SAR Compliance Partial Test Report

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Statement of Compliance: BlackBerry RTS declares under its sole responsibility that the product to which this declaration relates, is in conformity with the appropriate RF exposure standards, recommendations and guidelines. It also declares that the product was tested in accordance with the appropriate measurement standards, guidelines and recommended practices.

Device Category: This BlackBerry® Smartphone is a portable device, designed to be used in direct contact with the user's head, hand and to be carried in approved accessories when carried on the user's body.

RF Exposure Environment: This device has been shown to be in compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in, FCC 47 CFR Part 2.1093, FCC 96-326, IEEE Std. C95.1-1992, Health Canada's Safety Code 6, as reproduced in RSS-102 issue 4-2010 and has been tested in accordance with the measurement procedures specified in latest FCC OET KDB Procedures, ANSI/IEEE Std. C95.3-2002, IEEE 1528-2013, and RSS 102-issue4-2010.

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RTS is accredited according to EN ISO/IEC 17025 by:

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Note: According to the hardware similarity document BlackBerry model: RFM121LW has the same WiFi/BT design as RFQ111LW.

Revision History		
Rev. Number	**Date**	**Cause For Partial Report/Changes**
Initial	Apr 30, 2014	Added measured conducted power data for Wi-Fi Direct/GO mode: 1. Table 1 added on page 3
Rev 2	Dec. 17, 2014	Added measured test data, equipment used for 802.11a Direct/GO and Hotspot mode which will be supported on software 10.3.1.x maintenance release.

For full SAR test data and report, please refer to Cetecom test report number: SAR_CETE4_023_13001.

1.0 MEASURED CONDUCTED POWER

802.11b @ 1Mbps			**802.11g @ 6Mbps**			**802.11n @ 6.5 Mbps**		
f (MHz)	**Chan**	**Max. average conducted power (dBm)**	**f (MHz)**	**Chan**	**Max. average conducted power (dBm)**	**f (MHz)**	**Chan**	**Max. average conducted power (dBm)**
2412	1	13.2	2412	1	13.3	2412	1	13.3
2437	6	**13.6**	2437	6	**13.5**	2437	6	**13.6**
2462	11	13.3	2462	11	13.3	2462	11	13.4

802.11g			**802.11b**		
Data Rate (Mbps)	**Mod.**	**Channel 6** **Max. average conducted power (dBm)**	**Data Rate (Mbps)**	**Mod.**	**Channel 6** **Max. average conducted power (dBm)**
18	QPSK	13.6	5.5	CCK	13.5
54	64-QAM	13.6	11	CCK	13.6

802.11 n		
Data Rate (Mbps)	**Mod.**	**Channel 6** **Max. average conducted power (dBm)**
26	MCS3	13.5
65	MCS7	13.6

Table 1-1: 802.11 b/g/n modulation type/data rate vs. maximum average conducted power in Wi-Fi Direct/GO mode

802.11a/n Conducted Power in WiFi Direct/GO/Hotspot Mode					
802.11a (low band) 6Mbps			**802.11a (upper band II) 6Mbps**		
f (MHz)	**Chan**	**Max. average conducted power (dBm)**	**f (MHz)**	**Chan**	**Max. average conducted power (dBm)**
5180	36	**13.50**	5745	149	**12.00**
5200	40	13.45	5765	153	12.00
5220	44	13.45	5785	157	12.00
5240	48	13.40	5805	161	11.95
			5825	165	11.95

	802.11a (lower band)	**802.11 a (upper band II)**
Data Rate (Mbits)	**Channel 36**	**Channel 149**
	Max. average conducted power (dBm)	**Max. average conducted power (dBm)**
6	13.50	12.00
24	13.50	11.95
54	13.45	11.95

	802.11n (lower band)	**802.11n (upper band II)**
Mod.	**Channel 36**	**Channel 149**
	Max. average conducted power (dBm)	**Max. average conducted power (dBm)**
MCS0	13.50	12.00
MCS4	13.50	11.95
MCS7	13.50	12.00

Table 1-2: 802.11 a/n modulation type/data rate vs. maximum average conducted power in 802.11a Direct/Go and Hotspot mode

Note: 802.11a/n Hotspot mode does not support channels 52-140

2.0 EQUIPMENT LIST

Manufacturer	Test Equipment	Model Number	Serial Number	Cal. Due Date (MM/DD/YY)
Agilent Technologies	Power meter	N1911A	MY45100905	05/29/2015
Agilent Technologies	Power sensor	N1921A	SG45240281	12/04/2014

Table 2-1: Equipment list for Wi-Fi Direct/GO additional testing

Manufacturer	Test Equipment	Model Number	Serial Number	Cal. Due Date (MM/DD/YY)
SCHMID & Partner Engineering AG	E-field probe	EX3DV4	3592	11/10/2015
SCHMID & Partner Engineering AG	Data Acquisition Electronics (DAE3)	DAE3	472	03/18/2015
SCHMID & Partner Engineering AG	Dipole Validation Kit	D5000V2	1033	11/08/2015
Agilent Technologies	Signal generator	8648C	4037U03155	09/25/2015
Agilent Technologies	Power meter	E4419B	GB40202821	09/25/2015
Agilent Technologies	Power sensor	8481A	MY41095233	10/06/2015
Agilent Technologies	Power sensor	8481A	MY41095417	10/06/2015
Amplifier Research	Amplifier	5S1G4M3	300986	CNR
Rohde & Schwarz	Signal generator	SMA 100A	101540	11/28/2015
Amplifier Research	Coupler	DC7144	300993	CNR
CPI Wireless Solutions	Amplifier	VZC-6961K4	SK4310E5	CNR
Agilent Technologies	Network analyzer	8753ES	US39174857	10/24/2015
Agilent Technologies	Power meter	N1911A	MY45100905	05/29/2015
Agilent Technologies	Power sensor	N1921A	MY45241383	09/05/2015
Weinschel Corp	20dB Attenuator	33-20-34	BMO697	CNR
Pyrex, England	Graduated Cylinder	N/A	N/A	N/A
Pyrex, USA	Beaker	N/A	N/A	N/A
Acculab	Weight Scale	V1-1200	018WB2003	N/A
IKA Works Inc.	Hot Plate	RC Basic	3.107433	N/A
Dell	PC using GPIB card	GX110	347	N/A
Agilent Technologies	Dielectric probe kit	HP 85070C	US9936135	CNR
Agilent Technologies	Network Analyzer	8753ES	US39174857	10/24/2015
Control Company	Digital Thermometer	23609-234	21352860	09/22/2015
Control Company	Digital Thermometer	15-077-21	51129471	06/11/2015

Table 2-2: Equipment list for 802.11a Direct/Go and Hotspot mode

3.0 SAR MEASUREMENT SYSTEM VERIFICATION

Prior to conducting SAR measurements, the system was validated using the dipole validation kit and the flat section of the SAM phantom. A power level of 1.0W was applied to the dipole antenna. The verification results are in the table below with a comparison to reference values. Printouts are shown in Appendix A. All the measured parameters are within the allowed tolerances.

At above 1.5 – 2 GHz, dipoles maintain good return loss of -15 dB to -20 dB, therefore SAR measurements are limited to approximately +/- 100 MHz of the probe/dipole calibration frequency.

3.1 System accuracy verification for head adjacent use

f (MHz)	Limits / Measured (MM/DD/YYYY)	Scan Type	SAR 1g/10g (W/kg)	Dielectric Parameters	
				ε_r	σ [S/m]
5200		Area Scan/Fast SAR	N/A		
	Measured (12/11/2014)	Zoom Scan	82.8/24.1	34.8	4.77
	Recommended Limits (Dipole: 1033)		79.4/22.6	36.0	4.66
5800		Area Scan/Fast SAR	N/A		
	Measured (12/11/2014)	Zoom Scan	86.2/24.7	34.3	5.42
	Recommended Limits (Dipole: 1033)		79.4/22.6	35.3	5.27

Table 3-1: System accuracy (validation for head adjacent use) for 802.11a Hotspot testing

Band (MHz)	Tissue Type	Limits / Measured (MM/DD/YYYY)	f (MHz)	Dielectric Parameters		Liquid Temp (°C)
				ε_r	σ [S/m]	
5200	Head	Measured (12/11/2014)	5180	34.9	4.75	22.4
			5200	34.8	4.77	
			5280	34.6	4.85	
		Recommended Limits	5200	36.0	4.66	N/A
	Muscle	Measured (12/11/2014)	5180	45.7	5.56	22.4
			5200	45.7	5.59	
			5280	45.5	5.70	
		Recommended Limits	5200	49.0	5.30	N/A
5800	Head	Measured (12/11/2014)	5745	34.4	5.36	22.4
			5800	34.3	5.42	
		Recommended Limits	5800	35.3	5.27	N/A
	Muscle	Measured (12/11/2014)	5745	44.4	6.40	22.4
			5800	44.3	6.49	
		Recommended Limits	5800	48.2	6.00	N/A

Table 3-2: Electrical parameters of tissue simulating liquid

4.0 SAR SAFETY LIMITS

Standards/Guideline	Localized SAR Limit (W/kg) General public (uncontrolled)	Localized SAR Limits (W/kg) Workers (controlled)
ICNIRP Standard	2.0 (10g)	10.0 (10g)
IEEE C95.1 Standard	1.6 (1g)	8.0 (1g)

Table 7.0-1 SAR safety limits for Controlled / Uncontrolled environment

Human Exposure	Localized SAR Limits (W/kg) 10g, ICNIRP Standard	Localized SAR Limits (W/kg) 1g, IEEE C95.1 Standard
Spatial Average (averaged over the whole body)	0.08	0.08
Spatial Peak (averaged over any X g of tissue)	2.00	1.60
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.00	4.00 (10g)

Table 7.0-2 SAR safety limits

Uncontrolled Environments are defined as locations where there is exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

5.0 MEASUREMENT UNCERTAINTY

DASY5 Uncertainty Budget
(0.3 - 3 GHz range)

Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6.0%	N	1	1	1	±6.0%	±6.0%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Modulation Response[m]	±2.4%	R	$\sqrt{3}$	1	1	±1.4%	±1.4%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Max. SAR Eval.	±2.0%	R	$\sqrt{3}$	1	1	±1.2%	±1.2%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Power Scaling[p]	±0%	R	$\sqrt{3}$	1	1	±0.0%	±0.0%	∞
Phantom and Setup								
Phantom Uncertainty	±6.1%	R	$\sqrt{3}$	1	1	±3.5%	±3.5%	∞
SAR correction	±1.9%	R	$\sqrt{3}$	1	0.84	±1.1%	±0.9%	∞
Liquid Conductivity (mea.)[DAK]	±2.5%	R	$\sqrt{3}$	0.78	0.71	±1.1%	±1.0%	∞
Liquid Permittivity (mea.)[DAK]	±2.5%	R	$\sqrt{3}$	0.26	0.26	±0.3%	±0.4%	∞
Temp. unc. - Conductivity[BB]	±3.4%	R	$\sqrt{3}$	0.78	0.71	±1.5%	±1.4%	∞
Temp. unc. - Permittivity[BB]	±0.4%	R	$\sqrt{3}$	0.23	0.26	±0.1%	±0.1%	∞
Combined Std. Uncertainty						±11.2%	±11.1%	361
Expanded STD Uncertainty						**±22.3%**	**±22.2%**	

Table 5.0-1 Worst-Case uncertainty budget for DASY5 assessed according to IEEE P1528-2013. Source: Schmid & Partner Engineering AG.

[1] The budget is valid for the frequency range 300MHz - 3 GHz and represents a worst-case analysis. For specific tests and configurations, the uncertainty could be considerably smaller.

Relative DASY5 Uncertainty Budget for Fast SAR Tests
(0.3 - 3 GHz range)

Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6.0%	N	1	0	0			
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Modulation Response	±2.4%	R	$\sqrt{3}$	1	1	±1.4%	±1.4%	∞
Readout Electronics	±0.3%	N	1	0	0			
Response Time	±0.8%	R	$\sqrt{3}$	0	0			
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	0	0			
Probe Positioner	±0.4%	R	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Spatial x-y-Resolution	±10.0%	R	$\sqrt{3}$	1	1	±5.8%	±5.8%	∞
Fast SAR z-Approximation	±7.0%	R	$\sqrt{3}$	1	1	±4.0%	±4.0%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Power Scaling	±0%	R	$\sqrt{3}$	0	0			
Phantom and Setup								
Phantom Uncertainty	±6.1%	R	$\sqrt{3}$	1	1	±3.5%	±3.5%	∞
SAR correction	±1.9%	R	$\sqrt{3}$	0	0			
Liquid Conductivity (mea.)	±2.5%	R	$\sqrt{3}$	0	0			
Liquid Permittivity (mea.)	±2.5%	R	$\sqrt{3}$	0	0			
Temp. unc. - Conductivity	±3.4%	R	$\sqrt{3}$	0	0			
Temp. unc. - Permittivity	±0.4%	R	$\sqrt{3}$	0	0			
Combined Std. Uncertainty						±11.4%	±11.4%	748
Expanded STD Uncertainty						**±22.7%**	**±22.7%**	

Table 5.0-2 Worst-Case uncertainty budget for DASY5 assessed according to IEEE P1528-2013
Source: Schmid & Partner Engineering AG.

DASY5 Uncertainty Budget
(3 - 6 GHz range)

Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6.55 %	N	1	1	1	±6.55 %	±6.55 %	∞
Axial Isotropy	±4.7 %	R	$\sqrt{3}$	0.7	0.7	±1.9 %	±1.9 %	∞
Hemispherical Isotropy	±9.6 %	R	$\sqrt{3}$	0.7	0.7	±3.9 %	±3.9 %	∞
Boundary Effects	±2.0 %	R	$\sqrt{3}$	1	1	±1.2 %	±1.2 %	∞
Linearity	±4.7 %	R	$\sqrt{3}$	1	1	±2.7 %	±2.7 %	∞
System Detection Limits	±1.0 %	R	$\sqrt{3}$	1	1	±0.6 %	±0.6 %	∞
Modulation Response^m	±2.4 %	R	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
Readout Electronics	±0.3 %	N	1	1	1	±0.3 %	±0.3 %	∞
Response Time	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Integration Time	±2.6 %	R	$\sqrt{3}$	1	1	±1.5 %	±1.5 %	∞
RF Ambient Noise	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
RF Ambient Reflections	±3.0 %	R	$\sqrt{3}$	1	1	±1.7 %	±1.7 %	∞
Probe Positioner	±0.8 %	R	$\sqrt{3}$	1	1	±0.5 %	±0.5 %	∞
Probe Positioning	±6.7 %	R	$\sqrt{3}$	1	1	±3.9 %	±3.9 %	∞
Max. SAR Eval.	±4.0 %	R	$\sqrt{3}$	1	1	±2.3 %	±2.3 %	∞
Test Sample Related								
Device Positioning	±2.9 %	N	1	1	1	±2.9 %	±2.9 %	145
Device Holder	±3.6 %	N	1	1	1	±3.6 %	±3.6 %	5
Power Drift	±5.0 %	R	$\sqrt{3}$	1	1	±2.9 %	±2.9 %	∞
Power Scaling^p	±0 %	R	$\sqrt{3}$	1	1	±0.0 %	±0.0 %	∞
Phantom and Setup								
Phantom Uncertainty	±6.6 %	R	$\sqrt{3}$	1	1	±3.8 %	±3.8 %	∞
SAR correction	±1.9 %	R	$\sqrt{3}$	1	0.84	±1.1 %	±0.9 %	∞
Liquid Conductivity (mea.)^{DAK}	±2.5 %	R	$\sqrt{3}$	0.78	0.71	±1.1 %	±1.0 %	∞
Liquid Permittivity (mea.) ^{DAK}	±2.5 %	R	$\sqrt{3}$	0.26	0.26	±0.3 %	±0.4 %	∞
Temp. unc. - Conductivity ^{BB}	±3.4 %	R	$\sqrt{3}$	0.78	0.71	±1.5 %	±1.4 %	∞
Temp. unc. - Permittivity ^{BB}	±0.4 %	R	$\sqrt{3}$	0.23	0.26	±0.1 %	±0.1 %	∞
Combined Std. Uncertainty						±12.3 %	±12.2 %	748
Expanded STD Uncertainty						**±24.6 %**	**±24.5 %**	

Table 5.0-3 Worst-Case uncertainty budget for DASY52 assessed according to IEEE P1528-2013.
Source: Schmid & Partner Engineering AG.

6.0 TEST RESULTS

Measured/Extrapolated SAR Values - Hotspot - 802.11a 5000-6000 MHz								
Ch.	Freq. (MHz)	spacing (cm)/ holster	Side Facing Phantom	Cond. Output Power (dBm)		Power Drift (dB)	1g SAR (W/Kg)	
				Declared	Measured		Extrapolated	Reported
36*	5180	1.0	Back	13.5	13.5	0.16	0.73	0.73
40	5200	1.0	Back					0.00
44	5220	1.0	Back					0.00
48*	5240	1.0	Back					0.00
149*	5745	1.0	Back	12.0	12.0	-0.03	0.53	0.53
153	5765	1.0	Back					0.00
157*	5785	1.0	Back					0.00
161	5805	1.0	Back					0.00
165*	5825	1.0	Back					0.00
36*	5180	1.0	Front	13.5	13.5	0.31	0.02	0.02
36*	5180	1.0	Left	13.5	13.5	0.53	0.07	0.07
36*	5180	1.0	Right					0.00
36*	5180	1.0	Top	13.5	13.5	-0.06	0.12	0.12

Table 6-1: SAR test results for 802.11a Hotspot configurations

Note 1: Tested only highest output power channel per band
Note 2: * denotes the default channels of each sub band to be tested when reported 1g SAR ≥ 0.8 W/kg.
Note 3: 802.11a/n Hotspot mode does not support channels 52-136.

Test	Configuration	Licensed Transmitters		WiFi 5 G 1 g avg. SAR (W/kg)	Maximum Summation 1 g avg. SAR (W/kg)
		Band	1 g avg. SAR (W/kg)		
Mobile Hotspot SAR	10 mm separation, device back	LTE Band 13	0.79	0.73	1.52
		GSM 850	0.47		1.20
		UMTS Band V	0.49		1.22
		CDMA 850	1.05		1.78
		LTE Band 4	1.43		2.16
		GSM/GPRS/EDGE 1900	0.80		1.53
		UMTS Band II	1.27		2.00
		CDMA 1900	1.25		1.98

Table 6-2: Highest Mobile Hotspot SAR values for the worst case configuration

Note 1: If sum of 1 g SAR < 1.6 W/kg, Simultaneous SAR measurement is not required.
Note 2: If sum of 1 g SAR > 1.6 W/kg, ratio of SAR to peak separation distance for pair of transmitters calculated.

		Highest 1 g SAR (W/kg)	Hotspot Coordinates mm (x, y, z)			
Antenna	**Position**	**SAR Zoom 1g**	**X [mm]**	**Y [mm]**	**Z [mm]**	
Antenna 1 (802.11 a)	MHS 10mm, device back	0.73	-36.0	-53.0	-208.2	
Antenna 2 (LTE Band 4)	MHS 10mm, device back	1.43	-36.5	42.5	-209.0	
	SAR Sum	2.16				
	SAR Sum to the power of 1.5	3.17				
	Delta [mm]		0.5	-95.5	0.8	
	closest Distance [mm]					**95.50**
	Ratio	0.03				

Antenna	**Position**	**SAR Zoom 1g**	**X [mm]**	**Y [mm]**	**Z [mm]**	
Antenna 1 (802.11 a)	MHS 10mm, device back	0.73	-36.0	-53.0	-208.2	
Antenna 2 (UMTS Band II)	MHS 10mm, device back	1.27	-0.5	48.5	-207.7	
	SAR Sum	2.00				
	SAR Sum to the power of 1.5	2.83				
	Delta [mm]		-35.5	-101.5	-0.5	
	closest Distance [mm]					**107.52**
	Ratio	0.03				

Antenna	**Position**	**SAR Zoom 1g**	**X [mm]**	**Y [mm]**	**Z [mm]**	
Antenna 1 (802.11 a)	MHS 10mm, device back	0.73	-36.0	-53.0	-208.2	
Antenna 3 (CDMA 850 BC0)	MHS 10mm, device back	1.05	-24.5	36.5	-208.5	
	SAR Sum	1.78				
	SAR Sum to the power of 1.5	2.37				
	Delta [mm]		-11.5	-89.5	0.3	
	closest Distance [mm]					**90.24**
	Ratio	0.03				

Antenna	Position	SAR Zoom 1g	X [mm]	Y [mm]	Z [mm]	
Antenna 1 (802.11 a)	MHS 10mm, device back	0.73	-36.0	-53.0	-208.2	
Antenna 3 (CDMA 1900 BC0)	MHS 10mm, device back	1.25	-39.5	39.5	-208.1	
	SAR Sum	1.98				
	SAR Sum to the power of 1.5	2.79				
	Delta [mm]		3.5	-92.5	-0.1	
	closest Distance [mm]					**92.57**
	Ratio	0.03				

Table 6.3: WiFi (2.4 GHz) Mobile Hotspot configuration ratio of SAR to peak separation distance for pair of transmitters

Note 3: If the ratio of SAR to peak separation distance is ≤ 0.04, Simultaneous SAR measurement is not required.

7.0 REFERENCES

[1] DASY 5 DOSIMETRIC ASSESSMENT SYSTEM SOFTWARE MANUAL, Schmid & Partner Engineering AG.
[2] FCC 47 CRF Part 2.1093, Radiofrequency radiation exposure evaluation: portable devices. June 18, 2014.
[3] FCC 96-326, Guidelines for Evaluating the Environmental Effects of Radio-Frequency Radiation.
[4] Health Canada, Safety Code 6, 2009: Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency range from 3 kHz to 300 GHz.
[5] IEEE C95.1-1992, IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
[6] IEEE C95.3-2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave.
[7] IEEE 1528-2013: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
[8] KDB 248227 D01 v01r02, May 2007: FCC OET SAR Measurement Procedures for 802.11 a/b/g Transmitters.
[9] KDB 447498 D01 v05r02, Feb 2014: FCC OET Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.
[10] KDB 648474 D04 v01r02, Dec 2013: FCC OET SAR Evaluation Considerations for Wireless Handsets.
[11] KDB 865664 D01 v01r03, Feb 2014: FCC OET SAR Measurement Requirements for 100 MHz to 6 GHz.
[12] KDB 865664 D02 v01r01, May 2013: FCC OET RF Exposure Compliance Reporting and Documentation Considerations.
[13] KDB 941225 D01 v03r00, Oct 2014: FCC OET 3G SAR Measurement Procedures.
[14] KDB 941225 D05 v02r03, Dec 2013: FCC OET SAR Evaluation Considerations for LTE Devices.
[15] KDB 941225 D05A v01r01, Aug 2014: FCC OET Rel.10 LTE SAR Test Guidance and KDB Inquires.
[16] KDB 941225 D06 v02r00, Oct 2014: FCC OET SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities.
[17] 3GPP TS 36.521-1 V10.0.0 (2011-12): Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing.
[18] RSS-102, issue 4-2010: Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields.
[19] ICNIRP, International Commission on Non-Ionizing Radiation Protection (2009), Guidelines for limiting exposure in time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz).
[20] IEC 62209-1, First Edition-2005: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz).
[21] IEC 62209-2, Edition 1.0-2010: Human exposure to radio frequency fields from hand-held and body-mount wireless communication devices – Human Models, instrumentation, and procedures - part 2 - procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz).