AirCard 880E Supplementary Report

FCC ID: N7NAC880E

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1 Introduction

The AirCard 880E (FCC ID: N7NAC880E) 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 AirCard 880E 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:

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3 Occupied Bandwidth

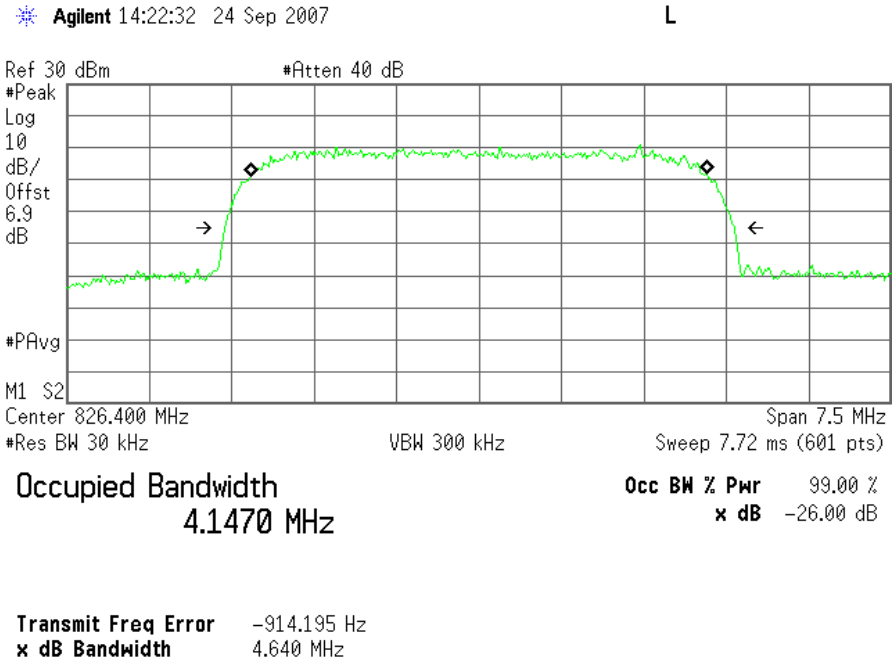
47 CFR 2.1046

3.1 Test Results

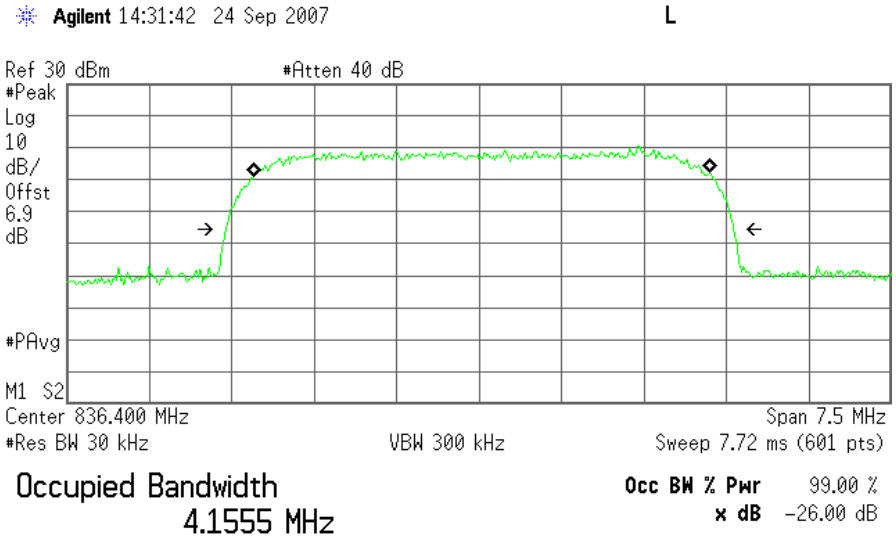
Performance of the UMTS 850 HSPA and UMTS 1900 HSPA are shown below.

Frequency (MHz)	Channel	99% Occupied Bandwidth (MHz)	-26dBc Occupied Bandwidth (MHz)
826.4	4132	4.1470	4.640
836.4	4182	4.1555	4.617
846.6	4233	4.1633	4.636
1852.4	9262	4.1683	4.652
1880.0	9400	4.1778	4.646
1907.6	9538	4.1457	4.168

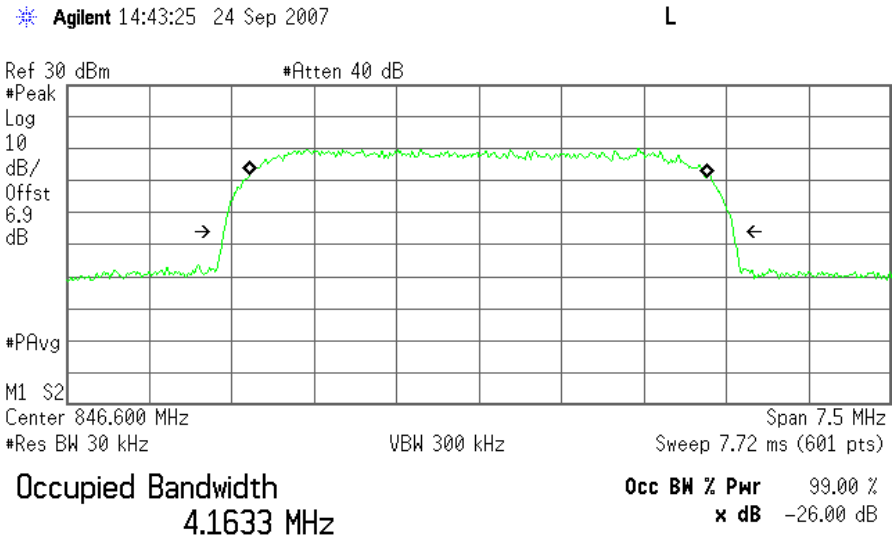
HSPA Occupied Bandwidth, Cellular Low channel 4132, 826.4 MHz, 99% bandwidth



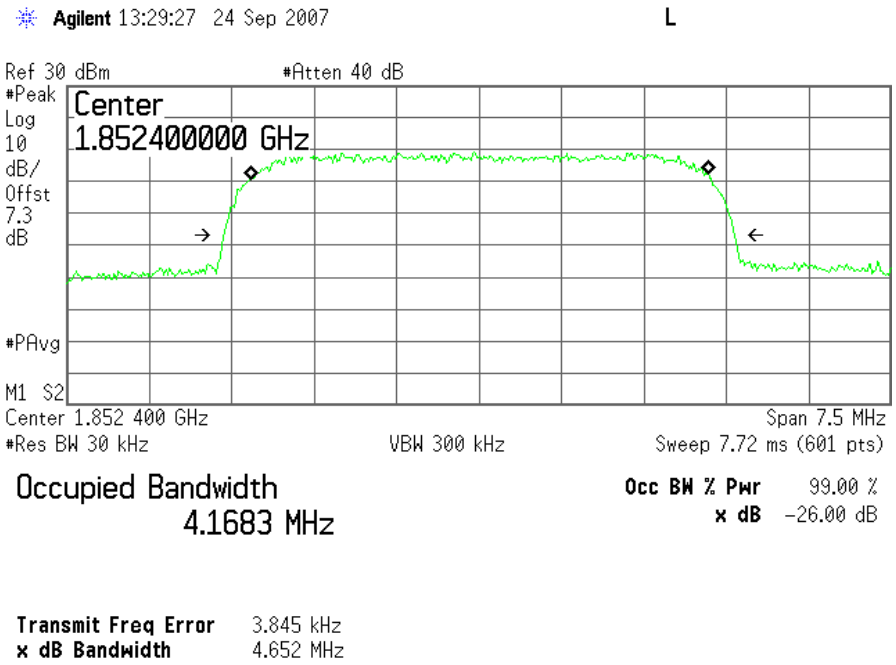
HSPA Occupied Bandwidth, Cellular Middle channel 4182, 836.4 MHz, 99% bandwidth



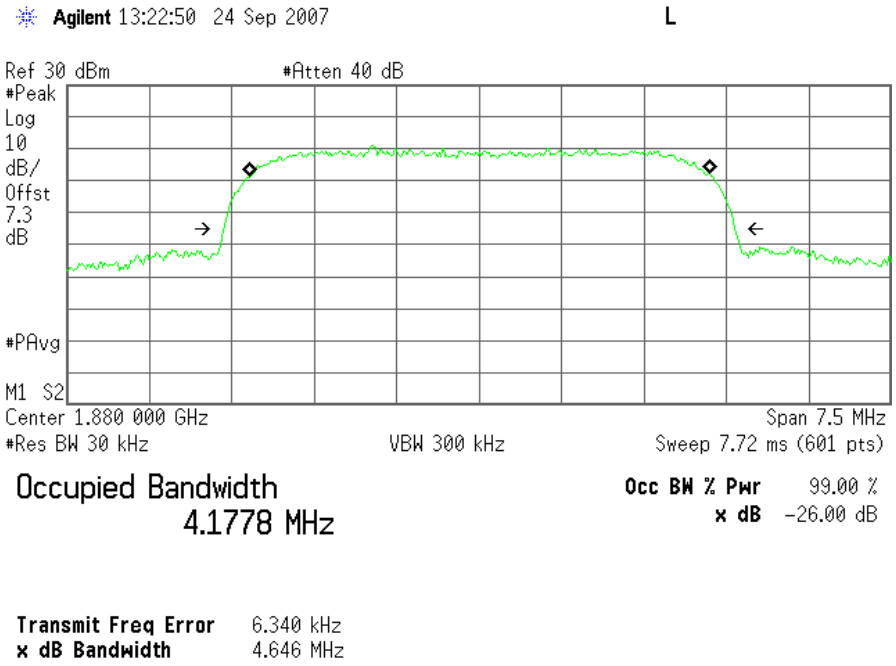
HSPA Occupied Bandwidth, Cellular High channel 4233, 846.6 MHz, 99% bandwidth



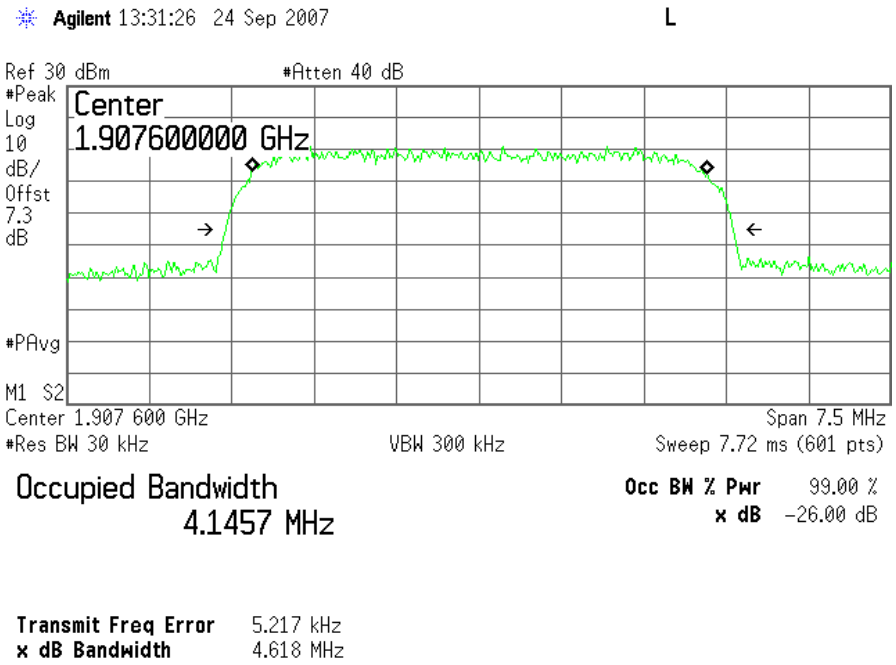
HSPA Occupied Bandwidth, PCS Low channel 9262, 1852.4 MHz, 99% bandwidth



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



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



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

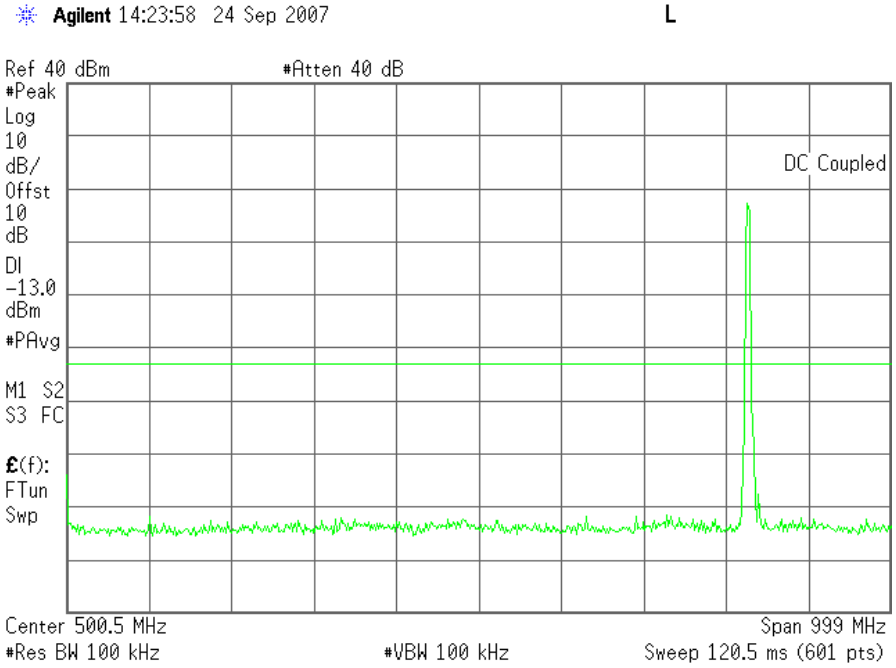
- **UMTS PCS Band**

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

4.2 Test Plots

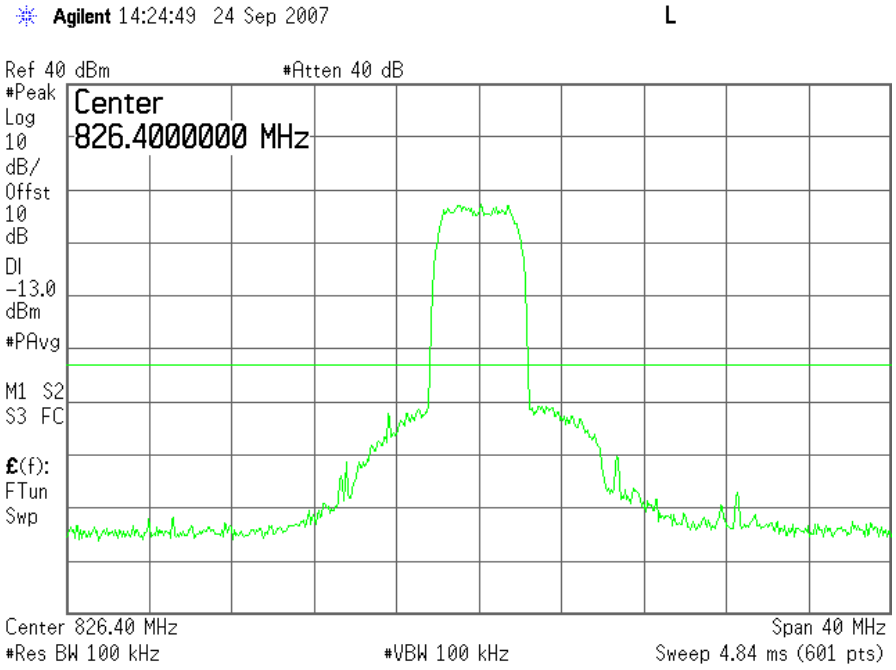
Plot 4.2.1) Out of Band Emissions at Antenna Terminals

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



Plot 4.2.2) Out of Band Emissions at Antenna Terminals

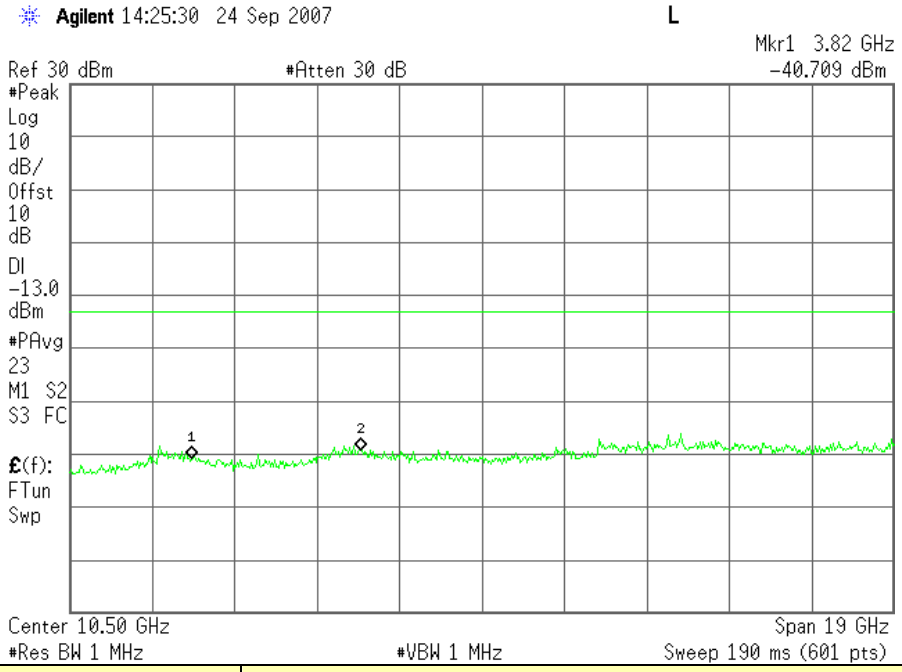
HSPA, Low channel 4132, 826.4 MHz, TX signal +/- 20 MHz



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

Plot 4.2.3) Out of Band Emissions at Antenna Terminals

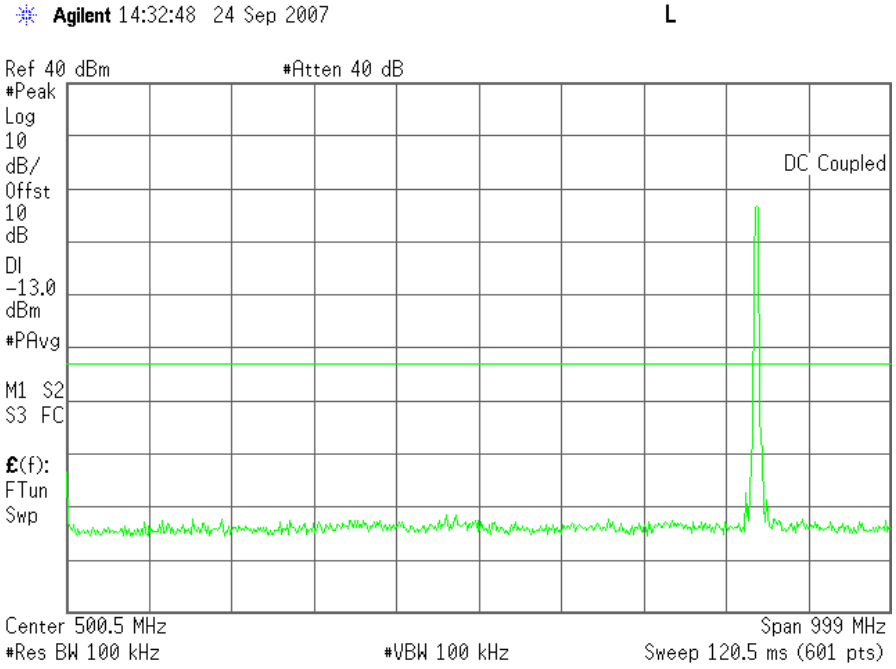
HSPA, Low channel 4132, 826.4 MHz, 1 GHz to 20 GHz



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

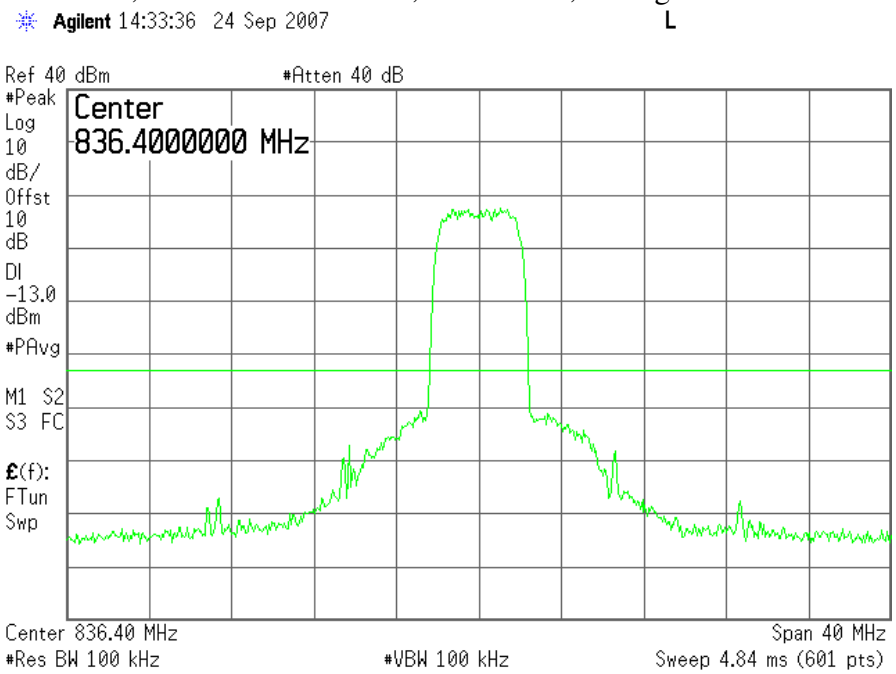
Plot 4.2.4) Out of Band Emissions at Antenna Terminals

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



Plot 4.2.5) Out of Band Emissions at Antenna Terminals

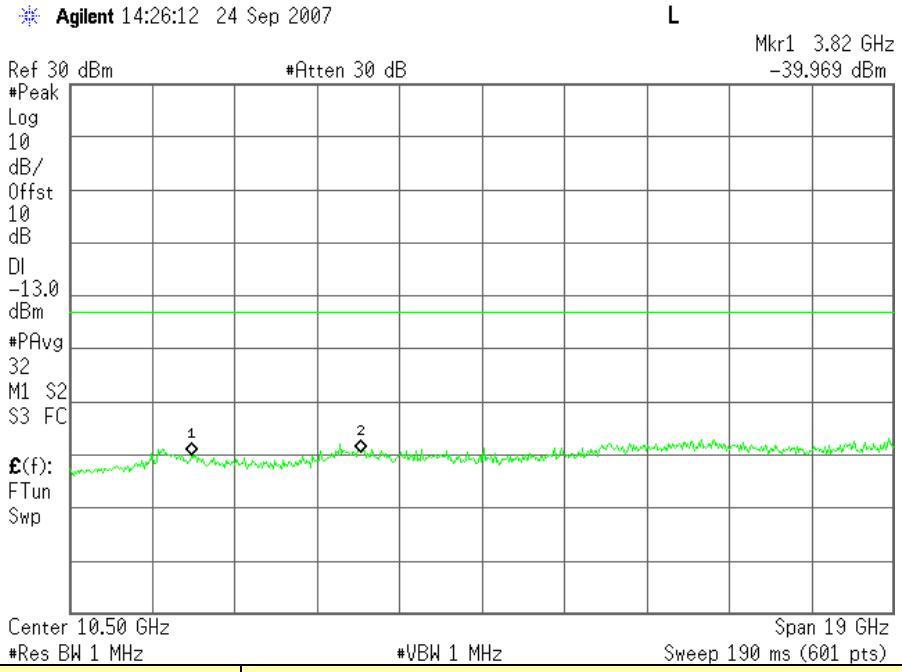
HSPA, Middle channel 4182, 836.4 MHz, TX signal +/- 20 MHz



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

Plot 4.2.6) Out of Band Emissions at Antenna Terminals

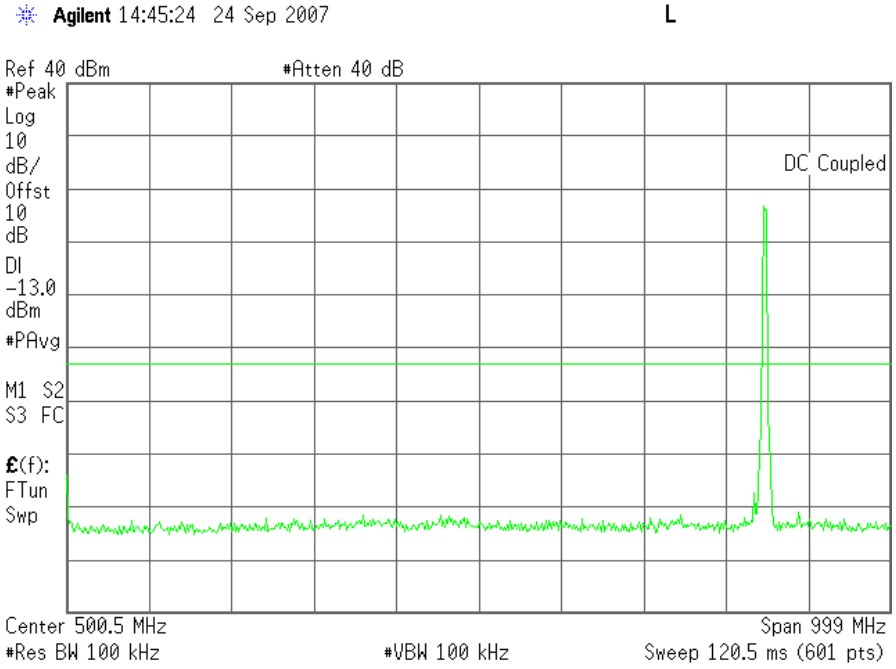
HSPA, Middle channel 4182, 836.4 MHz, 1 GHz to 20 GHz



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

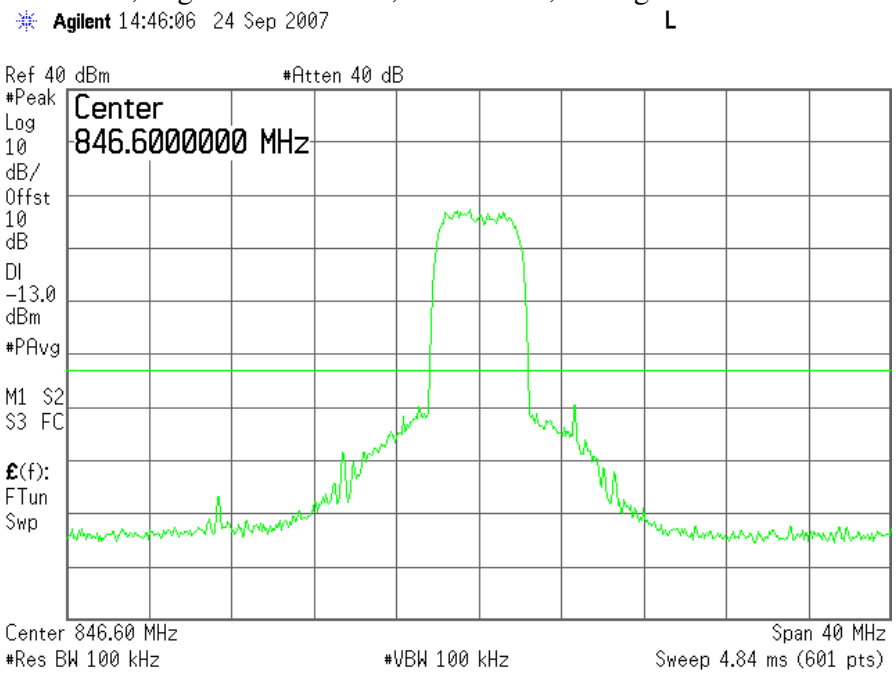
Plot 4.2.7) Out of Band Emissions at Antenna Terminals

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



Plot 4.2.8) Out of Band Emissions at Antenna Terminals

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



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

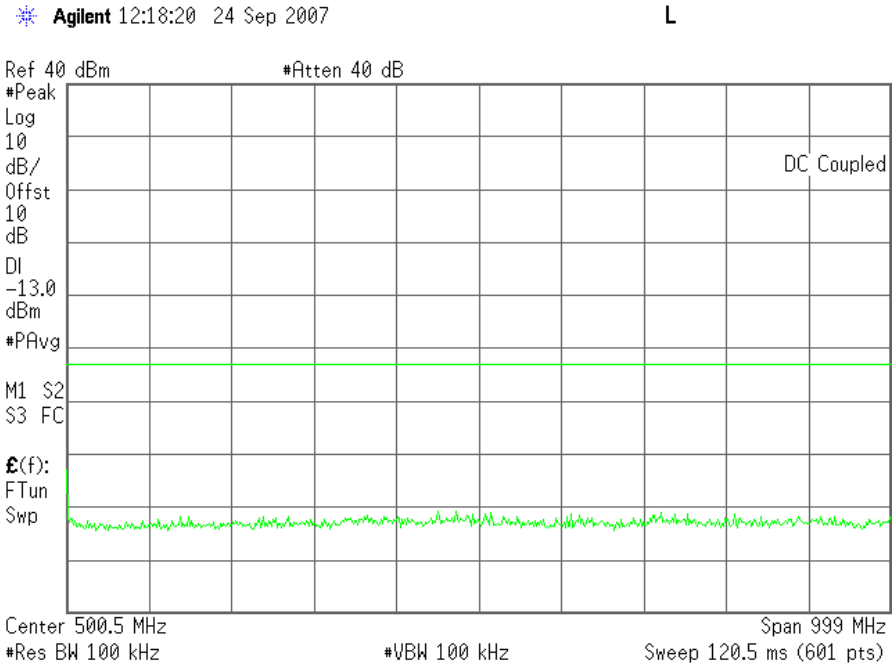
Plot 4.2.9) Out of Band Emissions at Antenna Terminals

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

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

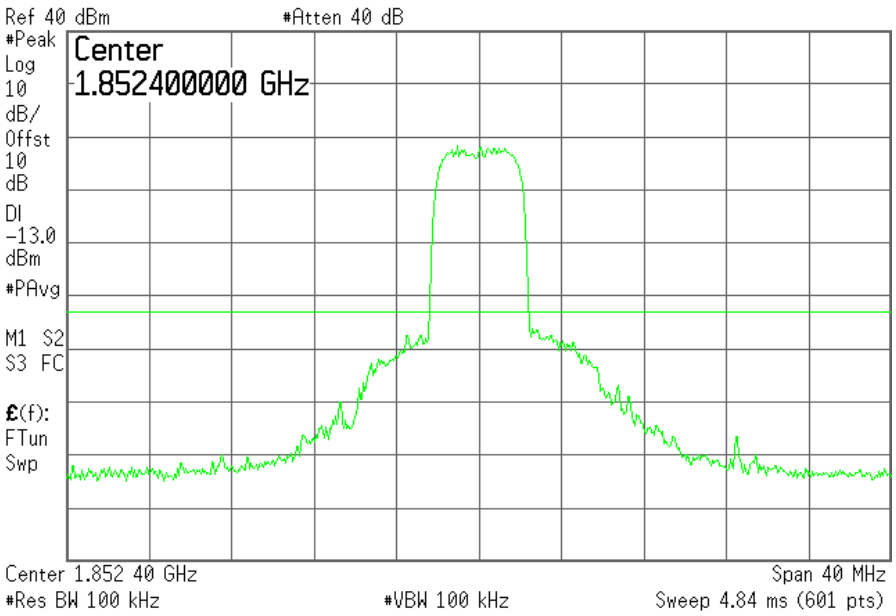
Plot 4.2.10) Out of Band Emissions at Antenna Terminals

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



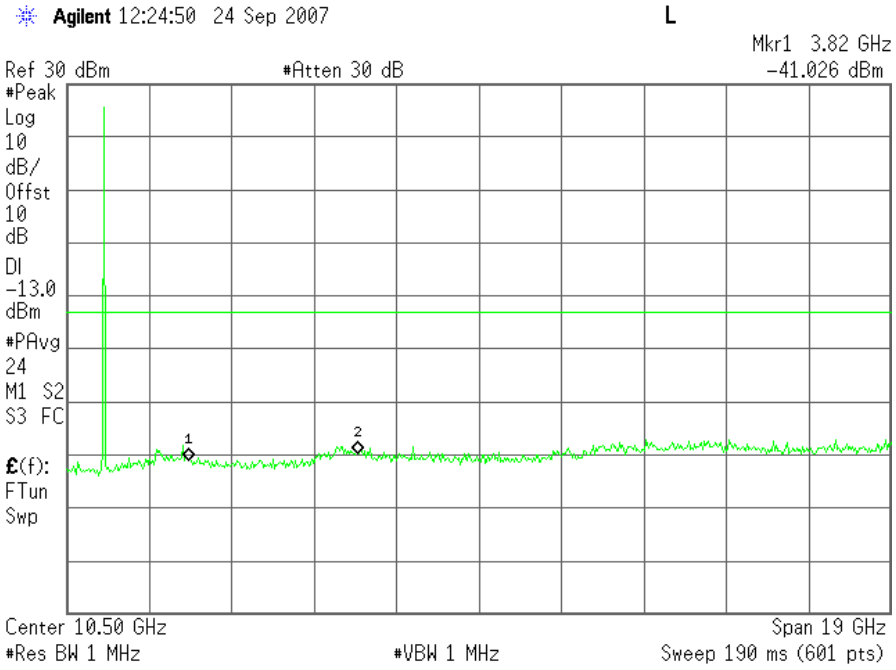
Plot 4.2.11) Out of Band Emissions at Antenna Terminals

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



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

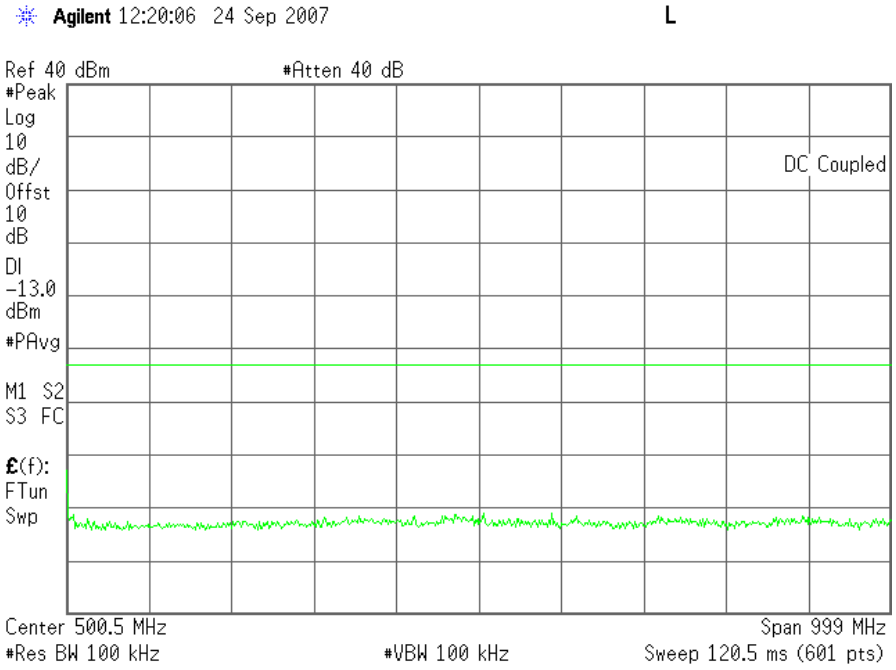
HSPA, Low channel 9262, 1852.4 MHz, 1 GHz to 20 GHz



The strong emission shown is the carrier signal.

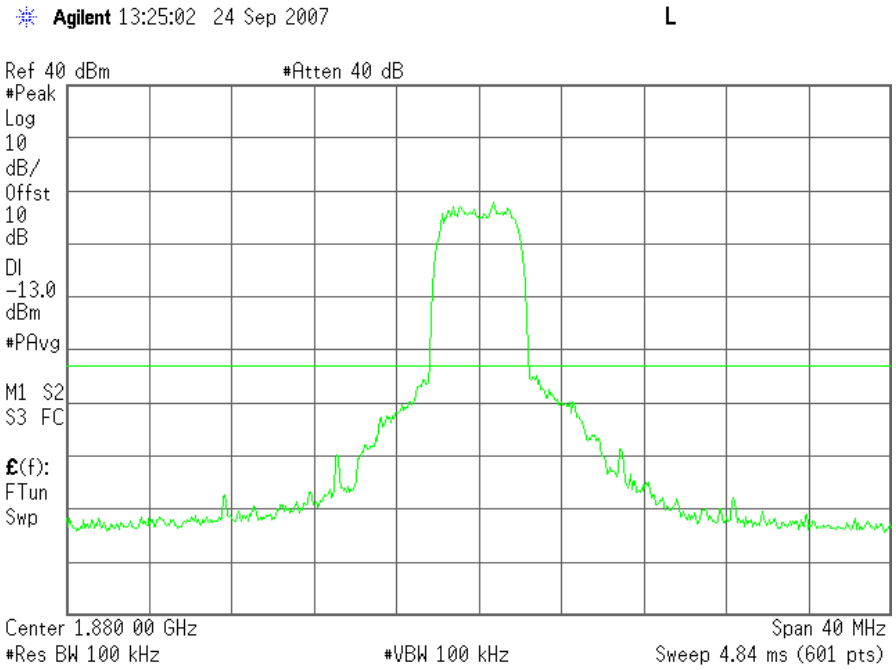
Plot 4.2.13) Out of Band Emissions at Antenna Terminals

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



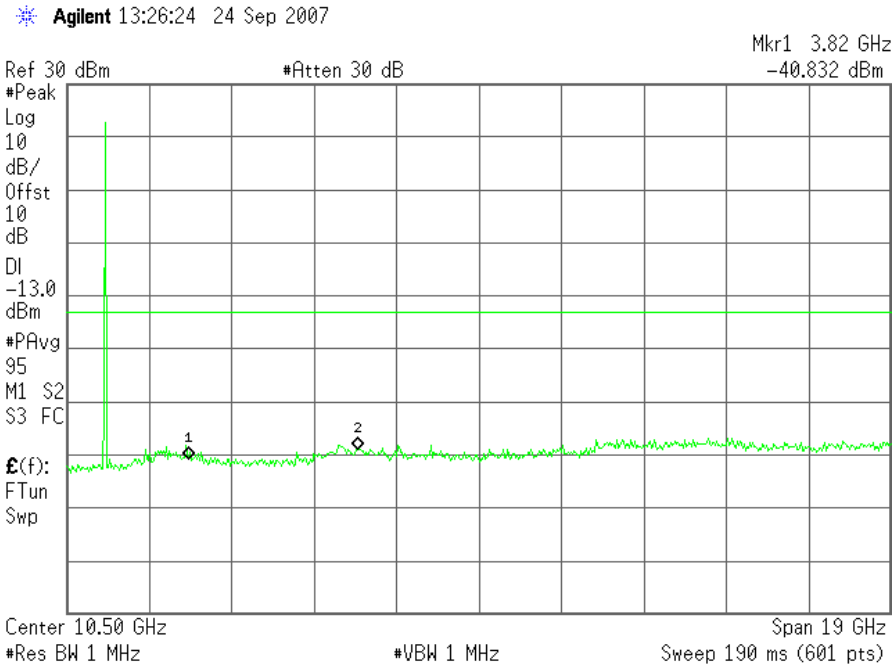
Plot 4.2.14) Out of Band Emissions at Antenna Terminals

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



Plot 4.2.15) Out of Band Emissions at Antenna Terminals

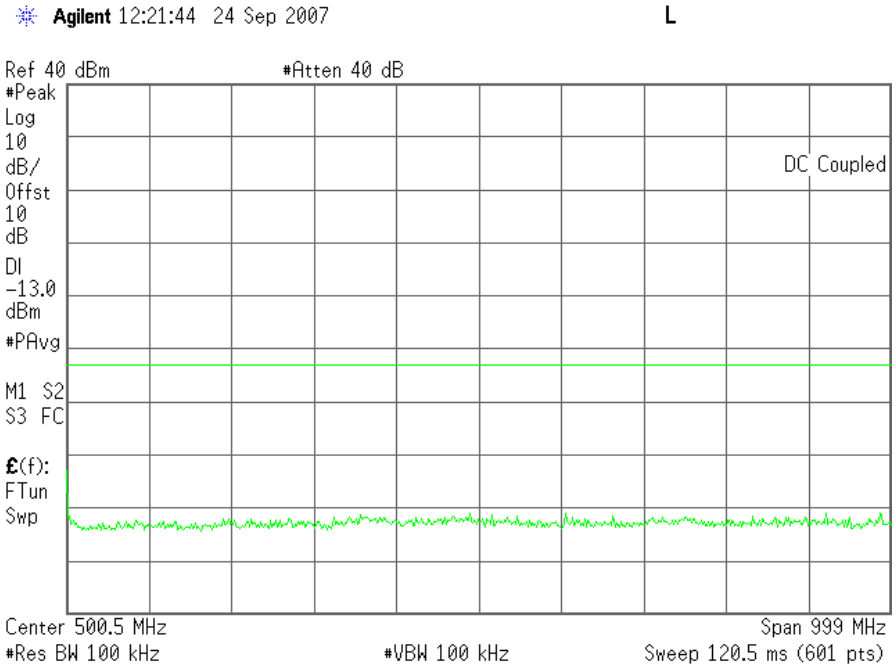
HSPA, Middle channel 9400, 1880 MHz, 1 GHz to 20 GHz



The strong emission shown is the carrier signal.

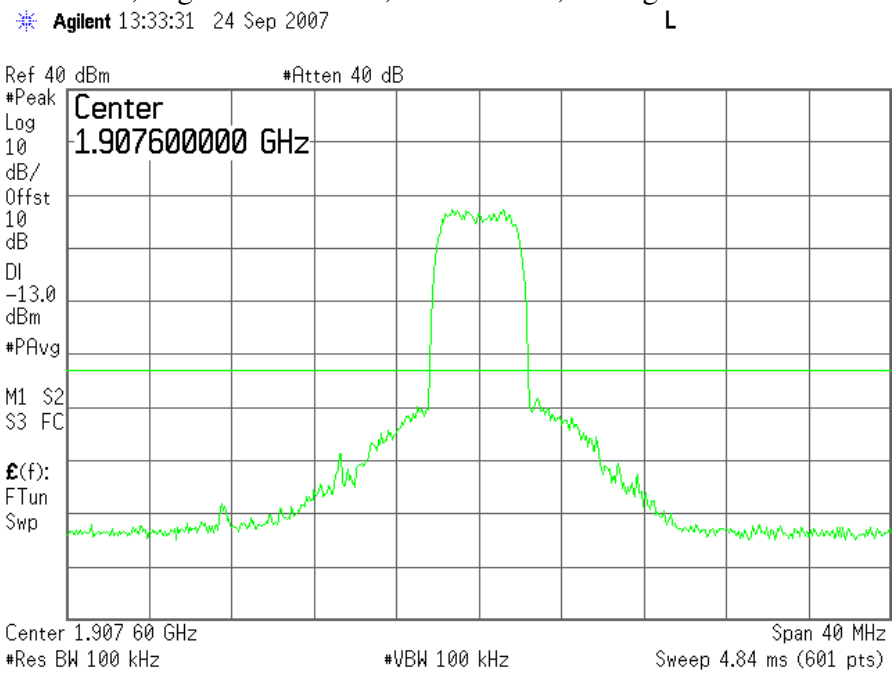
Plot 4.2.16) Out of Band Emissions at Antenna Terminals

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



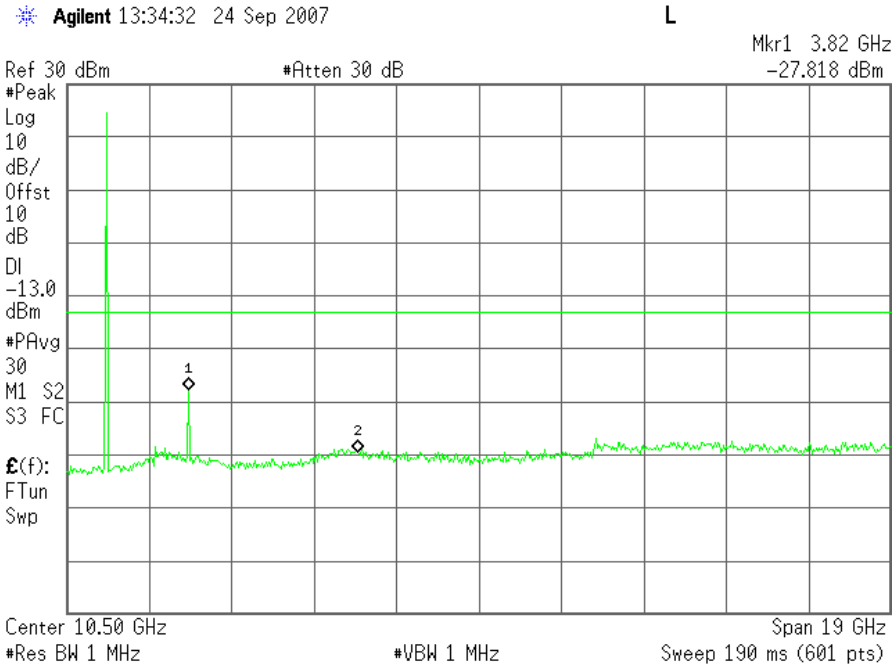
Plot 4.2.17) Out of Band Emissions at Antenna Terminals

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



Plot 4.2.18) Out of Band Emissions at Antenna Terminals

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



The strong emission shown is the carrier signal.

5 Block Edge Compliance

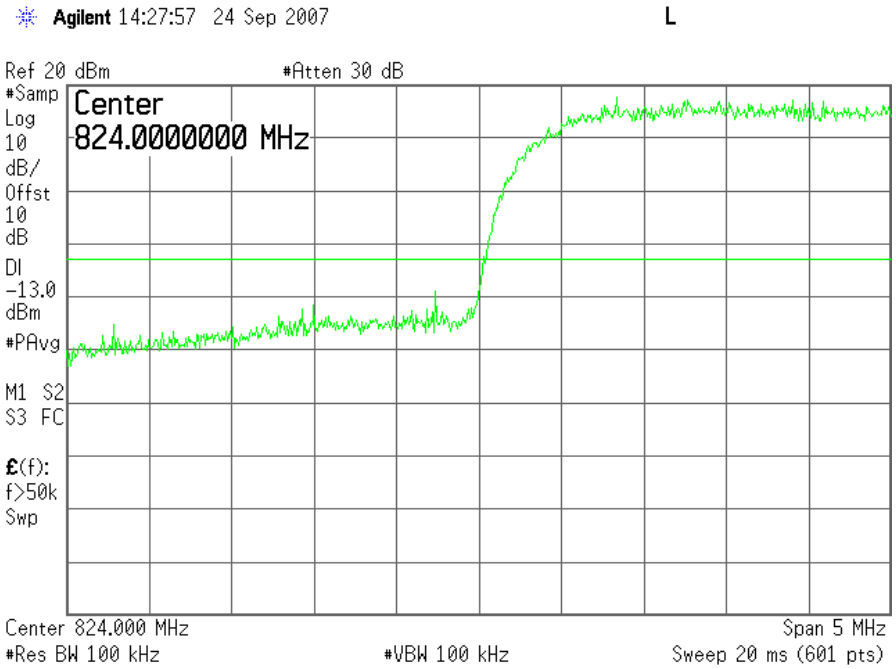
FCC Part 22H/24E

5.1 Test Results

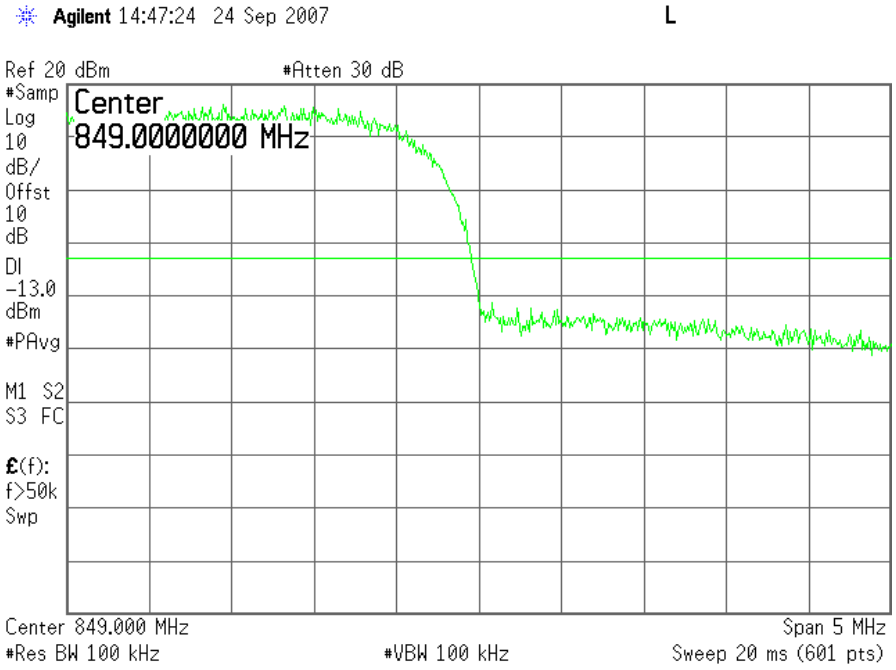
Block Test	Frequency Boundaries (MHz)	Channels Tested	Corresponding Plots	Result
1	HSPA: Below 824MHz, above 849MHz	4132, 4233	5.2.1, 5.2.2	Complies
2	HSPA: Below 1850MHz, above 1910MHz	9262, 9538	5.2.3, 5.2.4	Complies

5.2 Test Plots

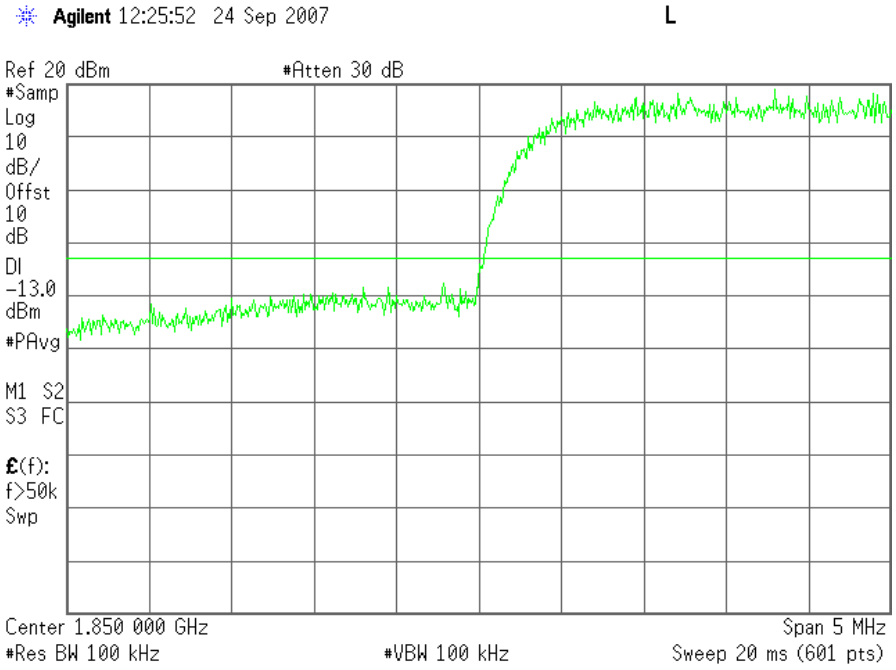
Plot 5.2.1) HSPA**; Cellular low channel, below 824 MHz**



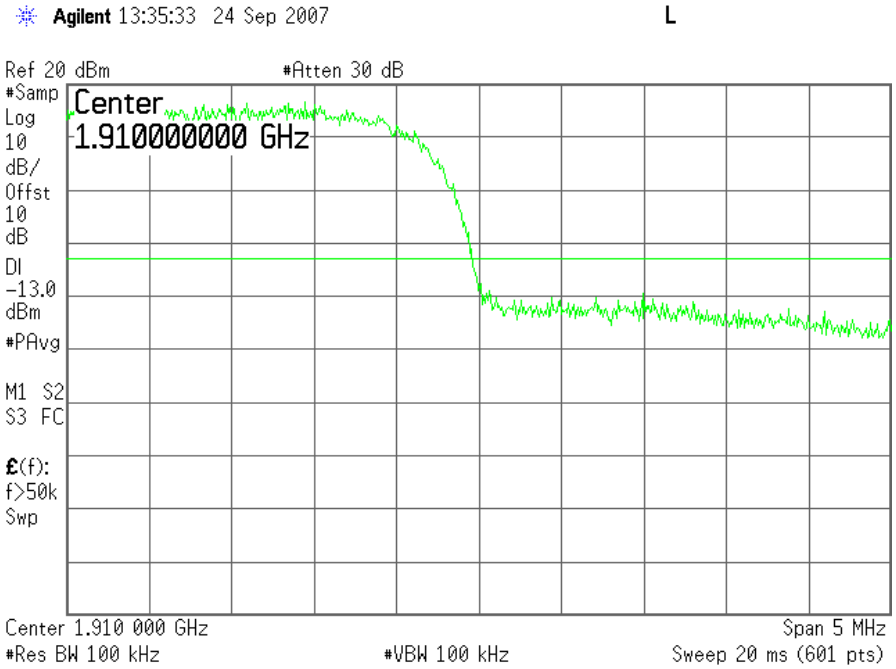
Plot 5.2.2) HSPA**; Cellular high channel, above 849 MHz**



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



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



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, therefore we conclude the frequency stability remains unchanged.