Accredited testing laboratory

DAR registration number: DAT-P-176/94-D1

Test report no.	**: 1-0995-02-02/08**
Type identification	**: IntelliVue MP2**
Test specification	**: IEEE 1528-2003**
FCC-ID	**: PQC-WLANBV1**
IC-ID	**: 3549C-WLANBV1**

Table of Contents

1 General Information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

1.1.1 Statement of Compliance

The SAR values found for the IntelliVue MP2 Medical Monitoring System are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1 g tissue according to the FCC rule §2.1093, the ANSI/IEEE C 95.1:1999, the NCRP Report Number 86 for uncontrolled environment, according to the Health Canada's Safety Code 6 and the Industry Canada Radio Standards Specification RSS-102 for General Population/Uncontrolled exposure.
For body worn operation, this device has been tested and meets FCC RF exposure guidelines without any distance from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.
The measurement together with the test system set-up is described in chapter 2.3 of this test report. A detailed description of the equipment under test can be found in chapter 1.5.

Note : According to an applicant's declaration the hardware and software of IntelliVue MP2 is identical to those of IntelliVue X2. Therefore this test report is valid for both types of the medical monitoring system.

Test engineer:

2009-06-09	**Oleksandr Hnatovskiy**	
Date	Name	Signature

Technical responsibility for area of testing:

2009-06-09	**Thomas Vogler**	
Date	Name	Signature

1.2 Testing laboratory

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e-mail: info@ict.cetecom.de
Internet: http://www.cetecom-ict.de

State of accreditation: The Test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025. DAR registration number: DAT-P-176/94-D1

Test location, if different from CETECOM ICT Services GmbH

Name: ---
Street: ---
Town: ---
Country: ---
Phone: ---
Fax: ---

1.3 Details of applicant

Name: Philips Medizin Systeme Böblingen GmbH
Patient Monitoring
Street: Hewlett-Packard-Strasse 2
Town: 71034 Böblingen
Country: Germany

Contact: Stefan Breuer
Telephone: +49-7031-463 2321

1.4 Application details

Date of receipt of application: 2009-06-04
Date of receipt of test item: 2009-06-02
Start/Date of test: 2009-06-03
End of test: 2009-06-05

Person(s) present during the test: ---

1.5 Test item

Description of the test item:	Medical Monitoring System
Type identification:	IntelliVue MP2
FCC-ID:	PQC-WLANBV1
IC-ID:	3549C-WLANBV1
Serial number:	FH 840 000 702

Manufacturer:

Name:	Philips Medizin Systeme Böblingen GmbH
Street:	Hewlett-Packard-Strasse 2
Town:	71034 Böblingen
Country:	Germany

additional information on the DUT:

device type :	
device category :	portable device
test device production information :	identical prototype
exposure category:	uncontrolled environment / general population

device operating configurations :

operating mode(s)	DSSS / OFDM
operating frequency range	2412 MHz – 2462 MHz 5180 MHz – 5240 MHz 5260 MHz – 5320 MHz 5735 MHz – 5835 MHz
Measured maximum output power (conducted):	19.28 dBm (2.45 GHz) 20.58 dBm (5 GHz range)
hardware status :	839
software status :	n.a.
antenna type :	PCB antenna max. 1.68 dBi in 2.4GHz band max. 3.95 dBi in 5.15 – 5.85 GHz band
accessories / body-worn configurations :	ECG, SpO2, and NBP (medical accessories)
auxiliary equipment:	Laptop computer with Atheros control software

1.6 Test specification(s)

Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01)

IEEE 1528-2003 (April 21, 2003)

RSS-102: Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands (Issue 2 of November 2005)

Canada's Safety Code 6: Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz (99-EHD-237)

IEEE Std C95.3 – 1991, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave.

IEEE Std C95.1 – 1999, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.

1.6.1 RF exposure limits

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

Table 1: RF exposure limits

The limit applied in this test report is shown in **bold** letters

Notes:

* The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time

** The Spatial Average value of the SAR averaged over the whole body.

*** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.	☒
The deviations as specified in 2.5 were ascertained in the course of the tests performed.	☐

2.2 Test environment

General Environment conditions in the test area are as follows:

Ambient temperature: 20°C – 24°C
Tissue simulating liquid: 20°C – 24°C
Humidity: 40% – 50%

Exact temperature values for each test are shown in the table(s) under 2.5. and/or on the measurement plots.

2.3 Measurement and test set-up

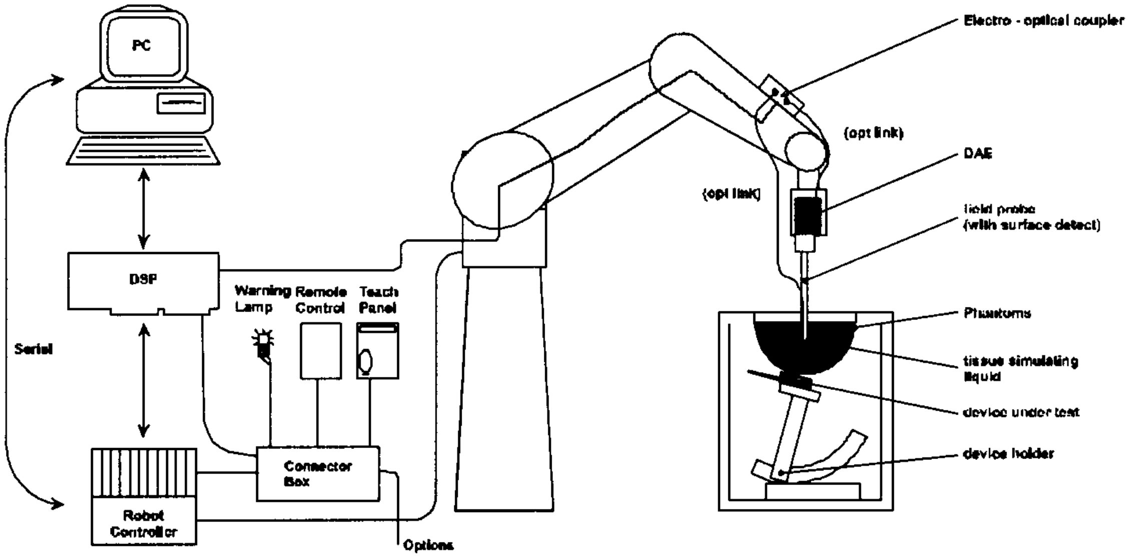
The measurement system is described in chapter 2.4.

The test setup for the system validation can be found in chapter 2.4.14.

A description of positioning and test signal control can be found in chapter 2.5 together with the test results.

2.4 Measurement system

2.4.1 System Description



The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).

- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

- A data acquisition electronic (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.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY4 measurement server.
- The DASY4 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 2000
- DASY4 software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System validation dipoles allowing to validate the proper functioning of the system.

2.4.2 Test environment

The DASY4 measurement system is placed at the head end of a room with dimensions:
5 x 2.5 x 3 m³, the SAM phantom is placed in a distance of 75 cm from the side walls and 1.1m from the rear wall. Above the test system a 1.5 x 1.5 m² array of pyramid absorbers is installed to reduce reflections from the ceiling.
Picture 1 of the photo documentation shows a complete view of the test environment.
The system allows the measurement of SAR values larger than 0.005 mW/g.

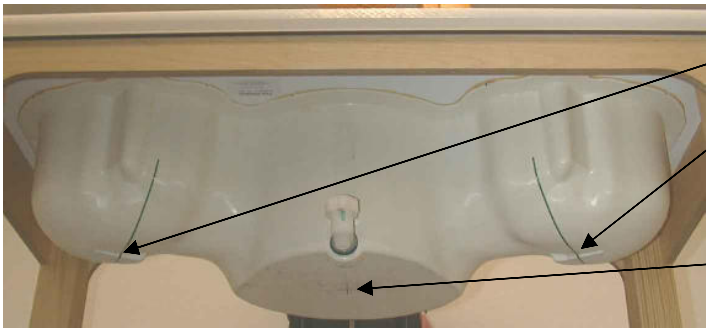
2.4.3 Probe description

Isotropic E-Field Probe ET3DV6 for Dosimetric Measurements

Technical data according to manufacturer information	
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection system Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycolether)
Calibration	In air from 10 MHz to 2.5 GHz In head tissue simulating liquid (HSL) at 900 (800-1000) MHz and 1.8 GHz (1700-1910 MHz) (accuracy ± 9.5%; k=2) Calibration for other liquids and frequencies upon request
Frequency	10 MHz to 3 GHz (dosimetry); Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.4 dB in HSL (rotation normal to probe axis)
Dynamic range	5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB
Optical Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces (ET3DV6 only)
Dimensions	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dosimetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms (ET3DV6)

2.4.4 Phantom description

The used SAM Phantom meets the requirements specified in Edition 01-01 of Supplement C to OET Bulletin 65 for Specific Absorption Rate (SAR) measurements.
The phantom consists of a fibreglass shell integrated in a wooden table. It allows left-hand and right-hand head as well as body-worn measurements with a maximum liquid depth of 18 cm in head position and 22 cm in planar position (body measurements). The thickness of the Phantom shell is 2 mm +/- 0.1 mm.



ear reference point right hand side

ear reference point left hand side

reference point flat position

2.4.5 Device holder description

The DASY4 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. 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. This device holder is used for standard mobile phones or PDA's only. If necessary an additional support of polystyrene material is used.

Larger DUT's (e.g. notebooks) cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values.
Therefore those devices are normally only tested at the flat part of the SAM.

2.4.6 Scanning procedure

The DASY4 installation includes predefined files with recommended procedures for measurements and validation. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

- The „reference“ and „drift“ measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. +/- 5 %.

- The „surface check“ measurement tests the optical surface detection system of the DASY4 system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

- The „area scan“ measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strenth is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The standard scan uses large grid spacing for faster measurement. Standard grid spacing for head measurements is 15 mm in x- and y- dimension. If a finer resolution is needed, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation.
  Results of this coarse scan are shown in annex 2.

- A „7x7x7 zoom scan” measures the field in a volume around the 2D peak SAR value acquired in the previous „coarse“ scan. This is a fine 7x7 grid where the robot additionally moves the probe in 7 steps along the z-axis away from the bottom of the Phantom. Grid spacing for the cube measurement is 5 mm in x and y-direction and 5 mm in z-direction. DASY4 is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in annex 2. Test results relevant for the specified standard (see chapter 1.6.) are shown in table form in chapter 2.5.

- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube 7x7x7 scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 2mm steps. This measurement shows the continuity of the liquid and can - depending in the field strength – also show the liquid depth. A z-axis scan of the measurement with maximum SAR value is shown in annex 2.

Note : In the 5 GHz range the requirements for measurements in the 3 – 6 GHz band have been taken into account.The grid spacing of the area scan is 1 cm. The cube scan consists of 8 x 8 x 8 measurement points with 4.3 x 4.3 x 3 mm grid spacing. (3 mm to the z-axis)

2.4.7 Spatial Peak SAR Evaluation

The spatial peak SAR - value for 1 and 10 g is evaluated after the Cube measurements have been done. The basis of the evaluation are the SAR values measured at the points of the fine cube grid consisting of 7 x 7 x 7 points. The algorithm that finds the maximal averaged volume is separated into three different stages.

- The data between the dipole center of the probe and the surface of the phantom are extrapolated. This data cannot be measured since the center of the dipole is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is about 1 mm (see probe calibration sheet). The extrapolated data from a cube measurement can be visualized by selecting ‘Graph Evaluated’.

- The maximum interpolated value is searched with a straight-forward algorithm. Around this maximum the SAR - values averaged over the spatial volumes (1g or 10 g) are computed using the 3d-spline interpolation algorithm. If the volume cannot be evaluated (i.e., if a part of the grid was cut off by the boundary of the measurement area) the evaluation will be started on the corners of the bottom plane of the cube.

- All neighboring volumes are evaluated until no neighboring volume with a higher average value is found.

Extrapolation

The extrapolation is based on a least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 3 cm along the z-axis, polynomials of order four are calculated. These polynomials are then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1 mm from each other.

Interpolation

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot"-condition [W. Gander, Computermathematik, p.141-150] (x, y and z -direction) [Numerical Recipes in C, Second Edition, p.123ff].

Volume Averaging

At First the size of the cube is calculated. Then the volume is integrated with the trapezoidal algorithm. 8000 points (20x20x20) are interpolated to calculate the average.

Advanced Extrapolation

DASY4 uses the advanced extrapolation option which is able to compansate boundary effects on E-field probes.

2.4.8 Data Storage and Evaluation

Data Storage

The DASY4 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension ".DA4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	Dcpi
Device parameters:	- Frequency	f
	- Crest factor	cf
Media parameters:	- Conductivity	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY4 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf/dcp_i$$

with	V_i	= compensated signal of channel i	(i = x, y, z)
	U_i	= input signal of channel i	(i = x, y, z)
	cf	= crest factor of exciting field	(DASY parameter)
	dcp_i	= diode compression point	(DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes: $$E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$$

H-field probes: $$H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2)/f$$

with	V_i	= compensated signal of channel i	(i = x, y, z)
	$Norm_i$	= sensor sensitivity of channel i [mV/(V/m)^2] for E-field Probes	(i = x, y, z)
	ConvF	= sensitivity enhancement in solution	
	a_{ij}	= sensor sensitivity factors for H-field probes	
	f	= carrier frequency [GHz]	
	E_i	= electric field strength of channel i in V/m	
	H_i	= magnetic field strength of channel i in A/m	

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_Y^2 + E_z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \sigma) / (\rho \cdot 1000)$$

with	SAR	= local specific absorption rate in mW/g
	E_{tot}	= total field strength in V/m
	σ	= conductivity in [mho/m] or [Siemens/m]
	ρ	= equivalent tissue density in g/cm^3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}^2 / 3770 \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with	P_{pwe}	= equivalent power density of a plane wave in mW/cm^2
	E_{tot}	= total electric field strength in V/m
	H_{tot}	= total magnetic field strength in A/m

2.4.9 Test equipment utilized

This table gives a complete overview of the SAR measurement equipment

Devices used during the test described in chapter 2.5. are marked ☒

	Manufacturer	Device	Type	Serial number	Date of last calibration)*
☒	Schmid & Partner Engineering AG	Dosimetric E-Field Probe	EX3DV4	3566	August 19, 2008
☒	Schmid & Partner Engineering AG	Dosimetric E-Field Probe	ET3DV6	1559	January 14, 2009
☐	Schmid & Partner Engineering AG	900 MHz System Validation Dipole	D900V2	102	August 18, 2008
☐	Schmid & Partner Engineering AG	1800 MHz System Validation Dipole	D1800V2	287	August 19, 2008
☐	Schmid & Partner Engineering AG	1900 MHz System Validation Dipole	D1900V2	531	May 20, 2009
☒	Schmid & Partner Engineering AG	2450 MHz System Validation Dipole	D2450V2	710	August 20, 2008
☒	Schmid & Partner Engineering AG	5 GHz System Validation Dipole	D5GHzV2	1055	January 15, 2009
☒	Schmid & Partner Engineering AG	Data acquisition electronics	DAE3V1	477	May 14, 2009
☒	Schmid & Partner Engineering AG	Software	DASY 4 V4.7	---	N/A
☒	Schmid & Partner Engineering AG	Phantom	SAM	1041	N/A
☒	Rohde & Schwarz	Universal Radio Communication Tester	CMU 200	106826	January 15, 2009
☒	Hewlett Packard)*	Network Analyser 300 kHz to 6 GHz	8753C	2937U00269	January 9, 2009
☒	Hewlett Packard)*	Network Analyser 300 kHz to 6 GHz	85047A	2936A00872	January 9, 2009
☒	Hewlett Packard	Dielectric Probe Kit	85070C	US99360146	N/A
☒	Hewlett Packard	Signal Generator	8665A	2833A00112	January 8, 2009
☒	Hewlett Packard	Signal Generator	8671B	2823A00656	January 9, 2009
☒	Amplifier Reasearch	Amplifier	25S1G4 (25 Watt)	20452	N/A
☒	Hewlett Packard	Microwave Amplifier	8349B	2644A02652	N/A
☒	Rohde & Schwarz	Power Meter	NRP	101367	January 9, 2009
☒	Rohde & Schwarz	Power Meter Sensor	NRP Z22	100227	January 9, 2009
☒	Rohde & Schwarz	Power Meter Sensor	NRP Z22	100234	January 9, 2009

)* : Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

2.4.10 Tissue simulating liquids: dielectric properties

The following materials are used for producing the tissue-equivalent materials.
(liquids used for tests described in chapter 2.5. are marked with ☒) :

Ingredients (% of weight)	Frequency (MHz)	
frequency band	☒ 2450	☒ 5000
Tissue Type	Body	Body
Water	73.2	64 - 78
Salt (NaCl)	0.04	2 - 3
Sugar	0.0	0.0
HEC	0.0	0.0
Bactericide	0.0	0.0
Triton X-100	0.0	0.0
DGBE	26.7	0.0
Emulsifiers	0.0	9 - 15
Mineral Oil	0.0	11 - 18

Table 2: Body tissue dielectric properties

Salt: 99+% Pure Sodium Chloride
Sugar: 98+% Pure Sucrose
Water: De-ionized, 16MΩ+ resistivity
HEC: Hydroxyethyl Cellulose
DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether

Note : Due to their availability body tissue simulating liquids as defined by FCC OET Bulletin 65 Supplement C are generally used for body worn SAR testing according to European standards.

2.4.11 Tissue simulating liquids: parameters

Used Target Frequency	Target Body Tissue		Measured Body Tissue		Measured Date
[MHz]	Permittivity	Conductivity [S/m]	Permittivity	Conductivity [S/m]	
2450	52.7	1.95	52.5	1.99	2009-06-03
5200	49.0	5.30	48.0	5.34	2009-06-04
5320	49.0	5.30	47.7	5.49	2009-06-04
5745	48.2	6.00	46.8	6.03	2009-06-05
5800	48.2	6.00	46.7	6.10	2009-06-05

Table 3: Parameter of the body tissue simulating liquid

Note: The dielectric properties have been measured using the contact probe method at 22°C.

2.4.12 Measurement uncertainty evaluation for SAR test

The overall combined measurement uncertainty of the measurement system is ± 10,3% (K=1).
The expanded uncertainty (k=2) is assessed to be ± 20.6%
This measurement uncertainty budget is suggested by IEEE P1528 and determined by Schmid & Partner Engineering AG. The breakdown of the individual uncertainties is as follows:

Error Sources	Uncertainty Value	Probability Distribution	Divi-sor	c_i 1g	c_i 10g	Standard Uncertainty 1g	Standard Uncertainty 10g	v_i^2 or v_{eff}
Measurement System								
Probe calibration	± 4.8%	Normal	1	1	1	± 4.8%	± 4.8%	∞
Axial isotropy	± 4.7%	Rectangular	√3	0.7	0.7	± 1.9%	± 1.9%	∞
Hemispherical isotropy	± 9.6%	Rectangular	√3	0.7	0.7	± 3.9%	± 3.9%	∞
Spatial resolution	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%	∞
Boundary effects	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Probe linearity	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%	∞
System detection limits	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Readout electronics	± 1.0%	Normal	1	1	1	± 1.0%	± 1.0%	∞
Response time	± 0.8%	Rectangular	√3	1	1	± 0.5%	± 0.5%	∞
Integration time	± 2.6%	Rectangular	√3	1	1	± 1.5%	± 1.5%	∞
RF ambient conditions	± 3.0%	Rectangular	√3	1	1	± 1.7%	± 1.7%	∞
Probe positioner	± 0.4%	Rectangular	√3	1	1	± 0.2%	± 0.2%	∞
Probe positioning	± 2.9%	Rectangular	√3	1	1	± 1.7%	± 1.7%	∞
Max. SAR evaluation	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Test Sample Related								
Device positioning	± 2.9%	Normal	1	1	1	± 2.9%	± 2.9%	145
Device holder uncertainty	± 3.6%	Normal	1	1	1	± 3.6%	± 3.6%	5
Power drift	± 5.0%	Rectangular	√3	1	1	± 2.9%	± 2.9%	∞
Phantom and Set-up								
Phantom uncertainty	± 4.0%	Rectangular	√3	1	1	± 2.3%	± 2.3%	∞
Liquid conductivity (target)	± 5.0%	Rectangular	√3	0.64	0.43	± 1.8%	± 1.2%	∞
Liquid conductivity (meas.)	± 2.5%	Normal	1	0.64	0.43	± 1.6%	± 1.1%	∞
Liquid permittivity (target)	± 5.0%	Rectangular	√3	0.6	0.49	± 1.7%	± 1.4%	∞
Liquid permittivity (meas.)	± 2.5%	Normal	1	0.6	0.49	± 1.5%	± 1.2%	∞
Combined Uncertainty						± 10.3%	± 10.0%	330
Expanded Std. Uncertainty						**± 20.6%**	**± 20.1%**	

Table 4: Measurement uncertainties

2.4.13 Measurement uncertainty evaluation for SAR test > 3 GHz

The overall combined measurement uncertainty of the measurement system is ± 11,5% (K=1).
The expanded uncertainty (k=2) is assessed to be ± 23.0%
This measurement uncertainty budget is suggested by IEEE P1528 and determined by Schmid & Partner Engineering AG. The breakdown of the individual uncertainties is as follows:

Error Sources	Uncertainty Value	Probability Distribution	Divi-sor	c_i 1g	c_i 10g	Standard Uncertainty 1g	Standard Uncertainty 10g	v_i^2 or v_{eff}
Measurement System								
Probe calibration	± 6.3%	Normal	1	1	1	± 6.3%	± 6.3%	∞
Axial isotropy	± 4.7%	Rectangular	√3	0.7	0.7	± 1.9%	± 1.9%	∞
Hemispherical isotropy	± 9.6%	Rectangular	√3	0.7	0.7	± 3.9%	± 3.9%	∞
Spatial resolution	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%	∞
Boundary effects	± 2.0%	Rectangular	√3	1	1	± 1.2%	± 1.2%	∞
Probe linearity	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%	∞
System detection limits	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Readout electronics	± 1.0%	Normal	1	1	1	± 1.0%	± 1.0%	∞
Response time	± 0.8%	Rectangular	√3	1	1	± 0.5%	± 0.5%	∞
Integration time	± 2.6%	Rectangular	√3	1	1	± 1.5%	± 1.5%	∞
RF ambient conditions	± 3.0%	Rectangular	√3	1	1	± 1.7%	± 1.7%	∞
Probe positioner	± 0.8%	Rectangular	√3	1	1	± 0.4%	± 0.4%	∞
Probe positioning	± 5.8%	Rectangular	√3	1	1	± 3.4%	± 3.4%	∞
Max. SAR evaluation	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Test Sample Related								
Device positioning	± 2.9%	Normal	1	1	1	± 2.9%	± 2.9%	145
Device holder uncertainty	± 3.6%	Normal	1	1	1	± 3.6%	± 3.6%	5
Power drift	± 5.0%	Rectangular	√3	1	1	± 2.9%	± 2.9%	∞
Phantom and Set-up								
Phantom uncertainty	± 4.0%	Rectangular	√3	1	1	± 2.3%	± 2.3%	∞
Liquid conductivity (target)	± 5.0%	Rectangular	√3	0.64	0.43	± 1.8%	± 1.2%	∞
Liquid conductivity (meas.)	± 2.5%	Normal	1	0.64	0.43	± 1.6%	± 1.1%	∞
Liquid permittivity (target)	± 5.0%	Rectangular	√3	0.6	0.49	± 1.7%	± 1.4%	∞
Liquid permittivity (meas.)	± 2.5%	Normal	1	0.6	0.49	± 1.5%	± 1.2%	∞
Combined Uncertainty						± 11.5%	± 11.2%	330
Expanded Std. Uncertainty						**± 23.0 %**	**± 22.5%**	

Table 5: Measurement uncertainties > 3 GHz

2.4.14 Measurement uncertainty evaluation for system validation

The overall combined measurement uncertainty of the measurement system is ± 8.4% (K=1).
The expanded uncertainty (k=2) is assessed to be ± 16.8%
This measurement uncertainty budget is suggested by IEEE P1528 and determined by Schmid & Partner Engineering AG. The breakdown of the individual uncertainties is as follows:

Error Sources	Uncertainty Value	Probability Distribution	Divi-sor	c_i 1g	c_i 10g	Standard Uncertainty 1g	Standard Uncertainty 10g	v_i^2 or v_{eff}
Measurement System								
Probe calibration	± 4.8%	Normal	1	1	1	± 4.8%	± 4.8%	∞
Axial isotropy	± 4.7%	Rectangular	√3	0.7	0.7	± 1.9%	± 1.9%	∞
Hemispherical isotropy	± 0.0%	Rectangular	√3	0.7	0.7	± 0.0%	± 3.9%	∞
Boundary effects	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Probe linearity	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%	∞
System detection limits	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Readout electronics	± 1.0%	Normal	1	1	1	± 1.0%	± 1.0%	∞
Response time	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%	∞
Integration time	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%	∞
RF ambient conditions	± 3.0%	Rectangular	√3	1	1	± 1.7%	± 1.7%	∞
Probe positioner	± 0.4%	Rectangular	√3	1	1	± 0.2%	± 0.2%	∞
Probe positioning	± 2.9%	Rectangular	√3	1	1	± 1.7%	± 1.7%	∞
Max. SAR evaluation	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Test Sample Related								
Dipole axis to liquid distance	± 2.0%	Normal	1	1	1	± 1.2%	± 1.2%	∞
Power drift	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%	∞
Phantom and Set-up								
Phantom uncertainty	± 4.0%	Rectangular	√3	1	1	± 2.3%	± 2.3%	∞
Liquid conductivity (target)	± 5.0%	Rectangular	√3	0.64	0.43	± 1.8%	± 1.2%	∞
Liquid conductivity (meas.)	± 2.5%	Normal	1	0.64	0.43	± 1.6%	± 1.1%	∞
Liquid permittivity (target)	± 5.0%	Rectangular	√3	0.6	0.49	± 1.7%	± 1.4%	∞
Liquid permittivity (meas.)	± 2.5%	Normal	1	0.6	0.49	± 1.5%	± 1.2%	∞
Combined Uncertainty						**± 8.4%**	**± 8.1%**	
Expanded Std. Uncertainty						**± 16.8%**	**± 16.2%**	

Table 6: Measurement uncertainties

2.4.15 Measurement uncertainty evaluation for system validation > 3 GHz

The overall combined measurement uncertainty of the measurement system is ± 9.9% (K=1).
The expanded uncertainty (k=2) is assessed to be ± 19.7%
This measurement uncertainty budget is suggested by IEEE P1528 and determined by Schmid & Partner Engineering AG. The breakdown of the individual uncertainties is as follows:

Error Sources	Uncertainty Value	Probability Distribution	Divi-sor	c_i 1g	c_i 10g	Standard Uncertainty 1g	Standard Uncertainty 10g	v_i^2 or v_{eff}
Measurement System								
Probe calibration	± 6.3%	Normal	1	1	1	± 6.3%	± 6.3%	∞
Axial isotropy	± 4.7%	Rectangular	√3	0.7	0.7	± 1.9%	± 1.9%	∞
Hemispherical isotropy	± 0.0%	Rectangular	√3	0.7	0.7	± 0.0%	± 3.9%	∞
Boundary effects	± 2.0%	Rectangular	√3	1	1	± 1.2%	± 1.2%	∞
Probe linearity	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%	∞
System detection limits	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Readout electronics	± 1.0%	Normal	1	1	1	± 1.0%	± 1.0%	∞
Response time	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%	∞
Integration time	± 0.0%	Rectangular	√3	1	1	± 0.0%	± 0.0%	∞
RF ambient conditions	± 3.0%	Rectangular	√3	1	1	± 1.7%	± 1.7%	∞
Probe positioner	± 0.8%	Rectangular	√3	1	1	± 0.4%	± 0.4%	∞
Probe positioning	± 5.8%	Rectangular	√3	1	1	± 3.4%	± 3.4%	∞
Max. SAR evaluation	± 1.0%	Rectangular	√3	1	1	± 0.6%	± 0.6%	∞
Test Sample Related								
Dipole axis to liquid distance	± 2.0%	Normal	1	1	1	± 1.2%	± 1.2%	∞
Power drift	± 4.7%	Rectangular	√3	1	1	± 2.7%	± 2.7%	∞
Phantom and Set-up								
Phantom uncertainty	± 4.0%	Rectangular	√3	1	1	± 2.3%	± 2.3%	∞
Liquid conductivity (target)	± 5.0%	Rectangular	√3	0.64	0.43	± 1.8%	± 1.2%	∞
Liquid conductivity (meas.)	± 2.5%	Normal	1	0.64	0.43	± 1.6%	± 1.1%	∞
Liquid permittivity (target)	± 5.0%	Rectangular	√3	0.6	0.49	± 1.7%	± 1.4%	∞
Liquid permittivity (meas.)	± 2.5%	Normal	1	0.6	0.49	± 1.5%	± 1.2%	∞
Combined Uncertainty						**± 9.9%**	**± 9.6%**	
Expanded Std. Uncertainty						**± 19.7%**	**± 19.2%**	

Table 7: Measurement uncertainties for validation > 3GHz

2.4.16 System validation

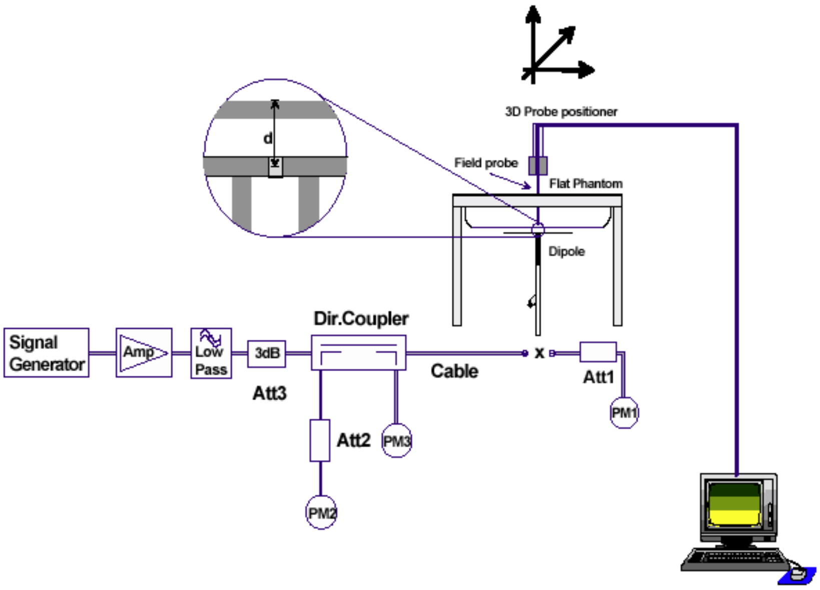
The system validation is performed for verifying the accuracy of the complete measurement system and performance of the software. The system validation is performed with tissue equivalent material according to IEEE P1528 (described above). The following table shows validation results for all frequency bands and tissue liquids used during the tests of the test item described in chapter 1.5.
(graphic plot(s) see annex 1).

Validation Kit	Frequency	Target Peak SAR (1000 mW) (+/- 10%)	Target SAR_{1g} (1000 mW) (+/- 10%)	Measured Peak SAR (1000 mW)	Measured SAR_{1g} (1000 mW)	Measured date
D2450V2 S/N: 710	2450 MHz body	99.6 mW/g	49.4 mW/g	118.0 mW/g	51.8 mW/g	2009-06-03
D5GHzV2 S/N: 1055	5200 MHz body	302 mW/g	78.7 mW/g	291 mW/g	74.2 mW/g	2009-06-04
D5GHzV2 S/N: 1055	5800 MHz body	312 mW/g	71.8 mW/g	340 mW/g	72.3 mW/g	2009-06-05

Table 8: Results system validation
.

2.4.17 Validation procedure

The validation is performed by using a validation dipole which is positioned parallel to the planar part of the SAM phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a plexiglass spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 1000 mW. To adjust this power a power meter is used. The power sensor is connected to the cable before the validation to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the validation to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).
Validation results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system.



2.5 Test results (Body SAR)

The table contains the measured SAR values averaged over a mass of 1 g					
Channel / frequency	Position	Bit rate	SAR value	Limit	Liquid temperature
6 / 2437 MHz	front	1 MBit/s DSSS	**0.443 W/kg**	1.6 W/kg	21.9 °C
6 / 2437 MHz	rear	1 MBit/s DSSS	0.035 W/kg	1.6 W/kg	21.9 °C
6 / 2437 MHz	side	1 MBit/s DSSS	0.288 W/kg	1.6 W/kg	21.9 °C
6 / 2437 MHz	front	6 MBit/s OFDM	0.404 W/kg	1.6 W/kg	21.9 °C

Table 9: Test results 2450 MHz (Body SAR)

The table contains the measured SAR values averaged over a mass of 1 g					
Channel / frequency	Position	Bit rate	SAR value	Limit	Liquid temperature
36 / 5180 MHz	rear	6 MBit/s OFDM	0.004 W/kg	1.6 W/kg	21.6 °C
36 / 5180 MHz	front	6 MBit/s OFDM	0.126 W/kg	1.6 W/kg	21.6 °C
36 / 5180 MHz	side	6 MBit/s OFDM	0.128 W/kg	1.6 W/kg	21.7 °C
64 / 5320 MHz	rear	6 MBit/s OFDM	0.001 W/kg	1.6 W/kg	21.6 °C
64 / 5320 MHz	front	6 MBit/s OFDM	0.210 W/kg	1.6 W/kg	21.7 °C
64 / 5320 MHz	side	6 MBit/s OFDM	0.204 W/kg	1.6 W/kg	21.7 °C
149 / 5745 MHz	rear	6 MBit/s OFDM	0.038 W/kg	1.6 W/kg	21.4 °C
149 / 5745 MHz	front	6 MBit/s OFDM	**0.340 W/kg**	1.6 W/kg	21.5 °C
149 / 5745 MHz	side	6 MBit/s OFDM	0.336 W/kg	1.6 W/kg	21.5 °C

Table 10: Test results 5 GHz (Body SAR)

Note: The SAR test shall be performed at the high, middle and low frequency channels of each operating mode. If the SAR measured at mid-band channel for each test configuration is at least 3.0 dB lower than the SAR limit (< 0.8 W/kg), testing at the high and low channels is optional.

2.5.1 Description of test positions and setup during SAR evaluation

The device was tested touching the SAM phantom with the rear side, front side and the antenna side. Rear and front side are most possible orientations during body worn use of the DUT. Additional medical cabling was connected to the DUT during the test. The WLAN module was supplied with external power. The same connector was also used to program test frequencies, power levels and 100% duty cycle via a control software installed on a notebook computer.
The followings power settings declared by the manufacturer were used by the control software. All measurements are performed with the specified settings.
The settings correspond to those used in FCC Part 15.247 and Part 15.407 reports to achieve identical output power conditions.

```
# target power file for AR6000 802.11a/b/g with super a/g TB111 Reference Design card

# 11a Target Power table:
#       Rules:
#               1. up to a maximum of 8 test frequencies
#               2. test frequencies DO NOT need to cover the entire range of 5180-5850. It
#                  is allowed to provide data for a smaller range. for all channels
#                  outside of test frequencies range, target power will be assumed 0dB.
#               3. specify mask/PER limited target power for various rates
#
#BEGIN_11a_TARGET_POWER_TABLE
#  test_frequencies   6-24_target  36_target 48_target   54_target
  5180                  15          15        15          15
  5240                  15          15        15          15
  5320                  15          15        15          15
  5440                  15          15        15          15
  5460                  15          15        15          15
  5500                  15          15        15          15
  5700                  15          15        15          15
  5745                  15          15        15          15
#END_11a_TARGET_POWER_TABLE


# 11b Target Power table:
#       Rules:
#               1. Need to define exactly 2 test frequencies in 2.412 - 2.484 G range.
#               2. test frequencies DO NOT need to cover the entire range of 2412-2484. It
#                  is allowed to provide data for a smaller range. for all channels
#                  outside of test frequencies range, target power will be assumed 0dB.
#               3. specify mask/PER limited target power for various rates
#
#BEGIN_11b_TARGET_POWER_TABLE
#  test_frequencies   1_target   2_target 5.5_target 11_target
  2412                  15         15        15          15
  2484                  15         15        15          15
#END_11b_TARGET_POWER_TABLE


# ofdm@2p4 Target Power table:
#       Rules:
#               1. up to a maximum of 3 test frequencies in 2.412 - 2.484 G range
#               2. test frequencies DO NOT need to cover the entire range of 2412-2484. It
#                  is allowed to provide data for a smaller range. for all channels
#                  outside of test frequencies range, target power will be assumed 0dB.
```

```
#                 3. specify mask/PER limited target power for various rates
#
#BEGIN_11g_TARGET_POWER_TABLE
# test_frequencies  6-24_target  36_target 48_target  54_target
  2412                 15          15        15         15
  2437                 15          15        15         15
  2472                 15          15        15         15
#END_11g_TARGET_POWER_TABLE


# Test Groups:
#    Rules:
#                 1. Specify up to 8 band edges for each test group.
#                 2. If no backoff desired at a band edge, give a large number (e.g, 30) so
#                    that the driver determined limit becomes the target power.
#

#BEGIN_TEST_GROUPS

# Test Group 1: US and CANADA (FCC)
#        test_group_code        BE1      BE2      BE3      BE4      BE5      BE6      BE7      BE8
         0x10             5180  5200     5260     5320     5500     5520     5700     5745
                              11       11         15         15        17        17        17          17  # Band Edge Max
Power
                            0      1        1        0        0        1        0          1  # in-band flag


# Test Group 3: US and CANADA (FCC) 802.11b mode CTL
# test_group_code       BE1      BE2      BE3
         0x11           2412     2437     2442
                          17     18       17       # Band Edge Max Power
                          1      0        1        # in-band flag

# Test Group 4: US and CANADA (FCC) 802.11g mode CTL
# test_group_code       BE1      BE2      BE3      BE4
         0x12           2412     2417     2457     2462
                          16     18       18       17       # Band Edge Max Power
                          0      1        0        0        # in-band flag


# Test Group 6: JAPAN (MKK)
# test_group_code       BE1      BE2
         0x40           5170     5230
                          17     17          # Band Edge Max Power
                          0      0           # in-band flag


# Test Group 7: EUROPE (ETSI)
# test_group_code       BE1      BE2      BE3      BE4      BE5      BE6      BE7
         0x30           5180     5320     5500     5700     5745     5765     5825
                          17     17       17       17      17      17 17      # Band Edge Max Power
                          0      0        0        0        0        1        0        # in-band flag

# Test Group 8: EUROPE (ETSI) 802.11b mode CTL
#        test_group_code        BE1      BE2      BE3
         0x31           2412     2417     2472
                          16     16       16       # Band Edge Max Power
                          0      1        0        # in-band flag
#END_TEST_GROUPS
```

2.6 Test results (conducted power measurement)

For the measurements Rhode & Schwarz NRP was used.
The output power was measured using an integrated RF connector and attached power sensor.
With 100% duty cycle average output power is equal to peak power.

WLAN 2.4 GHz		**WLAN 5.2 GHz**	
Channel / frequency	avg. output power	Channel / frequency	avg. output power
1 / 2412 MHz	18.1 dBm	36 / 5180 MHz	12.8 dBm
6 / 2437 MHz	19.3 dBm	40 / 5200 MHz	12.5 dBm
11 / 2462 MHz	17.7 dBm	48 / 5240 MHz	12.6 dBm
WLAN 5.3 GHz		**WLAN 5.8 GHz**	
Channel / frequency	avg. output power	Channel / frequency	avg. output power
52 / 5260 MHz	16.2 dBm	149 / 5745 MHz	20.6 dBm
56 / 5280 MHz	16.7 dBm	157 / 5775 MHz	20.6 dBm
64 / 5320 MHz	16.9 dBm	165 / 5825 MHz	20.6 dBm

Table 11: Test results conducted power measurement

Annex 1 System performance verification

Date/Time: 03.06.2009 09:25:08Date/Time: 03.06.2009 09:28:27

SystemPerformanceCheck-D2450 body 2009-06-03

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:710

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used: f = 2450 MHz; σ = 1.99 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1559; ConvF(3.91, 3.91, 3.91); Calibrated: 14.01.2009
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

d=10mm, Pin=1000mW/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 70.3 mW/g

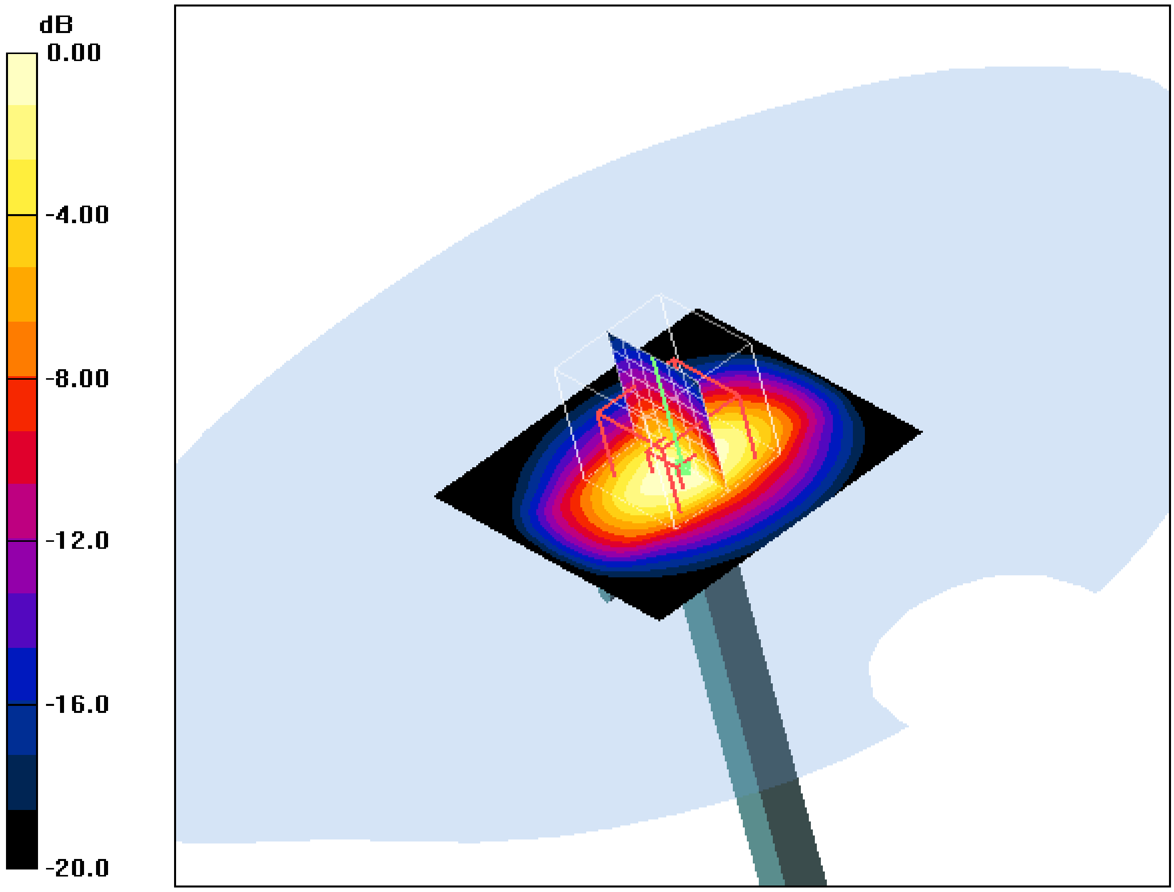
d=10mm, Pin=1000mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 176.0 V/m; Power Drift = -0.120 dB

Peak SAR (extrapolated) = 118.0 W/kg

SAR(1 g) = 51.8 mW/g; SAR(10 g) = 24.1 mW/g

Maximum value of SAR (measured) = 57.9 mW/g



0 dB = 57.9mW/g

Additional information:

position or distance of DUT to SAM (if not standard head positions) :

ambient temperature: 21.0°C; liquid temperature: 21.0°C

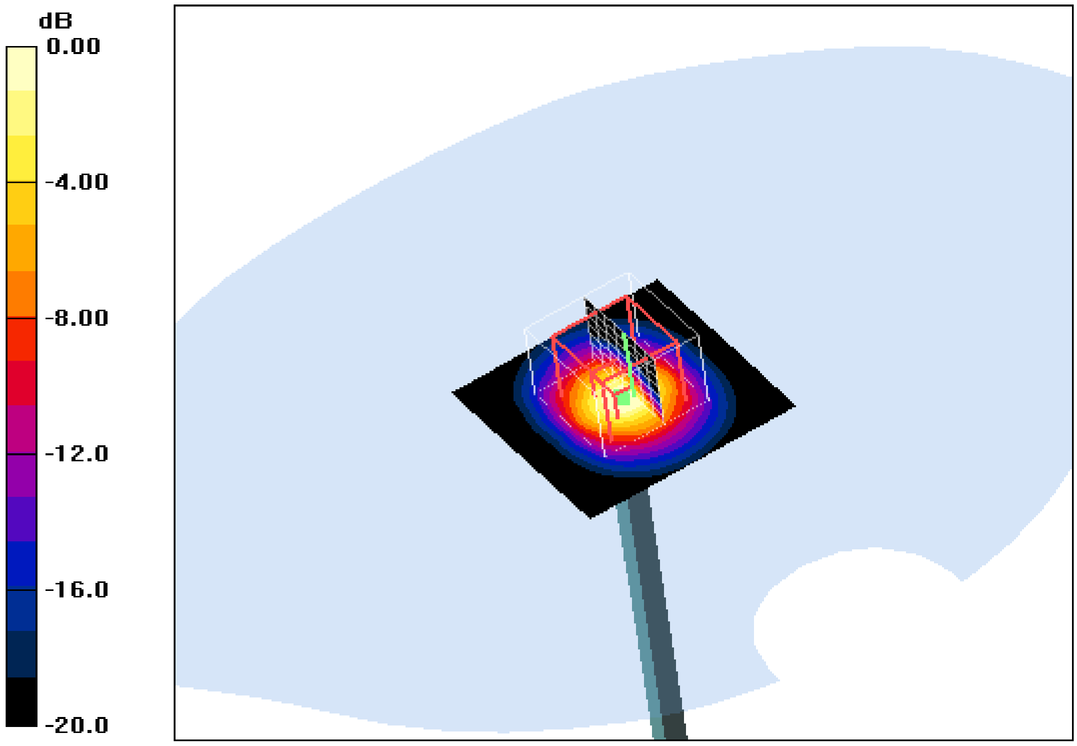
Date/Time: 04.06.2009 09:53:01Date/Time: 04.06.2009 10:33:04

SystemPerformanceCheck-D5200

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1055
Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: M5500 Medium parameters used: f = 5200 MHz; σ = 5.34 mho/m; ε_r = 48; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3566; ConvF(4.02, 4.02, 4.02); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

d=10mm, Pin=100mW/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.1 mW/g

d=10mm, Pin=100mW/Zoom Scan (8x8x8) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 41.0 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 29.1 W/kg
SAR(1 g) = 7.42 mW/g; SAR(10 g) = 2.06 mW/g
Maximum value of SAR (measured) = 14.6 mW/g



0 dB = 14.6mW/g

Additional information:
position or distance of DUT to SAM (if not standard head positions) :
ambient temperature: 22.3°C; liquid temperature: 21.1°C
Deviation of target: -5.7% (1 g); -6.4% (10 g)

Date/Time: 05.06.2009 08:27:07Date/Time: 05.06.2009 08:31:40

SystemPerformanceCheck-D5800

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1055

Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: M5500 Medium parameters used: f = 5800 MHz; σ = 6.1 mho/m; ε_r = 46.7; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3566; ConvF(3.61, 3.61, 3.61); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

d=10mm, Pin=100mW/Area Scan (61x61x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 16.1 mW/g

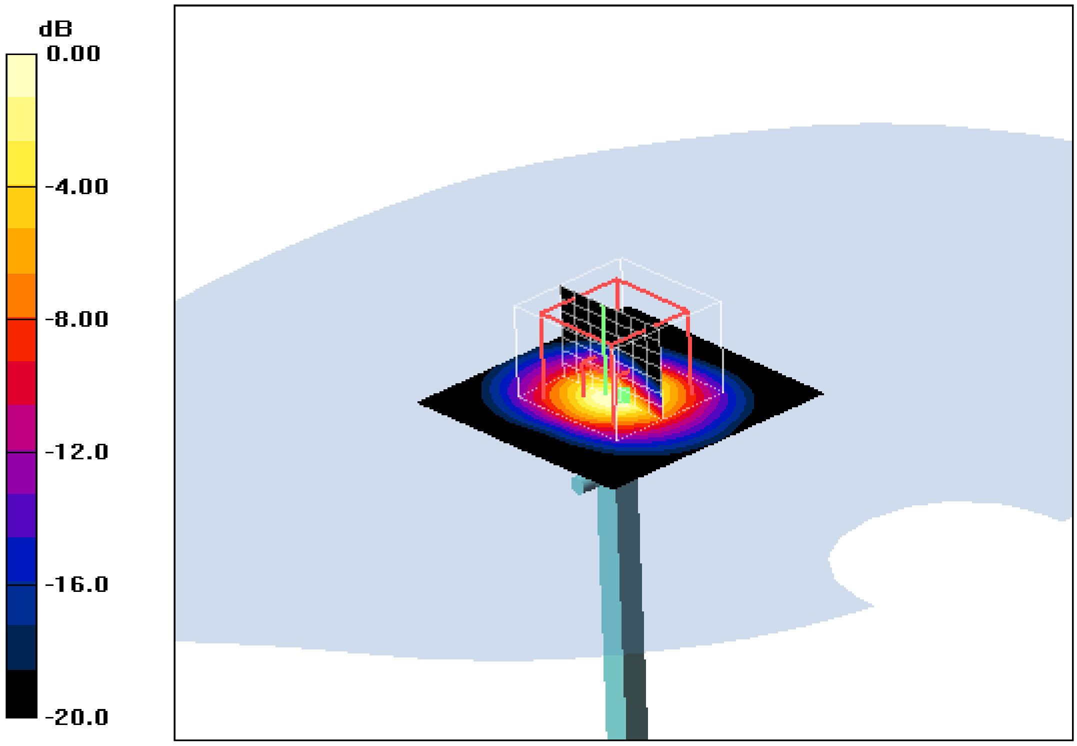
d=10mm, Pin=100mW/Zoom Scan (8x8x8) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 36.6 V/m; Power Drift = -0.118 dB

Peak SAR (extrapolated) = 34.0 W/kg

SAR(1 g) = 7.23 mW/g; SAR(10 g) = 1.99 mW/g

Maximum value of SAR (measured) = 14.4 mW/g



0 dB = 14.4mW/g

Additional information:

position or distance of DUT to SAM (if not standard head positions) :

ambient temperature: 22.7°C; liquid temperature: 21.0°C

Deviation of target: +0.7% (1 g); +1% (10 g)

Annex 2 Measurement results (printout from DASY TM)

Remark: results of conducted power measurements: see chapter 2.5/2.6 (if applicable)

Annex 2.1 WLAN 2450 MHz body

Date/Time: 03.06.2009 14:55:00Date/Time: 03.06.2009 15:10:22

P1528_OET65-Body-WLAN2450

DUT: IntelliVue; Type: MP2; Serial: DE716V0213

Communication System: WLAN 2450 US; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: M2450 Medium parameters used (interpolated): f = 2437 MHz; σ = 1.99 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1559; ConvF(3.91, 3.91, 3.91); Calibrated: 14.01.2009
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Front position - Middle 802.11b/Area Scan (91x151x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.473 mW/g

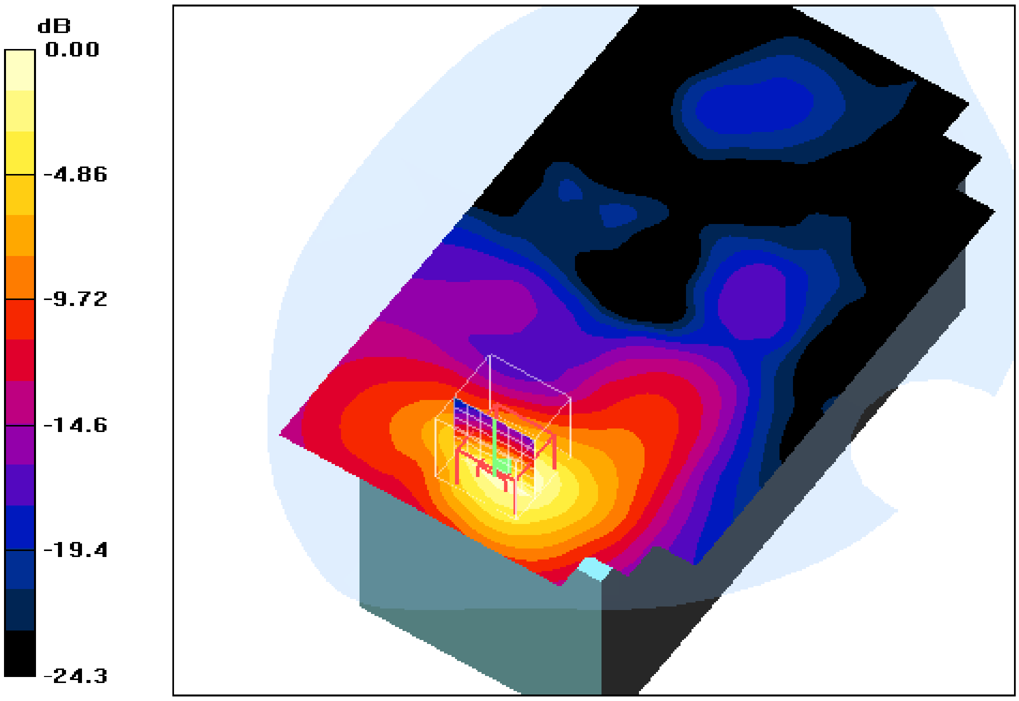
Front position - Middle 802.11b/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.9 V/m; Power Drift = -0.037 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.443 mW/g; SAR(10 g) = 0.202 mW/g

Maximum value of SAR (measured) = 0.477 mW/g



0 dB = 0.477mW/g

Additional information:

position or distance of DUT to SAM: DUT touching SAM

ambient temperature: 22.5°C; liquid temperature: 21.9°C

Date/Time: 03.06.2009 12:14:33Date/Time: 03.06.2009 12:34:36Date/Time: 03.06.2009 12:52:05
Date/Time: 03.06.2009 13:09:10Date/Time: 03.06.2009 13:26:25

P1528_OET65-Body-WLAN2450

DUT: IntelliVue; Type: MP2; Serial: DE716V0213
Communication System: WLAN 2450 US; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2437 MHz; σ = 1.99 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1559; ConvF(3.91, 3.91, 3.91); Calibrated: 14.01.2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

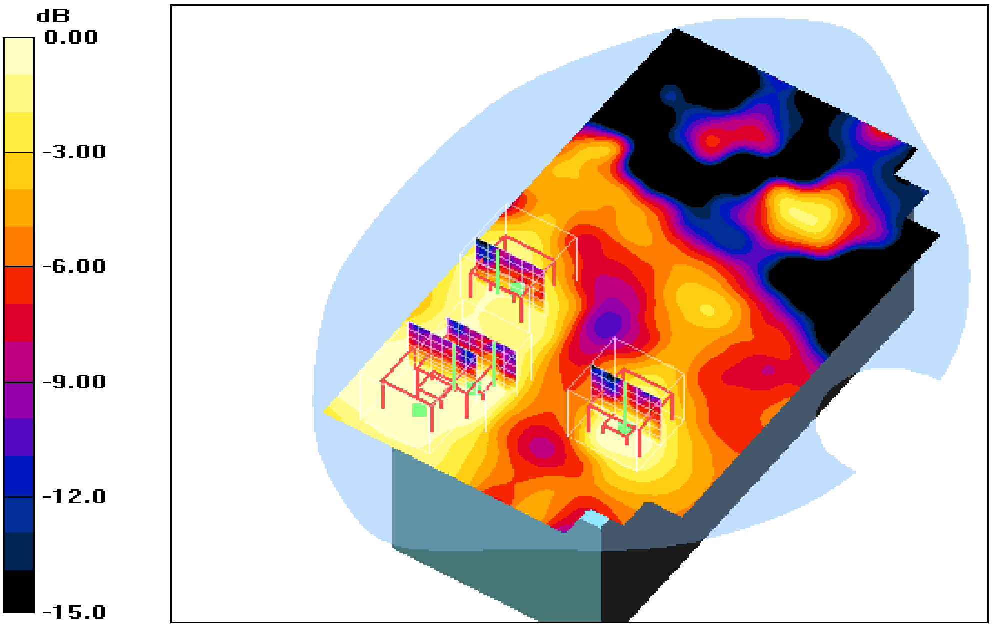
Rear position - Middle 802.11b/Area Scan (91x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.035 mW/g

Rear position - Middle 802.11b/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.91 V/m; Power Drift = -0.146 dB
Peak SAR (extrapolated) = 0.095 W/kg
SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.021 mW/g
Maximum value of SAR (measured) = 0.043 mW/g

Rear position - Middle 802.11b/Zoom Scan (7x7x7) (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.91 V/m; Power Drift = -0.146 dB
Peak SAR (extrapolated) = 0.069 W/kg
SAR(1 g) = 0.032 mW/g; SAR(10 g) = 0.018 mW/g
Maximum value of SAR (measured) = 0.038 mW/g

Rear position - Middle 802.11b/Zoom Scan (7x7x7) (7x7x7)/Cube 2: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.91 V/m; Power Drift = -0.146 dB
Peak SAR (extrapolated) = 0.084 W/kg
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.017 mW/g
Maximum value of SAR (measured) = 0.034 mW/g

Rear position - Middle 802.11b/Zoom Scan (7x7x7) (7x7x7)/Cube 3: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.91 V/m; Power Drift = -0.146 dB
Peak SAR (extrapolated) = 0.046 W/kg
SAR(1 g) = 0.024 mW/g; SAR(10 g) = 0.014 mW/g
Maximum value of SAR (measured) = 0.026 mW/g



0 dB = 0.026mW/g

Additional information:
position or distance of DUT to SAM: DUT touching SAM
ambient temperature: 22.5°C; liquid temperature: 21.9°C

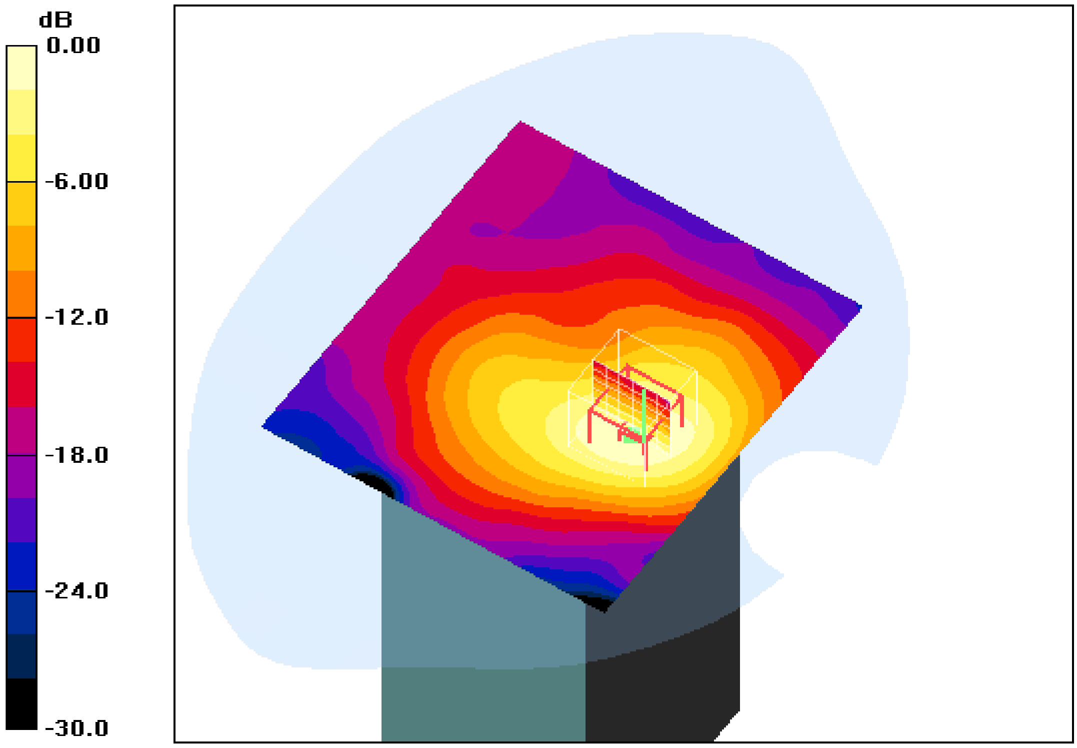
Date/Time: 03.06.2009 13:55:19Date/Time: 03.06.2009 14:06:17

P1528_OET65-Body-WLAN2450

DUT: IntelliVue; Type: MP2; Serial: DE716V0213
Communication System: WLAN 2450 US; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2437 MHz; σ = 1.99 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1559; ConvF(3.91, 3.91, 3.91); Calibrated: 14.01.2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Side position - Middle 802.11b/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.310 mW/g

Side position - Middle 802.11b/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.613 V/m; Power Drift = -0.123 dB
Peak SAR (extrapolated) = 0.652 W/kg
SAR(1 g) = 0.288 mW/g; SAR(10 g) = 0.155 mW/g
Maximum value of SAR (measured) = 0.299 mW/g



0 dB = 0.299mW/g

Additional information:
position or distance of DUT to SAM: DUT touching SAM
ambient temperature: 22.5°C; liquid temperature: 21.9°C

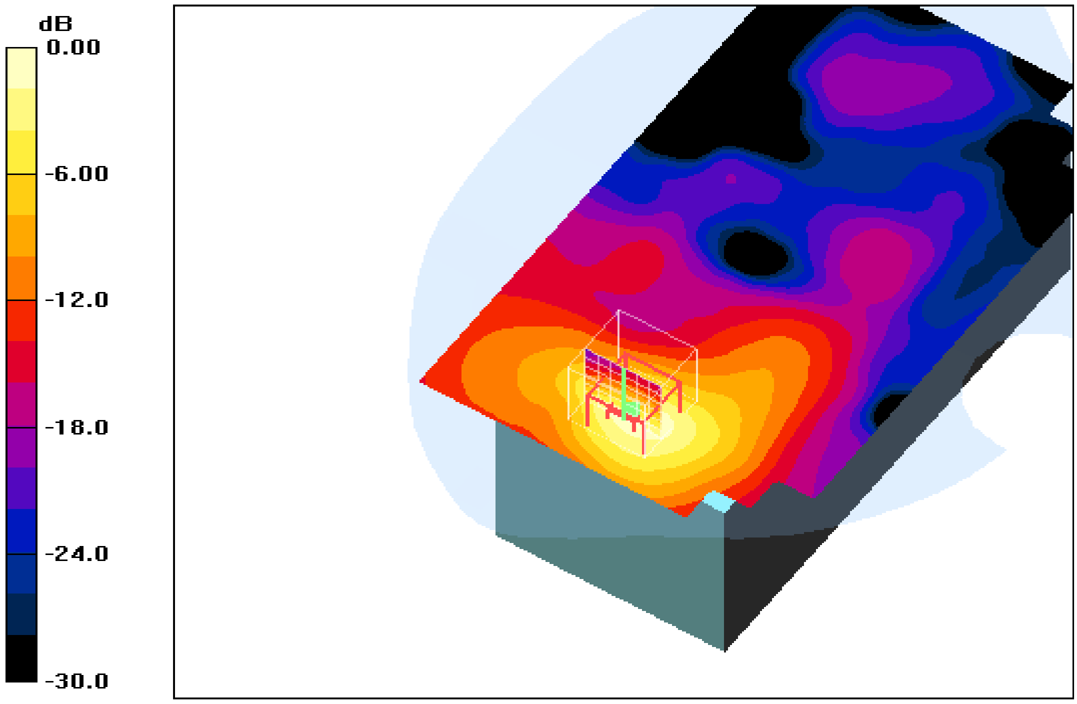
Date/Time: 03.06.2009 15:39:31Date/Time: 03.06.2009 15:54:27

P1528_OET65-Body-WLAN2450

DUT: IntelliVue; Type: MP2; Serial: DE716V0213
Communication System: WLAN 2450 US; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: M2450 Medium parameters used (interpolated): f = 2437 MHz; σ = 1.99 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1559; ConvF(3.91, 3.91, 3.91); Calibrated: 14.01.2009
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Front position - Middle 802.11g/Area Scan (91x151x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.420 mW/g

Front position - Middle 802.11g/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.2 V/m; Power Drift = -0.026 dB
Peak SAR (extrapolated) = 0.965 W/kg
SAR(1 g) = 0.404 mW/g; SAR(10 g) = 0.185 mW/g
Maximum value of SAR (measured) = 0.429 mW/g



0 dB = 0.429mW/g

Additional information:
position or distance of DUT to SAM: DUT touching SAM
ambient temperature: 22.5°C; liquid temperature: 21.9°C

Annex 2.2 WLAN 5 GHz body

Date/Time: 04.06.2009 12:32:11Date/Time: 04.06.2009 13:01:18

IEEE1528_OET65-Body-WLAN-5GHz

DUT: IntelliVue; Type: MP2; Serial: DE716V0213

Communication System: WLAN 5GHz; Frequency: 5180 MHz; Duty Cycle: 1:1

Medium: M5500 Medium parameters used: f = 5200 MHz; σ = 5.34 mho/m; ε_r = 48; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3566; ConvF(4.02, 4.02, 4.02); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Rear position - Ch36/Area Scan (131x221x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.018 mW/g

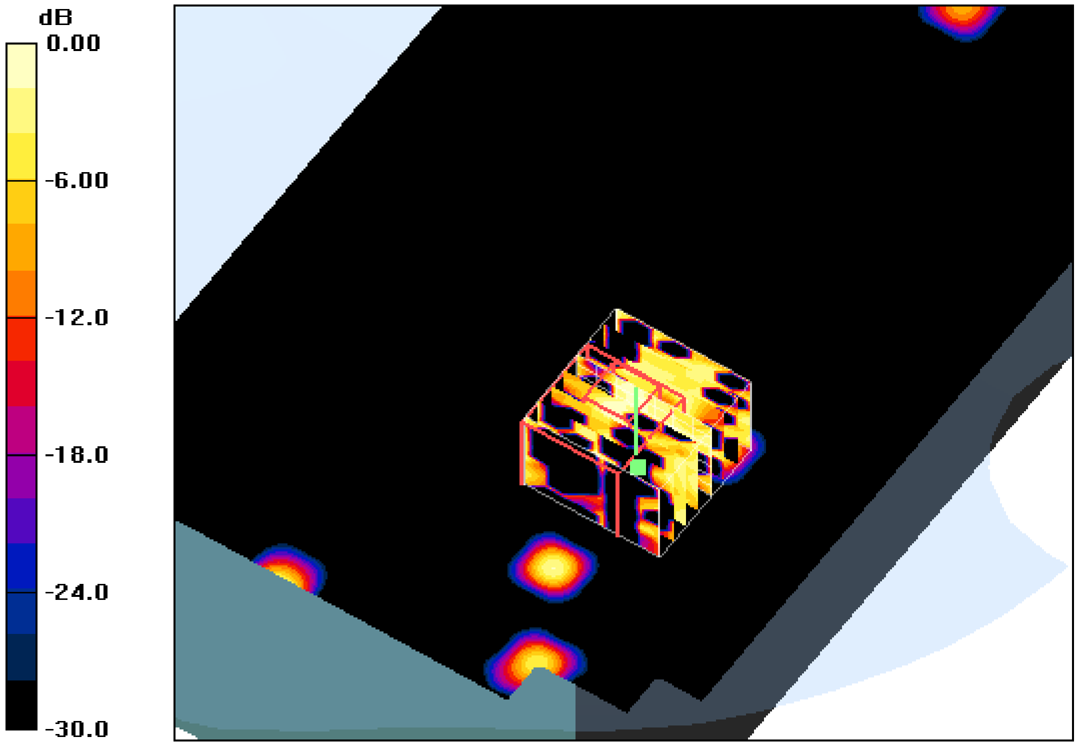
Rear position - Ch36/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 1.03 V/m; Power Drift = -0.137 dB

Peak SAR (extrapolated) = 0.027 W/kg

SAR(1 g) = 0.00369 mW/g; SAR(10 g) = 0.000893 mW/g

Maximum value of SAR (measured) = 0.021 mW/g



0 dB = 0.021mW/g

Additional information:

position or distance of DUT to SAM (if not standard head positions) : DUT touching SAM

ambient temperature: 22.8°C; liquid temperature: 21.6°C

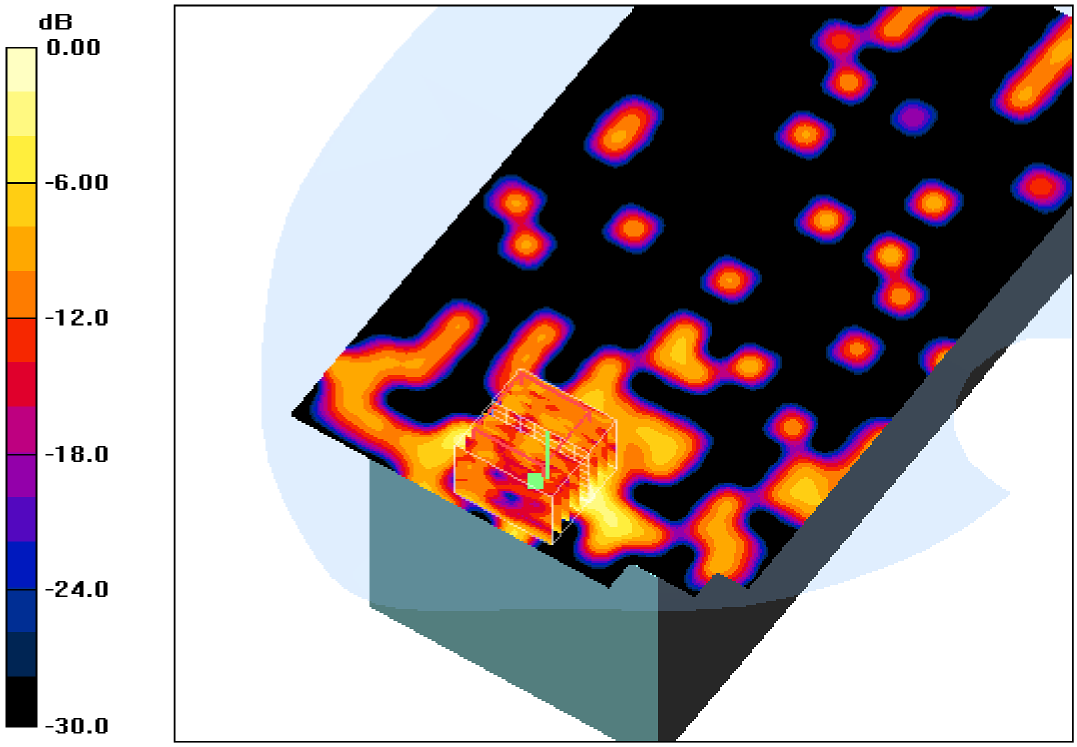
Date/Time: 04.06.2009 11:30:00Date/Time: 04.06.2009 11:59:15

IEEE1528_OET65-Body-WLAN-5GHz

DUT: IntelliVue; Type: MP2; Serial: DE716V0213
Communication System: WLAN 5GHz; Frequency: 5180 MHz; Duty Cycle: 1:1
Medium: M5500 Medium parameters used: f = 5200 MHz; σ = 5.34 mho/m; ε_r = 48; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3566; ConvF(4.02, 4.02, 4.02); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Front position - Ch36/Area Scan (131x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.349 mW/g

Front position - Ch36/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 6.79 V/m; Power Drift = -0.106 dB
Peak SAR (extrapolated) = 0.782 W/kg
SAR(1 g) = 0.126 mW/g; SAR(10 g) = 0.048 mW/g
Maximum value of SAR (measured) = 0.226 mW/g



0 dB = 0.226mW/g

Additional information:
position or distance of DUT to SAM (if not standard head positions) : DUT touchim SAM
ambient temperature: 22.8°C; liquid temperature: 21.6°C

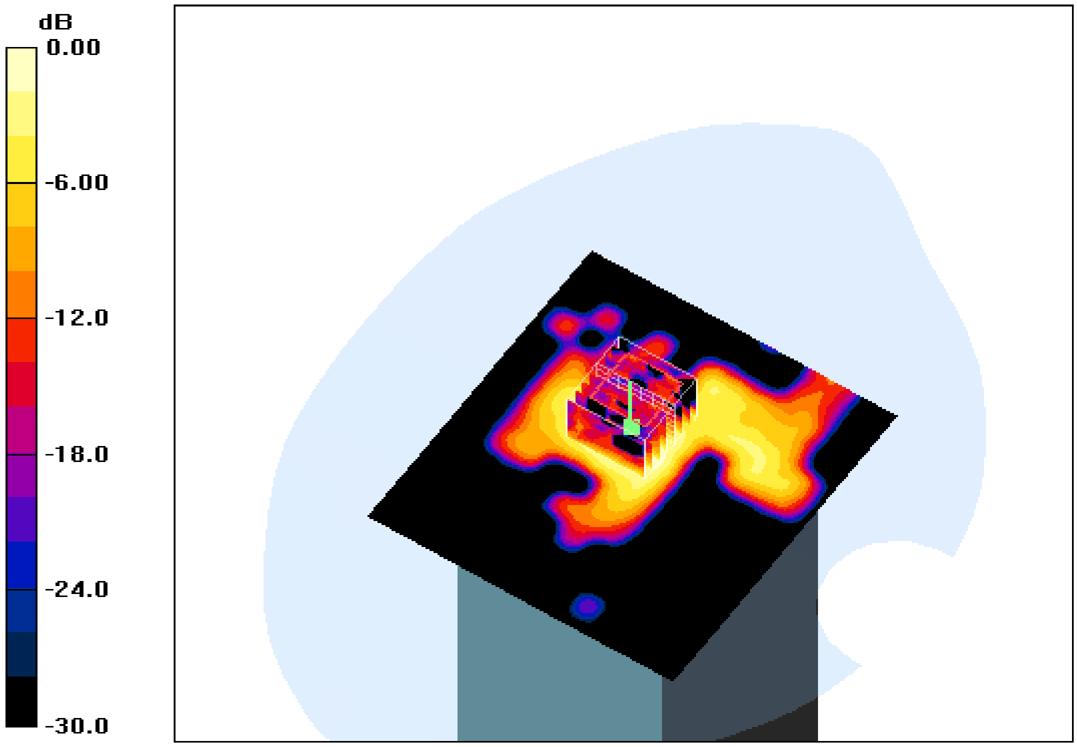
Date/Time: 04.06.2009 13:34:38Date/Time: 04.06.2009 13:51:24

IEEE1528_OET65-Body-WLAN-5GHz

DUT: IntelliVue; Type: MP2; Serial: DE716V0213
Communication System: WLAN 5GHz; Frequency: 5180 MHz; Duty Cycle: 1:1
Medium: M5500 Medium parameters used: f = 5200 MHz; σ = 5.34 mho/m; ε_r = 48; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3566; ConvF(4.02, 4.02, 4.02); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Side position - Ch36/Area Scan (121x131x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.238 mW/g

Side position - Ch36/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 7.15 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 0.397 W/kg
SAR(1 g) = 0.128 mW/g; SAR(10 g) = 0.049 mW/g
Maximum value of SAR (measured) = 0.240 mW/g



0 dB = 0.240mW/g

Additional information:
position or distance of DUT to SAM (if not standard head positions) : DUT touching SAM
ambient temperature: 22.7°C; liquid temperature: 21.7°C

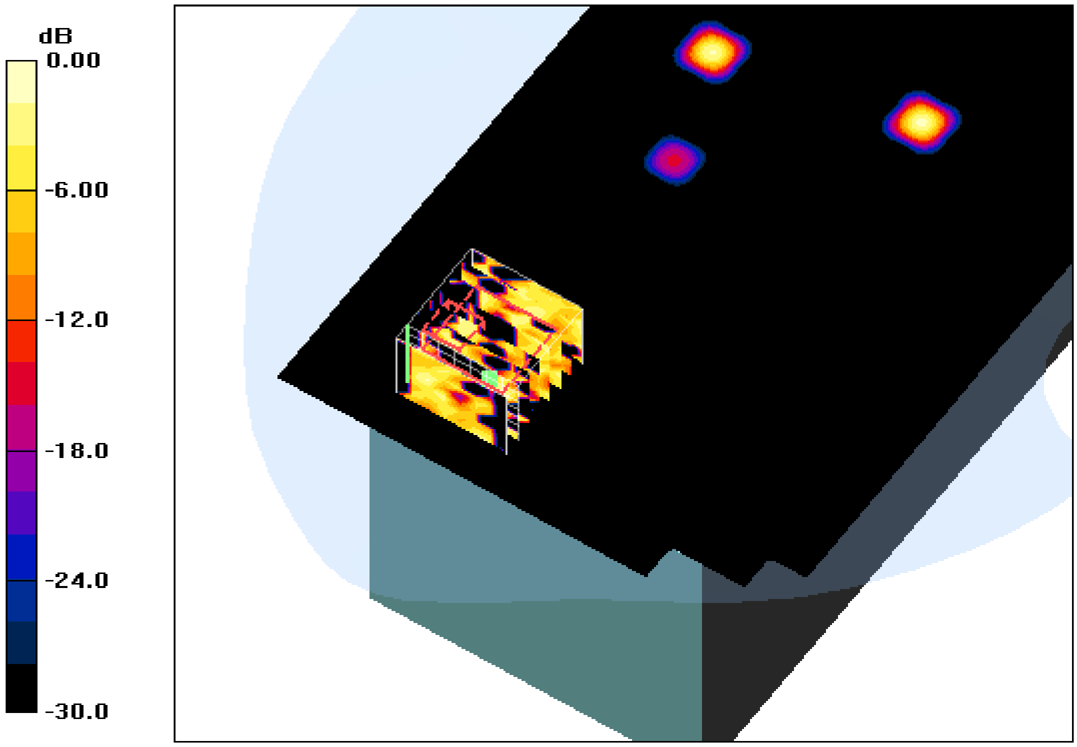
Date/Time: 04.06.2009 15:19:31Date/Time: 04.06.2009 15:48:14

IEEE1528_OET65-Body-WLAN-5GHz

DUT: IntelliVue; Type: MP2; Serial: DE716V0213
Communication System: WLAN 5GHz; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium: M5500 Medium parameters used (interpolated): f = 5320 MHz; σ = 5.49 mho/m; ε_r = 47.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3566; ConvF(4.02, 4.02, 4.02); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Rear position - Ch64/Area Scan (131x221x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.025 mW/g

Rear position - Ch64/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 1.16 V/m; Power Drift = 0.145 dB
Peak SAR (extrapolated) = 0.021 W/kg
SAR(1 g) = 0.00123 mW/g; SAR(10 g) = 0.000494 mW/g
Maximum value of SAR (measured) = 0.022 mW/g



0 dB = 0.022mW/g

Additional information:
position or distance of DUT to SAM (if not standard head positions) : DUT touching SAM
ambient temperature: 22.7°C; liquid temperature: 21.6°C

Date/Time: 04.06.2009 16:12:52Date/Time: 04.06.2009 16:42:30

IEEE1528_OET65-Body-WLAN-5GHz

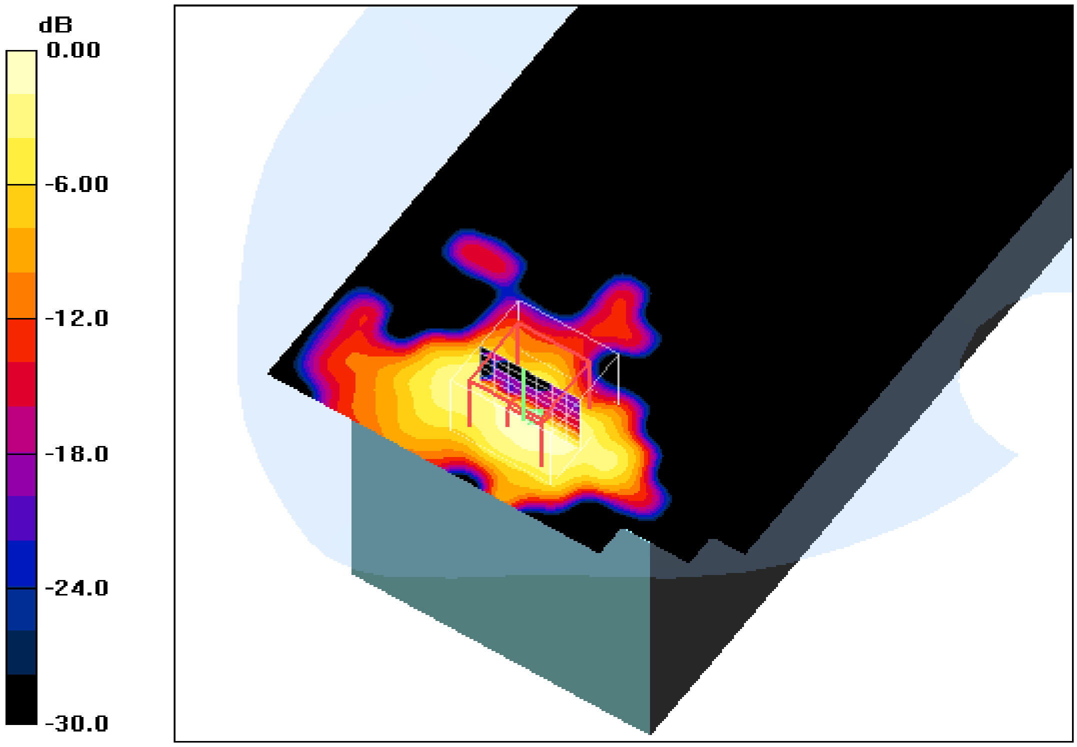
DUT: IntelliVue; Type: MP2; Serial: DE716V0213
Communication System: WLAN 5GHz; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium: M5500 Medium parameters used (interpolated): f = 5320 MHz; σ = 5.49 mho/m; ε_r = 47.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3566; ConvF(4.02, 4.02, 4.02); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Front position - Ch64/Area Scan (131x221x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.422 mW/g

Front position - Ch64/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 8.54 V/m; Power Drift = -0.098 dB
Peak SAR (extrapolated) = 0.696 W/kg
SAR(1 g) = 0.210 mW/g; SAR(10 g) = 0.073 mW/g
Maximum value of SAR (measured) = 0.414 mW/g



0 dB = 0.414mW/g

Additional information:
position or distance of DUT to SAM (if not standard head positions) : DUT touching SAM
ambient temperature: 22.7°C; liquid temperature: 21.7°C

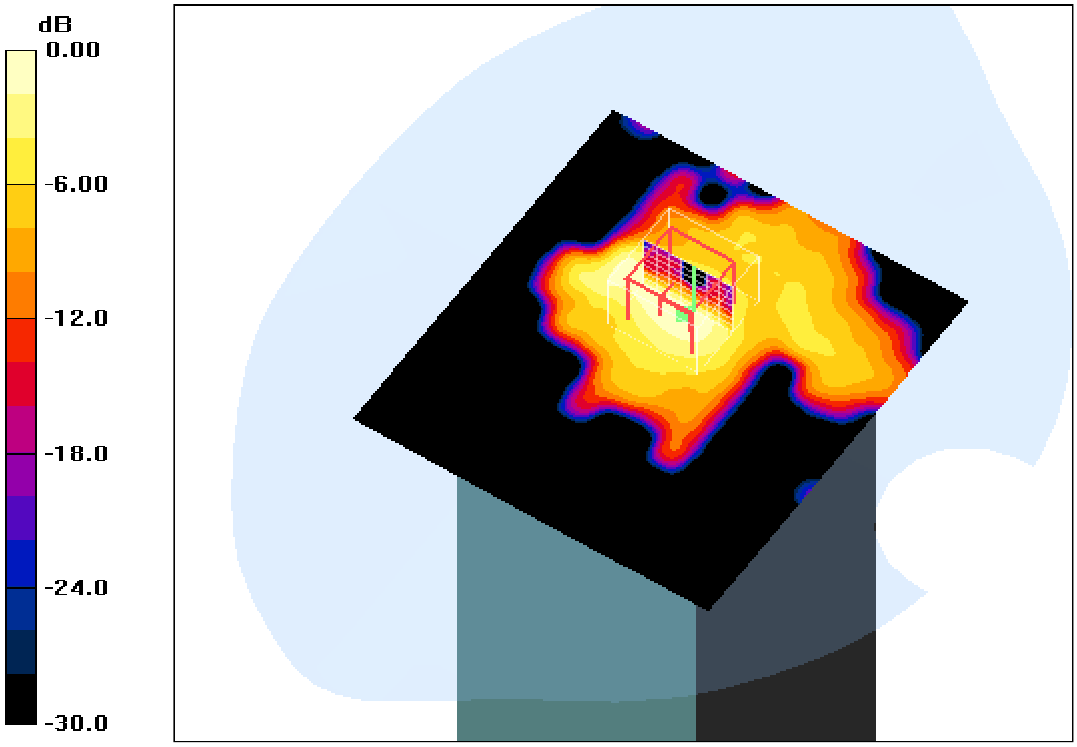
Date/Time: 04.06.2009 14:26:58Date/Time: 04.06.2009 14:43:52

IEEE1528_OET65-Body-WLAN-5GHz

DUT: IntelliVue; Type: MP2; Serial: DE716V0213
Communication System: WLAN 5GHz; Frequency: 5320 MHz; Duty Cycle: 1:1
Medium: M5500 Medium parameters used (interpolated): f = 5320 MHz; σ = 5.49 mho/m; ε_r = 47.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: EX3DV4 - SN3566; ConvF(4.02, 4.02, 4.02); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Side position - Ch64/Area Scan (121x131x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.396 mW/g

Side position - Ch64/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm
Reference Value = 8.01 V/m; Power Drift = -0.117 dB
Peak SAR (extrapolated) = 1.35 W/kg
SAR(1 g) = 0.204 mW/g; SAR(10 g) = 0.074 mW/g
Maximum value of SAR (measured) = 0.384 mW/g



0 dB = 0.384mW/g

Additional information:
position or distance of DUT to SAM (if not standard head positions) : DUT touching SAM
ambient temperature: 22.7°C; liquid temperature: 21.7°C

Date/Time: 05.06.2009 10:15:42Date/Time: 05.06.2009 10:45:20

IEEE1528_OET65-Body-WLAN-5GHz

DUT: IntelliVue; Type: MP2; Serial: DE716V0213

Communication System: WLAN 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1

Medium: M5500 Medium parameters used (interpolated): f = 5745 MHz; σ = 6.03 mho/m; ε_r = 46.8; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3566; ConvF(3.61, 3.61, 3.61); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Rear position - Ch149/Area Scan (131x221x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.142 mW/g

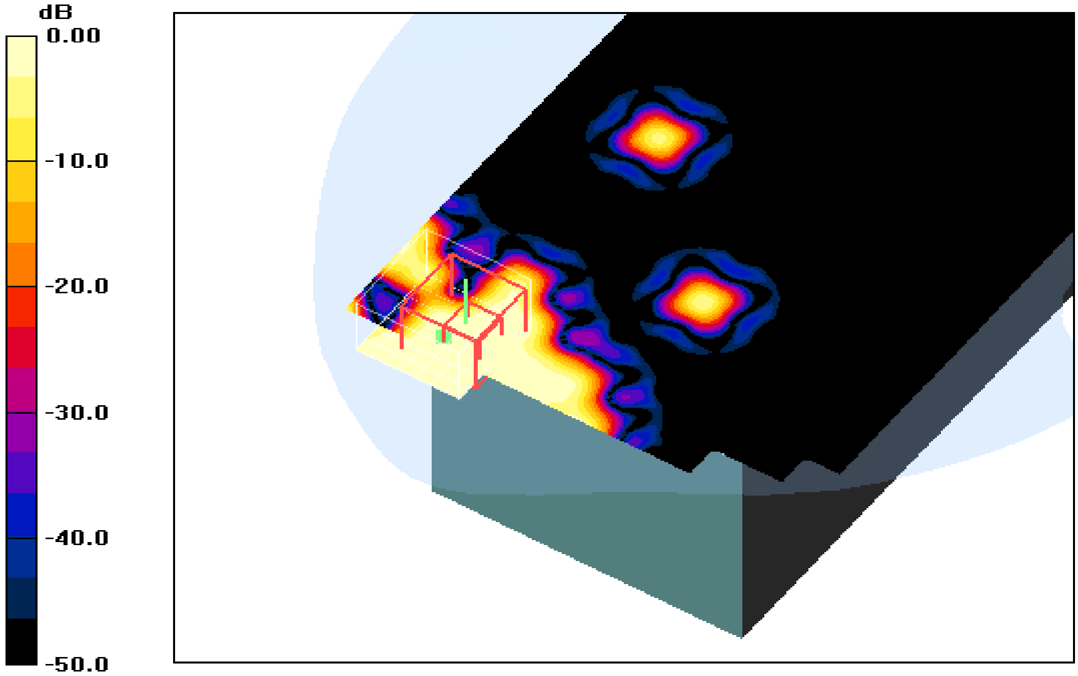
Rear position - Ch149/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.50 V/m; Power Drift = -0.089 dB

Peak SAR (extrapolated) = 0.283 W/kg

SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.016 mW/g

Maximum value of SAR (measured) = 0.078 mW/g



0 dB = 0.078mW/g

Additional information:

position or distance of DUT to SAM (if not standard head positions) : DUT touching SAM

ambient temperature: 22.5°C; liquid temperature: 21.4°C

Date/Time: 05.06.2009 09:08:49Date/Time: 05.06.2009 09:39:11

IEEE1528_OET65-Body-WLAN-5GHz

DUT: IntelliVue; Type: MP2; Serial: DE716V0213

Communication System: WLAN 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1

Medium: M5500 Medium parameters used (interpolated): f = 5745 MHz; σ = 6.03 mho/m; ε_r = 46.8; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3566; ConvF(3.61, 3.61, 3.61); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Front position - Ch149/Area Scan (131x221x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.50 mW/g

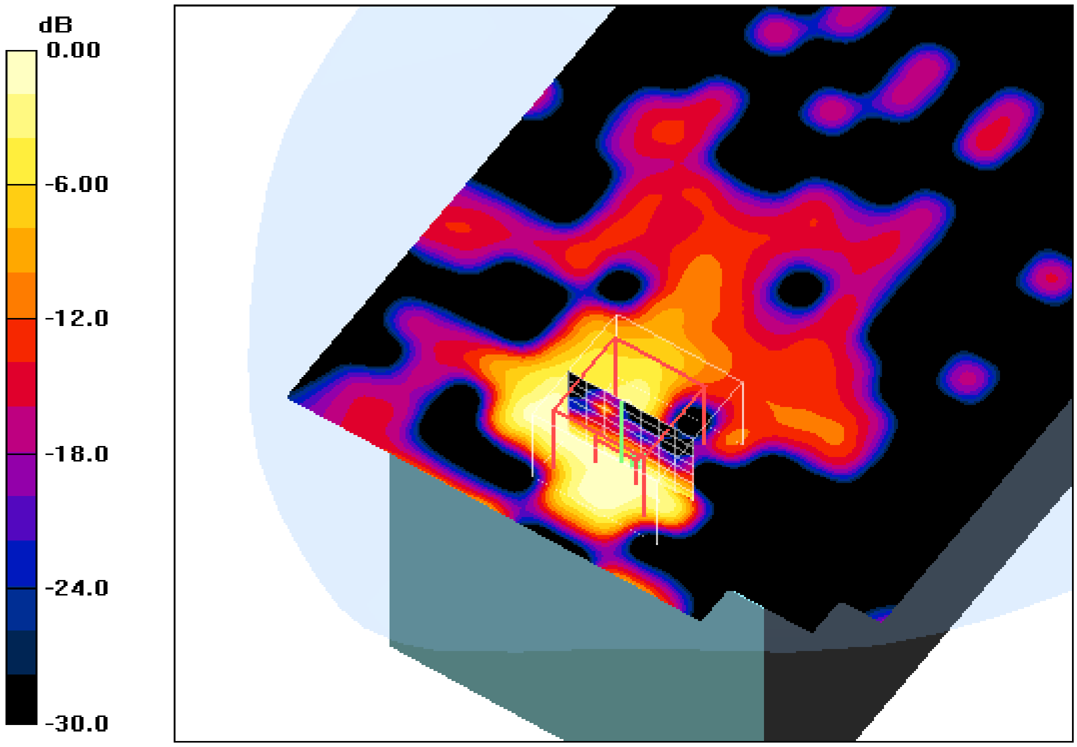
Front position - Ch149/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 10.6 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.340 mW/g; SAR(10 g) = 0.123 mW/g

Maximum value of SAR (measured) = 0.720 mW/g



0 dB = 0.720mW/g

Additional information:

position or distance of DUT to SAM (if not standard head positions) : DUT touching SAM

ambient temperature: 22.4°C; liquid temperature: 21.5°C

Date/Time: 05.06.2009 11:17:17Date/Time: 05.06.2009 11:34:57

IEEE1528_OET65-Body-WLAN-5GHz

DUT: IntelliVue; Type: MP2; Serial: DE716V0213

Communication System: WLAN 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1

Medium: M5500 Medium parameters used (interpolated): f = 5745 MHz; σ = 6.03 mho/m; ε_r = 46.8; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3566; ConvF(3.61, 3.61, 3.61); Calibrated: 19.08.2008
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn477; Calibrated: 14.05.2009
- Phantom: SAM left; Type: SAM; Serial: 1041
- Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 146

Side position - Ch149/Area Scan (121x131x1): Measurement grid: dx=10mm, dy=10mm

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

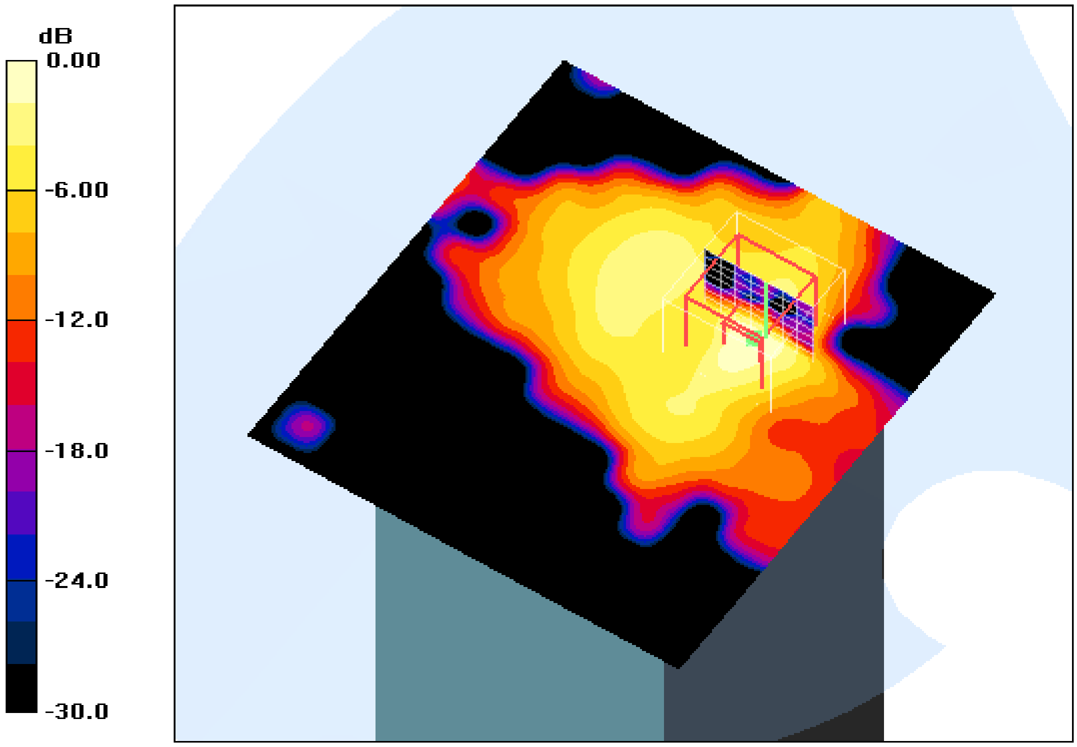
Side position - Ch149/Zoom Scan (7x7x7) (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 11.3 V/m; Power Drift = -0.111 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.336 mW/g; SAR(10 g) = 0.108 mW/g

Maximum value of SAR (measured) = 0.672 mW/g



0 dB = 0.672mW/g

Additional information:

position or distance of DUT to SAM (if not standard head positions) : DUT touching SAM

ambient temperature: 22.5°C; liquid temperature: 21.5°C

Annex 3 Photo documentation

Photo 1: Measurement System DASY 4

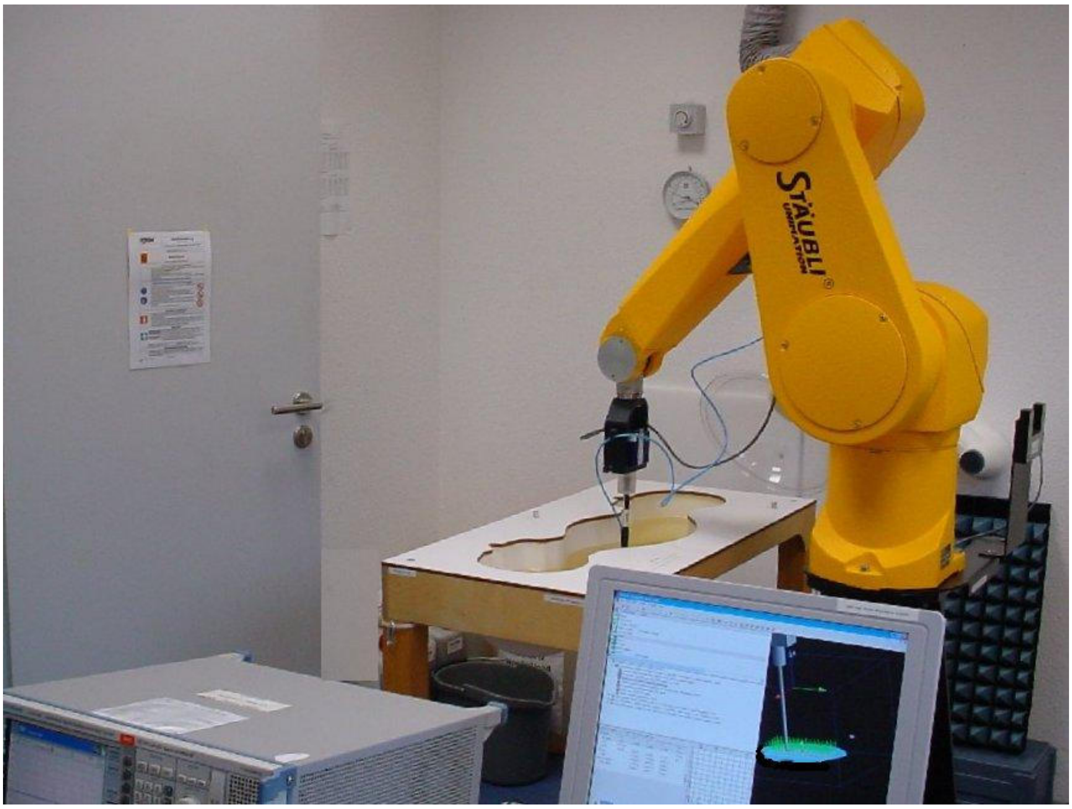


Photo 2: DUT - front view

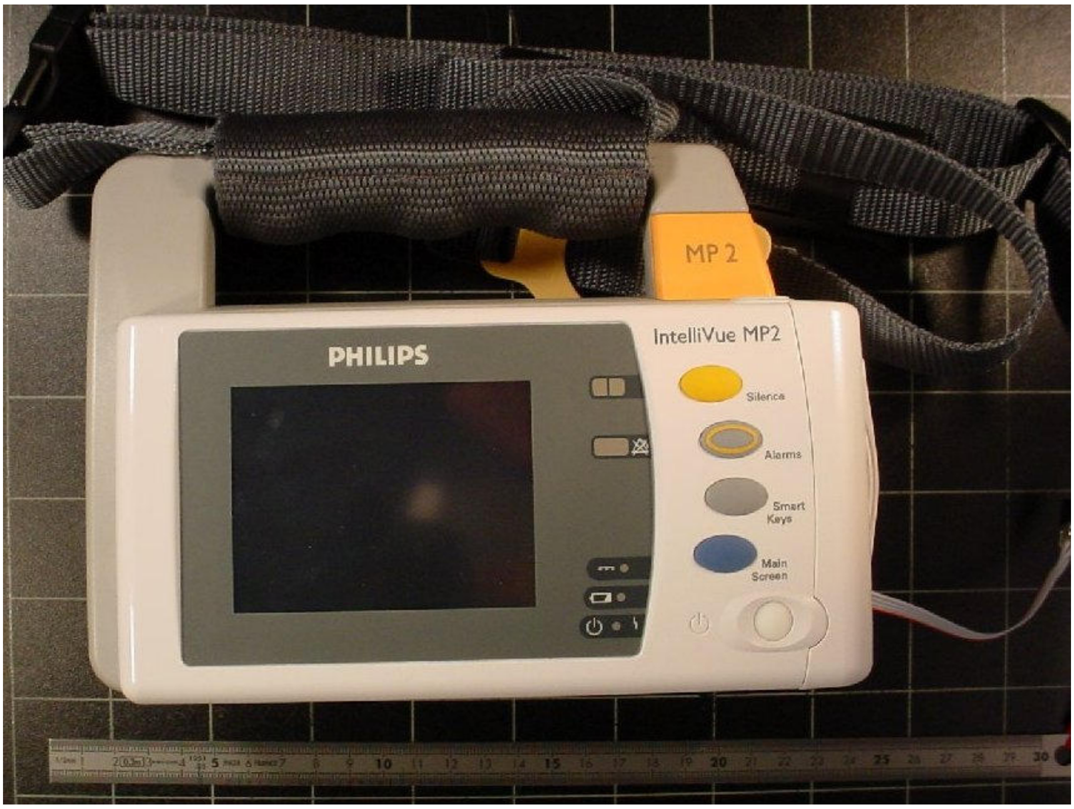


Photo 3: DUT - top view

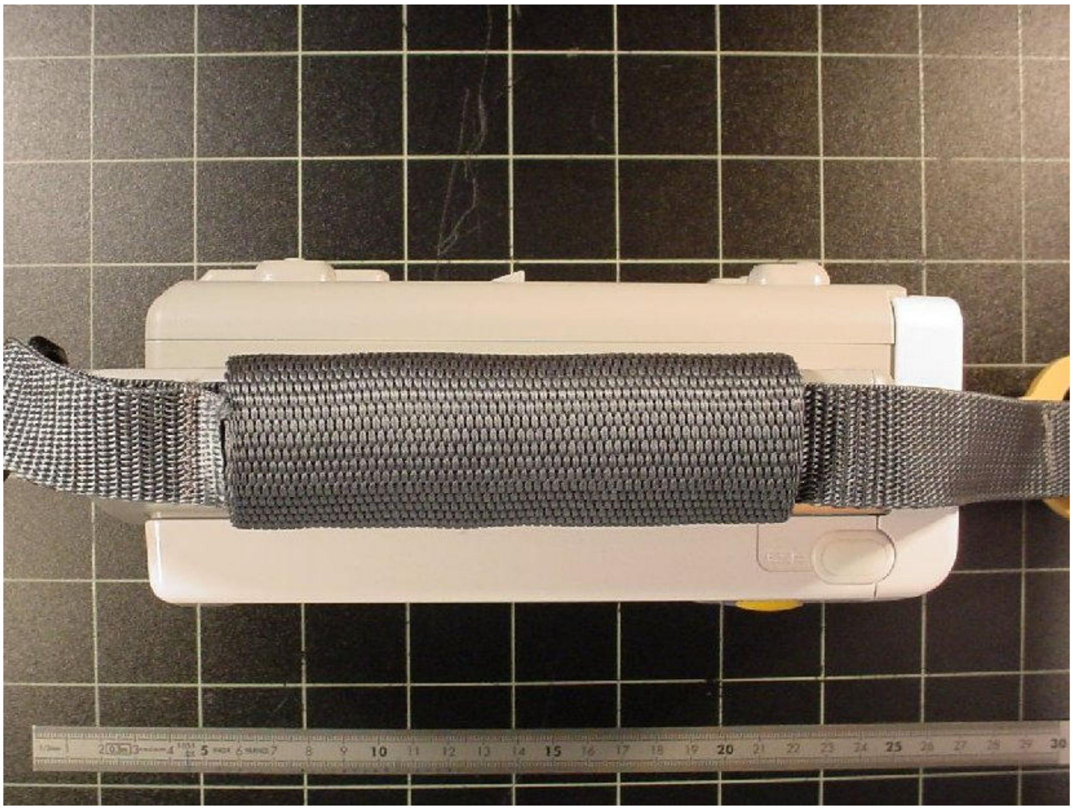


Photo 4: DUT - left side view

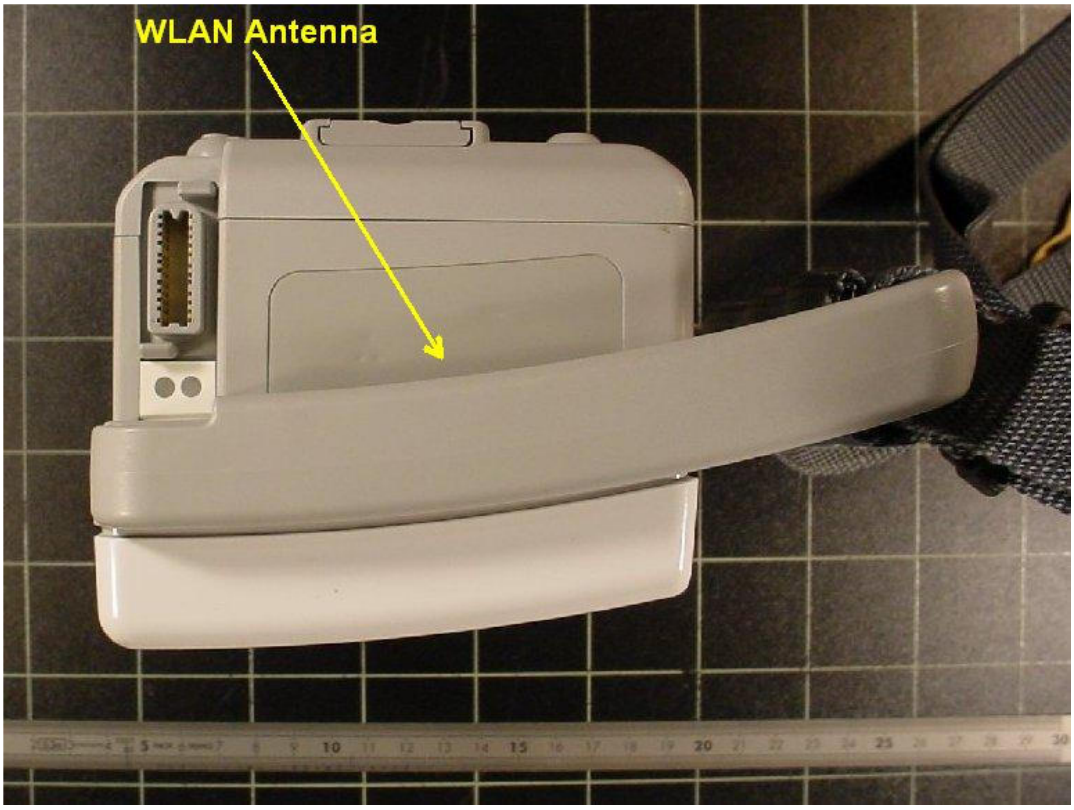


Photo 5: DUT - right side view

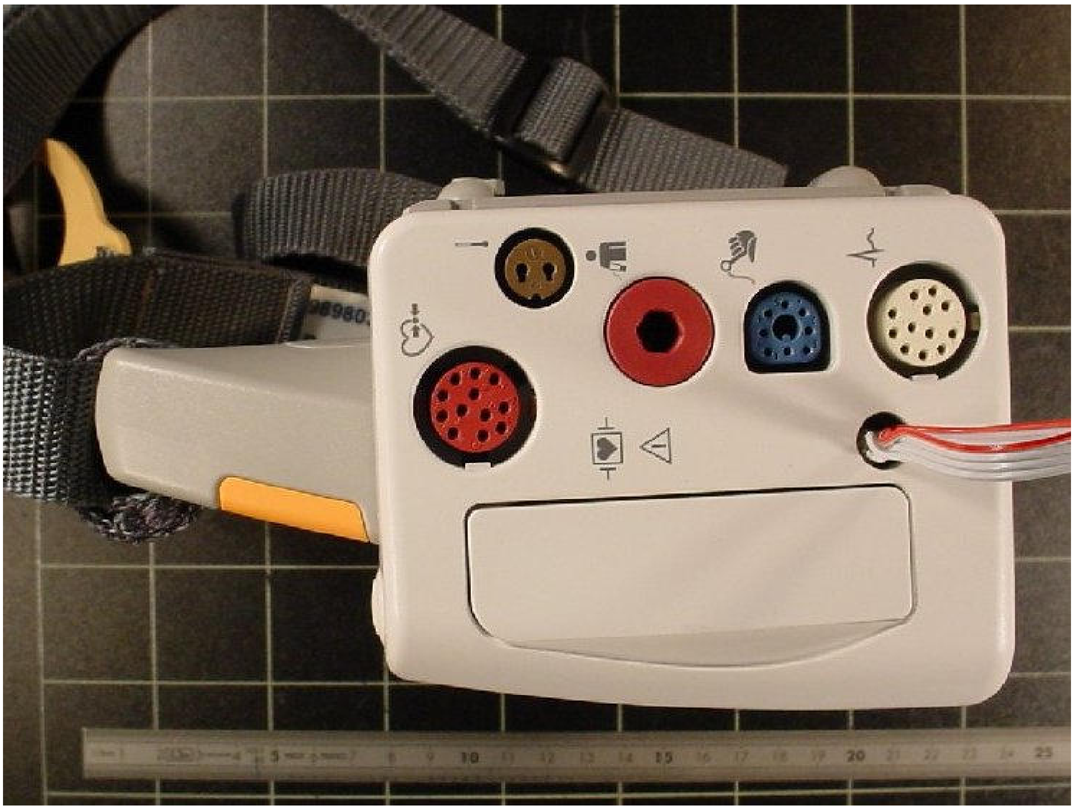


Photo 6: DUT - rear view

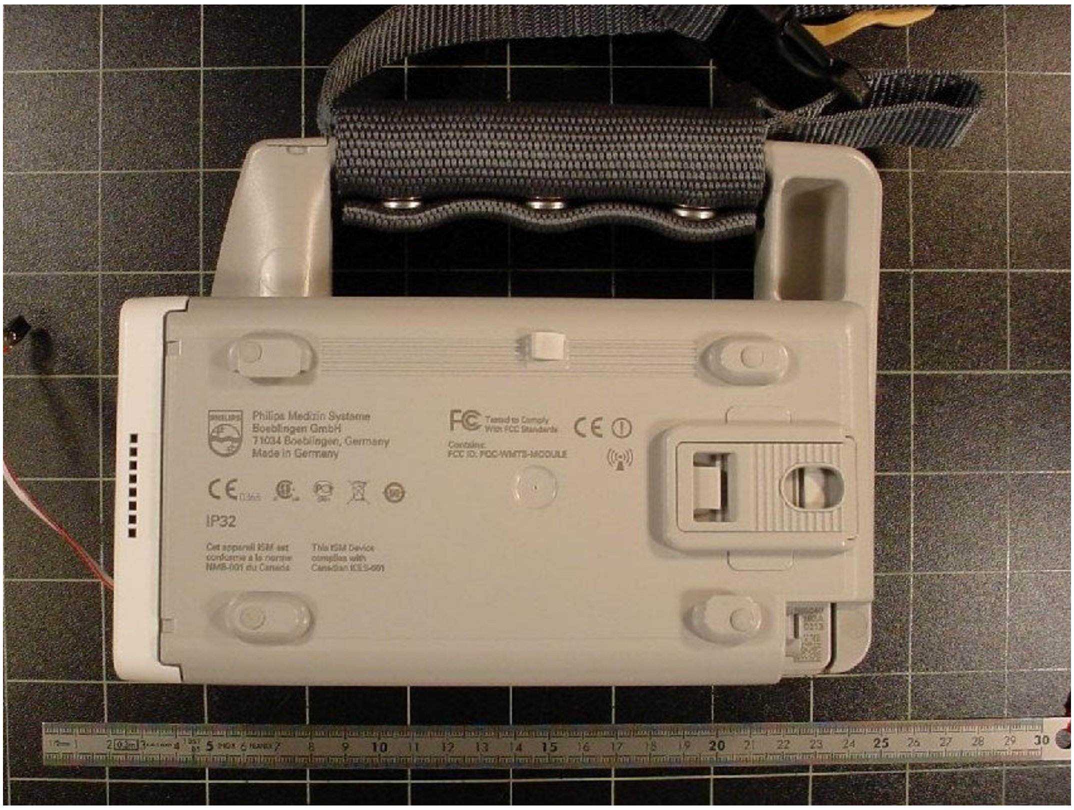


Photo 7: Accessories

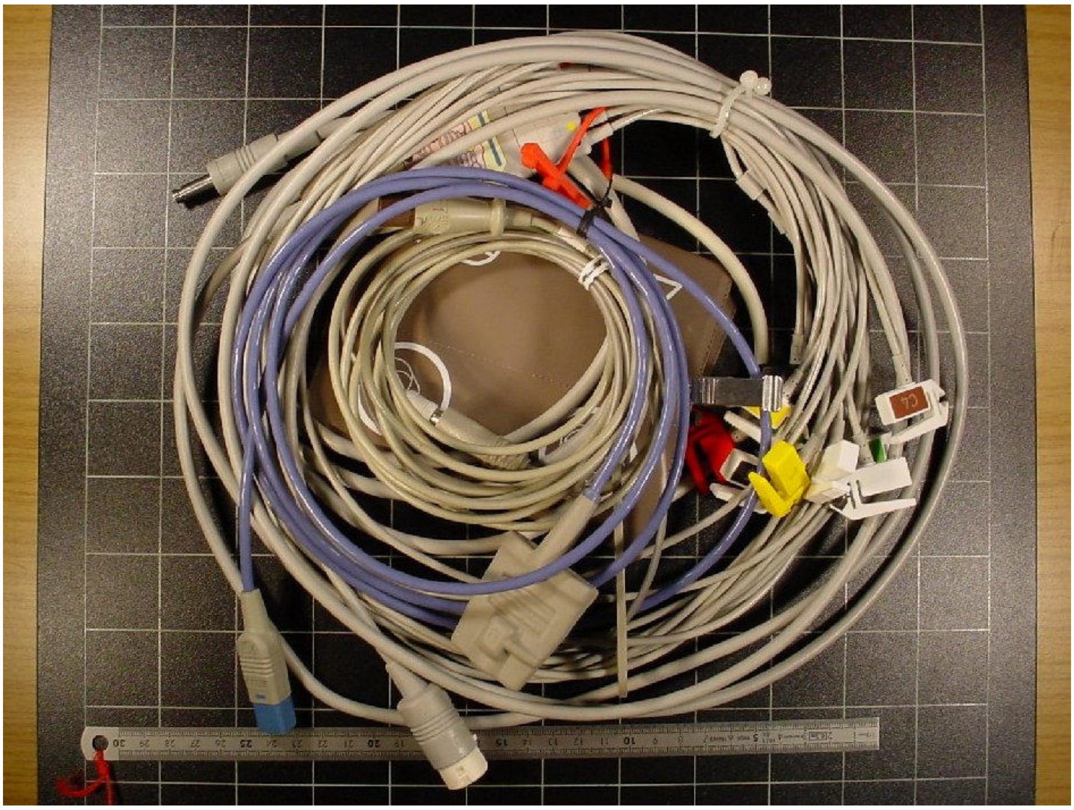


Photo 8: Test position body worn front side without any distance

Photo 9: Test position body worn front side without any distance

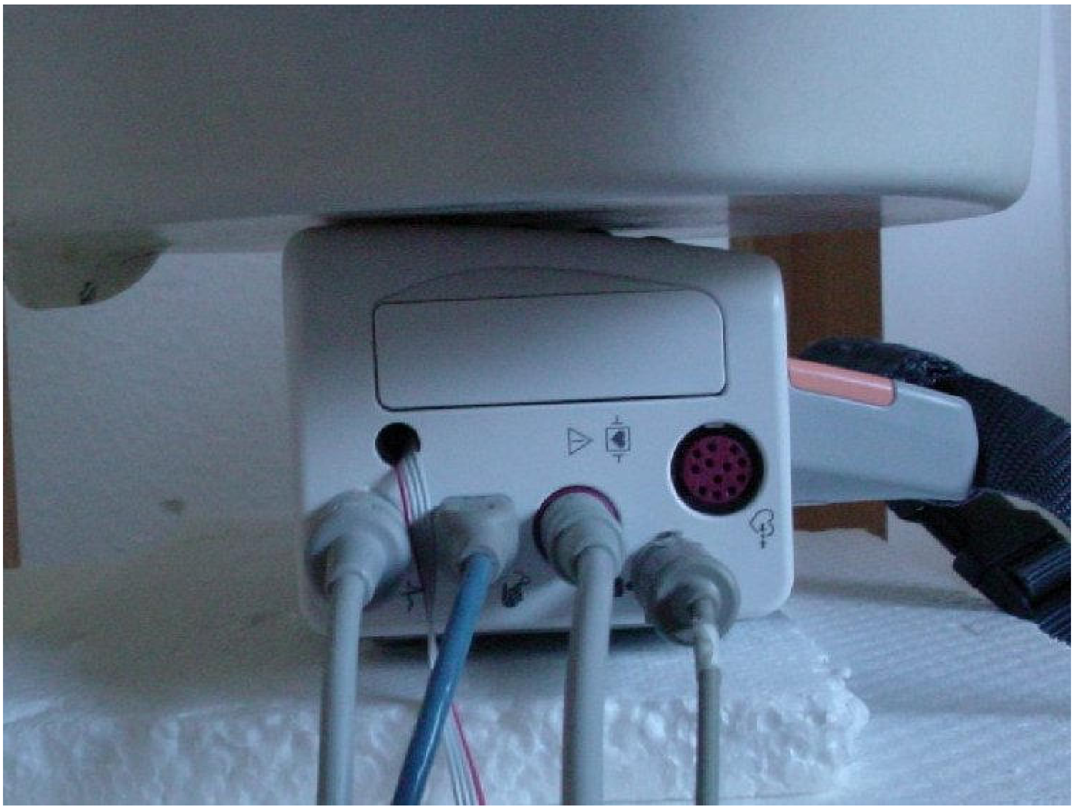


Photo 10: Test position body worn rear side without any distance

Photo 11: Test position body worn rear side without any distance

Photo 12: Test position body worn left side without any distance

Annex 3.1 Liquid depth

Photo 13: Liquid depth 2450 MHz body simulating liquid

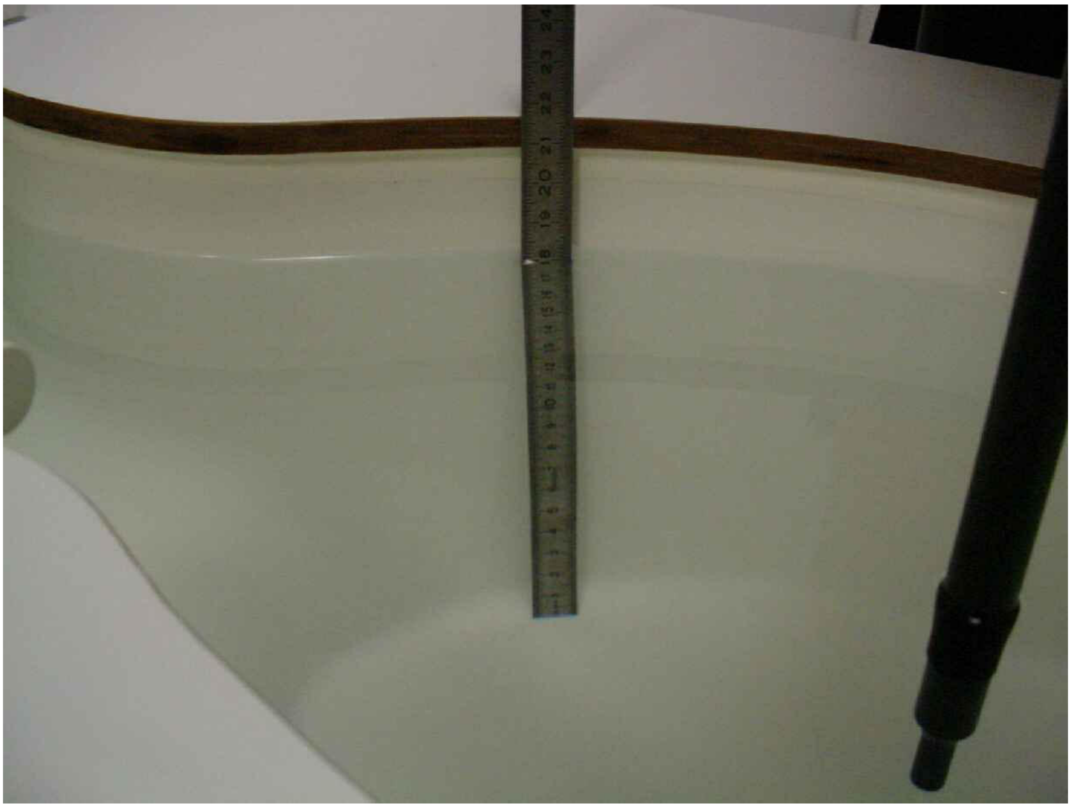
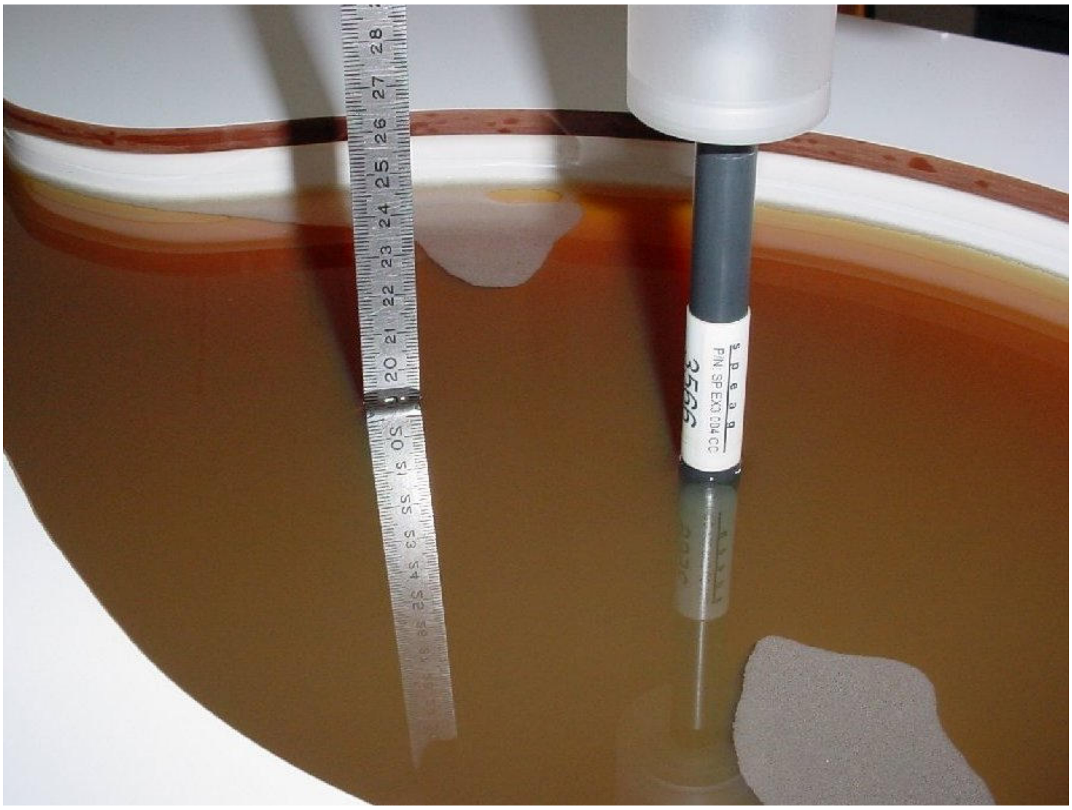
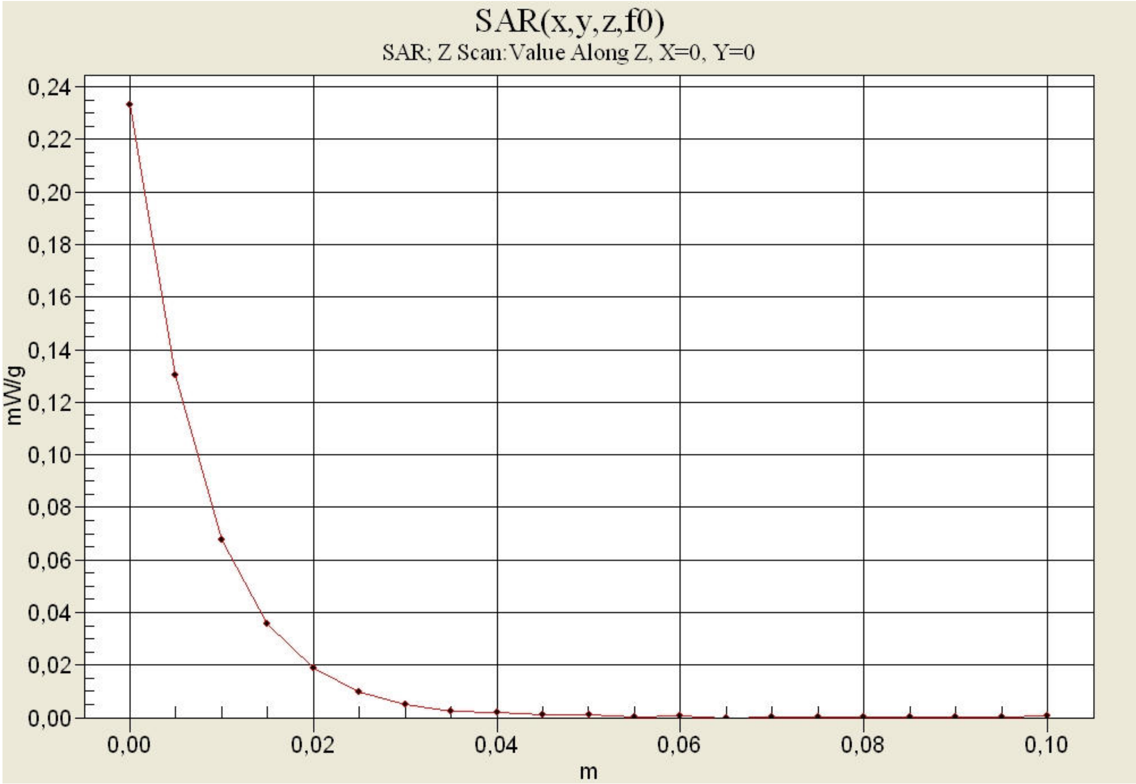


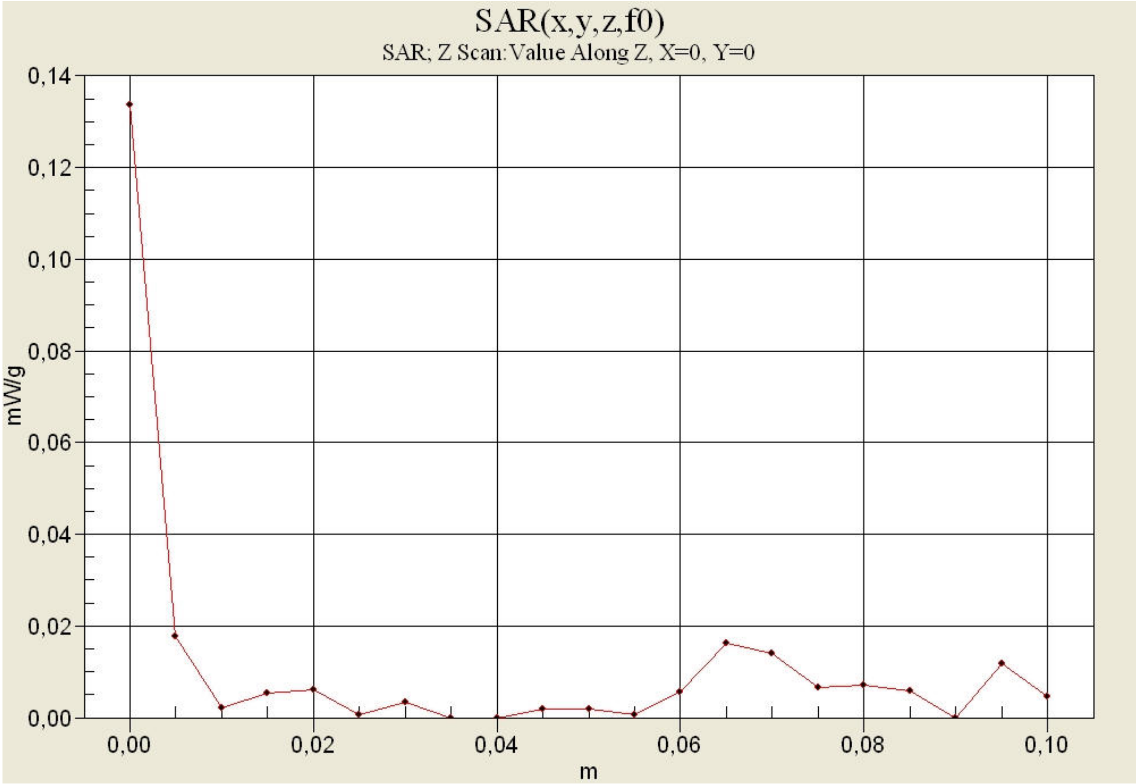
Photo 14: Liquid depth 5 GHz body simulating liquid



Annex 3.2 Z-axis scans



2450MHz body



5GHz body

Annex 4 RF Technical Brief Cover Sheet acc. to RSS-102

1. COMPANY NUMBER: 3549C

2. MODEL NUMBER: WLANBV1

3. MANUFACTURER: Philips Medizin Systeme Böblingen GmbH

4. TYPE OF EVALUATION:

(a) SAR Evaluation: Body-worn Device

- **Multiple transmitters: Yes ☐ No ☒**
- **Evaluated against exposure limits: General Public Use ☒ Controlled Use ☐**
- **Duty cycle used in evaluation: 100 %**
- **Standard used for evaluation: RSS-102 Issue 2 (2005-11)**
- **SAR value: 0.443 W/kg. Measured ☒ Computed ☐ Calculated ☐**

Annex 4.1 Declaration of RF Exposure Compliance

ATTESTATION: I attest that the information provided in Annex 4 is correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.

Signature: Thomas Vogler **Date: 2009-06-09**

NAME : Thomas Vogler

TITLE : Dipl.-Ing. (FH)

COMPANY : CETECOM ICT Services GmbH

Annex 5 Calibration parameters

Calibration parameters are described in the additional document :

Appendix to test report no. 1-0995-02-02/08‘
Calibration data, Phantom certificate
and detail information of the DASY4 System