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

Client

Nokia China

CALIBRATION	Gerane (CA)		
Object(s)	D1800V2 - SI	N:2d021	
Calibration procedure(s)	QA CAL-05.v Calibration pr	2 ocedure for dipole validation kits	
Calibration date:	March 17, 20	04 (calibration for Body tissue)	
Condition of the calibrated item	In Tolerance	(according to the specific calibration	document)
7025 international standard.	cted in the closed laborat	E used in the calibration procedures and conformity of tory facility: environment temperature 22 +/- 2 degrees	
7025 international standard.	cted in the closed laborat	tory facility: environment temperature 22 +/- 2 degrees	
7025 international standard. All calibrations have been conducation Equipment used (M& Model Type	cted in the closed laborat	ory facility: environment temperature 22 +/- 2 degrees	Celsius and humidity < 75%.
7025 international standard. Il calibrations have been conductalibration Equipment used (M8 lodel Type ower meter EPM E442	cted in the closed laborat TE critical for calibration)	cory facility: environment temperature 22 +/- 2 degrees Cal Date (Calibrated by, Certificate No.)	Celsius and humidity < 75%. Scheduled Calibration
7025 international standard. All calibrations have been conducted. Calibration Equipment used (M& Model Type Power meter EPM E442 Power sensor HP 8481A	cted in the closed laborat TE critical for calibration) ID # GB37480704	Cal Date (Calibrated by, Certificate No.) 6-Nov-03 (METAS, No. 252-0254)	Celsius and humidity < 75%. Scheduled Calibration Nov-04
7025 international standard. All calibrations have been conducation Equipment used (M&	cted in the closed laboration) TE critical for calibration) ID # GB37480704 US37292783	Cal Date (Calibrated by, Certificate No.) 6-Nov-03 (METAS, No. 252-0254) 6-Nov-03 (METAS, No. 252-0254)	Celsius and humidity < 75%. Scheduled Calibration Nov-04 Nov-04
7025 international standard. All calibrations have been conducted. Calibration Equipment used (M8 Model Type Power meter EPM E442 Power sensor HP 8481A Power sensor HP 8481A	cted in the closed laboration) ID # GB37480704 US37292783 MY41092317	Cal Date (Calibrated by, Certificate No.) 6-Nov-03 (METAS, No. 252-0254) 6-Nov-03 (METAS, No. 252-0254) 18-Oct-02 (Agilent, No. 20021018)	Scheduled Calibration Nov-04 Nov-04 Oct-04
7025 international standard. All calibrations have been conducted. Calibration Equipment used (M8 Model Type Power meter EPM E442 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SML-03	cted in the closed laboration) ID # GB37480704 US37292783 MY41092317 100698	Cal Date (Calibrated by, Certificate No.) 6-Nov-03 (METAS, No. 252-0254) 6-Nov-03 (METAS, No. 252-0254) 18-Oct-02 (Agilent, No. 20021018) 27-Mar-2002 (R&S, No. 20-92389)	Scheduled Calibration Nov-04 Nov-04 Oct-04 In house check; Mar-05
7025 international standard. All calibrations have been conducted. Calibration Equipment used (M8 Model Type Power meter EPM E442 Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SML-03	cted in the closed laboration) ID # GB37480704 US37292783 MY41092317 100698 US37390585	Cal Date (Calibrated by, Certificate No.) 6-Nov-03 (METAS, No. 252-0254) 6-Nov-03 (METAS, No. 252-0254) 18-Oct-02 (Agilent, No. 20021018) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-01 (SPEAG, in house check Nov-03)	Scheduled Calibration Nov-04 Nov-04 Oct-04 In house check: Mar-05 In house check: Oct 05

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: 03/17/04 12:43:06

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN2d021

Communication System: CW-1800; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: Muscle 1800 MHz;

Medium parameters used: f = 1800 MHz; $\sigma = 1.49 \text{ mho/m}$; $\varepsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 SN1507; ConvF(4.61, 4.61, 4.61); Calibrated: 1/23/2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn411; Calibrated: 11/6/2003
- Phantom: SAM with CRP TP1006; Type: SAM 4.0; Serial: TP:1006;
- Measurement SW: DASY4, V4.2 Build 37; Postprocessing SW: SEMCAD, V1.8 Build 105

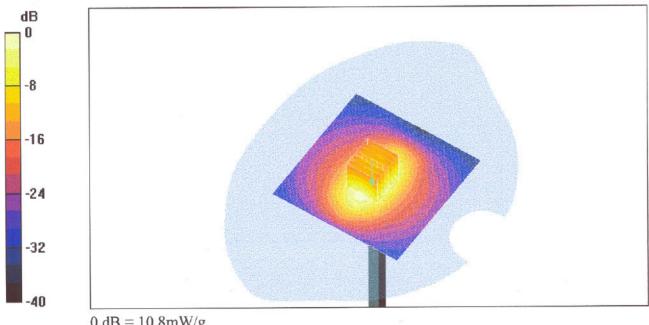
Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm Reference Value = 89.4 V/m; Power Drift = 0.0 dB Maximum value of SAR (interpolated) = 10.9 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 89.4 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 10.8 mW/g

Peak SAR (extrapolated) = 16.1 W/kg

SAR(1 g) = 9.54 mW/g; SAR(10 g) = 5.17 mW/g



0 dB = 10.8 mW/g

Calibration Laboratory of

Schmid & Partner

Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland

Client

Nokia China

CALIBRATION CERTIFICATE

Object(s)

D900V2 - SN:136

Calibration procedure(s)

QA CAL-05.v2

Calibration procedure for dipole validation kits

Calibration date:

October 3, 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 (Calibrated by, Certificate No.)	Scheduled Calibration	
Power sensor HP 8481A	MY41092317	18-Oct-02 (Agilent, No. 20021018)	Oct-04	
Power sensor HP 8481A	US37292783	30-Oct-02 (METAS, No. 252-0236)	Oct-03	
Power meter EPM E442	GB37480704	30-Oct-02 (METAS, No. 252-0236)	Oct-03	
RF generator R&S SML-03	100698	27-Mar-2002 (R&S, No. 20-92389)	In house check: Mar-05	
Network Analyzer HP 8753E	US37390585	18-Oct-01 (Agilent, No. 24BR1033101)	In house check: Oct 03	

Name
Calibrated by: Judith Mueller

Function Signature

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Technician

Approved by:

Katja Pokovic Laboratory Director

Date issued: October 9, 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.

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN136

Communication System: CW-900; Frequency: 900 MHz; Duty Cycle: 1:1 Medium: HSL 900 MHz ($\sigma = 0.96$ mho/m, $\epsilon_r = 42.26$, $\rho = 1000$ kg/m³)

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 SN1507; ConvF(6.6, 6.6, 6.6); 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 47; Postprocessing SW: SEMCAD, V1.8 Build 60

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

Reference Value = 56.2 V/m

Power Drift = -0.0 dB

Maximum value of SAR = 2.8 mW/g

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

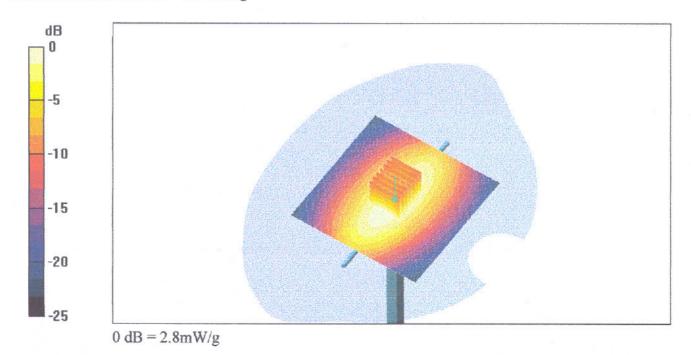
Peak SAR (extrapolated) = 3.88 W/kg

SAR(1 g) = 2.59 mW/g; SAR(10 g) = 1.67 mW/g

Reference Value = 56.2 V/m

Power Drift = -0.0 dB

Maximum value of SAR = 2.8 mW/g



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

Client

Nokia China

CALIBRATION			
Object(s)	D1800V2 - SI	N:2d021	
Calibration procedure(s)	QA CAL-05 v Calibration pr	2 ocedure for dipole validation kits	
Calibration date:	October 6, 20	03	
Condition of the calibrated item	In Tolerance	according to the specific calibration	on document)
17025 international standard.	670 to 500 No.000	E used in the calibration procedures and conformity	
17025 international standard. All calibrations have been conduct Calibration Equipment used (M&	cted in the closed laborat	ory facility: environment temperature 22 +/- 2 degre	ees Celsius and humidity < 75%.
17025 international standard. All calibrations have been conduct Calibration Equipment used (M&	cted in the closed laborat TE critical for calibration)	ory facility: environment temperature 22 +/- 2 degre Cal Date (Calibrated by, Certificate No.)	ees Celsius and humidity < 75%. Scheduled Calibration
7025 international standard. All calibrations have been conduct Calibration Equipment used (M& Model Type Power sensor HP 8481A	cted in the closed laborat TE critical for calibration) ID # MY41092317	ory facility: environment temperature 22 +/- 2 degre Cal Date (Calibrated by, Certificate No.) 18-Oct-02 (Agilent, No. 20021018)	sees Celsius and humidity < 75%. Scheduled Calibration Oct-04
7025 international standard. All calibrations have been conducted. Calibration Equipment used (M&: Model Type Power sensor HP 8481A Power sensor HP 8481A	cted in the closed laborat TE critical for calibration) ID # MY41092317 US37292783	Cal Date (Calibrated by, Certificate No.) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236)	Scheduled Calibration Oct-04 Oct-03
All calibrations have been conducted. Calibration Equipment used (M&) Model Type Power sensor HP 8481A Power meter EPM E442	TE critical for calibration) ID # MY41092317 US37292783 GB37480704	Cal Date (Calibrated by, Certificate No.) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236) 30-Oct-02 (METAS, No. 252-0236)	Scheduled Calibration Oct-04 Oct-03 Oct-03
17025 international standard. All calibrations have been conduct Calibration Equipment used (M& Model Type Power sensor HP 8481A Power sensor HP 8481A Power meter EPM E442 RF generator R&S SML-03	cted in the closed laborat TE critical for calibration) ID # MY41092317 US37292783	Cal Date (Calibrated by, Certificate No.) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236)	Scheduled Calibration Oct-04 Oct-03
17025 international standard. All calibrations have been conduct Calibration Equipment used (M& Model Type Power sensor HP 8481A Power sensor HP 8481A Power meter EPM E442 RF generator R&S SML-03	TE critical for calibration) ID # MY41092317 US37292783 GB37480704 100698	Cal Date (Calibrated by, Certificate No.) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236) 30-Oct-02 (METAS, No. 252-0238) 27-Mar-2002 (R&S, No. 20-92389)	Scheduled Calibration Oct-04 Oct-03 Oct-03 In house check: Mar-05
17025 international standard. All calibrations have been conduct Calibration Equipment used (M& Model Type Power sensor HP 8481A Power sensor HP 8481A Power meter EPM E442 RF generator R&S SML-03 Network Analyzer HP 8753E	TE critical for calibration) ID # MY41092317 US37292783 GB37480704 100698 US37390585	Cal Date (Calibrated by, Certificate No.) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236) 30-Oct-02 (METAS, No. 252-0236) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-01 (Agilent, No. 24BR1033101)	Scheduled Calibration Oct-04 Oct-03 Oct-03 In house check: Mar-05 In house check: Oct 03
17025 international standard. All calibrations have been conduc	cted in the closed laborate TE critical for calibration) ID # MY41092317 US37292783 GB37480704 100698 US37390585	Cal Date (Calibrated by, Certificate No.) 18-Oct-02 (Agilent, No. 20021018) 30-Oct-02 (METAS, No. 252-0236) 30-Oct-02 (METAS, No. 252-0236) 27-Mar-2002 (R&S, No. 20-92389) 18-Oct-01 (Agilent, No. 24BR1033101) Function	Scheduled Calibration Oct-04 Oct-03 Oct-03 In house check: Mar-05 In house check: Oct 03

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Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN2d021

Communication System: CW-1800; Frequency: 1800 MHz; Duty Cycle: 1:1 Medium: HSL 1800 MHz ($\sigma = 1.38 \text{ mho/m}$, $\epsilon_r = 40.96$, $\rho = 1000 \text{ kg/m}^3$)

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 SN1507; ConvF(5.3, 5.3, 5.3); 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 47; Postprocessing SW: SEMCAD, V1.8 Build 60

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

Reference Value = 93 V/m

Power Drift = -0.0 dB

Maximum value of SAR = 10.7 mW/g

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

dz=5mm

Peak SAR (extrapolated) = 16.5 W/kg

SAR(1 g) = 9.52 mW/g; SAR(10 g) = 5.1 mW/g

Reference Value = 93 V/m

Power Drift = -0.0 dB

Maximum value of SAR = 10.7 mW/g

