

# FCC/IC DFS Test Report

Tested in accordance with  
Federal Communications Commission (FCC)  
Personal Communications Services  
CFR 47, Parts 15.407  
&  
Industry Canada (IC), RSS-210



**REPORT NO.:** RTS-6067-1505-15

**PRODUCT MODEL NO.:** RHR191LW (SQW100-4)  
**TYPE NAME:** BlackBerry® smartphone  
**FCC ID:** L6ARHR190LW  
**IC:** 2503A-RHR190LW

**DATE:** May 15, 2015

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



**592**

|                                                                                   |                                                                          |                                           |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) |                                           |
| Test Report No.<br>RTS-6067-1505-15                                               | Date of Test<br>April 27 – 29, 2015                                      | FCC ID: L6ARHR190LW<br>IC: 2503A-RHR190LW |

### **Statement of Performance:**

The BlackBerry® smartphone, model RHR191LW (SQW100-4), part number CER-59662-001 Rev1-x08-00 and accessories perform within the requirements of the test standards when configured and operated per Blackberry's operation instructions.

### **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:

Reviewed by:

\_\_\_\_\_  
Sijia Li  
Compliance Associate

\_\_\_\_\_  
Savtej S. Sandhu  
Compliance Specialist I

Reviewed and Approved by:

\_\_\_\_\_  
Masud S. Attayi, P.Eng.  
Manager, Regulatory Compliance & Certification

|                                                                                   |                                                                          |                                                         |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15                                        | <b>Date of Test</b><br>April 27 – 29, 2015                               | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

## Table of Contents

|    |                                                         |   |
|----|---------------------------------------------------------|---|
| A. | Scope .....                                             | 4 |
| B. | Associated Documents .....                              | 4 |
| C. | Product Identification .....                            | 4 |
| D. | Support Equipment Used for the Testing of the EUT ..... | 5 |
| E. | Test Results Chart – FCC Part 15, Client Device .....   | 6 |
| F. | Summary of Result .....                                 | 6 |
| G. | Compliance Test Equipment Used .....                    | 7 |
|    | APPENDIX 1 - DFS TEST PLOTS and DATA.....               | 8 |

|                                                                                   |                                                                          |                                                         |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15                                        | <b>Date of Test</b><br>April 27 – 29, 2015                               | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

## A. Scope

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

- FCC CFR 47 Part 15.407, October, 2014
- Industry Canada, RSS-210, Issue 8, December 2010 and Amendment 1, February, 2015, License-exempt, Low-Power Radio Apparatus Operating in the Television Bands.
- KDB 905462 D02 UNII DFS Compliance Procedures v01r02
- KDB 848637 D01 DFS Client Devices v01

## B. Associated Documents

None

## C. Product Identification

Manufactured by BlackBerry 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 location:

RTS Test Facility  
440 Phillip Street  
Waterloo, Ontario  
Canada, N2L 5R9  
Phone: 519 888 7465  
Fax: 519 888 6906

The testing was performed on April 27-29, 2015.

|                                                                                   |                                                                          |                                           |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) |                                           |
| Test Report No.<br>RTS-6067-1505-15                                               | Date of Test<br>April 27 – 29, 2015                                      | FCC ID: L6ARHR190LW<br>IC: 2503A-RHR190LW |

### BlackBerry® smartphone Samples Tested

| SAMPLE | MODEL    | CER NUMBER                | PIN        | SOFTWARE                  |
|--------|----------|---------------------------|------------|---------------------------|
| 1      | RHR191LW | CER-59662-001 Rev1-x08-00 | 1160685327 | Software Build:<br>AAA728 |

DFS testing was performed on sample 1.

The manufacturer declared modes for the EUT operational characteristics that affect DFS are as follows:

#### Operating Modes (5250 -5350 MHz, 5470-5725MHz)

- ☐ Master Device
- ☒ Client Device (no In-Service Monitoring, no Ad – Hoc mode)
- ☐ Client Device with In-Service Monitoring

#### **Channel Protocol**

- ☒ IP Based
- ☐ Frame Based
- ☐ Other \_\_\_\_\_

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

| Manufacturer | Description         | Model             | Serial Number  | FCC ID and IC               |
|--------------|---------------------|-------------------|----------------|-----------------------------|
| Cisco        | Wireless Controller | 2504              | PSJ162904G5    | -                           |
| Cisco        | Access Point        | AIR-CAP3702E-A-K9 | FTX181077V8    | LDK102087<br>2461B-102087   |
| D-Link       | Router              | WBR-1310          | P10317B010096  | KA2WBR1310<br>4216A-WBR1310 |
| Lenovo       | Laptop              | 4236-D84          | R8-A1XXN 11/05 | -                           |

|                                                                                   |                                                                          |                                                         |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15                                        | <b>Date of Test</b><br>April 27 – 29, 2015                               | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

## E. Test Results Chart – FCC Part 15, Client Device

| SPECIFICATION |               | TEST TYPE                         | Meets Requirement | Test Data APPENDIX |
|---------------|---------------|-----------------------------------|-------------------|--------------------|
| FCC CFR 47    | IC            |                                   |                   |                    |
| Part 15.407   | RSS-210, A9.3 | Channel closing transmission time | Yes               | 1                  |
| Part 15.407   | RSS-210, A9.3 | Channel move time                 | Yes               | 1                  |
| Part 15.407   | RSS-210, A9.3 | Non-Occupancy time                | Yes               | 1                  |

## F. Summary of Result

- a). The BlackBerry® smartphone met the requirement of the Channel Closing Transmission and Time, Channel Move time and Non-occupancy period requirement as per FCC 15.407. The measurement was performed on Channel 60 and 106 of the DFS band with 80MHz bandwidth, and Channel 58 and 100 of the DFS band with 20 MHz bandwidth. Radar Type 1 of the Short Pulse Test waveform was used for tests.

See APPENDIX 1 for the test data.

Measurement Uncertainties:

| Measurement               | Measurement Unit | Expanded Uncertainty |
|---------------------------|------------------|----------------------|
| DFS Threshold (Conducted) | dBm              | 1.2                  |

|                                                                                   |                                                                          |                                                         |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15                                        | <b>Date of Test</b><br>April 27 – 29, 2015                               | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

## G. Compliance Test Equipment Used

| <u>UNIT</u>              | <u>MANUFACTURER</u>  | <u>MODEL</u> | <u>SERIAL<br/>NUMBER</u> | <u>CAL DUE DATE<br/>(YY MM DD)</u> | <u>USE</u> |
|--------------------------|----------------------|--------------|--------------------------|------------------------------------|------------|
| Spectrum Analyzer        | Rohde & Schwarz      | FSV          | 101820                   | 15-11-25                           | DFS        |
| DFS RF Modulator         | National Instruments | PXIe-5611    | EC157C                   | 16-03-17                           | DFS        |
| DFS I/Q Signal Generator | National Instruments | PXIe-5450    | EC6BB1                   | 16-03-17                           | DFS        |
| DFS RF Signal Generator  | National Instruments | PXIe-5620    | ED2167                   | 16-03-17                           | DFS        |
| T/RH Meter               | OMEGA                | iTHX-SD      | 0380564                  | 16-11-14                           | DFS        |

## H. Test Software used

| <u>SOFTWARE</u> | <u>COMPANY</u> | <u>VERSION</u> | <u>USE</u> |
|-----------------|----------------|----------------|------------|
| iDFTest         | Redwolf        | 2.5            | DFS        |

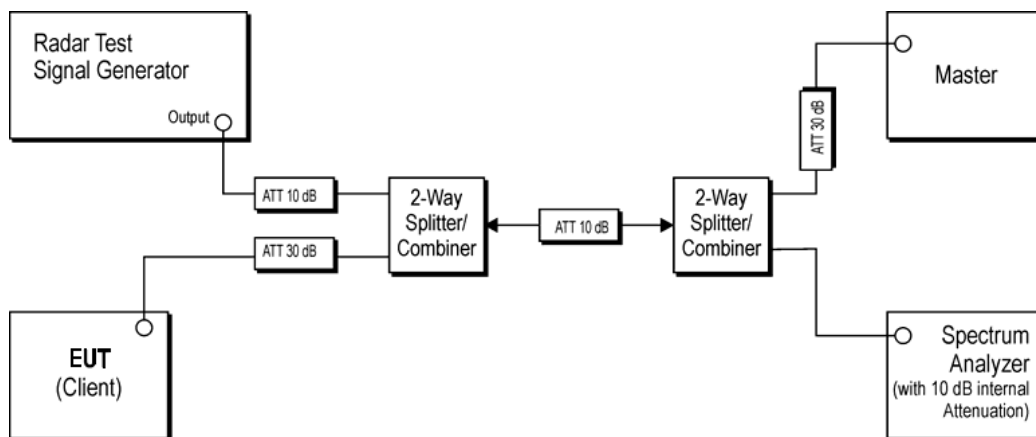
## APPENDIX 1 - DFS TEST PLOTS and DATA

|                                            |                                                                                               |                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>BlackBerry</b>                          | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15 | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

## DFS Conducted Test Results

### DFS Test Methods

#### Conducted Test Method



| <u>UNIT</u>     | <u>MANUFACTURER</u> | <u>MODEL</u> | <u>SERIAL NUMBER</u> |
|-----------------|---------------------|--------------|----------------------|
| 10dB Attenuator | Aeroflex Weinschel  | 3330A-10     | -                    |
| 30dB Attenuator | Aeroflex Weinschel  | 3330A-30     | -                    |
| 2-Way Splitter  | Weinschel           | 1515         | QC170                |
| 2-Way Splitter  | Weinschel           | 1534         | 221                  |

A spectrum analyzer is used as a monitor to verify that the EUT has vacated the Channel within the Channel Closing Transmission Time and Channel Move Time.

|                                                                                   |                                                                                               |                                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15                                        | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

## DFS Conducted Test Results Cont'd

### Radar Waveforms

| FCC Short Pulse Radar Test Waveforms |                    |            |                  |                              |                          |
|--------------------------------------|--------------------|------------|------------------|------------------------------|--------------------------|
| Radar Type                           | Pulse Width (µsec) | PRI (µsec) | Number of Pulses | Minimum Detection Percentage | Minimum Number of Trials |
| 1                                    | 1                  | 1428       | 18               | 60%                          | 30                       |
| 2                                    | 1-5                | 150-230    | 23-29            | 60%                          | 30                       |
| 3                                    | 6-10               | 200-500    | 16-18            | 60%                          | 30                       |
| 4                                    | 11-20              | 200-500    | 12-16            | 60%                          | 30                       |
| Aggregate (Radar Types 1-4)          |                    |            |                  | 80%                          | 120                      |

| FCC Long Pulse Radar Test Waveforms |                    |                   |           |                            |                  |                              |                          |
|-------------------------------------|--------------------|-------------------|-----------|----------------------------|------------------|------------------------------|--------------------------|
| Radar Type                          | Pulse Width (µsec) | Chirp Width (MHz) | PRI (µs)  | Number of Pulses per Burst | Number of Bursts | Minimum Detection Percentage | Minimum Number of Trials |
| 5                                   | 50-100             | 5-20              | 1000-2000 | 1-3                        | 8-20             | 80%                          | 30                       |

| Frequency Hopping Radar Test Waveforms |                    |            |                |                    |                                |                              |                          |
|----------------------------------------|--------------------|------------|----------------|--------------------|--------------------------------|------------------------------|--------------------------|
| Radar Type                             | Pulse Width (µsec) | PRI (µsec) | Pulses per Hop | Hopping Rate (kHz) | Hopping Sequence Length (msec) | Minimum Detection Percentage | Minimum Number of Trials |
| 6                                      | 1                  | 333        | 9              | 0.333              | 300                            | 70%                          | 30                       |

|                                            |                                                                                               |                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>BlackBerry</b>                          | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15 | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

### DFS Conducted Test Results Cont'd

The following tests were performed by Kevin Guo

Date of the test: April 27-29, 2015

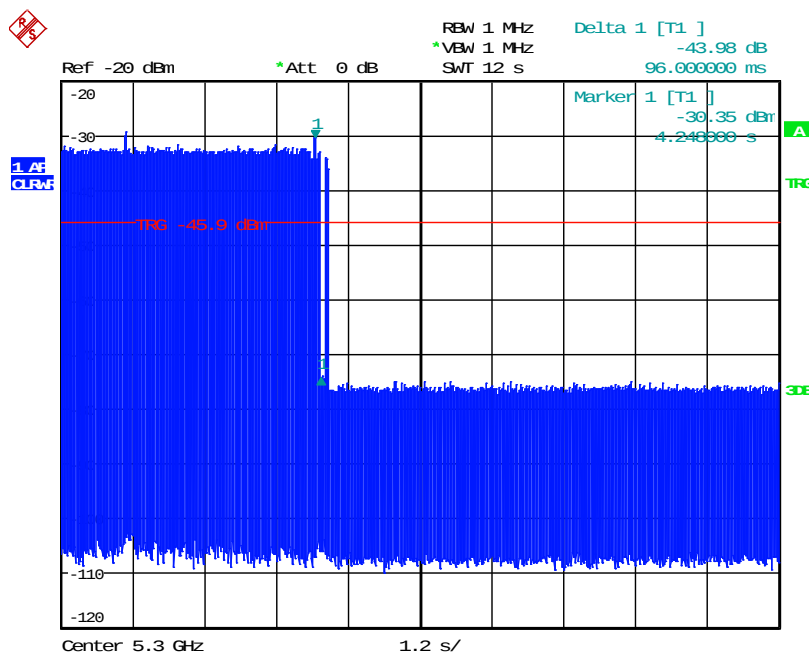
The environmental conditions were: Temperature: 23.6 – 24.7 °C  
Humidity: 22.9 – 49.5 %

Channel Bandwidth (80MHz)

Channel 60

| Wave form Type | Channel Closing Transmission Time |        | Channel Move Time |       | Non-Occupancy Time |        | Result |
|----------------|-----------------------------------|--------|-------------------|-------|--------------------|--------|--------|
|                | Measured                          | Limit  | Measured          | Limit | Measured           | Limit  | Limit  |
| Radar Type 1   | 96 ms                             | 260 ms | 216 ms            | 10 s  | 1860 s             | 1800 s | PASS   |

### Channel Closing Transmission Time

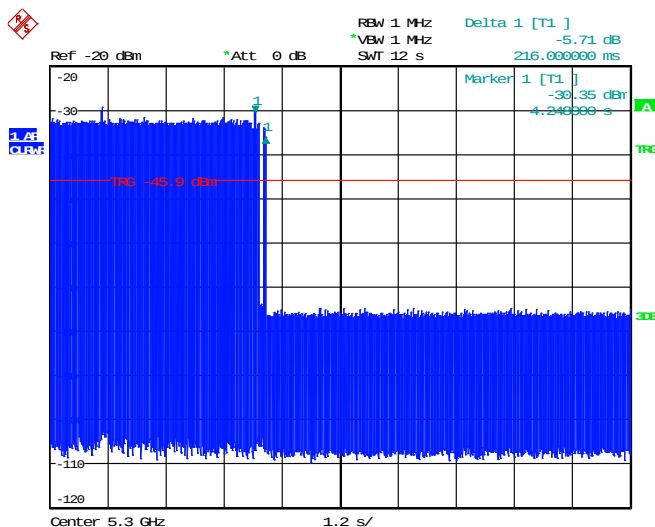


Date: 27.APR.2015 15:02:15

|                                            |                                                                                               |                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>BlackBerry</b>                          | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15 | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

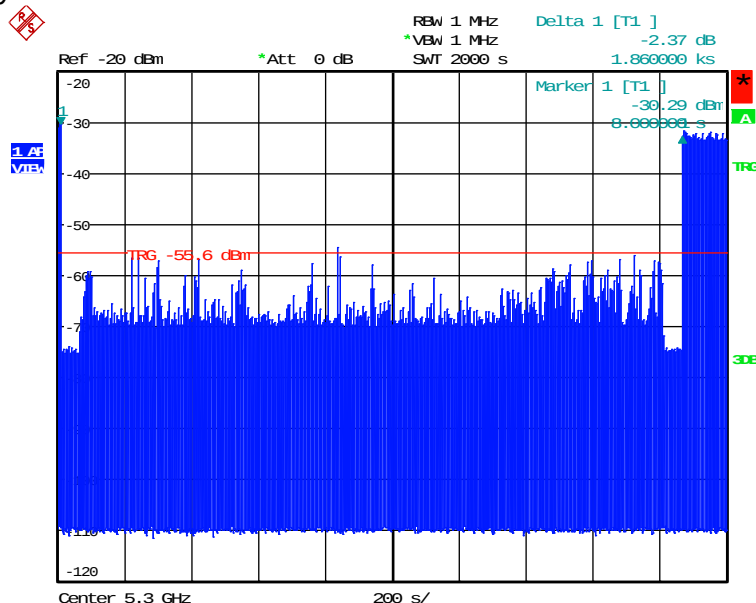
## DFS Conducted Test Results Cont'd

### Channel Move Time



Date: 27.APR.2015 15:03:18

### Non-Occupancy Time



Date: 28.APR.2015 14:46:14

|                                            |                                                                                               |                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>BlackBerry</b>                          | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15 | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

### DFS Conducted Test Results Cont'd

The following tests were performed by Kevin Guo

Date of the test: April 27-29, 2015

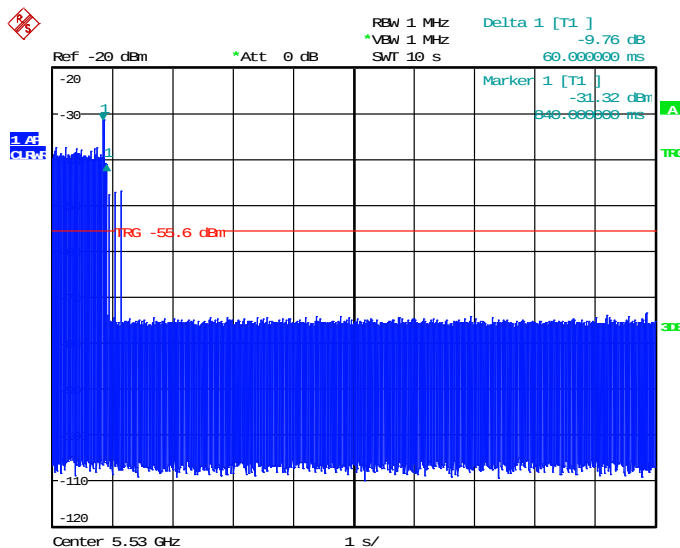
The environmental conditions were: Temperature: 23.6 – 24.7 °C  
Humidity: 22.9 – 49.5 %

Channel Bandwidth (80MHz)

Channel 106

| Wave form Type | Channel Closing Transmission Time |        | Channel Move Time |       | Non-Occupancy Time |        | Result |
|----------------|-----------------------------------|--------|-------------------|-------|--------------------|--------|--------|
|                | Measured                          | Limit  | Measured          | Limit | Measured           | Limit  | Limit  |
| Radar Type 1   | 60 ms                             | 260 ms | 300 ms            | 10 s  | 1860 s             | 1800 s | PASS   |

### Channel Closing Transmission Time

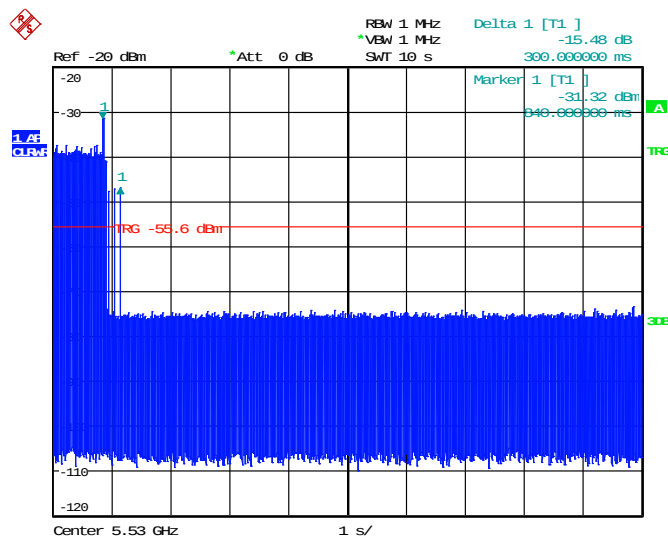


Date: 27.APR.2015 16:23:53

|                                                                                   |                                                                                               |                                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15                                        | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

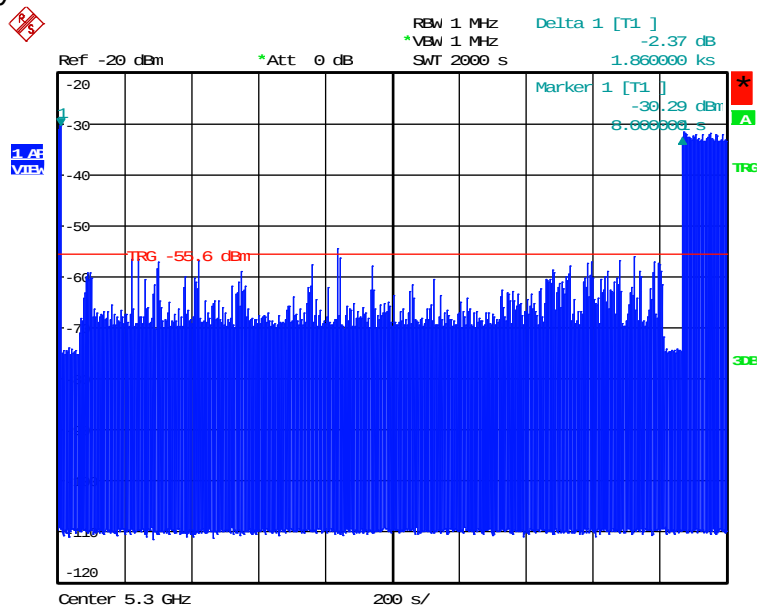
## DFS Conducted Test Results Cont'd

### Channel Move Time



Date: 27.APR.2015 16:24:25

### Non-Occupancy Time



Date: 28.APR.2015 14:46:14

|                                            |                                                                                               |                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>BlackBerry</b>                          | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15 | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

### DFS Conducted Test Results Cont'd

The following tests were performed by Kevin Guo

Date of the test: April 27-29, 2015

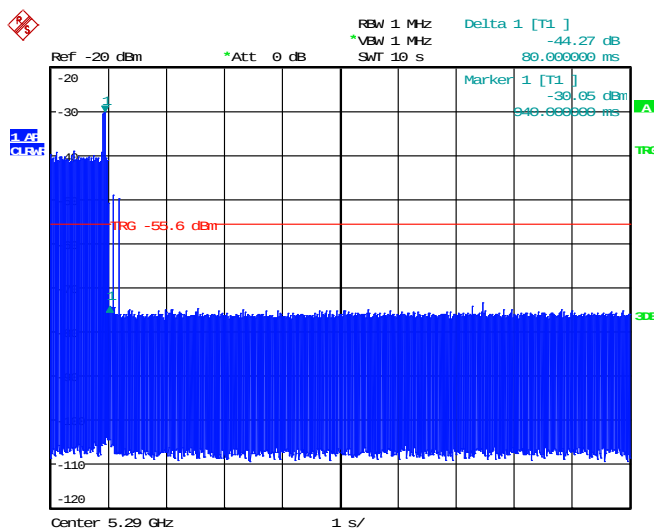
The environmental conditions were: Temperature: 23.6 – 24.7 °C  
Humidity: 22.9 – 49.5 %

Channel Bandwidth (20MHz)

Channel 58

| Wave form Type | Channel Closing Transmission Time |        | Channel Move Time |       | Non-Occupancy Time |        | Result |
|----------------|-----------------------------------|--------|-------------------|-------|--------------------|--------|--------|
|                | Measured                          | Limit  | Measured          | Limit | Measured           | Limit  | Limit  |
| Radar Type 1   | 80 ms                             | 260 ms | 240 ms            | 10 s  | 1860 s             | 1800 s | PASS   |

### Channel Closing Transmission Time

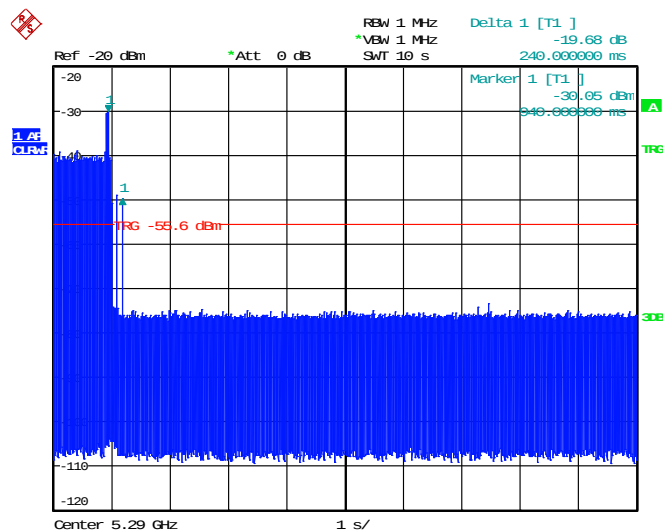


Date: 27.APR.2015 16:18:35

|                                            |                                                                                               |                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>BlackBerry</b>                          | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15 | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

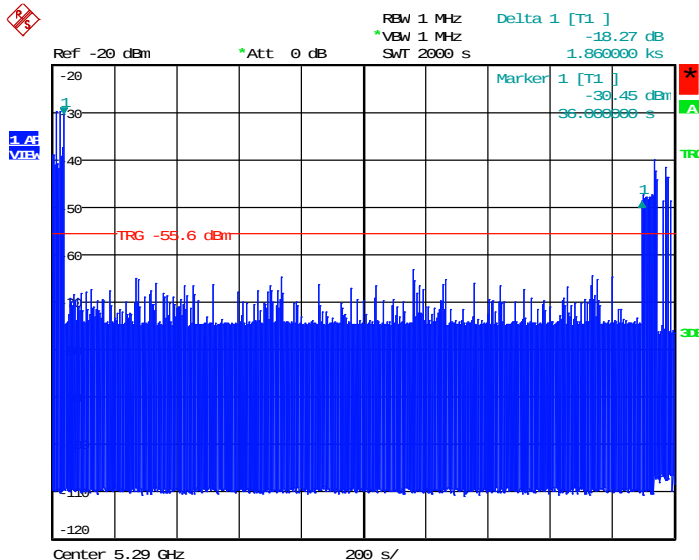
## DFS Conducted Test Results Cont'd

### Channel Move Time



Date: 27.APR.2015 16:19:03

### Non-Occupancy Time



Date: 28.APR.2015 15:21:25

|                                            |                                                                                               |                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>BlackBerry</b>                          | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15 | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

### DFS Conducted Test Results Cont'd

The following tests were performed by Kevin Guo

Date of the test: April 27-29, 2015

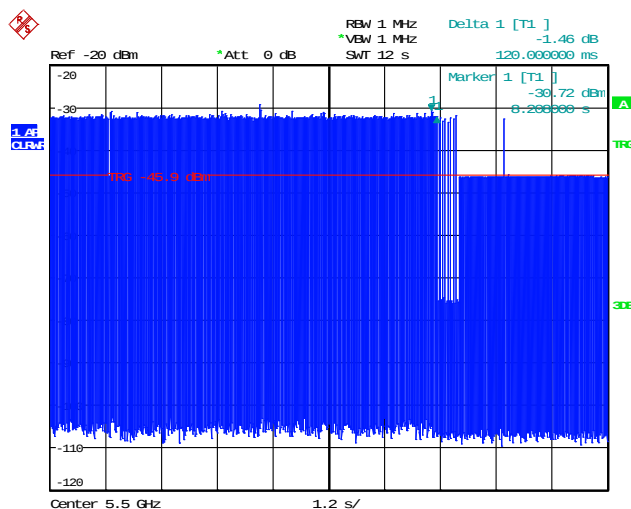
The environmental conditions were: Temperature: 23.6 – 24.7 °C  
Humidity: 22.9 – 49.5 %

Channel Bandwidth (20MHz)

Channel 100

| Wave form Type | Channel Closing Transmission Time |        | Channel Move Time |       | Non-Occupancy Time |        | Result |
|----------------|-----------------------------------|--------|-------------------|-------|--------------------|--------|--------|
|                | Measured                          | Limit  | Measured          | Limit | Measured           | Limit  | Limit  |
| Radar Type 1   | 120 ms                            | 260 ms | 528 ms            | 10 s  | 1864 s             | 1800 s | PASS   |

### Channel Closing Transmission Time

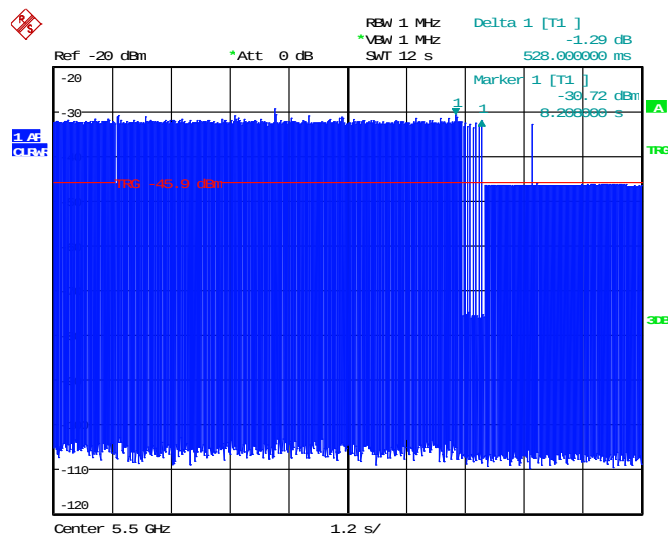


Date: 27.APR.2015 15:07:40

|                                                                                   |                                                                                               |                                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------|
|  | DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4)<br><b>APPENDIX 1</b> |                                                         |
| <b>Test Report No.</b><br>RTS-6067-1505-15                                        | <b>Date of Test</b><br>April 27 – 29, 2015                                                    | <b>FCC ID:</b> L6ARHR190LW<br><b>IC:</b> 2503A-RHR190LW |

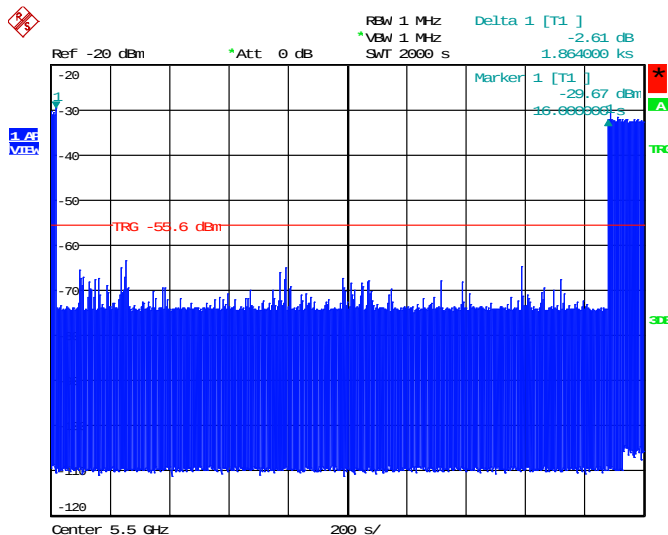
## DFS Conducted Test Results Cont'd

### Channel Move Time



Date: 27.APR.2015 15:08:13

### Non-Occupancy Time



Date: 28.APR.2015 12:41:21