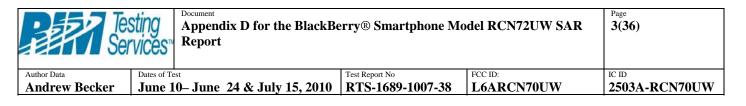
Text Ser	sting vices™	Appendix D for the BlackBe Report	Page 1(36)		
Author Data	Dates of Te	t Test Report No FCC ID:			IC ID
Andrew Becker	June 1	0-June 24 & July 15, 2010	2503A-RCN70UW		

## APPENDIX D: PROBE & DIPOLE CALIBRATION DATA

Services <sup>®</sup> Rej	pendix D for the Blac port			2(36)
Dates of Test           Becker         June 10– J	une 24 & July 15, 20	Test Report No <b>RTS-1689-1007-38</b>	FCC ID: L6ARCN70UW	іс ір 2503A-RCN
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#### Calibration Laboratory of

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



- S Schweizerischer Kalibrierdienst
- C Service suisse d'étalonnage
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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

#### Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization $\phi$	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) 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

#### 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 E<sup>2</sup>-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 with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z; A, B, C are numerical linearization parameters assessed based on the data of
  power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the
  maximum calibration range expressed in RMS voltage across the diode.
- 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 NORMs, 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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Tex Ser	sting vices <sup>w</sup>	Appendix D for the BlackBe Report	Page 4(36)			
Author Data	Dates of Te	st	Test Report No FCC ID:			
Andrew Becker	June 1	0– June 24 & July 15, 2010				

December 11, 2009

# Probe ES3DV3

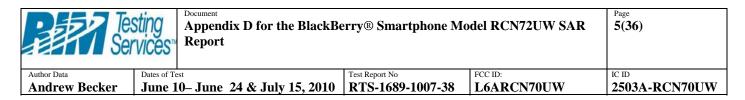
## SN:3225

Manufactured: Calibrated: September 1, 2009 December 11, 2009

Calibrated for DASY Systems (Note: non-compatible with DASY2 system!)

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## DASY - Parameters of Probe: ES3DV3 SN:3225

#### **Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $(\mu V/(V/m)^2)^A$	1.26	1.22	1.32	± 10.1%
DCP (mV) <sup>8</sup>	92.3	94.8	92.7	

#### **Modulation Calibration Parameters**

UID	Communication System Name	PAR		A dB	B dBuV	с	VR mV	Unc <sup>E</sup> (k=2)
10000	cw	0.00	x	0.00	0.00	1.00	300.0	± 1.5%
			Y	0.00	0.00	1.00	300.0	
			z	0.00	0.00	1.00	300.0	

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%.

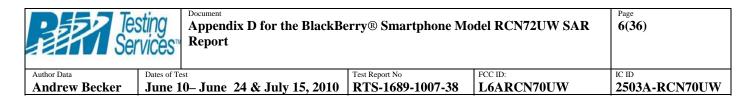
<sup>A</sup> The uncertainties of NormX, Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6).

<sup>8</sup> Numerical linearization parameter: uncertainty not required.

e Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

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## DASY - Parameters of Probe: ES3DV3 SN:3225

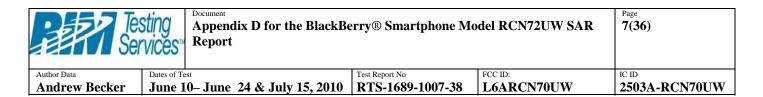
#### Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] <sup>C</sup>	Permittivity	Conductivity	ConvF X Co	nvFY Cor	wF Z	Alpha	Depth Unc (k=2)
900	± 50 / ± 100	41.5±5%	0.97 ± 5%	6.12	6.12	6.12	0.99	1.07 ± 11.0%
1810	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	5.14	5.14	5.14	0.46	1.60 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	4.96	4.96	4.96	0.47	1.57 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	4.53	4.53	4.53	0.41	1.89 ± 11.0%

<sup>C</sup> 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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## DASY - Parameters of Probe: ES3DV3 SN:3225

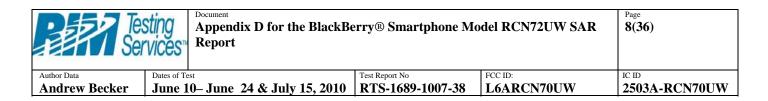
#### Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz] <sup>C</sup>	Permittivity	Conductivity	ConvFX Co	nvFY Co	nvF Z	Alpha	Depth Unc (k=2
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	5.97	5.97	5.97	0.98	1.12 ± 11.0%
1810	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.90	4.90	4.90	0.35	2.07 ± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.83	4.83	4.83	0.32	2.45 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	4.32	4.32	4.32	0.74	1.27 ± 11.0%

<sup>C</sup> 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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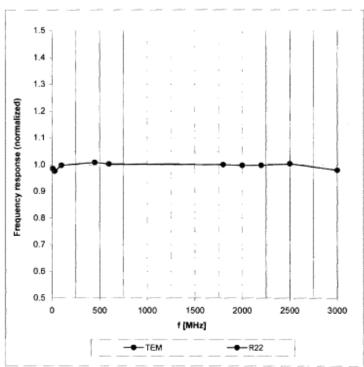
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## Frequency Response of E-Field

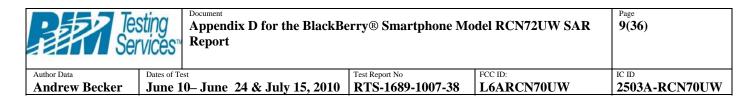
(TEM-Cell:ifi110 EXX, Waveguide: R22)



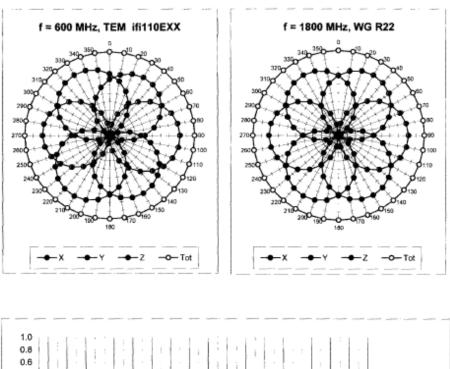
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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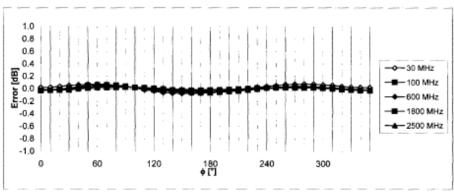
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## Receiving Pattern ( $\phi$ ), $\vartheta = 0^{\circ}$



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

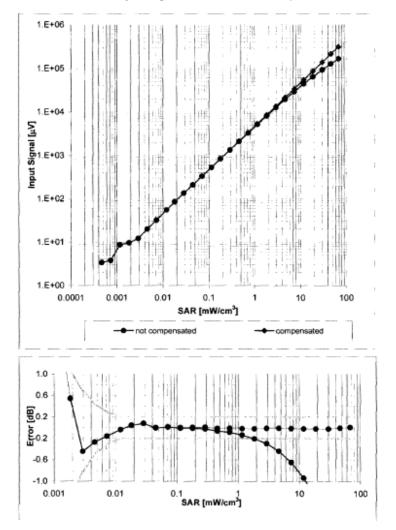
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Author Data	Dates of Te	st	IC ID				
Andrew Becker	June 1	0– June 24 & July 15, 2010	June 24 & July 15, 2010         Test Report No         FCC ID:           L6ARCN70UW         FCC ID:         FCC ID:				

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## Dynamic Range f(SAR<sub>head</sub>) (Waveguide R22, f = 1800 MHz)



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

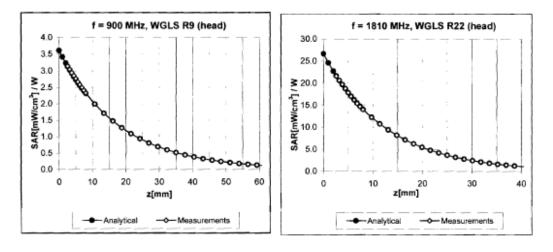
Certificate No: ES3-3225\_Dec09

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Tex Ser	sting vices"	Appendix D for the BlackBe Report	Appendix D for the BlackBerry® Smartphone Model RCN72UW SAR			
Author Data	Dates of Te	est	t Test Report No FCC ID:			
Andrew Becker	June 1	0-June 24 & July 15, 2010	2503A-RCN70UW			

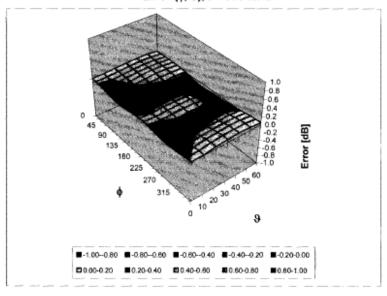
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## **Conversion Factor Assessment**

## **Deviation from Isotropy in HSL**

Error (\$, 9), f = 900 MHz



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

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Author Data	Dates of Te	est	IC ID		
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## **Other Probe Parameters**

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4.0 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

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Author Data Andrew Becker	Dates of Test June 10– June 24 &	T 1 15 0010	Test Report No	ECC ID	
		July 15, 2010	RTS-1689-1007-38	FCC ID: L6ARCN70UW	IC ID 2503А-RCN70UV
	Calibration Laboratory Schmid & Partner	y of		S Schweizerischer Kalibrierdien C Service suisse d'étalonnage	st
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	Client RTS ( RIM Test			cate No: D835V2-446_Jan09	
	CALIBRATION C				
	CALIDICATION	ERTITIOATE			
	Object	D835V2 - SN: 44	6		
	Calibration procedure(s)	QA CAL-05.v7 Calibration proce	dure for dipole validation kit	\$	
	Calibration date:	January 05, 2009			
	Condition of the calibrated item	In Tolerance			
			onal standards, which realize the phys robability are given on the following pa		
	All calibrations have been conduct		y facility: environment temperature (2)	2 ± 3)*C and humidity < 70%.	
	Primary Standards Power meter EPM-442A	ID # G837480704	Cal Date (Certificate No.) 08-Oct-08 (No. 217-00898)	Scheduled Calibration Oct-09	
	Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09	
	Reference 20 dB Attenuator	SN: 5086 (20g)	01-Jul-08 (No. 217-00864)	90-lut	
	Meleterine to do Mileinator		The second se	1.1.00	
	Type-N mismatch combination	SN: 5047.2 / 06327	01-Jul-08 (No. 217-00867)	-1ul-09	
	Type-N mismatch combination Reference Probe ES3DV2	SN: 3025	28-Apr-08 (No. ES3-3025_Apr08)	Apr-09	
	Type-N mismatch combination				
	Type-N mismatch combination Reference Probe ES3DV2	SN: 3025	28-Apr-08 (No. ES3-3025_Apr08)	Apr-09	
	Type-N mismatch combination Reference Probe ES3DV2 DAE4 Secondary Standards Power sensor HP 8481A	SN: 3025 SN: 601 ID # MY41092317	28-Apr-08 (No. ES3-3025_Apr08) 14-Mar-08 (No. DAE4-601_Mar08) Check Date (in house) 18-Oct-02 (in house check Oct-07)	Apr-09 Mar-09 Scheduled Check In house check: Oct-09	_
	Type-N mismatch combination Reference Probe ES3DV2 DAE4 Secondary Standards	SN: 3025 SN: 601	28-Apr-08 (No. ES3-3025_Apr08) 14-Mar-08 (No. DAE4-601_Mar08) Check Date (in house)	Apr-09 Mar-09 Scheduled Check	_

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Page 1 of 6

Laboratory Technician

Technical Manager

Issued: January 7, 2009

on Kastrati

Katja Pokovic

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Calibrated by:

Approved by:

Certificate No: D835V2-446\_Jan09

Service Servic	Sting VICES <sup>TI</sup> Appendix D for the BlackB Report	erry® Smartphone M	odel RCN72UW SAR	Page 14(36)
Author Data Andrew Becker	Dates of Test June 10– June 24 & July 15, 2010	Test Report No RTS-1689-1007-38	FCC ID: L6ARCN70UW	іс ір 2503А-RCN70UW

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



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- Swiss Calibration Service

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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 1528-2003, "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) 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) 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) DASY4/5 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.

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Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	June 10– June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### Measurement Conditions

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

DASY Version	DASY5	V5.0
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	41.3 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature during test	(21.5±0.2) °C		

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.40 mW / g
SAR normalized	normalized to 1W	9.60 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	9.50 mW /g ± 17.0 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.58 mW / g
SAR normalized	normalized to 1W	6.32 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	6.27 mW /g ± 16.5 % (k=2)

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

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	esting ervices"	Appendix D for the BlackB Report	erry® Smartphone Mo	odel RCN72UW SAR	Page <b>16(36)</b>
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Andrew Becker	June 1	0– June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.8 Ω - 6.9 jΩ	
Return Loss	- 23.3 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.385 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	
Manufactured on	October 24, 2001	

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	esting ervices™	Appendix D for the BlackBo Report	erry® Smartphone Mo	odel RCN72UW SAR	Page 17(36)
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Andrew Becker	June 1	0– June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### DASY5 Validation Report for Head TSL

Date/Time: 05.01.2009 10:38:06

Test Laboratory: SPEAG, Zurich, Switzerland

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

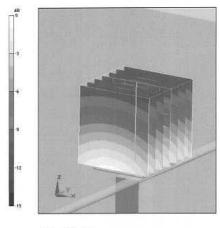
Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1 Medium: HSL 900 MHz Medium parameters used: f = 835 MHz;  $\sigma$  = 0.91 mho/m;  $\varepsilon_r$  = 41.1;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 SN3025; ConvF(5.97, 5.97, 5.97); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

## Pin=250mW; dip=15mm; dist=3.4mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.7 V/m; Power Drift = 0.024 dBPeak SAR (extrapolated) = 3.54 W/kgSAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.58 mW/gMaximum value of SAR (measured) = 2.7 mW/g



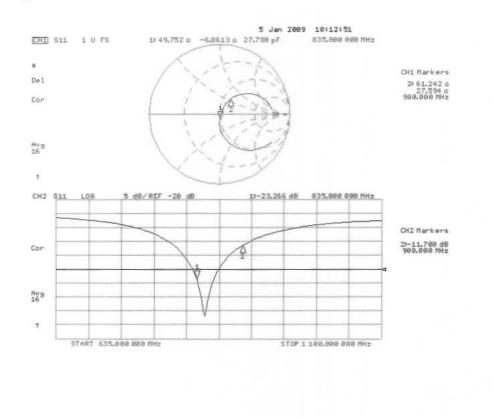
 $0 \, dB = 2.7 mW/g$ 

Certificate No: D835V2-446\_Jan09

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Andrew Becker	June 1	0-June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### Impedance Measurement Plot for Head TSL



Certificate No: D835V2-446\_Jan09

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			FOCID	LC ID
Becker June 10– June	e 24 & July 15, 20		FCC ID: L6ARCN70UW	IC ID 2503A-RCN
Calibration Laborator Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurio		IAC MRA	S Schweizerischer Kalibri C Service suisse d'étalom Servizio svizzero di tara Swiss Calibration Servi	nage atura
Accredited by the Swiss Accre The Swiss Accreditation Servic Multilateral Agreement for the	is one of the signatorie	s to the EA	tation No.: SCS 108	
Client RTS (RIM Test			ate No: D1800V2-2d020_	Jan09
CALIBRATION	CERTIFICATE			
Object	D1800V2 - SN: 2	d020		
Calibration procedure(s)	QA CAL-05.v7 Calibration proce	dure for dipole validation kits		
	and the second sec		and the second se	
Calibration date:	January 06, 2009	1		
Condition of the calibrated item	In Tolerance	onal standards, which realize the physic		
Condition of the calibrated item This calibration certificate docum The measurements and the unce All calibrations have been condu Calibration Equipment used (MS) Primary Standards	In Tolerance ents the traceability to nati- strainties with confidence p cted in the closed laborator TE critical for calibration)	onal standards, which realize the physic robability are given on the following pag y facility: environment temperature (22 s Cal Date (Calibrated by, Certificate N	es and are part of the certificate. ± 3)°C and humidity < 70%. No.) Scheduled Calibratic	n.
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Condition of the calibrated item This calibration certificate docum The measurements and the unce All calibrations have been condu Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination	In Tolerance ends the traceability to nati estainties with confidence p cted in the closed laborator TE critical for calibration) ID # GB37460704 US37292783 SN: 5085 (20g) SN: 5047.2 / 05327	conal standards, which realize the physic robability are given on the following page y facility: environment temperature (22 : Cal Date (Calibrated by, Certificate N 08-Oct-08 (No. 217-00898) 08-Oct-08 (No. 217-00898) 01-Jul-08 (No. 217-00864) 01-Jul-08 (No. 217-00867)	es and are part of the certificate. ± 3)°C and humidity < 70%. (o.) Scheduled Calibratic Oct-09 Oct-09 Jul-09 Jul-09 Jul-09	201
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Andrew Becker	June 1	0-June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

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



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  - Servizio svizzero di taratura
  - Swiss Calibration Service

Accreditation No.: SCS 108

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#### 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 1528-2003, "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) 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) 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) DASY4/5 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.

Certificate No: D1800V2-2d020 Jan09

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Andrew Becker	June 1	0– June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### **Measurement Conditions**

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

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1800 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 %	1.40 mho/m ± 6 %
Head TSL temperature during test	(21.6 ± 0.2) <sup>≠</sup> C		

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	250 mW input power	9.57 mW /g
SAR normalized	normalized to 1W	38.3 mW /g
SAR for nominal Head TSL parameters 1	normalized to 1W	38.2 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.04 mW /g
SAR normalized	normalized to 1W	20.2 mW /g
SAR for nominal Head TSL parameters 1	normalized to 1W	20.1 mW / g ± 16.5 % (k=2)

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

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	lesting ervices™	Appendix D for the BlackB Report	erry® Smartphone Mo	odel RCN72UW SAR	Page 22(36)
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#### Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	45.3 Ω - 7.5 jΩ	
Return Loss	- 20.6 dB	

#### **General Antenna Parameters and Design**

Electrical Delay (one direction)	1.215 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	
Manufactured on	September 07, 2001	

Certificate No: D1800V2-2d020\_Jan09

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	esting ervices <sup>™</sup>	Appendix D for the BlackBe Report	erry® Smartphone Mo	odel RCN72UW SAR	Page 23(36)
Author Data	Dates of Te	st	Test Report No	FCC ID:	IC ID
Andrew Becker	June 1	0– June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### **DASY5 Validation Report for Head TSL**

Date/Time: 06.01.2009 11:22:58

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: SN:2d020

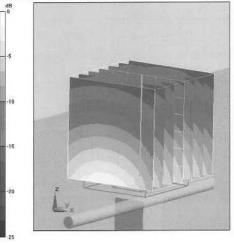
Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1 Medium: HSL U10 BB Medium parameters used: f = 1800 MHz;  $\sigma = 1.4$  mho/m;  $\epsilon_r = 39.6$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

- Probe: ES3DV2 SN3025; ConvF(4.96, 4.96, 4.96); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 5.C (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 3.4 Build 45

#### Pin = 250 mW; dip = 10 mm, scan at 3.4mm 2/Zoom Scan (dist=3.4mm, probe 0deg)

(7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 91.8 V/m; Power Drift = 0.036 dB Peak SAR (extrapolated) = 17.6 W/kg SAR(1 g) = 9.57 mW/g; SAR(10 g) = 5.04 mW/g Maximum value of SAR (measured) = 11.2 mW/g



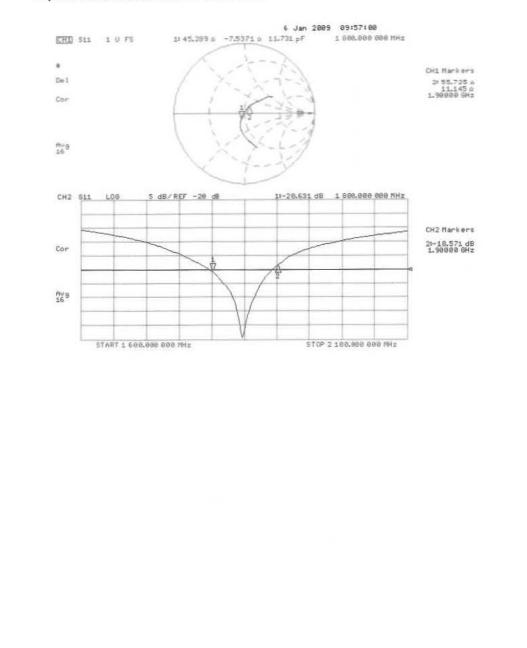
0 dB = 11.2 mW/g

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Test Ser	sting vices <sup>w</sup>			Page <b>24(36)</b>	
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Andrew Becker	June 1	0-June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### Impedance Measurement Plot for Head TSL



Certificate No: D1800V2-2d020\_Jan09

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r Data	Dates of Test	T	Test Report No	FCC ID:	IC ID
lrew Becker	June 10– June 24 & J		RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70U
	Calibration Laborator Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurio		Hac-MEA (2)	S Schweizerischer C Service suisse d Servizio svizzero S Swiss Calibration	étalonnage di taratura
	Accredited by the Swiss Accred The Swiss Accreditation Servic Multilateral Agreement for the r	e is one of the signato		Accreditation No.: SCS 108	
	Client RTS (RIM Test	ling Services)	SCHEME AND	Certificate No: D1900V2-545	5-Jan09
	CALIBRATION	CERTIFICAT	ΓE		
	Object	D1900V2 - SN	545	The second second	
	Calibration procedure(s)	QA CAL-05.v7 Calibration pro	cedure for dipole valida	tion kits	
	Calibration date:	January 06, 20	09		
	Condition of the calibrated item	In Tolerance	1000	Part of the Part o	
	The measurements and the unce	ertainties with confidence	e probability are given on the foll story faoility: environment temper	the physical units of measurements owing pages and are part of the cert rature (22 ± 3)°C and humidity < 70%	ficate.
	Primary Standards	ID#	Cal Date (Calibrated by, C	ertificate No.) Scheduled Ci	alibration
	Primary Standards Power meter EPM-442A	GB37480704	08-Oct-08 (No. 217-00898	Contraction of the second s	ALL
	Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898		
	Reference 20 dB Attenuator	SN: 5085 (20g)	01-Jul-08 (No. 217-00864)		
	Type-N mismatch combination	SN: 5047.2 / 06327	그 집중하다는 것 같은 것이라는 것 같았다. 것이라 같이 많다.		
	Reference Probe ES3DV2 DAE4	SN: 3025 SN: 601	28-Apr-08 (No. ES3-3025_ 14-Mar-08 (No. DAE4-601_		
	Secondary Standards	ID#	Check Date (in house)	Scheduled Ci	heck
	Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check		NG 8327 C 021
	RF generator R&S SMT-06 Network Analyzer HP 8753E	100005 US37390585 S420	4-Aug-99 (in house check ( 5 18-Oct-01 (in house check		Sec. 23206-241
		Name	Function	Signature	(
	Calibrated by:	Jelon Kastras	Laboratory Tex	cinicain fre U	i-
	Approved by:	Kalja Pokovic	Technical Man	agar 2	- les
		No. Animeter Con. Pro-			

Text Ser	sting ™ices™			Page 26(36)	
Author Data	Dates of Te	st	IC ID		
Andrew Becker	June 1	0– June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

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



- Servizio svizzero di taratura
- Swiss Calibration Service

Accreditation No.: SCS 108

- N

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 1528-2003, "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) DASY4/5 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.

Certificate No: D1900V2-545\_Jan09

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#### **Measurement Conditions**

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

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
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	39.2 ± 6 %	1.47 mho/m ± 8 %
Head TSL temperature during test	(21.0 ± 0.2) °C	_	

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	250 mW input power	10.2 mW / g
SAR normalized	normalized to 1W	40.8 mW/g
SAR for nominal Head TSL parameters 1	normalized to 1W	39.5 mW/g±17.0 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.29 mW / g
SAR normalized	normalized to 1W	21.2 mW/g
SAR for nominal Head TSL parameters 1	normalized to 1W	20.8 mW / g ± 16.5 % (k=2)

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

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Andrew Becker	June 1	0– June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

Appendix

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.9 Ω + 1.9 jΩ
Return Loss	- 34.4 dB

#### General Antenna Parameters and Design

Electrical 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
Manufactured on	November 15, 2001

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Andrew Becker	June 1	0– June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### **DASY5 Validation Report for Head TSL**

Date/Time: 06.01.2009 13:17:58

Test Laboratory: SPEAG, Zurich, Switzerland

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

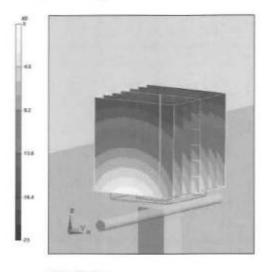
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium: HSL U10 BB Medium parameters used: f = 1900 MHz;  $\sigma = 1.47$  mho/m;  $\epsilon_r = 39.4$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC)

#### DASY5 Configuration:

- Probe: ES3DV2 SN3025; ConvF(4.9, 4.9, 4.9); Calibrated: 28.04.2008
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 14.03.2008
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.0 Build 120; SEMCAD X Version 13.4 Build 45

#### Pin = 250 mW; dip = 10 mm, scan at 3.4mm/Zoom Scan (dist=3.4mm, probe 0deg)

(7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 92.5 V/m; Power Drift = 0.037 dB Peak SAR (cxtrapolated) = 19 W/kg SAR(1 g) - 10.2 mW/g; SAR(10 g) - 5.29 mW/g Maximum value of SAR (measured) = 12 mW/g



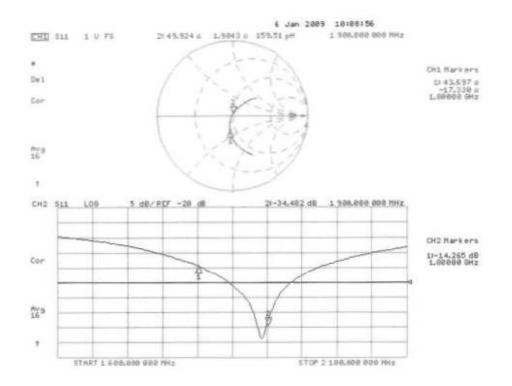
0 dB = 12 mW/g

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Andrew Becker	June 1	0-June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### Impedance Measurement Plot for Head TSL



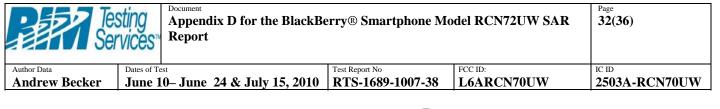
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Becker	Dates of Test June 10– June	e 24 & July 15, 20	Test Report No <b>RTS-1689-1007-38</b>	FCC ID: L6ARCN70UW	IC ID 2503A-RCN
Schmi Engi	ation Laboratory d & Partner neering AG sstrasse 43, 8004 Zurich	-	IDC MRA	S Schweizerischer Kalibri C Service suisse d'étalom Servizio svizzero di tara S Swiss Calibration Servi	nage atura
The Swi		tion Service (SAS) is one of the signatories cognition of calibration of	to the EA	ditation No.: SCS 108	
Client	RTS (RIM Testi	ng Services)	Certifi	cate No: D2450V2-747_No	909
CAL	IBRATION C	ERTIFICATE	te that is a t	Edda Franklin	
Object		D2450V2 - SN: 74	17,	1.1.4.4.4.4.4	
Calibrat	ion procedure(s)	QA CAL-05.v7 Calibration proces	dure for dipole validation ki	ts	
Celibrat		マニスベントリントリ	AN THE STOLES STOLEN	CMMERS Card Pro 5 7 8.	3032
This cal	ion date: ibration certificate docum	November 11, 20 ents the traceability to natio	09 //// ///////////////////////////////	sical units of measurements (SI).	89
The me All calib	ibration certificate docum asurements and the unce rations have been conduc	ents the traceability to nation rtainties with confidence pr cted in the closed laborator		ages and are part of the certificate.	
The me All calib Calibrat	ibration certificate docum asurements and the unce rations have been conduc ion Equipment used (M&1	ents the traceability to nation rtainties with confidence pr cted in the closed laborator FE critical for calibration)	onal standards, which realize the phy obability are given on the following p y facility: environment temperature (2	ages and are part of the cartificate. 22 ± 3)°C and humidity < 70%.	
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The me All calib Calibrat Primary Power r Power s	ibration certificate docum asurements and the unce rations have been conduc ion Equipment used (M&1 Standards_ neter EPM-442A iensor HP 8481A	ents the traceability to nation rtainties with confidence pro- cted in the closed laborator FE critical for calibration) ID # GB37480704 US37292783	onal standards, which realize the phy obability are given on the following p y facility: environment temperature (2 <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086)	ages and are part of the certificate. 12 ± 3)°C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10	
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The me All calib Calibrat Primary Power r Power s Referen DAE4 Second Power s RF gen Network	ibration certificate docume asurements and the unce rations have been conduct ion Equipment used (M&1 Standards reter EPM-442A sensor HP 8481A cce 20 dB Attenuator mismatch combination cce Probe ES3DV3 any Standards rensor HP 8481A erator R&S SMT-06 c Analyzer HP 8753E ed by:	ents the traceability to natio rtainties with confidence pr cted in the closed laborator FE critical for calibration) ID # GB37480704 US37282783 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317 100005 US37390585 S4206 Name	nal standards, which realize the phy obability are given on the following p y facility: environment temperature (2 <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. DAE4-601_Mar09) 07-Mar-09 (No. DAE4-601_Mar09) 07-Mar-09 (in house check Oct-09) 18-Oct-02 (in house check Oct-09) 18-Oct-01 (in house check Oct-09) 18-Oct-01 (in house check Oct-09)	ages and are part of the certificate. 22 ± 3)°C and humidity < 70%. Scheduled Calibratic Oct-10 Oct-10 Mar-10 Jun-10 Mar-10 Scheduled Check In house check: Oct In house check: Oct Signature	on t-11 t-11

Certificate No: D2450V2-747\_Nov09

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Calibration Laboratory of

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



8RI

- S Schweizerischer Kalibrierdienst C 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 1528-2003, "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) 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) 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) DASY4/5 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.

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	esting ervices"	Appendix D for the BlackBo Report	erry® Smartphone Mo	odel RCN72UW SAR	Page <b>33(36)</b>
Author Data	Dates of Te	est	Test Report No	FCC ID:	IC ID
Andrew Becker	June 1	0- June 24 & July 15, 2010	RTS-1689-1007-38	L6ARCN70UW	2503A-RCN70UW

#### Measurement Conditions

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

DASY Version	DASY5	V5.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

#### Head TSL parameters

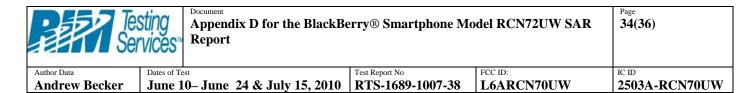
The following parameters and calculations were applied.

	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	39.1 ± 6 %	1.78 mho/m ± 6 %
Head TSL temperature during test	(21.3 ± 0.2) °C		

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.3 mW / g
SAR normalized	normalized to 1W	53.2 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	53.4 mW /g ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	250 mW input power	6.23 mW / g
		6.23 mW / g 24.9 mW / g
SAR measured	250 mW input power	

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#### Appendix

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.9 Ω + 0.9 jΩ	
Return Loss	- 33.9 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.161 ns

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

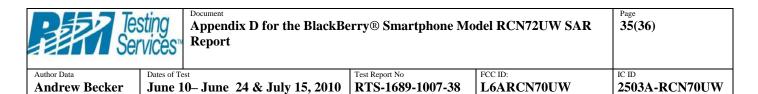
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

#### Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	December 01, 2003	

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#### DASY5 Validation Report for Head TSL

Date/Time: 11.11.2009 15:04:10

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:747

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium: HSL U11 BB Medium parameters used: f = 2450 MHz;  $\sigma = 1.79$  mho/m;  $\varepsilon_r = 39.2$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

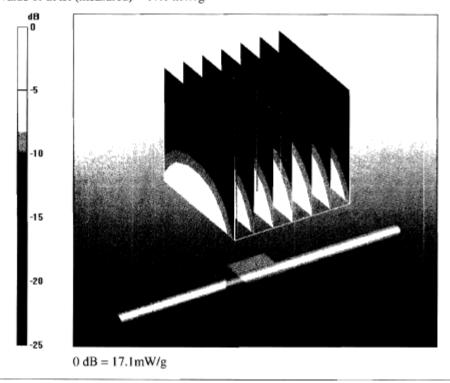
DASY5 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 26.06.2009
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 07.03.2009
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

#### Head/d=10mm, Pin=250 mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mmReference Value = 101.3 V/m; Power Drift = 0.067 dB Peak SAR (extrapolated) = 27 W/kg SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.23 mW/g

Maximum value of SAR (measured) = 17.1 mW/g

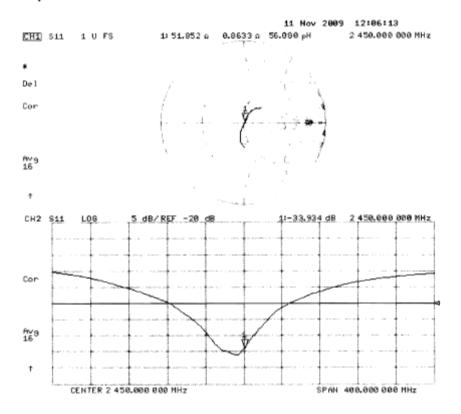


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#### Impedance Measurement Plot for Head TSL



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