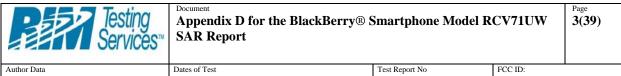
Testing Services™	Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:		
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	L6ARCV70UW		

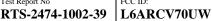
APPENDIX D: PROBE & DIPOLE CALIBRATION DATA

ew Becker		Dates of Test	t		Test Report No		FCC ID:	
			y 21 – March	3, 2010	RTS-2474-	1002-39	L6ARCV7)UW
	Calibration La Schmid & Partr Engineering	ner AG		AC MEA	SWISS NO	C Service si Servizio s	rischer Kalibrierdien uisse d'étaionnage vizzero di taratura	st
3	Zeughausstrasse 43,	8004 Zurich	, Switzerland	"Markedender	19RAT	S Swiss Cal	libration Service	
	Multilateral Agreeme	tion Service nt for the re	ion Service (SAS) is one of the signatori cognition of calibratio ng Services)			ion No.: SCS		itoni
ſ	lago marta	Service and the	ERTIFICAT	E				
l	Object		ET3DV6 - SN:1					
	Calibration procedure	s(s)	INCIDENT COMPLEX INTERVIEW	and QA CAL-23.v adure for dosime		Des		
	Calibration data:		March 10, 2009					
	Condition of the callb	rated item	In Tolerance		the states	No.		
	The measurements a All calibrations have t	nd the uncer	nts the traceability to na tainties with confidence and in the closed laborat E critical for calibration)	probability are given or	the following pages	and are part of t	the certificale.	
	Photo and a straight		1		122.57			
	Primary Standards Power meter E4419B	ř.	ID # GB41293874	Cal Date (Certifica 1-Apr-08 (No. 217	and a second data	Sche Apr-0	duled Calibration	
	Power sensor E4412/	A	MY41495277	1-Apr-08 (No. 217-	00788)	Apr-0	9	
	Power sensor E4412/	Contraction in the second	MY41498087	1-Apr-08 (No. 217-		Apr-D		
	Reference 3 dB Atten Reference 20 dB Atte		SN: S5054 (3c) SN: S5086 (20b)	1-Jul-08 (No. 217- 31-Mar-08 (No. 21	21 State (1999)	Jul-09 Apr-0		
	Reference 30 dB Atta		SN: S5129 (30b)	1-Jul-08 (No. 217-		Jul-05		
	Reference Probe ES3 DAE4	SDV2	SN: 3013 SN: 660	2-Jan-09 (No. ES3 9-Sep-06 (No. DAI	18 14 21 27 26 16 16 17 20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Jan-1 Sep-0		
						10.000		
	Secondary Standards RF generator HP 864		ID# US3642U01700	Check Date (in house 4-Aug-99 (in house			duled Check use check: Oct-09	
	Network Analyzer HP		U\$37390585	18-Oct-01 (in house			use check: Oct-09 use check: Oct-09	
			Name	Functi	on	Sign	ature	
	Calibrated by:		Kalja Pokovic	and the second se	ical Manager	Jest.	Eni Mel	
			Fin Bomholt	RAD	Director	I Pa	1.11	1.70
	Approved by:						201011	



Andrew Becker

January 21 – March 3, 2010



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



NIS

BRA

S Schweizerischer Kallbrierdienst C Service sulsse d'étalonnage

Servizio svizzero di taratura

Swiss Calibration Service

Accreditation No.: SCS 108

s

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: TSI

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization ϕ	or rotation around probe axis
Polarization 9	B 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 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 (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Certificate No: ET3-1643_Mar09

Page 2 of 9

Testing Services™	Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:		
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	L6ARCV70	UW	

March 10, 2009

Probe ET3DV6

SN:1643

Manufactured: Last calibrated: Recalibrated: November 7, 2001 March 11, 2008 March 10, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: ET3-1643_Mar09

Page 3 of 9

March 10, 2009

DASY - Parameters of Probe: ET3DV6 SN:1643

Sensitivity in Free	Diode Compressio			
NormX	1.75 ± 10.1%	$\mu V/(V/m)^2$	DCP X	94 mV
NormY	1.98 ± 10.1%	$\mu V/(V/m)^2$	DCP Y	95 mV
NormZ	1.79 ± 10.1%	$\mu V/(V/m)^2$	DCP Z	93 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	11.4	7.7
SAR _{be} [%]	With Correction Algorithm	0.9	0.6

TSL

1810 MHz Typical SAR gradient: 10 % per mm

Sensor Cente	r to Phantom Surface Distance	3.7 mm	4.7 mm
SAR _{be} [%]	Without Correction Algorithm	12.0	8.2
SAR _{be} [%]	With Correction Algorithm	0.9	0.5

Sensor Offset

Probe Tip to Sensor Center 2.7 mm

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

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

* Numerical linearization parameter: uncertainty not required.

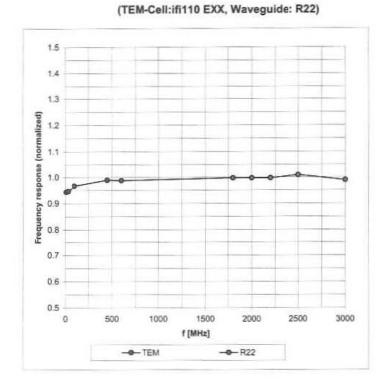
Certificate No: ET3-1643_Mar09

Page 4 of 9

Testing Services [™]	Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:		
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	L6ARCV70	UW	

March 10, 2009

Frequency Response of E-Field



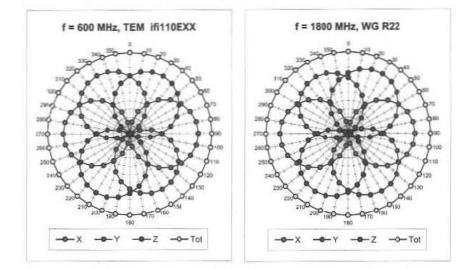
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Certificate No: ET3-1643_Mar09

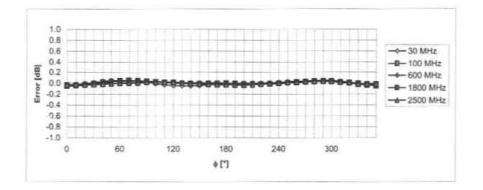
Page 5 of 9

Testing Services™	Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:		
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	D L6ARCV70UW		

March 10, 2009



Receiving Pattern (\u00fc), 9 = 0°



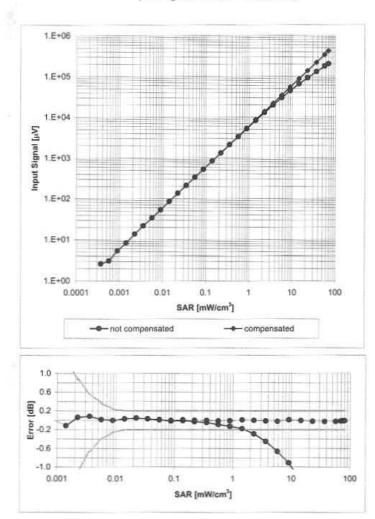
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Certificate No: ET3-1643_Mar09

Page 6 of 9

Testing Services™	Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:		
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	L6ARCV70UW		

March 10, 2009



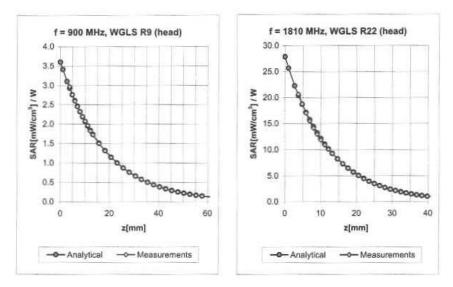
Dynamic Range f(SAR_{head}) (Waveguide R22, f = 1800 MHz)

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

Certificate No: ET3-1643_Mar09

Page 7 of 9

March 10, 2009



Conversion Factor Assessment

f [MHz]	Validity [MHz] ^c	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.30	2.80	5.94 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.74	2.21	5.17 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.61	2.51	4.94 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.40	2.90	5.88 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3±5%	1.52 ± 5%	0.64	2.91	4.77 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3±5%	1.52 ± 5%	0.85	2.25	4.74 ± 11.0% (k≈2)

^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.

Certificate No: ET3-1643_Mar09

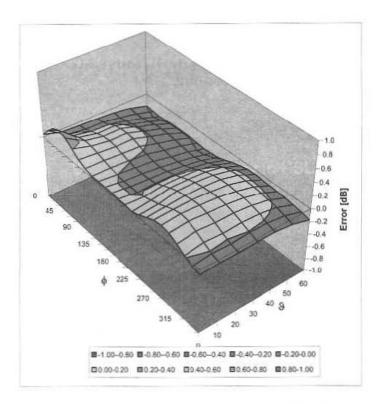
Page 8 of 9

Testing Services [™]	Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report				
Author Data	Dates of Test	Test Report No	FCC ID:		
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	L6ARCV70UW		

March 10, 2009

Deviation from Isotropy in HSL

Error (o, 3), f = 900 MHz

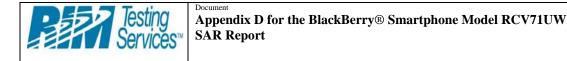


Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Certificate No: ET3-1643_Mar09

Page 9 of 9

Testing Services			
^{ta} ew Becker	Dates of Test January 21 – N	March 3, 2010 Test Report N RTS-24'	• FCC ID: 74-1002-39 L6ARCV70UW
Calibration Laborato Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zuri		BORNERA (PRISS) S CRUBERATO S	Service suisse d'étalonnage Servizio svizzero di taratura
Accredited by the Swiss Accredit The Swiss Accreditation Servio Multilateral Agreement for the	e is one of the signatori	es to the EA	n No.: SCS 108
Client RTS (RIM Tes			o: ET3-1644_Nov09
CALIBRATION	CERTIFICAT		and the second
Object	ET3DV6 - SN:10	644	a tha an an tha an
Calibration procedure(s)		QA CAL-23 v3 and QA CAL-25.v2 edure for dosimetric E-field probe	
Calibration date:		009	
This calibration certificate docur The measurements and the uno	nents the traceability to na ertainties with confidence ucted in the closed laborate	009 tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)*(its of measurements (SI). d are part of the certificate.
This calibration certificate docur The measurements and the uno All calibrations have been condu	nents the traceability to na ertainties with confidence ucted in the closed laborate	tional standards, which realize the physical un probability are given on the following pages an	its of measurements (SI). d are part of the certificate.
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M& Primary Standards Power meter E4419B	nents the traceability to na entainties with confidence ucted in the closed laborate TE critical for calibration) ID # GB41293874	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)°(Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030)	its of measurements (SI). nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A	nents the traceability to na ertainties with confidence ucted in the closed laborate ITE critical for calibration) ID # GB41293874 MY41495277	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)°(<u>Cal Date (Certificate No.)</u> 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030)	its of measurements (SI). Ind are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A	Inents the traceability to na entainties with confidence ucted in the closed laborate ATE critical for calibration) ID # GB41293874 MY41495277 MY41498087	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030)	its of measurements (SI). Id are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Apr-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M8 Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator	Inents the traceability to nate entainties with confidence sucted in the closed laborate ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c)	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)°(<u>Cal Date (Certificate No.)</u> 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01026)	its of measurements (SI). Id are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Apr-10 Mar-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A	Inents the traceability to na entainties with confidence ucted in the closed laborate ATE critical for calibration) ID # GB41293874 MY41495277 MY41498087	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030)	its of measurements (SI). Id are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Apr-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M& Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator	Inents the traceability to nate entainties with confidence sucted in the closed laborate ITE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5066 (20b)	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)°(Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01028)	its of measurements (SI). Id are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Mar-10 Mar-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M& Primary Standards Power meter E44198 Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 30 dB Attenuator	ID # ID # GB41293874 MY41495277 MY41496087 SN: S5054 (3c) SN: S5056 (20b) SN: S5129 (30b)	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)*(Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01028) 31-Mar-09 (No. 217-01028) 31-Mar-09 (No. 217-01027)	its of measurements (SI). Id are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Mar-10 Mar-10 Mar-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M& Primary Standards Power meter E44198 Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2	ID # ID # GB41293874 MY41495277 MY41496087 SN: S5054 (3c) SN: S5056 (20b) SN: S5129 (30b) SN: 3013	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)*(Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01028) 31-Mar-09 (No. 217-01027) 2-Jan-09 (No. ES3-3013_Jan09)	its of measurements (SI). Id are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Mar-10 Mar-10 Mar-10 Jan-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (MS Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 30 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5054 (3c) SN: S5129 (30b) SN: 3013 SN: 660	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)°(Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01020) 31-Mar-09 (No. 217-01028) 31-Mar-09 (No. 217-01027) 2-Jan-09 (No. ES3-3013_Jan09) 29-Sep-09 (No. DAE4-660_Sep09)	its of measurements (SI). Ind are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Mar-10 Mar-10 Mar-10 Jan-10 Sep-10
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M8 Primary Standards Power meter E4419B Power sensor E4419A Reference 3 dB Attenuator Reference 30 dB Attenuator Reference 70 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards	nents the traceability to na ertainties with confidence ucted in the closed laborate TE critical for calibration) ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5054 (3c) SN: S5054 (3c) SN: S5129 (30b) SN: S5129 (30b) SN: 3013 SN: 660	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)°(Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01027) 2-Jan-09 (No. ES3-3013_Jan09) 29-Sep-09 (No. DAE4-660_Sep09) Check Date (in house)	its of measurements (SI). Id are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Mar-10 Mar-10 Mar-10 Jan-10 Sep-10 Scheduled Check
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M8 Primary Standards Power meter E44198 Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 30 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C Network Analyzer HP 8753E	Inents the traceability to nate entainties with confidence of acted in the closed laborate ATE critical for calibration) (D # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5054 (3c) SN: S5066 (20b) SN: S5129 (30b) SN: S5129 (30b) SN: 3013 SN: 660 ID # US3642U01700 US37390585 Name	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01030) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01027) 2-Jan-09 (No. 2S3-3013_Jan09) 29-Sep-09 (No. DAE4-660_Sep09) Check Date (in house) 4-Aug-99 (in house check Oct-09) 18-Oct-01 (in house check Oct-09) Function	its of measurements (SI). Ind are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Apr-10 Mar-10 Mar-10 Jan-10 Sep-10 Scheduled Check In house check: Oct-11
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M8 Primary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C	ID # GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5054 (3c) SN: S5056 (20b) SN: S5129 (30b) SN: S129 (30b) SN: 3013 SN: 660 ID # US3642U01700 US37390585	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01030) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01027) 2-Jan-09 (No. ES3-3013_Jan09) 29-Sep-09 (No. DAE4-660_Sep09) Check Date (in house) 4-Aug-09 (in house check Oct-09) 18-Oct-01 (in house check Oct-09)	its of measurements (SI). Ind are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Mar-10 Mar-10 Jan-10 Sep-10 Scheduled Check In house check: Oct-11 In house check: Oct10 Signature
This calibration certificate docur The measurements and the uno All calibrations have been condu Calibration Equipment used (M8 Primary Standards Power meter E44198 Power sensor E4412A Power sensor E4412A Reference 3 dB Attenuator Reference 30 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C Network Analyzer HP 8753E	Inents the traceability to nate entainties with confidence of acted in the closed laborate ATE critical for calibration) (D #) (GB41293874 MY41495277 MY41498087 SN: S5054 (3c) SN: S5054 (3c) SN: S5066 (20b) SN: S5129 (30b) SN: S5129 (30b) SN: 3013 SN: 660 (D #) (US37390585) Name	tional standards, which realize the physical un probability are given on the following pages an ory facility: environment temperature (22 ± 3)*0 Cal Date (Certificate No.) 1-Apr-09 (No. 217-01030) 1-Apr-09 (No. 217-01030) 31-Mar-09 (No. 217-01030) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01026) 31-Mar-09 (No. 217-01028) 31-Mar-09 (No. 217-01027) 2-Jan-09 (No. 253-3013_Jan09) 29-Sep-09 (No. DAE4-660_Sep09) Check Date (in house) 4-Aug-99 (in house check Oct-09) 18-Oct-01 (in house check Oct-09) Function Laboratory Technician	its of measurements (SI). Id are part of the certificate. C and humidity < 70%. Scheduled Calibration Apr-10 Apr-10 Mar-10 Mar-10 Jan-10 Sep-10 Scheduled Check In house check: Oct-11 In house check: Oct10



Author Data
Andrew Becker

Dates of Test January 21 – March 3, 2010

Test Report No FCC ID: **RTS-2474-1002-39 L6ARCV70UW**

s

Calibration Laboratory of

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



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

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

Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization ϕ	φ rotation around probe axis
Polarization 8	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:

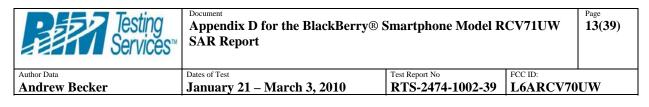
- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held 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.

Certificate No: ET3-1644_Nov09

Page 2 of 11



November 11, 2009

Probe ET3DV6

SN:1644

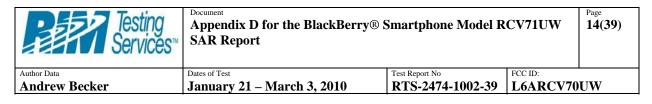
Manufactured: Last calibrated: Recalibrated: November 7, 2001 November 10, 2008 November 11, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: ET3-1644_Nov09

Page 3 of 11



November 11, 2009

DASY - Parameters of Probe: ET3DV6 SN:1644

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m) ²) ^A	1.85	1.95	1.93	± 10.1%
DCP (mV) ⁸	93.6	93.0	91.9	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	с	VR mV	Unc (k=2)
10000	cw	0.00	×	0.00	0.00	1.00	300	± 1.5%
			Y	0.00	0.00	1.00	300	
			z	0.00	0.00	1.00	300	

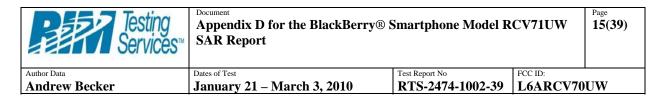
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

⁴ The uncertainties of NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

⁵ Numerical linearization parameter: uncertainty not required.

Certificate No: ET3-1644_Nov09

Page 4 of 11



November 11, 2009

DASY - Parameters of Probe: ET3DV6 SN:1644

Calibration Parameter Determined in Head Tissue Simulating Media

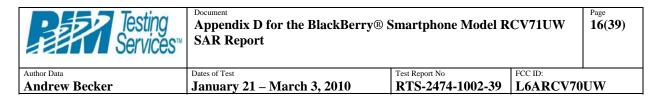
f [MHz]	Validity [MHz] ^C	Permittivity	Conductivity	ConvFX Co	nvFY Co	nvF Z	Alpha	Depth Unc (k=2)
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	6.08	6.08	6.08	0.42	2.29 ± 11.0%
1810	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	5.17	5.17	5.17	0.61	2.31 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	4.50	4.50	4.50	0.99	1.61 ± 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.

Certificate No: ET3-1644_Nov09

Page 5 of 11



November 11, 2009

DASY - Parameters of Probe: ET3DV6 SN:1644

Calibration Parameter Determined in Body Tissue Simulating Media

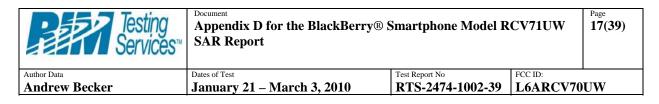
f [MHz]	Validity [MHz] ^G	Permittivity	Conductivity	ConvFX Cor	wFY Cor	nvF Z	Alpha	Depth Unc (k=2)
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	5.87	5.87	5.87	0.41	2.55 ± 11.0%
1810	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.69	4.69	4.69	0.79	2.57 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	4.11	4.11	4.11	0.99	1.41 ± 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.

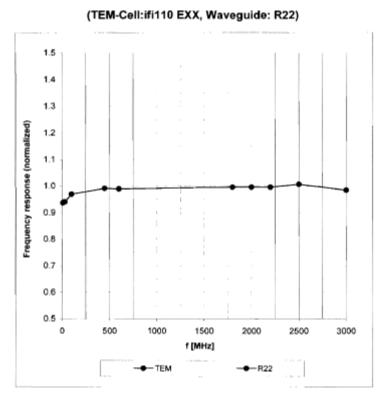
Certificate No: ET3-1644_Nov09

Page 6 of 11



November 11, 2009

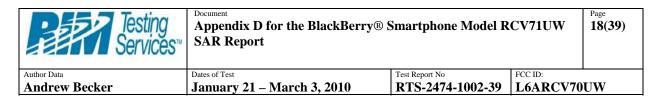
Frequency Response of E-Field



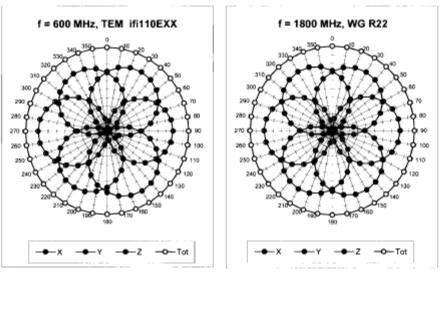
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Certificate No: ET3-1644_Nov09

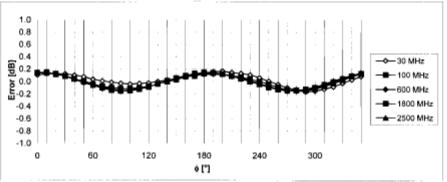
Page 7 of 11



November 11, 2009



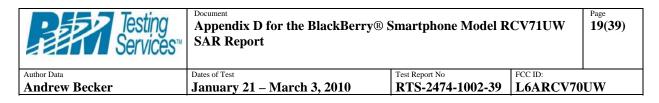
Receiving Pattern (ϕ), $\vartheta = 0^{\circ}$



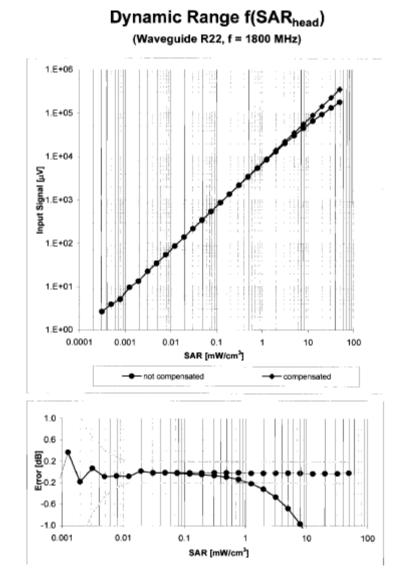
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Certificate No: ET3-1644_Nov09

Page 8 of 11



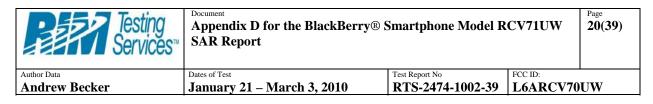
November 11, 2009



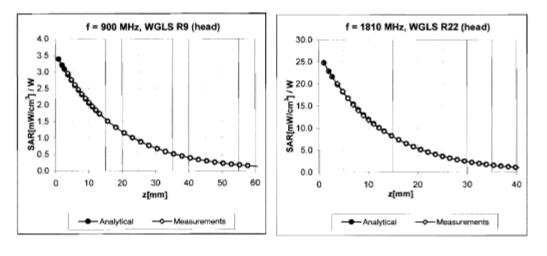
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Certificate No: ET3-1644_Nov09

Page 9 of 11

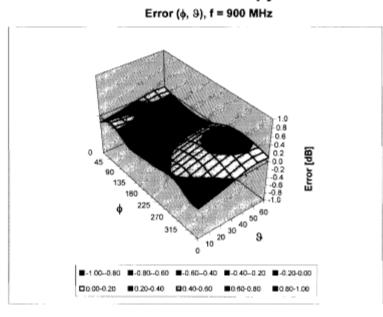


November 11, 2009



Conversion Factor Assessment

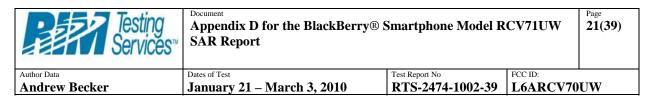
Deviation from Isotropy in HSL



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

Certificate No: ET3-1644_Nov09

Page 10 of 11



November 11, 2009

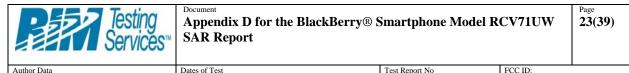
Other Probe Parameters

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

Certificate No: ET3-1644_Nov09

Page 11 of 11

w Becker	Dates of Test January 21 – Mar		eport No S-2474-1002-39	FCC ID: L6ARCV70	UW
Calibration Labo Schmid & Partner Engineering AG Zeughausstrasse 43, 800		Hacimera Racimera	S Schweizerische C Service suisse S Servizio svizzer S Swiss Calibratio	o di taratura	
The Swiss Accreditation	Accreditation Service (SAS) Service is one of the signatorie or the recognition of calibration	is to the EA	editation No.: SCS 108		
Client RTS (RIM	Testing Services)	Certif	ficate No: D835V2-44	6_Jan09	
CALIBRATIC	N CERTIFICATE				1
Object	D835V2 - SN: 44	16			
Calibration procedure(s)	QA CAL-05.v7	dure for dipole validation k	ite		
	Campranon proce		113		
Calibration date:	January 05, 2009	9			
Condition of the calibrated	litem In Tolerance				
The measurements and the	e uncertainties with confidence p	ional standards, which realize the phy robability are given on the following p	bages and are part of the ce	rtificate.	
STATUTE OF A ST	conducted in the closed laborato ed (M&TE critical for calibration)	ry facility: environment temperature (2	22 ± 3)°C and humidity < 70	%.	
Primary Standards Power meter EPM-442A	ID # GB37480704	Cal Date (Certificate No.) 08-Oct-08 (No. 217-00898)	Scheduled (Oct-09	Jailoration	-
Power sensor HP 8481A	US37292783	08-Oct-08 (No. 217-00898)	Oct-09		
Reference 20 dB Attenuat		01-Jul-08 (No. 217-00864)	Jul-09		
Type-N mismatch combine Reference Probe 55201/2		01-Jul-08 (No. 217-00867) 28-Apr-08 (No. ES3-3025 Apr08)	-Jul-09 Apr-09		
Reference Probe ES3DV2 DAE4	SN: 3025 SN: 601	14-Mar-08 (No. DAE4-601_Mar08)			
Secondary Standards	ID#	Check Date (in house)	Scheduled (-
Power sensor HP 8481A RF generator R&S SMT-0	MY41092317 6 100005	18-Oct-02 (in house check Oct-07) 4-Aug-99 (in house check Oct-07)			
Network Analyzer HP 875		18-Oct-01 (in house check Oct-08)			
	Name Jeton Kastrati	Function Laboratory Technician	Signature 7	11	
Calibrated by:			Ta	2 1 202	
	Katja Pokovic	Technical Manager	11	- 1001	
Calibrated by:	Kaga Pokovic	Technical Manager	Issued: Janu	ary 7 2000	



Andrew Becker

January 21 – March 3, 2010

RTS-2474-1002-39

L6ARCV70UW

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



Schweizerischer Kalibrierdienst S Service suisse d'étalonnage

С Servizio svizzero di taratura

Swiss Calibration Service

s

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 ٠ connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

Certificate No: D835V2-446 Jan09

Page 2 of 6

Author Data Document Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report Test Report No FCC ID:		Page 24(39)		
Author Data	Dates of Test	Test Report No	FCC ID:	
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	L6ARCV70	UW

Measurement Conditions

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

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.3 ± 6 %	0.91 mha/m ± 6 %
Head TSL temperature during test	(21.5 ± 0.2) °C		

SAR result with Head TSL

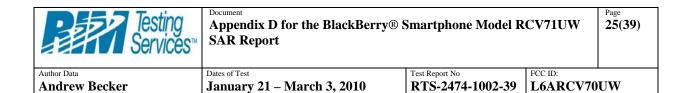
SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.40 mW / g
SAR normalized	normalized to 1W	9.60 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	9.50 mW /g ± 17.0 % (k=2)

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

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

Certificate No: D835V2-446_Jan09

Page 3 of 6



Appendix

Antenna Parameters with Head TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.385 ns	
----------------------------------	----------	--

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

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

feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 24, 2001

Certificate No: D835V2-446_Jan09

Page 4 of 6

L6ARCV70UW

DASY5 Validation Report for Head TSL

Date/Time: 05.01.2009 10:38:06

Test Laboratory: SPEAG, Zurich, Switzerland

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

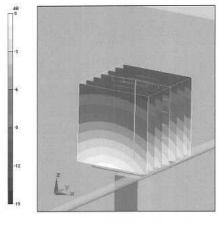
Communication System: CW-835; Frequency: 835 MHz; Duty Cycle: 1:1 Medium: HSL 900 MHz Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 41.1; ρ = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

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

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

Reference Value = 55.7 V/m; Power Drift = 0.024 dB Peak SAR (extrapolated) = 3.54 W/kg SAR(1 g) = 2.4 mW/g; SAR(10 g) = 1.58 mW/g Maximum value of SAR (measured) = 2.7 mW/g



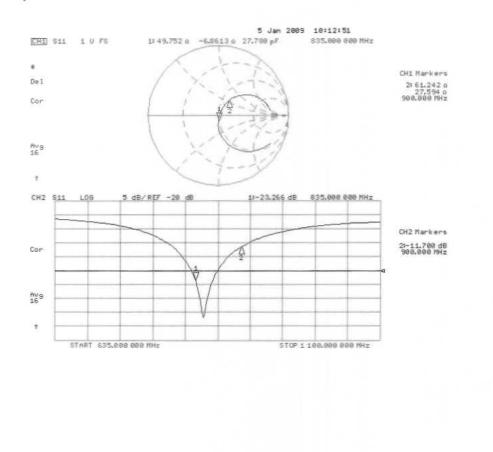
0 dB = 2.7 mW/g

Certificate No: D835V2-446_Jan09

Page 5 of 6

Testing Services™	Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report		Page 27(39)	
Author Data	Dates of Test	Test Report No	FCC ID:	
Andrew Becker	Tanuary 21 – March 3, 2010 RTS-2474-1002-39 L6ARCV70		UW	

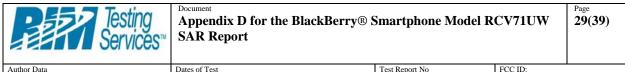
Impedance Measurement Plot for Head TSL



Certificate No: D835V2-446_Jan09

Page 6 of 6

r Data Irew Becker	•	Dates of Test January 21 – Mare	ch 3, 2010	Test Report No RTS-2474-100 2		CC ID: L6ARCV70UW
S	alibration Lab chmid & Partne Engineering Al oghausstrasse 43, 8	er	ACC ME	CRUSS SC S	Service su Servizio si	ischer Kalibrierdienst isse d'étalonnage vizzero di taratura ibration Service
TR	he Swiss Accreditatio ultilateral Agreement	as Accreditation Service (SA) on Service is one of the sign: I for the recognition of calibr	etories to the EA	Accreditation		
_	The survey survey	M Testing Services) ON CERTIFICA	TE	Certificate No:	D1900V	2-545-Jan09
	Dbject	D1900V2 - S				
c	alibration procedure(s			ole validation kits		
		and the second sec				
c	alibration date:	January 06, 2	2009		hard	
	alibration date:		2009			
C T T	Condition of the calibration certification certification certification certification measurements and If calibrations have be		o national standards, w roe probability are give pratory faoility: environ	in on the following pages and	are part of t	the certificate.
C T T C P	Condition of the calibra his calibration certifica he measurements and all calibrations have be alibration Equipment v rimary Standards	ted item In Tolerance te documents the traceability to the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibration ID #	o national standards, w roce probability are give oratory faoility: environ on) Cal Date (Cali	in on the following pages and ment temperature (22 ± 3)°C brated by, Certificate No.)	are part of t and humidit Sched	the certificate. γ < 70%.
C T T C P P	Condition of the calibration certifice he measurements and il calibrations have be calibration Equipment (rimary Standards ower meter EPM-442/	ted item In Tolerance te documents the traceability to the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibration ID # A GB37480704	o national standards, w roce probability are give pratory faoility: environ on) Cal Date (Cali 08-Oct-08 (No	in on the following pages and ment temperature (22 ± 3)°C brated by, Certificate No.) . 217-00898)	are part of t and humidit Sched Oct-00	the certificate. y < 70%. tuled Calibration
C T T A C P P P	Condition of the calibra his calibration certifica he measurements and all calibrations have be alibration Equipment v rimary Standards	ted item In Tolerance the documents the traceability to the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibration ID # A GB37480704 A US37292783	o national standards, w roce probability are give oratory faoility: environ on) Cal Date (Cali	in on the following pages and ment temperature (22 ± 3)°C brated by, Certificate No.) 217-00898) 217-00898)	are part of t and humidit Sched	the certificate. y < 70%. tuled Calibration 9 9
C TT A C PPPRT	Condition of the calibration certification certification certifications have be calibration Equipment of calibration Equipment of cover meter EPM-442/ lower sensor HP 8481. Reference 20 dB Attensive pe-N mismatch comb	ted item In Tolerance te documents the traceability to the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibrating lib # A. G837460704 A. US37292783 uator SN: 5085 (20g) ination SN: 5047.2 / 063	o national standards, w roc probability are give oratory facility: environ on) Cal Date (Cali 08-Oct-08 (No 08-Oct-08 (No 01-Jul-08 (No 27 01-Jul-08 (No	In on the following pages and ment temperature (22 ± 3)*C brated by, Certificate No.) . 217-00898) . 217-00898) . 217-00864) . 217-00867)	are part of t and humidit Sched Oct-00 Jul-09 Jul-09	the certificate. y < 70%. fuled Calibration 9 9
C TT A C PPPRTT	Condition of the calibration certification certification certification and a calibration bave be calibration Equipment virtuary Standards tower meter EPM-442/ ower sensor HP 8481, telerence 20 dB Attenu	ted item In Tolerance te documents the traceability to the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibrating lib # A. G837460704 A. US37292783 uator SN: 5085 (20g) ination SN: 5047.2 / 063	o national standards, w noe probability are give oratory facility: environ on) Cal Date (Cali 08-Oct-08 (No 08-Oct-08 (No 01-Jul-08 (No 27 01-Jul-08 (No 28-Apr-08 (No	an on the following pages and ment temperature (22 ± 3)°C brated by, Certificate No.) . 217-00898) . 217-00898) . 217-00864)	are part of t and humidit Sched Oct-0 Oct-0 Jui-09	the certificate. y < 70%. tuled Calibration 9 9 9 9
C TT A C PPPRTRD	Condition of the calibration certifica his calibration certifica he measurements and al calibrations have be calibration Equipment of rimary Standards ower meter EPM-442/ tower sensor HP 8481, telerence 20 dB Attenu ype-N mismatch comb telerence Probe ES30	ted item In Tolerance te documents the traceability to the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibration in D # A G837480704 A US37292783 uator SN: 5085 (20g) ination SN: 5047.2 / 063 V2 SN: 3025	o national standards, w noe probability are give oratory facility: environ on) Cal Date (Cali 08-Oct-08 (No 08-Oct-08 (No 01-Jul-08 (No 27 01-Jul-08 (No 28-Apr-08 (No	In on the following pages and ment temperature (22 ± 3)*C brated by, Certificate No.) .217-00898) .217-00898) .217-00864) .217-00867) .ES3-3025_Apr08) .DAE4-601_Mar08)	Sched Sched Oct-00 Oct-00 Juli-09 Juli-09 Apr-00 Mar-0	the certificate. y < 70%. tuled Calibration 9 9 9 9
C TT A C PPPRTRD S	Condition of the calibration certification certification certifications have be calibrations have be calibration Equipment (calibration Equipment (calibration Equipment (calibration Equipment (calibration Equipment (calibration Equipment (calibration)), and the calibration of the sensor HP 8481, teterence 20 dB Attenu (calibration), teterence Probe ES3D (calibration), and the calibration of the sensor HP 8481, teterence Probe ES3D (calibration)), and the sensor HP 8481, teterence Probe ES3D (calibration), tables (calibrati	ted item In Tolerance te documents the traceability is the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibration in the closed lab used (M&TE critical for calibration in the closed lab used (M&TE critical for calibration in the closed lab is a conducted in the closed lab used (M&TE critical for calibration is set of the calibration in the closed lab is a conducted in the closed lab is a conducted lab	o national standards, w roce probability are give pratory faoility: environ on) Cal Date (Cali 08-Oct-08 (No 08-Oct-08 (No 01-Jul-08 (No 28-Apr-08 (No 14-Mar-08 (No Check Date (no	In on the following pages and ment temperature (22 ± 3)*C brated by, Certificate No.) .217-00898) .217-00898) .217-00864) .217-00867) .ES3-3025_Apr08) .DAE4-601_Mar08)	are part of t and humidit Oct-00 Oct-00 Jul-09 Jul-09 Jul-09 Apr-05 Mar-0 Sched	the certificate. y < 70%. tuled Calibration 9 9 9 9 9
C TT A C PPPRTRD SPR	Condition of the calibrat his calibration certifica he measurements and all calibrations have be calibration Equipment of rimary Standards ower meter EPM-442/ ower meter EPM-442/ ower sensor HP 8481, leference 20 dB Attens ype-N mismatch comb leference Probe ES30 IAE4 econdary Standards	ted item In Tolerance the documents the tracesbility to the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibration is a conducted in the closed lab used (M&TE critical for calibration (M&TE critical for calib	o national standards, w roce probability are give pratory facility: environ on) Cat Date (Cali 08-Oct-08 (No 08-Oct-08 (No 01-Jul-08 (No 28-Apr-08 (No 14-Mar-08 (No Check Date (in 18-Oct-02 (in 1 4-Aug-99 (in th	In on the following pages and ment temperature (22 ± 3)*C brated by, Certificate No.) .217-00898) .217-00896) .217-00864) .217-00867) .ES3-3025_Apr08) .DAE4-601_Mar08) thouse)	are part of t and humidit Oct-0 Oct-0 Jul-09 Jul-09 Apr-0 Mar-0 Sched In hou In hou	the certificate. y < 70%. tuled Calibration 9 9 9 9 9 9 9 9 9 9 9 9 9
C TT A C PPPRTRD SPR	Condition of the calibration certification c	ted item In Tolerance the documents the tracesbility to the uncertainties with confider en conducted in the closed lab used (M&TE critical for calibration is a conducted in the closed lab used (M&TE critical for calibration (M&TE critical for calib	o national standards, w noe probability are give oratory facility: environ on) Cal Date (Cali 08-Oct-08 (No 08-Oct-08 (No 01-Jul-08 (No 01-Jul-08 (No 28-Apr-08 (No 14-Mar-08 (No 14-Mar-08 (No 14-Mar-08 (No 14-Mar-09 (No 18-Oct-02 (in 1 4-Aug-99 (in h	In on the following pages and ment temperature (22 ± 3)*C brated by, Certificate No.) . 217-00898) . 217-00864) . 217-00867) . ES3-3025_Apr08) . DAE4-601_Mar08) Inouse check Oct-07) ouse check Oct-07)	are part of t and humidit Oct-0 Oct-0 Jul-09 Jul-09 Apr-0 Mar-0 Sched In hou In hou	the certificate. y < 70%. fulled Calibration 9 9 9 9 5 5 5 5 5 5 5 5 5 5 5 5 5
C TT A C PPPRTRD SPRN	Condition of the calibration certification c	ted item In Tolerance the documents the tracesbility is the uncertainties with confider en conducted in the closed lab- used (M&TE critical for calibration ID # A GB37480704 A US37292783 ator SN: 5047.2 / 063 V2 SN: 3025 SN: 601 ID # A MY41092317 F06 100005 753E US37390585 S4	o national standards, w noe probability are give oratory facility: environ on) Cal Date (Cali 08-Oct-08 (No 08-Oct-08 (No 01-Jul-08 (No 28-Apr-08 (No 14-Mar-08 (No	In on the following pages and ment temperature (22 ± 3)*C brated by, Certificate No.) 217-00898) 217-00898) 217-00864) 217-00867) ES3-3025_Apr08) IDAE4-601_Mar08) Inbuse Check Oct-07) puse check Oct-07) puse check Oct-08)	and humidit Sched Oct-0 Jul-09 Jul	the certificate. y < 70%. fulled Calibration 9 9 9 9 5 5 5 5 5 5 5 5 5 5 5 5 5



Andrew Becker

January 21 – March 3, 2010

RTS-2474-1002-39

L6ARCV70UW

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) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed . point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- . Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the ٠ nominal SAR result.

Certificate No: D1900V2-545 Jan09

Page 2 of 6

Testing Services™	Document Appendix D for the BlackBerry® S SAR Report	Smartphone Model R	CV71UW	Page 30(39)
Author Data	Dates of Test	Test Report No	FCC ID:	
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	L6ARCV70	UW

Measurement Co	onditions
----------------	-----------

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

DASY Version	DASY5	V5.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	Trees -
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.2 ± 6 %	1.47 mho/m ± 8 %
Head TSL temperature during test	(21.0 ± 0.2) °C	-	

SAR result with Head TSL

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

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

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

Certificate No: D1900V2-545_Jan09

Page 3 of 6

Testing Services™	Document Appendix D for the BlackBerry® SAR Report	Smartphone Model R	CV71UW	Page 31(39)
Author Data	Dates of Test	Test Report No	FCC ID:	
Andrew Becker	January 21 – March 3, 2010 RTS-2474-1002-39 L6ARCV70		UW	

Appendix

Antenna Parameters with Head TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 ns
----------------------------------	----------

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	November 15, 2001	

Certificate No: D1900V2-545_Jan09

Page 4 of 6

DASY5 Validation Report for Head TSL

Date/Time: 06.01.2009 13:17:58

Test Laboratory: SPEAG, Zurich, Switzerland

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

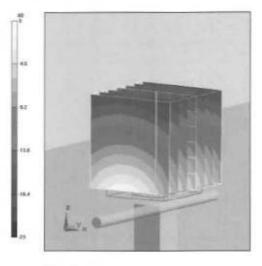
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium: HSL U10 BB Medium parameters used: f = 1900 MHz; σ = 1.47 mho/m; ϵ_r = 39.4; ρ = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC)

DASY5 Configuration:

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

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

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



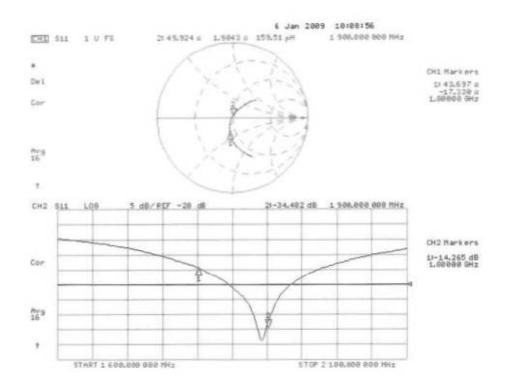
 $0 \mathrm{\,dB} = 12\mathrm{mW/g}$

Certificate No: D1900V2-545_Jan09

Page 5 of 6

Testing Services™	Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report		Page 33(39)	
Author Data	Dates of Test	Test Report No	FCC ID:	
Andrew Becker	January 21 – March 3, 2010 RTS-2474-1002-39 L6ARCV70U		UW	

Impedance Measurement Plot for Head TSL



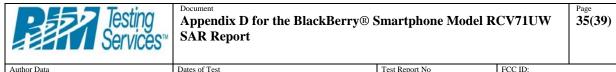
Certificate No: D1900V2-545_Jan09

Page 6 of 6

	Appendix D fo SAR Report		ne Model RCV71UW	34(39
Data rew Becker	Dates of Test January 21 – N	Test Report No Iarch 3, 2010 RTS-2474	4-1002-39 FCC ID: L6ARCV70	UW
Calibration Laborator Schmid & Partner Engineering AG Leughausstrasse 43, 8004 Zuric	-	ILAC MRA RAGE MRA RAGE SHISS SHIS S	Schweizerischer Kalibrierdien Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service	st
Accredited by the Swiss Accredita The Swiss Accreditation Service Multilateral Agreement for the re	is one of the signatorie	s to the EA	No.: SCS 108	
Client RTS (RIM Testi	ing Services)	Certificate No	: D2450V2-747_Nov09	
CALIBRATION C	ERTIFICATE			
Object	D2450V2 - SN: 7	47,	A Serie Caro	
Calibration procedure(s)	QA CAL-05.v7 Calibration proce	dure for dipole validation kits		
Calibration date:	November 11 20	09	1 1 1 1 4 6 5 11	
		1999 MUNIER ER Sate Kerner Merzen er der		
The measurements and the unce All calibrations have been conduc	ents the traceability to nat rtainties with confidence p cted in the closed laborato	onal standards, which realize the physical un robability are given on the following pages ar ny facility: environment temperature $(22 \pm 3)^{\circ}$	nd are part of the certificate.	
The measurements and the unce	ents the traceability to nat rtainties with confidence p cted in the closed laborato	onal standards, which realize the physical ur robability are given on the following pages ar	nd are part of the certificate.	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration)	onal standards, which realize the physical un robability are given on the following pages ar ry facility: environment temperature (22 ± 3) ^o Cal Date (Certificate No.)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A	ents the traceability to nat entainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704	onal standards, which realize the physical un robability are given on the following pages ar ny facility: environment temperature (22 ± 3)* <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8461A	ents the traceability to nat entainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783	onal standards, which realize the physical un robability are given on the following pages ar ny facility: environment temperature (22 ± 3)* <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g)	onal standards, which realize the physical ur robability are given on the following pages ar ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10 Mar-10	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination	ents the traceability to nat rtainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 / 06327	onal standards, which realize the physical un robability are given on the following pages ar ny facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10 Mar-10 Mar-10	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g)	onal standards, which realize the physical ur robability are given on the following pages ar ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10 Mar-10	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8461A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601	onal standards, which realize the physical un robability are given on the following pages ar ry facility: environment temperature (22 ± 3)° Cal Date (Certificate No.) 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10 Mar-10 Mar-10 Jun-10	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8461A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 3205 SN: 601	onal standards, which realize the physical un robability are given on the following pages ar ry facility: environment temperature (22 ± 3)° <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09) Check Date (in house)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10 Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317	onal standards, which realize the physical un robability are given on the following pages ar ry facility: environment temperature (22 ± 3)° <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09) Check Date (in house) 18-Oct-02 (in house check Oct-09)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10 Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check In house check: Oct-11	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8461A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 3205 SN: 601	onal standards, which realize the physical un robability are given on the following pages ar ry facility: environment temperature (22 ± 3)° <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. ES3-3205_Jun09) 07-Mar-09 (No. DAE4-601_Mar09) Check Date (in house)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10 Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8461A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8461A RF generator R&S SMT-06	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317 100005	onal standards, which realize the physical un robability are given on the following pages ar ry facility: environment temperature (22 ± 3)° <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01025) 31-Mar-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. 217-01029) 26-Jun-09 (No. DAE4-601_Mar09) O7-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)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-10 Mar-10 Mar-10 Jun-10 Mar-10 Scheduled Check In house check: Oct-11 In house check: Oct-11	
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer HP 8753E	ents the traceability to nat intainties with confidence p cted in the closed laborato TE critical for calibration) ID # GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # MY41092317 100005 US37390585 S4206 Name	onal standards, which realize the physical un robability are given on the following pages ar ry facility: environment temperature (22 ± 3)* <u>Cal Date (Certificate No.)</u> 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01086) 06-Oct-09 (No. 217-01026) 31-Mar-09 (No. 217-01029) 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) 18-Oct-01 (in house check Oct-09)	ad are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-10 Oct-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



Andrew Becker

January 21 – March 3, 2010

RTS-2474-1002-39

Calibration Laboratory of

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



GNISS CRUZ RIARDERS

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

Accreditation No.: SCS 108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

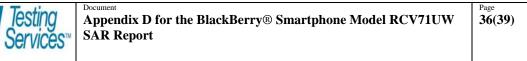
Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

Certificate No: D2450V2-747_Nov09



Author Data	
Andrew	Becker

	RTS-2474-1002-39	
Dates of Test	Test Report No	FCC ID:

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	

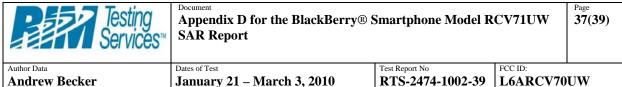
Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity	
Nominal Head TSL parameters	rameters 22.0 °C 39.2		1.80 mho/m	
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.1 ± 6 %	1.78 mho/m ± 6 %	
Head TSL temperature during test	(21.3 ± 0.2) °C			

SAR result with Head TSL

SAR averaged over 1 cm ³ (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 ² (10 g) of Head TSL	condition		
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	250 mW input power	6.23 mW / g	
		6.23 mW / g 24.9 mW / g	
SAR measured	250 mW input power		



Data	Dates of Test
rew Becker	January 21 – March 3, 2010

L6ARCV70UW

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
1	

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

Author Data
Andrew Becker

Dates of Test January 21 – March 3, 2010

rch 3, 2010 Test Report No RTS-2474-1002-39

02-39 L6ARCV70UW

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; σ = 1.79 mho/m; ϵ_r = 39.2; ρ = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

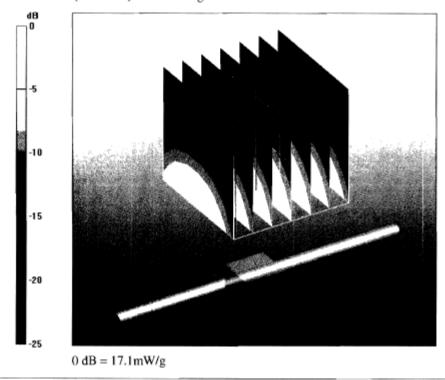
DASY5 Configuration:

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

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

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

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

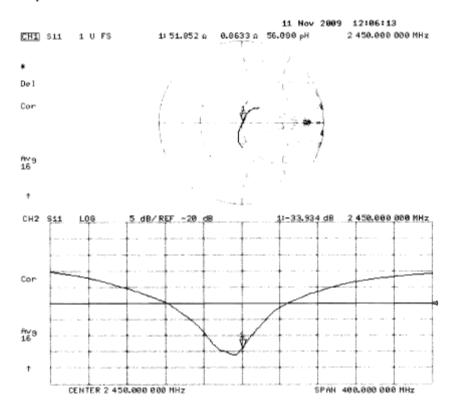


Certificate No: D2450V2-747_Nov09

Page 5 of 6

Testing Services™	Document Appendix D for the BlackBerry® Smartphone Model RCV71UW SAR Report			Page 39(39)
Author Data	Dates of Test	Test Report No	FCC ID:	
Andrew Becker	January 21 – March 3, 2010	RTS-2474-1002-39	L6ARCV70	UW

Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-747_Nov09

Page 6 of 6