APPENDIX F: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORTS

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

S Schweizerischer Kalibrierdienst
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S Swiss Calibration Service

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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**

Client **Nokia Salo TCC**

Certificate No: **D835V2-462_May14**

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 462
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	May 06, 2014

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 EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	30-Apr-14 (No. DAE4-601_Apr14)	Apr-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 7, 2014

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.2 ± 6 %	0.94 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.19 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.98 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	56.6 ± 6 %	1.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.43 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.41 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.58 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.16 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.7 Ω - 2.8 jΩ
Return Loss	- 30.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.8 Ω - 5.4 jΩ
Return Loss	- 23.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.390 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 27, 2002

Date: 06.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 462

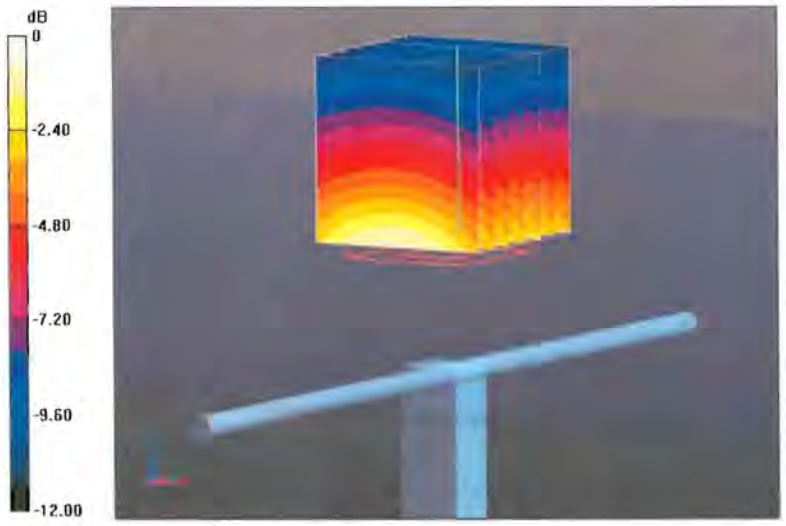
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.94 S/m; ε_r = 40.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.22, 6.22, 6.22); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

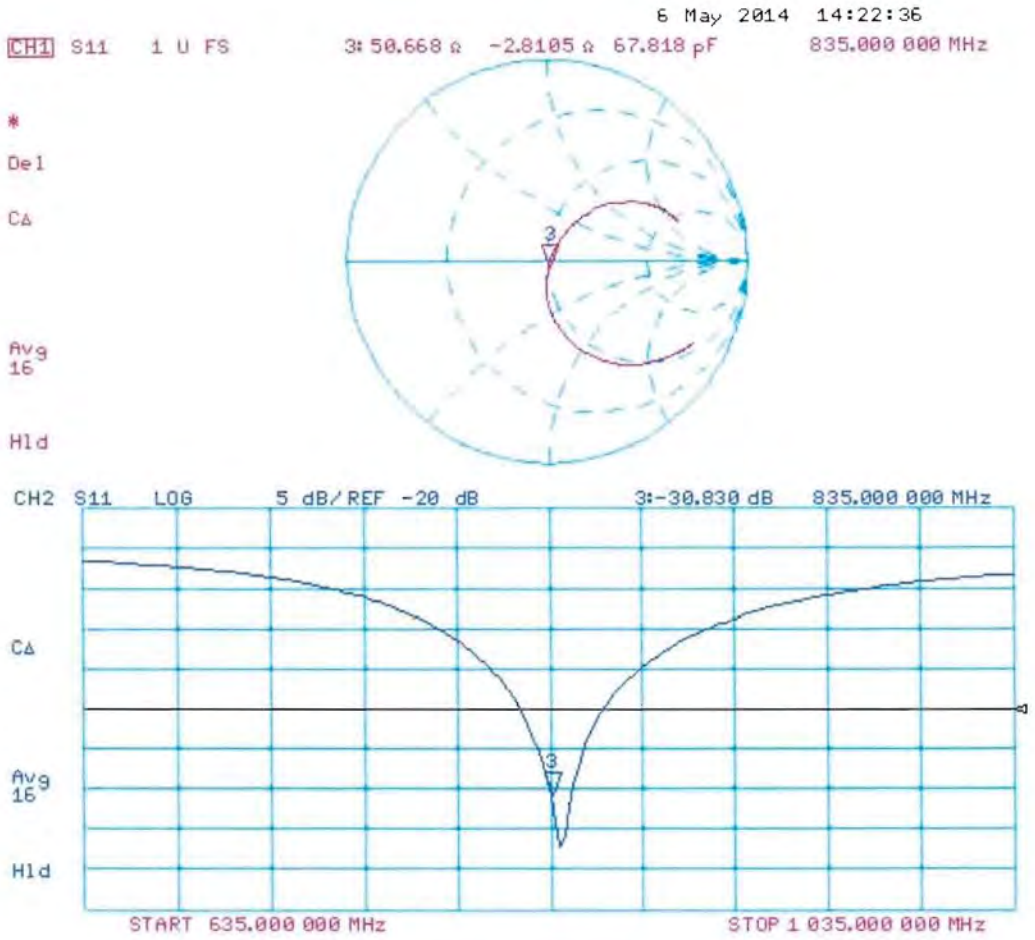
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.25 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.62 W/kg
SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.54 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 06.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 462

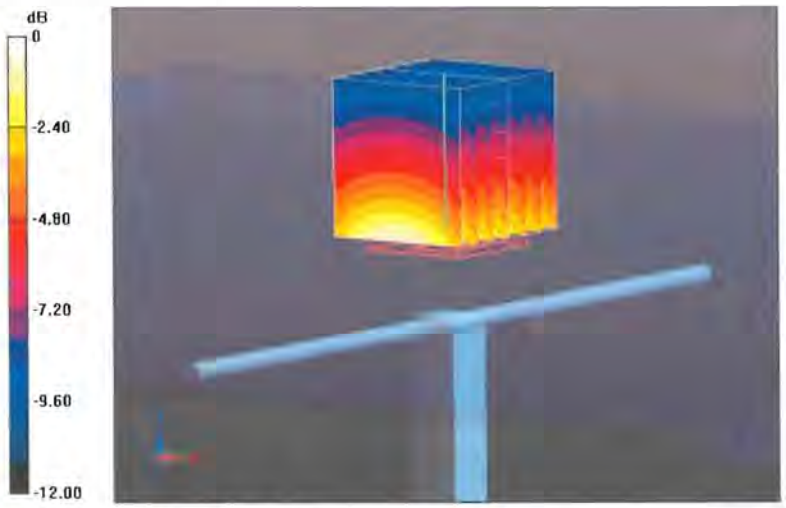
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.02 S/m; ε_r = 56.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.09, 6.09, 6.09); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

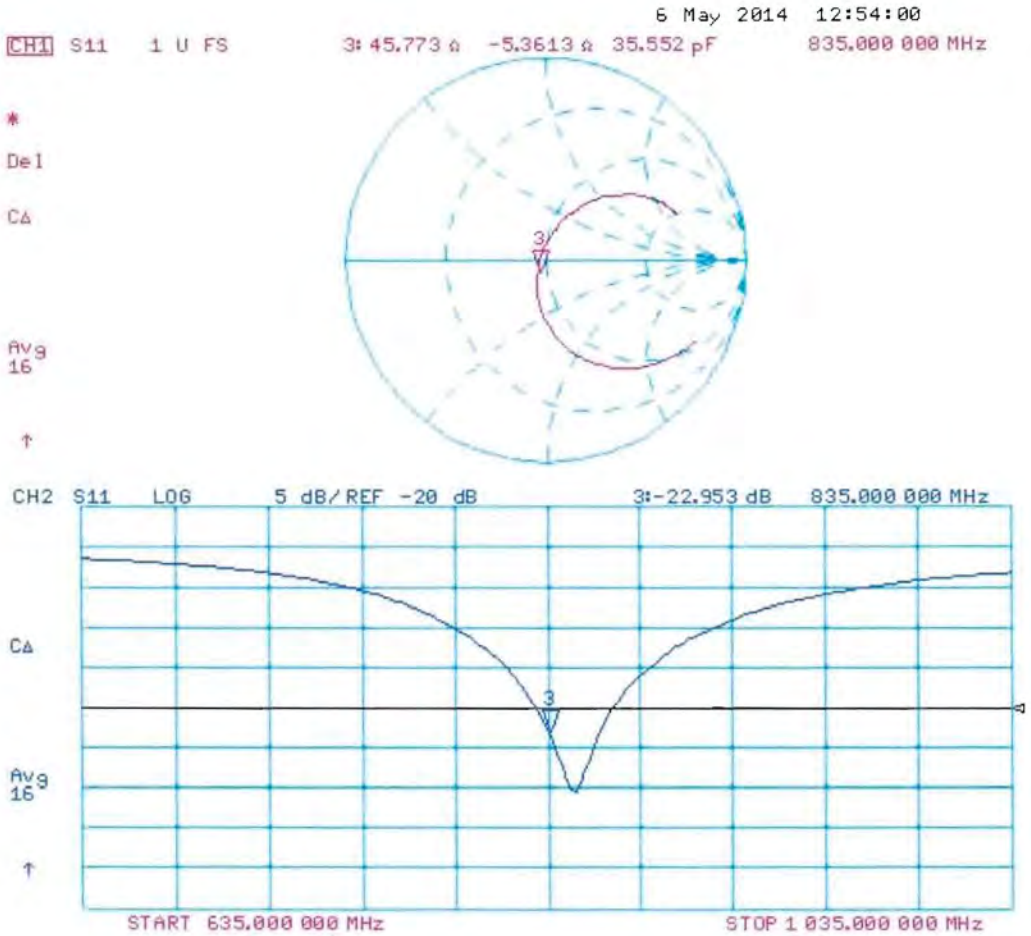
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.63 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.58 W/kg
Maximum value of SAR (measured) = 2.85 W/kg



0 dB = 2.85 W/kg = 4.55 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client **Nokia Salo TCC**

Certificate No: D835V2-480_Dec12

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 480
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	December 03, 2012

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 EPM-442A	GB37480704	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.3 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: December 3, 2012

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.3
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.4 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.40 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.56 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.16 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.5 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.42 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.51 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.59 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.27 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8 Ω - 3.3 jΩ
Return Loss	- 29.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.7 Ω - 4.9 jΩ
Return Loss	- 24.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.391 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 28, 2003

DASY5 Validation Report for Head TSL

Date: 03.12.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 480

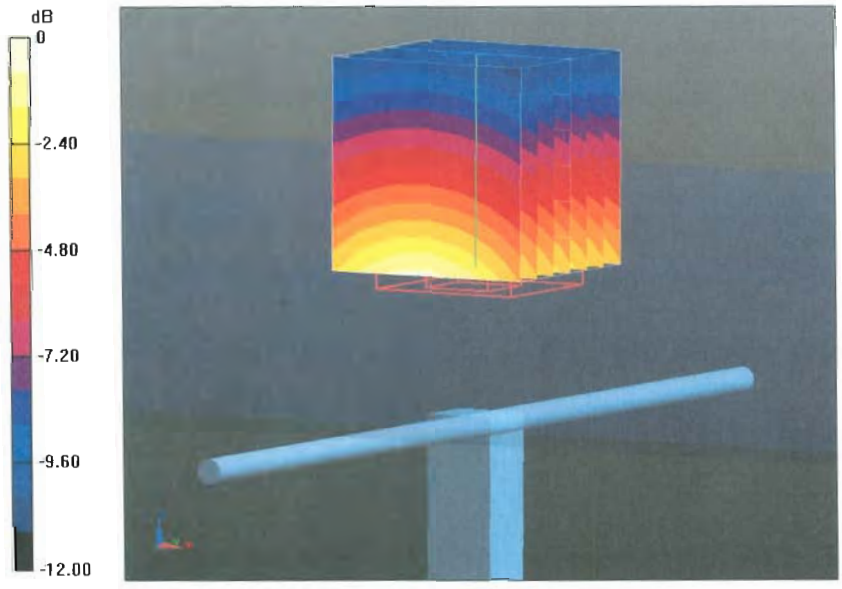
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.92 mho/m; ε_r = 41.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

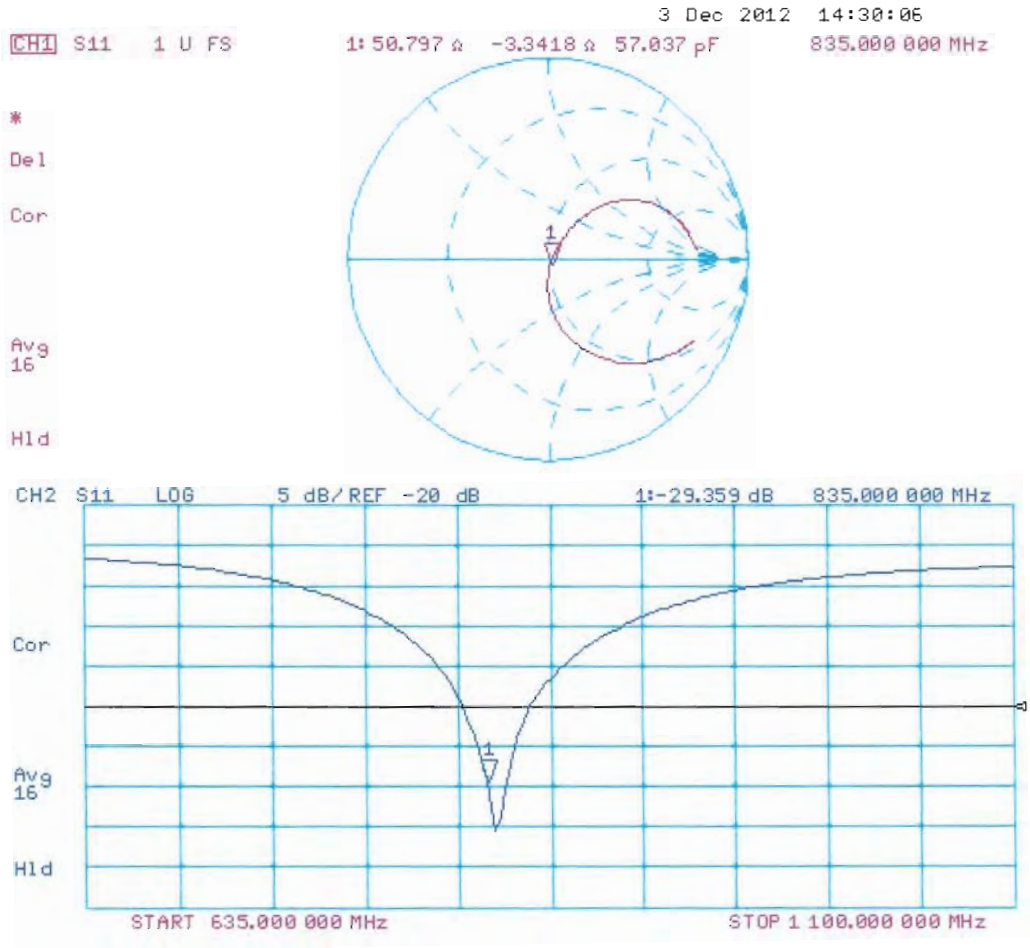
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.814 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 2.39 W/kg; SAR(10 g) = 1.56 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 03.12.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 480

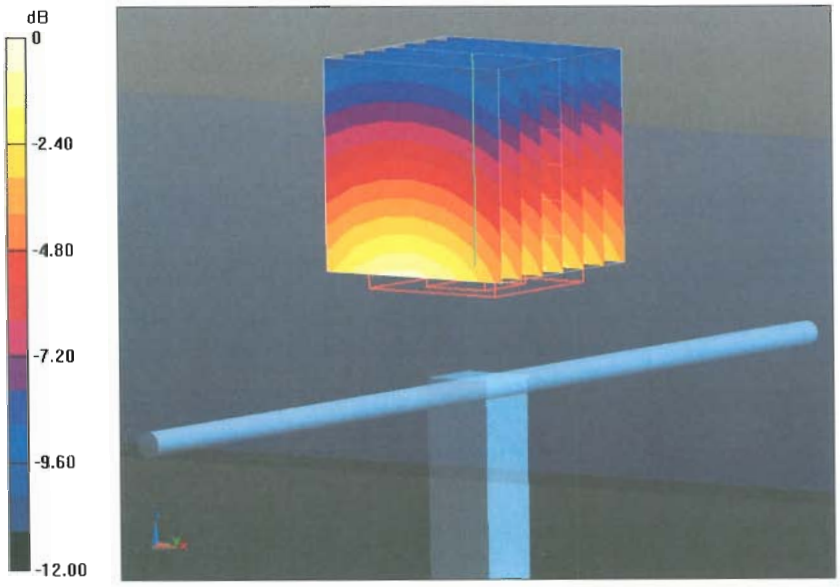
Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.99 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

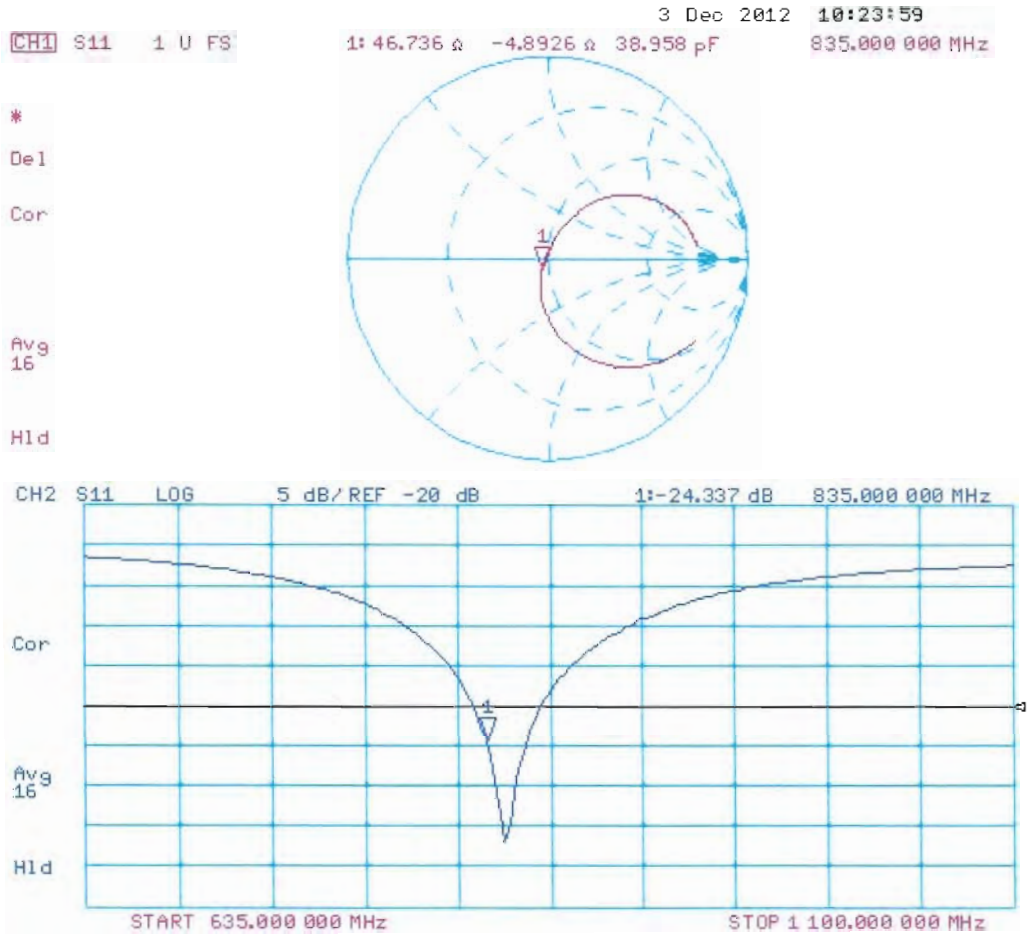
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.301 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.53 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole D835V2 – SN: 480 Antenna Parameters measured: 2014-01-31.

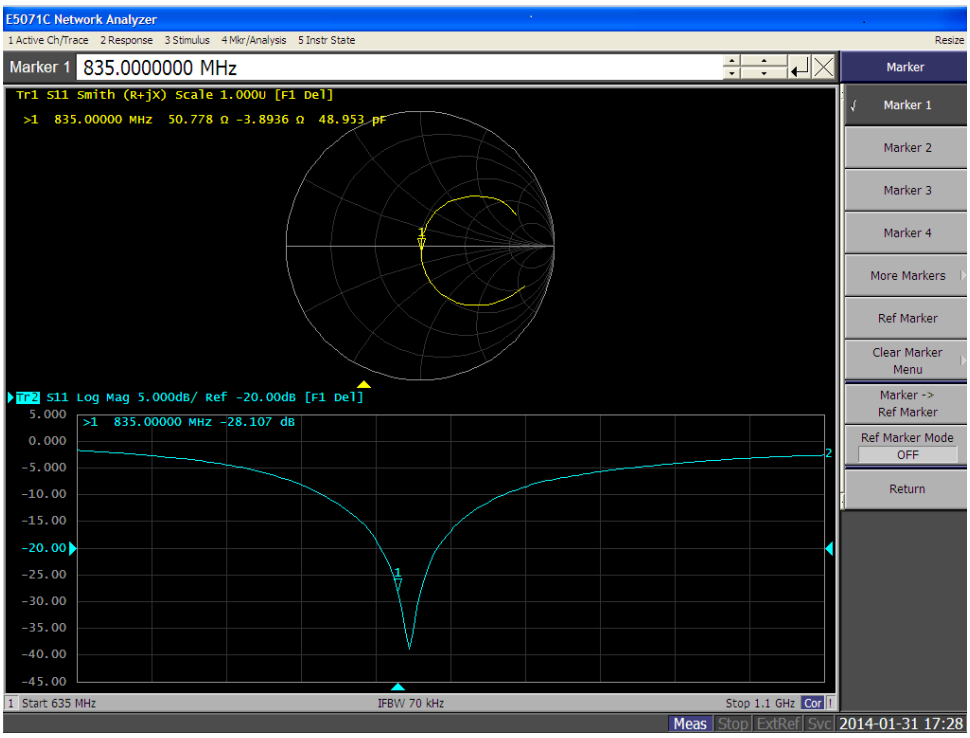
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	50.8 Ω - 3.3 jΩ	50.8 Ω -3.9 jΩ
Return loss	-29.4 dB	-28.1 dB

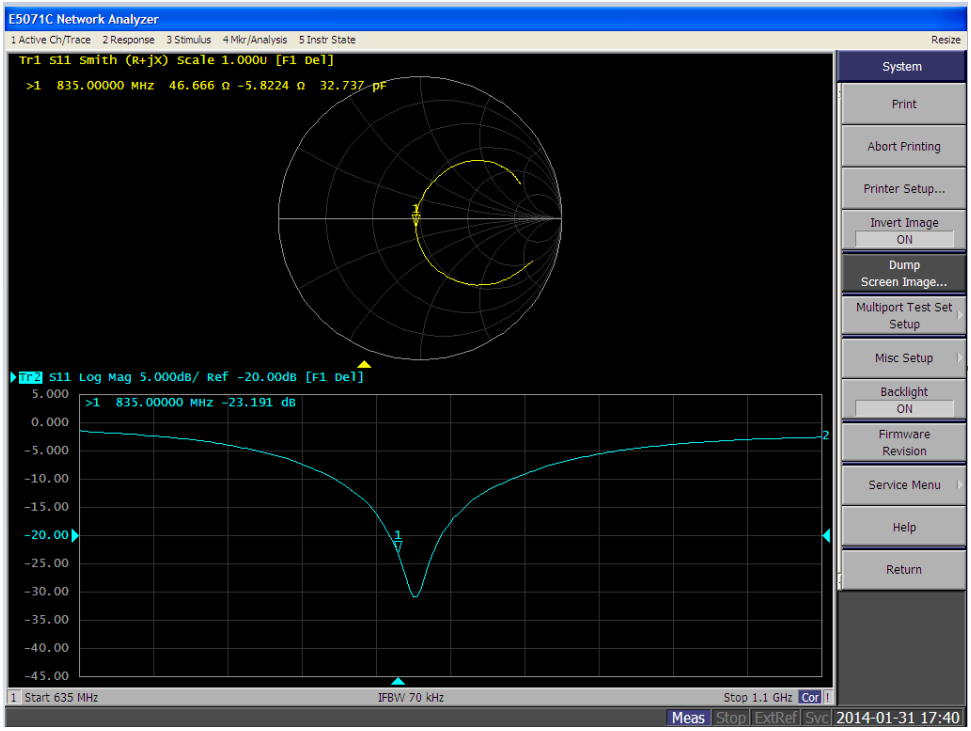
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	47.4 Ω - 3.8 jΩ	46.7 Ω -5.8 jΩ
Return loss	-26.5 dB	-23.2 dB

Impedance Measurement Plot for Head TSL 83



Impedance Measurement Plot for Body TSL 835



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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

Client Nokia Salo TCC

Certificate No: D1900V2-5d013_Dec12

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d013
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	December 06, 2012

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 EPM-442A	GB37480704	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.3 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	Israe El-Naouq
Approved by:	Katja Pokovic	Technical Manager	

Issued: December 6, 2012

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.3
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.5 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**21.2 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.2 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.3 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**41.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.41 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.6 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.3 Ω + 6.2 jΩ
Return Loss	- 23.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.4 Ω + 5.9 jΩ
Return Loss	- 24.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.194 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	April 30, 2002

Date: 06.12.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d013

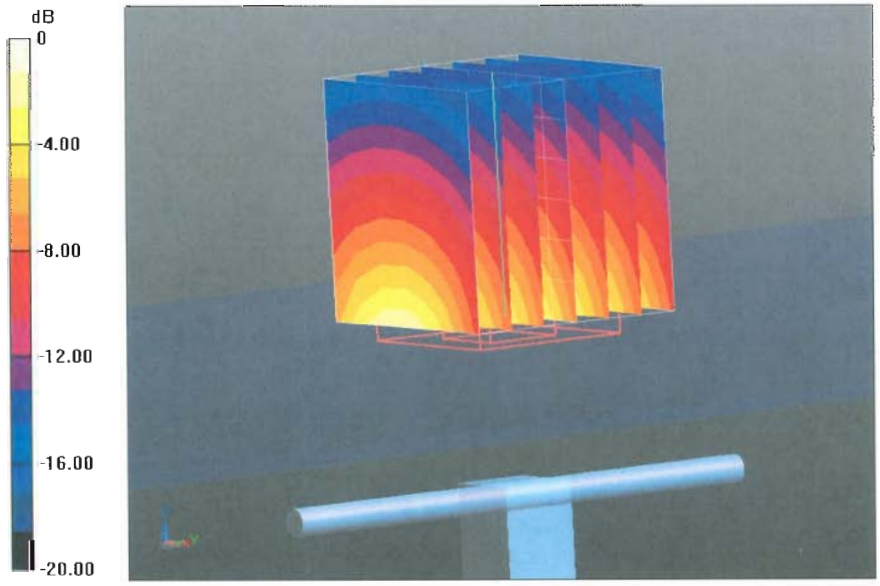
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.38 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

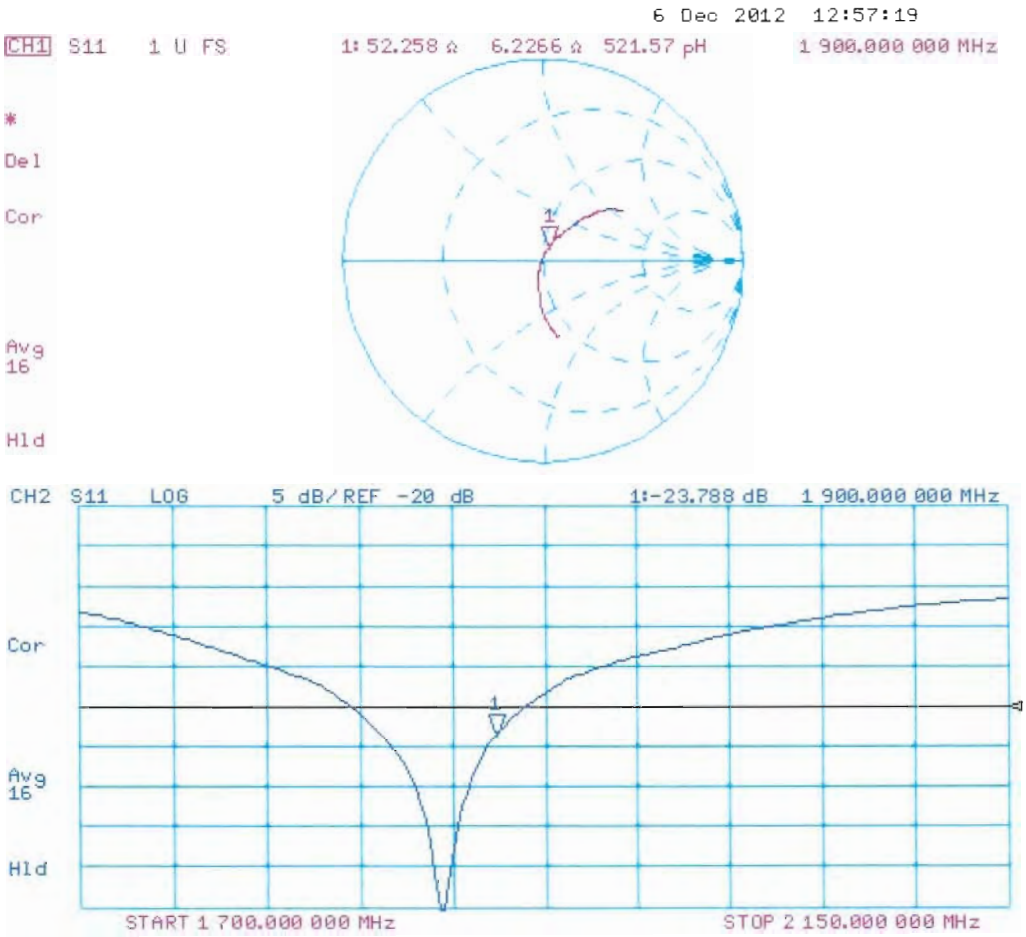
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.748 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.28 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 06.12.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d013

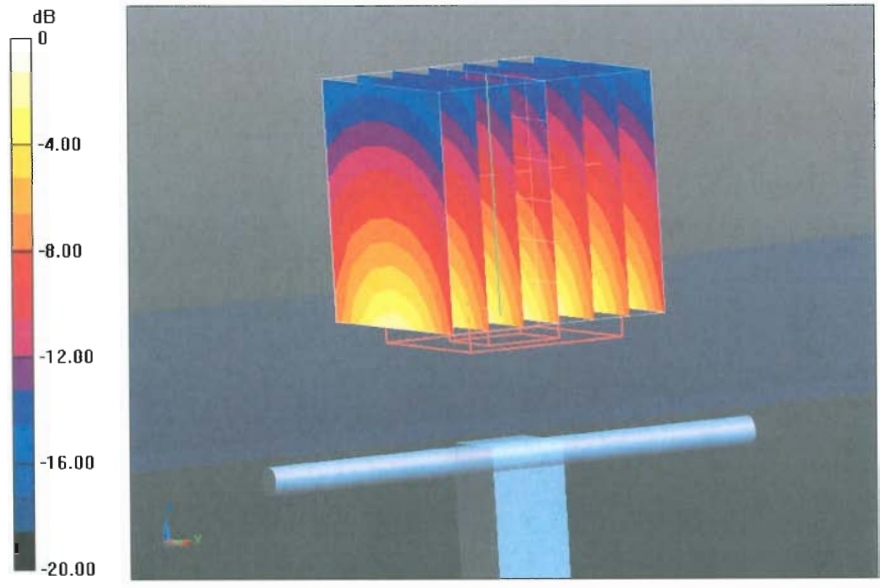
Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.52 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

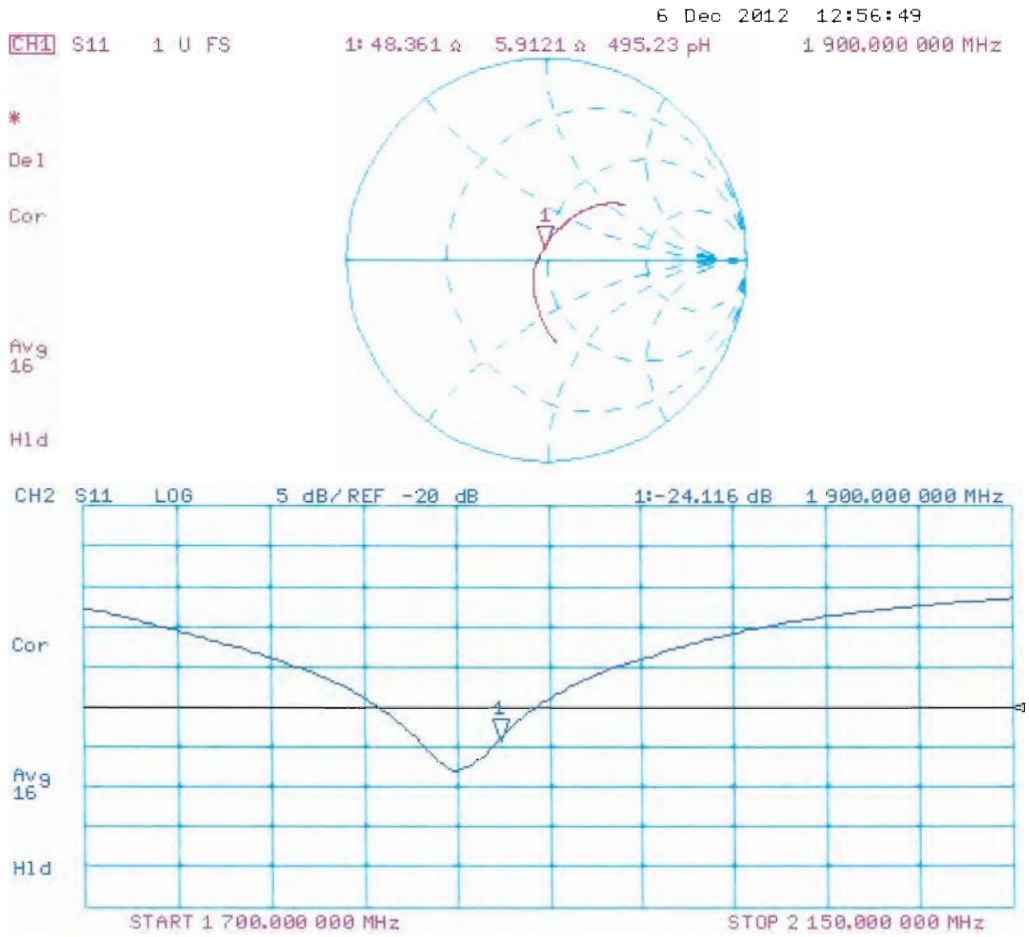
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.039 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.41 W/kg
Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg = 11.11 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole D1900V2 - SN5d013 Antenna Parameters measured: 2014-01-31.

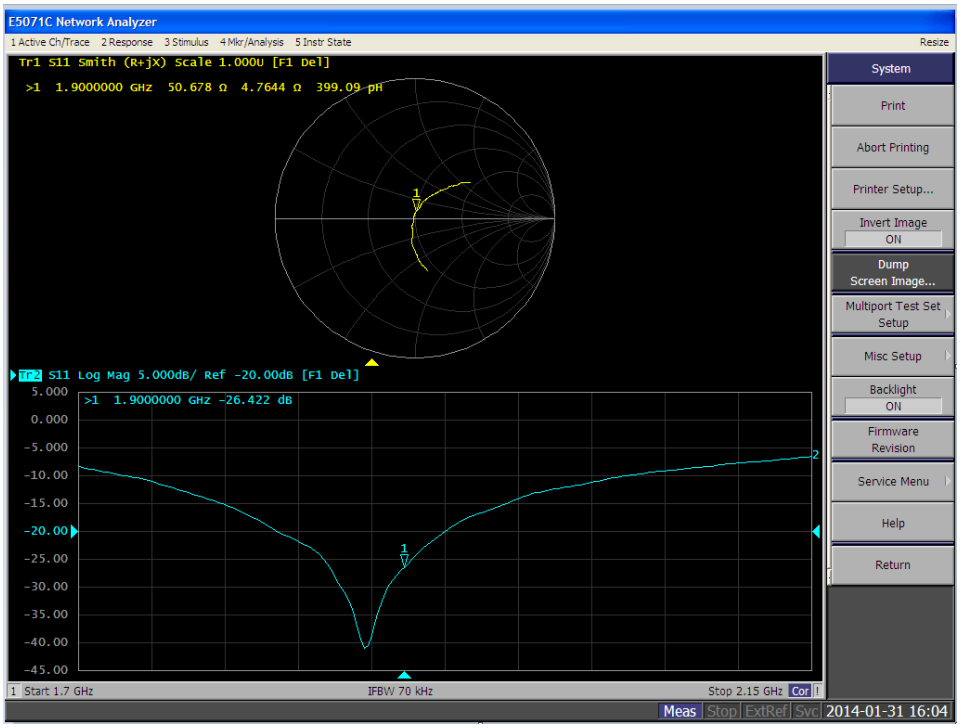
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	52.3 Ω 6.2 jΩ	50.7 Ω 4.8 jΩ
Return loss	-23.8 dB	-26.4 dB

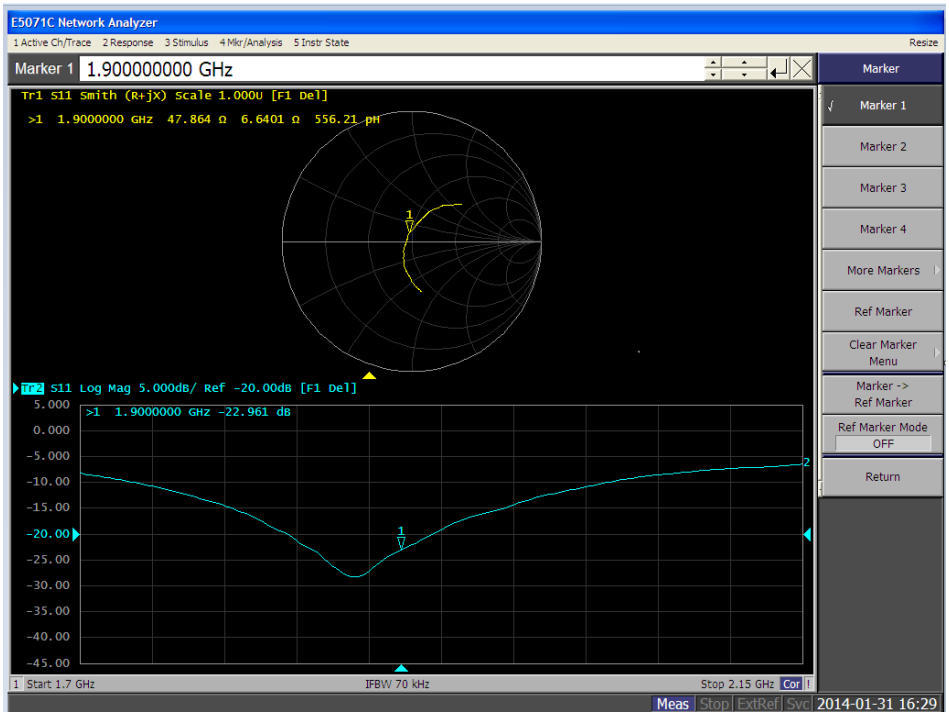
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	48.4 Ω 5.9 jΩ	47.9 Ω 6.6 jΩ
Return loss	-24.1 dB	-23.0 dB

Impedance Measurement Plot for Head TSL 1900



Impedance Measurement Plot for Body TSL 1900



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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**

Client **Nokia Salo TCC**

Certificate No: **D1900V2-5d030_May14**

CALIBRATION CERTIFICATE

Object D1900V2 - SN: 5d030

Calibration procedure(s) QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: May 14, 2014

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 EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	30-Apr-14 (No. DAE4-601_Apr14)	Apr-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 15, 2014

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.3 ± 6 %	1.37 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.83 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**39.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.15 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.7 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.5 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**40.3 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.3 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.6 Ω + 4.3 jΩ
Return Loss	- 27.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.6 Ω + 4.4 jΩ
Return Loss	- 24.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.191 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 17, 2002

Date: 14.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d030

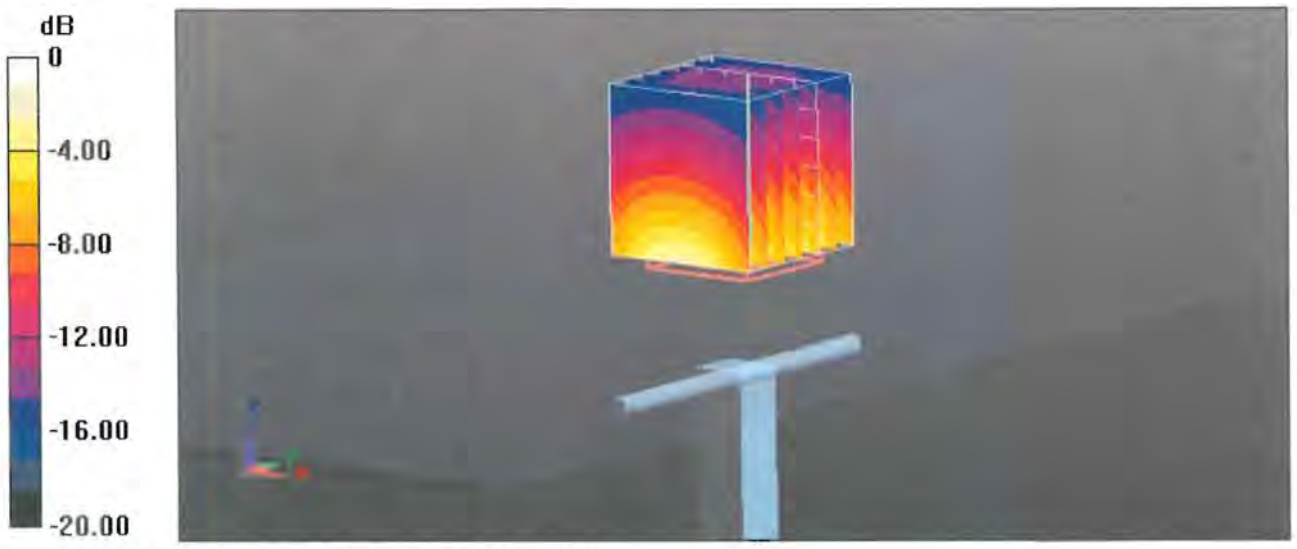
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.37 S/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.06, 5.06, 5.06); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

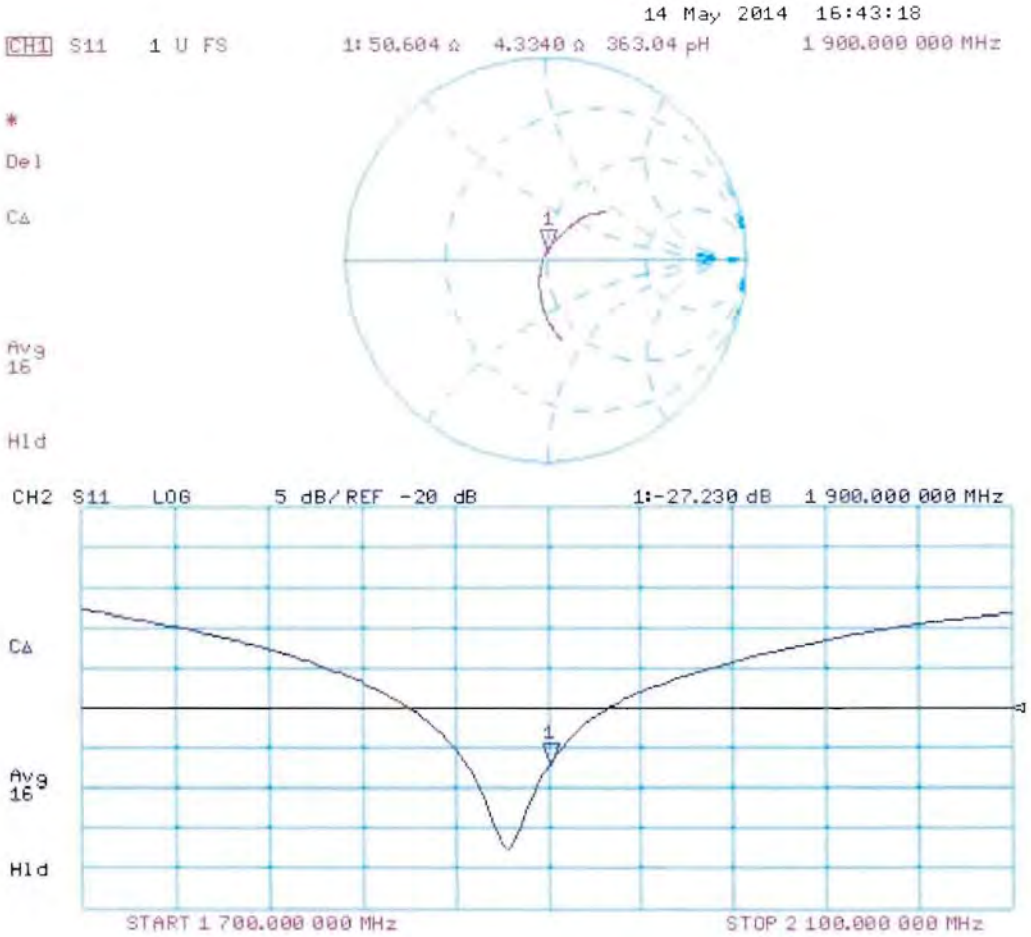
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.75 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 18.0 W/kg
SAR(1 g) = 9.83 W/kg; SAR(10 g) = 5.15 W/kg
Maximum value of SAR (measured) = 12.3 W/kg



0 dB = 12.3 W/kg = 10.90 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 14.05.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d030

Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.52 S/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

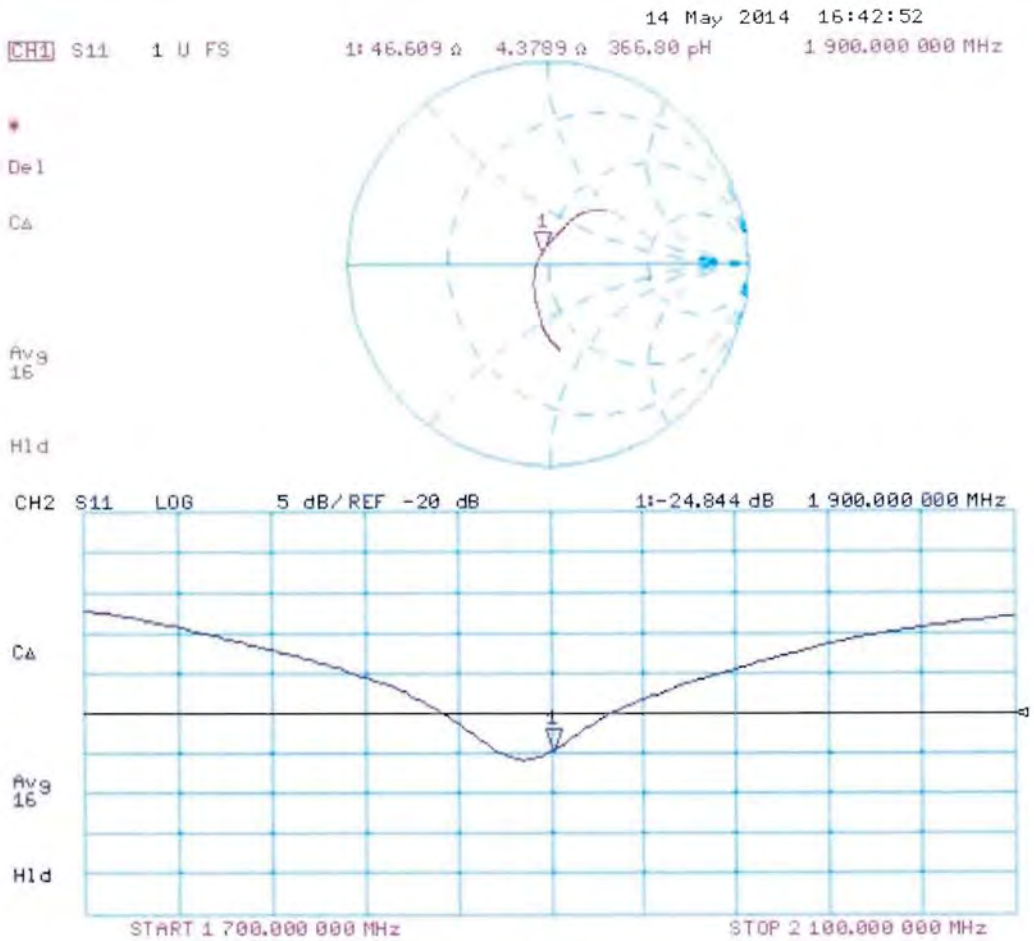
- Probe: ES3DV3 - SN3205; ConvF(4.76, 4.76, 4.76); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.65 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.34 W/kg
Maximum value of SAR (measured) = 12.6 W/kg

0 dB = 12.6 W/kg = 11.00 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client Nokia Salo TCC

Certificate No: D2450V2-749_Dec12

CALIBRATION CERTIFICATE

Object: D2450V2 - SN: 749

Calibration procedure(s): QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: December 07, 2012

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 EPM-442A	GB37480704	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.3 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
oproved by:	Katja Pokovic	Technical Manager	

Issued: December 7, 2012

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.3
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.2 ± 6 %	1.84 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**53.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.2 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.7 ± 6 %	2.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**51.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.08 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.0 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.6 Ω + 3.4 jΩ
Return Loss	- 27.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.5 Ω + 4.3 jΩ
Return Loss	- 27.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.163 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 01, 2003

DASY5 Validation Report for Head TSL

Date: 07.12.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 749

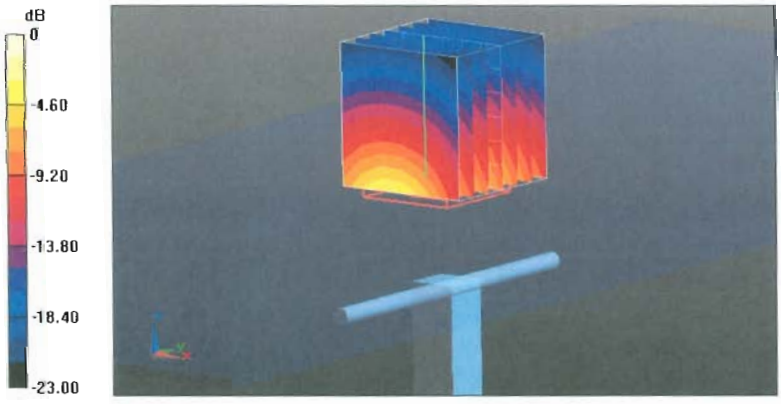
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.84 mho/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.45, 4.45, 4.45); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

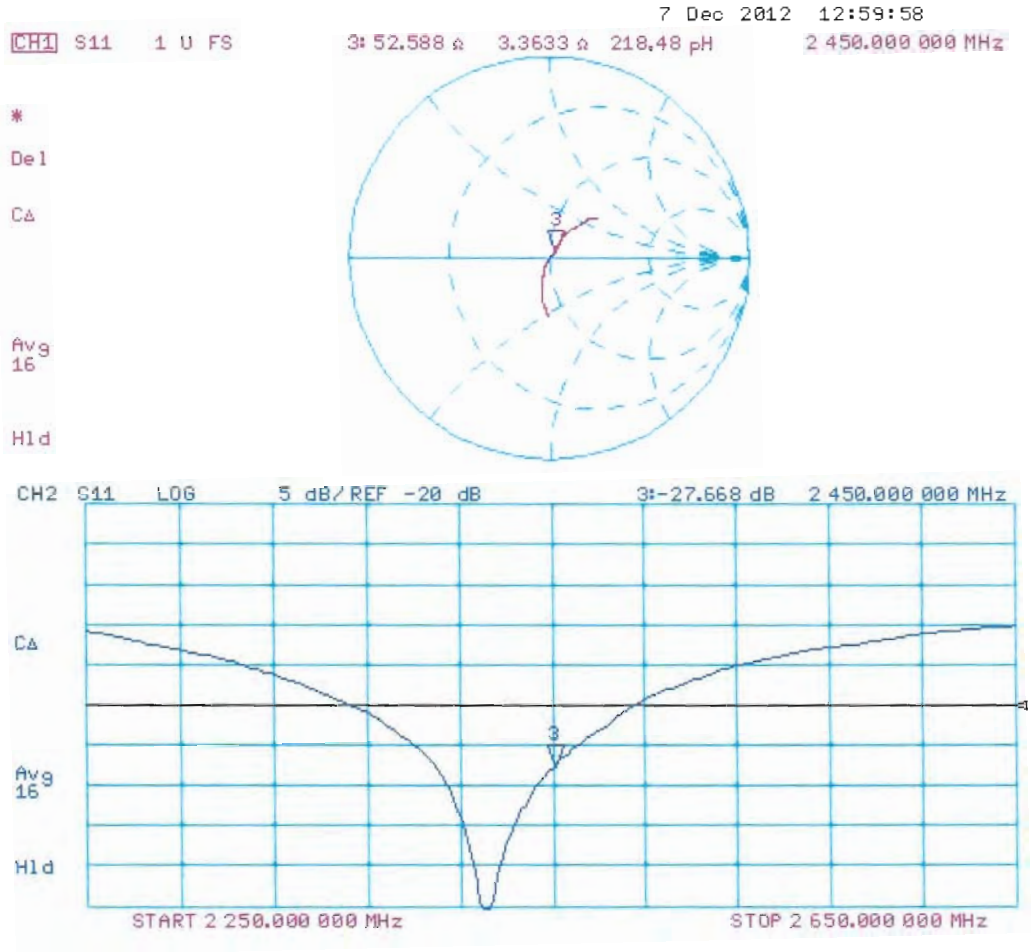
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.608 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 28.2 W/kg
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.35 W/kg
Maximum value of SAR (measured) = 17.3 W/kg



0 dB = 17.3 W/kg = 12.38 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 07.12.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 749

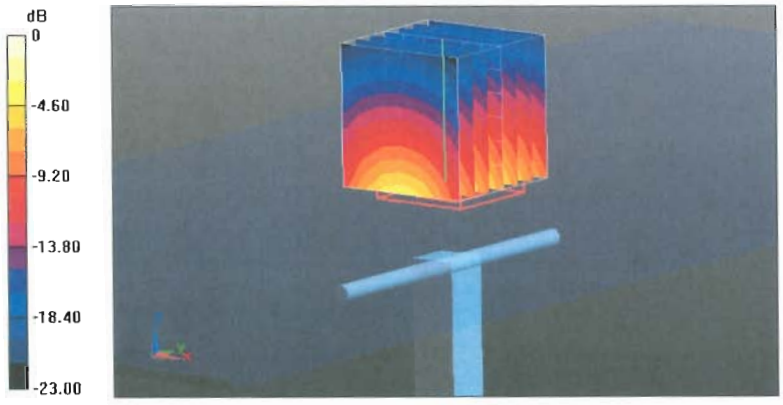
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.02 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.26, 4.26, 4.26); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

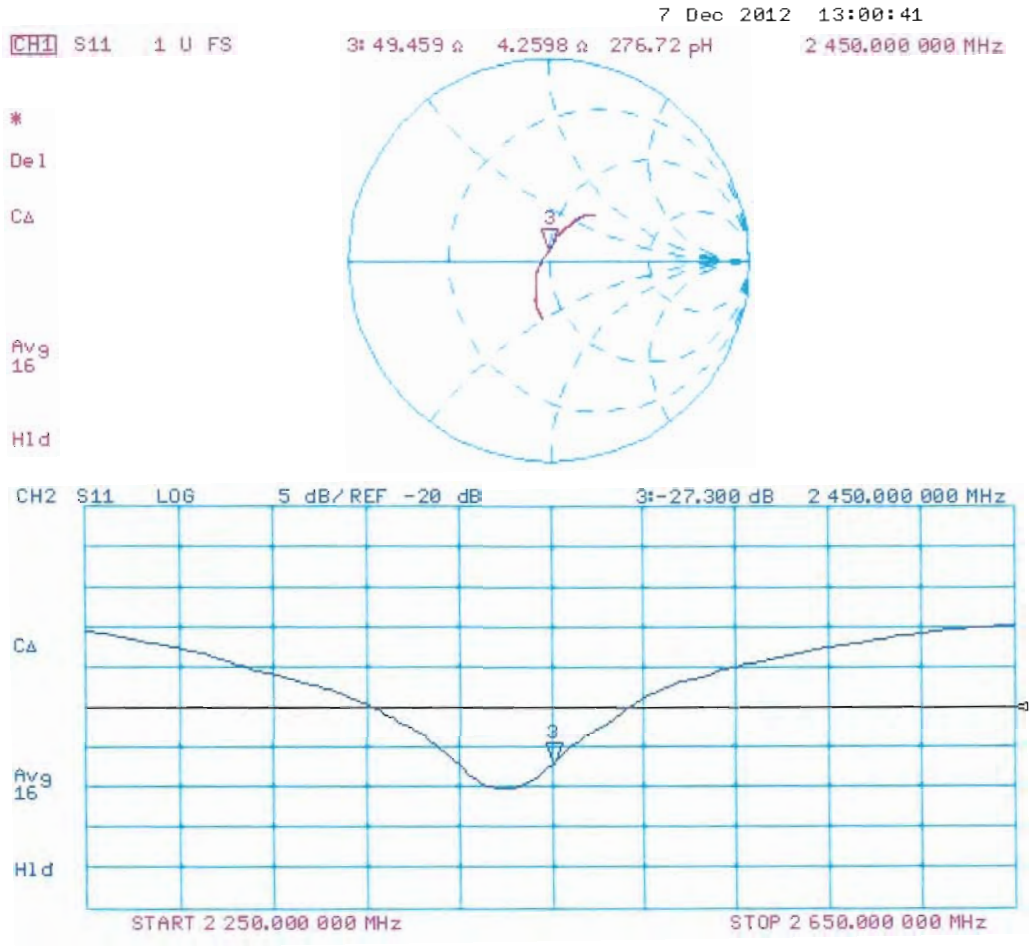
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm 2/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.139 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.08 W/kg
Maximum value of SAR (measured) = 17.4 W/kg



0 dB = 17.4 W/kg = 12.41 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole D2450V2 – SN:749 Antenna Parameters measured: 2014-01-14.

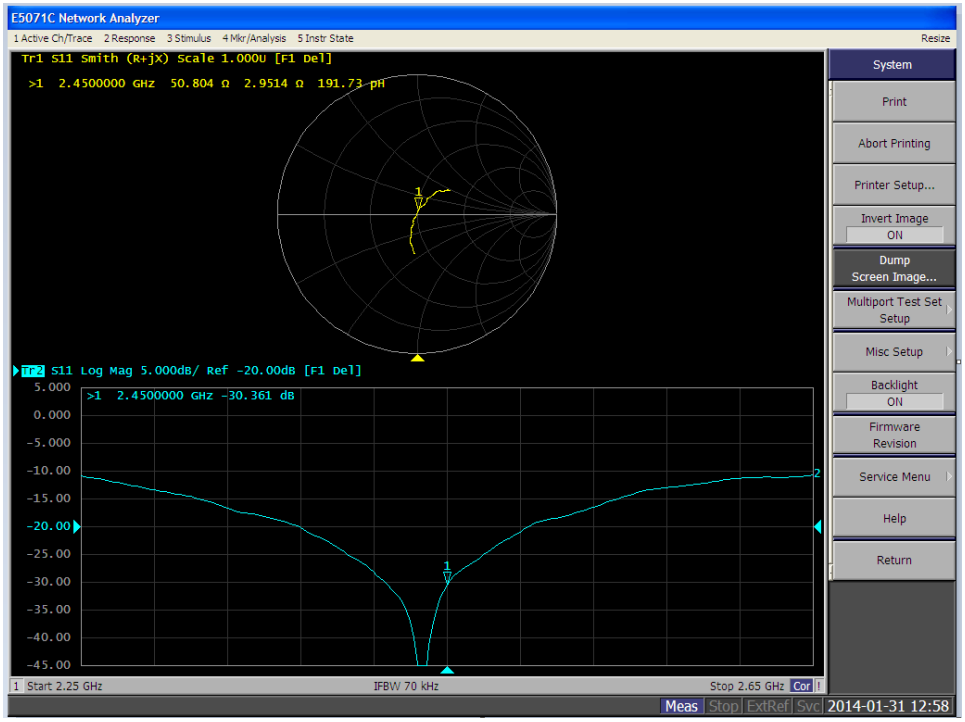
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	52.6 Ω - 3.4 jΩ	50.8 Ω - 3.0 jΩ
Return loss	-27.7 dB	-30.4 dB

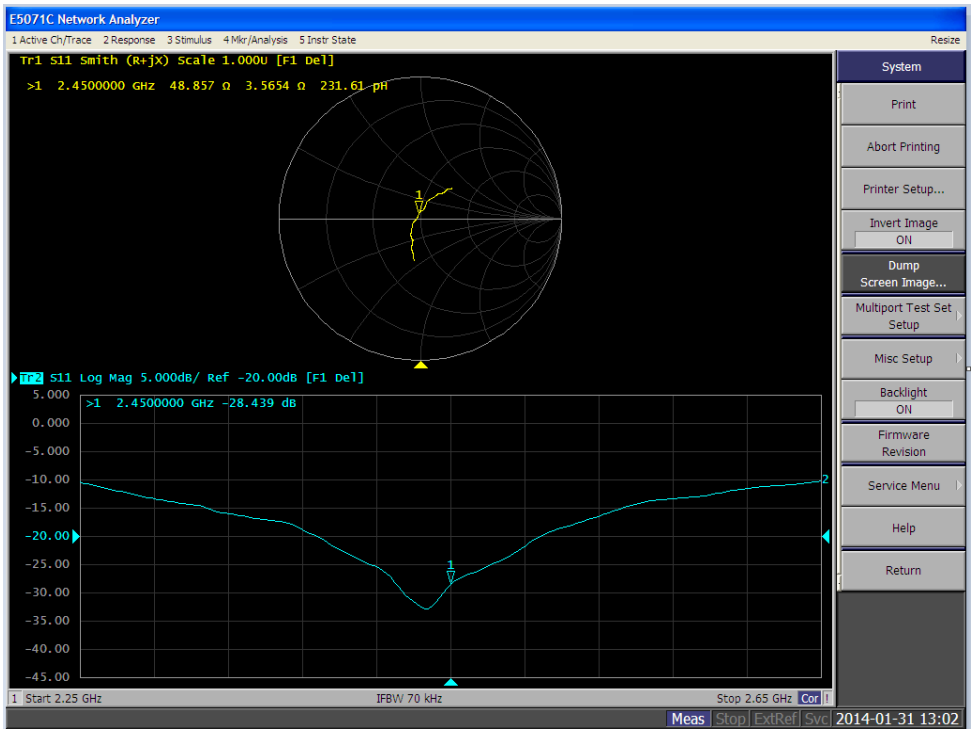
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	49.5 Ω - 4.3 jΩ	48.9 Ω - 3.6 jΩ
Return loss	-27.3 dB	-28.4 dB

Impedance Measurement Plot for Head TSL 2450



Impedance Measurement Plot for Body TSL 2450



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 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 Nokia Salo TCC

Certificate No: D2600V2-1056_Nov12

CALIBRATION CERTIFICATE

Object	D2600V2 - SN: 1056
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	November 07, 2012

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 EPM-442A	GB37480704	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 7, 2012

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.3
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.1 ± 6 %	2.01 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**57.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.9 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.8 ± 6 %	2.19 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	14.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**55.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.26 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.8 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.3 Ω - 5.1 jΩ
Return Loss	- 25.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.0 Ω - 4.4 jΩ
Return Loss	- 24.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	August 14, 2012

Date: 07.11.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1056

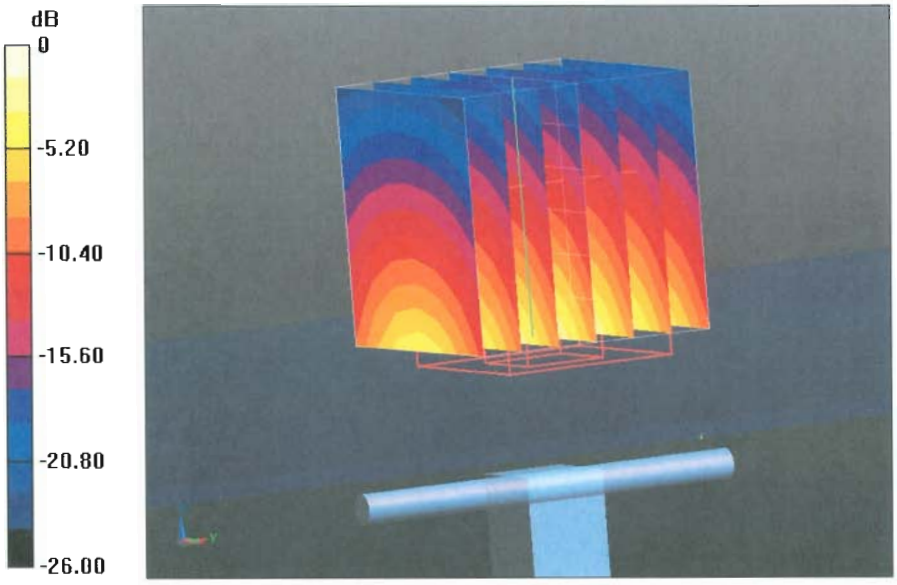
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.01 mho/m; ε_r = 38.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.39, 4.39, 4.39); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

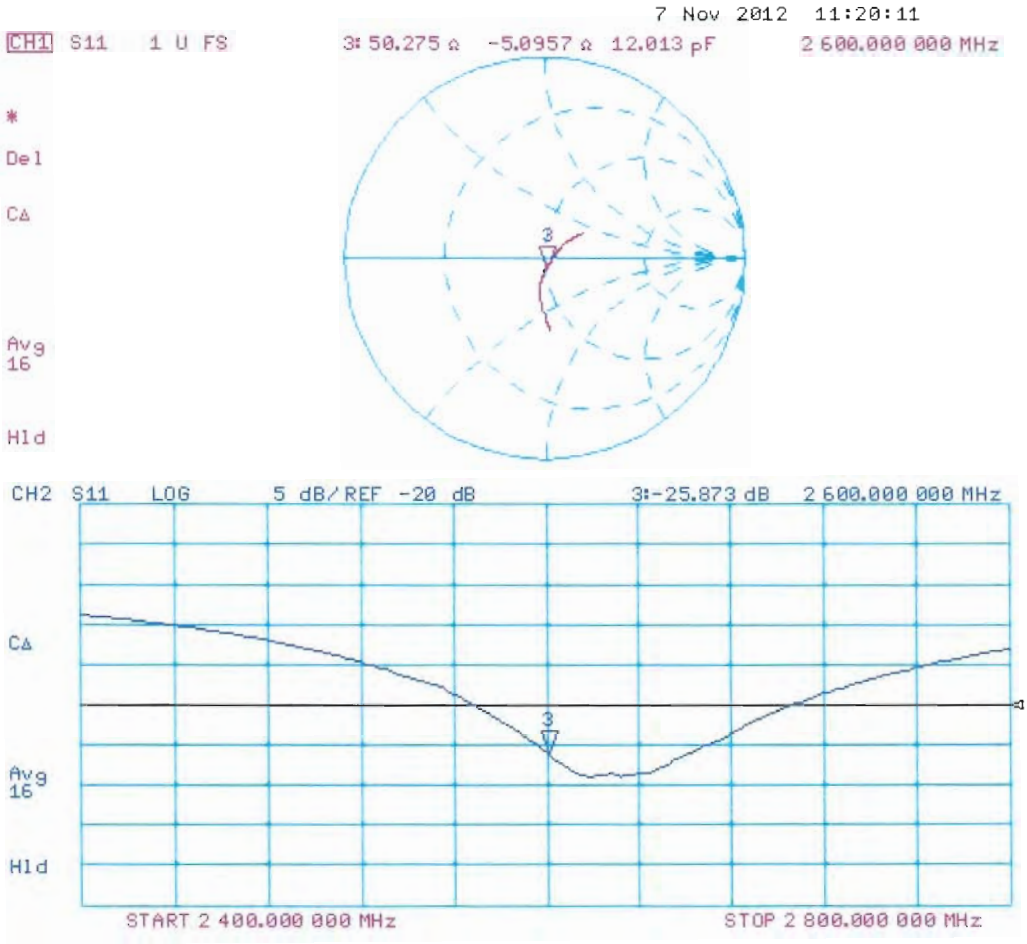
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.2 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 31.3 W/kg
SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.54 W/kg
Maximum value of SAR (measured) = 18.7 W/kg



0 dB = 18.7 W/kg = 12.72 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 07.11.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1056

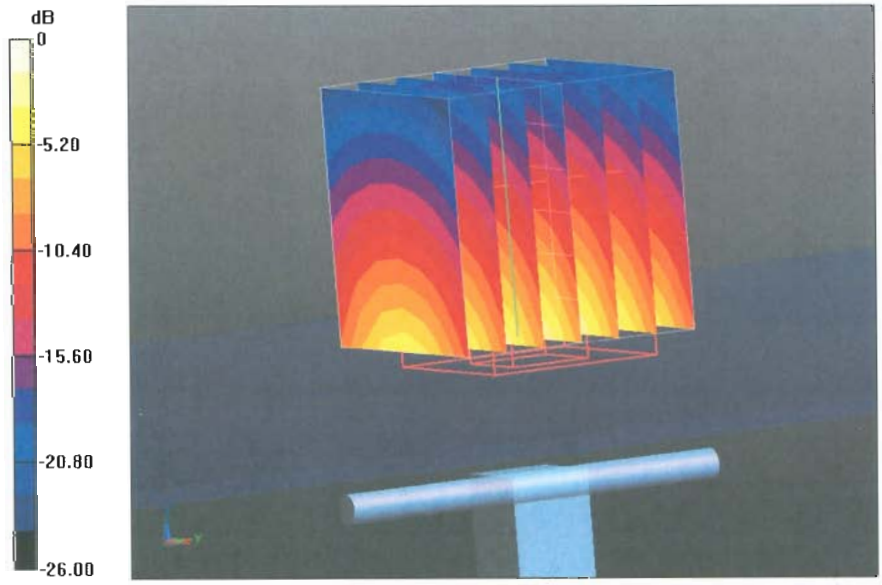
Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.19 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.16, 4.16, 4.16); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.3(988); SEMCAD X 14.6.7(6848)

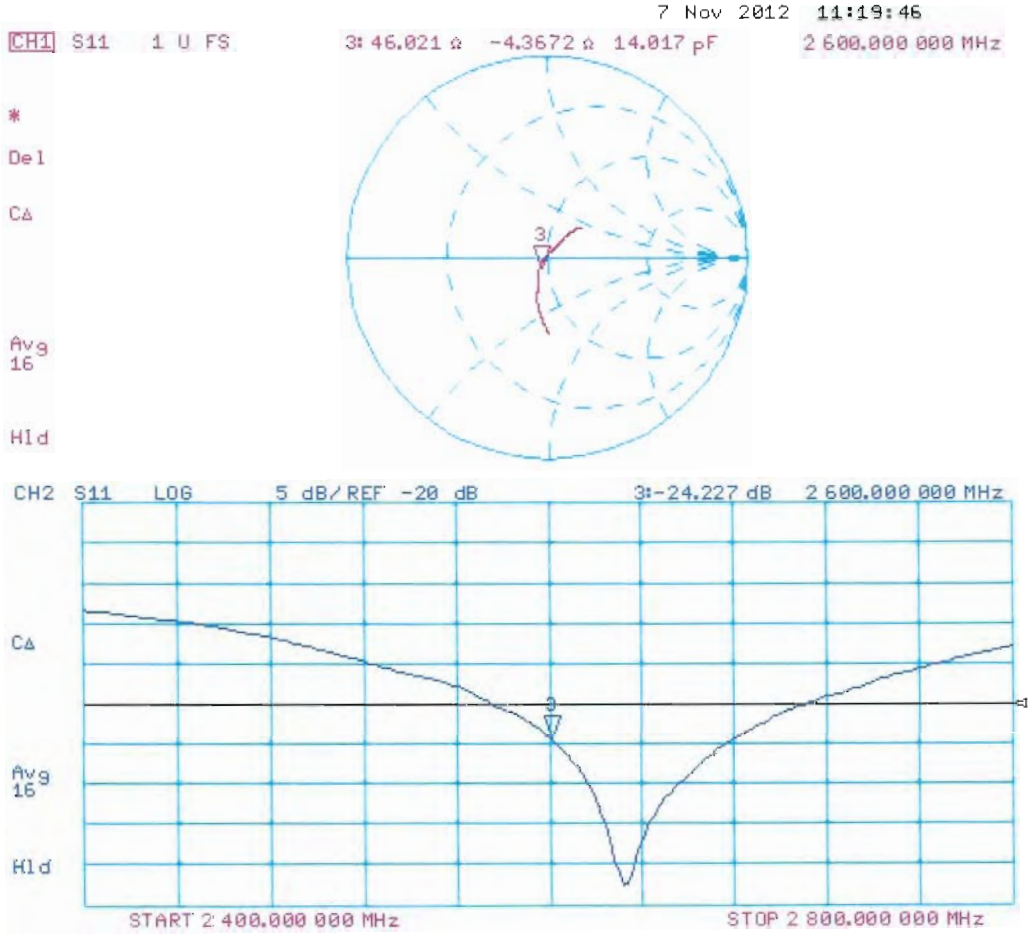
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.2 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 30.0 W/kg
SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.26 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg = 12.74 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole D2600V2 – SN:1056 Antenna Parameters measured: 2014-01-31.

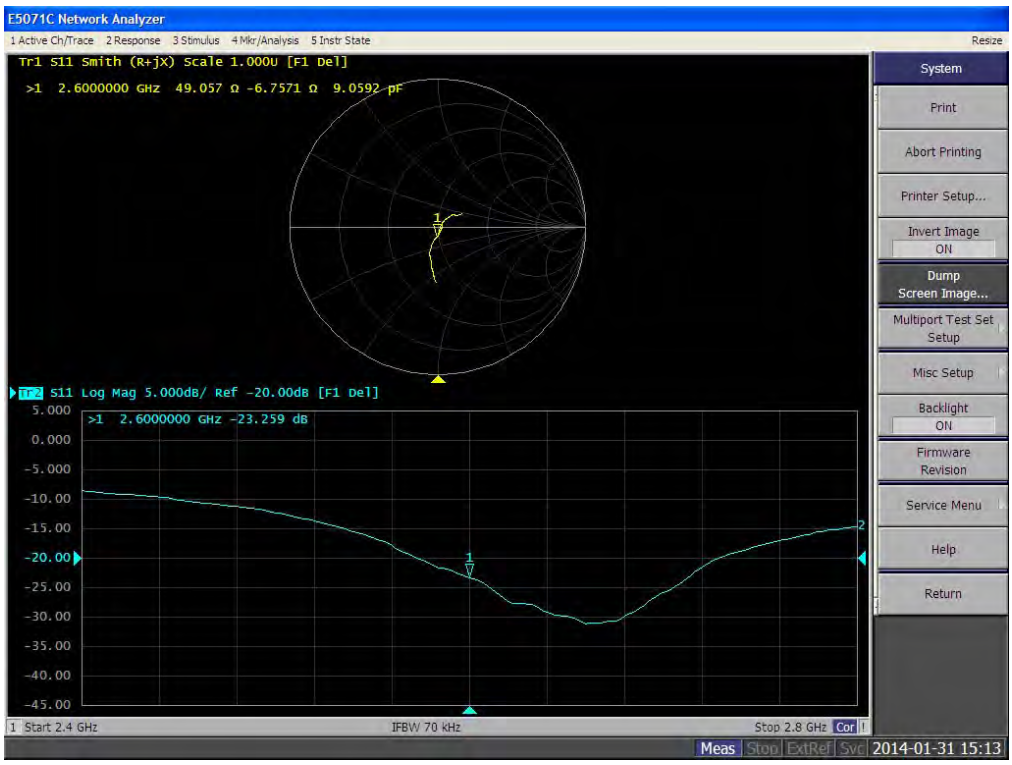
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	50.3 Ω - 5.1 jΩ	49.1 Ω - 6.8 jΩ
Return loss	-25.9 dB	-23.3 dB

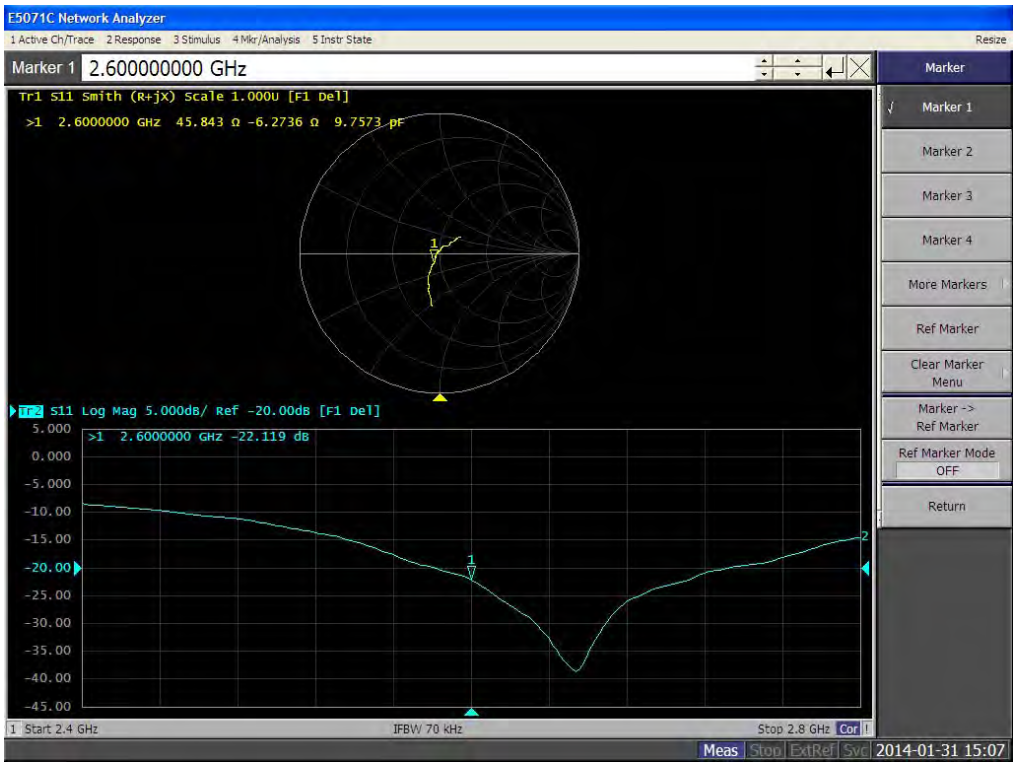
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	46.0 Ω - 4.4 jΩ	45.8 Ω - 6.3 jΩ
Return loss	-24.2 dB	-22.1 dB

Impedance Measurement Plot for Head TSL 2600



Impedance Measurement Plot for Body TSL 2600



APPENDIX G: CONDUCTED POWER MEASUREMENTS FOR SUPPORTED LTE TRANSMISSION MODES

G.1 Power Tuning Targets

Band	Modulation	Target Tuning Power in Head, Body-worn and Wireless Router measurements					
		1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE2500 (Band 7)	1RB/QPSK	N/A	N/A	19.5	19.5	19.5	19.5
	1RB/16QAM	N/A	N/A	18.5	18.5	18.5	18.5

G.2 Conducted Power from the Samples used in the Testing / HW:2010

Type: RM-974; Serial number: 004402/47/800177/3, HW:2010 SW: 01061.00014.14112.00000 used for LTE2500 (Band7) for Head, Body-worn and Wireless Router SAR measurements.

"Max Average Power (dBm)" column lists measured powers with MPR active. The "Reduced Power (dBm)" column lists measured powers with MPR and A-MPR active (as defined by 3GPP TS 36.101). A-MPR is not specified for LTE2500 (Band 7) in this specification (Table 6.2.4-1).

Antenna 1 / HW:2010							
Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2502.5	20775	5	1	0	QPSK	19.5	-
2502.5	20775	5	1	12	QPSK	19.5	-
2502.5	20775	5	1	24	QPSK	19.5	-
2502.5	20775	5	12	0	QPSK	18.6	-
2502.5	20775	5	12	6	QPSK	18.6	-
2502.5	20775	5	12	13	QPSK	18.6	-
2502.5	20775	5	25	0	QPSK	18.6	-
2502.5	20775	5	1	0	16QAM	18.2	-
2502.5	20775	5	1	12	16QAM	18.7	-
2502.5	20775	5	1	24	16QAM	18.8	-
2502.5	20775	5	12	0	16QAM	17.7	-
2502.5	20775	5	12	6	16QAM	17.7	-
2502.5	20775	5	12	13	16QAM	17.8	-
2502.5	20775	5	25	0	16QAM	17.7	-
2535.0	21100	5	1	0	QPSK	19.5	-
2535.0	21100	5	1	12	QPSK	19.5	-
2535.0	21100	5	1	24	QPSK	19.6	-

(Antenna 1/HW:2010 table continues)

(Antenna 1/HW:2010 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2535.0	21100	5	12	0	QPSK	18.8	-
2535.0	21100	5	12	6	QPSK	18.8	-
2535.0	21100	5	12	13	QPSK	18.7	-
2535.0	21100	5	25	0	QPSK	18.8	-
2535.0	21100	5	1	0	16QAM	18.8	-
2535.0	21100	5	1	12	16QAM	18.9	-
2535.0	21100	5	1	24	16QAM	18.9	-
2535.0	21100	5	12	0	16QAM	17.9	-
2535.0	21100	5	12	6	16QAM	17.9	-
2535.0	21100	5	12	13	16QAM	17.9	-
2535.0	21100	5	25	0	16QAM	17.8	-
2567.5	21425	5	1	0	QPSK	19.7	-
2567.5	21425	5	1	12	QPSK	19.7	-
2567.5	21425	5	1	24	QPSK	19.7	-
2567.5	21425	5	12	0	QPSK	18.8	-
2567.5	21425	5	12	6	QPSK	18.8	-
2567.5	21425	5	12	13	QPSK	18.8	-
2567.5	21425	5	25	0	QPSK	18.8	-
2567.5	21425	5	1	0	16QAM	18.9	-
2567.5	21425	5	1	12	16QAM	18.9	-
2567.5	21425	5	1	24	16QAM	18.9	-
2567.5	21425	5	12	0	16QAM	17.7	-
2567.5	21425	5	12	6	16QAM	17.9	-
2567.5	21425	5	12	13	16QAM	17.7	-
2567.5	21425	5	25	0	16QAM	17.9	-
2505.0	20800	10	1	0	QPSK	19.5	-
2505.0	20800	10	1	24	QPSK	19.4	-
2505.0	20800	10	1	49	QPSK	19.4	-
2505.0	20800	10	25	0	QPSK	18.5	-
2505.0	20800	10	25	12	QPSK	18.6	-
2505.0	20800	10	25	25	QPSK	18.5	-
2505.0	20800	10	50	0	QPSK	18.5	-
2505.0	20800	10	1	0	16QAM	18.7	-
2505.0	20800	10	1	24	16QAM	18.8	-
2505.0	20800	10	1	49	16QAM	18.7	-
2505.0	20800	10	25	0	16QAM	17.7	-
2505.0	20800	10	25	12	16QAM	17.8	-
2505.0	20800	10	25	25	16QAM	17.6	-
2505.0	20800	10	50	0	16QAM	17.6	-

(Antenna 1/HW:2010 table continues)

(Antenna 1/HW:2010 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2535.0	21100	10	1	0	QPSK	19.5	-
2535.0	21100	10	1	24	QPSK	19.6	-
2535.0	21100	10	1	49	QPSK	19.6	-
2535.0	21100	10	25	0	QPSK	18.7	-
2535.0	21100	10	25	12	QPSK	18.7	-
2535.0	21100	10	25	25	QPSK	18.8	-
2535.0	21100	10	50	0	QPSK	18.7	-
2535.0	21100	10	1	0	16QAM	18.9	-
2535.0	21100	10	1	24	16QAM	18.8	-
2535.0	21100	10	1	49	16QAM	18.8	-
2535.0	21100	10	25	0	16QAM	17.9	-
2535.0	21100	10	25	12	16QAM	17.9	-
2535.0	21100	10	25	25	16QAM	17.8	-
2535.0	21100	10	50	0	16QAM	17.9	-
2565.0	21400	10	1	0	QPSK	19.7	-
2565.0	21400	10	1	24	QPSK	19.7	-
2565.0	21400	10	1	49	QPSK	19.7	-
2565.0	21400	10	25	0	QPSK	18.9	-
2565.0	21400	10	25	12	QPSK	18.9	-
2565.0	21400	10	25	25	QPSK	18.8	-
2565.0	21400	10	50	0	QPSK	18.9	-
2565.0	21400	10	1	0	16QAM	18.8	-
2565.0	21400	10	1	24	16QAM	18.8	-
2565.0	21400	10	1	49	16QAM	18.8	-
2565.0	21400	10	25	0	16QAM	17.7	-
2565.0	21400	10	25	12	16QAM	17.7	-
2565.0	21400	10	25	25	16QAM	17.7	-
2565.0	21400	10	50	0	16QAM	17.7	-
2507.5	20825	15	1	0	QPSK	19.4	-
2507.5	20825	15	1	36	QPSK	19.4	-
2507.5	20825	15	1	74	QPSK	19.4	-
2507.5	20825	15	37	0	QPSK	18.4	-
2507.5	20825	15	37	18	QPSK	18.4	-
2507.5	20825	15	37	38	QPSK	18.4	-
2507.5	20825	15	75	0	QPSK	18.5	-
2507.5	20825	15	1	0	16QAM	18.3	-
2507.5	20825	15	1	36	16QAM	18.3	-
2507.5	20825	15	1	74	16QAM	18.3	-

(Antenna 1/HW:2010 table continues)

(Antenna 1/HW:2010 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2507.5	20825	15	37	0	16QAM	17.5	-
2507.5	20825	15	37	18	16QAM	17.5	-
2507.5	20825	15	37	38	16QAM	17.5	-
2507.5	20825	15	75	0	16QAM	17.6	-
2535.0	21100	15	1	0	QPSK	19.6	-
2535.0	21100	15	1	36	QPSK	19.6	-
2535.0	21100	15	1	74	QPSK	19.7	-
2535.0	21100	15	37	0	QPSK	18.7	-
2535.0	21100	15	37	18	QPSK	18.8	-
2535.0	21100	15	37	38	QPSK	18.8	-
2535.0	21100	15	75	0	QPSK	18.7	-
2535.0	21100	15	1	0	16QAM	18.6	-
2535.0	21100	15	1	36	16QAM	18.7	-
2535.0	21100	15	1	74	16QAM	18.7	-
2535.0	21100	15	37	0	16QAM	17.7	-
2535.0	21100	15	37	18	16QAM	17.8	-
2535.0	21100	15	37	38	16QAM	17.9	-
2535.0	21100	15	75	0	16QAM	17.9	-
2562.5	21375	15	1	0	QPSK	19.6	-
2562.5	21375	15	1	36	QPSK	19.7	-
2562.5	21375	15	1	74	QPSK	19.7	-
2562.5	21375	15	37	0	QPSK	18.8	-
2562.5	21375	15	37	18	QPSK	18.9	-
2562.5	21375	15	37	38	QPSK	18.9	-
2562.5	21375	15	75	0	QPSK	18.9	-
2562.5	21375	15	1	0	16QAM	18.7	-
2562.5	21375	15	1	36	16QAM	18.7	-
2562.5	21375	15	1	74	16QAM	18.8	-
2562.5	21375	15	37	0	16QAM	17.8	-
2562.5	21375	15	37	18	16QAM	17.9	-
2562.5	21375	15	37	38	16QAM	17.9	-
2562.5	21375	15	75	0	16QAM	17.7	-
2510.0	20850	20	1	0	QPSK	19.4	-
2510.0	20850	20	1	49	QPSK	19.3	-
2510.0	20850	20	1	99	QPSK	19.5	-
2510.0	20850	20	50	0	QPSK	18.5	-
2510.0	20850	20	50	24	QPSK	18.5	-
2510.0	20850	20	50	50	QPSK	18.4	-
2510.0	20850	20	100	0	QPSK	18.5	-

(Antenna 1/HW:2010 table continues)

(Antenna 1/HW:2010 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2510.0	20850	20	1	0	16QAM	18.4	-
2510.0	20850	20	1	49	16QAM	18.3	-
2510.0	20850	20	1	99	16QAM	18.5	-
2510.0	20850	20	50	0	16QAM	17.6	-
2510.0	20850	20	50	24	16QAM	17.5	-
2510.0	20850	20	50	50	16QAM	17.6	-
2510.0	20850	20	100	0	16QAM	17.6	-
2535.0	21100	20	1	0	QPSK	19.6	-
2535.0	21100	20	1	49	QPSK	19.6	-
2535.0	21100	20	1	99	QPSK	19.7	-
2535.0	21100	20	50	0	QPSK	18.7	-
2535.0	21100	20	50	24	QPSK	18.7	-
2535.0	21100	20	50	50	QPSK	18.8	-
2535.0	21100	20	100	0	QPSK	18.8	-
2535.0	21100	20	1	0	16QAM	18.0	-
2535.0	21100	20	1	49	16QAM	18.6	-
2535.0	21100	20	1	99	16QAM	18.6	-
2535.0	21100	20	50	0	16QAM	17.7	-
2535.0	21100	20	50	24	16QAM	17.8	-
2535.0	21100	20	50	50	16QAM	17.9	-
2535.0	21100	20	100	0	16QAM	17.8	-
2560.0	21350	20	1	0	QPSK	19.7	-
2560.0	21350	20	1	49	QPSK	19.6	-
2560.0	21350	20	1	99	QPSK	19.8	-
2560.0	21350	20	50	0	QPSK	18.8	-
2560.0	21350	20	50	24	QPSK	18.7	-
2560.0	21350	20	50	50	QPSK	18.9	-
2560.0	21350	20	100	0	QPSK	18.8	-
2560.0	21350	20	1	0	16QAM	18.8	-
2560.0	21350	20	1	49	16QAM	18.8	-
2560.0	21350	20	1	99	16QAM	18.5	-
2560.0	21350	20	50	0	16QAM	17.6	-
2560.0	21350	20	50	24	16QAM	17.9	-
2560.0	21350	20	50	50	16QAM	17.7	-
2560.0	21350	20	100	0	16QAM	17.9	-

Antenna 2/ HW:2010							
Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2502.5	20775	5	1	0	QPSK	19.0	-
2502.5	20775	5	1	12	QPSK	19.0	-
2502.5	20775	5	1	24	QPSK	19.0	-
2502.5	20775	5	12	0	QPSK	18.1	-
2502.5	20775	5	12	6	QPSK	18.1	-
2502.5	20775	5	12	13	QPSK	18.1	-
2502.5	20775	5	25	0	QPSK	18.1	-
2502.5	20775	5	1	0	16QAM	17.7	-
2502.5	20775	5	1	12	16QAM	18.2	-
2502.5	20775	5	1	24	16QAM	18.3	-
2502.5	20775	5	12	0	16QAM	17.2	-
2502.5	20775	5	12	6	16QAM	17.2	-
2502.5	20775	5	12	13	16QAM	17.3	-
2502.5	20775	5	25	0	16QAM	17.2	-
2535.0	21100	5	1	0	QPSK	19.0	-
2535.0	21100	5	1	12	QPSK	19.0	-
2535.0	21100	5	1	24	QPSK	19.1	-
2535.0	21100	5	12	0	QPSK	18.3	-
2535.0	21100	5	12	6	QPSK	18.3	-
2535.0	21100	5	12	13	QPSK	18.2	-
2535.0	21100	5	25	0	QPSK	18.3	-
2535.0	21100	5	1	0	16QAM	18.3	-
2535.0	21100	5	1	12	16QAM	18.4	-
2535.0	21100	5	1	24	16QAM	18.4	-
2535.0	21100	5	12	0	16QAM	17.4	-
2535.0	21100	5	12	6	16QAM	17.4	-
2535.0	21100	5	12	13	16QAM	17.4	-
2535.0	21100	5	25	0	16QAM	17.3	-
2567.5	21425	5	1	0	QPSK	19.2	-
2567.5	21425	5	1	12	QPSK	19.2	-
2567.5	21425	5	1	24	QPSK	19.2	-
2567.5	21425	5	12	0	QPSK	18.3	-
2567.5	21425	5	12	6	QPSK	18.3	-
2567.5	21425	5	12	13	QPSK	18.3	-
2567.5	21425	5	25	0	QPSK	18.3	-
2567.5	21425	5	1	0	16QAM	18.4	-
2567.5	21425	5	1	12	16QAM	18.4	-
2567.5	21425	5	1	24	16QAM	18.4	-

(Antenna 2/HW:2010 table continues)

(Antenna 2/HW:2010 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2567.5	21425	5	12	0	16QAM	17.2	-
2567.5	21425	5	12	6	16QAM	17.4	-
2567.5	21425	5	12	13	16QAM	17.2	-
2567.5	21425	5	25	0	16QAM	17.4	-
2505.0	20800	10	1	0	QPSK	19.0	-
2505.0	20800	10	1	24	QPSK	18.9	-
2505.0	20800	10	1	49	QPSK	18.9	-
2505.0	20800	10	25	0	QPSK	18.0	-
2505.0	20800	10	25	12	QPSK	18.1	-
2505.0	20800	10	25	25	QPSK	18.0	-
2505.0	20800	10	50	0	QPSK	18.0	-
2505.0	20800	10	1	0	16QAM	18.2	-
2505.0	20800	10	1	24	16QAM	18.3	-
2505.0	20800	10	1	49	16QAM	18.2	-
2505.0	20800	10	25	0	16QAM	17.2	-
2505.0	20800	10	25	12	16QAM	17.3	-
2505.0	20800	10	25	25	16QAM	17.1	-
2505.0	20800	10	50	0	16QAM	17.1	-
2535.0	21100	10	1	0	QPSK	19.0	-
2535.0	21100	10	1	24	QPSK	19.1	-
2535.0	21100	10	1	49	QPSK	19.1	-
2535.0	21100	10	25	0	QPSK	18.2	-
2535.0	21100	10	25	12	QPSK	18.2	-
2535.0	21100	10	25	25	QPSK	18.3	-
2535.0	21100	10	50	0	QPSK	18.2	-
2535.0	21100	10	1	0	16QAM	18.4	-
2535.0	21100	10	1	24	16QAM	18.3	-
2535.0	21100	10	1	49	16QAM	18.3	-
2535.0	21100	10	25	0	16QAM	17.4	-
2535.0	21100	10	25	12	16QAM	17.4	-
2535.0	21100	10	25	25	16QAM	17.3	-
2535.0	21100	10	50	0	16QAM	17.4	-
2565.0	21400	10	1	0	QPSK	19.2	-
2565.0	21400	10	1	24	QPSK	19.2	-
2565.0	21400	10	1	49	QPSK	19.2	-
2565.0	21400	10	25	0	QPSK	18.4	-
2565.0	21400	10	25	12	QPSK	18.4	-
2565.0	21400	10	25	25	QPSK	18.3	-
2565.0	21400	10	50	0	QPSK	18.4	-

(Antenna 2/HW:2010 table continues)

(Antenna 2/HW:2010 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2565.0	21400	10	1	0	16QAM	18.3	-
2565.0	21400	10	1	24	16QAM	18.3	-
2565.0	21400	10	1	49	16QAM	18.3	-
2565.0	21400	10	25	0	16QAM	17.2	-
2565.0	21400	10	25	12	16QAM	17.2	-
2565.0	21400	10	25	25	16QAM	17.2	-
2565.0	21400	10	50	0	16QAM	17.2	-
2507.5	20825	15	1	0	QPSK	18.9	-
2507.5	20825	15	1	36	QPSK	18.9	-
2507.5	20825	15	1	74	QPSK	18.9	-
2507.5	20825	15	37	0	QPSK	17.9	-
2507.5	20825	15	37	18	QPSK	17.9	-
2507.5	20825	15	37	38	QPSK	17.9	-
2507.5	20825	15	75	0	QPSK	18.0	-
2507.5	20825	15	1	0	16QAM	17.8	-
2507.5	20825	15	1	36	16QAM	17.8	-
2507.5	20825	15	1	74	16QAM	17.8	-
2507.5	20825	15	37	0	16QAM	17.0	-
2507.5	20825	15	37	18	16QAM	17.0	-
2507.5	20825	15	37	38	16QAM	17.0	-
2507.5	20825	15	75	0	16QAM	17.1	-
2535.0	21100	15	1	0	QPSK	19.1	-
2535.0	21100	15	1	36	QPSK	19.1	-
2535.0	21100	15	1	74	QPSK	19.2	-
2535.0	21100	15	37	0	QPSK	18.2	-
2535.0	21100	15	37	18	QPSK	18.3	-
2535.0	21100	15	37	38	QPSK	18.3	-
2535.0	21100	15	75	0	QPSK	18.2	-
2535.0	21100	15	1	0	16QAM	18.1	-
2535.0	21100	15	1	36	16QAM	18.2	-
2535.0	21100	15	1	74	16QAM	18.2	-
2535.0	21100	15	37	0	16QAM	17.2	-
2535.0	21100	15	37	18	16QAM	17.3	-
2535.0	21100	15	37	38	16QAM	17.4	-
2535.0	21100	15	75	0	16QAM	17.4	-

(Antenna 2/HW:2010 table continues)

(Antenna 2/HW:2010 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2562.5	21375	15	1	0	QPSK	19.1	-
2562.5	21375	15	1	36	QPSK	19.2	-
2562.5	21375	15	1	74	QPSK	19.2	-
2562.5	21375	15	37	0	QPSK	18.3	-
2562.5	21375	15	37	18	QPSK	18.4	-
2562.5	21375	15	37	38	QPSK	18.4	-
2562.5	21375	15	75	0	QPSK	18.4	-
2562.5	21375	15	1	0	16QAM	18.2	-
2562.5	21375	15	1	36	16QAM	18.2	-
2562.5	21375	15	1	74	16QAM	18.3	-
2562.5	21375	15	37	0	16QAM	17.3	-
2562.5	21375	15	37	18	16QAM	17.4	-
2562.5	21375	15	37	38	16QAM	17.4	-
2562.5	21375	15	75	0	16QAM	17.2	-
2510.0	20850	20	1	0	QPSK	18.9	-
2510.0	20850	20	1	49	QPSK	18.8	-
2510.0	20850	20	1	99	QPSK	19.0	-
2510.0	20850	20	50	0	QPSK	18.0	-
2510.0	20850	20	50	24	QPSK	18.0	-
2510.0	20850	20	50	50	QPSK	17.9	-
2510.0	20850	20	100	0	QPSK	18.0	-
2510.0	20850	20	1	0	16QAM	17.9	-
2510.0	20850	20	1	49	16QAM	17.8	-
2510.0	20850	20	1	99	16QAM	18.0	-
2510.0	20850	20	50	0	16QAM	17.1	-
2510.0	20850	20	50	24	16QAM	17.0	-
2510.0	20850	20	50	50	16QAM	17.1	-
2510.0	20850	20	100	0	16QAM	17.1	-
2535.0	21100	20	1	0	QPSK	19.1	-
2535.0	21100	20	1	49	QPSK	19.1	-
2535.0	21100	20	1	99	QPSK	19.2	-
2535.0	21100	20	50	0	QPSK	18.2	-
2535.0	21100	20	50	24	QPSK	18.2	-
2535.0	21100	20	50	50	QPSK	18.3	-
2535.0	21100	20	100	0	QPSK	18.3	-
2535.0	21100	20	1	0	16QAM	17.5	-
2535.0	21100	20	1	49	16QAM	18.1	-
2535.0	21100	20	1	99	16QAM	18.1	-

(Antenna 2/HW:2010 table continues)

(Antenna 2/HW:2010 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2535.0	21100	20	50	0	16QAM	17.2	-
2535.0	21100	20	50	24	16QAM	17.3	-
2535.0	21100	20	50	50	16QAM	17.4	-
2535.0	21100	20	100	0	16QAM	17.3	-
2560.0	21350	20	1	0	QPSK	19.2	-
2560.0	21350	20	1	49	QPSK	19.1	-
2560.0	21350	20	1	99	QPSK	19.3	-
2560.0	21350	20	50	0	QPSK	18.3	-
2560.0	21350	20	50	24	QPSK	18.2	-
2560.0	21350	20	50	50	QPSK	18.4	-
2560.0	21350	20	100	0	QPSK	18.3	-
2560.0	21350	20	1	0	16QAM	18.3	-
2560.0	21350	20	1	49	16QAM	18.3	-
2560.0	21350	20	1	99	16QAM	18.0	-
2560.0	21350	20	50	0	16QAM	17.1	-
2560.0	21350	20	50	24	16QAM	17.4	-
2560.0	21350	20	50	50	16QAM	17.2	-
2560.0	21350	20	100	0	16QAM	17.4	-

G.3 Conducted Power from the Samples used in the Testing / HW:3110

Type: RM-974; Serial number: 004402/47/876262/2, HW:3110 SW: 01061.00059.14212.33001 used for LTE2500 (Band7) for Head, Body-worn and Wireless Router SAR measurements.

"Max Average Power (dBm)" column lists measured powers with MPR active. The "Reduced Power (dBm)" column lists measured powers with MPR and A-MPR active (as defined by 3GPP TS 36.101). A-MPR is not specified for LTE2500 (Band 7) in this specification (Table 6.2.4-1).

Antenna 1 / HW:3110							
Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2502.5	20775	5	1	0	QPSK	19.4	-
2502.5	20775	5	1	12	QPSK	19.5	-
2502.5	20775	5	1	24	QPSK	19.5	-
2502.5	20775	5	12	0	QPSK	18.4	-
2502.5	20775	5	12	6	QPSK	18.5	-
2502.5	20775	5	12	13	QPSK	18.5	-
2502.5	20775	5	25	0	QPSK	18.6	-
2502.5	20775	5	1	0	16QAM	18.3	-
2502.5	20775	5	1	12	16QAM	18.4	-
2502.5	20775	5	1	24	16QAM	18.4	-
2502.5	20775	5	12	0	16QAM	17.4	-
2502.5	20775	5	12	6	16QAM	17.5	-
2502.5	20775	5	12	13	16QAM	17.5	-
2502.5	20775	5	25	0	16QAM	17.5	-
2535.0	21100	5	1	0	QPSK	19.8	-
2535.0	21100	5	1	12	QPSK	19.7	-
2535.0	21100	5	1	24	QPSK	19.8	-

(Antenna 1/HW:3110 table continues)

(Antenna 1/HW:3110 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2535.0	21100	5	12	0	QPSK	18.7	-
2535.0	21100	5	12	6	QPSK	18.7	-
2535.0	21100	5	12	13	QPSK	18.7	-
2535.0	21100	5	25	0	QPSK	18.7	-
2535.0	21100	5	1	0	16QAM	18.7	-
2535.0	21100	5	1	12	16QAM	18.6	-
2535.0	21100	5	1	24	16QAM	18.6	-
2535.0	21100	5	12	0	16QAM	17.6	-
2535.0	21100	5	12	6	16QAM	17.6	-
2535.0	21100	5	12	13	16QAM	17.7	-
2535.0	21100	5	25	0	16QAM	17.7	-
2567.5	21425	5	1	0	QPSK	19.7	-
2567.5	21425	5	1	12	QPSK	19.7	-
2567.5	21425	5	1	24	QPSK	19.8	-
2567.5	21425	5	12	0	QPSK	18.7	-
2567.5	21425	5	12	6	QPSK	18.6	-
2567.5	21425	5	12	13	QPSK	18.6	-
2567.5	21425	5	25	0	QPSK	18.6	-
2567.5	21425	5	1	0	16QAM	18.5	-
2567.5	21425	5	1	12	16QAM	18.5	-
2567.5	21425	5	1	24	16QAM	18.6	-
2567.5	21425	5	12	0	16QAM	17.6	-
2567.5	21425	5	12	6	16QAM	17.6	-
2567.5	21425	5	12	13	16QAM	17.6	-
2567.5	21425	5	25	0	16QAM	17.7	-
2505.0	20800	10	1	0	QPSK	19.4	-
2505.0	20800	10	1	24	QPSK	19.5	-
2505.0	20800	10	1	49	QPSK	19.6	-
2505.0	20800	10	25	0	QPSK	18.5	-
2505.0	20800	10	25	12	QPSK	18.5	-
2505.0	20800	10	25	25	QPSK	18.5	-
2505.0	20800	10	50	0	QPSK	18.5	-
2505.0	20800	10	1	0	16QAM	18.5	-
2505.0	20800	10	1	24	16QAM	18.6	-
2505.0	20800	10	1	49	16QAM	18.6	-
2505.0	20800	10	25	0	16QAM	17.5	-
2505.0	20800	10	25	12	16QAM	17.5	-
2505.0	20800	10	25	25	16QAM	17.5	-
2505.0	20800	10	50	0	16QAM	17.5	-

(Antenna 1/HW:3110 table continues)

(Antenna 1/HW:3110 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2535.0	21100	10	1	0	QPSK	19.8	-
2535.0	21100	10	1	24	QPSK	19.8	-
2535.0	21100	10	1	49	QPSK	19.9	-
2535.0	21100	10	25	0	QPSK	18.7	-
2535.0	21100	10	25	12	QPSK	18.7	-
2535.0	21100	10	25	25	QPSK	18.8	-
2535.0	21100	10	50	0	QPSK	18.7	-
2535.0	21100	10	1	0	16QAM	18.8	-
2535.0	21100	10	1	24	16QAM	18.8	-
2535.0	21100	10	1	49	16QAM	18.9	-
2535.0	21100	10	25	0	16QAM	17.7	-
2535.0	21100	10	25	12	16QAM	17.7	-
2535.0	21100	10	25	25	16QAM	17.7	-
2535.0	21100	10	50	0	16QAM	17.7	-
2565.0	21400	10	1	0	QPSK	19.7	-
2565.0	21400	10	1	24	QPSK	19.7	-
2565.0	21400	10	1	49	QPSK	19.8	-
2565.0	21400	10	25	0	QPSK	18.6	-
2565.0	21400	10	25	12	QPSK	18.7	-
2565.0	21400	10	25	25	QPSK	18.6	-
2565.0	21400	10	50	0	QPSK	18.6	-
2565.0	21400	10	1	0	16QAM	18.8	-
2565.0	21400	10	1	24	16QAM	18.8	-
2565.0	21400	10	1	49	16QAM	18.8	-
2565.0	21400	10	25	0	16QAM	17.6	-
2565.0	21400	10	25	12	16QAM	17.6	-
2565.0	21400	10	25	25	16QAM	17.6	-
2565.0	21400	10	50	0	16QAM	17.7	-
2507.5	20825	15	1	0	QPSK	19.3	-
2507.5	20825	15	1	36	QPSK	19.4	-
2507.5	20825	15	1	74	QPSK	19.4	-
2507.5	20825	15	37	0	QPSK	18.5	-
2507.5	20825	15	37	18	QPSK	18.5	-
2507.5	20825	15	37	38	QPSK	18.6	-
2507.5	20825	15	75	0	QPSK	18.6	-
2507.5	20825	15	1	0	16QAM	18.2	-
2507.5	20825	15	1	36	16QAM	18.3	-
2507.5	20825	15	1	74	16QAM	18.3	-

(Antenna 1/HW:3110 table continues)

(Antenna 1/HW:3110 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2507.5	20825	15	37	0	16QAM	17.4	-
2507.5	20825	15	37	18	16QAM	17.5	-
2507.5	20825	15	37	38	16QAM	17.5	-
2507.5	20825	15	75	0	16QAM	17.5	-
2535.0	21100	15	1	0	QPSK	19.7	-
2535.0	21100	15	1	36	QPSK	19.7	-
2535.0	21100	15	1	74	QPSK	19.8	-
2535.0	21100	15	37	0	QPSK	18.6	-
2535.0	21100	15	37	18	QPSK	18.7	-
2535.0	21100	15	37	38	QPSK	18.8	-
2535.0	21100	15	75	0	QPSK	18.7	-
2535.0	21100	15	1	0	16QAM	18.5	-
2535.0	21100	15	1	36	16QAM	18.6	-
2535.0	21100	15	1	74	16QAM	18.7	-
2535.0	21100	15	37	0	16QAM	17.7	-
2535.0	21100	15	37	18	16QAM	17.7	-
2535.0	21100	15	37	38	16QAM	17.8	-
2535.0	21100	15	75	0	16QAM	17.7	-
2562.5	21375	15	1	0	QPSK	19.6	-
2562.5	21375	15	1	36	QPSK	19.7	-
2562.5	21375	15	1	74	QPSK	19.8	-
2562.5	21375	15	37	0	QPSK	18.6	-
2562.5	21375	15	37	18	QPSK	18.6	-
2562.5	21375	15	37	38	QPSK	18.7	-
2562.5	21375	15	75	0	QPSK	18.6	-
2562.5	21375	15	1	0	16QAM	18.4	-
2562.5	21375	15	1	36	16QAM	18.5	-
2562.5	21375	15	1	74	16QAM	18.6	-
2562.5	21375	15	37	0	16QAM	17.6	-
2562.5	21375	15	37	18	16QAM	17.6	-
2562.5	21375	15	37	38	16QAM	17.7	-
2562.5	21375	15	75	0	16QAM	17.6	-
2510.0	20850	20	1	0	QPSK	19.4	-
2510.0	20850	20	1	49	QPSK	19.6	-
2510.0	20850	20	1	99	QPSK	19.6	-
2510.0	20850	20	50	0	QPSK	18.6	-
2510.0	20850	20	50	24	QPSK	18.6	-
2510.0	20850	20	50	50	QPSK	18.6	-
2510.0	20850	20	100	0	QPSK	18.7	-

(Antenna 1/HW:3110 table continues)

(Antenna 1/HW:3110 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2510.0	20850	20	1	0	16QAM	18.1	-
2510.0	20850	20	1	49	16QAM	18.3	-
2510.0	20850	20	1	99	16QAM	18.3	-
2510.0	20850	20	50	0	16QAM	17.5	-
2510.0	20850	20	50	24	16QAM	17.6	-
2510.0	20850	20	50	50	16QAM	17.6	-
2510.0	20850	20	100	0	16QAM	17.6	-
2535.0	21100	20	1	0	QPSK	19.7	-
2535.0	21100	20	1	49	QPSK	19.8	-
2535.0	21100	20	1	99	QPSK	19.9	-
2535.0	21100	20	50	0	QPSK	18.8	-
2535.0	21100	20	50	24	QPSK	18.7	-
2535.0	21100	20	50	50	QPSK	18.8	-
2535.0	21100	20	100	0	QPSK	18.7	-
2535.0	21100	20	1	0	16QAM	18.3	-
2535.0	21100	20	1	49	16QAM	18.4	-
2535.0	21100	20	1	99	16QAM	18.5	-
2535.0	21100	20	50	0	16QAM	17.7	-
2535.0	21100	20	50	24	16QAM	17.7	-
2535.0	21100	20	50	50	16QAM	17.8	-
2535.0	21100	20	100	0	16QAM	17.8	-
2560.0	21350	20	1	0	QPSK	19.7	-
2560.0	21350	20	1	49	QPSK	19.7	-
2560.0	21350	20	1	99	QPSK	19.9	-
2560.0	21350	20	50	0	QPSK	18.6	-
2560.0	21350	20	50	24	QPSK	18.7	-
2560.0	21350	20	50	50	QPSK	18.6	-
2560.0	21350	20	100	0	QPSK	18.7	-
2560.0	21350	20	1	0	16QAM	18.3	-
2560.0	21350	20	1	49	16QAM	18.4	-
2560.0	21350	20	1	99	16QAM	18.5	-
2560.0	21350	20	50	0	16QAM	17.5	-
2560.0	21350	20	50	24	16QAM	17.6	-
2560.0	21350	20	50	50	16QAM	17.7	-
2560.0	21350	20	100	0	16QAM	17.7	-

Antenna 2/ HW:3110							
Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2502.5	20775	5	1	0	QPSK	18.9	-
2502.5	20775	5	1	12	QPSK	19.0	-
2502.5	20775	5	1	24	QPSK	19.0	-
2502.5	20775	5	12	0	QPSK	17.9	-
2502.5	20775	5	12	6	QPSK	18.0	-
2502.5	20775	5	12	13	QPSK	18.0	-
2502.5	20775	5	25	0	QPSK	18.1	-
2502.5	20775	5	1	0	16QAM	17.8	-
2502.5	20775	5	1	12	16QAM	17.9	-
2502.5	20775	5	1	24	16QAM	17.9	-
2502.5	20775	5	12	0	16QAM	16.9	-
2502.5	20775	5	12	6	16QAM	17.0	-
2502.5	20775	5	12	13	16QAM	17.0	-
2502.5	20775	5	25	0	16QAM	17.0	-
2535.0	21100	5	1	0	QPSK	19.3	-
2535.0	21100	5	1	12	QPSK	19.2	-
2535.0	21100	5	1	24	QPSK	19.3	-
2535.0	21100	5	12	0	QPSK	18.2	-
2535.0	21100	5	12	6	QPSK	18.2	-
2535.0	21100	5	12	13	QPSK	18.2	-
2535.0	21100	5	25	0	QPSK	18.2	-
2535.0	21100	5	1	0	16QAM	18.2	-
2535.0	21100	5	1	12	16QAM	18.1	-
2535.0	21100	5	1	24	16QAM	18.1	-
2535.0	21100	5	12	0	16QAM	17.1	-
2535.0	21100	5	12	6	16QAM	17.1	-
2535.0	21100	5	12	13	16QAM	17.2	-
2535.0	21100	5	25	0	16QAM	17.2	-
2567.5	21425	5	1	0	QPSK	19.2	-
2567.5	21425	5	1	12	QPSK	19.2	-
2567.5	21425	5	1	24	QPSK	19.3	-
2567.5	21425	5	12	0	QPSK	18.2	-
2567.5	21425	5	12	6	QPSK	18.1	-
2567.5	21425	5	12	13	QPSK	18.1	-
2567.5	21425	5	25	0	QPSK	18.1	-
2567.5	21425	5	1	0	16QAM	18.0	-
2567.5	21425	5	1	12	16QAM	18.0	-
2567.5	21425	5	1	24	16QAM	18.1	-

(Antenna 2/HW:3110 table continues)

(Antenna 2/HW:3110 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2567.5	21425	5	12	0	16QAM	17.1	-
2567.5	21425	5	12	6	16QAM	17.1	-
2567.5	21425	5	12	13	16QAM	17.1	-
2567.5	21425	5	25	0	16QAM	17.2	-
2505.0	20800	10	1	0	QPSK	18.9	-
2505.0	20800	10	1	24	QPSK	19.0	-
2505.0	20800	10	1	49	QPSK	19.1	-
2505.0	20800	10	25	0	QPSK	18.0	-
2505.0	20800	10	25	12	QPSK	18.0	-
2505.0	20800	10	25	25	QPSK	18.0	-
2505.0	20800	10	50	0	QPSK	18.0	-
2505.0	20800	10	1	0	16QAM	18.0	-
2505.0	20800	10	1	24	16QAM	18.1	-
2505.0	20800	10	1	49	16QAM	18.1	-
2505.0	20800	10	25	0	16QAM	17.0	-
2505.0	20800	10	25	12	16QAM	17.0	-
2505.0	20800	10	25	25	16QAM	17.0	-
2505.0	20800	10	50	0	16QAM	17.0	-
2535.0	21100	10	1	0	QPSK	19.3	-
2535.0	21100	10	1	24	QPSK	19.3	-
2535.0	21100	10	1	49	QPSK	19.4	-
2535.0	21100	10	25	0	QPSK	18.2	-
2535.0	21100	10	25	12	QPSK	18.2	-
2535.0	21100	10	25	25	QPSK	18.3	-
2535.0	21100	10	50	0	QPSK	18.2	-
2535.0	21100	10	1	0	16QAM	18.3	-
2535.0	21100	10	1	24	16QAM	18.3	-
2535.0	21100	10	1	49	16QAM	18.4	-
2535.0	21100	10	25	0	16QAM	17.2	-
2535.0	21100	10	25	12	16QAM	17.2	-
2535.0	21100	10	25	25	16QAM	17.2	-
2535.0	21100	10	50	0	16QAM	17.2	-
2565.0	21400	10	1	0	QPSK	19.2	-
2565.0	21400	10	1	24	QPSK	19.2	-
2565.0	21400	10	1	49	QPSK	19.3	-
2565.0	21400	10	25	0	QPSK	18.1	-
2565.0	21400	10	25	12	QPSK	18.2	-
2565.0	21400	10	25	25	QPSK	18.1	-
2565.0	21400	10	50	0	QPSK	18.1	-

(Antenna 2/HW:3110 table continues)

(Antenna 2/HW:3110 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2565.0	21400	10	1	0	16QAM	18.3	-
2565.0	21400	10	1	24	16QAM	18.3	-
2565.0	21400	10	1	49	16QAM	18.3	-
2565.0	21400	10	25	0	16QAM	17.1	-
2565.0	21400	10	25	12	16QAM	17.1	-
2565.0	21400	10	25	25	16QAM	17.1	-
2565.0	21400	10	50	0	16QAM	17.2	-
2507.5	20825	15	1	0	QPSK	18.8	-
2507.5	20825	15	1	36	QPSK	18.9	-
2507.5	20825	15	1	74	QPSK	18.9	-
2507.5	20825	15	37	0	QPSK	18.0	-
2507.5	20825	15	37	18	QPSK	18.0	-
2507.5	20825	15	37	38	QPSK	18.1	-
2507.5	20825	15	75	0	QPSK	18.1	-
2507.5	20825	15	1	0	16QAM	17.7	-
2507.5	20825	15	1	36	16QAM	17.8	-
2507.5	20825	15	1	74	16QAM	17.8	-
2507.5	20825	15	37	0	16QAM	16.9	-
2507.5	20825	15	37	18	16QAM	17.0	-
2507.5	20825	15	37	38	16QAM	17.0	-
2507.5	20825	15	75	0	16QAM	17.0	-
2535.0	21100	15	1	0	QPSK	19.2	-
2535.0	21100	15	1	36	QPSK	19.2	-
2535.0	21100	15	1	74	QPSK	19.3	-
2535.0	21100	15	37	0	QPSK	18.1	-
2535.0	21100	15	37	18	QPSK	18.2	-
2535.0	21100	15	37	38	QPSK	18.3	-
2535.0	21100	15	75	0	QPSK	18.2	-
2535.0	21100	15	1	0	16QAM	18.0	-
2535.0	21100	15	1	36	16QAM	18.1	-
2535.0	21100	15	1	74	16QAM	18.2	-
2535.0	21100	15	37	0	16QAM	17.2	-
2535.0	21100	15	37	18	16QAM	17.2	-
2535.0	21100	15	37	38	16QAM	17.3	-
2535.0	21100	15	75	0	16QAM	17.2	-

(Antenna 2/HW:3110 table continues)

(Antenna 2/HW:3110 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2562.5	21375	15	1	0	QPSK	19.1	-
2562.5	21375	15	1	36	QPSK	19.2	-
2562.5	21375	15	1	74	QPSK	19.3	-
2562.5	21375	15	37	0	QPSK	18.1	-
2562.5	21375	15	37	18	QPSK	18.1	-
2562.5	21375	15	37	38	QPSK	18.2	-
2562.5	21375	15	75	0	QPSK	18.1	-
2562.5	21375	15	1	0	16QAM	17.9	-
2562.5	21375	15	1	36	16QAM	18.0	-
2562.5	21375	15	1	74	16QAM	18.1	-
2562.5	21375	15	37	0	16QAM	17.1	-
2562.5	21375	15	37	18	16QAM	17.1	-
2562.5	21375	15	37	38	16QAM	17.2	-
2562.5	21375	15	75	0	16QAM	17.1	-
2510.0	20850	20	1	0	QPSK	18.9	-
2510.0	20850	20	1	49	QPSK	19.1	-
2510.0	20850	20	1	99	QPSK	19.1	-
2510.0	20850	20	50	0	QPSK	18.1	-
2510.0	20850	20	50	24	QPSK	18.1	-
2510.0	20850	20	50	50	QPSK	18.1	-
2510.0	20850	20	100	0	QPSK	18.2	-
2510.0	20850	20	1	0	16QAM	17.6	-
2510.0	20850	20	1	49	16QAM	17.8	-
2510.0	20850	20	1	99	16QAM	17.8	-
2510.0	20850	20	50	0	16QAM	17.0	-
2510.0	20850	20	50	24	16QAM	17.1	-
2510.0	20850	20	50	50	16QAM	17.1	-
2510.0	20850	20	100	0	16QAM	17.1	-
2535.0	21100	20	1	0	QPSK	19.2	-
2535.0	21100	20	1	49	QPSK	19.3	-
2535.0	21100	20	1	99	QPSK	19.4	-
2535.0	21100	20	50	0	QPSK	18.3	-
2535.0	21100	20	50	24	QPSK	18.2	-
2535.0	21100	20	50	50	QPSK	18.3	-
2535.0	21100	20	100	0	QPSK	18.2	-
2535.0	21100	20	1	0	16QAM	17.8	-
2535.0	21100	20	1	49	16QAM	17.9	-
2535.0	21100	20	1	99	16QAM	18.0	-

(Antenna 2/HW:3110 table continues)

(Antenna 2/HW:3110 table continues)

Frequency (MHz)	Channel Number	Bandwidth (MHz)	RB Number	RB Offset	Modulation	Max Average Power (dBm)	Reduced Power(dBm)
2535.0	21100	20	50	0	16QAM	17.2	-
2535.0	21100	20	50	24	16QAM	17.2	-
2535.0	21100	20	50	50	16QAM	17.3	-
2535.0	21100	20	100	0	16QAM	17.3	-
2560.0	21350	20	1	0	QPSK	19.2	-
2560.0	21350	20	1	49	QPSK	19.2	-
2560.0	21350	20	1	99	QPSK	19.4	-
2560.0	21350	20	50	0	QPSK	18.1	-
2560.0	21350	20	50	24	QPSK	18.2	-
2560.0	21350	20	50	50	QPSK	18.1	-
2560.0	21350	20	100	0	QPSK	18.2	-
2560.0	21350	20	1	0	16QAM	17.8	-
2560.0	21350	20	1	49	16QAM	17.9	-
2560.0	21350	20	1	99	16QAM	18.0	-
2560.0	21350	20	50	0	16QAM	17.0	-
2560.0	21350	20	50	24	16QAM	17.1	-
2560.0	21350	20	50	50	16QAM	17.2	-
2560.0	21350	20	100	0	16QAM	17.2	-

APPENDIX H: CONDUCTED POWER MEASUREMENTS FOR SUPPORTED GSM/GPRS/EGPRS TRANSMISSION MODES

H.1 Tuning targets and conducted power measurements / HW:2010

Type: RM-974, Serial number 004402/47/800076/7 HW:2010 SW: 01061.00014.14112.00000 used for GSM/GPRS/EGPRS850 SAR Head, Body-worn and Wireless Router measurements.

GSM/GPRS/EGPRS850 / Tuning target (dBm) Head, Body-worn and Wireless Router / HW:2010			
Slot configuration	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM 1-slot	32.3	32.3	32.3
GPRS 2-slot	29.9	29.9	29.9
GPRS 3-slot	27.9	27.9	27.9
GPRS 4-slot	26.5	26.5	26.5
EGRPS 1-slot	26.5	26.5	26.5
EGPRS 2-slot	25.4	25.4	25.4
EGPRS 3-slot	23.5	23.5	23.5
EGPRS 4-slot	22.1	22.1	22.1
GSM/GPRS/EGPRS850 / Conducted power (dBm) Head, Body-worn and Wireless Router / HW:2010			
Slot configuration	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM 1-slot	32.3	32.4	32.4
GPRS 2-slot	29.9	30.2	30.1
GPRS 3-slot	27.9	28.2	28.1
GPRS 4-slot	26.5	26.8	26.8
EGRPS 1-slot	26.5	26.6	26.5
EGPRS 2-slot	25.4	25.4	25.4
EGPRS 3-slot	23.5	23.5	23.6
EGPRS 4-slot	22.1	22.3	22.1

Type: RM-974, Serial number 004402/47/800075/9, HW:2010, SW: 01061.00014.14112.00000 used for GSM/GPRS/EGPRS1900 SAR Head, Body-worn and Wireless Router measurements.

GSM/GPRS/EGPRS1900 / Tuning target (dBm) Head, Body-worn and Wireless Router / HW:2010			
Slot configuration	CH 512 1850.2 MHz	CH 661 1880.0 MHz	CH 810 1909.8 MHz
GSM 1-slot	29.5	29.5	29.5
GPRS 2-slot	29.0	29.0	29.0
GPRS 3-slot	27.0	27.0	27.0
GPRS 4-slot	25.5	25.5	25.5
EGRPS 1-slot	25.4	25.4	25.4
EGPRS 2-slot	25.2	25.2	25.2
EGPRS 3-slot	23.3	23.3	23.3
EGPRS 4-slot	22.0	22.0	22.0
GSM/GPRS/EGPRS1900 / Conducted power (dBm) Head, Body-worn and Wireless Router / HW:2010			
Slot configuration	CH 512 1850.2 MHz	CH 661 1880.0 MHz	CH 810 1909.8 MHz
GSM 1-slot	29.9	29.8	29.9
GPRS 2-slot	29.2	29.1	29.3
GPRS 3-slot	27.0	27.0	27.2
GPRS 4-slot	25.6	25.6	25.8
EGRPS 1-slot	25.7	25.4	25.5
EGPRS 2-slot	25.6	25.3	25.4
EGPRS 3-slot	23.5	23.4	23.5
EGPRS 4-slot	22.4	22.3	22.3

H.2 Tuning targets and conducted power measurements / HW:3110

Type: RM-974, Serial number 004402/47/876167/3 HW:3110 SW: 01061.00059.14212.33001 used for GSM/GPRS/EGPRS850 SAR Head, Body-worn and Wireless Router measurements.

GSM/GPRS/EGPRS850 / Tuning target (dBm) Head, Body-worn and Wireless Router / HW:3110			
Slot configuration	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM 1-slot	32.3	32.3	32.3
GPRS 2-slot	29.9	29.9	29.9
GPRS 3-slot	27.9	27.9	27.9
GPRS 4-slot	26.5	26.5	26.5
EGRPS 1-slot	26.5	26.5	26.5
EGPRS 2-slot	25.4	25.4	25.4
EGPRS 3-slot	23.5	23.5	23.5
EGPRS 4-slot	22.1	22.1	22.1
GSM/GPRS/EGPRS850 / Conducted power (dBm) Head, Body-worn and Wireless Router / HW:3110			
Slot configuration	Ch 128 824.2 MHz	Ch 190 836.6 MHz	Ch 251 848.8 MHz
GSM 1-slot	31.8	32.0	32.0
GPRS 2-slot	29.8	30.0	29.8
GPRS 3-slot	27.7	27.9	27.7
GPRS 4-slot	26.1	26.5	26.2
EGRPS 1-slot	26.2	26.3	26.2
EGPRS 2-slot	25.1	25.2	25.1
EGPRS 3-slot	23.1	23.3	23.1
EGPRS 4-slot	21.8	22.0	21.8

Type: RM-974, Serial number 004402/47/876161/6, HW:3110, SW: 01061.00059.14212.33001 used for GSM/GPRS/EGPRS1900 SAR Head, Body-worn and Wireless Router measurements.

GSM/GPRS/EGPRS1900 / Tuning target (dBm) Head, Body-worn and Wireless Router / HW:3110			
Slot configuration	CH 512 1850.2 MHz	CH 661 1880.0 MHz	CH 810 1909.8 MHz
GSM 1-slot	29.5	29.5	29.5
GPRS 2-slot	29.0	29.0	29.0
GPRS 3-slot	27.0	27.0	27.0
GPRS 4-slot	25.5	25.5	25.5
EGRPS 1-slot	25.4	25.4	25.4
EGPRS 2-slot	25.2	25.2	25.2
EGPRS 3-slot	23.3	23.3	23.3
EGPRS 4-slot	22.0	22.0	22.0
GSM/GPRS/EGPRS1900 / Conducted power (dBm) Head, Body-worn and Wireless Router / HW:3110			
Slot configuration	CH 512 1850.2 MHz	CH 661 1880.0 MHz	CH 810 1909.8 MHz
GSM 1-slot	29.5	29.5	29.4
GPRS 2-slot	28.9	28.9	28.7
GPRS 3-slot	27.0	26.9	26.9
GPRS 4-slot	25.7	25.6	25.5
EGRPS 1-slot	25.7	25.5	25.4
EGPRS 2-slot	25.6	25.5	25.4
EGPRS 3-slot	23.3	23.1	23.1
EGPRS 4-slot	22.1	22.0	21.9

APPENDIX I: CONDUCTED POWER MEASUREMENTS FOR SUPPORTED WCDMA TRANSMISSION MODES

Type: RM-974; SN: 004402/47/800076/7, **HW:2010**, SW: 01061.00014.14112.00000 used for WCDMA850 (Band 5) Head, Body-worn and Wireless router SAR measurements

WCDMA 850 (Band 5) / Tuning target (dBm) Head, Body-worn and Wireless Router			
Mode	Low channel	Mid channel	High channel
WCDMA	23.5	23.5	23.5
WCDMA 850 (Band 5) / Conducted power (dBm) Head, Body-worn and Wireless Router			
Mode	Low channel	Mid channel	High channel
WCDMA	23.5	23.5	23.5

WCDMA and HSUPA Subtest mode conducted powers, measured from a separate, fully representative sample are presented in Appendix D.

Type: RM-974; SN: 004402/47/876167/3, **HW:3110**, SW: 01061.00059.14212.33001 used for WCDMA850 (Band 5) Head, Body-worn and Wireless router SAR measurements

WCDMA 850 (Band 5) / Tuning target (dBm) Head, Body-worn and Wireless Router			
Mode	Low channel	Mid channel	High channel
WCDMA	23.5	23.5	23.5
WCDMA 850 (Band 5) / Conducted power (dBm) Head, Body-worn and Wireless Router			
Mode	Low channel	Mid channel	High channel
WCDMA	23.6	23.7	23.7

APPENDIX J: CONDUCTED POWER RESULTS FOR WLAN2450

J.1 Power Tuning Targets

WLAN 2.4 GHz: 20 MHz channel bandwidth								
Standard	Modulation	Data speed [MBPS]	CH 1	CH 2	CH 6	CH 7	CH 10	CH 11
802.11b	BPSK	1	16.0	16.0	16.0	16.0	16.0	16.0
802.11b	QPSK	2	16.0	16.0	16.0	16.0	16.0	16.0
802.11b	QPSK	5,5	16.0	16.0	16.0	16.0	16.0	16.0
802.11b	QPSK	11	16.0	16.0	16.0	16.0	16.0	16.0
802.11g	BPSK	6	13.0	16.0	16.0	16.0	16.0	11.0
802.11g	BPSK	9	13.0	16.0	16.0	16.0	16.0	11.0
802.11g	QPSK	12	13.0	16.0	16.0	16.0	16.0	11.0
802.11g	QPSK	18	13.0	16.0	16.0	16.0	16.0	11.0
802.11g	16QAM	24	13.0	16.0	16.0	16.0	16.0	11.0
802.11g	16QAM	36	13.0	15.0	15.0	15.0	15.0	11.0
802.11g	64QAM	48	13.0	14.0	14.0	14.0	14.0	11.0
802.11g	64QAM	54	13.0	13.0	13.0	13.0	13.0	11.0
802.11n	BPSK	6.5 / 7.25	16.0	16.0	16.0	16.0	16.0	11.0
802.11n	QPSK	13.0 / 14.4	16.0	16.0	16.0	16.0	16.0	11.0
802.11n	QPSK	19.5 / 21.7	16.0	16.0	16.0	16.0	16.0	11.0
802.11n	16QAM	26.0 / 28.9	16.0	16.0	16.0	16.0	16.0	11.0
802.11n	16QAM	39.0 / 43.3	13.0	16.0	16.0	16.0	14.0	11.0
802.11n	64QAM	52.0 / 57.8	13.0	16.0	16.0	16.0	13.0	11.0
802.11n	64QAM	58.5 / 65.0	13.0	16.0	16.0	16.0	13.0	11.0
802.11n	64QAM	65.0 / 72.2	13.0	16.0	16.0	16.0	11.0	11.0

J.2 Conducted Power from the Samples used in the Testing

Type: RM-974; SN: 004402/47/800253/2; HW:2010; SW: 01061.00014.14112.00000 used for WLAN2450 for SAR Head, Body-worn and Wireless Router measurements.

WLAN 2.4 GHz: 20 MHz channel bandwidth								
Standard	Modulation	Data speed [MBPS]	CH 1	CH 2	CH 6	CH 7	CH 10	CH 11
802.11b	BPSK	1	16.1	16.1	16.2	16.4	16.4	16.4
802.11b	QPSK	2	16.1	16.3	16.1	16.3	16.6	16.4
802.11b	QPSK	5,5	16.3	16.5	16.3	16.5	16.8	16.6
802.11b	QPSK	11	16.3	16.3	16.5	16.5	16.5	16.6
802.11g	BPSK	6	13.4	16.5	16.5	16.4	16.4	11.6
802.11g	BPSK	9	13.5	16.5	16.4	16.4	16.4	11.7
802.11g	QPSK	12	13.5	16.3	16.4	16.4	16.4	11.4
802.11g	QPSK	18	13.5	16.6	16.5	16.4	16.5	11.5
802.11g	16QAM	24	13.5	16.5	16.5	16.4	16.4	11.2
802.11g	16QAM	36	13.4	15.5	15.5	15.4	15.5	11.5
802.11g	64QAM	48	13.8	14.4	14.4	14.5	14.5	11.3
802.11g	64QAM	54	13.5	13.3	13.4	13.6	13.3	11.5
802.11n	BPSK	6.5 / 7.25	13.5	16.6	16.4	16.4	16.6	11.4
802.11n	QPSK	13.0 / 14.4	13.5	16.6	16.5	16.4	16.5	11.7
802.11n	QPSK	19.5 / 21.7	13.5	16.4	16.5	16.5	16.5	11.7
802.11n	16QAM	26.0 / 28.9	13.5	16.4	16.5	16.5	16.5	11.5
802.11n	16QAM	39.0 / 43.3	13.4	14.5	14.4	14.5	14.6	11.7
802.11n	64QAM	52.0 / 57.8	13.5	13.3	13.5	13.5	13.8	11.4
802.11n	64QAM	58.5 / 65.0	13.3	13.3	13.1	13.5	13.3	11.6
802.11n	64QAM	65.0 / 72.2	11.5	11.7	11.4	11.2	11.4	11.2