

## **Partial EMI Test Report**

Tested in accordance with  
Federal Communications Commission (FCC)  
Personal Communications Services  
CFR 47, Parts 15, Subpart B  
&  
Industry Canada (IC), ICES-003



**A division of Research In Motion Limited**

**REPORT NO.:** RTS-2579-1107-64

**PRODUCT MODEL NO.:** RDD71UW  
**TYPE NAME:** BlackBerry® smartphone  
**FCC ID:** L6ARDD70UW  
**IC:** 2503A-RDD70UW

**DATE:** July 15, 2011

|                                                                                   |                                                              |                                          |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------|
|  | EMI Test Report for the BlackBerry® smartphone Model RDD71UW |                                          |
| Test Report No.<br>RTS-2579-1107-64                                               | Date of Test<br>July 05 - July 06, 2011                      | FCC ID: L6ARDD70UW<br>IC : 2503A-RDD70CW |

**Statement of Performance:**

The BlackBerry® smartphone, model RDD71UW, part number CER-39234-001 Rev. 4 and accessories when configured and operated per RIM's operation instructions, and performs within the requirements of the test standards.

**Declaration:**

We hereby certify that:

The test data reported herein is an accurate record of the performance of the sample(s) tested.

The test results are valid for the tested unit (s) only.

The test equipment used was suitable for the tests performed and within manufacturer's published specifications and operating parameters.

The test methods were consistent with the methods described in the relevant standards.

Documented by:



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Regulatory Compliance Specialist  
Date: July 15, 2011

Reviewed by:



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Regulatory Compliance Specialist  
Date: July 15, 2011

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Manager, Regulatory Compliance  
Date: July 18, 2011

|                                                                                   |                                                              |                                          |
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|  EMI Test Report for the BlackBerry® smartphone Model RDD71UW |                                                |                                                        |
| <b>Test Report No.</b><br>RTS-2579-1107-64                                                                                                     | <b>Date of Test</b><br>July 05 - July 06, 2011 | <b>FCC ID:</b> L6ARDD70UW<br><b>IC :</b> 2503A-RDD70CW |

## A. Scope

This report details the results of compliance tests that were performed in accordance with the requirements of:

- FCC CFR 47 Part 15, Subpart B, October, 2010 Class B Digital Devices, Unintentional Radiators
- IC ICES-003 Issue 4, February 2004, Class B Digital Devices, Unintentional Radiators

## B. Associated Documents

1. 1-3314-01-19\_11-B

## C. Product Identification

Manufactured by Research In Motion Limited whose headquarters is located at:  
295 Phillip Street  
Waterloo, Ontario  
Canada, N2L 3W8  
Phone: 519 888 7465  
Fax: 519 888 6906

The equipment under test (EUT) was tested at the following locations:

### RIM Testing Services EMI test facilities

|                     |                     |
|---------------------|---------------------|
| 305 Phillip Street  | 440 Phillip Street  |
| Waterloo, Ontario   | Waterloo, Ontario   |
| Canada, N2L 3W8     | Canada, N2L 5R9     |
| Phone: 519 888 7465 | Phone: 519 888 7465 |
| Fax: 519 888 6906   | Fax: 519 888 6906   |

The testing was performed from July 05 to July 06, 2011.

|                                                                                                                                                |                                         |                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------|
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The sample EUT included:

| SAMPLE | MODEL   | CER NUMBER          | PIN      | Software               |
|--------|---------|---------------------|----------|------------------------|
| 1      | RDD71UW | CER-39234-001 Rev 4 | 27AE9DCD | V7.0.0.169 Bundle 1069 |
| 2      | RDD71UW | CER-39234-001 Rev 4 | 27AE9E1E | V7.0.0.169 Bundle 1069 |

AC conducted testing was performed on sample 1.

Radiated Emissions testing was performed on sample 2.

#### BlackBerry® smartphone Accessories Tested

- 1) Alt.1 Fixed Blade Charger part number HDW-24481-001 (model number PSM04A-050QRIM) with an output current of 750mA and voltage of 5.0 volts dc.
- 2) Captive Cable Charger, part number HDW-17957-003 with an output current of 750mA and voltage of 5.0 volts dc.
- 3) Premium Stereo Headset, part number HDW-15766-005, 1.3 meters long.
- 4) Bluetooth Headset part number HDW-25937-001.
- 5) USB Data Cable, part number HDW-06610-005, 1.5 meters long.

#### **D. Support Equipment Used for the Testing of the EUT**

- 1) IBM Thinkpad Lenovo T60p laptop, type 8742-C2U, product ID 8742C2U

#### **E. Summary of Results**

| SPECIFICATION      |          | TEST TYPE                                 | Meets Requirement          | Test Data APPENDIX |
|--------------------|----------|-------------------------------------------|----------------------------|--------------------|
| FCC CFR 47         | IC       |                                           |                            |                    |
| Part 15, Subpart B | ICES-003 | Conducted AC Line Emission                | Yes                        | 1                  |
|                    |          |                                           | Also see 1-3314-01-19_11-B |                    |
| Part 15, Subpart B | ICES-003 | Radiated Unintentional Spurious Emissions | Yes                        | 2                  |
|                    |          |                                           | Also see 1-3314-01-19_11-B |                    |

|                                                                                   |                                                              |                                                        |
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#### a) AC CONDUCTED EMISSIONS

The conducted emissions were measured using the test procedure outlined in CISPR Recommendation 22 through a 50 Ohm Line Impedance Stabilization Network (LISN), which was inserted in the power line to the equipment to provide the specified impedance for measurements. The EUT was placed on a nonconductive wooden table, 80 cm high that was positioned 40 cm from a vertical ground plane. The RF output of the network was connected to an EMI receiver system with characteristics that duplicate those of the receiver specified in CISPR Publication 16. BlackBerry® smartphone was in battery charging mode. The input voltage was 120 V, 60 Hz.

The following test configurations were measured for model RDD71UW:

| Test Configuration | Operating Mode(s)               | Charger + Accessories                                                 |
|--------------------|---------------------------------|-----------------------------------------------------------------------|
| 1                  | GSM 850 Idle,<br>Audio Playback | Alt.1 Fixed Blade Charger<br>Premium Stereo Headset<br>1.5m USB cable |

The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15, Subpart B, and IC ICES-003, Class B limit. The sample EUT had a worst case test margin of 14.60 dB below the QP limit at 0.155 MHz using the quasi-peak detector, Test Configuration 1.

#### Measurement Uncertainty $\pm 3.0$ dB

To view the test data/plots, see APPENDIX 1.

|                                                                                   |                                                              |                                          |
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## b) RADIATED EMISSIONS

The radiated emissions from the EUT were measured using the methods outlined in CISPR Recommendation 22. The EUT was placed on a nonconductive styrofoam table, 80 cm high that was positioned on a remote controlled turntable. The test distance used between the EUT and the receiving antenna was three metres. The turntable was rotated to determine the azimuth of the peak emissions. Then the emissions were maximized by elevating the antenna in the range of 1 to 4 metres. The maximum emission level was recorded. The frequency range measured was from 30 MHz to 5.0 GHz. Both the horizontal and vertical polarizations of the emissions were measured.

The measurements were done in a semi-anechoic chamber. The FCC registration number is **778487** and the Industry Canada(IC) file number is **2503B-1**. The EUT was configured and operated to produce the maximum radiated emissions while still keeping within RIM's specifications.

The BlackBerry® smartphone was in battery charging mode for all configurations. The ac input voltage was 120V, 60Hz.

The following test configurations were measured for model RDD71UW:

| Test Configuration | Operating Mode(s) | Charger + Accessories                     |
|--------------------|-------------------|-------------------------------------------|
| 1                  | GSM 850 Idle      | Captive Cable Charger + Bluetooth Headset |

The system's radiated emission levels were compared with respect to the FCC CFR 47 Part 15, Subpart B, and IC ICES-003, Class B limit.

The system met the requirements with a worst case emission test margin of 14.40 dB at 193.40 MHz using quasi-peak detector in Test Configuration 1.

To view the test data see APPENDIX 2.

### **Sample Calculation:**

Field Strength (dBµV/m) is calculated as follows:

FS = Measured Level (dBµV) + A.F. (dB/m) + Cable Loss (dB) - Preamplifier (dB) + Filter Loss (dB)

### **Measurement Uncertainty ±4.6 dB**

|                                                                                                                                                |                                                |                                                        |
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| <b>Test Report No.</b><br>RTS-2579-1107-64                                                                                                     | <b>Date of Test</b><br>July 05 - July 06, 2011 | <b>FCC ID:</b> L6ARDD70UW<br><b>IC :</b> 2503A-RDD70CW |

## F. Compliance Test Equipment Used

| <u>UNIT</u>                          | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SERIAL<br/>NUMBER</u> | <u>CAL DUE<br/>DATE</u><br>(YY MM DD) | <u>USE</u>                   |
|--------------------------------------|---------------------|--------------|--------------------------|---------------------------------------|------------------------------|
| Preamplifier                         | Sonoma              | 310N/11909A  | 185831                   | 11-11-14                              | Radiated Emissions           |
| Preamplifier system                  | TDK RF Solutions    | PA-02        | 080010                   | 11-09-13                              | Radiated Emissions           |
| EMC Analyzer                         | Rohde & Schwarz     | ESIB 40      | 3942A00517               | 11-11-28                              | Radiated Emissions           |
| T/RH Meter                           | OMEGA               | iTHX-SD      | 0380561                  | 11-10-13                              | Radiated Emission            |
| T/RH Meter                           | OMEGA               | iTHX-SD      | 0380567                  | 11-10-13                              | Radiated Emission            |
| L.I.S.N.                             | Rohde & Schwarz     | ENV216       | 100060                   | 11-12-10                              | Conducted Emissions          |
| Hybrid Log Antenna                   | EMC Automation      | HLP-3003C    | 017401                   | 12-01-14                              | Radiated Emissions           |
| Universal Radio Communication Tester | Rohde & Schwarz     | CMU 200      | 837493/073               | 11-09-23                              | Radiated Emissions           |
| Universal Radio Communication Tester | Rohde & Schwarz     | CMU 200      | 112394                   | 11-11-29                              | Radiated/Conducted Emissions |
| EMI Test Receiver                    | Rohde & Schwarz     | ESU 40       | 100162                   | 11-10-30                              | Radiated/Conducted Emissions |

|                                                                                   |                                                                                   |                                                        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|
|  | EMI Test Report for the BlackBerry® smartphone Model RDD71UW<br><b>APPENDIX 1</b> |                                                        |
| <b>Test Report No.</b><br>RTS-2579-1107-64                                        | <b>Date of Test</b><br>July 05 - July 06, 2011                                    | <b>FCC ID:</b> L6ARDD70CW<br><b>IC :</b> 2503A-RDD70CW |

## APPENDIX 1 - AC CONDUCTED EMISSIONS TEST DATA

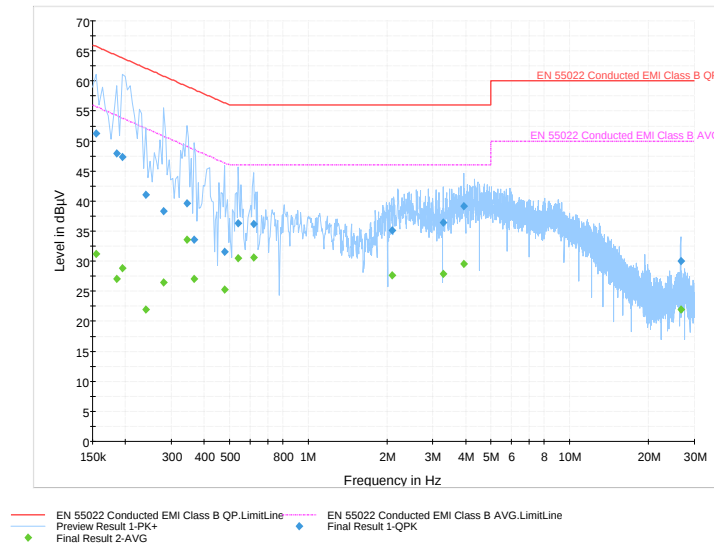


|                                                                                   |                                                                                   |                                                        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|
|  | EMI Test Report for the BlackBerry® smartphone Model RDD71UW<br><b>APPENDIX 1</b> |                                                        |
| <b>Test Report No.</b><br>RTS-2579-1107-64                                        | <b>Date of Test</b><br>July 05 - July 06, 2011                                    | <b>FCC ID:</b> L6ARDD70CW<br><b>IC :</b> 2503A-RDD70CW |

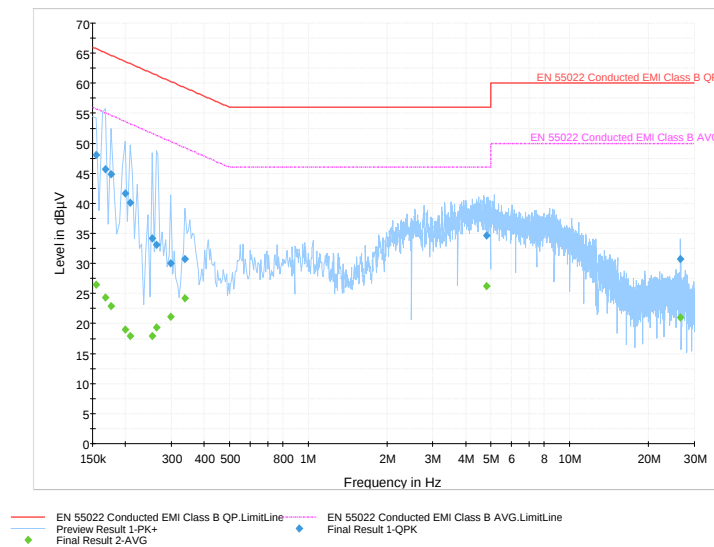
## AC Conducted Emissions Test Graphs

### Test Configuration 1

**Figure 1-1: L1 lines**



**Figure 1-2: N Lines**



|                                                                                   |                                                                                   |                                                        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------|
|  | EMI Test Report for the BlackBerry® smartphone Model RDD71UW<br><b>APPENDIX 2</b> |                                                        |
| <b>Test Report No.</b><br>RTS-2579-1107-64                                        | <b>Date of Test</b><br>July 05 - July 06, 2011                                    | <b>FCC ID:</b> L6ARDD70CW<br><b>IC :</b> 2503A-RDD70UW |

## APPENDIX 2 - RADIATED EMISSIONS TEST DATA (RDD71UW)

|                                                                                   |  |                                         |                                                                                   |                                          |  |
|-----------------------------------------------------------------------------------|--|-----------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------|--|
|  |  |                                         | EMI Test Report for the BlackBerry® smartphone Model RDD71UW<br><b>APPENDIX 2</b> |                                          |  |
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### Radiated Emissions Test Results

The following test configurations were measured for model RDD71UW.

The following tests were performed by Quan Ma

#### Test Configuration 1

Date of the test: July 05, 2011

The environmental conditions were: Temperature: 24.5 °C  
Humidity: 36.5 %

| Frequency<br>(MHz) | Antenna       |                    | Test<br>Angle<br>(Deg.) | Detector<br>(Q.P. or<br>Peak) | Measured<br>Level<br>(dBµV) | Correction Factor for<br>preamp/antenna /<br>cables/ filter<br>(dB/m) | Field<br>Strength<br>Level<br>(reading<br>+corr)<br>(dBµV/m) | Limit @<br>3.0 m<br>(dBµV/m) | Test<br>Margin<br>(dB) |
|--------------------|---------------|--------------------|-------------------------|-------------------------------|-----------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------|------------------------------|------------------------|
|                    | Pol.<br>(V/H) | Height<br>(metres) |                         |                               |                             |                                                                       |                                                              |                              |                        |
| 37.600             | V             | 1.47               | 275.00                  | Q.P.                          | 35.87                       | -14.83                                                                | 21.04                                                        | 40.00                        | -18.96                 |
| 72.100             | V             | 2.48               | 69.00                   | Q.P.                          | 39.56                       | -15.99                                                                | 23.57                                                        | 40.00                        | -16.43                 |
| 73.300             | H             | 3.75               | 171.00                  | Q.P.                          | 36.82                       | -15.85                                                                | 20.97                                                        | 40.00                        | -19.03                 |
| 193.200            | H             | 1.20               | 194.00                  | Q.P.                          | 30.19                       | -10.67                                                                | 19.52                                                        | 43.50                        | -23.98                 |
| 193.400            | V             | 1.41               | 69.00                   | Q.P.                          | 39.69                       | -10.59                                                                | 29.10                                                        | 43.50                        | <b>-14.40</b>          |
| 344.850            | H             | 2.61               | 154.00                  | Q.P.                          | 30.75                       | -3.24                                                                 | 27.51                                                        | 46.00                        | -18.49                 |
| 345.000            | V             | 2.81               | 8.00                    | Q.P.                          | 32.70                       | -3.22                                                                 | 29.48                                                        | 46.00                        | -16.52                 |
| 37.600             | V             | 1.47               | 275.00                  | Q.P.                          | 35.87                       | -14.83                                                                | 21.04                                                        | 40.00                        | -18.96                 |

All other emission levels had a test margin greater than 25 dB.