

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



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

Accredited by the Swiss Federal Office of Metrology and Accreditation  
 The Swiss Accreditation Service is one of the signatories to the EA  
 Multilateral Agreement for the recognition of calibration certificates.

Accreditation No.: **SCS 108**

**Glossary:**

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

**Calibration is Performed According to the Following Standards:**

- 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
- CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz)", July 2001
- 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:**

- DASY4 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.

<b>DASY Version</b>	DASY4	V4.7
<b>Extrapolation</b>	Advanced Extrapolation	
<b>Phantom</b>	Flat Phantom V4.4	Shell thickness: $6 \pm 0.2$ mm
<b>Distance Dipole Center - TSL</b>	15 mm	with Spacer
<b>Area Scan resolution</b>	$dx, dy = 15$ mm	
<b>Zoom Scan Resolution</b>	$dx, dy, dz = 5$ mm	
<b>Frequency</b>	$450$ MHz $\pm 1$ MHz	

**Head TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
<b>Nominal Head TSL parameters</b>	22.0 °C	43.5	0.87 mho/m
<b>Measured Head TSL parameters</b>	$(22.0 \pm 0.2)$ °C	$43.6 \pm 6$ %	$0.86$ mho/m $\pm 6$ %
<b>Head TSL temperature during test</b>	$(22.1 \pm 0.2)$ °C	---	---

**SAR result with Head TSL**

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	398 mW input power	2.06 mW / g
SAR normalized	normalized to 1W	5.18 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>5.21 mW / g <math>\pm 18.1</math> % (k=2)</b>

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	398 mW input power	1.39 mW / g
SAR normalized	normalized to 1W	3.49 mW / g
SAR for nominal Head TSL parameters <sup>1</sup>	normalized to 1W	<b>3.50 mW / g <math>\pm 17.6</math> % (k=2)</b>

<sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

**Appendix****Antenna Parameters with Head TSL**

Impedance, transformed to feed point	54.4 $\Omega$ - 9.5 $j\Omega$
Return Loss	- 20.0 dB

**General Antenna Parameters and Design**

Electrical Delay (one direction)	1.363 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

Manufactured by	SPEAG
Manufactured on	November 18, 2002

**DASY4 Validation Report for Head TSL**

Date/Time: 23.11.2006 11:09:54

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 450 MHz; Type: D450V2; Serial: D450V2 - SN:1010**

Communication System: CW; Frequency: 450 MHz; Duty Cycle: 1:1

Medium: HSL450;

Medium parameters used:  $f = 450$  MHz;  $\sigma = 0.86$  mho/m;  $\epsilon_r = 43.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (LF); ConvF(6.61, 6.61, 6.61); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.4; Type: Flat Phantom 4.4; ;
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

**d=15mm, Pin=398mW 2/Area Scan (61x131x1):**

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 2.17 mW/g

**d=15mm, Pin=398mW 2/Zoom Scan (7x7x7)/Cube 0:**

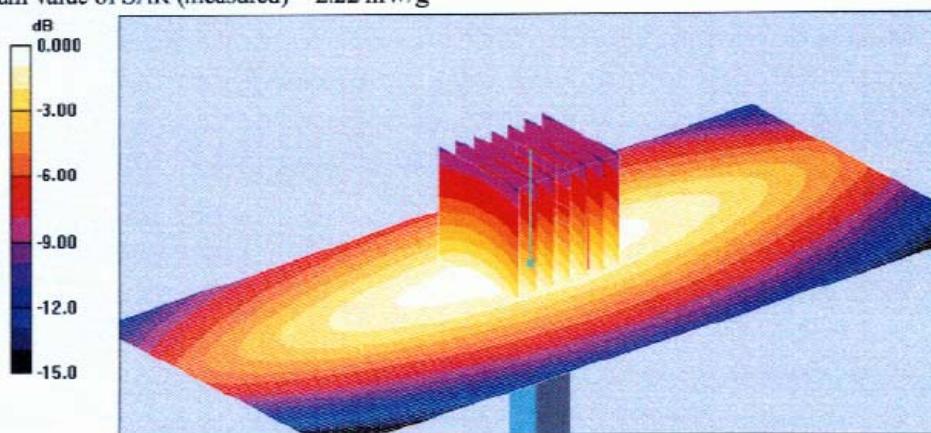
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.1 V/m; Power Drift = -0.010 dB

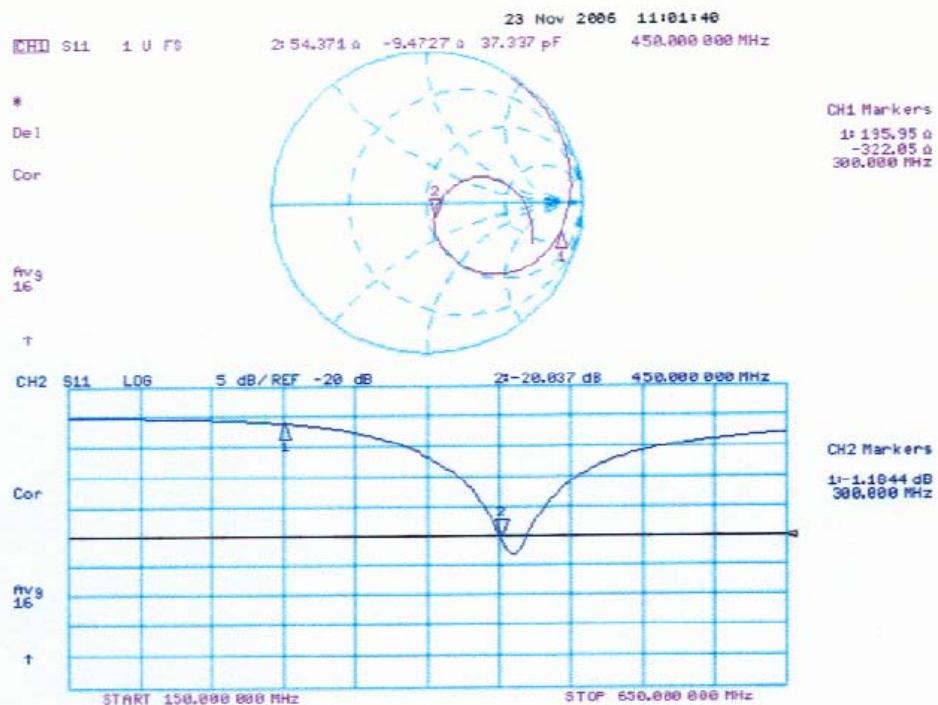
Peak SAR (extrapolated) = 3.03 W/kg

SAR(1 g) = 2.06 mW/g; SAR(10 g) = 1.39 mW/g

Maximum value of SAR (measured) = 2.22 mW/g



0 dB = 2.22mW/g

**Impedance Measurement Plot for Head TSL**

## APPENDIX D – DAE3 CALIBRATION CERTIFICATES

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Accreditation No.: SCS 108

Client BACL

Certificate No: DAE3-456\_Nov06

### CALIBRATION CERTIFICATE

Object DAE3 - SD 000 D03 AA - SN: 456

Calibration procedure(s)  
 QA CAL-06.v12  
 Calibration procedure for the data acquisition electronics (DAE)

Calibration date: November 22, 2006

Condition of the calibrated item In Tolerance

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  $(22 \pm 3)^\circ\text{C}$  and humidity  $< 70\%$ .

#### Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Fluke Process Calibrator Type 702	SN: 6295803	13-Oct-06 (Elcal AG, No: 5492)	Oct-07
Keithley Multimeter Type 2001	SN: 0810278	03-Oct-06 (Elcal AG, No: 5478)	Oct-07
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Calibrator Box V1.1	SE UMS 006 AB 1002	15-Jun-06 (SPEAG, in house check)	In house check Jun-07

Calibrated by: Name Eric Hainfeld Function Technician Signature

Approved by: Name Fin Bomholt Function R&D Director Signature

Issued: November 22, 2006

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

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### Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

### Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement*: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters contain technical information as a result from the performance test and require no uncertainty.
- *DC Voltage Measurement Linearity*: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
- *Common mode sensitivity*: Influence of a positive or negative common mode voltage on the differential measurement.
- *Channel separation*: Influence of a voltage on the neighbor channels not subject to an input voltage.
- *AD Converter Values with inputs shorted*: Values on the internal AD converter corresponding to zero input voltage
- *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
- *Input Offset Current*: Typical value for information; Maximum channel input offset current, not considering the input resistance.
- *Input resistance*: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
- *Low Battery Alarm Voltage*: Typical value for information. Below this voltage, a battery alarm signal is generated.
- *Power consumption*: Typical value for information. Supply currents in various operating modes.

**DC Voltage Measurement**

A/D - Converter Resolution nominal

High Range: 1LSB =  $6.1\mu\text{V}$  , full range =  $-100\ldots+300\text{ mV}$ Low Range: 1LSB =  $61\text{nV}$  , full range =  $-1\ldots+3\text{mV}$ 

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	$404.439 \pm 0.1\% \text{ (k=2)}$	$403.906 \pm 0.1\% \text{ (k=2)}$	$403.969 \pm 0.1\% \text{ (k=2)}$
Low Range	$3.93438 \pm 0.7\% \text{ (k=2)}$	$3.91686 \pm 0.7\% \text{ (k=2)}$	$3.94495 \pm 0.7\% \text{ (k=2)}$

**Connector Angle**

Connector Angle to be used in DASY system	$146^\circ \pm 1^\circ$
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**Appendix****1. DC Voltage Linearity**

High Range		Input (µV)	Reading (µV)	Error (%)
Channel X	+ Input	200000	200000	0.00
Channel X	+ Input	20000	20006.42	0.03
Channel X	- Input	20000	-20005.03	0.03
Channel Y	+ Input	200000	199999.6	0.00
Channel Y	+ Input	20000	20004.36	0.02
Channel Y	- Input	20000	-20008.05	0.04
Channel Z	+ Input	200000	199999.8	0.00
Channel Z	+ Input	20000	20005.63	0.03
Channel Z	- Input	20000	-20006.88	0.03

Low Range		Input (µV)	Reading (µV)	Error (%)
Channel X	+ Input	2000	2000.1	0.00
Channel X	+ Input	200	200.25	0.13
Channel X	- Input	200	-200.34	0.17
Channel Y	+ Input	2000	2000.1	0.00
Channel Y	+ Input	200	199.41	-0.30
Channel Y	- Input	200	-200.64	0.32
Channel Z	+ Input	2000	2000.1	0.00
Channel Z	+ Input	200	199.56	-0.22
Channel Z	- Input	200	-200.99	0.50

**2. Common mode sensitivity**

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	-3.41	-4.27
	-200	4.45	4.86
Channel Y	200	-7.35	-6.80
	-200	5.01	5.93
Channel Z	200	9.73	10.44
	-200	-12.17	-11.92

**3. Channel separation**

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	-	-0.13	-2.47
Channel Y	200	0.11	-	1.24
Channel Z	200	-1.80	-0.38	-

**4. AD-Converter Values with inputs shorted**

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16305	15799
Channel Y	15832	14878
Channel Z	16026	16094

**5. Input Offset Measurement**

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10MΩ

	Average (µV)	min. Offset (µV)	max. Offset (µV)	Std. Deviation (µV)
Channel X	-0.23	-1.20	1.19	0.30
Channel Y	-0.80	-1.80	0.08	0.26
Channel Z	-0.31	-1.66	1.10	0.31

**6. Input Offset Current**

Nominal Input circuitry offset current on all channels: &lt;25fA

**7. Input Resistance**

	Zeroing (MΩ)	Measuring (MΩ)
Channel X	0.2001	199.8
Channel Y	0.2001	199.5
Channel Z	0.2000	199.8

**8. Low Battery Alarm Voltage** (verified during pre test)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

**9. Power Consumption** (verified during pre test)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.0	+6	+14
Supply (- Vcc)	-0.01	-8	-9

## APPENDIX E - TEST SYSTEM VERIFICATIONS SCANS

### Measurement Result

System Validation Dipole: D450V2 SN: 1010

#### Environmental Conditions

Ambient Temperature:	21 C
Relative Humidity:	71
ATM Pressure:	1028bar

\* Testing was performed by Eric Hong on 2007-09-22.

Frequency [MHz]	Parameters	Liquid Temp [°C]	Target Value	Measured Value	Deviation [%]	Limits [%]
450	$\epsilon_r$	22	43.5	43.2	-0.69	$\pm 5$
	$\sigma$	22	0.87	0.86	-1.15	$\pm 5$
	1g SAR	22	4.9	4.94	0.82	$\pm 10$

$\epsilon_r$  = relative permittivity,  $\sigma$  = conductivity and  $\rho=1000\text{kg/m}^3$

## System Performance Test for Head Liquid

### Dipole 450 MHz; Type: D450V2; Serial Number: 1010

Communication System: CW; Frequency: 450 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 450$  MHz;  $\sigma = 0.86$  mho/m;  $\epsilon_r = 43.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

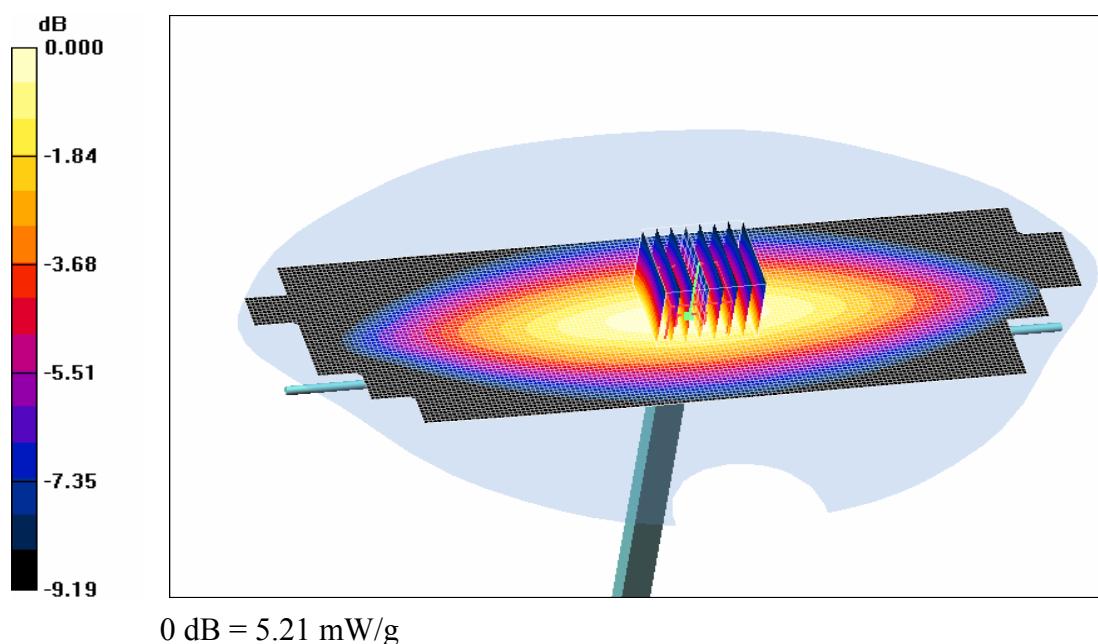
DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(7.31, 7.31, 7.31); Calibrated: 8/28/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 161

**d=15mm, Pin=1W/Area Scan (61x201x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (interpolated) = 5.24 mW/g

**d=15mm, Pin=1W/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 81.6 V/m; Power Drift = -0.02 dB  
Peak SAR (extrapolated) = 7.11 W/kg  
**SAR(1 g) = 4.94 mW/g; SAR(10 g) = 3.37mW/g**

Maximum value of SAR (measured) = 5.21 mW/g



## APPENDIX F - EUT SCANS

### EUT Face 2.5cm separation to flat phantom (High Channel)

Headline Systems; Type: HL-1521; Serial Number: B1301

Communication System: CW; Frequency: 469.975 MHz; Duty Cycle: 1:1  
 Medium parameters used:  $f = 450$  MHz;  $\sigma = 0.86$  mho/m;  $\epsilon_r = 43.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(7.31, 7.31, 7.31); Calibrated: 8/28/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 161

**Face position 2.5cm separation to flat phantom/Area Scan (51x101x1):** Measurement grid: dx=20mm, dy=20mm  
 Maximum value of SAR (interpolated) = 4.51 mW/g

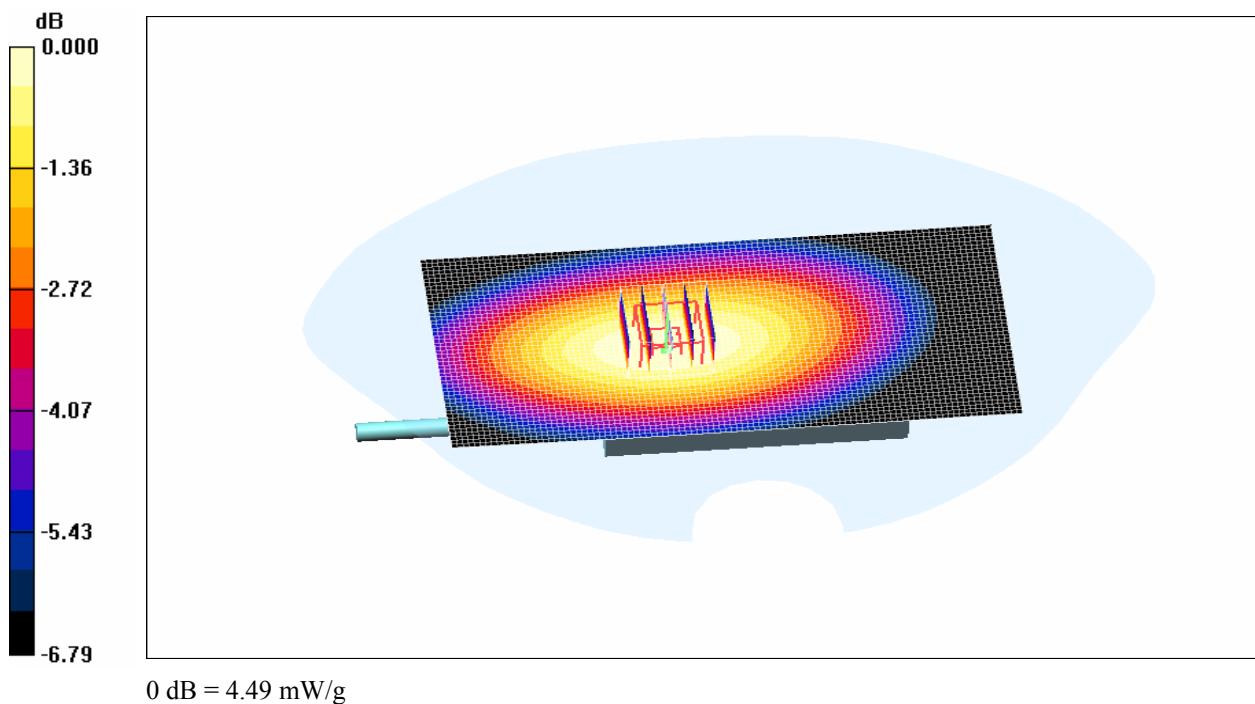
**Face position 2.5cm separation to flat phantom/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5m

Reference Value = 69.8 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 6.01 W/kg

**SAR (1 g) = 4.46 mW/g; SAR (10 g) = 3.32 mW/g**

Maximum value of SAR (measured) = 4.49 mW/g



**Plot # 1**

**EUT Face 2.5cm separation to flat phantom (Middle Channel)****Headline Systems; Type: HL-1521; Serial Number: B1301**

Communication System: CW; Frequency: 450.023 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 450$  MHz;  $\sigma = 0.86$  mho/m;  $\epsilon_r = 43.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(7.31, 7.31, 7.31); Calibrated: 8/28/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

**Face position 2.5cm separation to flat phantom/Area Scan (51x101x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 4.76 mW/g

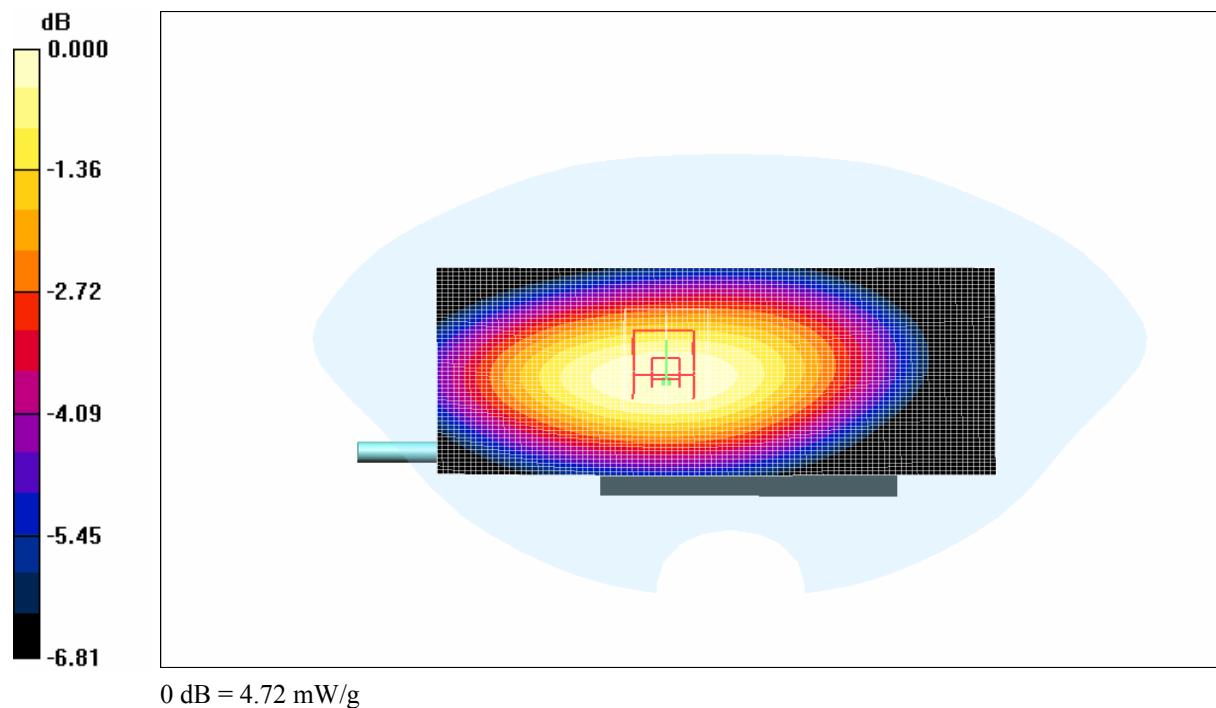
**Face position 2.5cm separation to flat phantom/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 71.1 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 6.07 W/kg

SAR(1 g) = 4.53 mW/g; SAR(10 g) = 3.46 mW/g

Maximum value of SAR (measured) = 4.72 mW/g



**EUT Face 2.5cm separation to flat phantom (Low Channel)****Headline Systems; Type: HL-1521; Serial Number: B1301**

Communication System: CW; Frequency: 430.025 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 450$  MHz;  $\sigma = 0.86$  mho/m;  $\epsilon_r = 43.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(7.31, 7.31, 7.31); Calibrated: 8/28/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 161

**Back touching flat phantom with belt clip and headset/Area Scan (51x101x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 4.77 mW/g

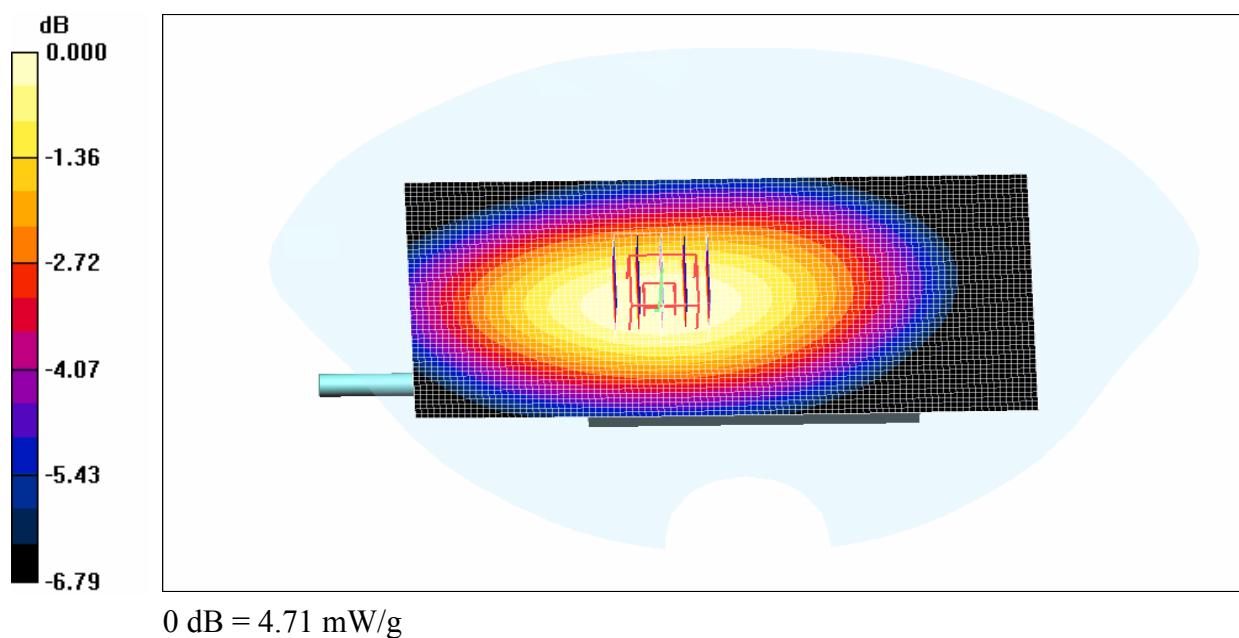
**Face position 2.5cm separation to flat phantom/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 71.1 V/m; Power Drift = -0.002 dB

Peak SAR (extrapolated) = 6.06 W/kg

**SAR(1 g) = 4.52 mW/g; SAR(10 g) = 3.45 mW/g**

Maximum value of SAR (measured) = 4.71 mW/g



**EUT back touching to flat phantom with belt clip and headset (High Channel)****Headline Systems; Type: HL-1521; Serial: B1301**

Communication System: CW; Frequency: 469.975 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 450$  MHz;  $\sigma = 0.93$  mho/m;  $\epsilon_r = 56.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(7.84, 7.84, 7.84); Calibrated: 8/28/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 161

**Back touching flat phantom with belt clip and headset/Area Scan (51x101x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 4.40 mW/g

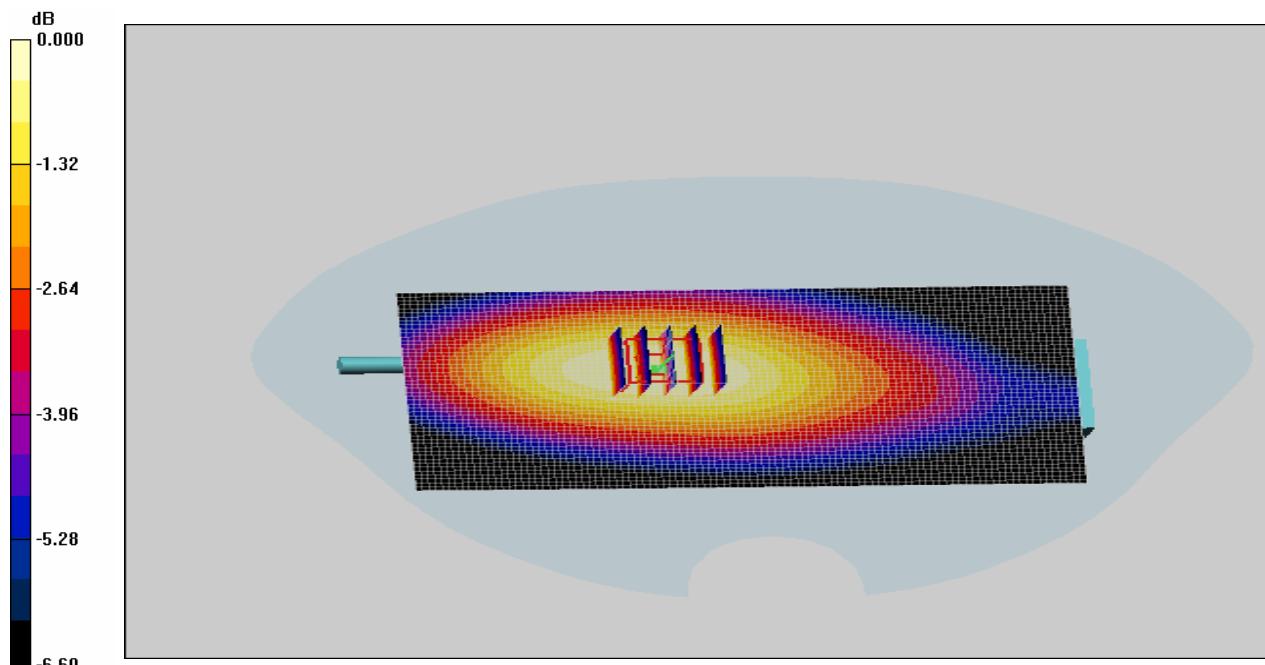
**Back touching flat phantom with belt clip and headset/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 64.3 V/m; Power Drift = 0.001dB

Peak SAR (extrapolated) = 5.76 W/kg

**SAR(1 g) = 4.21W/g; SAR(10 g) = 3.16W/g**

Maximum value of SAR (measured) = 4.39 mW/g

**Plot#4**

**EUT back touching to flat phantom with belt clip and headset (Middle Channel)****Headline Systems; Type: HL-1521; Serial: B1301**

Communication System: CW; Frequency: 450.023 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 450$  MHz;  $\sigma = 0.93$  mho/m;  $\epsilon_r = 56.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(7.84, 7.84, 7.84); Calibrated: 8/28/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

**Back touching flat phantom with headset/Area Scan (51x101x1):** Measurement grid: dx=20mm, dy=20mm  
Maximum value of SAR (interpolated) = 4.49 mW/g

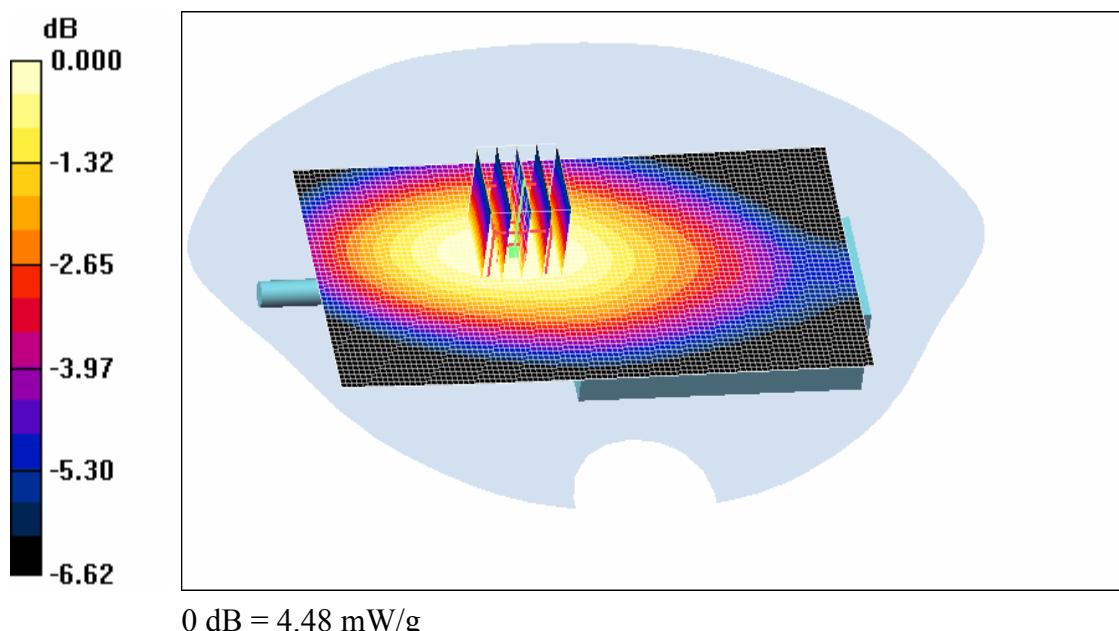
**Back touching flat phantom with headset/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 65.6 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 5.87 W/kg

SAR(1 g) = 4.28 mW/g; SAR(10 g) = 3.24 mW/g

Maximum value of SAR (measured) = 4.48 mW/g

**Plot#5**

**EUT back touching to flat phantom with belt clip and headset (Low Channel)****Headline Systems; Type: HL-1521; Serial: B1301**

Communication System: CW; Frequency: 430.025 MHz; Duty Cycle: 1:1  
Medium parameters used:  $f = 450$  MHz;  $\sigma = 0.93$  mho/m;  $\epsilon_r = 56.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1604; ConvF(7.84, 7.84, 7.84); Calibrated: 8/28/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/22/2006
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 161

**Back touching flat phantom with belt clip and headset/Area Scan (51x101x1):** Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 4.47 mW/g

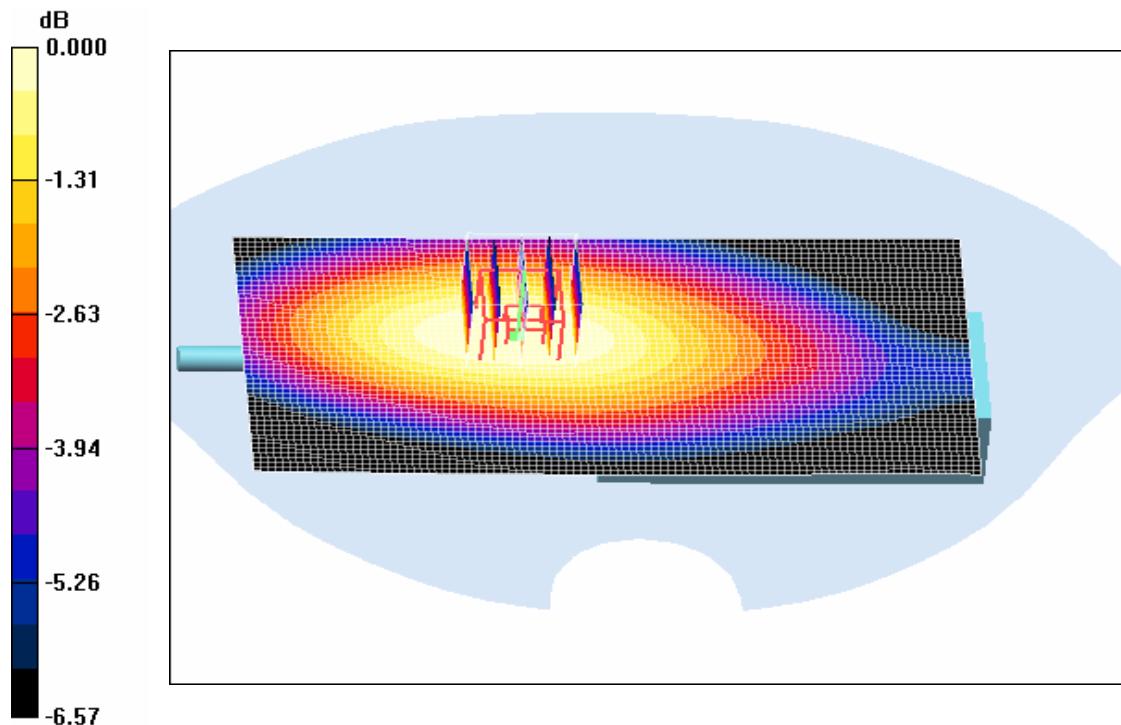
**Back touching flat phantom with belt clip and headset/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 65.2 V/m; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 5.83 W/kg

**SAR(1 g) = 4.27 mW/g; SAR(10 g) = 3.23 mW/g**

Maximum value of SAR (measured) = 4.45 mW/g



0 dB = 4.45 mW/g

**Plot#6**

## APPENDIX G – CONDUCTED OUTPUT POWER MEASUREMENT

### Provision Applicable

The measured peak output power should be greater and within 5% than EMI measurement.

### Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

### Test equipment

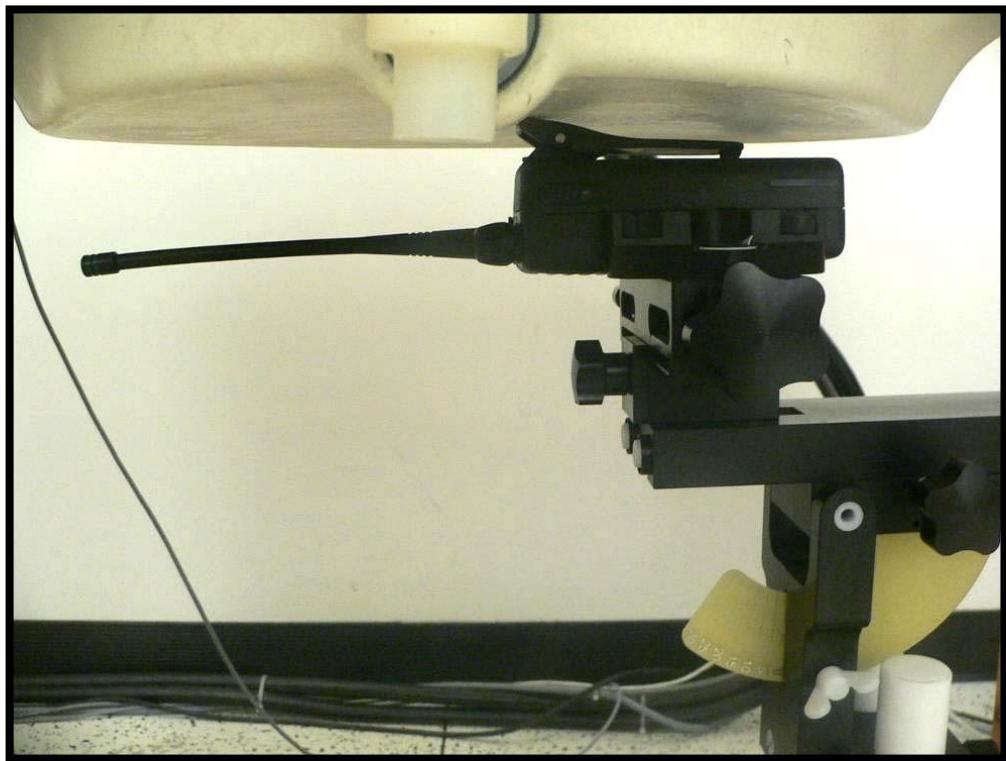
Equipment Description	Model Number	Serial Number	Calibration Date
Agilent Spectrum Analyzer	8565EC	3946A00131	2007-01-24

### Test Results

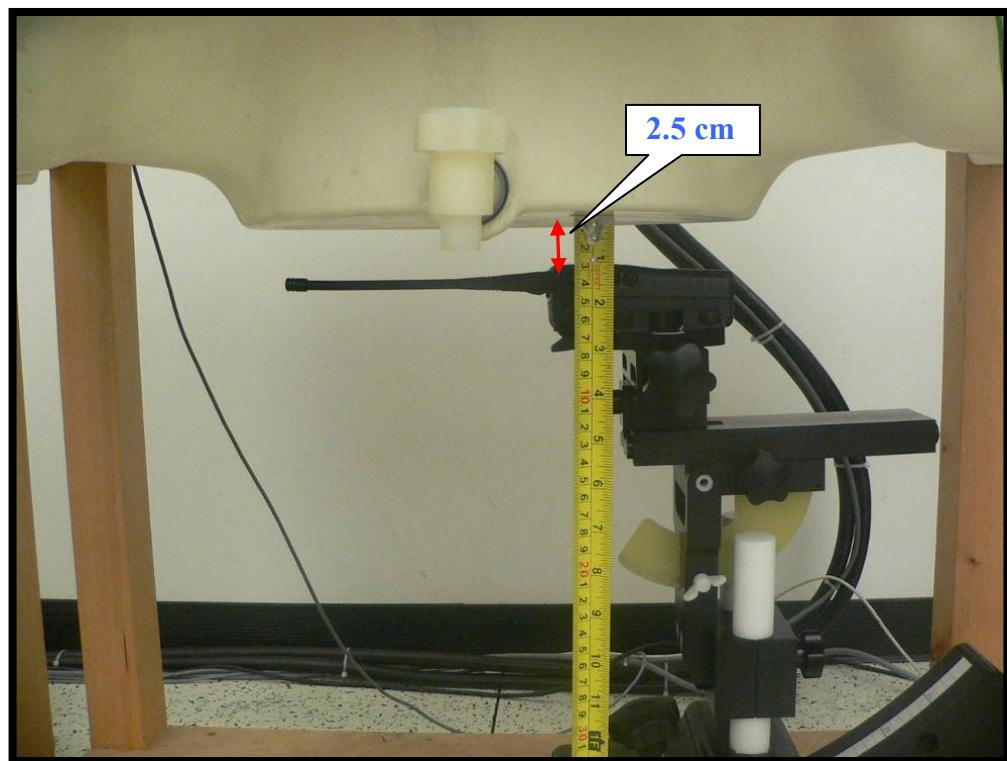
Channel	Frequency (MHz)	Conducted Output Power (dBm)
High Channel	469.975	35.79
Middle Channel	450.023	35.86
Low Channel	430.025	35.78

## **APPENDIX H – EUT TEST SET UP PHOTOS**

**Body-worn Belt clip with Headset back touching to the flat phantom**



**Face-held 2.5cm Separation to the flat phantom**



## **APPENDIX I– EUT PHOTO**

### **EUT – Front View**



### **EUT – Rear View**



## APPENDIX J - INFORMATIVE REFERENCES

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\*\*\*\*\* END OF REPORT \*\*\*\*\*