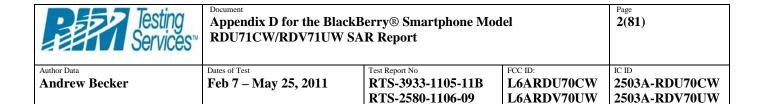
Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Page 1(81)			
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

APPENDIX D: PROBE & DIPOLE CALIBRATION DATA



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

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

RTS (RIM Testing Services) Client

Certificate No: ET3-1643_Mar10

Accreditation No.: SCS 108

CALIBRATION CERTIFICATE ET3DV6 - SN:1643 Object Calibration procedure(s) QA CAL-01.v6, QA CAL-23.v3 and QA CAL-25.v2 Calibration procedure for dosimetric E-field probes March 9, 2010 Calibration date: This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI) The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate All calibrations have been conducted in the closed laboratory facility; environment temperature (22 ± 3)°C and humidity < 70% Calibration Equipment used (M&TE critical for calibration) Primary Standards ID# Cal Date (Certificate No.) Scheduled Calibration Power meter E4419B GB41293874 1-Apr-09 (No. 217-01030) Apr-10 Power sensor E4412A MY41495277 1-Apr-09 (No. 217-01030) Apr-10 Power sensor E4412A MY41498087 1-Apr-09 (No. 217-01030) Apr-10 Reference 3 dB Attenuator SN: S5054 (3c) 31-Mar-09 (No. 217-01026) Mar-10 Reference 20 dB Attenuator SN: S5086 (20b) 31-Mar-09 (No. 217-01028) Mar-10 SN: S5129 (30b) Reference 30 dB Attenuator 31-Mar-09 (No. 217-01027) Mar-10 Reference Probe ES3DV2 SN: 3013 30-Dec-09 (No. ES3-3013_Dec09) Dec-10 DAE4 SN: 660 29-Sep-09 (No. DAE4-660_Sep09) Sep-10 Secondary Standards ID# Check Date (in house) Scheduled Check RF generator HP 8648C US3642U01700 4-Aug-99 (in house check Oct-09) In house check: Oct-11 Network Analyzer HP 8753E US37390585 18-Oct-01 (in house check Oct-09) In house check: Oct10 Name Function Calibrated by: Laboratory Technician Approved by: Technical Manager Issued: March 10, 2010 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: ET3-1643 Mar10

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Testing Services™			Page 3(81)	
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker Feb 7 - May 25, 2011 RTS-3933-1105-11B L6ARDU70CV RTS-2580-1106-09 L6ARDV70UV				2503A-RDU70CW 2503A-RDV70UW

Calibration Laboratory of

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





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Swiss Calibration Service

Accreditation No.: SCS 108

Accredited by the Swiss Accreditation Service (SAS)

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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 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., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- 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,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 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.

Certificate No: ET3-1643_Mar10 Page 2 of 11

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Page 4(81)			
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker Feb 7 - May 25, 2011 RTS-3933-1105-11B L6ARDU70CW RTS-2580-1106-09 L6ARDV70UW				2503A-RDU70CW 2503A-RDV70UW

Probe ET3DV6

SN:1643

Manufactured: November 7, 2001 Last calibrated: March 10, 2009 Recalibrated: March 9, 2010

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: ET3-1643_Mar10

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Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Page 5(81)			
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

DASY - Parameters of Probe: ET3DV6 SN:1643

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m) ²) ^A	1.75	2.01	1.79	± 10.1%
DCP (mV) ^B	93.2	91.0	90.9	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	С	VR mV	Unc ^E (k=2)
10000	cw	0.00	×	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%.

Certificate No: ET3-1643_Mar10

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

Numerical finearization 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.

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW SA	Page 6(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

DASY - Parameters of Probe: ET3DV6 SN:1643

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvF X Co	nvFY Co	nvF Z	Alpha	Depth Unc (k=2)
900	±50/±100	41.5 ± 5%	$0.97 \pm 5\%$	6.01	6.01	6.01	0.42	2.35 ± 11.0%
1810	± 50 / ± 100	$40.0 \pm 5\%$	$1.40 \pm 5\%$	4.99	4.99	4.99	0.62	2.35 ± 11.0%
1950	±50/±100	40.0 ± 5%	1.40 ± 5%	4.74	4.74	4.74	0.79	2.10 ± 11.0%

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

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW SA	Page 7(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

DASY - Parameters of Probe: ET3DV6 SN:1643

Calibration Parameter Determined in Body Tissue Simulating Media

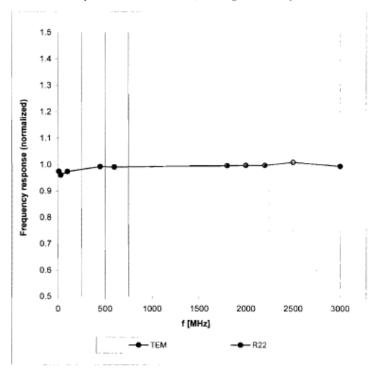
f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvF X C	onvFY Co	nvF Z	Alpha	Depth Unc (k=2)
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	5.93	5.93	5.93	0.33	2.77 ± 11.0%
1810	±50/±100	53.3 ± 5%	1.52 ± 5%	4.58	4.58	4.58	0.75	2.63 ± 11.0%
1950	±50/±100	53.3 ± 5%	1.52 ± 5%	4.54	4.54	4.54	0.99	2.20 ± 11.0%

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

Testing Services™	Appendix D for the BlackB RDU71CW/RDV71UW SA	•	el	Page 8(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Frequency Response of E-Field

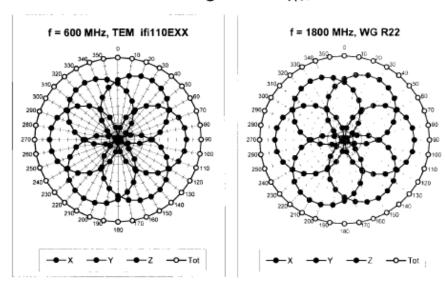
(TEM-Cell:ifi110 EXX, Waveguide: R22)

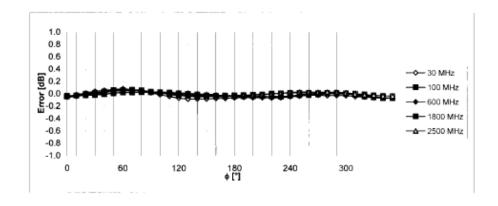


Uncertainty of Frequency Response of E-field: \pm 6.3% (k=2)

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Page 9(81)			
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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



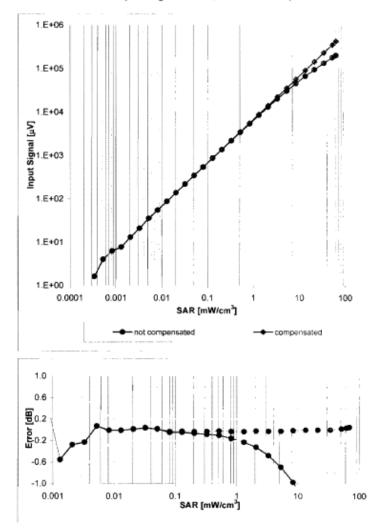


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
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Dynamic Range f(SAR_{head})

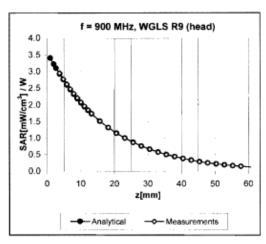
(Waveguide R22, f = 1800 MHz)

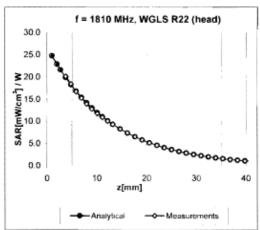


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Testing Services™	* *	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW	

Conversion Factor Assessment





Deviation from Isotropy in HSL

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

Testing Services™	* *	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID		
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW		

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	enabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	4 mm

Testing Services™		Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID	
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW	

Appendix D for the BlackBerry® Smartphone Model 14(81) RDU71CW/RDV71UW SAR Report Dates of Test FCC ID: Test Report No IC ID Feb 7 - May 25, 2011 RTS-3933-1105-11B L6ARDU70CW 2503A-RDU70CW Andrew Becker RTS-2580-1106-09 L6ARDV70UW 2503A-RDV70UW

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Accreditation No.: SCS 108

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RTS (RIM Testing Services)

Certificate No: ET3-1644_Nov10 CALIBRATION CERTIFICATE Oteset ET3DV6 - \$N:1644 QA CAL-01.v6, QA CAL-23.v3 and QA CAL-25.v2 Calibration procedure(s): Calibration procedure for dosimetric E-field probes Célérébon date November 16, 2010 This calibration conflicate documents the insteadbiry to national standards, which realize the physical units of measurements (SI) The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humbity < 70%, Calibration Equipment used (M&TE cursual for calibration) Primary Standards ID# Cal Date (Certificate No.) Scheduled Calibration Power meter 644198. GB41293874 1-Apr-10 (No. 217-01136) Apr-11 Power sensor E4412A MY41495277 1-Apr-10 (No. 217-01138) Apr-11 Power sensor E4412A MY41499067 1-Apr-10 (No. 217-01136) Apr-11 Reference 3 dB Attenuetor SN: \$5054 (3¢) 30:Mar:10 (No. 217-01159) Mar-11 Reference 20 d 8 Attempt to r SN: 35086 (20b) 38-Mer-10 (No. 217-01161) Mar-11 Reference 30 dB Attenuator SN: \$5129 (30b) 38-Mar-10 (No. 217-01160) Mar-11 Reference Probe ES3DV2 SN: 3013 30-Dec-09 (No. E53-3013 Dec09) Dec-10 DAE4 SN: 660 20-Apr-10 (No. DAE4-660_Apr-10) Apr-11 Secondary Standards ID ¢ Check Date (in house) Scheduled Check RF penerator HP 8648C US3642U01700 4-Aug-99 (in house check Oct-09) Inhouse check DcI-11 Network Analyzer HP 8753E US37390585 18-Oct-01 (in house check Oct-10) In house check: Bot-11 Name Function Stanature Calibrated by Approved by: Kata Pokovic Issued: November 17, 2018 This calibration careficate that not be reproduced except in full without written approval of the laboratory

Certificate No: ET3-1644_Nov10

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Testing Services™	Appendix D for the BlackB RDU71CW/RDV71UW SA	Page 15(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker				2503A-RDU70CW 2503A-RDV70UW

Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrapse 43, 8004 Zurien, Switzerland





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Accreditation No.: SCS 108

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Mutulateral Agreement for the recognition of calibration certificates

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 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., 3 = 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 2006

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 FSL (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 ConyF.
- DCPx, y, z: DCP are numerical linearization parameters assessed based on the data of power aweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- Ax, y, z: 8x, y, z; Cx, y, z, VRx, y, z: A, E, 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 clode.
- 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.

Certificate No: ET3-1644_Nov10	Page 2 of 11	

Testing Services™		Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID		
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW		

Probe ET3DV6

SN:1644

Manufactured: November 7, 2001 Last calibrated: November 11, 2009 Recalibrated: November 16, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Testing Services™		Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID		
Andrew Becker	Feb 7 – May 25, 2011	2503A-RDU70CW 2503A-RDV70UW				

DASY/EASY - Parameters of Probe: ET3DV6 SN:1644

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m) ²) ^A	1.83	1.95	2.01	± 10.1%
DCP (mV) ³	97.9	97.9	96.6	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBa¥	С	VR mV	Unc [€] (k=2)
10000	CW	0.00	х	0.00	0.00	1.00	143.5	± 3.4 %
			Y	0.00	0.00	1.00	146.8	
			Z	0.00	0.00	1.00	148.4	l

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

Certificate No: ET3-1844 Nov16

^{*} The uncertainties of NormX Y.2 do not affect the E*-hald uncertainty reside TSL (see Pages 5 and 6)

 $^{^{\}circ}$ Numerical -meanization paremeter, uncertainty not required.

⁵ Uncertainty is determined using the maximum deviation from linear response applying recetangular distribution and a captiossed for the aguars of the fight value.

Testing Services™	* *	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID		
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW		

DASY/EASY - Parameters of Probe: ET3DV6 \$N:1644

Calibration Parameter Determined in Head Tissue Simulating Media

1 [MHz]	Validity [MHz] ⁶	Permittivity	Conductivity	ConvEX Co	myFY Co	nvF Z	Alpha	Dopth Unc (k=2)
750	\pm 50 / \pm 100	41.9 ± 5%	$0.89 \pm 5\%$	6.54	6.54	6.54	0.31	3.05 ± 11.0%
900	\pm 50 / \pm 100	$41.5 \pm 5\%$	$0.97 \pm 5\%$	6.00	6.00	6.00	0.27	3.46 ± 11.0%
1810	\pm 50 / \pm 100	$40.0 \pm 5\%$	1 40 ± 5%	5.09	5.09	5.09	0.40	2.50 ± 11.0%
2450	± 507 ± 100	39.2 ± 5%	1.80 ± 5%	4.42	4.42	4,42	0.99	1.27 ± 11.0%

The validity of a 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.

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 19(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

DASY/EASY - Parameters of Probe: ET3DV6 SN:1644

Calibration Parameter Determined in Body Tissue Simulating Media

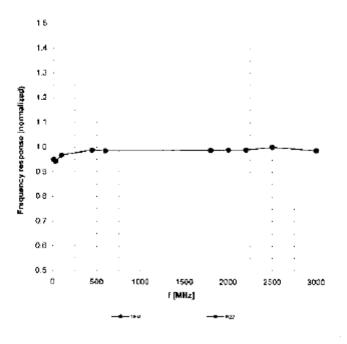
t (MHz)	Validity [MHz] ^c	Permittivity	Conductivity	ConvFX Co	nvFY Co	nvF Z	Alpha _.	Depth Unc (k=2)
750	±50/±100	55 5 ± 5%	$0.96 \pm 5\%$	5.14	6.14	6.14	0.31	3.06 ±11.0%
900	± 50 / ± 100	55 0 ± 5%	$1.05 \pm 5\%$	5.93	5.93	5 93	0.36	2.71 ±11.0%
1810	± 50 / ± 100	53 3 ± 5%	$1.52\pm5\%$	4.59	4.59	4 59	0.32	2.60 ±11.0%
2450	± 50 / ± 100	$52.7 \pm 5\%$	$1.95\pm5\%$	4.05	4.05	4 05	0.99	1.23 ±11.0%

This validity of ± 100 MHz only appres 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.

Testing Services™	Appendix D for the Blackl RDU71CW/RDV71UW SA	Page 20(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Frequency Response of E-Field

(TEM-Cell:ffi110 EXX, Waveguide: R22)



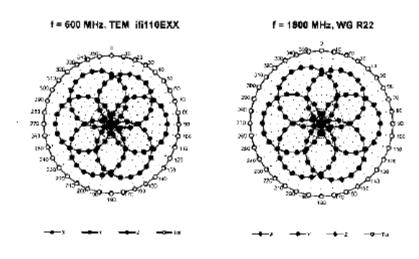
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

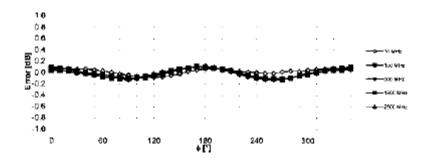
Certificate No. ET3-1644_Nov10

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Testing Services™				Page 21(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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





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

Certificate No: ET3-1644 Nov10

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Testing Services™	Appendix D for the Black RDU71CW/RDV71UW S	Page 22(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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

SAR [mW/cm³]

100

Certificate No: ET3-1644_Nov10

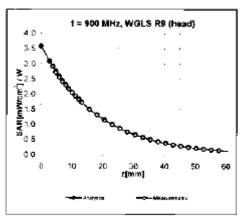
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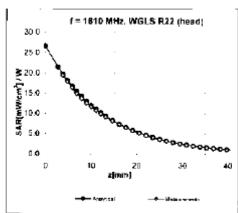
0.01

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Testing Services™	Appendix D for the Blackl RDU71CW/RDV71UW SA	Page 23(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

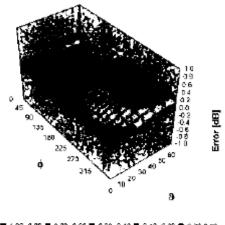
Conversion Factor Assessment





Deviation from Isotropy in HSL

Error (\$, 8), f = 900 MHz



■-1.00-40 80 ■-0.80-40.60 ■-0.80-40.40 ■-0.40-40 20 ● 40.20 40 10 ■0.00-0.20 ■-0.20-0.40 ■-0.40-0.00 ■-0.50-0.80 ■-0.80-4.00

Uncertainty of Spherical Isotropy Assessment: ± 2.5% (k=2)

Certificate No ET3-1644 Nov10

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Testing Services™	Appendix D for the BlackE RDU71CW/RDV71UW SA	Page 24(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (*)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	enabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	3.7 mm



Calibration Laboratory of

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





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

Accredited by the Swiss Accreditation Service (SAS)

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

RTS (RIM Testing Services)

Accreditation No.: SCS 108

Certificate No: ES3-3225_Jan11

ALIBITATION	CERTIFICAT		1944 - 11 12 12 12 12 12 12 12 12 12 12 12 12
Dbject	ES3DV3 - \$N;3	225	Park Ask Comment
Calibration procedure(s)		QA CAL-23.v4 and QA CAL-25.v3 edure for dosimetric E-field probes	
Calibration date:	January 13, 201	H er. 2002 - Gamber.	e switten in the
The measurements and the unc	ertainties with confidence	stional standards, which realize the physical uniprobability are given on the following pages an ory facility: environment temperature $(22 \pm 3)^{\circ}$ C	d are part of the certificate.
rimary Standards	ID#	Cal Data (Cartificate No.)	
		Car Date (Certificate No.)	Scheduled Calibration
	GB41293874	Cal Date (Certificate No.) 1-Apr-10 (No. 217-01136)	Scheduled Calibration Apr-11
ower meter E4419B		1-Apr-10 (No. 217-01136)	Apr-11
ower meter E4419B ower sensor E4412A	GB41293874		
Power meter E4419B Power sensor E4412A Power sensor E4412A	GB41293874 MY41495277	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136)	Apr-11 Apr-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator	GB41293874 MY41495277 MY41498087 SN: S5054 (3c)	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159)	Apr-11 Apr-11 Apr-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator	GB41293874 MY41495277 MY41498087	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136)	Apr-11 Apr-11 Apr-11 Mar-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator	GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b)	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161) 30-Mar-10 (No. 217-01160)	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2	GB41293674 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b)	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161)	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11 Mar-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4	GB41293674 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161) 30-Mar-10 (No. 217-01160) 29-Dec-10 (No. ES3-3013_Dec10)	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11 Mar-11 Dec-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4	GB41293674 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 660	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161) 30-Mar-10 (No. 217-01160) 29-Dec-10 (No. ES3-3013_Dec10) 20-Apr-10 (No. DAE4-660_Apr10)	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11 Mar-11 Dec-11 Apr-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C	GB41293674 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 660	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161) 30-Mar-10 (No. 217-01160) 29-Dec-10 (No. ES3-3013_Dec10) 20-Apr-10 (No. DAE4-860_Apr10) Check Date (in house)	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11 Mar-11 Dec-11 Apr-11 Scheduled Check
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C	GB41293674 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 660 ID # US3642U01700	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161) 30-Mar-10 (No. 217-01160) 29-Dec-10 (No. ES3-3013_Dec10) 20-Apr-10 (No. DAE4-860_Apr10) Check Date (in house) 4-Aug-99 (in house check Oct-09)	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11 Mar-11 Dec-11 Apr-11 Scheduled Check In house check: Oct-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C Network Analyzer HP 8753E	GB41293674 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 660 ID # US3642U01700 US37390585	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161) 30-Mar-10 (No. 217-01160) 29-Dec-10 (No. ES3-3013_Dec10) 20-Apr-10 (No. DAE4-860_Apr10) Check Date (in house) 4-Aug-99 (in house check Oct-09) 18-Oct-01 (in house check Oct-10)	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11 Dec-11 Apr-11 Scheduled Check In house check: Oct-11 In house check: Oct-11
Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C Network Analyzer HP 8753E Calibrated by:	GB41293674 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 660 ID # US3642U01700 US37390585 Name	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161) 30-Mar-10 (No. 217-01160) 29-Dec-10 (No. ES3-3013_Dec10) 20-Apr-10 (No. DAE4-860_Apr10) Check Date (in house) 4-Aug-99 (in house check Oct-09) 18-Oct-01 (in house check Oct-10) Function	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11 Dec-11 Apr-11 Scheduled Check In house check: Oct-11 In house check: Oct-11
Prover meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C Network Analyzer HP 8753E Calibrated by:	GB41293674 MY41495277 MY41498087 SN: S5054 (3c) SN: S5086 (20b) SN: S5129 (30b) SN: 3013 SN: 660 ID # US3642U01700 US37390585 Name Jeton Kastrati	1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 1-Apr-10 (No. 217-01136) 30-Mar-10 (No. 217-01159) 30-Mar-10 (No. 217-01161) 30-Mar-10 (No. 217-01161) 29-Dec-10 (No. ES3-3013_Dec10) 20-Apr-10 (No. DAE4-860_Apr10) Check Date (in house) 4-Aug-99 (in house check Oct-09) 18-Oct-01 (in house check Oct-10) Function Laboratory Technician	Apr-11 Apr-11 Apr-11 Mar-11 Mar-11 Dec-11 Apr-11 Scheduled Check In house check: Oct-11 In house check: Oct-11

Certificate No: ES3-3225_Jan11

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Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 26(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B	L6ARDU70CW	2503A-RDU70CW
		RTS-2580-1106-09	L6ARDV70UW	2503A-RDV70UW

Calibration Laboratory of

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





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

Accreditation No.: SCS 108

Accredited by the Swiss 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
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 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,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 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.

Cartificate No. ECS 2225 Jan 11	Done 2 of 11	

Testing Services™	Appendix D for the BlackB RDU71CW/RDV71UW SA	Page 27(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Probe ES3DV3

SN:3225

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

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW S	Page 28(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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

Basic Calibration Parameters

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

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	С	VR mV	Unc ^E (k=2)
10000	cw	0.00	×	0.00	0.00	1.00	149.8	± 2.6 %
			Υ	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%.

 $^{^{\}wedge}$ The uncertainties of NormX,Y,Z do not affect the $\dot{E^2}$ -field uncertainty inside TSL (see Pages 5 and 6).

Numerical linearization parameter, uncertainty not required.

⁶ Uncertainty is determined using the maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

Testing Services™	Appendix D for the BlackE RDU71CW/RDV71UW SA	Page 29(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

ES3DV3 SN:3225

January 13, 2011

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

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvF X Co	nvFY Cor	ıvF Z	Alpha	Depth Unc (k=2)
750	±50/±100	$41.9 \pm 5\%$	$0.89 \pm 5\%$	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%	$1.40 \pm 5\%$	5.26	5.26	5.26	0.37	1.68 ± 11.0%
1950	±50/±100	$40.0\pm5\%$	$1.40 \pm 5\%$	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	$39.0\pm5\%$	1.96 ± 5%	4.52	4.52	4.52	0.53	1.58 ± 11.0%

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

Testing Services™	Appendix D for the Blackl RDU71CW/RDV71UW SA	Page 30(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

ES3DV3 SN:3225

January 13, 2011

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

Calibration Parameter Determined in Body Tissue Simulating Media

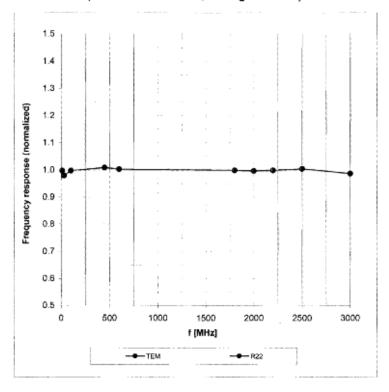
f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvF X Co	nvFY Co	nvF Z	Alpha	Depth Unc (k=2)
750	±50/±100	$55.5 \pm 5\%$	$0.96 \pm 5\%$	6.30	6.30	6.30	0.76	1.17 ± 11.0%
900	±50/±100	$55.0\pm5\%$	1.05 ± 5%	6.12	6.12	6.12	0.72	1.20 ± 11.0%
1810	±50/±100	53.3 ± 5%	1.52 ± 5%	4.88	4.88	4.88	0.26	2.70 ± 11.0%
1950	±50/±100	$53.3\pm5\%$	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%

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.

Testing Services™	Appendix D for the BlackE RDU71CW/RDV71UW SA	Page 31(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Frequency Response of E-Field

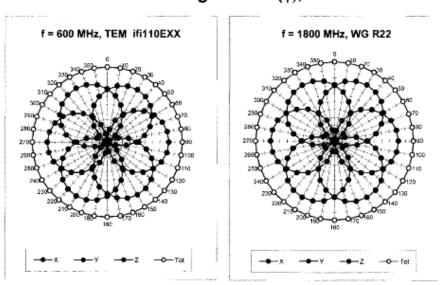
(TEM-Cell:ifi110 EXX, Waveguide: R22)

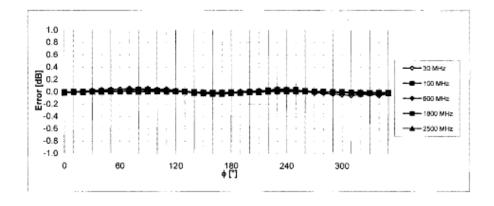


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW S	Page 32(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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



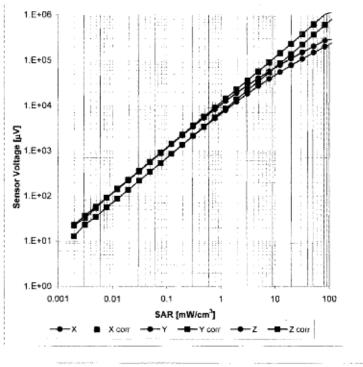


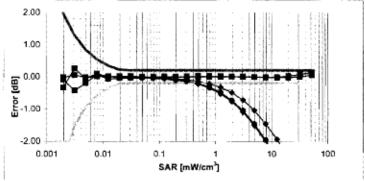
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Testing Services™	Appendix D for the BlackE RDU71CW/RDV71UW SA	33(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Dynamic Range f(SAR_{head})

(TEM cell, f = 900 MHz)

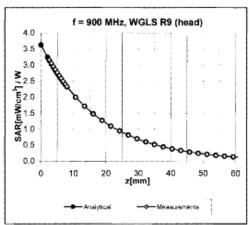


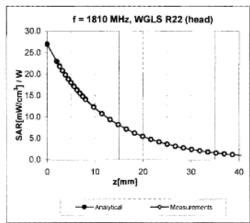


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW S.	Page 34(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

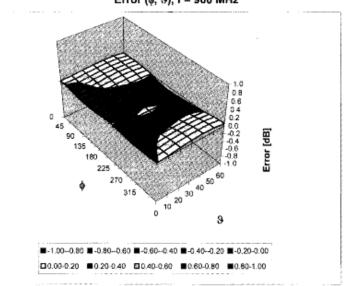
Conversion Factor Assessment





Deviation from Isotropy in HSL

Error (ϕ , ϑ), f = 900 MHz



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

Certificate No: ES3-3225_Jan11

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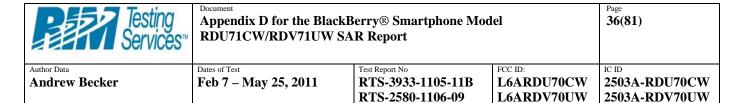
Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 35(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

ES3DV3 SN:3225

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



Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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Issued: January 20, 2011

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Client RTS (RIM Testing Services)

Accreditation No.: SCS 108

Certificate No. EX3-3548 Jan11

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3548

Calibration procedure(s) QA CAL-01.v7, QA CAL-14.v3, QA CAL-23.v4 and QA CAL-25.v3

Calibration procedure for dosimetric E-field probes

Calibration date: January 20, 2011

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 660	20-Apr-10 (No. DAE4-660_Apr10)	Apr-11
Secondary Standards	ID#	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11
	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	2010
			500
	and the first of	and the second s	1 11/11
Approved by:	Niels Kuster	Quality Menager	
	100		

Certificate No: EX3-3548 Jan11

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Testing Services™	Appendix D for the BlackB RDU71CW/RDV71UW SA	Page 37(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Calibration Laboratory of

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





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Accreditation No.: SCS 108

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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 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
- 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 θ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide).
 NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z * frequency_response (see Frequency Response Chart). This linearization is
 implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included
 in the stated uncertainty of ConvF.
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep 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.

Certificate No: EX3-3548_Jan11	Page 2 of 11

Testing Services™	Appendix D for the BlackE RDU71CW/RDV71UW SA	Page 38(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Probe EX3DV4

SN:3548

Manufactured: November 16, 2004 Last calibrated: January 21, 2010 Recalibrated: January 20, 2011

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW S	Page 39(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

EX3DV4 SN:3548

January 20, 2011

DASY/EASY - Parameters of Probe: EX3DV4 SN:3548

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m) ²) ^A	0.35	0.44	0.45	± 10.1%
DCP (mV) ⁸	101.4	100.4	99.2	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	С	VR mV	Unc ^E (k=2)
10000	cw	0.00	х	0.00	0.00	1.00	128.8	± 2.9 %
			Y	0.00	0.00	1.00	139.9	
			z	0.00	0.00	1.00	142.9	

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

Certificate No: EX3-3548_Jan11

A The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

⁸ Numerical linearization parameter: uncertainty not required.

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

Testing Services™	Appendix D for the BlackB RDU71CW/RDV71UW SA	Page 40(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

DASY/EASY - Parameters of Probe: EX3DV4 SN:3548

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvF X Co	nvFY Cor	nvF Z	Alpha	Depth Unc (k=2)
2600	±50/±100	$39.0 \pm 5\%$	1.96 ± 5%	7.08	7.08	7.08	0.23	1.34 ± 11.0%
5200	±50/±100	$36.0 \pm 5\%$	4.66 ± 5%	5.01	5.01	5.01	0.40	1.80 ± 13.1%
5500	± 50 / ± 100	$35.6 \pm 5\%$	4.96 ± 5%	4.63	4.63	4.63	0.50	1.80 ± 13.1%
5800	± 50 / ± 100	$35.3 \pm 5\%$	$5.27 \pm 5\%$	4.42	4.42	4.42	0.50	1.80 ± 13.1%

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.

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW S	Page 41(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

DASY/EASY - Parameters of Probe: EX3DV4 SN:3548

Calibration Parameter Determined in Body Tissue Simulating Media

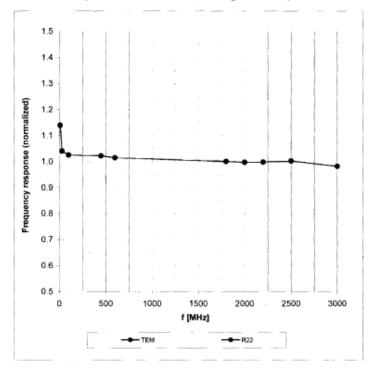
f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvF X Con	nvFY Con	vF Z	Alpha	Depth Unc (k=2)
2600	± 50 / ± 100	52.5 ± 5%	2.16 ± 5%	7.12	7.12	7.12	0.67	0.71 ±11.0%
5200	± 50 / ± 100	49.0 ± 5%	$5.30 \pm 5\%$	4.79	4.79	4.79	0.45	1.90 ± 13.1%
5500	±50/±100	48.6 ± 5%	$5.65\pm5\%$	4.29	4.29	4.29	0.50	1.90 ± 13.1%
5800	± 50 / ± 100	48.2 ± 5%	$6.00 \pm 5\%$	4.08	4.08	4.08	0.60	1.90 ± 13.1%

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

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW SA	Page 42(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Frequency Response of E-Field

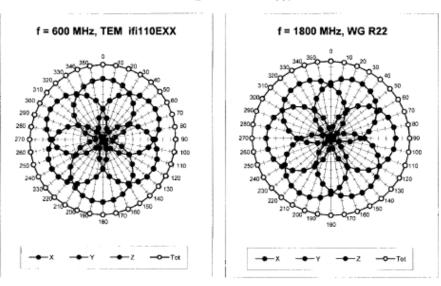
(TEM-Cell:ifi110 EXX, Waveguide: R22)

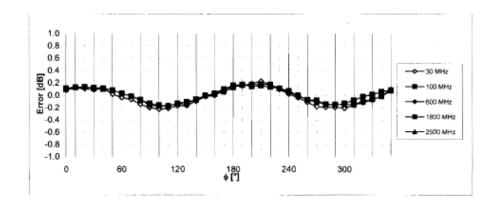


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW SA	Page 43(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Receiving Pattern (ϕ), ϑ = 0°



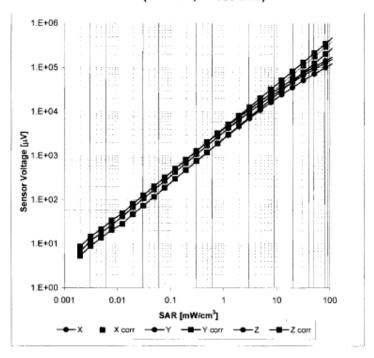


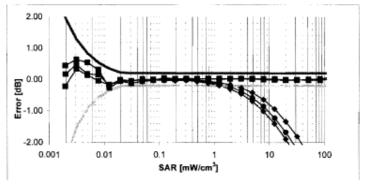
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Testing Services™	Appendix D for the Black! RDU71CW/RDV71UW SA	Test Report No				
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID		
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW		

Dynamic Range f(SAR_{head})

(TEM cell, f = 900 MHz)

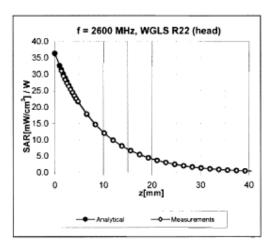


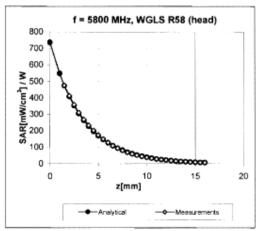


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Testing Services™				Page 45(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

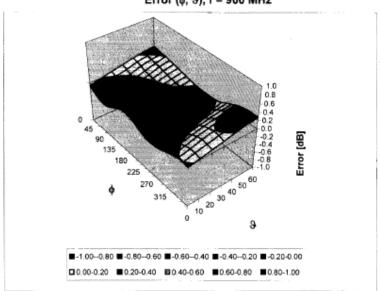
Conversion Factor Assessment





Deviation from Isotropy in HSL

Error (♦, ३), f = 900 MHz



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

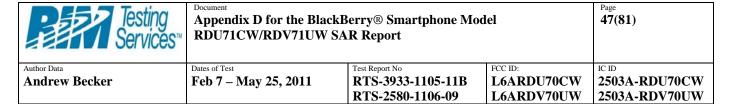
Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 46(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

EX3DV4 SN:3548

January 20, 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	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm



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Client RTS (RIM Testing Services) Certificate No: D835V2-446_Jan11

CALIBRATION CERTIFICATE D835V2 - SN: 446 Object QA CAL-05.v8 Calibration procedure(s) Calibration procedure for dipole validation kits Calibration date: January 21, 2011 This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%. Calibration Equipment used (M&TE critical for calibration) Primary Standards Cal Date (Certificate No.) Scheduled Calibration Power meter EPM-442A GB37480704 06-Oct-10 (No. 217-01266) Oct-11 Power sensor HP 8481A US37292783 06-Oct-10 (No. 217-01266) Oct-11 Reference 20 dB Attenuator SN: 5086 (20a) 30-Mar-10 (No. 217-01158) Mar-11 Type-N mismatch combination SN; 5047.2 / 06327 30-Mar-10 (No. 217-01162) Mar-11 Reference Probe ES3DV3 SN: 3205 30-Apr-10 (No. ES3-3205_Apr10) Apr-11 DAE4 SN: 601 10-Jun-10 (No. DAE4-601_Jun10) Jun-11 Secondary Standards ID# Check Date (in house) Scheduled Check MY41092317 Power sensor HP 8481A 18-Oct-02 (in house check Oct-09) In house check: Oct-11 RF generator R&S SMT-06 100005 4-Aug-99 (in house check Oct-09) In house check: Oct-11 Network Analyzer HP 8753E US37390585 S4206 18-Oct-01 (in house check Oct-10) In house check: Oct-11 Function Calibrated by: Approved by: Issued: January 21, 2011 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D835V2-446_Jan11

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Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 48(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	2503A-RDU70CW 2503A-RDV70UW		

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Zeughausstrasse 43, 8004 Zurich, Switzerland





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Accreditation No.: SCS 108

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

Glossary:

TSL

tissue simulating liquid

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) 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	Page 2 of 6	

Testing Services™				Page 49(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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 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 %	0.89 mho/m ± 6 %
Head TSL temperature during test	(21.8 ± 0.2) °C		****

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	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 ³ (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)

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 50(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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

Testing Services™			Page 51(81)	
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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; $\sigma = 0.89 \text{ mho/m}$; $\varepsilon_r = 41.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3205; ConvF(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)

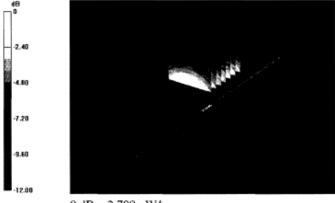
Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement

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/gMaximum value of SAR (measured) = 2.790 mW/g

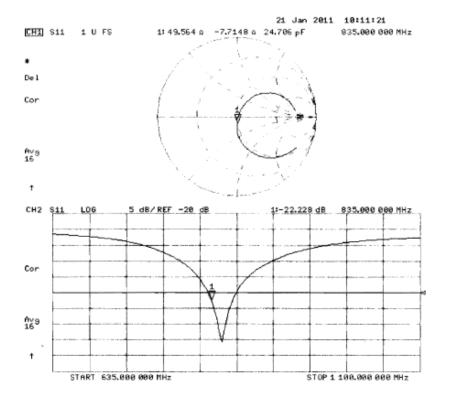


0 dB = 2.790 mW/g

Certificate No: D835V2-446_Jan11

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Page 52(81)		Page 52(81)	
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Impedance Measurement Plot for Head TSL



	Testing Services™	Appendix D for the BlackBerry® Smartphone Model 53(81)		Page 53(81)	
ſ	Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
	Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA

Accreditation No.: SCS 108

Multilateral Agreement for the recognition of calibration certificates

Certificate No: D1900V2-545_Jan11

RTS (RIM Testing Services) CALIBRATION CERTIFICATE D1900V2 - SN: 545 Object QA CAL-05.v8 Calibration procedure(s) Calibration procedure for dipole validation kits January 13, 2011 Calibration date: This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%. Calibration Equipment used (M&TE critical for calibration) Primary Standards Cal Date (Certificate No.) Scheduled Calibration Power meter EPM-442A GB37480704 06-Oct-10 (No. 217-01266) Oct-11 Power sensor HP 8481A 06-Oct-10 (No. 217-01266) US37292783 30-Mar-10 (No. 217-01158) Reference 20 dB Attenuator SN: 5086 (20g) Mar-11 Type-N mismatch combination SN: 5047.2 / 06327 30-Mar-10 (No. 217-01162) Mar-11 Reference Probe ES3DV3 SN: 3205 30-Apr-10 (No. ES3-3205_Apr10) Apr-11 SN: 601 10-Jun-10 (No. DAE4-601_Jun10) Jun-11 ID# Secondary Standards 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 100005 4-Aug-99 (in house check Oct-09) In house check: Oct-11 Network Analyzer HP 8753E US37390585 S4206 18-Oct-01 (in house check Oct-10) In house check: Oct-11 Function Calibrated by: Laboratory Technician ALTERNATION OF THE PARTY OF THE Approved by: Issued: January 14, 2011 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D1900V2-545_Jan11

Page 1 of 6

Testing Services™	Appendix D for the BlackBerry® Smartphone Model 54(81)		Page 54(81)	
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Calibration Laboratory of

Schmid & Partner Engineering AG





Schweizerischer Kalibrierdienst s Service suisse d'étalonnage

Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 108

Zeughausstrasse 43, 8004 Zurich, Switzerland

Accredited by the Swiss Accreditation Service (SAS)

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

Glossary:

TSL

tissue simulating liquid

ConvF N/A

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "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
- 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
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

Certificate No: D1900V2-545_Jan11	Page 2 of 6		

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Page 55(81)		Page 55(81)	
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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 ³ (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 ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.26 mW / g
SAR normalized	normalized to 1W	21.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	20.8 mW /g ± 16.5 % (k=2)

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 56(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	2503A-RDU70CW 2503A-RDV70UW		

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

Testing Services™				Page 57(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	2503A-RDU70CW 2503A-RDV70UW		

DASY5 Validation Report for Head TSL

Date/Time: 13.01.2011 14:52:49

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; $\sigma = 1.43 \text{ mho/m}$; $\varepsilon_r = 38.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: ES3DV3 - SN3205; ConvF(5.09, 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/gMaximum value of SAR (measured) = 12.743 mW/g

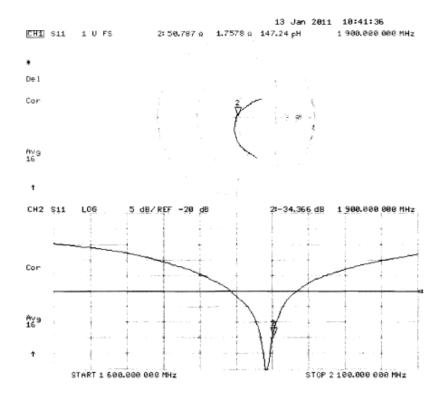


0 dB = 12.740 mW/g

Certificate No: D1900V2-545_Jan11

Testing Services™	Appendix D for the Black! RDU71CW/RDV71UW SA	Page 58(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Impedance Measurement Plot for Head TSL



Appendix D for the BlackBerry® Smartphone Model 59(81) RDU71CW/RDV71UW SAR Report Author Data Dates of Test Test Report No FCC ID: IC ID **Andrew Becker** Feb 7 - May 25, 2011 RTS-3933-1105-11B L6ARDU70CW 2503A-RDU70CW L6ARDV70UW RTS-2580-1106-09 2503A-RDV70UW

Calibration Laboratory of Schmid & Partner





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Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates Accreditation No.: SCS 108

Client RTS (RIM Testing Services)

Certificate No: D2450V2-747_Nov09

bject	D2450V2 - SN: 7	47 ,	
Calibration procedure(s)	QA CAL-05.v7 Calibration proce	dure for dipole validation kits	
Calibration date:	November 11, 20	009 11 11 11 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
		ional standards, which realize the physical un robability are given on the following pages an	
Il calibrations have been condu	cted in the closed laborato	ry facility: environment temperature (22 ± 3)°0	C and humidity < 70%.
Calibration Equipment used (M&	TE critical for calibration)		
Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Calibration
ower meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
	US37292783		
ower sensor HP 8481A	0537292763	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Reference 20 dB Attenuator Type-N mismatch combination	SN: 5086 (20g) SN: 5047.2 / 06327	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029)	Mar-10 Mar-10
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09)	Mar-10 Mar-10 Jun-10
Reference 20 dB Attenuator (ype-N mismatch combination Reference Probe ES3DV3	SN: 5086 (20g) SN: 5047.2 / 06327	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029)	Mar-10 Mar-10
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09)	Mar-10 Mar-10 Jun-10
Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A	SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09)	Mar-10 Mar-10 Jun-10 Mar-10
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09) Check Date (in house)	Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 RAE4 Recondary Standards Recondary Standards Reference Probe ES3DV3 RAE4 Recondary Standards Reference Probe ES3DV3 RAE4 Reference Probe ES3DV3	SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09) Check Date (in house)	Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check In house check: Oct-11
leference 20 dB Attenuator type-N mismatch combination teference Probe ES3DV3 tAE4 tecondary Standards tower sensor HP 8481A tif generator R&S SMT-06	SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317 100005	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09) Check Date (in house) 18-Oct-02 (in house check Oct-09) 4-Aug-99 (in house check Oct-09)	Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check In house check: Oct-11 In house check: Oct-11
eference 20 dB Attenuator type-N mismatch combination teference Probe ES3DV3 tAE4 tecondary Standards tower sensor HP 8481A tif generator R&S SMT-06 tetwork Analyzer HP 8753E	SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317 100005 US37390585 S4206	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09) 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-09)	Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check In house check: Oct-11 In house check: Oct-11 In house check: Oct-10
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Recondary Standards	SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317 100005 US37390585 S4206 Name	31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09) 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-09)	Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check In house check: Oct-11 In house check: Oct-11 In house check: Oct-10

Certificate No: D2450V2-747_Nov09 Page 1 of 6

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 60(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Calibration Laboratory of

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





Schweizerischer Kalibrierdienst

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Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 108

Accredited by the Swiss Accreditation Service (SAS)

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

Glossary:

TSL tissue simulating liquid

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "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.

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 61(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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 mha/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 cm3 (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 ³ (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)

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW S	Page 62(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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	

Certificate No: D2450V2-747 Nov09

Page 4 of 6

Testing Services™	Appendix D for the Black RDU71CW/RDV71UW S	Page 63(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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; $\sigma = 1.79 \text{ mho/m}$; $\varepsilon_r = 39.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 SN3205; ConvF(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:

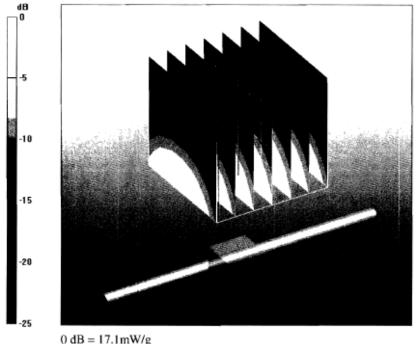
Measurement grid: dx=5mm, dy=5mm, dz=5mm

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

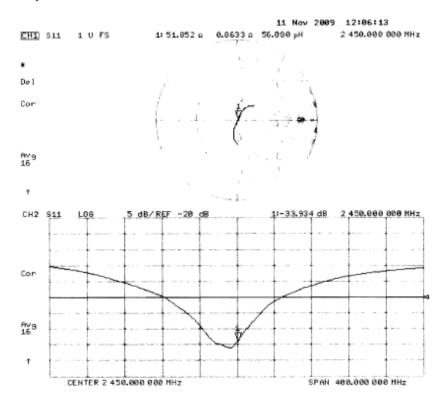


0 dB = 17.1 mW

Certificate No: D2450V2-747_Nov09

Testing Services™	Appendix D for the Blackl RDU71CW/RDV71UW SA	Page 64(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Impedance Measurement Plot for Head TSL



Testing Services™	Appendix D for the BlackB RDU71CW/RDV71UW SA	Page 65(81)		
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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





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S Swiss Calibration Service

Zeughausstrasse 43, 8004 Zurich, Switzerland

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

Client RTS (RIM Testing Services)

Accreditation No.: SCS 108

Certificate No: D5GHzV2-1033_Nov09

CALIBRATION CERTIFICATE

Object D5GHzV2 - SN: 1033

Calibration procedure(s) QA CAL-22.v1

Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date: November 13, 2009

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (Si). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID#	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	31-Mar-09 (No. 217-01025)	Mar-10
Type-N mismatch combination	SN: 5047.2 / 06327	31-Mar-09 (No. 217-01029)	Mar-10
Reference Probe EX3DV4	SN: 3503	11-Mar-09 (No. EX3-3503_Mar09)	Mar-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	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

Name Function Signate
Calibrated by: Jeton Kastrati Laboratory Technician

Approved by: Katja Pokovic Technical Manager

Issued: November 16, 2009

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

Certificate No: D5GHzV2-1033_Nov09 Page 1 of 11

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 66(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B	L6ARDU70CW	2503A-RDU70CW
		RTS-2580-1106-09	L6ARDV70UW	2503A-RDV70UW

Calibration Laboratory of

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





Schweizerischer Kalibrierdienst

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Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 108

Accredited by the Swiss Accreditation Service (SAS)

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

Glossary:

TSL

tissue simulating liquid

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

Calibration is Performed According to the Following Standards:

- a) IEC Std 62209 Part 2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", Draft Version 0.9, December 2004
- b) 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:

c) 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: D5GHzV2-1033_Nov09 Page 2 of 11

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 67(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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 V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 10 mm	
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 2.5 mm	
Frequency	5200 MHz ± 1 MHz 5500 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.4 ± 6 %	4.54 mho/m ± 6 %
Head TSL temperature during test	(22.5 ± 0.2) °C		

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	condition	
SAR measured	100 mW input power	7.75 mW / g
SAR normalized	normalized to 1W	77.5 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	77.2 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.19 mW / g
SAR normalized	normalized to 1W	21.9 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	21.8 mW / g ± 19.5 % (k=2)

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 68(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.6 ± 6 %	4.93 mho/m ± 6 %
Head TSL temperature during test	(22.5 ± 0.2) °C		

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	condition	
SAR measured	100 mW input power	8.29 mW / g
SAR normalized	normalized to 1W	82.9 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	82.9 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.32 mW / g
SAR normalized	normalized to 1W	23.2 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	23.2 mW / g ± 19.5 % (k=2)

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.2 ± 6 %	5.10 mho/m ± 6 %
Head TSL temperature during test	(22.5 ± 0.2) °C		

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	condition	
SAR measured	100 mW input power	7.62 mW / g
SAR normalized	normalized to 1W	76.2 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	75.6 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.15 mW / g
SAR normalized	normalized to 1W	21.5 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	21.3 mW / g ± 19.5 % (k=2)

Certificate No: D5GHzV2-1033_Nov09

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 69(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Body TSL parameters at 5500 MHz The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.5 ± 6 %	5.86 mho/m ± 6 %
Body TSL temperature during test	(22.5 ± 0.2) °C		

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	condition	
SAR measured	100 mW input power	8.22 mW / g
SAR normalized	normalized to 1W	82.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	81.9 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.28 mW / g
SAR normalized	normalized to 1W	22.8 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	22.7 mW / g ± 19.5 % (k=2)

Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 70(81)
Dates of Test	Test Report No	FCC ID:	IC ID
		2503A-RDU70CW 2503A-RDV70UW	
	RDU71CW/RDV71UW SA	Appendix D for the BlackBerry® Smartphone Mod RDU71CW/RDV71UW SAR Report Dates of Test Test Report No	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Dates of Test Feb 7 – May 25, 2011 Test Report No RTS-3933-1105-11B FCC ID: L6ARDU70CW

Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	50.1 Ω - 9.2 jΩ
Return Loss	-20.7 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	51.2 Ω - 4.2 jΩ
Return Loss	-27.3 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	56.0 Ω - 2.6 jΩ
Return Loss	-24.2 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	51.1 Ω - 3.0 jΩ
Return Loss	-29.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.202 ns

After long term use with 40 W 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	July 09, 2004

Certificate No: D5GHzV2-1033_Nov09

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 71(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

DASY5 Validation Report for Head TSL

Date/Time: 12,11,2009 13:12:49

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1033

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz; Duty

Cycle: 1:1

Medium: HSL 3-6 GHz

Medium parameters used: f = 5200 MHz; $\sigma = 4.53$ mho/m; $\varepsilon_r = 35.4$; $\rho = 1000$ kg/m³, Medium parameters used: f = 5500 MHz; $\sigma = 4.81$ mho/m; $\varepsilon_r = 34.8$; $\rho = 1000$ kg/m³, Medium parameters used: f = 5800

MHz; $\sigma = 5.08 \text{ mho/m}$; $\epsilon_r = 34.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 SN3503; ConvF(5.36, 5.36, 5.36), ConvF(4.85, 4.85, 4.85), ConvF(4.74, 4.74, 4.74); Calibrated: 11.03.2009
- Sensor-Surface: 2mm (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

Configuration D5GHzV2 Dipole (Head)/d=10mm, Pin=250mW, f=5200 MHz/Area Scan

(91x91x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (interpolated) = 15.4 mW/g

Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5200 MHz/Zoom Scan

(4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 64.7 V/m; Power Drift = 0.035 dB

Peak SAR (extrapolated) = 30 W/kg

SAR(1 g) = 7.75 mW/g; SAR(10 g) = 2.19 mW/gMaximum value of SAR (measured) = 15.3 mW/g

Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5500 MHz/Zoom Scan

(4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 65.4 V/m; Power Drift = 0.057 dB

Peak SAR (extrapolated) = 33.8 W/kg

SAR(1 g) = 8.29 mW/g; SAR(10 g) = 2.32 mW/gMaximum value of SAR (measured) = 16.5 mW/g

Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5800 MHz/Zoom Scan

(4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

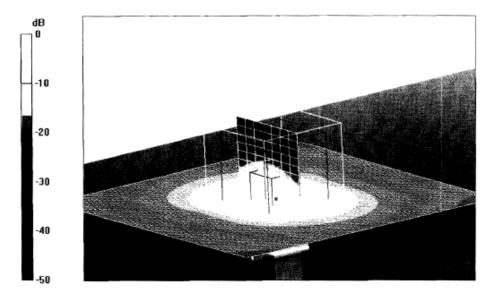
Reference Value = 61.7 V/m; Power Drift = 0.067 dB

Peak SAR (extrapolated) = 32.4 W/kg

SAR(1 g) = 7.62 mW/g; SAR(10 g) = 2.15 mW/g

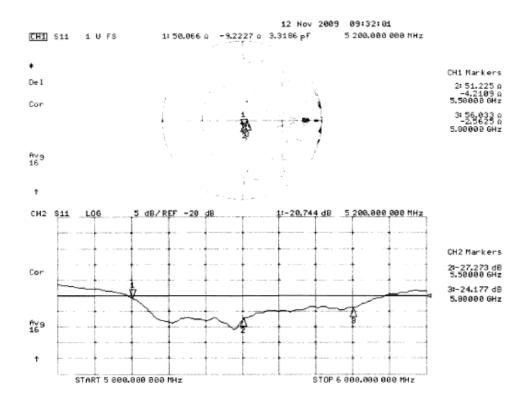
Certificate No: D5GHzV2-1033_Nov09 Page 7 of 11

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 72(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW



Testing Services™	Appendix D for the BlackB RDU71CW/RDV71UW SA		lel	73(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Impedance Measurement Plot for Head TSL



Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Page 74(81)			
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

DASY5 Validation Report for Body TSL

Date/Time: 13.11.2009 12:28:18

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1033

Communication System: CW; Frequency: 5500 MHz; Duty Cycle: 1:1

Medium: MSL 3-6 GHz

Medium parameters used: f = 5500 MHz; $\sigma = 5.83 \text{ mho/m}$; $\varepsilon_r = 47.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

Probe: EX3DV4 - SN3503; ConvF(4.37, 4.37, 4.37); Calibrated: 11.03.2009

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn601; Calibrated: 07.03.2009

Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002

Measurement SW: DASY5, V5.2 Build 157; SEMCAD X Version 14.0 Build 57

Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5500 MHz/Area Scan

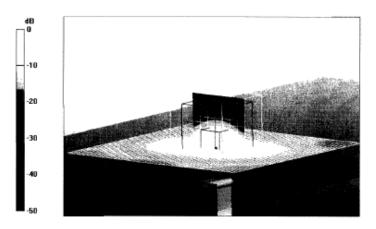
(91x91x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (interpolated) = 16.2 mW/g

Configuration D5GHzV2 Dipole/d=10mm, Pin=250mW, f=5500 MHz/Zoom Scan (4x4x2.5mm), dist=2mm (8x8x10)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm

Reference Value = 59.5 V/m; Power Drift = -0.044 dB

Peak SAR (extrapolated) = 33.3 W/kg

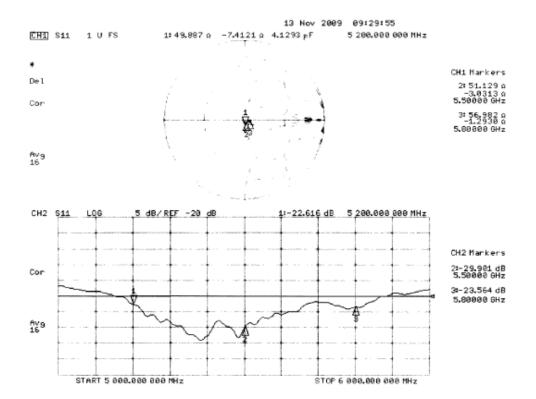
SAR(1 g) = 8.22 mW/g; SAR(10 g) = 2.28 mW/gMaximum value of SAR (measured) = 16.4 mW/g



0 dB = 16.4 mW/g

Testing Services™	Appendix D for the Black! RDU71CW/RDV71UW SA		lel	Page 75(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Impedance Measurement Plot for Body TSL



Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 76(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Calibration Laboratory of Schmid & Partner Engineering AG

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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

Certificate No: D1800V2-2d020 Jan11 RTS (RIM Testing Services)

CALIBRATION CERTIFICATE

The Complete State of States of States and Object D1800V2 - SN: 2d020 Calibration procedure(s) QA CAL-05.v8 Calibration procedure for dipole validation kits for a proper one gen January 13, 2011 Calibration date: This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%. Calibration Equipment used (M&TE critical for calibration) Primary Standards Cal Date (Certificate No.) Scheduled Calibration Power meter EPM-442A GB37480704 06-Oct-10 (No. 217-01266) Oct-11 Power sensor HP 8481A US37292783 06-Oct-10 (No. 217-01266) Oct-11 30-Mar-10 (No. 217-01158) Reference 20 dB Attenuator SN: 5086 (20g) Mar-11 Type-N mismatch combination SN: 5047.2 / 06327 30-Mar-10 (No. 217-01162) Mar-11 Reference Probe ES3DV3 SN: 3205 30-Apr-10 (No. ES3-3205 Apr10) Apr-11 DAE4 SN: 601 10-Jun-10 (No. DAE4-601_Jun10) Jun-11 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 100005 4-Aug-99 (in house check Oct-09) In house check: Oct-11 Network Analyzer HP 8753E US37390585 S4206 18-Oct-01 (in house check Oct-10) In house check: Oct-11 Name Function Calibrated by: Katia Pokovic Approved by: Issued: January 13, 2011 This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: D1800V2-2d020_Jan11

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report			Page 77(81)
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Calibration Laboratory of

Schmid & Partner Engineering AG





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Accreditation No.: SCS 108

Zeughausstrasse 43, 8004 Zurich, Switzerland

Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA

Multilateral Agreement for the recognition of calibration certificates Glossary:

TSL

tissue simulating liquid

ConvF N/A

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "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
- 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
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

			 	 	 	_
Certificate No	: D1800V2-2d02	0 Jan11	Page 2 of 6			

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RDU71CW/RDV71UW SAR Report Page 78(81)		Page 78(81)	
Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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 ³ (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 ³ (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)

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Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

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

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

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)

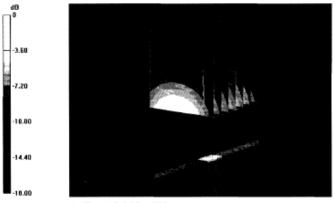
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement

grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.654 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 17.902 W/kg

SAR(I g) = 9.78 mW/g; SAR(I0 g) = 5.13 mW/gMaximum value of SAR (measured) = 12.051 mW/g



0 dB = 12.050 mW/g

Certificate No: D1800V2-2d020_Jan11

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Author Data	Dates of Test	Test Report No	FCC ID:	IC ID
Andrew Becker	Feb 7 – May 25, 2011	RTS-3933-1105-11B RTS-2580-1106-09	L6ARDU70CW L6ARDV70UW	2503A-RDU70CW 2503A-RDV70UW

Impedance Measurement Plot for Head TSL

