



Appendix for Test report

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.

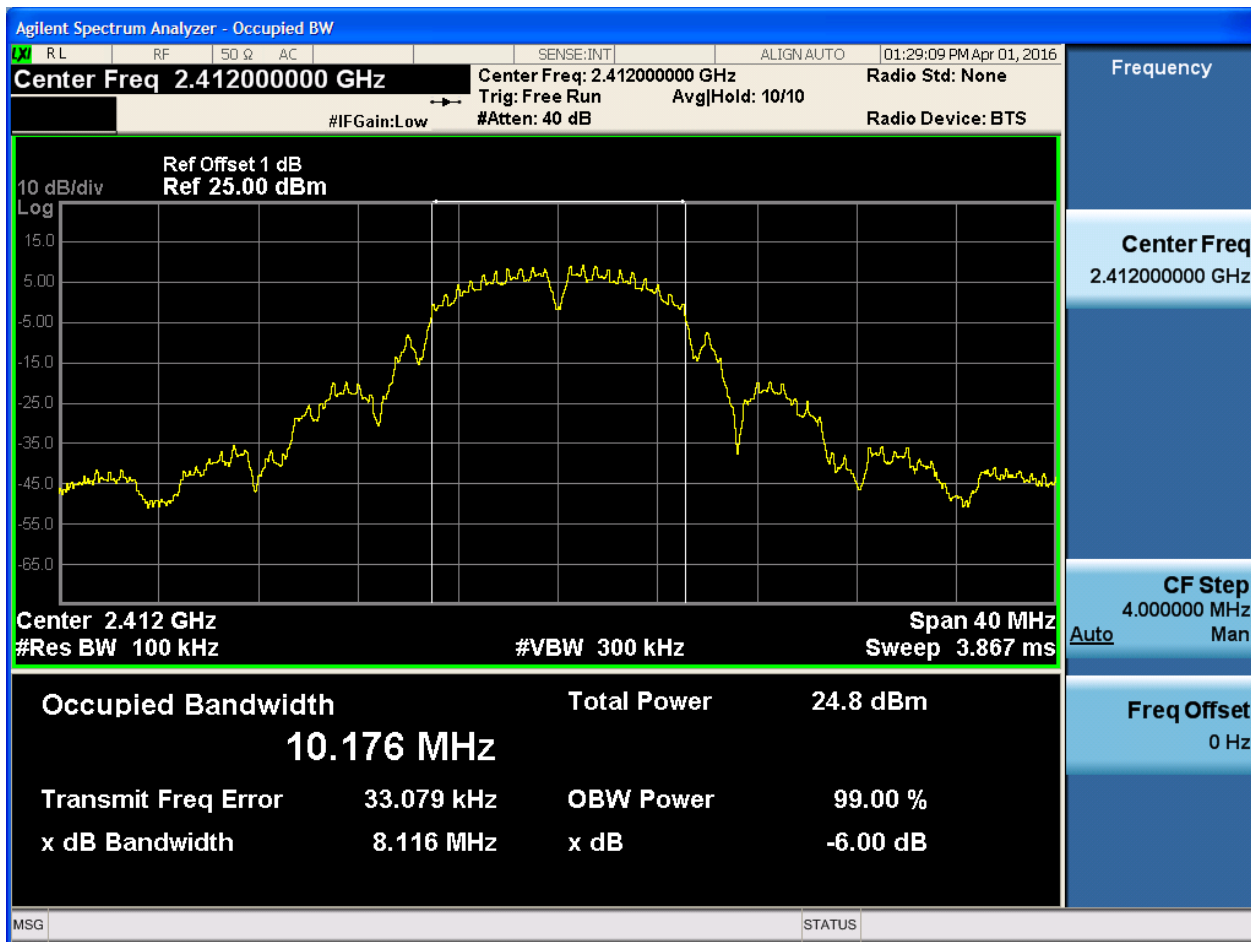
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	8.12	pass
11B	M	2437	Ant 1	8.11	pass
11B	H	2462	Ant 1	8.10	pass
11G	L	2412	Ant 1	16.42	pass
11G	M	2437	Ant 1	16.42	pass
11G	H	2462	Ant 1	16.11	pass
11N20	L	2412	Ant 1	17.65	pass
11N20	M	2437	Ant 1	17.64	pass
11N20	H	2462	Ant 1	17.20	pass
11N40	L	2422	Ant 1	35.41	pass
11N40	M	2437	Ant 1	35.98	pass
11N40	H	2452	Ant 1	32.71	pass



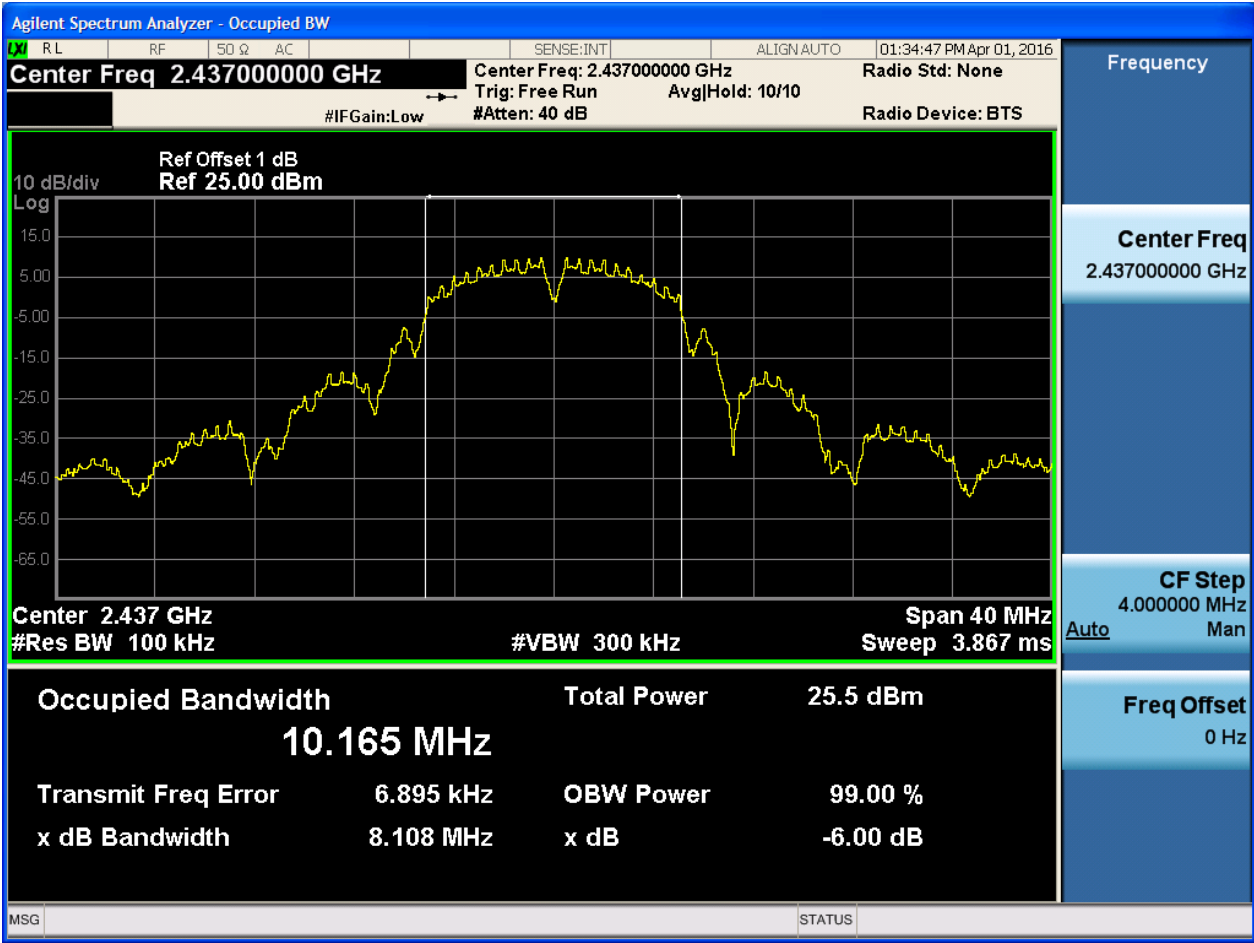
Part II - Test Plots

2.1 11B_L@Ant 1



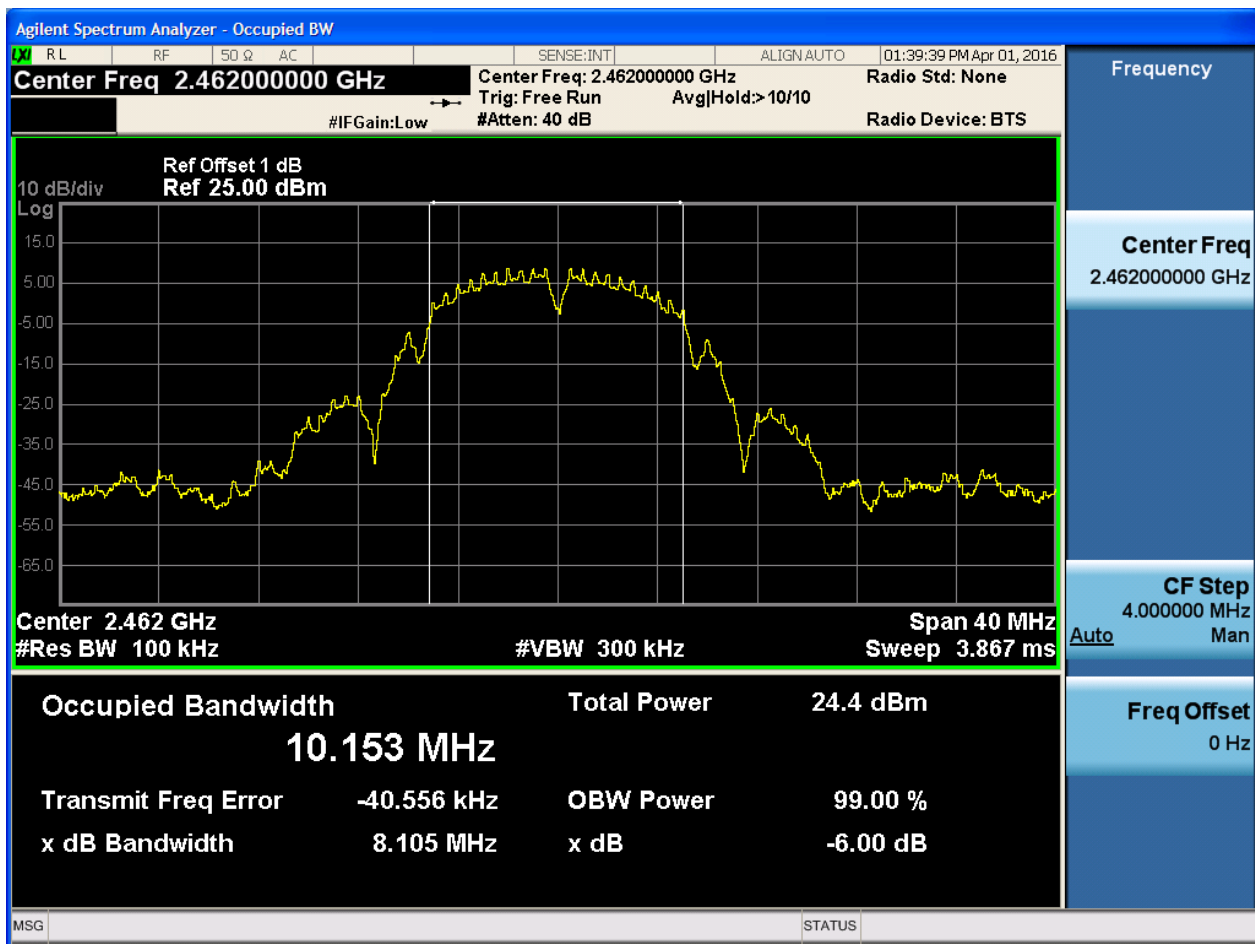


2.2 11B_M@Ant 1



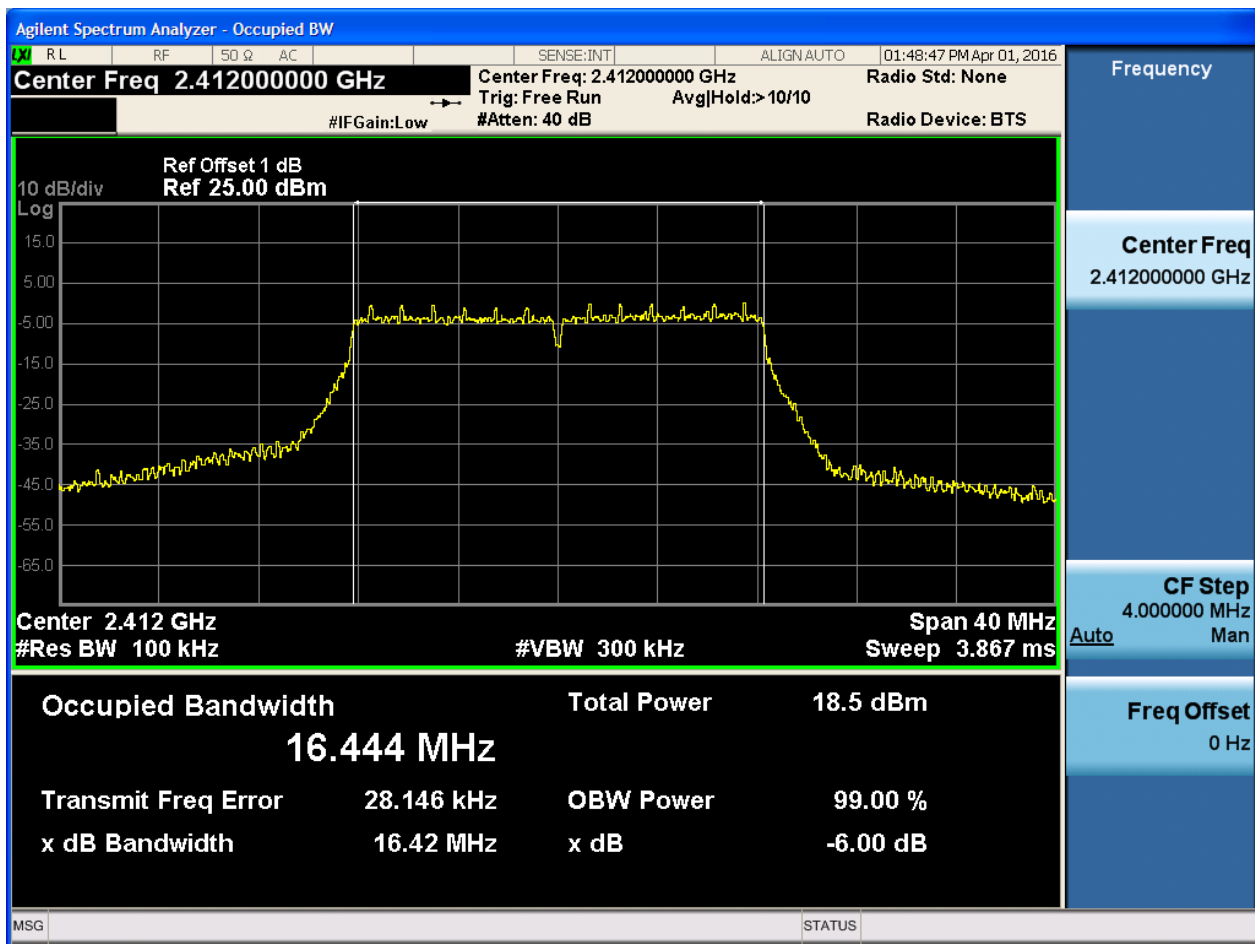


2.3 11B_H@Ant 1



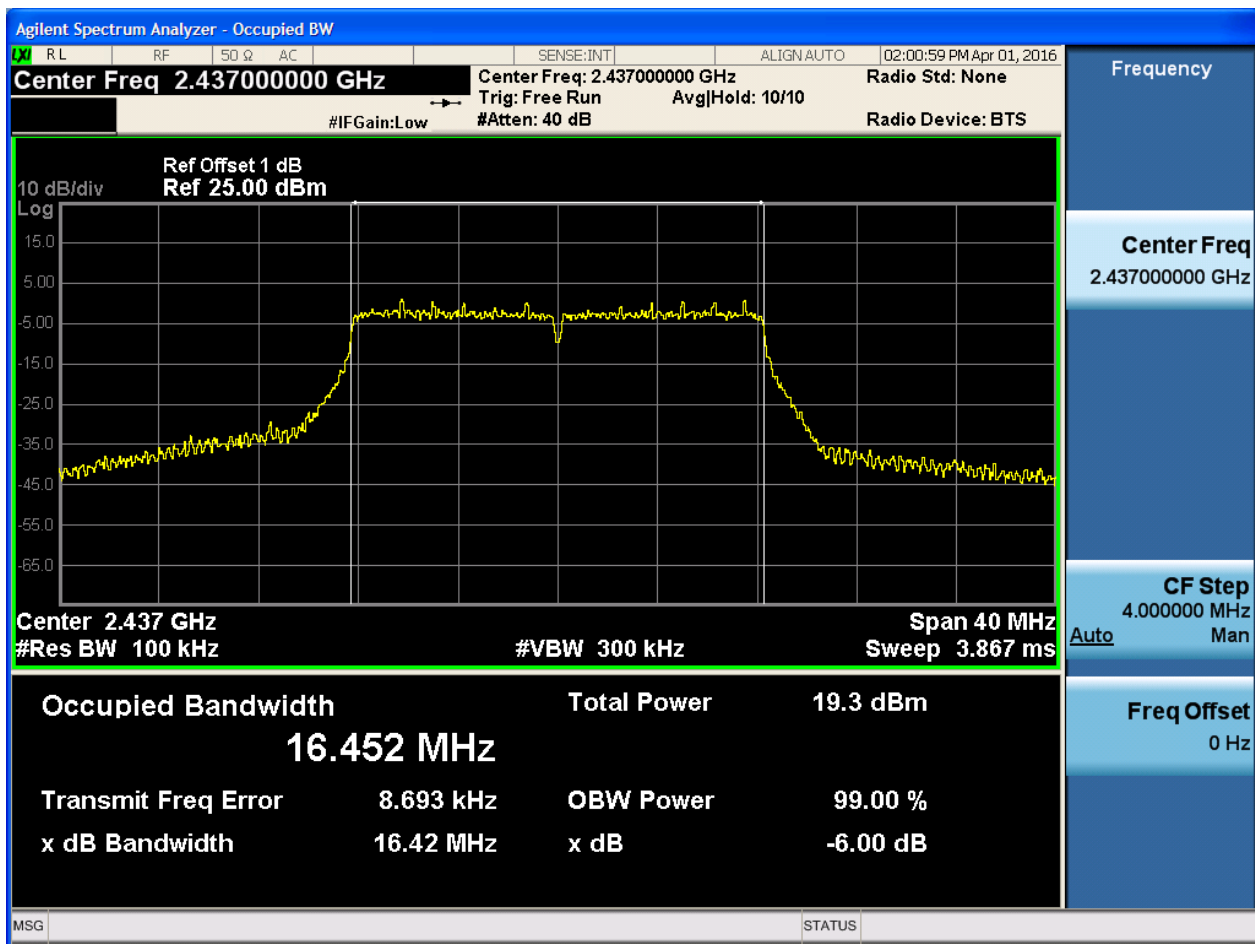


2.4 11G_L@Ant 1



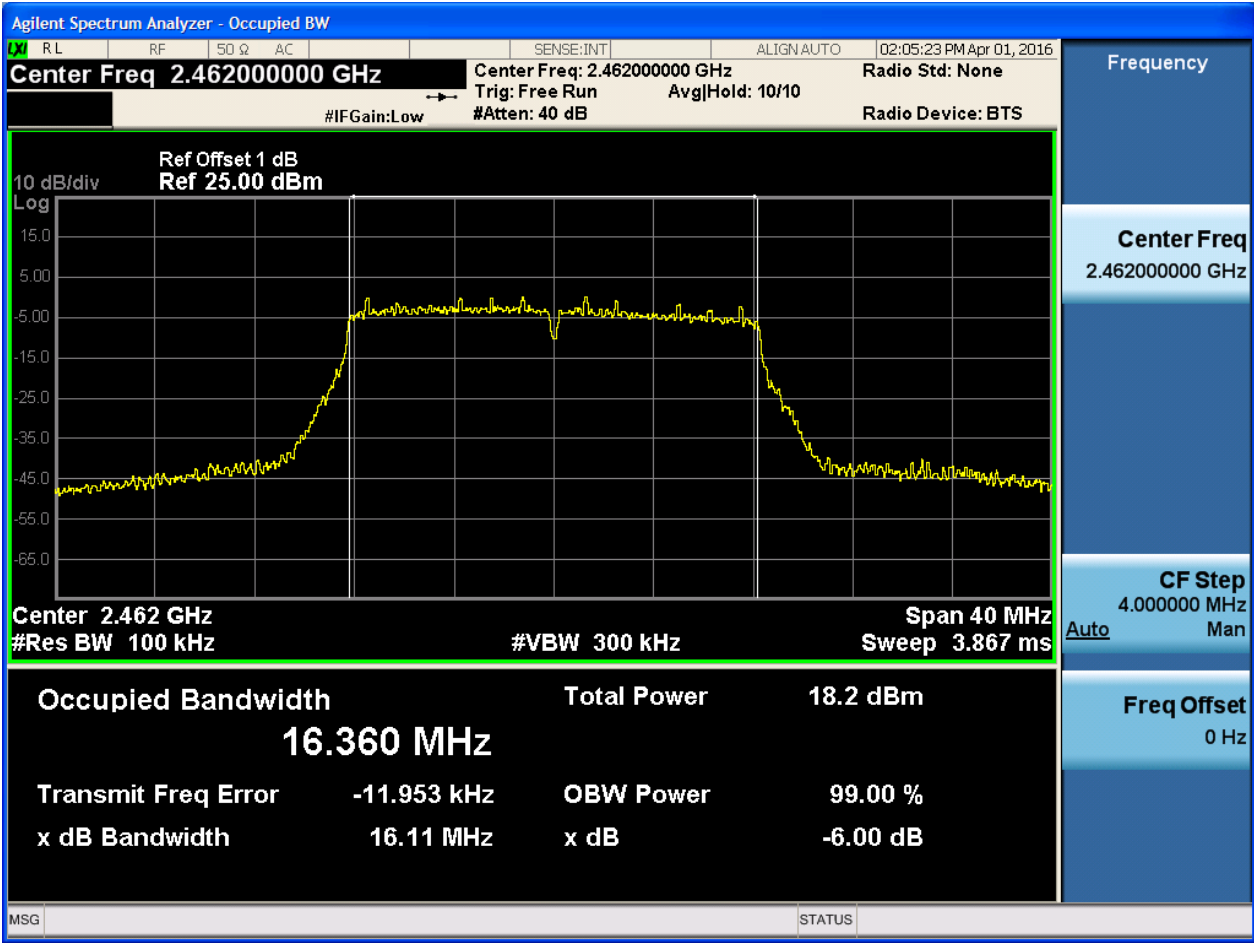


2.5 11G_M@Ant 1



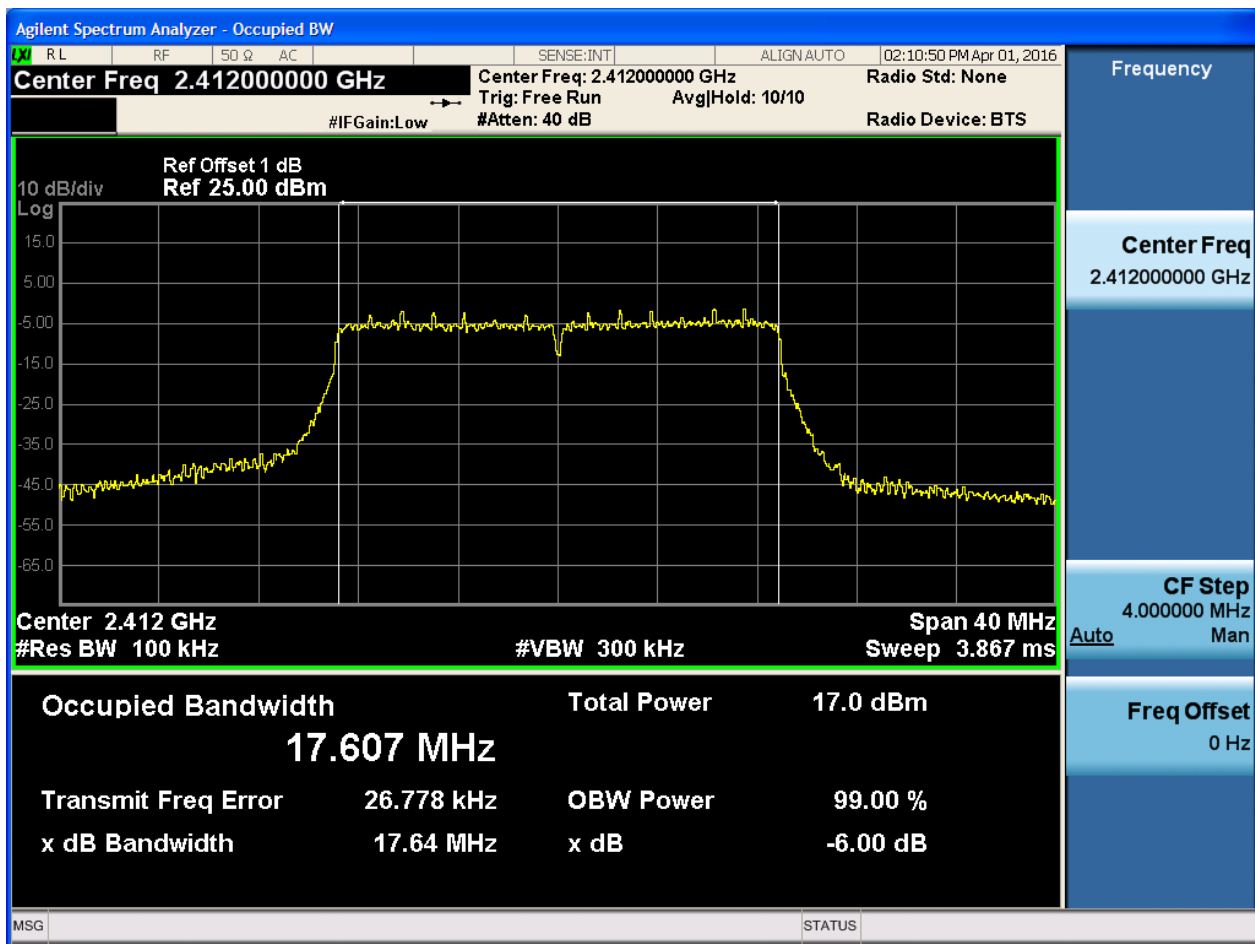


2.6 11G_H@Ant 1



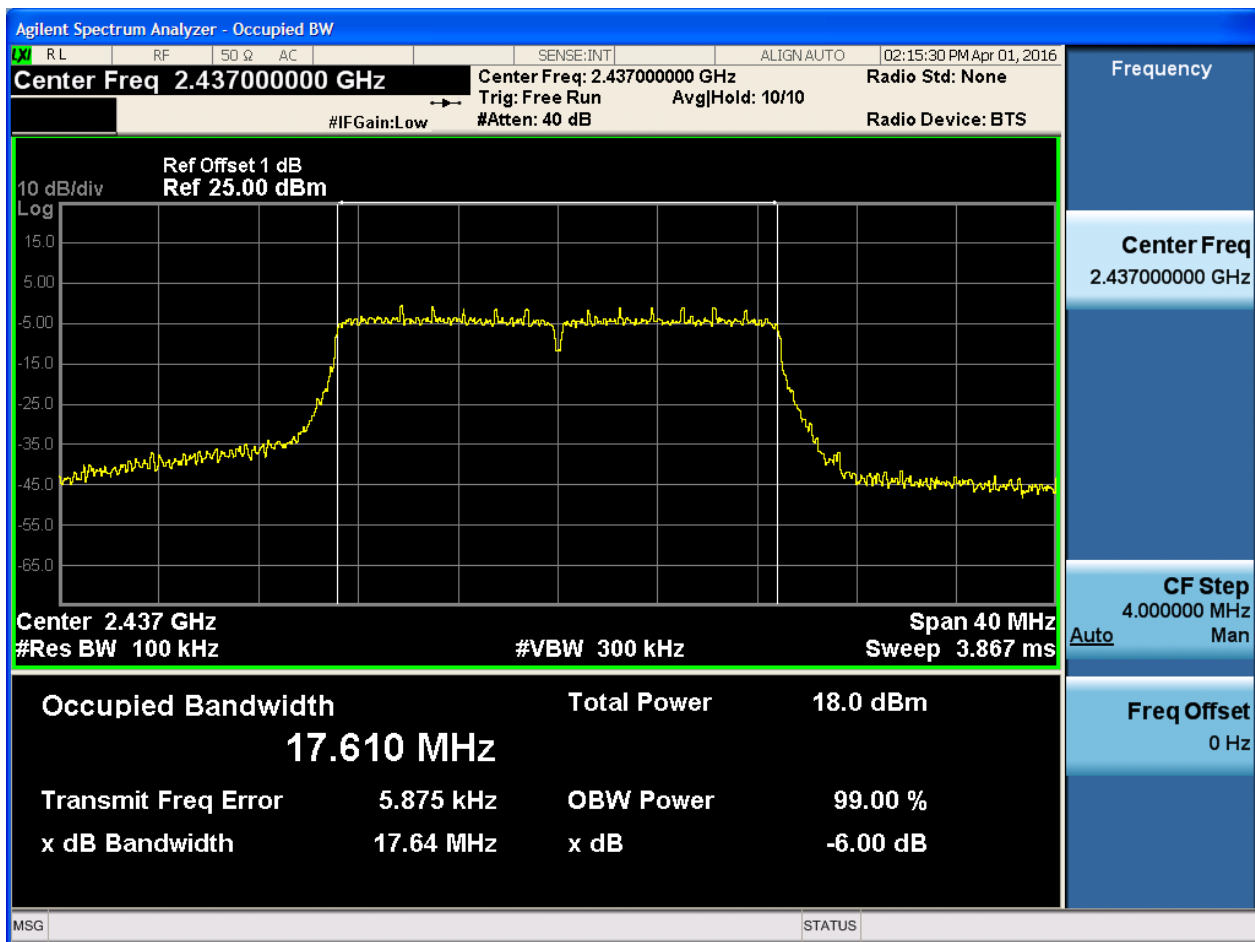


2.7 11N20_L@Ant 1



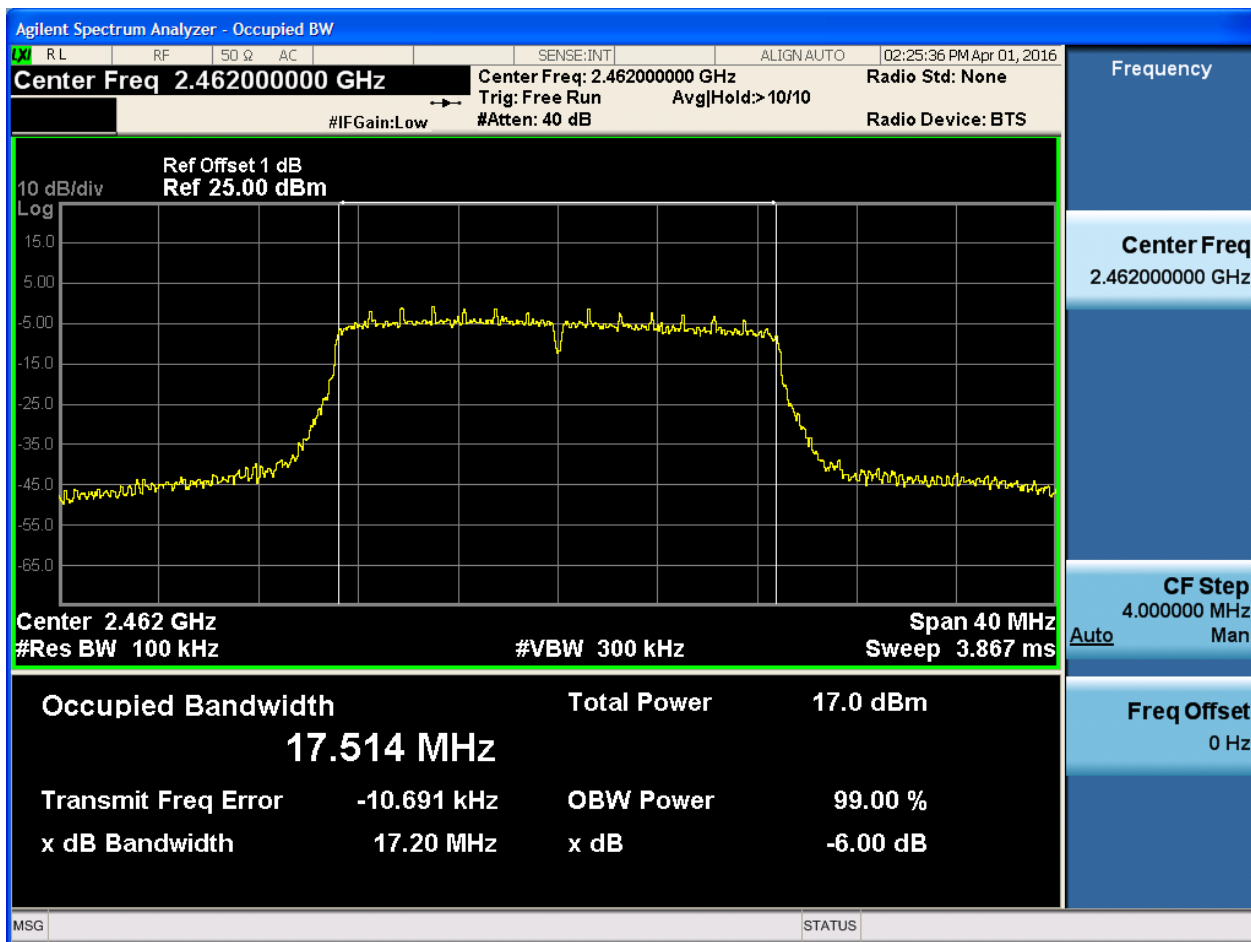


2.8 11N20_M@Ant 1



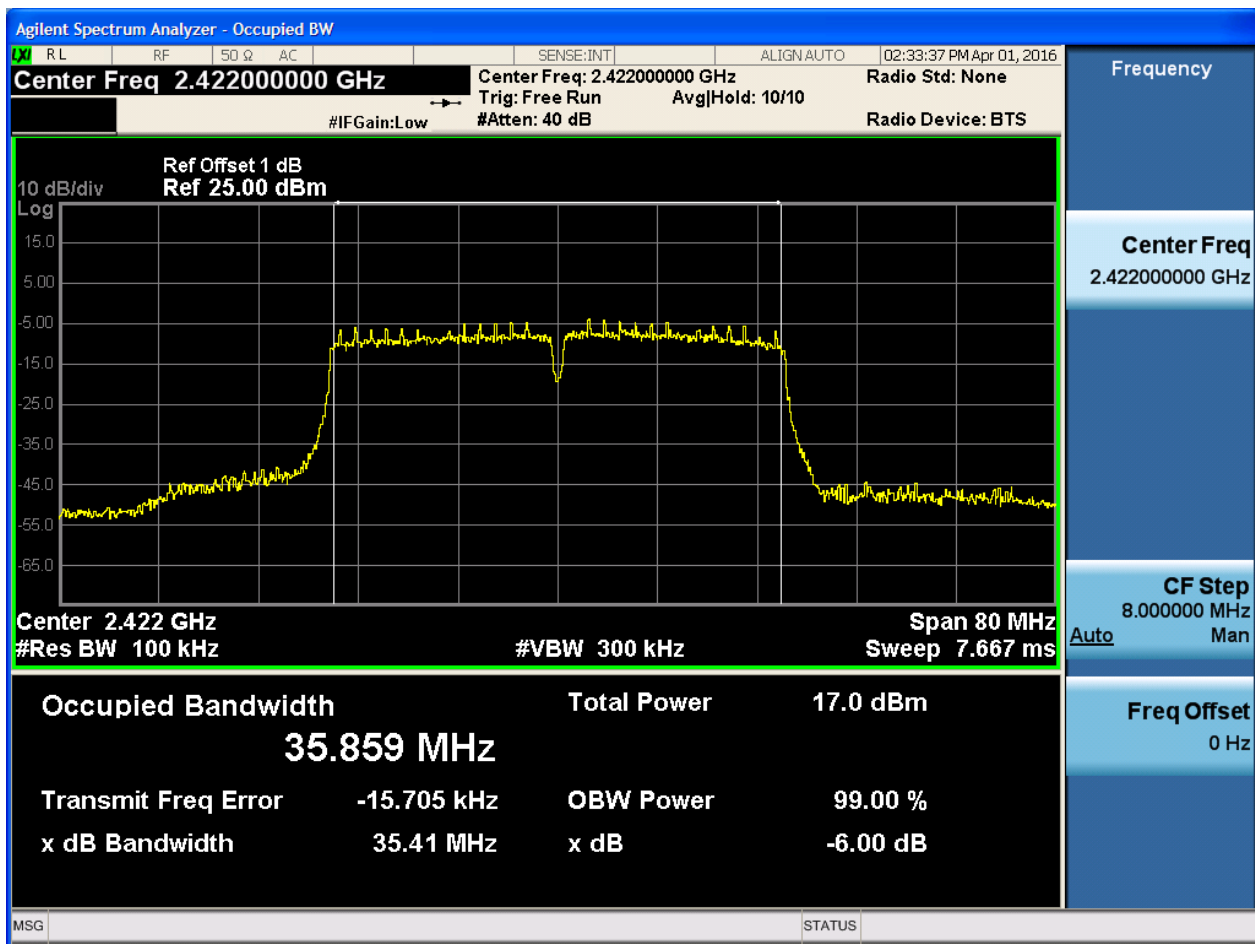


2.9 11N20_H@Ant 1



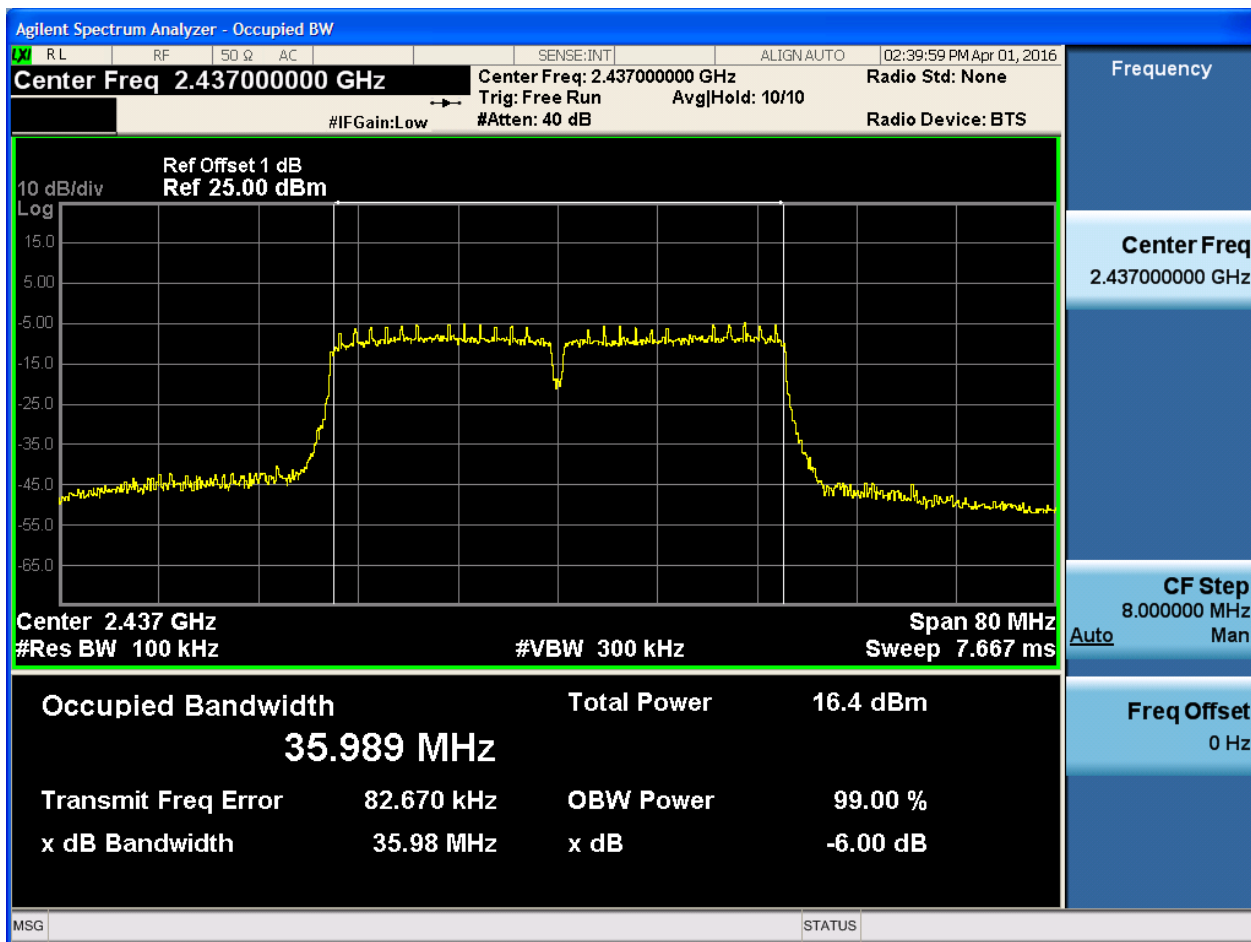


2.10 11N40_L@Ant 1



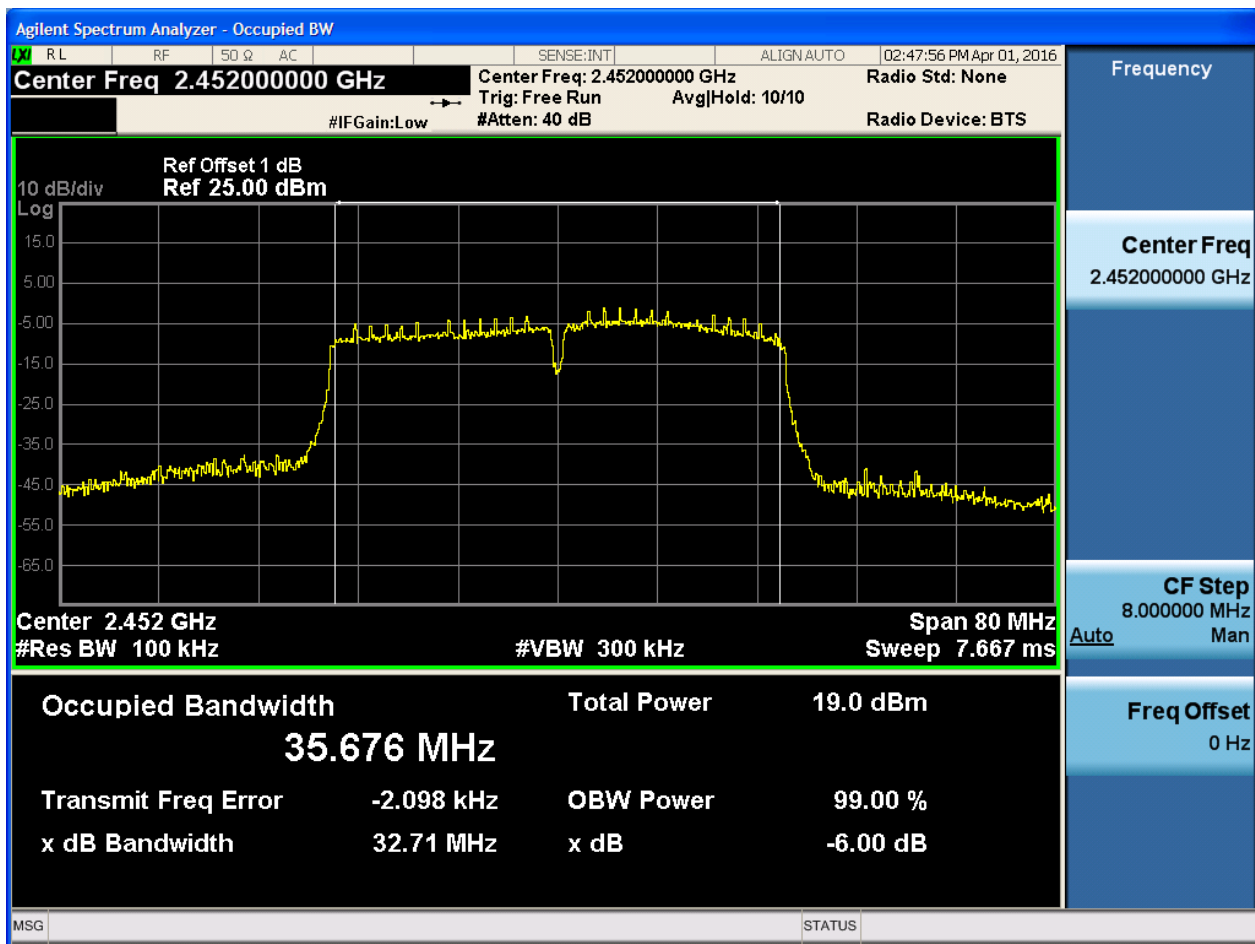


2.11 11N40_M@Ant 1





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.

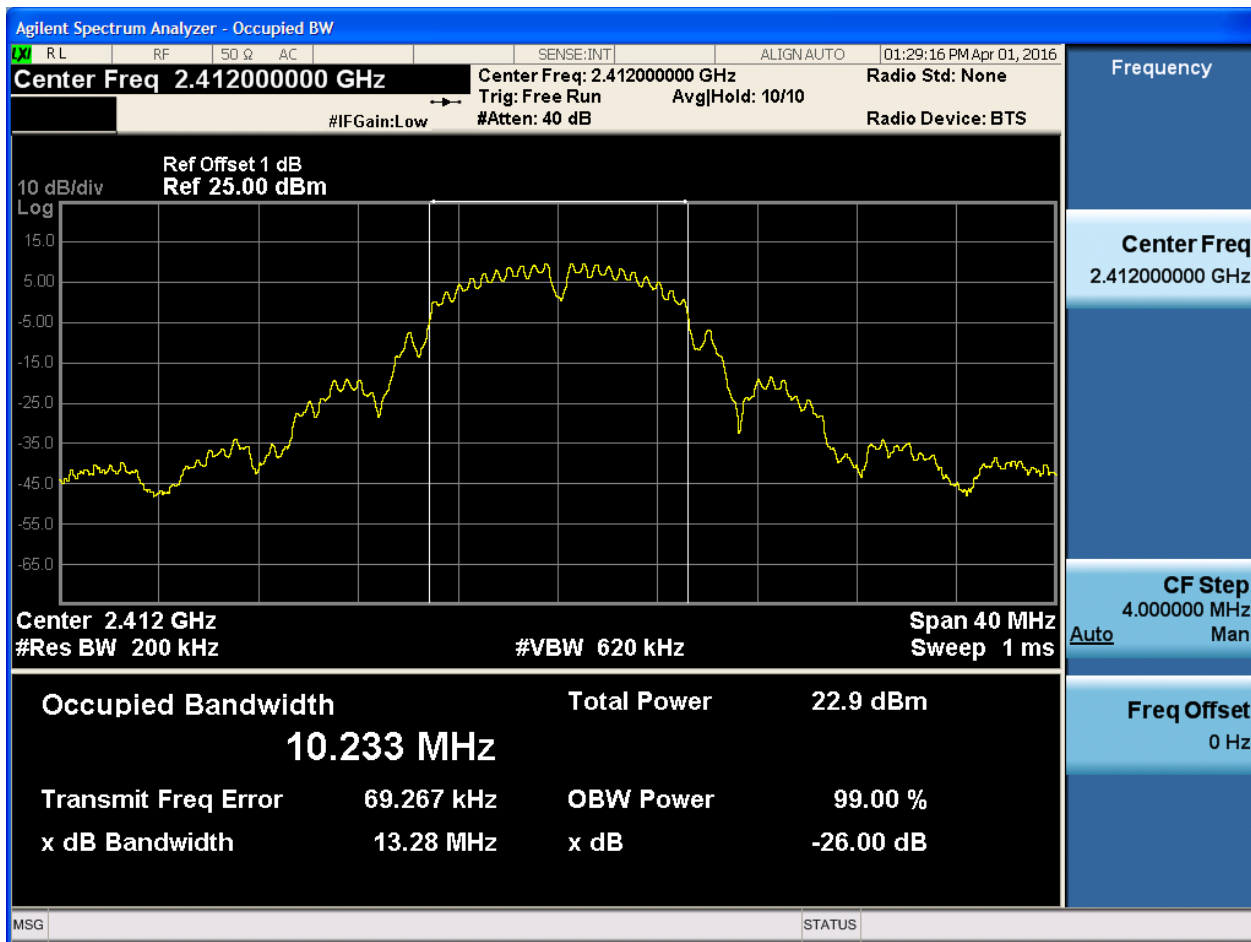
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	10.23	pass
11B	M	2437	Ant 1	10.23	pass
11B	H	2462	Ant 1	10.21	pass
11G	L	2412	Ant 1	16.53	pass
11G	M	2437	Ant 1	16.56	pass
11G	H	2462	Ant 1	16.39	pass
11N20	L	2412	Ant 1	17.63	pass
11N20	M	2437	Ant 1	17.63	pass
11N20	H	2462	Ant 1	17.49	pass
11N40	L	2422	Ant 1	35.86	pass
11N40	M	2437	Ant 1	36.06	pass
11N40	H	2452	Ant 1	35.71	pass



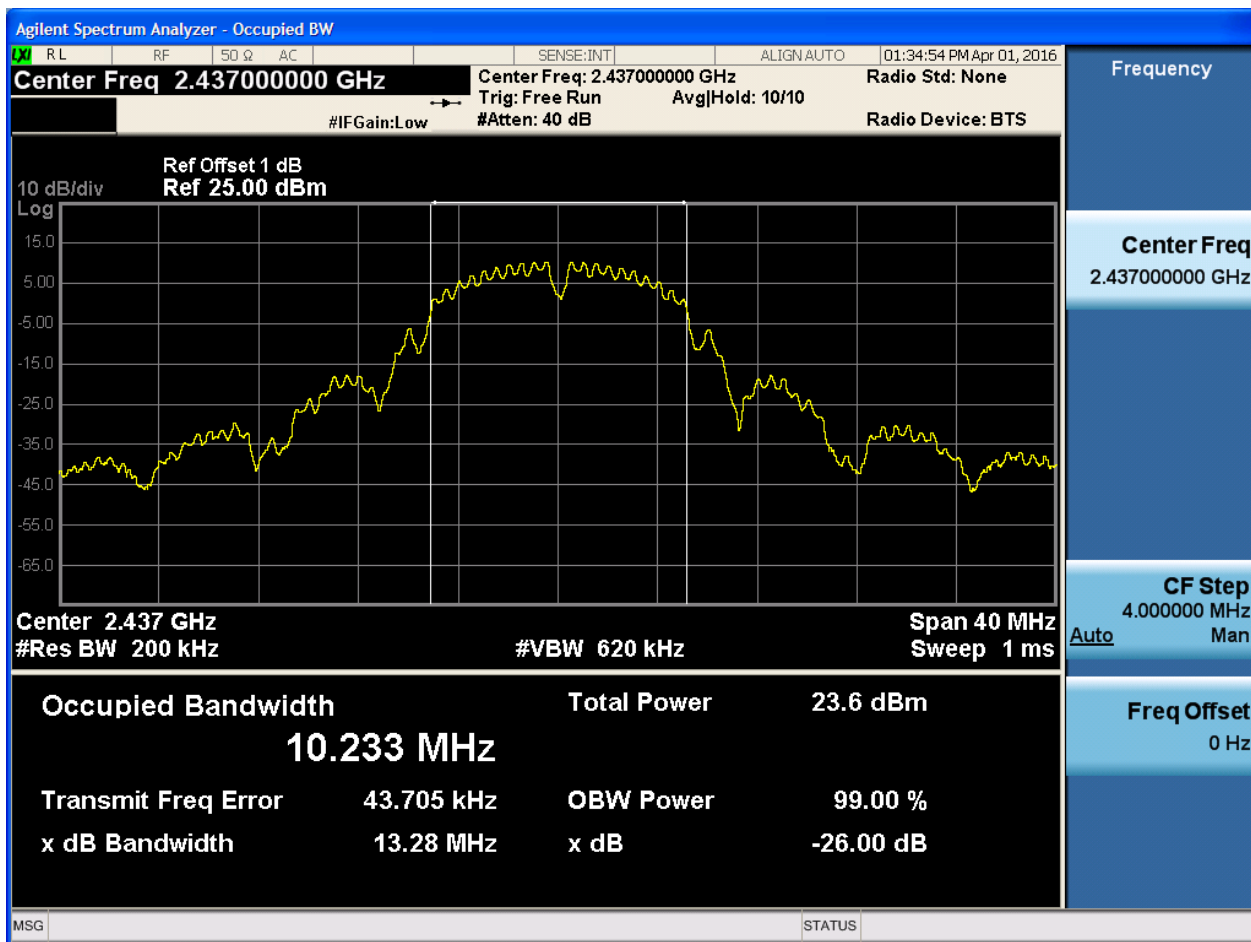
Part II - Test Plots

2.1 11B_L@Ant 1



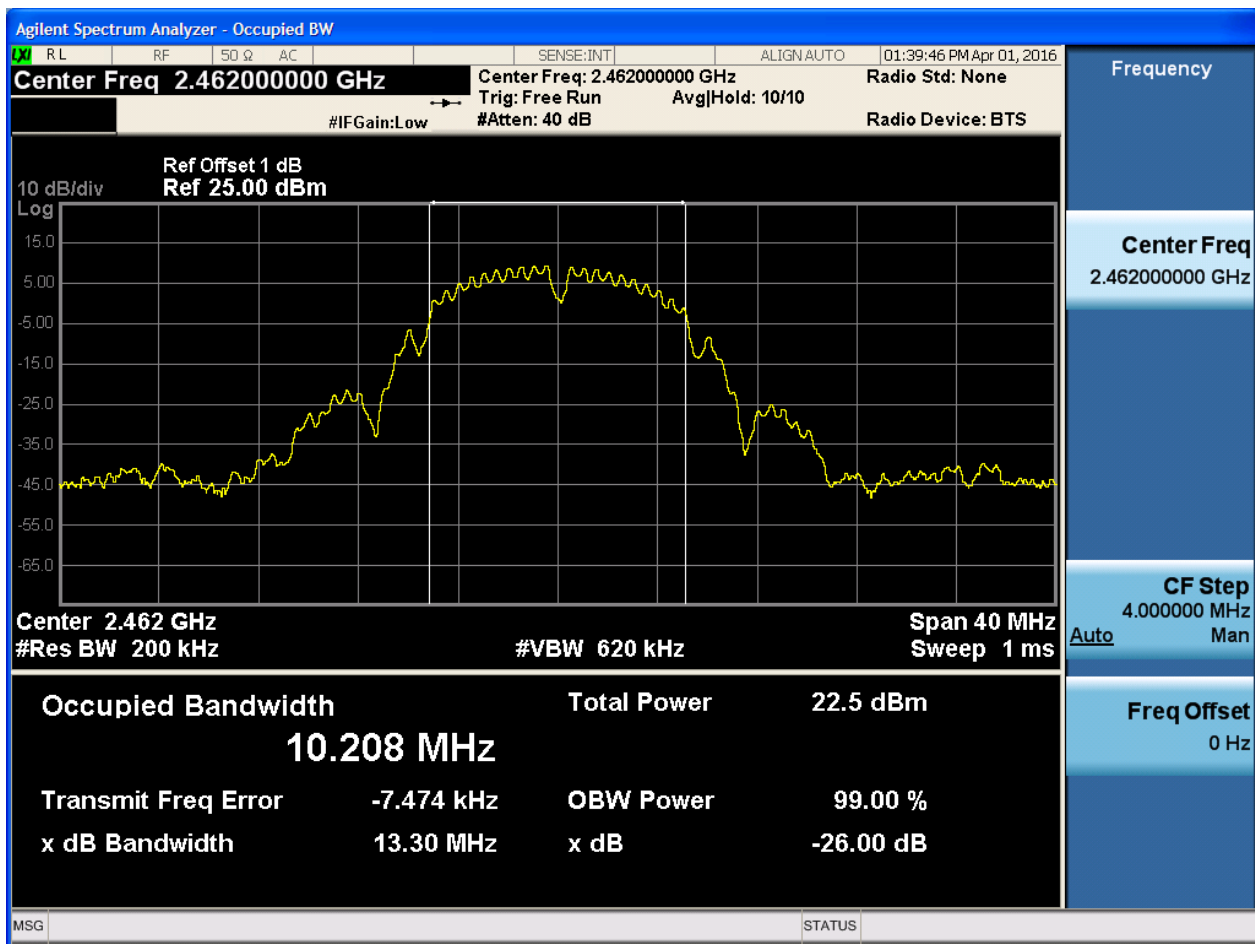


2.2 11B_M@Ant 1



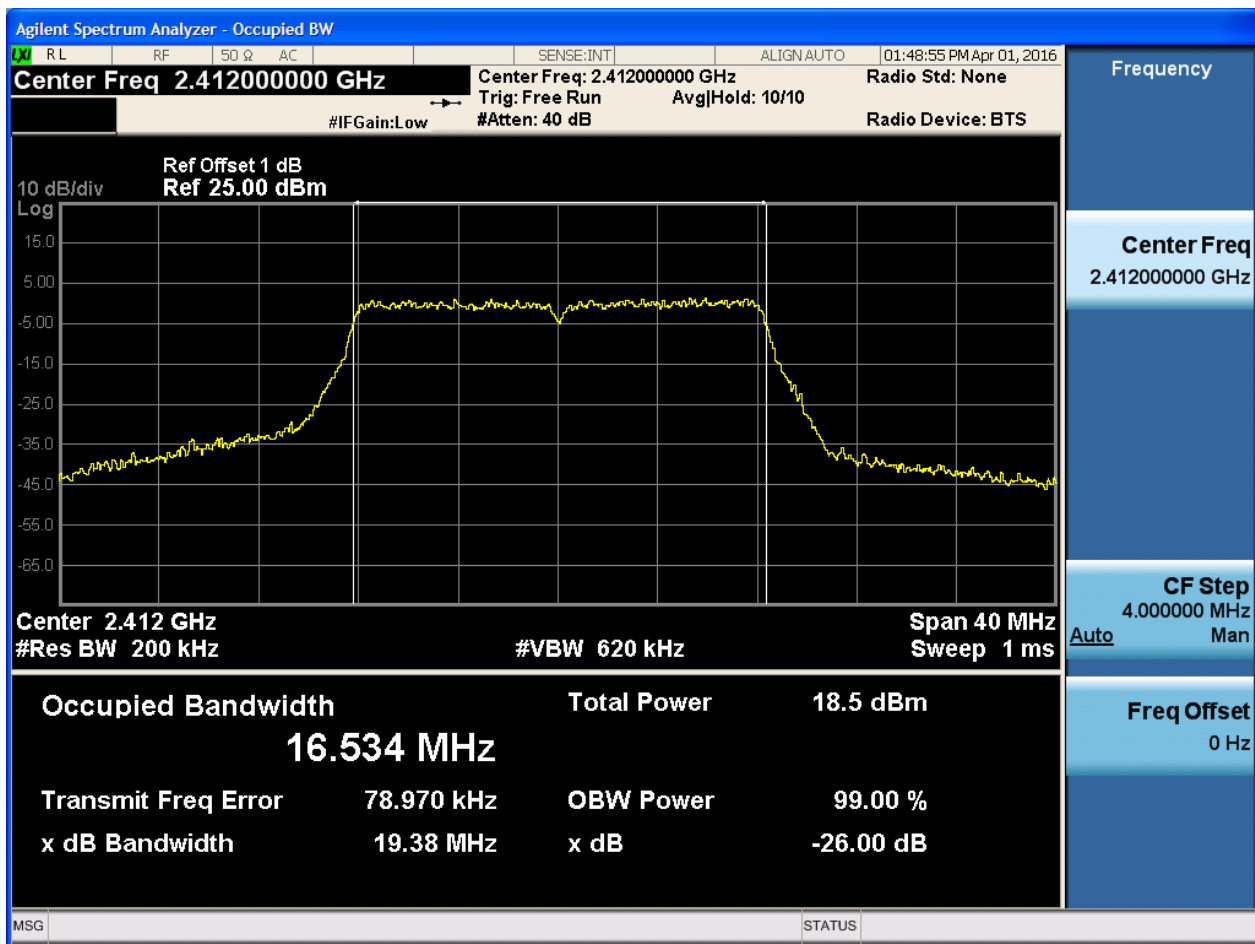


2.3 11B_H@Ant 1



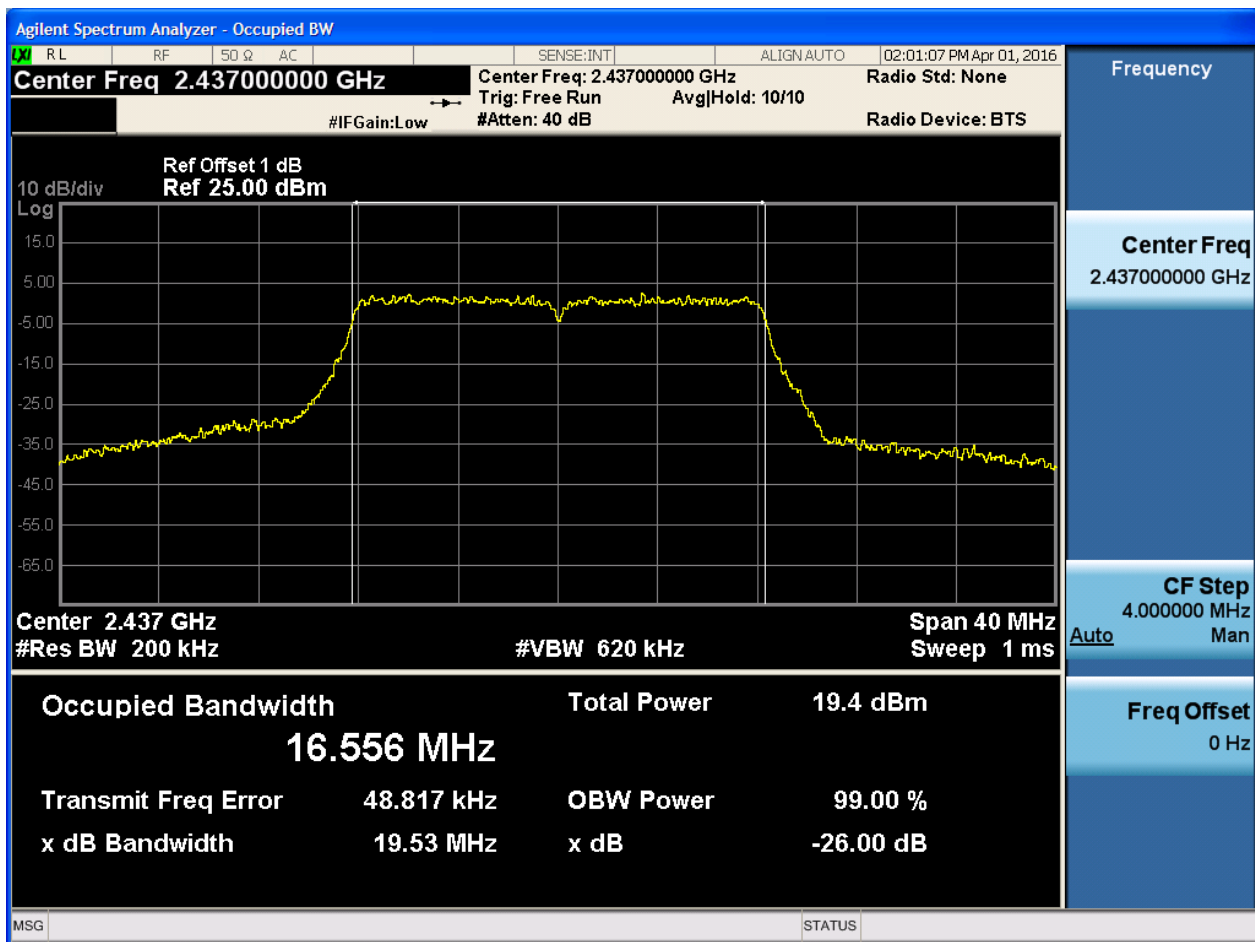


2.4 11G_L@Ant 1



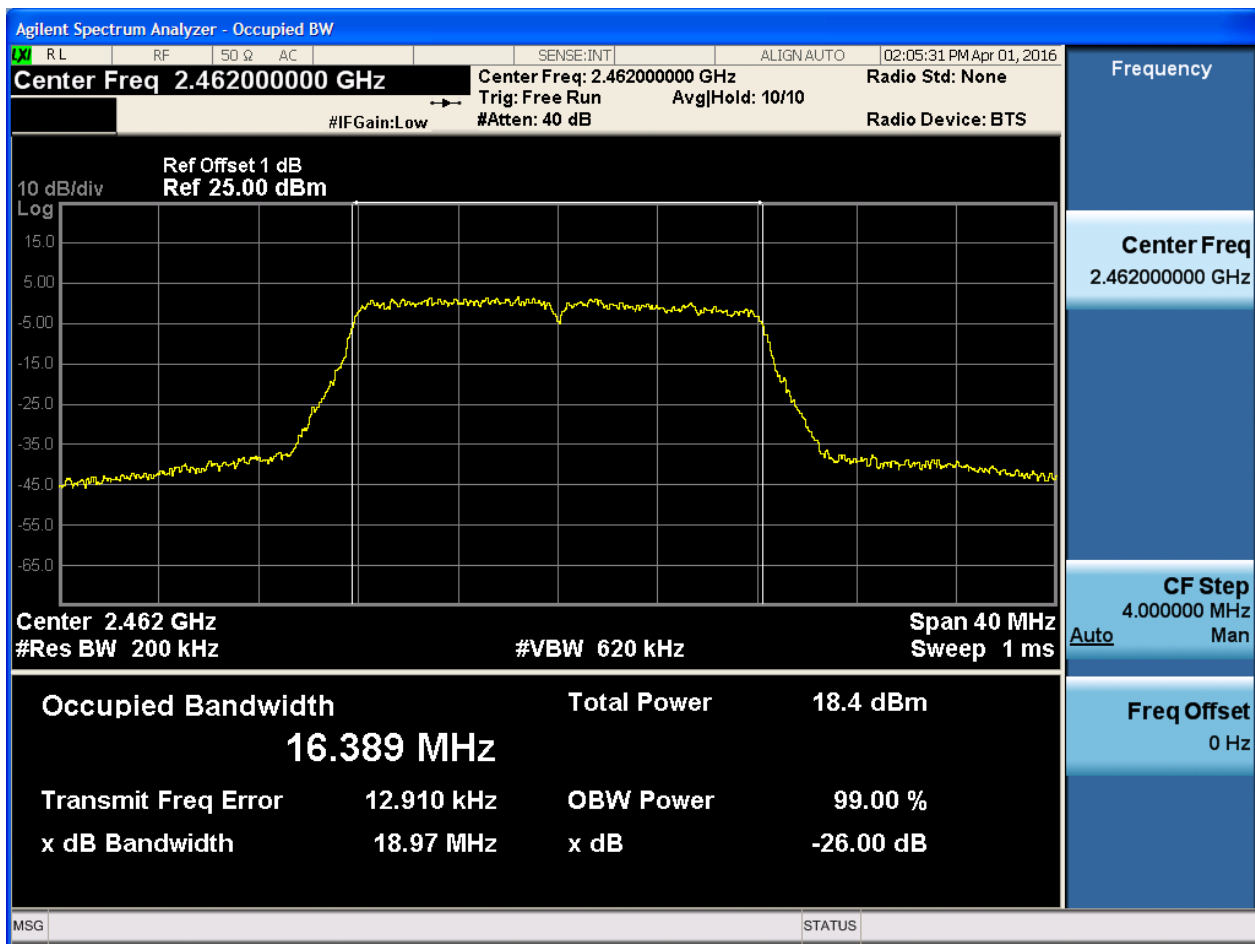


2.5 11G_M@Ant 1



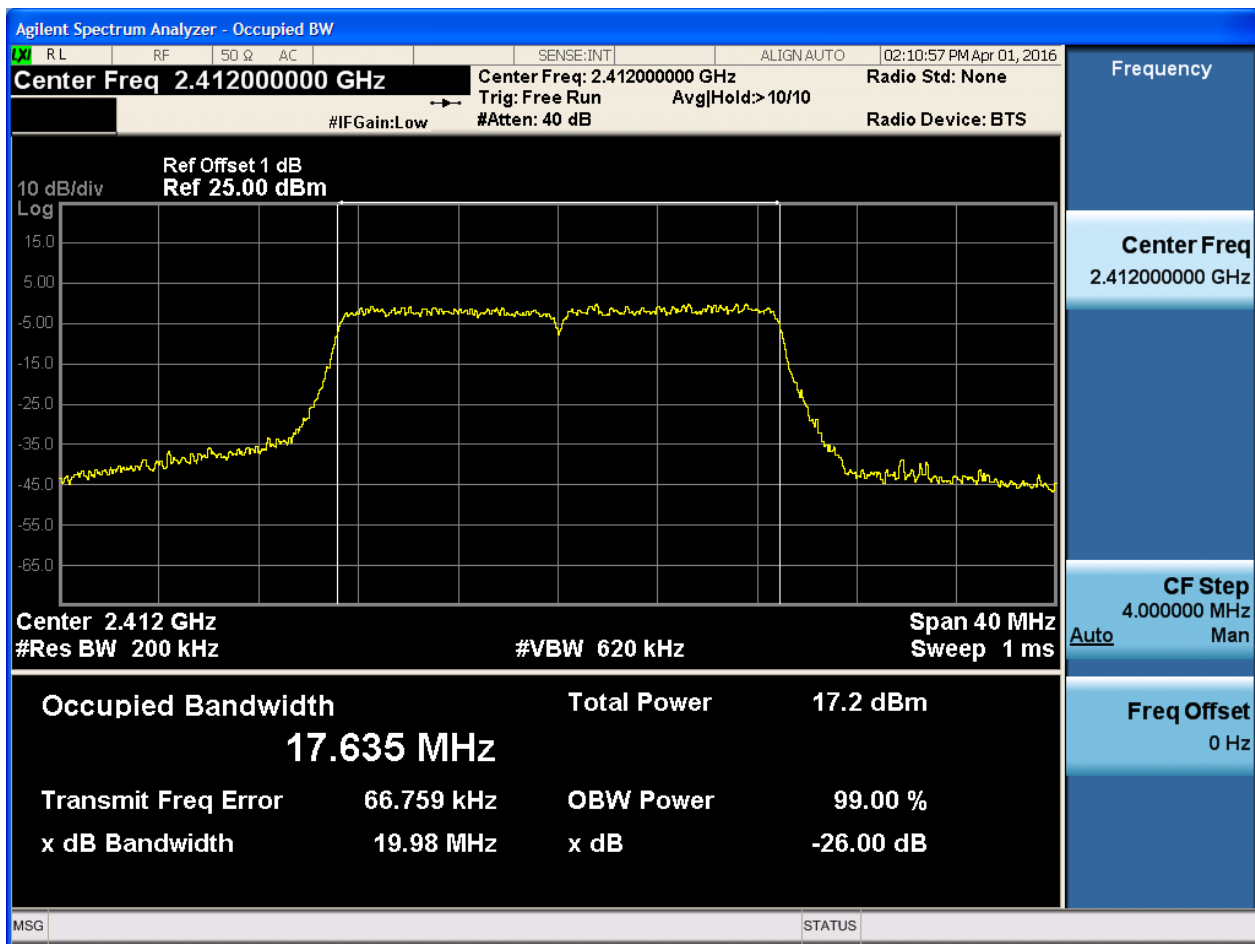


2.6 11G_H@Ant 1



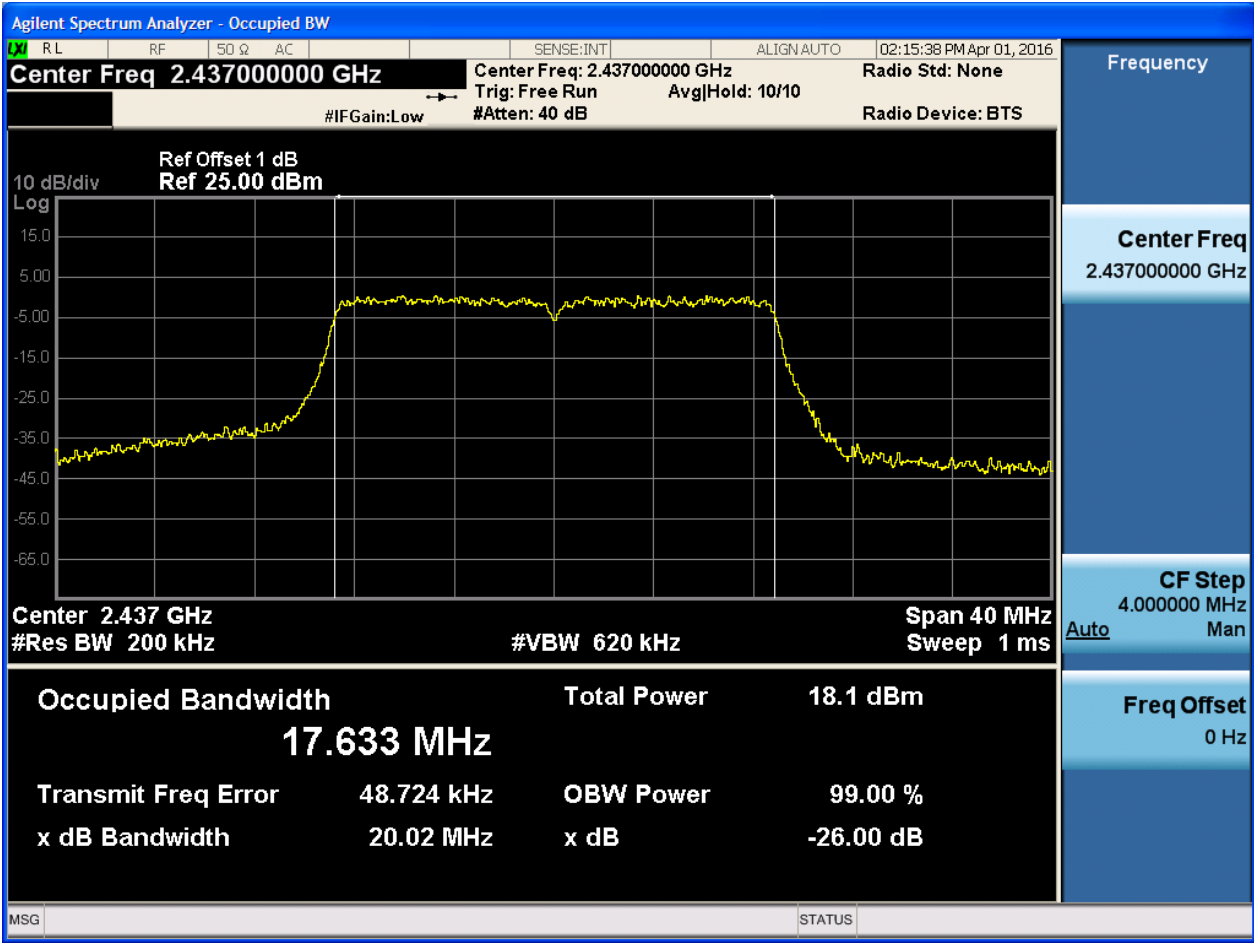


2.7 11N20_L@Ant 1



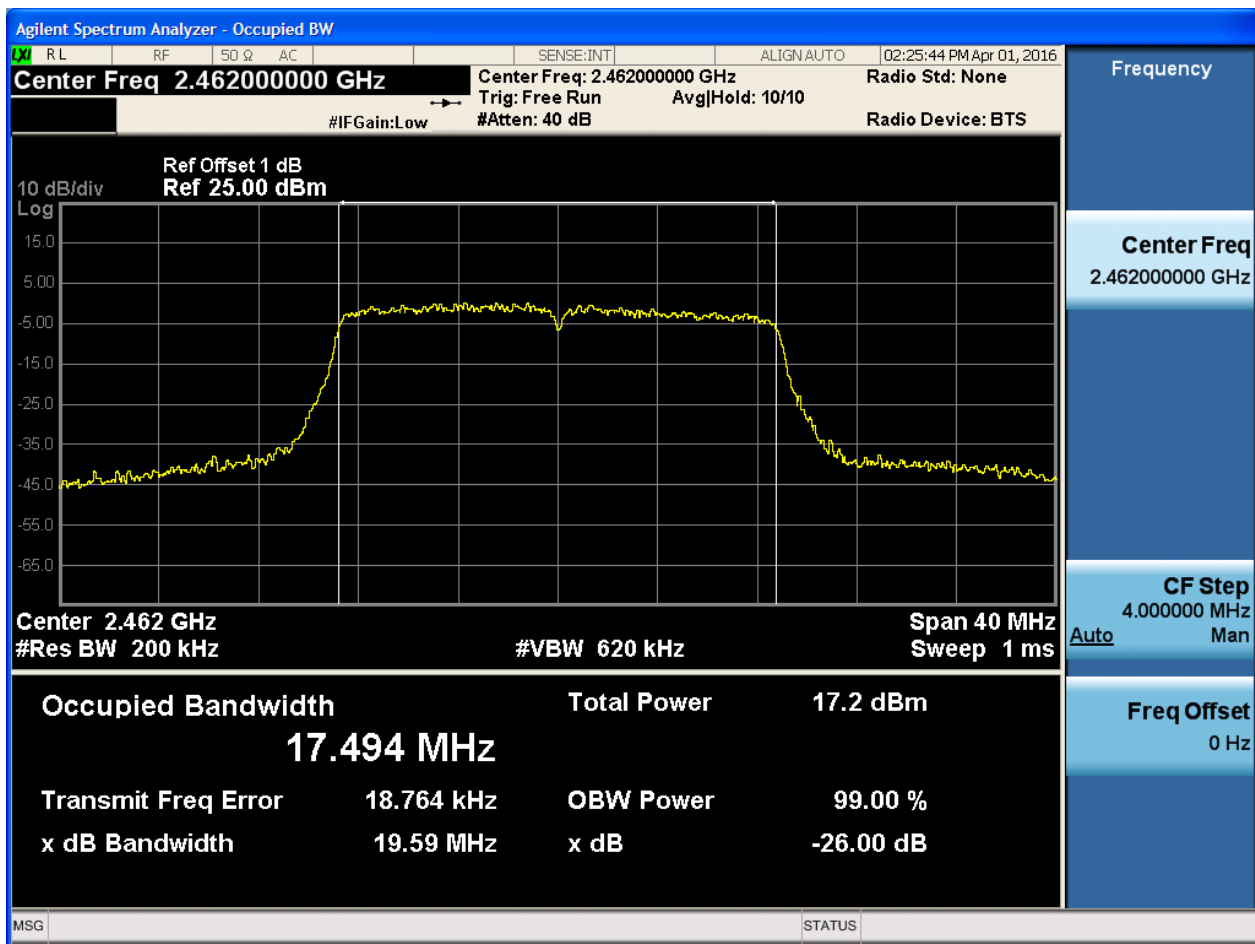


2.8 11N20_M@Ant 1



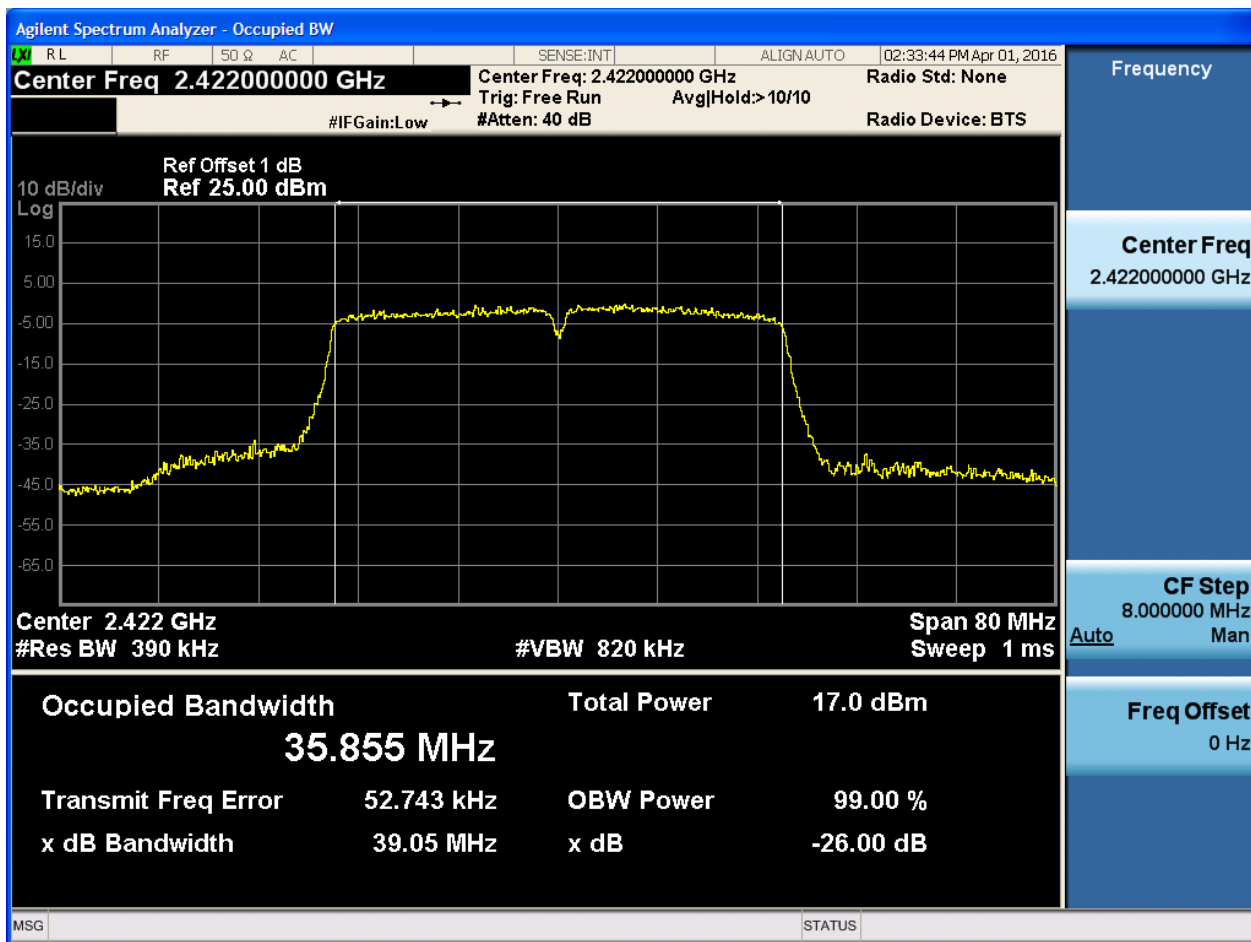


2.9 11N20_H@Ant 1



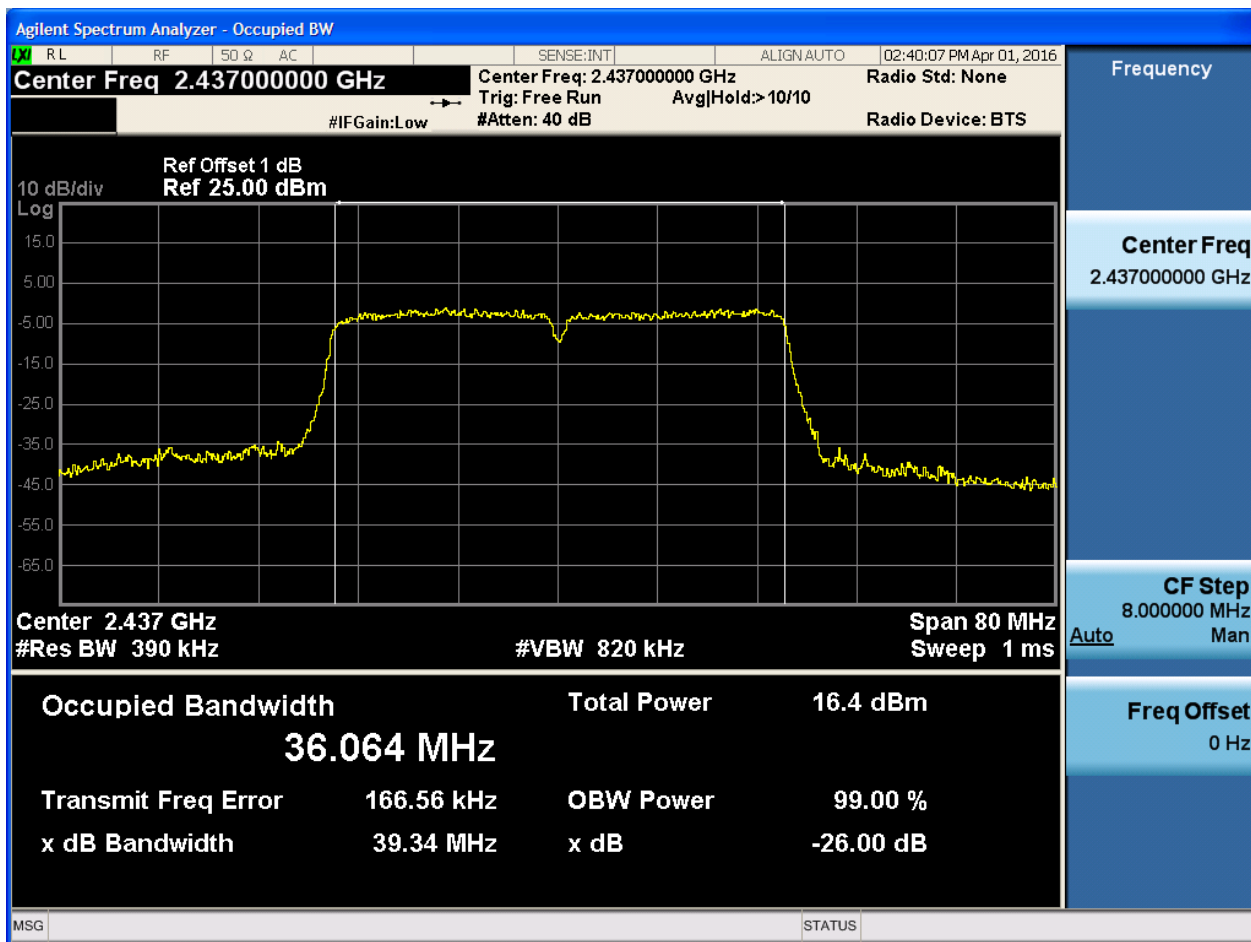


2.10 11N40_L@Ant 1



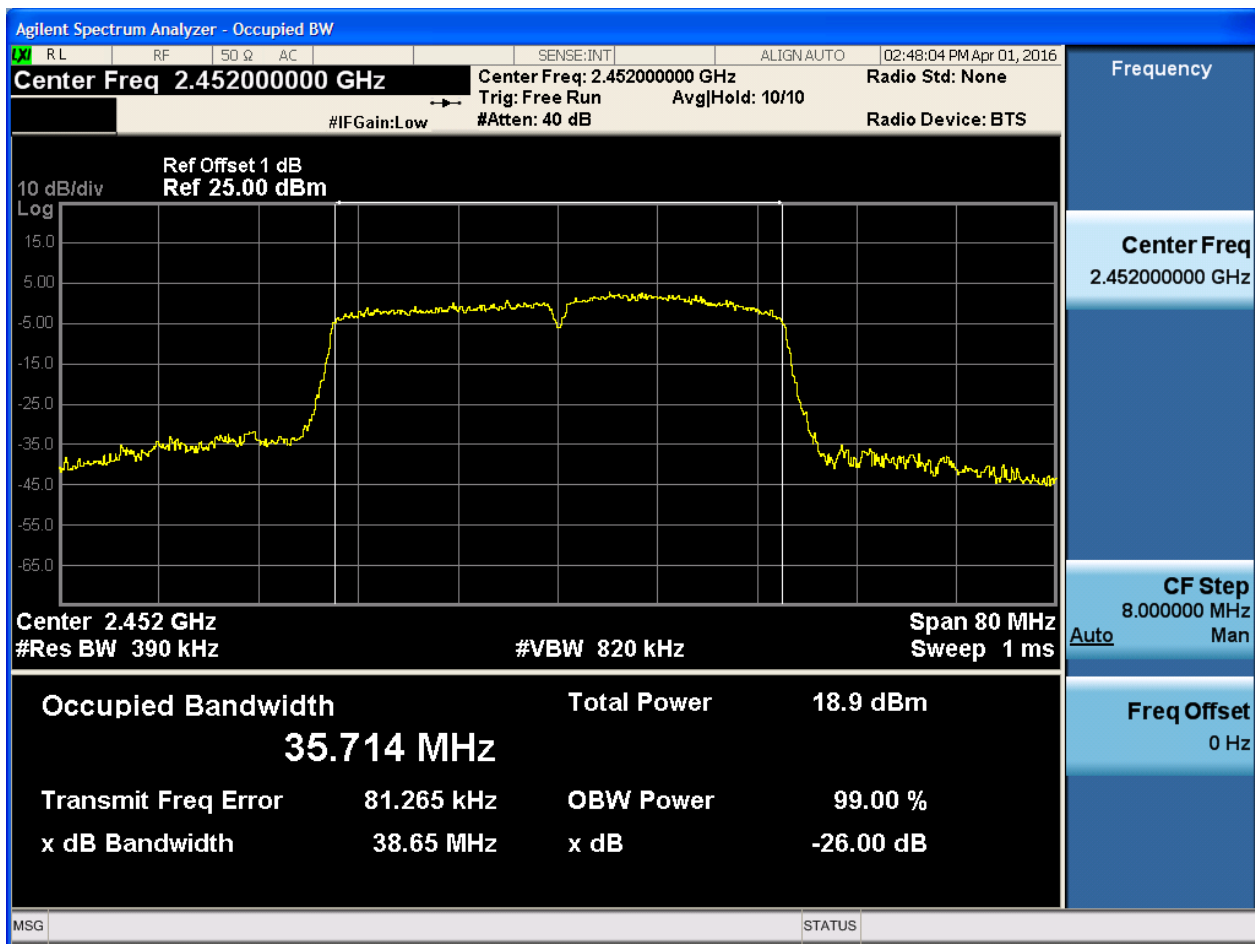


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



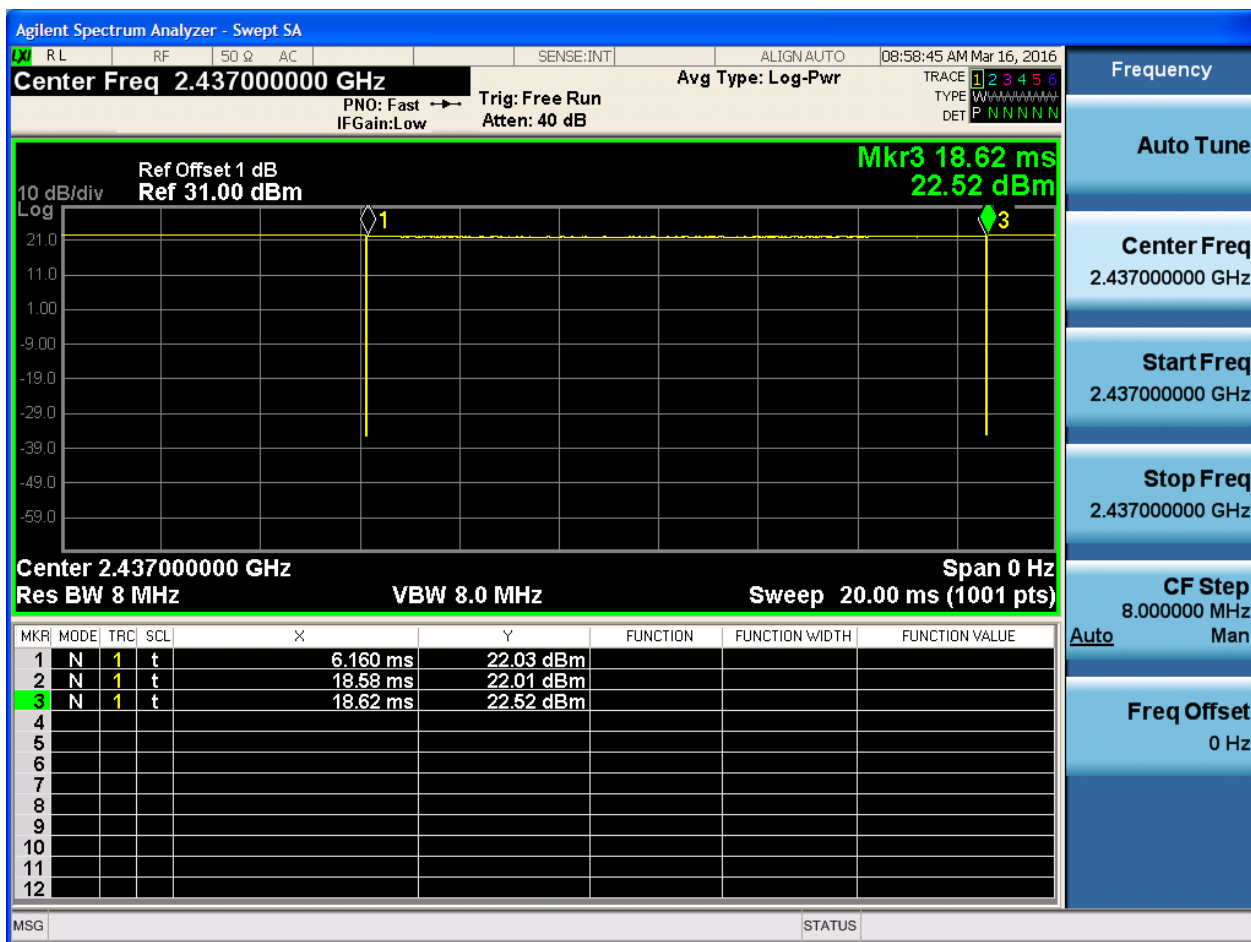
Appendix C: Duty cycle

Part I - Test Results

Test Mode	TX Freq. [MHz]	Ant	Duty cycle [%]
11B	CH1,CH6,CH11	Ant 1	99.7
11G	CH1,CH6,CH11	Ant 1	97.9
11N20SISO	CH1,CH6,CH11	Ant 1	97.5
11N40SISO	CH3,CH6,CH9	Ant 1	95.5

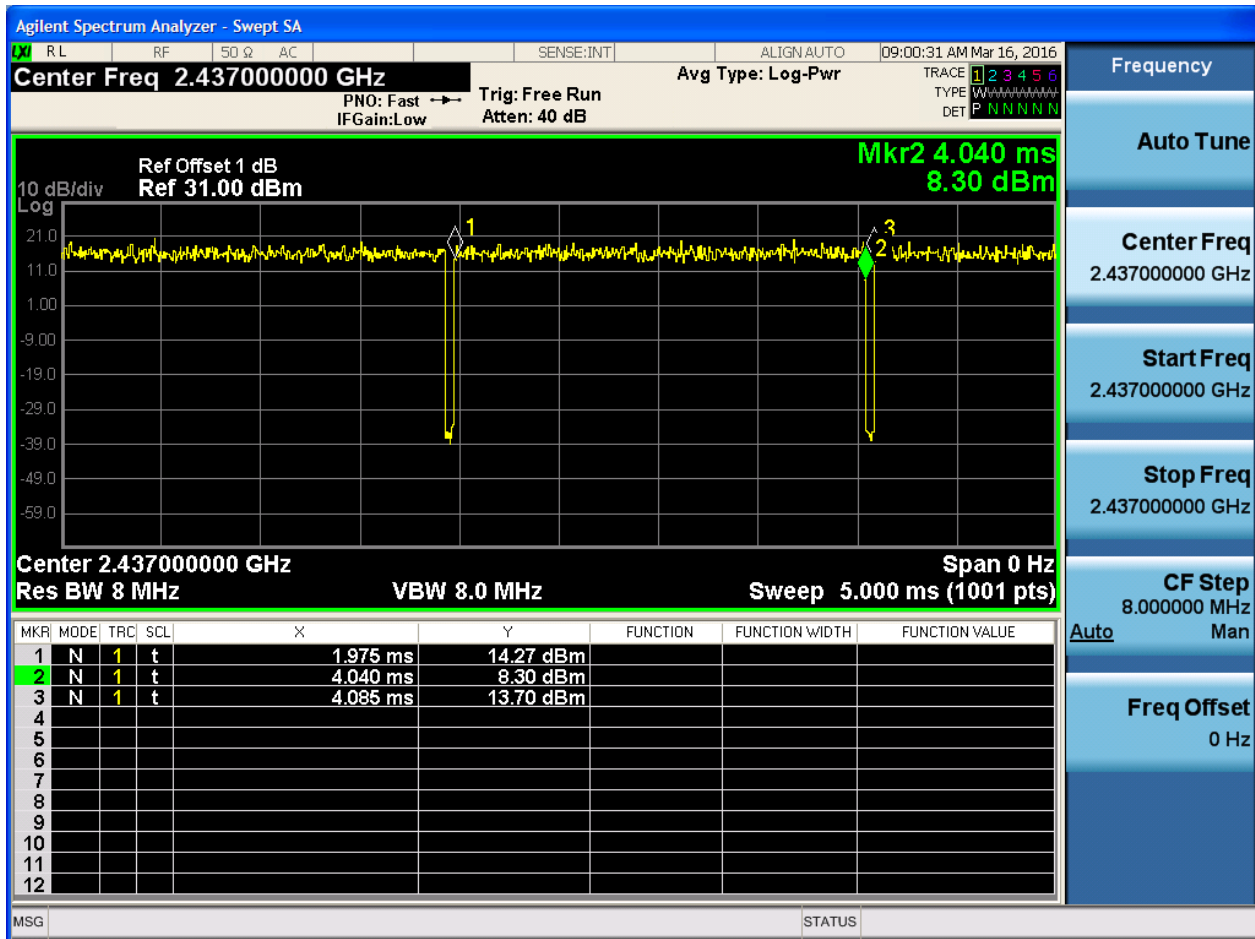


2.1 11B_M@Ant 1



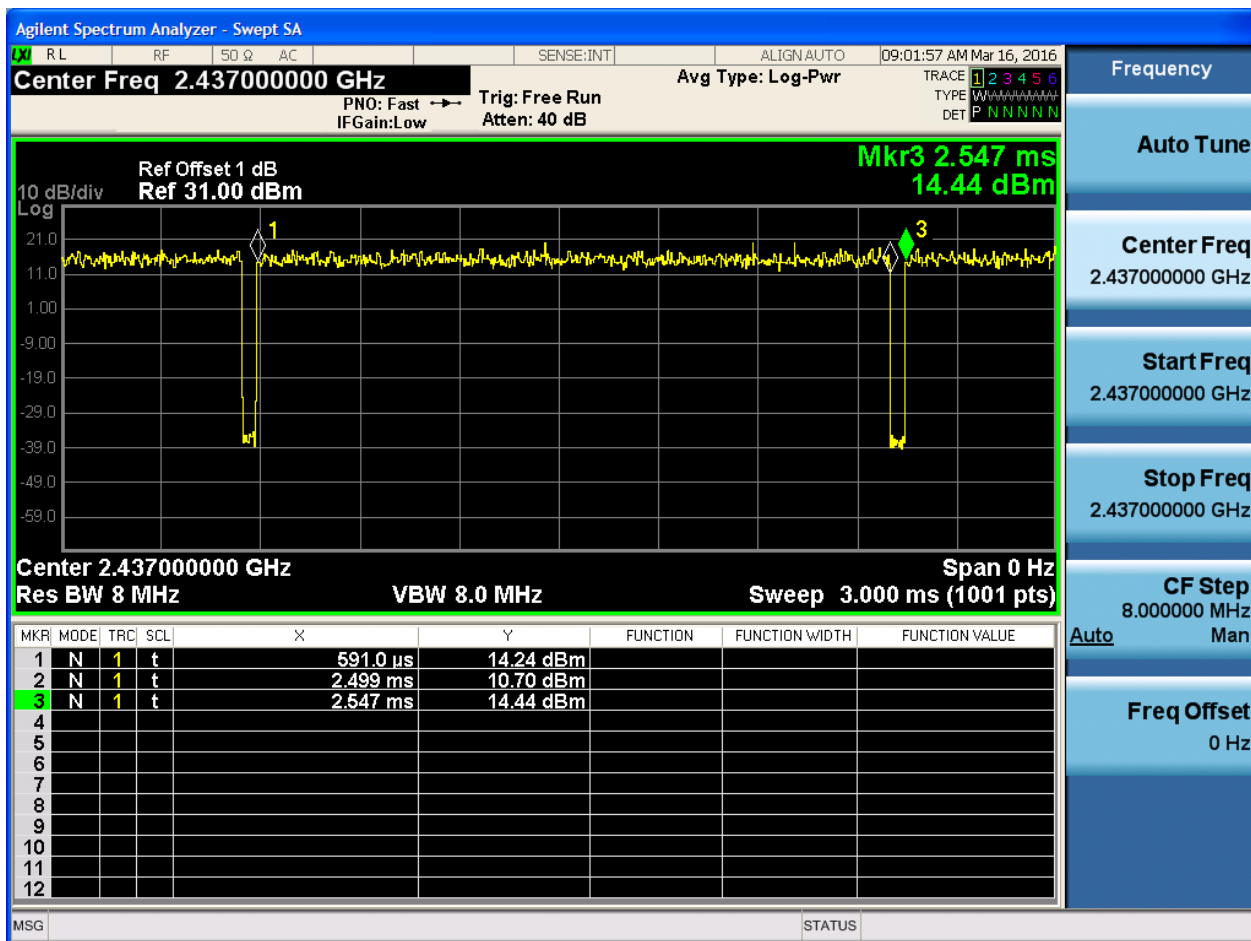


2.2 11G_M@Ant 1



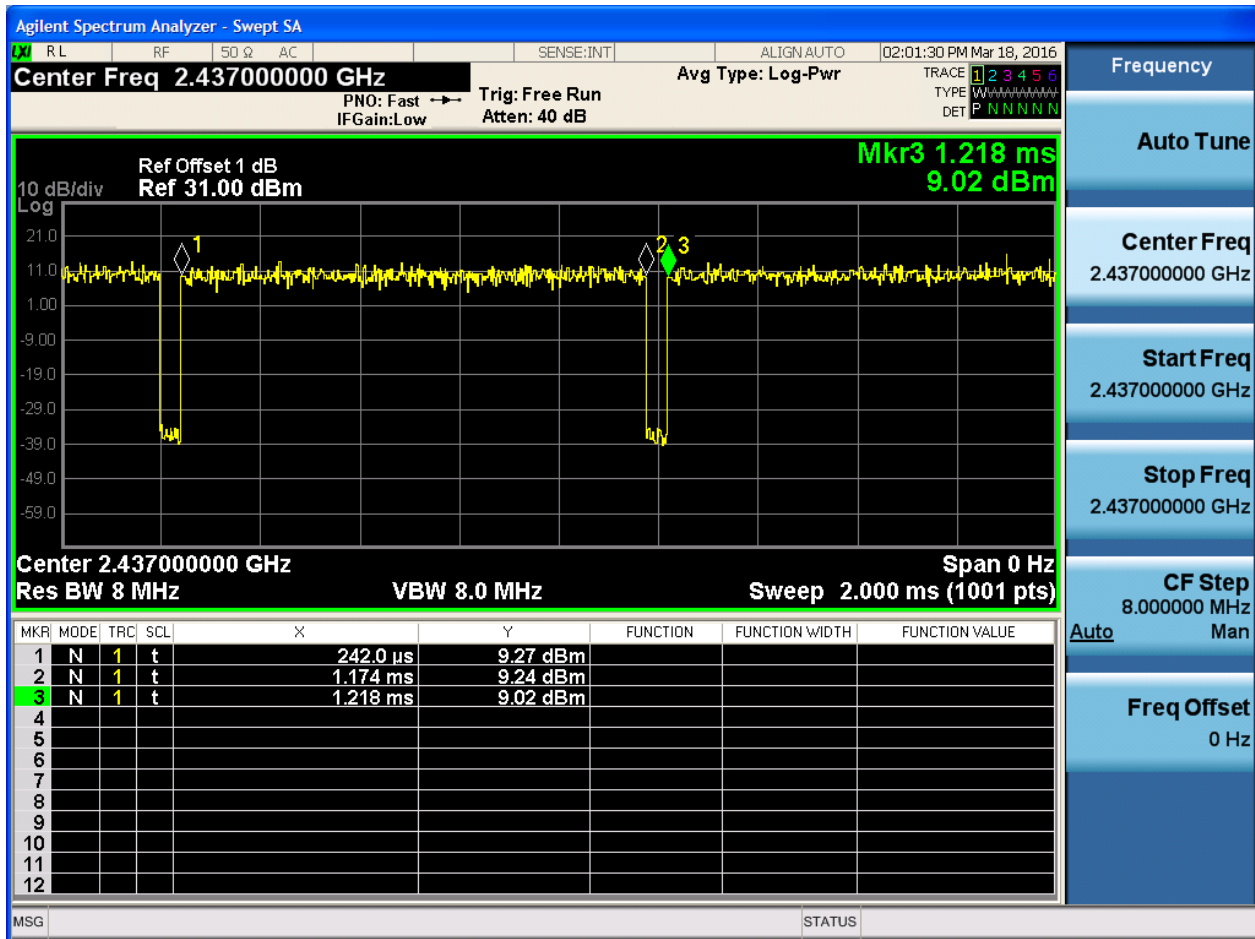


2.3 11N20SISO_M@Ant 1





2.4 11N40SISO_M@Ant 1



Appendix D: Maximum Conducted Average Output Power

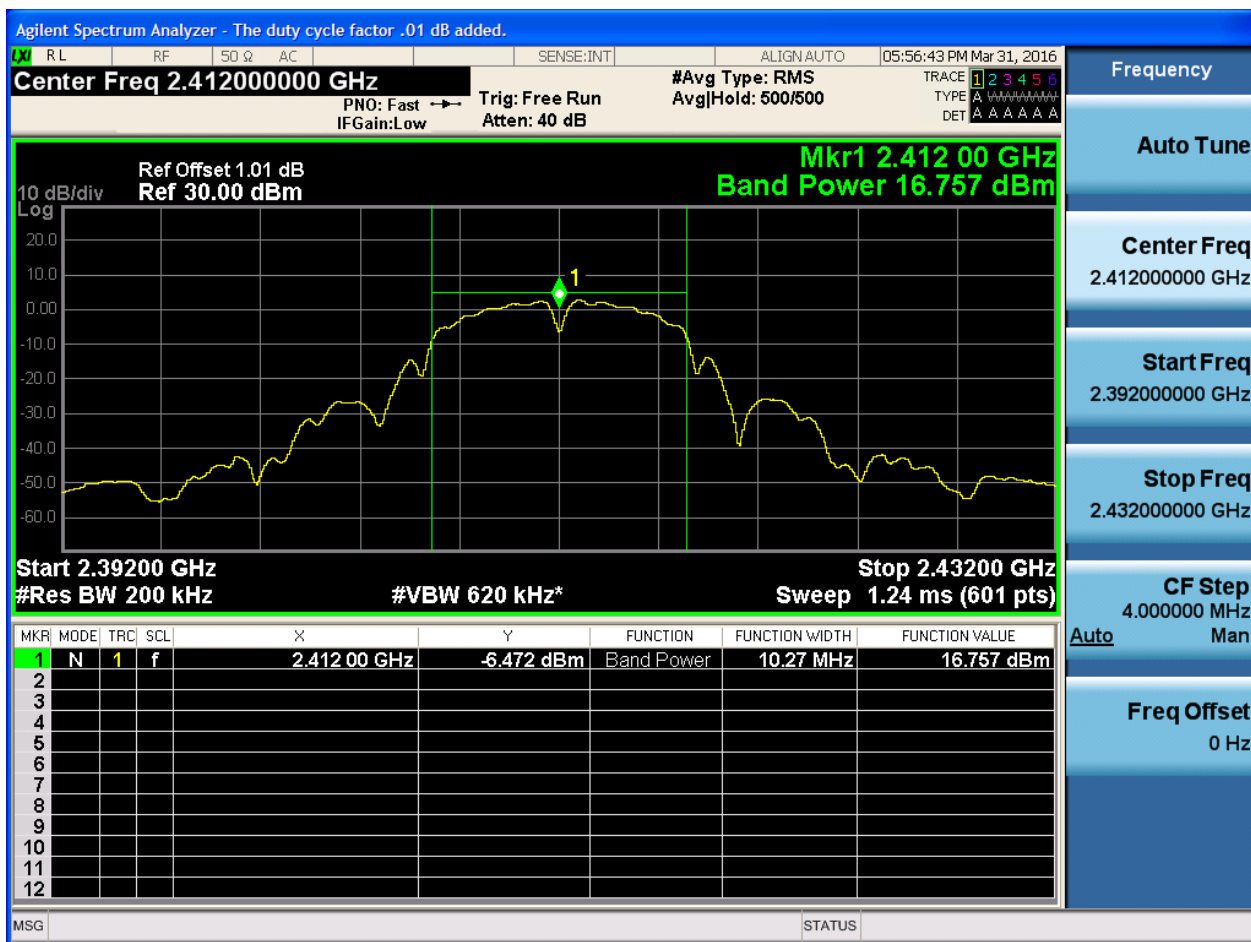
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11B	L	2412	Ant 1	16.76	pass
11B	M	2437	Ant 1	17.55	pass
11B	H	2462	Ant 1	17.33	pass
11G	L	2412	Ant 1	11.45	pass
11G	M	2437	Ant 1	12.31	pass
11G	H	2462	Ant 1	11.26	pass
11N20	L	2412	Ant 1	10.04	pass
11N20	M	2437	Ant 1	10.88	pass
11N20	H	2462	Ant 1	9.94	pass
11N40	L	2422	Ant 1	9.69	pass
11N40	M	2437	Ant 1	9.17	pass
11N40	H	2452	Ant 1	11.65	pass



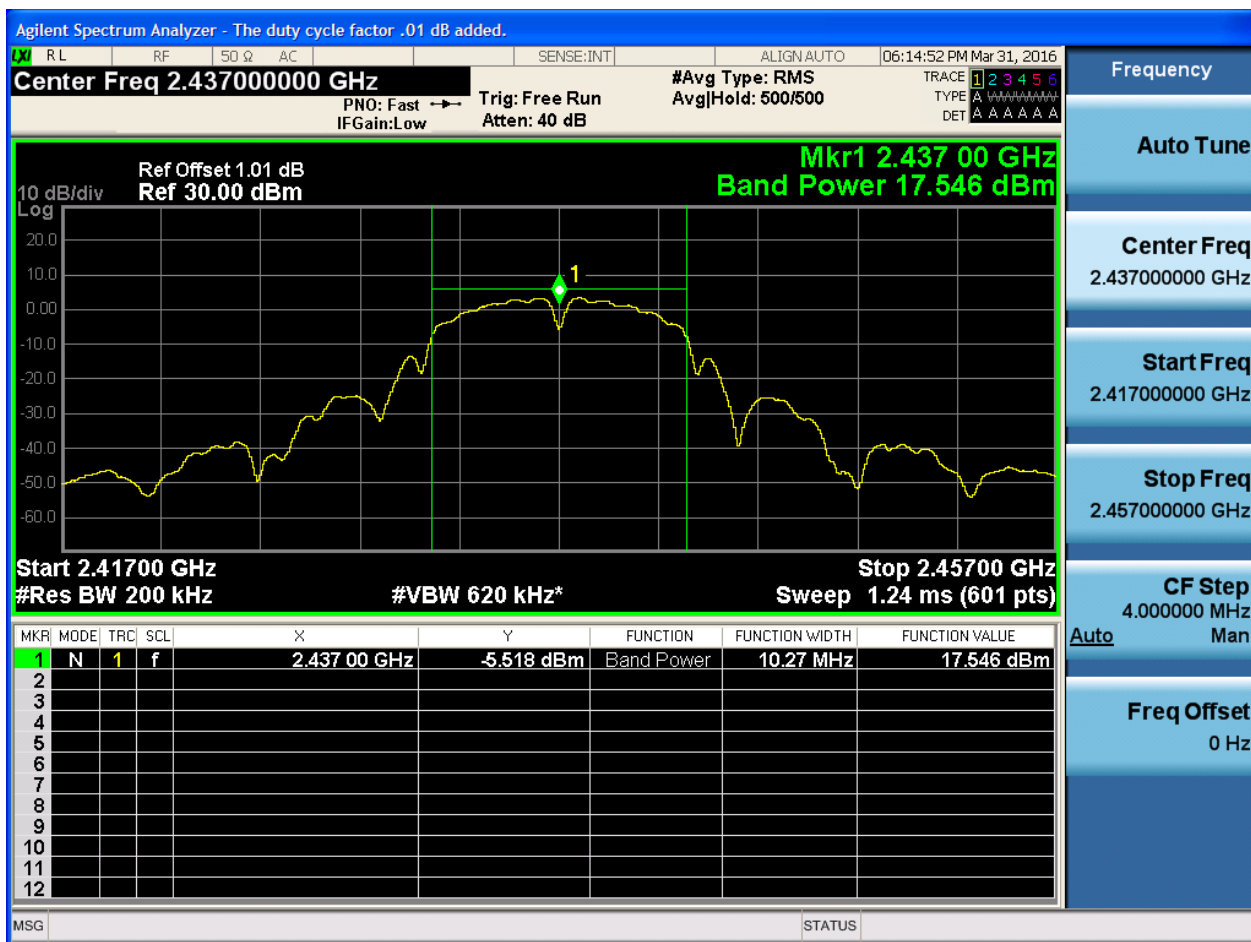
Part II - Test Plots

2.1 11B_L@Ant 1



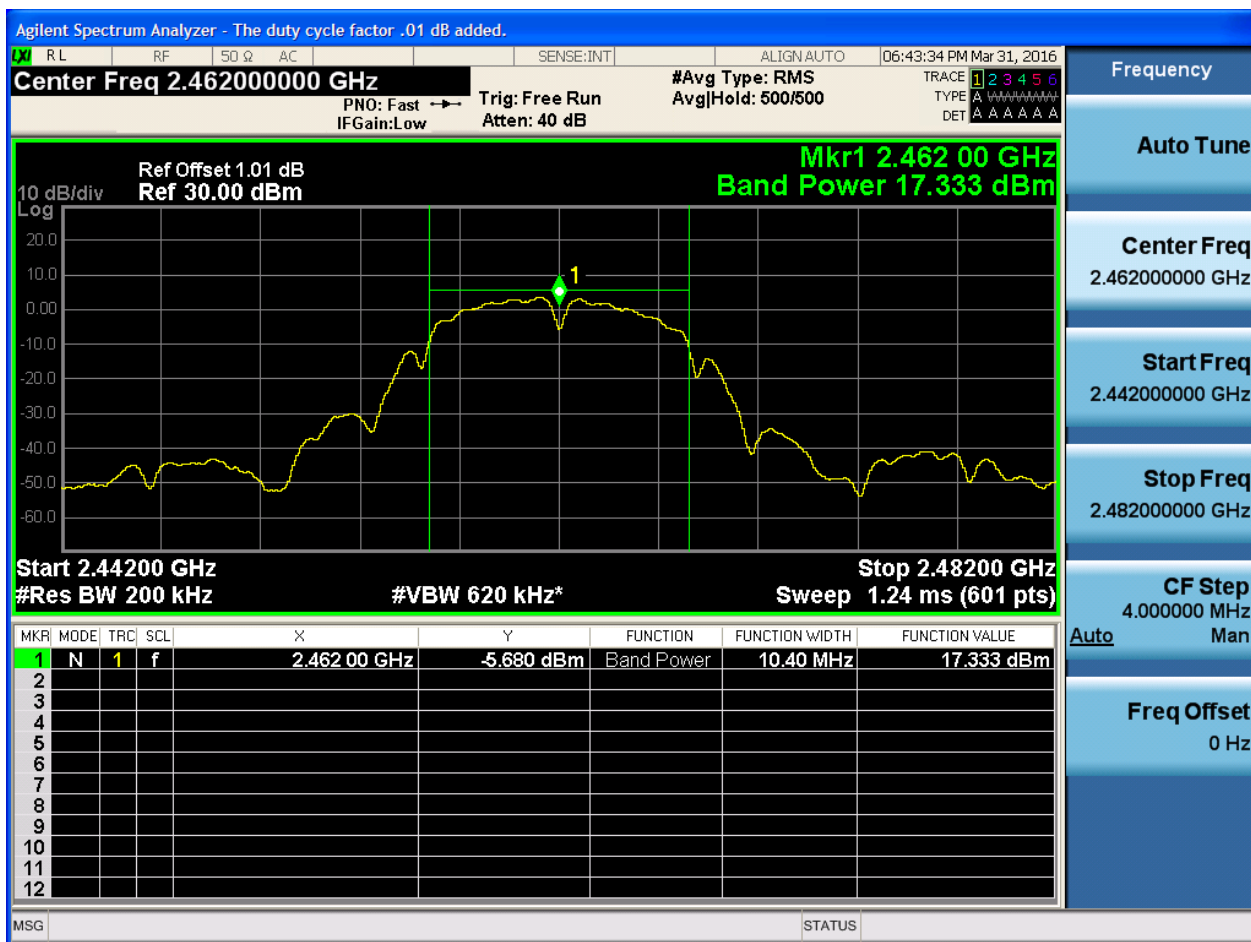


2.2 11B_M@Ant 1



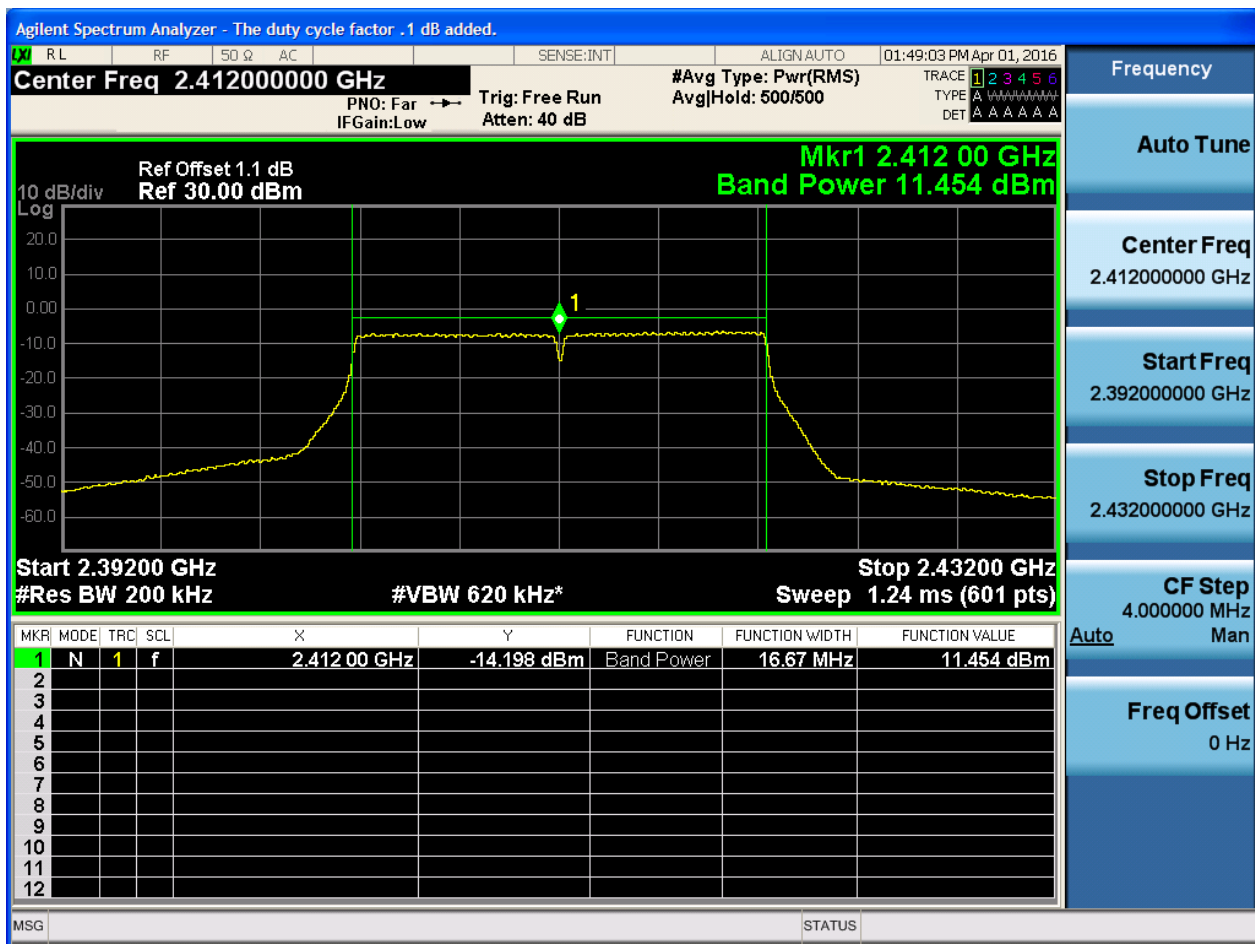


2.3 11B_H@Ant 1



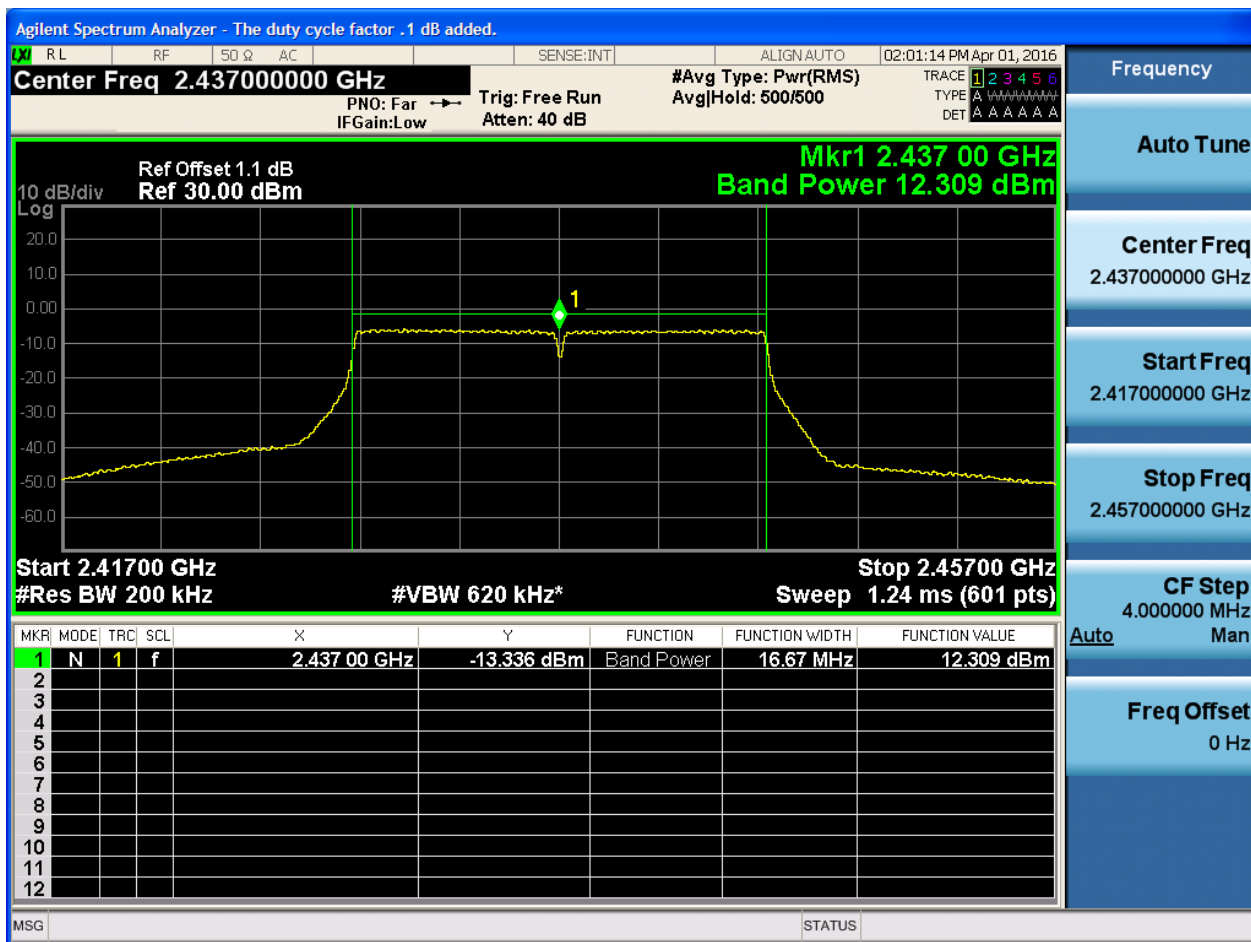


2.4 11G_L@Ant 1





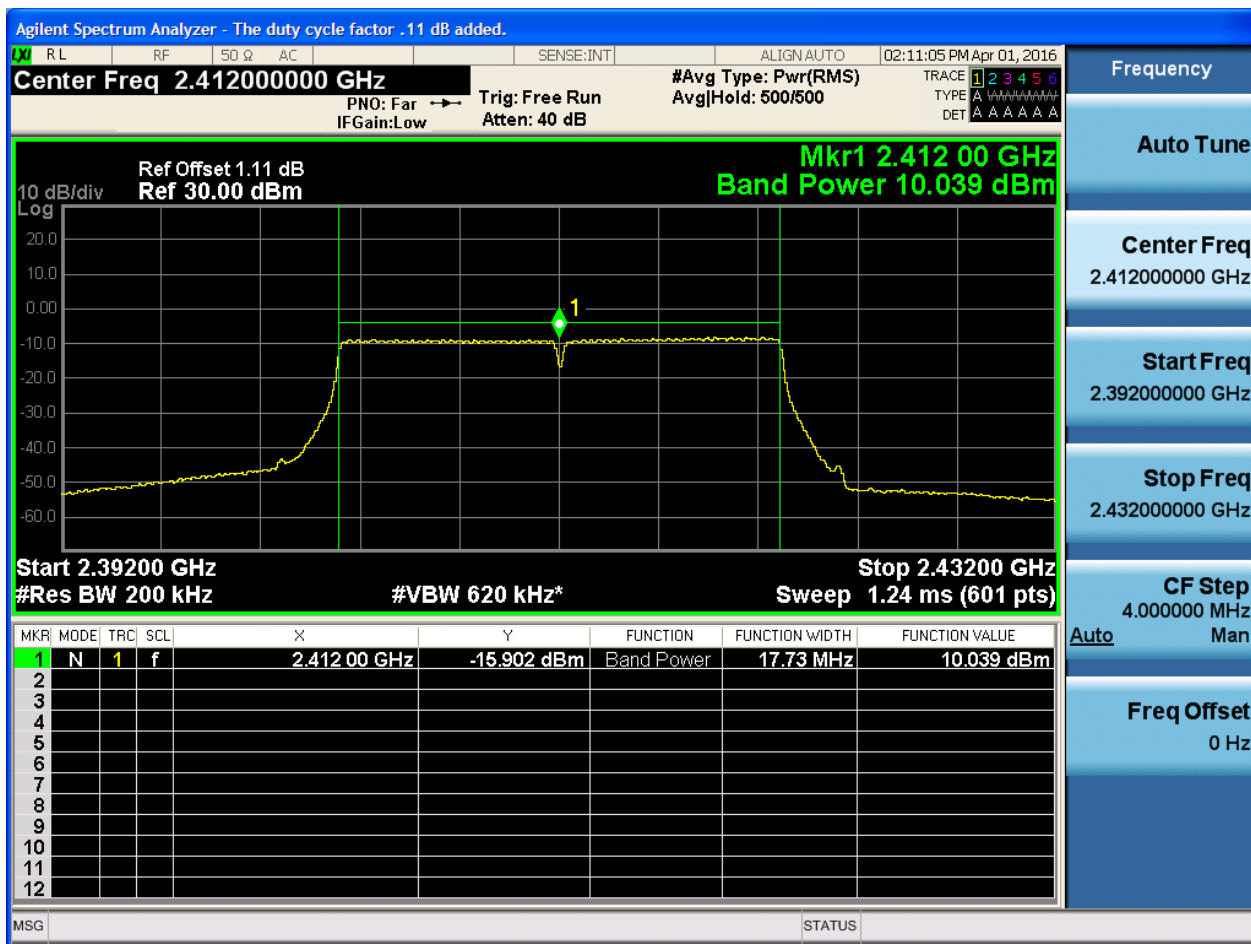
2.5 11G_M@Ant 1



[illegible]

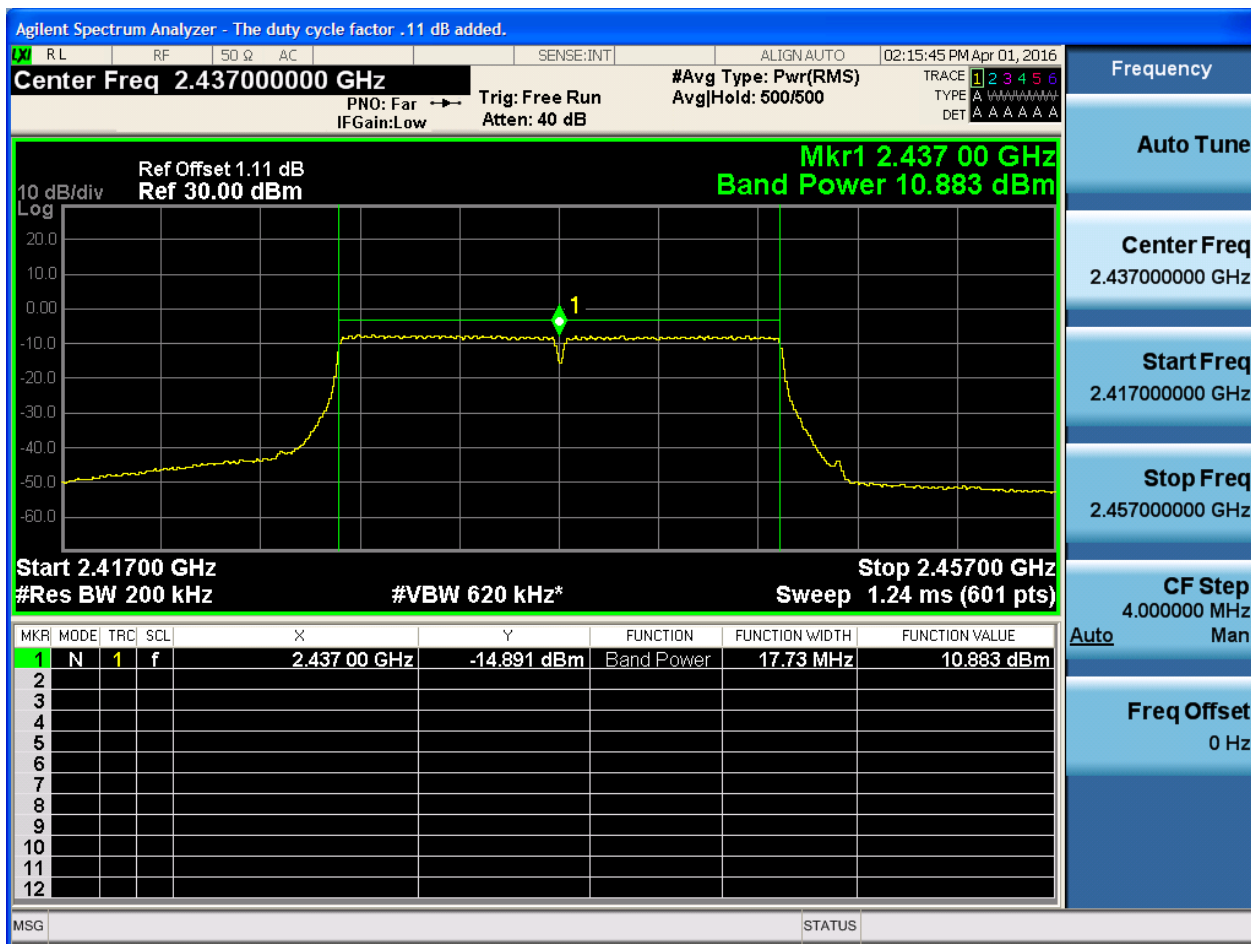


2.7 11N20_L@Ant 1



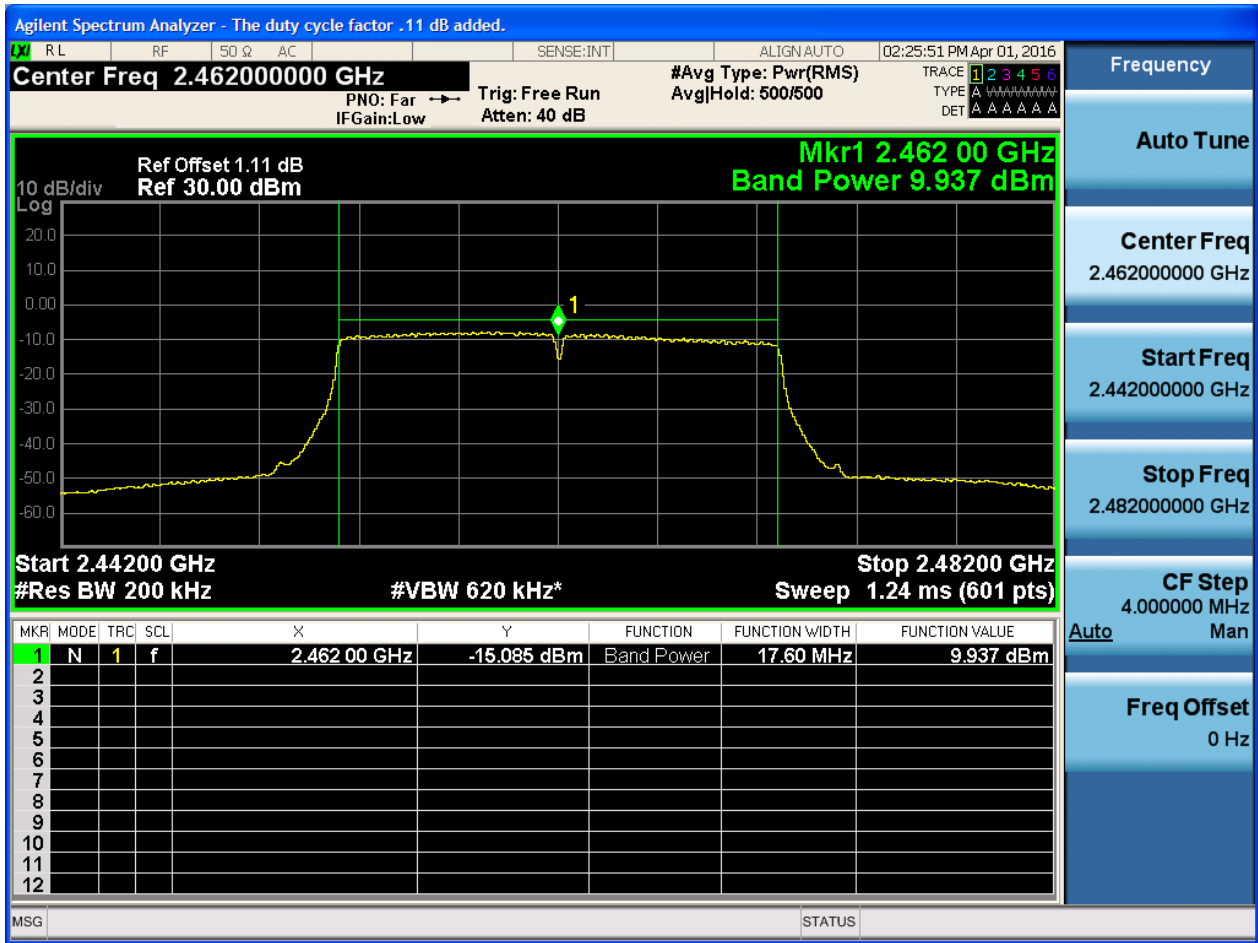


2.8 11N20_M@Ant 1





2.9 11N20_H@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .2 dB added.

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 02:33:52 PM Apr 01, 2016

Center Freq 2.42200000 GHz #Avg Type: Pwr(RMS) AvgHold: 500/500

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

TRACE 1 2 3 4 5 6
TYPE A W W W W W W W W
DET A A A A A A

Ref Offset 1.2 dB
Ref 30.00 dBm

**Mkr1 2.422 00 GHz
Band Power 9.690 dBm**

10 dB/div
Log

Start 2.38200 GHz
#Res BW 390 kHz

Stop 2.46200 GHz
Sweep 1.00 ms (601 pts)

#VBW 1.2 MHz*

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.422 00 GHz	-19.096 dBm	Band Power	36.00 MHz	9.690 dBm
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.422000000 GHz

Start Freq
2.382000000 GHz

Stop Freq
2.462000000 GHz

CF Step
8.000000 MHz
Man

Freq Offset
0 Hz



Agilent Spectrum Analyzer - The duty cycle factor .2 dB added.

RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 02:40:15 PM Apr 01, 2016

Center Freq 2.43700000 GHz #Avg Type: Pwr(RMS) AvgHold: 500/500
 PNO: Fast Trg: Free Run
 IFGain:Low Atten: 40 dB

TRACE 1 2 3 4 5 6
 TYPE A W W W W W W W W
 DET A A A A A A

Ref Offset 1.2 dB
 Ref 30.00 dBm

Mkr1 2.437 00 GHz
Band Power 9.174 dBm

10 dB/div
 Log

Start 2.39700 GHz
 #Res BW 390 kHz

Stop 2.47700 GHz
 Sweep 1.00 ms (601 pts)

#VBW 1.2 MHz*

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.437 00 GHz	-20.740 dBm	Band Power	36.27 MHz	9.174 dBm
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency
Auto Tune
Center Freq
 2.43700000 GHz
Start Freq
 2.39700000 GHz
Stop Freq
 2.47700000 GHz
CF Step
 8.000000 MHz
 Man
Auto
Freq Offset
 0 Hz



Agilent Spectrum Analyzer - The duty cycle factor .2 dB added.

Center Freq 2.45200000 GHz #Avg Type: Pwr(RMS) Avg|Hold: 500/500

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

Ref Offset 1.2 dB Ref 30.00 dBm

Mkr1 2.452 00 GHz Band Power 11.654 dBm

Start 2.41200 GHz Stop 2.49200 GHz

#Res BW 390 kHz #VBW 1.2 MHz* Sweep 1.00 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.452 00 GHz	-17.473 dBm	Band Power	35.73 MHz	11.654 dBm
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Frequency

Auto Tune

Center Freq 2.45200000 GHz

Start Freq 2.41200000 GHz

Stop Freq 2.49200000 GHz

CF Step 8.000000 MHz Man

Freq Offset 0 Hz

Auto

STATUS

Appendix E: Maximum Power Spectral Density Level

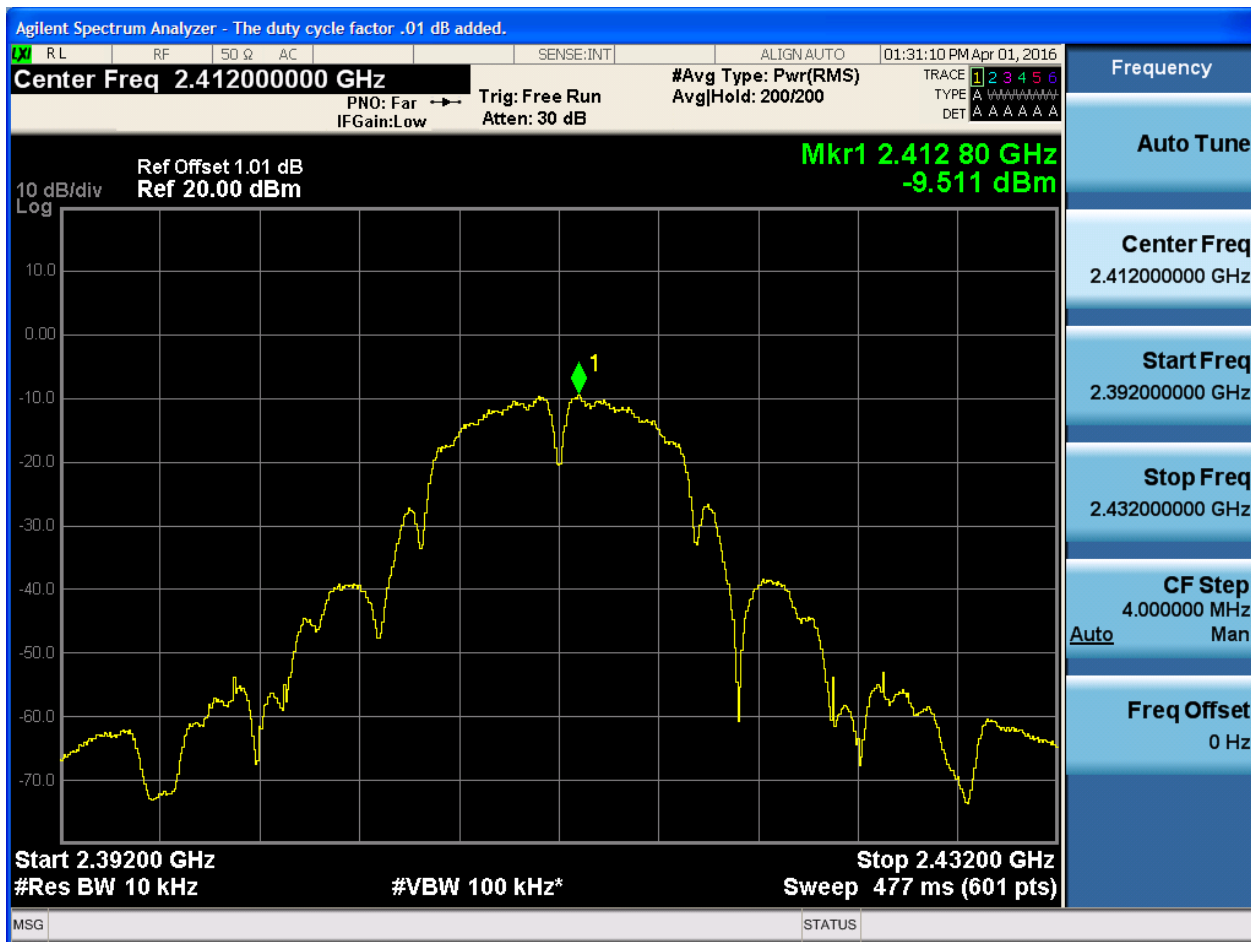
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	PD[MHz]	Verdict
11B	L	2412	Ant 1	-9.51	pass
11B	M	2437	Ant 1	-8.56	pass
11B	H	2462	Ant 1	-9.34	pass
11G	L	2412	Ant 1	-18.39	pass
11G	M	2437	Ant 1	-17.84	pass
11G	H	2462	Ant 1	-18.07	pass
11N20	L	2412	Ant 1	-20.16	pass
11N20	M	2437	Ant 1	-19.31	pass
11N20	H	2462	Ant 1	-19.61	pass
11N40	L	2422	Ant 1	-23.13	pass
11N40	M	2437	Ant 1	-24.29	pass
11N40	H	2452	Ant 1	-20.42	pass



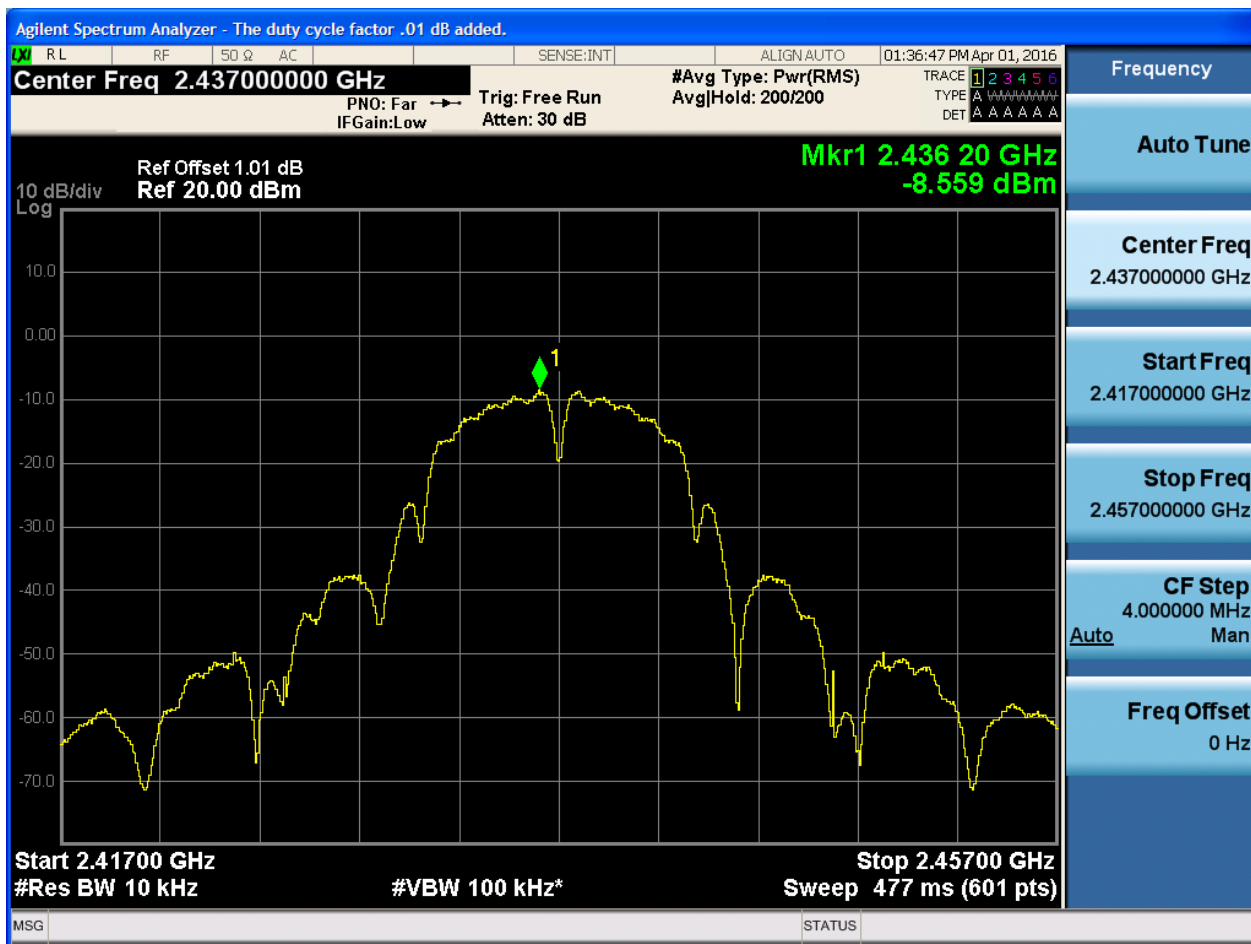
Part II - Test Plots

2.1 11B_L@Ant 1





2.2 11B_M@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .01 dB added.

Center Freq 2.46200000 GHz

Ref Offset 1.01 dB
Ref 20.00 dBm

10 dB/div
Log

Start 2.44200 GHz
#Res BW 10 kHz

Stop 2.48200 GHz
Sweep 477 ms (601 pts)

#VBW 100 kHz*

Mkr1 2.461 20 GHz
-9.337 dBm

Auto Tune

Center Freq
2.46200000 GHz

Start Freq
2.44200000 GHz

Stop Freq
2.48200000 GHz

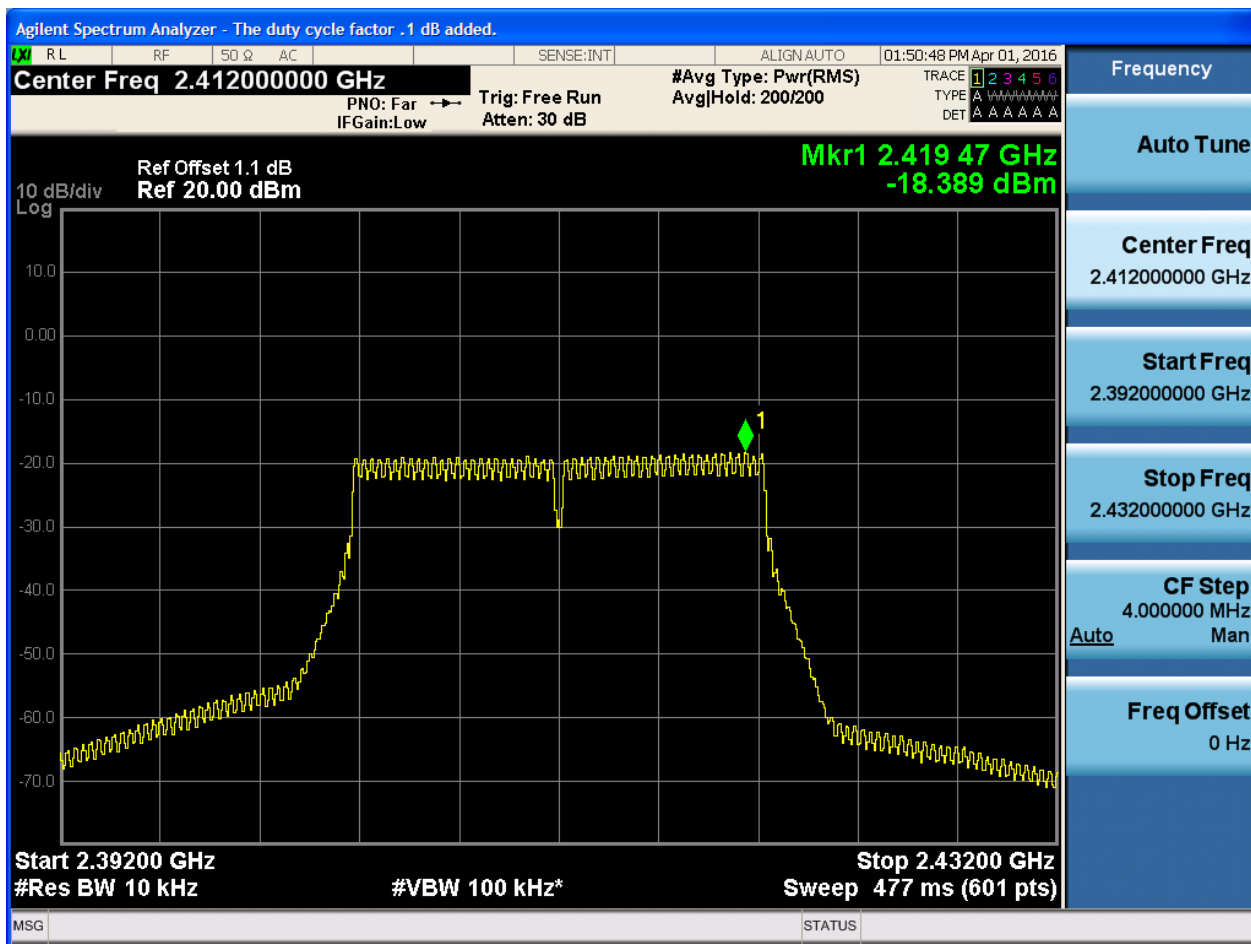
CF Step
4.000000 MHz
Man

Freq Offset
0 Hz

The image shows a screenshot of an Agilent Spectrum Analyzer. The main display is a plot of power spectral density (PSD) in dBm versus frequency in GHz. The y-axis is labeled '10 dB/div Log' and ranges from -70.0 to 10.0 dBm. The x-axis ranges from 2.44200 GHz to 2.48200 GHz. A yellow trace shows the signal spectrum, with a prominent peak at 2.461 GHz. A green diamond marker labeled '1' is placed on this peak. The peak's power is indicated as -9.337 dBm. The display also shows various settings: Center Freq 2.46200000 GHz, Ref Offset 1.01 dB, Ref 20.00 dBm, #Res BW 10 kHz, #VBW 100 kHz*, Sweep 477 ms (601 pts), and Stop 2.48200 GHz. On the right side, there is a vertical menu with options like 'Auto Tune', 'Center Freq', 'Start Freq', 'Stop Freq', 'CF Step', and 'Freq Offset'. The top of the screen shows the Agilent logo and the text 'The duty cycle factor .01 dB added.'

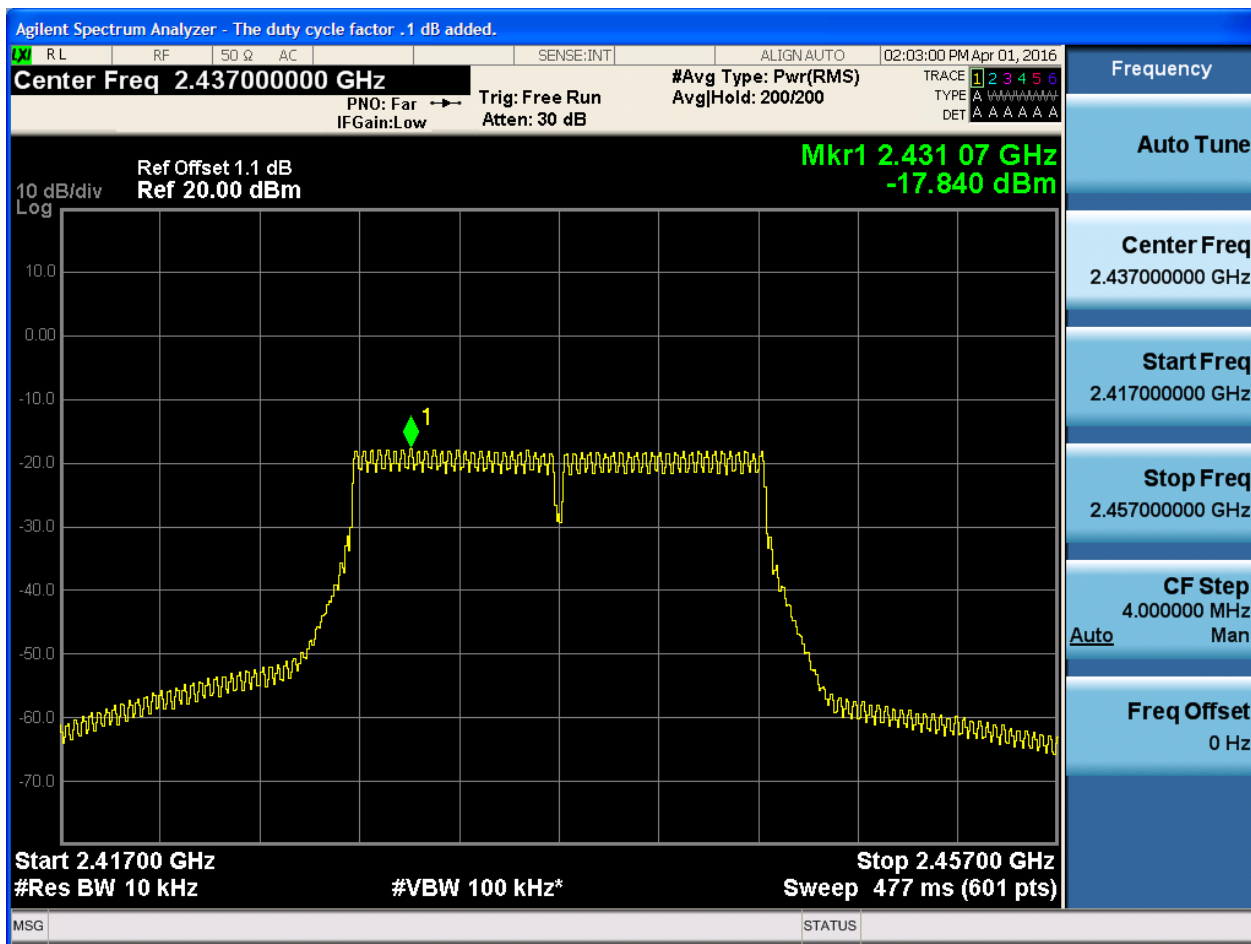


2.4 11G_L@Ant 1

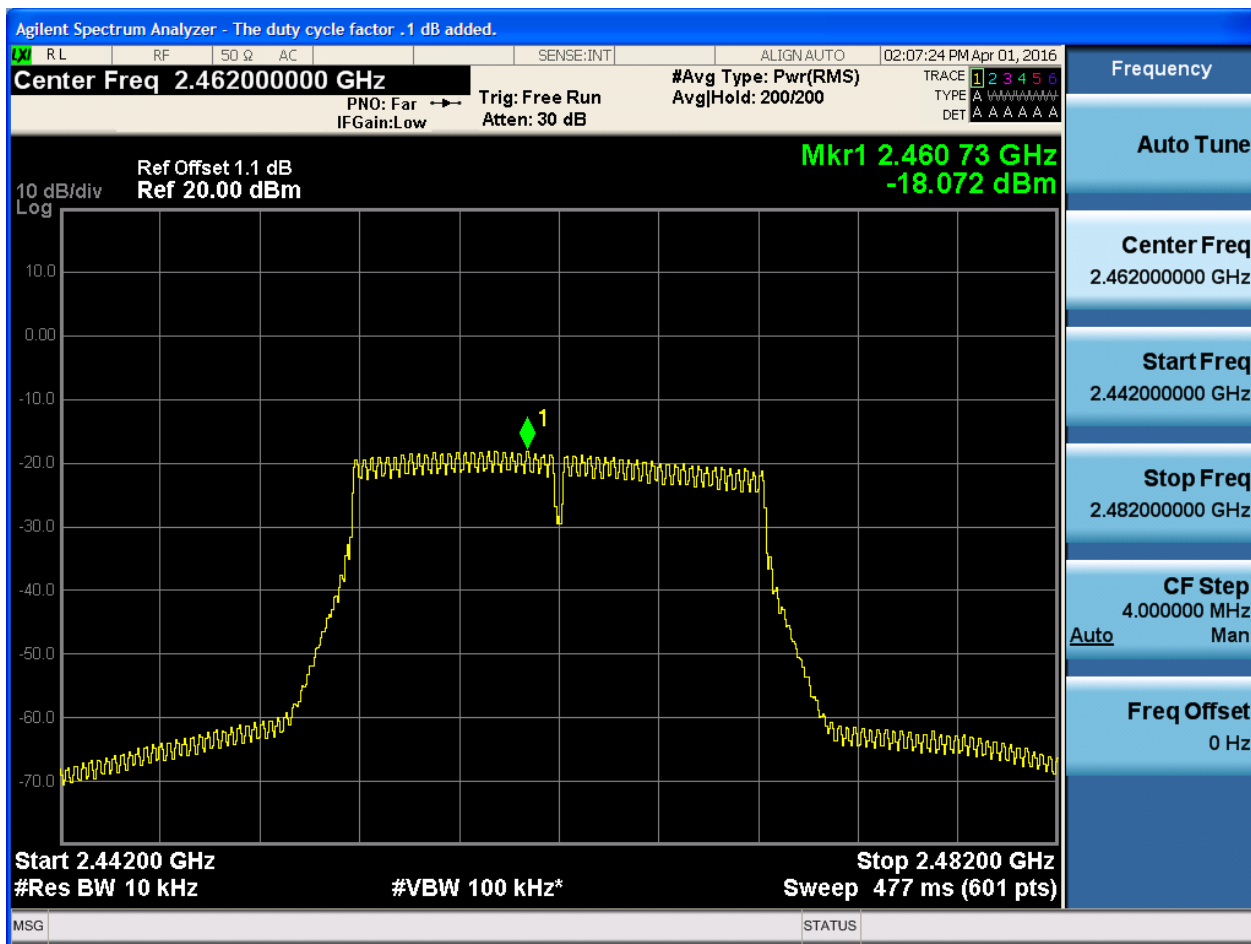




2.5 11G_M@Ant 1

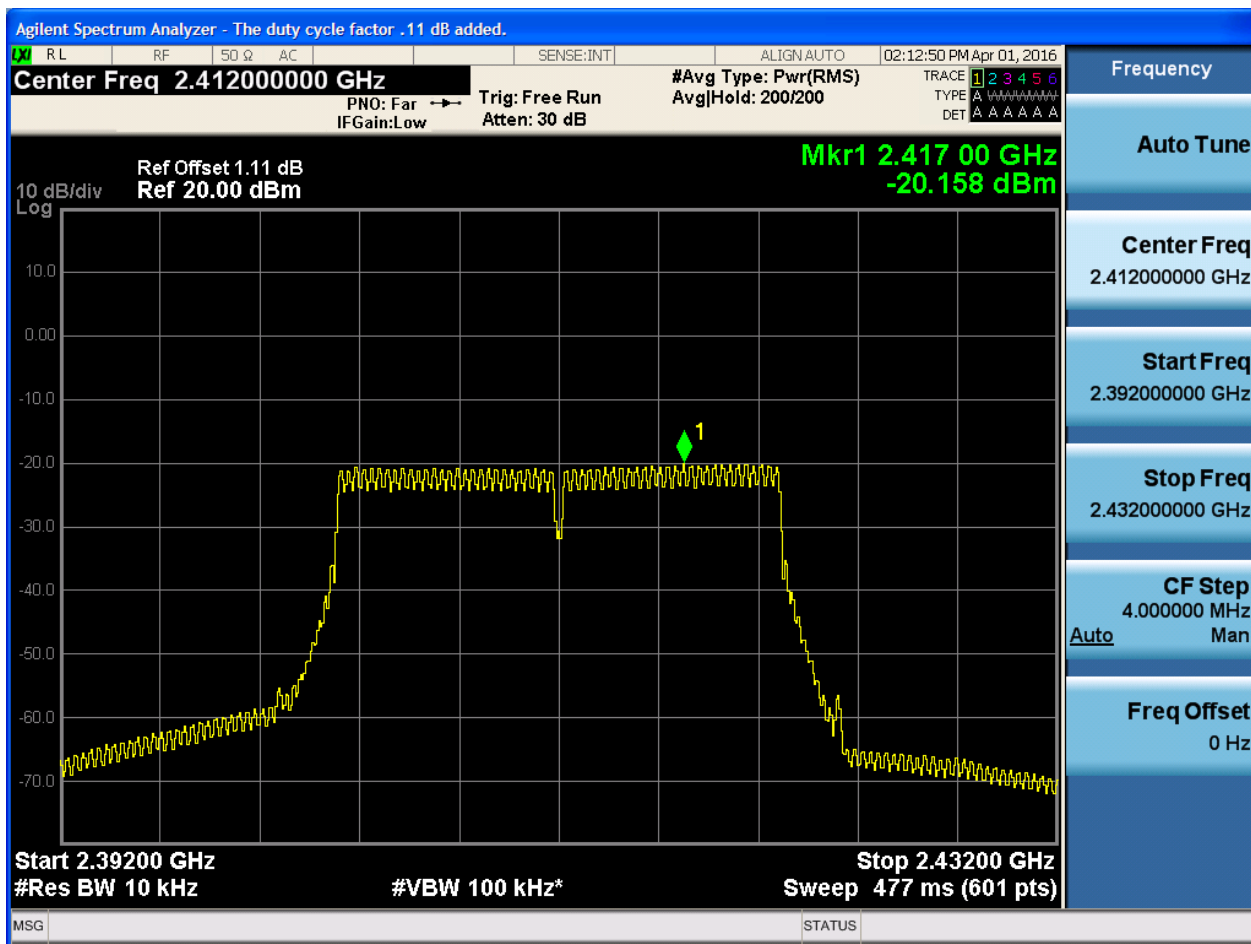


2.6 11G_H@Ant 1

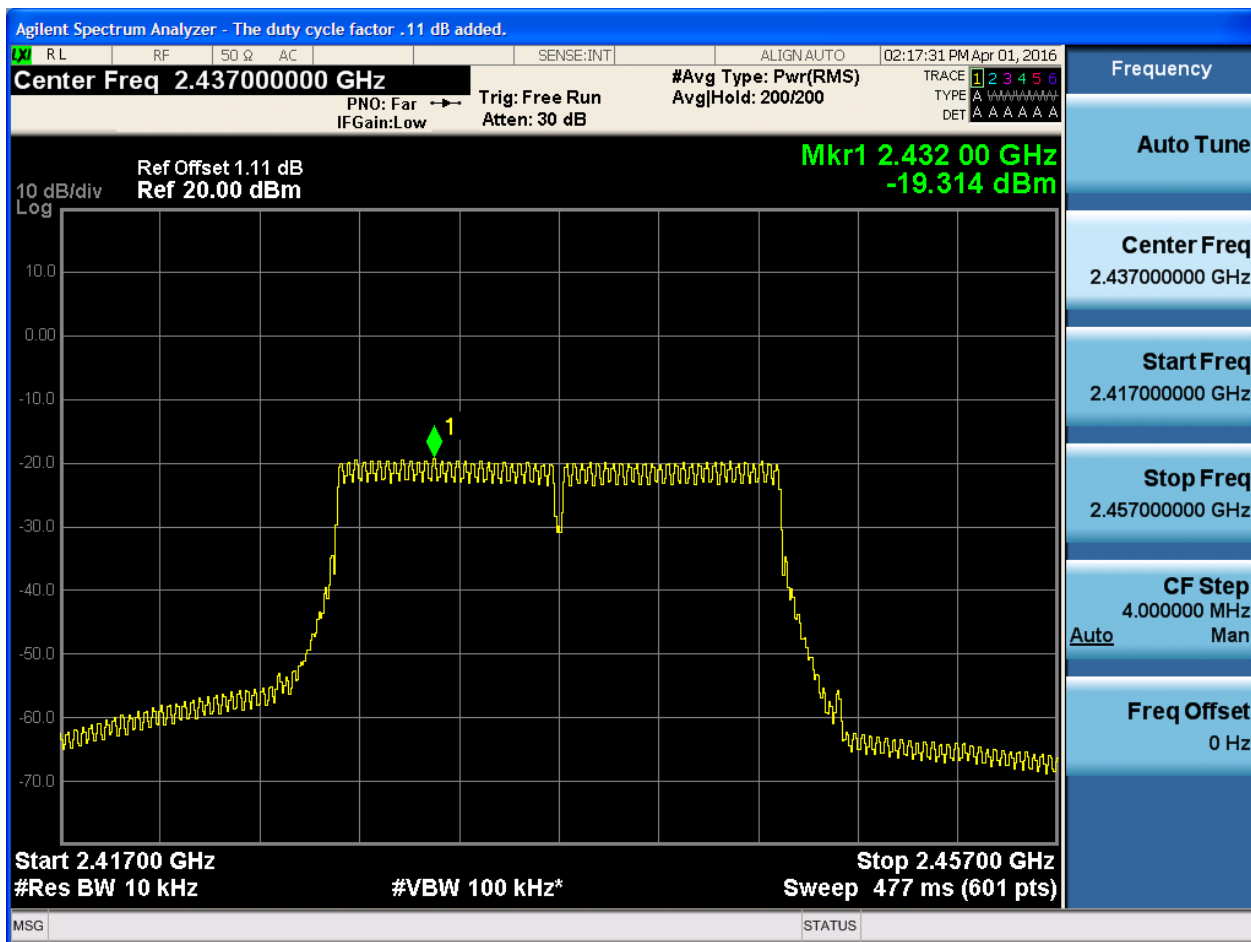




2.7 11N20_L@Ant 1



2.8 11N20_M@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .11 dB added.

Center Freq 2.462000000 GHz #Avg Type: Pwr(RMS) Avg|Hold: 200/200

Ref Offset 1.11 dB Ref 20.00 dBm

Mkr1 2.458 87 GHz -19.614 dBm

Start 2.44200 GHz Stop 2.48200 GHz

#Res BW 10 kHz #VBW 100 kHz* Sweep 477 ms (601 pts)

Frequency

Auto Tune

Center Freq 2.462000000 GHz

Start Freq 2.442000000 GHz

Stop Freq 2.482000000 GHz

CF Step 4.000000 MHz

Freq Offset 0 Hz

The image shows a screenshot of an Agilent Spectrum Analyzer. The main display area shows a signal spectrum with a peak at 2.45887 GHz, marked with a green diamond and labeled '1'. The power level at this peak is -19.614 dBm. The center frequency is set to 2.462000000 GHz. The reference level is 20.00 dBm, and the reference offset is 1.11 dB. The frequency range is from 2.44200 GHz to 2.48200 GHz. The resolution bandwidth (RBW) is 10 kHz, and the video bandwidth (VBW) is 100 kHz. The sweep time is 477 ms, and there are 601 points per sweep. The display is in a log scale. The top of the screen shows various settings and status information, including the duty cycle factor, average type, and hold time. The bottom of the screen shows the message and status indicators.



Agilent Spectrum Analyzer - The duty cycle factor .2 dB added.

Center Freq 2.422000000 GHz

Ref Offset 1.2 dB
Ref 20.00 dBm

10 dB/div
Log

Mkr1 2.425 73 GHz
-23.132 dBm

Start 2.38200 GHz
#Res BW 10 kHz
#VBW 100 kHz*

Stop 2.46200 GHz
Sweep 953 ms (601 pts)

Auto Tune

Center Freq
2.422000000 GHz

Start Freq
2.382000000 GHz

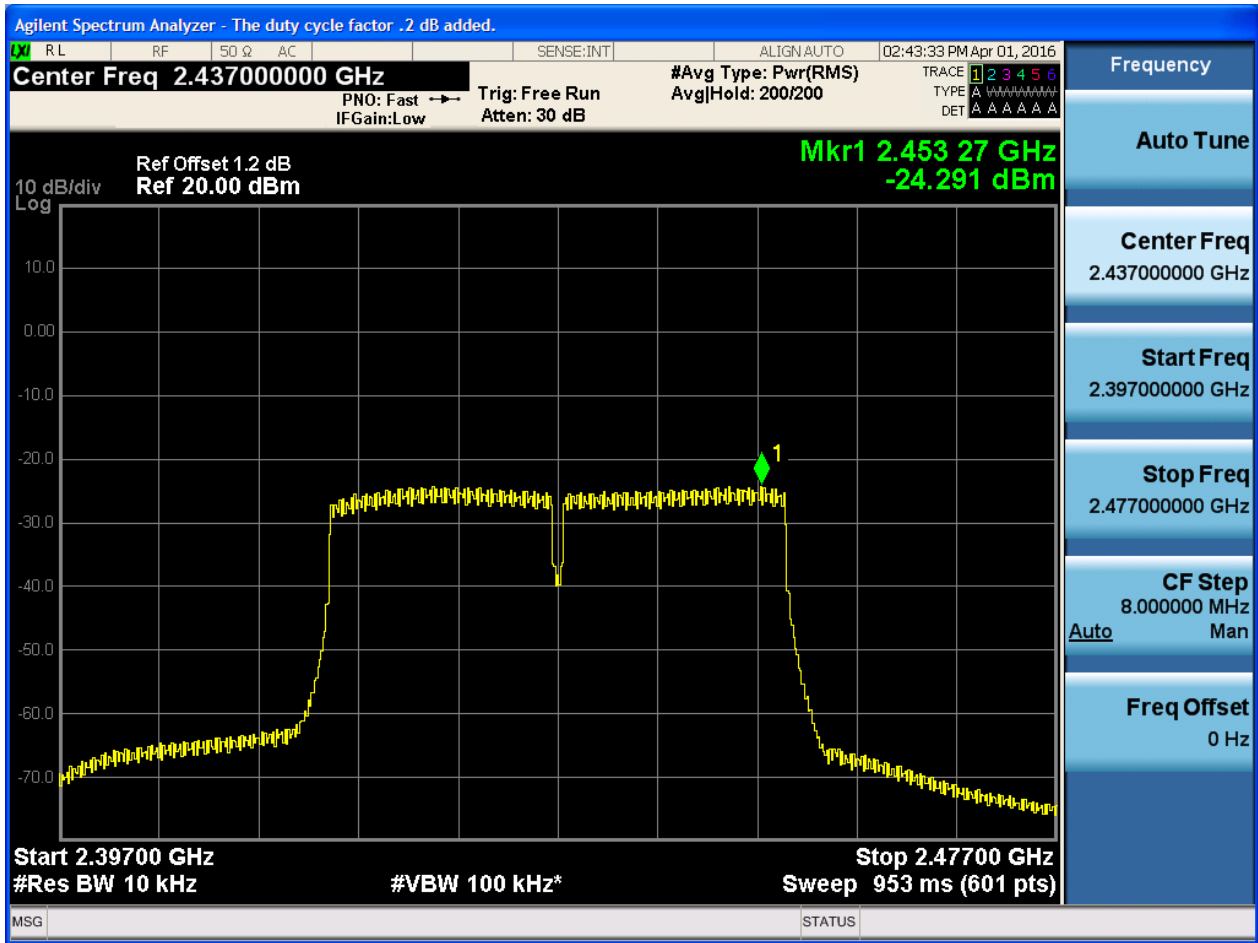
Stop Freq
2.462000000 GHz

CF Step
8.000000 MHz
Man

Freq Offset
0 Hz



2.11 11N40_M@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .2 dB added.

Center Freq 2.45200000 GHz

Ref Offset 1.2 dB
Ref 20.00 dBm

Mkr1 2.459 47 GHz
-20.423 dBm

Start 2.41200 GHz
#Res BW 10 kHz

Stop 2.49200 GHz
Sweep 953 ms (601 pts)

#VBW 100 kHz*

Trig: Free Run
Atten: 30 dB

PNO: Fast
IFGain:Low

Frequency

Auto Tune

Center Freq
2.45200000 GHz

Start Freq
2.41200000 GHz

Stop Freq
2.49200000 GHz

CF Step
8.000000 MHz
Man

Freq Offset
0 Hz

10 dB/div
Log

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	8.53	-50.05	pass
11B	H	2462	Ant 1	8.86	-44.46	pass
11G	L	2412	Ant 1	0.11	-50.14	pass
11G	H	2462	Ant 1	0.18	-48.24	pass
11N20	L	2412	Ant 1	-1.29	-50.31	pass
11N20	H	2462	Ant 1	-1.08	-46.53	pass
11N40	L	2422	Ant 1	-4.74	-49.82	pass
11N40	H	2452	Ant 1	-1.19	-45.05	pass



Part II - Test Plots

2.1 11B_L@Ant 1



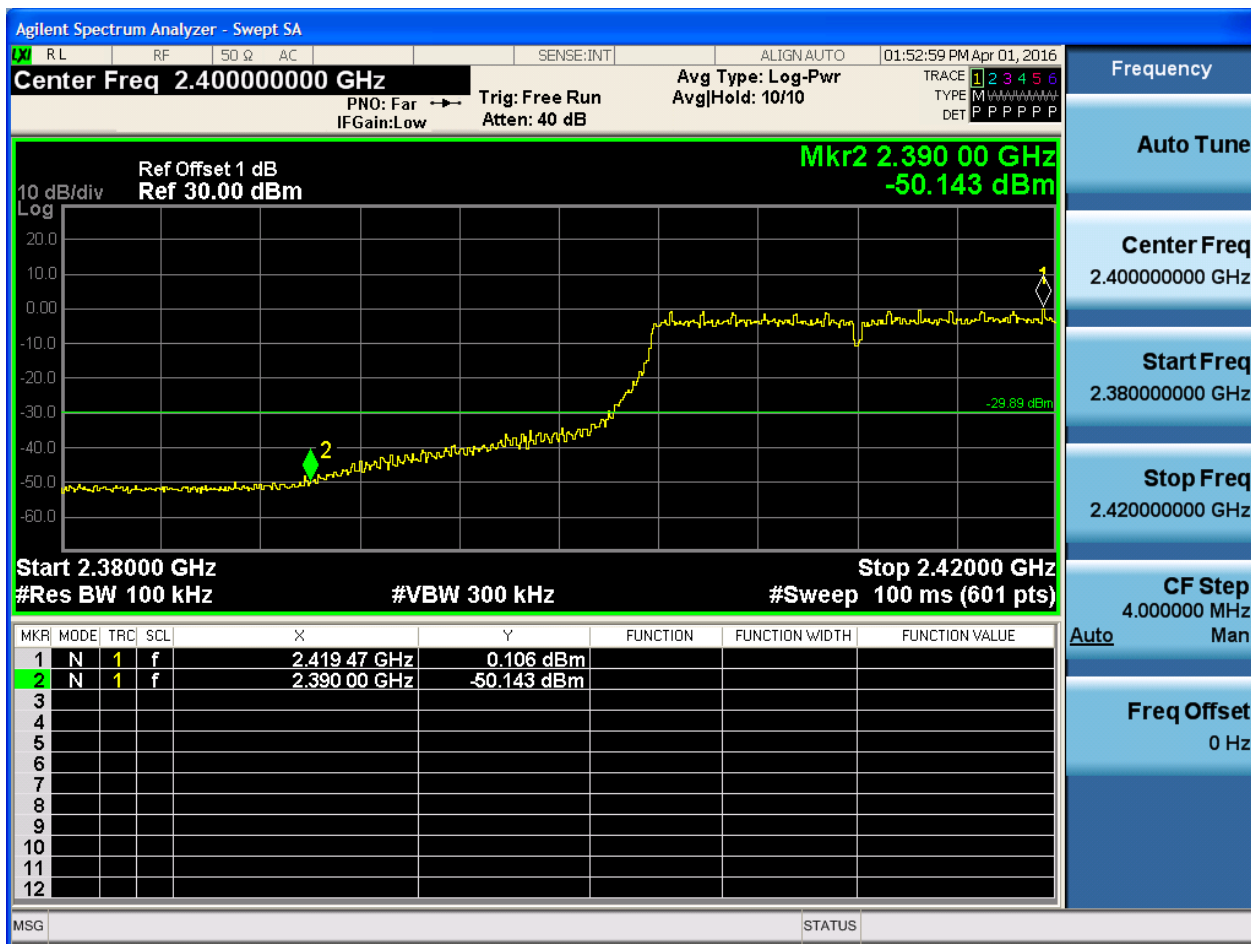


2.2 11B_H@Ant 1



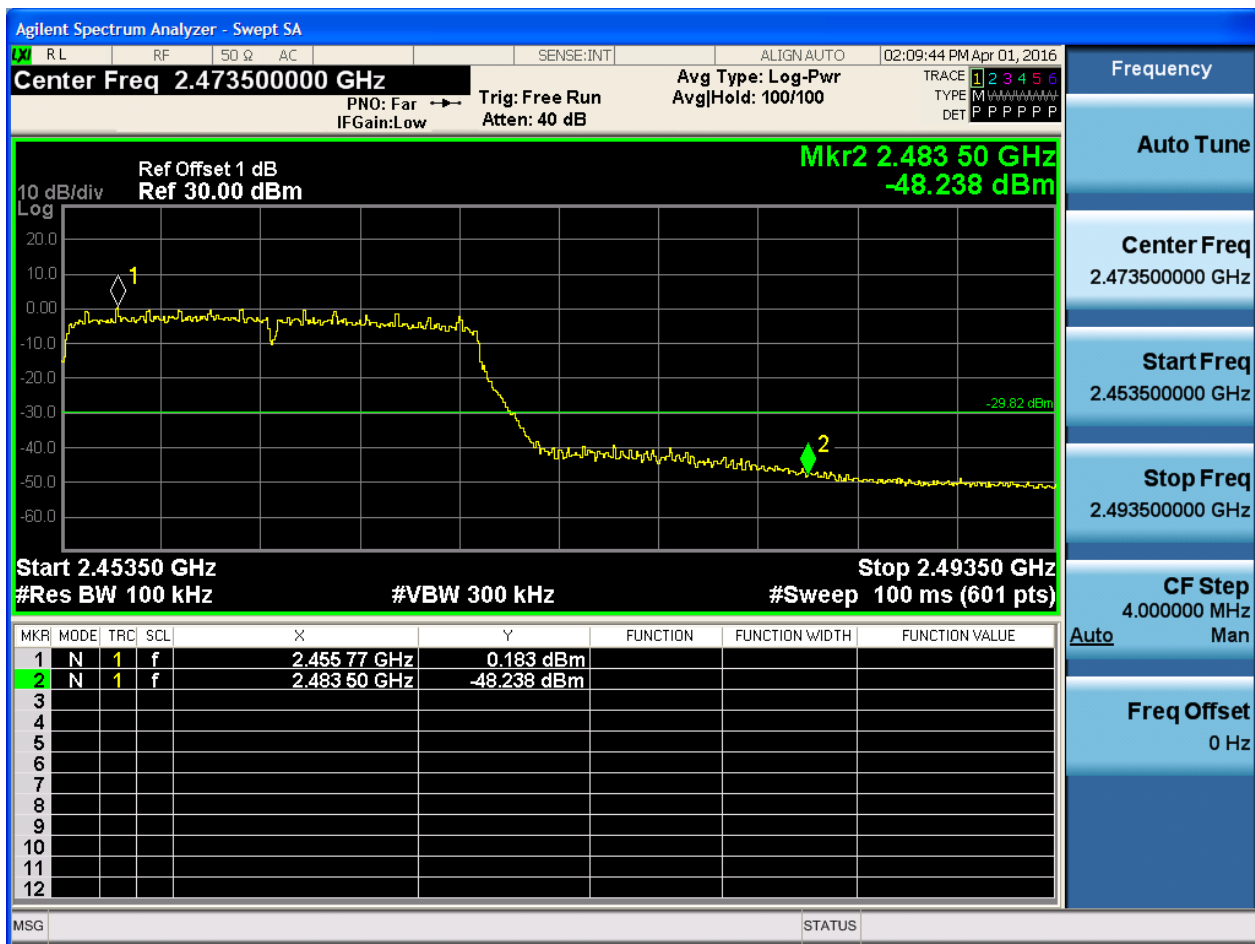


2.3 11G_L@Ant 1





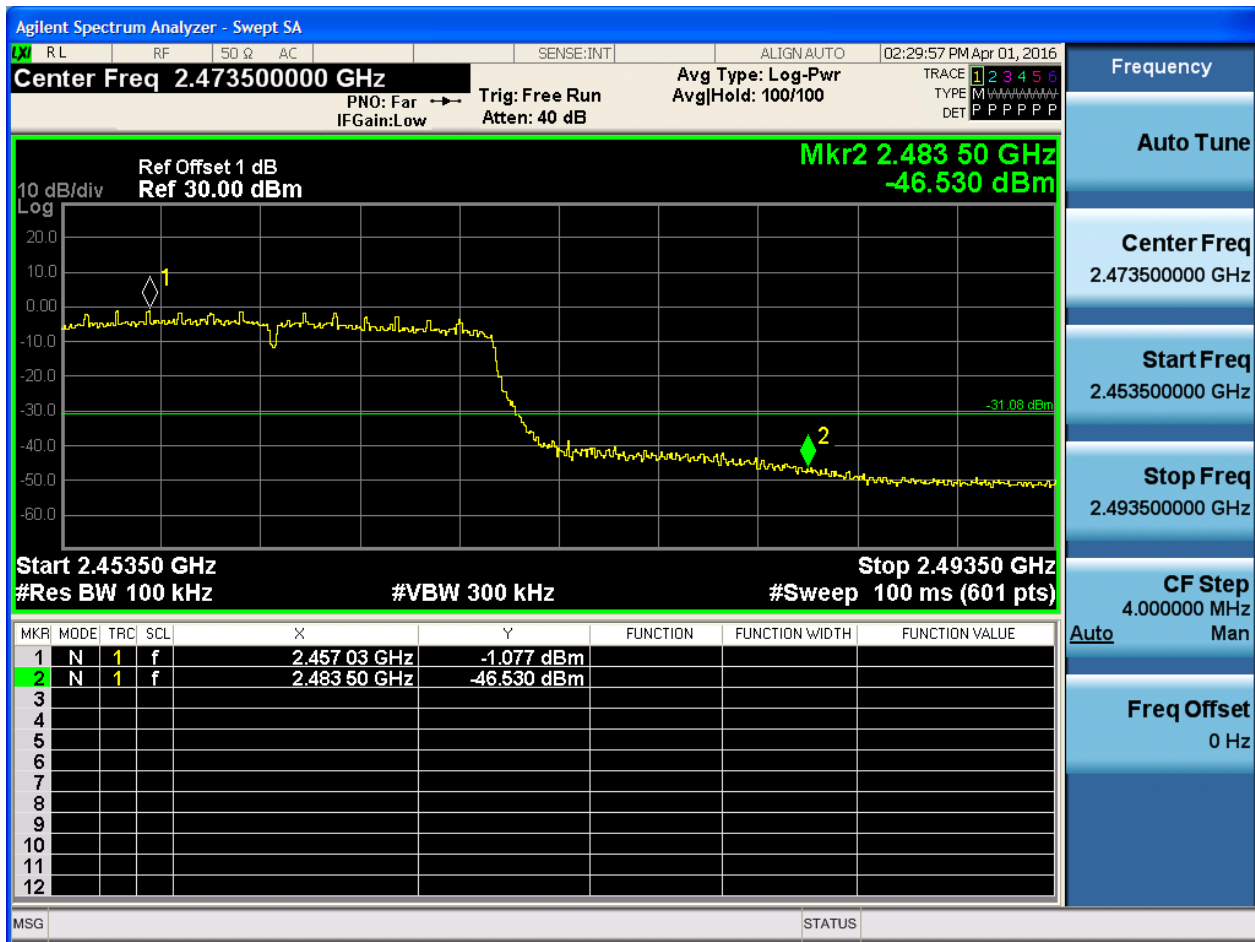
2.4 11G_H@Ant 1



[illegible]

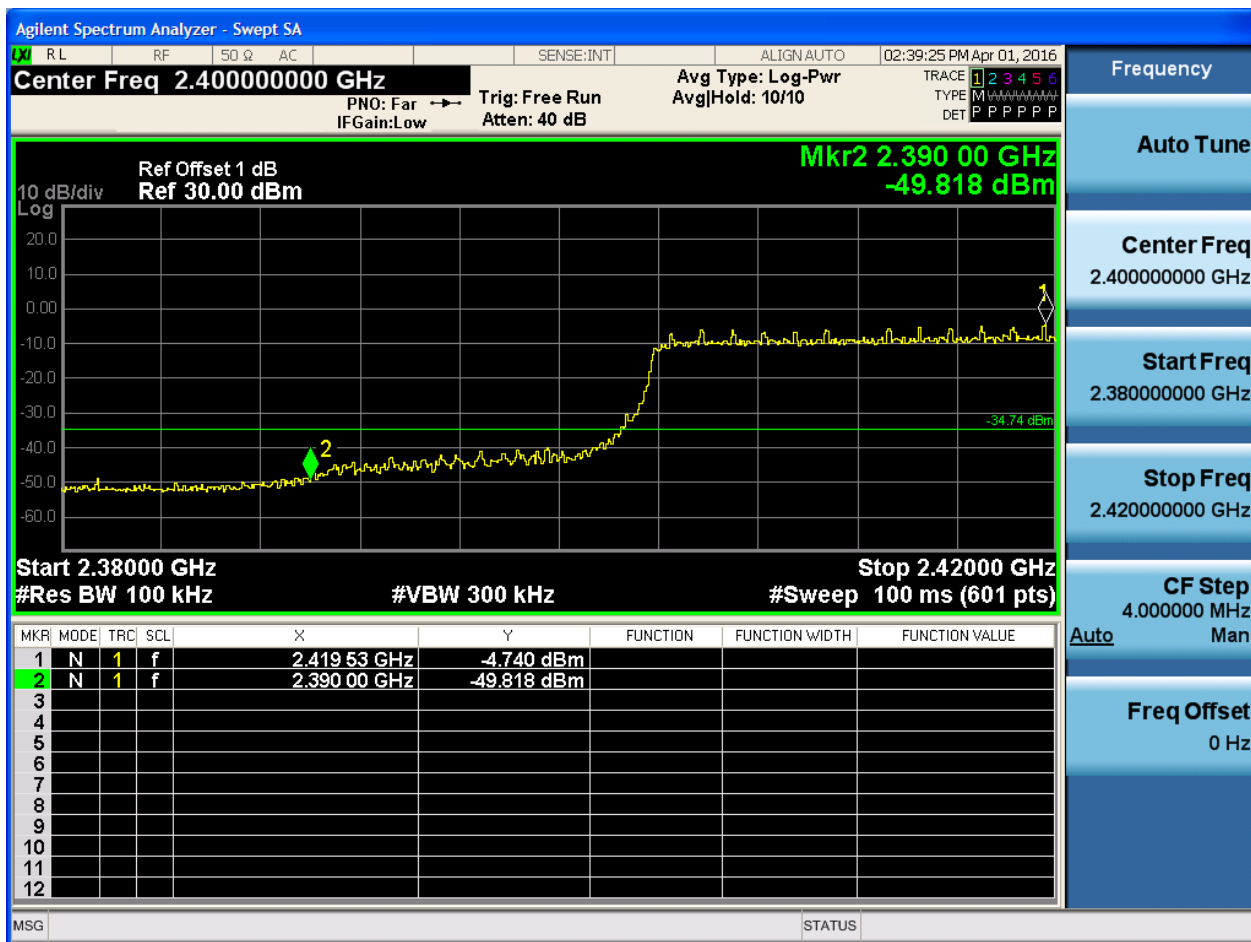


2.6 11N20_H@Ant 1



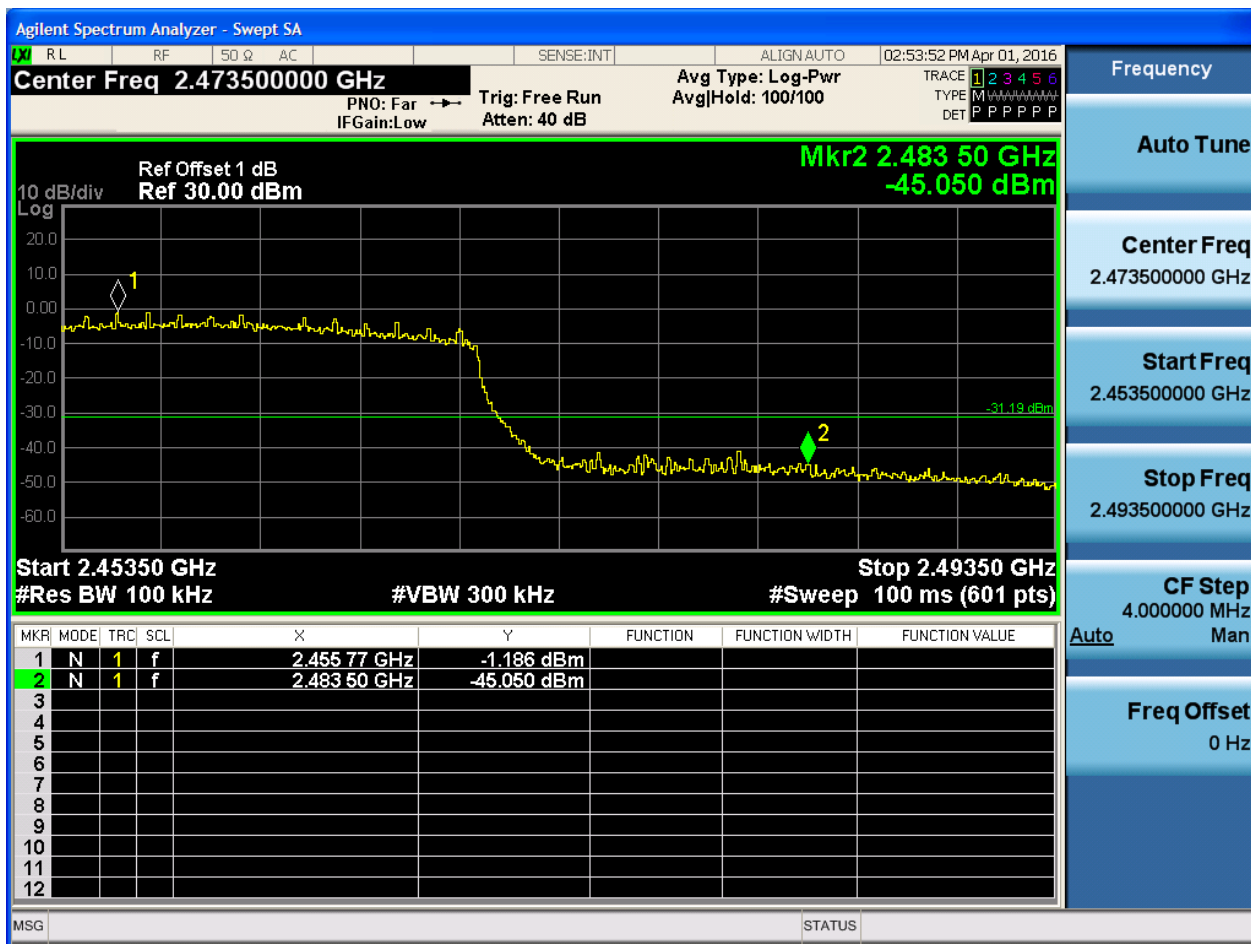


2.7 11N40_L@Ant 1





2.8 11N40_H@Ant 1



Appendix H: 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

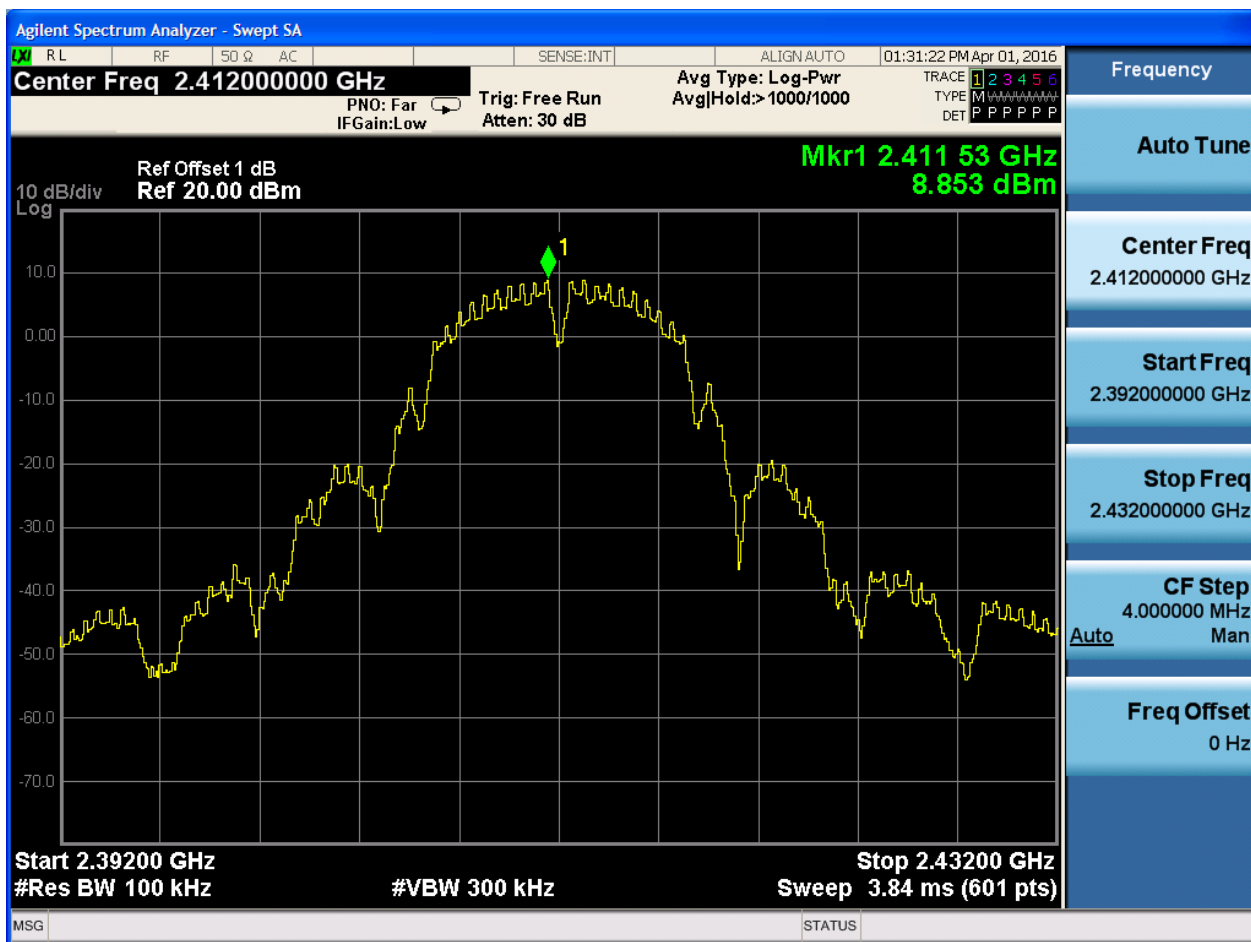
Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	8.85	<limit	pass
11B	M	2437	Ant 1	9.85	<limit	pass
11B	H	2462	Ant 1	8.80	<limit	pass
11G	L	2412	Ant 1	0.33	<limit	pass
11G	M	2437	Ant 1	0.97	<limit	pass
11G	H	2462	Ant 1	0.32	<limit	pass
11N20	L	2412	Ant 1	-1.12	<limit	pass
11N20	M	2437	Ant 1	-0.47	<limit	pass
11N20	H	2462	Ant 1	-0.95	<limit	pass
11N40	L	2422	Ant 1	-3.70	<limit	pass
11N40	M	2437	Ant 1	-4.81	<limit	pass
11N40	H	2452	Ant 1	-1.02	<limit	pass



Part II - Test Plots

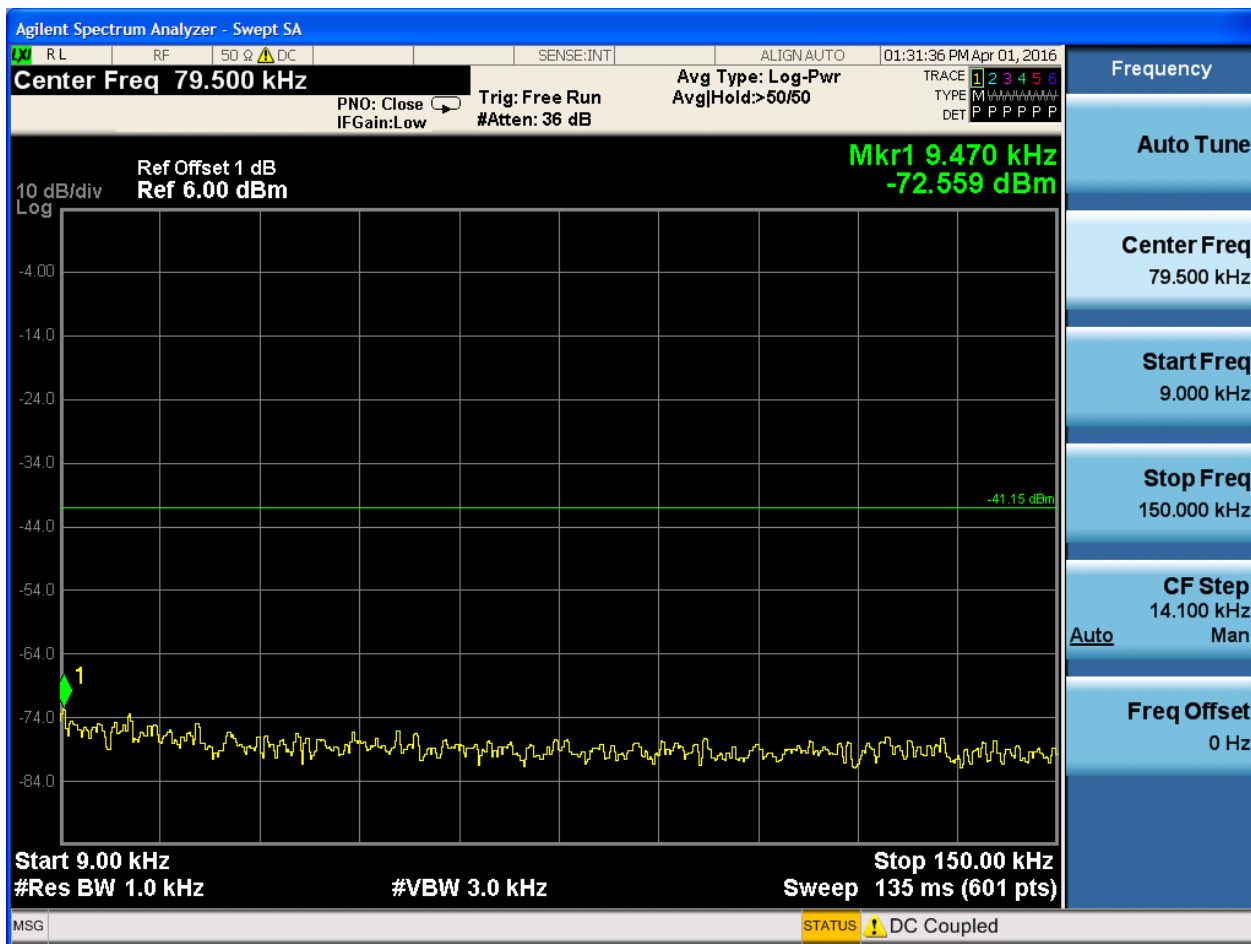
2.1 11B_L@Ant 1

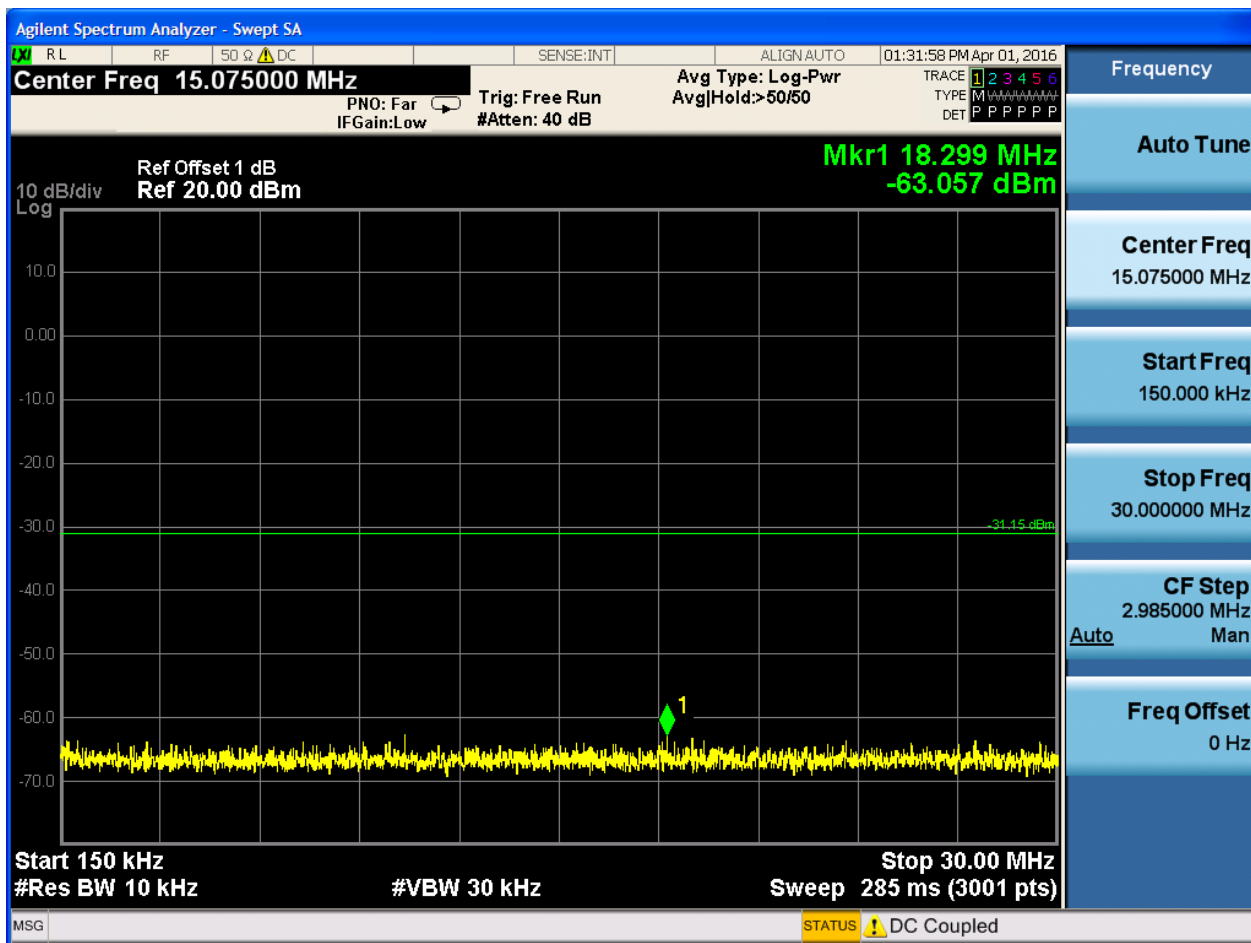
Pref:

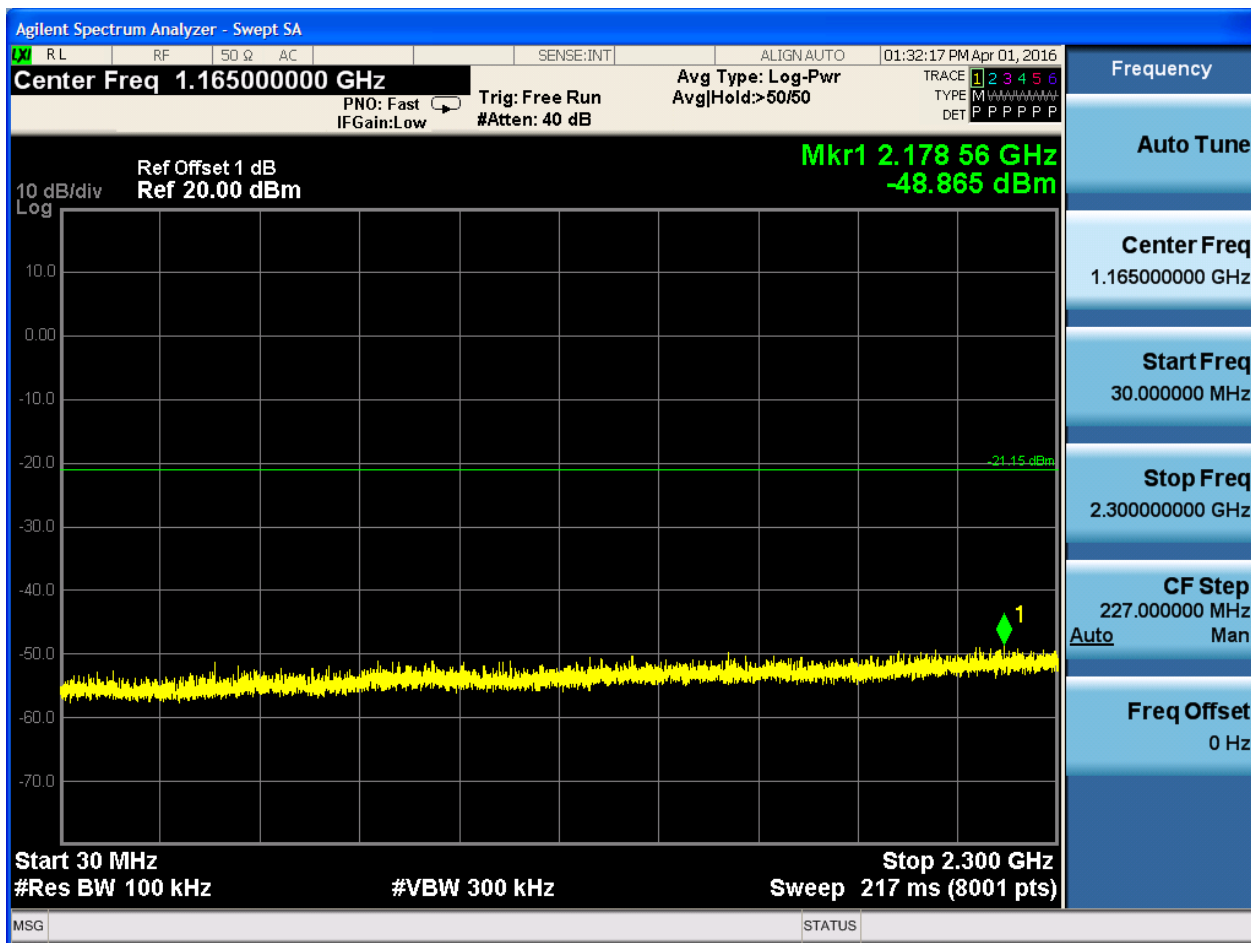


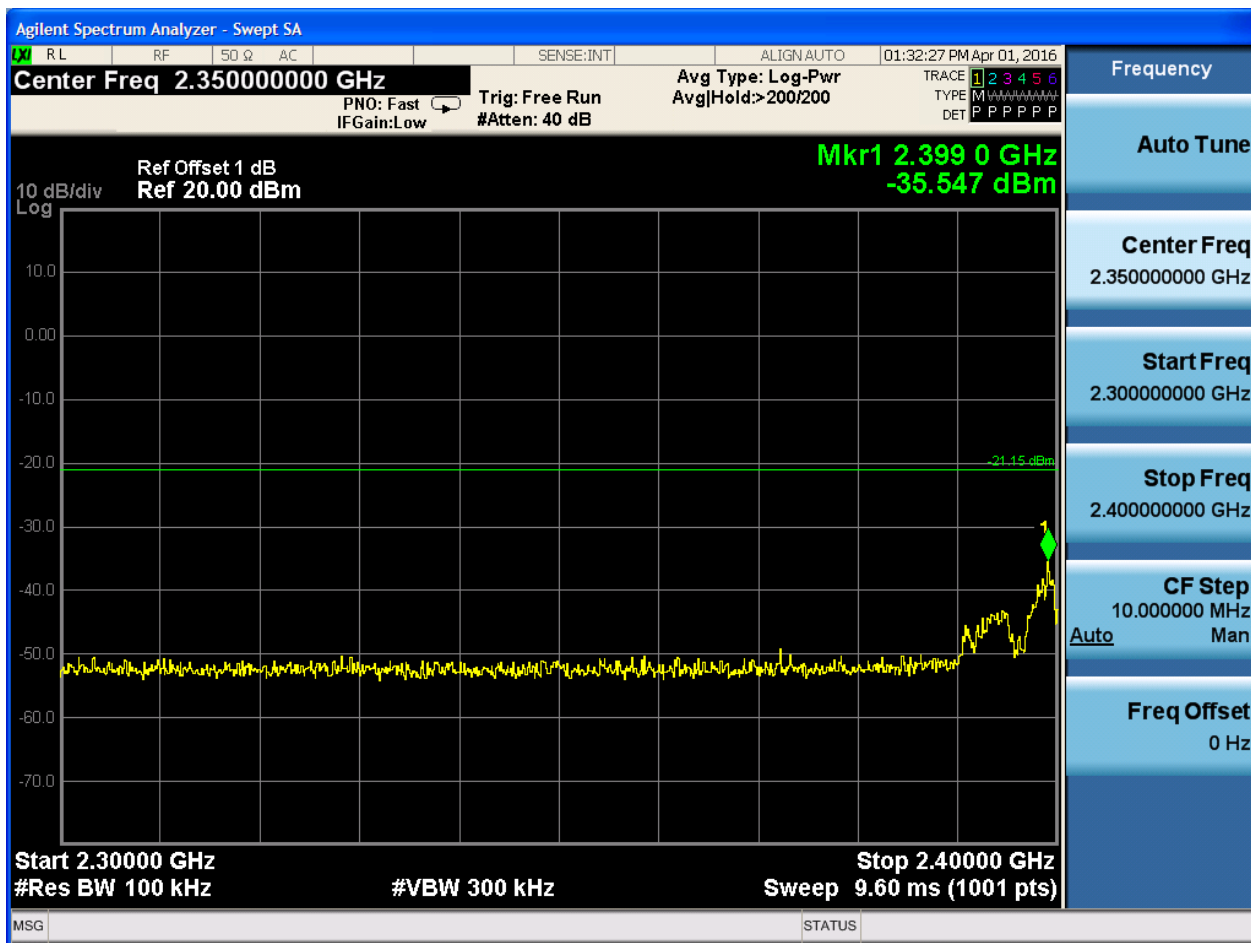


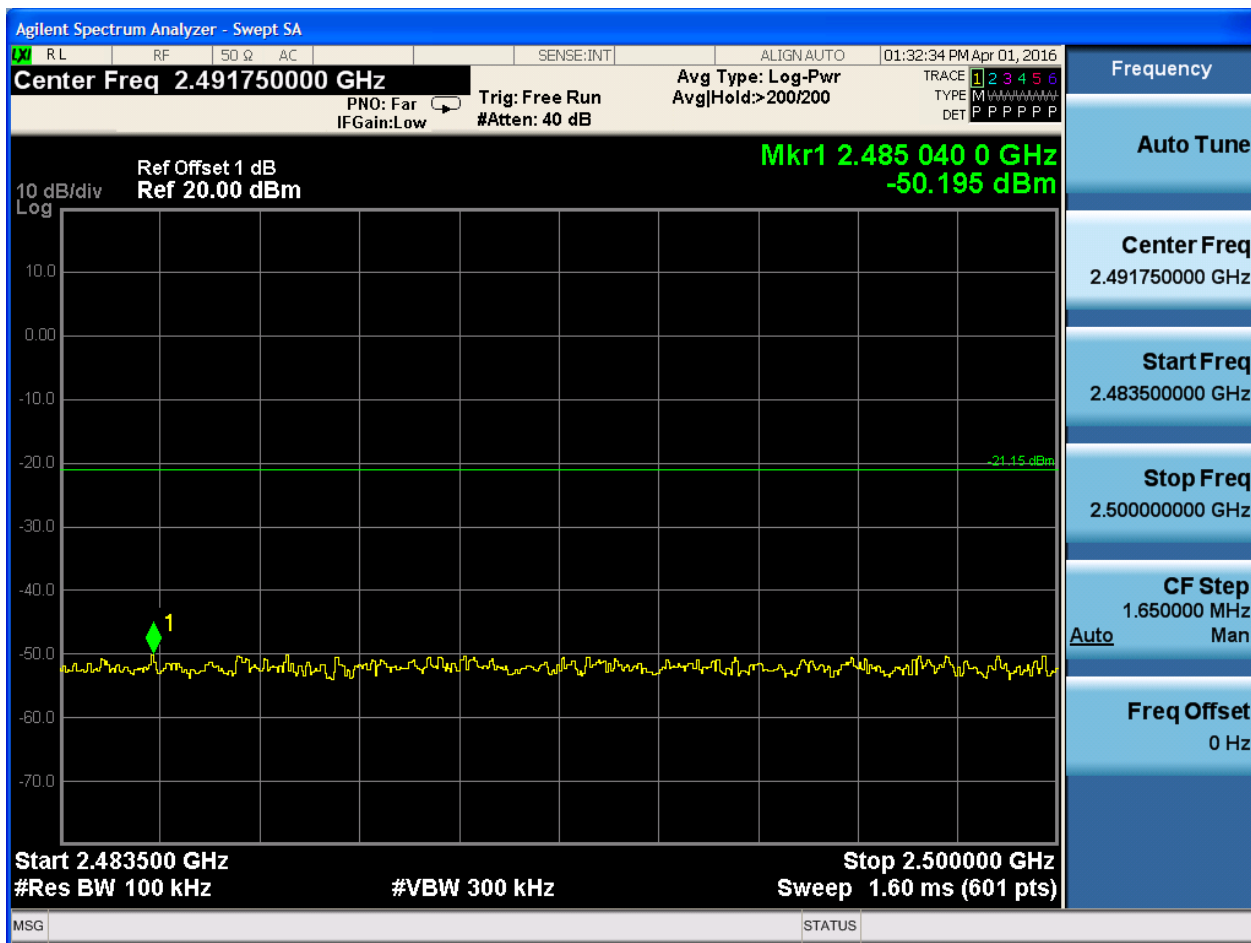
Puw:









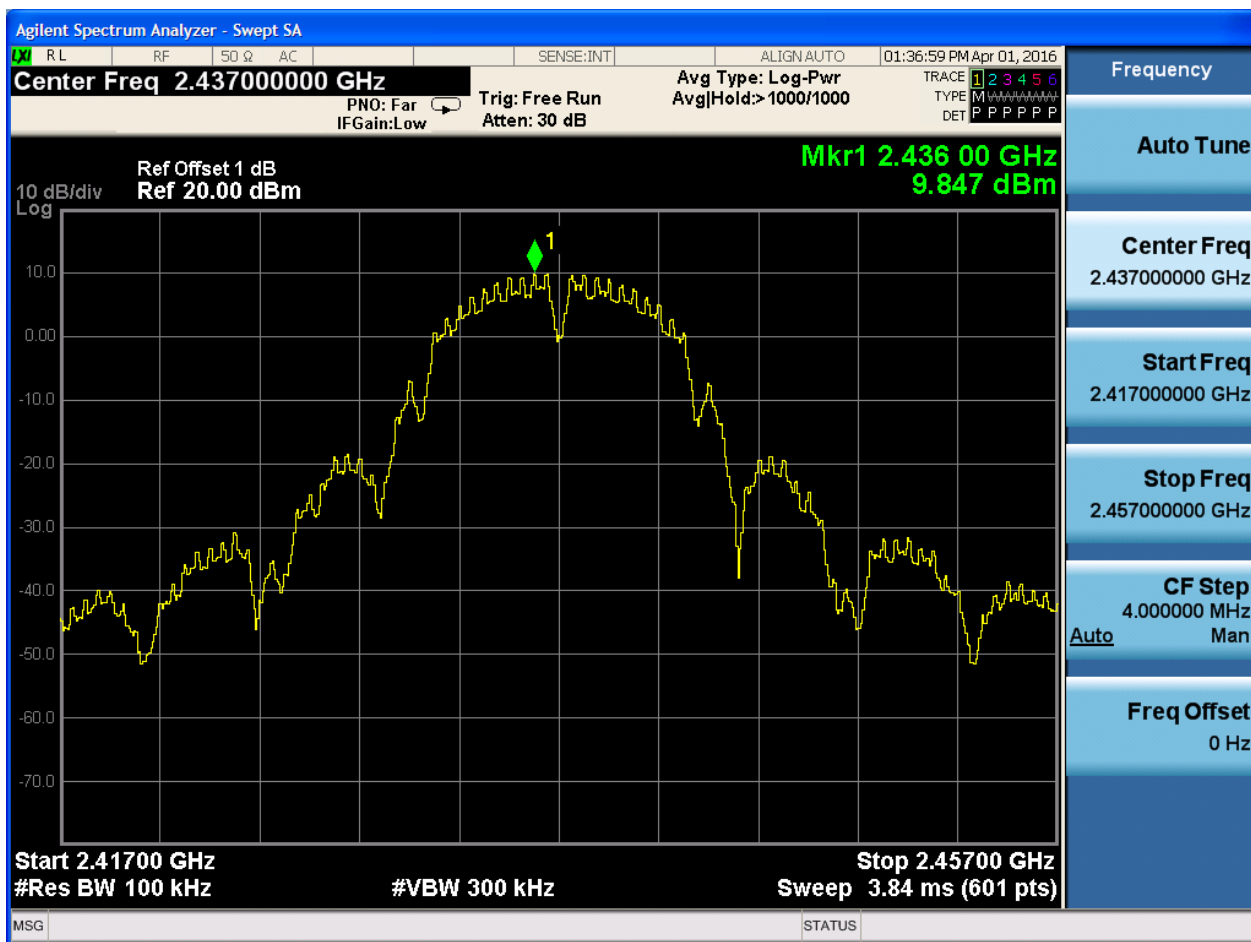






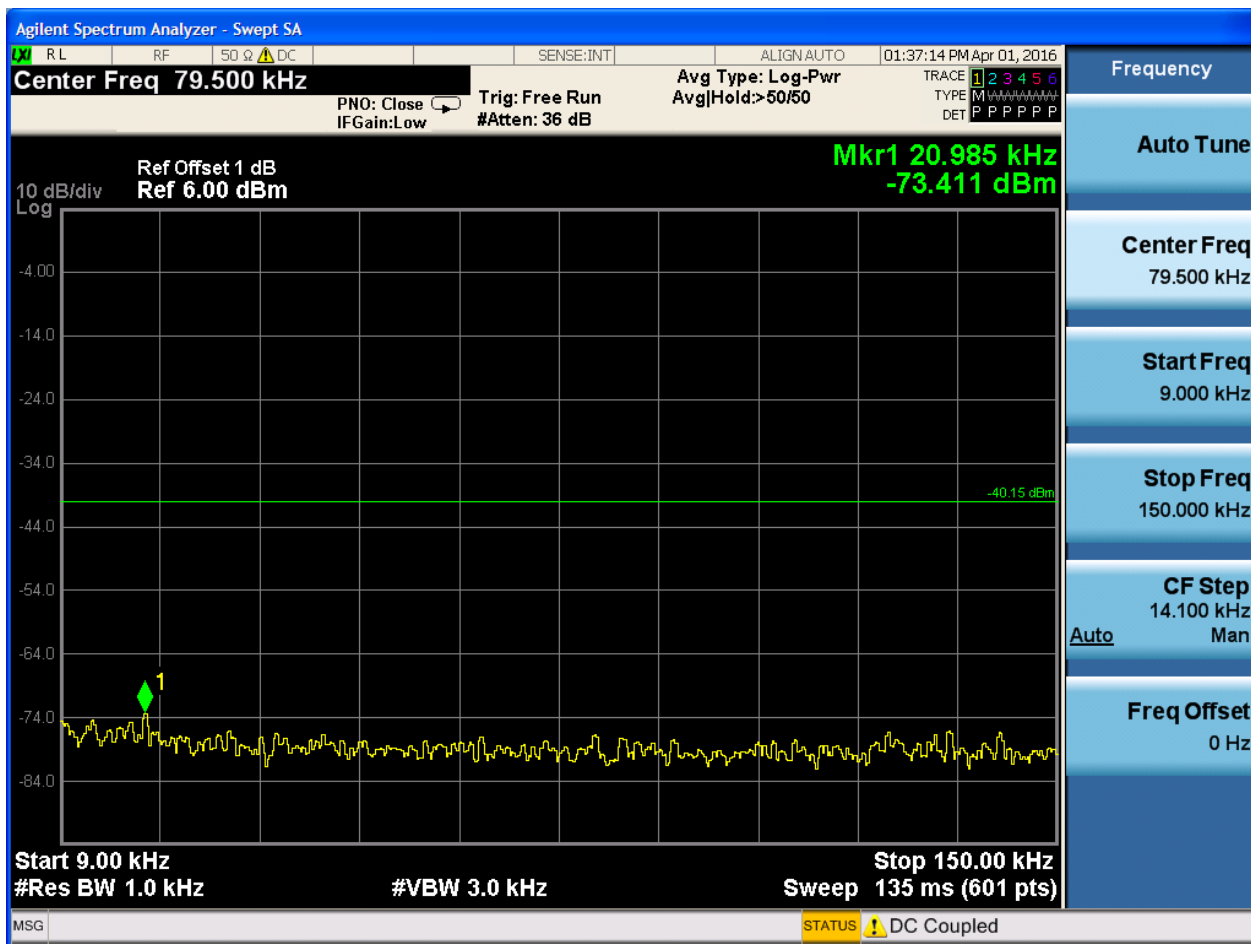
2.2 11B_M@Ant 1

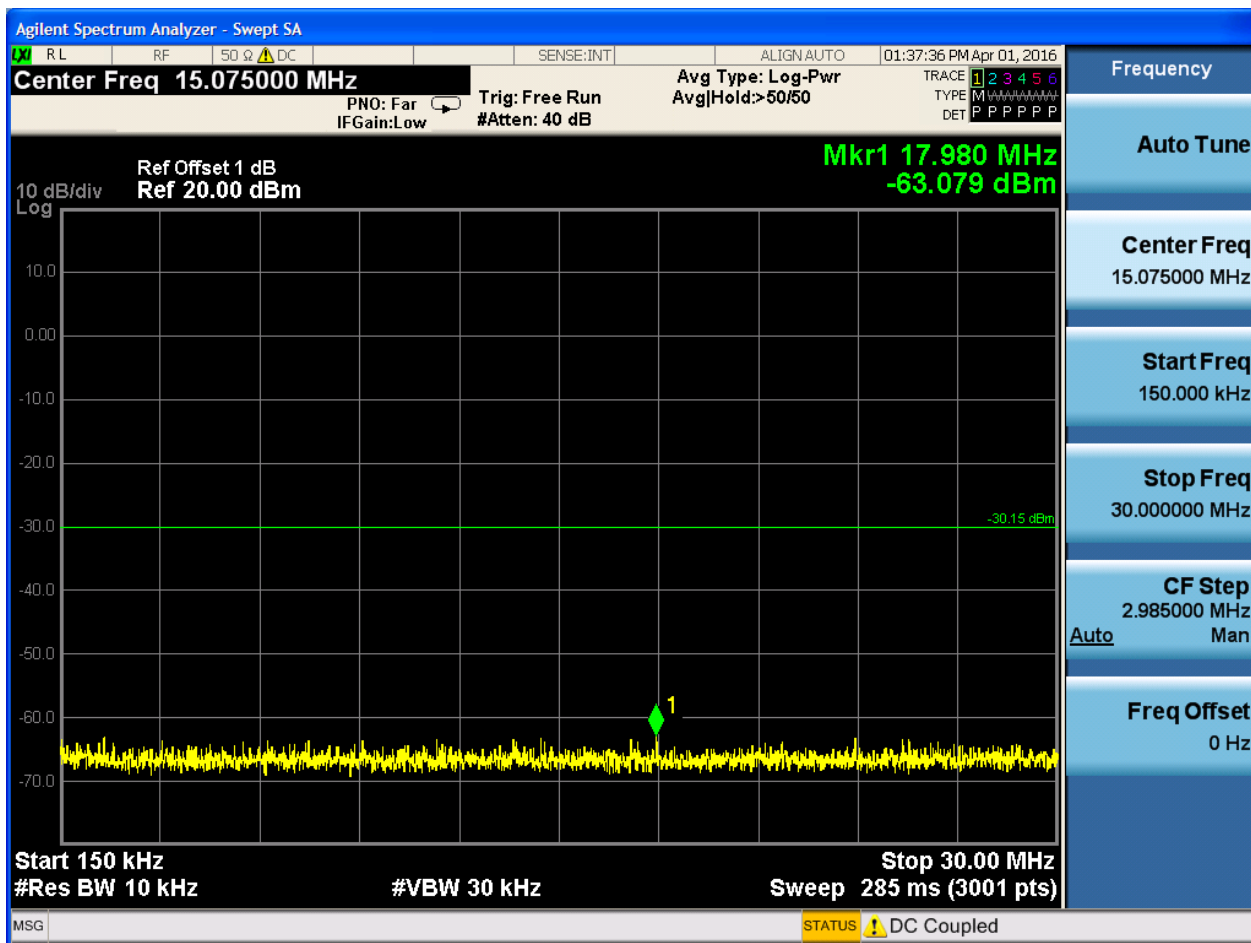
Pref:

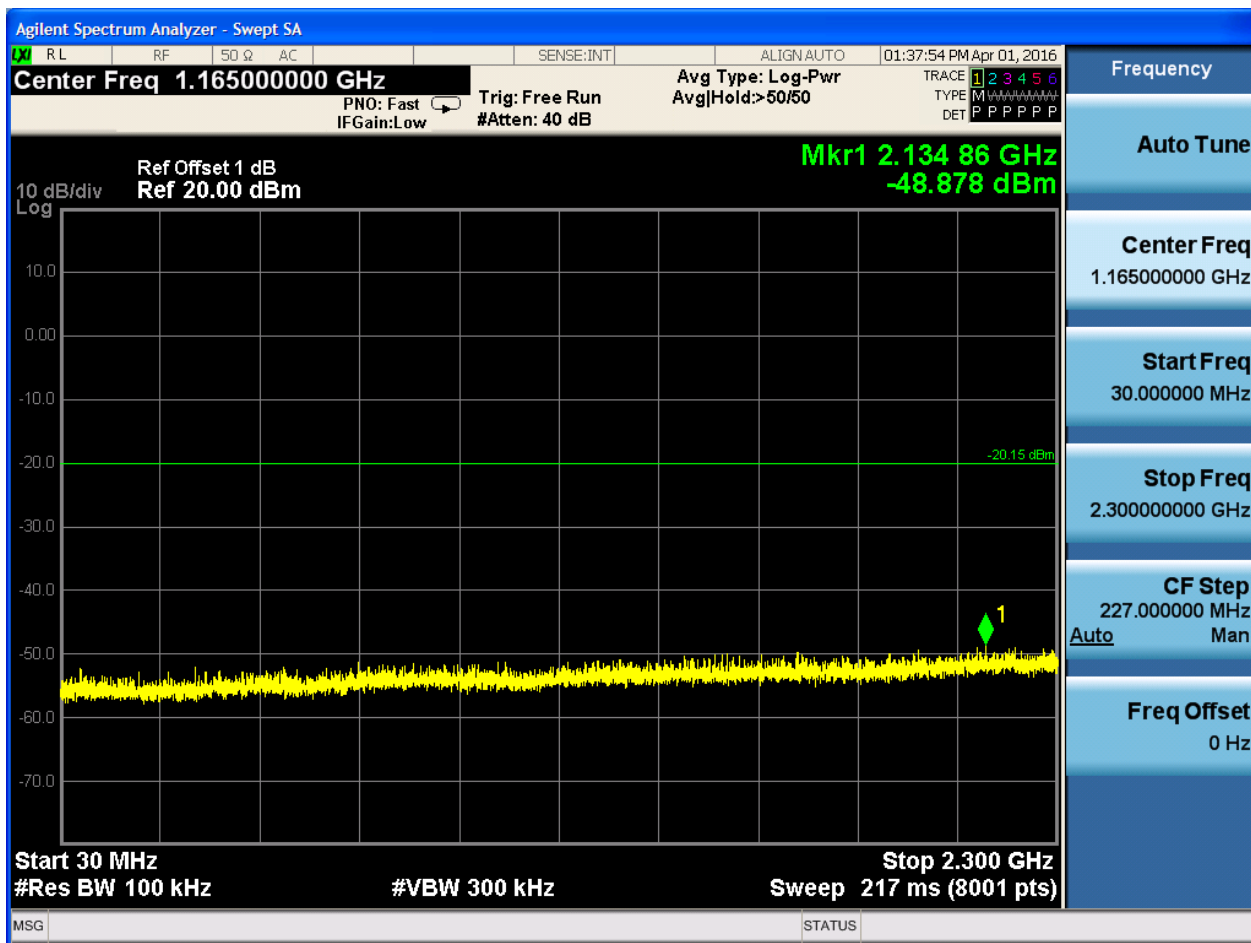


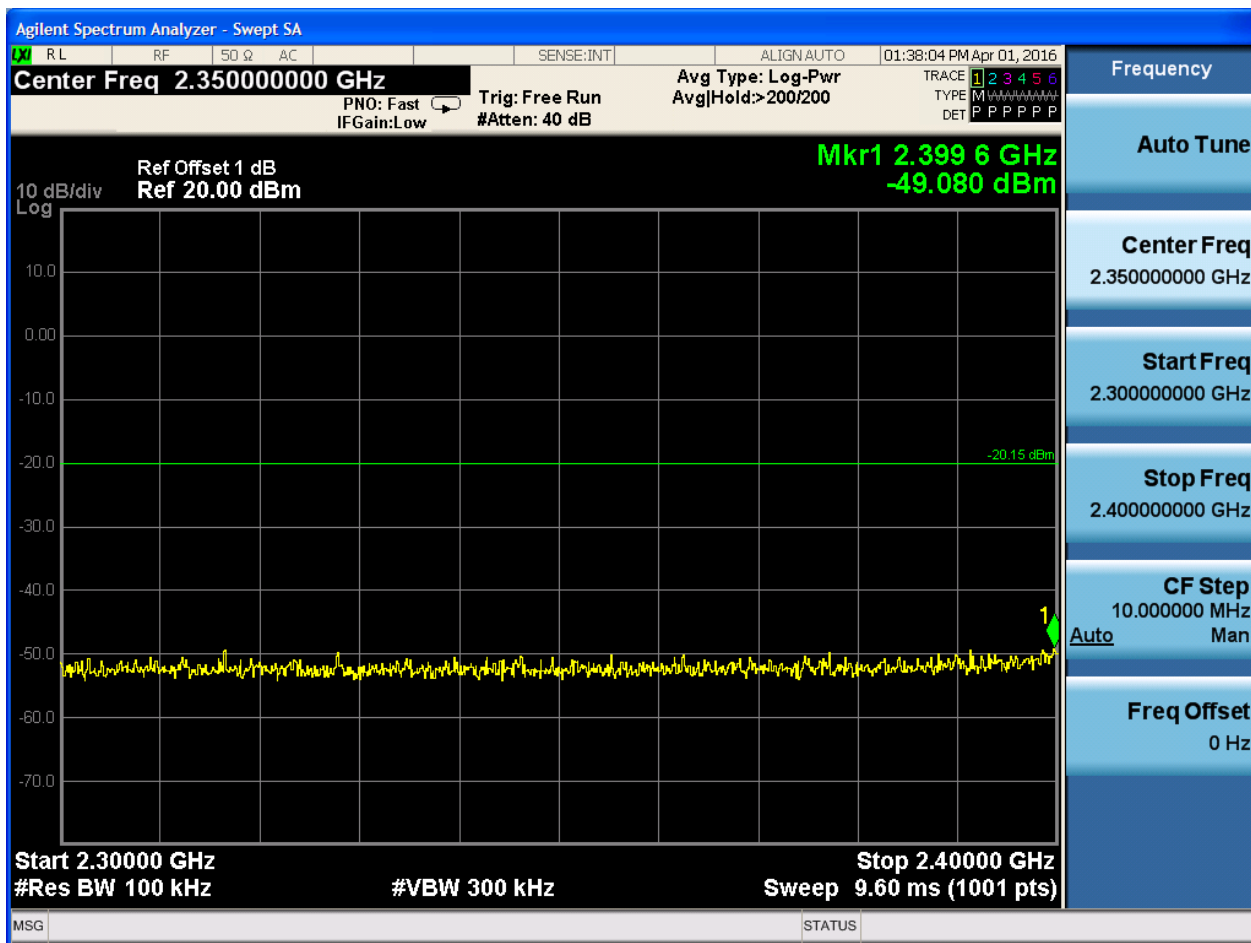


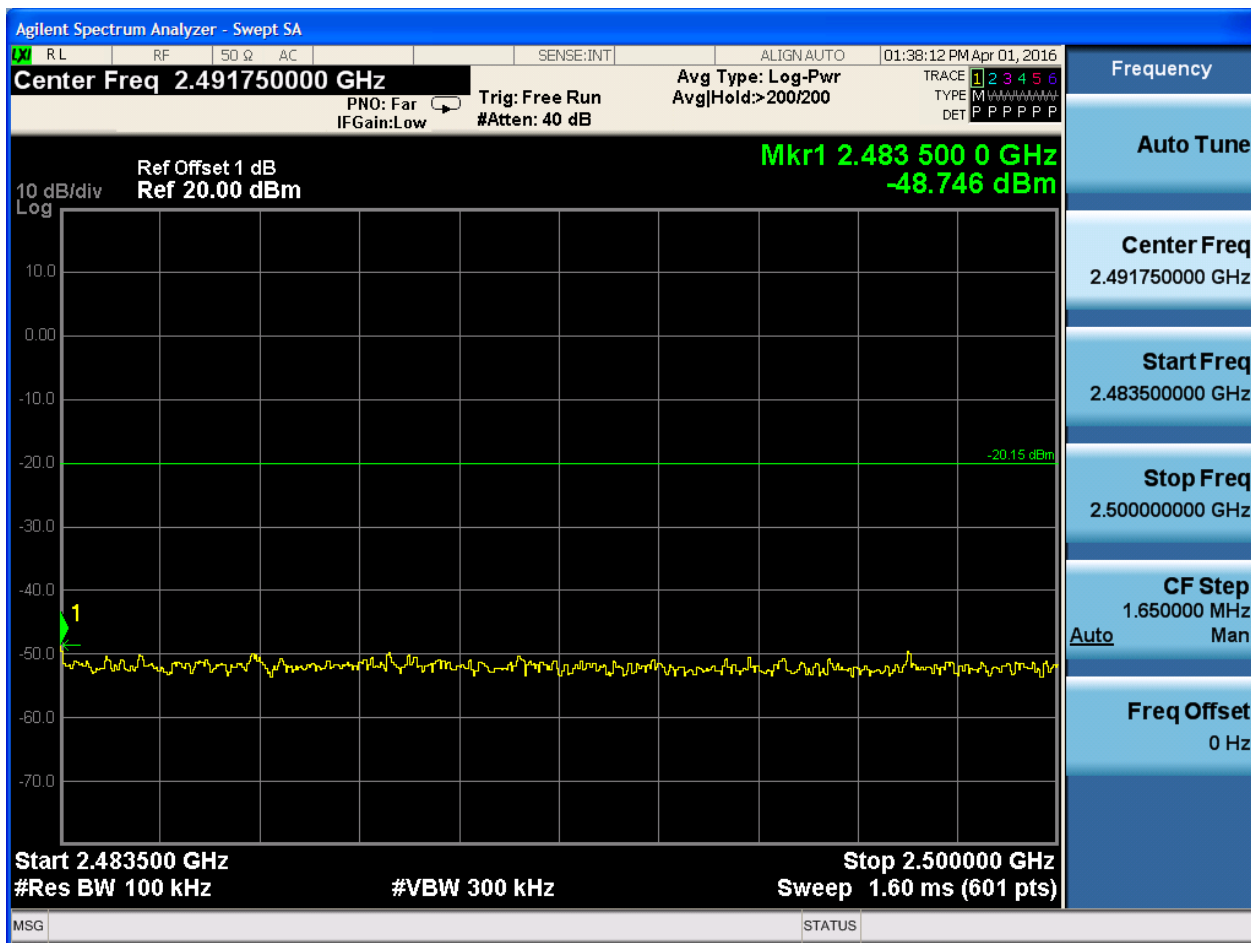
Puw:















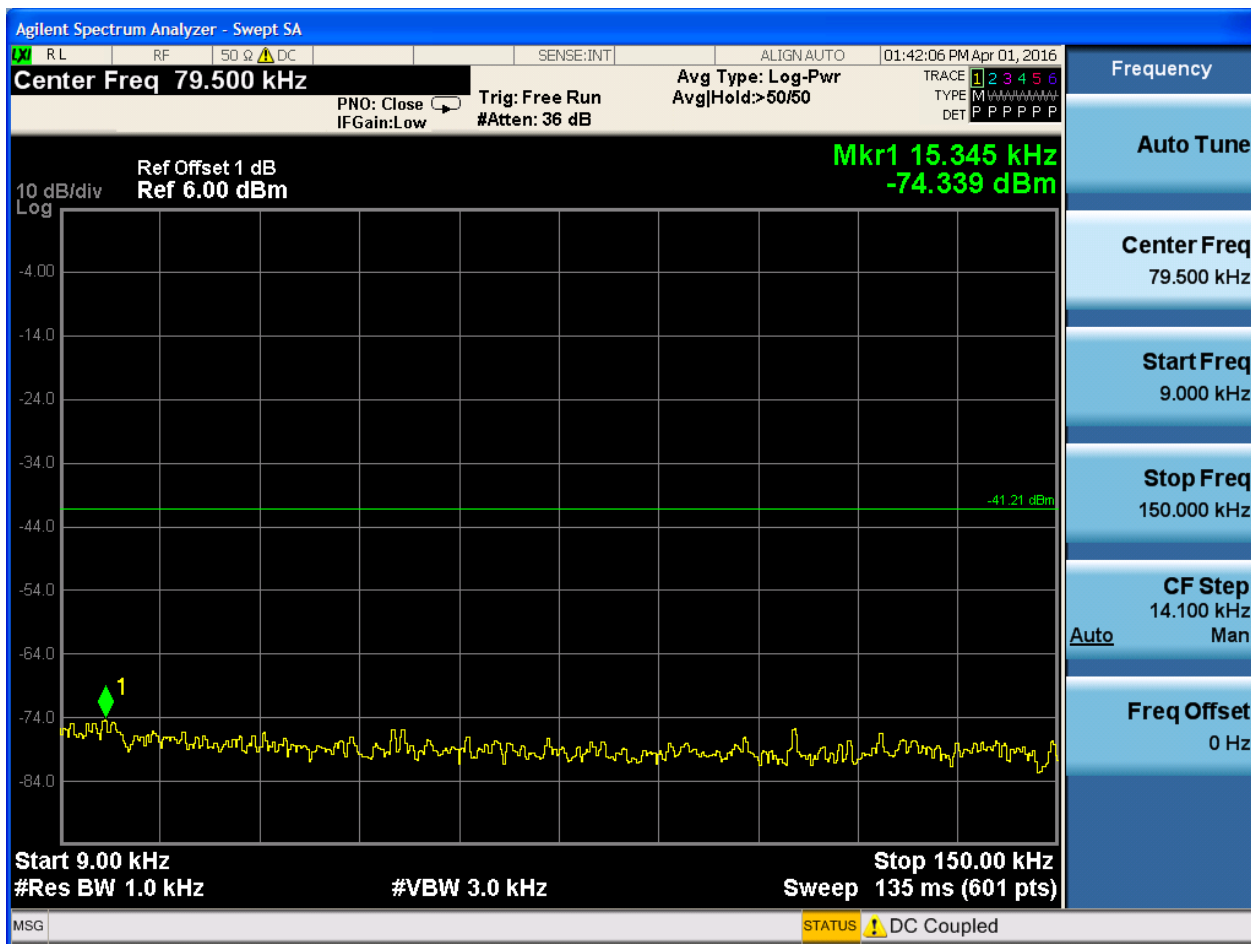
2.3 11B_H@Ant 1

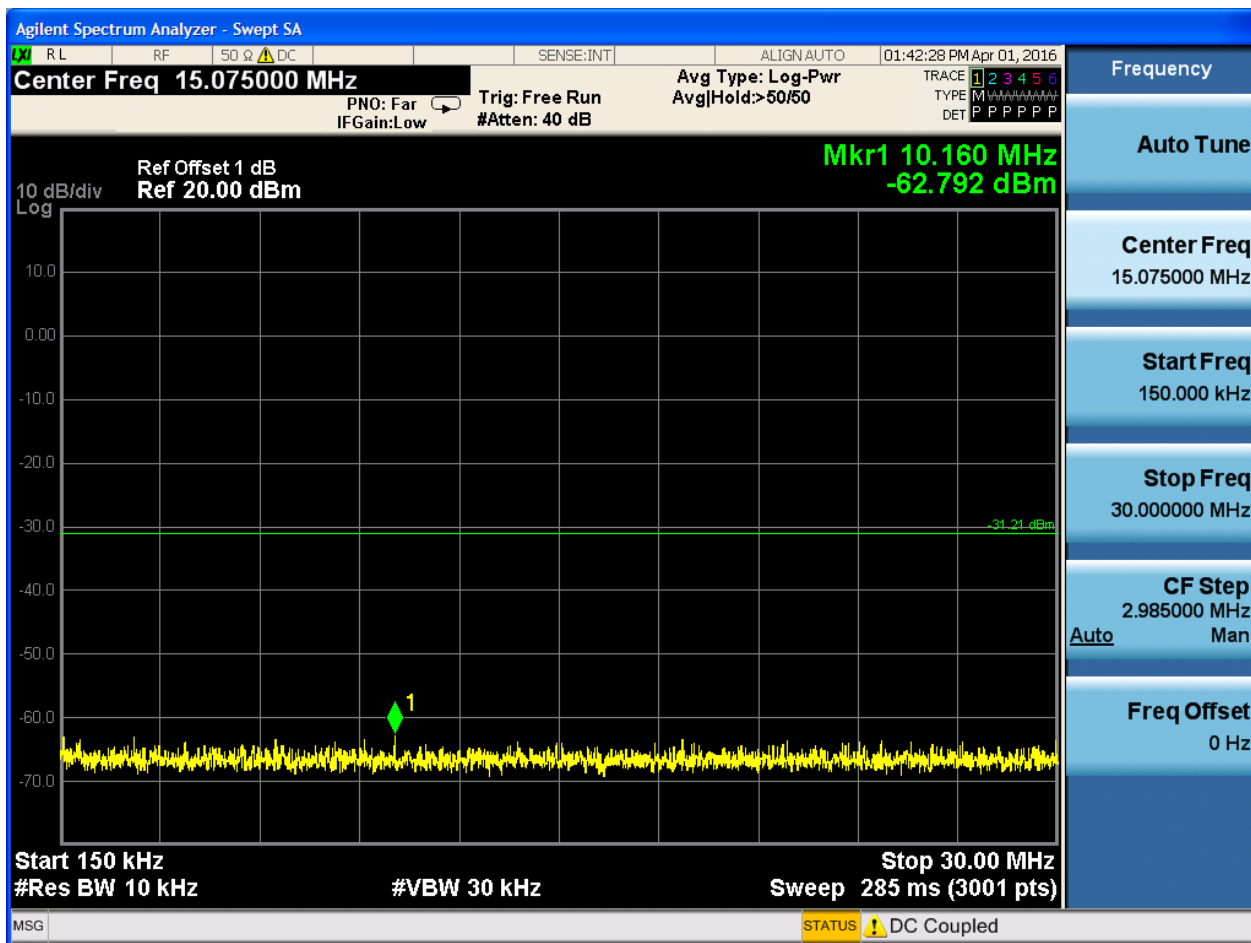
Pref:

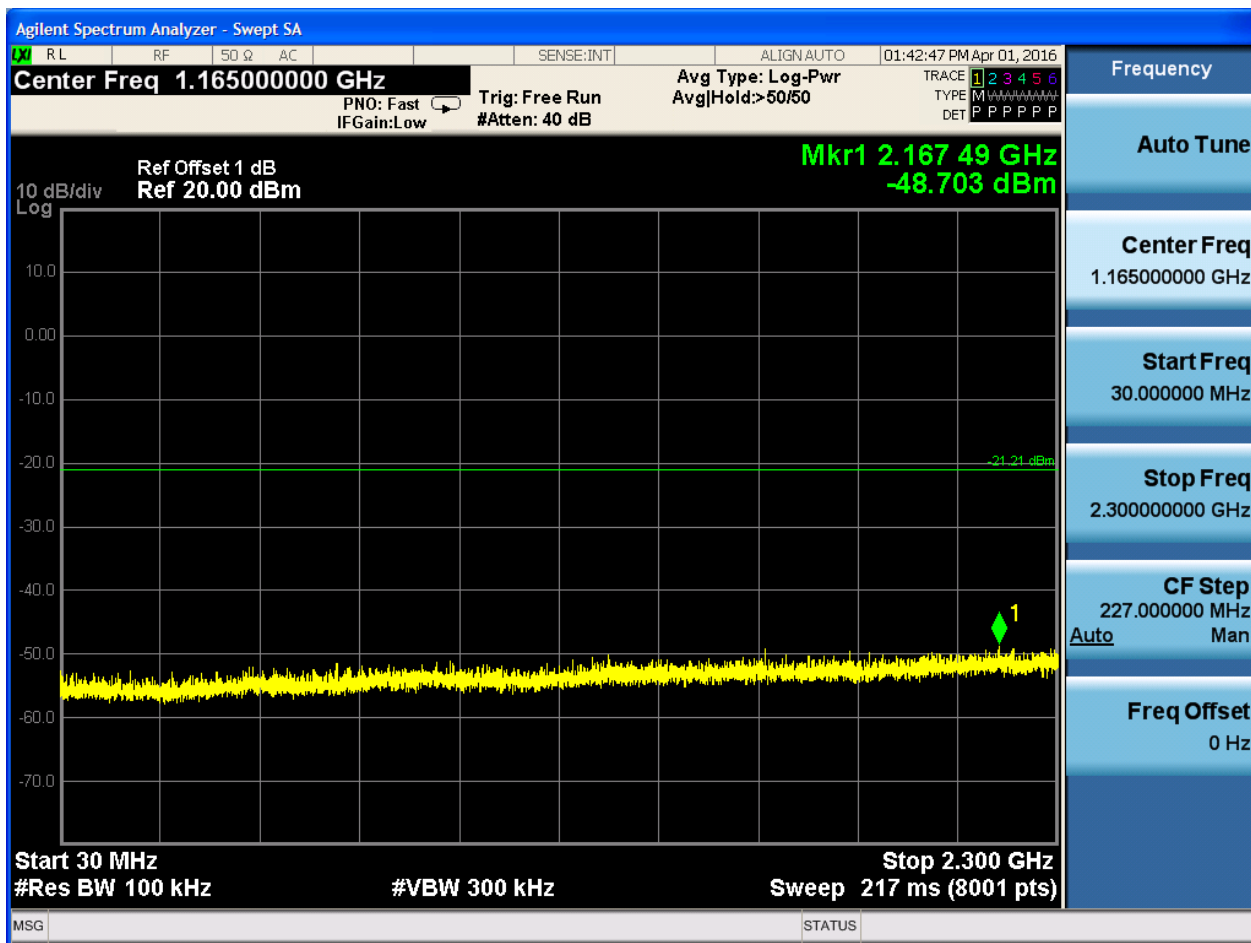


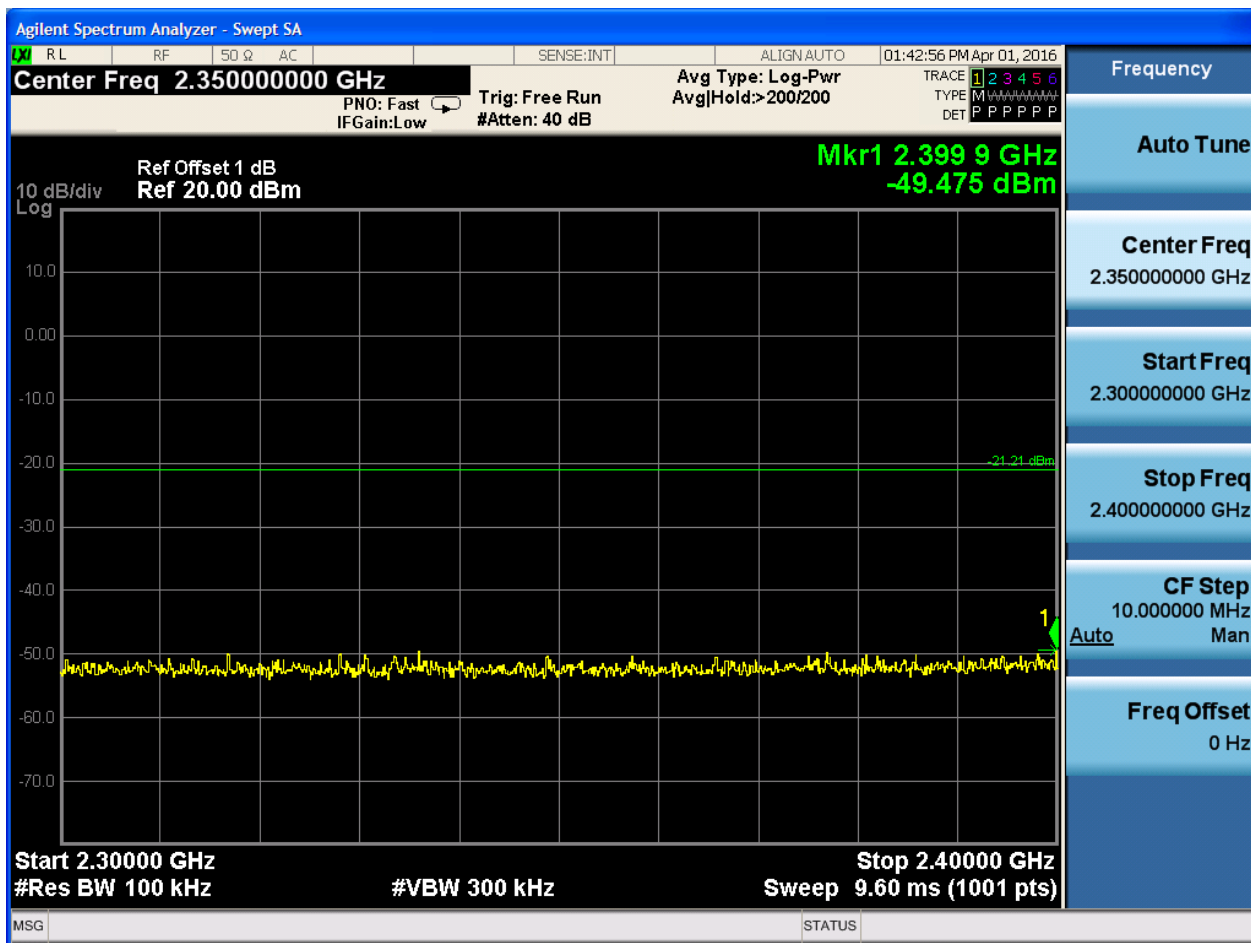


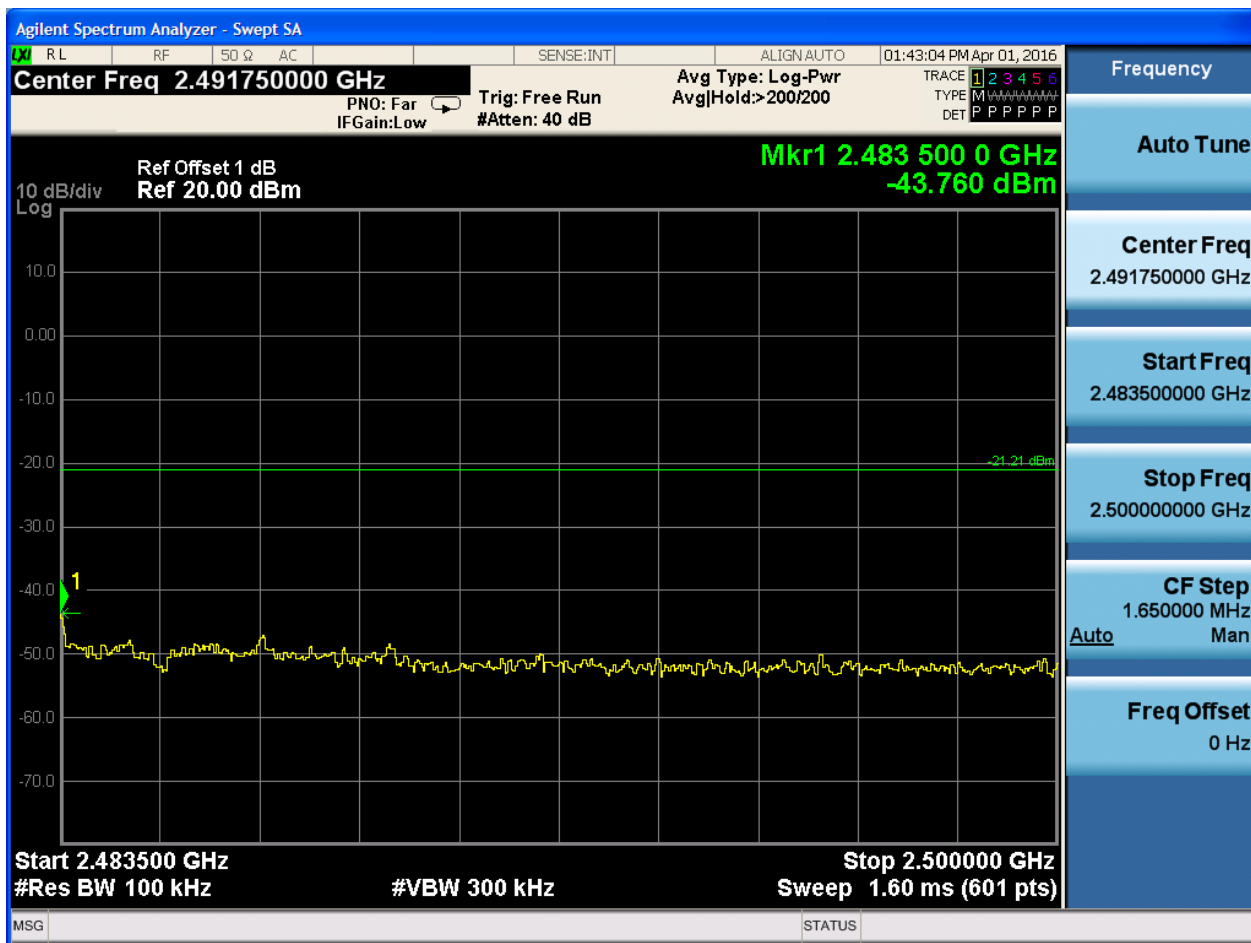
Puw:









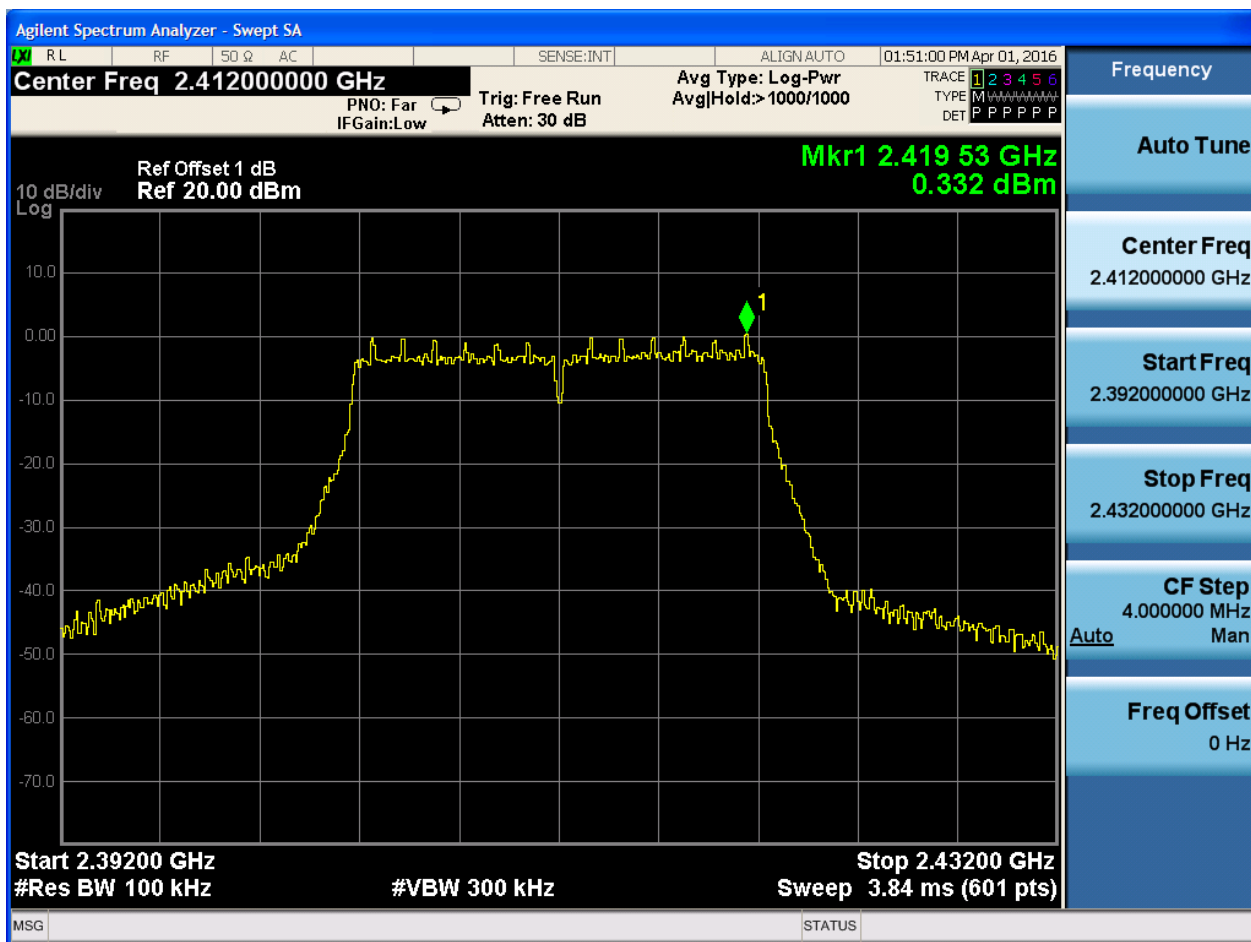






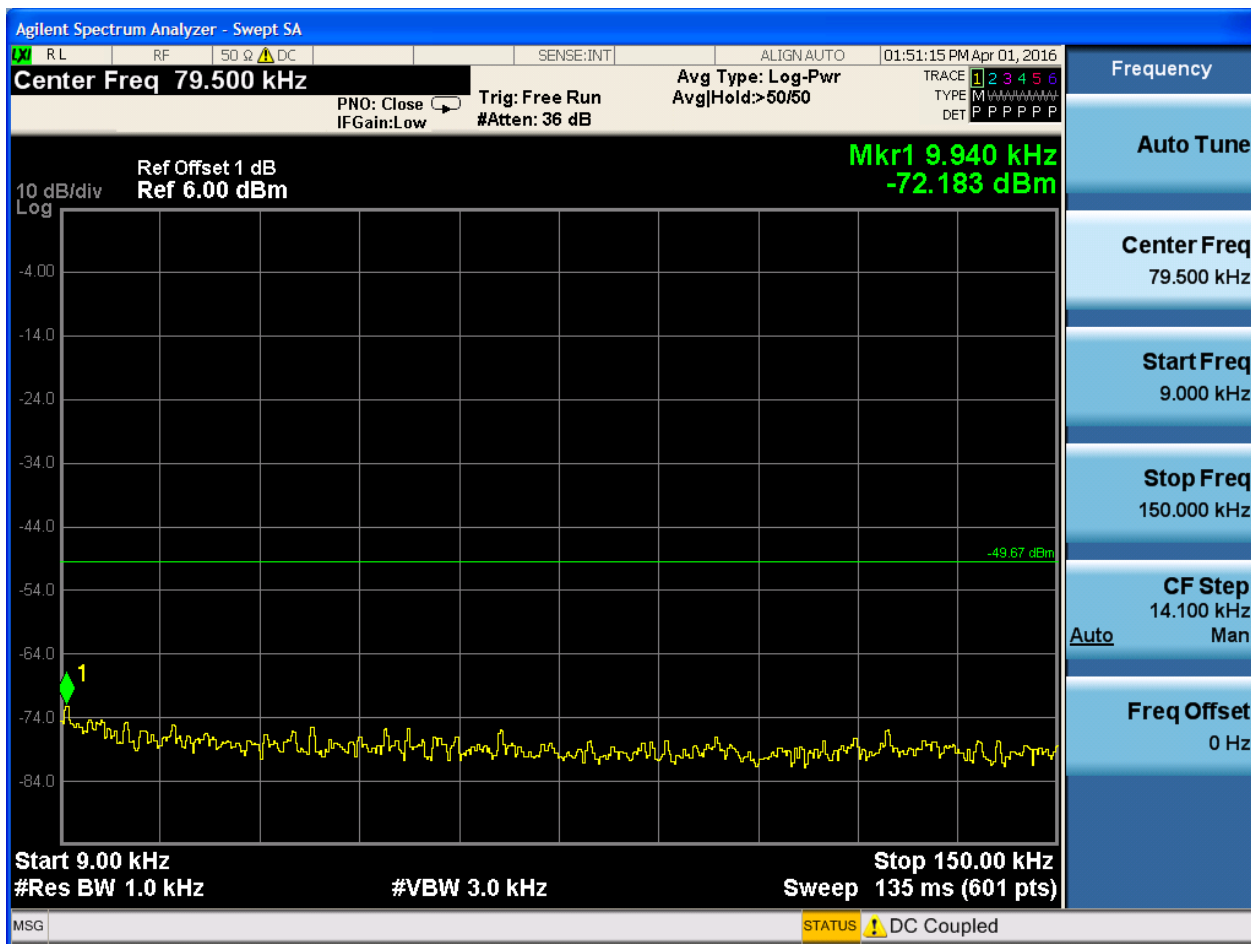
2.4 11G_L@Ant 1

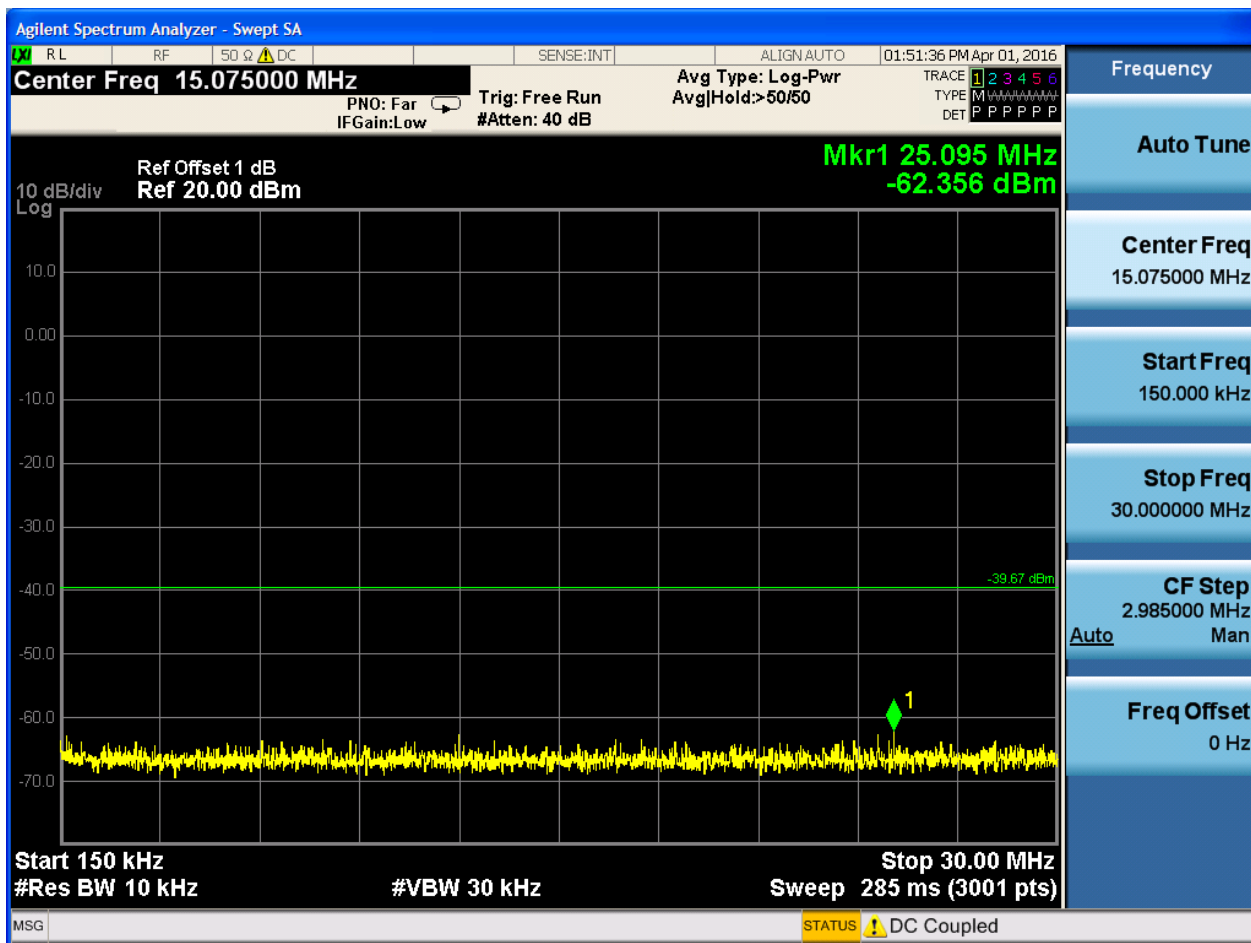
Pref:

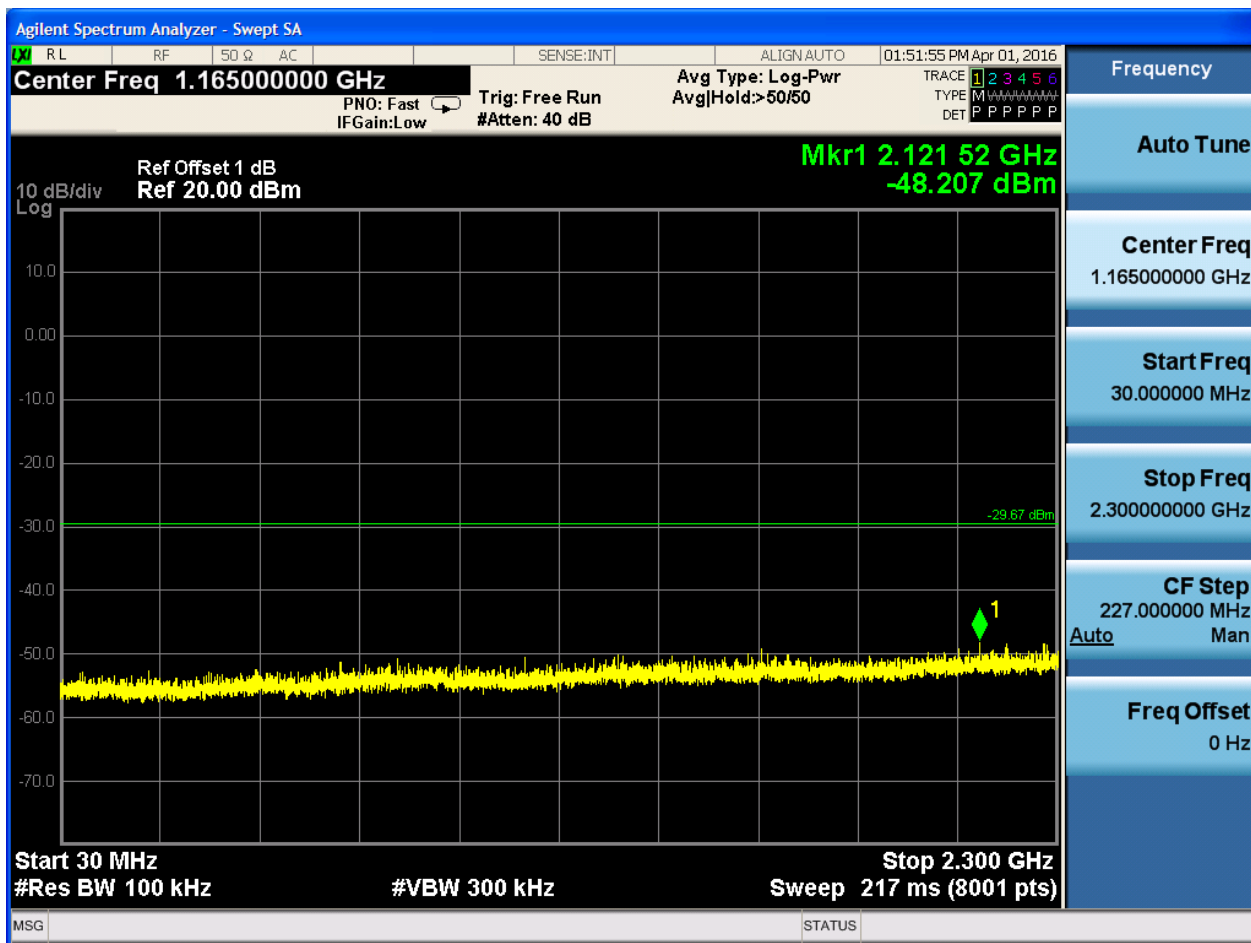


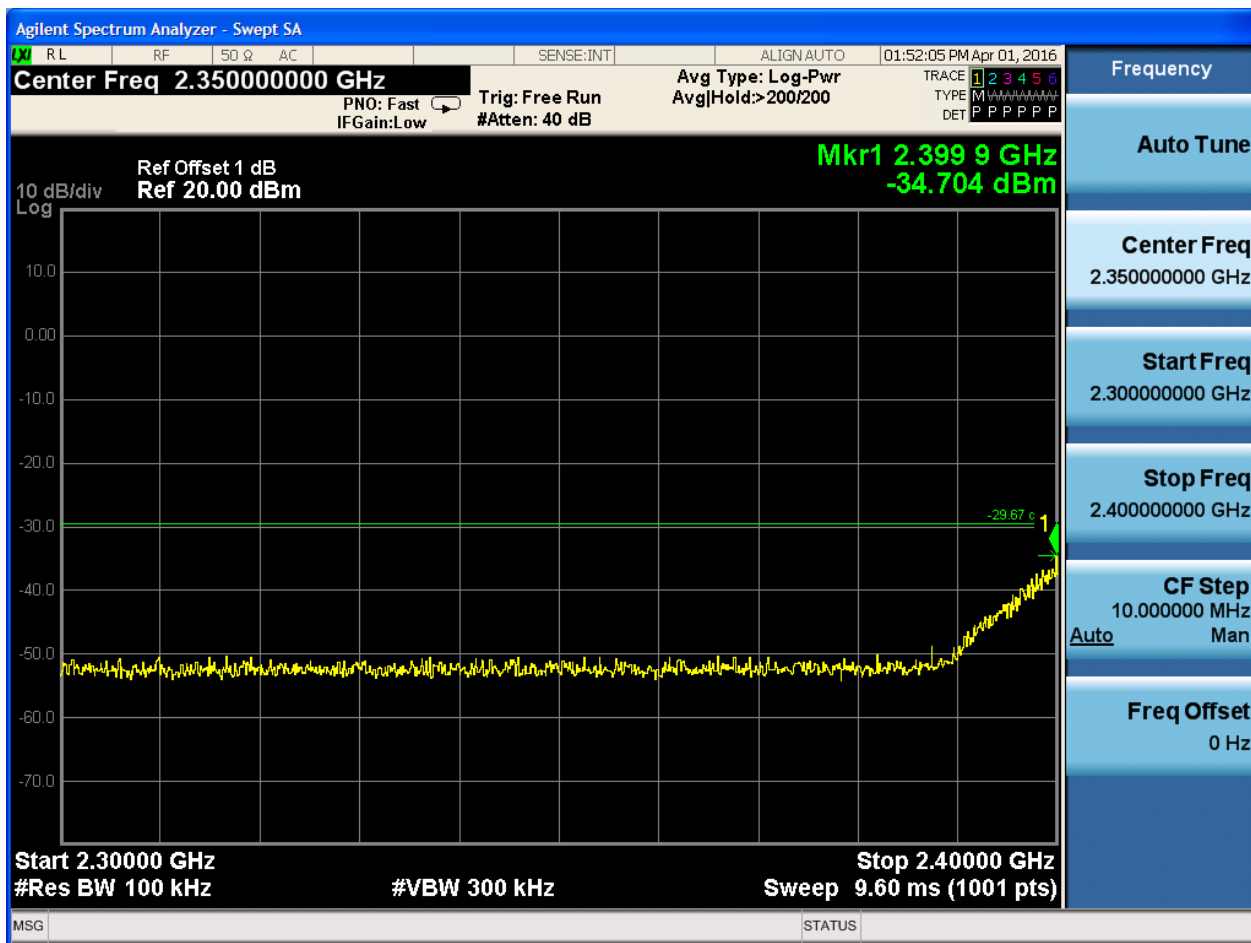


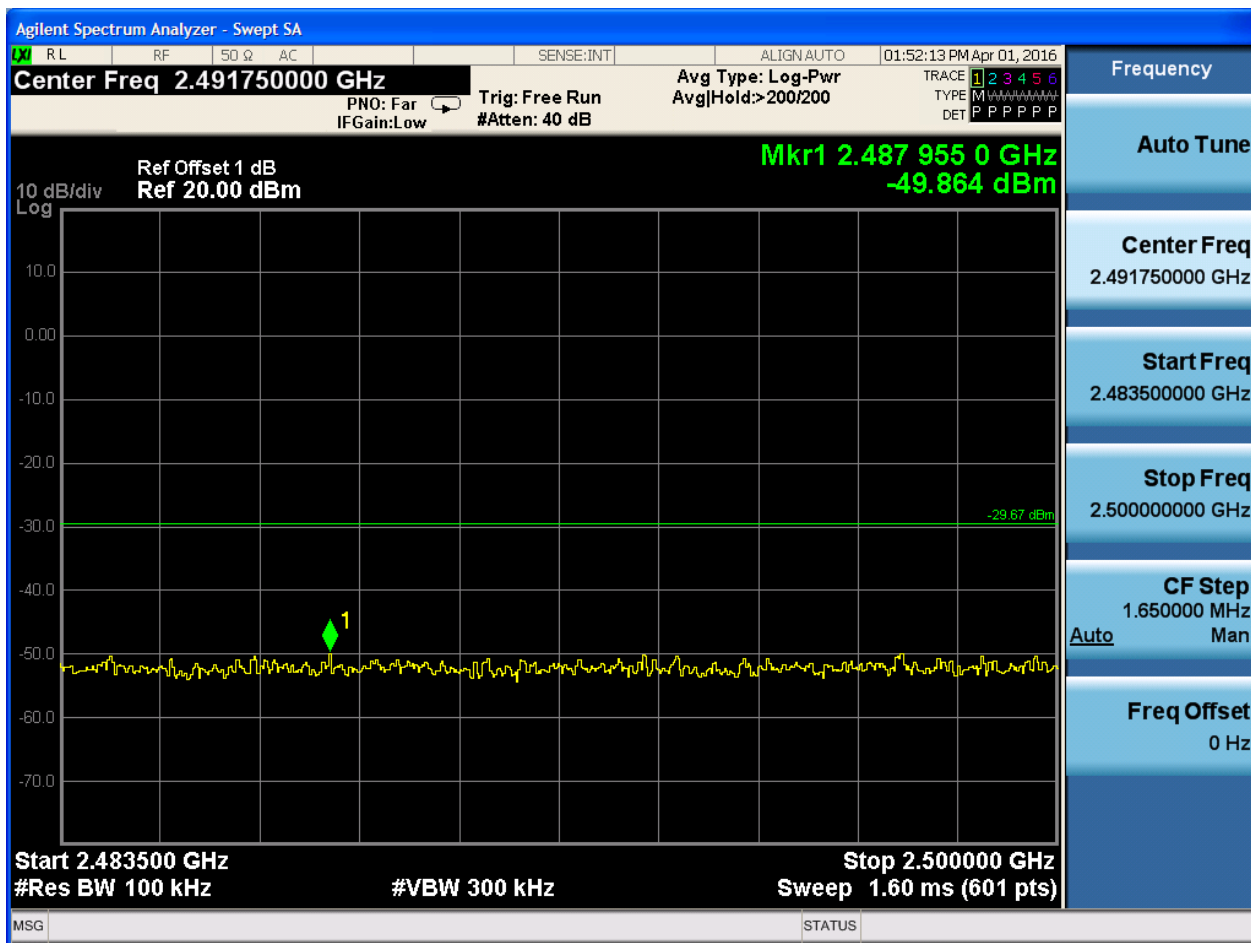
Puw:









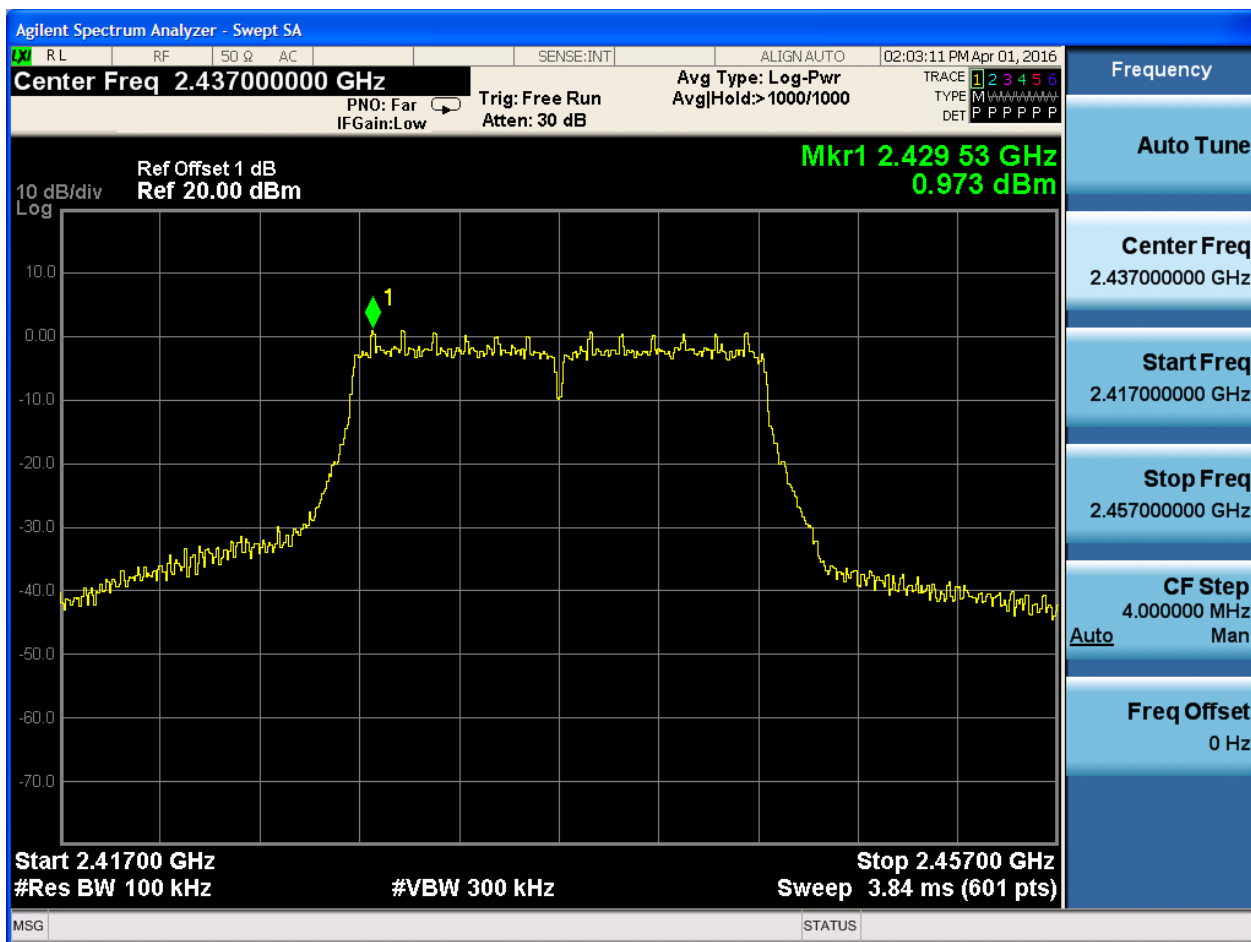






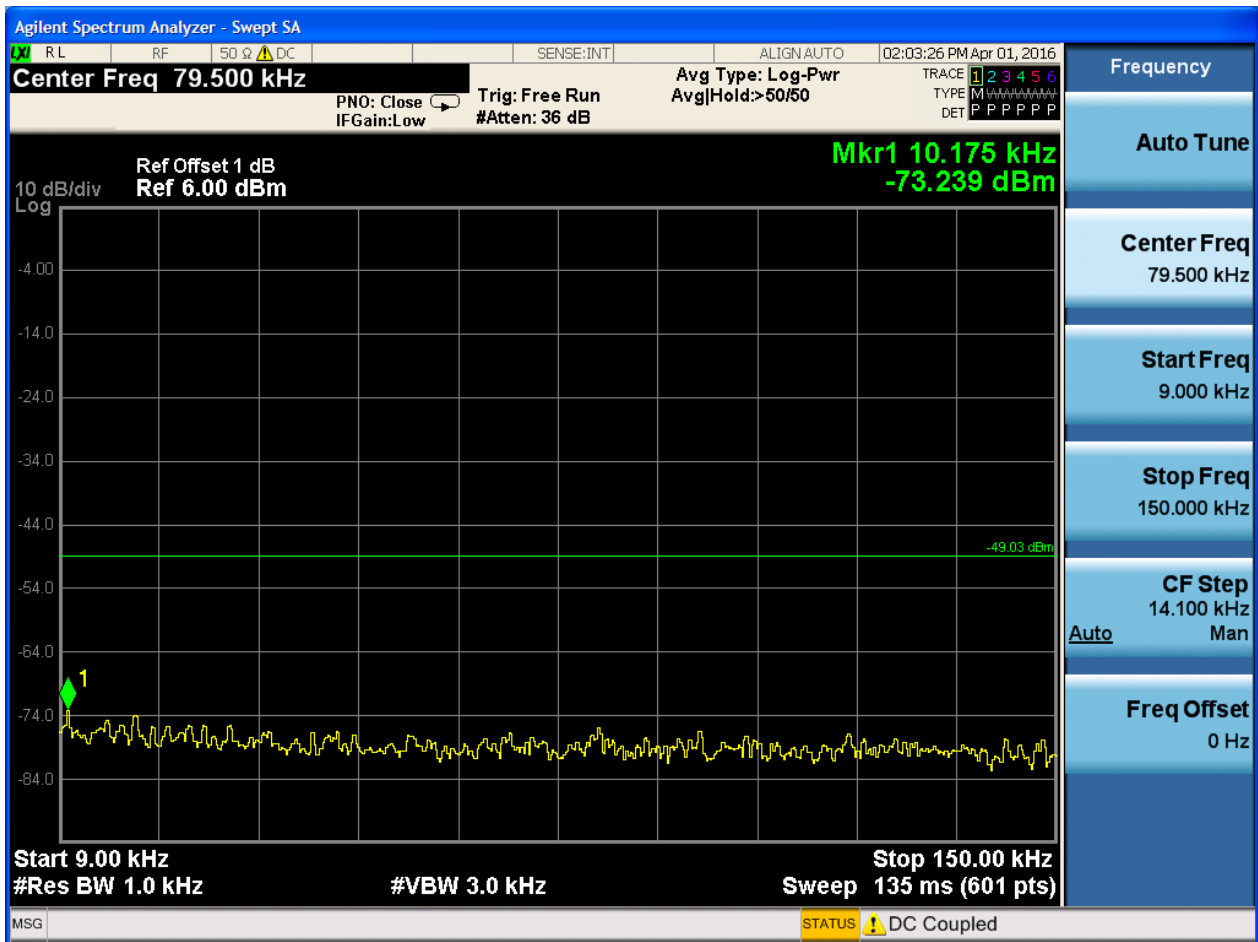
2.5 11G_M@Ant 1

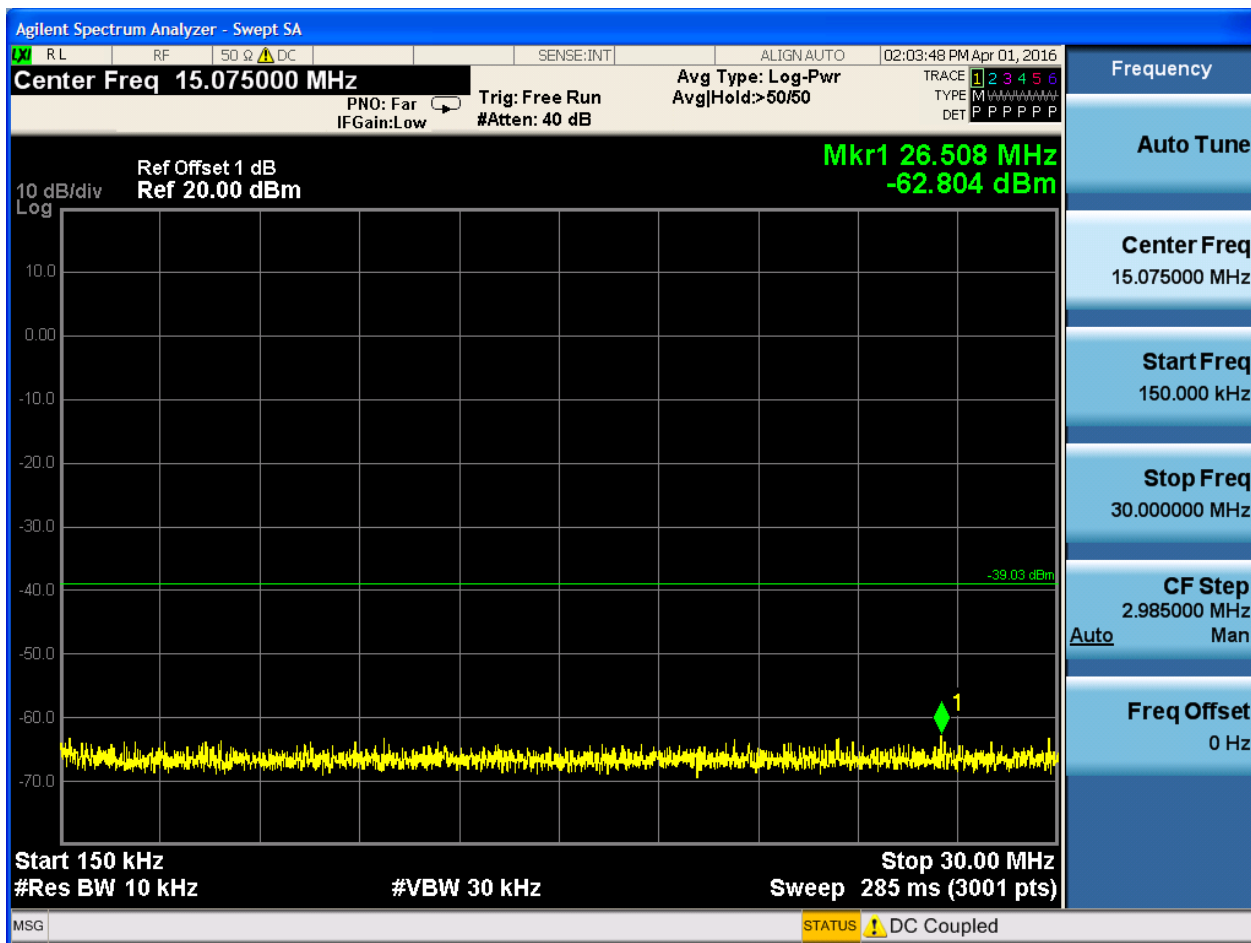
Pref:

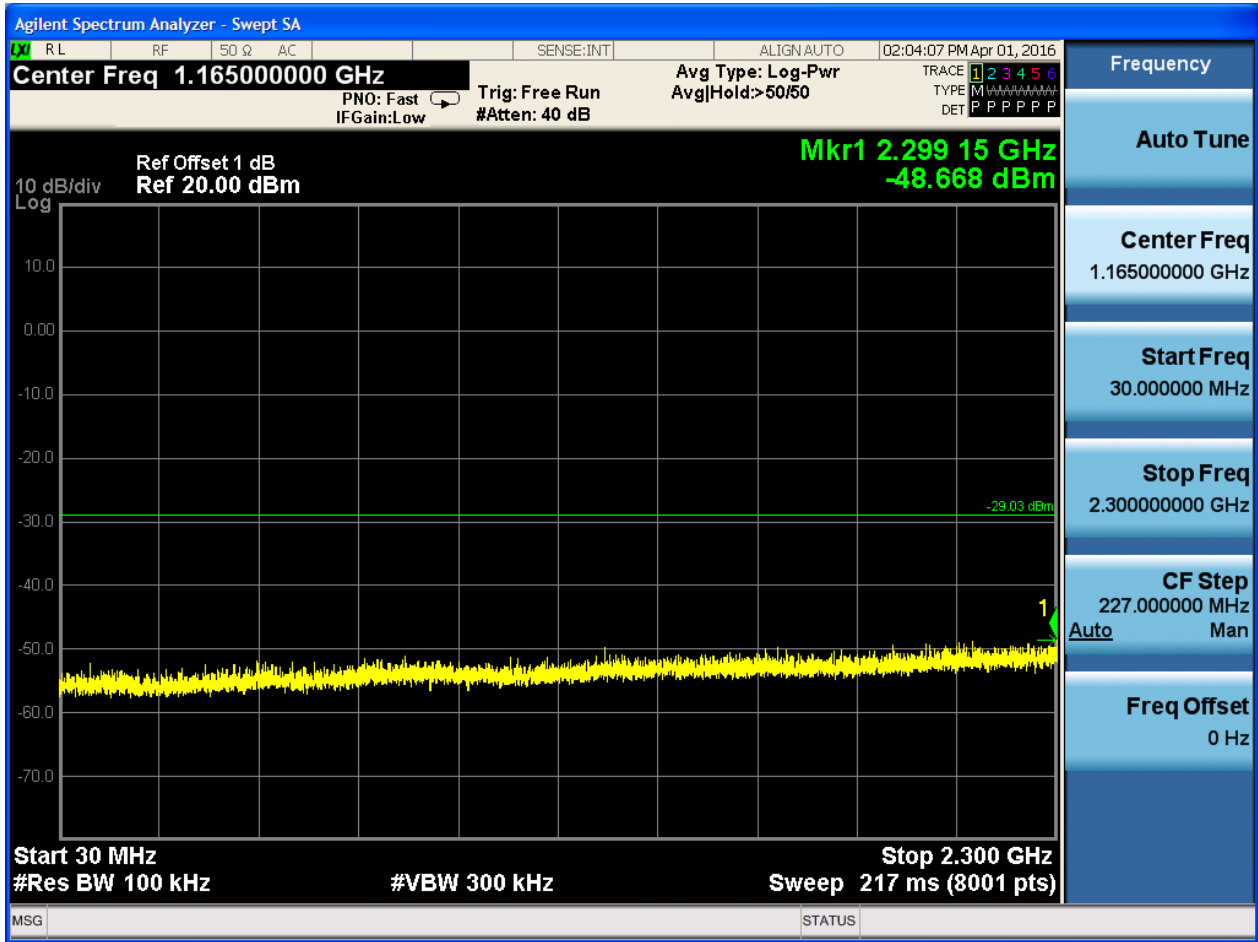


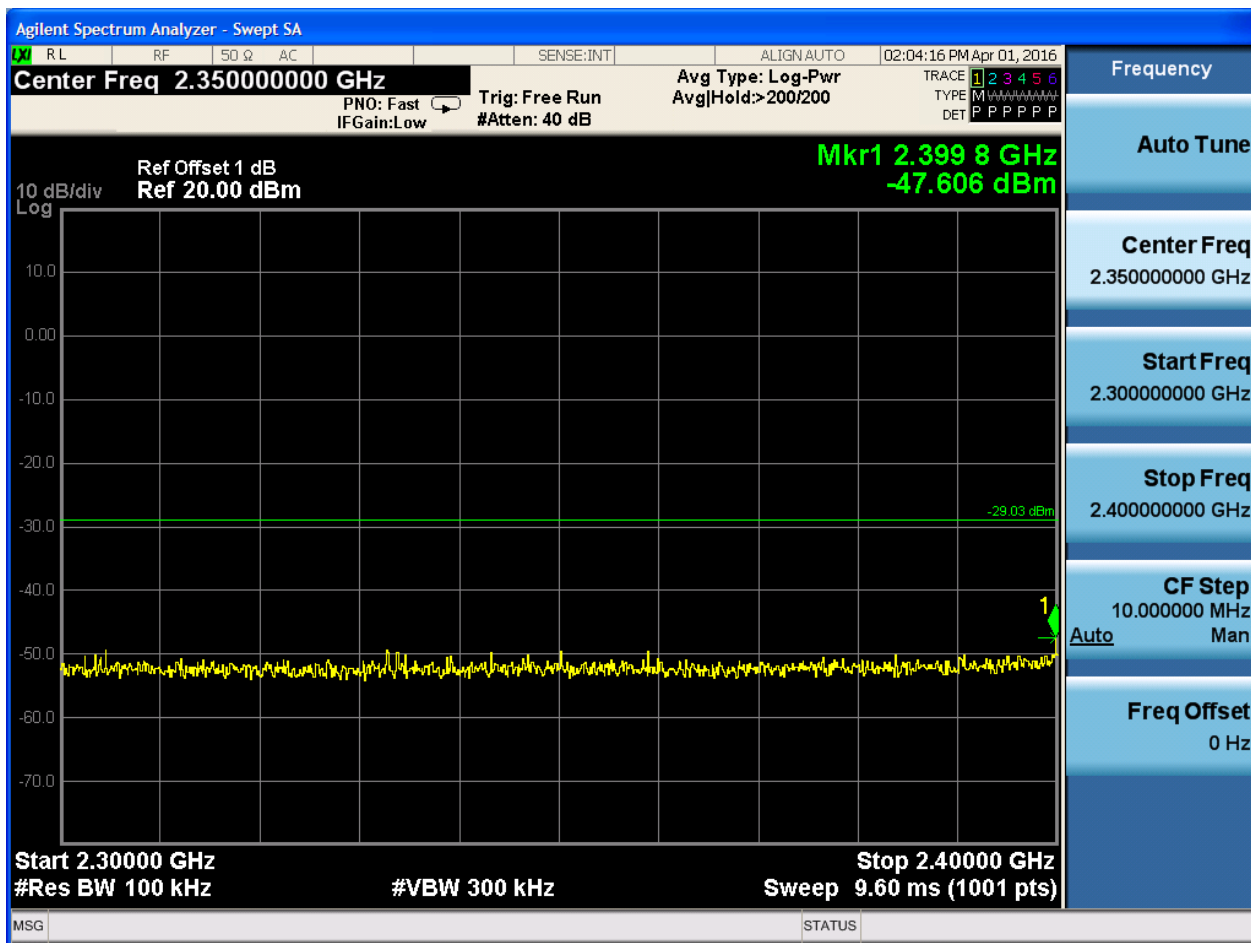


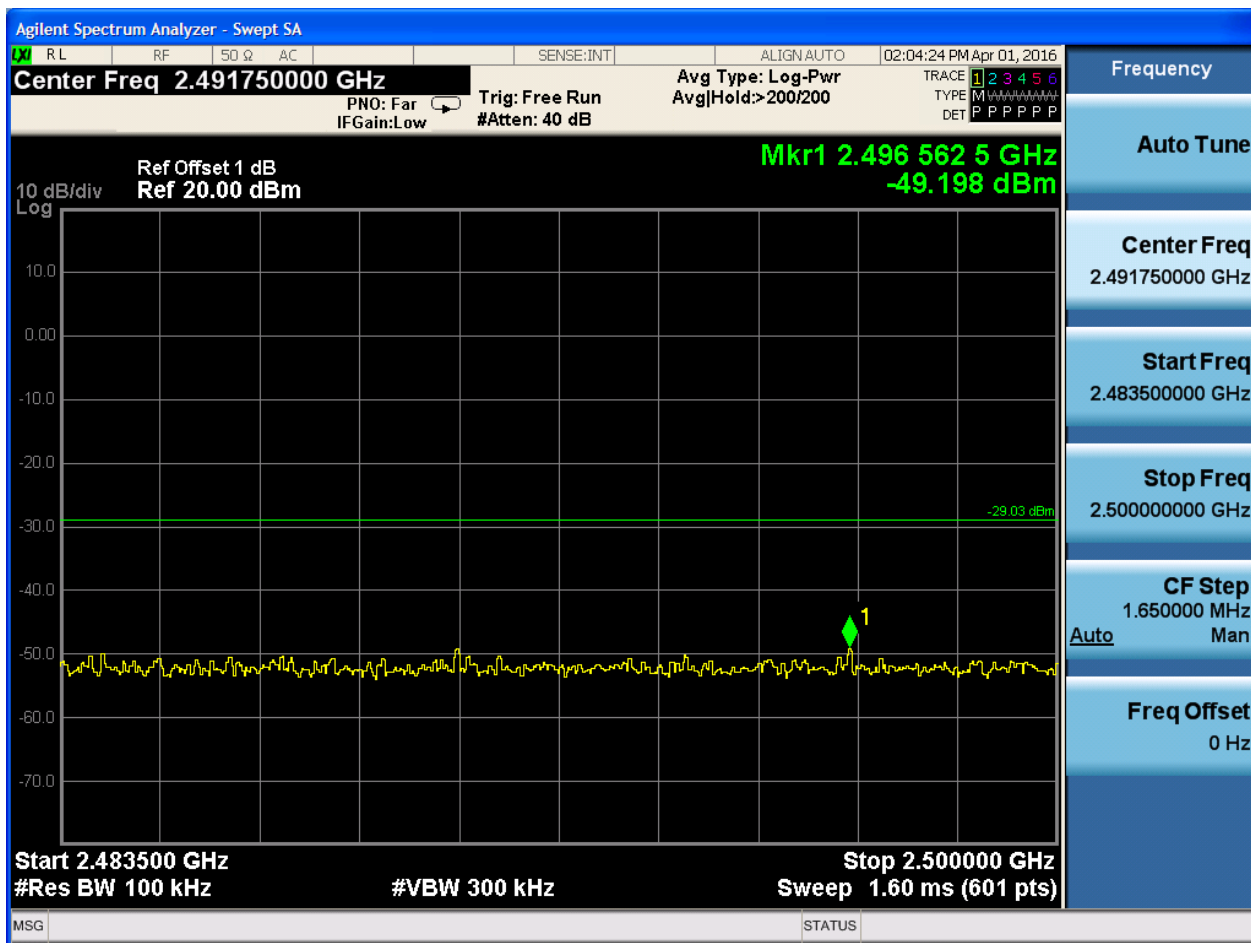
PuW:









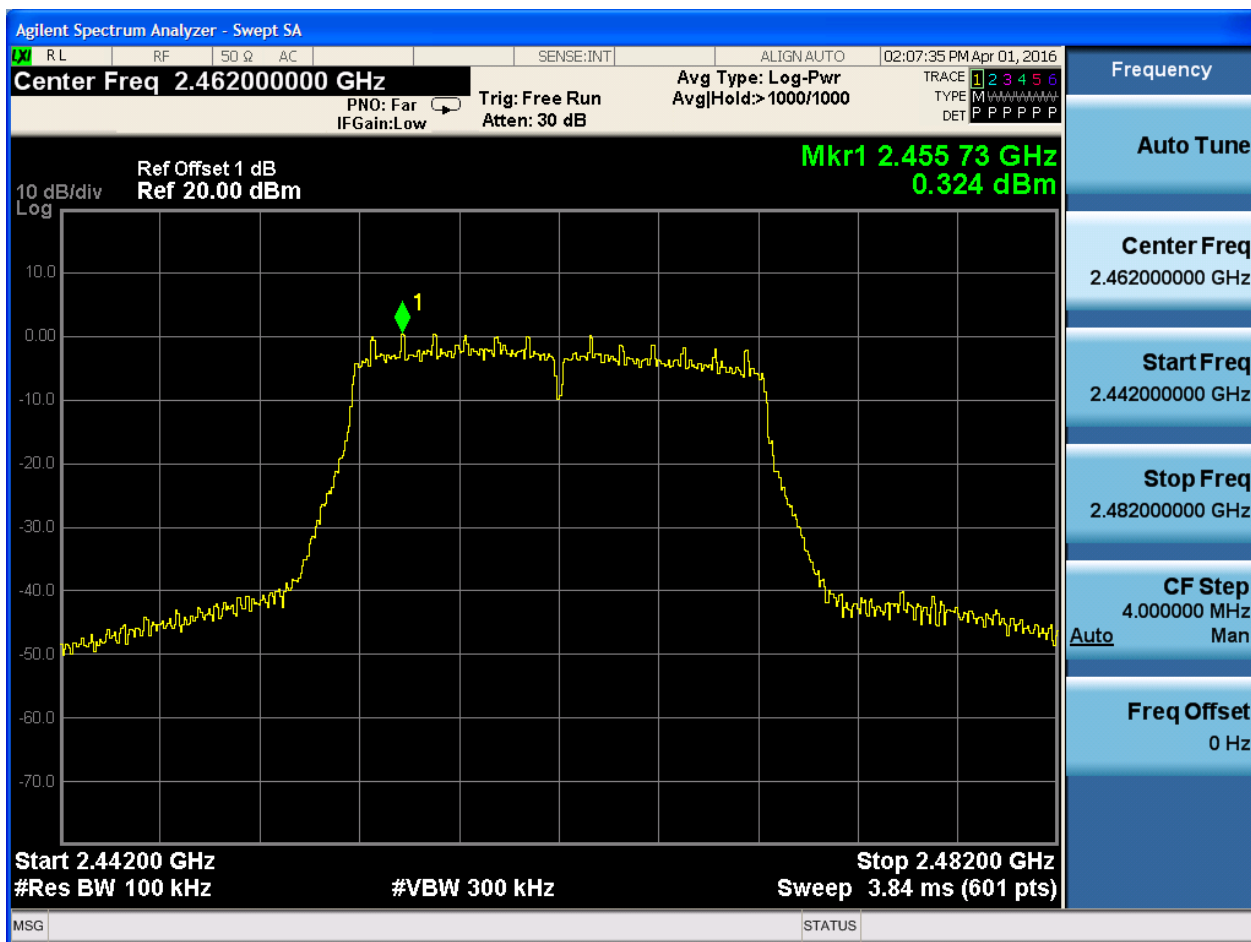


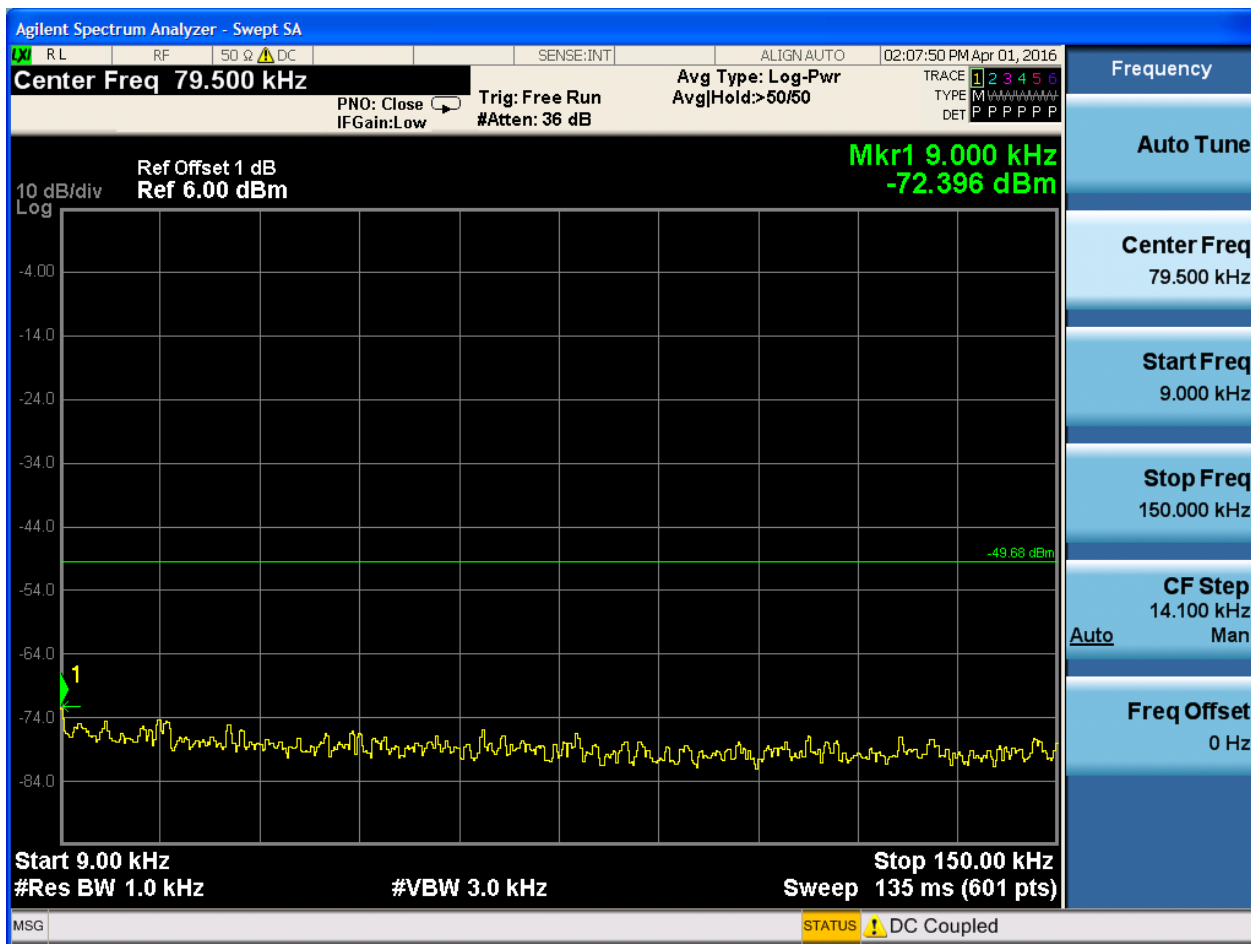


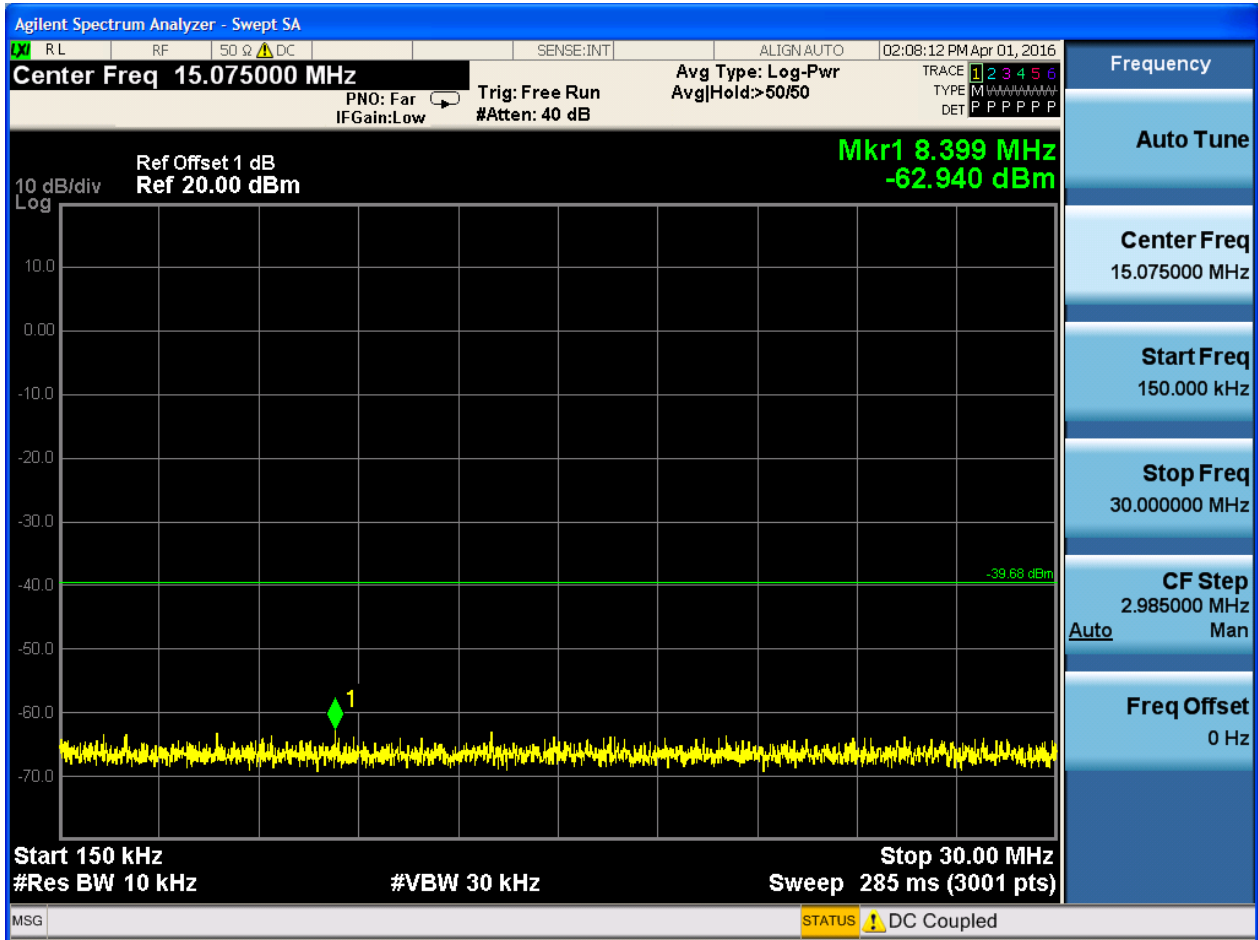


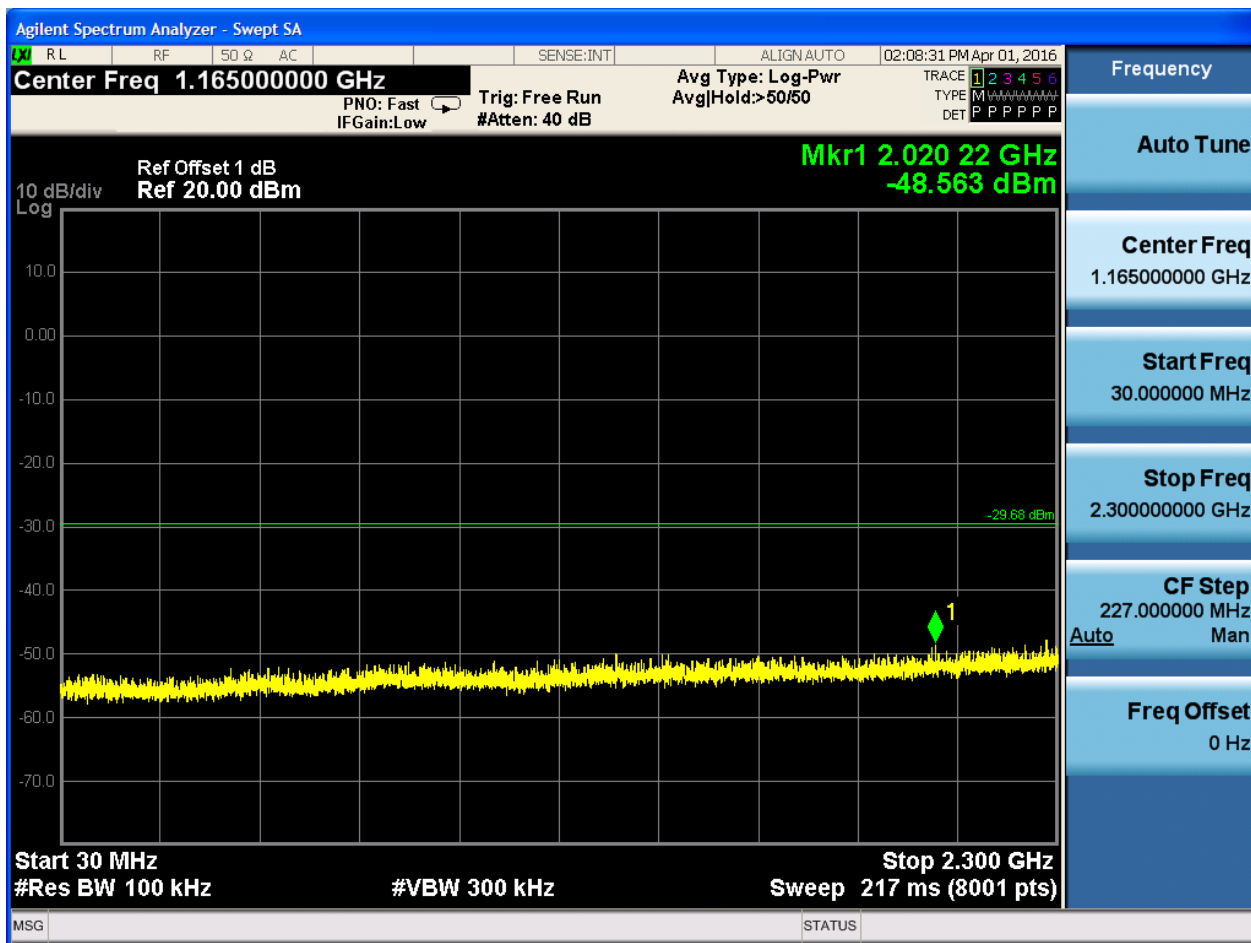
2.6 11G_H@Ant 1

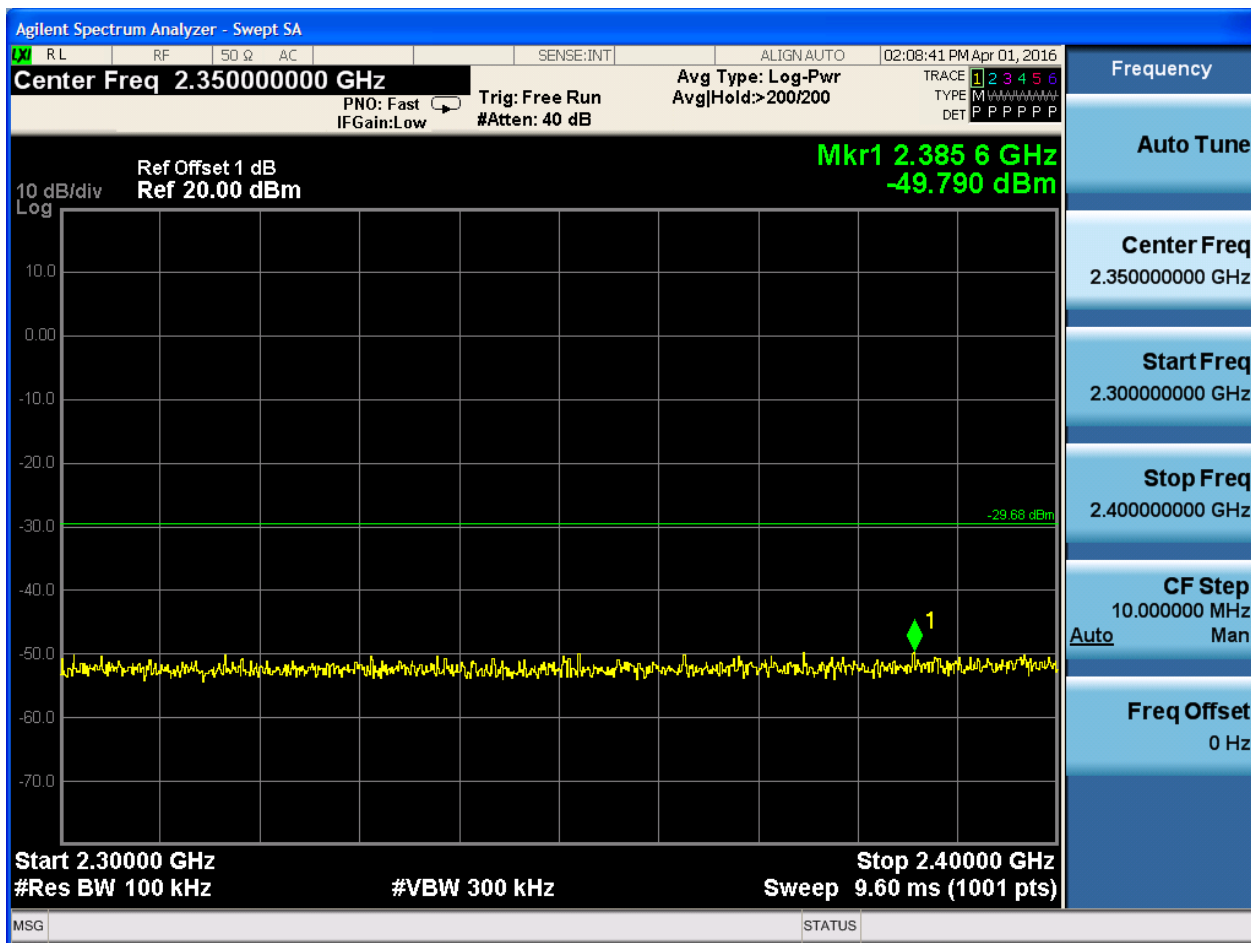
Pref:

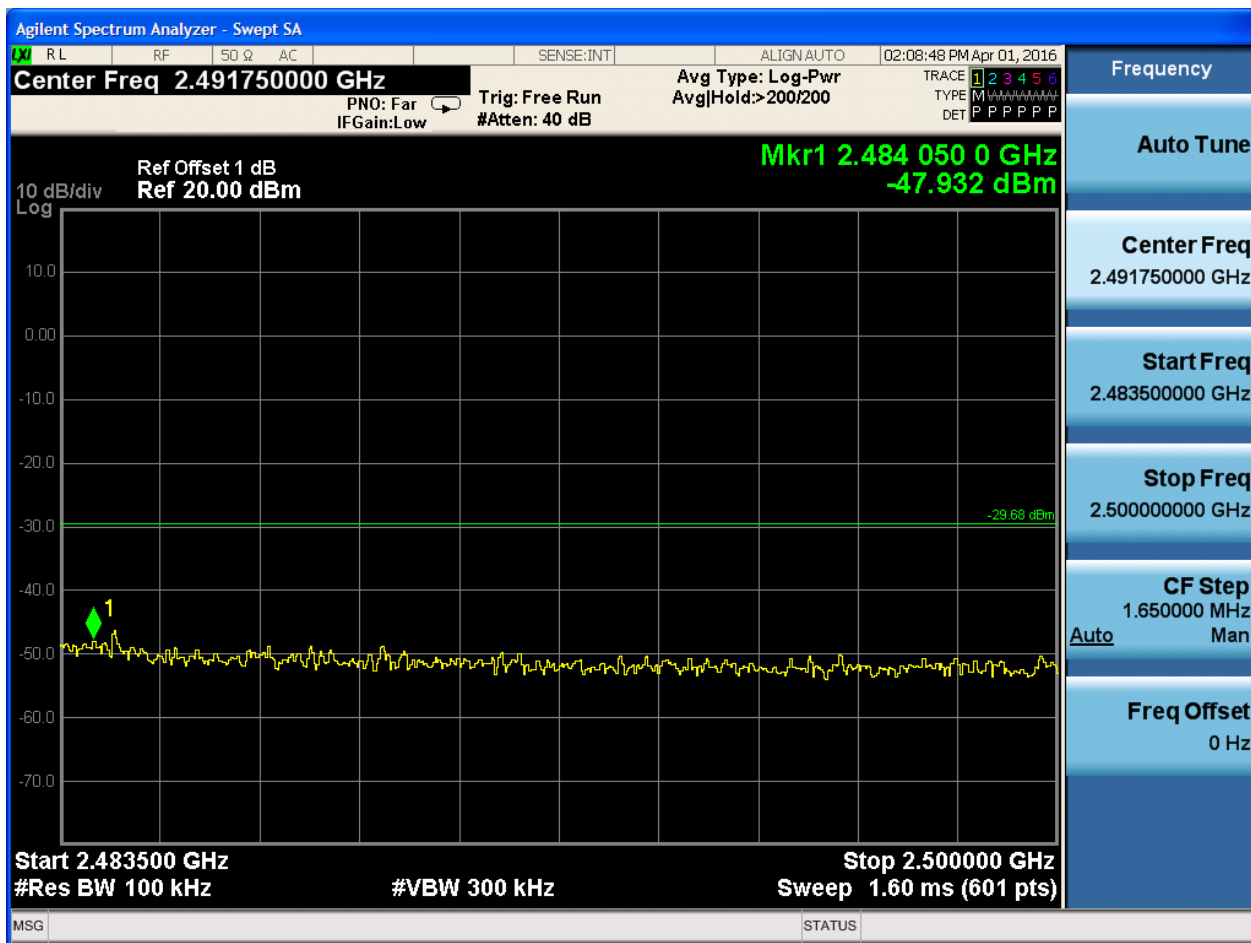


P_uw:







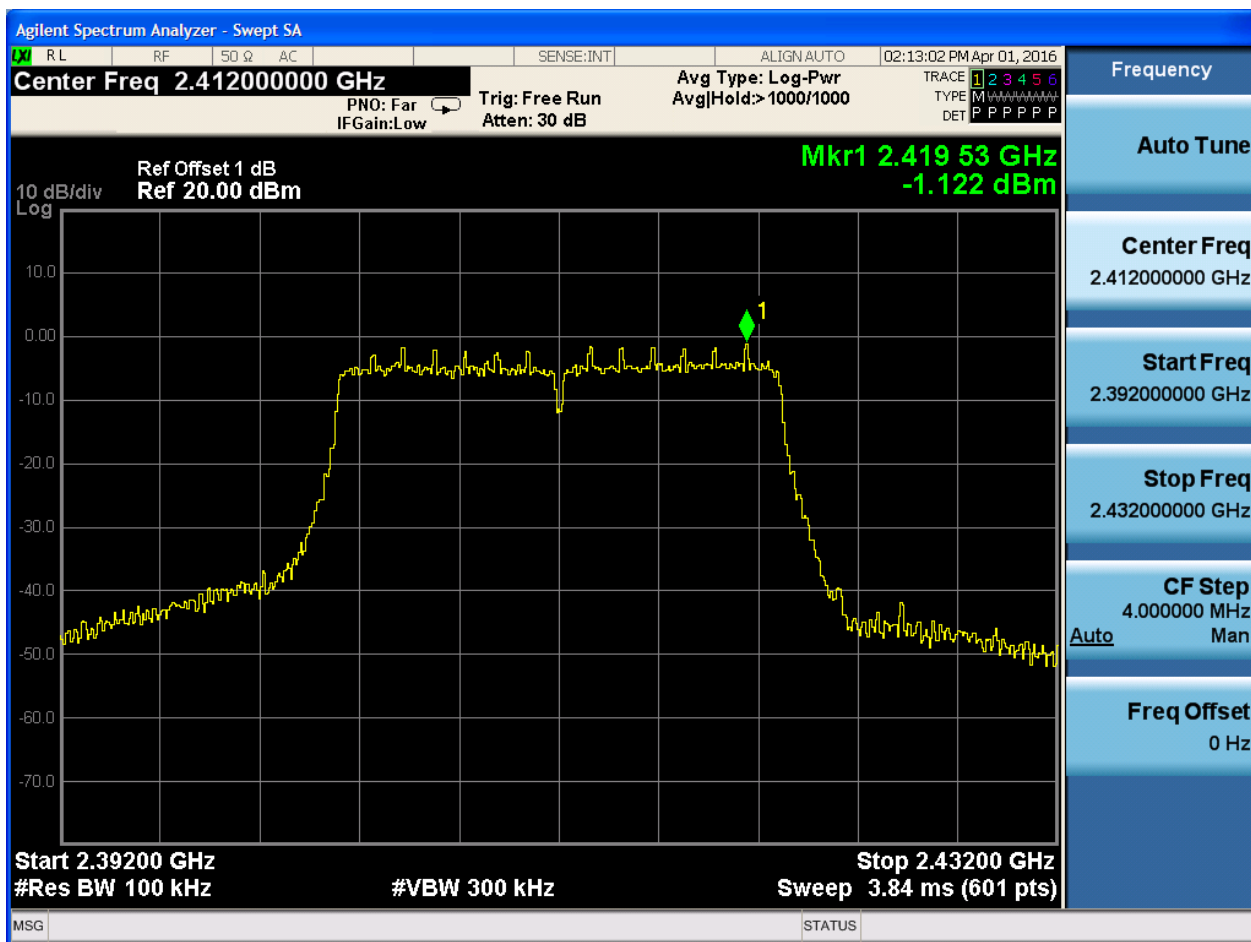






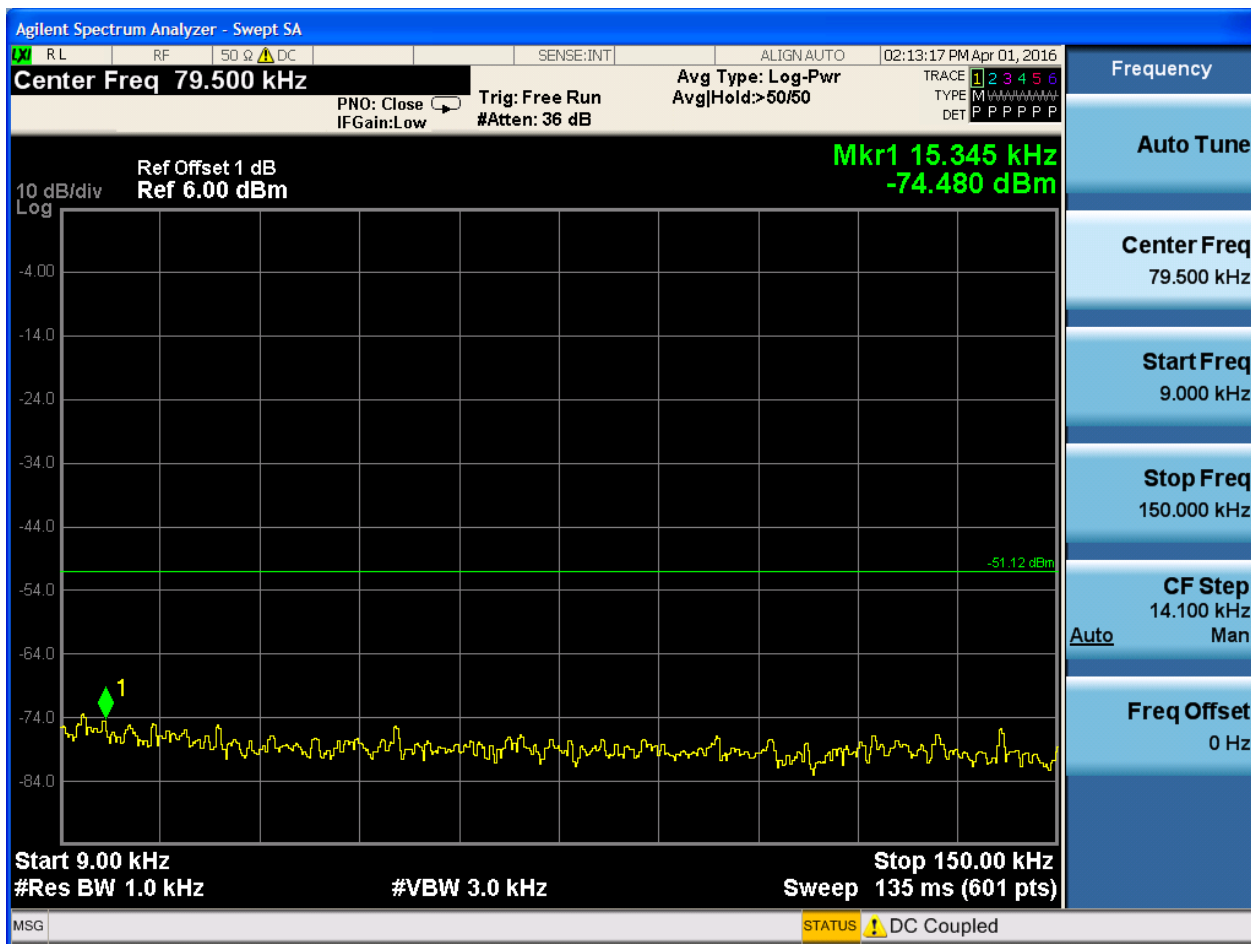
2.7 11N20_L@Ant 1

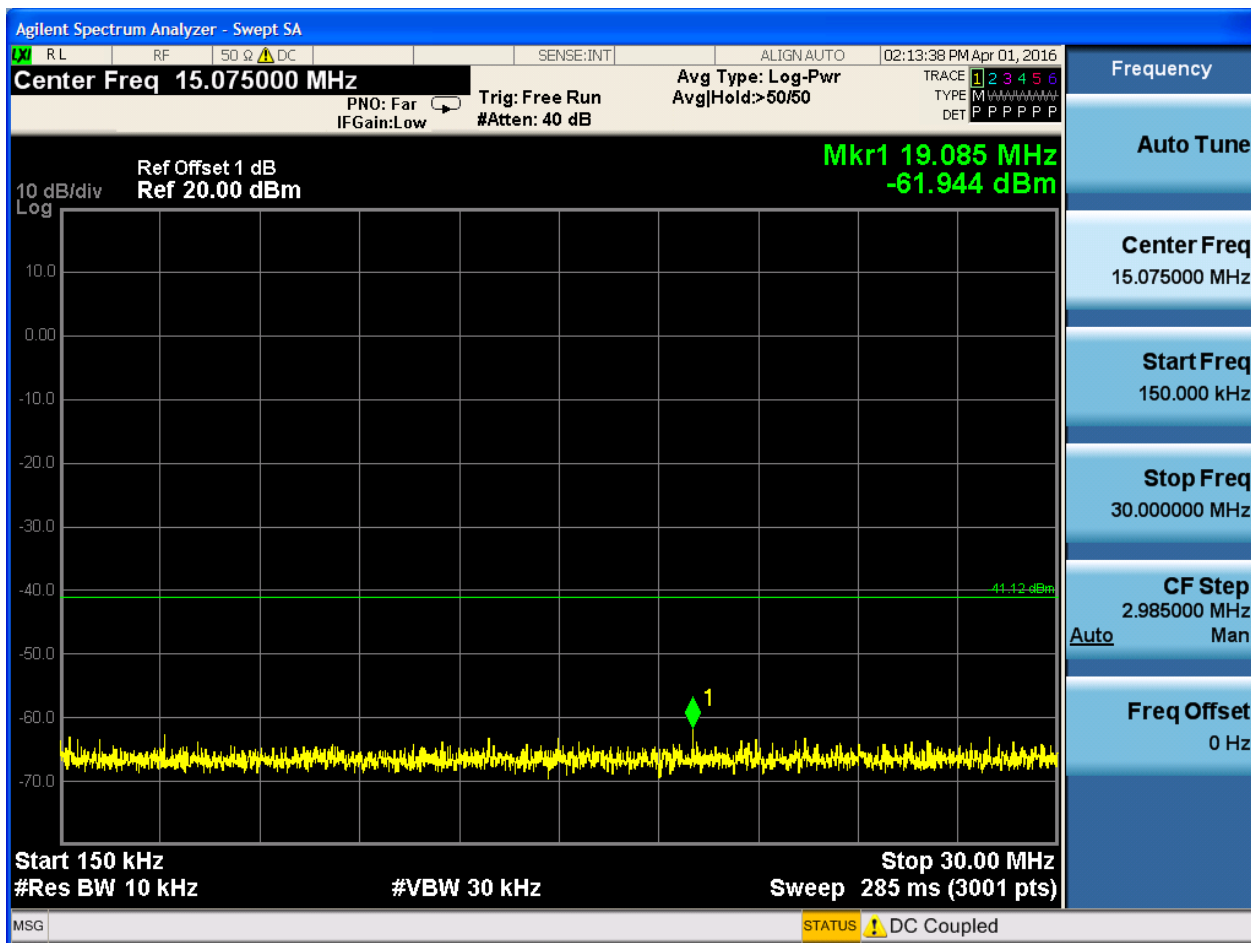
Pref:



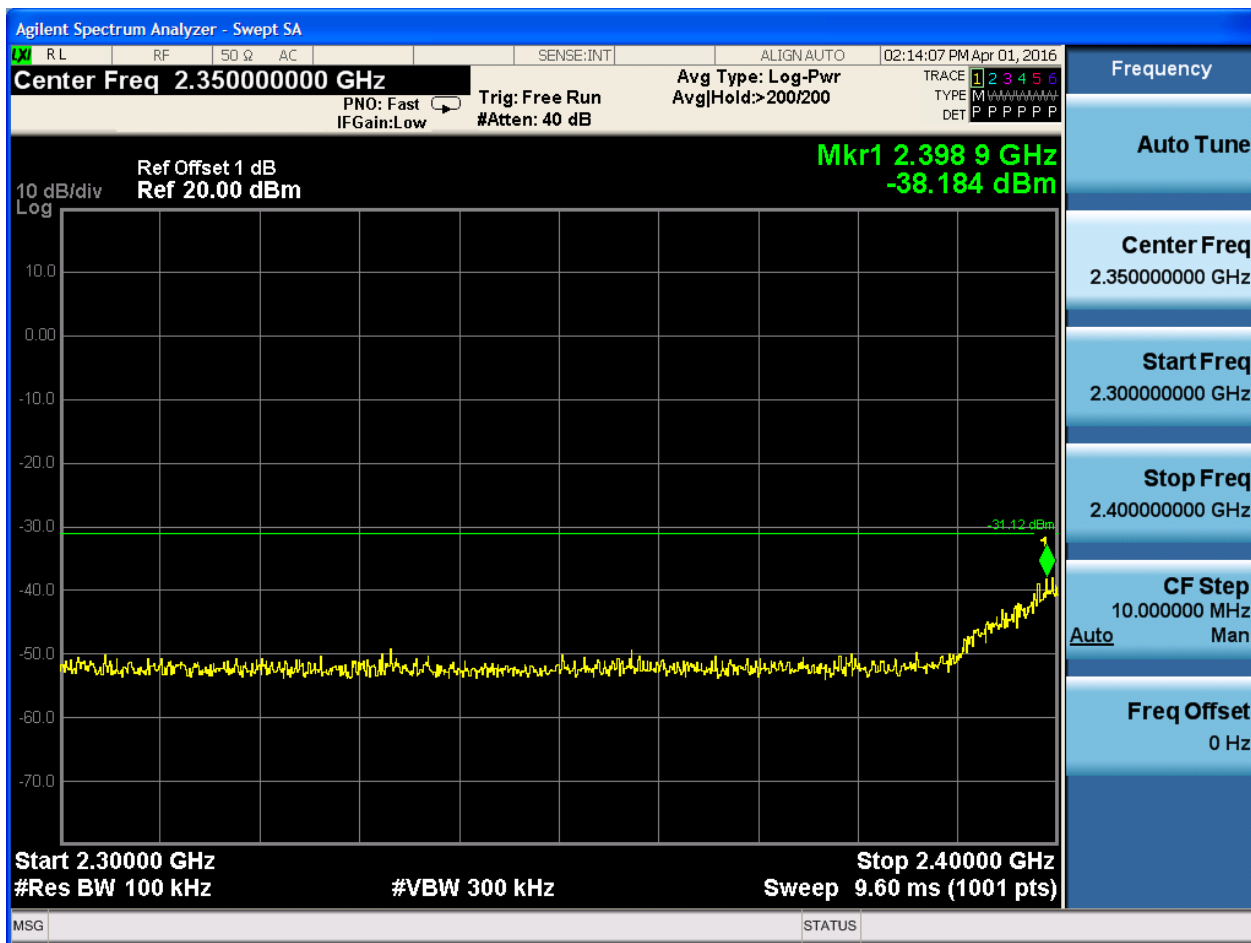


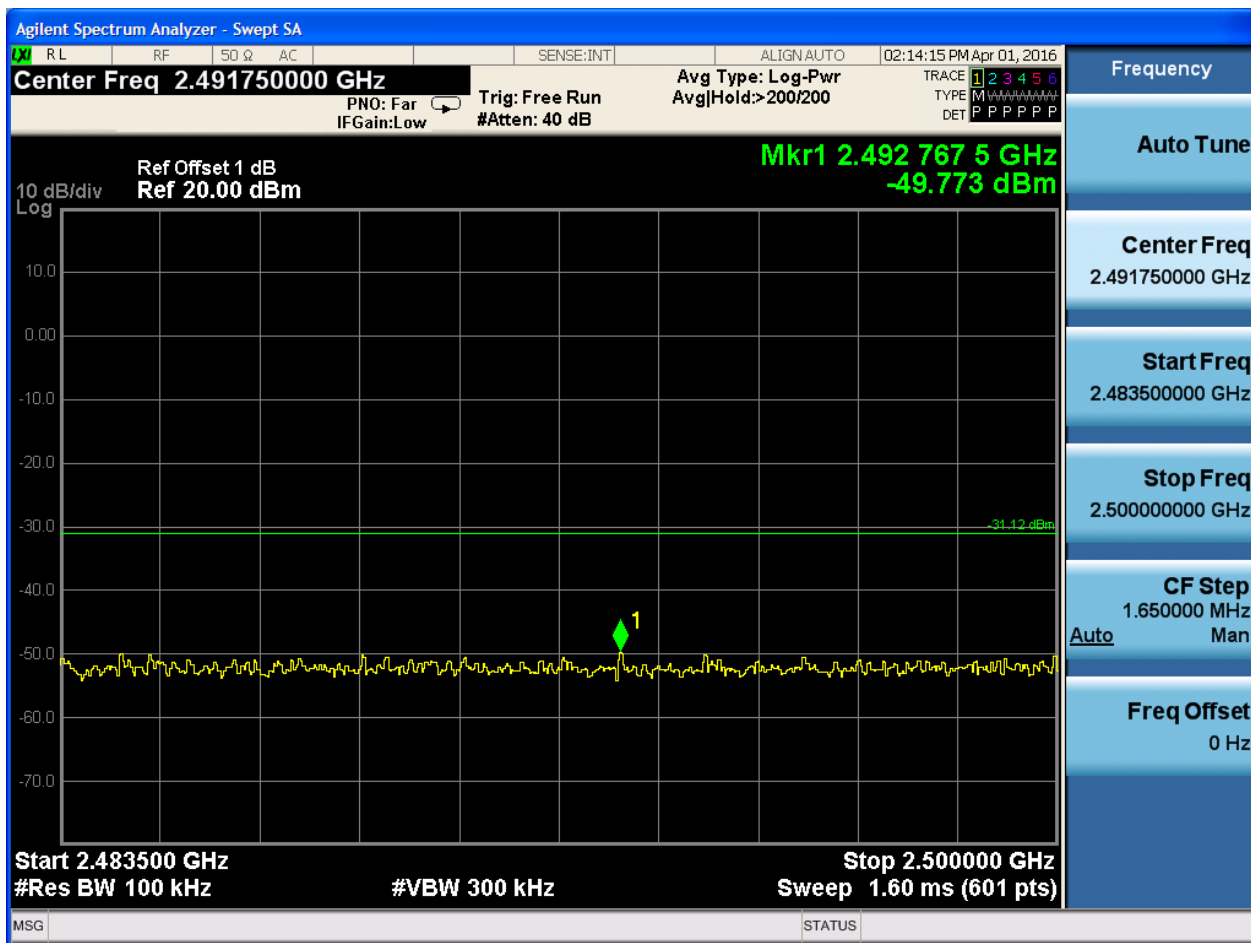
Puw:









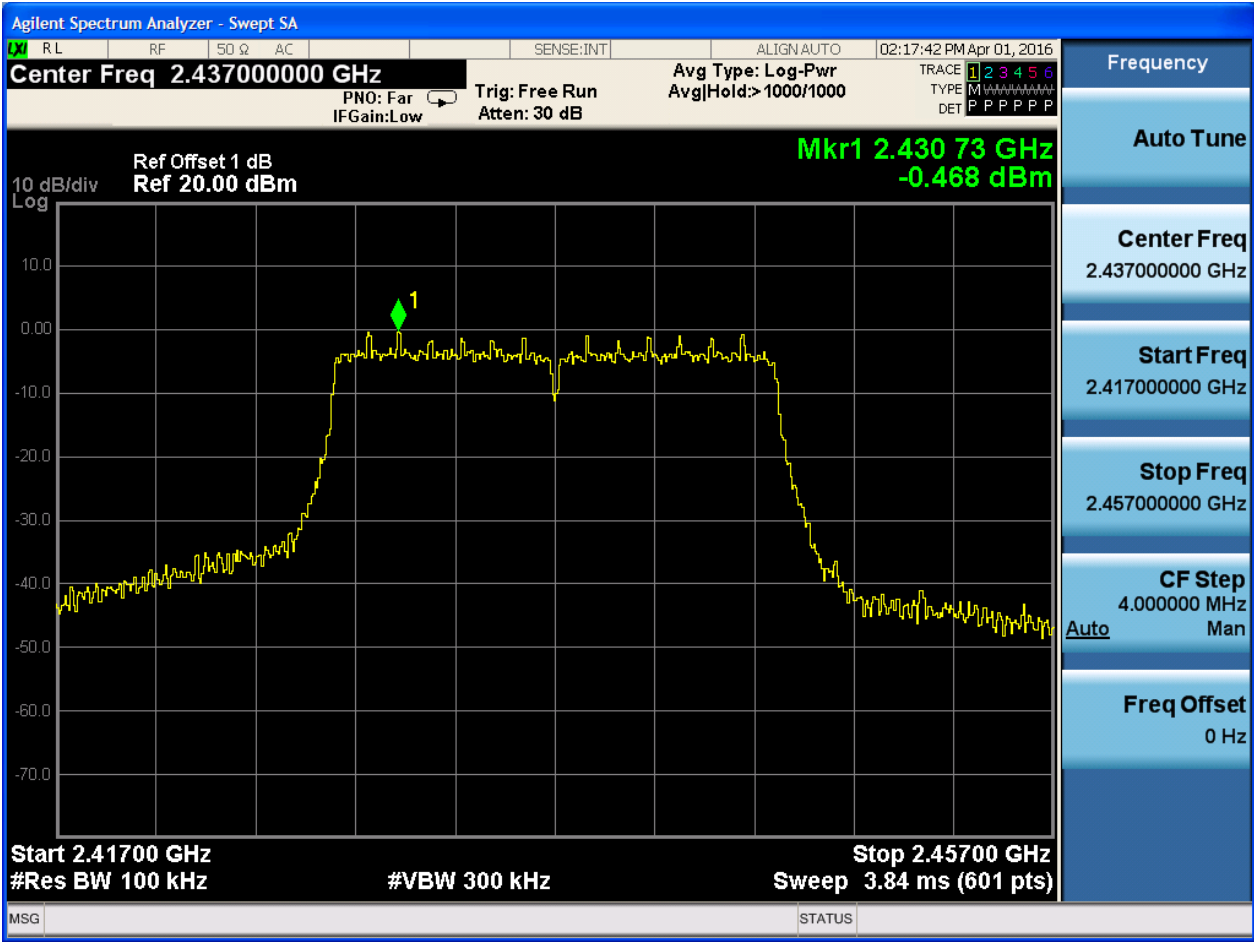






2.8 11N20_M@Ant 1

Pref:





Puw:

