

SAR Test Report

Project Number: 3071804

Report Number: 3071804EMC08

Revision Level: 3

Client: Airo Wireless, LLC.

Equipment Under Test: Intrinsically Safe Cellular Phone

Model Name: I-SAFE™28

Applicable Standards: IEEE STD 1528: 2003

EN 62209-1:2010, EN 62209-2:2010

Report issued on: 19 Feb 2014

Test Result: Compliant

Equipment Class	Mode	Band	Frequency (MHz)	Measured Conducted Power (dBm)	SAR	
					1g Head W/kg	1g Body W/kg
PCE	GSM	850	824-849	32.9	0.423	0.580
PCE	GSM	1900	1850-1900	30.0	0.384	0.363
PCE	WCDMA	Band II	1852-1907	23.8	0.933	0.896
PCE	WCDMA	Band V	826-847	23.5	0.503	1.005
DTS	WiFi	US	2412-2462	13.9	NA	0.014
DSS/DTS	Bluetooth	US	2402-2480	6.8	NA	
Simultaneous SAR per KDB 690783 D01v01r02					NA	1.019

Tested by:


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Reviewed by:


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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.

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1 GENERAL INFORMATION

1.1 CLIENT INFORMATION

Name: Airo Wireless LLC.
Address: 12 Piedmont Center NE
City, State, Zip, Country: Atlanta,GA 30305, USA

1.2 TEST LABORATORY

Name: SGS North America, Inc.
Address: 620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country: Suwanee, GA 30024, USA

Accrediting Body: A2LA
Type of lab: Testing Laboratory
Certificate Number: 3212.01

1.3 GENERAL INFORMATION OF EUT

Serial Number: 0232210061(WiFi)
0232020037(Cellular)
Build Version: 29153.5.3.12.19
IMEI: 013451000003004(WiFi)
013451000002360(Cellular)
Antenna: Integral
Rated Voltage: 3.7 VDC Rechargeable Battery
Sample Received Date: 13 March 2013
Dates of testing: 19 September to 13 November 2013
18 February 2014

Mode	Band	Frequency (MHz)	Operating Modes
GSM/GPRS/E-GPRS	850	824-849	Voice / Data
GSM/GPRS/E-GPRS	1900	1850-1910	Voice/ Data
WCDMA	Band II	1852-1907	Voice
WCDMA	Band V	826-847	Voice
WiFi	IC/FCC	2412 - 2462	Data

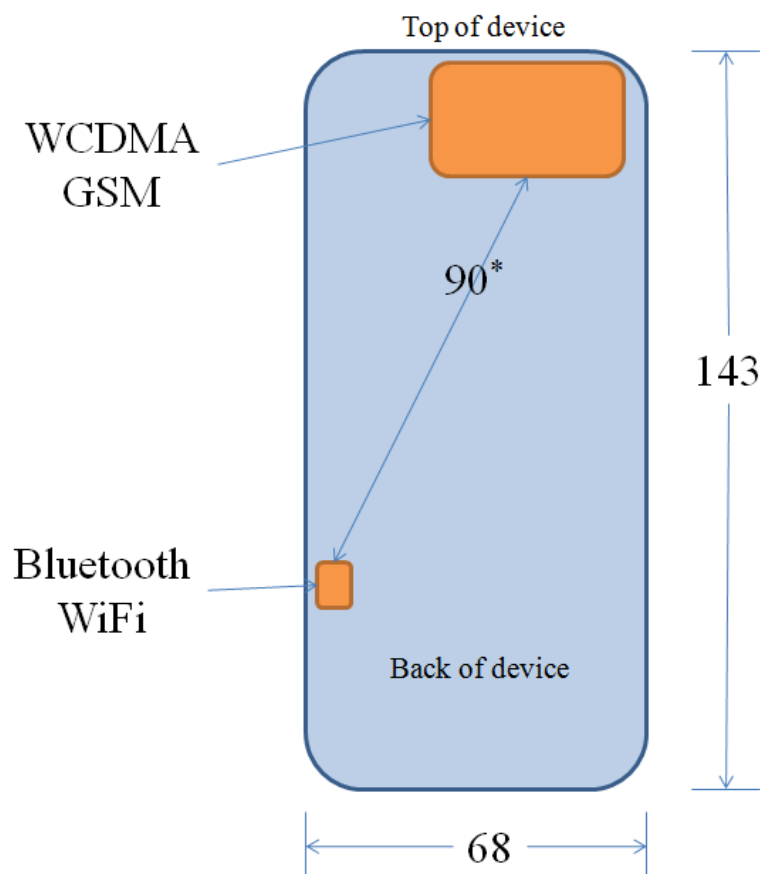
1.4 NOMINAL AND MAXIMUM POWER SPECIFICATIONS

Mode / Band		Type	Modulated Average dBm
GSM/GPRS/E-GPRS	850	Maximum	33.5
		Nominal	32.5
GSM/GPRS/E-GPRS	1900	Maximum	30.5
		Nominal	29.5
WCDMA	II	Maximum	25.0
		Nominal	24.0
WCDMA	V	Maximum	25.0
		Nominal	24.0
IEEE 802.11g	2.4GHz	Maximum	14.5
		Nominal	13.5
IEEE 802.11n	2.4GHz	Maximum	13.0
		Nominal	12.0

1.5 EQUIPMENT UNDER TEST

EUT	Mobile Computer
Normal operation:	Held to head, Worn on body (LCD facing-up; LCD facing-down)
Body Worn Accessory	Case B1 (1310041027_1/1), Can be worn left or right side, EUT can be seated in Position 1(P1) screen towards body, Position 2(P2) screen away from body, Position 3(P3) Tilt to accommodate for battery spacing
Device category:	Portable
Exposure category:	General Population/Uncontrolled Exposure

1.6 ANTENNA LOCATIONS



* Distance between geometric centers is 90mm. The distance between antenna feedpoints is 96mm.

1.7 DUT ACCESSORIES



Designated B1 Holster. SGS ID 1310041027_1/1

Prior to testing the DUT was placed inside the designated holster. A caliper was used to determine the spacing from the DUT to user. The spacing, which was determined to be 24mm, was used throughout testing for body configuration. The holster was of all plastic construction (no metallic parts).

2 TEST METHODOLOGY

Testing was performed in accordance with the FCC OET Bulletin 65 Supplement C 01-01, IEEE STD 1528: 2003, IC RSS 102 Issue 4, as well as the following:

- IEC 62209-2
- FCC KDB 865664 D02 RF Exposure Reporting v01r01
- FCC KDB 450824 D02 Dipole SAR Validation Verification v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r01
- FCC KDB 648474 D04 Handset SAR v01r01
- FCC KDB 941225 D01 SAR test for 3G devices v02
- FCC KDB 941225 D02 HSPA and 1x Advanced v02r02
- FCC KDB 941225 D03 SAR Test Reduction GSM GPRS EDGE v01

2.1 EUT OPERATION CONDITIONS

Base station simulator was used to control the EUT for maximum power. For UMTS, 3GPP TS 34.121 was the guiding document to ensure all the setting were correct. The WCDMA settings were as follows:

Subtests HSDPA

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

Note 1: β_{ACK} , β_{NACK} and $\beta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, β_{ACK} and $\beta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\beta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCCH, DPCCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

Subtests HSUPA

Subtest	Mode	Loopback Mode	Rel99 RMC	HSDPA FRC	HSUPA Test	Number of E-DPDCH Channels
1	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set1	HSUPA Loopback	1
2	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set1	HSUPA Loopback	1
3	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set1	HSUPA Loopback	2
4	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set1	HSUPA Loopback	1
5	Rel6 HSUPA	Test Mode 1	12.2kbps RMC	H-Set1	HSUPA Loopback	1

Subtest	Max UL Data Rate (kb/s)	β_c/β_d	β_{HS}	β_{ED}	CM
1	242.1	11/15	22/15	1309/225	1
2	161.3	6/15	12/15	94/75	3
3	524.7	15/9	30/15	47/15	2
4	197.6	2/15	4/15	56/75	3
5	299.6	15/15	30/15	134/15	1

For WiFi, commands were sent through a serial communication port to control frequency, modulation, data rates, and power levels. The maximum power settings were used.

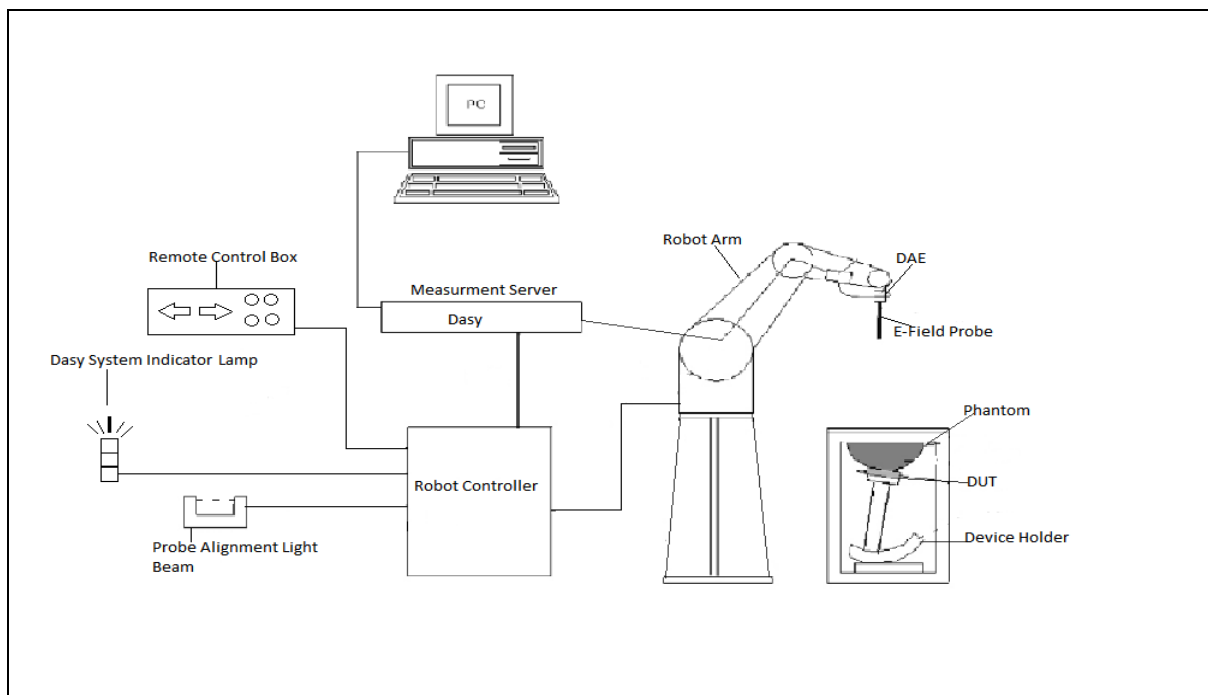
3 TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial Number	Cal Date	Cal Int
Dasy5 Controller	SP1D	Stäubli	S-1188	NA	
PC	Compaq 8000 Elite	HP	CZC1231RWS	NA	
Probe Alignment Beam	LB5/80	Speag	SEUKS030AA	NA	
Data Acquisition Electronics	DAE4	Speag	1287	NA	
Phantom	Twin Sam	Speag	1665	NA	
Oval Phantom	ELI5	Speag	1146	NA	
Device Holder	SD 00 HO1 HA	Speag	NA	NA	
System Validation Dipole	D835V2	Speag	4d123	10/25/13	3yr
System Validation Dipole	D1900V2	Speag	5d144	10/23/13	3yr
System Validation Dipole	D2450V2	Speag	890	5/11/12	3yr
E-Field Probe	EX3DV4	Speag	3812	01/24/14 12/12/12	1yr
RF Cable	LMR-240	Times Microwave	502774	7/7/13	1yr
RF Cable	SF106	Huber & Suhner	247436003	10/23/13	1yr
Network Analyzer	E5062A	Agilent	MY44202574	7/26/13	1yr
Power Meter	E4419B	Agilent	G839511059	8/26/13	1yr
Power Sensor	E9300B	Agilent	2702A61269	8/19/13	1yr
Power Sensor	E9300B	Agilent	MY41094585	8/19/13	1yr
Dual Directional Coupler	778D	Hewlett Packard	2604A13577	10/22/13	2yr
Dual Directional Coupler	11692D	Hewlett Packard	1212A02572	9/22/13	2yr
Signal Generator	SMB100A	Rohde & Schwarz	104999	6/18/13	3yr
Thermometer	DTM3000	LKM Electronic	2952	6/5/13	1yr
Dielectric Probe Kit	Dak-3.5	Speag	1109	3/19/13	1yr

Note: Calibration dates are specified in the mm/dd/yy format. The dipoles are validated annually according to FCC KDB 450824 D02 Dipole SAR Validation Verification v01r01.

Dipole Validation Log per KDB 450824 Dipole SAR Validation Verification v01r01											
Date	Tester	Object	Serial Number	Temp °C	RH	Tissue Type	Reported Return Loss dB	Reported Impedance Ω	Return Loss dB	Impedance	Within tolerance
5/6/2013	DJS	D2450V2	890	22.3	39	Head	-28.6	53.8+j0.8	-25.8	53.0+j0.4	Yes

3.1 TEST SYSTEM BLOCK DIAGRAM



The Dasy5 SAR test system consists of:

- 1 Stäubli Robot and system controller cabinet
- 1 Electro Optical Converter mounted on robots arm
- Robot stand
- Robot remote controller
- Light beam for E-field probe alignment
- DASY5 measurement server
- SAM Twin Phantom
- Hand-Held/ Laptop device holder
- HP PC with DASY5 software
- Data Acquisition Electronics(DAE)
- System validation dipole kit
- Head/Body simulating liquid
- E-field probe
- Warning lamps

Specifications listed bellow correspond with defined parameters in IEEE 1528 and IEC 62209-1	
Twin SAM Phantom:	Specific Anthropomorphic Mannequin
Material:	Vinylester, fiber glass reinforced
Shell Thickness:	2 ± 0.2mm (6 ± 0.2mm at ear point)
Dimensions (wooden support incl):	1000mm length, 500mm width, adjustable feet for height
Filling Volume:	approx. 25L
ELI Phantom	
Material:	Vinylester, fiber glass reinforced
Shell Thickness:	2.0 ± 0.2mm (bottom plate)
Dimensions:	Major axis: 600, Minor axis: 400
Filling Volume:	approx. 30L
EX3DV4 Probe:	Isotropic E-Field Probe
Directivity:	±0.3dB in TSL(rotation around probe axis), ±0.5 dB in TSL (rotation normal to probe axis)
Dimensions:	Overall length: 337mm (tip 20mm), Tip diameter: 2.5mm (Body: 12mm), Typical distance from probe tip t
Mounting Device for Hand-Held Transmitters:	Enables mounting and enables rotation of the mounted transmitter to specified spherical coordinates
	Transmitter devices can be accurately positioned according to IEC 62209-1, IEEE 1528, FCC or other sp
Material:	Polyoxymethylene

4 LIQUID PARAMETERS CHECK

The tissue dielectric parameters shall be measured at the beginning of the test or within 24 hours of the first SAR test. All dielectric parameters should be within the tolerance values shown in Table 4-1. For frequencies in 300 MHz to just under 6 GHz, the measured conductivity and relative permittivity should be within $\pm 5\%$ of the target values in table 1. The measured permittivity tolerances can be relaxed to no more than the $\pm 10\%$. All efforts should be made to obtain the target values as closely as possible.

Table 4-1

Target dielectric properties of tissue equivalent material in the 300-6000 MHz frequency range

Frequency MHz	Relative permittivity (ϵ_r)	Conductivity(σ) (S/m)
750	41.9	8.9
835	41.5	9.0
900	41.5	9.7
1450	40.5	3.0
1800	40.0	5.0
1900	40.0	5.0
1950	40.0	5.0
2000	40.0	5.0
2100	39.8	5.9
2450	39.2	9.0
2600	39.0	10.6
3000	38.5	6.0
3500	37.9	11.1
4000	37.4	7.3
4500	36.8	12.4
5000	36.2	8.5
5200	36.0	10.6
5400	35.8	12.6
5600	35.5	5.7
5800	35.3	7.7
6000	35.1	9.8

Table 4-2

Tissue Simulating Liquid Formulations

	835 MHz		1900 MHz		2450 MHz		5200-5800 MHz	
	Head	Body	Head	Body	Head	Body	Head	Body
Bactericide	0.10	0.10					See Note 1	See Note 2
DGBE								
HEC	1.00	1.00						
NaCL	1.45	0.94	1.03	0.70	0.00	0.30		
Sucrose	57.00	44.90						
Polysorbate (Tween) 20			46.10	28.00	45.25	28.00		
Water	40.45	53.06	52.87	71.30	55.75	71.70		

Note 1: Speag proprietary - Water 50-65%; Mineral Oil 10-30%; Emulsifiers 8-25%; NaCL 0-1.5%; Hexylene Glycol 1.0-2.8%

Note 2: Speag proprietary - Water 60-80%; Esters, Emulsifiers, Inhibitors 20-40%; NaCL 0-1.5%; Oleic acid 10-28%

4.1 TISSUE VERIFICATION MEASURED

Tissue Verification TARGET & MEASURED								
Date	Tissue Type	Measured Frequency (MHz)	Measured Dielectric Constant, ϵ	Measured Conductivity, σ S/m	Target Dielectric Constant, ϵ	Target Conductivity, σ S/m	% deviation, σ	% deviation, ϵ
9/19/2013	835H	836	40.3	0.88	41.5	0.90	-2.8%	-2.2%
9/19/2013	835H	824	40.9	0.87	41.5	0.90	-1.4%	-3.3%
9/19/2013	835H	848	40.2	0.89	41.5	0.90	-3.1%	-1.1%
9/20/2013	835H	836	39.5	0.88	41.5	0.90	-4.8%	-2.2%
9/20/2013	835H	824	39.6	0.86	41.5	0.90	-4.5%	-4.4%
9/20/2013	835H	848	39.4	0.89	41.5	0.90	-5.0%	-1.1%
9/23/2013	835H	836	39.3	0.87	41.5	0.90	-5.4%	-3.3%
9/23/2013	835H	824	39.2	0.86	41.5	0.90	-5.4%	-4.4%
9/23/2013	835H	848	39.2	0.88	41.5	0.90	-5.6%	-2.2%
9/24/2013	1800H	1747	38.3	1.30	40.0	1.39	-4.4%	-6.1%
9/24/2013	1800H	1710	38.4	1.27	40.1	1.36	-4.2%	-6.8%
9/24/2013	1800H	1784	38.1	1.34	40.0	1.40	-4.7%	-4.2%
9/26/2013	1800H	1747	38.2	1.30	40.0	1.39	-4.5%	-6.4%
9/26/2013	1800H	1710	38.4	1.26	40.1	1.36	-4.3%	-7.3%
9/26/2013	1800H	1784	38.1	1.33	40.0	1.40	-4.8%	-4.7%
9/28/2013	1800H	1747	39.1	1.33	40.0	1.39	-2.5%	-4.1%
9/28/2013	1800H	1710	39.2	1.29	40.1	1.36	-2.2%	-5.1%
9/28/2013	1800H	1784	39.0	1.36	40.0	1.40	-2.6%	-2.8%
10/1/2013	900H	897	39.1	0.94	41.5	0.97	-5.8%	-3.5%
10/1/2013	900H	880	39.3	0.92	41.5	0.97	-5.3%	-5.3%
10/1/2013	900H	914	38.9	0.95	41.5	0.97	-6.3%	-2.1%
10/2/2013	900H	836	39.8	0.88	41.5	0.90	-4.1%	-2.3%
10/2/2013	900H	824	40.0	0.87	41.5	0.90	-3.7%	-3.6%
10/2/2013	900H	848	39.7	0.89	41.5	0.90	-4.4%	-1.1%
10/3/2013	900H	880	38.9	0.92	41.5	0.97	-6.4%	-5.4%
10/3/2013	900H	914	38.4	0.95	41.5	0.97	-7.4%	-2.1%
10/4/2013	900H	897	38.7	0.93	41.5	0.97	-6.8%	-3.9%
10/4/2013	900H	880	38.9	0.92	41.5	0.97	-6.3%	-5.4%
10/4/2013	900H	914	38.5	0.95	41.5	0.97	-7.3%	-2.2%
10/5/2013	1800H	1747	39.1	1.41	40.0	1.39	-2.4%	1.7%
10/5/2013	1800H	1710	39.2	1.38	40.1	1.36	-2.3%	1.0%
10/5/2013	1800H	1784	39.0	1.44	40.0	1.40	-2.6%	3.2%
11/6/2013	835B	836	54.3	0.97	55.2	0.97	-1.6%	0.0%
11/6/2013	835B	824	54.4	0.96	55.2	0.97	-1.4%	-1.2%
11/6/2013	835B	848	54.2	0.98	55.2	0.97	-1.8%	1.2%
11/7/2013	1900B	1880	52.0	1.54	53.3	1.52	-2.4%	1.3%
11/7/2013	1900B	1850	52.1	1.52	53.3	1.52	-2.3%	-0.1%
11/7/2013	1900B	1909	51.9	1.58	53.3	1.52	-2.6%	3.6%

Tissue Verification Continued

Tissue Verification TARGET & MEASURED								
Date	Tissue Type	Measured Frequency (MHz)	Measured Dielectric Constant, ϵ	Measured Conductivity, σ S/m	Target Dielectric Constant, ϵ	Target Conductivity, σ S/m	% deviation, σ	% deviation, ϵ
11/7/2013	1900B	1852	52.1	1.52	53.3	1.52	-2.3%	0.1%
11/7/2013	1900B	1907	51.9	1.57	53.3	1.52	-2.6%	3.4%
11/7/2013	1900B	1950	51.8	1.62	53.3	1.52	-2.8%	6.3%
11/7/2013	1900B	1922	51.9	1.59	53.3	1.52	-2.6%	4.4%
11/7/2013	1900B	1977	51.7	1.64	53.3	1.52	-2.9%	8.0%
11/8/2013	1900B	1880	52.0	1.57	53.3	1.52	-2.5%	3.4%
11/8/2013	1900B	1852	52.0	1.55	53.3	1.52	-2.4%	1.6%
11/8/2013	1900B	1908	51.9	1.60	53.3	1.52	-2.7%	5.3%
11/8/2013	1900B	1950	51.7	1.64	53.3	1.52	-2.9%	8.0%
11/8/2013	1900B	1922	51.8	1.61	53.3	1.52	-2.8%	6.2%
11/8/2013	1900B	1977	51.7	1.67	53.3	1.52	-3.1%	9.8%
11/13/2013	1900H	1880	40.4	1.32	40.0	1.40	1.0%	-5.7%
11/13/2013	1900H	1850	40.5	1.29	40.0	1.40	1.3%	-7.7%
11/13/2013	1900H	1909	40.3	1.35	40.0	1.40	0.7%	-3.7%
11/13/2013	1900H	1852	40.5	1.29	40.0	1.40	1.3%	-7.6%
11/13/2013	1900H	1907	40.3	1.35	40.0	1.40	0.7%	-3.9%
11/13/2013	1900H	1950	40.1	1.39	40.0	1.40	0.4%	-0.8%
11/13/2013	1900H	1922	40.3	1.36	40.0	1.40	0.6%	-2.9%
11/13/2013	1900H	1977	40.0	1.42	40.0	1.40	0.1%	1.1%
11/16/2013	2450B	2412	50.4	2.04	52.7	1.95	-4.4%	4.5%
11/16/2013	2450B	2442	50.3	2.07	52.7	1.95	-4.6%	6.4%
11/16/2013	2450B	2462	50.3	2.08	52.7	1.95	-4.6%	6.6%
11/16/2013	2450B	2472	50.2	2.11	52.7	1.95	-4.7%	8.2%
2/18/2014	2450B	2412	49.5	2.03	52.7	1.95	-6.1%	4.0%
2/18/2014	2450B	2442	49.4	2.06	52.7	1.95	-6.3%	5.7%
2/18/2014	2450B	2462	49.3	2.08	52.7	1.95	-6.4%	6.9%
2/18/2014	2450B	2472	49.3	2.10	52.7	1.95	-6.5%	7.5%

5 SAR MEASUREMENT SYSTEM VERIFICATION

The system performance verification verifies the system operates within the $\pm 10\%$ limit. Each performance check is performed prior to any SAR testing to measure accuracy.

5.1 PERFORMANCE CHECK MEASUREMENT CONDITIONS

- Measurements are performed in the flat section of the SAM phantom
- Phantom is filled with Head or Body simulating liquids
- DASY5 system parameters are tested using a Isotropic E-field probe
- The dipole is mounted on an extendable tripod that is positioned below the flat phantom center. The dipole is oriented parallel with the body's axis. The standard measuring distance is 10 mm above 1 GHz or 15 mm below 1 GHz from the dipole to the simulating liquids surface.
- A grid spacing of 15 mm is aligned with the dipole
- 7x7x7 cube is selected for a zoom scan
- A 2.5-3 mm distance is set between the probe and phantom surface
- Dipole input power(forward power) is set to 100 mW
- Results are normalized to 1 W input power

5.2 SYSTEM VERIFICATION

System Verification TARGET & MEASURED										
Date	Ambient Temp (°C)	Liquid Temp (°C)	Input Power (W)	Tissue Frequency (MHz)	Dipole SN	Tissue Type	Measured SAR _{1g} (W/kg)	1W Target SAR _{1g} (W/kg)	1W Normalized SAR ₁₀ (W/kg)	Deviation (%)
9/19/2013	23.5	22.8	0.100	835	4d123	Head	0.915	9.42	9.15	-2.9%
9/23/2013	23	22.06	0.100	835	4d123	Head	0.956	9.53	9.56	0.3%
9/24/2013	23	22.18	0.100	1900	5d144	Head	3.77	40.60	37.70	-7.1%
9/28/2013	23.7	22.13	0.100	1900	5d144	Head	3.72	40.60	37.20	-8.4%
10/1/2013	23.6	22.03	0.100	1750	D1750V2	Head	3.45	36.00	34.50	-4.2%
10/1/2013	23.6	22.27	0.100	835	4d123	Head	0.94	9.42	9.40	-0.2%
10/3/2013	23	21.83	0.100	835	4d123	Head	0.947	9.42	9.47	0.5%
10/5/2013	23.4	22.21	0.100	1750	D1750v2	Head	3.51	36.00	35.10	-2.5%
10/7/2013	22	20.38	0.100	2450	890	Head	5.38	53.20	53.80	1.1%
11/6/2013	23.9	23.07	0.100	835	4d123	Body	0.927	9.32	9.27	-0.5%
11/7/2013	24	23.19	0.100	1900	5d144	Body	3.95	40.90	39.50	-3.4%
11/13/2013	23.7	22.44	0.100	1900	5d144	Head	3.63	40.10	36.30	-9.5%
2/18/2014	24.7	23.67	0.100	2450	890	Body	5.55	50.60	55.50	9.7%

6 SAR MEASUREMENT PROCEDURE

- Area Scan is used for a fast scan in two dimension to find the area of high field values before any finer measurement around the hotspot. The routines implemented in the DASY5 software can find the maximum locations.
- Zoom Scan is used to assess the peak spatial values within a cubic averaging volume containing 1g and 10g of simulated tissue. The scan measures a 7x7x7 area within the cube. Once measurement is done the values are displayed within the job's label.
- Power Drift will measure the field at the same location as the most recent power reference measurement within the same procedure and settings. The Power Drift Measurement gives the field difference in dB.
- Z- Scan measure points along a straight vertical line. The lines run along the z-axis of a one dimensional grid. To get a reasonable extrapolation the extrapolated distance should not be larger than the step size in z direction.

6.1 HEAD SAR CONFIGURATION

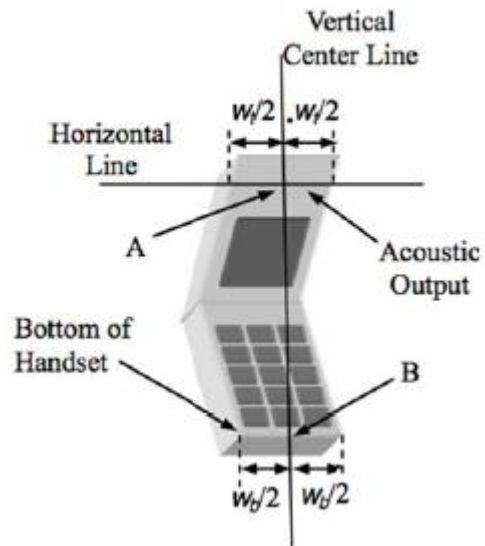
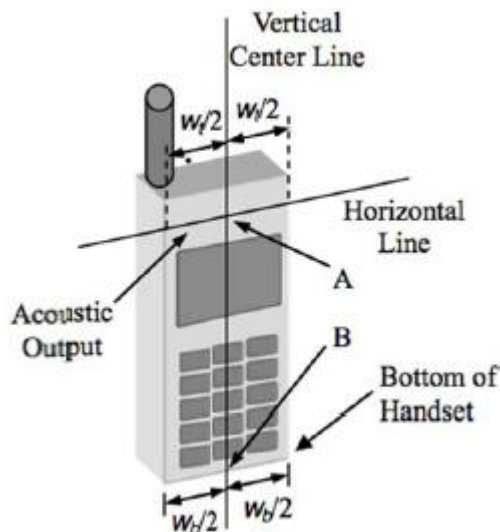
6.1.1 SAM SPECIFICATIONS

The Specific Anthropomorphic Mannequin (SAM) phantom corresponds to specifications defined in IEEE 1528 and IEC 62209-1. It allows dosimetric evaluation of the left, right, hand phone usage as well as body mounted usage at the flat region of the phantom

6.1.2 HANDSET REFERENCE POINTS

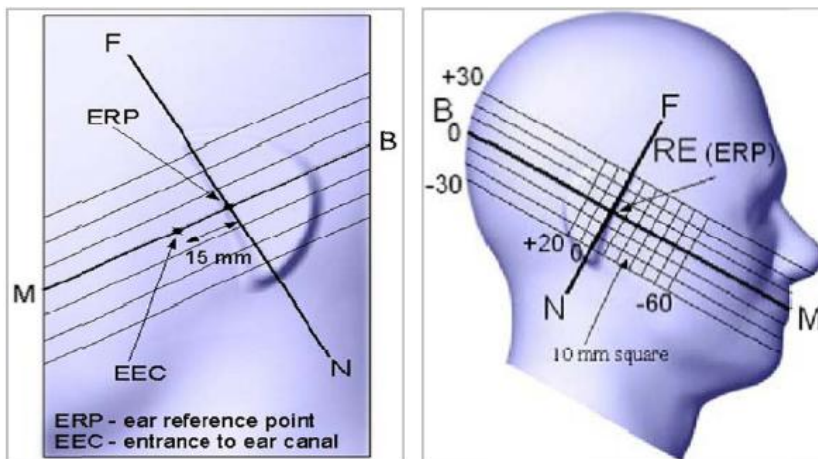
In order to identify reference points on the handset, define two imaginary lines on the handset

- The vertical centreline passes through two points on the front side of the handset. The midpoint of the width at the acoustic output and the midpoint of the width of the bottom of handset.
- The horizontal line is perpendicular to the vertical centreline and passes through the center of the acoustic output.
- The two lines intersect at point A.



6.1.3 EAR REFERENCE

This category includes most wireless handsets. The handset should have its earpieces located within the upper part of the device or along the centerline. The handset should be positioned with the earpiece region pressed against the ear spacer of the phantom.

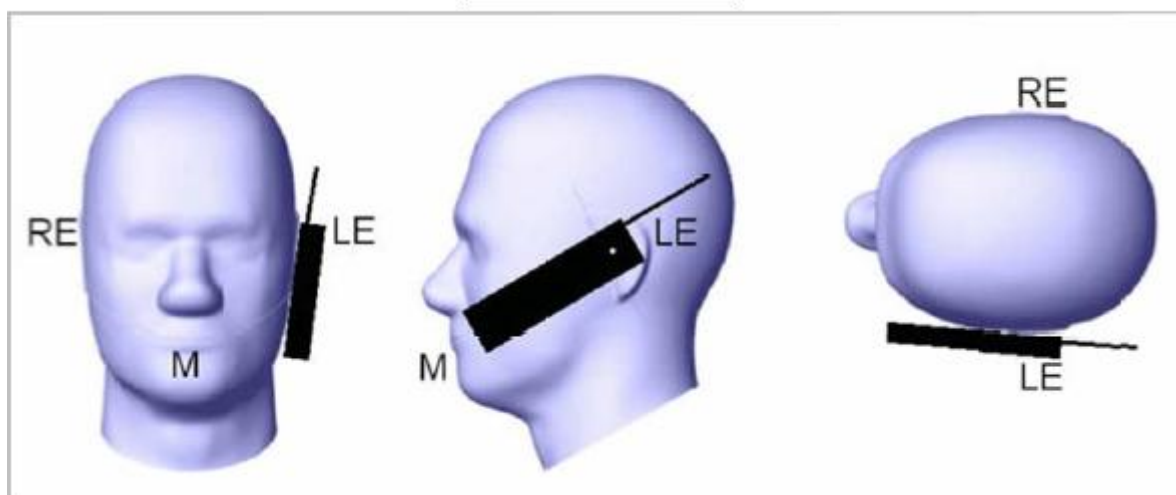


6.1.4 CHEEK POSITIONS

The device is attached toward the mouth part of the phantom by pivoting against the ear reference point. The test position is established when:

- EUT is in contact with the phantom
- Any point on the display, keypad or mouthpiece portion of the

Cheek / Touch Position

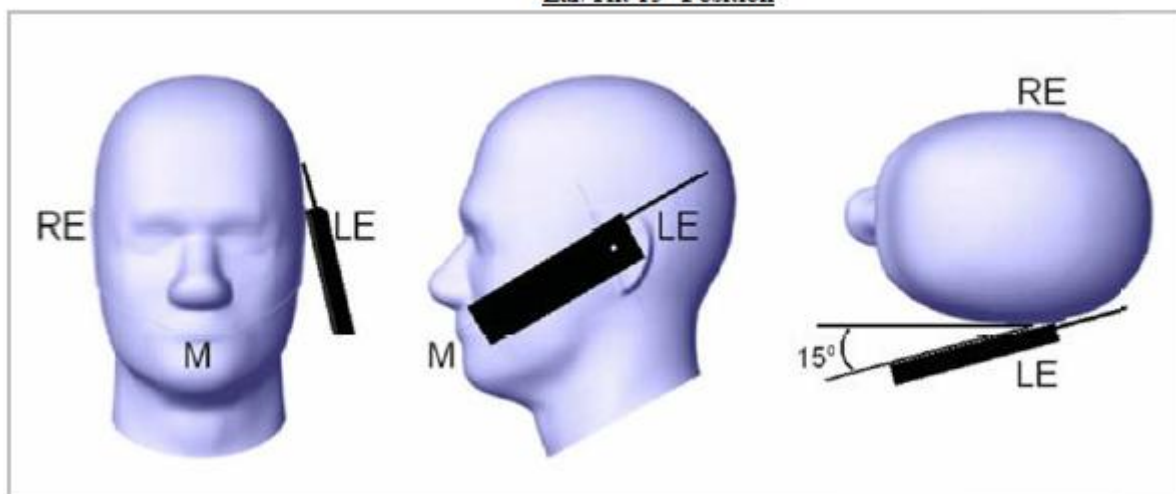


6.1.5 TILT POSITION

The test position is established when:

- Repeat the cheek touch position setup
- While maintaining the orientation of the handset move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
- Rotate the handset around the horizontal line by 15°
- While maintain the orientation of the handset move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear.
- The tilt position is obtained when the contact point is on the pinna and the antenna is at the back of the phantoms head.

Ear/Tilt 15° Position



7 CONDUCTED OUTPUT POWER VERIFICATION

			Burst Average Power, dBm					
Mode	Type	Test mode	Cellular Band, GSM850			PCS Band, GSM1900		
			128 824.2MHz	190 836.6MHz	251 848.8MHz	512 1850.2MHz	661 1880MHz	810 1909.8MHz
GSM	Voice		32.9	32.9	32.8	30.1	30.0	29.9
GPRS	Data	1 slot	32.9	32.9	32.8	30.0	29.9	29.9
		2 slot	31.3	31.4	31.2	28.7	28.6	28.6
EDGE	Data	1 slot	28.6	28.6	28.7	26.6	26.5	26.5
		2 slot	28.6	28.6	28.6	26.6	26.5	26.5

			Frame Average Power, dBm					
Mode	Type	Test mode	Cellular Band, GSM850			PCS Band, GSM1900		
			128 824.2MHz	190 836.6MHz	251 848.8MHz	512 1850.2MHz	661 1880MHz	810 1909.8MHz
GPRS	Data	1 slot	23.9	23.9	23.8	21.0	20.9	20.9
		2 slot	25.3	25.4	25.2	22.7	22.6	22.6
EDGE	Data	1 slot	19.6	19.6	19.7	17.6	17.5	17.5
		2 slot	22.6	22.6	22.6	20.6	20.5	20.5

Mode	Release Version	Subtest mode	Cellular Band, FDD5			PCS Band, FDD2		
			4132 826.4MHz	4183 836.6MHz	4233 846.6MHz	9262 1852.4MHz	9400 1880MHz	9538 1907.7MHz
WCDMA	99	12.2 kbps RMC	23.5	23.5	23.5	23.7	23.7	23.8
HSDPA	6	Subtest 1	22.7	22.7	22.7	22.4	22.4	22.5
		Subtest 2	22.6	22.6	22.6	22.4	22.4	22.5
		Subtest 3	22.4	22.4	22.4	22.2	22.2	22.3
		Subtest 4	22.4	22.4	22.4	21.8	21.8	21.9
HSUPA	6	Subtest 1	23.7	23.7	23.7	23.6	23.6	23.7
		Subtest 2	21.8	21.8	21.8	21.5	21.5	21.6
		Subtest 3	22.8	22.8	22.8	22.6	22.6	22.7
		Subtest 4	21.7	21.7	21.7	21.5	21.5	21.6
		Subtest 5	23.7	23.7	23.7	23.6	23.6	23.7

802.11 - Average RF Power

Protocol	Channel	Data Rate	Channel Power (dBm)
802.11g	1	6	13.85
802.11g	1	36	13.84
802.11g	1	54	13.86
802.11g	6	6	11.76
802.11g	6	36	11.84
802.11g	6	54	11.8
802.11g	11	6	9.88
802.11g	11	36	9.87
802.11g	11	54	9.84
802.11n	1	MCS0	11.87
802.11n	1	MCS7	11.87
802.11n	6	MCS0	9.42
802.11n	6	MCS7	9.4
802.11n	11	MCS0	9.47
802.11n	11	MCS7	9.42

8 2G-3G HEAD SAR MEASUREMENT RESULTS

Frequency		Mode	Service	Data Rate	Max Pwr	Meas Pwr	Power Drift	Test Position		1g SAR	Scaled SAR 1g	Plot #
MHz	CH			Mbps	dBm	dBm	dB			W/kg	W/kg	
836.6	190	GSM850	GMSK	Voice	33.5	32.9	-0.18	Left	Touch	0.323	0.371	
836.6	190	GSM850	GMSK	Voice	33.5	32.9	-0.32	Left	Tilt	0.151	0.173	
836.6	190	GSM850	GMSK	Voice	33.5	32.9	0.03	Right	Touch	0.345	0.396	
836.6	190	GSM850	GMSK	Voice	33.5	32.9	-0.07	Right	Tilt	0.190	0.218	
836.6	190	GSM850	GPRS	2 slot	32.5	31.4	0.00	Right	Touch	0.264	0.340	
836.6	190	GSM850	E-GPRS	2 slot	29.5	28.6	0.12	Right	Touch	0.271	0.333	
824.2	128	GSM850	GMSK	Voice	33.5	32.9	0.14	Right	Touch	0.257	0.295	
848.8	251	GSM850	GMSK	Voice	33.5	32.8	0.08	Right	Touch	0.404	0.475	1

836.6	4183	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	0.05	Right	Touch	0.400	0.504	2
836.6	4183	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	0.03	Right	Tilt	0.245	0.308	
836.6	4183	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	0.08	Left	Touch	0.384	0.483	
836.6	4183	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	-0.16	Left	Tilt	0.228	0.287	
826.4	4132	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	-0.37	Right	Touch	0.332	0.418	
846.6	4233	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	-0.07	Right	Touch	0.380	0.478	

1880	661	GSM1900	GMSK	Voice	30.5	30.0	-0.21	Right	Touch	0.260	0.292	
1880	661	GSM1900	GMSK	Voice	30.5	30.0	0.11	Right	Tilt	0.213	0.239	
1880	661	GSM1900	GMSK	Voice	30.5	30.0	0.04	Left	Touch	0.178	0.200	
1880	661	GSM1900	GMSK	Voice	30.5	30.0	0.03	Left	Tilt	0.168	0.188	
1880	661	GSM1900	GPRS	2 slot	27.5	26.5	0.00	Right	Touch	0.337	0.424	
1880	661	GSM1900	E-GPRS	2 slot	27.5	26.5	0.06	Right	Touch	0.339	0.427	
1850	512	GSM1900	GMSK	Voice	30.5	30.1	0.09	Right	Touch	0.391	0.429	
1850	512	GSM1900	GMSK	Voice	30.5	30.1	0.07	Right	Touch	0.393	0.431	3
1910	810	GSM1900	GMSK	Voice	30.5	29.9	0.03	Right	Touch	0.371	0.426	

1880	9400	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	-0.12	Right	Touch	0.607	0.730	
1880	9400	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	-0.02	Right	Tilt	0.537	0.646	
1880	9400	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	-0.36	Left	Touch	0.404	0.486	
1880	9400	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	-0.07	Left	Tilt	0.439	0.528	
1852	9262	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	-0.18	Right	Touch	0.754	0.907	
1852	9262	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	0.06	Right	Touch	0.776	0.933	4
1908	9538	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.8	-0.10	Right	Touch	0.598	0.703	

Note 1: Drift measurement not required since area scan is less than 0.1 W/kg

9 2G-3G BODY SAR MEASUREMENT RESULTS

Frequency		Mode	Service	Data Rate	Max Pwr	Meas Pwr	Power Drift	Test Position		1g SAR	Scaled SAR 1g	Plot #
MHz	CH			Mbps	dBm	dBm	dB			W/kg	W/kg	
836.6	190	GSM850	GMSK	Voice	33.5	32.9	0.08	B1	P1	0.193	0.222	
836.6	190	GSM850	GMSK	Voice	33.5	32.9	0.04	B1	P2	0.284	0.326	
836.6	190	GSM850	GMSK	Voice	33.5	32.9	-0.01	B1	P3	0.410	0.471	
836.6	190	GSM850	GPRS	2 slot	32.5	31.4	0.15	B1	P3	0.379	0.488	
836.6	190	GSM850	E-GPRS	2 slot	29.5	28.6	0.04	B1	P3	0.373	0.459	
824.2	128	GSM850	GMSK	Voice	33.5	32.9	-0.04	B1	P3	0.315	0.362	
848.8	251	GSM850	GMSK	Voice	33.5	32.8	-0.06	B1	P3	0.438	0.515	
848.8	251	GSM850	GMSK	Voice	33.5	32.8	0.00	B1	P3	0.554	0.651	5

836.6	4183	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	0.39	B1	P1	0.313	0.394	
836.6	4183	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	0.04	B1	P2	0.432	0.544	
836.6	4183	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	0.12	B1	P3	0.798	1.005	6
836.6	4183	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	-0.21	B1	P3	0.700	0.881	7
826.4	4132	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	0.08	B1	P3	0.669	0.842	
846.6	4233	WCDMA Band V	UMTS	RMC 12.2K	24.5	23.5	0.14	B1	P3	0.777	0.978	

1880	661	GSM1900	GMSK	Voice	30.5	30.0	0.32	B1	P1	0.101	0.113	
1880	661	GSM1900	GMSK	Voice	30.5	30.0	0.11	B1	P2	0.138	0.155	
1880	661	GSM1900	GMSK	Voice	30.5	30.0	0.01	B1	P3	0.324	0.364	
1880	661	GSM1900	GPRS	2 slot	27.5	26.5	-0.04	B1	P3	0.249	0.313	
1880	661	GSM1900	E-GPRS	2 slot	27.5	26.5	-0.16	B1	P3	0.249	0.313	
1850	512	GSM1900	GMSK	Voice	30.5	30.1	0.39	B1	P3	0.287	0.315	
1910	810	GSM1900	GMSK	Voice	30.5	29.9	0.06	B1	P3	0.341	0.392	
1910	810	GSM1900	GMSK	Voice	30.5	29.9	0.07	B1	P3	0.355	0.408	8

1880	9400	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	-0.29	B1	P1	0.171	0.206	
1880	9400	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	-0.04	B1	P2	0.227	0.273	
1880	9400	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	0.16	B1	P3	0.673	0.809	
1852	9262	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	0.21	B1	P3	0.745	0.896	9
1852	9262	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.7	0.19	B1	P3	0.624	0.750	10
1908	9538	WCDMA Band II	UMTS	RMC 12.2K	24.5	23.8	-0.05	B1	P3	0.485	0.570	

10 WI-FI BODY SAR MEASUREMENT RESULTS

Frequency		Mode	Service	Data Rate	Max Pwr	Meas Pwr	Power Drift	Test Position		Duty Cycle	1g SAR	Scaled SAR 1g	Plot #
MHz	CH			Mbps	dBm	dBm	dB				W/kg	W/kg	
2412	1	802.11g	OFDM	6	14.00	13.90	Note 1	B1	P1	1:1	0.014	0.014	11
2412	1	802.11g	OFDM	6	14.00	13.90	Note 1	B1	P2	1:1	0.008	0.008	
2412	1	802.11g	OFDM	6	14.00	13.90	Note 1	B1	P3	1:1	0.009	0.009	
2412	1	802.11g	OFDM	6	14.00	13.90	Note 1	B1	P1	1:1	0.010	0.010	
2442	7	802.11g	OFDM	6	14.00	11.90	Note 1	B1	P1	1:1	0.008	0.012	
2462	11	802.11g	OFDM	6	14.00	9.90	Note 1	B1	P1	1:1	0.005	0.013	

Note 1: Drift measurement not required since area scan is less than 0.1 W/kg

11 UNCERTAINTY BUDGET 0.3 – 3 GHZ RANGE

Test Name:	SAR IEEE 1528/ 62209-1 (0.3 to 3 GHz range)
Instrument(s) Used:	SAR Measurement Sytem
Standard(s) Reference:	IEEE 1528:2010 and IEC 62209-1:2010

Symbol	Source of Uncertainty	Value	Probability Distribution	Divisor	ci (1g)	ci (10g)	Std. Unc. (1g)	Std. Unc. (10g)	vi or veff
	MEASUREMENT DESCRIPTION								
	Probe Calibration	5.5%	N1	1	1	1	5.5%	5.5%	inf
	Axial Isotropy	4.7%	R	1.732	0.7	0.7	1.9%	1.9%	inf
	Hemispherical Isotropy	9.6%	R	1.732	0.7	0.7	3.9%	3.9%	inf
	Boundary Effects	1.0%	R	1.732	1	1	0.6%	0.6%	inf
	Linearity	4.7%	R	1.732	1	1	2.7%	2.7%	inf
	System Detection Limits	1.0%	R	1.732	1	1	0.6%	0.6%	inf
	Modulation Response	2.4%	R	1.732	1	1	1.4%	1.4%	inf
	Readout Electronics	0.3%	N1	1	1	1	0.3%	0.3%	inf
	Response Time	0.8%	R	1.732	1	1	0.5%	0.5%	inf
	Integration Time	2.6%	R	1.732	1	1	1.5%	1.5%	inf
	RF Ambient Noise	3.0%	R	1.732	1	1	1.7%	1.7%	inf
	RF Ambient Reflections	3.0%	R	1.732	1	1	1.7%	1.7%	inf
	Probe Positioner	0.4%	R	1.732	1	1	0.2%	0.2%	inf
	Probe Positioning	2.9%	R	1.732	1	1	1.7%	1.7%	inf
	Max. SAR Eval.	1.0%	R	1.732	1	1	0.6%	0.6%	inf
	TEST SAMPLE RELATED								
	Device Positioning	2.9%	N1	1	1	1	2.9%	2.9%	inf
	Device Holder	3.6%	N1	1	1	1	3.6%	3.6%	inf
	Power Drift	5.0%	R	1.732	1	1	2.9%	2.9%	inf
	Power Scaling	0.0%	R	1.732	1	1	0.0%	0.0%	inf
	PHANTOM AND SETUP								
	Phantom Uncertainty	4.0%	R	1.732	1	1	2.3%	2.3%	inf
	SAR correction	1.9%	R	1.732	1	0.84	1.1%	0.9%	inf
	Liquid Conductivity(meas.)	2.5%	N1	1	0.78	0.71	2.0%	1.8%	inf
	Liquid Permittivity(meas.)	2.5%	N1	1	0.26	0.26	0.7%	0.7%	inf
	Temp. unc. - Conductivity	1.7%	R	1.732	0.78	0.71	0.8%	0.7%	inf
	Temp. unc. - Permittivity	0.3%	R	1.732	0.23	0.26	0.0%	0.0%	inf
			n1	1	1	1	0.0%	0.0%	inf

uc(Fs)	Combined Standard Uncertainty	N1	1	10.6%	10.5%
U(Fs)	Expanded Uncertainty	Normal k=	2	21.2%	21.1%

The Expanded Uncertainty is 21.2% for a Normal k factor equal to 2

Test Name:	SAR 62209-2 (0.3 to 3 GHz range)
Instrument(s) Used:	SAR Measurement Sytem
Standard(s) Reference:	IEC 62209-2:2010

Symbol	Source of Uncertainty	Value	Probability Distribution	Divisor	ci (1g)	ci (10g)	Std. Unc. (1g)	Std. Unc. (10g)	vi or veff
	MEASUREMENT DESCRIPTION								
	Probe Calibration	6.55%	N1	1	1	1	6.6%	6.6%	inf
	Axial Isotropy	4.70%	R	1.732	0.7	0.7	1.9%	1.9%	inf
	Hemispherical Isotropy	9.60%	R	1.732	0.7	0.7	3.9%	3.9%	inf
	Linearity	4.70%	R	1.732	1	1	2.7%	2.7%	inf
	System Detection Limits	1.00%	R	1.732	1	1	0.6%	0.6%	inf
	Modulation Response	2.40%	R	1.732	1	1	1.4%	1.4%	inf
	Boundary Effects	2.00%	R	1.732	1	1	1.2%	1.2%	inf
	Readout Electronics	0.30%	N1	1	1	1	0.3%	0.3%	inf
	Response Time	0.80%	R	1.732	1	1	0.5%	0.5%	inf
	Integration Time	2.60%	R	1.732	1	1	1.5%	1.5%	inf
	RF Ambient Noise	3.00%	R	1.732	1	1	1.7%	1.7%	inf
	RF Ambient Reflections	3.00%	R	1.732	1	1	1.7%	1.7%	inf
	Probe Positioner	0.80%	R	1.732	1	1	0.5%	0.5%	inf
	Probe Positioning	6.70%	R	1.732	1	1	3.9%	3.9%	inf
	Post Processing	4.00%	R	1.732	1	1	2.3%	2.3%	inf
	TEST SAMPLE RELATED								
	Device Positioning	2.90%	N1	1	1	1	2.9%	2.9%	inf
	Device Holder	3.60%	N1	1	1	1	3.6%	3.6%	inf
	Power Drift	5.00%	R	1.732	1	1	2.9%	2.9%	inf
	Power Scaling	0.00%	R	1.732	1	1	0.0%	0.0%	inf
	PHANTOM AND SETUP								
	Phantom Uncertainty	4.00%	R	1.732	1	1	2.3%	2.3%	inf
	SAR correction	1.90%	R	1.732	1	0.84	1.1%	0.9%	inf
	Liquid Conductivity(meas.)	2.50%	N1	1	0.78	0.71	2.0%	1.8%	inf
	Liquid Permittivity(meas.)	2.50%	N1	1	0.26	0.26	0.7%	0.7%	inf
	Temp. unc. - Conductivity	1.70%	R	1.732	0.78	0.71	0.8%	0.7%	inf
	Temp. unc. - Permittivity	0.30%	R	1.732	0.23	0.26	0.0%	0.0%	inf
			n1	1	1	1	0.0%	0.0%	inf

uc(Fs)	Combined Standard Uncertainty	N1	1	11.9%	11.9%
U(Fs)	Expanded Uncertainty	Normal k=	2	23.9%	23.8%

The Expanded Uncertainty is 23.9% for a Normal k factor equal to 2



12 SAR PLOTS

Plot #1

Date/Time: 9/20/2013 10:23:16 AM

GSM 850, High Ch251, 848.8MHz, Right Touch, w zoom

Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 – 849.0 MHz);
Frequency: 848.8 MHz; Communication System PAR: 9.191 Db; PMF: 2.88104
Medium parameters used: $f = 849$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 40.193$; $\rho = 1000$ kg/m³
Phantom section: Right Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 – SN3812; ConvF(9.17, 9.17, 9.17); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/GSM850, High Ch251, 848.8MHz Right Touch/Area Scan (91x161x1):

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

Maximum value of SAR (interpolated) = 0.425 Mw/g

Configuration/GSM850, High Ch251, 848.8MHz Right Touch/Zoom Scan (7x7x7)/Cube 0:

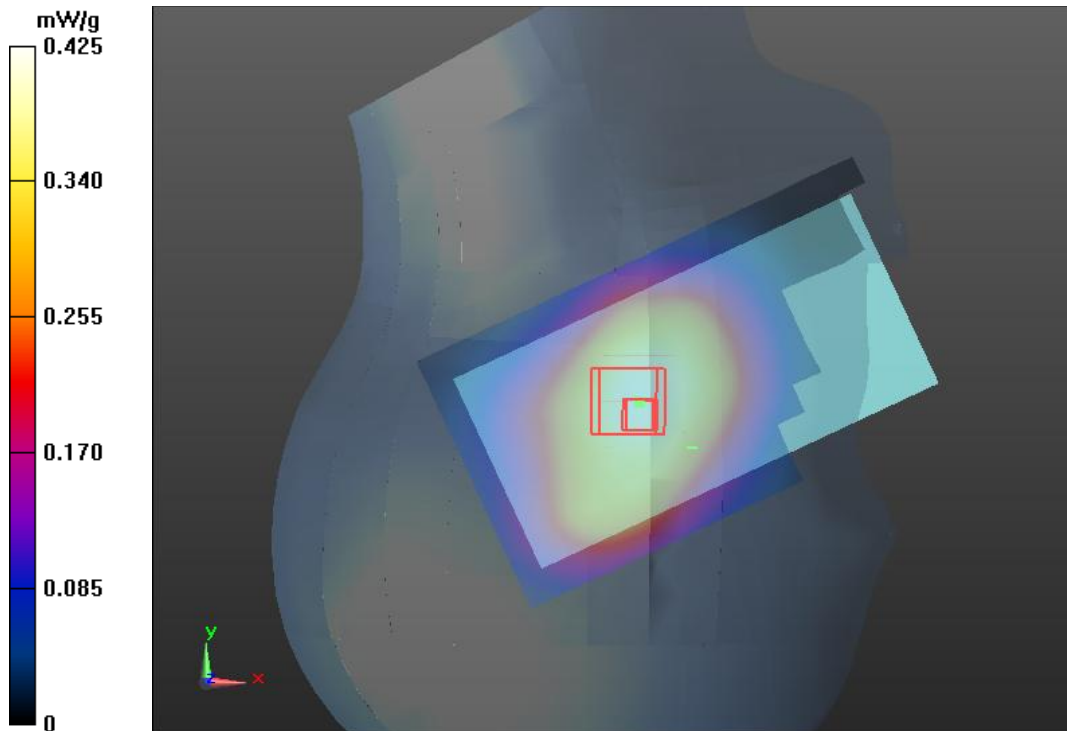
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.669 V/m; Power Drift = 0.08 Db

Peak SAR (extrapolated) = 0.604 Mw/g

SAR(1 g) = 0.404 Mw/g; SAR(10 g) = 0.288 Mw/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.402 Mw/g



Plot #2

Date/Time: 9/21/2013 9:57:50 AM

WCDMA Band V, UMTS RMC 12.2k, Mid Ch4183, 836.6MHz, R Touch w zoom

Communication System: CW; Communication System Band: FullSpan (0.0 - 6000.0 MHz);
Frequency: 836.6 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 0.889 \text{ mho/m}$; $\epsilon_r = 40.334$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Right Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.17, 9.17, 9.17); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/WCDMA Band V, Mid Ch4183, 836.6MHz R Touch/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.938 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.486 mW/g

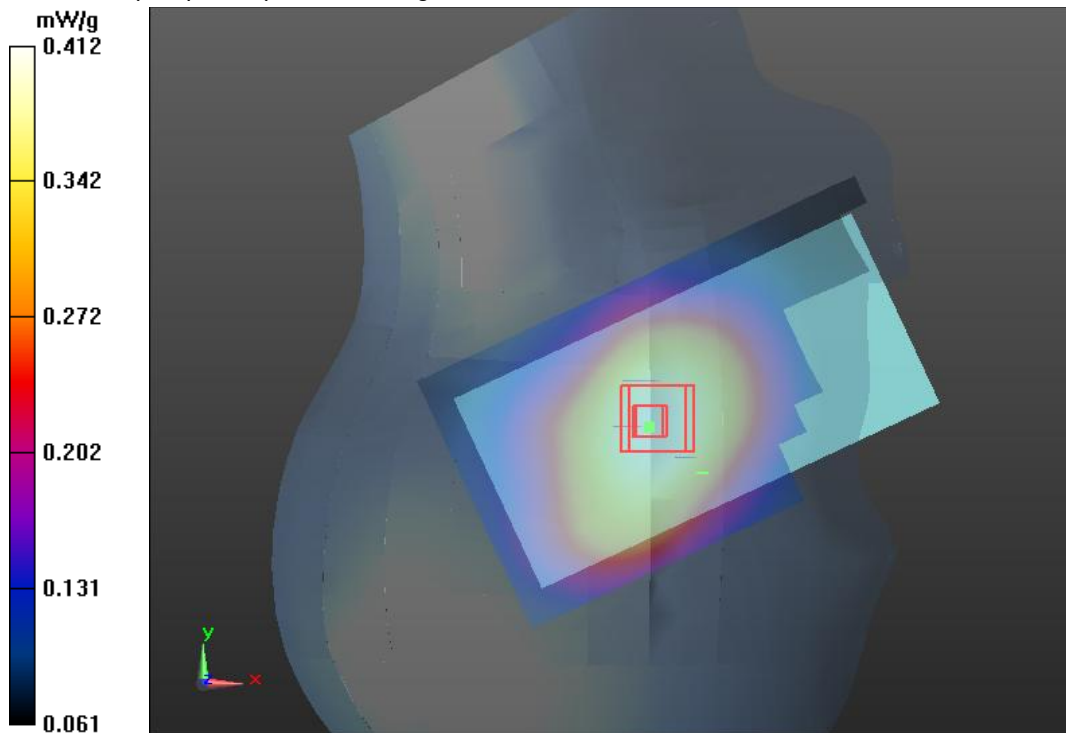
SAR(1 g) = 0.400 mW/g; SAR(10 g) = 0.307 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.412 mW/g

Configuration/WCDMA Band V, Mid Ch4183, 836.6MHz R Touch/Area Scan (91x161x1):

Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.436 mW/g



Plot #3

Date/Time: 11/13/2013 7:04:12 PM

GSM1900, Low Ch512, 1850.2 MHz, Right Touch, w zoom

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Frequency: 1850.2 MHz; Communication System PAR: 9.191 dB; PMF: 2.88104

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.292$ mho/m; $\epsilon_r = 40.506$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(8.18, 8.18, 8.18); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Scan H54Z/Zoom Scan (5x5x7)/Cube 0:

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

Reference Value = 13.160 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.590 mW/g

SAR(1 g) = 0.393 mW/g; SAR(10 g) = 0.232 mW/g (SAR corrected for target medium)

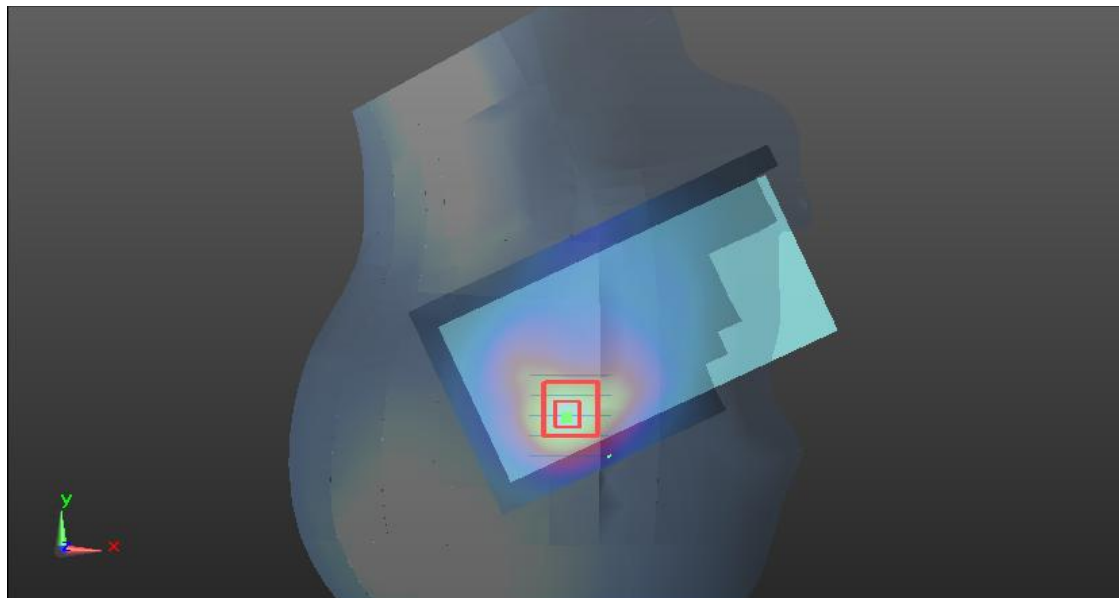
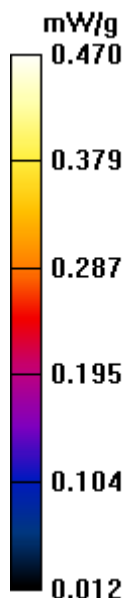
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.470 mW/g

Configuration/Scan H54Z/Area Scan (91x161x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 0.475 mW/g



Plot #4

Date/Time: 11/13/2013 4:54:34 PM

WCDMA Band II, UMTS RMC 12.2k, Low CH9262, 1852.4 MHz, R Touch w zoom

Communication System: WCDMA Band II; Communication System Band: FullSpan (0.0 - 6000.0 MHz);
Frequency: 1852.4 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.294$ mho/m; $\epsilon_r = 40.494$; $\rho = 1000$ kg/m³
Phantom section: Right Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(8.18, 8.18, 8.18); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/Scan H50Z/Area Scan (91x161x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

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

Configuration/Scan H50Z/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

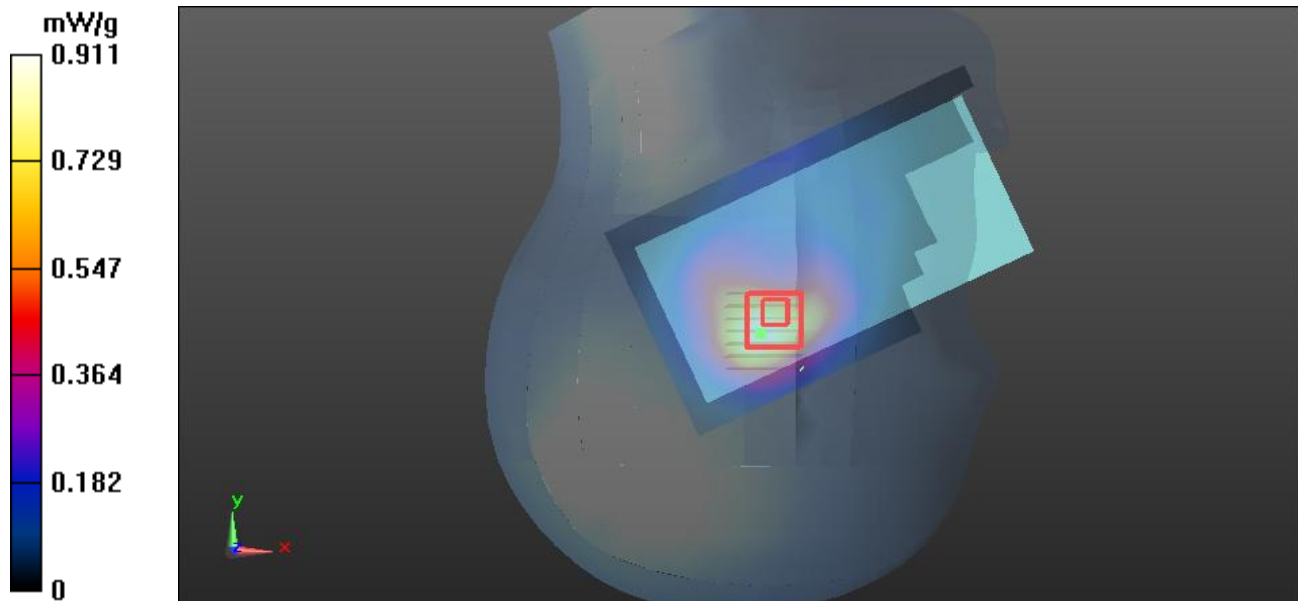
Reference Value = 18.518 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 2.124 mW/g

SAR(1 g) = 0.776 mW/g; SAR(10 g) = 0.307 mW/g (SAR corrected for target medium)

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.749 mW/g



Plot #5

Date/Time: 11/6/2013 12:30:03 PM

GSM 850, High Ch251, 848.8MHz, B1P3

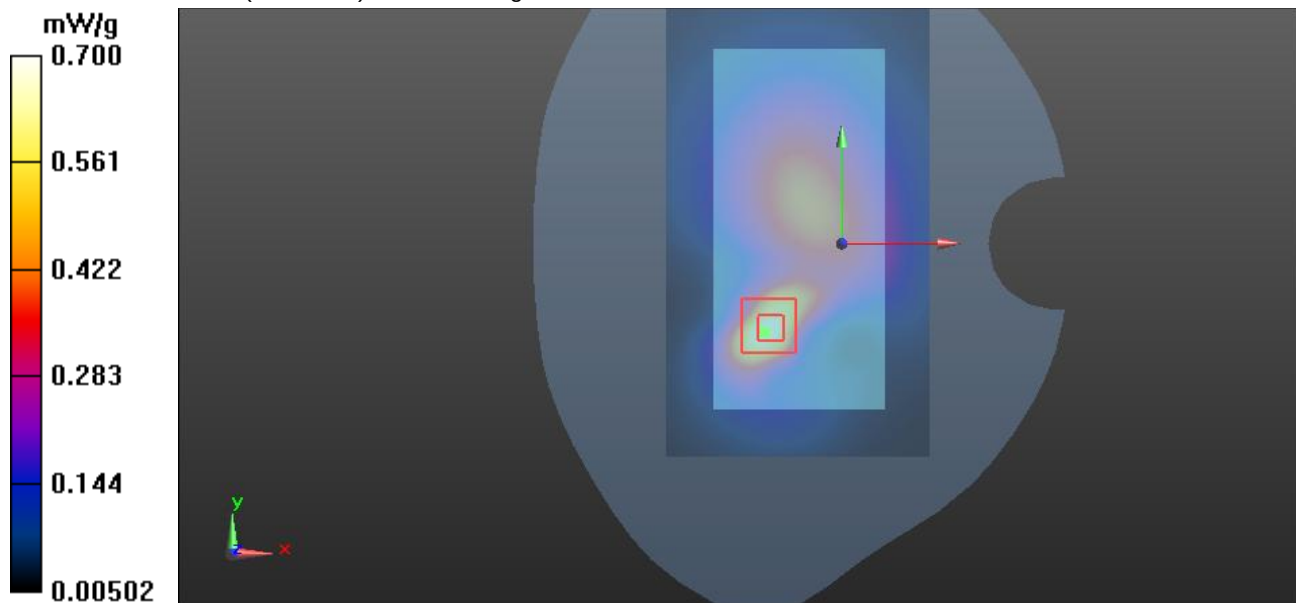
Communication System: Generic GSM; Communication System Band: GSM 850 (824.0 - 849.0 MHz);
Frequency: 848.8 MHz; Communication System PAR: 9.191 dB; PMF: 2.88104
Medium parameters used: $f = 849$ MHz; $\sigma = 0.983$ mho/m; $\epsilon_r = 54.173$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.13, 9.13, 9.13); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/B26Z, 850MHz, Body B1 P3/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.700 mW/g

Configuration/B26Z, 850MHz, Body B1 P3/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.808 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.942 mW/g
SAR(1 g) = 0.554 mW/g; SAR(10 g) = 0.307 mW/g (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.704 mW/g



Plot #6

Date/Time: 11/6/2013 1:52:47 PM

WCDMA Band V, Mid, CH4183, B1P3

Communication System: CW; Communication System Band: FullSpan (0.0 - 6000.0 MHz);
Frequency: 836.6 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 0.971 \text{ mho/m}$; $\epsilon_r = 54.283$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

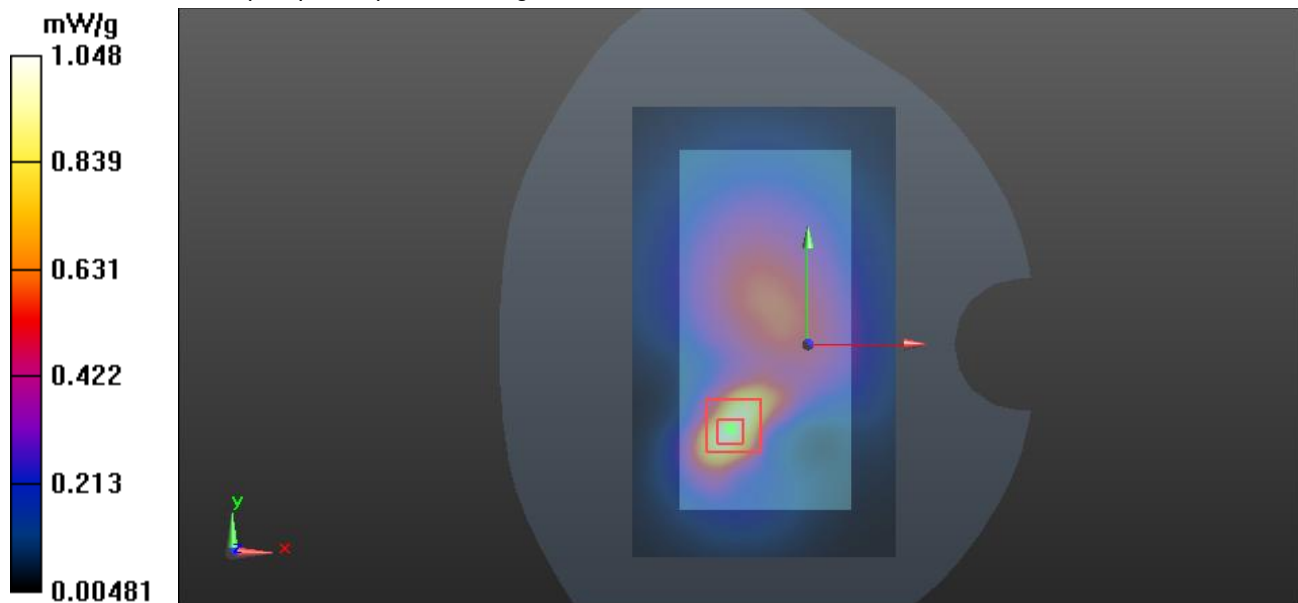
- Probe: EX3DV4 - SN3812; ConvF(9.13, 9.13, 9.13); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASYS2 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/B29, 850MHz, Body B1 P3/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 23.125 V/m; Power Drift = 0.12 dB

Fast SAR: SAR(1 g) = 0.798 mW/g; SAR(10 g) = 0.485 mW/g (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 1.05 mW/g



Plot #7

Date/Time: 11/6/2013 3:19:39 PM

WCDMA Band V, Mid, CH4183, B1P3

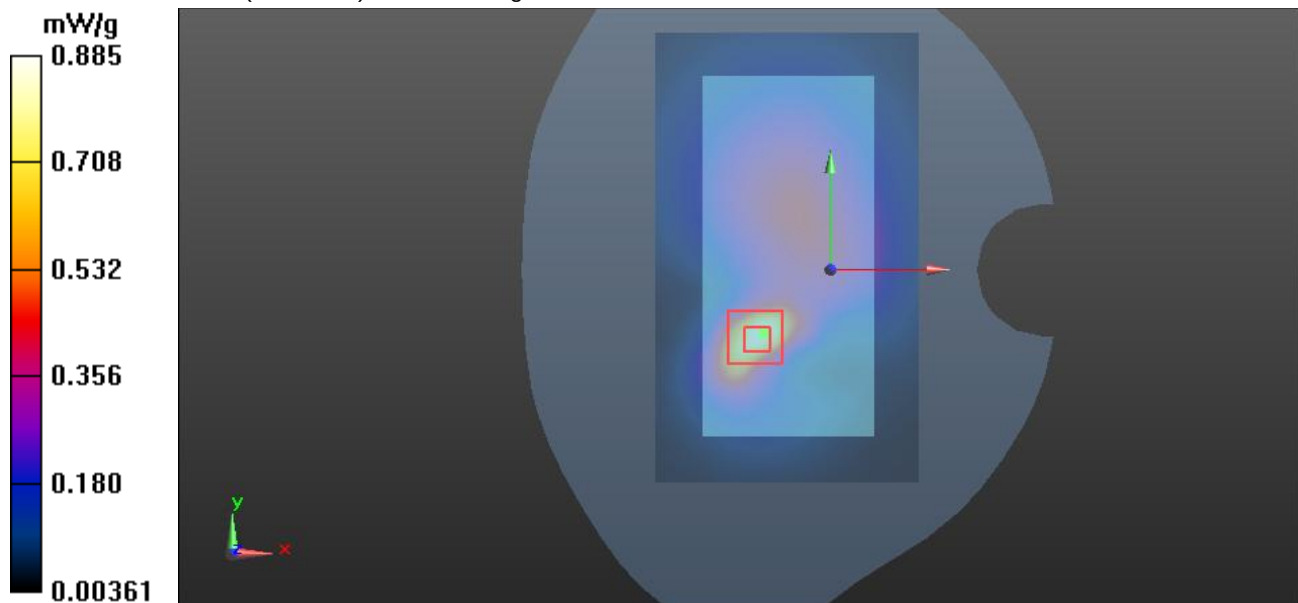
Communication System: CW; Communication System Band: FullSpan (0.0 - 6000.0 MHz);
Frequency: 836.6 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 837 \text{ MHz}$; $\sigma = 0.971 \text{ mho/m}$; $\epsilon_r = 54.283$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.13, 9.13, 9.13); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/B29Z, 850MHz, Body B1 P3/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.885 mW/g

Configuration/B29Z, 850MHz, Body B1 P3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.393 V/m; Power Drift = -0.21 dB
Peak SAR (extrapolated) = 1.212 mW/g
SAR(1 g) = 0.700 mW/g; SAR(10 g) = 0.381 mW/g (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.765 mW/g



Plot #8

Date/Time: 11/7/2013 3:43:35 PM

GSM1900, High CH810, B1P3

Communication System: Generic GSM; Communication System Band: PCS 1900 (1850.0 - 1910.0 MHz);

Frequency: 1909.8 MHz; Communication System PAR: 9.191 dB; PMF: 2.88104

Medium parameters used: $f = 1910$ MHz; $\sigma = 1.575$ mho/m; $\epsilon_r = 51.922$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(7.36, 7.36, 7.36); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/B38Z-1880MHz-B1P3/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.453 mW/g

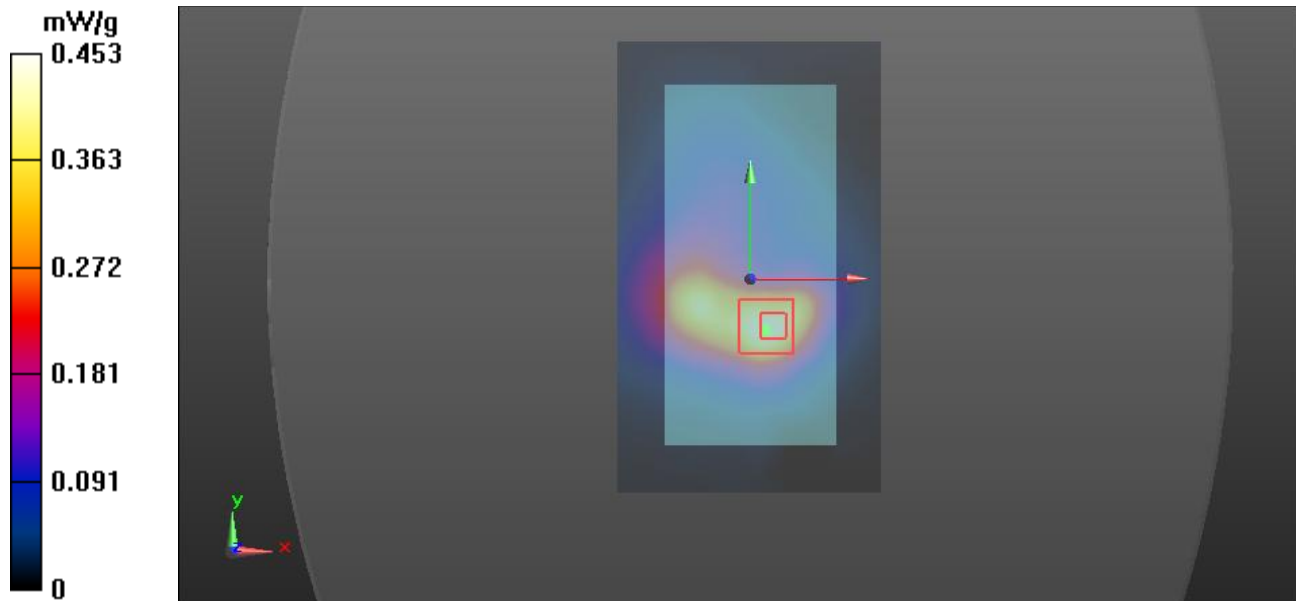
Configuration/B38Z-1880MHz-B1P3/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.568 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.607 mW/g

SAR(1 g) = 0.355 mW/g; SAR(10 g) = 0.203 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.457 mW/g



Plot #9

Date/Time: 11/8/2013 8:29:58 AM

WCDMA Band II, Mid CH9400, B1 P3

Communication System: WCDMA Band II; Communication System Band: FullSpan (0.0 - 6000.0 MHz);
Frequency: 1852.4 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.545$ mho/m; $\epsilon_r = 52.036$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(7.36, 7.36, 7.36); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

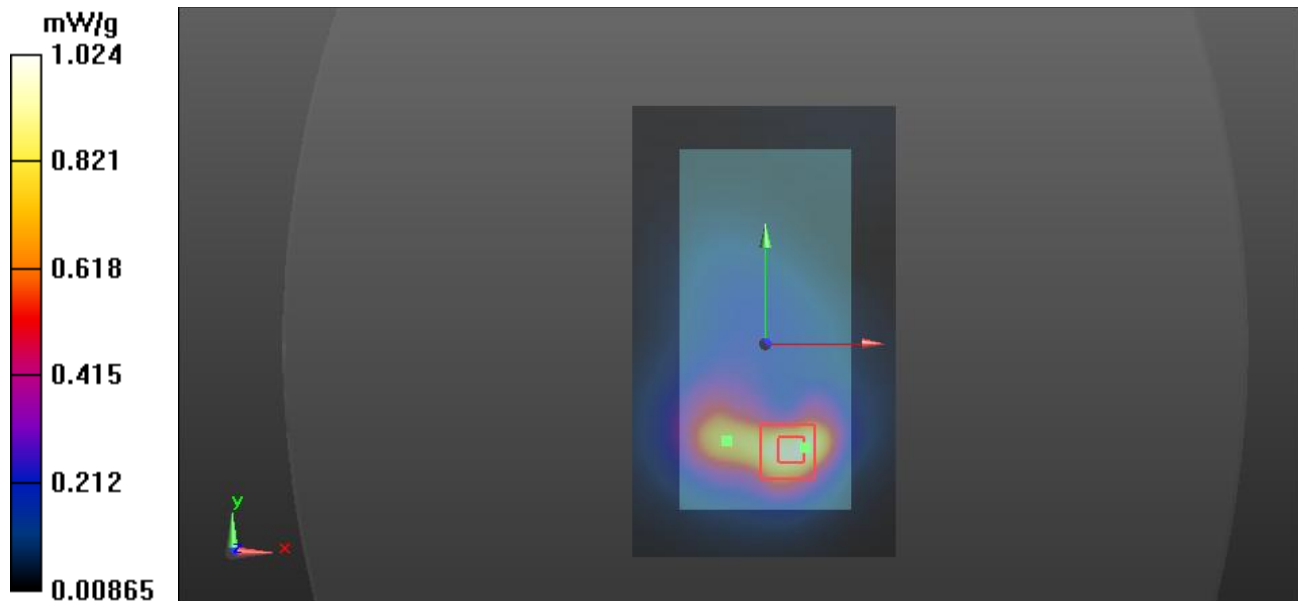
Configuration/B42-B1P3/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

Reference Value = 11.875 V/m; Power Drift = 0.21 dB

Fast SAR: SAR(1 g) = 0.745 mW/g; SAR(10 g) = 0.414 mW/g (SAR corrected for target medium)

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (interpolated) = 1.02 mW/g



Plot #10

Date/Time: 11/8/2013 9:59:20 AM

WCDMA Band II, Mid CH9400, B1 P3

Communication System: WCDMA Band II; Communication System Band: FullSpan (0.0 - 6000.0 MHz);
Frequency: 1852.4 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): $f = 1852.4$ MHz; $\sigma = 1.545$ mho/m; $\epsilon_r = 52.036$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(7.36, 7.36, 7.36); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/B42Z-B1P3/Area Scan (71x121x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.747 mW/g

Configuration/B42Z-B1P3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

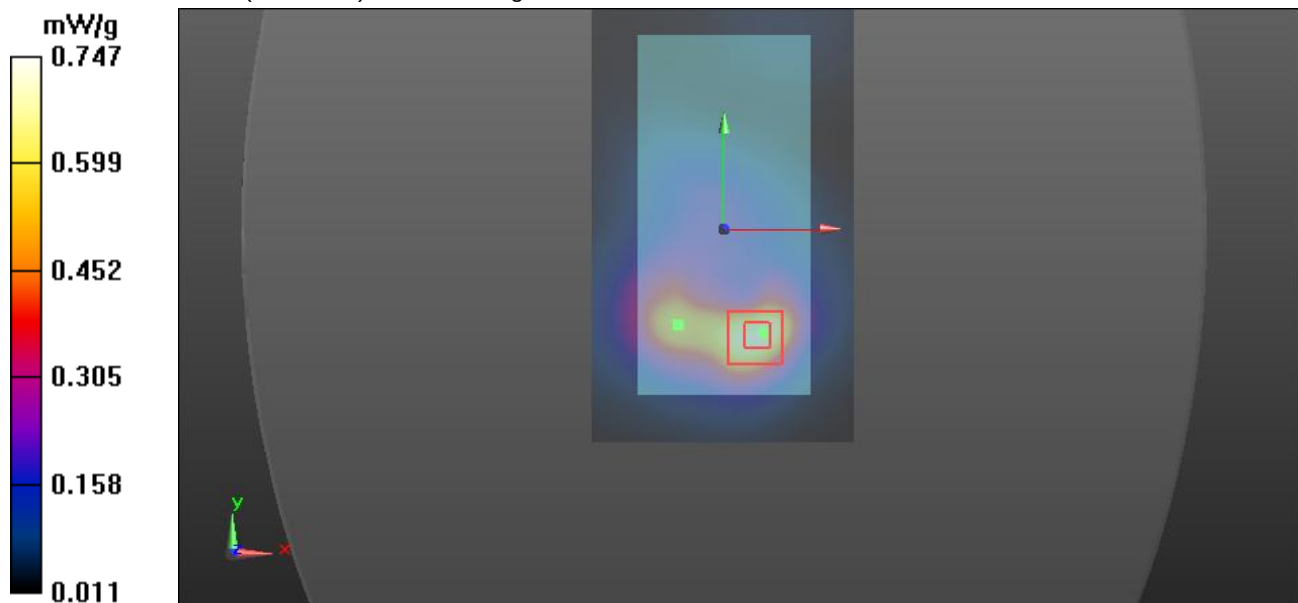
Reference Value = 11.796 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 1.074 mW/g

SAR(1 g) = 0.624 mW/g; SAR(10 g) = 0.343 mW/g (SAR corrected for target medium)

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.690 mW/g



Plot #11

Date/Time: 2/18/2014 11:34:23 AM

WiFi 802.11g, CH1, B1 P1

Communication System: 2.4GHz, 802.11g; Communication System Band: FullSpan (0.0 - 6000.0 MHz);
Frequency: 2412 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 2412$ MHz; $\sigma = 2.027$ mho/m; $\epsilon_r = 49.5$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

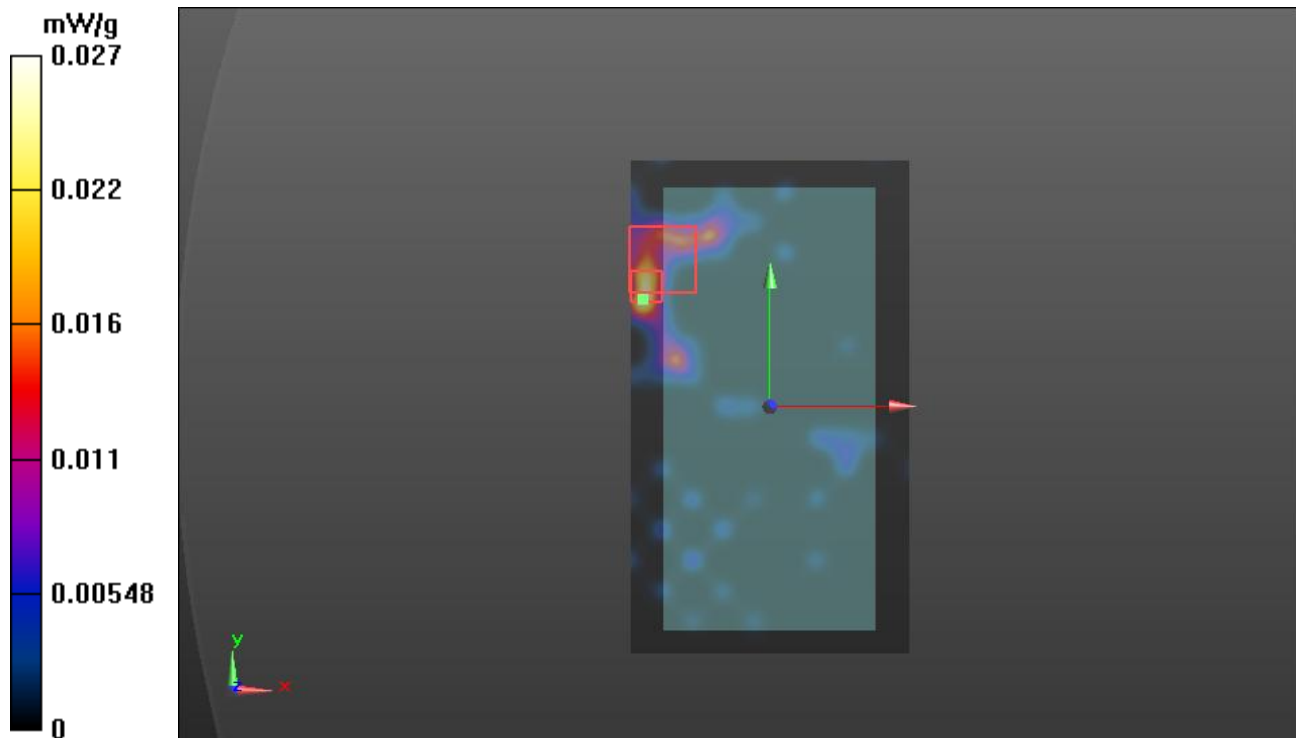
- Probe: EX3DV4 - SN3812; ConvF(7.01, 7.01, 7.01); Calibrated: 01/24/2014;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287;
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/2412MHz BSL, B1P1/Area Scan (91x161x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 1.566 V/m; Power Drift = 0.75 dB

Fast SAR: SAR(1 g) = 0.014 mW/g; SAR(10 g) = 0.00525 mW/g (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 0.0274 mW/g



13 SYSTEM CHECK PLOTS

Plot V1

Date/Time: 9/19/2013 11:30:39 AM

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d123

Communication System: CW; Communication System Band: D835 (835.0 MHz);
Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.887 \text{ mho/m}$; $\epsilon_r = 40.359$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.17, 9.17, 9.17); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/835MHz HSL System Validation/Area Scan (31x181x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (interpolated) = 1.06 mW/g

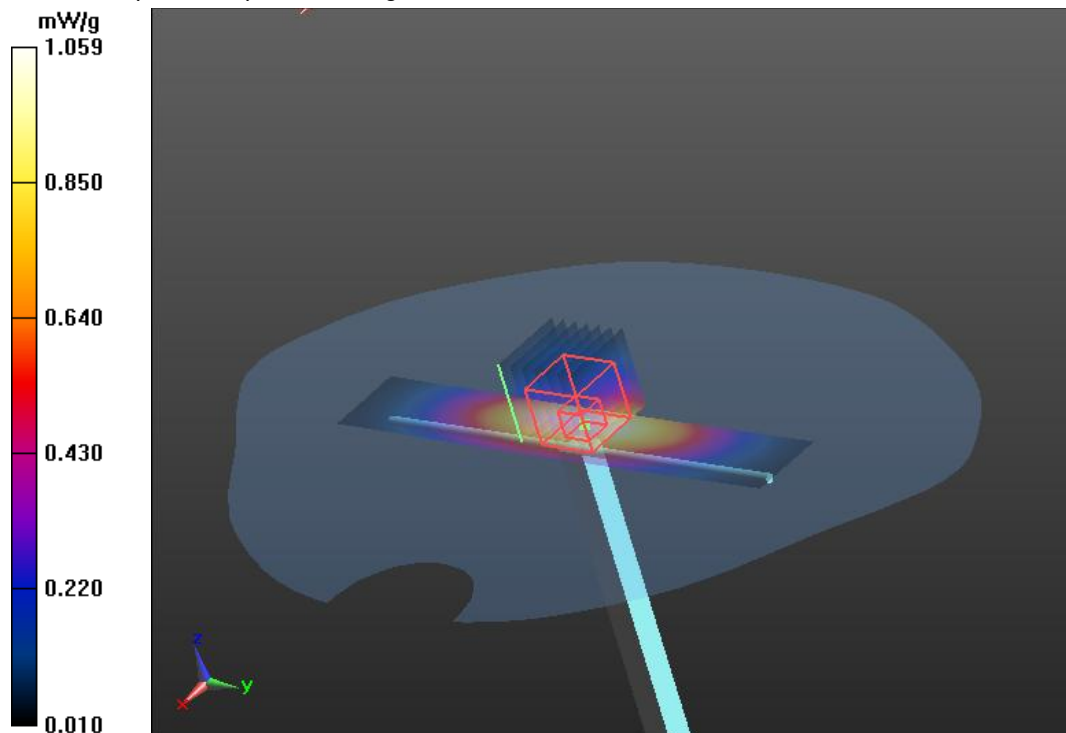
Configuration/835MHz HSL System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 33.145 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.344 mW/g

SAR(1 g) = 0.915 mW/g; SAR(10 g) = 0.603 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.05 mW/g



Plot V2

Date/Time: 9/23/2013 9:25:25 AM

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d123

Communication System: CW; Communication System Band: D835 (835.0 MHz);
Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.878 \text{ mho/m}$; $\epsilon_r = 39.272$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.17, 9.17, 9.17); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASYS 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/835MHz HSL System Validation/Area Scan (31x181x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (interpolated) = 1.09 mW/g

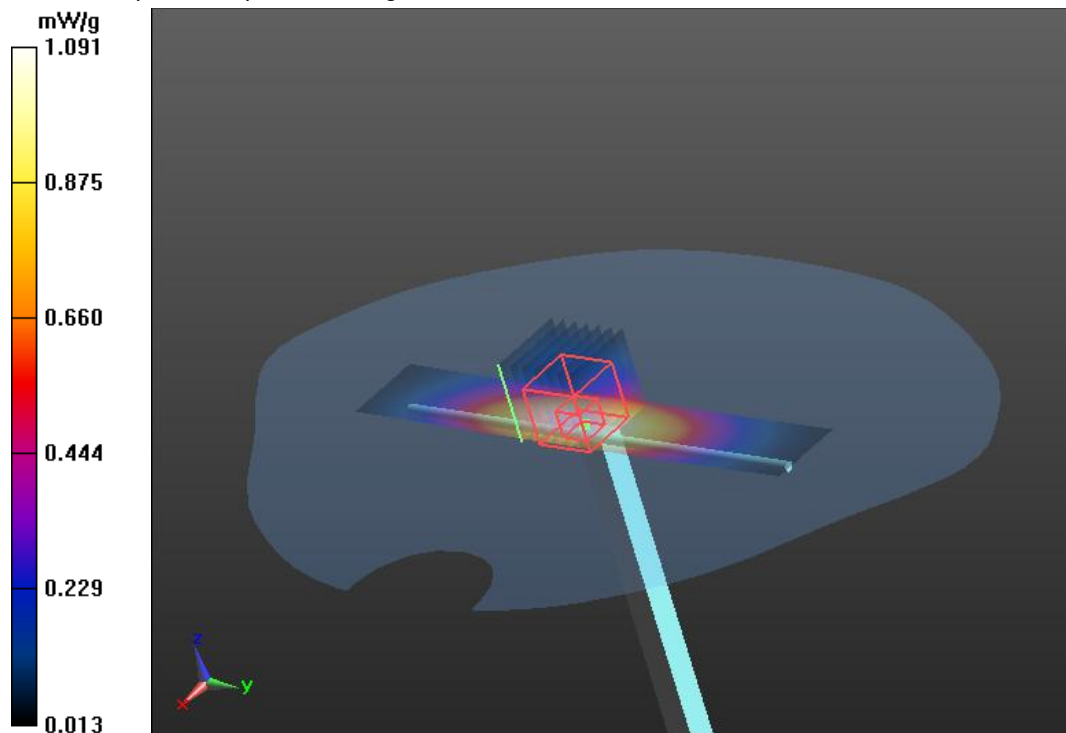
Configuration/835MHz HSL System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 35.426 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 1.395 mW/g

SAR(1 g) = 0.956 mW/g; SAR(10 g) = 0.630 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.10 mW/g



Plot V3

Date/Time: 10/1/2013 3:57:40 PM

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d123

Communication System: CW; Communication System Band: D835 (835.0 MHz);
Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.878 \text{ mho/m}$; $\epsilon_r = 39.815$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.17, 9.17, 9.17); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/835MHz HSL System Validation/Area Scan (41x41x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 1.12 mW/g

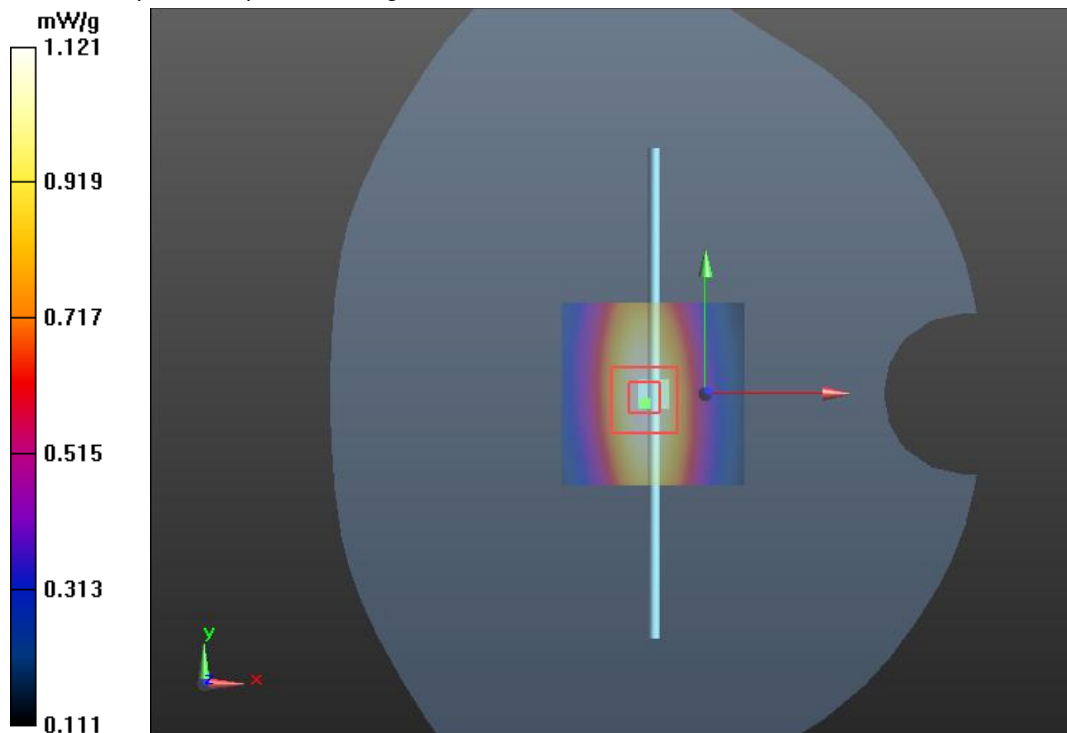
Configuration/835MHz HSL System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 35.727 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.385 mW/g

SAR(1 g) = 0.940 mW/g; SAR(10 g) = 0.620 mW/g (SAR corrected for target medium)

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



Plot V4

Date/Time: 10/3/2013 10:22:46 AM

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d123

Communication System: CW; Communication System Band: D835 (835.0 MHz);
Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.877 \text{ mho/m}$; $\epsilon_r = 39.388$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.17, 9.17, 9.17); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/835MHz HSL System Validation/Area Scan (41x41x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 1.13 mW/g

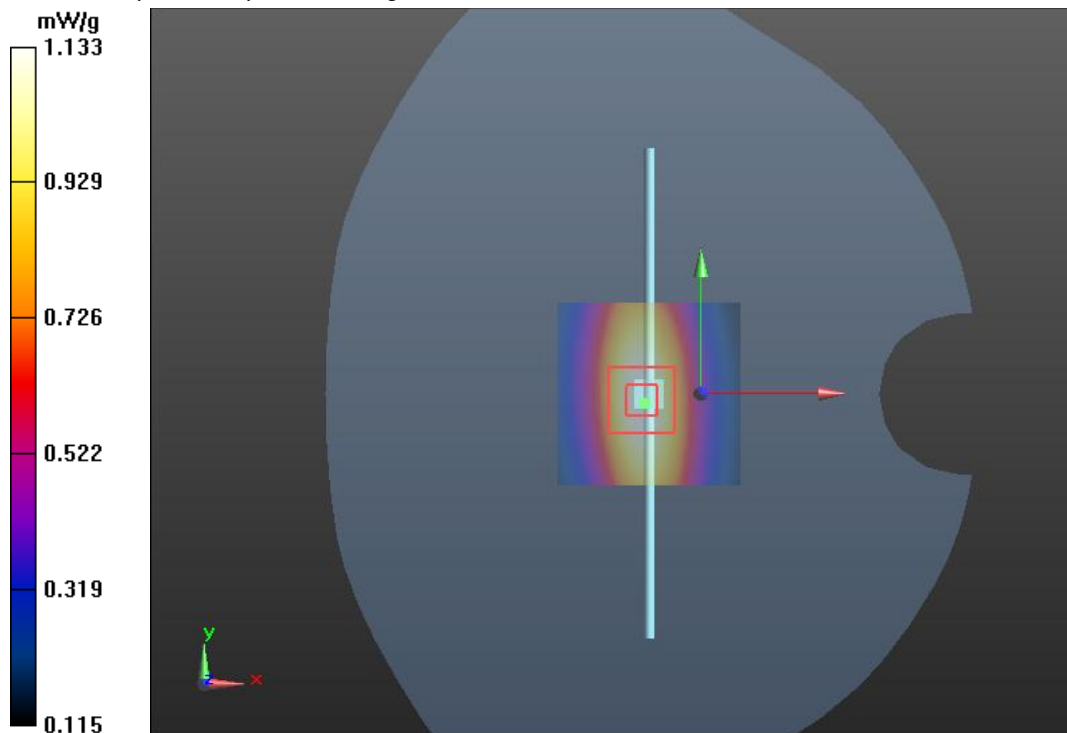
Configuration/835MHz HSL System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 36.099 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.390 mW/g

SAR(1 g) = 0.947 mW/g; SAR(10 g) = 0.620 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.13 mW/g



Plot V5

Date/Time: 11/6/2013 8:15:30 AM

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d123

Communication System: CW; Communication System Band: D835 (835.0 MHz);
Frequency: 835 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.969 \text{ mho/m}$; $\epsilon_r = 54.306$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.13, 9.13, 9.13); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/835MHz HSL System Validation/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.11 mW/g

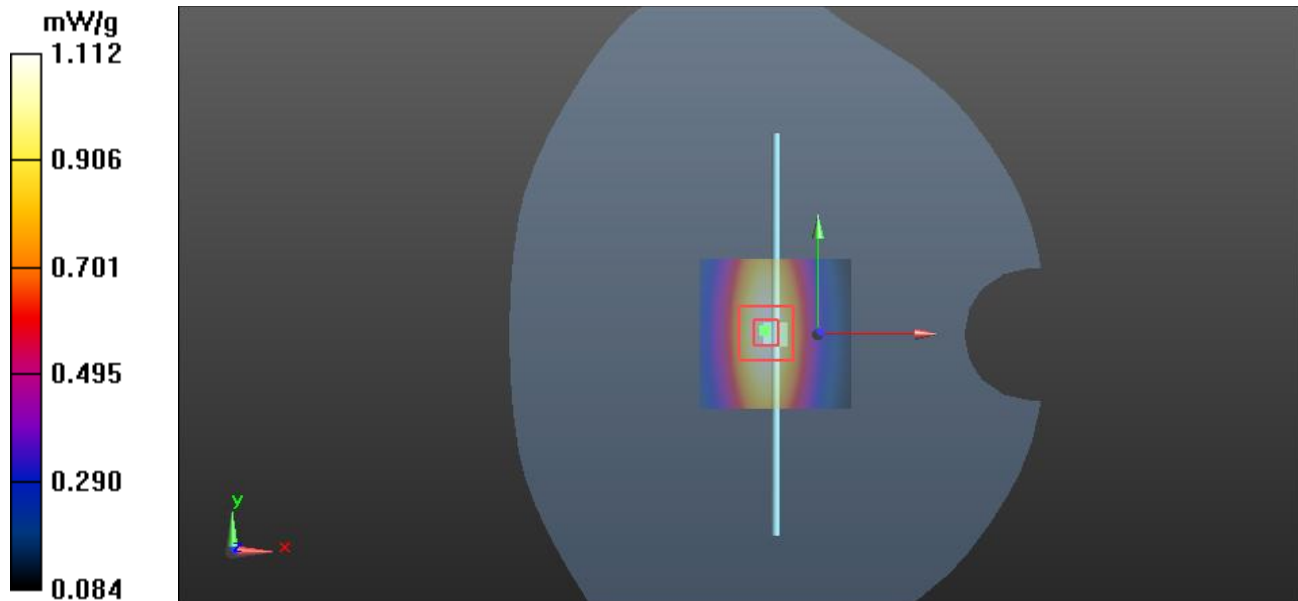
Configuration/835MHz HSL System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 33.835 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.325 mW/g

SAR(1 g) = 0.927 mW/g; SAR(10 g) = 0.616 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.11 mW/g



Plot V6

Date/Time: 11/7/2013 8:16:01 AM

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d144

Communication System: CW; Communication System Band: D1900 (1900.0 MHz);
Frequency: 1900 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 1900$ MHz; $\sigma = 1.566$ mho/m; $\epsilon_r = 51.952$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(7.36, 7.36, 7.36); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/1900MHz BSL System Validation/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 5.36 mW/g

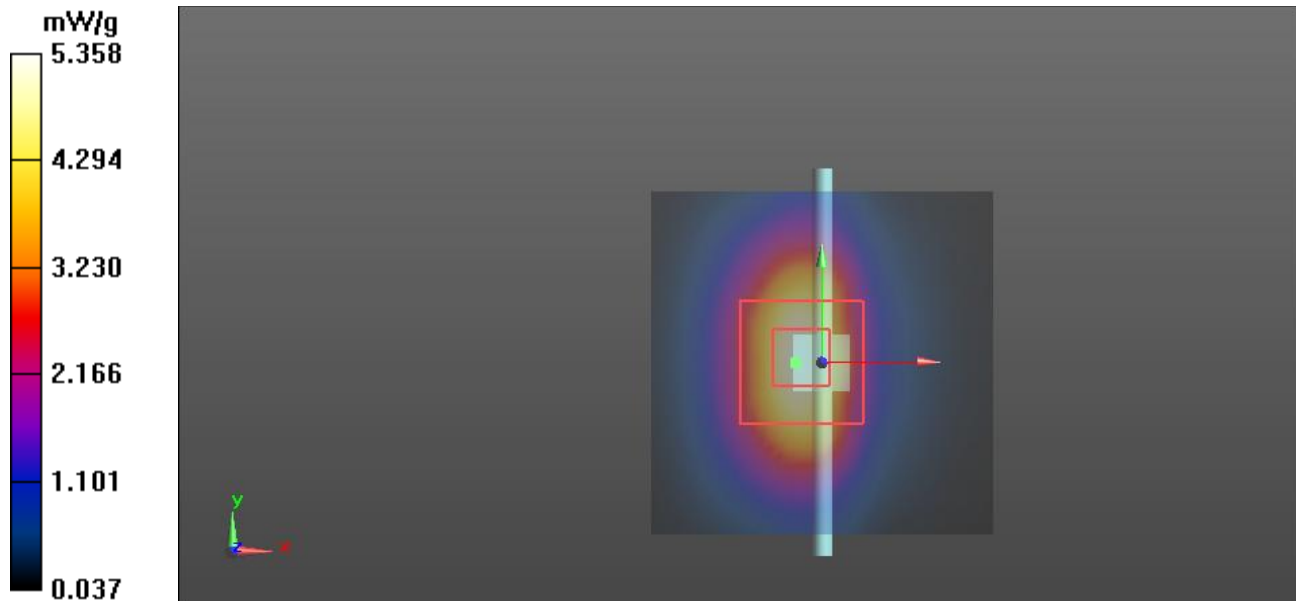
Configuration/1900MHz BSL System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.030 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 7.276 mW/g

SAR(1 g) = 3.95 mW/g; SAR(10 g) = 2.08 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 5.45 mW/g



Plot V7

Date/Time: 11/13/2013 10:35:47 AM

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d144

Communication System: CW; Communication System Band: D1900 (1900.0 MHz);
Frequency: 1900 MHz; Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $f = 1900$ MHz; $\sigma = 1.339$ mho/m; $\epsilon_r = 40.321$; $\rho = 1000$ kg/m³
Phantom section: Flat Section
Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(8.18, 8.18, 8.18); Calibrated: 12/12/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/1900MHz HSL System Validation/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.76 mW/g

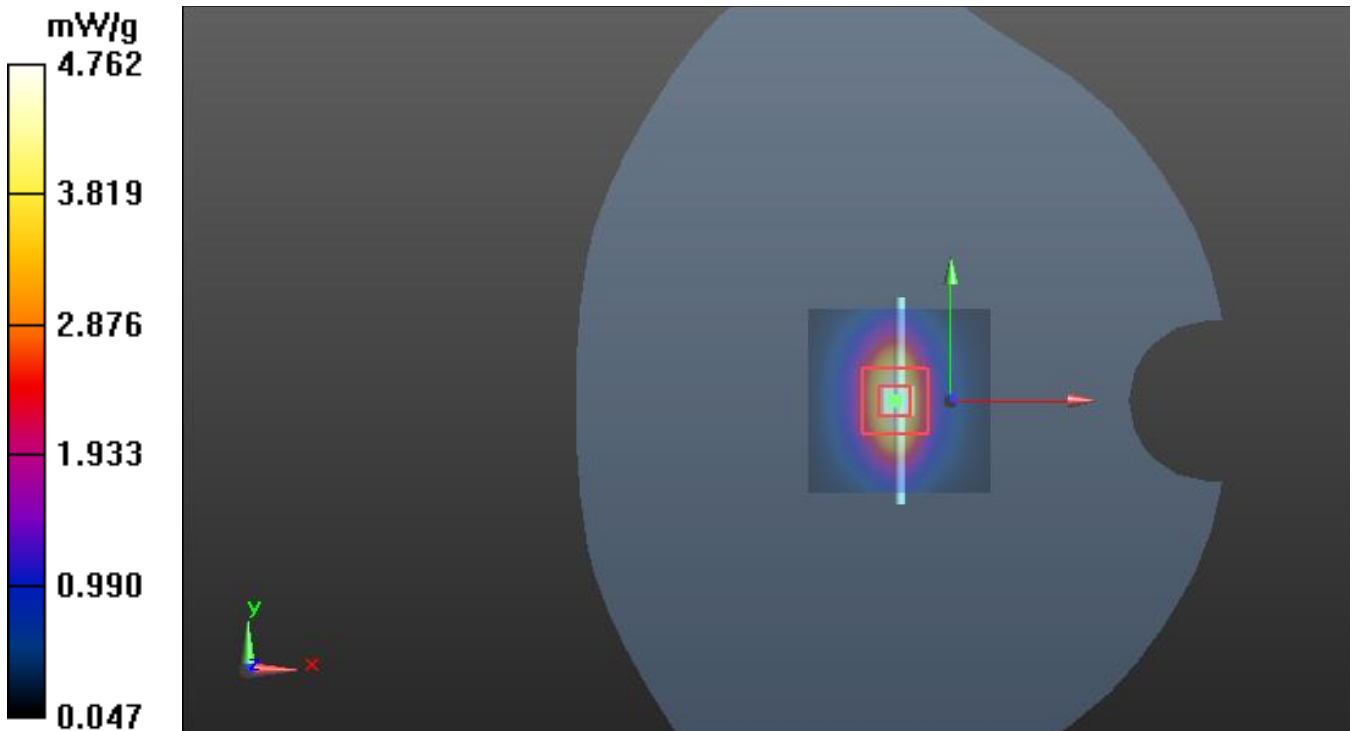
Configuration/1900MHz HSL System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 59.768 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 6.440 mW/g

SAR(1 g) = 3.63 mW/g; SAR(10 g) = 1.9 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 4.78 mW/g



Plot V8

Date/Time: 2/18/2014 10:49:53 AM

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:890

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency:

2450 MHz; Communication System PAR: 0 dB; PMF: 1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.071$ mho/m; $\epsilon_r = 49.368$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(7.01, 7.01, 7.01); Calibrated: 1/24/2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1287; Calibrated: 10/4/2011
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Configuration/2450MHz BSL System Validation/Area Scan (51x51x1): Measurement grid: dx=12mm, dy=12mm

Maximum value of SAR (interpolated) = 8.21 mW/g

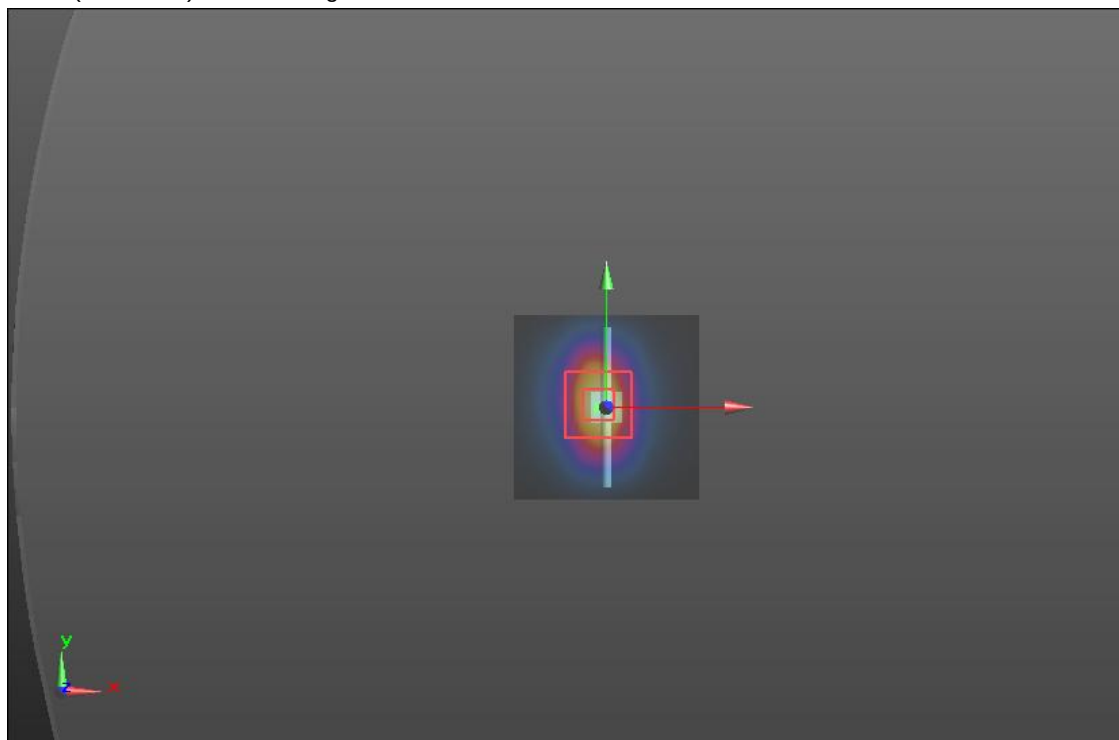
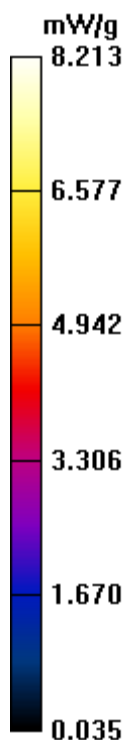
Configuration/2450MHz BSL System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

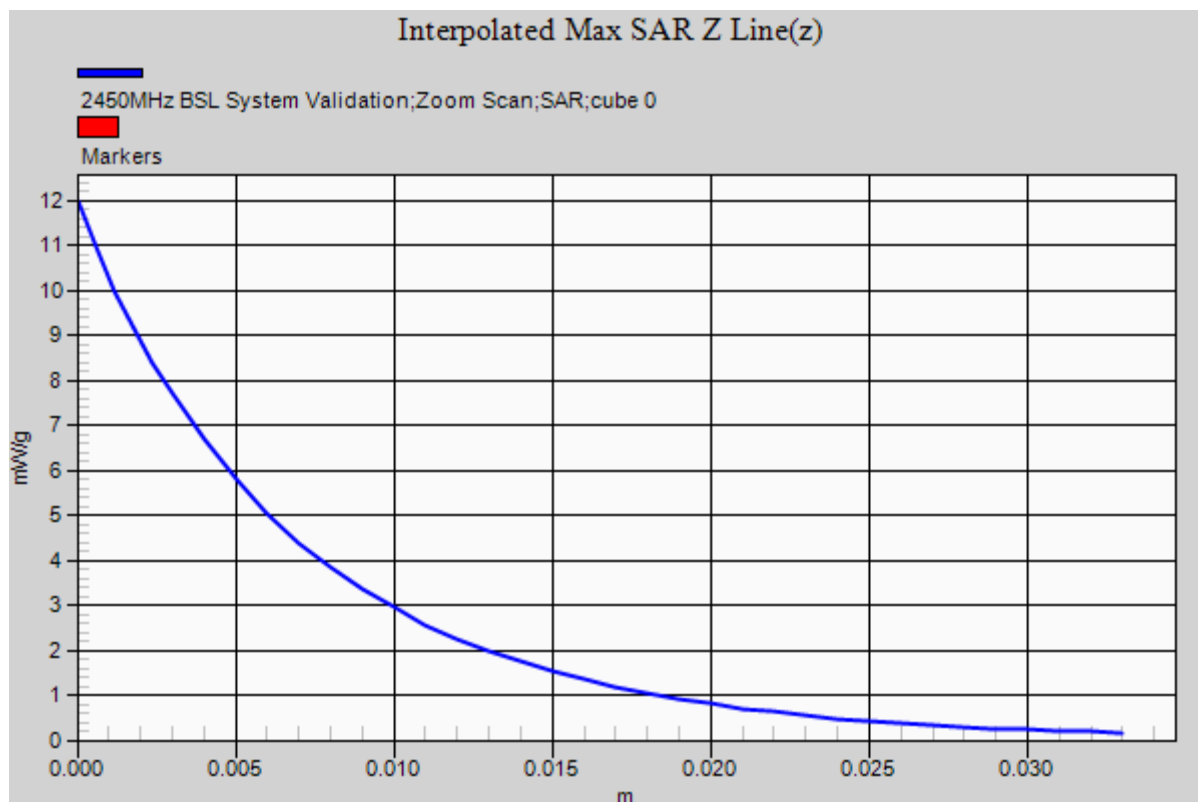
Reference Value = 62.064 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 11.983 mW/g

SAR(1 g) = 5.55 mW/g; SAR(10 g) = 2.6 mW/g (SAR corrected for target medium)

Maximum value of SAR (measured) = 7.67 mW/g





14 REVISION HISTORY

Revision Level	Description of changes	Revision Date
0	Initial release	22 November 2013
1	Nominal maximum power in GSM mode updated, probe, handset holder and phantom description added, dielectric constant for 1800H updated, test separation distance explanation addition, corrected plots 11-15. Added Section 2.1 to describe EUT power level setting.	22 Jan 2014
2	Corrected DTS frequency range on cover page and page 3.	23 Jan 2014
3	Added test data from 2-18-2014	19 Feb 2014