modes because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE).

Cellular 850 (1xEVDO mode)

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	1013	824.7	23.77 dBm	0.856	22.1	21.7
	384	836.52	23.81 dBm	0.907	22.1	21.7
	777	848.31	23.97 dBm	1	22.1	21.7
Configuration 2: Lap-held mode_repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	1013	824.7	19.95 dBm	0.823	22.1	21.7
	384	836.52	19.74 dBm	0.906	22.1	21.7
	777	848.31	19.78 dBm	0.846	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	384	836.52	23.81 dBm	0.106	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	384	836.52	23.81 dBm	0.117	22.1	21.7

(EVDO 850) - low and high channels not tested for landscape modes because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE).

US PCS 1900 (1xEVDO mode)

Configuration 1: Lap-held mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
1900MHz	25	1851.25	23.50 dBm	1.16	22.1	21.7
	600	1880	23.40 dBm	0.956	22.1	21.7
	1175	1908.75	23.20 dBm	1.08	22.1	21.7
Configuration 2: Lap-held mode_ repeated without Folio.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	25	1851.25	19.40 dBm	1.42	22.1	21.7
	600	1880	19.36 dBm	1.11	22.1	21.7
	1175	1908.75	19.10 dBm	1.36	22.1	21.7
Configuration 5: Primary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	600	1880	23.40 dBm	0.169	22.1	21.7
Configuration 6: Secondary Landscape mode.						
Frequency	Channel	MHz	Conducted Output Power (Average)	Measured(W/kg) 1g	Amb. Temp[˚C]	Liquid Temp[˚C]
850MHz	600	1880	23.40 dBm	0.093	22.1	21.7

(EVDO 850) - low and high channels not tested for landscape modes because measured SAR on center channel is < 0.8 (KDB 941225 D03 SAR Test Reduction GSM/GPRS/EDGE).

Power Reduction and Tune-up tolerance adjustment

The tune-up procedure for the module sets a +/-1.2dB tolerance on the output power from the module. To account for this variance the implementation of the module in the Akashi host uses two sets of power reduction values to ensure that under all circumstances the RF exposure requirements are met. One set of power reduction values are used when folio is attached, and one set of power reduction values is used when folio is removed.

In the table below the second column ("Tune-up Power") shows the maximum output power from the module based on the tune-up procedure (nominal power plus tolerance of 1.2dB). The second and third columns show the power reduction and corresponding highest output power values for the "Folio Attached" operation whenever the folio sensor detects a folio is attached. The fourth and fifth columns show the power reduction and corresponding highest output power values for the "Folio Removed" operation whenever the folio sensor has not detected a folio.

Mode / Band	Nominal Tune up power	Maximum Tune up power	Power reduction for sensor triggered	Reduction with folio not present	Maximum Powers (dBm)	
					Power with folio present	Power with folio not present
EVDO 850	23	24.2	0.00	-3.00	24.2	21.2
EVDO 1900	23	24.2	0.00	-4.40	24.2	19.8
WCDMA Band II	23	24.2	0.00	-4.00	24.2	20.2
WCDMA Band IV	23	24.2	0.00	-3.00	24.2	21.2
WCDMA Band V	23	24.2	0.00	-3.00	24.2	21.2
GSM 850 GPRS 1UL	32.5	33.7	0.00	-1.80	33.7	31.9
GSM 1900 GPRS 1UL	29.5	30.7	0.00	-2.00	30.7	28.7
GSM 850 GPRS 2UL	32.5	33.7	-1.80	-6.00	31.9	27.7
GSM 1900 GPRS 2UL	29.5	30.7	0.00	-4.00	30.7	26.7
GSM 850 EGPRS 1UL	26.5	27.7	0.00	0.00	27.7	27.7
GSM 1900 EGPRS 1UL	25.5	26.7	0.00	0.00	26.7	26.7
GSM 850 EGPRS 2UL	26.5	27.7	0.00	0.00	27.7	27.7
GSM 1900 EGPRS 2UL	25.5	26.7	0.00	0.00	26.7	26.7

Table 5 – Power Reduction offsets utilized in product and Maximum Output powers for both Folio Attached and Folio Removed states.

Mode / Band	Channel	Maximum Powers Used during SAR testing		Tune up power	Power reduction for sensor triggered	Maximum Powers based on Tune Up (dBm)			Correction to determine worst-case SAR (dB)		Measured SAR (W/Kg)		Scaled SAR (W/Kg)	
		w/o Reduction	w/ Reduction			Power with folio present	Reduction without folio	Power without folio	w/o reduction	w/ reduction	w/o reduction	w/ reduction	w/o reduction	w/ reduction
EVDO 850	1013	23.77	19.95	24.2	0	24.2	-3	21.2	0.43	1.25	0.86	0.82	0.95	1.1
	384	23.81	19.74	24.2	0	24.2	-3	21.2	0.39	1.46	0.91	0.91	0.99	1.27
	777	23.97	19.78	24.2	0	24.2	-3	21.2	0.23	1.42	1	0.85	1.05	1.17
EVDO 1900	25	23.5	19.4	24.2	0	24.2	-4.4	19.8	0.7	0.4	**1.16**	**1.42**	1.36	**1.56**
	600	23.4	19.36	24.2	0	24.2	-4.4	19.8	0.8	0.44	0.96	1.11	1.15	**1.23**
	1175	23.2	19.1	24.2	0	24.2	-4.4	19.8	1	0.7	1.08	1.36	1.36	**1.6**
WCDMA Band II	9262	23.49	19.75	24.2	0	24.2	-4	20.2	0.71	0.45	1.21	1.41	1.42	**1.56**
	9400	23.58	19.78	24.2	0	24.2	-4	20.2	0.62	0.42	1.11	1.2	1.28	**1.32**
	9538	23.11	19.36	24.2	0	24.2	-4	20.2	1.09	0.84	1.21	1.29	1.56	**1.57**
WCDMA Band IV	1312	23.77	19.99	24.2	0	24.2	-3	21.2	0.43	1.21	1.08	1.03	1.19	**1.36**
	1412	23.65	19.94	24.2	0	24.2	-3	21.2	0.55	1.26	1.19	1.19	1.35	**1.59**
	1513	23.68	20.09	24.2	0	24.2	-3	21.2	0.52	1.11	1.15	1.2	1.3	**1.55**
WCDMA Band V	4132	23.03	20.03	24.2	0	24.2	-3	21.2	1.17	1.17	1.11	0.92	1.45	**1.2**
	4183	23.01	20.08	24.2	0	24.2	-3	21.2	1.19	1.12	1.13	1	1.49	**1.29**
	4233	23.1	20.11	24.2	0	24.2	-3	21.2	1.1	1.09	1.23	1.13	1.58	**1.45**
GSM 850 GPRS 1UL	128	31.59	31.59	33.7	0	33.7	-1.8	31.9	2.11	0.31	**0.64**	1.27	1.04	**1.36**
	190		31.48	33.7	0	33.7	-1.8	31.9		0.42		1.42		**1.56**
	251		31.82	33.7	0	33.7	-1.8	31.9		0.08		**1.46**		**1.49**
GSM 1900 GPRS 1UL	512		28.33	30.7	0	30.7	-2	28.7		0.37		0.57		0.62
	661		28.42	30.7	0	30.7	-2	28.7		0.28		0.73		0.78
	810	30.58	28.69	30.7	0	30.7	-2	28.7	0.12	0.01	0.64	0.99	0.66	0.99
GSM 850 GPRS 2UL	128	31.47	27.07	33.7	-1.8	31.9	-6	27.7	0.43	0.63	**1.39**	0.92	**1.53**	1.06
	190	31.32	26.9	33.7	-1.8	31.9	-6	27.7	0.58	0.8	1.37	1.03	**1.57**	1.24
	251	31.7	27.14	33.7	-1.8	31.9	-6	27.7	0.2	0.56	1.36	**1.23**	**1.42**	1.4
GSM 1900 GPRS 2UL	512	30.29	25.74	30.7	0	30.7	-4	26.7	0.41	0.96	0.92	0.68	1.01	0.85
	661	30.51	26.04	30.7	0	30.7	-4	26.7	0.19	0.66	1.11	0.84	1.16	0.98
	810	30.53	26.29	30.7	0	30.7	-4	26.7	0.17	0.41	1.27	1.08	1.32	1.19
GSM 850 EGPRS 1UL (8PSK)	128	27.2	27.2	27.7	0	27.7	0	27.7	See Note Below					
	190	27.2	27.2	27.7	0	27.7	0	27.7						
	251	27.2	27.2	27.7	0	27.7	0	27.7						
GSM 1900 EGPRS 1UL (8PSK)	512	26.1	26.1	26.7	0	26.7	0	26.7						
	661	26.2	26.2	26.7	0	26.7	0	26.7						
	810	26.1	26.1	26.7	0	26.7	0	26.7						
GSM 850 EGPRS 2UL (8PSK)	128	27.1	27.1	27.7	0	27.7	0	27.7						
	190	27.1	27.1	27.7	0	27.7	0	27.7						
	251	27.2	27.2	27.7	0	27.7	0	27.7						
GSM 1900 EGPRS 2UL (8PSK)	512	26	26	26.7	0	26.7	0	26.7						
	661	26.1	26.1	26.7	0	26.7	0	26.7						
	810	25.9	25.9	26.7	0	26.7	0	26.7						

*Note: EGPRS Power Output values are less than or equal to GPRS values maximum power output. No SAR testing required - Per KDB941225 D03

Table 6 – Shows the tune-up values and SAR calculations, utilizing the measured conductive power and SAR values.

3. Instruments List

Manufacturer	Device	Type	Serial number	Date of last calibration
Schmid & Partner Engineering AG	Dosimetric E-Field Probe	EX3DV4	3770	Apr.19.2011
Schmid & Partner Engine856ering AG	850/1750/1900 MHz System Validation Dipole	D835V2	4d063	May.25.2011
		D1750V2	1008	May.24.2011
		D1900V2	5d027	Apr.19.2011
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	856	May.18.2011
Schmid & Partner Engineering AG	Software	DASY 5 V5.0 Build 125	N/A	Calibration not required
Schmid & Partner Engineering AG	Phantom	SAM	N/A	Calibration not required
Agilent	Network Analyzer	8753D	3410A05662	Mar.16.2011
Agilent	Dielectric Probe Kit	85070D	US01440168	Calibration not required
Agilent	Dual-directional coupler	778D	50313	Jul.19.2011
Agilent	RF Signal Generator	8648D	3847M00432	Jun.01.2011
Agilent	Power Sensor	U2001B	MY48100169	Apr.28.2011
Agilent	Radio Communication Test	E5515c	GB44051912	JUL.27 .2010

4. Measurements

Date: 8/25/2011

Configuration 1_GPRS 850_CH128

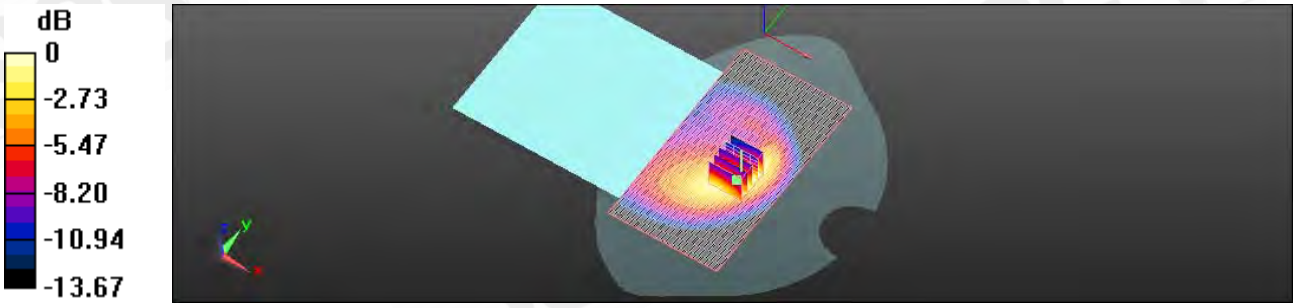
Communication System: GPRS(Class 10); Frequency: 824.2 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 824.2 MHz; σ = 0.996 mho/m; ε_r = 53.313; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.378 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.250 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 2.132 W/kg

SAR(1 g) = 1.39 mW/g; SAR(10 g) = 0.879 mW/g
Maximum value of SAR (measured) = 1.483 mW/g



0 dB = 1.480mW/g

Date: 8/25/2011

Configuration 1_GPRS 850_CH190

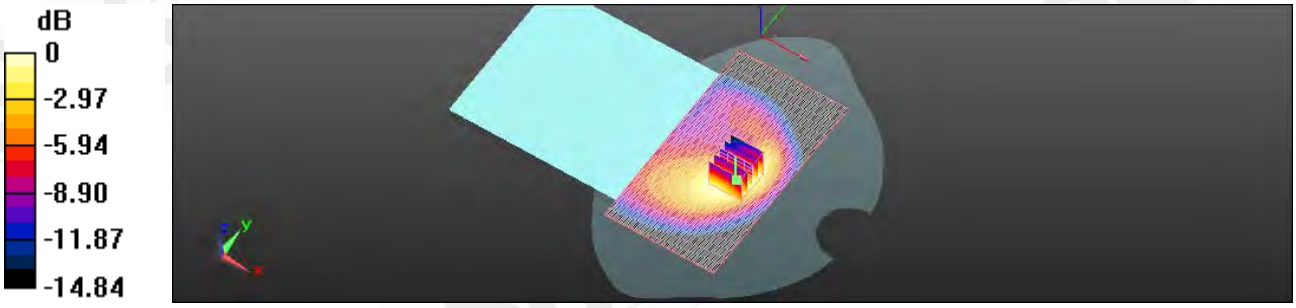
Communication System: GPRS(Class 10); Frequency: 836.6 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.554 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 37.498 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 2.139 W/kg

SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.852 mW/g
Maximum value of SAR (measured) = 1.496 mW/g



0 dB = 1.500mW/g

Date: 8/25/2011

Configuration 1_GPRS 850_CH251

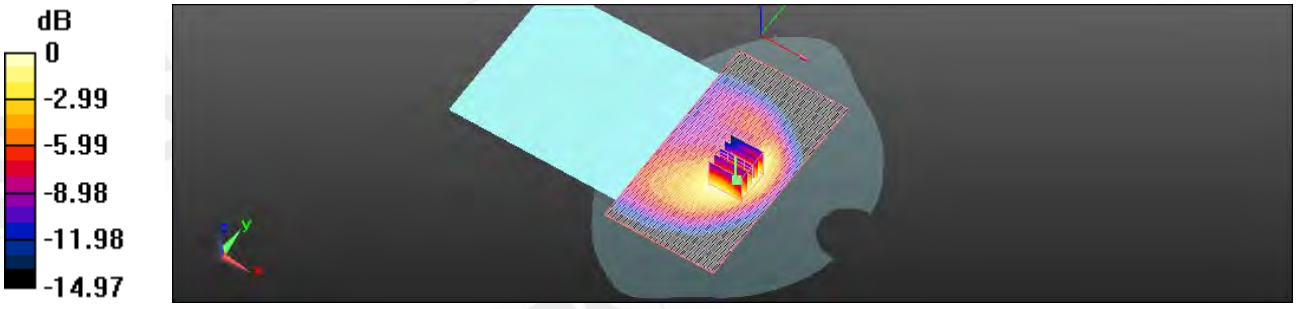
Communication System: GPRS(Class 10); Frequency: 848.8 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 849 MHz; σ = 1.018 mho/m; ε_r = 53.045; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.493 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 37.078 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 2.102 W/kg

SAR(1 g) = 1.36 mW/g; SAR(10 g) = 0.851 mW/g
Maximum value of SAR (measured) = 1.472 mW/g



0 dB = 1.470mW/g

Date: 8/25/2011

Configuration 2_GPRS 850_CH128_repeated without Folio

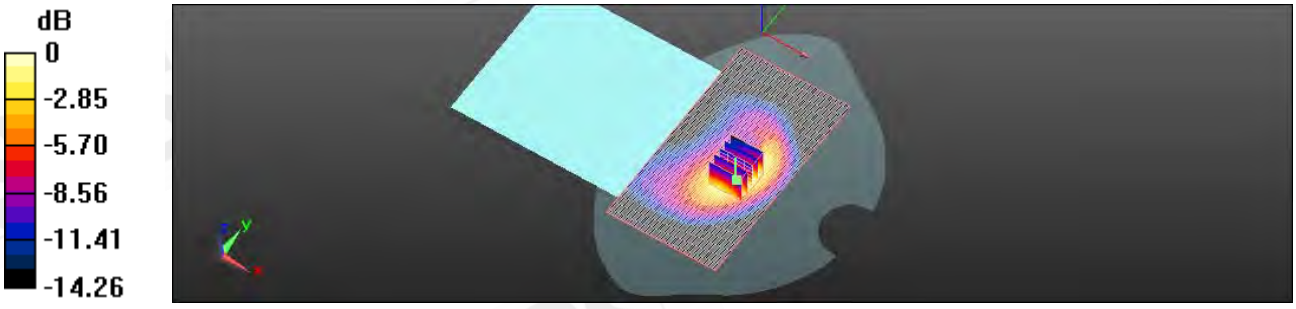
Communication System: GPRS(Class 10); Frequency: 824.2 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 824.2 MHz; σ = 0.996 mho/m; ε_r = 53.313; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.975 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.202 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.561 W/kg

SAR(1 g) = 0.921 mW/g; SAR(10 g) = 0.545 mW/g
Maximum value of SAR (measured) = 1.012 mW/g



0 dB = 1.010mW/g

Date: 8/25/2011

Configuration 2_GPRS 850_CH190_repeated without Folio

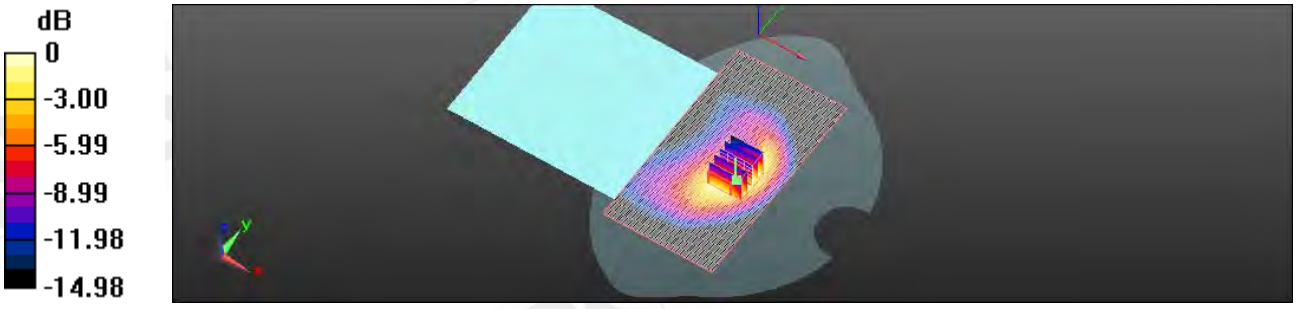
Communication System: GPRS(Class 10); Frequency: 836.6 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.085 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.945 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.755 W/kg

SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.579 mW/g
Maximum value of SAR (measured) = 1.152 mW/g



0 dB = 1.150mW/g

Date: 8/25/2011

Configuration 2_GPRS 850_CH251_repeated without Folio

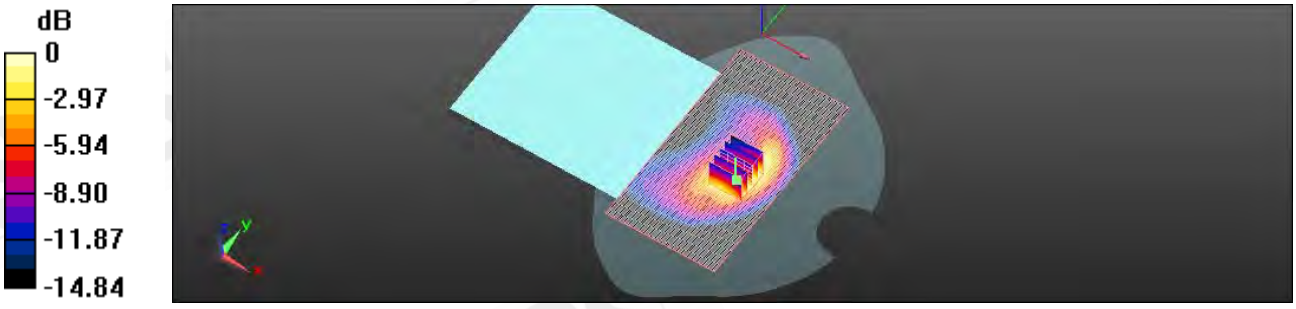
Communication System: GPRS(Class 10); Frequency: 848.8 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 849 MHz; σ = 1.018 mho/m; ε_r = 53.045; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.291 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.735 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 2.092 W/kg

SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.720 mW/g
Maximum value of SAR (measured) = 1.348 mW/g



0 dB = 1.350mW/g

Date: 8/25/2011

Configuration 5_GPRS 850_CH190

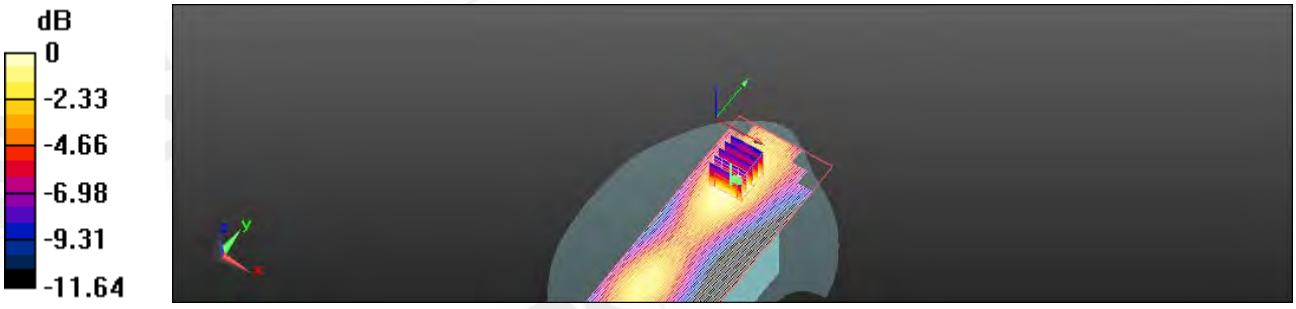
Communication System: GPRS(Class 10); Frequency: 836.6 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.178 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.391 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.237 W/kg

SAR(1 g) = 0.170 mW/g; SAR(10 g) = 0.116 mW/g
Maximum value of SAR (measured) = 0.187 mW/g



0 dB = 0.190mW/g

Date: 8/25/2011

Configuration 6_GPRS 850_CH190

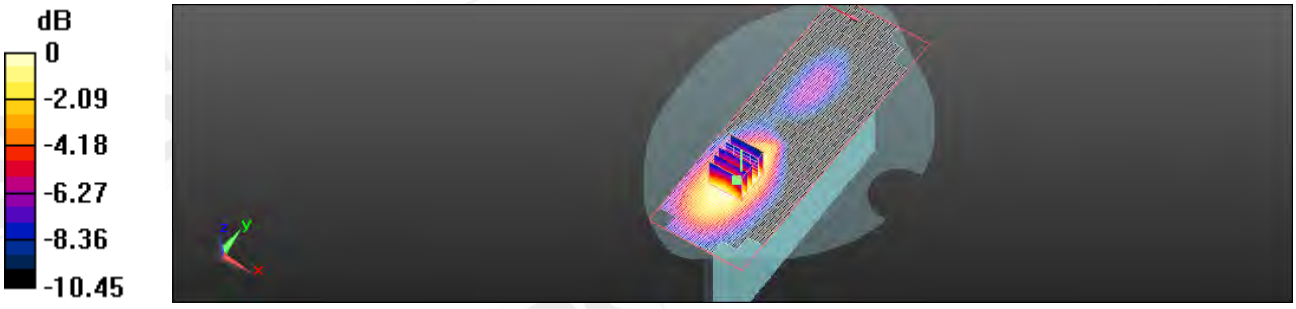
Communication System: GPRS(Class 10); Frequency: 836.6 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.206 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.520 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.301 W/kg

SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.137 mW/g
Maximum value of SAR (measured) = 0.210 mW/g



0 dB = 0.210mW/g

Date: 8/25/2011

Configuration 1_GPRS 850_CH128_Class 8

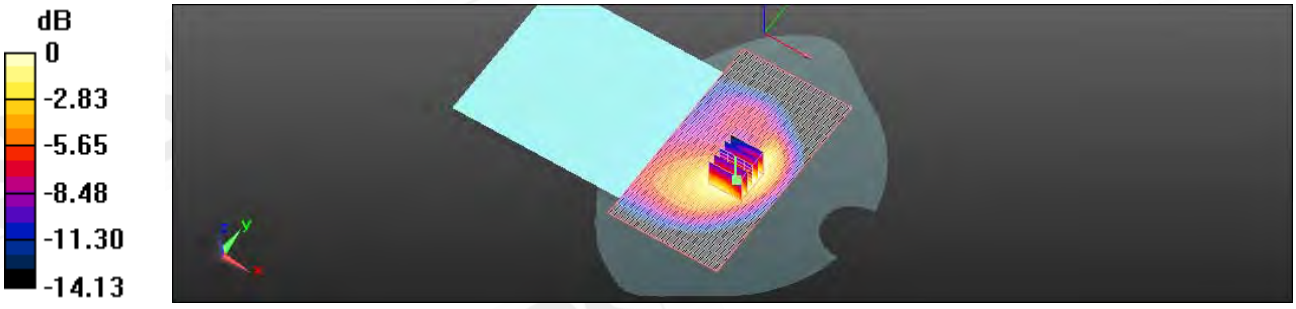
Communication System: GPRS(Class 8); Frequency: 824.2 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 824.2 MHz; σ = 0.996 mho/m; ε_r = 53.313; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.771 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.060 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.000 W/kg

SAR(1 g) = 0.639 mW/g; SAR(10 g) = 0.401 mW/g
Maximum value of SAR (measured) = 0.695 mW/g



0 dB = 0.700mW/g

Date: 8/25/2011

Configuration 2_GPRS 850_CH128_Class 8_repeated without Folio

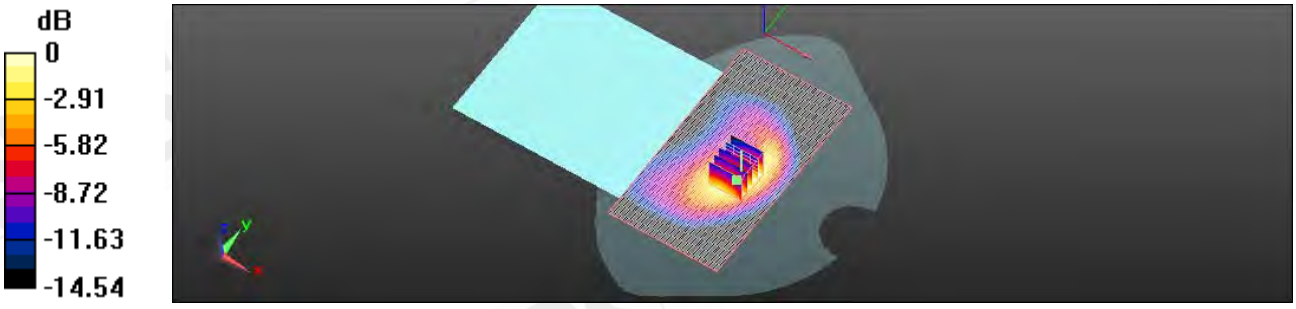
Communication System: GPRS(Class 8); Frequency: 824.2 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 824.2 MHz; σ = 0.996 mho/m; ε_r = 53.313; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.313 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 36.041 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 2.164 W/kg

SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.743 mW/g
Maximum value of SAR (measured) = 1.384 mW/g



0 dB = 1.380mW/g

Date: 8/25/2011

Configuration 2_GPRS 850_CH190_Class 8_repeated without Folio

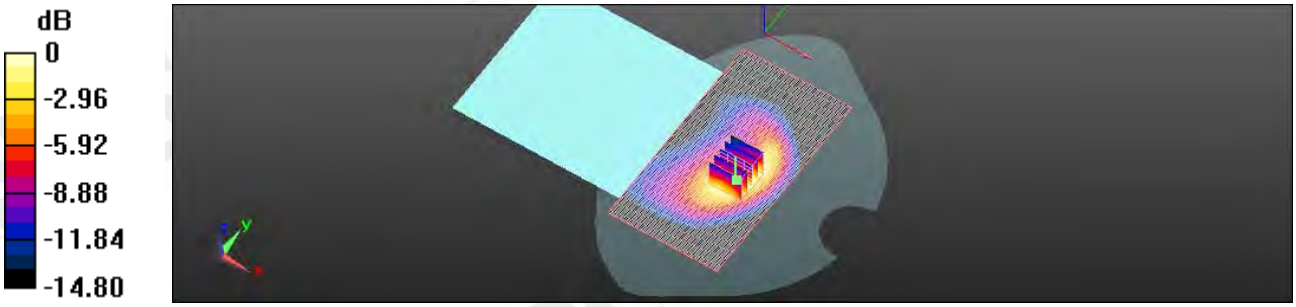
Communication System: GPRS(Class 8); Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.486 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 38.214 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 2.462 W/kg

SAR(1 g) = 1.42 mW/g; SAR(10 g) = 0.833 mW/g
Maximum value of SAR (measured) = 1.546 mW/g



0 dB = 1.550mW/g

Date: 8/25/2011

Configuration 2_GPRS 850_CH251_Class 8_repeated without Folio

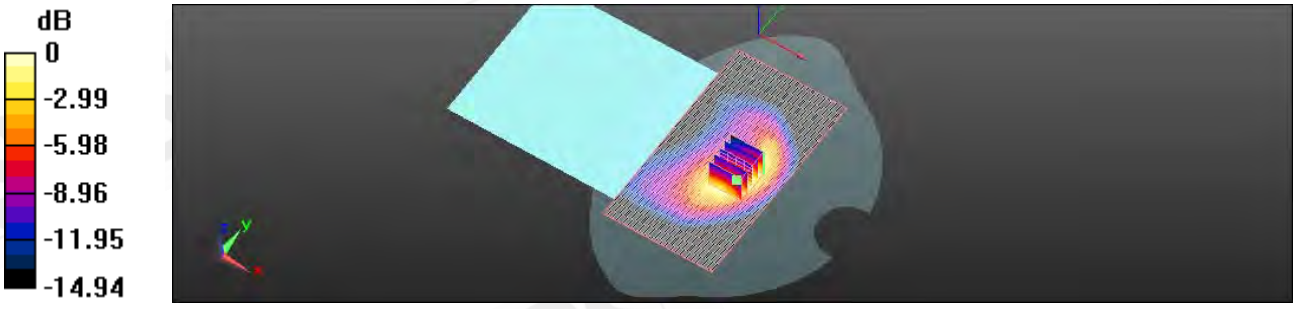
Communication System: GPRS(Class 8); Frequency: 848.8 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 849 MHz; σ = 1.018 mho/m; ε_r = 53.045; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

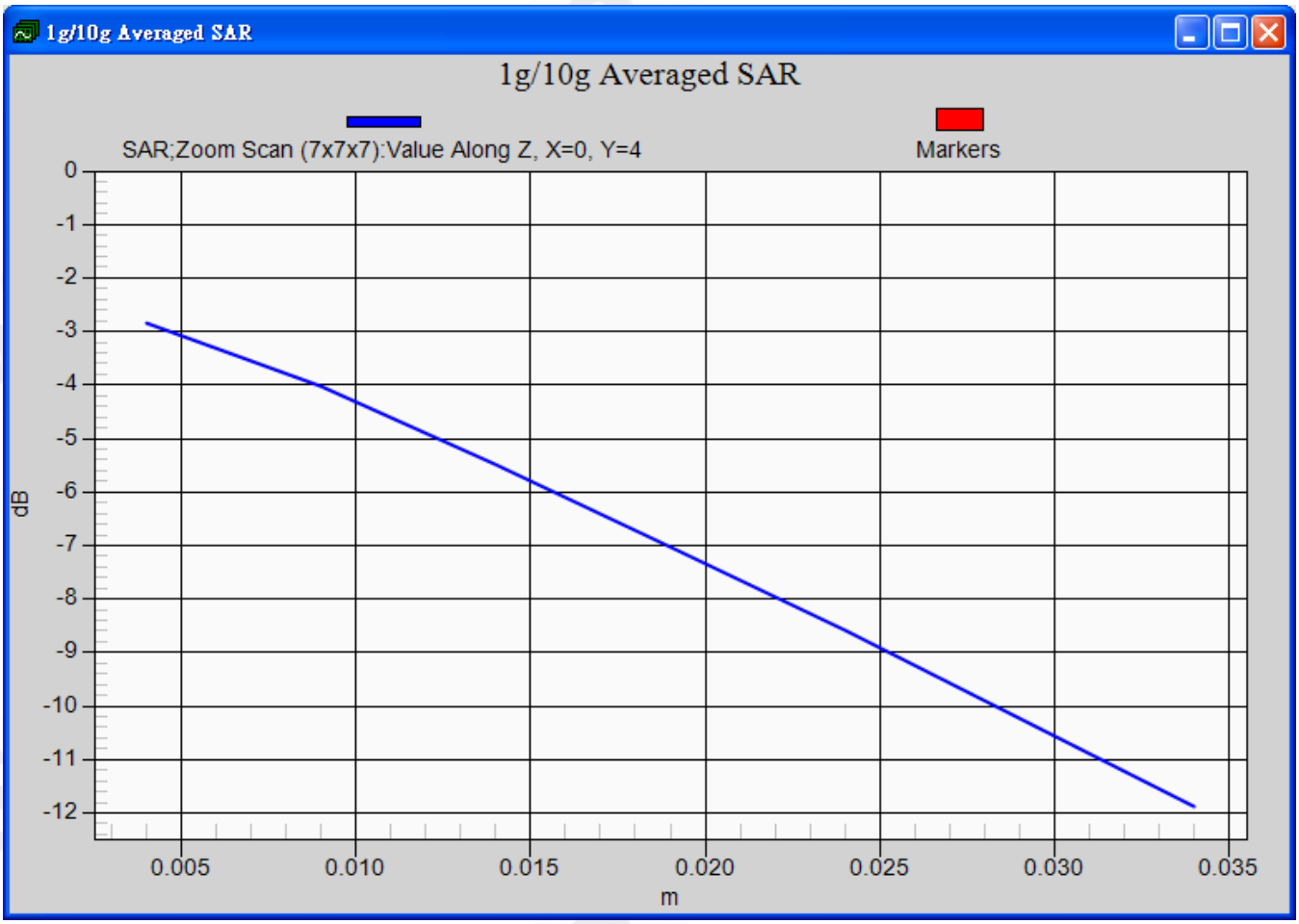
Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.550 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 39.995 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.447 W/kg

SAR(1 g) = 1.46 mW/g; SAR(10 g) = 0.860 mW/g
Maximum value of SAR (measured) = 1.600 mW/g



0 dB = 1.600mW/g



Date: 8/25/2011

Configuration 5_GPRS 850_CH190_Class 8

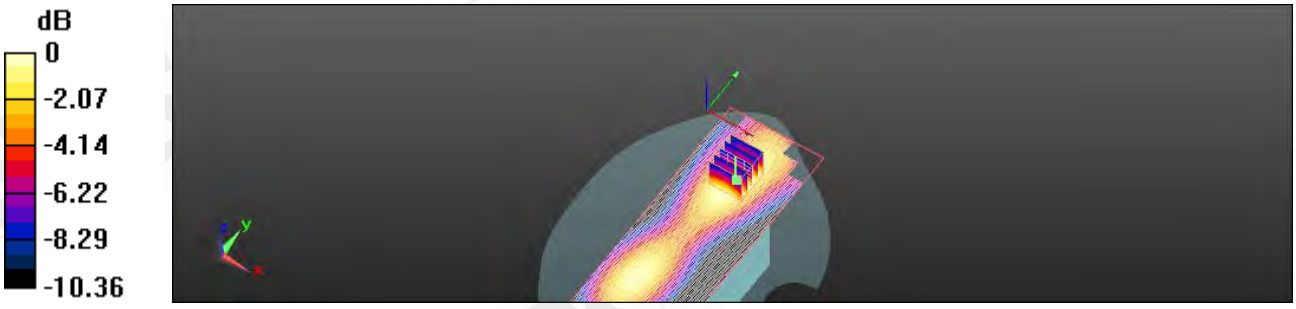
Communication System: GPRS(Class 8); Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.086 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.166 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 0.118 W/kg

SAR(1 g) = 0.084 mW/g; SAR(10 g) = 0.058 mW/g
Maximum value of SAR (measured) = 0.090 mW/g



0 dB = 0.090mW/g

Date: 8/25/2011

Configuration 6_GPRS 850_CH190_Class 8

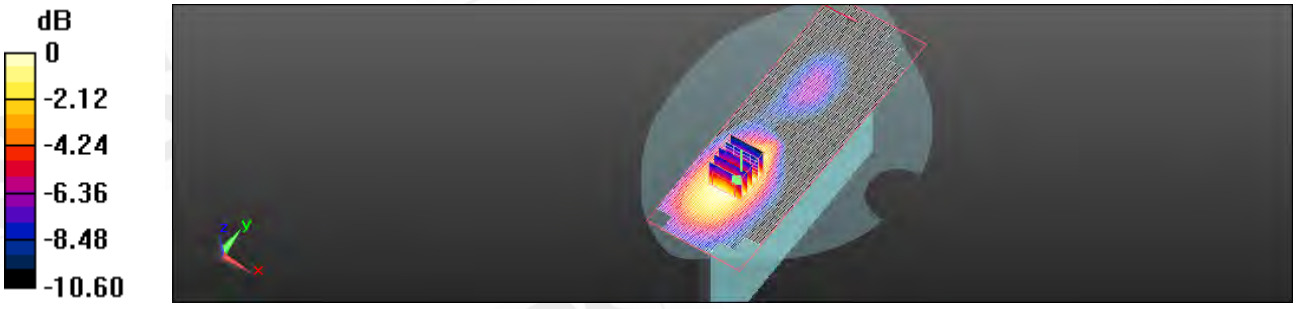
Communication System: GPRS(Class 8); Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.107 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.957 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.153 W/kg

SAR(1 g) = 0.098 mW/g; SAR(10 g) = 0.068 mW/g
Maximum value of SAR (measured) = 0.105 mW/g



0 dB = 0.110mW/g

Date: 8/29/2011

Configuration 1_GPRS 1900_CH512

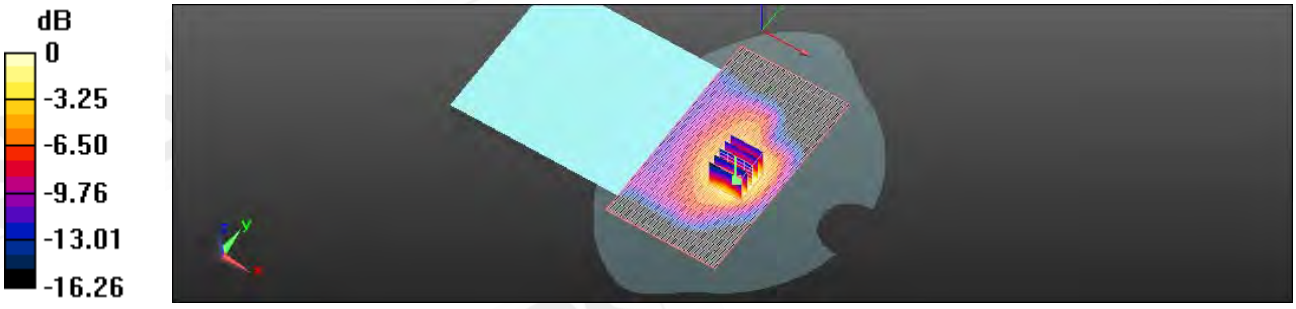
Communication System: GPRS(Class 10); Frequency: 1850.2 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 1850.2 MHz; σ = 1.468 mho/m; ε_r = 51.263; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.954 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.108 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.508 W/kg

SAR(1 g) = 0.921 mW/g; SAR(10 g) = 0.538 mW/g
Maximum value of SAR (measured) = 1.016 mW/g



0 dB = 1.020mW/g

Date: 8/29/2011

Configuration 1_GPRS 1900_CH661

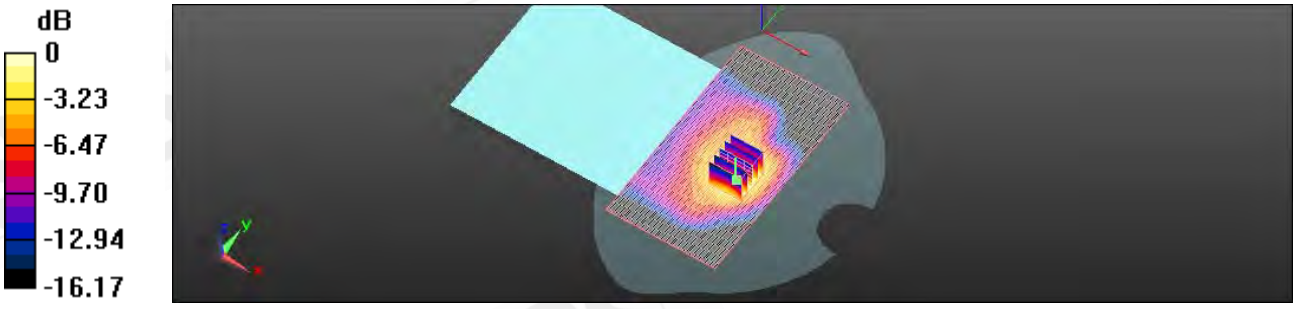
Communication System: GPRS(Class 10); Frequency: 1880 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.232 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.801 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.898 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.646 mW/g
Maximum value of SAR (measured) = 1.226 mW/g



0 dB = 1.230mW/g

Date: 8/29/2011

Configuration 1_GPRS 1900_CH810

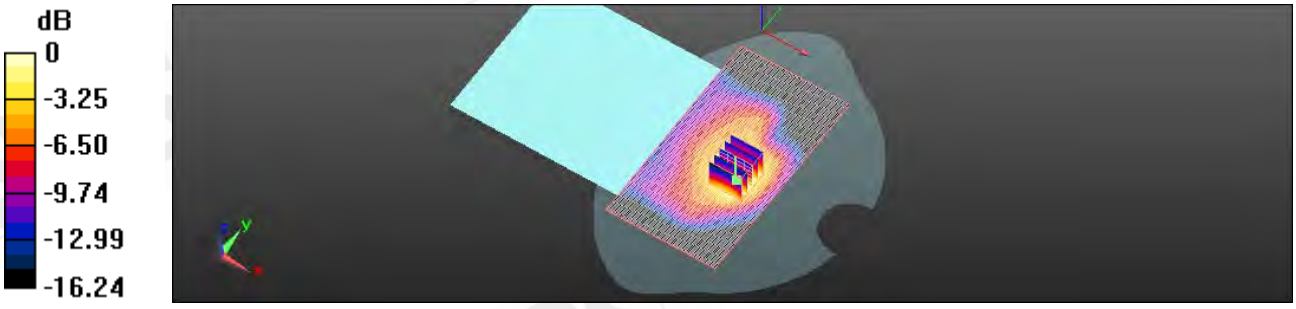
Communication System: GPRS(Class 10); Frequency: 1909.8 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 1910 MHz; σ = 1.538 mho/m; ε_r = 51.084; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.416 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.564 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.135 W/kg

SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.734 mW/g
Maximum value of SAR (measured) = 1.385 mW/g



0 dB = 1.390mW/g

Date: 8/29/2011

Configuration 2_GPRS 1900_CH512_repeated without Folio

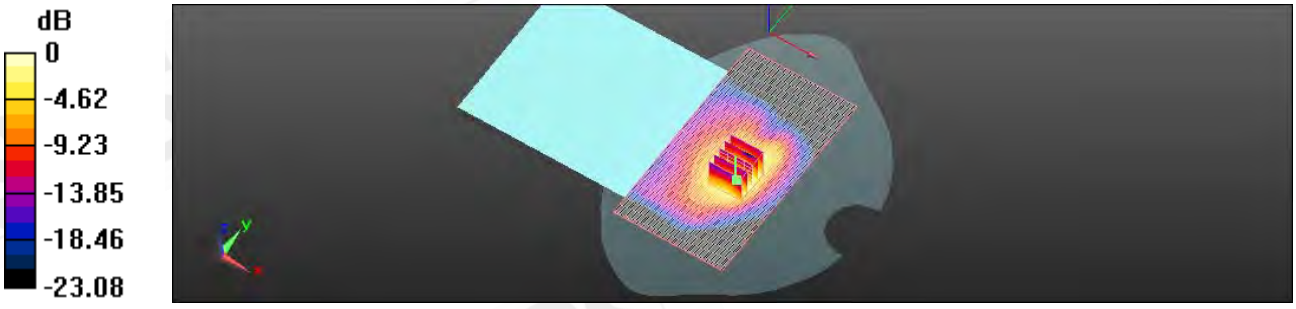
Communication System: GPRS(Class 10); Frequency: 1850.2 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 1850.2 MHz; σ = 1.468 mho/m; ε_r = 51.263; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.783 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.594 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 1.230 W/kg

SAR(1 g) = 0.682 mW/g; SAR(10 g) = 0.374 mW/g
Maximum value of SAR (measured) = 0.743 mW/g



0 dB = 0.740mW/g

Date: 8/29/2011

Configuration 2_GPRS 1900_CH661_repeated without Folio

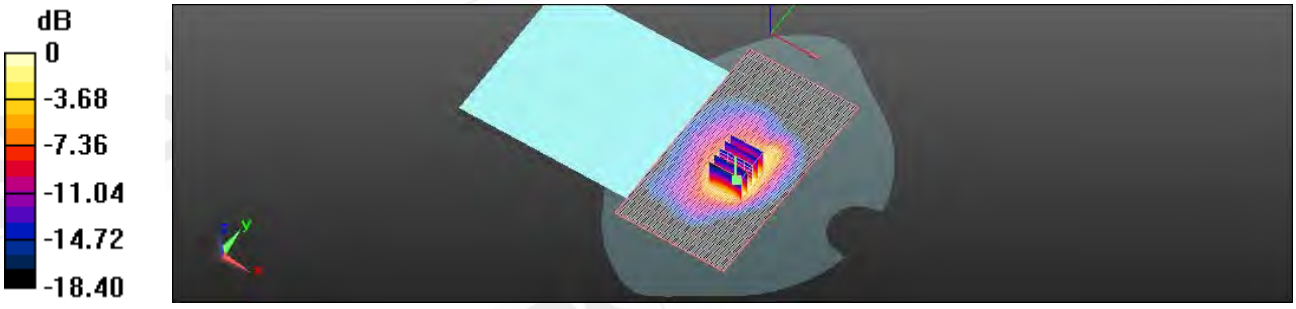
Communication System: GPRS(Class 10); Frequency: 1880 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.938 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.124 V/m; Power Drift = 0.20 dB
Peak SAR (extrapolated) = 1.608 W/kg

SAR(1 g) = 0.843 mW/g; SAR(10 g) = 0.444 mW/g
Maximum value of SAR (measured) = 0.936 mW/g



0 dB = 0.940mW/g

Date: 8/29/2011

Configuration 2_GPRS 1900_CH810_repeated without Folio

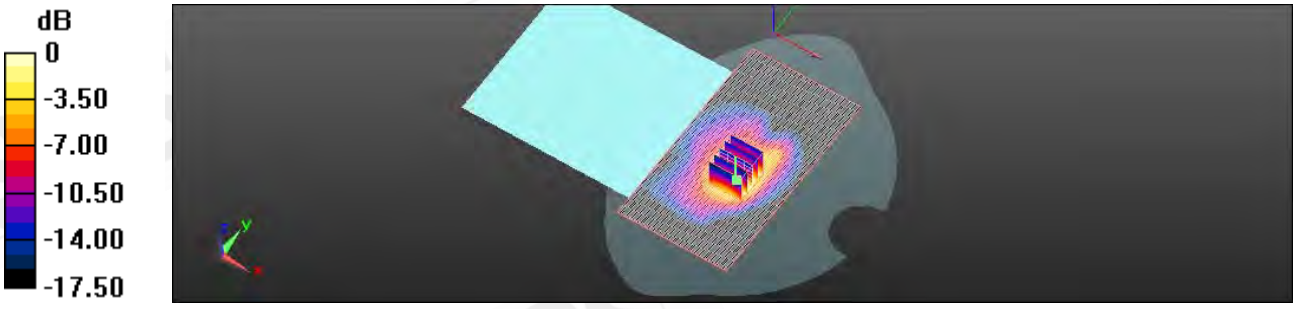
Communication System: GPRS(Class 10); Frequency: 1909.8 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 1910 MHz; σ = 1.538 mho/m; ε_r = 51.084; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.236 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.859 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 2.005 W/kg

SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.573 mW/g
Maximum value of SAR (measured) = 1.190 mW/g



0 dB = 1.190mW/g

Date: 8/29/2011

Configuration 5_GPRS 1900_CH661

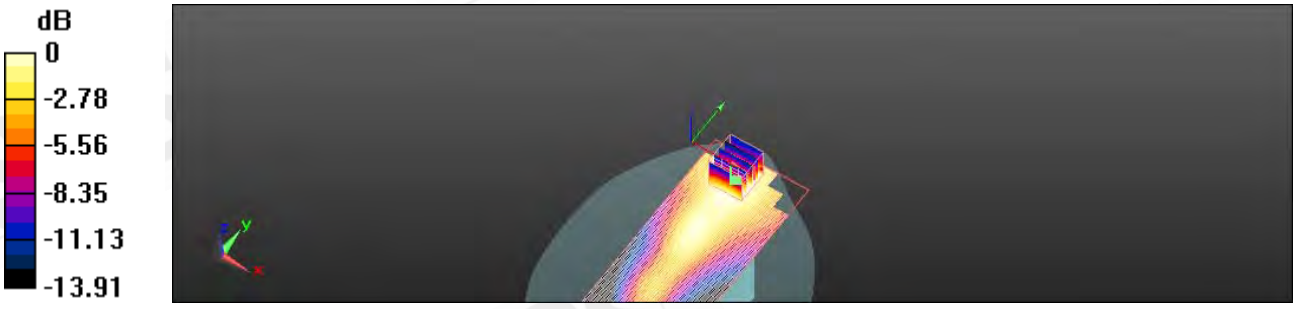
Communication System: GPRS(Class 10); Frequency: 1880 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.134 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.298 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.191 W/kg

SAR(1 g) = 0.124 mW/g; SAR(10 g) = 0.079 mW/g
Maximum value of SAR (measured) = 0.135 mW/g



0 dB = 0.130mW/g

Date: 8/29/2011

Configuration 6_GPRS 1900_CH661

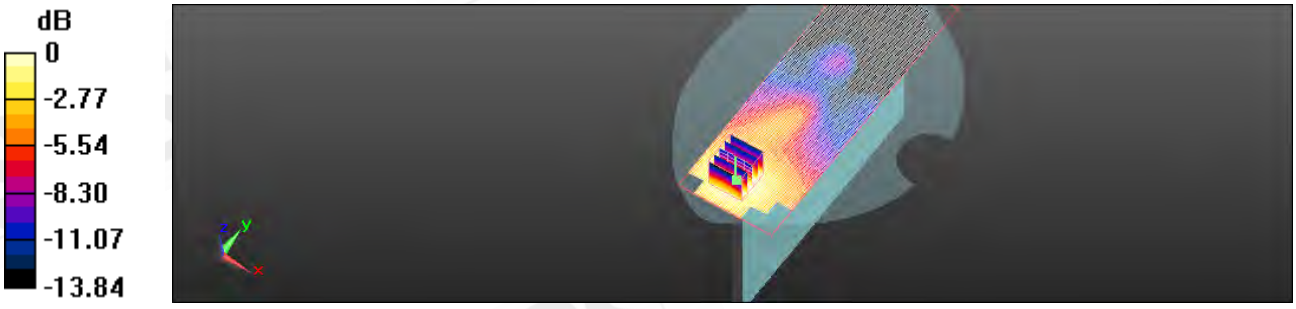
Communication System: GPRS(Class 10); Frequency: 1880 MHz; Duty Cycle: 1:4.1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.102 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.231 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.149 W/kg

SAR(1 g) = 0.096 mW/g; SAR(10 g) = 0.061 mW/g
Maximum value of SAR (measured) = 0.103 mW/g



0 dB = 0.100mW/g

Date: 8/29/2011

Configuration 1_GPRS 1900_CH810_Class 8

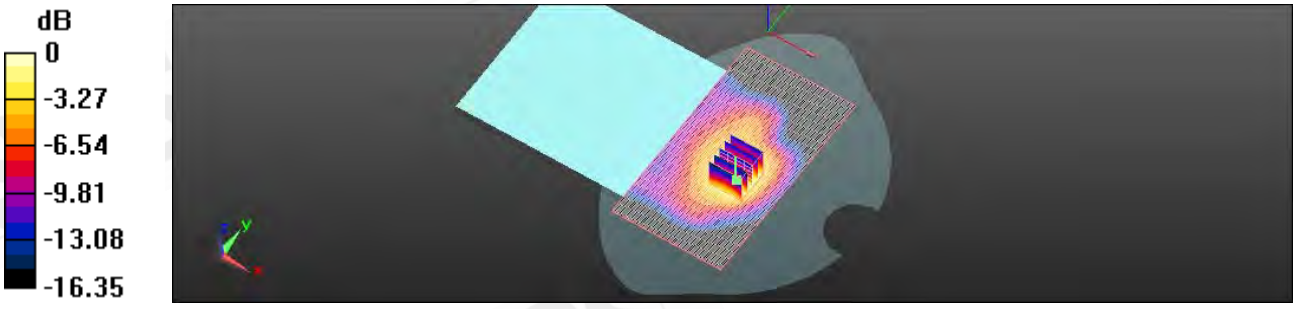
Communication System: GPRS(Class 8); Frequency: 1909.8 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.538 mho/m; ε_r = 51.084; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.712 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.585 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.093 W/kg

SAR(1 g) = 0.640 mW/g; SAR(10 g) = 0.371 mW/g
Maximum value of SAR (measured) = 0.700 mW/g



0 dB = 0.700mW/g

Date: 8/29/2011

Configuration 2_GPRS 1900_CH512_Class 8_repeated without Folio

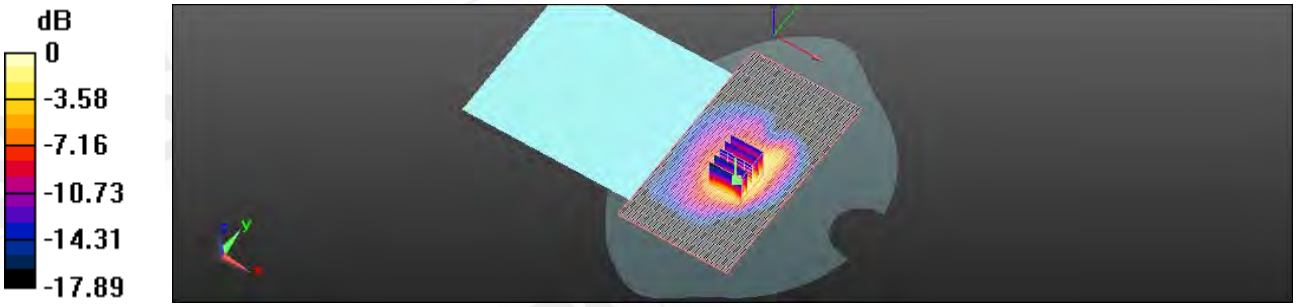
Communication System: GPRS(Class 8); Frequency: 1850.2 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 1850.2 MHz; σ = 1.468 mho/m; ε_r = 51.263; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.612 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.667 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.070 W/kg

SAR(1 g) = 0.572 mW/g; SAR(10 g) = 0.306 mW/g
Maximum value of SAR (measured) = 0.623 mW/g



0 dB = 0.620mW/g

Date: 8/29/2011

Configuration 2_GPRS 1900_CH661_Class 8_repeated without Folio

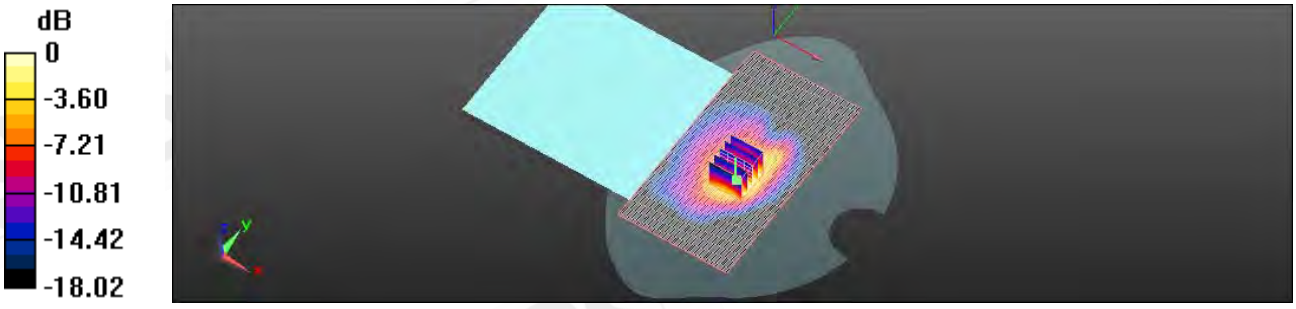
Communication System: GPRS(Class 8); Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.811 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.311 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.370 W/kg

SAR(1 g) = 0.731 mW/g; SAR(10 g) = 0.387 mW/g
Maximum value of SAR (measured) = 0.795 mW/g



0 dB = 0.800mW/g

Date: 8/29/2011

Configuration 2_GPRS 1900_CH810_Class 8_repeated without Folio

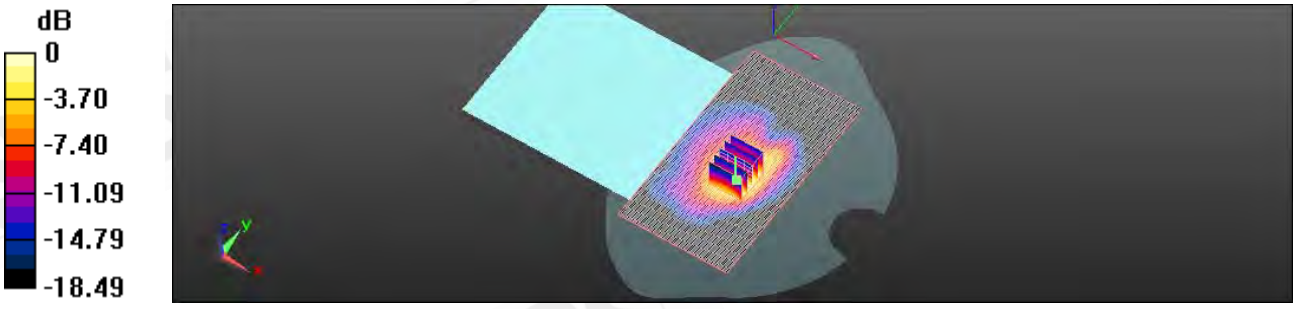
Communication System: GPRS(Class 8); Frequency: 1909.8 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 1910 MHz; σ = 1.538 mho/m; ε_r = 51.084; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.111 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.239 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.889 W/kg

SAR(1 g) = 0.990 mW/g; SAR(10 g) = 0.516 mW/g
Maximum value of SAR (measured) = 1.096 mW/g



0 dB = 1.100mW/g

Date: 8/29/2011

Configuration 5_GPRS 1900_CH661_Class 8

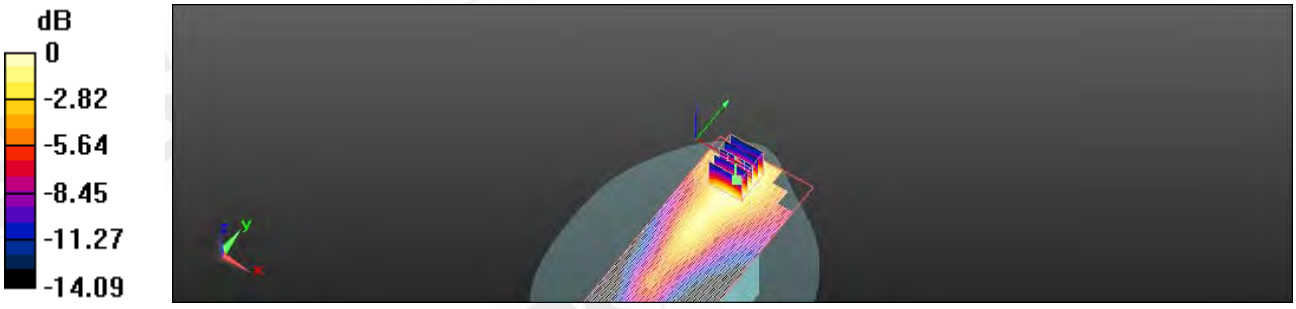
Communication System: GPRS(Class 10); Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.090 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.016 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.128 W/kg

SAR(1 g) = 0.082 mW/g; SAR(10 g) = 0.051 mW/g
Maximum value of SAR (measured) = 0.088 mW/g



0 dB = 0.090mW/g

Date: 8/29/2011

Configuration 6_GPRS 1900_CH661_Class 8

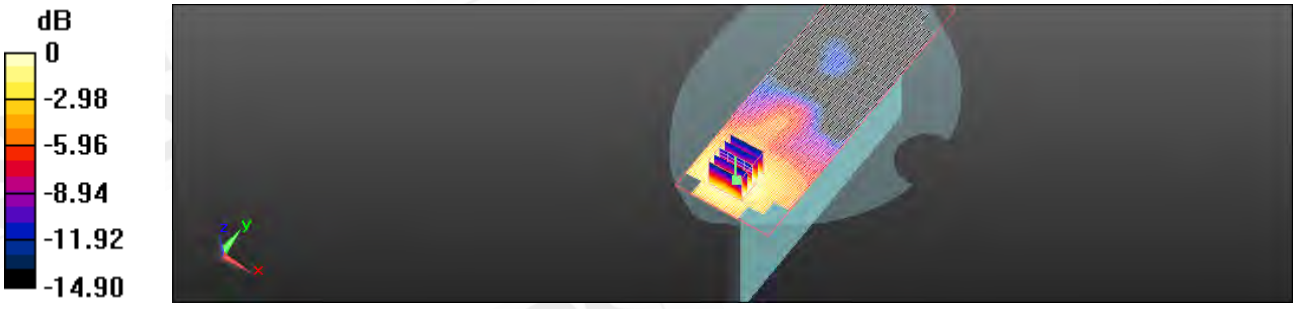
Communication System: GPRS(Class 10); Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.057 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.231 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.081 W/kg

SAR(1 g) = 0.052 mW/g; SAR(10 g) = 0.032 mW/g
Maximum value of SAR (measured) = 0.055 mW/g



0 dB = 0.060mW/g

Date: 8/29/2011

Configuration 1_WCDMA B2_CH9262

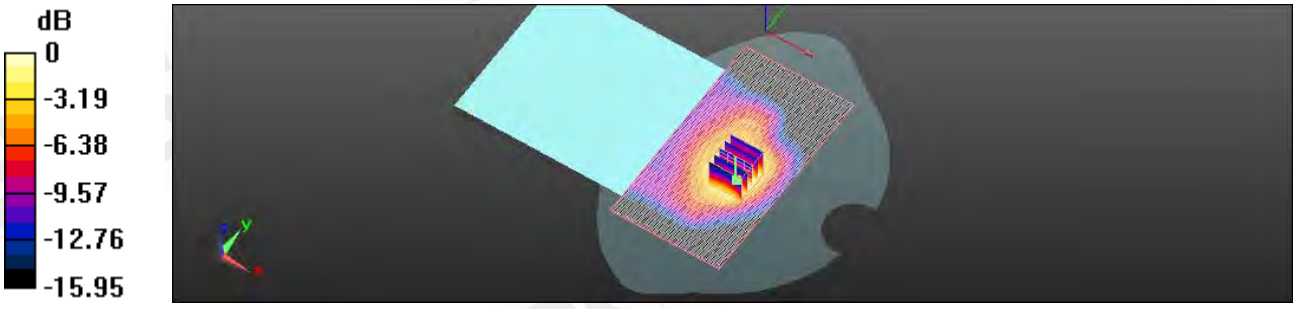
Communication System: WCDMA; Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1852.4 MHz; σ = 1.47 mho/m; ε_r = 51.258; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.341 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.854 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 2.041 W/kg

SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.710 mW/g
Maximum value of SAR (measured) = 1.323 mW/g



0 dB = 1.320mW/g

Date: 8/29/2011

Configuration 1_ WCDMA B2_CH9400

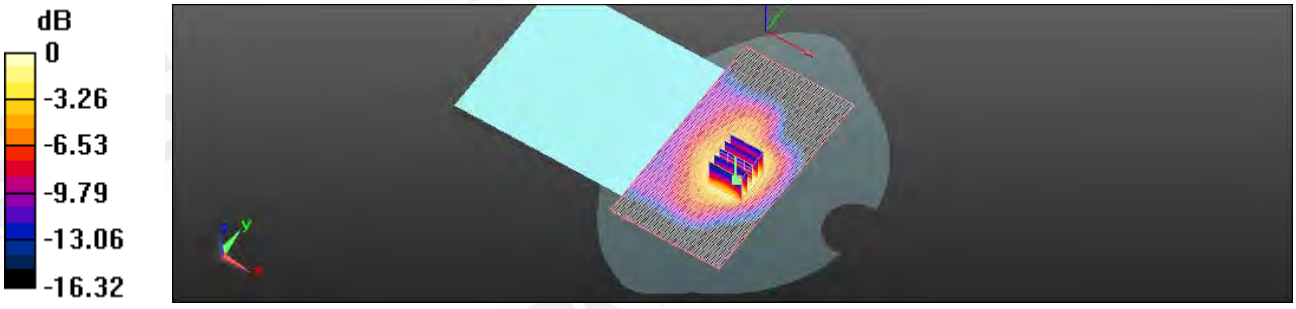
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.255 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.846 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 1.875 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.650 mW/g
Maximum value of SAR (measured) = 1.207 mW/g



0 dB = 1.210mW/g

Date: 8/29/2011

Configuration 1_WCDMA B2_CH9538

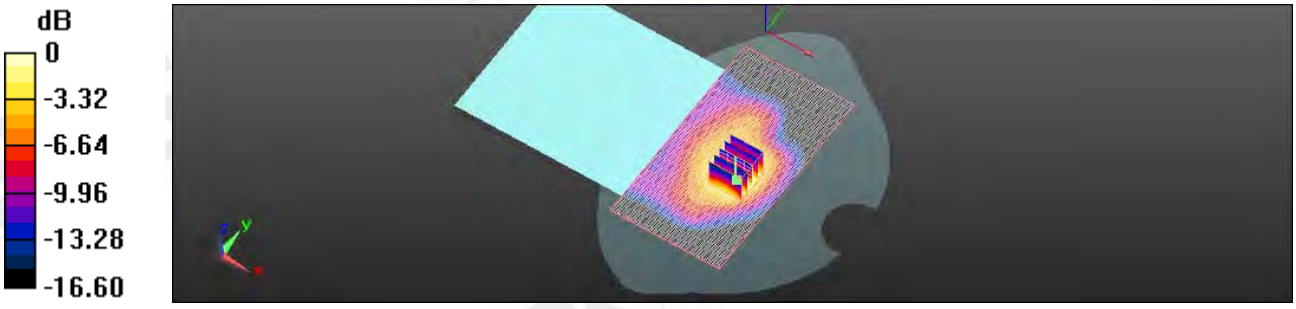
Communication System: WCDMA; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1908 MHz; σ = 1.535 mho/m; ε_r = 51.092; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.315 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.979 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.078 W/kg

SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.699 mW/g
Maximum value of SAR (measured) = 1.307 mW/g



0 dB = 1.310mW/g

Date: 8/29/2011

Configuration 2_WCDMA B2_CH9262_repeated without Folio

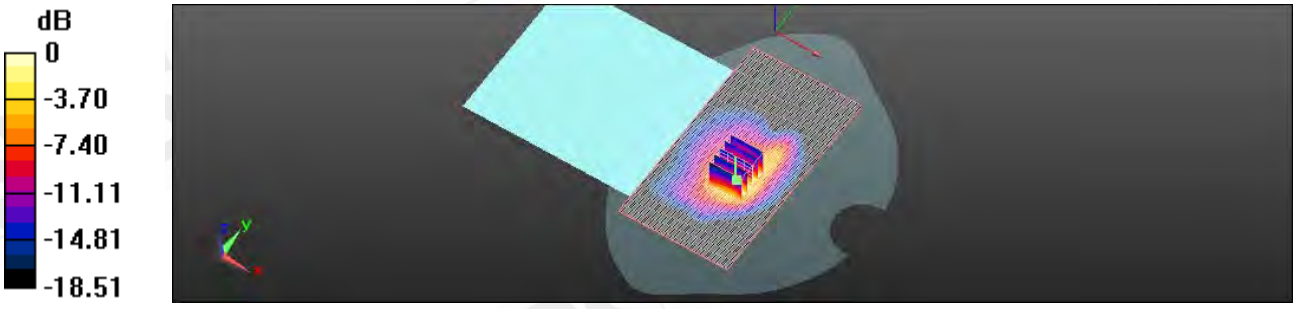
Communication System: WCDMA; Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1852.4 MHz; σ = 1.47 mho/m; ε_r = 51.258; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.589 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.091 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.708 W/kg

SAR(1 g) = 1.41 mW/g; SAR(10 g) = 0.710 mW/g
Maximum value of SAR (measured) = 1.590 mW/g



0 dB = 1.590mW/g

Date: 8/29/2011

Configuration 2_WCDMA B2_CH9400_repeated without Folio

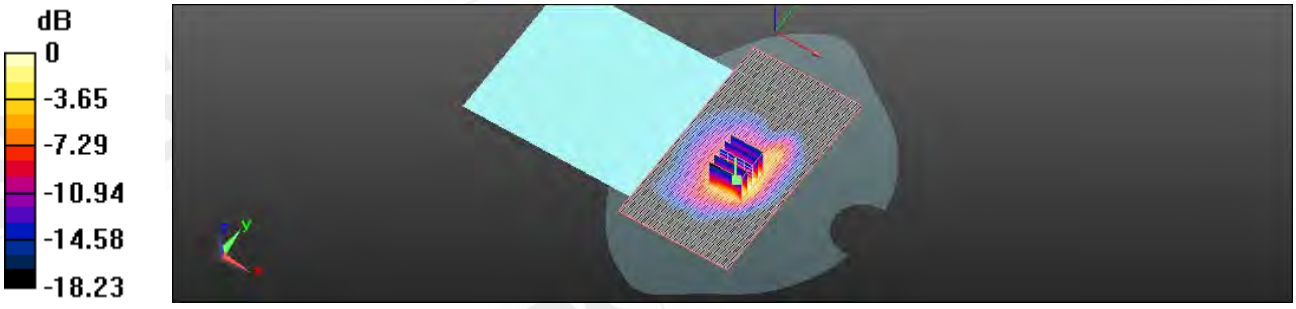
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.359 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.474 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 2.322 W/kg

SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.595 mW/g
Maximum value of SAR (measured) = 1.344 mW/g



0 dB = 1.340mW/g

Date: 8/29/2011

Configuration 2_WCDMA B2_CH9538_repeated without Folio

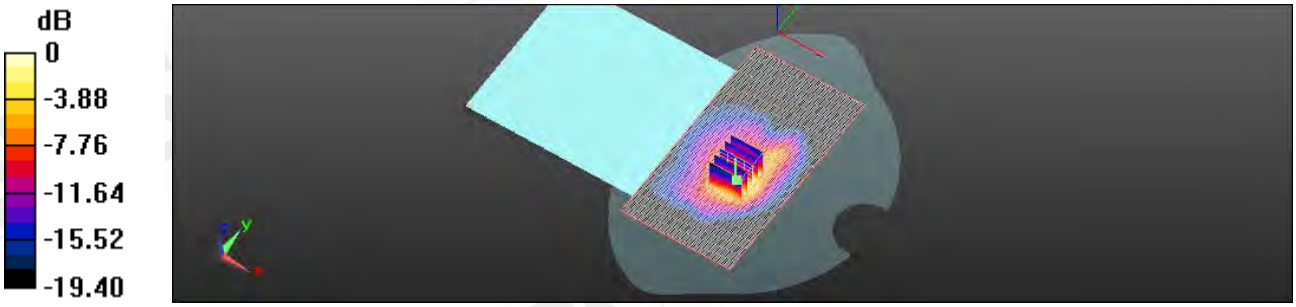
Communication System: WCDMA; Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1908 MHz; σ = 1.535 mho/m; ε_r = 51.092; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.498 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.480 V/m; Power Drift = 0.00015 dB
Peak SAR (extrapolated) = 2.525 W/kg

SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.629 mW/g
Maximum value of SAR (measured) = 1.479 mW/g



0 dB = 1.480mW/g

Date: 8/29/2011

Configuration 5_WCDMA B2_CH9400

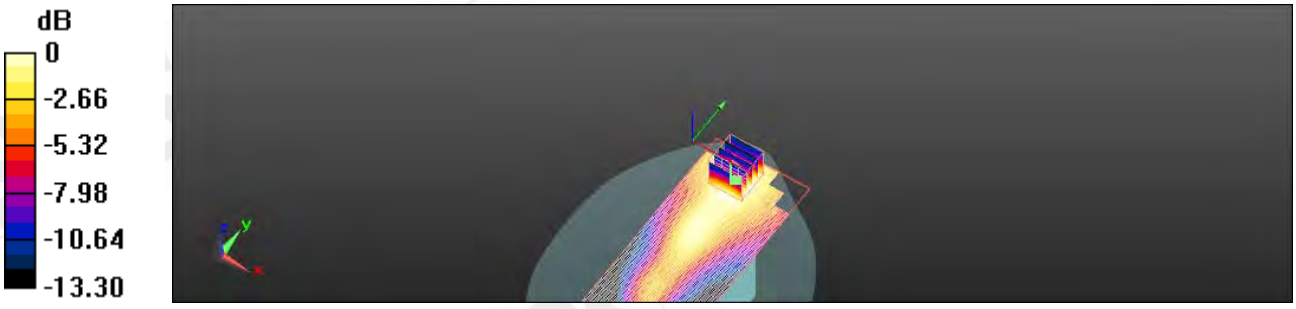
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.133 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.116 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.187 W/kg

SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.078 mW/g
Maximum value of SAR (measured) = 0.132 mW/g



0 dB = 0.130mW/g

Date: 8/29/2011

Configuration 6_WCDMA B2_CH9400

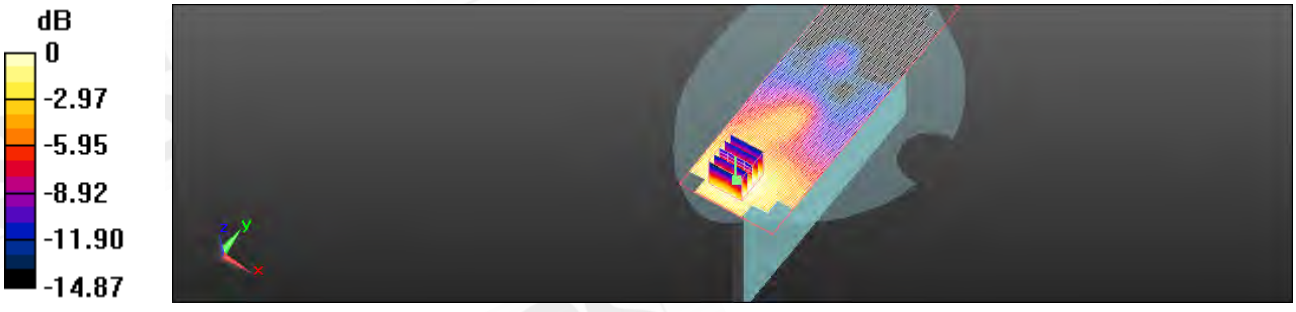
Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.105 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.136 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.150 W/kg

SAR(1 g) = 0.096 mW/g; SAR(10 g) = 0.061 mW/g
Maximum value of SAR (measured) = 0.102 mW/g



0 dB = 0.100mW/g

Date: 8/28/2011

Configuration 1_ WCDMA B4_CH1312

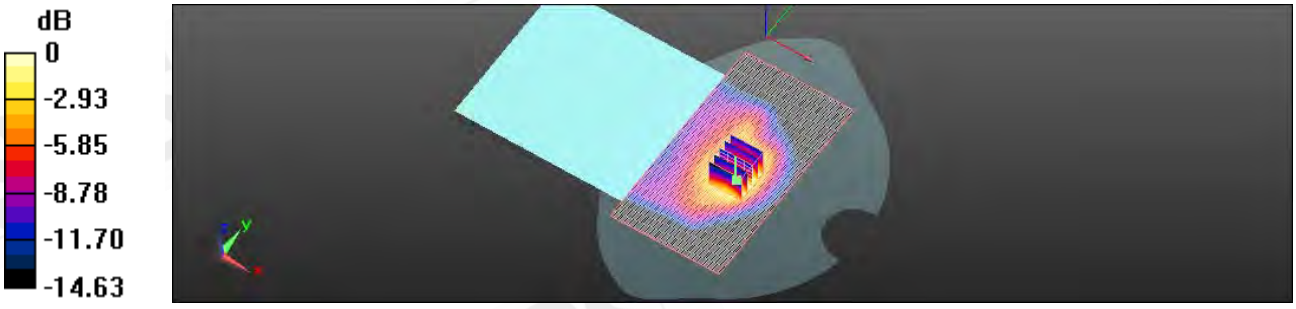
Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1712.4 MHz; σ = 1.461 mho/m; ε_r = 53.257; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.174 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.558 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.718 W/kg

SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.645 mW/g
Maximum value of SAR (measured) = 1.171 mW/g



0 dB = 1.170mW/g

Date: 8/28/2011

Configuration 1_WCDMA B4_CH1412

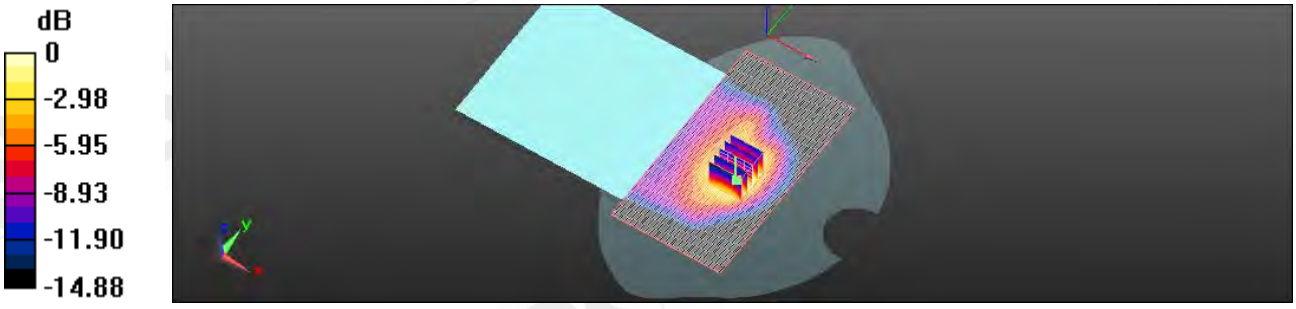
Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1732.4 MHz; σ = 1.495 mho/m; ε_r = 53.363; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.308 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.894 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 1.913 W/kg

SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.718 mW/g
Maximum value of SAR (measured) = 1.298 mW/g



0 dB = 1.300mW/g

Date: 8/28/2011

Configuration 1_WCDMA B4_CH1513

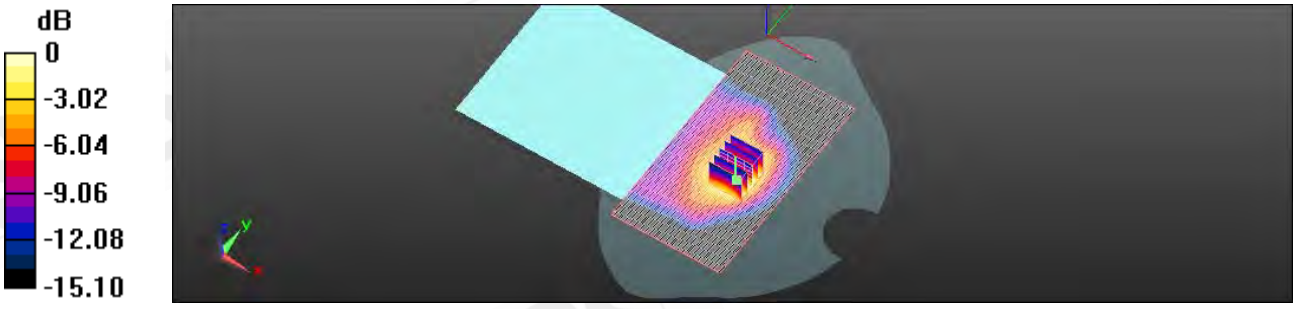
Communication System: WCDMA; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1753 MHz; σ = 1.5 mho/m; ε_r = 53.369; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.253 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.529 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.859 W/kg

SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.685 mW/g
Maximum value of SAR (measured) = 1.247 mW/g



0 dB = 1.250mW/g

Date: 8/28/2011

Configuration 2_WCDMA B4_CH1312_repeated without Folio

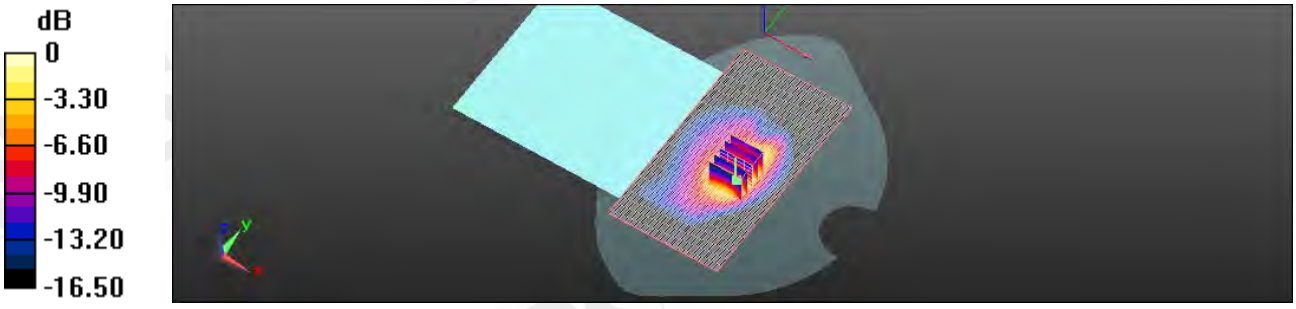
Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1712.4 MHz; σ = 1.461 mho/m; ε_r = 53.257; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.177 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.347 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.768 W/kg

SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.582 mW/g
Maximum value of SAR (measured) = 1.127 mW/g



0 dB = 1.130mW/g

Date: 8/28/2011

Configuration 2_WCDMA B4_CH1412_repeated without Folio

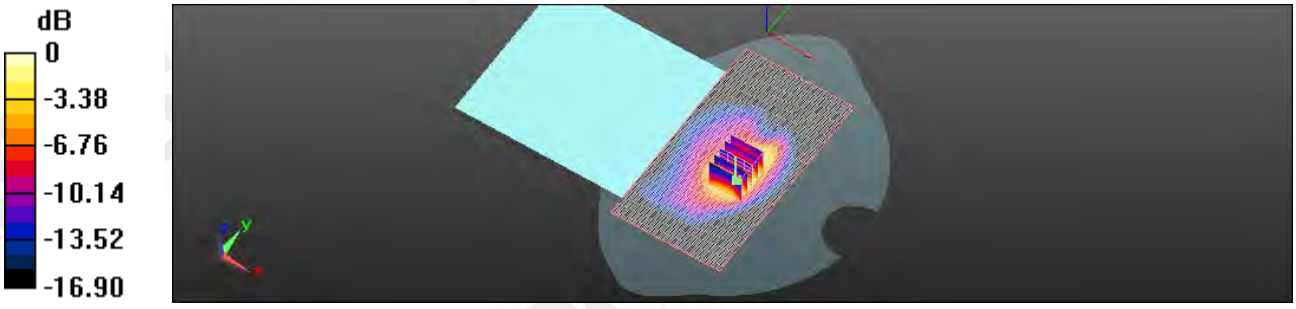
Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1732.4 MHz; σ = 1.495 mho/m; ε_r = 53.363; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.373 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.998 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.057 W/kg

SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.668 mW/g
Maximum value of SAR (measured) = 1.295 mW/g



0 dB = 1.300mW/g

Date: 8/28/2011

Configuration 2_WCDMA B4_CH1513_repeated without Folio

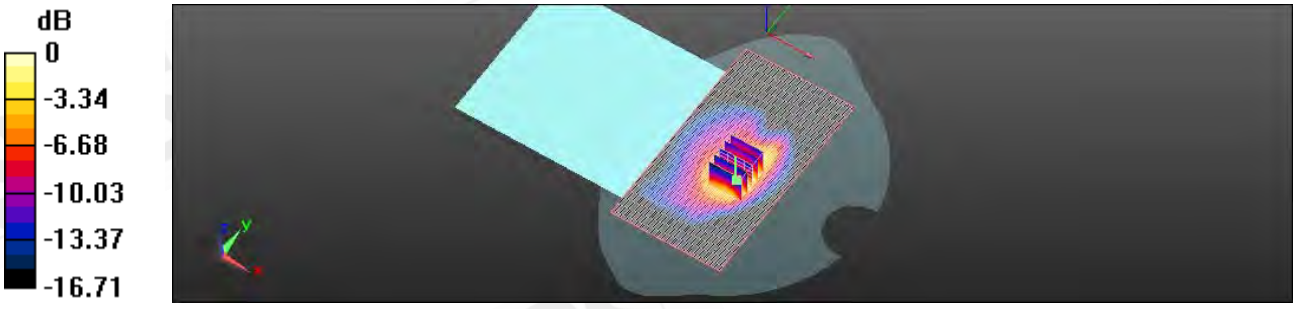
Communication System: WCDMA; Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1753 MHz; σ = 1.5 mho/m; ε_r = 53.369; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.389 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.768 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.131 W/kg

SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.671 mW/g
Maximum value of SAR (measured) = 1.294 mW/g



0 dB = 1.290mW/g

Date: 8/28/2011

Configuration 5_WCDMA B4_CH1412

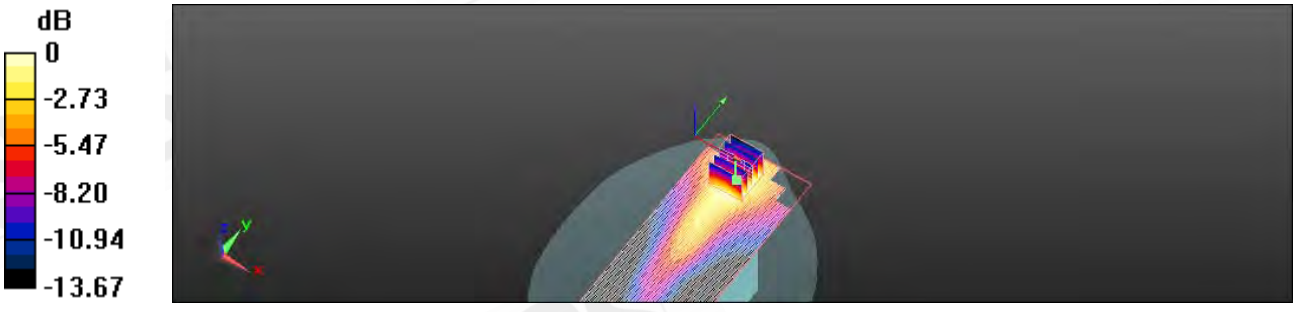
Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1732.4 MHz; σ = 1.495 mho/m; ε_r = 53.363; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.226 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.515 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.315 W/kg

SAR(1 g) = 0.204 mW/g; SAR(10 g) = 0.127 mW/g
Maximum value of SAR (measured) = 0.220 mW/g



0 dB = 0.220mW/g

Date: 8/28/2011

Configuration 6_WCDMA B4_CH1412

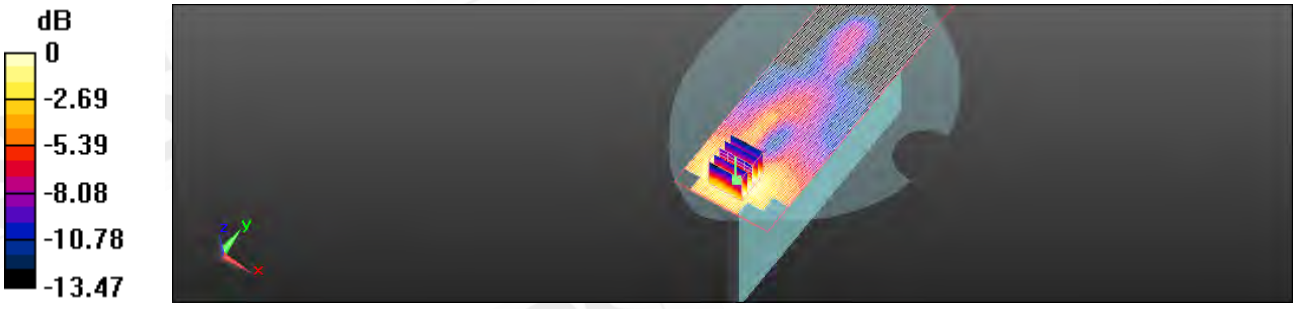
Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1732.4 MHz; σ = 1.495 mho/m; ε_r = 53.363; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.082 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.691 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.114 W/kg

SAR(1 g) = 0.075 mW/g; SAR(10 g) = 0.048 mW/g
Maximum value of SAR (measured) = 0.081 mW/g



0 dB = 0.080mW/g

Date: 8/25/2011

Configuration 1_WCDMA B5_CH4132

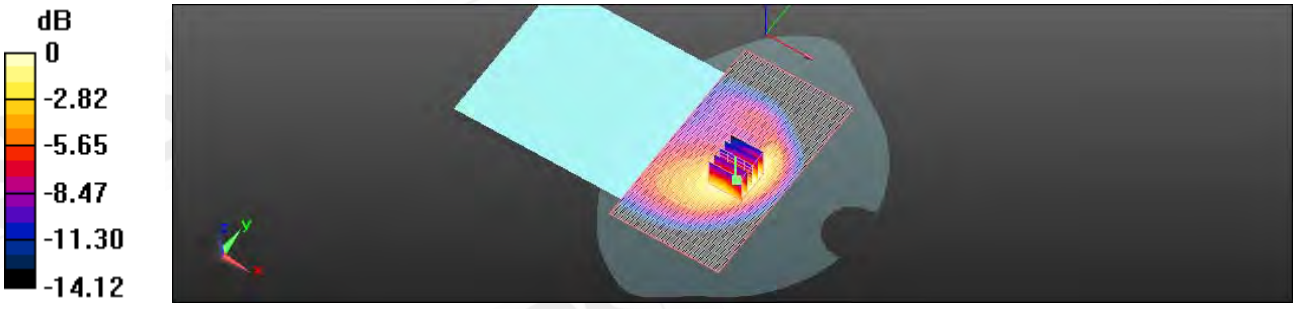
Communication System: WCDMA; Frequency: 826.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 826.4 MHz; σ = 0.999 mho/m; ε_r = 53.286; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.194 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.512 V/m; Power Drift = -0.00044 dB
Peak SAR (extrapolated) = 1.751 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.692 mW/g
Maximum value of SAR (measured) = 1.204 mW/g



0 dB = 1.200mW/g

Date: 8/25/2011

Configuration 1_WCDMA B5_CH4183

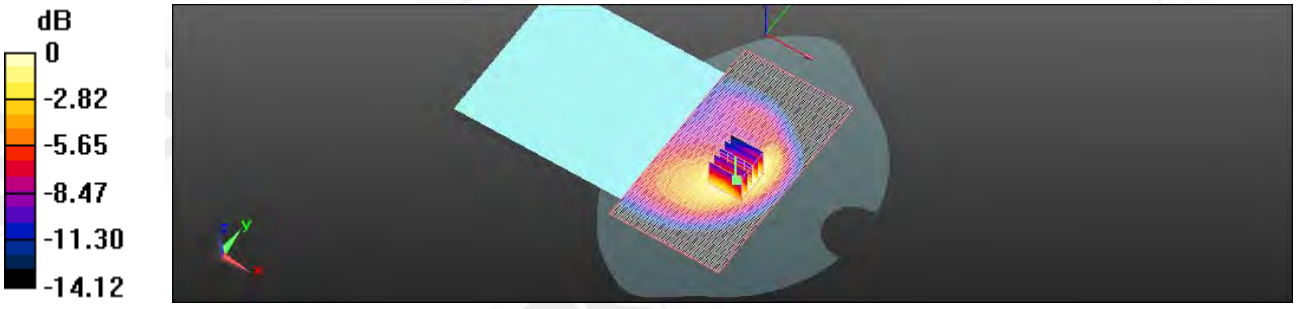
Communication System: WCDMA; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.212 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.569 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.778 W/kg

SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.703 mW/g
Maximum value of SAR (measured) = 1.222 mW/g



0 dB = 1.220mW/g

Date: 8/25/2011

Configuration 1_WCDMA B5_CH4233

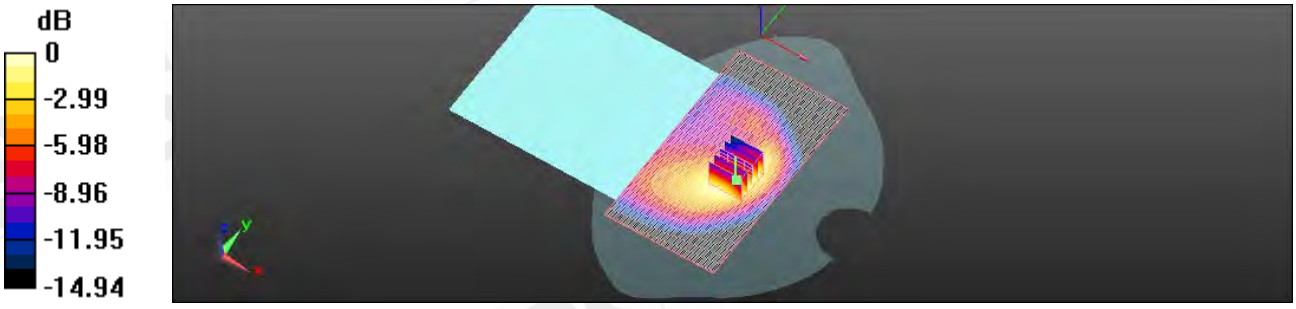
Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 1.021 mho/m; ε_r = 53.064; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.343 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 35.588 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.954 W/kg

SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.764 mW/g
Maximum value of SAR (measured) = 1.343 mW/g



0 dB = 1.340mW/g

Date: 8/25/2011

Configuration 2_WCDMA B5_CH4132_repeated without Folio

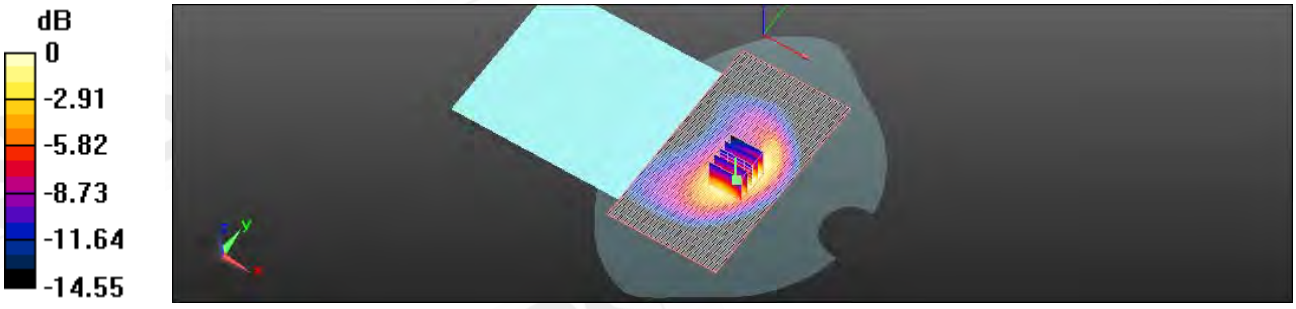
Communication System: WCDMA; Frequency: 826.4 MHz; Duty Cycle: 1:1
Medium parameters used: f = 826.4 MHz; σ = 0.999 mho/m; ε_r = 53.286; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.982 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.220 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.557 W/kg

SAR(1 g) = 0.915 mW/g; SAR(10 g) = 0.539 mW/g
Maximum value of SAR (measured) = 1.008 mW/g



0 dB = 1.010mW/g

Date: 8/25/2011

Configuration 2_WCDMA B5_CH4183_repeated without Folio

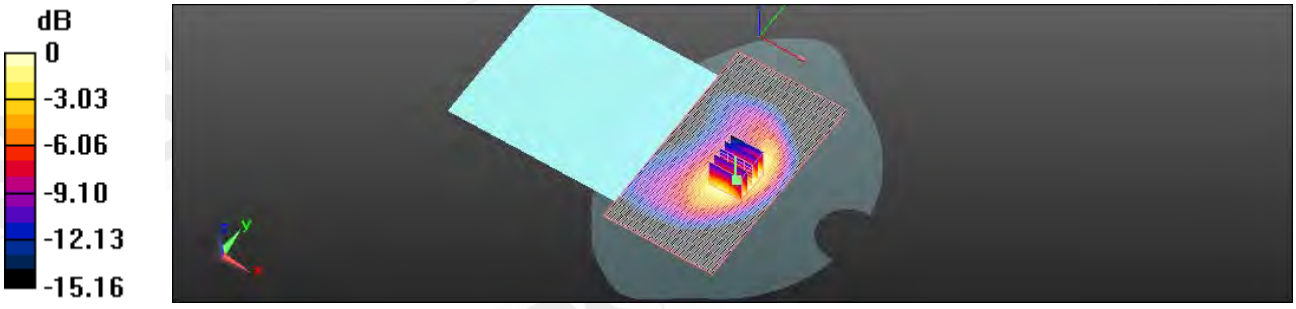
Communication System: WCDMA; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.061 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.526 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.715 W/kg

SAR(1 g) = 1 mW/g; SAR(10 g) = 0.590 mW/g
Maximum value of SAR (measured) = 1.096 mW/g



0 dB = 1.100mW/g

Date: 8/25/2011

Configuration 2_WCDMA B5_CH4233_repeated without Folio

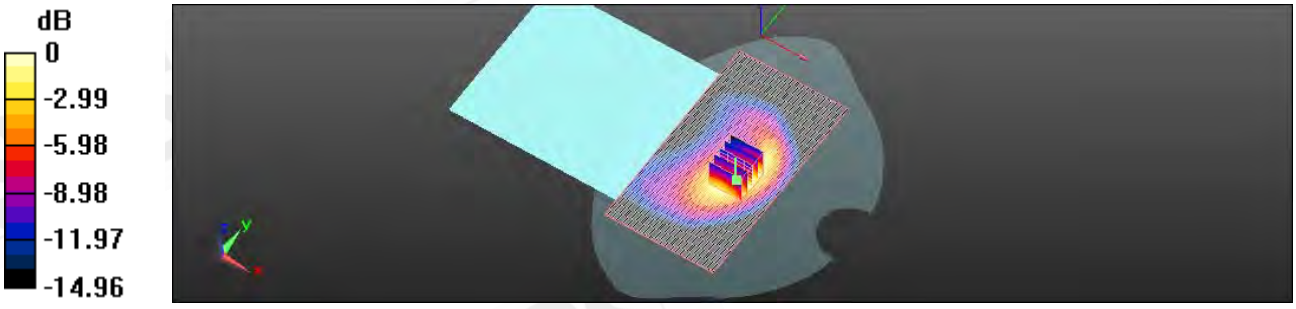
Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 1.021 mho/m; ε_r = 53.064; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.204 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.441 V/m; Power Drift = -0.0062 dB
Peak SAR (extrapolated) = 1.937 W/kg

SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.663 mW/g
Maximum value of SAR (measured) = 1.247 mW/g



0 dB = 1.250mW/g

Date: 8/25/2011

Configuration 5_WCDMA B5_CH4183

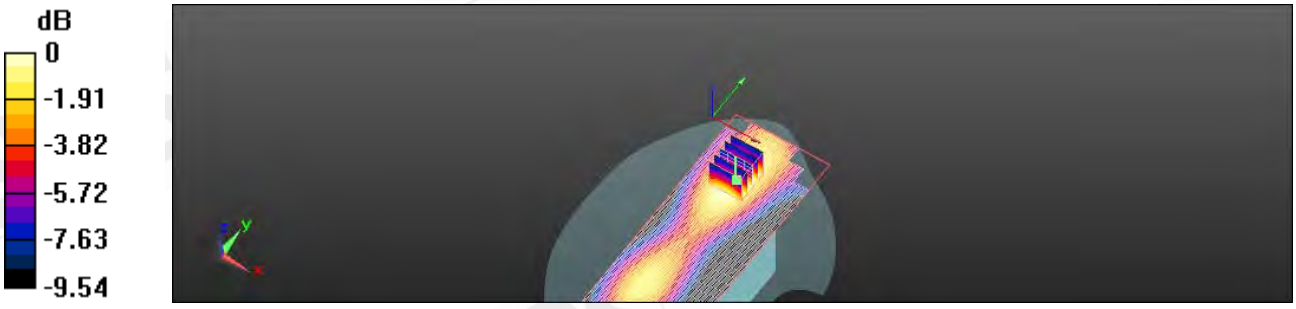
Communication System: WCDMA; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.130 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.962 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.171 W/kg

SAR(1 g) = 0.123 mW/g; SAR(10 g) = 0.085 mW/g
Maximum value of SAR (measured) = 0.131 mW/g



0 dB = 0.130mW/g

Date: 8/25/2011

Configuration 6_WCDMA B5_CH4183

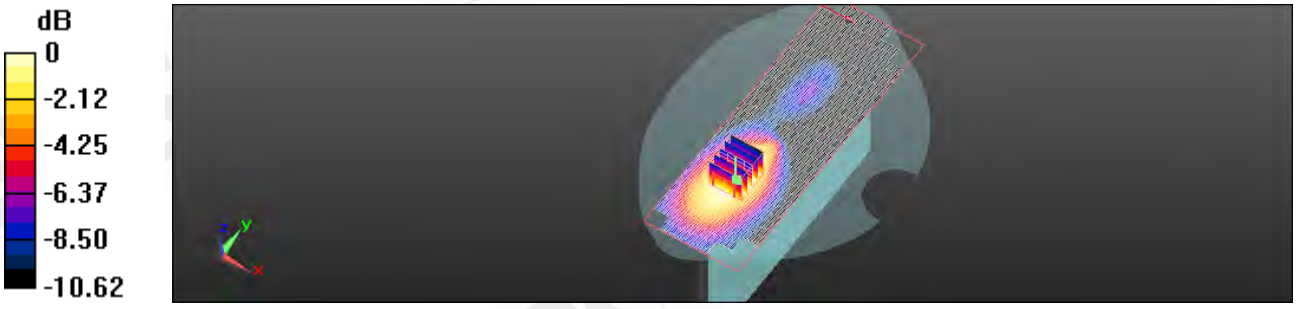
Communication System: WCDMA; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.158 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 3.119 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.211 W/kg

SAR(1 g) = 0.146 mW/g; SAR(10 g) = 0.102 mW/g
Maximum value of SAR (measured) = 0.157 mW/g



0 dB = 0.160mW/g

Date: 8/25/2011

Configuration 1_1xEVDO 850_CH1013

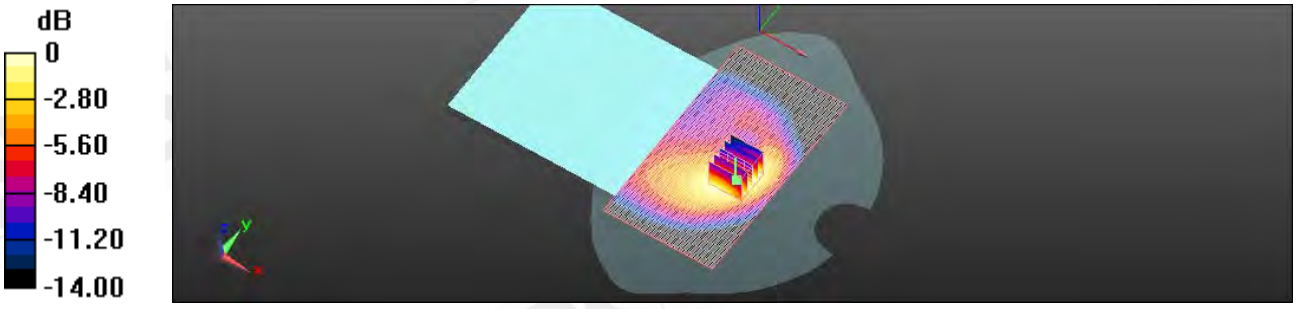
Communication System: 1xEVDO; Frequency: 824.7 MHz; Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; σ = 0.997 mho/m; ε_r = 53.304; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.948 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.789 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.352 W/kg

SAR(1 g) = 0.856 mW/g; SAR(10 g) = 0.532 mW/g
Maximum value of SAR (measured) = 0.904 mW/g



0 dB = 0.900mW/g

Date: 8/25/2011

Configuration 1_1xEVDO 850_CH384

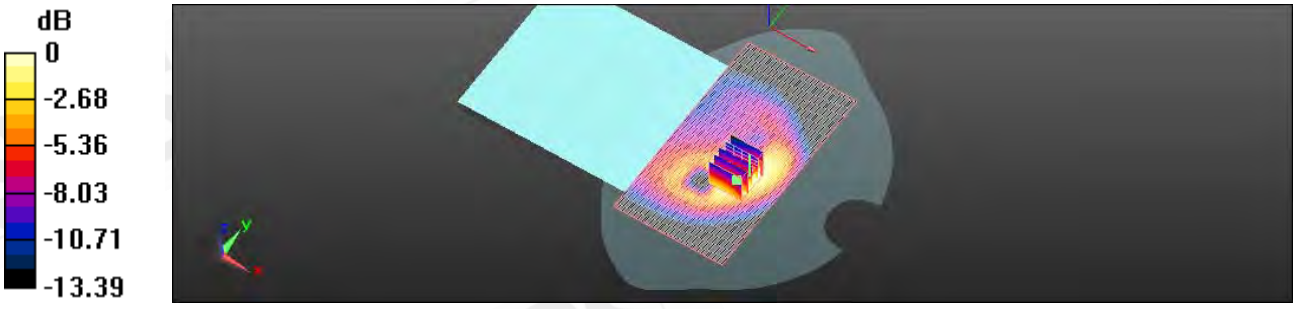
Communication System: 1xEVDO; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.071 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.333 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 1.415 W/kg

SAR(1 g) = 0.907 mW/g; SAR(10 g) = 0.562 mW/g
Maximum value of SAR (measured) = 0.984 mW/g



0 dB = 0.980mW/g

Date: 8/25/2011

Configuration 1_1xEVDO 850_CH777

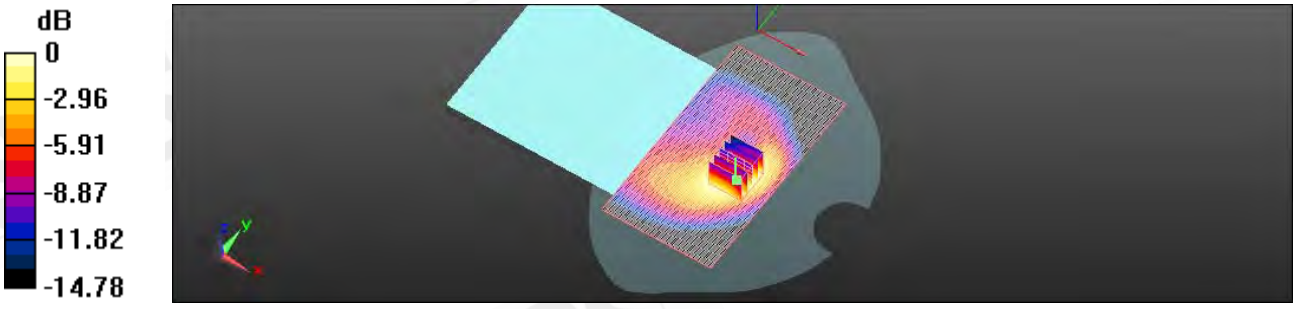
Communication System: 1xEVDO; Frequency: 848.31 MHz; Duty Cycle: 1:1
Medium parameters used: f = 848.31 MHz; σ = 1.018 mho/m; ε_r = 53.051; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.104 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.473 V/m; Power Drift = 0.0077 dB
Peak SAR (extrapolated) = 1.761 W/kg

SAR(1 g) = 1 mW/g; SAR(10 g) = 0.623 mW/g
Maximum value of SAR (measured) = 1.080 mW/g



0 dB = 1.080mW/g

Date: 8/25/2011

Configuration 2_1xEVDO 850_CH1013_repeated without Folio

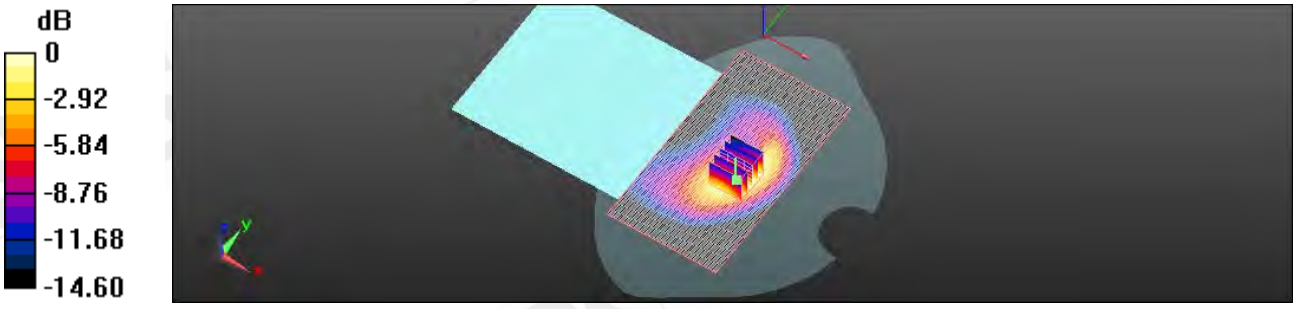
Communication System: 1xEVDO; Frequency: 824.7 MHz; Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; σ = 0.997 mho/m; ε_r = 53.304; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.874 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.010 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.386 W/kg

SAR(1 g) = 0.823 mW/g; SAR(10 g) = 0.477 mW/g
Maximum value of SAR (measured) = 0.898 mW/g



0 dB = 0.900mW/g

Date: 8/25/2011

Configuration 2_1xEVDO 850_CH384_repeated without Folio

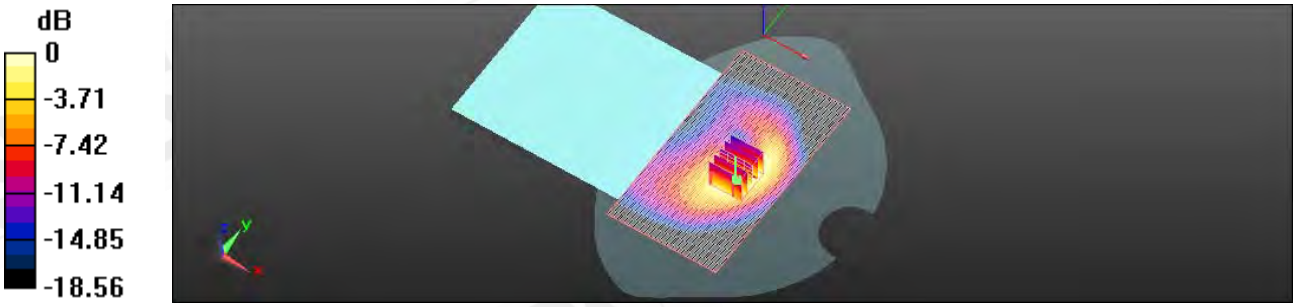
Communication System: 1xEVDO; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.935 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.245 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.624 W/kg

SAR(1 g) = 0.906 mW/g; SAR(10 g) = 0.495 mW/g
Maximum value of SAR (measured) = 1.002 mW/g



0 dB = 1.000mW/g

Date: 8/25/2011

Configuration 2_1xEVDO 850_CH777_repeated without Folio

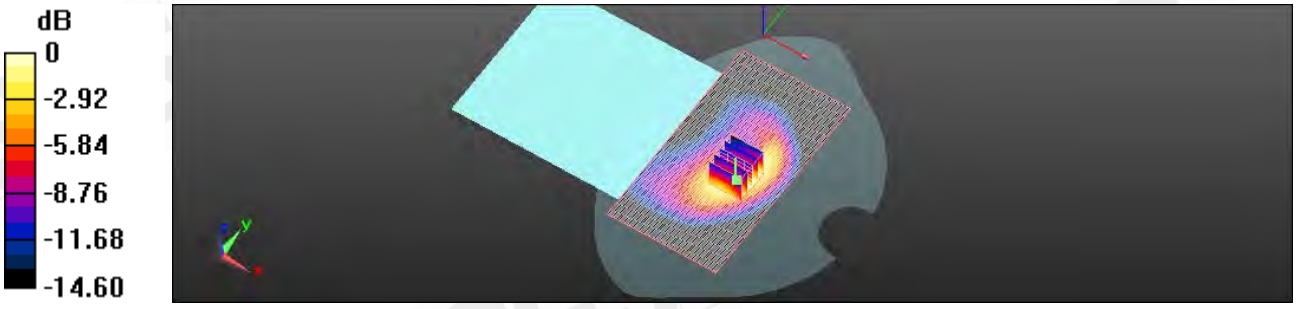
Communication System: 1xEVDO; Frequency: 848.31 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; σ = 1.018 mho/m; ε_r = 53.051; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.899 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.128 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.425 W/kg

SAR(1 g) = 0.846 mW/g; SAR(10 g) = 0.490 mW/g
Maximum value of SAR (measured) = 0.924 mW/g



0 dB = 0.920mW/g

Date: 8/25/2011

Configuration 5_1xEVDO 850_CH384

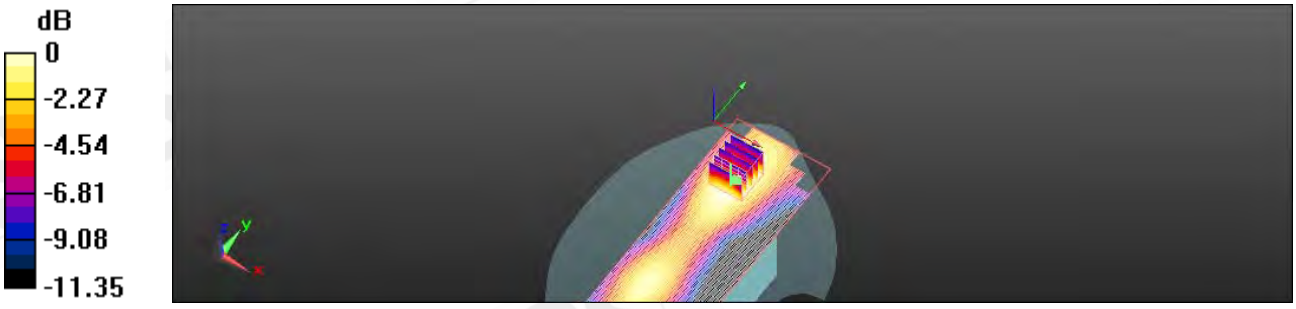
Communication System: 1xEVDO; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.115 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.434 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.143 W/kg

SAR(1 g) = 0.106 mW/g; SAR(10 g) = 0.072 mW/g
Maximum value of SAR (measured) = 0.114 mW/g



0 dB = 0.110mW/g

Date: 8/25/2011

Configuration 6_1xEVDO 850_CH384

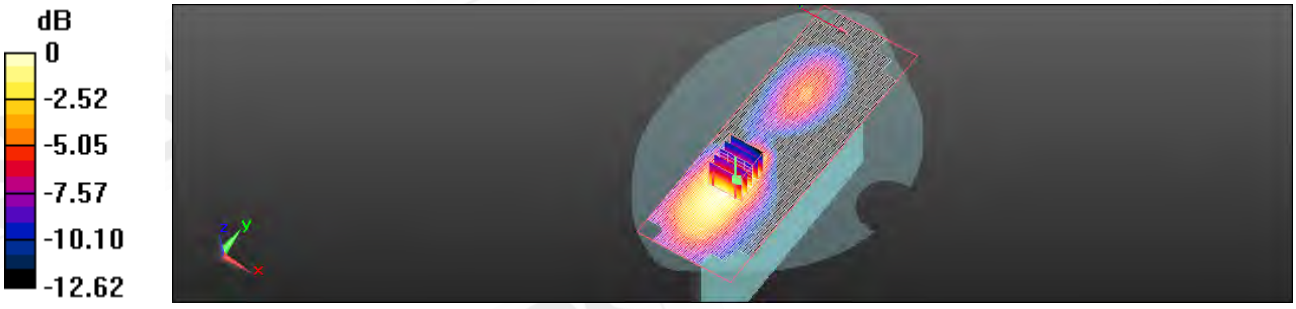
Communication System: 1xEVDO; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 1.01 mho/m; ε_r = 53.169; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.121 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.100 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.204 W/kg

SAR(1 g) = 0.117 mW/g; SAR(10 g) = 0.076 mW/g
Maximum value of SAR (measured) = 0.127 mW/g



0 dB = 0.130mW/g

Date: 8/29/2011

Configuration 1_1xEVDO 1900_CH25

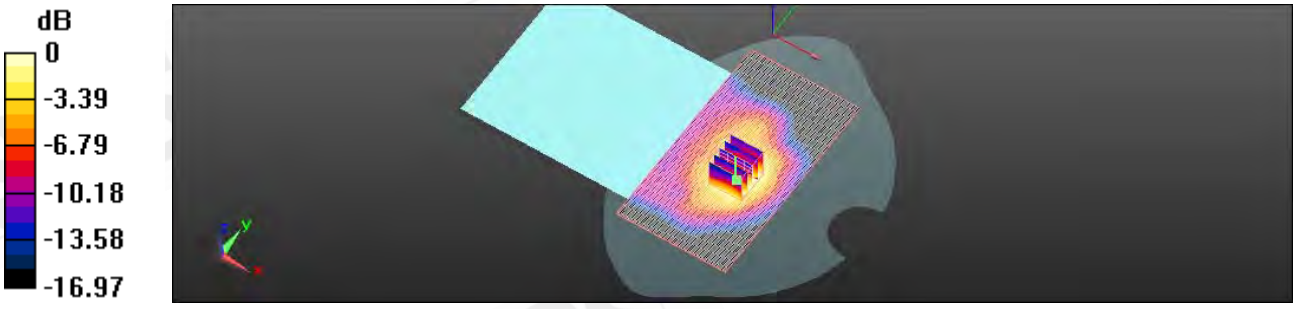
Communication System: 1xEVDO; Frequency: 1854.25 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1854.25 MHz; σ = 1.472 mho/m; ε_r = 51.254; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.274 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.387 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 2.563 W/kg

SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.662 mW/g
Maximum value of SAR (measured) = 1.297 mW/g



0 dB = 1.300mW/g

Date: 8/29/2011

Configuration 1_1xEVDO 1900_CH600

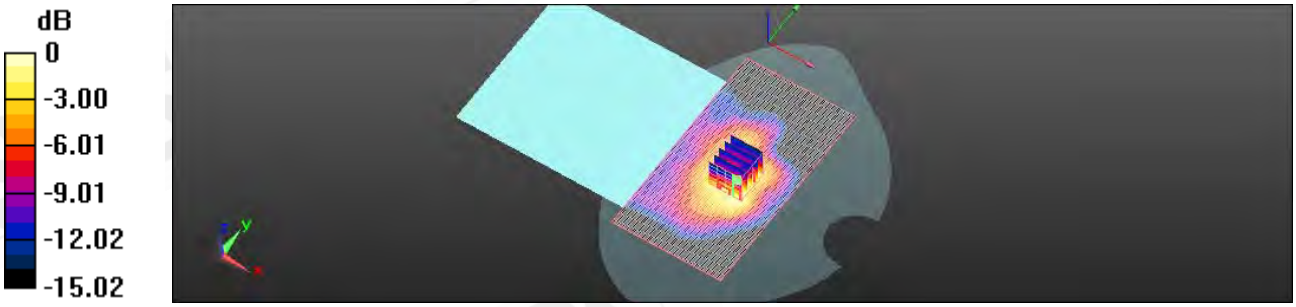
Communication System: 1xEVDO; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.055 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.901 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.564 W/kg

SAR(1 g) = 0.956 mW/g; SAR(10 g) = 0.574 mW/g
Maximum value of SAR (measured) = 1.127 mW/g



0 dB = 1.130mW/g

Date: 8/29/2011

Configuration 1_1xEVDO 1900_CH1175

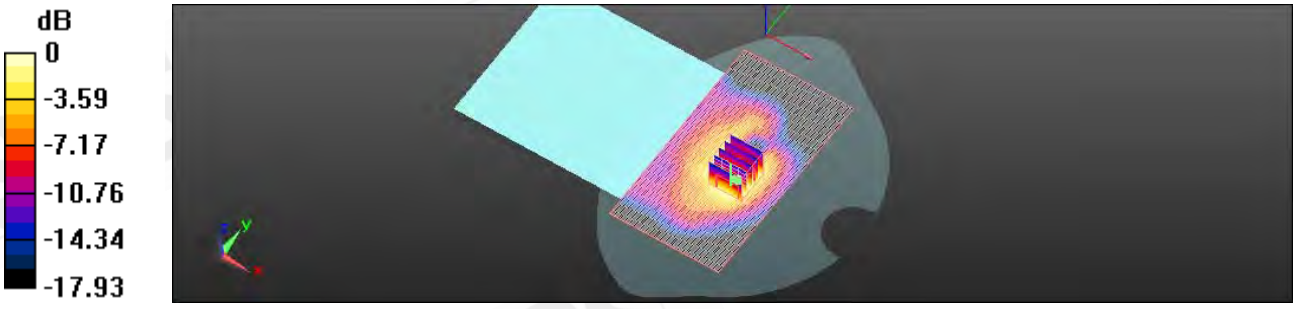
Communication System: 1xEVDO; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1909 MHz; σ = 1.537 mho/m; ε_r = 51.087; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.236 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.637 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.953 W/kg

SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.577 mW/g
Maximum value of SAR (measured) = 1.261 mW/g



0 dB = 1.260mW/g

Date: 8/29/2011

Configuration 2_1xEVDO 1900_CH25_repeated without Folio

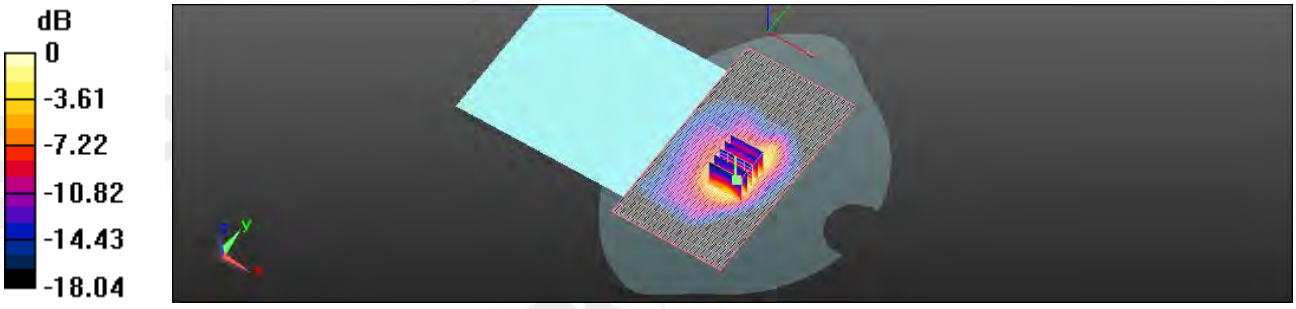
Communication System: 1xEVDO; Frequency: 1854.25 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1854.25 MHz; σ = 1.472 mho/m; ε_r = 51.254; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.634 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.728 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 2.750 W/kg

SAR(1 g) = 1.42 mW/g; SAR(10 g) = 0.740 mW/g
Maximum value of SAR (measured) = 1.542 mW/g



0 dB = 1.540mW/g

Date: 8/29/2011

Configuration 2_1xEVDO 1900_CH600_repeated without Folio

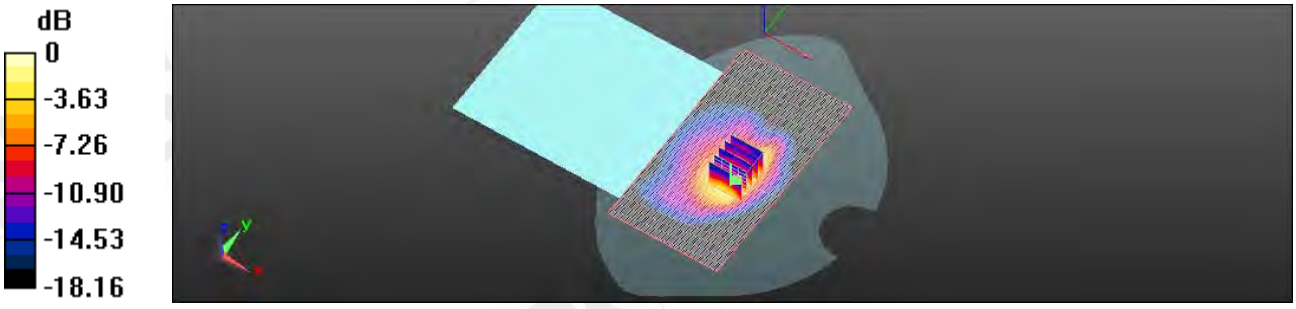
Communication System: 1xEVDO; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.051 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.591 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 2.336 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.574 mW/g
Maximum value of SAR (measured) = 1.223 mW/g



0 dB = 1.220mW/g

Date: 8/29/2011

Configuration 2_1xEVDO 1900_CH1175_repeated without Folio

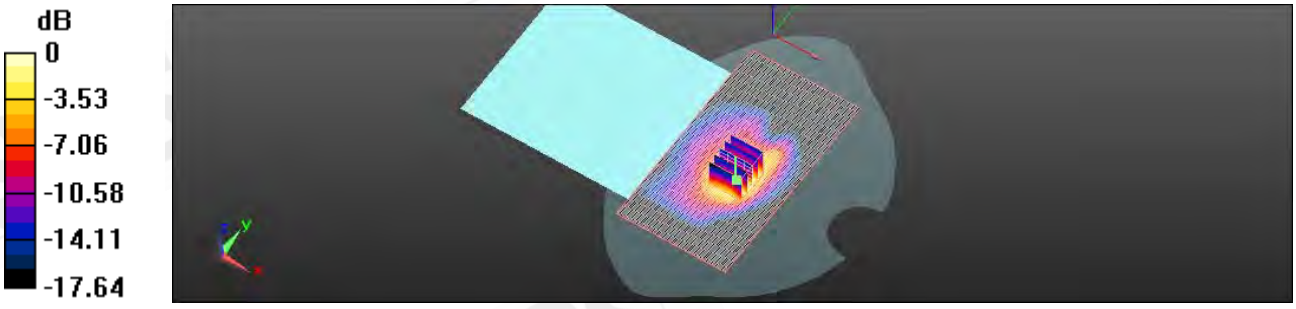
Communication System: 1xEVDO; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1909 MHz; σ = 1.537 mho/m; ε_r = 51.087; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (71x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.516 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.285 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 2.610 W/kg

SAR(1 g) = 1.36 mW/g; SAR(10 g) = 0.710 mW/g
Maximum value of SAR (measured) = 1.490 mW/g



0 dB = 1.490mW/g

Date: 8/29/2011

Configuration 5_1xEVDO 1900_CH600

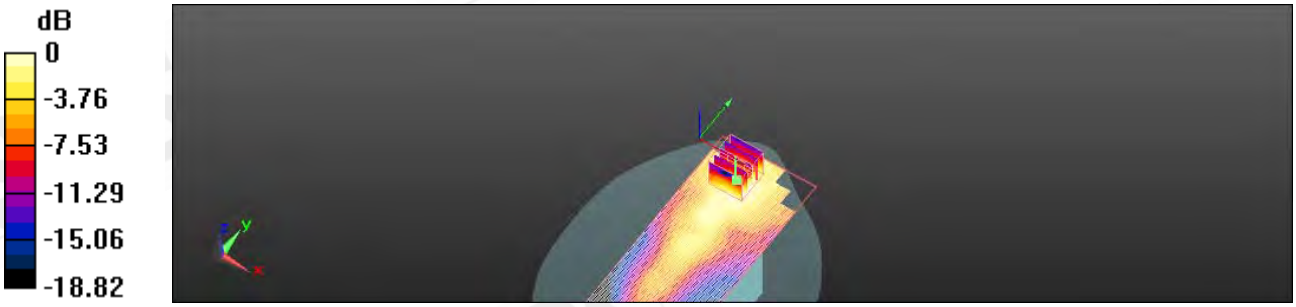
Communication System: 1xEVDO; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.180 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.729 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.293 W/kg

SAR(1 g) = 0.169 mW/g; SAR(10 g) = 0.104 mW/g
Maximum value of SAR (measured) = 0.179 mW/g



0 dB = 0.180mW/g

Date: 8/29/2011

Configuration 6_1xEVDO 1900_CH600

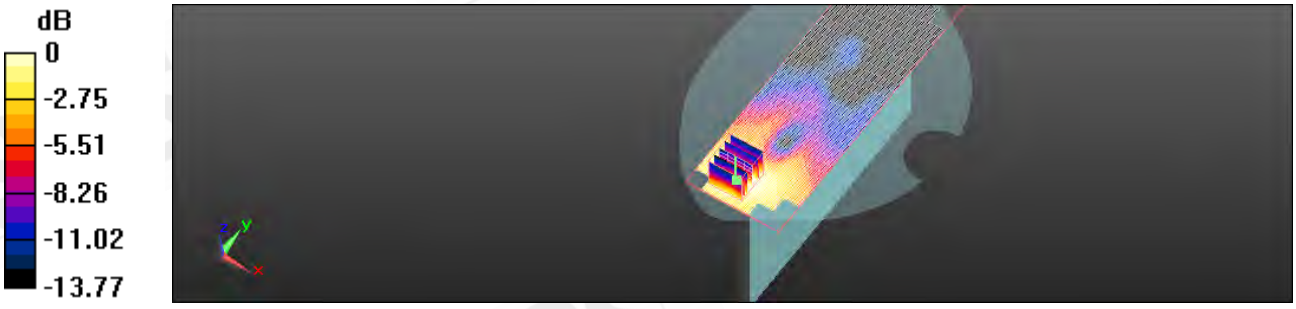
Communication System: 1xEVDO; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.501 mho/m; ε_r = 51.189; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/Body/Area Scan (61x201x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.102 mW/g

Configuration/Body/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.996 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.174 W/kg

SAR(1 g) = 0.093 mW/g; SAR(10 g) = 0.059 mW/g
Maximum value of SAR (measured) = 0.100 mW/g



0 dB = 0.100mW/g

5. SAR System Performance Verification

Date: 8/25/2011

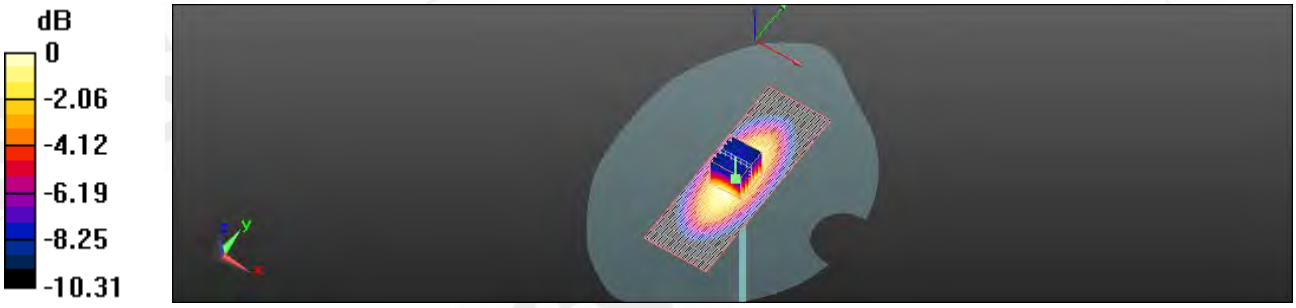
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.008 mho/m; ε_r = 53.195; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/d=15mm, Pin=250mW, dist=4mm: Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.677 mW/g

Configuration/d=15mm, Pin=250mW, dist=4mm: Measurement grid:
dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.102 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.685 W/kg

SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.62 mW/g
Maximum value of SAR (measured) = 2.684 mW/g



0 dB = 2.680mW/g

Date: 8/28/2011

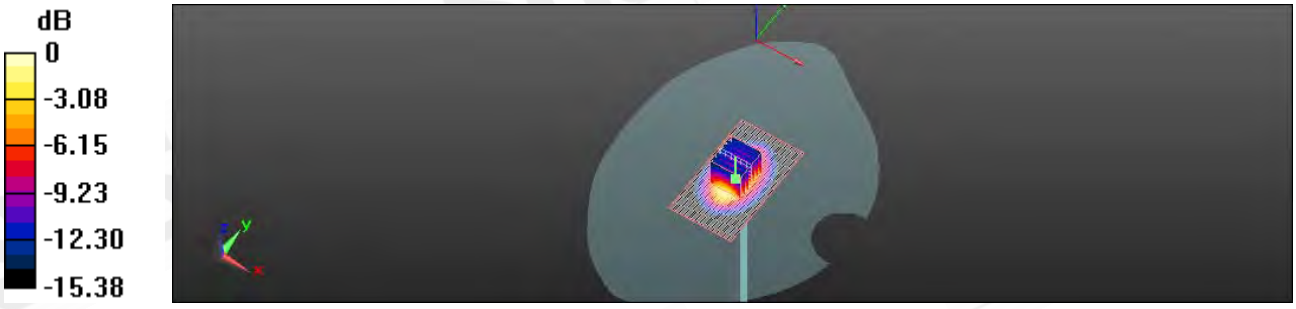
Communication System: CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.5 mho/m; ε_r = 53.377; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.84, 7.84, 7.84); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/d=10mm, Pin=250mW, dist=4mm: Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 10.435 mW/g

Configuration/d=10mm, Pin=250mW, dist=4mm: Measurement grid:
dx=5mm, dy=5mm, dz=5mm
Reference Value = 82.791 V/m; Power Drift = 0.0025 dB
Peak SAR (extrapolated) = 15.338 W/kg

SAR(1 g) = 9.43 mW/g; SAR(10 g) = 5.47 mW/g
Maximum value of SAR (measured) = 9.937 mW/g



0 dB = 9.940mW/g

Date: 8/29/2011

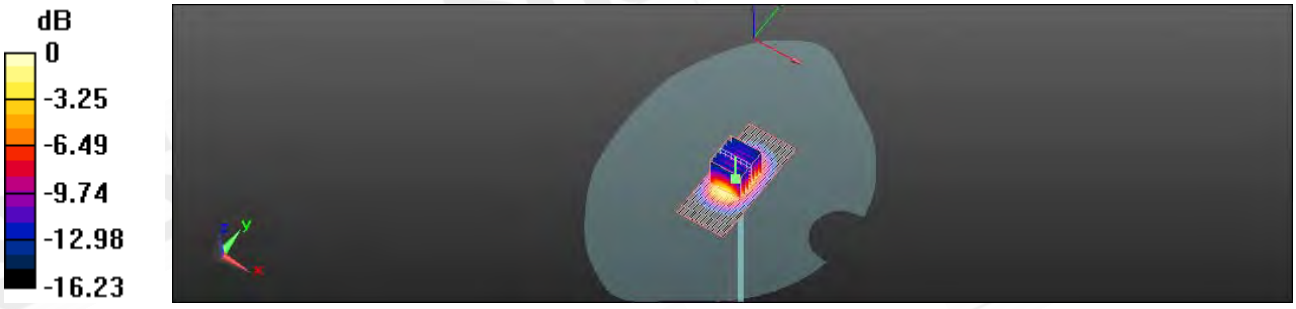
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.525 mho/m; ε_r = 51.12; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5 Configuration:

- Probe: EX3DV4 - SN3770; ConvF(7.51, 7.51, 7.51); Calibrated: 4/19/2011
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 5/18/2011
- Phantom: SAM1; Type: SAM
- Measurement SW: DASY52, Version 52.6 (2); SEMCAD X Version 14.4.5 (3634)

Configuration/d=10mm, Pin=250mW, dist=4mm: Measurement grid:
dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12.128 mW/g

Configuration/d=10mm, Pin=250mW, dist=4mm: Measurement grid:
dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.866 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 17.003 W/kg

SAR(1 g) = 9.86 mW/g; SAR(10 g) = 5.25 mW/g
Maximum value of SAR (measured) = 11.216 mW/g



0 dB = 11.220mW/g

6. DAE & Probe Calibration certificate

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

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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**

Client **SGS-TW (Auden)** Certificate No: **DAE4-856_May11**

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BJ - SN: 856
Calibration procedure(s)	QA CAL-06.v23 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	May 18, 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	07-Jun-10 (in house check)	In house check: Jun-11

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

Issued: May 18, 2011

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

Certificate No: DAE4-856_May11 Page 1 of 5

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

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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-TW (Auden)**

Certificate No: **EX3-3770_Apr11**

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3770

Calibration procedure(s): QA CAL-01.v7, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v3
Calibration procedure for dosimetric E-field probes

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 E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41495277	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	23-Apr-10 (No. DAE4-654_Apr10)	Apr-11
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:	Fin Bomholt	R&D Director	

Issued: April 19, 2011

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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* are numerical linearization parameters in dB assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media.
- *VR:* VR is the validity range of the calibration related to the average diode voltage or DAE voltage in mV.
- *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:3770

Manufactured: July 6, 2010
Calibrated: April 19, 2011

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.32	0.62	0.40	± 10.1 %
DCP (mV)[B]	106.6	98.3	102.8	

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	120.8	±2.7 %
			Y	0.00	0.00	1.00	134.3	
			Z	0.00	0.00	1.00	133.5	

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:3770

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	9.58	9.58	9.58	0.80	0.70	± 12.0 %
835	41.5	0.90	9.25	9.25	9.25	0.80	0.67	± 12.0 %
900	41.5	0.97	9.06	9.06	9.06	0.76	0.71	± 12.0 %
1750	40.1	1.37	7.97	7.97	7.97	0.80	0.61	± 12.0 %
1900	40.0	1.40	7.78	7.78	7.78	0.71	0.62	± 12.0 %
2000	40.0	1.40	7.79	7.79	7.79	0.75	0.58	± 12.0 %
2450	39.2	1.80	6.99	6.99	6.99	0.80	0.56	± 12.0 %
2600	39.0	1.96	6.95	6.95	6.95	0.66	0.62	± 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.

DASY/EASY - Parameters of Probe: EX3DV4- SN:3770

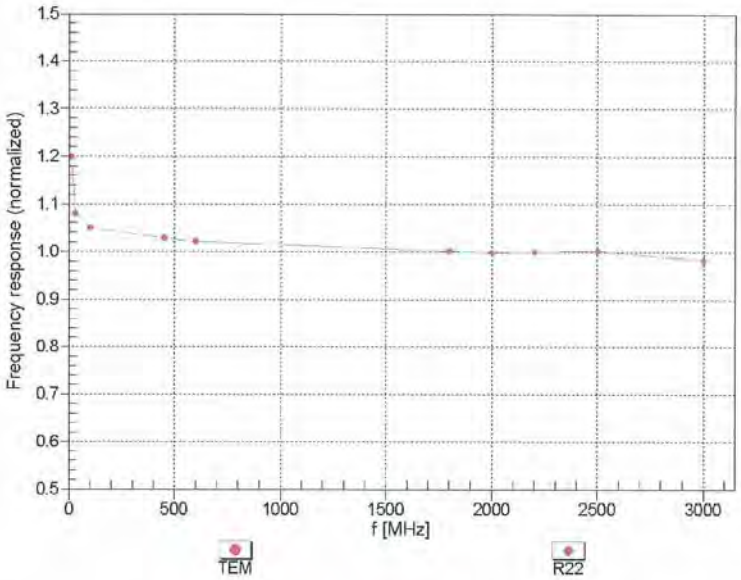
Calibration Parameter Determined in Body Tissue Simulating Media

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	9.42	9.42	9.42	0.73	0.72	± 12.0 %
835	55.2	0.97	9.30	9.30	9.30	0.72	0.72	± 12.0 %
900	55.0	1.05	9.12	9.12	9.12	0.73	0.75	± 12.0 %
1750	53.4	1.49	7.84	7.84	7.84	0.80	0.68	± 12.0 %
1900	53.3	1.52	7.51	7.51	7.51	0.80	0.62	± 12.0 %
2000	53.3	1.52	7.44	7.44	7.44	0.80	0.66	± 12.0 %
2450	52.7	1.95	6.96	6.96	6.96	0.80	0.50	± 12.0 %
2600	52.5	2.16	6.78	6.78	6.78	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.42	4.42	4.42	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.12	4.12	4.12	0.52	1.90	± 13.1 %
5600	48.5	5.77	3.54	3.54	3.54	0.60	1.90	± 13.1 %
5800	48.2	6.00	3.80	3.80	3.80	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:3770 April 19, 2011

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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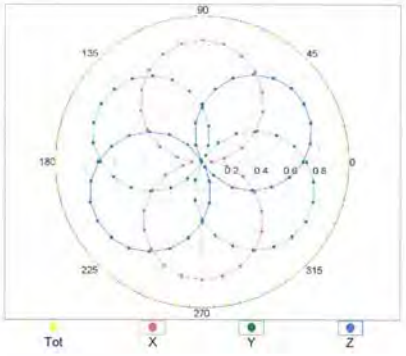
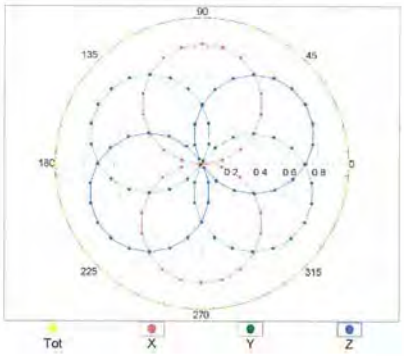
EX3DV4– SN:3770 April 19, 2011

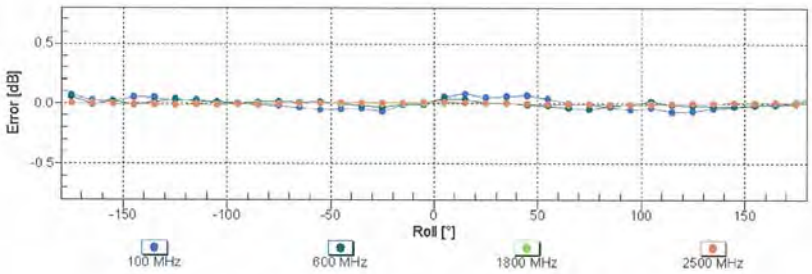
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



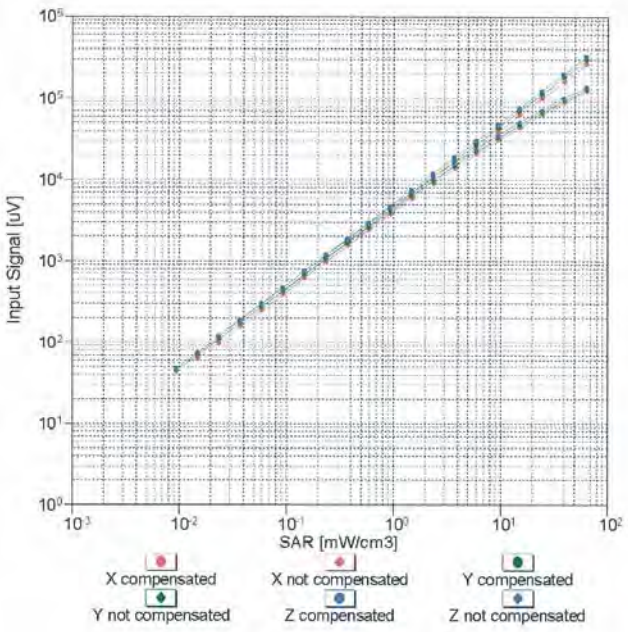
f=1800 MHz,R22

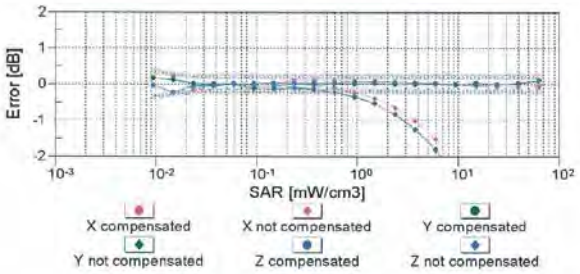




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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



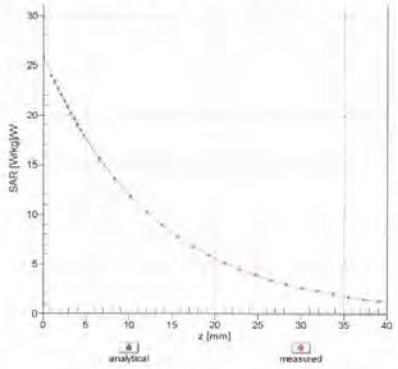


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

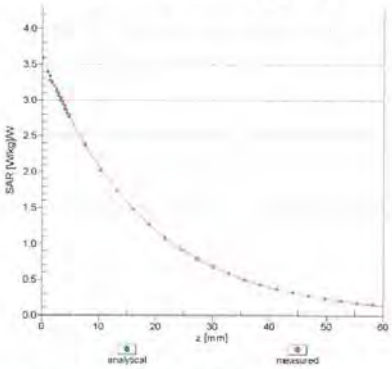
EX3DV4– SN:3770 April 19, 2011

Conversion Factor Assessment

f = 1750 MHz,WGLS R22 (H_convF)

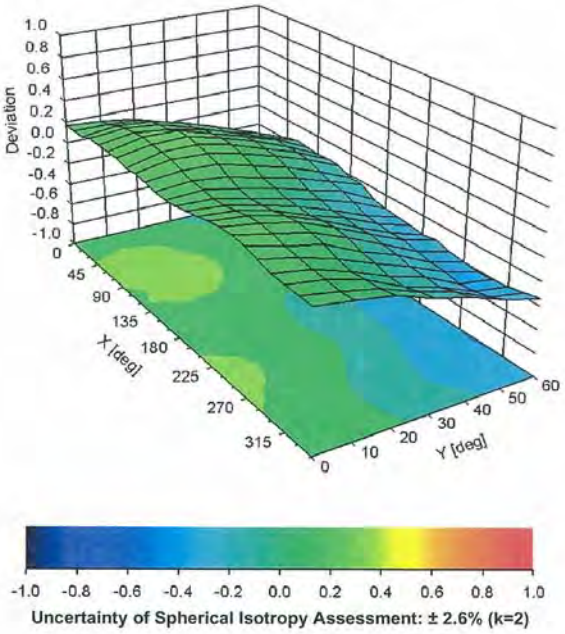


f = 900 MHz,WGLS R9 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

Certificate No: EX3-3770_Apr11 Page 10 of 11

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

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 Analysis

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 (Frequency below 2GHz)	6.0%	N	1	1	1	6.0%	6.0%	∞
Isotropy , Axial	4.7%	R	√3	1	1	2.7%	2.7%	∞
Isotropy, Hemispherical	9.6%	R	√3	1	1	5.5%	5.5%	∞
Boundary Effect	1.0%	R	√3	1	1	0.6%	0.6%	∞
Linearity	4.7%	R	√3	1	1	2.7%	2.7%	∞
Detection Limits	1.0%	R	√3	1	1	0.6%	0.6%	∞
Readout Electronics	0.3%	N	1	1	1	0.3%	0.3%	∞
Response time	0.8%	R	√3	1	1	0.5%	0.5%	∞
Integration Time	2.6%	R	√3	1	1	1.5%	1.5%	∞
Measurement drift (class A evaluation)	1.8%	R	√3	1	1	1.0%	1.0%	∞
RF ambient condition - noise	3.0%	R	√3	1	1	1.7%	1.7%	∞
RF ambient conditions -reflections	3.0%	R	√3	1	1	1.7%	1.7%	∞
Probe positioner Mechanical restrictions	0.4%	R	√3	1	1	0.2%	0.2%	∞
Probe Positioning with respect to phantom	2.9%	R	√3	1	1	1.7%	1.7%	∞
Post-processing	1.0%	R	√3	1	1	0.6%	0.6%	∞
Max SAR Eval	1.0%	R	√3	1	1	0.6%	0.6%	∞
Test Sample related								
Test sample	2.9%	N	1	1	1	2.9%	2.9%	M-1
Device Holder Uncertainty	3.6%	N	1	1	1	3.6%	3.6%	M-1
Drift of output power	5.0%	R	√3	1	1	2.9%	2.9%	∞
Phantom and Setup								
Phantom Uncertainty	4.0%	R	√3	1	1	2.3%	2.3%	∞
Liquid conductivity(meas.) Max at 1900 band	4.6%	N	1	0.64	0.43	2.9%	2.0%	M
Liquid permitivity(meas.) Max at 835 band	2.2%	N	1	0.6	0.49	1.3%	1.1%	M
Combined standard uncertainty		RSS				11.9%	11.6%	
Expant uncertainty (95% confidence interval), K=2						23.7%	23.3%	

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

9. Dipole calibration results and system validation results from original equipment supplier

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

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

Accredited by the Swiss Accreditation Service (SAS)
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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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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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t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sgs.com
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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

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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

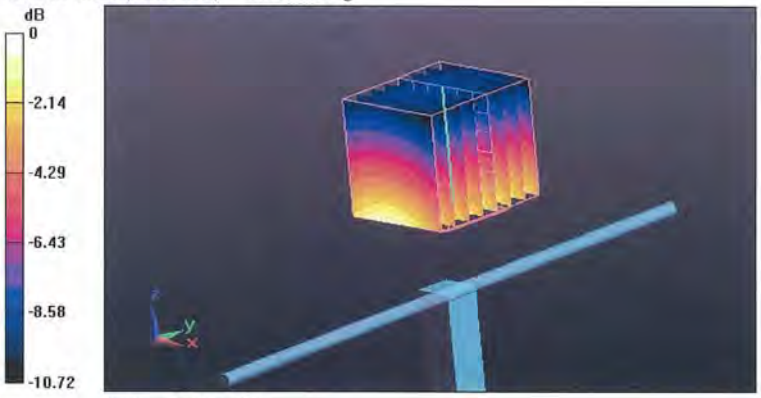
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL900
Medium parameters used: f = 835 MHz; σ = 0.88 mho/m; ε_r = 40.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

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)

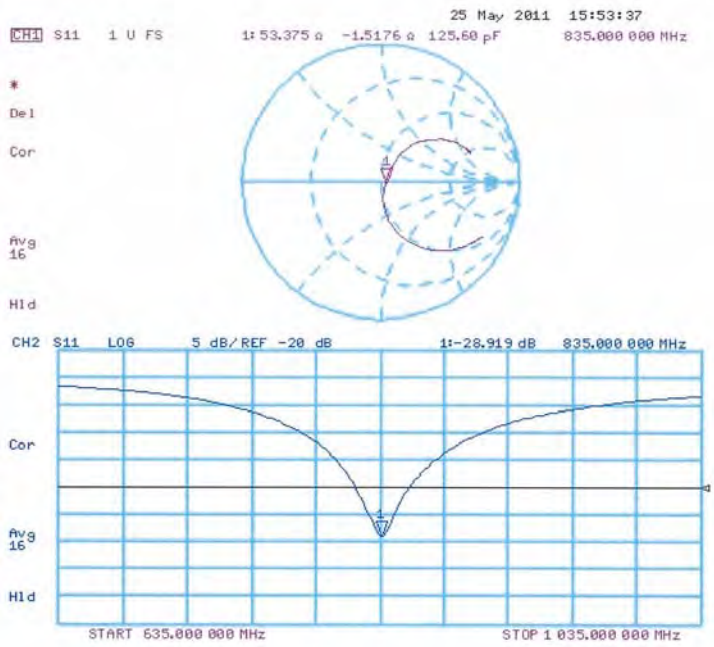
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Cube 0:

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

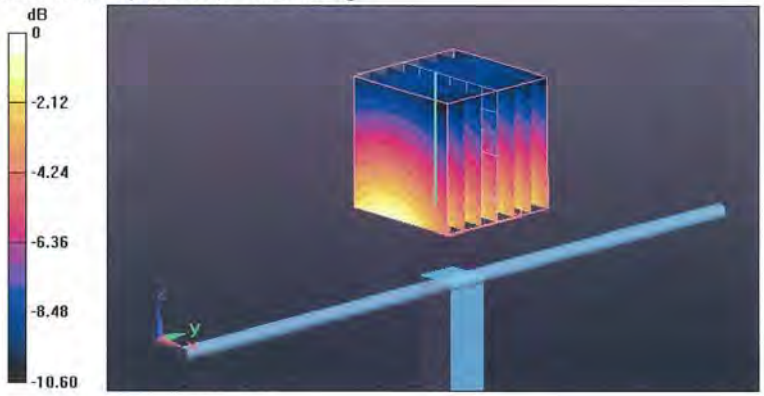
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d063

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:

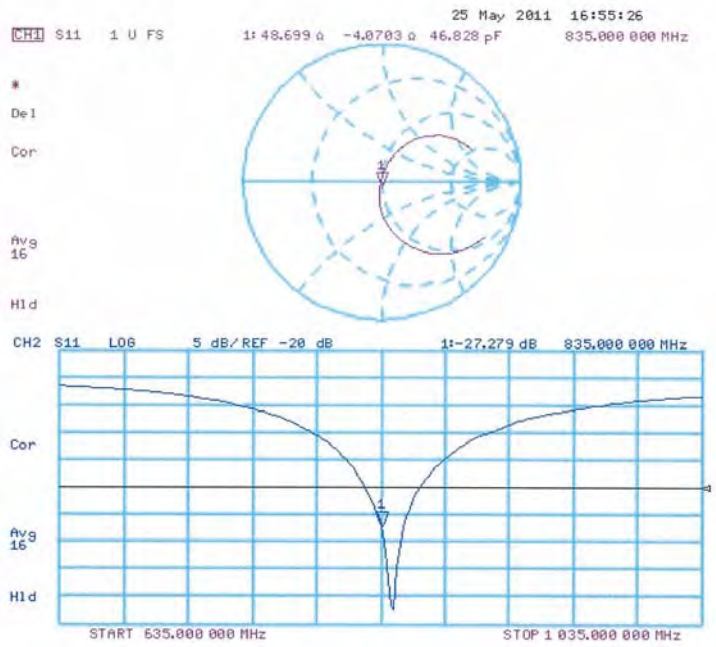
- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.6.2 Build (424)
- Postprocessing 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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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Client SGS-TW (Auden)

Certificate No: D1750V2-1008_May11

CALIBRATION CERTIFICATE

Object	D1750V2 - SN: 1008
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	May 24, 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 24, 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	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.4 ± 6 %	1.34 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	8.89 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**35.9 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.73 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**19.0 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	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.3 ± 6 %	1.44 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	9.04 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**36.7 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.82 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**19.4 mW / g ± 16.5 % (k=2)**

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.9 Ω + 0.9 jΩ
Return Loss	- 33.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.4 Ω + 1.6 jΩ
Return Loss	- 30.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.223 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	February 11, 2009

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DASY5 Validation Report for Head TSL

Date: 24.05.2011

Test Laboratory: SPEAG, Zurich, Switzerland

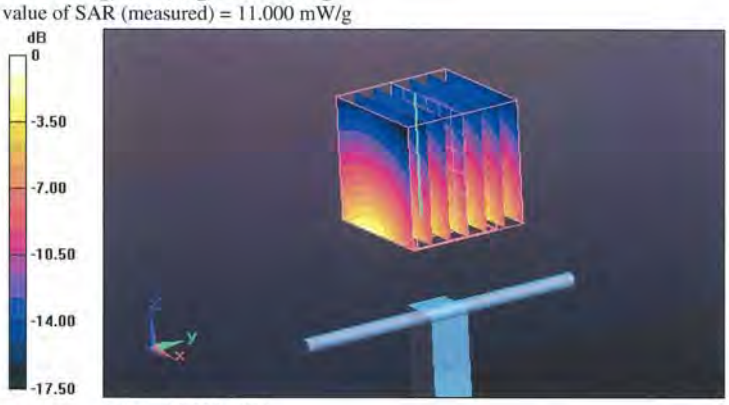
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: HSL U12 BB
Medium parameters used: f = 1750 MHz; σ = 1.34 mho/m; ε_r = 39.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.22, 5.22, 5.22); Calibrated: 29.04.2011
- 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, V14.4.4 Build (2829)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.240 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 15.901 W/kg
SAR(1 g) = 8.89 mW/g; SAR(10 g) = 4.73 mW/g
Maximum value of SAR (measured) = 11.000 mW/g



0 dB = 11.000mW/g

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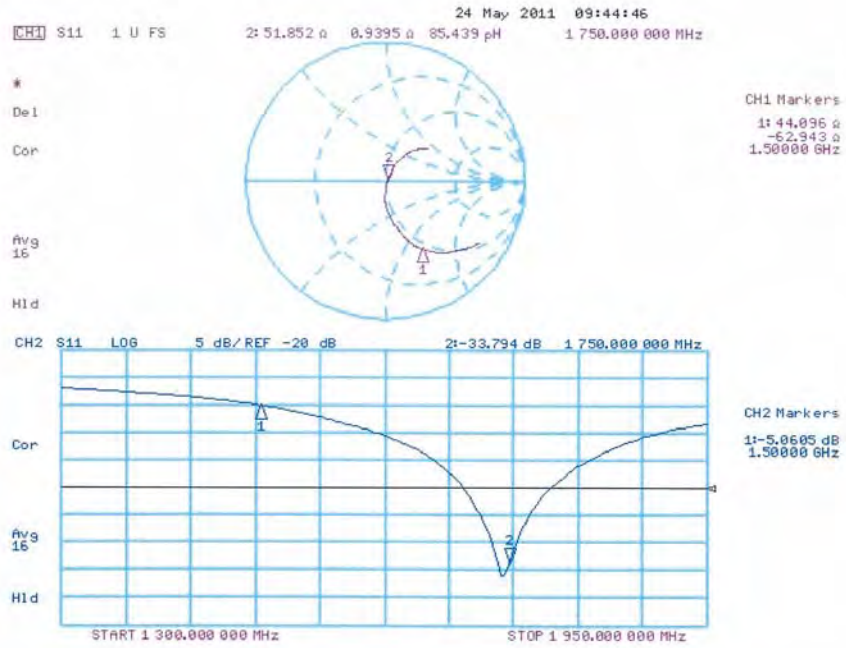
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 24.05.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1008

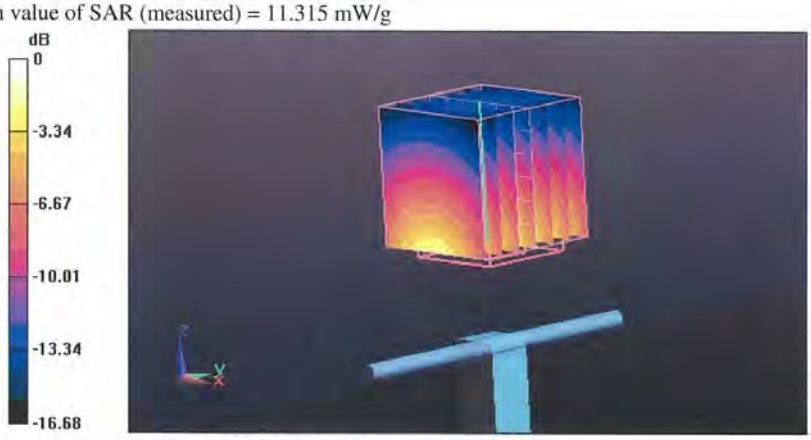
Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: MSL U12 BB
Medium parameters used: f = 1750 MHz; σ = 1.44 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.85, 4.85, 4.85); Calibrated: 29.04.2011
- 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, V14.4.4 Build (2829)

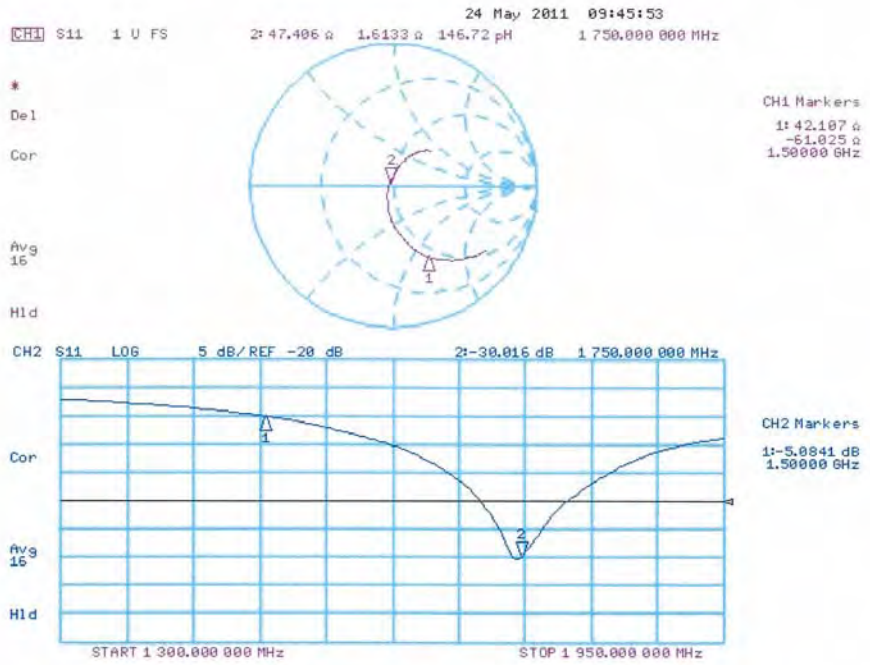
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.611 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 15.724 W/kg
SAR(1 g) = 9.04 mW/g; SAR(10 g) = 4.82 mW/g
Maximum value of SAR (measured) = 11.315 mW/g



0 dB = 11.310mW/g

Impedance Measurement Plot for Body TSL



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

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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

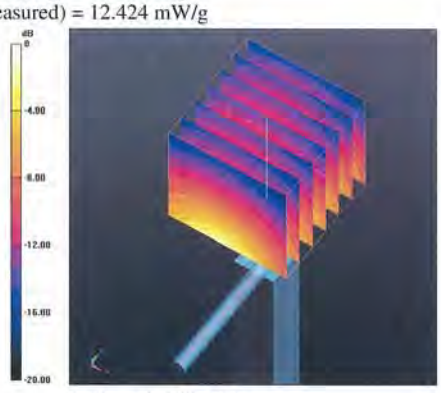
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027

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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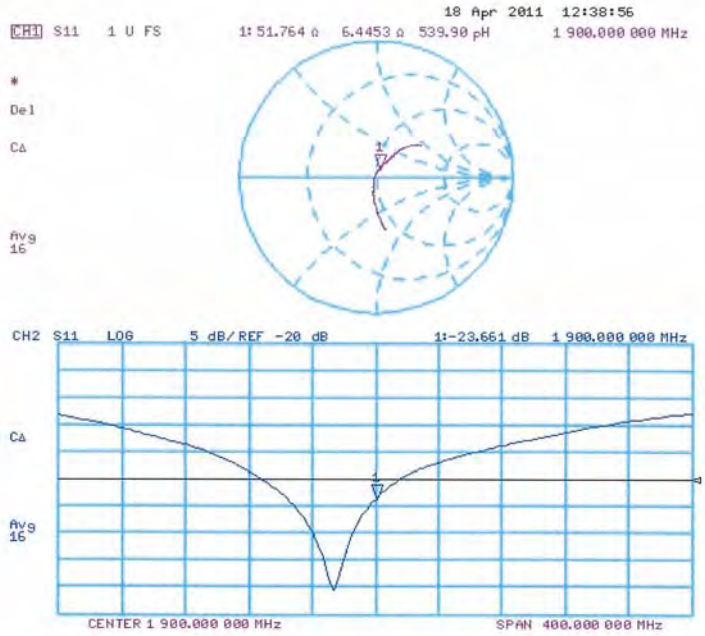
Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date/Time: 19.04.2011 12:53:51

Test Laboratory: SPEAG, Zurich, Switzerland

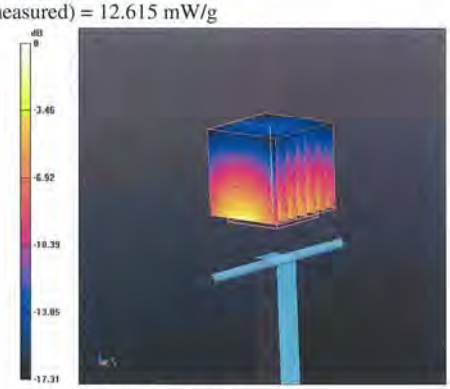
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027

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

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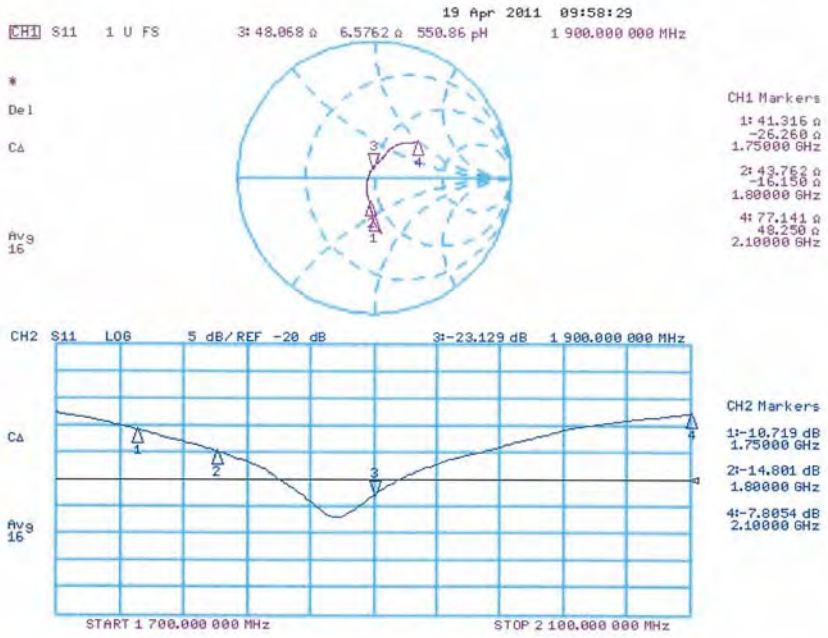
Impedance Measurement Plot for Body TSL



End of 1st part of report