SAR Test Report

Product Name : AirPcap Nx

Model No. : APC-NX

FCC ID : VHL-AIRPCAP-NX

Applicant : CACE Technologies, Inc.

Address : 1949 5th Street, Suite 103, Davis, CA 95616 USA

Date of Receipt : Oct. 22, 2010

Date of Test : Nov. 10, 2010

Issued Date : Nov. 11, 2010

Report No. : 109S022R-HP-US-P03V01

Report Version : V1.1

Test Report Certification

Issued Date: Nov. 11, 2010
Report No: 109S022R-HP-US-P03V01

Product Name	:	AirPcap Nx
Applicant	:	CACE Technologies, Inc.
Address	:	1949 5th Street, Suite 103, Davis, CA 95616 USA
Manufacturer	:	CACE Technologies, Inc.
Address	:	1949 5th Street, Suite 103, Davis, CA 95616 USA
FCC ID	:	VHL-AIRPCAP-NX
Model No.	:	APC-NX
Trade Name	:	CACE Technologies
EUT Voltage	:	DC 5V
Applicable Standard	:	FCC OET65 Supplement C June 2001 IEEE Std. 1528-2003, 47CFR § 2.1093
Test Result	:	Max. SAR Measurement (1g) 802.11n(20MHz)(2.4GHz): 1.159 W/kg 802.11n(40MHz)(5GHz): 1.092 W/kg
Performed Location	:	Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392
Documented By	:	Alice Ni (Engineering ADM: Alice Ni)
Tested By	:	Marlin chen (Engineering Supervisor: Marlin Chen)
Approved By	:	Dream Cao (Engineering Manager: Dream Cao)

Laboratory Information

We , **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Germany	**:**	**TUV Rheinland**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC, NVLAP**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: http://tw.quietek.com/modules/myalbum/
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :
No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

NVLAP Lab Code : 200347-0

Testing Laboratory 1313

LinKou Testing Laboratory :
No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen, Lin-Kou Shiang, Taipei, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0

Testing Laboratory 0914

Suzhou (China) Testing Laboratory :
No. 99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., Suzhou,China.
TEL : +86-512-6251-5088 / FAX : +86-512-6251-5098 E-Mail : service@quietek.com

NVLAP Lab Code : 200743-0

Testing Laboratory 1596

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1. General Information

1.1. EUT Description

Product Name	AirPcap Nx
FCC ID	VHL-AIRPCAP-NX
Trade Name	CACE Technologies
Model No.	APC-NX
Frequency Range	For 2.4GHz Band 802.11b/g/n(20MHz): 2412 - 2462 MHz 802.11n(40MHz): 2422 - 2452 MHz For 5.0GHz Band 802.11a/n(20MHz): 5180 - 5320 MHz, 5500 - 5700 MHz, 5745 - 5825MHz 802.11n(40MHz): 5190 - 5310 MHz, 5510 - 5670 MHz, 5755 - 5795 MHz
Channel Number	For 2.4GHz Band 802.11b/g/n(20MHz): 11 802.11n(40MHz): 7 For 5.0GHz Band 802.11a/n(20MHz): 24 802.11n(40MHz): 11
Type of Modulation	802.11b: DSSS
	802.11a/g/n: OFDM
Data Rate	802.11a/g: 6/9/12/18/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
	802.11n: up to 300 Mbps
Device Category	Mobile
RF Exposure Environment	Uncontrolled
Antenna Type	PCB (Internal)
Peak Antenna Gain	0 dBi for 2.4GHz band 0 dBi for 5GHz band
Max. Output Power (Conducted)	802.11b: 22.37dBm 802.11g: 25.83dBm 802.11a: 23.42dBm 802.11n(20MHz): 26.63dBm 802.11n(40MHz): 26.18dBm

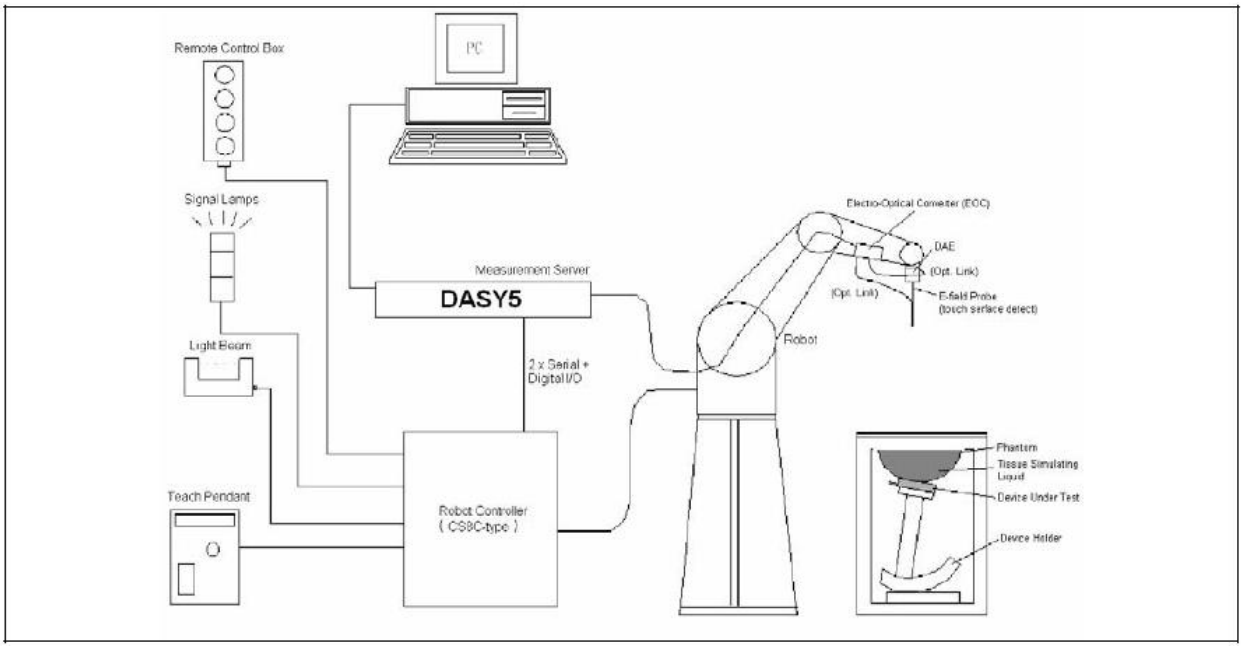
1.2. Test Environment

Ambient conditions in the laboratory:

Items	Required	Actual
Temperature (°C)	18-25	21.3± 2
Humidity (%RH)	30-70	52

2. SAR Measurement System

2.1. DASY5 System Description



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

- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

2.1.1. Applications

Predefined procedures and evaluations for automated compliance testing with all worldwide standards, e.g., IEEE 1528, OET 65, IEC 62209-1, IEC 62209-2, EN 50360, EN 50383 and others.

2.1.2. Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a $10mm^2$ step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2003, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan).

2.1.3. Zoom Scan (Cube Scan Averaging)

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of 1000 kg/m^3 is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1 g cube is 10mm, with the side length of the 10 g cube 21,5mm.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications utilize a physical step of 7x7x7 (5mmx5mmx5mm) providing a volume of 30mm in the X & Y axis, and 30mm in the Z axis.

2.1.4. Uncertainty of Inter-/Extrapolation and Averaging

In order to evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Postprocessor, DASY5 allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEEE 1528.The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.

$$f_1(x,y,z) = Ae^{-\frac{z}{2a}}\cos^2\left(\frac{\pi}{2}\frac{\sqrt{x'^2+y'^2}}{5a}\right)$$

$$f_2(x,y,z) = Ae^{-\frac{z}{a}}\frac{a^2}{a^2+x'^2}\left(3-e^{-\frac{2z}{a}}\right)\cos^2\left(\frac{\pi}{2}\frac{y'}{3a}\right)$$

$$f_3(x,y,z) = A\frac{a^2}{\frac{a^2}{4}+x'^2+y'^2}\left(e^{-\frac{2z}{a}}+\frac{a^2}{2(a+2z)^2}\right)$$

2.2. DASY5 E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SPEAG. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN 62209-1, IEC 62209, etc.) under ISO 17025. The calibration data are in Appendix D**.**

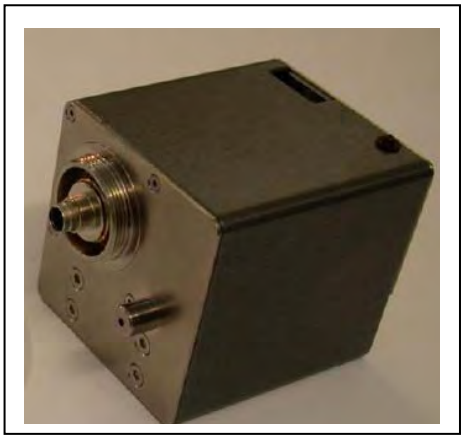
2.2.1. Isotropic E-Field Probe Specification

Model	EX3DV4	
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

2.3. Boundary Detection Unit and Probe Mounting Device

The DASY probes use a precise connector and an additional holder for the probe, consisting of a plastic tube and a flexible silicon ring to center the probe. The connector at the DAE is flexibly mounted and held in the default position with magnets and springs. Two switching systems in the connector mount detect frontal and lateral probe collisions and trigger the necessary software response.

2.4. DATA Acquisition Electronics (DAE) and Measurement Server



The data acquisition electronics (DAE) 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 measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.
The input impedance of the DAE4 is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.

The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz intel ULV Celeron, 128MB chipdisk and 128MB RAM. The necessary circuits for communication with the DAE electronics box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.

2.5. Robot

The DASY5 system uses the high precision robots TX90 XL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY5 system, the CS8C robot controller version from Stäubli is used.

The XL robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

2.6. Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.

The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

2.7. Device Holder

The DASY5 device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR).

Thus the device needs no repositioning when changing the angles.

The DASY5 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity εr =3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

2.8. SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

- Left head
- Right head
- Flat phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

3. Tissue Simulating Liquid

3.1. The composition of the tissue simulating liquid

INGREDIENT (% Weight)	2450MHz Head	2450MHz Body	5200MHz Body	5800MHz Body
Water	46.7	73.2	76	75.68
Salt	0.00	0.04	0.00	0.43
Sugar	0.00	0.00	0.00	0.00
HEC	0.00	0.00	0.00	0.00
Preventol	0.00	0.00	0.00	0.00
DGBE	53.3	26.7	4.44	4.42
Triton X-100	0.00	0.00	19.56	19.47

3.2. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using DASY5 Dielectric Probe Kit and Agilent Vector Network Analyzer E5071C

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
2450MHz	Reference result ± 5% window	52.7 50.07 to 55.34	1.95 1.85 to 2.05	N/A
	23-Oct-10	51.76	2.00	20.1
2412 MHz	Low channel	51.90	1.95	20.1
2437 MHz	Mid channel	51.80	1.98	20.1
2462 MHz	High channel	51.70	2.02	20.1

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
5200MHz	Reference result ± 5% window	49.0 46.55 to 51.45	5.30 5.04 to 5.57	N/A
	23-Oct-10	48.65	5.31	20.1
5180 MHz	Low channel	48.71	5.28	20.1
5240 MHz	Mid channel	48.55	5.39	20.1
5320 MHz	High channel	48.33	5.50	20.1

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
5500MHz	Reference result ± 5% window	48.6 46.17 to 51.03	5.65 5.37 to 5.93	N/A
	23-Oct-10	47.85	5.78	20.1
5590 MHz	Low channel	47.62	5.93	20.1
5600 MHz	Mid channel	47.59	5.94	20.1
5670 MHz	High channel	47.42	5.97	20.1

Body Tissue Simulant Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [°C]
		ε_r	σ [s/m]	
5800MHz	Reference result ± 5% window	48.2 45.79 to 50.61	6.00 5.70 to 6.30	N/A
	23-Oct-10	47.07	6.25	20.1
5745 MHz	Low channel	47.22	6.17	20.1
5785 MHz	Mid channel	47.11	6.23	20.1
5825 MHz	High channel	47.01	6.30	20.1

3.3. Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

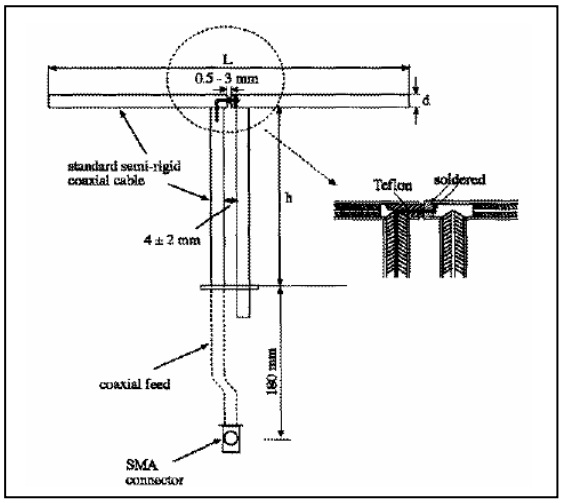
Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

4. SAR Measurement Procedure

4.1. SAR System Validation

4.1.1. Validation Dipoles



The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE and FCC Supplement C. the table below provides details for the mechanical and electrical specifications for the dipoles.

Frequency	L (mm)	h (mm)	d (mm)
2450MHz	53.5	30.4	3.6
5800MHz	20.6	14.2	3.6

4.1.2. Validation Result

System Performance Check at 2450MHz

Validation Dipole: D2450V2, SN: 839

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
2450 MHz	Reference result ± 10% window	51.6 46.44 to 56.76	24.2 21.78 to 26.62	N/A
	23-Oct-10	52.40	24.48	20.1
Note: All SAR values are normalized to 1W forward power.				

System Performance Check at 5200MHz

Validation Dipole: D5GHzV2, SN: 1078

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
5200 MHz	Reference result ± 10% window	77.9 70.11 to 85.69	21.8 19.62 to 23.98	N/A
	23-Oct-10	77.50	21.70	20.1
Note: All SAR values are normalized to 1W forward power.				

System Performance Check at 5500MHz

Validation Dipole: D5GHzV2, SN: 1078

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
5500 MHz	Reference result ± 10% window	83.6 75.24 to 91.96	23.0 20.70 to 25.30	N/A
	23-Oct-10	84.50	23.10	20.1
Note: All SAR values are normalized to 1W forward power.				

System Performance Check at 5800MHz

Validation Kit: ASL-D-2450-S-2

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [°C]
5800 MHz	Reference result ± 10% window	73.3 65.97 to 80.63	20.2 18.18 to 22.22	N/A
	23-Oct-10	75.00	21.90	20.1
Note: All SAR values are normalized to 1W forward power.				

4.2. SAR Measurement Procedure

The ALSAS-10U calculates SAR using the following equation,

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

σ: represents the simulated tissue conductivity

ρ: represents the tissue density

The EUT is set to transmit at the required power in line with product specification, at each frequency relating to the LOW, MID, and HIGH channel settings.

Pre-scans are made on the device to establish the location for the transmitting antenna, using a large area scan in either air or tissue simulation fluid.

The EUT is placed against the Universal Phantom where the maximum area scan dimensions are larger than the physical size of the resonating antenna. When the scan size is not large enough to cover the peak SAR distribution, it is modified by either extending the area scan size in both the X and Y directions, or the device is shifted within the predefined area.

The area scan is then run to establish the peak SAR location (interpolated resolution set at $1mm^2$) which is then used to orient the center of the zoom scan. The zoom scan is then executed and the 1g and 10g averages are derived from the zoom scan volume (interpolated resolution set at $1mm^3$).

5. SAR Exposure Limits

SAR assessments have been made in line with the requirements of IEEE-1528, FCC Supplement C, and comply with ANSI/IEEE C95.1-1992 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (1g cube tissue for brain or body)	1.60 W/kg
Spatial Average SAR (whole body)	0.08 W/kg
Spatial Peak SAR (10g for hands, feet, ankles and wrist)	4.00 W/kg

6. Test Equipment List

Instrument	Manufacturer	Model No.	Serial No.	Last Calibration	Next Calibration
Stäubli Robot TX60L	Stäubli	TX60L	F10/5C90A1/A/01	Mar. 2010	only once
Controller	Stäubli	SP1	S-0034	Mar. 2010	only once
DASY5 Reference Dipole 2450MHz	Speag	D2450V2	839	Mar. 2010	Mar. 2012
DASY5 Reference Dipole 5GHz	Speag	D5GHzV2	1078	Mar. 2010	Mar. 2012
SAM Twin Phantom	Speag	SAM	TP-1561/1562	N/A	N/A
Device Holder	Speag	SD 000 H01 HA	N/A	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1220	Mar. 2010	Mar. 2011
E-Field Probe	Speag	EX3DV4	3710	Mar. 2010	Mar. 2011
SAR Software	Speag	DASY5	V5.2 Build 162	N/A	N/A
Power Amplifier	Mini-Circuit	ZHL-42	D051404-28	N/A	N/A
Directional Coupler	Agilent	778D	20160	N/A	N/A
Universal Radio Communication Tester	R&S	CMU 200	117088	Jul. 2010	Jul. 2011
Vector Network	Agilent	E5071C	MY48367267	Mar. 2010	Mar. 2011
Signal Generator	Agilent	E4438C	MY49070163	Apr. 2010	Apr. 2011
Power Meter	Anritsu	ML2495A	0905006	Jan. 2010	Jan. 2011
Wide Bandwidth Sensor	Anritsu	MA2411B	0846014	Jan. 2010	Jan. 2011

7. Measurement Uncertainty

DASY5 Uncertainty								
Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±5.5%	N	1	1	1	±5.5%	±5.5%	∞
Axial Isotropy	±4.7%	R	√3	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	√3	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	√3	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	√3	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	√3	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	√3	1	1	±1.7%	±1.7%	∞
Max. SAR Eval.	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	√3	1	1	±2.9%	±2.9%	∞
Phantom and Setup								
Phantom Uncertainty	±4.0%	R	√3	1	1	±2.3%	±2.3%	∞
Liquid Conductivity (target)	±5.0%	R	√3	0.64	0.43	±1.8%	±1.2%	∞
Liquid Conductivity (meas.)	±2.5%	N	1	0.64	0.43	±1.6%	±1.1%	∞
Liquid Permittivity (target)	±5.0%	R	√3	0.6	0.49	±1.7%	±1.4%	∞
Liquid Permittivity (meas.)	±2.5%	N	1	0.6	0.49	±1.5%	±1.2%	∞
Combined Std. Uncertainty						±10.7%	±10.5%	387
Expanded STD Uncertainty						±21.5%	±21.0%	

8. Conducted Power Measurement

1Tx Chain 100

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Conducted Power (dBm)
802.11b	1	01	2412	21.85
		06	2437	22.61
		11	2462	**22.73**
802.11g	6	01	2412	23.33
		06	2437	**25.83**
		11	2462	23.55
802.11n(20MHz)	6.5	01	2412	23.32
		06	2437	26.04
		11	2462	23.40
802.11n(40MHz)	13.5	03	2422	23.36
		06	2437	26.16
		09	2452	23.61
802.11a	6	36	5180	16.35
		48	5240	16.36
		52	5260	21.44
		64	5320	21.10
		100	5500	21.63
		120	5600	22.32
		140	5700	21.94
		149	5745	23.16
		157	5785	22.88
		165	5825	23.00
802.11n(20MHz)	6	36	5180	16.56
		48	5240	16.48
		52	5260	21.66
		64	5320	22.17
		100	5500	22.10
		120	5600	22.19
		140	5700	22.20
		149	5745	23.25
		157	5785	22.91
		165	5825	23.04

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Conducted Power (dBm)
802.11n(40MHz)	13.5	38	5190	16.40
		46	5230	16.42
		54	5270	20.95
		62	5310	21.47
		102	5510	22.08
		118	5590	22.22
		134	5670	21.90
		151	5755	22.82
		159	5795	23.12

1Tx Chain 001

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Conducted Power (dBm)
802.11b	1	01	2412	19.14
		06	2437	22.23
		11	2462	21.05
802.11g	6	01	2412	23.26
		06	2437	25.52
		11	2462	23.08
802.11n(20MHz)	6.5	01	2412	22.95
		06	2437	25.72
		11	2462	22.48
802.11n(40MHz)	13.5	03	2422	21.65
		06	2437	25.66
		09	2452	21.89
802.11a	6	36	5180	16.72
		48	5240	16.41
		52	5260	21.74
		64	5320	22.25
		100	5500	21.70
		120	5600	**23.42**
		140	5700	23.38
		149	5745	23.21
		157	5785	23.40
		165	5825	23.02
802.11n(20MHz)	6	36	5180	16.65
		48	5240	16.51
		52	5260	22.02
		64	5320	22.30
		100	5500	22.15
		120	5600	22.49
		140	5700	22.95
		149	5745	24.41
		157	5785	23.64
		165	5825	23.11

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Conducted Power (dBm)
802.11n(40MHz)	13.5	38	5190	16.48
		46	5230	16.59
		54	5270	21.20
		62	5310	22.21
		102	5510	22.19
		118	5590	22.28
		134	5670	23.02
		151	5755	23.80
		159	5795	23.42

2Tx Chain 101

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Conducted Power (dBm)
802.11n(20MHz)	6.5	01	2412	26.01
		06	2437	**26.63**
		11	2462	24.87
		36	5180	16.18
		48	5240	16.22
		52	5260	21.55
		64	5320	21.73
		100	5500	22.12
		120	5600	22.17
		140	5700	22.44
		149	5745	26.71
		157	5785	26.23
		165	5825	26.17
802.11n(40MHz)	13.5	03	2422	23.56
		06	2437	**26.18**
		09	2452	24.49
		38	5190	16.31
		46	5230	16.30
		54	5270	21.17
		62	5310	22.03
		102	5510	22.13
		118	5590	22.09
		134	5670	23.00
		151	5755	26.54
		159	5795	26.41

9. Test Procedures

9.1. Test position and configuration

SAR was performed with the device configured in the positions according to IEEE1528, and 447498 D02 SAR Procedures for Dongle Xmtr v01 1, body SAR was performed with the device to phantom separation distance of 5mm. All USB orientations (A: Horizontal-Up, B: Horizontal-Down, C: Vertical-Front, D: Vertical-Back, and E: Tip) were evaluated with 15cm USB cable for extension. Please check the SAR test photos.

Other KDB files were referred for this device SAR evaluation: D01 Mobile Portable RF Exposure v04, 248227 802.11abg SAR and 388624 D02 Permit But Ask List v09R01.

9.2. SAR Test Results Summary

SAR MEASUREMENT							
Ambient Temperature (°C) : 21.4 ±2				Relative Humidity (%): 55			
Liquid Temperature (°C) : 20.1 ±2				Depth of Liquid (cm):>15			
Product: AirPcap NX							
Test Mode: 802.11b-Chain 100							
Test Position Body	Antenna Position	Frequency		Separation Distance (cm)	Power Drift (<±0.2)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz				
Horizontal Up (Laptop)	Fixed	11	2462	0.5	-0.105	0.675	1.6
Horizontal Down (Laptop)	Fixed	11	2462	0.5	-0.157	0.665	1.6
Vertical Front (USB Cable)	Fixed	11	2462	0.5	0.040	0.240	1.6
Vertical Back (Laptop)	Fixed	11	2462	0.5	-0.173	0.034	1.6
Tip (USB Cable)	Fixed	11	2462	0.5	-0.071	0.113	1.6
Test Mode: 802.11g-Chain 100							
Horizontal Up (Laptop)	Fixed	6	2437	0.5	0.140	0.763	1.6
Test Mode: 802.11n(20MHz)-Chain 101							
Horizontal Up (Laptop)	Fixed	1	2412	0.5	-0.100	**1.159**	1.6
Horizontal Up (Laptop)	Fixed	6	2437	0.5	0.056	1.132	1.6
Horizontal Up (Laptop)	Fixed	11	2462	0.5	-0.115	0.466	1.6
Test Mode: 802.11n(40MHz)-Chain 101							
Horizontal Up (Laptop)	Fixed	3	2422	0.5	-0.126	0.647	1.6
Horizontal Up (Laptop)	Fixed	6	2437	0.5	0.052	1.122	1.6
Horizontal Up (Laptop)	Fixed	9	2452	0.5	-0.107	0.480	1.6

SAR MEASUREMENT							
Ambient Temperature (°C) : 21.4 ±2				Relative Humidity (%): 55			
Liquid Temperature (°C) : 20.1 ±2				Depth of Liquid (cm):>15			
Product: AirPcap NX							
Test Mode: 802.11a-Chain 001							
Test Position Body	Antenna Position	Frequency		Separation Distance (cm)	Power Drift (<±0.2)	**SAR** 1g (W/kg)	Limit (W/kg)
		Channel	MHz				
Horizontal Up (Laptop)	Fixed	36	5180	0.5	-0.175	0.223	1.6
Horizontal Up (Laptop)	Fixed	48	5240	0.5	0.093	0.198	1.6
Horizontal Up (Laptop)	Fixed	52	5260	0.5	-0.148	0.914	1.6
Horizontal Up (Laptop)	Fixed	64	5320	0.5	0.110	0.635	1.6
Horizontal Up (Laptop)	Fixed	100	5500	0.5	-0.009	0.842	1.6
Horizontal Up (Laptop)	Fixed	120	5600	0.5	0.086	1.053	1.6
Horizontal Down (Laptop)	Fixed	120	5600	0.5	0.146	0.963	1.6
Vertical Front (USB Cable)	Fixed	120	5600	0.5	-0.184	0.308	1.6
Vertical Back (Laptop)	Fixed	120	5600	0.5	0.069	0.965	1.6
Tip (USB Cable)	Fixed	120	5600	0.5	-0.038	0.900	1.6
Horizontal Up (Laptop)	Fixed	140	5700	0.5	0.059	0.835	1.6
Horizontal Up (Laptop)	Fixed	149	5745	0.5	-0.142	0.906	1.6
Horizontal Up (Laptop)	Fixed	157	5785	0.5	0.159	0.897	1.6
Horizontal Up (Laptop)	Fixed	165	5825	0.5	0.134	0.930	1.6

Test Mode: 802.11n(20MHz)-Chain 001							
Horizontal Up (Laptop)	Fixed	36	5180	0.5	-0.107	0.214	1.6
Horizontal Up (Laptop)	Fixed	48	5240	0.5	0.102	0.236	1.6
Horizontal Up (Laptop)	Fixed	52	5260	0.5	0.132	1.072	1.6
Horizontal Up (Laptop)	Fixed	64	5320	0.5	-0.114	0.796	1.6
Horizontal Up (Laptop)	Fixed	100	5500	0.5	0.036	0.924	1.6
Horizontal Up (Laptop)	Fixed	120	5600	0.5	0.014	1.075	1.6
Horizontal Up (Laptop)	Fixed	140	5700	0.5	0.153	0.735	1.6
Horizontal Up (Laptop)	Fixed	149	5745	0.5	-0.010	0.872	1.6
Horizontal Up (Laptop)	Fixed	157	5785	0.5	0.119	0.867	1.6
Horizontal Up (Laptop)	Fixed	165	5825	0.5	0.186	0.912	1.6

Test Mode: 802.11n(40MHz)-Chain 001							
Horizontal Up (Laptop)	Fixed	38	5190	0.5	-0.139	0.252	1.6
Horizontal Up (Laptop)	Fixed	46	5230	0.5	0.157	0.168	1.6
Horizontal Up (Laptop)	Fixed	54	5270	0.5	0.083	0.923	1.6
Horizontal Up (Laptop)	Fixed	62	5310	0.5	0.127	0.849	1.6
Horizontal Up (Laptop)	Fixed	102	5510	0.5	0.056	0.785	1.6
Horizontal Up (Laptop)	Fixed	118	5590	0.5	0.062	**1.092**	1.6
Horizontal Up (Laptop)	Fixed	134	5670	0.5	0.019	0.813	1.6
Horizontal Up (Laptop)	Fixed	151	5755	0.5	-0.158	0.905	1.6
Horizontal Up (Laptop)	Fixed	159	5795	0.5	0.120	0.911	1.6

Appendix A. SAR System Validation Data

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

System Check Body 2450MHz

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Duty Cycle: 1:1;

Frequency: 2450 MHz; Medium parameters used: f = 2450 MHz; σ = 2 mho/m; εr = 51.8; ρ = 1000 kg/m3 ;

Phantom section: Flat Section ; Input Power=250mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

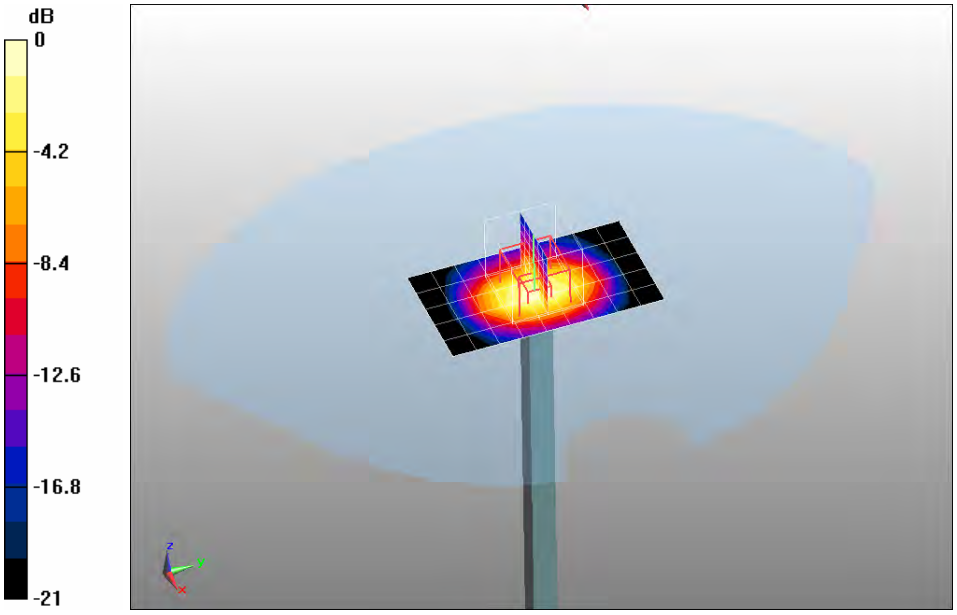
Configuration/Body 2450MHz/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 13.1 mW/g

Configuration/Body 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 85.8 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 26.4 W/kg

SAR(1 g) = 13.1 mW/g; SAR(10 g) = 6.12 mW/g Maximum value of SAR (measured) = 15.2 mW/g



0 dB = 15.2mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

System Check Body 5200MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: CW; Communication System Band: ITD5500 (5000.0 - 5900.0 MHz); Duty Cycle: 1:1; Frequency: 5200 MHz; Medium parameters used: f = 5200 MHz; σ = 5.31 mho/m; εr = 48.6; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=100mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.13, 4.13, 4.13); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

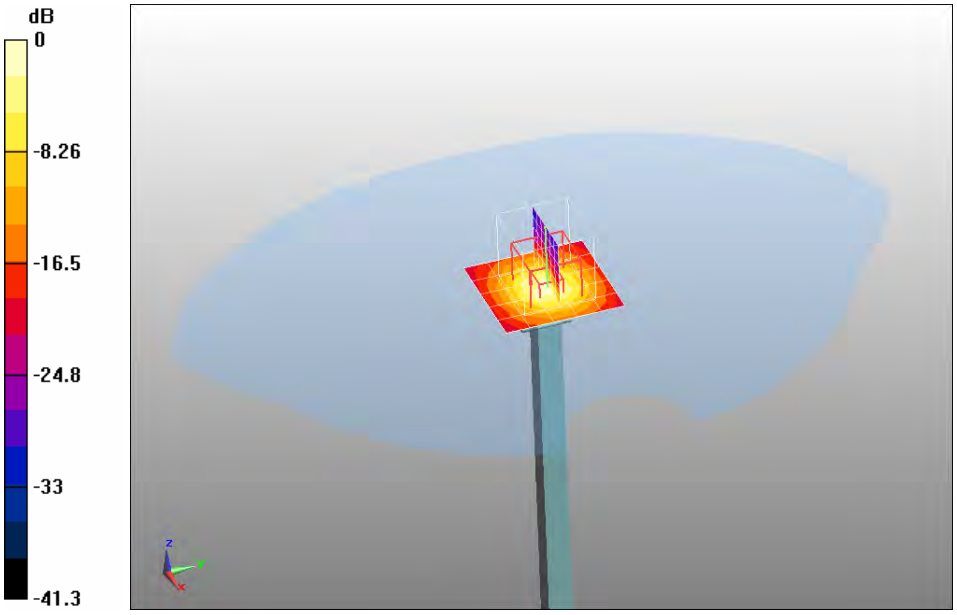
Configuration/Body 5200MHz/Area Scan (6x6x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 5.37 mW/g

Configuration/Body 5200MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 40.3 V/m; Power Drift = -0.082 dB

Peak SAR (extrapolated) = 37.9 W/kg

SAR(1 g) = 7.75 mW/g; SAR(10 g) = 2.17 mW/g Maximum value of SAR (measured) = 8.07 mW/g



0 dB = 8.07mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

System Check Body 5500MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: CW; Communication System Band: ITD5500 (5000.0 - 5900.0 MHz); Duty Cycle: 1:1; Frequency: 5500 MHz; Medium parameters used: f = 5500 MHz; σ = 5.78 mho/m; εr = 47.9; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=100mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.81, 3.81, 3.81); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

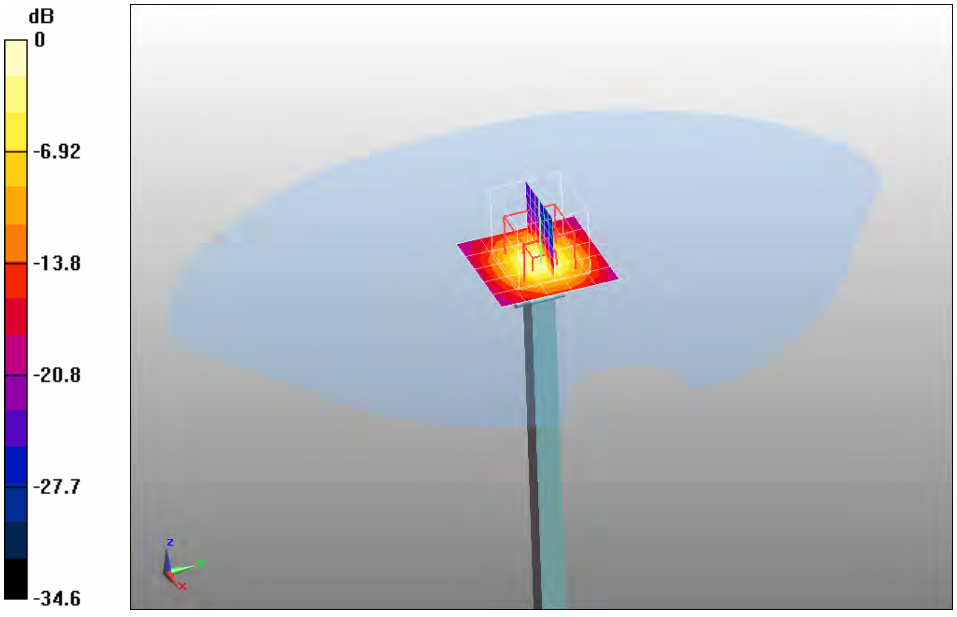
Configuration/Body 5500MHz/Area Scan (6x6x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 5.3 mW/g

Configuration/Body 5500MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 38.8 V/m; Power Drift = -0.183 dB

Peak SAR (extrapolated) = 48.4 W/kg

SAR(1 g) = 8.45 mW/g; SAR(10 g) = 2.31 mW/g Maximum value of SAR (measured) = 7.98 mW/g



0 dB = 7.98mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

System Check Body 5800MHz

DUT: Dipole D5GHzV2; Type: D5GHzV2

Communication System: CW; Communication System Band: ITD5500 (5000.0 - 5900.0 MHz); Duty Cycle: 1:1; Frequency: 5800 MHz; Medium parameters used: f = 5800 MHz; σ = 6.25 mho/m; εr = 47.1; ρ = 1000 kg/m3 ; Phantom section: Flat Section ; Input Power=100mW

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

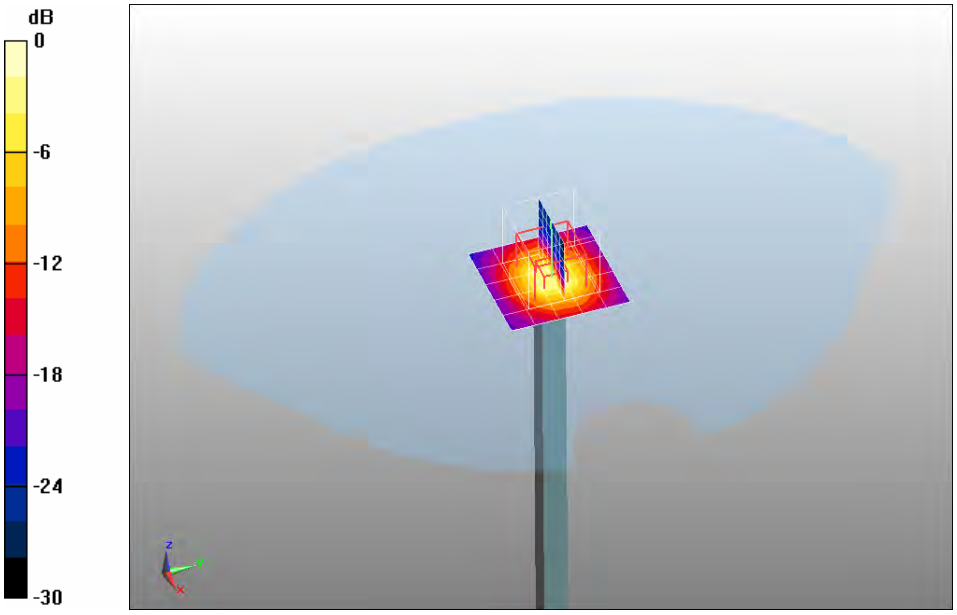
Configuration/Body 5800MHz/Area Scan (6x6x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 6.29 mW/g

Configuration/Body 5800MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm, Reference Value = 40.3 V/m; Power Drift = -0.057 dB

Peak SAR (extrapolated) = 25.1 W/kg

SAR(1 g) = 7.5 mW/g; SAR(10 g) = 2.19 mW/g Maximum value of SAR (measured) = 9.65 mW/g



0 dB = 9.65mW/g

Appendix B. SAR measurement Data

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11b Chain100 High-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2462 MHz; Medium parameters used: f = 2462 MHz; σ = 2.02 mho/m; εr = 51.7; ρ = 1000 kg/m3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

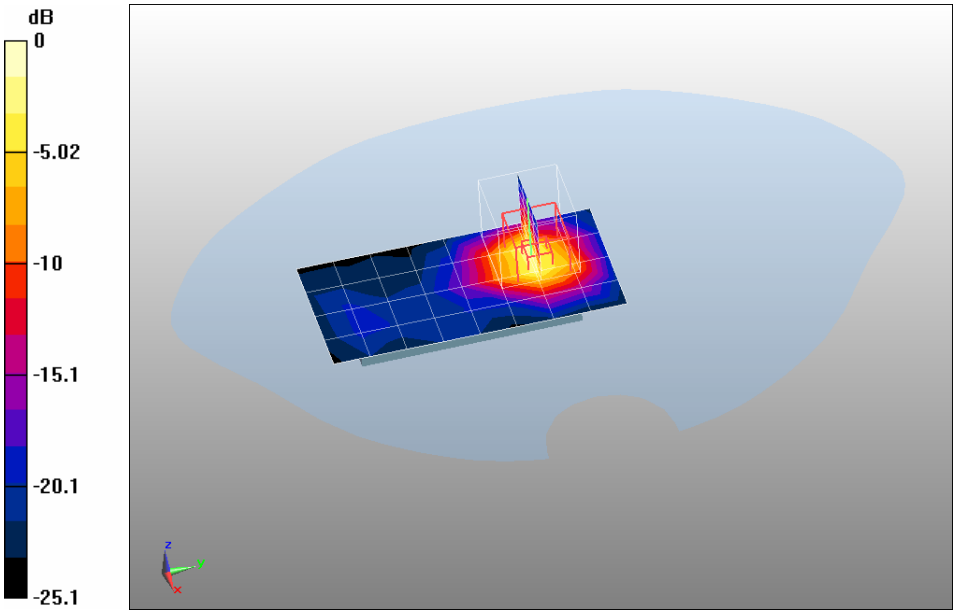
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11b Chain100 High-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.542 mW/g

Configuration/802.11b Chain100 High-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 16.7 V/m; Power Drift = -0.105 dB

Peak SAR (extrapolated) = 1.73 W/kg

SAR(1 g) = 0.675 mW/g; SAR(10 g) = 0.234 mW/g Maximum value of SAR (measured) = 0.794 mW/g



0 dB = 0.794mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

802.11b Chain100 High-Horizontal Down

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2462 MHz; Medium parameters used: f = 2462 MHz; σ = 2.02 mho/m; εr = 51.7; ρ = 1000 kg/m3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

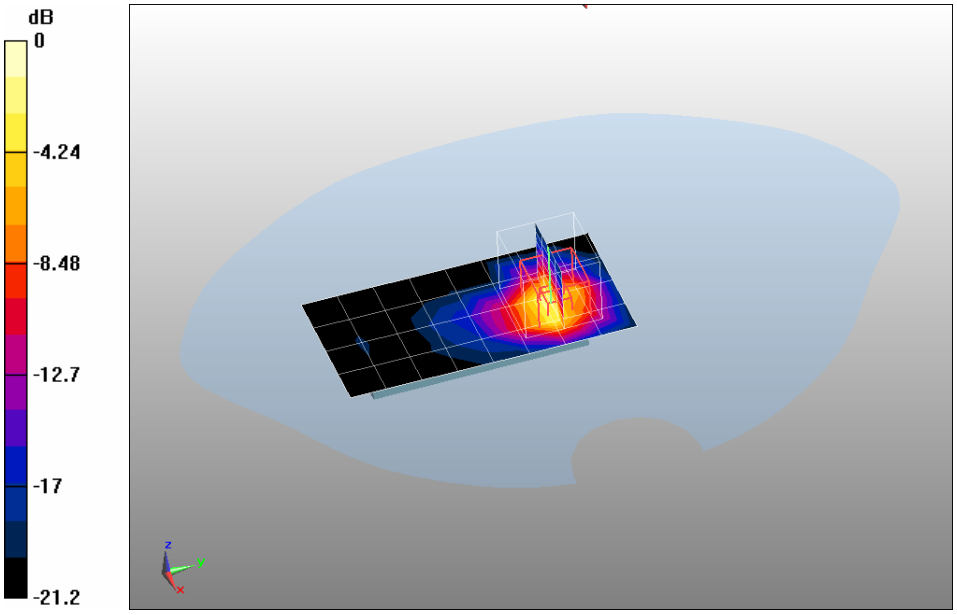
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11b Chain100 High-Horizontal Down/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.499 mW/g

Configuration/802.11b Chain100 High-Horizontal Down/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 18.6 V/m; Power Drift = -0.157 dB

Peak SAR (extrapolated) = 1.78 W/kg

SAR(1 g) = 0.665 mW/g; SAR(10 g) = 0.236 mW/g Maximum value of SAR (measured) = 0.829 mW/g



0 dB = 0.829mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

802.11b Chain100 High-Vertical Front

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2462 MHz; Medium parameters used: f = 2462 MHz; σ = 2.02 mho/m; εr = 51.7; ρ = 1000 kg/m3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

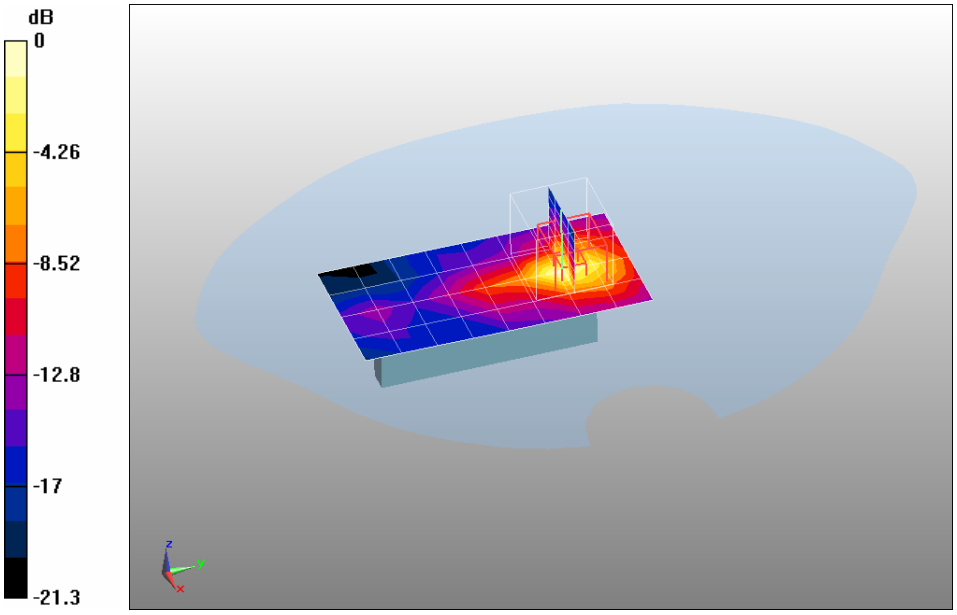
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11b Chain100 High-Vertical Front/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.244 mW/g

Configuration/802.11b Chain100 High-Vertical Front/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.7 V/m; Power Drift = 0.040 dB

Peak SAR (extrapolated) = 0.583 W/kg

SAR(1 g) = 0.240 mW/g; SAR(10 g) = 0.094 mW/g Maximum value of SAR (measured) = 0.280 mW/g



0 dB = 0.280mW/g

Date/Time: 09-Nov-2010

Test Laboratory: QuieTek Lab

802.11b Chain100 High-Vertical Back

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2462 MHz; Medium parameters used: f = 2462 MHz; σ = 2.02 mho/m; εr = 51.7; ρ = 1000 kg/m3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

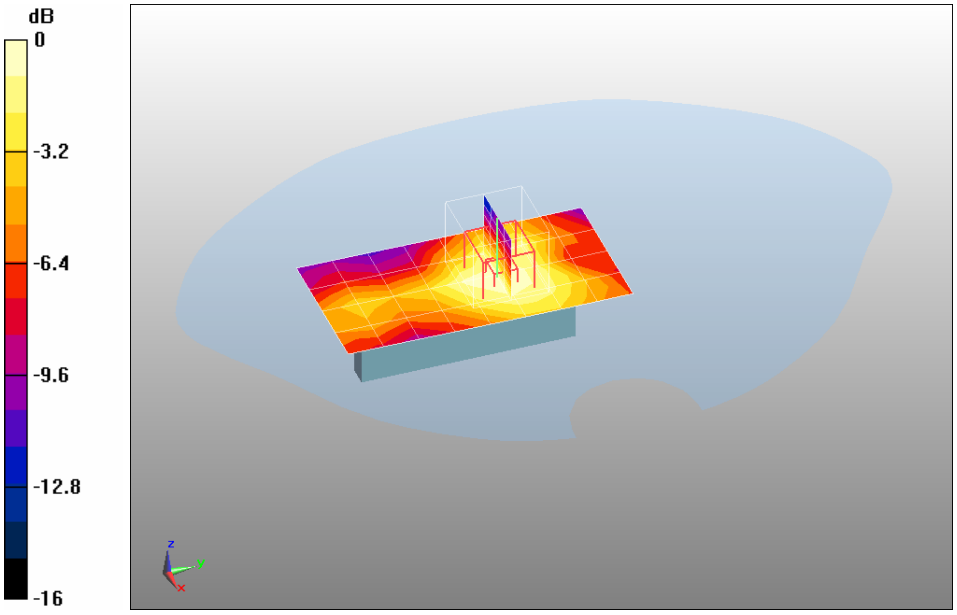
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11b Chain100 High-Vertical Back/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.037 mW/g

Configuration/802.11b Chain100 High-Vertical Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 3.21 V/m; Power Drift = -0.173 dB

Peak SAR (extrapolated) = 0.057 W/kg

SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.021 mW/g Maximum value of SAR (measured) = 0.036 mW/g



0 dB = 0.036mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

802.11b Chain100 High-Tip Mode

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2462 MHz; Medium parameters used: f = 2462 MHz; σ = 2.02 mho/m; εr = 51.7; ρ = 1000 kg/m3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

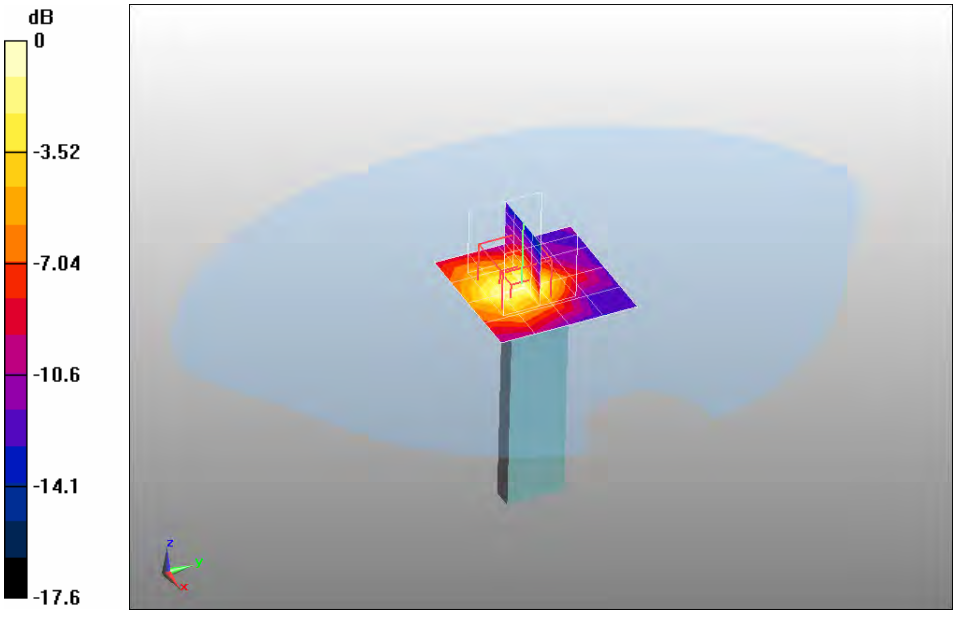
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11b Chain100 High-Tip Mode/Area Scan (5x5x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.101 mW/g

Configuration/802.11b Chain100 High-Tip Mode/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.04 V/m; Power Drift = -0.071 dB

Peak SAR (extrapolated) = 0.224 W/kg

SAR(1 g) = 0.113 mW/g; SAR(10 g) = 0.055 mW/g Maximum value of SAR (measured) = 0.125 mW/g



0 dB = 0.125mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11g Chain100 Mid-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.98 mho/m; εr = 51.8; ρ = 1000 kg/m3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

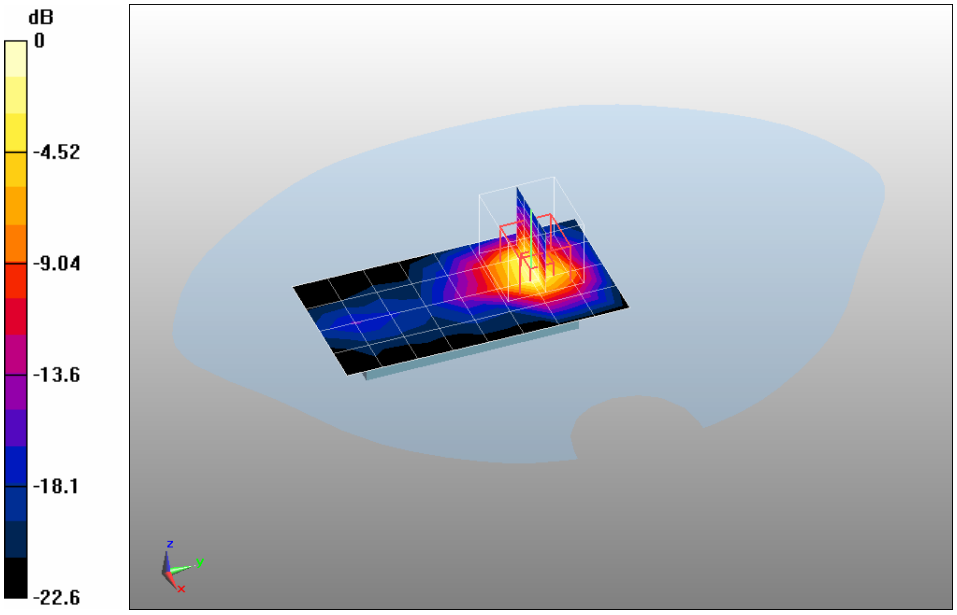
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11g Chain100 Mid-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.657 mW/g

Configuration/802.11g Chain100 Mid-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 19.7 V/m; Power Drift = 0.140 dB

Peak SAR (extrapolated) = 1.89 W/kg

SAR(1 g) = 0.763 mW/g; SAR(10 g) = 0.282 mW/g Maximum value of SAR (measured) = 0.938 mW/g



0 dB = 0.938mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain101 Low-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2412 MHz; Medium parameters used: f = 2412 MHz; σ = 1.95 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

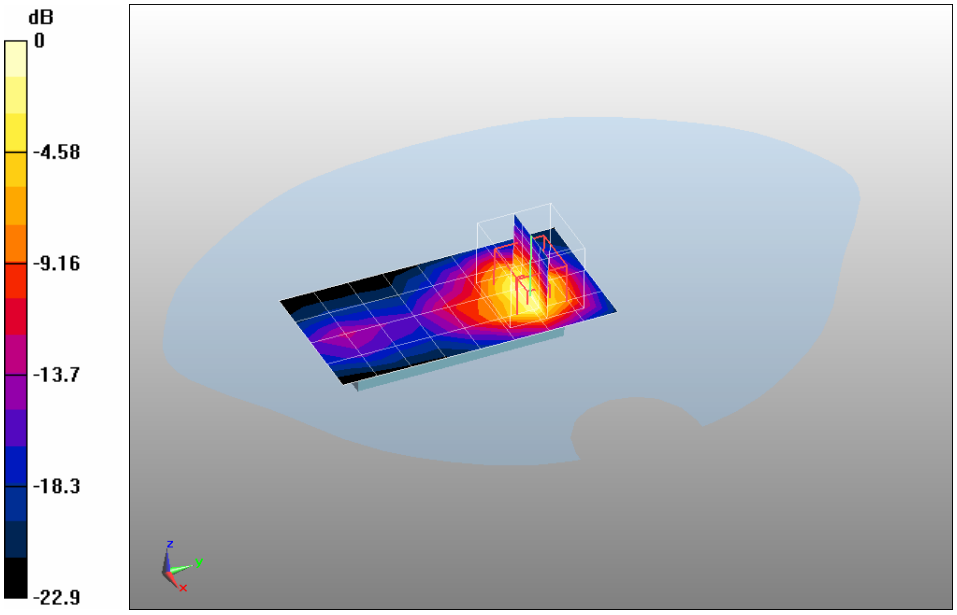
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain101 Low-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 1.02 mW/g

Configuration/802.11n(20) Chain101 Low-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 25.9 V/m; Power Drift = -0.100 dB

Peak SAR (extrapolated) = 2.81 W/kg

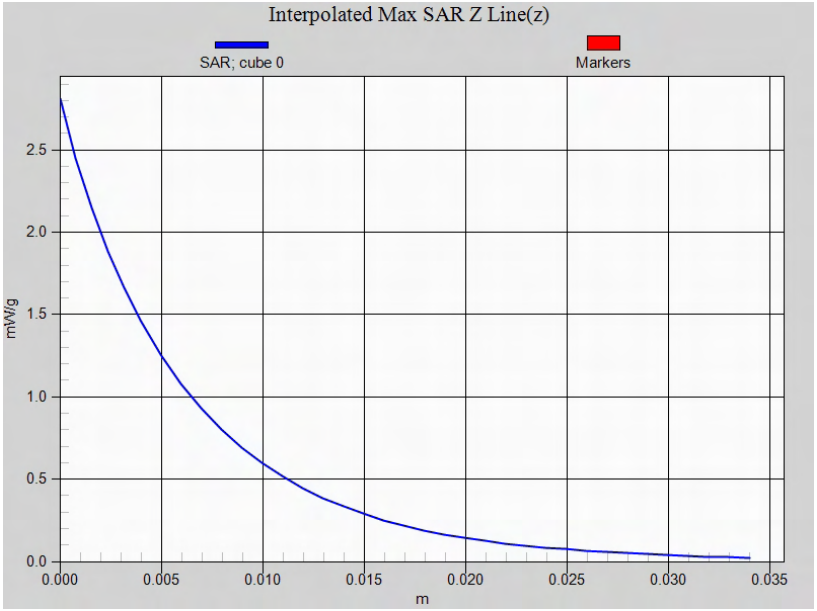
SAR(1 g) = 1.159 mW/g; SAR(10 g) = 0.478 mW/g Maximum value of SAR (measured) = 1.39 mW/g



0 dB = 1.39mW/g

802.11n(20MHz) EUT Bottom, Z-Axis Plot

Channel 01



Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain101 Mid-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.98 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

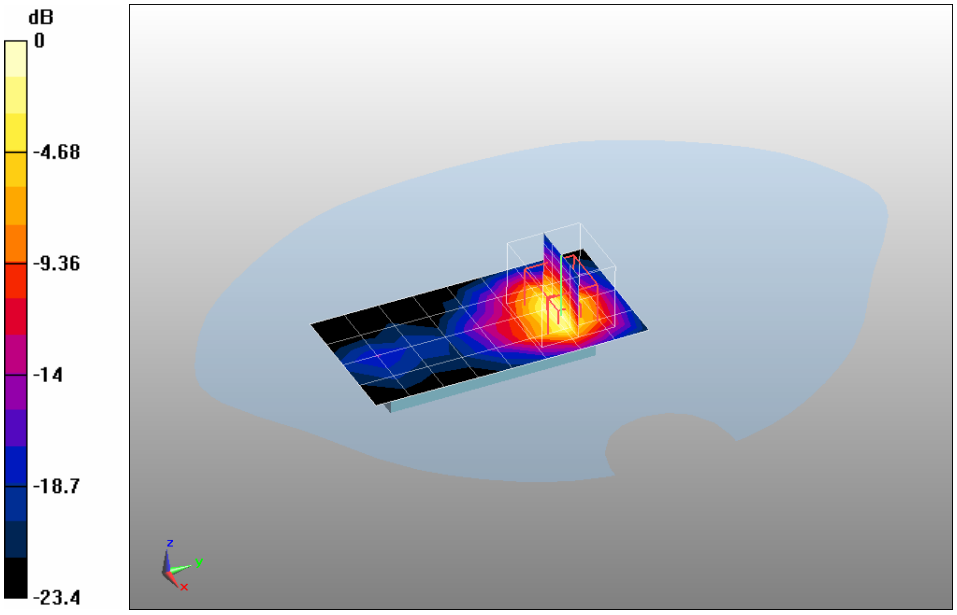
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain101 Mid-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.93 mW/g

Configuration/802.11n(20) Chain101 Mid-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 24.5 V/m; Power Drift = 0.056 dB

Peak SAR (extrapolated) = 2.72 W/kg

SAR(1 g) = 1.132 mW/g; SAR(10 g) = 0.438 mW/g Maximum value of SAR (measured) = 1.36 mW/g



0 dB = 1.36mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain101 High-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2462 MHz; Medium parameters used: f = 2462 MHz; σ = 2.02 mho/m; ε_r = 51.7; ρ = 1000 kg/m^3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

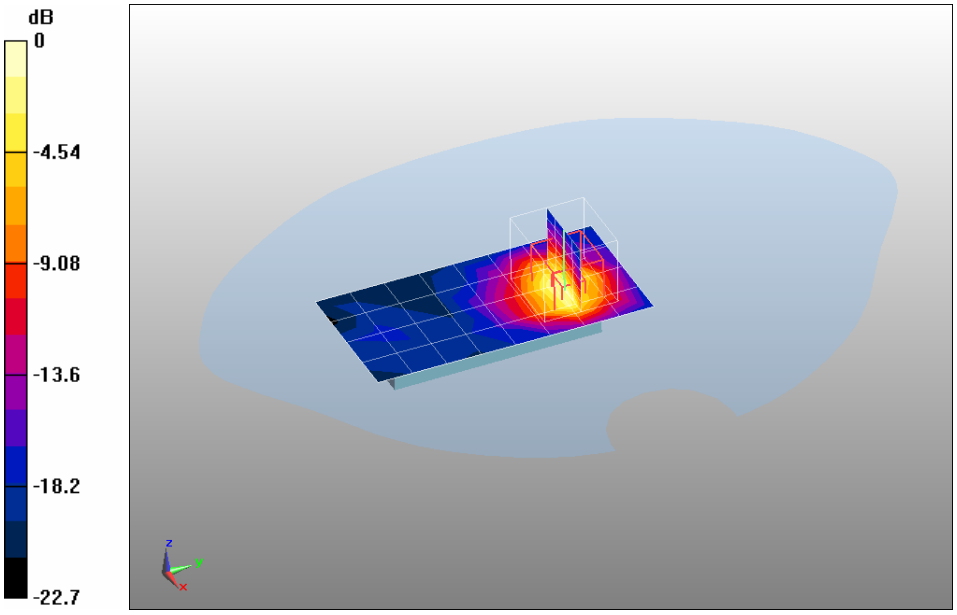
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain101 High-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.422 mW/g

Configuration/802.11n(20) Chain101 High-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 15.7 V/m; Power Drift = -0.115 dB

Peak SAR (extrapolated) = 1.12 W/kg

SAR(1 g) = 0.466 mW/g; SAR(10 g) = 0.184 mW/g Maximum value of SAR (measured) = 0.557 mW/g



0 dB = 0.557mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain101 Low-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2422 MHz; Medium parameters used: f = 2422 MHz; σ = 1.96 mho/m; ε_r = 51.9; ρ = 1000 kg/m^3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

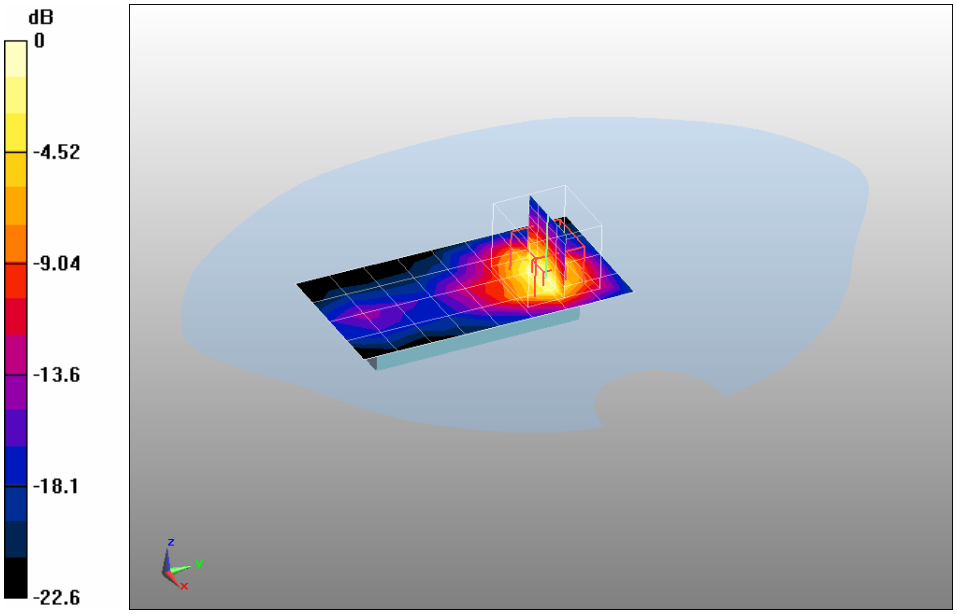
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain101 Low-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.557 mW/g

Configuration/802.11n(40) Chain101 Low-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 19.4 V/m; Power Drift = -0.126 dB

Peak SAR (extrapolated) = 1.51 W/kg

SAR(1 g) = 0.647 mW/g; SAR(10 g) = 0.262 mW/g Maximum value of SAR (measured) = 0.776 mW/g



0 dB = 0.776mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain101 Mid-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2437 MHz; Medium parameters used: f = 2437 MHz; σ = 1.98 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

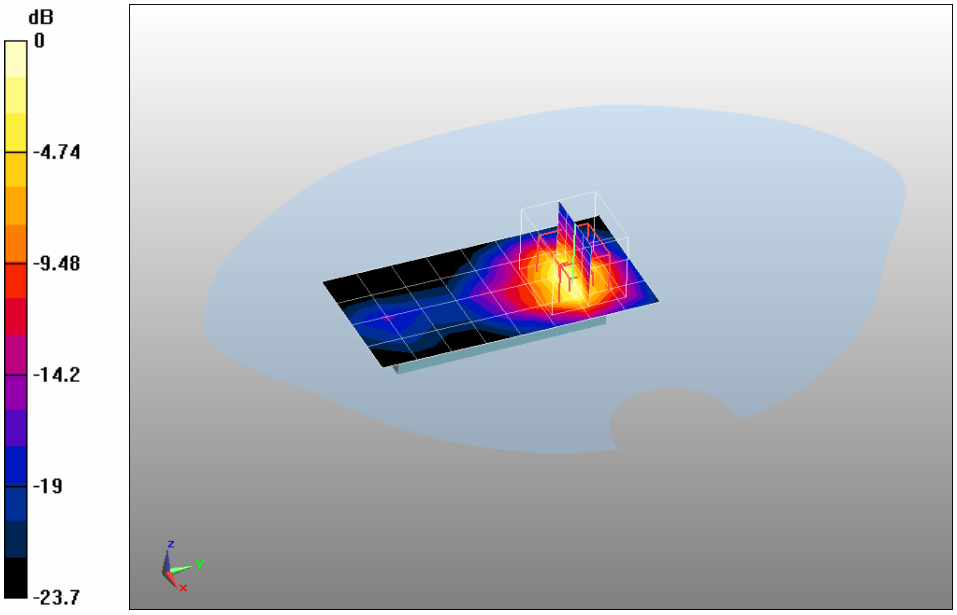
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain101 Mid-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.949 mW/g

Configuration/802.11n(40) Chain101 Mid-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 23.5 V/m; Power Drift = 0.052 dB

Peak SAR (extrapolated) = 2.67 W/kg

SAR(1 g) = 1.122 mW/g; SAR(10 g) = 0.428 mW/g Maximum value of SAR (measured) = 1.347 mW/g



0 dB = 1.347mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain101 High-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: Wi-Fi(2412-2462MHz); Duty Cycle: 1:1.0;

Frequency: 2452 MHz; Medium parameters used: f = 2452 MHz; σ = 2 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3 ;

Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

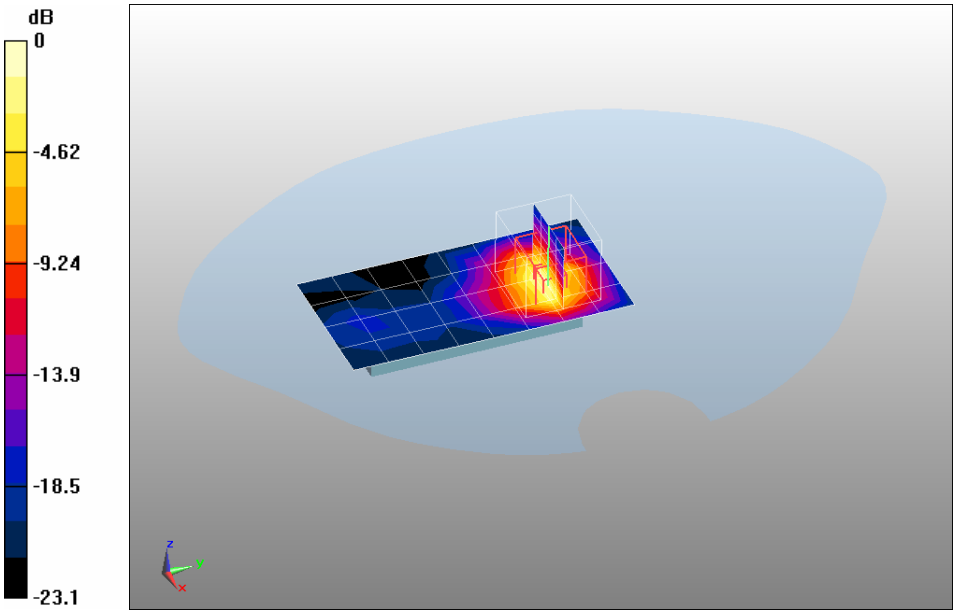
- Probe: EX3DV4 - SN3710; ConvF(7, 7, 7); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain101 High-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.406 mW/g

Configuration/802.11n(40) Chain101 High-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 15.8 V/m; Power Drift = -0.107 dB

Peak SAR (extrapolated) = 1.17 W/kg

SAR(1 g) = 0.480 mW/g; SAR(10 g) = 0.187 mW/g Maximum value of SAR (measured) = 0.586 mW/g



0 dB = 0.586mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5180MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5180 MHz; Medium parameters used: f = 5180 MHz; σ = 5.28 mho/m; ε_r = 48.7; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

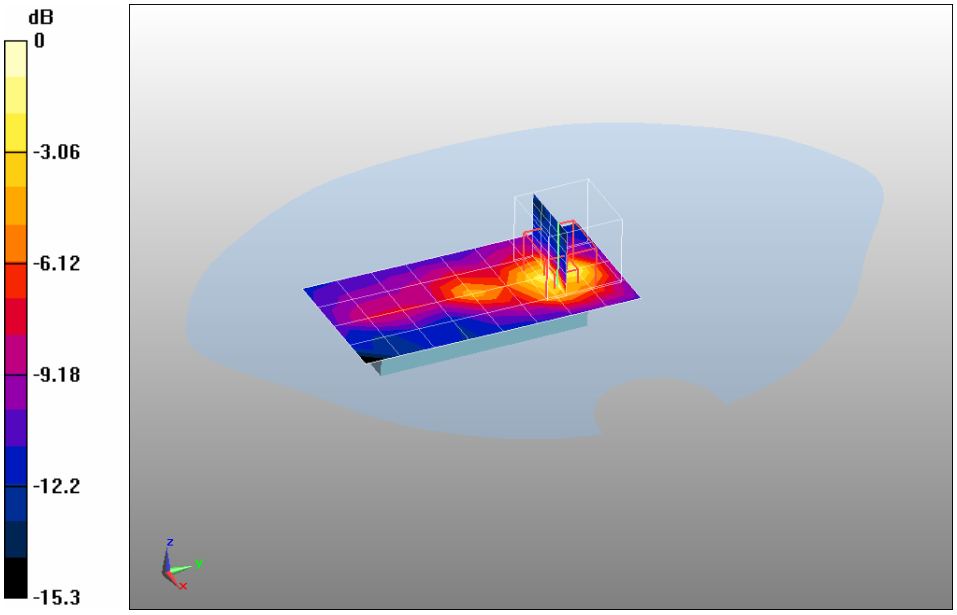
- Probe: EX3DV4 - SN3710; ConvF(4.13, 4.13, 4.13); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5180MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.206 mW/g

Configuration/802.11a Chain001 5180MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.65 V/m; Power Drift = -0.175 dB

Peak SAR (extrapolated) = 0.725 W/kg

SAR(1 g) = 0.223 mW/g; SAR(10 g) = 0.086 mW/g Maximum value of SAR (measured) = 0.297 mW/g



0 dB = 0.297mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5240MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5240 MHz; Medium parameters used: f = 5240 MHz; σ = 5.39 mho/m; ε_r = 48.5; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

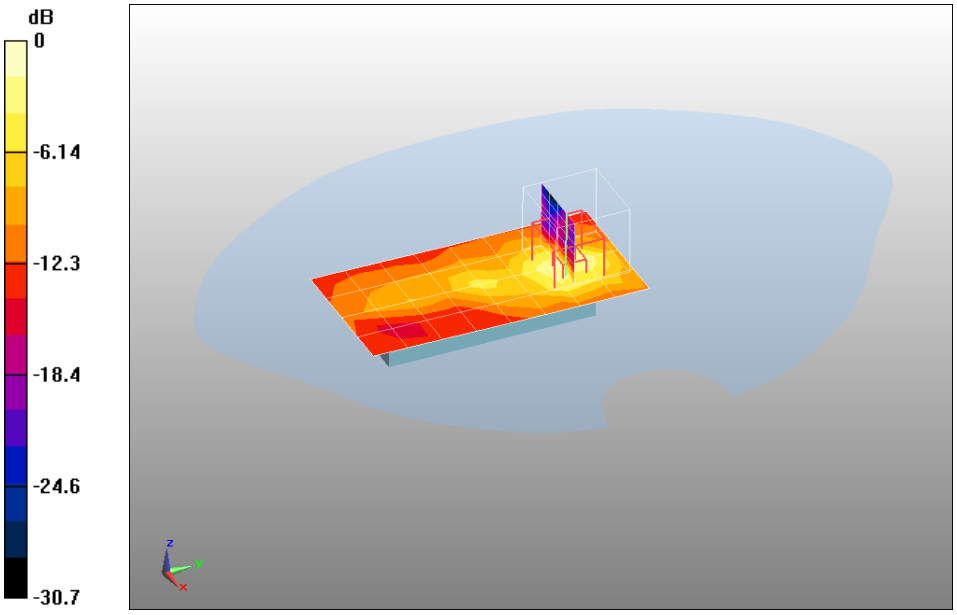
- Probe: EX3DV4 - SN3710; ConvF(4.13, 4.13, 4.13); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5240MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.135 mW/g

Configuration/802.11a Chain001 5240MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.24 V/m; Power Drift = 0.093 dB

Peak SAR (extrapolated) = 0.618 W/kg

SAR(1 g) = 0.198 mW/g; SAR(10 g) = 0.062 mW/g Maximum value of SAR (measured) = 0.227 mW/g



0 dB = 0.227mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5260MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5260 MHz; Medium parameters used: f = 5260 MHz; σ = 5.41 mho/m; ε_r = 48.5; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

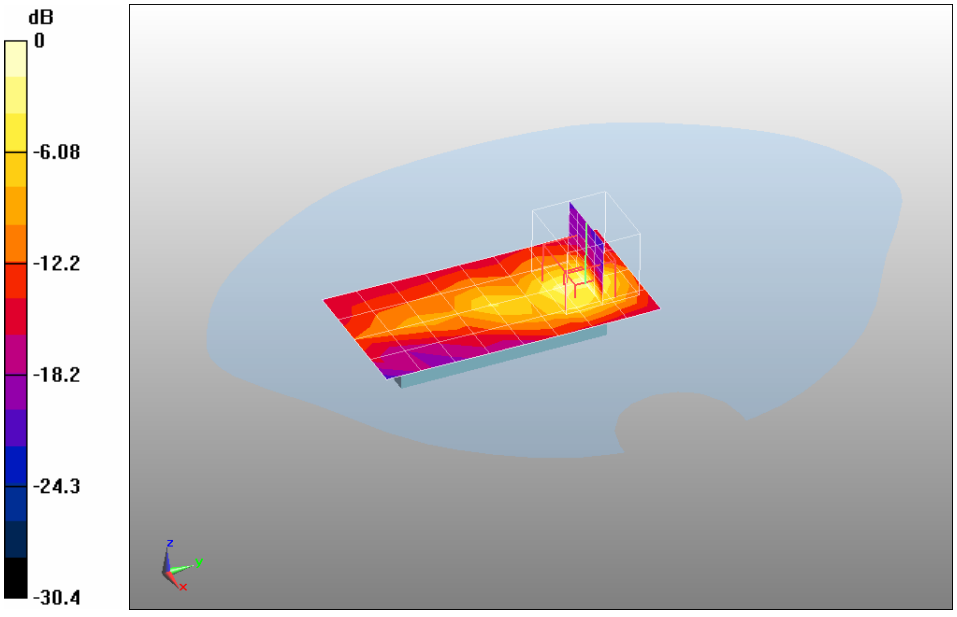
- Probe: EX3DV4 - SN3710; ConvF(3.91, 3.91, 3.91); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5260MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.616 mW/g

Configuration/802.11a Chain001 5260MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.2 V/m; Power Drift = -0.148 dB

Peak SAR (extrapolated) = 2.56 W/kg

SAR(1 g) = 0.914 mW/g; SAR(10 g) = 0.289 mW/g Maximum value of SAR (measured) = 1.174 mW/g



0 dB = 1.174mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5320MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5320 MHz; Medium parameters used: f = 5320 MHz; σ = 5.5 mho/m; ε_r = 48.3; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

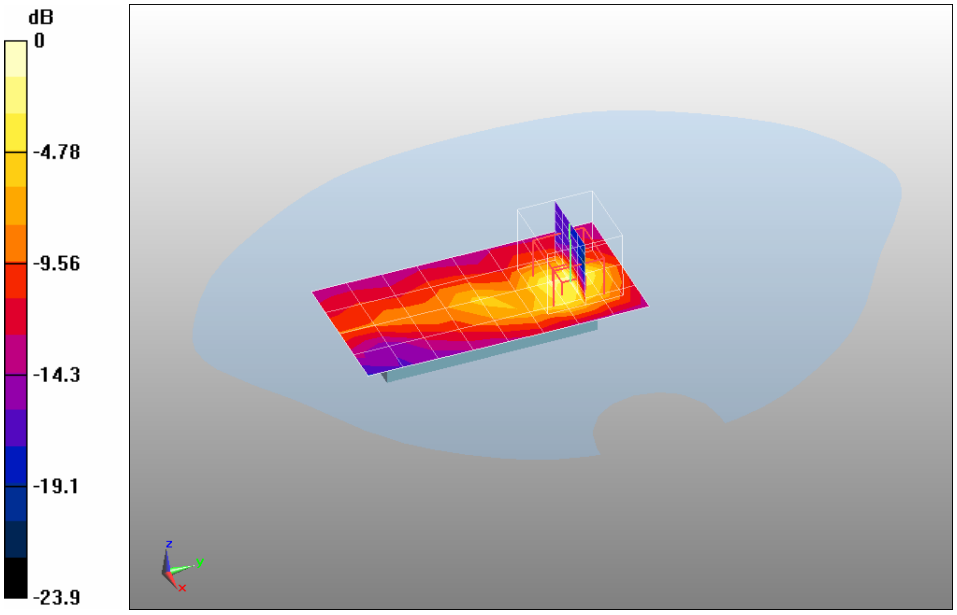
- Probe: EX3DV4 - SN3710; ConvF(3.91, 3.91, 3.91); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5320MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.427 mW/g

Configuration/802.11a Chain001 5320MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.4 V/m; Power Drift = 0.110 dB

Peak SAR (extrapolated) = 1.87 W/kg

SAR(1 g) = 0.635 mW/g; SAR(10 g) = 0.237 mW/g Maximum value of SAR (measured) = 0.879 mW/g



0 dB = 0.879mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5500MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5500 MHz; Medium parameters used: f = 5500 MHz; σ = 5.78 mho/m; ε_r = 47.9; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

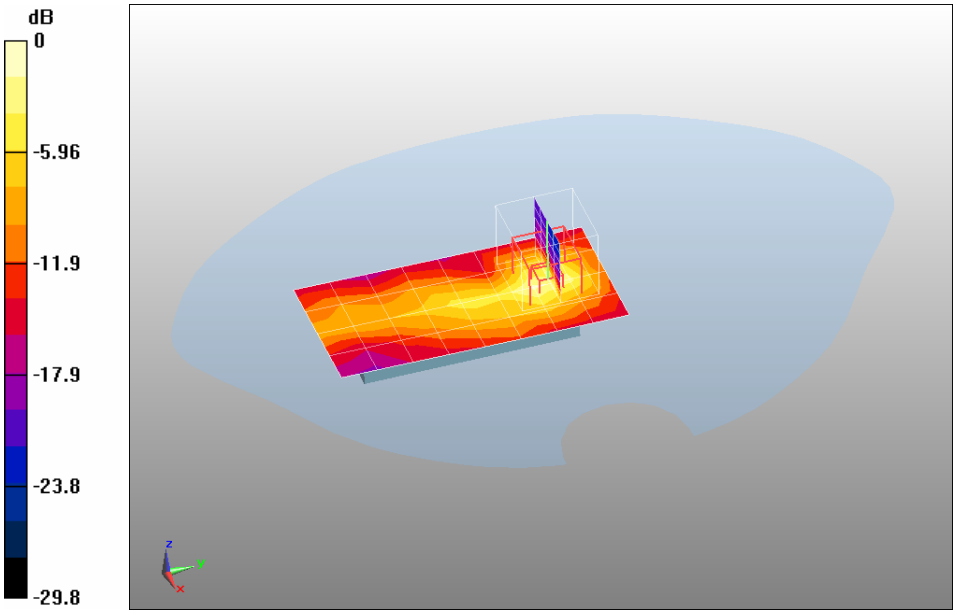
- Probe: EX3DV4 - SN3710; ConvF(3.81, 3.81, 3.81); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5500MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.815 mW/g

Configuration/802.11a Chain001 5500MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.1 V/m; Power Drift = -0.009 dB

Peak SAR (extrapolated) = 2.58 W/kg

SAR(1 g) = 0.842 mW/g; SAR(10 g) = 0.316 mW/g Maximum value of SAR (measured) = 1.13 mW/g



0 dB = 1.13mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5600MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5600 MHz; Medium parameters used: f = 5600 MHz; σ = 5.94 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

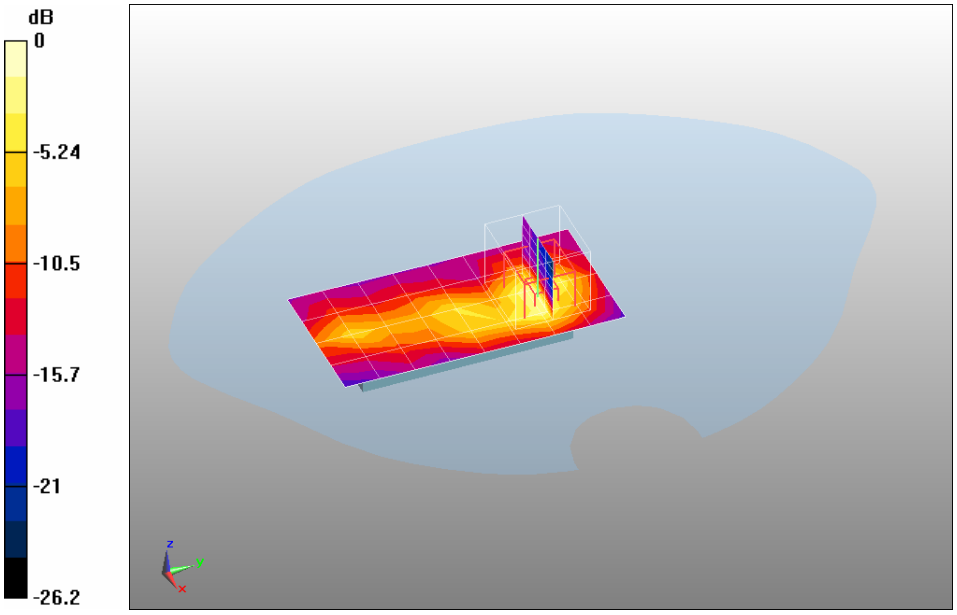
- Probe: EX3DV4 - SN3710; ConvF(3.58, 3.58, 3.58); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5600MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.815 mW/g

Configuration/802.11a Chain001 5600MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.6 V/m; Power Drift = 0.086 dB

Peak SAR (extrapolated) = 3.03 W/kg

SAR(1 g) = 1.053 mW/g; SAR(10 g) = 0.378 mW/g Maximum value of SAR (measured) = 1.32 mW/g



0 dB = 1.32mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5600MHz-Horizontal Down

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5600 MHz; Medium parameters used: f = 5600 MHz; σ = 5.94 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.58, 3.58, 3.58); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

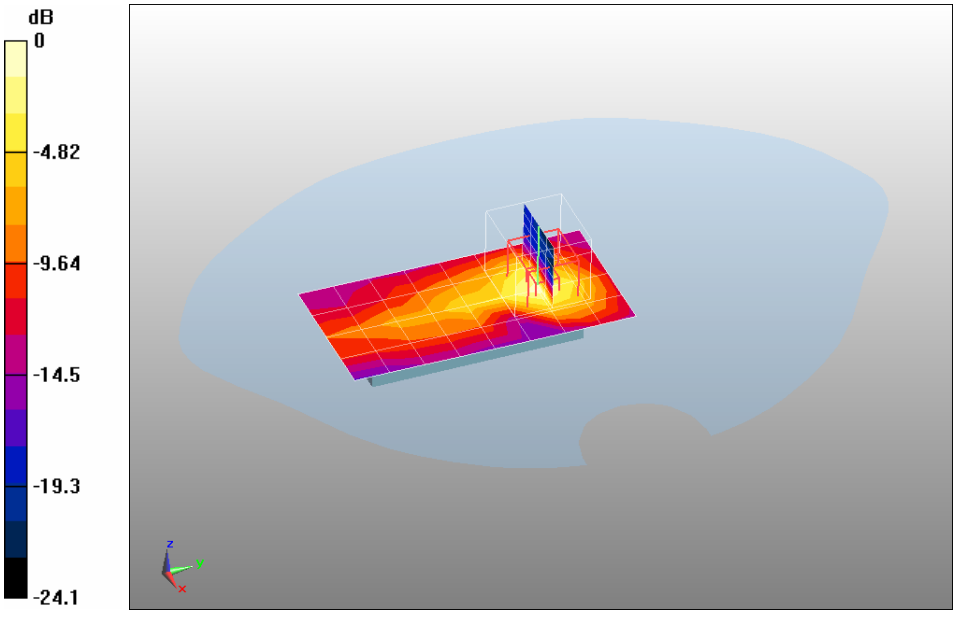
Configuration/802.11a Chain001 5600MHz-Horizontal Down/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.994 mW/g

Configuration/802.11a Chain001 5600MHz-Horizontal Down/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 14.1 V/m; Power Drift = 0.146 dB

Peak SAR (extrapolated) = 2.76 W/kg

SAR(1 g) = 0.963 mW/g; SAR(10 g) = 0.352 mW/g Maximum value of SAR (measured) = 1.15 mW/g



0 dB = 1.15mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5600MHz-Vertical Front

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5600 MHz; Medium parameters used: f = 5600 MHz; σ = 5.94 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

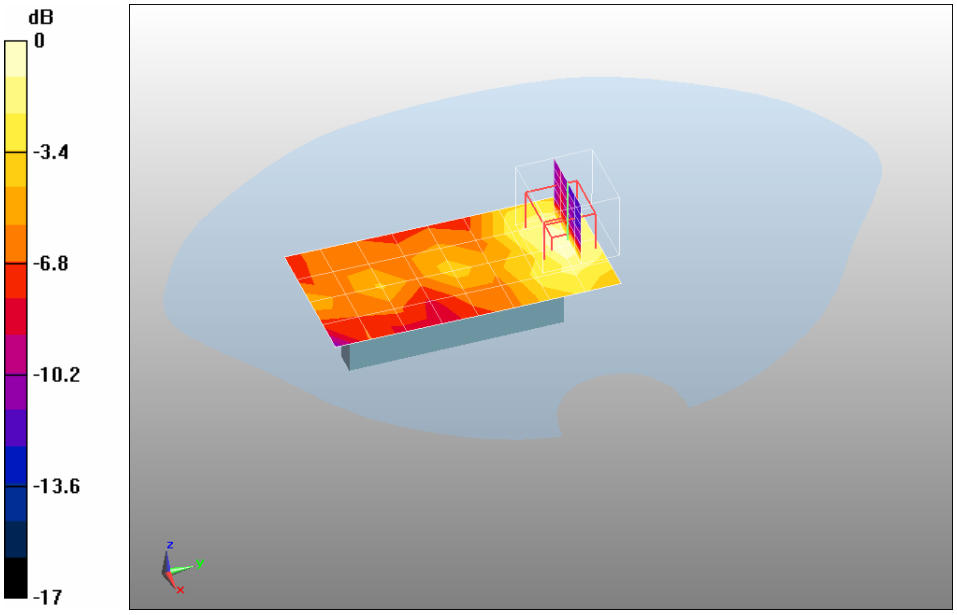
- Probe: EX3DV4 - SN3710; ConvF(3.58, 3.58, 3.58); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5600MHz-Vertical Front/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.234 mW/g

Configuration/802.11a Chain001 5600MHz-Vertical Front/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 4.87 V/m; Power Drift = -0.184 dB

Peak SAR (extrapolated) = 1.45 W/kg

SAR(1 g) = 0.308 mW/g; SAR(10 g) = 0.142 mW/g Maximum value of SAR (measured) = 0.246 mW/g



0 dB = 0.246mW/g

Date/Time: 09-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5600MHz-Vertical Back

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5600 MHz; Medium parameters used: f = 5600 MHz; σ = 5.94 mho/m; εr = 47.6; ρ = 1000 kg/m3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

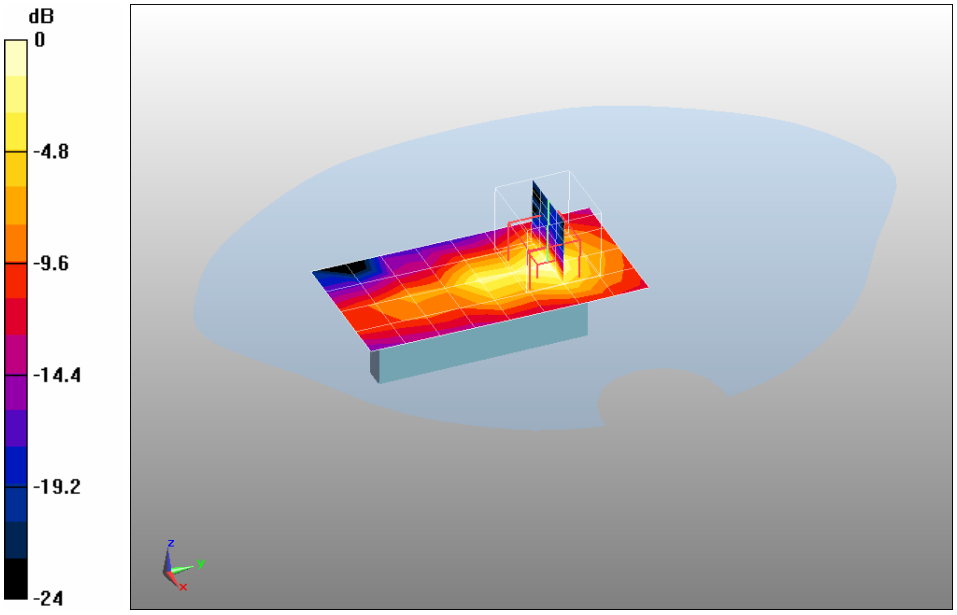
- Probe: EX3DV4 - SN3710; ConvF(3.58, 3.58, 3.58); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM2; Type: SAM; Serial: TP1562
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5600MHz-Vertical Back/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 1.12 mW/g

Configuration/802.11a Chain001 5600MHz-Vertical Back/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.7 V/m; Power Drift = 0.069 dB

Peak SAR (extrapolated) = 2.73 W/kg

SAR(1 g) = 0.965 mW/g; SAR(10 g) = 0.355 mW/g Maximum value of SAR (measured) = 1.08 mW/g



0 dB = 1.08mW/g

Date/Time: 23-Oct-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5600MHz-Tip Mode

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5600 MHz; Medium parameters used: f = 5600 MHz; σ = 5.94 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

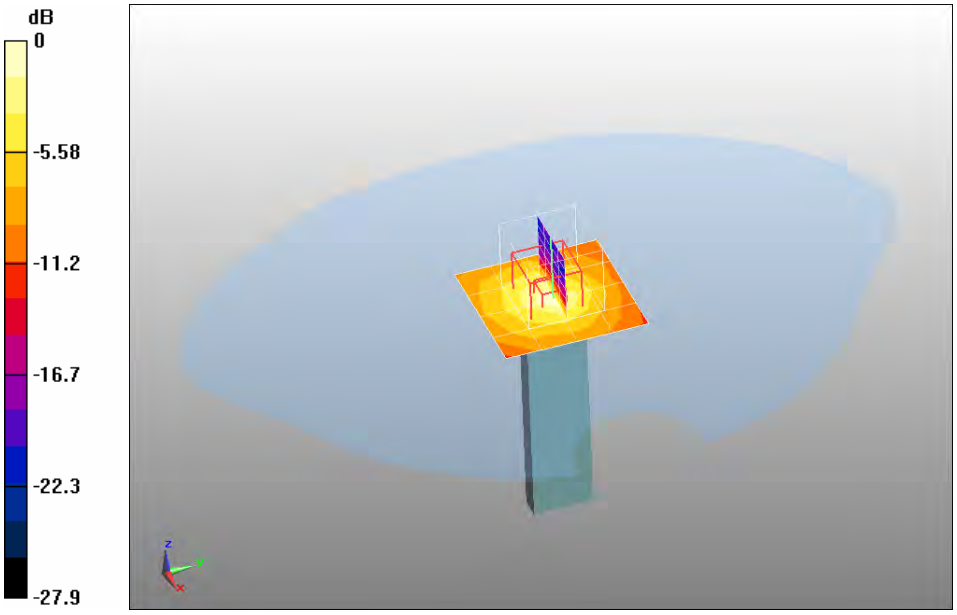
- Probe: EX3DV4 - SN3710; ConvF(3.58, 3.58, 3.58); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5600MHz-Tip Mode/Area Scan (5x5x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.774 mW/g

Configuration/802.11a Chain001 5600MHz-Tip Mode/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.8 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 5.36 W/kg

SAR(1 g) = 0.900 mW/g; SAR(10 g) = 0.312 mW/g Maximum value of SAR (measured) = 0.788 mW/g



0 dB = 0.788mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5700MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5700 MHz; Medium parameters used: f = 5700 MHz; σ = 6.1 mho/m; ε_r = 47.3; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

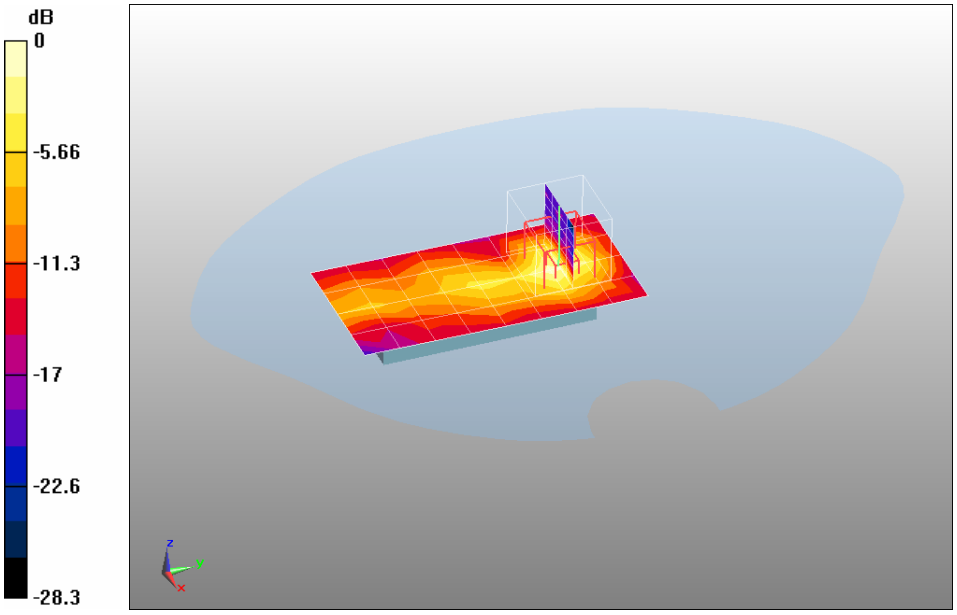
- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5700MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.827 mW/g

Configuration/802.11a Chain001 5700MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.8 V/m; Power Drift = 0.059 dB

Peak SAR (extrapolated) = 2.48 W/kg

SAR(1 g) = 0.835 mW/g; SAR(10 g) = 0.307 mW/g Maximum value of SAR (measured) = 1.02 mW/g



0 dB = 1.02mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5745MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5745 MHz; Medium parameters used: f = 5745 MHz; σ = 6.17 mho/m; ε_r = 47.2; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

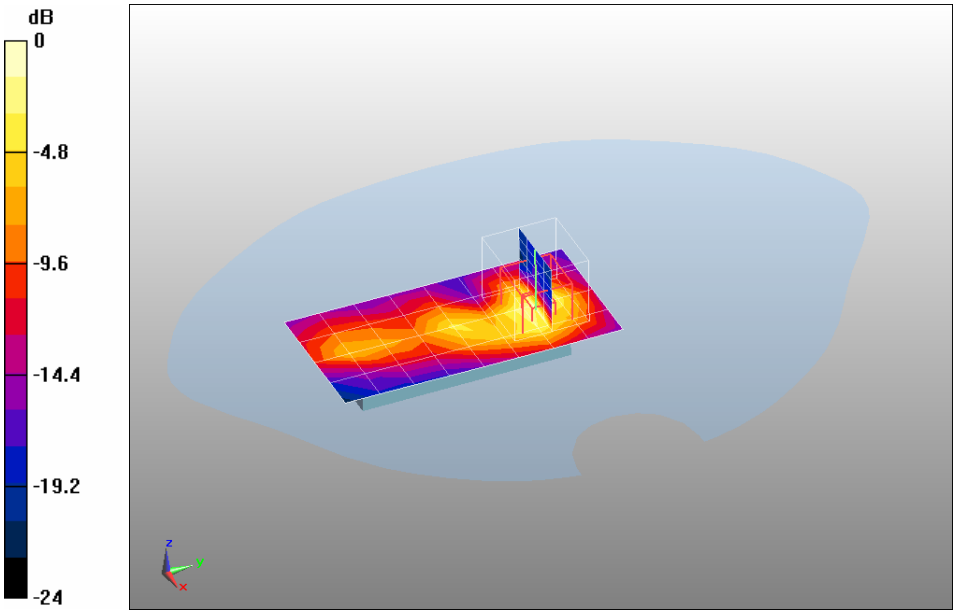
- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5745MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.752 mW/g

Configuration/802.11a Chain001 5745MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.7 V/m; Power Drift = -0.142 dB

Peak SAR (extrapolated) = 2.76 W/kg

SAR(1 g) = 0.906 mW/g; SAR(10 g) = 0.316 mW/g Maximum value of SAR (measured) = 1.13 mW/g



0 dB = 1.13mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5785MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5785 MHz; Medium parameters used: f = 5785 MHz; σ = 6.23 mho/m; ε_r = 47.1; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

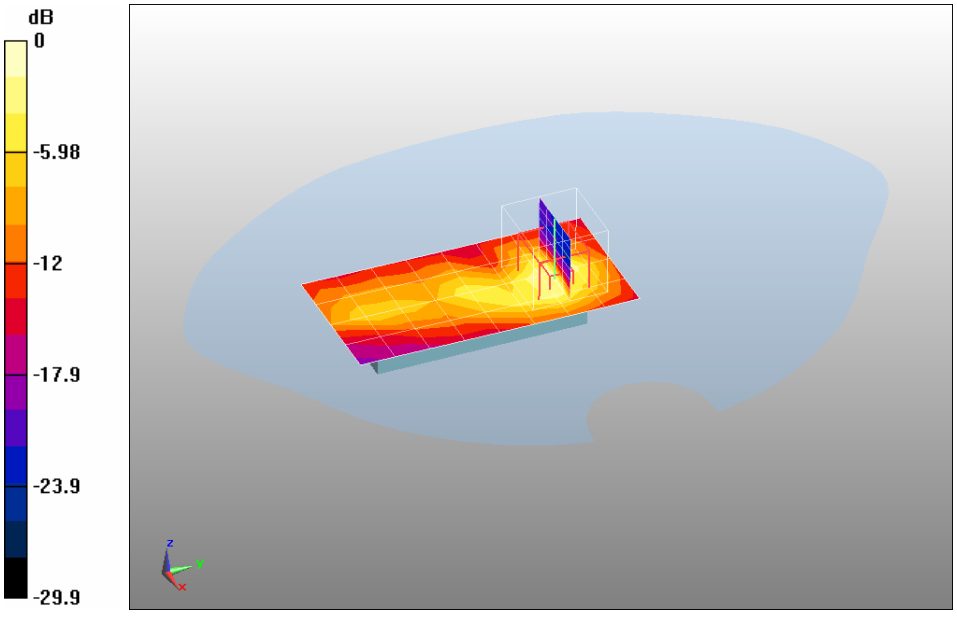
- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5785MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.722 mW/g

Configuration/802.11a Chain001 5785MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.8 V/m; Power Drift = 0.159 dB

Peak SAR (extrapolated) = 2.68 W/kg

SAR(1 g) = 0.897 mW/g; SAR(10 g) = 0.305 mW/g Maximum value of SAR (measured) = 1.16 mW/g



0 dB = 1.16mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11a Chain001 5825MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5825 MHz; Medium parameters used: f = 5825 MHz; σ = 6.3 mho/m; ε_r = 47; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

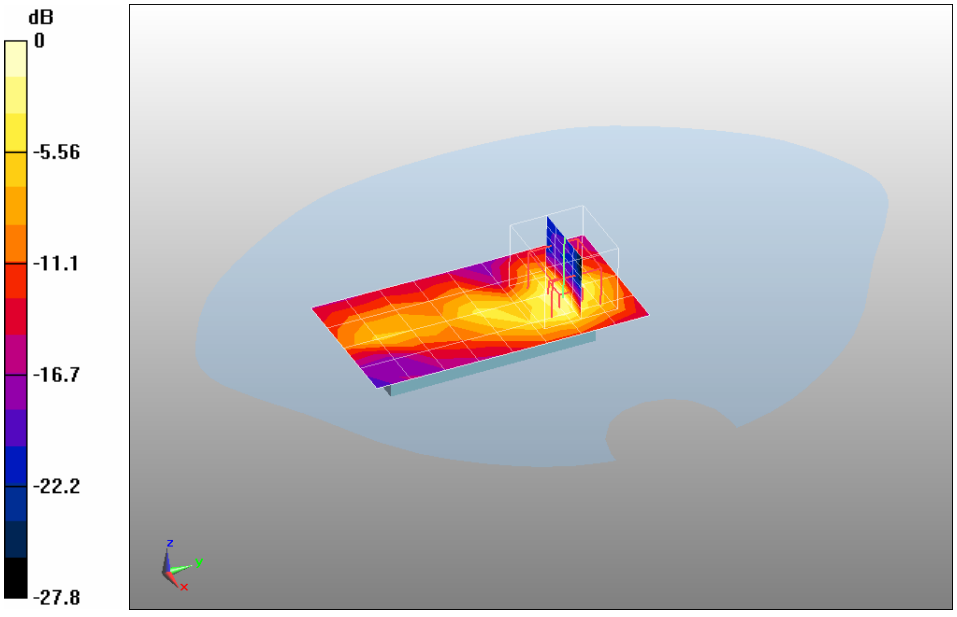
- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11a Chain001 5825MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.703 mW/g

Configuration/802.11a Chain001 5825MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.1 V/m; Power Drift = 0.134 dB

Peak SAR (extrapolated) = 2.86 W/kg

SAR(1 g) = 0.930 mW/g; SAR(10 g) = 0.316 mW/g Maximum value of SAR (measured) = 1.18 mW/g



0 dB = 1.18mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5180MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5180 MHz; Medium parameters used: f = 5180 MHz; σ = 5.28 mho/m; ε_r = 48.7; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

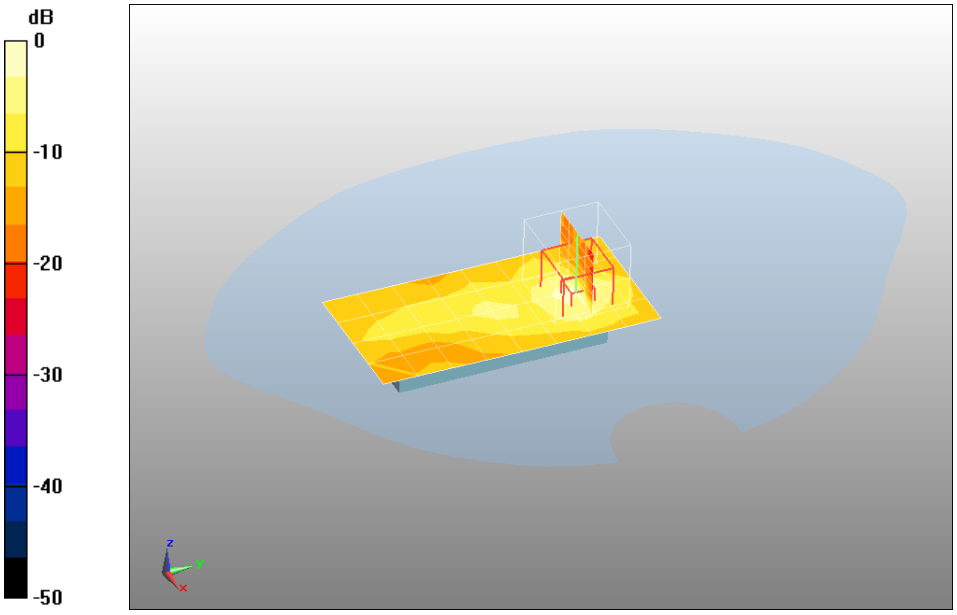
- Probe: EX3DV4 - SN3710; ConvF(4.13, 4.13, 4.13); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5180MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.197 mW/g

Configuration/802.11n(20) Chain001 5180MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.25 V/m; Power Drift = -0.107 dB

Peak SAR (extrapolated) = 0.687 W/kg

SAR(1 g) = 0.214 mW/g; SAR(10 g) = 0.078 mW/g Maximum value of SAR (measured) = 0.306 mW/g



0 dB = 0.306mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5240MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5240 MHz; Medium parameters used: f = 5240 MHz; σ = 5.39 mho/m; ε_r = 48.5; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

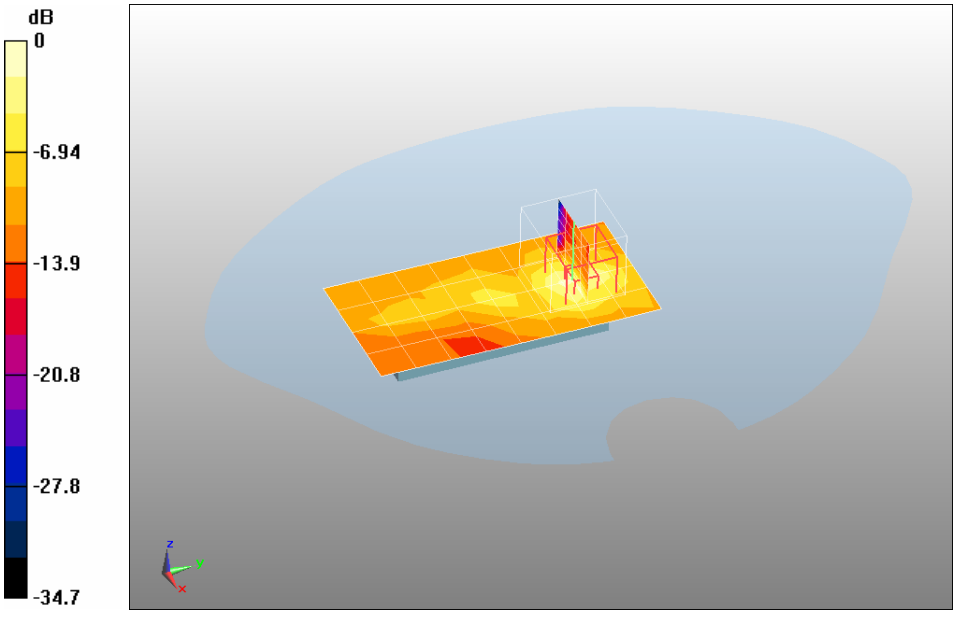
- Probe: EX3DV4 - SN3710; ConvF(4.13, 4.13, 4.13); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5240MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.176 mW/g

Configuration/802.11n(20) Chain001 5240MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.04 V/m; Power Drift = 0.102 dB

Peak SAR (extrapolated) = 1.55 W/kg

SAR(1 g) = 0.236 mW/g; SAR(10 g) = 0.089 mW/g Maximum value of SAR (measured) = 0.267 mW/g



0 dB = 0.267mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5260MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5260 MHz; Medium parameters used: f = 5260 MHz; σ = 5.41 mho/m; ε_r = 48.5; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

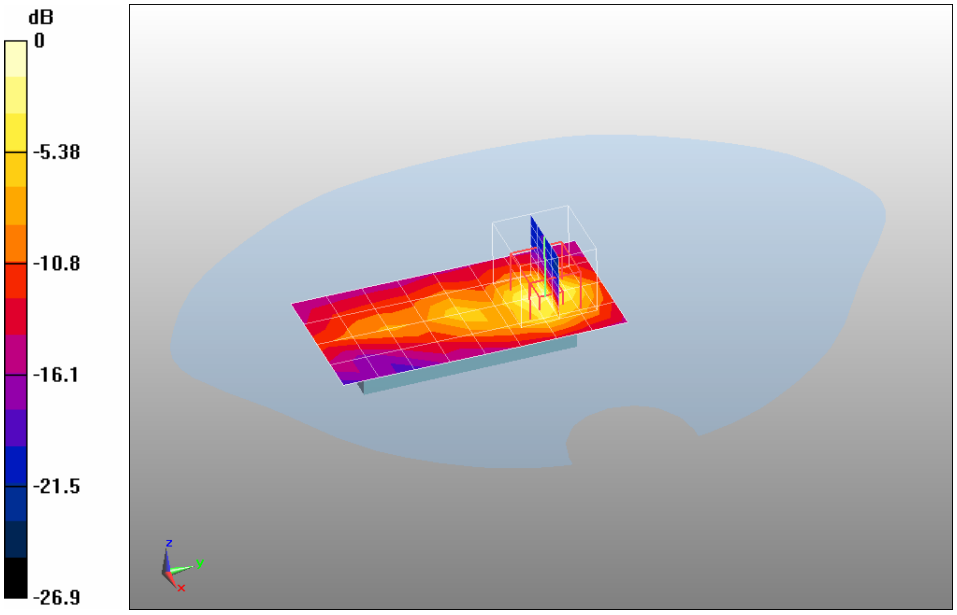
DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.91, 3.91, 3.91); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5260MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.615 mW/g

Configuration/802.11n(20) Chain001 5260MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.5 V/m; Power Drift = 0.132 dB Peak SAR (extrapolated) = 6.63 W/kg

SAR(1 g) = 1.072 mW/g; SAR(10 g) = 0.315 mW/g Maximum value of SAR (measured) = 1.06 mW/g



0 dB = 1.06mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5320MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5320 MHz; Medium parameters used: f = 5320 MHz; σ = 5.5 mho/m; ε_r = 48.3; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

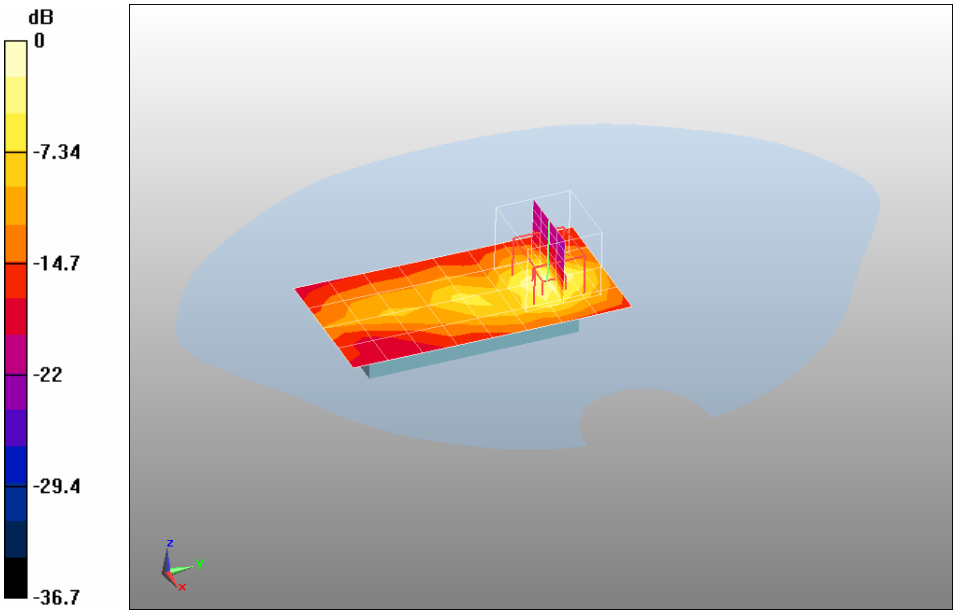
- Probe: EX3DV4 - SN3710; ConvF(3.91, 3.91, 3.91); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5320MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.620 mW/g

Configuration/802.11n(20) Chain001 5320MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.7 V/m; Power Drift = -0.114 dB

Peak SAR (extrapolated) = 2.33 W/kg

SAR(1 g) = 0.796 mW/g; SAR(10 g) = 0.235 mW/g Maximum value of SAR (measured) = 1.05 mW/g



0 dB = 1.05mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5500MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5500 MHz; Medium parameters used: f = 5500 MHz; σ = 5.78 mho/m; ε_r = 47.9; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

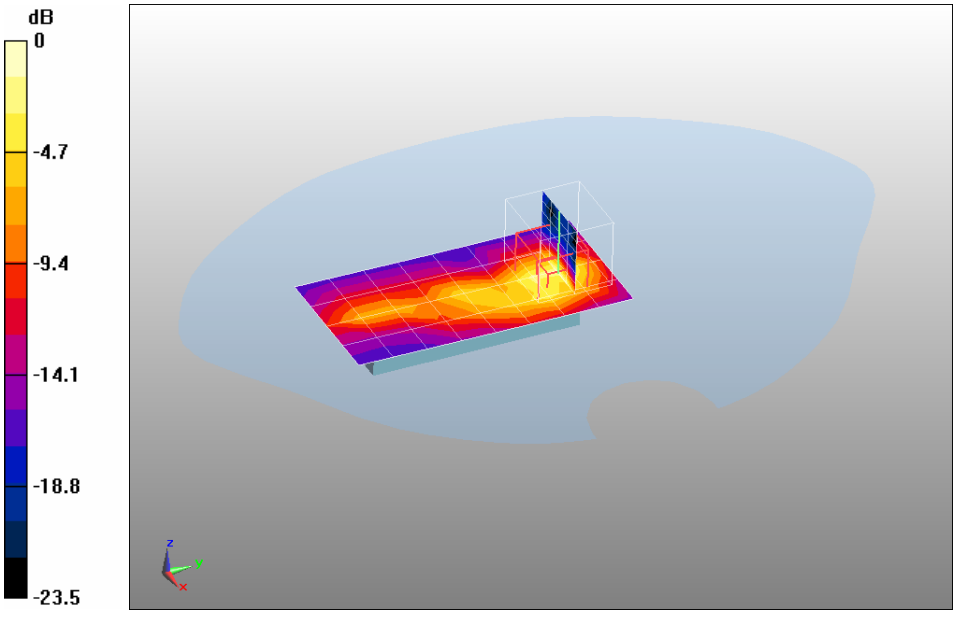
DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.81, 3.81, 3.81); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5500MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.568 mW/g

Configuration/802.11n(20) Chain001 5500MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.8 V/m; Power Drift = 0.036 dB Peak SAR (extrapolated) = 2.65 W/kg

SAR(1 g) = 0.924 mW/g; SAR(10 g) = 0.314 mW/g Maximum value of SAR (measured) = 1.13 mW/g



0 dB = 1.13mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5600MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5600 MHz; Medium parameters used: f = 5600 MHz; σ = 5.94 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

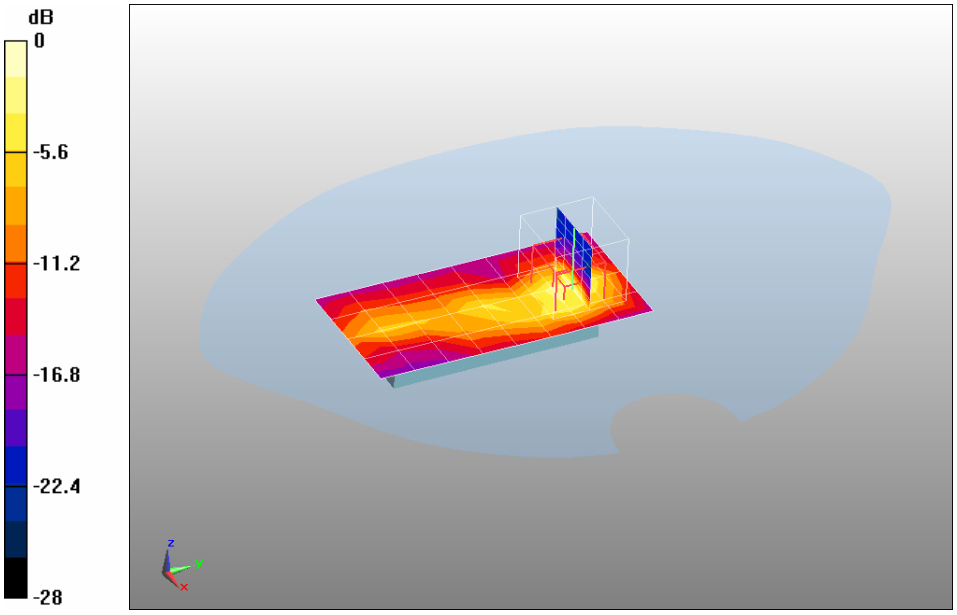
- Probe: EX3DV4 - SN3710; ConvF(3.58, 3.58, 3.58); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5600MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.763 mW/g

Configuration/802.11n(20) Chain001 5600MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 14.2 V/m; Power Drift = 0.014 dB

Peak SAR (extrapolated) = 3.27 W/kg

SAR(1 g) = 1.075 mW/g; SAR(10 g) = 0.383 mW/g Maximum value of SAR (measured) = 1.46 mW/g



0 dB = 1.46mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5700MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5700 MHz; Medium parameters used: f = 5700 MHz; σ = 6.1 mho/m; ε_r = 47.3; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

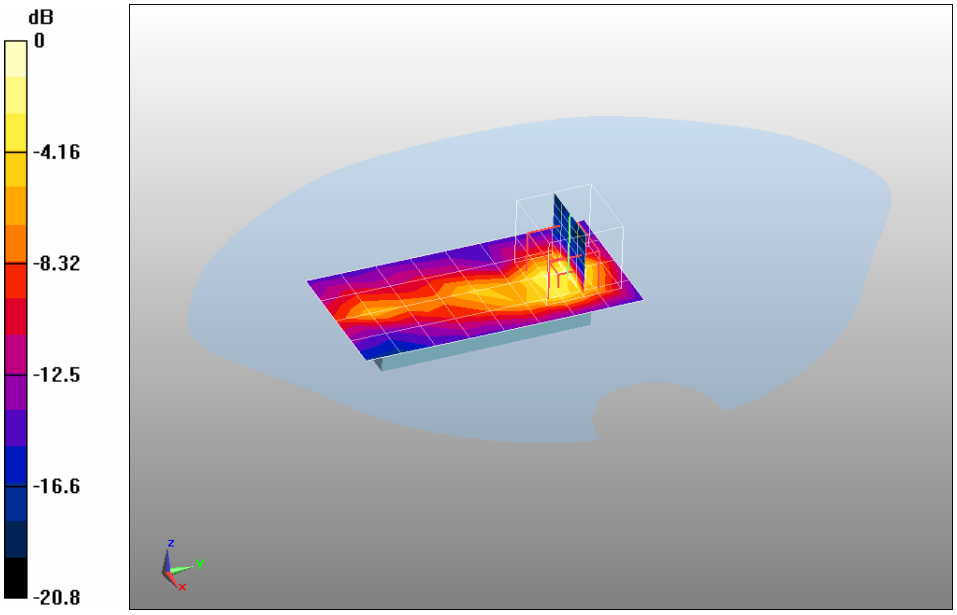
- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5700MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.517 mW/g

Configuration/802.11n(20) Chain001 5700MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 11.4 V/m; Power Drift = 0.153 dB

Peak SAR (extrapolated) = 2.17 W/kg

SAR(1 g) = 0.735 mW/g; SAR(10 g) = 0.215 mW/g Maximum value of SAR (measured) = 0.934 mW/g



0 dB = 0.934mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5745MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5745 MHz; Medium parameters used: f = 5745 MHz; σ = 6.17 mho/m; ε_r = 47.2; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

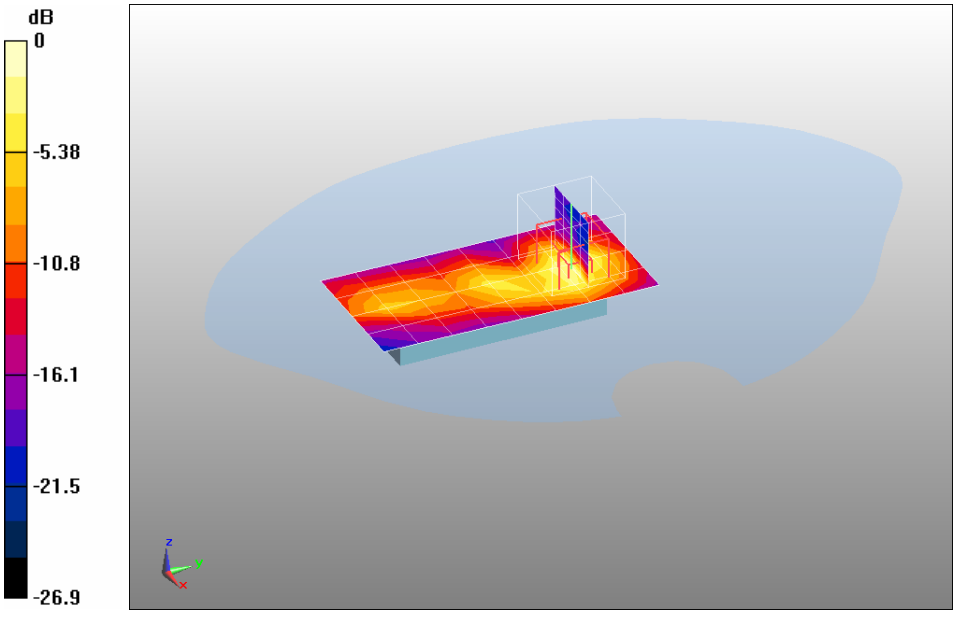
DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5745MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.635 mW/g

Configuration/802.11n(20) Chain001 5745MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.3 V/m; Power Drift = -0.010 dB Peak SAR (extrapolated) = 2.65 W/kg

SAR(1 g) = 0.872 mW/g; SAR(10 g) = 0.314 mW/g Maximum value of SAR (measured) = 1.1 mW/g



0 dB = 1.1mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5785MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5785 MHz; Medium parameters used: f = 5785 MHz; σ = 6.23 mho/m; ε_r = 47.1; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

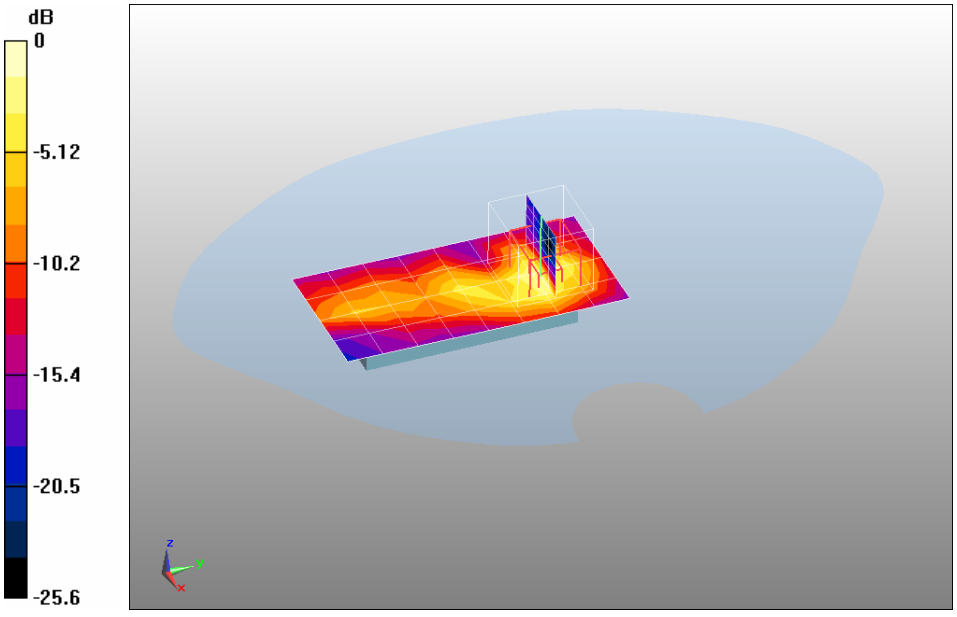
- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5785MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.713 mW/g

Configuration/802.11n(20) Chain001 5785MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.4 V/m; Power Drift = 0.119 dB

Peak SAR (extrapolated) = 2.52 W/kg

SAR(1 g) = 0.867 mW/g; SAR(10 g) = 0.312 mW/g Maximum value of SAR (measured) = 0.97 mW/g



0 dB = 0.97mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(20) Chain001 5825MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5825 MHz; Medium parameters used: f = 5825 MHz; σ = 6.3 mho/m; ε_r = 47; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

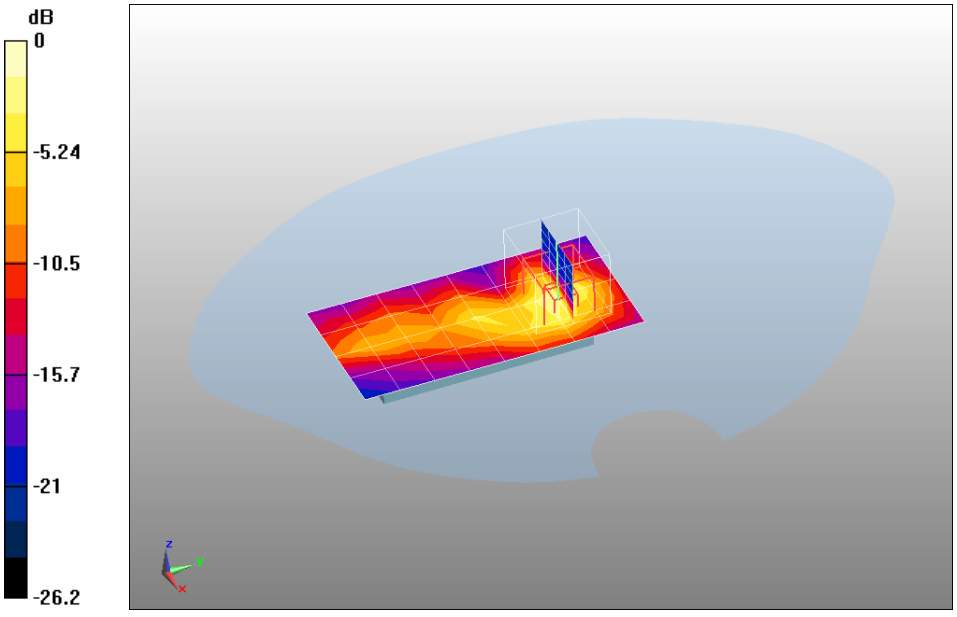
DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(20) Chain001 5825MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.714 mW/g

Configuration/802.11n(20) Chain001 5825MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.8 V/m; Power Drift = 0.186 dB Peak SAR (extrapolated) = 2.75 W/kg

SAR(1 g) = 0.912 mW/g; SAR(10 g) = 0.306 mW/g Maximum value of SAR (measured) = 1.18 mW/g



0 dB = 1.18mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5190MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5190 MHz; Medium parameters used: f = 5190 MHz; σ = 5.29 mho/m; ε_r = 48.7; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

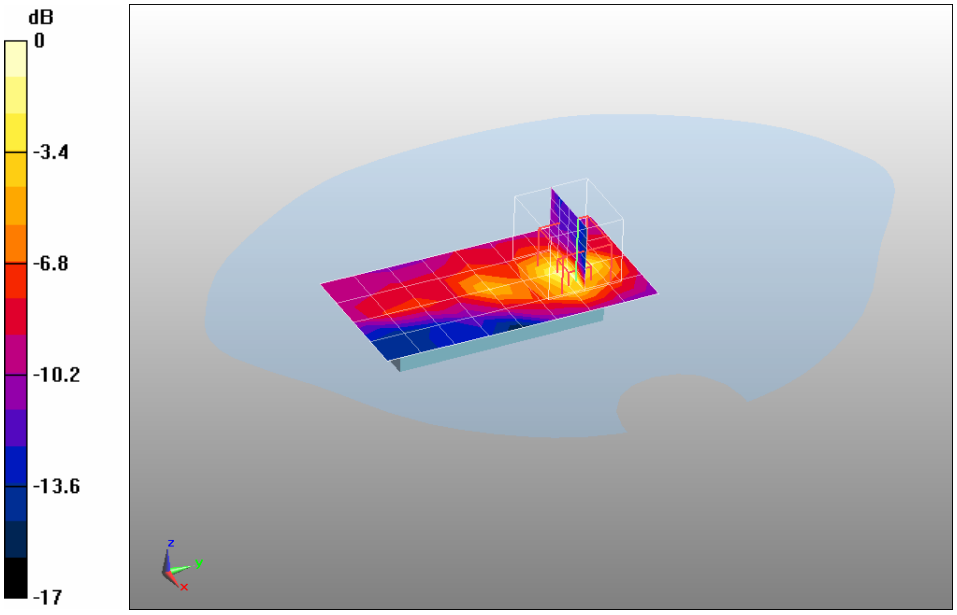
DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(4.13, 4.13, 4.13); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5190MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.156 mW/g

Configuration/802.11n(40) Chain001 5190MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.02 V/m; Power Drift = -0.139 dB Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.104 mW/g Maximum value of SAR (measured) = 0.246 mW/g



0 dB = 0.246mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5230MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5230 MHz; Medium parameters used: f = 5230 MHz; σ = 5.38 mho/m; ε_r = 48.6; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

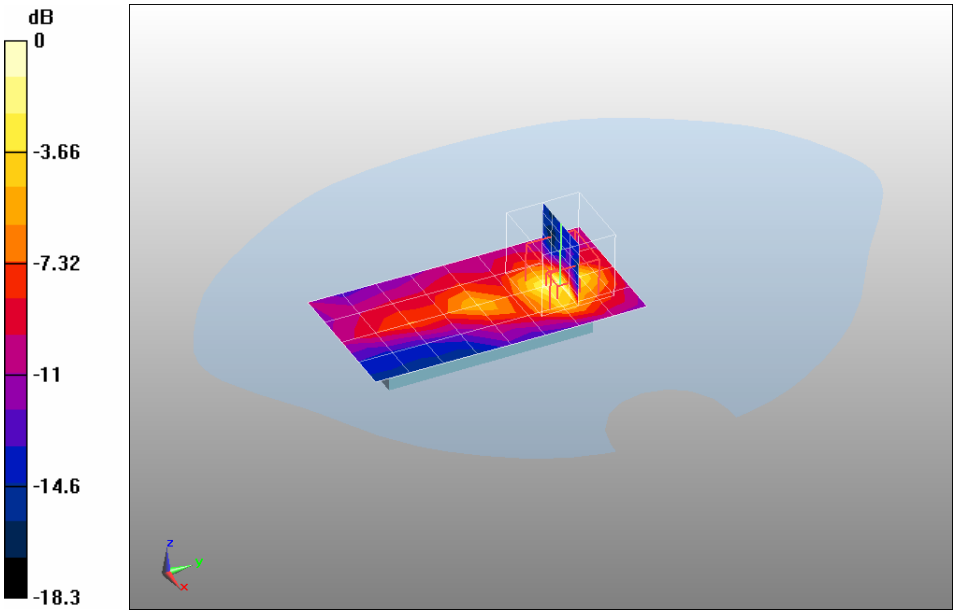
- Probe: EX3DV4 - SN3710; ConvF(4.13, 4.13, 4.13); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5230MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.175 mW/g

Configuration/802.11n(40) Chain001 5230MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 7.21 V/m; Power Drift = 0.157 dB

Peak SAR (extrapolated) = 0.584 W/kg

SAR(1 g) = 0.168 mW/g; SAR(10 g) = 0.074 mW/g Maximum value of SAR (measured) = 0.286 mW/g



0 dB = 0.286mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5270MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5270 MHz; Medium parameters used: f = 5270 MHz; σ = 5.42 mho/m; ε_r = 48.5; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

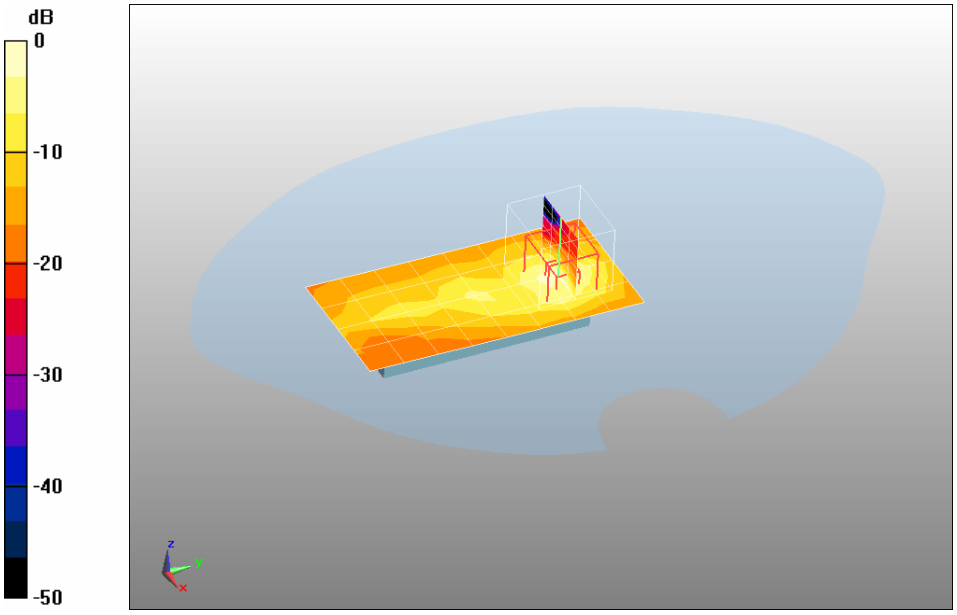
- Probe: EX3DV4 - SN3710; ConvF(3.91, 3.91, 3.91); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5270MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.584 mW/g

Configuration/802.11n(40) Chain001 5270MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.4 V/m; Power Drift = 0.083 dB

Peak SAR (extrapolated) = 4.36 W/kg

SAR(1 g) = 0.923 mW/g; SAR(10 g) = 0.286 mW/g Maximum value of SAR (measured) = 0.97 mW/g



0 dB = 0.97mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5310MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5310 MHz; Medium parameters used: f = 5310 MHz; σ = 5.49 mho/m; ε_r = 48.4; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

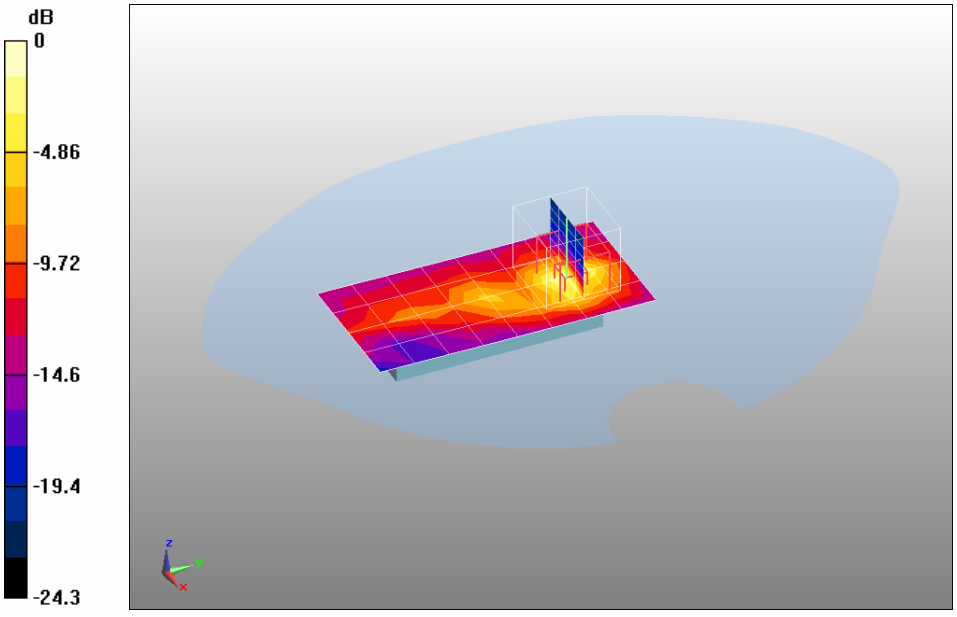
- Probe: EX3DV4 - SN3710; ConvF(3.91, 3.91, 3.91); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5310MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.646 mW/g

Configuration/802.11n(40) Chain001 5310MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.5 V/m; Power Drift = 0.127 dB

Peak SAR (extrapolated) = 2.38 W/kg

SAR(1 g) = 0.849 mW/g; SAR(10 g) = 0.303 mW/g Maximum value of SAR (measured) = 1.06 mW/g



0 dB = 1.06mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5510MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5510 MHz; Medium parameters used: f = 5510 MHz; σ = 5.79 mho/m; ε_r = 47.8; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

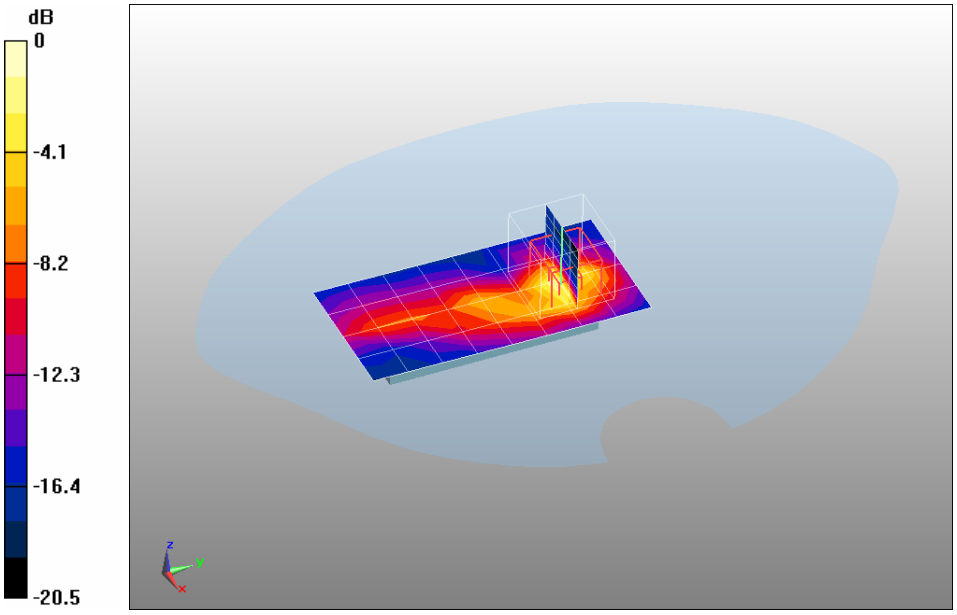
DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.81, 3.81, 3.81); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5510MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm,Maximum value of SAR (measured) = 0.683 mW/g

Configuration/802.11n(40) Chain001 5510MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 13.5 V/m; Power Drift = 0.056 dB Peak SAR (extrapolated) = 2.32 W/kg

SAR(1 g) = 0.785 mW/g; SAR(10 g) = 0.215 mW/g Maximum value of SAR (measured) = 0.94 mW/g



0 dB = 0.94mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5590MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5590 MHz; Medium parameters used: f = 5590 MHz; σ = 5.93 mho/m; ε_r = 47.6; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

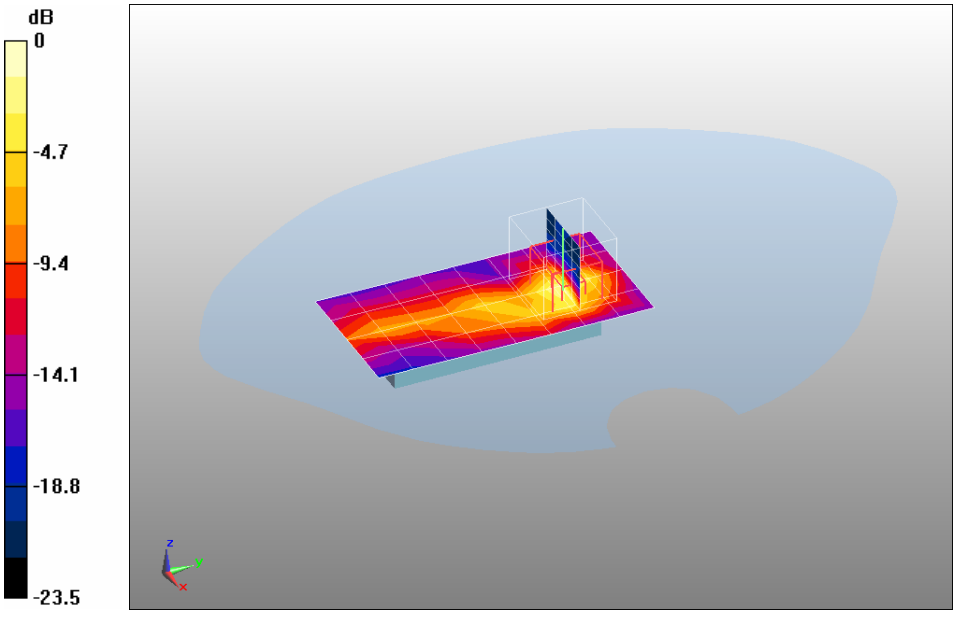
- Probe: EX3DV4 - SN3710; ConvF(3.58, 3.58, 3.58); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5590MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.914 mW/g

Configuration/802.11n(40) Chain001 5590MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 14.3 V/m; Power Drift = 0.062 dB

Peak SAR (extrapolated) = 3.37 W/kg

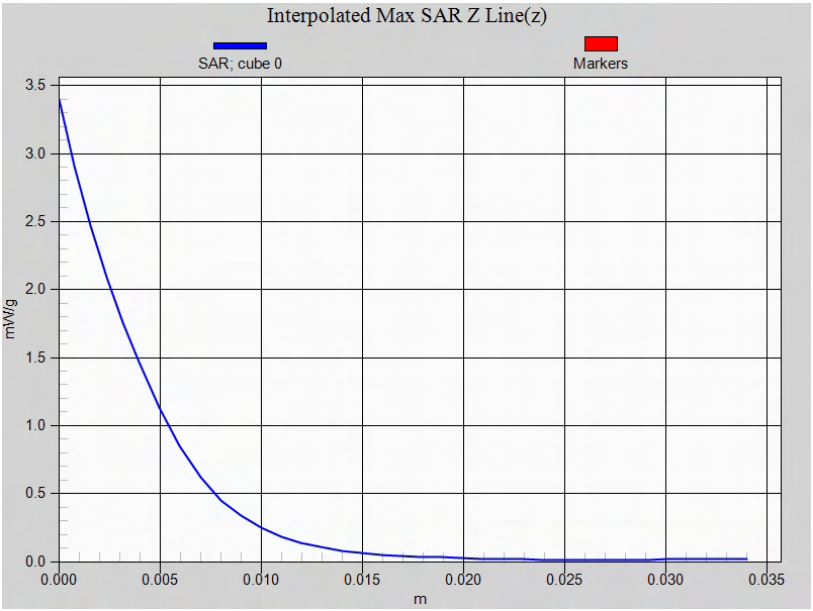
SAR(1 g) = 1.092 mW/g; SAR(10 g) = 0.413 mW/g Maximum value of SAR (measured) = 1.42 mW/g



0 dB = 1.42mW/g

802.11n(40MHz) EUT Bottom, Z-Axis Plot

Channel 118



Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5670MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5670 MHz; Medium parameters used: f = 5670 MHz; σ = 5.97 mho/m; ε_r = 47.4; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

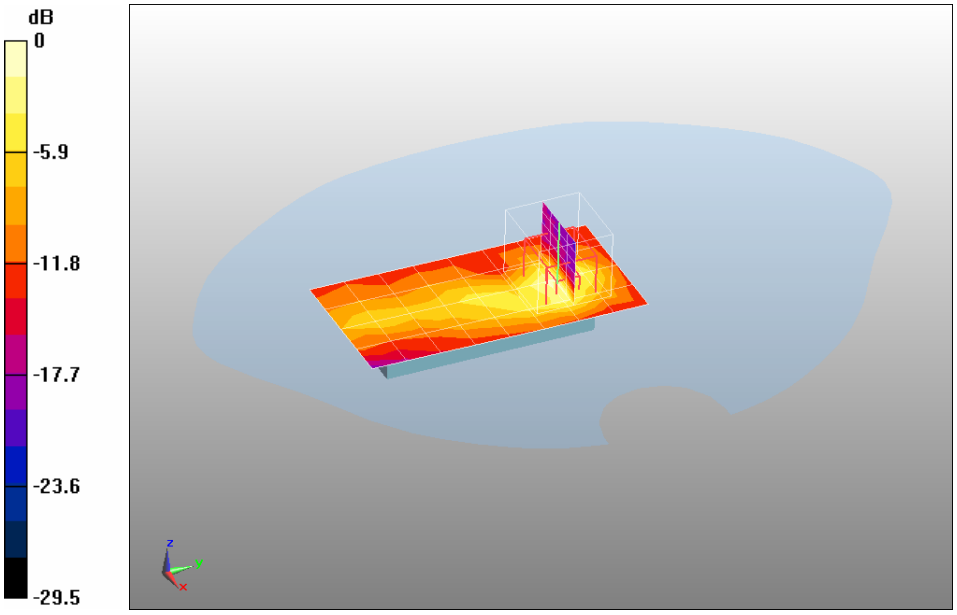
- Probe: EX3DV4 - SN3710; ConvF(3.58, 3.58, 3.58); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5670MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.746 mW/g

Configuration/802.11n(40) Chain001 5670MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.7 V/m; Power Drift = 0.019 dB

Peak SAR (extrapolated) = 2.47 W/kg

SAR(1 g) = 0.813 mW/g; SAR(10 g) = 0.312 mW/g Maximum value of SAR (measured) = 0.96 mW/g



0 dB = 0.96mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5755MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5755 MHz; Medium parameters used: f = 5755 MHz; σ = 6.18 mho/m; ε_r = 47.2; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

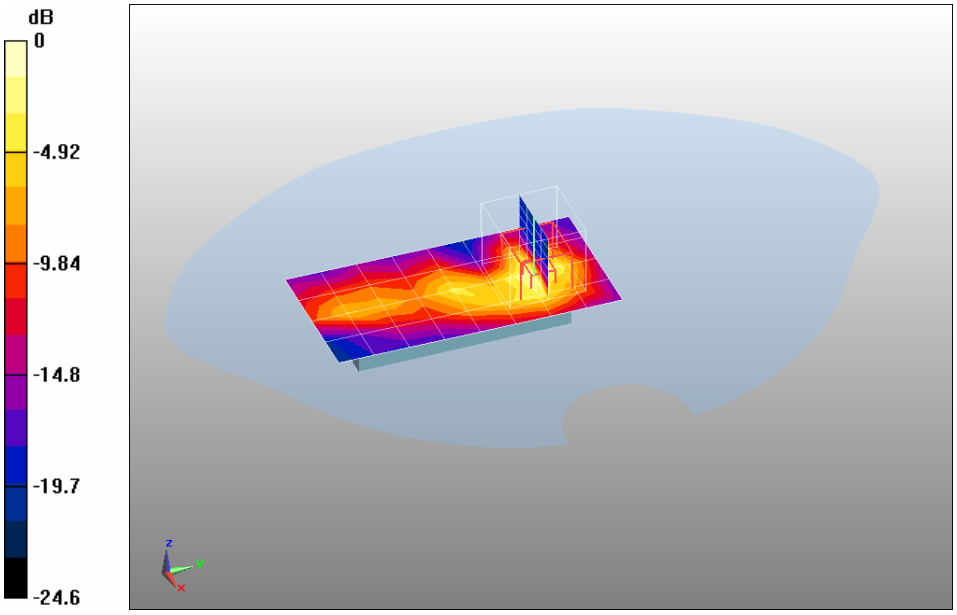
DASY5 Configuration:

- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5755MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.742 mW/g

Configuration/802.11n(40) Chain001 5755MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.6 V/m; Power Drift = -0.158 dB Peak SAR (extrapolated) = 2.74 W/kg

SAR(1 g) = 0.905 mW/g; SAR(10 g) = 0.316 mW/g Maximum value of SAR (measured) = 1.12 mW/g



0 dB = 1.12mW/g

Date/Time: 10-Nov-2010

Test Laboratory: QuieTek Lab

802.11n(40) Chain001 5795MHz-Horizontal Up

DUT: AirPcap Nx; Type: APC-NX

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Duty Cycle: 1:1.0; Frequency: 5795 MHz; Medium parameters used: f = 5795 MHz; σ = 6.24 mho/m; ε_r = 47.1; ρ = 1000 kg/m^3 ; Phantom section: Flat Section

Ambient temperature (℃): 21.5, Liquid temperature (℃): 21.0

DASY5 Configuration:

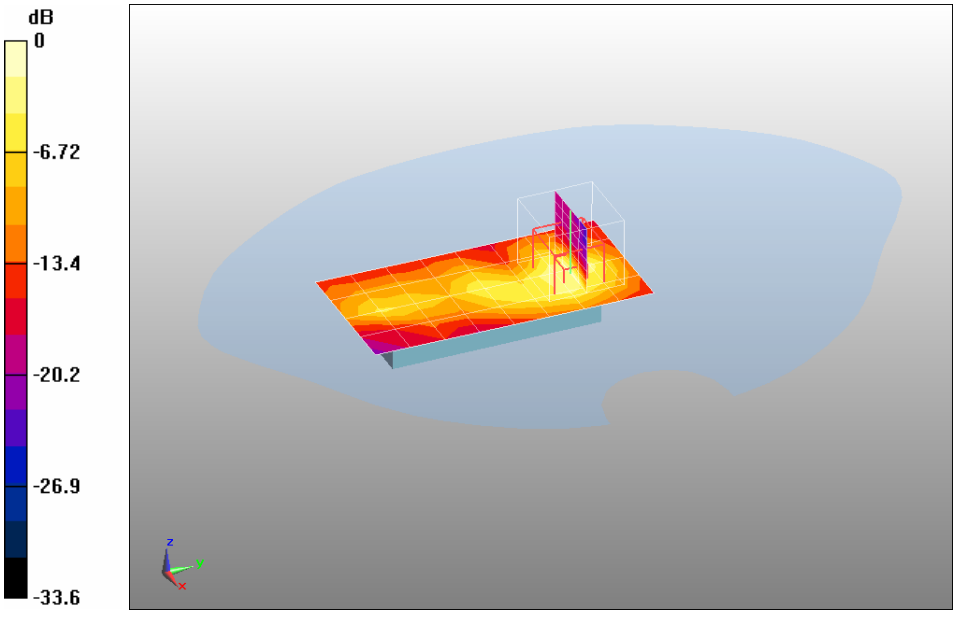
- Probe: EX3DV4 - SN3710; ConvF(3.97, 3.97, 3.97); Calibrated: 05/03/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1220; Calibrated: 09/03/2010
- Phantom: SAM1; Type: SAM; Serial: TP1561
- Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Configuration/802.11n(40) Chain001 5795MHz-Horizontal Up/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm, Maximum value of SAR (measured) = 0.680 mW/g

Configuration/802.11n(40) Chain001 5795MHz-Horizontal Up/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm, Reference Value = 12.6 V/m; Power Drift = 0.120 dB

Peak SAR (extrapolated) = 2.86 W/kg

SAR(1 g) = 0.911 mW/g; SAR(10 g) = 0.324 mW/g Maximum value of SAR (measured) = 1.15 mW/g



0 dB = 1.15mW/g

Appendix D. Probe Calibration Data

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

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S Servizio svizzero di taratura
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Accreditation No.: SCS 108

Client Quietek (Auden)

Certificate No: EX3-3710_Mar10

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3710
Calibration procedure(s)	QA CAL-01.v6, QA CAL-14.v3, QA CAL-23.v3 and QA CAL-25.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	March 5, 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-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	29-Sep-09 (No. DAE4-660_Sep09)	Sep-10

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:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: March 5, 2010

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

Certificate No: EX3-3710_Mar10 Page 1 of 11

Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not 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.

Probe EX3DV4

SN:3710

Manufactured: July 21, 2009
Calibrated: March 5, 2010

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

EX3DV4 SN:3710 March 5, 2010

DASY - Parameters of Probe: EX3DV4 SN:3710

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.48	0.58	0.60	± 10.1%
DCP (mV)[B]	90.8	94.4	91.8	

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	± 1.5%
			Y	0.00	0.00	1.00	300	
			Z	0.00	0.00	1.00	300	

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%.

[*] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).

[A] Numerical linearization parameter: uncertainty not required.

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

EX3DV4 SN:3710 March 5, 2010

DASY - Parameters of Probe: EX3DV4 SN:3710

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%	8.83	8.83	8.83	0.68	0.64 ± 11.0%
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	8.73	8.73	8.73	0.83	0.58 ± 11.0%
1810	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.69	7.69	7.69	0.62	0.63 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	7.35	7.35	7.35	0.70	0.60 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	6.96	6.96	6.96	0.46	0.75 ± 11.0%
2600	± 50 / ± 100	39.0 ± 5%	1.96 ± 5%	6.88	6.88	6.88	0.31	0.92 ± 11.0%
3500	± 50 / ± 100	37.9 ± 5%	2.91 ± 5%	6.64	6.64	6.64	0.33	1.18 ± 13.1%
5200	± 50 / ± 100	36.0 ± 5%	4.66 ± 5%	4.92	4.92	4.92	0.40	1.90 ± 13.1%
5300	± 50 / ± 100	35.9 ± 5%	4.76 ± 5%	4.60	4.60	4.60	0.40	1.90 ± 13.1%
5500	± 50 / ± 100	35.6 ± 5%	4.96 ± 5%	4.42	4.42	4.42	0.50	1.90 ± 13.1%
5600	± 50 / ± 100	35.5 ± 5%	5.07 ± 5%	4.42	4.42	4.42	0.40	1.90 ± 13.1%
5800	± 50 / ± 100	35.3 ± 5%	5.27 ± 5%	4.26	4.26	4.26	0.50	1.90 ± 13.1%

[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.

EX3DV4 SN:3710 March 5, 2010

DASY - Parameters of Probe: EX3DV4 SN:3710

Calibration Parameter Determined in Body Tissue Simulating Media

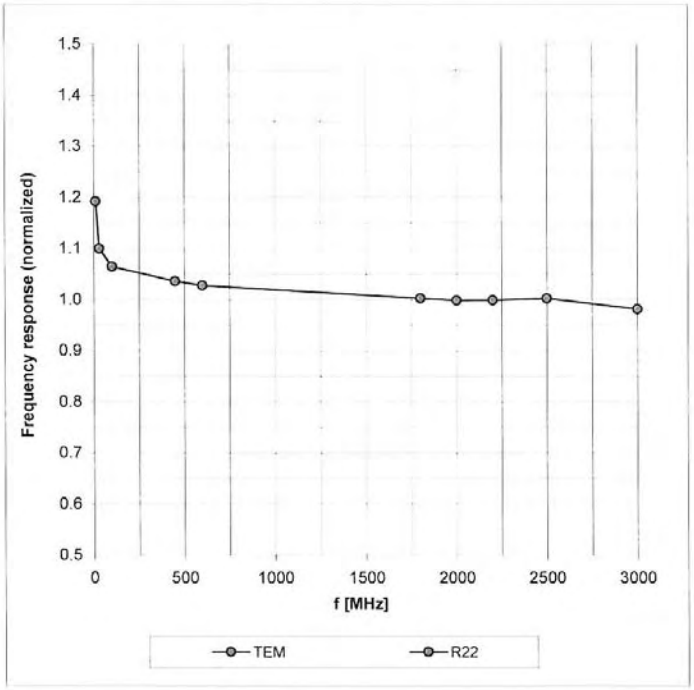
f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth	Unc (k=2)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	8.95	8.95	8.95	0.84	0.62	± 11.0%
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	8.80	8.80	8.80	0.65	0.69	± 11.0%
1810	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	7.71	7.71	7.71	0.57	0.72	± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	7.45	7.45	7.45	0.38	0.87	± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	7.00	7.00	7.00	0.32	0.95	± 11.0%
2600	± 50 / ± 100	52.5 ± 5%	2.16 ± 5%	6.90	6.90	6.90	0.47	0.79	± 11.0%
3500	± 50 / ± 100	51.3 ± 5%	3.31 ± 5%	6.19	6.19	6.19	0.31	1.44	± 13.1%
5200	± 50 / ± 100	49.0 ± 5%	5.30 ± 5%	4.13	4.13	4.13	0.50	1.90	± 13.1%
5300	± 50 / ± 100	48.5 ± 5%	5.42 ± 5%	3.91	3.91	3.91	0.55	1.90	± 13.1%
5500	± 50 / ± 100	48.6 ± 5%	5.65 ± 5%	3.81	3.81	3.81	0.55	1.90	± 13.1%
5600	± 50 / ± 100	48.5 ± 5%	5.77 ± 5%	3.58	3.58	3.58	0.60	1.90	± 13.1%
5800	± 50 / ± 100	48.2 ± 5%	6.00 ± 5%	3.97	3.97	3.97	0.60	1.90	± 13.1%

[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.

EX3DV4 SN:3710 March 5, 2010

Frequency Response of E-Field

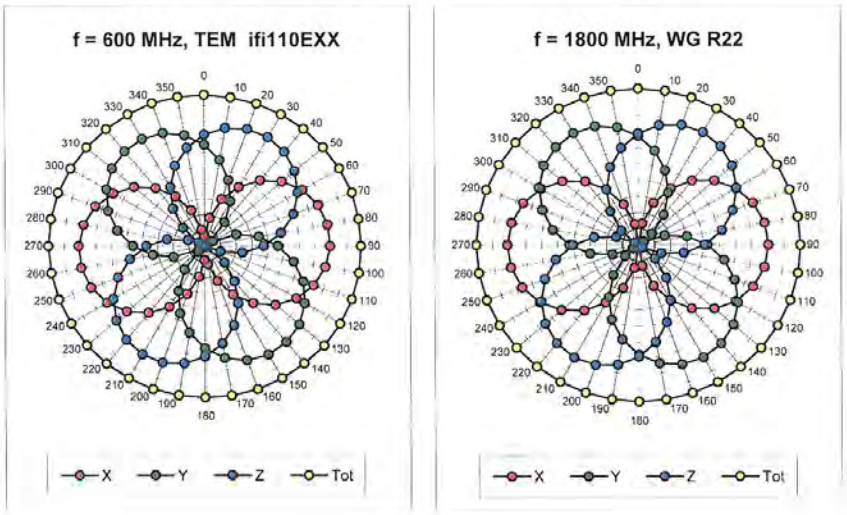
(TEM-Cell:ifi110 EXX, Waveguide: R22)

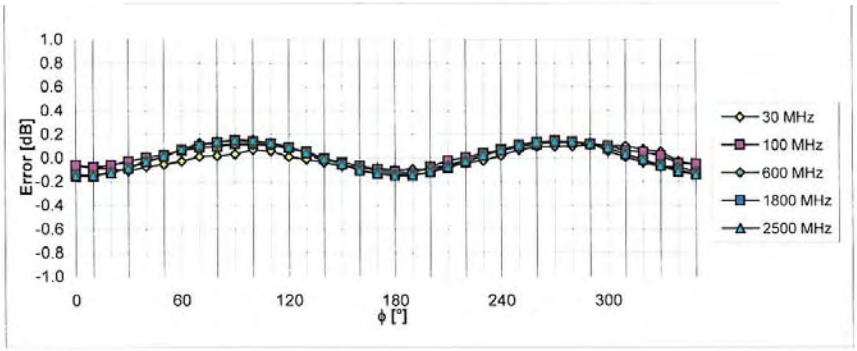


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

EX3DV4 SN:3710 March 5, 2010

Receiving Pattern (ϕ), ϑ = 0°



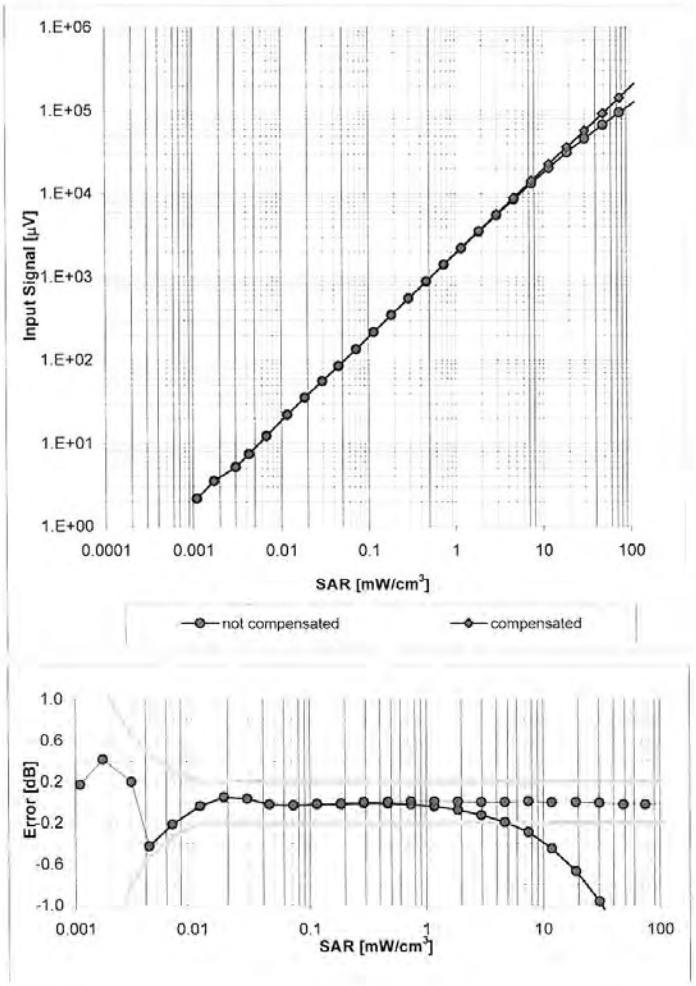


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

EX3DV4 SN:3710 March 5, 2010

Dynamic Range f(SAR_{head})

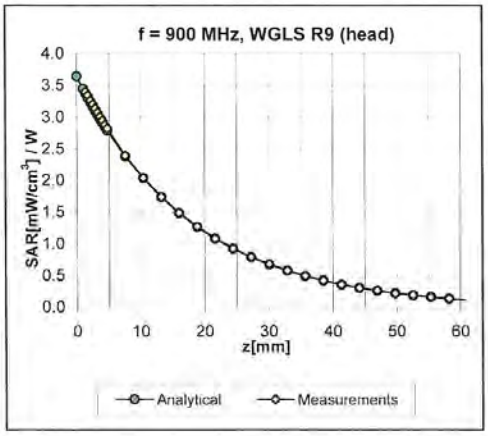
(Waveguide R22, f = 1800 MHz)

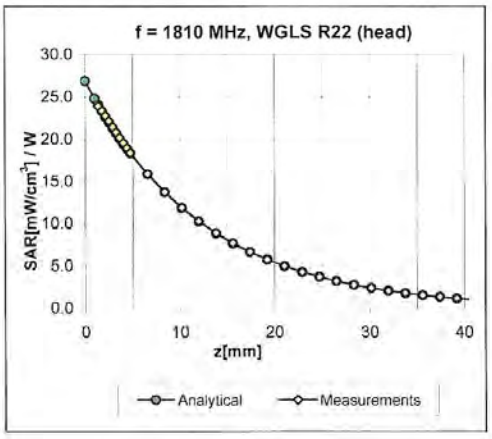


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

EX3DV4 SN:3710 March 5, 2010

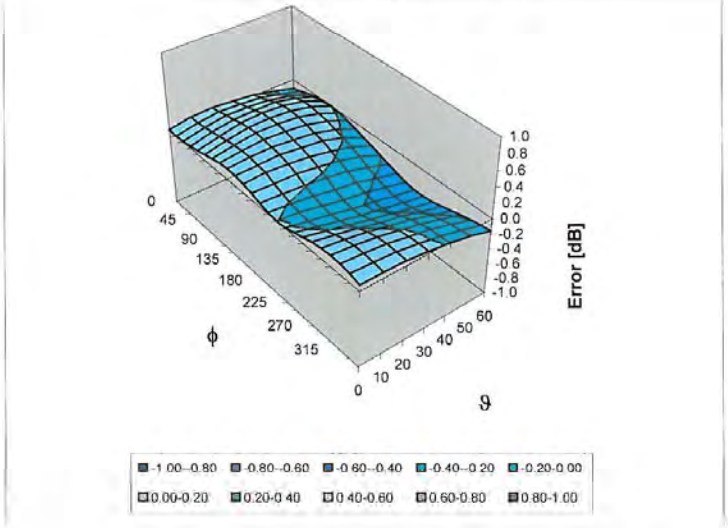
Conversion Factor Assessment





Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

Other Probe Parameters

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

Appendix E. Dipole Calibration Data

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

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Accreditation No.: SCS 108

Client Quietek (Auden)

Certificate No: D2450V2-839_Mar10

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 839
Calibration procedure(s)	QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date:	March 12, 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 EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe ES3DV3	SN: 3205	26-Jun-09 (No. ES3-3205_Jun09)	Jun-10
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Mike Meili	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 18, 2010

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

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY5	V5.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.4 ± 6 %	1.80 mho/m ± 6 %
Head TSL temperature during test	(21.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.0 mW / g
SAR normalized	normalized to 1W	52.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**52.3 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.11 mW / g
SAR normalized	normalized to 1W	24.4 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**24.5 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.4 ± 6 %	2.00 mho/m ± 6 %
Body TSL temperature during test	(21.0 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.0 mW / g
SAR normalized	normalized to 1W	52.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**51.6 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.06 mW / g
SAR normalized	normalized to 1W	24.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**24.2 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.5 Ω - 0.6 jΩ
Return Loss	- 29.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.0 Ω + 0.9 jΩ
Return Loss	- 40.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.134 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 20, 2009

DASY5 Validation Report for Head TSL

Date/Time: 12.03.2010 13:24:52

Test Laboratory: SPEAG, Zurich, Switzerland

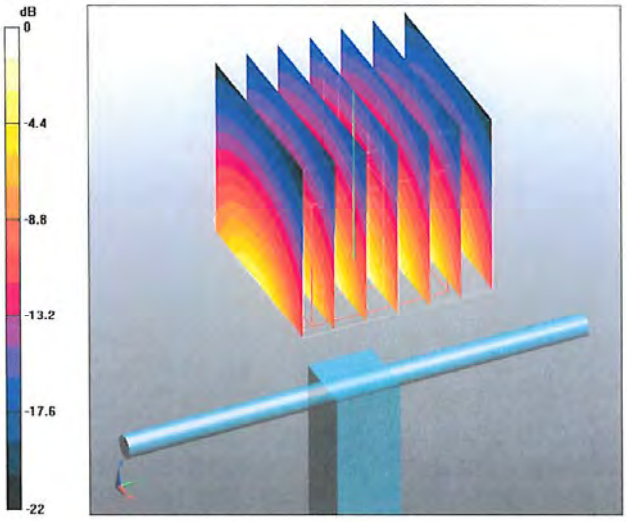
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:839

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: HSL U11 BB
Medium parameters used: f = 2450 MHz; σ = 1.81 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

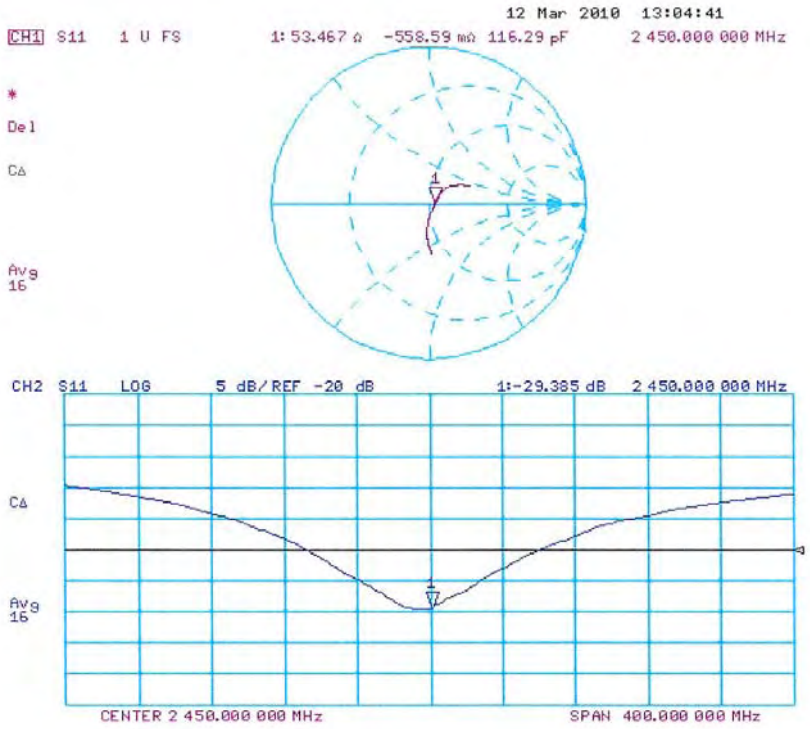
- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.1 V/m; Power Drift = 0.060 dB
Peak SAR (extrapolated) = 26.5 W/kg
SAR(1 g) = 13 mW/g; SAR(10 g) = 6.11 mW/g
Maximum value of SAR (measured) = 16.5 mW/g



0 dB = 16.5mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 12.03.2010 15:25:35

Test Laboratory: SPEAG, Zurich, Switzerland

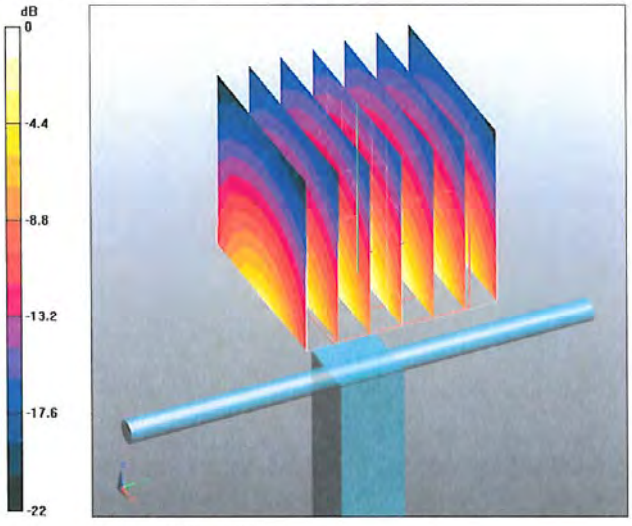
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:839

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: MSL U10 BB
Medium parameters used: f = 2450 MHz; σ = 2.01 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

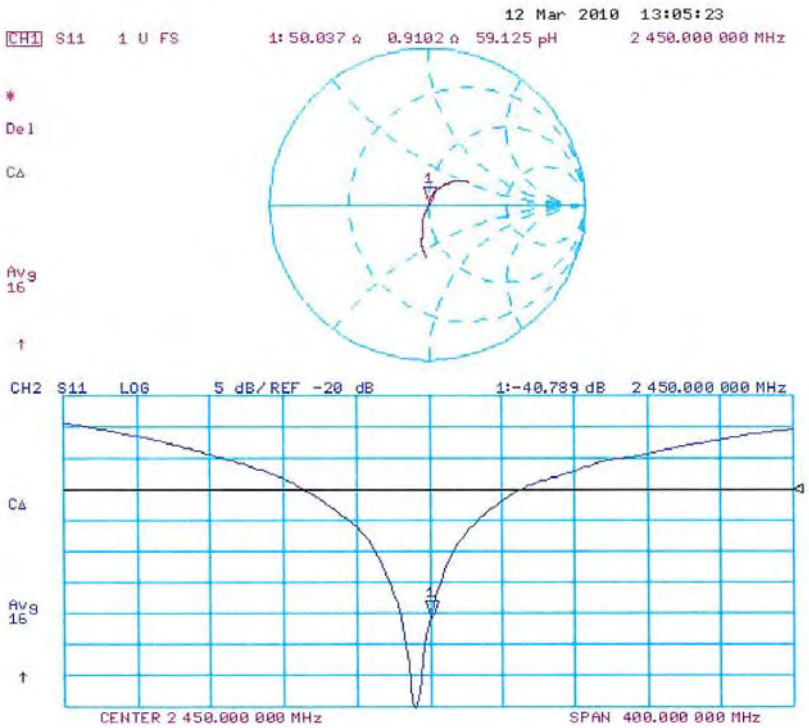
- Probe: ES3DV3 - SN3205; ConvF(4.31, 4.31, 4.31); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Body/d=10mm, Pin250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.9 V/m; Power Drift = -0.0047 dB
Peak SAR (extrapolated) = 27.1 W/kg
SAR(1 g) = 13 mW/g; SAR(10 g) = 6.06 mW/g
Maximum value of SAR (measured) = 17.2 mW/g



0 dB = 17.2mW/g

Impedance Measurement Plot for Body TSL



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

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

Accreditation No.: **SCS 108**

Client **Quietek (Auden)**

Certificate No: **D5GHzV2-1078_Mar10**

CALIBRATION CERTIFICATE

Object D5GHzV2 - SN: 1078

Calibration procedure(s) QA CAL-22.v1
Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date: March 11, 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 EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe EX3DV4	SN: 3503	05-Mar-10 (No. EX3-3503_Mar10)	Mar-11
DAE4	SN: 601	02-Mar-10 (No. DAE4-601_Mar10)	Mar-11
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

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

Issued: March 11, 2010

Calibration Laboratory of
Schmid & Partner
Engineering AG
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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEC Std 62209 Part 2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", Draft Version 0.9, December 2004

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

Additional Documentation:

c) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY5	V5.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 10 mm	
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 2.5 mm	
Frequency	5200 MHz ± 1 MHz 5500 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.7 ± 6 %	4.56 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm^2 (1 g) of Head TSL	condition	
SAR measured	100 mW input power	8.17 mW / g
SAR normalized	normalized to 1W	81.7 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**82.0 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.31 mW / g
SAR normalized	normalized to 1W	23.1 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 mW / g ± 19.5 % (k=2)**

Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.2 ± 6 %	4.82 mho/m ± 6 %
Head TSL temperature during test	(21.0 ± 0.2) °C	----	----

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	100 mW input power	8.73 mW / g
SAR normalized	normalized to 1W	87.3 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**87.5 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.45 mW / g
SAR normalized	normalized to 1W	24.5 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**24.5 mW / g ± 19.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.6 ± 6 %	5.08 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	100 mW input power	8.09 mW / g
SAR normalized	normalized to 1W	80.9 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**80.4 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.28 mW / g
SAR normalized	normalized to 1W	22.8 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**22.7 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	49.4 ± 6 %	5.44 mho/m ± 6 %
Body TSL temperature during test	(21.6 ± 0.2) °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.78 mW / g
SAR normalized	normalized to 1W	77.8 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**77.9 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.17 mW / g
SAR normalized	normalized to 1W	21.7 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.8 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.8 ± 6 %	5.81 mho/m ± 6 %
Body TSL temperature during test	(21.6 ± 0.2) °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	condition	
SAR measured	100 mW input power	8.35 mW / g
SAR normalized	normalized to 1W	83.5 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**83.6 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.30 mW / g
SAR normalized	normalized to 1W	23.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**23.0 mW / g ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.2 ± 6 %	6.18 mho/m ± 6 %
Body TSL temperature during test	(21.6 ± 0.2) °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.33 mW / g
SAR normalized	normalized to 1W	73.3 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**73.3 mW / g ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.02 mW / g
SAR normalized	normalized to 1W	20.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.2 mW / g ± 19.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	53.4 Ω - 8.7 jΩ
Return Loss	-20.9 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	52.8 Ω - 6.1 jΩ
Return Loss	-23.7 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	54.6 Ω - 3.8 jΩ
Return Loss	-24.9 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	53.6 Ω - 8.7 jΩ
Return Loss	-20.8 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	51.7 Ω - 5.2 jΩ
Return Loss	-25.4 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	55.6 Ω - 1.4 jΩ
Return Loss	-25.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.201 ns

After long term use with 40 W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 26, 2008

DASY5 Validation Report for Head TSL

Date/Time: 10.03.2010 17:25:49

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1078

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: HSL 5000
Medium parameters used: f = 5200 MHz; σ = 4.56 mho/m; ε_r = 36.7; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 4.82 mho/m; ε_r = 36.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.08 mho/m; ε_r = 35.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

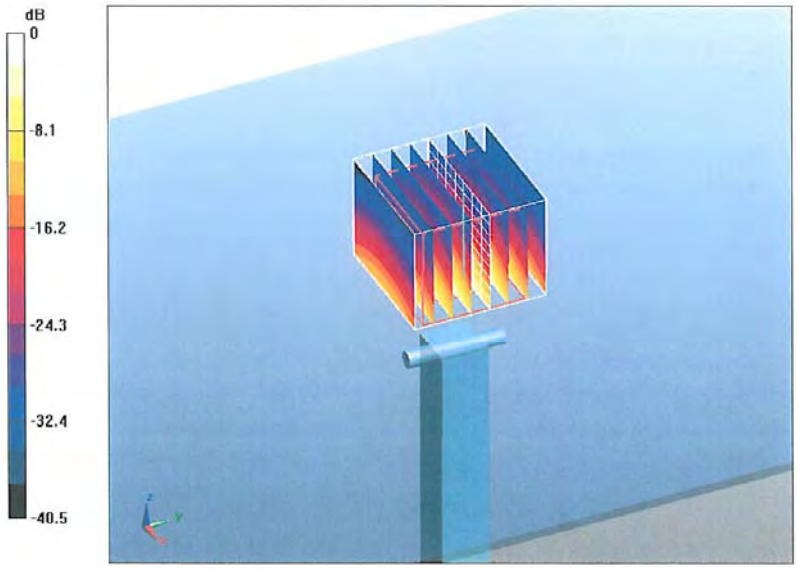
DASY5 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.36, 5.36, 5.36), ConvF(4.85, 4.85, 4.85), ConvF(4.74, 4.74, 4.74); Calibrated: 05.03.2010
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

D5GHzV2 Dipole (Head)/d=10mm, Pin=100mW, f=5200 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 64.8 V/m; Power Drift = 0.079 dB
Peak SAR (extrapolated) = 30.9 W/kg
SAR(1 g) = 8.17 mW/g; SAR(10 g) = 2.31 mW/g
Maximum value of SAR (measured) = 15.7 mW/g

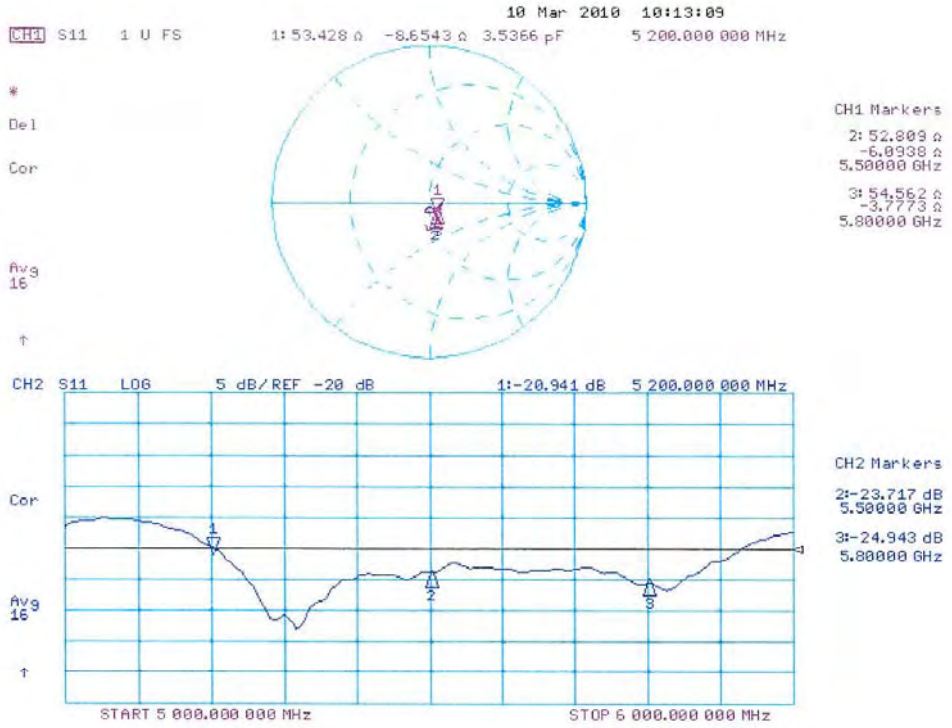
D5GHzV2 Dipole (Head)/d=10mm, Pin=100mW, f=5500 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 65.4 V/m; Power Drift = 0.074 dB
Peak SAR (extrapolated) = 35 W/kg
SAR(1 g) = 8.73 mW/g; SAR(10 g) = 2.45 mW/g
Maximum value of SAR (measured) = 17.1 mW/g

D5GHzV2 Dipole (Head)/d=10mm, Pin=100mW, f=5800 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 62.3 V/m; Power Drift = 0.099 dB
Peak SAR (extrapolated) = 33.5 W/kg
SAR(1 g) = 8.09 mW/g; SAR(10 g) = 2.28 mW/g
Maximum value of SAR (measured) = 16 mW/g



0 dB = 16mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date/Time: 11.03.2010 14:40:41

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1078

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: MSL 5000 MHz
Medium parameters used: f = 5200 MHz; σ = 5.47 mho/m; ε_r = 49.4; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 5.84 mho/m; ε_r = 48.7; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.21 mho/m; ε_r = 48.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

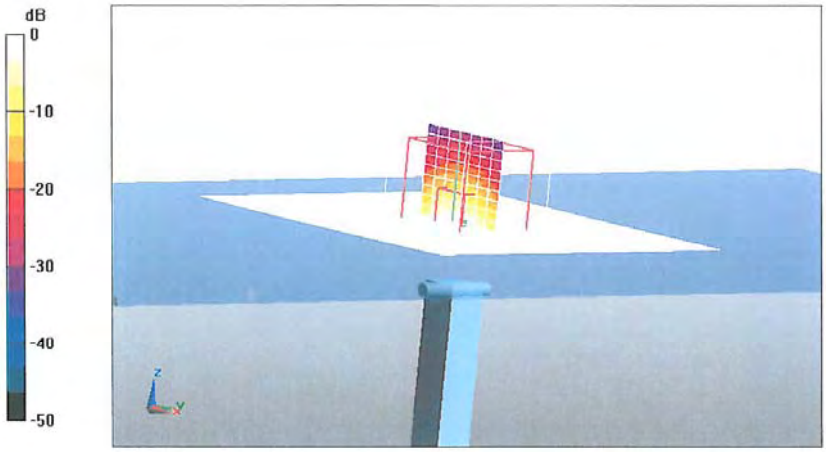
DASY5 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.88, 4.88, 4.88), ConvF(4.37, 4.37, 4.37), ConvF(4.57, 4.57, 4.57); Calibrated: 05.03.2010
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 02.03.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

D5GHzV2 Dipole (Body)/d=10mm, Pin=100mW, f=5200 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 59.5 V/m; Power Drift = 0.000976 dB
Peak SAR (extrapolated) = 29.6 W/kg
SAR(1 g) = 7.78 mW/g; SAR(10 g) = 2.17 mW/g
Maximum value of SAR (measured) = 15 mW/g

D5GHzV2 Dipole (Body)/d=10mm, Pin=100mW, f=5500 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 60.4 V/m; Power Drift = 0.013 dB
Peak SAR (extrapolated) = 34 W/kg
SAR(1 g) = 8.35 mW/g; SAR(10 g) = 2.3 mW/g
Maximum value of SAR (measured) = 16.4 mW/g

D5GHzV2 Dipole (Body)/d=10mm, Pin=100mW, f=5800 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 55.3 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 31.4 W/kg
SAR(1 g) = 7.33 mW/g; SAR(10 g) = 2.02 mW/g
Maximum value of SAR (measured) = 14.5 mW/g



0 dB = 14.5mW/g

Impedance Measurement Plot for Body TSL