



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.

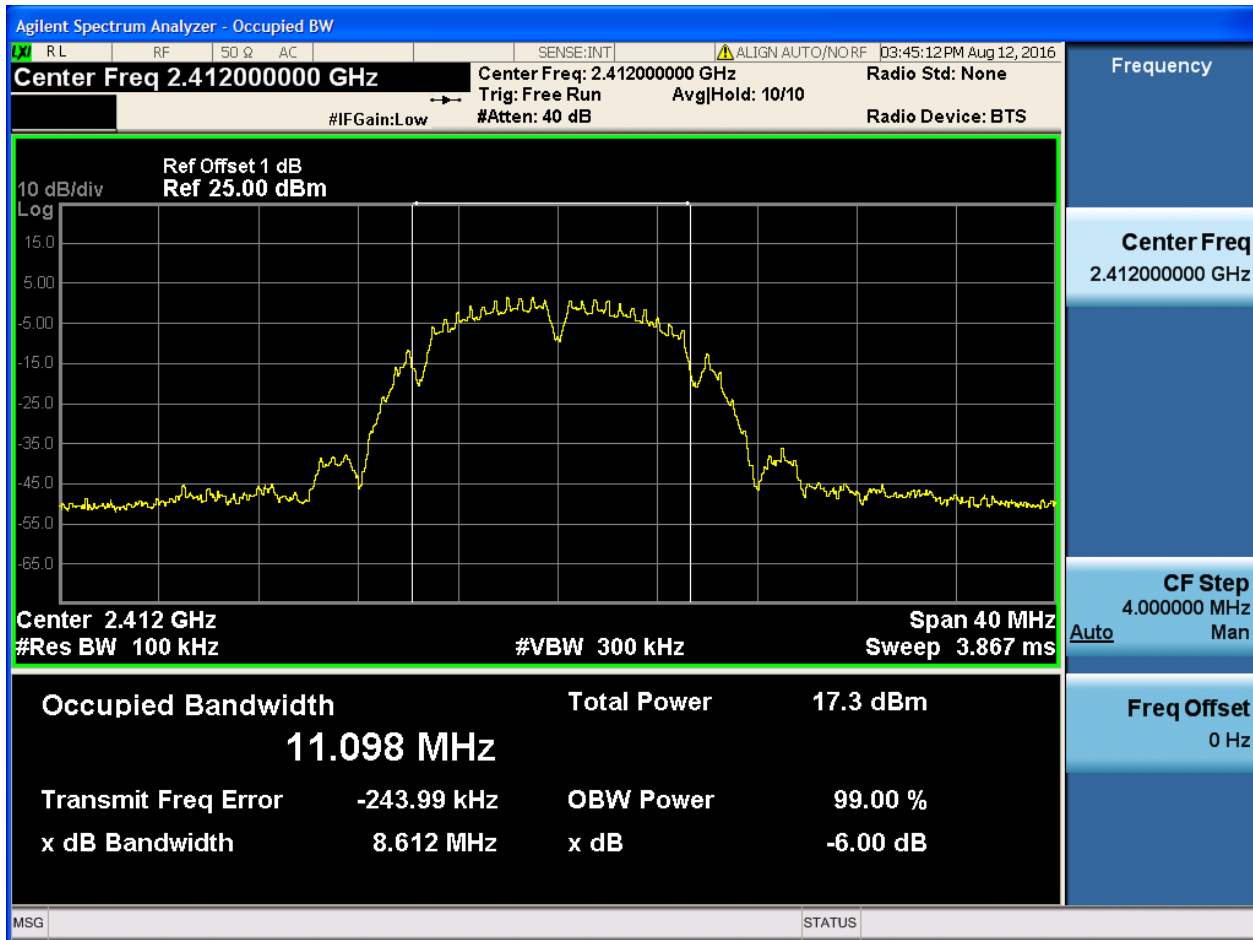
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	8.612	pass
11B	M	2437	Ant 1	8.590	pass
11B	H	2462	Ant 1	8.114	pass
11G	L	2412	Ant 1	16.38	pass
11G	M	2437	Ant 1	16.40	pass
11G	H	2462	Ant 1	16.33	pass
11N20	L	2412	Ant 1	17.59	pass
11N20	M	2437	Ant 1	17.59	pass
11N20	H	2462	Ant 1	17.18	pass
11N40	L	2422	Ant 1	35.38	pass
11N40	M	2437	Ant 1	35.39	pass
11N40	H	2452	Ant 1	35.33	pass



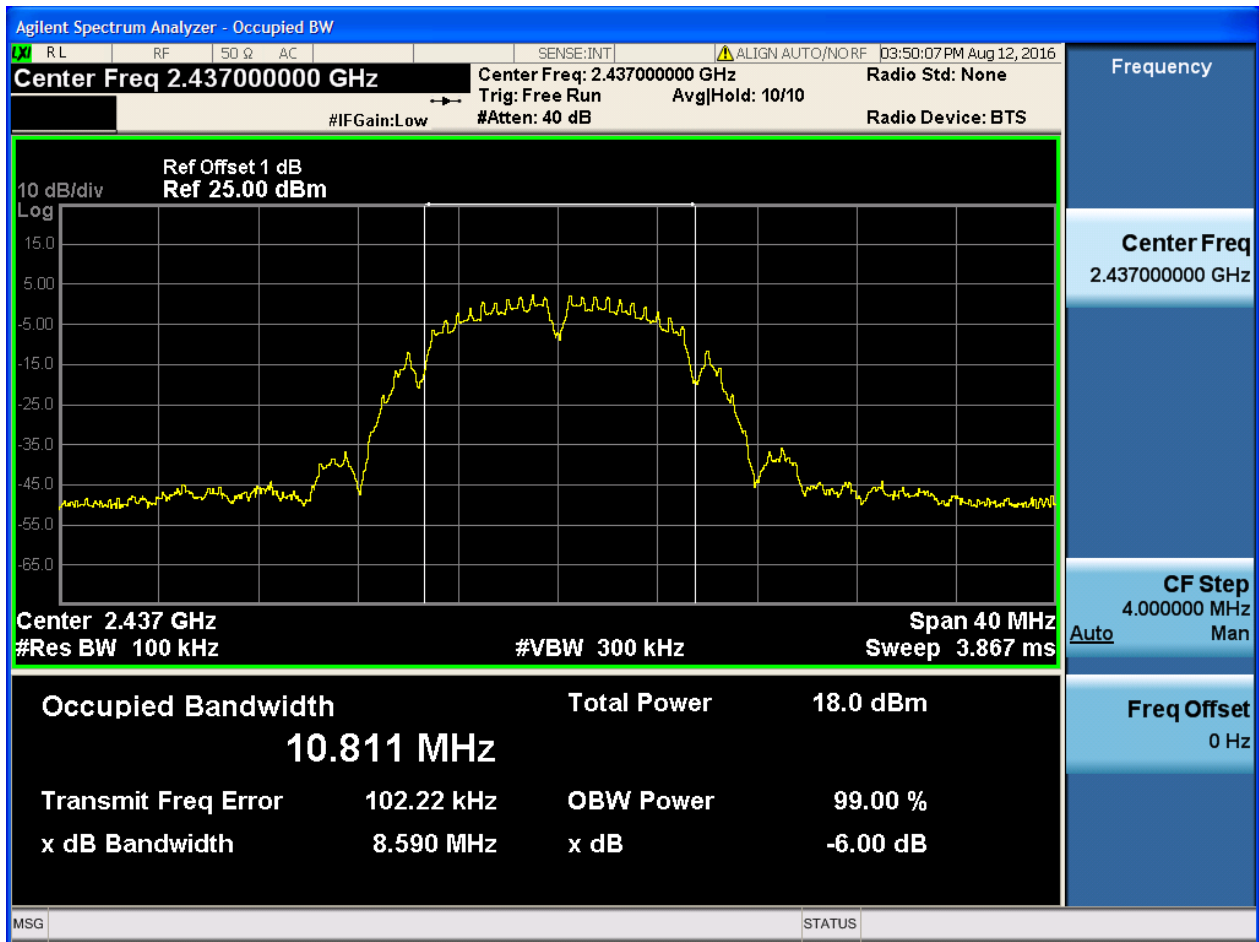
Part II - Test Plots

2.1 11B_L@Ant 1



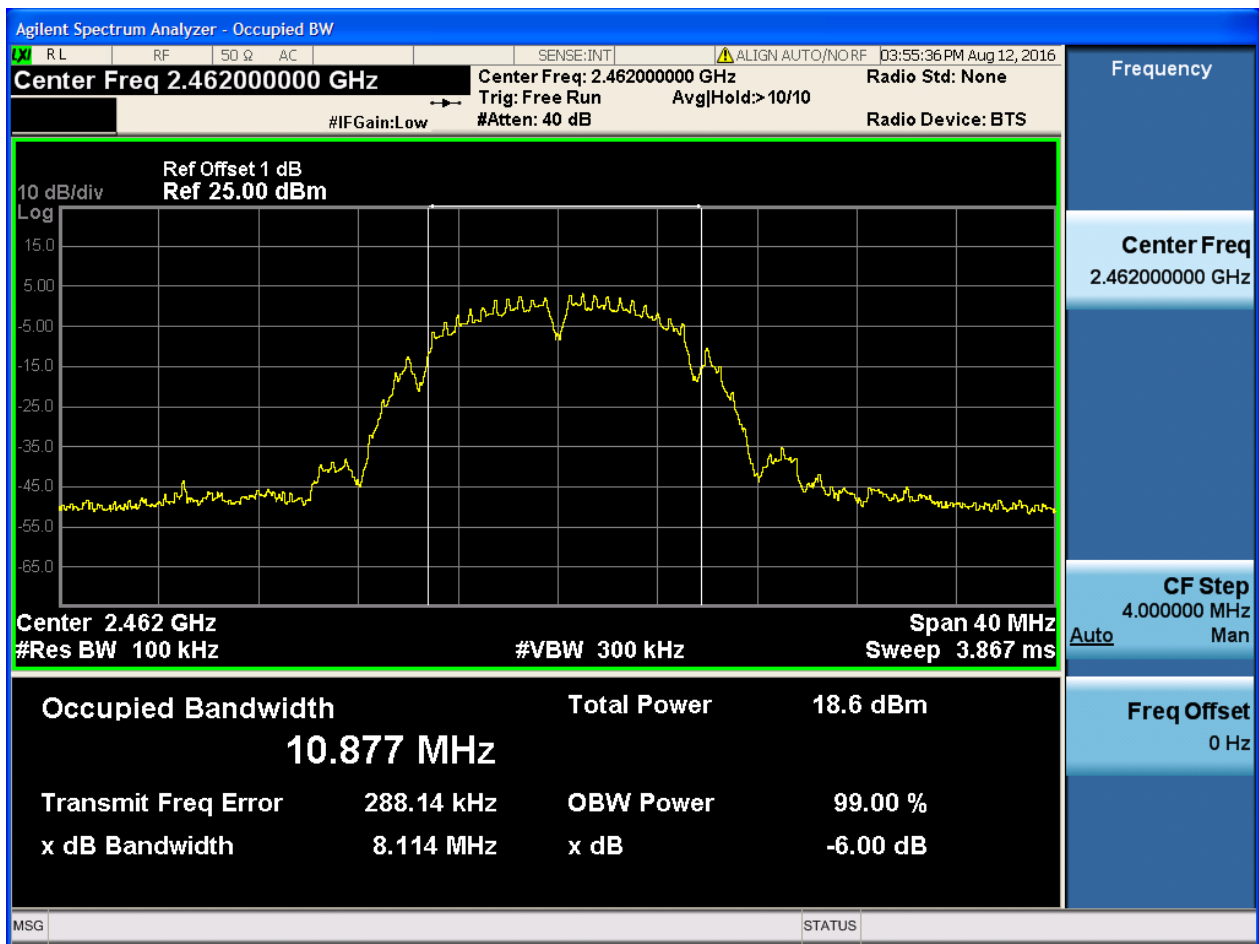


2.2 11B_M@Ant 1



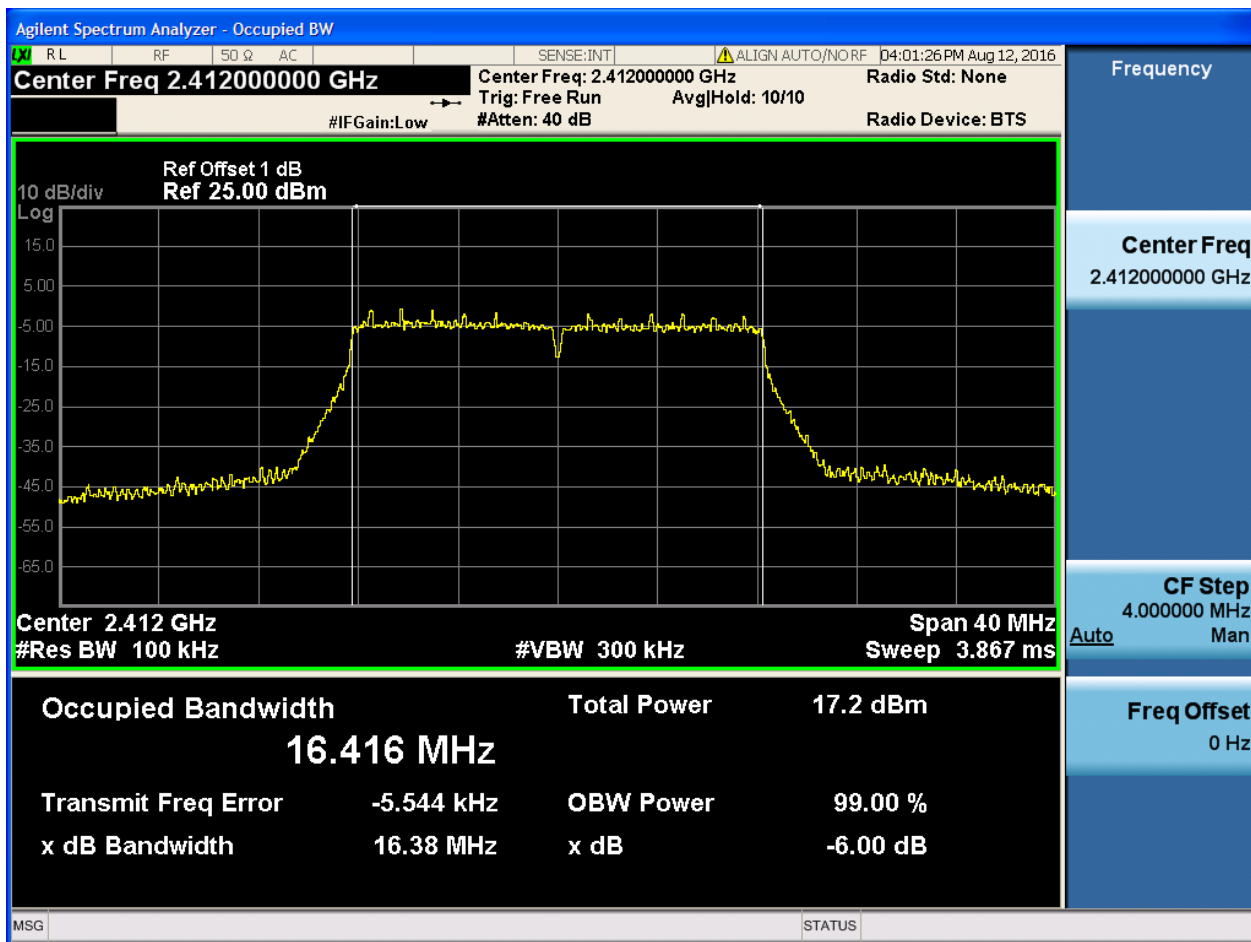


2.3 11B_H@Ant 1



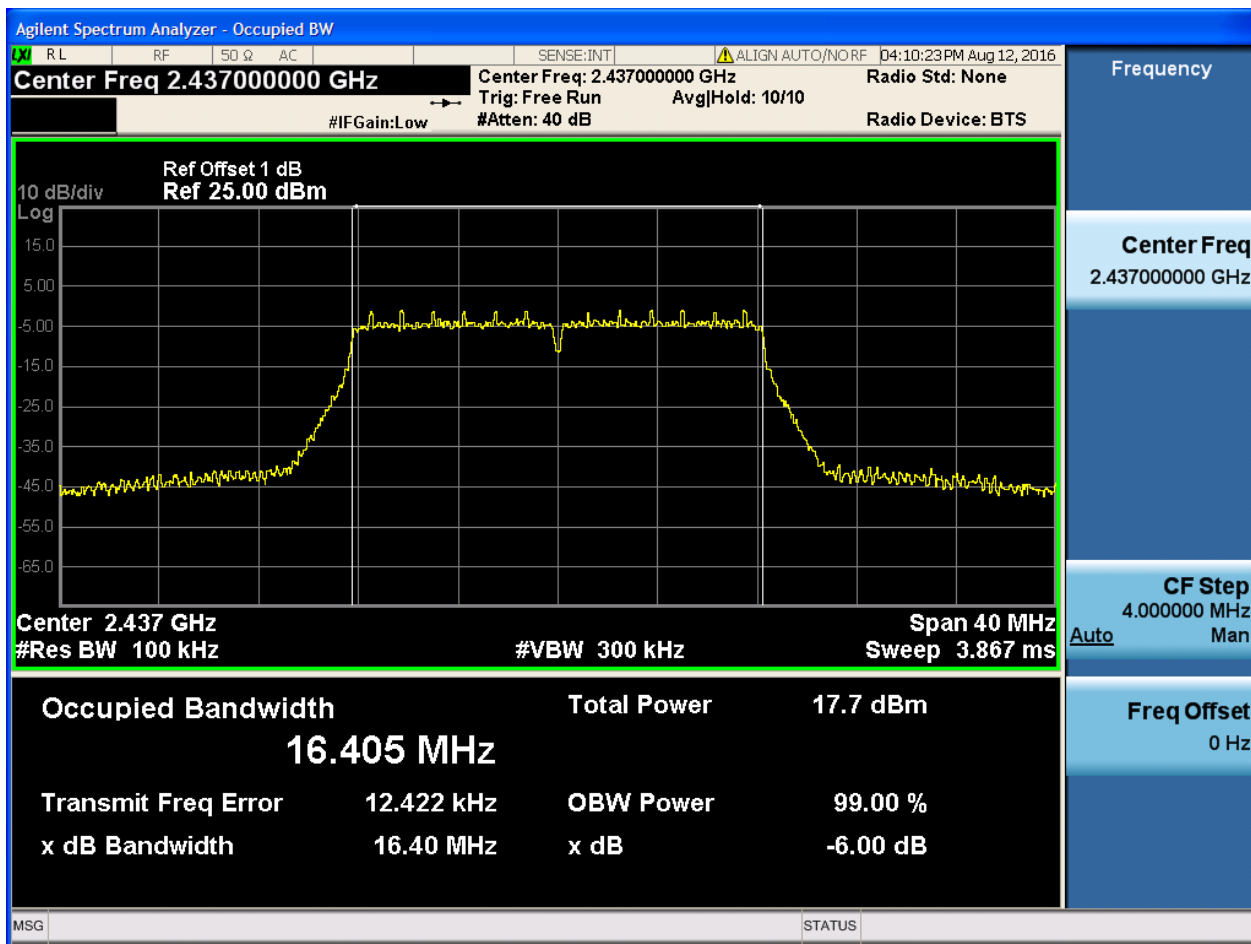


2.4 11G_L@Ant 1



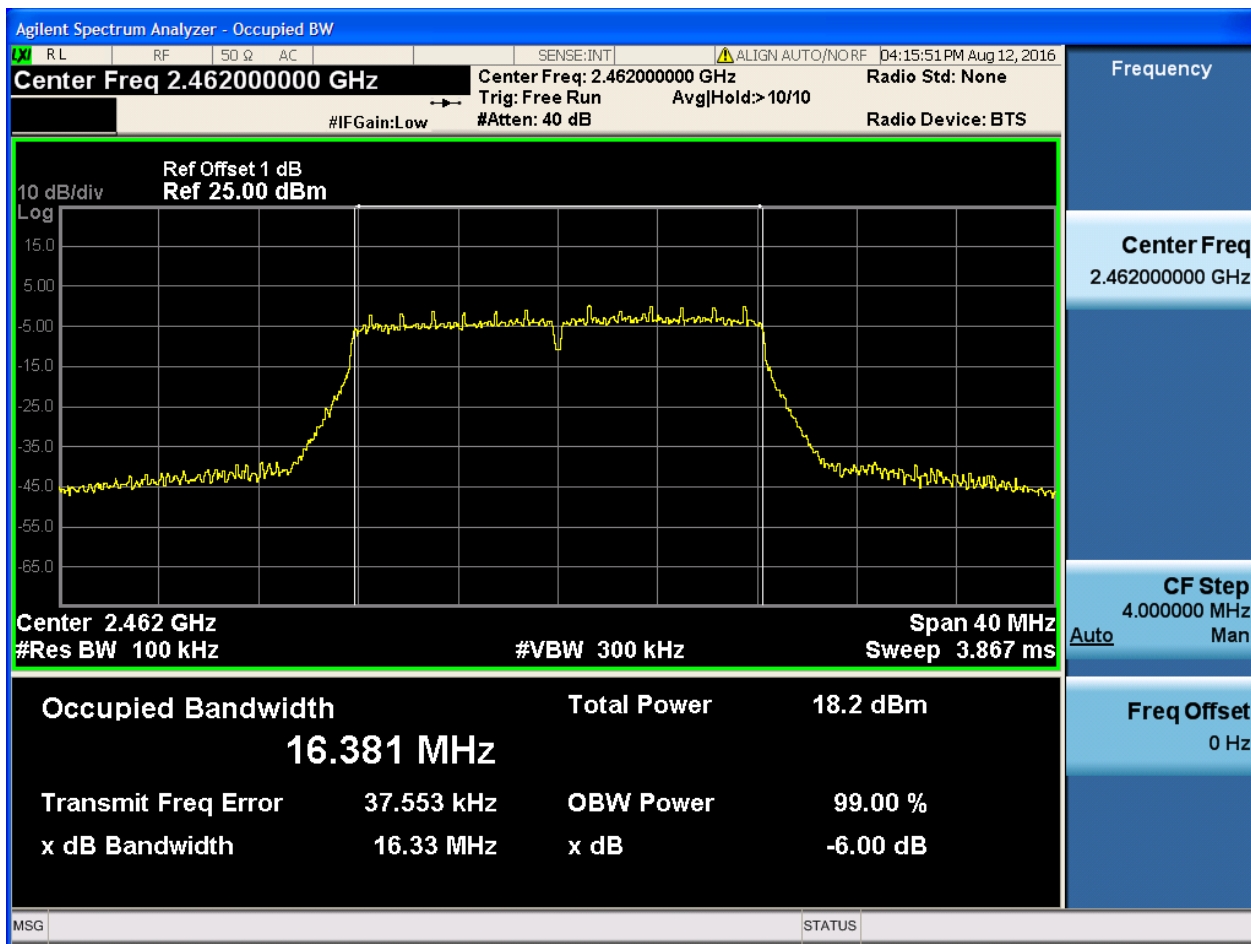


2.5 11G_M@Ant 1



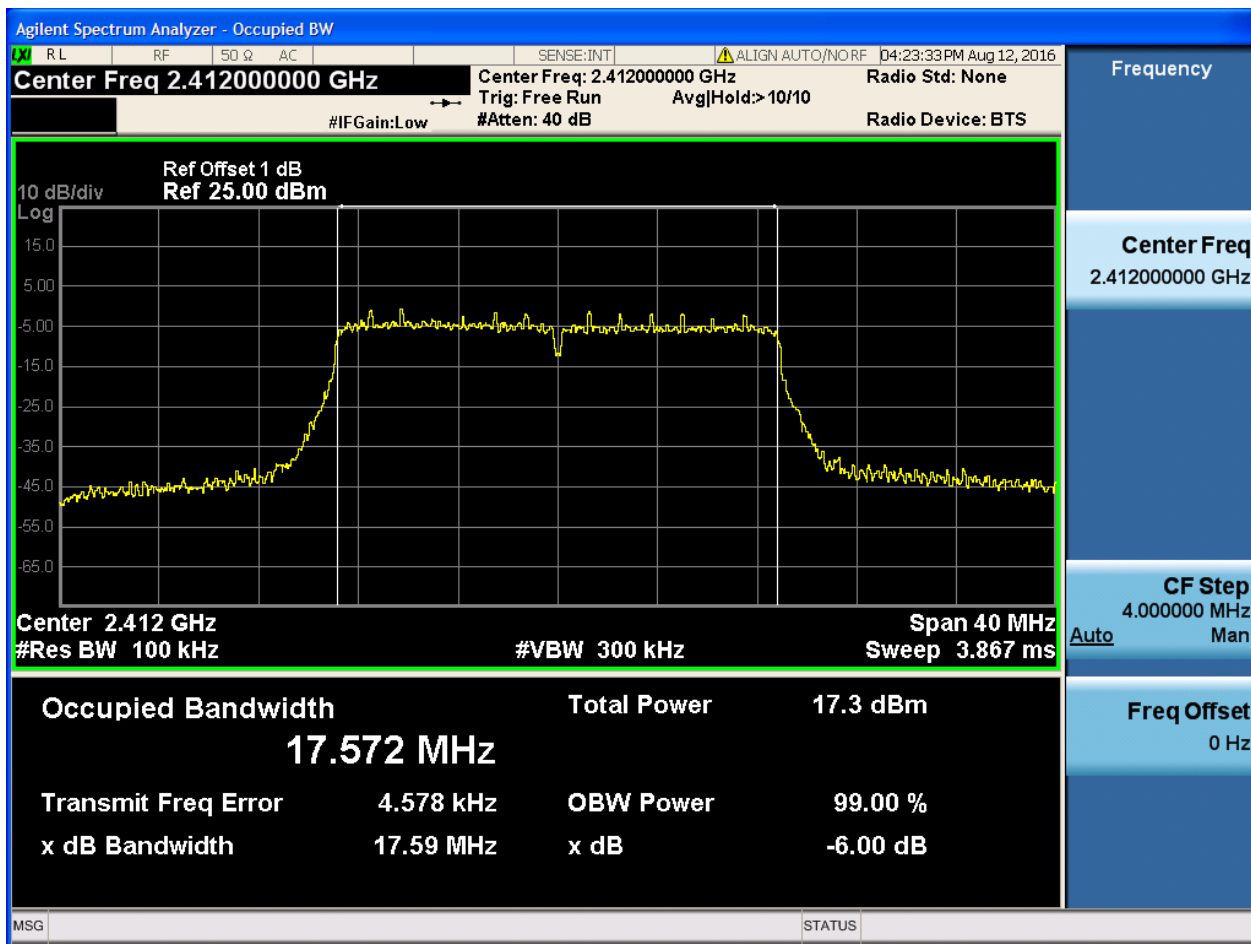


2.6 11G_H@Ant 1



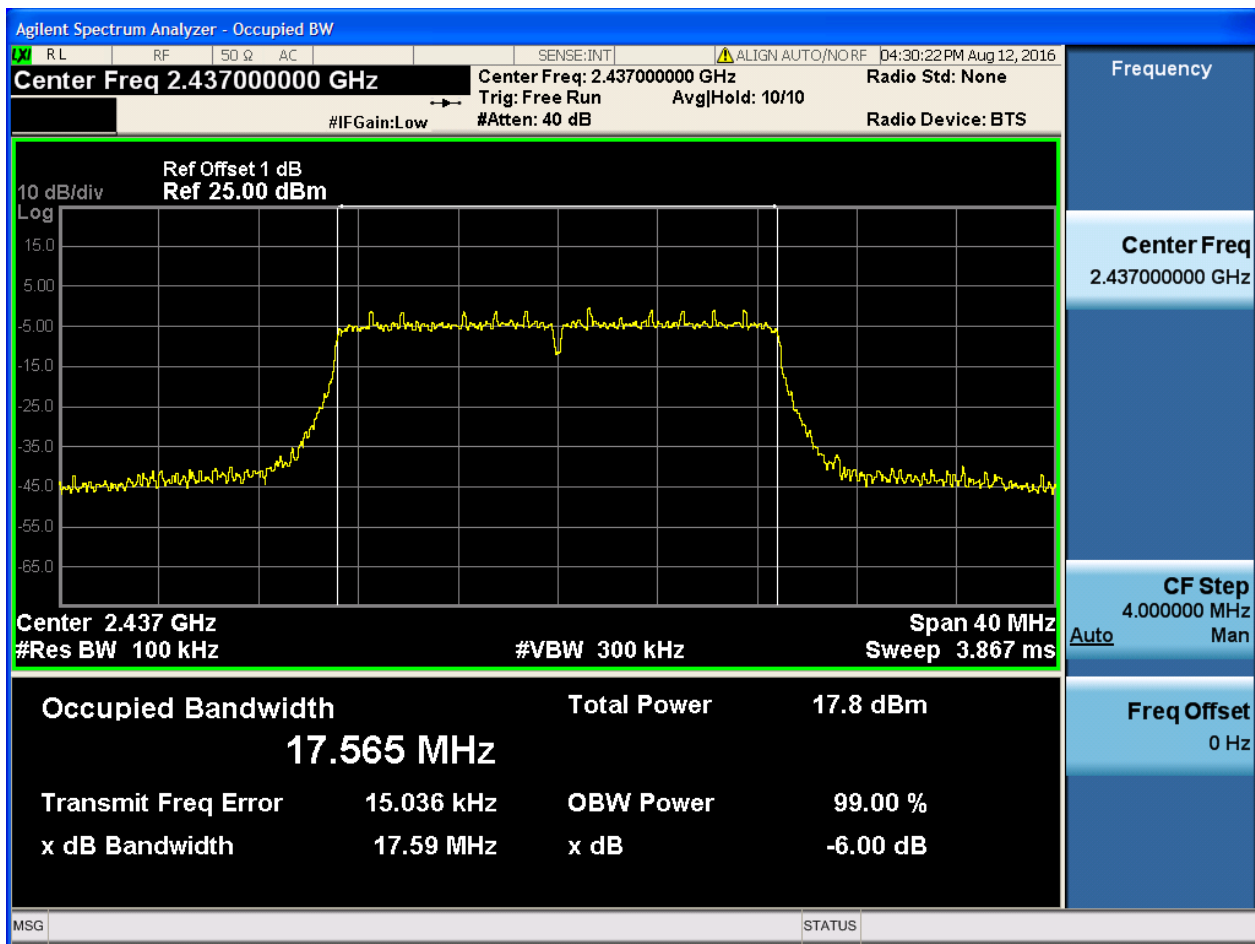


2.7 11N20_L@Ant 1



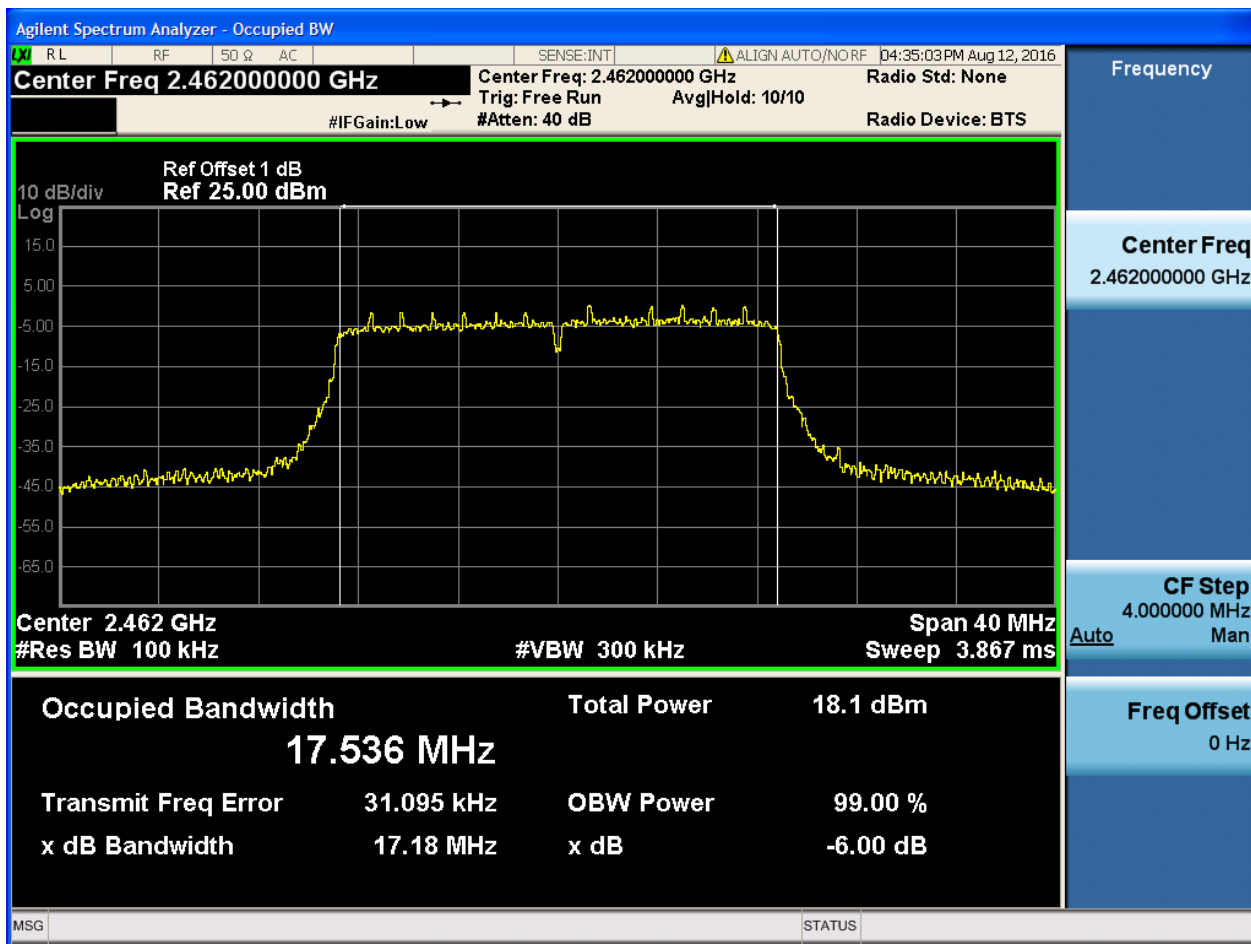


2.8 11N20_M@Ant 1



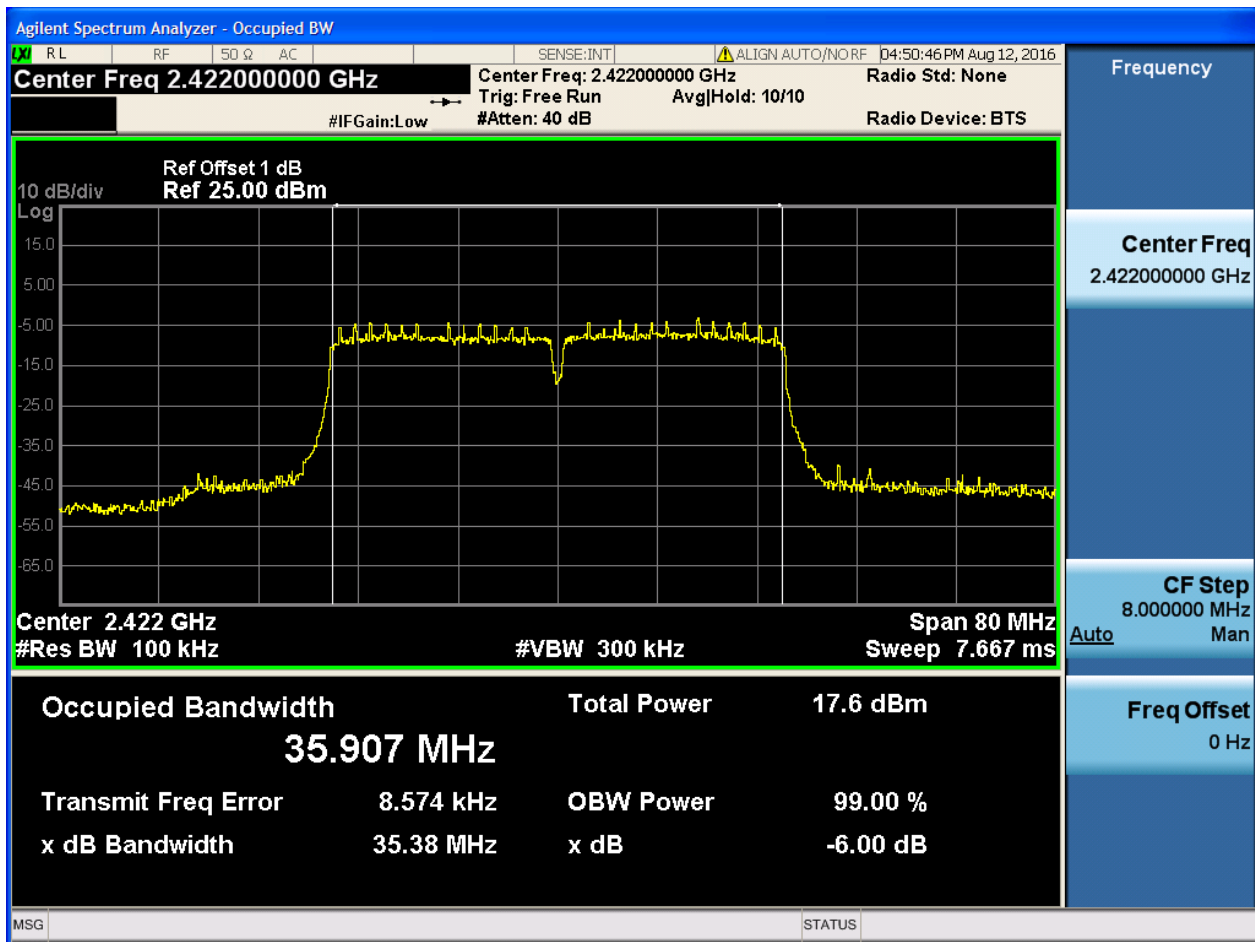


2.9 11N20_H@Ant 1

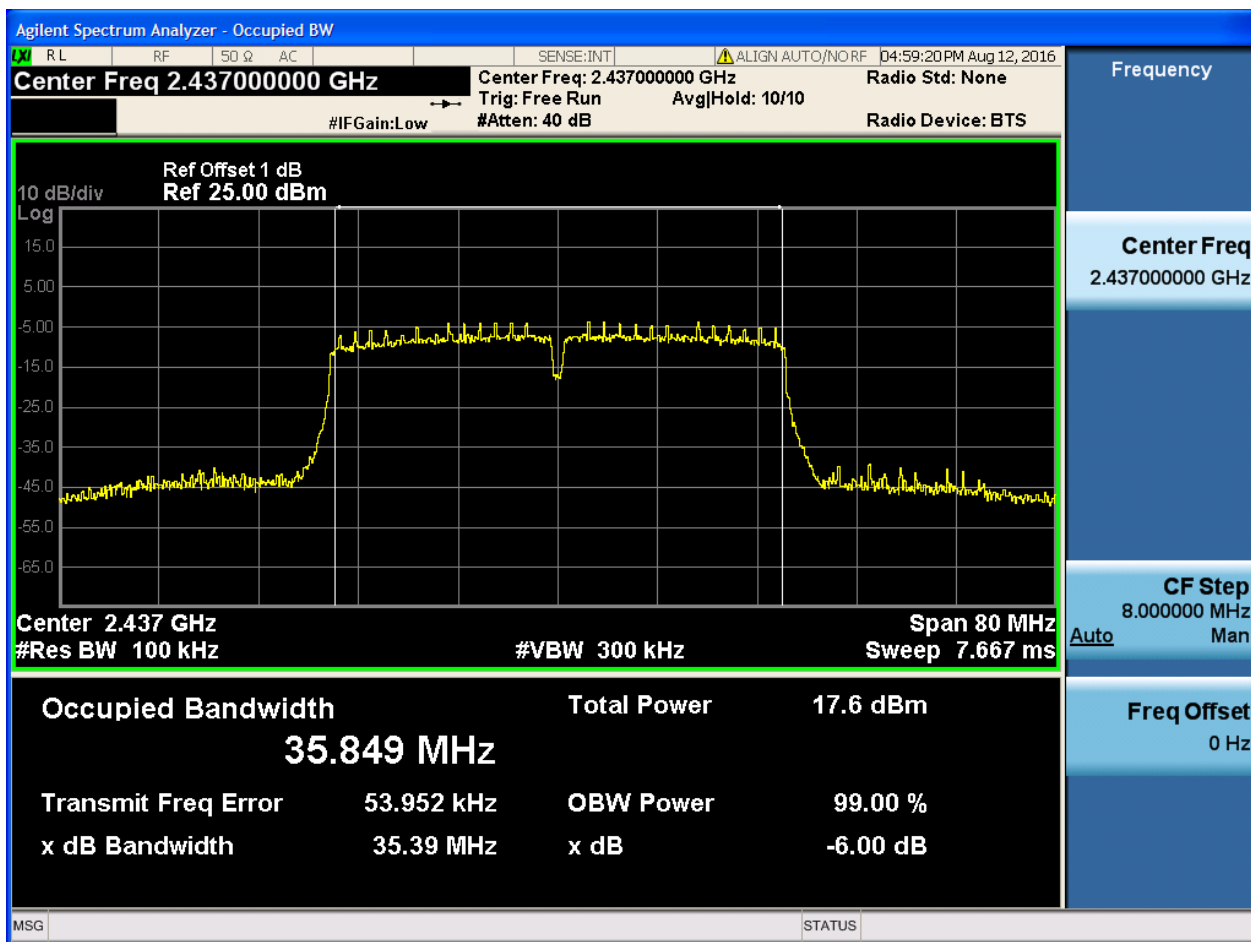




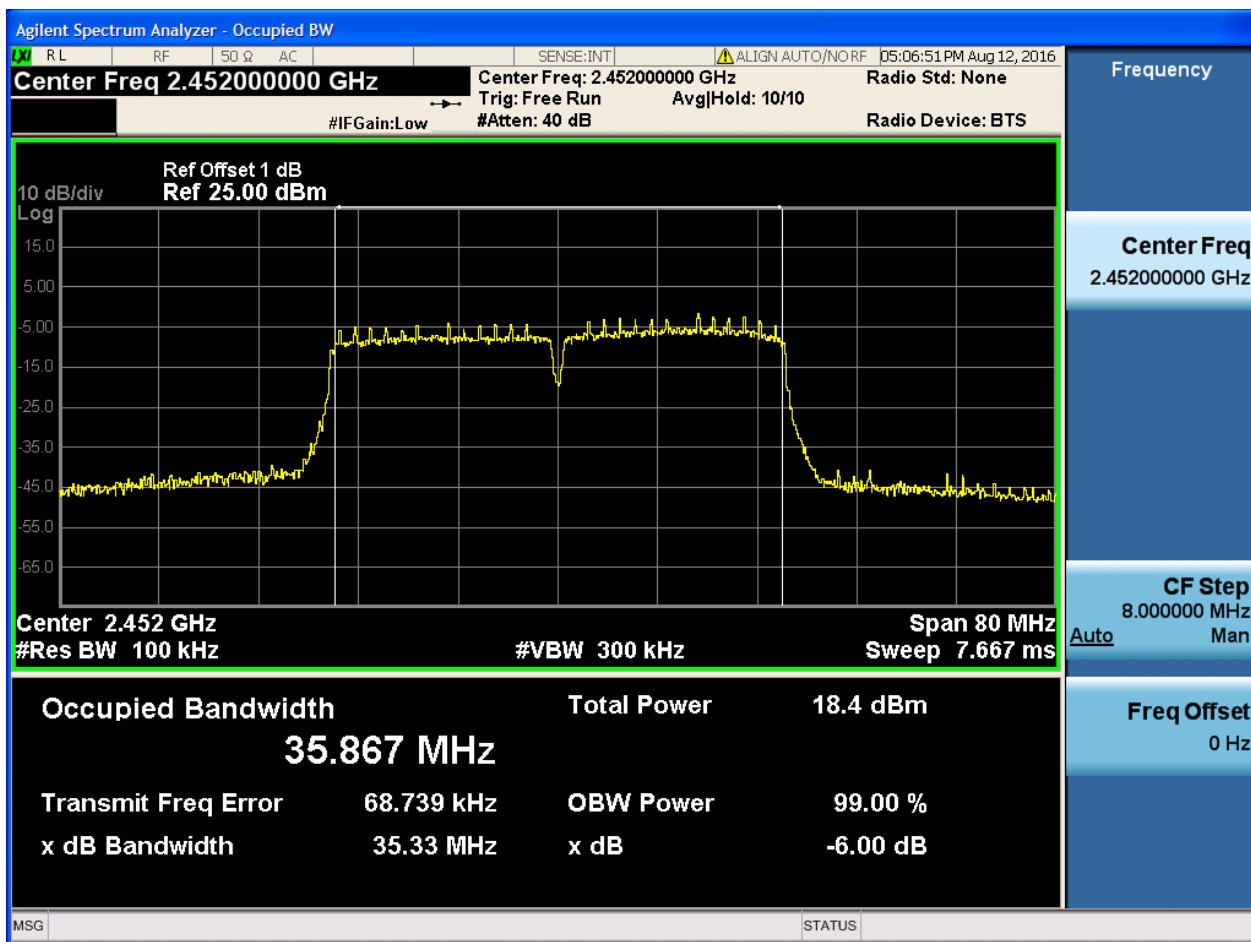
2.10 11N40_L@Ant 1



2.11 11N40_M@Ant 1



2.12 11N40_H@Ant 1



Appendix 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.

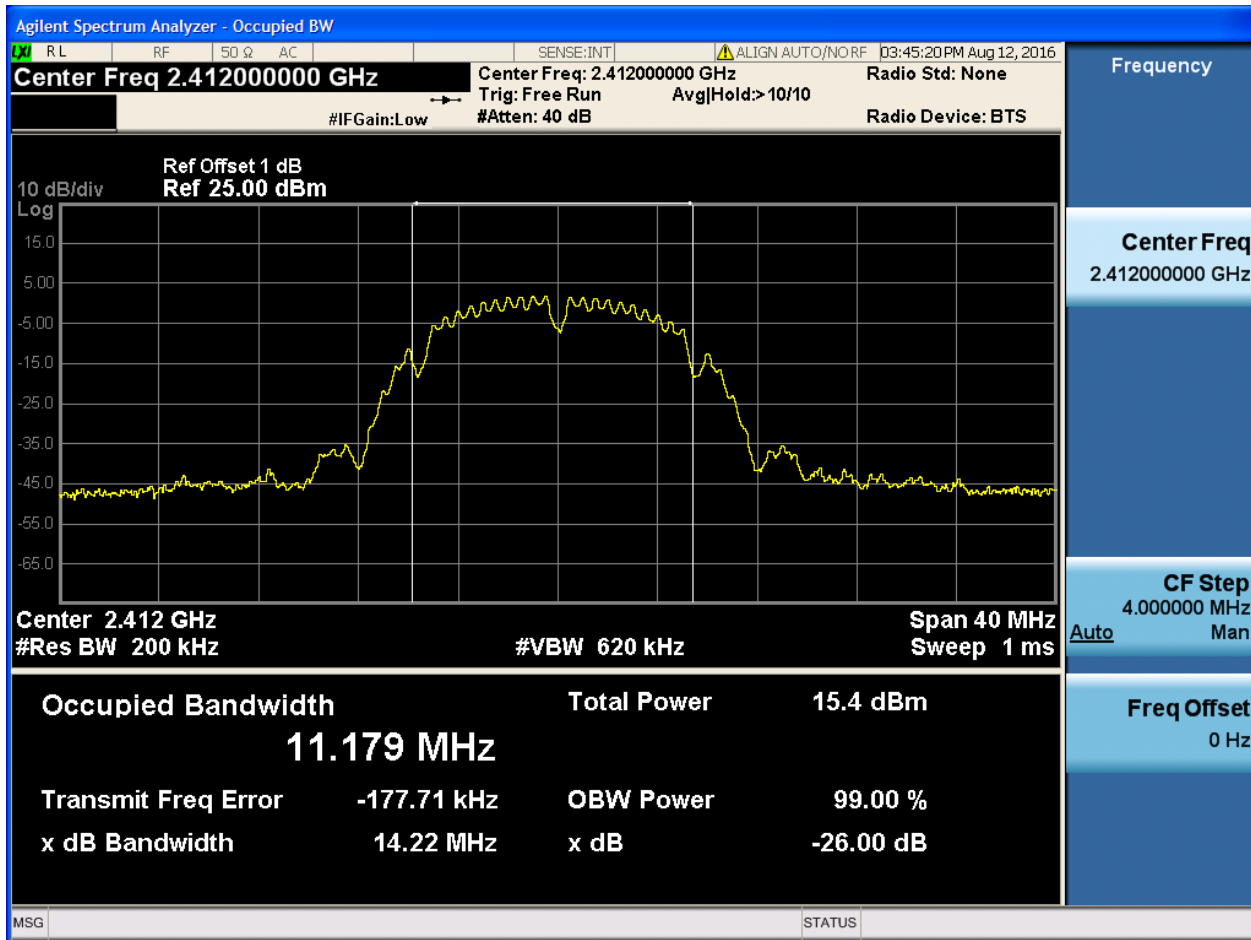
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	11.179	pass
11B	M	2437	Ant 1	10.919	pass
11B	H	2462	Ant 1	10.940	pass
11G	L	2412	Ant 1	16.515	pass
11G	M	2437	Ant 1	16.475	pass
11G	H	2462	Ant 1	16.440	pass
11N20	L	2412	Ant 1	17.577	pass
11N20	M	2437	Ant 1	17.573	pass
11N20	H	2462	Ant 1	17.528	pass
11N40	L	2422	Ant 1	35.967	pass
11N40	M	2437	Ant 1	35.909	pass
11N40	H	2452	Ant 1	35.940	pass



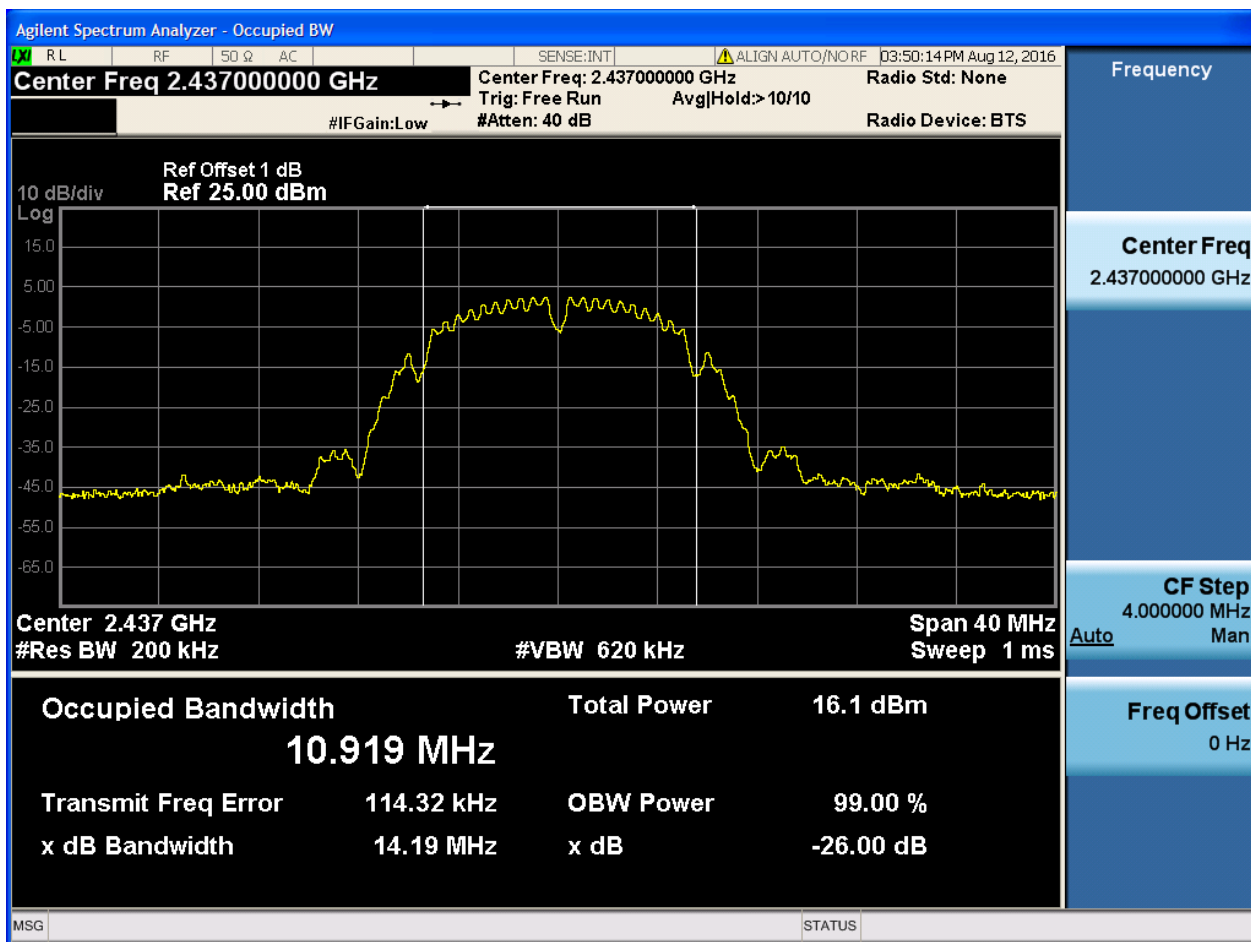
Part II - Test Plots

2.1 11B_L@Ant 1



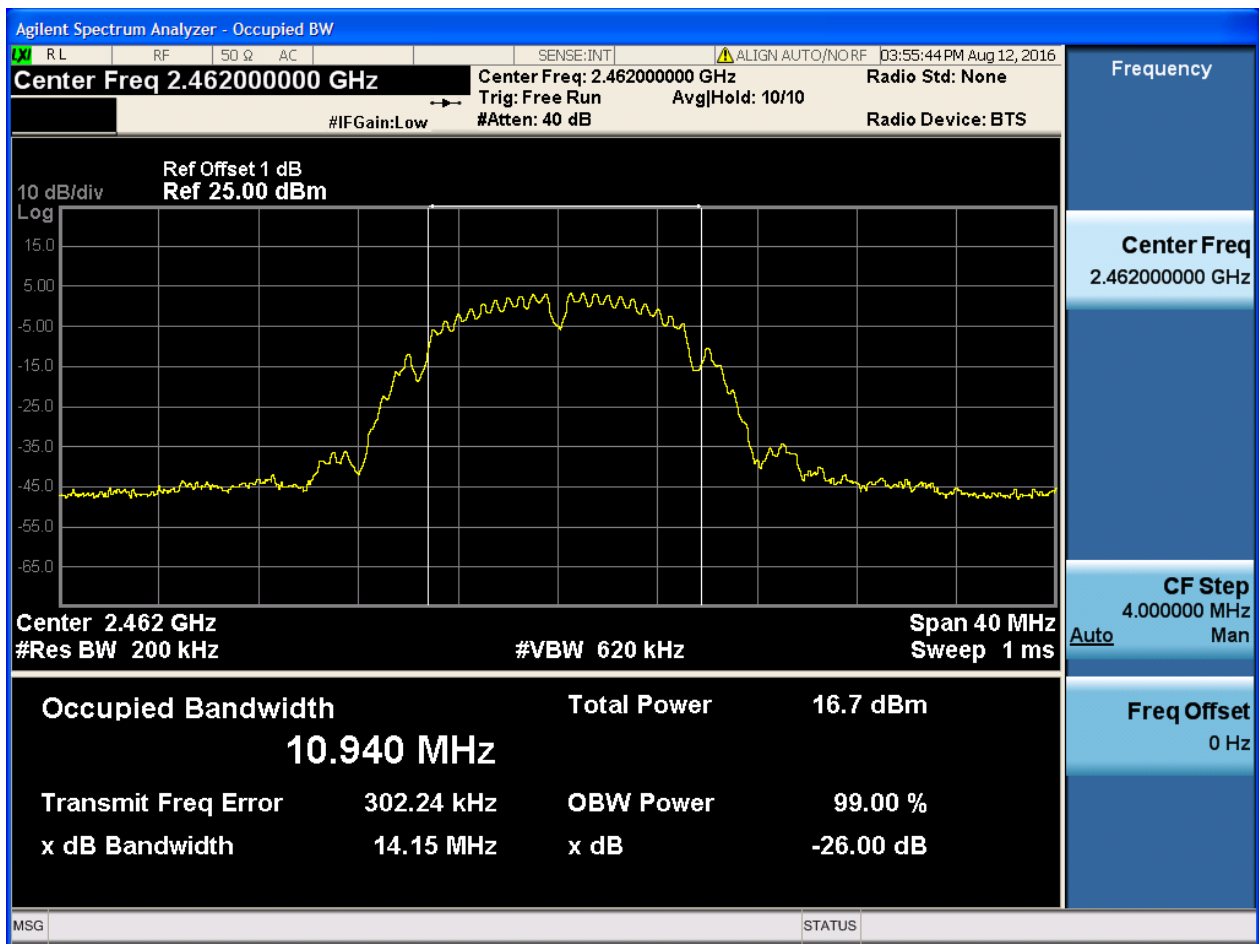


2.3 11B_M@Ant 1



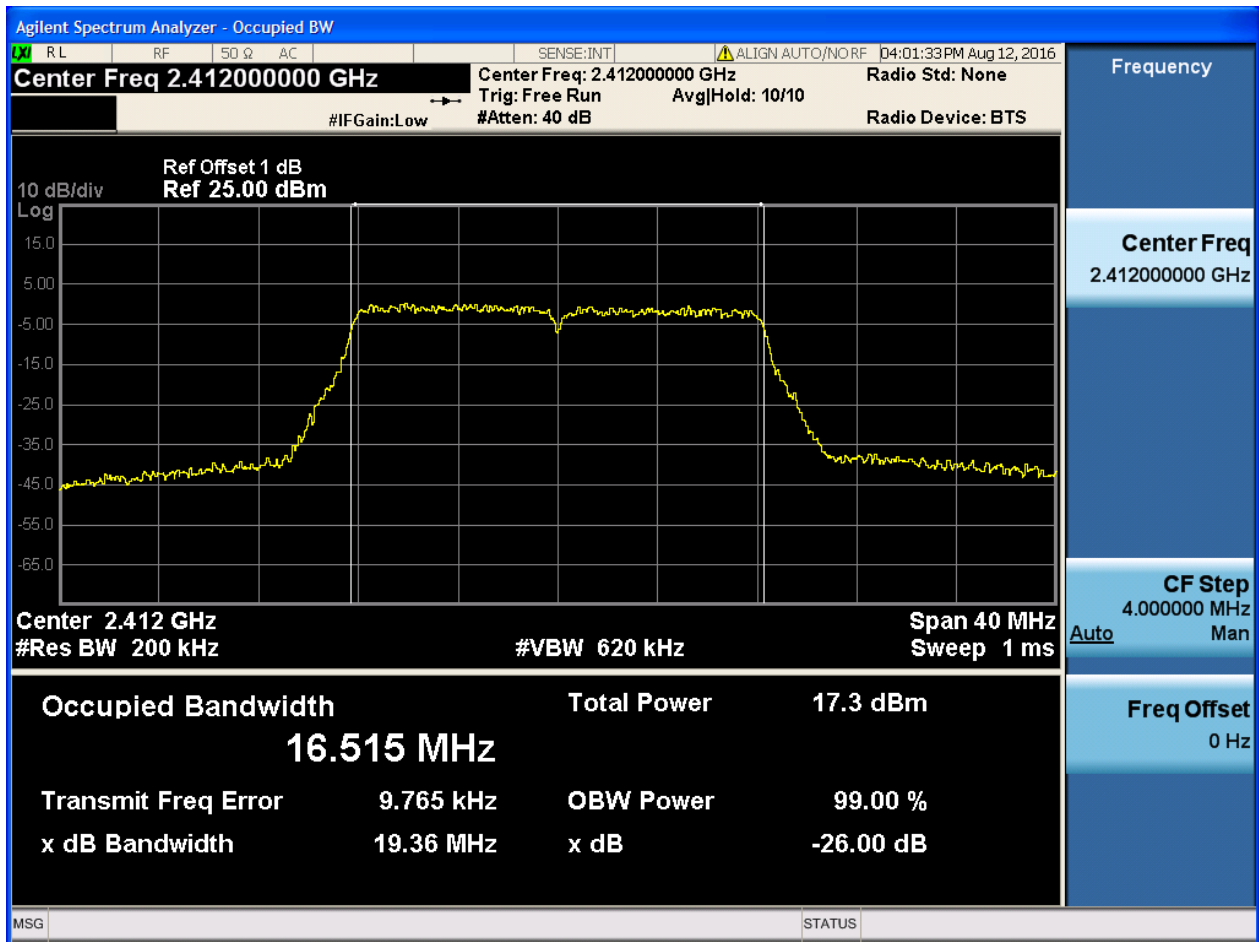


2.3 11B_H@Ant 1



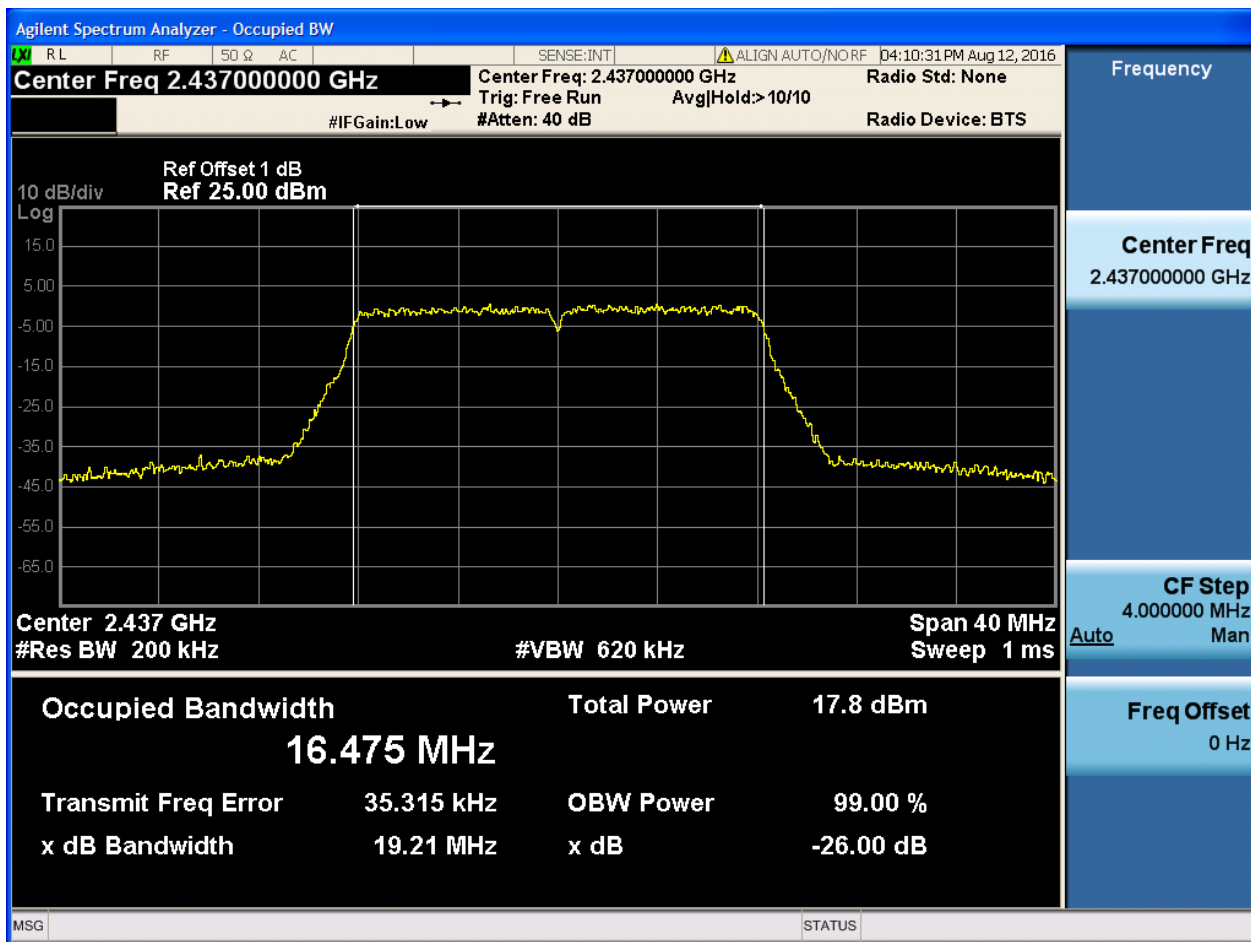


2.4 11G_L@Ant 1



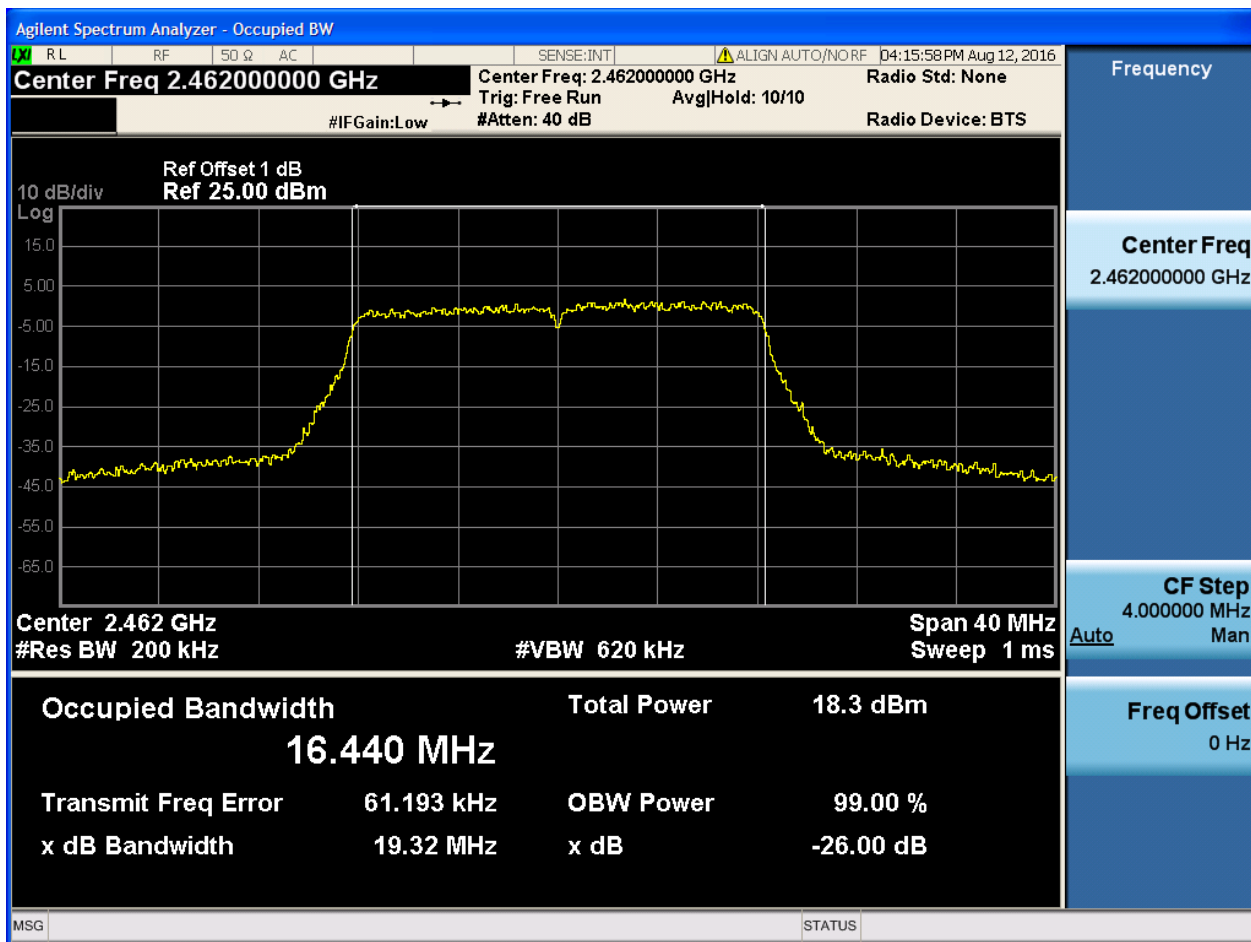


2.5 11G_M@Ant 1



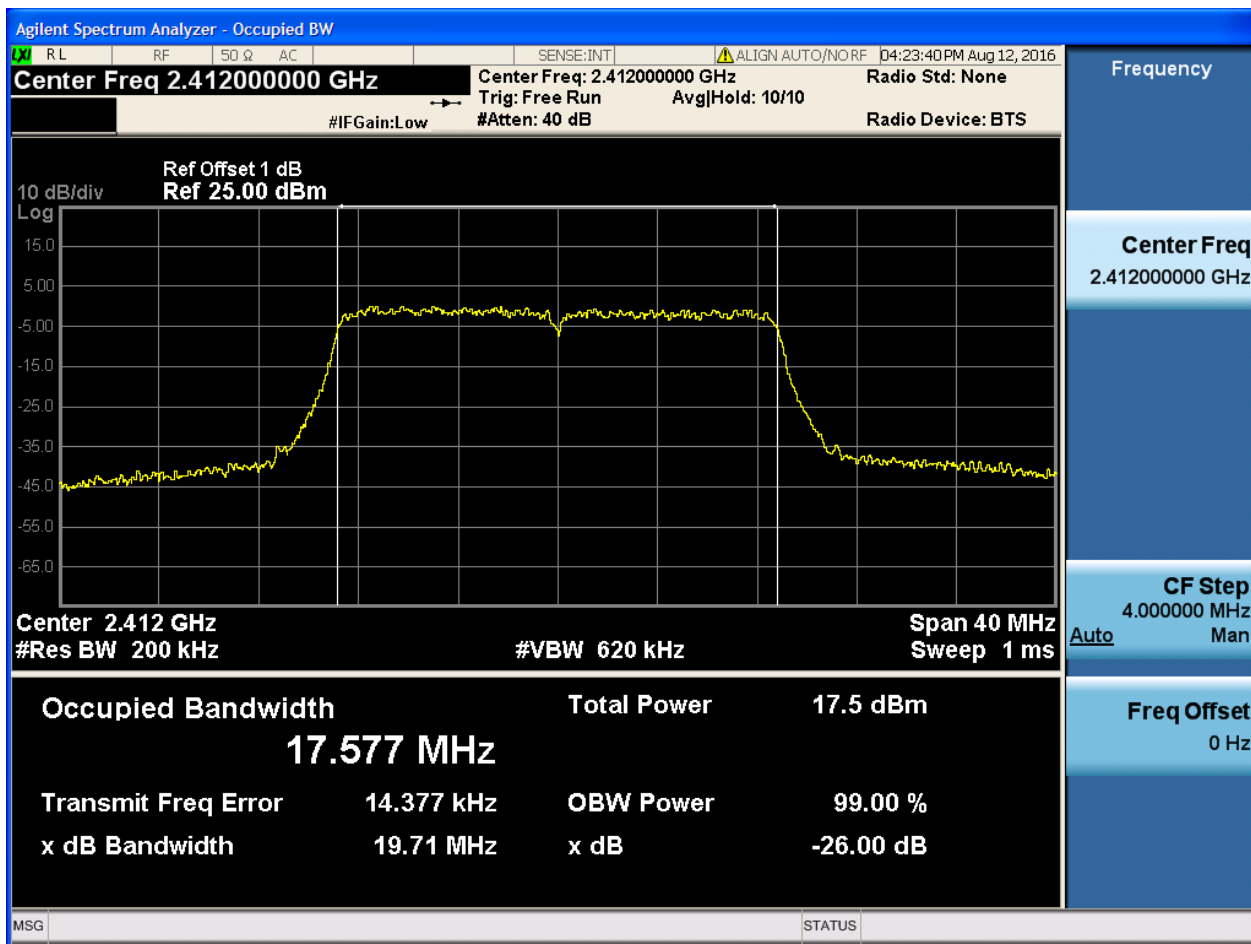


2.6 11G_H@Ant 1



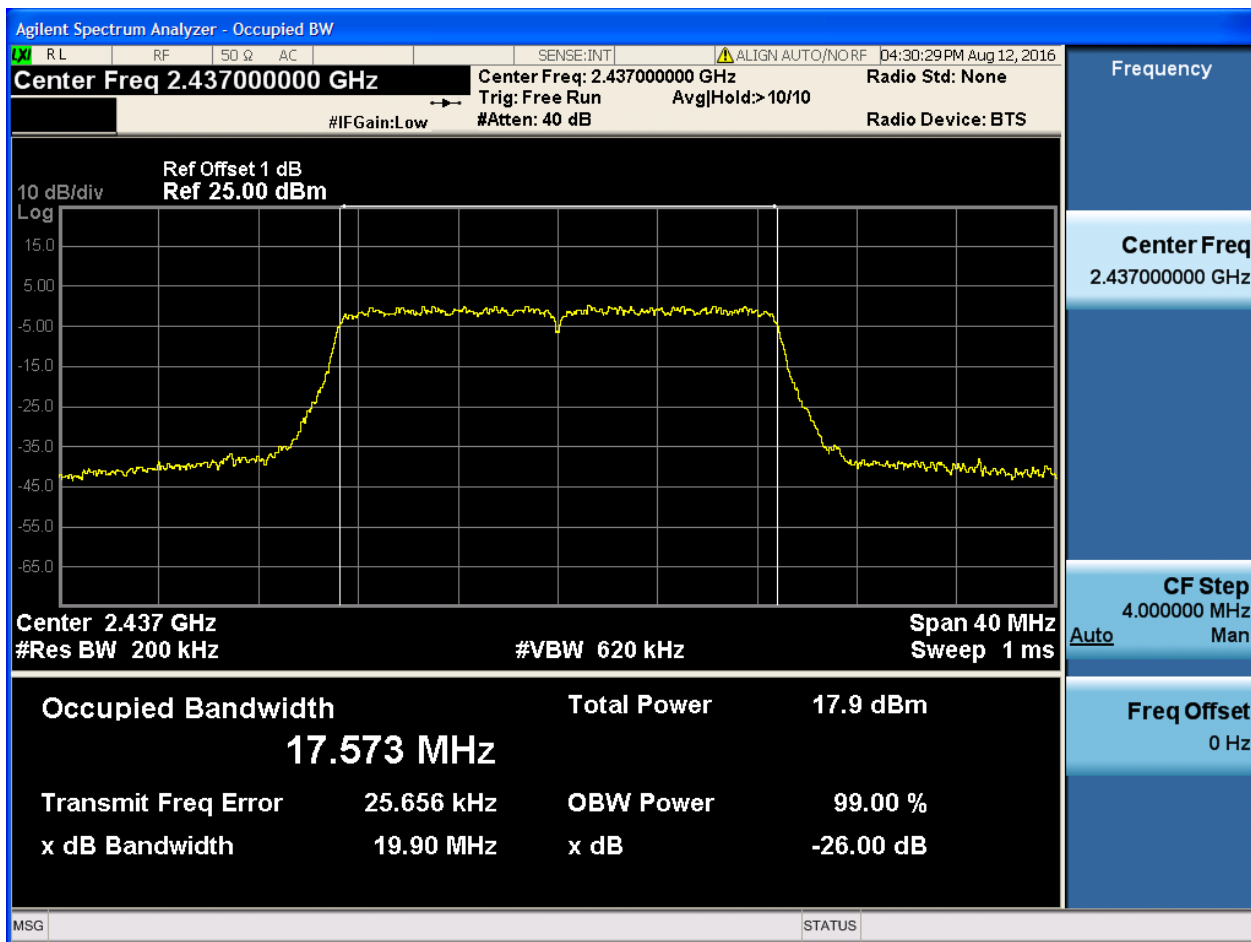


2.7 11N20_L@Ant 1



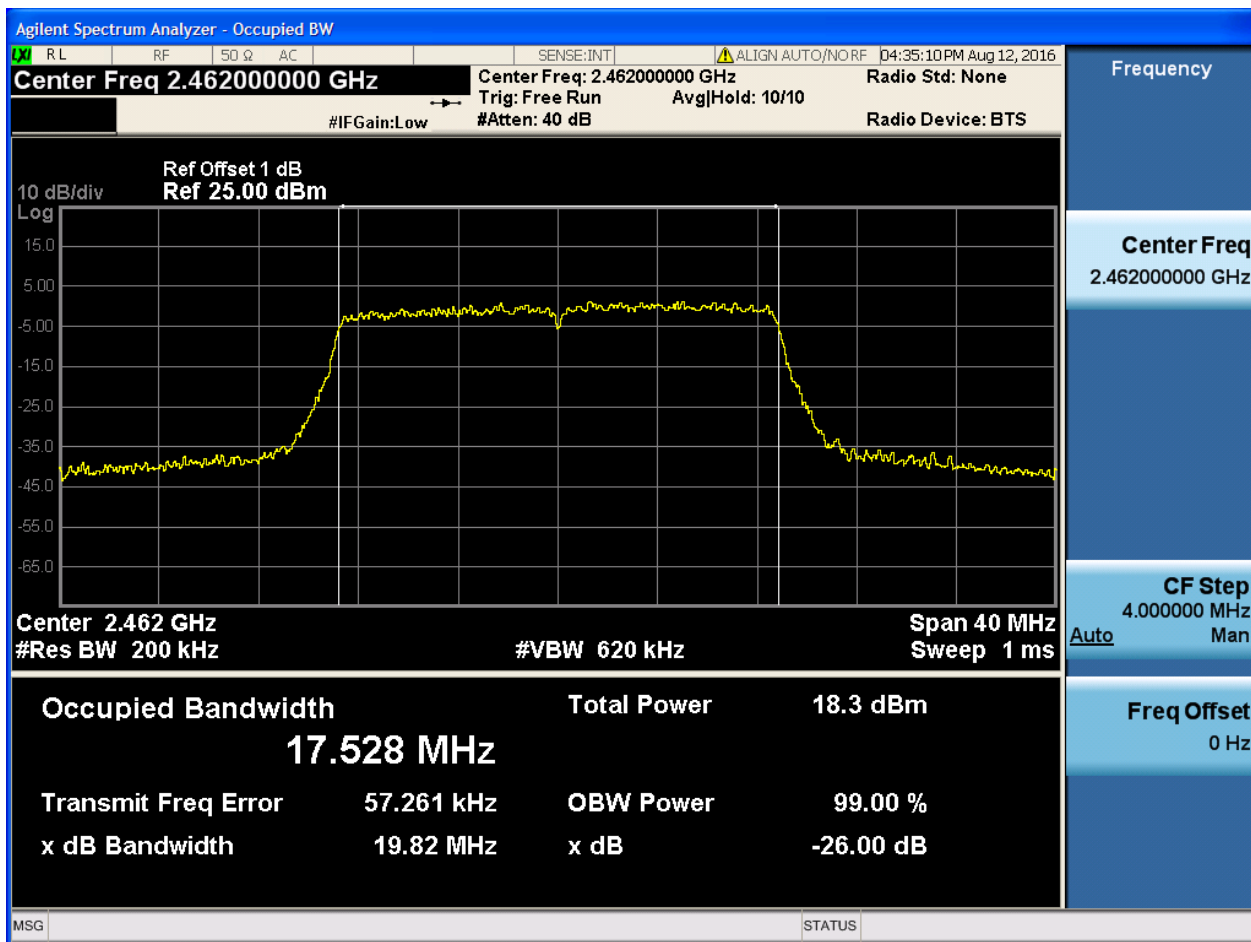


2.8 11N20_M@Ant 1



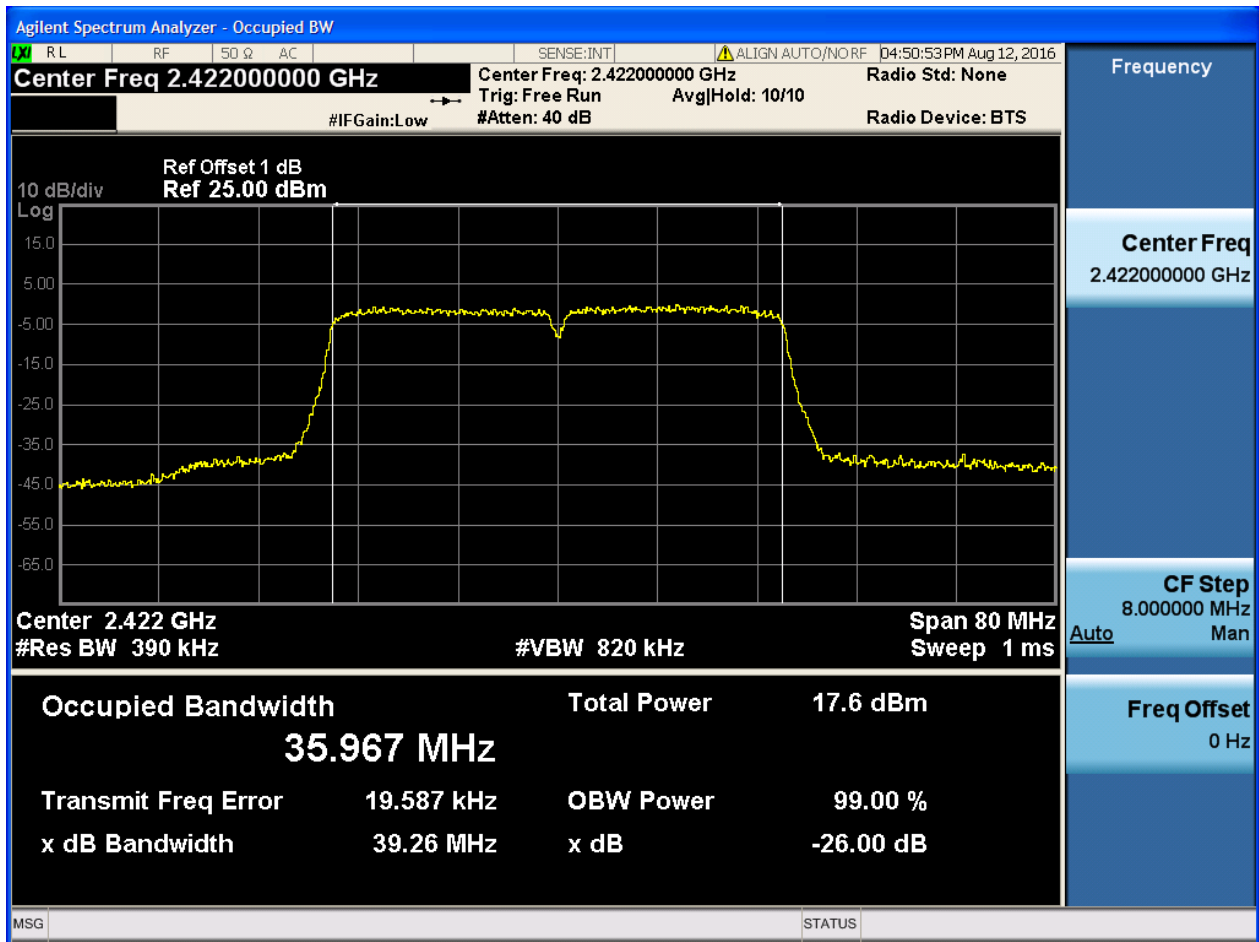


2.9 11N20_H@Ant 1



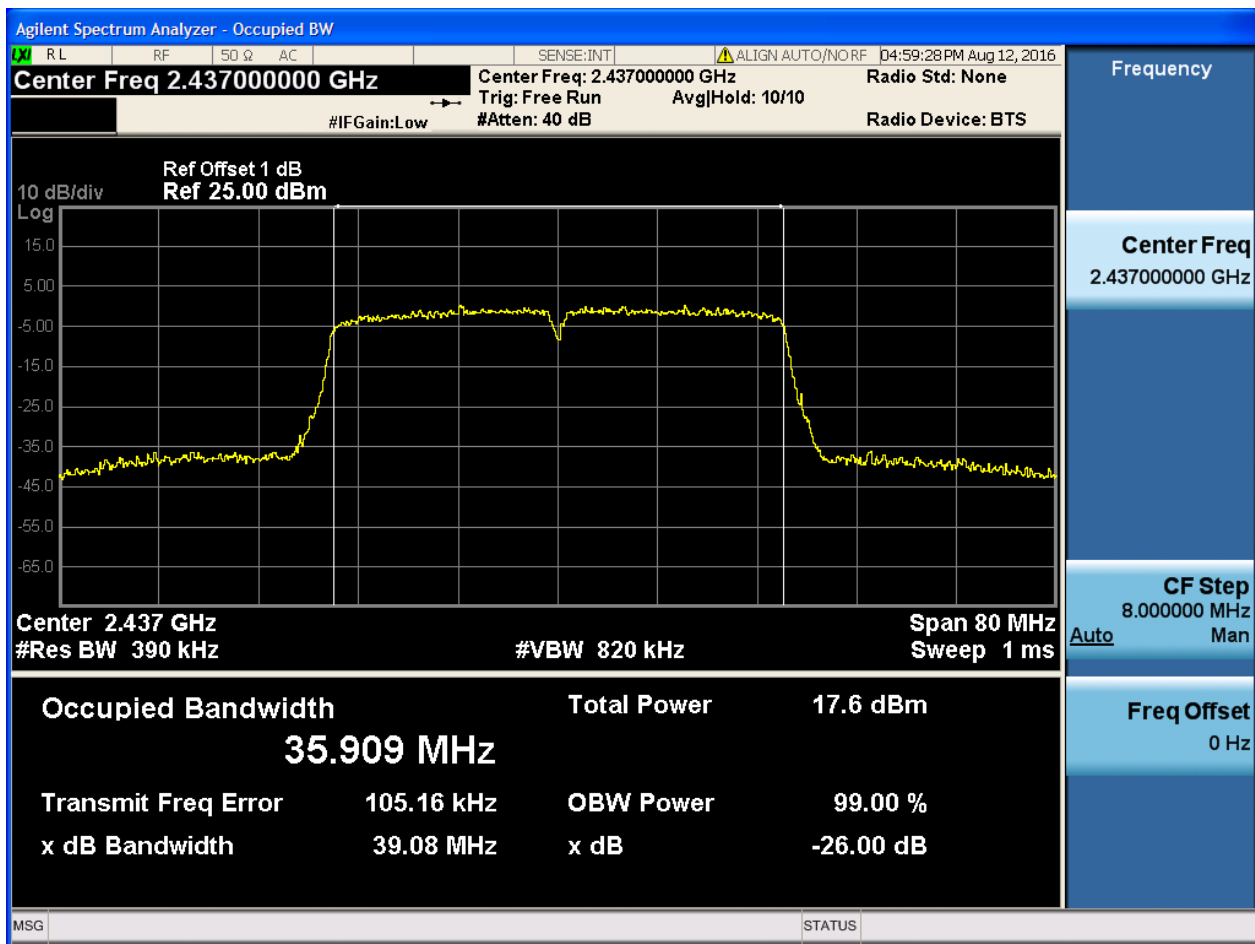


2.10 11N40_L@Ant 1



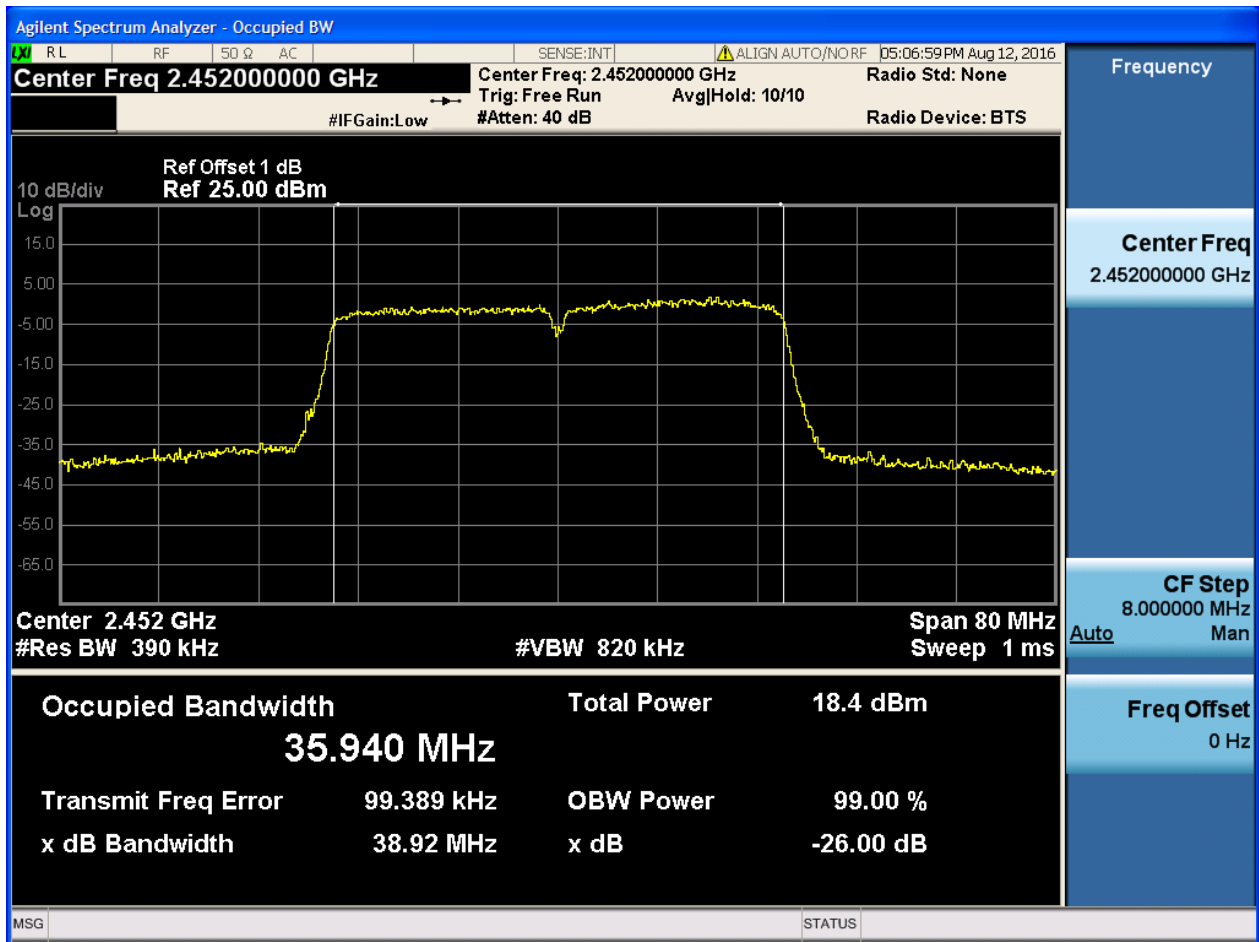


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix C: Duty cycle

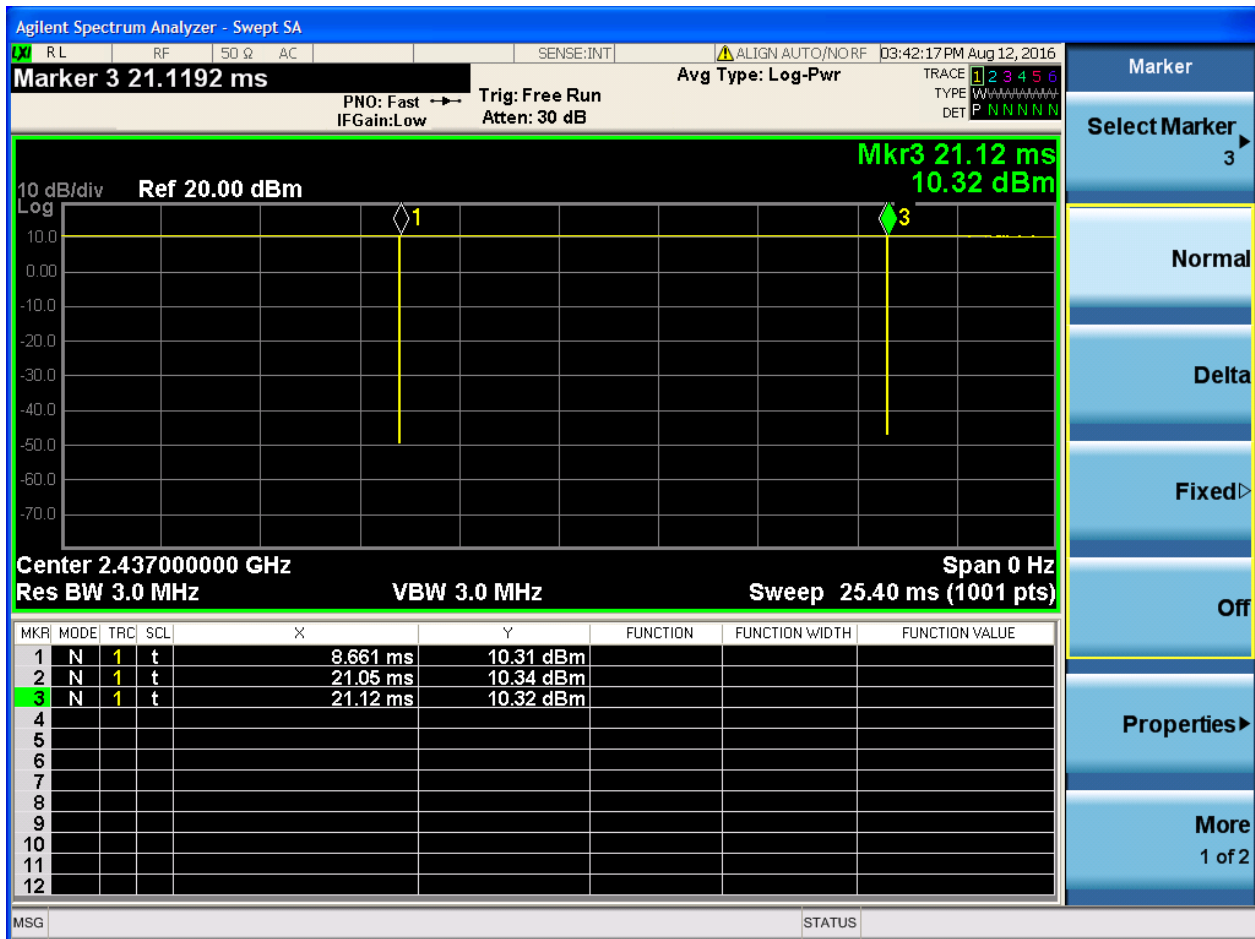
Part I - Test Results

Test Mode	TX Freq. [MHz]	Ant	Duty cycle [%]
11B	CH1,CH6,CH11	Ant 1	99.4
11G	CH1,CH6,CH11	Ant 1	98.0
11N20SISO	CH1,CH6,CH11	Ant 1	97.5
11N40SISO	CH3,CH6,CH9	Ant 1	94.9



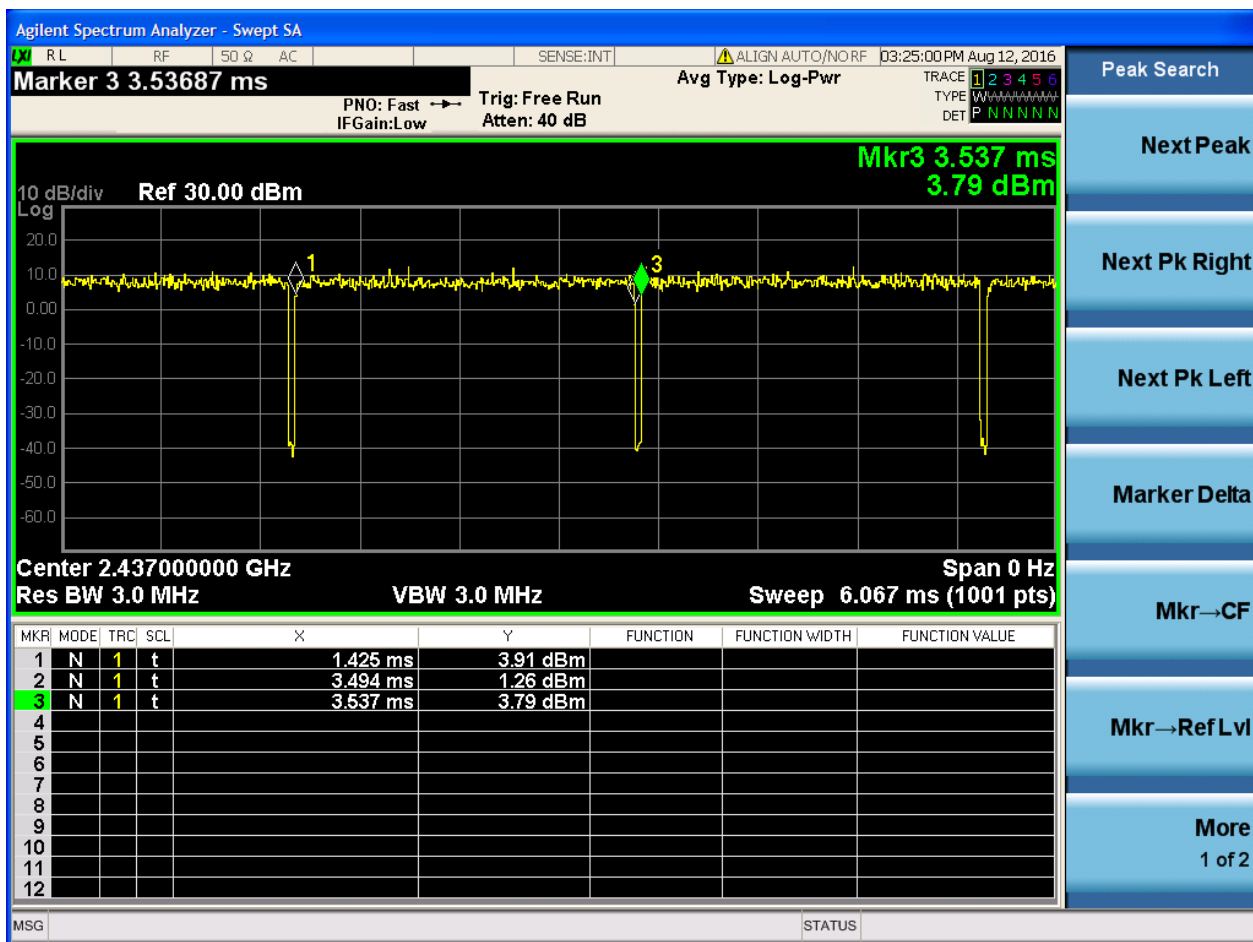
Part II - Test Plots

2.1 11B_M@Ant 1

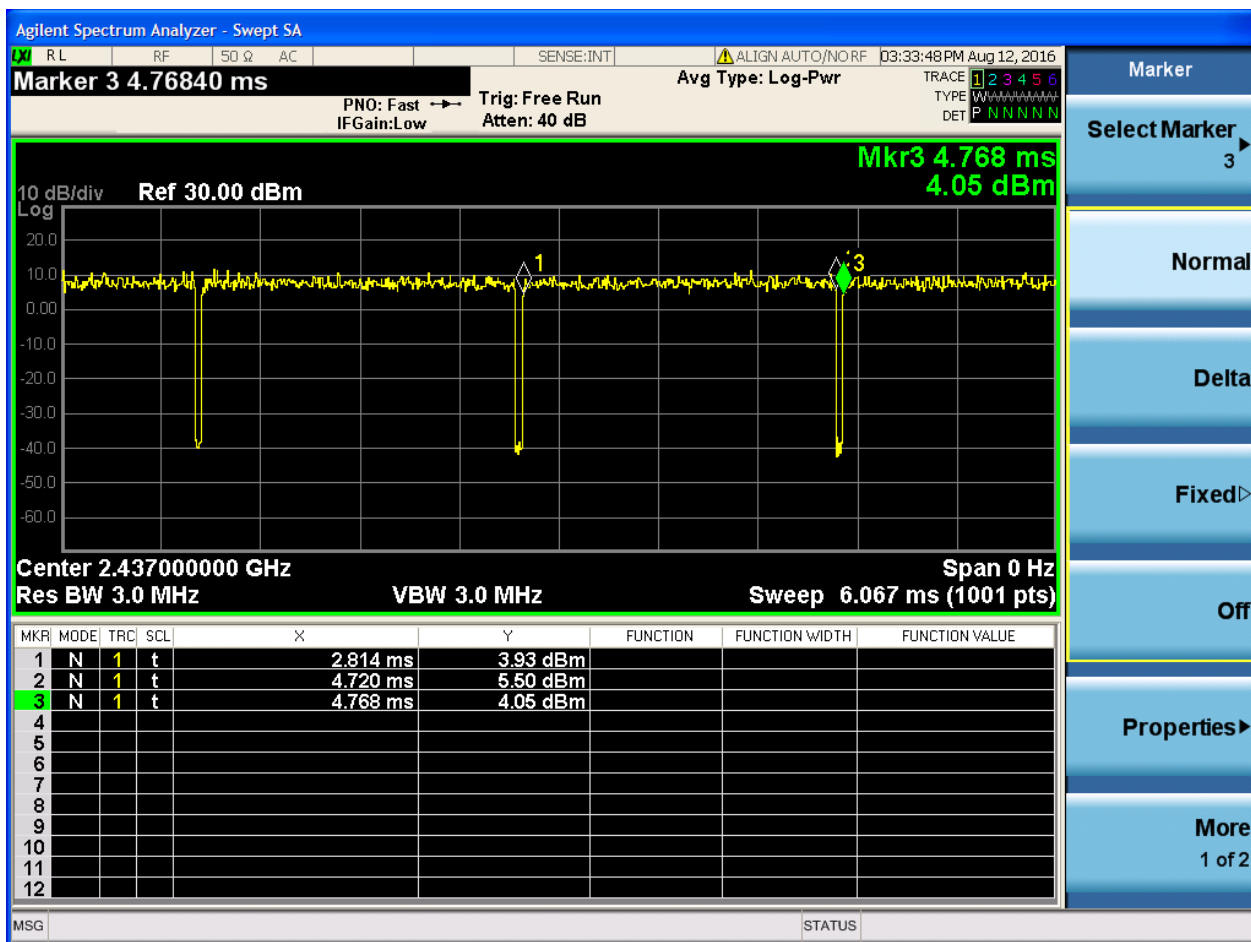




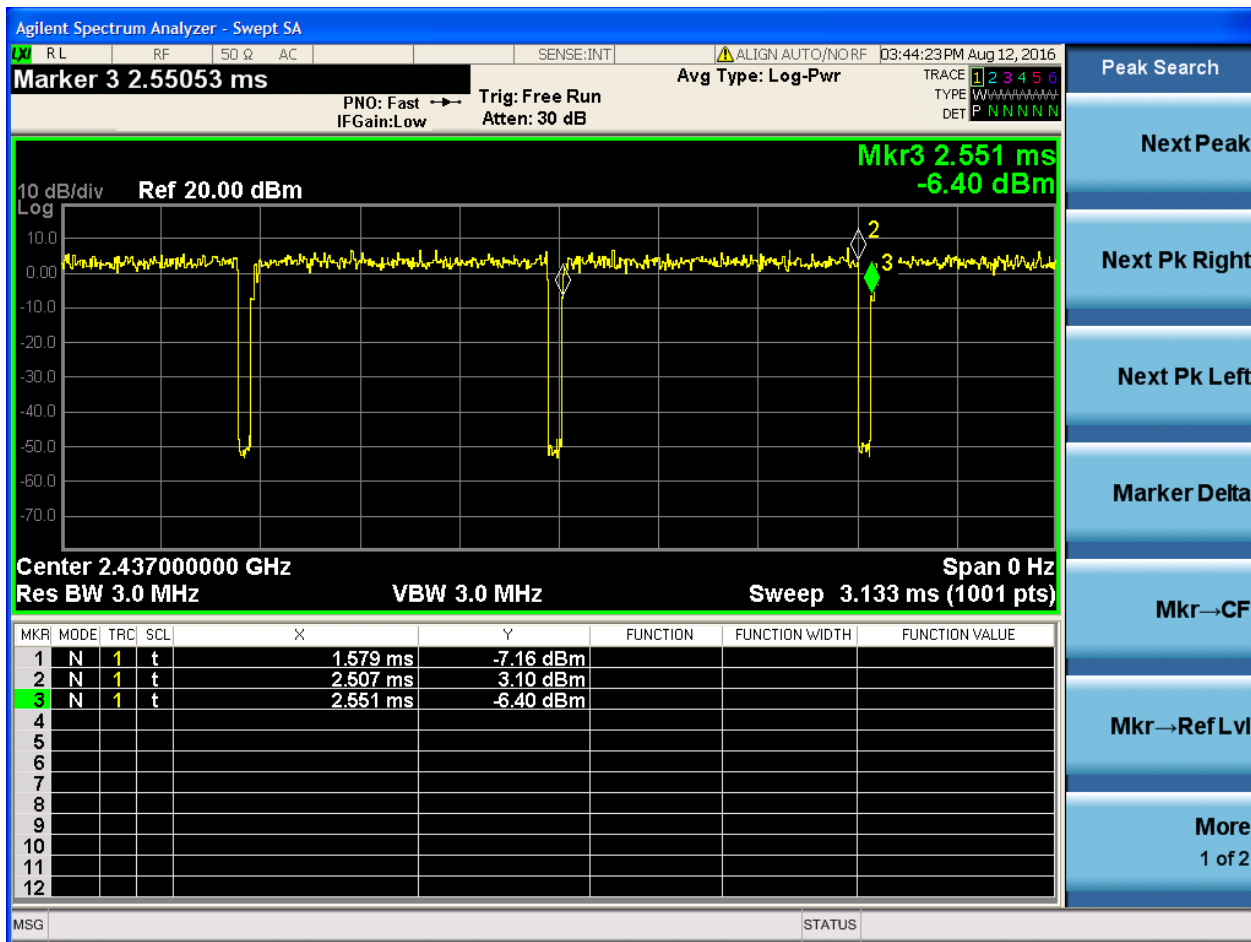
2.2 11G_M@Ant 1



2.3 11N20SISO_M@Ant 1



2.4 11N40SISO_M@Ant 1



Appendix D: Maximum Conducted Average Output Power

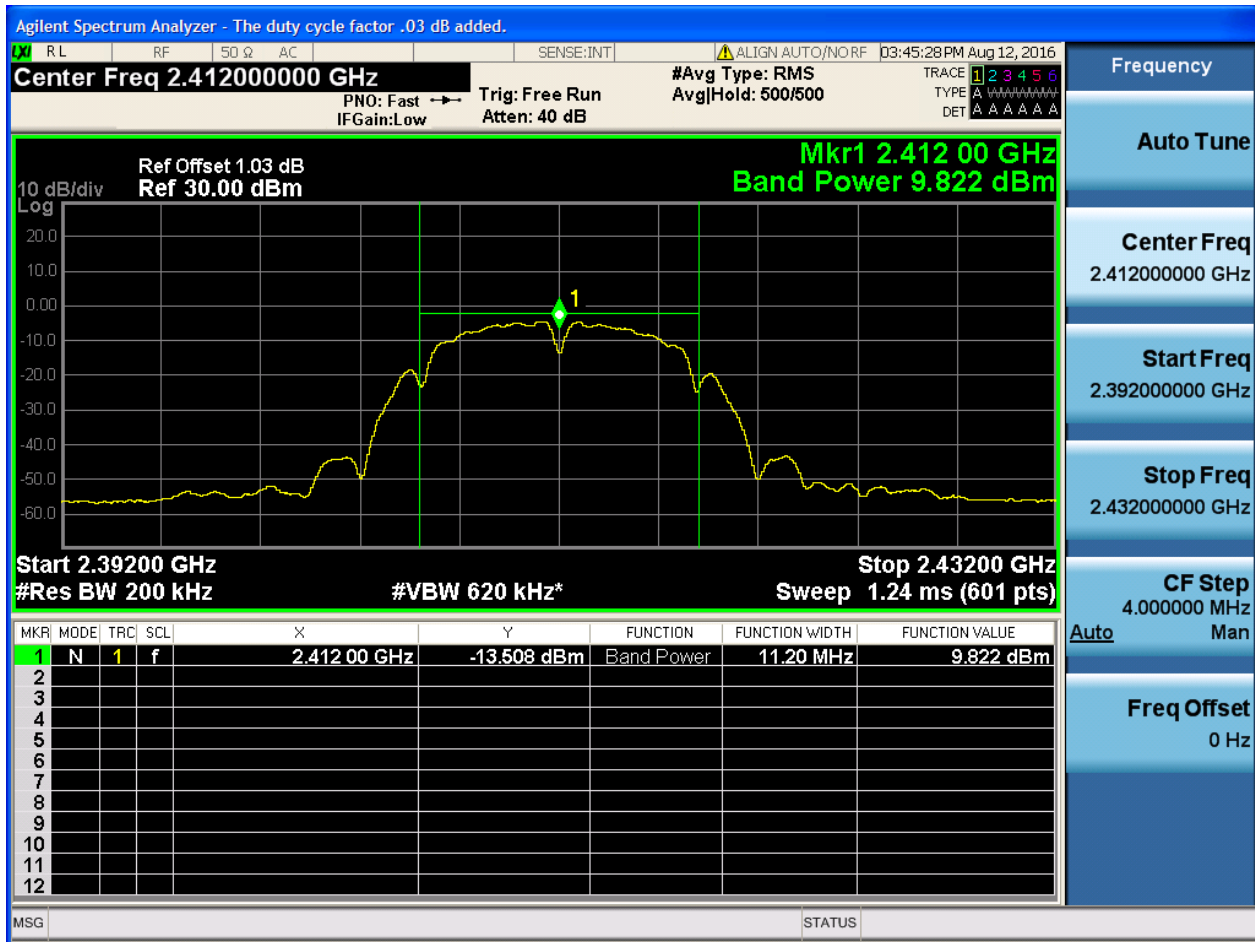
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11B	L	2412	Ant 1	9.822	pass
11B	M	2437	Ant 1	10.545	pass
11B	H	2462	Ant 1	11.155	pass
11G	L	2412	Ant 1	10.198	pass
11G	M	2437	Ant 1	10.657	pass
11G	H	2462	Ant 1	11.125	pass
11N20	L	2412	Ant 1	10.200	pass
11N20	M	2437	Ant 1	10.664	pass
11N20	H	2462	Ant 1	11.052	pass
11N40	L	2422	Ant 1	10.328	pass
11N40	M	2437	Ant 1	10.268	pass
11N40	H	2452	Ant 1	11.072	pass



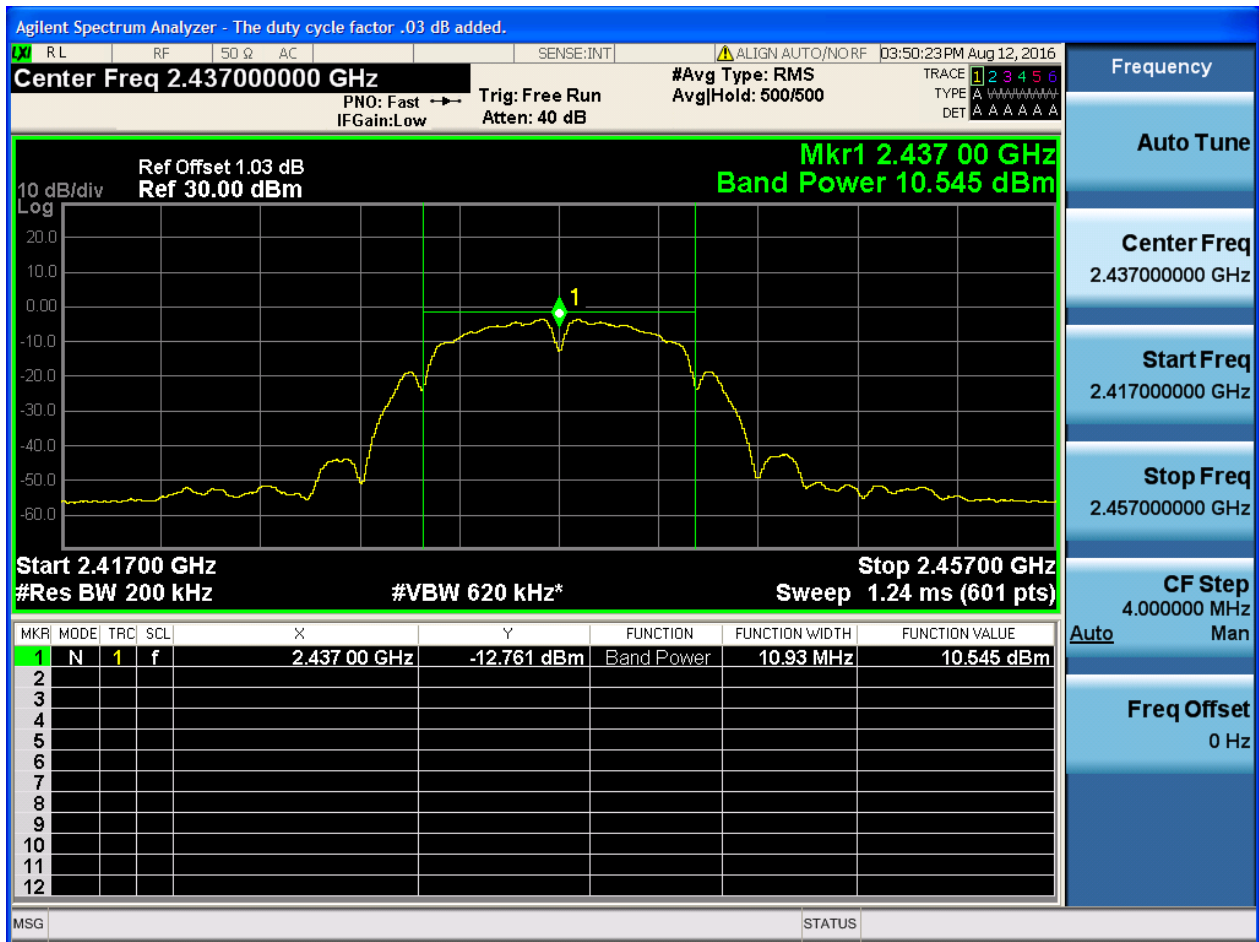
Part II - Test Plots

2.1 11B_L@Ant 1



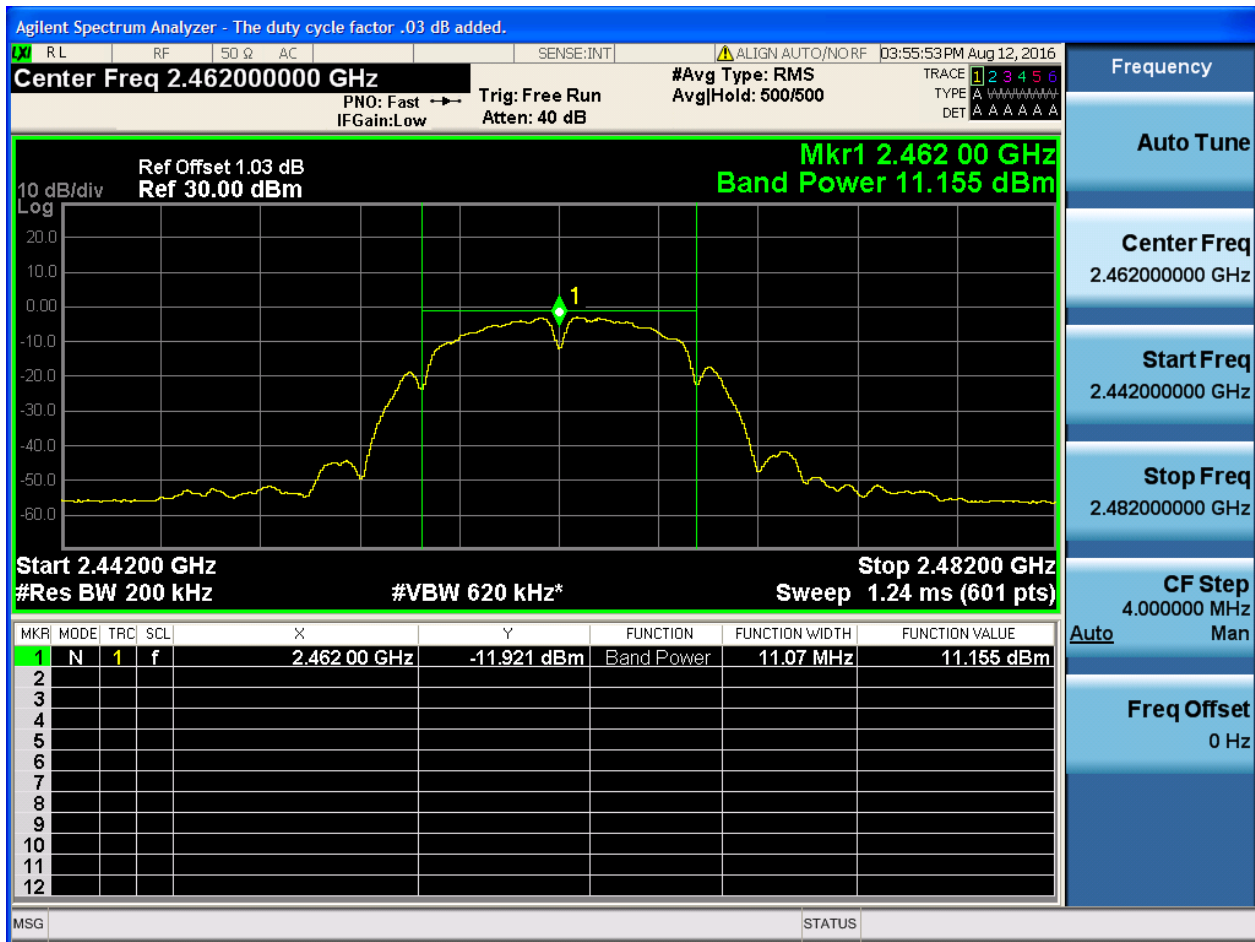


2.3 11B_M@Ant 1



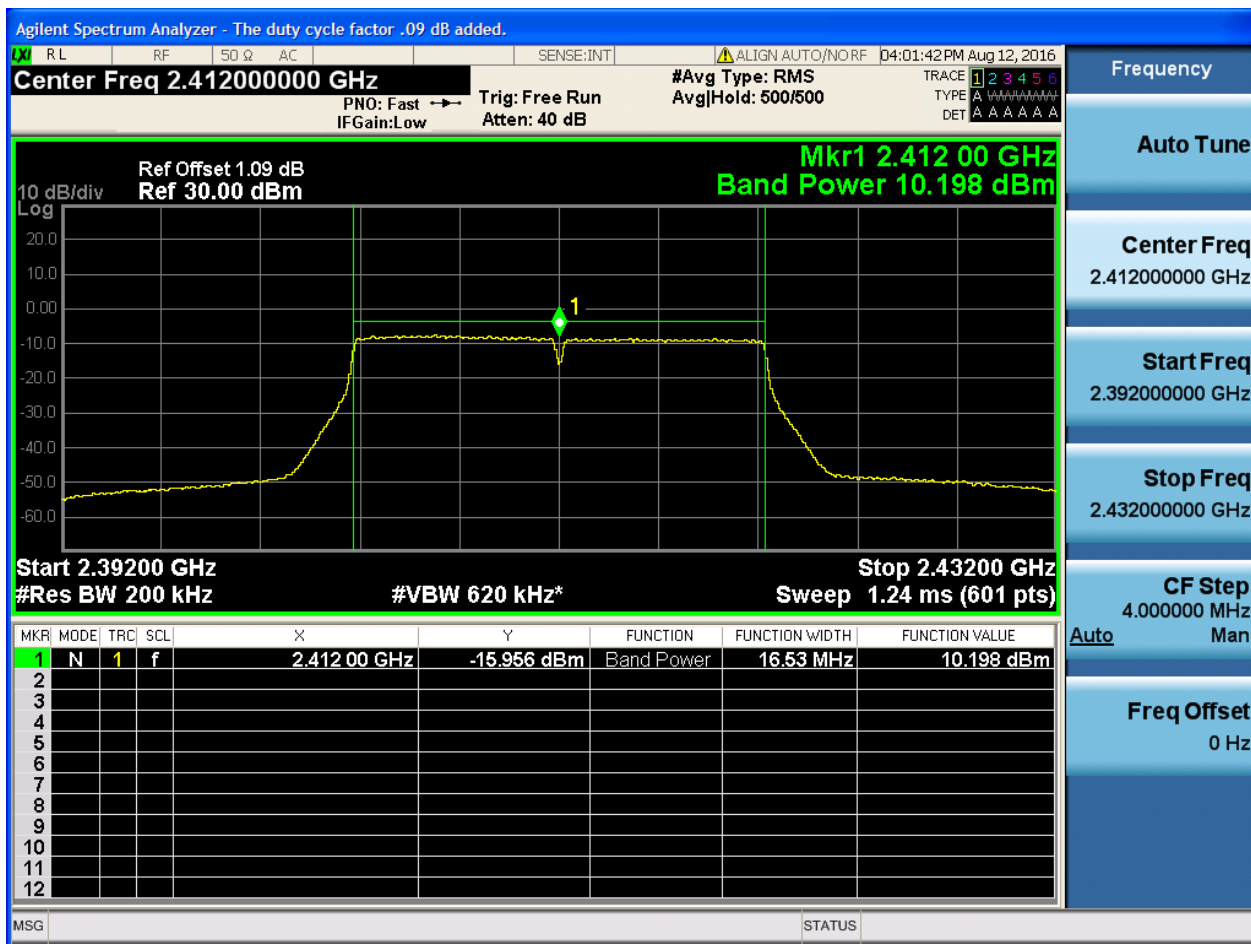


2.3 11B_H@Ant 1



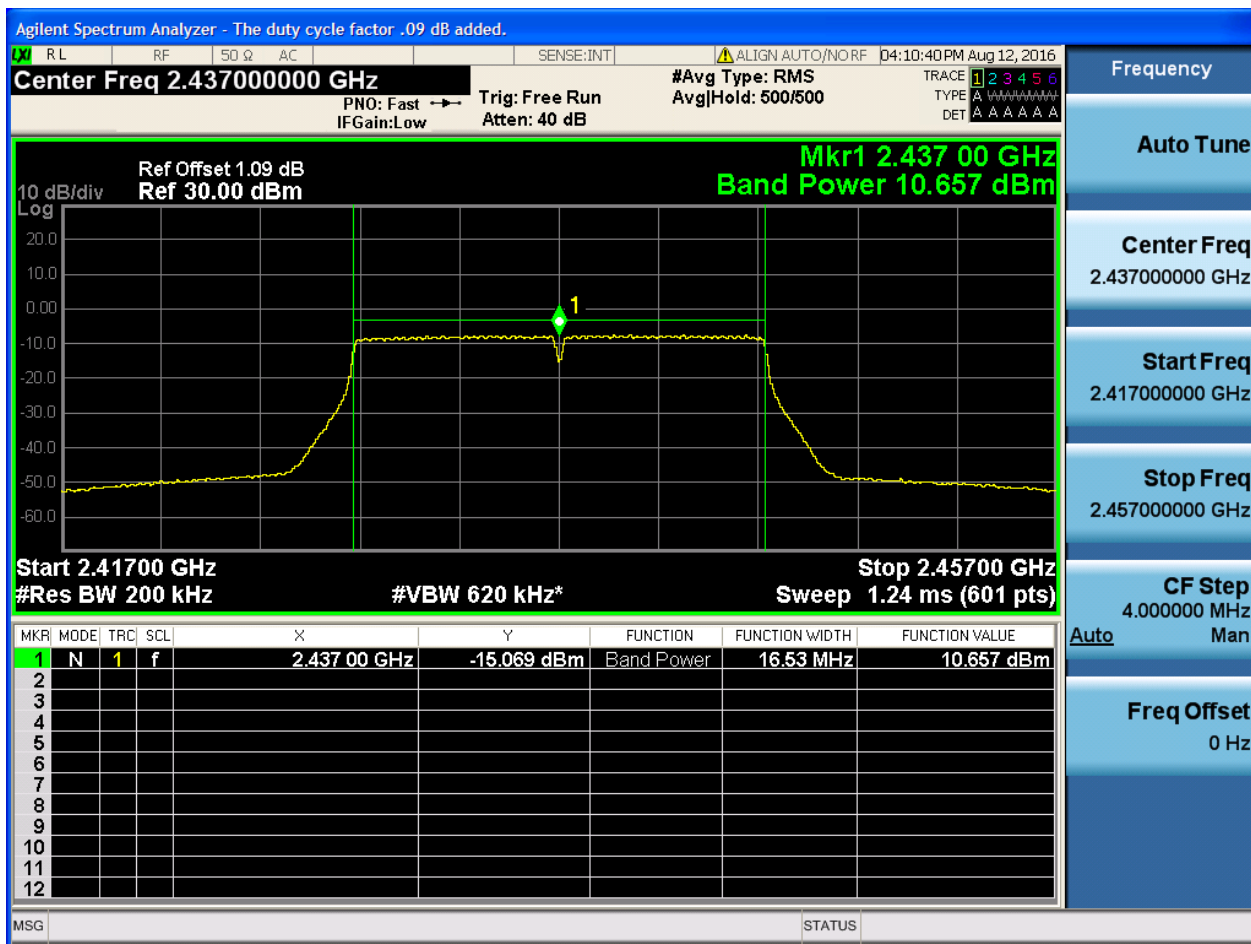


2.4 11G_L@Ant 1



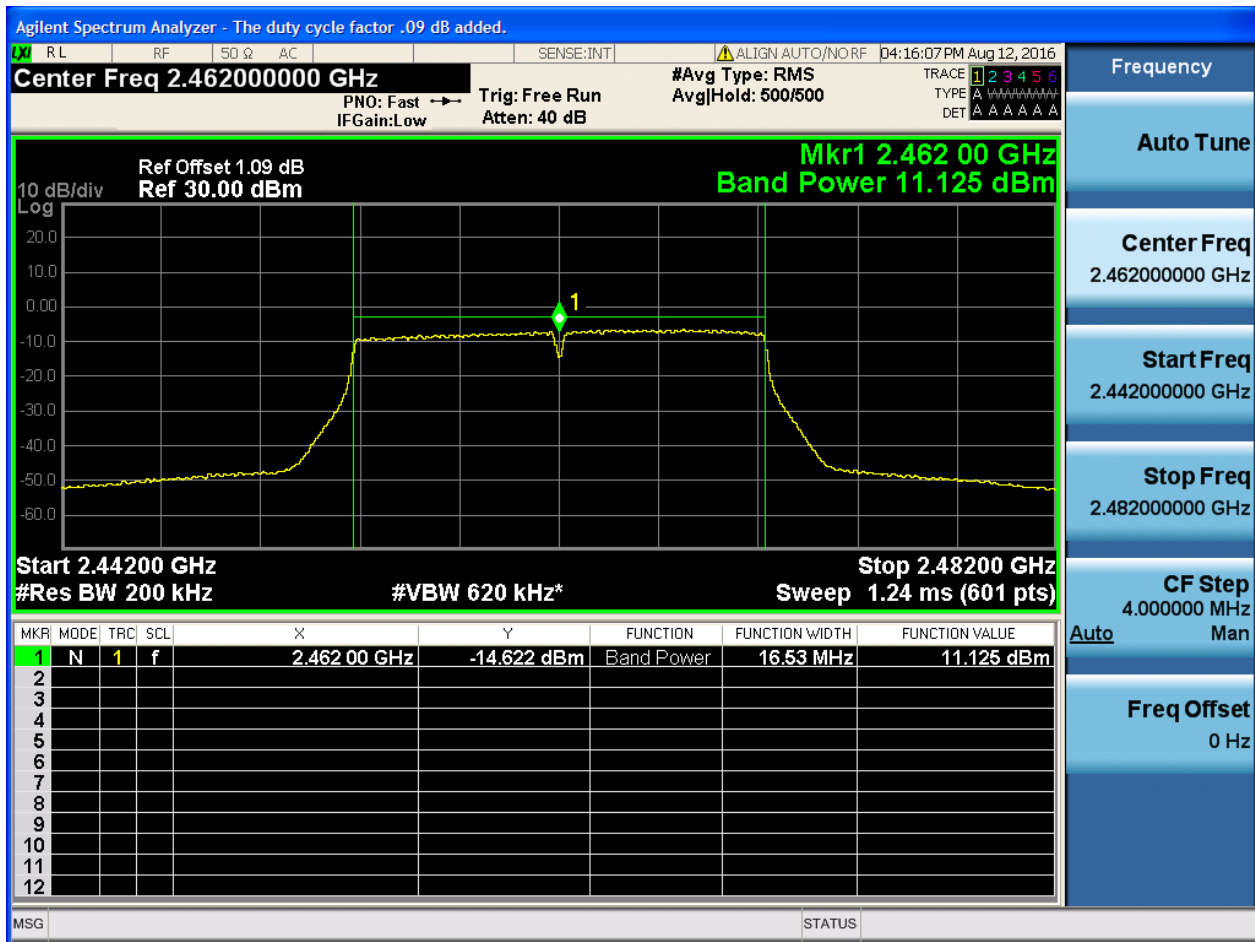


2.5 11G_M@Ant 1



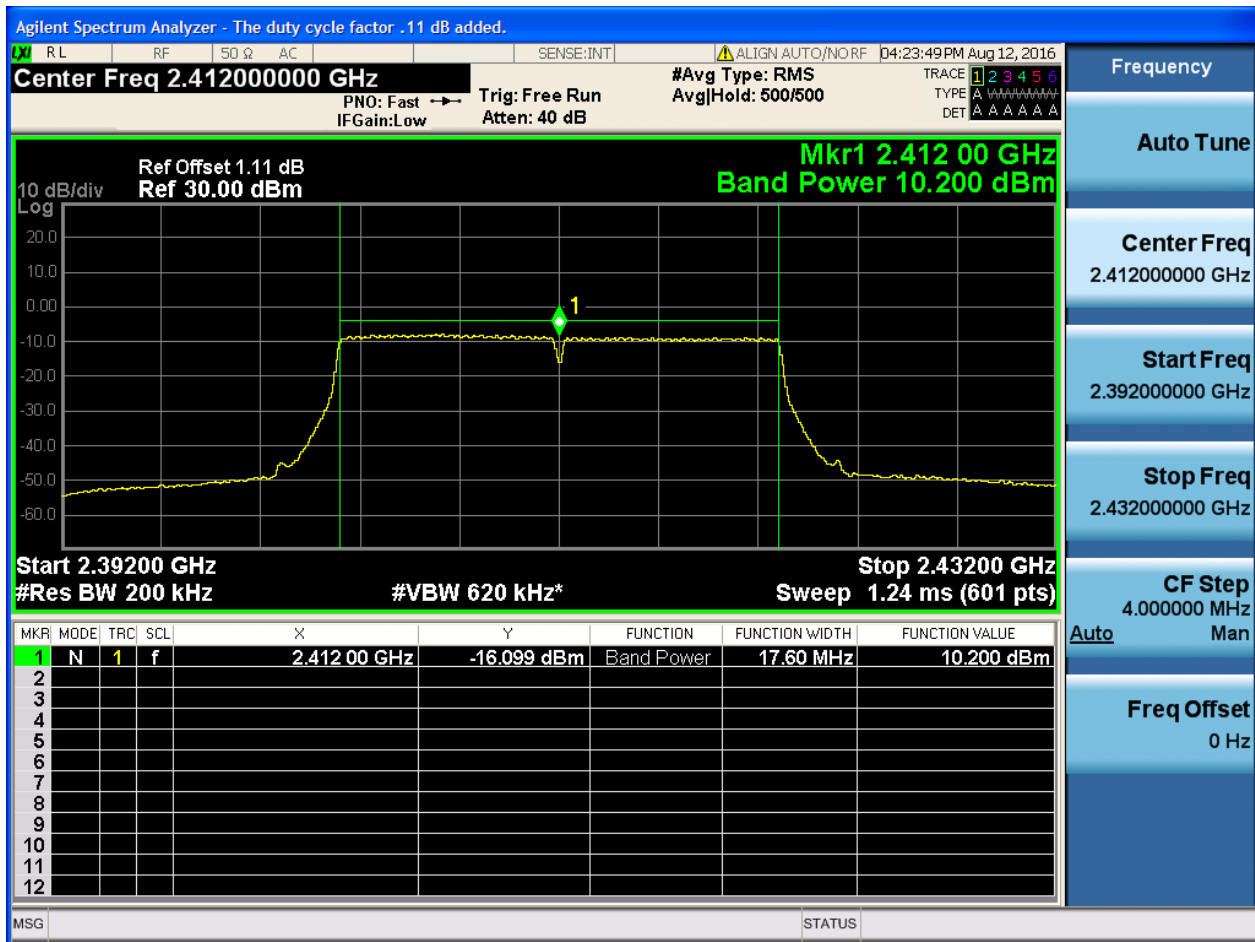


2.6 11G_H@Ant 1



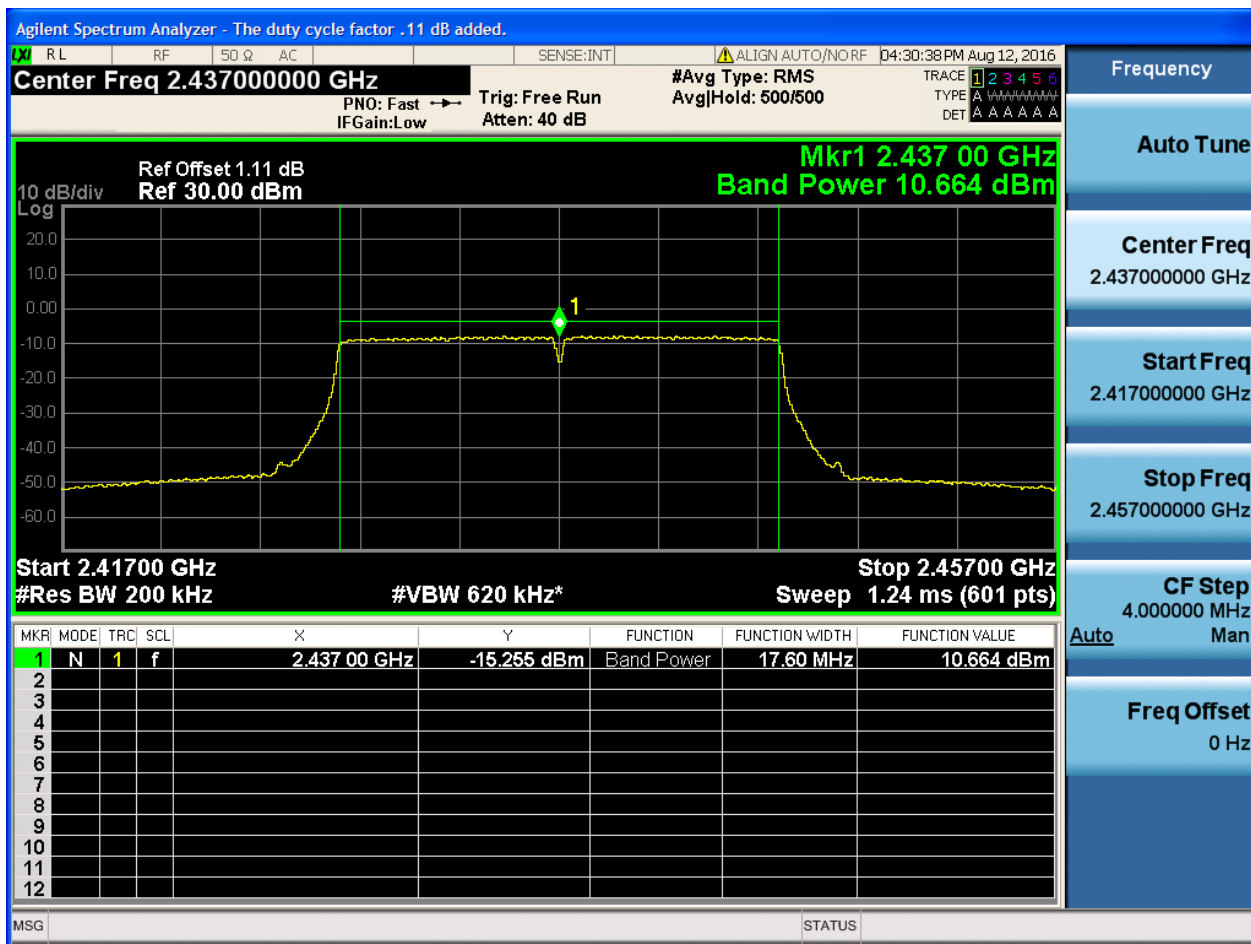


2.7 11N20_L@Ant 1



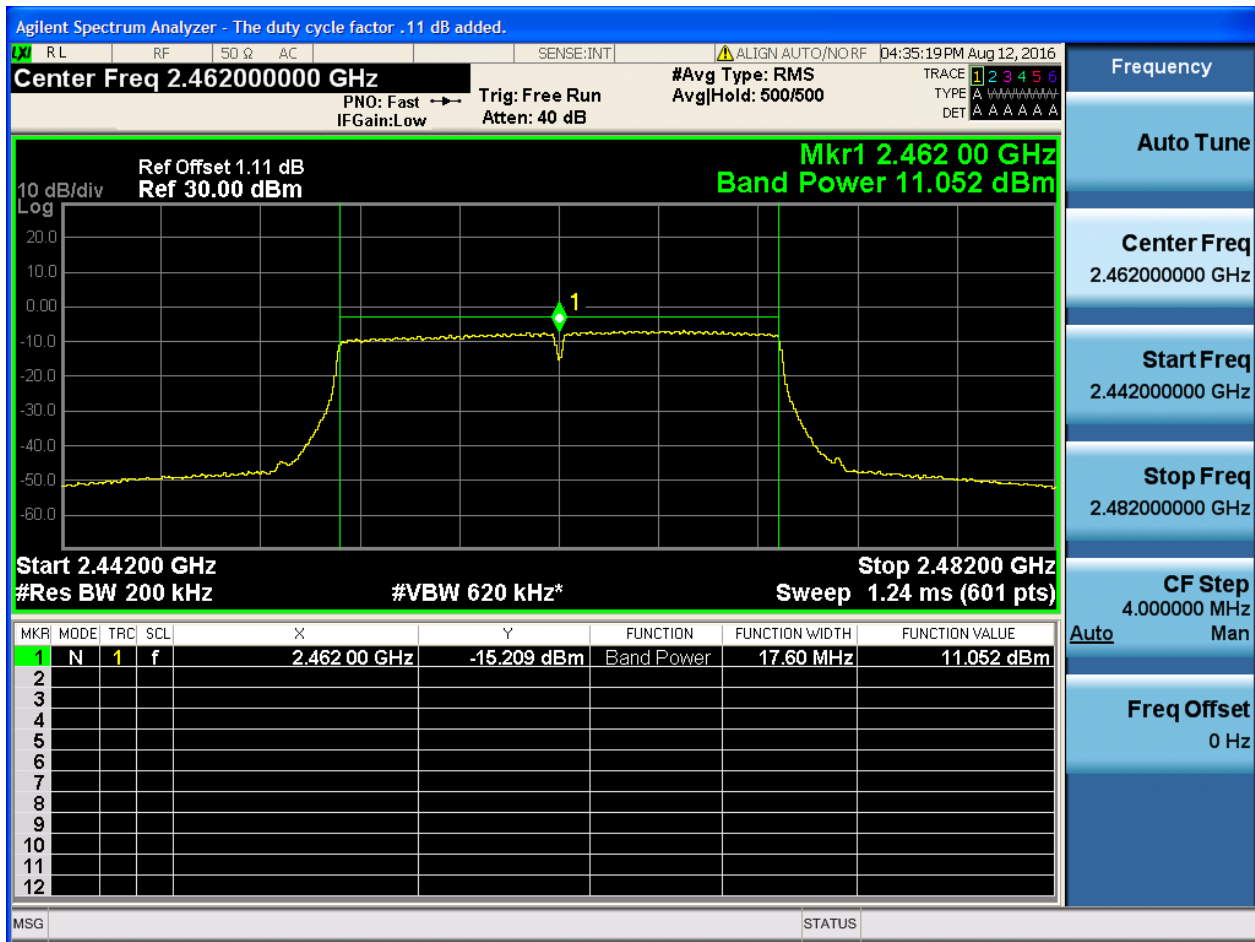


2.8 11N20_M@Ant 1



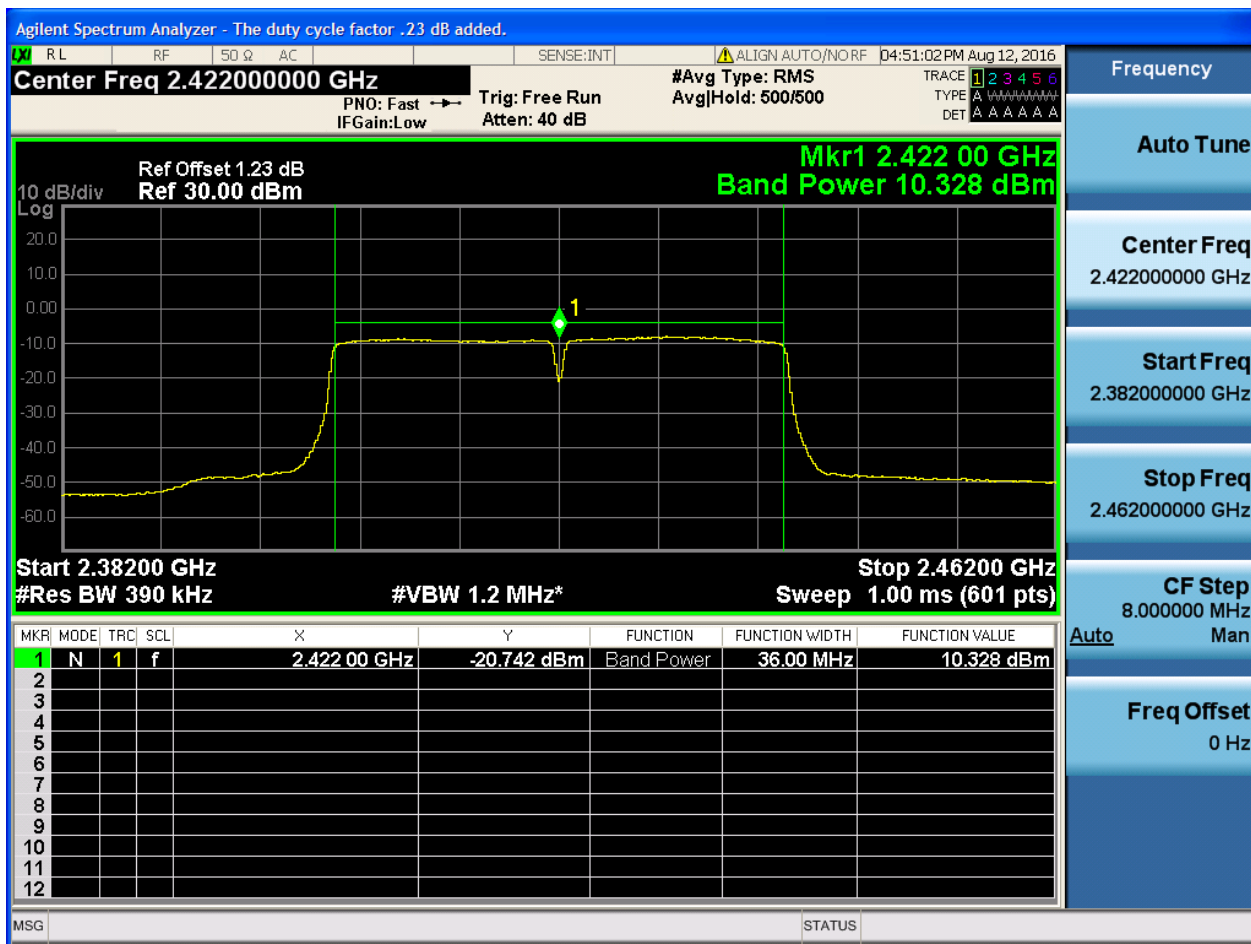


2.9 11N20_H@Ant 1



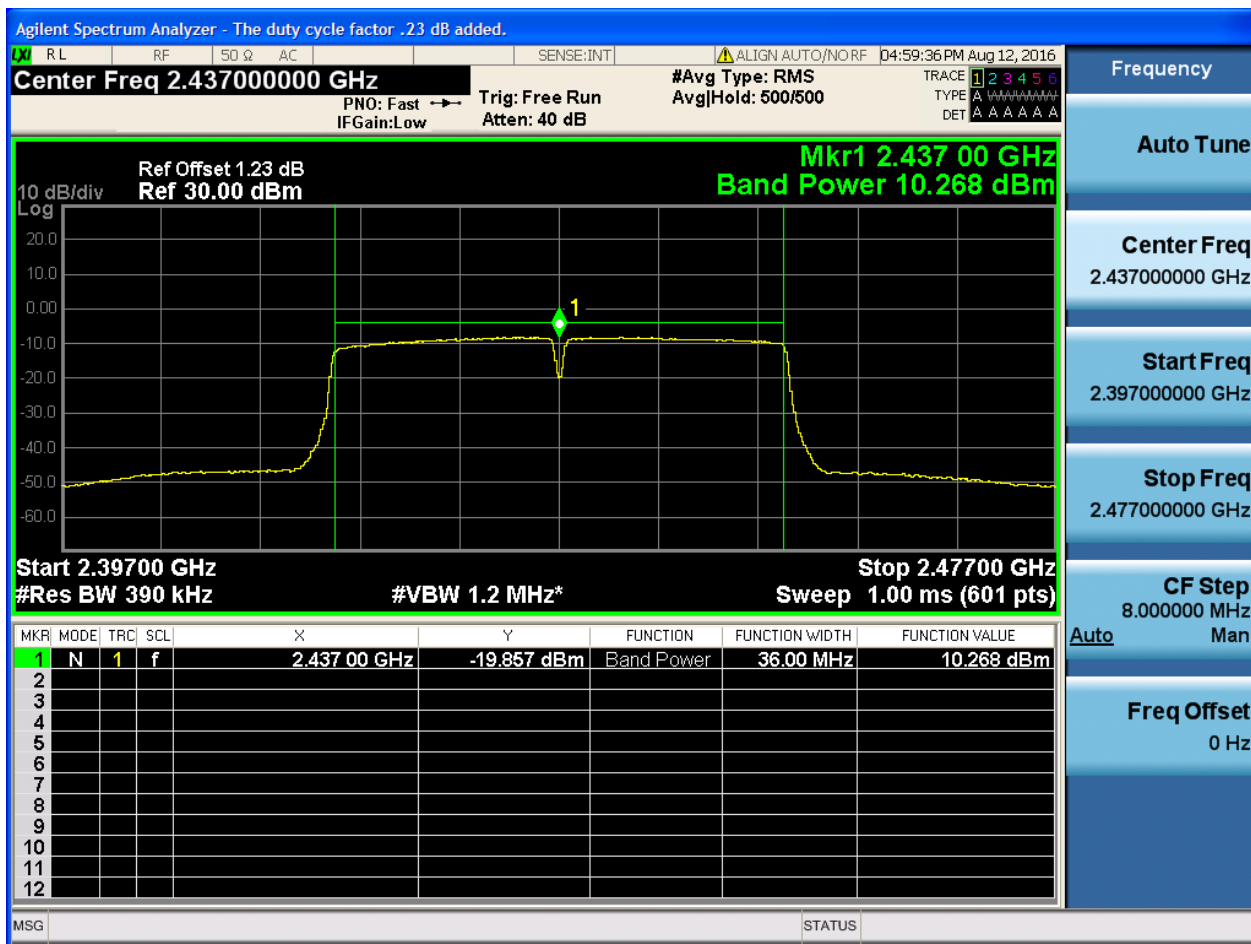


2.10 11N40_L@Ant 1



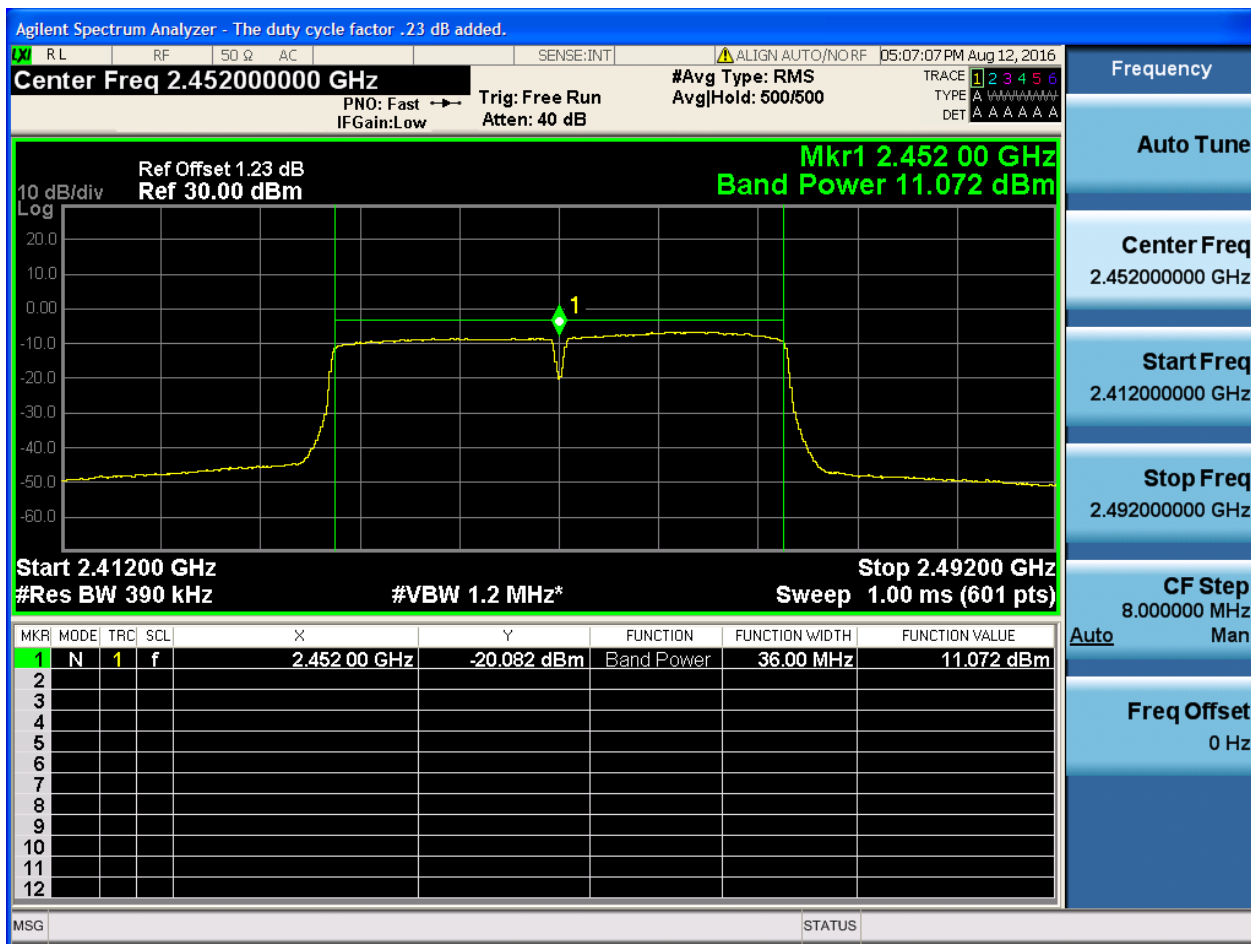


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix E: Maximum Power Spectral Density Level

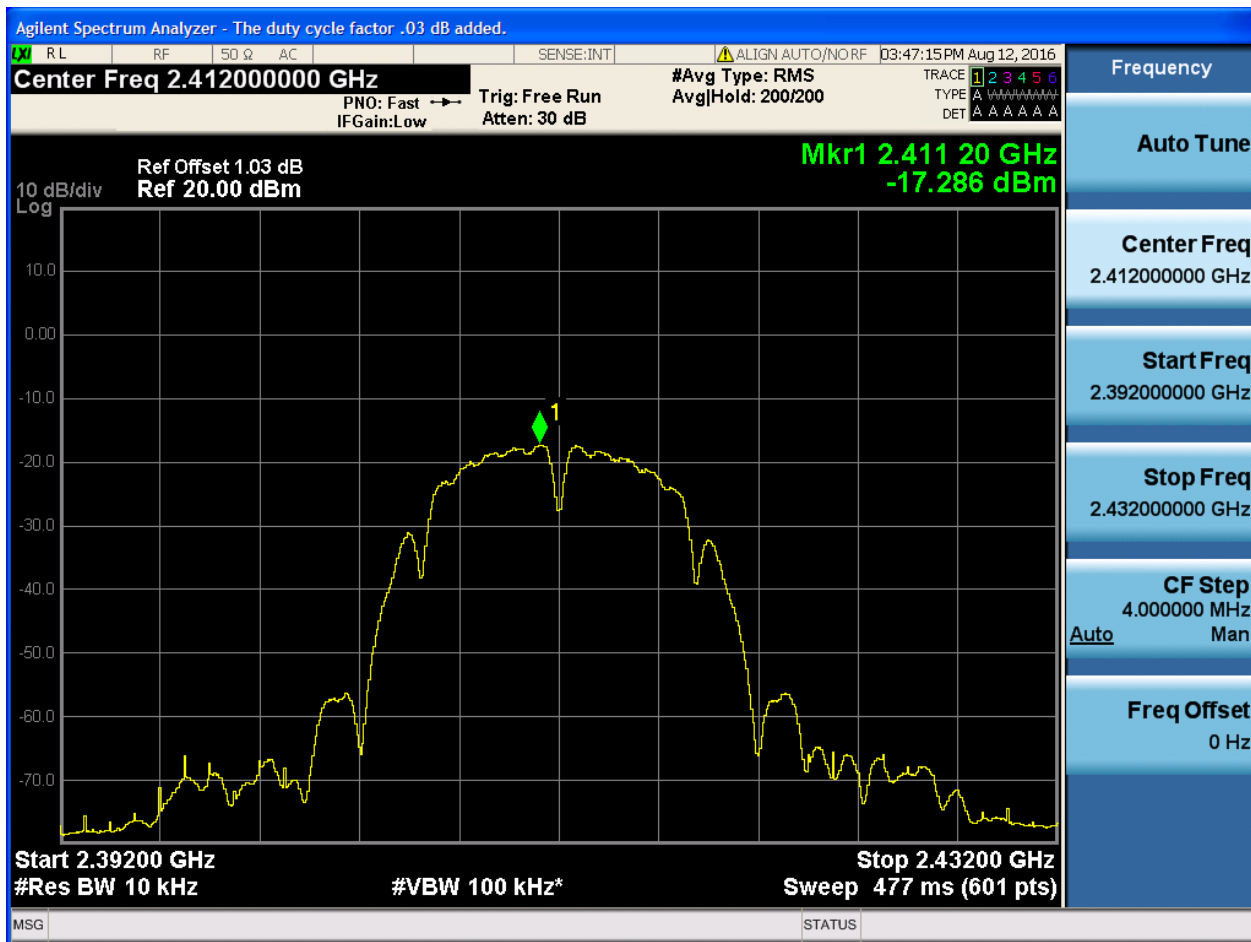
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	PD[MHz]	Verdict
11B	L	2412	Ant 1	-17.286	pass
11B	M	2437	Ant 1	-16.515	pass
11B	H	2462	Ant 1	-15.789	pass
11G	L	2412	Ant 1	-19.545	pass
11G	M	2437	Ant 1	-19.408	pass
11G	H	2462	Ant 1	-18.389	pass
11N20	L	2412	Ant 1	-19.654	pass
11N20	M	2437	Ant 1	-19.647	pass
11N20	H	2462	Ant 1	-18.795	pass
11N40	L	2422	Ant 1	-23.037	pass
11N40	M	2437	Ant 1	-23.079	pass
11N40	H	2452	Ant 1	-21.388	pass



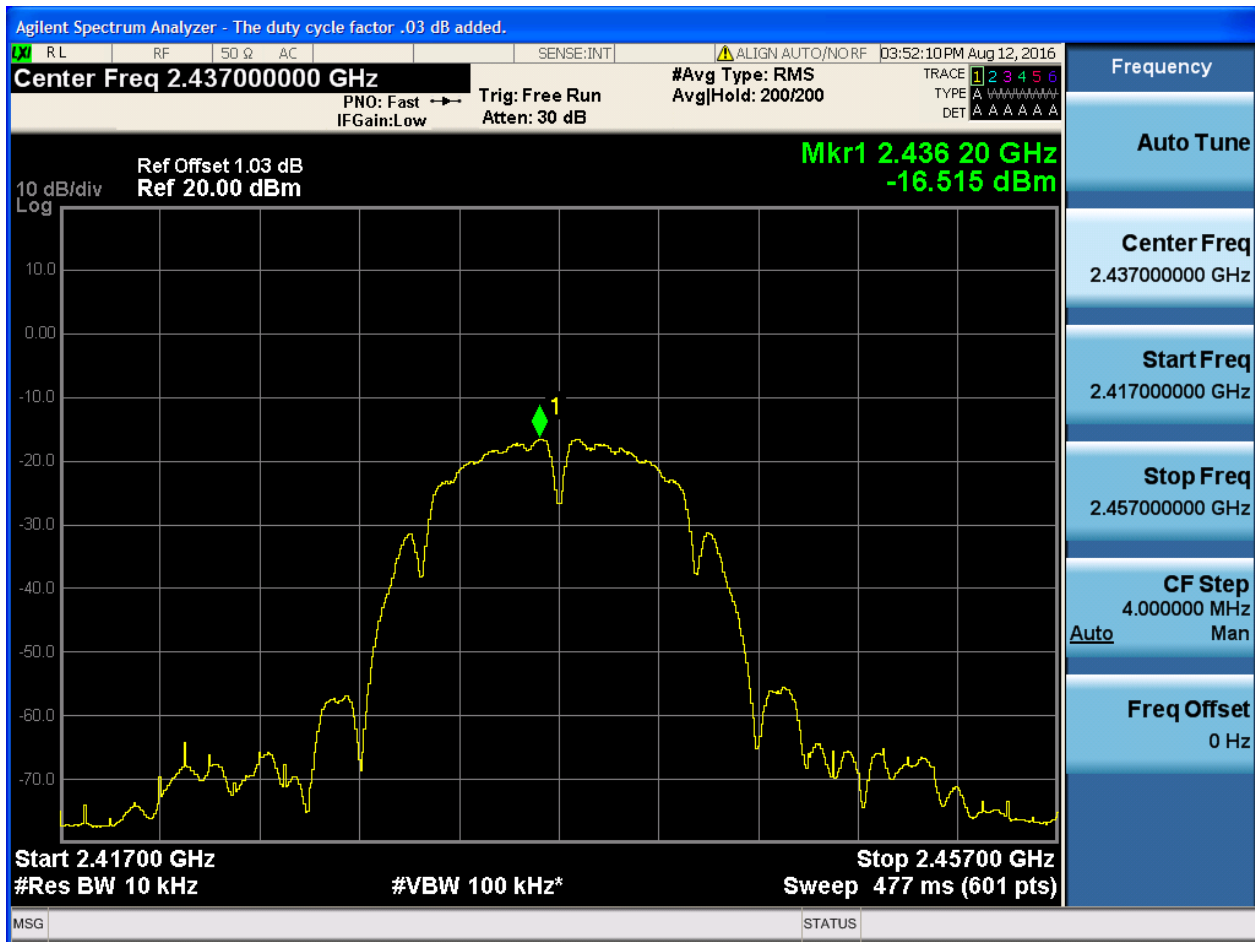
Part II - Test Plots

2.1 11B_L@Ant 1





2.3 11B_M@Ant 1



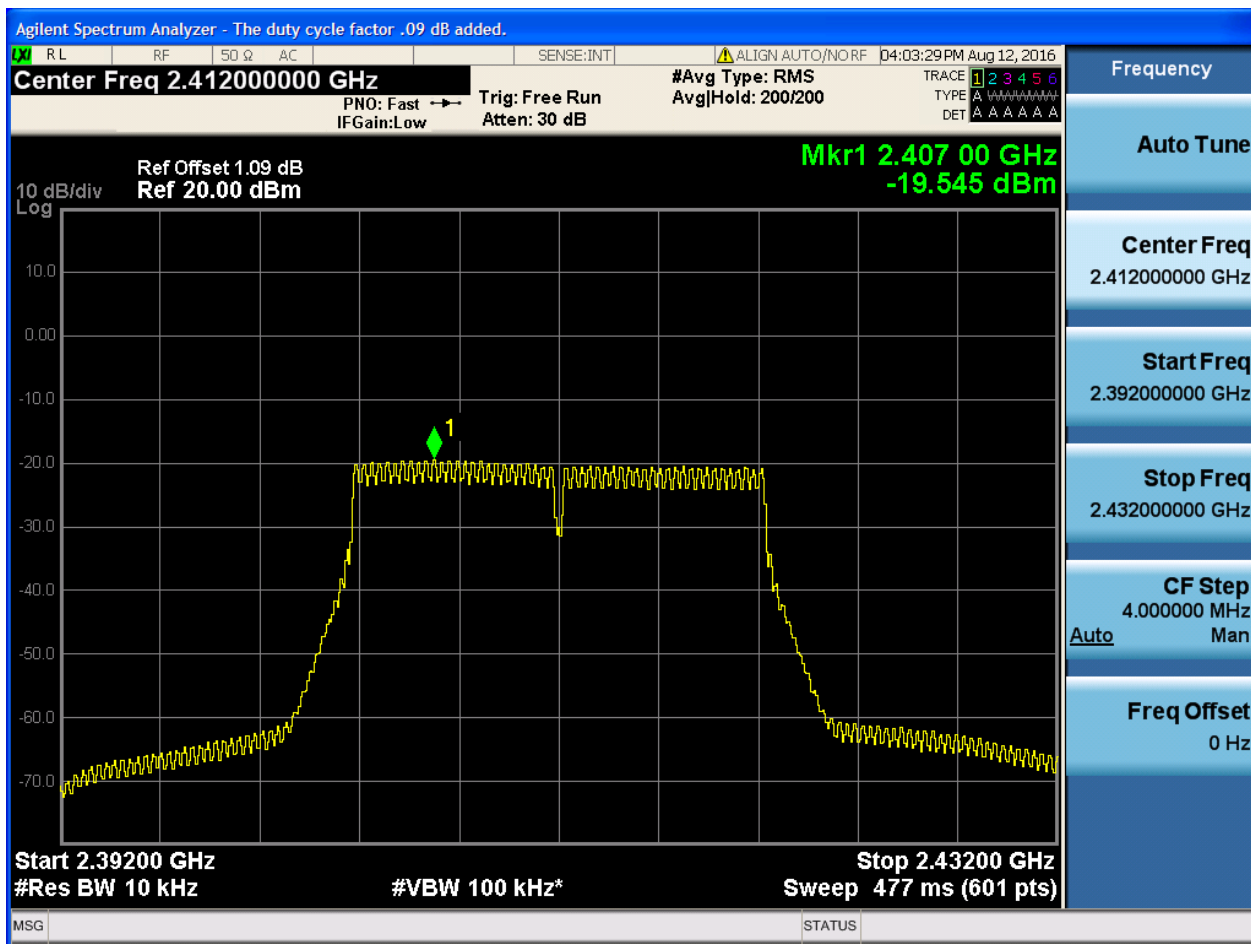


2.3 11B_H@Ant 1

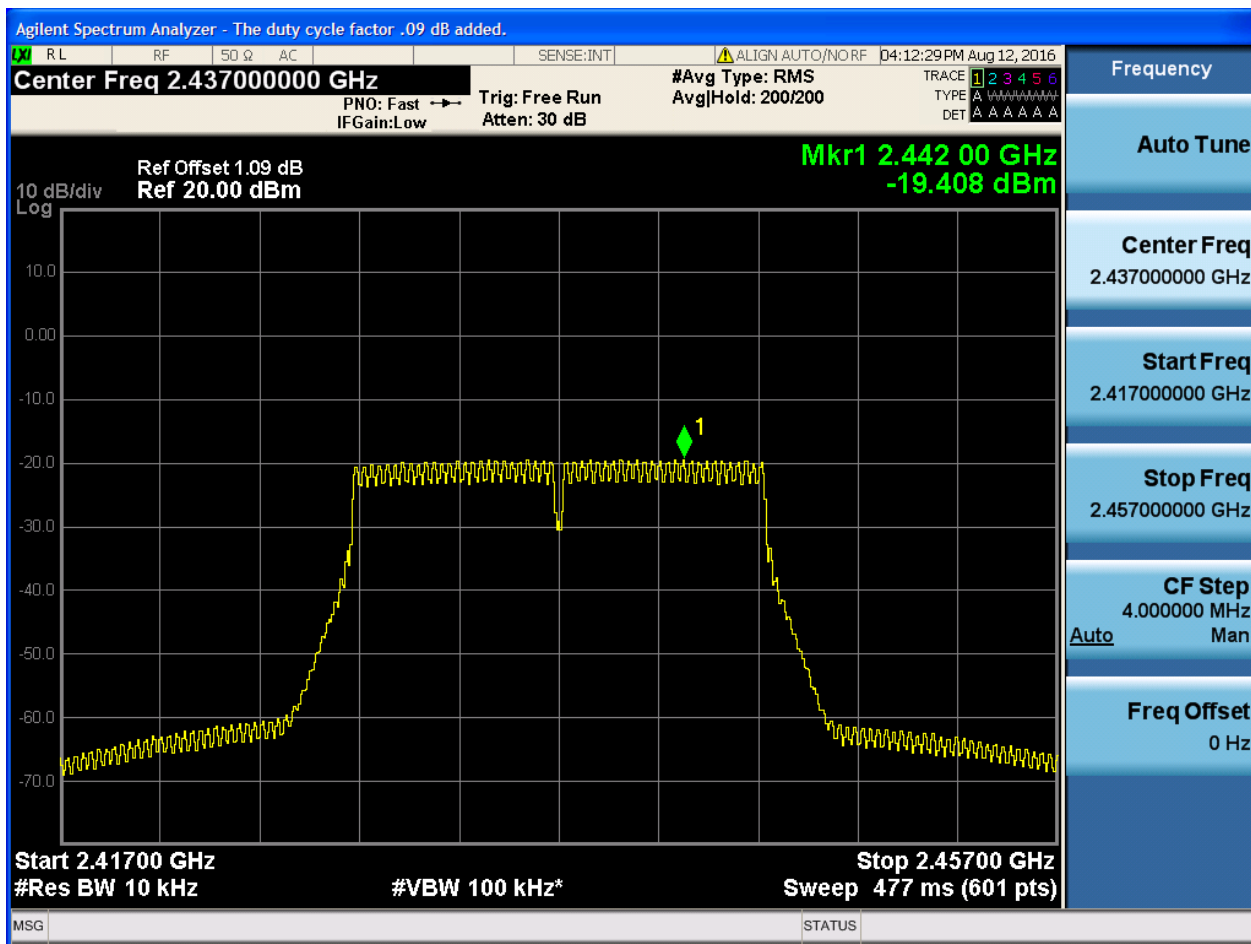




2.4 11G_L@Ant 1

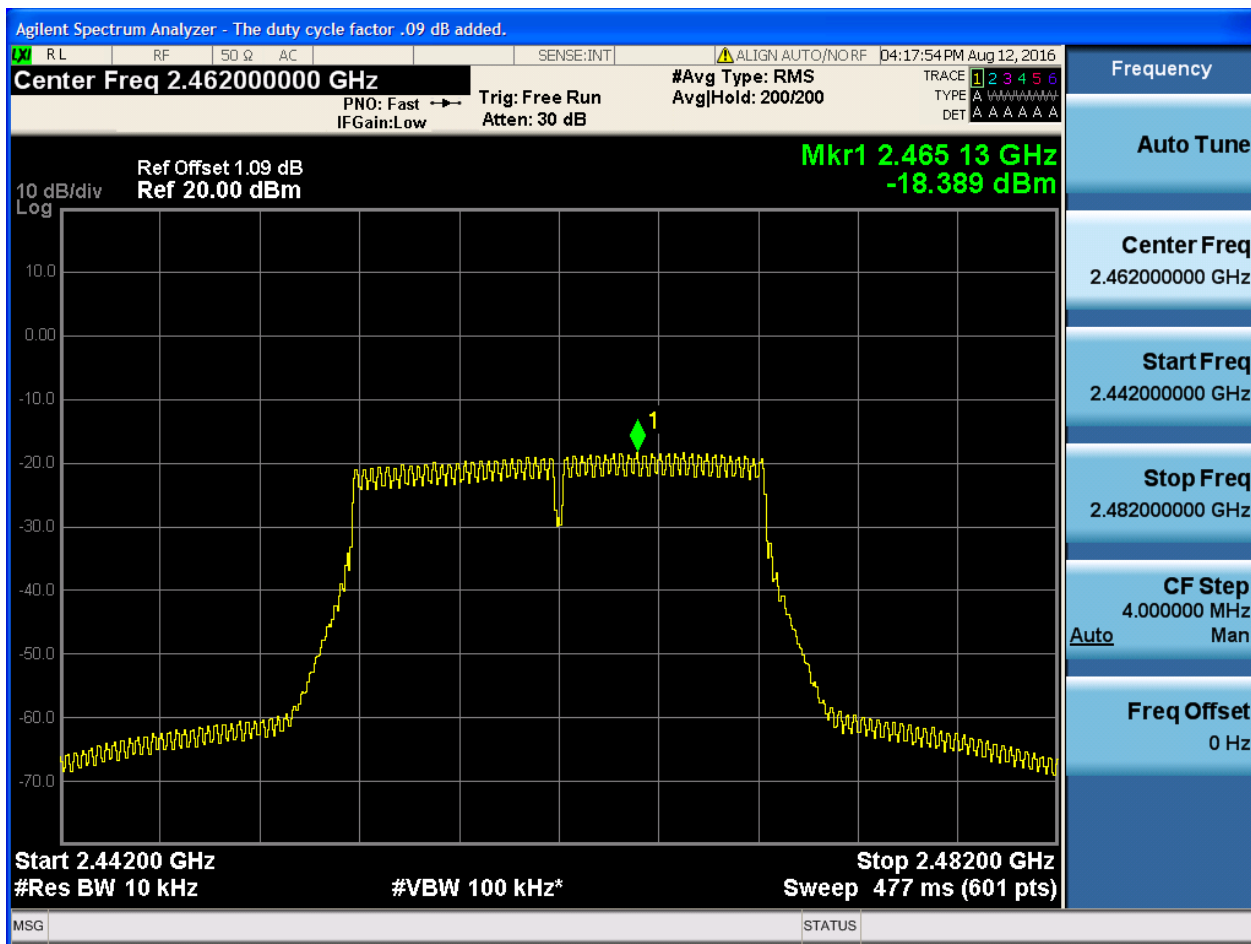


2.5 11G_M@Ant 1



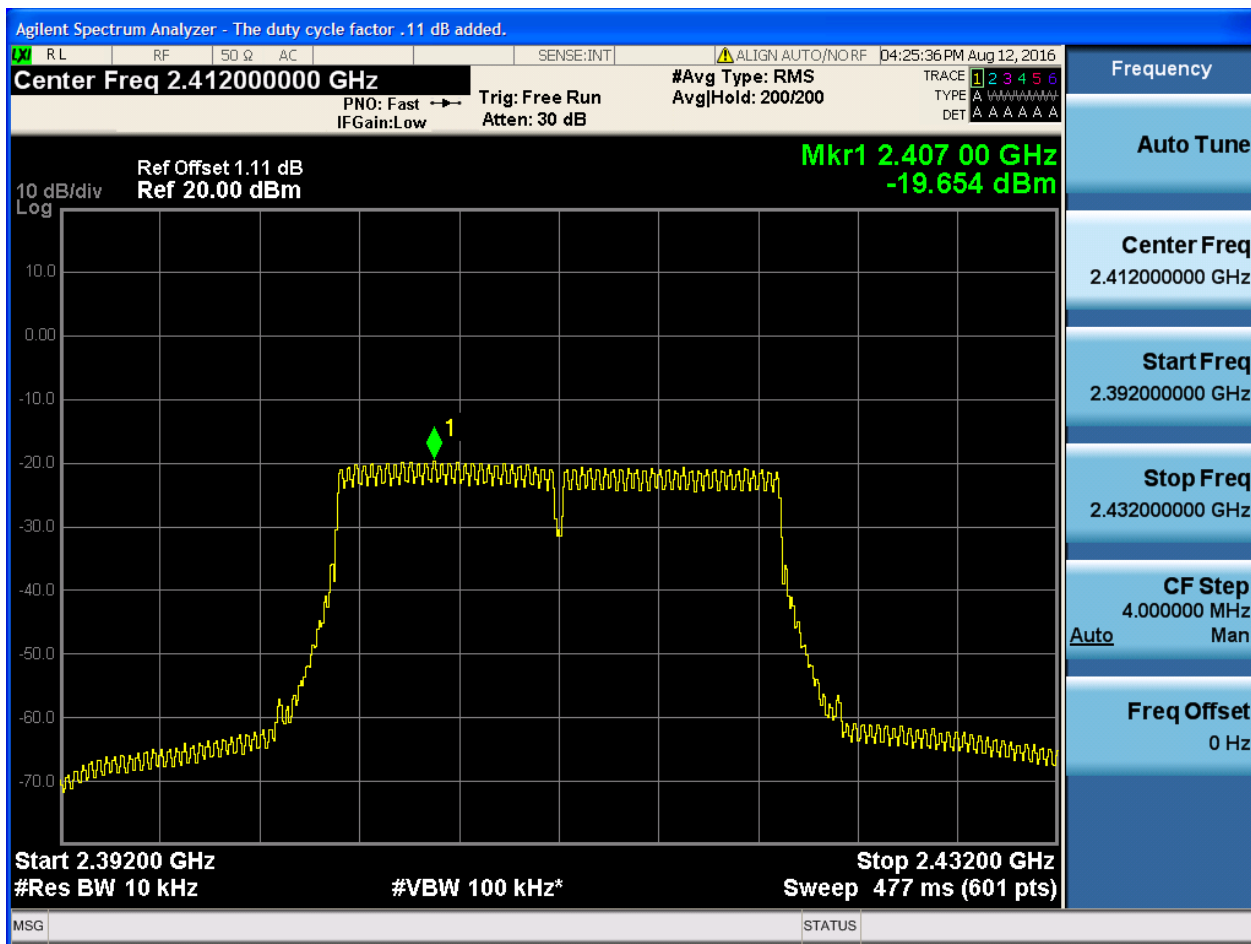


2.6 11G_H@Ant 1



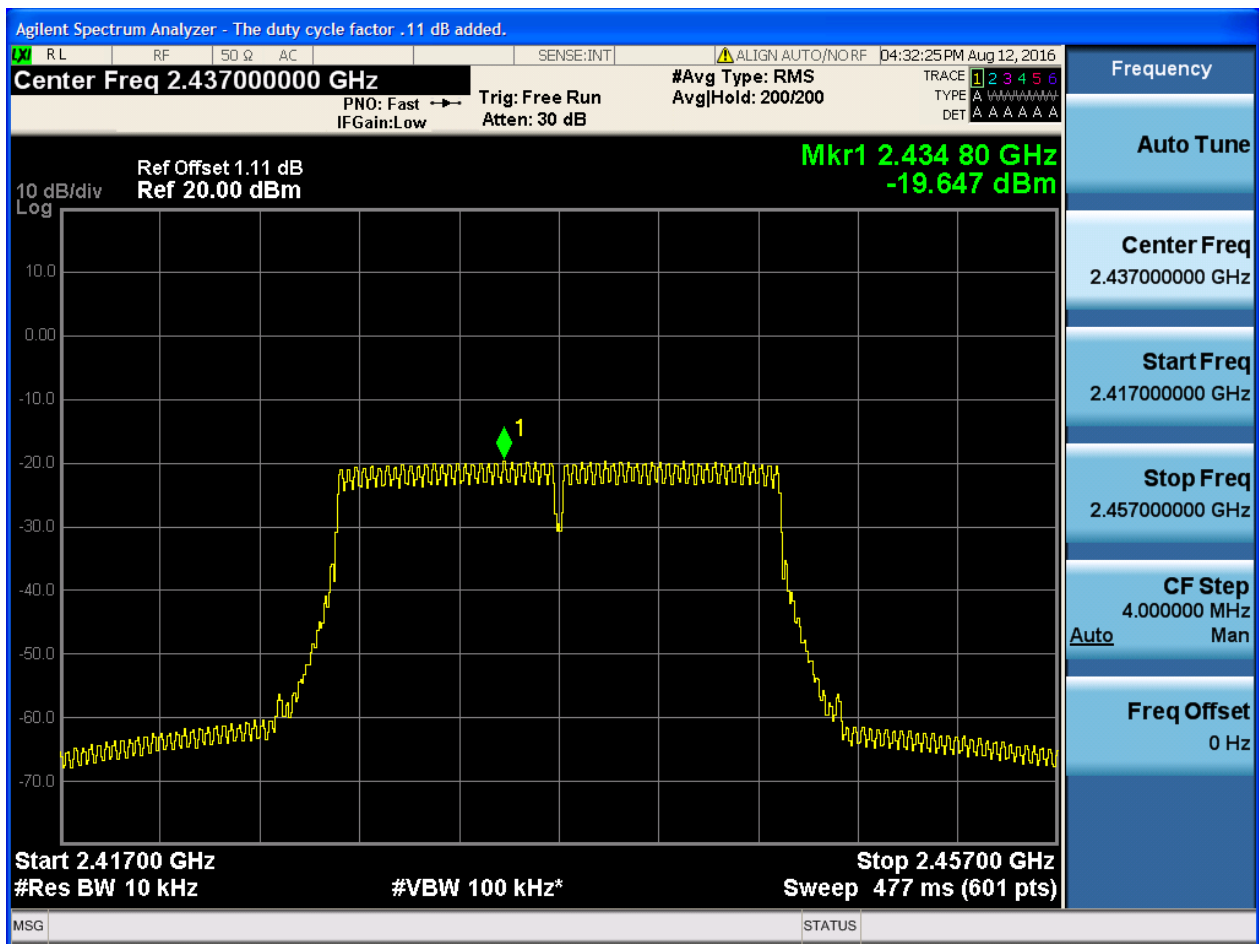


2.7 11N20_L@Ant 1



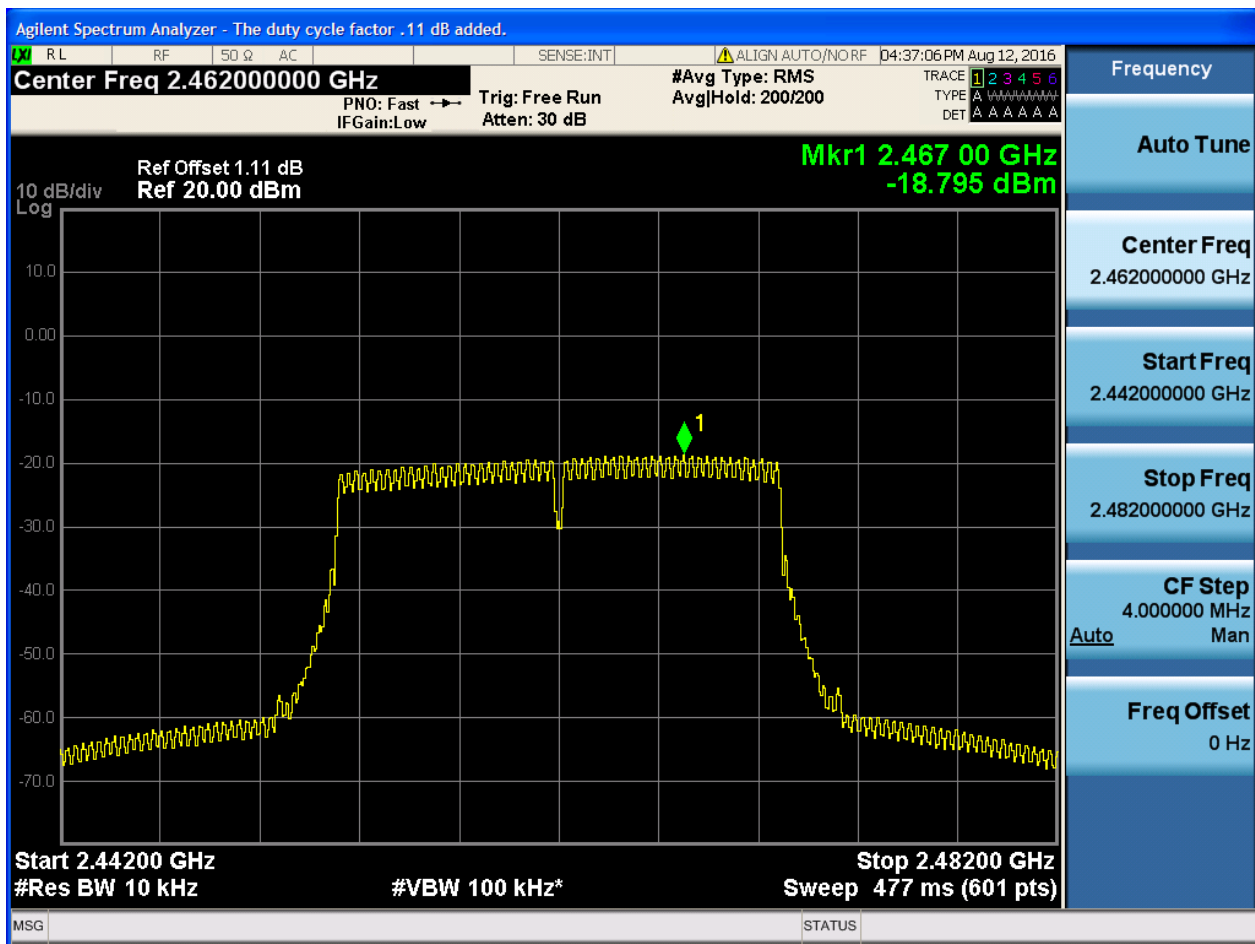


2.8 11N20_M@Ant 1



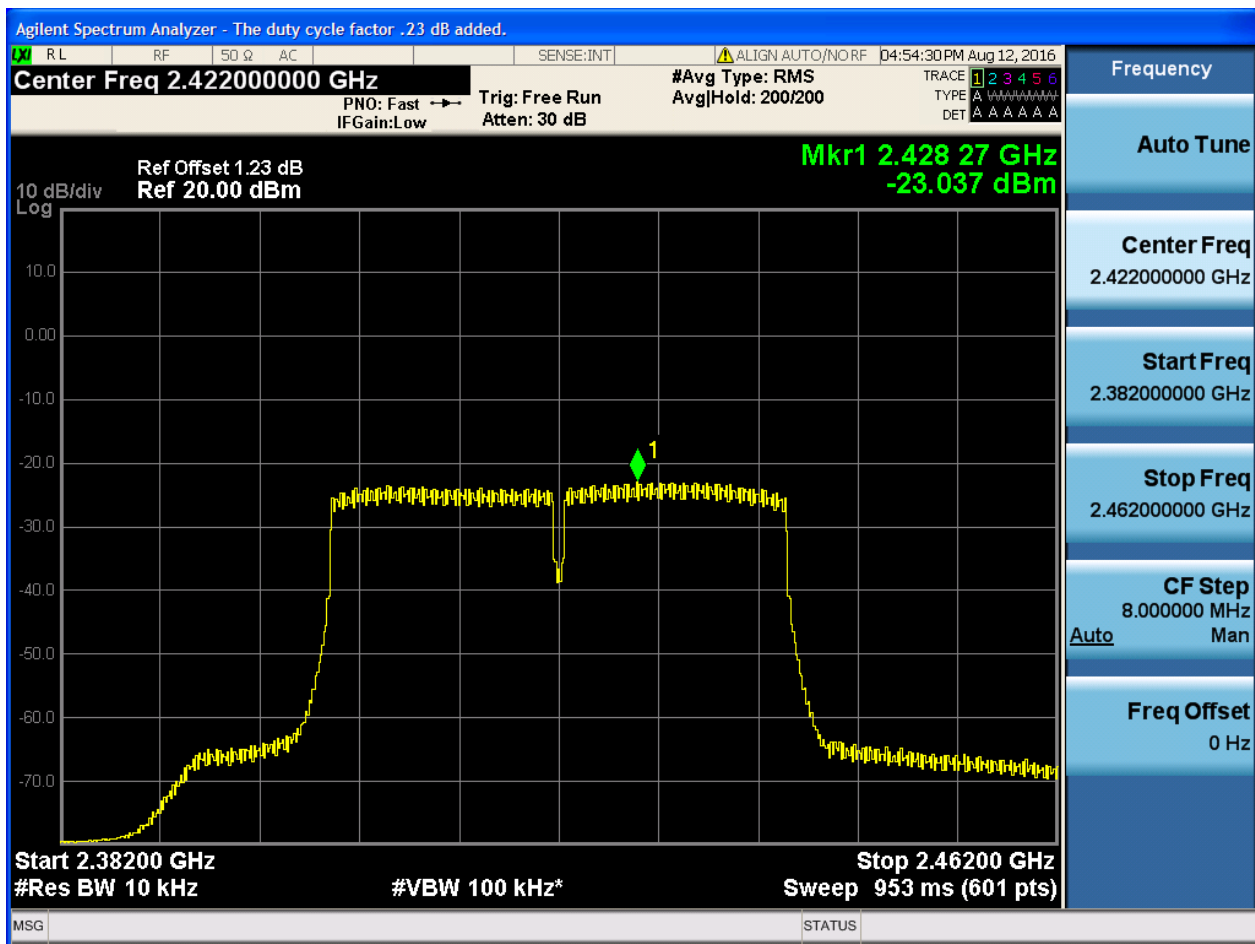


2.9 11N20_H@Ant 1



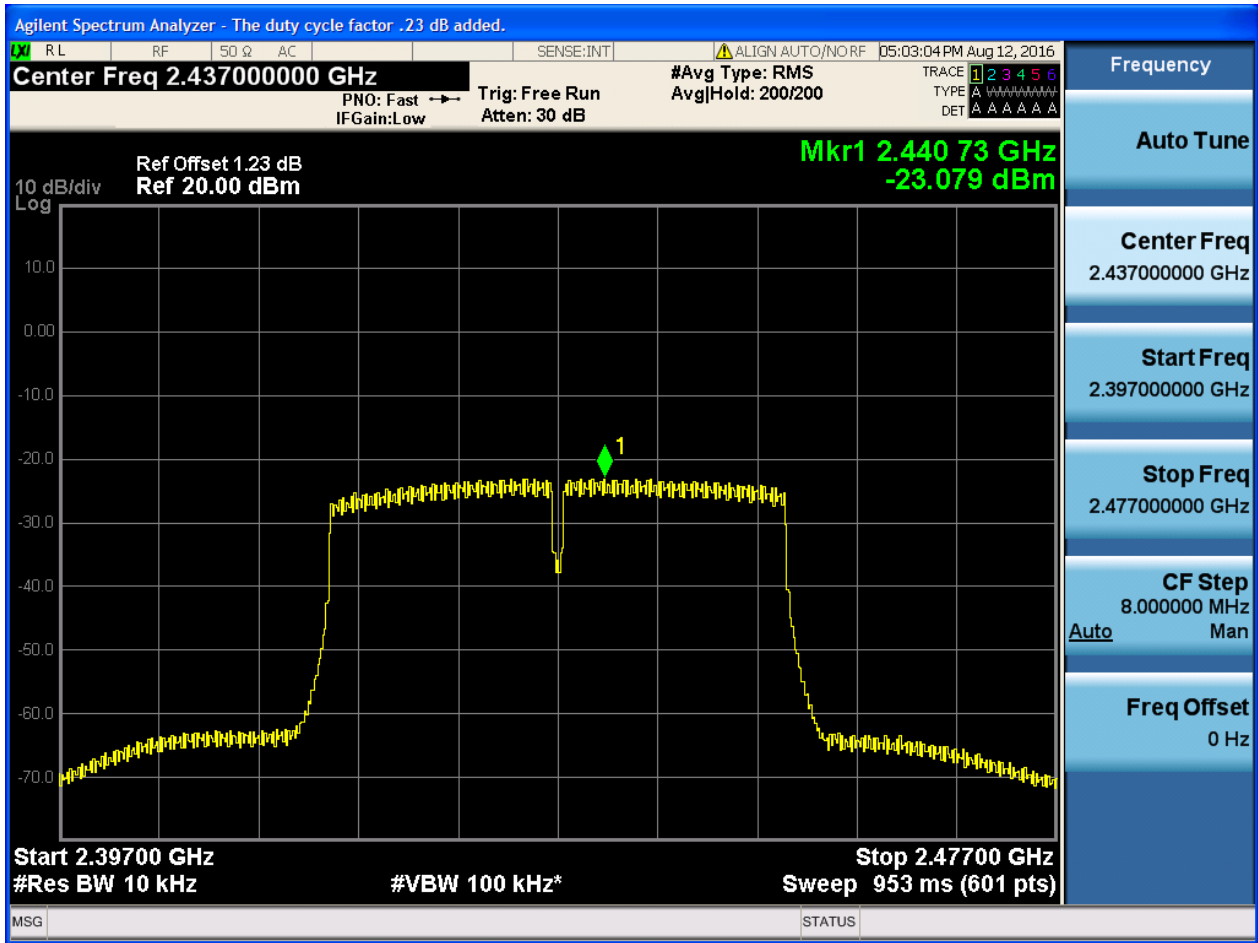


2.10 11N40_L@Ant 1



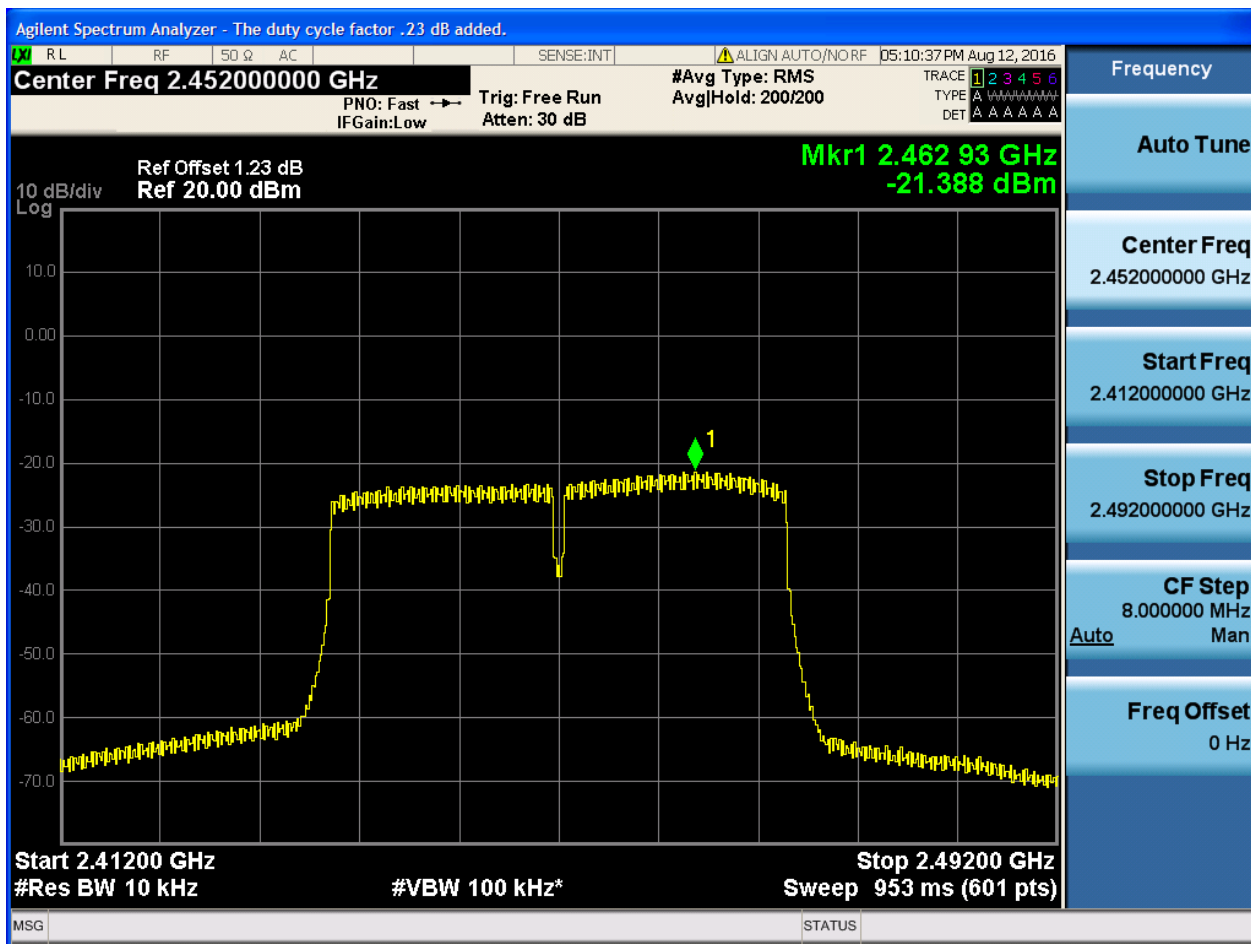


2.11 11N40_M@Ant 1





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	1.460	-49.178	pass
11B	H	2462	Ant 1	3.168	-48.694	pass
11G	L	2412	Ant 1	-0.824	-49.684	pass
11G	H	2462	Ant 1	0.090	-46.868	pass
11N20	L	2412	Ant 1	-0.982	-49.444	pass
11N20	H	2462	Ant 1	0.026	-44.851	pass
11N40	L	2422	Ant 1	-4.571	-48.921	pass
11N40	H	2452	Ant 1	-2.370	-45.411	pass



Part II - Test Plots

2.1 11B_L@Ant 1



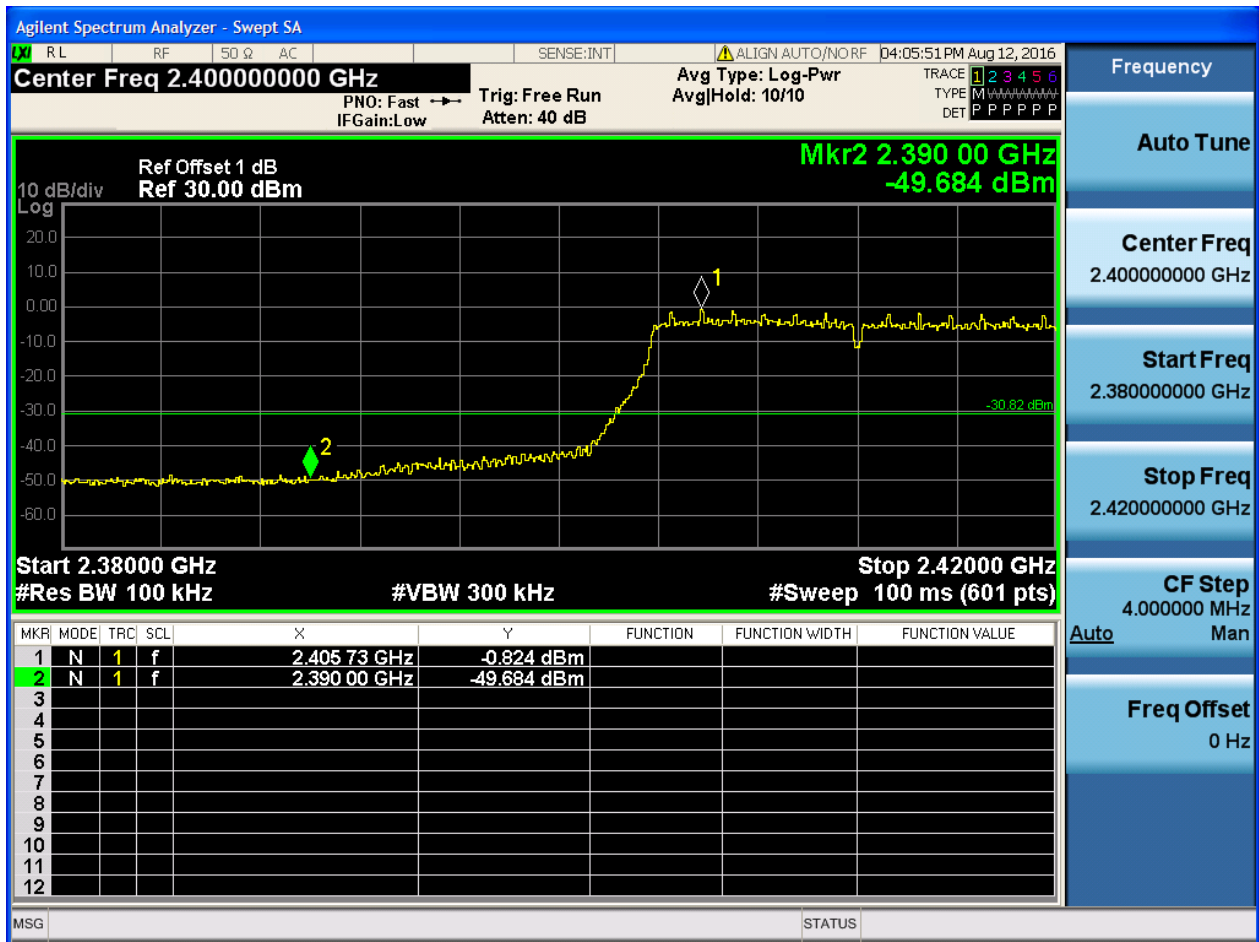


2.3 11B_H@Ant 1





2.5 11G_L@Ant 1





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO/NO RF 04:20:30 PM Aug 12, 2016

Center Freq 2.47350000 GHz Avg Type: Log-Pwr
 PNO: Fast → Trg: Free Run
 IFGain:Low Atten: 40 dB

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

Ref Offset 1 dB
 Ref 30.00 dBm

Mkr2 2.483 50 GHz
-46.868 dBm

10 dB/div
 Log

Start 2.45350 GHz Stop 2.49350 GHz
 #Res BW 100 kHz #VBW 300 kHz #Sweep 100 ms (601 pts)

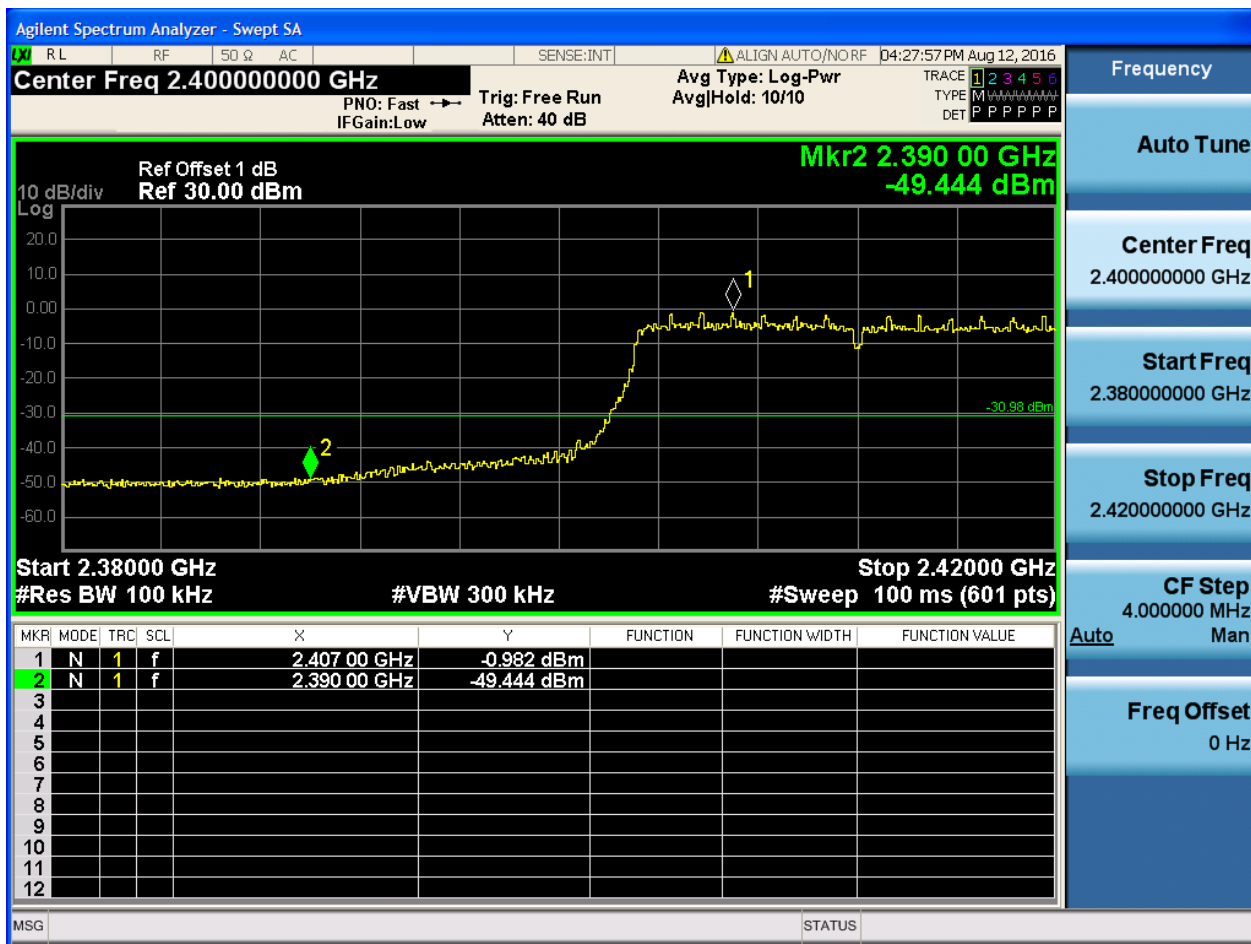
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.466 97 GHz	0.090 dBm			
2	N	1	f	2.483 50 GHz	-46.868 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency
 Auto Tune
 Center Freq 2.47350000 GHz
 Start Freq 2.45350000 GHz
 Stop Freq 2.49350000 GHz
 CF Step 4.000000 MHz Man
 Freq Offset 0 Hz

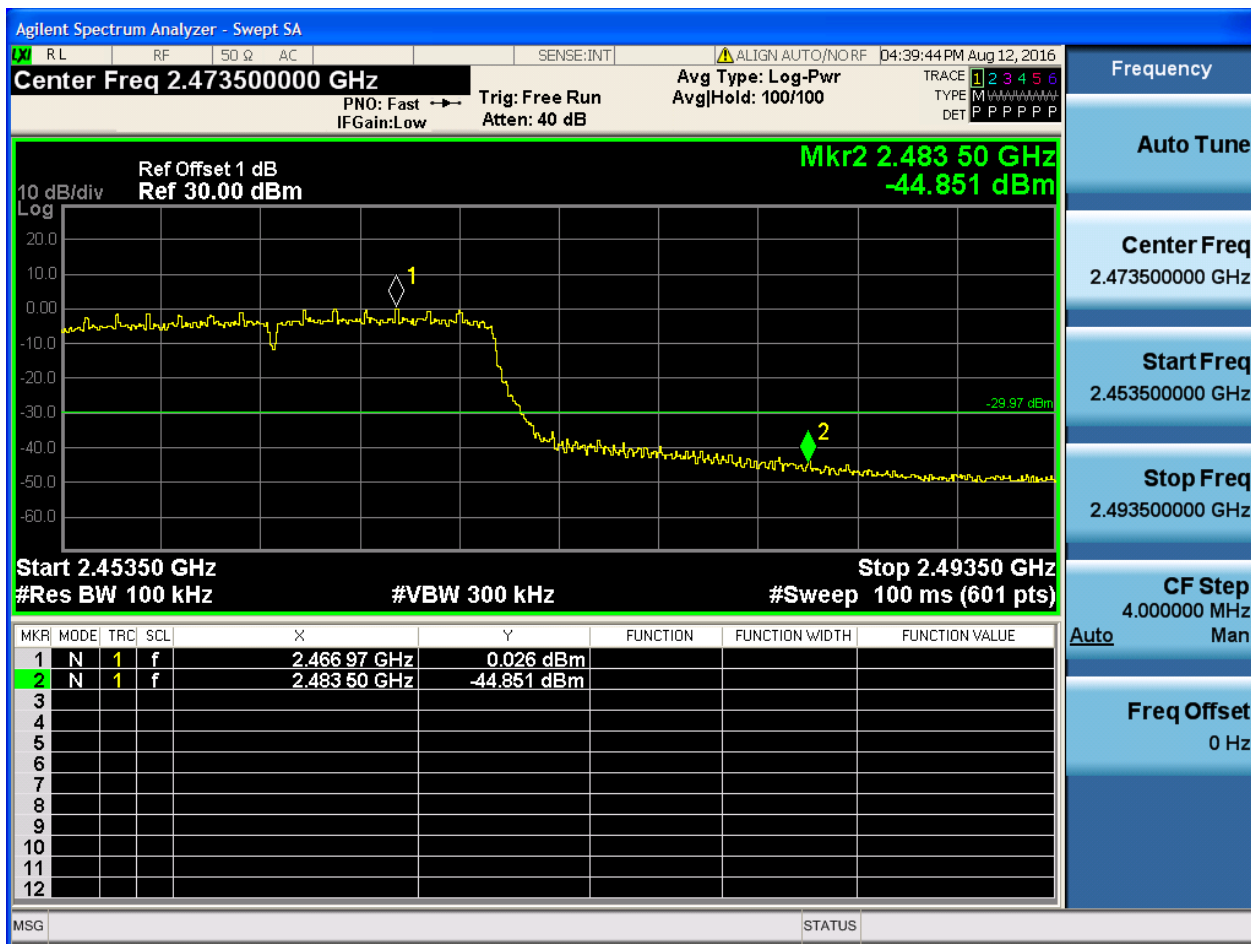


2.9 11N20_L@Ant 1





2.11 11N20_H@Ant 1





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ⚠ ALIGN AUTO/NO RF 04:57:00 PM Aug 12, 2016

Center Freq 2.40000000 GHz Avg Type: Log-Pwr AvgHold: 10/10

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

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

Ref Offset 1 dB
Ref 30.00 dBm

**Mkr2 2.390 00 GHz
-48.921 dBm**

10 dB/div
Log

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

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.407 00 GHz	-45.71 dBm			
2	N	1	f	2.390 00 GHz	-48.921 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

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
Man

Freq Offset
0 Hz



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.47350000 GHz

Ref Offset 1 dB
Ref 30.00 dBm

10 dB/div
Log

Mkr2 2.483 50 GHz
-45.411 dBm

32.37 dBm

Start 2.45350 GHz
#Res BW 100 kHz

Stop 2.49350 GHz
#Sweep 100 ms (601 pts)

#VBW 300 kHz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.463 30 GHz	-2.370 dBm			
2	N	1	f	2.483 50 GHz	-45.411 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

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	1.580	<limit	pass
11B	M	2437	Ant 1	2.290	<limit	pass
11B	H	2462	Ant 1	3.244	<limit	pass
11G	L	2412	Ant 1	-0.716	<limit	pass
11G	M	2437	Ant 1	-0.476	<limit	pass
11G	H	2462	Ant 1	0.406	<limit	pass
11N20	L	2412	Ant 1	-0.856	<limit	pass
11N20	M	2437	Ant 1	-0.544	<limit	pass
11N20	H	2462	Ant 1	0.199	<limit	pass
11N40	L	2422	Ant 1	-3.270	<limit	pass
11N40	M	2437	Ant 1	-3.686	<limit	pass
11N40	H	2452	Ant 1	-1.722	<limit	pass



Part II - Test Plots

2.1 11B_L@Ant 1

Pref:





Agilent Spectrum Analyzer - Swept SA

Center Freq 79.500 kHz

PNO: Wide Trg: Free Run Avg Type: Log-Pwr
IFGain:Low #Atten: 26 dB Avg|Hold:>50/50

Ref Offset 1 dB
Ref 17.00 dBm

Mkr1 9.000 kHz
-53.794 dBm

10 dB/div
Log

The plot shows a spectrum from 9.000 kHz to 150.000 kHz. The y-axis is logarithmic power density from -73.0 dBm to -3.00 dBm. A yellow trace shows a noisy signal starting at approximately -53.8 dBm at 9.000 kHz and decreasing to about -75 dBm at 150.000 kHz. A green horizontal line marks the level at -48.42 dBm.

Start 9.00 kHz
#Res BW 1.0 kHz
#VBW 3.0 kHz
Stop 150.00 kHz
Sweep 135 ms (601 pts)

Frequency

Auto Tune

Center Freq
79.500 kHz

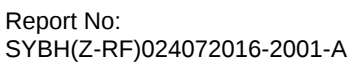
Start Freq
9.000 kHz

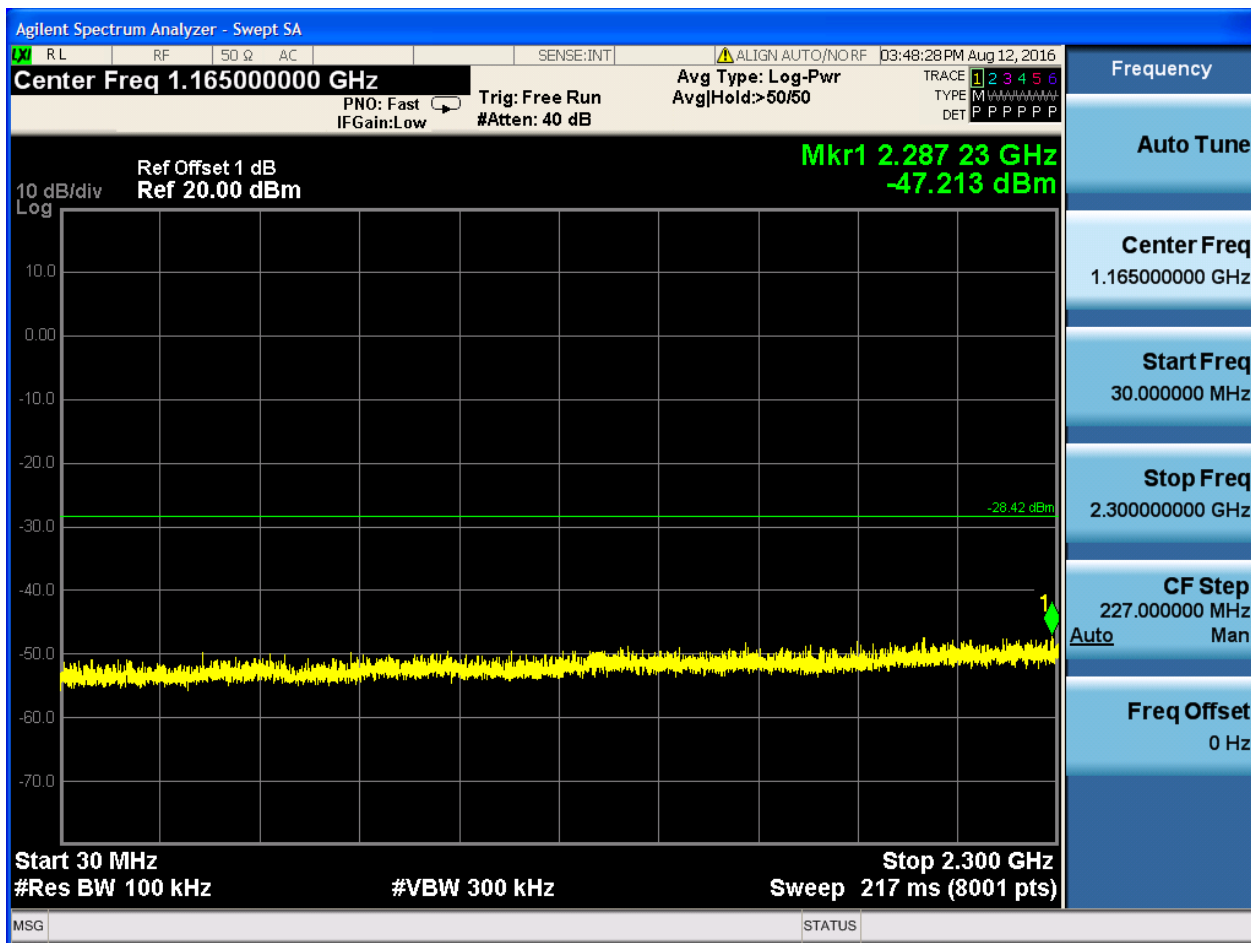
Stop Freq
150.000 kHz

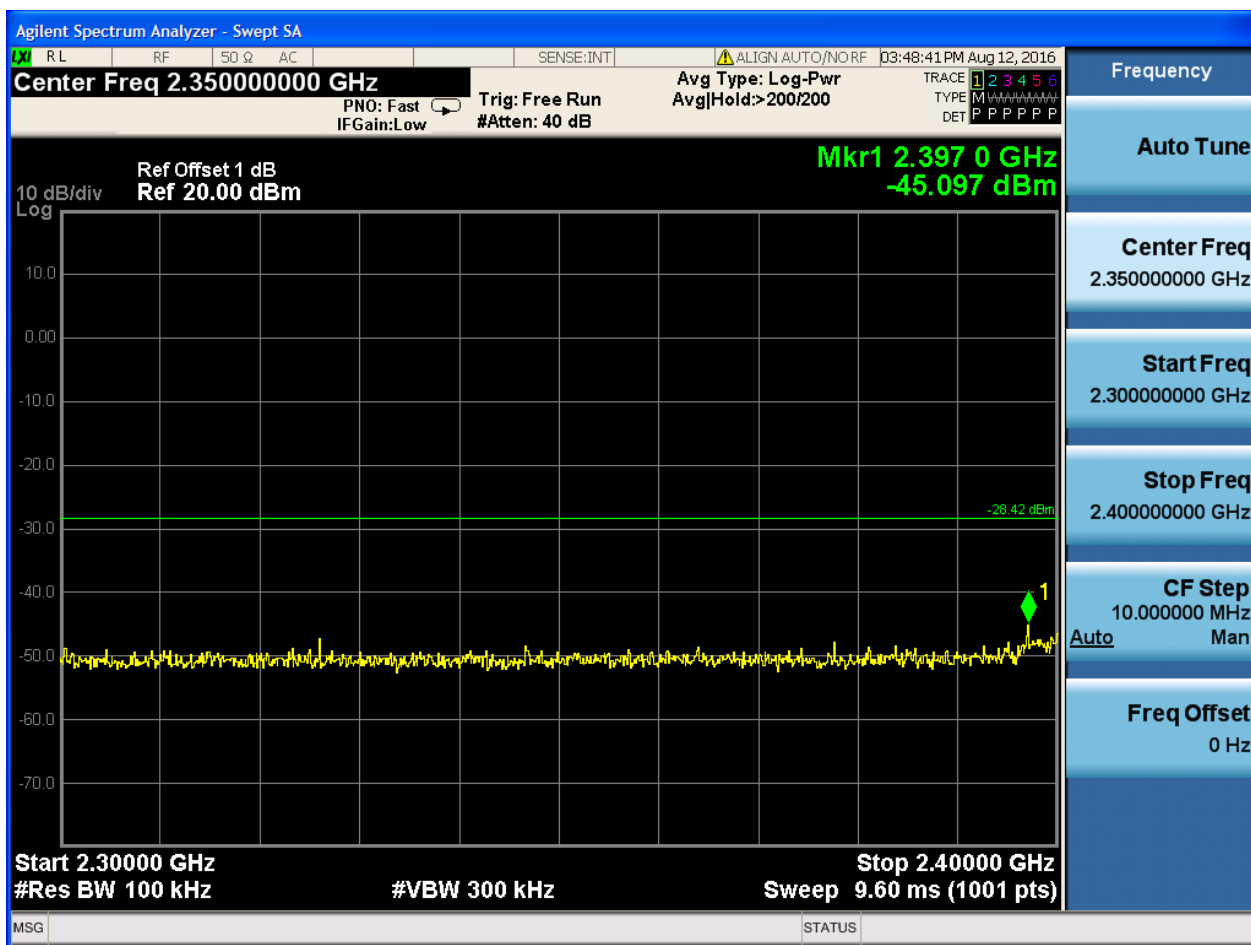
CF Step
14.100 kHz
Man

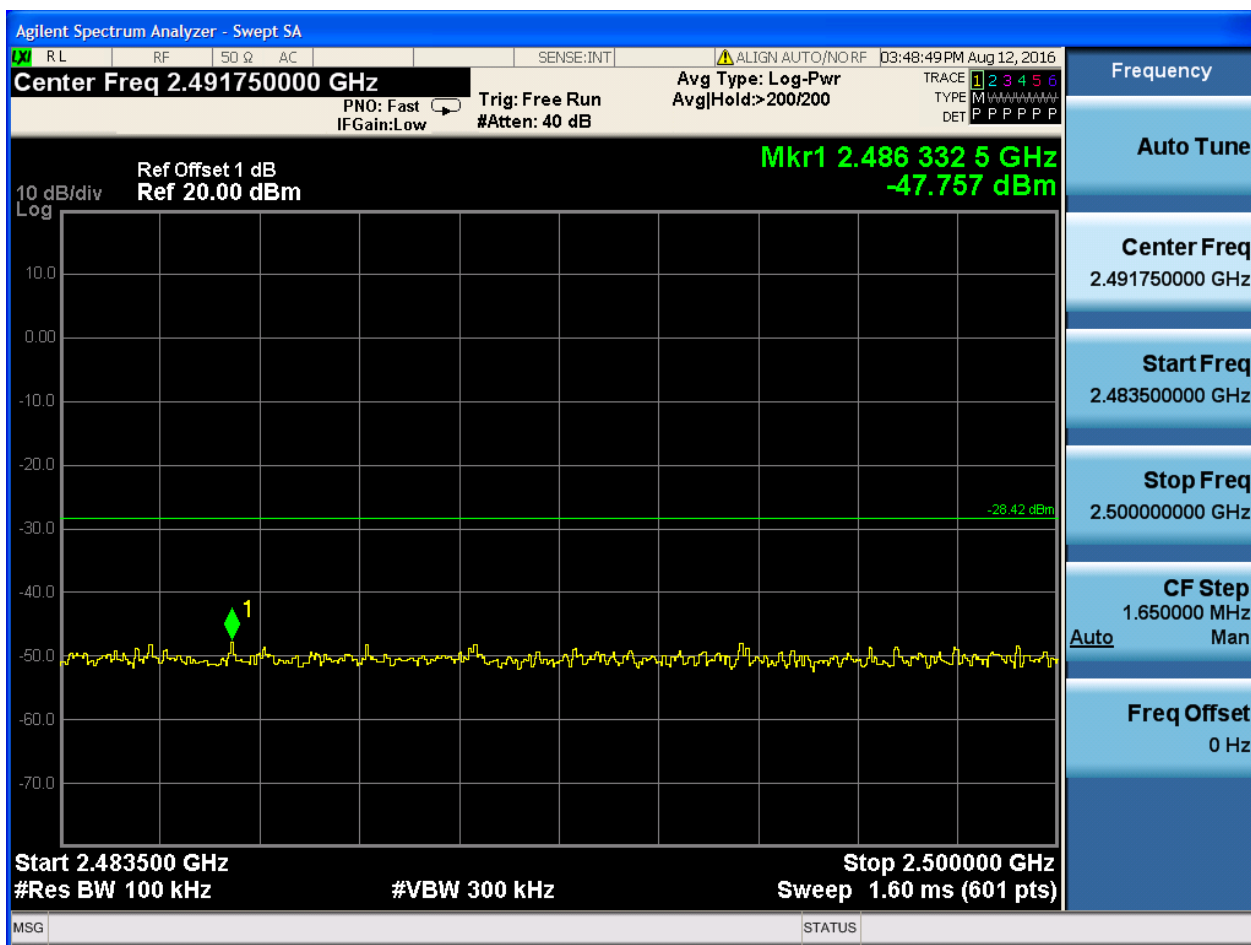
Auto

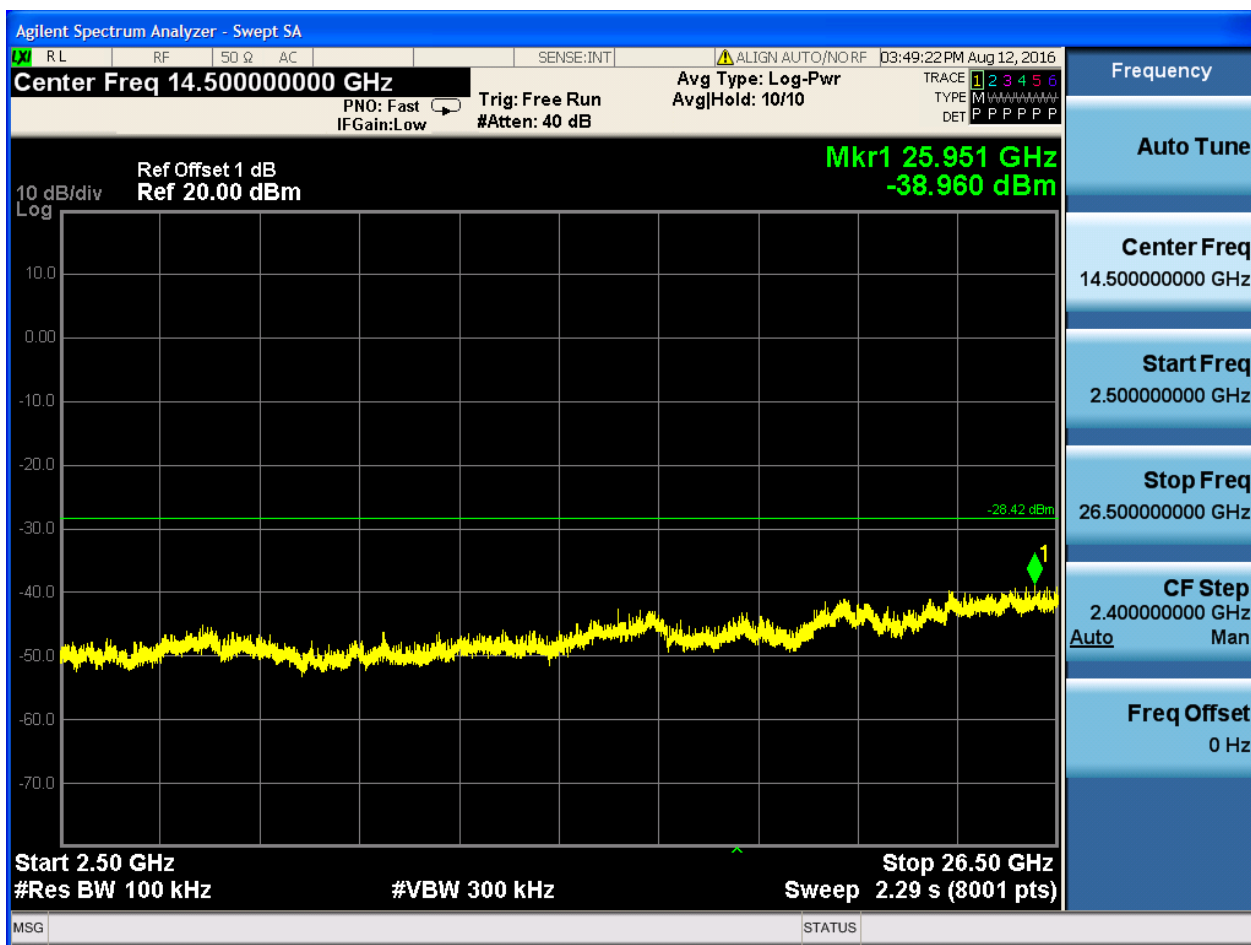
Freq Offset
0 Hz







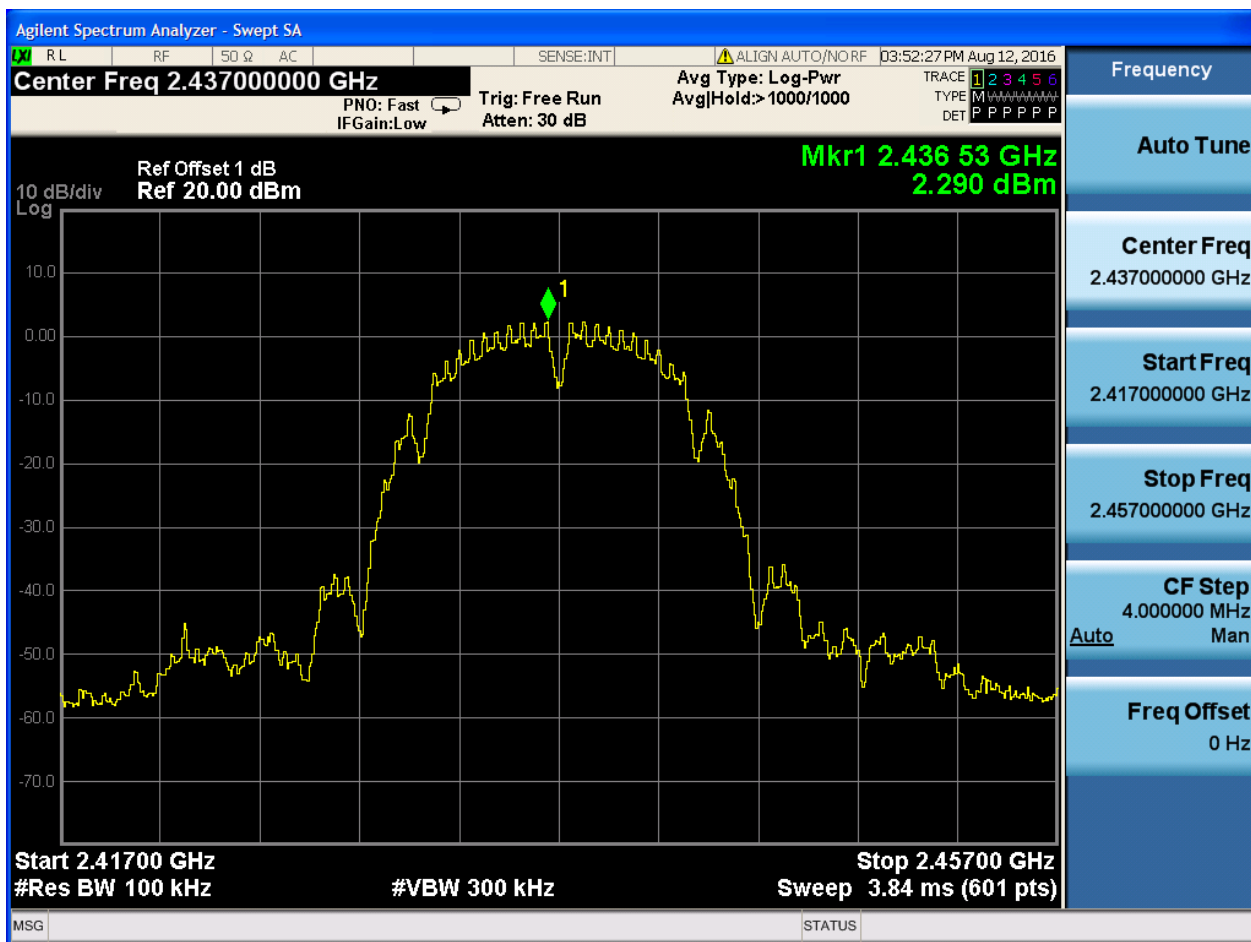






2.3 11B_M@Ant 1

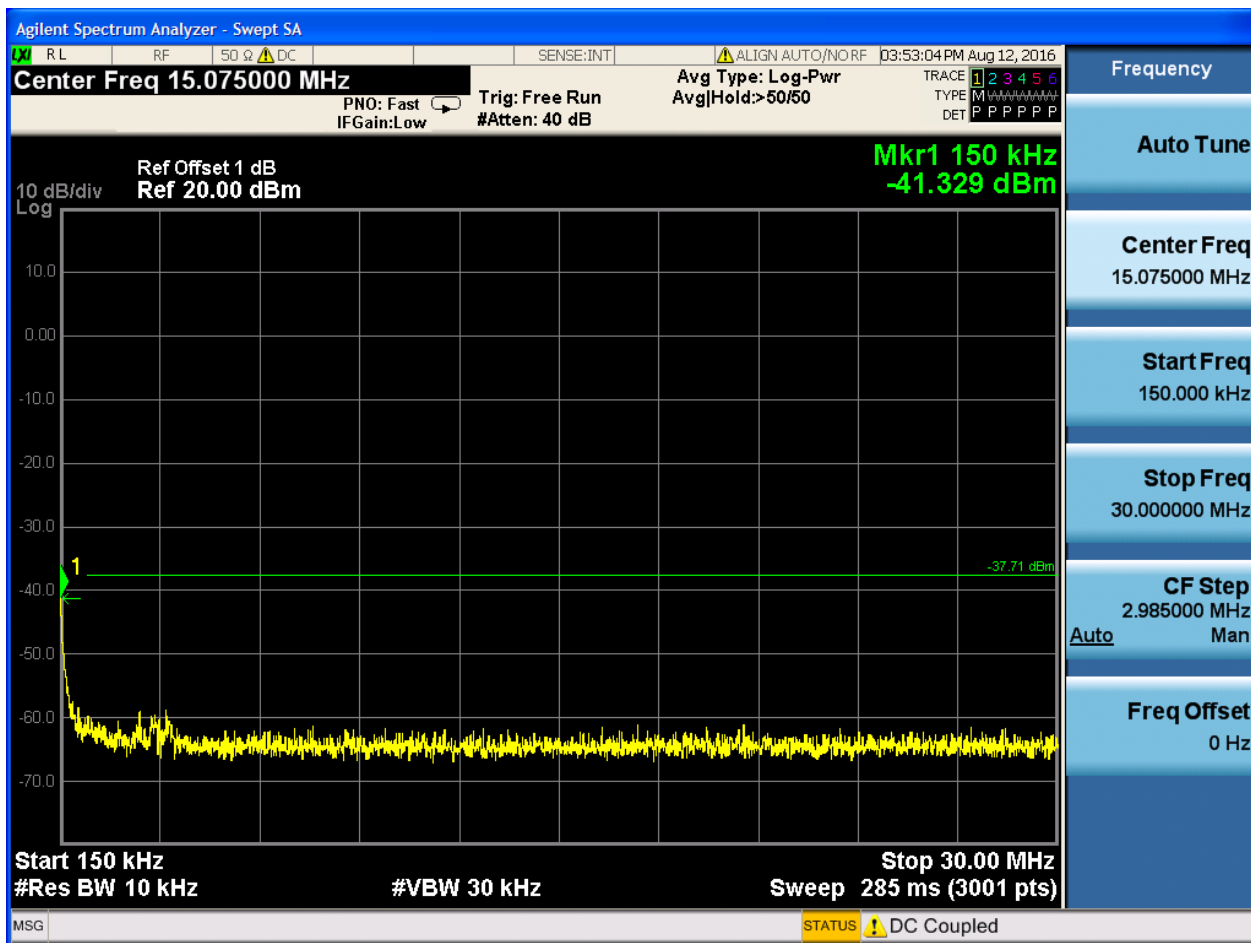
Pref:

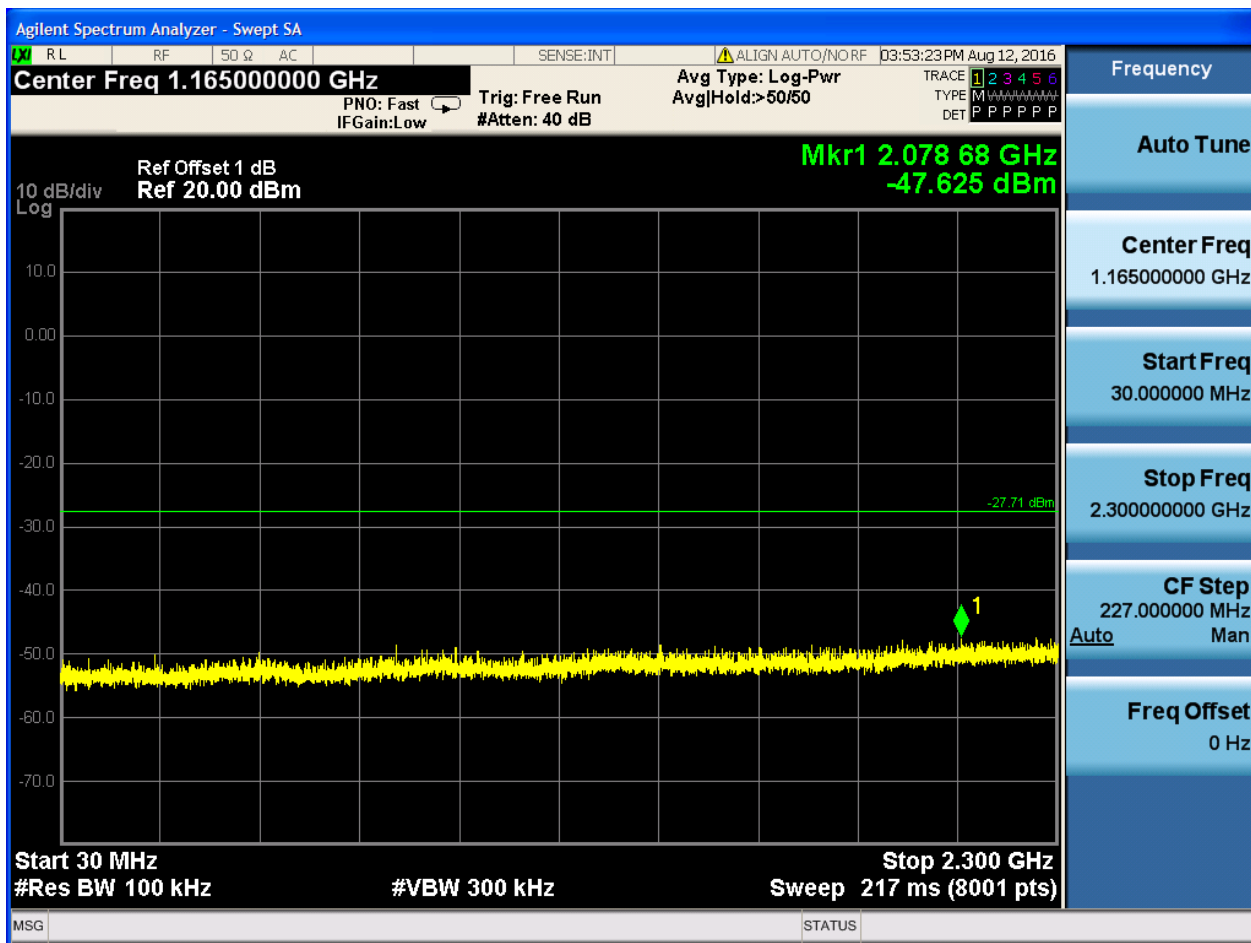


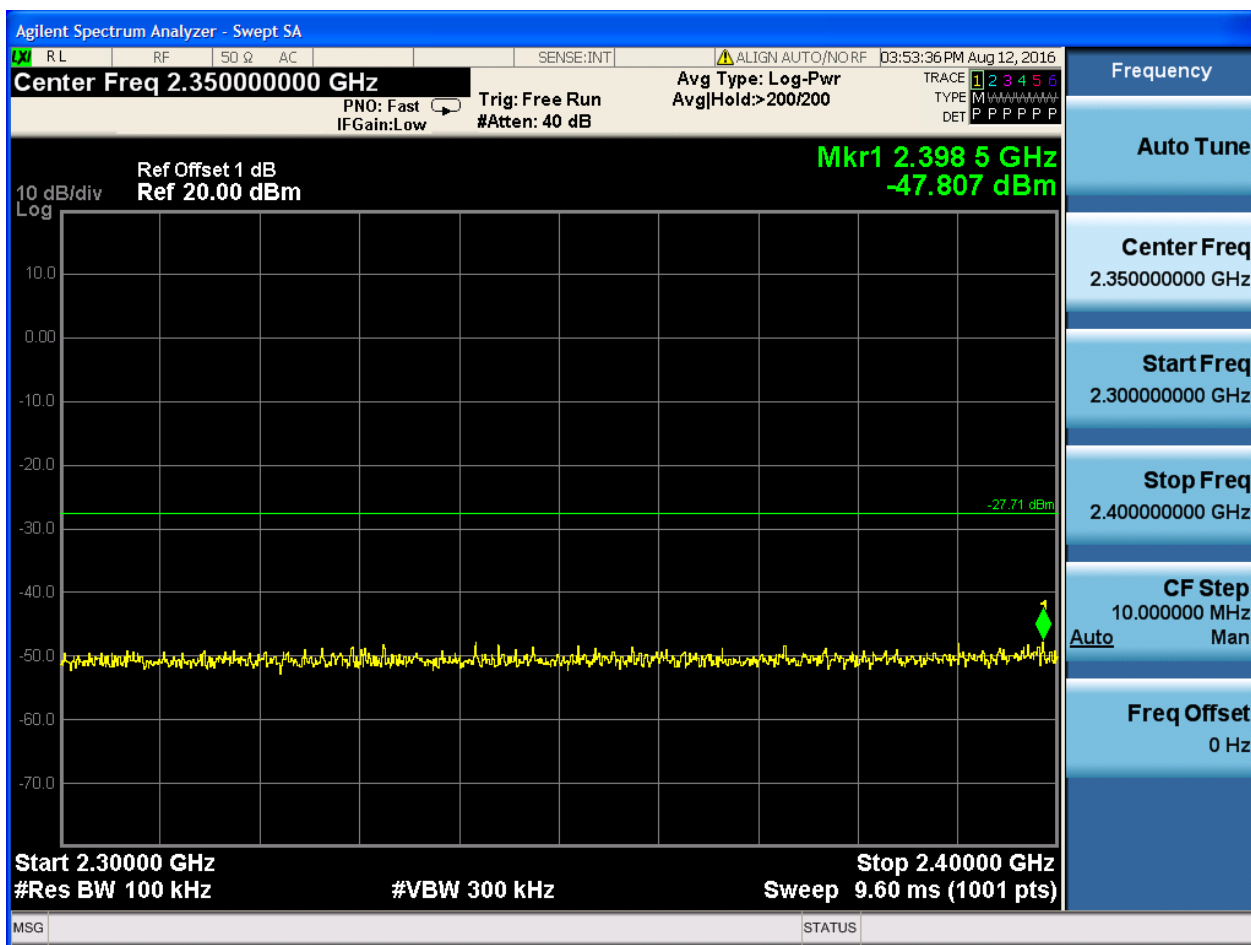


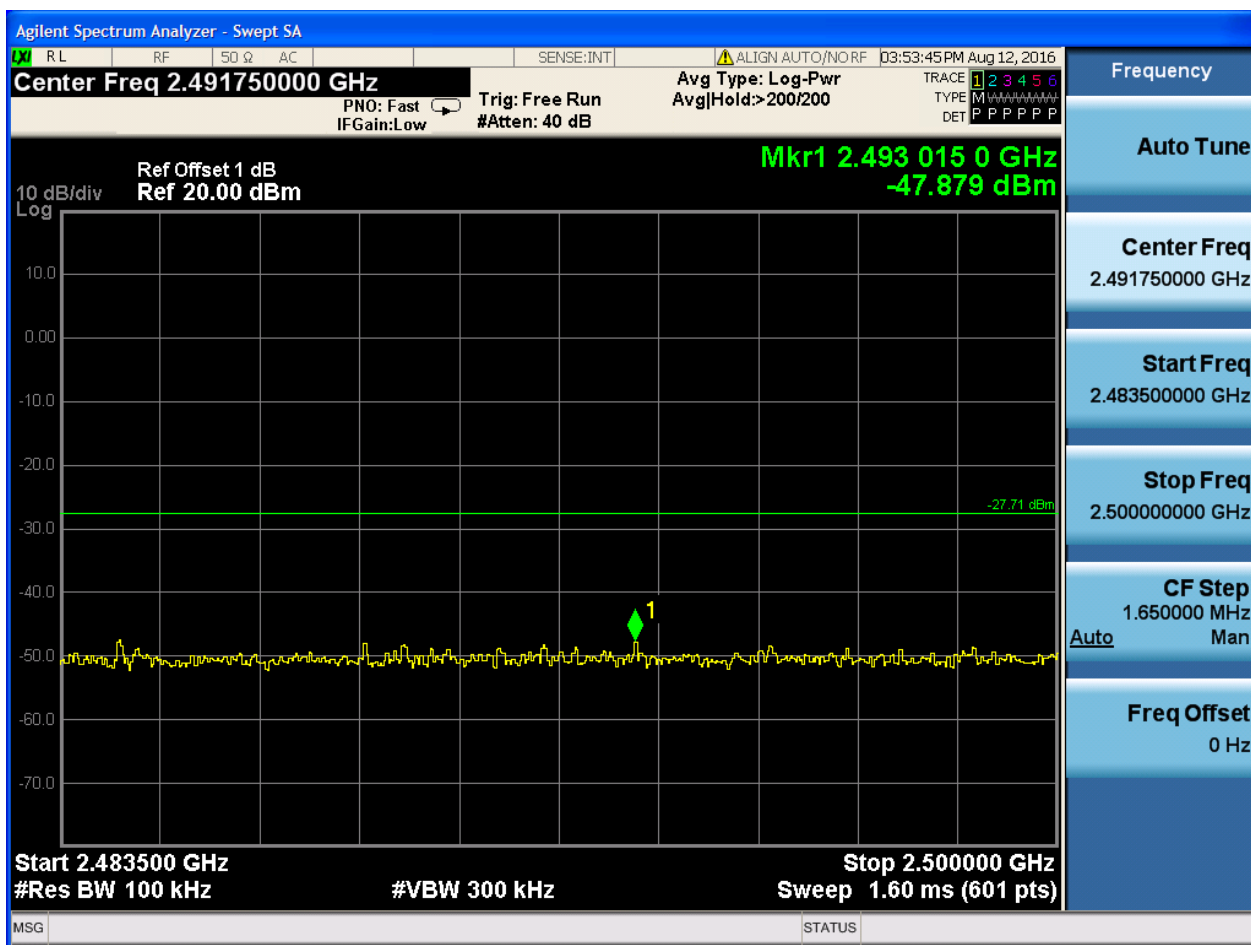
Puw:















2.3 11B_H@Ant 1

Pref:





Agilent Spectrum Analyzer - Swept SA

Center Freq 79.500 kHz

Ref Offset 1 dB
Ref 17.00 dBm

10 dB/div
Log

Start 9.00 kHz
#Res BW 1.0 kHz

Stop 150.00 kHz
Sweep 135 ms (601 pts)

#VBW 3.0 kHz

Mkr1 9.000 kHz
-53.604 dBm

-46.76 dBm

Frequency

Auto Tune

Center Freq
79.500 kHz

Start Freq
9.000 kHz

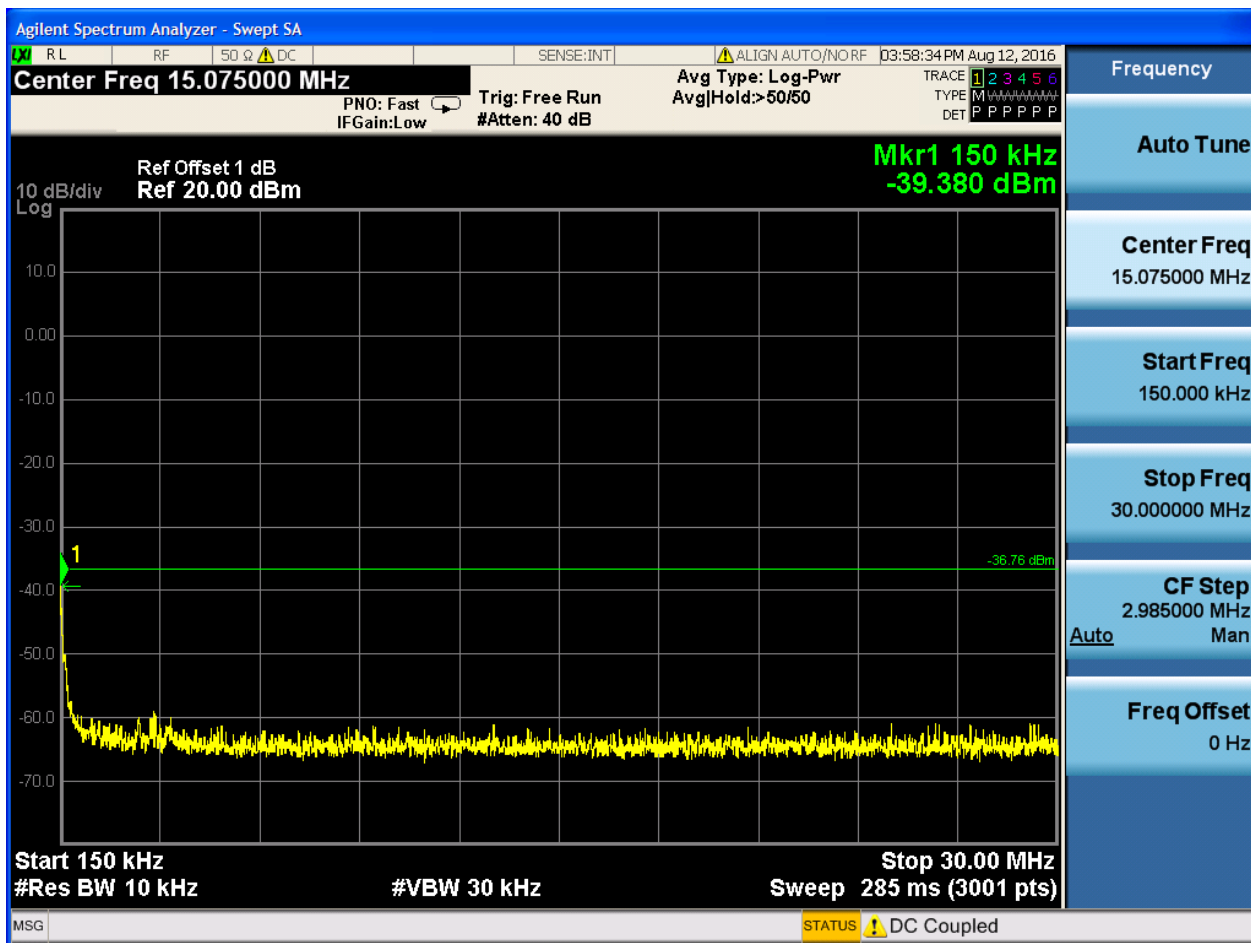
Stop Freq
150.000 kHz

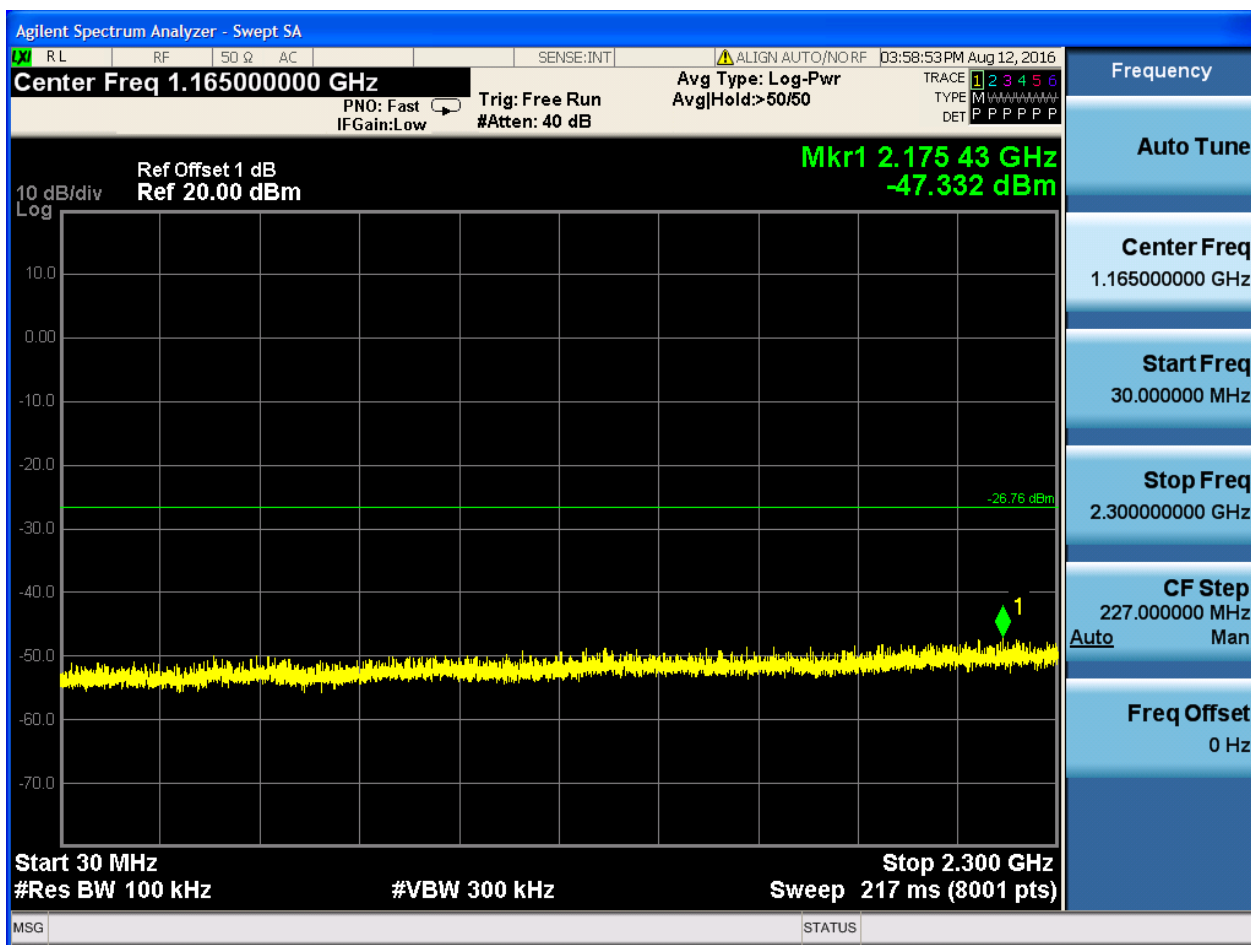
CF Step
14.100 kHz
Man

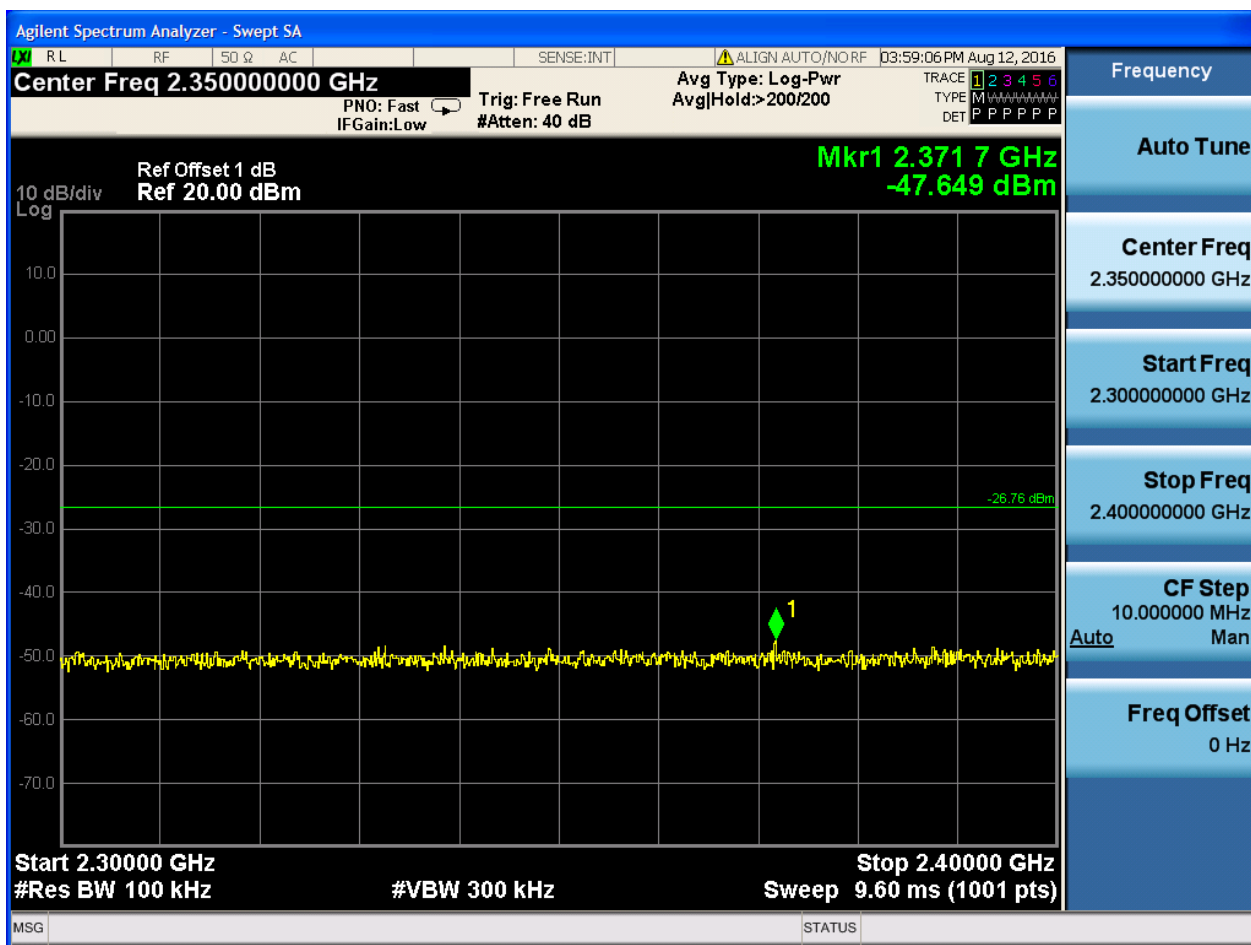
Auto

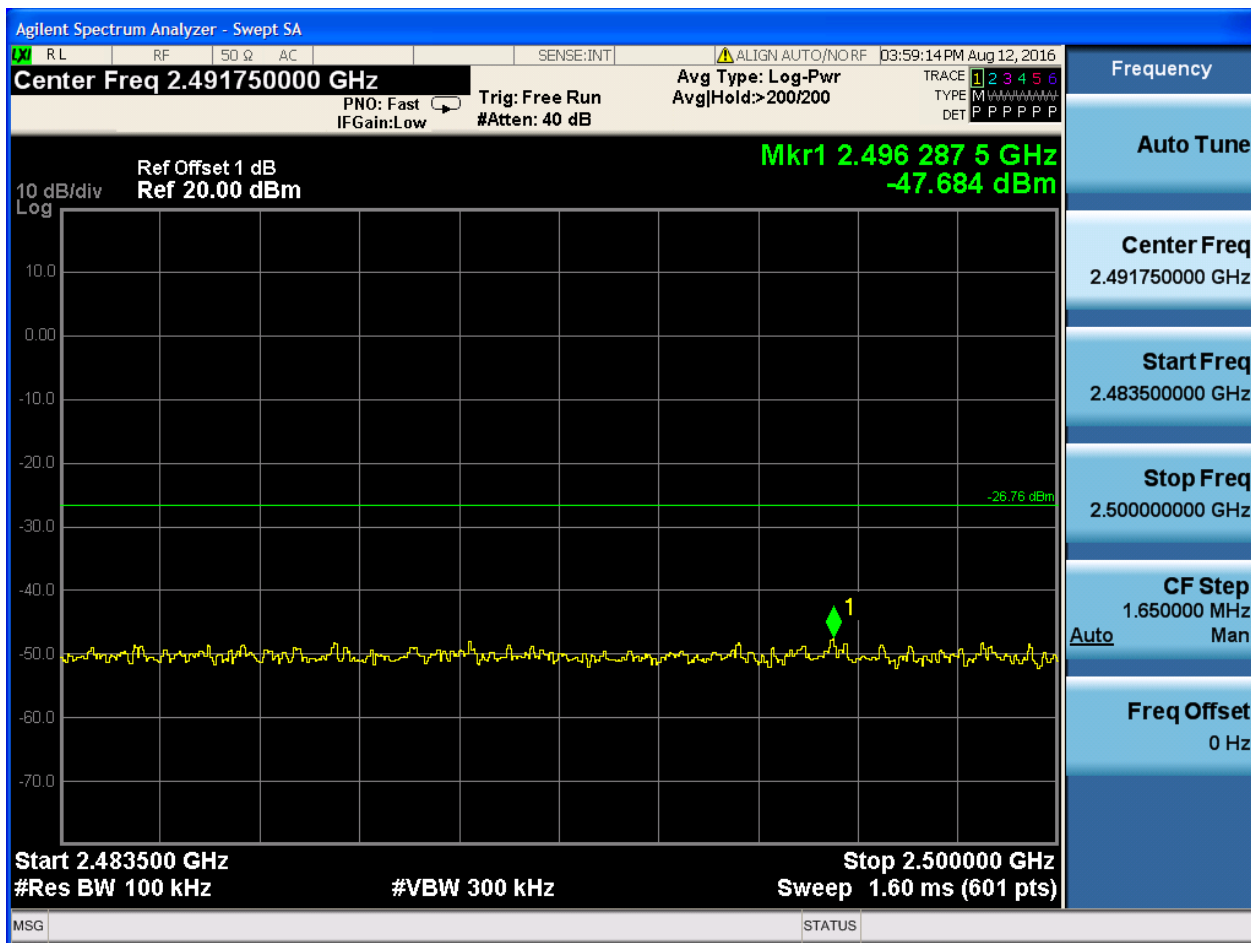
Freq Offset
0 Hz

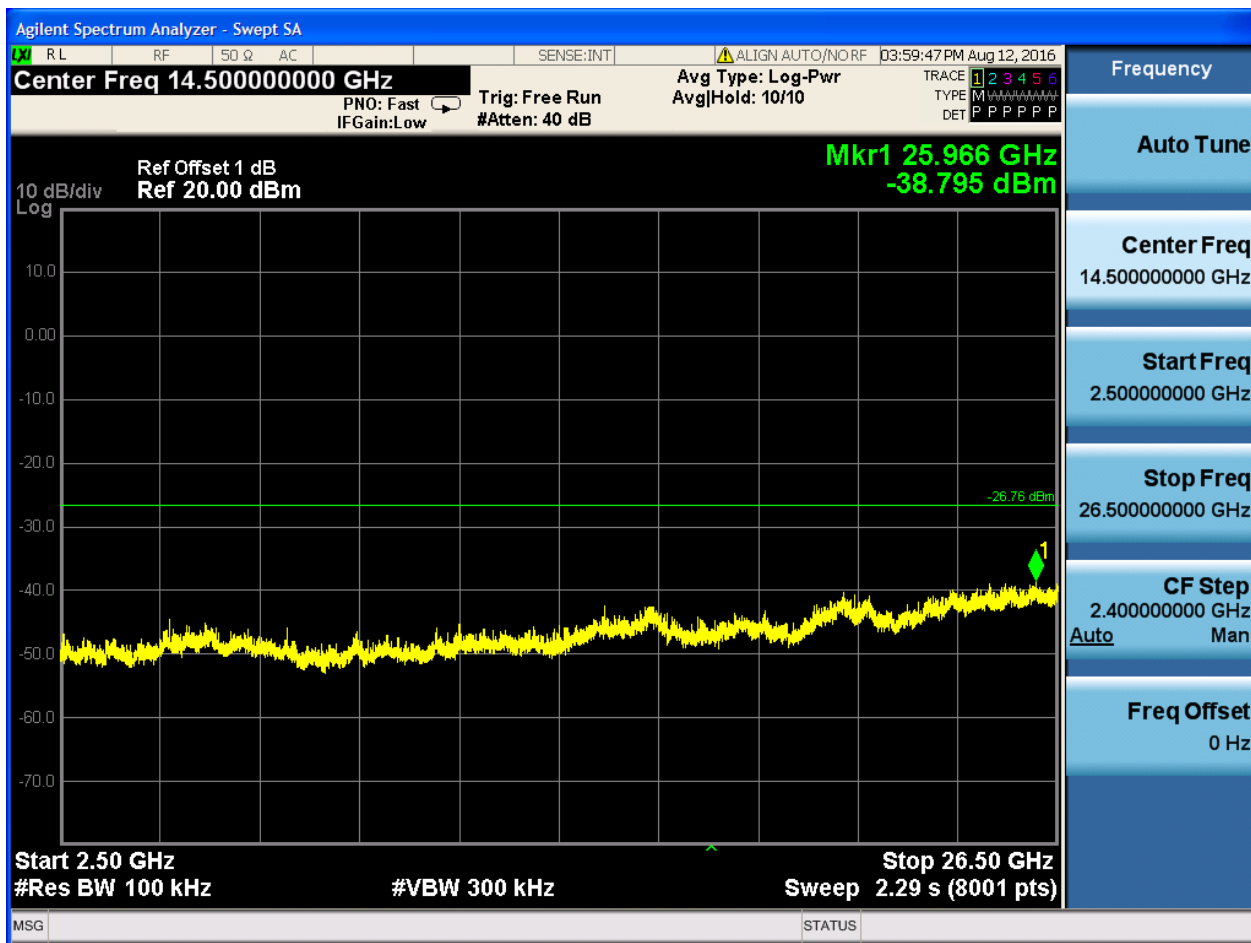
MSG STATUS ! DC Coupled







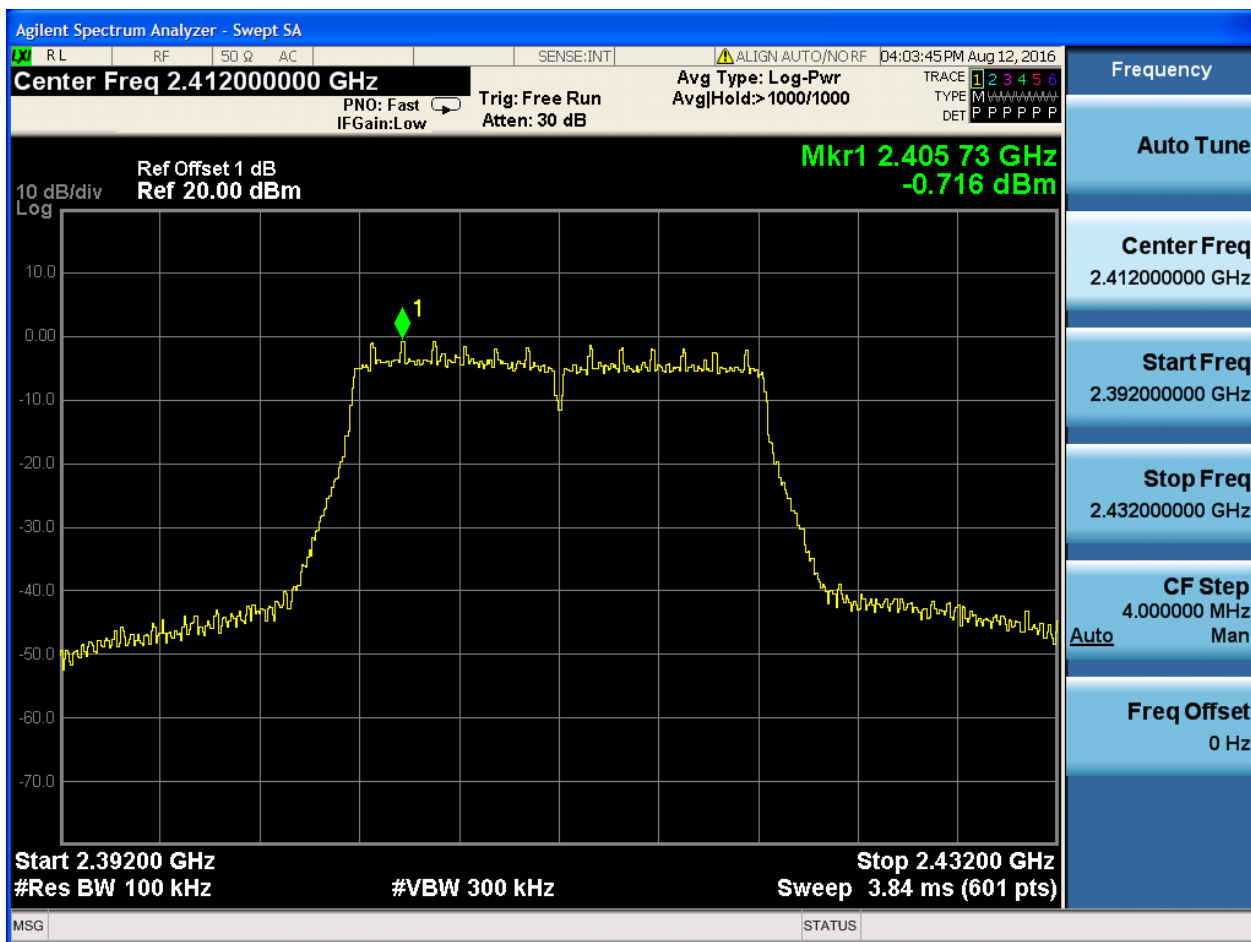






2.4 11G_L@Ant 1

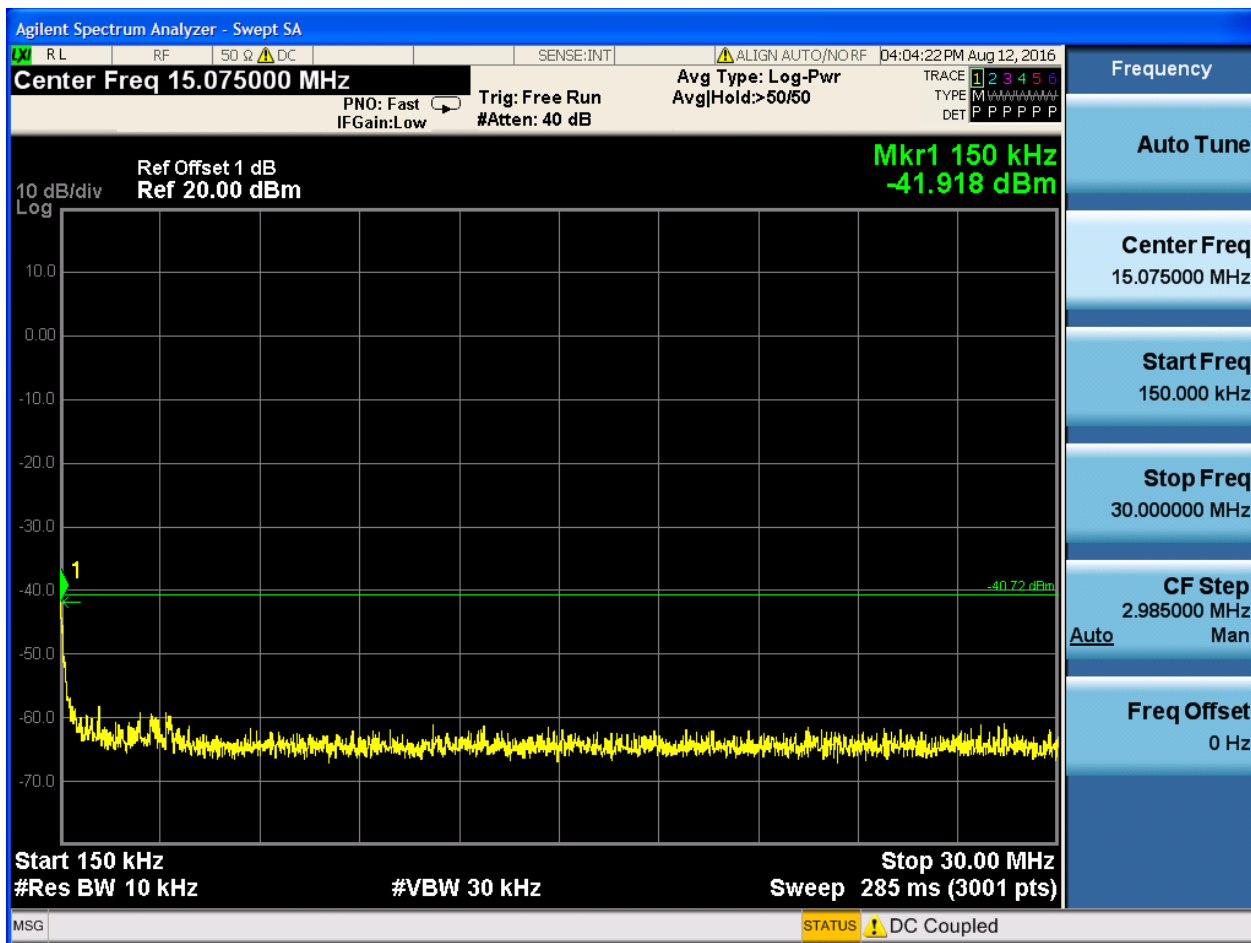
Pref:

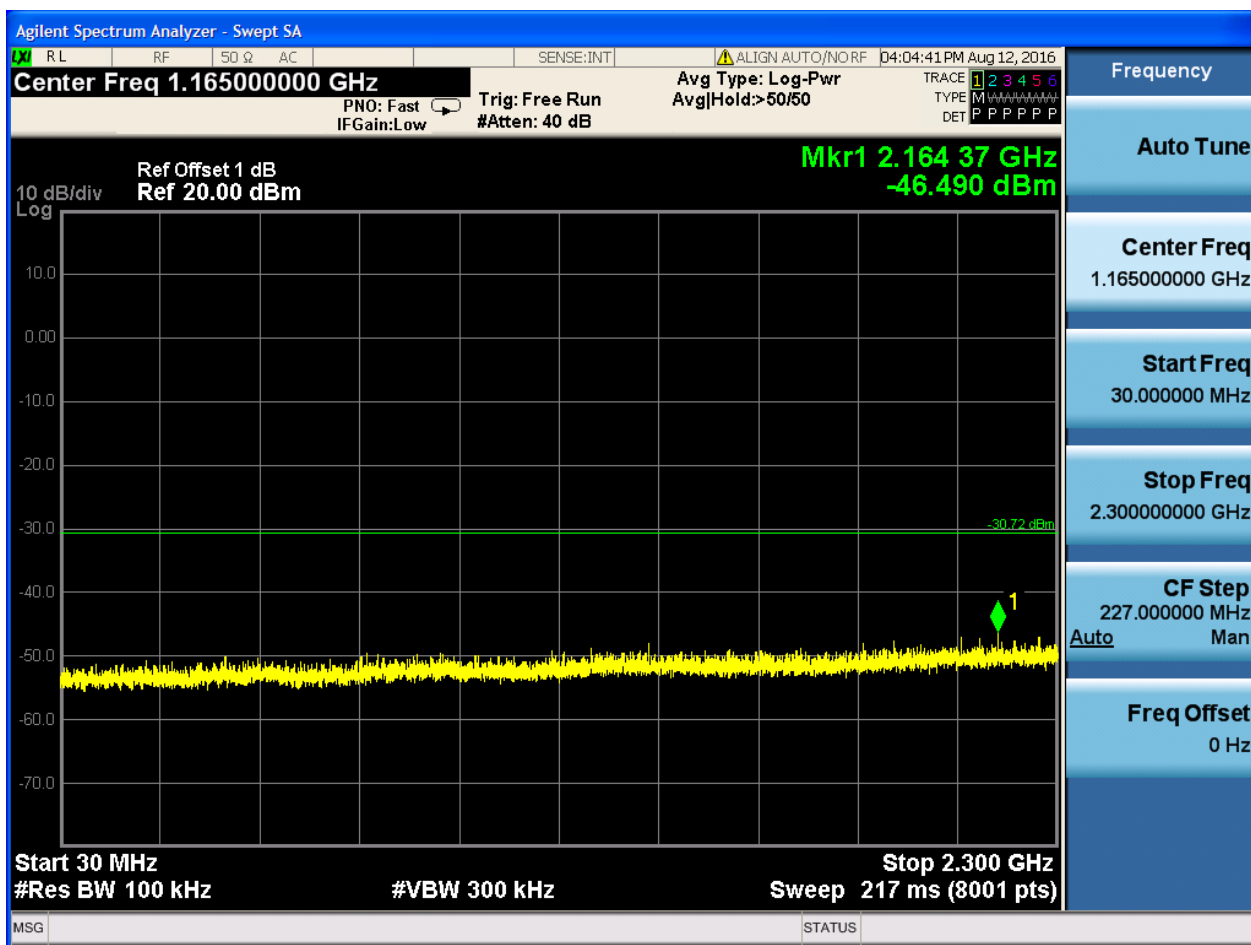


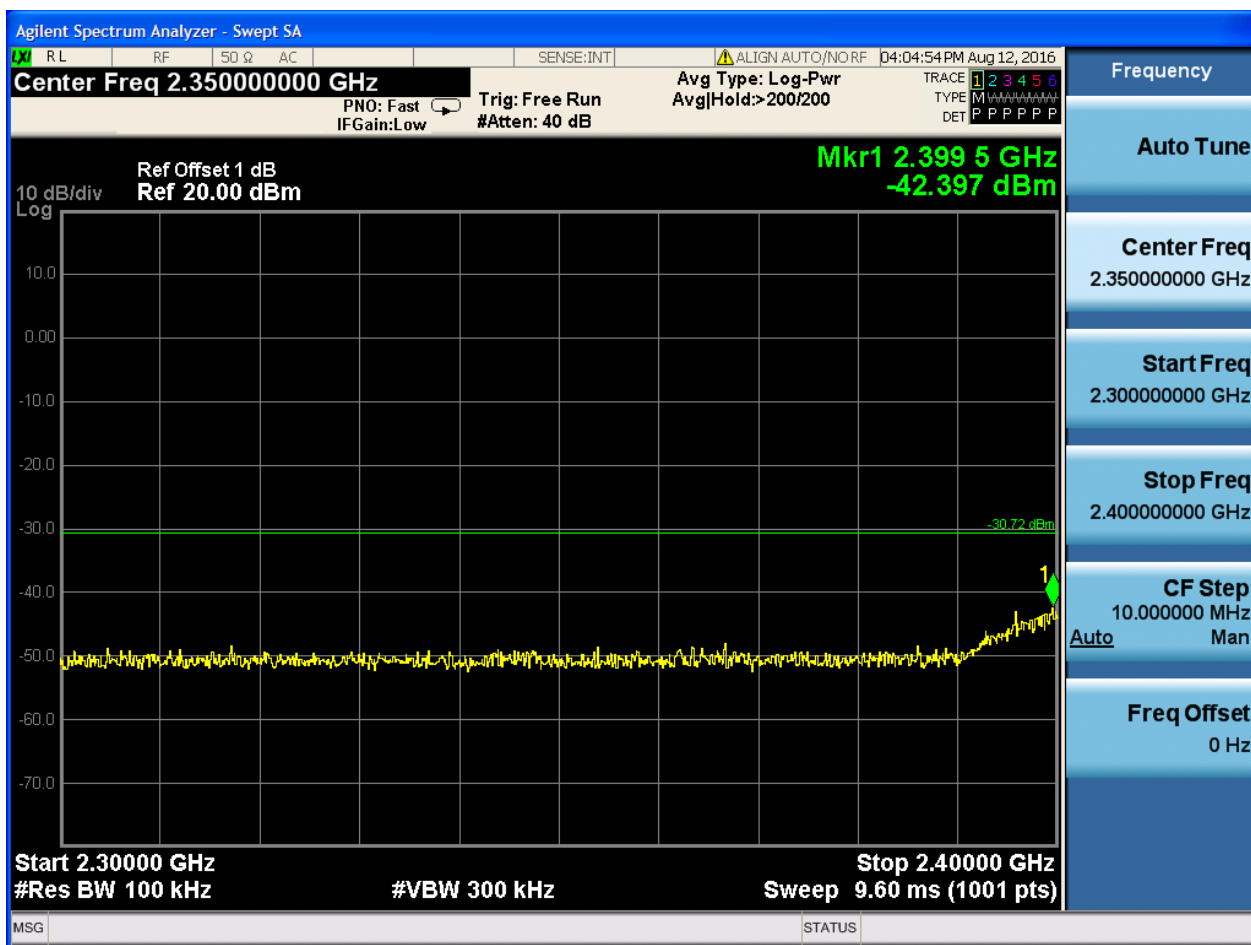


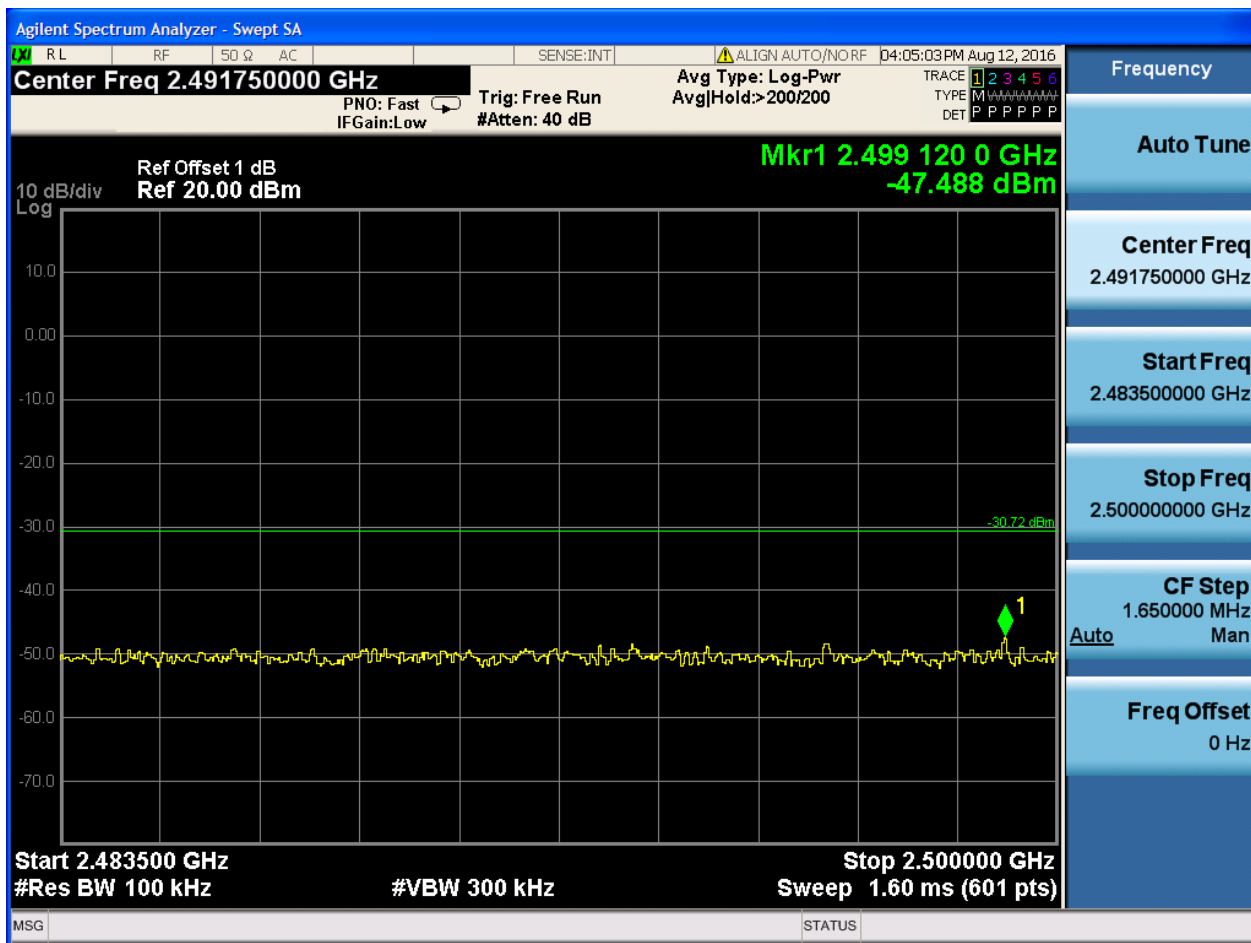
Puw:









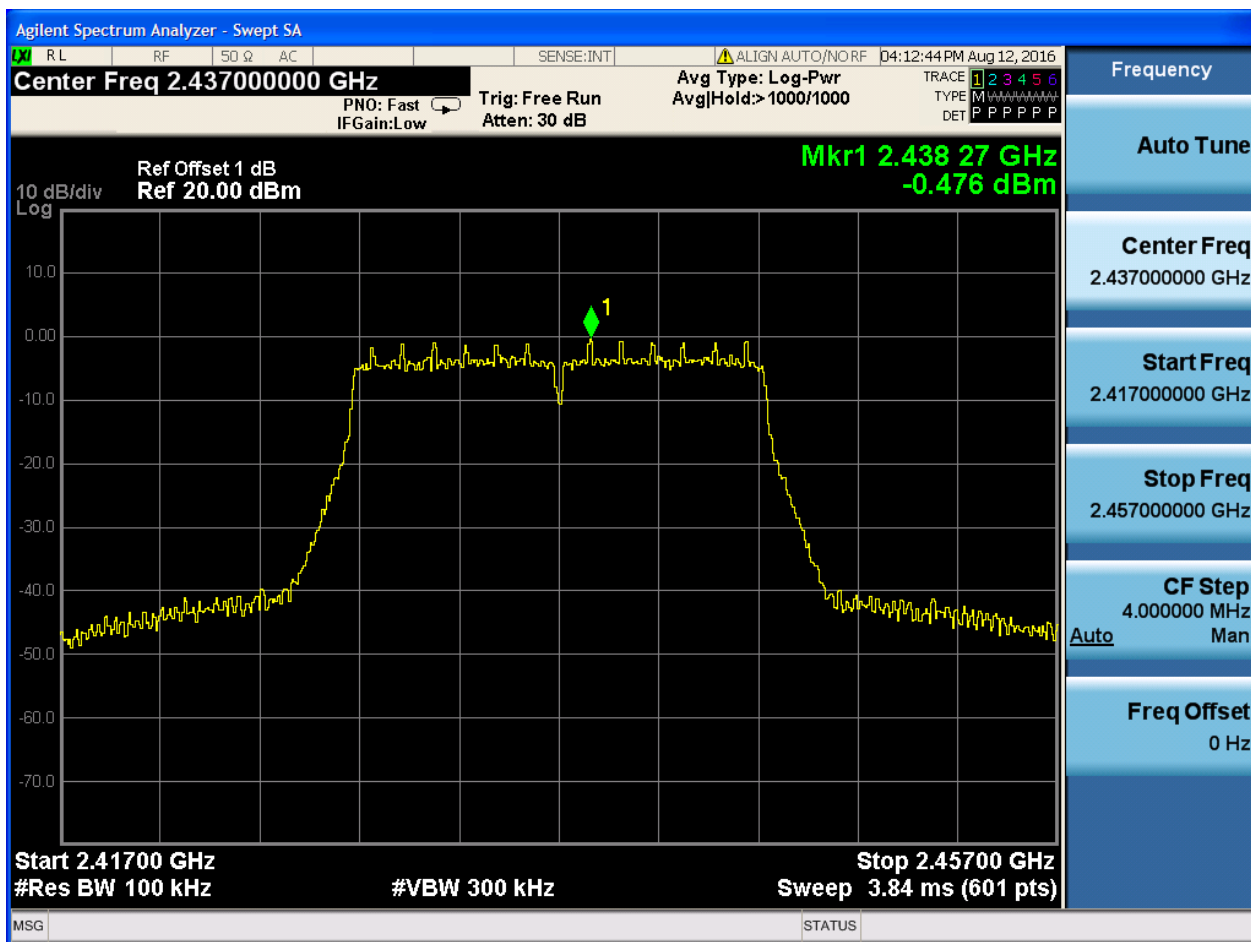






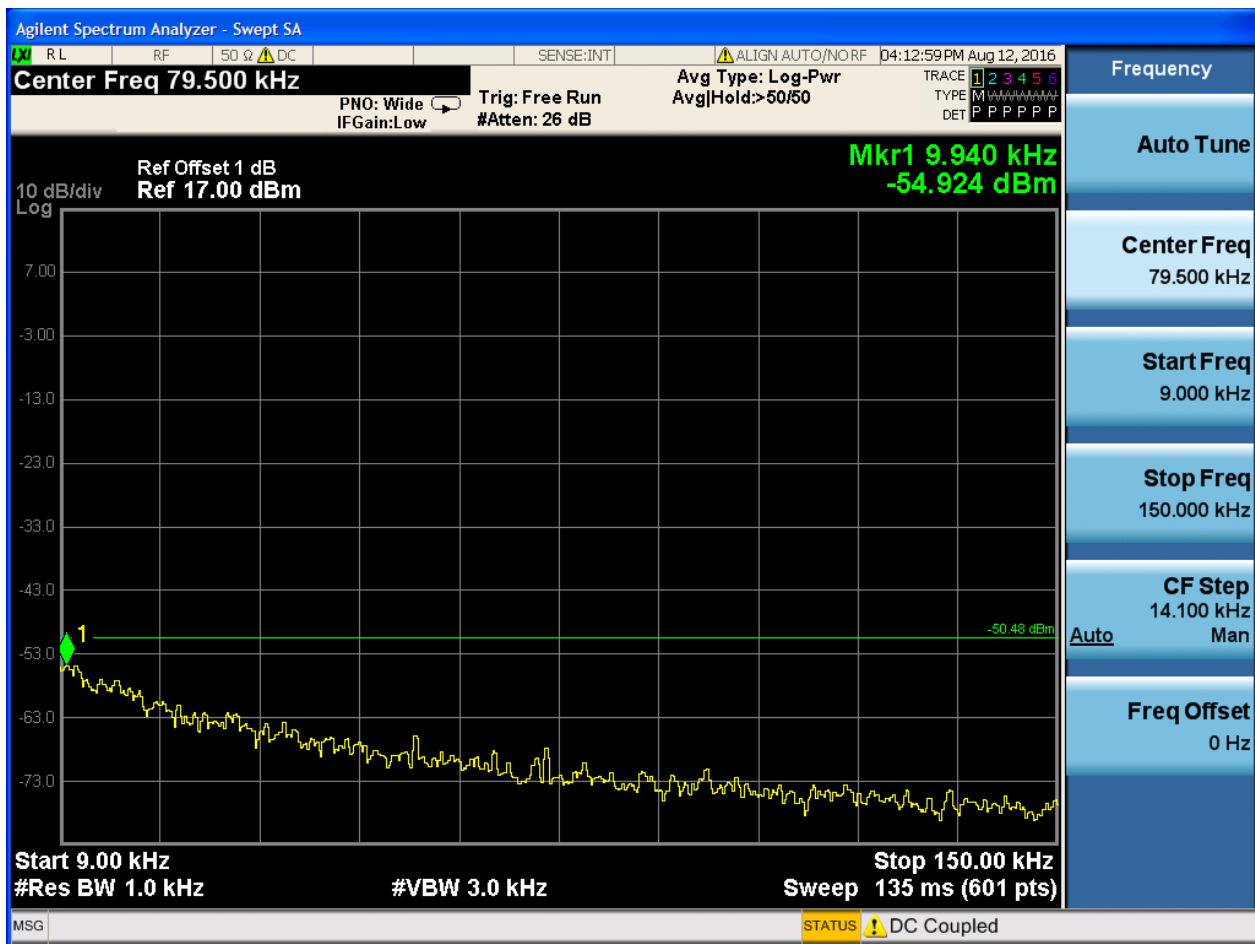
2.5 11G_M@Ant 1

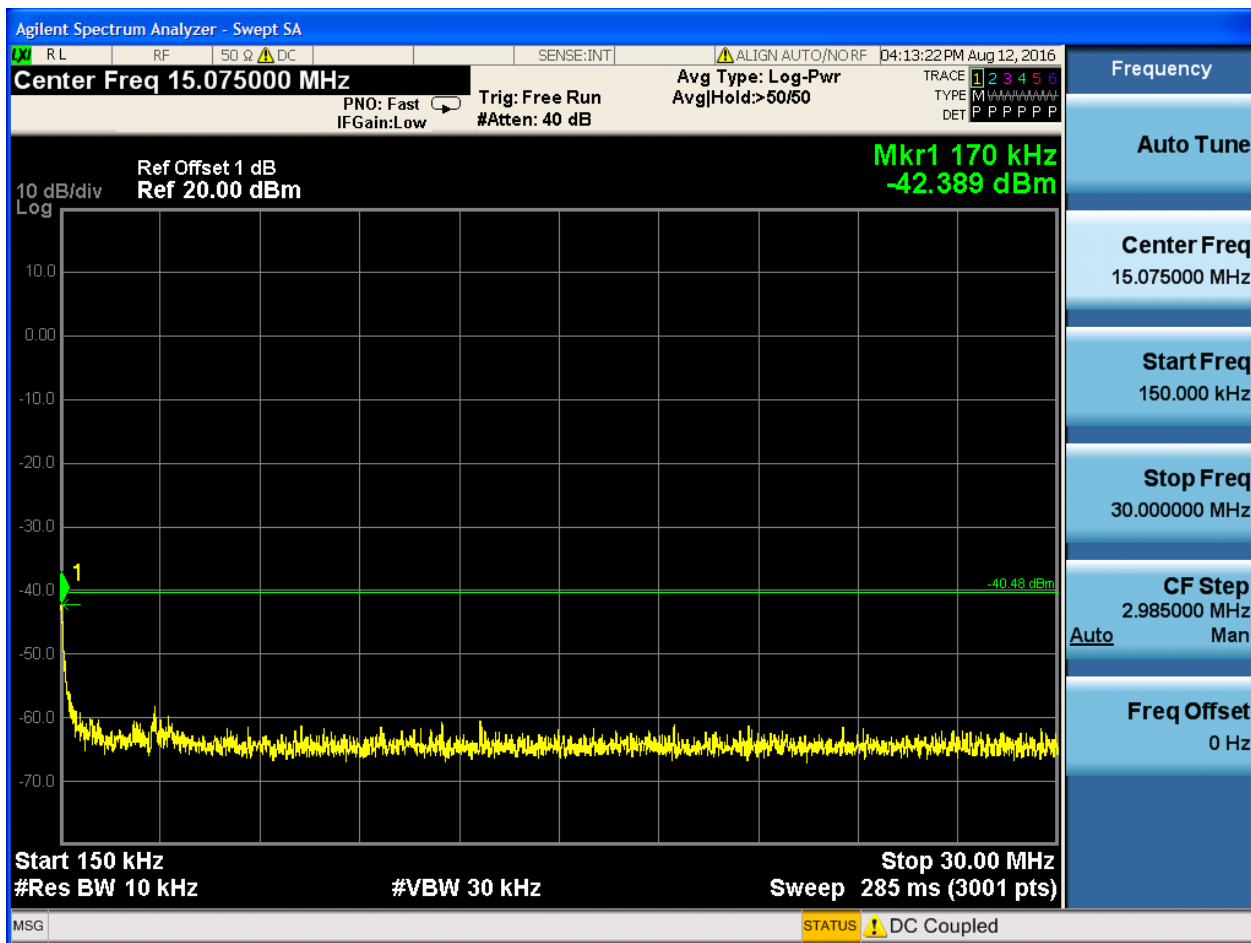
Pref:

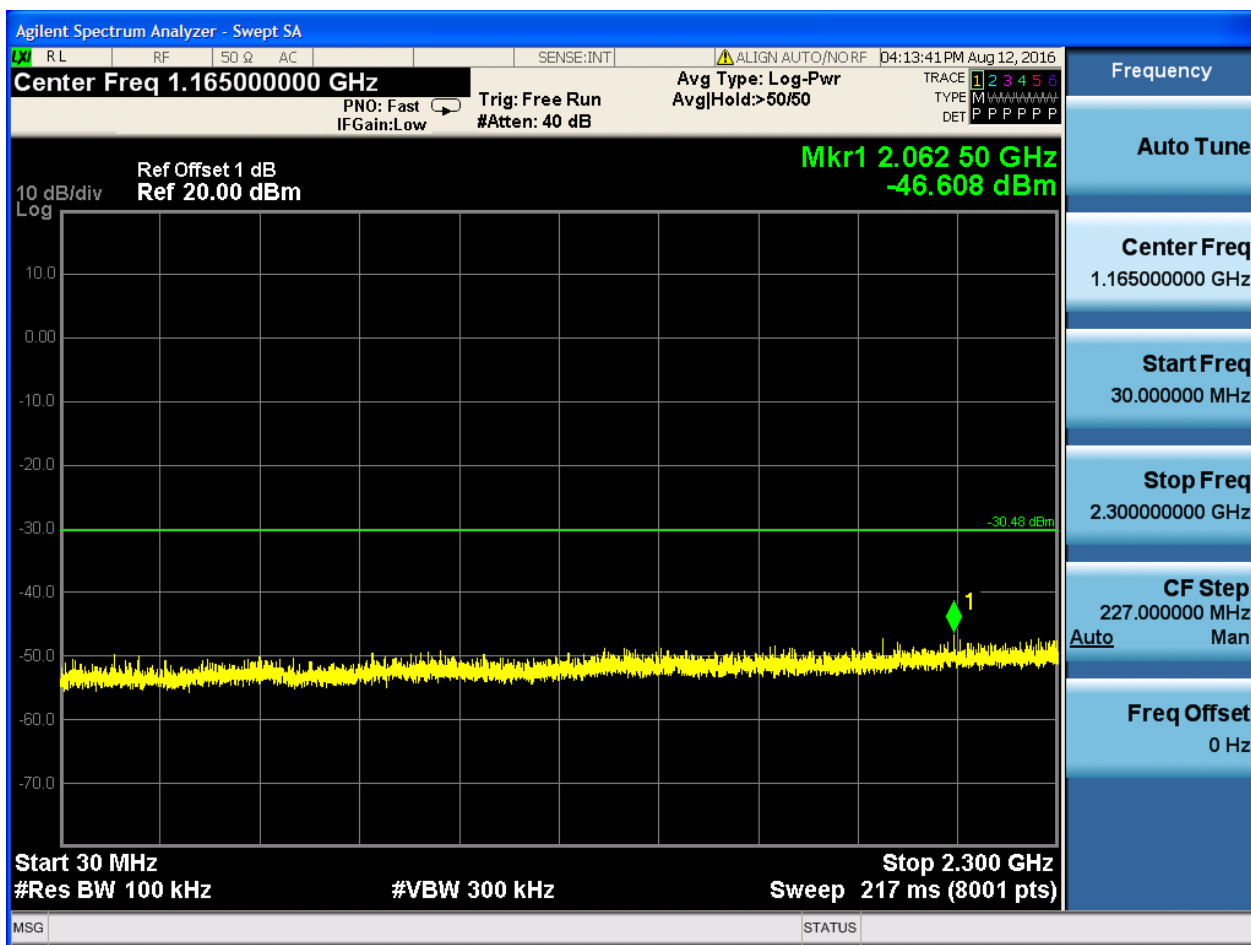


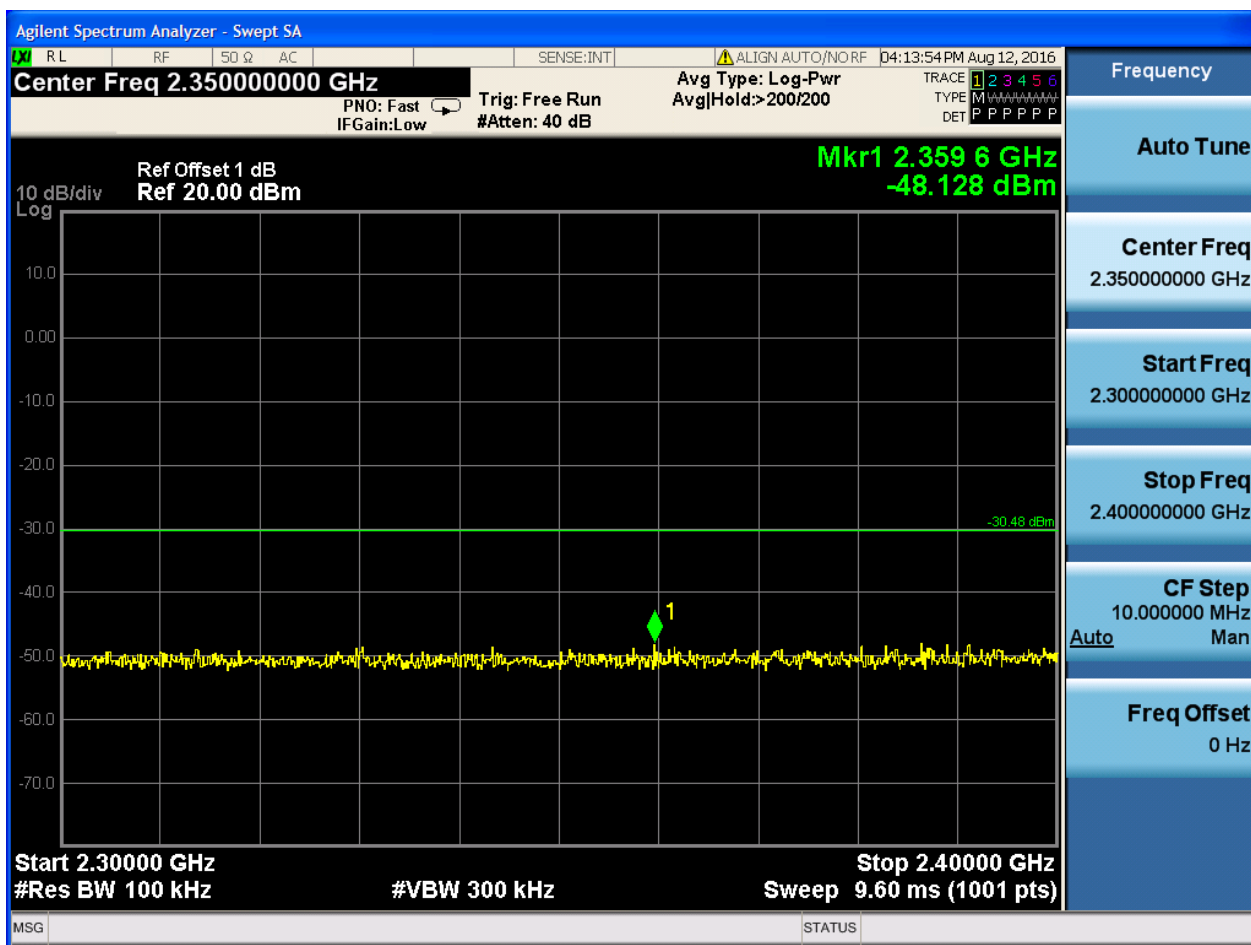


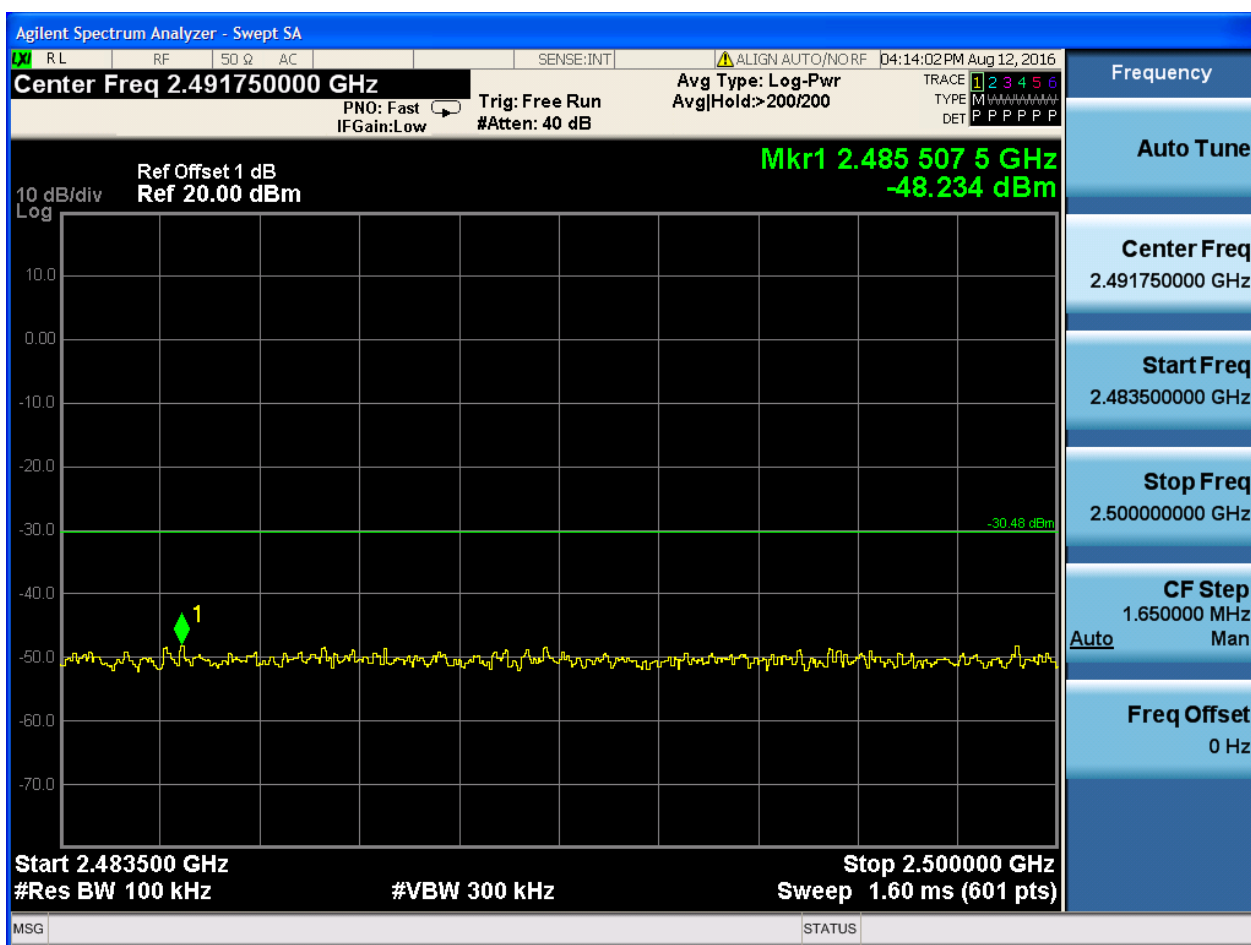
Puw:









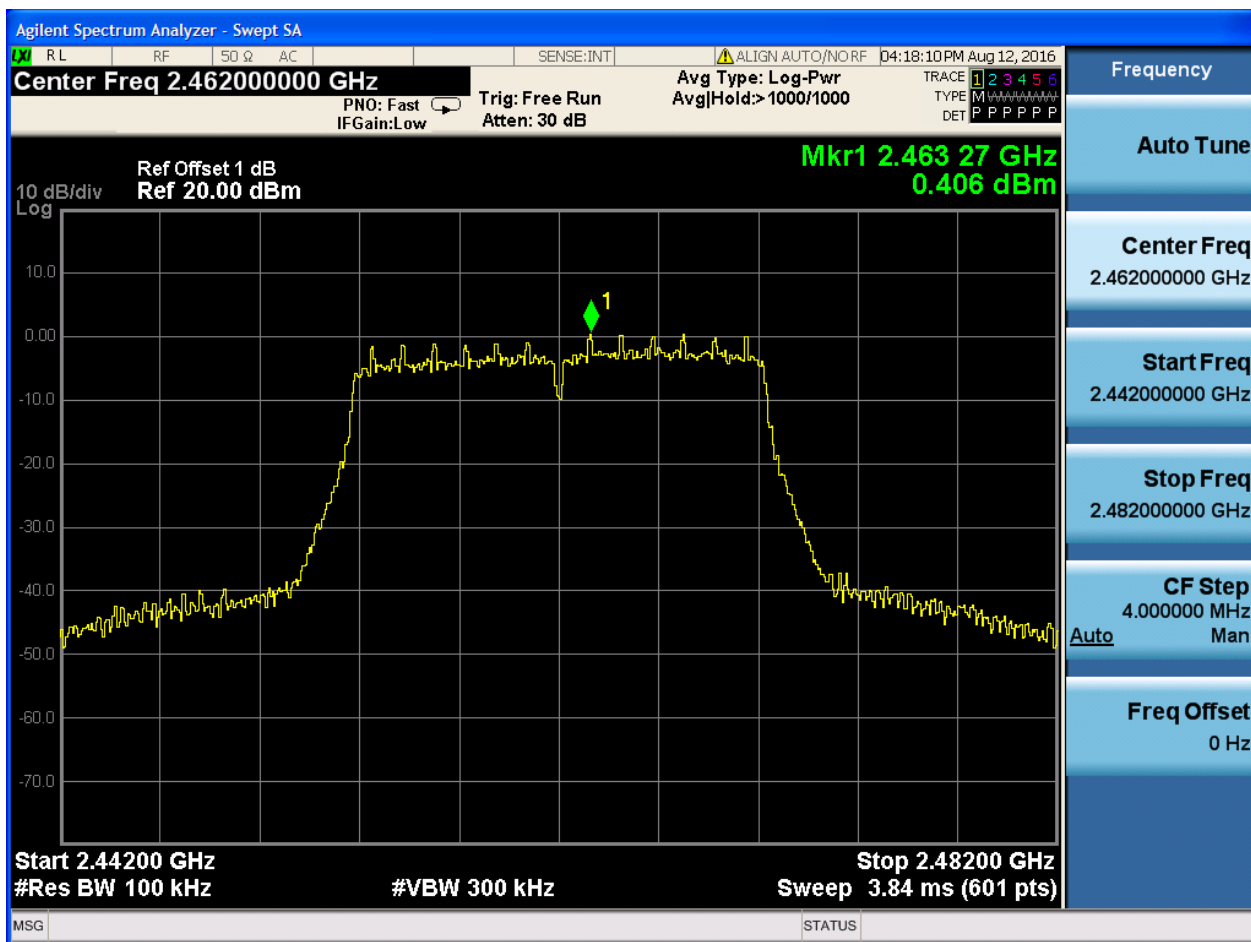






2.6 11G_H@Ant 1

Pref:





Puw:

