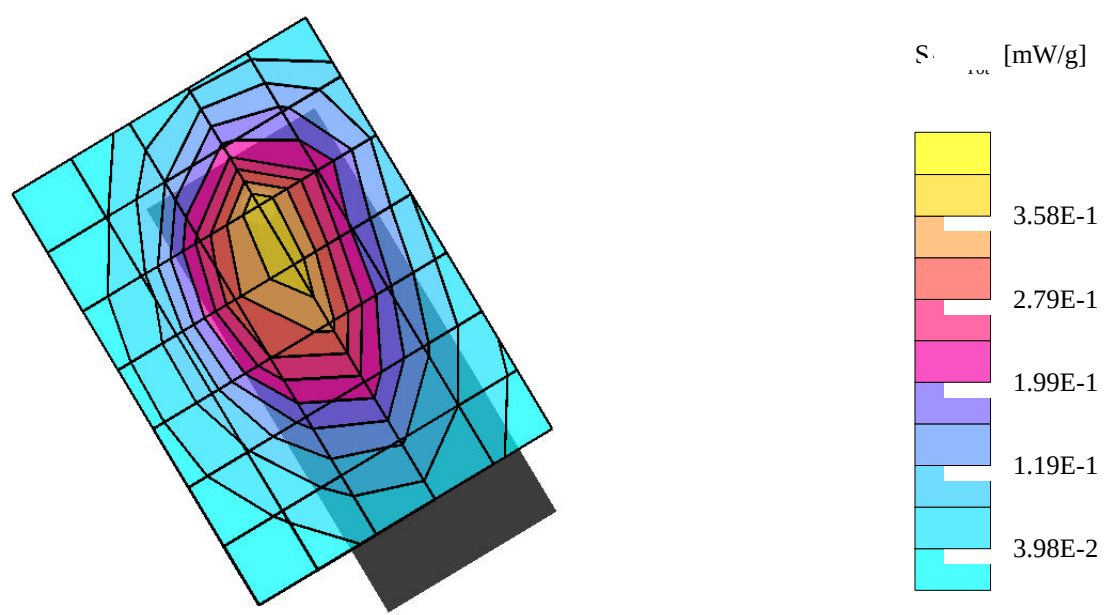


RH-28

Mode: GSM; CH 190 = 836.6 MHz; Crest factor: 8.0

Phantom: SAM Low Band; Section: Righ Hand
Medium Name: Head 835 MHz (SAM): $\sigma = 0.91 \text{ mho/m}$ $\epsilon_r = 42.1$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20)
Cube 5x5x7: SAR (1g): 0.401 mW/g, SAR (10g): 0.259 mW/g, (Worst-case extrapolation)
Antenna out: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.03 dB
Temperature (°C) = 22 ±1

Filename: SAM plus15° right 850 MHz Ant in CH 190



10/17/03

RH-28

Mode: GSM; CH 190 = 836.6 MHz; Crest factor: 8.0

Phantom: SAM Low Band; Section: Left Hand

Medium Name: Head 835 MHz (SAM): $\sigma = 0.91$ mho/m $\epsilon_r = 42.1$ $\rho = 1.00$ g/cm³

Probe: ET3DV6R - SN1431; ConvF(6.20,6.20,6.20)

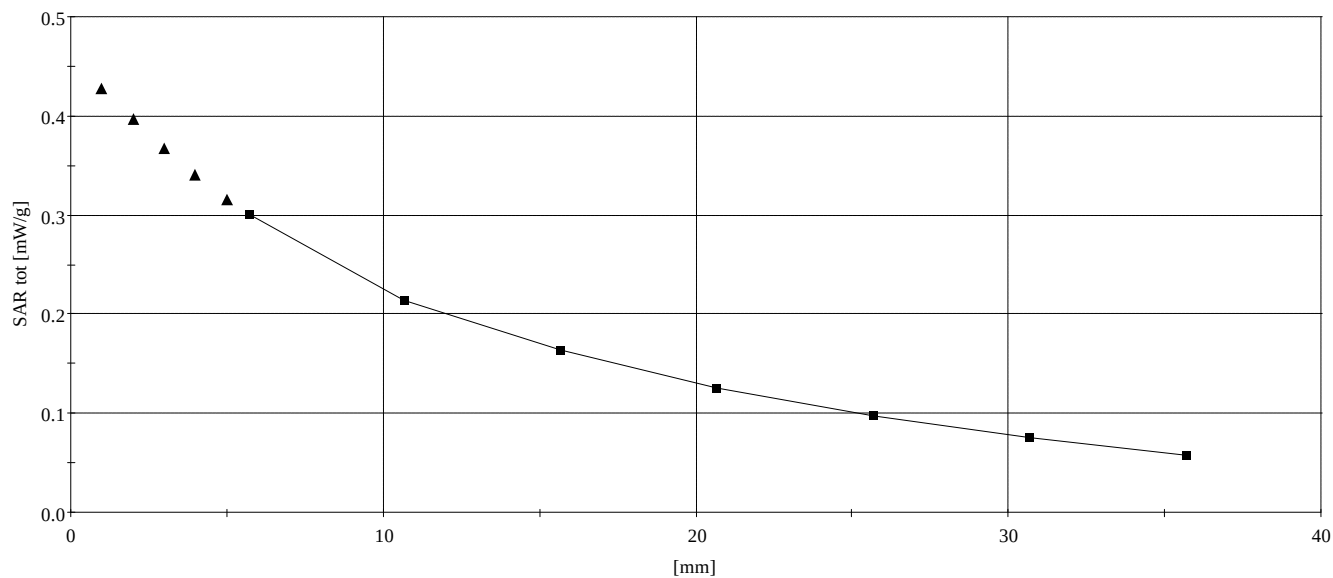
Cube 5x5x7: SAR (1g): 0.740 mW/g, SAR (10g): 0.489 mW/g, (Worst-case extrapolation)

Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0

Powerdrift: -0.08 dB

Temperature (°C) = 22 ±1

Filename: SAM touch left 850 MHz Ant in CH 190 no MMC card

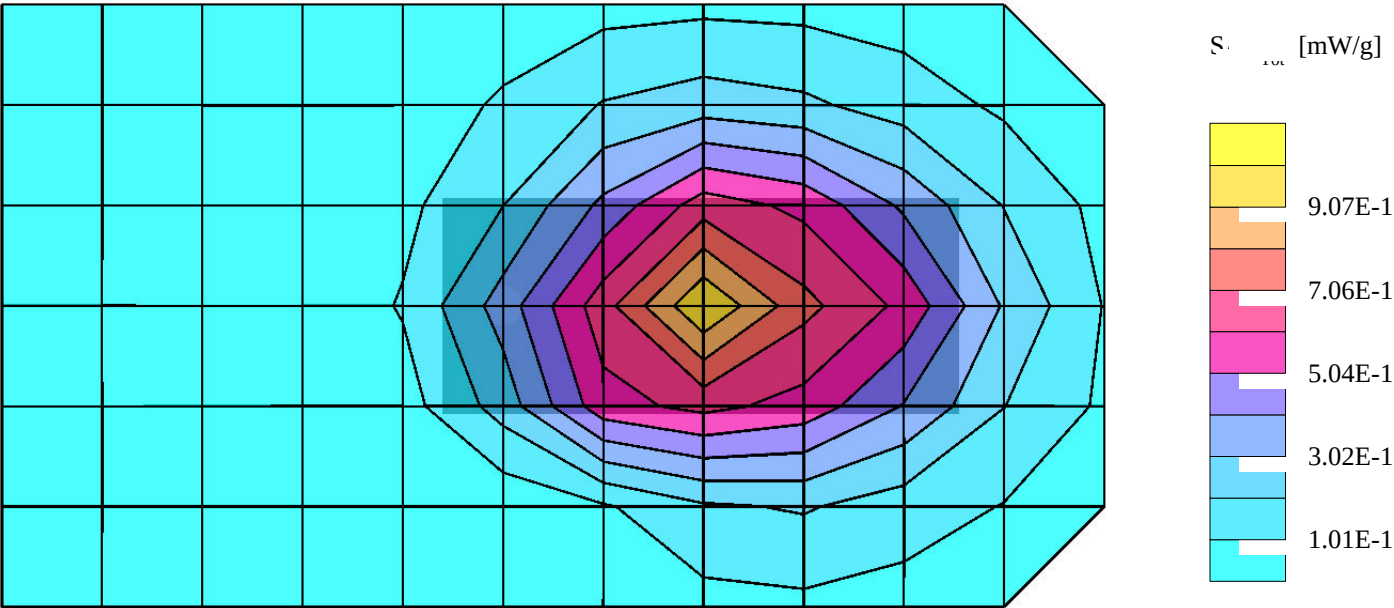


RH-28

Mode: GPRS, 1 Downlink 2 Uplink; CH 132 = 825.0 MHz; Crest factor: 4.0

Phantom: SAM Low Band; Section: Flat
Medium Name: Body 835 MHz (SAM): $\sigma = 0.94 \text{ mho/m}$ $\epsilon_r = 53.5$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(6.00,6.00,6.00)
Cube 5x5x7: SAR (1g): 0.991 mW/g, SAR (10g): 0.691 mW/g, (Worst-case extrapolation)
Body: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.07 dB
Temperature (°C) = 22 ±1

Filename: SAM Body, headset HDB-4 CH 132

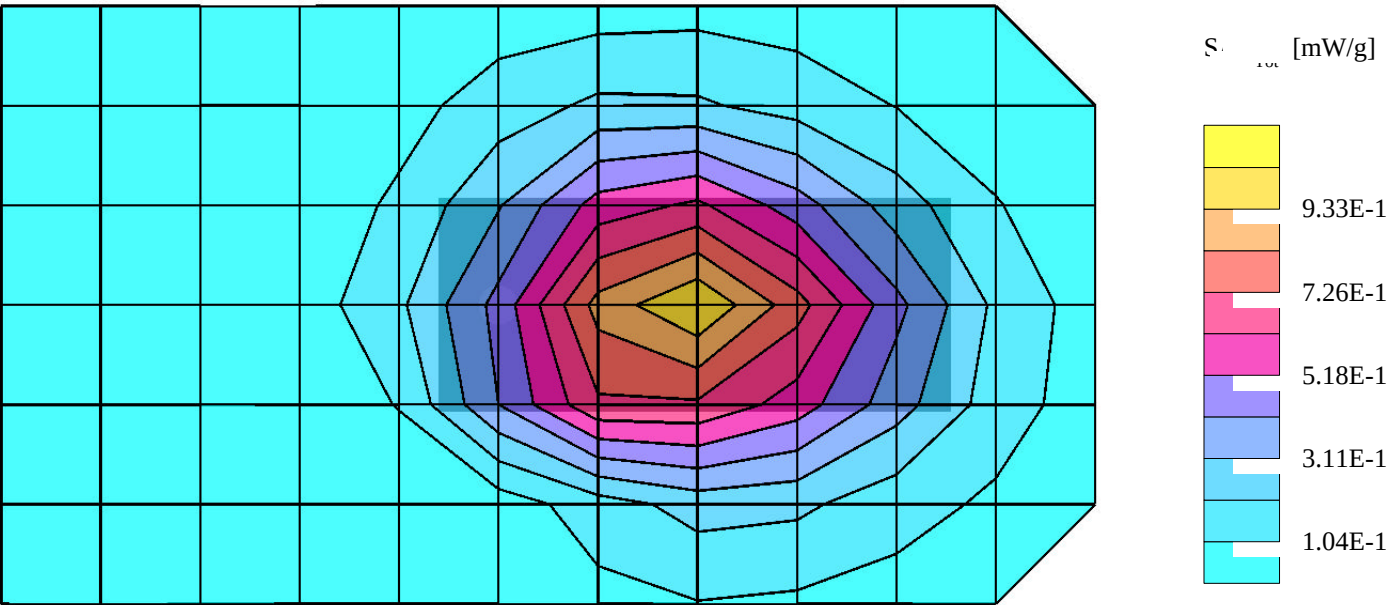


RH-28

Mode: GPRS, 1 Downlink 2 Uplink; CH 132 = 825.0 MHz; Crest factor: 4.0

Phantom: SAM Low Band; Section: Flat
Medium Name: Body 835 MHz (SAM): $\sigma = 0.94 \text{ mho/m}$ $\epsilon_r = 53.5$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(6.00,6.00,6.00)
Cube 5x5x7: SAR (1g): 1.02 mW/g, SAR (10g): 0.712 mW/g, (Worst-case extrapolation)
Body: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: -0.18 dB
Temperature (°C) = 22 ±1

Filename: SAM Body, headset HDB-4 no MMC card CH 132

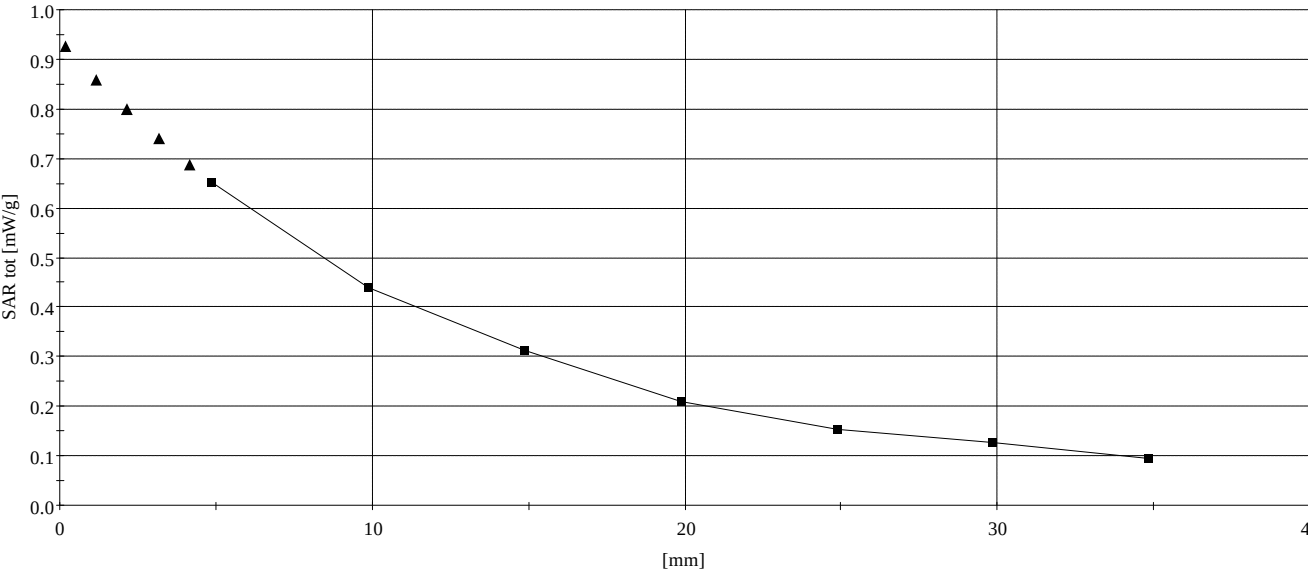


RH-28

Mode: GPRS, 1 Downlink 2 Uplink; CH 132 = 825.0 MHz; Crest factor: 4.0

Phantom: SAM Low Band; Section: Flat
Medium Name: Body 835 MHz (SAM): $\sigma = 0.94 \text{ mho/m}$ $\epsilon_r = 53.5$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(6.00,6.00,6.00)
Cube 5x5x7: SAR (1g): 1.02 mW/g, SAR (10g): 0.712 mW/g, (Worst-case extrapolation)
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0
Powerdrift: -0.18 dB
Temperature (°C) = 22 ±1

Filename: SAM Body, headset HDB-4 no MMC card CH 132

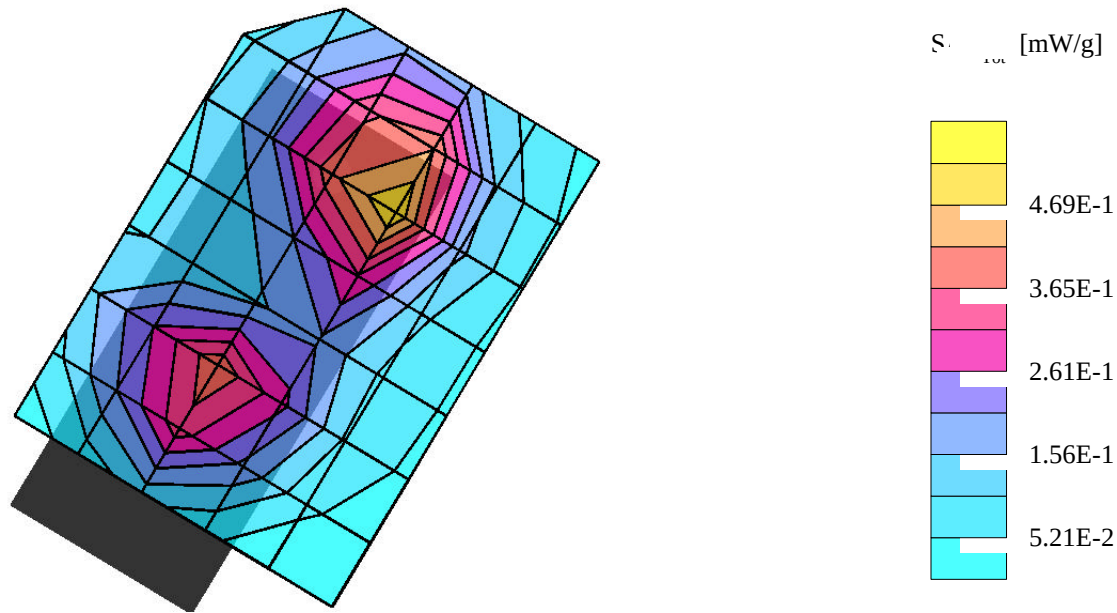


RH-28

Mode: GSM; CH 661 = 1880.0 MHz; Crest factor: 8.0

Phantom: SAM High Band; Section: Left Hand
Medium Name: Head 1900 MHz (SAM): $\sigma = 1.47 \text{ mho/m}$ $\epsilon_r = 38.8$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70)
Cube 5x5x7: SAR (1g): 0.550 mW/g, SAR (10g): 0.301 mW/g, (Worst-case extrapolation)
Coarse Scan: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.13 dB
Temperature (°C) = 22 ±1

Filename: SAM touch left 1900 MHz Ant in CH 661

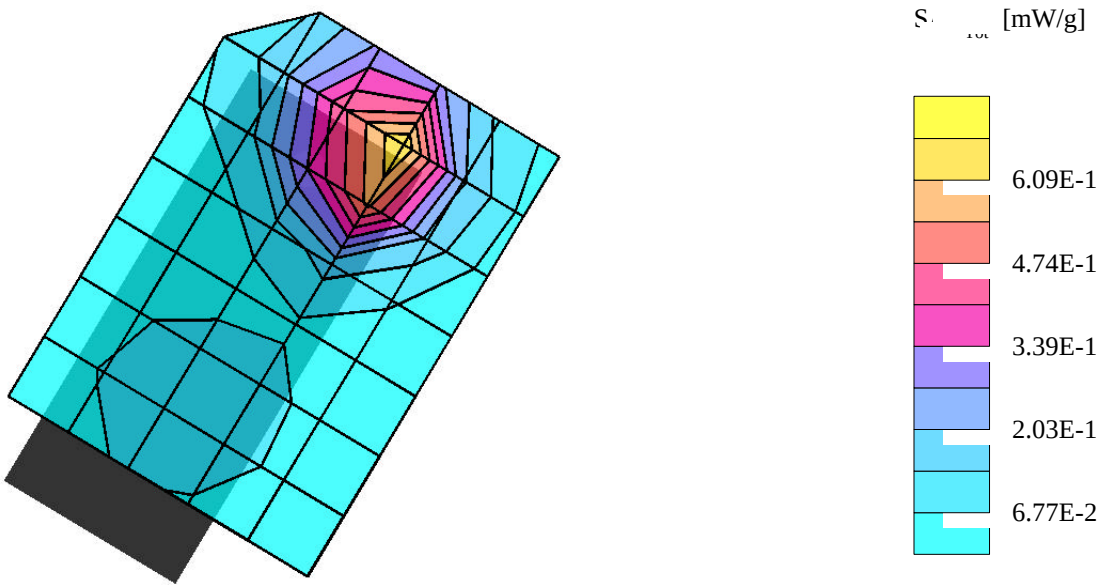


RH-28

Mode: GSM; CH 661 = 1880.0 MHz; Crest factor: 8.0

Phantom: SAM High Band; Section: Left Hand
Medium Name: Head 1900 MHz (SAM): $\sigma = 1.47 \text{ mho/m}$ $\epsilon_r = 38.8$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70)
Cube 5x5x7: SAR (1g): 0.727 mW/g, SAR (10g): 0.382 mW/g, (Worst-case extrapolation)
Coarse Scan: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.05 dB
Temperature (°C) = 22 ±1

Filename: SAM plus15° left 1900 MHz Ant in CH 661 no MMC card

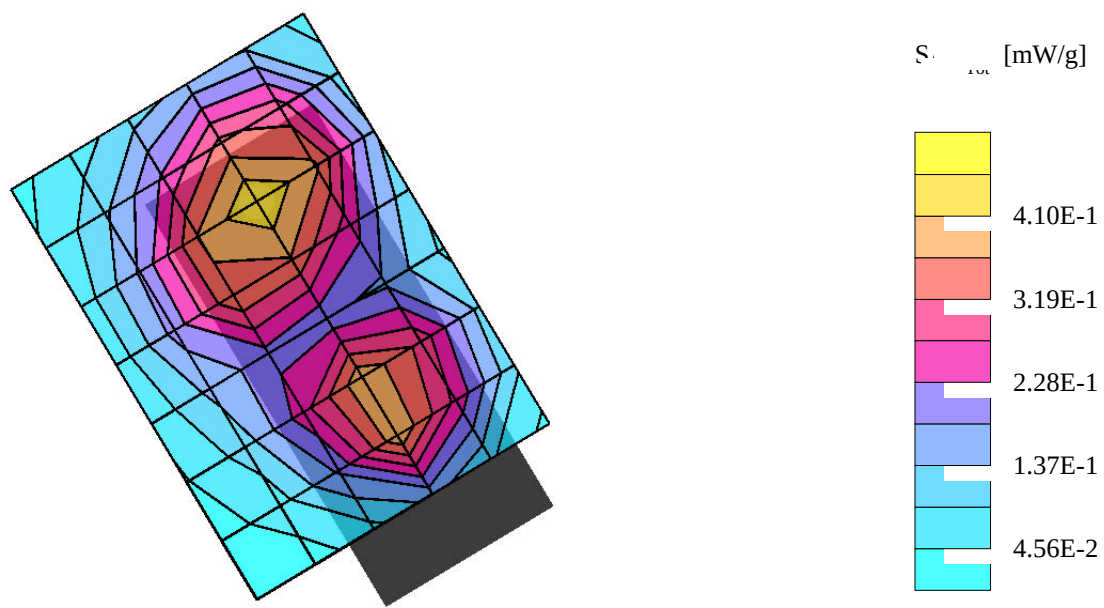


RH-28

Mode: GSM; CH 661 = 1880.0 MHz; Crest factor: 8.0

Phantom: SAM High Band; Section: Righ Hand
Medium Name: Head 1900 MHz (SAM): $\sigma = 1.47$ mho/m $\epsilon_r = 38.8$ $\rho = 1.00$ g/cm³
Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70)
Cube 5x5x7: SAR (1g): 0.463 mW/g, SAR (10g): 0.274 mW/g, (Worst-case extrapolation)
Coarse Scan: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: 0.01 dB
Temperature (°C) = 22 ±1

Filename: SAM touch right 1900 MHz Ant in CH 661

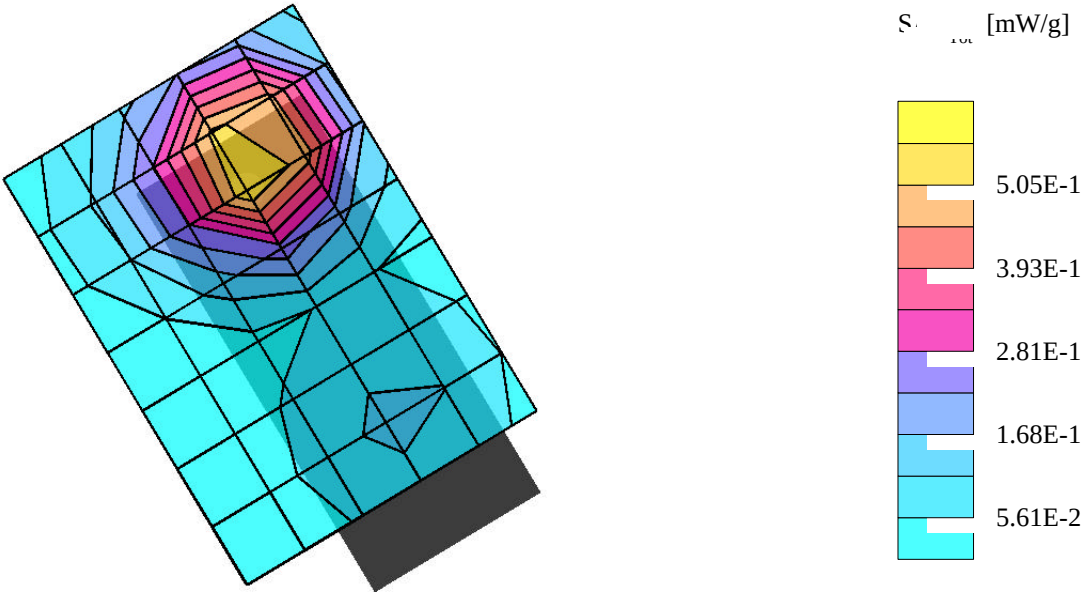


RH-28

Mode: GSM; CH 661 = 1880.0 MHz; Crest factor: 8.0

Phantom: SAM High Band; Section: Righ Hand
Medium Name: Head 1900 MHz (SAM): $\sigma = 1.47$ mho/m $\epsilon_r = 38.8$ $\rho = 1.00$ g/cm³
Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70)
Cube 5x5x7: SAR (1g): 0.635 mW/g, SAR (10g): 0.351 mW/g, (Worst-case extrapolation)
Coarse Scan: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.12 dB
Temperature (°C) = 22 ±1

Filename: SAM plus15° right 1900 MHz Ant in CH 661

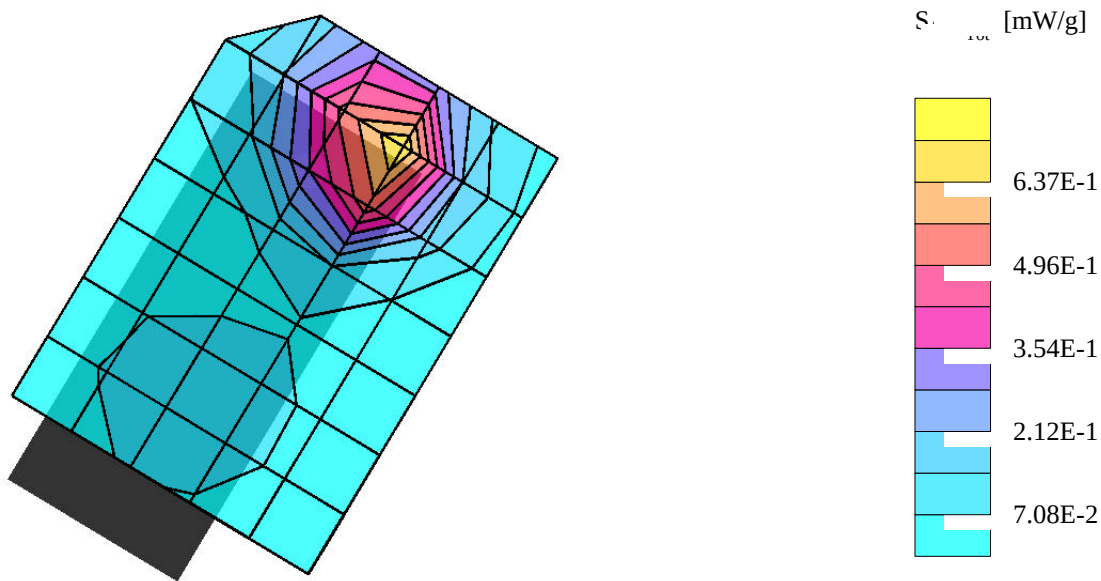


RH-28

Mode: GSM; CH 518 = 1851.4 MHz; Crest factor: 8.0

Phantom: SAM High Band; Section: Left Hand
Medium Name: Head 1900 MHz (SAM): $\sigma = 1.47 \text{ mho/m}$ $\epsilon_r = 38.8$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70)
Cube 5x5x7: SAR (1g): 0.758 mW/g, SAR (10g): 0.402 mW/g, (Worst-case extrapolation)
Coarse Scan: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.05 dB
Temperature (°C) = 22 ±1

Filename: SAM plus15° left 1900 MHz Ant in CH 518 no MMC card

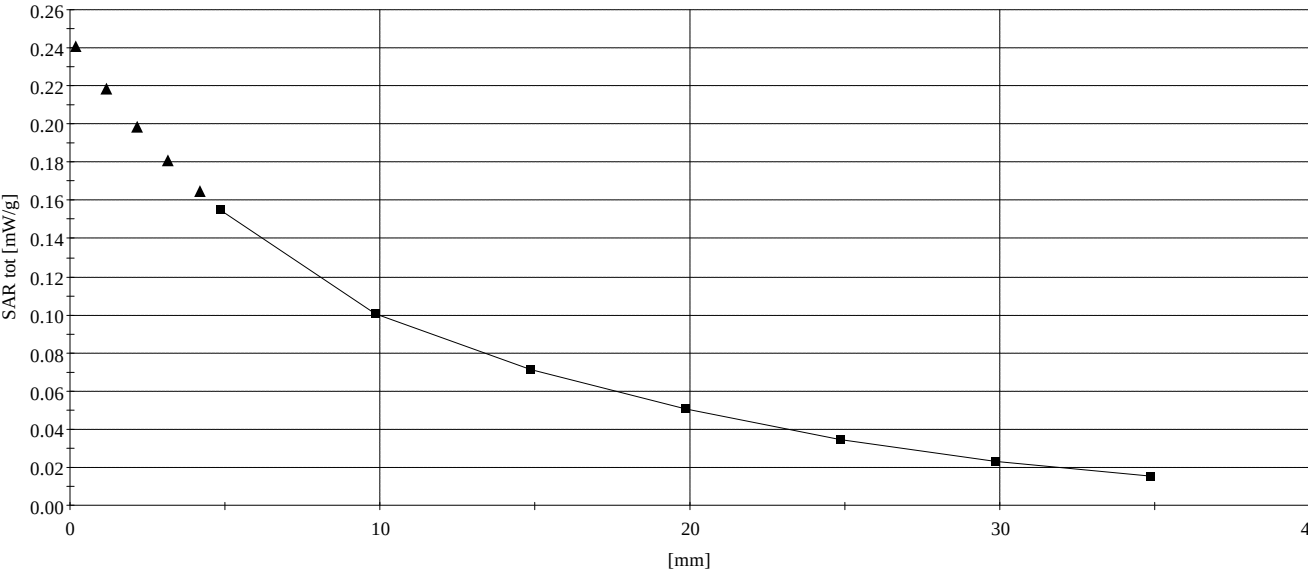


RH-28

Mode: GSM; CH 518 = 1851.4 MHz; Crest factor: 8.0

Phantom: SAM High Band; Section: Left Hand
Medium Name: Head 1900 MHz (SAM): $\sigma = 1.47$ mho/m $\epsilon_r = 38.8$ $\rho = 1.00$ g/cm³
Probe: ET3DV6R - SN1431; ConvF(4.70,4.70,4.70)
Cube 5x5x7: SAR (1g): 0.758 mW/g, SAR (10g): 0.402 mW/g, (Worst-case extrapolation)
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0
Powerdrift: -0.05 dB
Temperature (°C) = 22 ±1

Filename: SAM plus15° left 1900 MHz Ant in CH 518 no MMC card



RH-28

Mode: GPRS, 1 Downlink 2 Uplink; CH 518 = 1851.4 MHz; Crest factor: 4.0

Phantom: SAM High Band; Section: Flat

Medium Name: Body 1900 MHz (SAM): $\sigma = 1.56$ mho/m $\epsilon_r = 50.7$ $\rho = 1.00$ g/cm³

Probe: ET3DV6R - SN1431; ConvF(4.40,4.40,4.40)

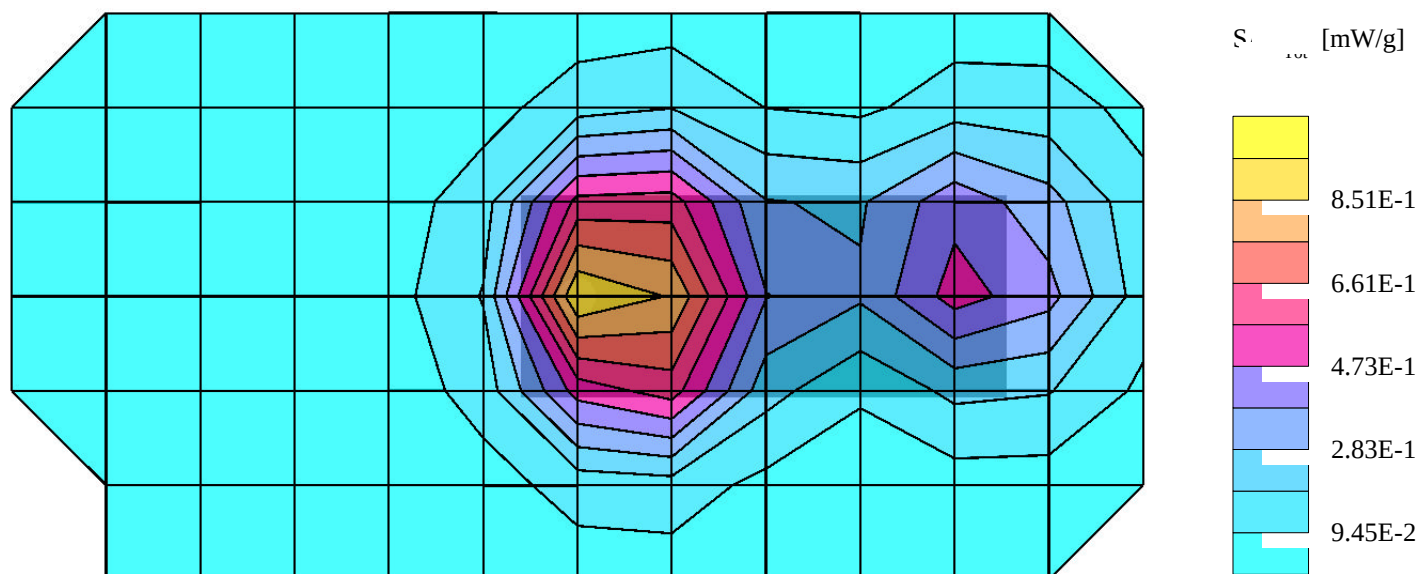
Cube 5x5x7: SAR (1g): 1.11 mW/g, SAR (10g): 0.661 mW/g, (Worst-case extrapolation)

Body: Dx = 20.0, Dy = 20.0, Dz = 10.0

Powerdrift: 0.06 dB

Temperature (°C) = 22 ±1

Filename: SAM Body,headset HDB-4 CH 518

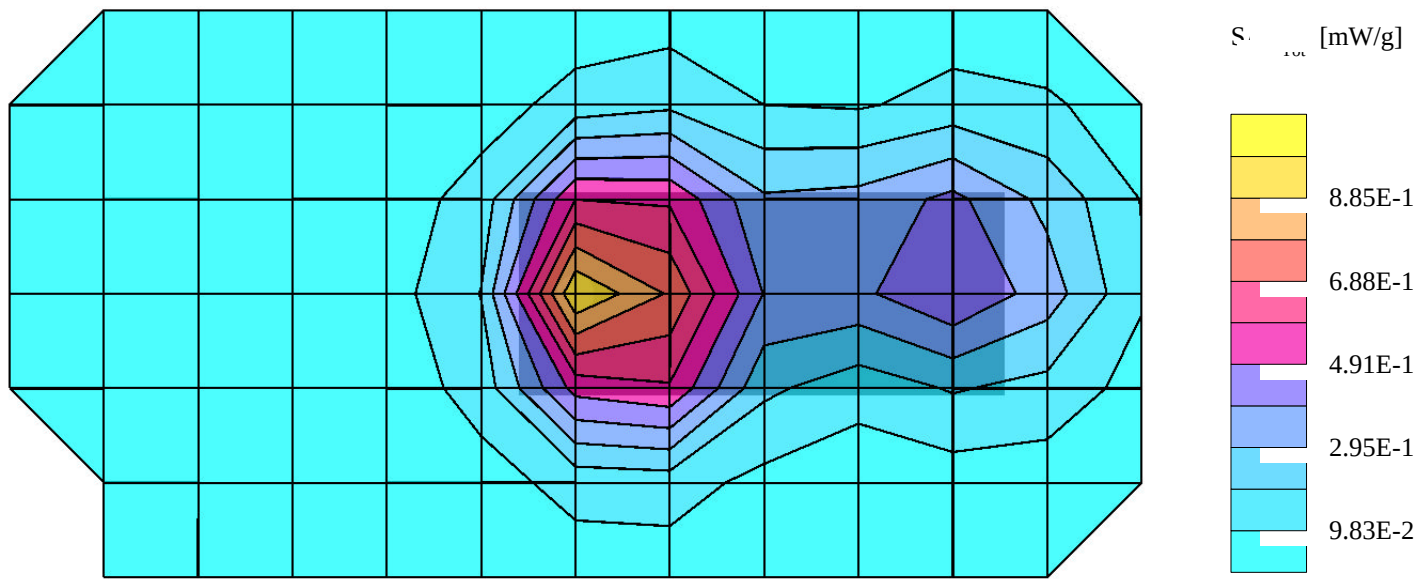


RH-28

Mode: GPRS, 1 Downlink 2 Uplink; CH 518 = 1851.4 MHz; Crest factor: 4.0

Phantom: SAM High Band; Section: Flat
Medium Name: Body 1900 MHz (SAM): $\sigma = 1.56 \text{ mho/m}$ $\epsilon_r = 50.7$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(4.40,4.40,4.40)
Cube 5x5x7: SAR (1g): 1.11 mW/g, SAR (10g): 0.652 mW/g, (Worst-case extrapolation)
Body: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrift: 0.03 dB
Temperature (°C) = 22 ±1

Filename: SAM Body, headset HDB-4 no MMC card CH 518

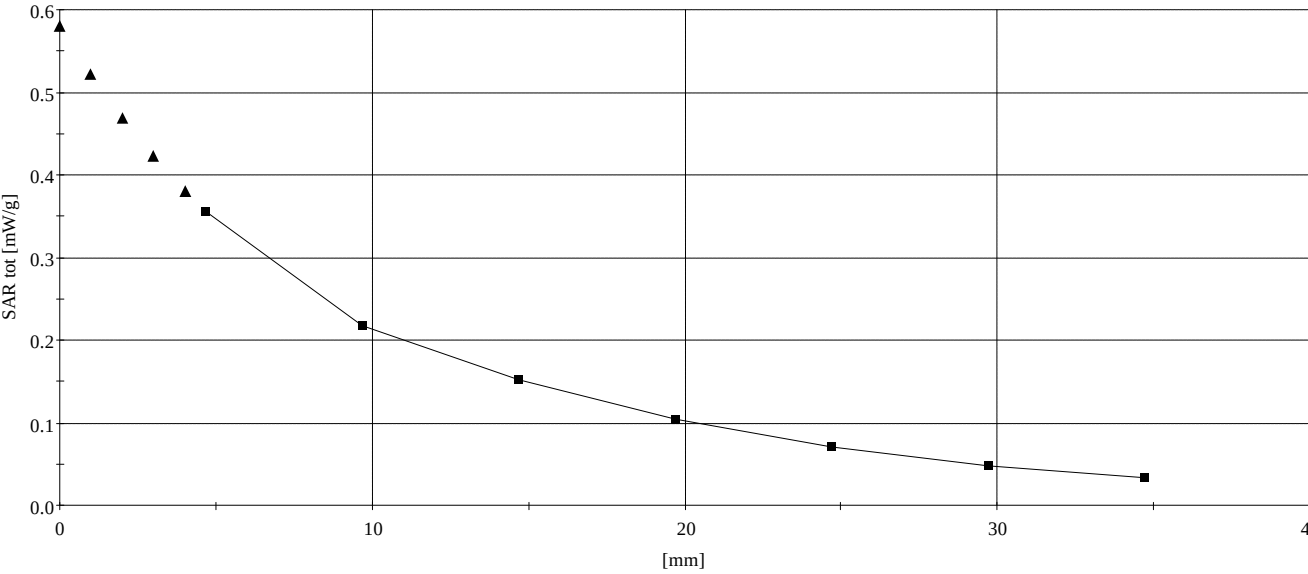


RH-28

Mode: GPRS, 1 Downlink 2 Uplink; CH 518 = 1851.4 MHz; Crest factor: 4.0

Phantom: SAM High Band; Section: Flat
Medium Name: Body 1900 MHz (SAM): $\sigma = 1.56 \text{ mho/m}$ $\epsilon_r = 50.7$ $\rho = 1.00 \text{ g/cm}^3$
Probe: ET3DV6R - SN1431; ConvF(4.40,4.40,4.40)
Cube 5x5x7: SAR (1g): 1.11 mW/g, SAR (10g): 0.661 mW/g, (Worst-case extrapolation)
Cube 5x5x7: Dx = 8.0, Dy = 8.0, Dz = 5.0
Powerdrift: 0.06 dB
Temperature (°C) = 22 ±1

Filename: SAM Body,headset HDB-4 CH 518



APPENDIX C: RELEVANT PAGES FROM PROBE CALIBRATION REPORT(S)

See the following pages.

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

Client

Nokia Danmark A/S

CALIBRATION CERTIFICATE

Object(s) **ET3DV6R - SN:1431**

Calibration procedure(s) **QA CAL-01.v2
Calibration procedure for dosimetric E-field probes**

Calibration date: **April 16, 2003**

Condition of the calibrated item **In Tolerance (according to the specific calibration document)**

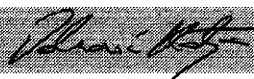
This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator HP 8684C	US3642U01700	4-Aug-99 (in house check Aug-02)	In house check: Aug-05
Power sensor E4412A	MY41495277	2-Apr-03	Apr-04
Power sensor HP 8481A	MY41092180	18-Sep-02	Sep-03
Power meter EPM E4419B	GB41293874	13-Sep-02	Sep-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01	Sep-03

Calibrated by:	Name	Function	Signature
	Nico Vetterli	Technician	

Approved by:	Name	Function	Signature
	Katja Pokovic	Laboratory Director	

Date issued: April 16, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

DASY - Parameters of Probe: ET3DV6R SN:1431

Sensitivity in Free Space

NormX	2.36 $\mu\text{V}/(\text{V}/\text{m})^2$
NormY	2.27 $\mu\text{V}/(\text{V}/\text{m})^2$
NormZ	1.99 $\mu\text{V}/(\text{V}/\text{m})^2$

Diode Compression

DCP X	98	mV
DCP Y	98	mV
DCP Z	98	mV

Sensitivity in Tissue Simulating Liquid

Head **900 MHz** $\epsilon_r = 41.5 \pm 5\%$ $\sigma = 0.97 \pm 5\% \text{ mho/m}$

ConvF X	6.1 $\pm 8.9\%$ (k=2)	Boundary effect:
ConvF Y	6.1 $\pm 8.9\%$ (k=2)	Alpha 0.40
ConvF Z	6.1 $\pm 8.9\%$ (k=2)	Depth 2.55

Head **1800 MHz** $\epsilon_r = 40.0 \pm 5\%$ $\sigma = 1.40 \pm 5\% \text{ mho/m}$

ConvF X	4.9 $\pm 8.9\%$ (k=2)	Boundary effect:
ConvF Y	4.9 $\pm 8.9\%$ (k=2)	Alpha 0.56
ConvF Z	4.9 $\pm 8.9\%$ (k=2)	Depth 2.39

Boundary Effect

Head **900 MHz** **Typical SAR gradient: 5 % per mm**

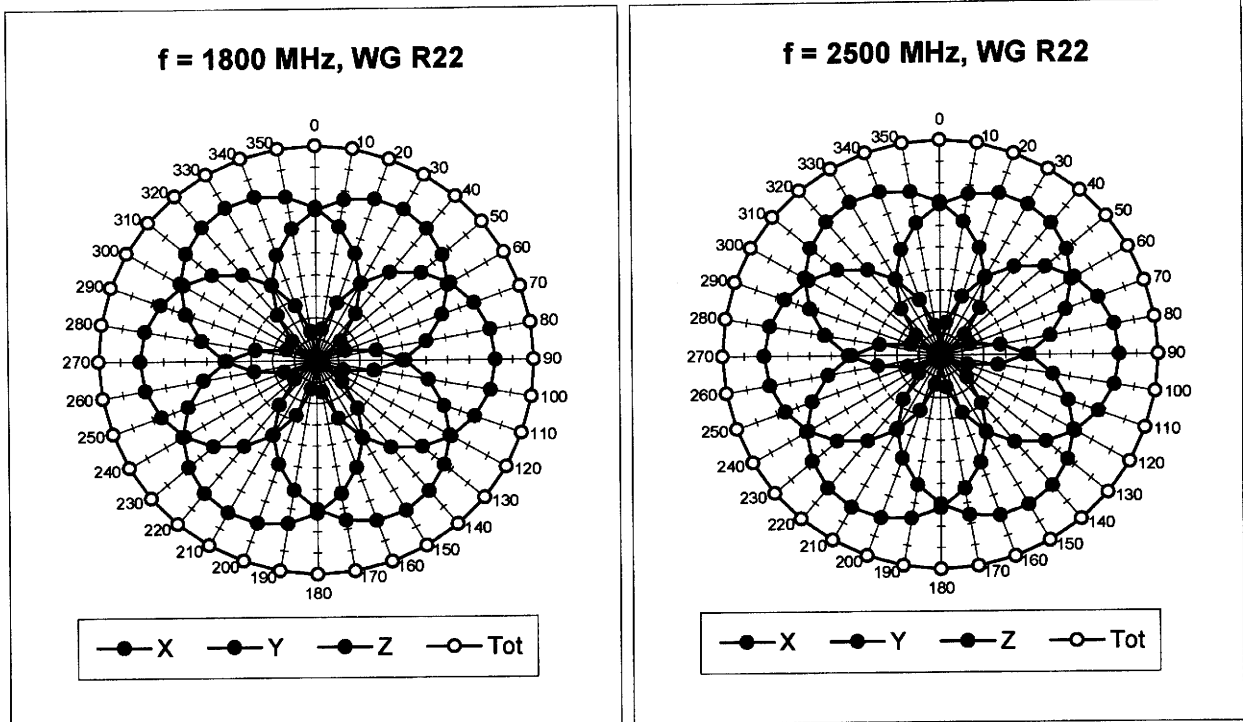
Probe Tip to Boundary	1 mm	2 mm
SAR _{be} [%] Without Correction Algorithm	10.7	6.0
SAR _{be} [%] With Correction Algorithm	0.4	0.7

Head **1800 MHz** **Typical SAR gradient: 10 % per mm**

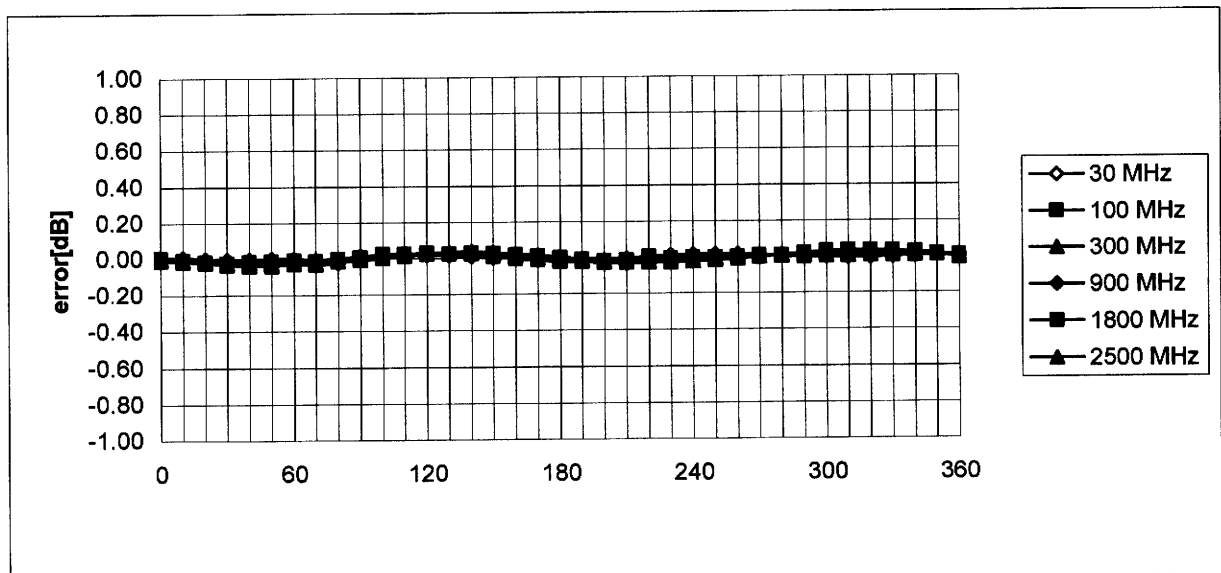
Probe Tip to Boundary	1 mm	2 mm
SAR _{be} [%] Without Correction Algorithm	13.3	8.7
SAR _{be} [%] With Correction Algorithm	0.1	0.2

Sensor Offset

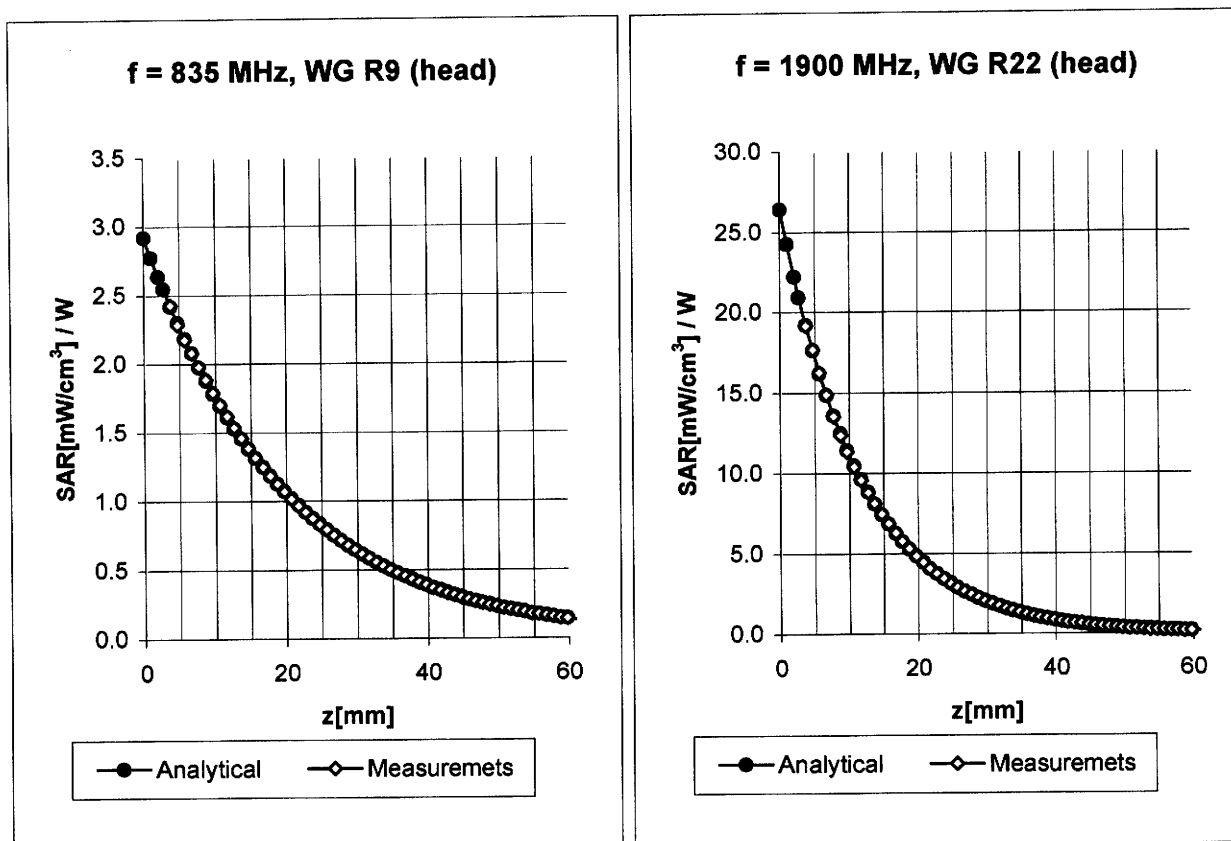
Probe Tip to Sensor Center **2.7** mm



Isotropy Error (ϕ), $\theta = 0^\circ$



Conversion Factor Assessment

**Head****835 MHz** $\epsilon_r = 41.5 \pm 5\%$ $\sigma = 0.90 \pm 5\% \text{ mho/m}$ ConvF X **6.2** $\pm 8.9\%$ (k=2)ConvF Y **6.2** $\pm 8.9\%$ (k=2)ConvF Z **6.2** $\pm 8.9\%$ (k=2)

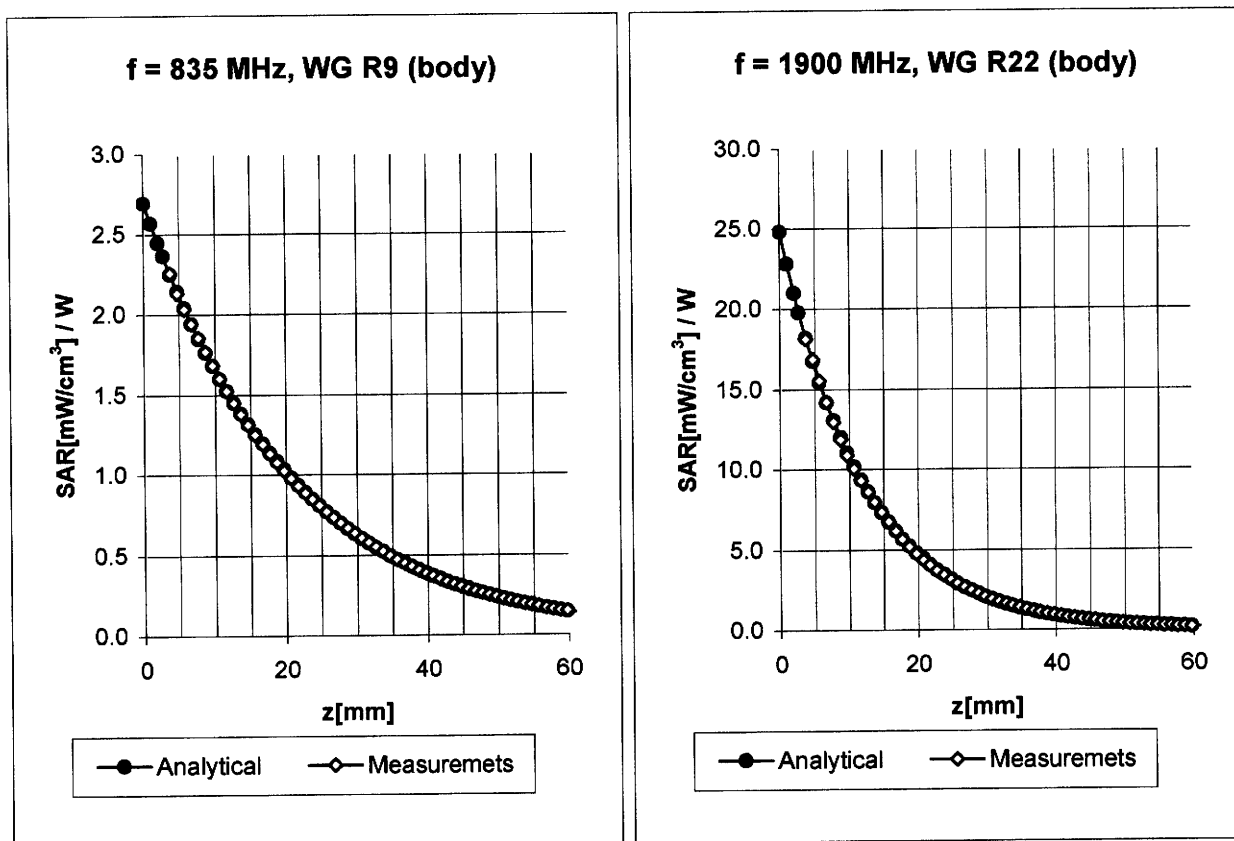
Boundary effect:

Alpha **0.42**Depth **2.35****Head****1900 MHz** $\epsilon_r = 40.0 \pm 5\%$ $\sigma = 1.40 \pm 5\% \text{ mho/m}$ ConvF X **4.7** $\pm 8.9\%$ (k=2)ConvF Y **4.7** $\pm 8.9\%$ (k=2)ConvF Z **4.7** $\pm 8.9\%$ (k=2)

Boundary effect:

Alpha **0.60**Depth **2.34**

Conversion Factor Assessment



Body **835 MHz** $\epsilon_r = 55.2 \pm 5\%$ $\sigma = 0.97 \pm 5\% \text{ mho/m}$

ConvF X **6.0** $\pm 8.9\%$ (k=2)

Boundary effect:

ConvF Y **6.0** $\pm 8.9\%$ (k=2)

Alpha **0.43**

ConvF Z **6.0** $\pm 8.9\%$ (k=2)

Depth **2.32**

Body **1900 MHz** $\epsilon_r = 53.3 \pm 5\%$ $\sigma = 1.52 \pm 5\% \text{ mho/m}$

ConvF X **4.4** $\pm 8.9\%$ (k=2)

Boundary effect:

ConvF Y **4.4** $\pm 8.9\%$ (k=2)

Alpha **0.67**

ConvF Z **4.4** $\pm 8.9\%$ (k=2)

Depth **2.36**

APPENDIX D: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORT(S)

See the following pages.

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

Client

Nokia Danmark A/S

CALIBRATION CERTIFICATE

Object(s) **D835V2 - SN:476**

Calibration procedure(s) **QA CAL-05.v2
Calibration procedure for dipole validation kits**

Calibration date: **February 25, 2003**

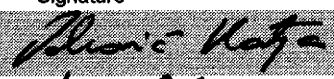
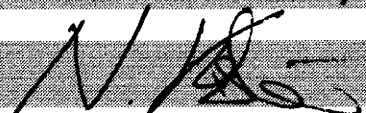
Condition of the calibrated item **In Tolerance (according to the specific calibration document)**

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator R&S SML-03	100698	27-Mar-2002	In house check: Mar-05
Power sensor HP 8481A	MY41092317	18-Oct-02	Oct-04
Power sensor HP 8481A	US37292783	30-Oct-02	Oct-03
Power meter EPM E442	GB37480704	30-Oct-02	Oct-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Laboratory Director	
Approved by:	Niels Kuster	Quality Manager	

Date issued: February 26, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Date/Time: 02/25/03 17:45:15

Test Laboratory: SPEAG, Zurich, Switzerland
File Name: SN476_SN1507_HSL835_250203.da4

DUT: Dipole 835 MHz; Serial: D835V2 - SN476
Program: Dipole Calibration

Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL 835 MHz; ($\sigma = 0.89$ mho/m, $\epsilon_r = 41.5$, $\rho = 1000$ kg/m³)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.7, 6.7, 6.7); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 - SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 23; Postprocessing SW: SEMCAD, V1.6 Build 105

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm

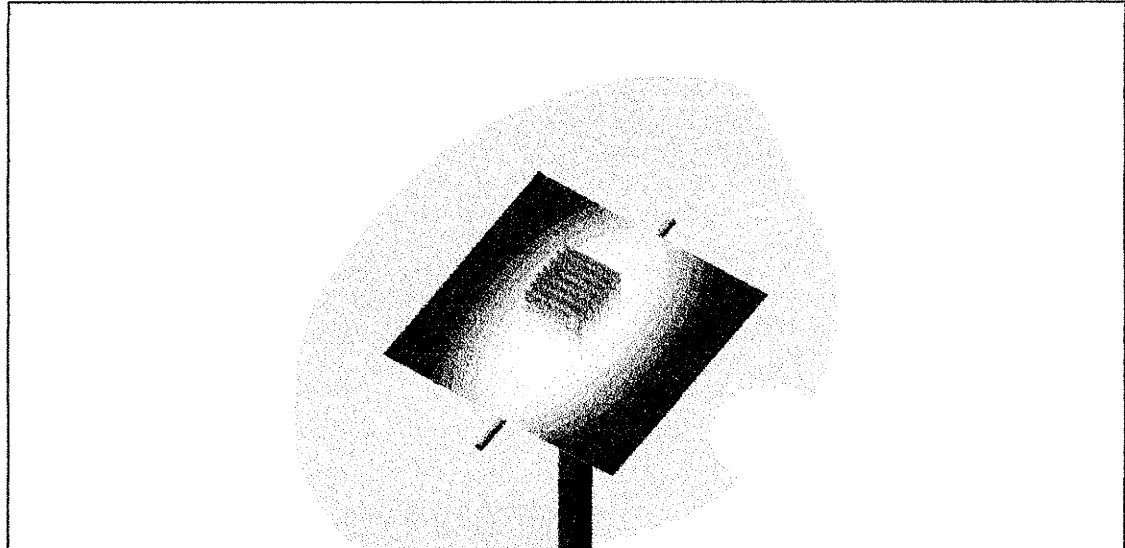
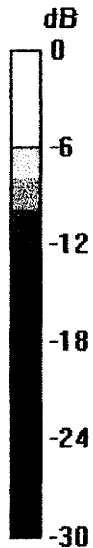
Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.2 V/m

Peak SAR = 3.57 W/kg

SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.55 mW/g

Power Drift = 0.03 dB



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

Client

Nokia Danmark A/S

CALIBRATION CERTIFICATE

Object(s) **D835V2 - SN:476**

Calibration procedure(s) **QA CAL-05.v2
Calibration procedure for dipole validation kits**

Calibration date: **April 7, 2003**

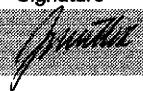
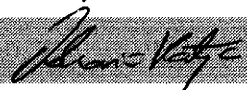
Condition of the calibrated item **In Tolerance (according to the specific calibration document)**

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator R&S SML-03	100698	27-Mar-2002	In house check: Mar-05
Power sensor HP 8481A	MY41092317	18-Oct-02	Oct-04
Power sensor HP 8481A	US37292783	30-Oct-02	Oct-03
Power meter EPM E442	GB37480704	30-Oct-02	Oct-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03

	Name	Function	Signature
Calibrated by:	Judith Mueller	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: April 11, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Date/Time: 04/07/03 13:58:59

Test Laboratory: SPEAG, Zurich, Switzerland
File Name: SN476_SN1507_M835_070403.da4

DUT: Dipole 835 MHz; Serial: D835V2 - SN476
Program: Dipole Calibration

Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Muscle 835 MHz; ($\sigma = 0.96$ mho/m, $\epsilon_r = 54.03$, $\rho = 1000$ kg/m³)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.3, 6.3, 6.3); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 - SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 33; Postprocessing SW: SEMCAD, V1.6 Build 109

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm

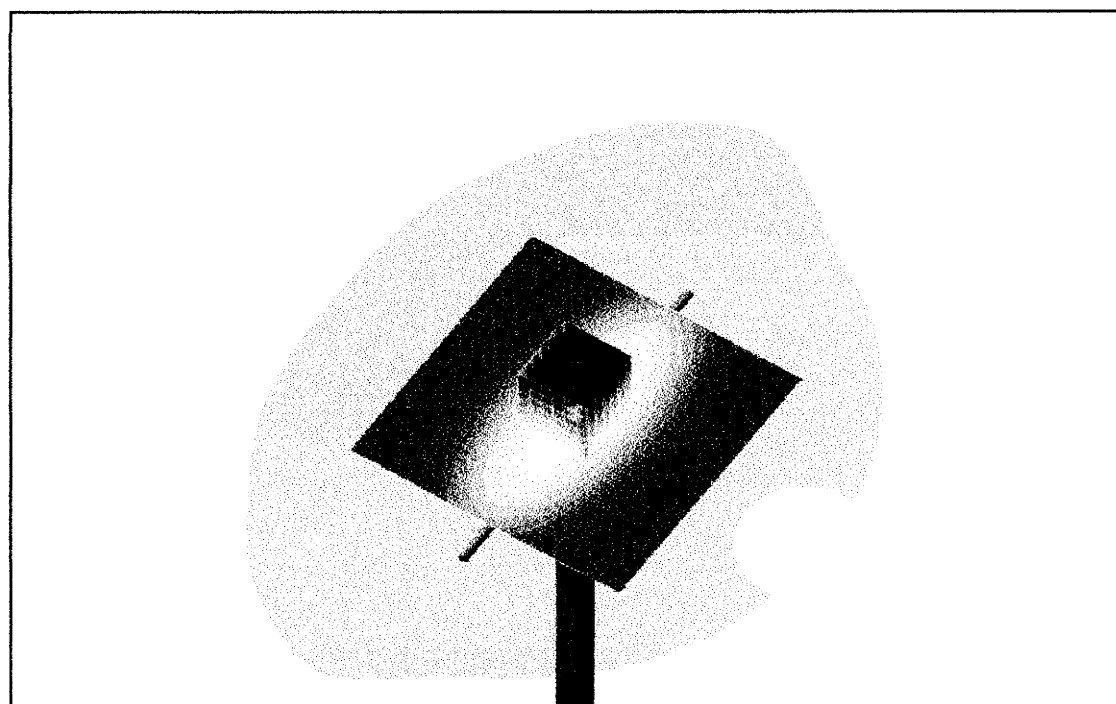
Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.4 V/m

Peak SAR = 3.6 W/kg

SAR(1 g) = 2.53 mW/g; SAR(10 g) = 1.67 mW/g

Power Drift = 0.02 dB



Client

Nokia Danmark A/S

CALIBRATION CERTIFICATE

Object(s)

D1900V2 - SN:5d026

Calibration procedure(s)

QA CAL-05.v2
 Calibration procedure for dipole validation kits

Calibration date:

February 26, 2003

Condition of the calibrated item

In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator R&S SML-03	100698	27-Mar-2002	In house check: Mar-05
Power sensor HP 8481A	MY41092317	18-Oct-02	Oct-04
Power sensor HP 8481A	US37292783	30-Oct-02	Oct-03
Power meter EPM E442	GB37480704	30-Oct-02	Oct-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03

Calibrated by:

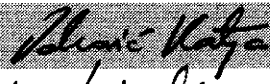
Name

Katja Pokovic

Function

Laboratory Director

Signature



Approved by:

Niels Kuster

Quality Manager



Date issued: February 26, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Date/Time: 02/26/03 17:17:26

Test Laboratory: SPEAG, Zurich, Switzerland
File Name: SN5d026 SN1507 HSL1900 260203.da4

DUT: Dipole 1900 MHz; Serial: D1900V2 - SN5d026
Program: Dipole Calibration

Communication System: CW-1900; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL 1900 MHz; ($\sigma = 1.46$ mho/m, $\epsilon_r = 38.6$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(5.2, 5.2, 5.2); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 - SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 25; Postprocessing SW: SEMCAD, V1.6 Build 105

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm

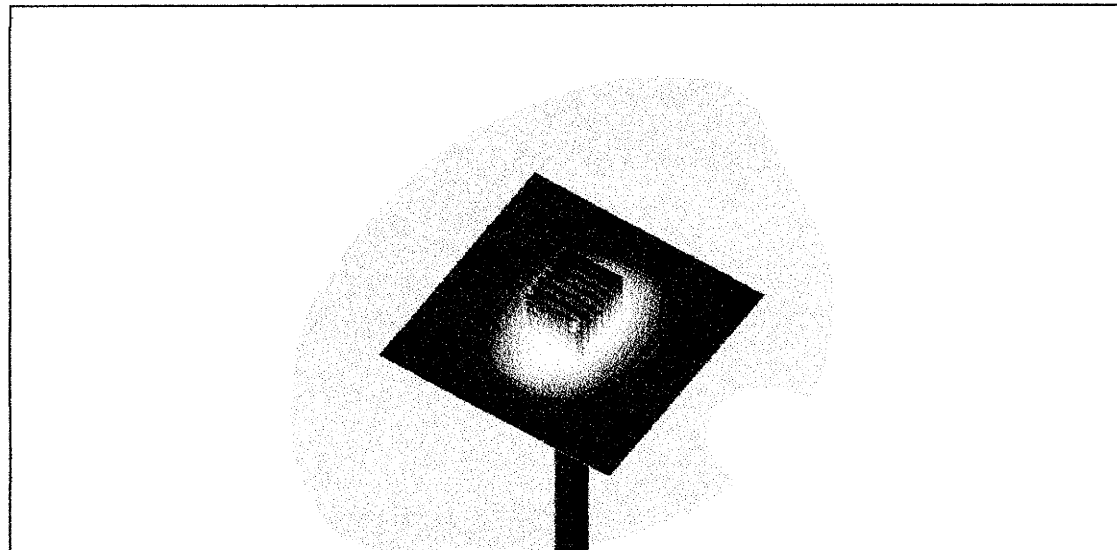
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.2 V/m

Peak SAR = 18.6 W/kg

SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.31 mW/g

Power Drift = 0.04 dB



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

Client

Nokia Danmark A/S

CALIBRATION CERTIFICATE

Object(s) D1900V2 - SN:5d026

Calibration procedure(s) QA CAL-05.v2
Calibration procedure for dipole validation kits

Calibration date: April 8, 2003

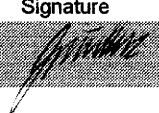
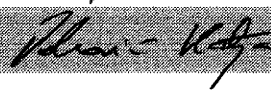
Condition of the calibrated item In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator R&S SML-03	100698	27-Mar-2002	In house check: Mar-05
Power sensor HP 8481A	MY41092317	18-Oct-02	Oct-04
Power sensor HP 8481A	US37292783	30-Oct-02	Oct-03
Power meter EPM E442	GB37480704	30-Oct-02	Oct-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03

	Name	Function	Signature
Calibrated by:	Judith Mueller	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: April 12, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Date/Time: 04/08/03 13:41:14

Test Laboratory: SPEAG, Zurich, Switzerland
File Name: SN5d026 SN1507 M1900 080403.da4

DUT: Dipole 1900 MHz; Serial: D1900V2 - SN5d026
Program: Dipole Calibration

Communication System: CW-1900; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: Muscle 1900 MHz; ($\sigma = 1.59$ mho/m, $\epsilon_r = 51.2$, $\rho = 1000$ kg/m³)
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(4.8, 4.8, 4.8); Calibrated: 1/18/2003
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 - SN411; Calibrated: 1/16/2003
- Phantom: SAM with CRP - TP1006; Type: SAM 4.0; Serial: TP:1006
- Measurement SW: DASY4, V4.1 Build 33; Postprocessing SW: SEMCAD, V1.6 Build 109

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.2 V/m

Peak SAR = 18.6 W/kg

SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.51 mW/g

Power Drift = 0.09 dB

