

## 5. RF antenna conducted test

### 5.1. Test Equipment

The following test equipments are used during the test:

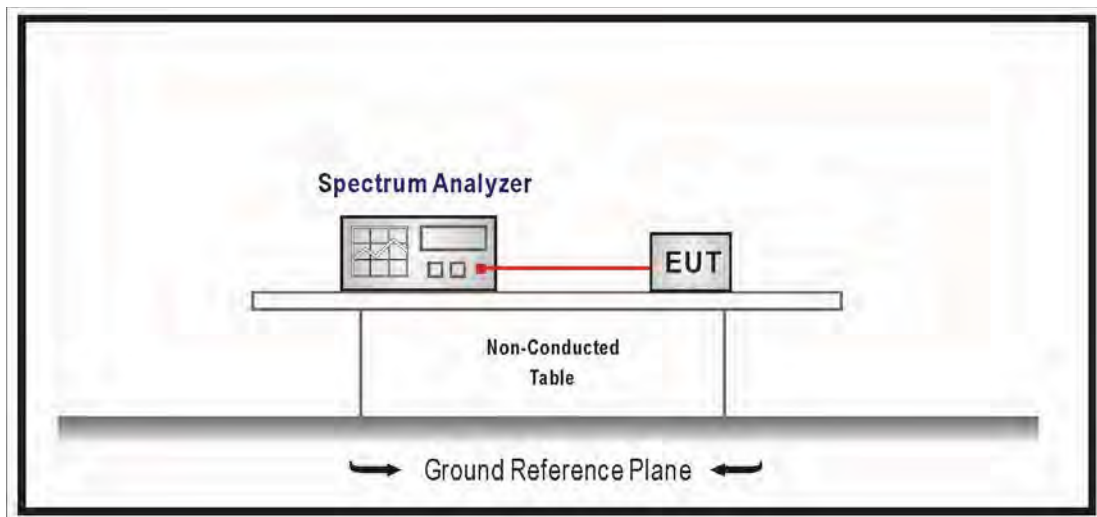
#### RF antenna conducted test / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2014/08/05

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 5.2. Test Setup

RF Antenna Conducted Measurement:



### **5.3. Limits**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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 an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### **5.4. Test Procedure**

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of KDB558074 v03r01 for compliance to FCC 47CFR 15.247 requirements Set RBW = 100 kHz, Set VBW  $\geq$  3xRBW, scan up through 10th harmonic.

### **5.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

### **5.6. Uncertainty**

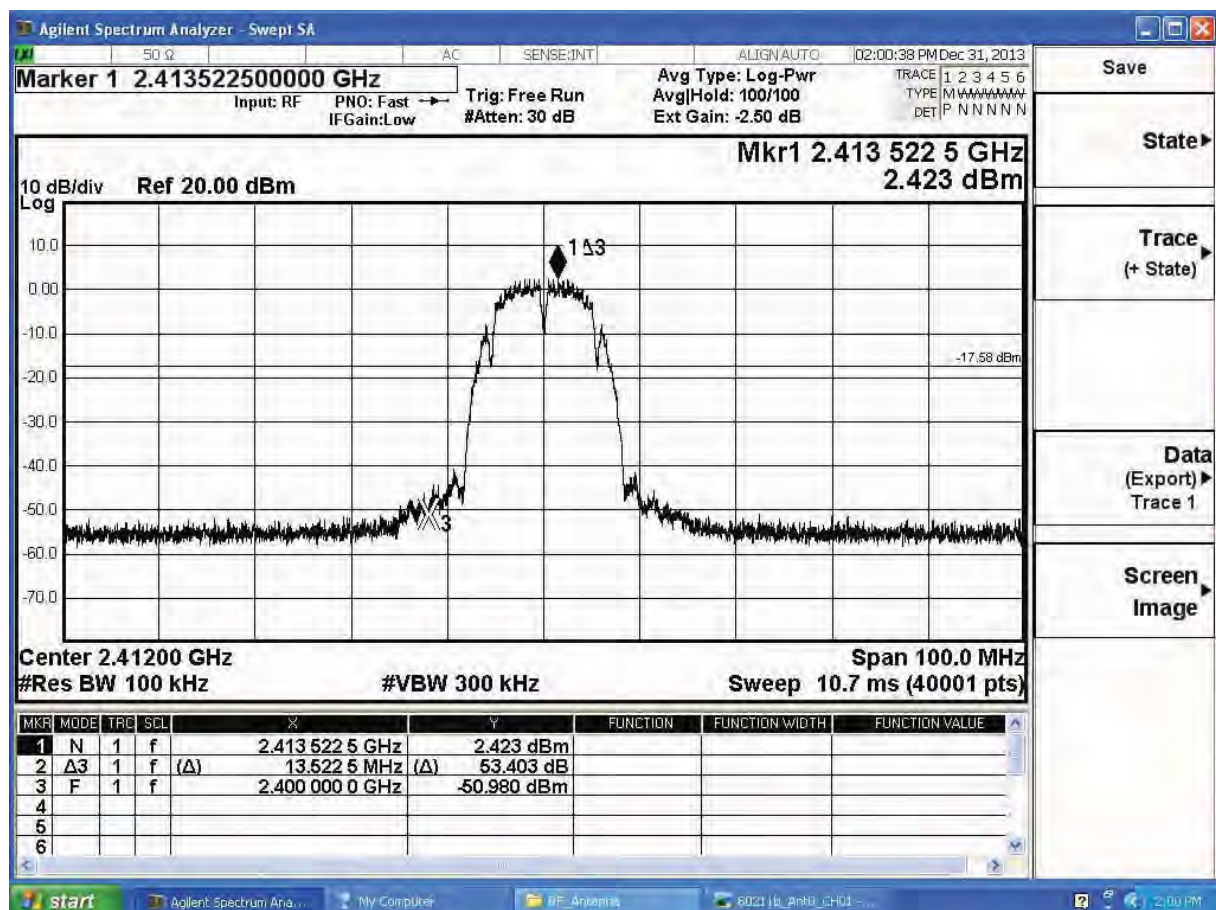
Conducted is defined as  $\pm 1.27$ dB

## 5.7. Test Result

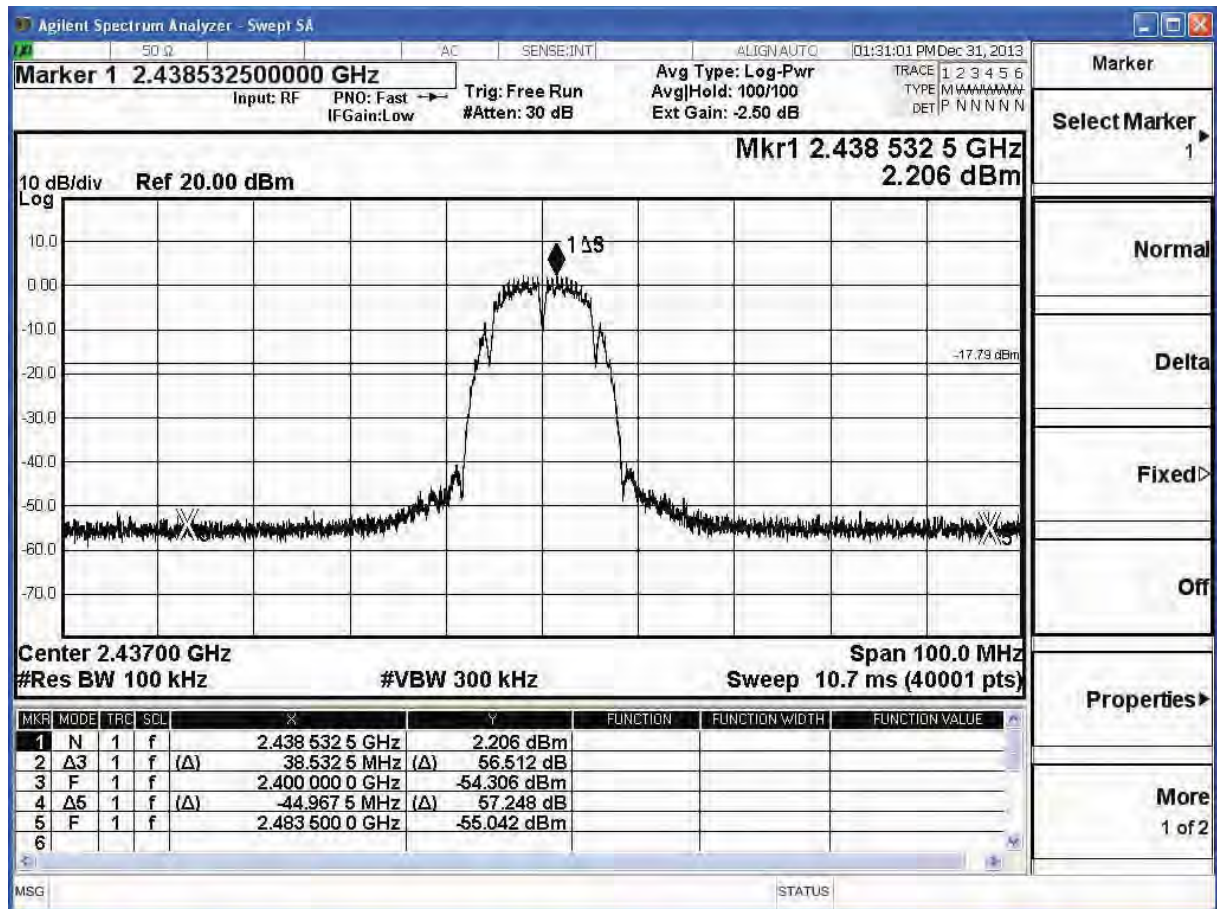
Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

IEEE 802.11b, ANT 0, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	53.403	$\geq 20$	Pass
6	2437	56.512	$\geq 20$	Pass
11	2462	55.854	$\geq 20$	Pass

### Channel 01 (2412MHz)



Channel 6 (2437MHz)



Agilent Spectrum Analyzer - Swept SA

50 Ω AC SENSE:INT ALIGN: AUTO 01:38:56 PM Dec 31, 2013

**Display Line -17.15 dBm**

Input: RF PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg/Hold: 100/100 Ext Gain: -2.50 dB

TRACE 1 2 3 4 5 6  
TYPE M M M M M M M M  
DET P N N N N N

**Mkr1 2.460 517 5 GHz 2.849 dBm**

10 dB/div Ref 20.00 dBm

Center 2.46200 GHz Span 100.0 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 10.7 ms (40001 pts)

MKR	MODE	TRG	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.460 517 5 GHz	2.849 dBm			
2	Δ3	1	f (Δ)	-22.982 5 MHz	55.854 dB			
3	F	1	f	2.483 500 0 GHz	-53.006 dBm			
4								
5								
6								

MSG STATUS

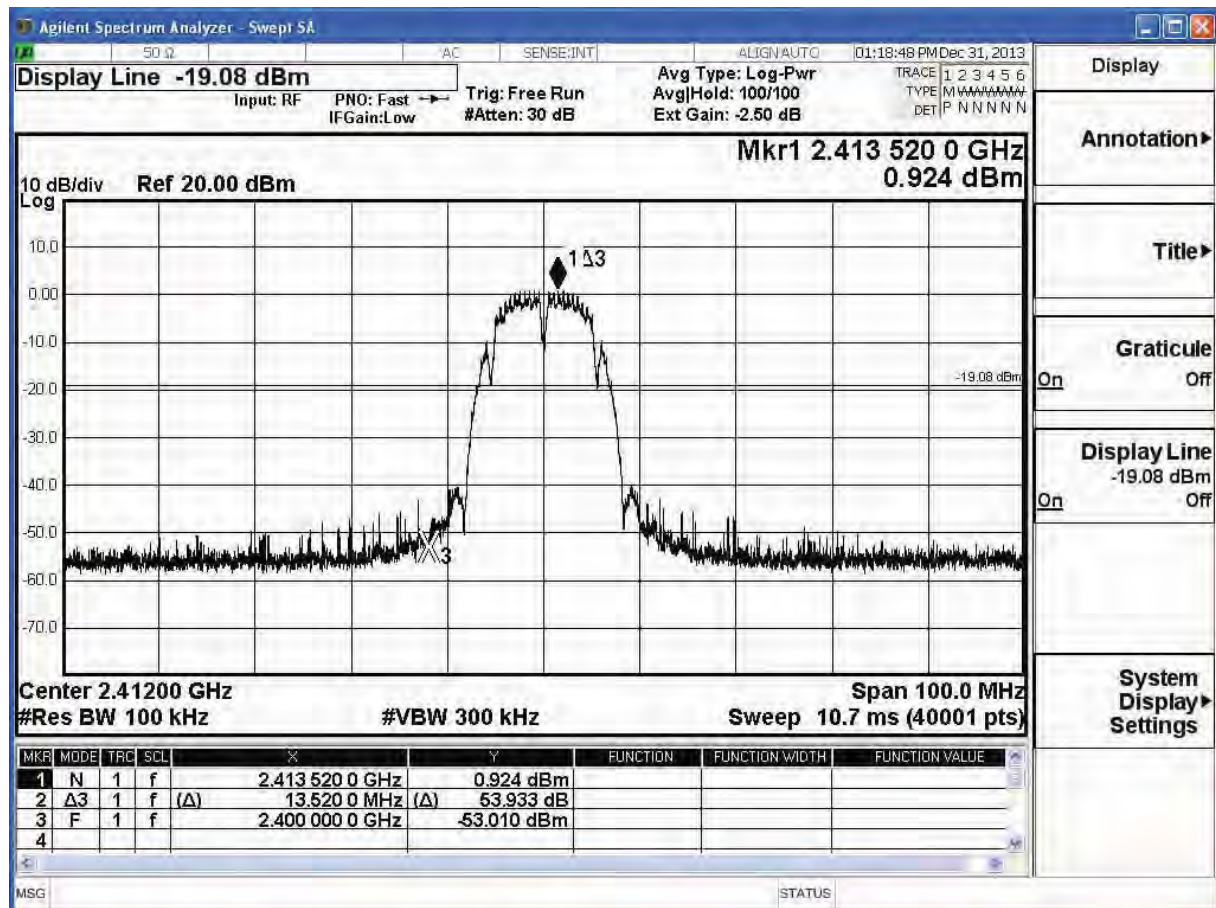
Display Annotation Title Graticule On Off Display Line -17.15 dBm On Off System Display Settings



Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

IEEE 802.11b, ANT 1, Duty Cycle: 1				
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	53.933	$\geq 20$	Pass
6	2437	55.647	$\geq 20$	Pass
11	2462	56.190	$\geq 20$	Pass

## Channel 01 (2412MHz)



Agilent Spectrum Analyzer - Swept SA

50 Ω AC SENSE:INT ALIGN: AUTO 01:26:17 PM Dec 31, 2013

**Display Line -18.55 dBm**

Input: RF PNO: Fast IFGain: Low Trig: Free Run #Atten: 30 dB

Avg Type: Log-Pwr Avg/Hold: 100/100 Ext Gain: -2.50 dB

TRACE 1 2 3 4 5 6  
TYPE M M M M M M M M  
DET P N N N N N

**Mkr1 2.438 527 5 GHz**  
**1.446 dBm**

10 dB/div Ref 20.00 dBm

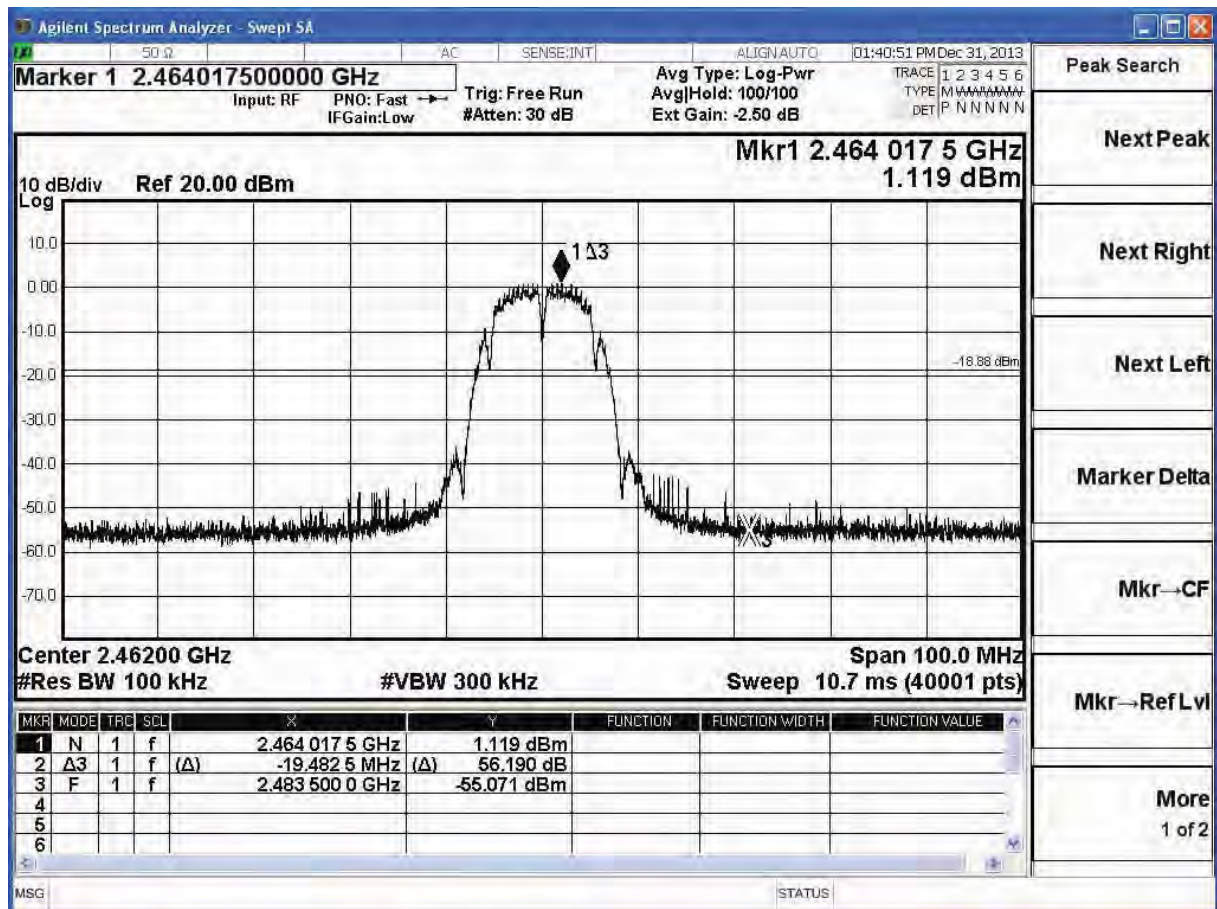
Center 2.43700 GHz Span 100.0 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 10.7 ms (40001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.438 527 5 GHz	1.446 dBm			
2	Δ3	1	f	38.527 5 MHz (Δ)	56.578 dB			
3	F	1	f	2.400 000 0 GHz	-55.133 dBm			
4	Δ5	1	f	44.972 5 MHz (Δ)	55.647 dB			
5	F	1	f	2.483 500 0 GHz	-54.201 dBm			
6								

MSG STATUS

Display Annotation Title Graticule On Off Display Line -18.55 dBm On Off System Display Settings

Channel 11 (2462MHz)



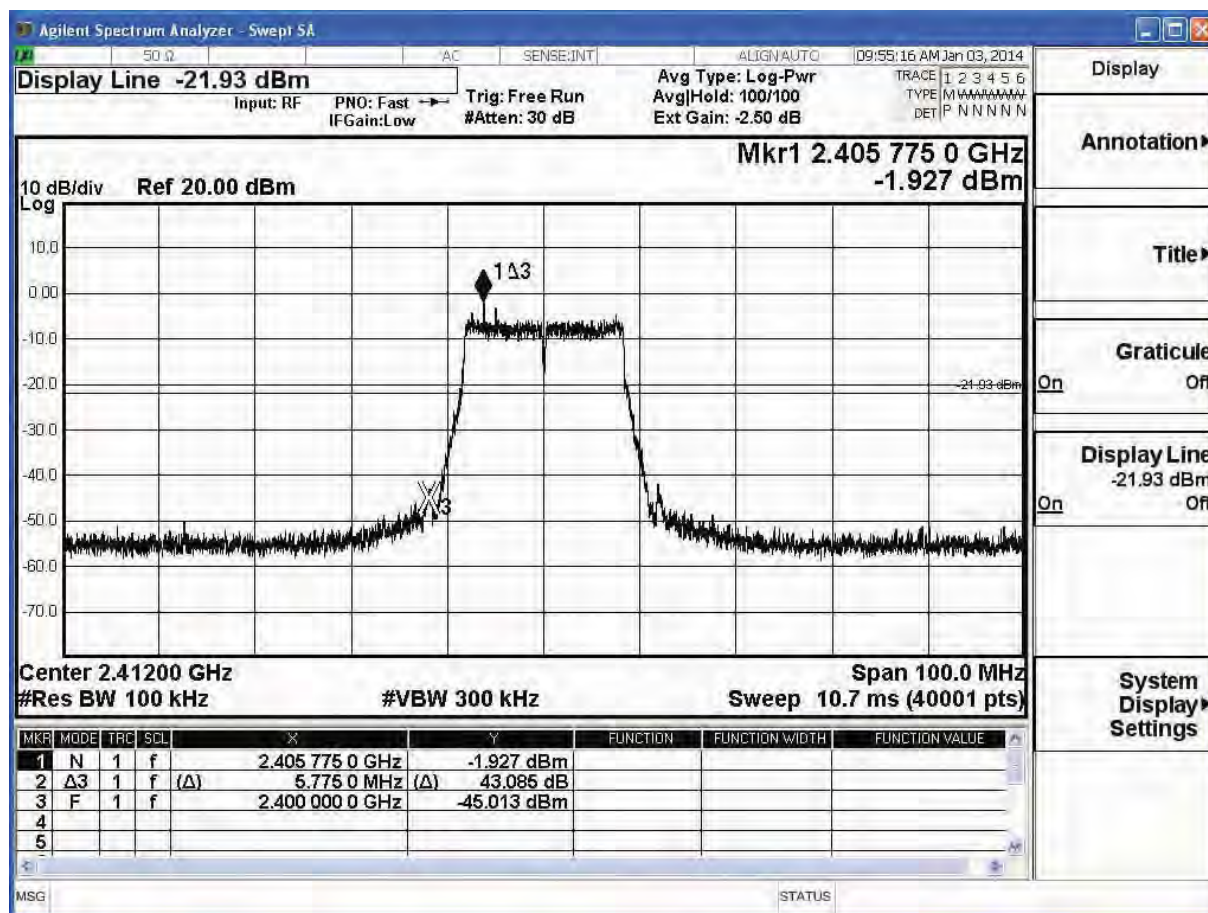


Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

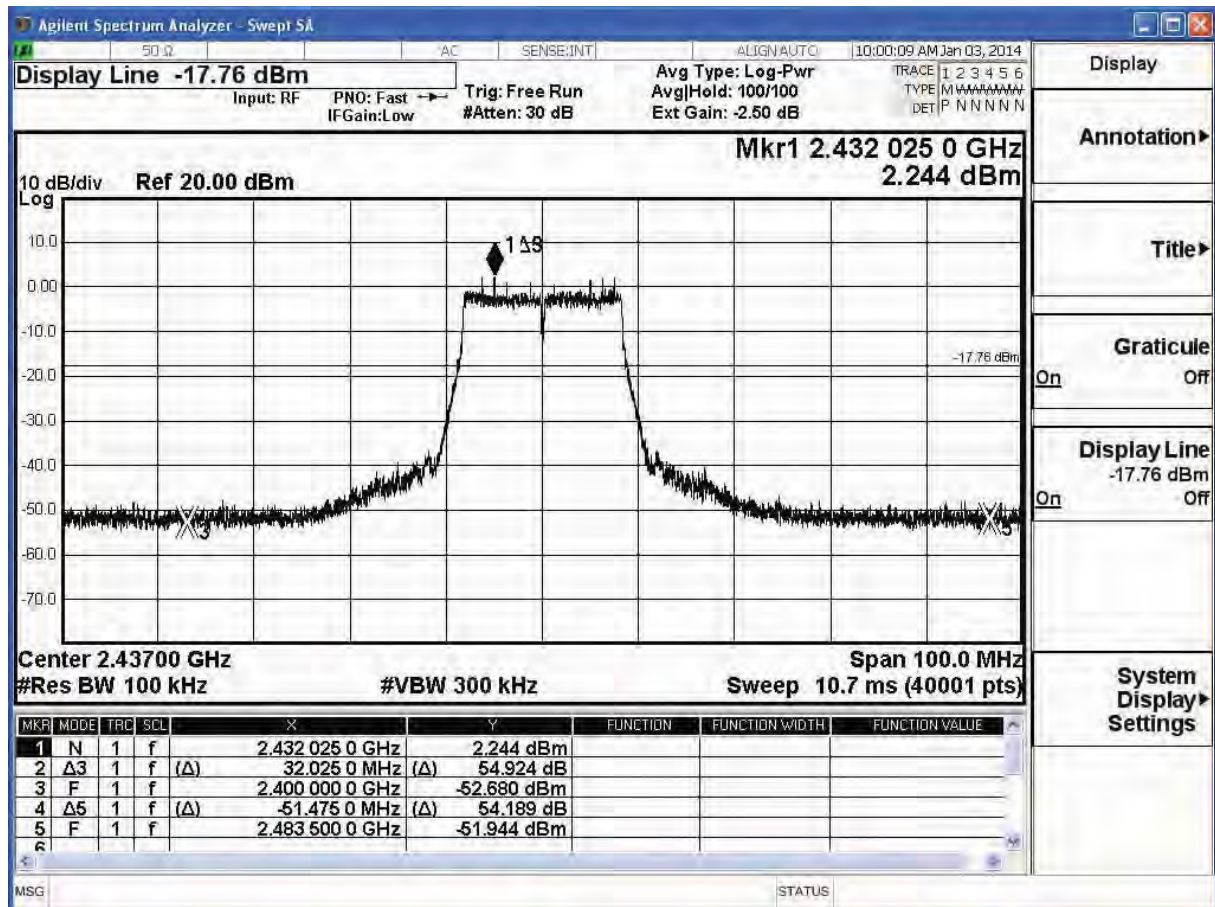
IEEE 802.11g, ANT 0, Duty Cycle: 1

Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	43.085	$\geq 20$	Pass
6	2437	54.189	$\geq 20$	Pass
11	2462	52.253	$\geq 20$	Pass

## Channel 01 (2412MHz)



Channel 6 (2437MHz)



Agilent Spectrum Analyzer - Swept SA

50  $\Omega$  AC SENSE:INT ALIGN: AUTO 10:03:17 AM Jan 03, 2014

**Display Line -24.91 dBm**

Input: RF PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg/Hold: 100/100 Ext Gain: -2.50 dB

TRACE 1 2 3 4 5 6  
TYPE M M M M M M M M  
DET P N N N N N

**Mkr1 2.469 502 5 GHz -4.905 dBm**

10 dB/div Ref 20.00 dBm

Center 2.46200 GHz Span 100.0 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 10.7 ms (40001 pts)

MkP	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.469 502 5 GHz	-4.905 dBm			
2	Δ3	1	f	(Δ) -13.997 5 MHz	(Δ) 52.253 dB			
3	F	1	f	2.483 500 0 GHz	-57.157 dBm			
4								
5								
6								

MSG STATUS

Display Annotation Title Graticule On Off Display Line -24.91 dBm On Off System Display Settings

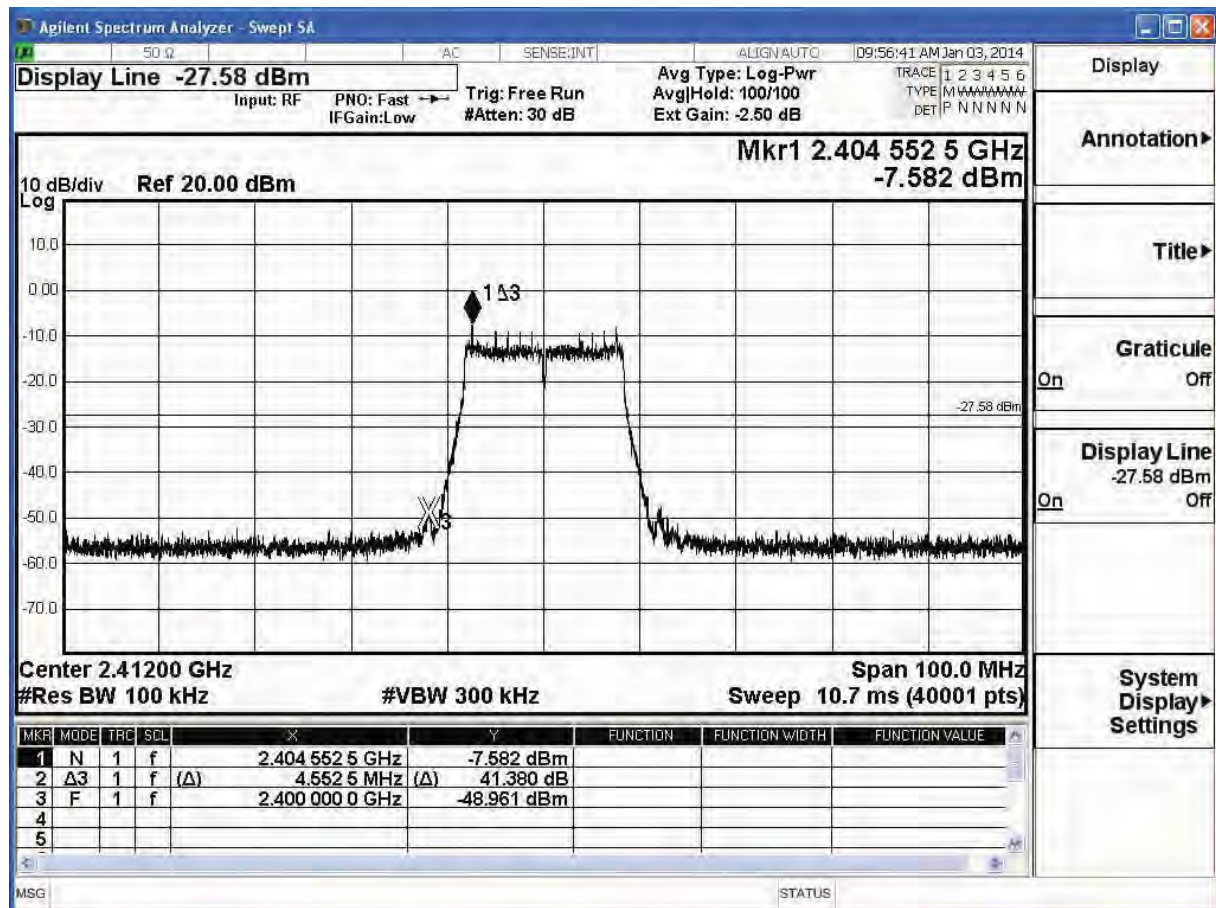


Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

IEEE 802.11g, ANT 1, Duty Cycle: 1

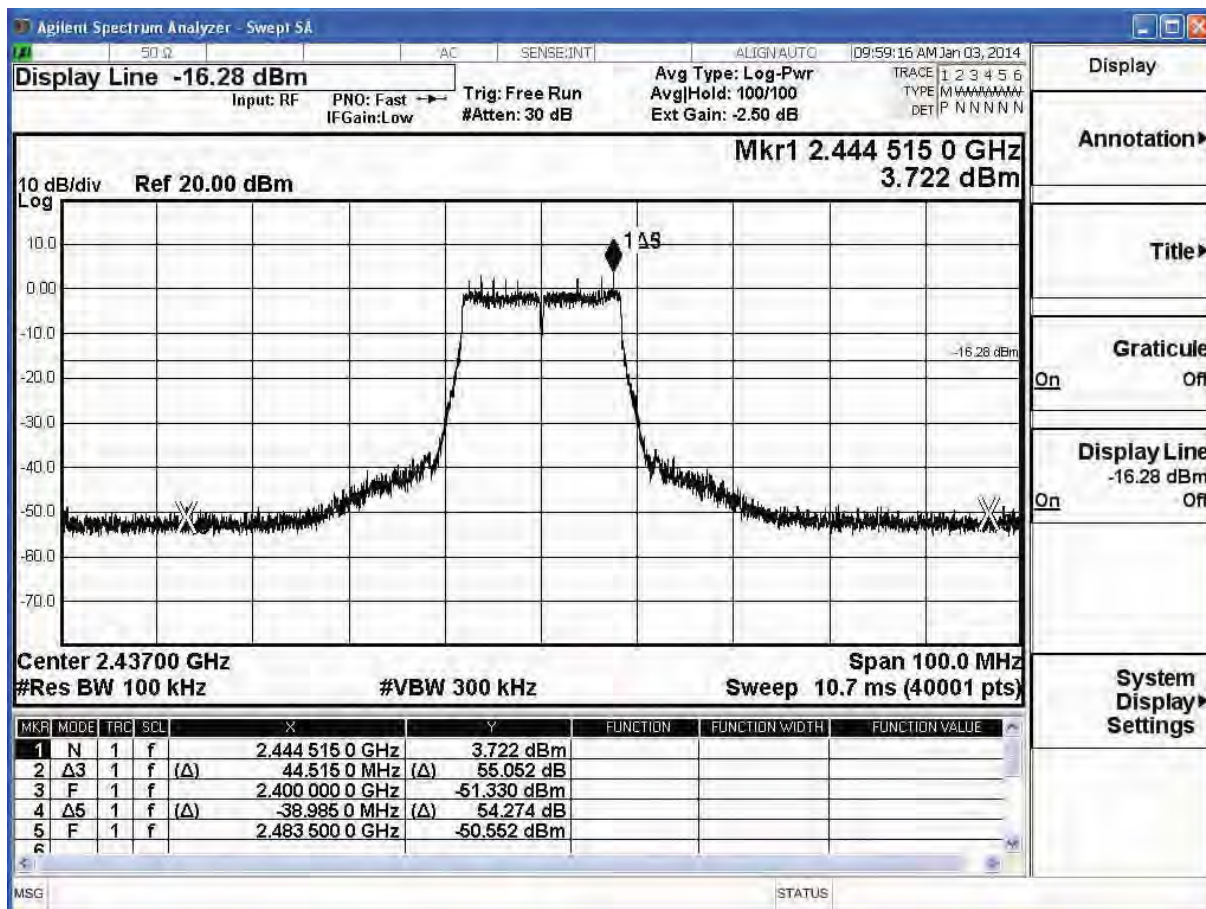
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	41.380	$\geq 20$	Pass
6	2437	54.274	$\geq 20$	Pass
11	2462	45.550	$\geq 20$	Pass

## Channel 01 (2412MHz)





Channel 6 (2437MHz)



Agilent Spectrum Analyzer - Swept SA

50 Ω AC SENSE:INT ALIGN: AUTO 10:05:11 AM Jan 03, 2014

**Display Line -30.12 dBm**

Input: RF PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB

Avg Type: Log-Pwr Avg/Hold: 100/100 Ext Gain: -2.50 dB

TRACE 1 2 3 4 5 6  
TYPE M M M M M M M M  
DET P N N N N N

**Mkr1 2.457 017 5 GHz -10.115 dBm**

10 dB/div Ref 20.00 dBm

Center 2.46200 GHz Span 100.0 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 10.7 ms (40001 pts)

MkP	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.457 017 5 GHz	-10.115 dBm			
2	Δ3	1	f	(Δ) 2.482 5 MHz	(Δ) 45.550 dB			
3	F	1	f	2.483 500 0 GHz	-55.665 dBm			
4								
5								
6								

MSG STATUS

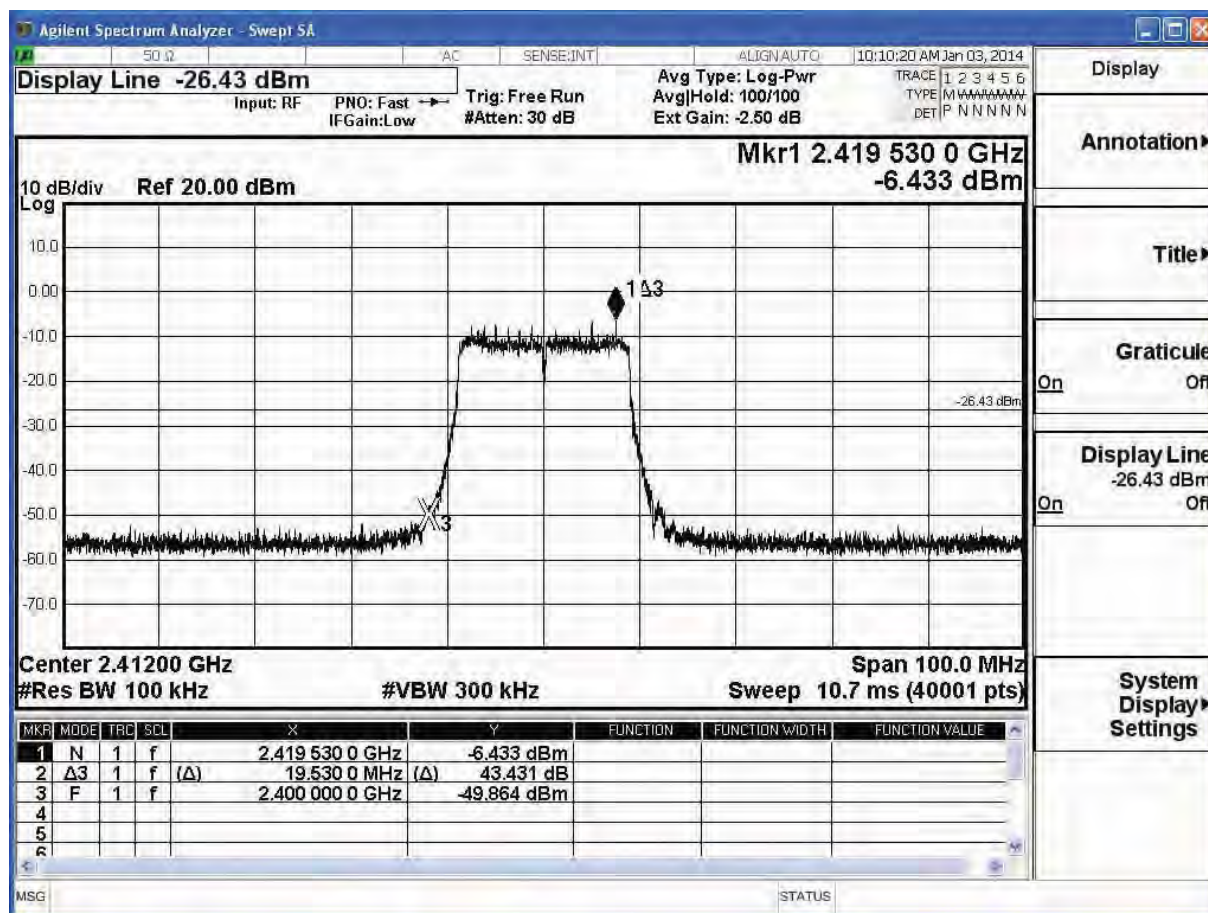
Display Annotation Title Graticule On Off Display Line -30.12 dBm On Off System Display Settings

Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

IEEE 802.11n (20MHz), ANT 0, Duty Cycle: 1

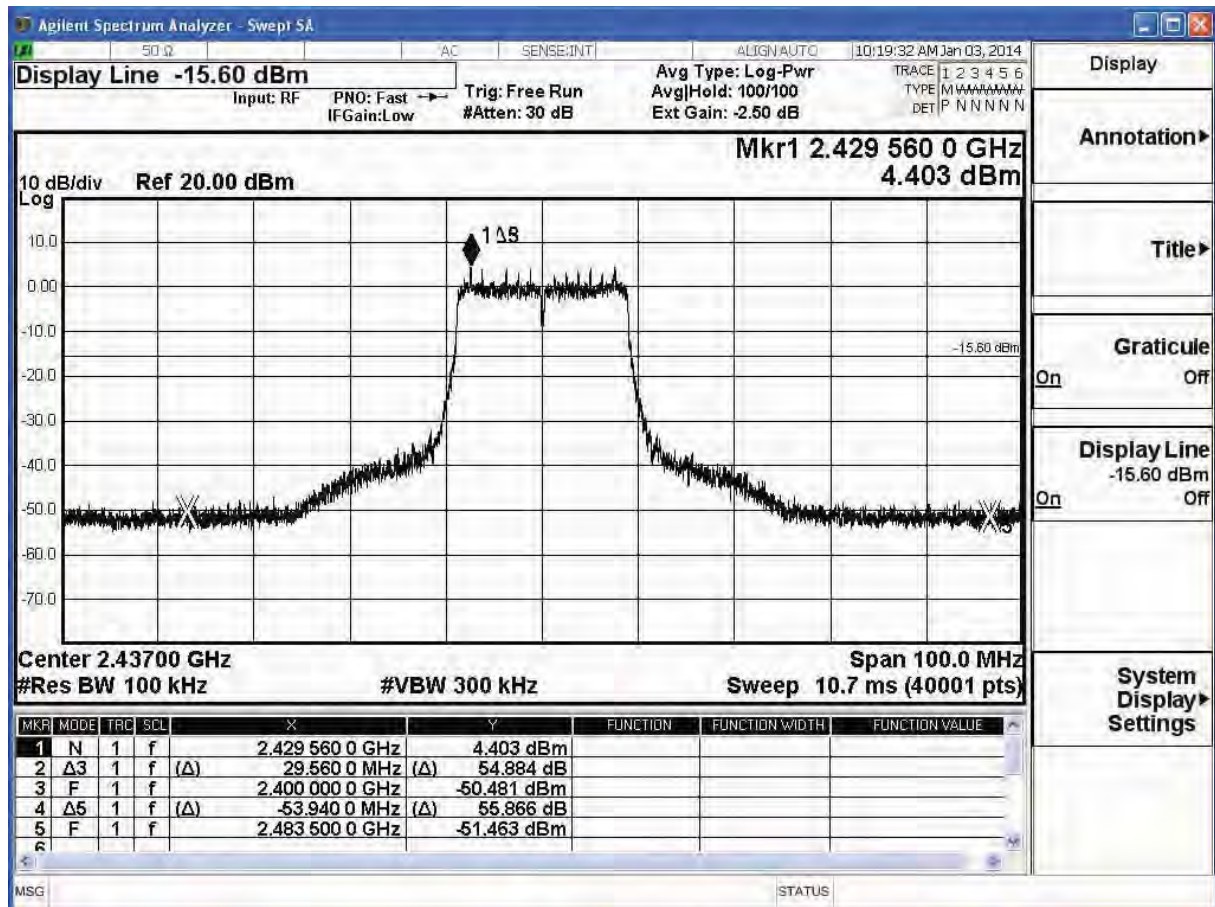
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	43.431	$\geq 20$	Pass
6	2437	54.884	$\geq 20$	Pass
11	2462	50.079	$\geq 20$	Pass

## Channel 01 (2412MHz)





Channel 6 (2437MHz)





Agilent Spectrum Analyzer - Swept SA

50  $\Omega$  AC SENSE:INT ALIGN: AUTO 10:21:36 AM Jan 03, 2014

**Display Line -26.60 dBm**

Input: RF PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg/Hold: 100/100 Ext Gain: -2.50 dB

TRACE 1 2 3 4 5 6  
TYPE M M M M M M M M  
DET P N N N N N

**Mkr1 2.454 505 0 GHz -6.600 dBm**

10 dB/div Ref 20.00 dBm

Center 2.46200 GHz Span 100.0 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 10.7 ms (40001 pts)

MkP	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.454 505 0 GHz	-6.600 dBm			
2	$\Delta$ 3	1	f	( $\Delta$ ) 28.995 0 MHz	( $\Delta$ ) 50.079 dB			
3	F	1	f	2.483 500 0 GHz	-56.679 dBm			
4								
5								
6								

MSG STATUS

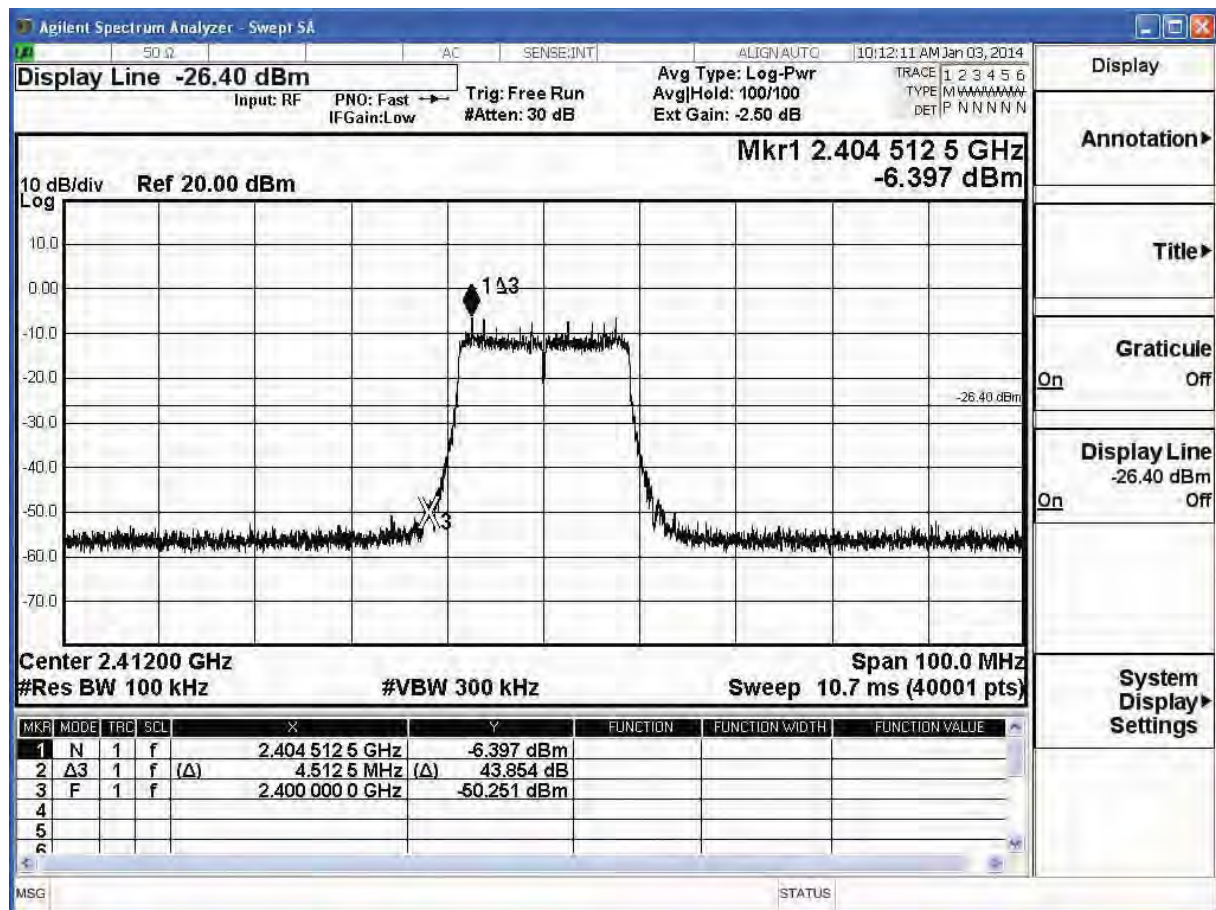
Display Annotation Title Graticule On Off Display Line -26.60 dBm On Off System Display Settings

Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

IEEE 802.11n (20MHz), ANT 1, Duty Cycle: 1

Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	43.854	$\geq 20$	Pass
6	2437	56.831	$\geq 20$	Pass
11	2462	48.792	$\geq 20$	Pass

## Channel 01 (2412MHz)



Agilent Spectrum Analyzer - Swept SA

50 Ω AC SENSE:INT ALIGN: AUTO 10:14:26 AM Jan 03, 2014

**Display Line -13.67 dBm**

Input: RF PNO: Fast IFGain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg/Hold: 100/100 Ext Gain: -2.50 dB

TRACE 1 2 3 4 5 6  
TYPE M M M M M M M M  
DET P N N N N N N

**Mkr1 2.429 565 0 GHz 6.330 dBm**

10 dB/div Ref 20.00 dBm

Center 2.43700 GHz Span 100.0 MHz  
#Res BW 100 kHz #VBW 300 kHz Sweep 10.7 ms (40001 pts)

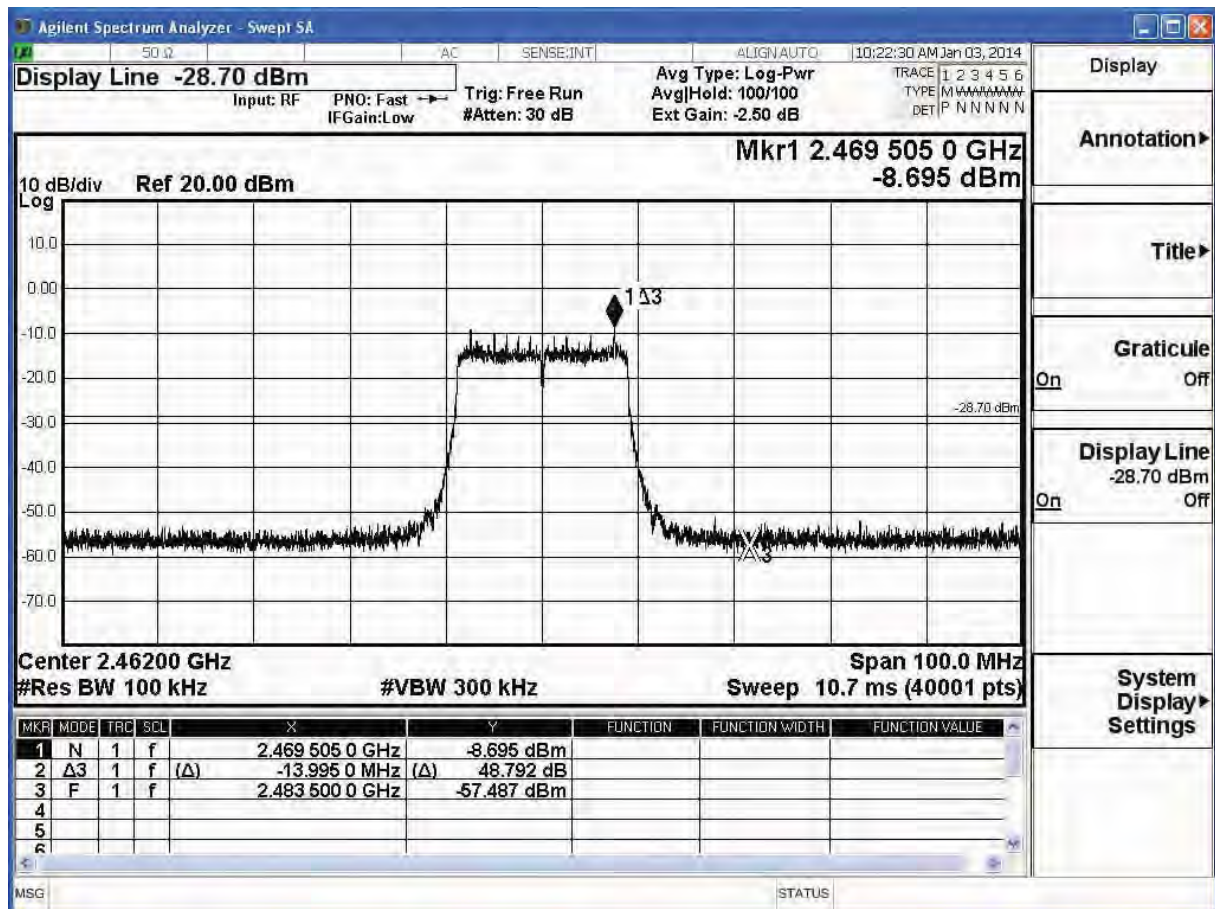
MkP	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.429 565 0 GHz	6.330 dBm			
2	Δ3	1	f	(Δ) 29.565 0 MHz	(Δ) 59.290 dB			
3	F	1	f	2.400 000 0 GHz	-52.960 dBm			
4	Δ5	1	f	(Δ) -53.935 0 MHz	(Δ) 56.831 dB			
5	F	1	f	2.483 500 0 GHz	-50.501 dBm			

MSG STATUS

Display Annotation Title Graticule On Off Display Line -13.67 dBm On Off System Display Settings



Channel 11 (2462MHz)



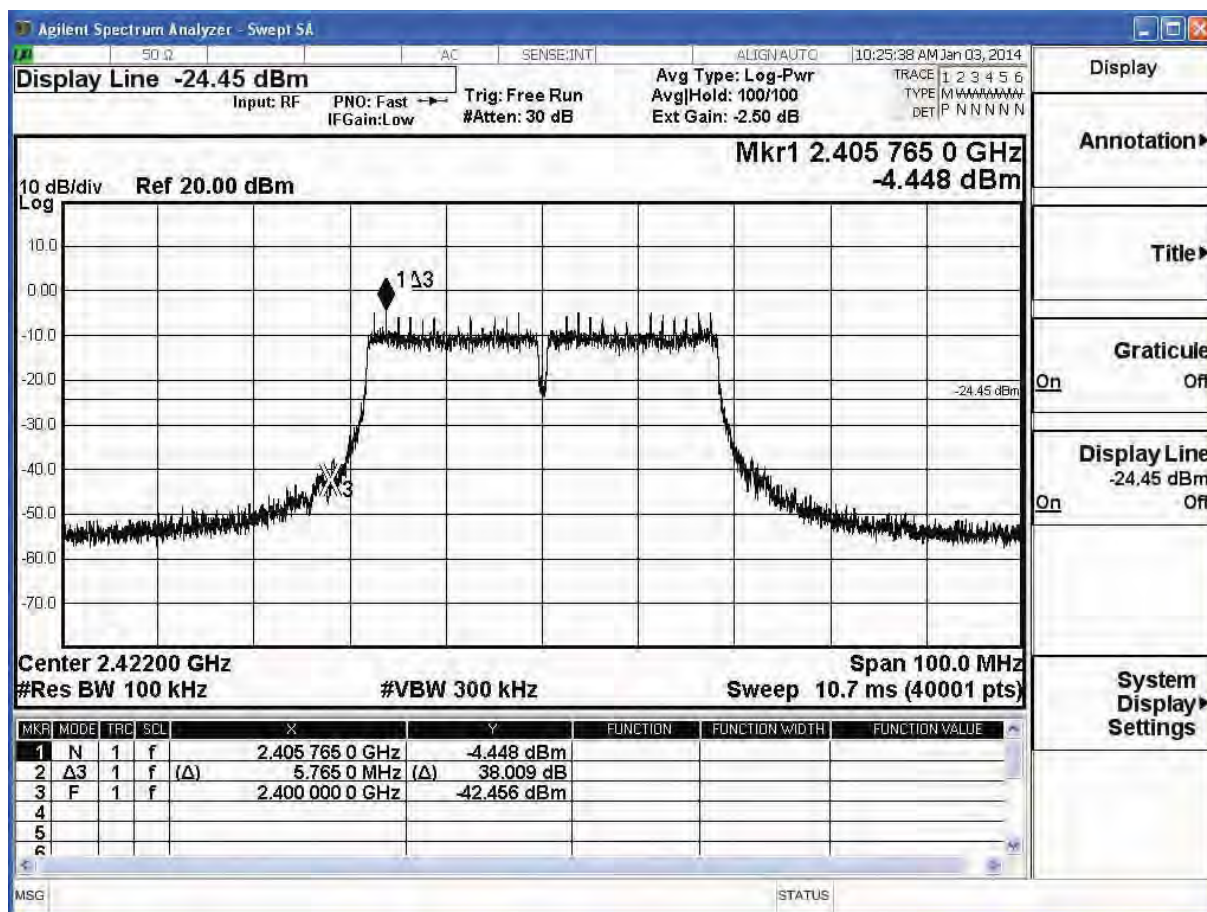


Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

IEEE 802.11n (40MHz), ANT 0, Duty Cycle: 1

Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
3	2422	38.009	$\geq 20$	Pass
6	2437	39.027	$\geq 20$	Pass
9	2452	45.893	$\geq 20$	Pass

### Channel 3 (2422MHz)



Agilent Spectrum Analyzer - Swept SA

50 Ω

AC

SENSE:INT

ALIGN:AUTO

10:38:56 AM Jan 03, 2014

Display Line -35.14 dBm

Input: RF

PNO: Fast

IFGain: Low

Trig: Free Run

#Atten: 30 dB

Avg Type: Log-Pwr

Avg/Hold: 100/100

Ext Gain: -2.50 dB

TRACE 1 2 3 4 5 6

TYPE M M M M M M M M

DET P N N N N N

10 dB/div

Ref 20.00 dBm

Mkr1 2.420 782 5 GHz

-15.141 dBm

Center 2.43700 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 100.0 MHz

Sweep 10.7 ms (40001 pts)

MkP	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.420 782 5 GHz	-15.141 dBm			
2	Δ3	1	f (Δ)	20.782 5 MHz	39.027 dB			
3	F	1	f	2.400 000 0 GHz	-54.168 dBm			
4	Δ5	1	f (Δ)	-62.717 5 MHz	41.618 dB			
5	F	1	f	2.483 500 0 GHz	-56.759 dBm			

MSG

STATUS

Display

Annotation ▶

Title ▶

Graticule

On Off

Display Line

-35.14 dBm

On Off

System Display

Settings

Agilent Spectrum Analyzer - Swept SA

50  $\Omega$

AC

SENSE:INT

ALIGN:AUTO

10:48:18 AM Jan 03, 2014

Display Line -28.63 dBm

Input: RF

PNO: Fast

IF Gain: Low

Trig: Free Run

#Atten: 30 dB

Avg Type: Log-Pwr

Avg/Hold: 100/100

Ext Gain: -2.50 dB

TRACE 1 2 3 4 5 6

TYPE M W W W W W W W

DET P N N N N N

10 dB/div

Ref 20.00 dBm

Mkr1 2.457 030 0 GHz

-8.629 dBm

Center 2.45200 GHz

#Res BW 100 kHz

#VBW 300 kHz

Span 100.0 MHz

Sweep 10.7 ms (40001 pts)

MkP	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.457 030 0 GHz	-8.629 dBm			
2	Δ3	1	f	-26.470 0 MHz (Δ)	45.893 dB			
3	F	1	f	2.483 500 0 GHz	-54.522 dBm			
4								
5								
6								

Display

Annotation

Title

Graticule

On Off

Display Line

-28.63 dBm

On Off

System Display

Settings

MSG

STATUS

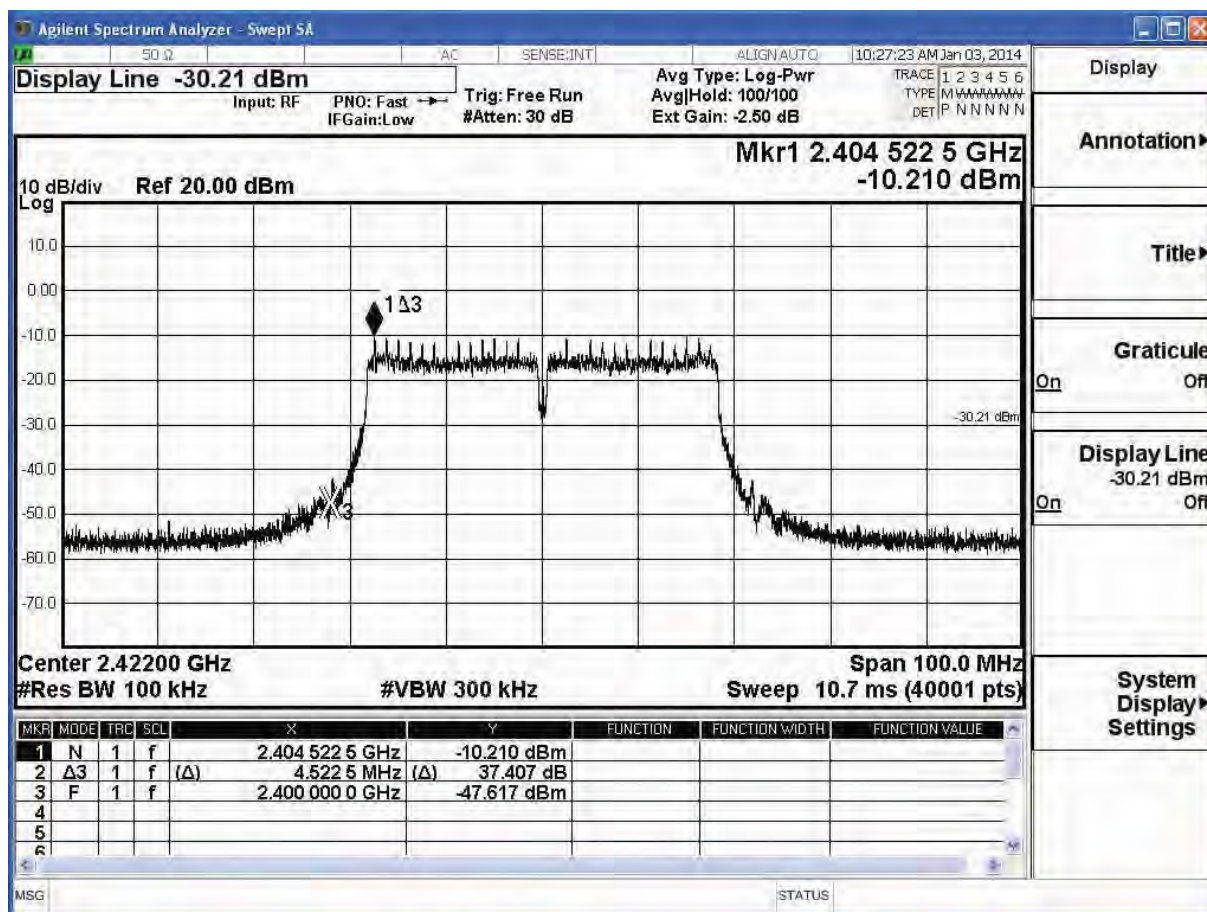


Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

IEEE 802.11n (40MHz), ANT 1, Duty Cycle: 1

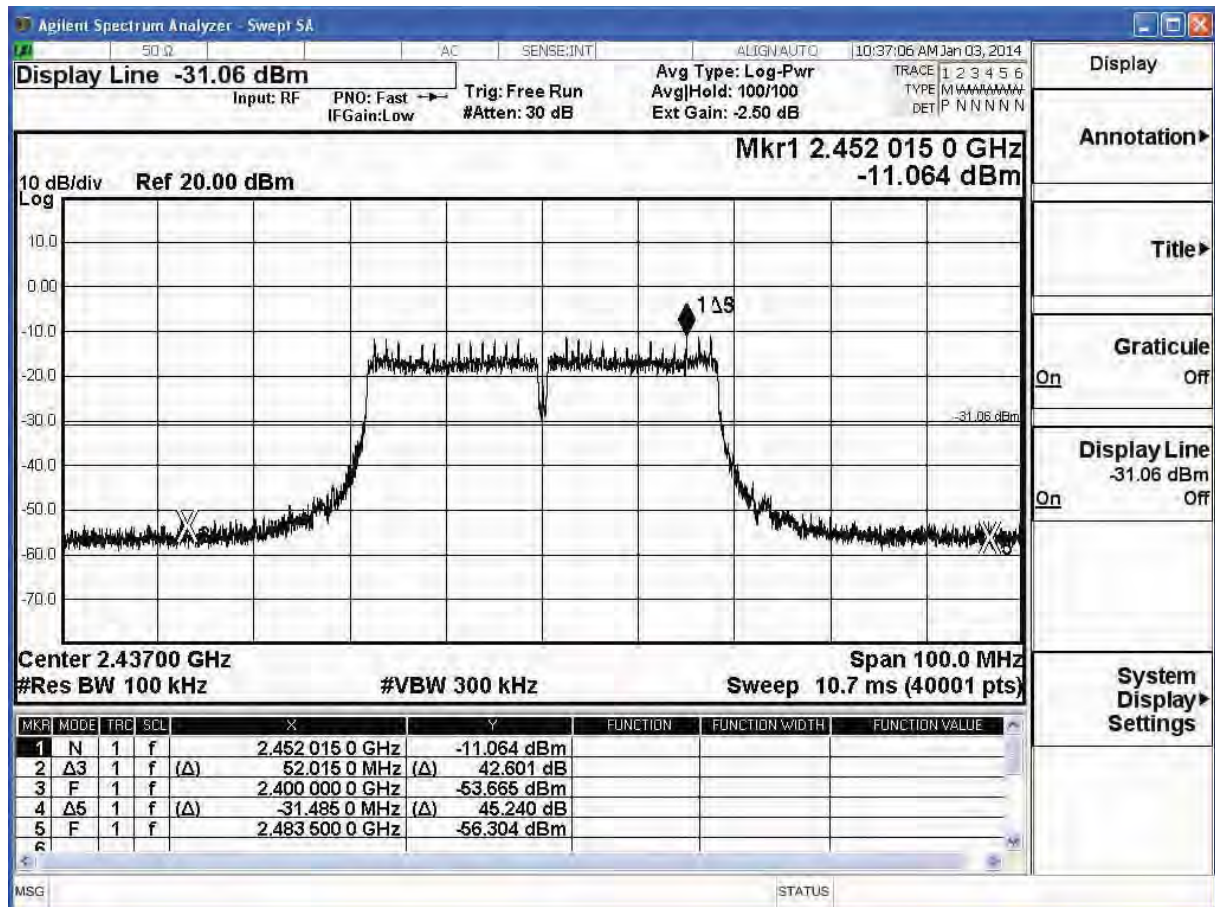
Channel No.	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
3	2422	37.407	$\geq 20$	Pass
6	2437	42.601	$\geq 20$	Pass
9	2452	43.282	$\geq 20$	Pass

## Channel 3 (2422MHz)





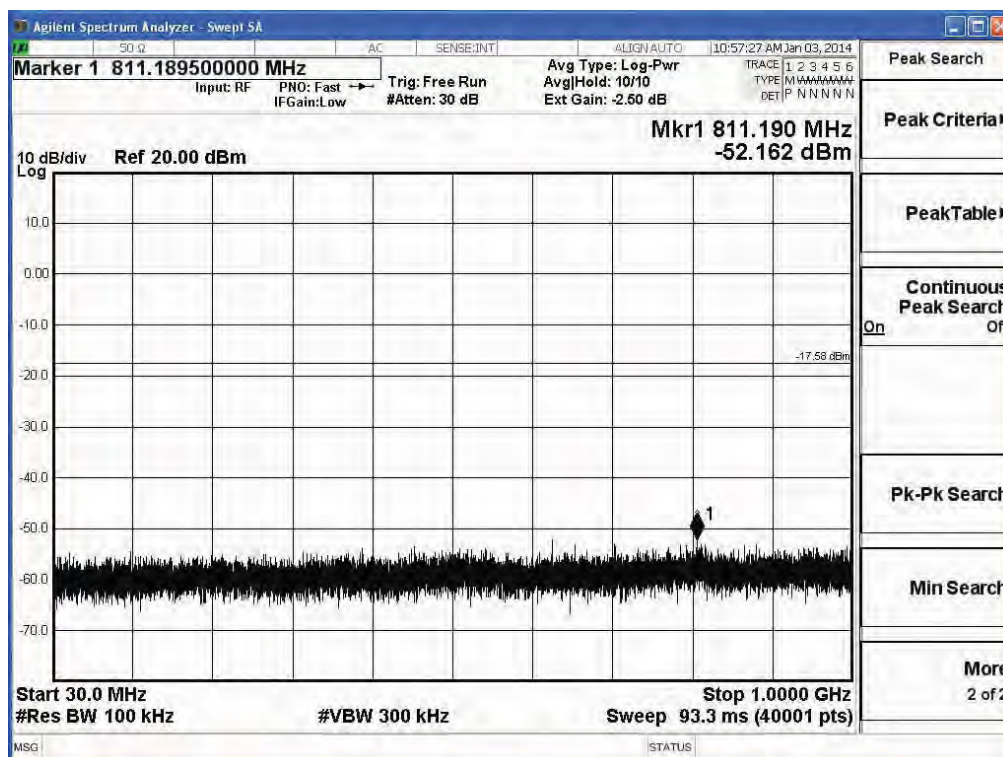
Channel 6 (2437MHz)



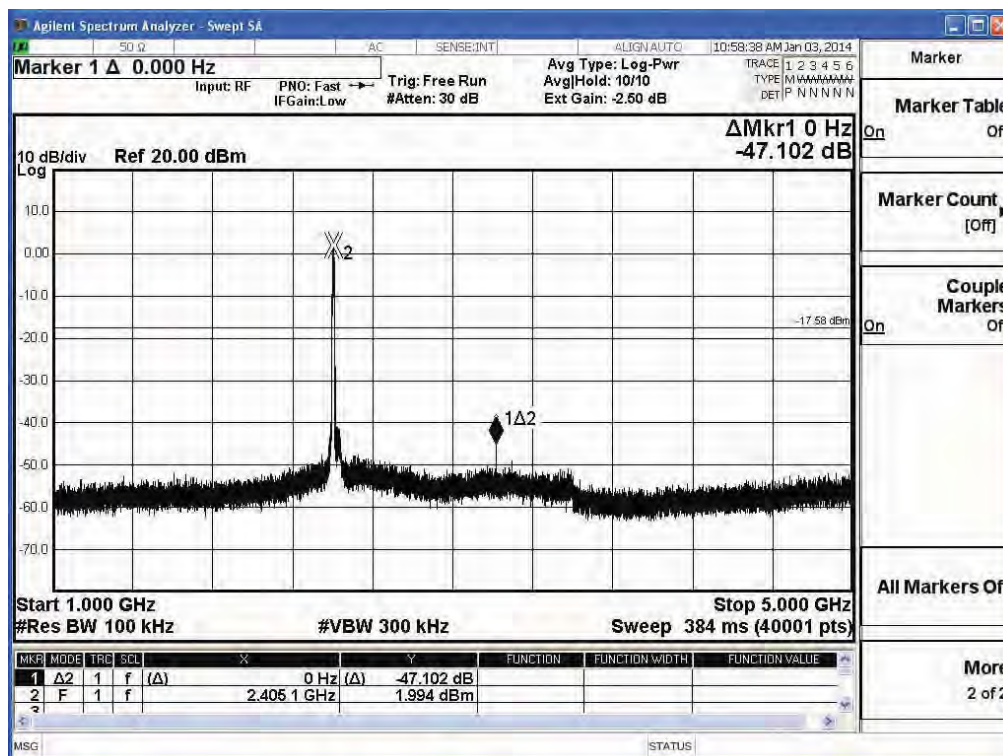
[illegible]

Product	Access Point		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2013/12/05	Test Site	SR7

### 2412MHz (30MHz-1GHz)-802.11b (ANT 0)

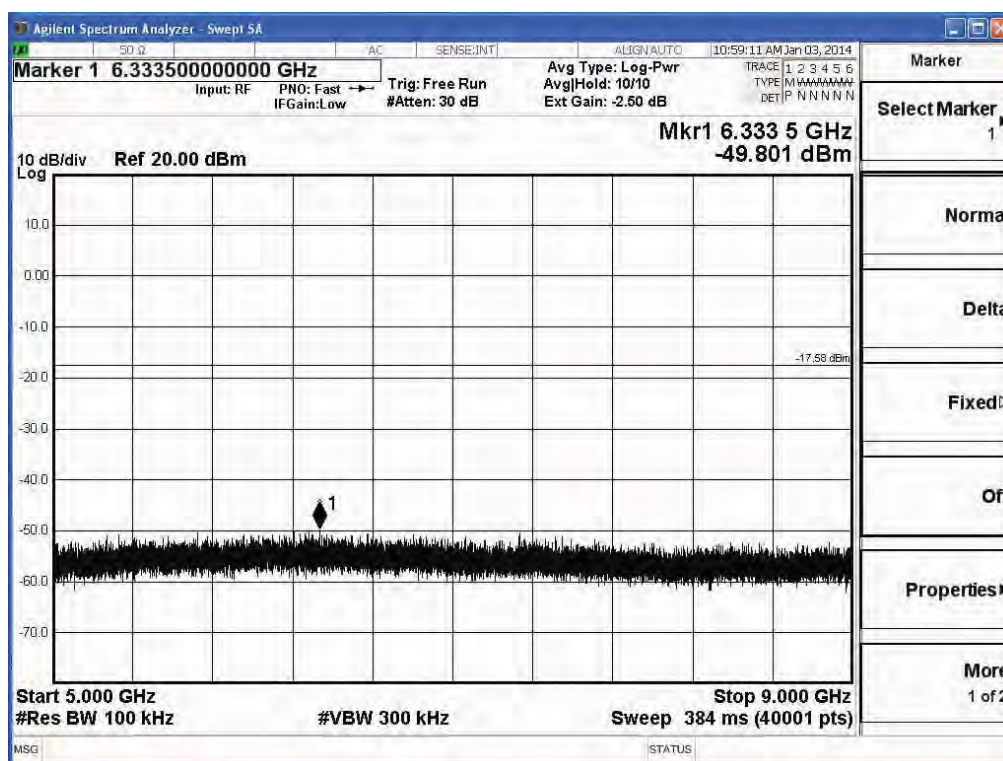


### 2412MHz (1GHz-5GHz) -802.11b (ANT 0)

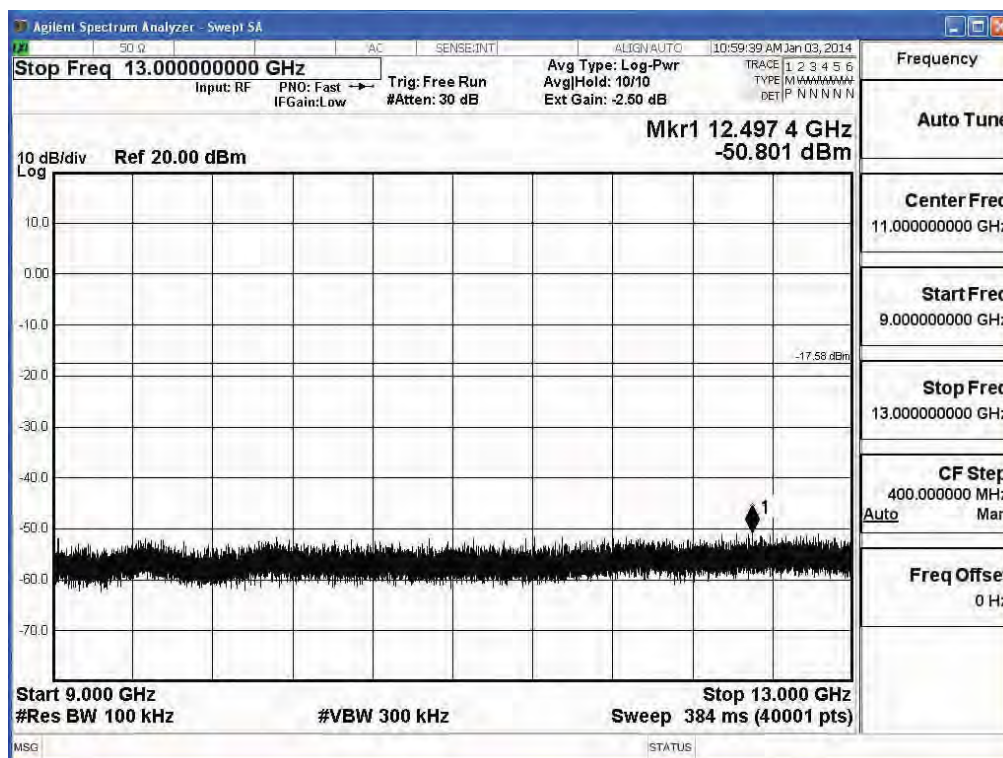




### 2412MHz (5GHz-9GHz) -802.11b (ANT 0)

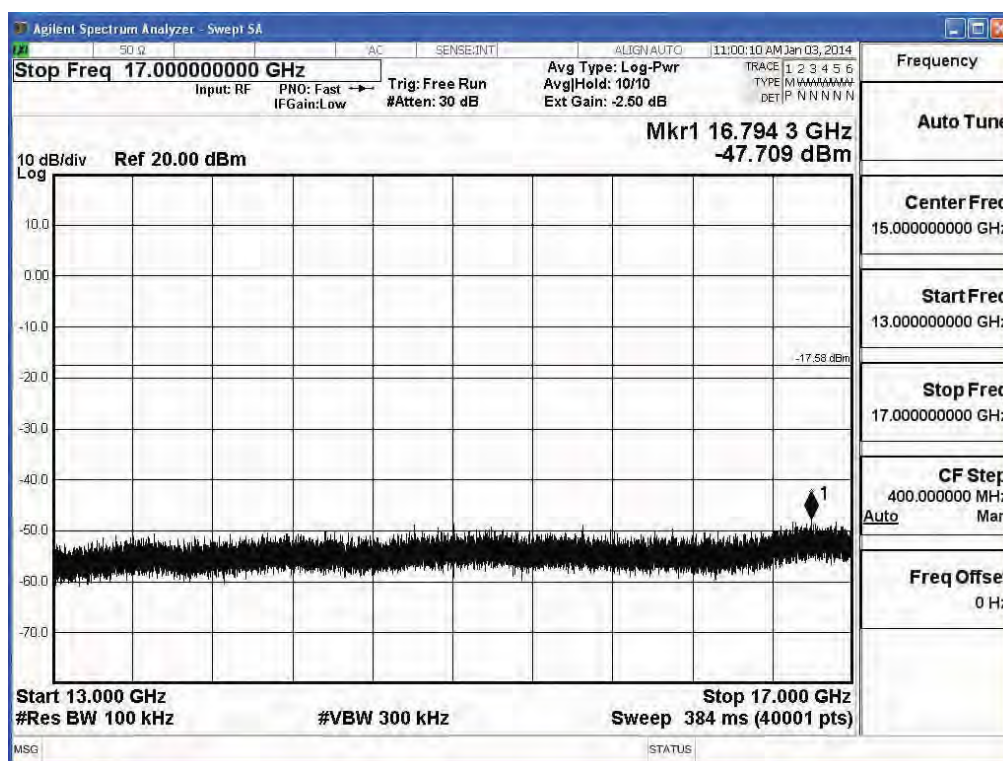


### 2412MHz (9GHz-13GHz) -802.11b (ANT 0)

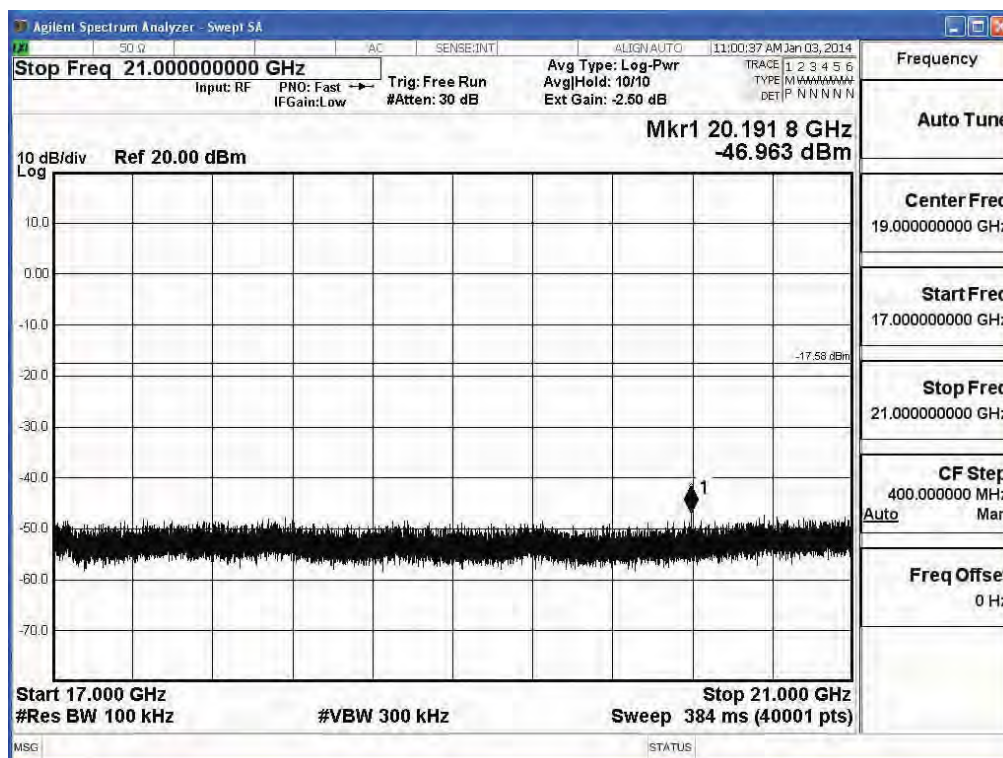




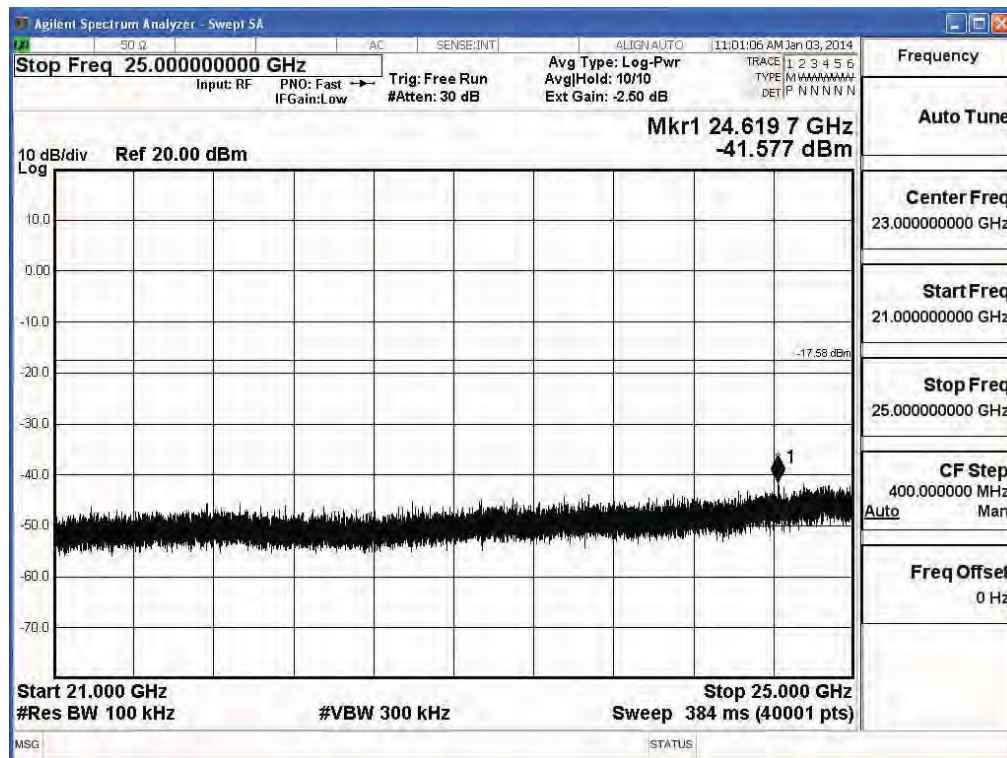
### 2412MHz (13GHz-17GHz) -802.11b (ANT 0)



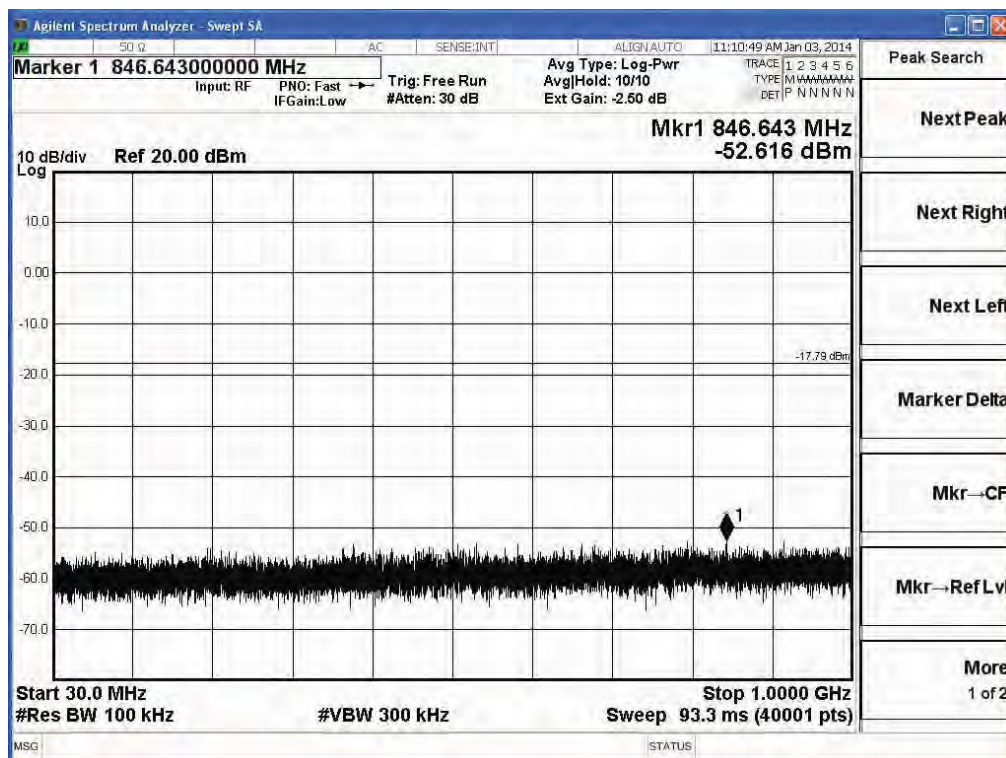
### 2412MHz (17GHz-21GHz) -802.11b (ANT 0)



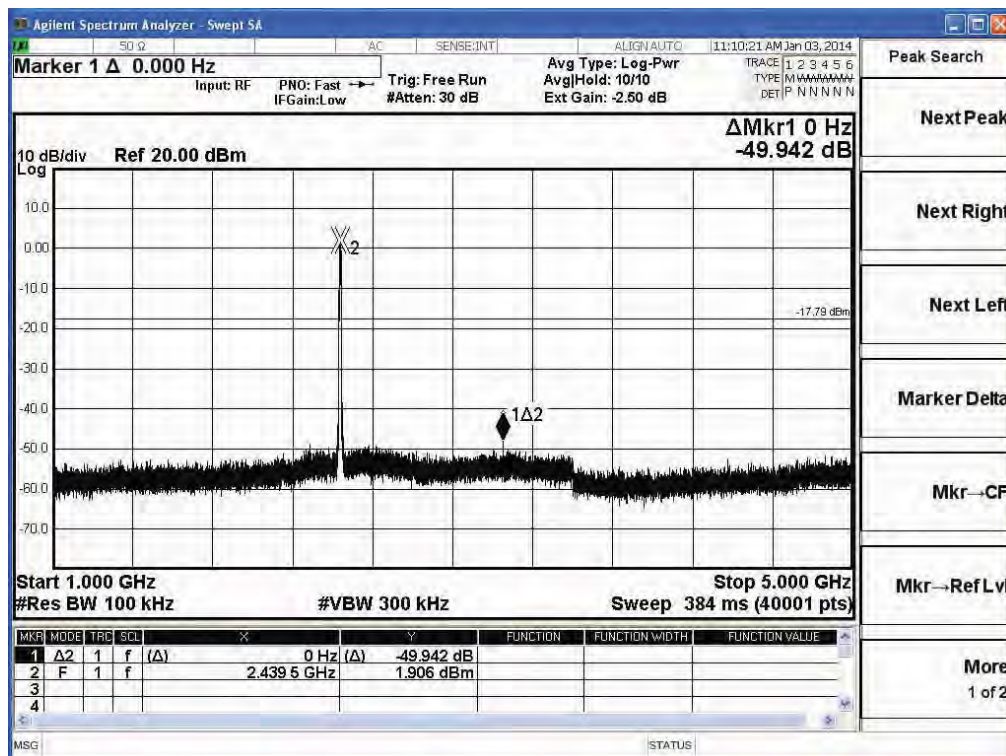
2412MHz (21GHz-25GHz) -802.11b (ANT 0)



### 2437MHz (30MHz-1GHz)-802.11b (ANT 0)

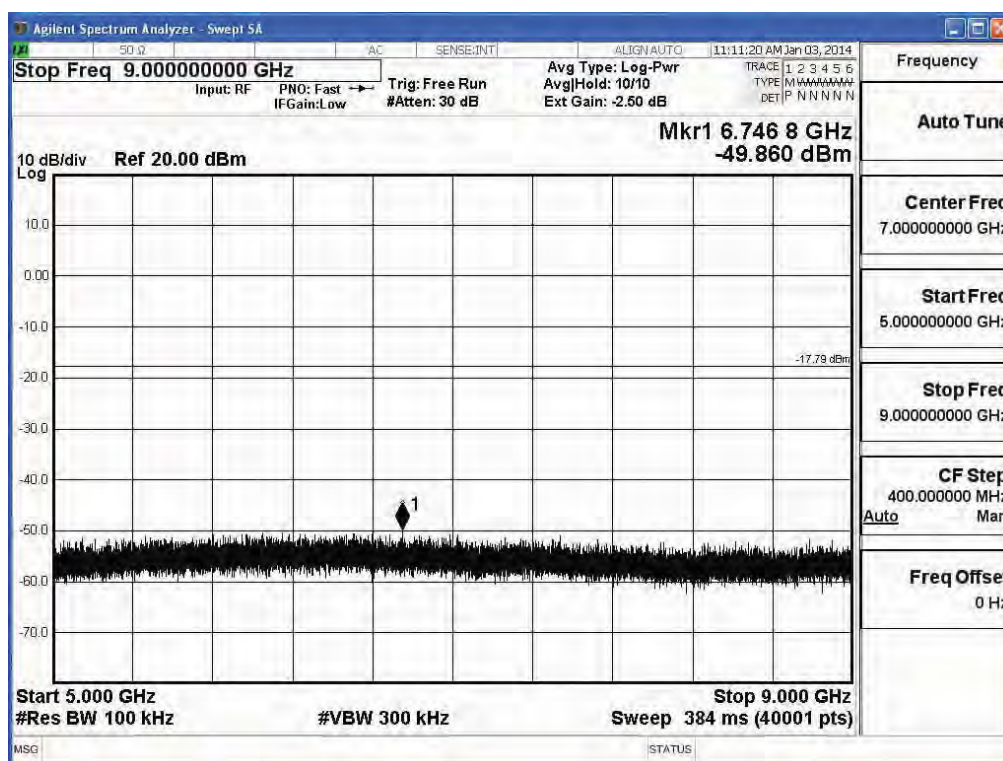


### 2437MHz (1GHz-5GHz) -802.11b (ANT 0)

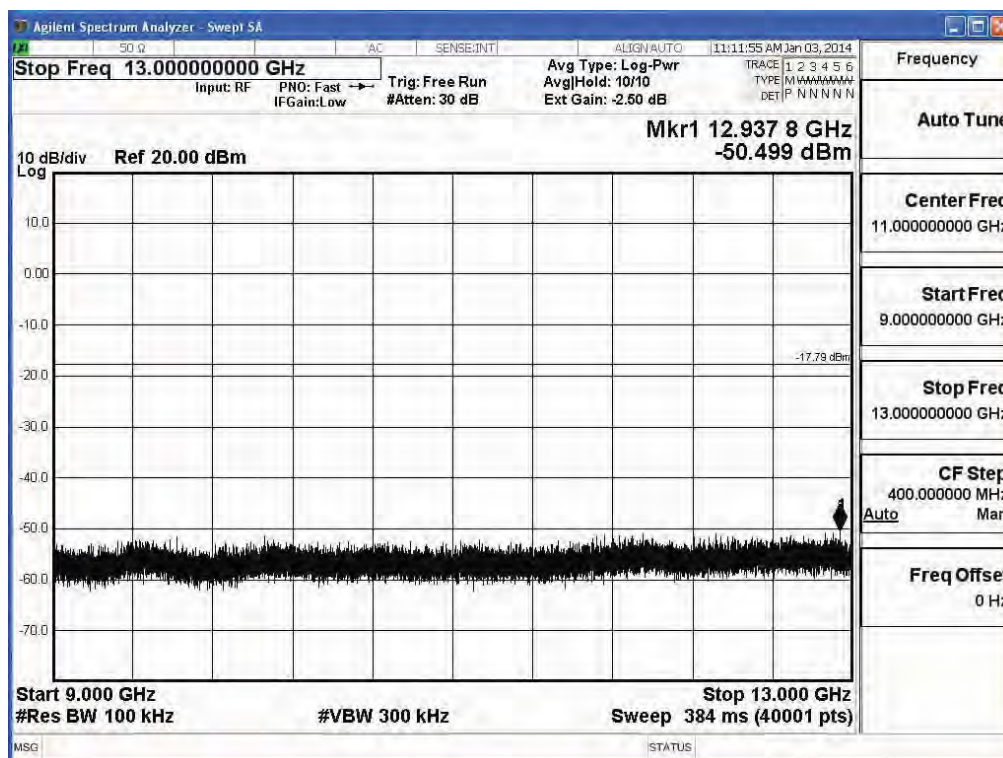




### 2437MHz (5GHz-9GHz) -802.11b (ANT 0)

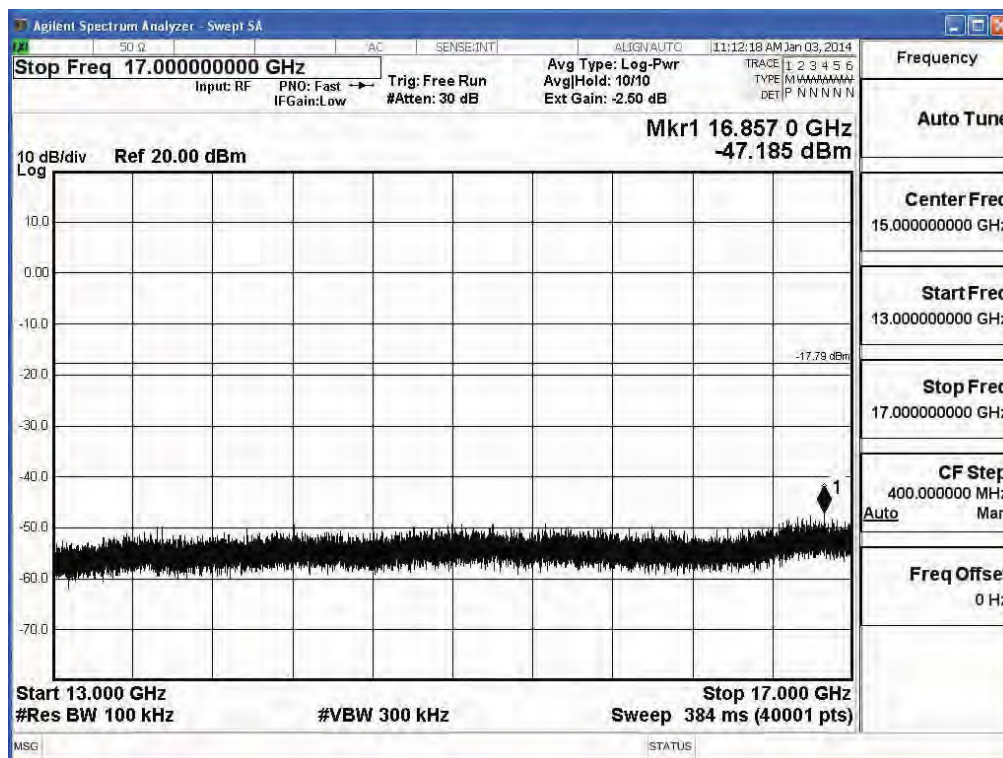


### 2437MHz (9GHz-13GHz) -802.11b (ANT 0)

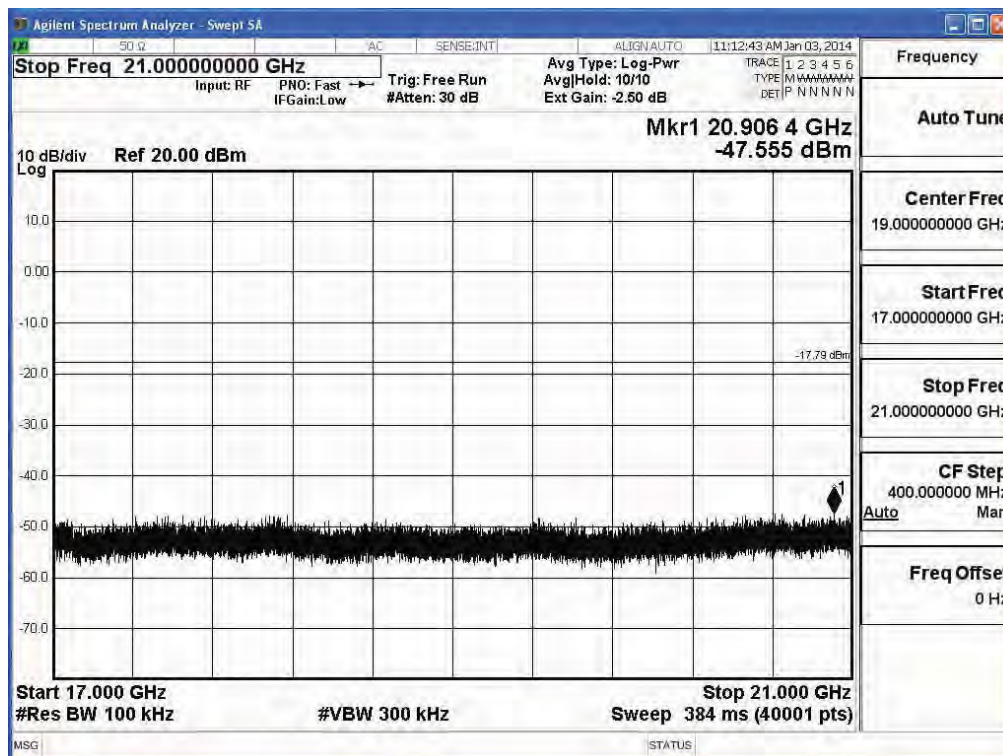




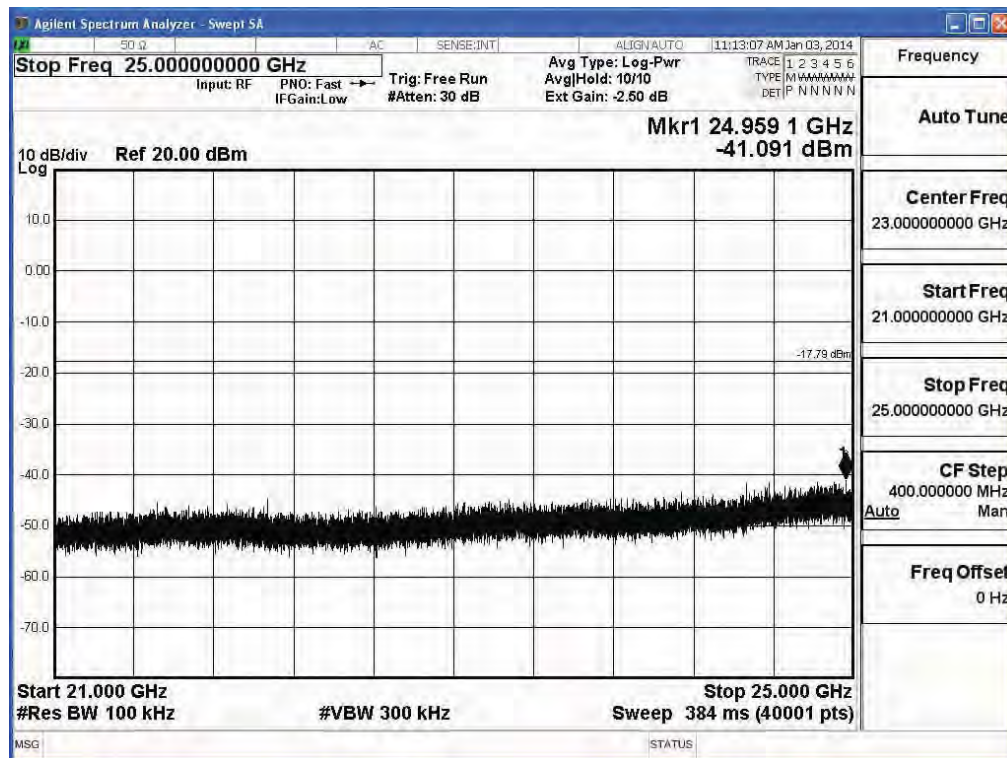
### 2437MHz (13GHz-17GHz) -802.11b (ANT 0)



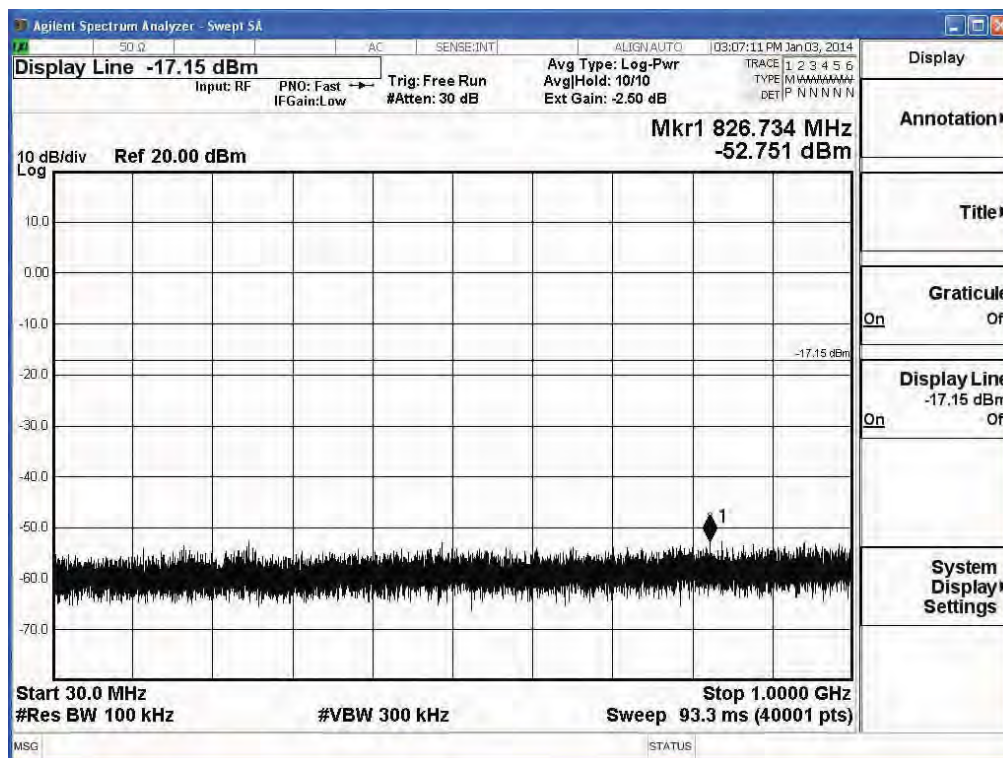
### 2437MHz (17GHz-21GHz) -802.11b (ANT 0)



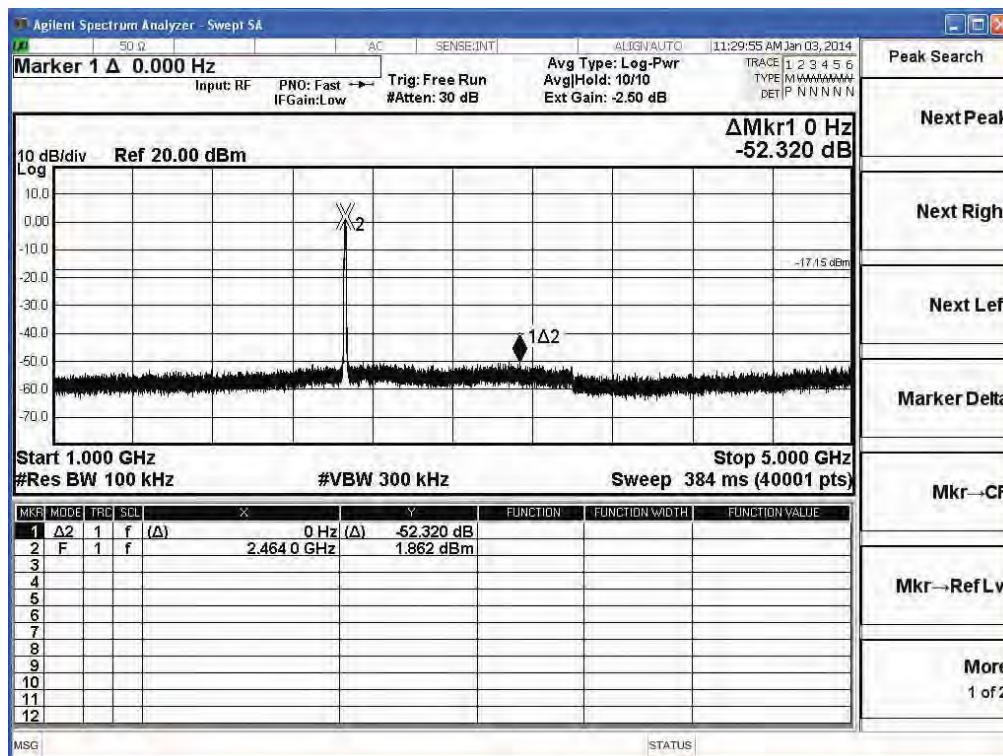
2437MHz (21GHz-25GHz) -802.11b (ANT 0)



### 2462MHz (30MHz-1GHz)-802.11b (ANT 0)

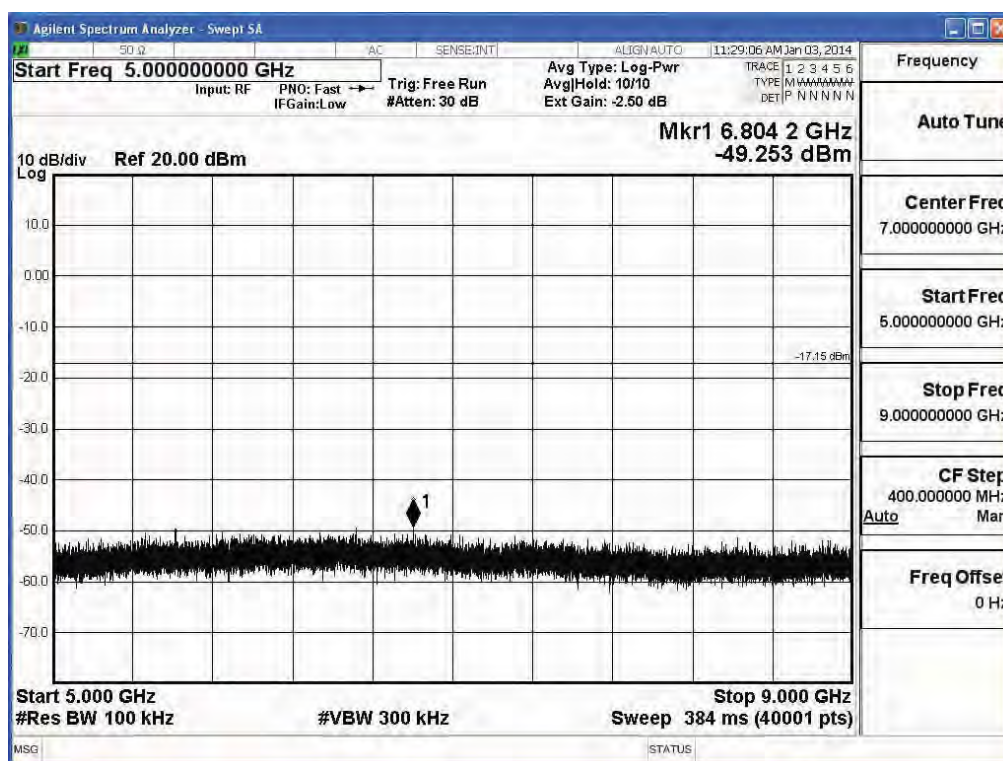


### 2462MHz (1GHz-5GHz) -802.11b (ANT 0)

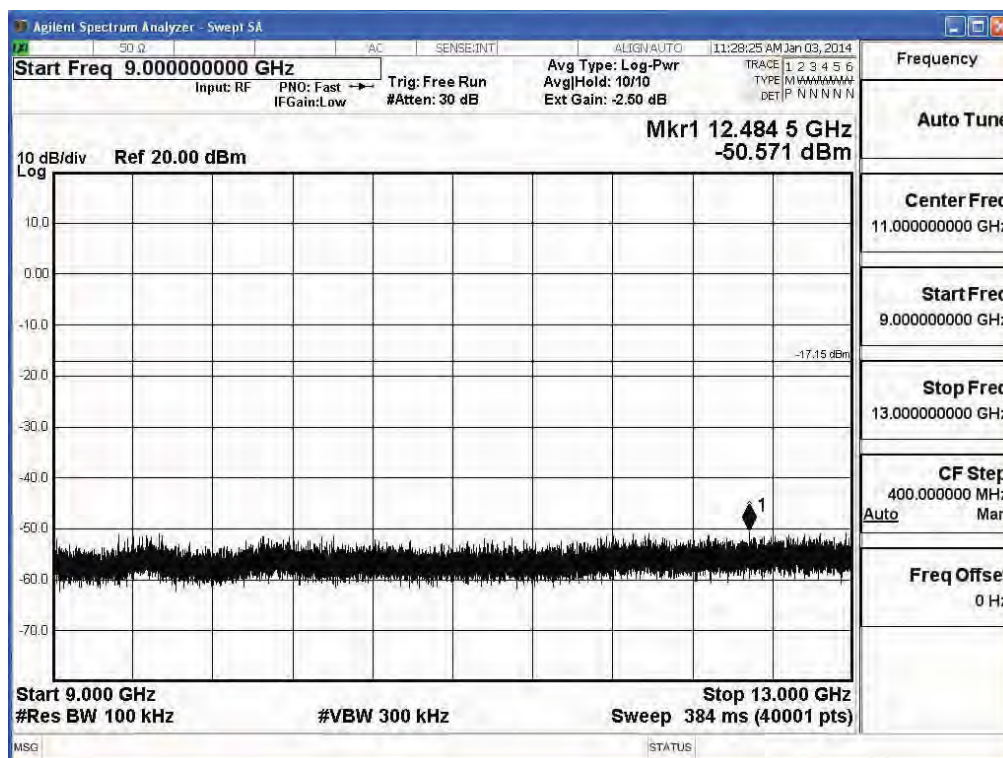




### 2462MHz (5GHz-9GHz) -802.11b (ANT 0)

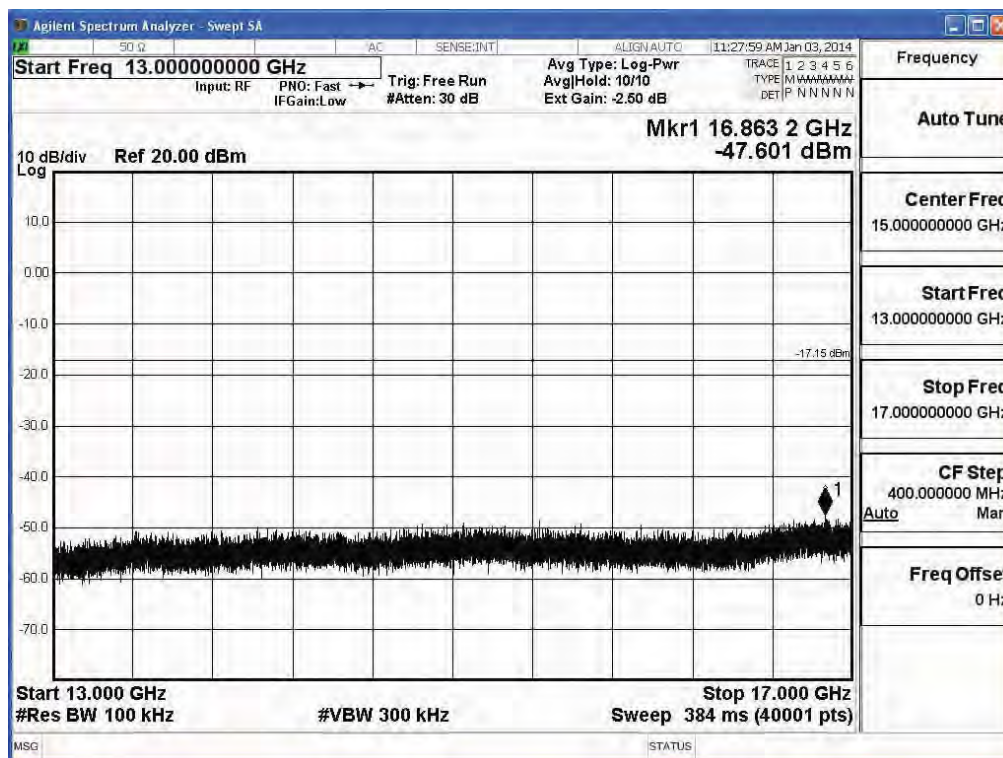


### 2462MHz (9GHz-13GHz) -802.11b (ANT 0)

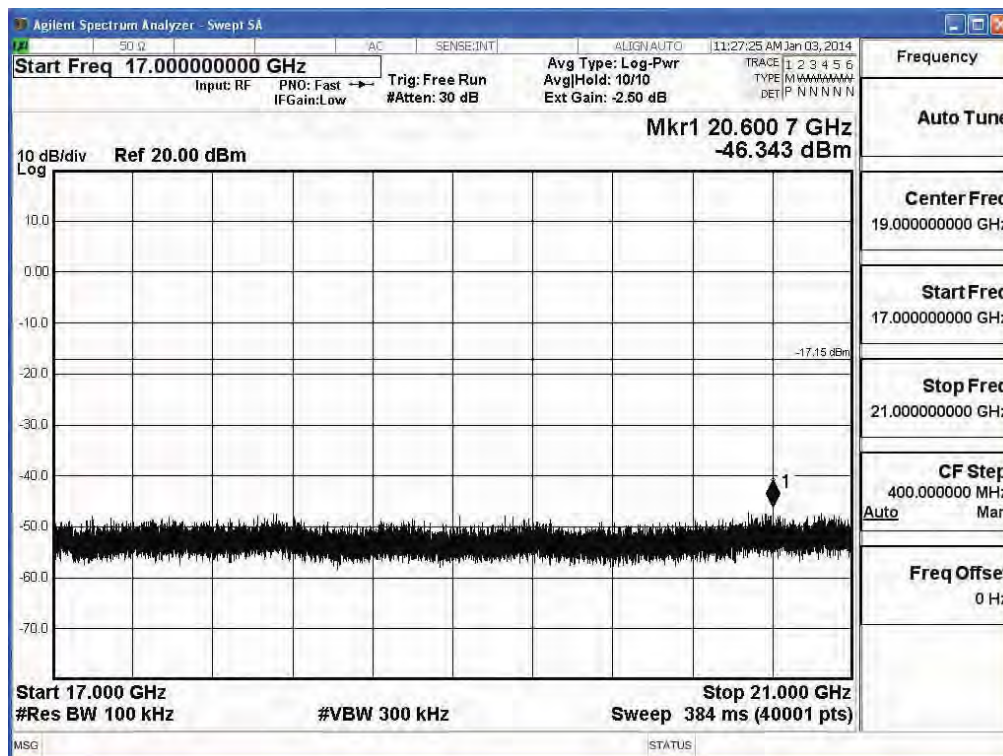




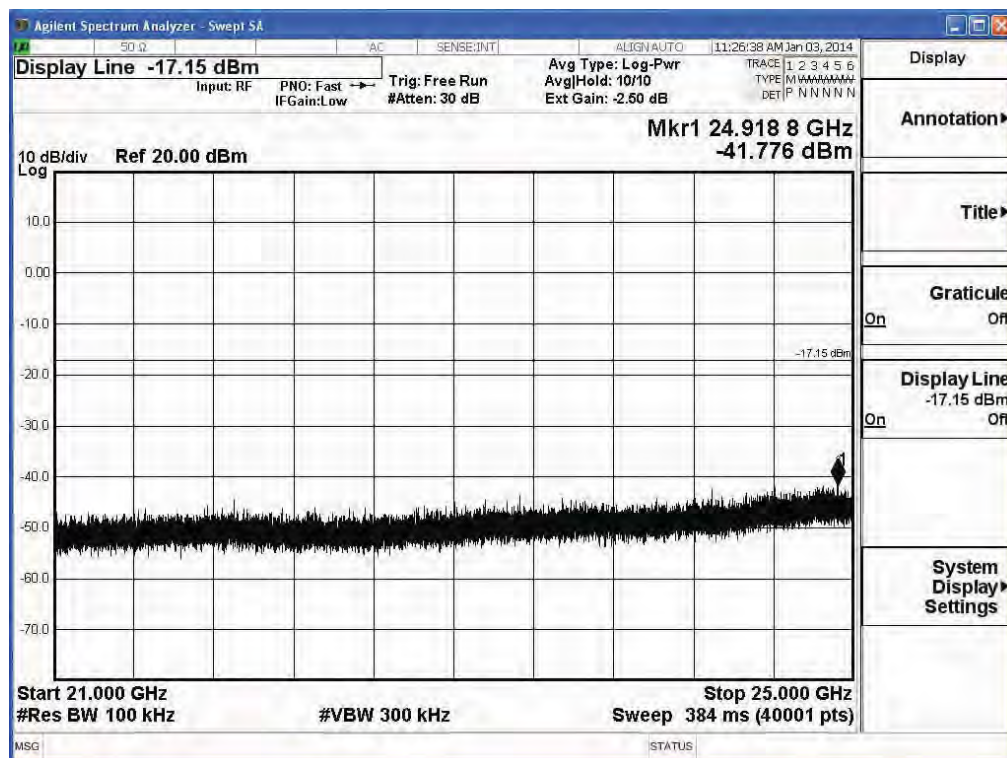
2462MHz (13GHz-17GHz) -802.11b (ANT 0)



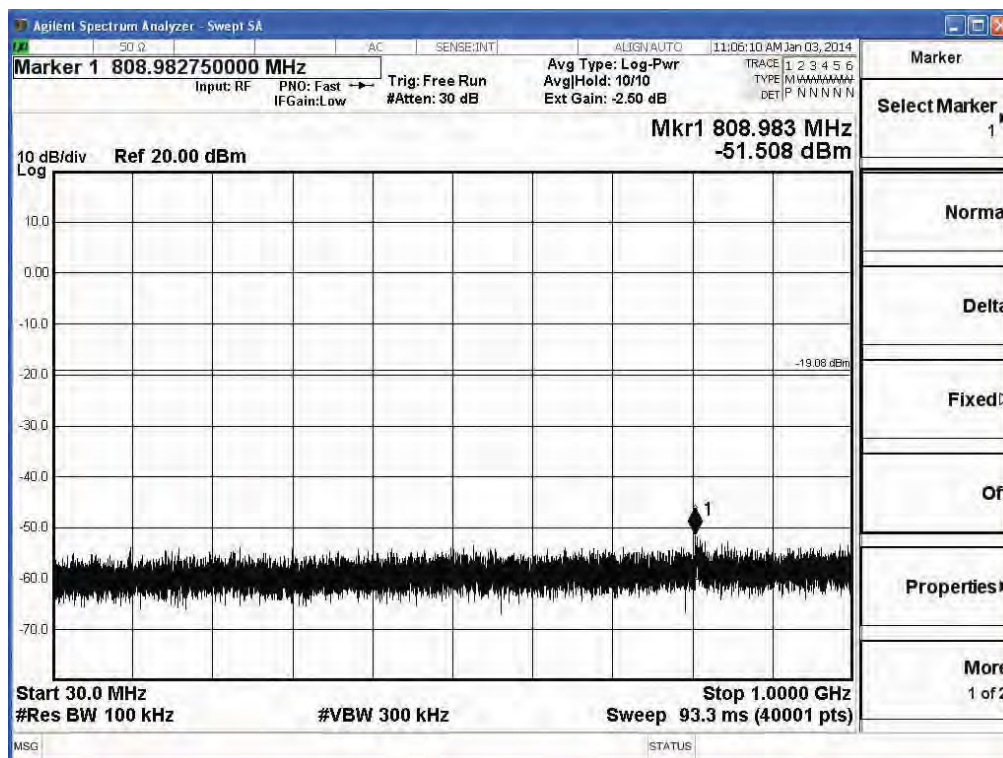
2462MHz (17GHz-21GHz) -802.11b (ANT 0)



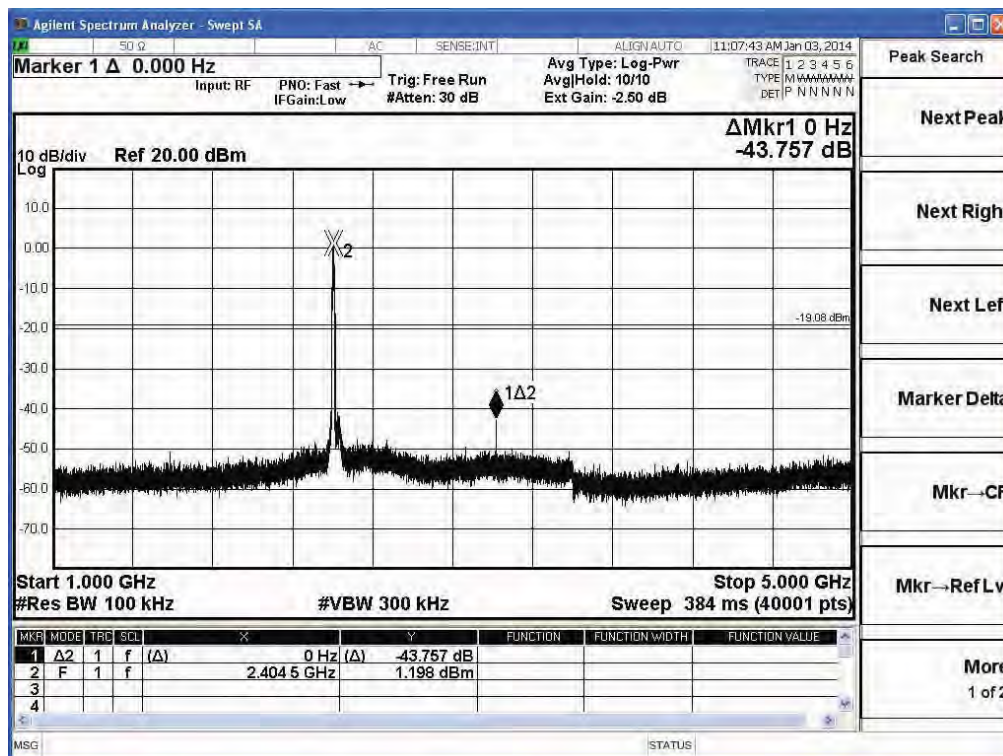
2462MHz (21GHz-25GHz) -802.11b (ANT 0)



## 2412MHz (30MHz-1GHz)-802.11b (ANT 1)

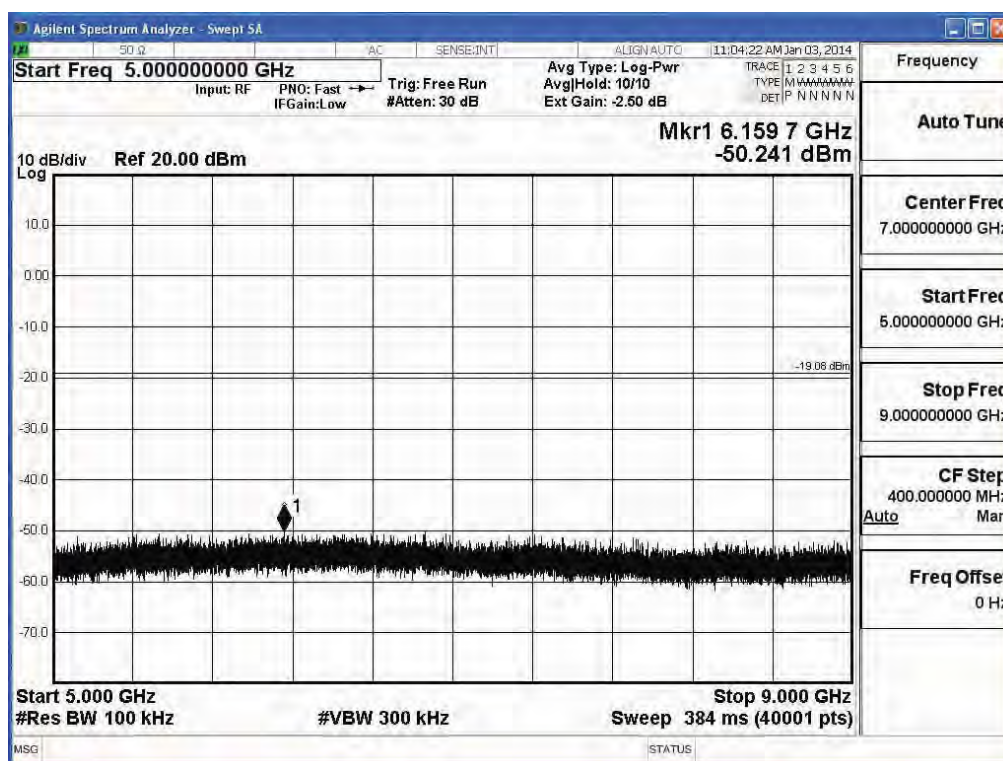


## 2412MHz (1GHz-5GHz) -802.11b (ANT 1)

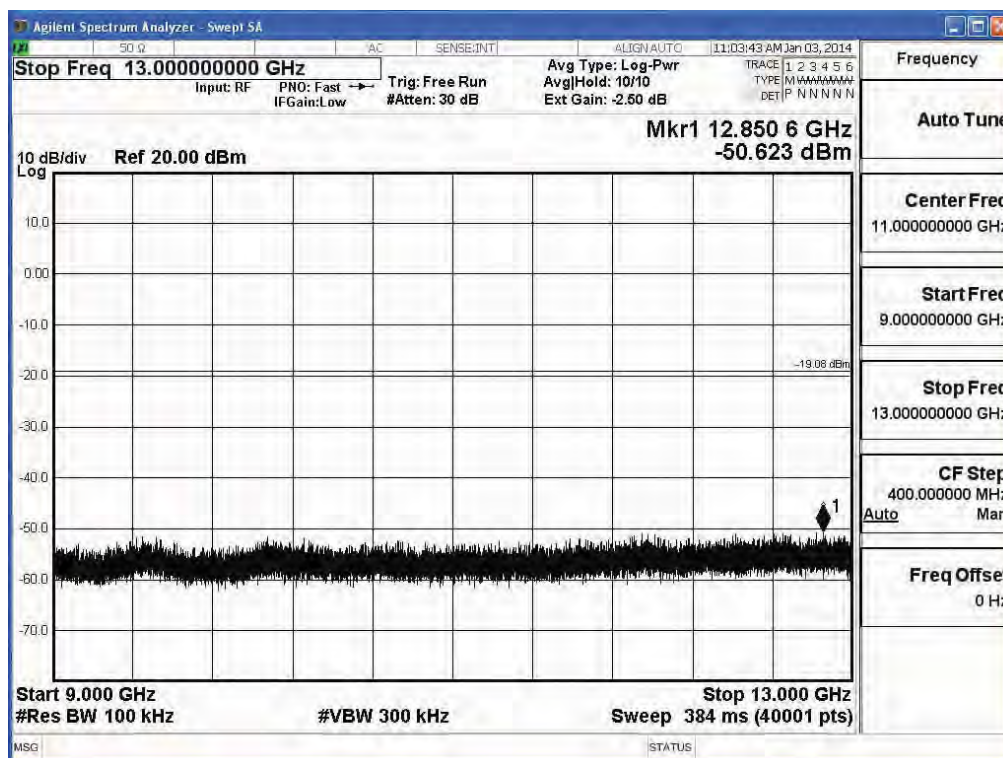




### 2412MHz (5GHz-9GHz) -802.11b (ANT 1)

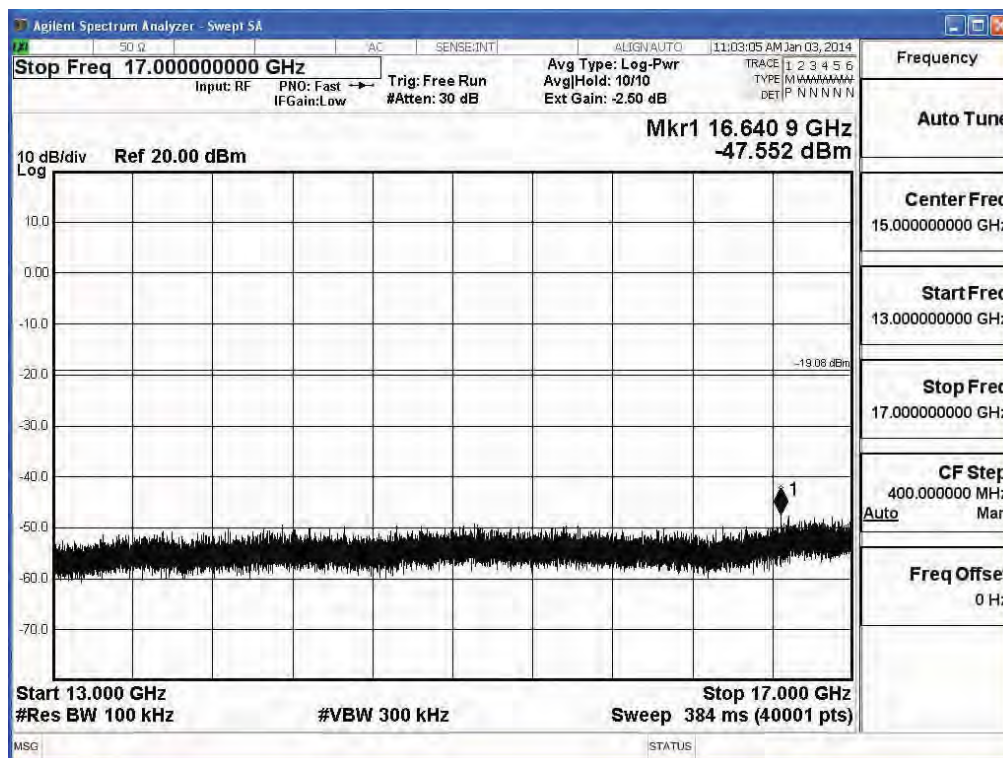


### 2412MHz (9GHz-13GHz) -802.11b (ANT 1)

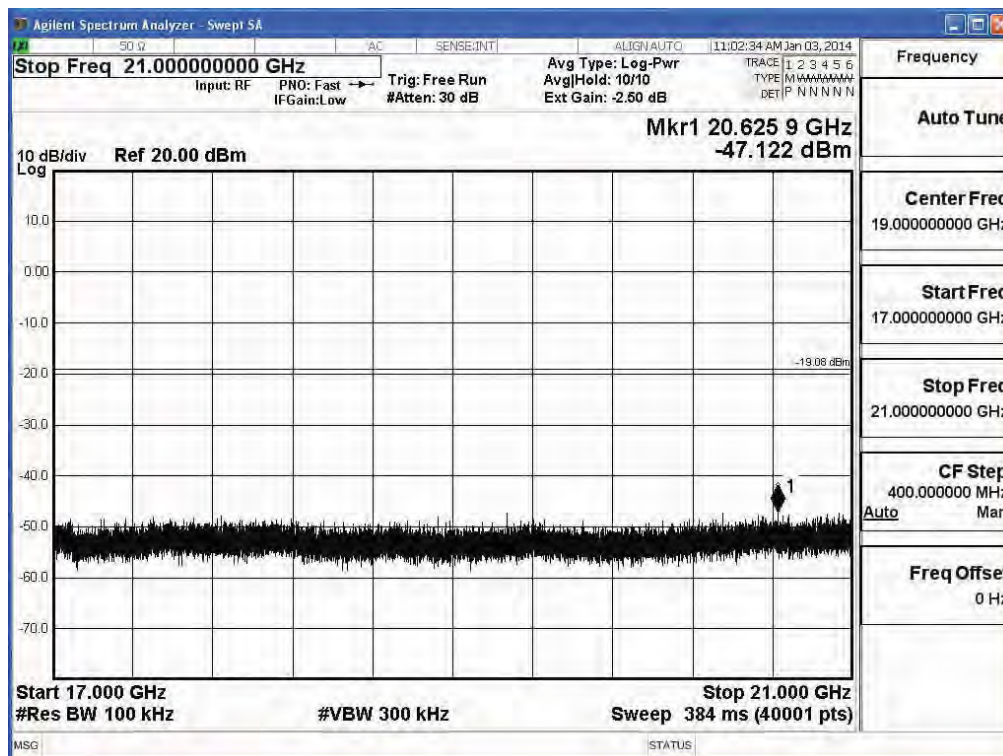




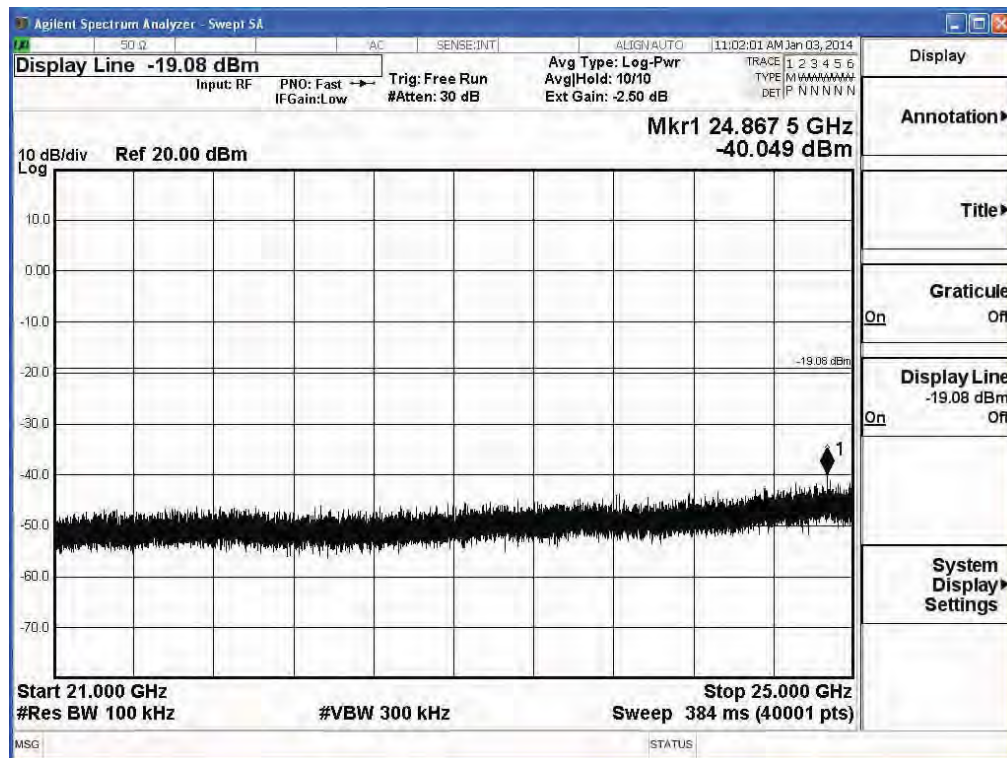
2412MHz (13GHz-17GHz) -802.11b (ANT 1)



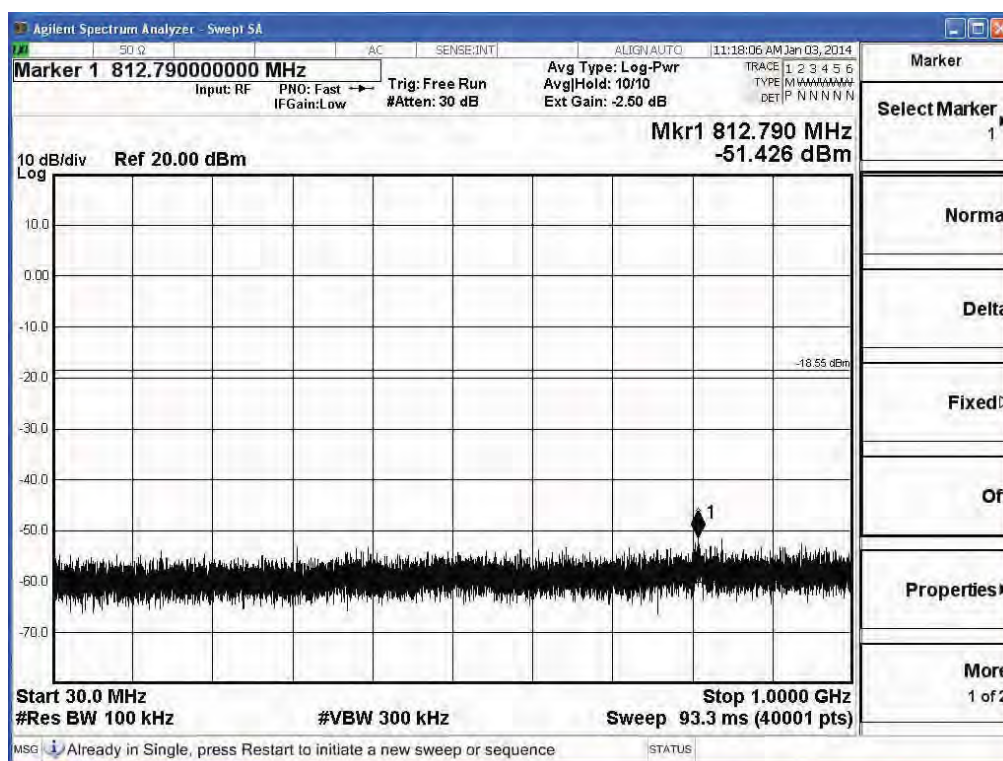
2412MHz (17GHz-21GHz) -802.11b (ANT 1)



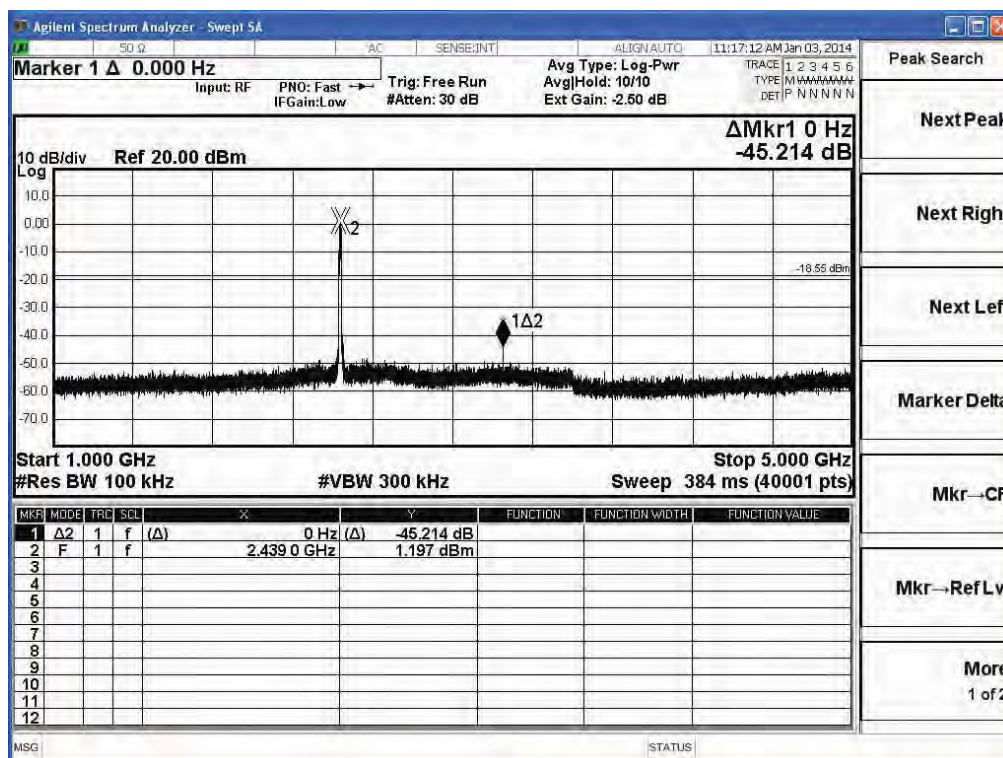
2412MHz (21GHz-25GHz) -802.11b (ANT 1)



### 2437MHz (30MHz-1GHz)-802.11b (ANT 1)

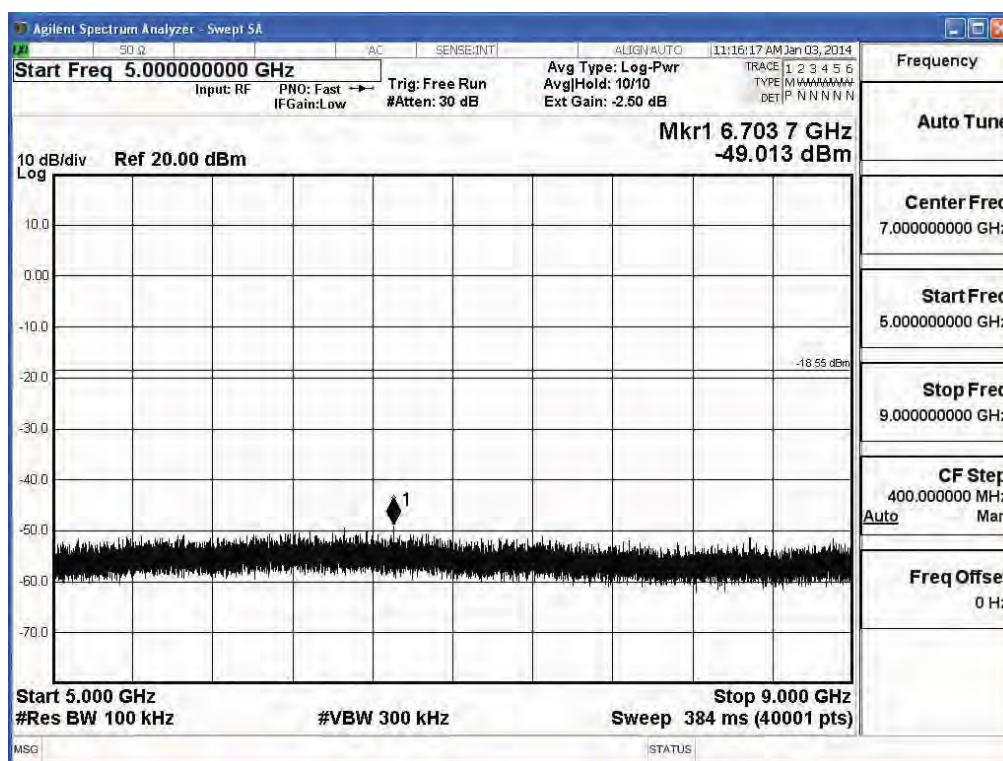


### 2437MHz (1GHz-5GHz) -802.11b (ANT 1)

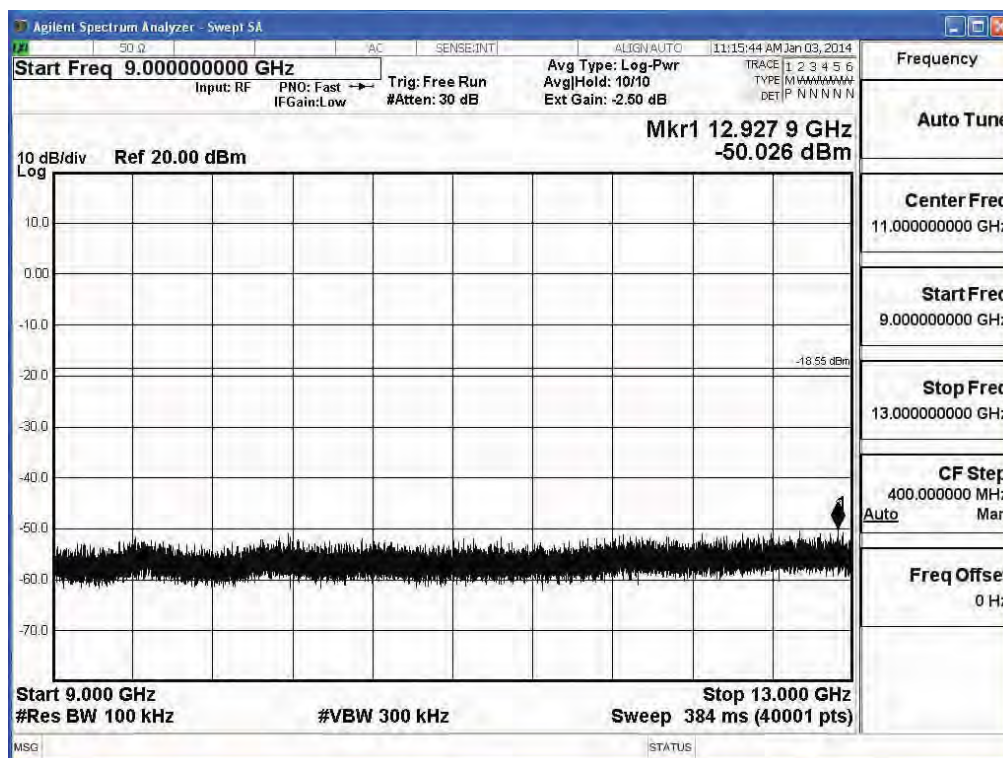




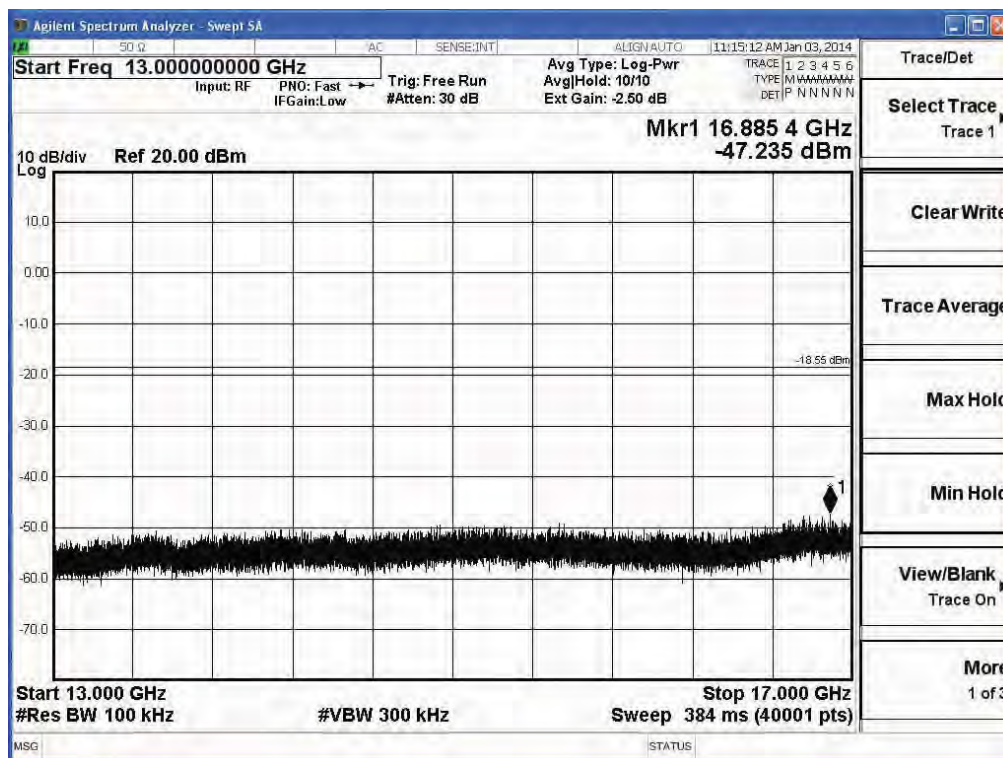
### 2437MHz (5GHz-9GHz) -802.11b (ANT 1)



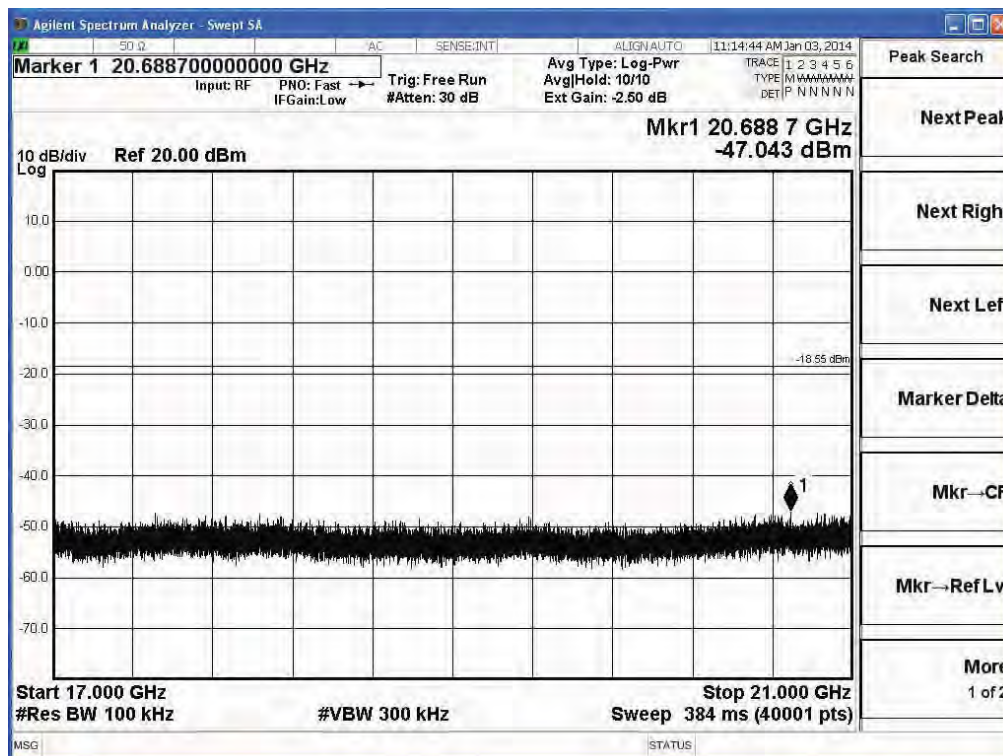
### 2437MHz (9GHz-13GHz) -802.11b (ANT 1)



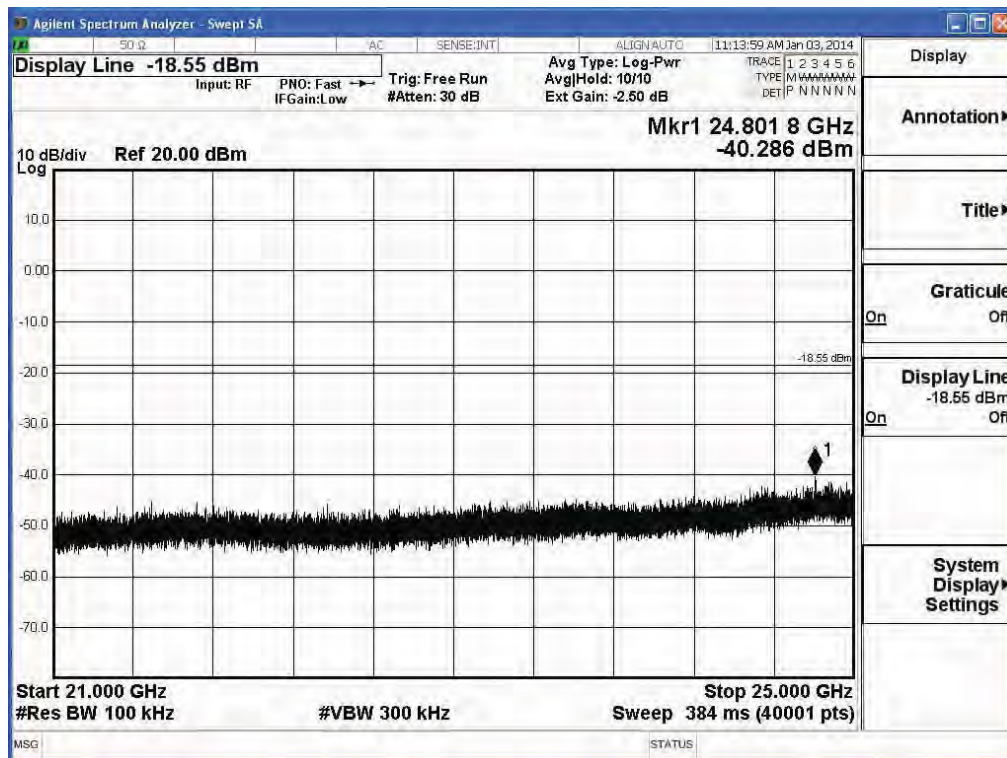
2437MHz (13GHz-17GHz) -802.11b (ANT 1)



2437MHz (17GHz-21GHz) -802.11b (ANT 1)

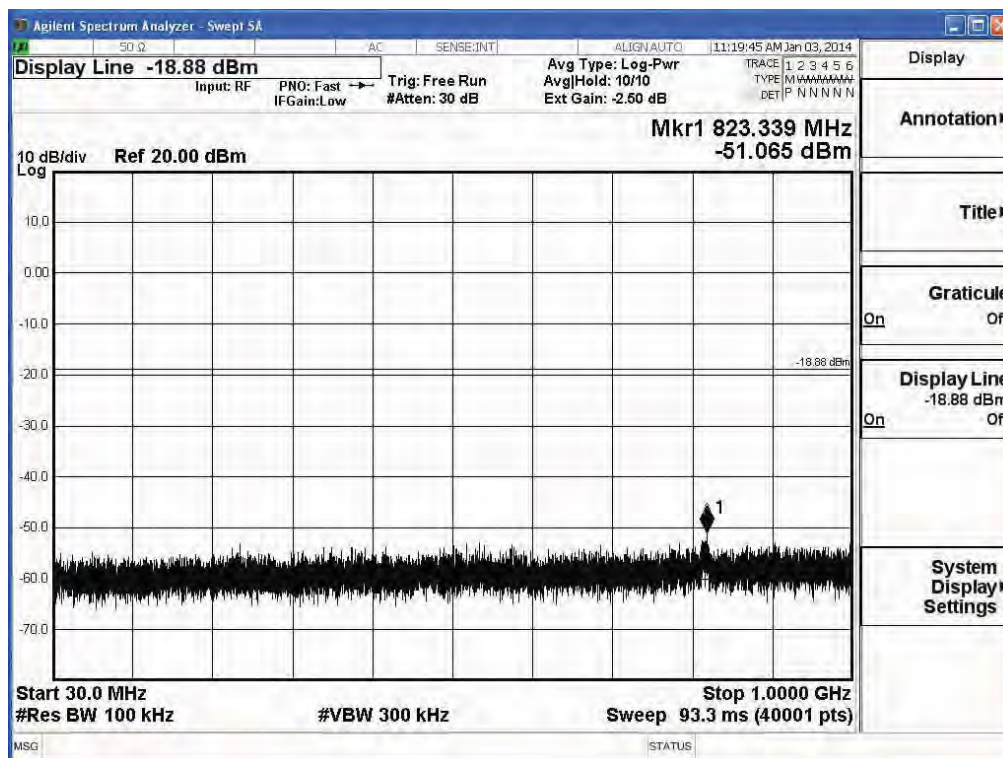


2437MHz (21GHz-25GHz) -802.11b (ANT 1)

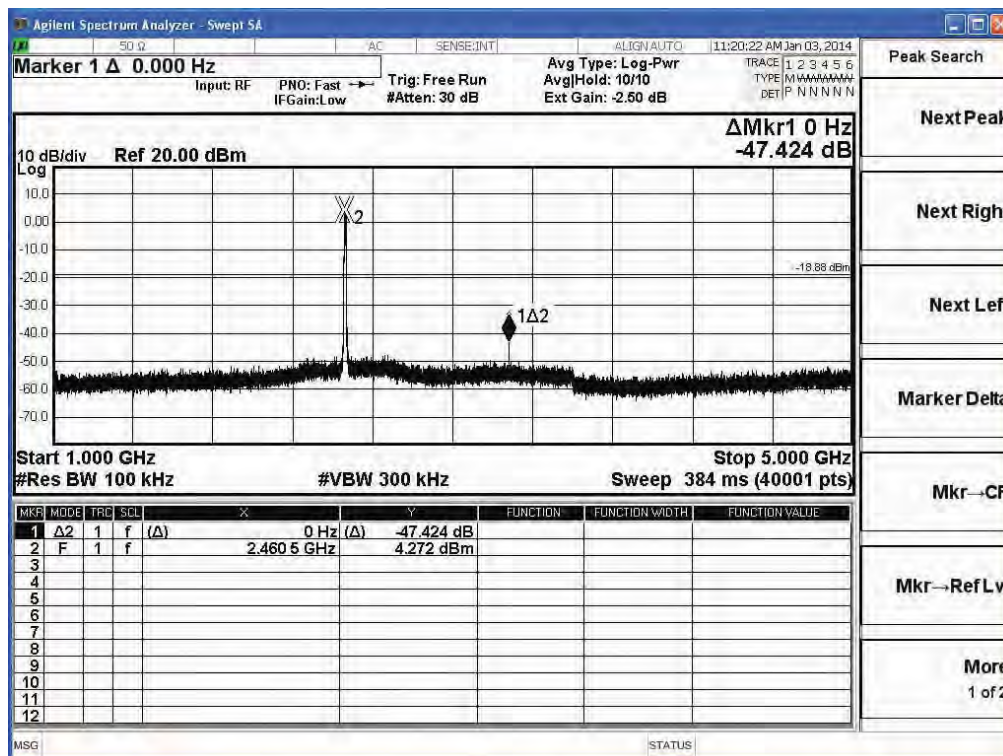




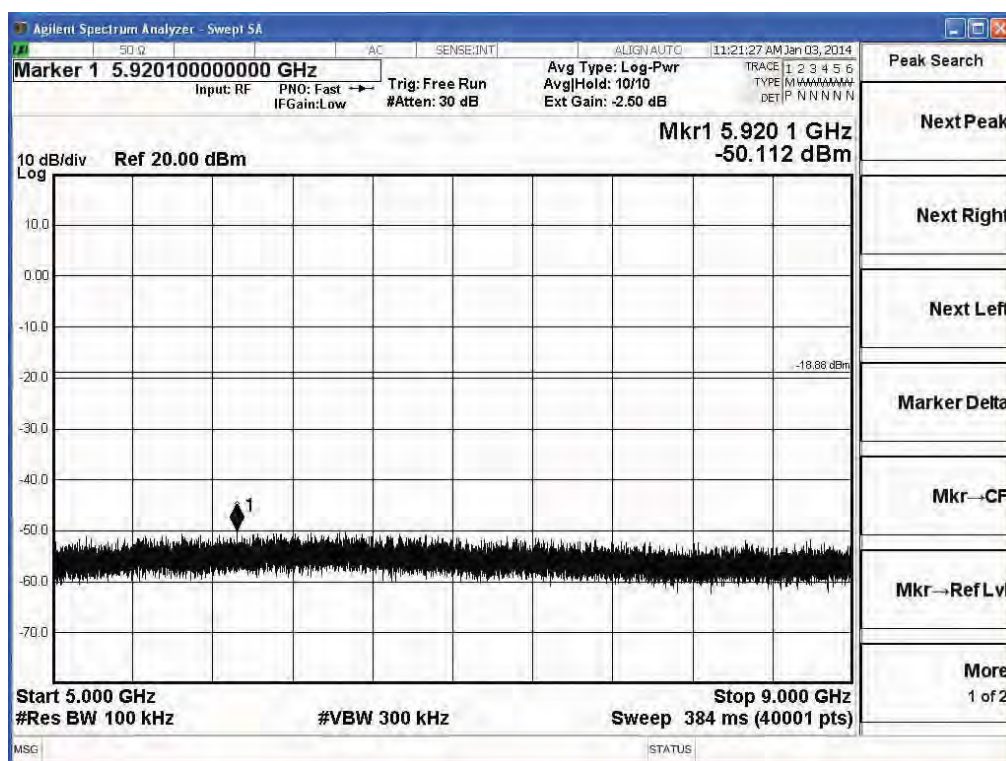
### 2462MHz (30MHz-1GHz)-802.11b (ANT 1)



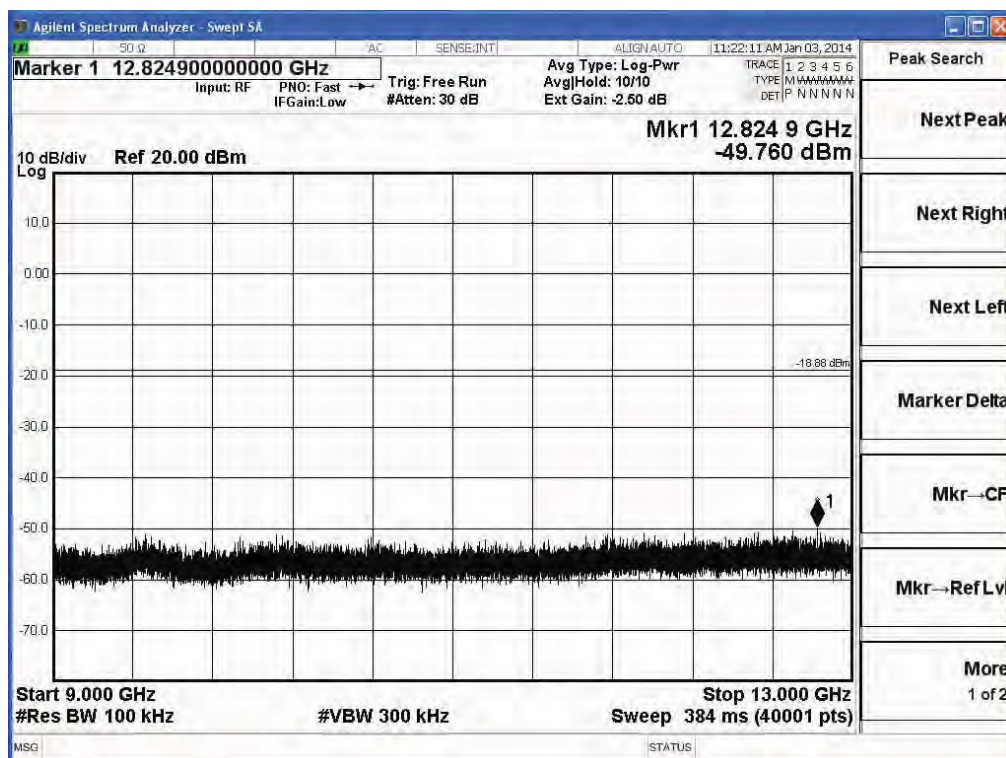
### 2462MHz (1GHz-5GHz) -802.11b (ANT 1)



### 2462MHz (5GHz-9GHz) -802.11b (ANT 1)

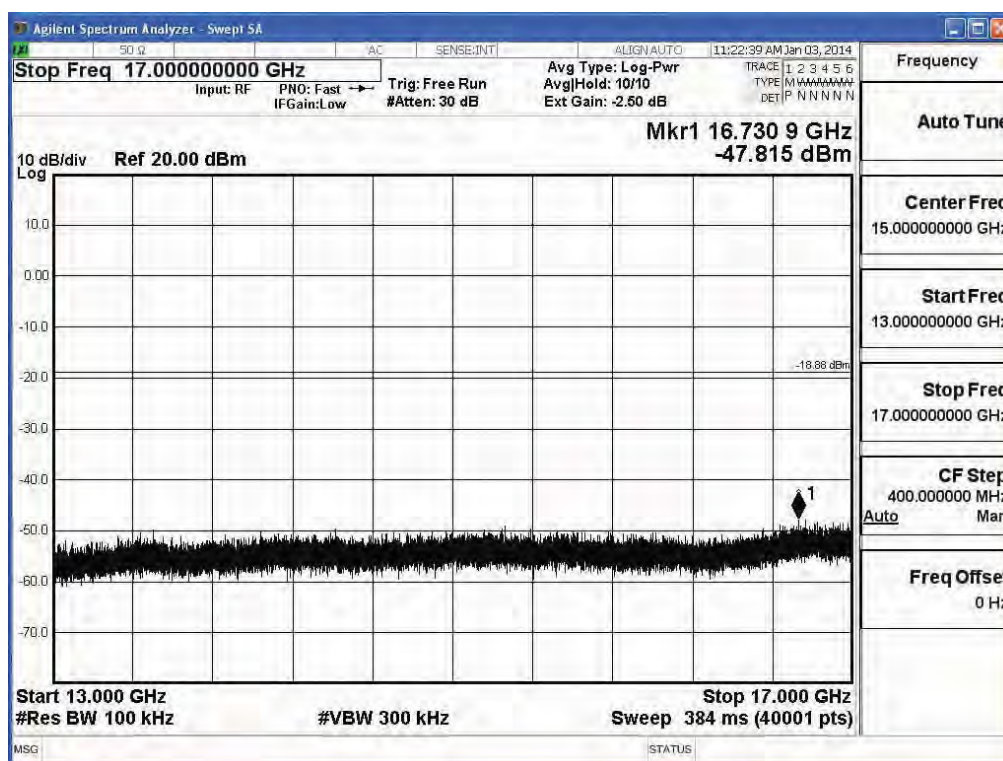


### 2462MHz (9GHz-13GHz) -802.11b (ANT 1)

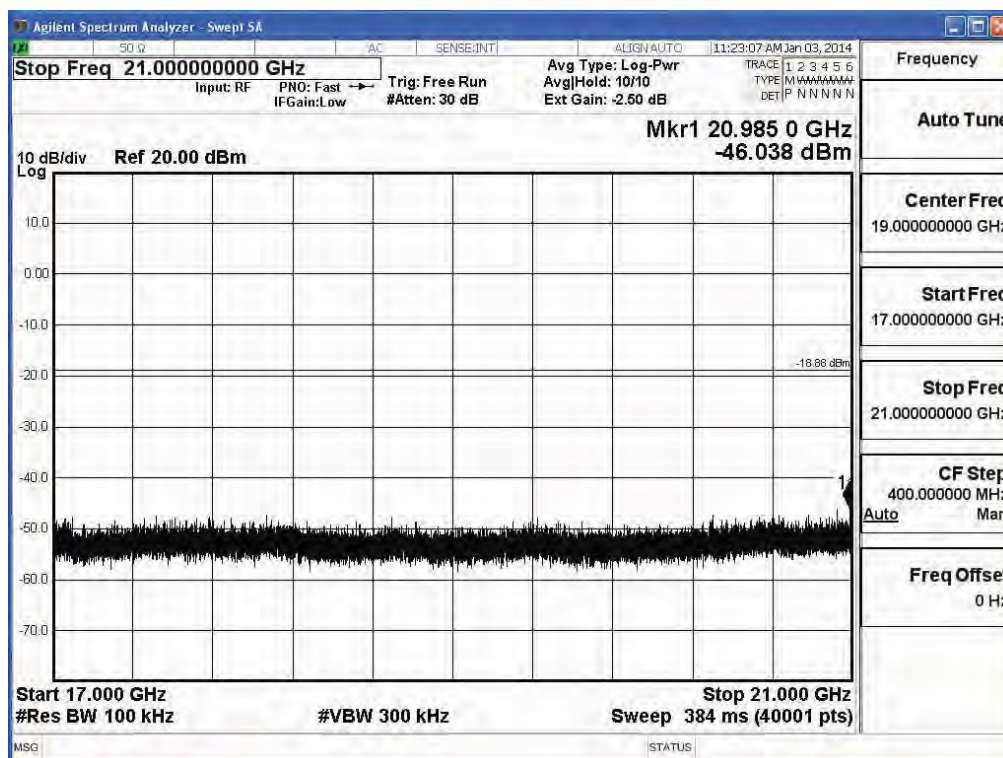




2462MHz (13GHz-17GHz) -802.11b (ANT 1)

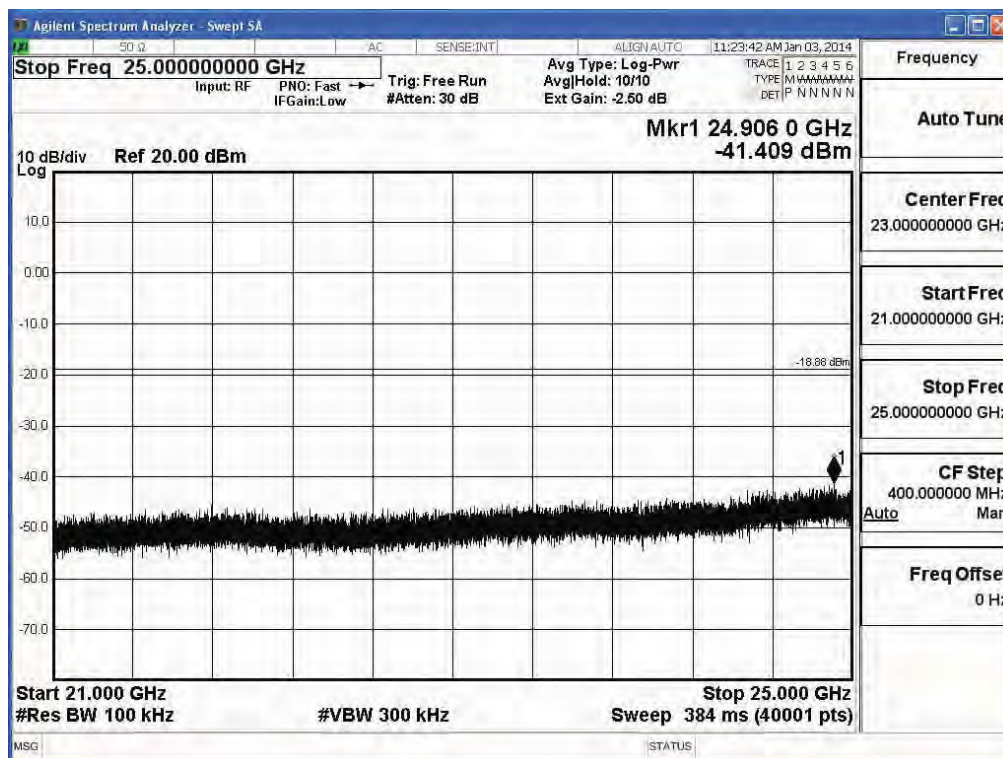


2462MHz (17GHz-21GHz) -802.11b (ANT 1)

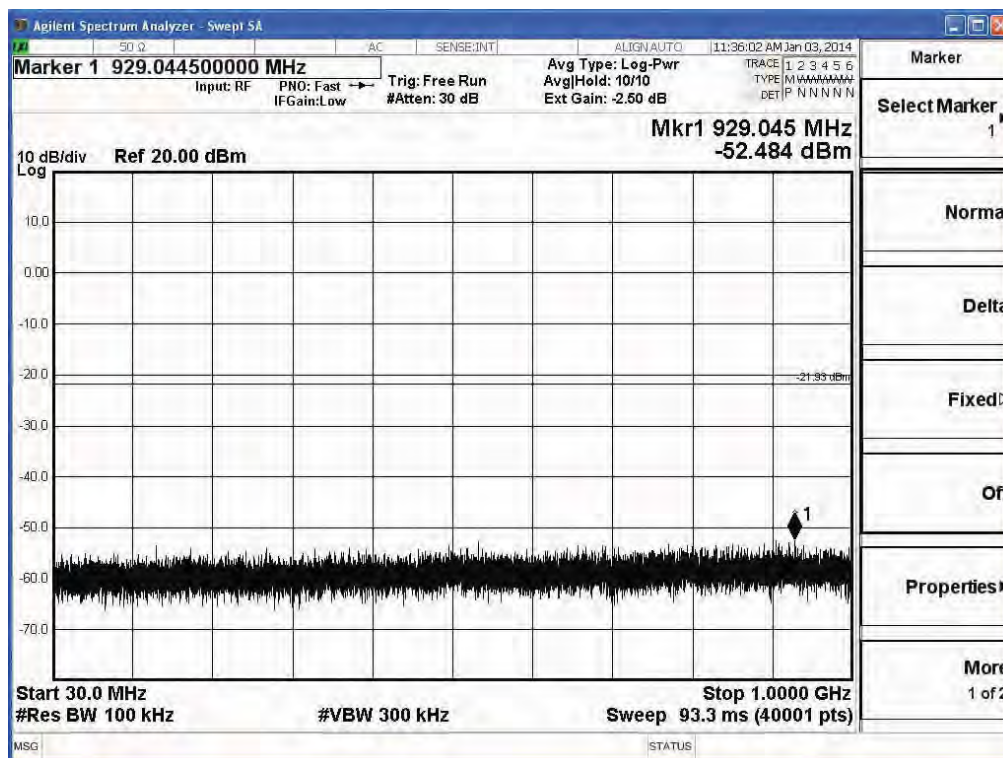




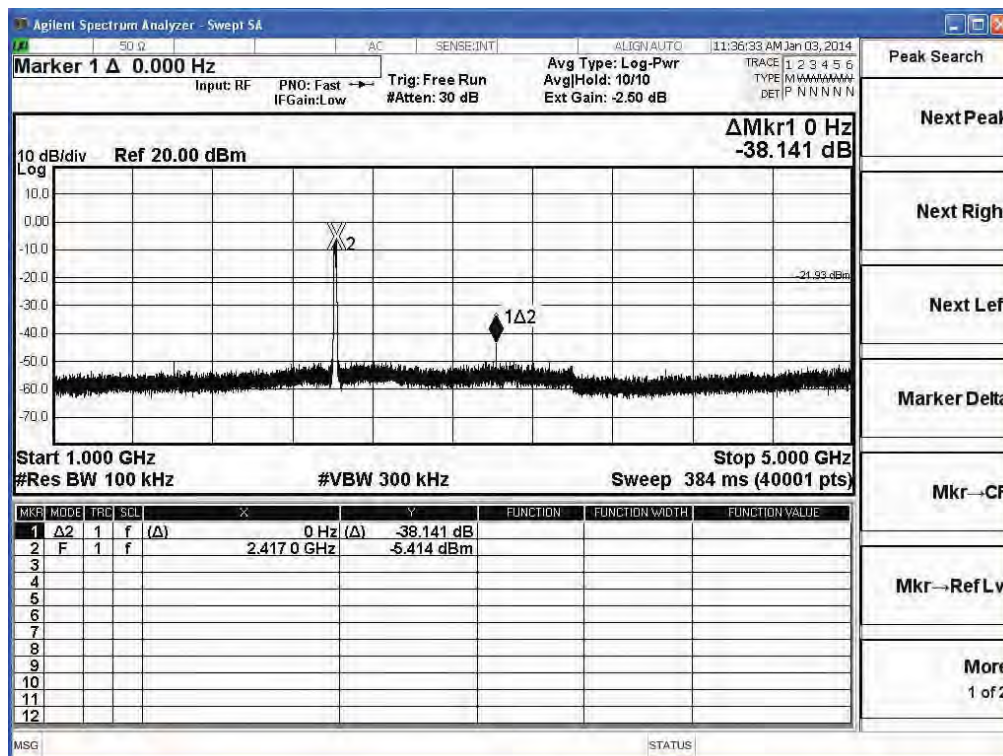
2462MHz (21GHz-25GHz) -802.11b (ANT 1)



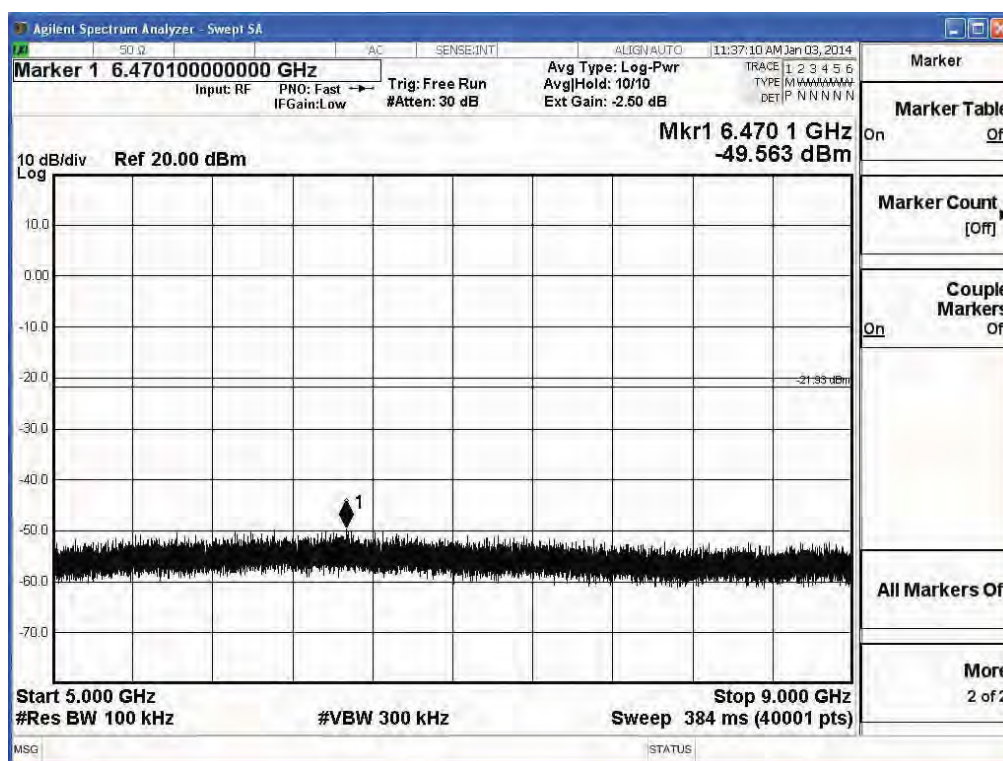
## 2412MHz (30MHz-1GHz)-802.11g (ANT 0)



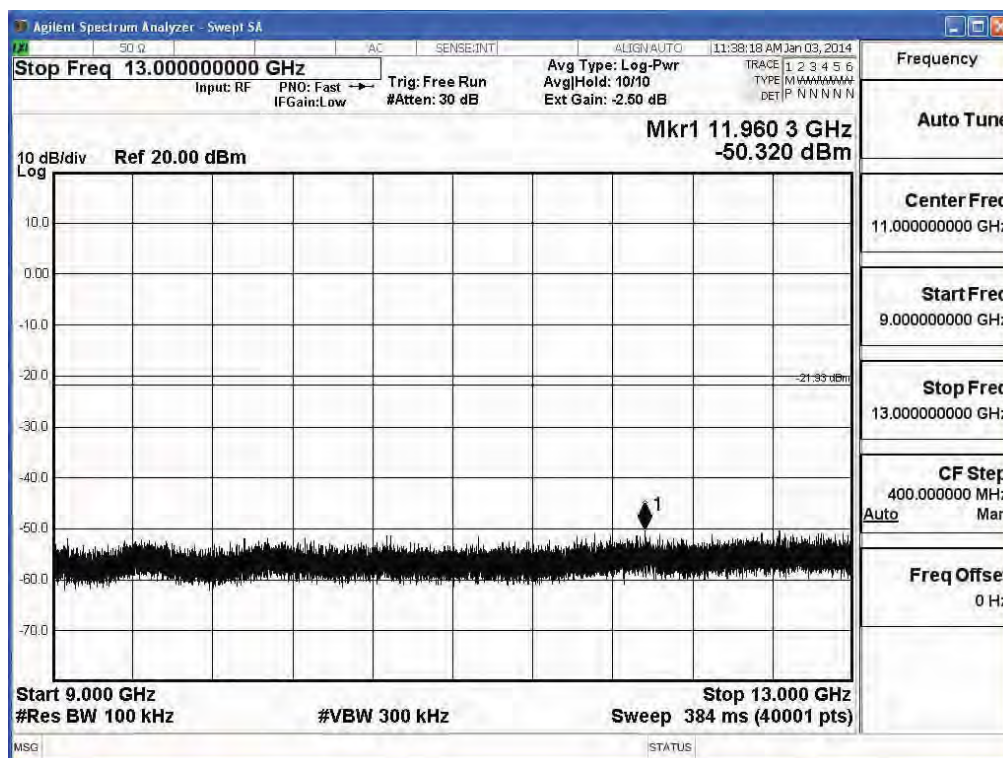
## 2412MHz (1GHz-5GHz) -802.11g (ANT 0)



### 2412MHz (5GHz-9GHz) -802.11g (ANT 0)

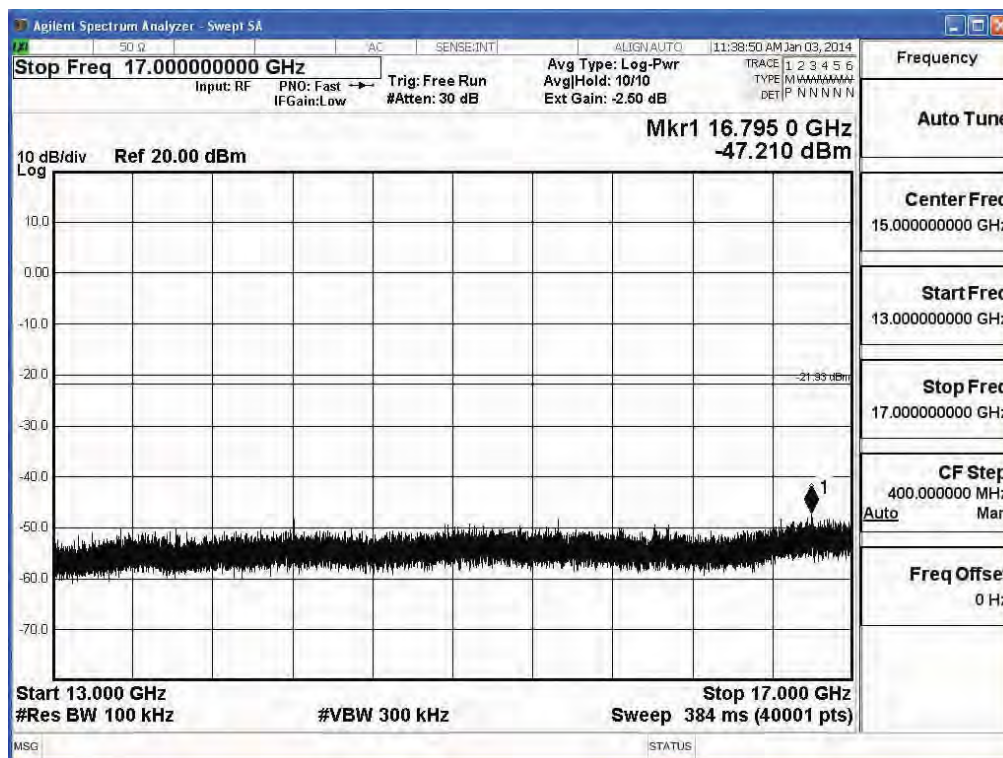


### 2412MHz (9GHz-13GHz) -802.11g (ANT 0)

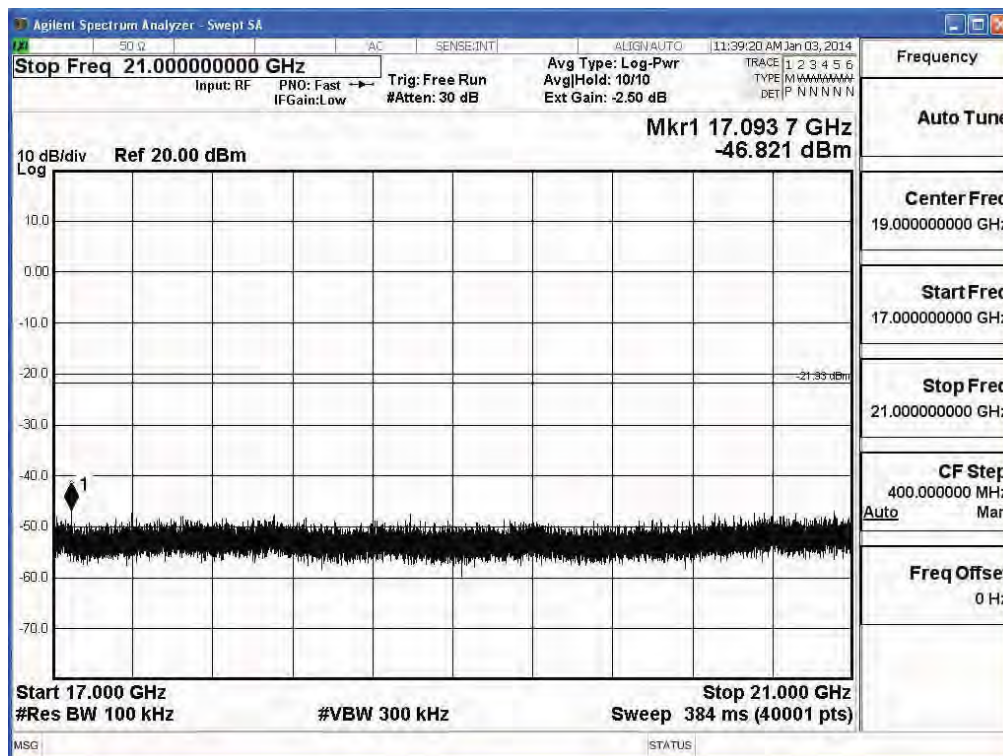




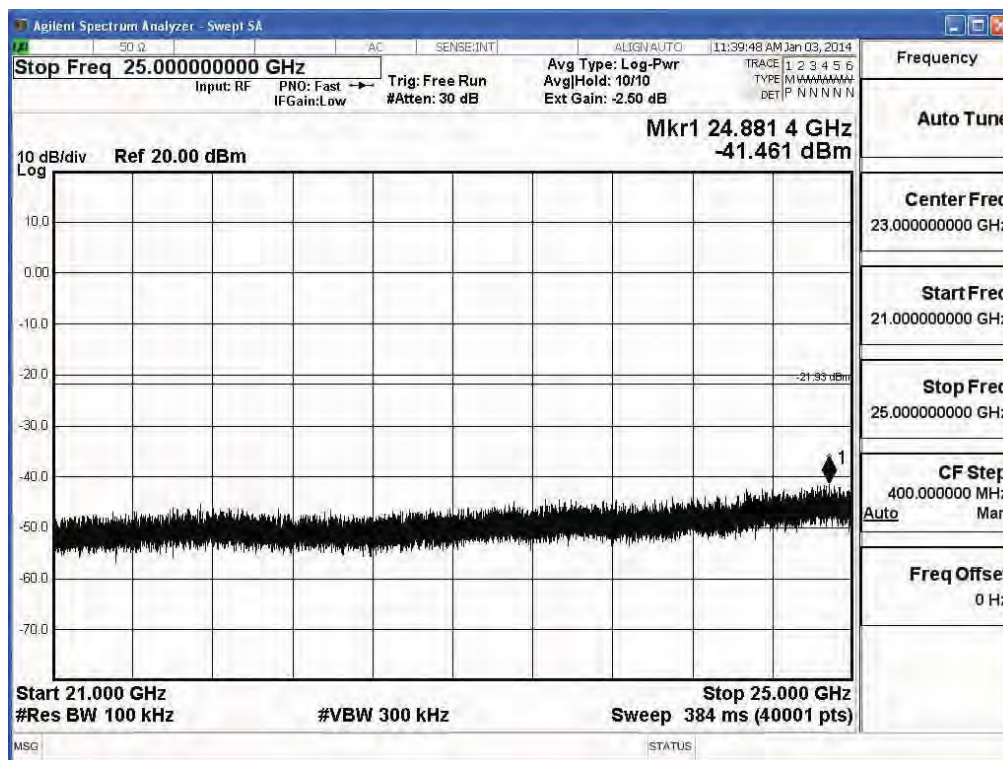
2412MHz (13GHz-17GHz) -802.11g (ANT 0)



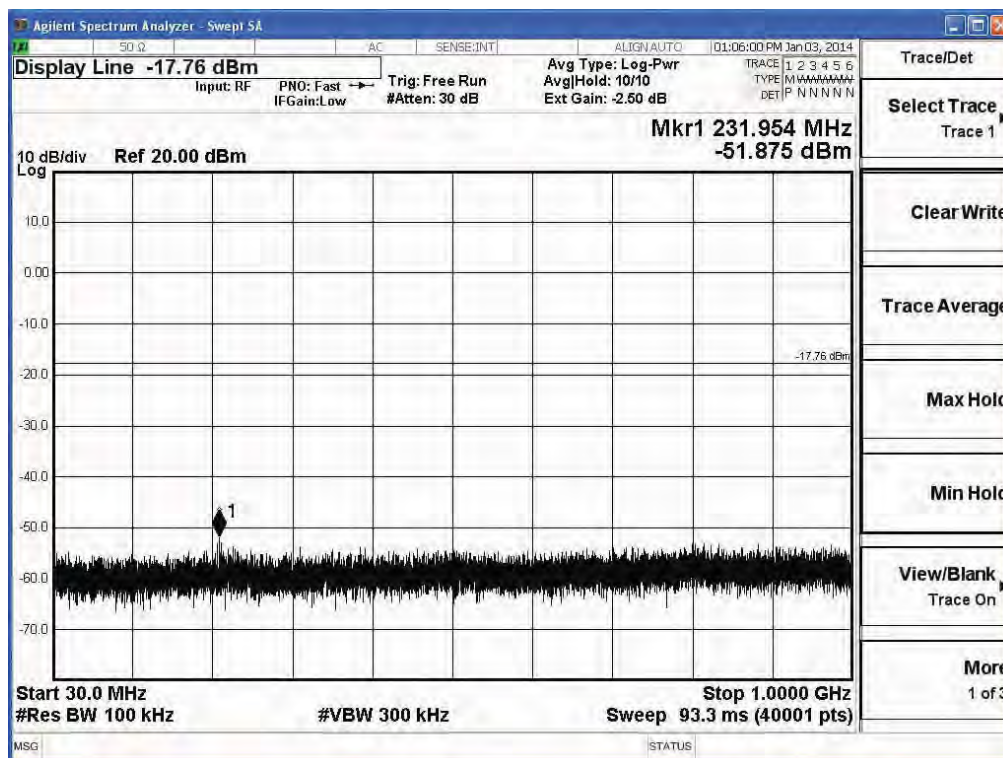
2412MHz (17GHz-21GHz) -802.11g (ANT 0)



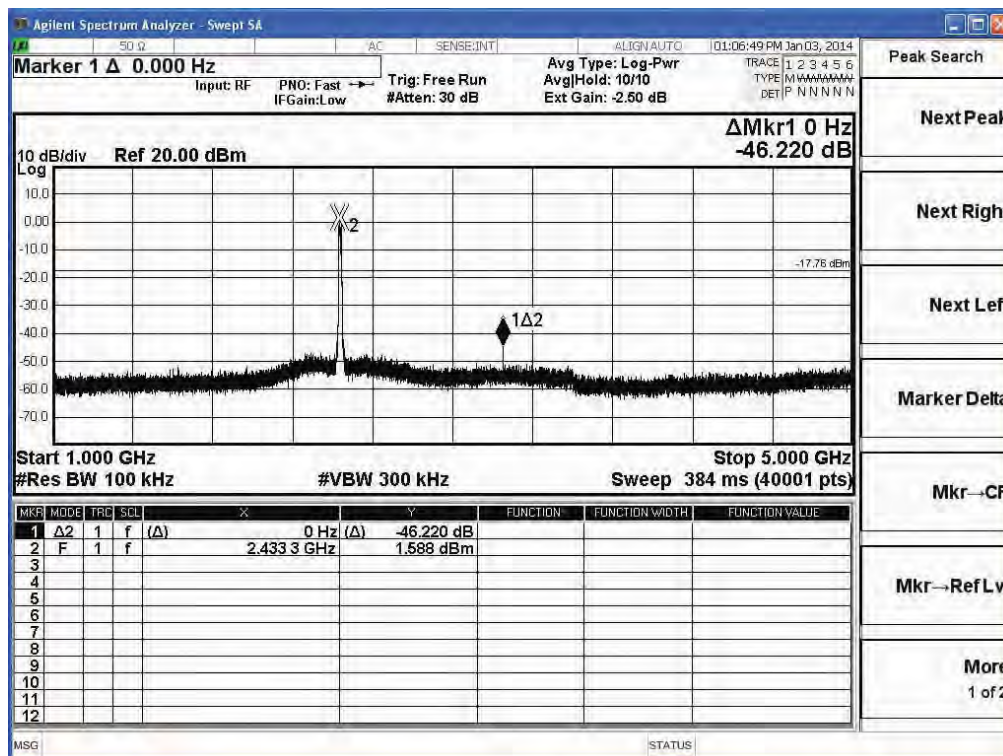
2412MHz (21GHz-25GHz) -802.11g (ANT 0)



### 2437MHz (30MHz-1GHz)-802.11g (ANT 0)

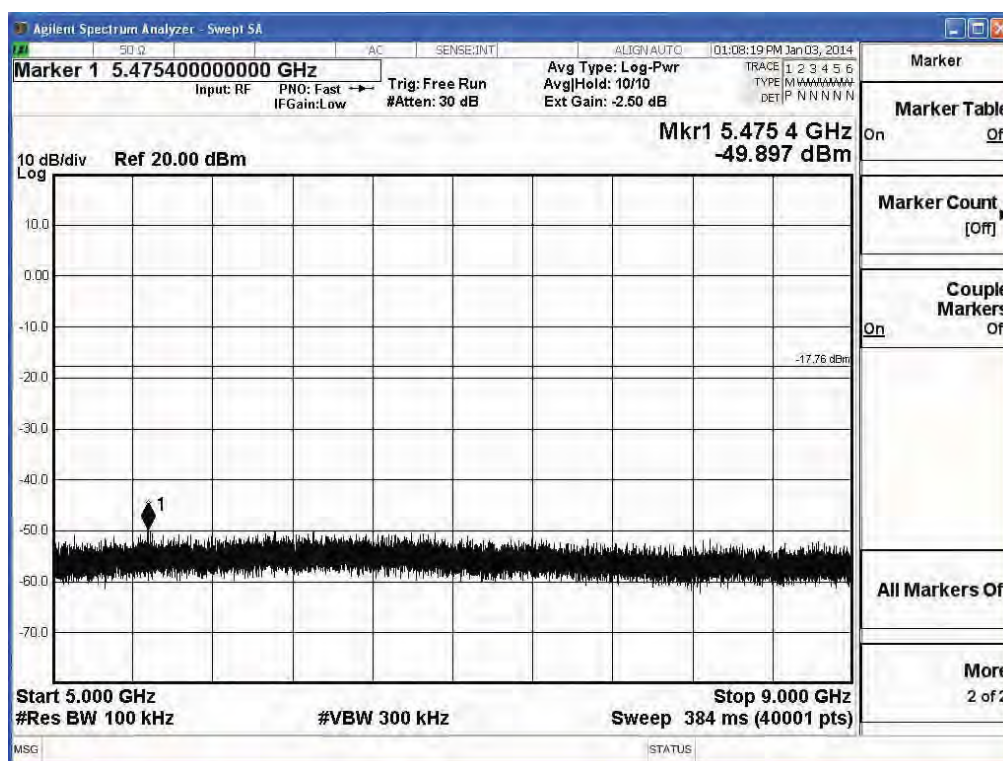


### 2437MHz (1GHz-5GHz) -802.11g (ANT 0)

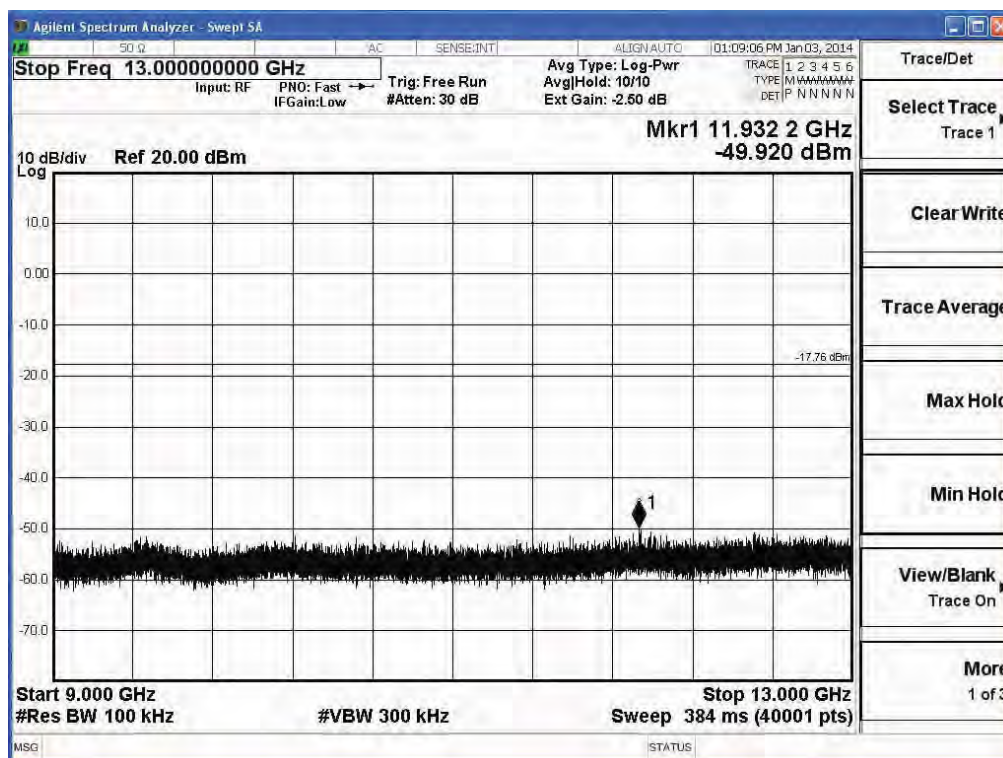




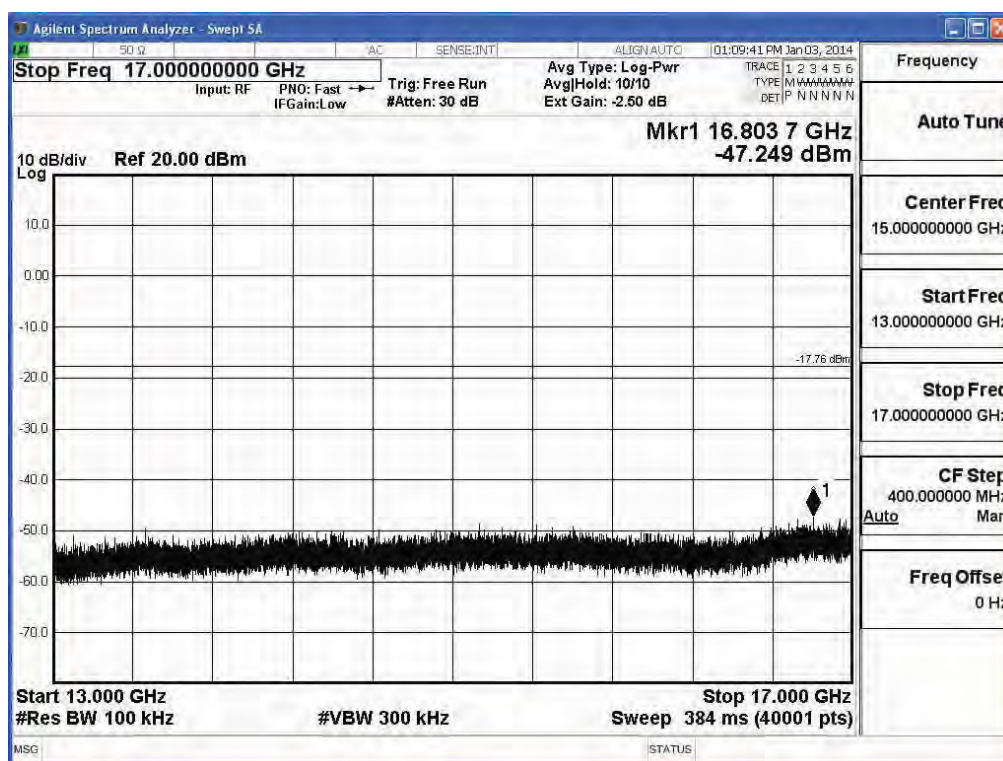
### 2437MHz (5GHz-9GHz) -802.11g (ANT 0)



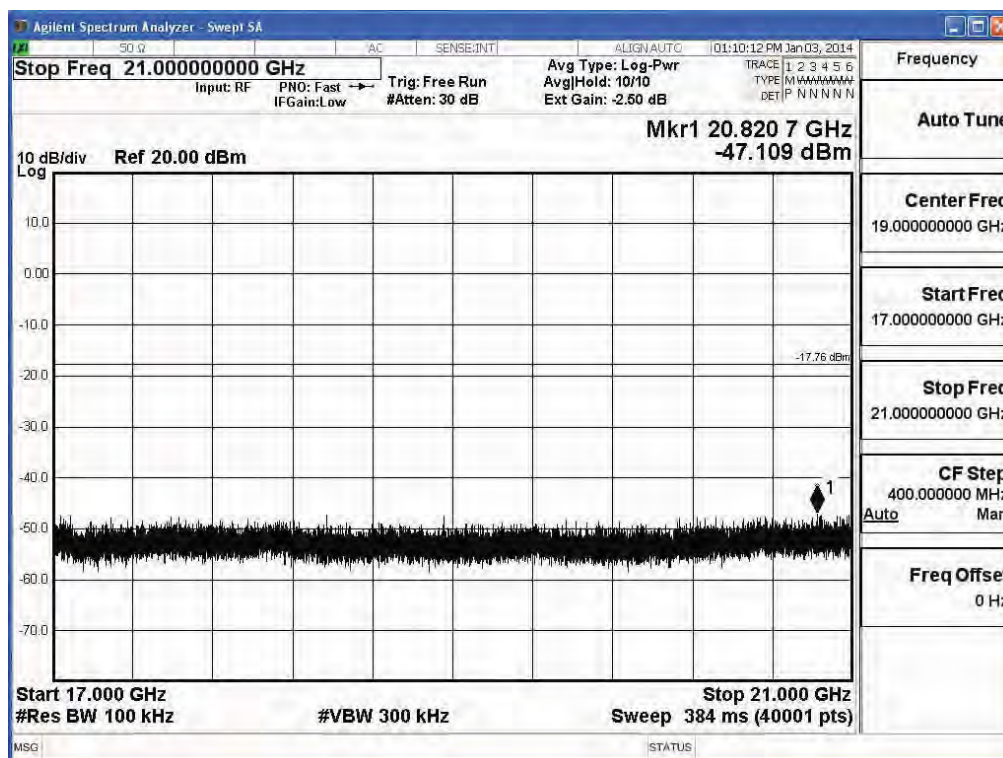
### 2437MHz (9GHz-13GHz) -802.11g (ANT 0)



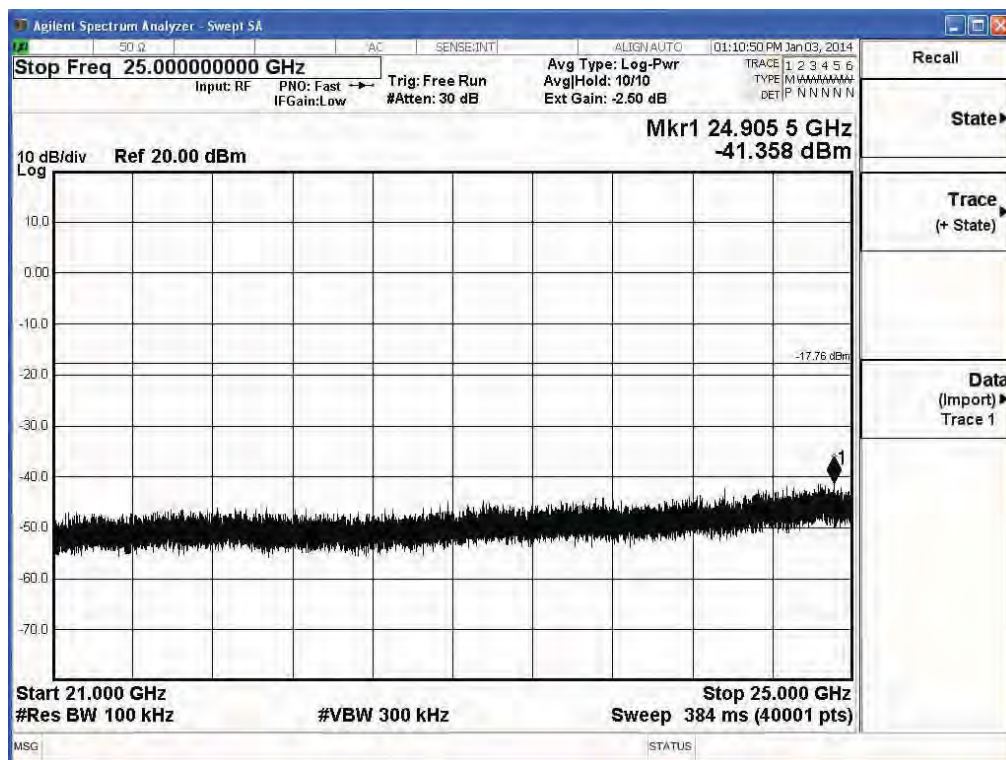
2437MHz (13GHz-17GHz) -802.11g (ANT 0)



2437MHz (17GHz-21GHz) -802.11g (ANT 0)

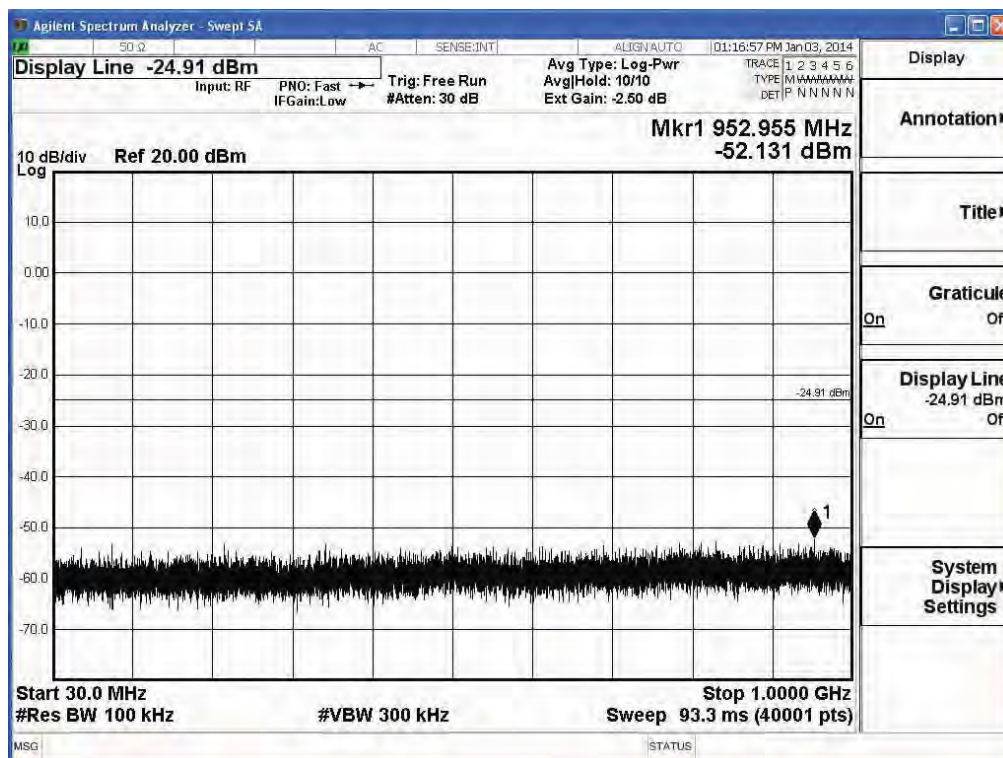


2437MHz (21GHz-25GHz) -802.11g (ANT 0)

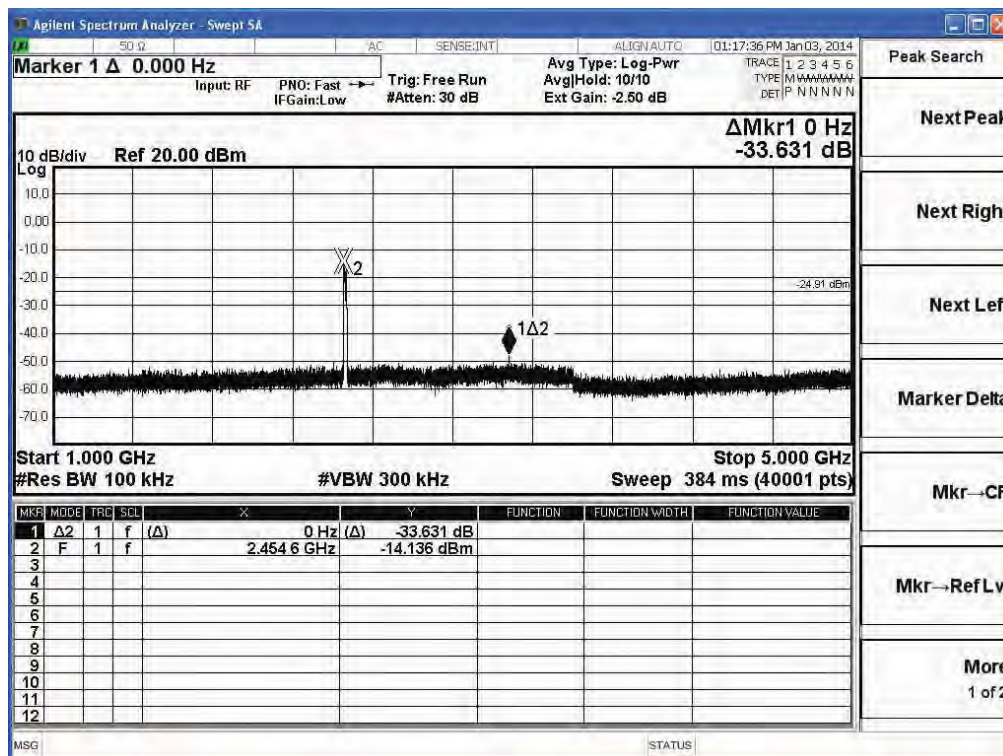




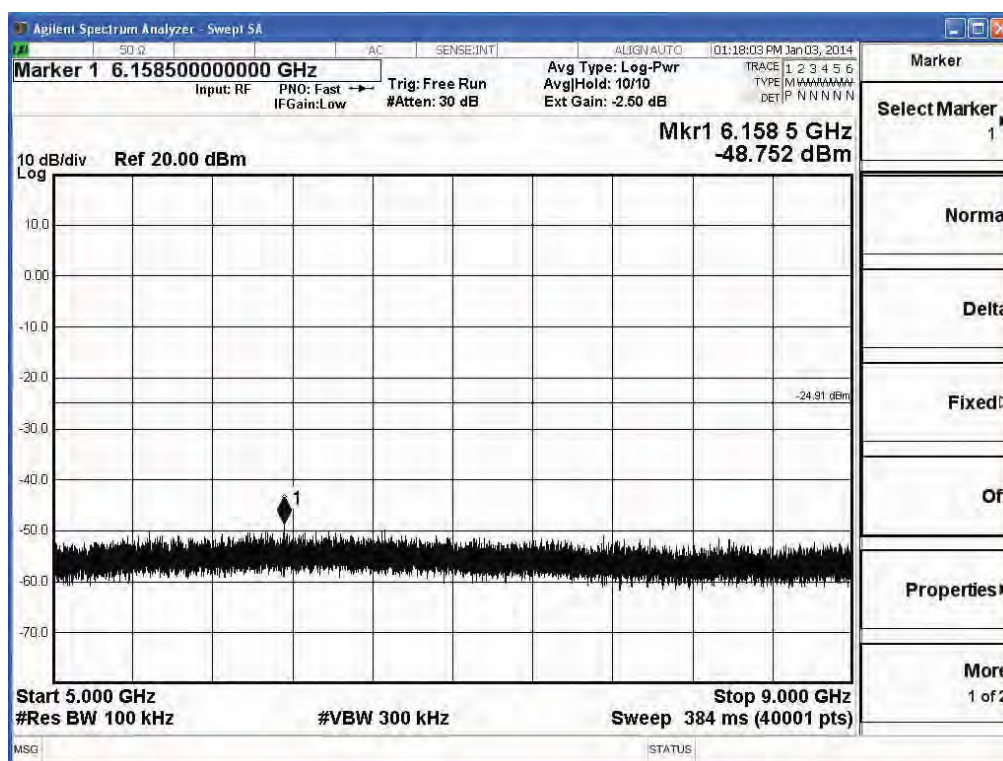
### 2462MHz (30MHz-1GHz)-802.11g (ANT 0)



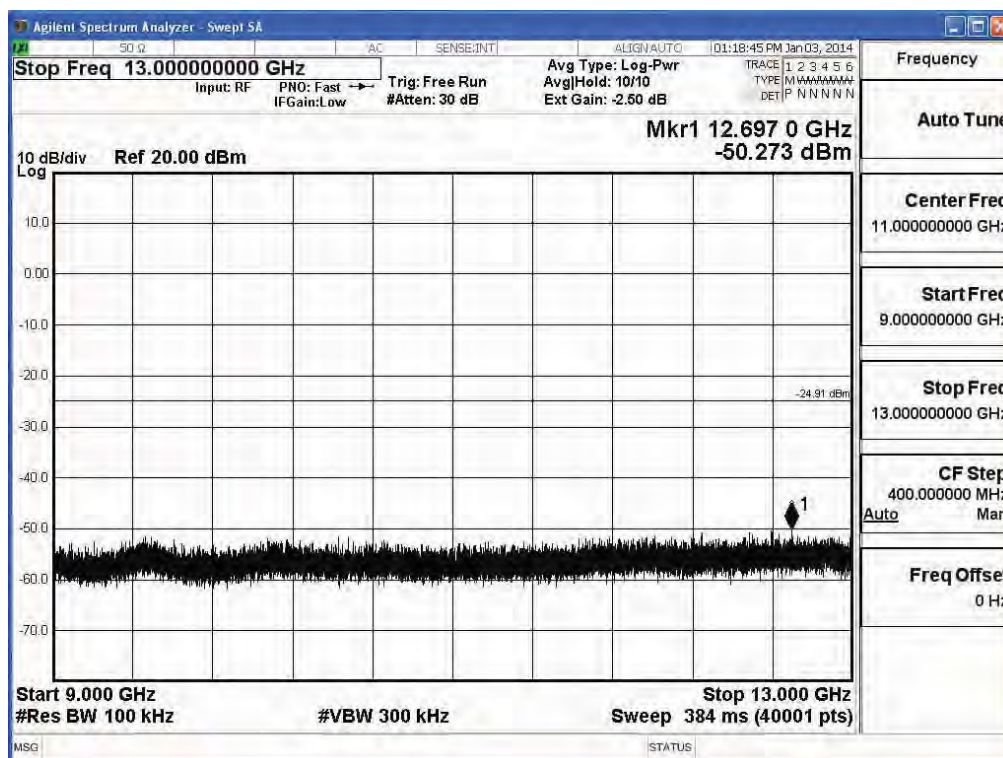
### 2462MHz (1GHz-5GHz) -802.11g (ANT 0)



### 2462MHz (5GHz-9GHz) -802.11g (ANT 0)

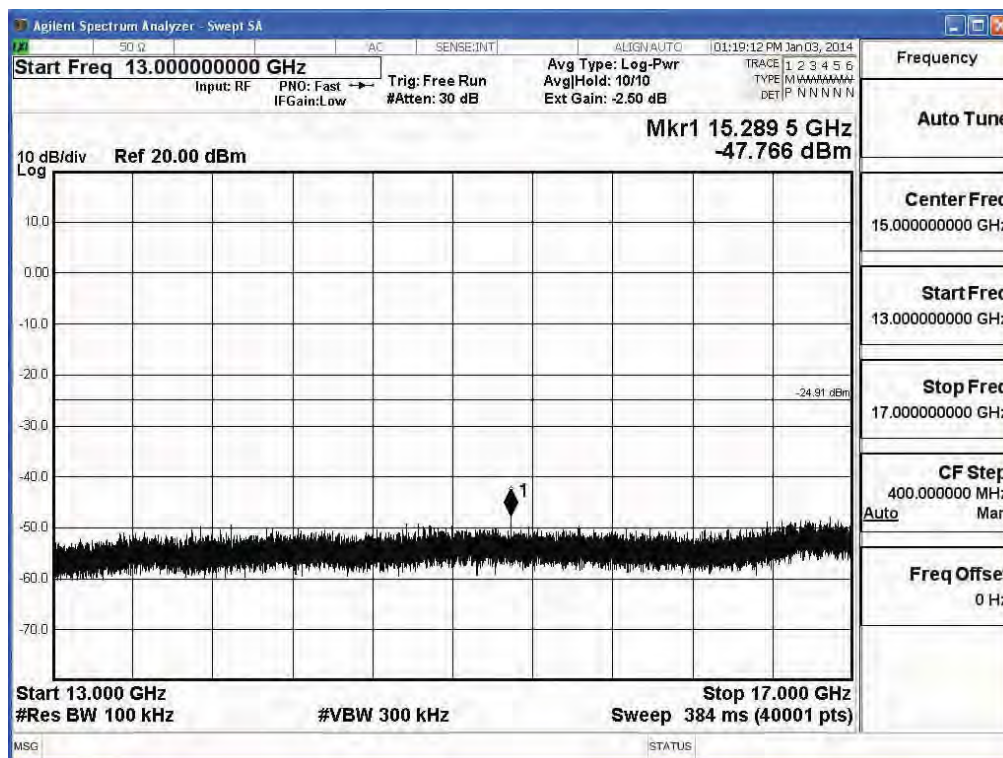


### 2462MHz (9GHz-13GHz) -802.11g (ANT 0)

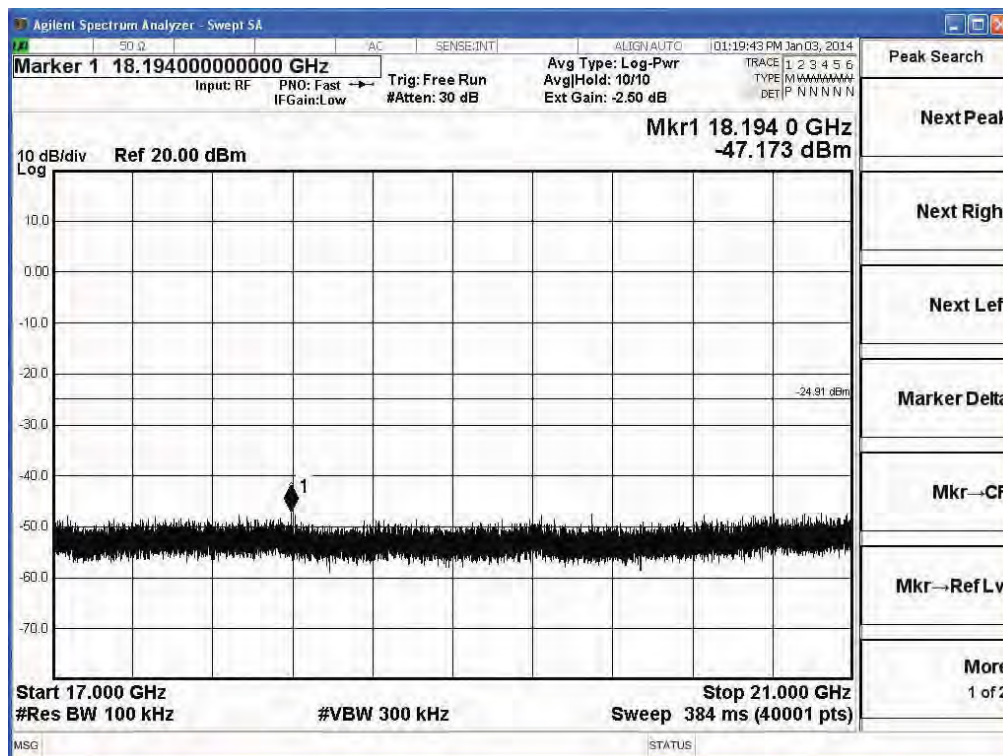




2462MHz (13GHz-17GHz) -802.11g (ANT 0)

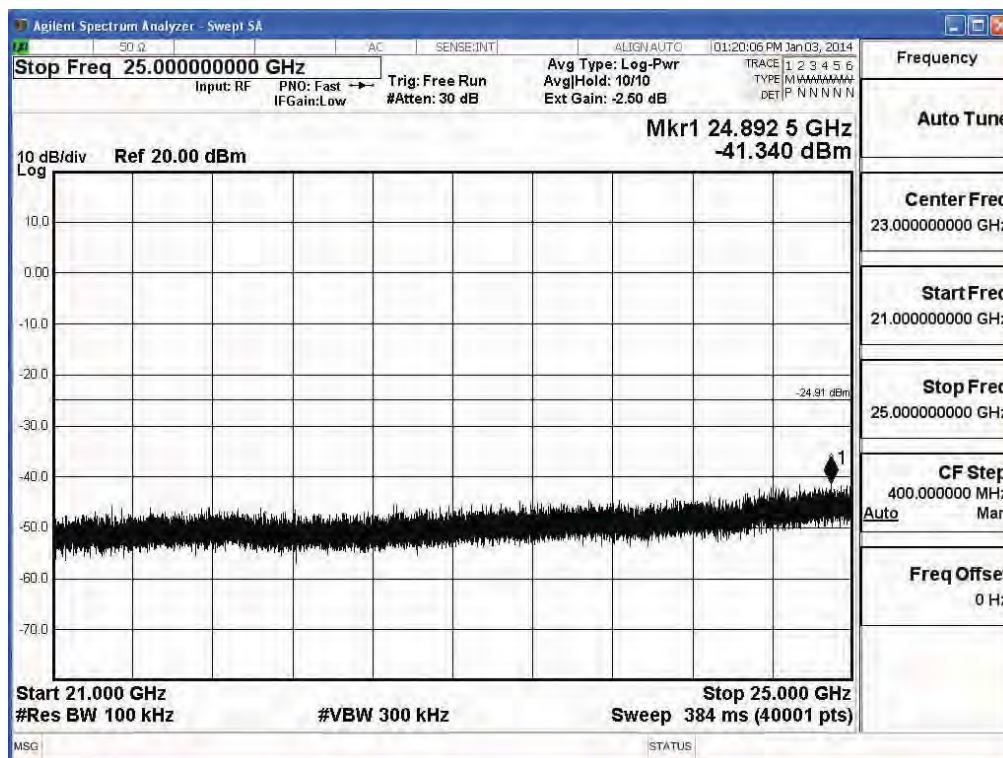


2462MHz (17GHz-21GHz) -802.11g (ANT 0)

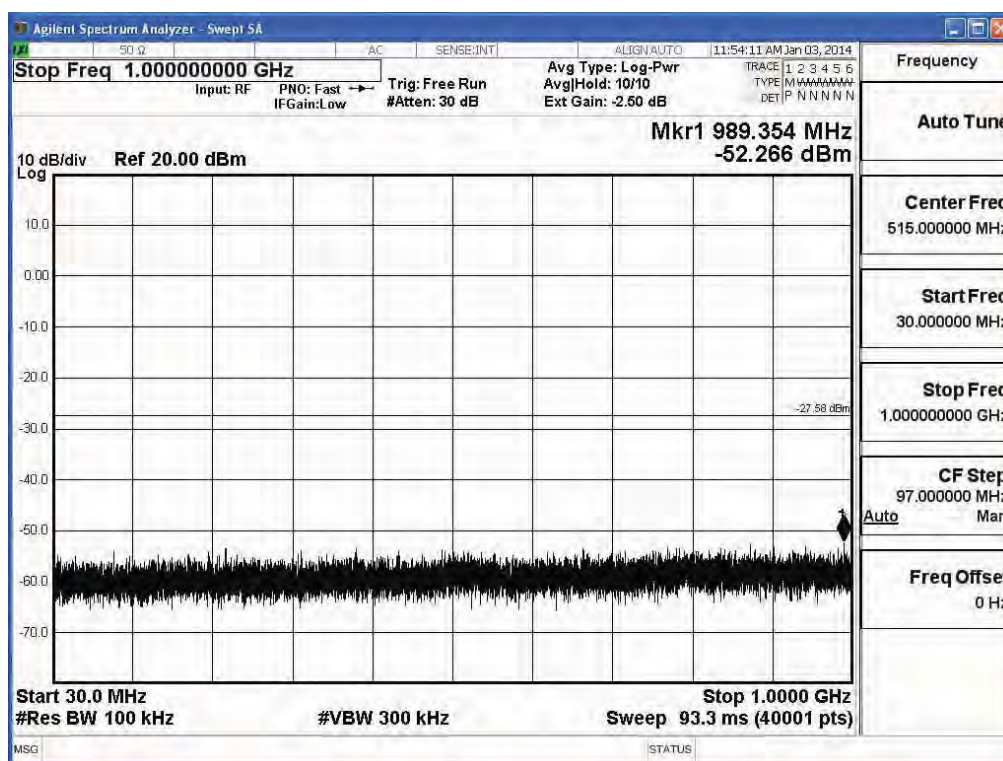




2462MHz (21GHz-25GHz) -802.11g (ANT 0)



### 2412MHz (30MHz-1GHz)-802.11g (ANT 1)



### 2412MHz (1GHz-5GHz) -802.11g (ANT 1)

