Testing Services™	EMI Test Report for the BlackBerry	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 3A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-1b: Band 2, Spurious Conducted Emissions, Low channel, 20MHz BW (RB= 100)



Figure 3-2b: Band 2, Spurious Conducted Emissions, Low channel, 20MHz BW (RB= 100)



Date: 22.FEB.2013 17:16:00

Date: 22.FEB.2013 16:23:08

Figure 3-3b: Band 2, Spurious Conducted Emissions, Middle channel, 20MHz BW (RB= 100)



Date: 22.FEB.2013 17:16:44

Figure 3-4b: Band 2, Spurious Conducted Emissions, Middle channel, 20MHz BW (RB= 100)



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 3A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-5b: Band 2, Spurious Conducted Emissions, High Channel, 20MHz BW (RB= 100)



Date: 22.FEB.2013 17:16:44

Figure 3-7b: Band 2, Spurious Conducted Emissions, Low channel, 10MHz BW (RB= 50)



Date: 22.FEB.2013 17:07:47

Figure 3-6b: Band 2, Spurious Conducted Emissions, High Channel, 20MHz BW (RB= 100)



Date: 22.FEB.2013 16:30:13

Figure 3-8b: Band 2, Spurious Conducted Emissions, Low channel, 10MHz BW (RB= 50)



Date: 22.FEB.2013 16:35:05

Testing Services™	EMI Test Report for the BlackBerry	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 3A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-9b: Band 2, Spurious Conducted Emissions, Middle channel, 10MHz BW (RB= 50)



Date: 22.FEB.2013 17:09:52

Figure 3-11b: Band 2, Spurious Conducted Emissions, High Channel, 10MHz BW (RB= 50)



Date: 22.FEB.2013 17:12:07

Figure 3-10b: Band 2, Spurious Conducted Emissions, Middle channel, 10MHz BW (RB= 50)



Date: 22.FEB.2013 16:46:09

Figure 3-12b: Band 2, Spurious Conducted Emissions, High Channel, 10MHz BW (RB= 50)



Date: 22.FEB.2013 16:47:42

Testing Services™	EMI Test Report for the BlackBerry	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 3A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-13b: Band 2, Spurious Conducted Emissions, Low channel, 1.4MHz BW (RB= 6)



Figure 3-14b: Band 2, Spurious Conducted Emissions, Low channel, 1.4MHz BW (RB= 6)



Date: 22.FEB.2013 17:00:44

Date: 22.FEB.2013 16:49:18

Figure 3-15b: Band 2, Spurious Conducted Emissions, Middle channel, 1.4MHz BW (RB= 6)



Date: 22.FEB.2013 17:02:35

Figure 3-16b: Band 2, Spurious Conducted Emissions, Middle channel, 1.4MHz BW (RB= 6)



Date: 22.FEB.2013 16:55:13

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 3A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-17b: Band 2, Spurious Conducted Emissions, High Channel, 1.4MHz BW (RB= 6)



Date: 22.FEB.2013 17:04:49

Figure 3-19b: Occupied Bandwidth, Band 2 Low Channel, 20MHz BW (RB= 100)



Figure 3-18b: Band 2, Spurious Conducted Emissions, High Channel, 1.4MHz BW (RB= 6)



Date: 22.FEB.2013 16:57:30

Figure 3-20b: Occupied Bandwidth, Band 2 Middle Channel, 20MHz BW (RB= 100)



Testing Services™	EMI Test Report for the BlackBerry	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 3A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-21b: Occupied Bandwidth, Band 2 High Channel, 20MHz BW (RB= 100)

Figure 3-22b: -26 dBc Bandwidth, Band 2 Low Channel, 20MHz BW (RB= 100)



Figure 3-23b: -26 dBc Bandwidth, Band 2 Middle Channel, 20MHz BW (RB= 100)

Figure 3-24b: -26 dBc Bandwidth, Band 2 High Channel, 20MHz BW (RB= 100)



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Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-25b: Band 2 Low Channel Mask, 20MHz BW, RB = 100

Figure 3-26b: Band 2 High Channel Mask, 20MHz BW, RB = 100



Figure 3-27b: Band 2 Low Channel Mask, 10MHz BW, RB = 50

Figure 3-28b: Band 2 High Channel Mask, 10MHz BW, RB = 50





Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 3A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-29b: Band 2 Low Channel Mask, 1.4MHz BW, RB = 6



Figure 3-30b: Band 2 High Channel Mask, 1.4MHz BW, RB = 6



Figure 3-31b: Band 2 Low Channel Mask, 20MHz BW, RB = 1

Figure 3-32b: Band 2 High Channel Mask, 20MHz BW, RB = 1

-30.48 dB 1.9100000 GH

hand

Spar

lagen

25.0 MHz



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Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 3A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-33b: Band 2 Low Channel Mask, 10MHz BW, RB = 1



Figure 3-34b: Band 2 High Channel Mask, 10MHz BW, RB = 1



Figure 3-35b: Band 2 Low Channel Mask, 1.4MHz BW, RB = 1

Figure 3-36b: Band 2 High Channel Mask, 1.4MHz BW, RB = 1



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Testing Services™	EMI Test Report for the BlackBerry	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 3A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-37b: Band 2, Mid Channel PAR, 20 MHz BW, RB = 100 QPSK



Figure 3-38b: Band 2, Mid Channel PAR, 20 MHz BW, RB = 100 16-QAM



Figure 3-39b: Band 2, Mid Channel PAR, 10 MHz BW, RB = 50 QPSK



Figure 3-40b: Band 2, Mid Channel PAR, 10 MHz BW, RB = 50 16-QAM



Testing Services™	EMI Test Report for the BlackBerry	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 3A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-41b: Band 2, Mid Channel PAR, 1.4 MHz BW, RB = 6 QPSK



Figure 3-42b: Band 2, Mid Channel PAR, 1.4 MHz BW, RB = 6 16-QAM



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 3A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-43b: Occupied Bandwidth, Band 2 Low Channel, 20MHz BW (RB= 100) 16-QAM

Figure 3-44b: Occupied Bandwidth, Band 2 Mid Channel, 20MHz BW (RB= 100) 16-QAM



Figure 3-45b: Occupied Bandwidth, Band 2 High Channel, 20MHz BW (RB= 100) 16-QAM



APPENDIX 3B - LTE Band 2 FREQUENCY STABILITY TEST DATA

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW		
Services™	APPENDIX 3B		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

LTE Frequency Stability Test Data



The following measurements were performed by Berkin Can.

CFR 47 Chapter 1 - Federal Communications Commission Rules

Part 2 Required Measurements

2.1055 Frequency Stability - Procedures

- (a,b) Frequency Stability Temperature Variation
- (d) Frequency Stability Voltage Variation

24.236 Frequency Stability.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

The EUT meets the requirements as stated in CFR 47 chapter 1, Section 24.235, CFR 47 and RSS-133, 6.3 Frequency Stability.

Frequency Stability measurement devices were configured as presented in the block diagram recording frequency, power, data, temperatures, and stepped voltages controlled via a GPIB interface linked to the Environmental chamber, a DC power supply, and the Communications Test Set. A 0.9-metre coax cable was calibrated to characterize the insertion loss for the transmitted frequencies between the RF input/output of the CMW 500 and the EUT antenna port.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW			
Services™	APPENDIX 3B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Test Setup:

The EUT was placed in the Temperature chamber and connected to CMW 500 outside as shown in the figure above. Dry air was pumped inside the temperature chamber to maintain a backpressure during the test. The EUT was kept in the off condition at all times except when the following measurements were to be made.

The chamber was switched on and the temperature was set to -30°C. After the chamber stabilized at -30 °C there was a soak period of one hour to alleviate moisture in the chamber, the EUT voltage was enabled.

The system software recorded the frequency, power, and associated measurements.

A Computer system controlled the automated software. This application was given the command of activating all machines intrinsic to the temperature and voltage tests controlling the CMW 500 via the GPIB Bus. The Environmental Chamber was instructed through an RS-232 serial line. The EUT dialogue was passed through a serial connection.

The EUT repetitively transmitted 100 bursts for each set of programmed parameters recording temperature, voltage settings, and systematically selected frequencies. The power supply was cycled from minimum voltage 3.6 volts, to 4.1 volts and to 4.35 volts maximum voltage. The frequency error was measured at a maximum output power and recorded by the automated system test software.

The EUT output power and frequency was measured at 3.6 volts, 4.1 volts and 4.35 volts. The transmit frequency was varied in 3 steps consisting of 1860.0, 1880.0 and 1900.0 MHz each was measured under bandwidth of 20 MHz with maximum (100) resource blocks. This frequency was recorded in MHz and deviation from nominal, in Parts Per Million.

After the initial one-hour soak at the beginning of the tests, a period of thirty minutes soak was initialized between each ascending temperature step, before proceeding to the next measurement test cycle.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW			
Services™	APPENDIX 3B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Procedure:

The test system software for commencing the Frequency Stability Tests carried through the following cycle.

- 1. Switch on the HP 6632B power supply; CMW 500 Communications test Set, and Environmental Chamber.
- 2. Start test program
- 3. Set the Temperature to -30°C and maintain a period of one- hour soak time, with the EUT supply voltage disabled.
- 4. Set power supply voltage to 3.6 volts.
- 5. Set up CMW 500 Radio Communication Tester.
- 6. Command the CMW 500 to switch to the low channel.
- 7. Enable the voltage to the EUT, and connect a link to the CMW 500 test set.
- 8. EUT is commanded to Transmit 100 Bursts.
- Software logs the following data from the CMW 500, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power and Frequency Error.
- 10. The CMW 500 commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
- 11. Repeat steps 5 to 10 changing the supply voltage to 4.1 Volts
- 12. Increase temperature by 10°C and soak for 1/2 hour.
- 13. Repeat steps 4 12 for temperatures -30°C to 60°C.
- 14. Repeat steps 5 to 10 changing the supply voltage to 4.35 volts

Procedure 5 to 10 was repeated at room temperature (20°C) with the power supply voltage set to 3.6, 4.1 and 4.35 volts

The maximum frequency error in the LTE band 2 measured was 0.009 PPM for product RFL111LW.

The maximum frequency error in the LTE band 2 measured was 0.0074 PPM for product RFP121LW.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW			
Services™	APPENDIX 3B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

The following testing were done on product RFL111LW:

Date of test: January 04, 2013

LTE band 2 results: channels 18600, 18900, & 19199 @ 20°C maximum transmitted power

Traffic Channel Number	LTE Band 2 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	3.6	20	10.96	0.0059
18900	1880.0	3.6	20	13.18	0.0070
19199	1900.0	3.6	20	-1.61	-0.0008

Traffic Channel Number	LTE Band 2 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	4.1	20	7.62	0.0041
18900	1880.0	4.1	20	11.95	0.0064
19199	1900.0	4.1	20	-4.60	-0.0024

Traffic Channel Number	LTE Band 2 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	4.35	20	8.91	0.0048
18900	1880.0	4.35	20	10.81	0.0057
19199	1900.0	4.35	20	-0.94	-0.0005

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW			
Services™	APPENDIX 3B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

LTE band 2 Results: channel 18600 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	3.6	-30	22.44	0.0121
18600	1860.0	3.6	-20	10.08	0.0054
18600	1860.0	3.6	-10	7.26	0.0039
18600	1860.0	3.6	0	10.01	0.0054
18600	1860.0	3.6	10	11.29	0.0061
18600	1860.0	3.6	20	10.96	0.0059
18600	1860.0	3.6	30	10.52	0.0057
18600	1860.0	3.6	40	13.85	0.0074
18600	1860.0	3.6	50	-8.85	-0.0048
18600	1860.0	3.6	60	10.50	0.0056
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
18600	1860.0	4.1	-30	9.74	0.0052
18600	1860.0	4.1	-20	11.92	0.0064
18600	1860.0	4.1	-10	14.87	0.0080
18600	1860.0	4.1	0	9.94	0.0053
18600	1860.0	4.1	10	11.47	0.0062
18600	1860.0	4.1	20	7.62	0.0041
18600	1860.0	4.1	30	9.58	0.0051
18600	1860.0	4.1	40	14.53	0.0078
18600	1860.0	4.1	50	-4.29	-0.0023
18600	1860.0	4.1	60	9.13	0.0049
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	4.35	-30	9.61	0.0052
18600	1860.0	4.35	-20	7.75	0.0042
18600	1860.0	4.35	-10	13.13	0.0071
18600	1860.0	4.35	0	11.05	0.0059
18600	1860.0	4.35	10	11.87	0.0064
18600	1860.0	4.35	20	8.91	0.0048
18600	1860.0	4.35	30	16.74	0.0090
18600	1860.0	4.35	40	-6.50	-0.0035
18600	1860.0	4.35	50	13.19	0.0071
18600	1860.0	4.35	60	13.64	0.0073

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW			
Services™	APPENDIX 3B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

LTE band 2 Results: channel 18900 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18900	1880.00	3.6	-30	11.95	0.0064
18900	1880.00	3.6	-20	8.49	0.0045
18900	1880.00	3.6	-10	10.26	0.0055
18900	1880.00	3.6	0	-4.85	-0.0026
18900	1880.00	3.6	10	9.21	0.0049
18900	1880.00	3.6	20	13.18	0.0070
18900	1880.00	3.6	30	11.68	0.0062
18900	1880.00	3.6	40	13.72	0.0073
18900	1880.00	3.6	50	12.09	0.0064
18900	1880.00	3.6	60	13.70	0.0073
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
18900	1880.00	4.1	-30	10.85	0.0058
18900	1880.00	4.1	-20	-10.05	-0.0053
18900	1880.00	4.1	-10	-3.34	-0.0018
18900	1880.00	4.1	0	13.65	0.0073
18900	1880.00	4.1	10	9.47	0.0050
18900	1880.00	4.1	20	11.95	0.0064
18900	1880.00	4.1	30	12.21	0.0065
18900	1880.00	4.1	40	11.16	0.0059
18900	1880.00	4.1	50	-11.14	-0.0059
18900	1880.00	4.1	60	12.33	0.0066
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18900	1880.00	4.35	-30	-12.45	-0.0066
18900	1880.00	4.35	-20	6.48	0.0034
18900	1880.00	4.35	-10	12.91	0.0069
18900	1880.00	4.35	0	10.60	0.0056
18900	1880.00	4.35	10	11.32	0.0060
18900	1880.00	4.35	20	10.81	0.0057
18900	1880.00	4.35	30	14.56	0.0077
18900	1880.00	4.35	40	16.99	0.0090
18900	1880.00	4.35	50	11.60	0.0062
18900	1880.00	4.35	60	12.91	0.0069

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW			
Services™	APPENDIX 3B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

LTE band 2 Results: channel 19199 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
19199	1900.0	3.6	-30	-7.56	-0.0040
19199	1900.0	3.6	-20	-5.01	-0.0026
19199	1900.0	3.6	-10	6.48	0.0034
19199	1900.0	3.6	0	9.09	0.0048
19199	1900.0	3.6	10	-6.57	-0.0035
19199	1900.0	3.6	20	-1.61	-0.0008
19199	1900.0	3.6	30	-4.97	-0.0026
19199	1900.0	3.6	40	-5.30	-0.0028
19199	1900.0	3.6	50	-1.52	-0.0008
19199	1900.0	3.6	60	-5.46	-0.0029
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
19199	1900.0	4.1	-30	-3.06	-0.0016
19199	1900.0	4.1	-20	-3.11	-0.0016
19199	1900.0	4.1	-10	-8.11	-0.0043
19199	1900.0	4.1	0	-2.66	-0.0014
19199	1900.0	4.1	10	-4.91	-0.0026
19199	1900.0	4.1	20	-4.60	-0.0024
19199	1900.0	4.1	30	-5.09	-0.0027
19199	1900.0	4.1	40	-5.78	-0.0030
19199	1900.0	4.1	50	-8.69	-0.0046
19199	1900.0	4.1	60	-6.89	-0.0036
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
19199	1900.0	4.35	-30	-3.77	-0.0020
19199	1900.0	4.35	-20	-2.74	-0.0014
19199	1900.0	4.35	-10	-6.72	-0.0035
19199	1900.0	4.35	0	-2.25	-0.0012
19199	1900.0	4.35	10	-5.63	-0.0030
19199	1900.0	4.35	20	-0.94	-0.0005
19199	1900.0	4.35	30	-10.53	-0.0055
19199	1900.0	4.35	40	12.40	0.0065
19199	1900.0	4.35	50	-4.68	-0.0025
19199	1900.0	4.35	60	-2.74	-0.0014

Testing Services™	EMI Test Report for the BlackBerry	ry [®] smartphone Model RFL111LW, RFL121LW APPENDIX 3B		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

The following measurements were performed on product RFP121LW:

Date of test: February 22, 2013

LTE band 2 results: channels 18600, 18900, & 19199 @ 20°C maximum transmitted power

Traffic Channel Number	LTE Band 2 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	3.6	20	10.96	0.0059
18900	1880.0	3.6	20	13.18	0.0070
19199	1900.0	3.6	20	-1.61	-0.0008

Traffic Channel Number	LTE Band 2 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	4.1	20	7.62	0.0041
18900	1880.0	4.1	20	11.95	0.0064
19199	1900.0	4.1	20	-4.60	-0.0024

Traffic Channel Number	LTE Band 2 Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	4.35	20	8.91	0.0048
18900	1880.0	4.35	20	10.81	0.0057
19199	1900.0	4.35	20	-0.94	-0.0005

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW		
Services™	APPENDIX 3B		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

LTE band 2 Results: channel 18600 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	3.6	-30	22.44	0.0121
18600	1860.0	3.6	-20	10.08	0.0054
18600	1860.0	3.6	-10	7.26	0.0039
18600	1860.0	3.6	0	10.01	0.0054
18600	1860.0	3.6	10	11.29	0.0061
18600	1860.0	3.6	20	10.96	0.0059
18600	1860.0	3.6	30	10.52	0.0057
18600	1860.0	3.6	40	13.85	0.0074
18600	1860.0	3.6	50	-8.85	-0.0048
18600	1860.0	3.6	60	10.50	0.0056
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
18600	1860.0	4.1	-30	9.74	0.0052
18600	1860.0	4.1	-20	11.92	0.0064
18600	1860.0	4.1	-10	14.87	0.0080
18600	1860.0	4.1	0	9.94	0.0053
18600	1860.0	4.1	10	11.47	0.0062
18600	1860.0	4.1	20	7.62	0.0041
18600	1860.0	4.1	30	9.58	0.0051
18600	1860.0	4.1	40	14.53	0.0078
18600	1860.0	4.1	50	-4.29	-0.0023
18600	1860.0	4.1	60	9.13	0.0049
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18600	1860.0	4.35	-30	9.61	0.0052
18600	1860.0	4.35	-20	7.75	0.0042
18600	1860.0	4.35	-10	13.13	0.0071
18600	1860.0	4.35	0	11.05	0.0059
18600	1860.0	4.35	10	11.87	0.0064
18600	1860.0	4.35	20	8.91	0.0048
18600	1860.0	4.35	30	16.74	0.0090
18600	1860.0	4.35	40	-6.50	-0.0035
18600	1860.0	4.35	50	13.19	0.0071
18600	1860.0	4.35	60	13.64	0.0073

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW		
Services™	APPENDIX 3B		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

LTE band 2 Results: channel 18900 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
18900	1880.00	3.6	-30	11.95	0.0064
18900	1880.00	3.6	-20	8.49	0.0045
18900	1880.00	3.6	-10	10.26	0.0055
18900	1880.00	3.6	0	-4.85	-0.0026
18900	1880.00	3.6	10	9.21	0.0049
18900	1880.00	3.6	20	13.18	0.0070
18900	1880.00	3.6	30	11.68	0.0062
18900	1880.00	3.6	40	13.72	0.0073
18900	1880.00	3.6	50	12.09	0.0064
18900	1880.00	3.6	60	13.70	0.0073
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
18900	1880.00	4.1	-30	10.85	0.0058
18900	1880.00	4.1	-20	-10.05	-0.0053
18900	1880.00	4.1	-10	-3.34	-0.0018
18900	1880.00	4.1	0	13.65	0.0073
18900	1880.00	4.1	10	9.47	0.0050
18900	1880.00	4.1	20	11.95	0.0064
18900	1880.00	4.1	30	12.21	0.0065
18900	1880.00	4.1	40	11.16	0.0059
18900	1880.00	4.1	50	-11.14	-0.0059
18900	1880.00	4.1	60	12.33	0.0066
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
18900	1880.00	4.35	-30	-12.45	-0.0066
18900	1880.00	4.35	-20	6.48	0.0034
18900	1880.00	4.35	-10	12.91	0.0069
18900	1880.00	4.35	0	10.60	0.0056
18900	1880.00	4.35	10	11.32	0.0060
18900	1880.00	4.35	20	10.81	0.0057
18900	1880.00	4.35	30	14.56	0.0077
18900	1880.00	4.35	40	16.99	0.0090
18900	1880.00	4.35	50	11.60	0.0062
18900	1880.00	4.35	60	12.91	0.0069

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFL121LW		
Services™	APPENDIX 3B		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

LTE band 2 Results: channel 19199 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
19199	1900.0	3.6	-30	-7.56	-0.0040
19199	1900.0	3.6	-20	-5.01	-0.0026
19199	1900.0	3.6	-10	6.48	0.0034
19199	1900.0	3.6	0	9.09	0.0048
19199	1900.0	3.6	10	-6.57	-0.0035
19199	1900.0	3.6	20	-1.61	-0.0008
19199	1900.0	3.6	30	-4.97	-0.0026
19199	1900.0	3.6	40	-5.30	-0.0028
19199	1900.0	3.6	50	-1.52	-0.0008
19199	1900.0	3.6	60	-5.46	-0.0029
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
19199	1900.0	4.1	-30	-3.06	-0.0016
19199	1900.0	4.1	-20	-3.11	-0.0016
19199	1900.0	4.1	-10	-8.11	-0.0043
19199	1900.0	4.1	0	-2.66	-0.0014
19199	1900.0	4.1	10	-4.91	-0.0026
19199	1900.0	4.1	20	-4.60	-0.0024
19199	1900.0	4.1	30	-5.09	-0.0027
19199	1900.0	4.1	40	-5.78	-0.0030
19199	1900.0	4.1	50	-8.69	-0.0046
19199	1900.0	4.1	60	-6.89	-0.0036
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
19199	1900.0	4.35	-30	-3.77	-0.0020
19199	1900.0	4.35	-20	-2.74	-0.0014
19199	1900.0	4.35	-10	-6.72	-0.0035
19199	1900.0	4.35	0	-2.25	-0.0012
19199	1900.0	4.35	10	-5.63	-0.0030
19199	1900.0	4.35	20	-0.94	-0.0005
19199	1900.0	4.35	30	-10.53	-0.0055
19199	1900.0	4.35	40	12.40	0.0065
19199	1900.0	4.35	50	-4.68	-0.0025
19199	1900.0	4.35	60	-2.74	-0.0014

APPENDIX 3C - LTE Band 2 RADIATED EMISSIONS TEST DATA

Testing Services™	EMI Test Report for the BlackBerr	ry [®] smartphone Model RFL111LW, RFP121LW APPENDIX 3C	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

Radiated Power Test Data Results

The following tests were performed on product RFL111LW:

Date of Test: January 15, 2013

The following measurements were performed by Feras Obeid.

25.0 °C The environmental tests conditions were: Temperature: Relative Humidity: 29.5 %

The EUT was standalone, vertically with the top down and LCD facing the RX antenna when the turntable is at 0 degree position.

Measurements were performed with QPSK and 16QAM modulations. The smallest test margins are reported below.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height.

					Z , Z			(IIIOuui					
									Substitutio	on Method			
EUT				Rx Ante	enna	Spectrum /	Spectrum Analyzer		Tracking (Generator			
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected	Reading	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	18700	1860.00	2	Horn	V	-28.92	07.40	V-V	-16.48	00.00	0.40	~ ~ ~	10.00
F0	18700	1860.00	2	Horn	Н	-27.16	-27.16	H-H	-16.31	22.80	0.19	33.00	-10.20
F0	18900	1880.00	2	Horn	V	-29.84	-27 02	V-V	-17.36	22 31	0 17	33 00	-10 60
F0	18900	1880.00	2	Horn	Н	-27.92	-21.52	H-H	-16.63	22.51	0.17	55.00	-10.03
F0	19099	1899.90	2	Horn	V	-30.16	27 21	V-V	-16.56	22 66	0 22	22.00	0.24
F0	19099	1899.90	2	Horn	Н	-27.21	-21.21	H-H	-15.49	23.00	0.23	33.00	-9.34

I TE hand 2 20MHz BW RB-1 OPSK modulation

LTE band 2, 20MHz BW, RB=1, 16-QAM modulation

									Substitutio	on Method			
		EUT		Rx Antenna Spectrum A		Analyzer	Tracking Generator						
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected	Reading	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	18700	1860.00	2	Horn	V	-30.24	00.40	V-V	-17.84	21.42	0.14	33.00·	-11.58
F0	18700	1860.00	2	Horn	Н	-28.49	-28.49	H-H	-17.69				
F0	18900	1880.00	2	Horn	V	-30.74	-28 67	V-V	-18.14	21 55	0 1/	22.00	11 15
F0	18900	1880.00	2	Horn	Н	-28.67	-20.07	H-H	-17.39	21.00	0.14	55.00	-11.43
F0	19099	1899.90	2	Horn	V	-32.81	20 50	V-V	-17.86	22.20	0 17	22.00	10.62
F0	19099	1899.90	2	Horn	Н	-28.50	-20.30	H-H	-16.77	22.38	0.17	33.00	-10.62

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Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW IPPENDIX 3C
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Radiated Emissions Test Data Results cont'd

Date of Test: January 03, 2013

The following measurements were performed by Feras Obeid.

The environmental test conditions were:	Temperature:	25.1 ⁰C
	Relative Humidity:	15.3 %

The EUT was standalone, vertically with the top down and LCD facing the RX antenna when the turntable is at 0 degree position.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and the frequency range scanned was 30MHz – 1GHz.

Measurements were performed in LTE band 2 with QPSK modulation for 1.4MHz BW (channel 18607, 18900 and 19192 with RB = 6), 5MHz BW (channel 18625, 18900 and 19174 with RB = 25) and 20MHz BW (channel18700, 18900, 19099 with RB = 100 and RB = 1), in QPSK modulation; with 16-QAM modulation for 1.4MHz BW (channel 18900 with RB=6), 5MHz BW (channel 18900 with RB-25) and 20MHz BW (channel 18900 with RB = 100 and RB = 100 and RB = 1).

All emissions were at least 25 dB below the limit.

Date of Test: December 07, 2012 to January 15, 2013

The following measurements were performed by Mahmood Ahmed.

The environmental test conditions were:Temperature:25.4 °CRelative Humidity:41.7 %

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and a frequency range of 1 GHz to 20 GHz.

The EUT was standalone, with USB jack pointing up and LCD facing the RX antenna when the turntable is at 0 degree position

Measurements were performed in LTE band 2 with QPSK modulation for 1.4MHz BW (channel 18607, 18900 and 19192 with RB = 6), 5MHz BW (channel 18625, 18900 and 19174 with RB = 25) and 20MHz BW (channel18700, 18900, 19099 with RB = 100 and RB = 1), in QPSK modulation; with 16-QAM modulation for 1.4MHz BW (channel 18900 with RB=6), 5MHz BW (channel 18900 with RB-25) and 20MHz BW (channel 18900 with RB = 100 and RB = 100 and RB = 1).

All emissions were at least 25 dB below the limit.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 3C			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Radiated Power Test Data Results cont'd

The following tests were performed on product RFP121LW:

Date of Test: February 06, 2013

The following measurements were performed by Savtej Sandhu.

The environmental tests conditions were: Temperature: 25.2 °C Relative Humidity: 13.0 %

The EUT was standalone, horizontally with the LCD facing down and the top porting to the RX antenna when the turntable is at 0 degree position.

Measurements were performed with QPSK and 16QAM modulations. The smallest test margins are reported below.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height.

										anon			
									Substitutio	on Method			
EUT Rx Antenna					Spectrum /	Spectrum Analyzer		Tracking (Generator				
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected	Reading	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	18700	1860.00	2	Horn	V	-34.12	05 44	V-V	-15.42	04 50	0.00	~~ ~~	0.40
F0	18700	1860.00	2	Horn	H	-25.11	-25.11	H-H	-14.53	24.58	0.29	33.00	-0.42
F0	18900	1880.00	2	Horn	V	-34.64	-24 75	V-V	-14.93	24.05	0.25	33 00	-8.05
F0	18900	1880.00	2	Horn	Н	-24.75	-24.75	H-H	-14.89	24.05	0.23	55.00	-0.95
F0	19099	1899.90	2	Horn	V	-35.95	24.06	V-V	-14.87	25 22	0.24	22.00	7 69
F0	19099	1899.90	2	Horn	Н	-24.96	-24.90	H-H	-13.83	23.32	0.34	33.00	-7.00

LTE band 2, 20MHz BW, RB=1, QPSK modulation

LTE band 2, 20MHz BW, RB=1, 16-QAM modulation

								Substitution Method					
		EUT		Rx Antenna Spectrum An		Analyzer	Tracking Generator						
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected	Reading	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	18700	1860.00	2	Horn	V	-35.34	00.00	V-V	-16.64	23.38	0.22	33.00	-9.62
F0	18700	1860.00	2	Horn	Н	-26.30	-26.30	H-H	-15.73				
F0	18900	1880.00	2	Horn	V	-35.67	-25.06	V-V	-15.80	23.83	0.24	22.00	0.17
F0	18900	1880.00	2	Horn	Н	-25.96	-25.50	H-H	-15.11	20.00	0.24	55.00	-3.17
F0	19099	1899.90	2	Horn	V	-37.14	26.09	V-V	-15.69	24.16	0.26	22.00	0 01
F0	19099	1899.90	2	Horn	Н	-26.08	-20.00	H-H	-14.99	24.10	0.20	33.00	-0.04

Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 3C
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Radiated Emissions Test Data Results cont'd

Date of Test: February 05, 2013

The following measurements were performed by Feras Obeid.

The environmental test conditions were:	Temperature:	25.3 ⁰C
	Relative Humidity:	14.1 %

The EUT was standalone, horizontally with the LCD facing down and the top pointing to RX antenna when the turntable is at 0 degree position.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and the frequency range scanned was 30MHz – 1GHz.

Measurements were performed in LTE band 2 with QPSK modulation for 1.4MHz BW (channel 18607, 18900 and 19192 with RB = 6), 5MHz BW (channel 18625, 18900 and 19174 with RB = 25) and 20MHz BW (channel18700, 18900, 19099 with RB = 100 and RB = 1), in QPSK modulation; with 16-QAM modulation for 1.4MHz BW (channel 18900 with RB=6), 5MHz BW (channel 18900 with RB-25) and 20MHz BW (channel 18900 with RB = 100 and RB = 100 and RB = 1).

All emissions were at least 25 dB below the limit.

Date of Test: January 28, 2012 to February 05, 2013

The following measurements were performed by Mahmood Ahmed.

The environmental test conditions were:	Temperature:	236 – 26.3⁰C
	Relative Humidity:	15.6 – 20.4 %

The EUT was standalone, horizontally with LCD facing up and the top pointing to the RX antenna when the turntable is at 0 degree position

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and a frequency range of 1 GHz to 20 GHz.

Measurements were performed in LTE band 2 with QPSK modulation for 1.4MHz BW (channel 18607, 18900 and 19192 with RB = 6), 5MHz BW (channel 18625, 18900 and 19174 with RB = 25) and 20MHz BW (channel18700, 18900, 19099 with RB = 100 and RB = 1), in QPSK modulation; with 16-QAM modulation for 1.4MHz BW (channel 18900 with RB=6), 5MHz BW (channel 18900 with RB-25) and 20MHz BW (channel 18900 with RB = 100 and RB = 100 and RB = 1).

All emissions were at least 25 dB below the limit.

APPENDIX 4A- LTE Band 5 CONDUCTED RF EMISSIONS TEST DATA/PLOTS

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

This appendix contains measurement data pertaining to conducted spurious emissions, 99% power bandwidth and the channel mask.

Test Setup Diagram



A reference offset of 31.4 dB was applied to the spectrum analyzer reference level for the attenuators and coaxial cable loss in the test circuit.

UNIT	MANUFACTURER	MODEL	<u>SERIAL</u> <u>NUMBER</u>
Attenuator 1	Mini-Circuits	BW-S6W2+	0647
Attenuator 2	Mini-Circuits	BW-S6W2+	0648
Attenuator 3	Mini-Circuits	BW-S20-2W263+	1234
Splitter 1	Weinschel	1515	MES 92

Date of Test: January 18 – 21, 2012

The environmental test conditions were:	Temperature:	22.5 – 22.7 ⁰C
	Relative Humidity:	19.2 – 20.1 %

The following measurements were performed by Berkin Can.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW		
Services™	APPENDIX 4A		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

Emission Designator Table

Frequency Range (MHz)	Conducted Output Power (dBm)	Emission Designator	Band	Bandwidth (MHz)	Modulation
824.7-848.2	23.73	1M09G7D	LTE B5	1.4	QPSK
824.7-848.2	22.50	1M09D7W	LTE B5	1.4	16QAM
825.5-847.5	23.80	2M68G7D	LTE B5	3	QPSK
825.5-847.5	22.85	2M68D7W	LTE B5	3	16QAM
826.5-846.4	23.77	4M47G7D	LTE B5	5	QPSK
826.5-846.4	23.08	4M47D7W	LTE B5	5	16QAM
829-844	23.78	8M92G7D	LTE B5	10	QPSK
829-844	22.65	8M92D7W	LTE B5	10	16QAM

The conducted spurious emissions – As per 47 CFR 2.1051, CFR 22.917 and RSS-132, 4.5 were measured from 30 MHz to 20 GHz.

-26 dBc Bandwidth and Occupied Bandwidth (99%)

For each 1.4MHz, 3MHz, 5MHz, 10MHz with different number of resource blocks as per scalable bandwidths for LTE band 5, the modulation spectrum was measured by both methods of 99% power bandwidth and –26 dBc bandwidth.

QPSK and 16-QAM modulations were applied to each of the bandwidths. Only the worst case measurements are documented in this report.

A minimum resource block condition was also measured (RB = 1).

The resolution bandwidth required for out-of-band emissions in the 1 MHz bands immediately outside and adjacent to the frequency block, was determined to be at least 1% of the emission bandwidth.

The worst case –26dBc bandwidth for LTE band 5 was measured to be 9.320 MHz. Results were derived in a 100 kHz resolution bandwidth.

On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 1 MHz was applied.

Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

LTE Band 5 Frequency (MHz)	26dBc Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	
	QPSK	QPSK	16-QAM
829.0	9.291	8.929	8.929
836.5	9.320	8.944	8.929
843.9	9.276	8.929	8.929

Measurement Plots for LTE Band 5

See Figures 4-1a to 4-18a for the plots of the conducted spurious emissions.

See Figures 4-19a to 4-36a and 4-45a to 4-47a for the plots of 99% Occupied Bandwidth and -26 dBc Bandwidth.

See Figures 4-37a to 4-44a for the plots of the Channel mask.

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-1a: Band 5, Spurious Conducted Emissions, Low channel, 10MHz BW (RB= 1)



Figure 4-2a: Band 5, Spurious Conducted Emissions, Low channel, 10MHz BW (RB= 1)



Date: 21.JAN.2013 10:39:45

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Figure 4-3a: Band 5, Spurious Conducted Emissions, Middle channel, 10MHz BW (RB= 25)



Date: 21.JAN.2013 10:44:25

Figure 4-4a: Band 5, Spurious Conducted Emissions, Middle channel, 10MHz BW (RB= 25)



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Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-5a: Band 5, Spurious Conducted Emissions, High Channel, 10MHz BW (RB= 50)



Figure 4-6a: Band 5, Spurious Conducted Emissions, High Channel, 10MHz BW (RB= 50)



Date: 21.JAN.2013 11:06:45

Figure 4-7a: Band 5, Spurious Conducted Emissions, Low channel, 5MHz BW (RB= 1)

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 Marker I [T]

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 *31.43 dBm

 *Att 10 dB
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Figure 4-8a: Band 5, Spurious Conducted Emissions, Low channel, 5MHz BW (RB= 1)



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Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-9a: Band 5, Spurious Conducted Emissions, Middle Channel, 5MHz BW (RB= 15)



Date: 21.JAN.2013 11:19:28

Date: 21.JAN.2013 11:27:51

Figure 4-10a: Band 5, Spurious Conducted Emissions, Middle Channel, 5MHz BW (RB= 15)



Date: 21.JAN.2013 11:16:14

Figure 4-12a: Band 5, Spurious Conducted missions, High changes, SML and State Market 1 (1) Marke

Date: 21.JAN.2013 11:28:56
Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-13a: Band 5, Spurious Conducted Emissions, Low Channel, 1.4MHz BW (RB= 1)



Date: 21.JAN.2013 11:32:19

Figure 4-15a: Band 5, Spurious Conducted Emissions, Middle channel, 1.4MHz BW (RB= 3)



Date: 21.JAN.2013 11:33:32

Figure 4-14a: Band 5, Spurious Conducted Emissions, Low Channel, 1.4MHz BW (RB= 1)



Date: 21.JAN.2013 11:30:17

Figure 4-16a: Band 5, Spurious Conducted Emissions, Middle channel, 1.4MHz BW (RB= 3)



Date: 21.JAN.2013 11:36:20

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-17a: Band 5, Spurious Conducted Emissions, High channel, 1.4MHz BW (RB= 6)



Figure 4-18a: Band 5, Spurious Conducted Emissions, High channel, 1.4MHz BW (RB= 6)



Date: 21.JAN.2013 11:42:57

Date: 21.JAN.2013 11:40:08

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-19a: Occupied Bandwidth, Band 5 Low Channel, 10MHz BW, RB=50

Figure 4-20a: Occupied Bandwidth, Band 5 Middle Channel, 10MHz BW, RB=50



Figure 4-21a: Occupied Bandwidth, Band 5 High Channel, 10MHz BW, RB=50



Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-22a: Occupied Bandwidth, Band 5 Low Channel, 5MHz BW, RB=25

Figure 4-23a: Occupied Bandwidth, Band 5 Middle Channel, 5MHz BW, RB=25



Figure 4-24a: Occupied Bandwidth, Band 5 High Channel, 5MHz BW, RB=25



Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-25a: Occupied Bandwidth, Band 5 Low Channel, 1.4MHz BW, RB=6

Figure 4-26a: Occupied Bandwidth, Band 5 Middle Channel, 1.4MHz BW, RB=6



Figure 4-27a: Occupied Bandwidth, Band 5 High Channel, 1.4MHz BW, RB=6



Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-28a: -26 dBc Bandwidth, Band 5 Low Channel, 10MHz BW, RB=50

Figure 4-29a: -26 dBc Bandwidth, Band 5 Middle Channel, 10MHz BW, RB=50



Figure 4-30a: -26 dBc Bandwidth, Band 5 High Channel, 10MHz BW, RB=50



Figure 4-31a: -26 dBc Bandwidth, Band 5 Low Channel, 5MHz BW, RB=25



Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-32a: -26 dBc Bandwidth, Band 5 Middle Channel, 5MHz BW, RB=25



Figure 4-33a: -26 dBc Bandwidth, Band 5 High Channel, 5MHz BW, RB=25



Figure 4-34a: -26 dBc Bandwidth, Band 5 Low Channel, 1.4MHz BW, RB=6

Figure 4-35a: -26 dBc Bandwidth, Band 5 Middle Channel, 1.4MHz BW, RB=6



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 4A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-36a: -26 dBc Bandwidth, Band 5 High Channel, 1.4MHz BW, RB=6



Figure 4-37a: Band 5 Low Channel Mask, 10MHz BW, RB=50

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-40 dB

-50 dBm

-60 dBm

₩ V Spectrum Spectrum Ref Level 35.00 dBm Att 20 dB 00 dBm Offset 31.70 dB - RBW 100 kHz 20 dB SWT 1 ms - VBW 300 kHz Offset 31.70 dB RBW 100 kHz SWT 1 ms VBW 300 kHz Mode Sweep Att 20 dB 1 ms 🖷 VBW 300 kHz Mode Sweep 20 dB SWT and Edge, LTE B5, BW: 10MHz, RB: 50, OFFSET: 0, QPSK @ 1Av Ma and Edge, LTE B5, BW: 10 Hz, RB: SO, OFFSET: 0 QPSK . IAv Ma M1[1] 11.29 d EUGE BAND FIRT NUFUCI 82 84 20 d8m 1.1. 10 d8m-10 dBm 20 dBr m. 30 di ab di 40 dBr -50 dBm 60 dBm CF 849.0 MH CF 824.0 MI 691 pl 15.0 MHz 691 pt Span 15.0 MHz Spar

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Figure 4-38a: Band 5 High Channel Mask, 10MHz BW, RB=50

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-39a: Band 5 Low Channel Mask, 5MHz BW, RB=25

Figure 4-40a: Band 5 High Channel Mask, 5MHz BW, RB=25



Figure 4-41a: Band 5 Low Channel Mask, 1.4MHz BW, RB=6

Figure 4-42a: Band 5 High Channel Mask, 1.4MHz BW, RB=6



Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 4A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 4-43d: Band 5 Low Channel Mask, 10MHz BW, RB=1

Figure 4-44a: Band 5 High Channel Mask, 10MHz BW, RB=1



Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 3-45a: Occupied Bandwidth, Band 5 Low Channel, 10MHz BW (RB= 50) 16-QAM

Figure 3-46a: Occupied Bandwidth, Band 5 Mid Channel, 20MHz BW (RB= 50) 16-QAM



Figure 3-47a: Occupied Bandwidth, Band 5 High Channel, 10MHz BW (RB= 50) 16-QAM



APPENDIX 4B - LTE Band 5 FREQUENCY STABILITY TEST DATA

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

LTE Band 5 Frequency Stability Test Data



The following measurements were performed by Berkin Can.

CFR 47 Chapter 1 - Federal Communications Commission Rules

Part 2 Required Measurements

2.1055 Frequency Stability - Procedures

- (a,b) Frequency Stability Temperature Variation
- (d) Frequency Stability Voltage Variation

24.237 Frequency Stability.

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

The EUT meets the requirements as stated in CFR 47 chapter 1, Section 27.54, CFR 47 and RSS-139, 6.3 Frequency Stability.

Frequency Stability measurement devices were configured as presented in the block diagram recording frequency, power, data, temperatures, and stepped voltages controlled via a GPIB interface linked to the Environmental chamber, a DC power supply, and the Communications Test Set. A 0.9-metre coax cable was calibrated to characterize the insertion loss for the transmitted frequencies between the RF input/output of the CMW 500 and the EUT antenna port.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 4B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Test Setup:

The EUT was placed in the Temperature chamber and connected to CMW 500 outside as shown in the figure above. Dry air was pumped inside the temperature chamber to maintain a backpressure during the test. The EUT was kept in the off condition at all times except when the following measurements were to be made.

The chamber was switched on and the temperature was set to -30°C. After the chamber stabilized at -30 °C there was a soak period of one hour to alleviate moisture in the chamber, the EUT voltage was enabled. The system software recorded the frequency, power, and associated measurements.

A Computer system controlled the automated software. This application was given the command of activating all machines intrinsic to the temperature and voltage tests controlling the CMW 500 via the GPIB Bus. The Environmental Chamber was instructed through an RS-232 serial line. The EUT dialogue was passed through a serial connection.

The EUT repetitively transmitted 100 bursts for each set of programmed parameters recording temperature, voltage settings, and systematically selected frequencies. The power supply was cycled from minimum voltage 3.6 volts, 4.1 volts and to 4.35 volts maximum voltage. The frequency error was measured at a maximum output power and recorded by the automated system test software.

The EUT output power and frequency was measured at 3.6 volts, 4.1 volts and 4.35 volts. The transmit frequency was varied in 3 steps consisting of 829.0 MHz, 836.5 MHz and 844.0 MHz each was measured under 10 MHz bandwidth with maximum (50) resource blocks. This frequency was recorded in MHz and deviation from nominal, in Parts Per Million.

After the initial one-hour soak at the beginning of the tests, a period of thirty minutes soak was initialized between each ascending temperature step, before proceeding to the next measurement test cycle.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 4B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Procedure:

The test system software for commencing the Frequency Stability Tests carried through the following cycle.

- 15. Switch on the HP 6632B power supply; CMW 500 Communications test Set, and Environmental Chamber.
- 16. Start test program
- 17. Set the Temperature to –30°C and maintain a period of one- hour soak time, with the EUT supply voltage disabled.
- 18. Set power supply voltage to 3.6 volts.
- 19. Set up CMW 500 Radio Communication Tester.
- 20. Command the CMW 500 to switch to the low channel.
- 21. Enable the voltage to the EUT, and connect a link to the CMW 500 test set.
- 22. EUT is commanded to Transmit 100 Bursts.
- 23. Software logs the following data from the CMW 500, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power and Frequency Error.
- 24. The CMW 500 commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
- 25. Repeat steps 5 to 10 changing the supply voltage to 4.1 Volts
- 26. Increase temperature by 10°C and soak for 1/2 hour.
- 27. Repeat steps 4 12 for temperatures -30°C to 60°C.
- 28. Repeat steps 5 to 10 changing the supply voltage to 4.35 volts

Procedure 5 to 10 was repeated at room temperature (20°C) with the power supply voltage set to 3.6, 4.1 and 4.35 volts

The maximum frequency error in the LTE Band 5 measured was **0.0201 PPM**.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 4B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Date of test: January 21, 2013

LTE Band 5 results: channels 20400, 20525 and 20649 @ 20°C maximum transmitted power

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20450	829.0	3.6	20	10.56	0.0127
20525	836.5	3.6	20	11.32	0.0135
20600	844.0	3.6	20	5.46	0.0065

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20450	829.0	4.1	20	6.53	0.0079
20525	836.5	4.1	20	1.76	0.0021
20600	844.0	4.1	20	8.86	0.0105

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20450	829.0	4.35	20	13.65	0.0165
20525	836.5	4.35	20	10.39	0.0124
20600	844.0	4.35	20	10.33	0.0122

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 4B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

LTE band 5 Results: channel 20400 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20450	829.0	3.6	-30	0.44	0.0005
20450	829.0	3.6	-20	-0.10	-0.0001
20450	829.0	3.6	-10	-1.77	-0.0021
20450	829.0	3.6	0	4.87	0.0059
20450	829.0	3.6	10	12.57	0.0152
20450	829.0	3.6	20	10.56	0.0127
20450	829.0	3.6	30	6.01	0.0073
20450	829.0	3.6	40	-0.35	-0.0004
20450	829.0	3.6	50	16.67	0.0201
20450	829.0	3.6	60	1.42	0.0017
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20450	829.0	4.1	-30	2.59	0.0031
20450	829.0	4.1	-20	2.08	0.0025
20450	829.0	4.1	-10	2.28	0.0027
20450	829.0	4.1	0	4.62	0.0056
20450	829.0	4.1	10	11.56	0.0139
20450	829.0	4.1	20	6.53	0.0079
20450	829.0	4.1	30	6.89	0.0083
20450	829.0	4.1	40	0.78	0.0009
20450	829.0	4.1	50	9.03	0.0109
20450	829.0	4.1	60	2.89	0.0035
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20450	829.0	4.35	-30	0.58	0.0007
20450	829.0	4.35	-20	-0.28	-0.0003
20450	829.0	4.35	-10	3.14	0.0038
20450	829.0	4.35	0	1.34	0.0016
20450	829.0	4.35	10	10.71	0.0129
20450	829.0	4.35	20	13.65	0.0165
20450	829.0	4.35	30	14.60	0.0176
20450	829.0	4.35	40	2.06	0.0025
20450	829.0	4.35	50	3.70	0.0045
20450	829.0	4.35	60	2.49	0.0030

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW		
Services™	APPENDIX 4B		
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LTE band 5 Results: channel 20525	@ maximum transmitted po	ower
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Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20525	836.5	3.6	-30	12.45	0.0149
20525	836.5	3.6	-20	1.52	0.0018
20525	836.5	3.6	-10	9.83	0.0117
20525	836.5	3.6	0	11.66	0.0139
20525	836.5	3.6	10	-1.65	-0.0020
20525	836.5	3.6	20	11.32	0.0135
20525	836.5	3.6	30	1.55	0.0019
20525	836.5	3.6	40	10.23	0.0122
20525	836.5	3.6	50	13.46	0.0161
20525	836.5	3.6	60	12.66	0.0151
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20525	836.5	4.1	-30	9.81	0.0117
20525	836.5	4.1	-20	8.91	0.0107
20525	836.5	4.1	-10	13.00	0.0155
20525	836.5	4.1	0	8.74	0.0105
20525	836.5	4.1	10	-1.14	-0.0014
20525	836.5	4.1	20	1.76	0.0021
20525	836.5	4.1	30	3.63	0.0043
20525	836.5	4.1	40	8.31	0.0099
20525	836.5	4.1	50	11.70	0.0140
20525	836.5	4.1	60	-4.74	-0.0057
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20525	836.5	4.35	-30	6.24	0.0075
20525	836.5	4.35	-20	7.19	0.0086
20525	836.5	4.35	-10	8.25	0.0099
20525	836.5	4.35	0	8.22	0.0098
20525	836.5	4.35	10	2.39	0.0029
20525	836.5	4.35	20	10.39	0.0124
20525	836.5	4.35	30	9.97	0.0119
20525	836.5	4.35	40	10.57	0.0126
20525	836.5	4.35	50	8.87	0.0106
20525	836.5	4.35	60	9.55	0.0114

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 4B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

LTE band 5 Results: channel 20649 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20600	844.0	3.6	-30	8.79	0.0104
20600	844.0	3.6	-20	10.43	0.0124
20600	844.0	3.6	-10	6.16	0.0073
20600	844.0	3.6	0	9.43	0.0112
20600	844.0	3.6	10	0.16	0.0002
20600	844.0	3.6	20	5.46	0.0065
20600	844.0	3.6	30	8.07	0.0096
20600	844.0	3.6	40	8.88	0.0105
20600	844.0	3.6	50	11.96	0.0142
20600	844.0	3.6	60	10.90	0.0129
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20600	844.0	4.1	-30	7.53	0.0089
20600	844.0	4.1	-20	10.30	0.0122
20600	844.0	4.1	-10	6.16	0.0073
20600	844.0	4.1	0	9.99	0.0118
20600	844.0	4.1	10	6.44	0.0076
20600	844.0	4.1	20	8.86	0.0105
20600	844.0	4.1	30	5.00	0.0059
20600	844.0	4.1	40	0.98	0.0012
20600	844.0	4.1	50	6.38	0.0076
20600	844.0	4.1	60	9.80	0.0116
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
20600	844.0	4.35	-30	11.11	0.0132
20600	844.0	4.35	-20	11.24	0.0133
20600	844.0	4.35	-10	3.42	0.0040
20600	844.0	4.35	0	9.55	0.0113
20600	844.0	4.35	10	10.54	0.0125
20600	844.0	4.35	20	10.33	0.0122
20600	844.0	4.35	30	7.89	0.0094
20600	844.0	4.35	40	12.36	0.0146
20600	844.0	4.35	50	8.63	0.0102
20600	844.0	4.35	60	12.02	0.0142

APPENDIX 4C - LTE Band 5 RADIATED EMISSIONS TEST DATA

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 4C				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

Radiated Power Test Data Results

Date of Test: December 19, 2012

The following measurements were performed by Feras Obeid.

The environmental tests conditions were: Temperature: 25.0 °C

Relative Humidity: 29.5 %

The EUT was standalone horizontally with LCD facing up and top pointing to the RX antenna when the turntable is at 0 degree position.

Measurements were performed with QPSK and 16QAM modulations. The smallest test margins are reported below.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height.

									(IIIOddi				
								Substitutio	on Method				
EUT				Rx Ante	nna	Spectrum /	Analyzer	Tracking Generator					
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected (relative to	Reading Dipole)	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	20500	834.00	5	Dipole	V	-39.98	20.05	V-V	6.26	22.20	0.04	20 50	15 00
F0	20500	834.00	5	Dipole	Н	-28.85	-20.00	H-H	4.87	23.28	0.21	30.50	-15.22
F0	20525	836.50	5	Dipole	V	-40.03	20.15	V-V	5.87	22.76	0 10	20 50	15 74
F0	20525	836.50	5	Dipole	Н	-29.15	-29.15	H-H	4.74	22.70	0.19	30.50	-15.74
F0	20549	838.90	5	Dipole	V	-39.99	20.26	V-V	5.75	22 64	0.10	20 50	15.06
F0	20549	838.90	5	Dipole	Н	-29.36	-29.30	H-H	4.90	22.04	0.10	30.50	-10.00

LTE band 5, 10MHz BW, RB=1, QPSK modulation

LTE band 5, 10MHz BW, RB=1, 16-QAM modulation

							Substitution Method						
EUT				Rx Ante	enna	Spectrum Analyzer		Tracking Generator					
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected (relative to	Reading Dipole)	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	20500	834.00	5	Dipole	V	-41.15	20.02	V-V	3.80	20.92	0 1 2	20 50	17.60
F0	20500	834.00	5	Dipole	Н	-30.83	-30.03	H-H	3.30	20.02	0.12	30.50	-17.00
F0	20525	836.50	5	Dipole	V	-41.34	20.42	V-V	4.58	21 47	0.14	20 50	17.02
F0	20525	836.50	5	Dipole	Н	-30.43	-30.43	H-H	3.43	21.47	0.14	30.00	-17.03
F0	20549	838.90	5	Dipole	V	-41.20	21 07	V-V	3.78	20.67	0.12	20 50	17 02
F0	20549	838.90	5	Dipole	Н	-31.87	-31.07	H-H	2.24	20.07	0.12	30.50	-17.03

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Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 4C				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

Radiated Emissions Test Data Results cont'd

Date of Test: December 22, 2012

The following measurements were performed by Feras Obeid.

The environmental test conditions were:	Temperature:	25.3 ⁰C
	Relative Humidity:	18.3 %

The EUT was standalone horizontally with LCD facing up and top pointing to the RX antenna when the turntable is at 0 degree position

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and the frequency range scanned was 30MHz – 1GHz.

Measurements were performed in LTE band 5 with QPSK modulation for 1.4MHz BW (channel 20407, 20525 and 20642 with RB = 6), 5MHz BW (channel 20425, 20525 and 20624 with RB = 25) and 10MHz BW (channel 20500, 20525, 20549 with RB = 50 and RB = 1) and with 16-QAM modulation for 1.4MHz BW (channel 20525 with RB = 6), 5MHz BW (channel 20525 with RB = 25) and 10MHz BW (channel 20525 with RB = 50 and RB = 1).

All emissions were at least 25 dB below the limit.

Date of Test: December 11, 2012 to January 15, 2013

The following measurements were perform	ned by Shuo Wang	
The environmental test conditions were:	Temperature:	23.7 - 25.5 ⁰C
	Relative Humidity:	18.6 - 21.6 %

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and a frequency range of 1 GHz to 10 GHz.

The EUT was standalone, with USB jack pointing up and LCD facing the RX antenna when the turntable is at 0 degree position

Measurements were performed in LTE band 5 with QPSK modulation for 1.4MHz BW (channel 20407, 20525 and 20642 with RB = 6), 5MHz BW (channel 20425, 20525 and 20624 with RB = 25) and 10MHz BW (channel 20500, 20525, 20549 with RB = 50 and RB = 1) and with 16-QAM modulation for 1.4MHz BW (channel 20525 with RB = 6), 5MHz BW (channel 20525 with RB = 25) and 10MHz BW (channel 20525 with RB = 50 and RB = 1).

All emissions were at least 25 dB below the limit.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 4C				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

Radiated Emissions Test Data Results cont'd

The following measurements were performed on RFP121LW:

Date of Test: February 07, 2013

The following measurements were performed by Berkin Can. The environmental tests conditions were: Temperature: 25.5 °C Relative Humidity: 13.1 %

The EUT was standalone horizontally with LCD facing down and top pointing to the RX antenna when the turntable is at 0 degree position.

Measurements were performed with QPSK and 16QAM modulations. The smallest test margins are reported below.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height.

					υ, ι			,	(IIIOuui	ution			
								Substitution Method					
	E	UT		Rx Ante	enna	Spectrum /	Analyzer		Tracking (Generator			
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected (relative to	Reading Dipole)	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	20500	834.00	5	Dipole	V	-38.83	00.07	V-V	7.23	04.05	0.07	00 50	44.05
F0	20500	834.00	5	Dipole	Н	-29.27	-29.27	H-H	4.74	24.25	0.27	38.50	-14.25
F0	20525	836.50	5	Dipole	V	-38.49	20.21	V-V	7.26	24.15	0.26	20 50	14.25
F0	20525	836.50	5	Dipole	Н	-29.31	-29.31	H-H	4.43	24.13	0.20	30.00	-14.30
F0	20549	838.90	5	Dipole	V	-38.59	20.22	V-V	7.25	24.14	0.26	20 50	14.26
F0	20549	838.90	5	Dipole	Н	-29.33	-29.00	H-H	4.24	24.14	0.20	30.50	-14.30

LTE band 5, 10MHz BW, RB=1, QPSK modulation

LTE band 5, 10MHz BW, RB=1, 16-QAM modulation

				-				Substitution Method					
EUT				Rx Ante	Rx Antenna Sr		Spectrum Analyzer		Tracking Generator				
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected (relative to	Reading Dipole)	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	20500	834.00	5	Dipole	V	-40.16	00 77	V-V	5.80	00.00	0.40	20 50	45.00
F0	20500	834.00	5	Dipole	Н	-30.77	-30.77	H-H	3.24	22.82	0.19	38.50	-15.68
F0	20525	836.50	5	Dipole	V	-39.69	-30 61	V-V	6.03	22.02	0.20	38 50	-15 58
F0	20525	836.50	5	Dipole	Η	-30.61	-30.01	H-H	3.15	22.92	0.20	30.30	-13.30
F0	20549	838.90	5	Dipole	V	-39.46	20.14	V-V	6.48	22.27	0.22	20 50	15 12
F0	20549	838.90	5	Dipole	Н	-30.14	-30.14	H-H	3.46	23.31	0.22	30.50	-15.15

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Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 4C				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

Radiated Emissions Test Data Results cont'd

Date of Test: February 06 2013

The following measurements were performed by Feras Obeid.

The environmental test conditions were:	Temperature:	25.3 ⁰C
	Relative Humidity:	14.1 %

The EUT was standalone, vertically with LCD facing to the RX antenna when the turntable is at 0 degree position

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and the frequency range scanned was 30MHz – 1GHz.

Measurements were performed in LTE Band 5 with QPSK modulation for 1.4MHz BW (channel 20407, 20525 and 20642 with RB = 6) and 10MHz BW (channel 20500, 20525, 20549 with RB = 50 and RB = 1) and with 16-QAM modulation for 1.4MHz BW (channel 20525 with RB = 6) and 10MHz BW (channel 20525 with RB = 50 and RB = 1).

All emissions were at least 25 dB below the limit.

Date of Test: January 29 – February 01, 2013

The following measurements were performed by Masud Attayi.

The environmental test conditions were:	Temperature:	23.7 - 25.5 ⁰C
	Relative Humidity:	18.6 - 21.6 %

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and a frequency range of 1 GHz to 9 GHz.

The EUT was standalone, with USB jack pointing up and LCD facing the RX antenna when the turntable is at 0 degree position

Measurements were performed in LTE Band 5 with QPSK modulation for 1.4MHz BW (channel 20407, 20525 and 20642 with RB = 6) and 10MHz BW (channel 20500, 20525, 20549 with RB = 50 and RB = 1) and with 16-QAM modulation for 1.4MHz BW (channel 20525 with RB = 6) and 10MHz BW (channel 20525 with RB = 50 and RB = 1).

All emissions were at least 25 dB below the limit.

APPENDIX 5A- LTE Band 4 CONDUCTED RF EMISSIONS TEST DATA/PLOTS

Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

This appendix contains measurement data pertaining to conducted spurious emissions, 99% power bandwidth and the channel mask.

Test Setup Diagram



A reference offset of 31.4 dB was applied to the spectrum analyzer reference level for the attenuators and coaxial cable loss in the test circuit.

UNIT	MANUFACTURER	MODEL	<u>SERIAL</u> <u>NUMBER</u>
Attenuator 1	Mini-Circuits	BW-S6W2+	0647
Attenuator 2	Mini-Circuits	BW-S6W2+	0648
Attenuator 3	Mini-Circuits	BW-S20-2W263+	1234
Splitter 1	Weinschel	1515	MES 92

Date of Test: January 18, 2013

The environmental test conditions were:	Temperature:	23.2ºC
	Relative Humidity:	21.1 %

The following measurements were performed by Berkin Can.

Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Emission Designator Table

Frequency Range (MHz)	Conducted Output Power	Emission Designator	Band	Bandwidth (MHz)	Modulation
		41400.075			
1/10.7-1/54.3	23.75	1M08G7D	LIE B4	1.4	QPSK
1710.7-1754.3	22.55	1M09D7W	LTE B4	1.4	16QAM
1711.5-1753.5	23.80	2M68G7D	LTE B4	3	QPSK
1711.5-1753.5	22.55	2M68D7W	LTE B4	3	16QAM
1712.5-1752.5	23.85	4M50G7D	LTE B4	5	QPSK
1712.5-1752.5	23.05	4M50D7W	LTE B4	5	16QAM
1715-1750	23.71	8M92G7D	LTE B4	10	QPSK
1715-1750	22.49	8M95D7W	LTE B4	10	16QAM
1717.5-1747.5	23.67	13M4G7D	LTE B4	15	QPSK
1717.5-1747.5	22.63	13M4D7W	LTE B4	15	16QAM
1720-1745	23.83	17M9G7D	LTE B4	20	QPSK
1720-1745	22.30	17M9D7W	LTE B4	20	16QAM

The conducted spurious emissions – As per 47 CFR 2.1051, CFR 27.53, RSS-139, 6.5 were measured from 30 MHz to 20 GHz.

-26 dBc Bandwidth and Occupied Bandwidth (99%)

The modulation spectrum was measured by both methods of 99% power bandwidth and – 26 dBc bandwidth For each 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz and 20MHz with different number of resource blocks for LTE band 4,.

QPSK and 16-QAM modulations were applied to each of the bandwidths. Only the worst case measurements are documented in this report.

A minimum resource block condition was also measured (RB = 1).

The resolution bandwidth required for out-of-band emissions in the 1 MHz bands immediately outside and adjacent to the frequency block, was determined to be at least 1% of the emission bandwidth.

The worst case –26dBc bandwidth for LTE band 4 was measured to be 18.64 MHz. Results were derived in a 200 kHz resolution bandwidth.

On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 1 MHz was applied.

Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

LTE Band 4 Frequency (MHz)	26dBc Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	
	QPSK	QPSK	16-QAM
1720.0	18.64	17.86	17.91
1732.5	18.63	17.80	17.80
1745.0	18.56	17.84	17.92

Peak to Average Ratio (PAR)

For each 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz and 20MHz with different number of resource blocks as per scalable bandwidths for LTE band 4, the peak to average ratio was measured on the low, middle and high channels with QPSK modulation.

On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 1 MHz was applied.

The worst case measured was 9.03 dB in 20MHz bandwidth with 50 resource blocks.

Measurement Plots for LTE Band 4

See Figures 5-1a to 5-18a for the plots of the conducted spurious emissions.

See Figures 5-19a to 5-34a and 5-51a to 5-53a for the plots of 99% Occupied Bandwidth and -26 dBc Bandwidth.

See Figures 5-35a to 5-44a for the plots of the Channel mask.

See Figures 5-45a to 5-50a for the plots of the Peak to Average Ratios.

Testing Services™	EMI Test Report for the BlackBerr A	ry [®] smartphone Model RFL111LW, RFP121LW PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-1a: Band 4, Spurious Conducted Emissions, Low channel, 20MHz BW (RB= 1)



Figure 5-2a: Band 4, Spurious Conducted Emissions, Low channel, 20MHz BW (RB= 1)



Date: 4.JAN.2013 15:13:14

Date: 4.JAN.2013 15:20:49

Figure 5-3a: Band 4, Spurious Conducted Emissions, Middle channel, 20MHz BW (RB= 50)



Date: 4.JAN.2013 15:14:32

Figure 5-4a: Band 4, Spurious Conducted Emissions, Middle channel, 20MHz BW (RB= 50)



Date: 4.JAN.2013 15:20:10

Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-5a: Band 4, Spurious Conducted Emissions, High Channel, 20MHz BW (RB= 100)



Date: 4.JAN.2013 15:15:09

Figure 5-7a: Band 4, Spurious Conducted Emissions, Low channel, 10MHz BW (RB= 1)



Date: 4.JAN.2013 15:29:24

Figure 5-6a: Band 4, Spurious Conducted Emissions, High Channel, 20MHz BW (RB= 100)



Date: 4.JAN.2013 15:15:54

Figure 5-8a: Band 4, Spurious Conducted Emissions, Low channel, 10MHz BW (RB= 1)



Date: 4.JAN.2013 15:21:28

Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-9a: Band 4, Spurious Conducted Emissions, Middle Channel, 10MHz BW (RB= 25)



Date: 4.JAN.2013 15:32:35

Figure 5-11a: Band 4, Spurious Conducted Emissions, High channel, 10MHz BW (RB= 50)



Date: 4.JAN.2013 15:33:26

Figure 5-10a: Band 4, Spurious Conducted Emissions, Middle Channel, 10MHz BW (RB= 25)



Date: 4.JAN.2013 15:22:25

Figure 5-12a: Band 4, Spurious Conducted Emissions, High channel, 10MHz BW (RB= 50)



Date: 4.JAN.2013 15:23:41

Testing Services™	EMI Test Report for the BlackBerr A	ry [®] smartphone Model RFL111LW, RFP121LW PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-13a: Band 4, Spurious Conducted Emissions, Low Channel, 1.4MHz BW (RB= 1)



Date: 4.JAN.2013 15:34:38

Figure 5-15a: Band 4, Spurious Conducted Emissions, Middle channel, 1.4MHz BW (RB= 3)



Date: 4.JAN.2013 15:43:20

Figure 5-14a: Band 4, Spurious Conducted Emissions, Low Channel, 1.4MHz BW (RB= 1)



Date: 4.JAN.2013 15:46:28

Figure 5-16a: Band 4, Spurious Conducted Emissions, Middle channel, 1.4MHz BW (RB= 3)



Date: 4.JAN.2013 15:45:58

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW



Figure 5-18a: Band 4, Spurious Conducted Emissions, High channel, 1.4MHz BW (RB= 6)



Date: 4.JAN.2013 15:43:54

Date: 4.JAN.2013 15:44:28

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-19a: Occupied Bandwidth, Band 4 Low Channel, 20MHz BW, RB=100

Figure 5-20a: Occupied Bandwidth, Band 4 Middle Channel, 20MHz BW, RB=100



Figure 5-21a: Occupied Bandwidth, Band 4 High Channel, 20MHz BW, RB=100



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-22a: Occupied Bandwidth, Band 4 Low Channel, 10MHz BW, RB=50

Figure 5-23a: Occupied Bandwidth, Band Middle Channel, 10MHz BW, RB=50



Figure 5-24a: Occupied Bandwidth, Band 4 High Channel, 10MHz BW, RB=50



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-25a: Occupied Bandwidth, Band 4 Low Channel, 1.4MHz BW, RB=6

Figure 5-26a: Occupied Bandwidth, Band 4 Middle Channel, 1.4MHz BW, RB=6



Figure 5-27a: Occupied Bandwidth, Band 4 High Channel, 1.4MHz BW, RB=6


Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-28a: -26 dBc Bandwidth, Band 4 Low Channel, 20MHz BW, RB=100

Figure 5-29a: -26 dBc Bandwidth, Band 4 Middle Channel, 20MHz BW, RB=100



Figure 5-30a: -26 dBc Bandwidth, Band 4 High Channel, 20MHz BW, RB=100

Figure 5-31a: -26 dBc Bandwidth, Band 4 Low Channel, 10MHz BW, RB=50



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-32a: -26 dBc Bandwidth, Band 4 Middle Channel, 10MHz BW, RB=50



Figure 5-33a: -26 dBc Bandwidth, Band 4 High Channel, 10MHz BW, RB=50



Figure 5-34a: -26 dBc Bandwidth, Band 4 Low Channel, 1.4MHz BW, RB=6

Figure 5-35a: -26 dBc Bandwidth, Band 4 Middle Channel, 1.4MHz BW, RB=6



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-36a: -26 dBc Bandwidth, Band 4 High Channel, 1.4MHz BW, RB=6

Att 20 dB	SWT 1.1	ms 🖶 VBW 100 kH	iz Mode Sweep		
30 dBm	84, 8W. 1.4MHz	, RB:6, QP5K • 1Pk	D1[1]		0.24 dB 1.11960 MHz
20 d8m-			mitt	1 1	1.75373790 GHz
10 dBm	man	man	man	anna	a
d8m 01 0.360 c	Bm 				-
10 dBm					1
20 dBm					
30 dBm				+ +	_
40 dBm					_
50 dBm					
60 dBm				-	

Figure 5-37a: Band 4 Low Channel Mask, 20MHz BW, RB=100

Figure 5-38a: Band 4 High Channel Mask, 20MHz BW, RB=100



Testing Services™	EMI Test Report for the BlackBerr A	ry [®] smartphone Model RFL111LW, RFP121LW PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-39a: Band 4 Low Channel Mask, 10MHz BW, RB=50



Figure 5-40a: Band 4 High Channel Mask, 10MHz BW, RB=50



Figure 5-41a: Band 4 Low Channel Mask, 1.4MHz BW, RB=6

Figure 5-42a: Band 4 High Channel Mask, 1.4MHz BW, RB=6





Testing Services™	EMI Test Report for the BlackBerr A	ry [®] smartphone Model RFL111LW, RFP121LW PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-43a: Band 4 Low Channel Mask, 20MHz BW, RB=1



Figure 5-44a: Band 4 High Channel Mask, 20MHz BW, RB=1



Figure 5-45a: Band 4 Mid Channel PAR, 20MHz BW, RB=50, QPSK

Figure 5-46a: Band 4 Middle Channel Mask, 20MHz BW, RB=100, 16-QAM



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Testing Services™	EMI Test Report for the BlackBerr A	y [®] smartphone Model RFL111LW, RFP121LW PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-47a: Band 4 Mid Channel PAR, 10MHz BW, RB=25, QPSK



Figure 5-48a: Band 4 Mid Channel PAR, 10MHz BW, RB=50, 16-QAM



Figure 5-49a: Band 4 Mid Channel PAR, 1.4MHz BW, RB=3, QPSK

Figure 5-50a: Band 4 Middle Channel Mask, 5MHz BW, RB=6, 16-QAM



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Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 5A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 5-51a: Occupied Bandwidth, Band 4 Low Channel, 20MHz BW (RB= 100) 16-QAM



Figure 5-52a: Occupied Bandwidth, Band 4 Mid Channel, 20MHz BW (RB= 100) 16-QAM



Figure 5-53a: Occupied Bandwidth, Band 4 High Channel, 20MHz BW (RB= 100) 16-QAM



APPENDIX 5B - LTE Band 4 FREQUENCY STABILITY TEST DATA

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

LTE Band 4 Frequency Stability Test Data



The following measurements were performed by Berkin Can.

CFR 47 Chapter 1 - Federal Communications Commission Rules

Part 2 Required Measurements

2.1055 Frequency Stability - Procedures

- (a,b) Frequency Stability Temperature Variation
- (d) Frequency Stability Voltage Variation

The EUT meets the requirements as stated in CFR 47 chapter 1, Section 27.54, CFR 47 and RSS-139, 6.3 Frequency Stability.

Frequency Stability measurement devices were configured as presented in the block diagram recording frequency, power, data, temperatures, and stepped voltages controlled via a GPIB interface linked to the Environmental chamber, a DC power supply, and the Communications Test Set. A 0.9-metre coax cable was calibrated to characterize the insertion loss for the transmitted frequencies between the RF input/output of the CMW 500 and the EUT antenna port.

Testing	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 5B
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Test Setup:

The EUT was placed in the Temperature chamber and connected to CMW 500 outside as shown in the figure above. Dry air was pumped inside the temperature chamber to maintain a backpressure during the test. The EUT was kept in the off condition at all times except when the following measurements were to be made.

The chamber was switched on and the temperature was set to -30°C. After the chamber stabilized at -30 °C there was a soak period of one hour to alleviate moisture in the chamber, the EUT voltage was enabled.

The system software recorded the frequency, power, and associated measurements.

A Computer system controlled the automated software. This application was given the command of activating all machines intrinsic to the temperature and voltage tests controlling the CMW 500 via the GPIB Bus. The Environmental Chamber was instructed through an RS-232 serial line. The EUT dialogue was passed through a serial connection.

The EUT repetitively transmitted 100 bursts for each set of programmed parameters recording temperature, voltage settings, and systematically selected frequencies. The power supply was cycled from minimum voltage 3.6 volts, to 4.1 volts and to 4.35 volts maximum voltage. The frequency error was measured at a maximum output power and recorded by the automated system test software.

The EUT output power and frequency was measured at 3.6 volts, 4.1 volts and 4.35 volts. The transmit frequency was varied in 3 steps consisting of 1720.0 MHz, 1732.5 MHz and 1745.0 MHz each was measured under 20 MHz bandwidth with maximum (100) resource blocks. This frequency was recorded in MHz and deviation from nominal, in Parts Per Million.

After the initial one-hour soak at the beginning of the tests, a period of thirty minutes soak was initialized between each ascending temperature step, before proceeding to the next measurement test cycle.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5B	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Procedure:

The test system software for commencing the Frequency Stability Tests carried through the following cycle.

- 29. Switch on the HP 6632B power supply; CMW 500 Communications test Set, and Environmental Chamber.
- 30. Start test program
- 31. Set the Temperature to –30°C and maintain a period of one- hour soak time, with the EUT supply voltage disabled.
- 32. Set power supply voltage to 3.6 volts.
- 33. Set up CMW 500 Radio Communication Tester.
- 34. Command the CMW 500 to switch to the low channel.
- 35. Enable the voltage to the EUT, and connect a link to the CMW 500 test set.
- 36. EUT is commanded to Transmit 100 Bursts.
- 37. Software logs the following data from the CMW 500, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power and Frequency Error.
- 38. The CMW 500 commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
- 39. Repeat steps 5 to 10 changing the supply voltage to 4.1 Volts
- 40. Increase temperature by 10°C and soak for 1/2 hour.
- 41. Repeat steps 4 12 for temperatures –30°C to 60°C.
- 42. Repeat steps 5 to 10 changing the supply voltage to 4.35 volts

Procedure 5 to 10 was repeated at room temperature (20°C) with the power supply voltage set to 3.6, 4.1 and 4.35 volts

The maximum frequency error in the LTE band 4 measured was 0.0227 PPM.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 5B	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Date of test: July 03, 2012

LTE Band 4 results: channels 20050, 20175 and 20300 @ 20°C maximum transmitted power

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20050	1720.0	3.6	20	18.05	0.0105	
20175	1732.5	3.6	20	4.82	0.0028	
20300	1745.0	3.6	20	16.16	0.0093	

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20050	1720.0	4.1	20	18.77	0.0109	
20175	1732.5	4.1	20	3.74	0.0022	
20300	1745.0	4.1	20	19.83	0.0114	

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20050	1720.0	4.35	20	22.09	0.0128	
20175	1732.5	4.35	20	8.46	0.0049	
20300	1745.0	4.35	20	4.79	0.0027	

Testing Services™	EMI Test Report for the BlackBerr	y [®] smartphone Model RFL111LW, RFP121LW IPPENDIX 5B
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20050	1720.0	3.6	-30	14.67	0.0085	
20050	1720.0	3.6	-20	17.98	0.0105	
20050	1720.0	3.6	-10	13.65	0.0079	
20050	1720.0	3.6	0	19.25	0.0112	
20050	1720.0	3.6	10	17.07	0.0099	
20050	1720.0	3.6	20	18.05	0.0105	
20050	1720.0	3.6	30	18.71	0.0109	
20050	1720.0	3.6	40	18.20	0.0106	
20050	1720.0	3.6	50	24.95	0.0145	
20050	1720.0	3.6	60	17.90	0.0104	
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20050	1720.0	4.1	-30	17.96	0.0104	
20050	1720.0	4.1	-20	19.22	0.0112	
20050	1720.0	4.1	-10	21.03	0.0122	
20050	1720.0	4.1	0	20.03	0.0116	
20050	1720.0	4.1	10	22.77	0.0132	
20050	1720.0	4.1	20	18.77	0.0109	
20050	1720.0	4.1	30	33.21	0.0193	
20050	1720.0	4.1	40	17.28	0.0100	
20050	1720.0	4.1	50	12.85	0.0075	
20050	1720.0	4.1	60	19.33	0.0112	
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20050	1720.0	4.35	-30	16.83	0.0098	
20050	1720.0	4.35	-20	17.22	0.0100	
20050	1720.0	4.35	-10	20.44	0.0119	
20050	1720.0	4.35	0	18.24	0.0106	
20050	1720.0	4.35	10	18.02	0.0105	
20050	1720.0 4.35		20	22.09	0.0128	
20050	1720.0	4.35	30	20.75	0.0121	
20050	1720.0	4.35	40	16.34	0.0095	
20050	1720.0	4.35	50	8.51	0.0050	
20050	1720.0	4.35	60	19.51	0.0113	

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 5B				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

LTE band 4 Results: channel 20175 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20175	1732.5	3.6	-30	16.54	0.0095	
20175	1732.5	3.6	-20	14.64	0.0084	
20175	1732.5	3.6	-10	3.81	0.0022	
20175	1732.5	3.6	0	6.60	0.0038	
20175	1732.5	3.6	10	15.08	0.0087	
20175	1732.5	3.6	20	4.82	0.0028	
20175	1732.5	3.6	30	6.63	0.0038	
20175	1732.5	3.6	40	-0.06	0.0000	
20175	1732.5	3.6	50	20.70	0.0119	
20175	1732.5	3.6	60	8.45	0.0049	
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20175	1732.5	4.1	-30	5.53	0.0032	
20175	1732.5	4.1	-20	8.08	0.0047	
20175	1732.5	4.1	-10	14.12	0.0081	
20175	1732.5	4.1	0	20.03	0.0116	
20175	1732.5	4.1	10	3.64	0.0021	
20175	1732.5	4.1	20	3.74	0.0022	
20175	1732.5	4.1	30	3.98	0.0023	
20175	1732.5	4.1	40	0.15	0.0001	
20175	1732.5	4.1	50 17.36		0.0100	
20175	1732.5	4.1	60	4.44	0.0026	
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20175	1732.5	4.35	-30	-0.02	0.0000	
20175	1732.5	4.35	-20	-0.42	-0.0002	
20175	1732.5	4.35	-10	17.34	0.0100	
20175	1732.5	4.35	0	16.65	0.0096	
20175	5 1732.5		10	1.99	0.0011	
20175	1732.5	4.35	20	8.46	0.0049	
20175	1732.5	4.35	30	18.09	0.0104	
20175	1732.5	4.35	40	-0.14	-0.0001	
20175	1732.5	4.35	50	15.06	0.0087	
20175	1732.5	4.35	60	9.45	0.0055	

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 5B				
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LTE band 4 Results: channel 20300 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20300	1745.0	3.6	-30	6.41	0.0037	
20300	1745.0	3.6	-20	6.82	0.0039	
20300	1745.0	3.6	-10	0.57	0.0003	
20300	1745.0	3.6	0	9.77	0.0056	
20300	1745.0	3.6	10	3.34	0.0019	
20300	1745.0	3.6	20	16.16	0.0093	
20300	1745.0	3.6	30	39.63	0.0227	
20300	1745.0	3.6	40	0.75	0.0004	
20300	1745.0	3.6	50	21.70	0.0124	
20300	1745.0	3.6	60	4.93	0.0028	
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20300	1745.0	4.1	-30	-3.37	-0.0019	
20300	1745.0	4.1	-20	20.46	0.0117	
20300	1745.0	4.1	-10	-1.84	-0.0011	
20300	1745.0	4.1	0	3.70	0.0021	
20300	1745.0	4.1	10	16.57	0.0095	
20300	1745.0	4.1	20	19.83	0.0114	
20300	1745.0	4.1	30	0.70	0.0004	
20300	1745.0	4.1	40	21.26	0.0122	
20300	1745.0	4.1	50	4.93	0.0028	
20300	1745.0	4.1	60	2.37	0.0014	
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ	
20300	1745.0	4.35	-30	17.80	0.0102	
20300	1745.0	4.35	-20	16.69	0.0096	
20300	1745.0	4.35	-10	12.47	0.0071	
20300	1745.0	4.35	0	5.50	0.0032	
20300	1745.0	4.35	10	8.91	0.0051	
20300	1745.0	4.35	20	4.79	0.0027	
20300	1745.0	4.35	30	5.18	0.0030	
20300	1745.0	4.35	40	22.04	0.0126	
20300	1745.0	4.35	50	17.86	0.0102	
20300	1745.0	4.35	60	23.90	0.0137	

APPENDIX 5C – LTE Band 4 RADIATED EMISSIONS TEST DATA

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 5C				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

Radiated Power Test Data Results

The following measurements were performed on product RFL111LW:

Date of Test: January 16, 2013

The following measurements were performed by Feras Obeid. The environmental tests conditions were:

25.0 °C Temperature:

Relative Humidity: 29.5 %

The EUT was standalone, USB port pointing up with the LCD facing to the RX antenna when the turntable is at 0 degree position.

Measurements were performed with QPSK and 16QAM modulations. The smallest test margins are reported below.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height.

									Substitution Method				
EUT				Rx Ante	enna	Spectrum /	Analyzer		Tracking	Generator			
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected (relative to Radia	Reading Isotropic ator)	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	20050	1720.00	4	Horn	V	-23.30	22.20	V-V	-16.42	04.40	0.00	20.00	F F7
F0	20050	1720.00	4	Horn	Н	-31.28	-23.30	H-H	-14.99	24.43	0.28	30.00	-5.57
F0	20175	1732.50	4	Horn	V	-23.36	22.26	V-V	-15.62	24 54	0.29	20.00	5 46
F0	20175	1732.50	4	Horn	Н	-31.22	-23.30	H-H	-15.09	24.54	0.20	30.00	-5.40
F0	20299	1744.90	4	Horn	V	-23.36	22.26	V-V	-15.32	24 65	0.20	20.00	E 2E
F0	20299	1744.90	4	Horn	Н	-31.22	-23.30	H-H	-14.69	24.03	0.29	30.00	-0.00

LTE band 4. 20MHz BW. RB=1. QPSK modulation

LTE band 4, 20MHz BW, RB=1, 16-QAM modulation

									Substitutio				
		EUT		Rx Ante	enna	Spectrum /	Analyzer	Tracking Generator					
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected (relative to Radia	Reading Isotropic ator)	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	20050	1720.00	4	Horn	V	-24.62	04.00	V-V	-16.79	00.40	0.00	20.00	0.00
F0	20050	1720.00	4	Horn	Н	-32.55	-24.62	H-H	-16.32	23.10	0.20	30.00	-6.90
F0	20175	1732.50	4	Horn	V	-24.64	24 64	V-V	-16.90	22 12	0.21	20.00	6 99
F0	20175	1732.50	4	Horn	Н	-32.44	-24.04	H-H	-16.51	23.12	0.21	30.00	-0.00
F0	20299	1744.90	4	Horn	V	-24.53	24 52	V-V	-16.44	22 40	0 22	20.00	6 50
F0	20299	1744.90	4	Horn	Н	-32.42	-24.00	H-H	-15.86	23.40	0.22	30.00	-0.52

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Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 5C				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

Radiated Emissions Test Data Results cont'd

Date of Test: January 10, 2013

The following measurements were performed by Feras Obeid.

The environmental test conditions were:	Temperature:	26.4 °C
	Relative Humidity:	17.3 %

The EUT was standalone, USB port point up with LCD facing to the RX antenna when the turntable is at 0 degree position

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and the frequency range scanned was 30MHz – 1GHz.

Measurements were performed in LTE band 4 with QPSK modulation for 1.4MHz BW (channel 19957, 20175 and 20392 with RB = 6), 10MHz BW (channel 20000, 20175, 20349 with RB = 50) and 20MHz BW (channel 20050, 20175 and 20299 with RB = 100 and RB = 1) and with 16-QAM modulation for 1.4MHz BW (channel 20175 with RB = 6), 10MHz BW (channel 20175 with RB = 50) and 20MHz BW (channel 20175 with RB = 100 and RB = 1).

All emissions were at least 25.0 dB below the limit.

Date of Test: December 07, 2012 to January 11, 2013

The following measurements were performed by Mahmood Ahmed							
The environmental test conditions were:	Temperature:	23.4 – 29.5 ⁰C					
	Relative Humidity:	18.5 - 20.4 %					

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and a frequency range of 1 GHz to 20 GHz.

The EUT was standalone, horizontally with LCD facing down and the top pointing to the RX antenna when the turntable is at 0 degree position

Measurements were performed in LTE band 4 with QPSK modulation for 1.4MHz BW (channel 19957, 20175 and 20392 with RB = 6), 10MHz BW (channel 20000, 20175, 20349 with RB = 50) and 20MHz BW (channel 20050, 20175 and 20299 with RB = 100 and RB = 1) and with 16-QAM modulation for 1.4MHz BW (channel 20175 with RB = 6), 10MHz BW (channel 20175 with RB = 50) and 20MHz BW (channel 20175 with RB = 100 and RB = 1).

All emissions were at least 25.0 dB below the limit.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 5C				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

Radiated Emissions Test Data Results cont'd

The following measurements were performed on product RFP121LW:

Date of Test: February 07, 2013

The following measurements were performed by Savtej Sandhu.

The environmental tests conditions were: Temperature: 25.5 °C Relative Humidity: 13.1 %

The EUT was standalone, vertically with the LCD facing to the RX antenna when the turntable is at 0 degree position.

Measurements were performed with QPSK and 16QAM modulations. The smallest test margins are reported below.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height.

									VIIIOUUI	ation			
							Substitutio	on Method					
		EUT		Rx Ante	enna	Spectrum /	Analyzer Tracking		Generator				
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected (relative to Radia	Reading Isotropic ator)	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	20050	1720.00	4	Horn	V	-25.25	04.00	V-V	-16.98	00.70	0.40	20.00	7 00
F0	20050	1720.00	4	Horn	Н	-24.38	-24.38	H-H	-16.64	22.78	0.19	30.00	-1.22
F0	20175	1732.50	4	Horn	V	-24.52	-24 52	V-V	-17.03	23.00	0.20	30 00	-6.01
F0	20175	1732.50	4	Horn	Η	-24.53	-24.32	H-H	-16.54	23.09	0.20	30.00	-0.91
F0	20299	1744.90	4	Horn	V	-24.80	24 62	V-V	-16.47	22 64	0 22	20.00	6.26
F0	20299	1744.90	4	Horn	Н	-24.62	-24.02	H-H	-15.70	23.04	0.23	30.00	-0.30

LTE band 4, 20MHz BW, RB=1, QPSK modulation

LTE band 4, 20MHz BW, RB=1, 16-QAM modulation

									Substitutio	on Method			
EUT				Rx Ante	enna	Spectrum /	Analyzer Tracking		Tracking (Generator			
		Frequency				Reading	Max (V,H)	Pol.	Reading	Corrected (relative to Radia	Reading Isotropic ator)	Limit	Diff to Limit
Туре	Ch	(MHz)	Band	Туре	Pol.	(dBuV)	(dBuV)	Tx-Rx	(dBm)	(dBm)	(W)	(dBm)	(dB)
F0	20050	1720.00	4	Horn	V	-26.38	05.05	V-V	-18.32	04.40	0.44	~ ~ ~	0.54
F0	20050	1720.00	4	Horn	Н	-25.65	-25.65	H-H	-17.96	21.46	0.14	30.00	-8.54
F0	20175	1732.50	4	Horn	V	-25.93	-25.82	V-V	-18.37	21 75	0.15	30 00	-8.25
F0	20175	1732.50	4	Horn	Н	-25.82	-20.02	H-H	-17.88	21.75	0.15	50.00	-0.25
F0	20299	1744.90	4	Horn	V	-26.10	25.90	V-V	-17.75	22.25	0.17	20.00	7 65
F0	20299	1744.90	4	Horn	Н	-25.89	-20.09	H-H	-16.99	22.33	0.17	30.00	-7.05

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Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW				
Services™	APPENDIX 5C				
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW			

Radiated Emissions Test Data Results cont'd

Date of Test: February 06, 2013

The following measurements were performed by Feras Obeid.

The environmental test conditions were:	Temperature:	25.3 ⁰C
	Relative Humidity:	14.1 %

The EUT was standalone, vertically with the LCD facing to the RX antenna when the turntable is at 0 degree position.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and the frequency range scanned was 30MHz – 1GHz.

Measurements were performed in LTE band 4 with QPSK modulation for 1.4MHz BW (channel 20175 with RB = 6), 10MHz BW (channel 20175, with RB = 50) and 20MHz BW (channel 20175 with RB = 100 and RB = 1) and with 16-QAM modulation for 1.4MHz BW (channel 20175 with RB = 6), 10MHz BW (channel 20175 with RB = 50) and 20MHz BW (channel 20175 with RB = 100 and RB = 1).

All emissions were at least 25.0 dB below the limit.

Date of Test: January 29 – February 03, 2013

The following measurements were performed by Mahmood Ahmed							
The environmental test conditions were:	Temperature:	23.4 – 29.5 ⁰C					
	Relative Humidity:	18.5 - 20.4 %					

The EUT was standalone, horizontally with LCD facing down and the top pointing to the RX antenna when the turntable is at 0 degree position

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and a frequency range of 1 GHz to 20 GHz.

Measurements were performed in LTE band 4 with QPSK modulation for 1.4MHz BW (channel 20175 with RB = 6), 10MHz BW (channel 20175, with RB = 50) and 20MHz BW (channel 20175 with RB = 100 and RB = 1) and with 16-QAM modulation for 1.4MHz BW (channel 20175 with RB = 6), 10MHz BW (channel 20175 with RB = 50) and 20MHz BW (channel 20175 with RB = 100 and RB = 1).

All emissions were at least 25.0 dB below the limit.

APPENDIX 6A- LTE Band 17 CONDUCTED RF EMISSIONS TEST DATA/PLOTS

Testing	EMI Test Report for the BlackBerry	[®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

This appendix contains measurement data pertaining to conducted spurious emissions, 99% power bandwidth and the channel mask.

Test Setup Diagram



A reference offset of 31.4 dB was applied to the spectrum analyzer reference level for the attenuators and coaxial cable loss in the test circuit.

UNIT	MANUFACTURER	MODEL	<u>SERIAL</u> <u>NUMBER</u>
Attenuator 1	Mini-Circuits	BW-S6W2+	0647
Attenuator 2	Mini-Circuits	BW-S6W2+	0648
Attenuator 3	Mini-Circuits	BW-S20-2W263+	1234
Splitter 1	Weinschel	1515	MES 92

Date of Test: January 21 - 211, 2013

The environmental test conditions were:	Temperature:	21.8 – 22.5⁰C
	Relative Humidity:	19 – 19.2 %

The following measurements were performed by Berkin Can.

Testing	EMI Test Report for the BlackBerry	^{(®} smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Emission Designator Table

Frequency Range (MHz)	Conducted Output Power (dBm)	Emission Designator	Band	Bandwidth (MHz)	Modulation
706.5-713.5	23.7	4M47G7D	LTE B17	5	QPSK
706.5-713.5	22.7	4M47D7W	LTE B17	5	16QAM
709-711	23.70	8M94G7D	LTE B17	10	QPSK
709-711	22.55	8M94D7W	LTE B17	10	16QAM

The conducted spurious emissions – As per 47 CFR 2.202, CFR 2.1046, CFR 27.53 CFR 27.54, CFR 27.50, RSS-139 were measured from 30 MHz to 20 GHz.

-26 dBc Bandwidth and Occupied Bandwidth (99%)

the modulation spectrum was measured by both methods of 99% power bandwidth and –26 dBc bandwidth for each 5MHz and 10MHz with different number of resource blocks for LTE band 17.

QPSK and 16-QAM modulations were applied to each of the bandwidths. Only the worst case measurements are documented in this report.

A minimum resource block condition was also measured (RB = 1).

The resolution bandwidth required for out-of-band emissions in the 1 MHz bands immediately outside and adjacent to the frequency block, was determined to be at least 1% of the emission bandwidth.

The worst case –26dBc bandwidth for LTE band 17 was measured to be 9.407MHz. Results were derived in a 100 kHz resolution bandwidth.

On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 1 MHz was applied.

Testing	EMI Test Report for the BlackBerry	[®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

<u>Test Data for LTE Band 17 selected Frequencies in 10MHz BW (RB = 50)</u>			
LTE Band 17 Frequency (MHz)	26dBc Occupied Bandwidth (MHz)	99% Occupi (M	ed Bandwidth IHz)
	QPSK	QPSK	16-QAM
709.0	9.276	8.944	8.944
710.0	9.262	8.929	8.944
711.0	9.275	8.929	8.944

Peak to Average Ratio (PAR)

For each 5MHz and 10MHz with different number of resource blocks as per scalable bandwidths for LTE band 17, the peak to average ratio was measured on the low, middle and high channels with QPSK modulation.

On any frequency outside the frequency block and outside the adjacent 1 MHz bands, a resolution bandwidth of at least 1 MHz was applied.

The worst case measured was 9.94 dB on in 10MHz bandwidth with 50 resource blocks.

Measurement Plots for LTE Band 17

See Figures 6-1a to 6-12a for the plots of the conducted spurious emissions.

See Figures 6-19a to 6-24a and 6-37a to 6-39a for the plots of 99% Occupied Bandwidth and -26 dBc Bandwidth.

See Figures 6-25a to 6-32a for the plots of the Channel mask.

See Figures 6-33a to 6-36a for the plots of the Peak to Average Ratio.

Testing	EMI Test Report for the BlackBerry	[®] smartphone Model RFL111LW, RFP121LW
Services ^{**}	A	PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-1a: Band 17, Spurious Conducted Emissions, Low channel, 10MHz BW (RB= 1)



Figure 6-2a: Band 17, Spurious Conducted Emissions, Low channel, 10MHz BW (RB= 1)



Date: 21.JAN.2013 12:13:34

Date: 21.JAN.2013 12:15:05

X

Figure 6-3a: Band 17, Spurious Conducted Emissions, Middle channel, 10MHz BW (RB= 25)



*RBW 1 MHz *VBW 3 MHz SWT 100 ms ker 1 [T1] -31.44 5.090000000 29.7 Att 10 dE 31

Figure 6-4a: Band 17, Spurious Conducted

Emissions, Middle channel, 10MHz BW (RB= 25)



Date: 21.JAN.2013 12:18:51

Date: 21.JAN.2013 12:17:18

Testing	EMI Test Report for the BlackBerry	[®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-5a: Band 17, Spurious Conducted Emissions, High Channel, 10MHz BW (RB= 50)



Figure 6-6a: Band 17, Spurious Conducted Emissions, High Channel, 10MHz BW (RB= 50)



Date: 21.JAN.2013 12:20:20

Date: 21.JAN.2013 12:21:47

Figure 6-7a: Band 17, Spurious Conducted Emissions, Low channel, 5MHz BW (RB= 1)



Date: 21.JAN.2013 12:32:26

Figure 6-8a: Band 17, Spurious Conducted Emissions, Low channel, 5MHz BW (RB= 1)



Date: 21.JAN.2013 12:23:44

Testing Services™	EMI Test Report for the BlackBerry A	/ [®] smartphone Model RFL111LW, RFP121LW PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-9a: Band 17, Spurious Conducted Emissions, Middle Channel, 5MHz BW (RB= 15)



Date: 21.JAN.2013 13:48:34

Date: 21.JAN.2013 13:51:35

Figure 6-10a: Band 17, Spurious Conducted Emissions, High Channel, 5MHz BW (RB= 15)



Date: 21.JAN.2013 13:49:40

Figure 6-12a: Band 17, Spurious Conducted biological constraints of the second second

Date: 21.JAN.2013 13:51:02

Testing Services ^{**}	EMI Test Report for the BlackBerry A	[®] smartphone Model RFL111LW, RFP121LW PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-13a: Occupied Bandwidth, Band 17 Low Channel, 10MHz BW, RB=50

Figure 6-14a: Occupied Bandwidth, Band 17 Middle Channel, 10MHz BW, RB=50



Figure 6-15a: Occupied Bandwidth, Band 17 High Channel, 10MHz BW, RB=50



Testing Services™	EMI Test Report for the BlackBerry A	/ [®] smartphone Model RFL111LW, RFP121LW PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-16a: Occupied Bandwidth, Band 5 Low Channel, 5MHz BW, RB=25

Figure 6-17a: Occupied Bandwidth, Band 5 Middle Channel, 5MHz BW, RB=25



Figure 6-18a: Occupied Bandwidth, Band 5 High Channel, 5MHz BW, RB=25



Testing Services™	EMI Test Report for the BlackBerry A	[®] smartphone Model RFL111LW, RFP121LW PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-19a: -26 dBc Bandwidth, Band 17 Low Channel, 10MHz BW, RB=50



Figure 6-21a: -26 dBc Bandwidth, Band 17 High Channel, 10MHz BW, RB=50

Figure 6-22a: -26 dBc Bandwidth, Band 17 Low Channel, 5MHz BW, RB=25



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Figure 6-20a: -26 dBc Bandwidth, Band 17 Middle Channel, 10MHz BW, RB=50

E ∀

0.52

11

Span 10.0 MHz 21.01.2013

3.00 dB

9.2

Testing	EMI Test Report for the BlackBerry	[®] smartphone Model RFL111LW, RFP121LW
Services™	A	PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-23a: -26 dBc Bandwidth, Band 17 Middle Channel, 5MHz BW, RB=25



Figure 6-24a: -26 dBc Bandwidth, Band 17 High Channel, 5MHz BW, RB=25



Figure 6-25a: Band 17 Low Channel Mask, 10MHz BW, RB=50

Figure 6-26a: Band 17 High Channel Mask, 10MHz BW, RB=50



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 6A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-27a: Band 17 Low Channel Mask, 10MHz BW, RB=1

Figure 6-28a: Band 17 High Channel Mask,10MHz BW, RB=1

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Figure 6-29a: Band 17 Low Channel Mask, 5MHz BW, RB=25

Figure 6-30a: Band 17 High Channel Mask, 5MHz BW, RB=25



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Testing Services™	EMI Test Report for the BlackBerry A	[®] smartphone Model RFL111LW, RFP121LW PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-31a: Band 17 Low Channel Mask, 5MHz BW, RB=1

Figure 6-32a: Band 17 High Channel Mask, 5MHz BW, RB=1





Figure 6-33a: Band 17 Mid Channel PAR, 10MHz BW, RB=25

Figure 6-34a: Band 17 Middle Channel PAR, 10MHz BW, RB=50



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Testing Services™	EMI Test Report for the BlackBerry A	[®] smartphone Model RFL111LW, RFP121LW PPENDIX 6A
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-35a: Band 17 Mid Channel PAR, 5MHz BW, RB=15

Figure 6-36a: Band 17 Mid Channel PAR, 5MHz BW, RB=25



Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW	
Services™	APPENDIX 6A	
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW

Figure 6-37a: Occupied Bandwidth, Band 17 Low Channel, 20MHz BW (RB= 100) 16-QAM

Figure 6-38a: Occupied Bandwidth, Band 17 Mid Channel, 20MHz BW (RB= 100) 16-QAM



Figure 6-39a: Occupied Bandwidth, Band 17 High Channel, 20MHz BW (RB= 100) 16-QAM



APPENDIX 6B – LTE Band 17 FREQUENCY STABILITY TEST DATA
Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW		
Services™	APPENDIX 6B		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

LTE Band 17 Frequency Stability Test Data



The following measurements were performed by Berkin Can.

CFR 47 Chapter 1 - Federal Communications Commission Rules

Part 2 Required Measurements

2.1055 Frequency Stability - Procedures

- (a,b) Frequency Stability Temperature Variation
- (d) Frequency Stability Voltage Variation

The EUT meets the requirements as stated in CFR 47 chapter 1, Section 27.54, CFR 47 and RSS-139, 6.3 Frequency Stability.

Frequency Stability measurement devices were configured as presented in the block diagram recording frequency, power, data, temperatures, and stepped voltages controlled via a GPIB interface linked to the Environmental chamber, a DC power supply, and the Communications Test Set. A 0.9-metre coax cable was calibrated to characterize the insertion loss for the transmitted frequencies between the RF input/output of the CMW 500 and the EUT antenna port.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 6B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Test Setup:

The EUT was placed in the Temperature chamber and connected to CMW 500 outside as shown in the figure above. Dry air was pumped inside the temperature chamber to maintain a backpressure during the test. The EUT was kept in the off condition at all times except when the following measurements were to be made.

The chamber was switched on and the temperature was set to -30°C. After the chamber stabilized at -30 °C there was a soak period of one hour to alleviate moisture in the chamber, the EUT voltage was enabled. The system software recorded the frequency, power, and associated measurements.

A Computer system controlled the automated software. This application was given the command of activating all machines intrinsic to the temperature and voltage tests controlling the CMW 500 via the GPIB Bus. The Environmental Chamber was instructed through an RS-232 serial line. The EUT dialogue was passed through a serial connection.

The EUT repetitively transmitted 100 bursts for each set of programmed parameters recording temperature, voltage settings, and systematically selected frequencies. The power supply was cycled from minimum voltage 3.6 volts, to 4.1 volts and to 4.35 volts maximum voltage. The frequency error was measured at a maximum output power and recorded by the automated system test software.

The EUT output power and frequency was measured at 3.6 volts, 4.1 volts and 4.35 volts. The transmit frequency was varied in 3 steps consisting of 709.0 MHz, 710.0 MHz and 711.0 MHz each was measured under 10 MHz bandwidth with maximum (50) resource blocks. This frequency was recorded in MHz and deviation from nominal, in Parts Per Million.

After the initial one-hour soak at the beginning of the tests, a period of thirty minutes soak was initialized between each ascending temperature step, before proceeding to the next measurement test cycle.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 6B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Procedure:

The test system software for commencing the Frequency Stability Tests carried through the following cycle.

- 43. Switch on the HP 6632B power supply; CMW 500 Communications test Set, and Environmental Chamber.
- 44. Start test program
- 45. Set the Temperature to –30°C and maintain a period of one- hour soak time, with the EUT supply voltage disabled.
- 46. Set power supply voltage to 3.6 volts.
- 47. Set up CMW 500 Radio Communication Tester.
- 48. Command the CMW 500 to switch to the low channel.
- 49. Enable the voltage to the EUT, and connect a link to the CMW 500 test set.
- 50. EUT is commanded to Transmit 100 Bursts.
- 51. Software logs the following data from the CMW 500, power supply and temperature chamber: Traffic Channel Number, Traffic Channel Frequency, Power Level, Chamber Temperature, Supply Voltage, Power and Frequency Error.
- 52. The CMW 500 commands the EUT to change frequency to the middle channel and high channel and repeats steps 7 to 9.
- 53. Repeat steps 5 to 10 changing the supply voltage to 4.1 Volts
- 54. Increase temperature by 10°C and soak for 1/2 hour.
- 55. Repeat steps 4 12 for temperatures -30°C to 60°C.
- 56. Repeat steps 5 to 10 changing the supply voltage to 4.35 volts

Procedure 5 to 10 was repeated at room temperature (20°C) with the power supply voltage set to 3.6, 4.1 and 4.35 volts

The maximum frequency error in the LTE band 17 measured was 0.0272 PPM.

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 6B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

Date of test: January 22, 2013

LTE Band 17 results: channels 23780, 23790 and 23800 @ 20°C maximum transmitted power

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23780	709.0	3.6	20	3.18	0.0045
23790	710.0	3.6	20	16.62	0.0234
23800	711.0	3.6	20	1.16	0.0016

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23780	709.0	4.1	20	5.21	0.0073
23790	710.0	4.1	20	7.32	0.0103
23800	711.0	4.1	20	-1.02	-0.0014

Traffic Channel Number	LTE Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23780	709.0	4.35	20	-0.13	-0.0002
23790	710.0	4.35	20	15.33	0.0216
23800	711.0	4.35	20	11.67	0.0164

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW			
Services™	APPENDIX 6B			
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW		

LTE band 17 Results: channel 23780 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23780	709.0	3.6	-30	-0.97	-0.0014
23780	709.0	3.6	-20	4.24	0.0060
23780	709.0	3.6	-10	6.54	0.0092
23780	709.0	3.6	0	-9.71	-0.0137
23780	709.0	3.6	10	19.27	0.0272
23780	709.0	3.6	20	3.18	0.0045
23780	709.0	3.6	30	6.26	0.0088
23780	709.0	3.6	40	6.86	0.0097
23780	709.0	3.6	50	0.96	0.0014
23780	709.0	3.6	60	7.46	0.0105
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23780	709.0	4.1	-30	2.56	0.0036
23780	709.0	4.1	-20	9.40	0.0133
23780	709.0	4.1	-10	3.98	0.0056
23780	709.0	4.1	0	13.53	0.0191
23780	709.0	4.1	10	0.86	0.0012
23780	709.0	4.1	20	5.21	0.0073
23780	709.0	4.1	30	10.89	0.0154
23780	709.0	4.1	40	-5.86	-0.0083
23780	709.0	4.1	50	-7.59	-0.0107
23780	709.0	4.1	60	9.99	0.0141
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	PPM
23780	709.0	4.35	-30	1.82	0.0026
23780	709.0	4.35	-20	6.30	0.0089
23780	709.0	4.35	-10	8.37	0.0118
23780	709.0	4.35	0	0.41	0.0006
23780	709.0	4.35	10	15.29	0.0216
23780	709.0	4.35	20	-0.13	-0.0002
23780	709.0	4.35	30	6.50	0.0092
23780	709.0	4.35	40	-1.82	-0.0026
23780	709.0	4.35	50	10.18	0.0144
23780	709.0	4.35	60	14.54	0.0205

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW		
Services™	APPENDIX 6B		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

LTE band 5 Results: channel 23790 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23790	710.0	3.6	-30	11.81	0.0166
23790	710.0	3.6	-20	7.71	0.0109
23790	710.0	3.6	-10	9.15	0.0129
23790	710.0	3.6	0	18.88	0.0266
23790	710.0	3.6	10	0.15	0.0002
23790	710.0	3.6	20	16.62	0.0234
23790	710.0	3.6	30	13.16	0.0185
23790	710.0	3.6	40	13.19	0.0186
23790	710.0	3.6	50	16.21	0.0228
23790	710.0	3.6	60	16.57	0.0233
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23790	710.0	4.1	-30	14.25	0.0201
23790	710.0	4.1	-20	9.79	0.0138
23790	710.0	4.1	-10	12.94	0.0182
23790	710.0	4.1	0	-2.55	-0.0036
23790	710.0	4.1	10	9.06	0.0128
23790	710.0	4.1	20	7.32	0.0103
23790	710.0	4.1	30	3.73	0.0053
23790	710.0	4.1	40	9.77	0.0138
23790	710.0	4.1	50	10.13	0.0143
23790	710.0	4.1	60	6.27	0.0088
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23790	710.0	4.35	-30	4.35	0.0061
23790	710.0	4.35	-20	5.40	0.0076
23790	710.0	4.35	-10	8.63	0.0122
23790	710.0	4.35	0	13.55	0.0191
23790	710.0	4.35	10	-0.51	-0.0007
23790	710.0	4.35	20	15.33	0.0216
23790	710.0	4.35	30	3.27	0.0046
23790	710.0	4.35	40	4.19	0.0059
23790	710.0	4.35	50	8.71	0.0123
23790	710.0	4.35	60	-0.43	-0.0006

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW		
Services™	APPENDIX 6B		
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW	

LTE band 17 Results: channel 23800 @ maximum transmitted power

Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23800	711.0	3.6	-30	1.88	0.0026
23800	711.0	3.6	-20	3.62	0.0051
23800	711.0	3.6	-10	-0.80	-0.0011
23800	711.0	3.6	0	-0.50	-0.0007
23800	711.0	3.6	10	11.56	0.0163
23800	711.0	3.6	20	1.16	0.0016
23800	711.0	3.6	30	2.57	0.0036
23800	711.0	3.6	40	1.15	0.0016
23800	711.0	3.6	50	13.06	0.0184
23800	711.0	3.6	60	3.50	0.0049
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23800	711.0	4.1	-30	0.17	0.0002
23800	711.0	4.1	-20	2.99	0.0042
23800	711.0	4.1	-10	-0.82	-0.0012
23800	711.0	4.1	0	10.49	0.0148
23800	711.0	4.1	10	-4.86	-0.0068
23800	711.0	4.1	20	-1.02	-0.0014
23800	711.0	4.1	30	14.70	0.0207
23800	711.0	4.1	40	13.65	0.0192
23800	711.0	4.1	50	6.27	0.0088
23800	711.0	4.1	60	11.99	0.0169
Traffic Channel Number	Frequency (MHz)	Voltage (Volts)	Temperature (Celsius)	Frequency Error (Hz)	РРМ
23800	711.0	4.35	-30	4.01	0.0056
23800	711.0	4.35	-20	2.57	0.0036
23800	711.0	4.35	-10	-2.93	-0.0041
23800	711.0	4.35	0	11.01	0.0155
23800	711.0	4.35	10	15.04	0.0212
23800	711.0	4.35	20	11.67	0.0164
23800	711.0	4.35	30	1.79	0.0025
23800	711.0	4.35	40	14.18	0.0199
23800	711.0	4.35	50	1.47	0.0021
23800	711.0	4.35	60	4.26	0.0060

APPENDIX 6C – LTE Band 17 RADIATED EMISSIONS TEST DATA

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW					
Services™	APPENDIX 6C					
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW				

Radiated Power Test Data Results

The following measurements were performed on product RFL111LW:

Date of Test: November 21, 2012

The following measurements were performed by Feras Obeid.

The environmental tests conditions were: Temperature: 25.0 °C

Relative Humidity: 29.5 %

The EUT was standalone, vertically with LCD facing the RX antenna when the turntable is at 0 degree position.

Measurements were performed with QPSK and 16QAM modulations. The smallest test margins are reported below.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height.

-								.,		ation			
		сит						Substitution Method					
		EUI		Rx Ante	nna	Spectrum /	Analyzer	Tracking Generator					
Type	Ch	Frequency	Band	Type	Pol	Reading	Max (V,H)	Pol.	Reading	Corrected (relative t	l Reading o Dipole)		Diff. To
турс	011	(MHz)	Dana	Type	1 01.	(dBm)	(dBm)	Tx-Rx	(dBm)	(dBm)	(W)	Limit (dBm)	Limit (dB)
F0	23780	709.00	17	Dipole	V	-33.64	-33.64	V-V	1.04	10 65	0 00	35.0	-15 35
F0	23780	709.00	17	Dipole	Н	-39.31	-33.04	H-H	-2.14	19.05	0.03	55.0	-10.00
F0	23790	710.00	17	Dipole	V	-33.99	-33.00	V-V	0.85	10.46	0.00	35.0	-15 54
F0	23790	710.00	17	Dipole	Н	-39.36	-33.99	H-H	-2.44	19.40	0.09	35.0	-15.54
F0	23799	710.90	17	Dipole	V	-35.15	25 15	V-V	-0.22	10 20	0.07	25.0	16 61
F0	23799	710.90	17	Dipole	Н	-39.77	-35.15	H-H	-3.67	10.39	0.07	33.0	-10.01

LTE band 17, 10MHz BW, RB=1, QPSK modulation

LTE band 17, 10MHz BW, RB=1, 16-QAM modulation

		EUT						Substitution Method					
				Rx Antei	nna	Spectrum <i>I</i>	Analyzer	I racking Generator					
Type	Ch	Frequency	Band	Type	Pol	Reading	Max (V,H)	Pol.	Reading	Corrected (relative t	l Reading o Dipole)		Diff. To
турс	OII	(MHz)	Dana	турс	1 01.	(dBm)	(dBm)	Tx-Rx	(dBm)	(dBm)	(W)	Limit (dBm)	Limit (dB)
F0	23780	709.00	17	Dipole	V	-35.98	-35.08	V-V	-1.57	17.04	0.05	35.0	-17.06
F0	23780	709.00	17	Dipole	Н	-42.63	-55.50	H-H	-4.66	17.04	0.05	55.0	-17.30
F0	23790	710.00	17	Dipole	V	-34.85	24.05	V-V	-0.07	10 E A	0.07	25.0	16.46
F0	23790	710.00	17	Dipole	Н	-40.18	-34.00	H-H	-3.31	10.94	0.07	35.0	-10.40
F0	23799	710.90	17	Dipole	V	-36.78	26 70	V-V	-2.26	16.25	0.04	25.0	10.65
F0	23799	710.90	17	Dipole	Н	-42.68	-30.70	H-H	-5.51	10.30	0.04	35.0	-10.00

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Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW					
Services™	APPENDIX 6C					
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW				

Radiated Emissions Test Data Results cont'd

Date of Test: December 21, 2012

The following measurements were performed by Feras Obeid.

The environmental test conditions were:	Temperature:	25.7 ⁰C
	Relative Humidity:	17.9 %

The EUT was standalone, vertically with LCD facing the RX antenna when the turntable is at 0 degree position.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and the frequency range scanned was 30MHz – 1GHz.

Measurements were performed in LTE band 17 with QPSK modulation for 5MHz BW (channel 23755, 23790 and 23824 with RB = 25 and RB = 1) and 10MHz BW (channel 23780, 23790, 23800 with RB = 50 and RB = 1) and with 16-QAM modulation for 5MHz BW (channel 23790 with RB = 25) and 10MHz BW (channel 23790 with RB = 50 and RB = 1).

All emissions were at least 25.0 dB below the limit.

Date of Test: December 11, 2012 to January 16, 2013

The following measurements were performed by Heng Lin							
The environmental test conditions were:	Temperature: Relative Humidity:	23.6 – 25.7 °C 17.2 – 19.8 %					

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and a frequency range of 1 GHz to 10 GHz.

The EUT was standalone, horizontally with LCD facing down and the top pointing to the RX antenna when the turntable is at 0 degree position

Measurements were performed in LTE band 17 with QPSK modulation for 5MHz BW (channel 23755, 23790 and 23824 with RB = 25 and RB = 1) and 10MHz BW (channel 23780, 23790, 23800 with RB = 50 and RB = 1) and with 16-QAM modulation for 5MHz BW (channel 23790 with RB = 25) and 10MHz BW (channel 23790 with RB = 50 and RB = 1).

All emissions were at least 25.0 dB below the limit

Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW					
Services™	APPENDIX 6C					
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW				

Radiated Emissions Test Data Results cont'd

The following measurements were performed on product RFP121LW:

Date of Test: February 06, 2012

The following measurements were performed by Berkin Can.

The environmental tests conditions were:	Temperature:	25.5 °C
	Relative Humidity:	13.1 %

The EUT was standalone, vertically with LCD facing the RX antenna when the turntable is at 0 degree position.

Measurements were performed with QPSK and 16QAM modulations. The smallest test margins are reported below.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height.

		EUT					A	Substitution Method					
				RX Ante	nna	Spectrum	Analyzer	Tracking Generator					
Type	Ch	Frequency	Band	Type	Pol	Reading	Max (V,H)	Pol.	Reading	Corrected (relative t	l Reading o Dipole)		Diff. To
турс	OII	(MHz)	Dana	турс	1 01.	(dBm)	(dBm)	Tx-Rx	(dBm)	(dBm)	(W)	Limit (dBm)	Limit (dB)
F0	23780	709.00	17	Dipole	V	-34.08	-34 08	V-V	0.83	10 11	0 00	35.0	-15 56
F0	23780	709.00	17	Dipole	Н	-45.64	-34.00	H-H	-3.45	13.44	0.03	00.0	10.00
F0	23790	710.00	17	Dipole	V	-33.99	22.00	V-V	1.01	10.62	0.00	25.0	15 20
F0	23790	710.00	17	Dipole	Н	-44.73	-33.99	H-H	-3.38	19.02	0.09	35.0	-15.30
F0	23799	710.90	17	Dipole	V	-34.16	24.16	V-V	0.81	10.42	0.00	25.0	15 50
F0	23799	710.90	17	Dipole	Н	-44.70	-34.10	H-H	-3.56	19.42	0.09	33.0	-15.56

LTE band 17, 10MHz BW, RB=1, QPSK modulation

LTE band 17, 10MHz BW, RB=1, 16-QAM modulation

		FUT						Substitution Method					
		LUI	Rx Antenna		nna	Spectrum Analyzer		Tracking Generator					
Type	Ch	Frequency	Band	Type	Pol	Reading	Max (V,H)	Pol.	Reading	Corrected (relative t	l Reading o Dipole)		Diff. To
турс	on	(MHz)	Dunu	Type	1 01.	(dBm)	(dBm)	Tx-Rx	(dBm)	(dBm)	(W)	Limit (dBm)	Limit (dB)
F0	23780	709.00	17	Dipole	V	-35.26	-35.26	V-V	-0.35	18 26	0 07	35.0	-16 74
F0	23780	709.00	17	Dipole	Н	-46.86	-00.20	H-H	-4.60	10.20	0.07	55.0	-10.74
F0	23790	710.00	17	Dipole	V	-35.32	-35 32	V-V	-0.41	18 20	0.07	35.0	-16.80
F0	23790	710.00	17	Dipole	Н	-45.46	-33.32	H-H	-4.81	10.20	0.07	55.0	-10.00
F0	23799	710.90	17	Dipole	V	-35.50	25 50	V-V	-0.57	19.04	0.06	25.0	16.06
F0	23799	710.90	17	Dipole	Н	-46.02	-33.30	H-H	-4.91	10.04	0.00	55.0	-10.90

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Testing	EMI Test Report for the BlackBerry [®] smartphone Model RFL111LW, RFP121LW					
Services™	APPENDIX 6C					
Test Report No.: RTS-6026-1302-12A_Rev1	Dates of Test: Nov. 22, 2012 to Mar. 04, 2013, and April 05, 2013	FCC ID: L6ARFL110LW, L6ARFP120LW IC: 2503A-RFL110LW, 2503A-RFP120LW				

Radiated Emissions Test Data Results cont'd

Date of Test: February 07, 2012

The following measurements were performed by Feras Obeid.

The environmental test conditions were:	Temperature:	25.3 ⁰C
	Relative Humidity:	14.1 %

The EUT was standalone, vertically with LCD facing the RX antenna when the turntable is at 0 degree position.

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and the frequency range scanned was 30MHz – 1GHz.

Measurements were performed in LTE band 17 with QPSK modulation for 5MHz BW (channel 23790 with RB = 25) and 10MHz BW (channel 23790 with RB = 50 and RB = 1) and with 16-QAM modulation for 5MHz BW (channel 23790 with RB = 25) and 10MHz BW (channel 23790 with RB = 50 and RB = 1).

All emissions were at least 25.0 dB below the limit.

Date of Test: January 29 – February 01, 2013

The following measurements were perform		
The environmental test conditions were:	Temperature:	23.6 – 25.7 ⁰C
	Relative Humidity:	17.2 – 19.8 %

Test Distance was 3.0 meters with the RX antenna height scans between 1-4 meters height, and a frequency range of 1 GHz to 10 GHz.

The EUT was standalone, horizontally with LCD facing up and the top pointing to the RX antenna when the turntable is at 0 degree position

Measurements were performed in LTE band 17 with QPSK modulation for 5MHz BW (channel 23790 with RB = 25) and 10MHz BW (channel 23790 with RB = 50 and RB = 1) and with 16-QAM modulation for 5MHz BW (channel 23790 with RB = 25) and 10MHz BW (channel 23790 with RB = 50 and RB = 1).

All emissions were at least 25.0 dB below the limit