



## TEST REPORT

Report Number: 100455091ATL-007

September 30, 2011

**Product Name: Sirius XM Lynx Portable Radio**

**Product Model Number: SXi1**

Standard: FCC Part 15, Subpart C, Intentional Radiators (15.247)

**Tested by:**

Intertek Testing Services NA Inc.  
1950 Evergreen Blvd., Suite 100  
Duluth, GA 30096

**Client:**

SIRIUS XM Radio Inc  
1500 Eckington PL NE  
Washington, DC 20002  
Contact: Beejay Jolayemi  
Phone: 202.680.4288  
Fax: 202.380.4091

**Report prepared by:**

A blue ink signature of Richard Bianco, written in a cursive style.

Richard Bianco  
EMC Team Leader

**Report reviewed by:**

A blue ink signature of Jeremy O. Pickens, written in a cursive style.

Jeremy O. Pickens  
Department Manager - EMC

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## 1.0 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the testing indicated below. The results obtained in this test report pertain only to the item(s) tested. Refer to the Test Summary for the specific details.

## 2.0 Test Summary

Section	Test Full Name	Test Date	Result
3.0	Description of Equipment Under Test		
4.0	System setup including cable interconnection details, support equipment and simplified block diagram.		
5.0	Transmitter Information for equipment operating under Parts 11, 15 and 18 of the rules (Transmitter Info -		PASS
6.0	§ 15.247 Occupied Bandwidth		PASS
7.0	§ 15.247(e) Power Spectral Density		PASS
8.0	§ 15.247(d) Conducted Spurious Emissions		PASS
9.0	§ 15.247(d) Radiated Spurious Emissions		PASS
10.0	Test Equipment List		
11.0	Revision History		

### 3.0 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Satellite Radio	SIRIUS XM Satellite Radio	SXi1	NA

EUT receive date:	July 11, 2011
EUT receive condition:	Good

Description of EUT provided by Client:

Sirius XM Lynx Hardware Features

- Revolutionary SiriusXM *PowerConnect*™ FM Transmitter works through your vehicle's radio\* with easy Do-It-Yourself Installation. The color-coded Vehicle Dock makes it simple to connect.
- Customize your display by choosing the backlight color theme that matches your mood or vehicle dash lights.
- Personalize your radio by choosing the trim ring that reflects your taste or complements your vehicle interior.
- View artist name, song title, and channel information on the large color display.
- Browse programs, artists, and songs playing on other channels without having to change the channel.
- One-Touch Jump™ to traffic and weather of the 20 most congested cities, or to the previous channel to which you were listening.
- Save and enjoy fast access to your favorite channels.
- Lock and unlock channels with easy-to-use parental controls.
- Complete *PowerConnect* Vehicle Kit included.
- Universal docking capability - add accessories for your home, office, additional vehicles or even outdoors.
- Connectivity could be achieved via Satellite, WiFi, Bluetooth & USB.

Description of EUT exercising:

The EUT was powered with a 12Vdc battery supplied to the dock. The satellite signal was amplified and retransmitted into the emissions chamber to the radio under test. The radio then transmitted the music on the FM channel being investigated. The channels tested were 88.1, 96.9, and 107.9MHz.

Mode of Operation	Frequency Range (MHz)	Number of Channels	Channel Separation (kHz)
WiFi	2400-2483.5	NA	NA

Applicant Information:

XM Radio Inc.  
1500 Eckington Pl, NE  
Washington, DC 20002

Manufacturer Information:

WNC (Kunshan) Corp.  
NO. 88 Central Avenue, Area B, Kunshan Export Processing Zone  
Kunshan City, Jiangsu, China

#### **4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)**

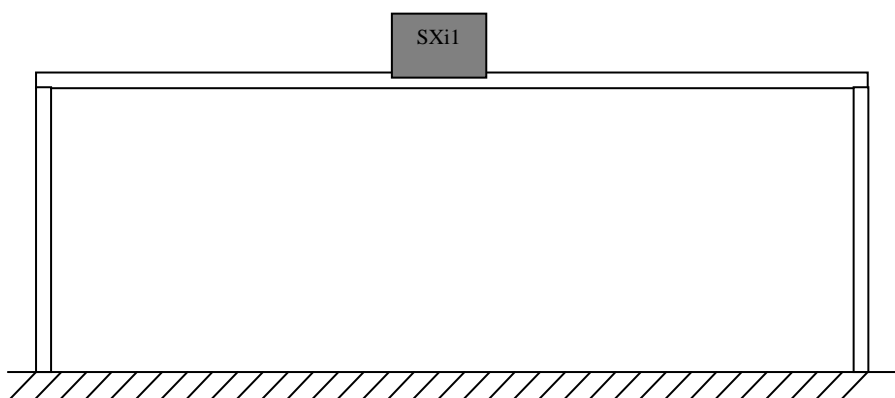
**Method:**

Record the details of EUTcabling, document the support equipment, and show the interconnections in a block diagram.

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
No support equipment required			

**4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)**

**Configuration Diagram – Test Setup**



## 5.0 Transmitter Information for equipment operating under Parts 11, 15 and 18 of the rules (Transmitter Info - Unlicensed)

FCC Rule Part			
2.1033(b)(1)	<b>Applicant</b>	Company Name:	Sirius XM Satellite Radio, Inc.
		Address:	3161 S.W. 10th Street, Deerfield Beach, FL 33442
		Phone:	202-680-4288
		Contact Name:	Beejay Jolayemi
	<b>Manufacturer</b>	Company Name:	Same
		Address:	Same
		Phone:	Same
		Contact Name:	Same
2.1033(b)(2)	<b>Equipment</b>	FCC ID:	RS2SXI1
		EUT Model Number:	SXI1
		EUT Serial Number:	NA
2.1033(b)(3)	User Manual		Attach as separate exhibit.
2.1033(b)(4)	Brief description of circuit functions		Attach as separate exhibit.
2.1033(b)(5)	Block diagram showing frequency of oscillators		Attach as separate exhibit.
2.1033(b)(6)	Test report		Incorporated with this document
2.1033(b)(7)	Internal and external photographs		Attach as separate exhibit.
2.1033(b)(8)	Peripheral Equipment	Can be used?	N/A
		Comercially available?	N/A
2.1033(b)(9)	Transition rules apply?		No
2.1033(b)(10)	Scanning receiver?		No
2.1033(b)(11)	Transmitter in 59-64 GHz band?		No
2.1033(b)(12)	Software defined radio?		No

## 6.0 15.247 Occupied Bandwidth

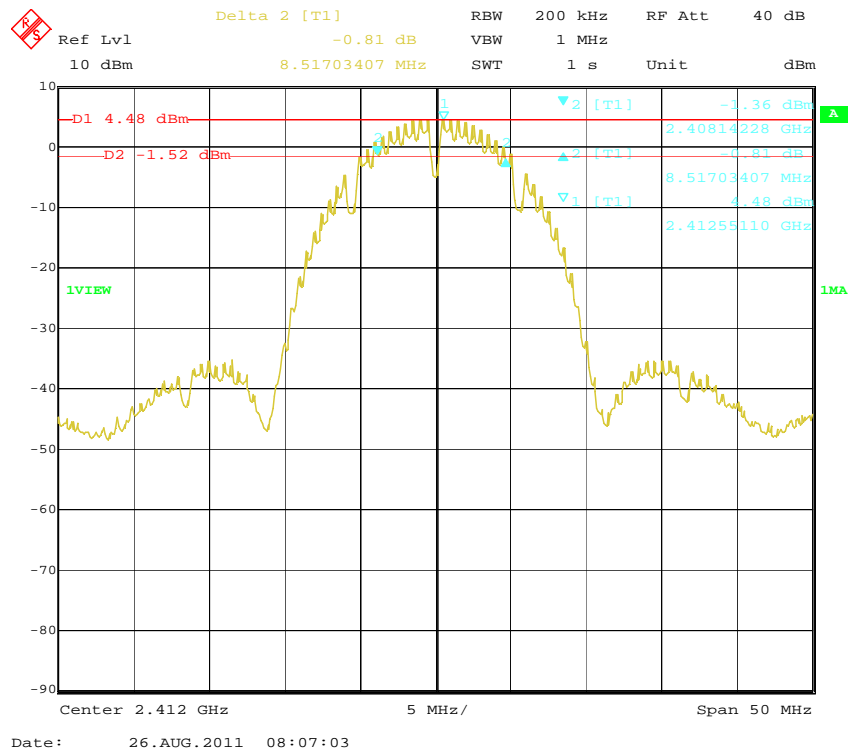
### Method:

Test Requirement: Emissions from the intentional radiator shall be greater than a band 500 kHz wide centered on the operating frequency. The 500 kHz band shall lie wholly within the frequency range of 2400-2483.5 MHz.

Test Procedure: FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

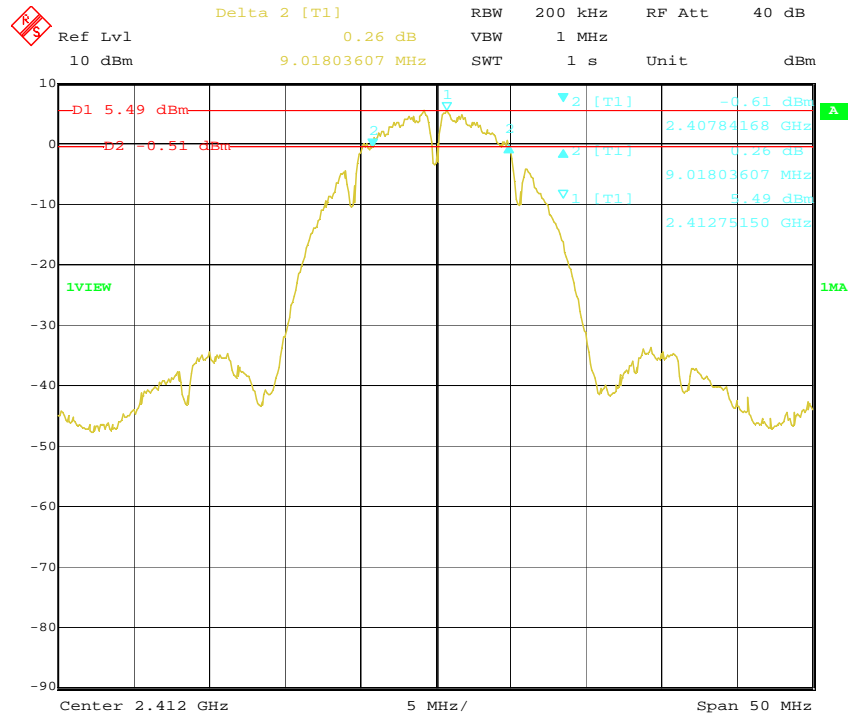
**Results: The sample tested was found to Comply**

### Low Channel Bandwidth – 8.517MHz



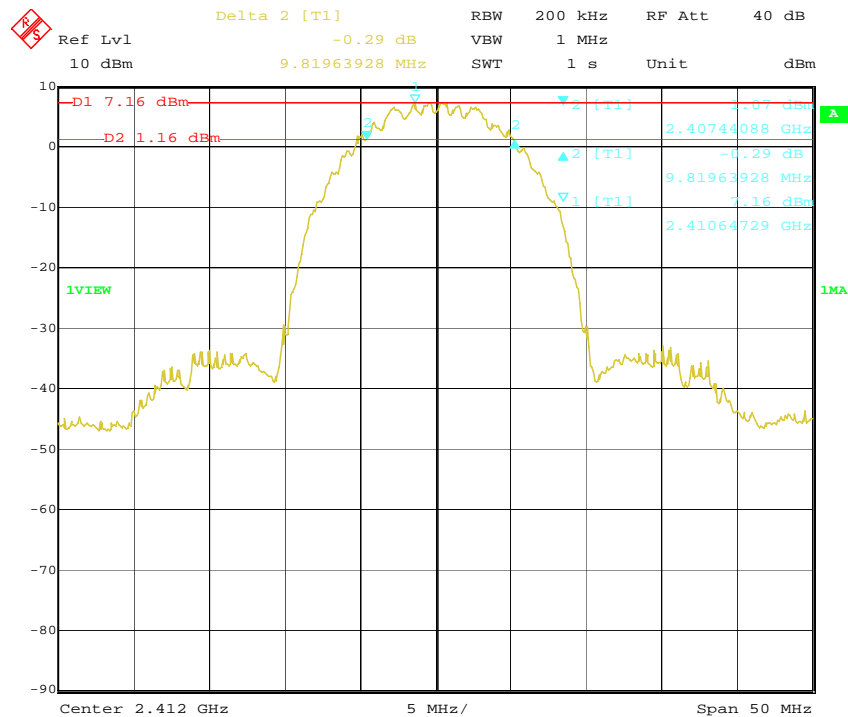
### 802.11b – 1Mbps – Low Channel

### Low Channel Bandwidth – 9.018MHz



### 802.11b – 2Mbps – Low Channel

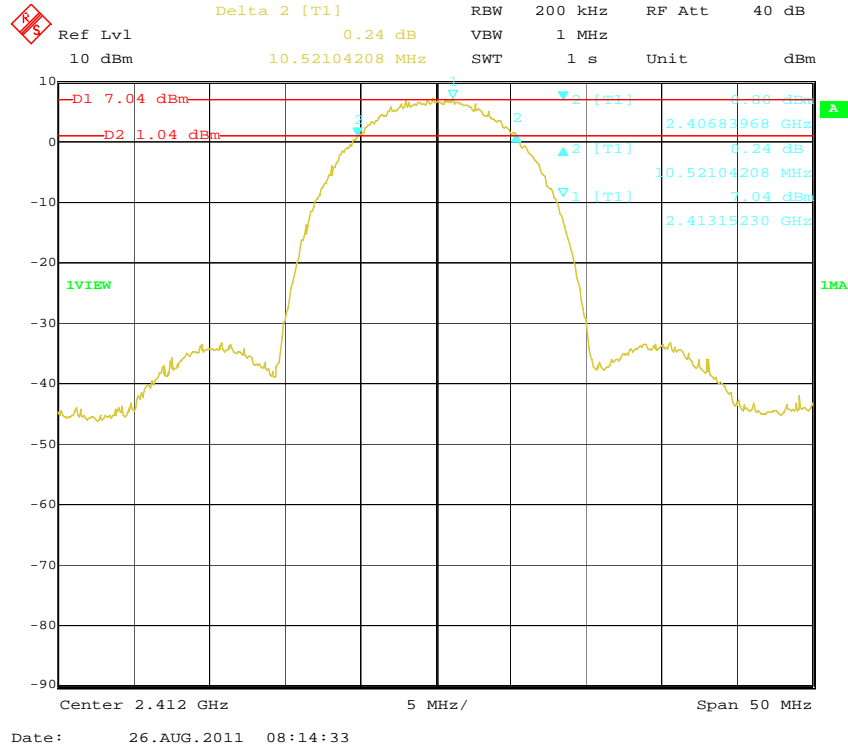
### Low Channel Bandwidth – 9.819MHz



### 802.11b – 5.5Mbps – Low Channel

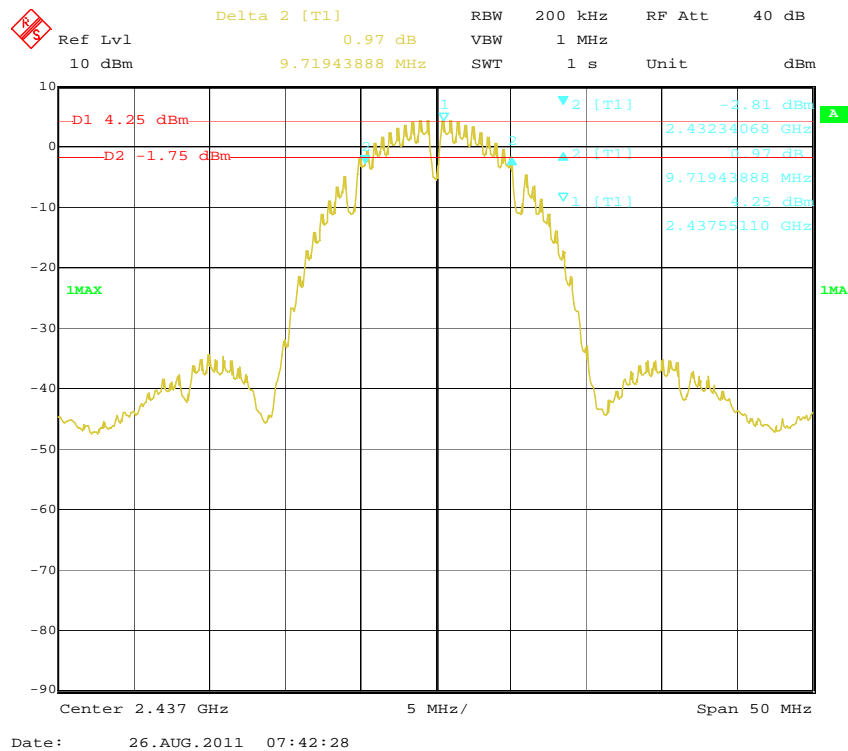


### Low Channel Bandwidth – 10.521MHz



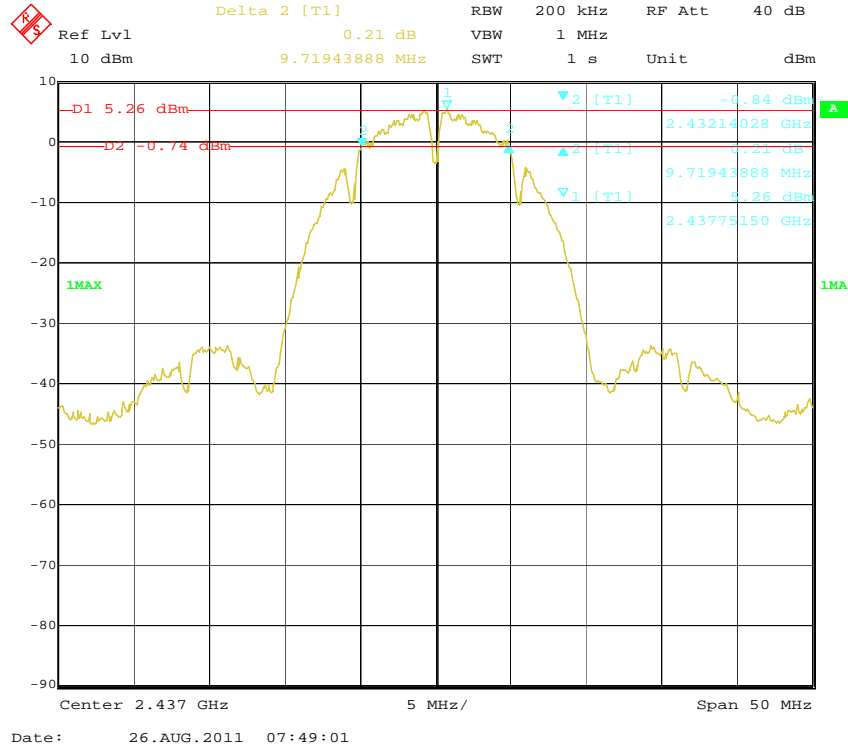
### 802.11b – 11Mbps – Low Channel

### Middle Channel Bandwidth – 9.712MHz



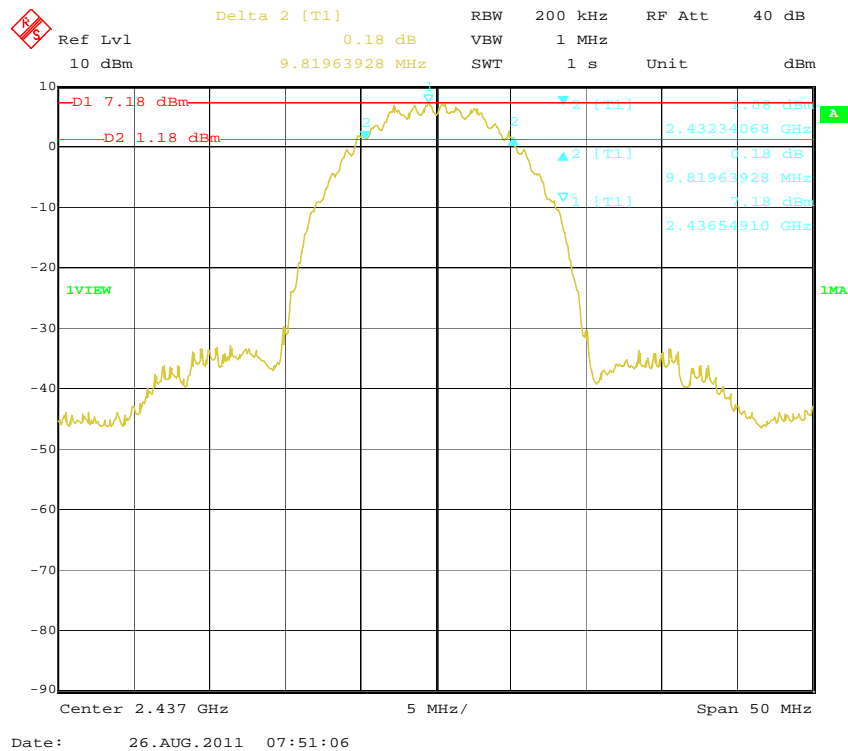
### 802.11b – 1Mbps – Mid Channel

### Middle Channel Bandwidth – 9.719MHz



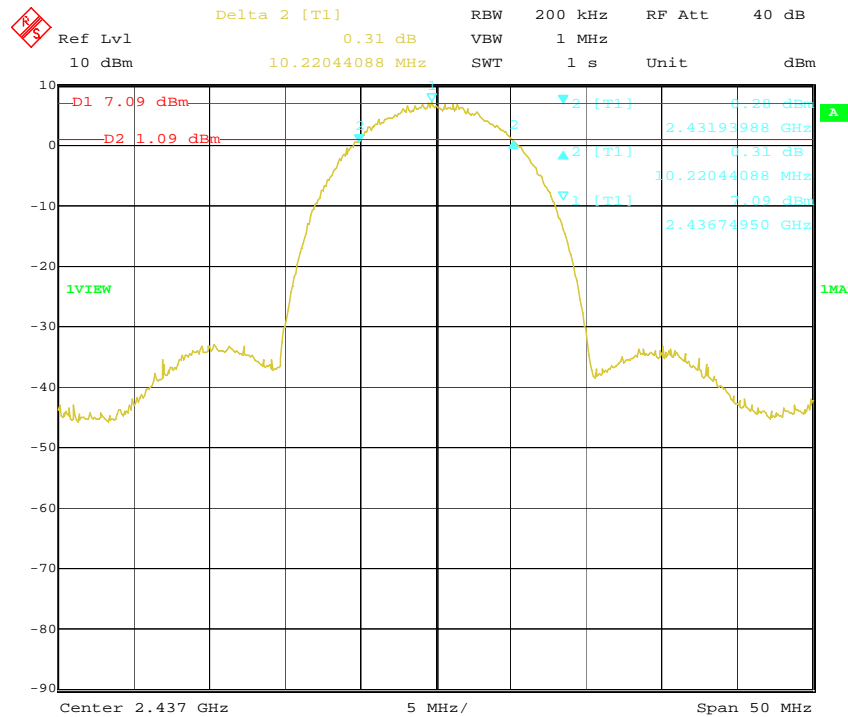
### 802.11b – 2Mbps – Mid Channel

### Middle Channel Bandwidth – 9.819MHz



### 802.11b – 5.5Mbps – Mid Channel

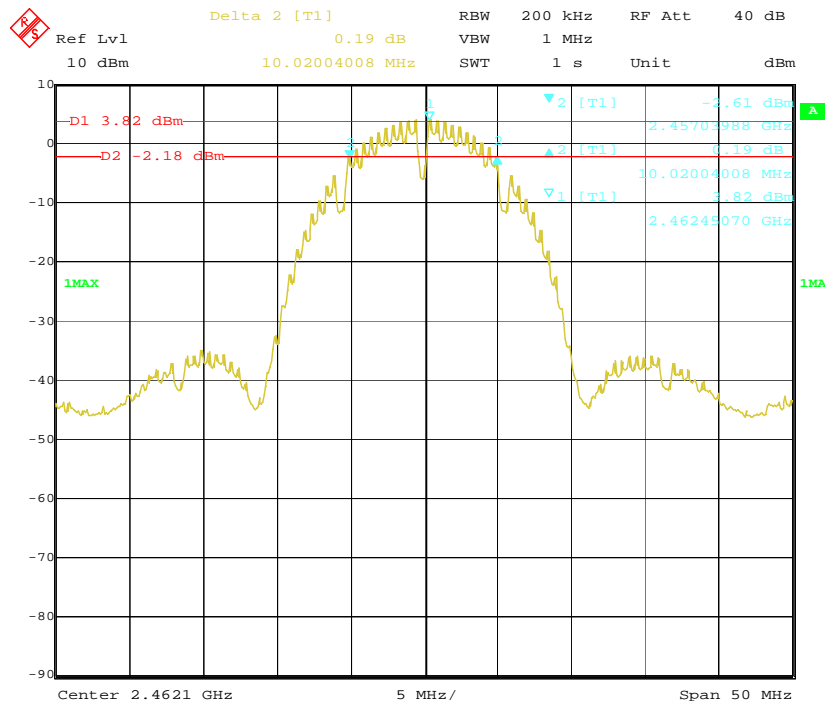
### Middle Channel Bandwidth – 10.220MHz



Date: 26.AUG.2011 07:53:14

### 802.11b – 11Mbps – Mid Channel

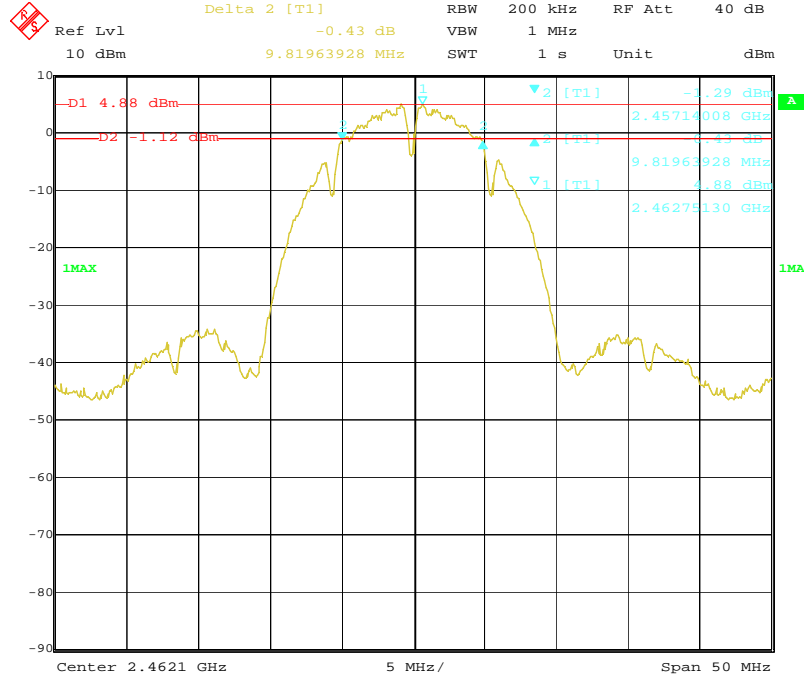
### High Channel Bandwidth – 10.020MHz



Date: 26.AUG.2011 07:16:24

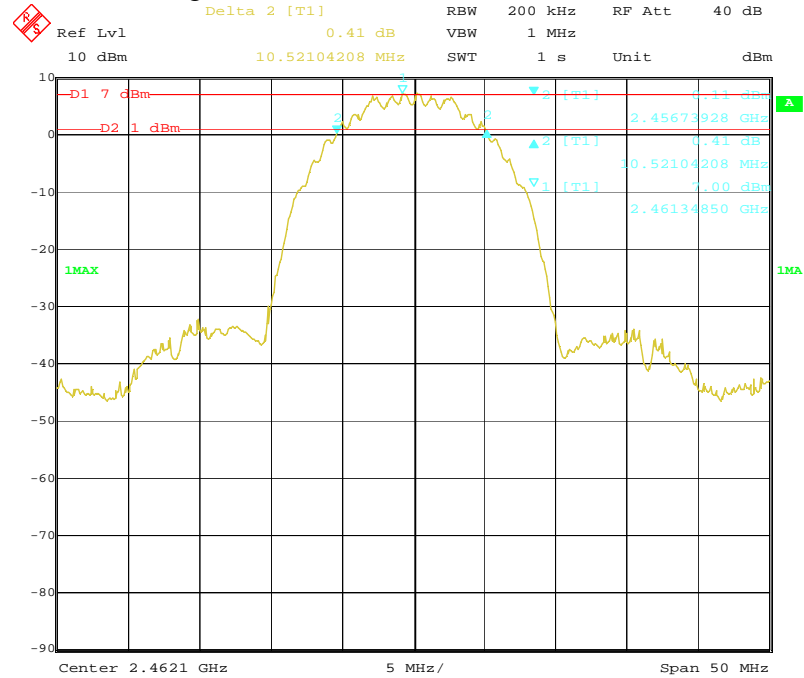
### 802.11b – 1Mbps – High Channel

### High Channel Bandwidth – 9.819MHz



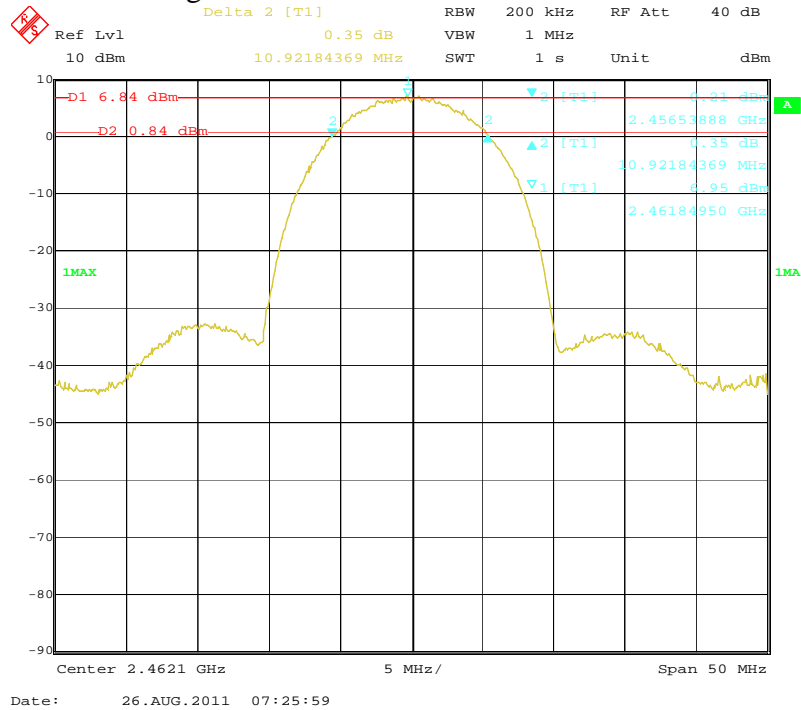
### 802.11b – 2Mbps – High Channel

### High Channel Bandwidth – 10.521MHz



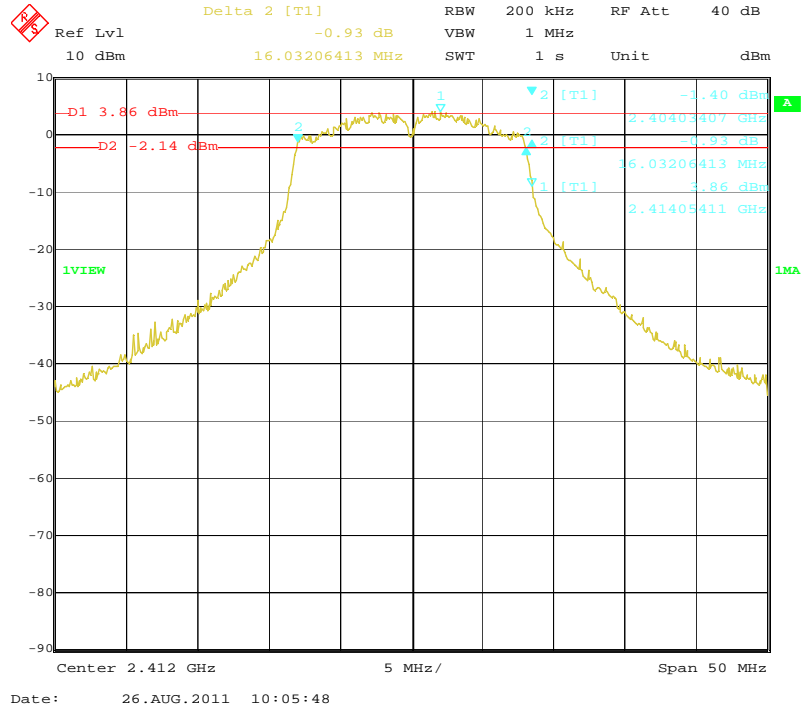
### 802.11b – 5.5Mbps – High Channel

### High Channel Bandwidth – 10.921MHz



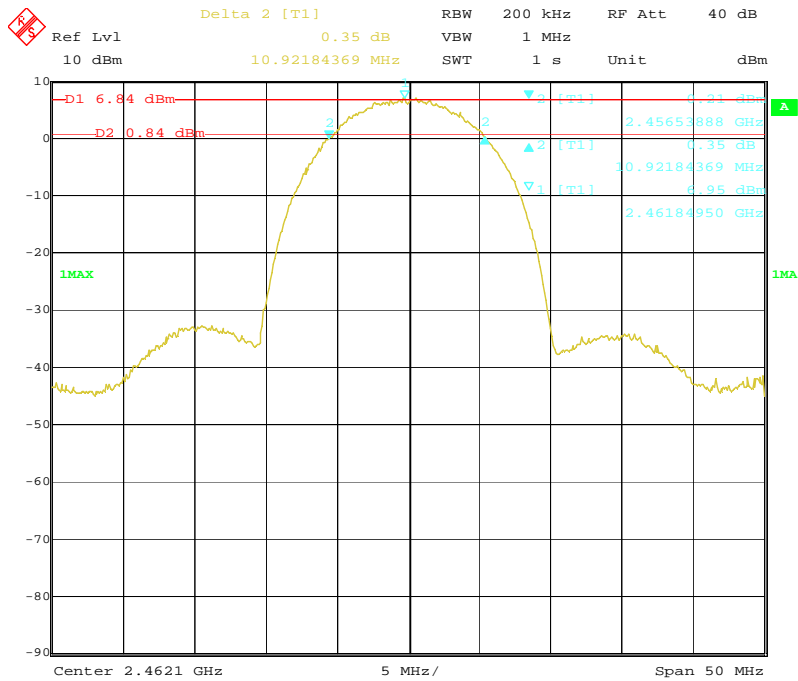
### 802.11b – 11Mbps – High Channel

### Low Channel Bandwidth – 16.032MHz



### 802.11g – 6MBPS (BPSK OFDM preamble) - Low channel

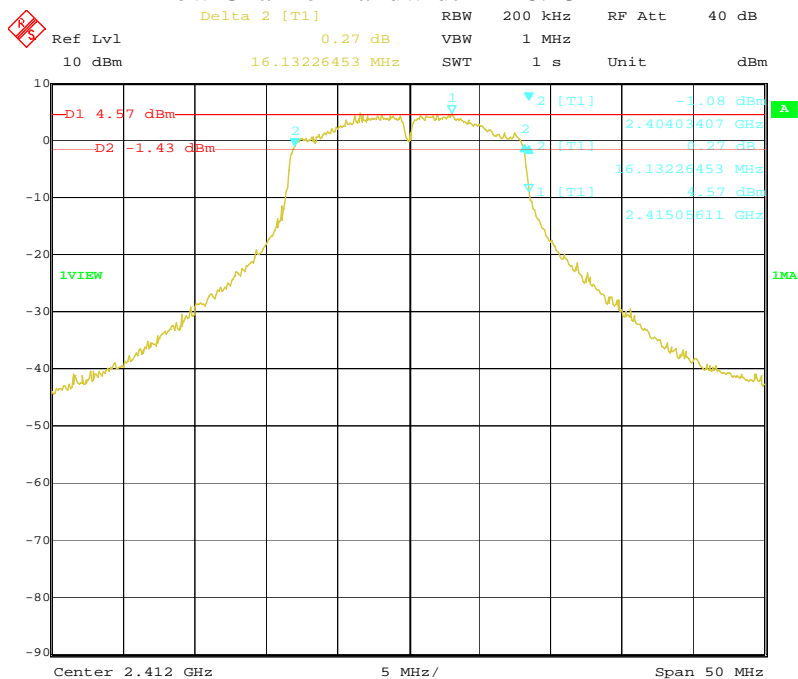
### Low Channel Bandwidth – 16.032MHz



Date: 26.AUG.2011 07:25:59

802.11g – 9MBPS (BPSK3 OFDM preamble) - Low channel

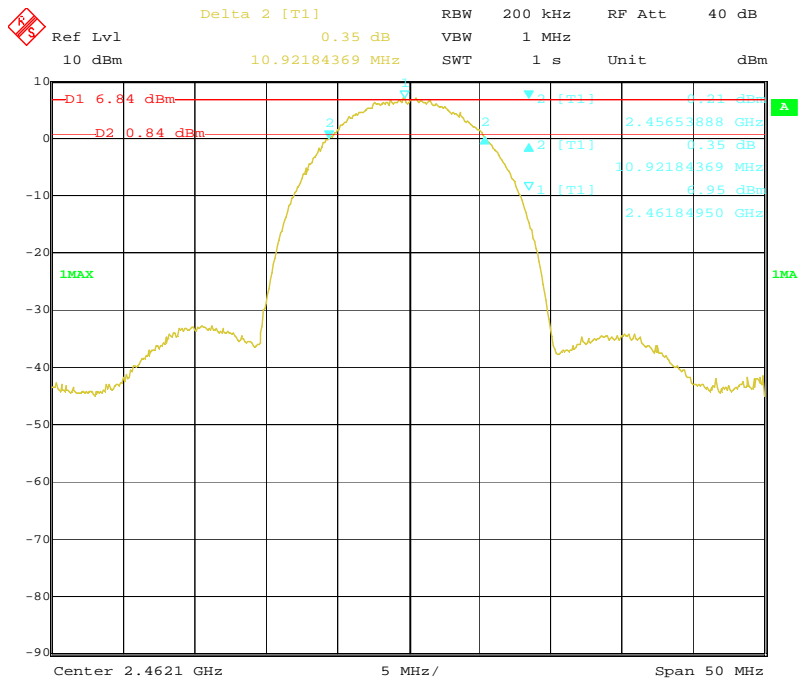
### Low Channel Bandwidth – 16.132MHz



Date: 26.AUG.2011 10:13:23

802.11g – 12MBPS (QPSK OFDM preamble) - Low channel

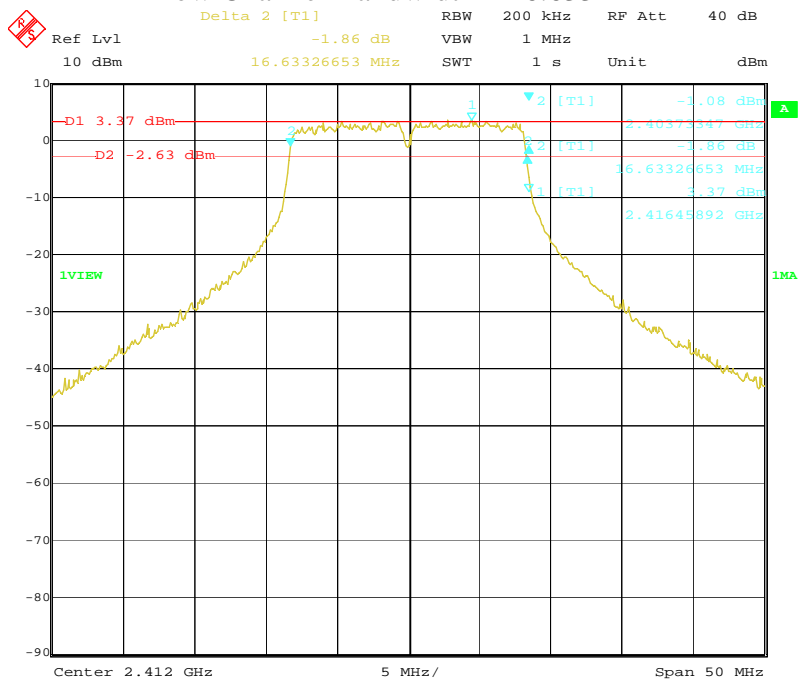
### Low Channel Bandwidth – 16.232MHz



Date: 26.AUG.2011 07:25:59

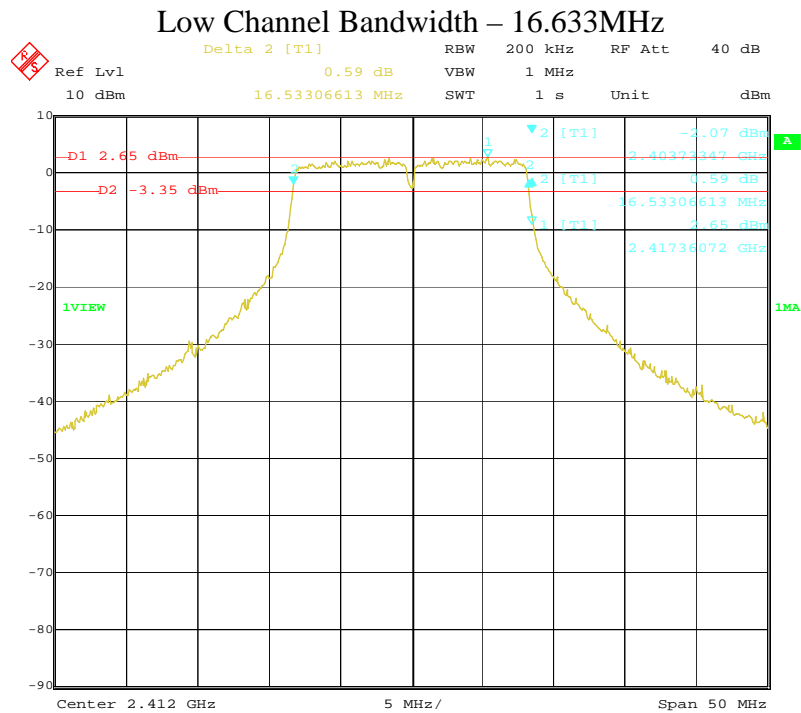
802.11g – 18MBPS (QPSK1 OFDM preamble) - Low channel

### Low Channel Bandwidth – 16.633MHz



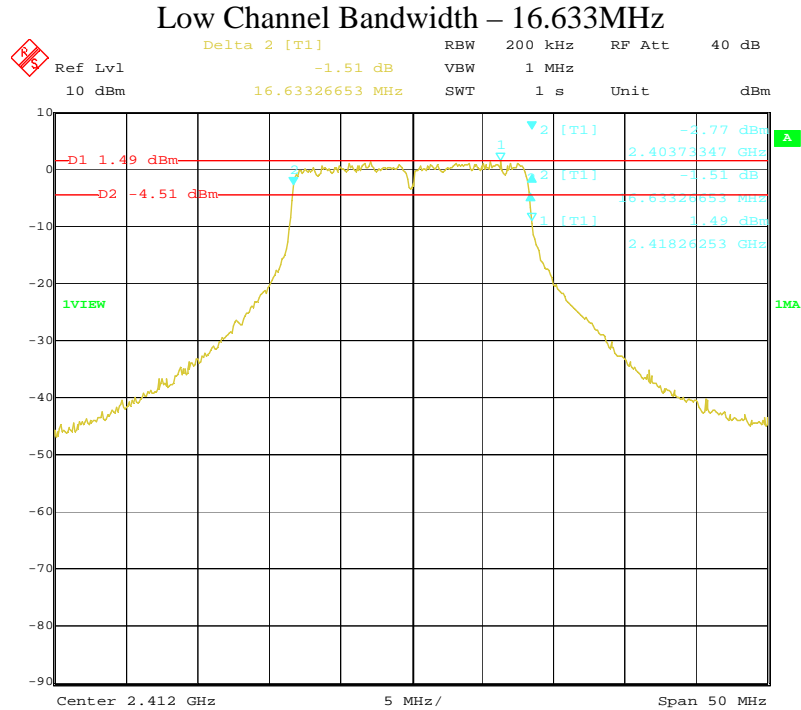
Date: 26.AUG.2011 10:19:26

802.11g – 24MBPS (16qam OFDM preamble) - Low channel



Date: 26.AUG.2011 10:23:58

802.11g – 48MBPS (64qam OFDM preamble) - Low channel

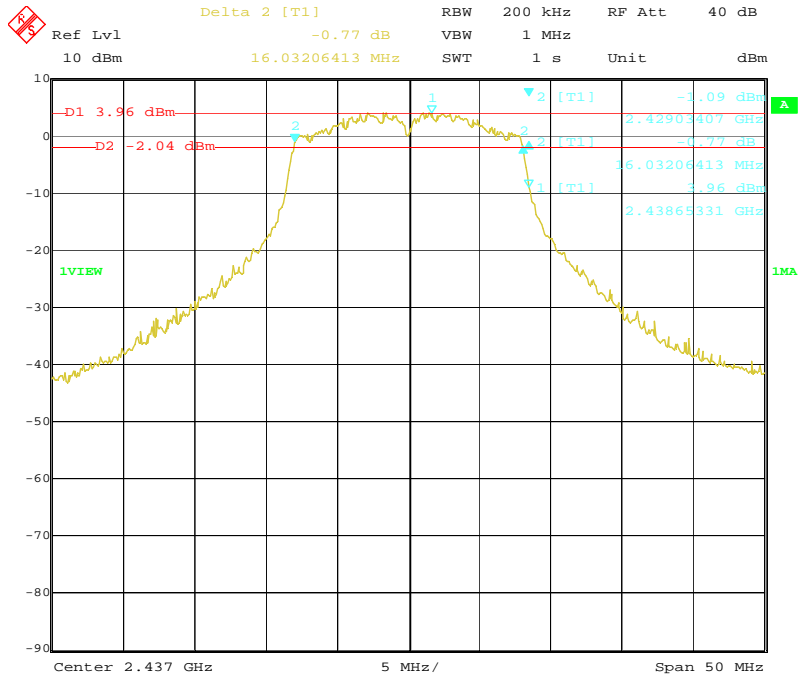


Date: 26.AUG.2011 10:27:21

802.11g – 54MBPS (64qam OFDM preamble) - Low channel



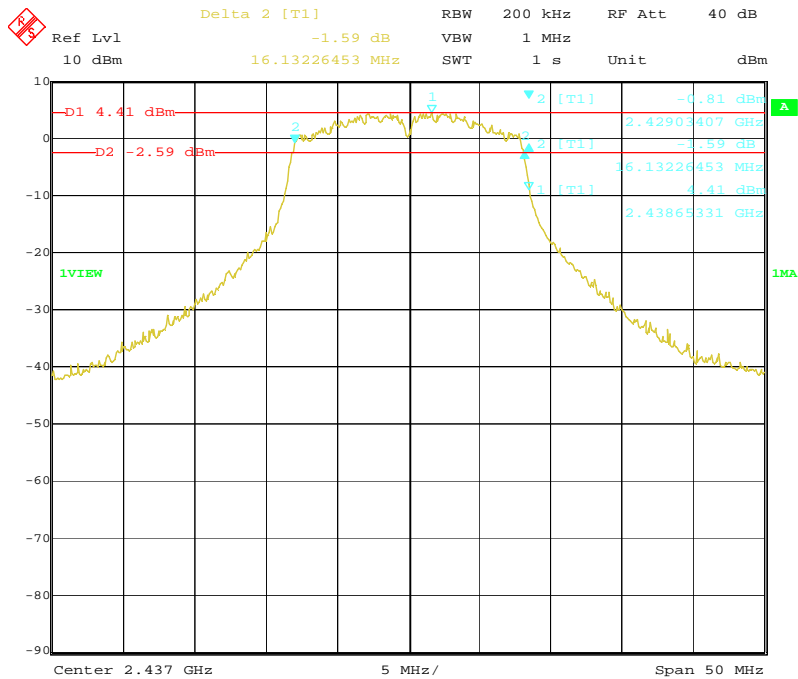
### Middle Channel Bandwidth – 16.032MHz



Date: 26.AUG.2011 09:41:23

802.11g – 6MBPS (BPSK OFDM preamble) - Mid channel

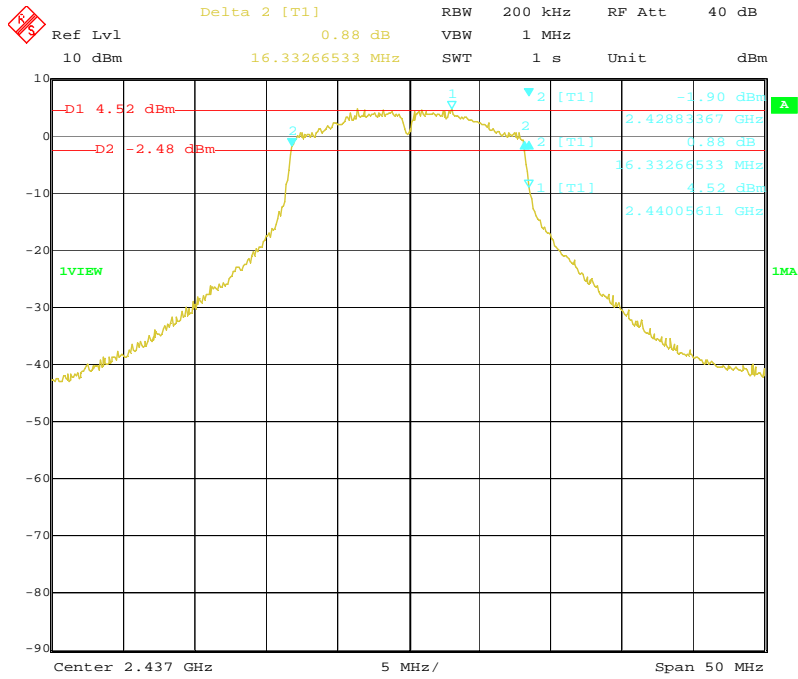
### Middle Channel Bandwidth – 16.132MHz



Date: 26.AUG.2011 09:43:27

802.11g – 9MBPS (BPSK3 OFDM preamble) - Mid channel

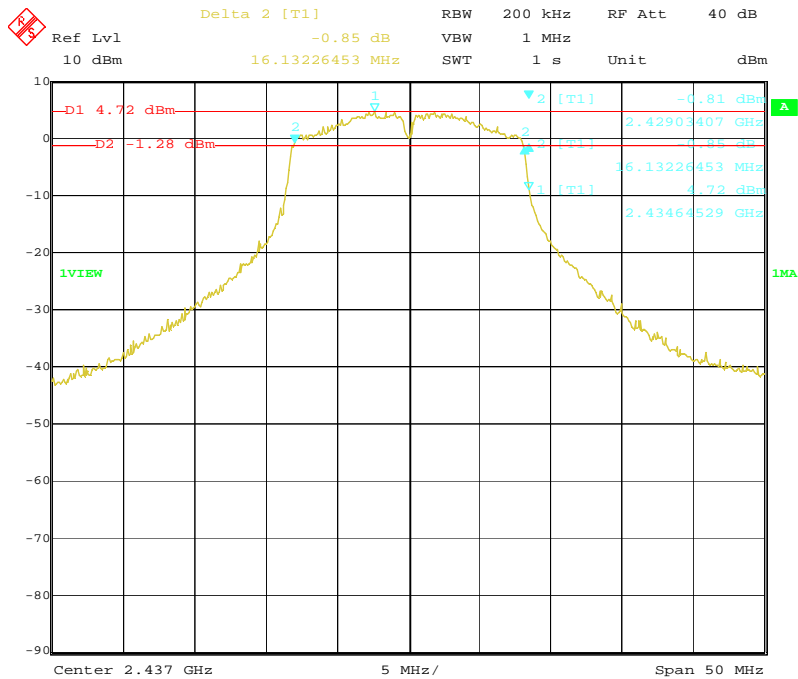
### Middle Channel Bandwidth – 16.332MHz



Date: 26.AUG.2011 09:45:26

802.11g – 12MBPS (QPSK OFDM preamble) - Mid channel

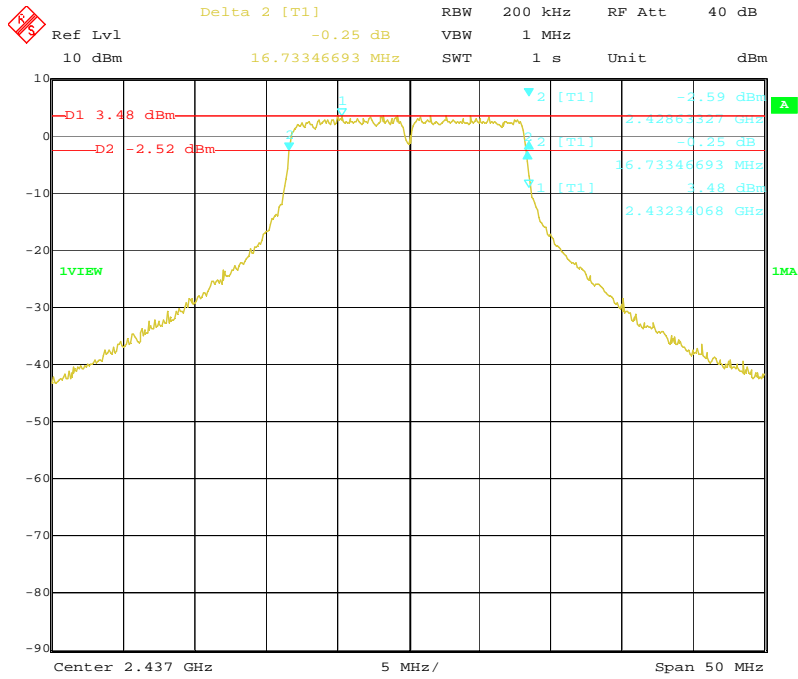
### Middle Channel Bandwidth – 16.132MHz



Date: 26.AUG.2011 09:50:14

802.11g – 18MBPS (QPSK1 OFDM preamble) - Mid channel

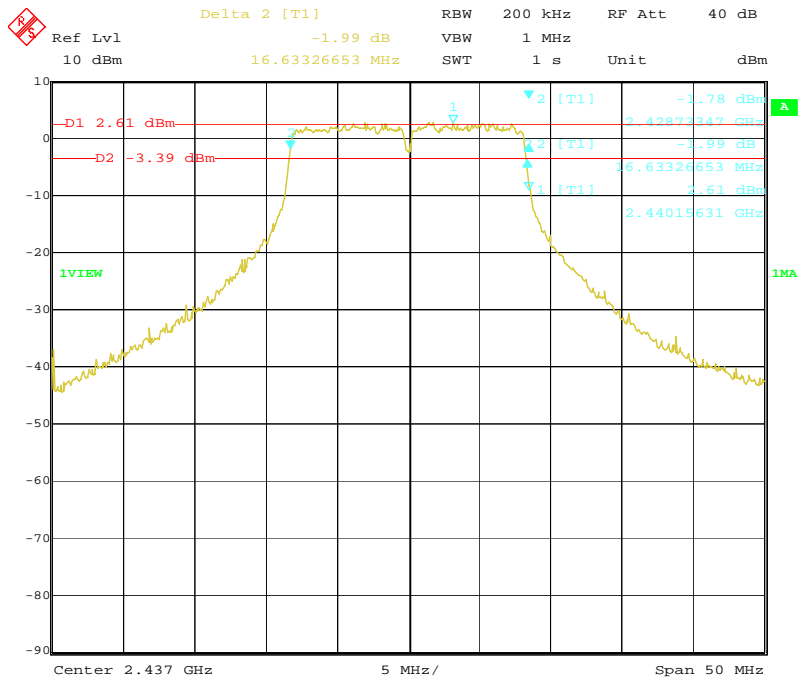
### Middle Channel Bandwidth – 16.733MHz



Date: 26.AUG.2011 09:56:09

802.11g – 24MBPS (16qam OFDM preamble) - Mid channel

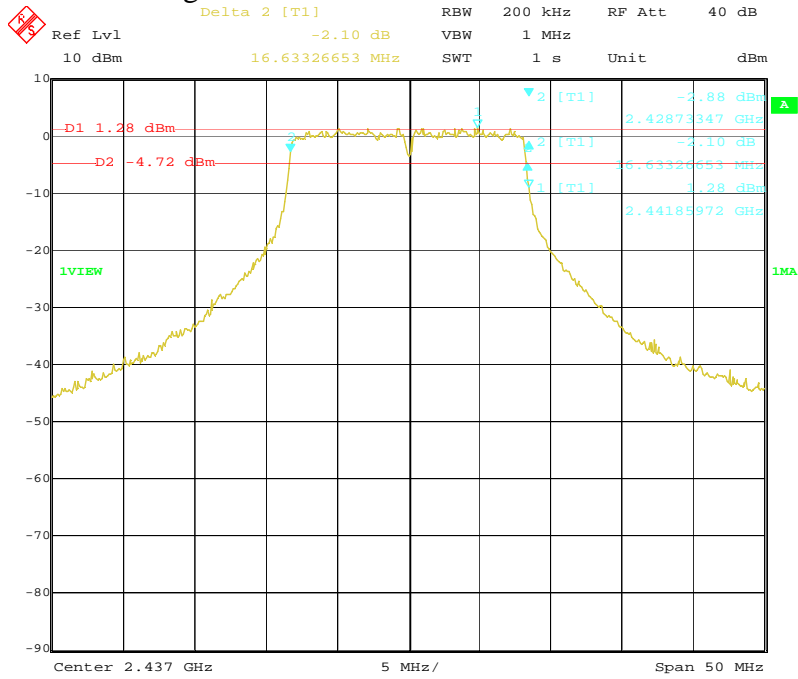
### Middle Channel Bandwidth – 16.633MHz



Date: 26.AUG.2011 09:59:24

802.11g – 36MBPS (16qam OFDM preamble) - Mid channel

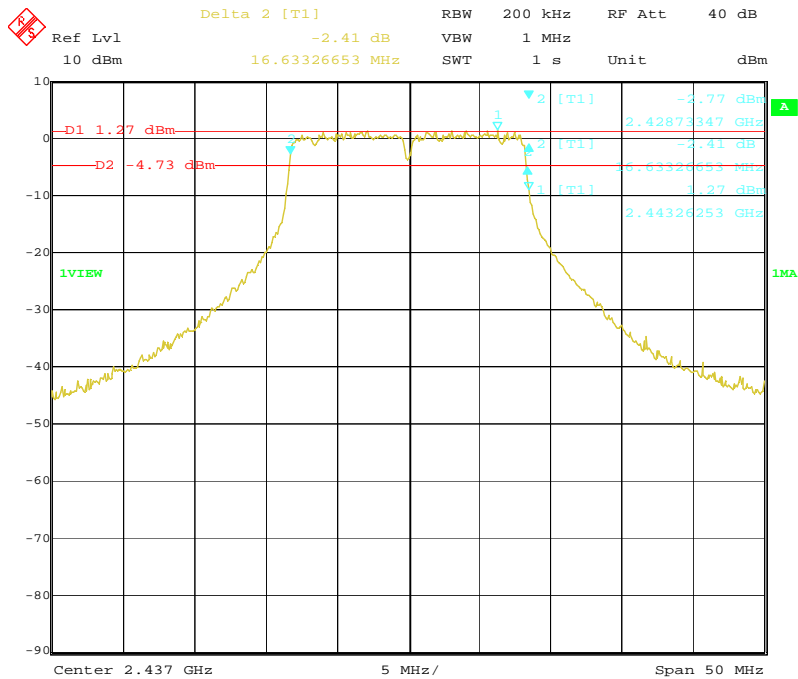
### High Channel Bandwidth – 16.633MHz



Date: 26.AUG.2011 10:01:10

802.11g – 48MBPS (64qam OFDM preamble) - Mid channel

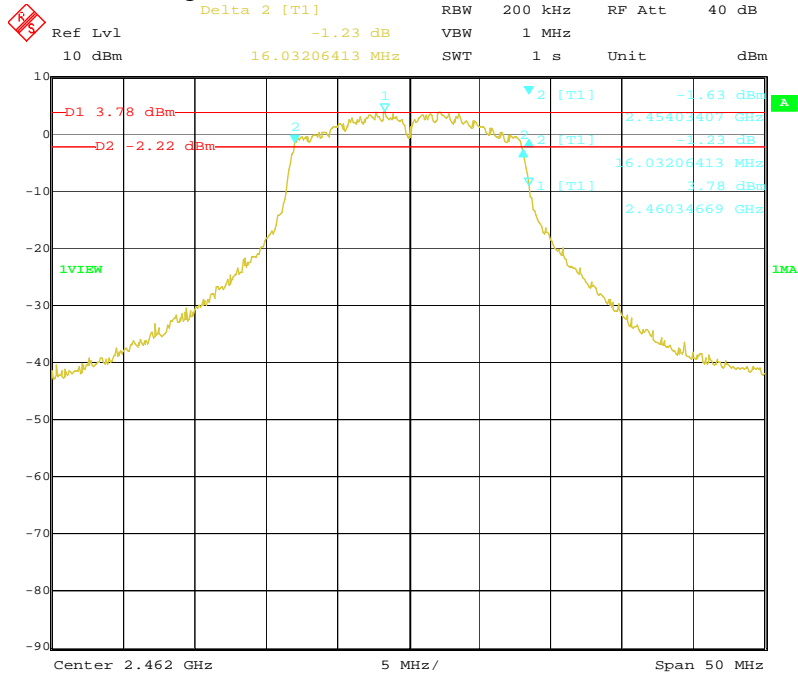
### Middle Channel Bandwidth – 16.633MHz



Date: 26.AUG.2011 10:03:10

802.11g – 54MBPS (64qam OFDM preamble) - Mid channel

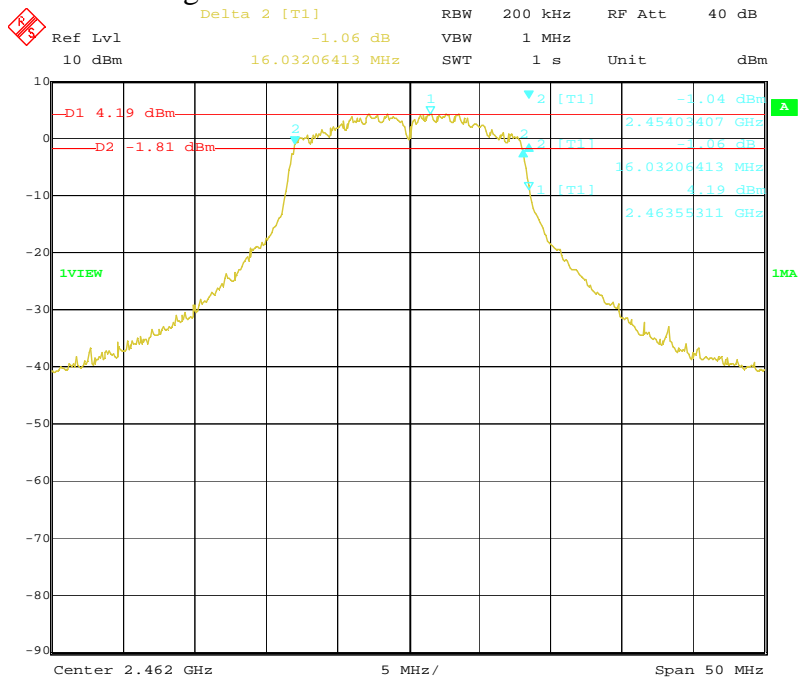
### High Channel Bandwidth – 16.032MHz



Date: 26.AUG.2011 08:38:09

802.11g – 6MBPS (BPSK OFDM preamble) - High channel

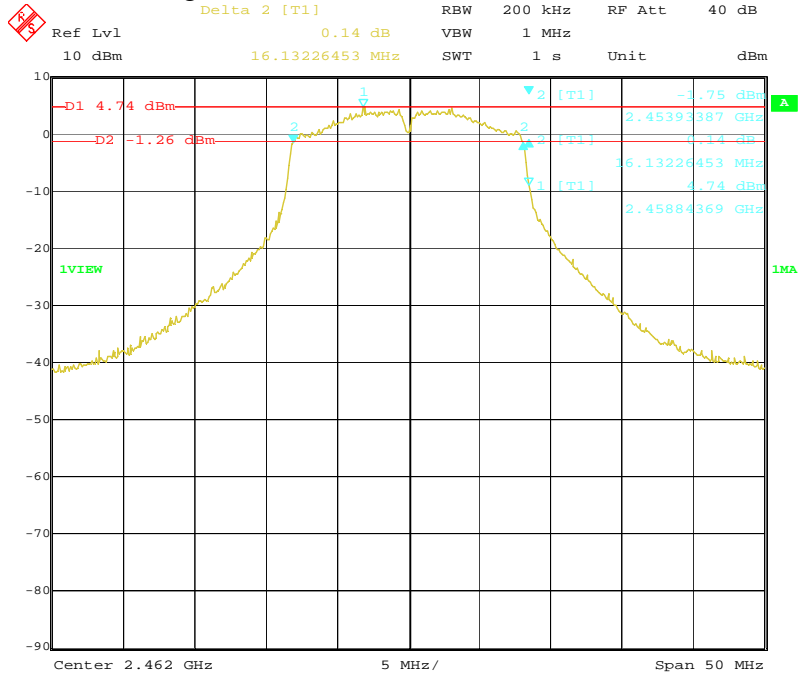
### High Channel Bandwidth – 16.032MHz



Date: 26.AUG.2011 08:43:44

802.11g – 9MBPS (BPSK OFDM preamble) - High channel

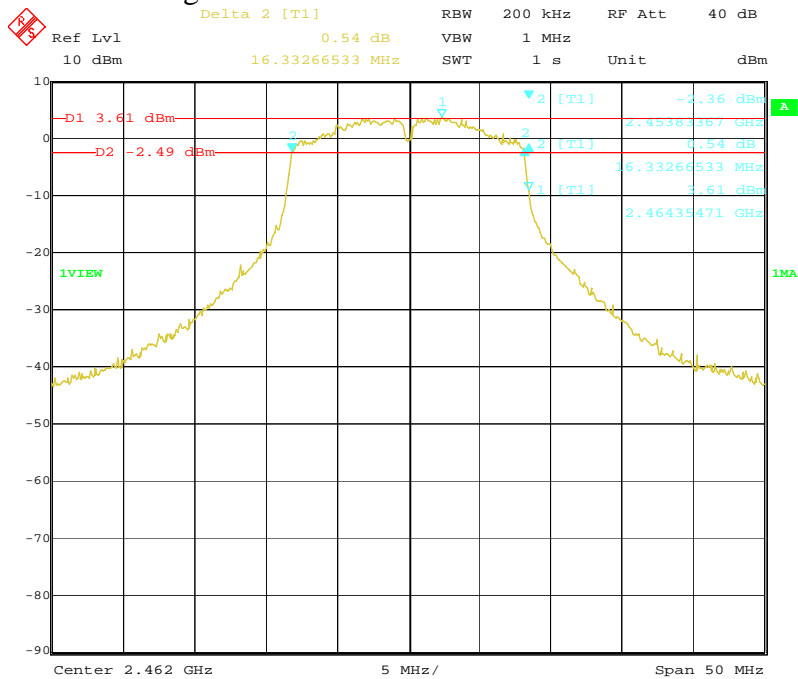
### High Channel Bandwidth – 16.132MHz



Date: 26.AUG.2011 09:01:27

802.11g – 12MBPS (QPSK OFDM preamble) - High channel

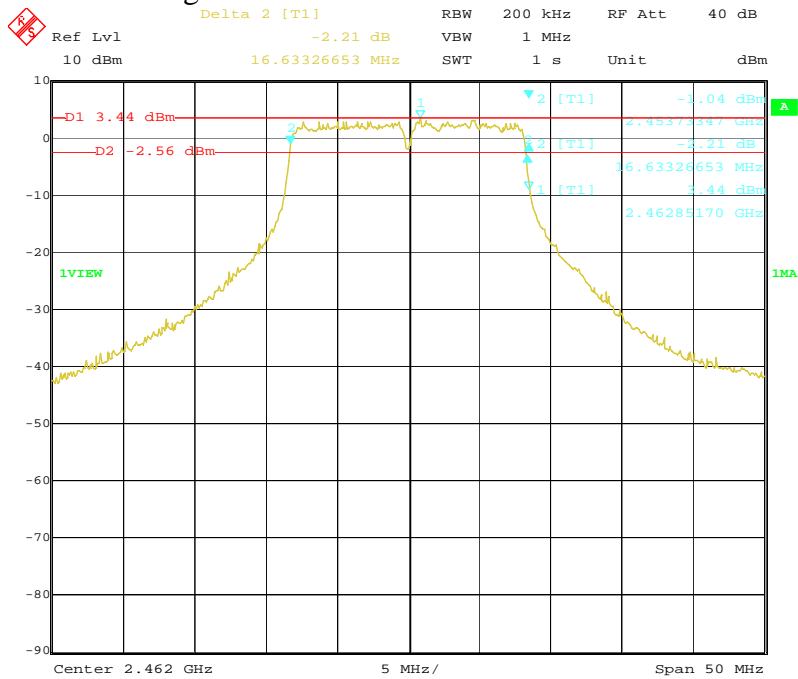
### High Channel Bandwidth – 16.332MHz



Date: 26.AUG.2011 09:05:28

802.11g – 18MBPS (QPSK1 OFDM preamble) - High channel

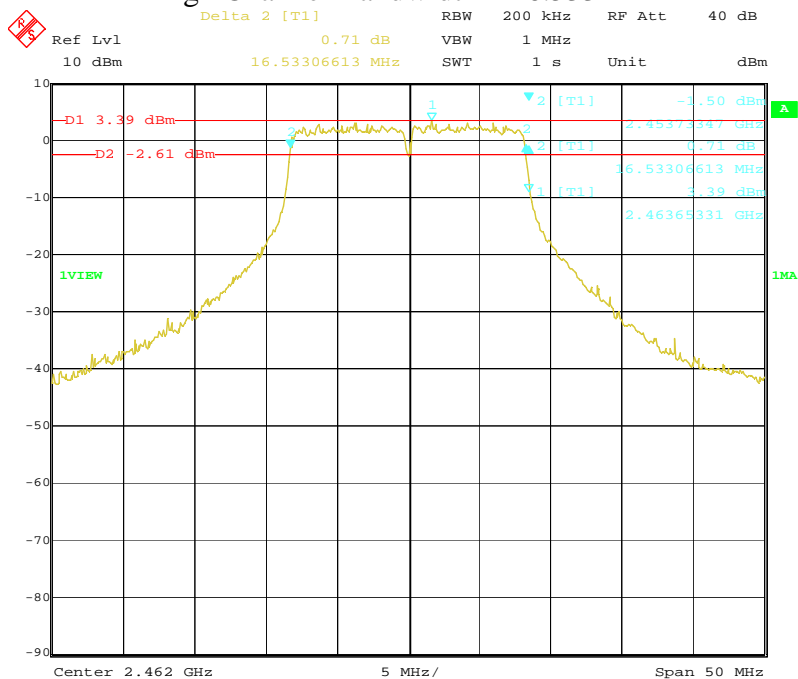
## High Channel Bandwidth – 16.633MHz



Date: 26.AUG.2011 09:07:32

802.11g – 24Mbps (16qam OFDM preamble) - High channel

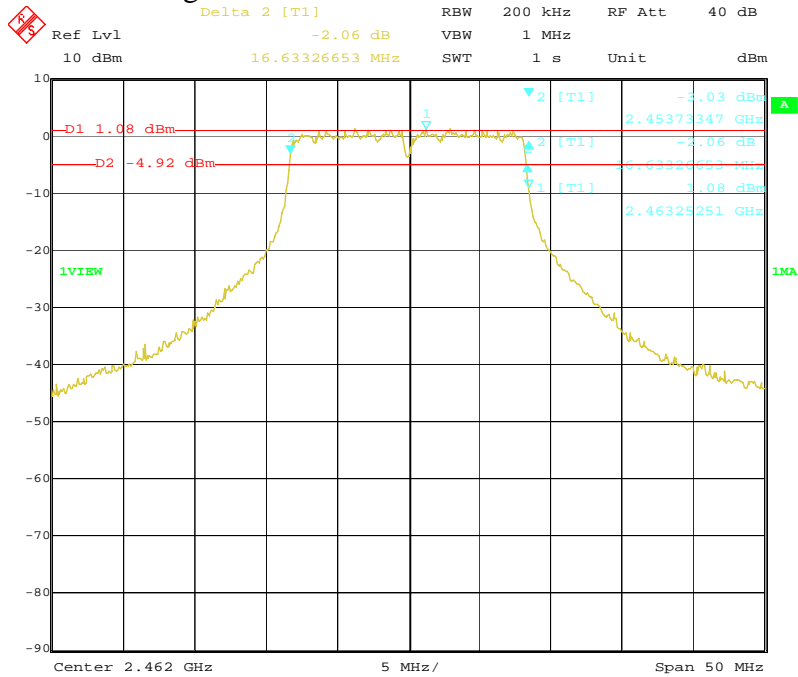
## High Channel Bandwidth – 16.533MHz



Date: 26.AUG.2011 09:16:32

802.11g – 36MBPS (16qam OFDM preamble) - High channel

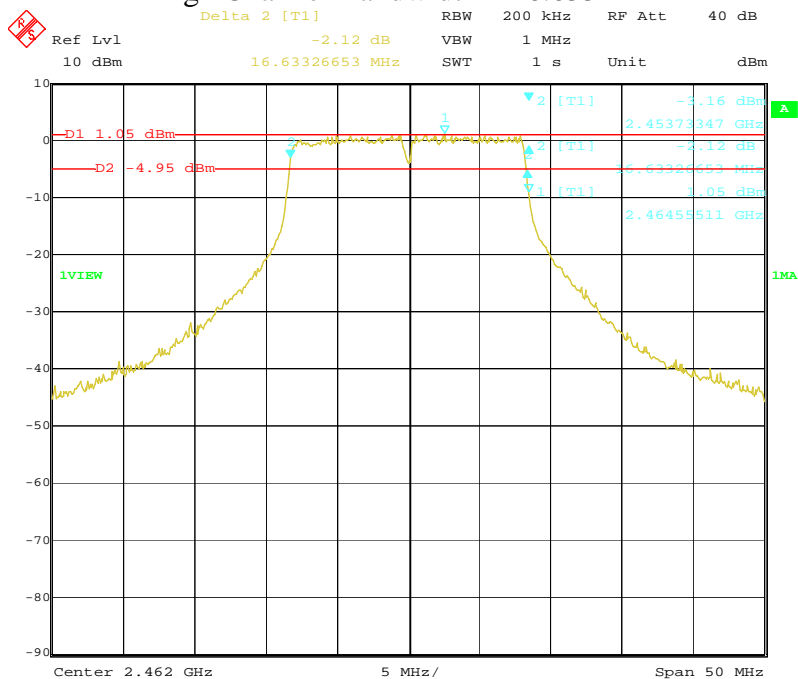
# High Channel Bandwidth – 16.633MHz



Date: 26.AUG.2011 09:19:33

802.11g – 48MBPS (64qam OFDM preamble) - High channel

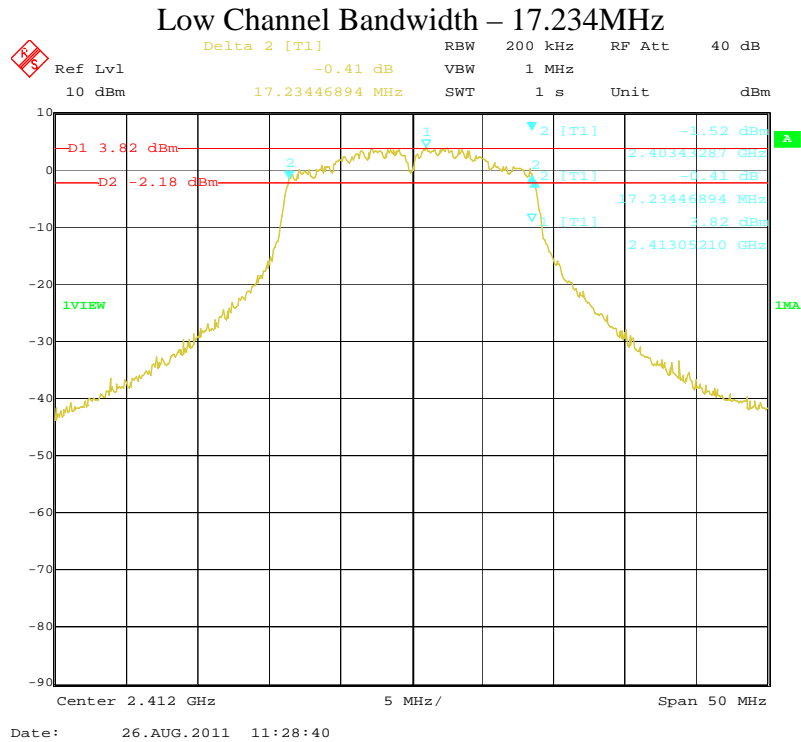
# High Channel Bandwidth – 16.633MHz



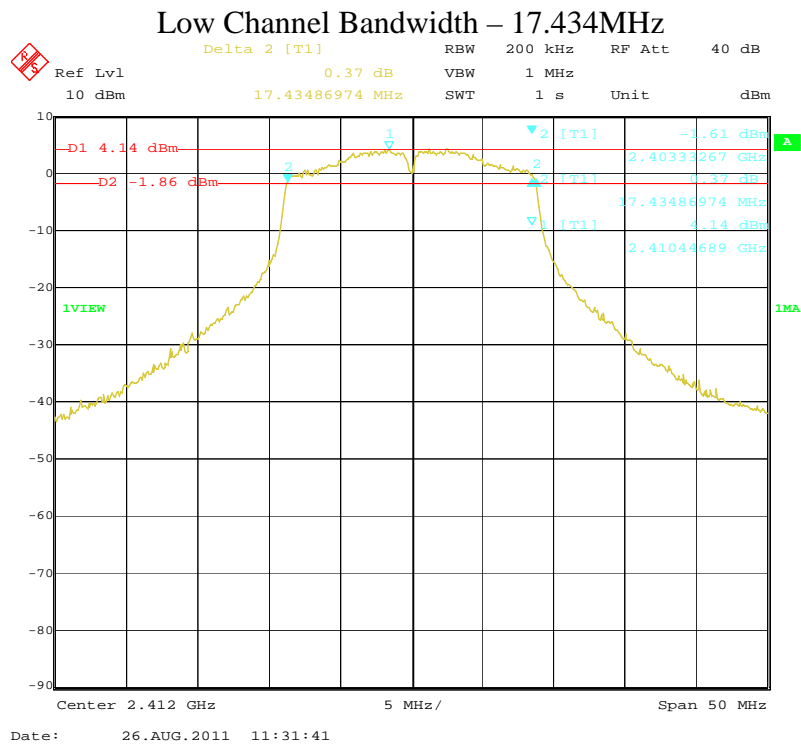
Date: 26.AUG.2011 09:23:37

802.11g – 54MBPS (64qam OFDM preamble) - High channel

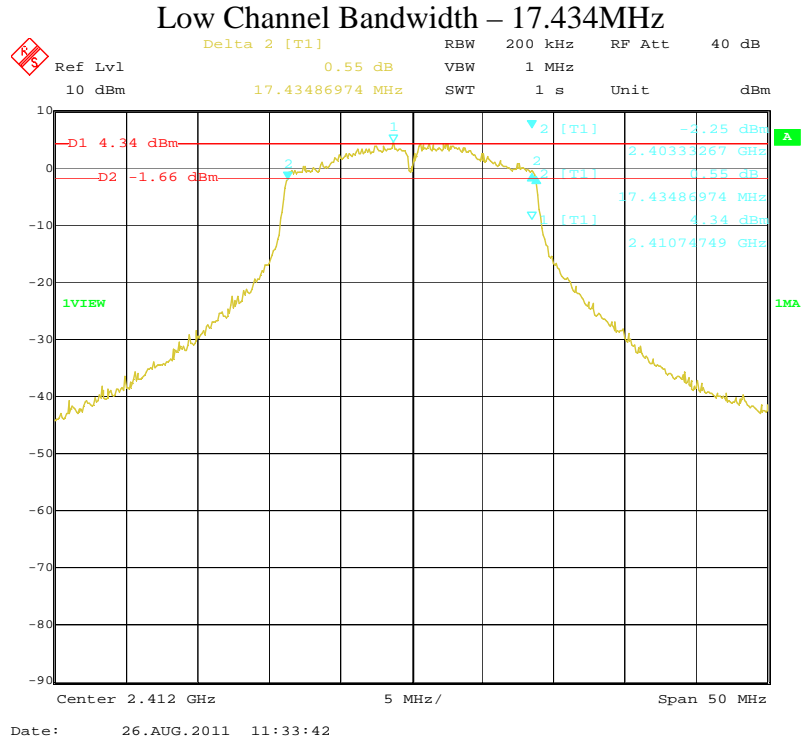




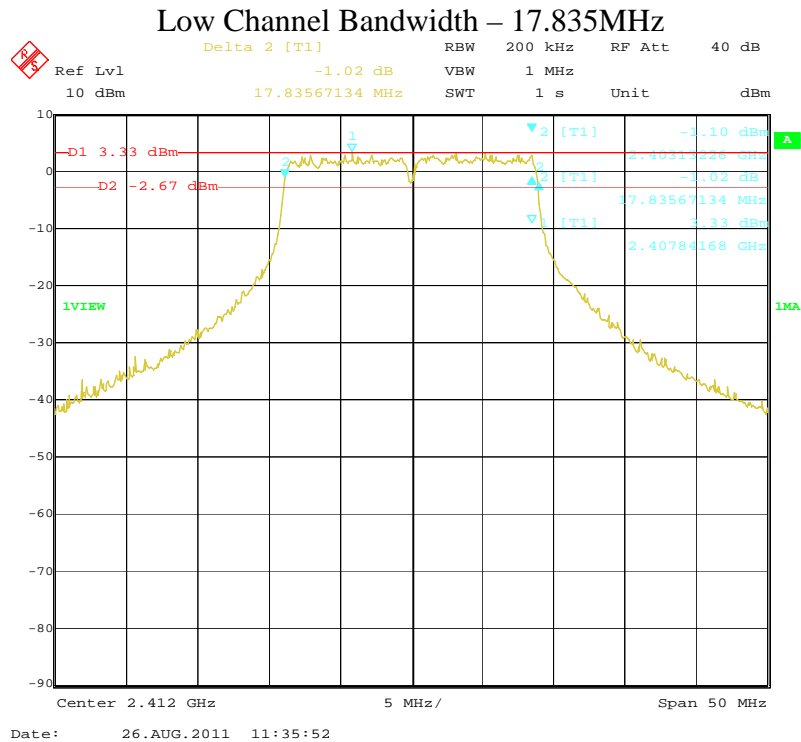
802.11n – Low channel – MCS0



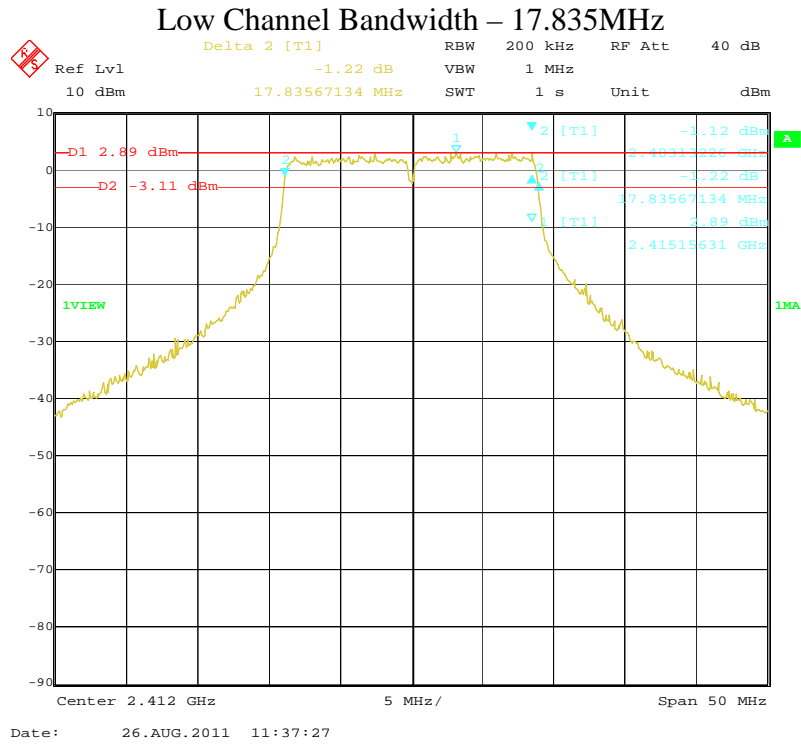
802.11n – Low channel – MCS1



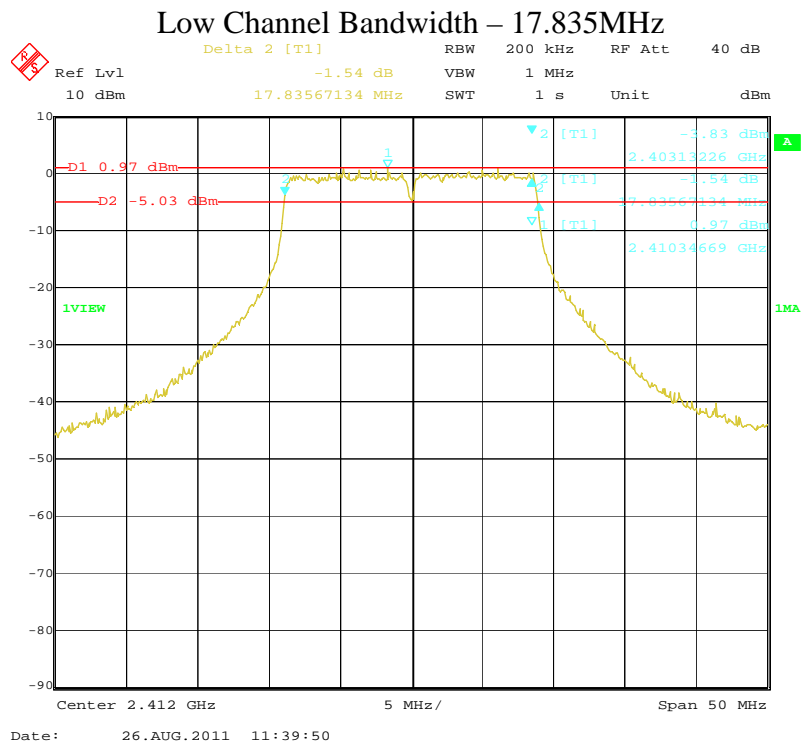
802.11n – Low channel – MCS2



802.11n – Low channel – MCS3

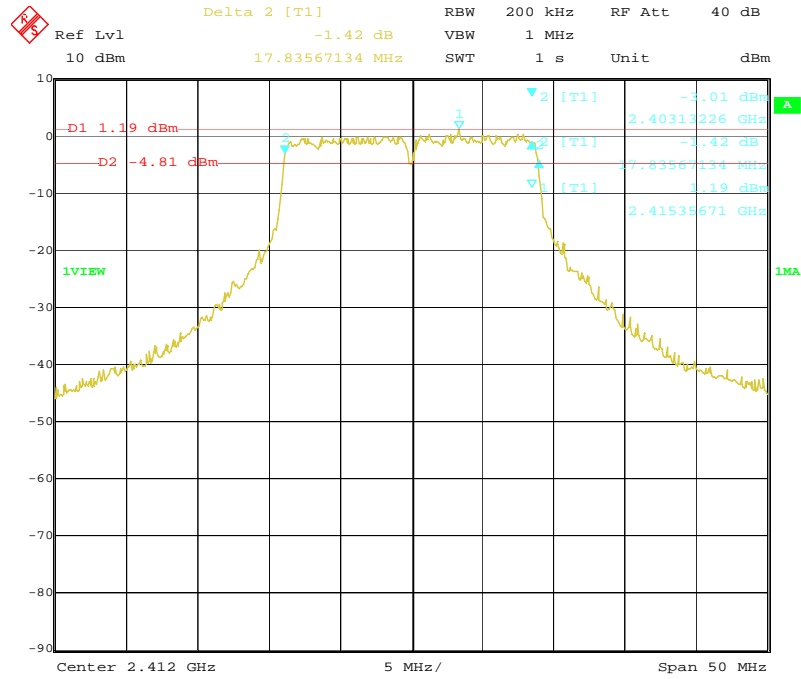


802.11n – Low channel – MCS4



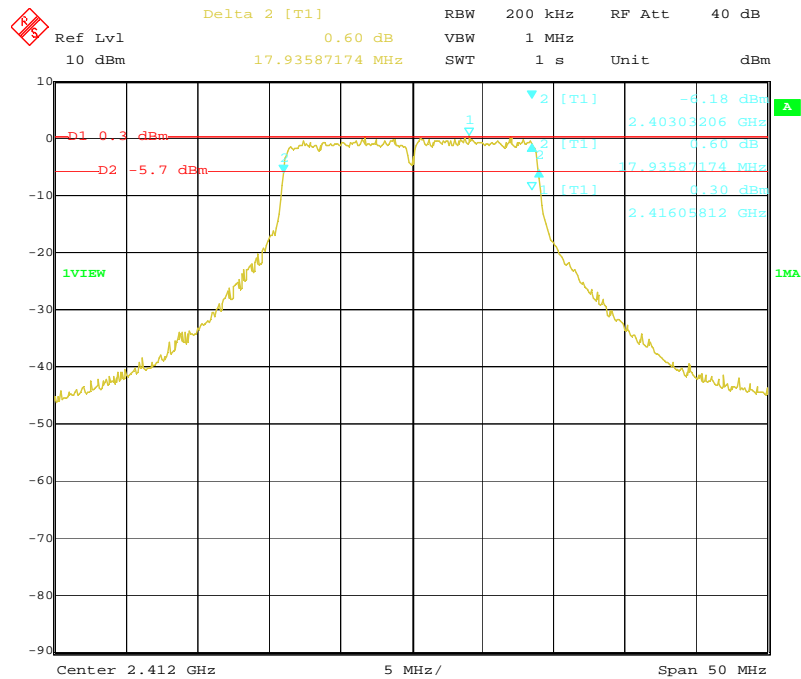
802.11n – Low channel – MCS5

### Low Channel Bandwidth – 17.835MHz



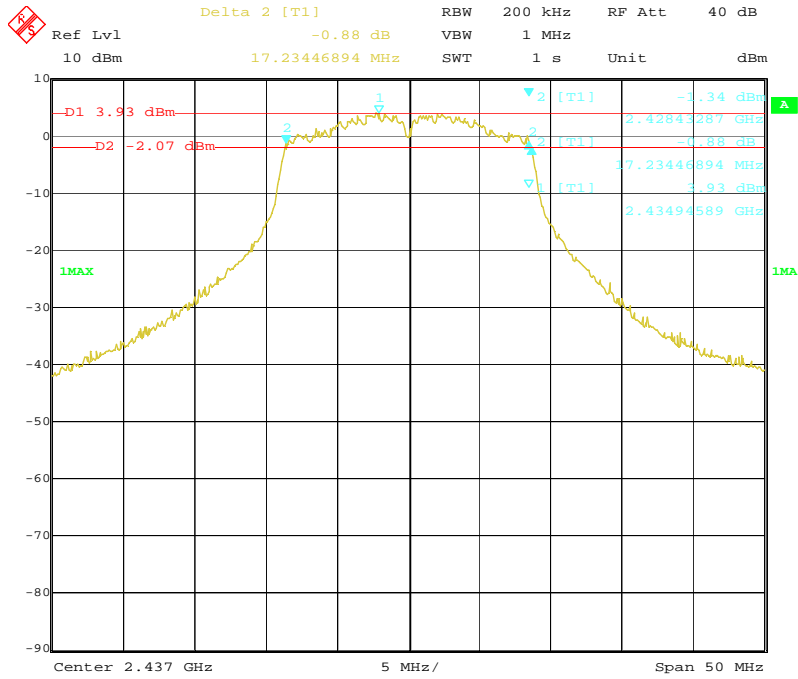
### 802.11n – Low channel – MCS6

### Low Channel Bandwidth – 17.935MHz



### 802.11n – Low channel – MCS7

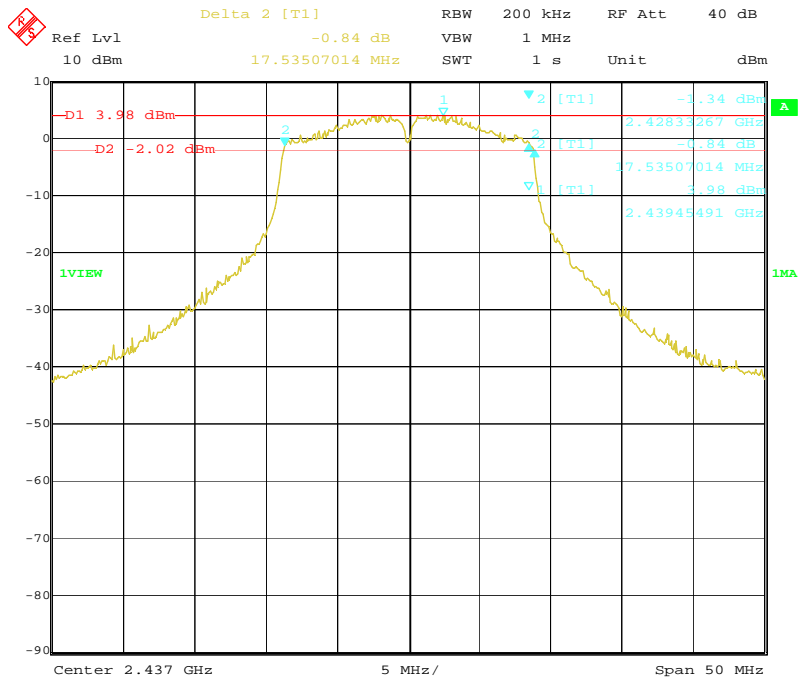
### Middle Channel Bandwidth – 17.234MHz



Date: 26.AUG.2011 11:09:32

### 802.11n – Mid channel – MCS0

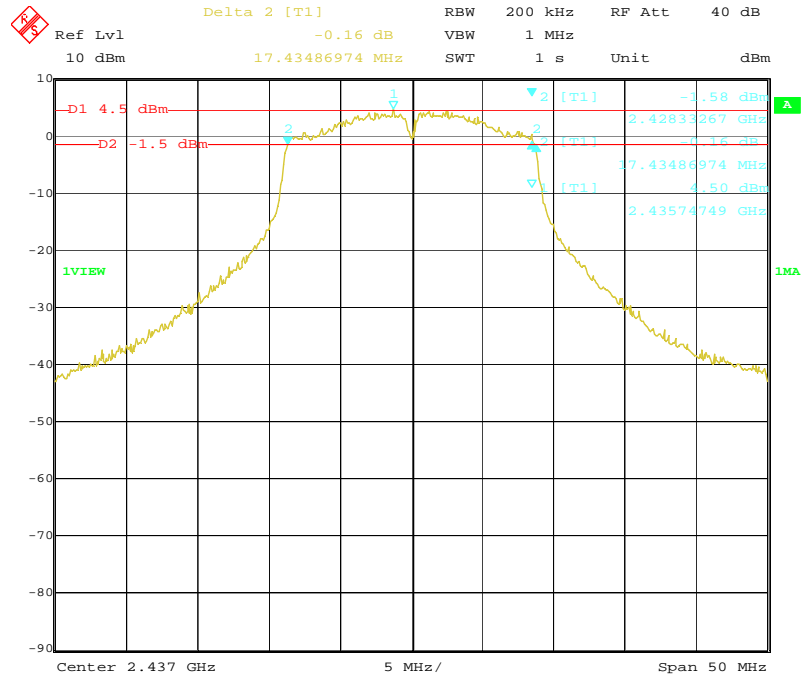
### Middle Channel Bandwidth – 17.535MHz



Date: 26.AUG.2011 11:11:22

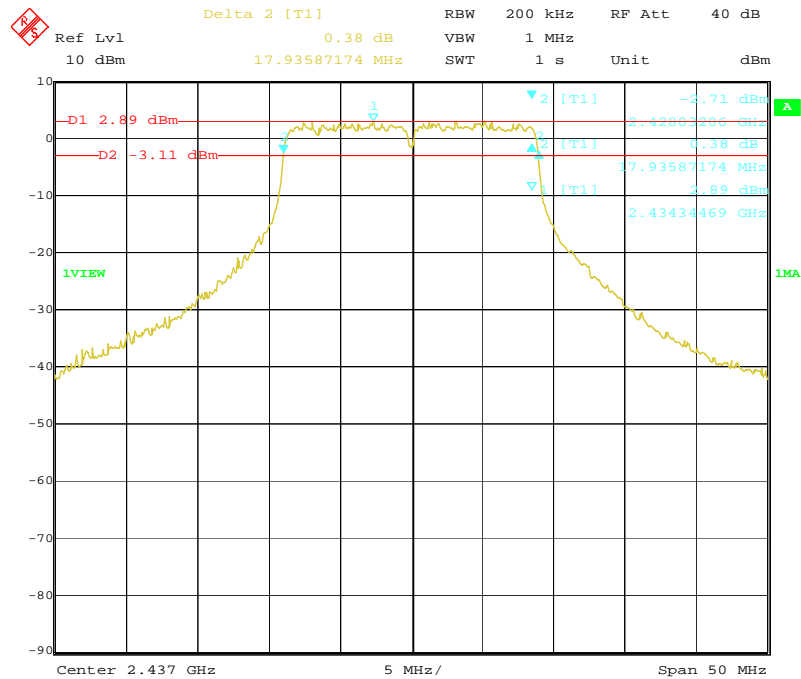
### 802.11n – Mid channel – MCS1

### Middle Channel Bandwidth – 17.434MHz



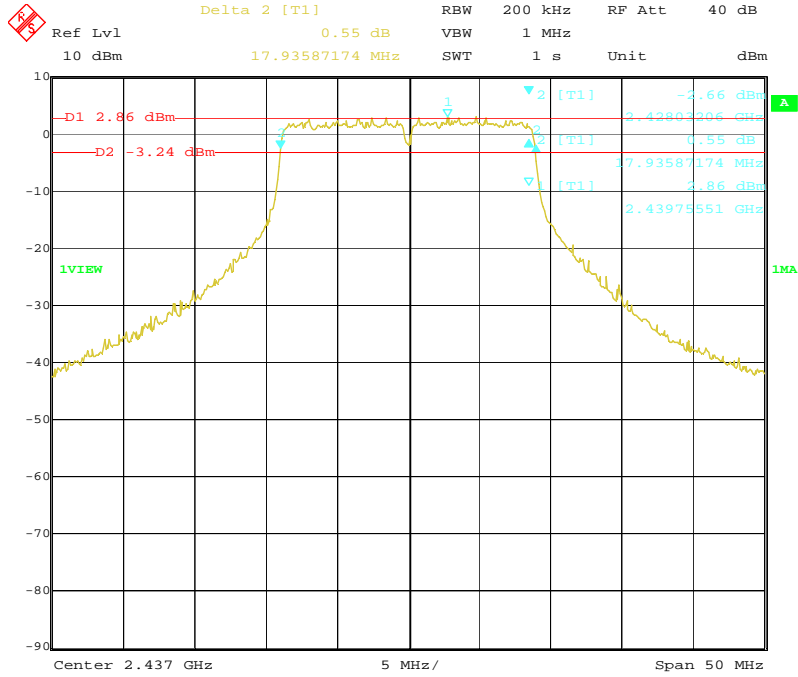
### 802.11n – Mid channel – MCS2

### Middle Channel Bandwidth – 17.935MHz



### 802.11n – Mid channel – MCS3

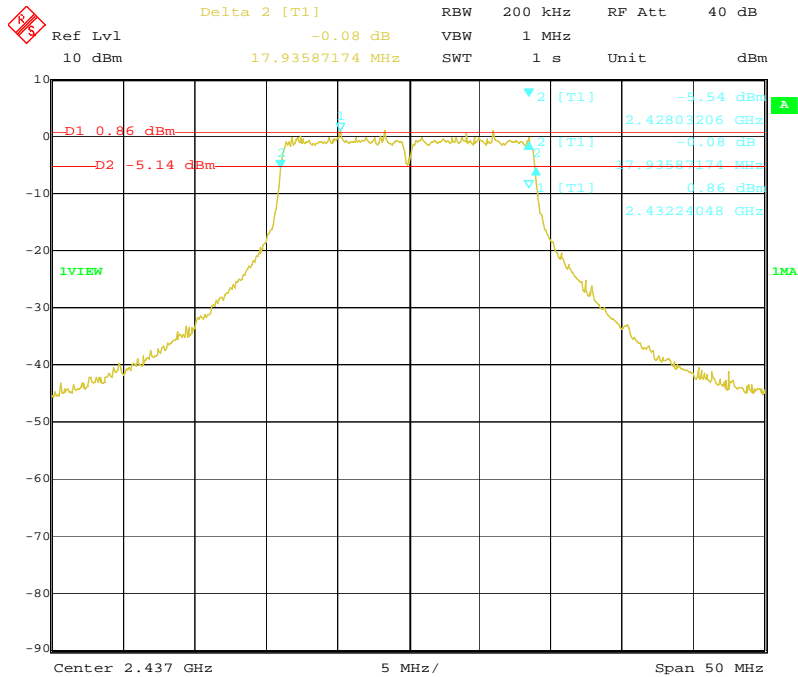
### Middle Channel Bandwidth – 17.935MHz



Date: 26.AUG.2011 11:18:16

### 802.11n – Mid channel – MCS4

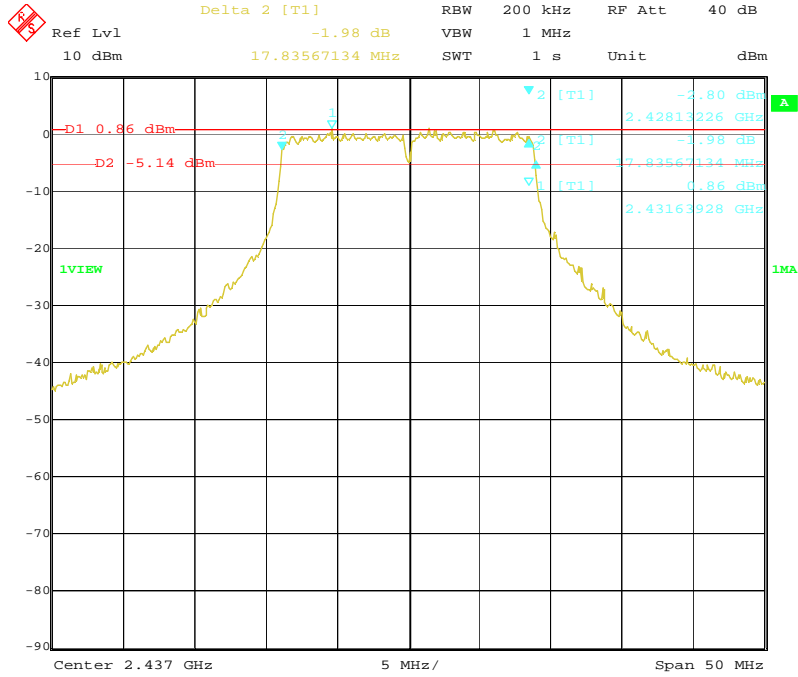
### Middle Channel Bandwidth – 17.935MHz



Date: 26.AUG.2011 11:21:04

### 802.11n – Mid channel – MCS5

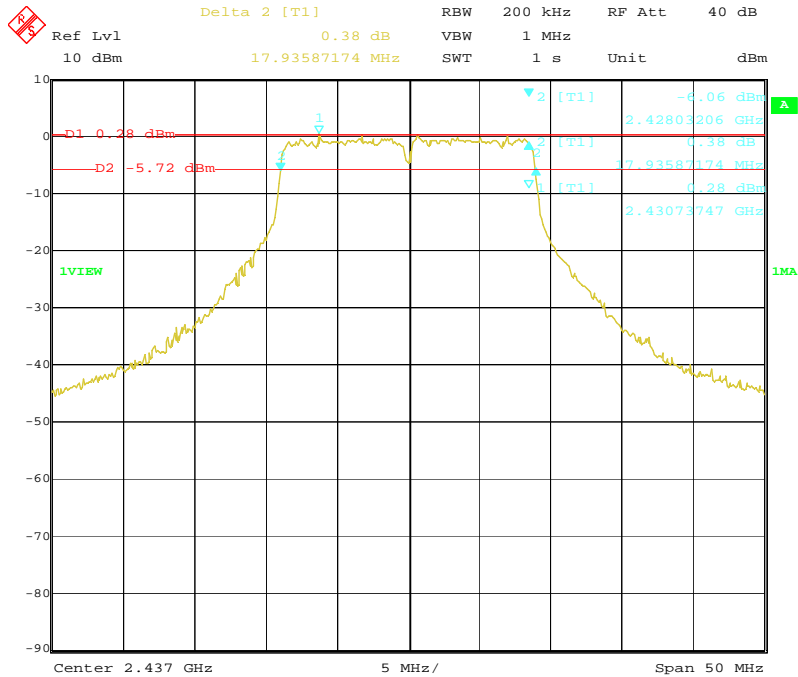
### Middle Channel Bandwidth – 17.835MHz



Date: 26.AUG.2011 11:23:24

### 802.11n – Mid channel – MCS6

### Middle Channel Bandwidth – 17.935MHz

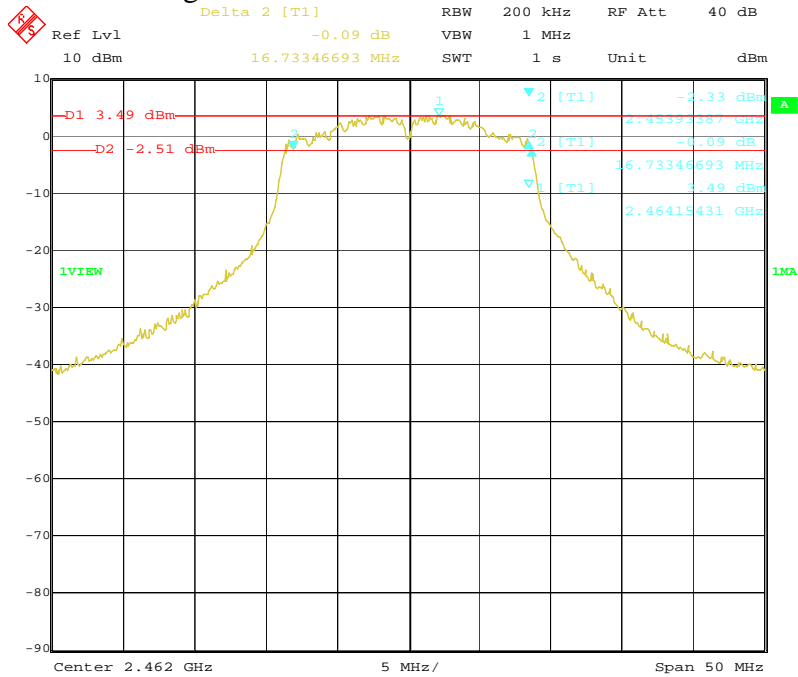


Date: 26.AUG.2011 11:25:02

### 802.11n – Mid channel – MCS7



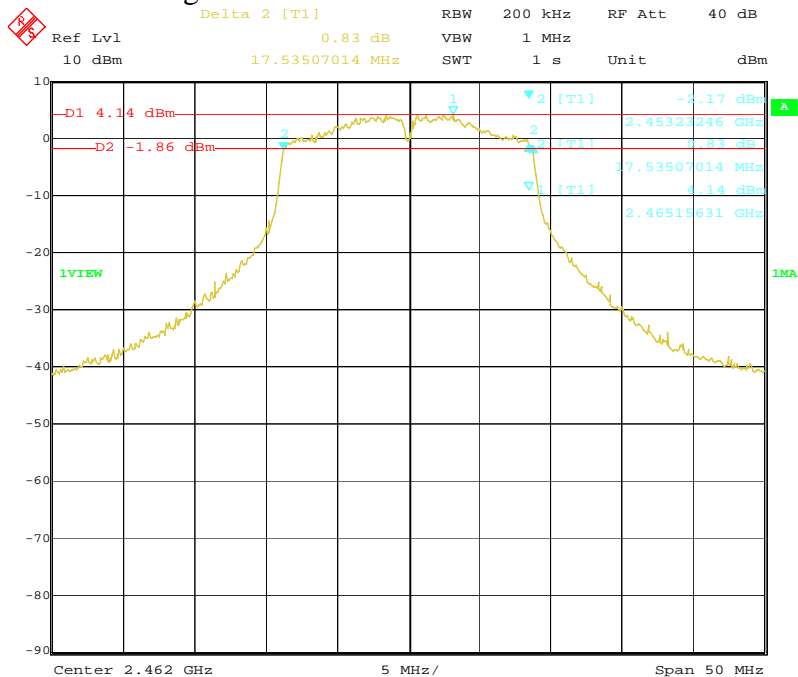
### High Channel Bandwidth – 16.733MHz



Date: 26.AUG.2011 10:48:33

### 802.11n – High channel – MCS0

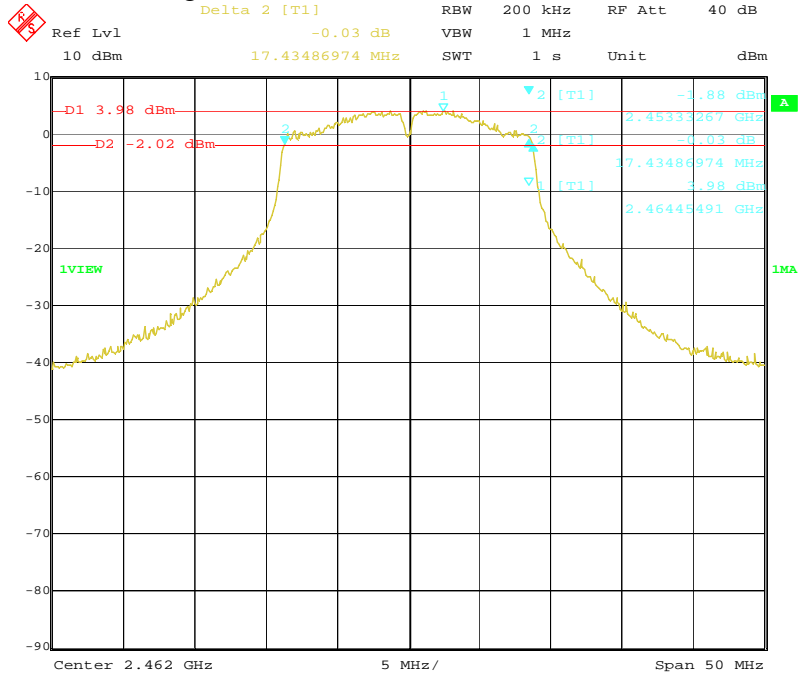
### High Channel Bandwidth – 17.535MHz



Date: 26.AUG.2011 10:50:26

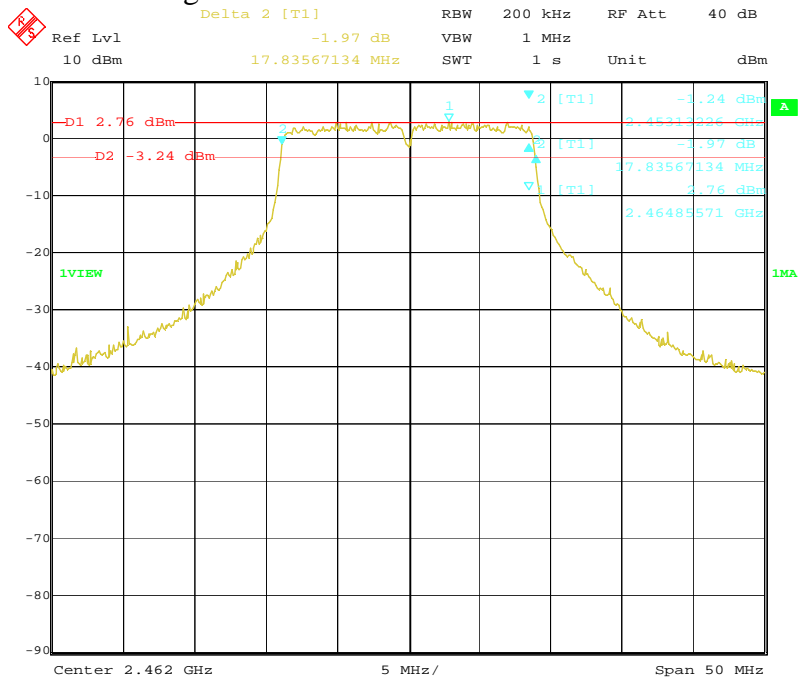
### 802.11n – High channel – MCS1

### High Channel Bandwidth – 17.434MHz



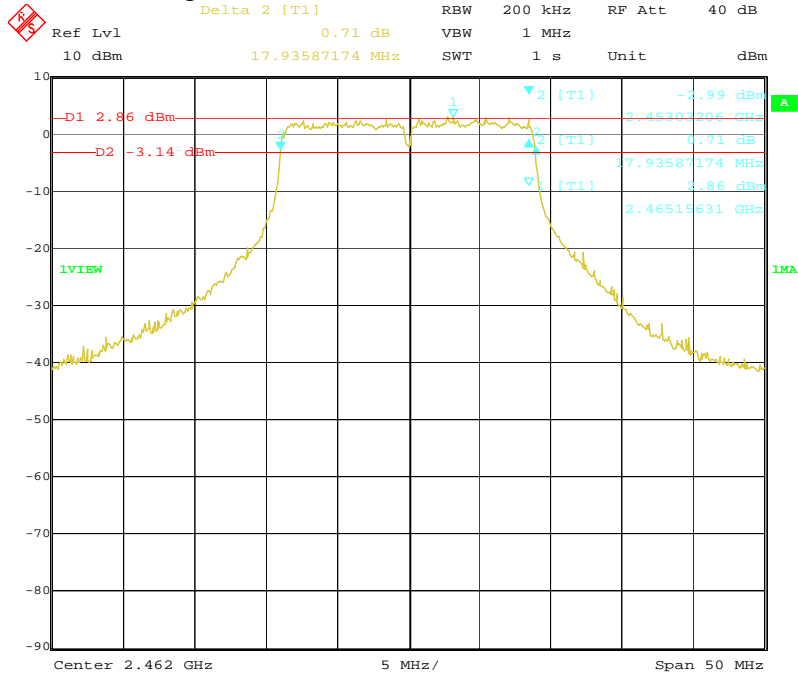
### 802.11n – High channel – MCS2

### High Channel Bandwidth – 17.835MHz



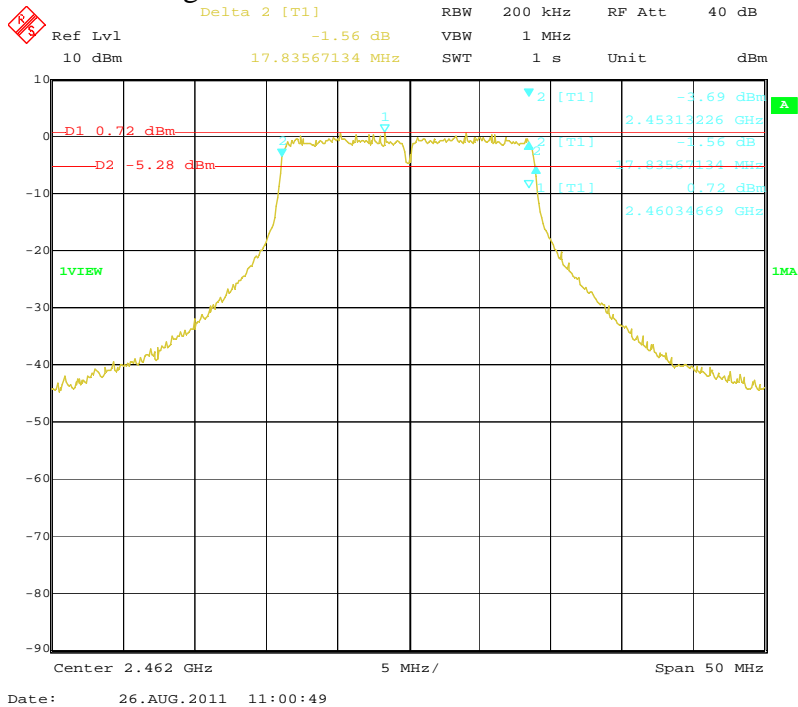
### 802.11n – High channel – MCS3

### High Channel Bandwidth – 17.935MHz



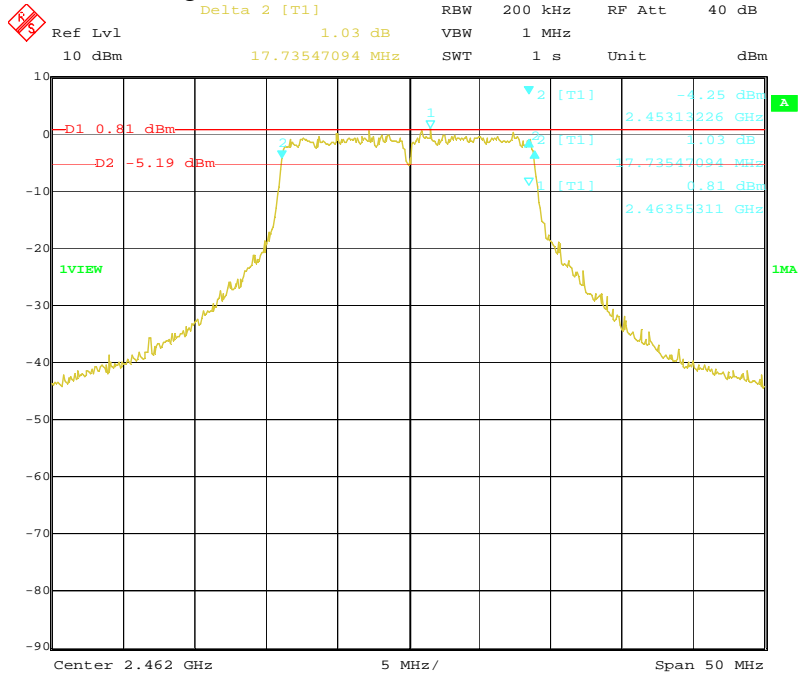
802.11n – High channel – MCS4

### High Channel Bandwidth – 17.835MHz



802.11n – High channel – MCS5

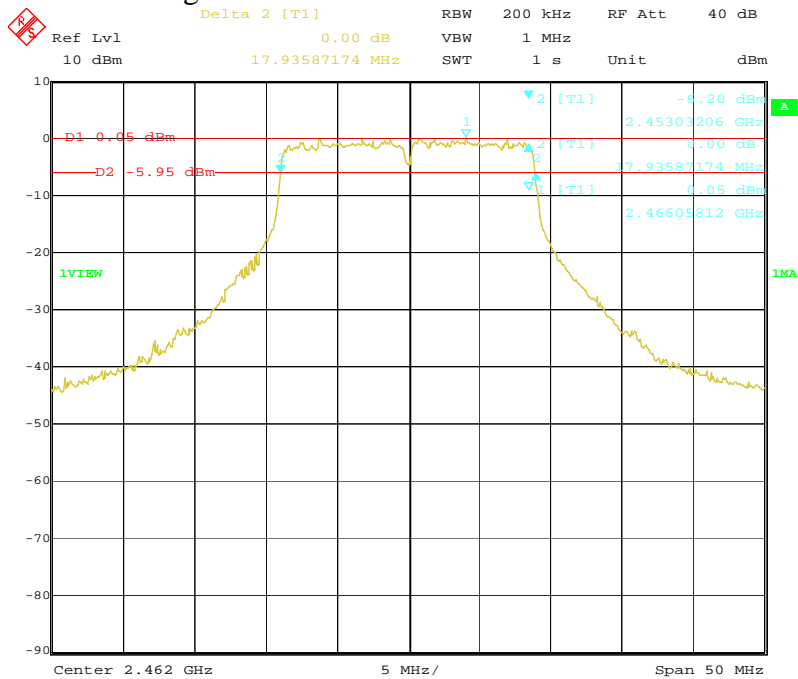
### High Channel Bandwidth – 17.735MHz



Date: 26.AUG.2011 11:02:30

### 802.11n – High channel – MCS6

### High Channel Bandwidth – 17.935MHz



Date: 26.AUG.2011 11:04:47

### 802.11n – High channel – MCS7

## **7.0 15.247(e) Power Spectral Density**

### **Method:**

Equipment setup for conducted disturbance tests shall follow the guidelines of ANSI C63.4.

FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

PSD Option #1 was used for testing

Connect the antenna port of the EUT to the input of a spectrum analyzer. Input an offset into the analyzer amplitude to account for the associated cable loss.

Set the span to cover the entire emission bandwidth. With a bandwidth of 100kHz or greater, set the marker to the peak emission and move that frequency to the center of the display. Set the analyzer resolution and video bandwidths to 3kHz and turn on the max hold function. Set the frequency span was set to 300kHz around the highest amplitude occurring in the peak emission envelope. The total sweep time was calculated as follows:

Sweep time (Sec.) = (Fstop - Fstart)/Resolution Bandwidth

Example:

Sweep time (Sec) = 300kHz / 3kHz

Sweep time (Sec) = 100 Seconds

Perform a peak search on the resultant trace. Record the amplitude of that peak as the maximum power density in dBm. Measure the power density for all data rates and modulation modes on the middle channel.

For the high and low channels, measure the power density at the data rate and modulation mode that resulted in the highest and lowest conducted power for that channel.

### **TEST SITE**

The test site for conducted emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096. The VCCI Registration Number for this site is C-2818.

### **MEASUREMENT UNCERTAINTY**

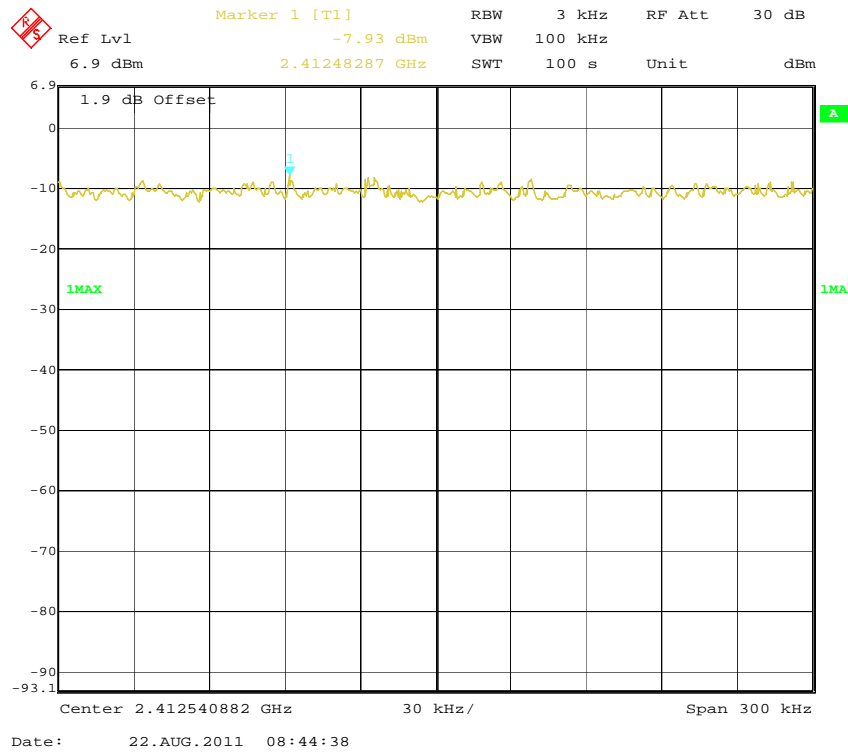
Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes. The values given are the measurement uncertainty values with an expanded uncertainty of k=2.

150 kHz to 30 MHz: +/- 2.8 dB

**Results: The sample tested was found to Comply.**

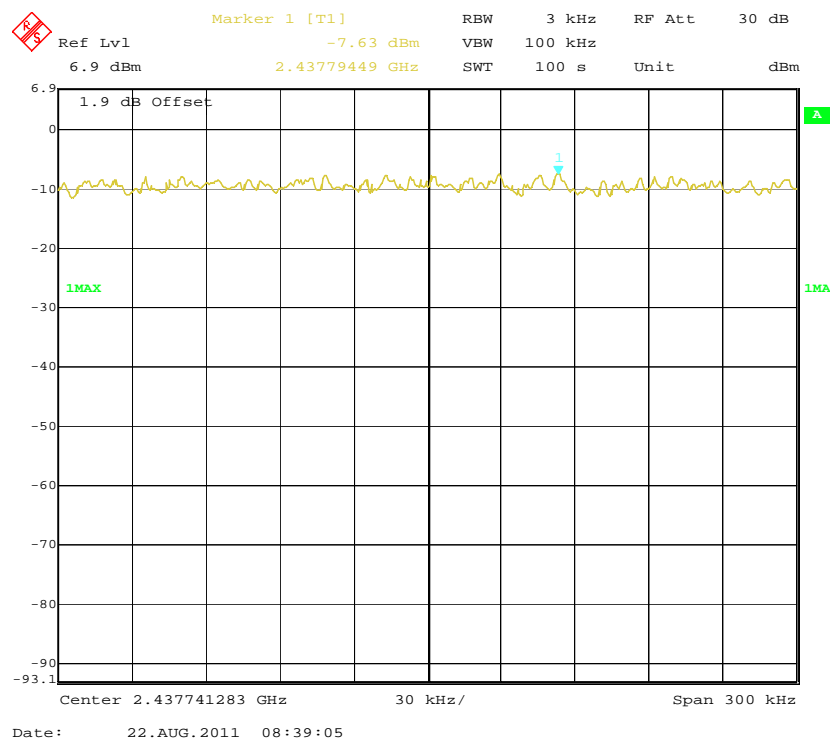
## 7.0 15.247(e) Power Spectral Density

### Low Channel Power Spectral Density – (-7.93dBm)



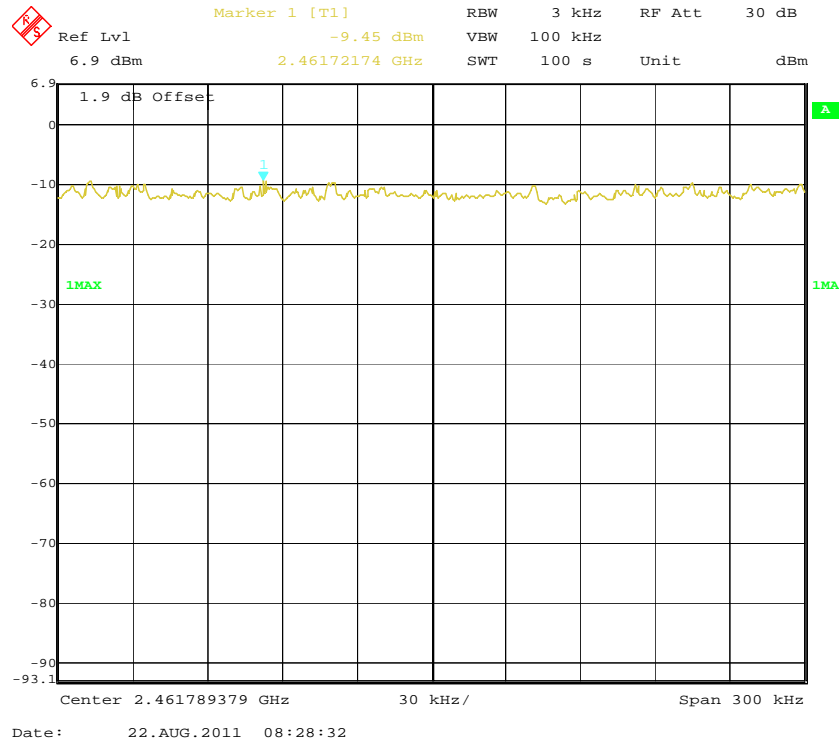
### 802.11b – 5.5Mbps – Low Channel

### Middle Channel Power Spectral Density – (-7.63dBm)

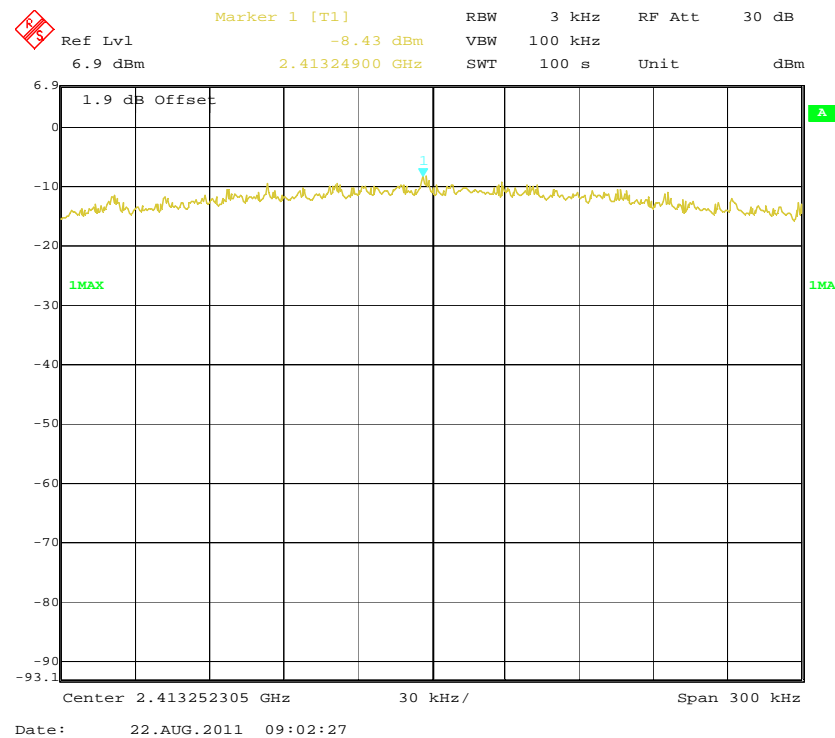


### 802.11b – 2Mbps – Mid Channel

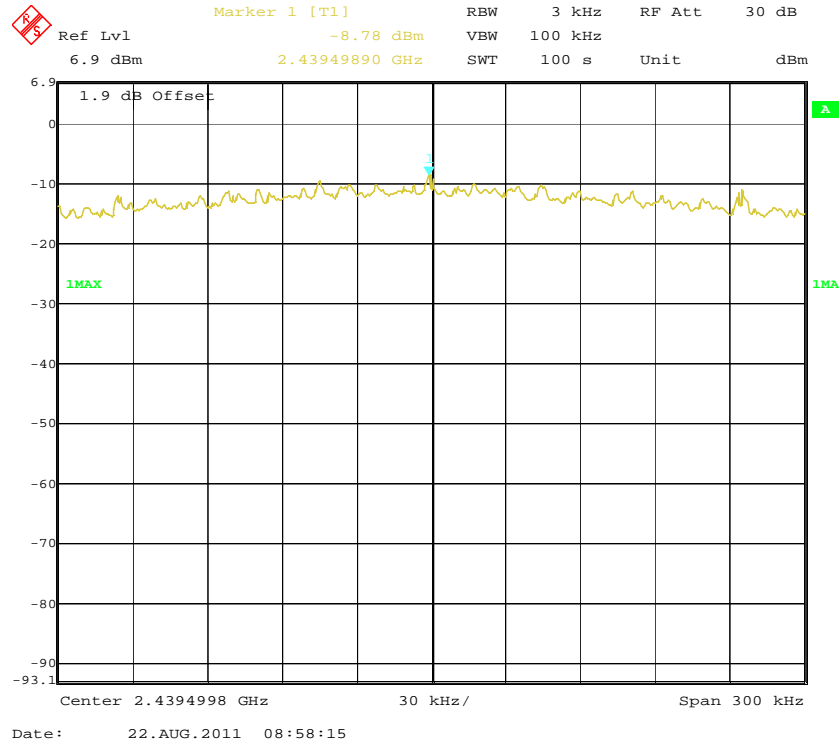
### High Channel Power Spectral Density – (-9.45dBm)



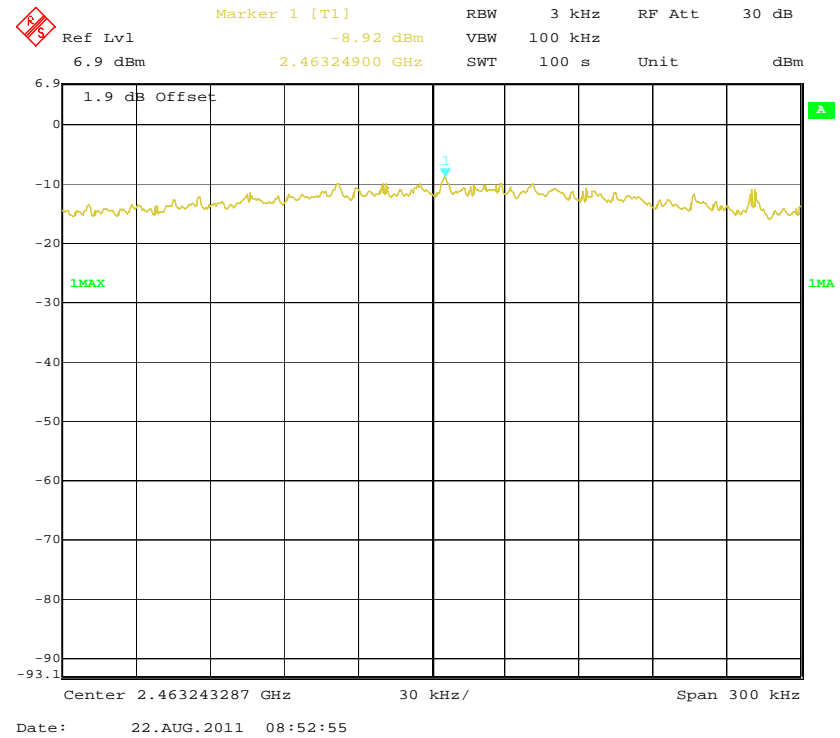
### 802.11b – 11Mbps – High Channel



### 802.11g – 6MBPS (BPSK OFDM preamble) - Low channel

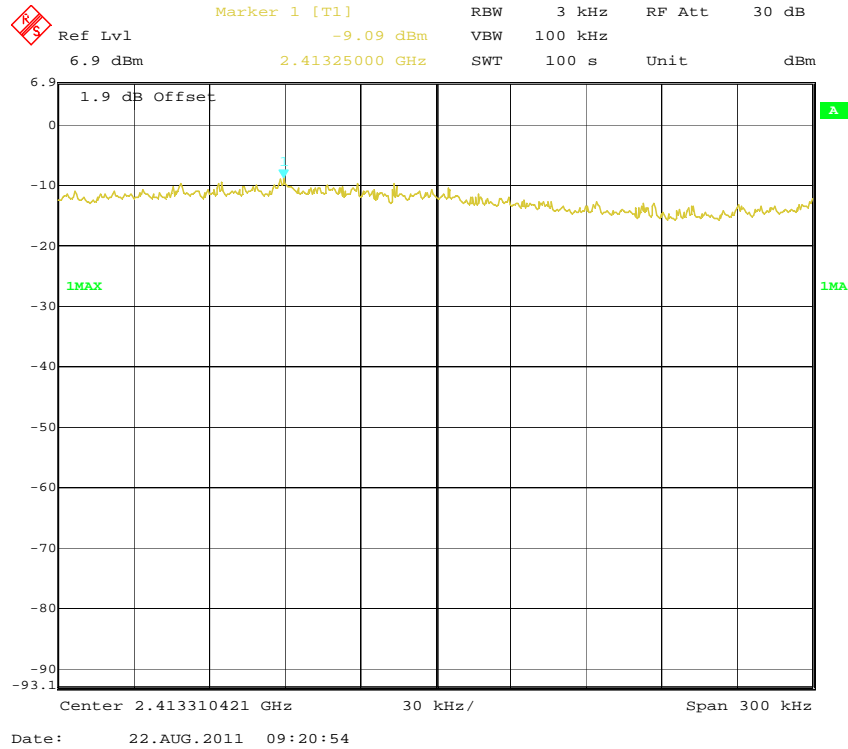


### 802.11g – 9MBPS (BPSK3 OFDM preamble) - Mid channel

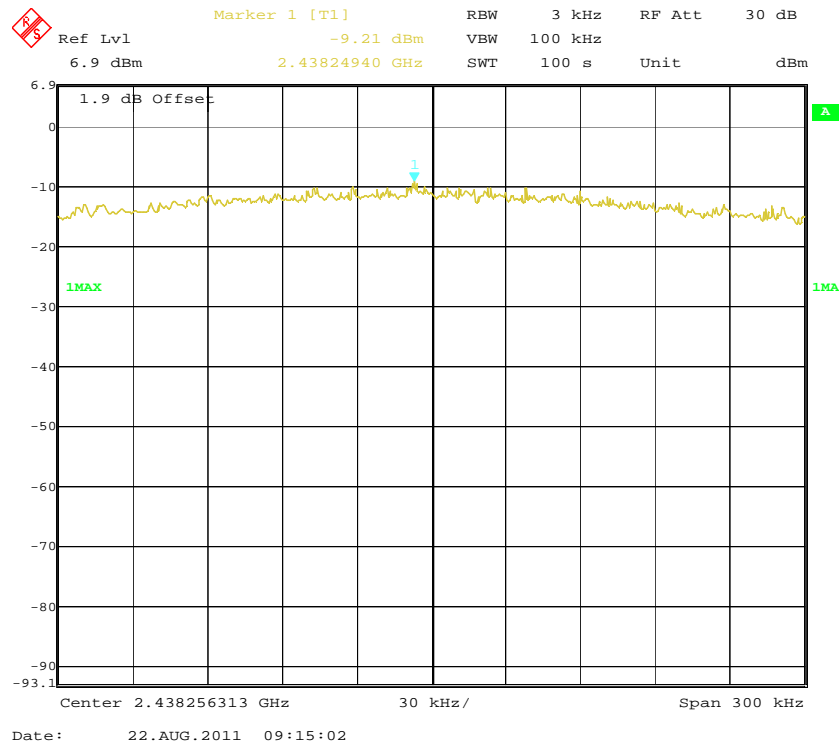


### 802.11g – 9MBPS (BPSK3 OFDM preamble) - High channel

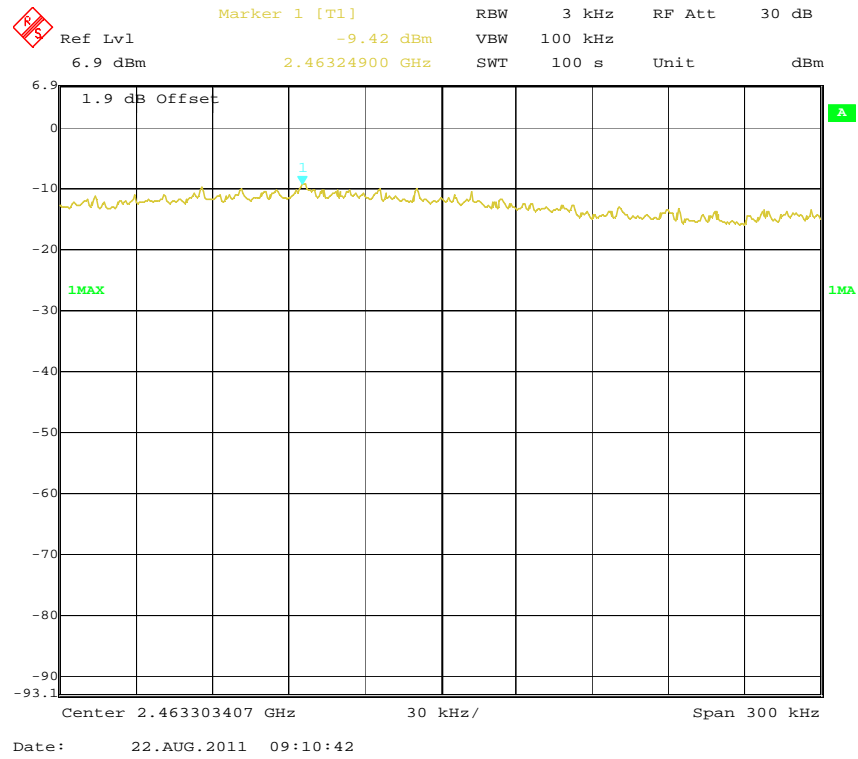




## 802.11n – Low channel – MCS0



## 802.11n – Mid channel – MCS0



### 802.11n – High channel – MCS0

**7.0 15.247(e) Power Spectral Density****Tabular Data:**

Channel	PSD dBm	Limit dBm	RWB kHz	Span kHz	Sweep Time seconds
802.11b – 11Mbps – High Channel	-9.45	8	3	300	100
802.11b – 2Mbps – Mid Channel	-7.63	8	3	300	100
802.11b – 5.5Mbps – Low Channel	-7.93	8	3	300	100
802.11g – 9MBPS (BPSK3 OFDM preamble) - High channel	-8.92	8	3	300	100
802.11g – 9MBPS (BPSK3 OFDM preamble) - Mid channel	-8.78	8	3	300	100
802.11g – 6MBPS (BPSK OFDM preamble) - Low channel	-8.43	8	3	300	100
802.11n – High channel – MCS0	-9.42	8	3	300	100
802.11n – Mid channel – MCS0	-9.21	8	3	300	100
802.11n – Low channel – MCS0	-9.09	8	3	300	100

## **8.0 15.247(d) Conducted Spurious Emissions**

### **Method:**

Equipment setup for conducted disturbance tests shall follow the guidelines of ANSI C63.4.

FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB.

### **TEST SITE**

The test site for conducted emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096. The VCCI Registration Number for this site is C-2818.

### **MEASUREMENT UNCERTAINTY**

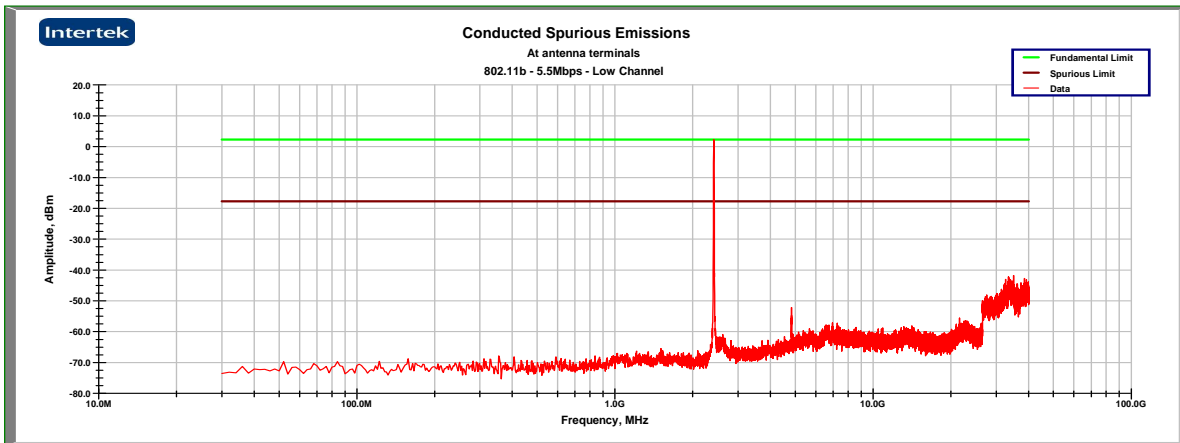
Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes. The values given are the measurement uncertainty values with an expanded uncertainty of  $k=2$ .

150 kHz to 30 MHz:  $\pm 2.8$  dB

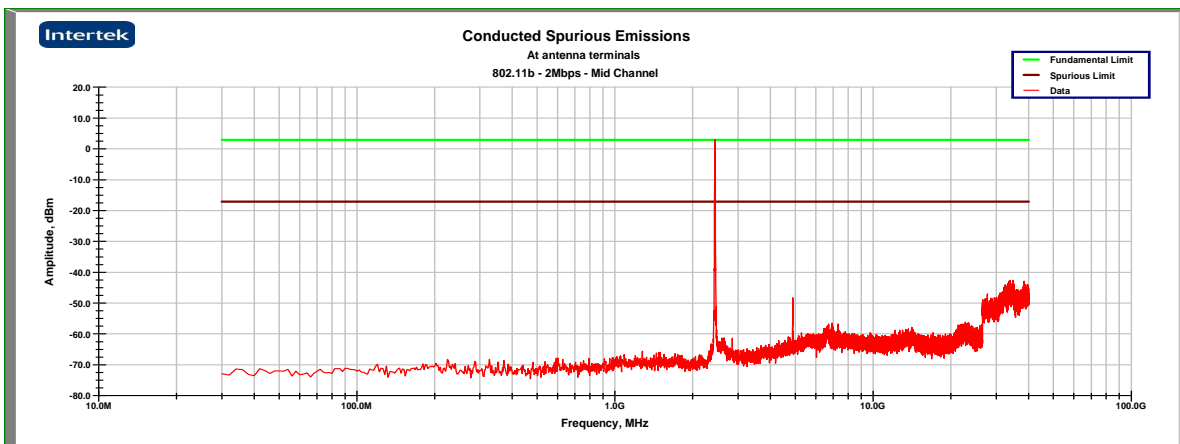
**Results: The sample tested was found to Comply.**

## 8.0 15.247(d) Conducted Spurious Emissions

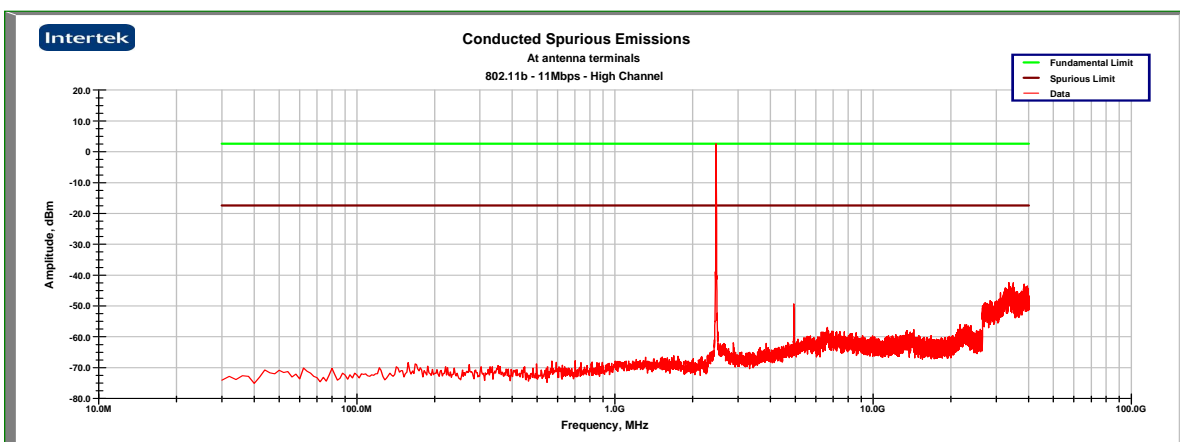
### 802.11b – 5.5Mbps – Low Channel



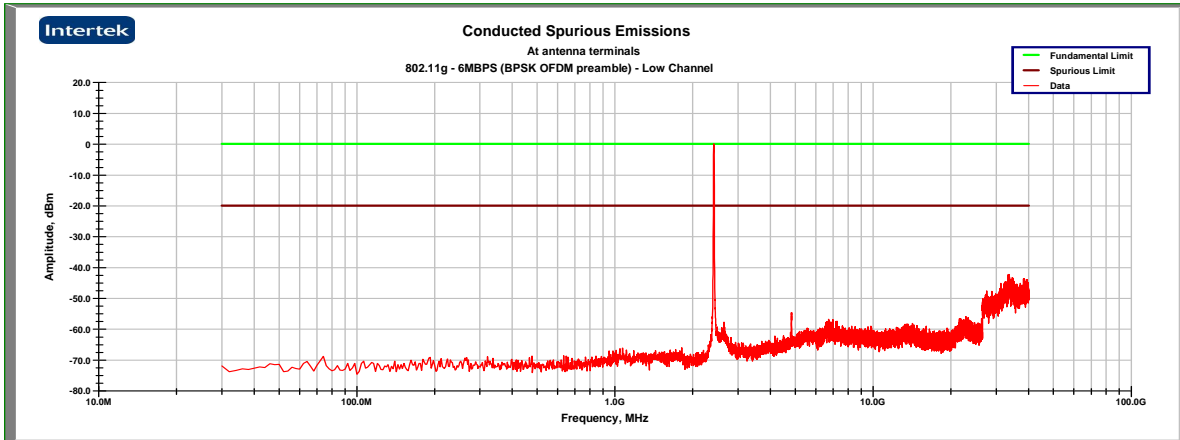
### 802.11b – 2Mbps – Middle Channel



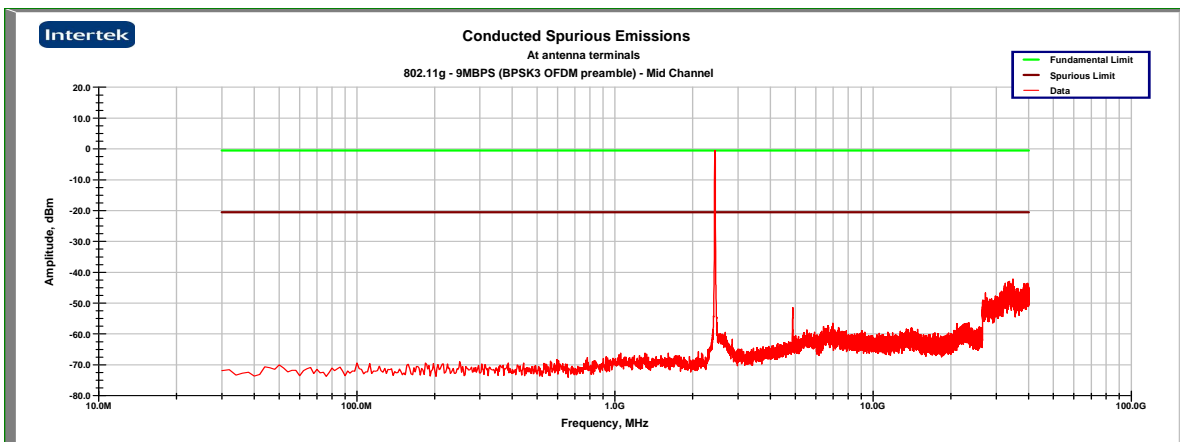
### 802.11b – 11Mbps – High Channel



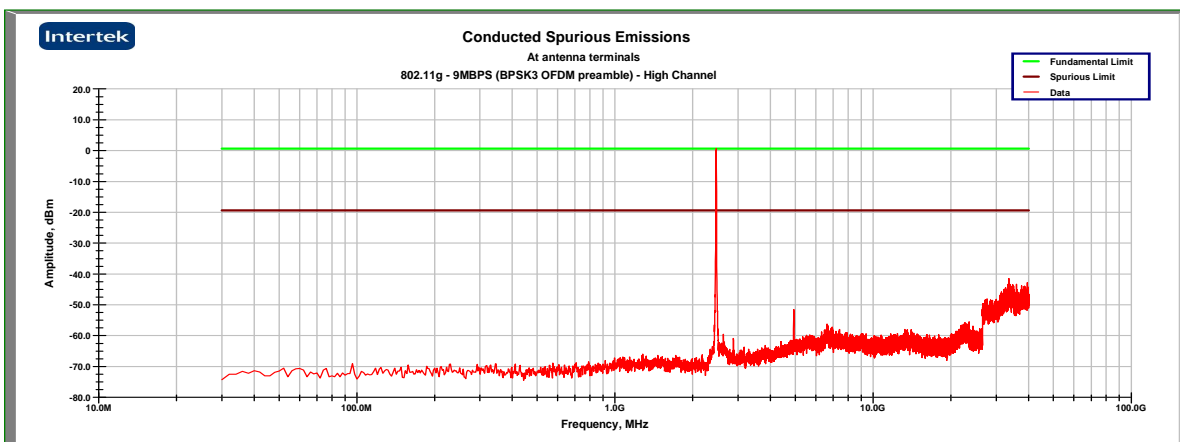
## 802.11g – 6MPS (BPSK OFDM preamble) – Low Channel



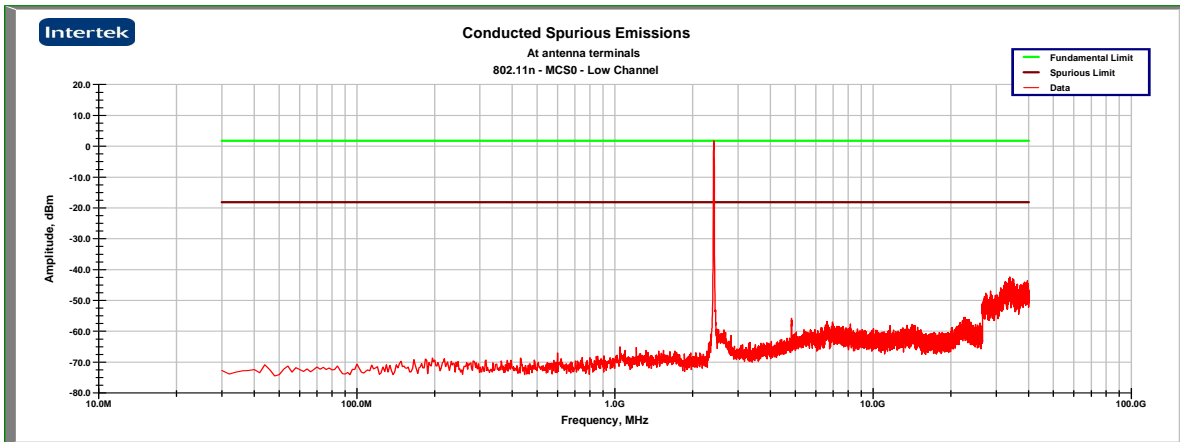
## 802.11g – 9MPS (BPSK OFDM preamble) – Middle Channel



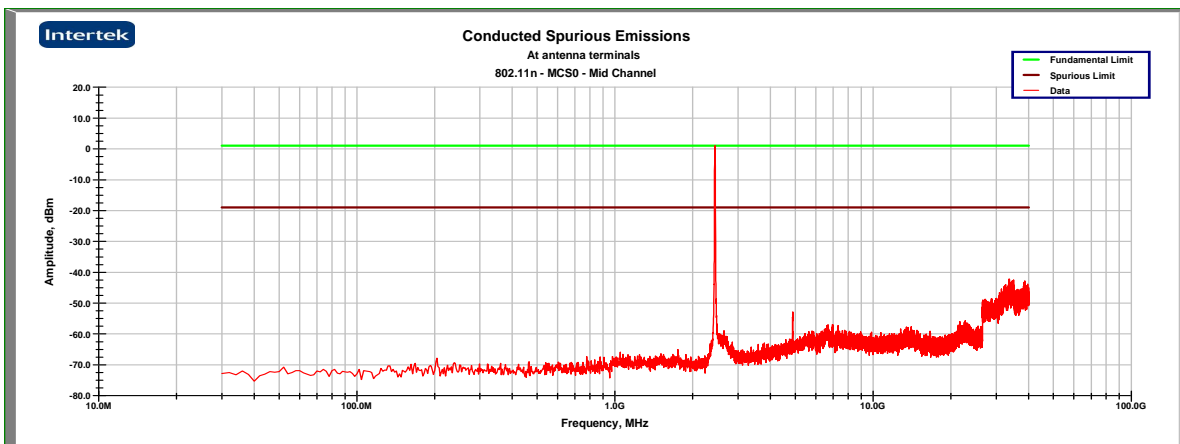
## 802.11g – 9MPS (BPSK OFDM preamble) – High Channel



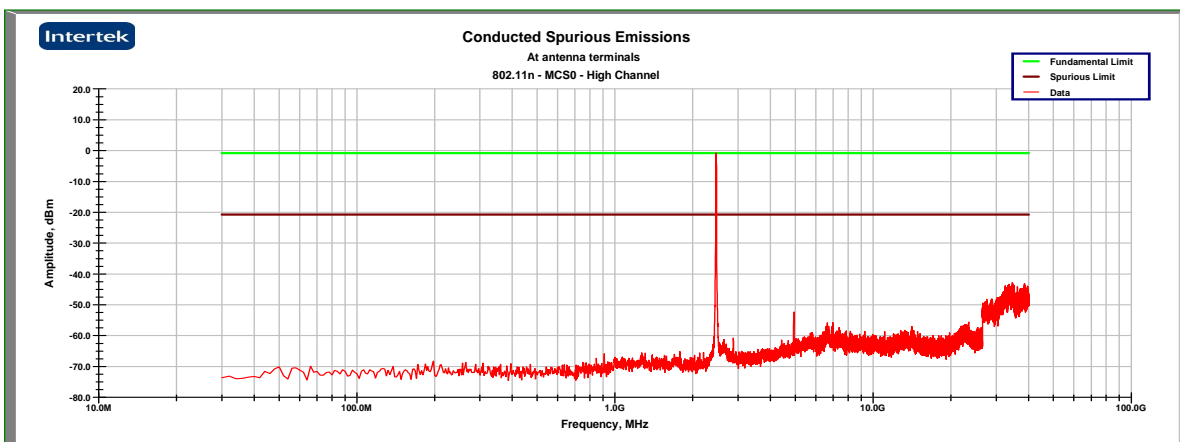
## 802.11n – MCS0 – Low Channel



## 802.11n – MCS0 – Middle Channel



## 802.11n – MCS0 – High Channel



## 9.0 15.247(d) Radiated Spurious Emissions

### Method:

Equipment setup for conducted disturbance tests shall follow the guidelines of ANSI C63.4.

FCC's KDB Publication 558074, "Measurement of Digital Transmission Systems Operating under Section 15.247" March 23, 2005

Measurements in the frequency range of 30 MHz to 40000 MHz shall be performed with a quasi-peak detector instrument that meets the requirements of Section One of CISPR 16. Above 1000 MHz, a peak detector shall be used. Peak values converted to average by applying the duty cycle correction factor, when applicable. When an average detector is used, it shall meet the requirements of Section One of CISPR 16. The measuring antenna shall correlate to a balanced dipole.

Bandwidths:

30 MHz to 1000 MHz: 120 kHz RBW and 1 MHz VBW

Above 1000 MHz: 1 MHz RBW and 3 MHz VBW

Measurements of the radiated field are made with the antenna located at a distance of 3 or 10 meters from the EUT. The limit applied to the measurement shall be appropriate for the test distance. The test distance shall be indicated in the results section.

The EUT shall be arranged and connected with cables terminated in accordance with the product specification.

Exploratory tests should be carried out while varying the cable positions to determine the maximum or near-maximum emission level. During manipulation, cables shall not be placed under or on top of the system test components unless such placement is required by the inherent equipment design.

The antenna shall be adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

The antenna-to-EUT azimuth shall be varied during the measurement to find the maximum field-strength readings.

The antenna-to-EUT polarization (horizontal and vertical) shall be varied during the measurements to find the maximum field-strength readings.

If the EUT is intended for tabletop use, it shall be placed on a table whose top is 0.8m above the ground plane. The table shall be constructed of non-conductive materials. Its dimensions are at least 1m by 1.5m, but may be extended for larger EUT.

If EUT is floor standing, the EUT was placed on a horizontal metal ground plane and isolated from the ground plane by up to 12 mm of insulating material.

Equipment setup for radiated disturbance tests shall follow the guidelines of ANSI C63.4.

### TEST SITE

The test site for radiated emissions is located at 1950 Evergreen Blvd, Suite 100, Duluth, Georgia 30096. It is a 10 meter semi-anechoic chamber manufactured by Panashield. Embedded in the floor is a 3 meter diameter turntable.

A2LA: 1455.01

IC: 2077-1

VCCI Registration Number: R-2570

### MEASUREMENT UNCERTAINTY

Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes. The values given are the measurement uncertainty values with an expanded uncertainty of  $k=2$ .

30 MHz to 1000 MHz at 3 meters: +/- 3.9 dB

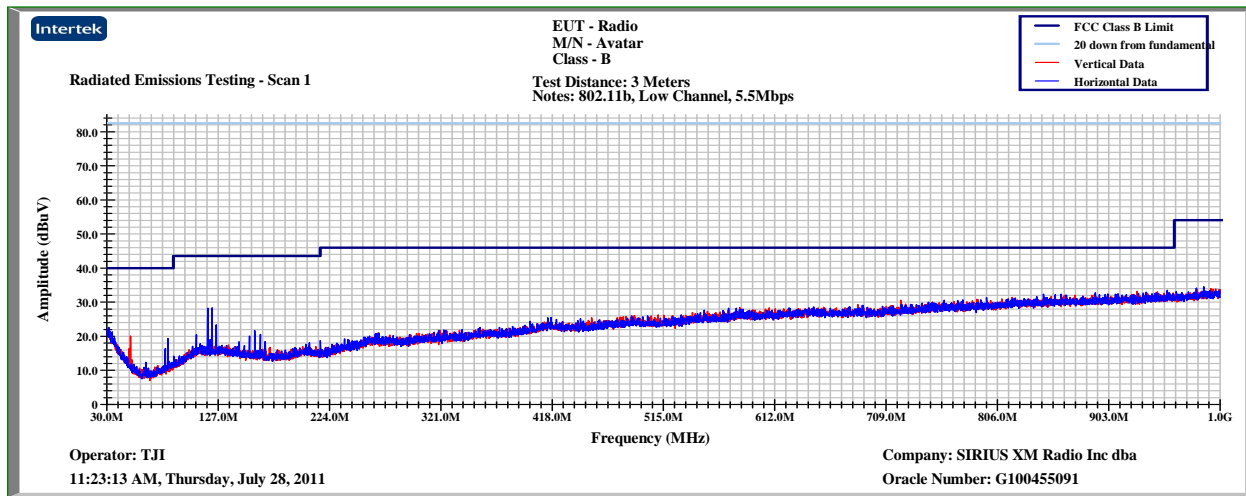
30 MHz to 1000 MHz at 10 meters: +/- 3.6 dB

1 GHz to 18 GHz at 3 meters: +/- 4.2 dB

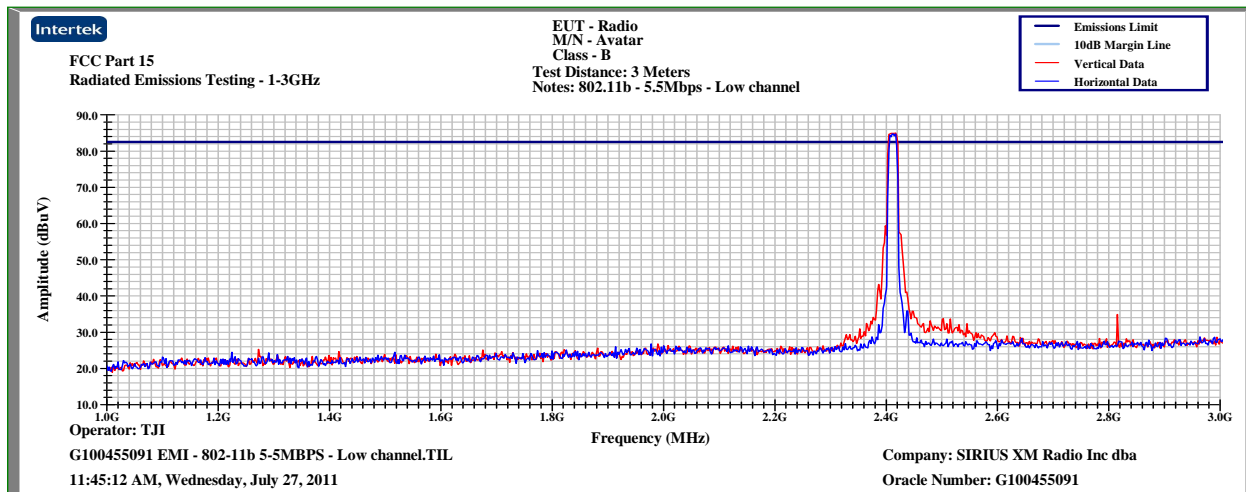


## 9.0 15.247(d) Radiated Spurious Emissions

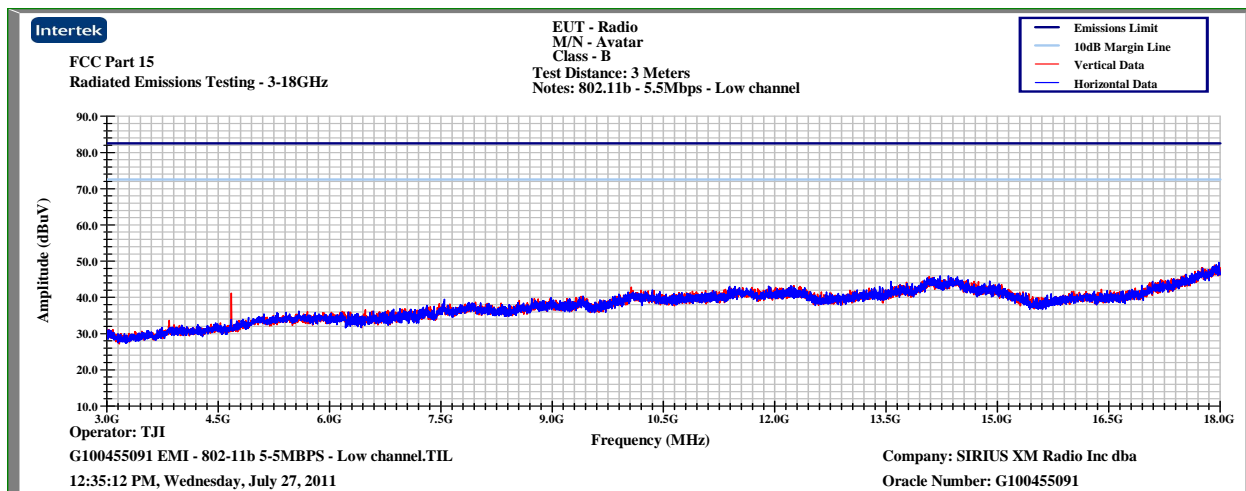
Peak Plot – 30MHz-1000MHz – 802.11b – 5.5Mbps – Low Channel



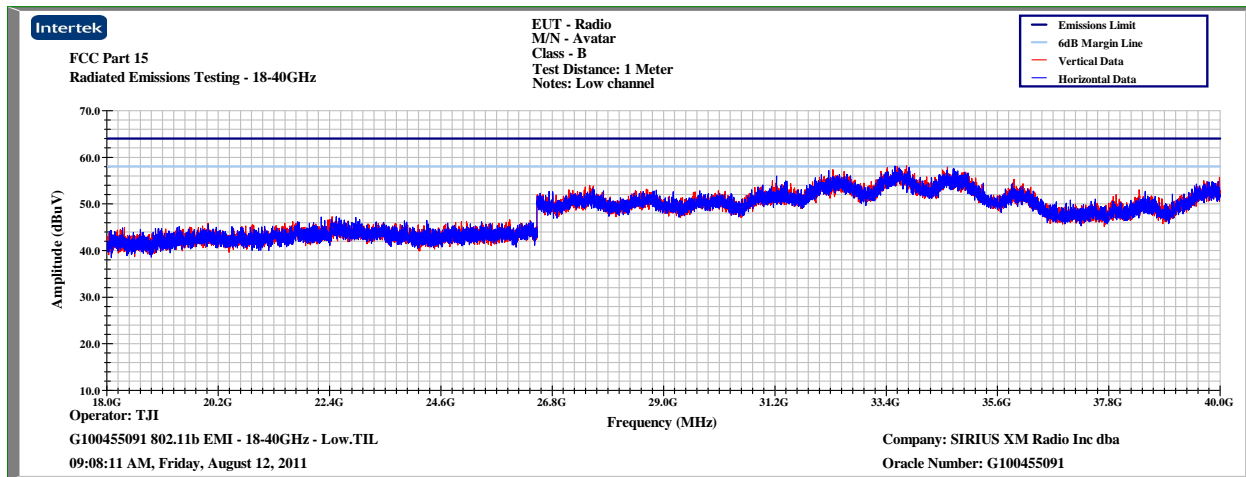
Peak Plot – 1000MHz-3000MHz – 802.11b – 5.5Mbps – Low Channel



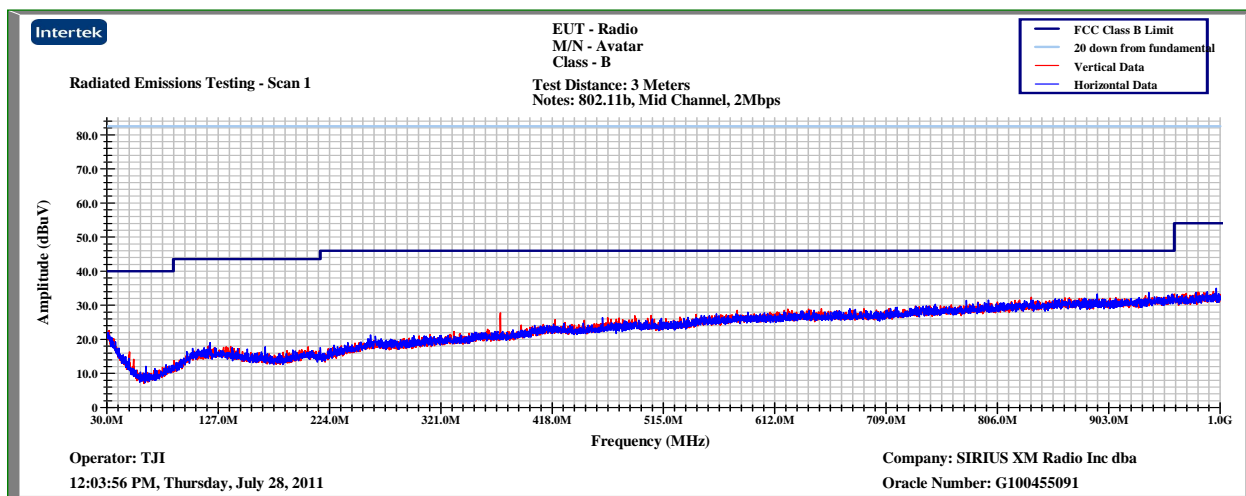
Peak Plot – 3000MHz-18000MHz – 802.11b – 5.5Mbps – Low Channel



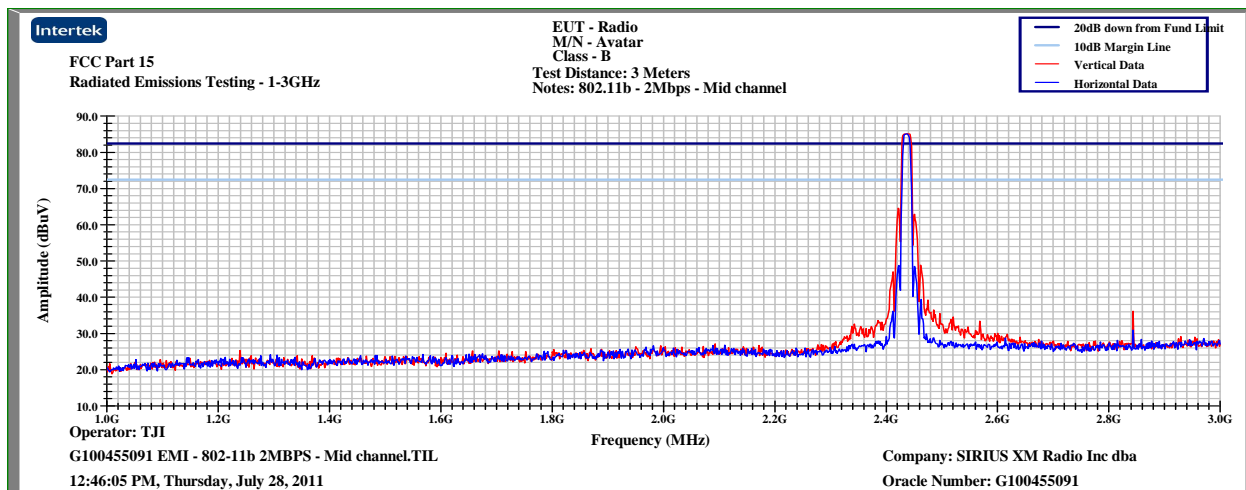
Peak Plot – 18000MHz-40000MHz – 802.11b – 5.5Mbps – Low Channel



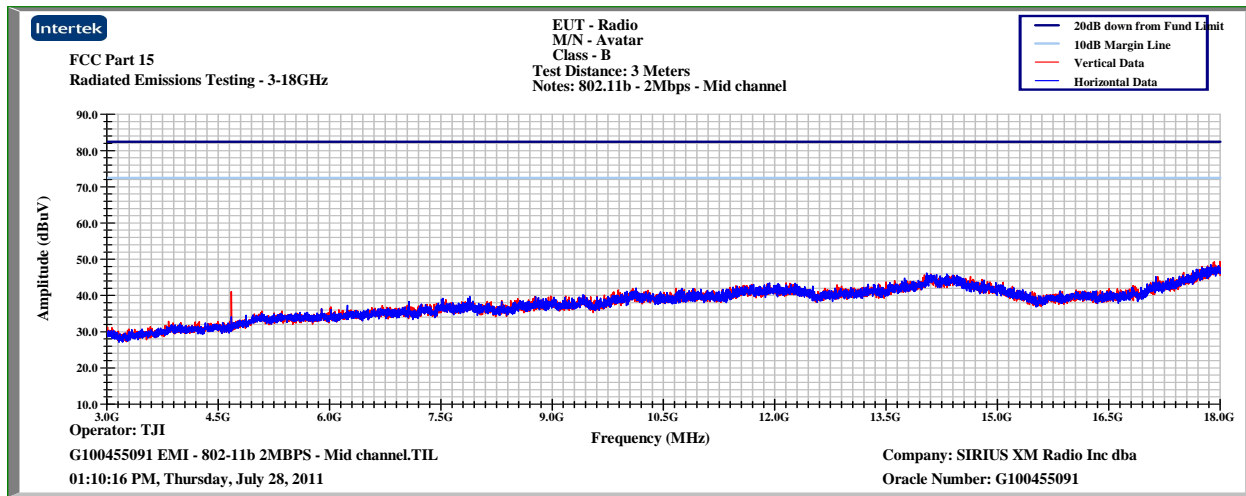
Peak Plot – 30MHz-1000MHz – 802.11b – 2.0Mbps – Middle Channel



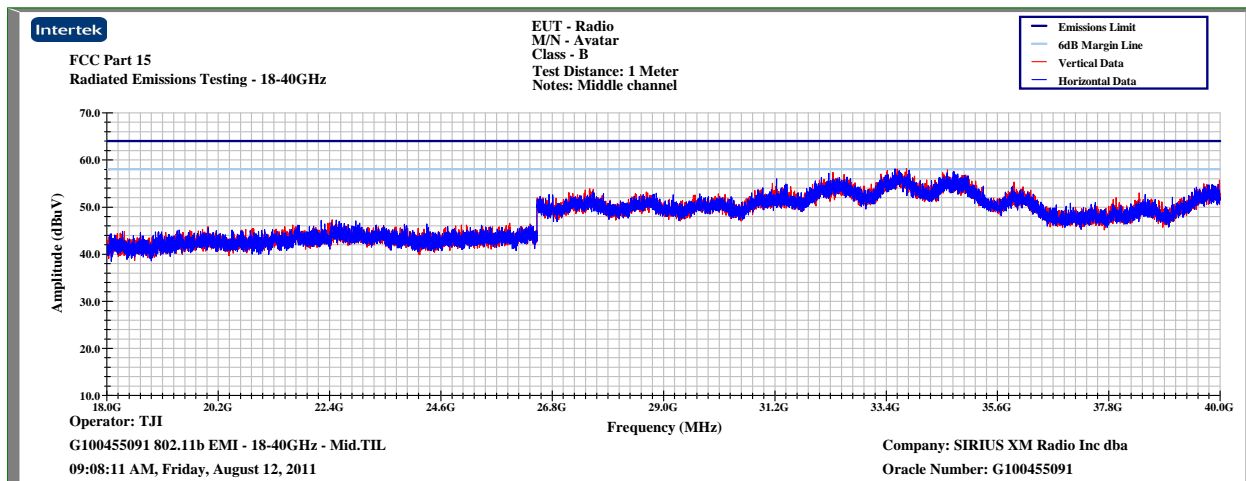
Peak Plot – 1000MHz-3000MHz – 802.11b – 2.0Mbps – Middle Channel



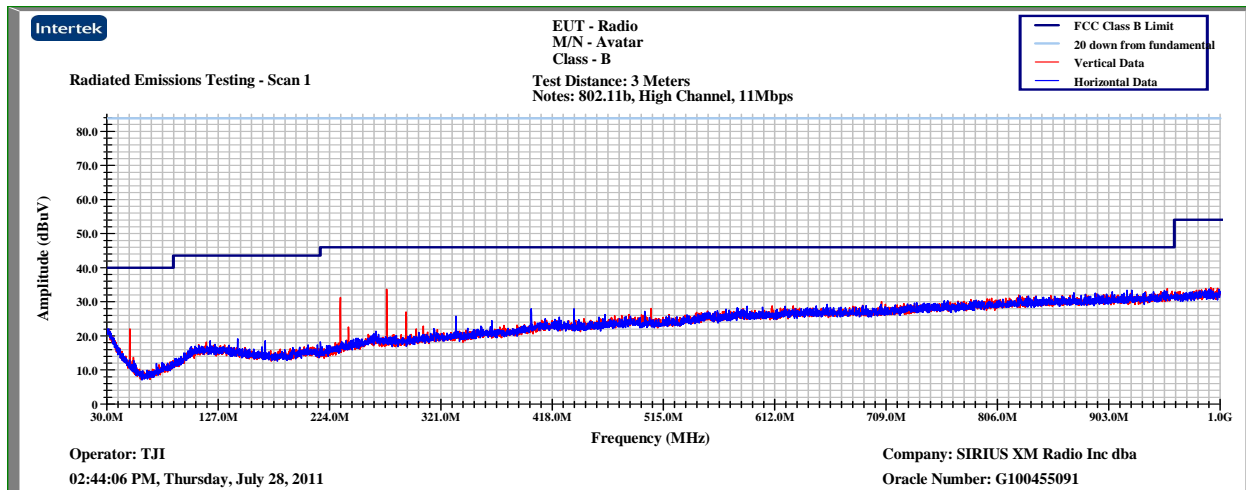
Peak Plot – 3000MHz-18000MHz – 802.11b – 2.0Mbps – Middle Channel



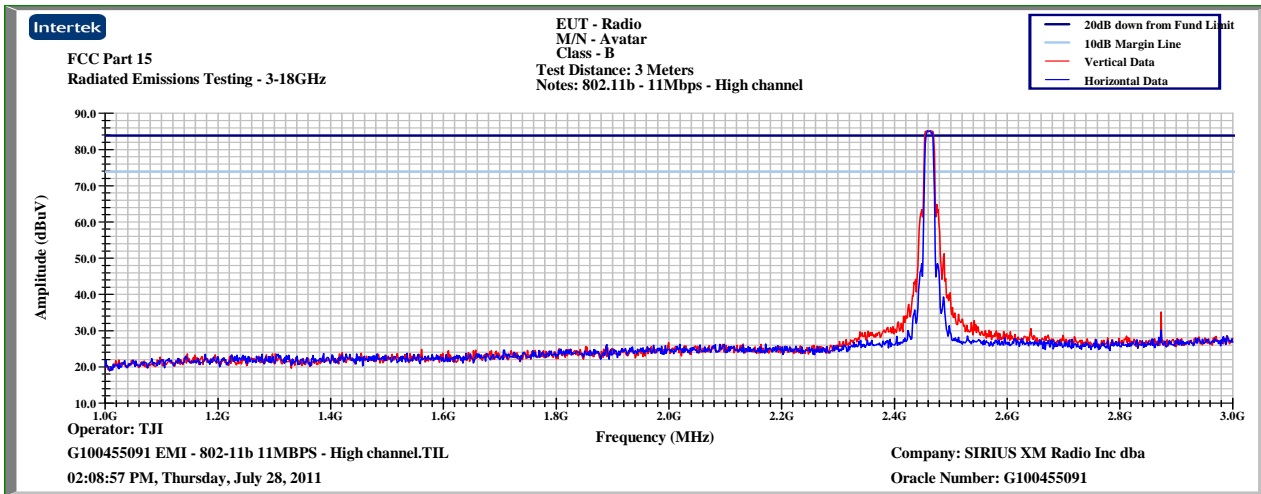
Peak Plot – 18000MHz-40000MHz – 802.11b – 2.0Mbps – Middle Channel



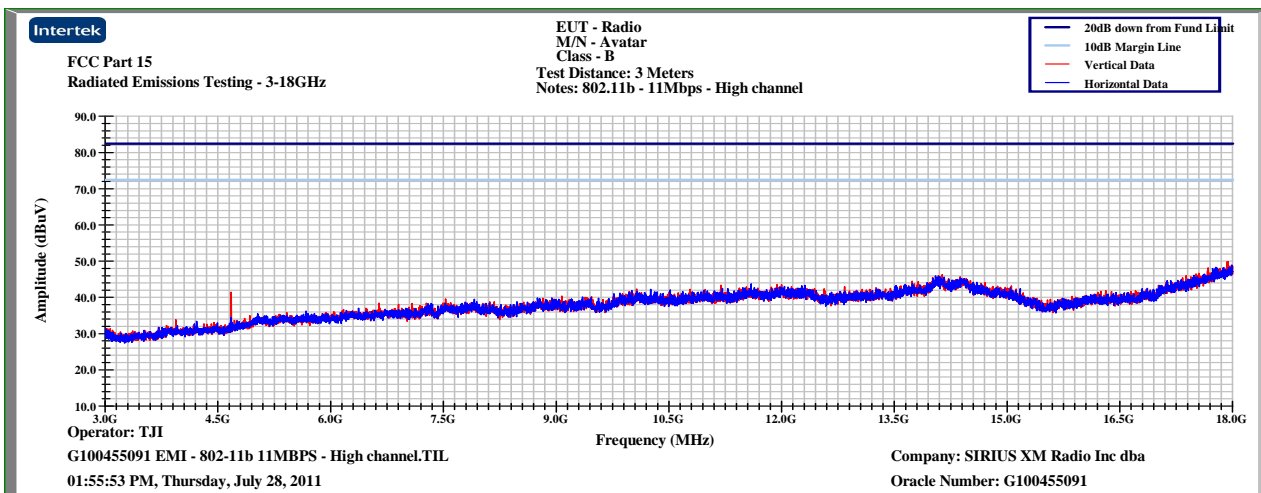
Peak Plot – 30MHz-1000MHz – 802.11b – 11Mbps – High Channel



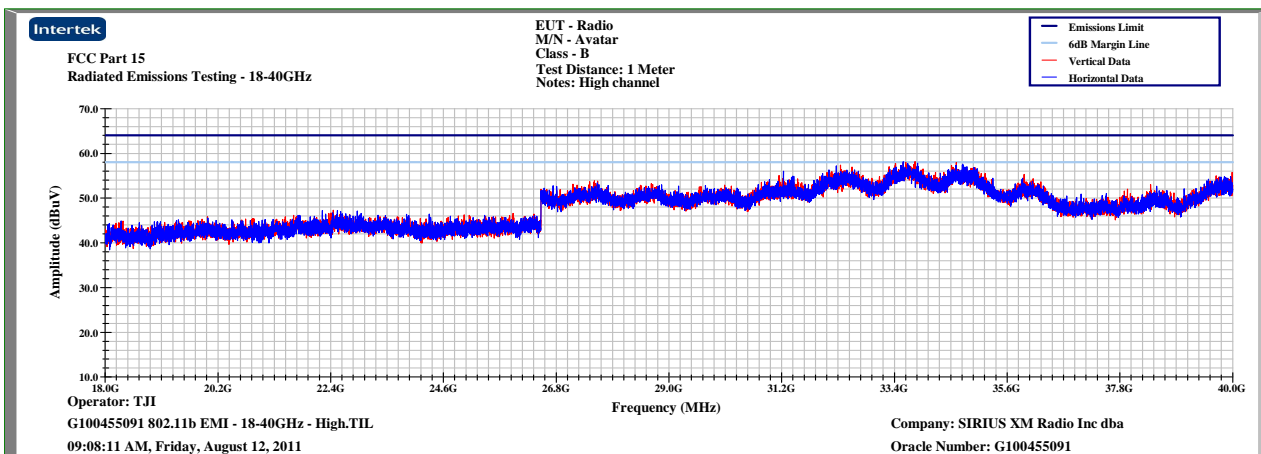
Peak Plot – 1000MHz-3000MHz – 802.11b – 11Mbps – High Channel



Peak Plot – 3000MHz-18000MHz – 802.11b – 11Mbps – High Channel

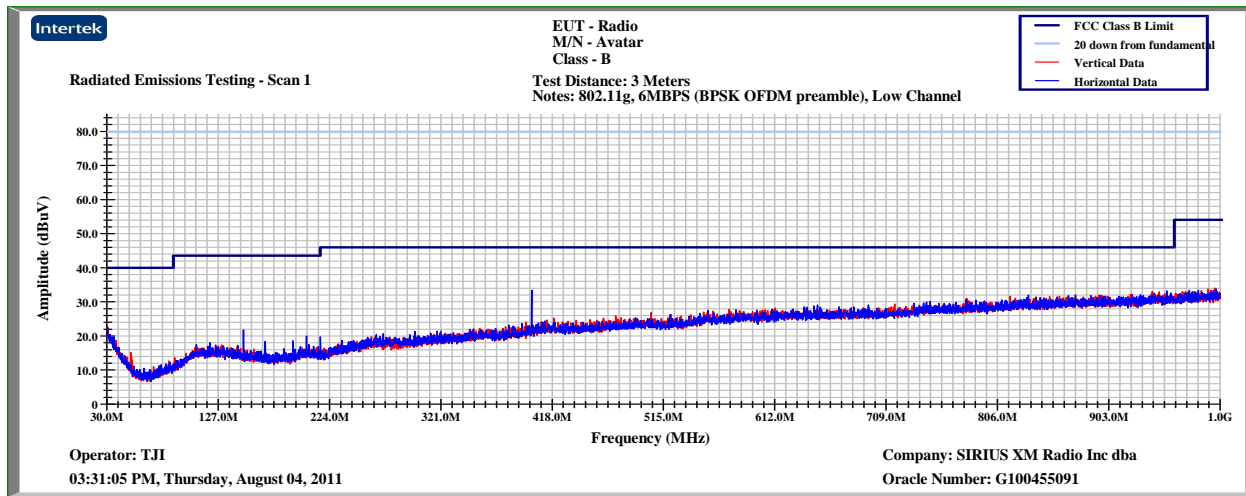


Peak Plot – 18000MHz-40000MHz – 802.11b – 11Mbps – High Channel

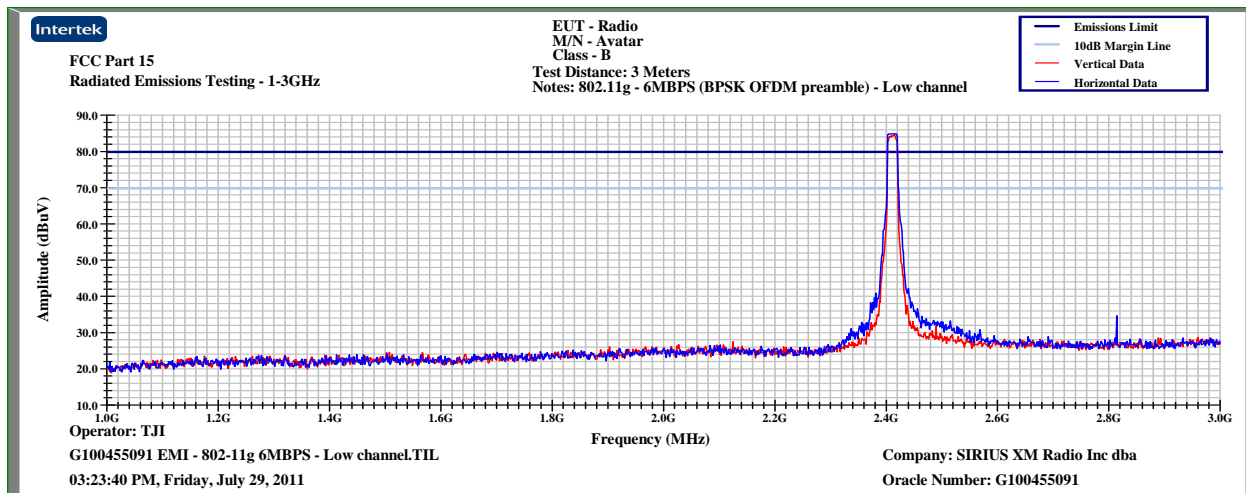


Note: Peaks above the limit between 2.2 and 2.5GHz are signals transmitted into the chamber with the satellite signal and are not related to the DUT.

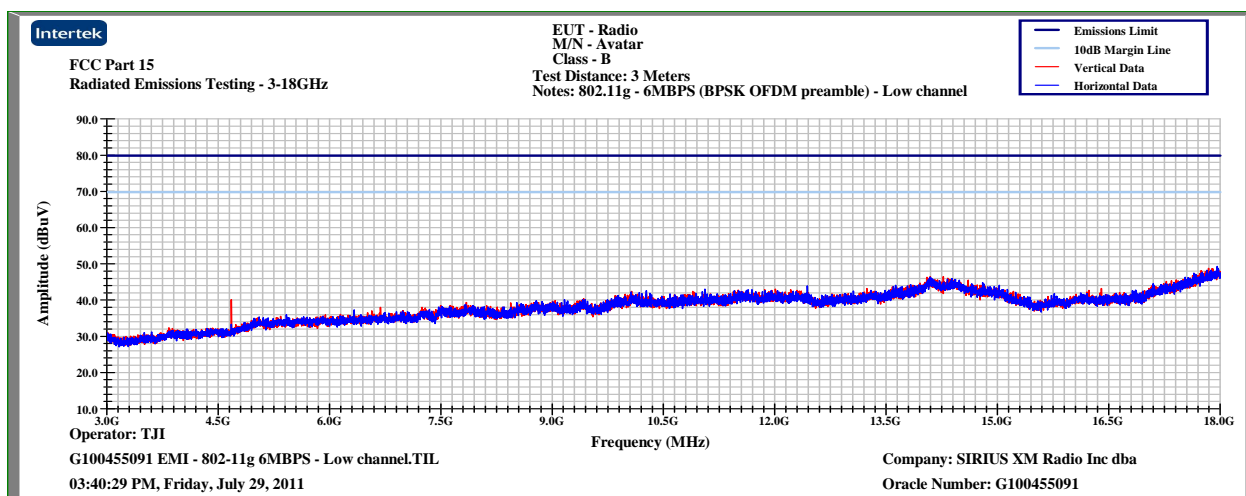
## Peak Plot – 30MHz-1000MHz – 802.11g – 6Mbps – Low Channel



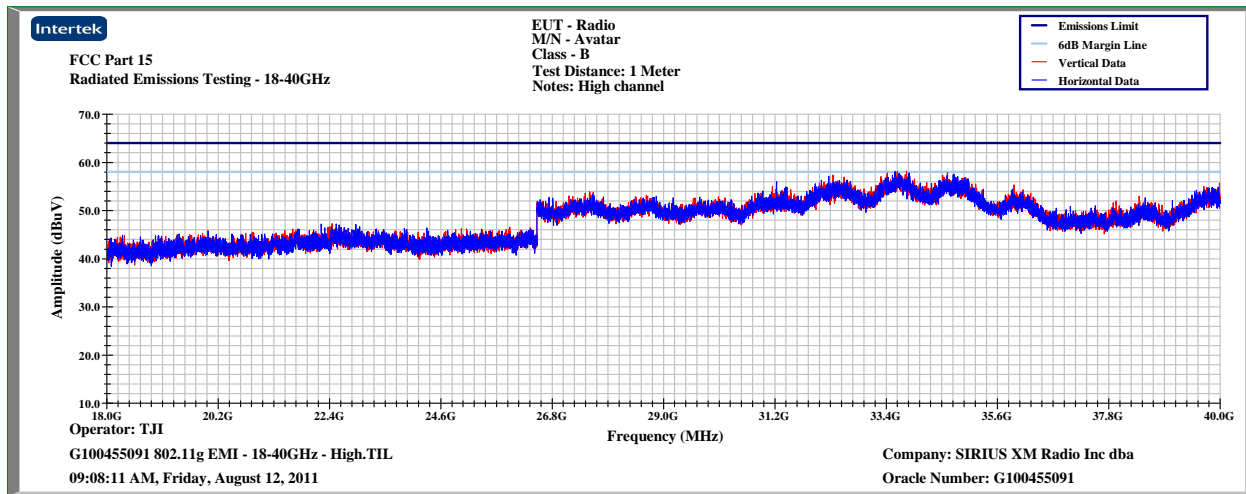
## Peak Plot – 1000MHz-3000MHz – 802.11g – 6Mbps – Low Channel



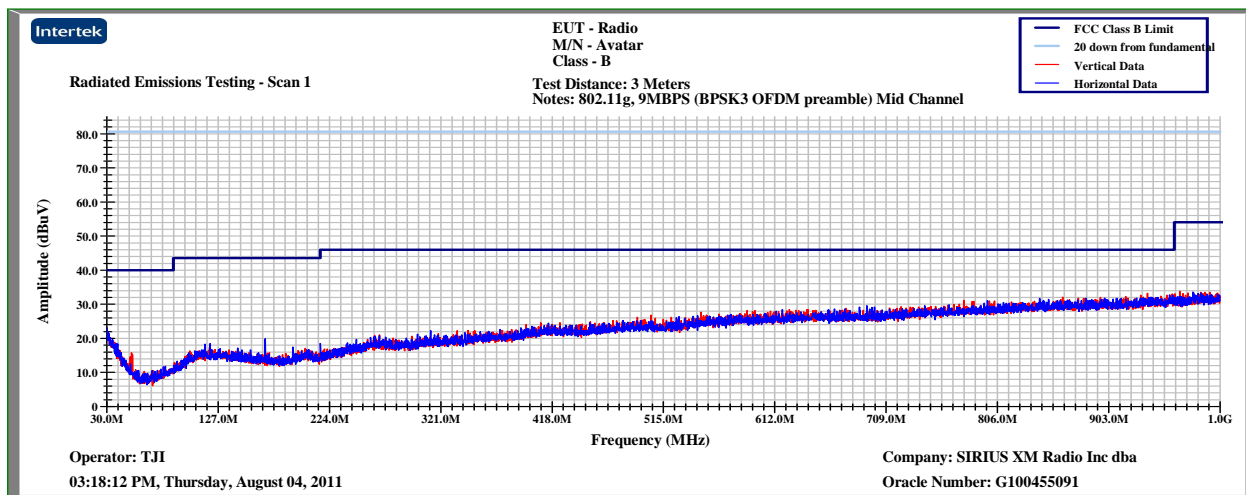
## Peak Plot – 3000MHz-18000MHz – 802.11g – 6Mbps – Low Channel



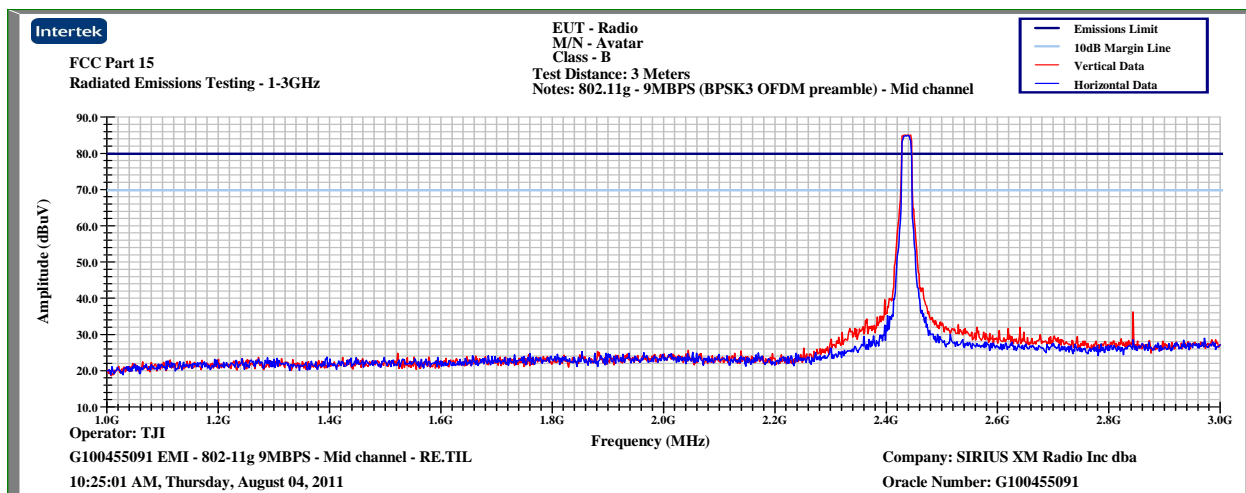
Peak Plot – 18000MHz-40000MHz – 802.11g – 6Mbps – Low Channel



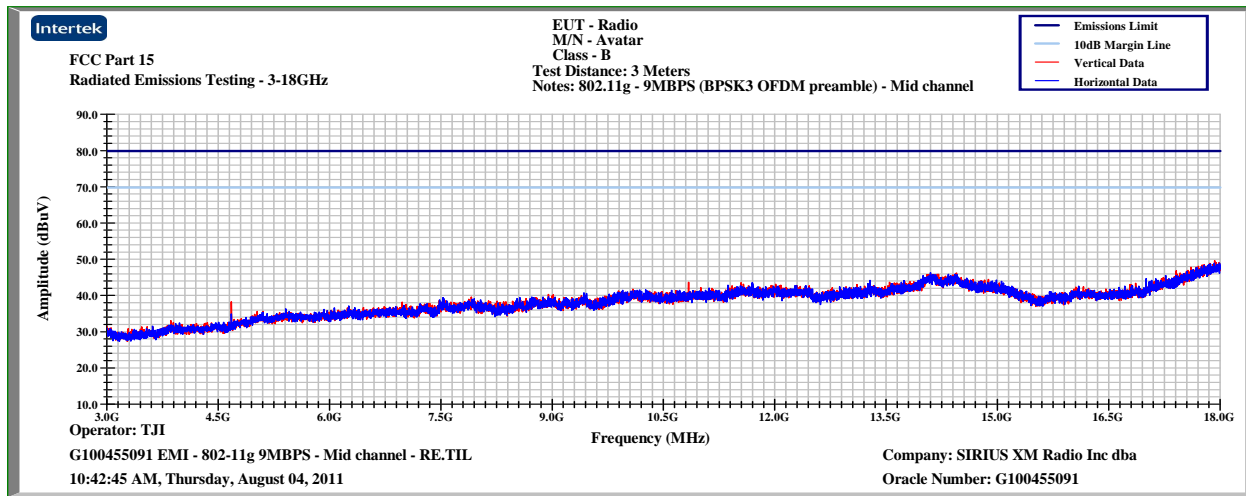
Peak Plot – 30MHz-1000MHz – 802.11g – 9Mbps – Middle Channel



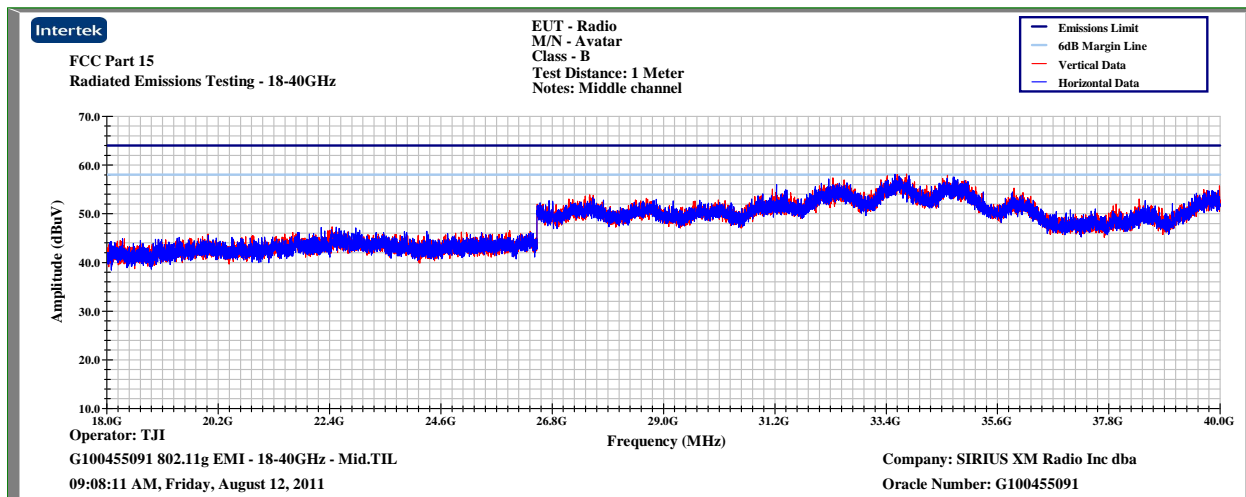
Peak Plot – 1000MHz-3000MHz – 802.11g – 9Mbps – Middle Channel



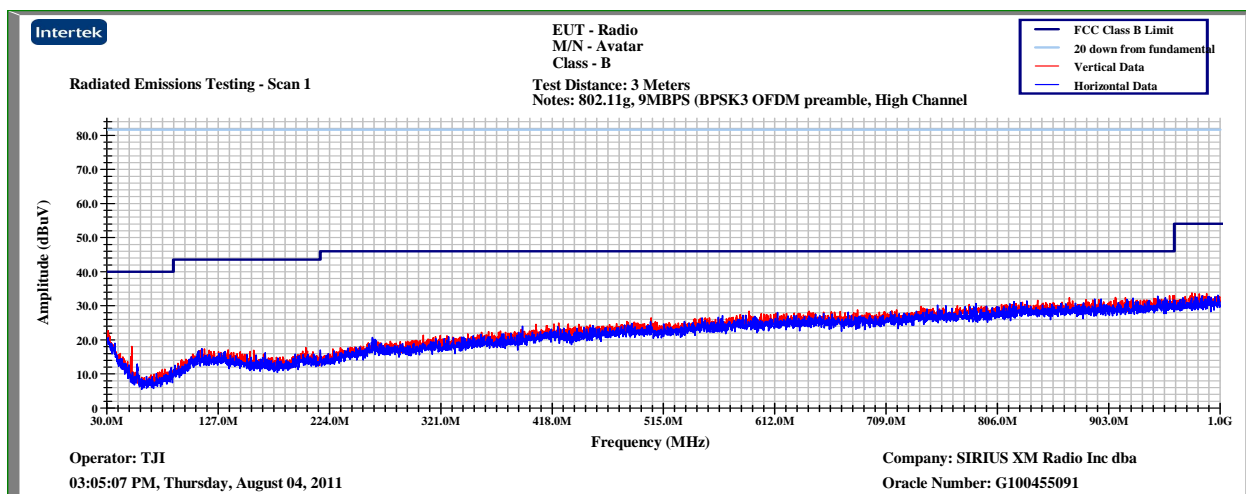
Peak Plot – 3000MHz-18000MHz – 802.11g – 9Mbps – Middle Channel



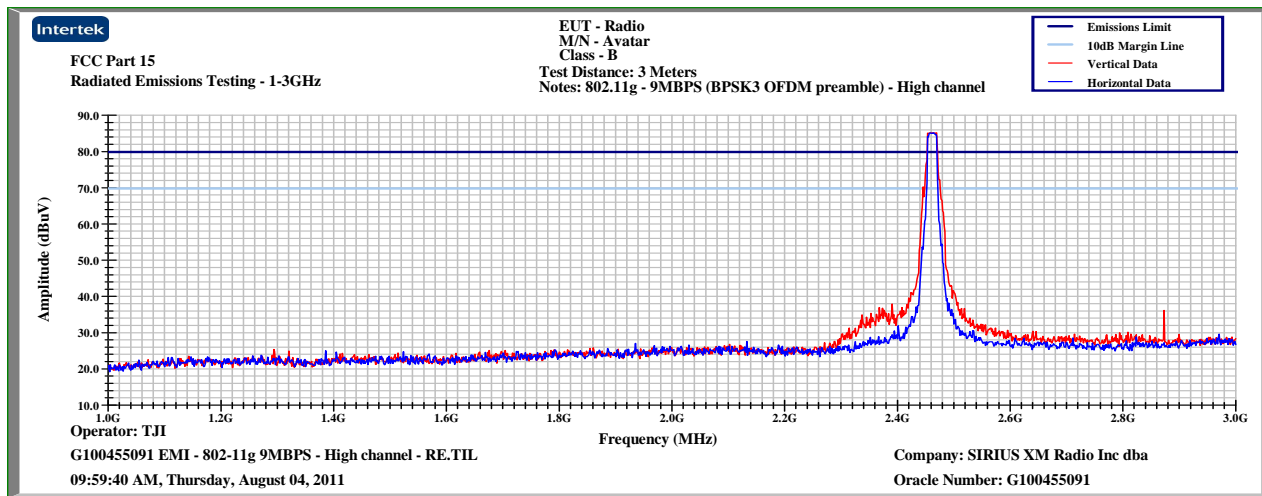
Peak Plot – 18000MHz-40000MHz – 802.11g – 9Mbps – Middle Channel



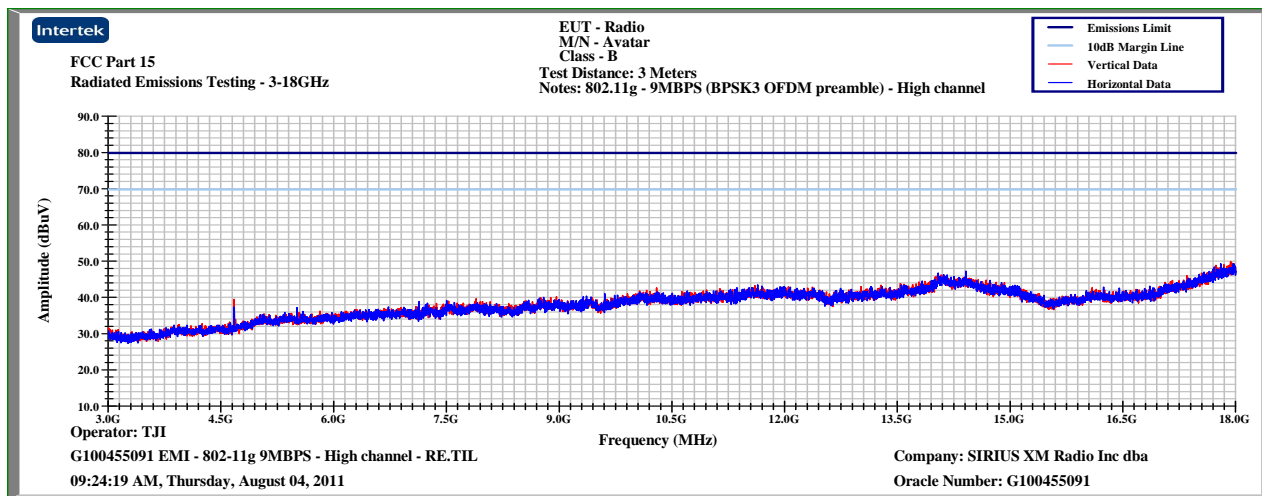
Peak Plot – 30MHz-1000MHz – 802.11g – 9Mbps – High Channel



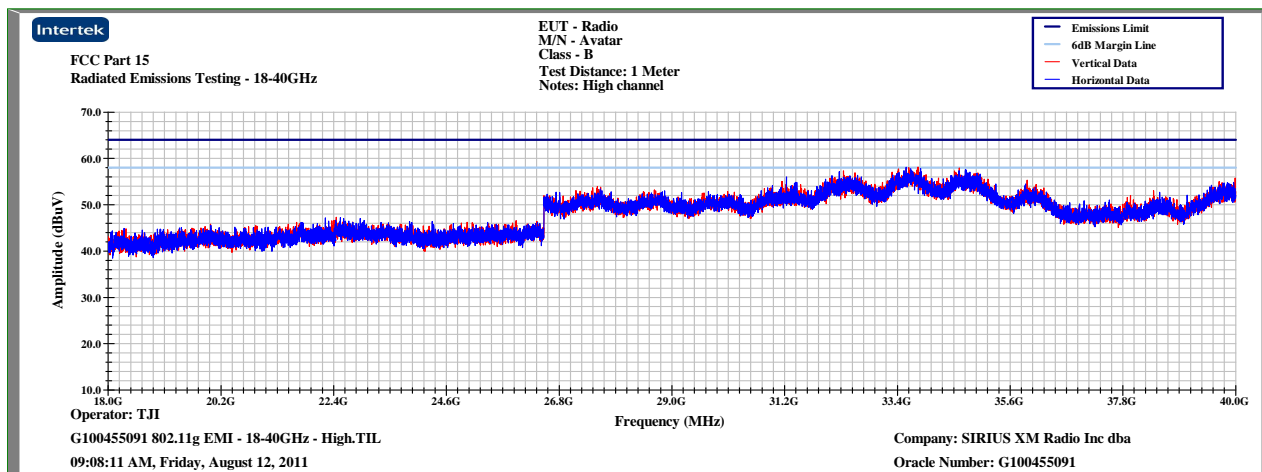
Peak Plot – 1000MHz-3000MHz – 802.11g – 9Mbps – High Channel



Peak Plot – 3000MHz-18000MHz – 802.11g – 9Mbps – High Channel



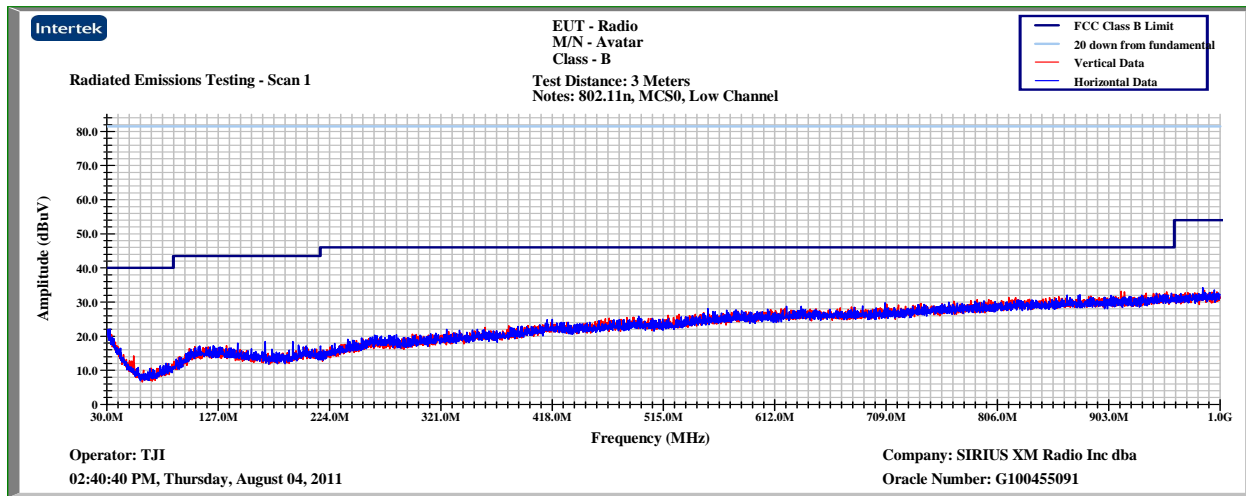
Peak Plot – 18000MHz-40000MHz – 802.11g – 9Mbps – High Channel



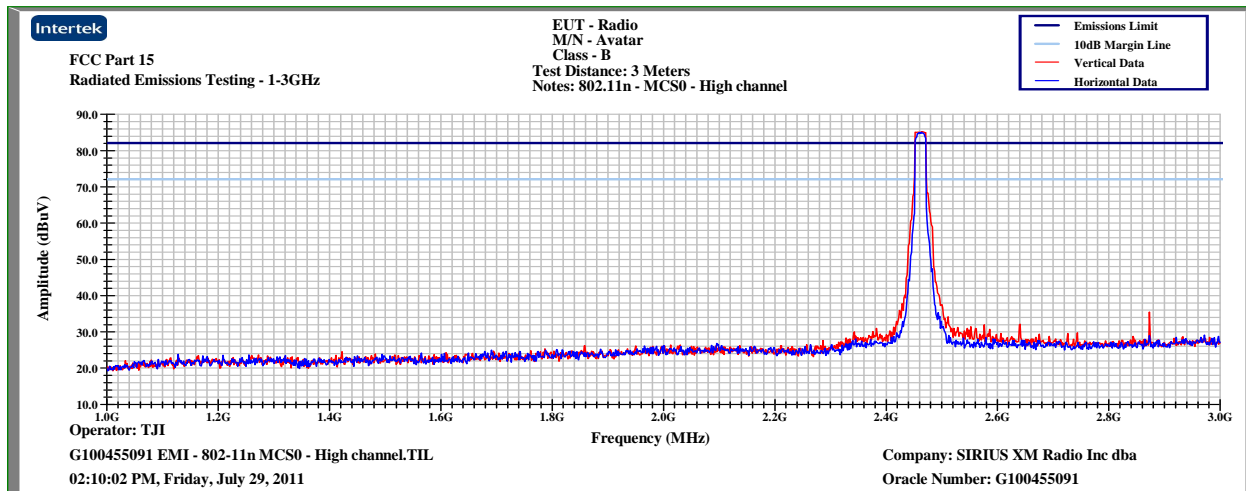
Note: Peaks above the limit between 2.2 and 2.5GHz are signals transmitted into the chamber with the satellite signal and are not related to the DUT.



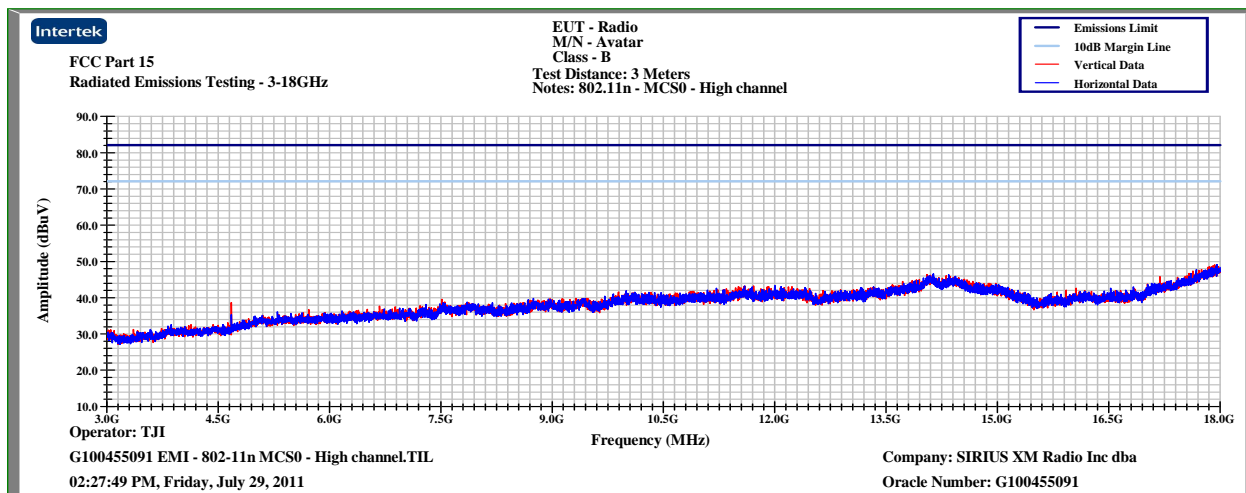
Peak Plot – 30MHz-1000MHz – 802.11n – MCS0 – Low Channel



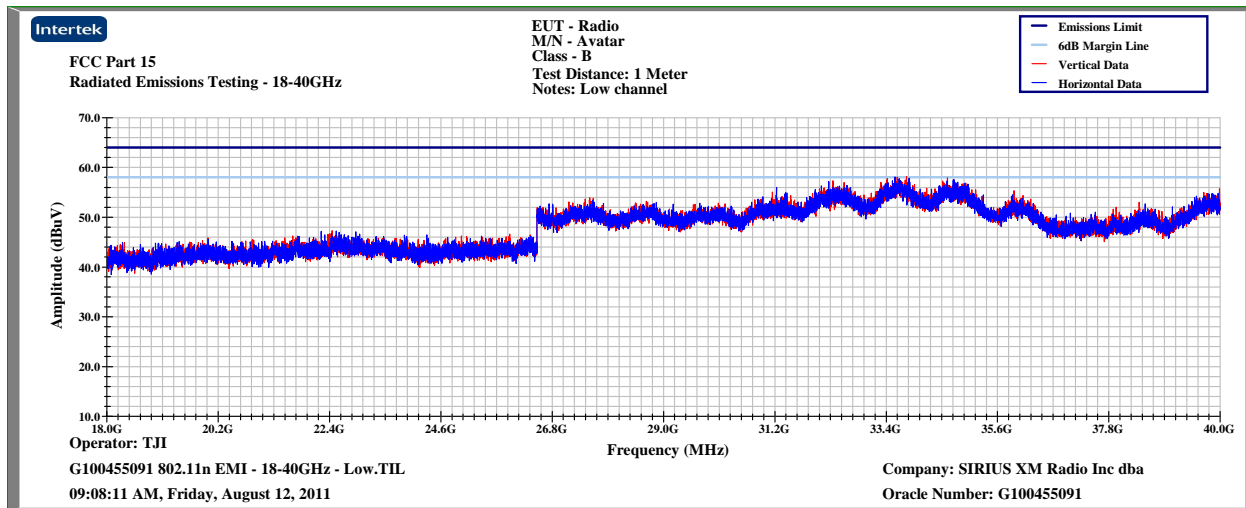
Peak Plot – 1000MHz-3000MHz – 802.11n – MCS0 – Low Channel



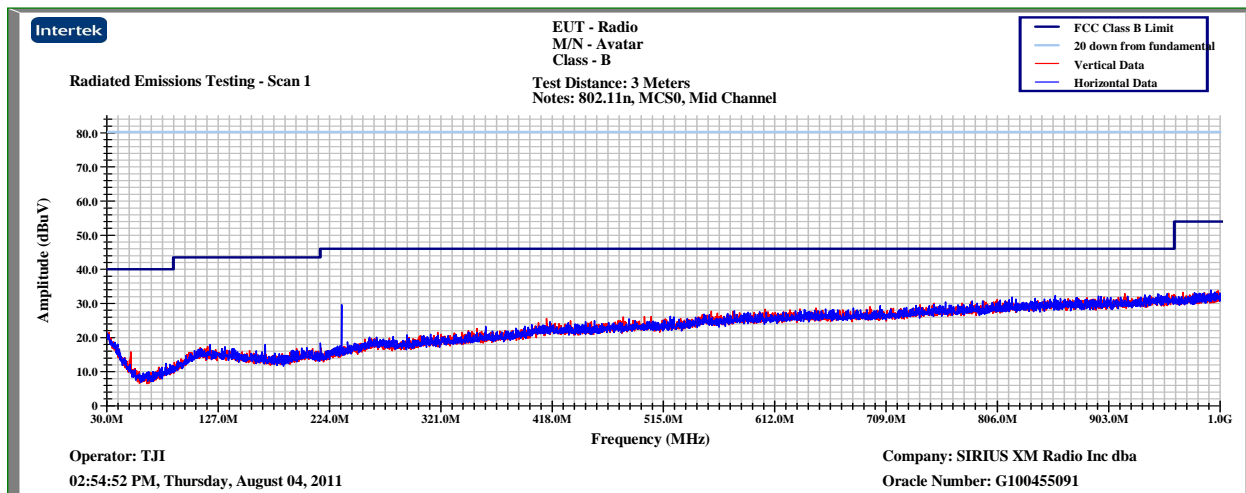
Peak Plot – 3000MHz-18000MHz – 802.11n – MCS0 – Low Channel



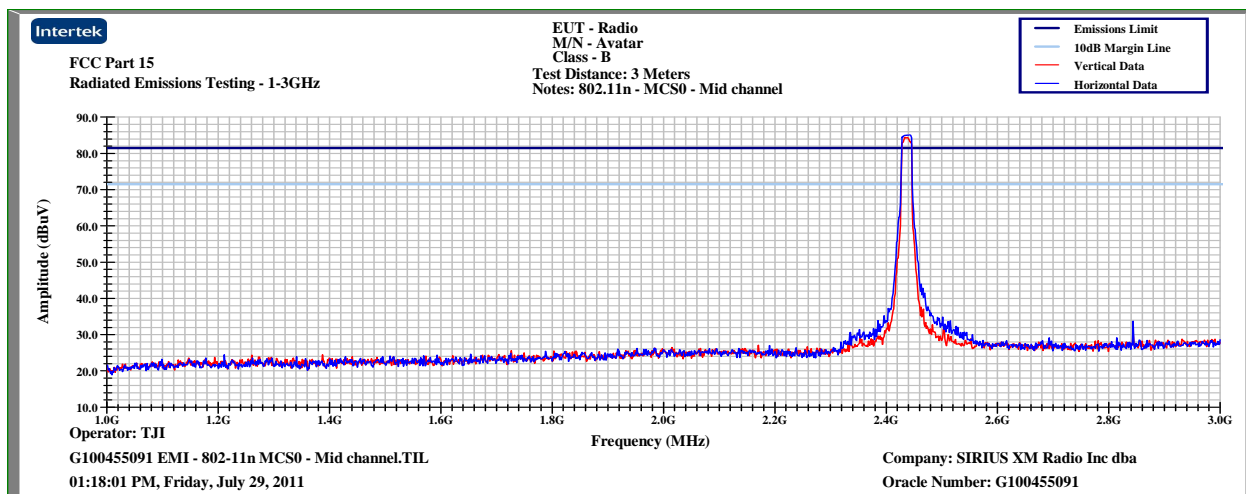
Peak Plot – 18000MHz-40000MHz – 802.11n – MCS0 – Low Channel



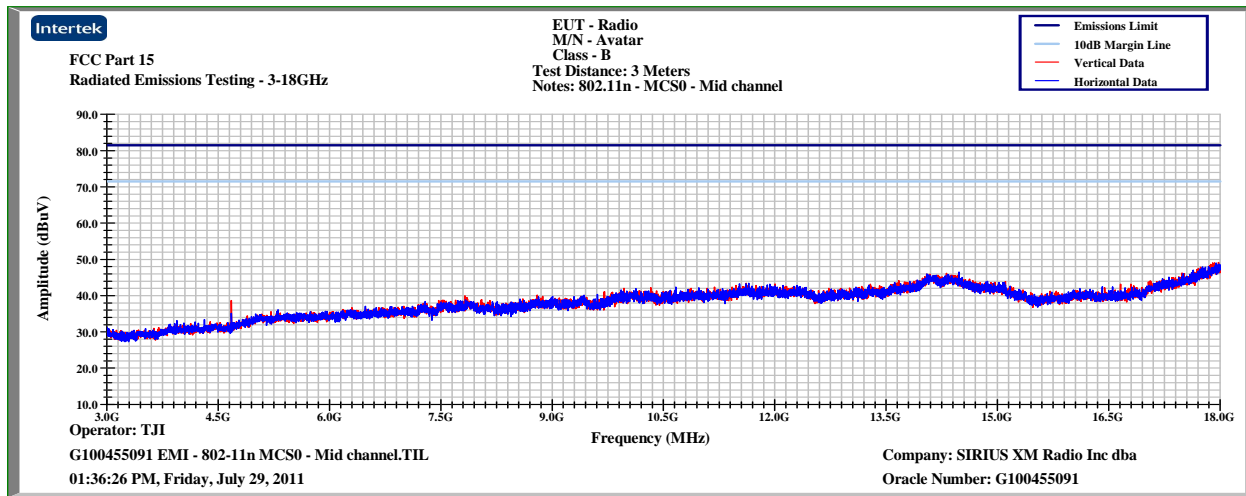
Peak Plot – 30MHz-1000MHz – 802.11n – MCS0 – Middle Channel



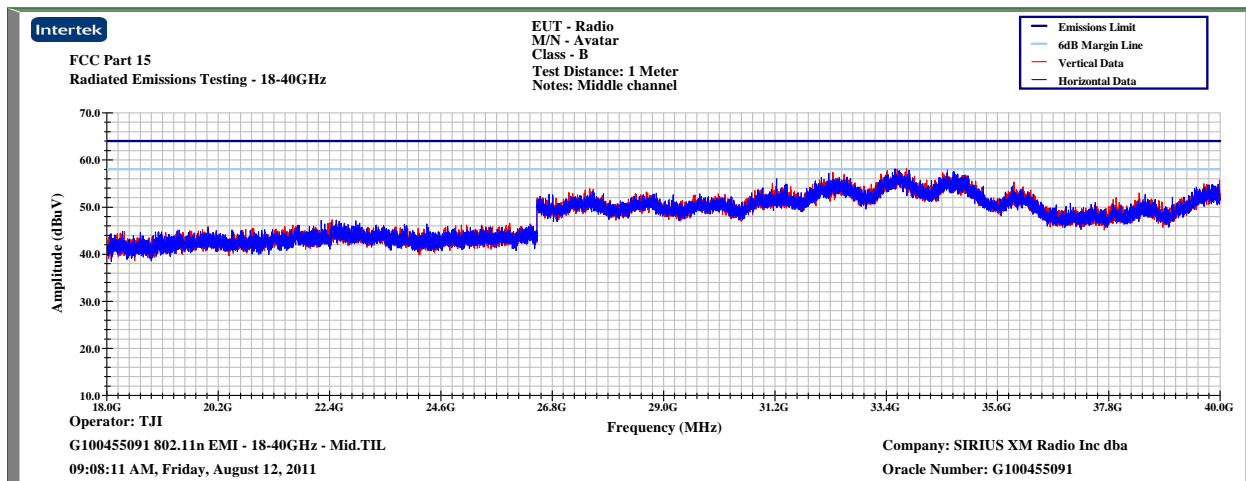
Peak Plot – 1000MHz-3000MHz – 802.11n – MCS0 – Middle Channel



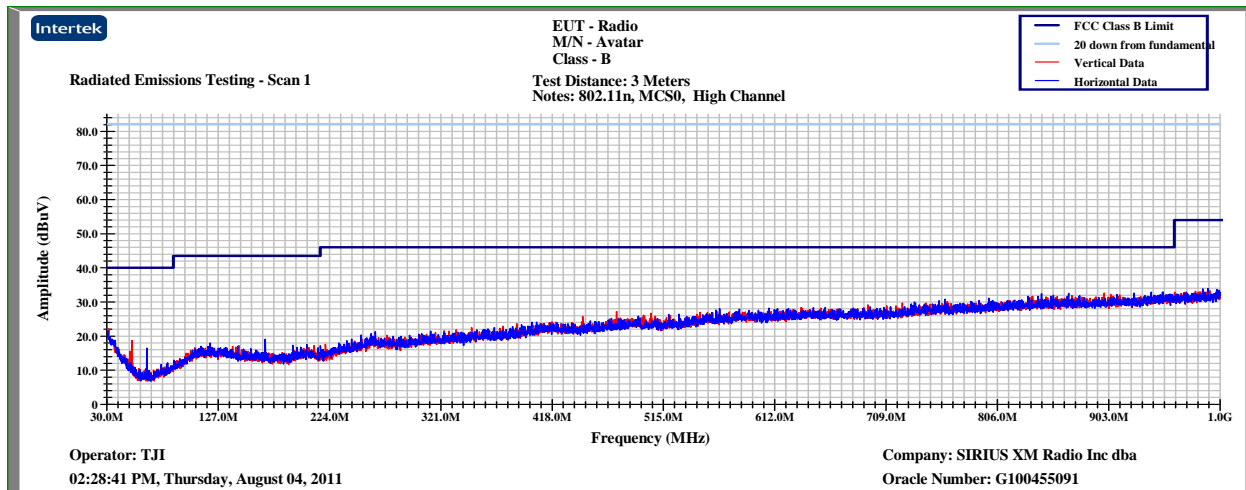
Peak Plot – 3000MHz-18000MHz – 802.11n – MCS0 – Middle Channel



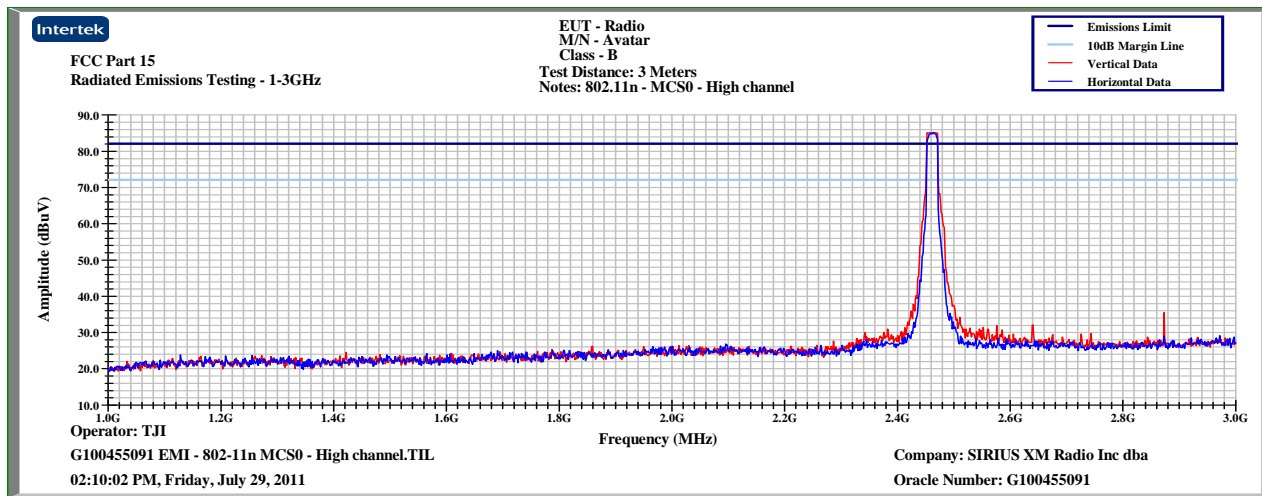
Peak Plot – 18000MHz-40000MHz – 802.11n – MCS0 – Middle Channel



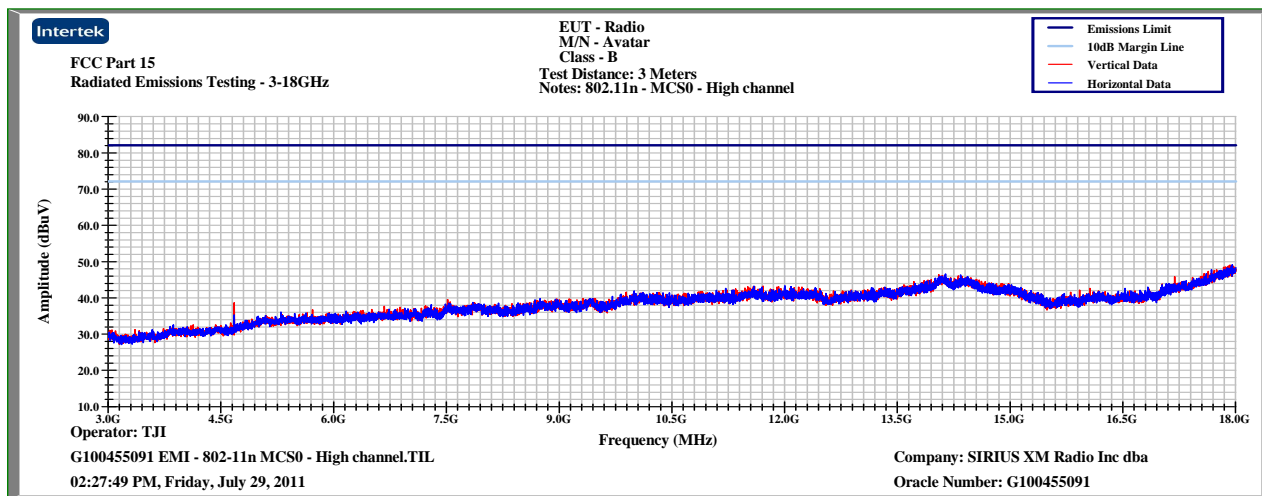
Peak Plot – 30MHz-1000MHz – 802.11n – MCS0 – High Channel



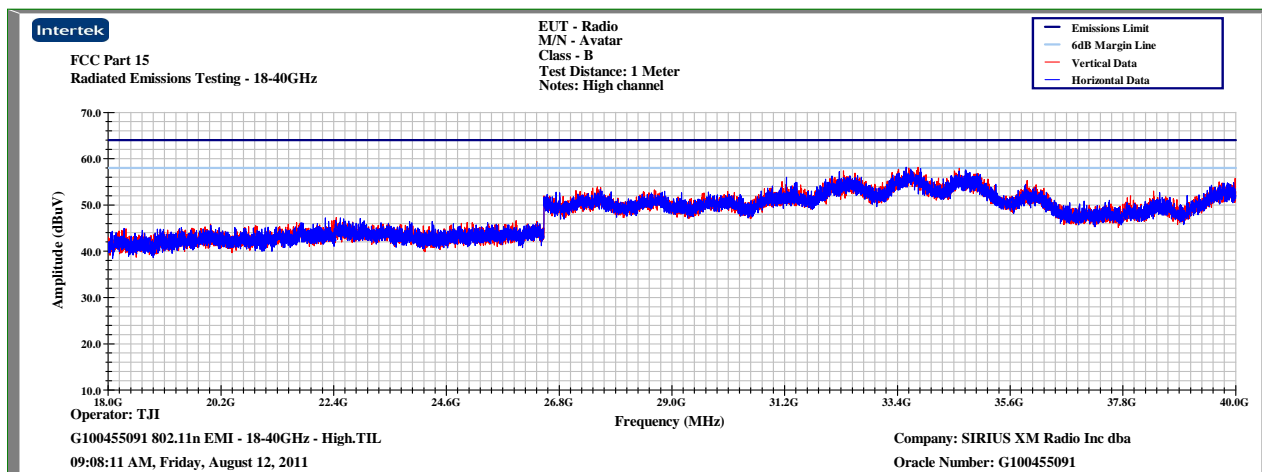
Peak Plot – 1000MHz-3000MHz – 802.11n – MCS0 – High Channel



Peak Plot – 3000MHz-18000MHz – 802.11n – MCS0 – High Channel



Peak Plot – 18000MHz-40000MHz – 802.11n – MCS0 – High Channel



Note: Peaks above the limit between 2.2 and 2.5GHz are signals transmitted into the chamber with the satellite signal and are not related to the DUT.

# 9.0 15.247(d) Radiated Spurious Emissions

Tabular Data: 802.11b

Frequency Range (MHz): Fundamental

Test Distance (m): 3

Input power: 3.7VDC battery

Limit: FCC Part 15.247

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J	
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW	
Mode: 802.11b - 5.5Mbps - Low Channel										
v	2413.430	91.7	28.4	9.4	33.1	96.4	125.0	-28.6	Pk/100k/300k	x
h	2413.430	93.8	28.4	9.4	33.1	98.5	125.0	-26.5	Pk/100k/300k	x
v	2413.430	97.8	28.4	9.4	33.1	102.5	125.0	-22.5	Pk/100k/300k	y
h	2413.430	88.6	28.4	9.4	33.1	93.3	125.0	-31.7	Pk/100k/300k	y
v	2413.430	93.8	28.4	9.4	33.1	98.5	125.0	-26.5	Pk/100k/300k	z
h	2413.430	92.3	28.4	9.4	33.1	97.0	125.0	-28.0	Pk/100k/300k	z
Mode: 802.11b - 2Mbps - Mid Channel										
v	2437.880	90.5	28.5	9.4	33.1	95.4	125.0	-29.6	Pk/100k/300k	x
h	2437.880	97.2	28.5	9.4	33.1	102.0	125.0	-23.0	Pk/100k/300k	x
v	2437.880	97.5	28.5	9.4	33.1	102.4	125.0	-22.6	Pk/100k/300k	y
h	2437.880	88.6	28.5	9.4	33.1	93.4	125.0	-31.6	Pk/100k/300k	y
v	2437.880	95.5	28.5	9.4	33.1	100.4	125.0	-24.6	Pk/100k/300k	z
h	2437.880	97.4	28.5	9.4	33.1	102.2	125.0	-22.8	Pk/100k/300k	z
Mode: 802.11b - 11Mbps - High Channel										
v	2463.130	91.6	28.6	9.5	33.1	96.6	125.0	-28.4	Pk/100k/300k	x
h	2463.130	96.6	28.6	9.5	33.1	101.6	125.0	-23.4	Pk/100k/300k	x
v	2463.130	98.8	28.6	9.5	33.1	103.8	125.0	-21.2	Pk/100k/300k	y
h	2463.130	89.6	28.6	9.5	33.1	94.6	125.0	-30.4	Pk/100k/300k	y
v	2463.130	95.5	28.6	9.5	33.1	100.5	125.0	-24.5	Pk/100k/300k	z
h	2463.130	97.7	28.6	9.5	33.1	102.7	125.0	-22.3	Pk/100k/300k	z
Calculations		G=C+D+E-F			I=G-H					

Tabular Data: 802.11g

Frequency Range (MHz): Fundamental  
Input power: 3.7VDC battery

Test Distance (m): 3  
Limit: FCC Part 15.247

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J	
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW	
<b>Mode: 802.11g - 6MBPS (BPSK OFDM preamble) - Low Channel</b>										
v	2414.630	87.4	28.4	9.4	33.1	92.1	125.0	-32.9	Pk/100k/300k	x
h	2414.630	95.1	28.4	9.4	33.1	99.8	125.0	-25.2	Pk/100k/300k	x
v	2414.630	94.5	28.4	9.4	33.1	99.2	125.0	-25.8	Pk/100k/300k	y
h	2414.630	88.4	28.4	9.4	33.1	93.1	125.0	-31.9	Pk/100k/300k	y
v	2414.630	93.3	28.4	9.4	33.1	98.0	125.0	-27.0	Pk/100k/300k	z
h	2414.630	92.7	28.4	9.4	33.1	97.4	125.0	-27.6	Pk/100k/300k	z
<b>Mode: 802.11g - 9MBPS (BPSK3 OFDM preamble) - Mid Channel</b>										
v	2434.630	92.1	28.5	9.4	33.1	96.9	125.0	-28.1	Pk/100k/300k	x
h	2434.630	91.5	28.5	9.4	33.1	96.3	125.0	-28.7	Pk/100k/300k	x
v	2434.630	95.8	28.5	9.4	33.1	100.6	125.0	-24.4	Pk/100k/300k	y
h	2434.630	86.9	28.5	9.4	33.1	91.7	125.0	-33.3	Pk/100k/300k	y
v	2434.630	90.8	28.5	9.4	33.1	95.6	125.0	-29.4	Pk/100k/300k	z
h	2434.630	93.0	28.5	9.4	33.1	97.8	125.0	-27.2	Pk/100k/300k	z
<b>Mode: 802.11g - 9MBPS (BPSK3 OFDM preamble) - High Channel</b>										
v	2463.380	92.7	28.6	9.5	33.1	97.7	125.0	-27.3	Pk/100k/300k	x
h	2463.380	90.2	28.6	9.5	33.1	95.2	125.0	-29.8	Pk/100k/300k	x
v	2463.380	96.6	28.6	9.5	33.1	101.6	125.0	-23.4	Pk/100k/300k	y
h	2463.380	88.4	28.6	9.5	33.1	93.4	125.0	-31.6	Pk/100k/300k	y
v	2463.380	91.0	28.6	9.5	33.1	96.0	125.0	-29.0	Pk/100k/300k	z
h	2463.380	94.9	28.6	9.5	33.1	99.9	125.0	-25.1	Pk/100k/300k	z
<b>Calculations</b>		G=C+D+E-F			I=G-H					

Tabular Data: 802.11n

Frequency Range (MHz): Fundamental  
Input power: 3.7VDC battery

Test Distance (m): 3  
Limit: FCC Part 15.247

Modifications for compliance (y/n): n

A	B	C	D	E	F	G	H	I	J	
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Detectors / Bandwidths Det/RBW/VBW	
<b>Mode: 802.11n - MCS0 - Low Channel</b>										
v	2410.880	88.8	28.4	9.4	33.1	93.5	125.0	-31.5	Pk/100k/300k	x
h	2410.880	91.9	28.4	9.4	33.1	96.6	125.0	-28.4	Pk/100k/300k	x
v	2410.880	95.2	28.4	9.4	33.1	99.9	125.0	-25.1	Pk/100k/300k	y
h	2410.880	89.0	28.4	9.4	33.1	93.7	125.0	-31.3	Pk/100k/300k	y
v	2410.880	91.8	28.4	9.4	33.1	96.5	125.0	-28.5	Pk/100k/300k	z
h	2410.880	96.8	28.4	9.4	33.1	101.5	125.0	-23.5	Pk/100k/300k	z
<b>Mode: 802.11n - MCS0 - Mid Channel</b>										
v	2440.880	89.0	28.5	9.4	33.1	93.9	125.0	-31.1	Pk/100k/300k	x
h	2440.880	93.8	28.5	9.4	33.1	98.6	125.0	-26.4	Pk/100k/300k	x
v	2440.880	95.3	28.5	9.4	33.1	100.2	125.0	-24.8	Pk/100k/300k	y
h	2440.880	88.5	28.5	9.4	33.1	93.3	125.0	-31.7	Pk/100k/300k	y
v	2440.880	92.6	28.5	9.4	33.1	97.5	125.0	-27.5	Pk/100k/300k	z
h	2440.880	95.2	28.5	9.4	33.1	100.0	125.0	-25.0	Pk/100k/300k	z
<b>Mode: 802.11n - MCS0 - High Channel</b>										
v	2463.440	89.5	28.6	9.5	33.1	94.5	125.0	-30.5	Pk/100k/300k	x
h	2463.440	94.1	28.6	9.5	33.1	99.1	125.0	-25.9	Pk/100k/300k	x
v	2463.440	95.9	28.6	9.5	33.1	100.9	125.0	-24.1	Pk/100k/300k	y
h	2463.440	89.1	28.6	9.5	33.1	94.1	125.0	-30.9	Pk/100k/300k	y
v	2463.440	93.3	28.6	9.5	33.1	98.3	125.0	-26.7	Pk/100k/300k	z
h	2463.440	97.1	28.6	9.5	33.1	102.1	125.0	-22.9	Pk/100k/300k	z
<b>Calculations</b>		G=C+D+E-F			I=G-H					

## 10.0 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal Due
Bilog Antenna	Chase	CBL6112A	2622	10/13/2011
Cable E205	Megaphase	TM18 NKNK 118	9053201 003	05/12/2012
Cable E206	Megaphase	TM18 NKNK 118	9053201 004	05/12/2012
Cable MP3	Megaphase	G919-NKNK-394	MP3	05/12/2012
Cable ST-3	Storm Products Co.	PR90-195-7MTR	09-07-601	08/19/2012
Cable E401	Megaphase	TR40	E401	07/07/2012
Cable E402	Megaphase	TR40	E402	07/07/2012
Cable E403	Megaphase	TR40	E403	07/07/2012
Cable TT4	Andrews	TT4	TT4	05/24/2012
EMI Receiver	Hewlett Packard	8546A	213109	10/26/2011
EMI Receiver RF Preselector	Hewlett Packard	85460A	213108	10/26/2011
Horn Antenna (1-18GHz)	EMCO	3115	9208-3919	05/07/2012
Horn Antenna (18-40GHz)	EMCO	3116	9310-2222	07/07/2012
LISN	Fischer	FCC-LISN-50-50-M	2019	11/12/2011
Preamplifier, 10 MHz to 2000 MHz	Mini-Circuits	ZKL-2	D052005	08/16/2012
Preamplifier (1-18GHz)	Miteq	AMF-4D-001180-24-10P	1020106	10/04/2011
Preamplifier (18-40GHz)	Miteq	JS4	965178	07/06/2012
Preamplifier (18-40GHz)	Miteq	JS4	818197	07/06/2012
Spectrum Analyzer	Rohde & Schwartz	FSEK30	100253	10/22/2011



## 11.0 Revision History

Revision Level	Date	Report Number	Notes
Original issue	August 25, 2011	100455091ATL-007	--
1	August 30, 2011	100455091ATL-007	Page 43 – Added PSD measurement table Page 50 – Added Conducted Power measurement table
2	September 9, 2011	100455091ATL-007	Page 71-75 – Added Restricted Band Information
3	September 26, 2011	100455091ATL-007	Page 71-75 – Removed Restricted Band Information Page 55 - added KDB information for test method. Page 6 – changed FCC ID to RS2SX11
4	September 30, 2011	100455091ATL-005	Page 37 – Test method clarified Page 44 – Test method clarified
5	September 30, 2011	100455091ATL-005	Page 44thru50 – removed Conducted Power data