≅ BlackBerry

Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

RTS-6066-1511-01

Test Report No

L6ARHT180LW

FCC ID:

APPENDIX C: PROBE & DIPOLE CALIBRATION DATA PART 1 OF 2

Note: Model RHM181LW was tested using the external lab CETECOM ICT Services GmbH. Information regarding the SAR test results and procedures for model: RHM181LW were taken from the CETECOM SAR test report for model RHM181LW, report number 1-0042/15-01-15-A

Author Data
Andrew Becker

Document
Appendix C for the BlackBerry® Smartphone Model RHT181LW
(STV100-2) SAR Report Part 1/2

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Test Report No
RTS-6066-1511-01

RTS-6066-1511-01

L6ARHT180LW

Calibration Files for Model RHT181LW

*** BlackBerry	/	Appendix C for the (STV100-2) SAR R	BlackBerry® Smartpho eport Part 1/2	ne Model RHT181LW	Page 3(81)
Author Data	Dates of Te	st	Test Report No	FCC ID:	
Andrew Becker	Oct 06	- Nov 02, 2015	RTS-6066-1511-01	L6ARHT180LW	

Probe 1643



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Author Data

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No

FCC ID:

RTS-6066-1511-01 L6ARHT180LW **Andrew Becker**

> Calbration Laboratory of Schmid & Partner Engineering AG Zer/Stausstrasse 43, 8004 Zurich, Switzerland





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

Accreditation No.: SCS 0108

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

Blackberry Waterloo

Certificate No: ET3-1643 Mar15

CALIBRATION CERTIFICATE

Object

ET3DV6 - SN:1643

Calibration procedure(s)

QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure for dosimetric E-field probes

Calibration date:

March 13, 2015

This of brition 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 ontical for calibration)

Primary Standards	(D)	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E44198	GB41293874	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E44*2A	MV41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
Reference Proba ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14).	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-880 Jan15)	Jan-16
Secondary Standards	10	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house chack: Oct-15

Calibrated by

Israe Elnaouq

Envirtien Laboratory Technician

Approved by:

Katja Pokovic

Technical Manager

Issued March 13, 2015

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

Certificate No: ET3-1643_Mar15

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Author Data

Dates of Test **Andrew Becker**

Oct 06 - Nov 02, 2015

Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

Schnid & Partner Eligineering AG Zou 9 Journal of AG 2010 A Surface AG 2010 A Surfa

Calbration Laboratory of





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

Accreditation No.: SCS 0108

Appreciated by the Swiss Accreditation Service (SAS)

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

Glossary:

fissue simulating liquid NORUK, y, z sensitivity in free space sensitivity in TSL / NORMx,y,z COME DCP diode compression point

crest factor (1/duty_cycle) of the RF signal modulation dependent linearization parameters CF A, B.C. D

Polarization m w rotation around probe axis

3 rotation around an axis that is in the plane normal to probe axis (at measurement center), Potalization #

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

information used in DASY system to align probe sensor X to the robot coordinate system Contractor Angle

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) In the Human Head from Wireless Communications Devices: Measurement
- Techniques", June 2013 IEC 62209-1, "Procedure to measure the Specific Absorption Rele (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 8 = 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 affect the E'-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z * frequency_response (see Frequency Response Charl). 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.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal
- Ax,y,z, Bx,y,z; Cx,y,z, Dx,y,z; VRx,y,z, A, B, C, D 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 s 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 (elpha, 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
- 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.
- Connector Angle: The angle is assessed using the Information gained by determining the NORMx (no uncertainty required).

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Author Data
Andrew Becker

Dates of Test
Oct 06 – Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Probe ET3DV6

SN:1643

Manufactured: Calibrated:

November 7, 2001 March 13, 2015

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

ETૐ^D/6- SN:1643

March 13, 2015

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1643

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
N@fn (μV/(V/m) ²) ^A	1.76	1.95	1.75	± 10.1 %
DCP (mV)B	101.5	100.5	102.4	

Madulation Calibration Parameters

JID_	Communication System Name		A dB	B dB√μV	С	D dB	VR mV	Unc ^E (k=2)
)	CW	X	X 0.0	0.0	1.0	0.00	261.1	±3.8 %
		Y	0.0	0.0	1.0		237.4	
		Z	0.0	0.0	1.0		267.0	

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%.

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

Numerical linearization parameter; uncertainty not required.

Numerical linearization parameter; uncertainty not required.

Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

ET/30V6- SN:1643

March 13, 2015

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1643

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unct. (k=2)
750	41.9	0.89	6.69	6.69	6.69	0.32	3.00	± 12.0 %
900	41.5	0.97	6.09	6.09	6.09	0.33	3.00	± 12.0 %
1810	40.0	1.40	5.18	5.18	5.18	0.80	2.02	± 12.0 %
1950	40.0	1.40	4.93	4.93	4.93	0.80	2.06	± 12.0 %
2450	39.2	1.80	4.58	4.58	4.58	0.80	1.62	± 12.0 %

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity or an be extended to ± 110 MHz.

*At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

*Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

ET 230V6- SN:1643

March 13, 2015

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1643

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unct. (k=2)
750	55.5	0.96	6.29	6.29	6.29	0.36	2.49	± 12.0 %
900	55.0	1.05	6.00	6.00	6.00	0.33	3.00	± 12.0 %
1810	53.3	1.52	4.50	4.50	4.50	0.80	2.60	± 12.0 %
1950	53.3	1.52	4.56	4.56	4.56	0.80	2.23	± 12.0 %
2450	52.7	1.95	3.93	3.93	3.93	0.70	1.60	± 12.0 %

⁶ Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency

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validity can be extended to ± 110 MHz.

F At frequencies below 3 GHz, the validity of tissue parameters (s and σ) can be relaxed to ± 10% if liquid compensation formula is applied to

At requencies below 3 GHz, the valuity or issue parameters (s and o) can be relaxed to ± 10% if injude compensation formula is applied to the account of the ConvF uncertainty for indicated target tissue parameters.

Apha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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Author Data
Andrew Becker

Dates of Test
Oct 06 – Nov 02, 2015

Test Report No **RTS-6066-1511-01**

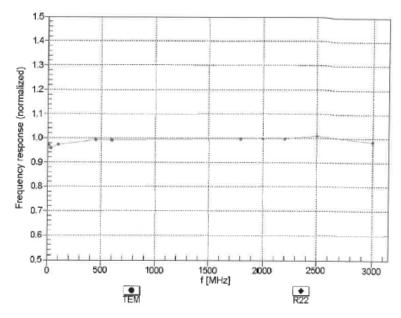
FCC ID: L6ARHT180LW

ET'30V6- SN:1643

March 13, 2015

Frequency Response of E-Field

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



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

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Author Data
Andrew Becker

Dates of Test
Oct 06 – Nov 02, 2015

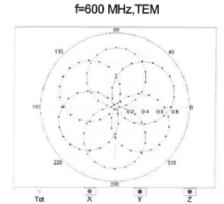
Test Report No **RTS-6066-1511-01**

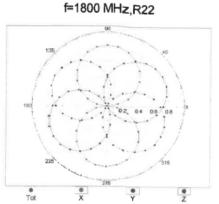
FCC ID: L6ARHT180LW

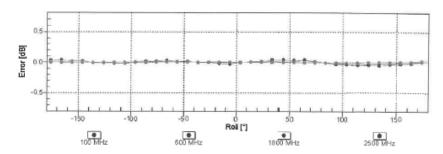
ET/30V6- SN:1643

March 13, 2015

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







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

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Author Data
Andrew Becker

Dates of Test

Oct 06 – Nov 02, 2015

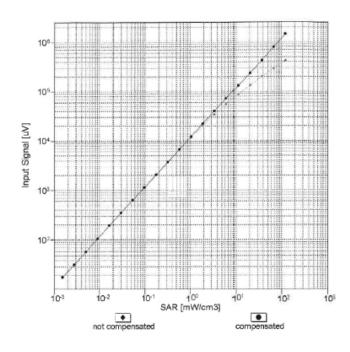
Test Report No **RTS-6066-1511-01**

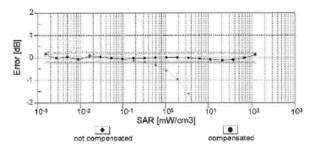
FCC ID: L6ARHT180LW

ET24V6~ SN:1643

March 13, 2015

Dynamic Range f(SAR_{head}) (TEM cell , f_{eval}= 1900 MHz)





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

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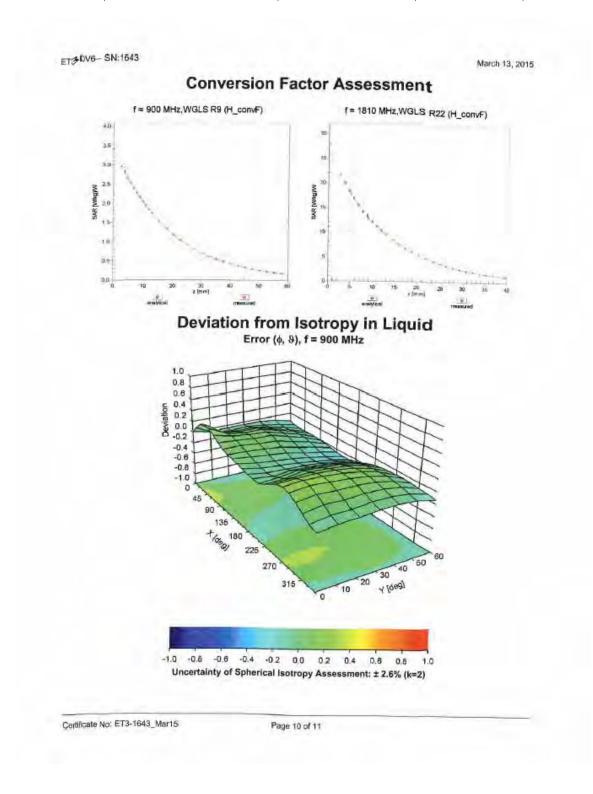
Page **13(81)**

Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

ET/30V6- SN:1643

March 13, 2015

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1643

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	3.8
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	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
	4 111111

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*# BlackBerry	/	Appendix C for the (STV100-2) SAR R	e BlackBerry® Smartpho Report Part 1/2	ne Model RHT181LV	V	Page 15(81)
Author Data	Dates of Te	st	Test Report No	FCC ID:		
Andrew Becker	Oct 06	- Nov 02, 2015	RTS-6066-1511-01	L6ARHT180LW		

750 Dipole

*** BlackBerry

Appendix C for the BlackBerry® Smartphone Model RHT181LW

(STV100-2) SAR Report Part 1/2

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Author Data **Andrew Becker** Dates of Test

Oct 06 - Nov 02, 2015

Test Report No RTS-6066-1511-01 FCC ID:

L6ARHT180LW

Calibration Laboratory of Schrill & Partner Engheering AG Zeughattasse 43, 8004 Zurich, Switzerland





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

Accred His by the Swiss Accorditation Service (SAS) The SyVIs Accreditation Service is one of the signatories to the EA Multilate al Agreement for the recognition of calibration certificates

Blackberry Waterloo

Accreditation No.: SCS 0108

Certificate No: D750V3-1021_Mar15

Object	D750V3 - SN:10	21	
Calibrathn procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Calibration date;	March 11, 2015		
		ional standards, which realize the physical un robability are given on the following pages an	
All calibrations have been condu	cted in the closed laborato	ry facility: environment temperature (22 ± 3)*	C and humiday < 70%.
All calibrations have been condu Calibration Equipment used (M&		ry facility: environment temperature (22 ± 3)*/	C and humiday < 70%.
Calibration Equipment used (M&	TE critical for calibration)		
Calibration Equipment used (M&		cy facility; environment température (22 ± 3)*(Cel Dete (Certificate No.) 07-Oct-14 (No. 217-02020)	C and humiday < 70%. Scheduled Calibration Oct-15
Calibration Equipment used (M& rimmry Standards Power mater EPM-442A	TE critical for calibration)	Cal Date (Certificate No.)	Scheduled Calibration
Calibration Equipment used (M& trimary Standards Power mater EPM-442A Power sensor HP 6481A	TE critical for calibration) ID # GB37480704	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020)	Scheduled Calibration Oct-15
Calibration Equipment used (M& Primary Standards Power mater EPM-442A Power sensor HP 6481A Power sensor HP 6481A	TE critical for calibration) ID # GB37480704 US37292783	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020)	Scheduled Calibration Oct-15 Oct-15
Calibration Equipment used (M& Primary Standards Power mater EPM-442A Power sensor HP 6481A Power sensor HP 8481A Reference 20 dB Attenuator	TE critical for calibration) ID # GB37480704 US37292783 MY41092317	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021)	Scheduled Calibration Oct-15 Oct-15 Oct-16
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 6481A Power sensor HP 8481A Televence 20 dB Attenuator Type-N mismatch combination	TE critical for calibration) ID # GB37480704 US37292763 MY41092317 SN: 5058 (20k)	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918)	Scheduled Calibration Oct-15 Oct-15 Oct-16 Apr-15
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HIP 6481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	TE chitical for calibration) ID # GB87480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921)	Scheduled Calibration Oct-15 Oct-15 Oct-15 Apr-15 Apr-15
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 6481A Power sensor HP 6481A Heference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	TE critical for calibration) ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3206	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. 217-01921) 30-Dec-14 (No. ES3-3205_Dec14)	Scheduled Calibration Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 6481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	TE critical for calibration ID # GB37480704 US37792783 MY41092317 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 3205 SN: 601	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. E53-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14)	Scheduled Calibration Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Apr-15 Aug-15 Scheduled Check
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 6481A Reference 20 dB Attenuator Typis-N mismatch combination Reference Probe ES3DV3 DAE4	TE critical for calibration ID # GB37480704 US37792763 MY41092317 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 3205 SN: 601	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-801_Aug14) Check Date (in house)	Scheduled Calibration Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house check: Oct-16
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 6481A Reference 20 dB Attenuator Typis-N mismatch combination Reference Probe ES3DV3 DAE4	TE chitical for calibration) ID # GB837480704 US377992783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14)	Scheduled Calibration Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Apr-15 Apr-15 Apr-15 Aug-15
Calibration Equipment used (M& Primary Standards Power mater EPM-442A Power sensor HP 6481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards TE generator R&S SMT-06 Network Analyzer HP 8753E	TE critical for calibration) ID # GB37480704 US377992783 MY41092317 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-801_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14)	Scheduled Calibration Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Apr-15 Aug-15 Scheduled Check In house check: Oct-15 In house check: Oct-15
	TE chitical for calibration) ID # GB837480704 US377992783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14)	Scheduled Calibration Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house check: Oct-16

Certificat e No: D750V3-1021_Mar15

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Appendix C for the BlackBerry® Smartphone Model RHT181LW

(STV100-2) SAR Report Part 1/2

17(81)

Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No RTS-6066-1511-01 FCC ID:

L6ARHT180LW

Calibation Laboratory of Schmill & Partner En@heering AG Zeugha Vistrasse 43, 8004 Zurich, Switzerland





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

Accreditation No.: SCS 0108

Accredital by the Swiss Accreditation Service (SAS) The Sylvis Accreditation Service is one of the signatories to the EA Multila to a Agreement for the recognition of calibration certificates

Glossiry:

TSL ConvF N/A

tissue simulating liquid

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

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.

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

Certificate No: D750V3-1021_Mar15

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Mea∮rement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.8 ± 6 %	0.90 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	****	

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.28 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.42 W/kg ± 16.5 % (k=2)



Document

Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data
Andrew Becker

Dates of Test

Test Report No

FCC ID:

Becker Oct 06 – Nov 02, 2015 RTS-6066-1511-01 L6ARHT180LW

App€ndix (Additional assessments outside the scope of SCS 0108)

Ante Tha Parameters with Head TSL

Inpedance, transformed to feed point	$55.3 \Omega + 0.3 j\Omega$	
Fleturn Loss	- 25.9 dB	

General Antenna Parameters and Design

~	
Electrical Delay (one direction)	1.032 ns

After IOng 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

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, 2010	

Certificate No: D750V3-1021_Mar15

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Document

Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

DAS Y5 Validation Report for Head TSL

Date: 11.03.2015

Test Liboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1021

Communication System: UID 0 - CW; Frequency: 750 MHz Medi un parameters used: f = 750 MHz; σ = 0.9 S/m; ε_r = 40.8; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

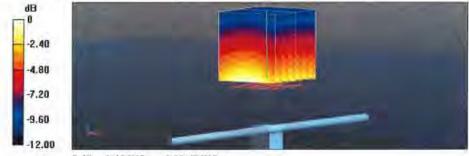
DAS Y52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.44, 6.44, 6.44); Calibrated: 30.12.2014;
- · Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 54.15 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 3.15 W/kg SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.37 W/kg

SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.37 W/kgMaximum value of SAR (measured) = 2.45 W/kg



0 dB = 2.45 W/kg = 3.89 dBW/kg

Certificate No: D750V3-1021_Mar15

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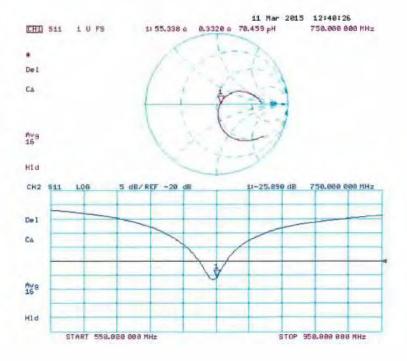
Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Imperdance Measurement Plot for Head TSL



Certificate No: D750V3-1021_Mar15

Page 6 of 6

*** BlackBerry	/	Appendix C for the (STV100-2) SAR R	BlackBerry® Smartpho eport Part 1/2	ne Model RHT181LW	Page 22(81)
Author Data	Dates of Te	st	Test Report No	FCC ID:	
Andrew Becker	Oct 06	- Nov 02, 2015	RTS-6066-1511-01	L6ARHT180LW	

835 Dipole



Appendix C for the BlackBerry® Smartphone Model RHT181LW

(STV100-2) SAR Report Part 1/2

23(81)

Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No RTS-6066-1511-01 FCC ID:

L6ARHT180LW

CaliPlation Laboratory of Schr nd & Partner En Sneering AG Zeugh Alstrasse 43, 8004 Zurich, Switzerland





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

Accreditation No.: SCS 0108

Accreding by the Swiss Accreditation Service (SAS) The SWis Accreditation Service is one of the signatories to the EA Multile that Agreement for the recognition of calibration certificates

D835V2-446 Mar15

ALIBRATION C	ERTIFICATE		
Object	D835V2 - SN:446		
albrølen procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Calibration date:	March 11, 2015		
		onal standards, which realize the physical un robability are given on the following pages an	
All calibrations have been conduc	cted in the closed laborator	ry facility: anvironment temperature (22 \pm 3)*(C and humidity < 70%.
Calibration Equipment used (M&	TE entical for calibration)		
	l m a		
Primary Standards	I ID.W	Cal Date (Certificate No.)	Scheduled Calibration
The state of the s	GB37480704	Cal Date (Certificate No.) 07-Oct-14 (No. 217-02020)	Oct-15
Power meter EPM-442A	G837480704 US37292783	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020)	Oct-15 Oct-15
Power meter EPM-442A Power sensor HP 8481A	GB37480704 U537292783 MY41092317	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021)	Oct-15 Oct-15 Oct-15
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A	G837480704 US37292783	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918)	Oct-15 Oct-15 Oct-15 Apr-15
Power mater EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator	GB37480704 U537292783 MY41092317	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15
Power mater EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	G837480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047,2 / 06327 SN: 3205	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. ES3-3205_Dec14)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15
Power mater EPM-442A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	G837460704 U537292783 MY41092317 SN: 5058 (20k) SN: 5047,2 / 06327	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01921)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15
Power mater EPM-442A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Peterence 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	G837460704 U537292783 MY41092317 SN: 5058 (20K) SN: 5047,2 / 06327 SN: 3205 SN: 601	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01921) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. ES3-0205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15
Power mater EPM-442A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Peletence 20 dB Attenuator Type-N mismatch combination Peterance Probe ES3DV3 DAE4 Secondary Standards	G837460704 US37292783 MY41092317 SN: 5059 (20K) SN: 5047.2 / 05327 SN: 3205 SN: 601	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01918) 03-Dec-14 (No. E83-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (In house)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N milismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E	G837460704 U537292783 MY41092317 SN: 5058 (20K) SN: 5047,2 / 06327 SN: 3205 SN: 601	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01921) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. ES3-0205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house check: Oct-16
Power mater EPM-442A Pawer sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	G837460704 US37292783 MY41092317 SN: 5058 (20K) SN: 5047.2 / 05327 SN: 3205 SN: 601	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. E83-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (In house)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-15 Schieduled Check In house check: Oct-16 In house check: Oct-16
Power mater EPM-442A Pawer sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047,2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-02021) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. E83-0205_Doc14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (In house) 04-Aug-98 (in house check Oct-13) 18-Oct-01 (in house check Oct-14)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-15
Power mater EPM-442A Power sensor HP 8481A Power sensor HP 9481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E	G837480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5057 (2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-02021) 03-Apr-14 (No. 217-01921) 30-Dec-14 (No. E83-9205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (In house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14)	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-15 Schieduled Check In house check: Oct-16 In house check: Oct-16
Power mater EPM-442A Pawer sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference) Probe ESSIDV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E Calibrated by:	G837490704 US37292783 MY41092317 SN: 5059 (20K) SN: 5047.2 / 05327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206 Name: Michael Weber	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 03-Apr-14 (No. 217-01918) 03-Apr-14 (No. 217-01918) 18-Occ-14 (No. E83-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (In house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14) Function Laboratory Technician	Oct-15 Oct-15 Oct-15 Apr-15 Apr-15 Dec-15 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-16

Certificate No. D835V2-446_Mar15

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Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID:

L6ARHT180LW

Cali Etation Laboratory of SchrTid & Partner Er#Sineering AG Zeughr Esstrasse 43, 8004 Zurich, Switzerland





S Schweizerischer Kallbrierdienst
C Service suisse d'étalonnage
Servizio avizzero di taratura
S Swiss Calibration Service

Accreditation No.: SCS 0108

Accredist by the Swiss Accreditation Senson (SAS)

The S^{MI}ss Accreditation Service is one of the signatories to the EA

Multil Airal 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 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- 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) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

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.

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: D835V2-446 Mar15

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Appendix C for the BlackBerry® Smartphone Model RHT181LW

(STV100-2) SAR Report Part 1/2

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

Mea Surement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.6 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.28 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.06 W/kg ± 16.5 % (k=2)

Certificate No: D835V2-446_Mar15



Document

Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

Page **26(81)**

Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

App€\dix (Additional assessments outside the scope of SCS 0108)

Ante na Parameters with Head TSL

Inpedance, transformed to feed point	50.6 Ω - 4.8 jΩ
Return Loss	- 26.4 dB

General Antenna Parameters and Design

~	
Electrical Delay (one direction)	1.383 ns

After IOng 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measu*erment Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

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_Mar15

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Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

Page **27(81)**

Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID:

L6ARHT180LW

DAS 15 Validation Report for Head TSL

Date: 11.03.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used; f = 835 MHz; $\sigma = 0.92$ S/m; $\varepsilon_r = 40.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

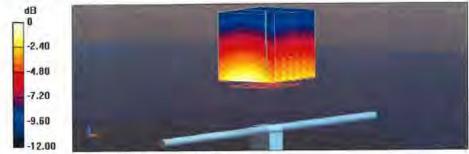
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DAS \$52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.2, 6.2, 6.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L., Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 56.83 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 3.55 W/kg SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.54 W/kg Maximum value of SAR (measured) = 2.78 W/kg



0 dB = 2.78 W/kg = 4.44 dBW/kg

Certificate No: D835V2-446_Mar15

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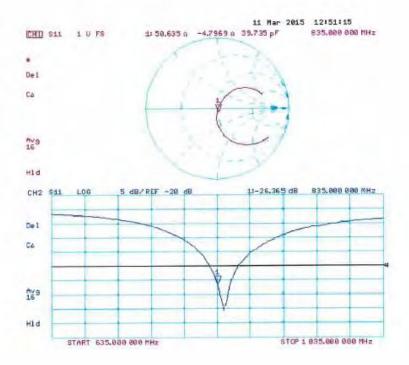
Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Imp@fance Measurement Plot for Head TSL



Certificate No: D835V2-446_Mar15

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∷ BlackBerry

Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

1900 Dipole



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	10 4	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
F generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US87390585 S4206	18-Oct-01 (in house check Oct-14)	In house check, Oct-15
	Name	Function	eterit in a
Calibrated by:	Claudio Laubler	Laboratory Technician	Signature
		2,000,000	
Approved by:	Katja Pokovic	Technical Manager	00111
			Make May
		full without written approval of the laboratory	Issued: March 13, 2015

Certificate No: D1900V2-545_Mar15

Page 1 of 6

*** BlackBerry

Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

30(81)

Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No RTS-6066-1511-01 FCC ID:

L6ARHT180LW

Cal bration Laboratory of Sch mid & Partner Emgineering AG Zeug Frausstrasse 43, 8004 Zurich, Switzerland





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

Accreditation No.: SCS 0108

Access cited by the Swiss Accreditation Service (SAS). The Swiss Accreditation Service is one of the signatories to the EA Multi fateral Agreement for the recognition of calibration certificates

Glossary:

TSL Con VF tissue simulating liquid

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

Cali bration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- 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) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

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 llat 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.

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 D1900V2-545_Mar15

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Appendix C for the BlackBerry® Smartphone Model RHT181LW

(STV100-2) SAR Report Part 1/2

31(81)

Author Data **Andrew Becker**

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No RTS-6066-1511-01 FCC ID:

L6ARHT180LW

Me@surement Conditions

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

ASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
hantom	Modular Flat Phantom	
Nistance 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.

A section and the latest terms of the latest t	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	39.0 ± 6 %	1.38 mho/m ± 6 %	
Head TSL temperature change during test	< 0.5 °C	100	****	

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.88 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	39.6 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.8 W/kg ± 16.5 % (k=2)

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

Appendix (Additional assessments outside the scope of SCS 0108) Antenna Parameters with Head TSL

impedance, transformed to feed point	$50.9 \Omega + 0.9 \Omega$		
Return Loss			
	- 37.7 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-directled for DC-signals. On some of the dipoles, small end caps are acided to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipote length is shift according to the Standard.

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		

Certificals No. D1900V2-545_Mar15

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∷ BlackBerry

Appendix C for the BlackBerry® Smartphone Model RHT181LW

(STV100-2) SAR Report Part 1/2

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

DASY5 Validation Report for Head TSL

Test Laboratory: SPEAG, Zurich, Switzerland

Date: 12,03,2015

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

Con munication System: UID 0 - CW; Frequency: 1900 MHz

Medium parameters used: f = 1900 MHz; $\sigma = 1.38 \text{ S/m}$; $\varepsilon_r = 39$; $\rho = 1000 \text{ kg/m}^3$

Pharatom section: Flat Section

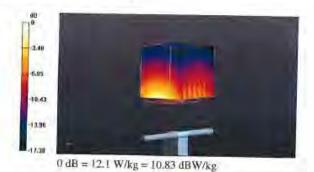
Mea-surement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DAS Y52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(5, 5, 5); Calibrated: 30,12,2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 96.17 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 18.1 W/kg SAR(1 g) = 9.88 W/kg; SAR(10 g) = 5.18 W/kg Maximum value of SAR (measured) = 12.1 W/kg





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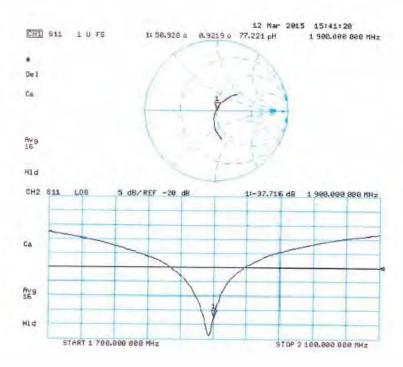
Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Impedance Measurement Plot for Head TSL



Certificate No: D1900V2-545_Mar15

Page 6 of 6

Author Data
Andrew Becker

Document
Appendix C for the BlackBerry® Smartphone Model RHT181LW
(STV100-2) SAR Report Part 1/2

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Calibration Files for Model RHK211LW

*# BlackBerry	Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2			Page 36(81)	
Author Data	Dates of Te	st	Test Report No	FCC ID:	
Andrew Becker	Oct 06	- Nov 02, 2015	RTS-6066-1511-01	L6ARHT180LW	

Probe 3225



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Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No

RTS-6066-1511-01

FCC ID:

L6ARHT180LW

Ca libration Laboratory of Schmid & Partner En§ineering AG Zeu Shastrasse 43, 8004 Zurich, Switzerland





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

Accreditation No.: SCS 0108

Accreditation Service (SAS) The Swas Accreditation Service is one of the signatories to the EA Mul^{≰ ilat}ral Agreement for the recognition of calibration certificates

Blackberry Waterloo

Certificate No: ES3-3225_Feb15

CALIBRATION CERTIFICATE

Object

ES3DV3 - SN:3225

Callibration procedure(s)

QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure for dosimetric E-field probes

Cali bration date:

February 25, 2015

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 E44198	GB41293874	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN; S5054 (3c)	03-Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN; S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8848C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

Function Calibrated by: Claudio Leubler Laboratory Technician Approved by: Issued: February 25, 2015 This calibration certificate shall not be reproduced except in full without written approval of the laboratory

Certificate No: ES3-3225 Feb15

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(STV100-2) SAR Report Part 1/2

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Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No

FCC ID:

RTS-6066-1511-01

L6ARHT180LW

Ca ^{lit}ration Laboratory of Schhid & Partner Figineering AG Zeu Shusstrasse 43, 8004 Zurich, Switzerland





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

Accreditation No.: SCS 0108

Acc F^{eq}ted by the Swiss Accreditation Service (SAS)

The Shiss Accreditation Service is one of the signatories to the EA Mulf tiliteral Agreement for the recognition of calibration certificates

GIP%sary:

NO RIIX, y, z CorTVR

tissue simulating liquid sensitivity in free space sensitivity in TSL / NORMx,y,z diode compression point

CF Ã, B, C, D

DCP

crest factor (1/duty_cycle) of the RF signal modulation dependent linearization parameters

Polarization o

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

Cornector Angle

information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- 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 affect 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
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal
- Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D 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
- Connector Angle: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

Certificate No: ES3-3225 Feb15

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Probe ES3DV3

SN:3225

Manufactured: Repaired:

Calibrated:

September 1, 2009 February 18, 2015 February 25, 2015

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

Certificate No: ES3-3225_Feb15

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(STV100-2) SAR Report Part 1/2

40(81)

Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

ES:30/3-SN:3225

February 25, 2015

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

B# Sc Calibration Parameters

Do o delibration i arai	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
N (μV/(V/m)²) ^Δ	1.07	1.00	1.12	± 10.1 %
DCF (mV)B	107.0	106.0	105.6	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	С	D dB	VR mV	Unc [±] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	196.9	±3.3 %
		Y	0.0	0.0	1.0		189.2	
		Z	0.0	0.0	1.0		195.9	

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: ES3-3225_Feb15

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A 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.

⁶ Uncortainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

ES \$10/3- SN:3225

February 25, 2015

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

Ca likration Parameter Determined in Head Tissue Simulating Media

f(MHz) ^C	Relative Permittivity ^F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ⁶	Depth ⁶ (mm)	Unct. (k=2)
750	41.9	0.89	6.50	6.50	6.50	0.61	1.31	± 12.0 %
900	41.5	0.97	6.22	6.22	6.22	0.30	1.84	± 12.0 %
1810	40.0	1.40	5.26	5.26	5.26	0.50	1.46	± 12.0 %
1950	40.0	1.40	5.01	5.01	5.01	0.80	1.11	± 12.0 %
2300	39.5	1.67	4.77	4.77	4.77	0.75	1.25	± 12.0 %
2450	39.2	1.80	4.60	4.60	4.60	0.57	1.49	± 12.0 %
2600	39.0	1.96	4.40	4.40	4.40	0.72	1.30	± 12.0 %

⁶ Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

F. At frequencies below 3 GHz, the validity of tissue parameters (c and d) can be released to ± 10% if liquid compensation formula is applied to

Certificate No: ES3-3225_Feb15

Page 5 of 11

At requences elected 3 GHz, the valency or issue parameters (c and or) can be resized to 2 Hz/s in rique compensation formula is applied to the assert AR values. At frequencies above 3 GHz, the validity of tissue parameters (s and or) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

ApplieDepth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.



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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

ES 5 D'3 SN:3225

February 25, 2015

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

Ca Iltration Parameter Determined in Body Tissue Simulating Media

f MHz) C	Relative Permittivity ^f	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ⁶	Depth ^G (mm)	Unct. (k=2)
750	55.5	0.96	6.19	6.19	6.19	0.80	1.23	± 12.0 %
_900	55.0	1.05	6.07	6.07	6.07	0.53	1.41	± 12.0 %
1810	53.3	1.52	4.89	4.89	4.89	0.63	1.46	± 12.0 %
1950	53.3	1.52	4.86	4.86	4.86	0.44	1.86	± 12.0 %
2300	52.9	1.81	4.48	4.48	4.48	0.80	1.29	± 12.0 %
2450	52.7	1.95	4.34	4.34	4.34	0.72	1.14	± 12.0 %
2600	52.5	2.16	4.06	4.06	4.06	0.80	1.08	± 12.0 %

⁶ Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity has extended in ± 110 MHz.

Certificate No: ES3-3225_Feb15

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validity can be extended to ± 110 MHz.

At frequencies below 3 GHz, the validity of tissue parameters (c and d) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (c and d) is restricted to ± 5%. The uncertainty is the RSS of the Confe uncertainty for indicated target tissue parameters.

headsold SNV between the following a first parameters.

Approximation for indicated target tissue parameters,

Approximation for indicated target tissue parameters.

Approximation for indicated target tissue parameters,

Approximat



43(81)

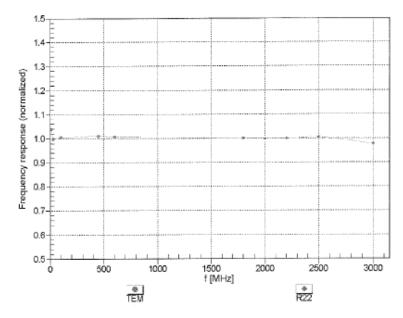
Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

ESP^{D\3}~ SN:3225

February 25, 2015

Frequency Response of E-Field

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



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

Certificate No: ES3-3225_Feb15

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Author Data
Andrew Becker

Dates of Test
Oct 06 – Nov 02, 2015

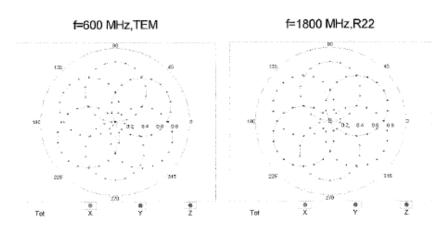
Test Report No **RTS-6066-1511-01**

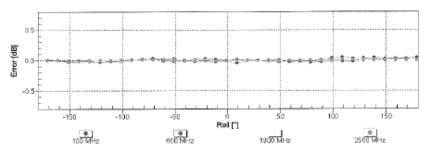
FCC ID: L6ARHT180LW

ES# D/3- SN:3225

February 25, 2015

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





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

Certificate No: ES3-3225_Feb15

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(STV100-2) SAR Report Part 1/2

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Author Data

Andrew Becker

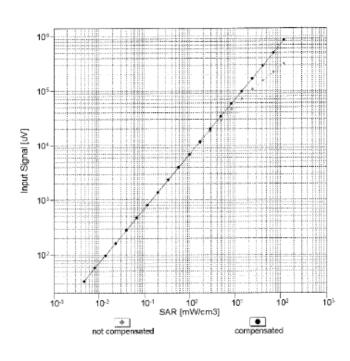
Dates of Test

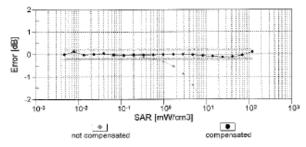
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

(TEM cell , feval= 1900 MHz)





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

Certificate No: ES3-3225_Feb15

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

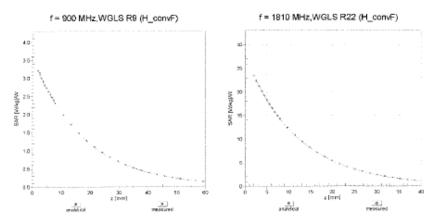
Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

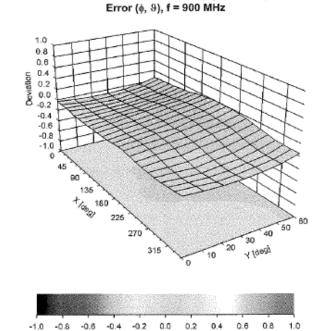
ES 20/3- SN:3225

February 25, 2015

Conversion Factor Assessment



Deviation from Isotropy in Liquid



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

Certificate No: ES3-3225_Feb15

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

ES多^{D)}3- SN:3225

February 25, 2015

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

Ot Probe Parameters

Senior Arrangement	Triangular
Conjector Angle (°)	-61.4
Medianical Surface Detection Mode	enabled
Oplical Surface Detection Mode	disabled
Prote Overall Length	337 mm
Prote Body Diameter	10 mm
Tip length	10 mm
Tip Diameter	4 mm
Prote Tip to Sensor X Calibration Point	2 mm
Prote Tip to Sensor Y Calibration Point	2 mm
Prote Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Certificate No: ES3-3225_Feb15

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*** BlackBerr	у	Appendix C for the (STV100-2) SAR R	e BlackBerry® Smartpho Report Part 1/2	ne Model RHT181LV	V	Page 48(81)
Author Data	Dates of To	est	Test Report No	FCC ID:		
Andrew Becker	Oct 06	6 – Nov 02, 2015	RTS-6066-1511-01	L6ARHT180LW		

Probe 3592



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Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No

RTS-6066-1511-01

FCC ID:

L6ARHT180LW

Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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

Accreditation No.: SCS 108

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

Blackberry Waterloo

Certificate No: EX3-3592_Nov14

CALIBRATION CERTIFICATE

Object

EX3DV4 - SN:3592

Calibration procedure(s)

QA CAL-01,v9, QA CAL-14,v4, QA CAL-23,v5, QA CAL-25,v6

Calibration procedure for dosimetric E-field probes

Calibration date:

November 10, 2014

This calibration certificate documents the tracoability 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	G841293874	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03 Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN; S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
Reference Probe ESUDV2	5N: 3013	30-Dec-13 (No. ES3-3013, Dec13)	Dec-14
DAE4	SN: 660	13-Dec-13 (No. DAE4-960_Dec13)	Dec-14
Secondary Standards	(1)	Gheck Date (in house)	Schedulad Check
RI- generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753F	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-16

Name Function Laboratory Technician Calibrated by: Leif Klysner Technical Manager Approved by: Ketja Pukovic Issued: November 10, 2014 This celluration certificate shall not be reproduced except in full without written approval of the laboratory

Certificate No: EX3-3592_Nov14

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Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

Fage 50(81)

Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No

FCC ID:

RTS-6066-1511-01

L6ARHT180LW

Calibration Laboratory of

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





S Schweizerlscher Kalibrierdiensi
C Service suisse d'étalonnage
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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 diode compression point

CF crest factor (1/duty_cycle) of the RF signal A, B, C, D modulation dependent linearization parameters

Polarization φ o 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., 8 = 0 is normal to probe axis

Connector Angle information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

 a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

 EC 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 affect 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.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z; A, B, C, D 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 Perameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for 1 < 800 MHz) and inside waveguide using analytical field distributions based on power measurements for 1 > 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 * CornvF 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.
- Connector Angle: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

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(STV100-2) SAR Report Part 1/2

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

EX3DV4 - SN:3592

November 10, 2014

Probe EX3DV4

SN:3592

Manufactured: Calibrated:

September 18, 2006 November 10, 2014

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

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

EX3DV4-SN:3592

November 10, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3592

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Nomi (µV/(V/m)²) ^A	0.48	0.47	0.40	±10.1 %
DCP (mV)	95,2	98.0	98.8	

Modulation Calibration Parameters

מוט	Communication System Name		A dB	B dBõV	C	dB	VR mV	Unc (k=2)
0	CW	×	0.0	0.0	1.0	0.00	145.9	±3.3 %
	100-1100-1	Y	0.0	0,0	1.0		156.9	
		Z	0.0	0.0	1.0		149.1	

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

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

^B Numerical linearization parameter; uncertainty not required.
Euch certainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



(STV100-2) SAR Report Part 1/2

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

EX3DV4-SN:3592

November 10, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3592

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unct. (k=2)
2600	39.0	1.96	6.80	6.80	6.80	0.36	0.93	±12.0 %
5250	35.9	4.71	4.63	4.63	4.63	0.35	1.80	± 13.1 %
5600	35.5	5.07	4,20	4.20	4,20	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.34	4.34	4.34	0.40	1.80	± 13.1 %

Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (add Page 2), alse it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncortainty at dailbration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 84, 128, 190 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

At frequencies below 3 GHz, the validity of tissue parameters (a and or) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (c and or) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncortainty for indicated target tissue parameters.

Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies aclow 3 GHz and below ± 2% for frequencies between 3-8 GHz at any distance larger than half the probe to diameter from the boundary.

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diameter from the boundary.



(STV100-2) SAR Report Part 1/2

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Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

EX3DV4 SN:3592

November 10, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3592

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) c	Relative Permittivity	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^C (mm)	Unct. (k=2)
2600	52.5	2.18	6.84	6.84	6,84	0.78	0.62	± 12.0 %
5250	48,9	5.36	4.06	4.06	4.06	0.45	1.90	± 13.1 %
5600	48.5	5.77	3.78	3.78	3.78	0.45	1.90	± 13.1 %
5750	48.3	5.94	3.81	3.81	3.81	0.50	1.90	± 13.1 %

Frequency validity above 300 MHz of ± 103 MHz only applies for DASY V4.4 and higher (see Page 2), else if is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

At frequencies below 3 GHz, the validity of tissue parameters (c and c) can be released to ± 10% if liquid compansation formula is applied to

Certificate No: EX3-3592_Nov14

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At frequencies below 3 GHz, the validity of tissue parameters (clandic) can be relaxed to ± 10% if liquid compansation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (clandic) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated larger itssue parameters.

Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and heliow ± 2% for frequencies between 3.6 GHz at any distance larger than half the probe lip claimater from the boundary.



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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

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EX3DV4-5N:3592

November 10, 2014

Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)

1.5 Frequency response (normalized) 1.1 1.0 0.9 0.8 0.7 0.6 0.5-1000 2000 2500 3000 Ó 500 1500 f [MHz] TEM R22

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

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Author Data
Andrew Becker

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Oct 06 - Nov 02, 2015

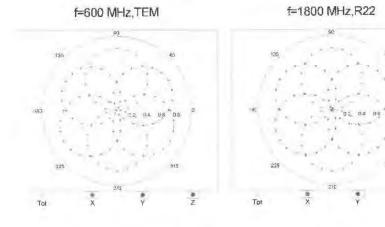
Test Report No **RTS-6066-1511-01**

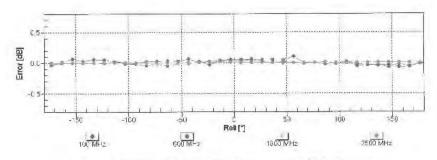
FCC ID: L6ARHT180LW

November 10, 2014

EX3DV4- \$N:3592

Receiving Pattern (\$\phi\$), 9 = 0°





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

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(STV100-2) SAR Report Part 1/2

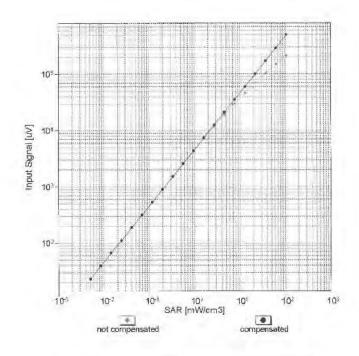
Author Data **Andrew Becker** Dates of Test Oct 06 - Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

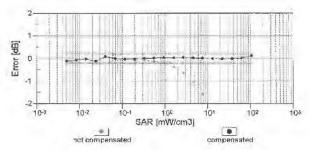
EX3DV4 SN:3592

November 10, 2014

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Dynamic Range f(SAR_{head}) (TEM cell , feval= 1900 MHz)





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

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Author Data
Andrew Becker

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Oct 06 - Nov 02, 2015

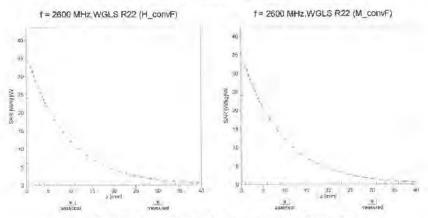
Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

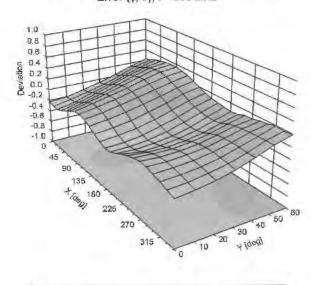
EX3DV4-SN:3592

November 10, 2014

Conversion Factor Assessment



Deviation from Isotropy in Liquid Error (\$\phi\$, \$), f = 900 MHz



-1.0 -0.8 -0.6 -0.4 -0.2 0.0 0.2 0.4 0.6 0.8 1.1 Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

EX3DV4-SN:3592

November 10, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3592

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (*)	-13.3
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	1,4 mm

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*** BlackBerry	/	Appendix C for the (STV100-2) SAR R	e BlackBerry® Smartpho eport Part 1/2	ne Model RHT181LW	Page 60(81)
Author Data	Dates of Te	st	Test Report No	FCC ID:	
Andrew Becker	Oct 06	- Nov 02, 2015	RTS-6066-1511-01	L6ARHT180LW	

2450 Dipole



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Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No RTS-6066-1511-01 FCC ID:

L6ARHT180LW

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





Service suisse d'étalonnago Servizio svizzero di taratura Swiss Calibration Service

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Blackberry Waterloo

Accreditation No.: SCS 108

C

Certificate No: D2450V2-791_Sep13

Object	D2450V2 - SN: 791				
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz				
Calibration date;	September 10, 26	013			
		onal standards, which realize the physical un rebability are given on the following pages an			
		ry facility: environment temperature (22 ± 3)*(C and humidity < 70%.		
Calibration Equipment used (M&	TE critical for calibration)				
Calibration Equipment used (M& Primary Standards	TE critical for calibration)	Cal Date (Certificate No.)	C and humidity < 70%. Scheduled Calibration Oct-13		
Calibration Equipment used (M& Primary Standards Power mater EPM-442A	TE critical for calibration)		Scheduled Calibration		
Calibration Equipment used (M& Primary Standards Power mater EPM-442A Power sensor HP 8481A	TE critical for calibration) ID # GB37480704	Cal Date (Certificate No.) 01-Nov-12 (No. 217-01640)	Scheduled Calibration Oct-13		
Calibration Equipment used (M& Primary Standards Power mater CPM-442A Power sonsor HP 6481A Reference 20 dB Attenuator	TE critical for calibration) ID ti GB87480704 US37292763	Cal Date (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640)	Scheduled Calibration Oct-13 Oct-13		
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination	ID # GB87480704 US37292783 SN: 5058 (20k)	Cal Data (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640) 04-Apr-13 (No. 217-01736)	Scheduled Calibration Oct-13 Oct-13 Apr-14		
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	ID # GB97480704 US37299763 SN: 5058 (20k) SN: 5047.3 / 06327	Cal Date (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739)	Scheduled Calibration Oct-13 Apr-14 Apr-14		
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Heference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	ID # GB97480704 US37299763 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3206	Cal Date (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dac-12 (No. ESS-3205_Dect2) 25-Apr-13 (No. OAF4-601_Apr13)	Scheduled Calibration Oct-13 Oct-13 Apr-14 Apr-14 Dec-13		
	ID # GB87480704 US37292763 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601	Cal Date (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01799) 28-Dac-12 (No. ESS-3205_Dec12)	Scheduled Calibration Oct-13 Oct-13 Apr-14 Apr-14 Dec-13 Apr-14		
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Heference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards	ID # GB37480704 US37292763 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601	Cal Date (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dac-12 (No. ESS:3205_Dec12) 25-Apr-13 (No. OAF4-601_Apr13) Chock Date (in house)	Scheduled Calibration Oct-13 Oct-13 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check		
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	ID # GB87480704 US37292783 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601 ID # MY41092317	Cel Date (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dac-12 (No. ESS-3205_Dec12) 25-Apr-13 (No. DAF4-601_Apr13) Check Date (in house)	Scheduled Calibration Oct-13 Oct-13 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check In house check; Oct-13		
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 RE generator R&S SMT-06	ID # GB37480704 US37299763 SN: 5053 (20k) SN: 5047.3 / 06397 SN: 3205 SN: 601 ID # MY41099317 100005 US37390585 S4208	Cal Date (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01799) 28-Dac-12 (No. ESS-3205_Dec12) 25-Apr-13 (No. OAF4-601_Apr13) Chock Date (in house) 18-Oct-02 (in house check Oct-11) 04-Aug-99 (in house check Oct-12)	Scheduled Calibration Oct-13 Oct-13 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check In house check; Oct-13 In house check; Oct-13 In house check; Oct-13		
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 RE generator R&S SMT-06	ID # GB87480704 US37292763 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601 ID # MY41092317 100005	Cal Date (Certificate No.) 01-Nov-12 (No. 217-01640) 01-Nov-12 (No. 217-01640) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dac-12 (No. ESS:3205_Dec12) 25-Apr-13 (No. OAF4-601_Apr13) Chock Date (in house) 18-Oct-02 (in house check Oct-11) 04-Aug-99 (in house check Oct-11) 18-Oct-01 (in house check Oct-12)	Scheduled Calibration Oct-13 Oct-13 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check In house check; Oct-13 In house check; Oct-13		

Certificate No: D2450V2-791_Sep13

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Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

Page **62(81)**

Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID:

L6ARHT180LW

Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland ilac MRA



Schweizerischer Kallbrierdienst
 Service suisse d'étatonnage
 Servizio svizzero di taratura
 Swiss Callbratton 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) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

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.

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

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Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Measurement Conditions

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

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22,0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) "C	39.4 ± 6 %	1.83 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	1-44	-

SAR result with Head TSL

SAR averaged over 1 cm3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	51.6 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.03 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.0 W/kg ± 16.5 % (k=2)

Certificate No: D2450V2-791_Sep13

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Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data
Andrew Becker

Dates of Test
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FCC ID: L6ARHT180LW

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	56 1 Ω + 3.4 β2	
Return Loss	- 23.6 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.153 ns
	A. S. C. M. M.

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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

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	January 24, 2006	

Certificate No: D2450V2-791_Sep13

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Author Data **Andrew Becker** Dates of Test

Oct 06 - Nov 02, 2015

Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

DASY5 Validation Report for Head TSL

Date: 10.09,2013

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 791

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: f = 2450 MHz; $\sigma = 1.83 \text{ S/m}$; $\epsilon_r = 39.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.52, 4.52, 4.52); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics; DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 99.824 V/m; Power Drift = 0,04 dB

Peak SAR (extrapolated) = 26.7 W/kg

SAR(1 g) = 13 W/kg; SAR(10 g) = 6.03 W/kg

Maximum value of SAR (measured) = 16.9 W/kg



0 dB = 16.9 W/kg = 12.28 dBW/kg

Certificate No: D2450V2-791 Sep13

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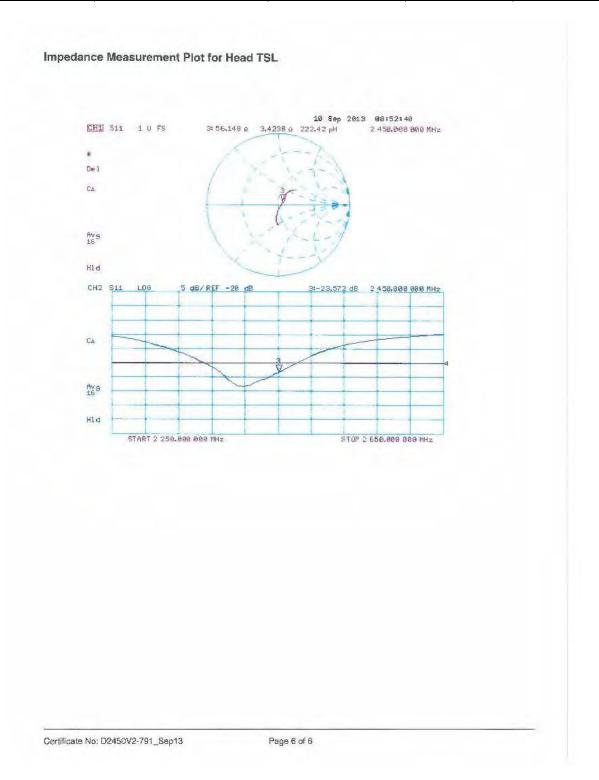
Page **66(81)**

Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW





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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

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 Swise 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

Client Blackberry Waterloo

Accreditation No.: SCS 108

Certificate No: D2450V2-747_Nov13

	CERTIFICATI		
Object	D2450V2 - SN: 7	747	
Calibration procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits a	bove 700 MHz
Calibration date:	November 14, 20	013	
The measurements and the unce	rtainties with confidence p	ional standards, which realize the physical probability are given on the following pages by facility: environment temperature (22 \pm 3)	and are part of the certificate.
rimary Stendards	ID #	Cal Date (Certificate No.)	Sohodydad Callbrotion
	ID # GB37480704	Cal Date (Certificate No.)	Scheduled Calibration
ower meter EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power meter EPM-442A Power sensor HP 8481A	GB37480704 US37292783	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827)	Oct-14 Oct-14
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A	GBS7480704 US37292783 MY41092317	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828)	Oct-14 Oct-14 Oct-14
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator	GB37480704 US37292783 MY41092317 SN: 5058 (20k)	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736)	Oct-14 Oct-14 Oct-14 Apr-14
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination	GBS7480704 US37292783 MY41092317	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736)	Oct-14 Oct-14 Oct-14 Apr-14
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01736) 28-Dec-12 (No. ES3-3205_Dec12) 25-Apr-13 (No. DAE4-601 Apr13)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 6047.3 / 06327 SN: 3205 SN: 601	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dec-12 (No. ES3-3205_Dec12) 25-Apr-13 (No. DAE4-601 Apr13) Check Date (in house)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01736) 28-Dec-12 (No. ES3-3205_Dec12) 25-Apr-13 (No. DAE4-601 Apr13)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	GB87480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01736) 28-Dec-12 (No. ES3-3206_Dec12) 25-Apr-13 (No. DAE4-601 Apr13) Check Date (in house)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check In house check: Oct-15 In house check: Oct-14
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Natwork Analyzer HP 8753E	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dec-12 (No. ES3-3205_Dec12) 25-Apr-13 (No. DAE4-601 Apr13) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check In house check: Oct-15 In house check: Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Natwork Analyzer HP 8753E Calibrated by:	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 601 ID W 100005 US37390585 S4206	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 26-Dec-12 (No. ES3-3265_Dec12) 25-Apr-13 (No. DAE4-601 Apr13) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check In house check: Oct-15 In house check: Oct-14

Certificate No: D2450V2-747_Nov13

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*** BlackBerry

Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data **Andrew Becker** Dates of Test

Oct 06 - Nov 02, 2015

Test Report No

FCC ID:

RTS-6066-1511-01

L6ARHT180LW

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

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

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- 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) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

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.

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



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Author Data **Andrew Becker** Dates of Test Oct 06 – Nov 02, 2015 Test Report No RTS-6066-1511-01 FCC ID: L6ARHT180LW

Measurement Conditions

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

DASY5	V52.8.7
Advanced Extrapolation	
Modular Flat Phantom	
10 mm	with Spacer
dx, dy, dz = 5 mm	
2450 MHz ± 1 MHz	
	Advanced Extrapolation Modular Flat Phantom 10 mm dx, dy, dz = 5 mm

Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.7 ± 6 %	1.84 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °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 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.8 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.6 W/kg ± 16.5 % (k=2)



Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data
Andrew Becker

Dates of Test
Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$51.8 \Omega + 1.7 j\Omega$
Return Loss	- 32.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.159 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

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_Nov13

Page 4 of 6



(STV100-2) SAR Report Part 1/2

Page **71(81)**

Author Data
Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

DASY5 Validation Report for Head TSL

Date: 14.11.2013

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 2450 MHz.

Mcdium parameters used: f = 2450 MHz; $\sigma = 1.84$ S/m; $\epsilon_r = 39.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.52, 4.52, 4.52); Calibrated: 28.12.2012;
- · Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

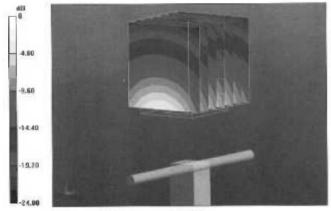
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 98.651 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 27.8 W/kg

SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.17 W/kg

Maximum value of SAR (measured) = 16.8 W/kg



0 dB = 16.8 W/kg = 12.25 dBW/kg

Certificate No: D2450V2-747_Nov13

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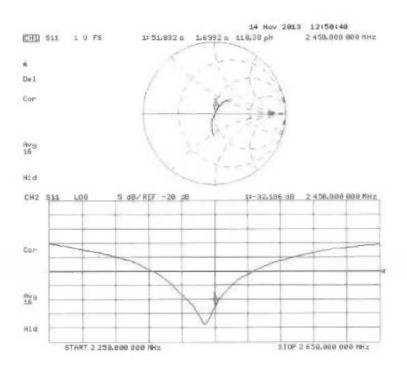
Author Data
Andrew Becker

Dates of Test
Oct 06 – Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-747_Nov13

Page 6 of 6

*** BlackBerry	/	Appendix C for the (STV100-2) SAR R	BlackBerry® Smartpho eport Part 1/2	ne Model RHT181LW	Page 73(81)
Author Data	Dates of Te	st	Test Report No	FCC ID:	
Andrew Becker	Oct 06	- Nov 02, 2015	RTS-6066-1511-01	L6ARHT180LW	

5000 Dipole



Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

Page **74(81)**

Author Data
Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No **DTC 6066 1511**

FCC ID:

RTS-6066-1511-01

L6ARHT180LW

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





S Schweizerischer Kalibrierdienst
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Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)

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Multilateral Agreement for the recognition of calibration certificates

Client

Blackberry Waterloo

Accreditation No.: SCS 108

Certificate No: D5GHzV2-1033_Nov13

energie.	DECLINIO CHI	000	
Object	D5GHzV2 - SN: 1	U33	
Calibration procedure(s)	QA CAL-22.v2		
	Calibration proces	dure for dipole validation kits bet	ween 3-6 GHz
Calibration date:	November 08, 20	13	
	17474(104)(104)		
This calibration certificate docum	ents the traceability to nati	onal standards, which realize the physical un	its of measurements (SI).
		obability are given on the following pages an	
All calibrations have been condu	cted in the closed laborator	y facility: environment temperature (22 ± 3) 'C	C and humidity < 70%.
an excessional to higher where, my man	The street interest		
Calibration Equipment used (M&	TE critical for calibration)		
	TE critical for calibration)	Cal Date (Certificate No.)	Scheduled Calibration
Primary Standards	Table 1	Cal Date (Certificate No.) 09-Oct-13 (No. 217-01827)	Oct-14
Primary Standards Power meter EPM-442A	ID # GB37480704 US37292783	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827)	Oct-14 Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A	ID # GB37480704	09-Oct-13 (No. 217-01827)	Oct-14 Oct-14 Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A	ID # GB37480704 US37292783	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827)	Oct-14 Oct-14 Oct-14 Apr-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator	ID 9 GB37480704 US37292783 MY41092317	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01826)	Oct-14 Oct-14 Oct-14
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ESSDV3	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k)	09-Oct-13 (No. 217-01827) 08-Oct-13 (No. 217-01827) 08-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736)	Oct-14 Oct-14 Oct-14 Apr-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ESSDV3	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 08-Oct-13 (No. 217-01826) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 08-Oct-13 (No. 217-01826) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dec-12 (No. ESS-3205_Dec12)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ESSDV3 DAE4 Secondary Standards	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047 3 / 06327 SN: 3205 SN: 801	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dac-12 (No. ESS-3205_Dec12) 25-Apr-13 (No. DAE-4-601_Apri3)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14
Primary Standards Power meter EPM-442A Power sensor HP 9481A Power sensor HP 9481A Reference 20 dB Attenuator Type-N mismatch combination Reference Proba ESSDV3 DAE4	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047 3 / 06327 SN: 3205 SN: 601	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dec-12 (No. ESS-3205_Dec12) 25-Apr-13 (No. DAE-4-601_Apr/3) Check Date (in house)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Chieck
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Proba ESSDV3 DAE4 Secondary Standards RF generator R&S SMT-06	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 801 ID # 100005 US37390585 S4206	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01336) 04-Apr-13 (No. 217-01736) 24-Dac-12 (No. ESS-3205_Dec12) 25-Apr-13 (No. DAE-4-601_Apri3) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dac-13 Apr-14 Schieduled Check In house check: Oct-15 In house check: Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Secondary Standards RF generator R&S SMT-06	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047 3 / 06327 SN: 3205 SN: 801	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dec-12 (No. ES3-3205_Dec12) 25-Apr-13 (No. DAE4-601_Apr13) Check Date (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14 Schieduled Check In house check: Oct-15
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Proba ESSDV3 DAE4 Secondary Standards RF generator R&S SMT-06	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 801 ID # 100005 US37390585 S4206	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01336) 04-Apr-13 (No. 217-01736) 24-Dac-12 (No. ESS-3205_Dec12) 25-Apr-13 (No. DAE-4-601_Apri3) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dac-13 Apr-14 Schieduled Check In house check: Oct-15 In house check: Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E Calibrated by:	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047 3 / 06327 SN: 3205 SN: 801 ID # 100005 US37390585 S4208 Name Claudio Leubler	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 28-Dec-12 (No. ES3-3205_Dec12) 25-Apr-13 (No. DAE4-601_Apr(3) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-13) Function Laboratory Technician	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dac-13 Apr-14 Schieduled Check In house check: Oct-15 In house check: Oct-14
Primary Standards Power meter EPM-442A Power sensor HP 9481A Power sensor HP 9481A Power sensor HP 9481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E	ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.3 / 06327 SN: 3205 SN: 801 ID # 100005 US37390585 S4206	09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01827) 09-Oct-13 (No. 217-01828) 04-Apr-13 (No. 217-01736) 04-Apr-13 (No. 217-01739) 29-Dac-12 (No. E53-3205_Dec12) 25-Apr-13 (No. DAE4-601_Apri3) Check Date (in house) 04-Aug-98 (in house check Oct-13) 18-Oct-01 (in house check Oct-13)	Oct-14 Oct-14 Oct-14 Apr-14 Apr-14 Dec-13 Apr-14 Scheduled Check In house check: Oct-15 In house check: Oct-14

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*** BlackBerry

Appendix C for the BlackBerry® Smartphone Model RHT181LW (STV100-2) SAR Report Part 1/2

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Author Data

Andrew Becker

Dates of Test

Oct 06 - Nov 02, 2015

Test Report No

FCC ID:

RTS-6066-1511-01

L6ARHT180LW

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





Schweizerischer Kaltbrierdienst Service suisse d'étalonnage

C Servizio svizzero di taratura

Accreditation No.: SCS 108

S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)

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

Glossary:

TSL ConvF

N/A

tissue simulating liquid

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

Calibration is Performed According to the Following Standards:

- a) IEC 62209-2, "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", March 2010
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"
- c) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

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.

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

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Author Data
Andrew Becker

Dates of Test
Oct 06 – Nov 02, 2015

Test Report No **RTS-6066-1511-01**

FCC ID: L6ARHT180LW

Measurement Conditions

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

DASY Version	DASY5	V52.8.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, d2 = 1.4 mm	Graded Batio = 1.4 (Z direction)
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 ℃	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) "C	35.0 ± 6 %	4.46 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °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	7.99 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.4 W/kg = 19.9 % (k=2)

SAR averaged over 10 cm3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.6 W/kg ± 19.5 % (k=2)

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	34.6 ± 6 %	4.75 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	-	-

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.51 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	84.4 W / kg ± 19.9 % (k=2)

SAR averaged over 10 cm3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2,41 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.9 W/kg ± 19.5 % (k=2)

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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 mhp/m
Measured Head TSL parameters	(22.0 ± 0.2) "C	34.2 ± 6 %	5.06 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °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	8:01 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.4 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	22.6 W/kg ± 19.5 % (k=2)

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Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	49.1 (2 - 9.6 jQ
Return Loss	- 20.3 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	50.3 Ω - 4.1 μΩ
Return Loss	- 27.7 aB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	57,8 £2 - 4,0 j£2
Return Loss	- 21.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1,213 ns	
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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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

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

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L6ARHT180LW

DASY5 Validation Report for Head TSL

Date: 08.11.2013

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz

Medium parameters used: f = 5200 MHz; $\sigma = 4.46$ S/m; $\epsilon_r = 35$; $\rho = 1000$ kg/m³, Medium parameters used: f = 5500 MHz; $\sigma = 4.75$ S/m; $\epsilon_r = 34.6$; $\rho = 1000$ kg/m³

Medium parameters used: f = 5800 MHz; $\sigma = 5.06 \text{ S/m}$; $\varepsilon_r = 34.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: EX3DV4 SN3503; CvnvF(5.41, 5.41, 5.41); Calibrated: 28.12.2012, ConvF(4.91, 4.91, 4.91); Calibrated: 28.12.2012, ConvF(4.81, 4.81, 4.81); Calibrated: 28.12.2012;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8,7(1137); SEMCAD X 14.6.10(7164)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.635 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 29.5 W/kg

SAR(1 g) = 7.99 W/kg; SAR(10 g) = 2.28 W/kg

Maximum value of SAR (measured) = 18.4 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.397 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 33.8 W/kg

SAR(1 g) = 8.51 W/kg; SAR(10 g) = 2.41 W/kg

Maximum value of SAR (measured) = 20.3 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 61.128 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 33.0 W/kg

SAR(1 g) = 8.01 W/kg; SAR(10 g) = 2.28 W/kg

Maximum value of SAR (measured) = 19.2 W/kg

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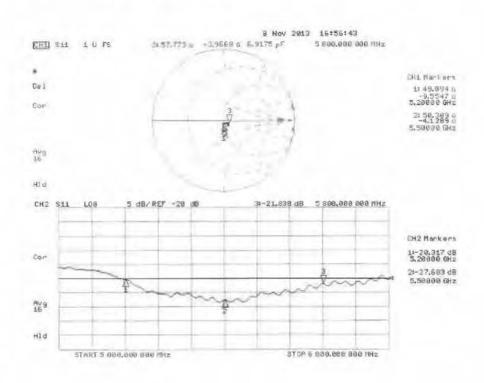
Author Data
Andrew Becker

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Impedance Measurement Plot for Head TSL



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