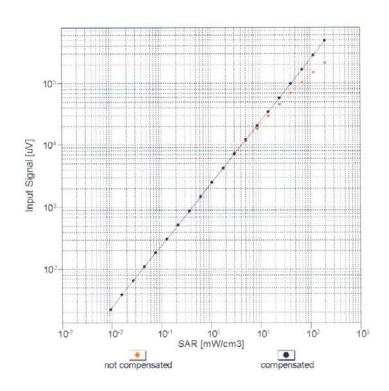
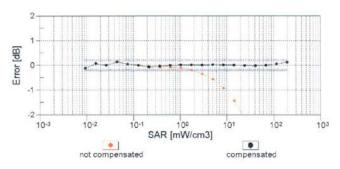


EX3DV4- SN:3846

September 24, 2014

Dynamic Range f(SAR_{head}) (TEM cell , f_{eval}= 1900 MHz)



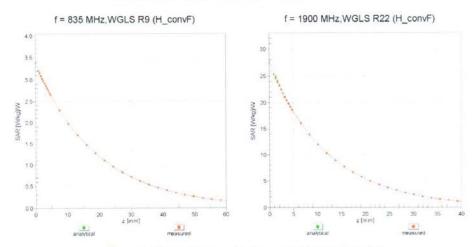


Uncertainty of Linearity Assessment: ± 0.6% (k=2)



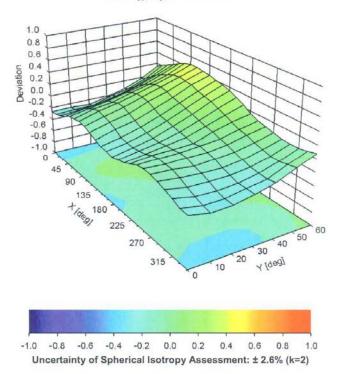
EX3DV4- SN:3846 September 24, 2014

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (\$\phi\$, \$\text{9}\$), f = 900 MHz



Certificate No: EX3-3846_Sep14



EX3DV4- SN:3846

September 24, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3846

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Certificate No: EX3-3846_Sep14



ANNEX HDipole Calibration Certificate

750 MHz Dipole Calibration Certificate

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





Schweizerischer Kalibrierdienst Service suisse d'étalonnage C 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

CTTL (Auden)

Accreditation No.: SCS 108

Certificate No: D750V3-1017_Aug14 **CALIBRATION CERTIFICATE** D750V3 - SN: 1017 Object Calibration procedure(s) QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz August 28, 2014 Calibration date: 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) ID# Cal Date (Certificate No.) Scheduled Calibration Primary Standards 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 09-Oct-13 (No. 217-01828) Oct-14 Power sensor HP 8481A MY41092317 SN: 5058 (20k) 03-Apr-14 (No. 217-01918) Apr-15 Reference 20 dB Attenuator SN: 5047.2 / 06327 03-Apr-14 (No. 217-01921) Apr-15 Type-N mismatch combination Reference Probe ES3DV3 SN: 3205 30-Dec-13 (No. ES3-3205_Dec13) Dec-14 DAE4 SN: 601 18-Aug-14 (No. DAE4-601_Aug14) Aug-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 In house check: Oct-14 US37390585 S4206 Network Analyzer HP 8753E 18-Oct-01 (in house check Oct-13) Calibrated by: Michael Weber Laboratory Technician Katja Pokovic Technical Manager Approved by: Issued: August 28, 2014 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D750V3-1017 Aug14

Page 1 of 8



No I14Z49056-SEM01 Page 155 of 194

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





S Schweizerischer Kalibrierdienst
Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

Accreditation No.: SCS 108

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

Glossary:

TSL tissue simulating liquid

ConvF sensitivity in TSL / NORM x,y,z N/A not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
 of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point.
 No uncertainty required.
- · SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D750V3-1017_Aug14



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	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.2 ± 6 %	0.91 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	2.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.31 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.49 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	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.4 ± 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	2.24 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.75 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.49 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.85 W/kg ± 16.5 % (k=2)



Appendix (Additional assessments outside the scope of SCS108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.2 Ω - 0.5 jΩ
Return Loss	- 30.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.0 Ω - 2.9 jΩ	
Return Loss	- 28.9 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.034 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 22, 2010



DASY5 Validation Report for Head TSL

Date: 28.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1017

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used: f = 750 MHz; $\sigma = 0.91 \text{ S/m}$; $\varepsilon_r = 42.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

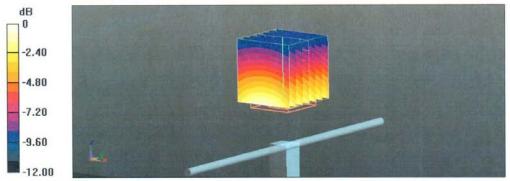
DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.37, 6.37, 6.37); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- 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 = 53.72 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 3.14 W/kg SAR(1g) = 2.11 W/kg: SAR(10g) = 1.39 W/kg

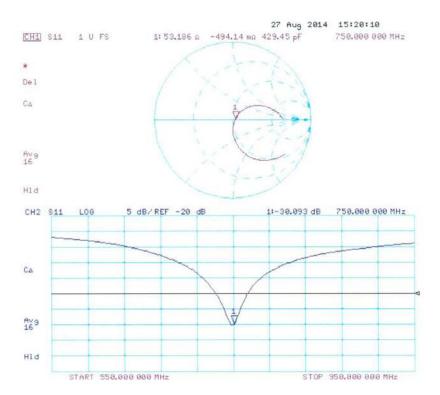
SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.39 W/kgMaximum value of SAR (measured) = 2.47 W/kg



0 dB = 2.47 W/kg = 3.93 dBW/kg



Impedance Measurement Plot for Head TSL





DASY5 Validation Report for Body TSL

Date: 27.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1017

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used: f = 750 MHz; $\sigma = 0.99 \text{ S/m}$; $\varepsilon_r = 55.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

Probe: ES3DV3 - SN3205; ConvF(6.13, 6.13, 6.13); Calibrated: 30.12.2013;

Sensor-Surface: 3mm (Mechanical Surface Detection)

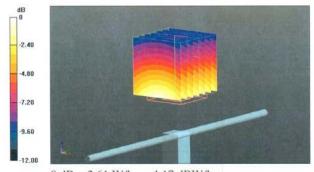
Electronics: DAE4 Sn601; Calibrated: 18.08.2014

Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001

DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

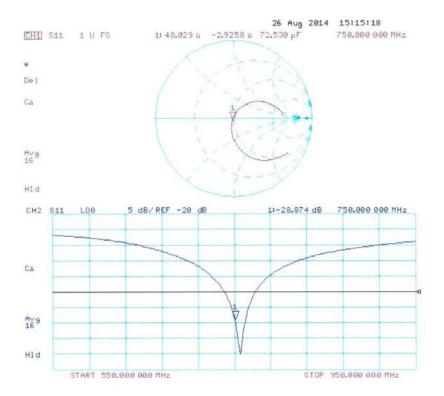
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 53.10 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 3.29 W/kg SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.49 W/kg Maximum value of SAR (measured) = 2.61 W/kg





Impedance Measurement Plot for Body TSL





835 MHz Dipole Calibration Certificate

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





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Multilateral Agreement for the recognition of calibration certificates

Client

CTTL (Auden)

Certificate No: D835V2-4d069_Aug14

Accreditation No.: SCS 108

Calibration procedure(s) QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz Calibration procedure for dipole validation kits above 700 MHz 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 D# Cal Date (Certificate No.) Scheduled Calibration Primary Standards Dower 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 US37292783 09-Oct-13 (No. 217-01828) Oct-14 Paleterence 20 dB Attenuator Sh: 5058 (20k) 03-Apr-14 (No. 217-01921) Apr-15 Teleference Probe ES3DV3 SN: 5058 (20k) 03-Apr-14 (No. 217-01921) Apr-15 Secondary Standards D# Check Date (in house) Scheduled Check Network Analyzer HP 8753E US37390585 S4206 18-Oct-01 (in house check Oct-13) In house check: Oct-14 Name Function Signature Calibrated by: Michael Weber Laboratory Technician		ERTIFICATE		
Calibration procedure for dipole validation kits above 700 MHz Calibration date: August 28, 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 Primary Standards ID # Cal Date (Certificate No.) Scheduled Calibration Primary Standards ID # Cal Date (Certificate No.) Oct-14 Prower sensor HP 8481A US37292783 09-0ct-13 (No. 217-01827) Oct-14 Prower sensor HP 8481A MY41092317 09-0ct-13 (No. 217-01828) Oct-14 Prower sensor HP 8481A MY41092317 09-0ct-13 (No. 217-01828) Oct-14 Reference 20 dB Attenuator SN: 5058 (20K) 03-Apr-14 (No. 217-01918) Apr-15 Reference Probe ES3DV3 SN: 5047.2 / 06327 03-Apr-14 (No. 217-01921) Apr-15 Reference Probe ES3DV3 SN: 601 18-Aug-14 (No. DAE4-601_Aug14) Aug-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-14 Name Function Signature Calibrated by: Michael Weber Laboratory Technician	Object	D835V2 - SN: 4d	069	
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 90-Oct-13 (No. 217-01827) Oct-14 Power sensor HP 8481A LUS37292783 09-Oct-13 (No. 217-01827) Oct-14 Reference 20 dB Attenuator SN: 5058 (20k) 30-Apr-14 (No. 217-01928) Oct-14 Reference Probe ES3DV3 SN: 5047.2 / 06327 SN: 305 30-Dec-13 (No. 217-01921) Apr-15 Reference Probe ES3DV3 SN: 5047.2 / 06327 SN: 305 30-Dec-13 (No. 217-01921) Apr-15 Reference Probe ES3DV3 SN: 601 18-Aug-14 (No. 217-01921) DAE4 SN: 601 18-Aug-14 (No. DAE4-601_Aug14) Aug-15 Secondary Standards ID # Check Date (in house) Scheduled Check RF generator R&S SMT-06 Network Analyzer HP 8753E US37390585 S4206 Name Function Signature Calibrated by: Michael Weber Laboratory Technician	Calibration procedure(s)		dure for dipole validation kits abo	ve 700 MHz
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 D #	Calibration date:	August 28, 2014		
Primary Standards	The measurements and the unce	ertainties with confidence proceed in the closed laborator	robability are given on the following pages an	d are part of the certificate.
Cower meter EPM-442A	Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Calibration
MY41092317		GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Reference 20 dB Attenuator SN: 5058 (20k) 03-Apr-14 (No. 217-01918) Apr-15	Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
SN: 5047.2 / 06327 O3-Apr-14 (No. 217-01921) Apr-15 Reference Probe ES3DV3 SN: 3205 30-Dec-13 (No. ES3-3205_Dec13) Dec-14 Aug-15 Aug-15 Aug-16 Aug-16 Aug-17 Aug-17 Aug-18 Aug-18 Aug-19 Aug-19 Aug-	5. C. T. T. C.	MY41092317	00-Oct-12 (No. 217-01929)	
SN: 3205 30-Dec-13 (No. ES3-3205_Dec13) Dec-14	ower sensor HP 8481A		09-001-13 (140, 217-01020)	Oct-14
SN: 601 18-Aug-14 (No. DAE4-601_Aug14) Aug-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 Retwork Analyzer HP 8753E US37390585 S4206 18-Oct-01 (in house check Oct-13) In house check: Oct-14 Name Function Signature Michael Weber Laboratory Technician			03-Apr-14 (No. 217-01918)	Apr-15
Secondary Standards ID # Check Date (In house) Scheduled Check AF generator R&S SMT-06 Network Analyzer HP 8753E Name Function Signature Michael Weber Laboratory Technician Scheduled Check Scheduled Check In house check Oct-13) In house check: Oct-14 Signature Michael Weber Laboratory Technician	Reference 20 dB Attenuator Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921)	Apr-15 Apr-15
Network Analyzer HP 8753E Name Name Function Name Michael Weber Name Signature Michael Weber Network Analyzer HP 8753E Name Function Laboratory Technician	Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	SN: 5047.2 / 06327 SN: 3205	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13)	Apr-15 Apr-15 Dec-14
Network Analyzer HP 8753E US37390585 S4206 18-Oct-01 (in house check Oct-13) In house check: Oct-14 Name Function Signature Michael Weber Laboratory Technician	Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	SN: 5047.2 / 06327 SN: 3205	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13)	Apr-15 Apr-15 Dec-14
Name Function Signature Calibrated by: Michael Weber Laboratory Technician H. Weber	Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	SN: 5047.2 / 06327 SN: 3205 SN: 601	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house)	Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check
Calibrated by: Michael Weber Laboratory Technician M.Weber	Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards	SN: 5047.2 / 06327 SN: 3205 SN: 601	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house)	Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check
Calibrated by: Michael Weber Laboratory Technician M.Weber	Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	SN: 5047.2 / 06327 SN: 3205 SN: 601	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13)	Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check In house check: Oct-16
M. Neses	Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-14
Approved by: Katja Pokovic Technical Manager	Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E	SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206 Name	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-14
	Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E	SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206 Name	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-14
Issued; August 28, 2014	Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E Calibrated by: Approved by:	SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206 Name Michael Weber	03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13) Function Laboratory Technician	Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-14

Certificate No: D835V2-4d069_Aug14



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Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





C

Schweizerischer Kalibrierdienst Service suisse d'étalonnage

Servizio svizzero di taratura

Swiss Calibration Service

Accreditation No.: SCS 108

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

Glossary:

TSL tissue simulating liquid

ConvF N/A

sensitivity in TSL / NORM x,y,z not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- · SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D835V2-4d069_Aug14

Page 2 of 8



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	42.0 ± 6 %	0.94 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	5000	Secret

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.43 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.43 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.58 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.17 W/kg ± 16.5 % (k=2)

Body TSL parameters

	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	55.2 ± 6 %	1.01 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	2.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.55 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.62 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	6.33 W/kg ± 16.5 % (k=2)



Appendix (Additional assessments outside the scope of SCS108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$53.3 \Omega + 0.8 j\Omega$	
Return Loss	- 29.7 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.8 Ω - 1.4 jΩ	
Return Loss	- 34.5 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1,393 ns
Electrical Delay (offe direction)	1,555 115

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	November 09, 2007



DASY5 Validation Report for Head TSL

Date: 28.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d069

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used: f = 835 MHz; $\sigma = 0.94 \text{ S/m}$; $\varepsilon_r = 42$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

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: 18.08.2014

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 = 56.74 V/m; Power Drift = 0.00 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

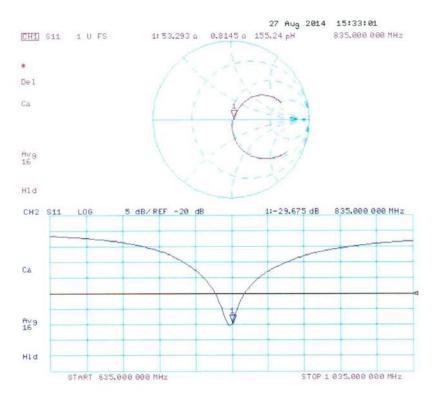
-2.40 -4.80 -7.20 -9.60

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

-12.00



Impedance Measurement Plot for Head TSL





DASY5 Validation Report for Body TSL

Date: 27.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d069

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used: f = 835 MHz; $\sigma = 1.01$ S/m; $\varepsilon_r = 55.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

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: 18.08.2014

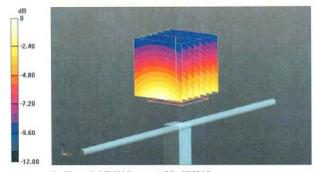
Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001

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 = 54.97 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 3.60 W/kg SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.62 W/kg

Maximum value of SAR (measured) = 2.87 W/kg

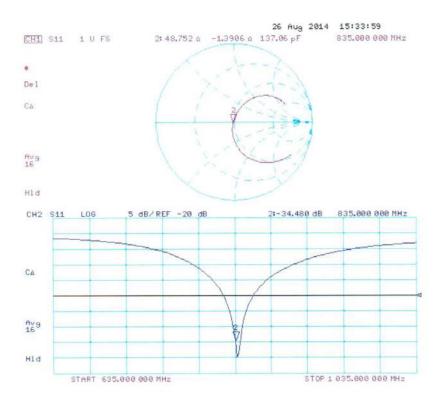


0 dB = 2.87 W/kg = 4.58 dBW/kg

Certificate No: D835V2-4d069_Aug14 Page 7 of 8



Impedance Measurement Plot for Body TSL





1750 MHz Dipole Calibration Certificate

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





S Schweizerischer Kalibrierdienst
Service suisse d'étalonnage
Servizio svizzero di taratura
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

CTTL (Auden)

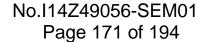
Certificate No: D1750V2-1003 Aug14

Accreditation No.: SCS 108

ALIBITATION	ERTIFICATE		Walt of the last o
Dbject	D1750V2 - SN: 10	003	
Calibration procedure(s)	QA CAL-05.v9 Calibration proceed	dure for dipole validation kits abo	ve 700 MHz
Calibration date:	August 18, 2014		
The measurements and the unce	rtainties with confidence pr	conal standards, which realize the physical un cobability are given on the following pages an y facility: environment temperature $(22 \pm 3)^{\circ}$ 0	d are part of the certificate.
Calibration Equipment used (M&	TE critical for calibration)		
Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Calibration
Primary Standards Power meter EPM-442A	ID # GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A	ID # GB37480704 US37292783	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827)	Oct-14 Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A	ID # GB37480704 US37292783 MY41092317	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828)	Oct-14 Oct-14 Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k)	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918)	Oct-14 Oct-14 Oct-14 Apr-15
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921)	Oct-14 Oct-14 Oct-14 Apr-15 Apr-15
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k)	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918)	Oct-14 Oct-14 Oct-14 Apr-15
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14)	Oct-14 Oct-14 Oct-14 Apr-15 Apr-15 Dec-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house)	Oct-14 Oct-14 Oct-14 Apr-15 Apr-15 Dec-14 Aug-15
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14)	Oct-14 Oct-14 Oct-14 Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check In house check: Oct-16
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-14
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E Calibrated by:	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-13 (No. ES3-3205_Dec13) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-15 Apr-15 Dec-14 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-14

Certificate No: D1750V2-1003_Aug14

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Calibration Laboratory of

Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





- S Schweizerischer Kalibrierdienst
- Service suisse d'étalonnage
- C Servizio svizzero di taratura
- Swiss Calibration Service

Accreditation No.: SCS 108

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

Glossary:

TSL tissue simulating liquid

ConvF sensitivity in TSL / NORM x,y,z N/A not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
 of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point.
 No uncertainty required.
- · SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D1750V2-1003_Aug14 Page 2 of 8



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	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.2 ± 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	9.27 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	36.9 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.93 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.7 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	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.0 ± 6 %	1.49 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	9.49 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	37.7 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	20.3 W/kg ± 16.5 % (k=2)



Appendix (Additional assessments outside the scope of SCS108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$51.4 \Omega + 1.2 j\Omega$	
Return Loss	- 34.8 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$46.7 \Omega + 1.4 j\Omega$	
Return Loss	- 28.6 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.213 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	July 30, 2008



DASY5 Validation Report for Head TSL

Date: 18.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1003

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used: f = 1750 MHz; $\sigma = 1.37 \text{ S/m}$; $\varepsilon_r = 39.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

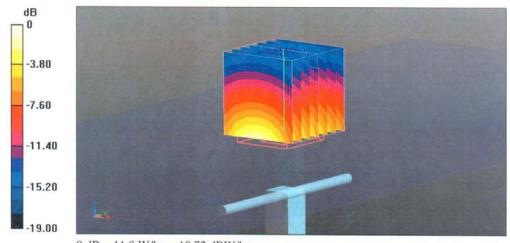
- Probe: ES3DV3 SN3205; ConvF(5.23, 5.23, 5.23); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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 = 96.38 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 16.7 W/kg

SAR(1 g) = 9.27 W/kg; SAR(10 g) = 4.93 W/kg

Maximum value of SAR (measured) = 11.8 W/kg



0 dB = 11.8 W/kg = 10.72 dBW/kg



Impedance Measurement Plot for Head TSL

