FCC DFS Test Report

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

A division of Research In Motion Limited

REPORT NO.: RTS-6026-1302-52

PRODUCT MODEL NO.: RFL111LW
TYPE NAME: BlackBerry® smartphone
FCC ID: L6ARFL110LW
IC: 2503A-RFL110LW

DATE: February 28, 2013

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

592

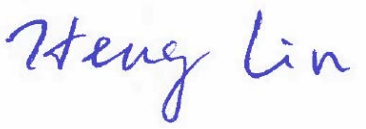
Statement of Performance:

The BlackBerry® smartphone, model RFL111LW, part number CER-53012-001 Rev3-906-01 and accessories perform within the requirements of the test standards when configured and operated per RIM's operation instructions.

Declaration:

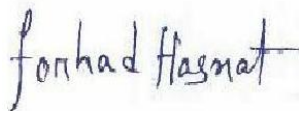
We hereby certify that:
The test data reported herein is an accurate record of the performance of the sample(s) tested.
The test results are valid for the tested unit (s) only.
The test equipment used was suitable for the tests performed and within manufacturer's published specifications and operating parameters.
The test methods were consistent with the methods described in the relevant standards.

Documented by:



Heng Lin
Regulatory Compliance Specialist

Reviewed by:



Forhad Hasnat
Regulatory Compliance Specialist

Reviewed and Approved by:

Masud S. Attayi, P.Eng.
Manager, Regulatory Compliance

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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, 2012
- Industry Canada, RSS-210, Issue 8, December 2010, Licence-exempt Radio Apparatus

B. Associated Documents

None

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

The testing was performed on February 28, 2013.

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BlackBerry® smartphone Samples Tested

SAMPLE	MODEL	CER NUMBER	PIN	SOFTWARE
1	RFL111LW	CER-53012-001 Rev3-906-01	2668C740	127.0.1.4318

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	Access Point	AIR-RM1252G-A-K9	FCW1336Z03R	LDK102061/2 2461B-102061/2
Lenovo	Laptop	8742-C2U	L3-B3615 07/06	MCLJ07H081 2878D-J07H081
D-Link	Router	WBR-1310	P10317B010096	KA2WBR1310 4216A-WBR1310

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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 period - associated	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 and RSS 210. The measurement was performed on Channel 60 (5300 MHz) of the DFS band. Radar Type 2 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

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G. Compliance Test Equipment Used

UNIT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL DUE DATE (YY MM DD)	USE
Spectrum Analyzer	Rohde & Schwarz	FSP	101884	13-11-21	DFS
DFS RF Modulator	National Instruments	PXIe-5611	EC157C	14-02-25	DFS
DFS I/Q Signal Generator	National Instruments	PXIe-5450	EC6BB1	14-02-25	DFS
DFS RF Signal Generator	National Instruments	PXIe-5620	ED2167	14-02-25	DFS
T/RH Meter	OMEGA	iTHX-SD	0380564	13-10-30	DFS

H. Test Software used

SOFTWARE	COMPANY	VERSION	USE
iDFTest	Redwolf	2.5	DFS

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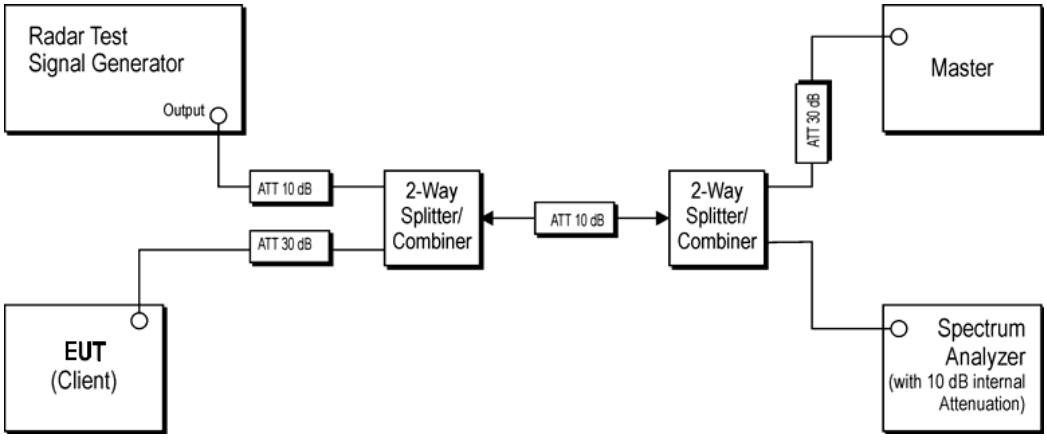
APPENDIX 1 - DFS TEST PLOTS and DATA

DFS Conducted Test Results

DFS Test Methods

Conducted Test Method



UNIT	MANUFACTURER	MODEL	SERIAL NUMBER
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 Transimission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the detection and Channel Move. It is also used to monitor EUT transmissions during the Channel Availability Check Time.

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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

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DFS Conducted Test Results Cont'd

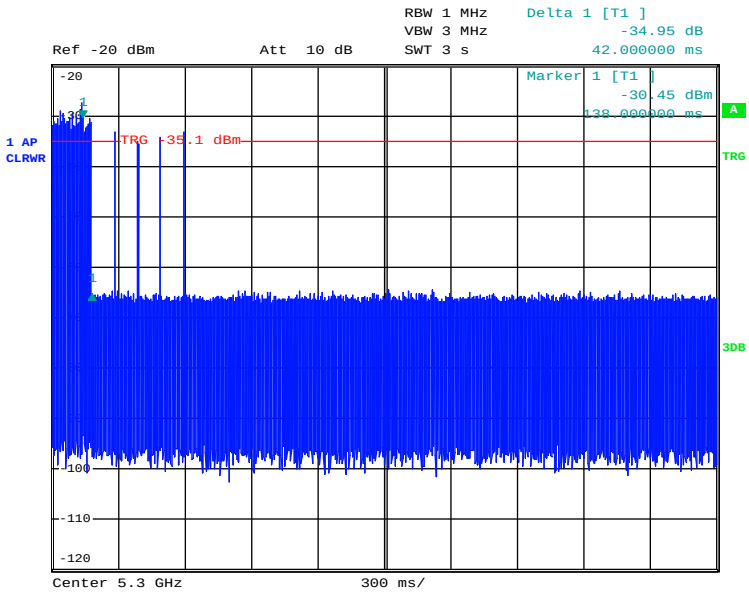
The following tests were performed by Heng Lin

Date of the test: February 28, 2013

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

Wave form Type	Channel Closing Transmission Time		Channel Move Time		Result
	Measured	Limit	Measured	Limit	
Radar Type 2	42 ms	260 ms	0.312 s	10 s	PASS

Channel Closing Transmission Time



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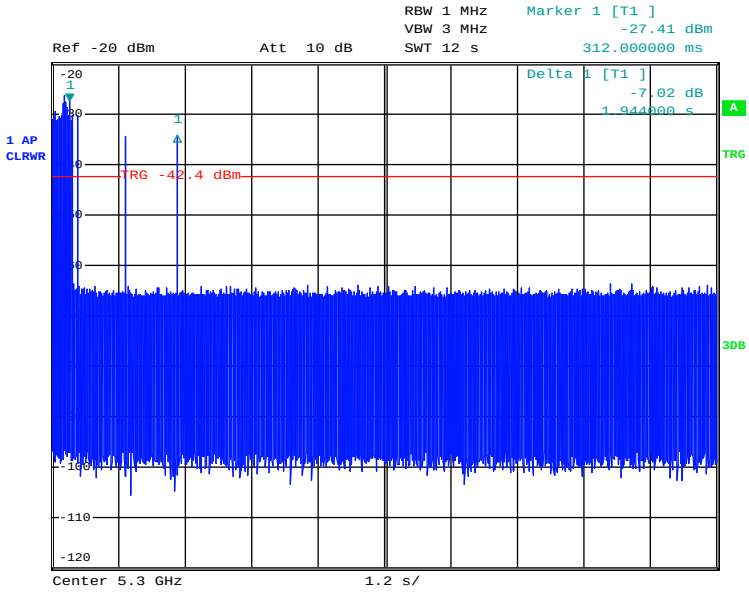
DFS Conducted Test Results Cont'd

Channel Move Time



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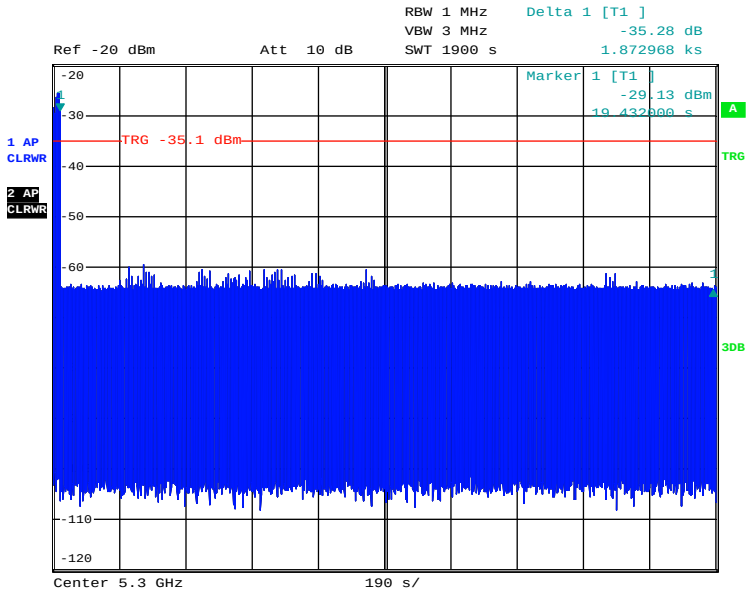
Non-Occupancy Period ≥ 30 min.



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