

Date/Time: 4/7/2009 1:01:52 PM

WCDMA Band V with BenQ Joybook S72 Test Position 1 Middle Frequency

Communication System: WCDMA Band V; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 1.02$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3

Liquid Temperature: 21.4

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3660; ConvF(9.1, 9.1, 9.1); Calibrated: 9/3/2008
- Electronics: DAE4 Sn452; Calibrated: 11/18/2008
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Test Position 1 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.500 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.0 V/m; Power Drift = -0.149 dB

Peak SAR (extrapolated) = 0.676 W/kg

SAR(1 g) = 0.457 mW/g; SAR(10 g) = 0.325 mW/g

Maximum value of SAR (measured) = 0.541 mW/g

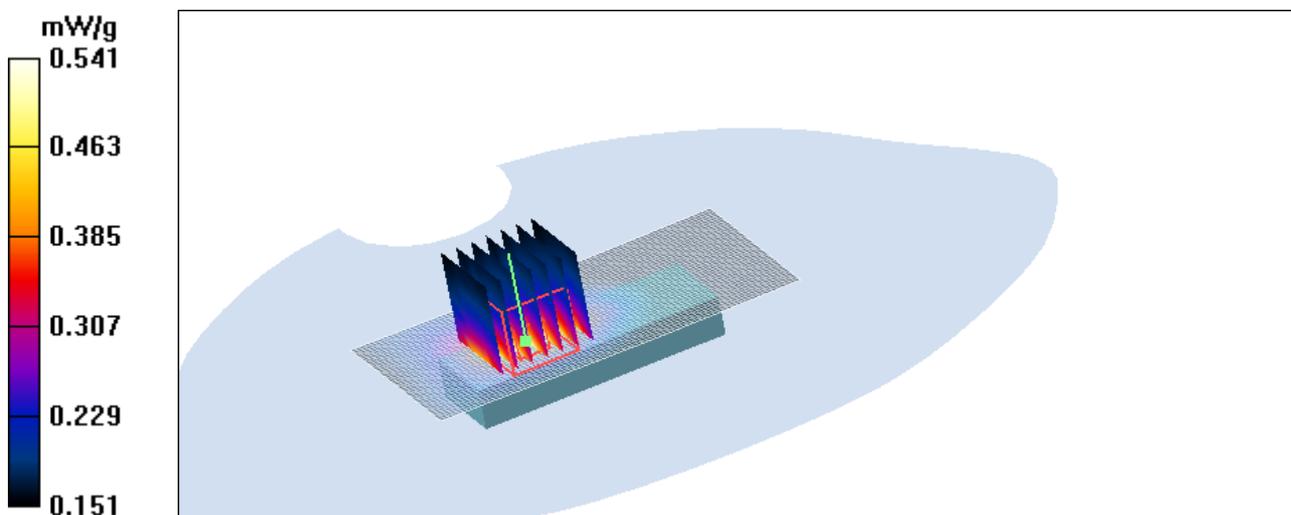


Figure 75 WCDMA Band V with BenQ Joybook S72 Test Position 1 Channel 4182

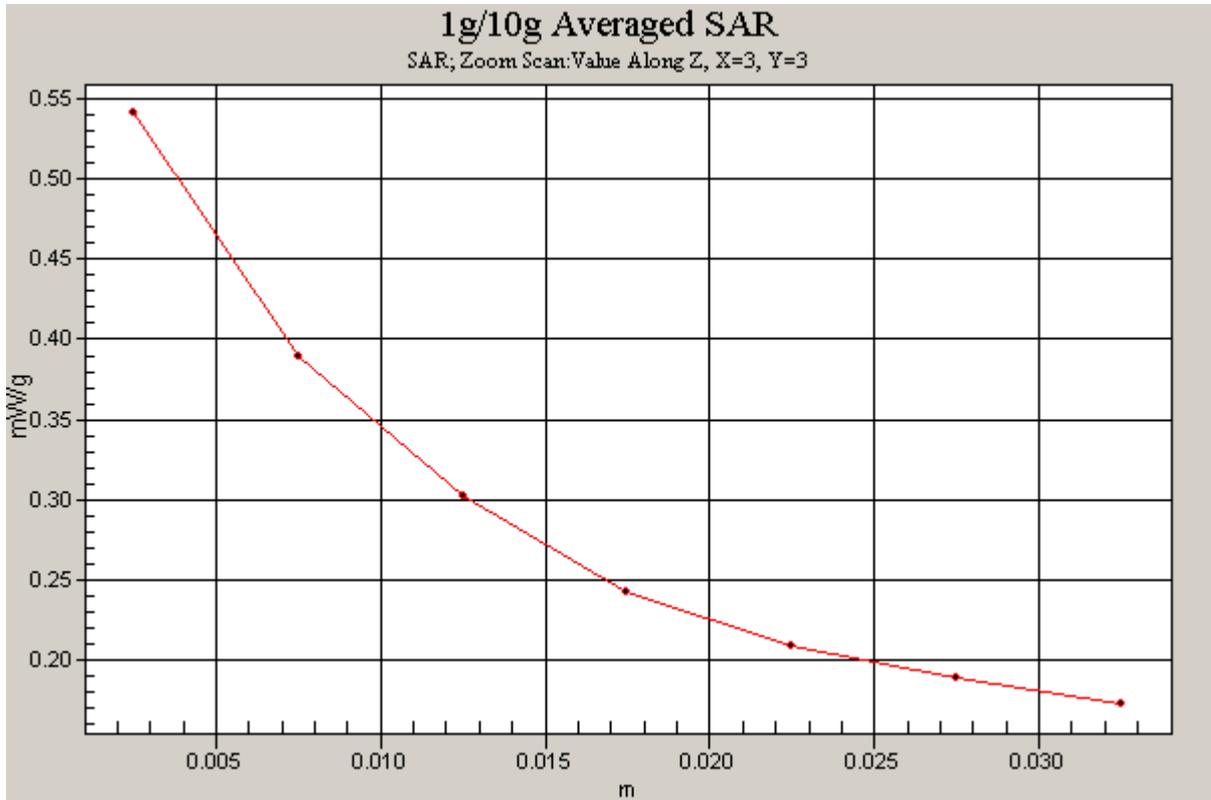


Figure 76 Z-Scan at power reference point [WCDMA Band V with I BenQ Joybook S72 Test Position 1 Channel 4182]

Date/Time: 4/7/2009 1:25:52 PM

WCDMA Band V with BenQ Joybook S72 Test Position 2 High Frequency

Communication System: WCDMA Band V; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 847$ MHz; $\sigma = 1.03$ mho/m; $\epsilon_r = 54.9$; $\rho = 1000$ kg/m³
Ambient Temperature: 22.3 Liquid Temperature: 21.4

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3660; ConvF(9.1, 9.1, 9.1); Calibrated: 9/3/2008
- Electronics: DAE4 Sn452; Calibrated: 11/18/2008
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Test Position 1 High/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.663 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.5 V/m; Power Drift = 0.023 dB
Peak SAR (extrapolated) = 0.832 W/kg
SAR(1 g) = 0.548 mW/g; SAR(10 g) = 0.373 mW/g
Maximum value of SAR (measured) = 0.660 mW/g

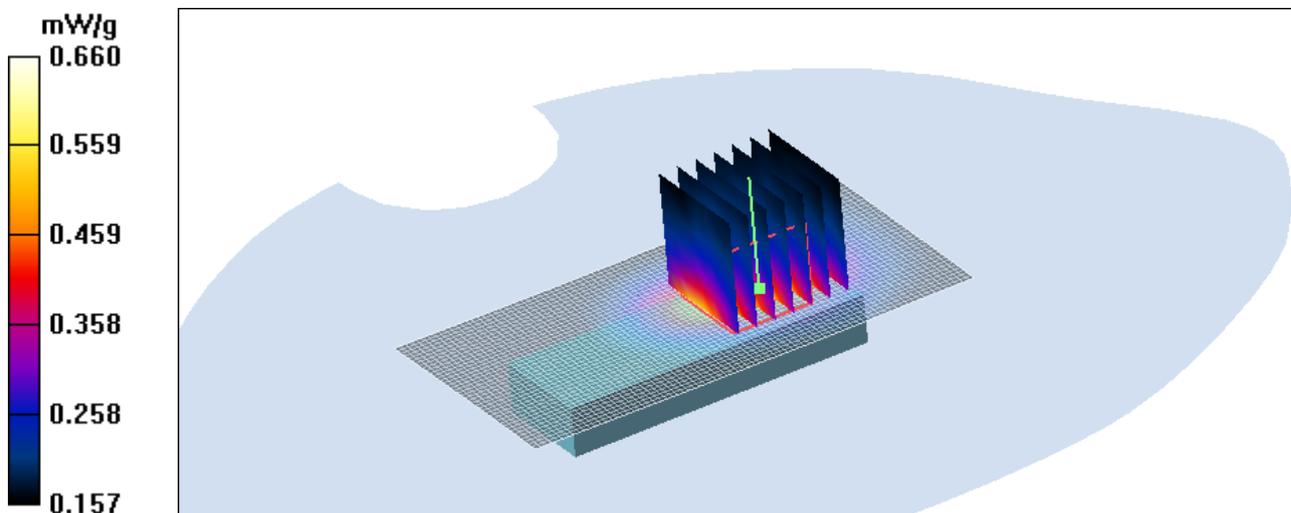


Figure 77 WCDMA Band V with BenQ Joybook S72 Test Position 2 Channel 4233

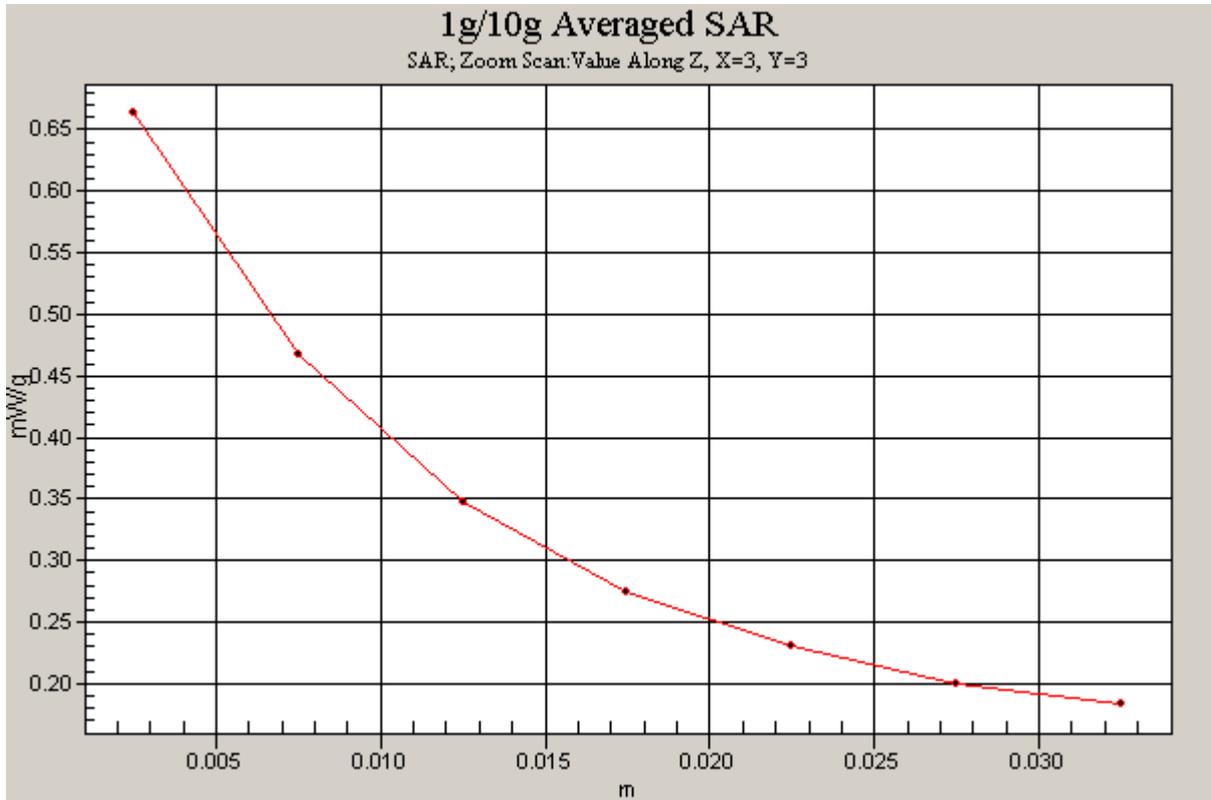


Figure 78 Z-Scan at power reference point [WCDMA Band v with I BenQ Joybook S72 Test Position 2 Channel 4233]

Date/Time: 4/7/2009 1:47:52 PM

WCDMA Band V with BenQ Joybook S72 Test Position 2 Middle Frequency

Communication System: WCDMA Band V; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 1.02$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3

Liquid Temperature: 21.4

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3660; ConvF(9.1, 9.1, 9.1); Calibrated: 9/3/2008
- Electronics: DAE4 Sn452; Calibrated: 11/18/2008
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Test Position 1 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.744 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm,

dz=5mm

Reference Value = 22.2 V/m; Power Drift = 0.028 dB

Peak SAR (extrapolated) = 0.964 W/kg

SAR(1 g) = 0.630 mW/g; SAR(10 g) = 0.426 mW/g

Maximum value of SAR (measured) = 0.750 mW/g

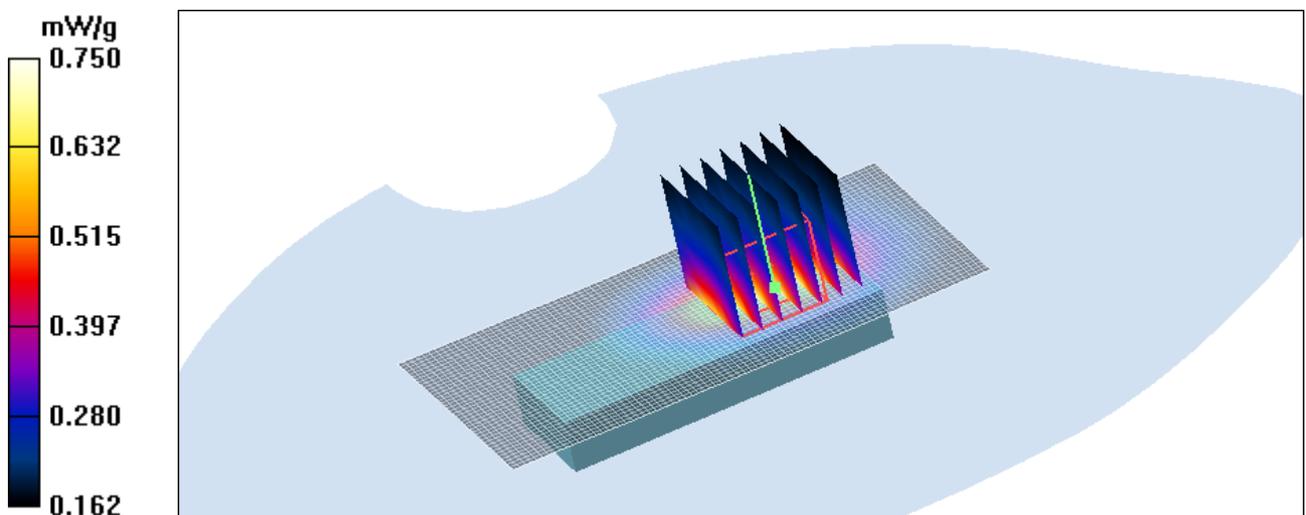


Figure 79 WCDMA Band V with BenQ Joybook S72 Test Position 2 Channel 4182

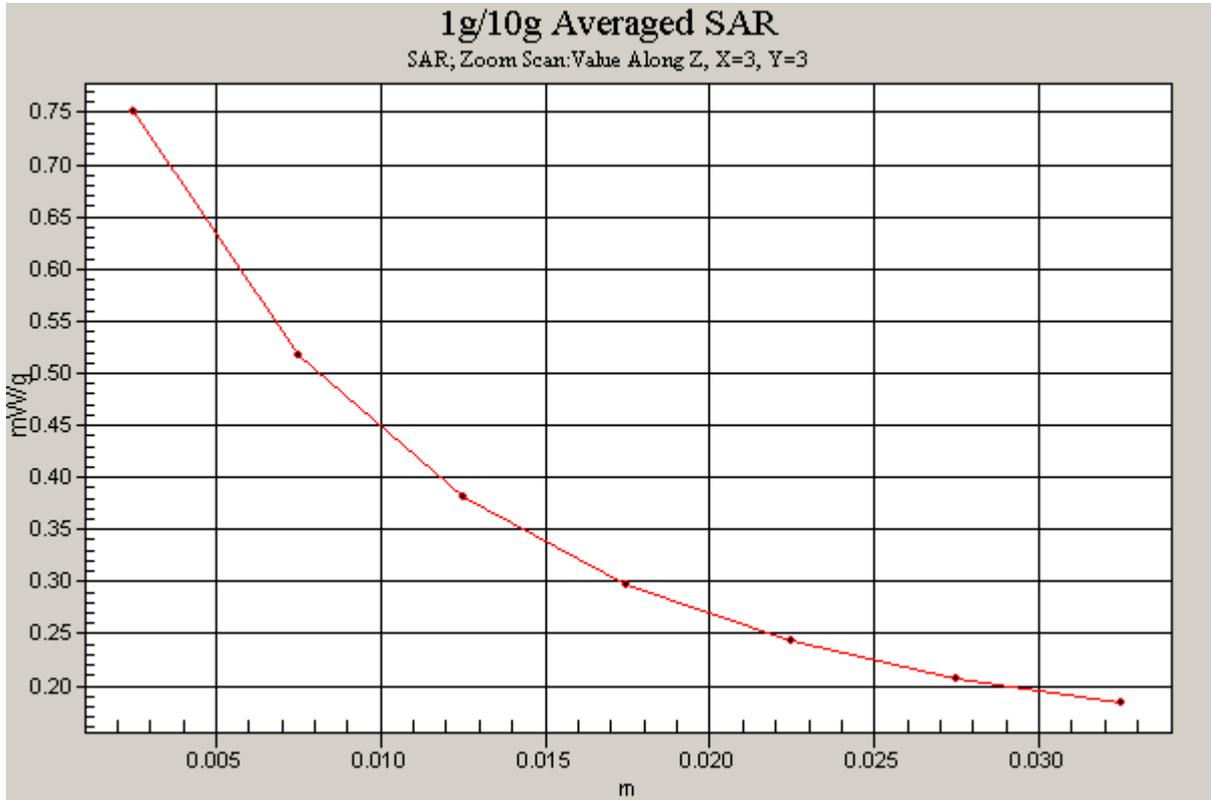


Figure 80 Z-Scan at power reference point [WCDMA Band v with I BenQ Joybook S72 Test Position 2 Channel 4182]

Date/Time: 4/7/2009 2:15:52 PM

WCDMA Band V with BenQ Joybook S72 Test Position 2 Low Frequency

Communication System: WCDMA Band V; Frequency: 826.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 826.4$ MHz; $\sigma = 1.01$ mho/m; $\epsilon_r = 55.2$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3

Liquid Temperature: 21.4

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3660; ConvF(9.1, 9.1, 9.1); Calibrated: 9/3/2008
- Electronics: DAE4 Sn452; Calibrated: 11/18/2008
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Test Position 1 Low/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.677 mW/g

Test Position 1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.3 V/m; Power Drift = 0.190 dB

Peak SAR (extrapolated) = 0.820 W/kg

SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.379 mW/g

Maximum value of SAR (measured) = 0.654 mW/g

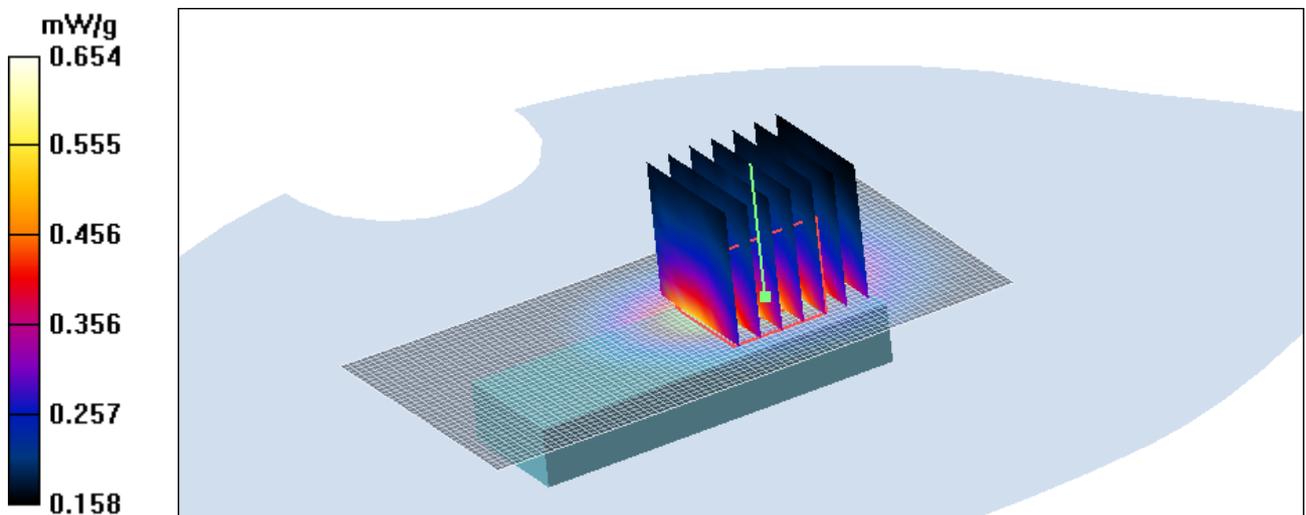


Figure 81 WCDMA Band V with BenQ Joybook S72 Test Position 2 Channel 4132

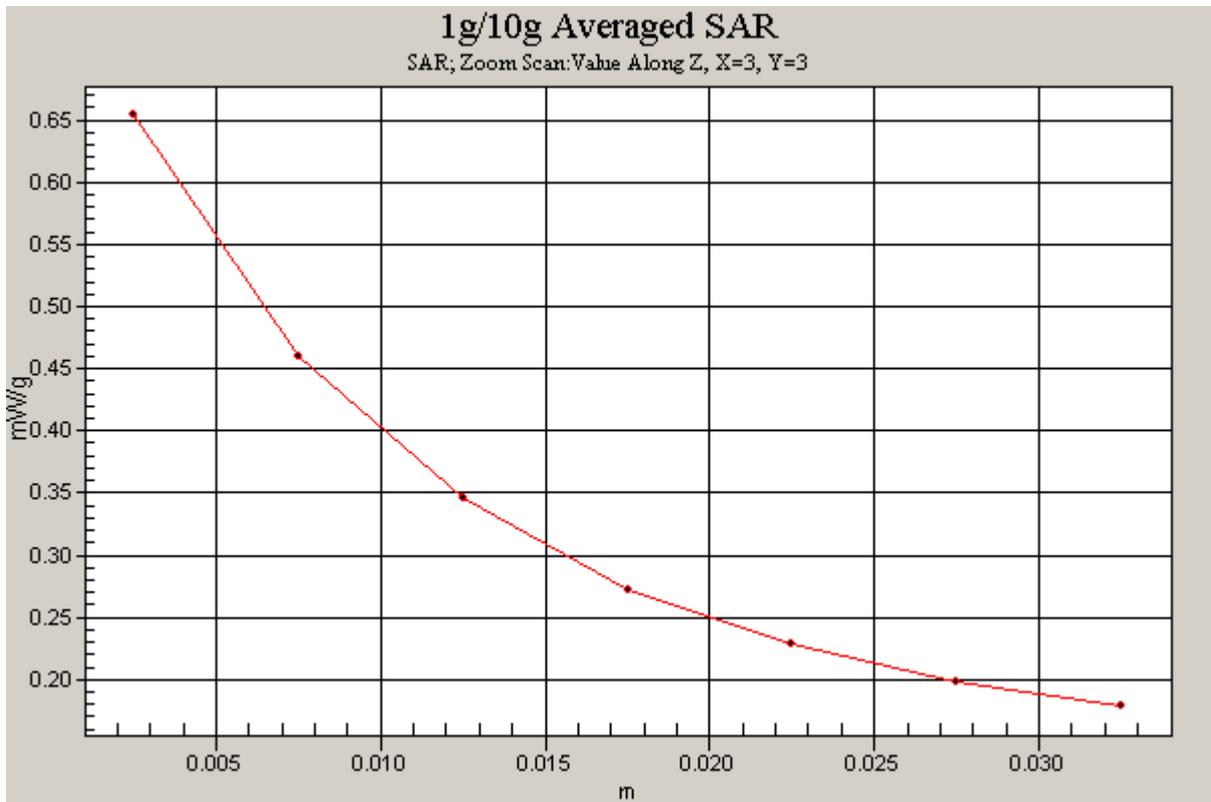


Figure 82 Z-Scan at power reference point [WCDMA Band v with I BenQ Joybook S72 Test Position 2 Channel 4132]

Date/Time: 4/7/2009 2:37:52 PM

WCDMA Band V with BenQ Joybook S72 Test Position 3 Middle Frequency

Communication System: WCDMA Band V; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 1.02$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3

Liquid Temperature: 21.4

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3660; ConvF(9.1, 9.1, 9.1); Calibrated: 9/3/2008
- Electronics: DAE4 Sn452; Calibrated: 11/18/2008
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Test Position 1 Middle/Area Scan (41x41x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.053 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.40 V/m; Power Drift = 0.184 dB

Peak SAR (extrapolated) = 0.112 W/kg

SAR(1 g) = 0.039 mW/g; SAR(10 g) = 0.026 mW/g

Maximum value of SAR (measured) = 0.052 mW/g

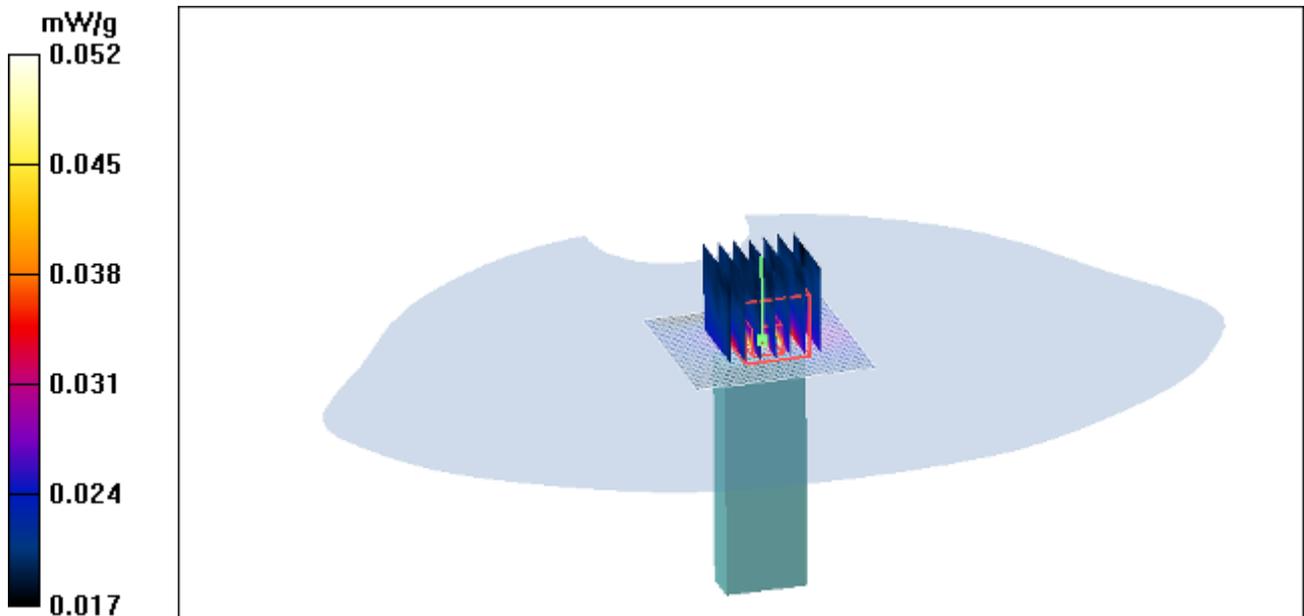


Figure 83 WCDMA Band V with BenQ Joybook S72 Test Position 3 Channel 4182

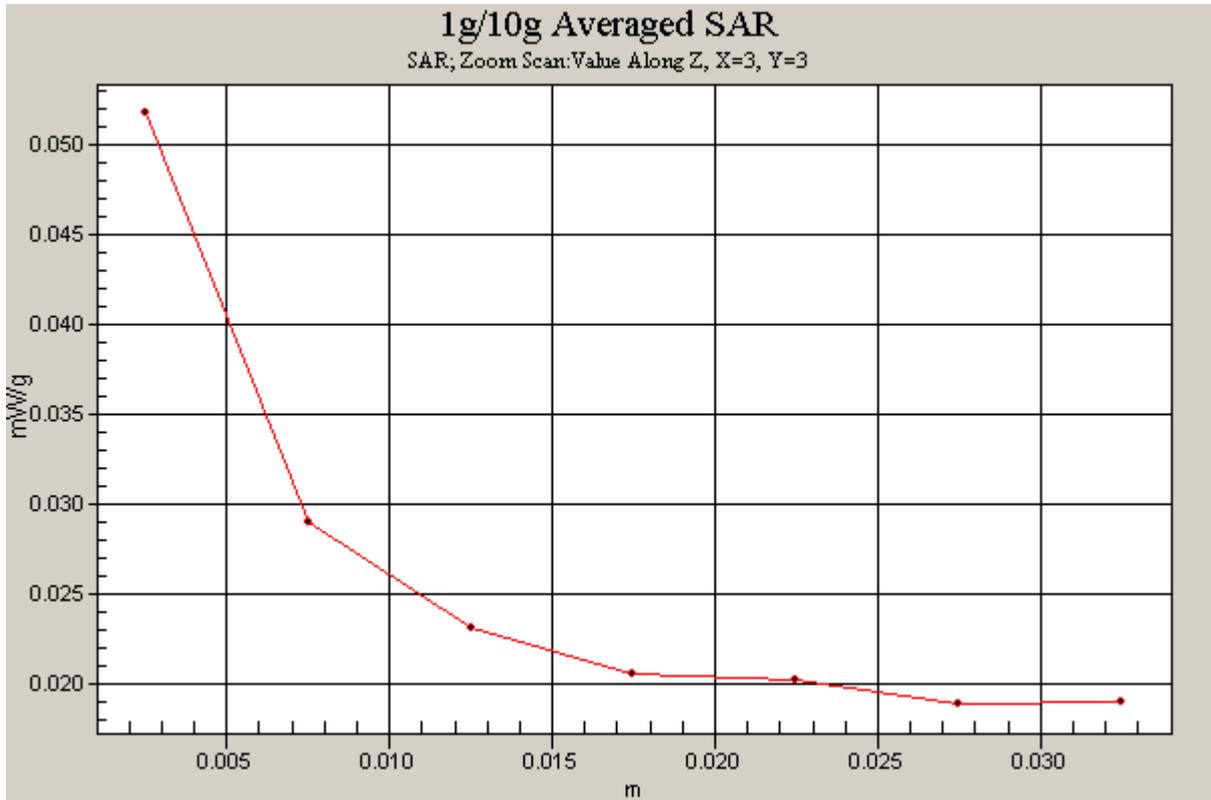


Figure 84 Z-Scan at power reference point [WCDMA Band II with I BenQ Joybook S72 Test Position 3 Channel 4182]

Date/Time: 4/7/2009 2:59:52 PM

WCDMA Band V with IBM T61 Test Position 4 Middle Frequency

Communication System: WCDMA Band V; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 1.02$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3

Liquid Temperature: 21.4

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3660; ConvF(9.1, 9.1, 9.1); Calibrated: 9/3/2008
- Electronics: DAE4 Sn452; Calibrated: 11/18/2008
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Test Position 1 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.210 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.0 V/m; Power Drift = 0.110 dB

Peak SAR (extrapolated) = 0.264 W/kg

SAR(1 g) = 0.178 mW/g; SAR(10 g) = 0.120 mW/g

Maximum value of SAR (measured) = 0.214 mW/g

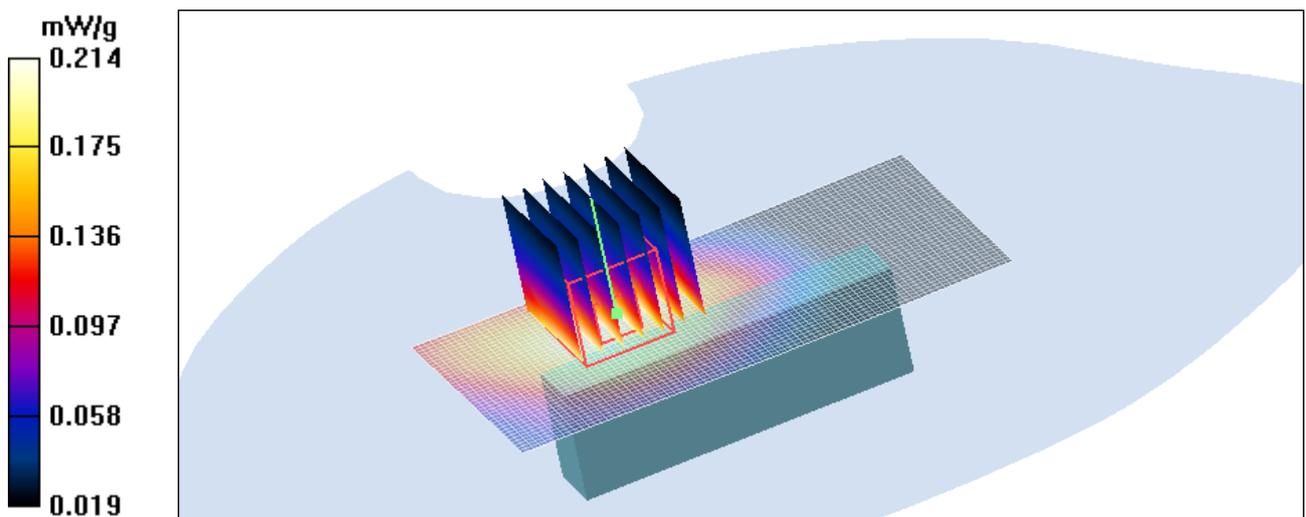


Figure 85 WCDMA Band V with IBM T61 Test Position 4 Channel 4182

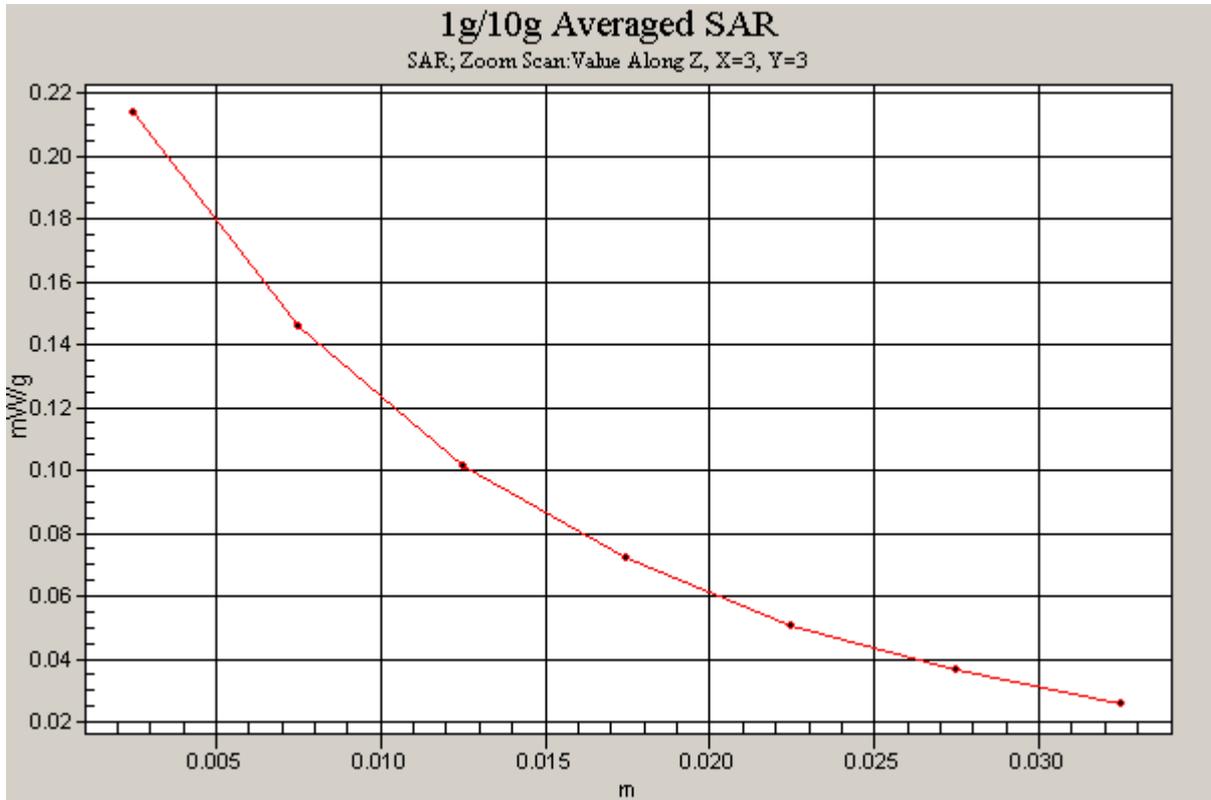


Figure 86 Z-Scan at power reference point [WCDMA Band V with I IBM T61 Test Position
4Channel 4182]

Date/Time: 4/7/2009 3:24:52 PM

WCDMA Band V with IBM T61 Test Position 5 Middle Frequency

Communication System: WCDMA Band V; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 1.02$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3

Liquid Temperature: 21.4

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3660; ConvF(9.1, 9.1, 9.1); Calibrated: 9/3/2008
- Electronics: DAE4 Sn452; Calibrated: 11/18/2008
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

Test Position 1 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.418 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.8 V/m; Power Drift = 0.027 dB

Peak SAR (extrapolated) = 0.534 W/kg

SAR(1 g) = 0.339 mW/g; SAR(10 g) = 0.213 mW/g

Maximum value of SAR (measured) = 0.419 mW/g

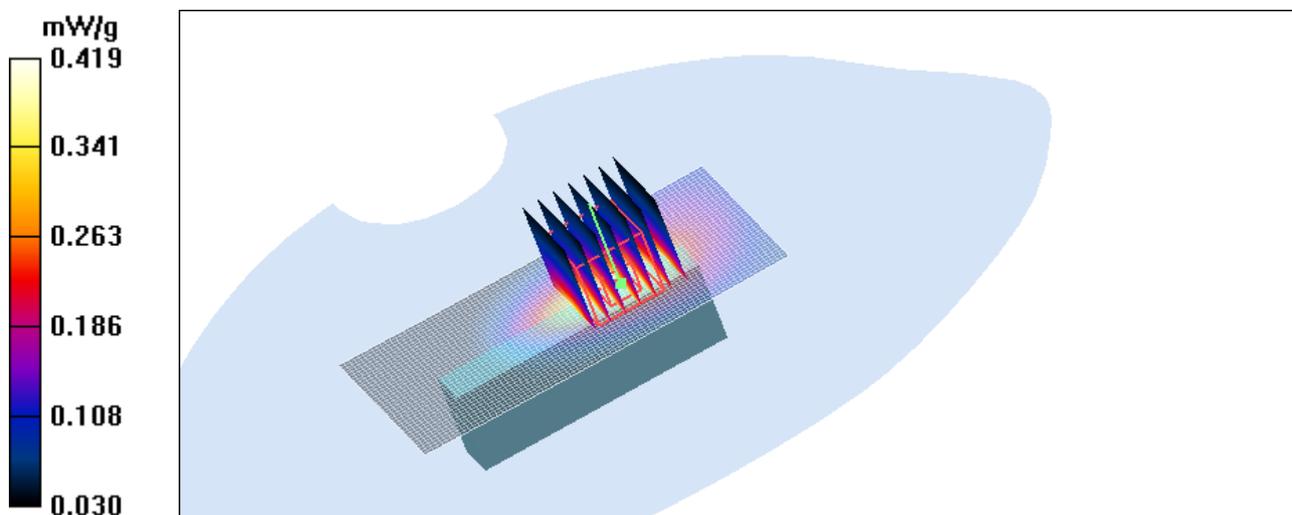


Figure 87 WCDMA Band II with IBM T61 Test Position 5 Channel 4182

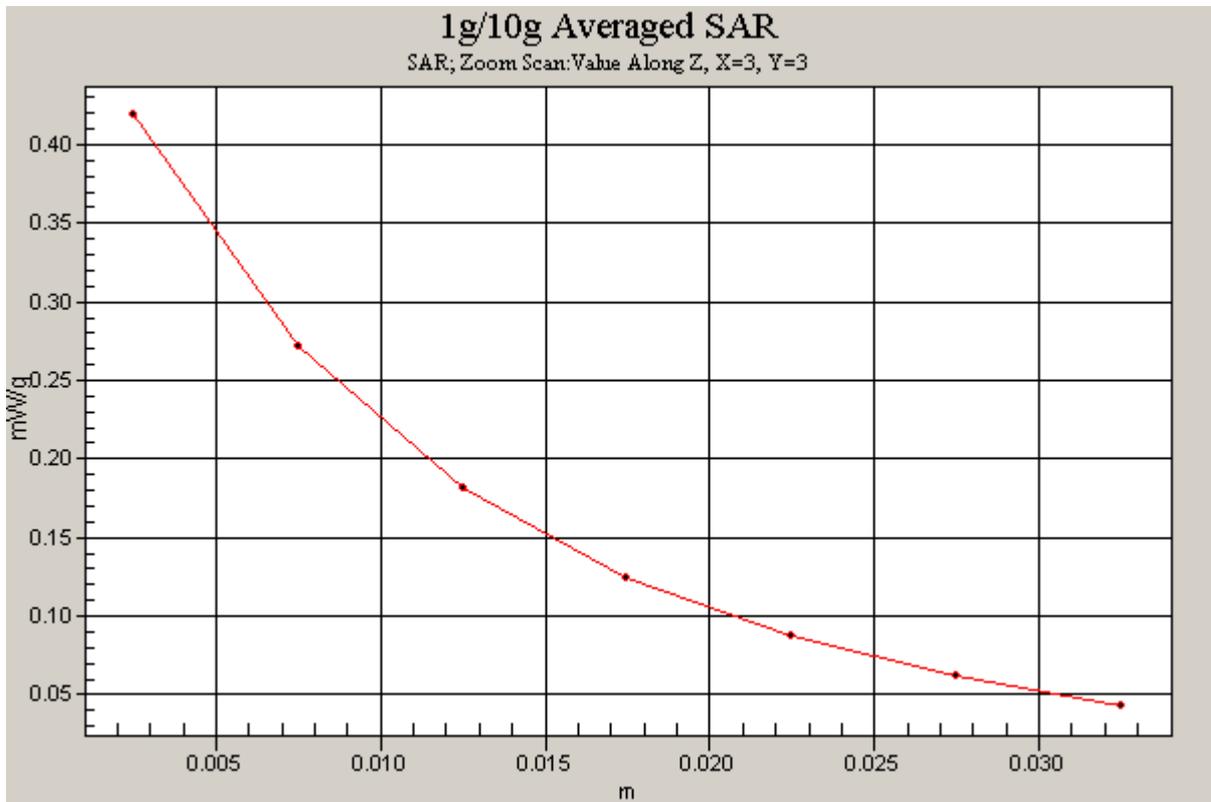


Figure 88 Z-Scan at power reference point [WCDMA Band V with I IBM T61 Test Position 5
Channel 4182

Date/Time: 4/7/2009 3:47:52 PM

WCDMA Band V HSDPA with BenQ Joybook S72 Test Position 2 Middle Frequency

Communication System: WCDMA Band V+HSDPA; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 836.4$ MHz; $\sigma = 1.02$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.3

Liquid Temperature: 21.4

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3660; ConvF(9.1, 9.1, 9.1); Calibrated: 9/3/2008
- Electronics: DAE4 Sn452; Calibrated: 11/18/2008
- Phantom: SAM 12; Type: SAM V4.0; Serial: TP-1246
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

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

Maximum value of SAR (interpolated) = 0.699 mW/g

Towards Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.2 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 0.936 W/kg

SAR(1 g) = 0.574 mW/g; SAR(10 g) = 0.344 mW/g

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

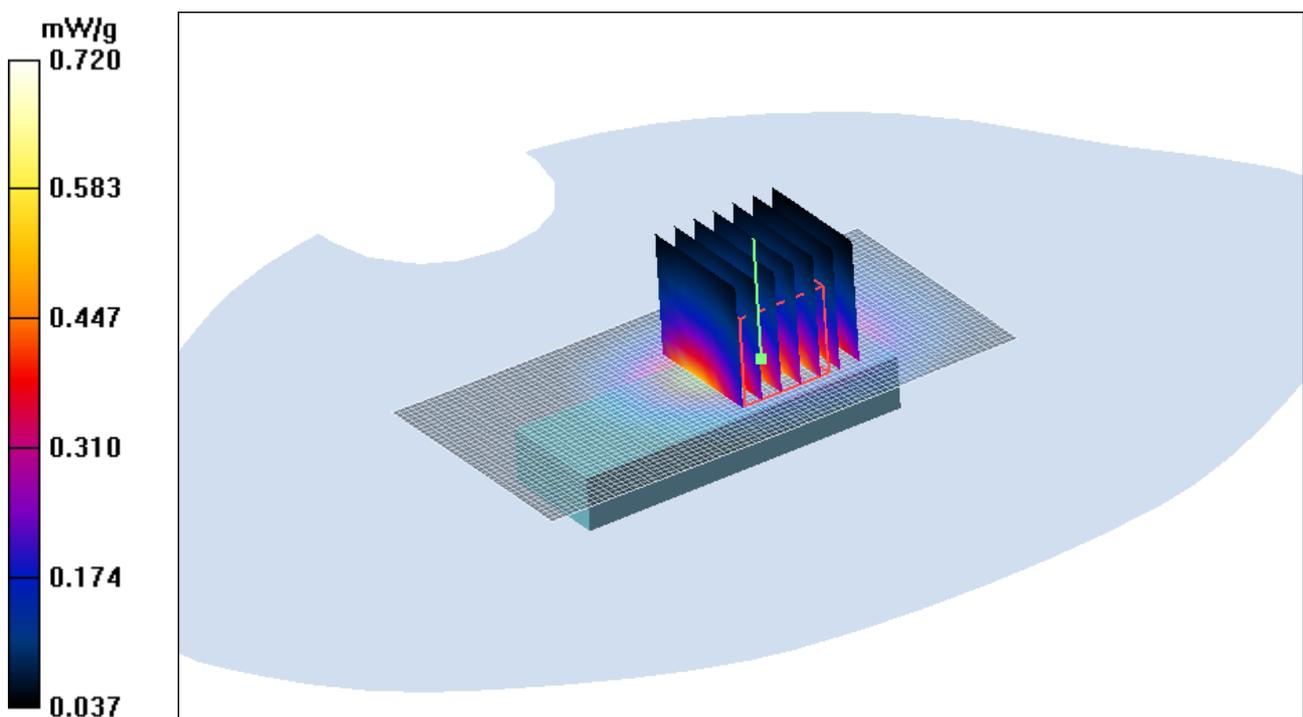


Figure 89 WCDMA Band V HSDPA with BenQ Joybook S72 Test Position 2 Channel 4182

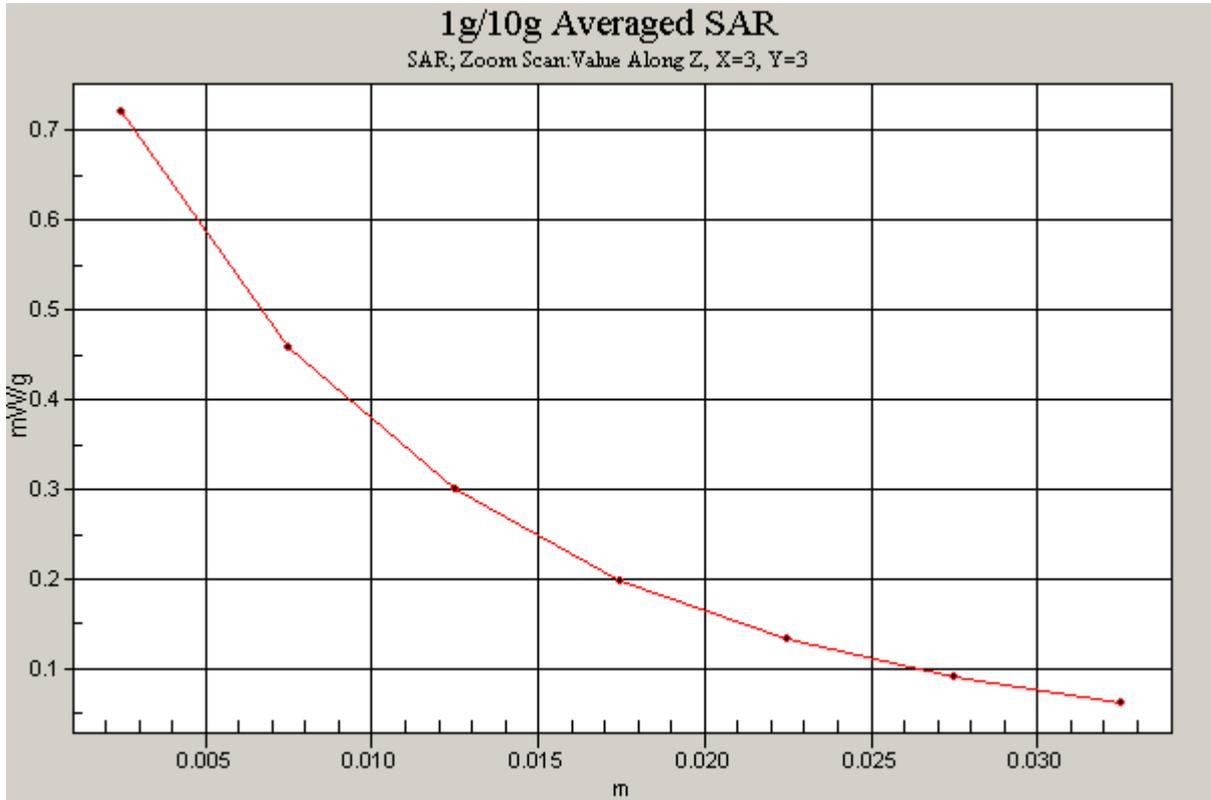


Figure 90 Z-Scan at power reference point [WCDMA Band V HSDPA with BenQ Joybook S72
Test Position 2 Channel 4182

TA Technology (Shanghai) Co., Ltd. Test Report

No. RZA2009-0366FCC

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ANNEX D : PROBE CALIBRATION CERTIFICATE

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



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

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

Accreditation No.: **SCS 108**

Client **TA (Auden)**

Certificate No: **EX3-3660_Sep08**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3660**

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

Calibration date: **September 3, 2008**

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 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|-----------------------------------|------------------------|
| Power meter E4419B | GB41293874 | 1-Apr-08 (No. 217-00788) | Apr-09 |
| Power sensor E4412A | MY41495277 | 1-Apr-08 (No. 217-00788) | Apr-09 |
| Power sensor E4412A | MY41498087 | 1-Apr-08 (No. 217-00788) | Apr-09 |
| Reference 3 dB Attenuator | SN: S5054 (3c) | 1-Jul-08 (No. 217-00665) | Jul-09 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 31-Mar-08 (No. 217-00787) | Apr-09 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 1-Jul-08 (No. 217-00666) | Jul-09 |
| Reference Probe ES3DV2 | SN: 3013 | 2-Jan-08 (No. ES3-3013_Jan08) | Jan-09 |
| D4E4 | SN: 660 | 3-Sep-07 (No. D4E4-660_Sep07) | Sep-08 |
| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
| RF generator HP 8648C | US3642U01700 | 4-Aug-09 (in house check Oct-07) | In house check: Oct-09 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01 (in house check Oct-07) | In house check: Oct-08 |

| Calibrated by: | Name | Function | Signature |
|----------------|---------------|-------------------|-----------|
| | Katja Pokovic | Technical Manager | |
| Approved by: | Name | Function | Signature |
| | Fin Bomholt | R&D Director | |

Issued: September 3, 2008

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

TA Technology (Shanghai) Co., Ltd.

Test Report

No. RZA2009-0366FCC

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



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

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

Accreditation No.: **SCS 108**

Glossary:

| | |
|--------------------------|--|
| TSL | tissue simulating liquid |
| NORM _{x,y,z} | sensitivity in free space |
| ConvF | sensitivity in TSL / NORM _{x,y,z} |
| DCP | diode compression point |
| Polarization φ | φ rotation around probe axis |
| Polarization ϑ | ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis |

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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

EX3DV4 SN:3660

September 3, 2008

Probe EX3DV4

SN:3660

Manufactured: April 29, 2008
Calibrated: September 3, 2008

Calibrated for DASY Systems

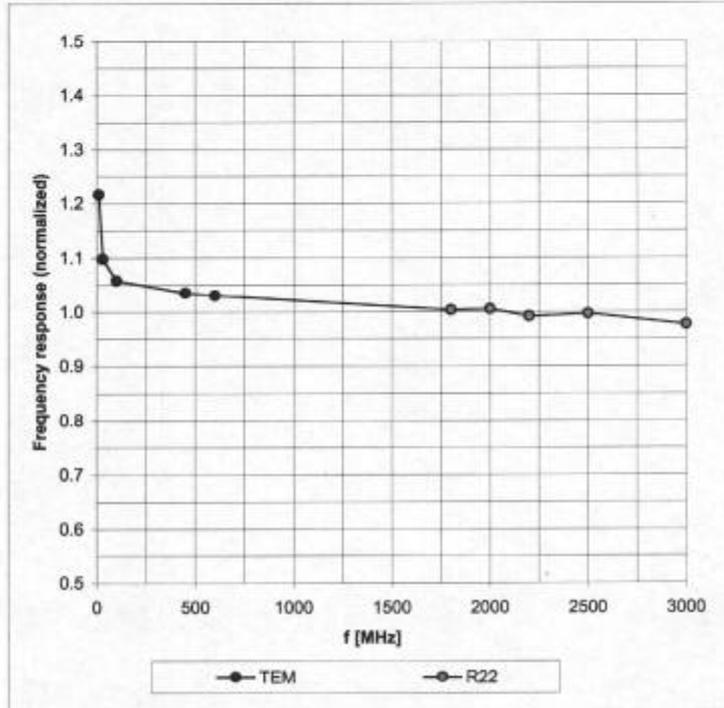
(Note: non-compatible with DASY2 system!)

EX3DV4 SN:3660

September 3, 2008

Frequency Response of E-Field

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

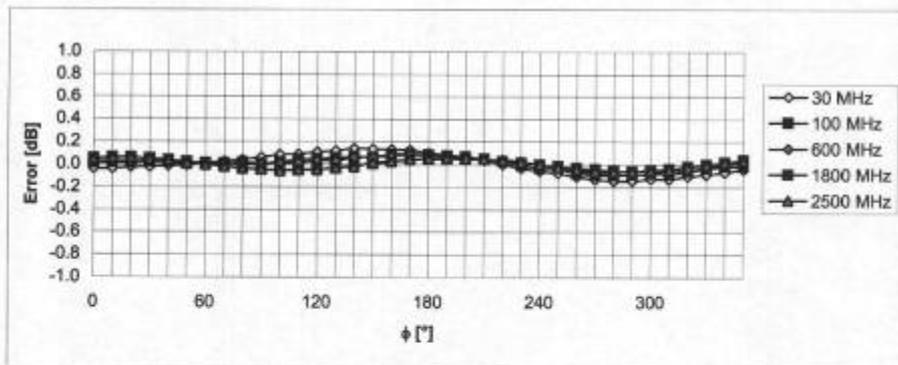
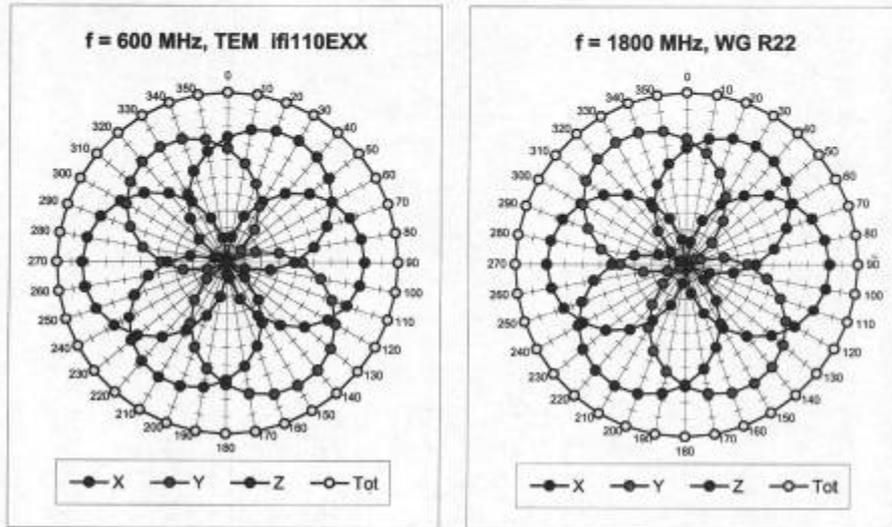


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

EX3DV4 SN:3660

September 3, 2008

Receiving Pattern (ϕ), $\vartheta = 0^\circ$

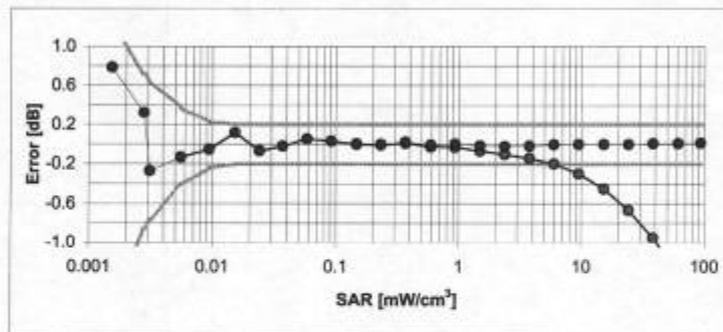
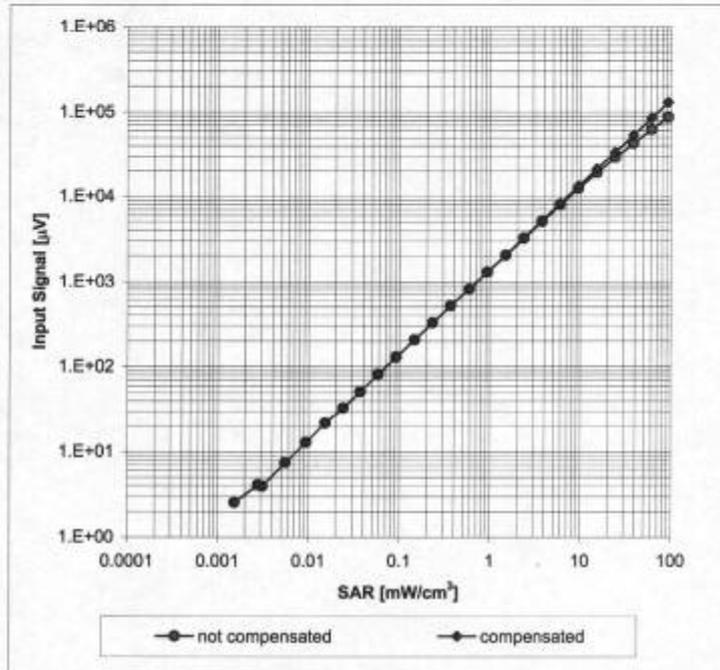


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

EX3DV4 SN:3660

September 3, 2008

Dynamic Range $f(\text{SAR}_{\text{head}})$
(Waveguide R22, $f = 1800 \text{ MHz}$)

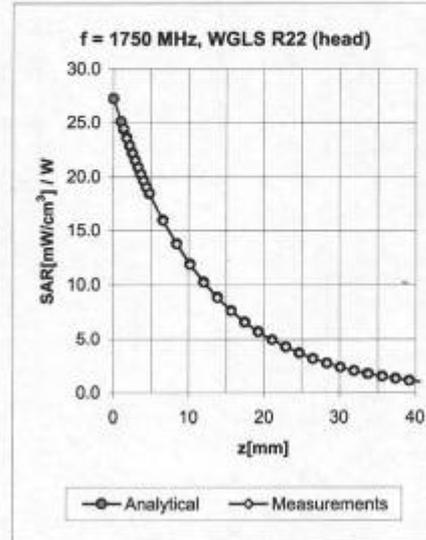
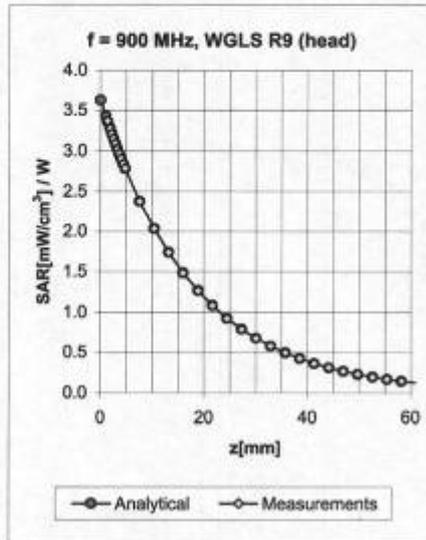


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

EX3DV4 SN:3660

September 3, 2008

Conversion Factor Assessment



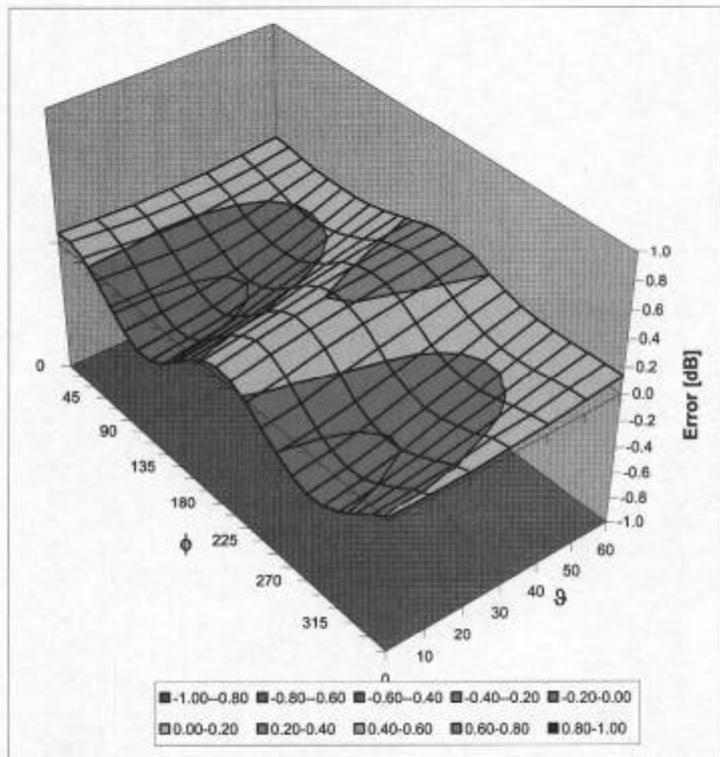
| f [MHz] | Validity [MHz] ^c | TSL | Permittivity | Conductivity | Alpha | Depth | ConvF Uncertainty |
|---------|-----------------------------|------|--------------|--------------|-------|-------|--------------------|
| 835 | ± 50 / ± 100 | Head | 41.5 ± 5% | 0.90 ± 5% | 0.49 | 0.76 | 9.19 ± 11.0% (k=2) |
| 900 | ± 50 / ± 100 | Head | 41.5 ± 5% | 0.97 ± 5% | 0.43 | 0.83 | 8.84 ± 11.0% (k=2) |
| 1750 | ± 50 / ± 100 | Head | 40.1 ± 5% | 1.37 ± 5% | 0.68 | 0.63 | 7.79 ± 11.0% (k=2) |
| 1950 | ± 50 / ± 100 | Head | 40.0 ± 5% | 1.40 ± 5% | 0.31 | 0.80 | 7.35 ± 11.0% (k=2) |
| 2450 | ± 50 / ± 100 | Head | 39.2 ± 5% | 1.80 ± 5% | 0.32 | 0.85 | 6.94 ± 11.0% (k=2) |
| 835 | ± 50 / ± 100 | Body | 55.2 ± 5% | 0.97 ± 5% | 0.63 | 0.71 | 9.10 ± 11.0% (k=2) |
| 900 | ± 50 / ± 100 | Body | 55.0 ± 5% | 1.05 ± 5% | 0.30 | 1.08 | 8.76 ± 11.0% (k=2) |
| 1750 | ± 50 / ± 100 | Body | 53.4 ± 5% | 1.49 ± 5% | 0.34 | 0.86 | 7.55 ± 11.0% (k=2) |
| 1950 | ± 50 / ± 100 | Body | 53.3 ± 5% | 1.52 ± 5% | 0.60 | 0.67 | 7.45 ± 11.0% (k=2) |
| 2450 | ± 50 / ± 100 | Body | 52.7 ± 5% | 1.95 ± 5% | 0.30 | 1.15 | 6.75 ± 11.0% (k=2) |

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

EX3DV4 SN:3660

September 3, 2008

Deviation from Isotropy in HSL
Error (ϕ , θ), $f = 900$ MHz



Uncertainty of Spherical Isotropy Assessment: $\pm 2.6\%$ ($k=2$)