DAT-PL-162/04-01

TESTING
No. L0570

TEST REPORT

REPORT NUMBER: I11GC5267-FCC-SAR

ON

Type of Equipment: HSUPA USB Stick
Type of Designation: MF193
Manufacturer: ZTE CORPORATION

ACCORDING TO

FCC Part 2.1093: Radiofrequency radiation exposure evaluation: portable devices, Oct-1-2009
FCC OET Bulletin 65 Supplement C (Edition 01-01): Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions

China Telecommunication Technology Labs.

Month date, year
Apr 15, 2011

Signature

He Guili
Director

FCC ID:	Q78-MF193
Report Date:	2011-04-15
Test Firm Name:	China Telecommunication Technology Labs
Registration Number:	840587

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1093. The sample tested was found to comply with the requirements defined in the applied rules.

Table of Contents

1. General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with the requirements of FCC CFR 47 Part 2.1093.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviations from, additions to, or exclusions from the test specifications have been made. See Annex G.

1.2 Testers

Name: Li Guoqing

Position: Engineer

Department: Department of EMC test

Signature: 

Editor of this test report:

Name: Li Guoqing

Position: Engineer

Department: Department of EMC test

Date: 2011-04-15

Signature: 

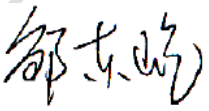
Technical responsibility for testing:

Name: Zou Dongyi

Position: Manager

Department: Department of EMC test

Date: 2011-04-15

Signature: 

1.3 Testing Laboratory information

1.3.1 Location

Name:	China Telecommunication Technology Labs.
Address:	No. 11, Yue Tan Nan Jie, Xi Cheng District, BEIJING P. R. CHINA, 100083
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1.3.2 Details of accreditation status

Accredited by:	DATech Deutsche Akkreditierungsstelle Technik in der TGA GmbH（German Accreditation Body for Technology in the TGA）
Lab number:	DA7130
DAR Registration number:	DAT-PL-162/04-01
Accredited by:	CNAS (China National Accreditation Service for Conformity Assessment)
Registration number:	CNAS L0570
Standard:	ISO/IEC 17025:2005

1.3.3 Test location, where different from section 1.3.1

Name:	------
Address:	------

1.4 Details of applicant or manufacturer

1.4.1 Applicant

Name:	ZTE CORPORATION
Address:	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
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1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name:	--
Address:	--

1.4.3 Manufactory (if different from applicant in section 1.4.1)

Name:	--
Address:	--

2 Test Item

2.1 General Information

Manufacturer: ZTE CORPORATION
Name: HSUPA USB Stick
Model Number: MF193
IMEI Number: 35739040000936
Serial Number: SAR1
Production Status: Product
Receipt date of test item: 2011-03-29

2.2 Outline of EUT

EUT is a USB modem supporting GPRS/EGPRS 850/900/1800/1900 bands and HSDPA/HSUPA FDD I/II/V bands. For GPRS, the multi class is 10 (maximum 2 up timeslots) and for EGPRS, it is 12 (maximum 4 up timeslots). It does not support voice mode.
Upon the applicant's request, only GPRS/EGPRS 850/1900 and HSDPA/HSUPA FDD II/V bands are tested.

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	USB dongle	ZTE CORPORATION	MF193	SAR1	None
B	adapter	--	--	--	None
C	battery	--	--	--	None
D	Earphone	--	--	--	None

Cables:

Item	Cable Type	Manufacturer	Length	Shield	Quantity	Remarks
1	DC cable on Adapter	--	--	--	--	None

2.5 Other Information

Version of hardware and software:

HW Version: MF193-2.0.0

SW Version: EN_ZTE_MF193V1.0.0B01

2.6 EUT Photographs

See internal and external photo of Annex A and B.

2.7 References

IEEE Std 1528-2003 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques

OET Bulletin No. 65, Supplement C (2001): Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

FCC KDB Publication 447498 D02 SAR Measurement Procedures for USB Dongle Transmitters

FCC KDB Publication 941225 D01 SAR Measurement Procedures for 3G Devices

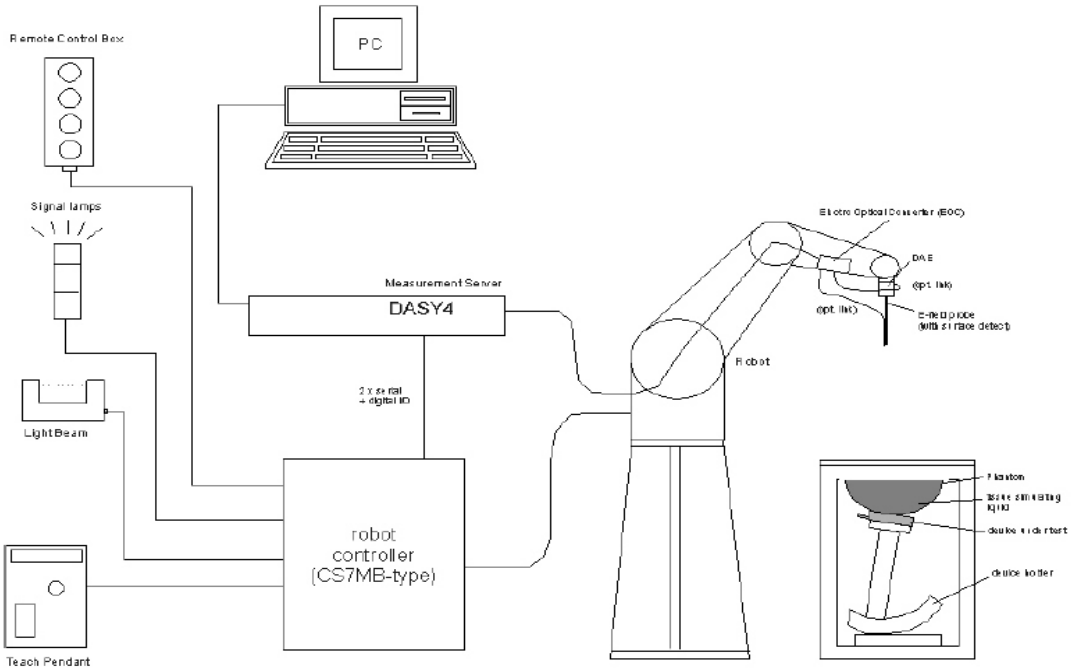
FCC KDB Publication 941225 D03 Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE

3 Measurement Systems

3.1 SAR Measurement Systems Setup

All measurements were performed using the automated near-field scanning system, DASY5, from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision industrial robot which positions the probes with a positional repeatability of better than 0.02mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit.

A cell controller system containing the power supply, robot controller, teach pendant (Joystick) and remote control, is used to drive the robot motors. The PC consists of the Micron Pentium III 800 MHz computer with Windows 2000 system and SAR Measurement Software DASY5, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc., which is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical signal to digital electric signal of the DAE and transfers data to the PC plug-in card.



Demonstration of measurement system setup

The DAE4 consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter

and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built-in VME-bus computer.

3.2 E-field Probe

3.2.1 E-field Probe Description

The SAR measurements were conducted with the dosimetric probe ES3DV3 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the standard procedure with an accuracy of better than ±10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB.

Items	Specification
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection System Built-in shielding against static charges PEEK enclosure material(resistant to organic solvents, e.g., glycol)
Calibration	In air from 10 MHz to 2.5 GHz In brain and muscle simulating tissue at frequencies of 450MHz, 900MHz and 1.8GHz (accuracy±8%) Calibration for other liquids and frequencies upon request
Frequency	l 0 MHz to > 6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity	±0.2 dB in brain tissue (rotation around probe axis) ±0.4 dB in brain tissue (rotation normal probe axis)
Dynamic Range	5u W/g to > 100mW/g; Linearity: ±0.2dB
Surface Detection	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surface
Dimensions	Overall length: 330mm Tip length: 16mm Body diameter: 12mm Tip diameter: 6.8mm Distance from probe tip to dipole centers: 2.7mm
Application	General dosimetry up to 3GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

3.2.2 E-field Probe Calibration

The Annex C is the copy of the calibration certificate of the used probes.
Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.
The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.
E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The free-space E-field measured in the medium correlates to temperature increase in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where: Δt = Exposure time (30 seconds),
C = Heat capacity of tissue (brain or muscle),
ΔT = Temperature increase due to RF exposure.
Or

$$SAR = \frac{|E|^2 \sigma}{\rho}$$

Where:
σ = Simulated tissue conductivity,
ρ = Tissue density (kg/m^3).

3.3 Phantom

The Generic Twin Phantom is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. 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 the 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 in the robot.
Specifications:
Shell Thickness: 2±0.1mm
Filling Volume: Approx. 20 liters
Dimensions: 810 x l000 x 500 mm (H x L x W)
Liquid depth when testing: at least 150 mm

3.4 Device Holder

In combination with the Generic Twin Phantom V3.0, the Mounting Device (POM) enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation points is the ear opening. The devices can be easily, accurately, and repeat ably positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom etc).

4 Test Results

4.1 Operational Condition

Specifications FCC OET 65C (01-01)
Date of Tests 2011-3-31, 2011-4-1/2/6
Operation Mode TX at the highest output peak power level
Method of measurement: FCC OET 65C (01-01)

4.2 Test Equipment Used

ITEM	TYPE	S/N	CALIBRATION DATE	DUE DATE
probe	ES3DV3	3158	2010-05-20	2011-05-19
DAE	DAE4	549	2010-05-20	2011-05-20
D835V2	dipole	473	2010-05-21	2011-05-20
D1800V2	dipole	2d153	2010-5-26	2011-5-25
D1900V2	dipole	5d024	2010-5-26	2011-5-25
Power Meter	E4417A	GB41050460	2010-05-25	2012-05-20
Radio Communication Analyzer	CMU200	1100000802	2010-06-01	2011-05-31
Signal Generator	SMP04	100064	2010-05-24	2011-05-23
Power Sensor	E9327A	US40440198	2010-07-13	2011-07-12
Power Sensor	E9327A	US40440326	2010-07-26	2011-07-25
Power Amplifier	150W1000	150W1000	NA	NA
Attenuator	20dB	836471/003	NA	NA
Attenuator	20dB	836471/004	NA	NA
Attenuator	2	BL1250	NA	NA
Attenuator	2	BK774	NA	NA
Dual directional coupler	4242-20	04200	NA	NA
Probe kit	85070E	3G-S-00139	NA	NA
Network Analyzer	8753ES	MY40002093	2010-05-26	2011-05-25

4.3 Applicable Limit Regulations

Item	Limit Level
Local Specific Absorption Rate (SAR) (1g)	1.6W/kg

4.4 Test Results

The EUT complies.

Note:

All measurements are traceable to national standards.

4.5 Test Setup and Procedures

4.5.1 Test distance

For USB modem, the distance between EUT and flat phantom is 5 mm for body modes.

4.5.2 Duty Factor and Crest Factor

For GPRS the multi time slot is class 10 with maximum 2 up time slots and for EGPRS it is class 12 with maximum 4 up time slots. For 1 up time slots, the crest factor used is 8.3, for 2 up time slots, it is 4.15, and for 4 up time slots, it is 2.
For HSDPA/HSUPA, the crest factor is 1.

4.5.3 Test setup pictures:

Test position definition:

(A) Horizontal-Up (B) Horizontal-Down (C) Vertical-Front (D) Vertical-Back

Note: These are USB connector orientations on laptop computers; USB dongles have the reverse configuration for plugging into the corresponding laptop computers.

For side E, the dongle's top end is vertically upwards and the USB connector end is vertically downwards.

Note:

Because the USB dongle's antenna is located far more than 10 mm from its tip, so the measurement of the side E is not necessary and skipped.

See Annex A for test setup photos.

4.5.4 General body mode measurement procedures

Generally, for body mode, the evaluation was performed according to the following procedure:

Step 1: The SAR value at a fixed location above the center point flat phantom was measured and was used as a reference value for assessing the power drift.

Step 2: The SAR distribution at the exposed side of the body was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the EUT and the horizontal grid spacing was 15 mm x 15 mm. Based on these data, the area of the maximum absorption was determined by interpolation.

Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7 x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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

b. The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot"-condition (in x ~ y and z-directions). The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation should be repeated.

4.5.5 General principle for body mode evaluation

(1) For USB modem used on laptop PC, the side A~E of the USB modem are measured according to FCC KDB Publication 447498 D02 with side E is vertical state. In all measurements, 5 mm distance is maintained. For side A and C measurements, the USB modem is directly plugged in the laptop PC, and for the other three sides measurements, a high quality USB cable with the length of 30 cm is used. See 2.5 EUT photograph and annex A for details.

For side F and G, also 5 mm distance is maintained and the USB dongle is plugged in the laptop PC directly.

(2) For GSM/GPRS/EGPRS mode test, first the peak average conducted power values are measured. Then, for every frequency band, the SAR values of GSM mode are measured. Finally, the GPRS and EGPRS, the configurations with the maximum peak average power on all kinds of possible time slots combinations respectively shall be measured for SAR values.

If there is no GSM mode (voice mode), then the SAR for GPRS mode with the

maximum peak average conducted power values is measured first, and then for EGPRS the worst-case configuration of GPRS is used for the maximum peak average conducted power.

(3) For WCDMA/HSDPA/HSUPA mode test, WCDMA with 12.2 kbps RMC mode are measured. Then, the power values for all typical configurations are measured. If for one HSDPA or HSUPA mode, the power value is bigger than that of related WCDMA mode plus 0.25dB, then the SAR values for the mode shall be measured. See FCC KDB Publication 941225 D01 and conducted power measurement results.

4.6 Test Environment and Liquid Information

4.6.1 Test Environment

Date:	Liquid Temperature (℃)	Ambient Temperature (℃)	Ambient Humidity (%)
	20~~24	20~~25	30~~70
2011-03-31	20.7	21.1	38.4
2011-04-01	20.8	21.0	38.3
2011-04-02	20.6	21.1	38.0
2011-04-06	20.4	20.9	37.9

4.6.2 Liquid Recipes

INGREDIENTS	TISSUE TYPE			
	HSL900	MSL900	HSL1800	MSL1800
Water	40.29	50.75	55.24	70.17
DGBE	0	0	44.45	29.44
Sugar	57.90	48.21	0	0
Salt	1.38	0.94	0.31	0.39
Cellulose	0.24	0.00	0	0
Preventol	0.18	0.10	0	0

4.6.3 Liquid Parameters

Tissue Type	Type	Dielectric Parameters		Date
		permittivity	conductivity	
MSL900 At 835MHz (for GSM850)	Target	55.2	0.97	2011-04-01
	±5% window	52.44~57.96	0.922~1.019	
	Measured	52.65	0.935	
MSL900 At 835MHz (for FDD V)	Target	55.2	0.97	2011-04-02
	±5% window	52.44~57.96	0.922~1.019	
	Measured	52.65	0.935	
MSL1800 At 1900MHz (for PCS1900)	Target	53.3	1.52	2011-03-31
	±5% window	50.64~55.97	1.444~1.596	
	Measured	54.13	1.583	
MSL1800 At 1900MHz (for FDD II)	Target	53.3	1.52	2011-04-06
	±5% window	50.64~55.97	1.444~1.596	
	Measured	53.0	1.570	

4.7 System Validation Check

Validation Method:

The setup of system validation check or performance check is demonstrated as figure 5. The amplifier, low pass filter and attenuators are optional. The dipole shall be positioned and centered below the phantom, paralleling to the longest side of the phantom. A low loss and low dielectric constant spacer on the dipole may be used to guarantee the correct distance between the dipole top surface and the phantom bottom surface.

The separation d, which is defined as the distance from the liquid bottom surface to the dipole's central axis at location of the feed-point, should be as following: for 835 MHz dipole, d = 15 mm, and for 1900 MHz dipole, d = 10 mm, and this can be obtained using two different size spacer. The dipole arms shall be parallel to the flat phantom surface.

First the power meter PM1 is connected to the cable and it measures the forward power at the location of the dipole connector (X). The signal generator is adjusted for the desired forward power at the dipole connector (taking into account the (Att1) value) and the power meter PM2 is read at that level. Then after connecting the cable to the dipole, the signal generator is readjusted for the same reading at the power meter PM2.

The system validation check procedures are the same as all measurement procedures used for compliance tests. A complete 1 g averaged SAR measurement is performed using the flat part of the phantom. The reference dipole input power is adjusted to produce a 1 g averaged SAR value falling in the range of 0.4 – 10 mW/g. The 1 g averaged SAR is measured at 835 MHz and 1900 MHz using corresponding dipole respectively. Then the results are normalized to 1 W forward input power and compared with the reference SAR values.

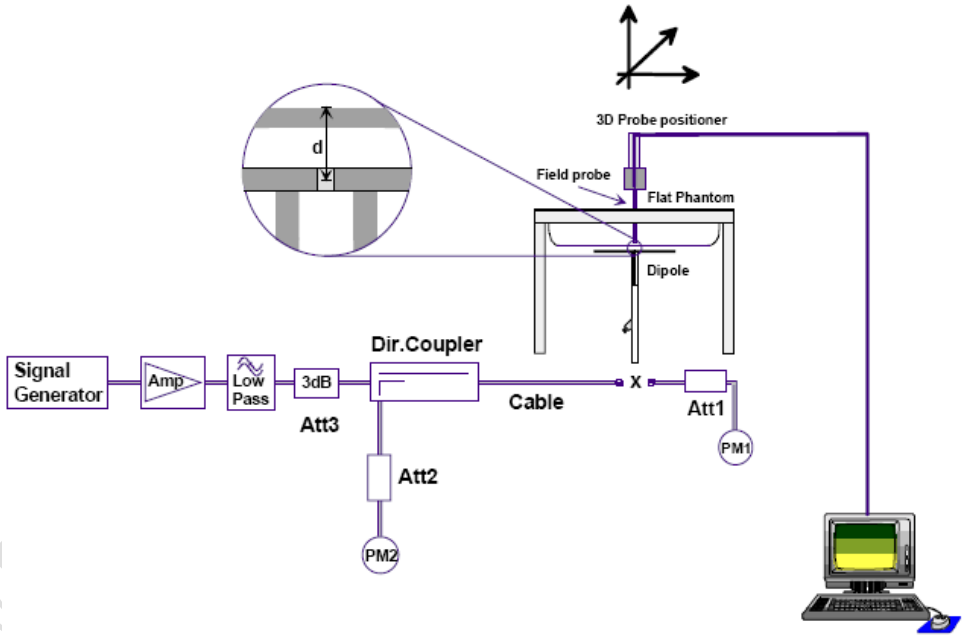


Figure 5 Illustration of system validation test setup

Validation Results

Date:	Frequency (MHz)	Tissue Type	Input Power(mw)	Targeted (SAR1g)	Measured (SAR1g)	Deviation (%)
2011-04-01	835	Body	250	9.62	9.00	-6.4
2011-04-02	835	Body	250	9.62	9.04	-6.0
2011-03-31	1900	Body	250	41.3	38.04	-7.9
2011-04-06	1900	Body	250	41.3	37.48	-9.2

4.8 Maximum Output Power Measurement

According to FCC OET 65c, maximum output power shall be measured before and after each SAR test. The test setup and method are described as following.

Test setup

The output power measurement test setup is demonstrated as figure 6.

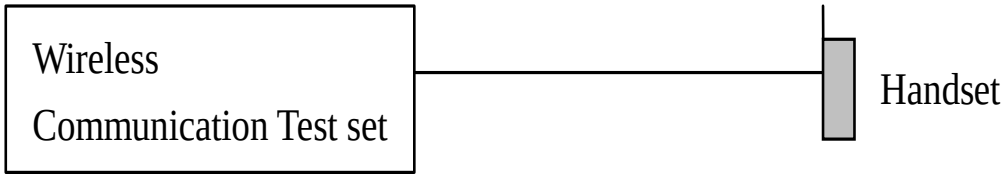


Figure 6 Demonstration of power measurement

Note: For GSM850/EGSM900, the PCL=5, and for DCS1800/PCS1900, PCL=0. For GPRS, the coding scheme used is CS4, and for EGPRS, it is MCS1, i.e. GMSK modulation is used for EGPRS.

GSM modes:

Note: For GSM, complete set of tests are performed. For GPRS and EGPRS, only the modes with the maximum time average power values need to be tested respectively, the test mode is the worst case of GSM modes.

If there is no GSM (voice mode), then for GPRS/EGPRS, only the modes with the maximum time average power values are needed to be tested, which for GPRS, the complete tests are performed using the maximum power configurations, and for EGPRS, its maximum power configurations with position from the worst-case of GPRS are tested.

System and Channel	Power Values (dBm)	Average factor (dB)	Time Average (dBm)	Test mode selection
GSM850 Ch190 (1TS)	--	--	--	For GPRS, only 2 timeslots mode is tested, and for EGPRS only 4 timeslots mode is tested, with the
GPRS850 Ch190				
1TS	31.80	-9.03	22.77	
2TS	**30.20**	**-6.02**	**24.18**	
EGPRS850 Ch190				

System and Channel	Power Values (dBm)	Average factor (dB)	Time Average (dBm)	Test mode selection
1TS	31.80	-9.03	22.77	worst case from GPRS mode.
2TS	30.20	-6.02	24.18	
3TS	28.40	-4.26	24.14	
4TS	**27.30**	**-3.01**	**24.29**	
PCS1900 Ch661 (1TS)	--	--	--	For GPRS, only 2 timeslots mode is tested, and for EGPRS only 2 timeslots mode is tested, with the worst case from GPRS mode.
GPRS1900 Ch661				
1TS	28.80	-9.03	19.77	
2TS	**27.30**	**-6.02**	**21.28**	
EGPRS1900 Ch661				
1TS	28.90	-9.03	19.87	
2TS	27.30	-6.02	21.28	
3TS	25.60	-4.26	21.34	
4TS	**24.40**	**-3.01**	**21.39**	

WCDMA modes:

Note: For WCDMA 12.2 kbps RMC mode, complete tests are performed. For 12.2 kbps AMR + 3.4 kbps SRB mode and all HSDPA and HSUPA modes, only if the peak power values are bigger than the RMC mode values plus 0.25 dB, then the modes shall be tested using the worst case of RMC mode. The power measurement method refers to 3GPP TS34.121. The test parameters configurations are as following table:

Release 5 HSDPA:

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

Release 6 HSUPA:

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	30/15	24/15	134/15	4	1	1.0	0.0	21	81

WCDMA FDD II					
WCDMA mode	12.2kbps RMC mode	12.2 kbps AMR + 3.4 kbps SRB mode			
Ch9262	22.03	Not supported			
Ch9400	22.07				
Ch9538	21.61				
HSDPA mode	**Subtest1**	Subtest 2	Subtest 3	Subtest 4	
Ch9262	22.10	21.62	20.15	19.27	
Ch9400	22.00	21.74	20.11	19.36	
Ch9538	21.65	21.15	19.47	18.84	
HSUPA mode	Subtest1	Subtest 2	Subtest 3	Subtest 4	**Subtest5**
Ch9262	21.69	21.72	21.70	21.68	21.69
Ch9400	21.69	21.78	21.80	21.80	21.83
Ch9538	21.17	21.18	21.16	21.19	21.18
There is no mode which the power is more than RMC mode, so no test is needed for HSDPA and HSUPA mode.					
WCDMA FDD V					
WCDMA mode	12.2kbps RMC mode	12.2 kbps AMR + 3.4 kbps SRB mode			
Ch4132	23.01	Not supported			
Ch4175	22.85				
Ch4233	23.16				
HSDPA mode	**Subtest1**	Subtest 2	Subtest 3	Subtest 4	
Ch4132	22.98	22.48	20.71	20.02	
Ch4175	22.76	22.26	20.60	19.89	
Ch4233	23.12	22.70	20.87	20.03	
HSUPA mode	Subtest1	Subtest 2	Subtest 3	Subtest 4	**Subtest5**
Ch4132	22.56	22.57	22.54	22.56	22.58
Ch4175	22.25	22.25	22.25	22.22	22.23
Ch4233	22.65	22.58	22.63	22.73	22.57
There is no mode which the power is more than RMC mode, so no test is needed for HSDPA and HSUPA mode.					

4.9 Test Data

Note: The distance between EUT and flat phantom is 5 mm for body modes.

GSM850_GPRS body

Test configuration	SAR_{1g} [W/kg] / Power Drift [dB]		
	Channel 128 [low] 824.2 MHz	Channel 190 [Mid] 836.6 MHz	Channel 251 [high] 848.8 MHz
Side A	0.733 / 0.076	0.910 / -0.016	1.01 / 0.077
Side B	-- / --	0.725 / -0.125	-- / --
Side C	-- / --	0.713 / 0.037	-- / --
Side D	-- / --	0.134 / -0.138	-- / --

GSM850_EGPRS body

Test configuration	SAR_{1g} [W/kg] / Power Drift [dB]		
	Channel 128 [low] 824.2 MHz	Channel 190 [Mid] 836.6 MHz	Channel 251 [high] 848.8 MHz
Side A	-- / --	-- / --	0.826 / 0.157
Side B	-- / --	-- / --	-- / --
Side C	-- / --	-- / --	-- / --
Side D	-- / --	-- / --	-- / --

PCS1900_GPRS body

Test configuration	SAR_{1g} [W/kg] / Power Drift [dB]		
	Channel 512 [low] 1850.2 MHz	Channel 661 [Mid] 1880.0 MHz	Channel 512 [low] 1850.2 MHz
Side A	-- / --	0.676 / 0.076	-- / --
Side B	0.557 / 0.367	0.783 / -0.333	0.748 / 0.155
Side C	-- / --	0.619 / -0.087	-- / --
Side D	-- / --	0.475 / -0.059	-- / --

PCS1900_EGPRS body

Test configuration	SAR_{1g} [W/kg] / Power Drift [dB]		
	Channel 512 [low] 1850.2 MHz	Channel 661 [Mid] 1880.0 MHz	Channel 512 [low] 1850.2 MHz
Side A	-- / --	-- / --	-- / --
Side B	-- / --	-- / --	0.717 / -0.222
Side C	-- / --	-- / --	-- / --
Side D	-- / --	-- / --	-- / --

Note: for EGPRS mode, the modulation is GMSK.

RMC FDD II body

Test configuration	SAR_{1g} [W/kg] / Power Drift [dB]		
	Channel 9262 [low] 1852.4 MHz	Channel 9400 [Mid] 1880.0 MHz	Channel 9538 [low] 1907.6 MHz
Side A	0.861 / 0.288	0.928 / 0.307	0.982 / 0.292
Side B	0.865 / 0.271	1.10 / -0.216	0.896 / 0.130
Side C	-- / --	0.589 / 0.128	-- / --
Side D	-- / --	0.516 / -0.263	-- / --

RMC FDD V body

Test configuration	SAR_{1g} [W/kg] / Power Drift [dB]		
	Channel 4132 [low] 826.4 MHz	Channel 4175 [Mid] 835.0 MHz	Channel 4233 [low] 846.6 MHz
Side A	0.639 / 0.076	0.587 / -0.367	0.680 / 0.004
Side B	-- / --	0.556 / -0.345	-- / --
Side C	-- / --	0.426 / 0.077	-- / --
Side D	-- / --	0.471 / -0.192	-- / --

4.10 Measurement uncertainty

ERROR SOURCE	Uncertainty value (%)	Probability distribution	Divisor	c_i (1g)	Standard Uncertainty (%)
Measurement equipment					
Probe calibration	5.9	Normal	1	1	5.9
Probe axial isotropy	4.7	Rectangular	$\sqrt{3}$	0.7	1.9
Probe hemispherical isotropy	9.6	Rectangular	$\sqrt{3}$	0.7	3.9
Probe linearity	4.7	Rectangular	$\sqrt{3}$	1	2.7
Detection limits	0.25	Rectangular	$\sqrt{3}$	1	0.6
Boundary effect	0.8	Rectangular	$\sqrt{3}$	1	0.6
Measurement device	0.3	Normal	1	1	0.3
Response time	0.0	Normal	1	1	0
Noise	0.0	Normal	1	1	0
Integration time	1.7	Normal	1	1	2.6
Mechanical constraints					
Scanning system	1.5	Rectangular	$\sqrt{3}$	1	0.2
Positioning of the probe	2.9	Normal	1	1	2.9
Phantom shell	4.0	Rectangular	$\sqrt{3}$	1	2.3
Positioning of the dipole	2.0	Normal	1	1	2.0
Positioning of the phone	2.9	Normal	1	1	2.9
Device holder disturbance	3.6	Normal	1	1	3.6
Physical parameters					
Liquid conductivity (deviation from target)	5.0	Rectangular	$\sqrt{3}$	0.5	1.4
Liquid conductivity (measurement error)	4.3	Rectangular	$\sqrt{3}$	0.5	1.2
Liquid permittivity (deviation from target)	5.0	Rectangular	$\sqrt{3}$	0.5	1.4
Liquid permittivity (measurement error)	4.3	Rectangular	$\sqrt{3}$	0.5	1.2
Drifts in output power of the phone, probe, temperature and humidity	5.0	Rectangular	$\sqrt{3}$	1	2.9
Environment disturbance	3.0	Rectangular	$\sqrt{3}$	1	1.7
Post-processing					
SAR interpolation and extrapolation	0.6	Rectangular	$\sqrt{3}$	1	0.6
Maximum SAR evaluation	1.0	Rectangular	$\sqrt{3}$		0.6
Combined standard uncertainty	$u_c = \sqrt{\sum_{i=1}^{m} c_i^2 \cdot u_i^2} = 11.08\%$				
Expanded uncertainty （confidence interval of 95%）	Normal $u_e = 1.96 u_c = 21.7\%$				

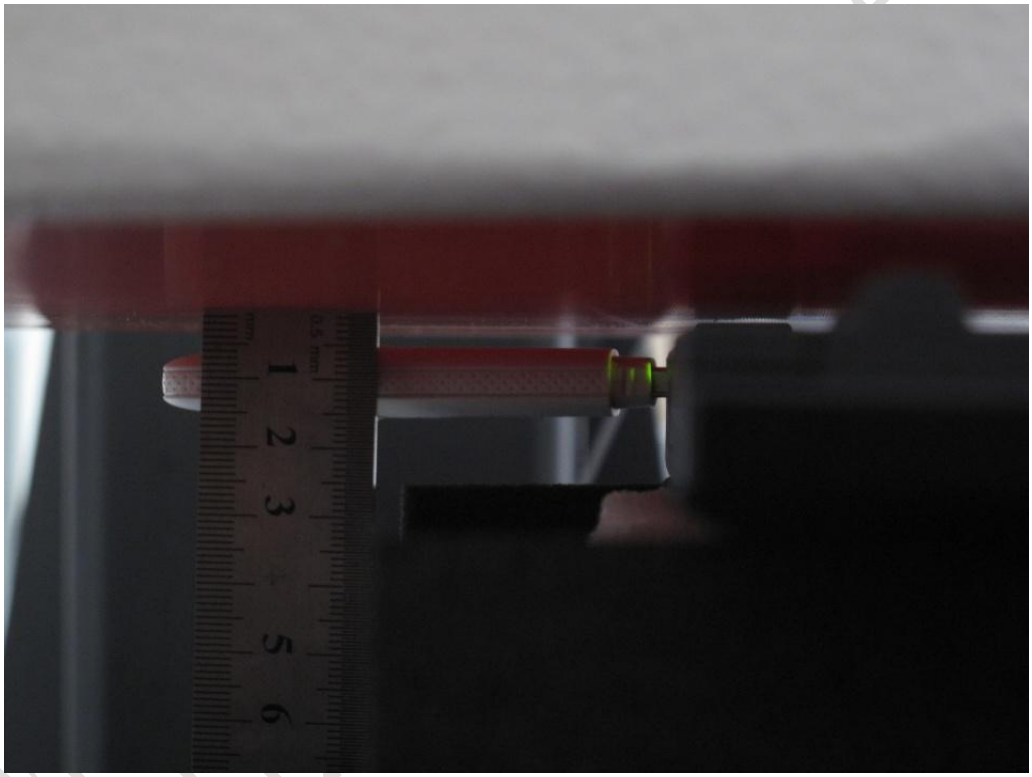
Annex A EUT External Photos

See the attachment Annex A.

Annex B EUT Internal Photos

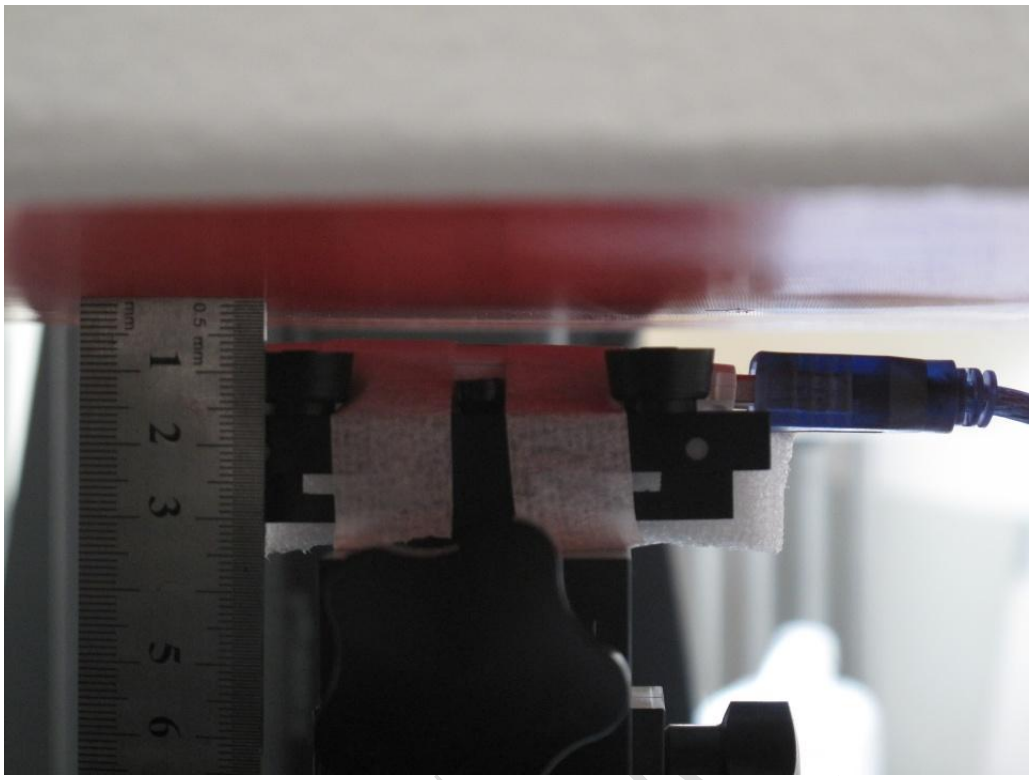
See the attachment annex B.

Annex C EUT Test Setup Photos



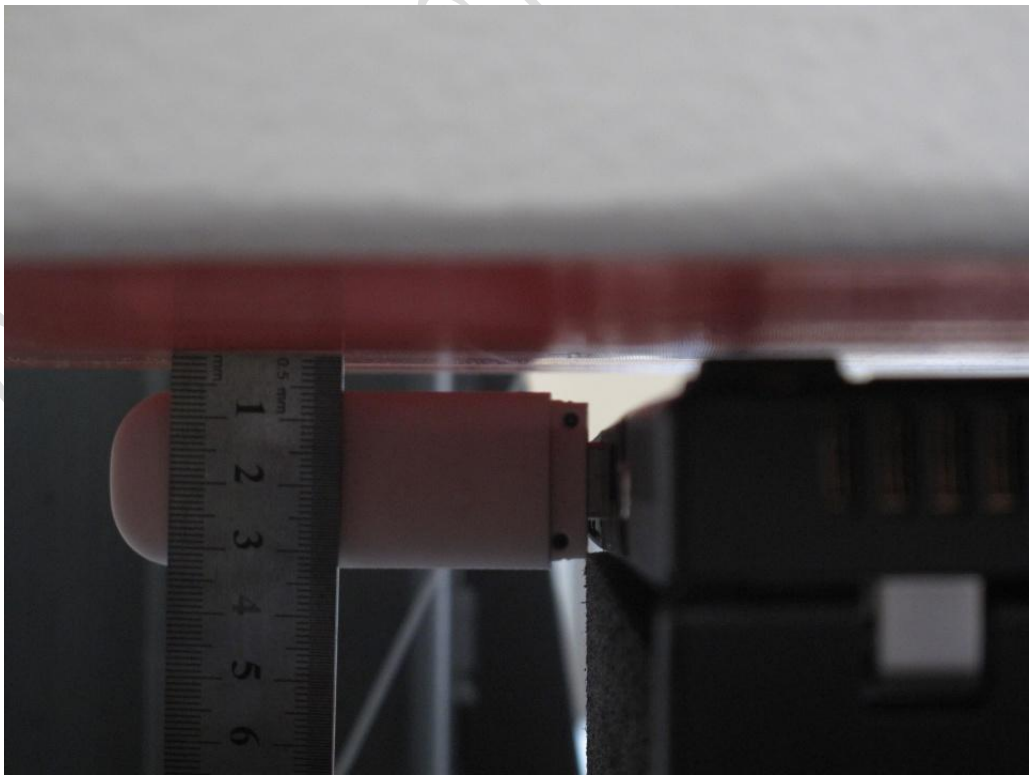
Side A to phantom

Note: The distance between EUT and flat phantom is 5 mm.



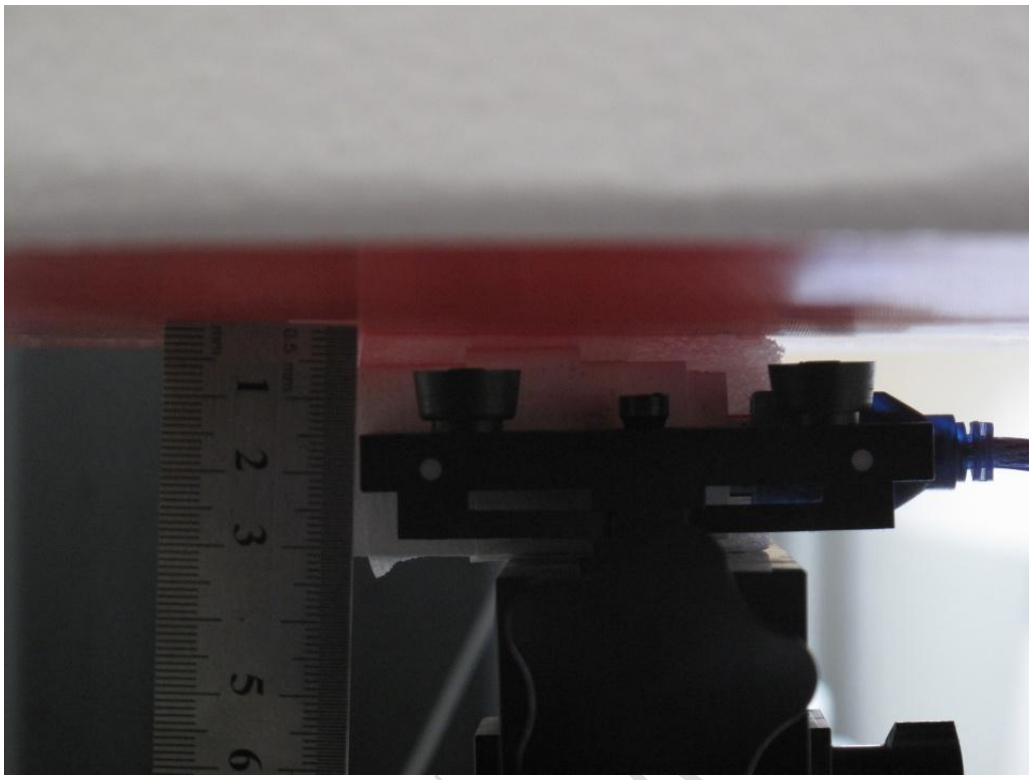
Side B to phantom

Note: The distance between EUT and flat phantom is 5 mm.



Side C to phantom

Note: The distance between EUT and flat phantom is 5 mm.



Side D to phantom

Note: The distance between EUT and flat phantom is 5 mm.

Annex D Graphical Measurement Results

Body_GPRS850_2TS_SideA_Low

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS850 2TS; Frequency: 824.2 MHz;Duty Cycle: 1:4.15
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.925 mho/m; ε_r = 52.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

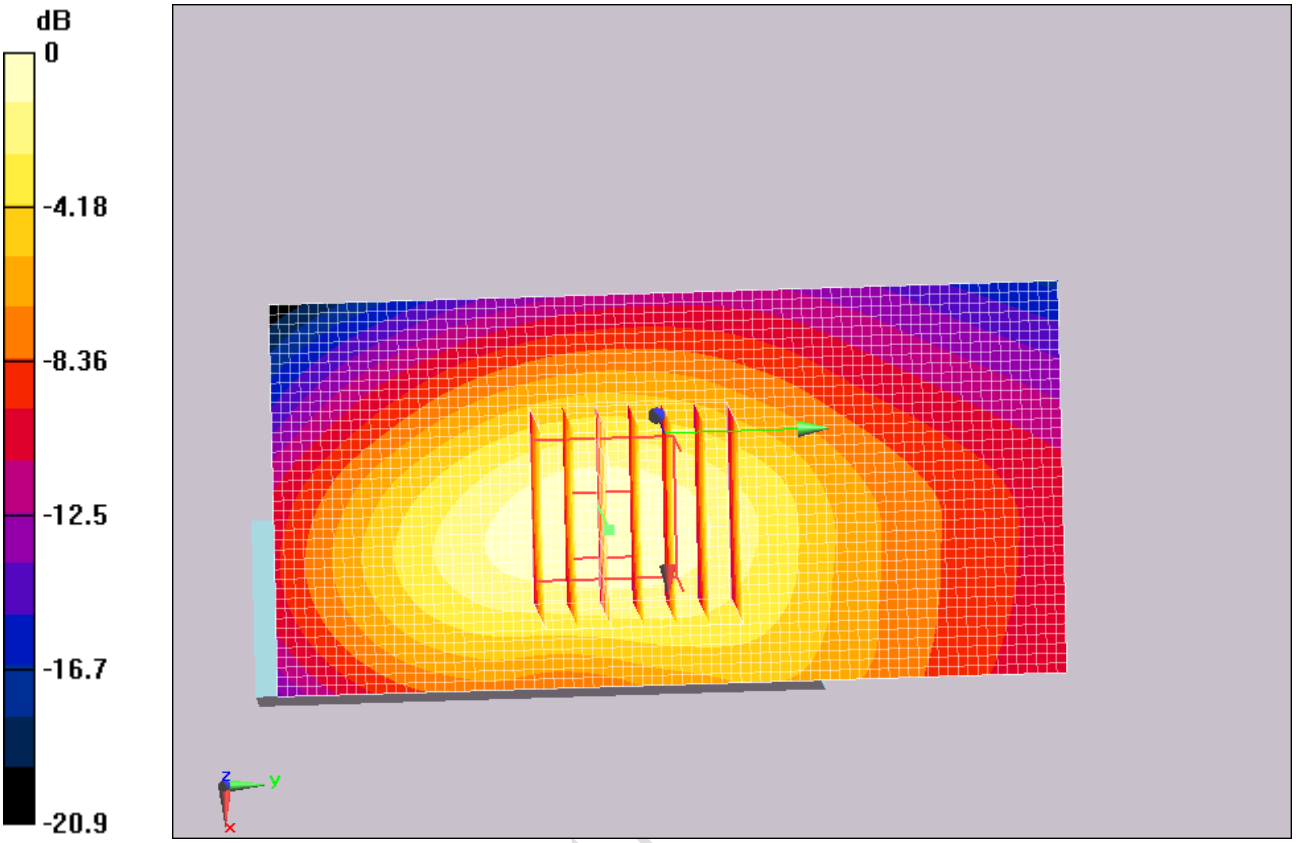
GPRS_Low_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.3 V/m; Power Drift = 0.076 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.733 mW/g; SAR(10 g) = 0.445 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.809 mW/g

GPRS_Low_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.799 mW/g



0 dB = 0.799mW/g

Body_GPRS850_2TS_SideA_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS850 2TS; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 837 MHz; σ = 0.936 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

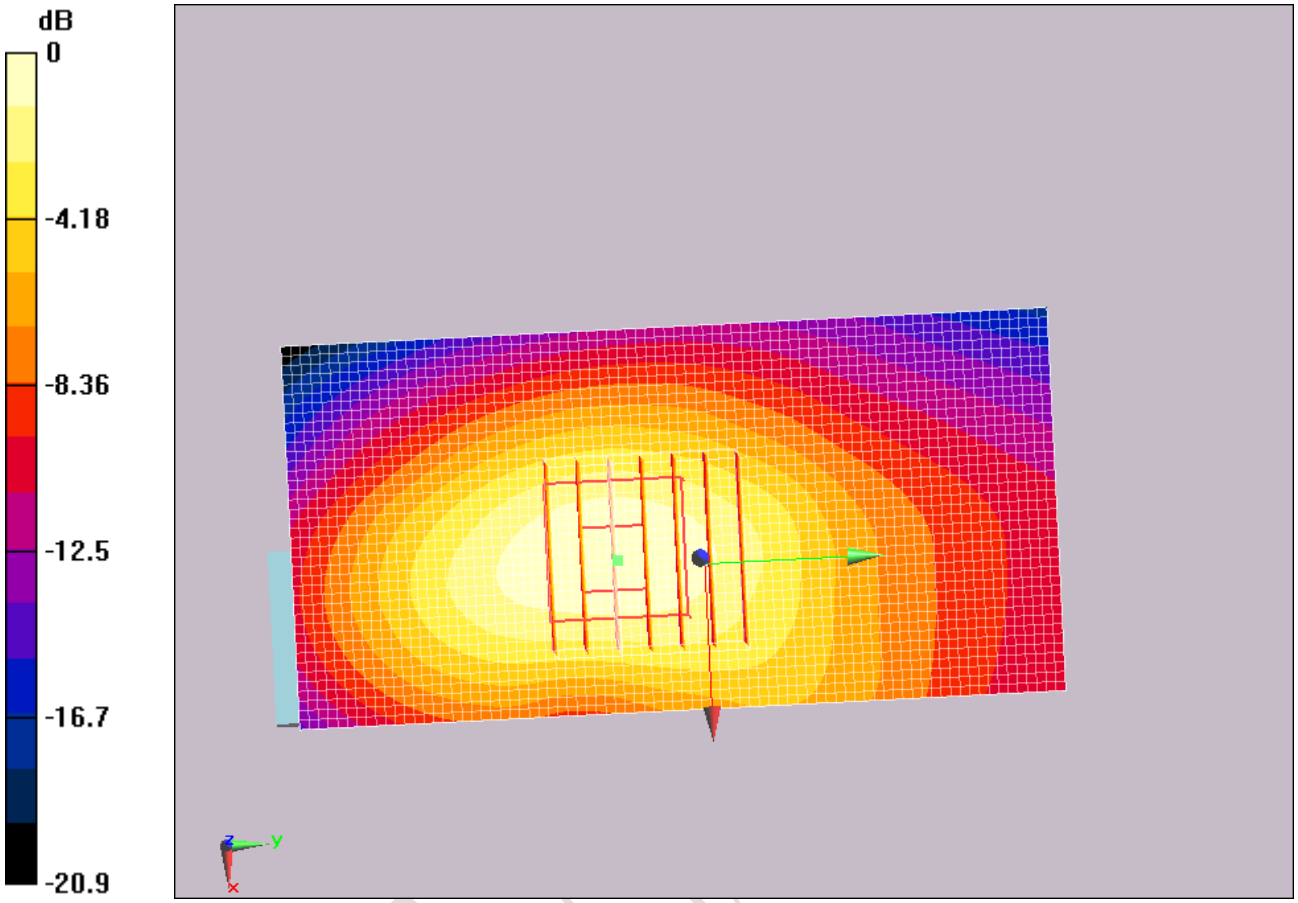
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_Mid_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.7 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.910 mW/g; SAR(10 g) = 0.550 mW/g

Maximum value of SAR (measured) = 1 mW/g

GPRS_Mid_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1 mW/g



0 dB = 1mW/g

Body_GPRS850_2TS_SideA_High

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS850 2TS; Frequency: 848.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 849 MHz; σ = 0.957 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

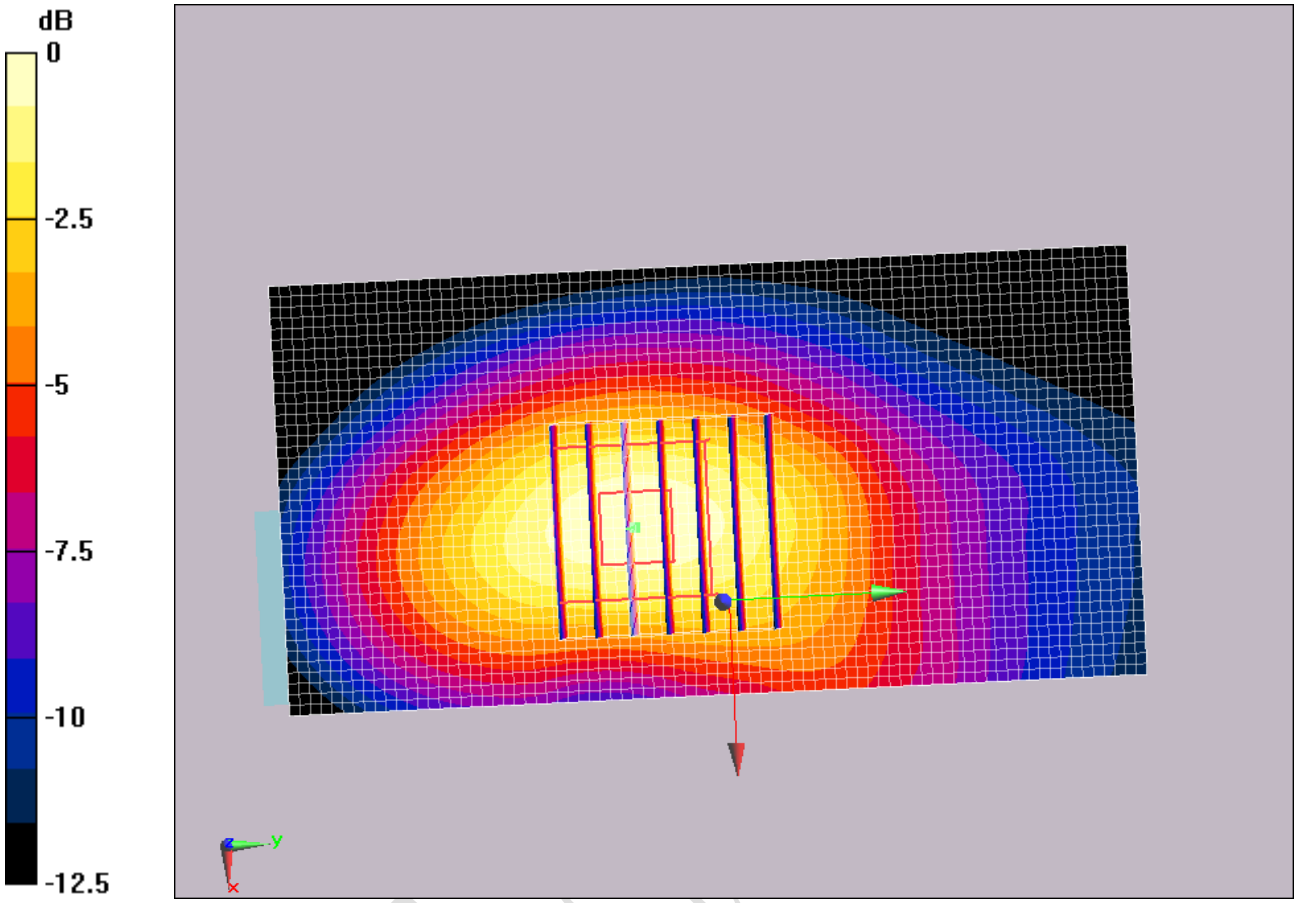
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_High_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.1 mW/g

GPRS_High_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.5 V/m; Power Drift = 0.077 dB
Peak SAR (extrapolated) = 1.62 W/kg
SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.607 mW/g

Maximum value of SAR (measured) = 1.12 mW/g



0 dB = 1.12mW/g

Body_GPRS850_2TS_SideB_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

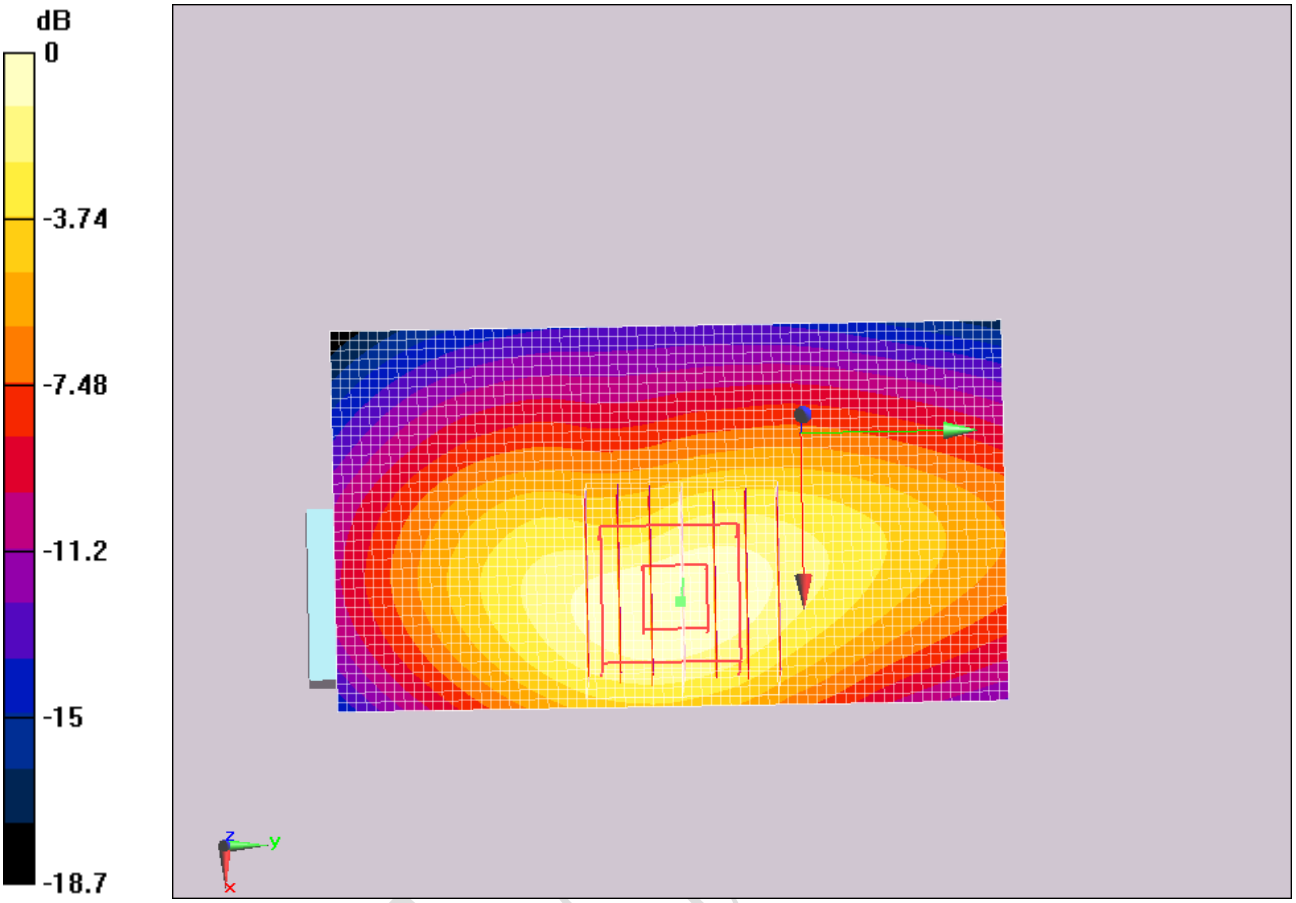
Communication System: (E)GPRS850 2TS; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 837 MHz; σ = 0.936 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_Mid_B/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.3 V/m; Power Drift = -0.125 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.725 mW/g; SAR(10 g) = 0.428 mW/g
Maximum value of SAR (measured) = 0.810 mW/g

GPRS_Mid_B/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.787 mW/g



0 dB = 0.787mW/g

Body_GPRS850_2TS_SideC_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS850 2TS; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 837 MHz; σ = 0.936 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

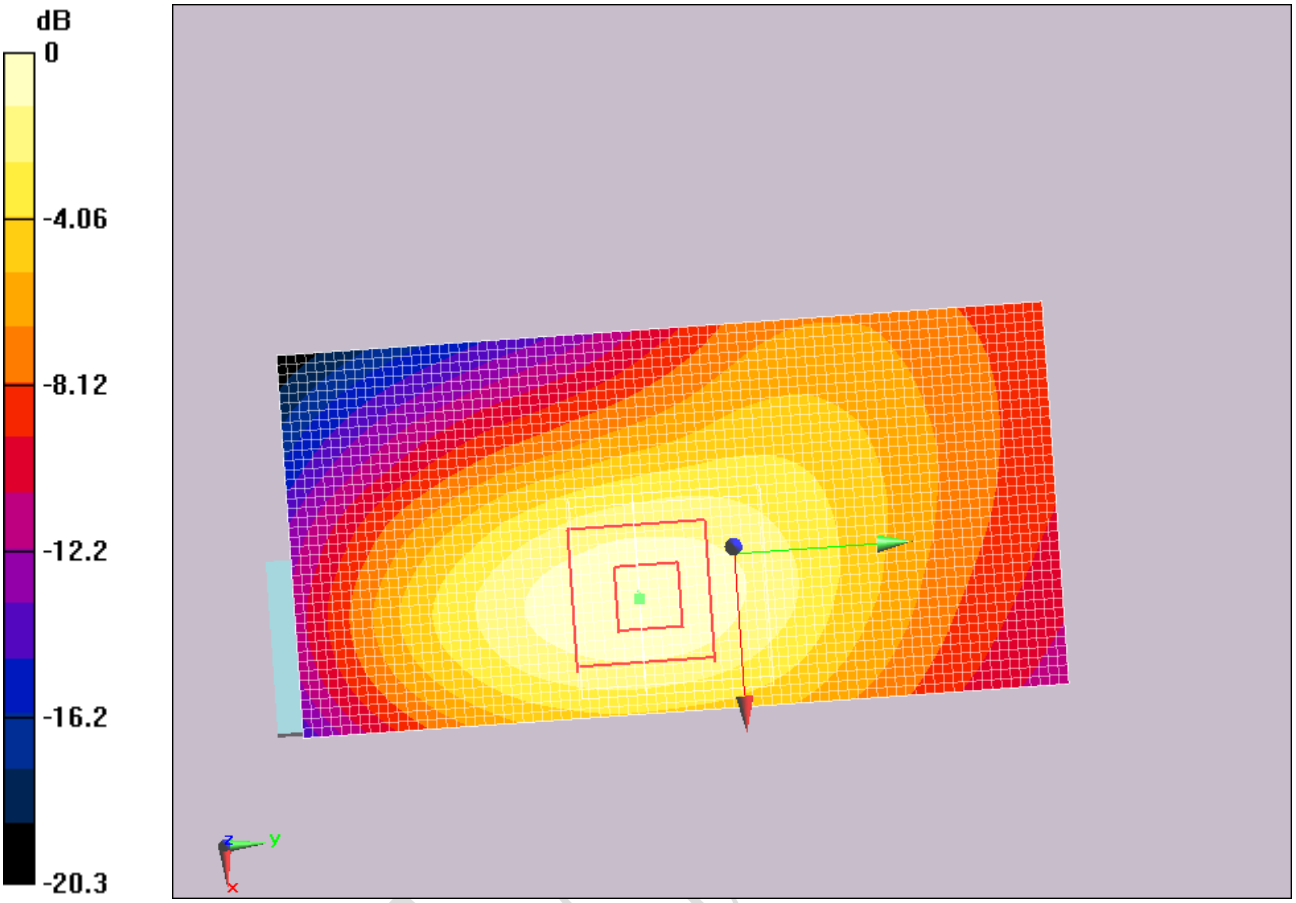
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_Mid_C/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.2 V/m; Power Drift = 0.037 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.713 mW/g; SAR(10 g) = 0.448 mW/g

Maximum value of SAR (measured) = 0.780 mW/g

GPRS_Mid_C/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.781 mW/g



0 dB = 0.781mW/g

Body_GPRS850_2TS_SideD_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

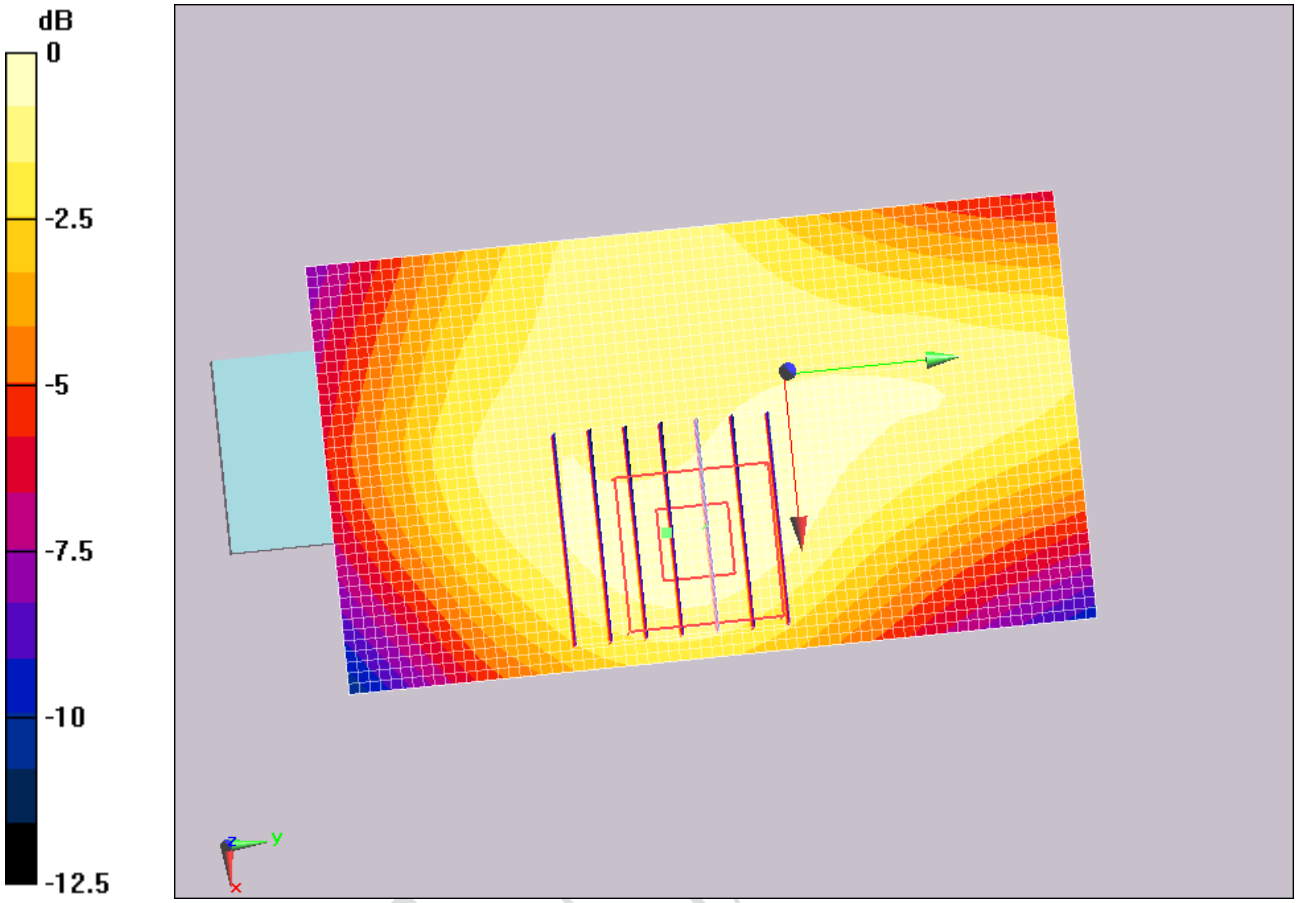
Communication System: (E)GPRS850 2TS; Frequency: 836.6 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 837 MHz; σ = 0.936 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_Mid_D/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.147 mW/g

GPRS_Mid_D/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.4 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 0.238 W/kg
SAR(1 g) = 0.134 mW/g; SAR(10 g) = 0.086 mW/g
Maximum value of SAR (measured) = 0.145 mW/g



0 dB = 0.145mW/g

Body_EGPRS850_4TS_SideA_High

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS850 4TS; Frequency: 848.8 MHz;Duty Cycle: 1:2
Medium parameters used: f = 849 MHz; σ = 0.957 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

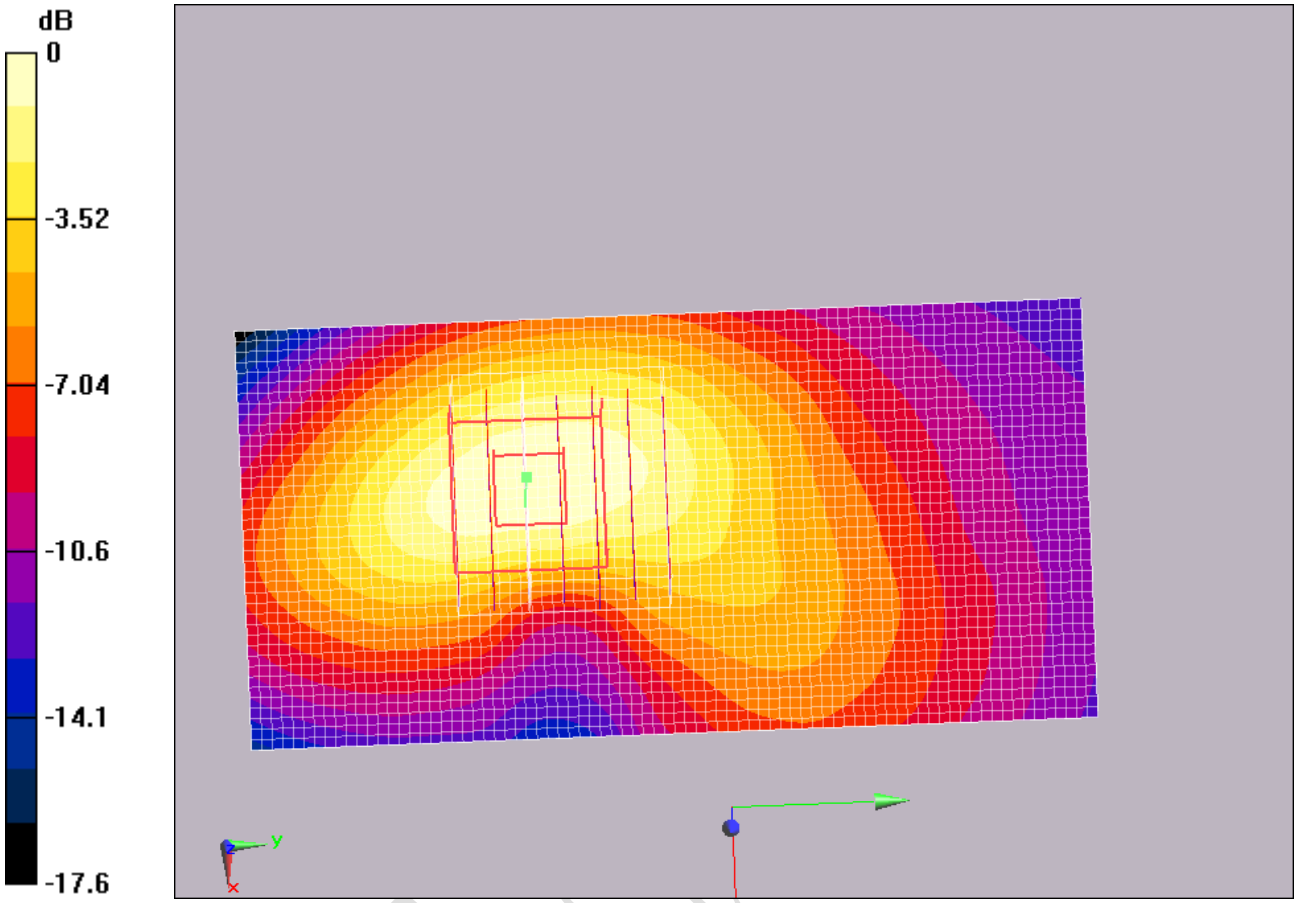
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

EGPRS_High_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.7 V/m; Power Drift = 0.157 dB
Peak SAR (extrapolated) = 1.35 W/kg
SAR(1 g) = 0.826 mW/g; SAR(10 g) = 0.486 mW/g

Maximum value of SAR (measured) = 0.911 mW/g

EGPRS_High_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.919 mW/g



0 dB = 0.919mW/g

Body_GPRS1900_2TS_SideA_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS1900 2TS; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

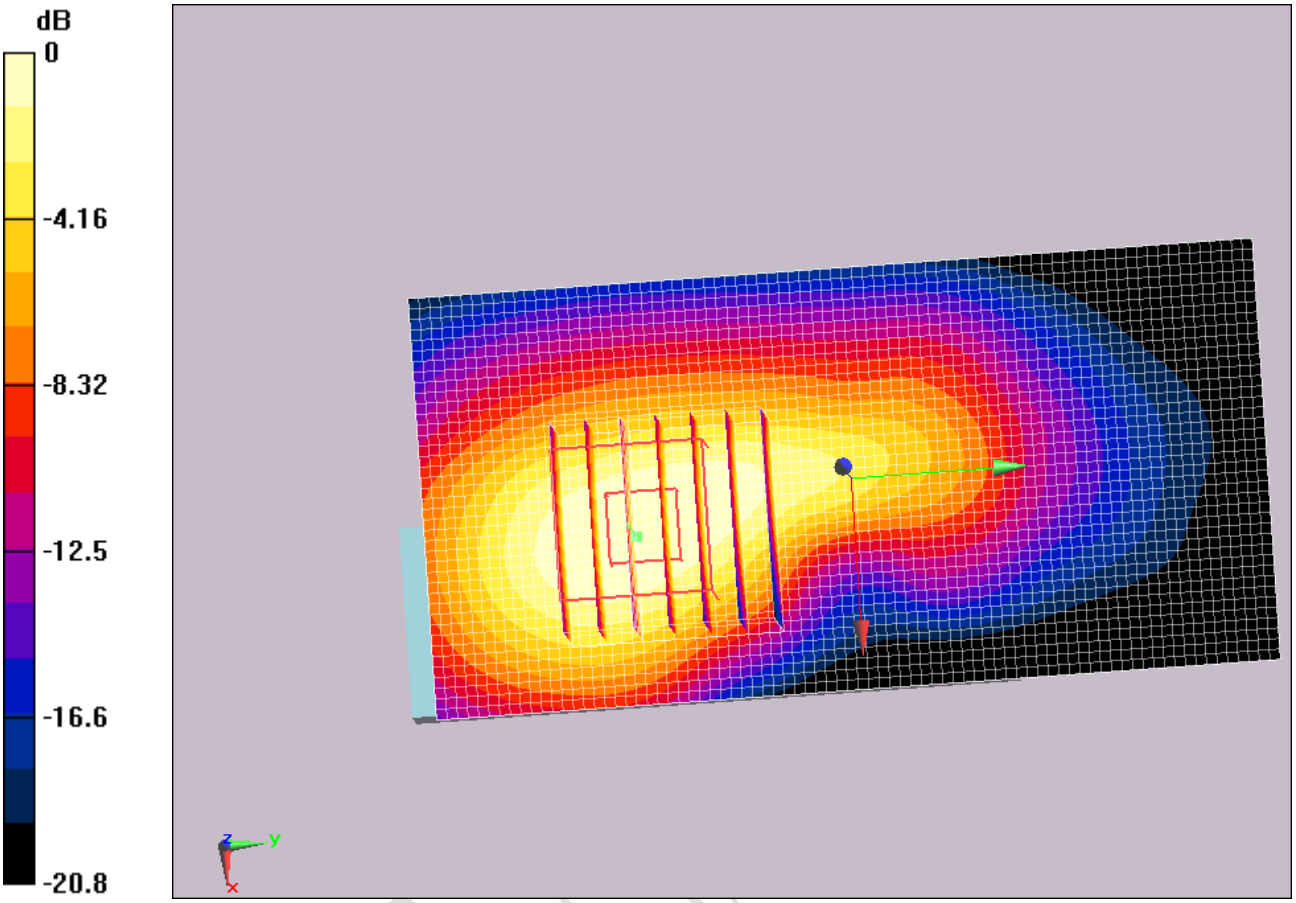
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_Mid_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.840 mW/g

GPRS_Mid_A/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.71 V/m; Power Drift = 0.076 dB
Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.676 mW/g; SAR(10 g) = 0.381 mW/g

Maximum value of SAR (measured) = 0.756 mW/g



0 dB = 0.756mW/g

Body_GPRS1900_2TS_SideB_Low

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS1900 2TS; Frequency: 1850.2 MHz;Duty Cycle: 1:4.15
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.51 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

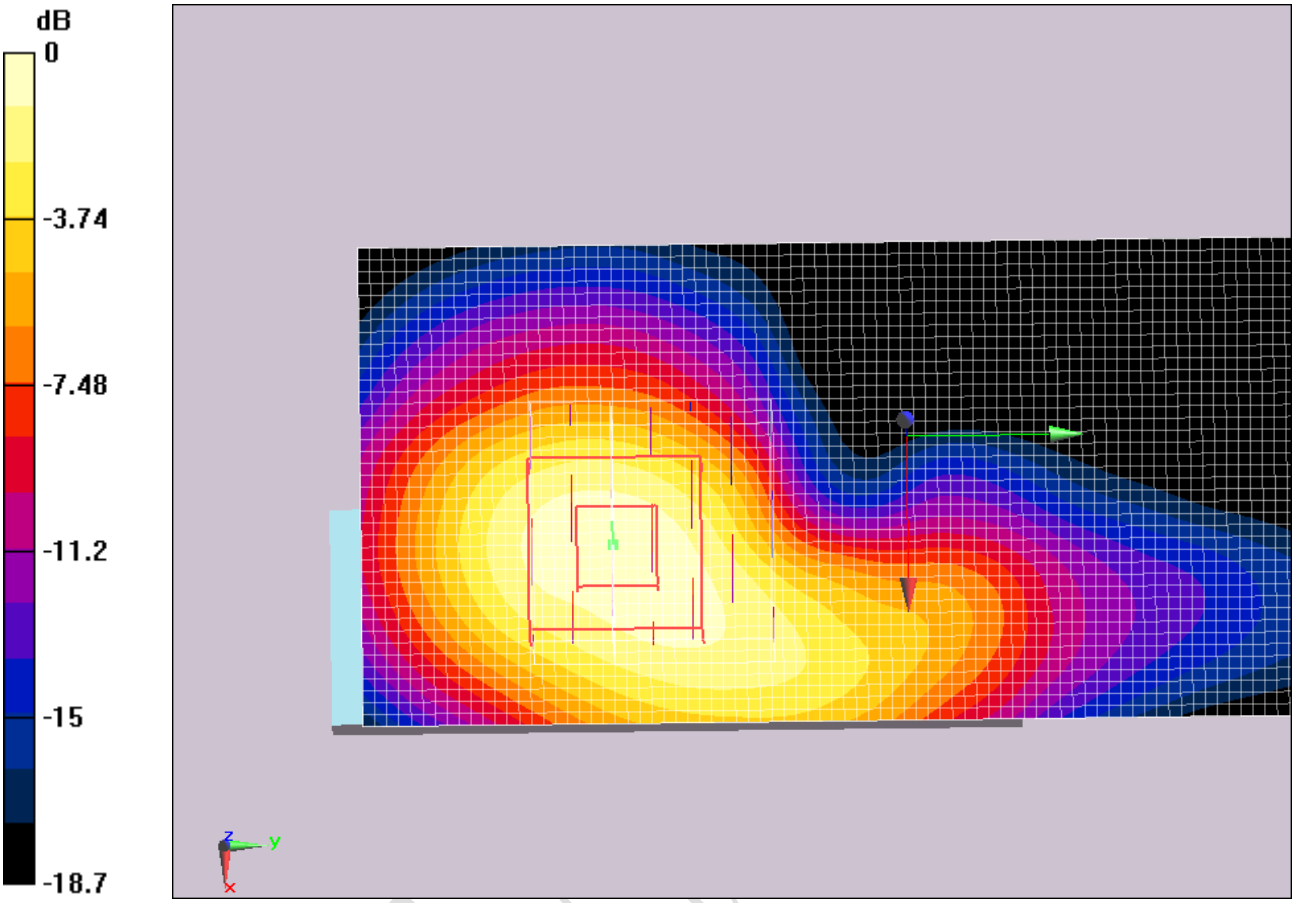
GPRS_Low_B/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.618 mW/g

GPRS_Low_B/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.8 V/m; Power Drift = 0.367 dB
Peak SAR (extrapolated) = 0.892 W/kg
SAR(1 g) = 0.557 mW/g; SAR(10 g) = 0.310 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.621 mW/g



0 dB = 0.621mW/g

Body_GPRS1900_2TS_SideB_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS1900 2TS; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

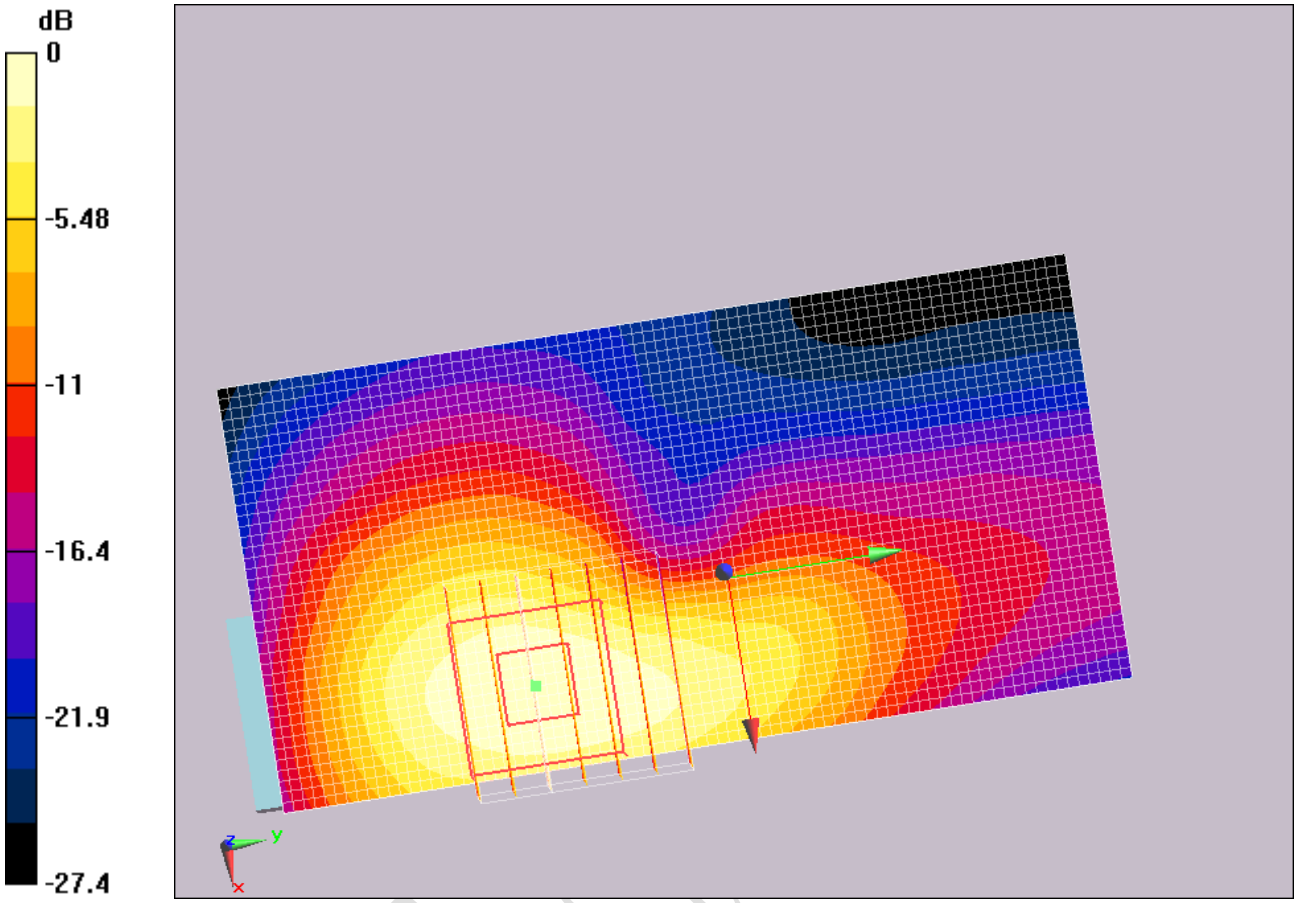
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_Mid_B/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.5 V/m; Power Drift = -0.333 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.783 mW/g; SAR(10 g) = 0.438 mW/g

Maximum value of SAR (measured) = 0.870 mW/g

GPRS_Mid_B/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1 mW/g



0 dB = 1mW/g

Body_GPRS1900_2TS_SideB_High

DUT: USB Modem MF193; Type: MF193; Serial: --

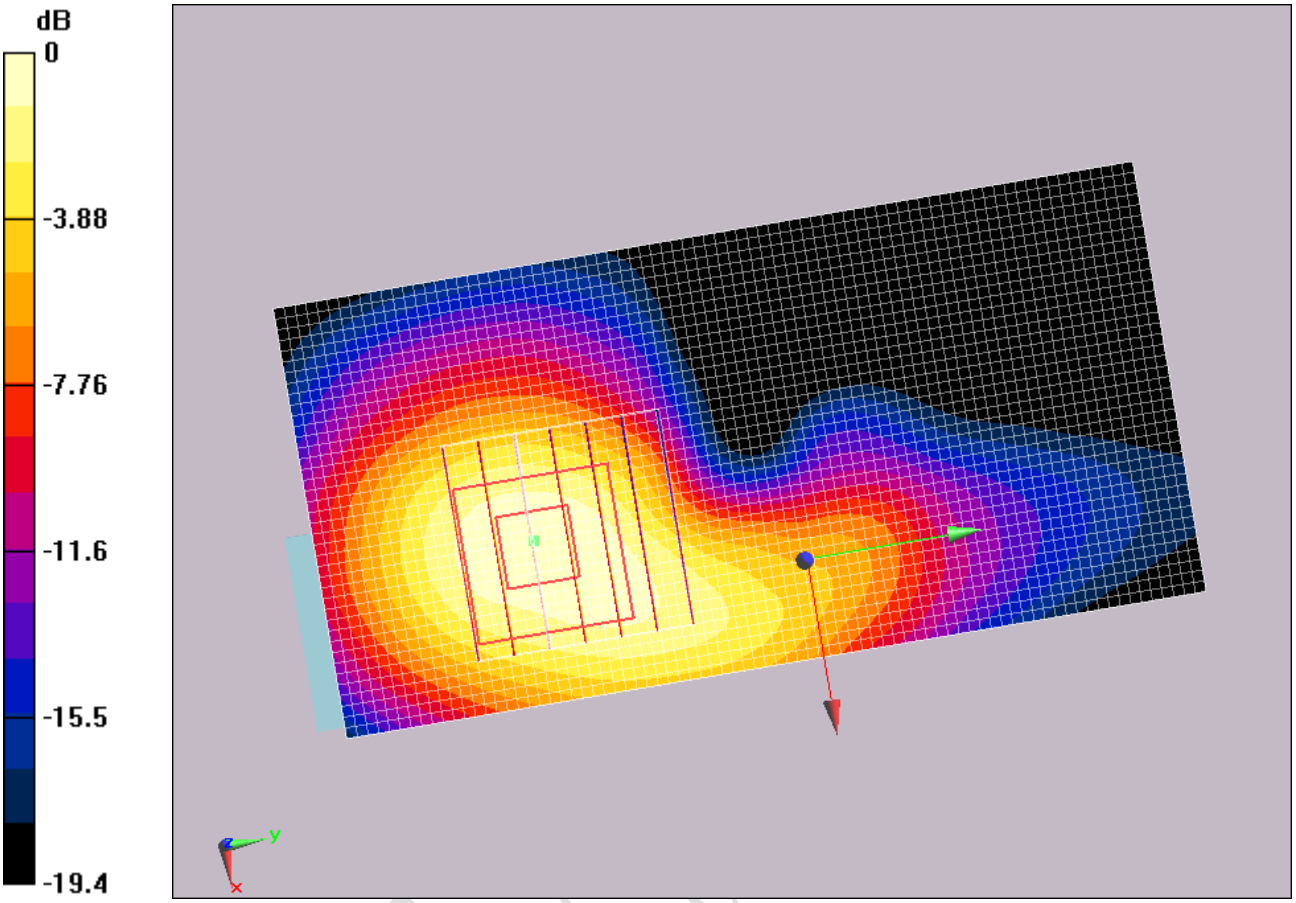
Communication System: (E)GPRS1900 2TS; Frequency: 1909.8 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1910 MHz; σ = 1.59 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_High_B/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.850 mW/g

GPRS_High_B/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = 0.155 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.748 mW/g; SAR(10 g) = 0.413 mW/g
Maximum value of SAR (measured) = 0.834 mW/g



0 dB = 0.834mW/g

Body_GPRS1900_2TS_SideC_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: (E)GPRS1900 2TS; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

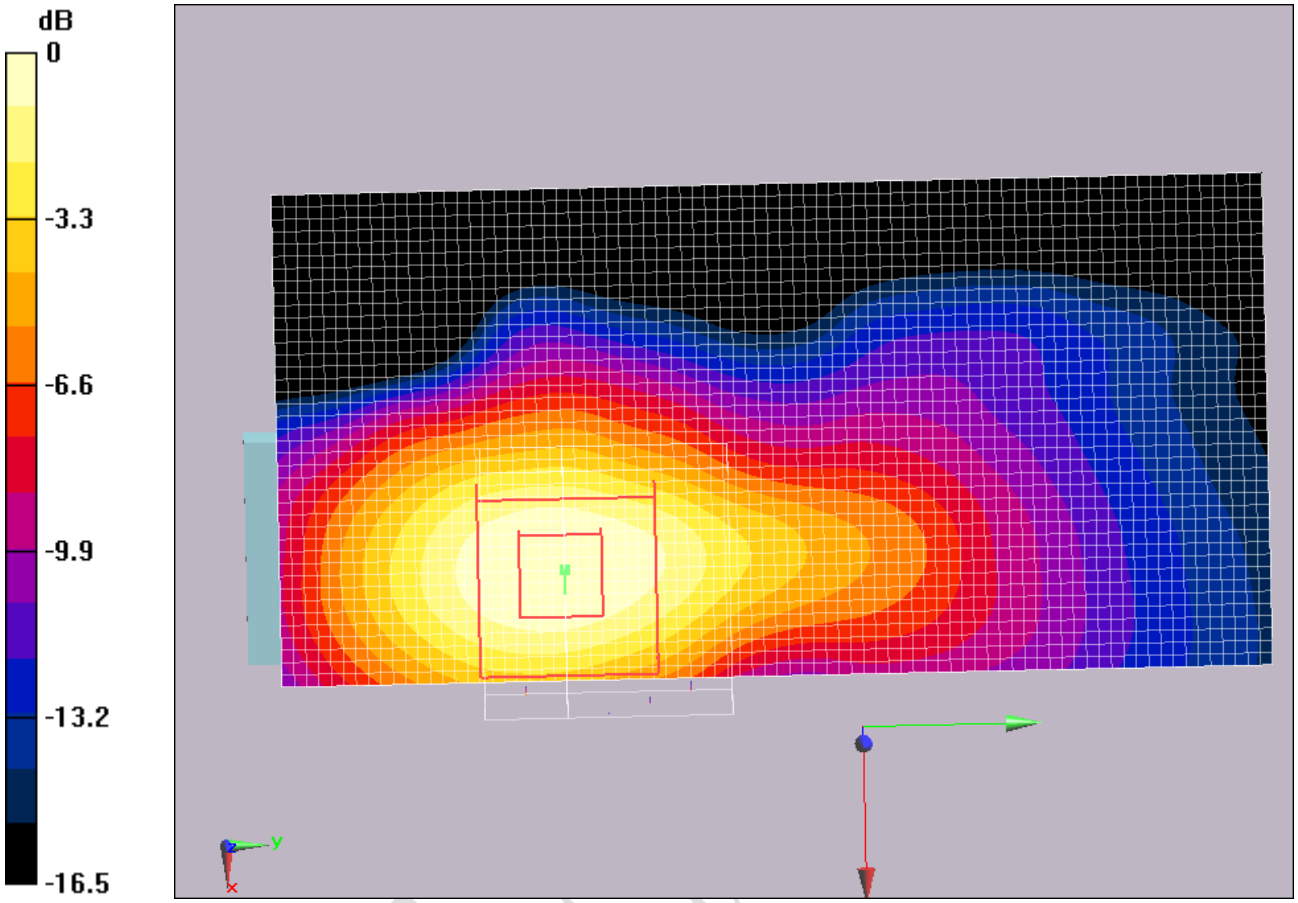
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_Mid_C/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.715 mW/g

GPRS_Mid_C/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.3 V/m; Power Drift = -0.087 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.619 mW/g; SAR(10 g) = 0.338 mW/g

Maximum value of SAR (measured) = 0.693 mW/g



0 dB = 0.693mW/g

Body_GPRS1900_2TS_SideD_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

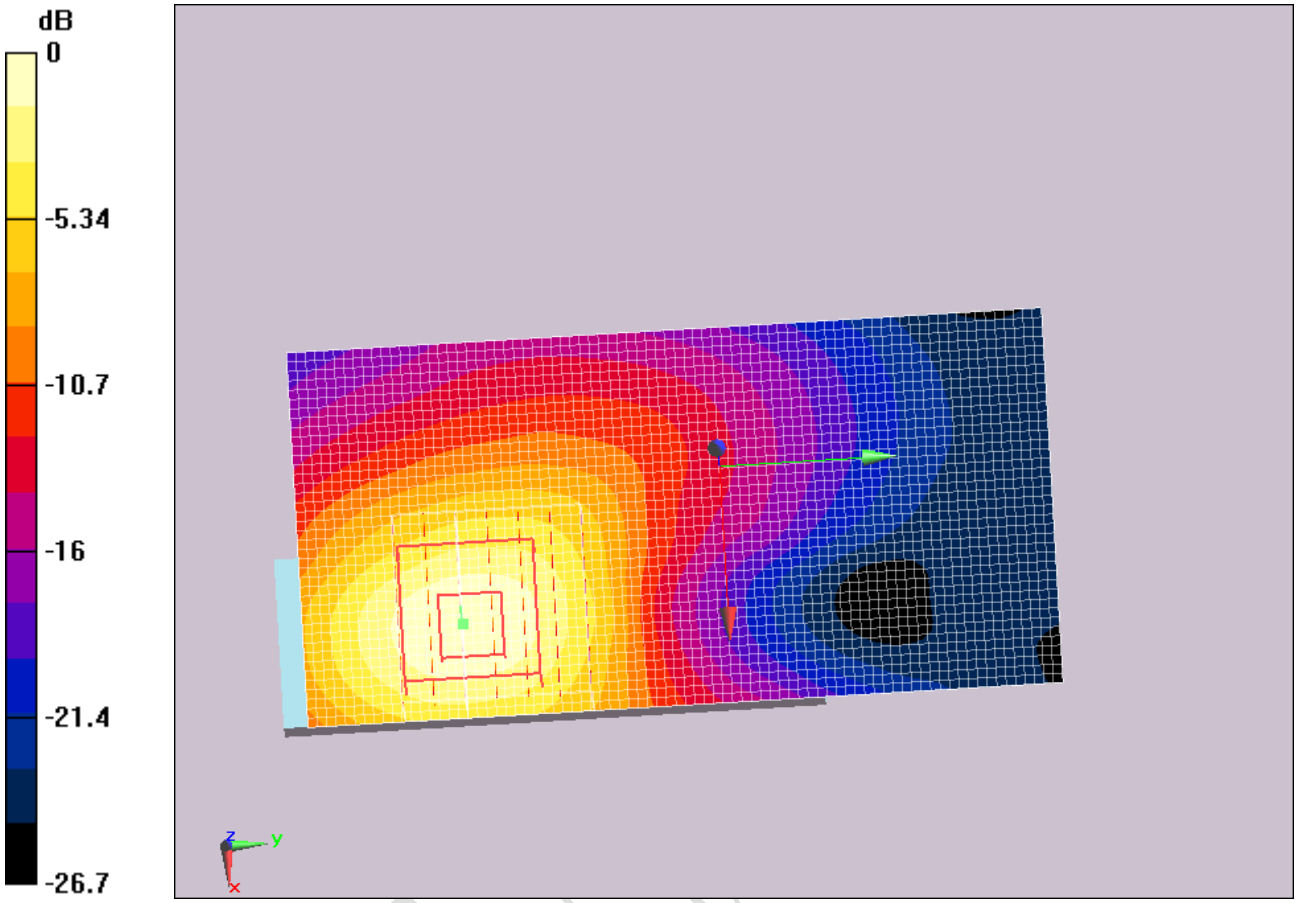
Communication System: (E)GPRS1900 2TS; Frequency: 1880 MHz;Duty Cycle: 1:4.15
Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

GPRS_Mid_D/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.91 V/m; Power Drift = -0.059 dB
Peak SAR (extrapolated) = 0.811 W/kg
SAR(1 g) = 0.475 mW/g; SAR(10 g) = 0.250 mW/g
Maximum value of SAR (measured) = 0.538 mW/g

GPRS_Mid_D/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.545 mW/g



0 dB = 0.545mW/g

Body_EGPRS1900_4TS_SideB_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

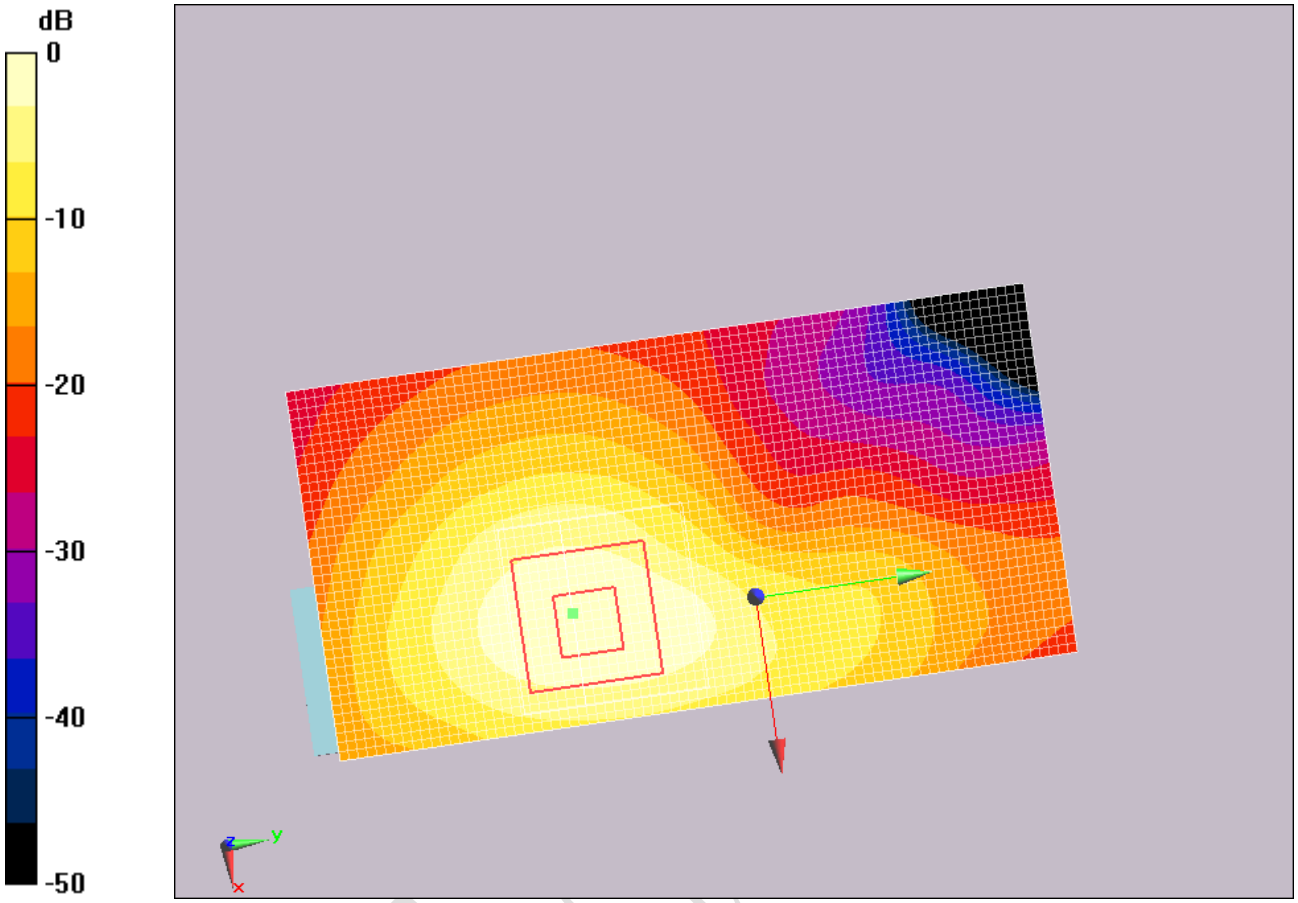
Communication System: EGPRS 1900 class12; Frequency: 1880 MHz;Duty Cycle: 1:2
Medium parameters used: f = 1880 MHz; σ = 1.56 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

EGPRS_Mid_B/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = -0.222 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.717 mW/g; SAR(10 g) = 0.386 mW/g
Maximum value of SAR (measured) = 0.793 mW/g

EGPRS_Mid_B/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.913 mW/g



0 dB = 0.913mW/g

Body_WCDMA_FDDV_RMC_SideA_Low

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: WCDMA-FDDV; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.93 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

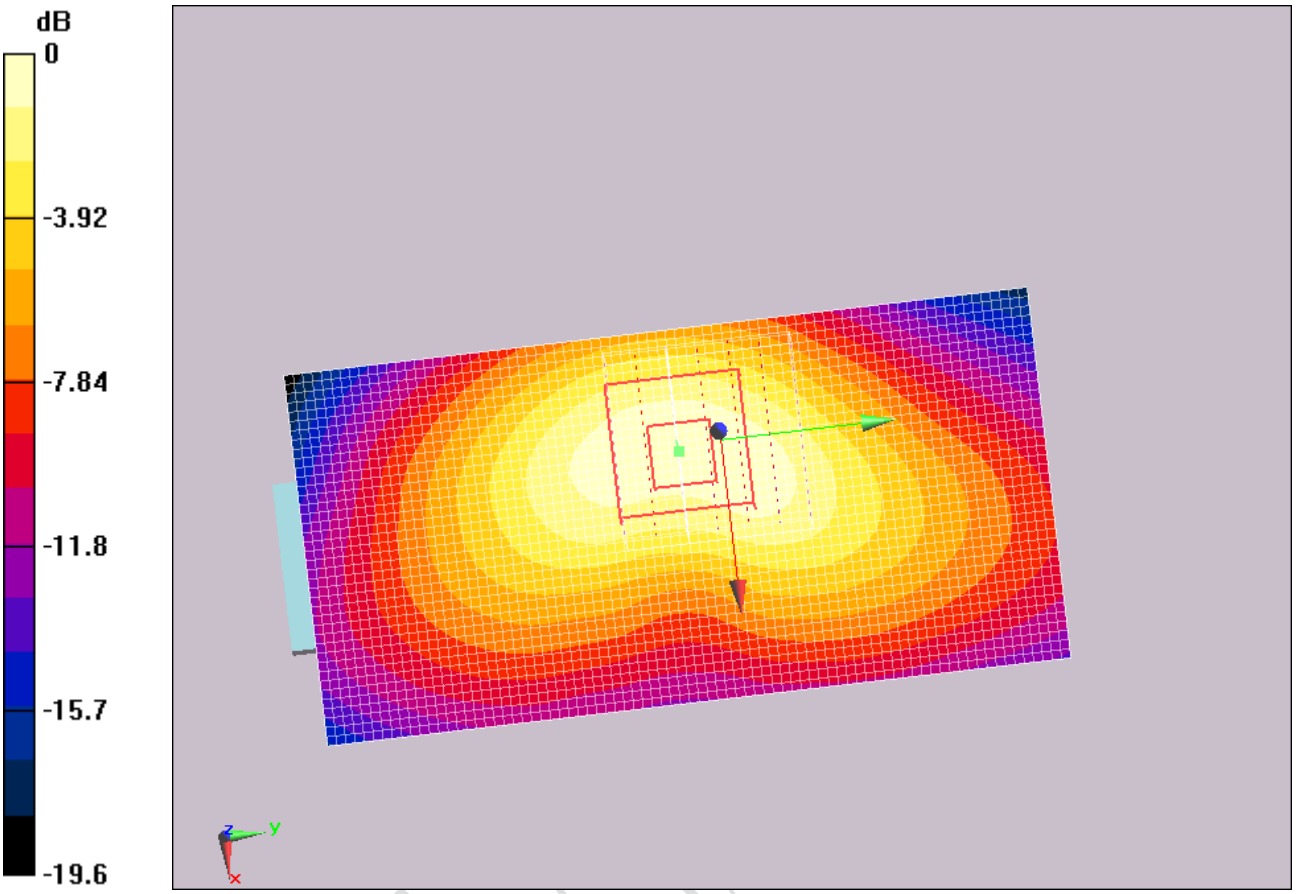
WCDMA_FDD5_Low_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.9 V/m; Power Drift = 0.076 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.639 mW/g; SAR(10 g) = 0.384 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.706 mW/g

WCDMA_FDD5_Low_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.671 mW/g



0 dB = 0.671mW/g

Body_WCDMA_FDDV_RMC_SideA_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

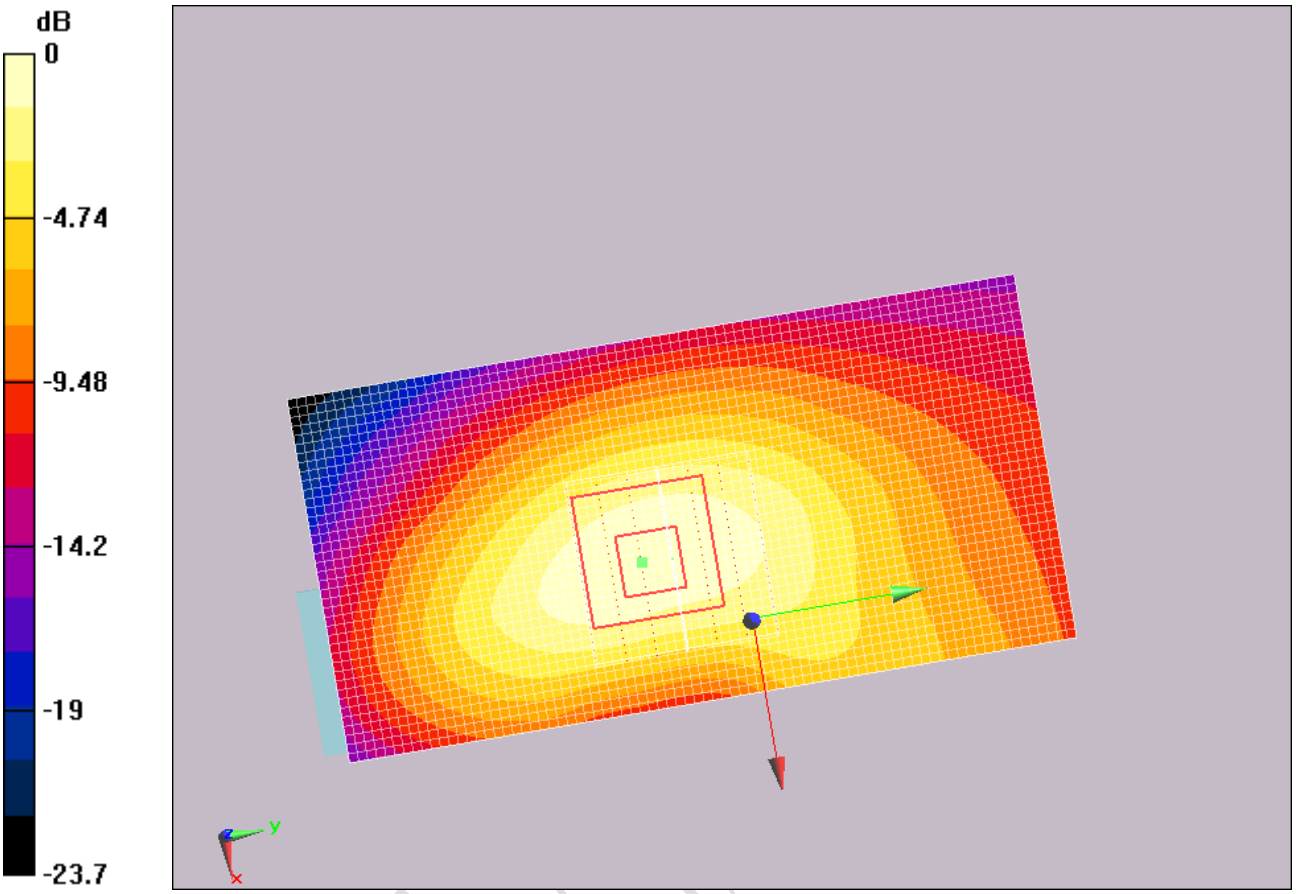
Communication System: WCDMA-FDDV; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.935 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD5_Mid_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.7 V/m; Power Drift = -0.367 dB
Peak SAR (extrapolated) = 0.951 W/kg
SAR(1 g) = 0.587 mW/g; SAR(10 g) = 0.349 mW/g
Maximum value of SAR (measured) = 0.649 mW/g

WCDMA_FDD5_Mid_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.636 mW/g



0 dB = 0.636mW/g

Body_WCDMA_FDDV_RMC_SideA_High

DUT: USB Modem MF193; Type: MF193; Serial: --

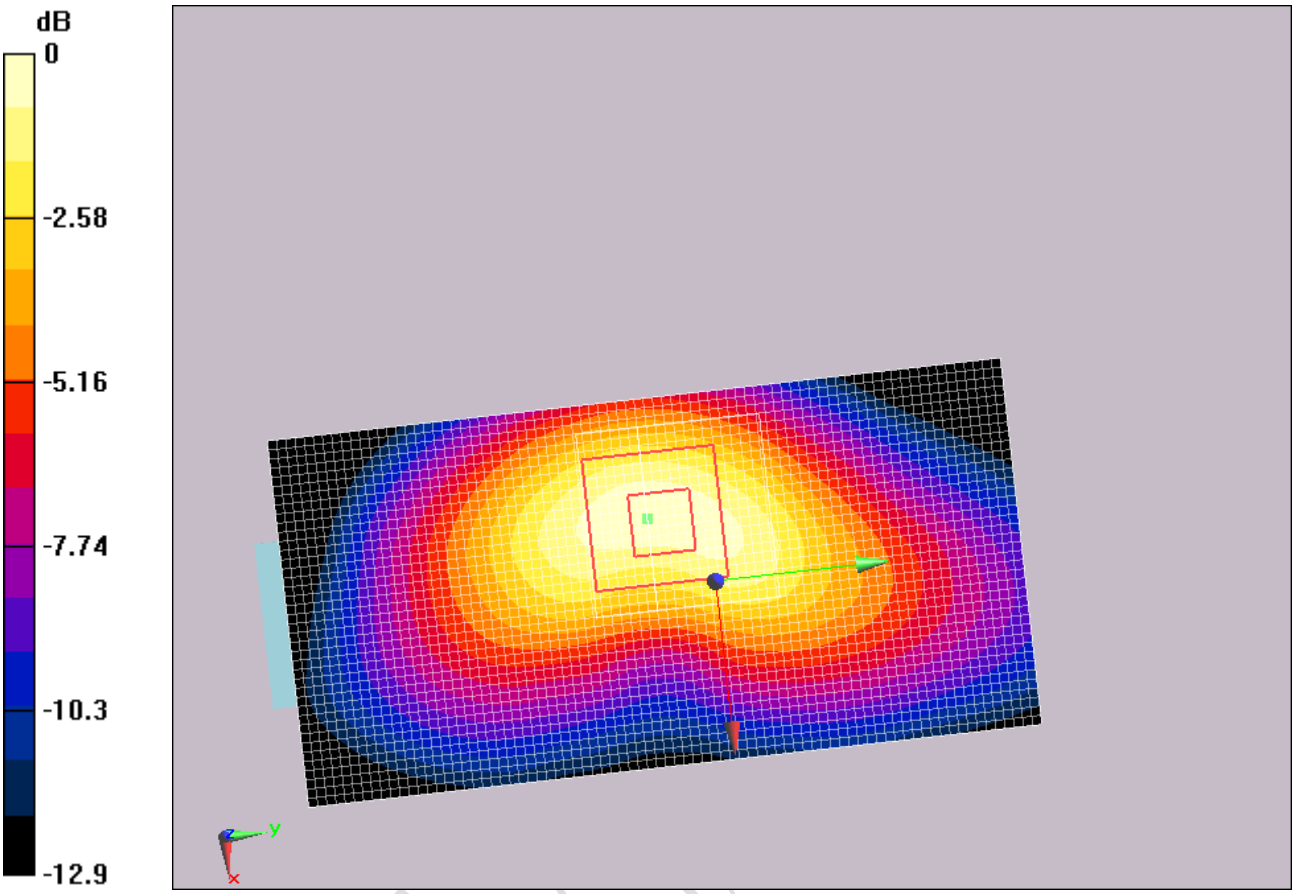
Communication System: WCDMA-FDDV; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 847 MHz; σ = 0.947 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD5_High_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.721 mW/g

WCDMA_FDD5_High_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.3 V/m; Power Drift = 0.00382 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.680 mW/g; SAR(10 g) = 0.402 mW/g
Maximum value of SAR (measured) = 0.745 mW/g



0 dB = 0.745mW/g

Body_WCDMA_FDDV_RMC_SideB_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: WCDMA-FDDV; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.935 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

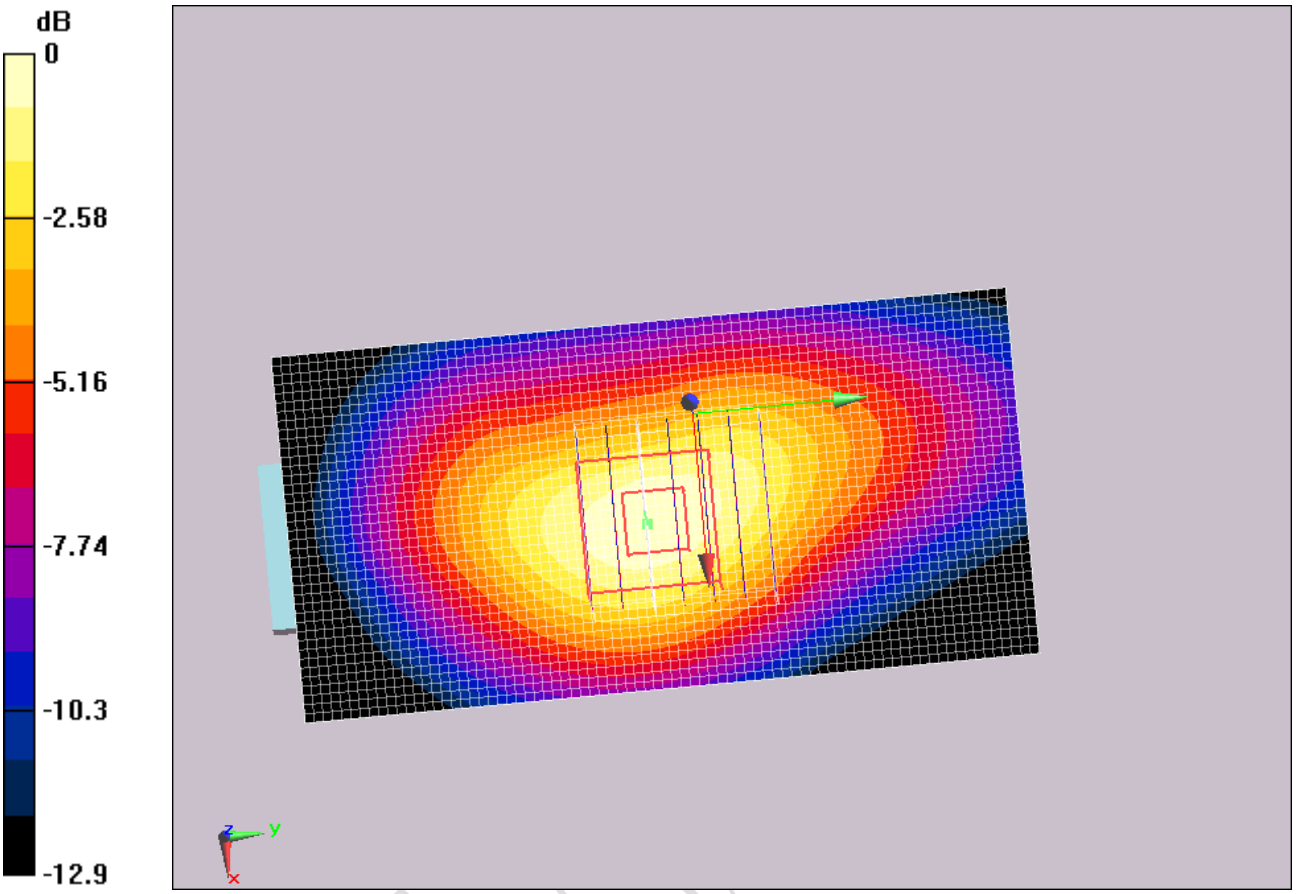
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD5_Mid_B/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.611 mW/g

WCDMA_FDD5_Mid_B/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.1 V/m; Power Drift = -0.345 dB
Peak SAR (extrapolated) = 0.895 W/kg
SAR(1 g) = 0.556 mW/g; SAR(10 g) = 0.332 mW/g

Maximum value of SAR (measured) = 0.617 mW/g



0 dB = 0.617mW/g

Body_WCDMA_FDDV_RMC_SideC_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: WCDMA-FDDV; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.935 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

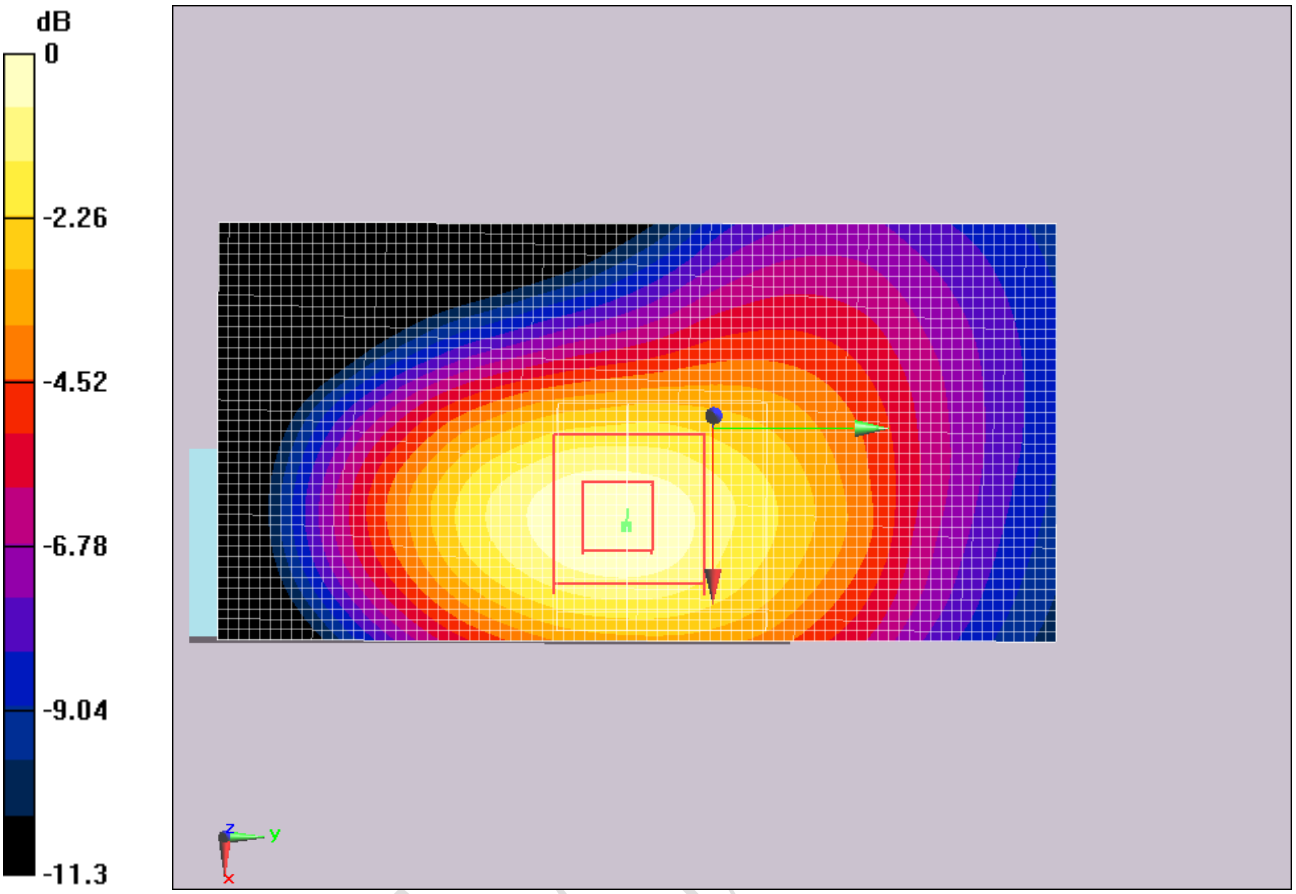
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD5_Mid_C/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.473 mW/g

WCDMA_FDD5_Mid_C/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.4 V/m; Power Drift = 0.077 dB
Peak SAR (extrapolated) = 0.672 W/kg
SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.265 mW/g

Maximum value of SAR (measured) = 0.467 mW/g



0 dB = 0.467mW/g

Body_WCDMA_FDDV_RMC_SideD_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

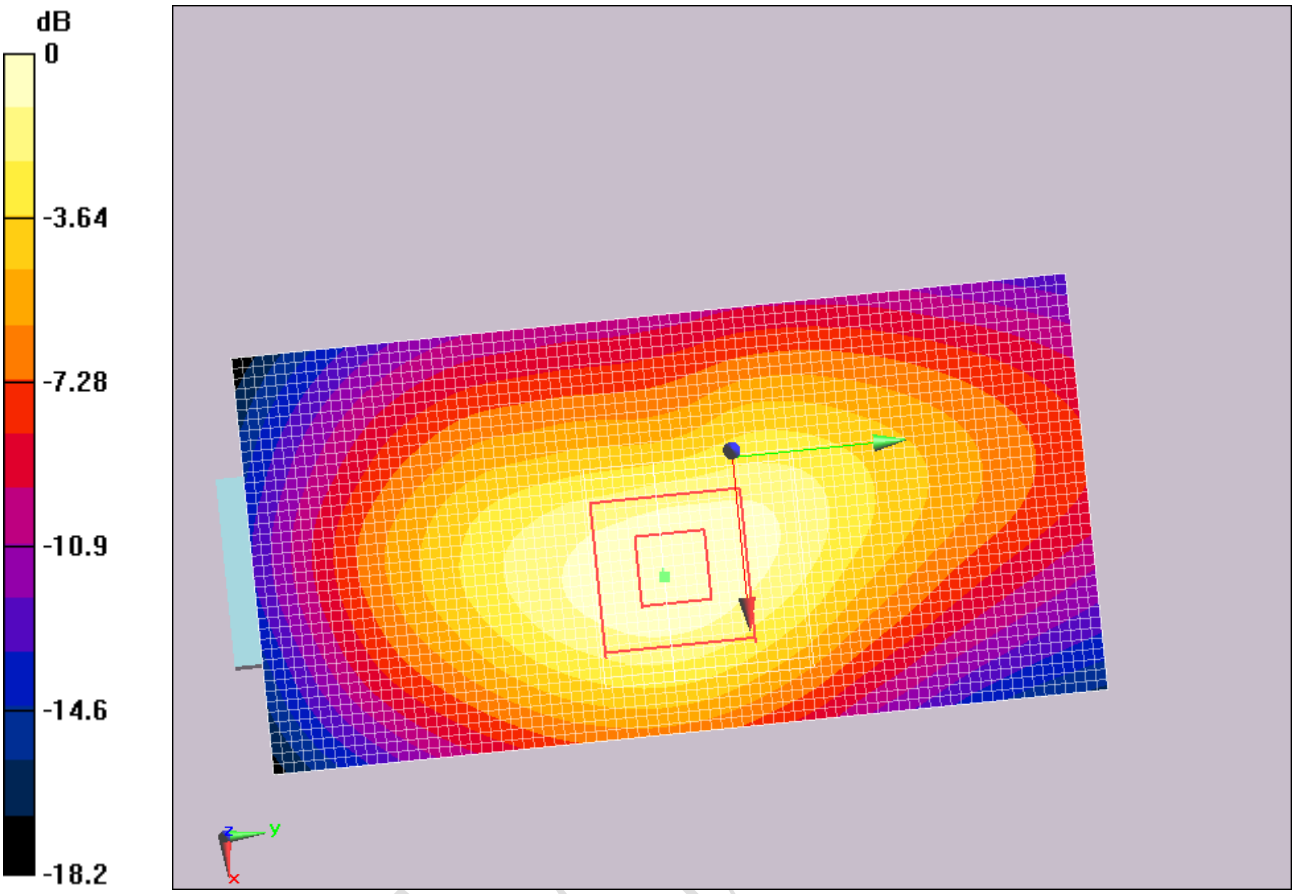
Communication System: WCDMA-FDDV; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.935 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD5_Mid_D/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.9 V/m; Power Drift = -0.192 dB
Peak SAR (extrapolated) = 0.741 W/kg
SAR(1 g) = 0.471 mW/g; SAR(10 g) = 0.285 mW/g
Maximum value of SAR (measured) = 0.523 mW/g

WCDMA_FDD5_Mid_D/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.501 mW/g



0 dB = 0.501mW/g

Body_WCDMA_FDDII_RMC_SideA_Low

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: W-CDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.52 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

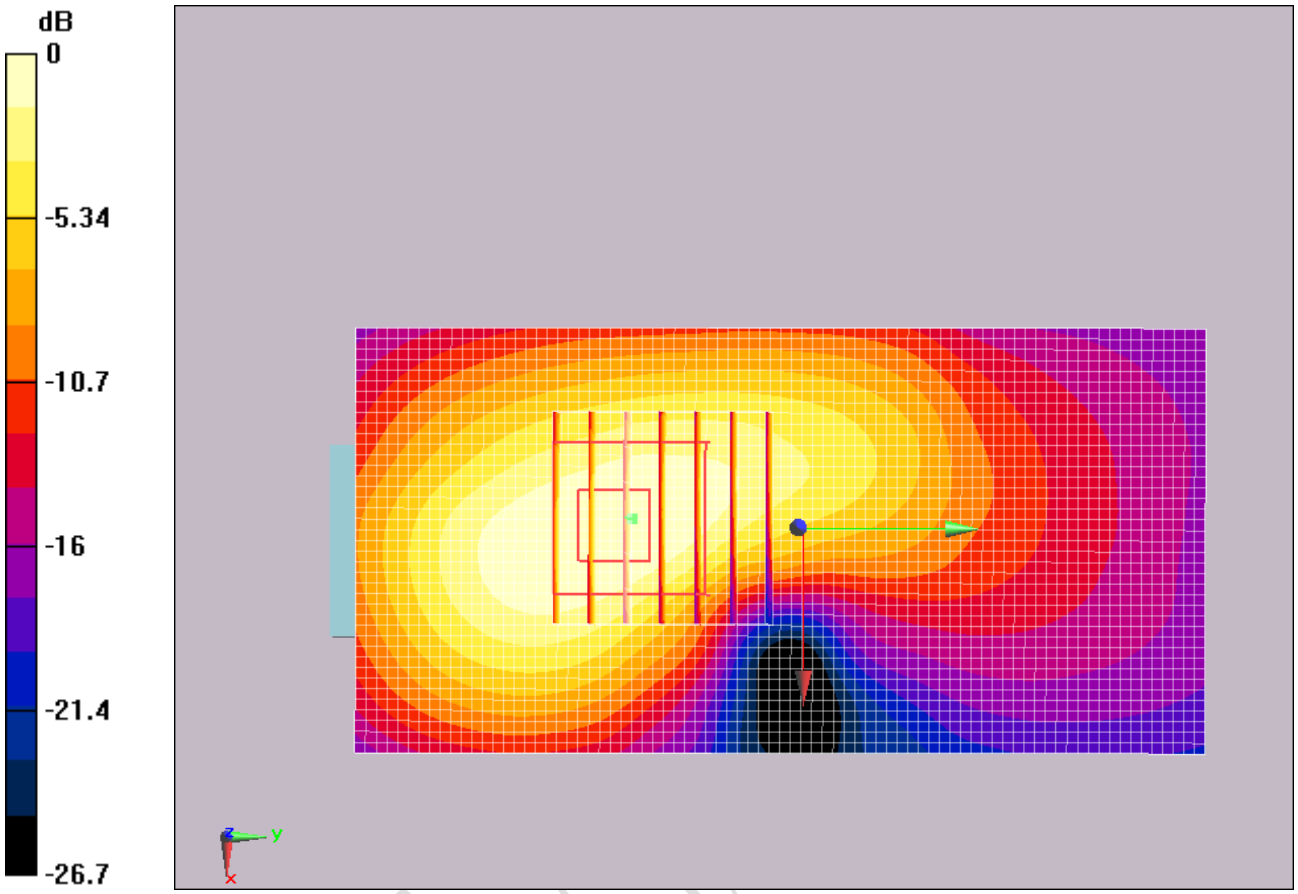
WCDMA_FDD2_Low_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.05 mW/g

WCDMA_FDD2_Low_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11 V/m; Power Drift = 0.288 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.861 mW/g; SAR(10 g) = 0.473 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.950 mW/g



0 dB = 0.950mW/g

Body_WCDMA_FDDII_RMC_SideA_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

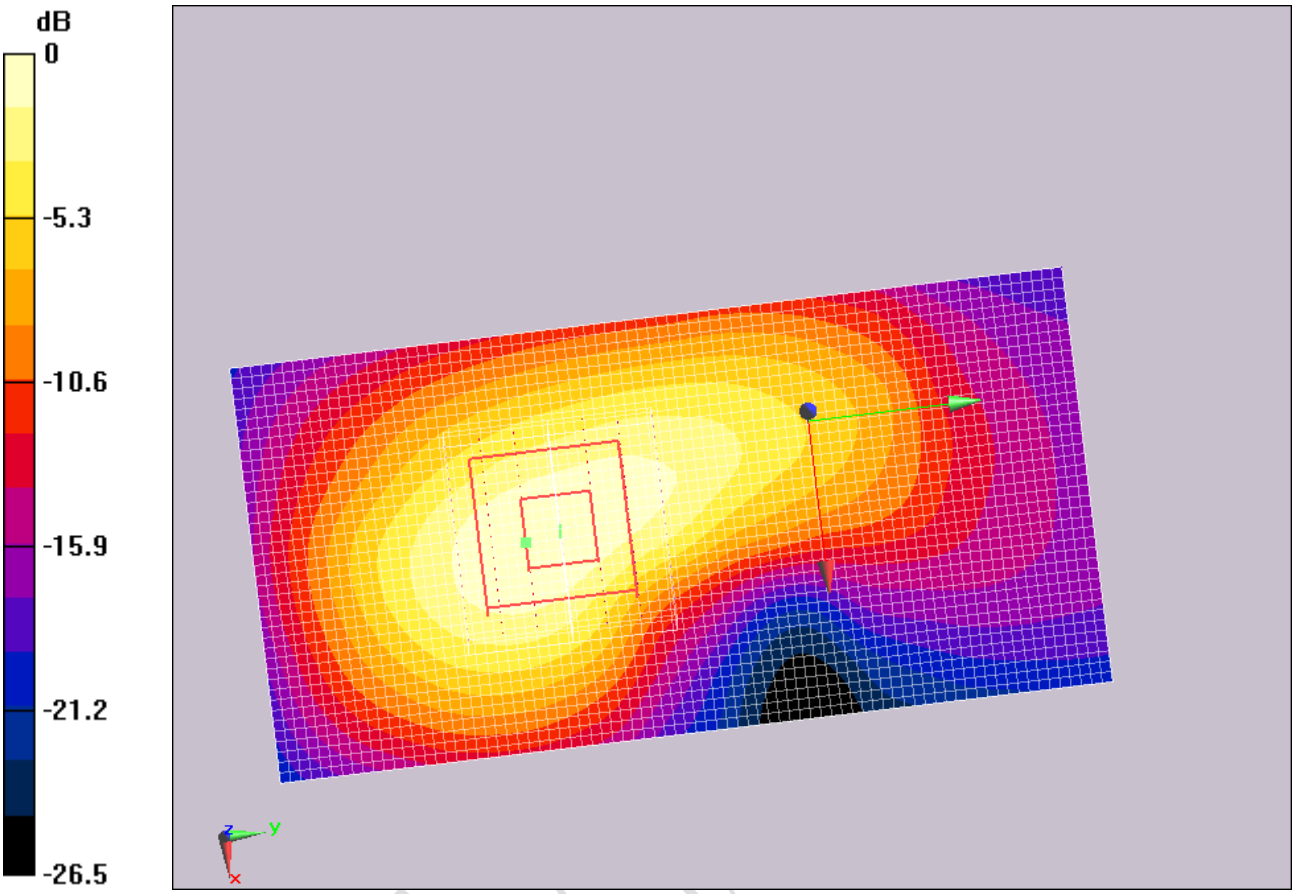
Communication System: W-CDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.55 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD2_Mid_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.9 V/m; Power Drift = 0.307 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.928 mW/g; SAR(10 g) = 0.528 mW/g
Maximum value of SAR (measured) = 1.03 mW/g

WCDMA_FDD2_Mid_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.08 mW/g



0 dB = 1.08mW/g

Body_WCDMA_FDDII_RMC_SideA_High

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: W-CDMA Band II; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1908 MHz; σ = 1.58 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

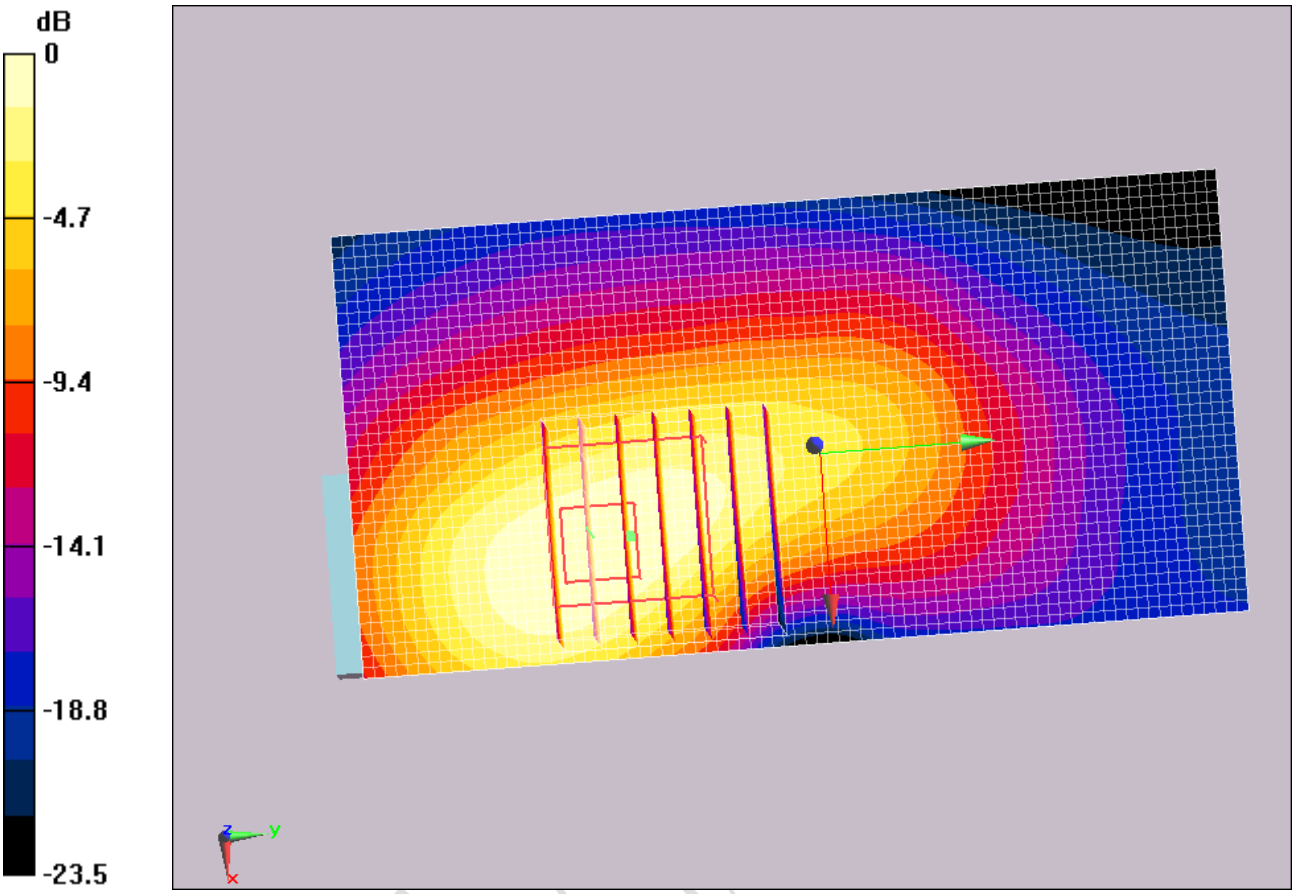
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD2_High_A/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.14 mW/g

WCDMA_FDD2_High_A/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.1 V/m; Power Drift = 0.292 dB
Peak SAR (extrapolated) = 1.55 W/kg
SAR(1 g) = 0.982 mW/g; SAR(10 g) = 0.530 mW/g

Maximum value of SAR (measured) = 1.09 mW/g



0 dB = 1.09mW/g

Body_WCDMA_FDDII_RMC_SideB_Low

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: W-CDMA Band II; Frequency: 1852.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.52 mho/m; ε_r = 53.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

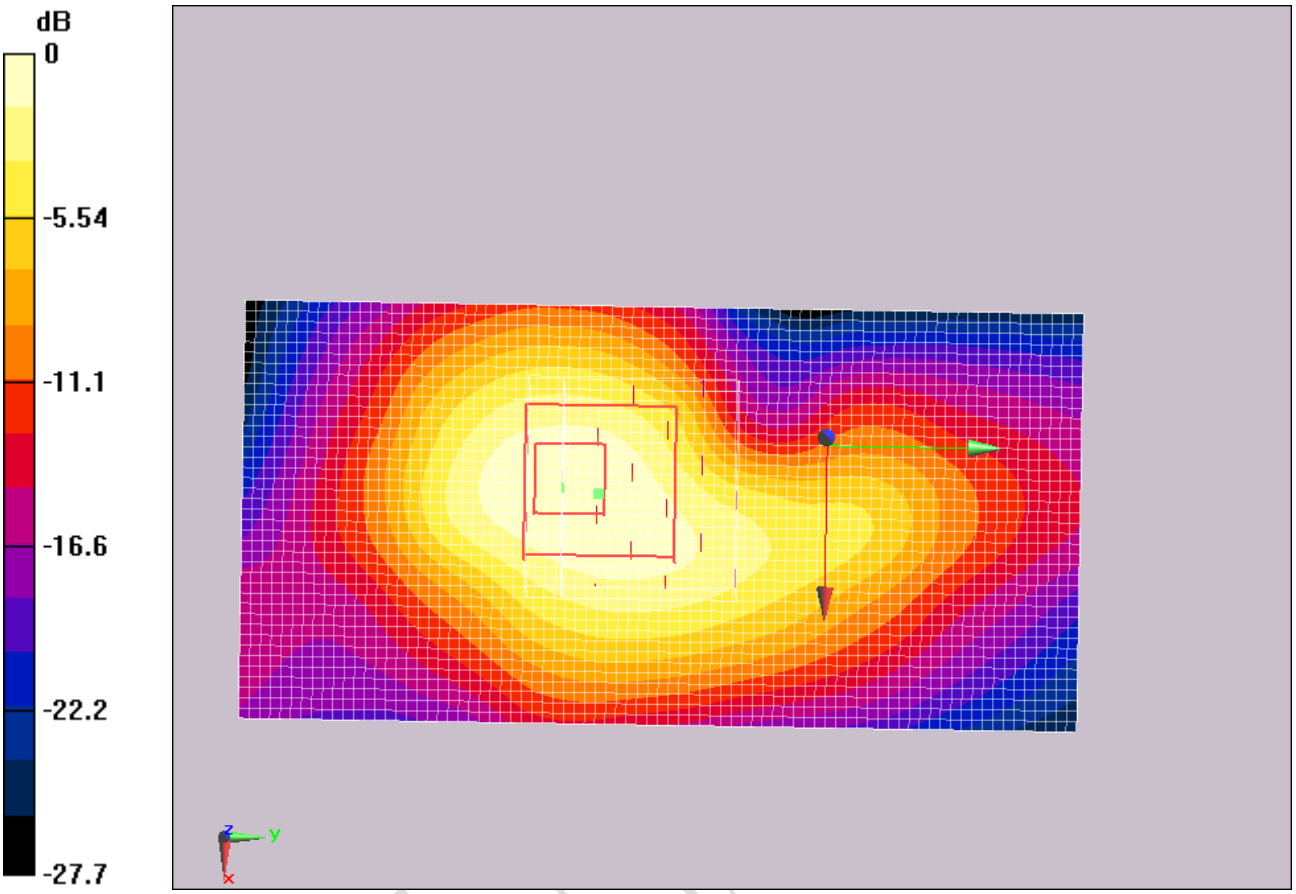
WCDMA_FDD2_Low_B/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.8 V/m; Power Drift = 0.271 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.865 mW/g; SAR(10 g) = 0.441 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.963 mW/g

WCDMA_FDD2_Low_B/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.911 mW/g



0 dB = 0.911mW/g

Body_WCDMA_FDDII_RMC_SideB_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: W-CDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.55 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

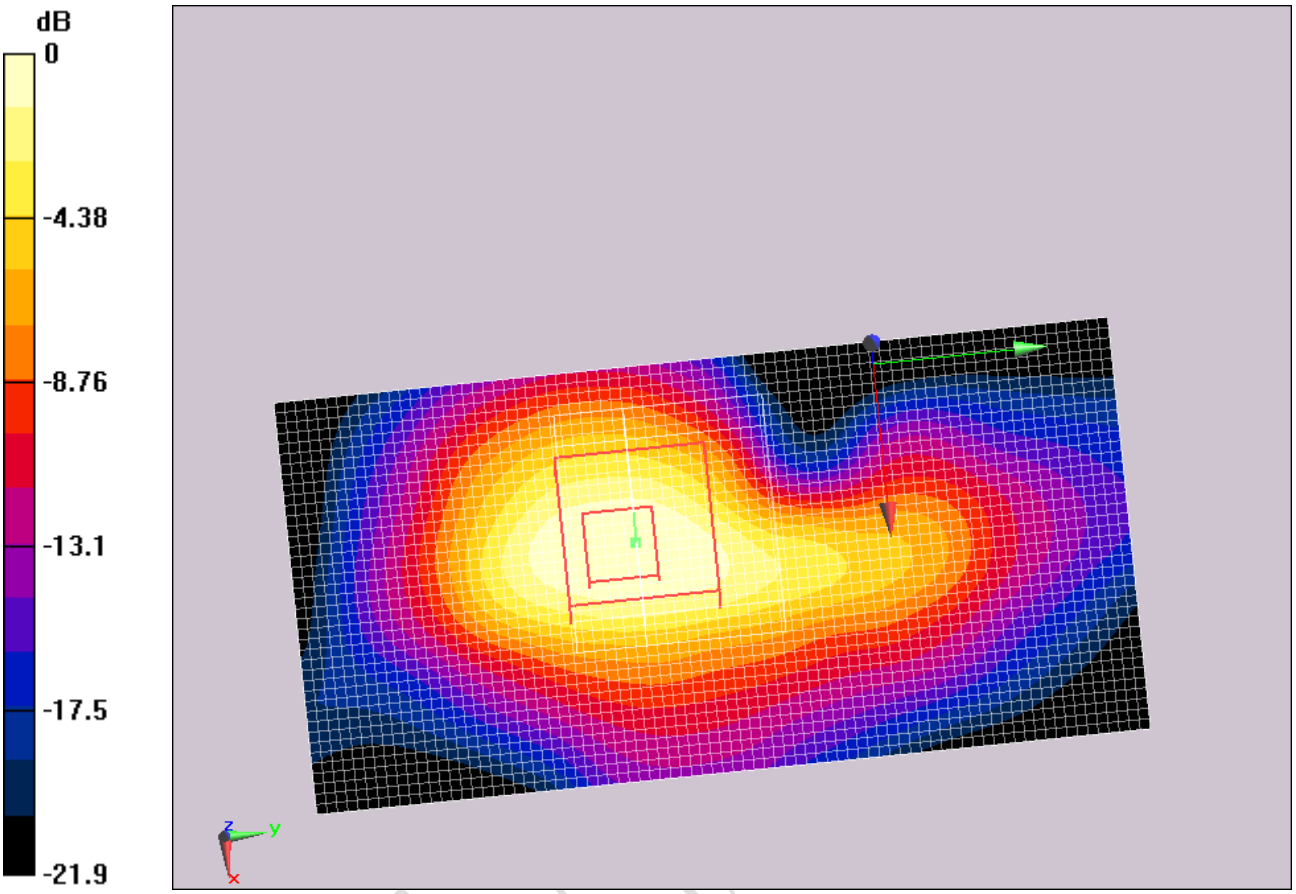
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD2_Mid_B/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.4 mW/g

WCDMA_FDD2_Mid_B/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.4 V/m; Power Drift = -0.216 dB
Peak SAR (extrapolated) = 1.84 W/kg
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.571 mW/g

Maximum value of SAR (measured) = 1.23 mW/g



0 dB = 1.23mW/g

Body_WCDMA_FDDII_RMC_SideB_High

DUT: USB Modem MF193; Type: MF193; Serial: --

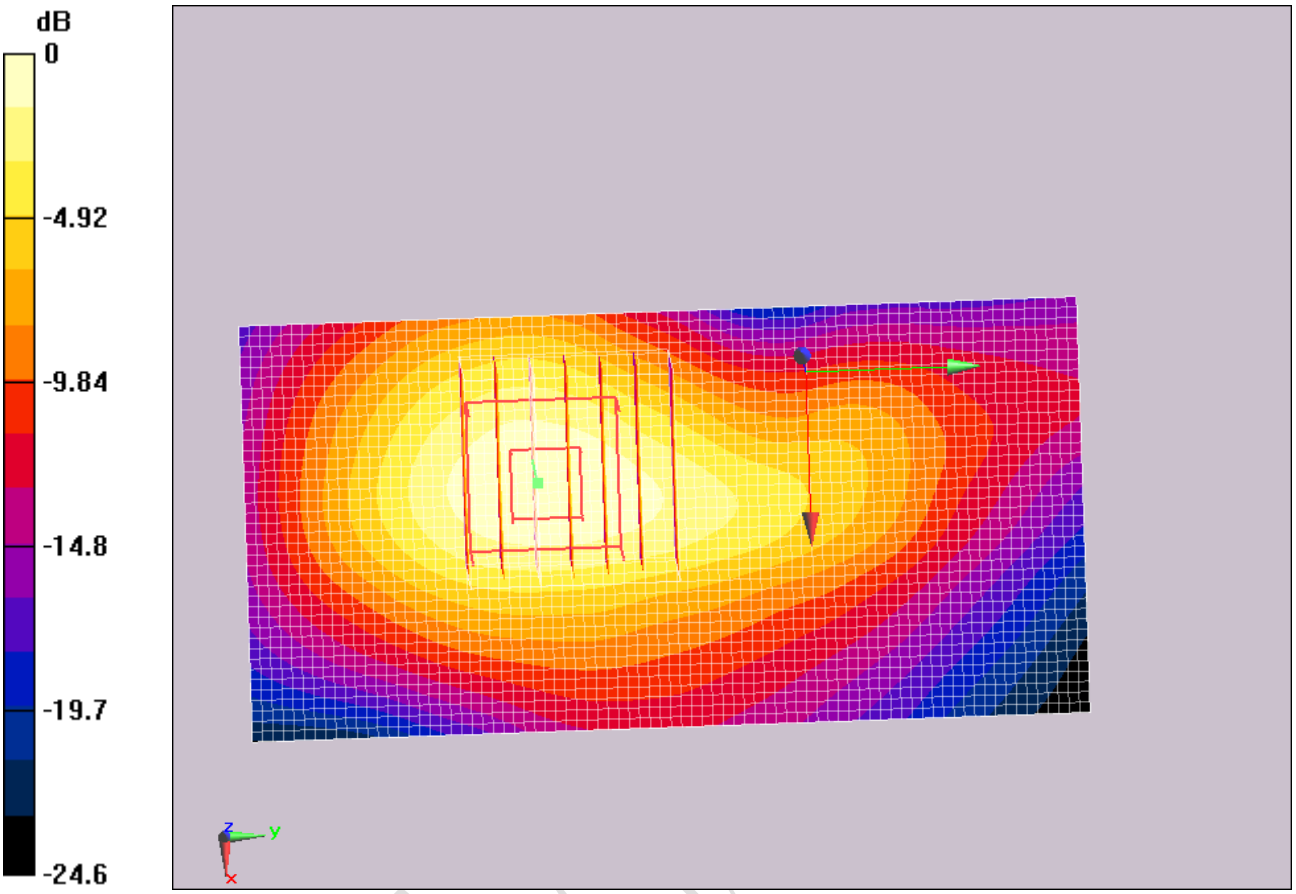
Communication System: W-CDMA Band II; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1908 MHz; σ = 1.58 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD2_High_B 2 2 3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = 0.130 dB
Peak SAR (extrapolated) = 1.41 W/kg
SAR(1 g) = 0.896 mW/g; SAR(10 g) = 0.513 mW/g
Maximum value of SAR (measured) = 0.988 mW/g

WCDMA_FDD2_High_B 2 2 3/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.04 mW/g



0 dB = 1.04mW/g

Body_WCDMA_FDDII_RMC_SideC_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: W-CDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.55 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

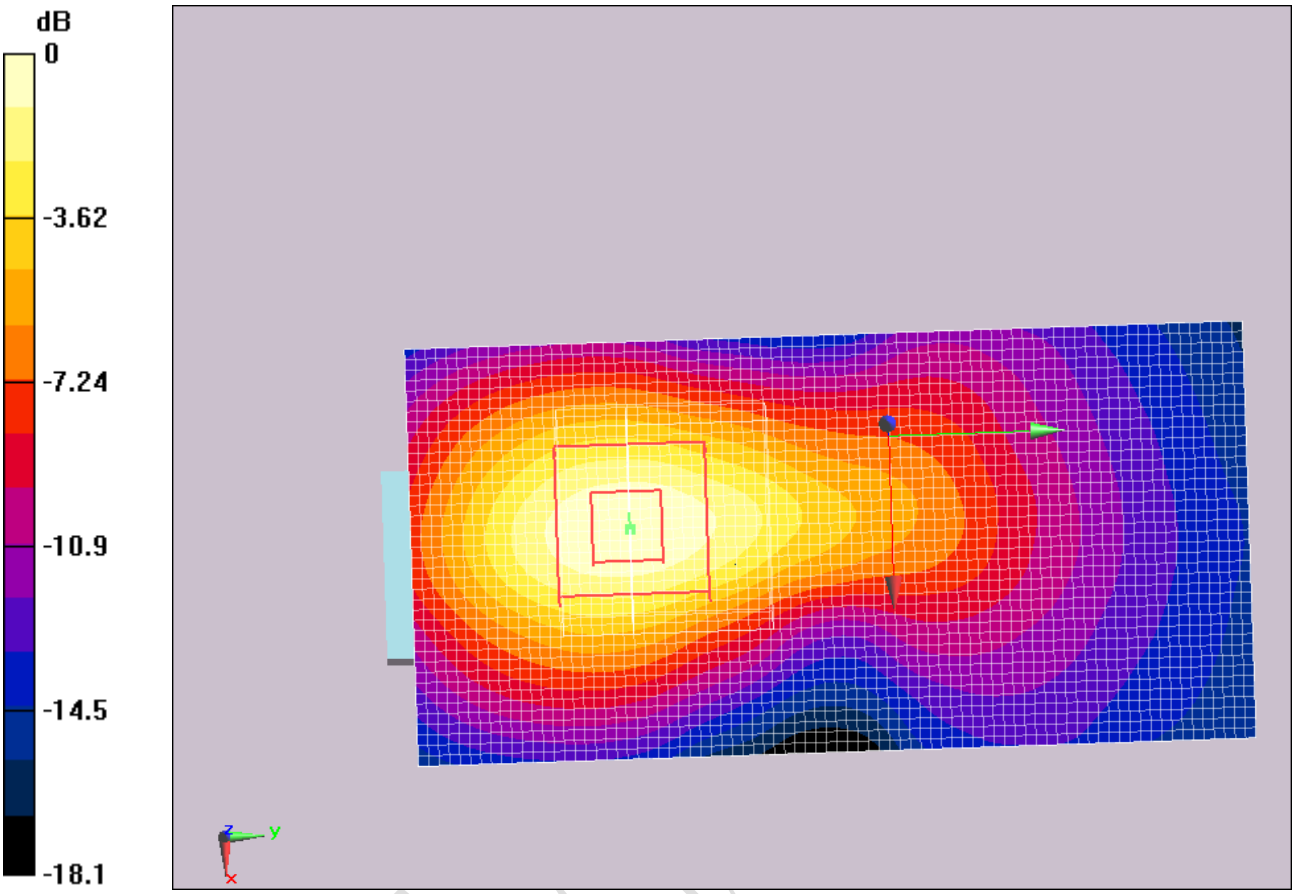
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD2_Mid_C/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.656 mW/g

WCDMA_FDD2_Mid_C/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11 V/m; Power Drift = 0.128 dB
Peak SAR (extrapolated) = 0.975 W/kg
SAR(1 g) = 0.589 mW/g; SAR(10 g) = 0.321 mW/g

Maximum value of SAR (measured) = 0.661 mW/g



0 dB = 0.661mW/g

Body_WCDMA_FDDII_RMC_SideD_Middle

DUT: USB Modem MF193; Type: MF193; Serial: --

Communication System: W-CDMA Band II; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.55 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

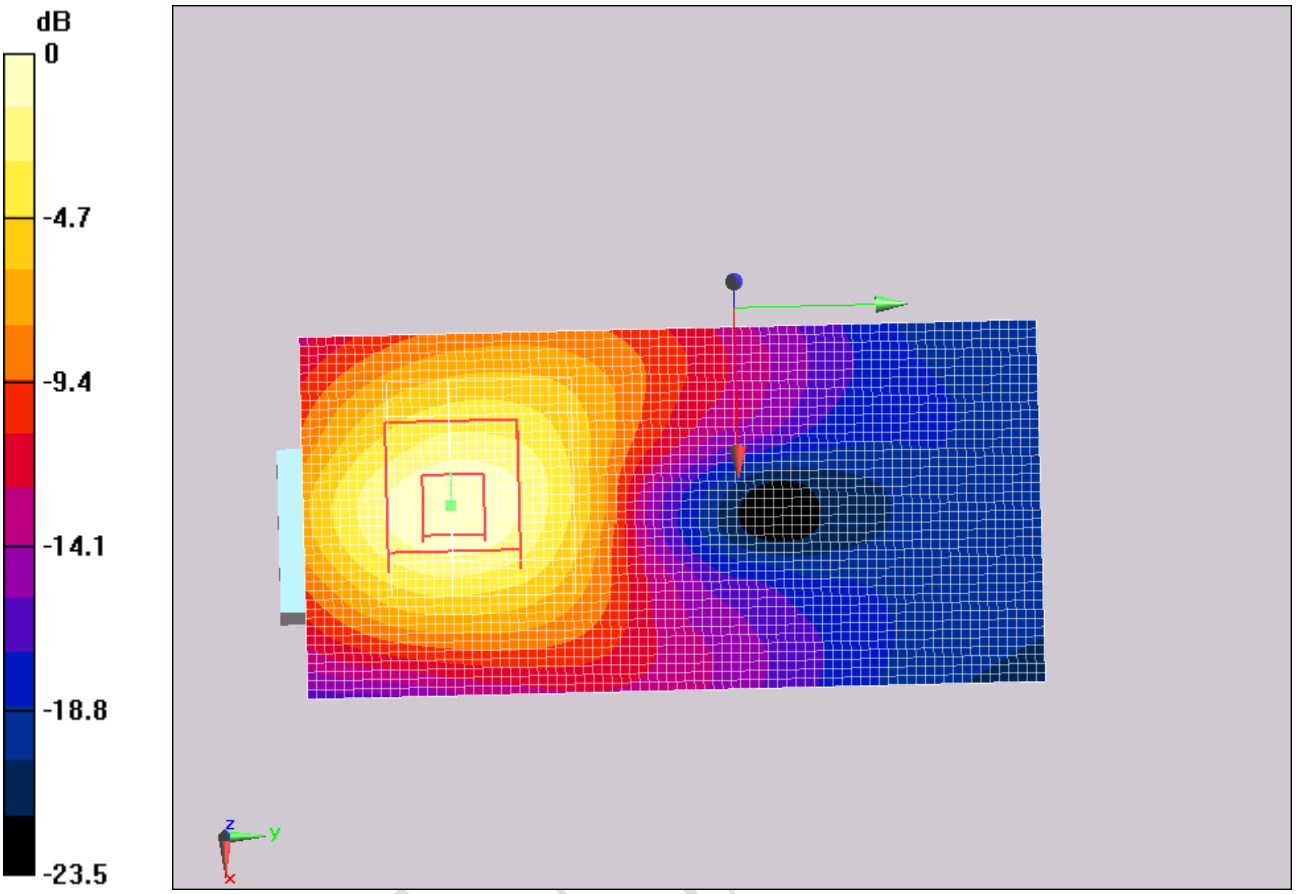
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

WCDMA_FDD2_Mid_D/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.63 V/m; Power Drift = -0.263 dB
Peak SAR (extrapolated) = 0.882 W/kg
SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.275 mW/g

Maximum value of SAR (measured) = 0.577 mW/g

WCDMA_FDD2_Mid_D/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.595 mW/g



0 dB = 0.595mW/g

Annex E System Performance Check Graphical Results

Validation_MSL900_850MHz_GSM850

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:xxx

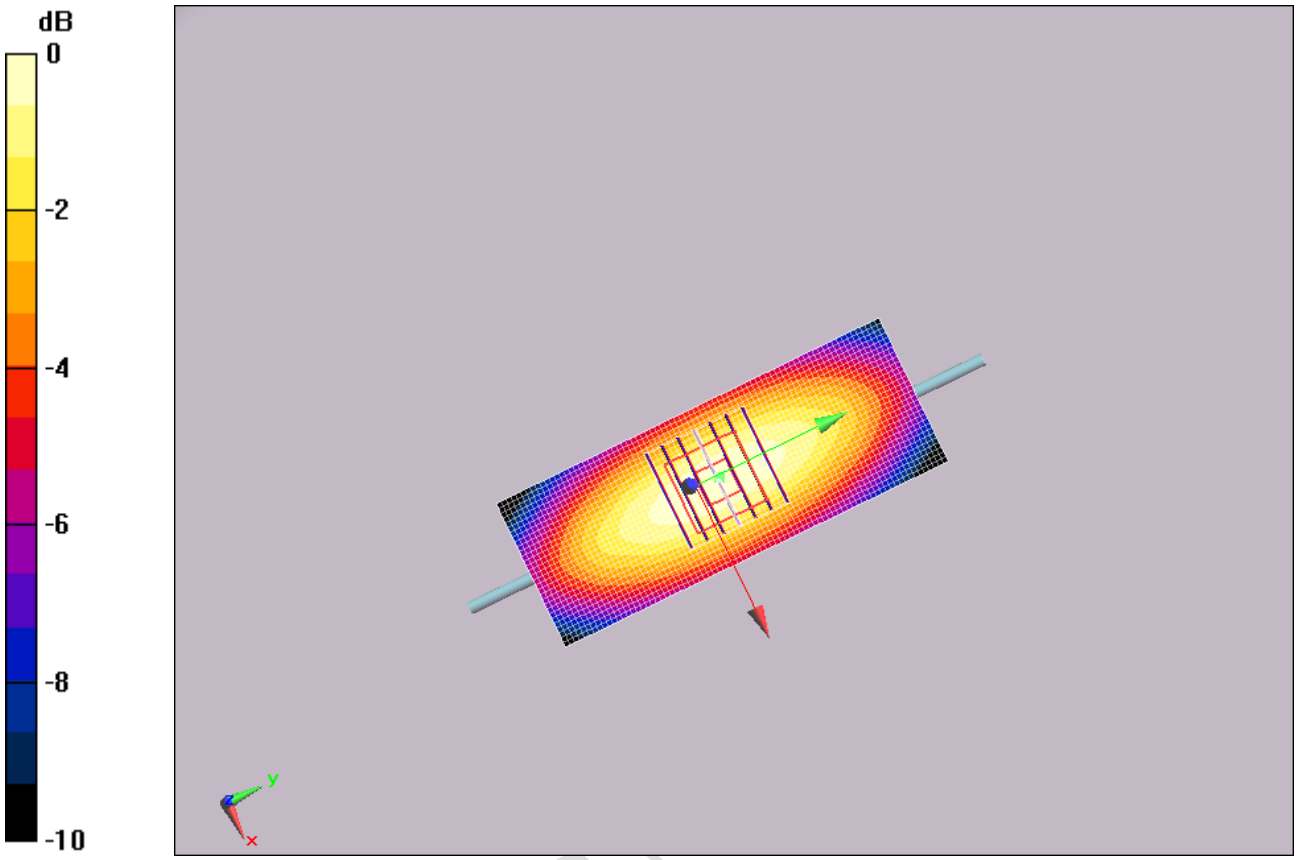
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.935 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

d=15mm, Pin=24 dBm/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.51 mW/g

d=15mm, Pin=24 dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.4 V/m; Power Drift = 0.000561 dB
Peak SAR (extrapolated) = 3.28 W/kg
SAR(1 g) = 2.25 mW/g; SAR(10 g) = 1.49 mW/g
Maximum value of SAR (measured) = 2.54 mW/g



0 dB = 2.54mW/g

Validation_MSL900_835MHz_FDDV

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:xxx

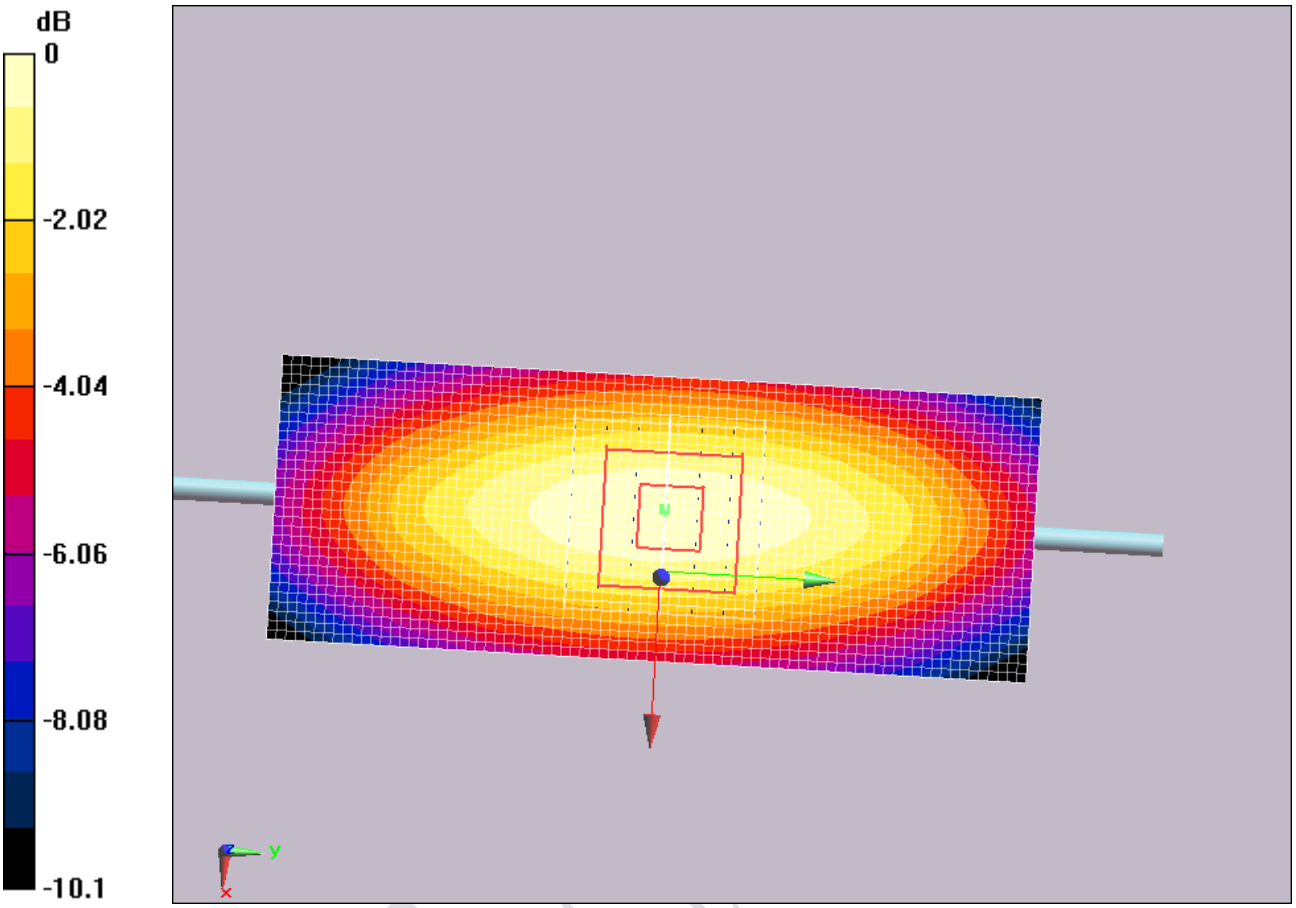
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.935 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

d=15mm, Pin=24 dBm/Area Scan (31x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.54 mW/g

d=15mm, Pin=24 dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.4 V/m; Power Drift = -0.042 dB
Peak SAR (extrapolated) = 3.29 W/kg
SAR(1 g) = 2.26 mW/g; SAR(10 g) = 1.49 mW/g
Maximum value of SAR (measured) = 2.55 mW/g



0 dB = 2.55mW/g

Validation_MSL1800_1900MHz_PCS1900

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:xxx

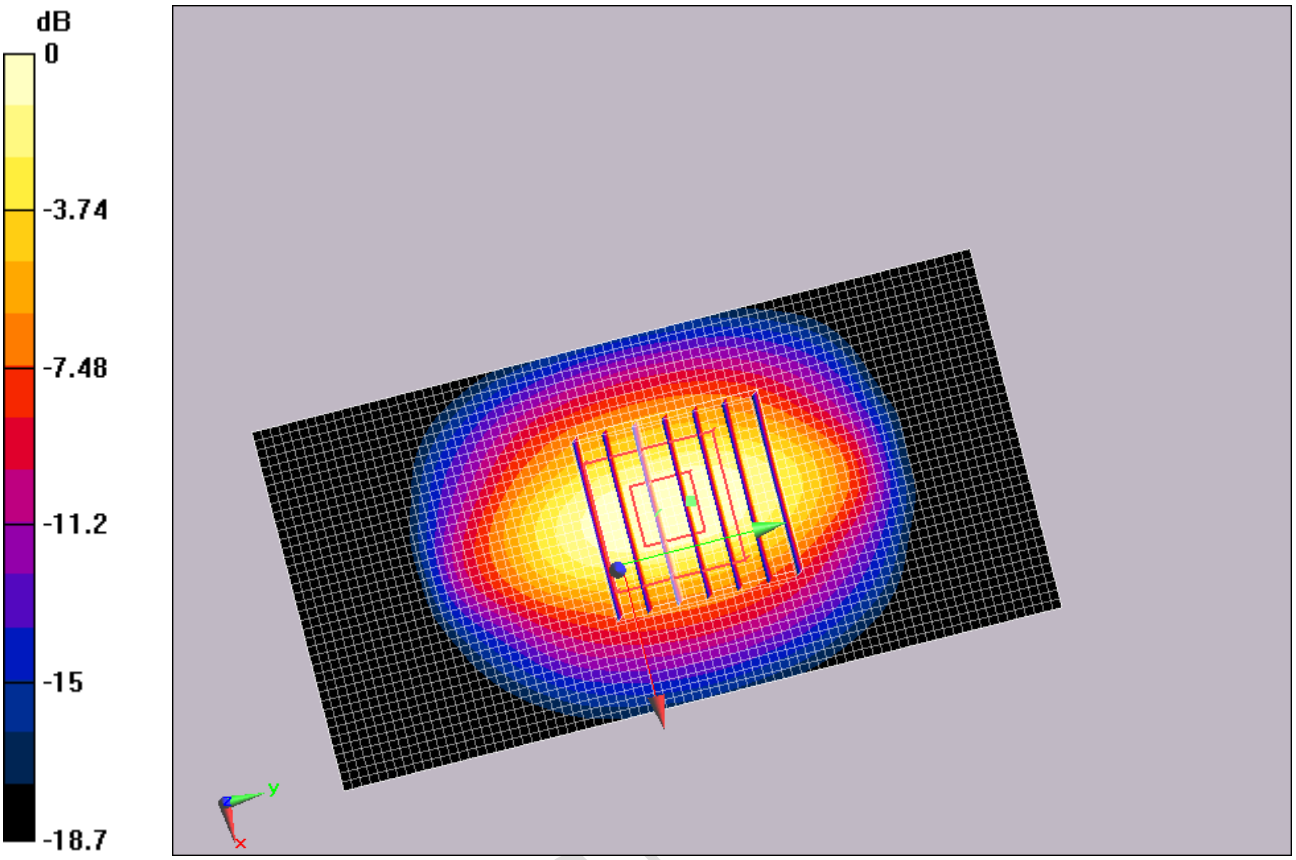
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.58 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

d=10mm, Pin=24 dBm/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12 mW/g

d=10mm, Pin=24 dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.9 V/m; Power Drift = -0.028 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.51 mW/g; SAR(10 g) = 4.87 mW/g
Maximum value of SAR (measured) = 11.6 mW/g



0 dB = 11.6mW/g

Validation_MSL1800_1900MHz_FDDII

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:xxx

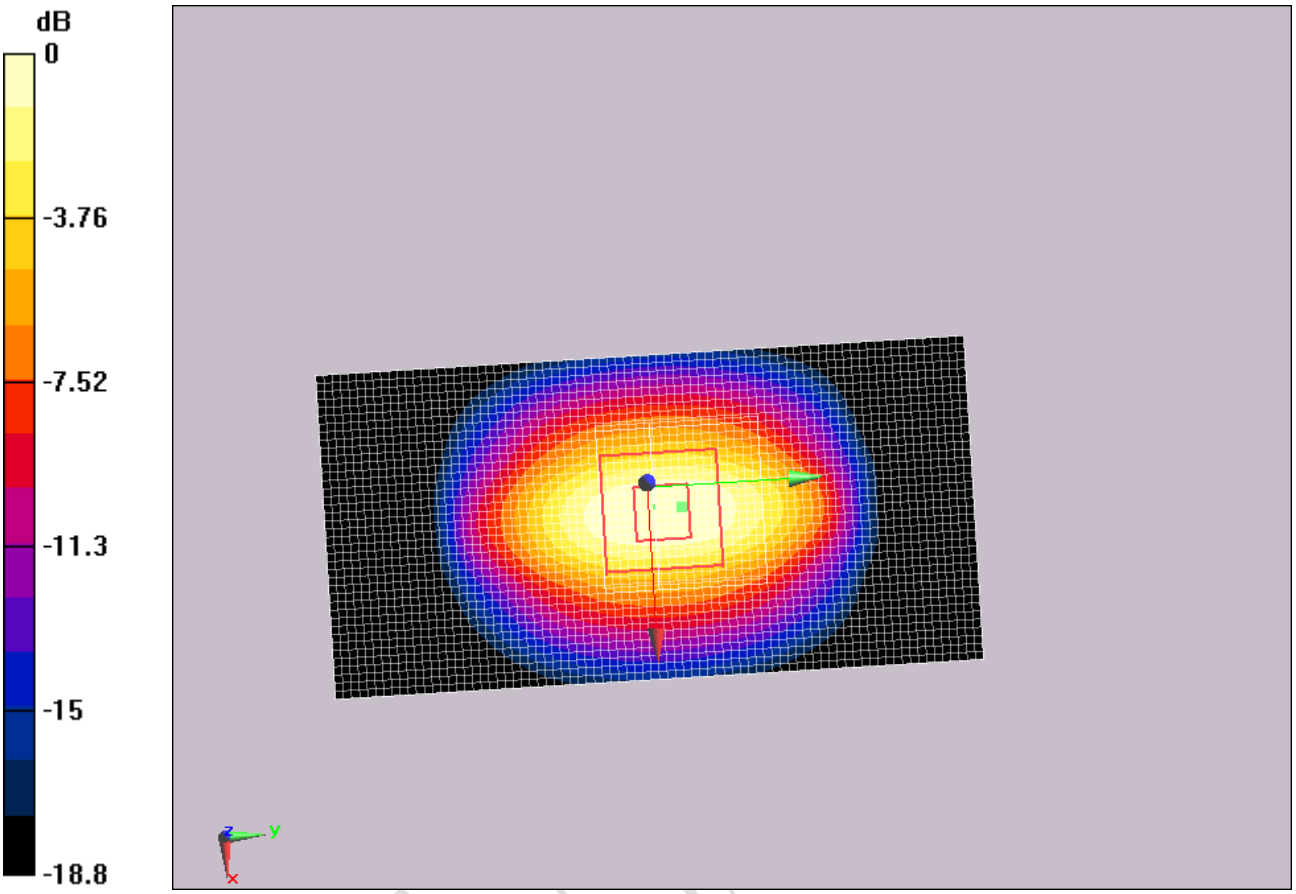
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.57 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(4.58, 4.58, 4.58); Calibrated: 2010-5-20
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

d=10mm, Pin=24 dBm/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.8 mW/g

d=10mm, Pin=24 dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.8 V/m; Power Drift = -0.000643 dB
Peak SAR (extrapolated) = 17 W/kg
SAR(1 g) = 9.37 mW/g; SAR(10 g) = 4.8 mW/g
Maximum value of SAR (measured) = 11.4 mW/g



0 dB = 11.4mW/g

Annex F Probes Calibration Certificates

The System Validation was conducted following the requirements of standard IEEE 1528: 2003 Clause 8.3.

The scanned copy of the calibration certificate of the probe used is as following.

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

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

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

Accreditation No.: SCS 108

Client CTTL Certificate No: ES3-3158_May10

CALIBRATION CERTIFICATE

Object ES3DV3 - SN:3158

Calibration procedure(s) QA CAL-01.v6, QA CAL-23.v3 and QA CAL-25.v2
Calibration procedure for dosimetric E-field probes

Calibration date: May 20, 2010

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	20-Apr-10 (No. DAE4-660_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-09)	In house check: Oct10

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

Issued: May 22, 2010

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

Certificate No: ES3-3158_May10 Page 1 of 11

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

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

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

Accreditation No.: SCS 108

Glossary:

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 effect 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.
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z: A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Certificate No: ES3-3158_May10 Page 2 of 11

Probe ES3DV3

SN:3158

Manufactured:	August 13, 2007
Last calibrated:	April 14, 2009
Recalibrated:	May 20, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

ES3DV3 SN:3158 May 20, 2010

DASY/EASY - Parameters of Probe: ES3DV3 SN:3158

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.14	1.23	1.22	± 10.1%
DCP (mV)[B]	93.9	93.8	91.6	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300.0	± 1.5%
			Y	0.00	0.00	1.00	300.0	
			Z	0.00	0.00	1.00	300.0	

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.

[C] Uncertainty is determined using the maximum deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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ES3DV3 SN:3158 May 20, 2010

DASY/EASY - Parameters of Probe: ES3DV3 SN:3158

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	5.97	5.97	5.97	0.69	1.18 ± 11.0%
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	5.86	5.86	5.86	0.73	1.16 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	5.13	5.13	5.13	0.37	1.72 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	5.00	5.00	5.00	0.41	1.58 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	4.84	4.84	4.84	0.37	1.76 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	4.43	4.43	4.43	0.44	1.68 ± 11.0%

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

Certificate No: ES3-3158_May10 Page 5 of 11

ES3DV3 SN:3158 May 20, 2010

DASY/EASY - Parameters of Probe: ES3DV3 SN:3158

Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth	Unc (k=2)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	5.93	5.93	5.93	0.77	1.20	± 11.0%
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	5.84	5.84	5.84	0.83	1.13	± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	4.81	4.81	4.81	0.36	2.06	± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.58	4.58	4.58	0.32	2.41	± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.69	4.69	4.69	0.31	2.43	± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	4.20	4.20	4.20	0.66	1.29	± 11.0%

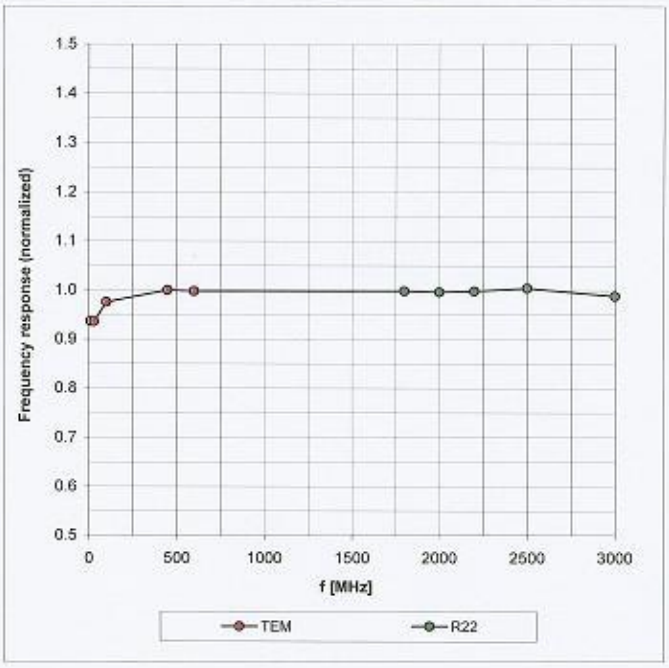
[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Certificate No: ES3-3158_May10 Page 6 of 11

ES3DV3 SN:3158 May 20, 2010

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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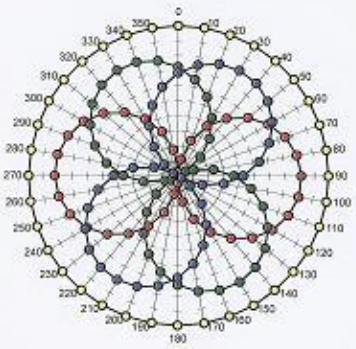
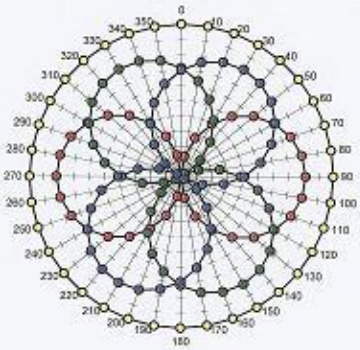
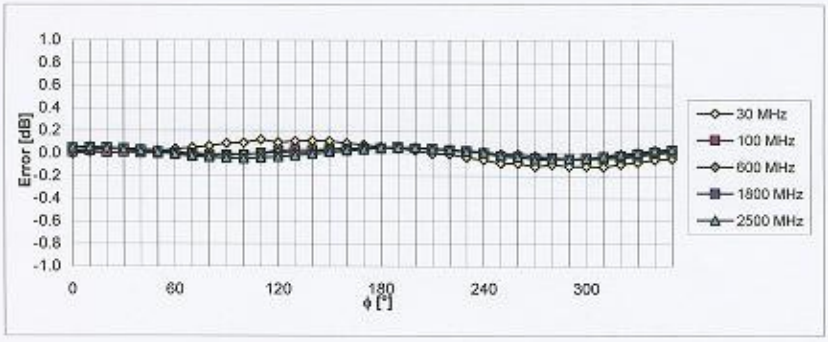
Receiving Pattern (ϕ), ϑ = 0°

f = 600 MHz, TEM ifi110EXX



f = 1800 MHz, WG R22





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

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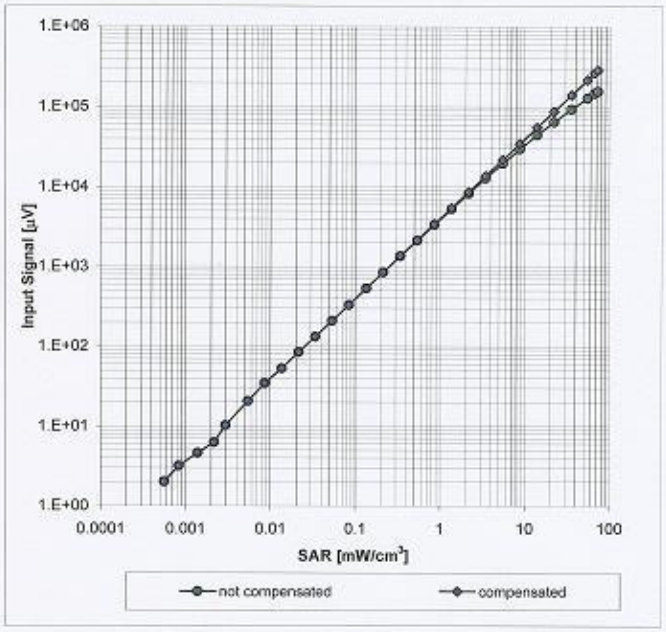
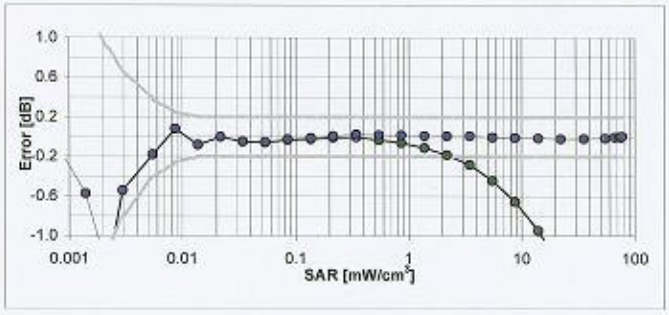
Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)





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

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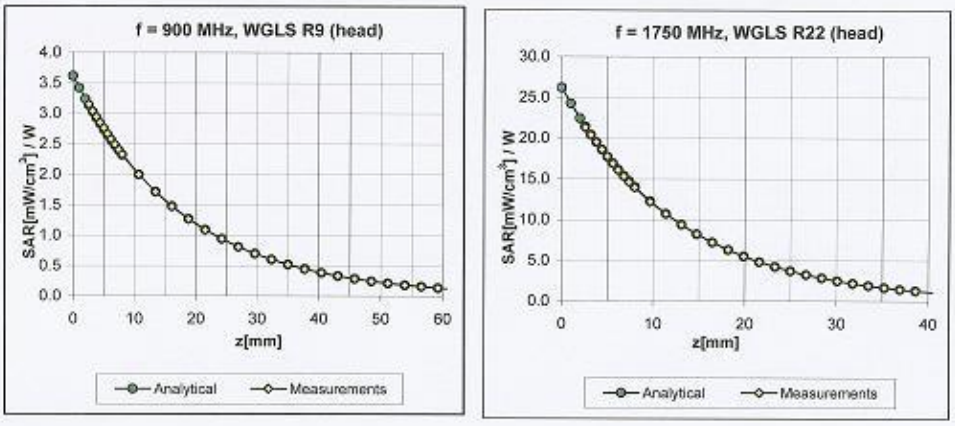
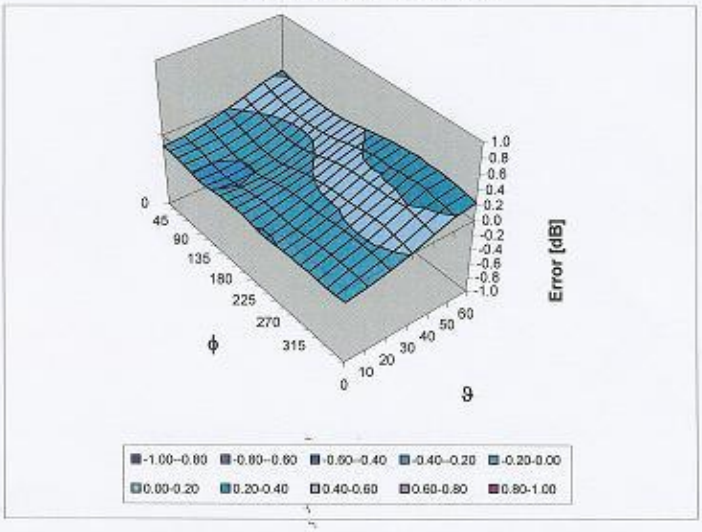
Conversion Factor Assessment



Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

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Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4.0 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

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Annex G Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

The End of this Report