

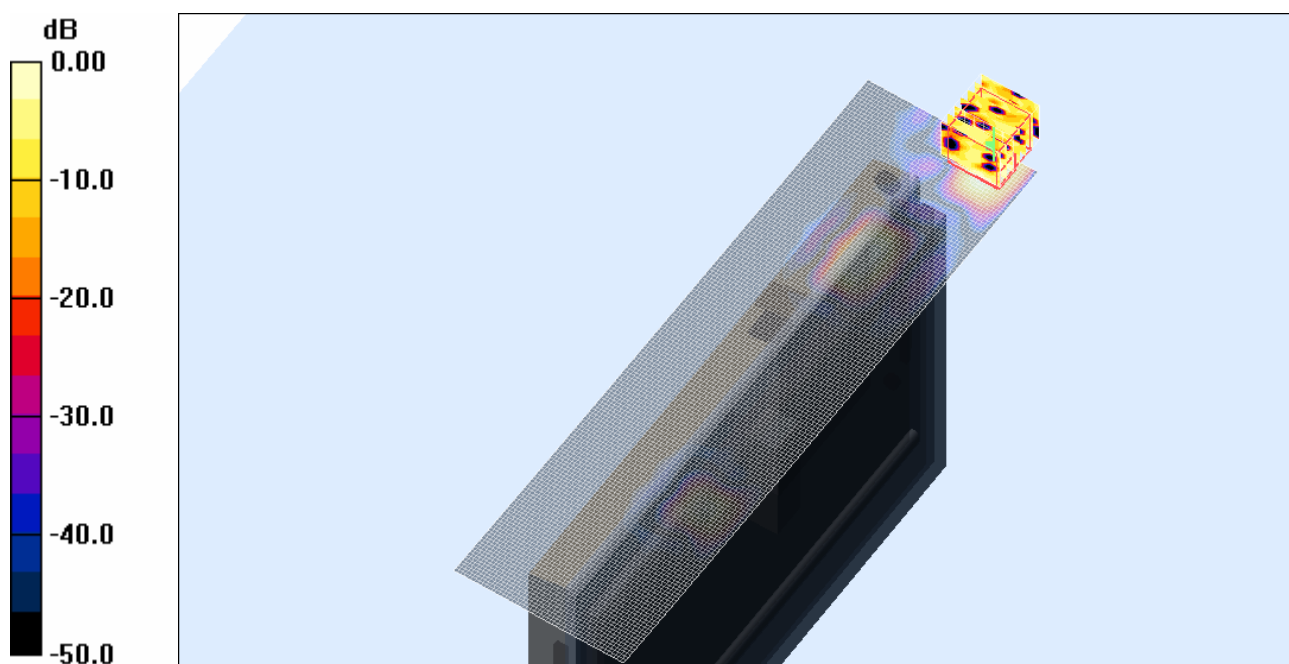
**Test Date: 08 January 2008**

File Name: Edge On OFDM 5.77 GHz Antenna B Far Side Bluetooth Off Prescan 08-01-08.da4

**DUT: Fujitsu Tablet Ryuga with Kedron 11abg and Bluetooth; Type: 4965 AG; Serial: MAC: 0013E805C841**

- \* Communication System: OFDM 5770 MHz; Frequency: 5785 MHz; Duty Cycle: 1:1
- \* Medium parameters used:  $\sigma = 6.50586$  mho/m,  $\epsilon_r = 46.4323$ ;  $\rho = 1000$  kg/m<sup>3</sup>
- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(3.72, 3.72, 3.72)
- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

**Channel 157 Test/Area Scan (51x181x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 0.062 mW/g



0 dB = 0.027mW/g

**SAR MEASUREMENT PLOT 12**

**Ambient Temperature**  
**Liquid Temperature**  
**Humidity**

**21.4 Degrees Celsius**  
**21.0 Degrees Celsius**  
**58.0 %**



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Test Date: 08 January 2008

File Name: Edge On OFDM 5.77 GHz Antenna B Side Bluetooth Off 08-01-08.da4

**DUT: Fujitsu Tablet Ryuga with Kedron 11abg and Bluetooth; Type: 4965 AG; Serial: MAC: 0013E805C841**

\* Communication System: OFDM 5770 MHz; Frequency: 5745 MHz; Duty Cycle: 1:1

\* Medium parameters used:  $\sigma = 6.41122$  mho/m,  $\epsilon_r = 46.5847$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(3.72, 3.72, 3.72)

- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

**Channel 149 Test/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.880 mW/g

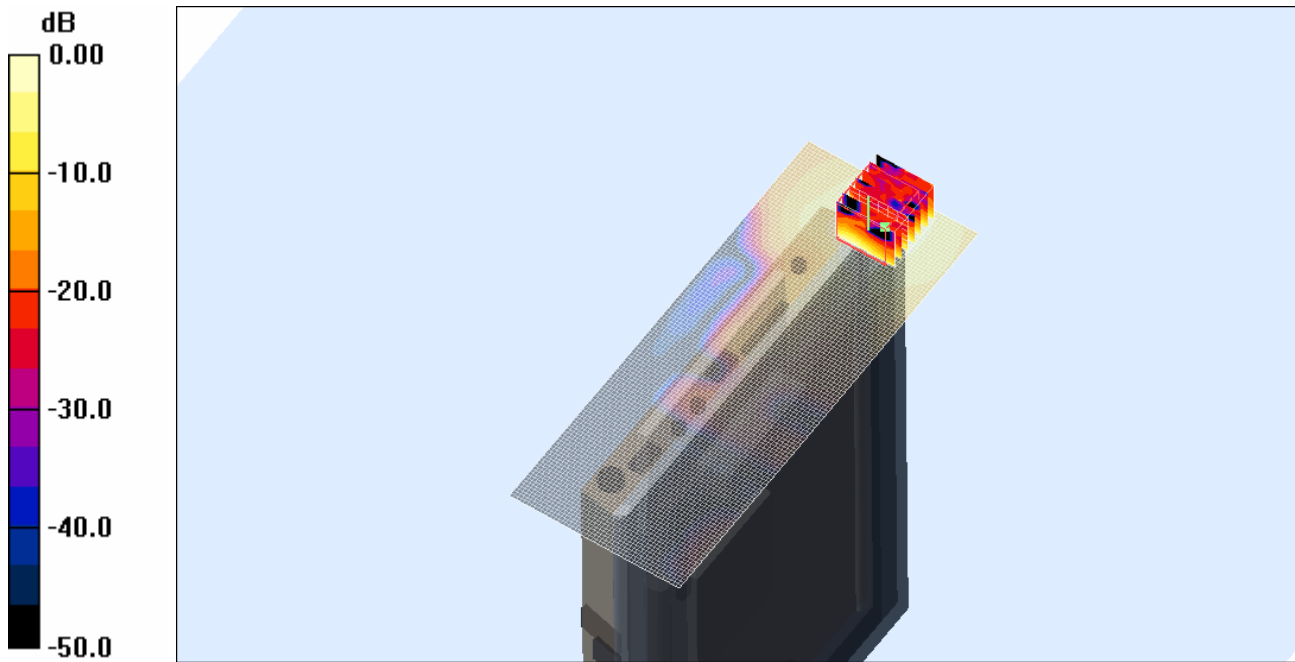
**Channel 149 Test/Zoom Scan (7x7x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 11.5 V/m; Power Drift = -0.448 dB

Peak SAR (extrapolated) = 2.71 W/kg

**SAR(1 g) = 0.580 mW/g; SAR(10 g) = 0.184 mW/g**

Maximum value of SAR (measured) = 1.25 mW/g



**SAR MEASUREMENT PLOT 13**

Ambient Temperature  
Liquid Temperature  
Humidity

21.4 Degrees Celsius  
21.0 Degrees Celsius  
58.0 %



Test Date: 08 January 2008

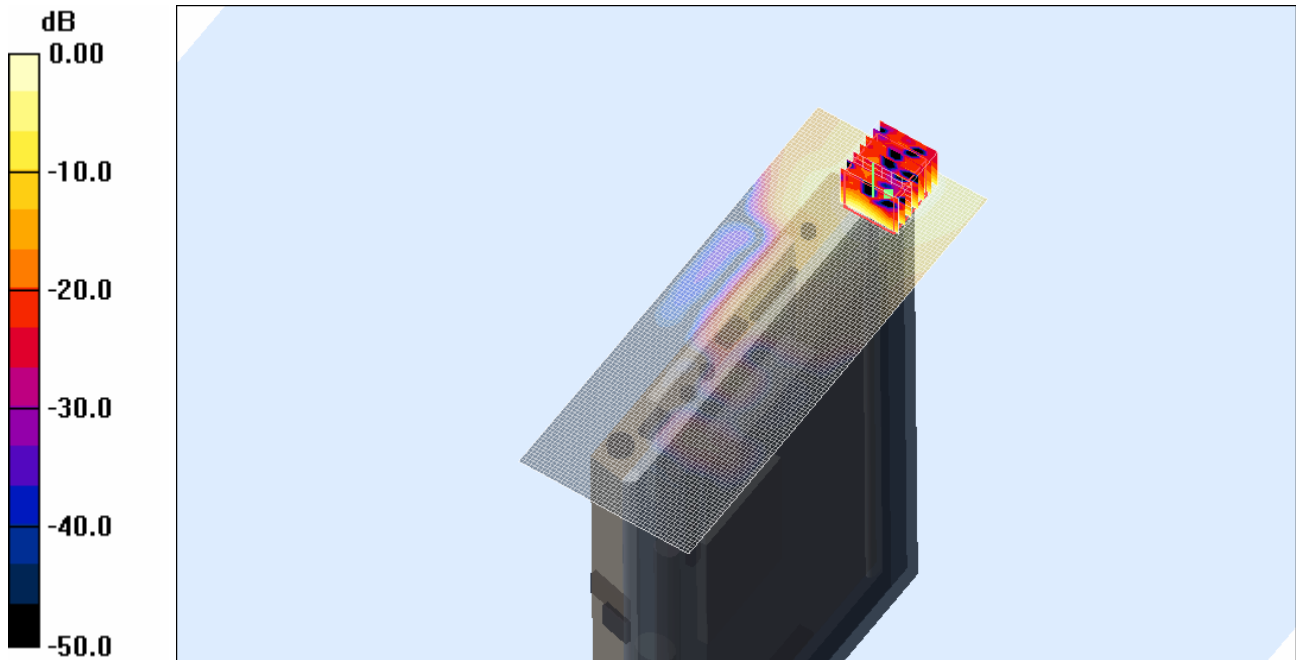
File Name: Edge On OFDM 5.77 GHz Antenna B Side Bluetooth Off 08-01-08.da4

DUT: **Fujitsu Tablet Ryuga with Kedron 11abg and Bluetooth; Type: 4965 AG; Serial: MAC: 0013E805C841**

- \* Communication System: OFDM 5770 MHz; Frequency: 5785 MHz; Duty Cycle: 1:1
- \* Medium parameters used:  $\sigma = 6.50586$  mho/m,  $\epsilon_r = 46.4323$ ;  $\rho = 1000$  kg/m<sup>3</sup>
- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(3.72, 3.72, 3.72)
- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

**Channel 157 Test/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 0.856 mW/g

**Channel 157 Test/Zoom Scan (7x7x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 10.6 V/m; Power Drift = -0.226 dB  
 Peak SAR (extrapolated) = 2.42 W/kg  
**SAR(1 g) = 0.557 mW/g; SAR(10 g) = 0.176 mW/g**  
 Maximum value of SAR (measured) = 1.20 mW/g



**SAR MEASUREMENT PLOT 14**

Ambient Temperature  
 Liquid Temperature  
 Humidity

21.4 Degrees Celsius  
 21.0 Degrees Celsius  
 58.0 %



Test Date: 08 January 2008

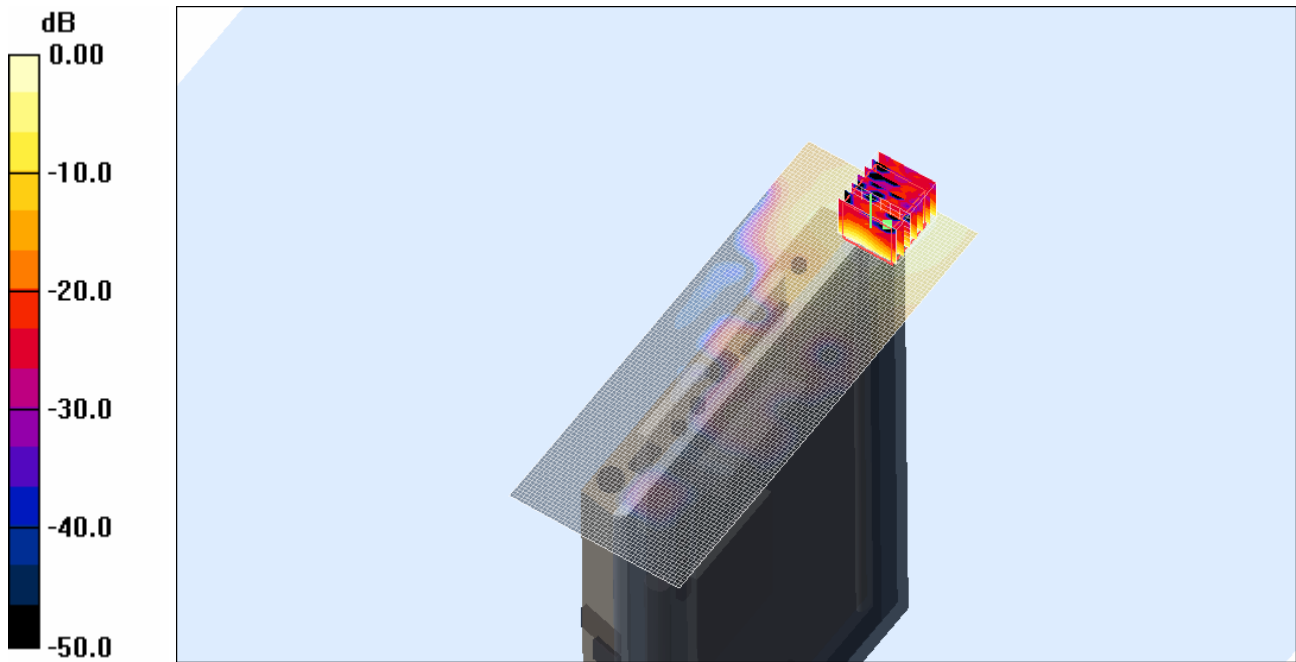
File Name: Edge On OFDM 5.77 GHz Antenna B Side Bluetooth Off 08-01-08.da4

**DUT: Fujitsu Tablet Ryuga with Kedron 11abg and Bluetooth; Type: 4965 AG; Serial: MAC: 0013E805C841**

- \* Communication System: OFDM 5770 MHz; Frequency: 5825 MHz; Duty Cycle: 1:1
- \* Medium parameters used:  $\sigma = 6.5627$  mho/m,  $\epsilon_r = 46.2704$ ;  $\rho = 1000$  kg/m<sup>3</sup>
- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(3.72, 3.72, 3.72)
- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

**Channel 165 Test/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 1.44 mW/g

**Channel 165 Test/Zoom Scan (7x7x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 12.5 V/m; Power Drift = -0.498 dB  
 Peak SAR (extrapolated) = 3.84 W/kg  
**SAR(1 g) = 0.787 mW/g; SAR(10 g) = 0.242 mW/g**  
 Maximum value of SAR (measured) = 1.71 mW/g



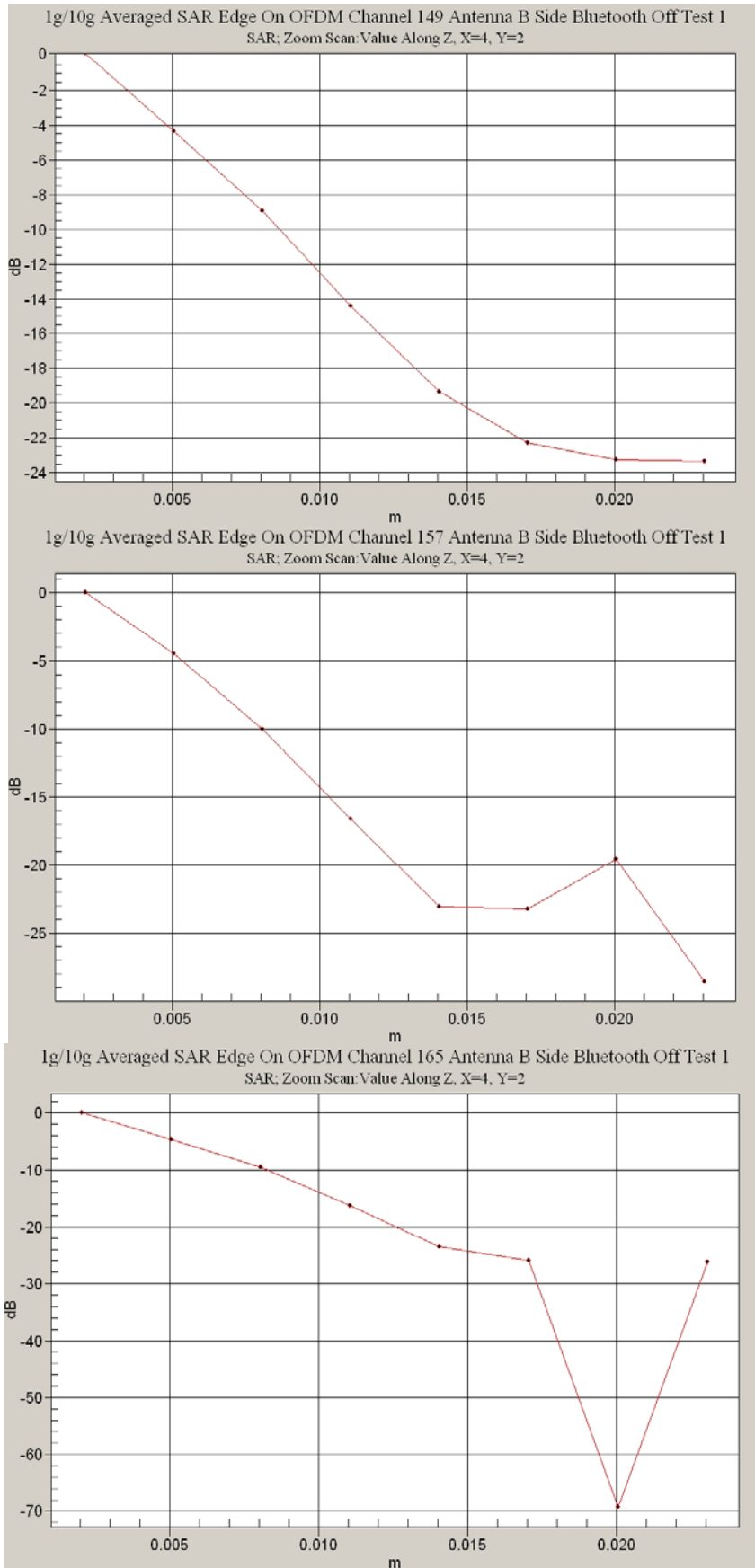
0 dB = 1.71mW/g

**SAR MEASUREMENT PLOT 15**

Ambient Temperature  
 Liquid Temperature  
 Humidity

21.4 Degrees Celsius  
 21.0 Degrees Celsius  
 58.0 %





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Test Date: 08 January 2008

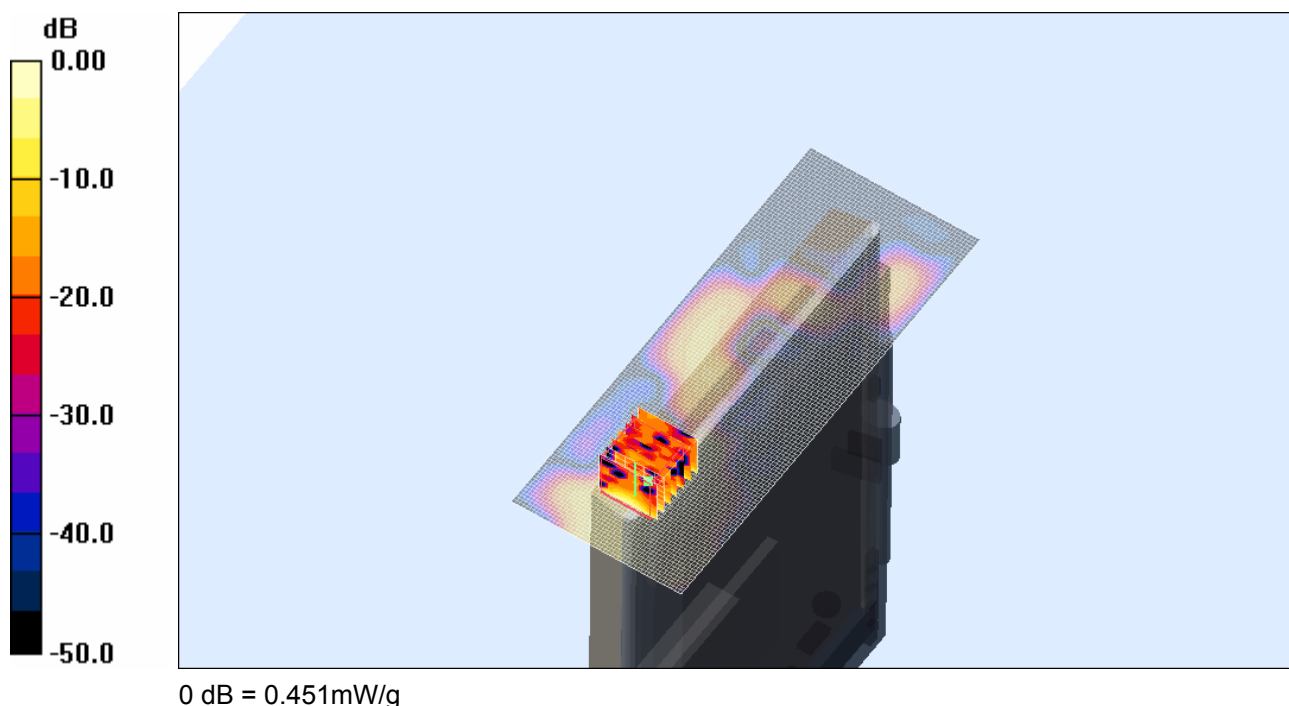
File Name: Edge On OFDM 5.77 GHz Antenna A Side Bluetooth Off 08-01-08.da4

DUT: **Fujitsu Tablet Ryuga with Kedron 11abg and Bluetooth; Type: 4965 AG; Serial: MAC: 0013E805C841**

- \* Communication System: OFDM 5770 MHz; Frequency: 5785 MHz; Duty Cycle: 1:1
- \* Medium parameters used:  $\sigma = 6.50586$  mho/m,  $\epsilon_r = 46.4323$ ;  $\rho = 1000$  kg/m<sup>3</sup>
- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(3.72, 3.72, 3.72)
- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

**Channel 157 Test/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 0.416 mW/g

**Channel 157 Test/Zoom Scan (7x7x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 3.56 V/m; Power Drift = -0.033 dB  
 Peak SAR (extrapolated) = 0.772 W/kg  
**SAR(1 g) = 0.188 mW/g; SAR(10 g) = 0.055 mW/g**  
 Maximum value of SAR (measured) = 0.451 mW/g



**SAR MEASUREMENT PLOT 16**

Ambient Temperature  
 Liquid Temperature  
 Humidity

21.4 Degrees Celsius  
 21.0 Degrees Celsius  
 58.0 %



Test Date: 08 January 2008

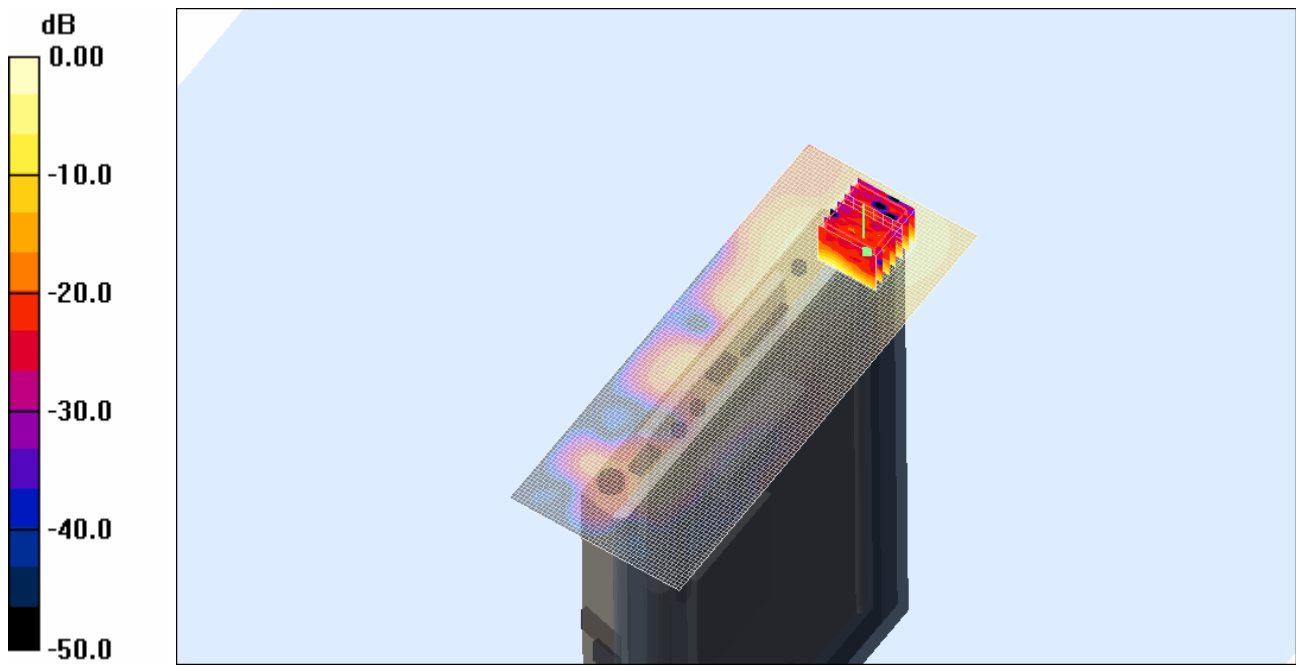
File Name: Edge On OFDM 5.77 GHz Antenna B Side Bluetooth On Extended Battery 08-01-08.da4

DUT: **Fujitsu Tablet Ryuga with Kedron 11abg and Bluetooth; Type: 4965 AG; Serial: MAC: 0013E805C841**

- \* Communication System: OFDM 5770 MHz; Frequency: 5825 MHz; Duty Cycle: 1:1
- \* Medium parameters used:  $\sigma = 6.5627$  mho/m,  $\epsilon_r = 46.2704$ ;  $\rho = 1000$  kg/m<sup>3</sup>
- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(3.72, 3.72, 3.72)
- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

**Channel 165 Test/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 1.18 mW/g

**Channel 165 Test/Zoom Scan (7x7x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 12.7 V/m; Power Drift = -0.495 dB  
 Peak SAR (extrapolated) = 3.90 W/kg  
**SAR(1 g) = 0.782 mW/g; SAR(10 g) = 0.233 mW/g**  
 Maximum value of SAR (measured) = 1.74 mW/g



0 dB = 1.74mW/g

**SAR MEASUREMENT PLOT 17**

Ambient Temperature  
 Liquid Temperature  
 Humidity

21.4 Degrees Celsius  
 21.0 Degrees Celsius  
 58.0 %



Test Date: 08 January 2008

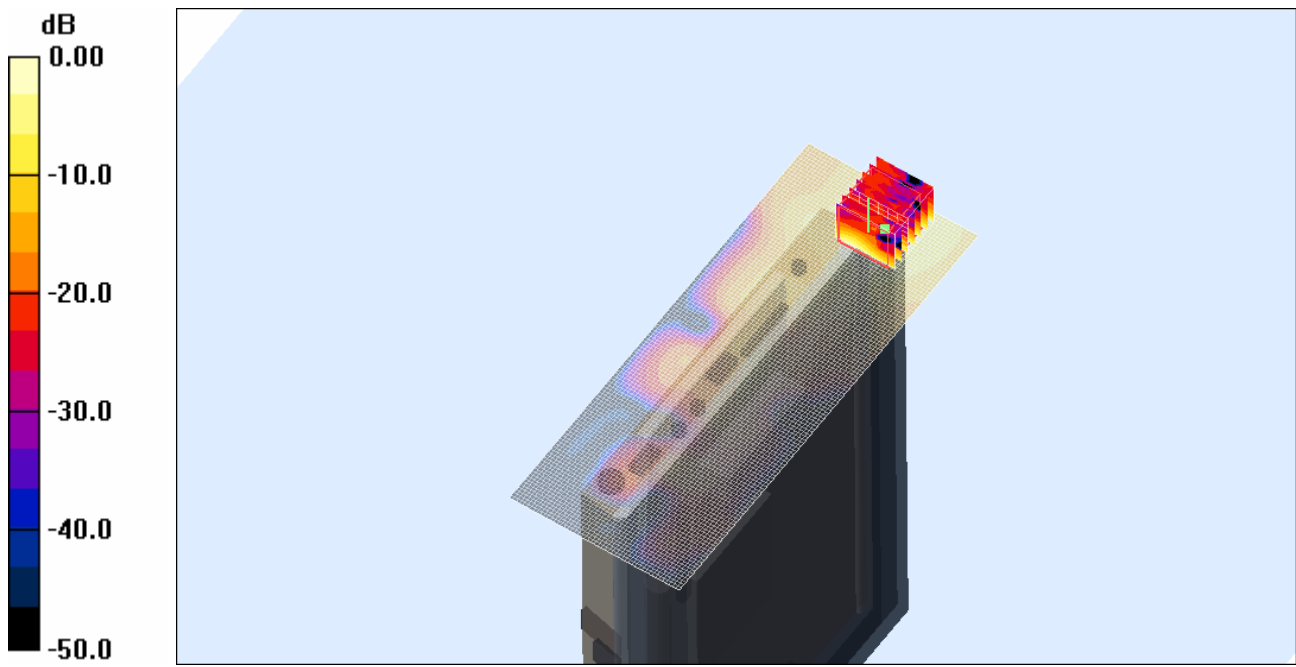
File Name: Edge On OFDM 5.77 GHz Antenna B Side Bluetooth On 08-01-08.da4

DUT: **Fujitsu Tablet Ryuga with Kedron 11abg and Bluetooth; Type: 4965 AG; Serial: MAC: 0013E805C841**

- \* Communication System: OFDM 5770 MHz; Frequency: 5825 MHz; Duty Cycle: 1:1
- \* Medium parameters used:  $\sigma = 6.5627$  mho/m,  $\epsilon_r = 46.2704$ ;  $\rho = 1000$  kg/m<sup>3</sup>
- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(3.72, 3.72, 3.72)
- Phantom: Flat Phantom 10.1; Serial: P 10.1; Phantom section: Flat 2.2 Section

**Channel 165 Test/Area Scan (51x131x1):** Measurement grid: dx=15mm, dy=15mm  
 Maximum value of SAR (interpolated) = 1.25 mW/g

**Channel 165 Test/Zoom Scan (7x7x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 11.9 V/m; Power Drift = -0.157 dB  
 Peak SAR (extrapolated) = 4.25 W/kg  
**SAR(1 g) = 0.842 mW/g; SAR(10 g) = 0.256 mW/g**  
 Maximum value of SAR (measured) = 1.94 mW/g



0 dB = 1.94mW/g

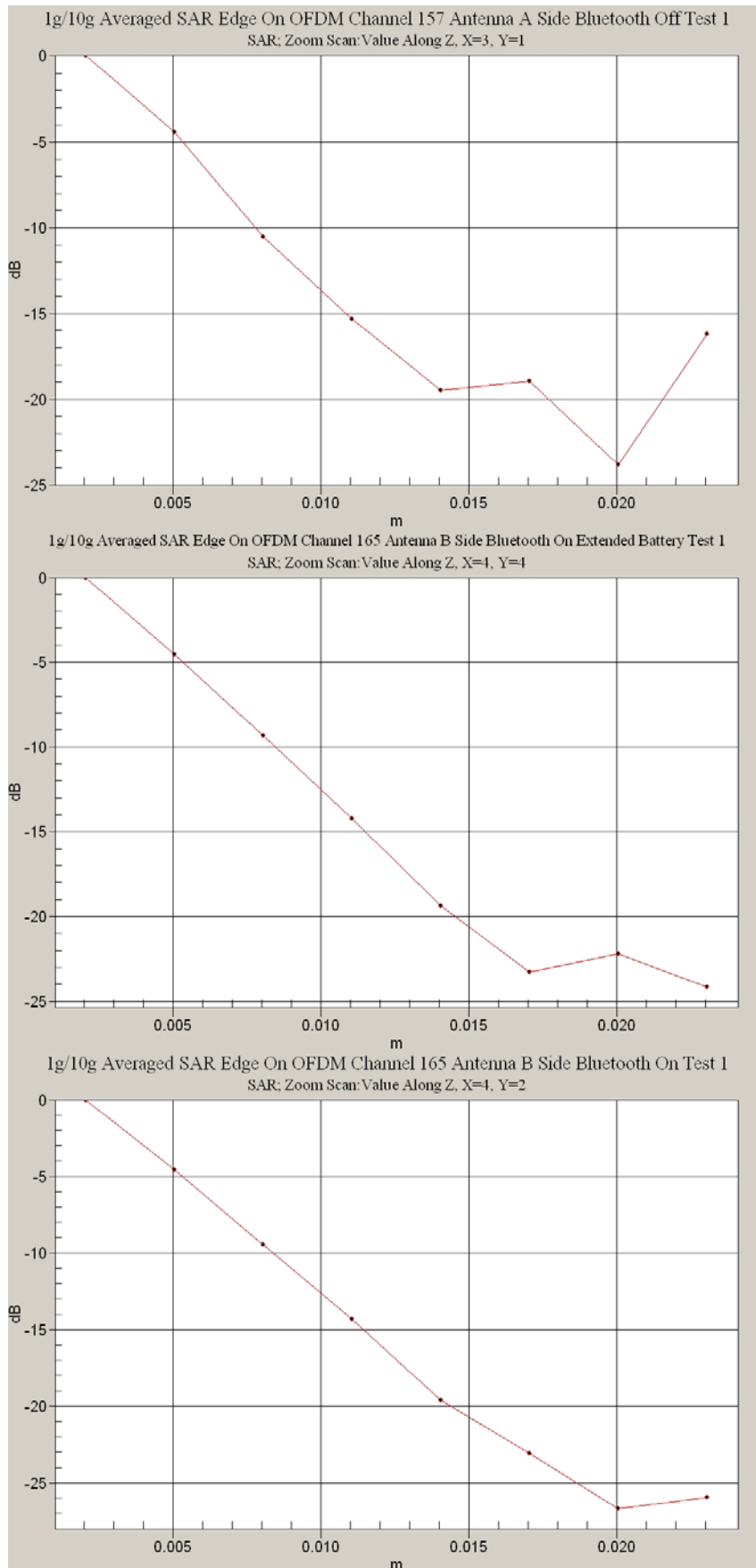
**SAR MEASUREMENT PLOT 18**

Ambient Temperature  
 Liquid Temperature  
 Humidity

21.4 Degrees Celsius  
 21.0 Degrees Celsius  
 58.0 %







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**Test Date: 08 January 2008**

File Name: Validation 5800MHz (DAE 359 Probe EX3DV4) 08-01-08.da4

**DUT: Dipole 5200\_5800 MHz; Type: D5GHzV2; Serial: 1008**

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

\* Medium parameters used:  $\sigma = 5.49675$  mho/m,  $\epsilon_r = 34.5876$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(3.65, 3.65, 3.65)

- Phantom: SAM 22; Serial: 1260; Phantom section: Flat Section

**Channel 1 Test 2/Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 38.1 mW/g

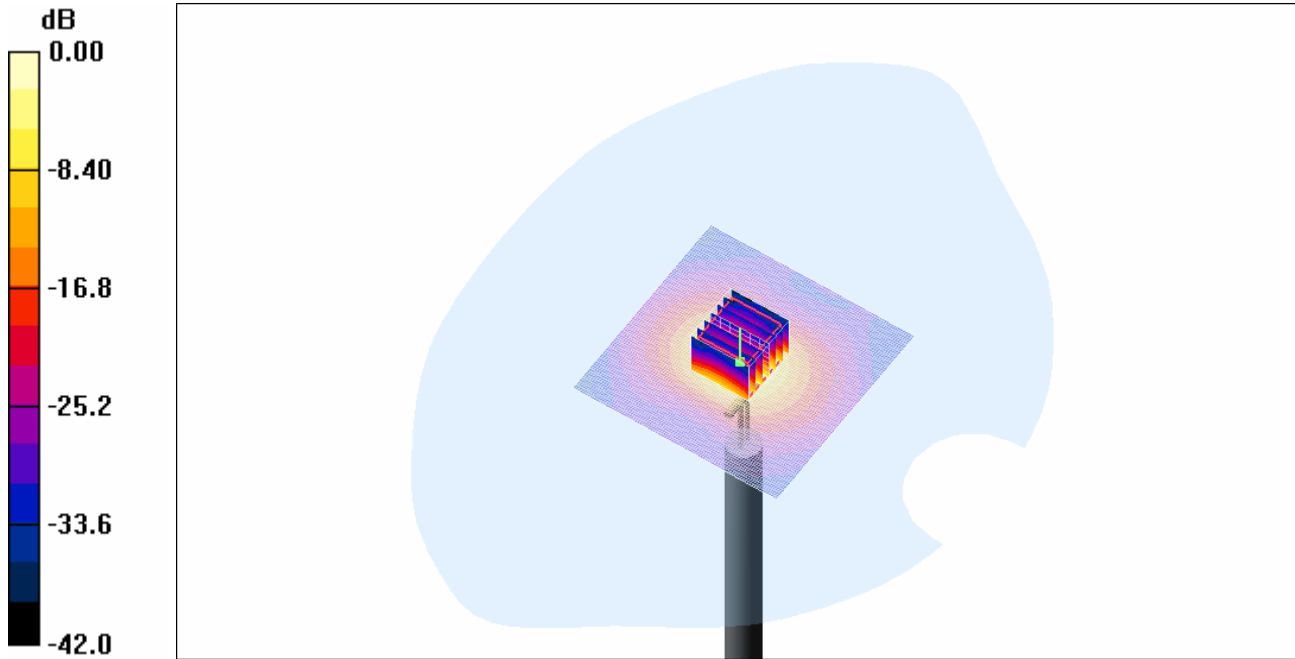
**Channel 1 Test 2/Zoom Scan (7x7x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 87.3 V/m; Power Drift = 0.128 dB

Peak SAR (extrapolated) = 79.0 W/kg

**SAR(1 g) = 17.8 mW/g; SAR(10 g) = 5.05 mW/g**

Maximum value of SAR (measured) = 38.0 mW/g



0 dB = 38.0mW/g

**SAR MEASUREMENT PLOT 19**

Ambient Temperature  
Liquid Temperature  
Humidity

21.4 Degrees Celsius  
21.0 Degrees Celsius  
58.0 %



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Test Date: 09 January 2008

File Name: Validation 5200MHz (DAE 359 Probe EX3DV4) 09-01-08.da4

DUT: Dipole 5200\_5800 MHz; Type: D5GHzV2; Serial: 1008

\* Communication System: CW 5200 MHz; Frequency: 5200 MHz; Duty Cycle: 1:1

\* Medium parameters used:  $\sigma = 4.85828$  mho/m,  $\epsilon_r = 36.4527$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Electronics: DAE3 Sn359; Probe: EX3DV4 - SN3563; ConvF(4.25, 4.25, 4.25)

- Phantom: SAM 22; Serial: 1260; Phantom section: Flat Section

**Channel 1 Test 2/Area Scan (91x91x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 42.0 mW/g

**Channel 1 Test 2/Zoom Scan (7x7x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm,

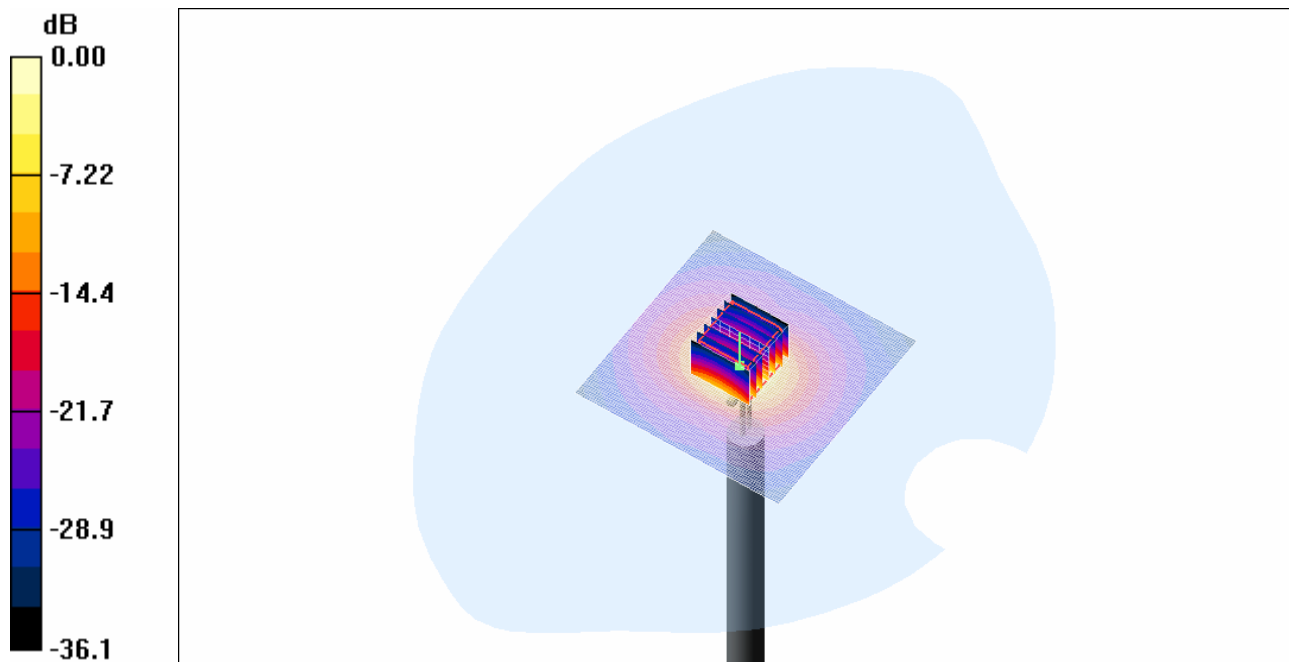
dz=3mm

Reference Value = 95.3 V/m; Power Drift = 0.161 dB

Peak SAR (extrapolated) = 77.7 W/kg

**SAR(1 g) = 20.1 mW/g; SAR(10 g) = 5.69 mW/g**

Maximum value of SAR (measured) = 42.0 mW/g



0 dB = 42.0mW/g

**SAR MEASUREMENT PLOT 20**

Ambient Temperature

21.6 Degrees Celsius

Liquid Temperature

21.3 Degrees Celsius

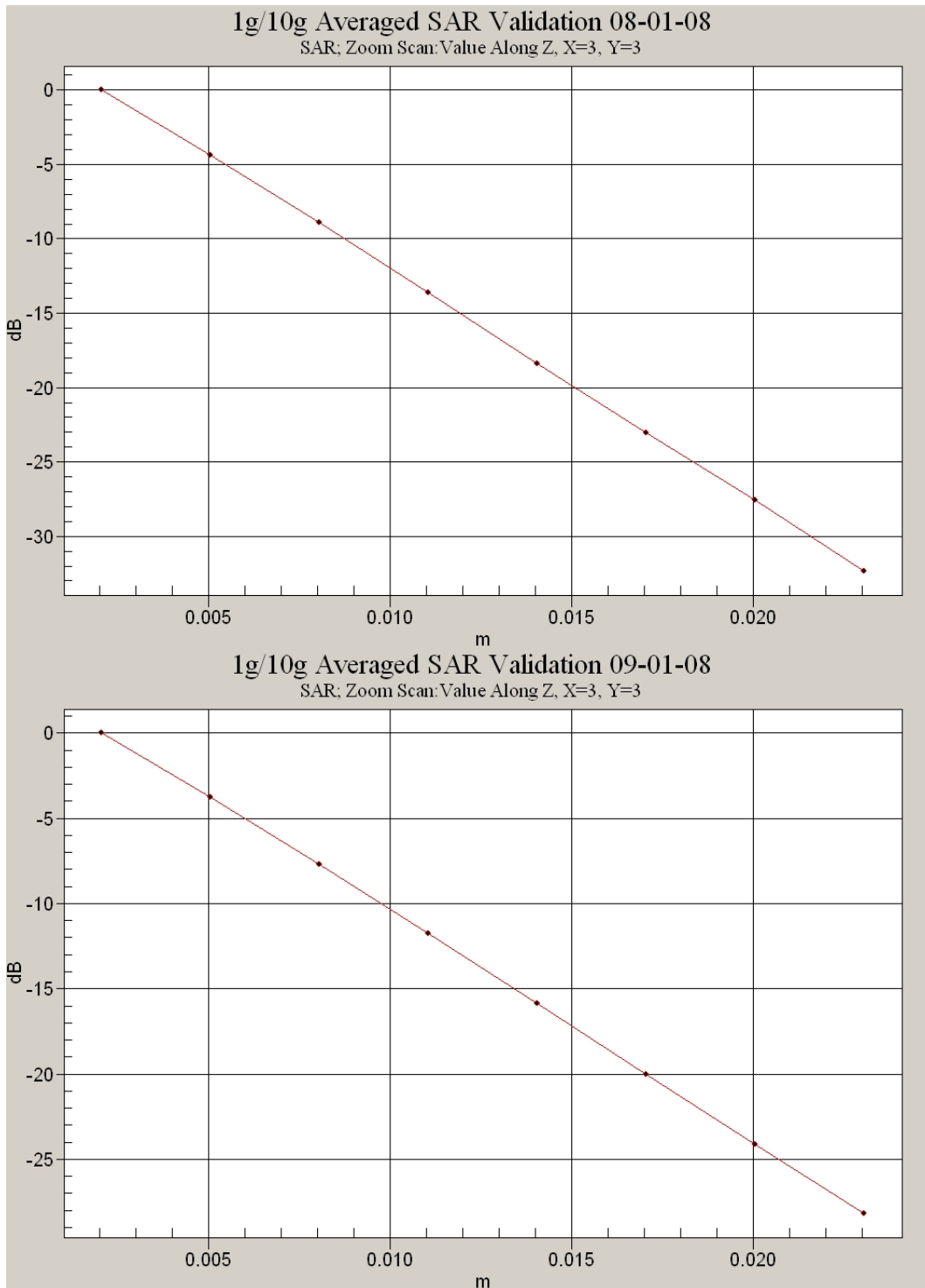
Humidity

60.0 %



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## APPENDIX C CALIBRATION DOCUMENTS

**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 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**

Client **EMC Technologies**

Certificate No: **EX3-3563\_Jul07**

### CALIBRATION CERTIFICATE

Object: **EX3DV4 - SN:3563**

Calibration procedure(s): **QA CAL-01.v6 and QA CAL-14.v3  
Calibration procedure for dosimetric E-field probes**

Calibration date: **July 13, 2007**

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 (Calibrated by, Certificate No.) | Scheduled Calibration  |
|----------------------------|-----------------|---|------------------------|
| Power meter E4419B         | GB41293874      | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                 |
| Power sensor E4412A        | MY41495277      | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                 |
| Power sensor E4412A        | MY41498087      | 29-Mar-07 (METAS, No. 217-00670)          | Mar-08                 |
| Reference 3 dB Attenuator  | SN: S5054 (3c)  | 10-Aug-06 (METAS, No. 217-00592)          | Aug-07                 |
| Reference 20 dB Attenuator | SN: S5086 (20b) | 29-Mar-07 (METAS, No. 217-00671)          | Mar-08                 |
| Reference 30 dB Attenuator | SN: S5129 (30b) | 10-Aug-06 (METAS, No. 217-00593)          | Aug-07                 |
| Reference Probe ES3DV2     | SN: 3013        | 4-Jan-07 (SPEAG, No. ES3-3013_Jan07)      | Jan-08                 |
| DAE4                       | SN: 654         | 20-Apr-07 (SPEAG, No. DAE4-654_Apr07)     | Apr-08                 |
| Secondary Standards        | ID #            | Check Date (in house)                     | Scheduled Check        |
| RF generator HP 8648C      | US3642U01700    | 4-Aug-99 (SPEAG, in house check Nov-05)   | In house check: Nov-07 |
| Network Analyzer HP 8753E  | US37390585      | 18-Oct-01 (SPEAG, in house check Oct-06)  | In house check: Oct-07 |

|                |               |                   |           |
|----------------|---------------|-------------------|-----------|
|                | Name          | Function          | Signature |
| Calibrated by: | Katja Pokovic | Technical Manager |           |
| Approved by:   | Niels Kuster  | Quality Manager   |           |

Issued: July 13, 2007

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



**Calibration Laboratory of  
Schmid & Partner  
Engineering AG**  
Zeughausstrasse 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   |
| NORM <sub>x,y,z</sub>    | sensitivity in free space  |
| ConF                     | sensitivity in TSL / NORM <sub>x,y,z</sub>   |
| DCP                      | diode compression point  |
| Polarization $\varphi$   | $\varphi$ rotation around probe axis   |
| Polarization $\vartheta$ | $\vartheta$ 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<sub>x,y,z</sub>**: Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not effect the E<sup>2</sup>-field uncertainty inside TSL (see below *ConvF*).
- NORM(f)<sub>x,y,z</sub>** = NORM<sub>x,y,z</sub> \* 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<sub>x,y,z</sub>**: 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<sub>x,y,z</sub> \* 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  $\pm 50$  MHz to  $\pm 100$  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:3563**

**July 13, 2007**

# Probe EX3DV4

## SN:3563

|                  |                   |
|------------------|-------------------|
| Manufactured:    | February 14, 2005 |
| Last calibrated: | July 14, 2006     |
| Recalibrated:    | July 13, 2007     |

**Calibrated for DASY Systems**

(Note: non-compatible with DASY2 system!)

