

TEST REPORT

REPORT NUMBER: I09GE6624-FCC-BT

ON

Sort of equipment: GSM/GPRS/UMTS mobile phone
Type of designation: Sonim XP2.10 Spirit
Manufacturer: Sonim Technologies, Inc
Type name: P32B003AA

ACCORDING TO

**FCC Part 15, FREQUENCY Hopping Spread Spectrum
Transceiver**

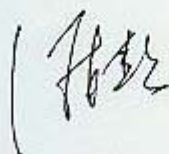
PART 15 subpart C 15.247

China Telecommunication Technology Labs.

Month date, year

Sep, 11, 2009

Signature



**He Guili
Director**

FCC ID: WYPP32B003AA

Report Date: 2009-9-11

Test Firm Name: China Telecommunication Technology Labs

Registration Number: 840587

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC Parts 15, subpart C 15.247. The sample tested was found to comply with the requirements defined in the applied rules.

CONTENTS

1 GENERAL INFORMATION	4
1.1 NOTES	4
1.2 TESTERS	5
1.3 TESTING LABORATORY INFORMATION	6
1.4 DETAILS OF APPLICANT OR MANUFACTURER	7
2 TEST ITEM	8
2.1 GENERAL INFORMATION	8
2.2 OUTLINE OF EUT	8
2.3 MODIFICATIONS INCORPORATED IN EUT	8
2.4 EQUIPMENT CONFIGURATION	8
2.5 OTHER INFORMATION	8
3 SUMMARY OF TEST RESULTS	9
4 TEST RESULTS	10
4.1 PEAK POWER	10
4.2 BAND EDGES (CONDUCTED)	13
4.3 BAND EDGES MEASUREMENT (RADIATED)	16
4.4 FREQUENCY SEPARATION	21
4.5 NUMBER OF HOPPING FREQUENCY	24
4.6 TIME OF OCCUPANCY	26
4.7 SPURIOUS MEASUREMENT (CONDUCTED)	29
4.8 RADIATED SPURIOUS MEASUREMENT	32
4.9 POWER LINE CONDUCTED EMISSIONS	34
ANNEX A EUT PHOTOS	36
ANNEX B DEVIATIONS FROM PRESCRIBED TEST METHODS	42

1 General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC Parts 15, subpart C 15.247.

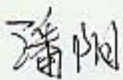
The test results of this test report relate exclusively to the item(s) tested as specified in section 2.


The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex B.

China Telecommunication Technology Labs.(CTTL) authorizes the applicant or manufacturer (see section 1.4) to reproduce this report provided, and the test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of director of CTTL Mr. He Guili.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. CTTL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

1.2 Testers

Name: Pan Yang
Position: Engineer
Department: Department of EMC test
Signature: 

Name: Li Dongjin
Position: Engineer
Department: Department of EMC test
Signature: 

Editor of this test report:

Name: Li Wang
Position: Engineer
Department: Department of EMC test
Date: 2009-9-11
Signature: 

Technical responsibility for area of testing:

Name: Zou Dongyi
Position: Manager
Department: Department of EMC test
Date: 2009-9-11
Signature: 

1.3 Testing Laboratory information

1.3.1 Location

Name: China Telecommunication Technology Labs.
Address: No. 11, Yue Tan Nan Jie, Xi Cheng District
BEIJING
P. R. CHINA, 100083
Tel: +86 10 68094053
Fax: +86 10 68011404
Email: emc@chinattl.com

1.3.2 Details of accreditation status

Accredited by: China National Accreditation for Laboratory (CNAL)
Registration number: CNAL Registration No.L0570
Standard: ISO/IEC 17025:2005

1.3.3 Test location, where different from section 1.3.1

Name: -----
Street: -----
City: -----
Country: -----
Telephone: -----
Fax: -----
Postcode: -----

1.4 Details of applicant or manufacturer

1.4.1 Applicant

Name: Sonim Technologies, Inc
Address: 1875 S. Grant Street, Suite 620, San Mateo, CA 94402
Country: USA
Telephone: +1 650 504 4411
Fax: +1 650 378 8190
Contact: Jasen Kolev
Telephone: +1 650 504 4411
Email: jasen@sonimtech.com

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name: ----
Address: ----

1.4.3 Manufactory (if different from applicant in section 1.4.1)

Name: ----
Address: ----

2 Test Item

2.1 General Information

Manufacturer: Sonim Technologies, Inc
Name: GSM/GPRS/UMTS mobile phone
Model Number: Sonim XP2.10 Spirit
Serial Number: --
Production Status: Product
Receipt date of test item: 2009-7-9

2.2 Outline of EUT

EUT is a GSM/GPRS/UMTS mobile phone.

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	handset	Sonim Technologies, Inc	Sonim XP2.10 Spirit	--	None
B	adapter	Dee Van Enterprise Co.,LTD.	DSA-5W-05 FEU 051055	--	None
C	battery	XWODA Electronic Co., Ltd	XP2-0001100	--	None
D	Earphone	MINAMI ACOUSTICS LIMITED	ME-816B6	--	None

Cables:

Item	Cable Type	Manufacturer	Length	Shield	Quantity	Remarks
1	DC cable on Adapter	Unknown	1.8m	No	1	None

2.5 Other Information

Hardware version: A
Software version: 7.0.0-07.0-1

3 Summary of Test Results

A brief summary of the tests carried out is shown as following.

	Name of Test	Result
1、	Peak power	Pass
2、	Band edge (conducted)	Pass
3、	Band edge (radiated)	Pass
4、	Frequency separation	Pass
5、	Number of hopping frequency	Pass
6、	Time of occupancy	Pass
7、	Spurious emission (conducted)	Pass
8、	Spurious emission (radiated)	Pass
9、	Power line Conducted Emissions	Pass
Note: none		

4 Test Results

4.1 Peak power

Specifications:	15.247 (b)(3)(i),(ii)and(iii)					
Date of Tests	2009-8-31					
Test conditions:	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	Fix channel transmit					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup:

The Universal Radio Communications Tester was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.

Test Results:

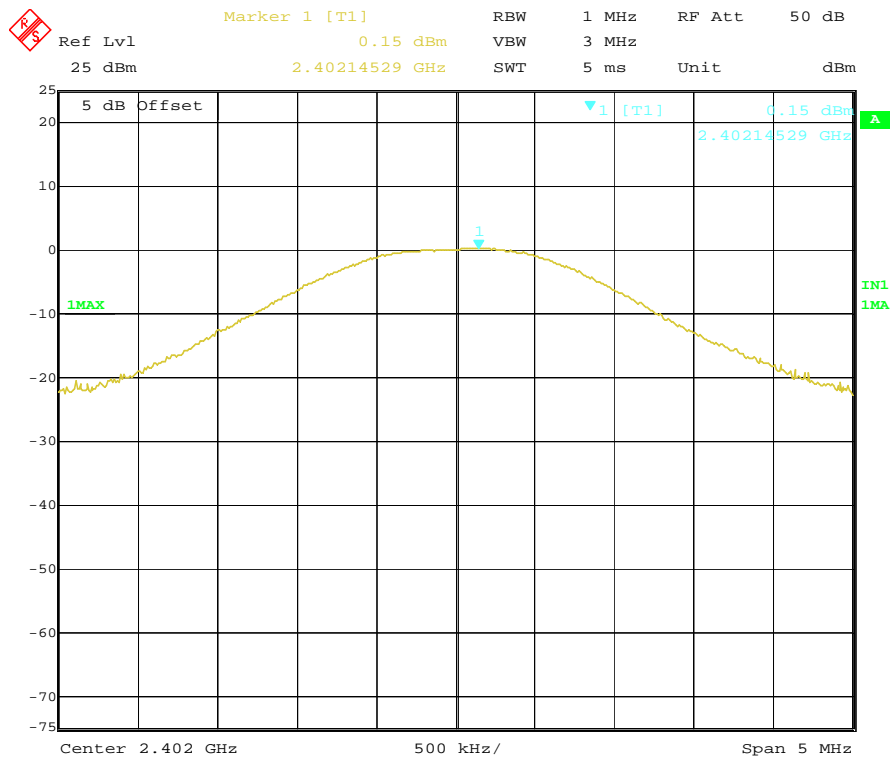
channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Result
0	2402	0.15	30	Pass
39	2441	0.04	30	Pass
78	2480	-0.37	30	pass

FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

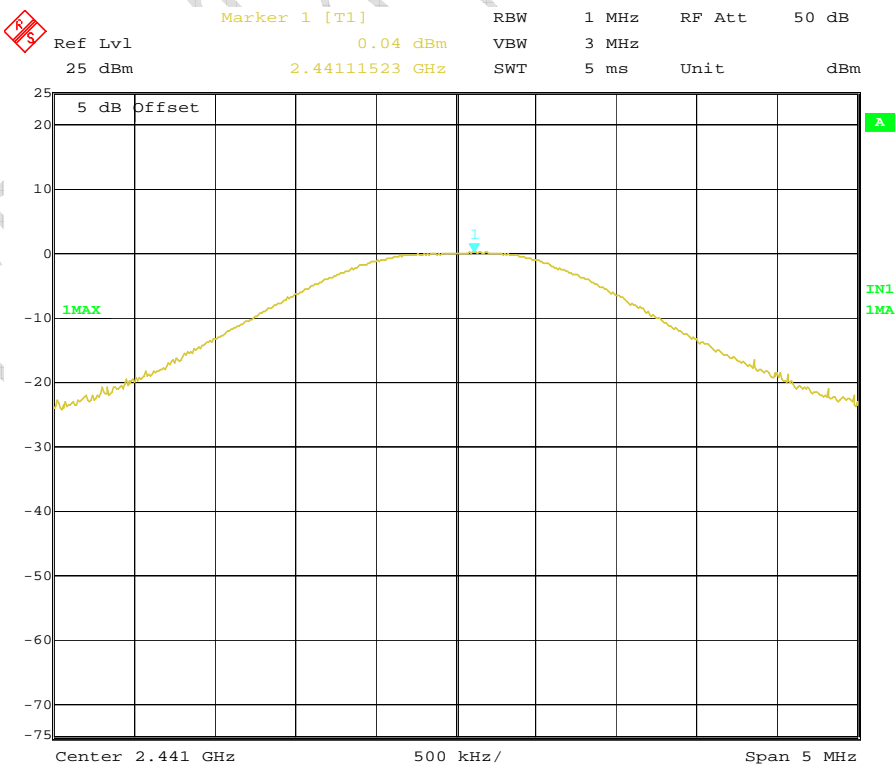
Test Data:

Channel 0:



Date: 31.AUG.2009 16:05:29

Channel 39



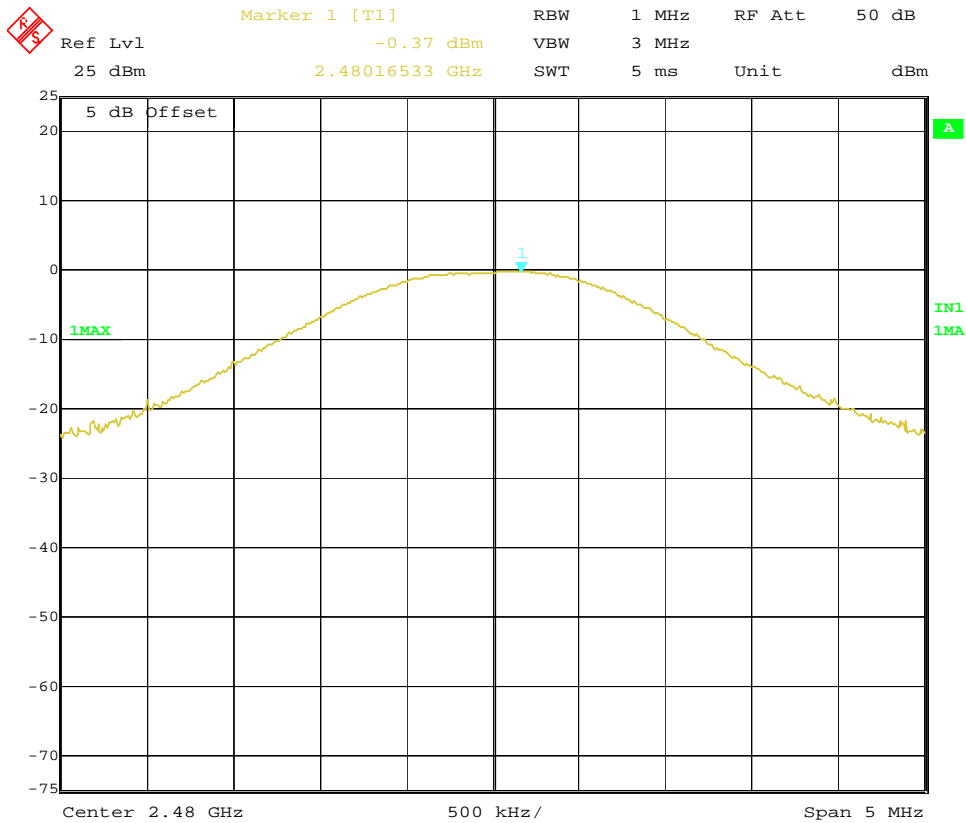
Date: 31.AUG.2009 11:29:22



FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Channel 78



Date: 31.AUG.2009 11:30:21

Copyright

4.2 Band edges (conducted)

Specifications:	15.247 (d)					
Date of Tests	2009-8-31					
Test conditions:	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	Fix channel transmit					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup:

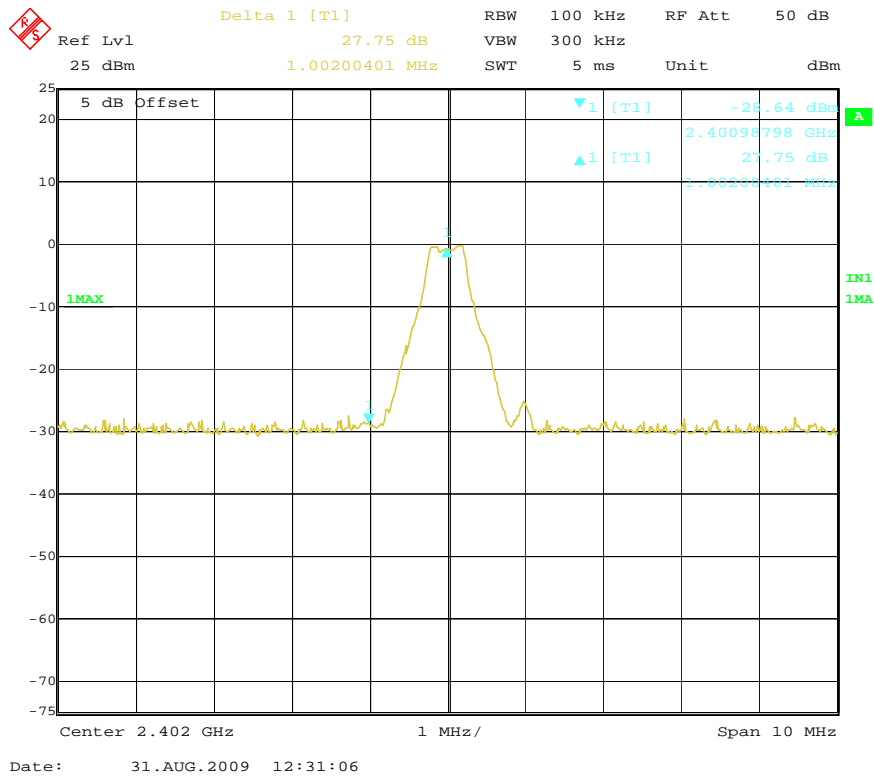
The Universal Radio Communications Tester was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.

FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

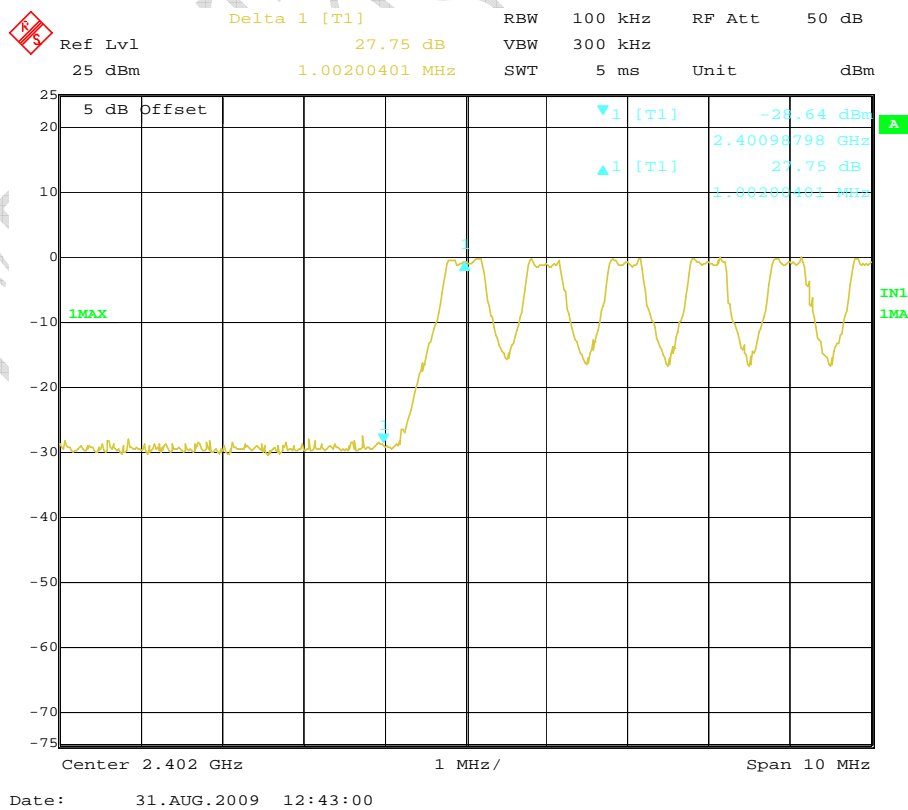
REPORT NO.: I09GE6624-FCC-BT

Test data:

Channel 0, fixed mode, left band-edge



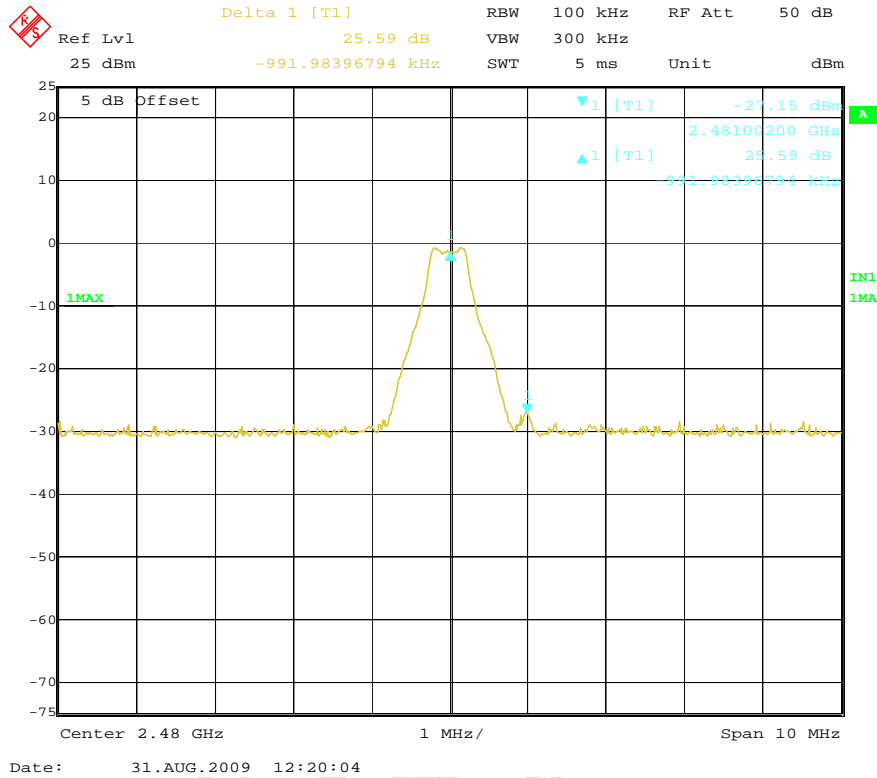
Hopping mode, left band-edge



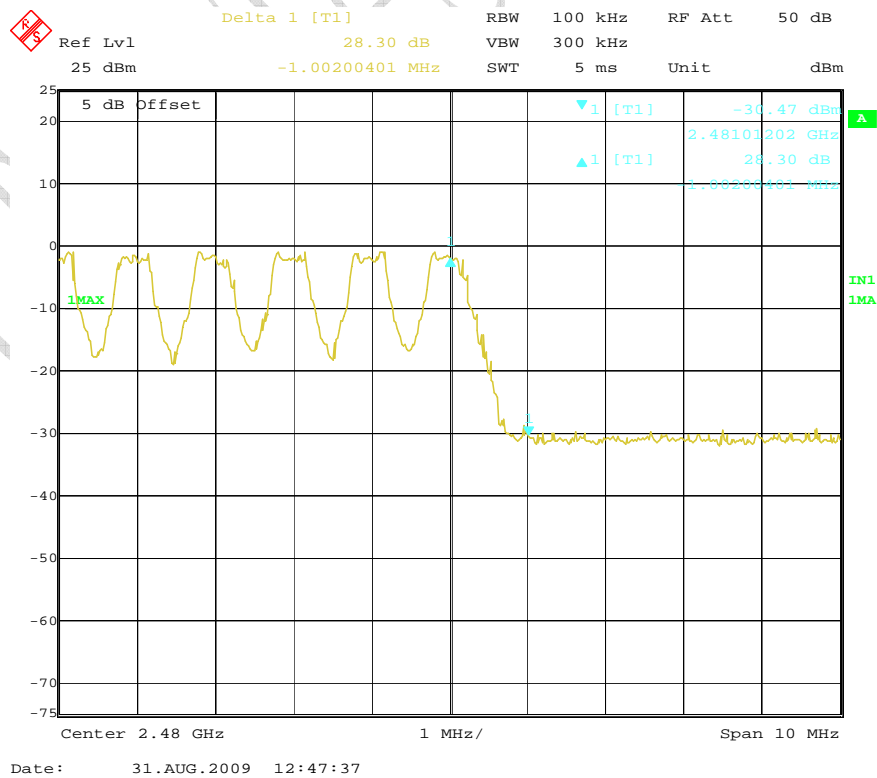
FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Channel 78, fixed mode, right band-edge



Hopping mode, right band-edge



4.3 Band edges measurement (Radiated)

Specifications:	15.247 (c); 15.205(a) and 15.209(a)					
Date of Tests	2009-9-7					
Test conditions:	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	Fix channel transmit					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
7330	Horn Antenna	R/S	HF906	100037	2010-01-09	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3m	--	2010-11-16	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup:

The EUT was placed in an anechoic chamber. The Universal Radio Communications Tester was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a Horn antenna.

Test method:

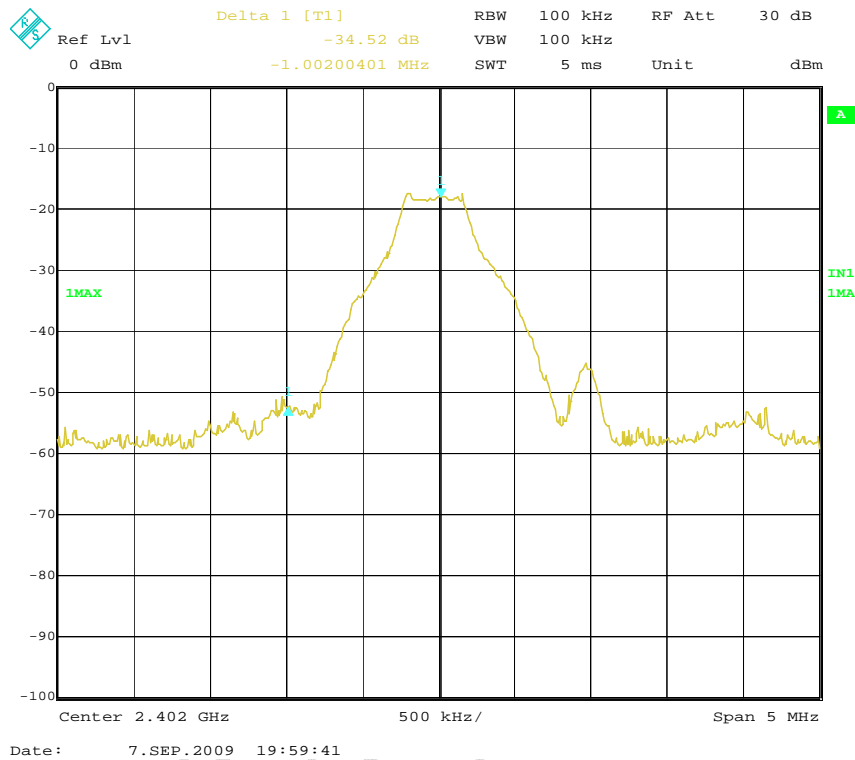
Use peak and average detector to measure band edges.

Test should be performing under Vertical and Horizontal modes.

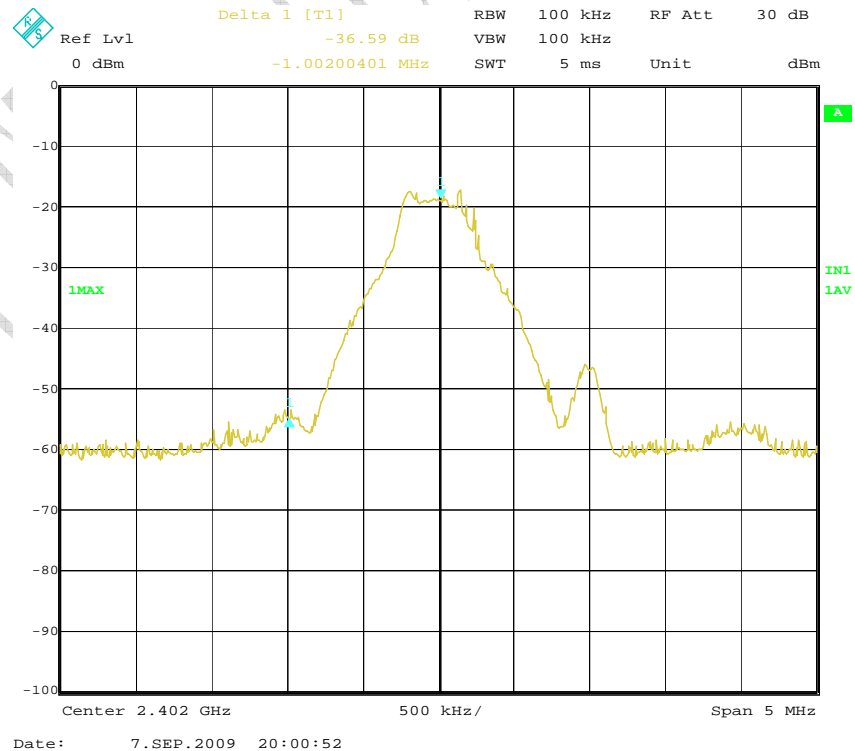
FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Test data:
Channel 0
Vertical
Peak mode:



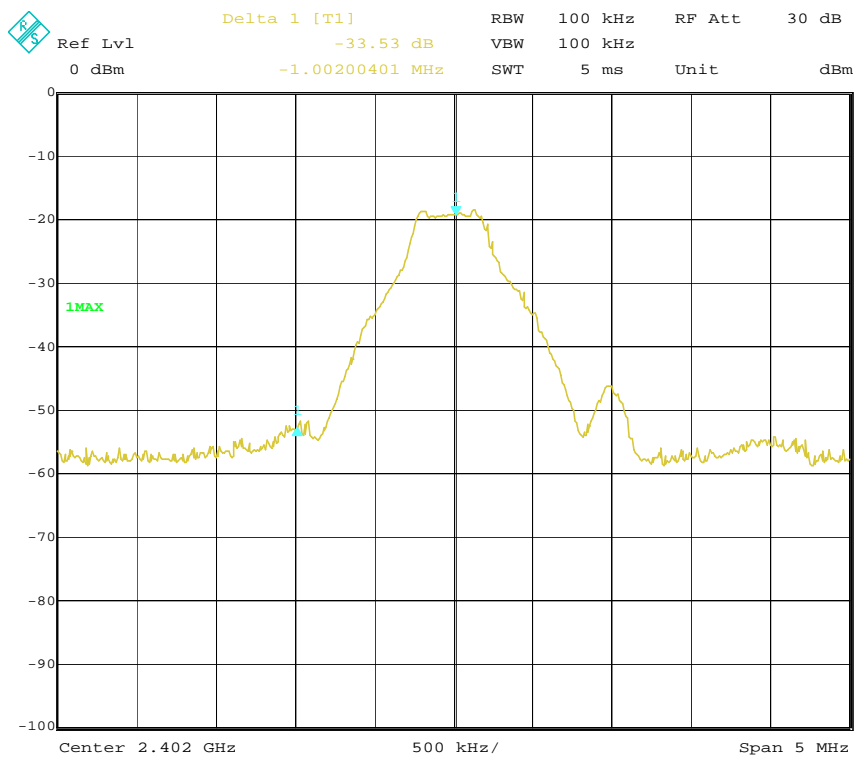
Average mode:



FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

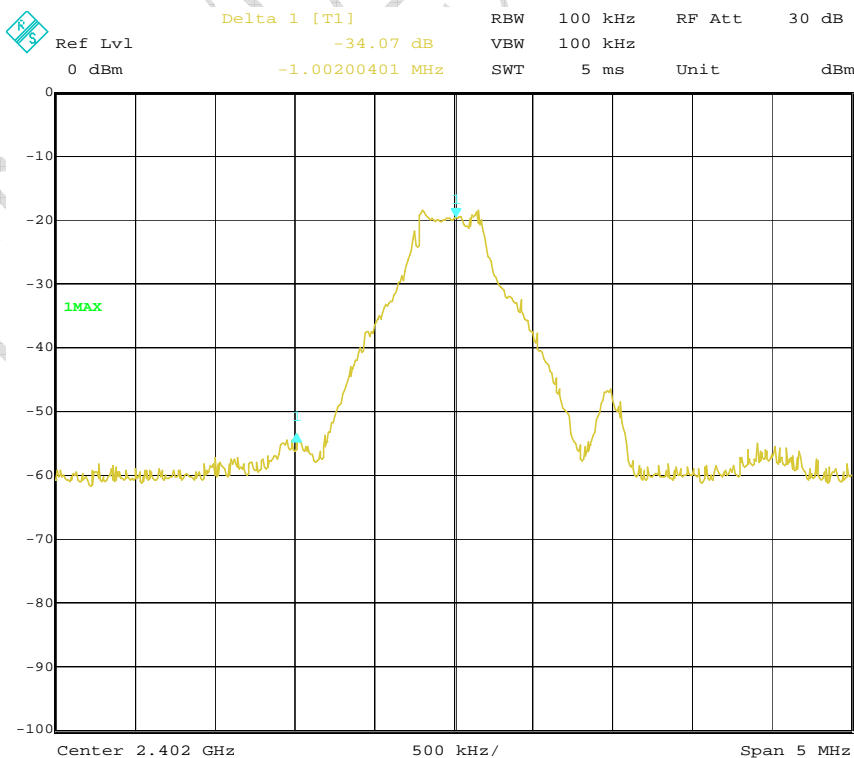
REPORT NO.: I09GE6624-FCC-BT

Channel 0
Horizontal
Peak mode:



Date: 7.SEP.2009 19:51:00

Average mode:



Date: 7.SEP.2009 19:53:05

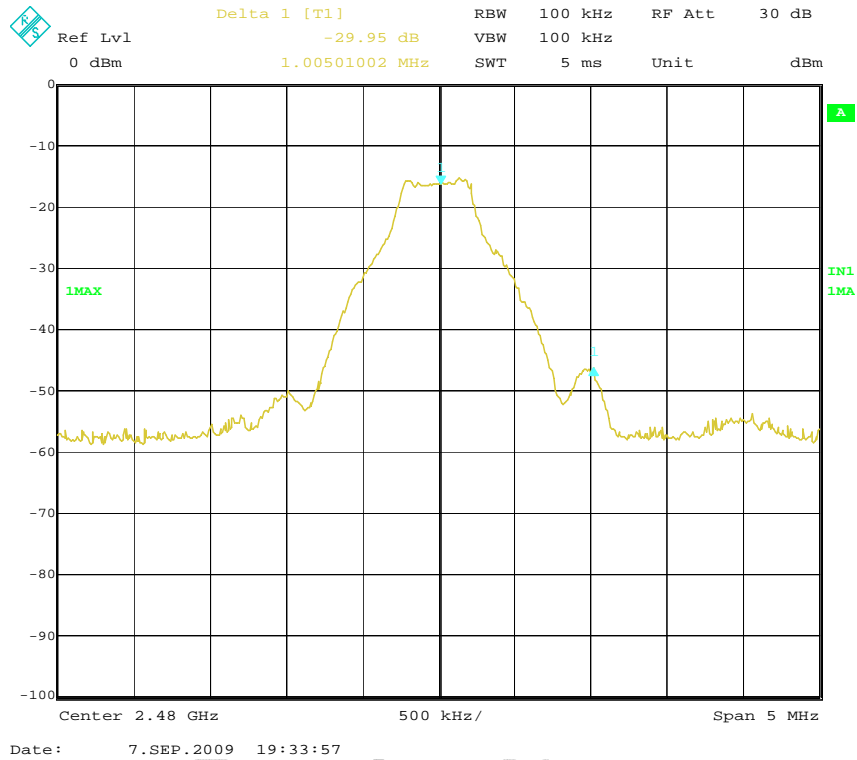
FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

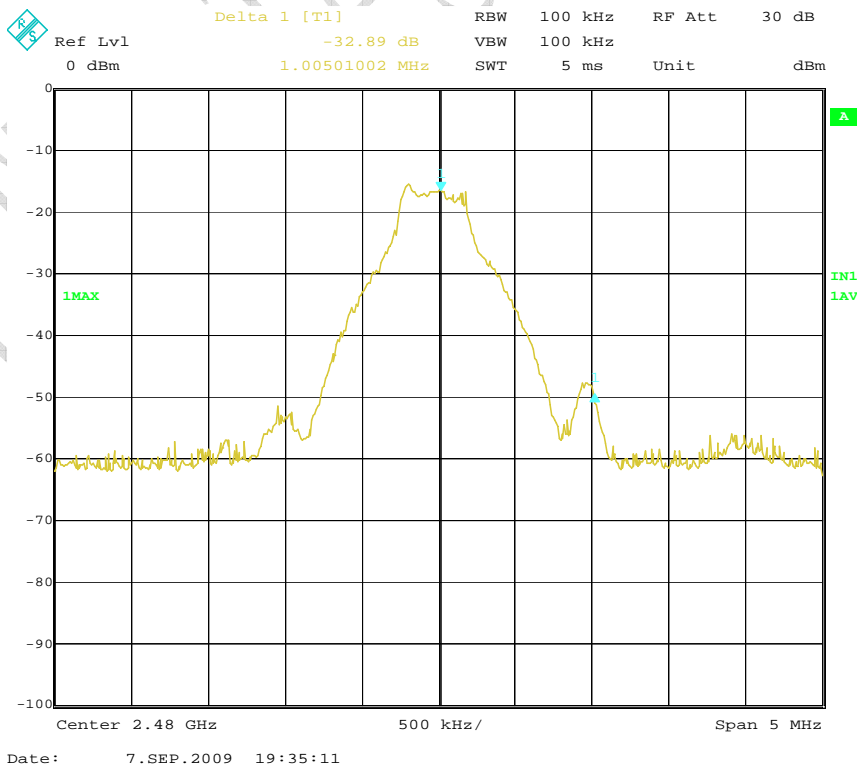
Channel 78

Vertical

Peak mode:



Average mode:



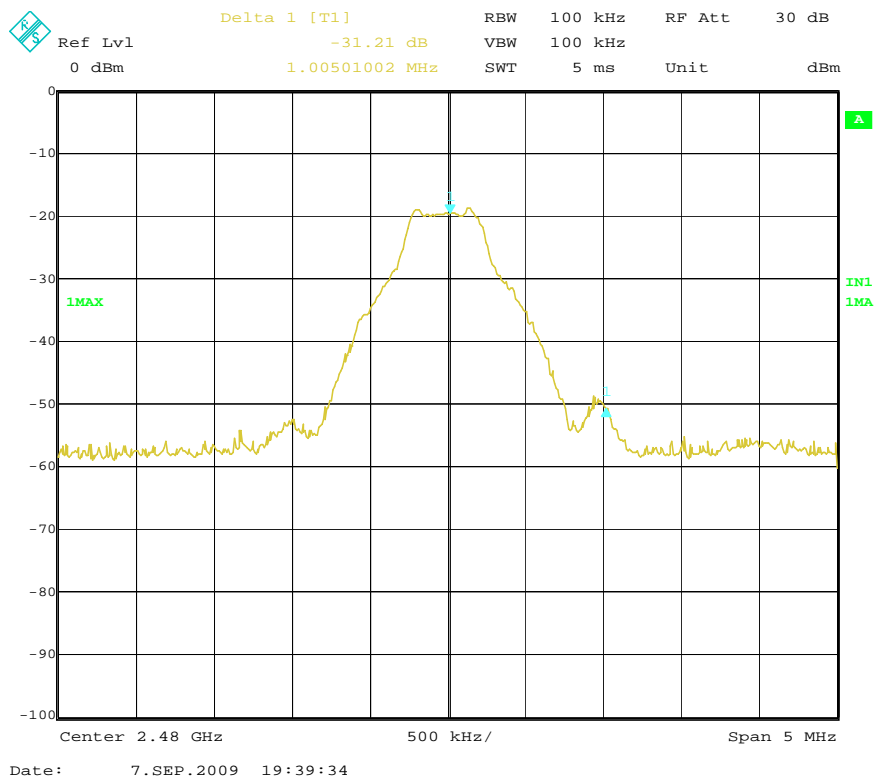
FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

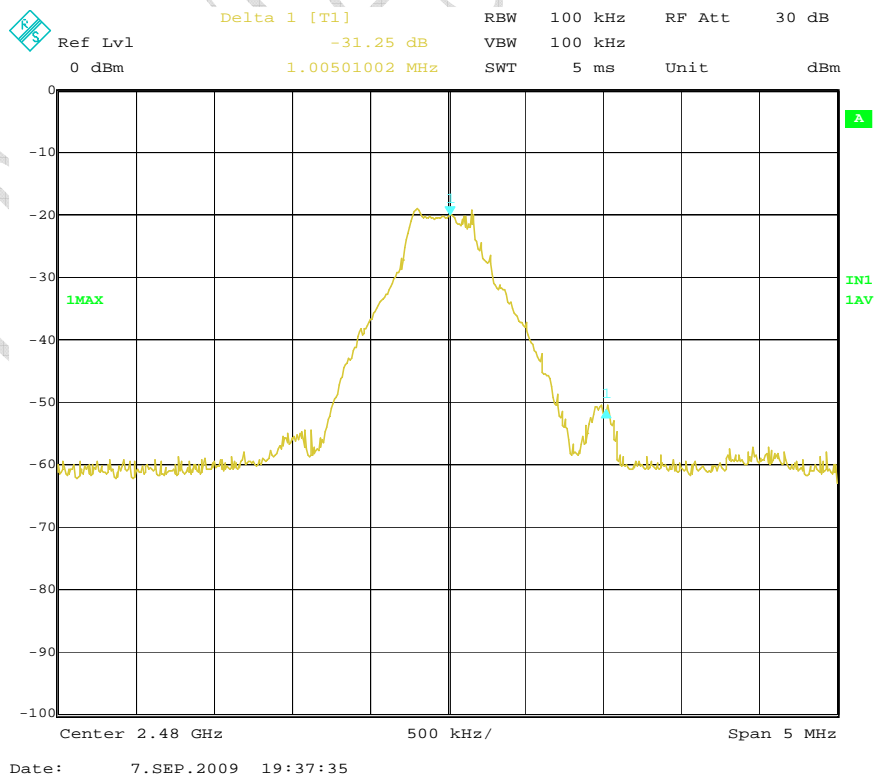
Channel 78

Horizontal

Peak mode:



Average mode:



4.4 Frequency separation

Specifications:	15.247(a)(1)					
Date of Test	2009-8-31					
Test conditions:	Ambient Temperature: 15℃-35℃ Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	Fix channel transmit					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup

The Universal Radio Communications Tester was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.

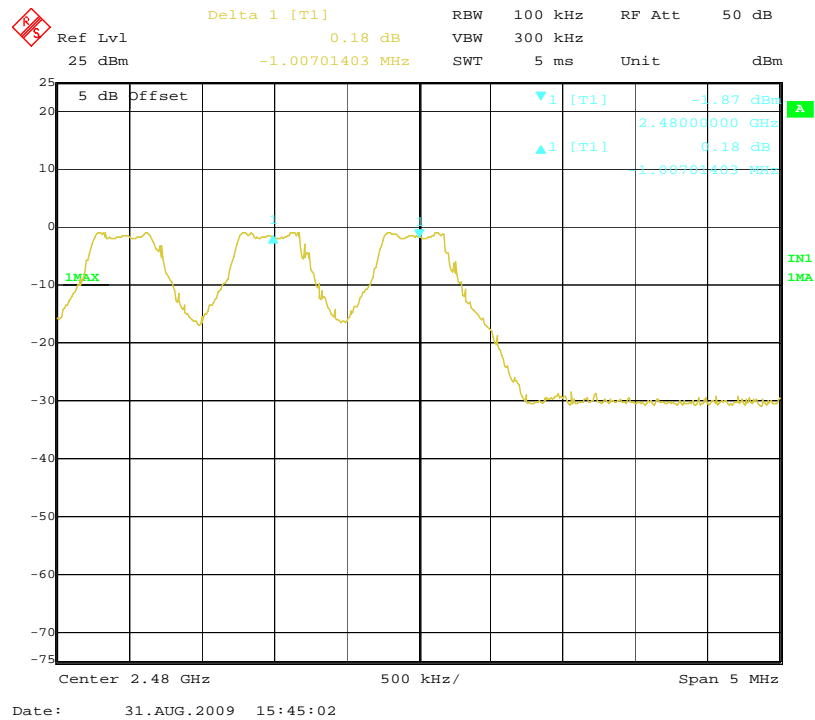
Test Result:

Channel separation (kHz)	20dB Bandwidth (kHz)		Limit (kHz)	Result
1002.00	Ch 0	1192	>25	Pass
	Ch 39	1202	>25	Pass
	Ch 78	1192	>25	Pass

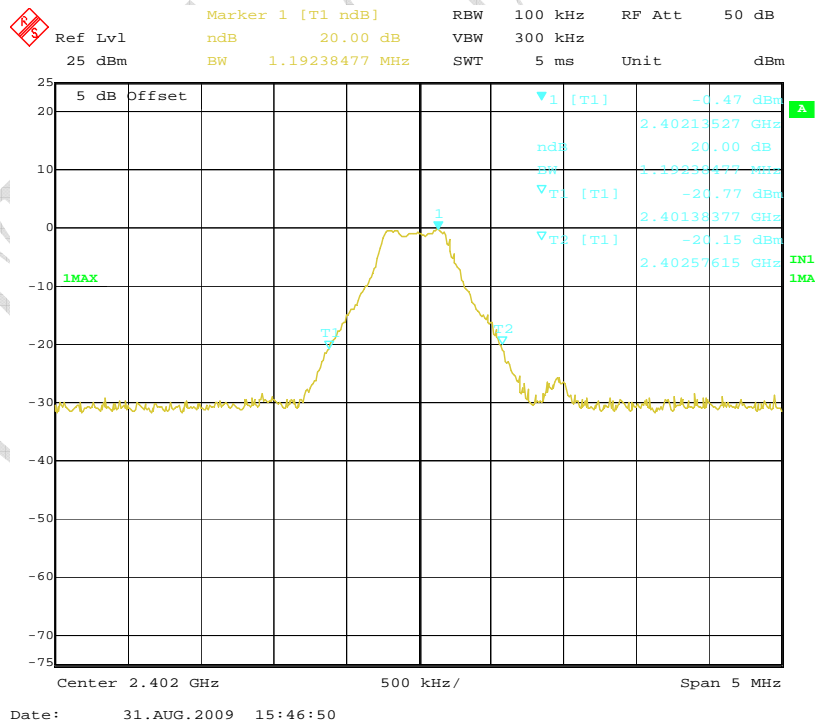
FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Test data:
Channel Separation



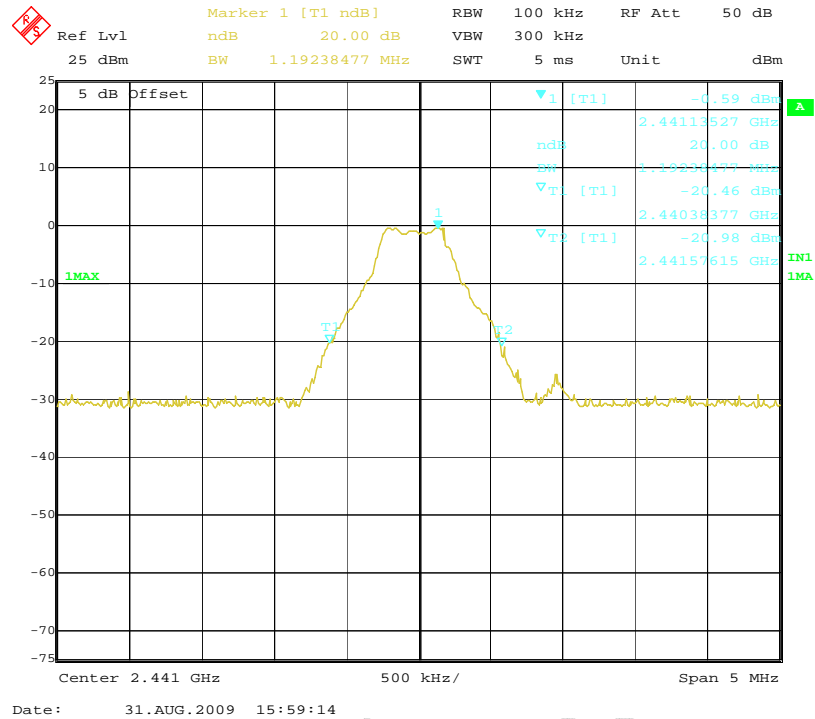
20dB Bandwidth (Ch 0)



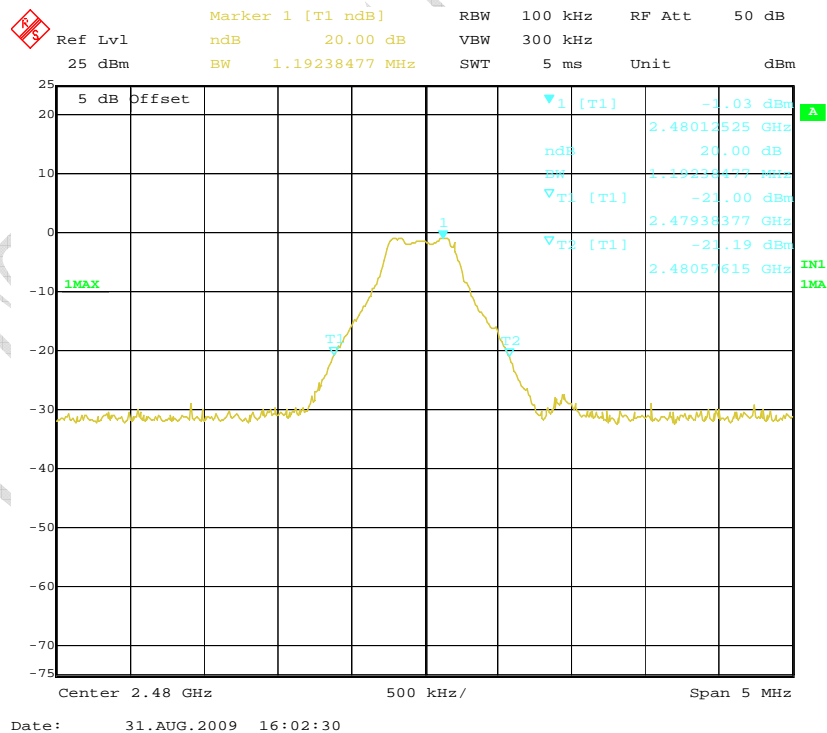
FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

20dB Bandwidth (Ch 39)



20dB Bandwidth (Ch 78)



4.5 Number of hopping frequency

Specifications:	15.247(a)(1)(ii)					
Date of Test	2009-8-31					
Test conditions:	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	hopping					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup

The Universal Radio Communications Tester was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.

Test Result:

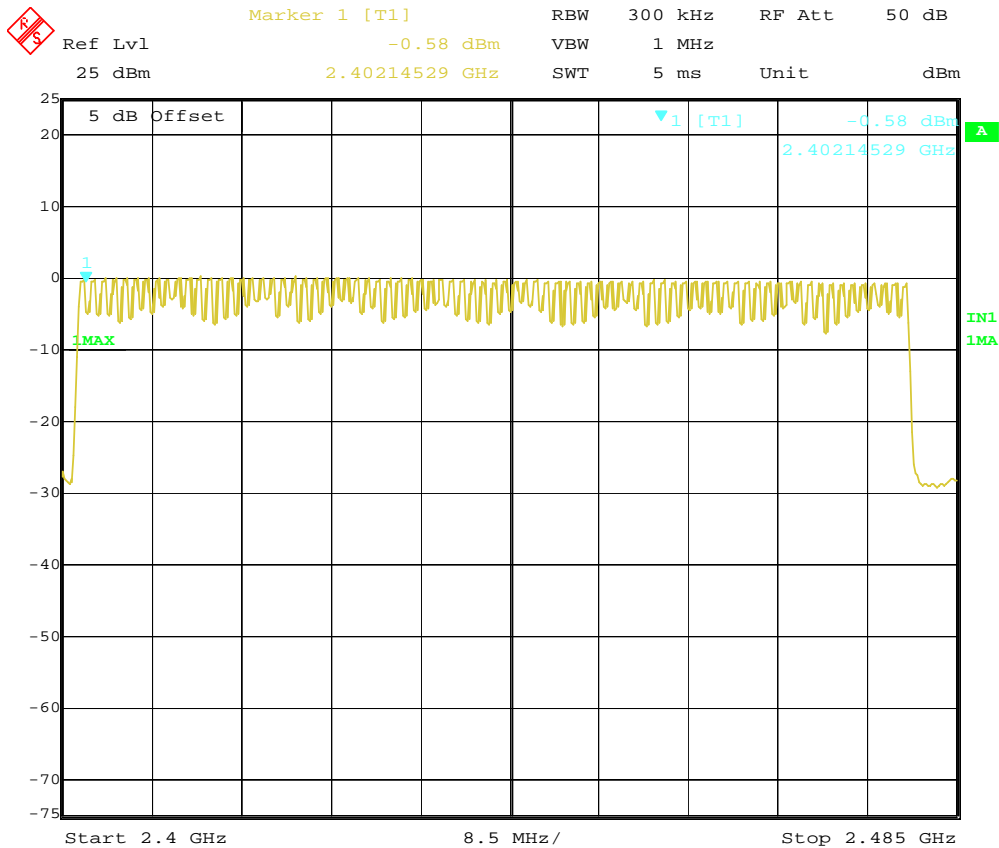
Result (No. of Ch)	Limit (No. of Ch)	Result
79	>75	Pass

FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Test data:

Channel Number



Date: 31.AUG.2009 16:12:50

4.6 Time of occupancy

Specifications:	15.247(a)(1)(iii)					
Date of Test	2009-8-31					
Test conditions:	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	Fix channel					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup

The Universal Radio Communications Tester was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.

Test Result:

Function for DH5:

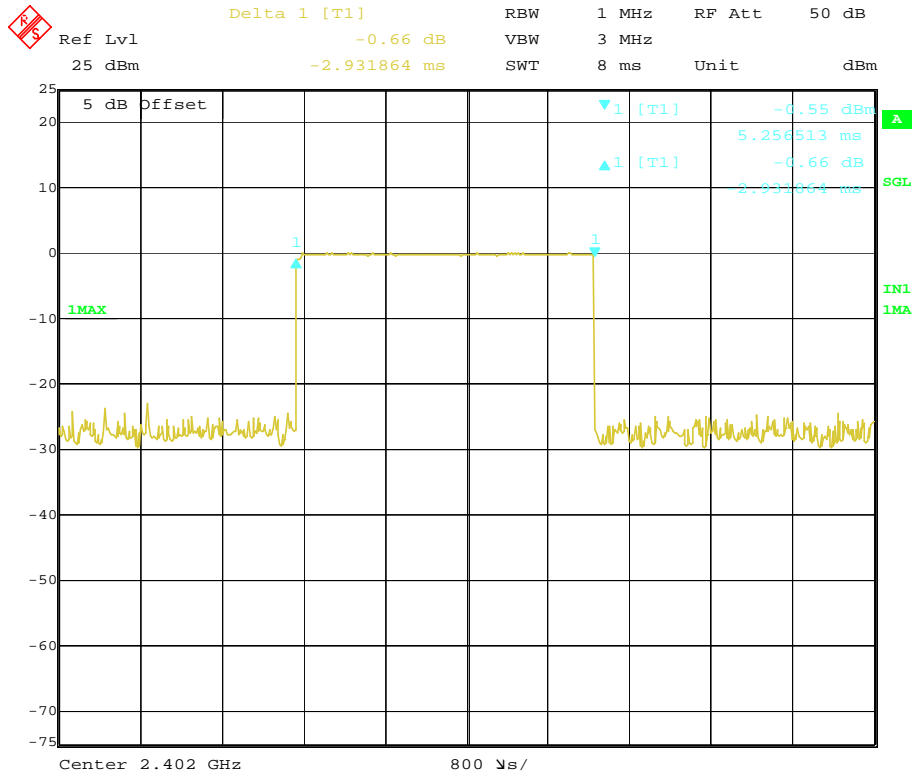
$$\text{Total Dwell Time} = \text{pulsetime} \times \left(\frac{1600}{6} \right) / 79 \times 31.6$$

Channel	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
0	2.93	312.53	31.6	400	Pass
39	2.91	310.40	31.6		Pass
78	2.93	312.53	31.6		Pass

FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

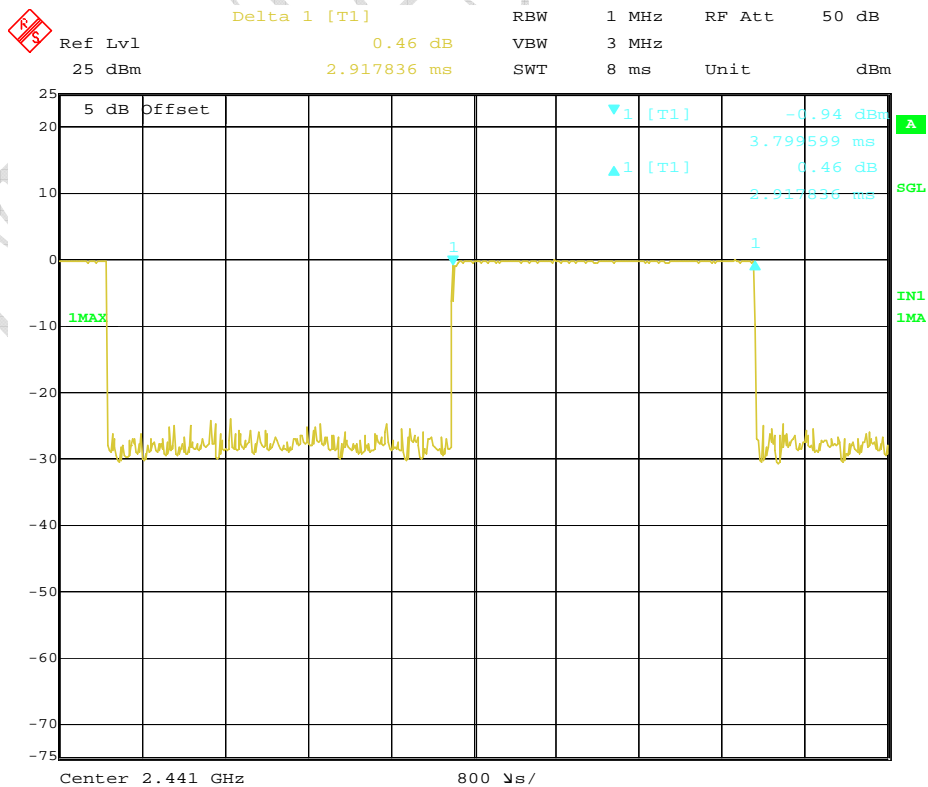
REPORT NO.: I09GE6624-FCC-BT

Test data:
Channel 0



Date: 31.AUG.2009 16:17:49

Channel 39



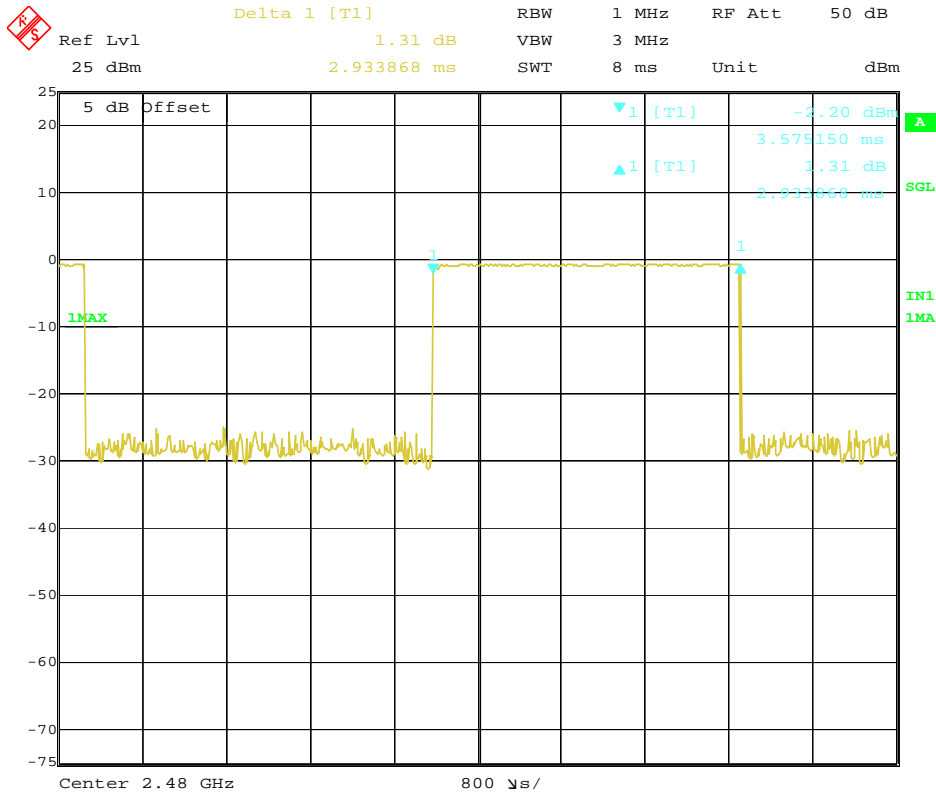
Date: 31.AUG.2009 16:19:24



FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Channel 78



Date: 31.AUG.2009 16:20:21

China Telecommunication Technology Labs

4.7 Spurious Measurement (Conducted)

Specifications:	15.209(a) and 15.205(a)					
Date of Test	2009-8-31					
Test conditions:	Ambient Temperature: 15℃-35℃ Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	Fix channel transmit					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup

The Universal Radio Communications Tester was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.

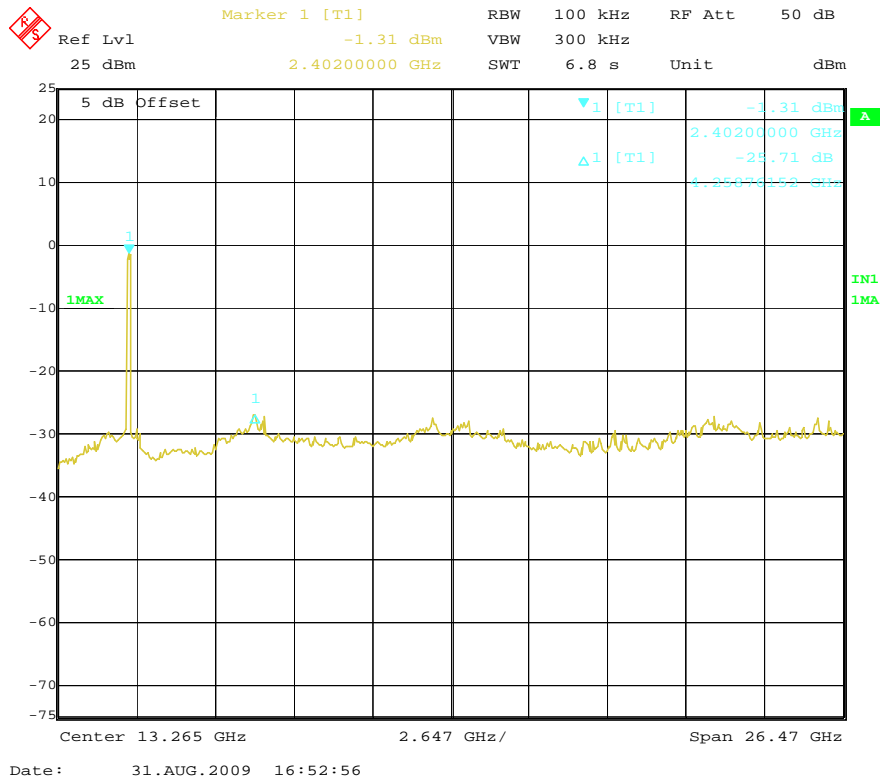
Test Result:

Channel	Result
0	Pass
39	Pass
78	Pass

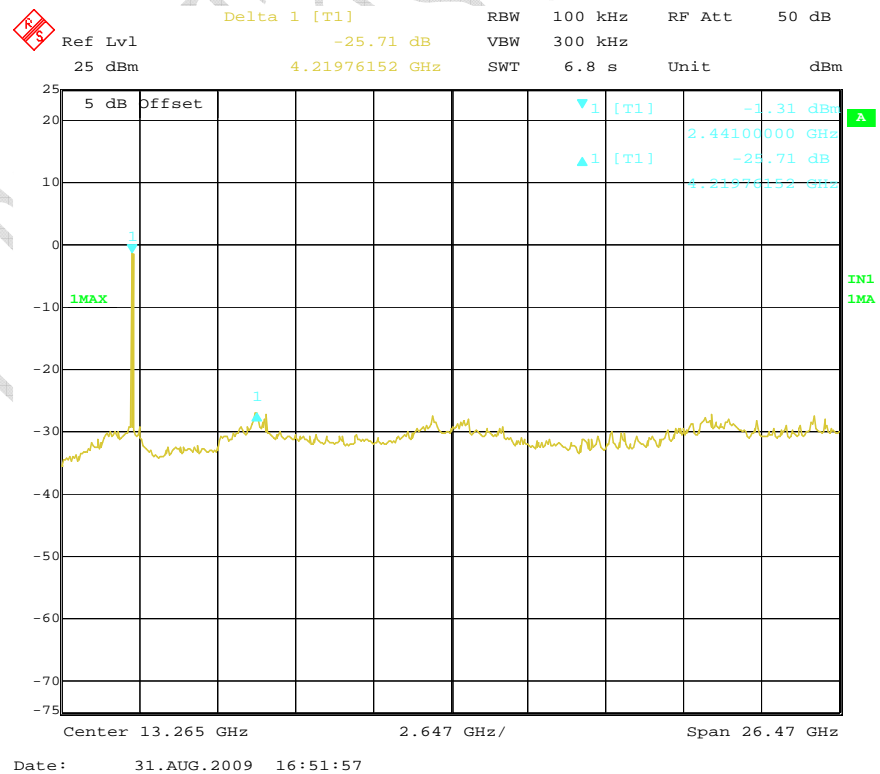
FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Test data:
Channel 0



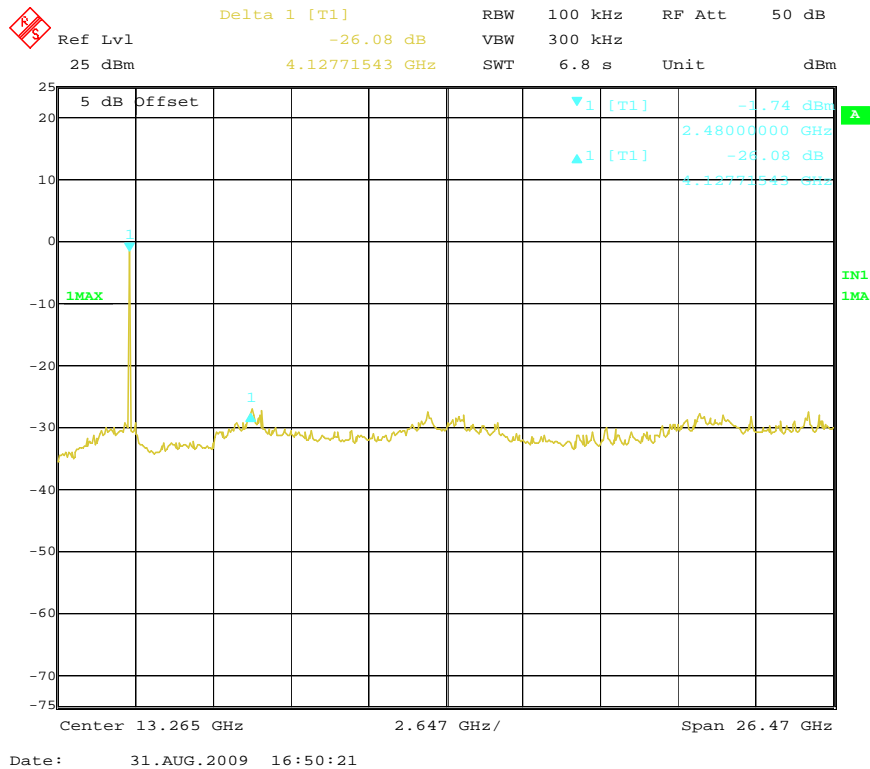
Channel 39



FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Channel 78



4.8 Radiated Spurious Measurement

Specifications:	15.209(a) and 15.205(a)					
Date of Test	2009-9-4					
Test conditions:	Ambient Temperature: 15℃-35℃ Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	hopping					
Test Results:	Fix channel transmit					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
713	Fully-Anechoic Chamber	ETS	11.8m×6.5m×6.3 m	--	2010-11-16	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup

The EUT was placed in an anechoic chamber. The CMU 200 was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a Bilog antenna (for frequency under 1GHz) or a horn antenna (for frequency above 1GHz).

Limit:

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

Test result:
9kHz-30MHz

There is No frequency exceeds and near limit line in 20dB scope blow.

30MHz-1GHz:

Frequency [MHz]	Level [dBuV/m]	Limit [dBuV/m]	Antenna height [cm]	Turntable azimuth [degree]	Antenna polarization [V/H]
--	--	--	--	--	--

Note: --

Above 1GHz:

Channel 0:

Frequency[GHz]	Level[dBuV/m]	Limit[dBuV/m]	Antenna Polarization[V/H]	Detector
--	--	--	--	Peak
--	--	--	--	Average

Channel 39:

Frequency[GHz]	Level[dBuV/m]	Limit[dBuV/m]	Antenna Polarization[V/H]	Detector
--	--	--	--	Peak
--	--	--	--	Average

Channel 78:

Frequency[GHz]	Level[dBuV/m]	Limit[dBuV/m]	Antenna Polarization[V/H]	Detector
--	--	--	--	Peak
--	--	--	--	Average

Note:

1. Test from 1GHz up to 10th harmonic of operating frequency.
2. 2.4~2.4835GHz band is the operating frequency.

4.9 Power line Conducted Emissions

Specifications:	ANSI C63.4 voltage mains test					
Date of Test	2009-8-31					
Test conditions:	Ambient Temperature: 15°C-35°C Relative Humidity: 30%-60% Air pressure: 86-106kPa					
Operation Mode	Hopping					
Test Results:	Pass					
Test equipment Used:						
Asset Number	Description	Manufacturer	Model Number	Serial Number	Cal Due	State
7805	EMI Test Receiver	R/S	ESI26	100211	2010-01-11	Normal
7330	Artificial Mains Network	R/S	ESH2-Z5	837480/002	2011-01-08	Normal
714	Shielding Room	ETS	--	19003	2010-11-16	Normal
7330	Universal Radio Communications Tester	R&S	CMU200	100233	2010-04-29	Normal

Test Setup

The EUT was placed in a shielding room. The Universal Radio Communications Tester was used to set the TX channel and power level. The ac adapter output is connected to Spectrum analyzer through an AMN (Artificial Mains Network).

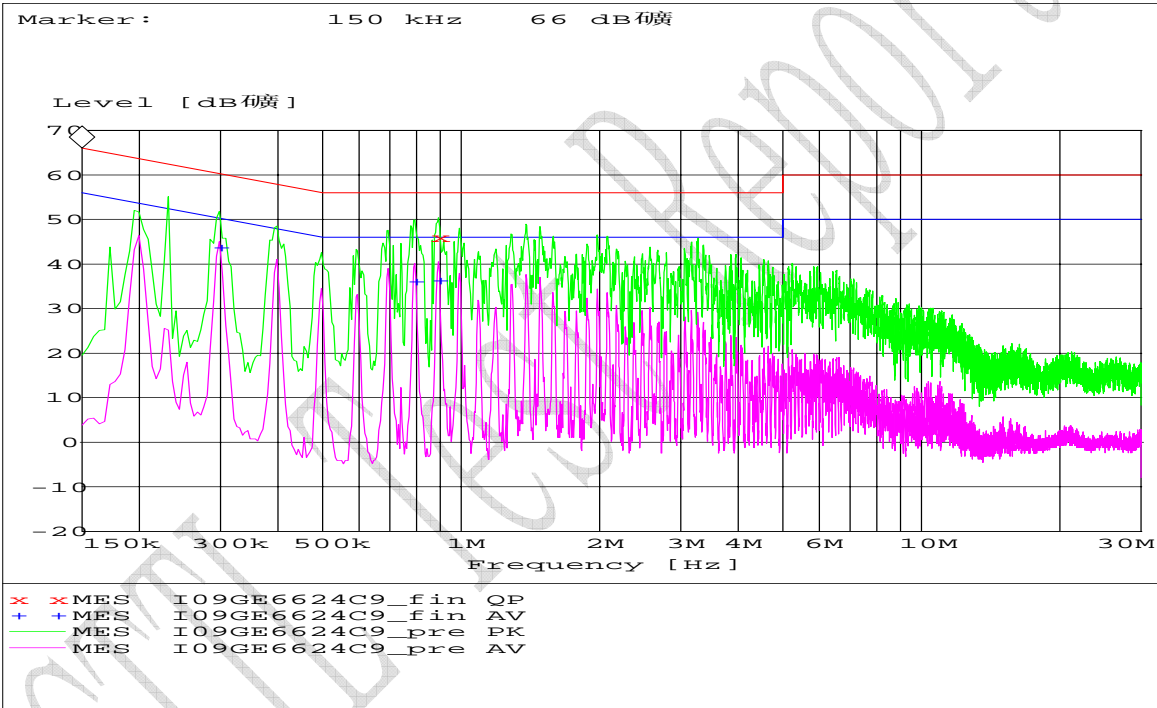
Limits of the conducted disturbance at the AC mains ports:

Frequency range	Limit(Quasi-peak)	Limit(Average)
0.15 MHz to 0.5 MHz	66 dBμV – 56 dBμV	56 dBμV – 46 dBμV
>0.5 MHz to 5MHz	56 dBμV	46 dBμV
>5 MHz to 30 MHz	60 dBμV	50 dBμV
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

Test Result:

Pass					
Detector (QP/AV)	Frequency (MHz)	Level (dBμV)	Limit (dBμV)	Line	PE
QP	0.892500	46.1	56	L1	FLO
AV	0.298500	43.8	50	L1	FLO
AV	0.793500	36.2	46	L1	FLO
AV	0.892500	36.4	46	L1	FLO
Remarks: No frequency exceeds the limit.					

Test data:



Annex A EUT Photos



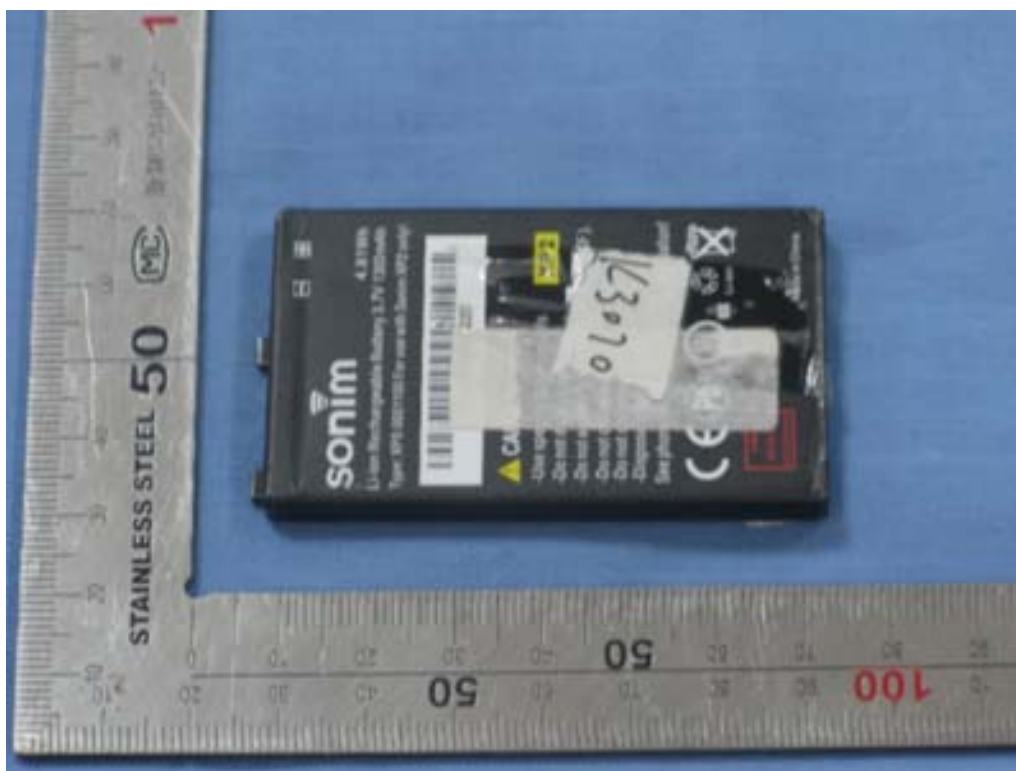
Face view



Back view

FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT



Battery



Adapter

FCC Parts 15 subpart C 15.247
Equipment: Sonim XP2.10 Spirit

REPORT NO.: I09GE6624-FCC-BT

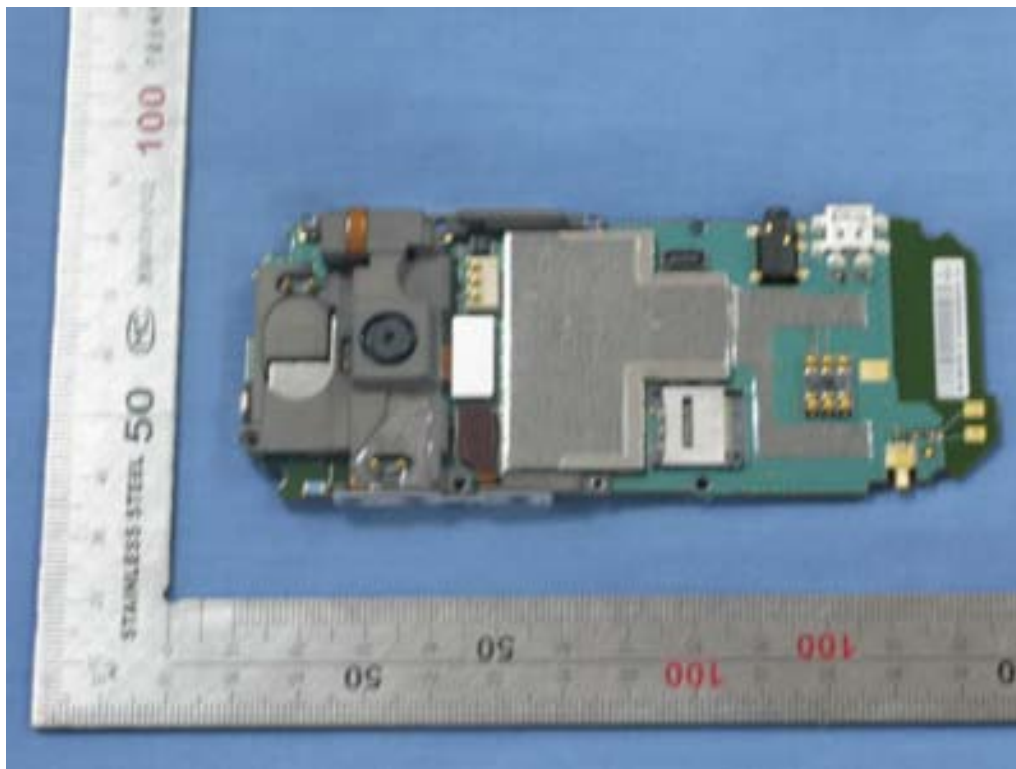


Earphone

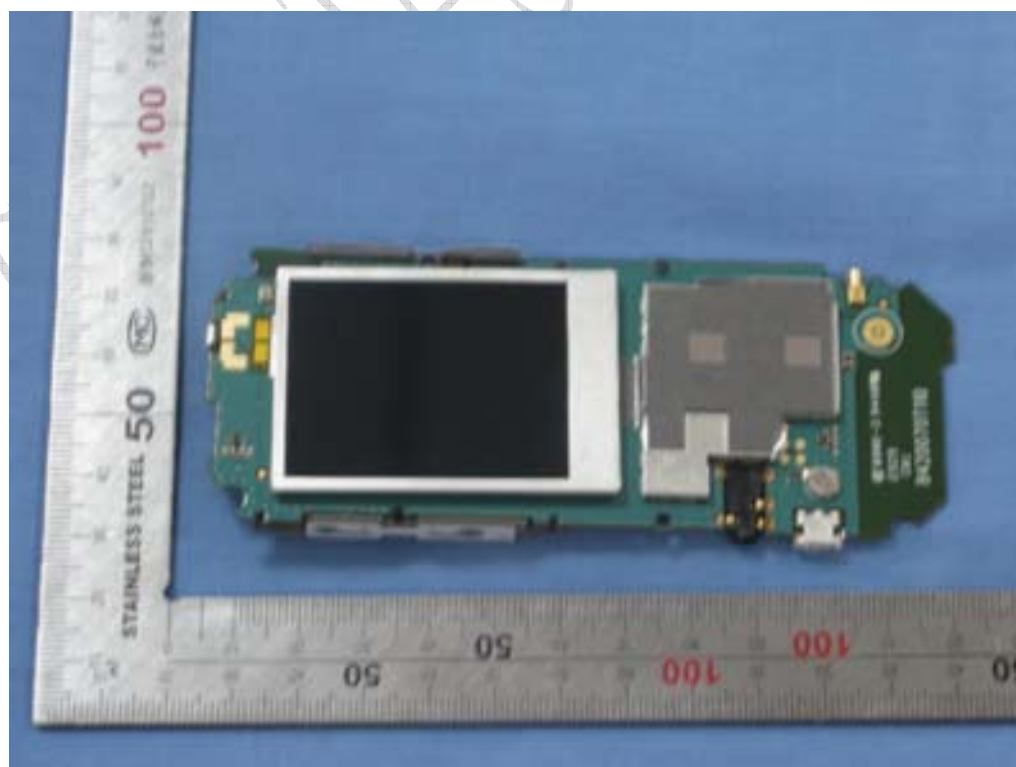


vehicular charger

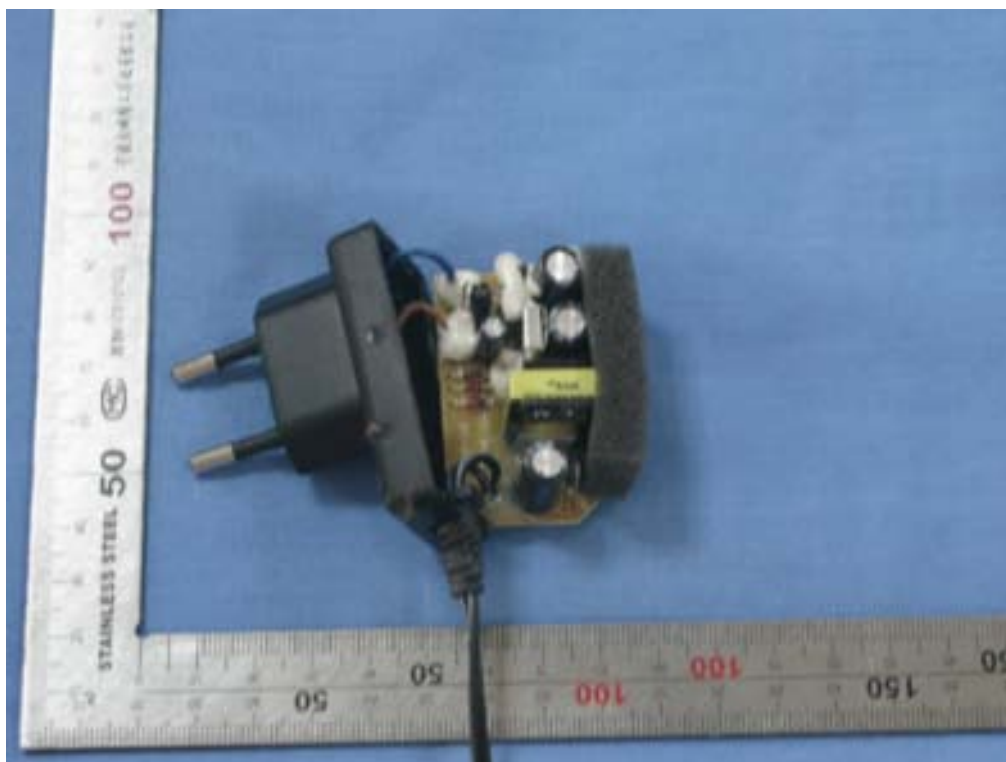
Annex B Internal Photos



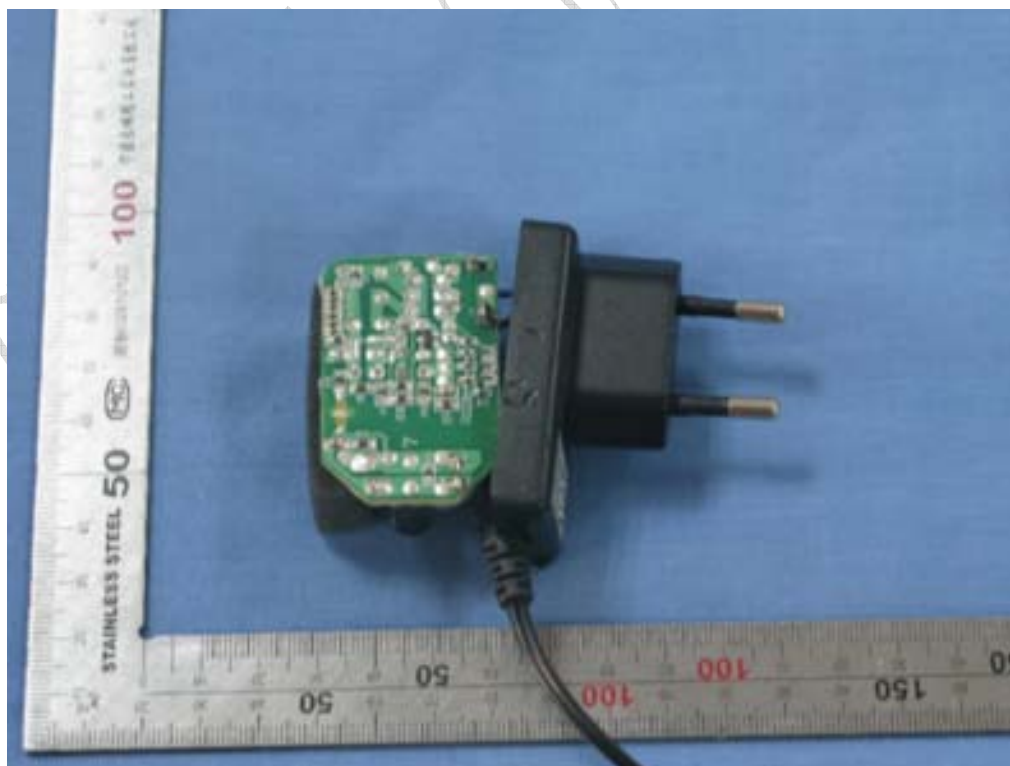
Main board (face)



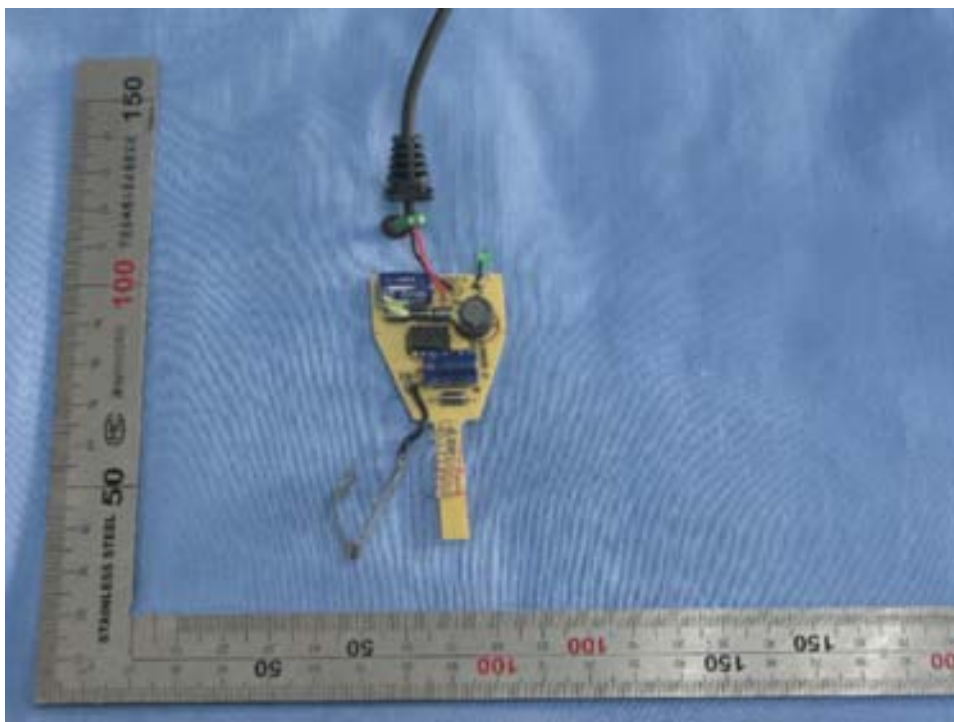
Main board (back)



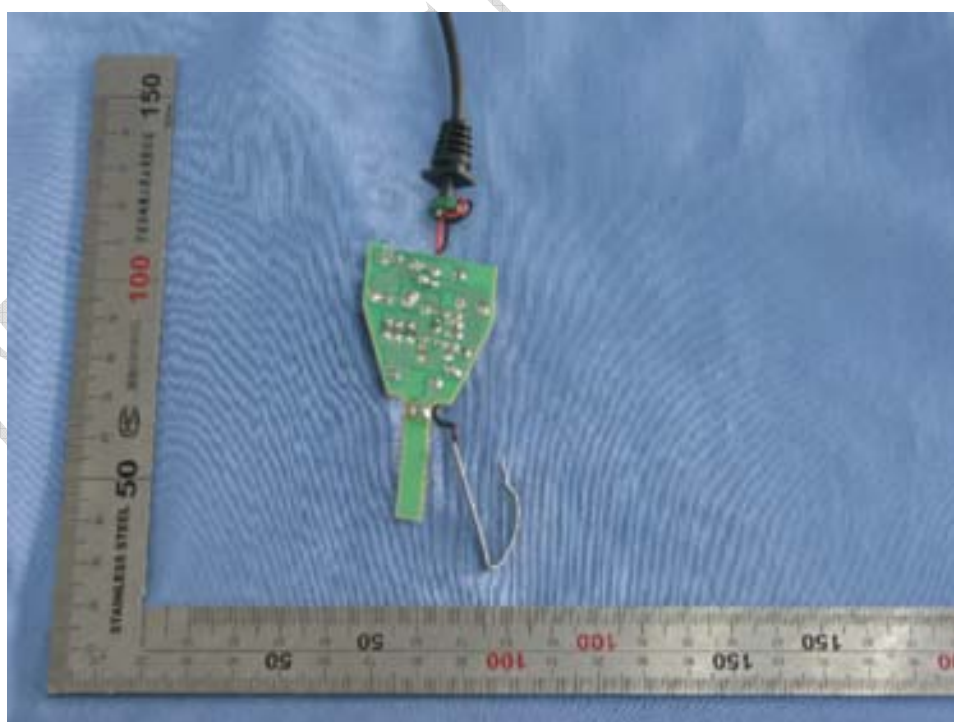
Mainboard of Adapter (face)



Mainboard of Adapter (inverse)



Mainboard of vehicular charger (face)



Mainboard of vehicular charger (inverse)

ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

_____ The End of this Report _____

Test Report