

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

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

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Compliance Associate

Savtej S. Sandhu
Compliance Specialist I

Reviewed and Approved by:

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Manager, Regulatory Compliance & Certification



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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, 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.

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BlackBerry® smartphone Samples Tested

SAMPLE	MODEL	CER NUMBER	PIN	SOFTWARE
1	RHR191LW	CER-59662-001 Rev1-x08-00	1160685327	Software Build: 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 2461B-102087
D-Link	Router	WBR-1310	P10317B010096	KA2WBR1310 4216A-WBR1310
Lenovo	Laptop	4236-D84	R8-A1XXN 11/05	-

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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 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

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G. Compliance Test Equipment Used

<u>UNIT</u>	<u>MANUFACTURER</u>	<u>MODEL</u>	<u>SERIAL NUMBER</u>	<u>CAL DUE DATE (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

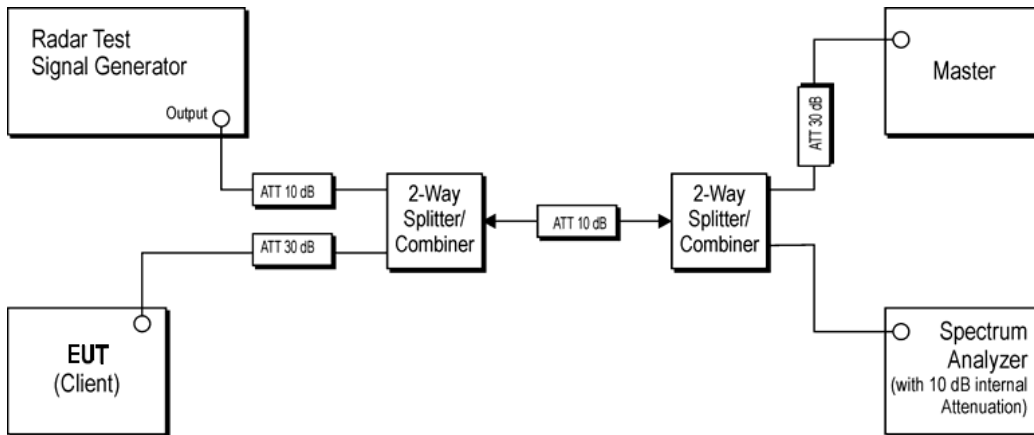
APPENDIX 1 - DFS TEST PLOTS and DATA

BlackBerry	DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) APPENDIX 1	
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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.

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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 Kevin Guo

Date of the test: April 27-29, 2015

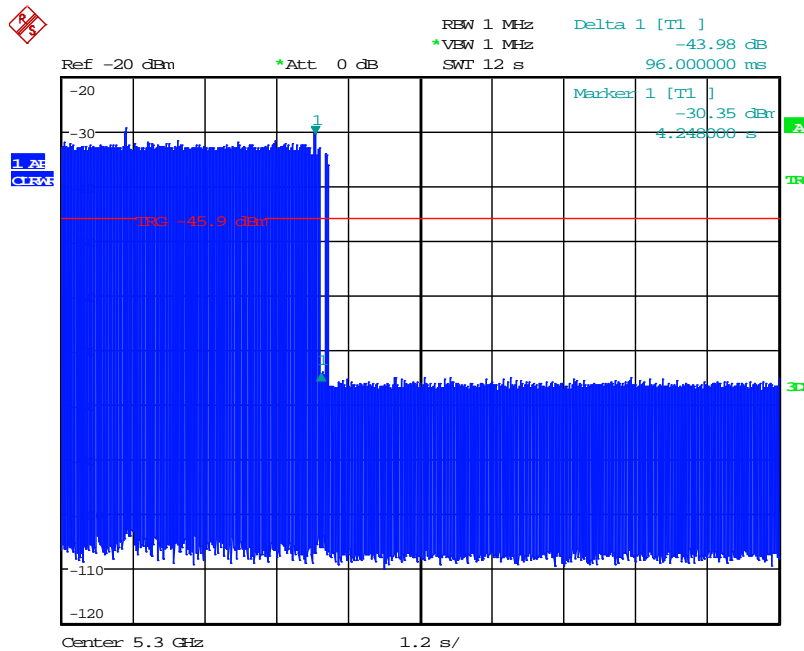
The environmental conditions were: Temperature: 23.6 – 24.7 °C
Humidity: 22.9 – 49.5 %

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

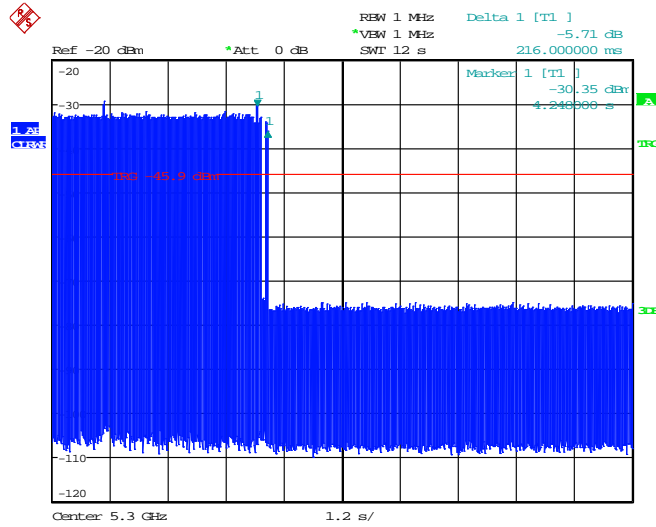


Date: 27.APR.2015 15:02:15

BlackBerry	DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) APPENDIX 1	
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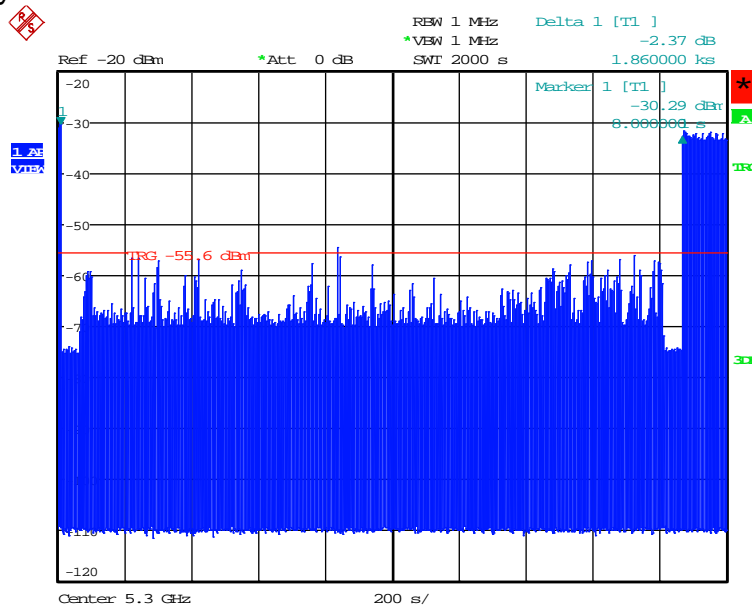
DFS Conducted Test Results Cont'd

Channel Move Time




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

Non-Occupancy Time



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

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DFS Conducted Test Results Cont'd

The following tests were performed by Kevin Guo

Date of the test: April 27-29, 2015

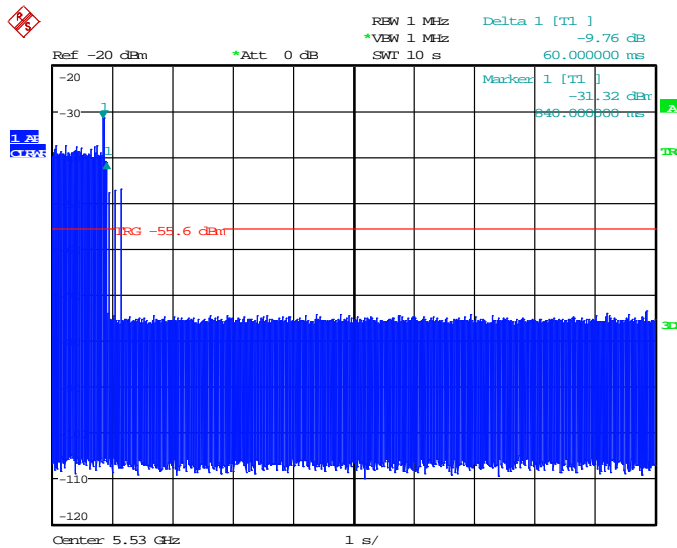
The environmental conditions were: Temperature: 23.6 – 24.7 °C
Humidity: 22.9 – 49.5 %

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

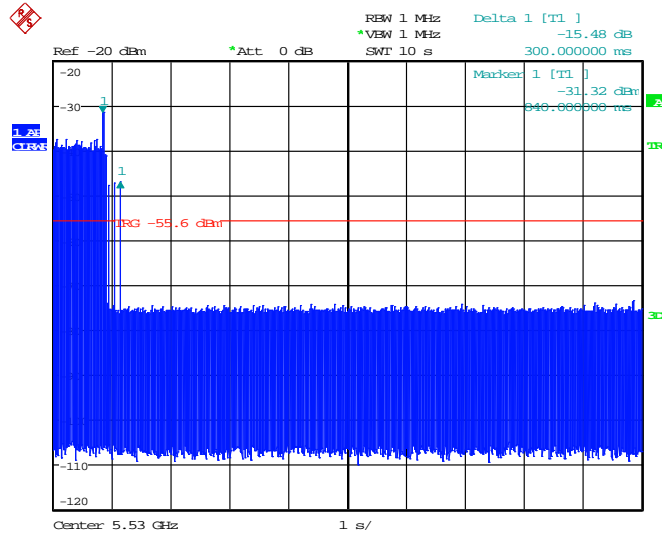


Date: 27.APR.2015 16:23:53

	DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) APPENDIX 1	
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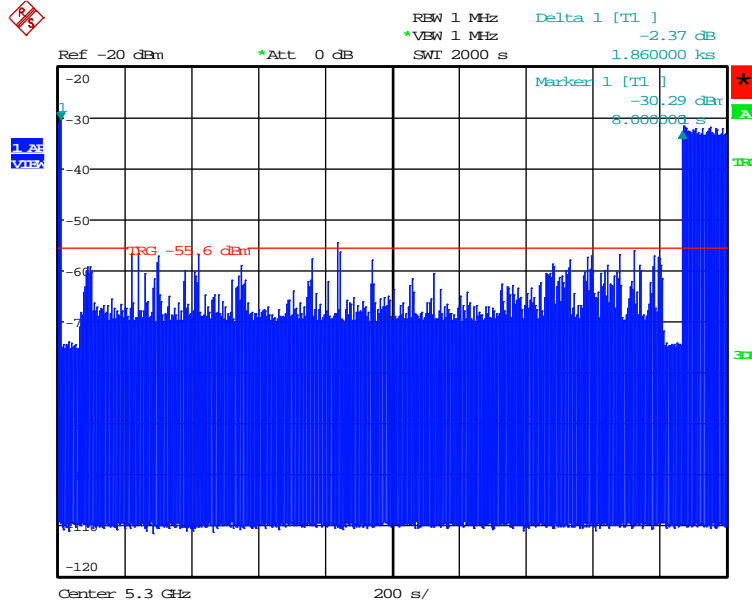
DFS Conducted Test Results Cont'd

Channel Move Time



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

Non-Occupancy Time



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

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DFS Conducted Test Results Cont'd

The following tests were performed by Kevin Guo

Date of the test: April 27-29, 2015

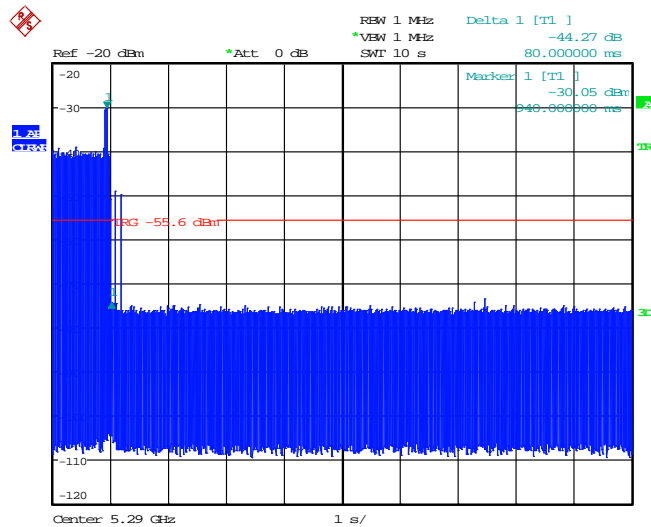
The environmental conditions were: Temperature: 23.6 – 24.7 °C
Humidity: 22.9 – 49.5 %

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

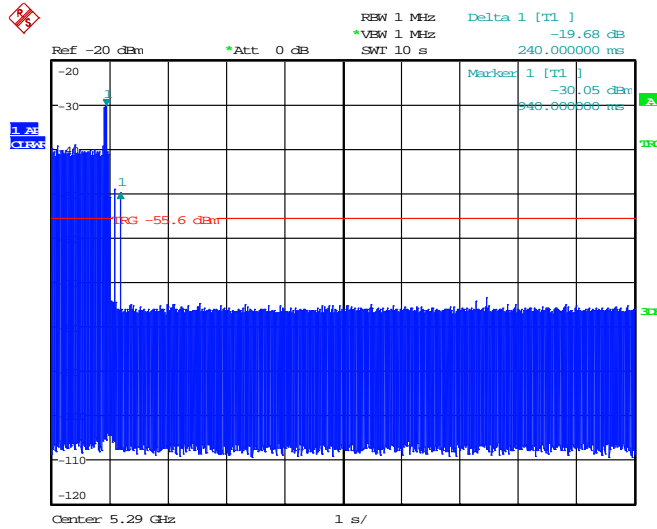


Date: 27.APR.2015 16:18:35

BlackBerry	DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) APPENDIX 1	
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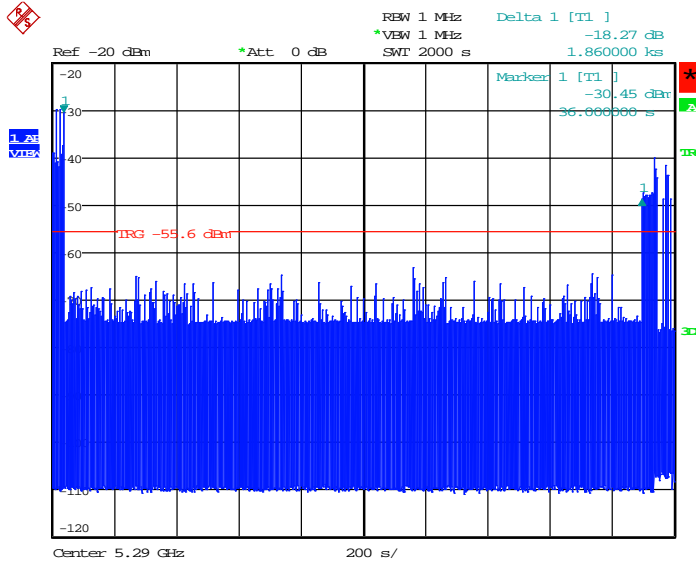
DFS Conducted Test Results Cont'd

Channel Move Time



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

Non-Occupancy Time



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

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DFS Conducted Test Results Cont'd

The following tests were performed by Kevin Guo

Date of the test: April 27-29, 2015

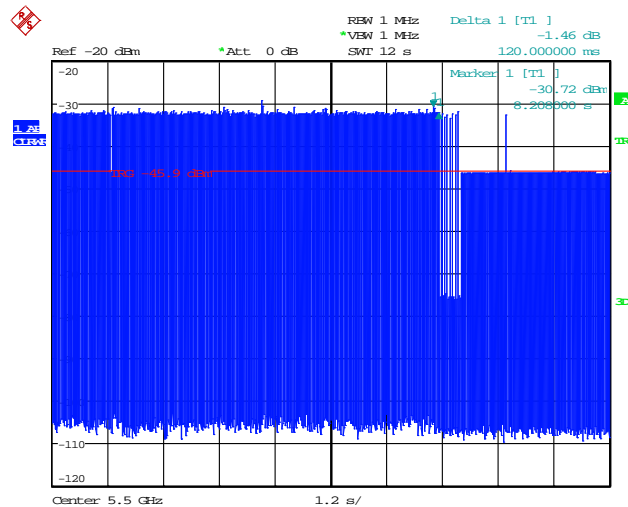
The environmental conditions were: Temperature: 23.6 – 24.7 °C
Humidity: 22.9 – 49.5 %

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

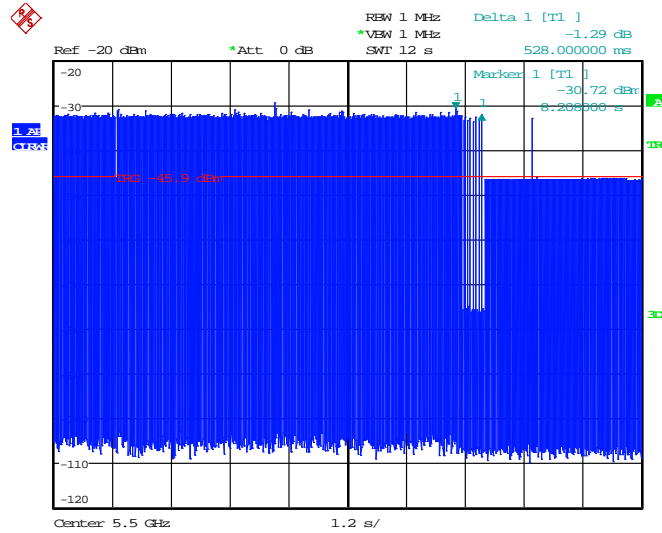


Date: 27.APR.2015 15:07:40

BlackBerry	DFS Test Report for the BlackBerry® smartphone Model RHR191LW (SQW100-4) APPENDIX 1	
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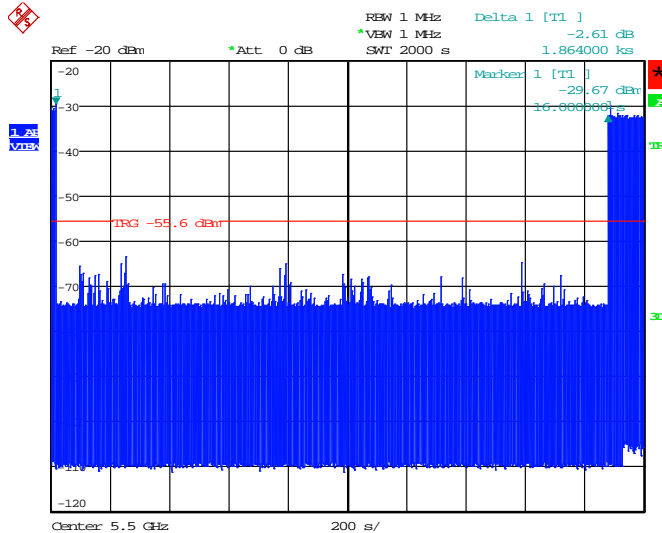
DFS Conducted Test Results Cont'd

Channel Move Time



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

Non-Occupancy Time



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