Testing Services™	Document Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW SAR Report				Page 1(37)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Apr 13 – July 4, 2011 RTS-2579-1106-34C L6ARDD70UW 2503A-RDD7				
			L6AREM70UW	2503A-RE	M70UW

### APPENDIX D: PROBE & DIPOLE CALIBRATION DATA



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Issued: January 15, 2011



Author Data Andrew Becker

Apr 13 – July 4, 2011

Test Report No RTS-2579-1106-34C

L6ARDD70UW L6AREM70UW

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Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



- Schweizerischer Kalibrierdienst s Service suisse d'étalonnage
- С Servizio svizzero di taratura
- s Swiss Calibration Service

Accreditation No.: SCS 108

FCC ID:

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

Dates of Test

#### 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 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) 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 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, v.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 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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Andrew Becker	Apr 13 – July 4, 2011 RTS-2579-1106-34C L6ARDD70UW 2503A-RDD				
			L6AREM70UW	2503A-RE	M70UW

January 13, 2011

# Probe ES3DV3

## SN:3225

Manufactured: Last calibrated: Recalibrated: September 1, 2009 December 11, 2009 January 13, 2011

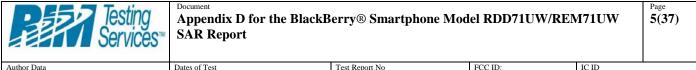
Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

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			L6AREM70UW	2503A-REM70UW

January 13, 2011

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

#### **Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m) <sup>2</sup> ) <sup>A</sup>	1.26	1.21	1.31	± 10.1%
DCP (mV) <sup>8</sup>	102.1	100.8	99.1	

#### **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	х	0.00	0.00	1.00	149.8	± 2.6 %
			Y	0.00	0.00	1.00	148.1	
			Z	0.00	0.00	1.00	110.7	

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>e</sup> Numerical linearization parameter, uncertainty not required.

<sup>c</sup> 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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			L6AREM70UW	2503A-REM70UW

January 13, 2011

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

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

f [MHz]	Validity [MHz] <sup>C</sup>	Permittivity	Conductivity	ConvFX Co	nvFY Cor	wF Z	Alpha	Depth Unc (k=2)
750	± 50 / ± 100	41.9 ± 5%	0.89 ± 5%	6.47	6.47	6.47	0.89	1.08 ± 11.0%
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	6.11	6.11	6.11	0.81	1.10 ± 11.0%
1810	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	5.26	5.26	5.26	0.37	1.68 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	4.98	4.98	4.98	0.48	1.51 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	4.60	4.60	4.60	0.52	1.54 ± 11.0%
2600	± 50 / ± 100	39.0 ± 5%	1.96 ± 5%	4.52	4.52	4.52	0.53	1.58 ± 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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ANGREW RECKER   ANT 1 - MIV 4 2011   KIN-25 79-1106-340   L.6A KUU 2011 W   2503A-KUU 2011	$\mathbf{D}/\mathbf{U}\mathbf{U}\mathbf{W}$	2503A-RDD7	L6ARDD70UW	RTS-2579-1106-34C	Apr 13 – July 4, 2011	Andrew Becker
	$\mathbf{D}$	2303A-KDD/	LUARDD/UU W	KIS-23/9-1100-34C	Apr 15 – July 4, 2011	Andrew Decker

January 13, 2011

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

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

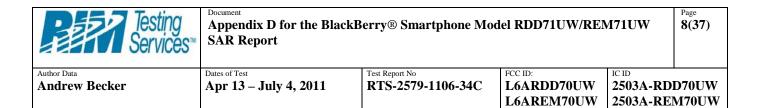
f (MHz)	Validity [MHz] <sup>C</sup>	Permittivity	Conductivity	ConvF X Co	nvFY Cor	ıvF Z	Alpha	Depth Unc (k=2)
750	± 50 / ± 100	$55.5 \pm 5\%$	0.96 ± 5%	6.30	6.30	6.30	0.76	1.17 ± 11.0%
900	± 50 / ± 100	$55.0 \pm 5\%$	1.05 ± 5%	6.12	6.12	6.12	0.72	1.20 ±11.0%
1810	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.88	4.88	4.88	0.26	2.70 ± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.89	4.89	4.89	0.33	2.28 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	$1.95 \pm 5\%$	4.43	4.43	4.43	0.99	1.04 ± 11.0%
2600	± 50 / ± 100	52.5 ± 5%	2.16 ± 5%	4.29	4.29	4.29	0.99	1.05 ± 11.0%

<sup>©</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.

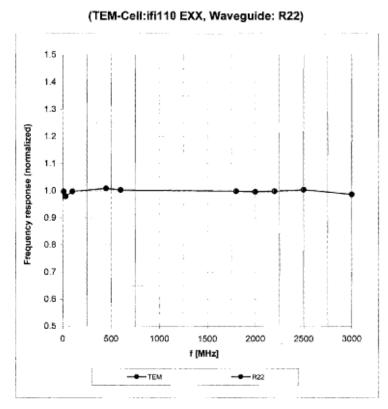
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## Frequency Response of E-Field

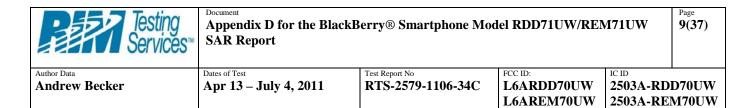


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

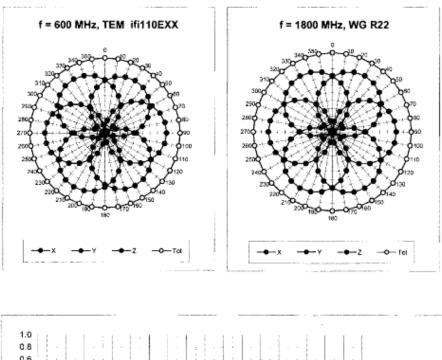
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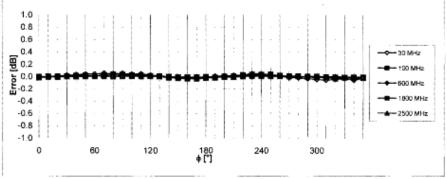
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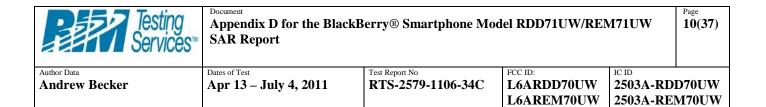
## Receiving Pattern ( $\phi$ ), $\vartheta = 0^{\circ}$



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

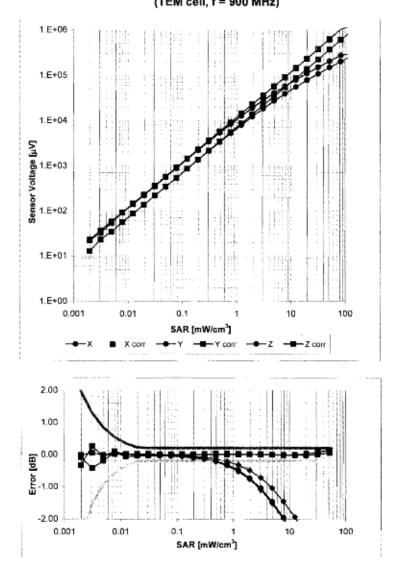
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## Dynamic Range f(SAR<sub>head</sub>) (TEM cell, f = 900 MHz)

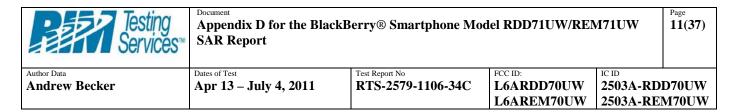


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

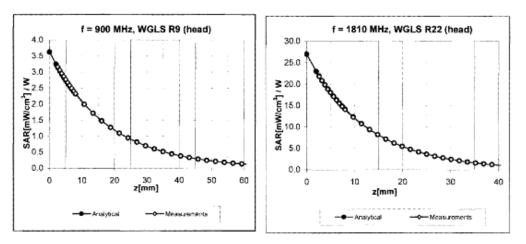
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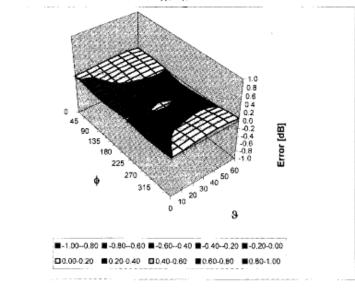
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## Conversion Factor Assessment

## **Deviation from Isotropy in HSL**

Error (4, 3), f = 900 MHz



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

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			L6AREM70UW	2503A-REM70UW

January 13, 2011

## **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 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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Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RD	D70UW
			L6AREM70UW	2503A-RE	M70UW

Services**	Append SAR Re		ackBerry® Smartphone Mo	odel RDD71UW/REM	M71UW Page 14(3
ta ew Becker	Dates of Test Apr 13 –	- July 4, 2011	Test Report No <b>RTS-2579-1106-34C</b>	FCC ID: L6ARDD70UW L6AREM70UW	іс ір 2503A-RDD70U 2503A-REM70U
Calibration La Schmid & Partr Engineering A Zeughausstrasse 43,	ner AG		BC MRA CHARACTER S	Schweizerischer Kalibrierdi Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service	9
	tion Service is	Service (SAS) one of the signatories gnition of calibration of	to the EA	No.: SCS 108	
Client RTS (F	RIM Testing	Services)	Certificate No	: D835V2-446_Jan11	
CALIBRAT	ION CE	RTIFICATE			
Object	C	0835V2 - SN: 446	Branch and a suffer of the surface		
Calibration procedure		QA CAL-05.v8 Calibration proces	dure for dipole validation kits		
Calibration date:	ل	anuary 21, 2011			
		•			
The measurements a	and the uncertain been conducted	the traceability to nationation the traceability to nationation the swith confidence prior to the closed laboratory in the closed laboratory.	anal standards, which realize the physical un obability are given on the following pages ar f facility: environment temperature (22 ± 3)°	nd are part of the certificate.	
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The measurements a All calibrations have to Calibration Equipment Primary Standards Power meter EPM-44 Power sensor HP 848	and the uncertain been conducted nt used (M&TE c 42A 81A	the traceability to natio tities with confidence pr in the closed laboratory ritical for calibration) ID # GB37480704 US37292783	Cal Date (Certificate No.) 06-Oct-10 (No. 217-01266)	d are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-11 Oct-11	
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The measurements a All calibrations have to Calibration Equipmen Primary Standards Power meter EPM-44 Power sensor HP 848 Reference 20 dB Atte Type-N mismatch coo Reference Probe ES3 DAE4	and the uncertain been conducted nt used (M&TE of 42A 81A enuator mbination 3DV3 s	the traceability to nationalise with confidence print in the closed laboratory in the closed laboratory initical for calibration) ID # GB37480704 US37292763 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601	Cal Date (Certificate No.) 06-Oct-10 (No. 217-01266) 06-Oct-10 (No. 217-01266) 06-Oct-10 (No. 217-01266) 03-Mar-10 (No. 217-01158) 30-Mar-10 (No. 217-01162) 30-Apr-10 (No. ES3-3205_Apr10) 10-Jun-10 (No. DAE4-601_Jun10)	Scheduled Calibration Oct-11 Oct-11 Mar-11 Mar-11 Jun-11	
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The measurements a All calibrations have to Calibration Equipmen Primary Standards Power meter EPM-44 Power sensor HP 848 Reference 20 dB Atte Type-N mismatch coor Reference Probe ESC DAE4 Secondary Standards Power sensor HP 844	and the uncertain been conducted nt used (M&TE c 42A 81A enuator mbination 3DV3 s 81A MT-06	the traceability to nationation the closed laboratory in the closed laboratory in the closed laboratory initical for calibration) ID # GB37480704 US37292763 SN: 5066 (20g) SN: 5045 (20g) SN: 5045 SN: 601 ID # MY41092317	Cal Date (Certificate No.) 06-Oct-10 (No. 217-01266) 06-Oct-10 (No. 217-01266) 06-Oct-10 (No. 217-01266) 30-Mar-10 (No. 217-01158) 30-Mar-10 (No. 217-01162) 30-Apr-10 (No. E3-3205_Apr10) 10-Jun-10 (No. DAE4-601_Jun10) Check Date (in house) 18-Oct-02 (in house check Oct-09)	Ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-11 Oct-11 Mar-11 Mar-11 Jun-11 Scheduled Check In house check: Oct-11	
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The measurements a All calibrations have to Calibration Equipment Primary Standards Power meter EPM-44 Power sensor HP 844 Reference 20 dB Atte Type-N mismatch con Reference Probe ES3 DAE4 Secondary Standards Power sensor HP 844 RF generator R&S SI Network Analyzer HP	and the uncertain been conducted nt used (M&TE of 42A 81A enuator mibination 3DV3 s 81A MT-06 2 8753E	the traceability to nationalise with confidence print the closed laboratory in the closed laboratory initical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317 100005 US37390585 S4206 Name	Cal Date (Certificate No.) 06-Oct-10 (No. 217-01266) 06-Oct-10 (No. 217-01266) 06-Oct-10 (No. 217-01266) 06-Oct-10 (No. 217-01266) 30-Mar-10 (No. 217-01158) 30-Mar-10 (No. 217-01162) 30-Apr-10 (No. 217-01162) 30-Apr-10 (No. ES3-3205_Apr10) 10-Jun-10 (No. DAE4-601_Jun10) Check Date (in house) 18-Oct-02 (in house check Oct-09) 4-Aug-99 (in house check Oct-09) 18-Oct-01 (in house check Oct-10) Function	Ad are part of the certificate. C and humidity < 70%. C and humidity < 70%. Oct-11 Oct-11 Mar-11 Mar-11 Jun-11 Scheduled Check In house check: Oct-11 In house check: Oct-11	



Author Data Andrew Becker

Apr 13 – July 4, 2011

Test Report No RTS-2579-1106-34C

L6ARDD70UW 2503A-RDD70UW L6AREM70UW 2503A-REM70UW

IC ID

Calibration Laboratory of

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





Schweizerischer Kalibrierdienst Service suisse d'étalonnage С

Servizio svizzero di taratura Swiss Calibration Service

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Dates of Test

#### 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: D835V2-446\_Jan11

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Accreditation No.: SCS 108

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#### Document Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW SAR Report

Page

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Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RDD	70UW
			L6AREM70UW	2503A-REM	170UW

#### Measurement Conditions

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

DASY5	V52.6
Advanced Extrapolation	
Modular Flat Phantom V4.9	
15 mm	with Spacer
dx, dy, dz = 5 mm	
835 MHz ± 1 MHz	
	Advanced Extrapolation Modular Flat Phantom V4.9 15 mm dx, dy, dz = 5 mm

#### 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 %	0.89 mho/m ± 6 %
Head TSL temperature during test	(21.8 ± 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	2.39 mW / g
SAR normalized	normalized to 1W	9.56 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	9.63 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	1.56 mW / g
SAR normalized	normalized to 1W	6.24 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	6.27 mW /g ± 16.5 % (k=2)

Certificate No: D835V2-446\_Jan11



## Document Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW Page 17(37) SAR Report 17(37)

Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RD	D70UW
			L6AREM70UW	2503A-RE	M70UW

#### Appendix

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.6 Ω - 7.7 jΩ
Return Loss	- 22.2 dB

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.386 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

Certificate No: D835V2-446\_Jan11



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## DASY5 Validation Report for Head TSL

Date/Time: 21.01.2011 10:18:05

Test Laboratory: SPEAG, Zurich, Switzerland

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

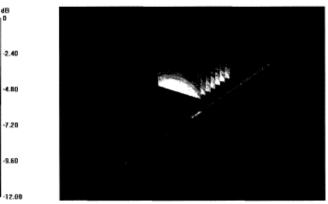
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium: HSL900 Medium parameters used: f = 835 MHz;  $\sigma$  = 0.89 mho/m;  $\epsilon_r$  = 41.2;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

## DASY5 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.03, 6.03, 6.03); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.6.1 Build (408)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595)

## Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement

grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 57.426 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 3.600 W/kg SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.56 mW/g Maximum value of SAR (measured) = 2.790 mW/g



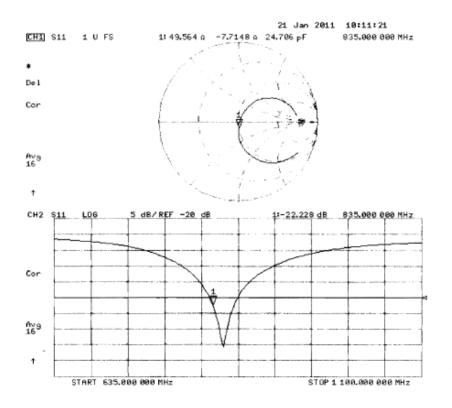
 $0 \, dB = 2.790 \, mW/g$ 

Certificate No: D835V2-446\_Jan11

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Testing Services	Document Appendix D for the Black SAR Report	Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW		Page 19(37)	
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RD	D70UW
			L6AREM70UW	2503A-RE	M70UW

Impedance Measurement Plot for Head TSL



Certificate No: D835V2-446\_Jan11

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Becker	Dates of Test	Test Report No	FCC ID:	IC ID
	Apr 13 – July 4, 2011		L6ARDD70UW L6AREM70UW	2503A-RDD7 2503A-REM
Calibration Labora Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 z		RANKS S	Schweizerischer Kalibriere Service suisse d'étalonnag Servizio svizzero di taratu Swiss Calibration Service	ge
	editation Service (SAS) rvice is one of the signatorie the recognition of calibration	s to the EA	No.: SCS 108	
Client RTS (RIM T	esting Services)	Certificate No	: D1800V2-2d020_Ja	in11
CALIBRATION	I CERTIFICATE			
Object	D1800V2 - SN: 2	d020	Martin Constant	
Calibration procedure(s)		dure for dipole validation kits		
	a second a second find the			
	cuments the traceability to nat	ional standards, which realize the physical uni	its of measurements (SI).	
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Author Data Andrew Becker

Apr 13 – July 4, 2011

Test Report No RTS-2579-1106-34C FCC ID: L6ARDD70UW L6AREM70UW

IC ID 2503A-RDD70UW 2503A-REM70UW

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Calibration Laboratory of

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



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- 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

Dates of Test

#### Glossarv:

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. ٠ 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 ٠ nominal SAR result.

Certificate No: D1800V2-2d020 Jan11

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## Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW SAR Report

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Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RDD70UW
			L6AREM70UW	2503A-REM70UW

#### Measurement Conditions

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

DASY Version	DASY5	V52.6
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	38.6 ± 6 %	1.38 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	9.78 mW / g
SAR normalized	normalized to 1W	39.1 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	39.2 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	5.13 mW / g
SAR normalized	normalized to 1W	20.5 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	20.5 mW /g ± 16.5 % (k=2)



## Document Page Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW 23(37) SAR Report 23(37)

Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RDD70UW
			L6AREM70UW	2503A-REM70UW

#### Appendix

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	46.5 Ω - 7.3 jΩ	
Return Loss	- 21.5 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.216 ns
	A second s

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



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### DASY5 Validation Report for Head TSL

Date/Time: 13.01.2011 12:34:12

Test Laboratory: SPEAG, Zurich, Switzerland

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

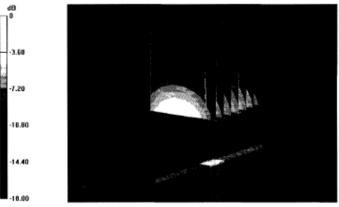
Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1 Medium: HSL U12 BB Medium parameters used: f = 1800 MHz;  $\sigma = 1.38 \text{ mho/m}$ ;  $\varepsilon_r = 38.7$ ;  $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 SN3205; ConvF(5.05, 5.05, 5.05); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010 ٠
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.1 Build (408)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595) ٠

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

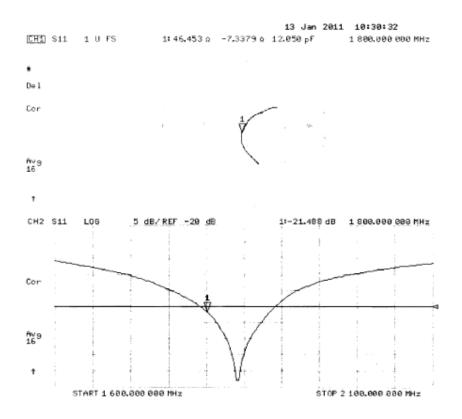
grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 96.654 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 17.902 W/kg SAR(1 g) = 9.78 mW/g; SAR(10 g) = 5.13 mW/gMaximum value of SAR (measured) = 12.051 mW/g



 $0 \, dB = 12.050 \, mW/g$ 

Testing Services					Page <b>25(37)</b>		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID			
Andrew Becker	Apr 13 – July 4, 2011	Apr 13 – July 4, 2011 RTS-2579-1106-34C L6ARDD70UW 2503A-RDD7					
			L6AREM70UW	2503A-RE	M70UW		

Impedance Measurement Plot for Head TSL



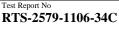
				1	
w Becker		Dates of Test Apr 13 – July 4, 2011	Test Report No <b>RTS-2579-1106-34C</b>	FCC ID: L6ARDD70UW L6AREM70UW	<sup>IC ID</sup> 2503A-RDD70U <sup>T</sup> 2503A-REM70U
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Calib	ration procedure(s)		dure for dipole validation kits		
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Author Data **Andrew Becker** 

Apr 13 – July 4, 2011

Dates of Test



FCC ID: IC ID L6ARDD70UW L6AREM70UW

2503A-RDD70UW 2503A-REM70UW

Calibration Laboratory of

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



- Schweizerischer Kalibrierdienst s Service suisse d'étalonnage
- С 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. ٠ 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 Jan11



#### Document Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW **SAR Report**

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Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RDI	D70UW
			L6AREM70UW	2503A-REN	470UW

#### Measurement Conditions

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

DASY Version	DASY5	V52.6
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	38.5 ± 6 %	1.43 mho/m ± 6 %
Head TSL temperature during test	(21.2 ± 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	normalized to 1W	40.0 mW /g ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
	condition 250 mW input power	5.26 mW / g
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured SAR normalized		5.26 mW / g 21.0 mW / g

Certificate No: D1900V2-545\_Jan11



## Document Page Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW 29(37) SAR Report 29(37)

Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RDI	D70UW
			L6AREM70UW	2503A-REN	M70UW

#### Appendix

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.8 Ω + 1.8 jΩ
Return Loss	- 34.4 dB

#### General Antenna Parameters and Design

Electrical Delay (one direction)		1.199 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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#### DASY5 Validation Report for Head TSL

Date/Time: 13.01.2011 14:52:49

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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 U12 BB Medium parameters used: f = 1900 MHz;  $\sigma$  = 1.43 mho/m;  $\varepsilon$ <sub>r</sub> = 38.6;  $\rho$  = 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(5.09, 5.09, 5.09); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.1 Build (408)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595)

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

grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 98.053 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 18.648 W/kg SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.26 mW/g Maximum value of SAR (measured) = 12.743 mW/g



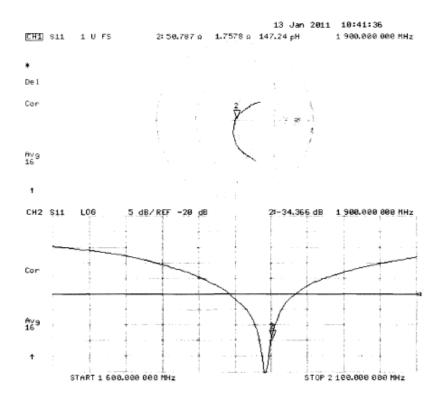


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Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Apr 13 – July 4, 2011 RTS-2579-1106-34C L6ARDD70UW 2503A-RDD7				
			L6AREM70UW	2503A-RE	M70UW

Impedance Measurement Plot for Head TSL



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Testing Services™	Appendix D for the B SAR Report	BlackBerry® Smartphone Mod	del RDD71UW/REN	<b>A71UW</b> 32	<sup>ge</sup> 2(37)
ew Becker	Dates of Test Apr 13 – July 4, 2011	Test Report No <b>RTS-2579-1106-34C</b>	FCC ID: L6ARDD70UW L6AREM70UW	IC ID 2503A-RDD70 2503A-REM70	
Calibration Labor Schmid & Partner Engineering AG Zeughausstrasse 43, 8004	-	Hac MRA RA RA RA RA RA RA RA RA S	Schweizerischer Kalibrie Service suisse d'étalonn Servizio svizzero di tara Swiss Calibration Servic	age tura	
	creditation Service (SAS) Service is one of the signatories the recognition of calibration	to the EA	No.: SCS 108		
Client RTS (RIM	Testing Services)	Certificate No	: D2450V2-747_Nov	/09	
CALIBRATIO	N CERTIFICATE	2. B. M. M. M. M. M. M. S. S.			
Object	D2450V2 - SN: 7	47	a set to the Child	10	
Calibration procedure(s)	QA CAL-05.v7 Calibration proce	dure for dipole validation kits			
Calibration date:	November 11, 20	<b>09</b>		10	
The measurements and th All calibrations have been	e uncertainties with confidence p	onal standards, which realize the physical un robability are given on the following pages ar y facility: environment temperature $(22 \pm 3)^{\circ}$	nd are part of the certificate.		
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Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01066)	Oct-10		
Reference 20 dB Attenuate	or SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10		
Type-N mismatch combina		31-Mar-09 (No. 217-01029)	Mar-10		
Reference Probe ES3DV3 DAE4		26-Jun-09 (No. ES3-3205_Jun09)	Jun-10		
DAE4	SN: 601	07-Mar-09 (No. DAE4-601_Mar09)	Mar-10		
Secondary Standards	ID #	Check Date (in house)	Scheduled Check		
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-	11	
RF generator R&S SMT-06		4-Aug-99 (in house check Oct-09)	In house check: Oct-	11	
Network Analyzer HP 8753	3E US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-	10	
Calibrated by:	Name Mike Meil	Function Laboratory Technician	Signature	11112	
Approved by:	Katja Pokovic	Technicsi Maneger	de k	8	
This calibration certificate	shall not be reproduced except in	full without written approval of the laboratory	Issued: November 16	3, 2009	
Certificate No: D2450V2-	-747_Nov09	Page 1 of 6			



Document Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW **SAR Report** 

Author Data **Andrew Becker** 

Apr 13 – July 4, 2011

Test Report No RTS-2579-1106-34C

L6ARDD70UW 2503A-RDD70UW L6AREM70UW 2503A-REM70UW

Calibration Laboratory of

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





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- С Servizio svizzero di taratura

FCC ID:

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

Dates of Test

#### 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. ٠ 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: D2450V2-747 Nov09

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#### Document Appendix D for the BlackBerry® Smartphone Model RDD71UW/REM71UW 34(37) **SAR Report**

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Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RDD70UW
			L6AREM70UW	2503A-REM70UW

#### 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>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.23 mW / g
SAR normalized	normalized to 1W	24.9 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	24.9 mW /g ± 16.5 % (k=2)

Certificate No: D2450V2-747\_Nov09



Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Apr 13 – July 4, 2011	RTS-2579-1106-34C	L6ARDD70UW	2503A-RDD70UW
			L6AREM70UW	2503A-REM70UW

#### 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

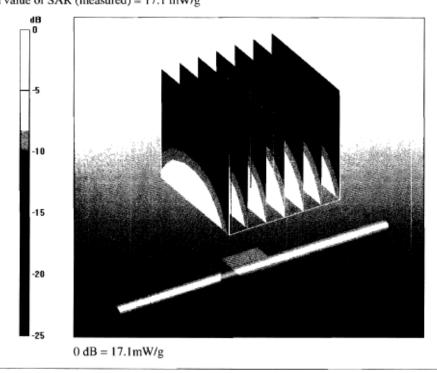
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium: HSL U11 BB Medium parameters used: f = 2450 MHz;  $\sigma$  = 1.79 mho/m;  $\epsilon_r$  = 39.2;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

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=5mm Reference 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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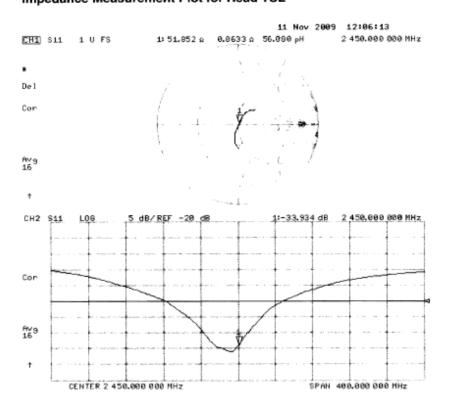
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L6AREM70UW

2503A-REM70UW

## Impedance Measurement Plot for Head TSL



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