EMI Test Report

Tested in accordance with
Federal Communications Commission (FCC)
Personal Communications Services
CFR 47, Part 15 Subpart C
&
Industry Canada (IC) RSS-210, RSS-GEN

RIM Testing Services (RTS)

A division of Research In Motion Limited

REPORT NO.: RTS-1191-0808-19

PRODUCT MODEL NO.: RBW71CW

TYPE NAME: BlackBerry[®] smartphone

FCC ID: L6ARBW70CW

IC: 2503A-RBW70CW

DATE: 23 September, 2008

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Statement of Performance:

The BlackBerry® smartphone, model RBW71CW, part number CER-17673-002 Rev. 4, and accessories when configured and operated per RIM's operation instructions, 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:

Gurjeev Singh

Compliance Specialist

Date: 23 September 2008

Reviewed by:

Masud S. Attayi, P.Eng.

Team Lead, Regulatory Compliance

Date: 24 September 2008

Reviewed by:

Maurice Battler

Compliance Specialist

Date: 23 September 2008

Maurice Buttler

Approved by:

Paul G. Cardinal, Ph.D.

Director

Date: 26 September 2008

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A. Scope

This report details the results of compliance tests which were performed in accordance to the requirements of:

- o FCC CFR 47 Part 15, Subpart C, July 10, 2008
- o Industry Canada, RSS-210, Issue 7, June 2007, Low Power Licence-Exempt Radiocommunication Devices
- o Industry Canada, RSS-GEN, Issue 2, June 2007, General Requirements and Information for the Certification of Radiocommunication Equipment

B. Associated Documents

- 1. Document number RTS-1191-RBW71CW-01
- 2. Document number RTS-1191-RBW71CW-02
- 3. Cetecom test report number 4-3120-01-05_08

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 RIM Testing Services (RTS) EMI test facility, located at:

 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

CETECOM ICT Services GmbH Untertürkheimer Str. 6 – 10 D-66117 Saarbrücken Germany

The testing was performed from August 12 to September 12, 2008.

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The sample EUT included:

SAMPLE	MODEL	CER NUMBER	PIN
1	RBW71CW	CER-17673-002 Rev. 2	30479FB5
2	RBW71CW	CER-17673-002 Rev. 2	3047A3BE

To view the differences between CER-17673-001 Rev. 2 to CER-17673-001 Rev. 3, see document number RTS-1191-RBW71CW-01.

To view the differences between CER-17673-001 Rev. 3 to CER-17673-001 Rev. 4, see document number RTS-1191-RBW71CW-02.

The changes from Rev 2 to Rev 4 had no effect on the measurement results in this report.

BlackBerry® smartphone Accessories Tested

- 1) Folding Blade Charger, part number HDW-19129-001 with an output voltage of 5.0 volts dc, 700 mA and attached USB cable with a lead length of 1.80 metres.
- 2) Stereo Multi Button Headset, 3.5 mm, part number HDW-15765-001, 1.1 metres long.
- 3) External Battery Charger, (EBC), part number HDW-19137-001.
- 4) USB Y-Cable, part number HDW-19137-002, lead lengths of 26 cm and 11 cm.

D. Support Equipment Used for the Testing of the EUT

- Communication Tester, Rohde & Schwarz, model CMU 200, serial number 837493/073
- 2) DC Power Supply, H/P, model 6632B, serial number US37472178
- 3) Bluetooth Tester, Rohde & Schwarz, model CBT, serial number 100034
- 4) Bluetooth Tester, Rohde & Schwarz, model CBT, serial number 100370

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E. Test Results Chart

SPECIFICATION		TEST TYPE	Meets	TEST DATA
FCC CFR 47	IC	TEST TIPE	Requirements	APPENDIX
Part 15.207	RSS-GEN, 7.2.2	Conducted AC Line Emission	Yes	1
Part 15.209 Part 15.247	RSS-210, A8.5	Radiated Spurious Emissions and Radiated Band Edge Compliance	See test report 4-3120-01-05_08	-
Part 15.247(a)	RSS-210, A8.1	Bluetooth 20 dB Bandwidth	Yes	2
Part 15.247(a)	RSS-210, A8.1	Bluetooth Carrier Frequency Separation	Yes	2
Part 15.247(a)	RSS-210, A8.1d	Bluetooth Number of Hopping Frequencies	Yes	2
Part 15.247(a)	RSS-210, A8.1c	Bluetooth Time of Occupancy (Dwell Time)	Yes	2
Part 15.247(b)	RSS-210, A8.4	Bluetooth Maximum Peak Conducted Output Power	Yes	2
Part 15.247(c)	RSS-210, A8.5	Bluetooth Band-Edge Compliance of RF Conducted Emissions	Yes	2
Part 15.247(c)	RSS-210, A8.5	Bluetooth Spurious RF Conducted Emissions	Yes	2

F. Modifications to EUT

No modifications were required on the EUT.

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G. Summary of Results

1) AC LINE 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, PIN 3047A3BE was in battery charging mode. The input voltage was 120 V, 60 Hz.

The following test configuration was measured:

1. The BlackBerry[®] smartphone in Bluetooth Tx mode with the 3.5 mm Stereo Multi Button Headset and the External Battery Charger connected via the USB Y cable to the Folding Blade Charger.

The sample EUT's conducted emissions were compared with respect to the FCC CFR 47 Part 15, Subpart C and IC RSS-210 limits. The sample EUT had a worse case test margin of 18.14 dB below the limit at 0.173 MHz using the quasi peak detector with the External Battery Charger, test configuration.

See APPENDIX 1 for the test data

Measurement Uncertainty ±3.0 dB

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2) RADIATED EMISSIONS

See test report 4-3120-01-05 08.

Co-Location Measurements

The radiated emissions were measured up to 18 GHz for middle channels for simultaneous transmission in the following test configuration combinations: CDMA, PCS and Bluetooth. Both the horizontal and vertical polarizations were measured. The emissions due to different simultaneous transmission did not increase the amplitude of any emissions nor did it produce any new inter-modulation products as a result of mixing.

3) BLUETOOTH RF CONDUCTED EMISSIONS

a) 20 dB Bandwidth

The EUT met the requirements of the 20 dB bandwidth as per 47 CFR 15.247(a) and RSS-210. Low channel (0), middle channel (39) and high channel (78) were measured. The result includes both normal data rate and EDR. See APPENDIX 3 for the test data.

b) Carrier Frequency Separation

The EUT met the requirements of the carrier frequency separation as per 47 CFR 15.247(a) and RSS-210. Channel 38 to 39 was measured. The result includes both normal data rate and EDR. See APPENDIX 3 for the test data.

c) Number of Hopping Frequencies

The EUT met the requirements of the number of hopping frequencies as per 47 CFR 15.247(a) and RSS-210. The number of hopping channels measured was 79.

See APPENDIX 3 for the test data.

d) Time of Occupancy (Dwell Time)

The EUT met the requirements of the dwell time as per 47 CFR 15.247(a) and RSS-210. Low channel (0), middle channel (39) and high channel (78) were measured in DH1, DH3 and DH5 modes. Bluetooth was operating in frequency hopping (Euro/US) mode during the measurements. See APPENDIX 3 for the test data.

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e) Maximum Peak Conducted Output Power

The EUT met the requirements of the maximum peak conducted output power as per 47 CFR 15.247(b) and RSS-210. Low channel (0), middle channel (39) and high channel (78) were measured. The result includes both normal data rate and EDR.

See APPENDIX 3 for the test data.

f) Band-Edge Compliance of RF Conducted Emissions

The EUT met the requirements of the band-edge compliance of RF conducted emissions as per 47 CFR 15.247(c) and RSS-210. Channels 0 and 78 were measured in frequency hopping (Euro/US) mode and single frequency mode. The result includes both normal data rate and EDR.

See APPENDIX 3 for the test data.

g) Spurious RF Conducted Emissions

The EUT met the requirements of the spurious RF conducted emissions as per 47 CFR 15.247(c) and RSS-210. The frequency range measured was 10 MHz to 26 GHz. Low channel (0), middle channel (39) and high channel (78) were measured in single frequency mode and frequency hopping (Euro/US) mode. The result includes both normal data rate and EDR.

See APPENDIX 3 for the test data.

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H. Compliance Test Equipment Used

<u>UNIT</u>	MANUFACTURER	MODEL	<u>SERIAL</u> <u>NUMBER</u>	CAL DUE DATE (YY MM DD)	<u>USE</u>
EMI Receiver	Agilent	8546A	3942A00517	08-11-19	Conducted/Radiated Emissions
RF Filter Section	Agilent	85460A	3704A00481	08-11-19	Conducted/Radiated Emissions
Spectrum Analyzer	HP	8563E	3745A08112	09-09-22	RF Conducted Emissions
DC Power Supply	HP	6632B	US37472178	09-09-24	RF Conducted Emissions
Environment Monitor	Control Company	1870	230355189	08-12-11	RF Conducted Emissions
Temperature Probe	Control Company	15-077-21	51129471	09-05-12	Frequency Stability
Environmental Chamber	ESPEC Corp.	SH-240S1	91005607	N/R	Frequency Stability
Bluetooth Tester	Rohde & Schwarz	CBT	100034	08-12-06	RF Conducted Emissions
Signal Generator	Agilent	8648C	4037U03155	09-09-20	Frequency Stability
Power Meter	Aglient	N1911A	MY45100905	09-04-16	Frequency Stability
Power Sensor	Agilent	N1921A	SG45240281	09-04-16	Frequency Stability
Digital Multimeter	Hewlett Packard	34401A	US36042324	08-09-28	Conducted/Radiated Emissions
L.I.S.N.	Rohde & Schwarz	ENV216	100060	10-04-08	Conducted Emissions

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APPENDIX 1 _	. AC CONDUCT	ED EMISSIONS	TEST DATA/PI	OTS
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Bluetooth AC Conducted Emission Test Results

The measurements were performed by Andrew Fleming and Savtej Sandhu

Test Configuration 1

AC Power Line Conducted Emissions

The EUT met the requirements of the AC Power Line Conducted Emissions as per FCC CFR 47 Part 15, Subpart C and IC RSS-210.

The environmental test conditions were: 25°C Temperature

Pressure 1012 mb

Relative Humidity 38%

Date of test: September 12, 2008

Frequency	Line	Reading (QP)	Correction Factor	Corrected Reading (QP)	Limit (QP)	Limit (AV)	Margin (QP) Limits
(MHz)		(dBµV)	(dB)	(dB)	(dBµV)		(dB)
0.159	L1	36.61	10.03	46.64	65.52	55.52	-18.92
0.173	Ν	36.71	10.04	46.75	64.84	54.84	-18.14
0.204	L1	31.30	9.90	41.20	63.45	53.45	-22.25
0.209	N	32.77	9.79	42.57	63.26	53.26	-20.67
0.231	N	30.53	9.81	40.34	62.41	52.41	-22.11
0.240	L1	29.41	9.88	39.30	62.10	52.10	-22.80
0.263	L1	28.41	9.85	38.26	61.35	51.35	-23.05
0.371	Z	26.65	9.85	36.50	58.49	48.49	-21.99
0.470	L1	24.32	9.70	34.01	56.52	46.52	-22.52
0.830	N	23.56	9.72	33.28	56.00	46.00	-22.70
2.180	L1	21.40	9.56	30.96	56.00	46.00	-25.00

All other emission levels had a test margin of greater than 25 dB. Measurements were done with the quasi-peak detector.

See figure 1-1 and figure 1-2 for the measurement plot of the L1 and N lines of AC power line conducted emissions.

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Bluetooth AC Conducted Emission Test Graph 1

Test Configuration 1

Figure 1-1

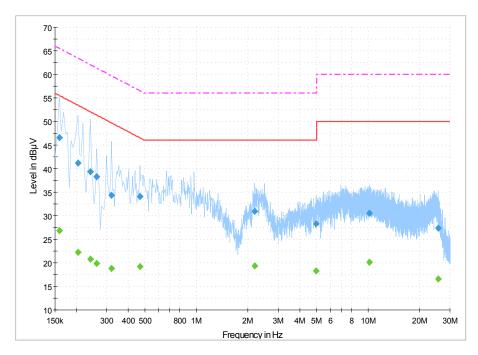
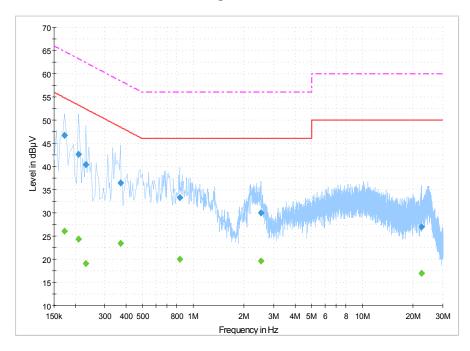


Figure 1-2



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APPENDIX 2.	 BLUETOOTH CONDUCTED 	FMISSIONS T	TEST DATA/PL(STC
AFFLINDIA 2 -	- BLUETOUTH CONDUCTED		ILSIDAIAIFL	JIO

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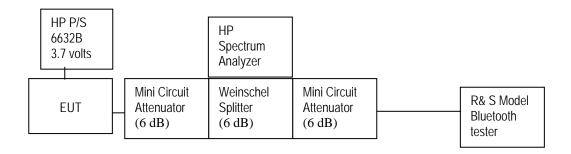
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Bluetooth power output from BlackBerry® smartphone PIN 30479FB5 was at maximum for all the recorded measurements shown below.

The measurements were performed by Maurice Battler.

Date of test: August 12, 2008

Test Setup Diagram



A reference offset of 12.4 dB was applied to the spectrum analyzer reference level for the attenuators and coaxial cable loss in the test circuit.

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20 dB Bandwidth

The EUT met the requirements of the 20 dB bandwidth as per 47 CFR 15.247(a) and RSS-210. Low channel (0), middle channel (39) and high channel (78) were measured. Bluetooth was operating in single frequency mode.

Using pattern type "Static PRBS" and packet type "DH5" during the measurements.

Bluetooth Channel	Limit (MHz)	Measured Level (MHz)
0	≤1.0	0.920
39	≤1.0	0.920
78	≤1.0	0.913

See figures 3-1 to 3-3 for the plots of the 20 dB bandwidth measurements.

The environmental test conditions were: Temperature 22°C

Pressure 1010 mb Relative Humidity 34%

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Figure 3-1: 20 dB Bandwidth

Figure 3-2: 20 dB Bandwidth
Single freg., Static PBRS, DH5

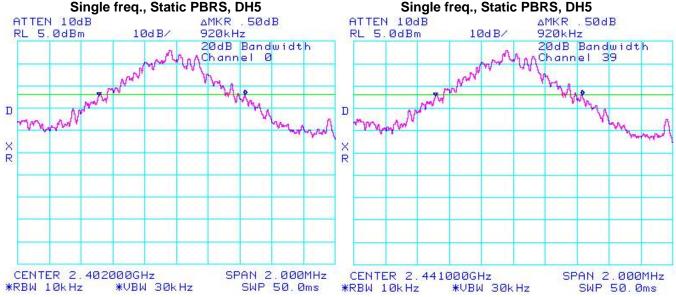


Figure 3-3: 20 dB Bandwidth
Single freq., Static PBRS, DH5



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*VBW 30kHz

*RBW 10kHz

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SWP 50.0ms

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Using Pattern type "Static PRBS" and packet type "3-DH5" during the measurements.

Bluetooth Channel	Limit (MHz)	Measured Level (MHz)
0	≤1.5	1.247
39	≤1.5	1.240
78	≤1.5	1.240

The environmental test conditions were: Temperature 22°C

Pressure 1010 mb Relative Humidity 34%

See figures 3-4 to 3-6 for the plots of the 20 dB bandwidth measurements.

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Figure 3-4: 20 dB Bandwidth

Figure 3-5: 20 dB Bandwidth
Single freq Static PRRS 3-Di

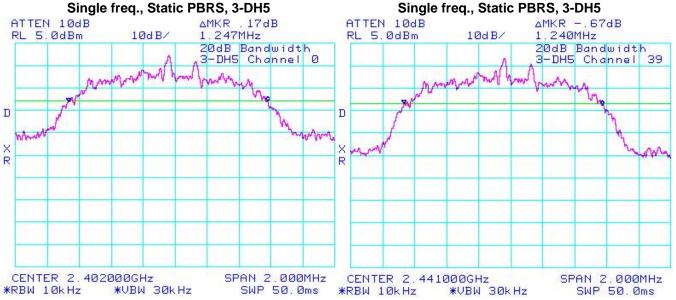
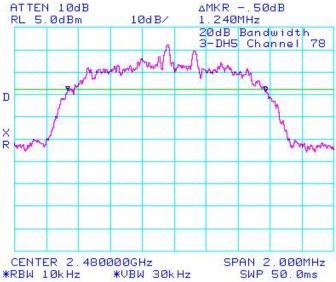


Figure 3-6: 20 dB Bandwidth





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Carrier Frequency Separation

The EUT met the requirements of the Carrier Frequency Separation as per 47 CFR 15.247(a) and RSS-210. Channel 38 to 39 was measured. Bluetooth was operating in frequency hopping (Euro/US) mode.

Using pattern type "Static PRBS" and packet type "DH5" during the measurements.

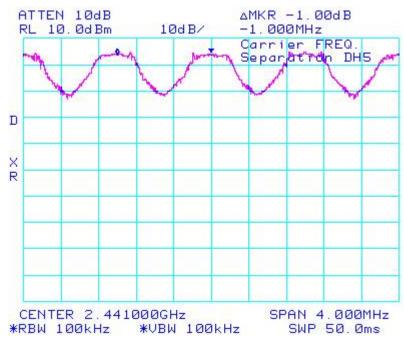
Bluetooth Channels	Limit (MHz)	Measured Level (MHz)
38 to 39	≥ 0.025 or 20 dB bandwidth	1.000

The environmental test conditions were: Temperature 22°C Pressure 1010 mb

Relative Humidity 34%

See figure 3-7 for the plot of the Carrier Frequency Separation measurement.

Figure 3-7: Carrier Frequency Separation, Freq. Hopping, Static PBRS, DH5, Channels 38 to 39



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Using Pattern type "Static PRBS" and packet type "3-DH5" during the measurements.

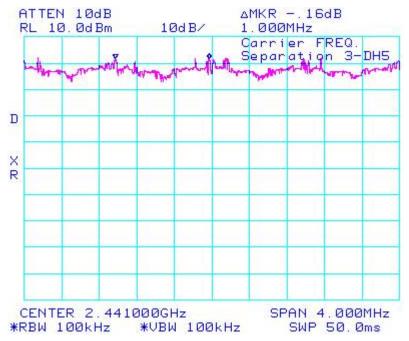
Bluetooth Channels	Limit (MHz)	Measured Level (MHz)	
38 to 39	≥ 0.025 or 20 dB bandwidth	1.000	

The environmental test conditions were: Temperature 22°C

Pressure 1010 mb Relative Humidity 34%

See figure 3-8 for the plot of the Carrier Frequency Separation measurement.

Figure 3-8: Carrier Frequency Separation, Freq. Hopping, Static PBRS, 3-DH5, Channels 38 to 39



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Number of Hopping Frequencies

The EUT met the requirements of the number of hopping frequencies as per 47 CFR 15.247(a) and RSS-210. Bluetooth was operating in frequency hopping (Euro/US) mode.

Using pattern type "Static PRBS" and packet type "DH5" during the measurements.

Limit (CH)	Number of Hopping Frequencies (CH)	
≥75	79	

The environmental test conditions were: Temperature 22°C

Pressure 1010 mb Relative Humidity 34%

See figures 3-9 to 3-12 for the plots of the number of hopping frequencies.

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Figure 3-6: Number of Hopping Frequencies Figure 3-7: Number of Hopping Frequencies Static PBRS, DH5 Static PBRS, DH5 ATTEN 20dB ATTEN 20dB 10dB/ RL 15. 0dBm RL 15. Ød Bm 10dB/ DH5 Number of Hopping FREQ. DH5 Number of Hopping FREQ. D D XR R

START 2.42000GHz

*VBW 100kHz

*RBW 100kHz

STOP 2.44000GHz

SWP 50.0ms

STOP 2.42000GHz

SWP 50.0ms

START 2.40000GHz

*VBW 100kHz

*RBW 100kHz

Figure 3-8: Number of Hopping Frequencies Figure 3-9: Number of Hopping Frequencies Static PBRS, DH5 Static PBRS, DH5 ATTEN 20dB ATTEN 20dB RL 15. Ød Bm RL 15. Ød Bm 10dB/ 10dB/ DH5 Number DH5 Number of Hopping FREQ. Hopping FREQ D XR R START 2.44000GHz STOP 2.46000GHz START 2.46000GHz STOP 2.48200GHz *RBW 100kHz *VBW 100kHz SWP 50.0ms *RBW 100kHz *VBW 100kHz SWP 50.0ms

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Time of Occupancy (Dwell Time)

The EUT met the requirements of the time of occupancy (dwell time) as per 47 CFR 15.247(a) and RSS-210. Low channel (0), middle channel (39) and high channel (78) were measured in packet types <u>DH1</u>, <u>DH3</u> and <u>DH5</u>. Bluetooth was operating in frequency hopping (Euro/US) mode during the measurements. The frequency hopping is 1600 hops per second for a dwell time of 625 µsec for 79 channels.

A DH1 packet needs one time slot for transmitting and one time slot for receiving. The frequency hopping is 800 hops per second with 79 channels which is 10.127 times per second. As per 15.247(a) (iii) "The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed". Therefore for 31.6 seconds (79x0.4) there are 320.0 times of appearance.

A DH3 packet needs one time slot for transmitting and one time slot for receiving. The frequency hopping is 400 hops per second with 79 channels which is 5.06 times per second. Therefore for 31.6 seconds there are 159.9 times of appearance.

A DH5 packet needs one time slot for transmitting and one time slot for receiving. The frequency hopping is 266.7 hops per second with 79 channels which is 3.38 times per second. Therefore for 31.6 seconds there are 106.8 times of appearance.

Bluetooth Channel	Mode	Tx Time (ms)	Dwell Time/31.6 sec. (msec.)	Limit (msec.)	Margin (msec.)
0	DH1	0.5157	0.5157 x 320.0 = 165.02	400	234.98
39	DH1	0.5128	0.5128 x 320.0 = 164.10	400	235.90
78	DH1	0.5298	0.5298 x 320.0 = 169.54	400	230.46
0	DH3	1.7853	1.7853 x 159.9 = 285.47	400	114.53
39	DH3	1.7767	1.7767 x 159.9 = 284.09	400	115.91
78	DH3	1.7767	1.7767 x 159.9 = 284.09	400	115.91
0	DH5	2.9900	2.9900 x 106.8 = 319.33	400	80.67
39	DH5	3.0200	3.0200 x 106.8 = 322.54	400	77.46
78	DH5	3.0100	3.0100 x 106.8 = 321.47	400	78.53

The environmental test conditions were: Temperature 22°C

Pressure 1005 mb Relative Humidity 41%

See figures 3-13 to 3-21 for the plots of the dwell time.

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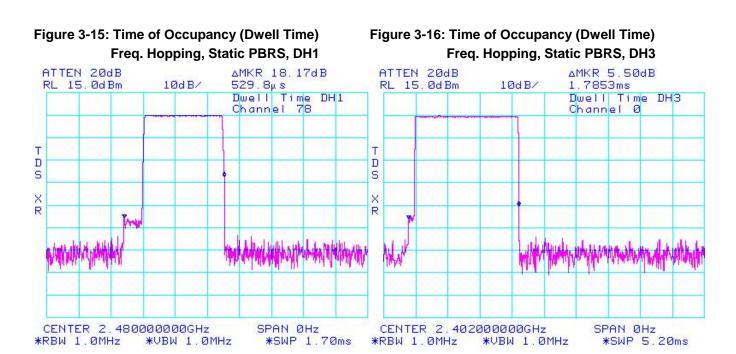
Figure 3-13: Time of Occupancy (Dwell Time) Figure 3-14: Time of Occupancy (Dwell Time) Freq. Hopping, Static PBRS, DH1 Freq. Hopping, Static PBRS, DH1 ΔMKR -11.00dB ATTEN 20dB ΔMKR 4.67dB ATTEN 20dB 515.7µs Dwell Time DH1 RL 15. 0d Bm 10dB/ 512.8µs RL 15. 0d Bm 10dB/ Dwell Time DH1 Channel 39 Channel 0 T D D S S X X R R SPAN ØHz CENTER 2.402000000GHz SPAN ØHz CENTER 2.441000000GHz *RBW 1.0MHz *SWP 1.70ms

*UBW 1.0MHz

*RBW 1.0MHz

*VBW 1.0MHz

*SWP 1.70ms



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Figure 3-17: Time of Occupancy (Dwell Time) Figure 3-18: Time of Occupancy (Dwell Time) Freq. Hopping, Static PBRS, DH3 Freq. Hopping, Static PBRS, DH3 ATTEN 20dB ATTEN 20dB ΔMKR 21.33dB ΔMKR 21.33dB RL 15. Ød Bm 1.7767ms RL 15. Ød Bm 10dB/ 1.7767ms 10dB/ Dwell Time DH3 Channel 39 Dwell Time DH3 Channel 39 Т D D S S XR X R SPAN ØHz SPAN ØHz CENTER 2.441000000GHz CENTER 2.441000000GHz

*RBW 1.0MHz

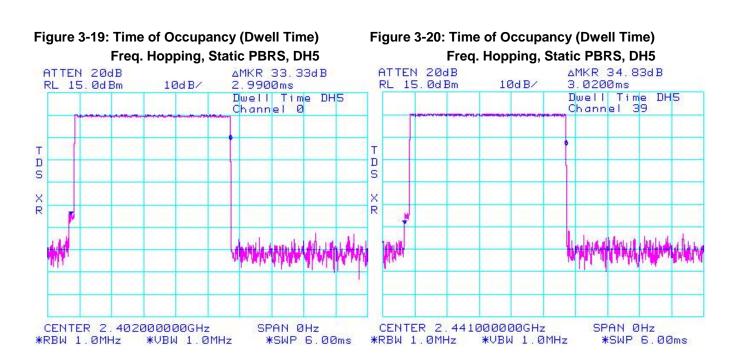
*VBW 1.0MHz

*SWP 5.20ms

*SWP 5.20ms

*RBW 1.0MHz

*VBW 1.0MHz

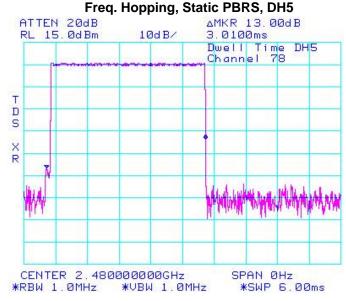


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Figure 3-21: Time of Occupancy (Dwell Time)



Maximum Peak Conducted Output Power

The EUT met the requirements of the maximum peak conducted output power of class 2 as per 47 CFR 15.247(b) and RSS-210. Low channel (0), middle channel (39) and high channel (78) were measured. Bluetooth was operating in single frequency mode during the measurements. A reference offset of 12.4 dB was applied to the spectrum analyzer reference level for the coaxial cable loss and attenuators in the test circuit.

Using pattern type "Static PRBS" and packet type "DH5" during the measurements.

Bluetooth Channel	Measured Level (dBm)	Class 1 Limit (dBm)
0	4.83	0.0 to 20.0
39	5.00	0.0 to 20.0
78	5.33	0.0 to 20.0

The environmental test conditions were: Temperature 22°C Pressure 1010 mb

Relative Humidity 34%

See figures 3-22 to 3-24 for the plots of the maximum peak conducted output power.

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Figure 3-22: Max. Peak Conducted Output Power Single Freq., Static PBRS, DH5

Figure 3-23: Max. Peak Conducted Output Power Single Freq., Static PBRS, DH5

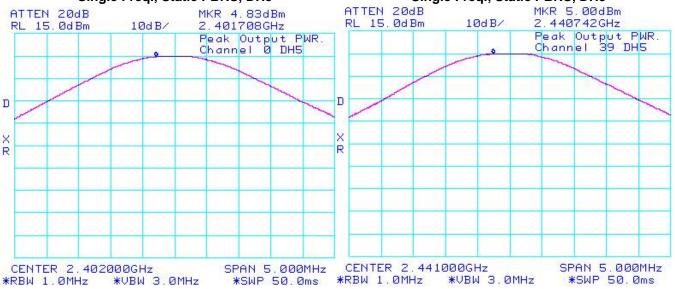
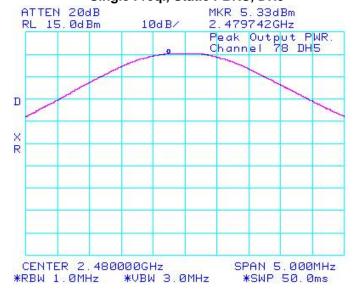


Figure 3-24: Max. Peak Conducted Output Power Single Freq., Static PBRS, DH5



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Using Pattern type "Static PRBS" and packet type "3-DH5" during the measurements.

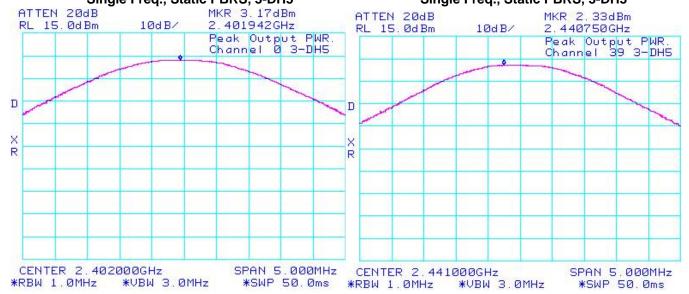
Bluetooth Channel	Measured Level (dBm)	Class 1 Limit (dBm)
0	3.17	0.0 to 20.0
39	2.33	0.0 to 20.0
78	1.83	0.0 to 20.0

The environmental test conditions were: Temperature 22°C

Pressure 1010 mb Relative Humidity 34%

See figures 3-25 to 3-27 for the plots of the maximum peak conducted output power.

Figure 3-25: Max. Peak Conducted Output Power
Single Freq., Static PBRS, 3-DH5
Figure 3-26: Max. Peak Conducted Output Power
Single Freq., Static PBRS, 3-DH5



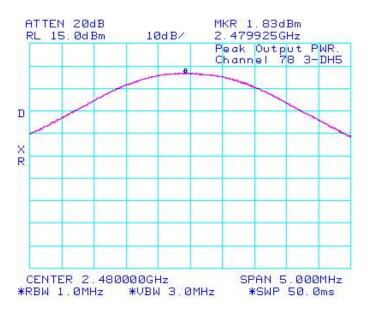
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Figure 3-27: Max. Peak Conducted Output Power Single Freq., Static PBRS, 3-DH5



Band Edge Compliance

The EUT met the requirements of the band edge compliance as per 47 CFR 15.247(c) and RSS-210. Low channel (0) and high channel (78) were measured. Bluetooth was operating in single frequency and hopping mode.

Using pattern type "Static PRBS" and packet type "DH5" during the measurements.

Bluetooth Channel	Operating Mode	Measured Level (dBc)	Limit (dBc)	Margin (dB)
0	Single Frequency	-27.33	-20	-7.33
78	Single Frequency	-31.50	-20	-11.50
0 - 78	Hopping	-27.17	-20	-7.17
0 - 78	Hopping	-30.50	-20	-10.50

The environmental test conditions were: Temperature 22°C Pressure 1008 mb

Relative Humidity 34%

See figures 3-28 to 3-31 for the plots of the band edge compliance measurements.

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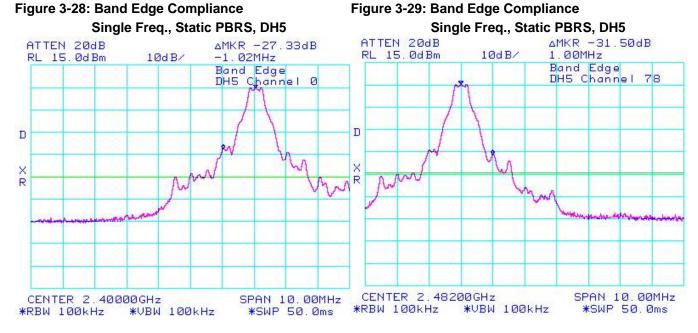


Figure 3-30: Band Edge Compliance Figure 3-31: Band Edge Compliance Freq. Hopping, Static PBRS, DH5 Freq. Hopping, Static PBRS, DH5 ATTEN 20dB ATTEN 20dB ΔMKR -27.17dB ΔMKR -30.50dB RL 15. Ød Bm 10dB/ -1.00MHz RL 15. Ød Bm 10dB/ 1.03MHz Band Edge DH5 Channel 78 Band Edge DH5 Channel 0 D D XR R CENTER 2.40000GHz SPAN 10.00MHz CENTER 2.48200GHz SPAN 10.00MHz

*RBW 100kHz

*VBW 100kHz

*SWP 50.0ms

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*SWP 50.0ms

*RBW 100kHz

*VBW 100kHz

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Using pattern type "Static PRBS" and packet type "3-DH5" during the measurements.

Bluetooth Channel	Operating Mode	Measured Level (dBc)	Limit (dBc)	Margin (dB)
0	Single Frequency	-26.00	-20	-6.00
78	Single Frequency	-38.00	-20	-18.00
0 - 78	Hopping	-27.00	-20	-7.00
0 - 78	Hopping	-40.00	-20	-20.00

The environmental test conditions were: Temperature 22°C

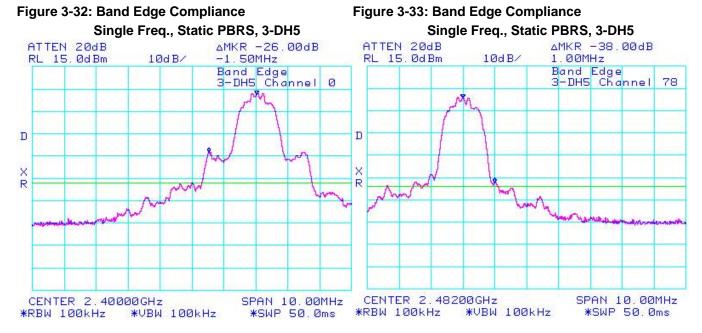
Pressure 1008 mb Relative Humidity 34%

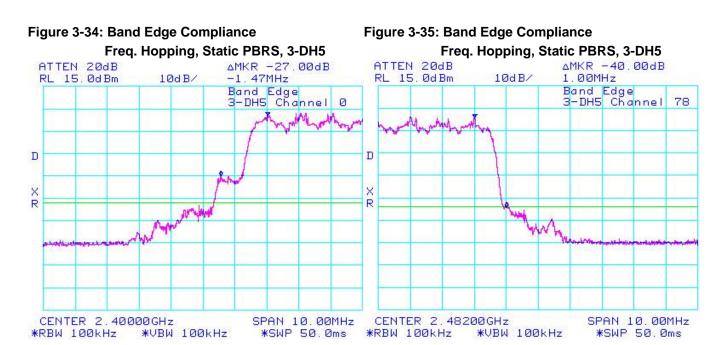
See figures 3-32 to 3-35 for the plots of the band edge compliance measurements.

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Spurious RF Conducted Emissions

The EUT met the requirements of the spurious RF conducted emissions as per 47 CFR 15.247(c) and RSS-210. Low channel (0), mid channel (39) and high channel (78) were measured. Bluetooth was operating in single frequency and hopping mode. A reference offset of 12.4 dB was applied to the spectrum analyzer reference level for the attenuators and coaxial cable loss in the test circuit.

Using pattern type "Static PRBS" and packet type "DH5" during the measurements.

Bluetooth Channel	Channel Power (dBm)	Max. Measured Level (dBm)	Max. Measured Level from carrier (dBc)	Limit (dBc)
0	4.83	-28.83	-33.66	-20
39	5.00	-30.67	-35.67	-20
78	5.33	-35.00	-40.33	-20
Hopping mode	4.83	-31.83	-36.66	-20

The environmental test conditions were: Temperature 22°C

Pressure 1008 mb Relative Humidity 34%

See figures 2-36 to 2-39 for the plots of the spurious RF conducted emissions.

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Figure 2-36: Spurious RF Conducted Emissions

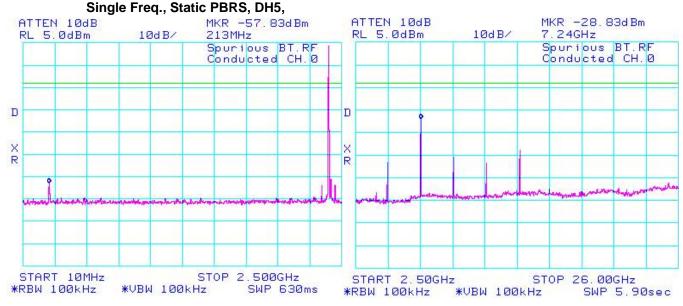
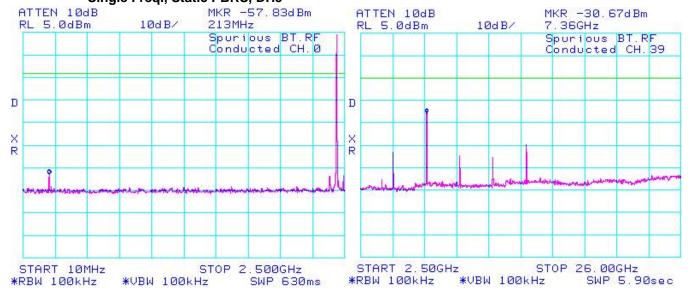


Figure 2-37: Spurious RF Conducted Emissions Single Freq., Static PBRS, DH5



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Figure 2-38: Spurious RF Conducted Emissions Single Freq., Static PBRS, DH5

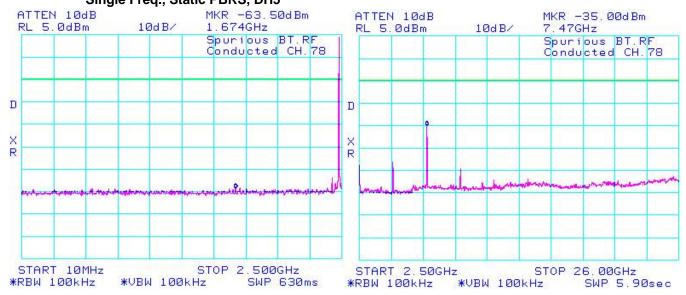
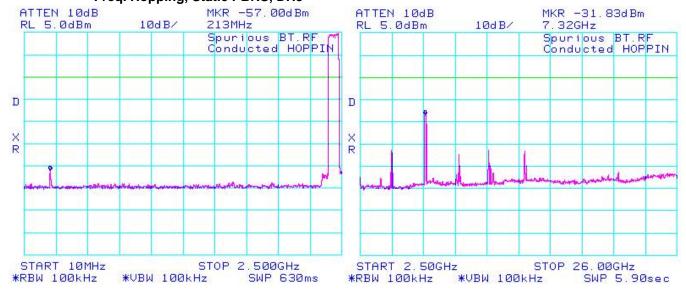


Figure 2-39: Spurious RF Conducted Emissions Freq. Hopping, Static PBRS, DH5



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Using pattern type "Static PRBS" and packet type "3-DH5" during the measurements.

Bluetooth Channel	Channel Power (dBm)	Max. Measured Level (dBm)	Max. Measured Level from carrier (dBc)	Limit (dBc)
0	3.17	-55.83	-59.00	-20
39	2.33	-53.67	-56.00	-20
78	1.83	-55.17	-57.00	-20
Hopping mode	1.83	-55.33	-57.16	-20

The environmental test conditions were: Temperature 22°C

Pressure 1008 mb Relative Humidity 34%

See figures 3-40 to 3-43 for the plots of the spurious RF conducted emissions.

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Figure 3-40 : Spurious RF Conducted Emissions Single Freq., Static PBRS, 3-DH5

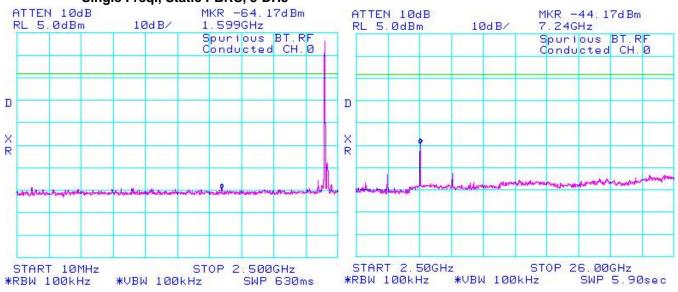
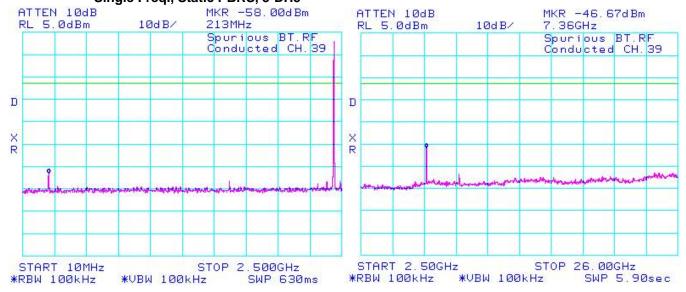


Figure 3-41: Spurious RF Conducted Emissions Single Freq., Static PBRS, 3-DH5



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Figure 3-42: Spurious RF Conducted Emissions

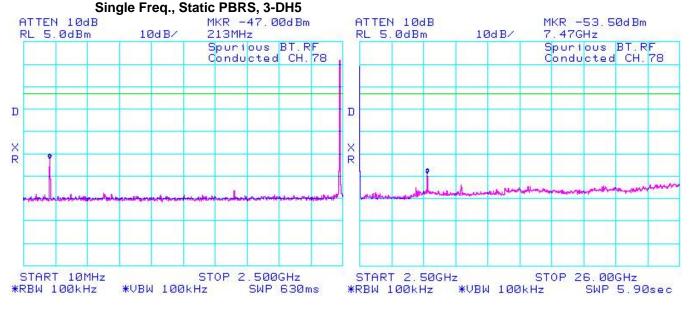
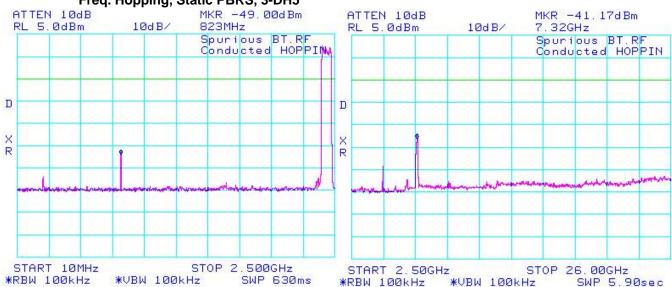


Figure 3-43 : Spurious RF Conducted Emissions Freq. Hopping, Static PBRS, 3-DH5



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