

Test Laboratory: Sony Ericsson Mobile Communications

File Name: [189\\_LT0deg\\_Flat\\_15mm\\_ExtAnt\\_90deg\\_050420\\_RP.da4](#)

**DUT: PY7FF051011; Type: Quad GSM;**

**Program Name: GC89, GSM835** (ch189, DELL 0 deg, External antenna 90 deg)

Communication System: GSM835MHz; Frequency: 836.4 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 836.4$  MHz;  $\sigma = 1.02$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(6.43, 6.43, 6.43); Calibrated: 2005-01-20
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2004-10-12
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (71x111x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.211 mW/g

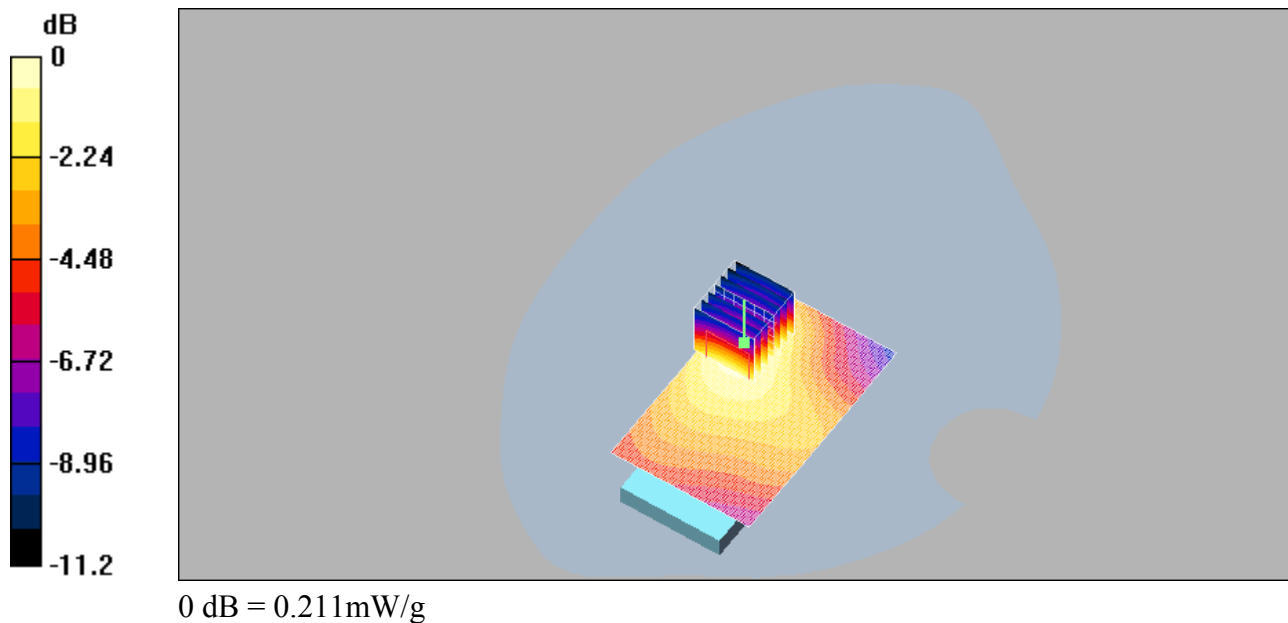
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.8 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 0.291 W/kg

**SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.131 mW/g**

Maximum value of SAR (measured) = 0.211 mW/g



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**DUT: PY7FF051011; Type: Quad GSM;**

**Program Name: GC89, GSM835** (ch189, DELL 0 deg, External antenna 0deg)

Communication System: GSM835MHz; Frequency: 836.4 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 836.4$  MHz;  $\sigma = 1.02$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(6.43, 6.43, 6.43); Calibrated: 2005-01-20

- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

- Electronics: DAE4 Sn640; Calibrated: 2004-10-12

- Phantom: SAM 5; Type: SAM; Serial: 1352

- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (71x111x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.351 mW/g

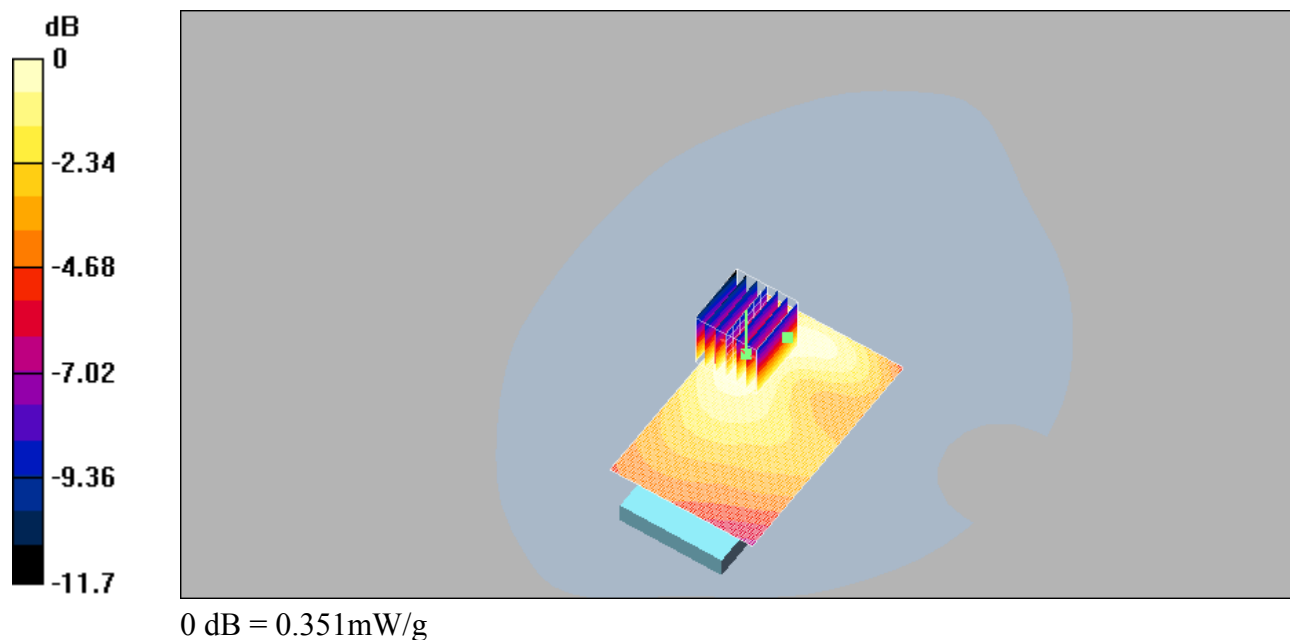
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.9 V/m; Power Drift = -0.2 dB

Peak SAR (extrapolated) = 0.464 W/kg

**SAR(1 g) = 0.323 mW/g; SAR(10 g) = 0.217 mW/g**

Maximum value of SAR (measured) = 0.351 mW/g



Test Laboratory: Sony Ericsson Mobile Communications

File Name: [124\\_LT90deg\\_Flat\\_15mm\\_ExtAnt\\_0deg\\_050420\\_RP.da4](#)

**DUT: PY7FF051011; Type: Quad GSM;**

**Program Name: GC89, GSM835** (ch128, DELL 0 deg, External antenna 0 deg)

Communication System: GSM835MHz; Frequency: 824.2 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 824.2$  MHz;  $\sigma = 1.02$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(6.43, 6.43, 6.43); Calibrated: 2005-01-20

- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

- Electronics: DAE4 Sn640; Calibrated: 2004-10-12

- Phantom: SAM 5; Type: SAM; Serial: 1352

- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (81x111x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.322 mW/g

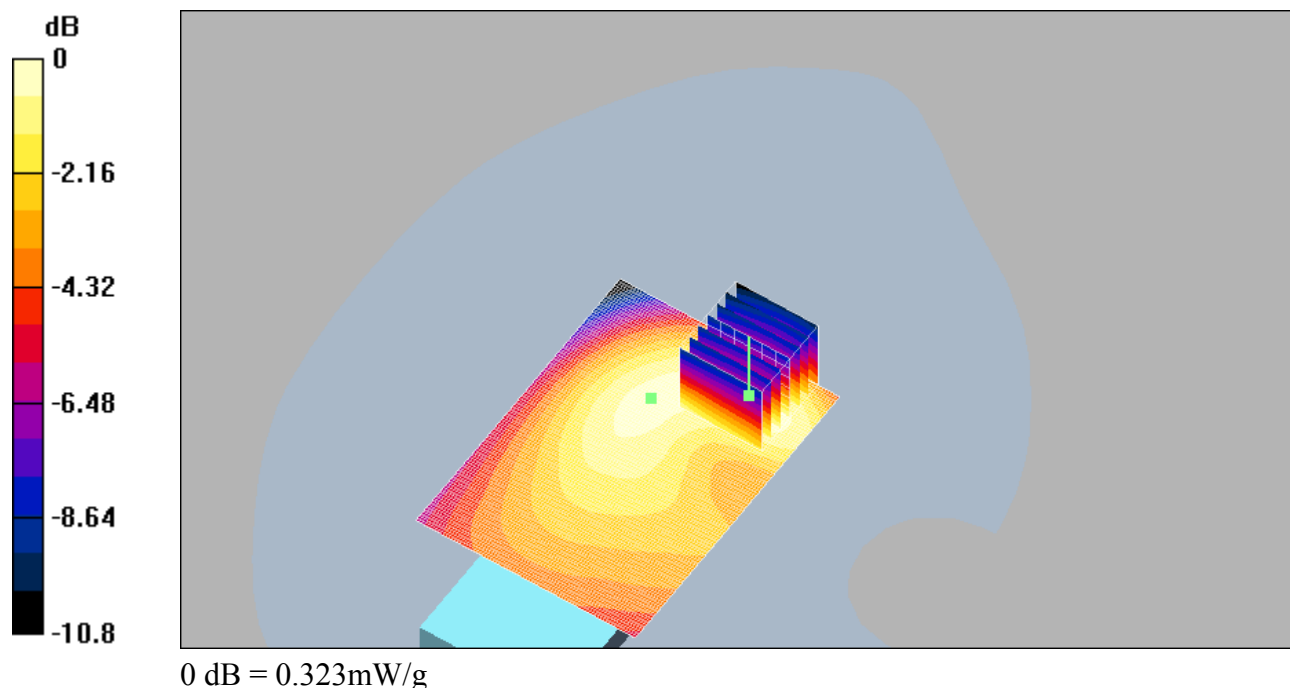
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17 V/m; Power Drift = -0.0 dB

Peak SAR (extrapolated) = 0.417 W/kg

**SAR(1 g) = 0.300 mW/g; SAR(10 g) = 0.204 mW/g**

Maximum value of SAR (measured) = 0.323 mW/g



Test Laboratory: Sony Ericsson Mobile Communications

File Name: [251\\_LT90deg\\_Flat\\_15mm\\_ExtAnt\\_0deg\\_050420\\_RP.da4](#)

**DUT: PY7FF051011; Type: Quad GSM;**

**Program Name: GC89, GSM835** (ch 251, DELL 0 deg, External antenna 0deg)

Communication System: GSM835MHz; Frequency: 848.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 848.8$  MHz;  $\sigma = 1.02$  mho/m;  $\epsilon_r = 55.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(6.43, 6.43, 6.43); Calibrated: 2005-01-20

- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

- Electronics: DAE4 Sn640; Calibrated: 2004-10-12

- Phantom: SAM 5; Type: SAM; Serial: 1352

- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (81x111x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.331 mW/g

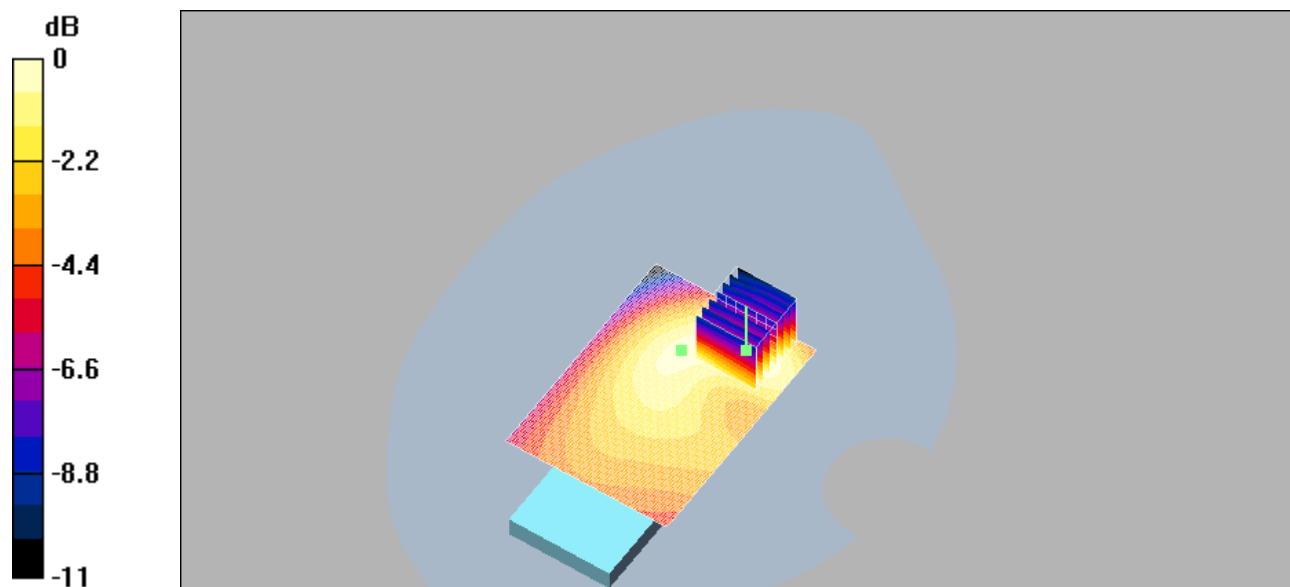
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.3 V/m; Power Drift = -0.1 dB

Peak SAR (extrapolated) = 0.417 W/kg

**SAR(1 g) = 0.306 mW/g; SAR(10 g) = 0.208 mW/g**

Maximum value of SAR (measured) = 0.327 mW/g



0 dB = 0.327mW/g

Test Laboratory: Sony Ericsson Mobile Communications  
 File Name: [661\\_LT90deg\\_Flat\\_15mm\\_IntAnt\\_050421\\_RP.da4](#)

**DUT: PY7FF051011; Type: GSM 4 band;**

**Program Name: GC89, GSM1900**

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(4.69, 4.69, 4.69); Calibrated: 2005-01-20
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2004-10-12
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (61x81x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (interpolated) = 0.082 mW/g

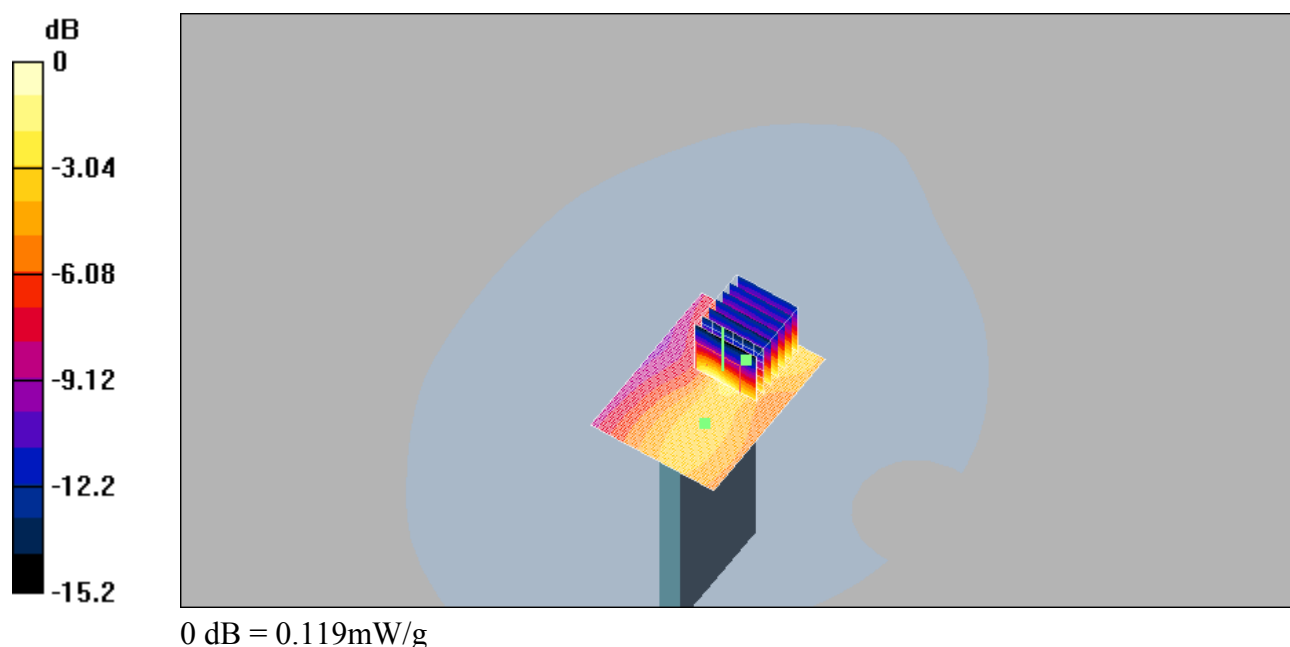
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.13 V/m; Power Drift = 3 dB

Peak SAR (extrapolated) = 0.201 W/kg

**SAR(1 g) = 0.109 mW/g; SAR(10 g) = 0.063 mW/g**

Maximum value of SAR (measured) = 0.119 mW/g



Test Laboratory: Sony Ericsson Mobile Communications

File Name: [661\\_LT90deg\\_Flat\\_15mm\\_ExtAnt\\_90deg\\_050421\\_RP.da4](#)

**DUT: PY7FF051011; Type: GSM 4 band;**  
**Program Name: GC89, GSM1900**

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(4.69, 4.69, 4.69); Calibrated: 2005-01-20
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2004-10-12
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (101x81x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (interpolated) = 0.374 mW/g

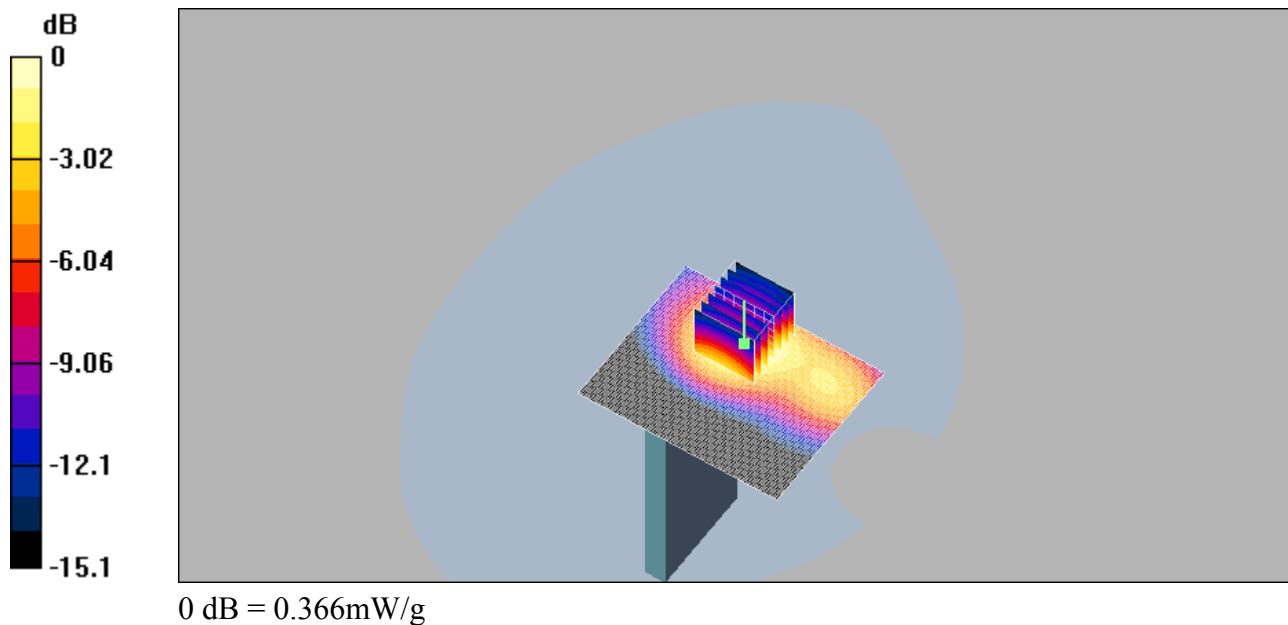
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm,  
 dz=5mm

Reference Value = 8.96 V/m; Power Drift = 0.0005 dB

Peak SAR (extrapolated) = 0.501 W/kg

**SAR(1 g) = 0.334 mW/g; SAR(10 g) = 0.201 mW/g**

Maximum value of SAR (measured) = 0.366 mW/g



Date/Time: 04/29/05 14:54:46

Test Laboratory: Sony Ericsson Mobile Communications

File Name: [661\\_LT90deg\\_Flat\\_15mm\\_ExtAnt\\_0deg\\_050421\\_RP.da4](#)**DUT: PY7FF051011; Type: Quad GSM;****Program Name: GC89, GSM1900** (ch 661, DELL 90 deg, External antenna 0 deg)

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(4.69, 4.69, 4.69); Calibrated: 2005-01-20
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2004-10-12
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (81x81x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.485 mW/g

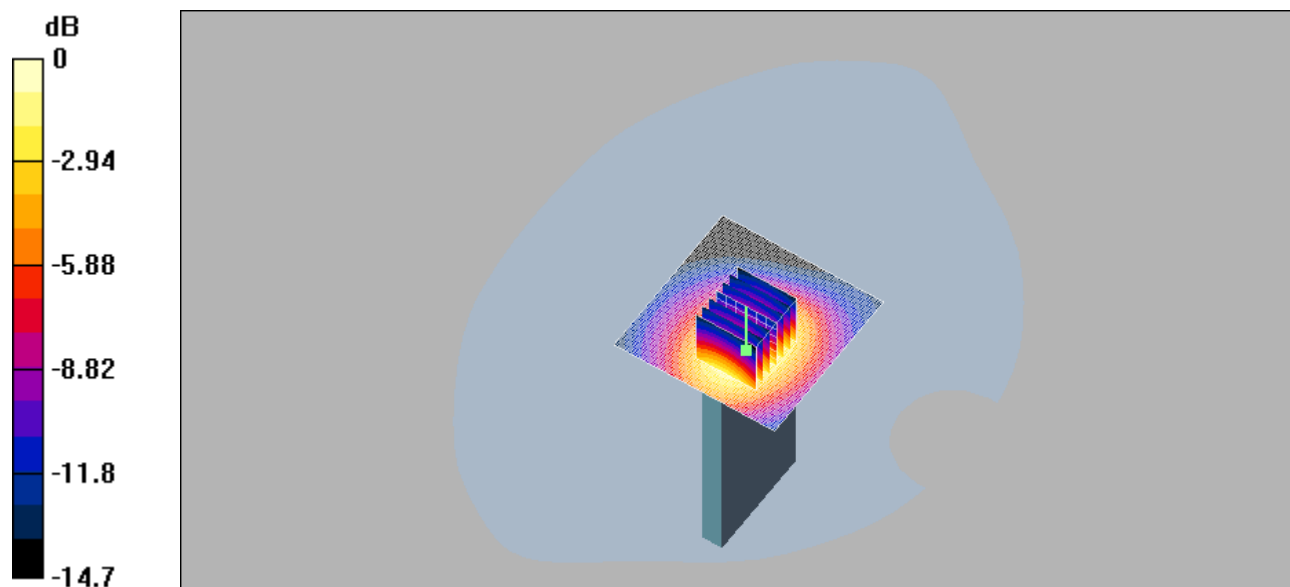
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16 V/m; Power Drift = -0.0 dB

Peak SAR (extrapolated) = 0.706 W/kg

**SAR(1 g) = 0.443 mW/g; SAR(10 g) = 0.265 mW/g**

Maximum value of SAR (measured) = 0.488 mW/g



0 dB = 0.488mW/g

Test Laboratory: Sony Ericsson Mobile Communications  
 File Name: [661\\_LT0deg\\_Flat\\_15mm\\_IntAnt\\_050421\\_RP.da4](#)

**DUT: PY7FF051011; Type: Quad GSM;**  
**Program Name: GC89, GSM1900** (ch 661, DELL 0 deg, Internal antenna)

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3  
 Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(4.69, 4.69, 4.69); Calibrated: 2005-01-20
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2004-10-12
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (81x111x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (interpolated) = 0.234 mW/g

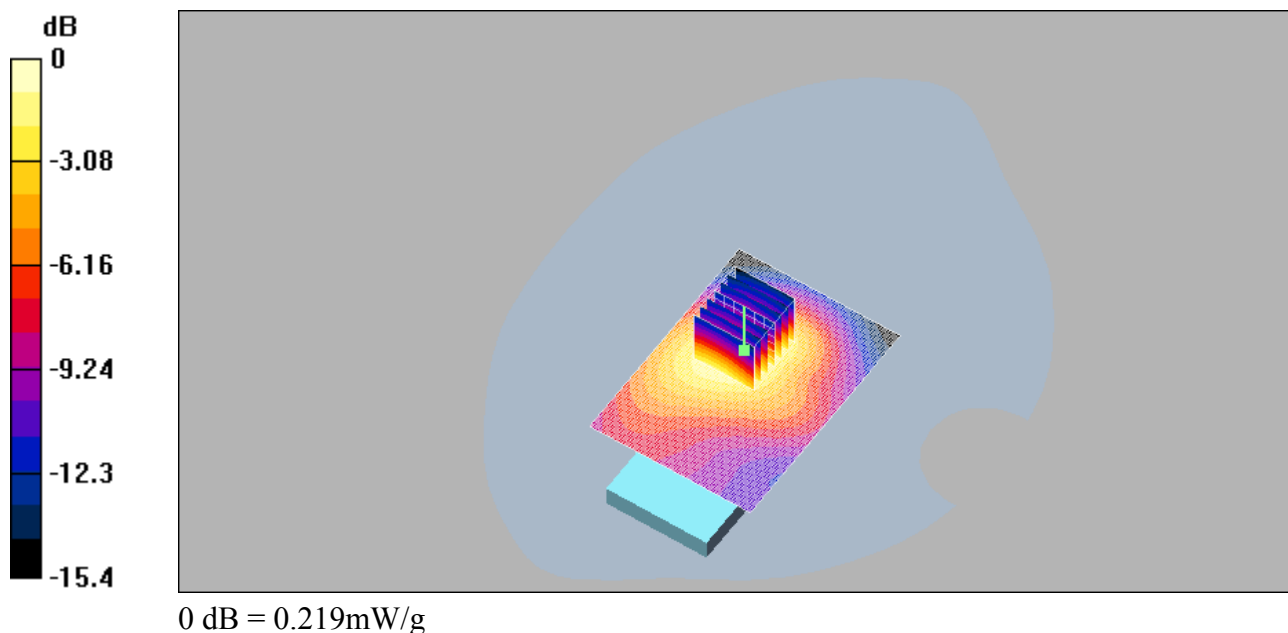
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.3 V/m; Power Drift = -0.5 dB

Peak SAR (extrapolated) = 0.311 W/kg

**SAR(1 g) = 0.198 mW/g; SAR(10 g) = 0.119 mW/g**

Maximum value of SAR (measured) = 0.219 mW/g





Test Laboratory: Sony Ericsson Mobile Communications

File Name: [661\\_LT0deg\\_Flat\\_15mm\\_ExtAnt\\_90deg\\_050421\\_RP.da4](#)

**DUT: PY7FF051011; Type: Quad GSM;**

**Program Name: GC89, GSM1900** (ch 661, DELL 0 deg, External antenna 90 deg)

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(4.69, 4.69, 4.69); Calibrated: 2005-01-20

- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

- Electronics: DAE4 Sn640; Calibrated: 2004-10-12

- Phantom: SAM 5; Type: SAM; Serial: 1352

- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (81x111x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.179 mW/g

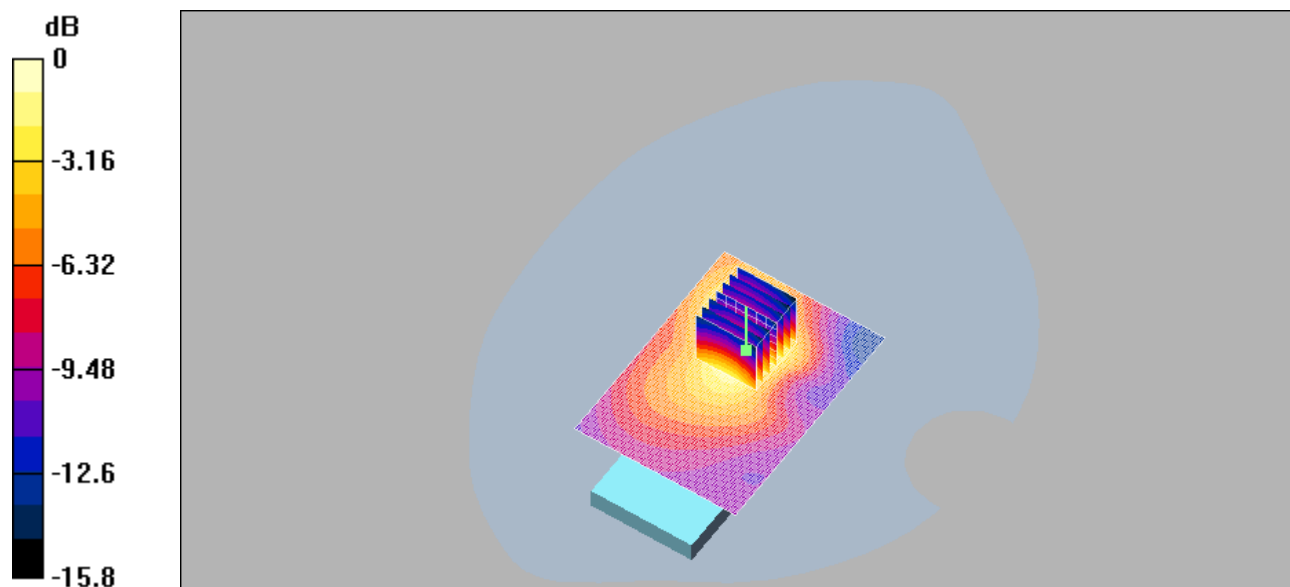
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.9 V/m; Power Drift = -0.1 dB

Peak SAR (extrapolated) = 0.259 W/kg

**SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.094 mW/g**

Maximum value of SAR (measured) = 0.178 mW/g



0 dB = 0.178mW/g

Test Laboratory: Sony Ericsson Mobile Communications

File Name: [661\\_LT0deg\\_Flat\\_15mm\\_ExtAnt\\_0deg\\_050421\\_RP.da4](#)

**DUT: PY7FF051011; Type: Quad GSM;**

**Program Name: GC89, GSM1900** (ch 661, DELL 0 deg, External antenna 0deg)

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(4.69, 4.69, 4.69); Calibrated: 2005-01-20

- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

- Electronics: DAE4 Sn640; Calibrated: 2004-10-12

- Phantom: SAM 5; Type: SAM; Serial: 1352

- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (81x111x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.276 mW/g

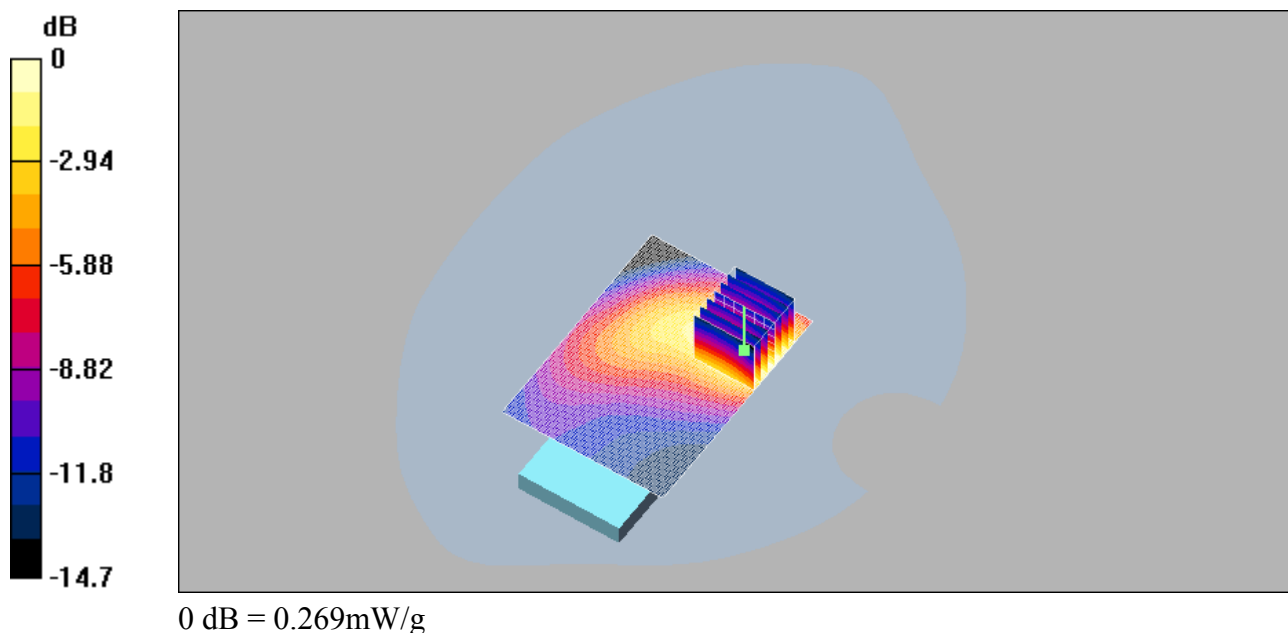
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.8 V/m; Power Drift = -0.1 dB

Peak SAR (extrapolated) = 0.378 W/kg

**SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.152 mW/g**

Maximum value of SAR (measured) = 0.269 mW/g



Test Laboratory: Sony Ericsson Mobile Communications

File Name: [512\\_LT90deg\\_Flat\\_15mm\\_ExtAnt\\_0deg\\_050421\\_RP.da4](#)

**DUT: PY7FF051011; Type: Quad GSM;**

**Program Name: GC89, GSM1900** (ch 512, DELL 90 deg, External antenna 0deg)

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(4.69, 4.69, 4.69); Calibrated: 2005-01-20

- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)

- Electronics: DAE4 Sn640; Calibrated: 2004-10-12

- Phantom: SAM 5; Type: SAM; Serial: 1352

- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (61x81x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.492 mW/g

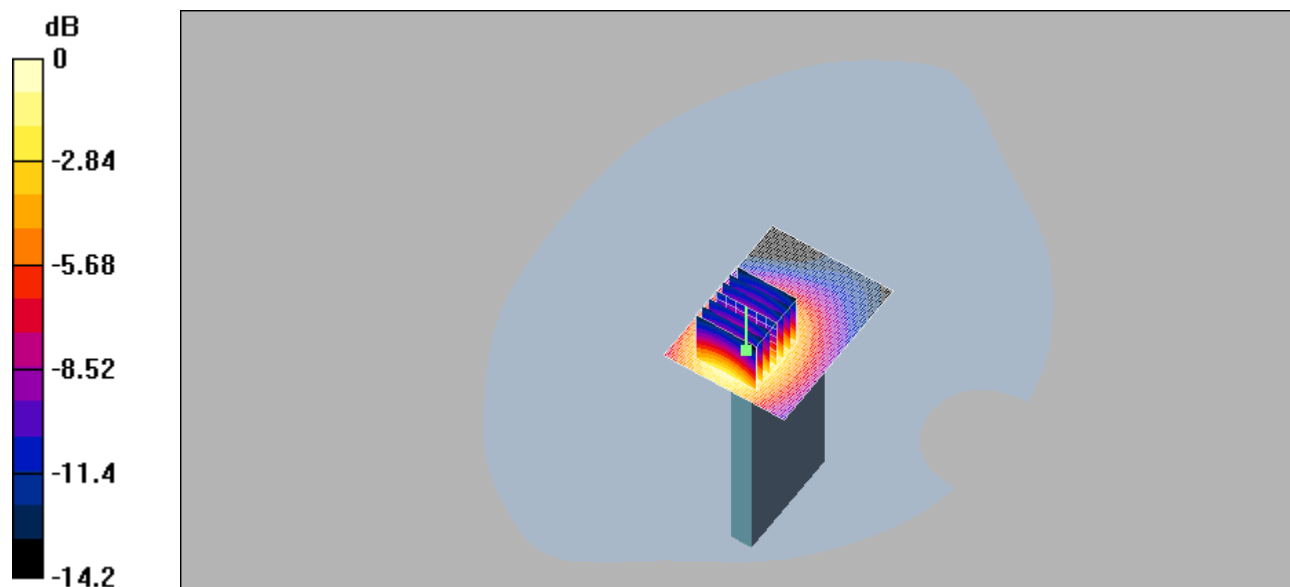
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.2 V/m; Power Drift = -0.1 dB

Peak SAR (extrapolated) = 0.679 W/kg

**SAR(1 g) = 0.444 mW/g; SAR(10 g) = 0.271 mW/g**

Maximum value of SAR (measured) = 0.485 mW/g



0 dB = 0.485mW/g

Test Laboratory: Sony Ericsson Mobile Communications

File Name: [810\\_LT90deg\\_Flat\\_15mm\\_ExtAnt\\_0deg\\_050421\\_RP.da4](#)

**DUT: PY7FF051011; Type: GSM 4 band;**  
**Program Name: GC89, GSM1900**

Communication System: GSM 1900; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3

Medium parameters used:  $f = 1909.8$  MHz;  $\sigma = 1.52$  mho/m;  $\epsilon_r = 50.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1815; ConvF(4.69, 4.69, 4.69); Calibrated: 2005-01-20
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn640; Calibrated: 2004-10-12
- Phantom: SAM 5; Type: SAM; Serial: 1352
- Measurement SW: DASY4, V4.4 Build 3; Postprocessing SW: SEMCAD, V1.8 Build 130

**Flat, 15mm, GPRS 1 Slot/Area Scan (61x81x1):** Measurement grid: dx=10mm, dy=10mm  
 Maximum value of SAR (interpolated) = 0.388 mW/g

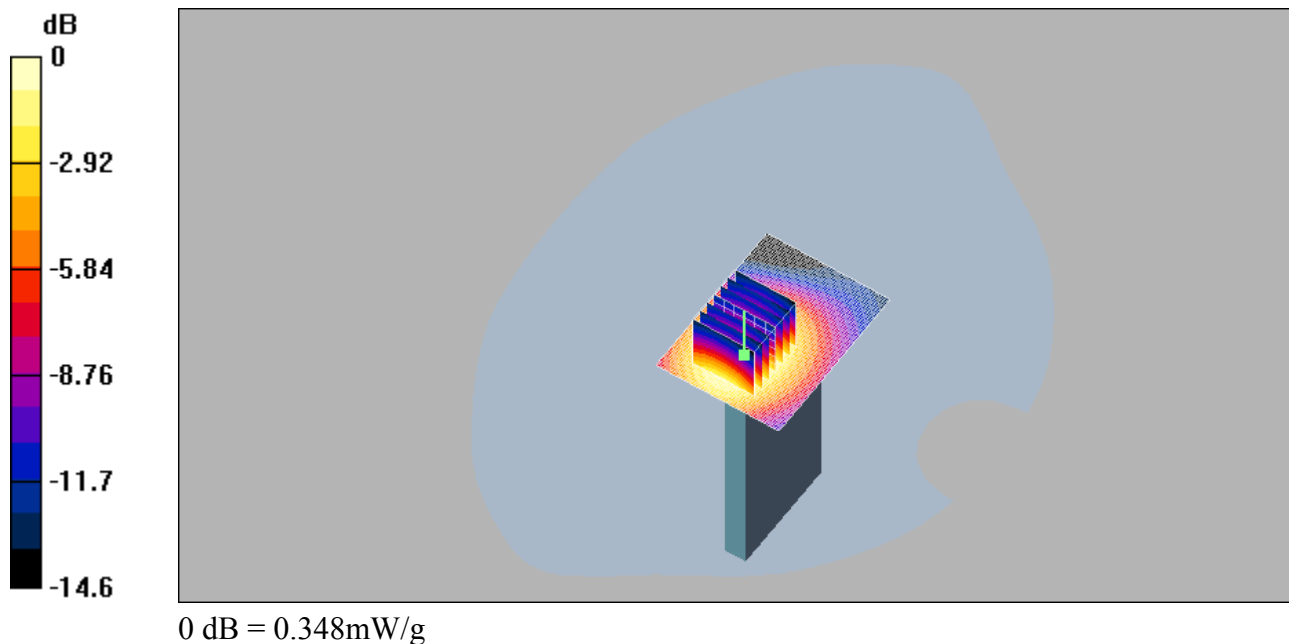
**Flat, 15mm, GPRS 1 Slot/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.4 V/m; Power Drift = -0.5 dB

Peak SAR (extrapolated) = 0.495 W/kg

**SAR(1 g) = 0.320 mW/g; SAR(10 g) = 0.194 mW/g**

Maximum value of SAR (measured) = 0.348 mW/g







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 **Sony Ericsson Lund**

Certificate No: **ET3-1815\_Jan05**

## CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1815**

Calibration procedure(s) **QA CAL-01.v5  
Calibration procedure for dosimetric E-field probes**

Calibration date: **January 20, 2005**


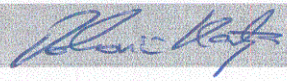
Condition of the calibrated item **In Tolerance**

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 ( $22 \pm 3$ )°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	5-May-04 (METAS, No. 251-00388)	May-05
Power sensor E4412A	MY41495277	5-May-04 (METAS, No. 251-00388)	May-05
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-04 (METAS, No. 251-00403)	Aug-05
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-04 (METAS, No. 251-00389)	May-05
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-04 (METAS, No. 251-00404)	Aug-05
Reference Probe ES3DV2	SN: 3013	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
DAE4	SN: 617	29-Sep-04 (SPEAG, No. DAE4-617_Sep04)	Sep-05
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

Calibrated by:	Name <b>Nico Vetterli</b>	Function <b>Laboratory Technician</b>	Signature 
Approved by:	Name <b>Katja Pokovic</b>	Function <b>Technical Manager</b>	Signature 

Issued: January 21, 2005

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





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

Accreditation No.: **SCS 108**

### 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
- 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

### 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.

# Probe ET3DV6

## SN:1815

Manufactured:	February 27, 2004
Calibrated:	January 20, 2005

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)