



Appendix for Testreport

Appendix A: DTS (6 dB) Bandwidth

In this document, the "DTS6dBBW" refers to the measured "DTS (6 dB) Bandwidth" value. In this Appendix, the "fc(DTS6dBBW)" refers to the centre of the measured "DTS6dBBW". The introduction of the "fc(DTS6dBBW)" is due to that other measurements use it as the spectrum analyzer setting.

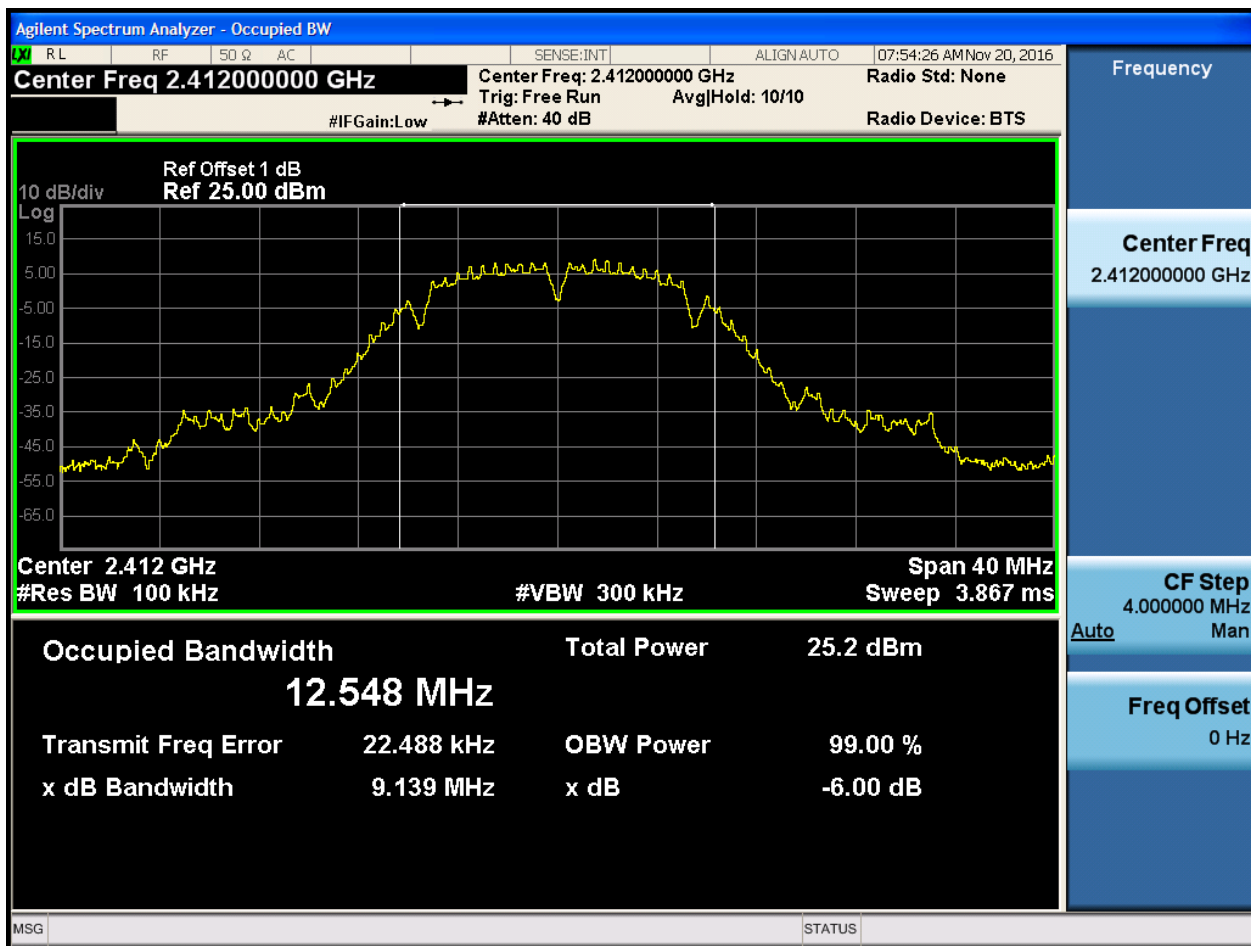
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	9.14	pass
11B	M	2437	Ant 1	9.60	pass
11B	H	2462	Ant 1	9.16	pass
11G	L	2412	Ant 1	15.18	pass
11G	M	2437	Ant 1	15.37	pass
11G	H	2462	Ant 1	15.08	pass
11N20	L	2412	Ant 1	15.16	pass
11N20	M	2437	Ant 1	15.18	pass
11N20	H	2462	Ant 1	15.11	pass
11N40	L	2422	Ant 1	35.24	pass
11N40	M	2437	Ant 1	35.24	pass
11N40	H	2452	Ant 1	35.26	pass

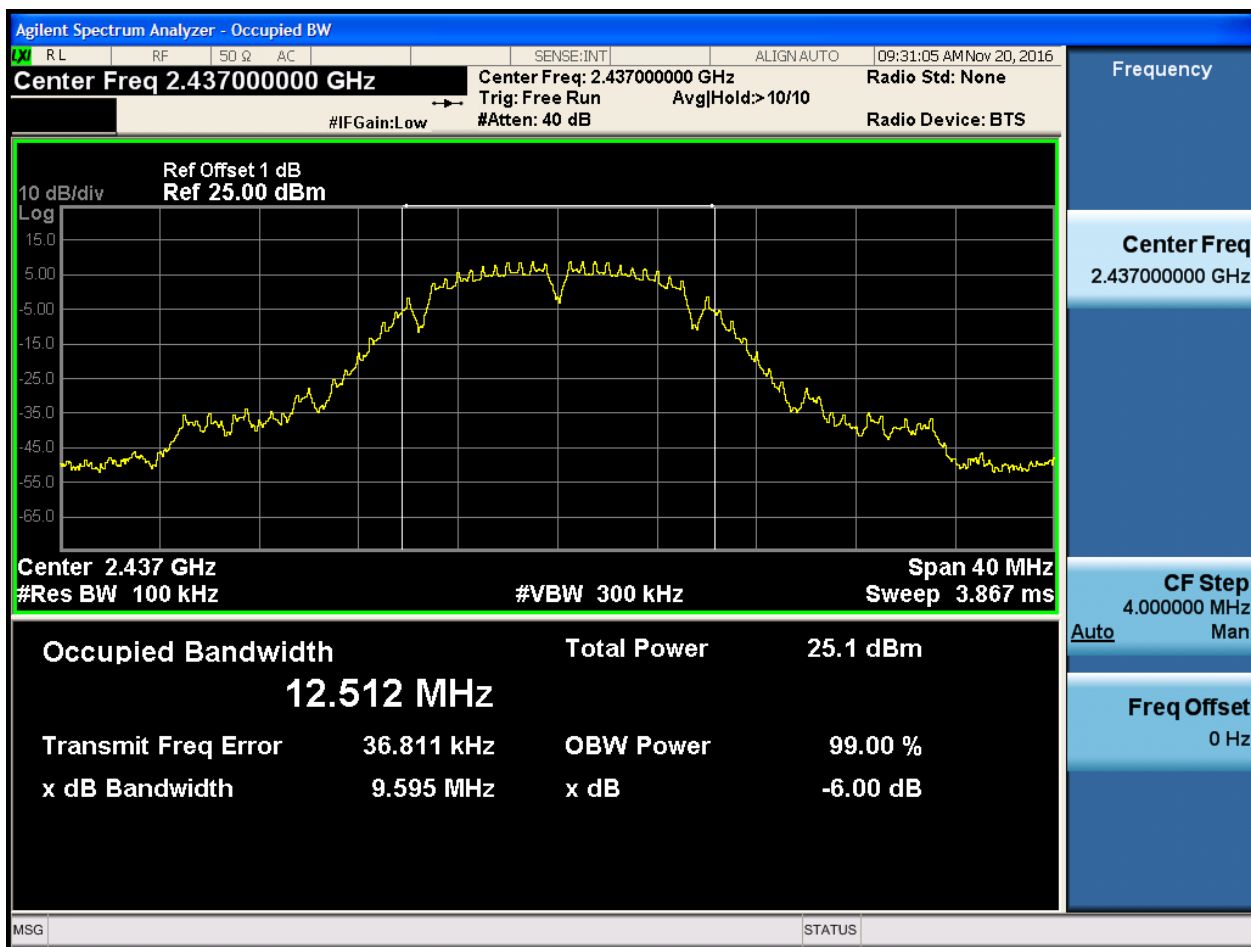
Part II - Test Plots

2.1 11B_L@Ant 1



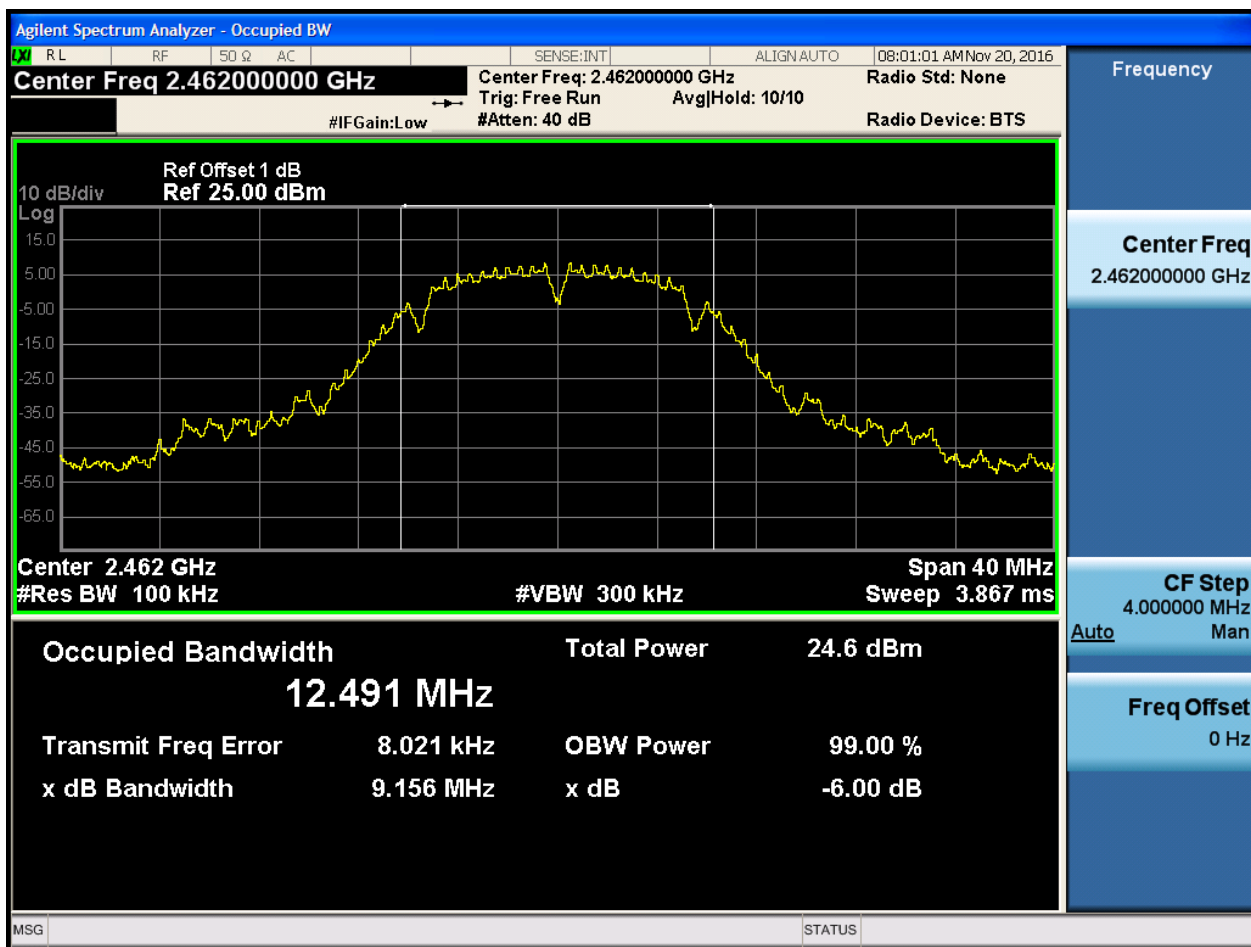


2.2 11B_M@Ant 1



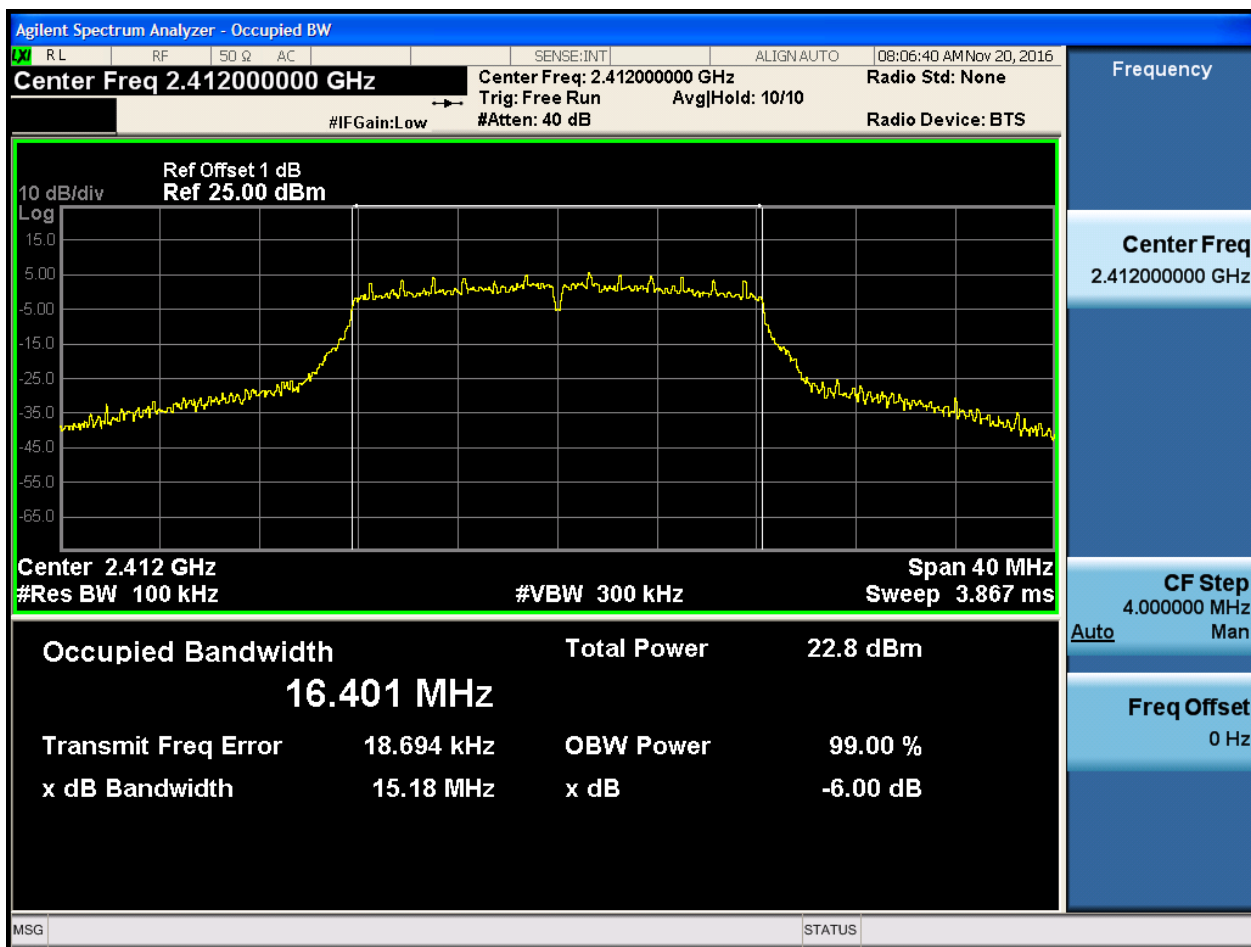


2.3 11B_H@Ant 1



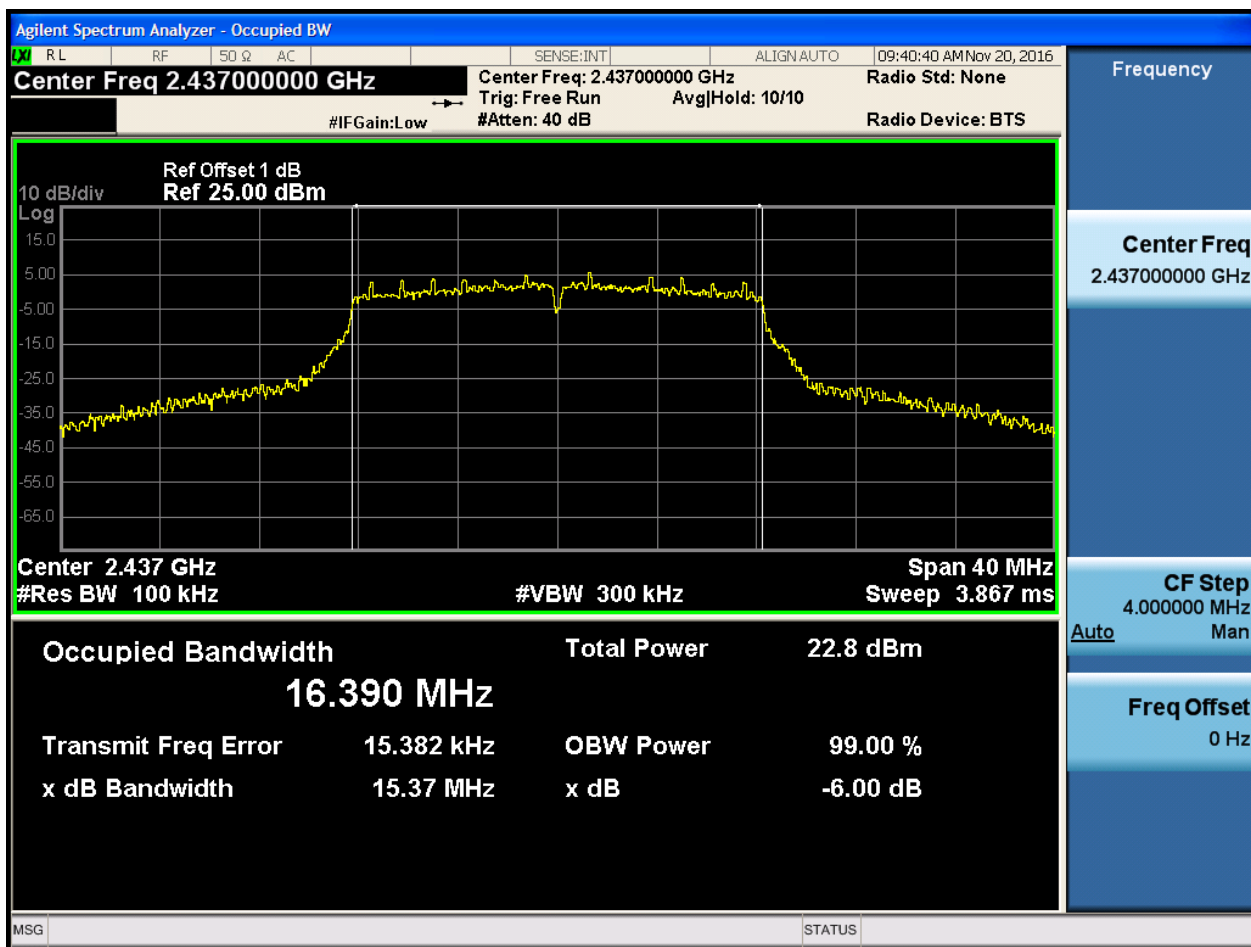


2.4 11G_L@Ant 1



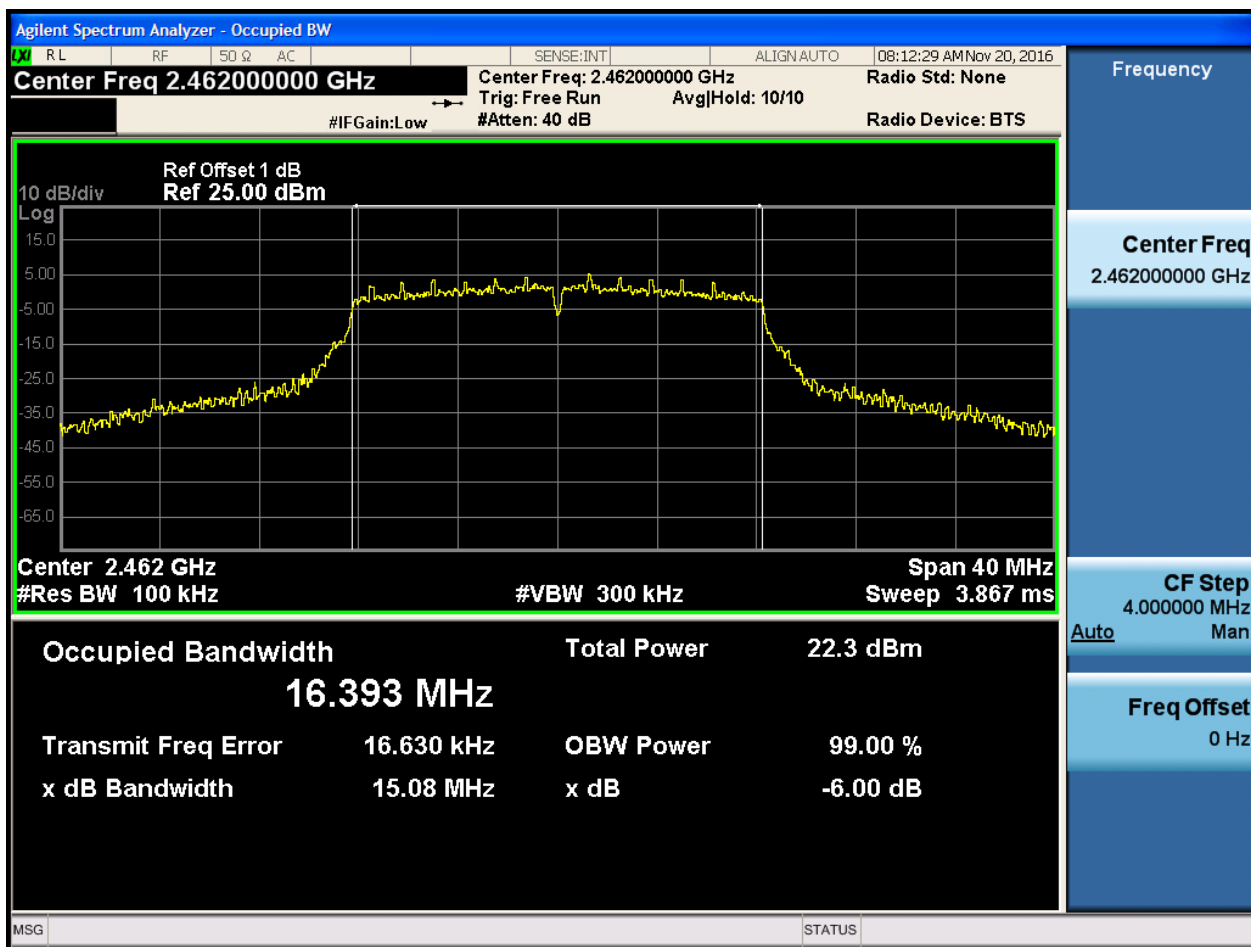


2.5 11G_M@Ant 1





2.6 11G_H@Ant 1





Agilent Spectrum Analyzer - Occupied BW

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 08:19:08 AM Nov 20, 2016

Center Freq 2.412000000 GHz Center Freq: 2.412000000 GHz Radio Std: None
 Trig: Free Run Avg/Hold: 10/10
 #IFGain: Low #Atten: 40 dB Radio Device: BTS

Ref Offset 1 dB
 Ref 25.00 dBm

10 dB/div
 Log

Center 2.412 GHz Span 40 MHz
 #Res BW 100 kHz #VBW 300 kHz Sweep 3.867 ms

Occupied Bandwidth		Total Power	
17.549 MHz		21.6 dBm	
Transmit Freq Error	21.785 kHz	OBW Power	99.00 %
x dB Bandwidth	15.16 MHz	x dB	-6.00 dB

Frequency

Center Freq
 2.412000000 GHz

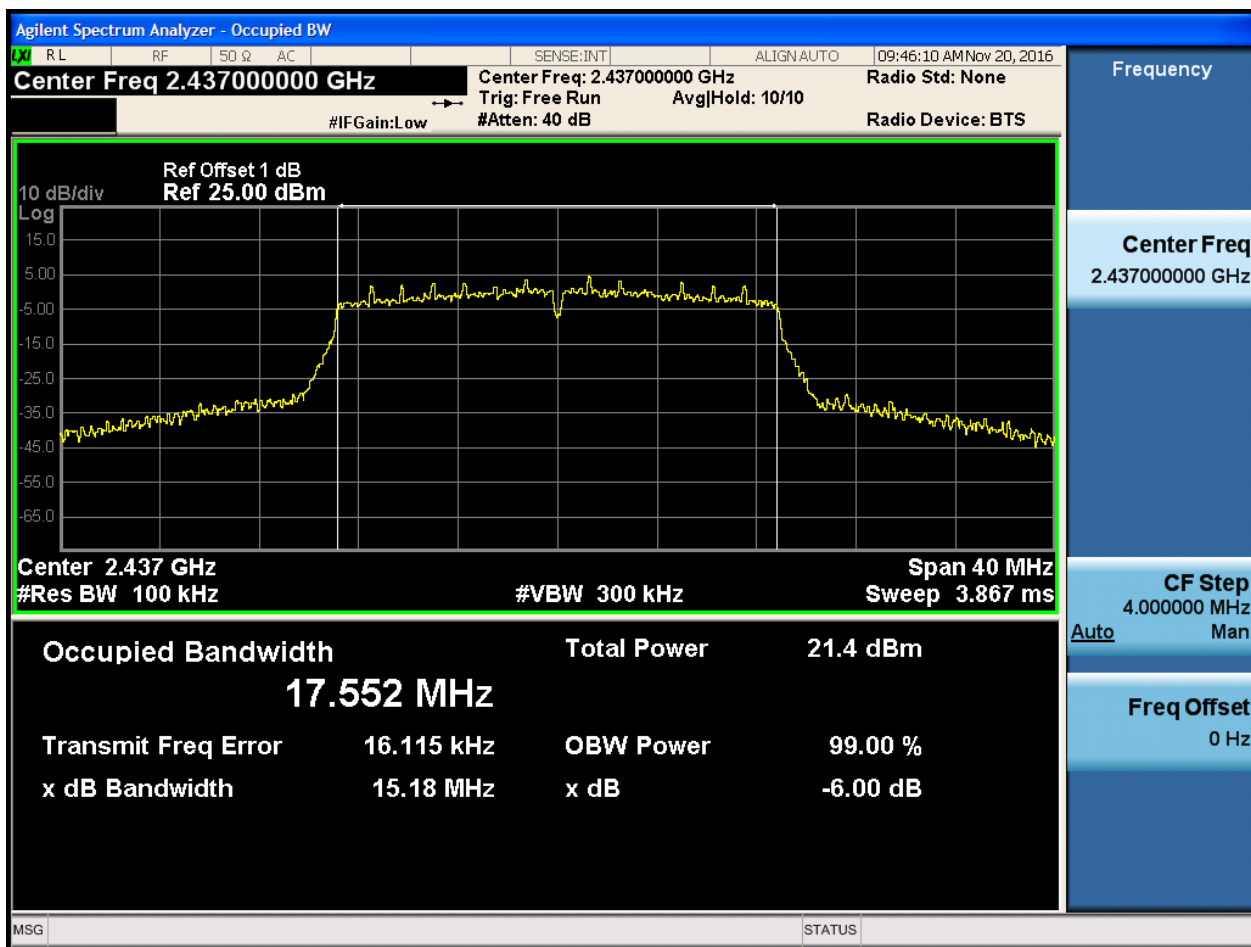
CF Step
 4.000000 MHz
 Auto Man

Freq Offset
 0 Hz

MSG STATUS

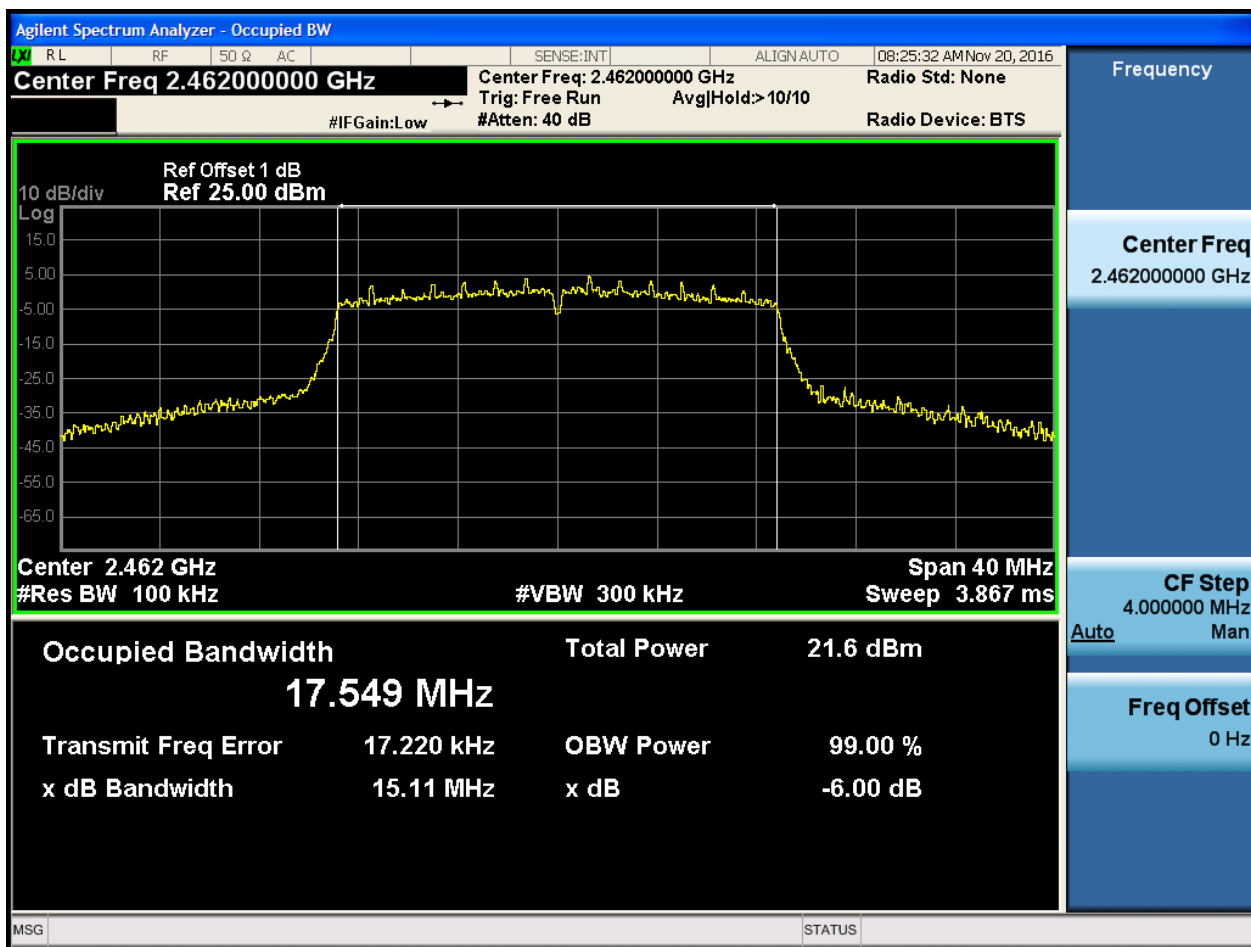


2.8 11N20_M@Ant 1



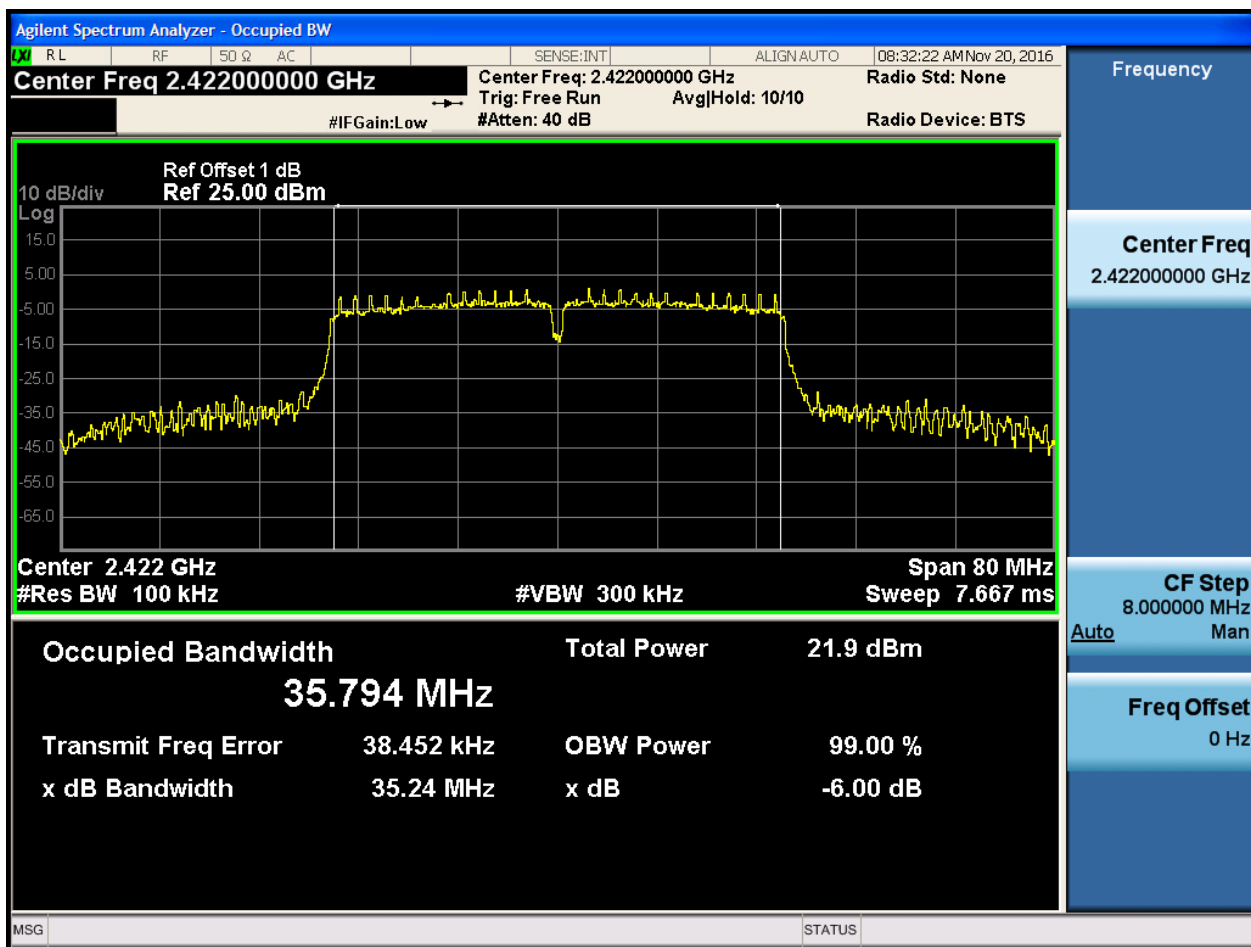


2.9 11N20_H@Ant 1



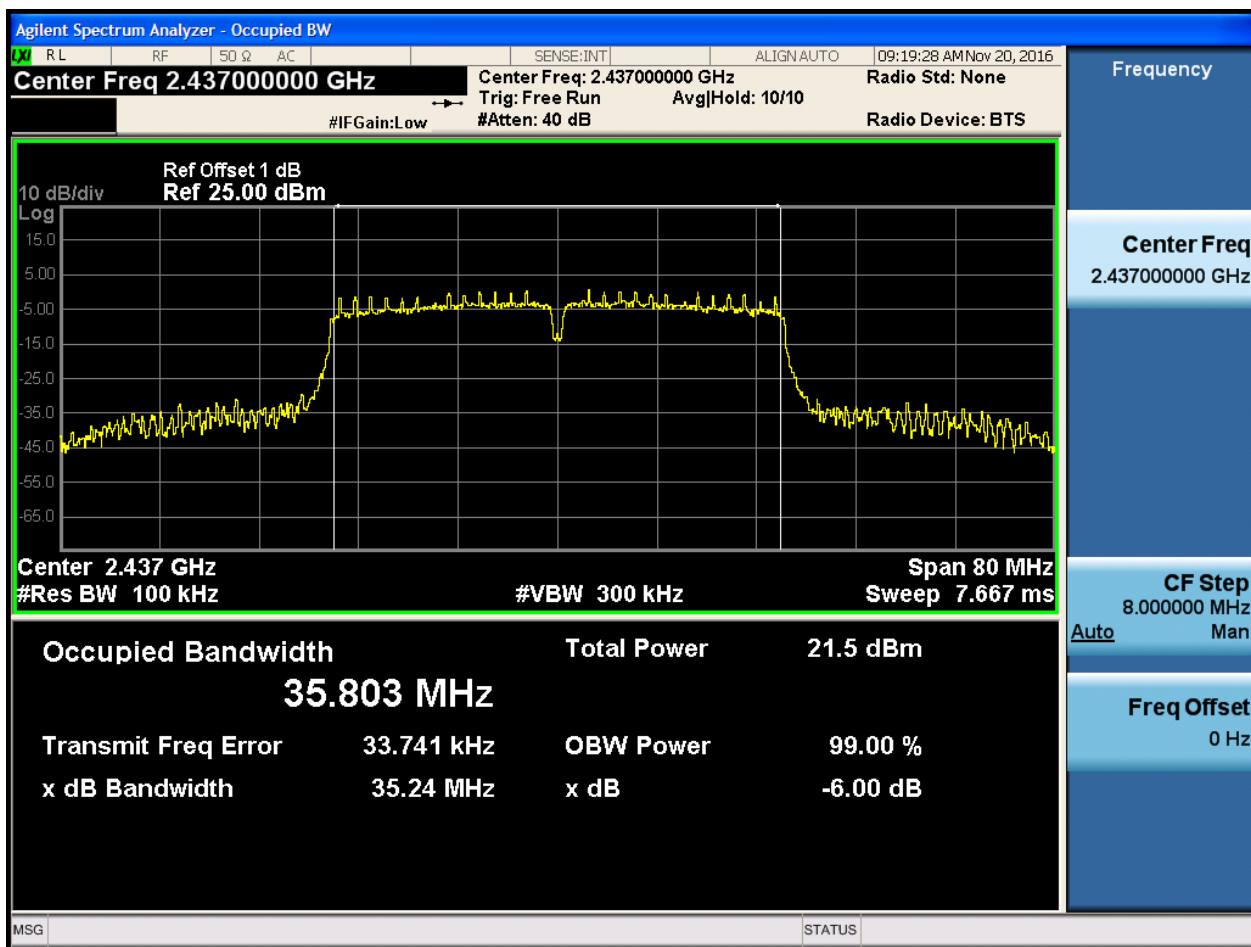


2.10 11N40_L@Ant 1





2.11 11N40_M@Ant 1





Agilent Spectrum Analyzer - Occupied BW

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 08:46:25 AM Nov 20, 2016

Center Freq 2.452000000 GHz Center Freq: 2.452000000 GHz Radio Std: None
Trig: Free Run Avg/Hold: 10/10
#IFGain: Low #Atten: 40 dB Radio Device: BTS

Ref Offset 1 dB
Ref 25.00 dBm

10 dB/div
Log

Center 2.452 GHz Span 80 MHz
#Res BW 100 kHz #VBW 300 kHz Sweep 7.667 ms

Occupied Bandwidth		Total Power	
35.830 MHz		21.4 dBm	
Transmit Freq Error	15.553 kHz	OBW Power	99.00 %
x dB Bandwidth	35.26 MHz	x dB	-6.00 dB

Frequency

Center Freq
2.452000000 GHz

CF Step
8.000000 MHz
Auto Man

Freq Offset
0 Hz

MSG STATUS

Appendix B: Occupied Bandwidth

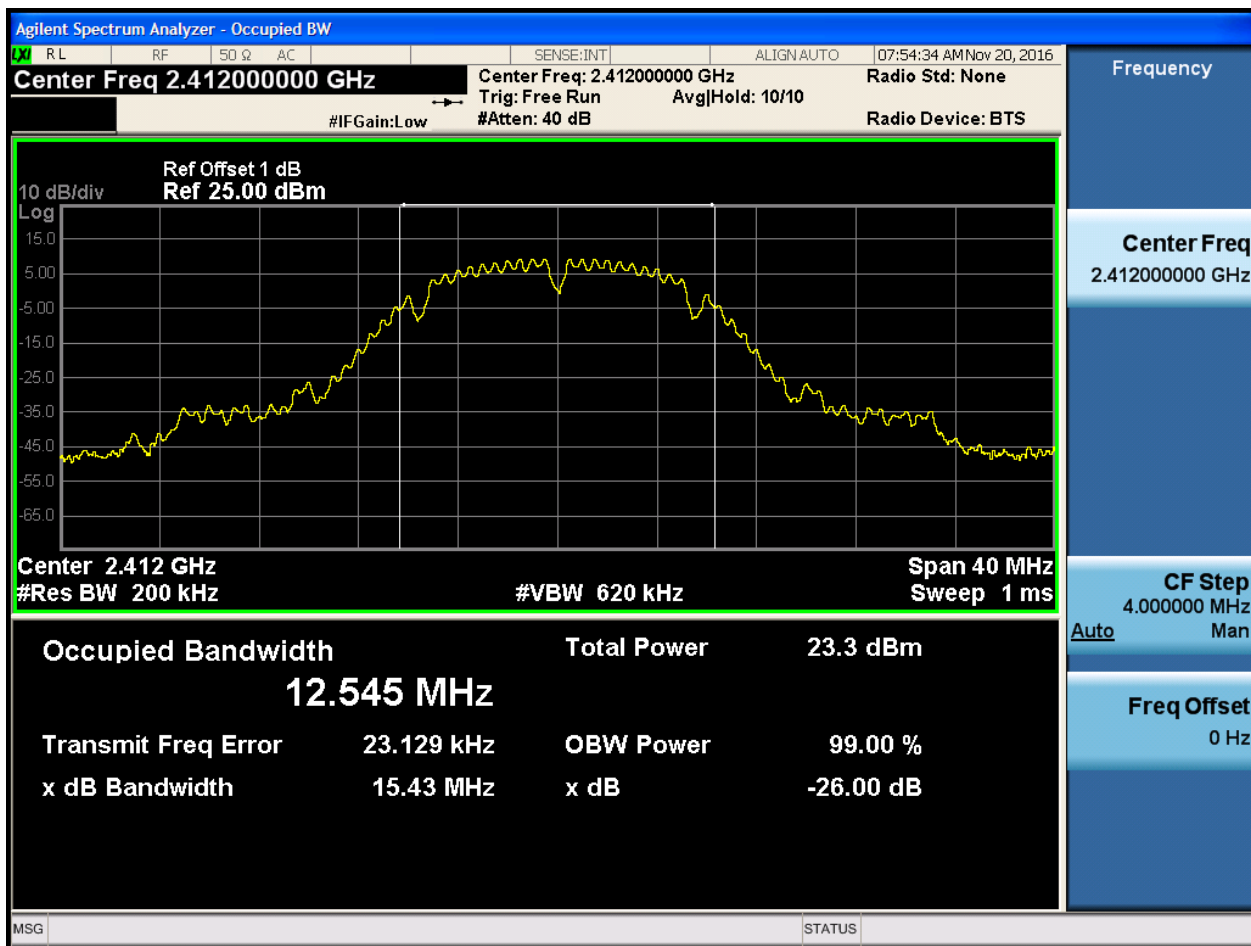
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	12.55	pass
11B	M	2437	Ant 1	12.52	pass
11B	H	2462	Ant 1	12.48	pass
11G	L	2412	Ant 1	16.53	pass
11G	M	2437	Ant 1	16.56	pass
11G	H	2462	Ant 1	16.56	pass
11N20	L	2412	Ant 1	17.58	pass
11N20	M	2437	Ant 1	17.58	pass
11N20	H	2462	Ant 1	17.59	pass
11N40	L	2422	Ant 1	36.02	pass
11N40	M	2437	Ant 1	35.99	pass
11N40	H	2452	Ant 1	36.04	pass

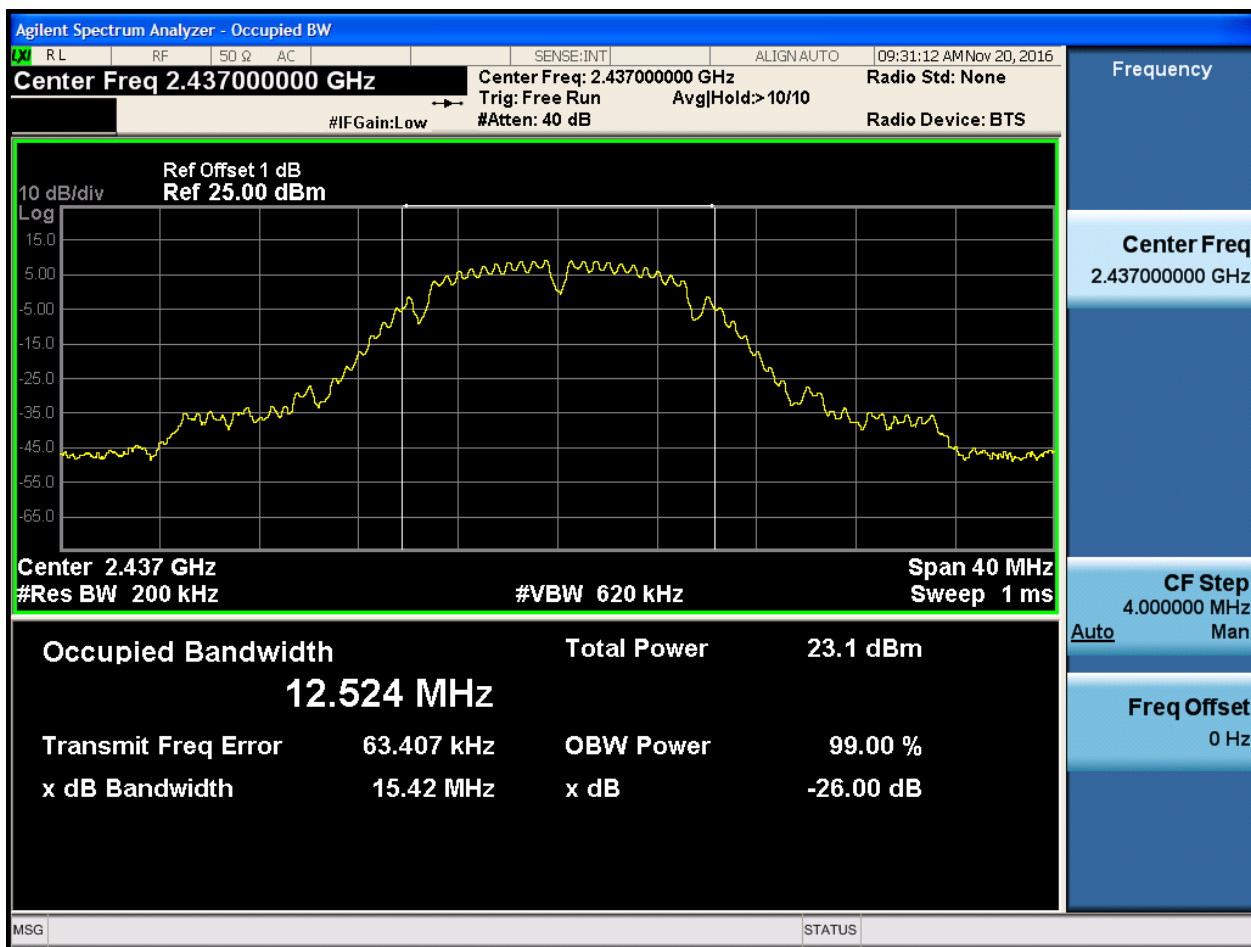
Part II - Test Plots

2.1 11B_L@Ant 1



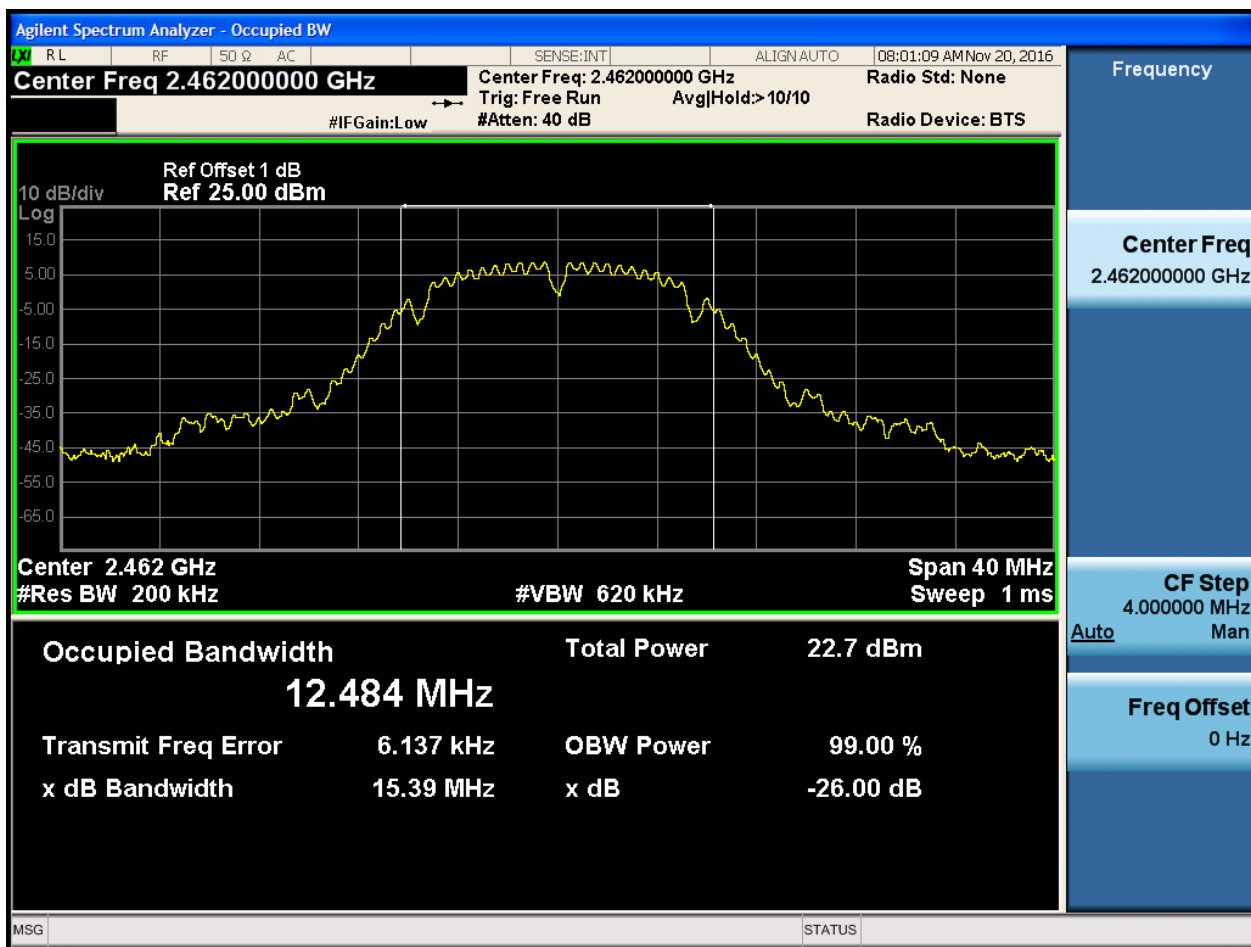


2.2 11B_M@Ant 1



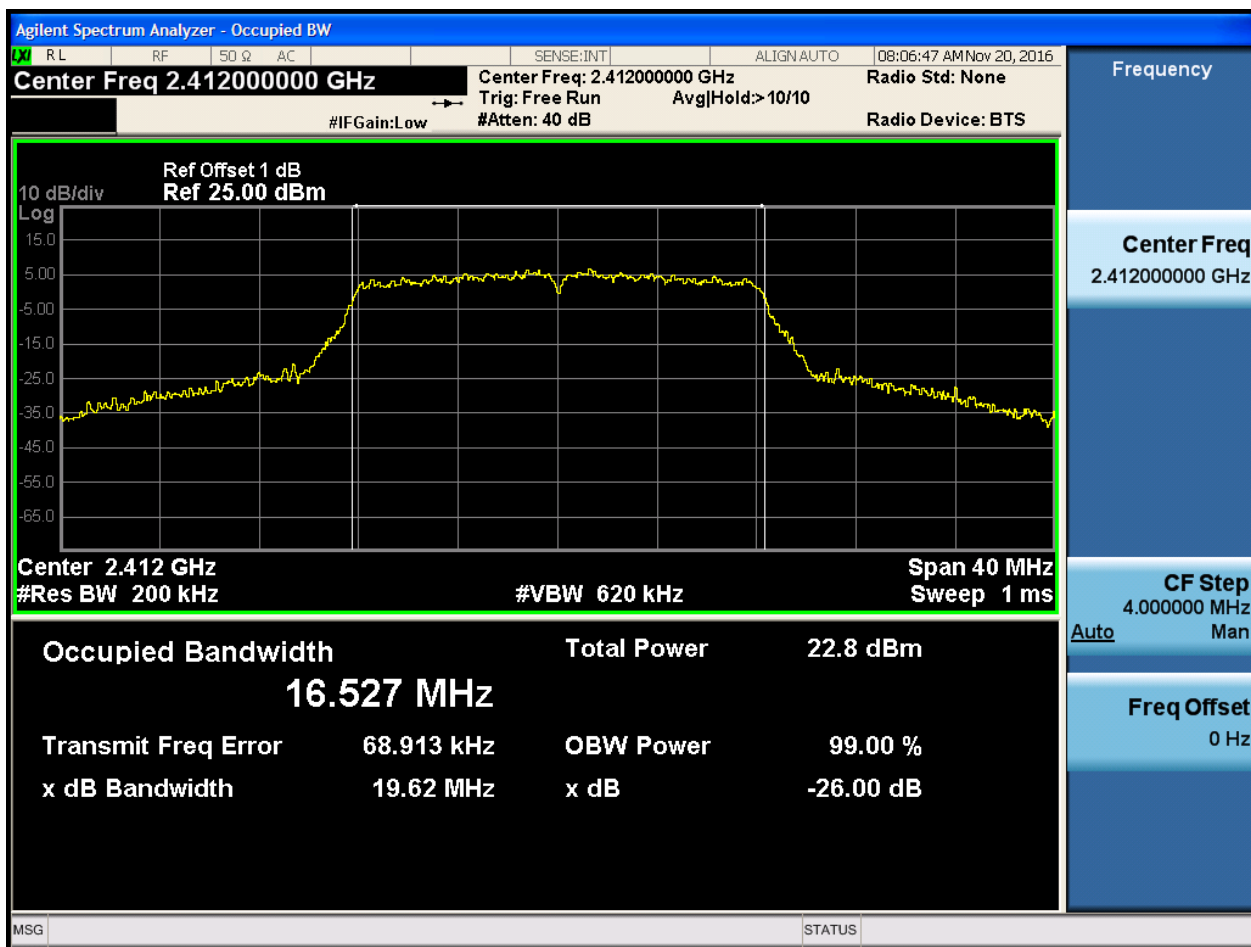


2.3 11B_H@Ant 1



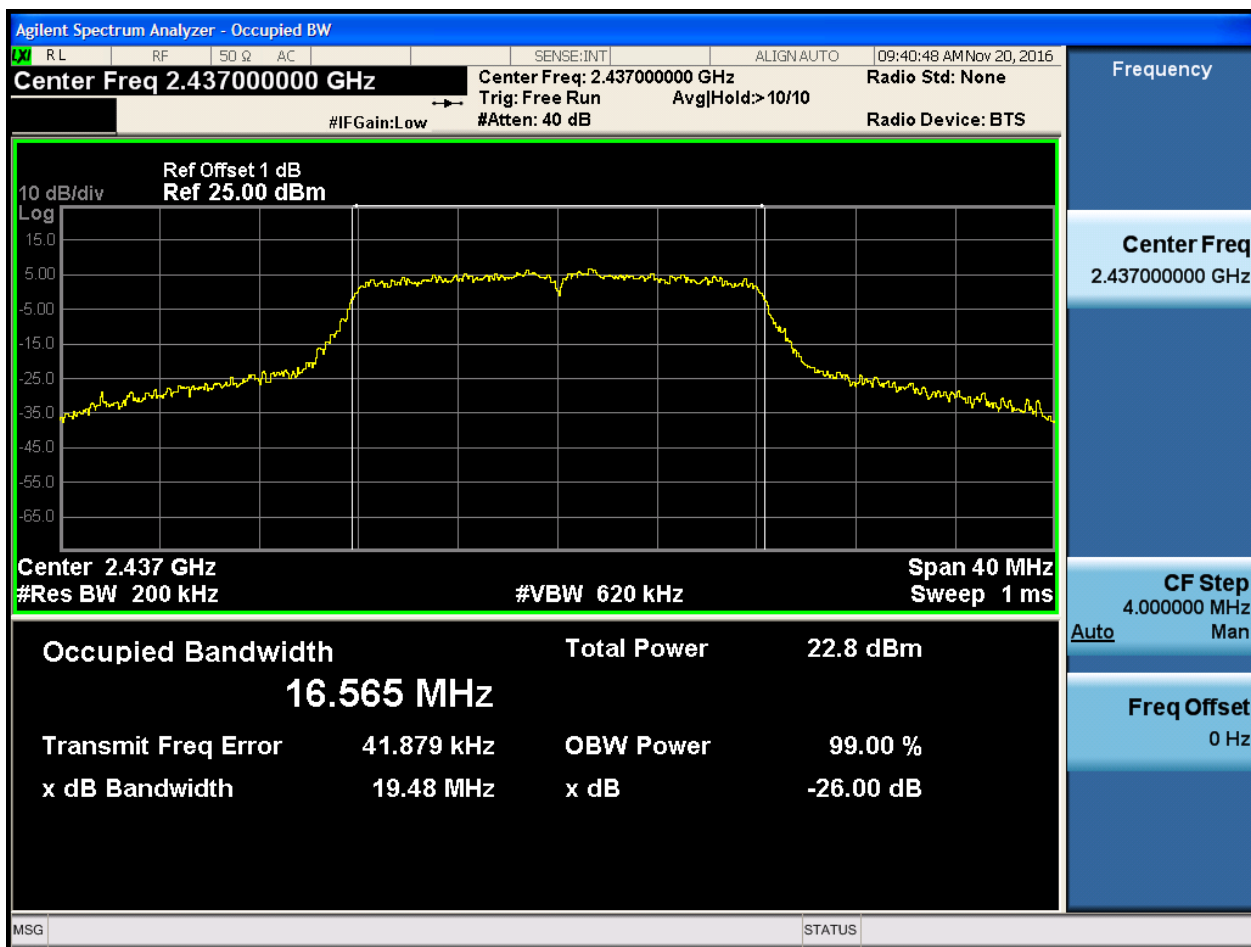


2.4 11G_L@Ant 1



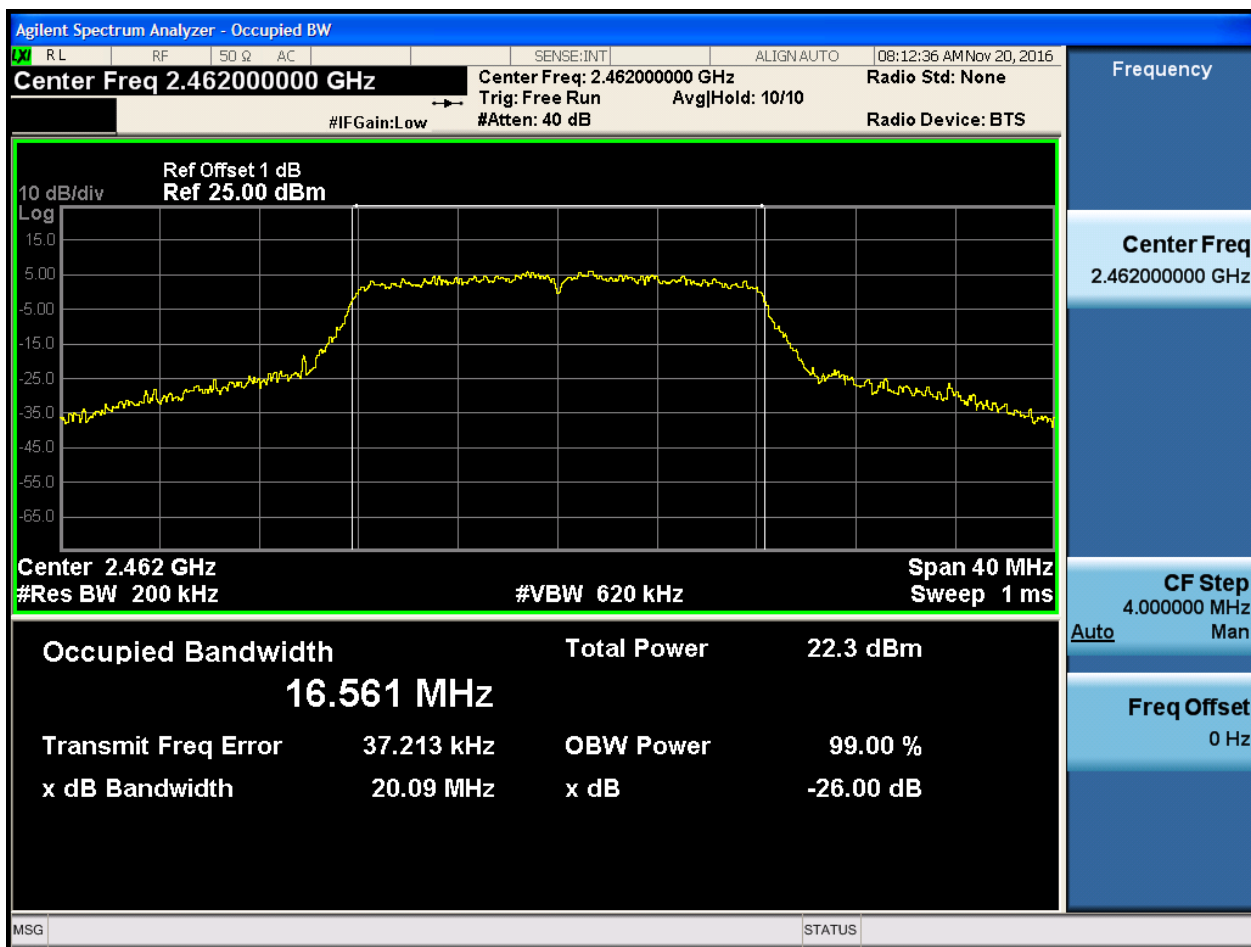


2.5 11G_M@Ant 1



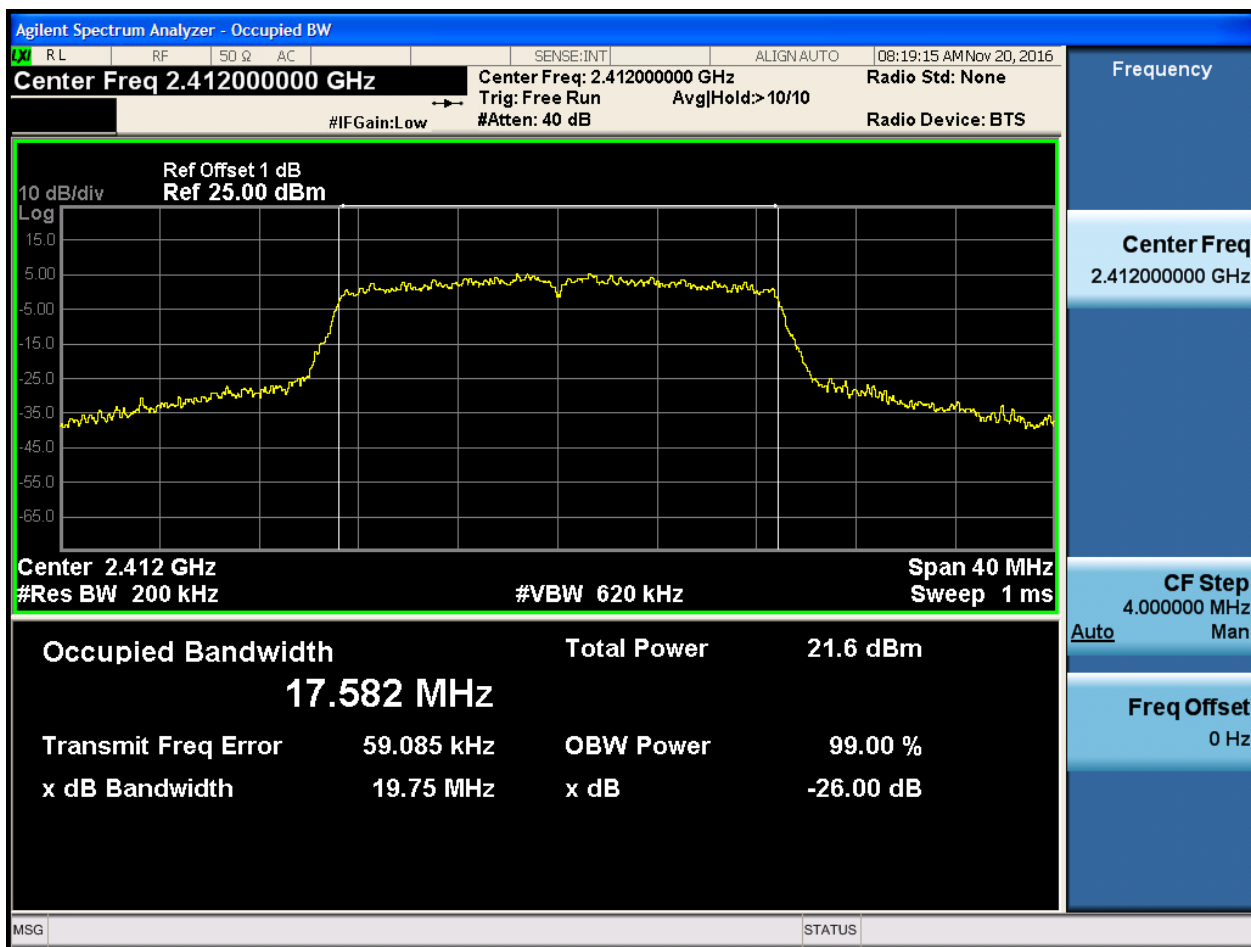


2.6 11G_H@Ant 1



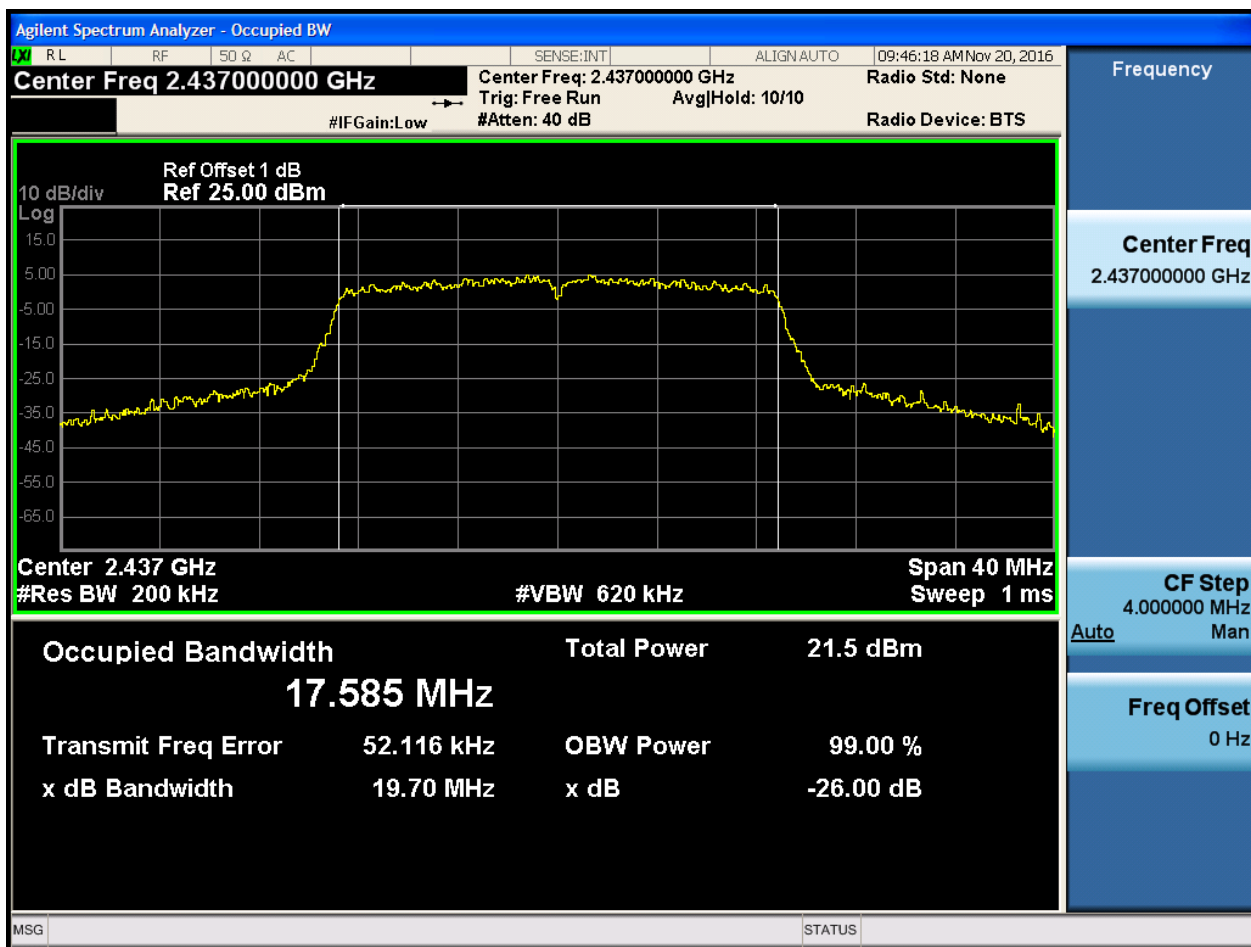


2.7 11N20_L@Ant 1



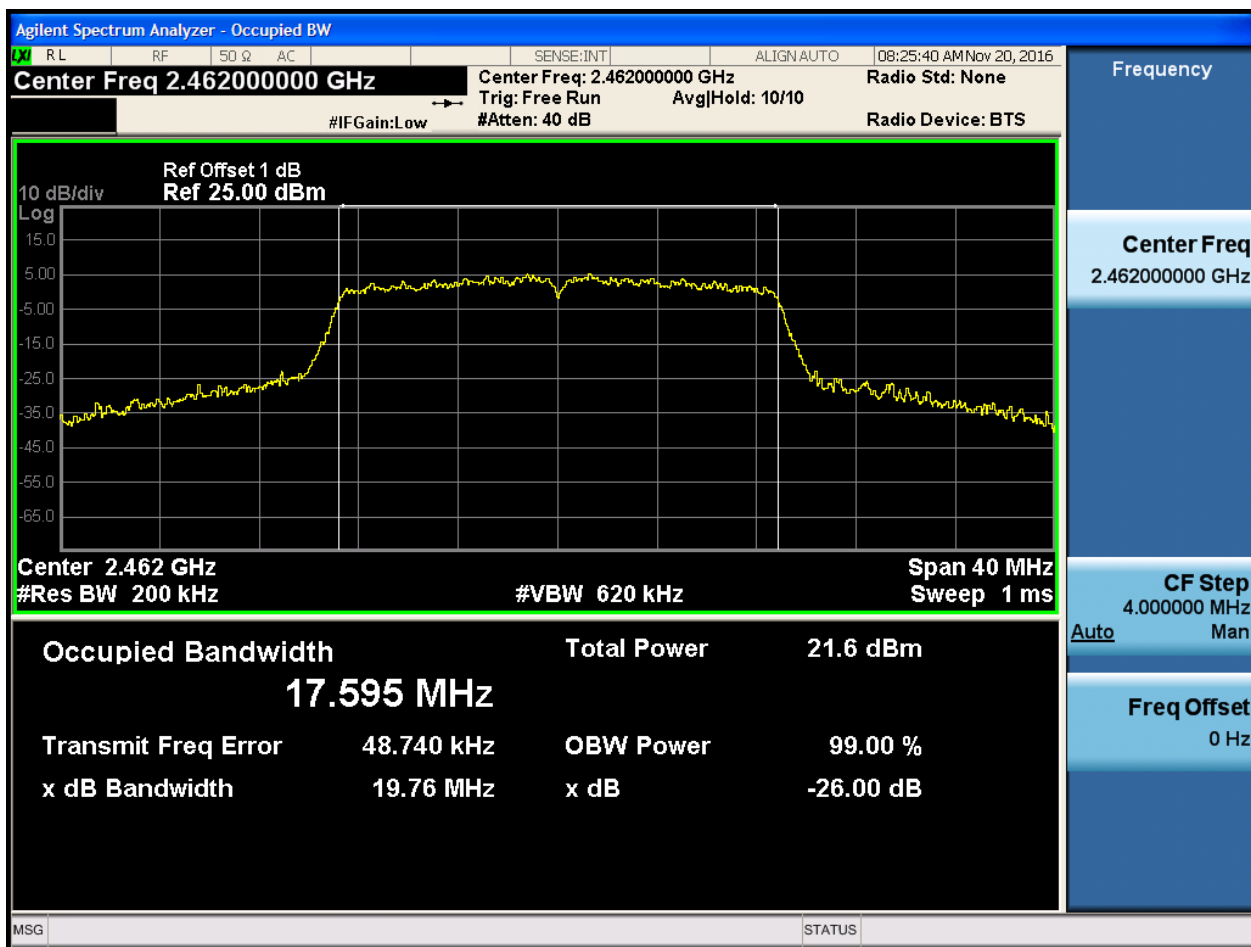


2.8 11N20_M@Ant 1



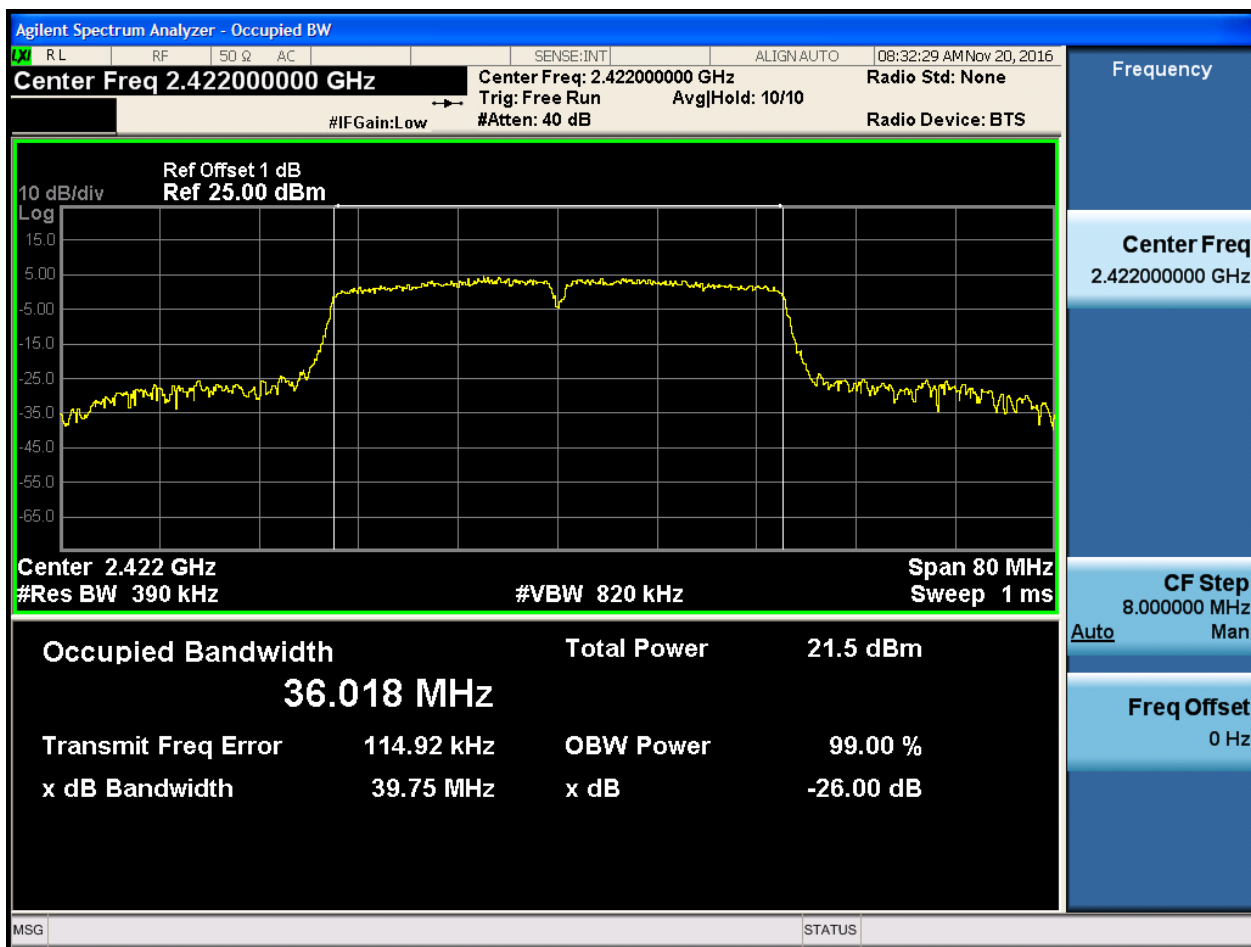


2.9 11N20_H@Ant 1



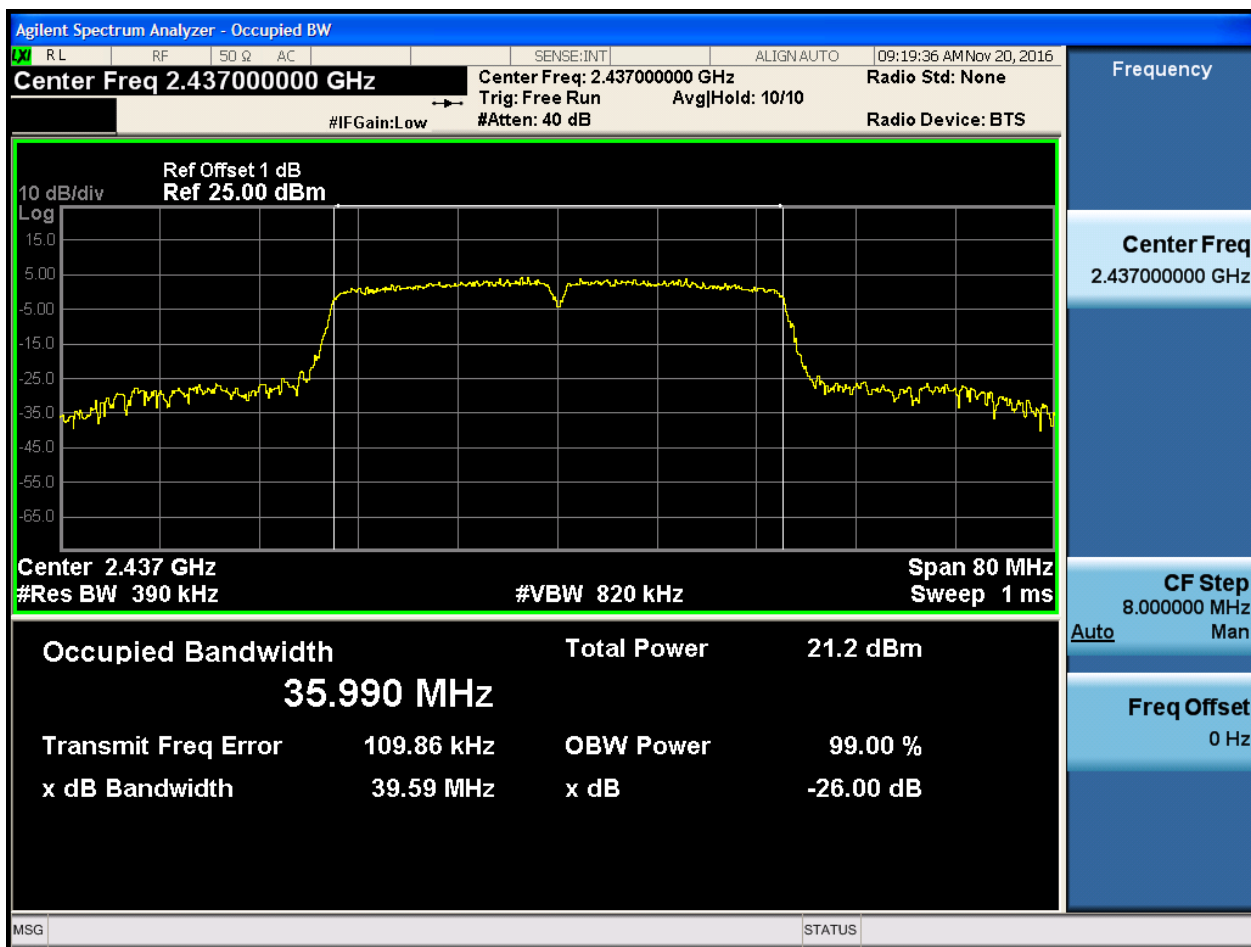


2.10 11N40_L@Ant 1



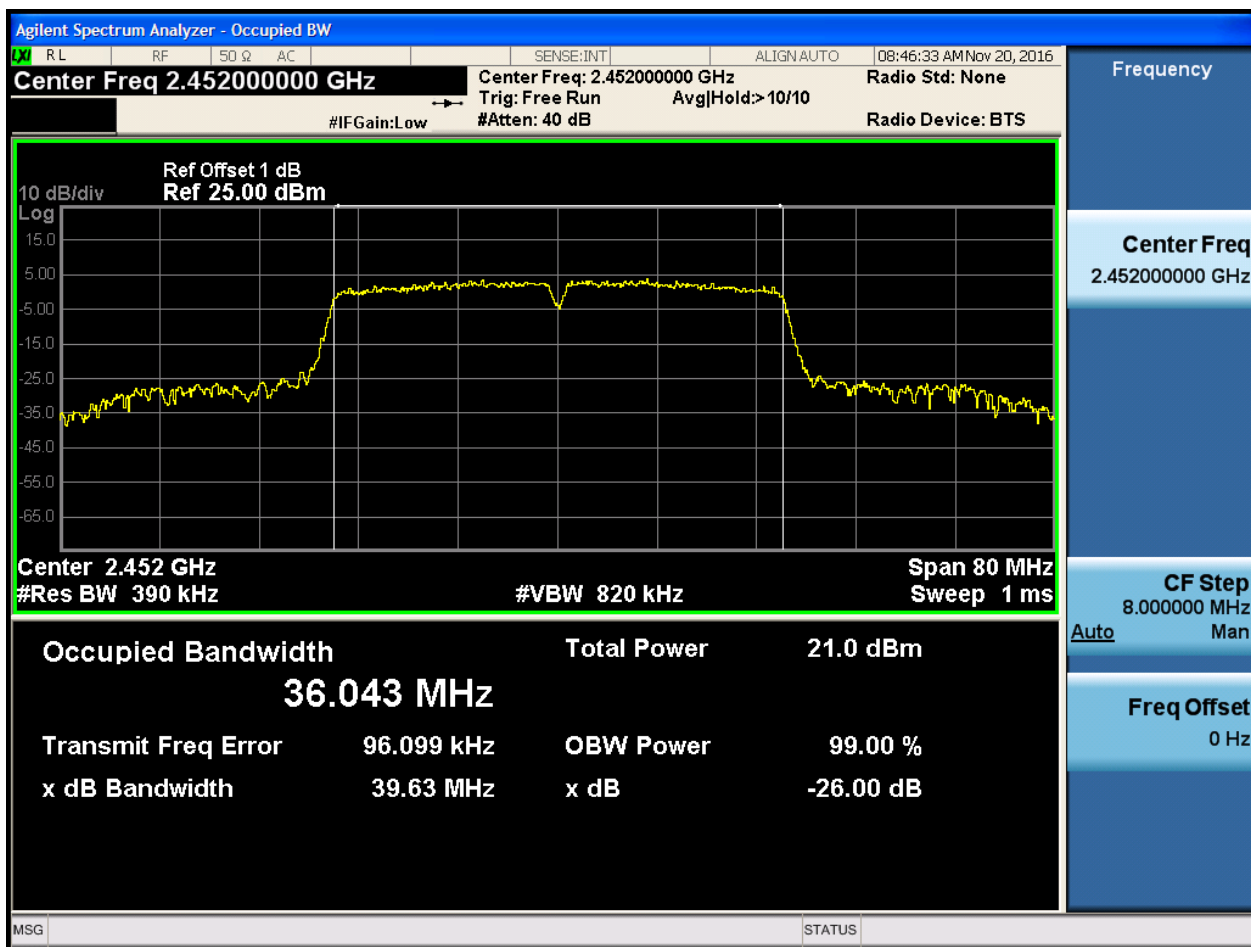


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix C: Duty Cycle

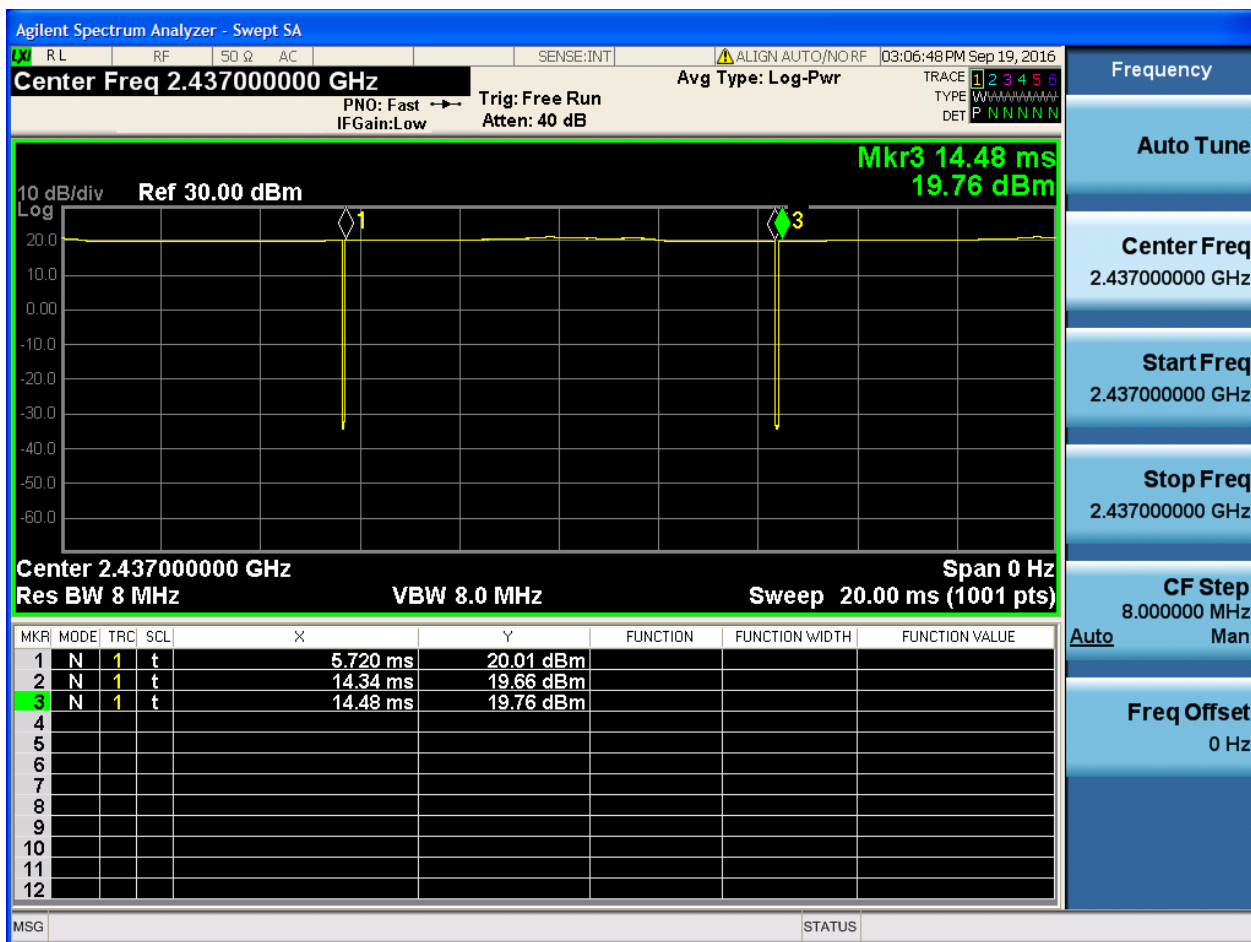
Part I - Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1,CH6,CH11	99.5
11G	Ant 1: CH1,CH6,CH11	97.4
11N_20M_SISO	Ant 1: CH1,CH6,CH11	97.3
11N_40M_SISO	Ant 1: CH3,CH6,CH9	94.9



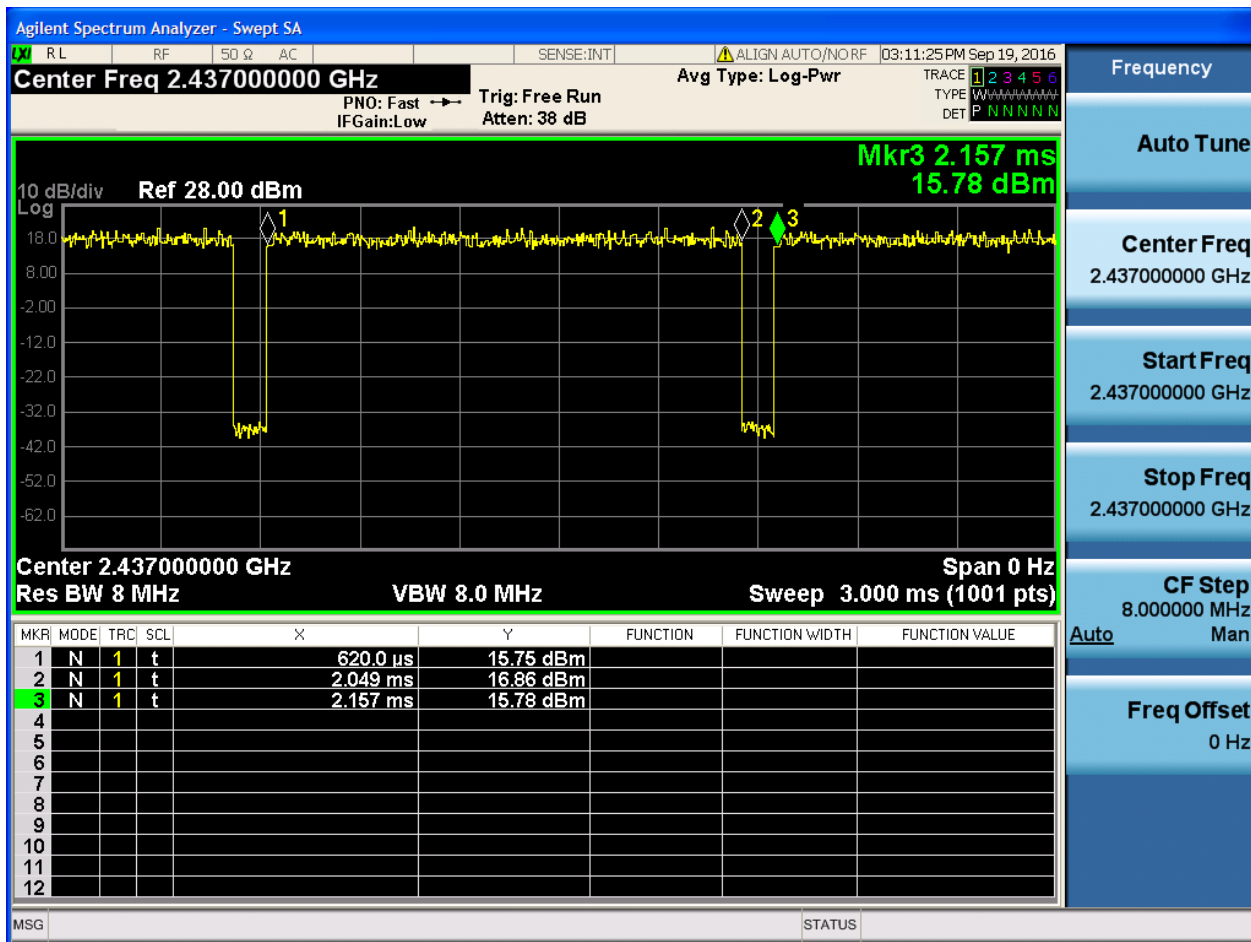
Part II - Test Plots

2.1 11B





2.2 11G





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO/NORF 03:36:38 PM Sep 19, 2016

Center Freq 2.437000000 GHz Avg Type: Log-Pwr

PNO: Fast Trig: Free Run
IFGain:Low Atten: 38 dB

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

10 dB/div Ref 27.00 dBm

Log

Mkr3 2.845 ms
15.07 dBm

Center 2.437000000 GHz Span 0 Hz
Res BW 8 MHz VBW 8.0 MHz Sweep 5.000 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t	1.395 ms	14.81 dBm			
2	N	1	t	2.715 ms	16.86 dBm			
3	N	1	t	2.845 ms	15.07 dBm			
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.437000000 GHz

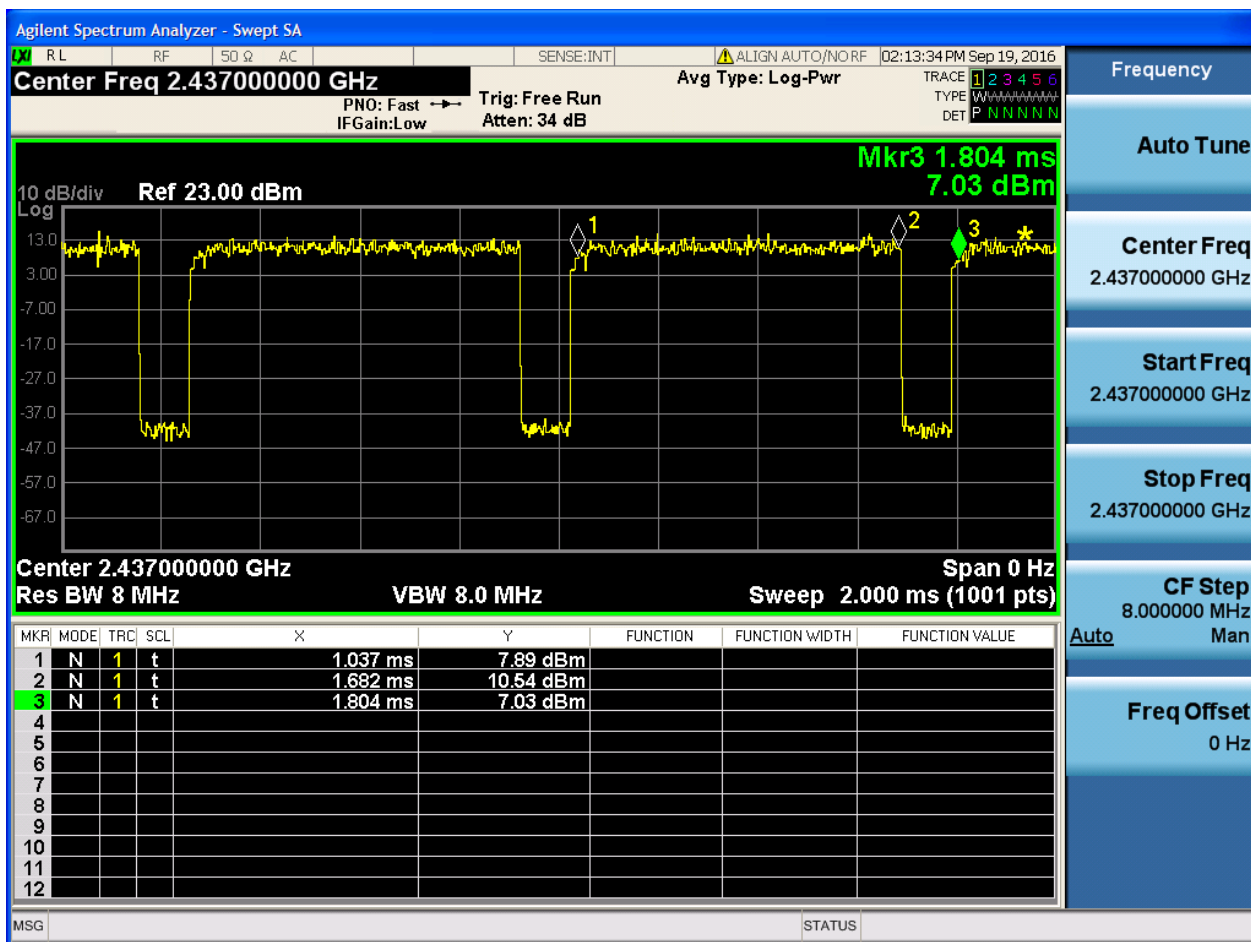
Start Freq
2.437000000 GHz

Stop Freq
2.437000000 GHz

CF Step
8.000000 MHz
Man

Freq Offset
0 Hz

2.4 11N40



Appendix D: Maximum Conducted Average Output Power

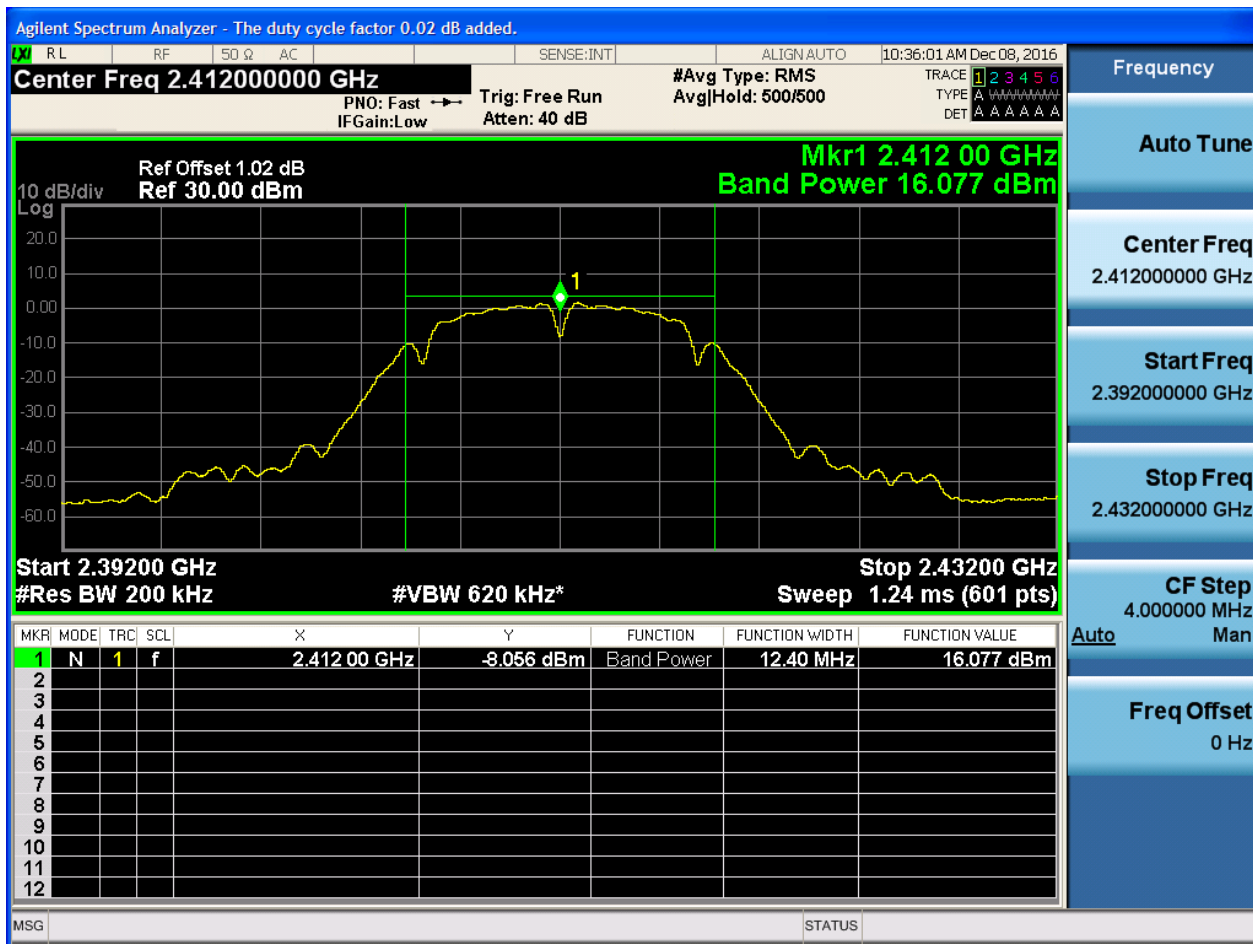
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11B	L	2412	Ant 1	16.08	pass
11B	M	2437	Ant 1	17.61	pass
11B	H	2462	Ant 1	16.20	pass
11G	L	2412	Ant 1	15.11	pass
11G	M	2437	Ant 1	15.67	pass
11G	H	2462	Ant 1	14.99	pass
11N20	L	2412	Ant 1	14.27	pass
11N20	M	2437	Ant 1	14.30	pass
11N20	H	2462	Ant 1	14.02	pass
11N40	L	2422	Ant 1	13.65	pass
11N40	M	2437	Ant 1	14.09	pass
11N40	H	2452	Ant 1	13.71	pass



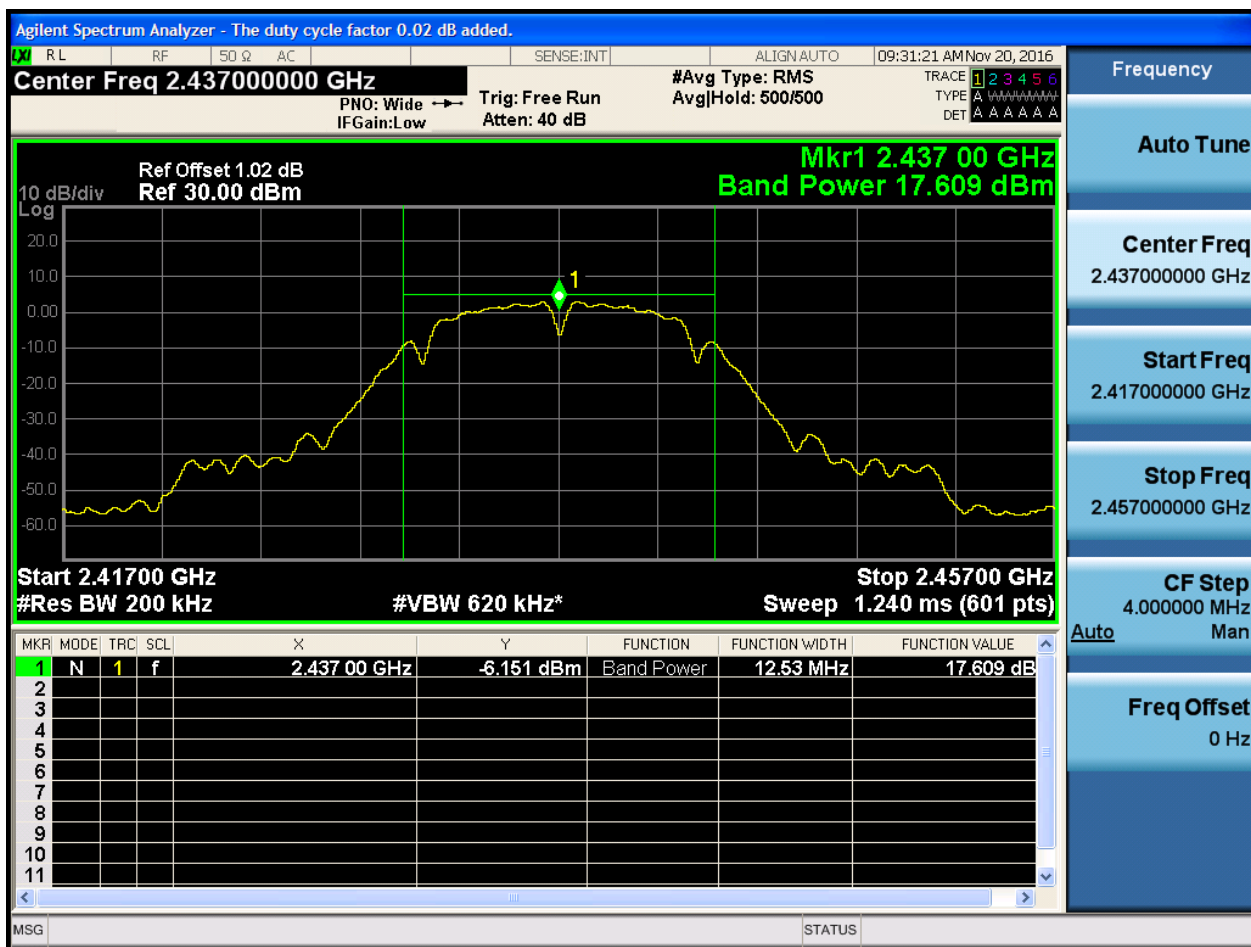
Part II - Test Plots

2.1 11B_L@Ant 1



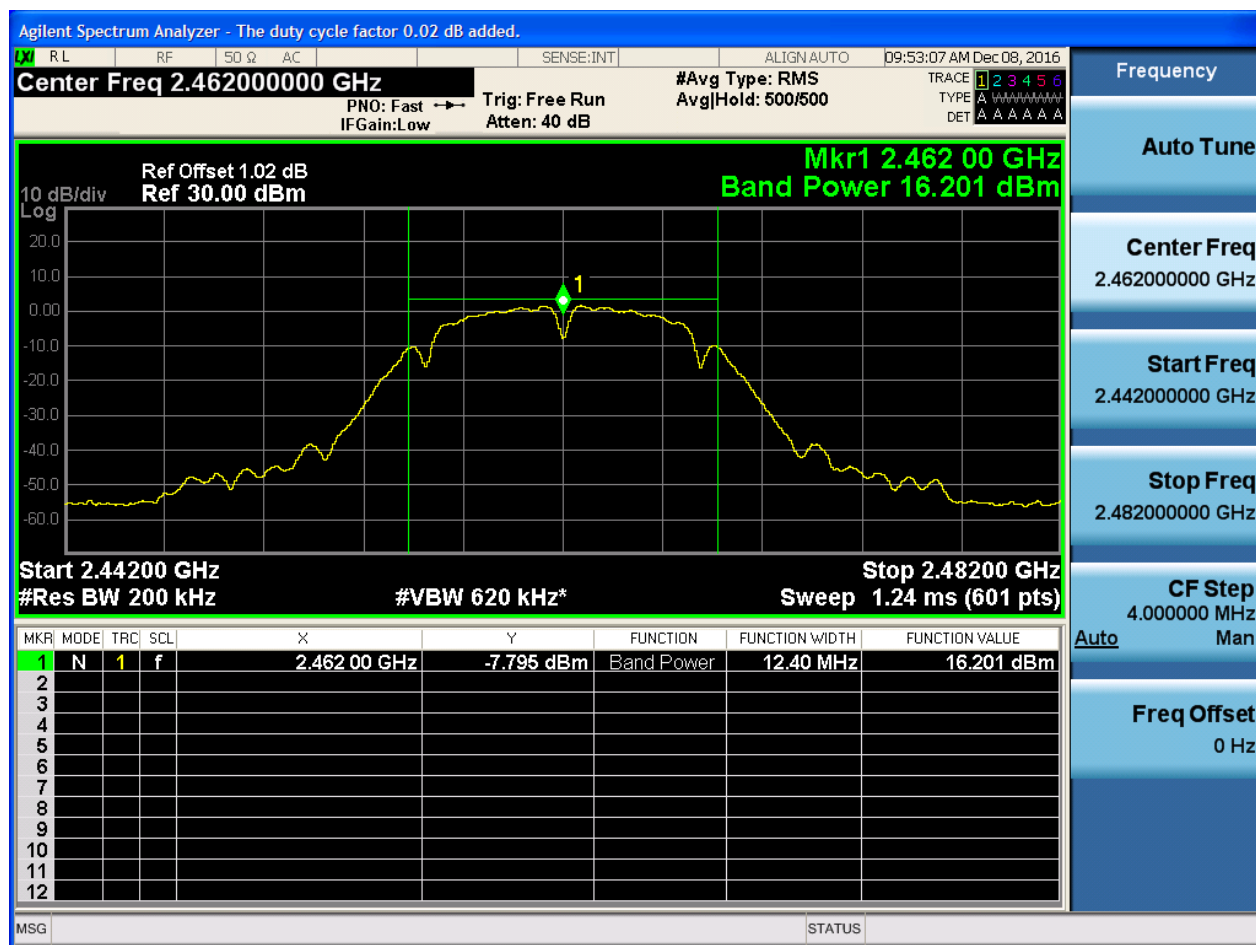


2.2 11B_M@Ant 1



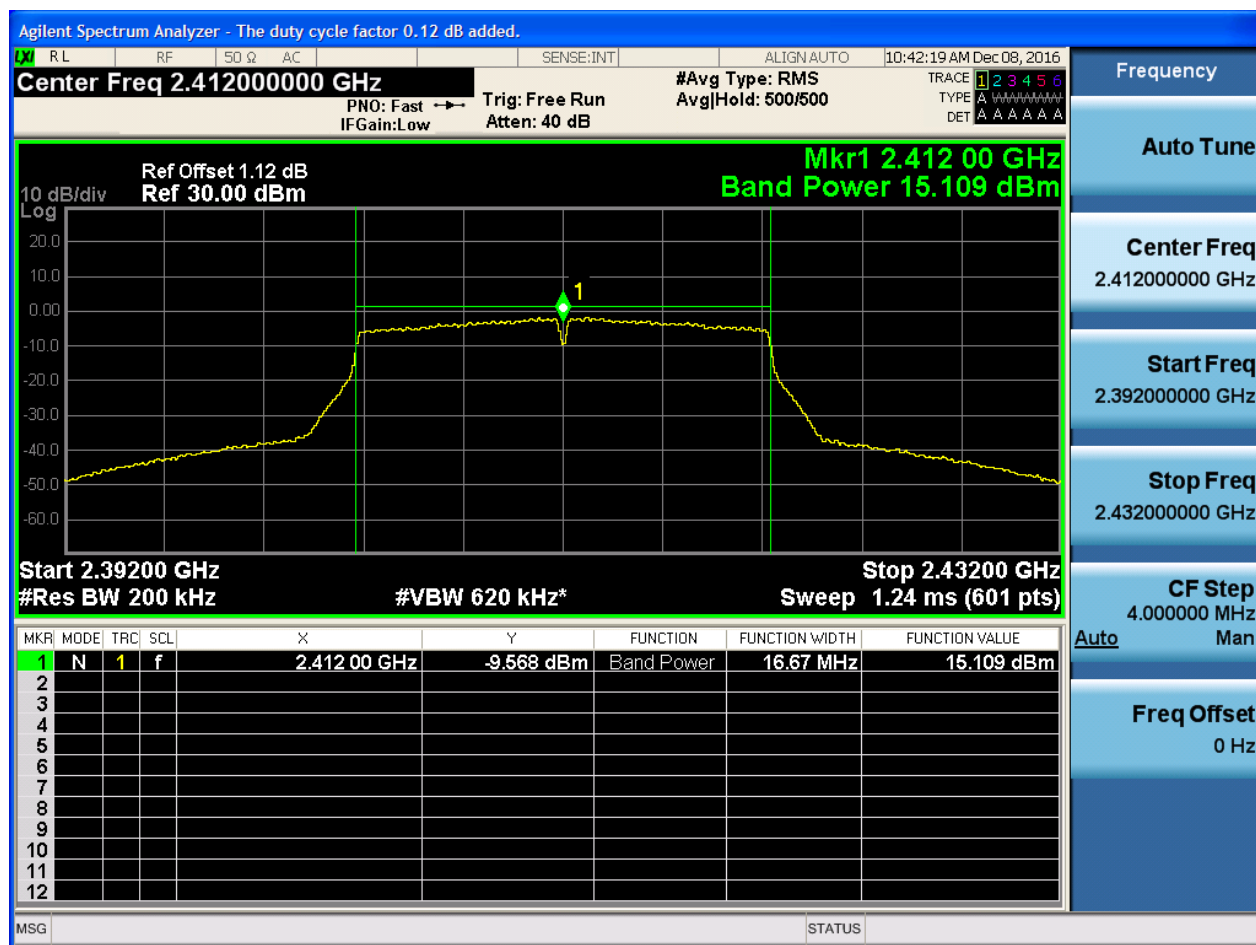


2.3 11B_H@Ant 1





2.4 11G_L@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor 0.11 dB added.

Center Freq 2.437000000 GHz

#Avg Type: RMS
Avg|Hold: 500/500

Ref Offset 1.11 dB
Ref 30.00 dBm

Mkr1 2.437 00 GHz
Band Power 15.670 dBm

Start 2.41700 GHz
#Res BW 200 kHz

Stop 2.45700 GHz
Sweep 1.240 ms (601 pts)

#VBW 620 kHz*

Frequency

Auto Tune

Center Freq
2.437000000 GHz

Start Freq
2.417000000 GHz

Stop Freq
2.457000000 GHz

CF Step
4.000000 MHz
Man

Auto

Freq Offset
0 Hz

10 dB/div
Log

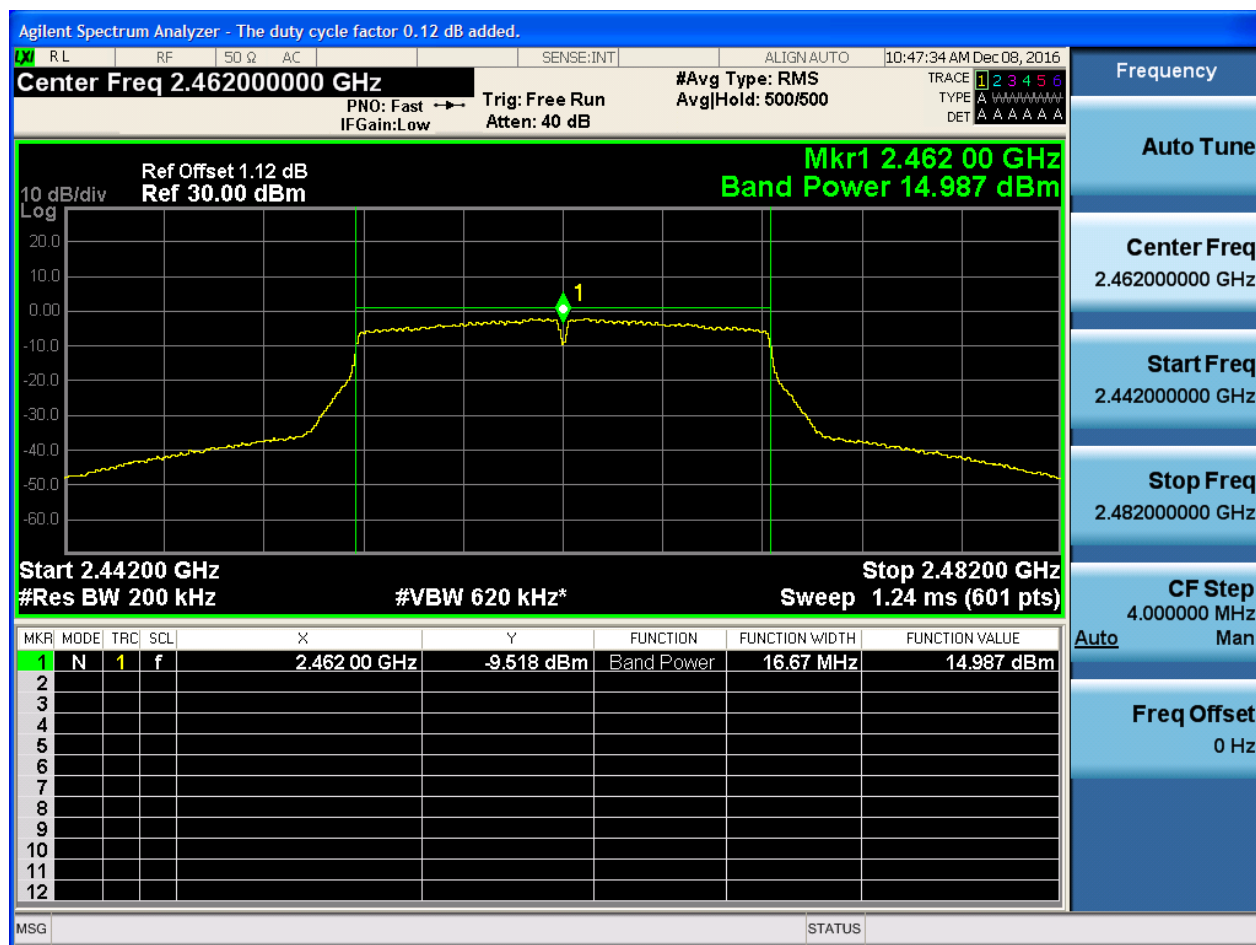
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.437 00 GHz	-8.576 dBm	Band Power	16.67 MHz	15.670 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS

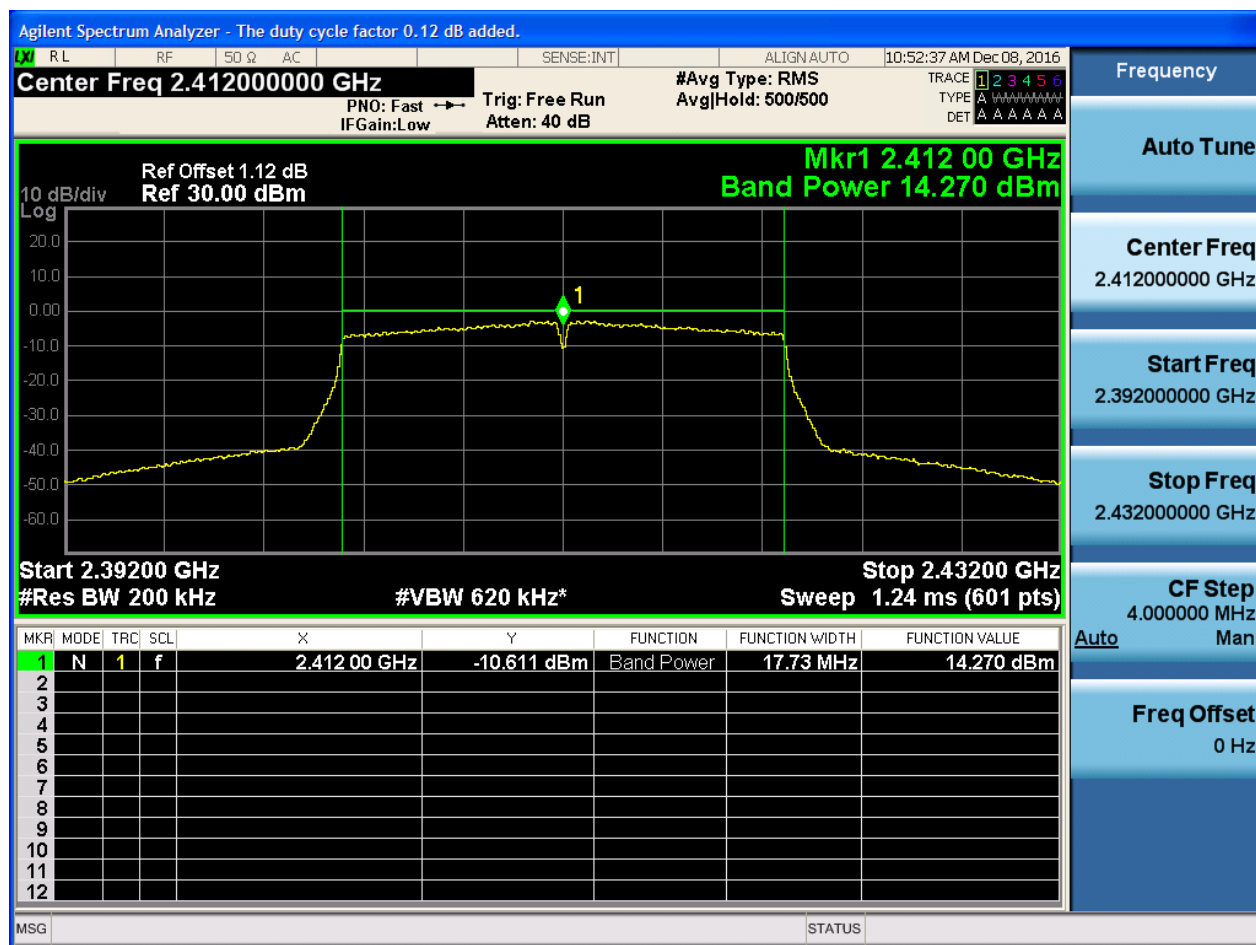


2.6 11G_H@Ant 1





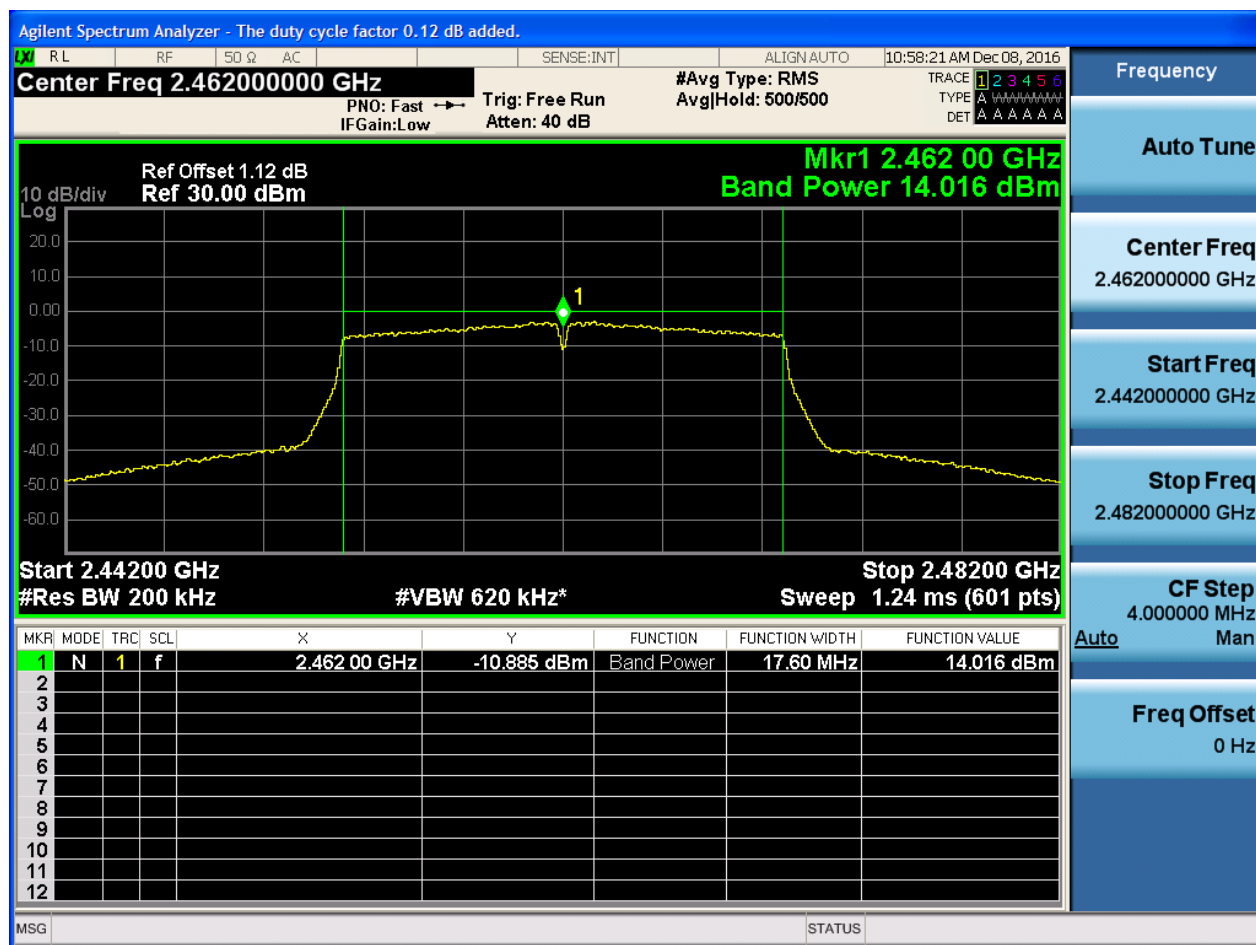
2.7 11N20_L@Ant 1



[illegible]

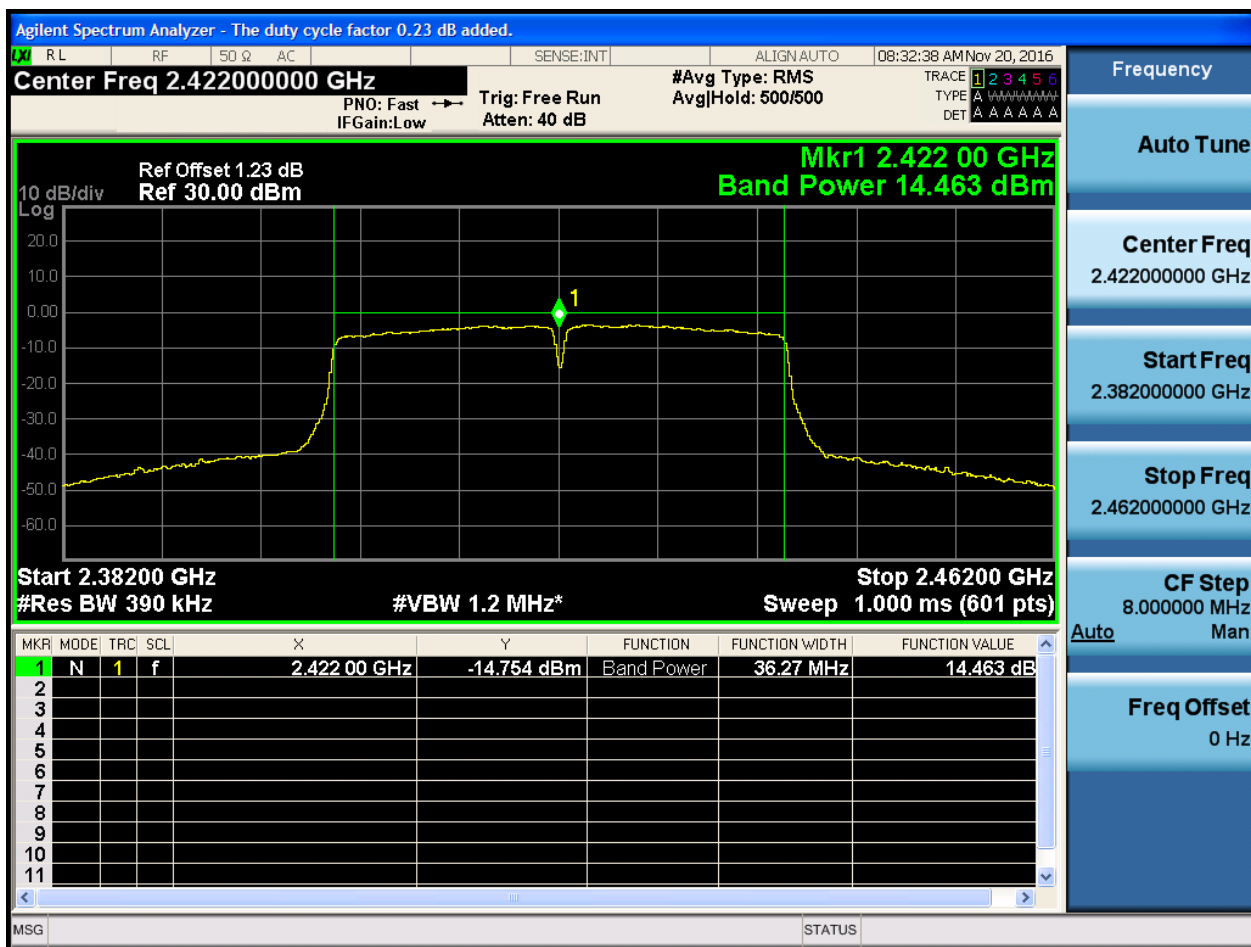


2.9 11N20_H@Ant 1



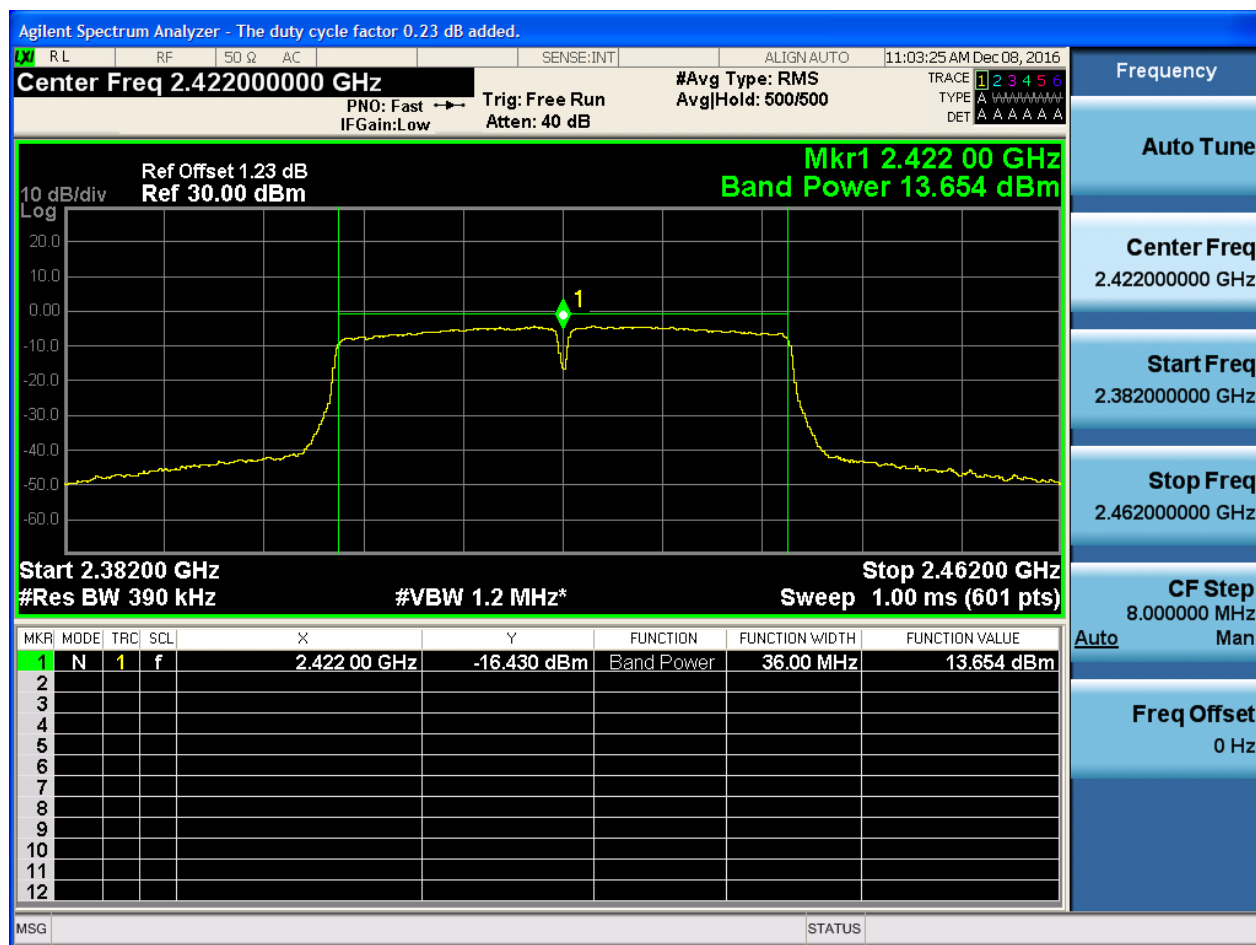


2.10 11N40_L@Ant 1



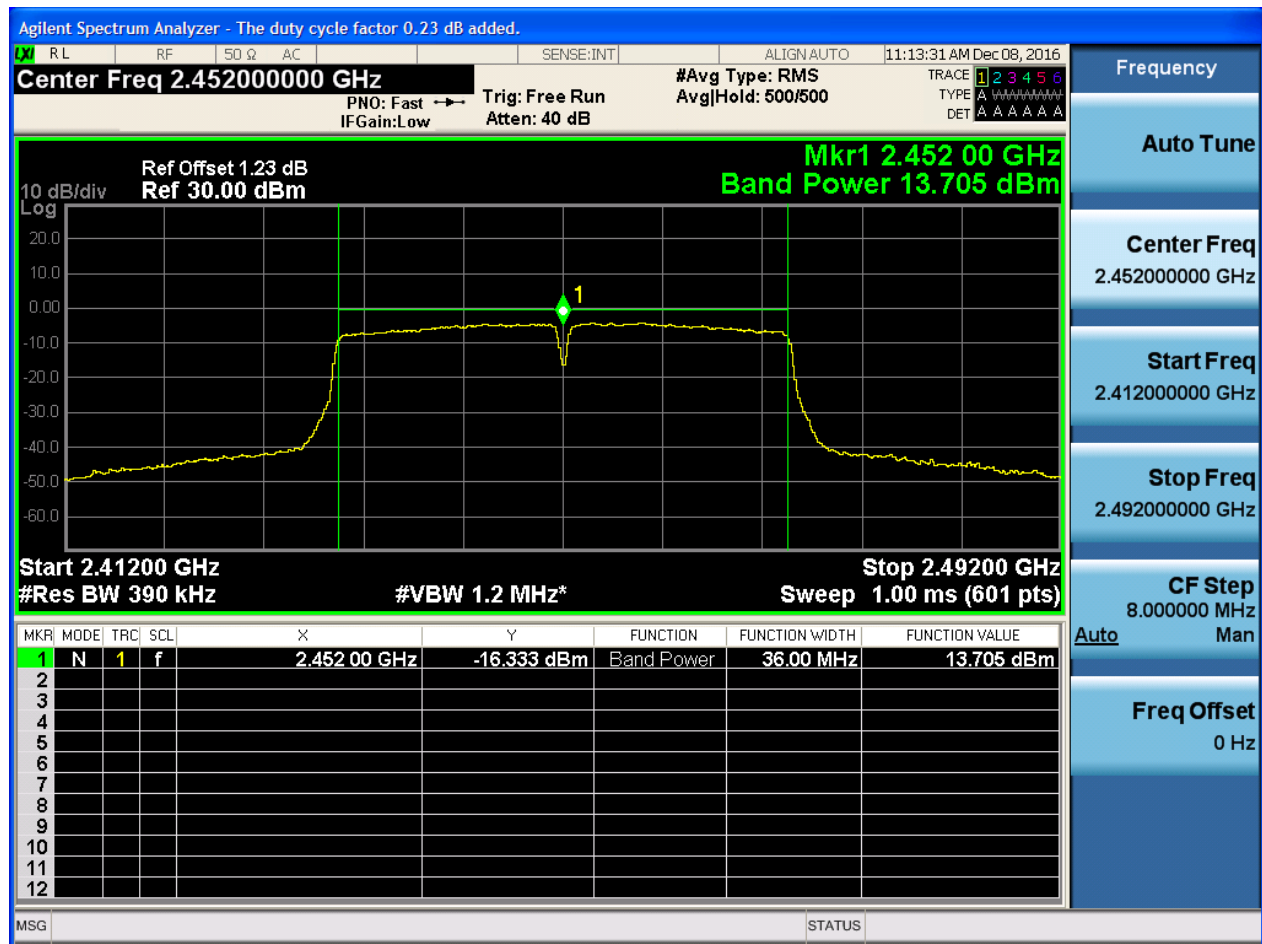


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



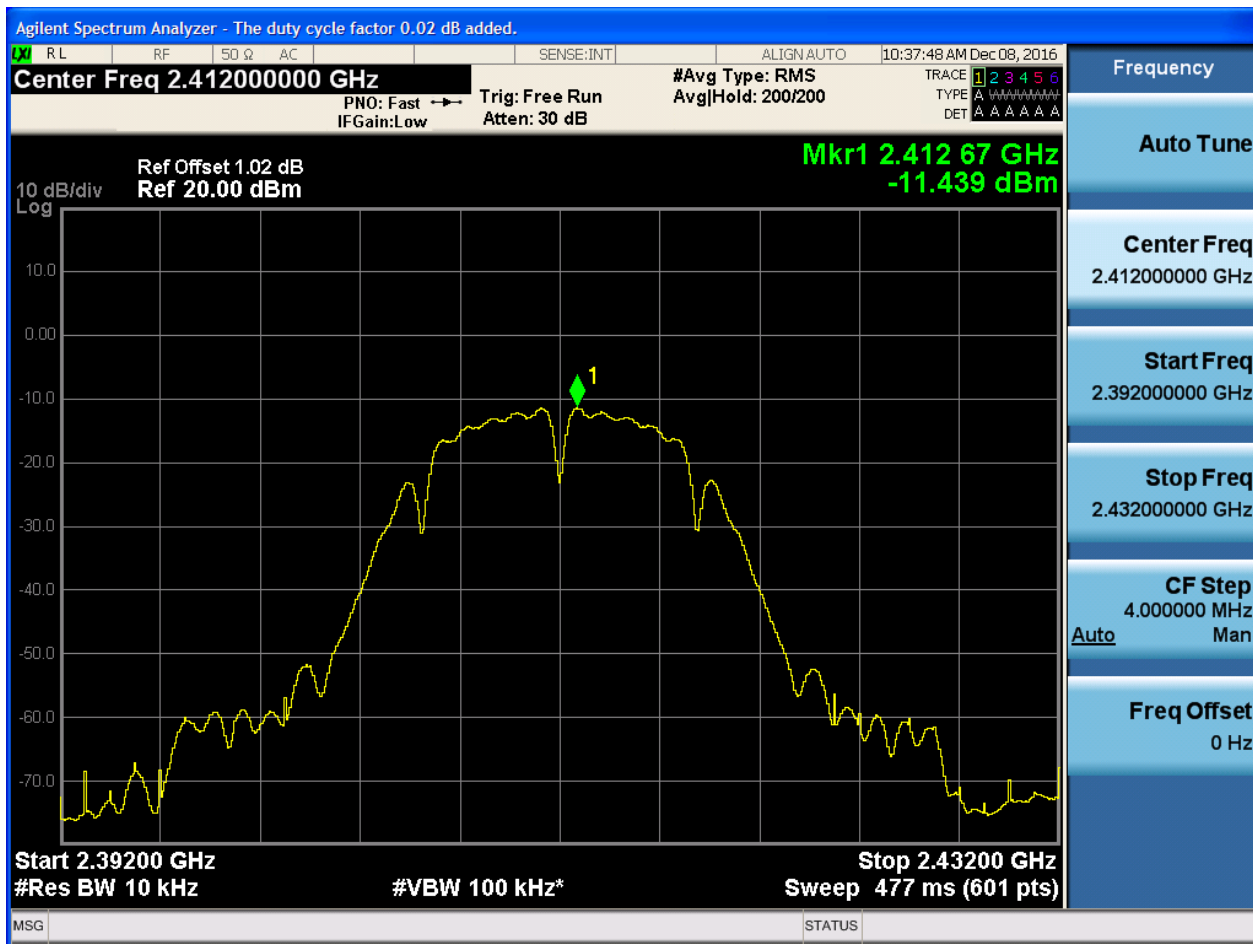
Appendix E: Maximum Power Spectral Density Level

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	PD[MHz]	Verdict
11B	L	2412	Ant 1	-11.44	pass
11B	M	2437	Ant 1	-9.93	pass
11B	H	2462	Ant 1	-11.18	pass
11G	L	2412	Ant 1	-13.82	pass
11G	M	2437	Ant 1	-13.17	pass
11G	H	2462	Ant 1	-13.83	pass
11N20	L	2412	Ant 1	-14.66	pass
11N20	M	2437	Ant 1	-14.60	pass
11N20	H	2462	Ant 1	-14.69	pass
11N40	L	2422	Ant 1	-19.09	pass
11N40	M	2437	Ant 1	-18.65	pass
11N40	H	2452	Ant 1	-19.03	pass

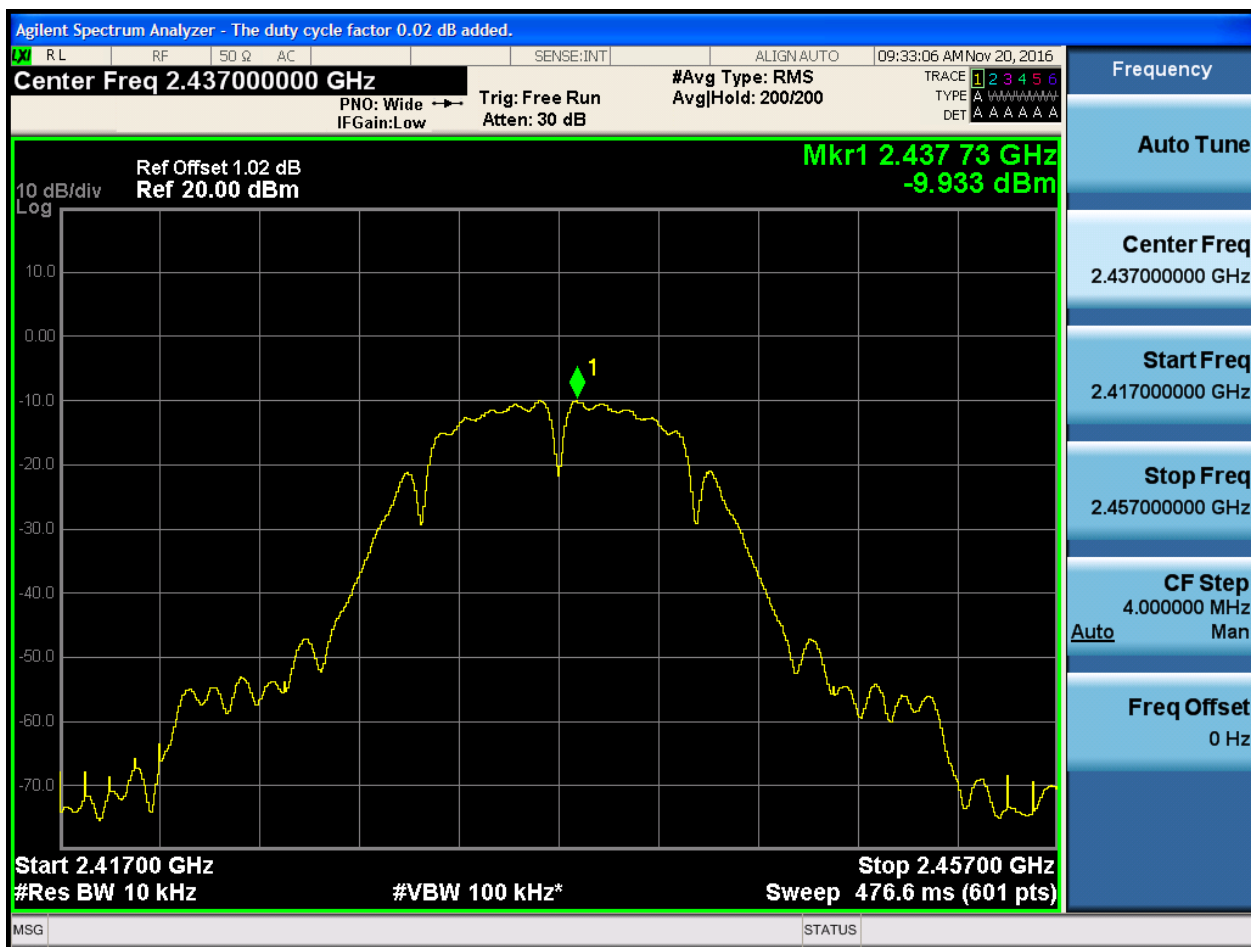
Part II - Test Plots

2.1 11B_L@Ant 1



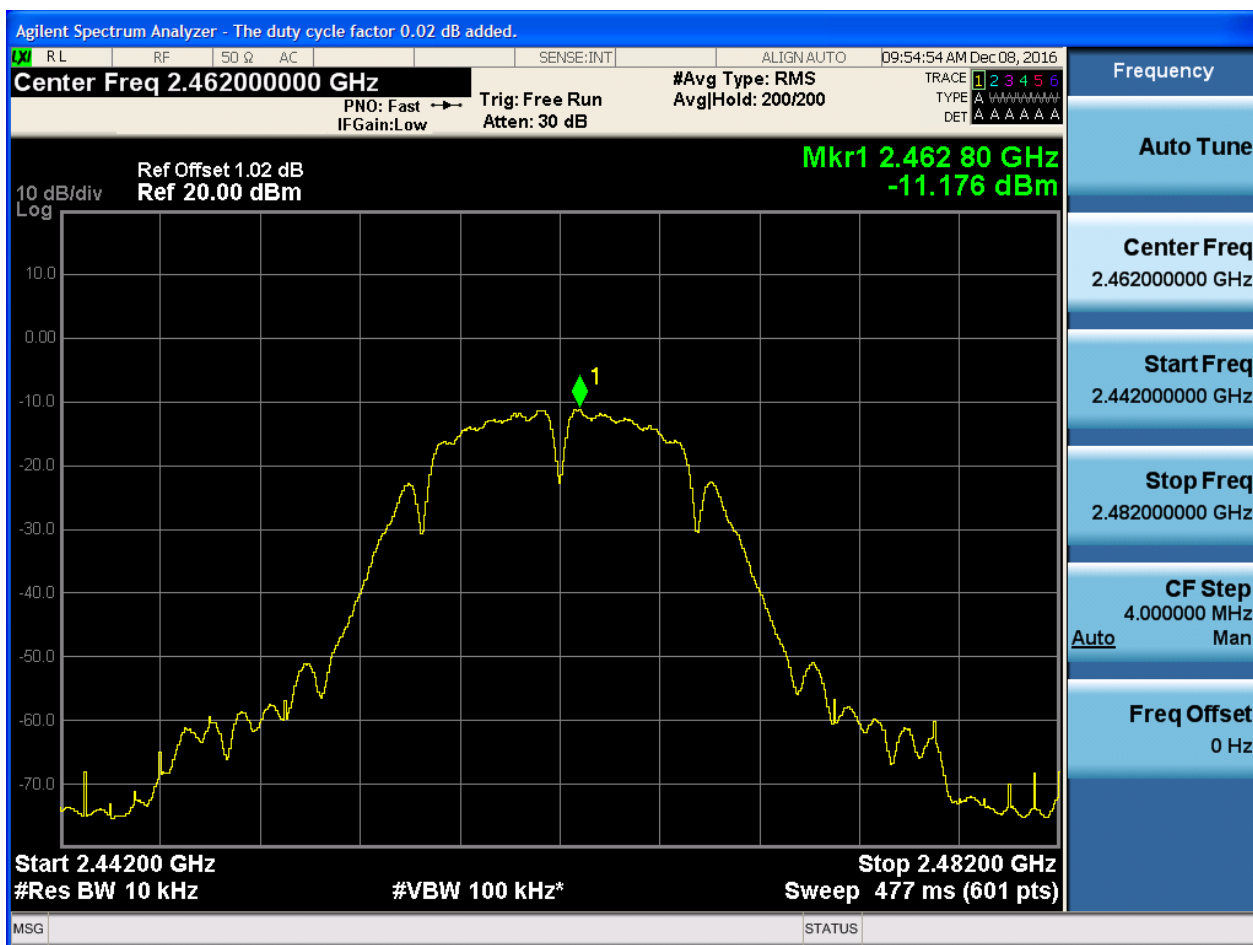


2.2 11B_M@Ant 1



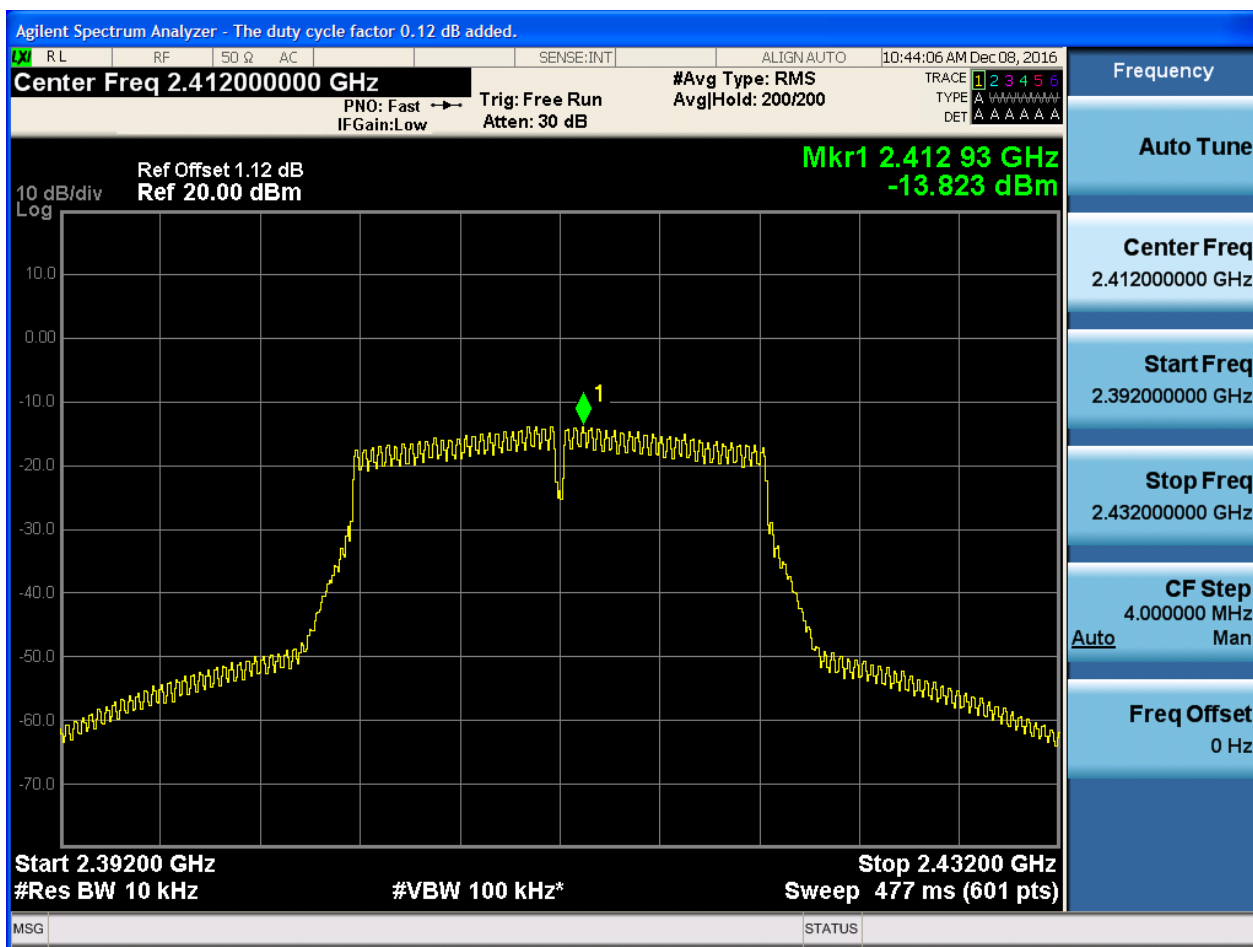


2.3 11B_H@Ant 1



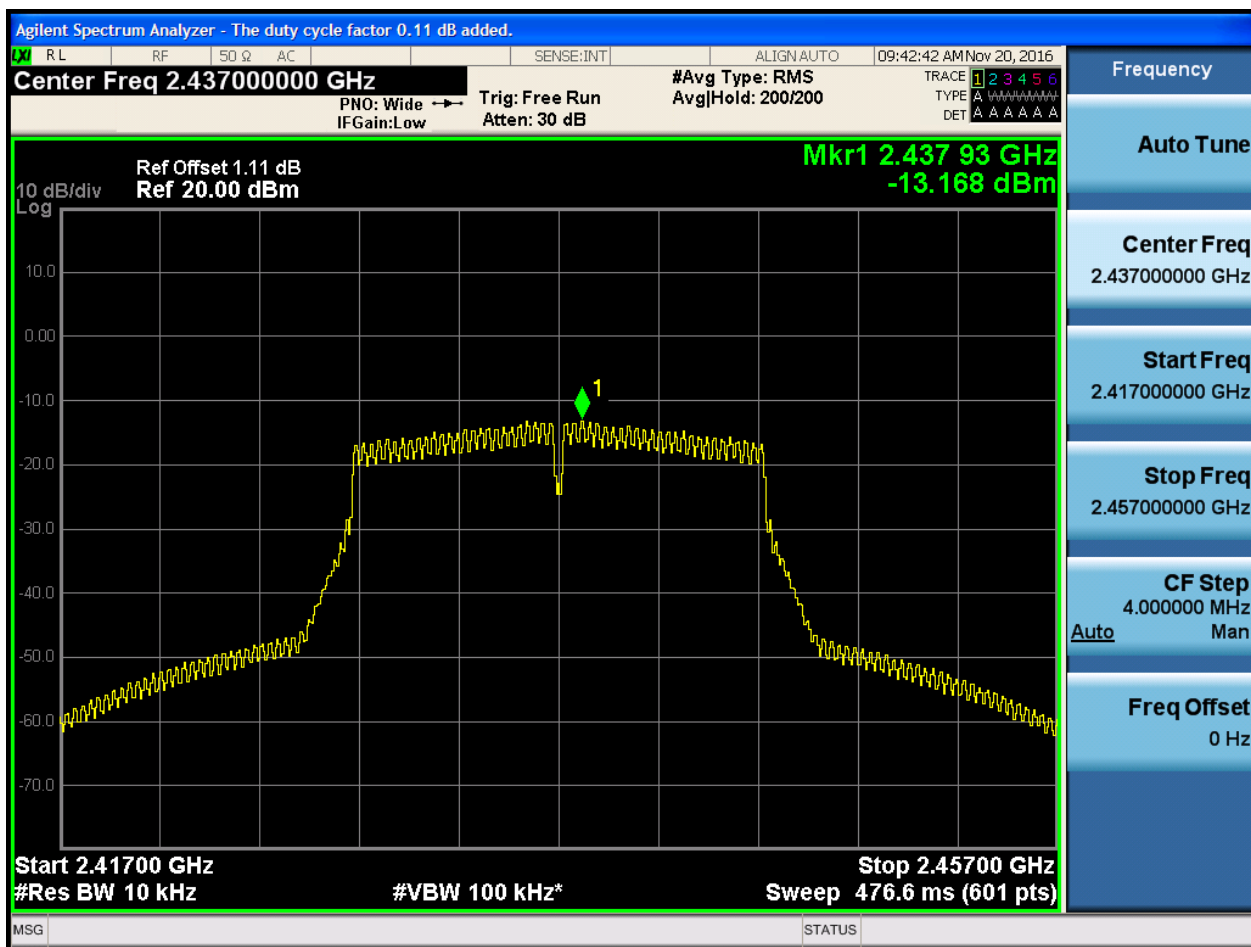


2.4 11G_L@Ant 1



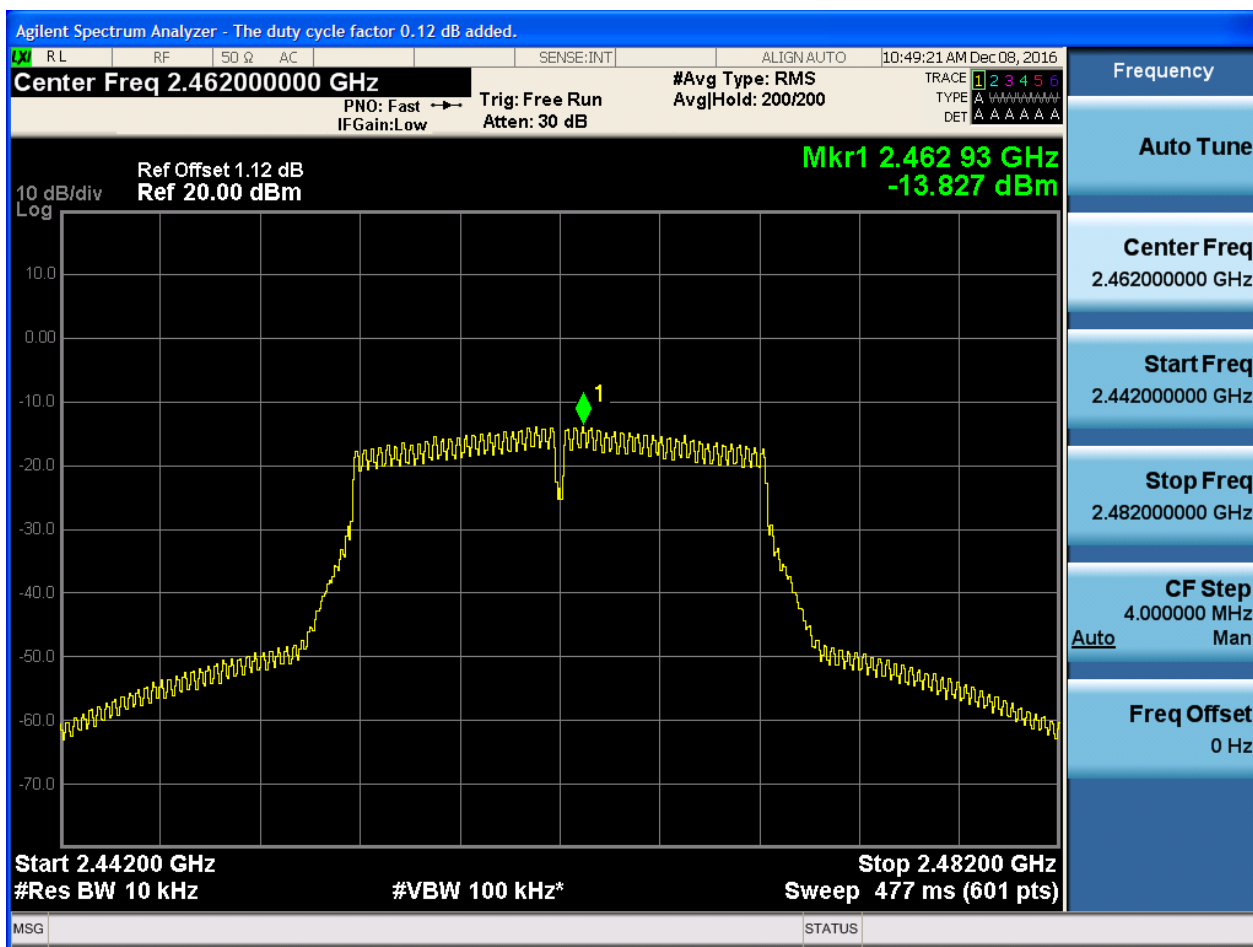


2.5 11G_M@Ant 1



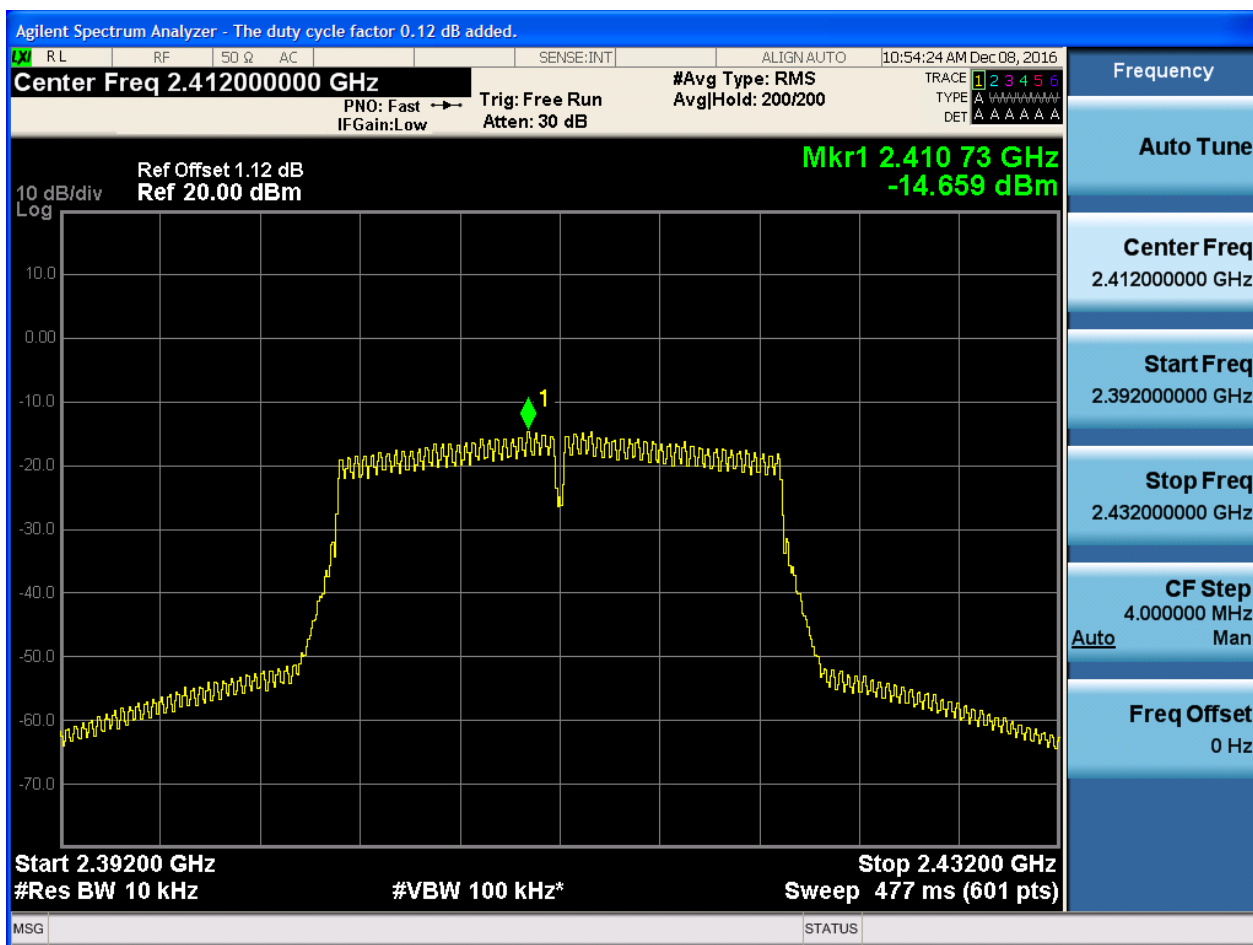


2.6 11G_H@Ant 1



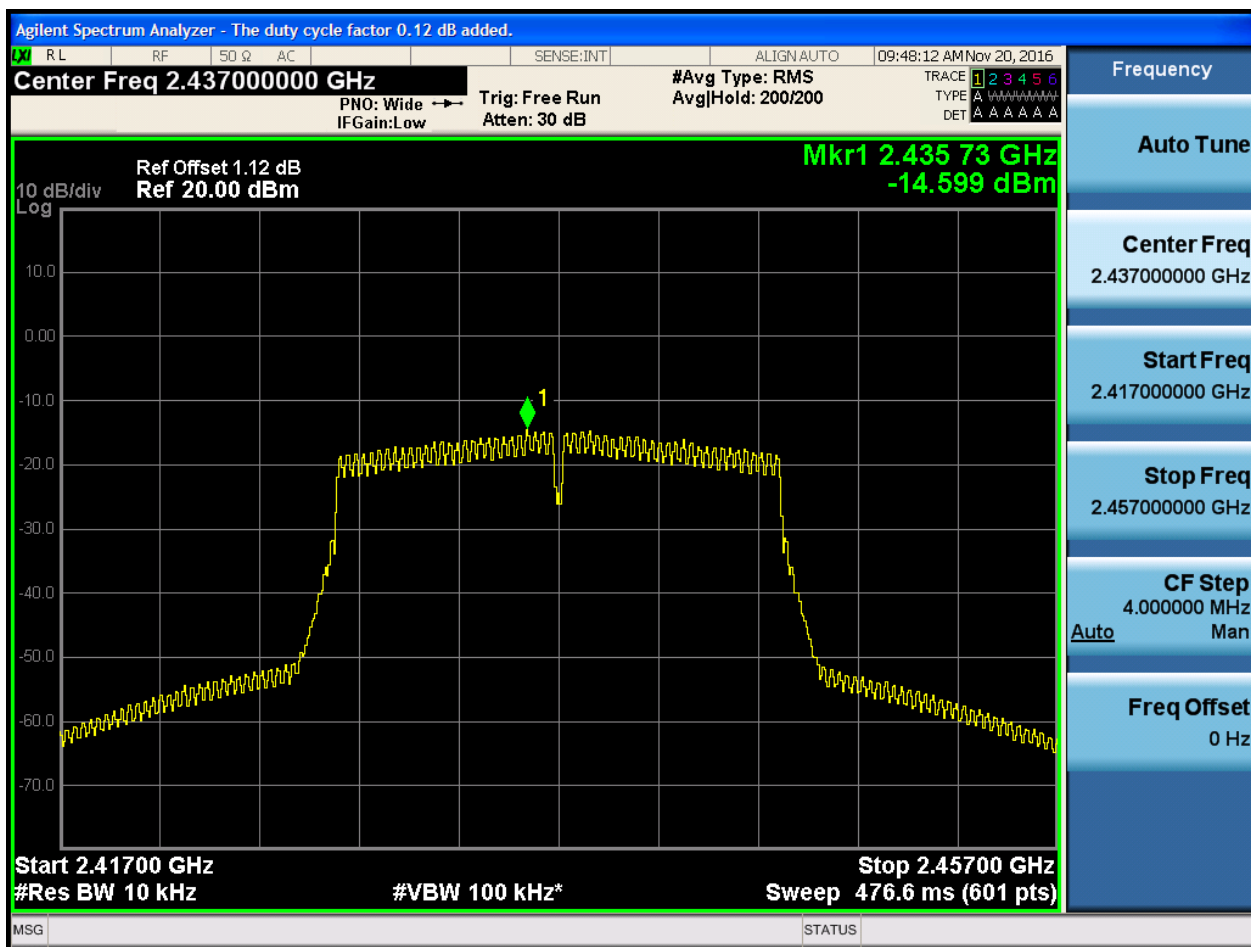


2.7 11N20_L@Ant 1



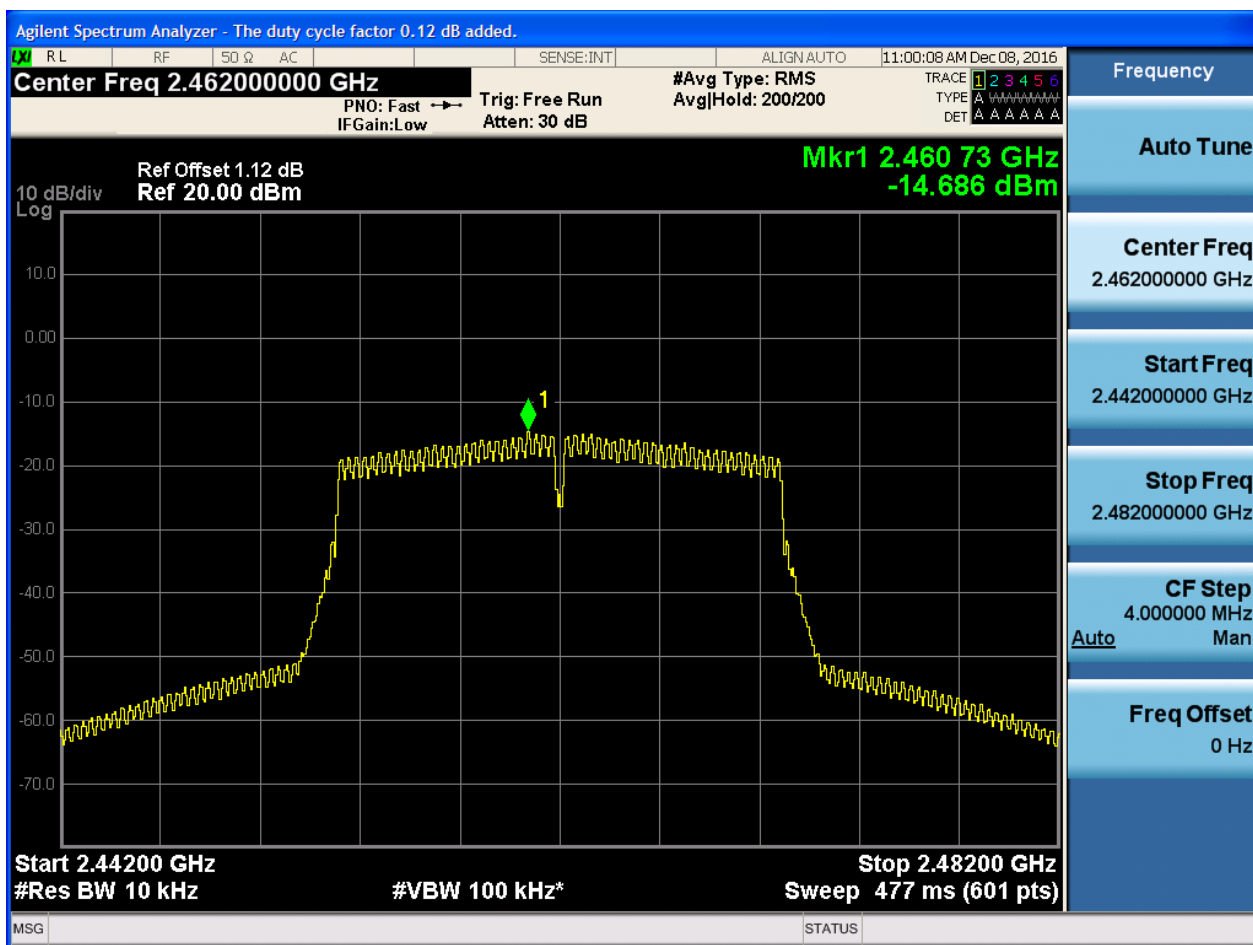


2.8 11N20_M@Ant 1



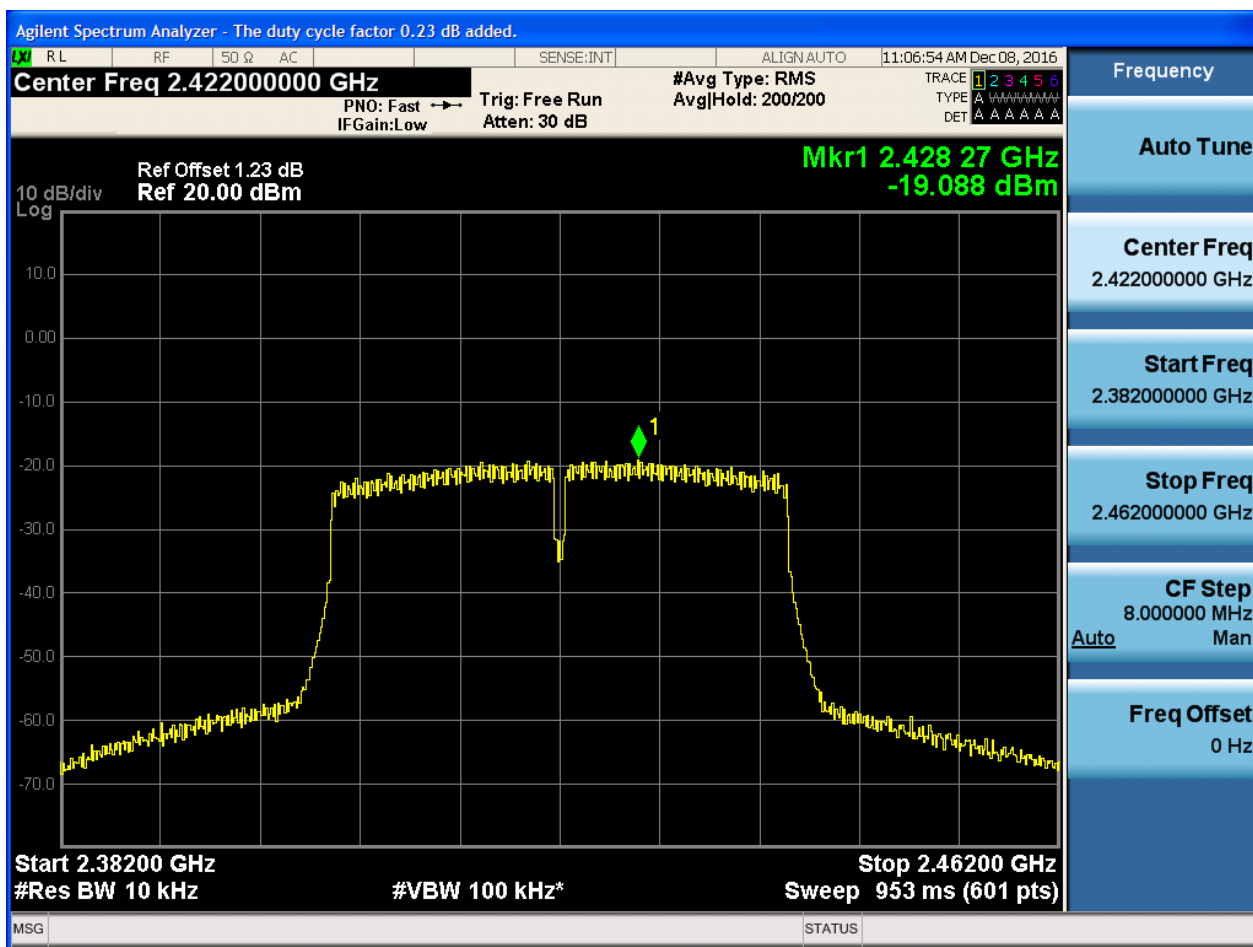


2.9 11N20_H@Ant 1



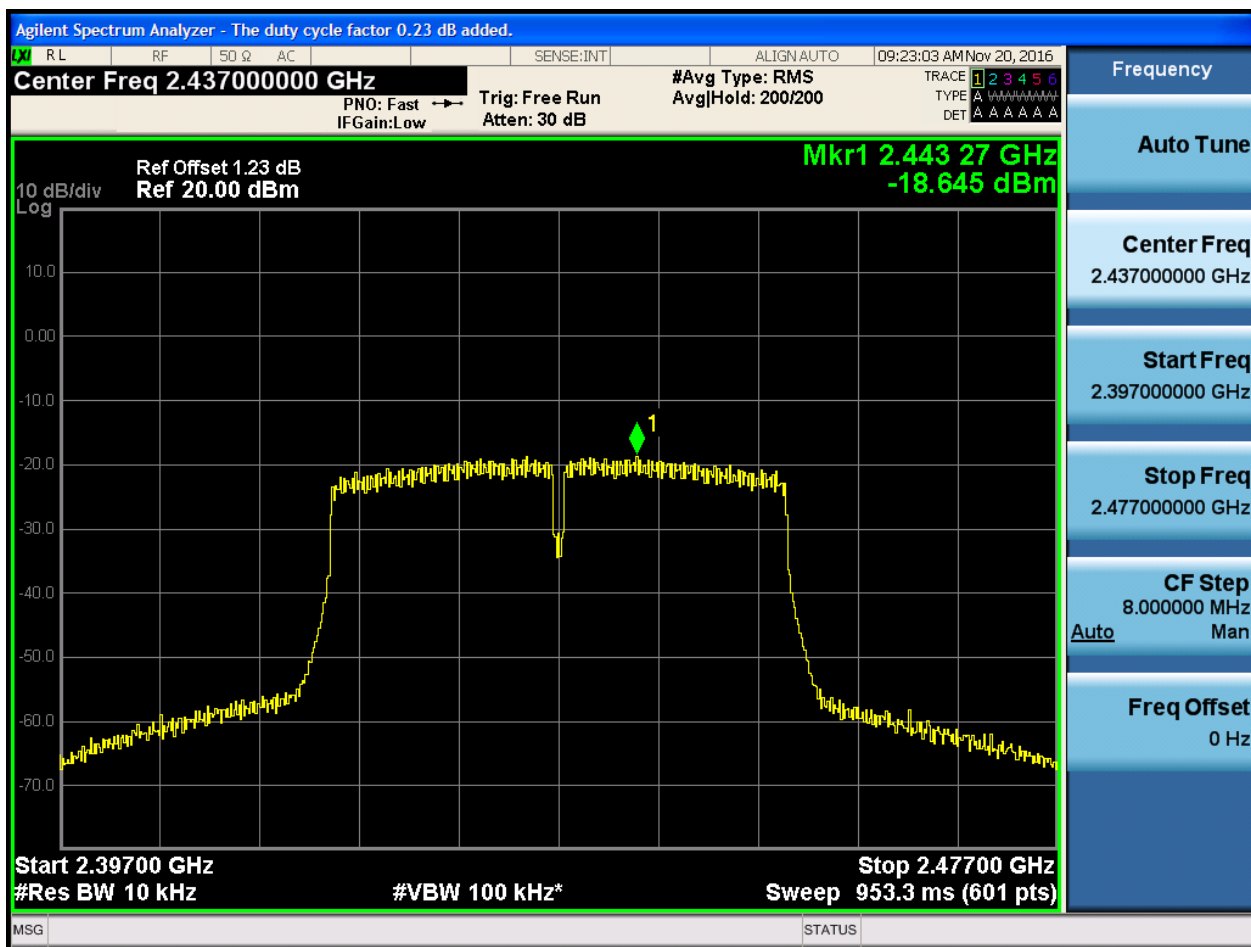


2.10 11N40_L@Ant 1



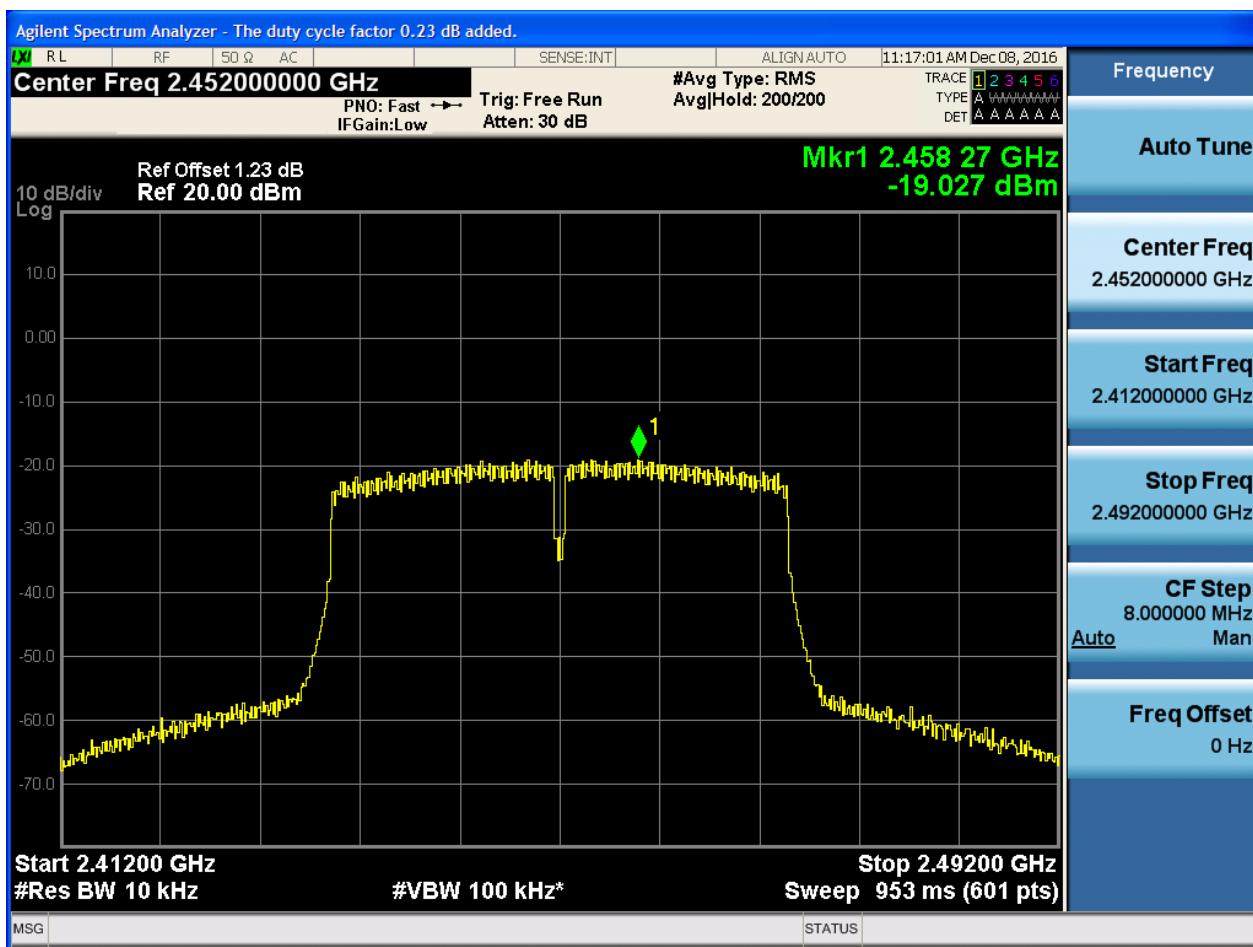


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix F: Band Edges Compliance

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Carrier Power[dBm]	Max.Spurious Level[dBm]	Verdict
11B	L	2412	Ant 1	8.64	-47.40	pass
11B	H	2462	Ant 1	8.46	-50.21	pass
11G	L	2412	Ant 1	5.45	-44.94	pass
11G	H	2462	Ant 1	4.90	-42.35	pass
11N20	L	2412	Ant 1	4.17	-43.55	pass
11N20	H	2462	Ant 1	4.17	-41.04	pass
11N40	L	2422	Ant 1	0.74	-38.09	pass
11N40	H	2452	Ant 1	0.24	-38.11	pass



Part II - Test Plots

2.1 11B_L@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.473500000 GHz

Ref Offset 1 dB
Ref 30.00 dBm

Mkr2 2.483 50 GHz
-50.211 dBm

Start 2.45350 GHz
#Res BW 100 kHz

Stop 2.49350 GHz
#Sweep 100.0 ms (601 pts)

#VBW 300 kHz

Trig: Free Run
Atten: 40 dB

Avg Type: Log-Pwr
Avg/Hold: 100/100

Frequency

Auto Tune

Center Freq
2.473500000 GHz

Start Freq
2.453500000 GHz

Stop Freq
2.493500000 GHz

CF Step
4.000000 MHz
Man

Freq Offset
0 Hz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.462 50 GHz	8.461 dBm			
2	N	1	f	2.483 50 GHz	-50.211 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.40000000 GHz

PNO: Wide → Trig: Free Run
IFGain: Low Atten: 40 dB

Avg Type: Log-Pwr
Avg/Hold: 10/10

08:10:58 AM Nov 20, 2016

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

Ref Offset 1 dB
Ref 30.00 dBm

Mkr2 2.390 00 GHz
-44.937 dBm

10 dB/div
Log

20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0

Start 2.38000 GHz
#Res BW 100 kHz

#VBW 300 kHz

Stop 2.42000 GHz
#Sweep 100.0 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.410 73 GHz	5.447 dBm			
2	N	1	f	2.390 00 GHz	-44.937 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS

Frequency

Auto Tune

Center Freq
2.40000000 GHz

Start Freq
2.38000000 GHz

Stop Freq
2.42000000 GHz

CF Step
4.000000 MHz

Auto

Freq Offset
0 Hz

2.4 11G_H@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.40000000 GHz

Ref Offset 1 dB
Ref 30.00 dBm

Mkr2 2.390 00 GHz
-43.549 dBm

Start 2.38000 GHz
#Res BW 100 kHz

Stop 2.42000 GHz
#Sweep 100.0 ms (601 pts)

#VBW 300 kHz

Trig: Free Run
Atten: 40 dB

Avg Type: Log-Pwr
Avg/Hold: 10/10

Frequency

Auto Tune

Center Freq
2.40000000 GHz

Start Freq
2.380000000 GHz

Stop Freq
2.420000000 GHz

CF Step
4.000000 MHz
Man

Freq Offset
0 Hz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.413 27 GHz	4.170 dBm			
2	N	1	f	2.390 00 GHz	-43.549 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS



2.6 11N20_H@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq **2.40000000 GHz** Avg Type: Log-Pwr
 PNO: Wide → Trig: Free Run Attenuation: 40 dB
 IFGain: Low

Ref Offset 1 dB
 Ref 30.00 dBm

Mkr2 2.390 00 GHz
 -38.094 dBm

Start 2.38000 GHz Stop 2.42000 GHz
 #Res BW 100 kHz #VBW 300 kHz #Sweep 100.0 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.419 53 GHz	0.736 dBm			
2	N	1	f	2.390 00 GHz	-38.094 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency Auto Tune Center Freq 2.40000000 GHz Start Freq 2.38000000 GHz Stop Freq 2.42000000 GHz CF Step 4.000000 MHz Man Freq Offset 0 Hz



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.473500000 GHz

Ref Offset 1 dB
Ref 30.00 dBm

Mkr2 2.483 50 GHz
-38.114 dBm

Start 2.45350 GHz
#Res BW 100 kHz

Stop 2.49350 GHz
#Sweep 100.0 ms (601 pts)

#VBW 300 kHz

10 dB/div
Log

20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0

1

2

-29.76 dBm

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.455 77 GHz	0.242 dBm			
2	N	1	f	2.483 50 GHz	-38.114 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.473500000 GHz

Start Freq
2.453500000 GHz

Stop Freq
2.493500000 GHz

CF Step
4.000000 MHz
Man

Freq Offset
0 Hz

MSG

STATUS

Appendix G: Unwanted Emissions into Non-Restricted Frequency

Bands

In this Appendix, the "Pref", which is used as the reference level, refers to the peak power level in any 100 kHz bandwidth within the fundamental emission, the "Puw" refers to the maximum emission power in 100 kHz band segments outside of the authorized frequency band.

Considering that the higher ratio of RBW to the span for the frequency ranges below 30 MHz makes the results determination be complicated, a narrower RBW other than 100 kHz is used for these ranges. The measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \times \lg(100 [kHz]/\text{narrower RBW} [kHz])$. As to this Appendix, the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain and used as respective results for each chain, due to the relative-limit requirement.

In the result table, the "< Limit" denotes that "The Puw [dBm] is less than Pref[dBm]-30[dBm], see test plots for detailed".

Part I - Test Results

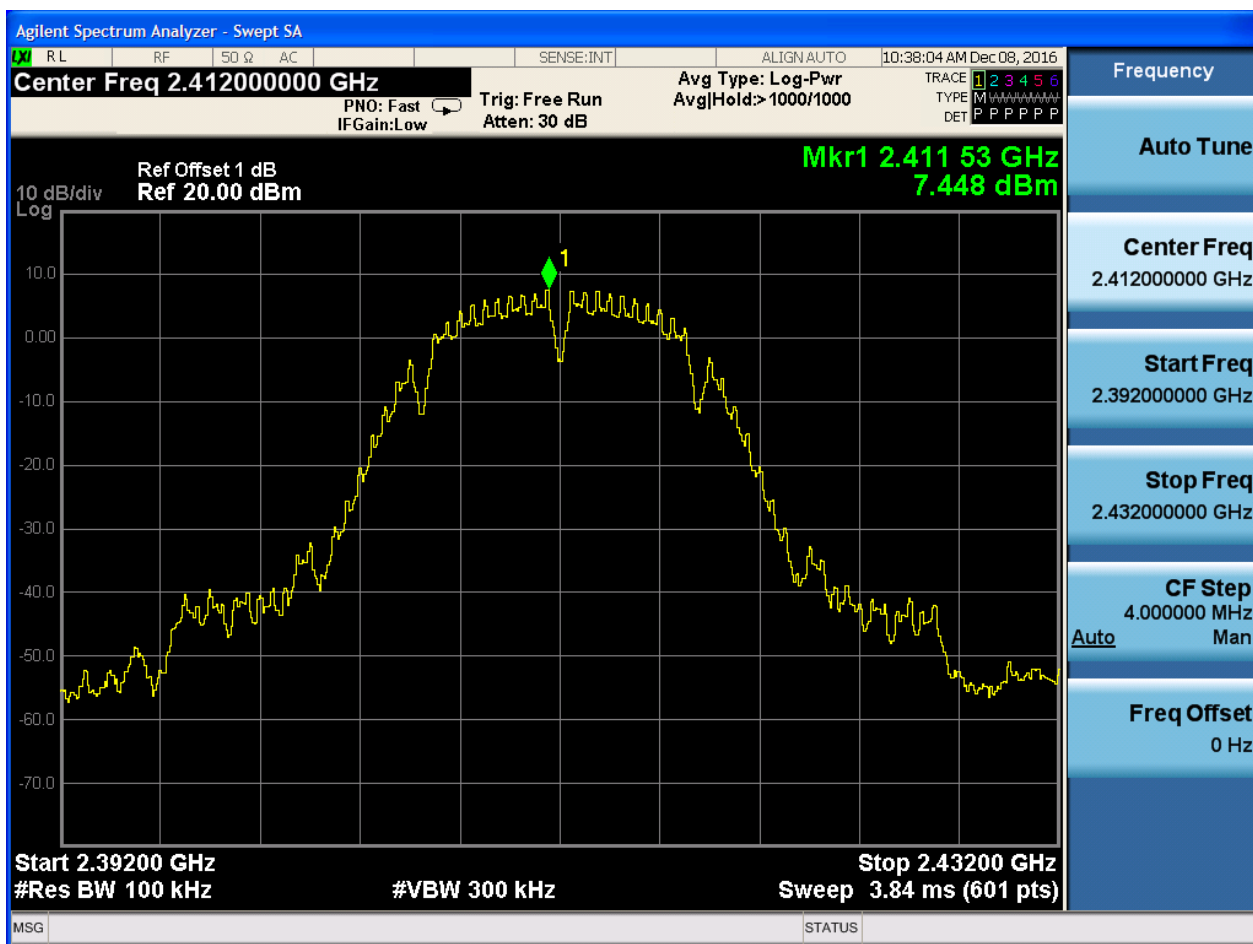
Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	7.45	<limit	pass
11B	M	2437	Ant 1	8.94	<limit	pass
11B	H	2462	Ant 1	7.68	<limit	pass
11G	L	2412	Ant 1	5.22	<limit	pass
11G	M	2437	Ant 1	5.73	<limit	pass
11G	H	2462	Ant 1	5.09	<limit	pass
11N20	L	2412	Ant 1	4.42	<limit	pass
11N20	M	2437	Ant 1	4.49	<limit	pass
11N20	H	2462	Ant 1	4.19	<limit	pass
11N40	L	2422	Ant 1	0.12	<limit	pass
11N40	M	2437	Ant 1	0.52	<limit	pass
11N40	H	2452	Ant 1	0.28	<limit	pass



Part II - Test Plots

2.1 11B_L@Ant 1

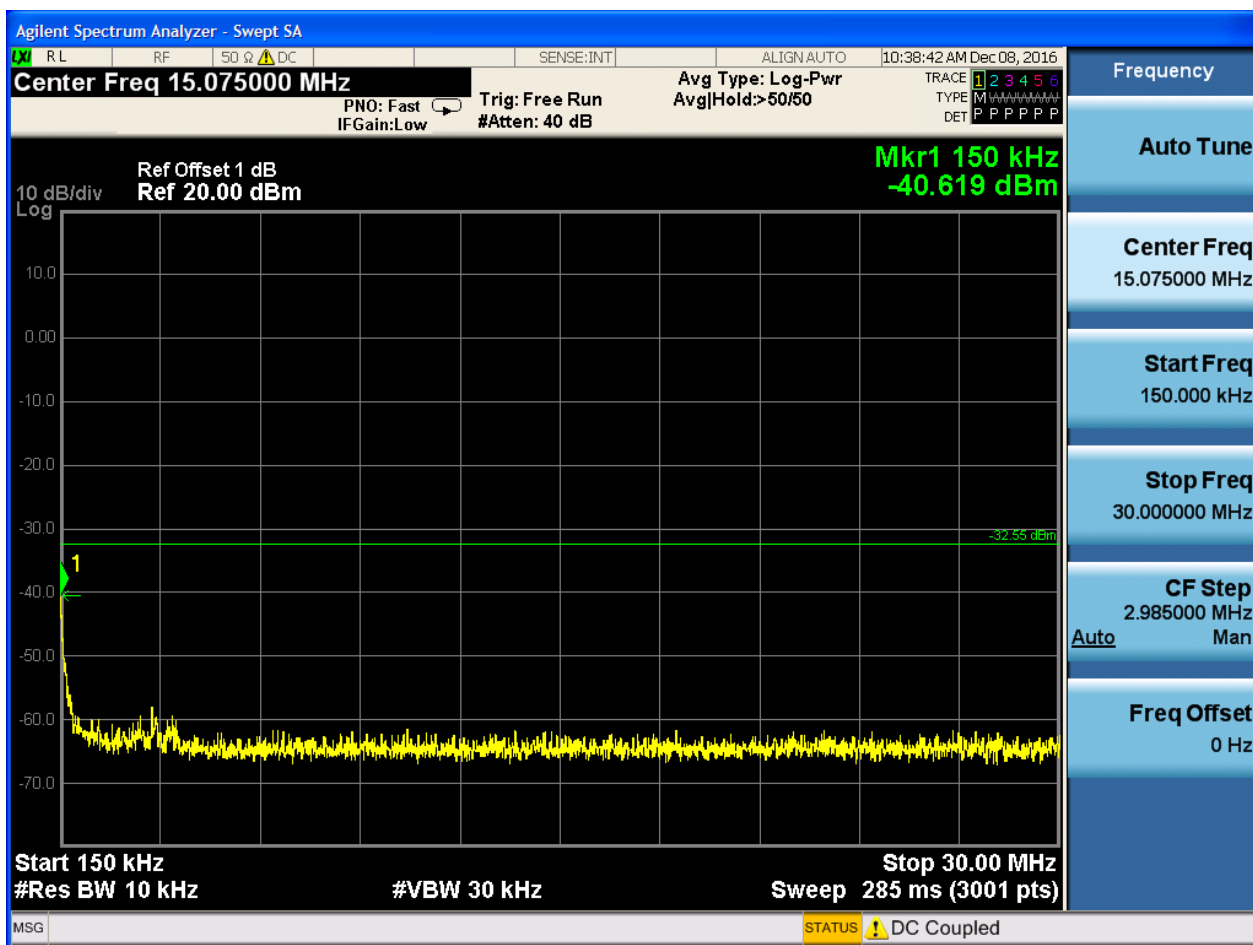
Pref:

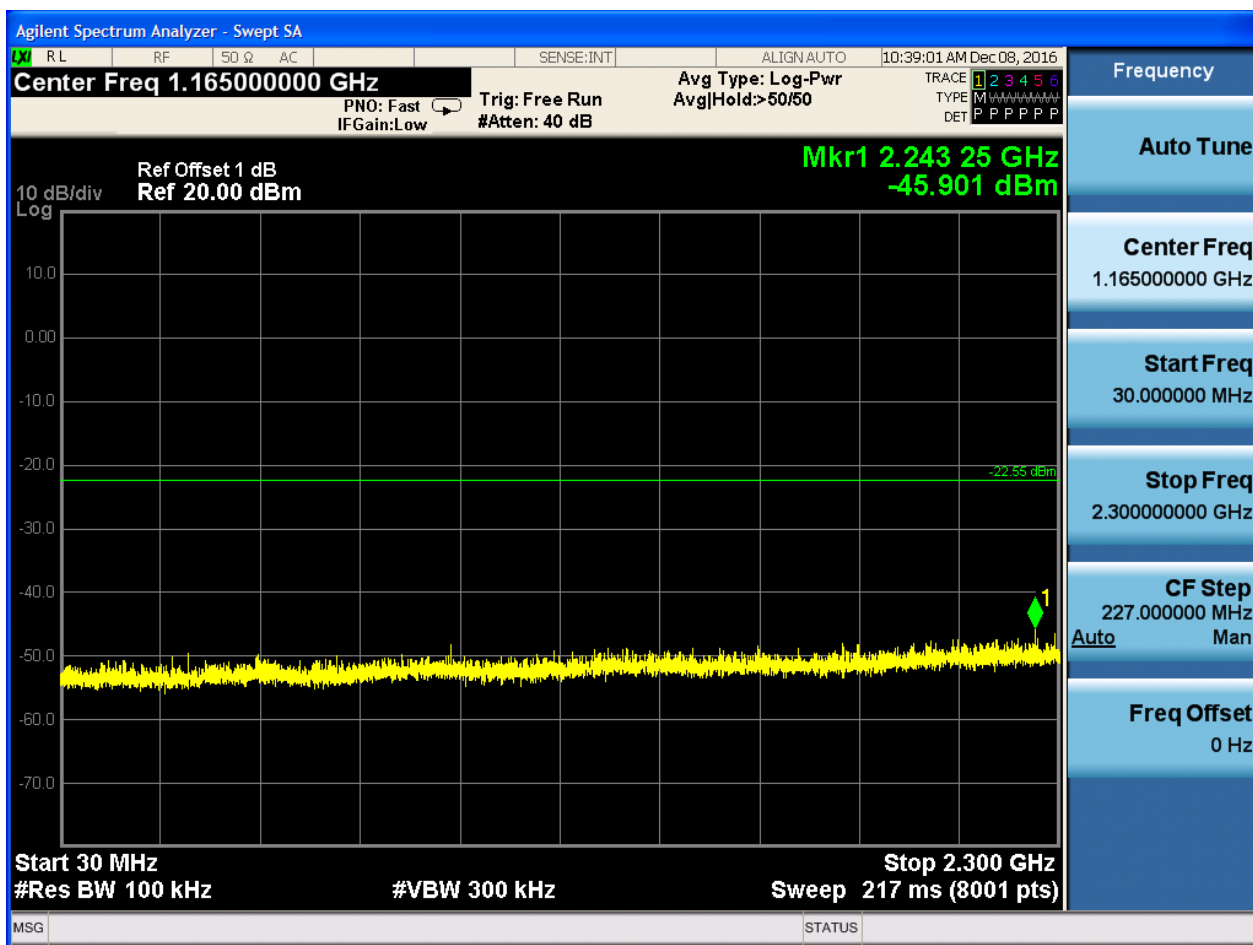


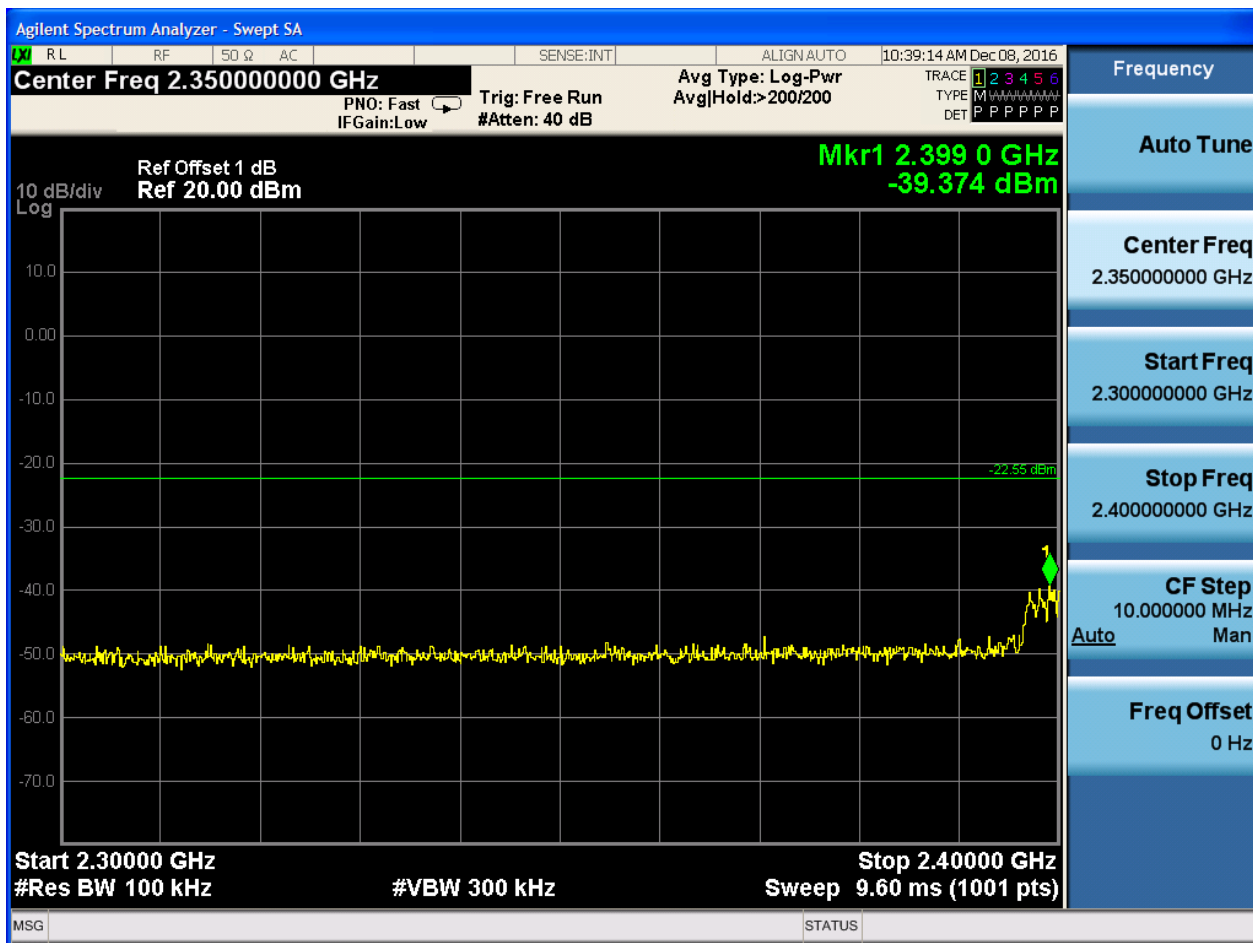


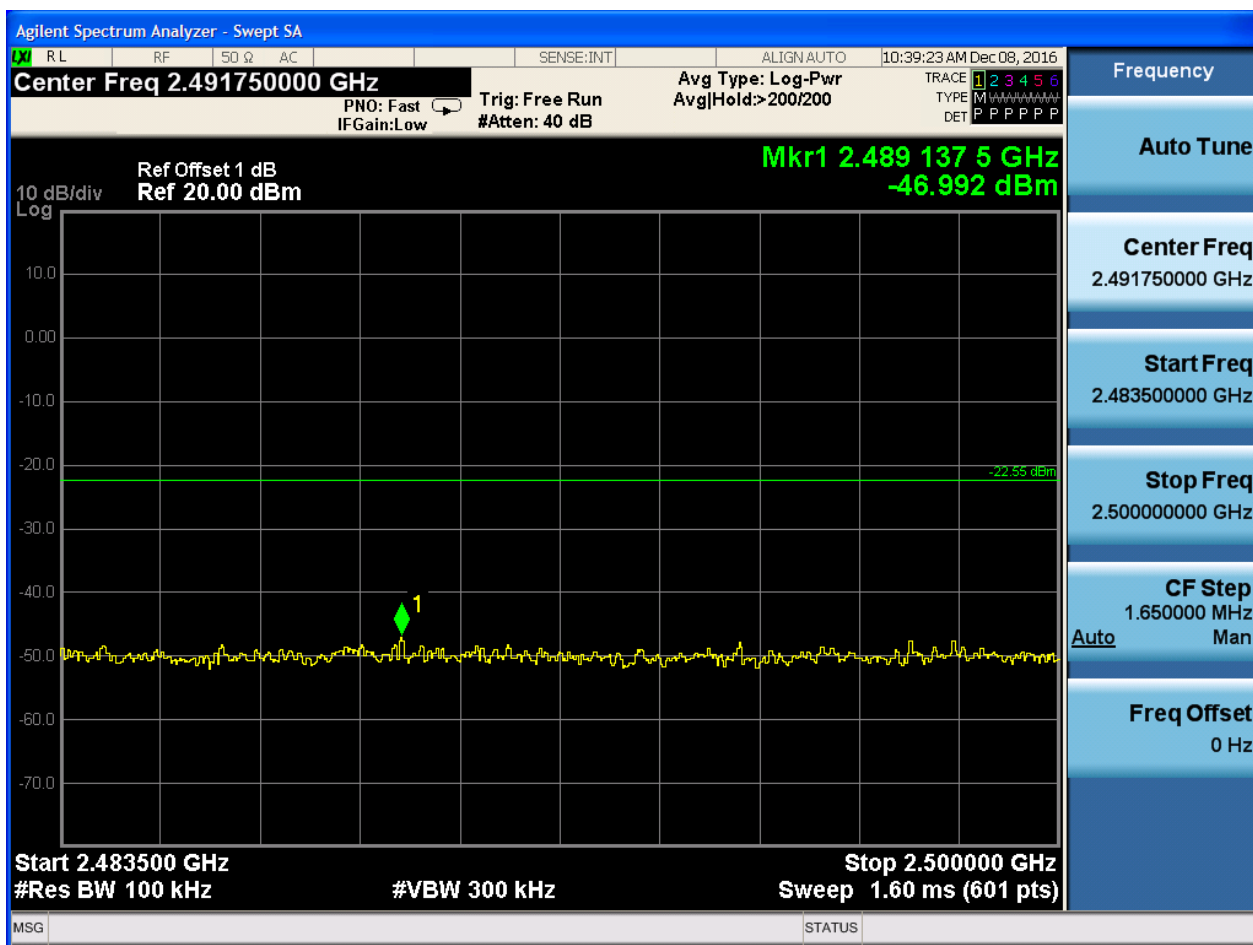
Puw:









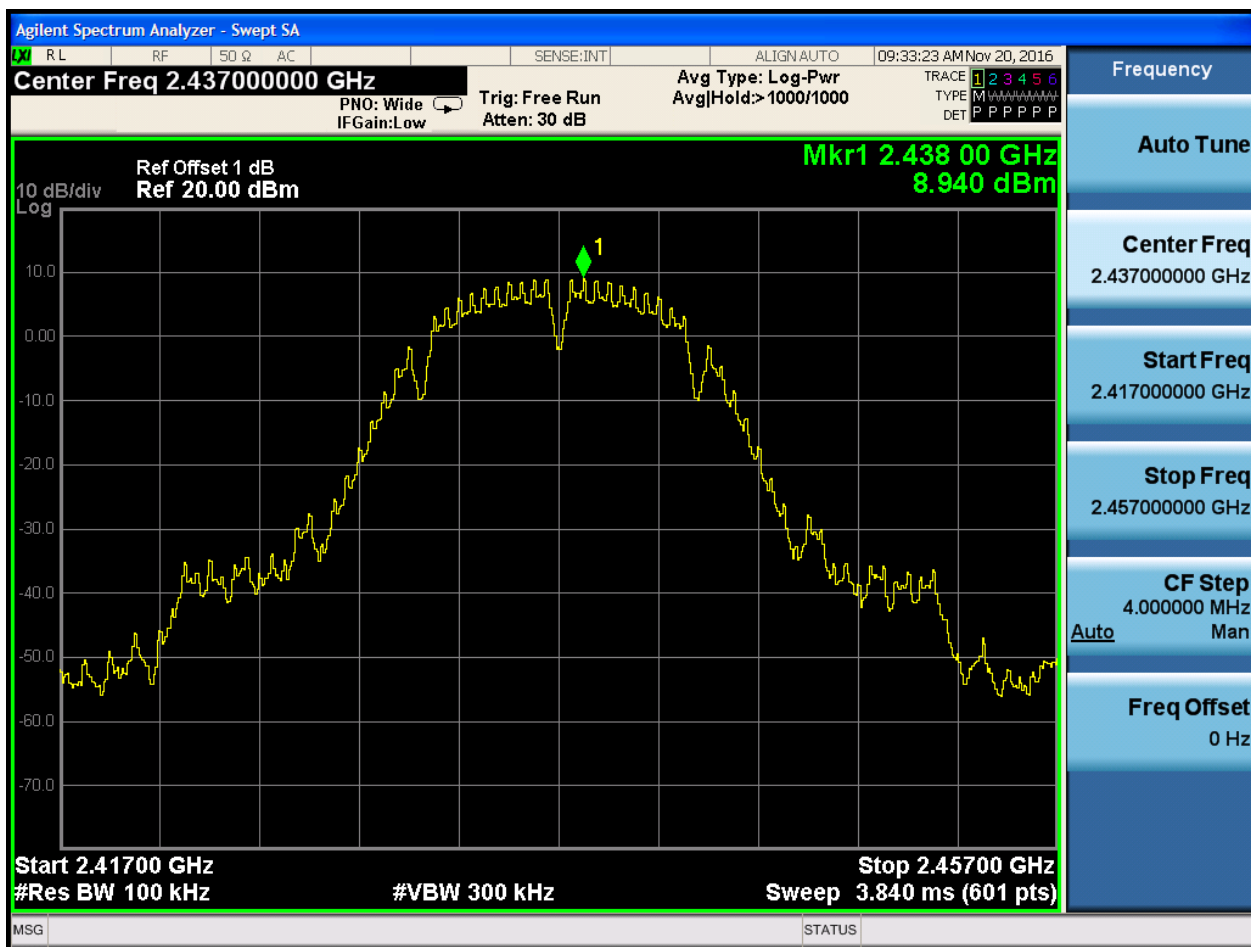






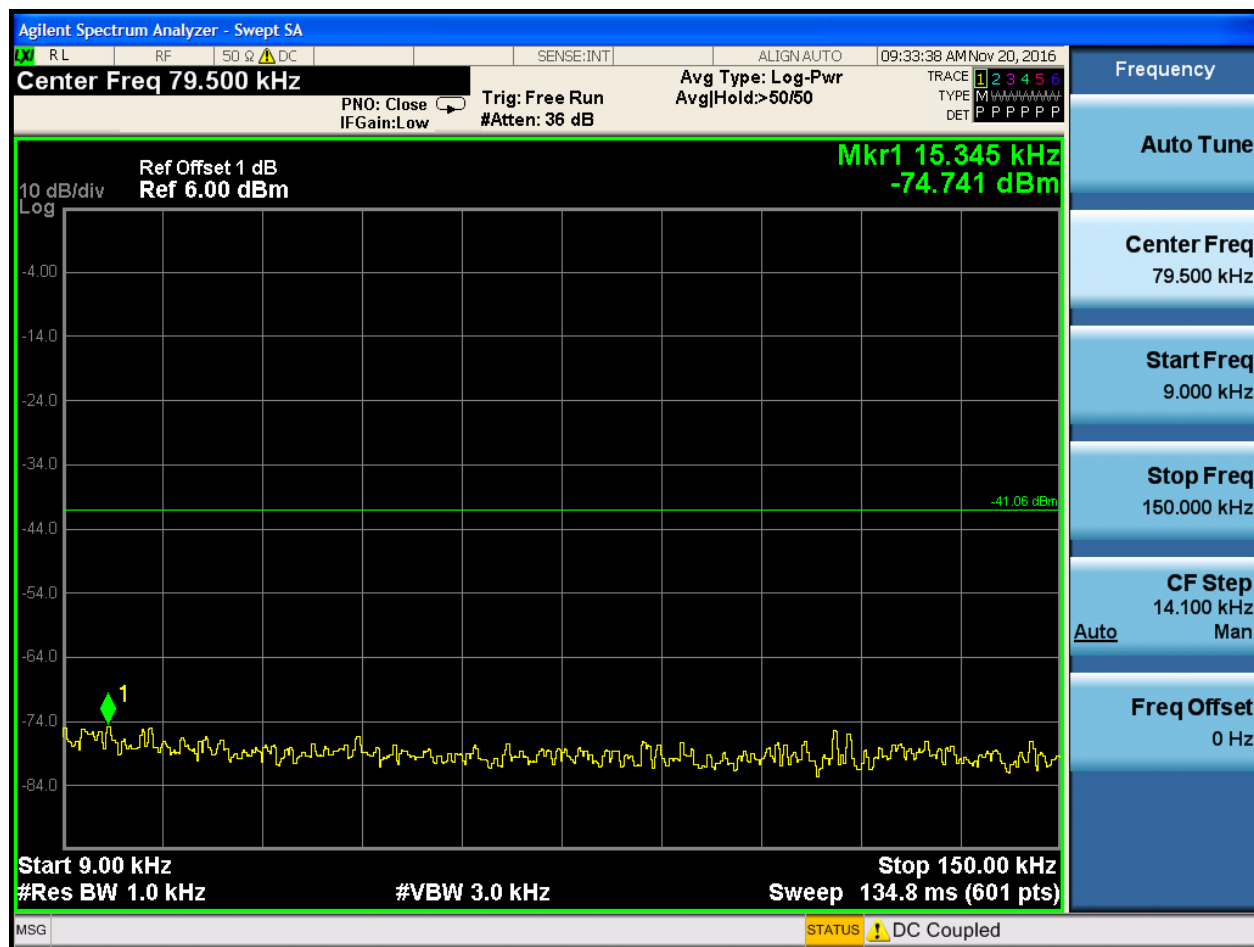
2.2 11B_M@Ant 1

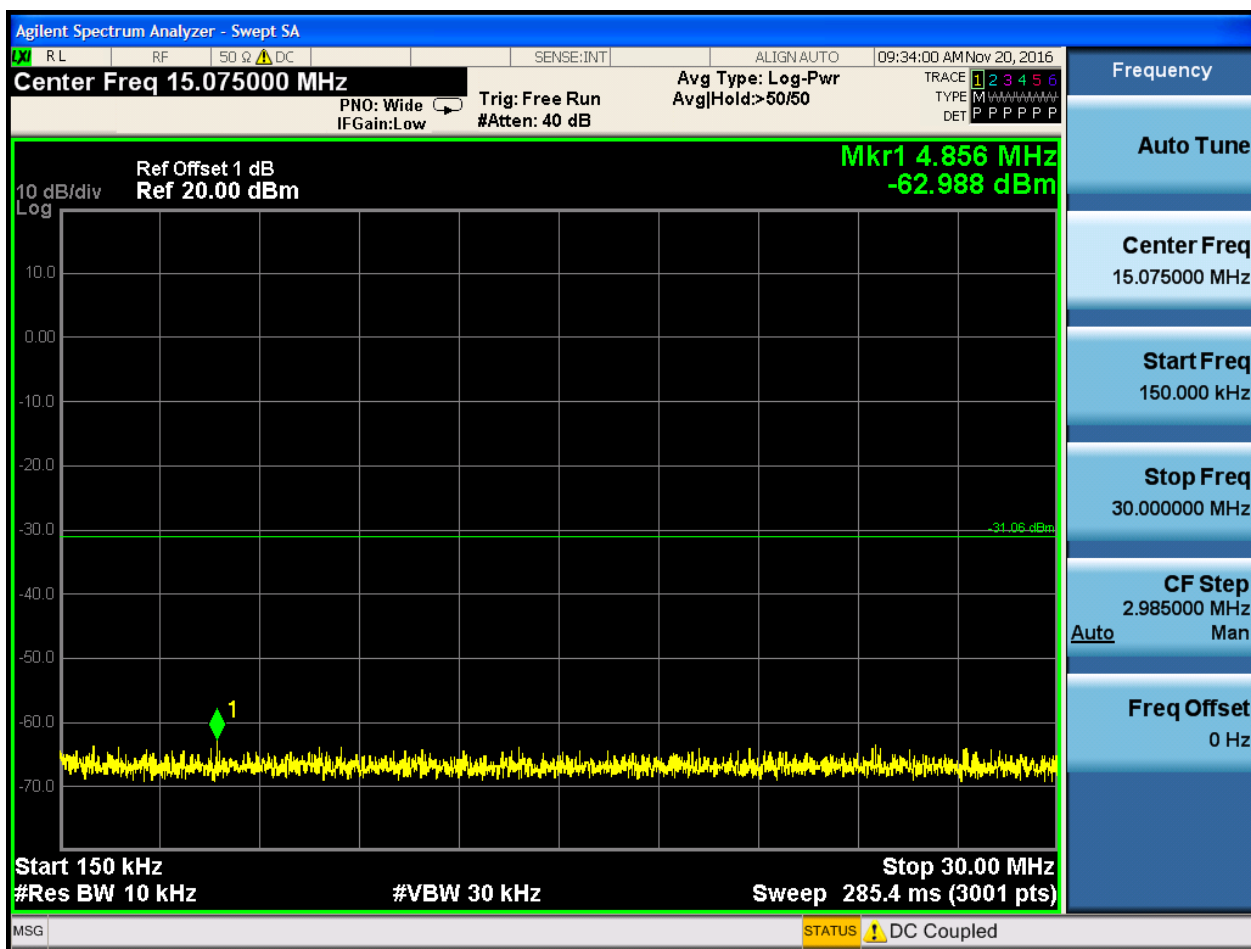
Pref:

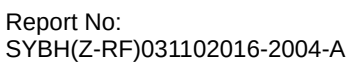


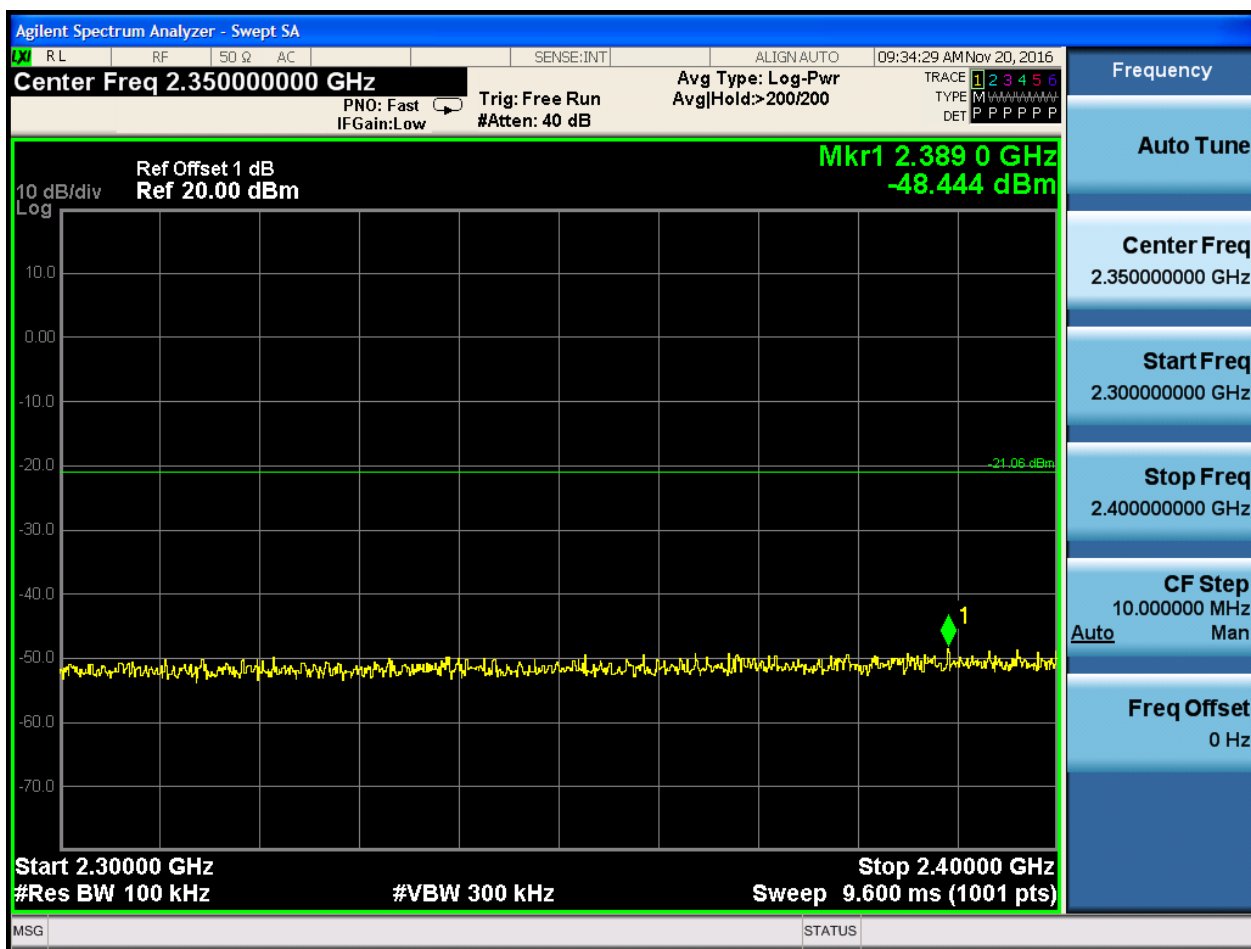


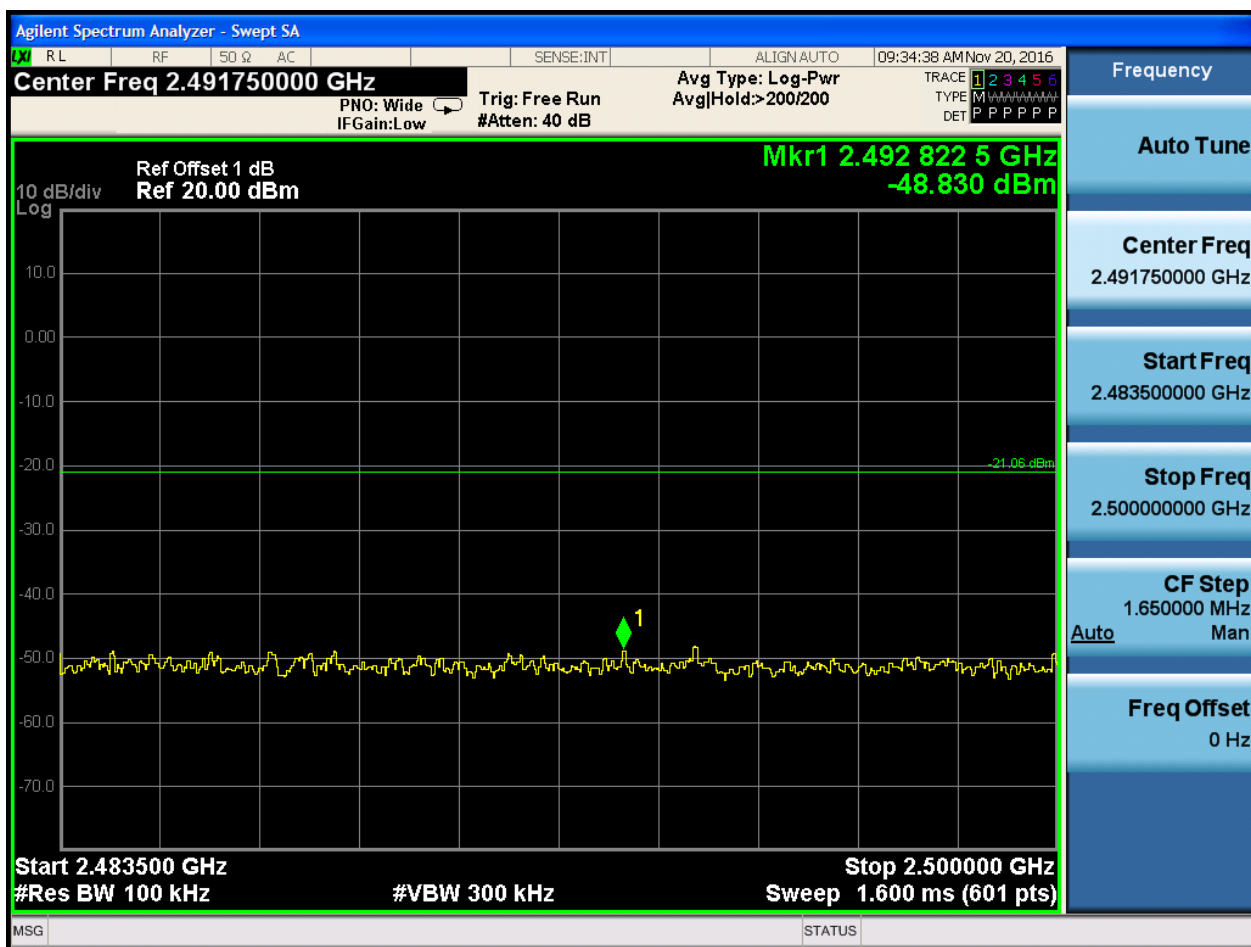
Puw:









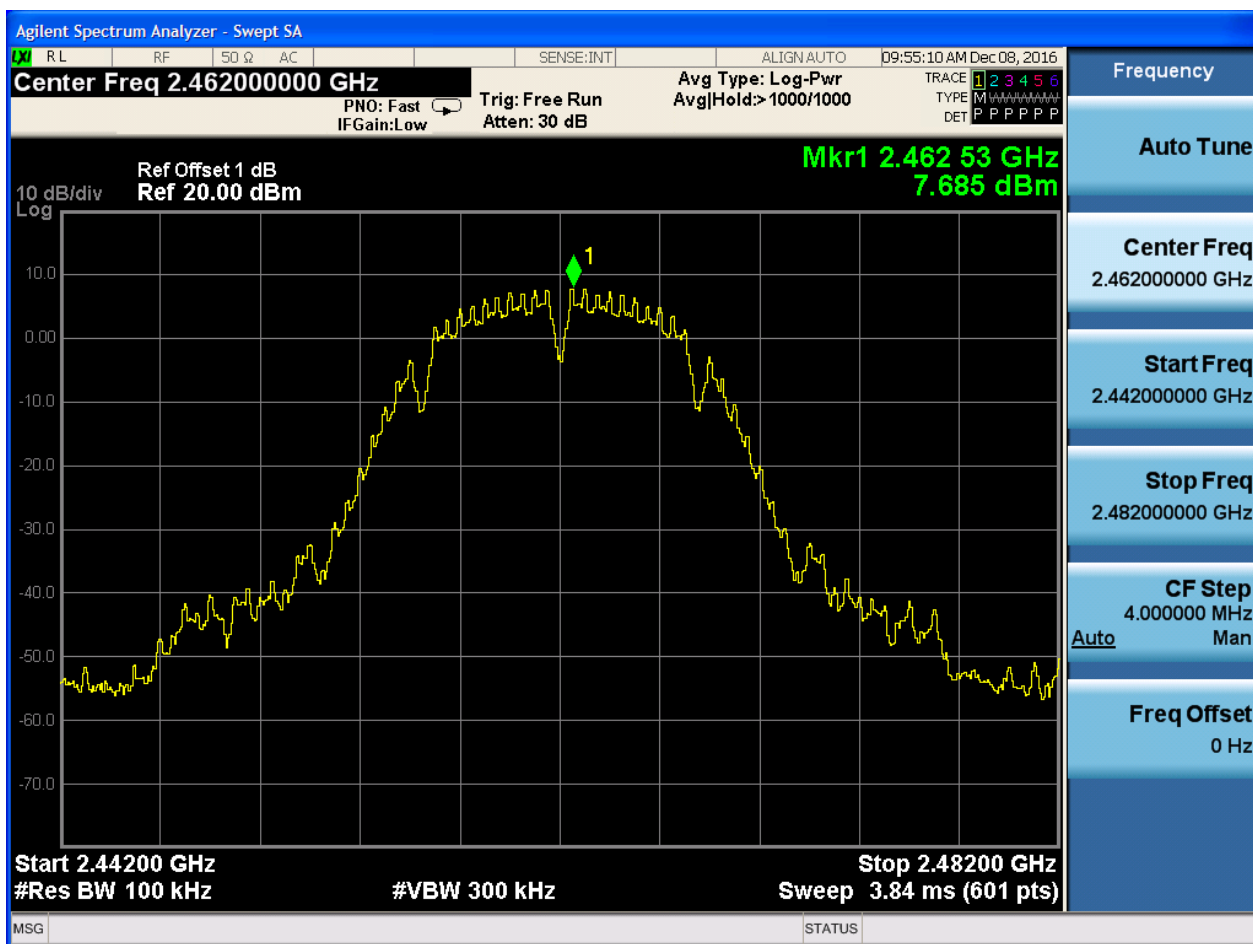






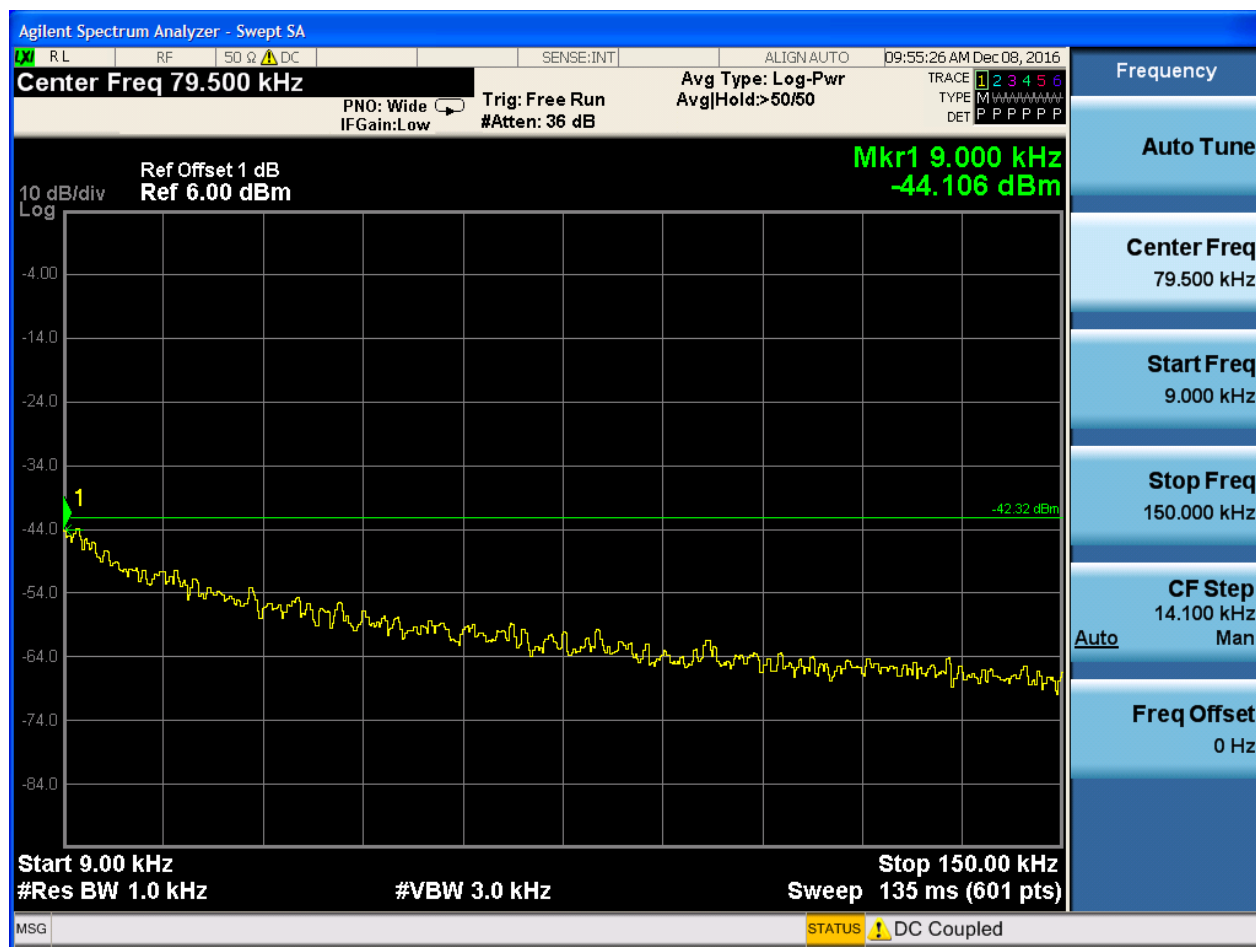
2.3 11B_H@Ant 1

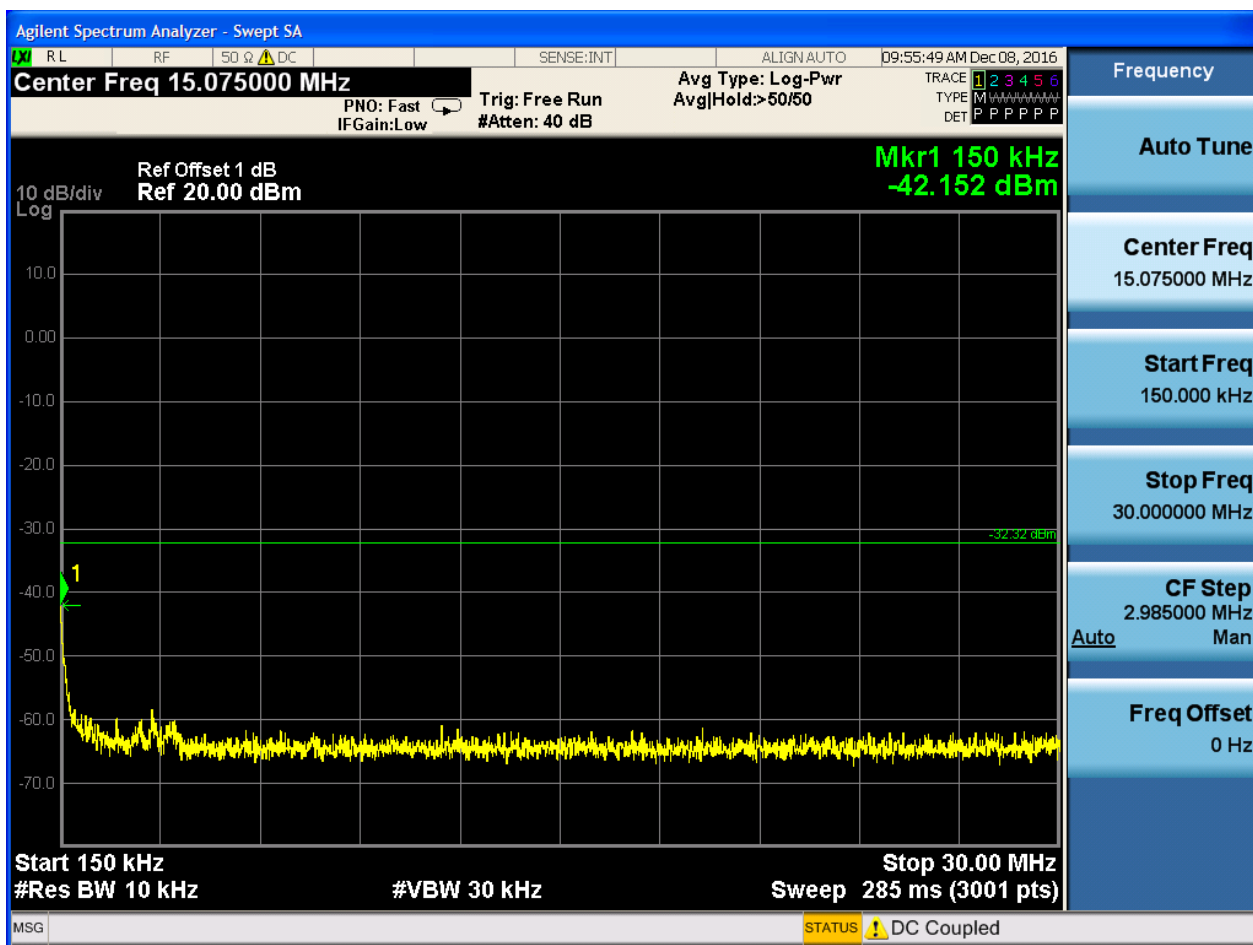
Pref:

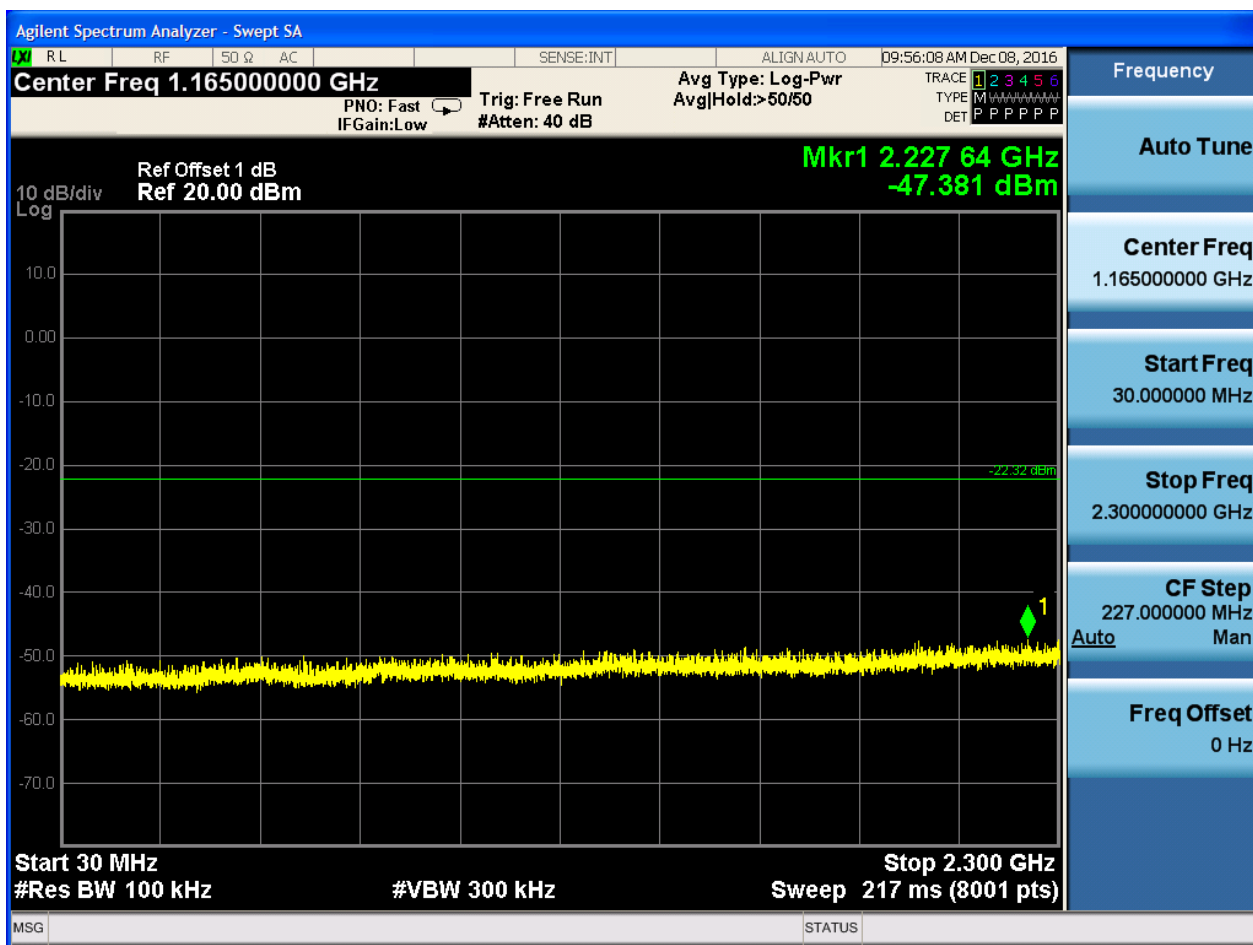


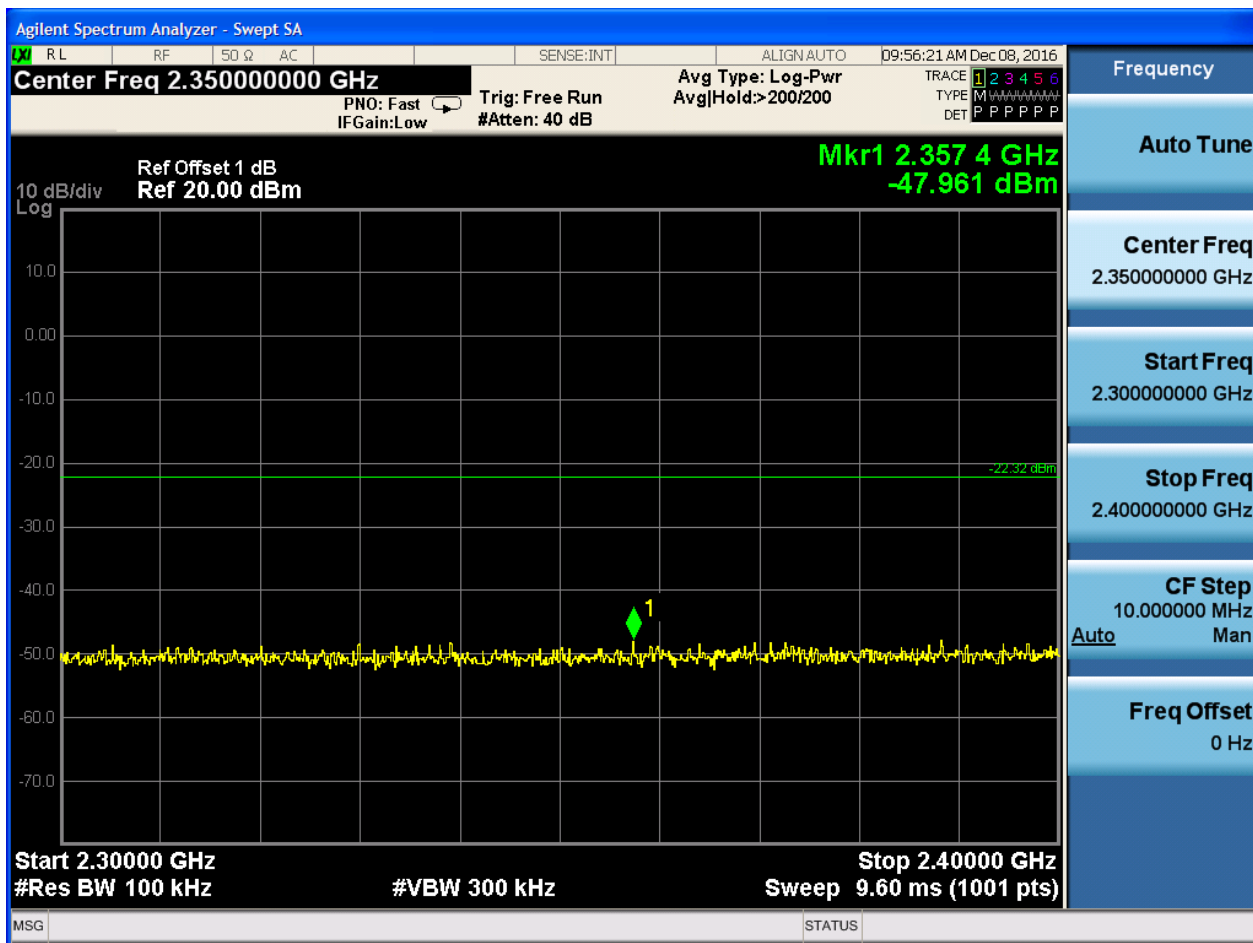


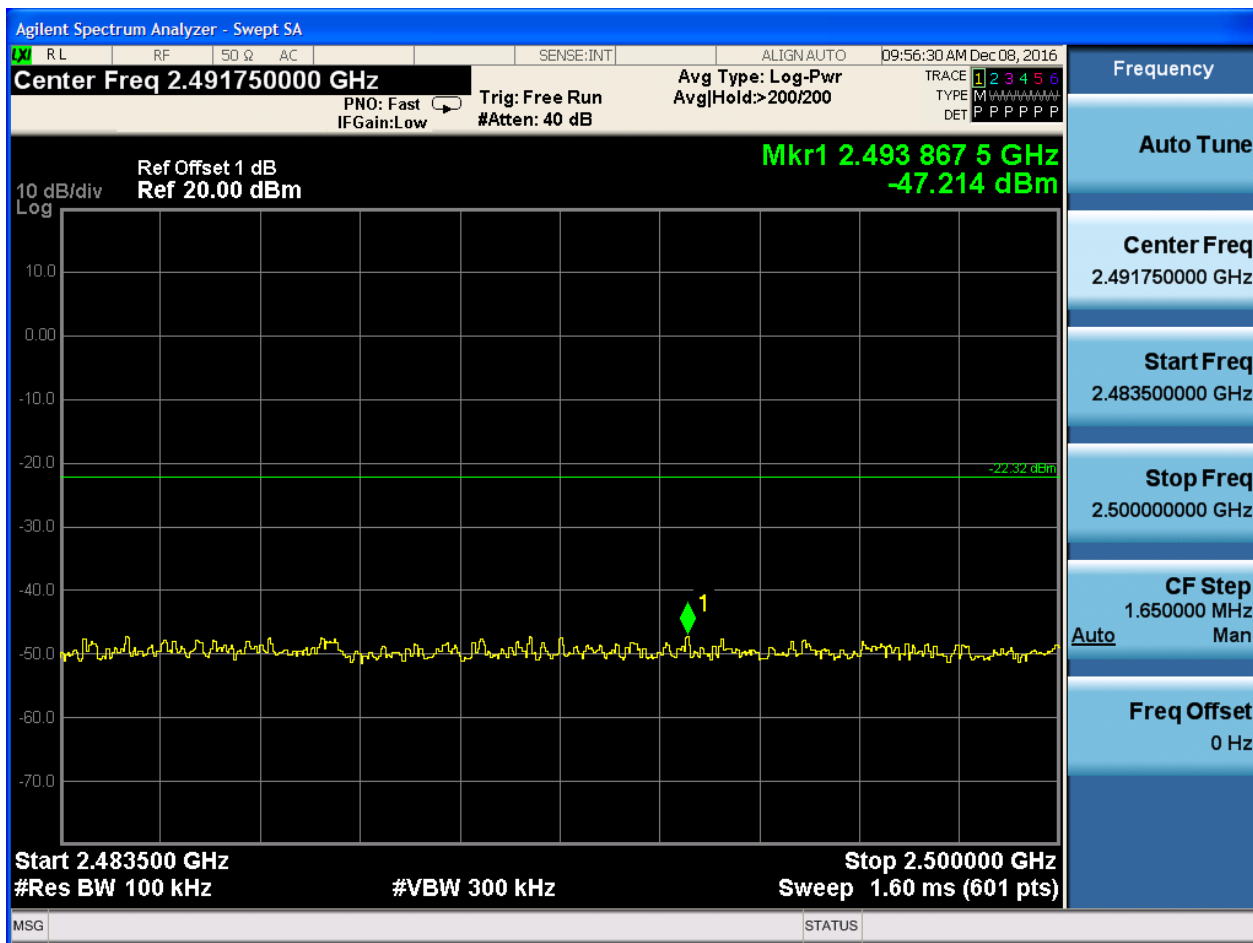
Puw:









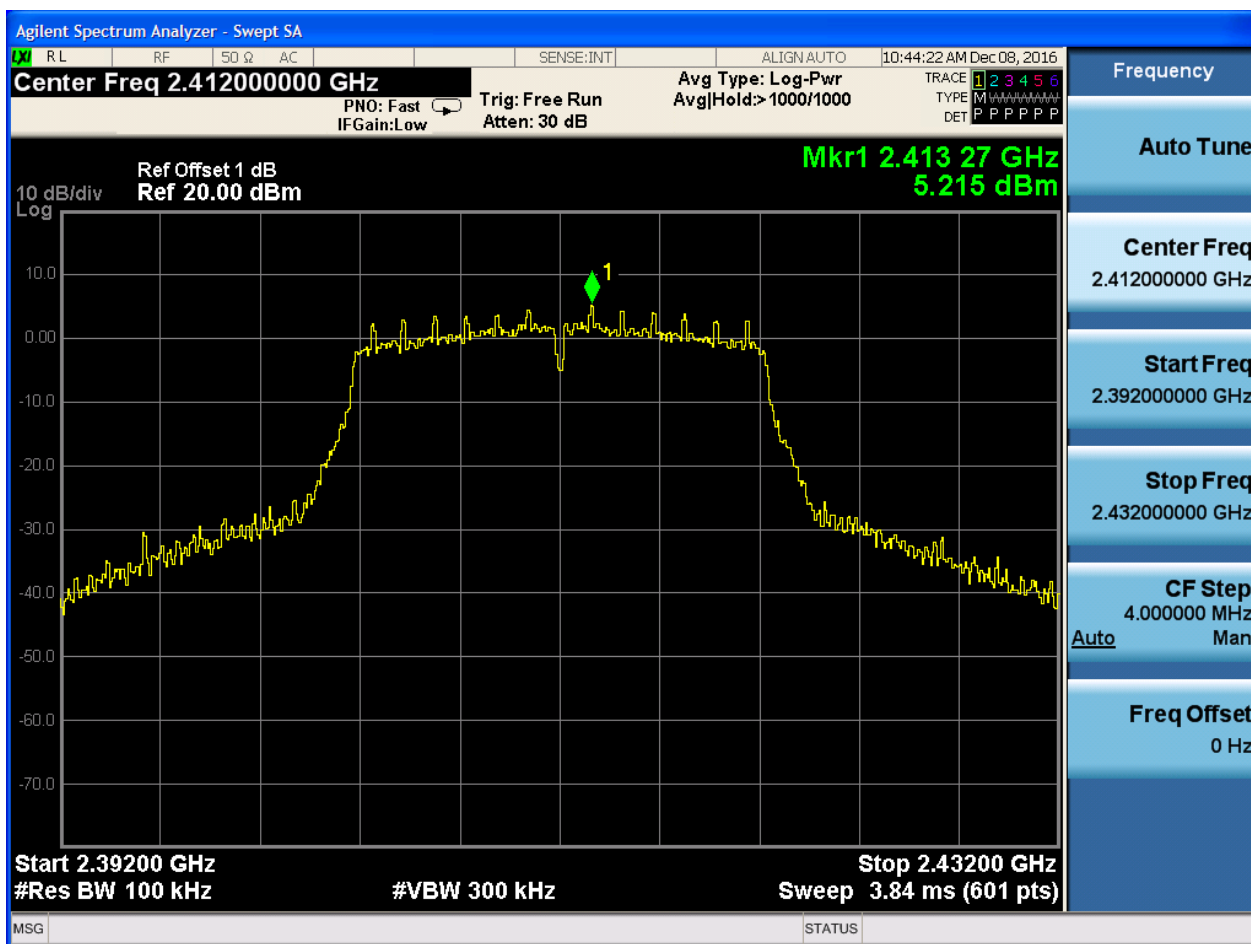






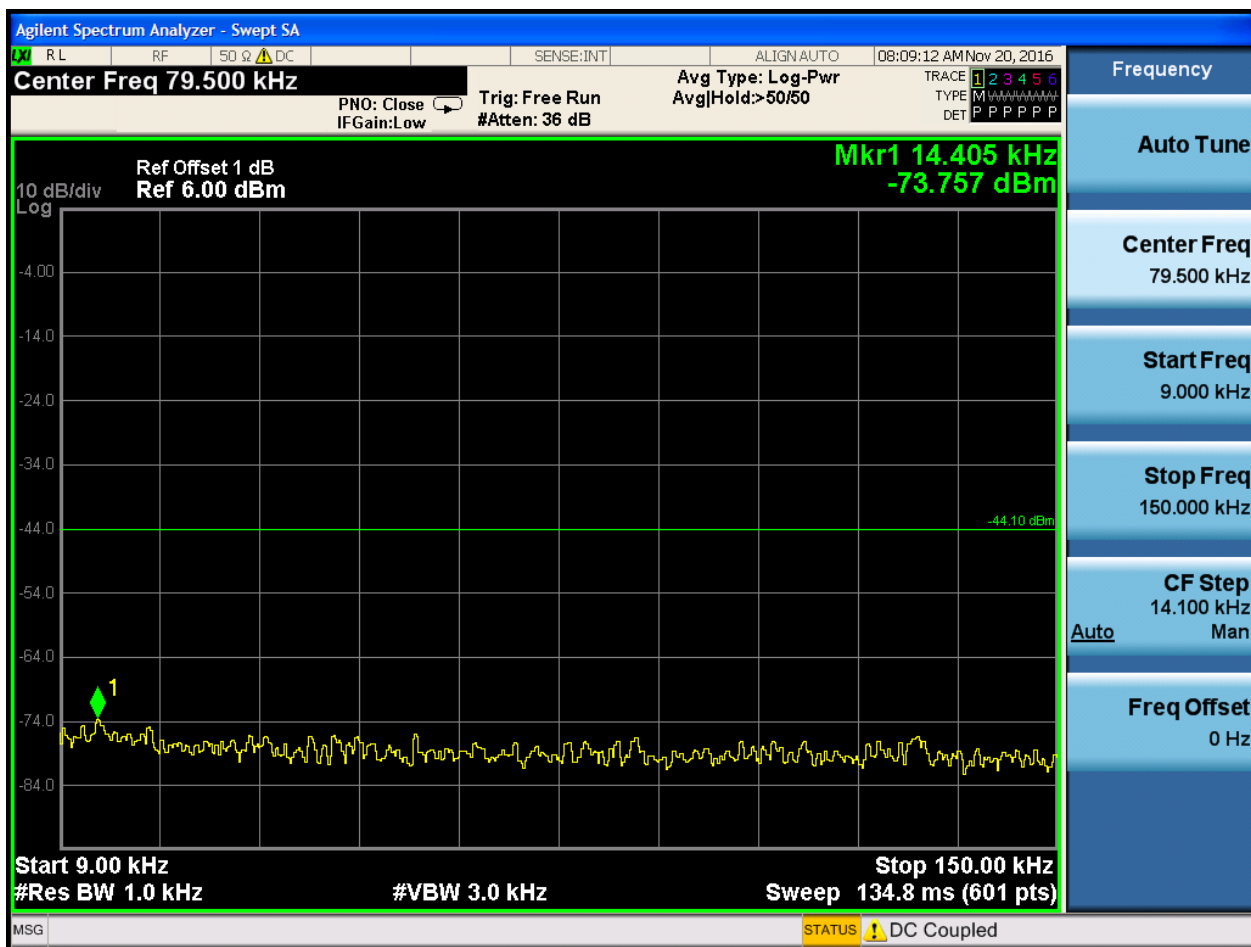
2.4 11G_L@Ant 1

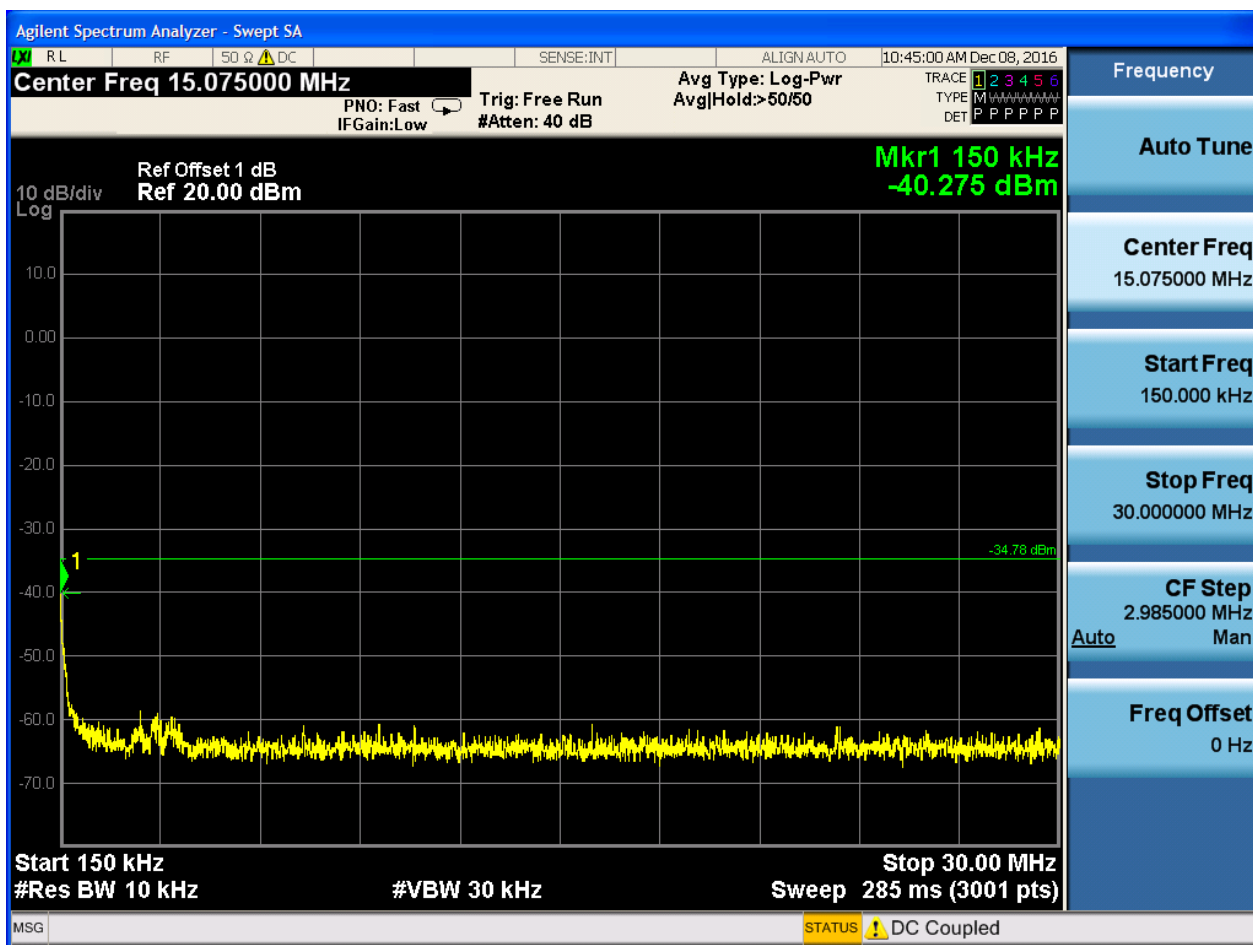
Pref:

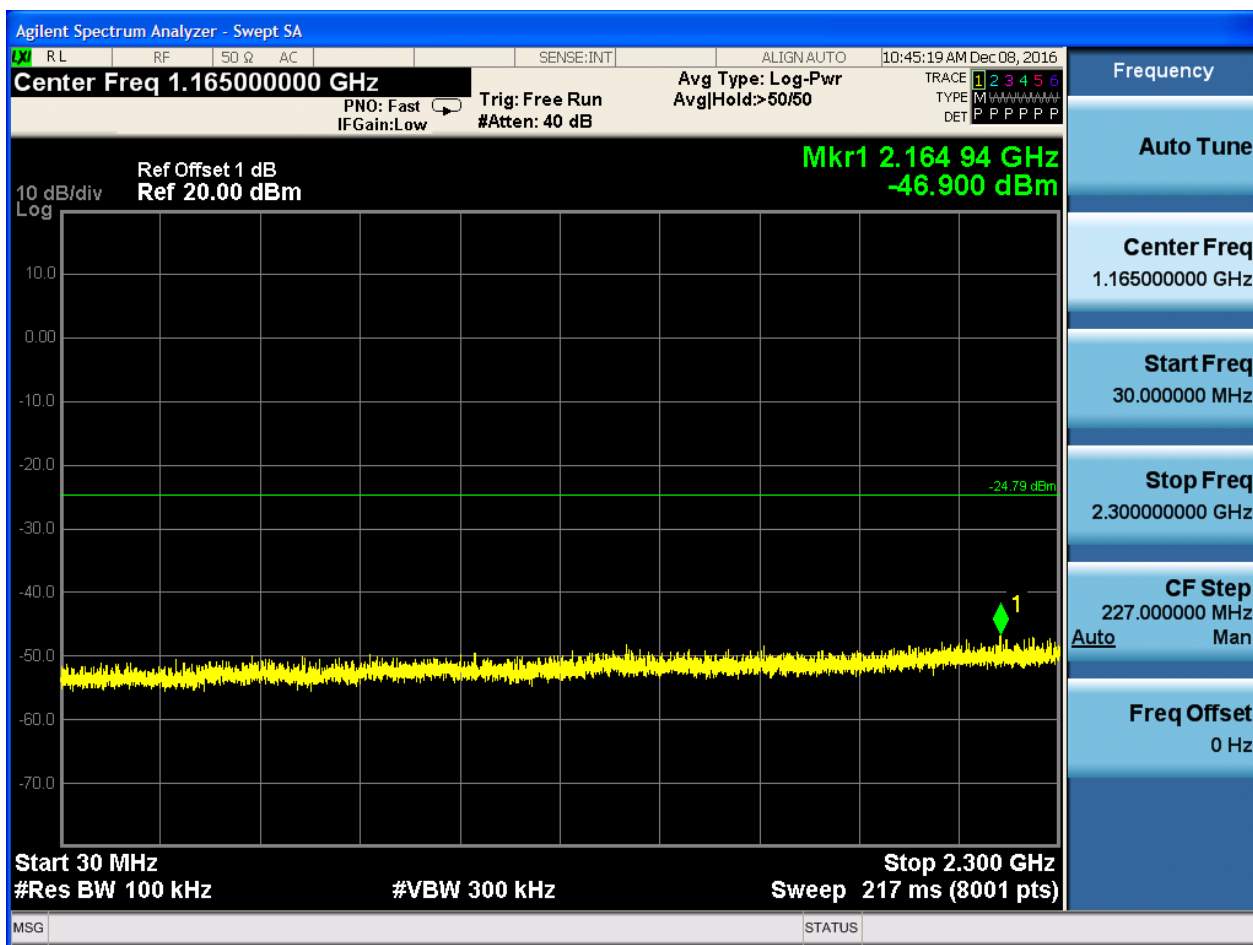


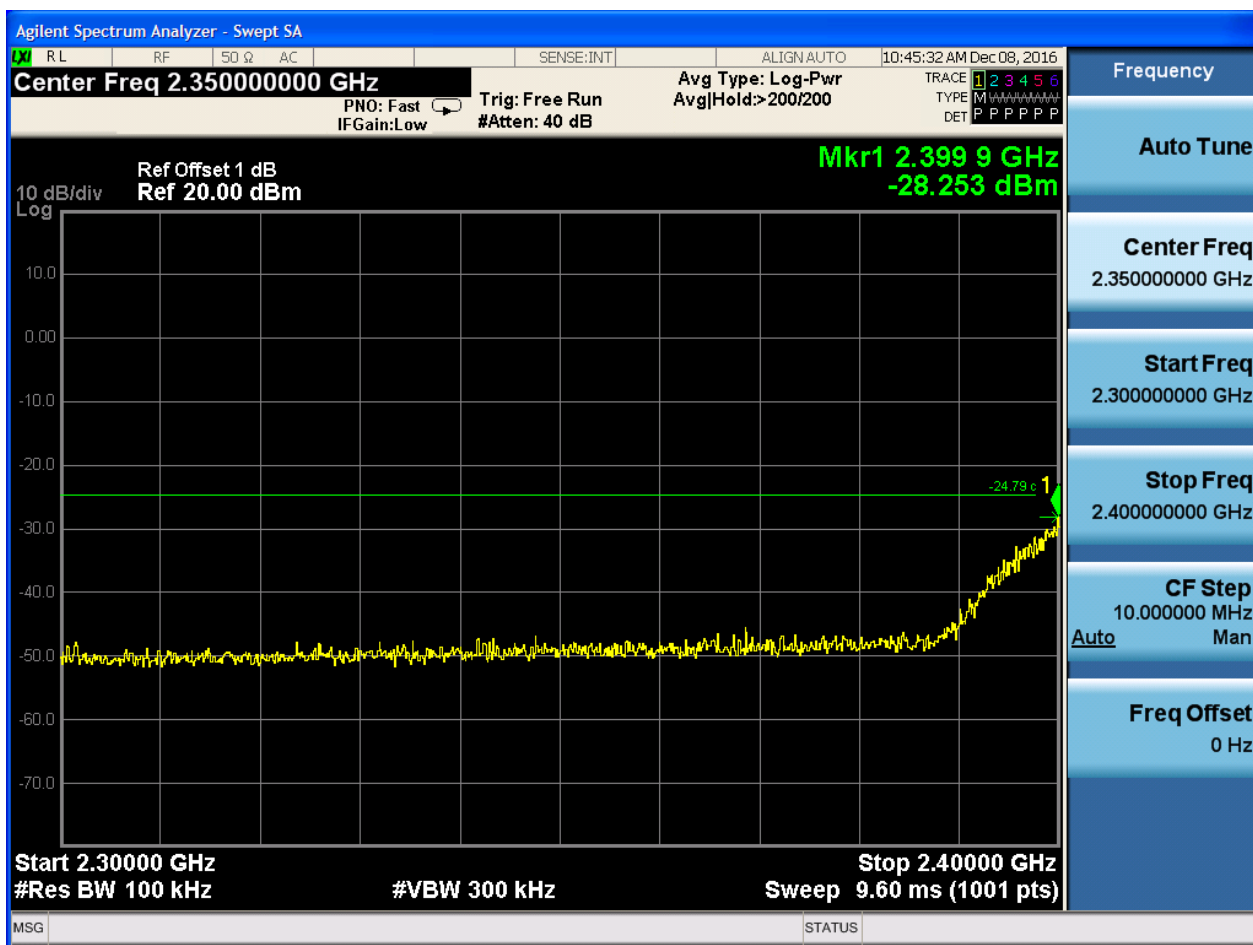


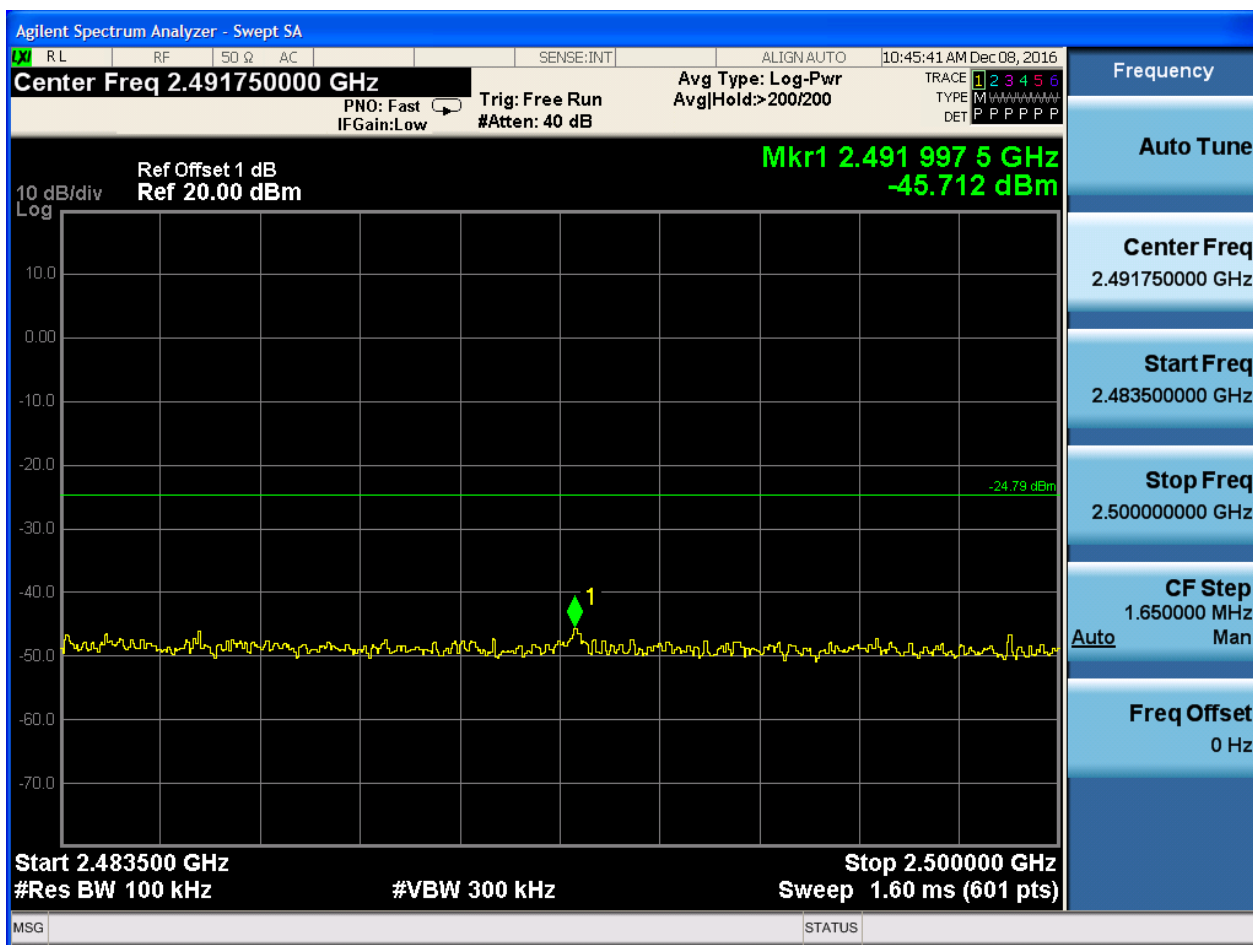
Puw:

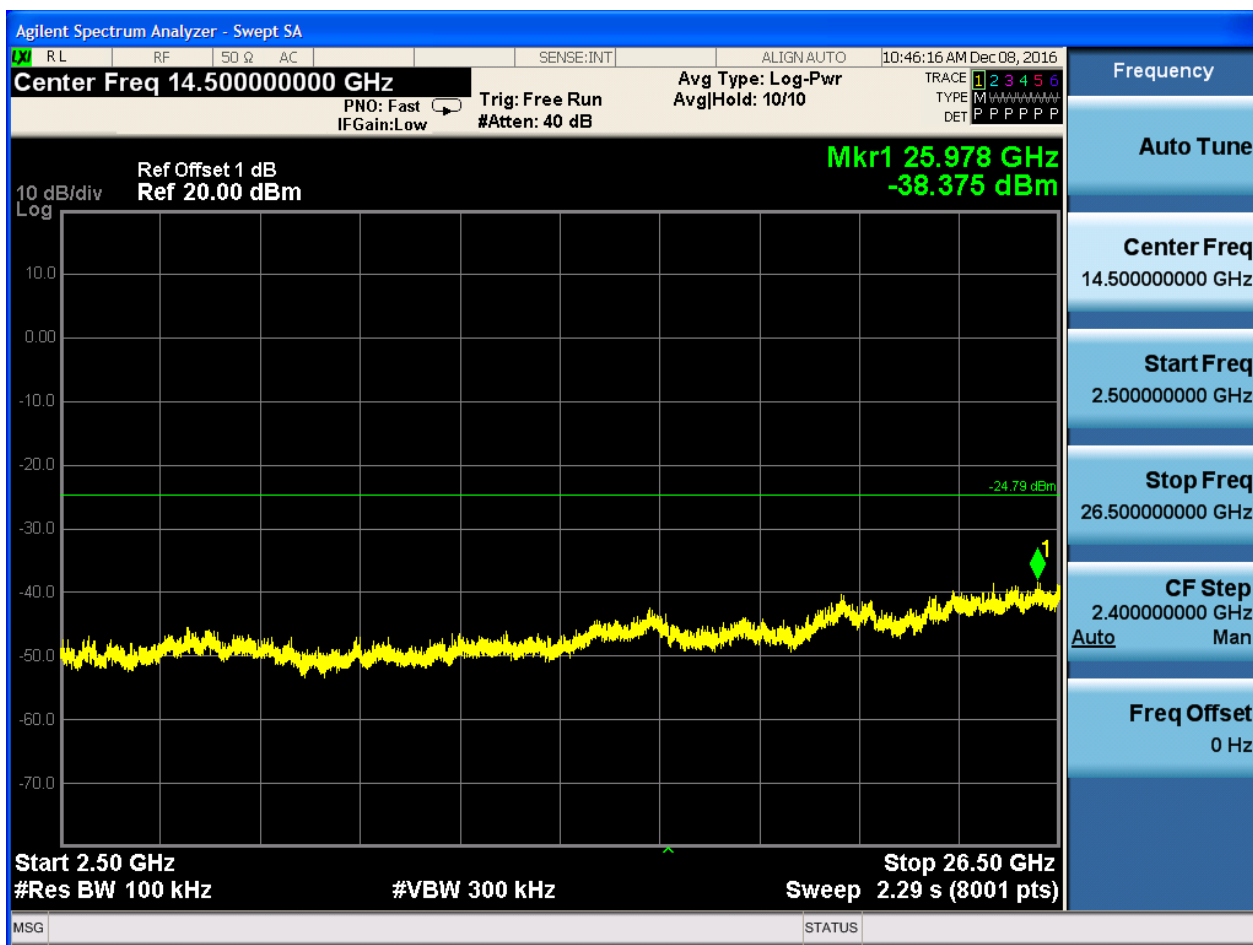














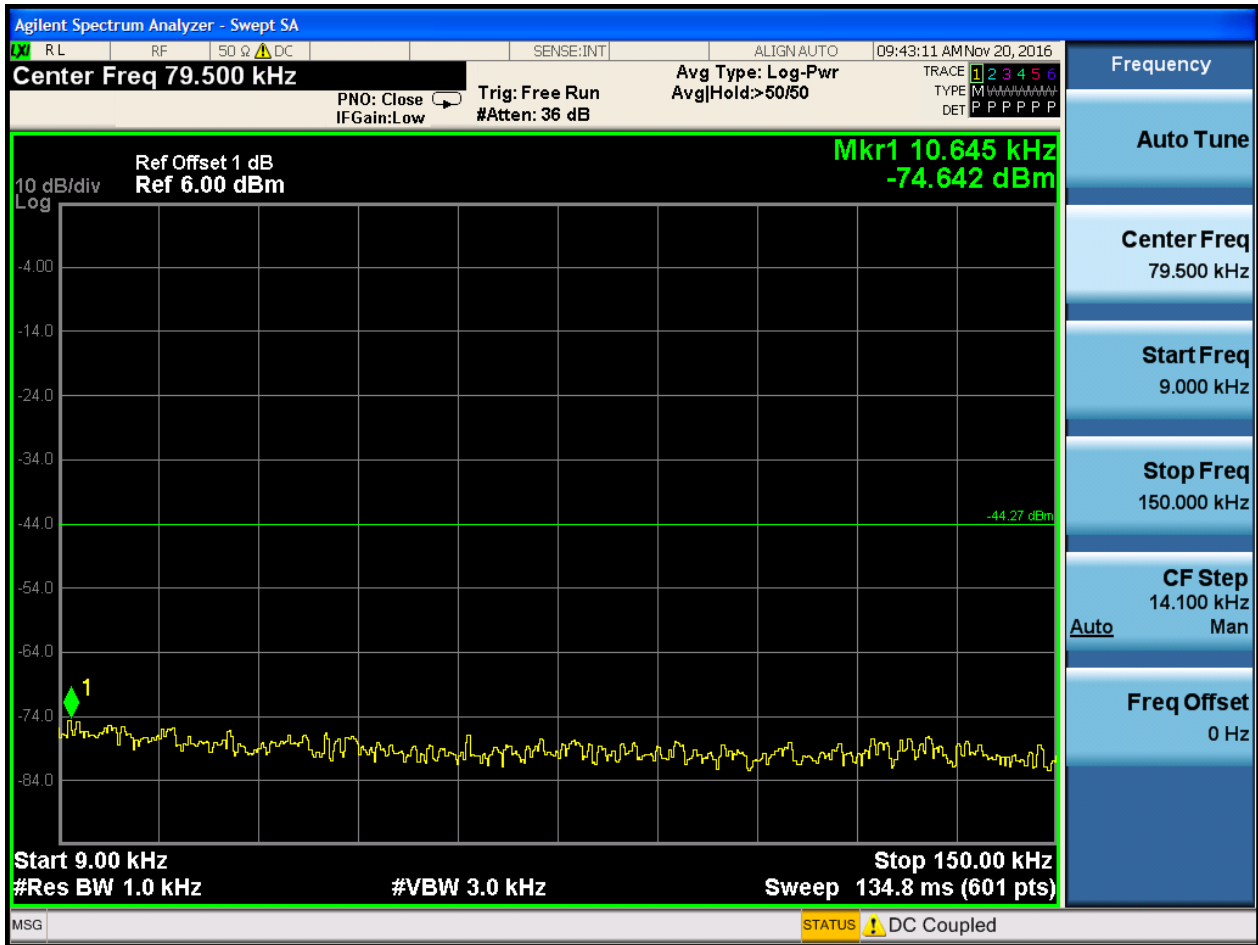
2.5 11G_M@Ant 1

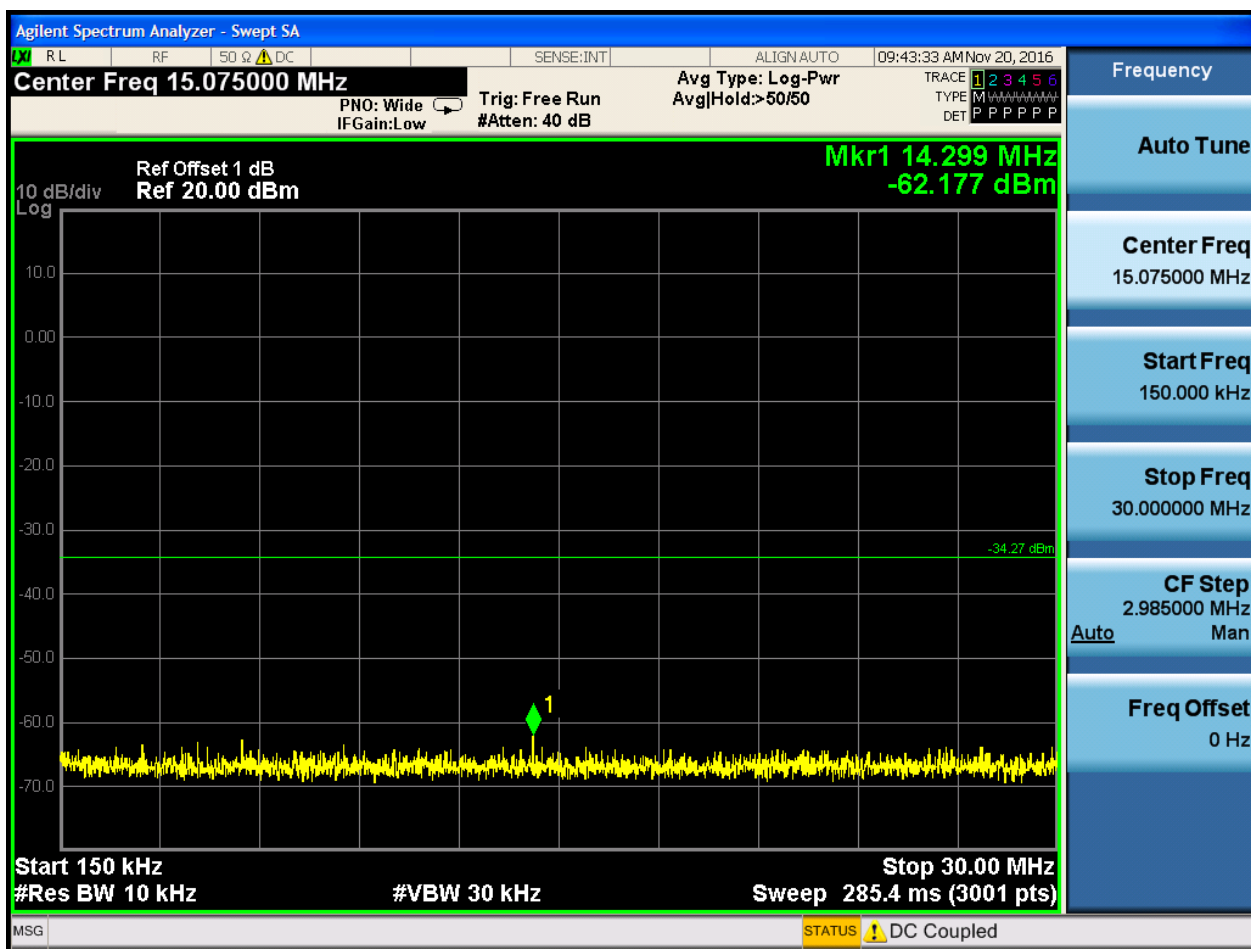
Pref:

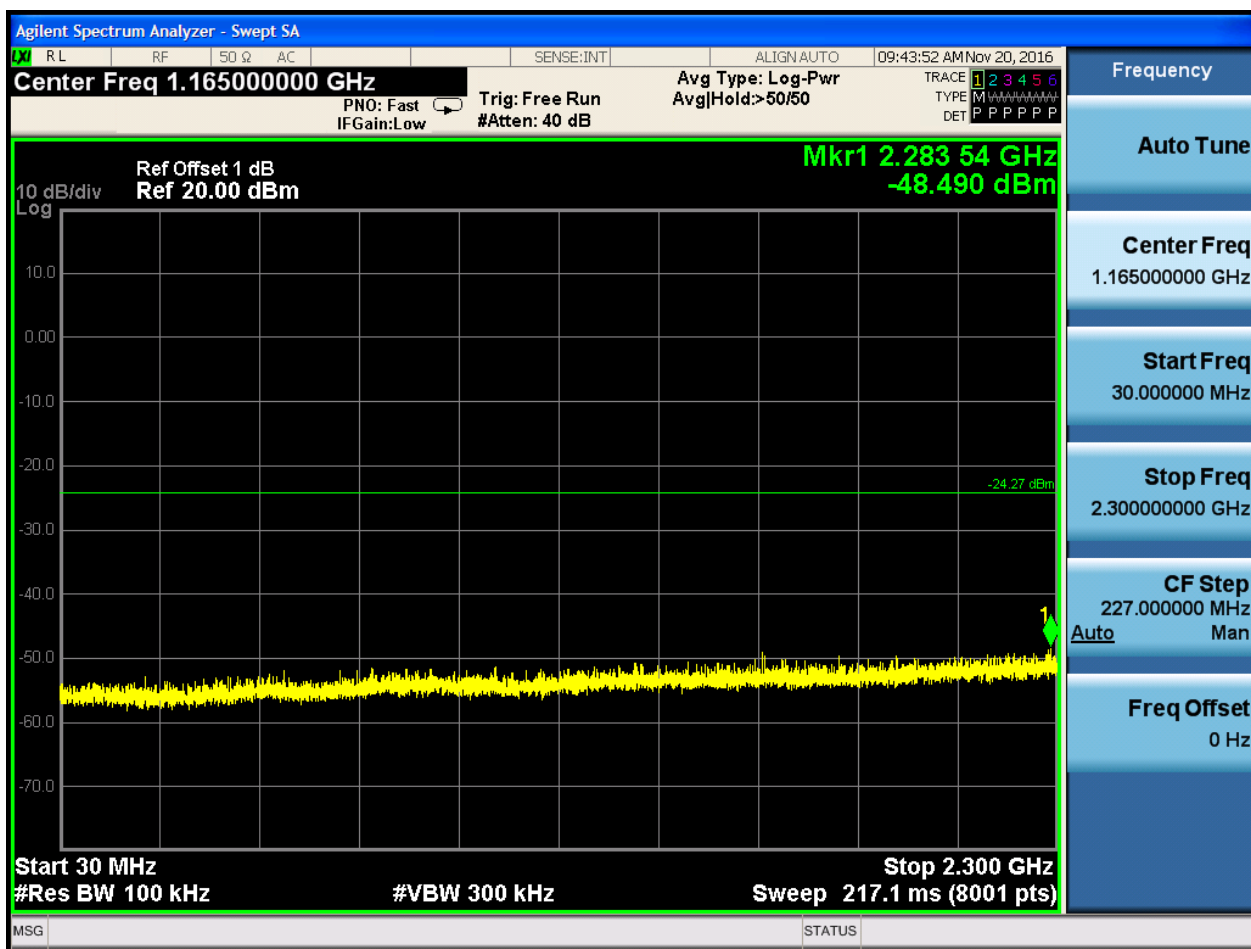


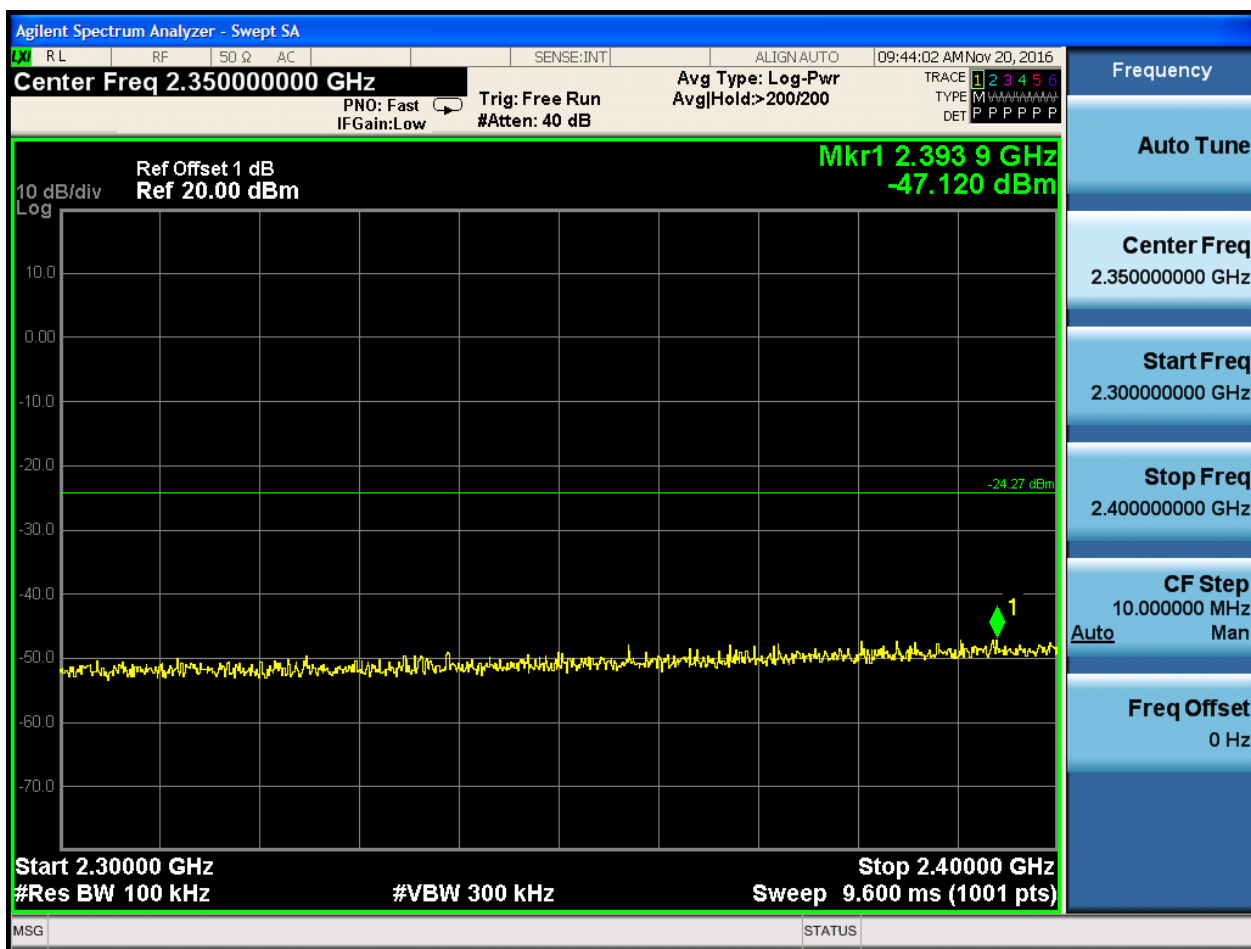


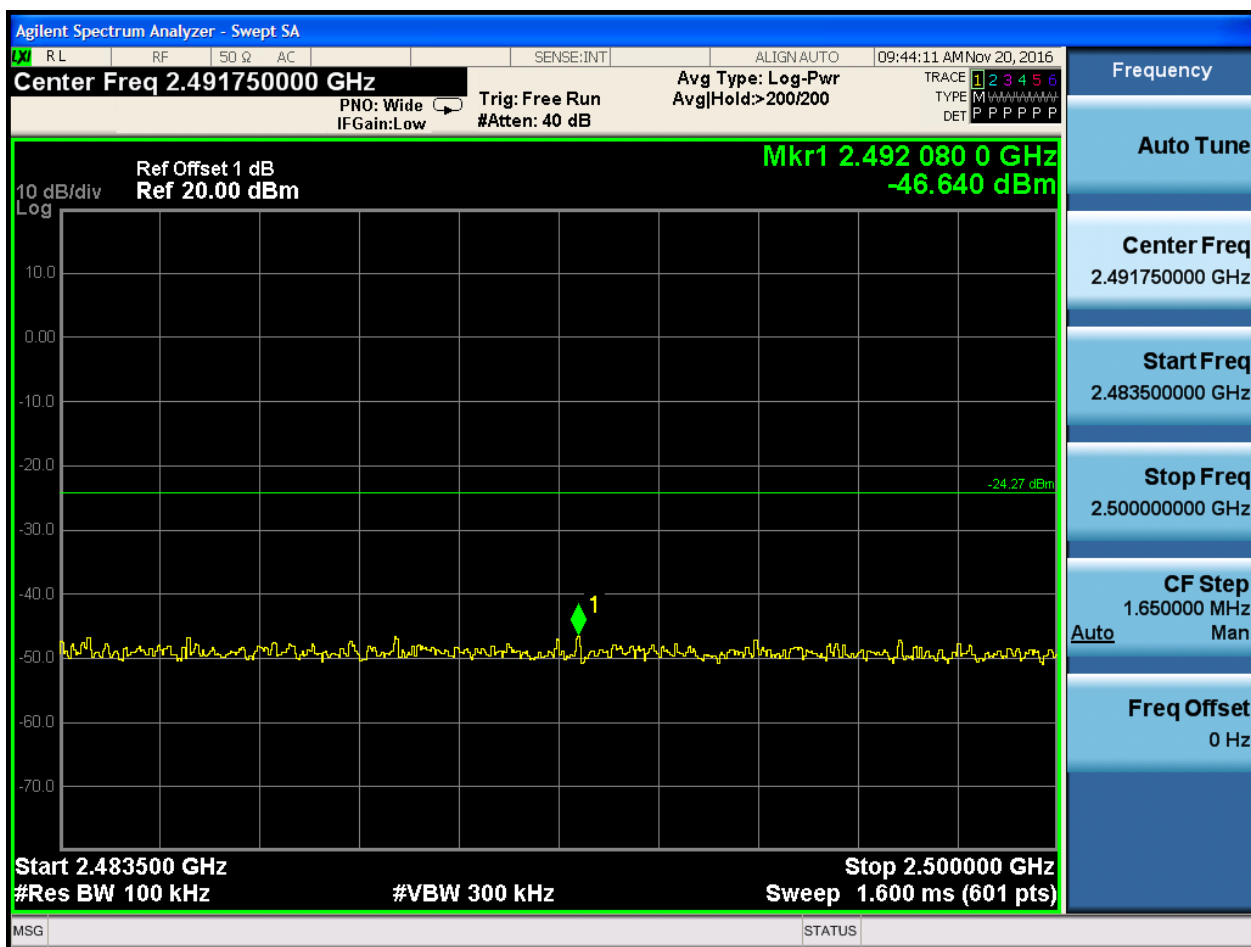
Puw:









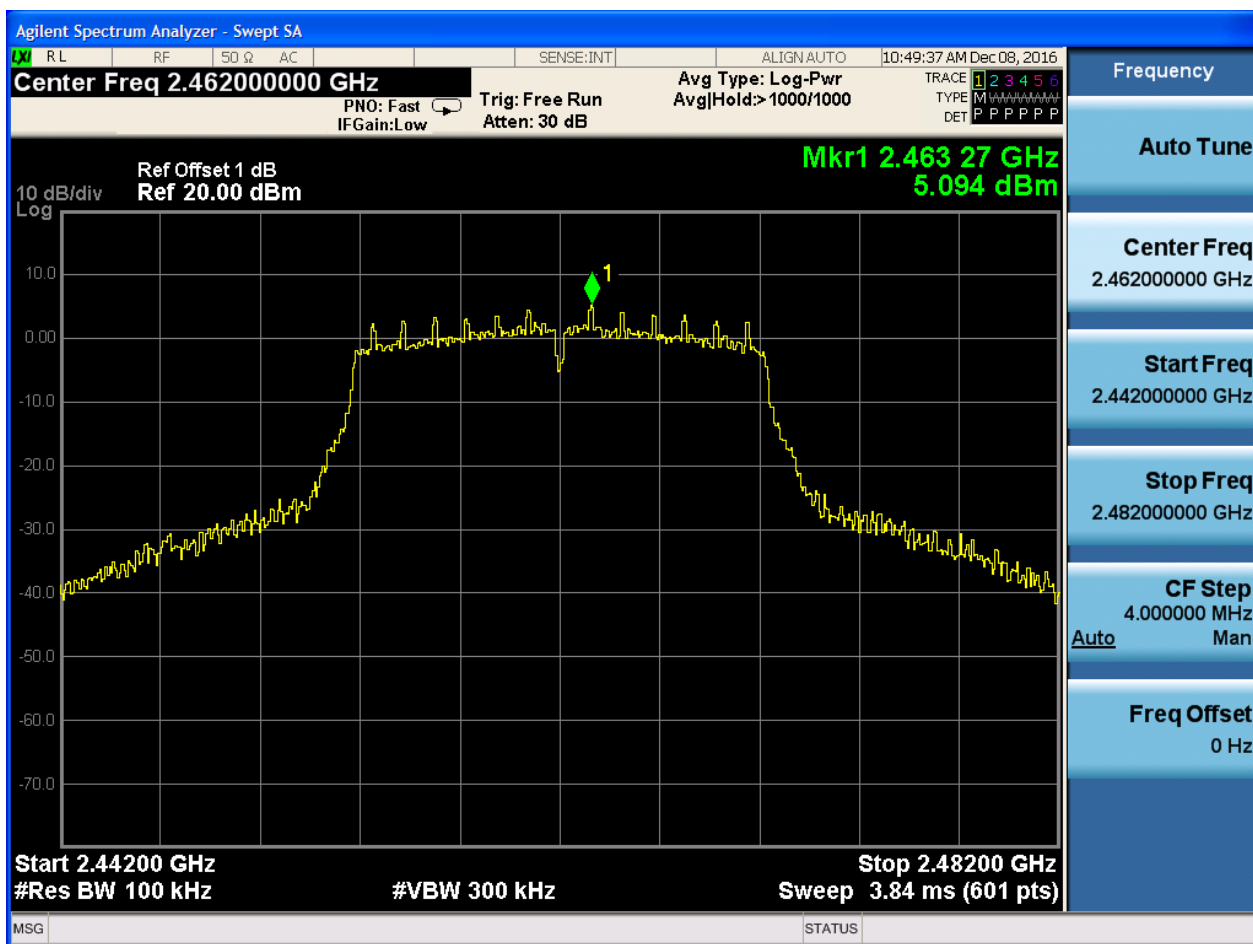






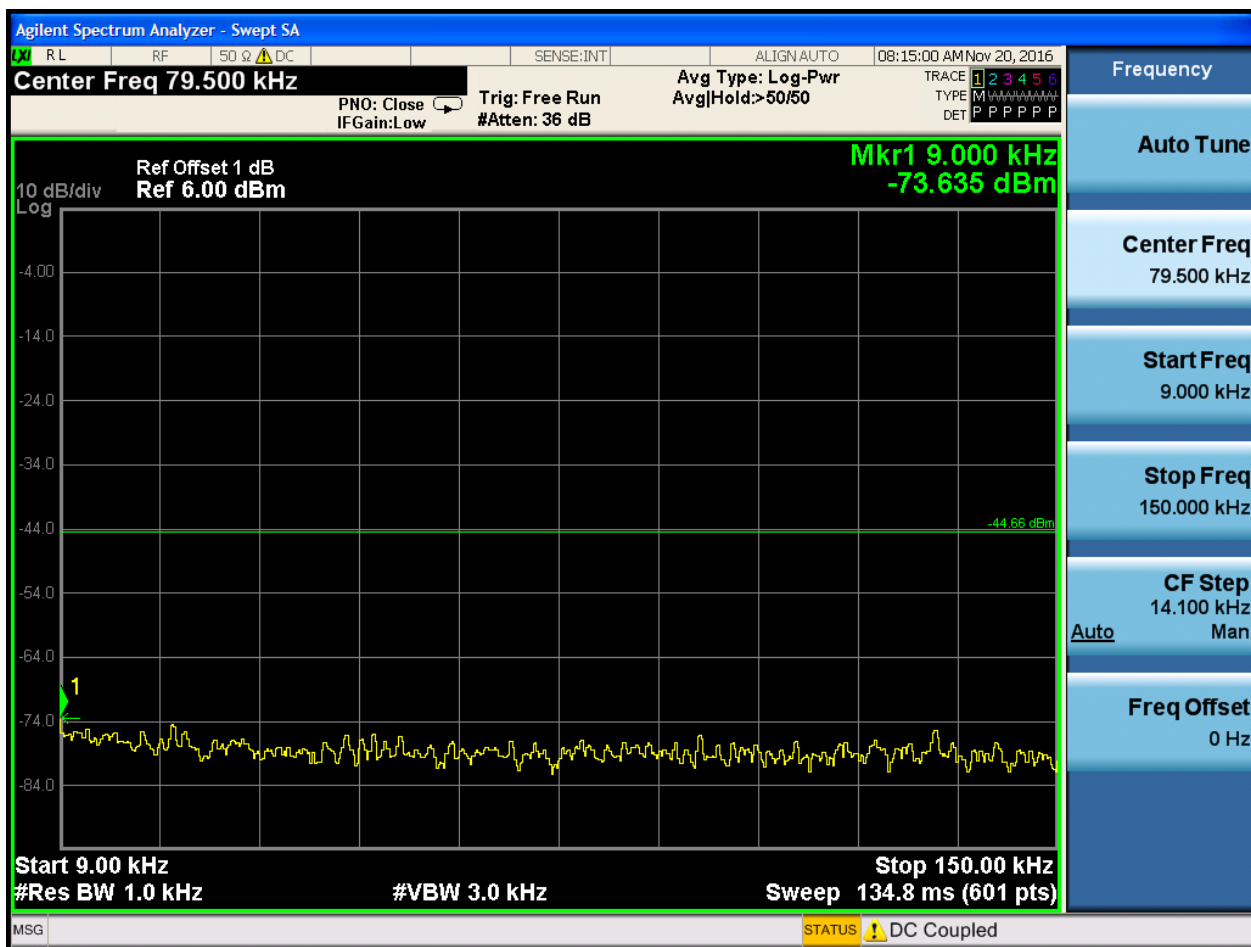
2.6 11G_H@Ant 1

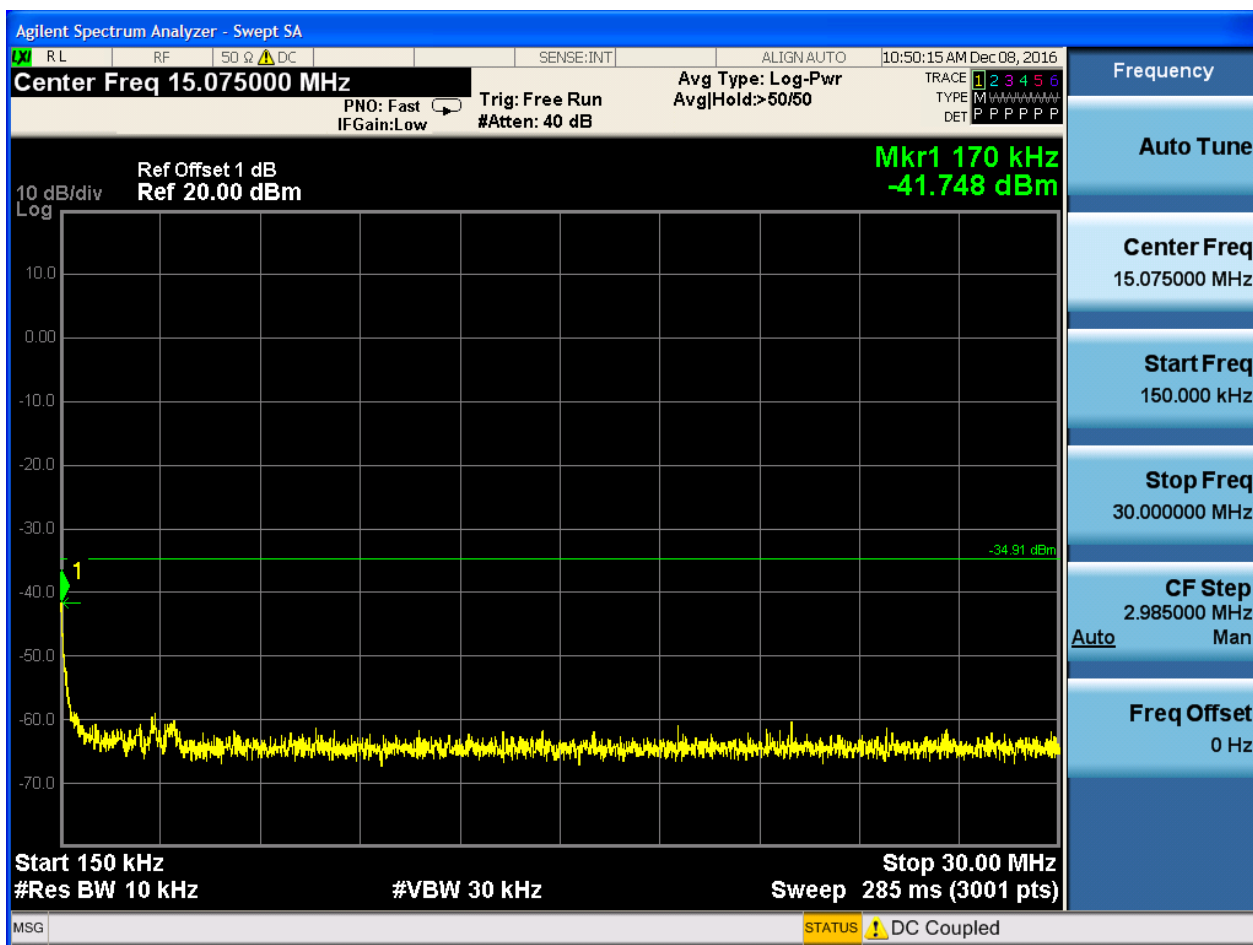
Pref:

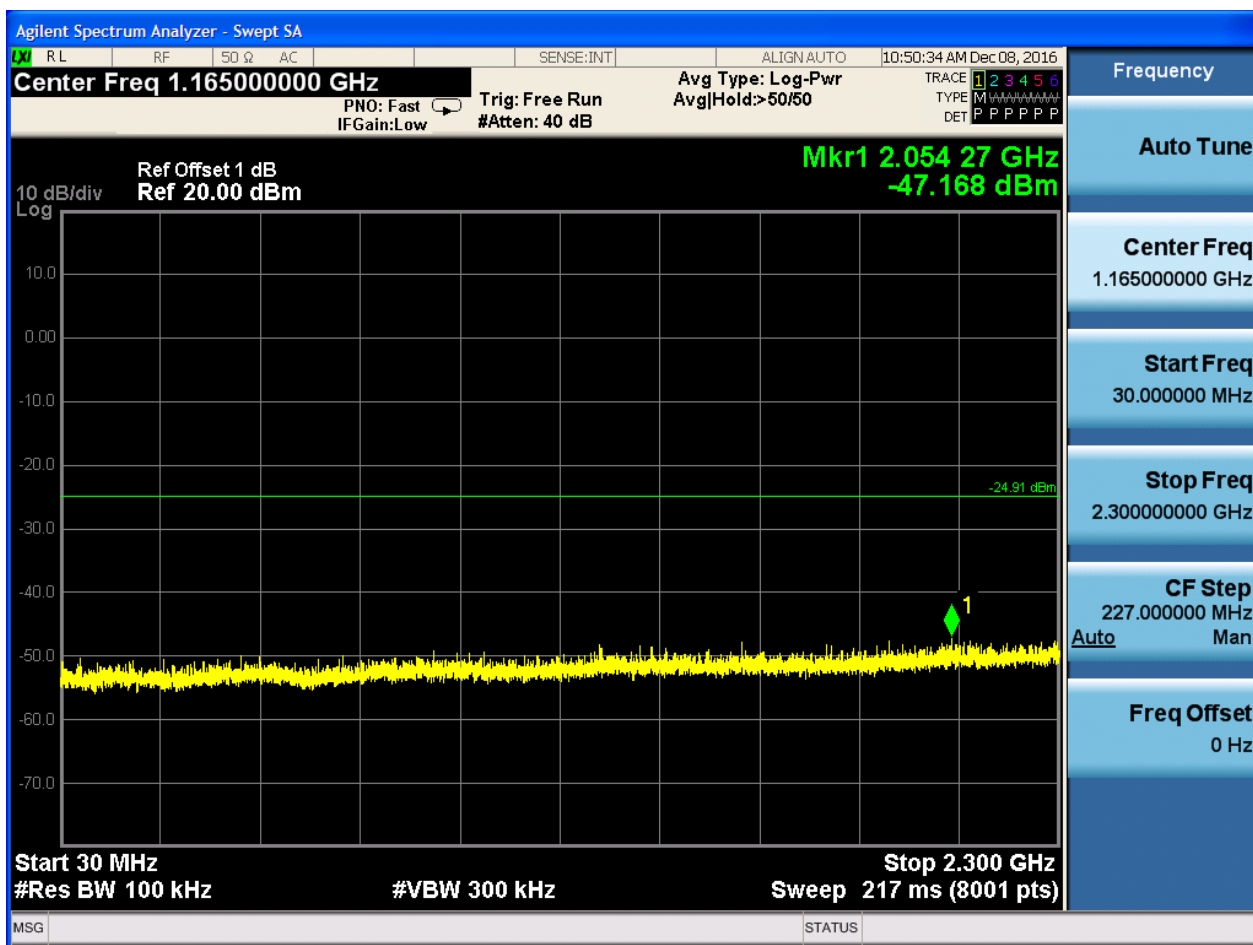


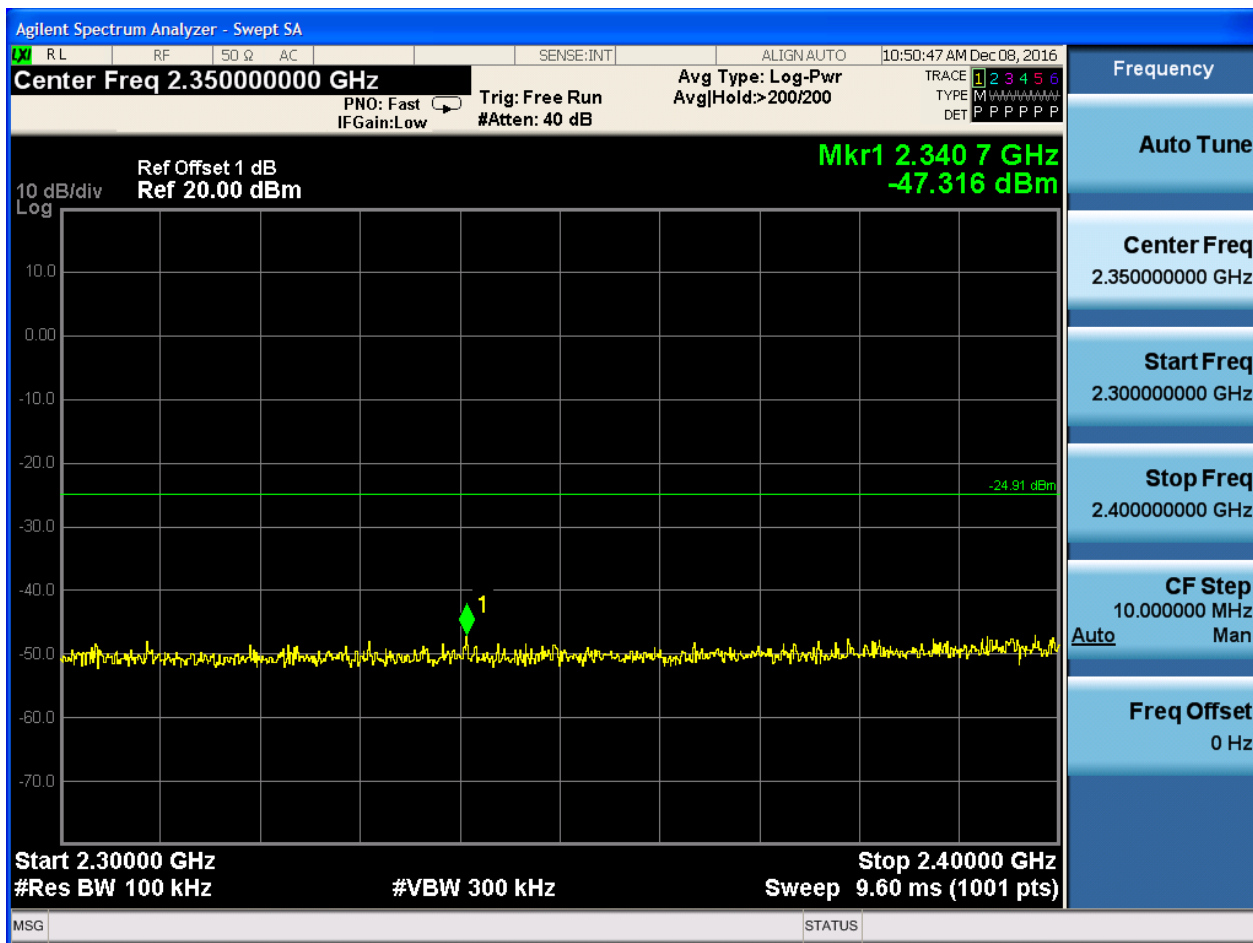


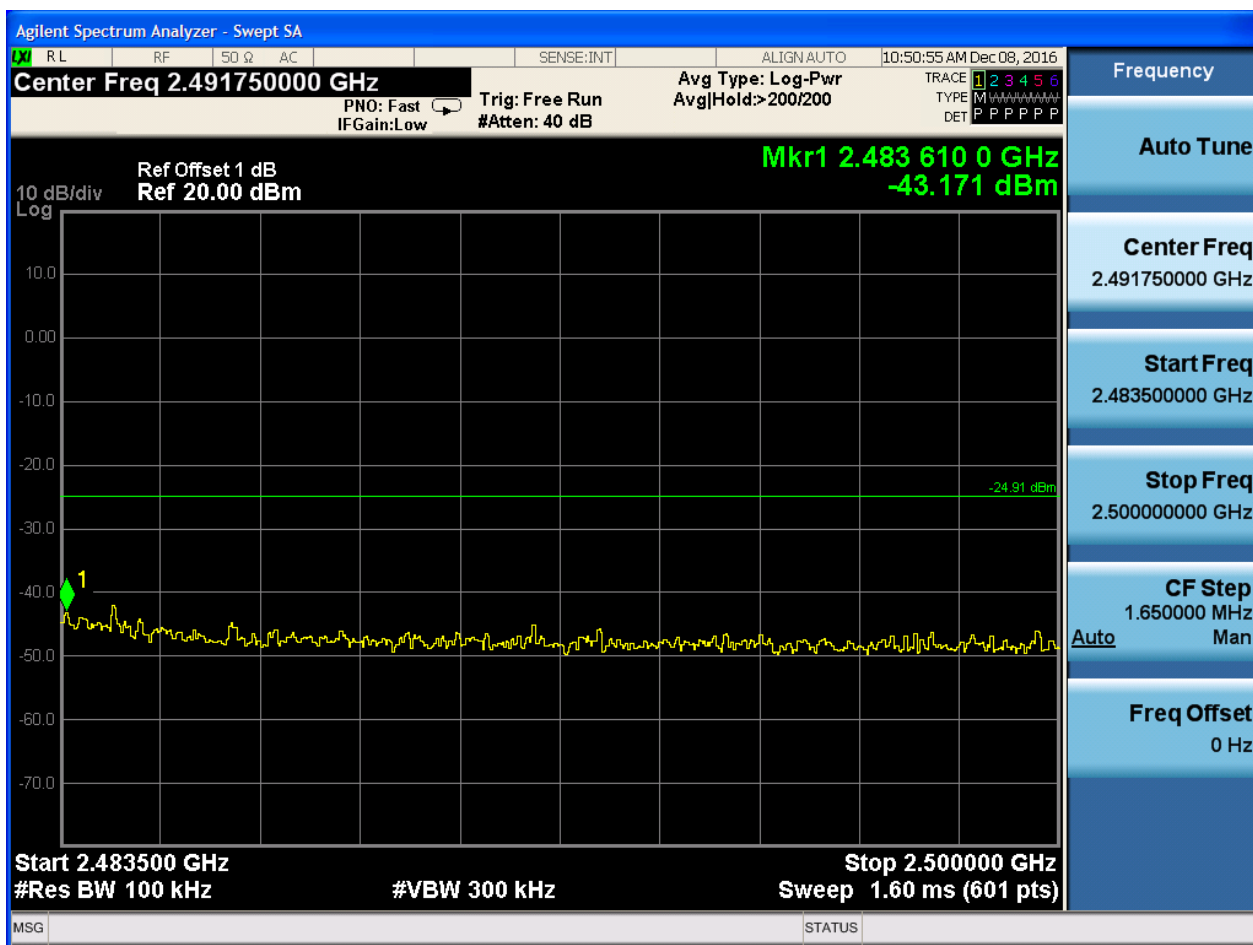
Puw:

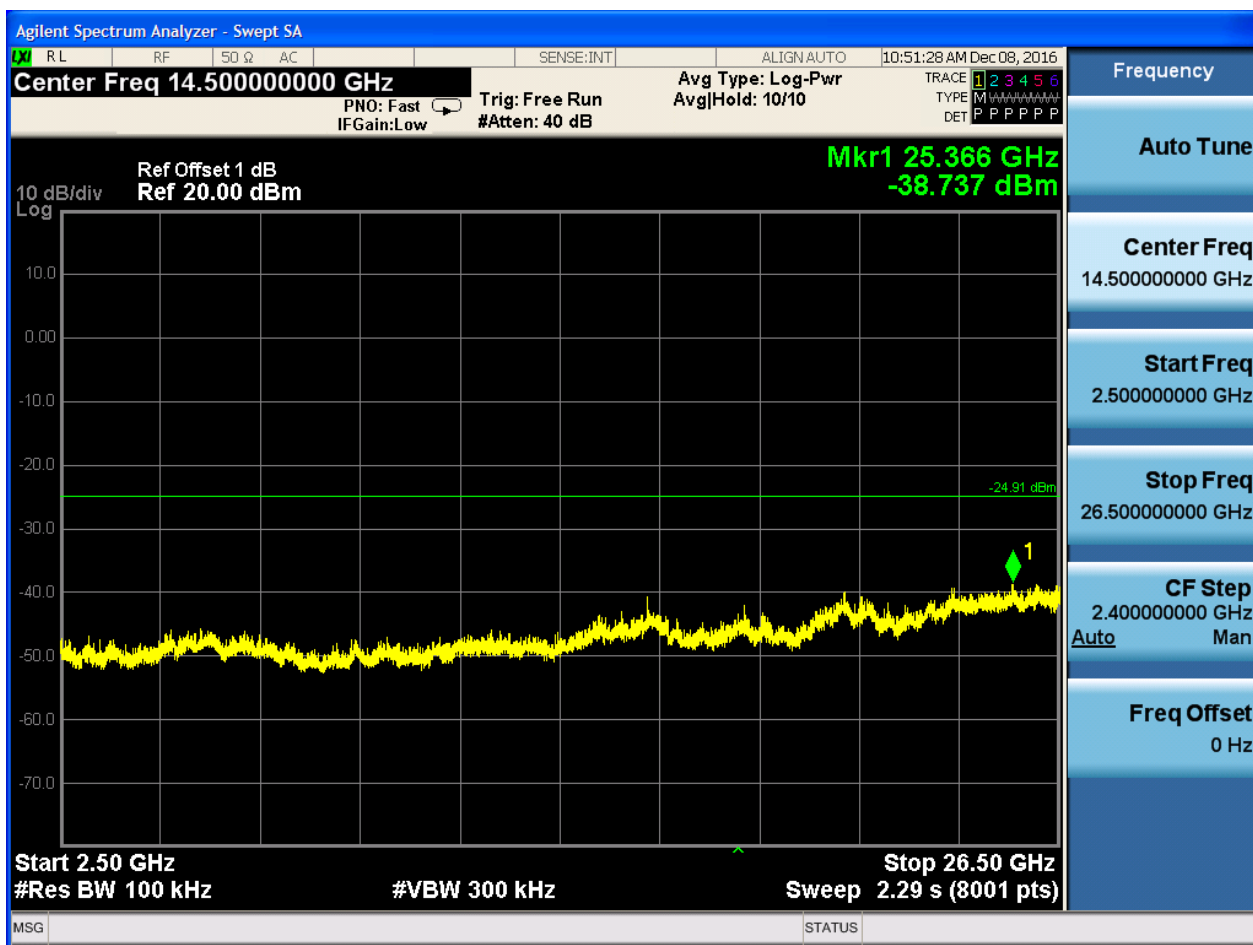








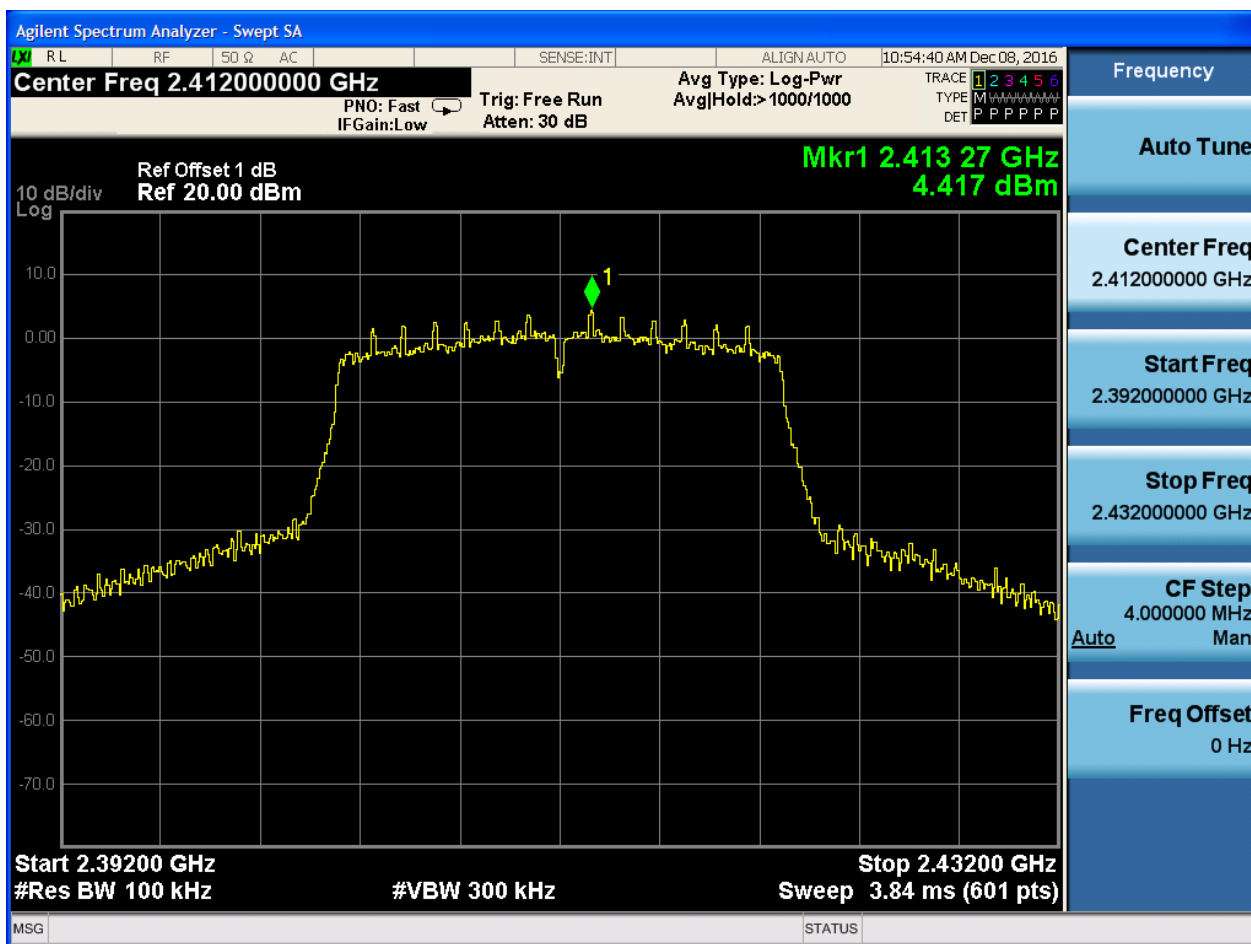






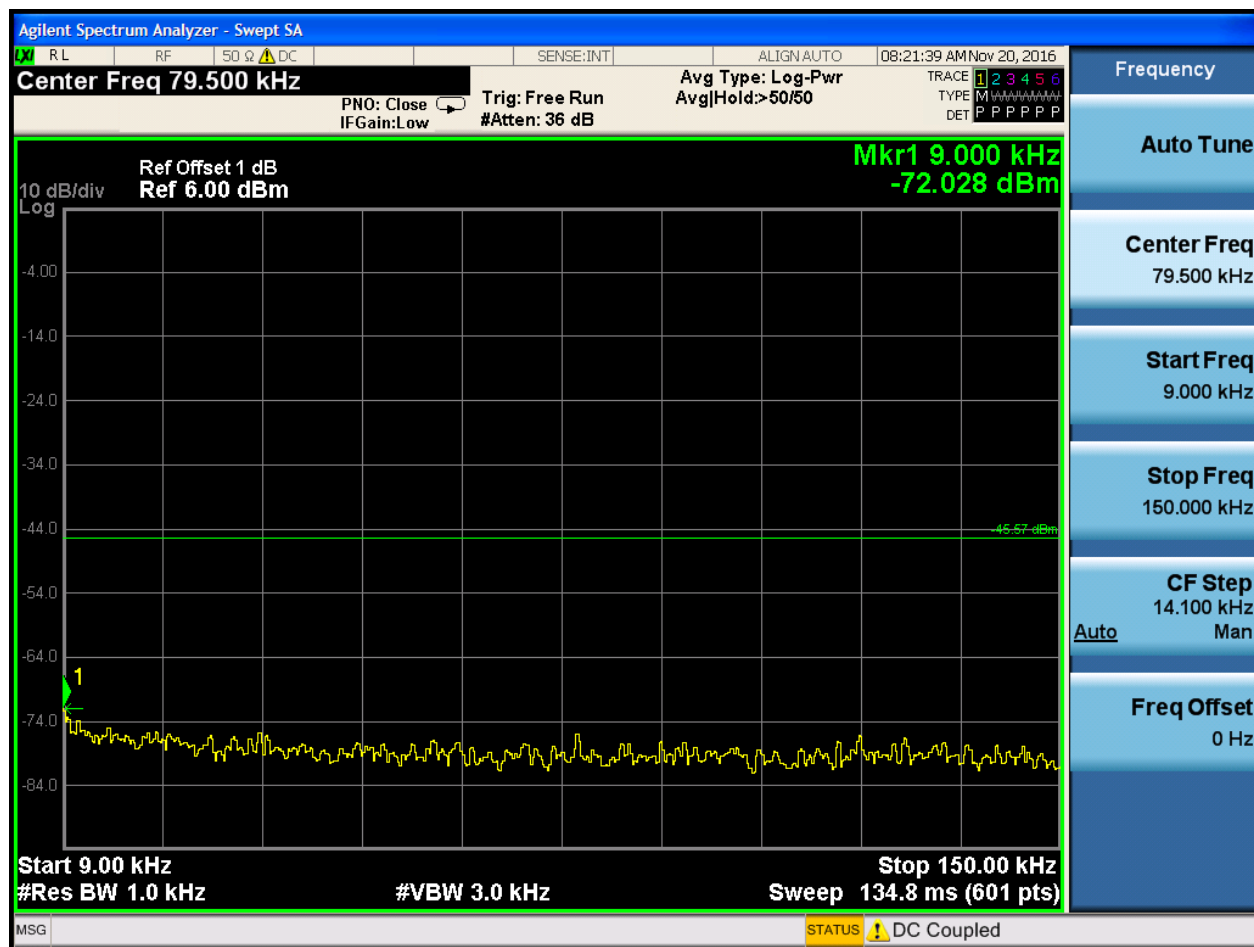
2.7 11N20_L@Ant 1

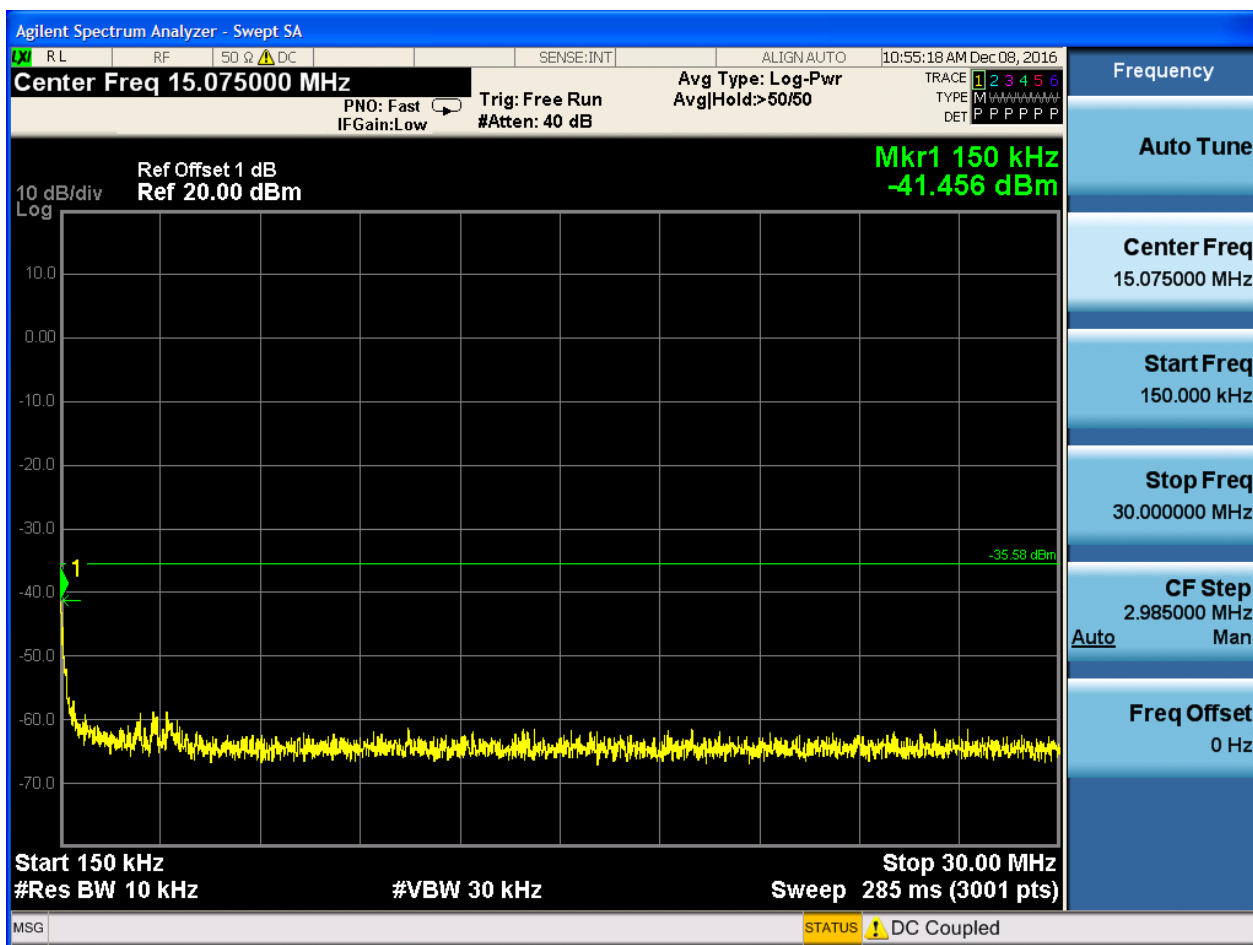
Pref:

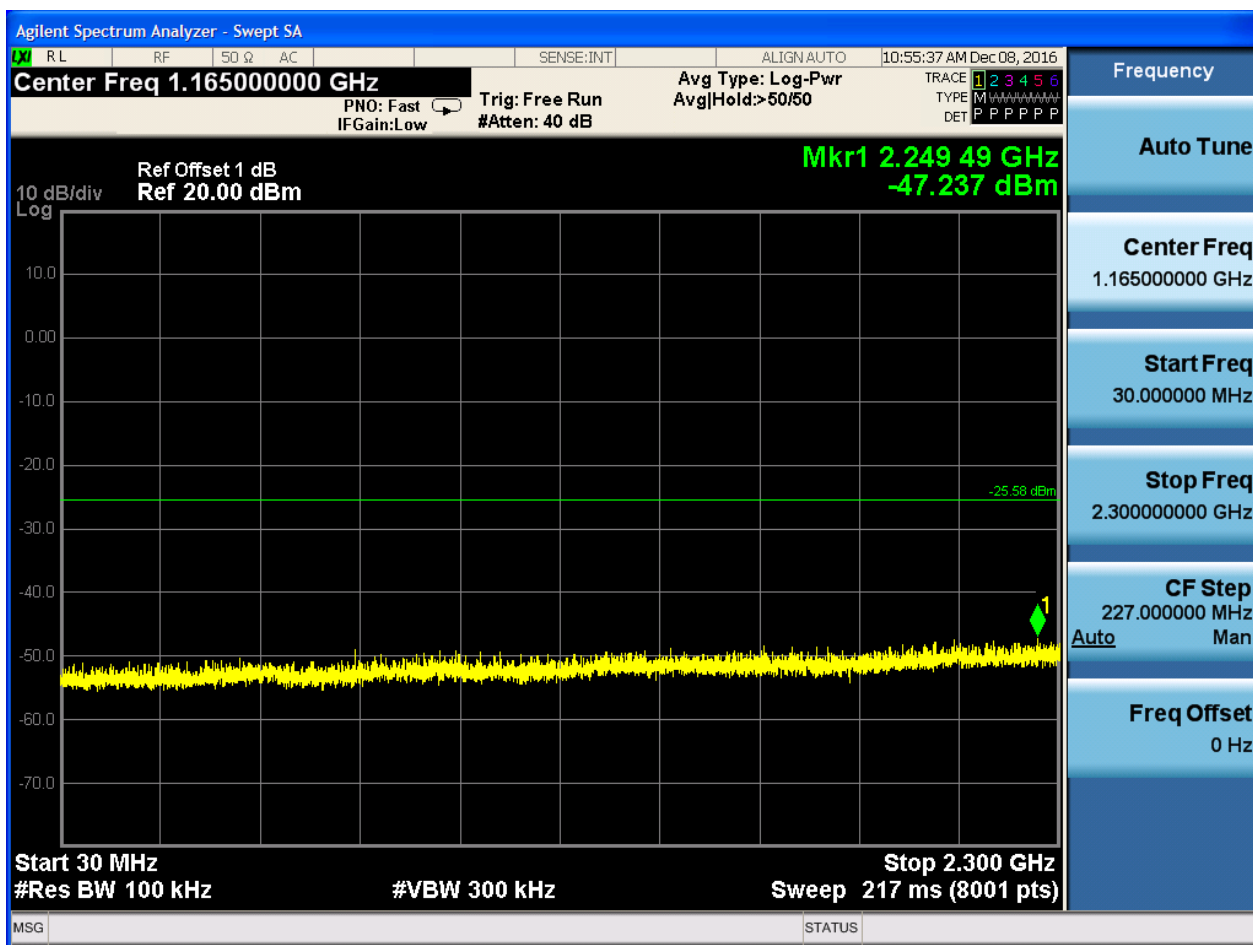


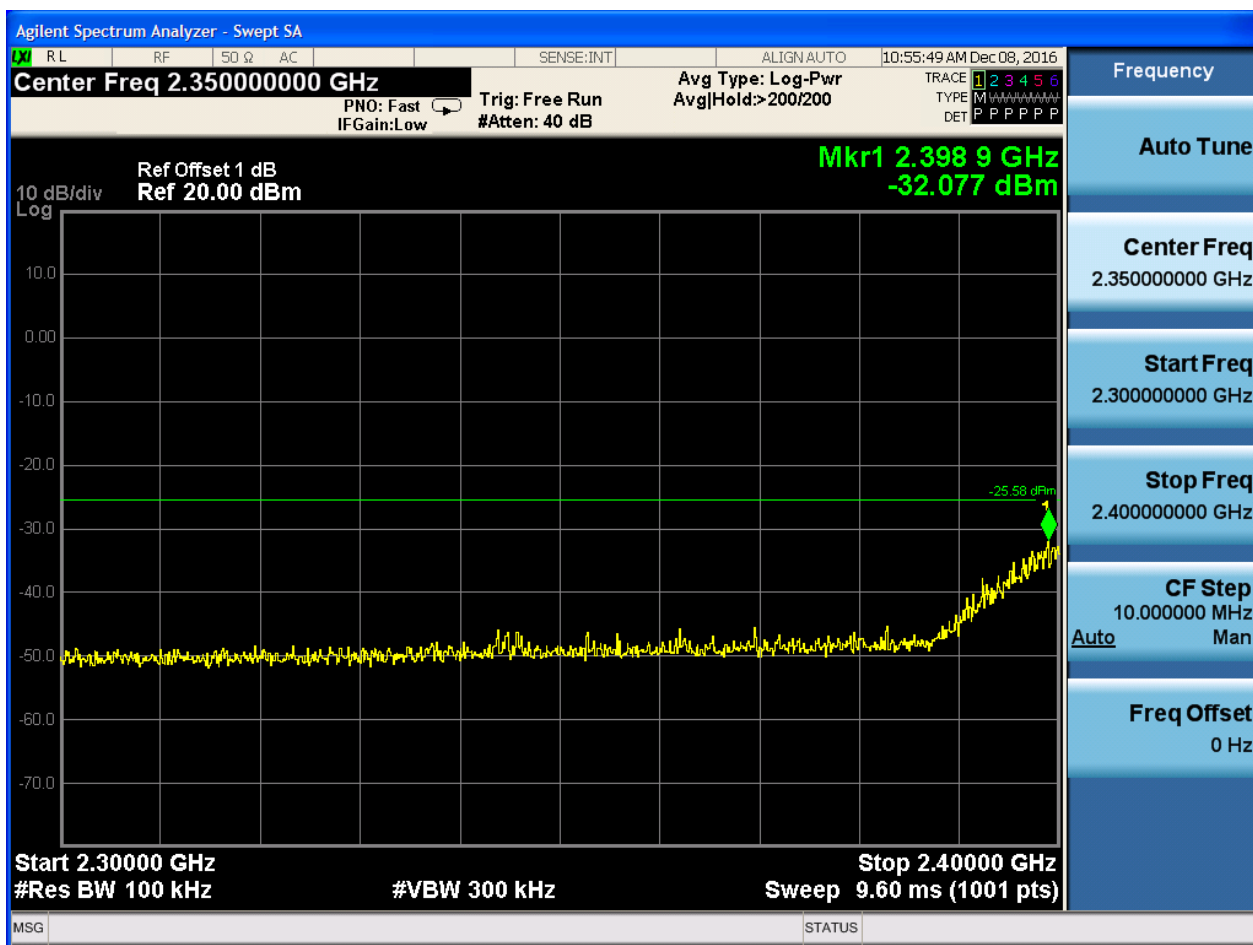


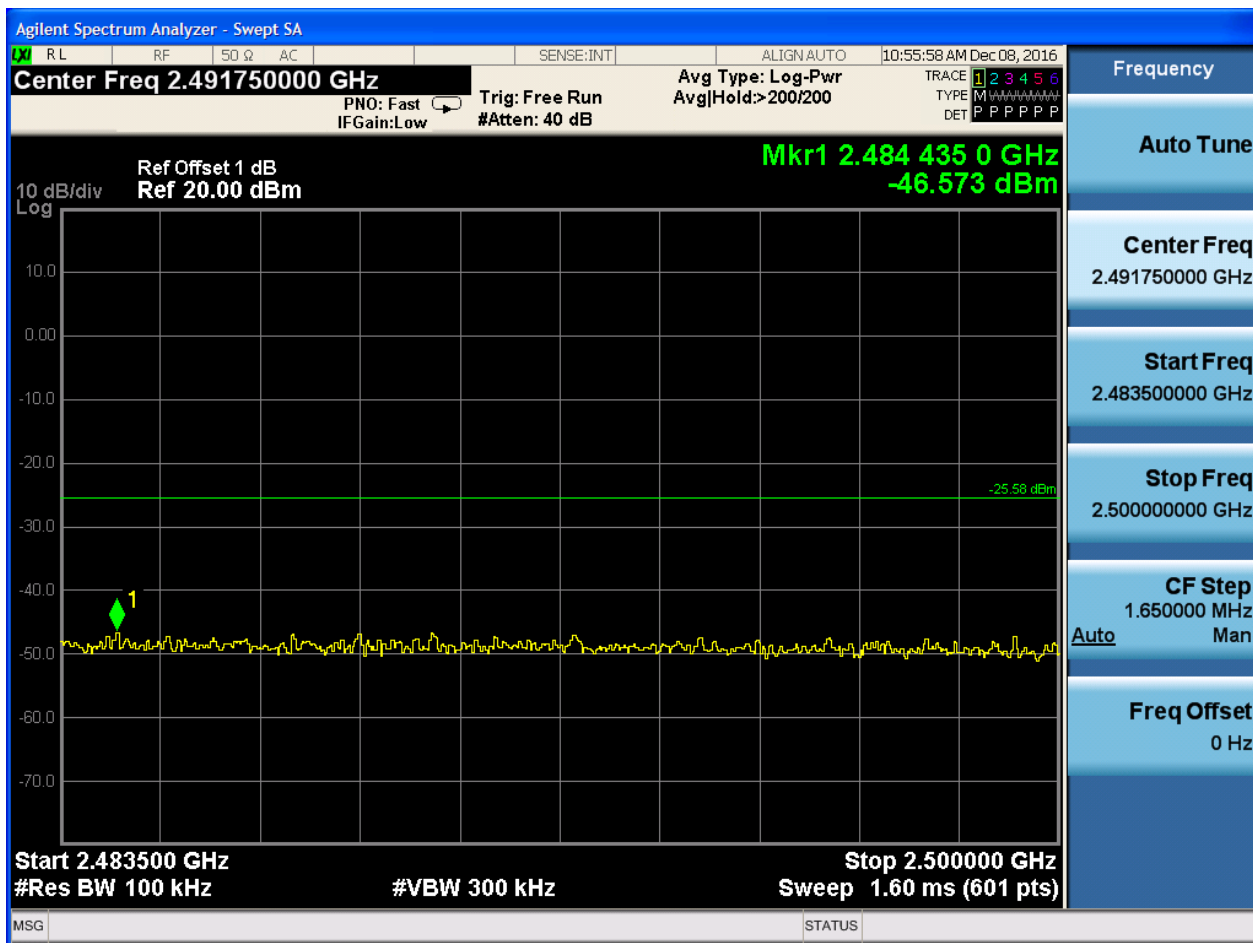
Puw:

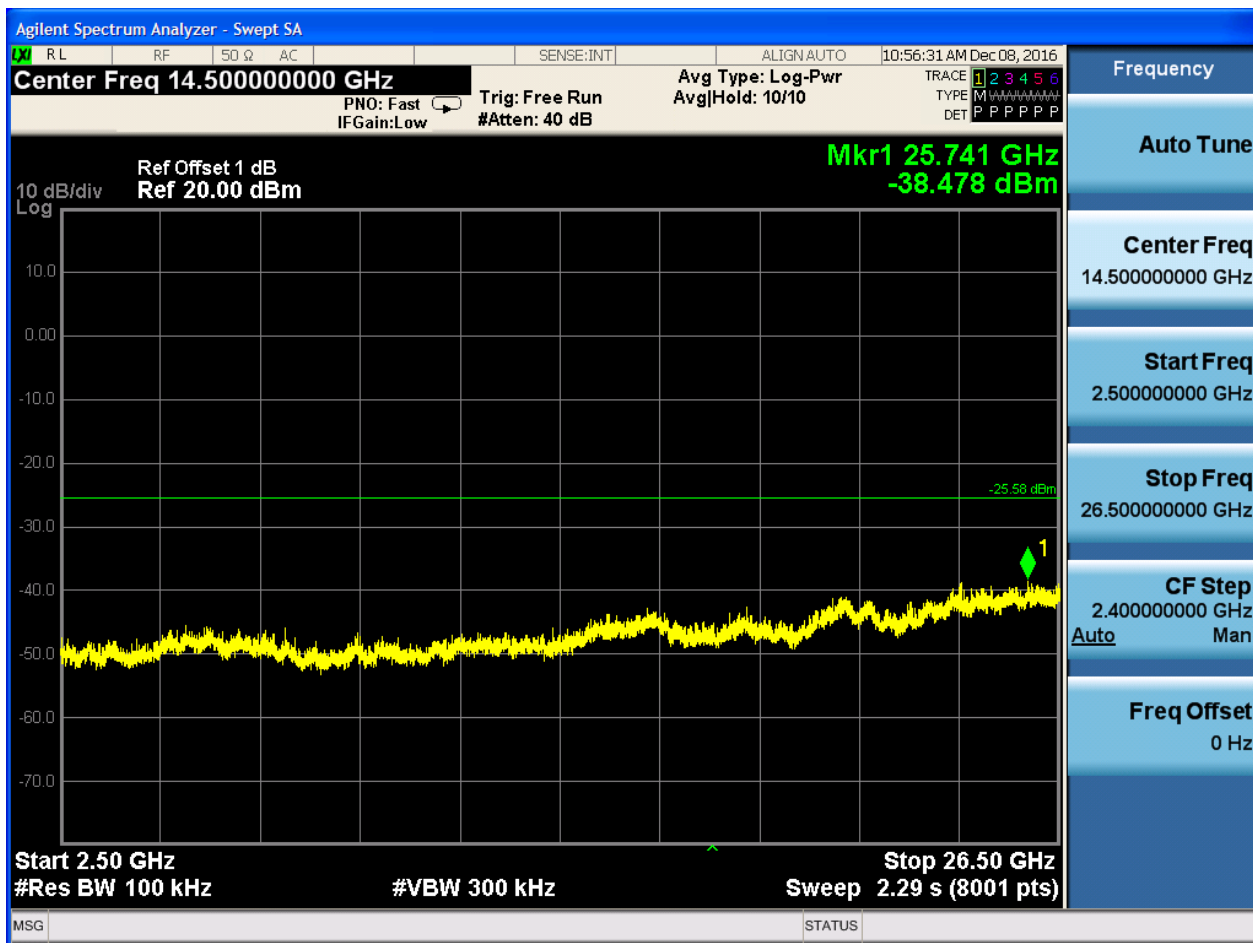








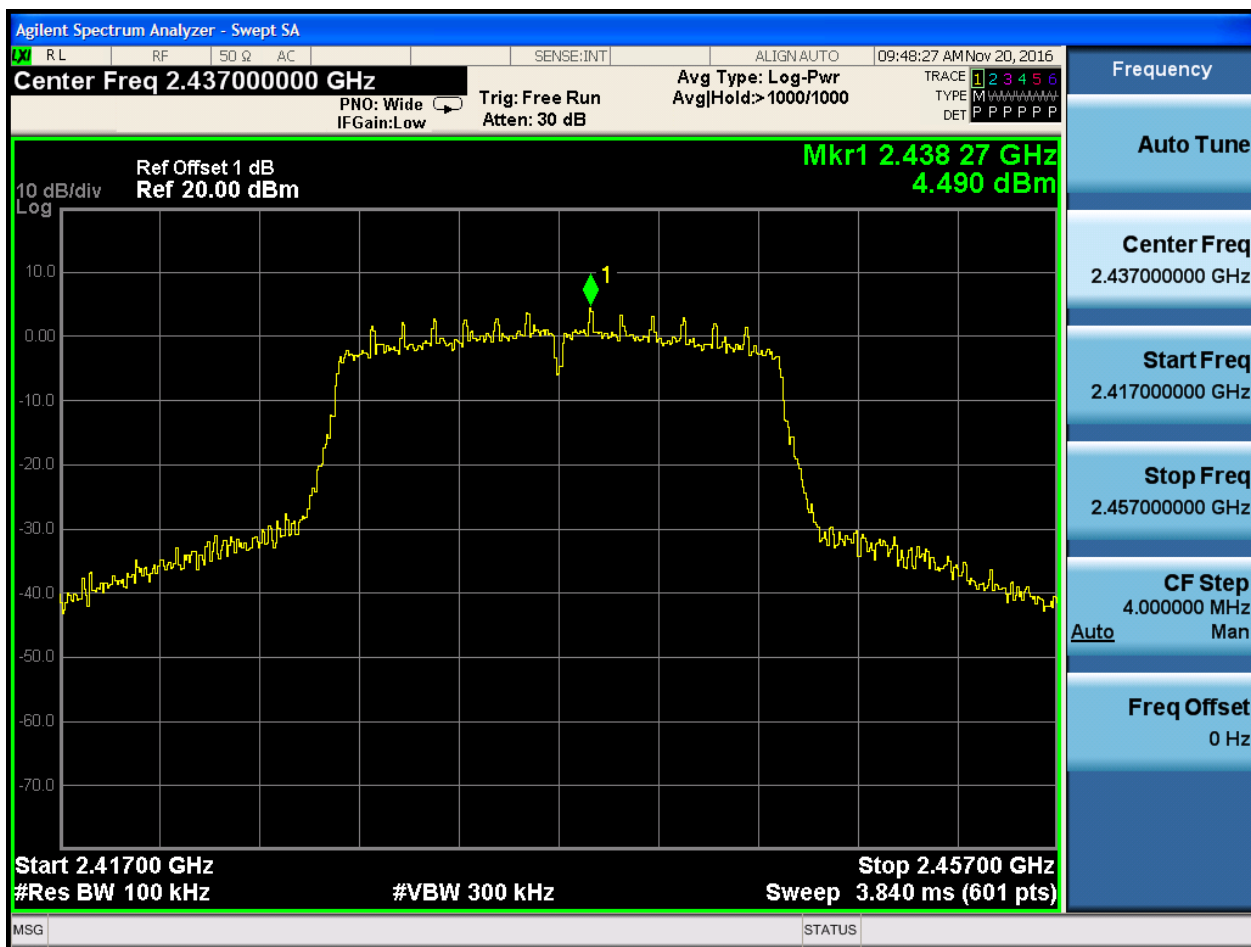






2.8 11N20_M@Ant 1

Pref:





Puw:

