RTS RIM Testing Services	Appendix for the BlackBerry SAR Report	y® Smartphone Model l	RBN41GW	Page 1(22)
Author Data	Dates of Test	Test Report No	FCC ID:	
Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

APPENDIX D: PROBE & DIPOLE CALIBRATION DATA

RTS RIM Testing Services	Appendix for the BlackBerry SAR Report	y® Smartphone Model l	RBN41GW	Page 2(22)
Author Data	Dates of Test	Test Report No	FCC ID:	
Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

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





S Schweizerischer Kallbrierdienst
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Servizio svizzero di taratura
S wiss 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

Multilateral Agreement for the recognition of calibration certificates

Client RIM

Certificate No: ET3-1642_Jan07

Object	ET3DV6 - SN:1	642			
Calibration procedure(s)	QA CAL-01.v5 Calibration prod	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes			
Calibration date:	January 15, 200	07	100 300 2 10 53		
Condition of the calibrated item	In Tolerance				
Calibration Equipment used (M&	TE critical for calibration)		i humidity < 70%.		
Calibration Equipment used (M&	TE critical for calibration)	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration		
Calibration Equipment used (M& Primary Standards Power meter E4419B	TE critical for calibration) ID # GB41293874	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00567)	Scheduled Calibration Apr-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A	TE critical for calibration) ID # GB41293874 MY41495277	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557)	Scheduled Calibration Apr-07 Apr-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557)	Scheduled Calibration Apr-07 Apr-07 Apr-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 cB Altenuator	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c)	Cal Date (Calibrated by, Cartificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 cB Attenuator Reference 20 dB Attenuator	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Apr-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 cB Attenuator Reference 20 dB Attenuator Reference 20 dB Attenuator	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b)	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-08 (METAS, No. 251-00557) 10-Aug-08 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 251-00558)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 o B Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES30V2	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5029 (30b)	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 251-00558) 10-Aug-06 (METAS, No. 217-00593)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Apr-07 Aug-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 cB Attenuator Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES30V2 DAE4	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5056 (20b) SN: S5129 (30b) SN: 3013	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 251-00558) 10-Aug-06 (METAS, No. 217-00593) 4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Jan-08		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 oB Attenuator Reference 20 dB Attenuator Reference Probe ES30V2 DAE4	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: \$5054 (3c) SN: \$5086 (20b) SN: \$55129 (30b) SN: 3013 SN: 654 ID # US3642U01700	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 217-00593) 10-Aug-06 (METAS, No. 217-00593) 4-Jan-07 (SPEAG, No. ES3-3013_Jan07) 21-Jun-06 (SPEAG, No. DAE4-854_Jun08)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Aug-07 Jan-08 Jun-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 oB Attenuator Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 654	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 251-00559) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 217-00593) 4-Jan-07 (SPEAG, No. ES3-3013_Jan07) 21-Jun-06 (SPEAG, No. DAE4-654_Jun08) Check Date (in house)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Jan-08 Jun-07 Scheduled Check		
Calibration Equipment used (M& Primary Standards Power meter E44198 Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C Network Analyzer HP 8753E	TE critical for calibration) ID # GB41293874 MY41495277 MY41498067 SN: S5046 (20b) SN: S5086 (20b) SN: S5086 (20b) SN: 3013 SN: 654 ID # US3542U01700 US37390585 Name	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-06 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 217-00593) 10-Aug-06 (METAS, No. 217-00593) 4-Jan-07 (SPEAG, No. ES3-3013_Jan07) 21-Jun-06 (SPEAG, No. DAE4-854_Jun08) Check Date (in house) 4-Aug-99 (SPEAG, in house check Nov-05)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Jan-08 Jun-07 Scheduled Check In house check: Nov-07		
Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 oB Attenuator Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4	TE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 654 ID # US3642U01700 US37390585	Cal Date (Calibrated by, Certificate No.) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 5-Apr-06 (METAS, No. 251-00557) 10-Aug-05 (METAS, No. 217-00592) 4-Apr-06 (METAS, No. 217-00593) 4-Jan-07 (SPEAG, No. E33-3013, Jan07) 21-Jun-06 (SPEAG, No. DAE4-654_Jun08) Check Date (in house) 4-Aug-99 (SPEAG, in house check Nov-05) 18-Oct-01 (SPEAG, in house check Oct-06)	Scheduled Calibration Apr-07 Apr-07 Apr-07 Aug-07 Aug-07 Jan-08 Jun-07 Scheduled Check In house check; Nev-07 In house check; Oct-07		

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Author Data	Dates of Test	Test Report No	FCC ID:	
Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

Calibration Laboratory of Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland





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

Accreditation No.: SCS 108

Accredited by the Swiss Federal Office of Metrology and Accreditation The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

.....

Glossary:

tissue simulating liquid TSL NORMx,y,z sensitivity in free space

sensitivity in TSL / NORMx,y,z ConF DCP diode compression point Polarization o φ rotation around probe axis

Polarization 9 9 rotation around an axis that is in the plane normal to probe axis (at

measurement center), i.e., 9 = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

- NORMx,y,z: Assessed for E-field polarization 9 = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz; R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E2-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

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RTS RIM Testing Services	Appendix for the BlackBer SAR Report	ry® Smartphone Model	RBN41GW	Page 4(22)
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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

January 15, 2007

Probe ET3DV6

SN:1642

Manufactured: November 7, 2001 Last calibrated: January 19, 2006 Recalibrated: January 15, 2007

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

ET3DV6 SN:1642 January 15, 2007

DASY - Parameters of Probe: ET3DV6 SN:1642

Sensitivity in Free Space ^A		Diode C	ompression ^B	
NormX	1.69 ± 10.1%	$\mu V/(V/m)^2$	DCP X	94 mV
NormY	1.86 ± 10.1%	$\mu V/(V/m)^2$	DCP Y	96 mV
NormZ	1.62 ± 10.1%	$\mu V/(V/m)^2$	DCP Z	95 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Cente	er to Phantom Surface Distance	3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	5.5	2.5
SAR _{be} [%]	With Correction Algorithm	0.3	0.2

TSL 1810 MHz Typical SAR gradient: 10 % per mm

Sensor Cente	r to Phantom Surface Distance	3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	12.3	8.1
SAR _{be} [%]	With Correction Algorithm	0.6	0.3

Sensor Offset

Probe Tip to Sensor Center 2.7 mm

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%.

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1

^A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Page 8).

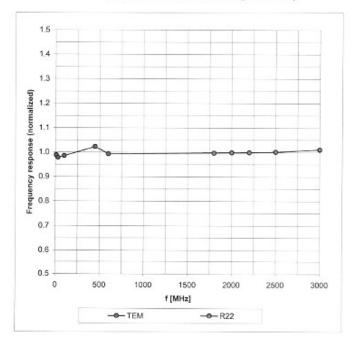
⁸ Numerical linearization parameter; uncertainty not required.

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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

January 15, 2007

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

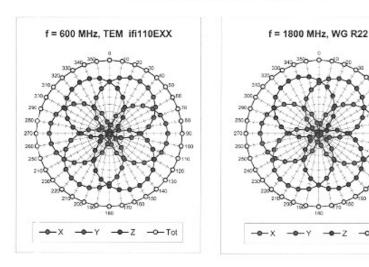
Certificate No: ET3-1642_Jan07

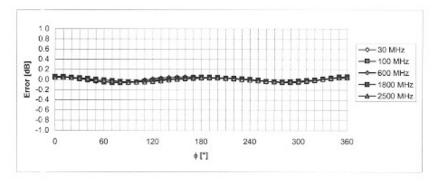
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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

January 15, 2007

Receiving Pattern (ϕ), $\vartheta = 0^{\circ}$





Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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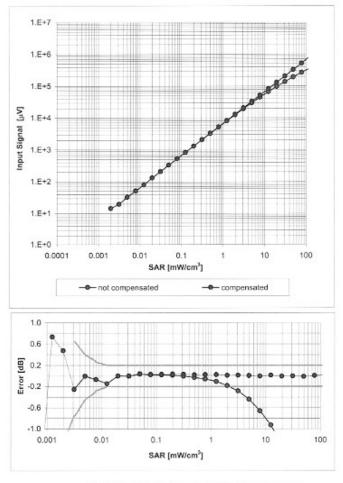
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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

January 15, 2007

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)



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

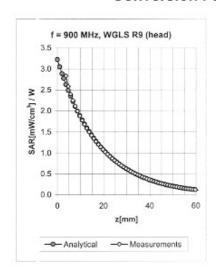
Certificate No: ET3-1642_Jan07

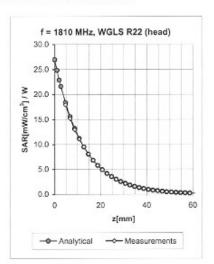
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January 15, 2007

Conversion Factor Assessment





f [MHz]	Validity [MHz] ^C	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	$0.97 \pm 5\%$	0.31	2.70	6.41 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.56	2.48	5.28 ± 11.0% (k=2)
900	±50/±100	Body	55.0 ± 5%	1.05 ± 5%	0.33	2.72	6.16 ± 11.0% (k=2)
1810	±50/±100	Body	53.3 ± 5%	$1.52 \pm 5\%$	0.65	2.61	4.78 ± 11.0% (k=2)

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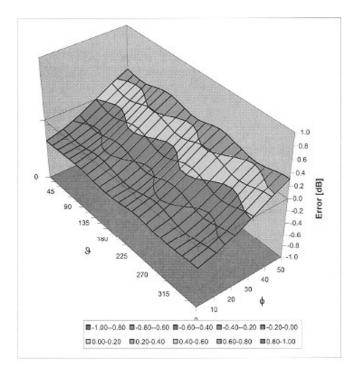
^C The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

January 15, 2007

Deviation from Isotropy in HSL

Error (¢, ३), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

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Appendix for the BlackBerry® Smartphone Model RBN41GW 11(22) **SAR Report RIM Testing Services** Author Data Dates of Test Test Report No FCC ID: RTS-0510-0706-03 L6ARBN40GW **Shahriar Ninad** May 23-June 01, 2007

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





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Accredited by the Swiss Federal Office of Metrology and Accreditation The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates Accreditation No.: SCS 108

RIM Client

Certificate No: D835V2-446 Jan07

CALIBRATION CERTIFICATE Object D835V2 - SN: 446 QA CAL-05.v6 Calibration procedure(s) Calibration procedure for dipole validation kits Calibration date: January 8, 2007 In Tolerance Condition of the calibrated item This calibration certificate documents the tracesbility 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 (Calibrated by, Certificate No.) Scheduled Calibration Power meter EPM-442A GB37480704 03-Oct-06 (METAS, No. 217-00608) Oct-07 Power sensor HP 8481A US37292783 03-Oct-06 (METAS, No. 217-00608) Oct-07 Reference 20 dB Attenuator SN: 5086 (20g) 10-Aug-06 (METAS, No 217-00591) Aug-07 Reference 10 dB Attenuator SN: 5047.2 (10r) 10-Aug-06 (METAS, No 217-00591) Aug-07 Reference Probe ET3DV6 (HF) SN 1507 19-Oct-06 (SPEAG, No. ET3-1507_Oct06) Oct-07 DAE4 SN 907 20-Jul-06 (SPEAG, No. DAE4-907_Jul06) Jul-07 Secondary Standards Check Date (in house) Scheduled Check Power sensor HP 8481A MY41092317 18-Oct-(12 (SPEAG, in house check Oct-05) In house check: Oct-07 RF generator Agrient E4421B MY41000675 11-May-05 (SPEAG, in house check Nov-05) In house check: Nev-07 Network Analyze: HP 8753E US37390585 S4206 18-Oct-01 (SPEAG, in house check Oct-06) In house check: Oct-07 Function Calibrated by: Marcol Fehr Laboratory Technician Katja Pokovic Approved by: Technical Manager Issued: January 9, 2007 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D835V2-446 Jan07

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Author Data	Dates of Test	Test Report No	FCC ID:	
Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

Calibration Laboratory of

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





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Accreditation No.: SCS 108

Accredited by the Swiss Federal Office of Metrology and Accreditation The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

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 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 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.

Certificate No: D835V2-446 Jan07

RTS RIM Testing Services	Appendix for the BlackBerr SAR Report	y® Smartphone Model	RBN41GW	Page 13(22)
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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

Measurement Conditions

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

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
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 %	0.88 mho/m ± 6 %
Head TSL temperature during test	(22.2 ± 0.2) °C		-

SAR result with Head TSL

SAR averaged over 1 cm3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.33 mW / g
SAR normalized	normalized to 1W	9.32 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	9.28 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ² (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.52 mW / g
SAR normalized	normalized to 1W	6.08 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	6.04 mW / g ± 16.5 % (k=2)

¹ Correction to numinal TSL parameters according to d), chapter "SAR Sensitivities"

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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8 Ω - 5.8 jΩ	
Return Loss	- 24.7 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.386 ns
Electrical Bolay (one direction)	1.300 RS

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.

No excessive force must be applied to the dipole arms, because they gight hand not be applied to the dipole.

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	October 24, 2001		

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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

DASY4 Validation Report for Head TSL

Date/Time: 08.01.2007 11:34:46

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 446

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL 900 MHz;

Medium parameters used: f = 835 MHz; $\sigma = 0.88$ mho/m; $\epsilon_t = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 SN1507 (HF); ConvF(6.09, 6.09, 6.09); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn907; Calibrated: 20.07.2006
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA;
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

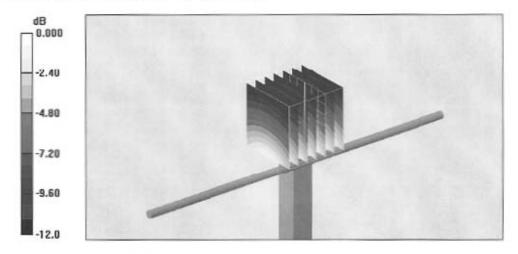
Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm

Reference Value = 55.7 V/m; Power Drift = 0.017 dB

Peak SAR (extrapolated) = 3.43 W/kg

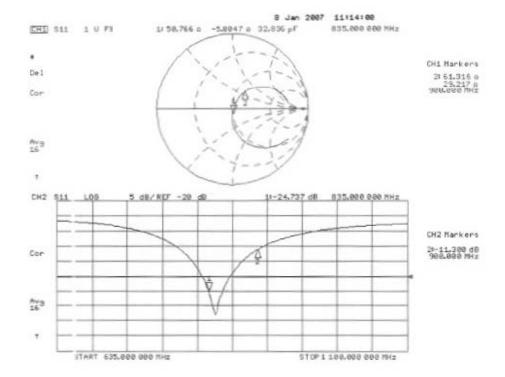
SAR(1 g) = 2.33 mW/g; SAR(10 g) = 1.52 mW/g Maximum value of SAR (measured) = 2.51 mW/g



0 dB = 2.51 mW/g

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Impedance Measurement Plot for Head TSL



RIM Testing Services Appendix for the BlackBerry® Smartphone Model RBN41GW SAR Report Dates of Test May 23-June 01, 2007 Page 17(22) Page 17(22)

Calibration Laboratory of

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





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

Accredited by the Swiss Federal Office of Metrology and Accreditation.

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

Accreditation No.: SCS 108

DIM

Certificate No: D1900V2-545 Jan07

Object	D1900V2 - SN: 545				
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits				
Calibration date:	January 9, 2007	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1900-190		
Condition of the calibrated item	In Tolerance	FED TO BUILDING			
calibration Equipment used (we	LE CHICKLICE CHICKSECT)				
Janorason Equipment used (Ma	ic discard care zeon)				
Primary Standards Power meter EPM-442A Power sensor HP 8481A	ID# GB37490704 US37292783	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608)	Scheduled Calibration Oct-07 Oct-07		
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dli Attenuator Reference 10 db Attenuator Reference Probe ET3DV6	ID# GB37480704 US37292783 SN: 5086 (20g) SN: 5047-2 (10r) SN: 1507	03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591) 19-Oct-06 (SPEAG, No. ET3-1607_Oct06)	Oct-07 Oct-07 Aug-07 Aug-07 Oct-07		
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference 10 dB Attenuator Reference Probe ET30V6 Reference Probe ES30V3	ID# G837480704 US37292783 SN: 5086 (20g) SN: 5047.2 (10r)	03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00605) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591)	Oct-07 Oct-07 Aug-07 Aug-07		
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dll Attenuator Reference 10 db Attenuator Reference Probe ET30V6 Reference Probe ES30V3 DAE4	ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 (10r) SN: 1507 SN: 3025	03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No. 217-00591) 10-Aug-06 (METAS, No. 217-00591) 10-Oct-06 (SPEAG, No. ET3-1607_Oct06) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06)	Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Oct-07		
Primary Standards Power meter EPM-442A Power sensor HP 6481A Reference 20 dH Attenuator Reference 10 dB Attenuator	ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 (10r) SN: 1507 SN: 3025 SN 907	03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No. 217-00591) 10-Aug-06 (METAS, No. 217-00591) 10-Oct-06 (SPEAG, No. ET3-1607_Oct06) 19-Oct-06 (SPEAG, No. ES3-3005_Oct06) 20-Jul-06 (SPEAG, No. DAE4-907_sul06)	Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Oct-07 Jul-07 Scheduled Check In house check: Oct-07 In house check: Nov-07		
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference 10 dB Attenuator Reference Probe ET3DV6 Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A RF generator Ag ent E44218	ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047-2 (10r) SN: 1507 SN: 3025 SN 907 ID # MY41092317 MY41090675	03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No. 217-00591) 10-Aug-06 (METAS, No. 217-00591) 10-Oct-06 (SPEAG, No. ET3-1607_Oct06) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06) 20-Jul-06 (SPEAG, No. DAE4-907_bul08) Chnck Date (In House) 18-Oct-02 (SPEAG, in house check Oct-05) 11-May-05 (SPEAG, in house check Nov-05)	Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Oct-07 Oct-07 Jul-07 Scheduled Check In house check: Oct-07 In house check: Nov-07 In house check: Oct-07		
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dli Altenuator Reference Probe ET3DV6 Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A RP generator Agi ent E4421B Network Analyzer HP 8753E	ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 (10r) SN: 1507 SN: 3025 SN 907 ID # MY41092317 MY4109255 US37390585 S4208	03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No. 217-00591) 10-Aug-06 (METAS, No. 217-00591) 10-Oct-06 (SPEAG, No. ET3-1607_Oct06) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06) 20-Jul-06 (SPEAG, No. DAE4-907_Jul06) Check Date (In house) 18-Oct-02 (SPEAG, in house check Oct-05) 18-Oct-01 (SPEAG, in house check Oct-05)	Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Oct-07 Oct-07 Jul-07 Scheduled Check In house check: Oct-07 In house check: Nov-07 In house check: Oct-07		
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference 10 dB Attenuator Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A RF generator Ag ent E4421B	ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 (10r) SN: 1507 SN: 3025 SN 907 ID # MY41092317 MY41090575 US37390585 S4208 Name	03-Oct-06 (METAS, No. 217-00608) 03-Oct-08 (METAS, No. 217-00608) 10-Aug-06 (METAS, No. 217-00609) 10-Aug-06 (METAS, No. 217-00501) 10-Oct-06 (SPEAG, No. ET3-1607_Oct06) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06) 20-Jul-06 (SPEAG, No. DAE4-907_Jul06) Chrick Date (In house) 18-Oct-02 (SPEAG, in house check Oct-05) 11-May-05 (SPEAG, in house check Oct-05) 18-Oct-01 (SPEAG, in house check Oct-06)	Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Oct-07 Oct-07 Jul-07 Scheduled Check In house check: Oct-07 In house check: Nov-07 In house check: Oct-07		

Certificate No: D1900V2-545_Jan07

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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

Calibration Laboratory of

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





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

Accreditation No.: SCS 108

Accredited by the Swiss Federal Office of Mehology and Accreditation 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:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 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.

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Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

Measurement Conditions

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

DASY Version	DASY4	
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan Resolution	dx, dy = 15 mm	
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	38.8 ± 6 %	1.43 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C		_

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	9.49 mW / g
SAR normalized	normalized to 1W	38.0 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	37.0 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	4.98 mW / g
SAR normalized	normalized to 1W	19.9 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	19.6 mW / g ± 16.5 % (k=2)

¹ Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.0 Ω + 0.2 JΩ	
Return Loss	- 34.1 dB	

General Antenna Parameters and Design

lectrical Delay (one direction)	1.197 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.

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 November 15, 2001		
Manufactured on			

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Author Data	Dates of Test	Test Report No	FCC ID:	
Shahriar Ninad	May 23-June 01, 2007	RTS-0510-0706-03	L6ARBN40	GW

DASY4 Validation Report for Head TSL

Date/Time: 09.01.2007 12:59:52

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:545

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

Medium: HSL U10 BB;

Medium parameters used: f = 1900 MHz; $\sigma = 1.43$ mho/m; $\epsilon_t = 38.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

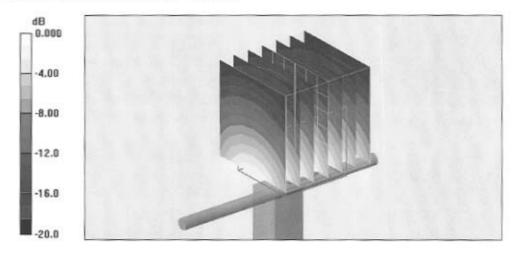
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 SN1507 (HF); ConvF(4.97, 4.97, 4.97); Calibrated: 19.10.2006
- Sens or-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn907; Calibrated: 20.07.2006
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 90.8 V/m; Power Drift = 0.018 dB Peak SAR (extrapolated) = 16.5 W/kg SAR(1 g) = 9.49 mW/g; SAR(10 g) = 4.98 mW/g Maximum value of SAR (measured) = 10.7 mW/g



0 dB - 10.7mW/g

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Impedance Measurement Plot for Head TSL

