



## **MC8781 Supplementary Report**

**FCC ID: N7NMC8781**

Prepared by  
SIERRA WIRELESS INC.  
13811 WIRELESS WAY  
RICHMOND, BC V6V 3A4  
CANADA

September 20, 2007

© 2007 Sierra Wireless, Inc.

This document contains information which is proprietary and confidential to Sierra Wireless, Inc. Disclosure to persons other than the officers, employees, agents, or subcontractors of the Company or licensee of this document without the prior written permission of Sierra Wireless, Inc. is strictly prohibited.

**SIERRA WIRELESS, INC.**

FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 2 of 23
-----------------	-------------------	----------------	--------------

**Table of Contents**

1	Introduction.....	3
2	Test Summary .....	3
3	Occupied Bandwidth.....	4
3.1	<i>Test Results</i> .....	4
4	Out of Band Emissions at Antenna Terminals .....	7
4.1	<i>Test Results</i> .....	7
4.2	<i>Test Plots</i> .....	8
5	Block Edge Compliance.....	20
5.1	<i>Test Results</i> .....	20
5.2	<i>Test Plots</i> .....	20
6	Field strength of spurious radiation .....	23
7	Frequency stability .....	23

## SIERRA WIRELESS, INC.

FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 3 of 23
-----------------	-------------------	----------------	--------------

### 1 Introduction

The MC8781 (FCC ID: N7NMC8781) wireless modem was originally certified by FCC as an HSDPA device. This document provides additional test data in Release 6 HSDPA/HSUPA mode and justifications in support of a Class II Permissive Change application for the MC8781 wireless modem. All measurements in this report were made in HSPA Sub-Test 5 as we have observed it represents the worst-case scenario. Please refer to the previously submitted test report for test setup, test parameters, and all other equipment details.

### 2 Test Summary

Test	FCC RULE	DESCRIPTION OF TEST	RESULT	PAGE
1	2.1049	Occupied Bandwidth	Complies	4 - 7
2	2.1051 22.917 24.238	Spurious Emission	Complies	8 - 20
3	22H/24E	Block Edge	Complies	21 - 23

The tests described in this report were performed by Mr. Philip Wright at:

Sierra Wireless, Inc.  
13811 Wireless Way  
Richmond, B.C. V6V 3A4  
Canada

© 2007 Sierra Wireless, Inc.

The contents of this page are subject to the confidentiality information on page one.

# SIERRA WIRELESS, INC.

FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 4 of 23
-----------------	-------------------	----------------	--------------

## 3 Occupied Bandwidth

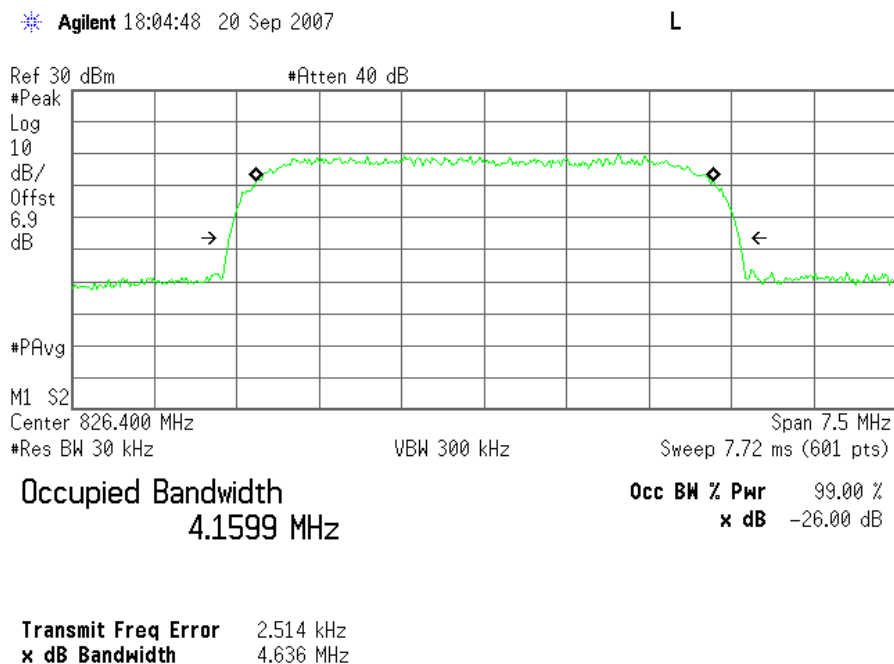
47 CFR 2.1046

### 3.1 Test Results

Performance of the UMTS 850 HSPA and UMTS 1900 HSPA are shown below.

Frequency (MHz)	Channel	99% Occupied Bandwidth (MHz)	-26dBc Occupied Bandwidth (MHz)
826.4	4132	4.1599	4.636
836.4	4182	4.1572	4.623
846.6	4233	4.1597	4.640
1852.4	9262	4.1663	4.617
1880.0	9400	4.1663	4.628
1907.5	9538	4.1424	4.620

### HSPA Occupied Bandwidth, Cellular Low channel 4132, 826.4 MHz, 99% bandwidth



© 2007 Sierra Wireless, Inc.

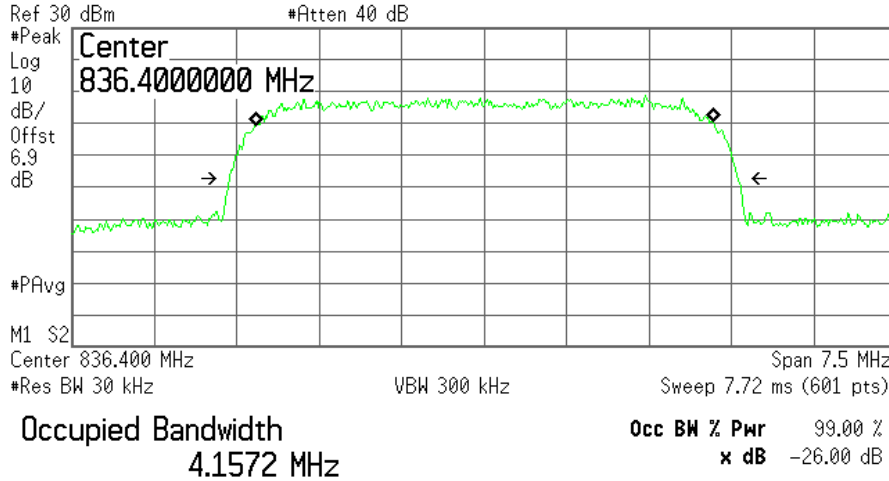
The contents of this page are subject to the confidentiality information on page one.

SIERRA WIRELESS, INC.

**HSPA Occupied Bandwidth, Cellular Middle channel 4182, 836.4 MHz, 99% bandwidth**

Agilent 18:19:52 20 Sep 2007

L

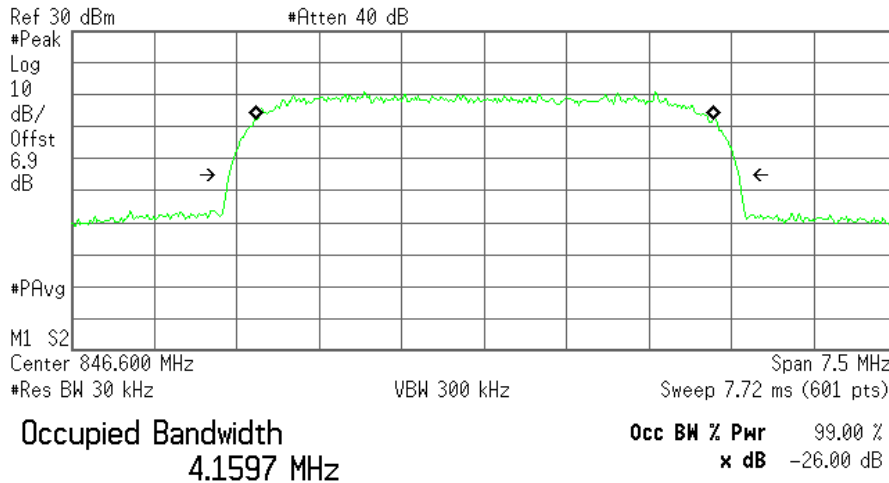


Transmit Freq Error 6.534 kHz  
x dB Bandwidth 4.623 MHz

**HSPA Occupied Bandwidth, Cellular High channel 4233, 846.6 MHz, 99% bandwidth**

Agilent 18:14:23 20 Sep 2007

L



Transmit Freq Error 3.475 kHz  
x dB Bandwidth 4.640 MHz

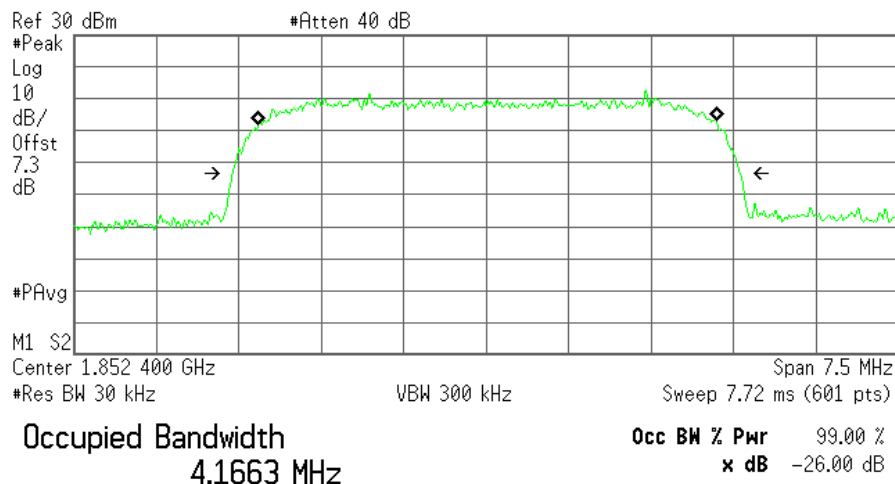
# SIERRA WIRELESS, INC.

FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 6 of 23
-----------------	-------------------	----------------	--------------

## HSPA Occupied Bandwidth, PCS Low channel 9262, 1852.4 MHz, 99% bandwidth

\* Agilent 17:32:53 20 Sep 2007

L

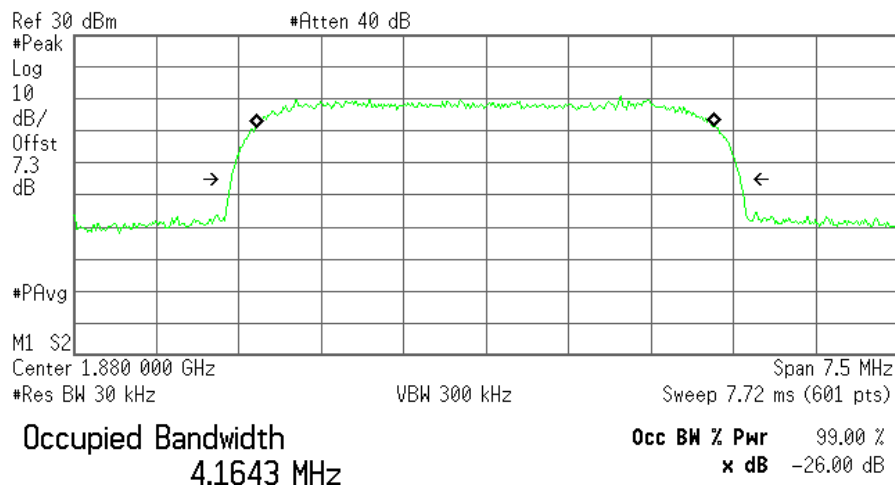


**Transmit Freq Error** 11.201 kHz  
**x dB Bandwidth** 4.617 MHz

## HSPA Occupied Bandwidth, PCS Middle channel 9400, 1880 MHz, 99% bandwidth

\* Agilent 17:35:14 20 Sep 2007

L



**Transmit Freq Error** -2.838 kHz  
**x dB Bandwidth** 4.628 MHz

© 2007 Sierra Wireless, Inc.

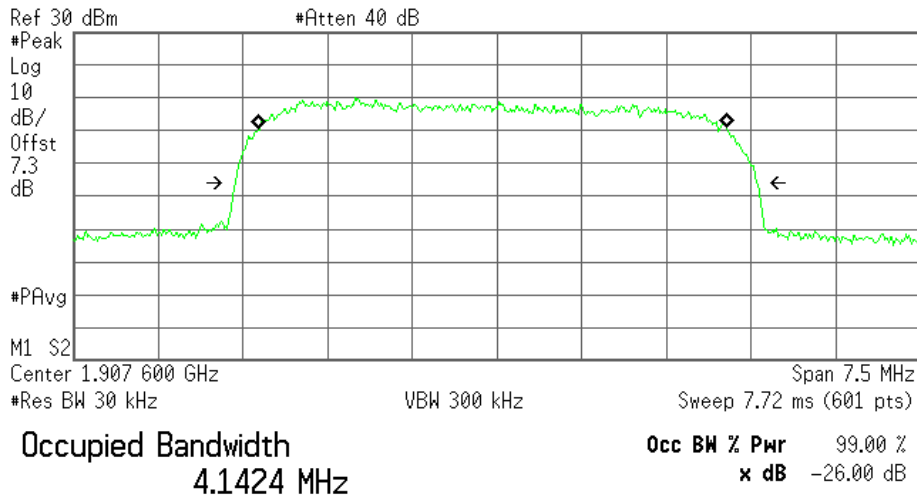
The contents of this page are subject to the confidentiality information on page one.

**SIERRA WIRELESS, INC.**

**HSPA Occupied Bandwidth, PCS High channel 9538, 1907.6 MHz, 99% bandwidth**

\* Agilent 17:48:36 20 Sep 2007

L



**Transmit Freq Error** -36.319 kHz  
**x dB Bandwidth** 4.620 MHz

#### 4 Out of Band Emissions at Antenna Terminals

47 CFR 22.917, 24.238

##### 4.1 Test Results

Refer to the following plots.

- **UMTS Cellular Band**

Plot Number	Description
4.2.1 – 4.2.3	HSPA Mode, Low Channel, 826.4 MHz
4.2.4 – 4.2.6	HSPA Mode, Middle Channel, 836.4 MHz
4.2.7 – 4.2.9	HSPA Mode, High Channel, 846.6 MHz

- **UMTS PCS Band**

Plot Number	Description
4.2.10 – 4.2.12	HSPA Mode, Low Channel, 1852.4 MHz
4.2.13 – 4.2.15	HSPA Mode, Middle Channel, 1880.0 MHz
4.2.16 – 4.2.18	HSPA Mode, High Channel, 1907.6 MHz

© 2007 Sierra Wireless, Inc.

The contents of this page are subject to the confidentiality information on page one.

**SIERRA WIRELESS, INC.**

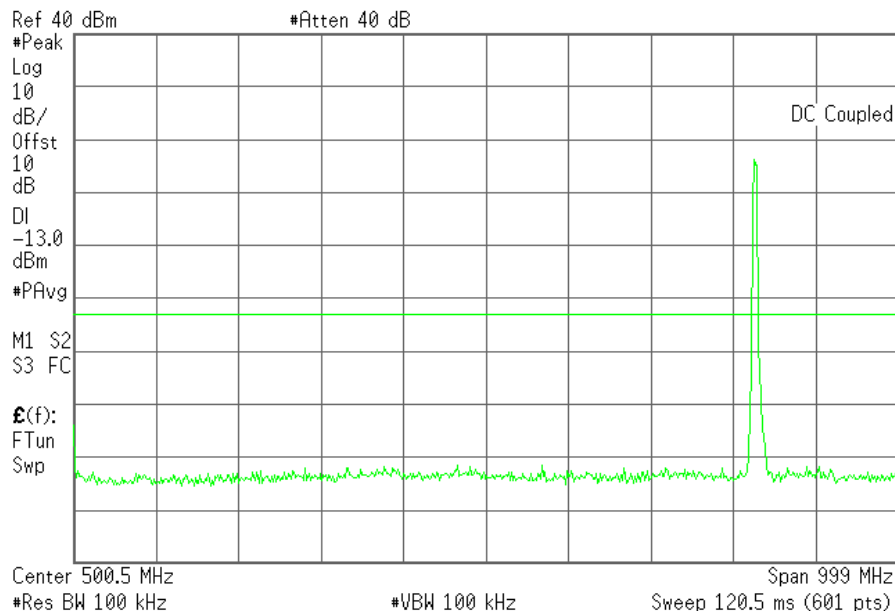
FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 8 of 23
-----------------	-------------------	----------------	--------------

**4.2 Test Plots**

**Plot 4.2.1) Out of Band Emissions at Antenna Terminals**

HSPA, Low channel 4132, 826.4 MHz, 1 MHz to 1 GHz

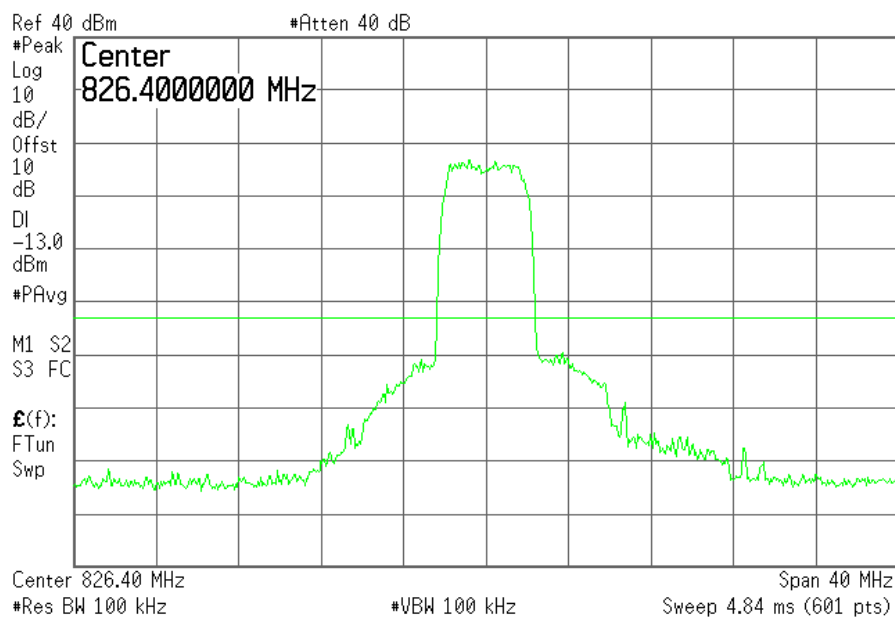
Agilent 18:05:29 20 Sep 2007 L



**Plot 4.2.2) Out of Band Emissions at Antenna Terminals**

HSPA, Low channel 4132, 826.4 MHz, TX signal +/- 20 MHz

Agilent 18:06:11 20 Sep 2007 L



**The strong emission shown in each case is the carrier signal.**

© 2007 Sierra Wireless, Inc.

The contents of this page are subject to the confidentiality information on page one.



**SIERRA WIRELESS, INC.**

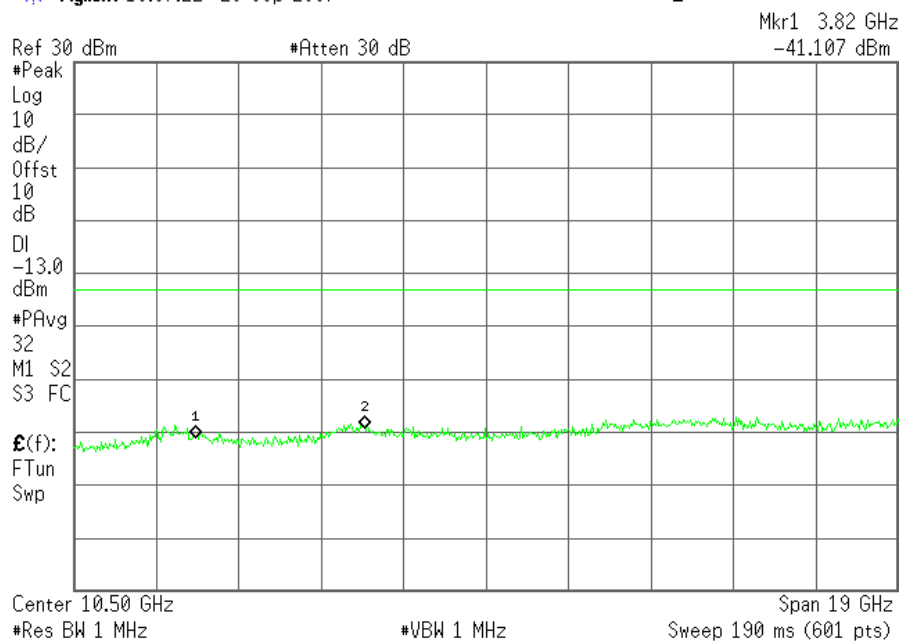
FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 9 of 23
-----------------	-------------------	----------------	--------------

**Plot 4.2.3) Out of Band Emissions at Antenna Terminals**

HSPA, Low channel 4132, 826.4 MHz, 1 GHz to 20 GHz

Agilent 18:07:22 20 Sep 2007

L



Cellular Harmonics for Ch. 128 (824.2 MHz)	Level (dBm)
Second	--
Third	--
All others	< -30dBm up to 20GHz

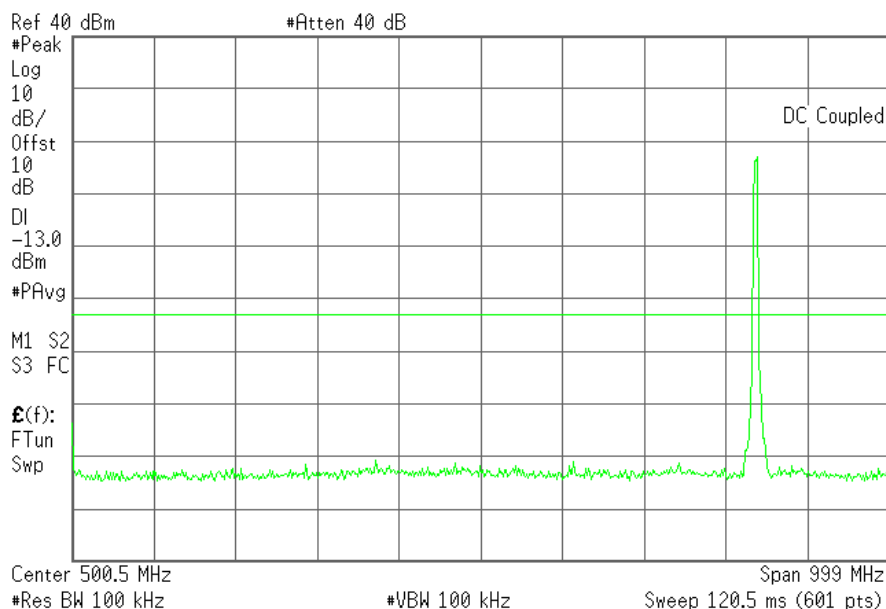
**SIERRA WIRELESS, INC.**

**Plot 4.2.4) Out of Band Emissions at Antenna Terminals**

HSPA, Middle channel 4182, 836.4 MHz, 1 MHz to 1 GHz

\* Agilent 18:21:43 20 Sep 2007

L

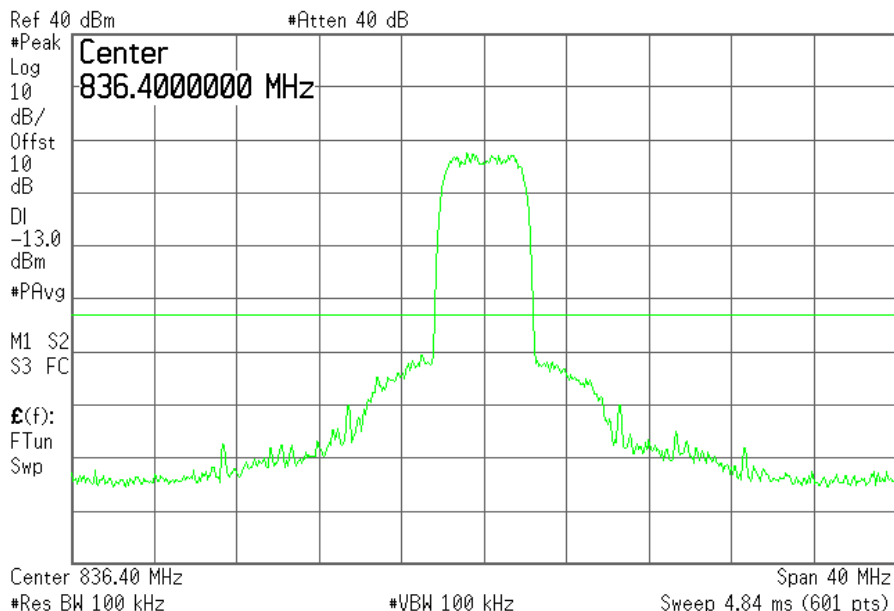


**Plot 4.2.5) Out of Band Emissions at Antenna Terminals**

HSPA, Middle channel 4182, 836.4 MHz, TX signal +/- 20 MHz

\* Agilent 18:22:28 20 Sep 2007

L



**The strong emission shown in each case is the carrier signal.**

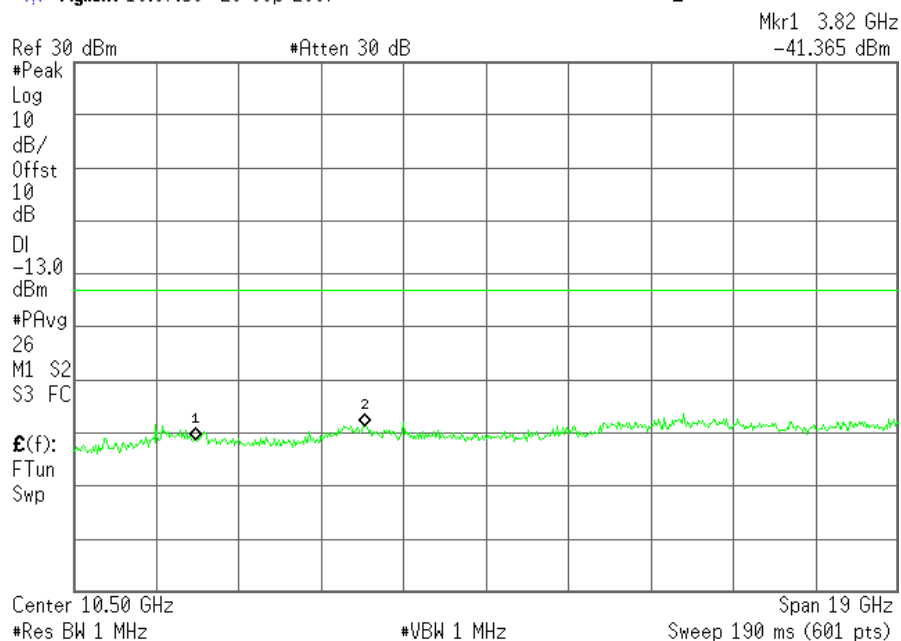
**SIERRA WIRELESS, INC.**

**Plot 4.2.6) Out of Band Emissions at Antenna Terminals**

HSPA, Middle channel 4182, 836.4 MHz, 1 GHz to 20 GHz

\* Agilent 18:07:58 20 Sep 2007

L



Cellular Harmonics for Ch. 190 (836.6 MHz)	Level (dBm)
Second	--
Third	--
All others	< -30dBm up to 20GHz

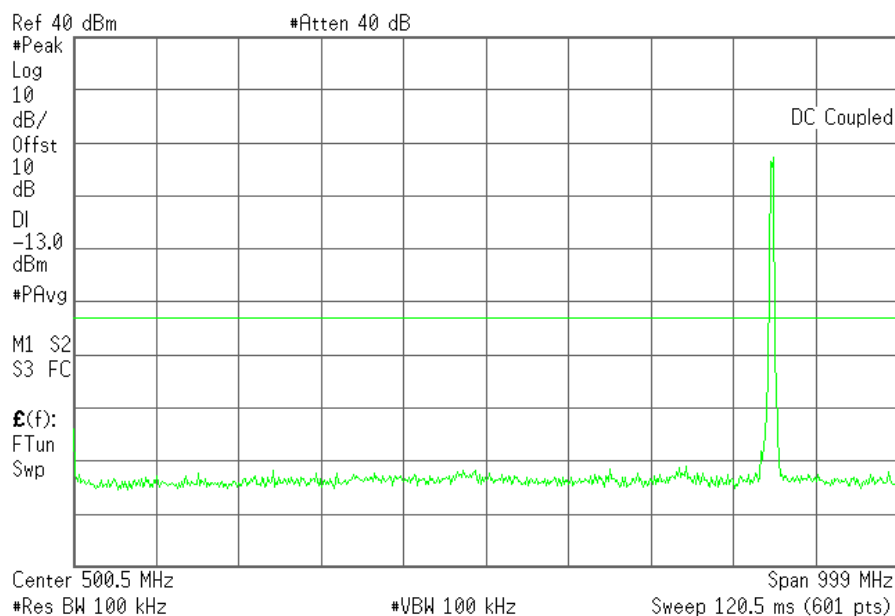
SIERRA WIRELESS, INC.

**Plot 4.2.7) Out of Band Emissions at Antenna Terminals**

HSPA, High Channel 4233, 846.6 MHz, 1 MHz to 1 GHz

\* Agilent 18:15:23 20 Sep 2007

L

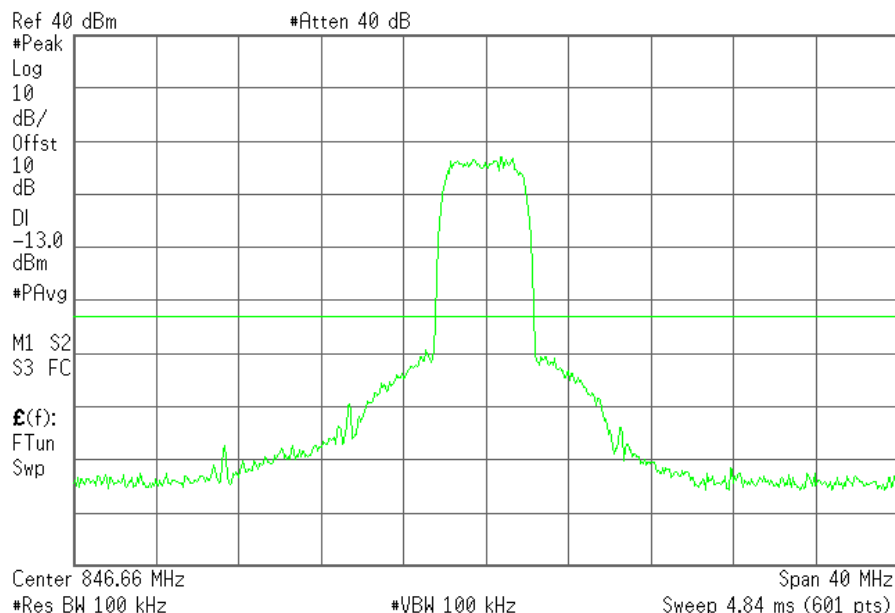


**Plot 4.2.8) Out of Band Emissions at Antenna Terminals**

HSPA, High Channel 4233, 846.6 MHz, TX signal +/- 20 MHz

\* Agilent 18:16:11 20 Sep 2007

L



**The strong emission shown in each case is the carrier signal.**

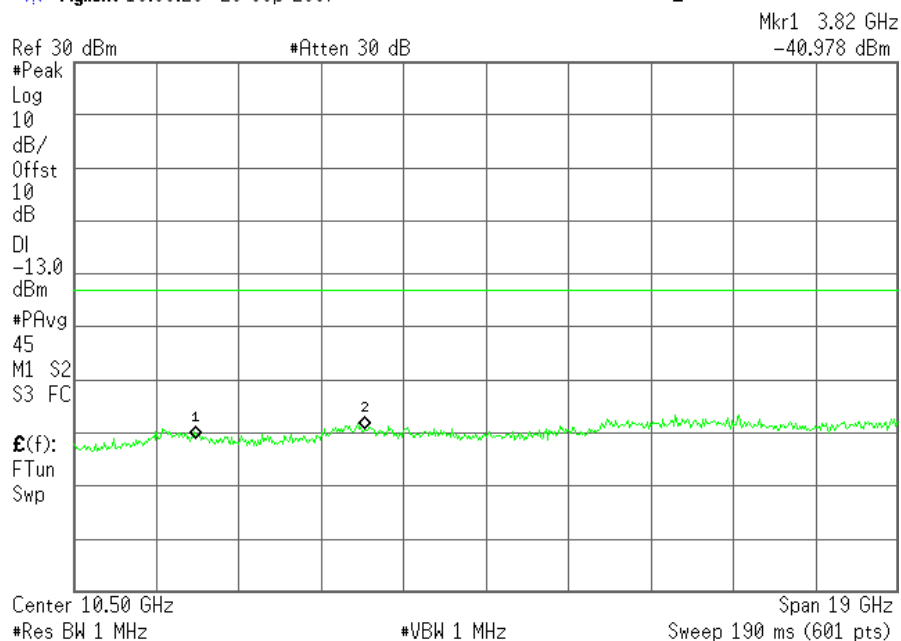
**SIERRA WIRELESS, INC.**

**Plot 4.2.9) Out of Band Emissions at Antenna Terminals**

HSPA, High Channel 4233, 846.6 MHz, 1 GHz to 20 GHz

\* Agilent 18:08:29 20 Sep 2007

L



Cellular Harmonics for Ch. 251 (848.8 MHz)	Level (dBm)
Second	--
Third	--
All others	< -30dBm up to 20GHz

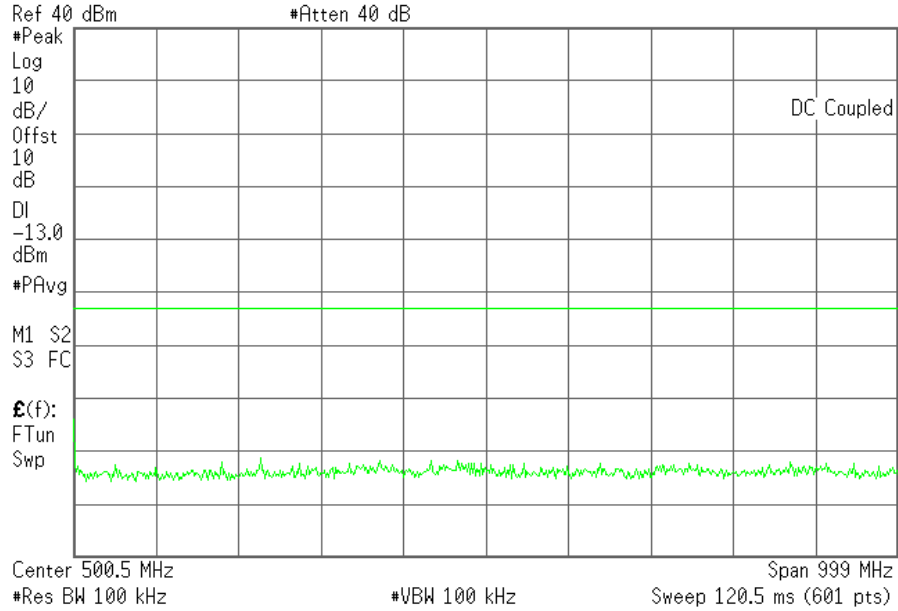
**SIERRA WIRELESS, INC.**

FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 14 of 23
-----------------	-------------------	----------------	---------------

**Plot 4.2.10) Out of Band Emissions at Antenna Terminals**

HSPA, Low channel 9262, 1852.4 MHz, 1 MHz to 1 GHz

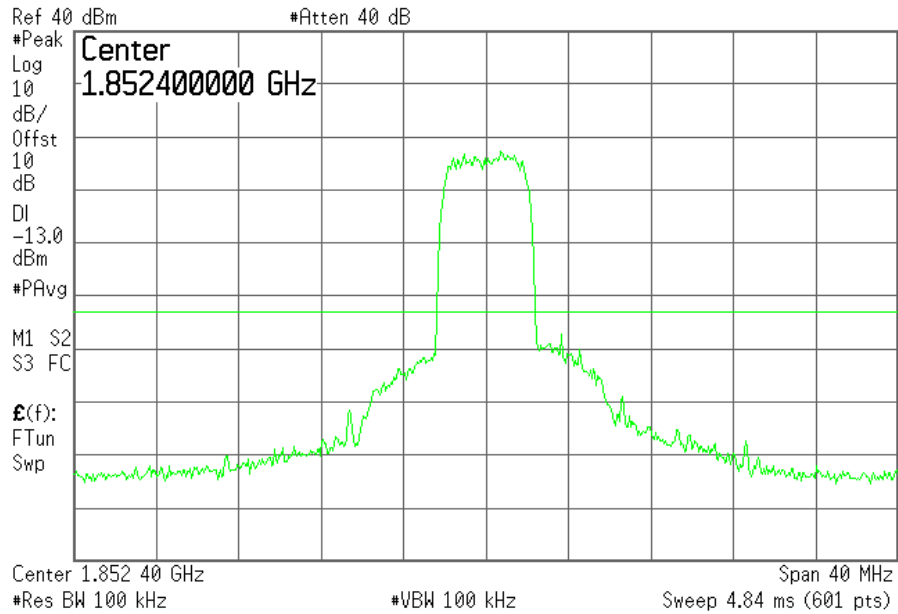
Agilent 17:38:07 20 Sep 2007 L



**Plot 4.2.11) Out of Band Emissions at Antenna Terminals**

HSPA, Low channel 9262, 1852.4 MHz, TX signal +/- 20 MHz

Agilent 17:40:56 20 Sep 2007 L



© 2007 Sierra Wireless, Inc.

The contents of this page are subject to the confidentiality information on page one.

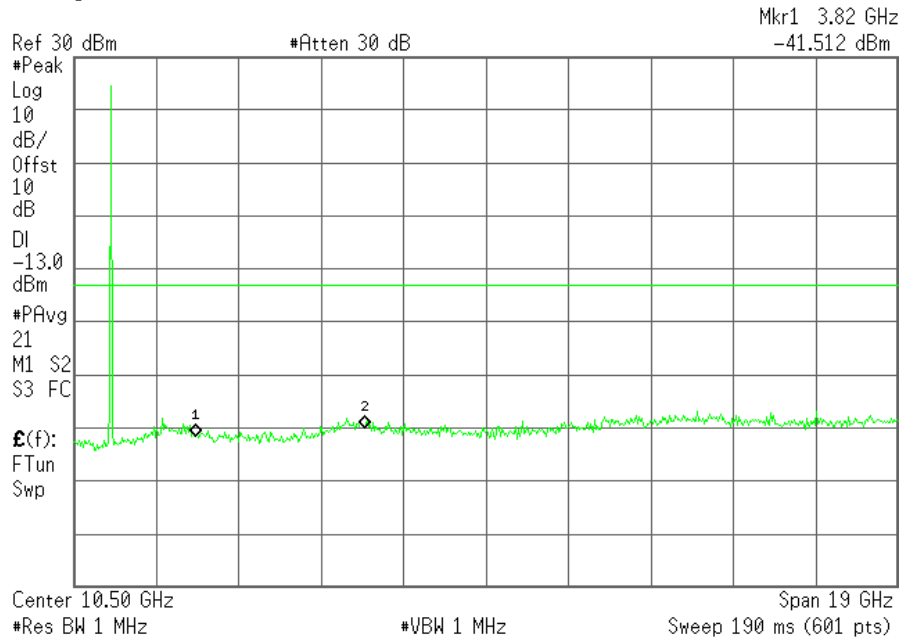
SIERRA WIRELESS, INC.

**Plot 4.2.12) Out of Band Emissions at Antenna Terminals**

HSPA, Low channel 9262, 1852.4 MHz, 1 GHz to 20 GHz

\* Agilent 17:42:39 20 Sep 2007

L



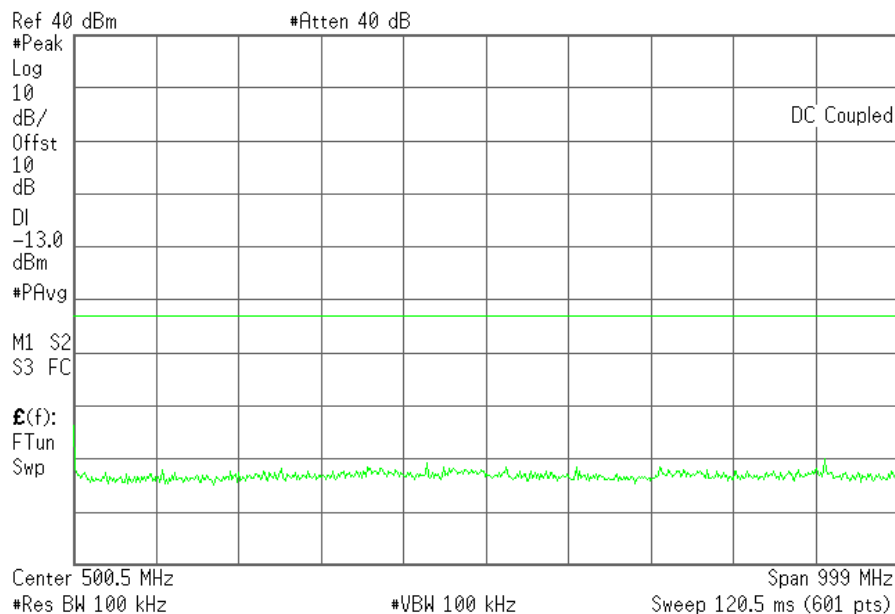
**The strong emission shown is the carrier signal.**

**SIERRA WIRELESS, INC.**

**Plot 4.2.13) Out of Band Emissions at Antenna Terminals**

HSPA, Middle channel 9400, 1880 MHz, 1 MHz to 1 GHz

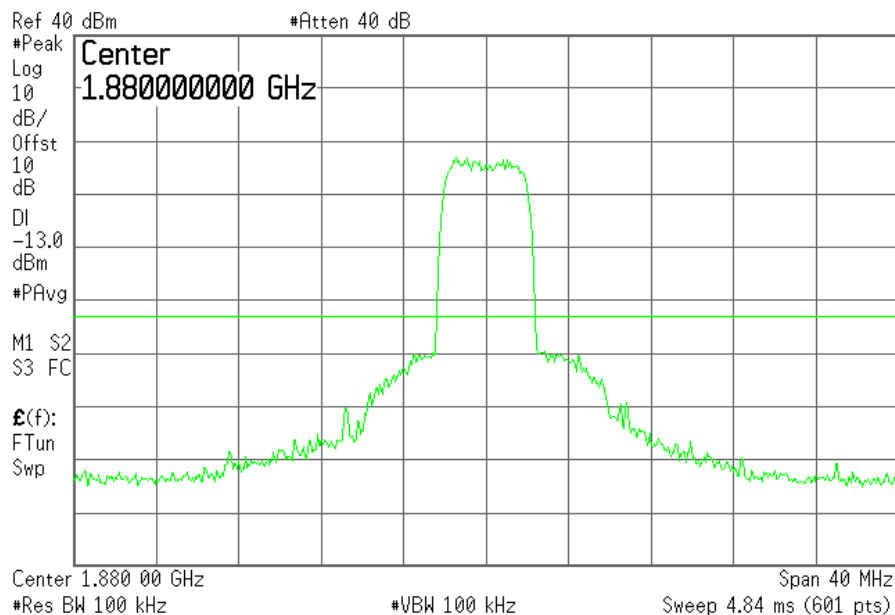
\* Agilent 17:38:59 20 Sep 2007 L



**Plot 4.2.14) Out of Band Emissions at Antenna Terminals**

HSPA, Middle channel 9400, 1880 MHz, TX signal +/- 20 MHz

\* Agilent 17:54:08 20 Sep 2007 L





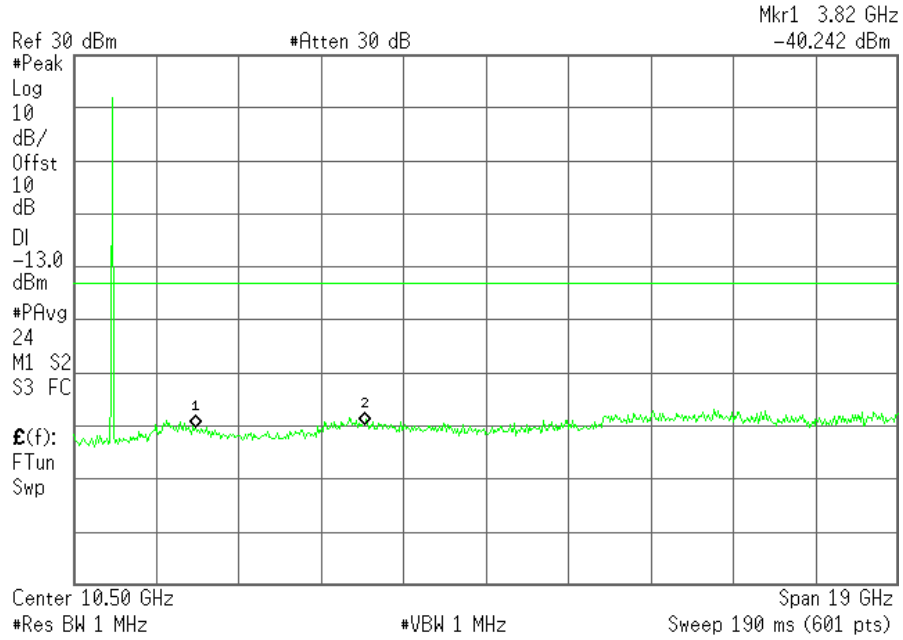
SIERRA WIRELESS, INC.

**Plot 4.2.15) Out of Band Emissions at Antenna Terminals**

HSPA, Middle channel 9400, 1880 MHz, 1 GHz to 20 GHz

\* Agilent 17:52:58 20 Sep 2007

L



**The strong emission shown is the carrier signal.**

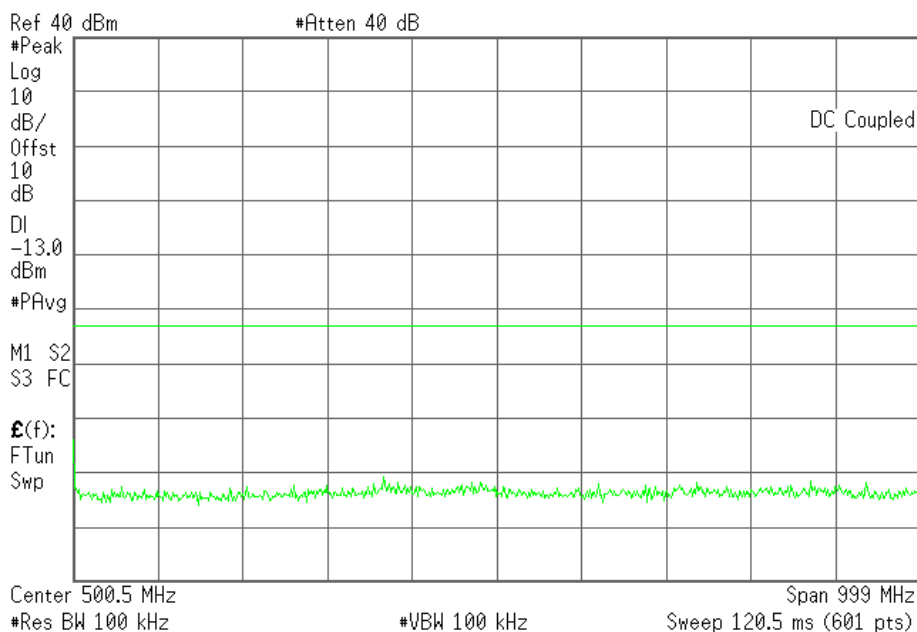
**SIERRA WIRELESS, INC.**

**Plot 4.2.16) Out of Band Emissions at Antenna Terminals**

HSPA, High channel 9538, 1907.6 MHz, 1 MHz to 1 GHz

\* Agilent 17:39:41 20 Sep 2007

L

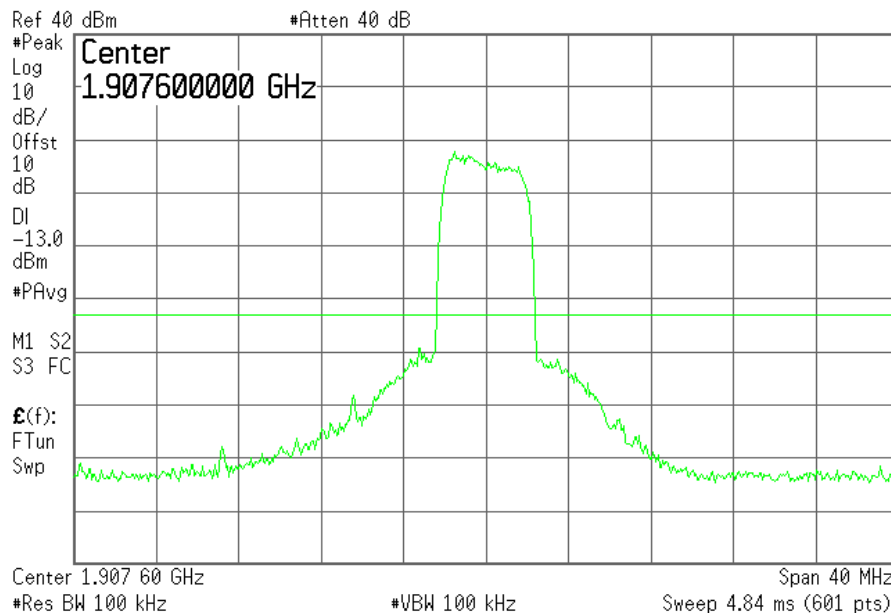


**Plot 4.2.17) Out of Band Emissions at Antenna Terminals**

HSPA, High channel 9538, 1907.6 MHz, TX signal +/- 20 MHz

\* Agilent 17:50:16 20 Sep 2007

L



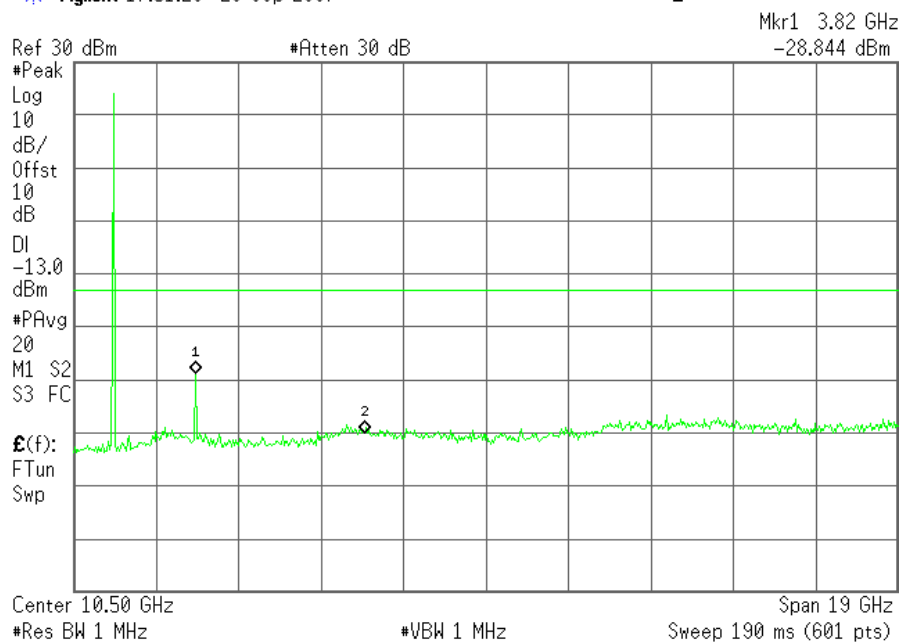
SIERRA WIRELESS, INC.

**Plot 4.2.18) Out of Band Emissions at Antenna Terminals**

HSPA, High channel 9538, 1907.6 MHz, 1 GHz to 20 GHz

\* Agilent 17:51:28 20 Sep 2007

L



**The strong emission shown is the carrier signal.**

**SIERRA WIRELESS, INC.**

FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 20 of 23
-----------------	-------------------	----------------	---------------

**5 Block Edge Compliance**

FCC Part 22H/24E

**5.1 Test Results**

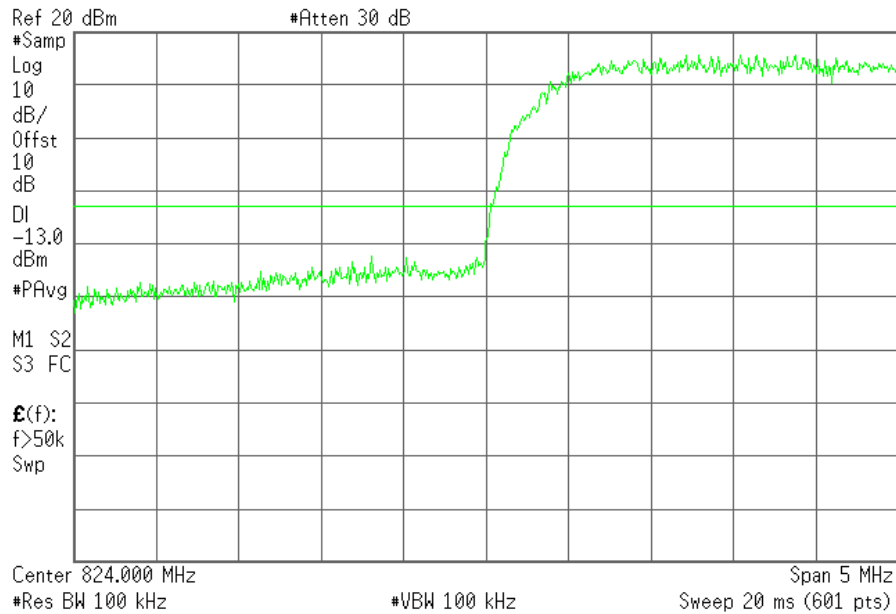
Block Test	Frequency Boundaries (MHz)	Channels Tested	Corresponding Plots	Result
1	HSPA: Below 824MHz, above 849MHz	4132, 4233	5.2.1, 5.2.2	Complies
2	HSPA: Below 1850MHz, above 1910MHz	9262, 9538	5.2.3, 5.2.4	Complies

**5.2 Test Plots**

**Plot 5.2.1) HSPA; Cellular low channel, below 824 MHz**

Agilent 18:09:34 20 Sep 2007

L



© 2007 Sierra Wireless, Inc.

The contents of this page are subject to the confidentiality information on page one.

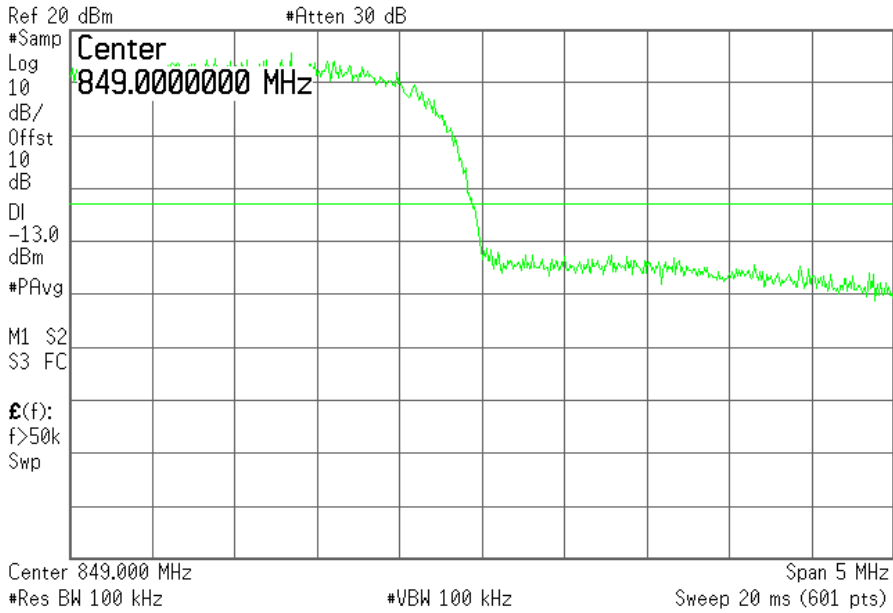
SIERRA WIRELESS, INC.

FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 21 of 23
-----------------	-------------------	----------------	---------------

Plot 5.2.2) HSPA; Cellular high channel, above 849 MHz

\* Agilent 18:12:29 20 Sep 2007

L

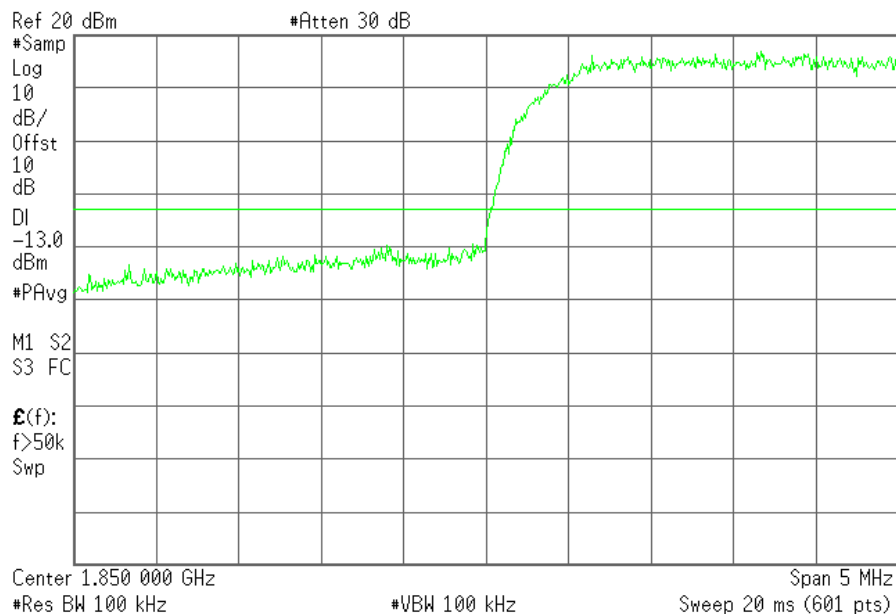


**SIERRA WIRELESS, INC.**

**Plot 5.2.3) HSPA; PCS low channel, below 1850 MHz**

\* Agilent 17:45:13 20 Sep 2007

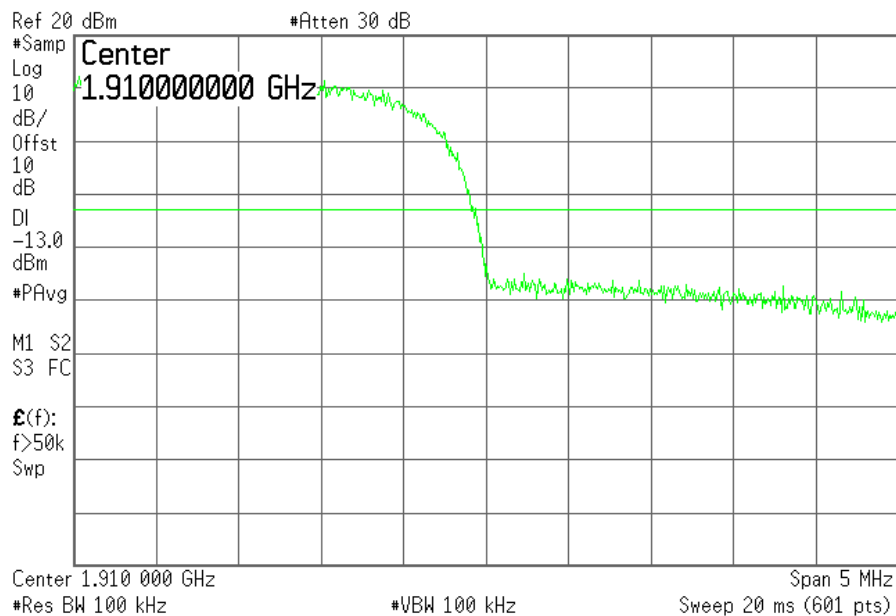
L



**Plot 5.2.4) HSPA; PCS high channel, above 1910 MHz**

\* Agilent 17:46:39 20 Sep 2007

L



## SIERRA WIRELESS, INC.

FCC Test Report	FCC ID: N7NMC8781	Sept. 20, 2007	Page 23 of 23
-----------------	-------------------	----------------	---------------

### **6 Field strength of spurious radiation**

47 CFR 2.1053

There is no change in DUT hardware, operating frequency, TX modulation, and peak power, and there is no degradation in spurious emissions at the antenna port as demonstrated above, we conclude there is no degradation in field strength of spurious radiation.

### **7 Frequency stability**

47 CFR 2.1055

There is no change in DUT hardware, operating frequency, TX modulation, and peak power, all components affecting frequency stability remain the same, and therefore we conclude the frequency stability remains unchanged.