



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.

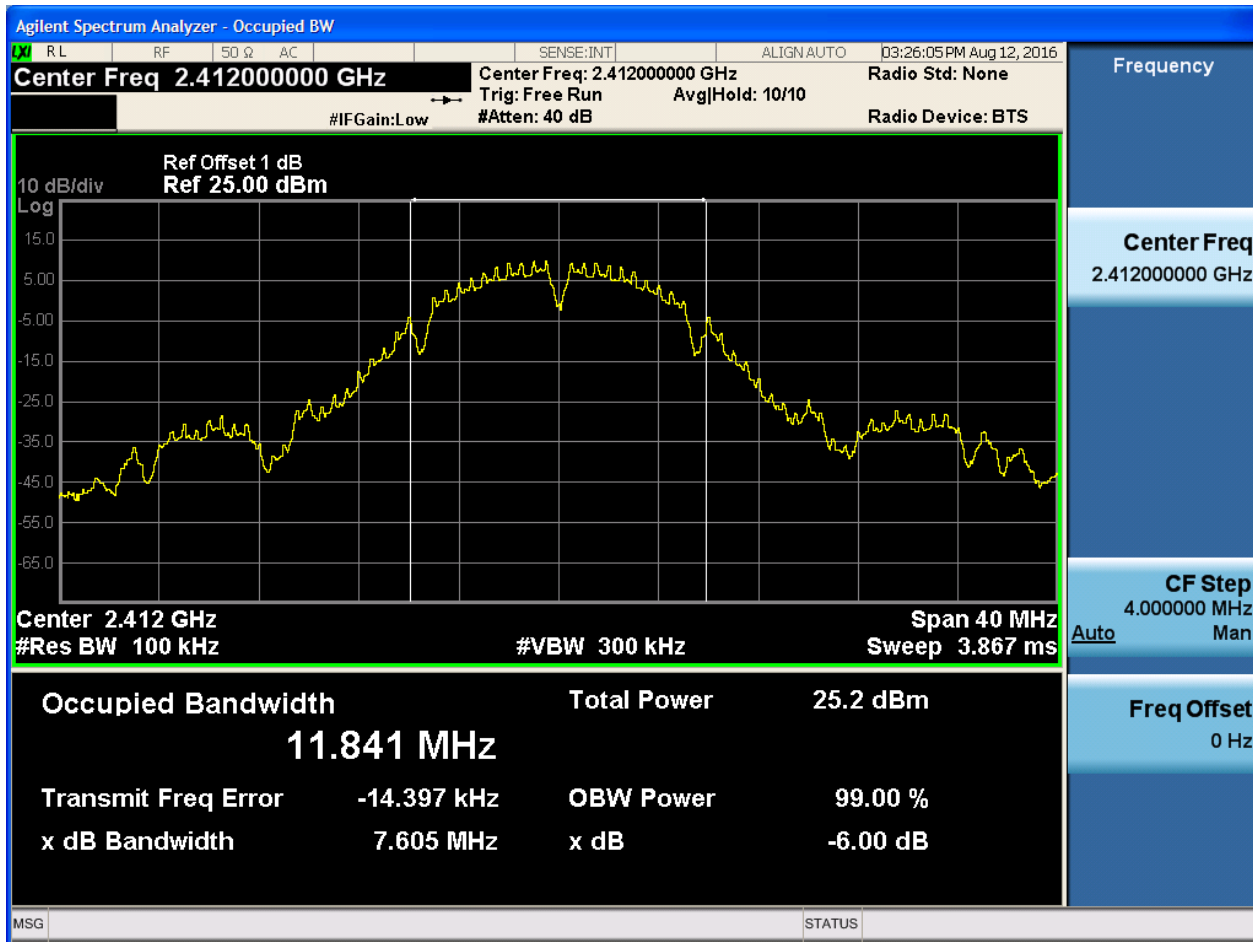
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	7.60	pass
11B	M	2437	Ant 1	7.54	pass
11B	H	2462	Ant 1	7.04	pass
11G	L	2412	Ant 1	16.32	pass
11G	M	2437	Ant 1	15.76	pass
11G	H	2462	Ant 1	15.80	pass
11N20	L	2412	Ant 1	16.95	pass
11N20	M	2437	Ant 1	16.34	pass
11N20	H	2462	Ant 1	15.18	pass
11N40	L	2422	Ant 1	35.29	pass
11N40	M	2437	Ant 1	35.27	pass
11N40	H	2452	Ant 1	35.66	pass



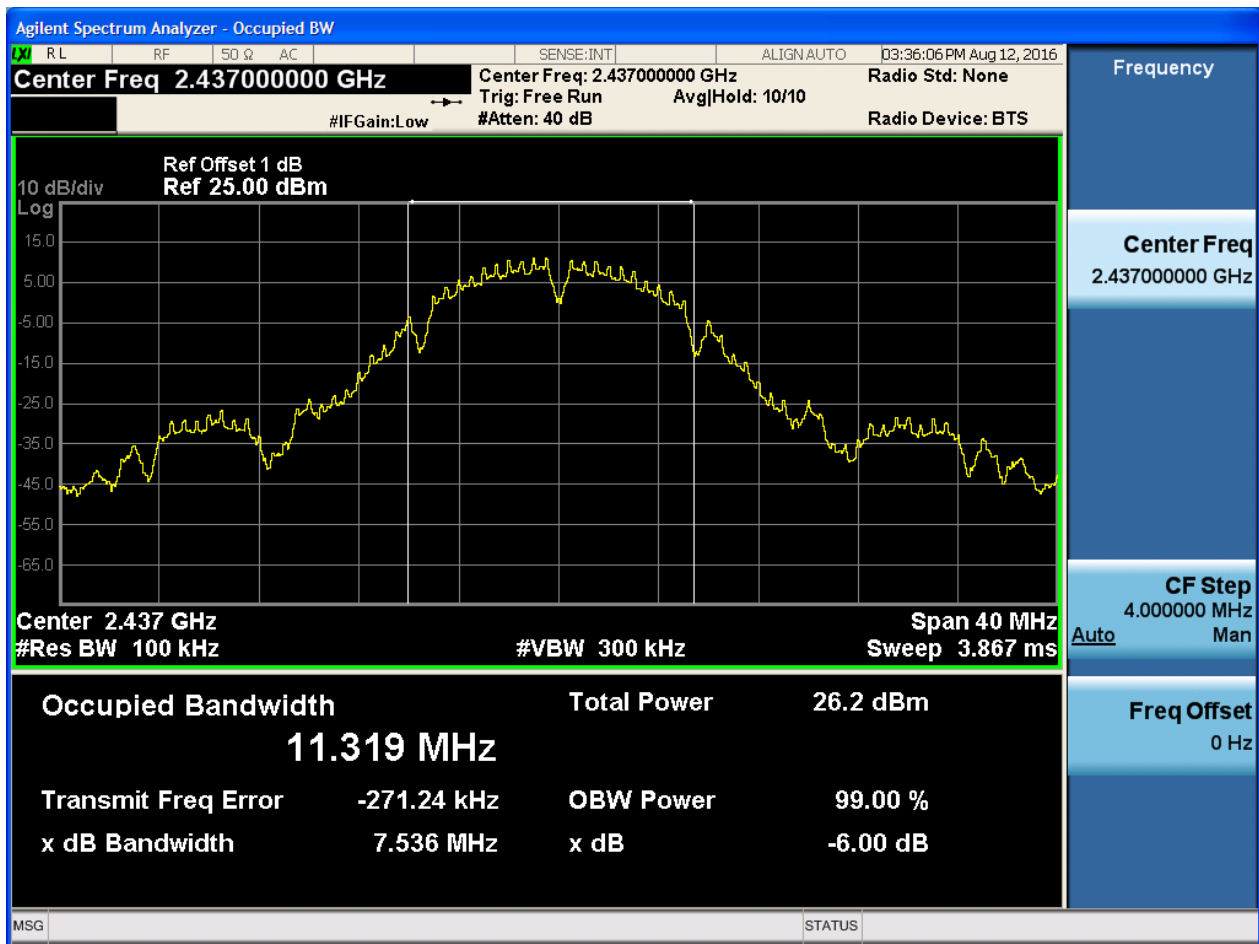
Part II - Test Plots

2.1 11B_L@Ant 1



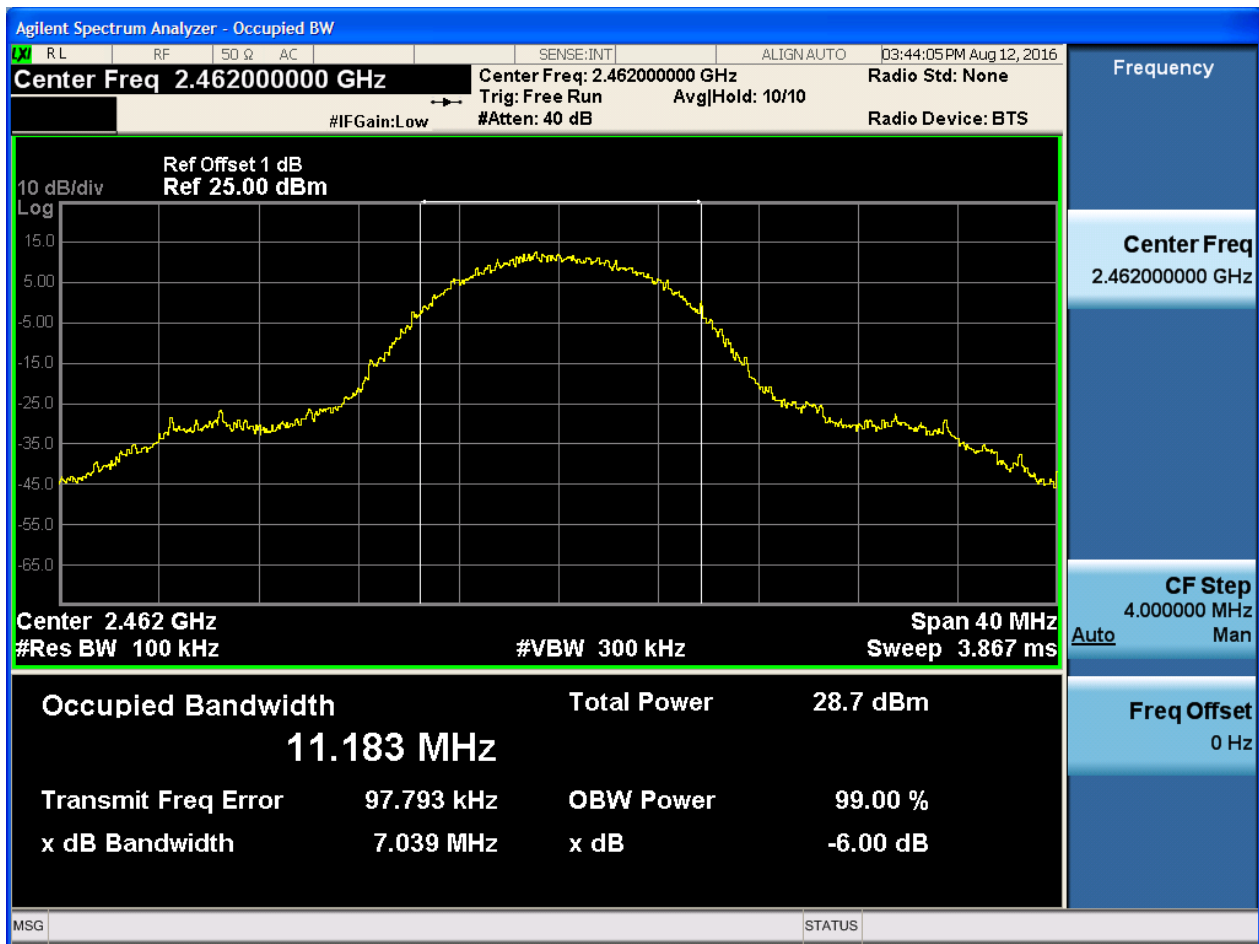


2.2 11B_M@Ant 1



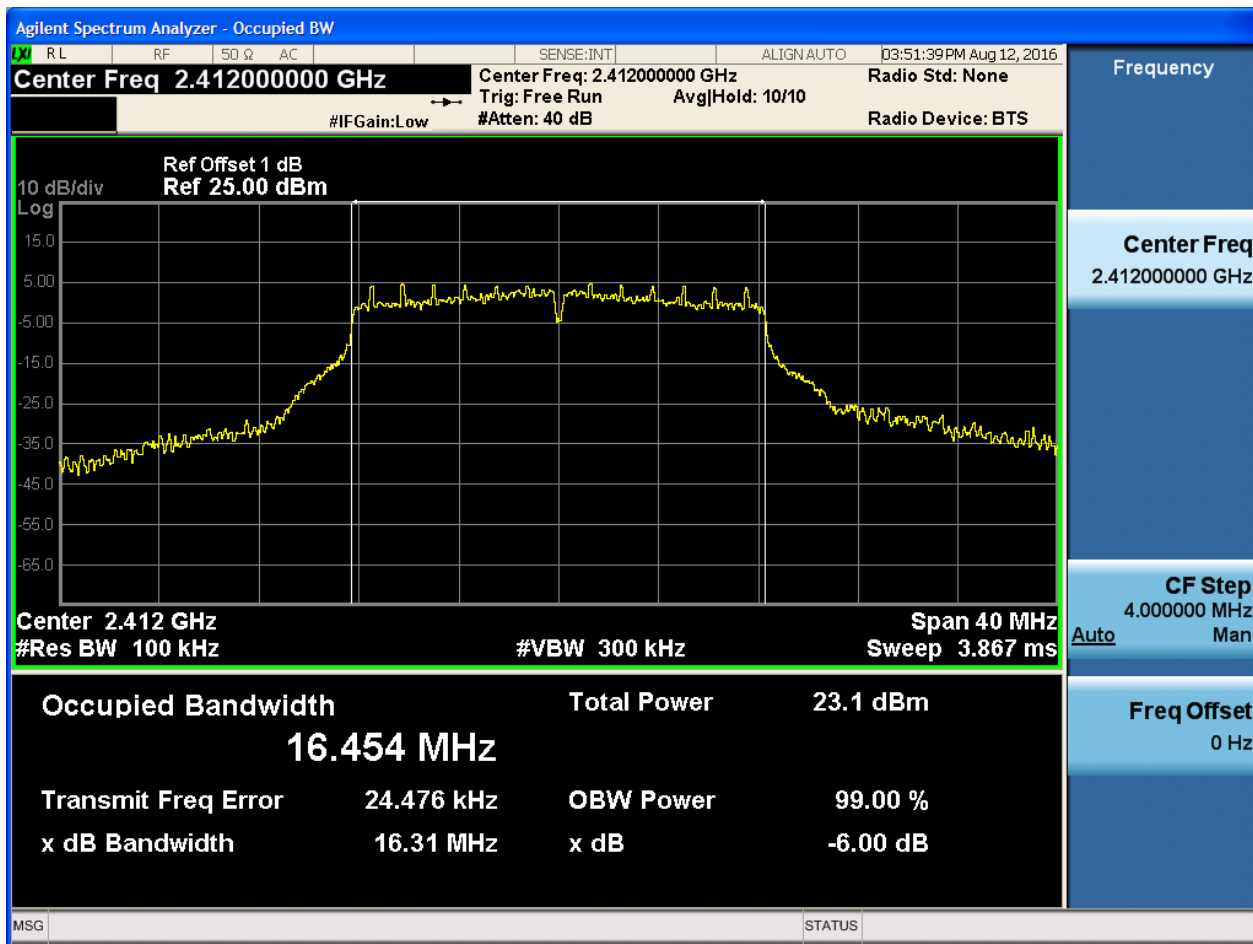


2.3 11B_H@Ant 1



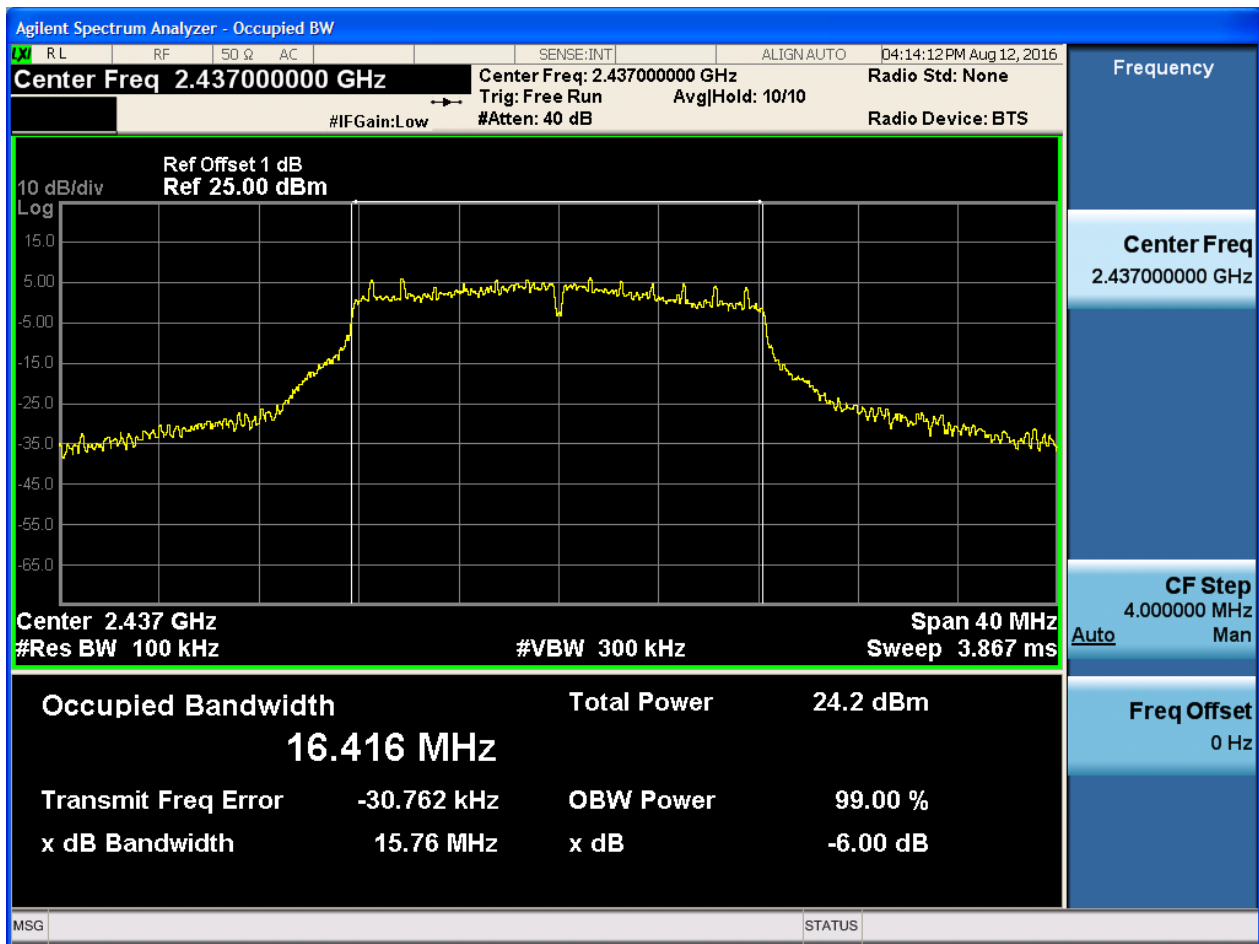


2.4 11G_L@Ant 1



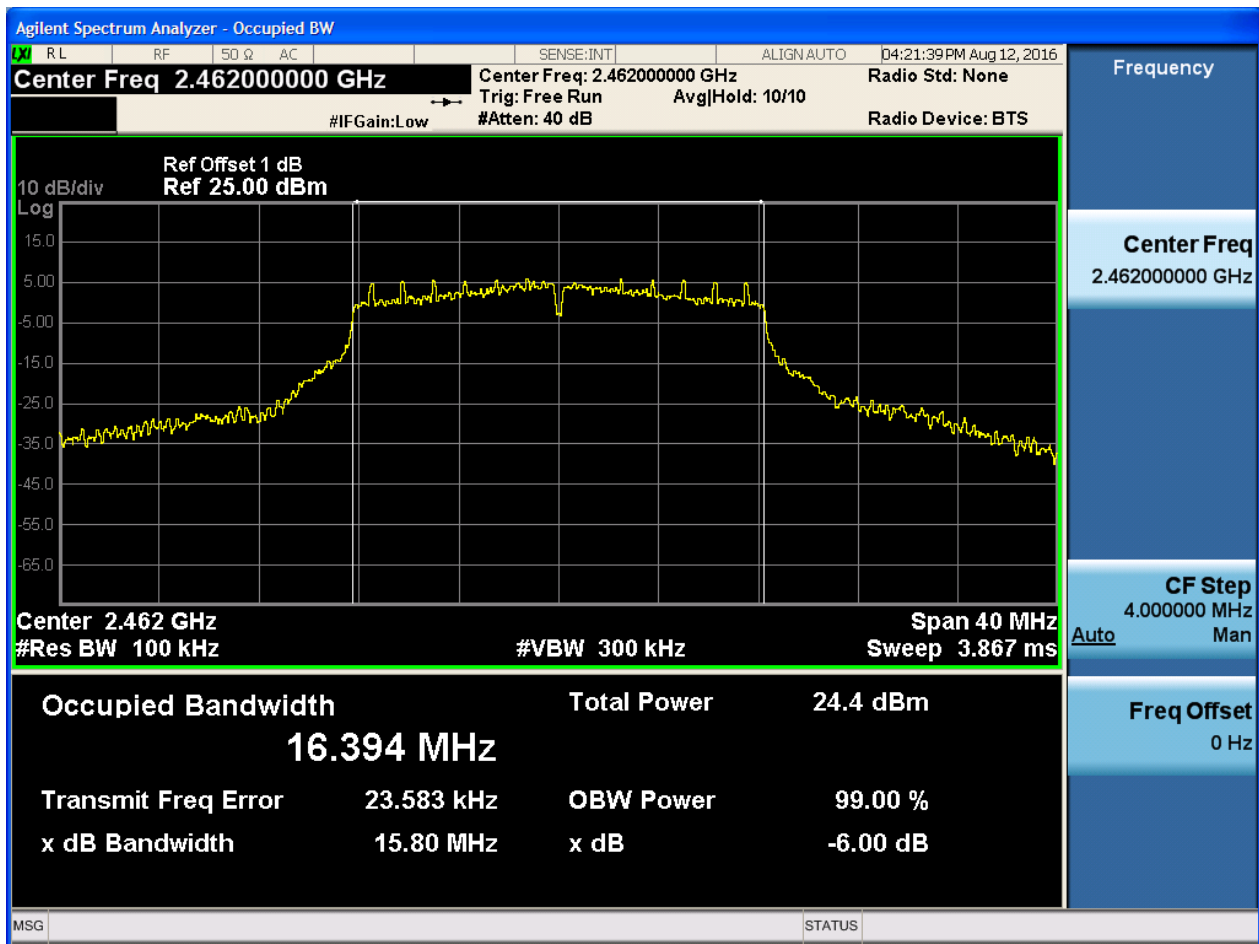


2.5 11G_M@Ant 1



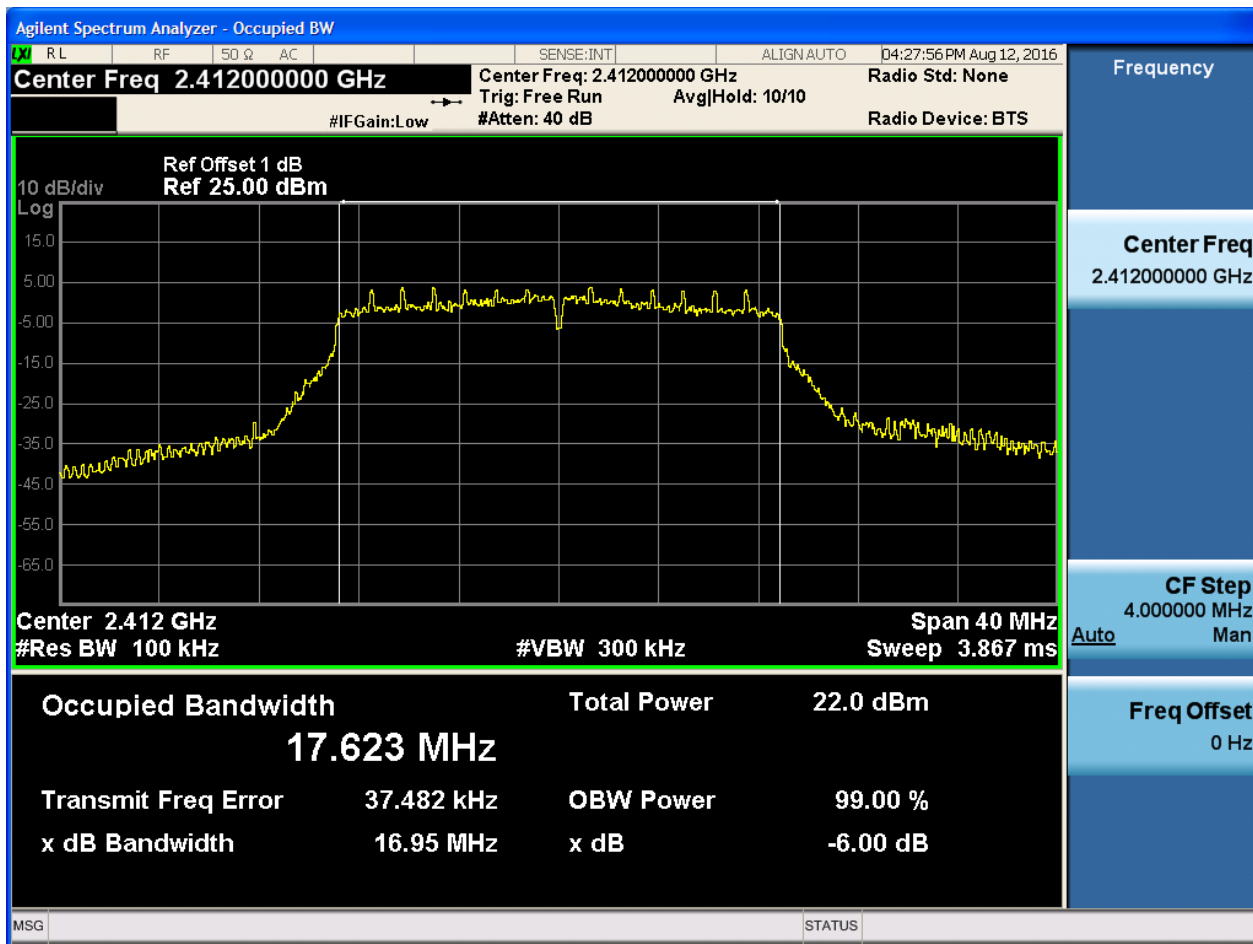


2.6 11G_H@Ant 1



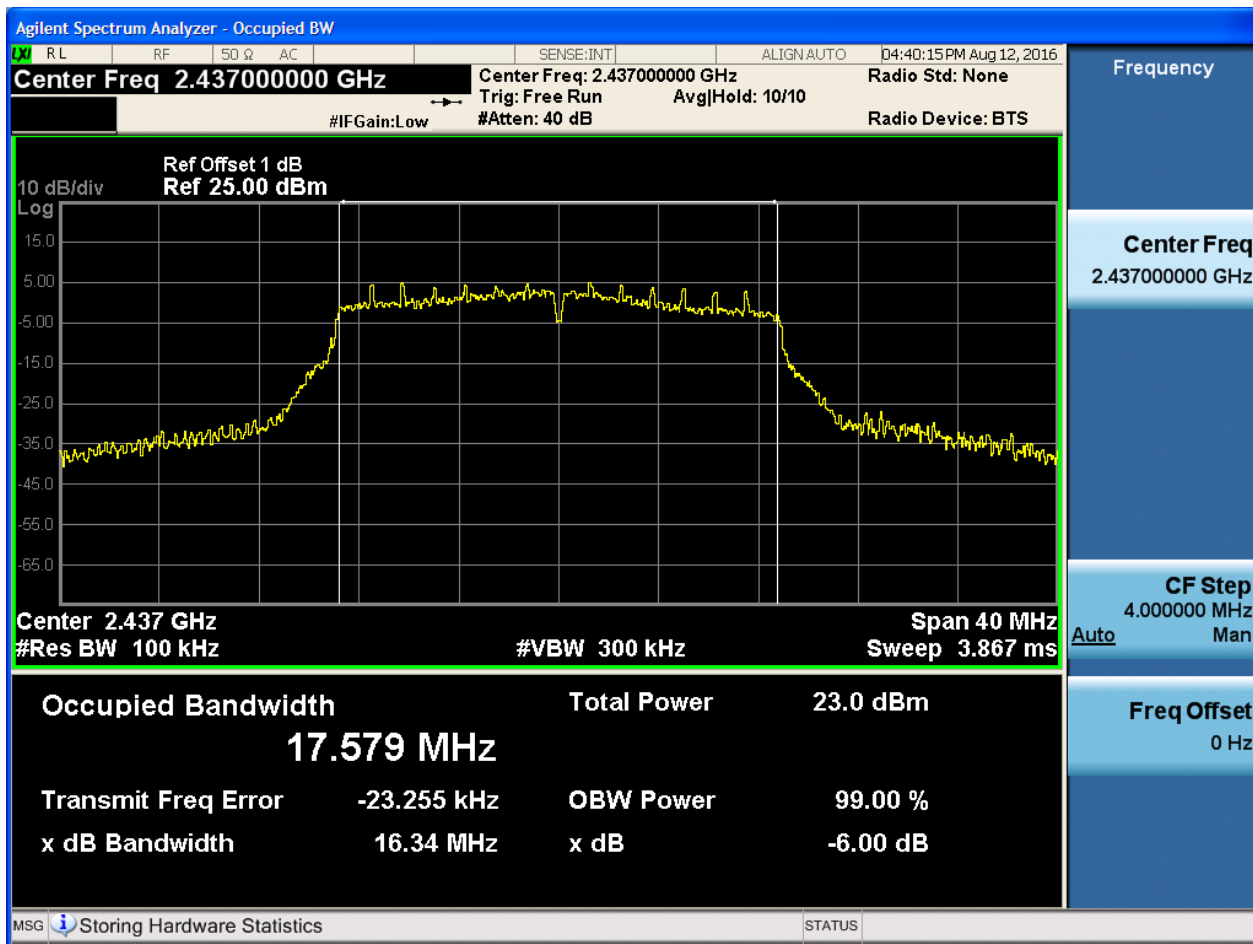


2.7 11N20_L@Ant 1



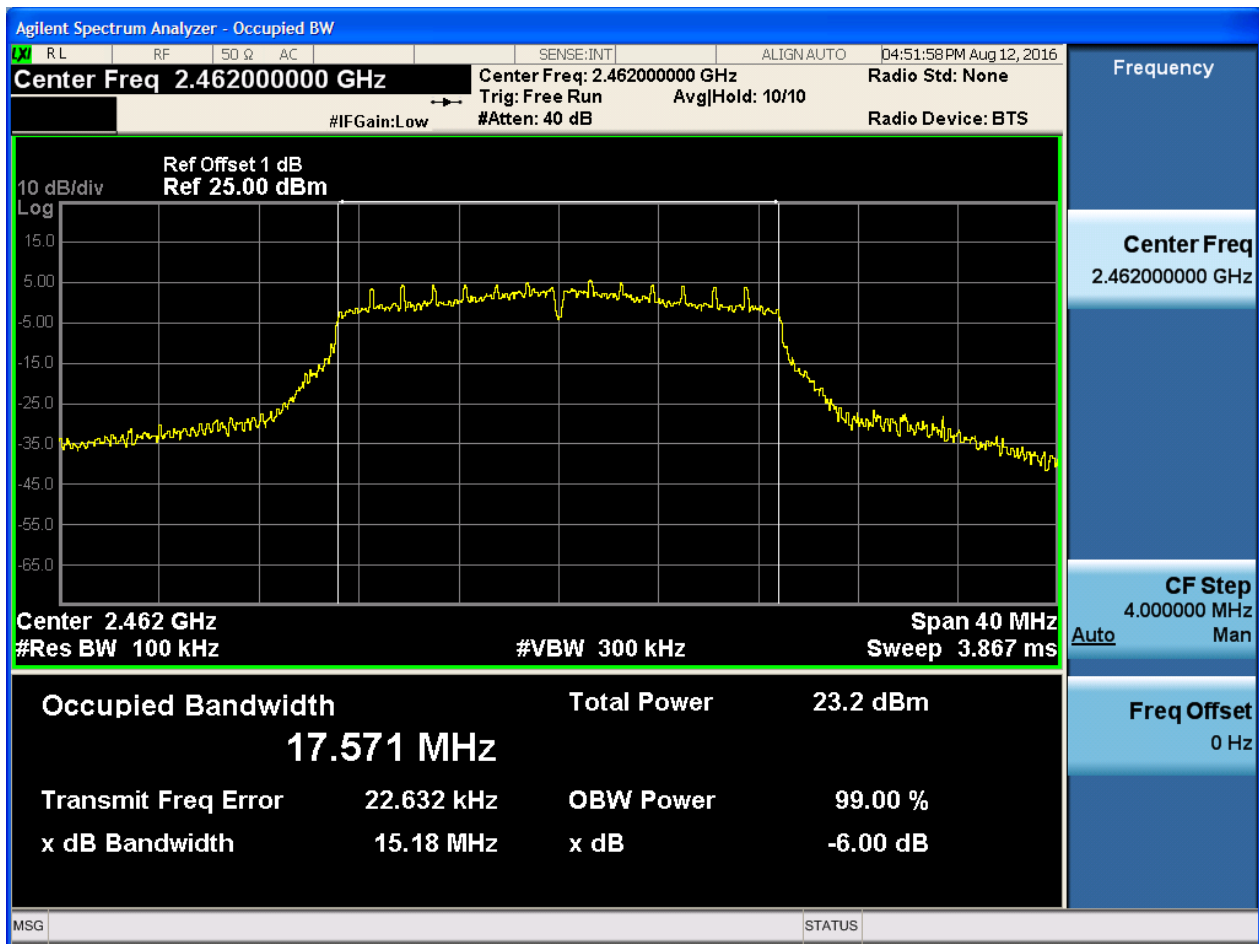


2.8 11N20_M@Ant 1



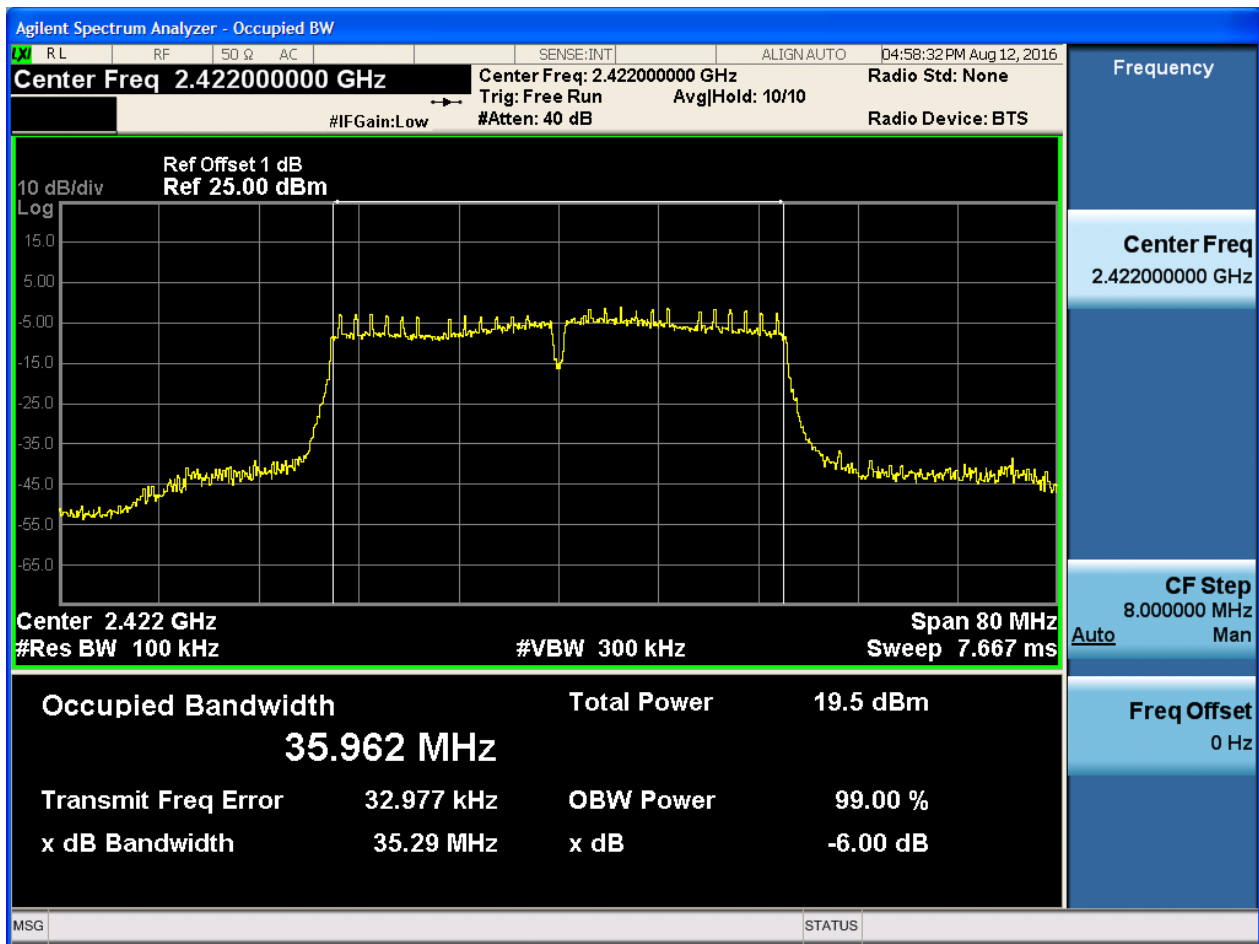


2.9 11N20_H@Ant 1



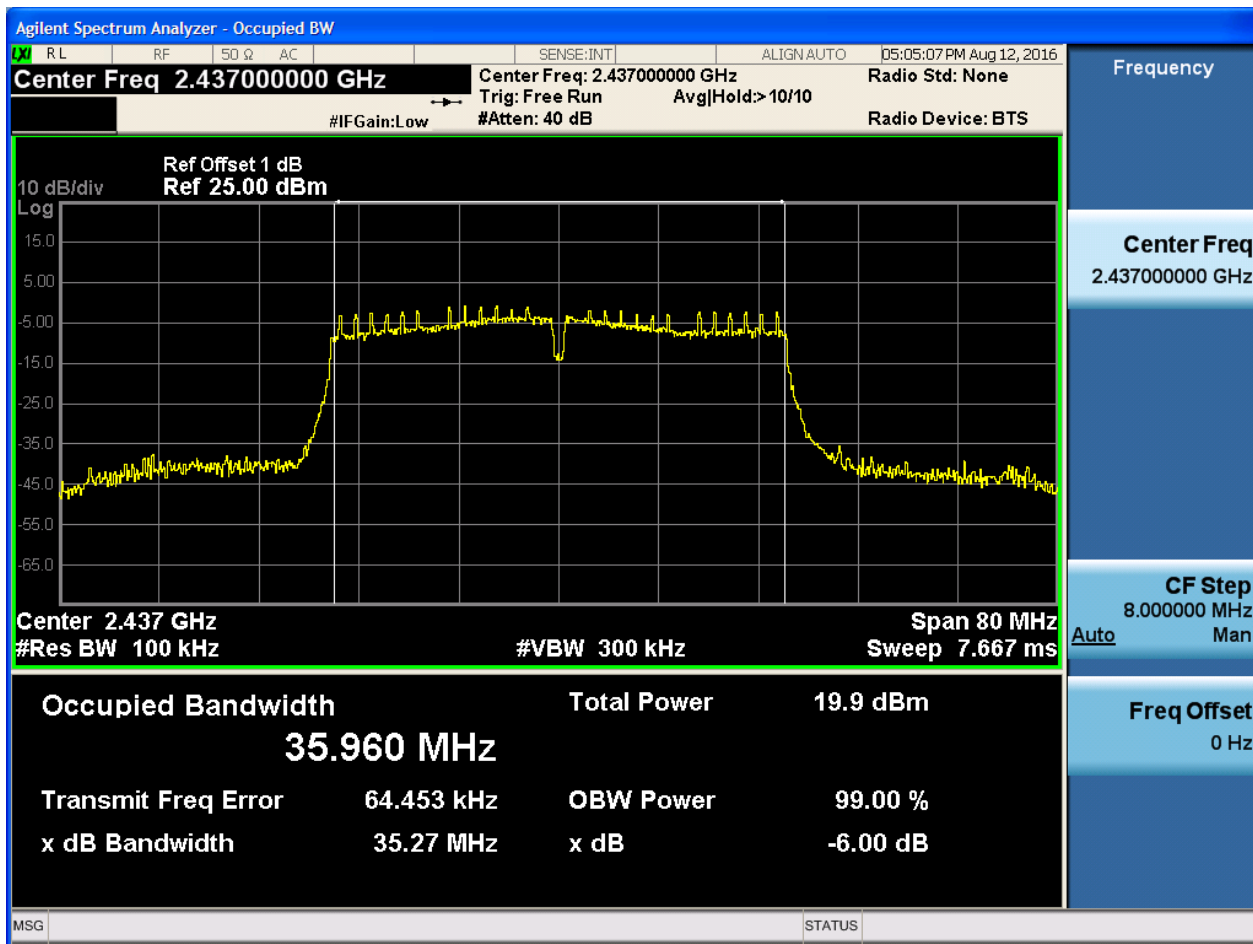


2.10 11N40_L@Ant 1



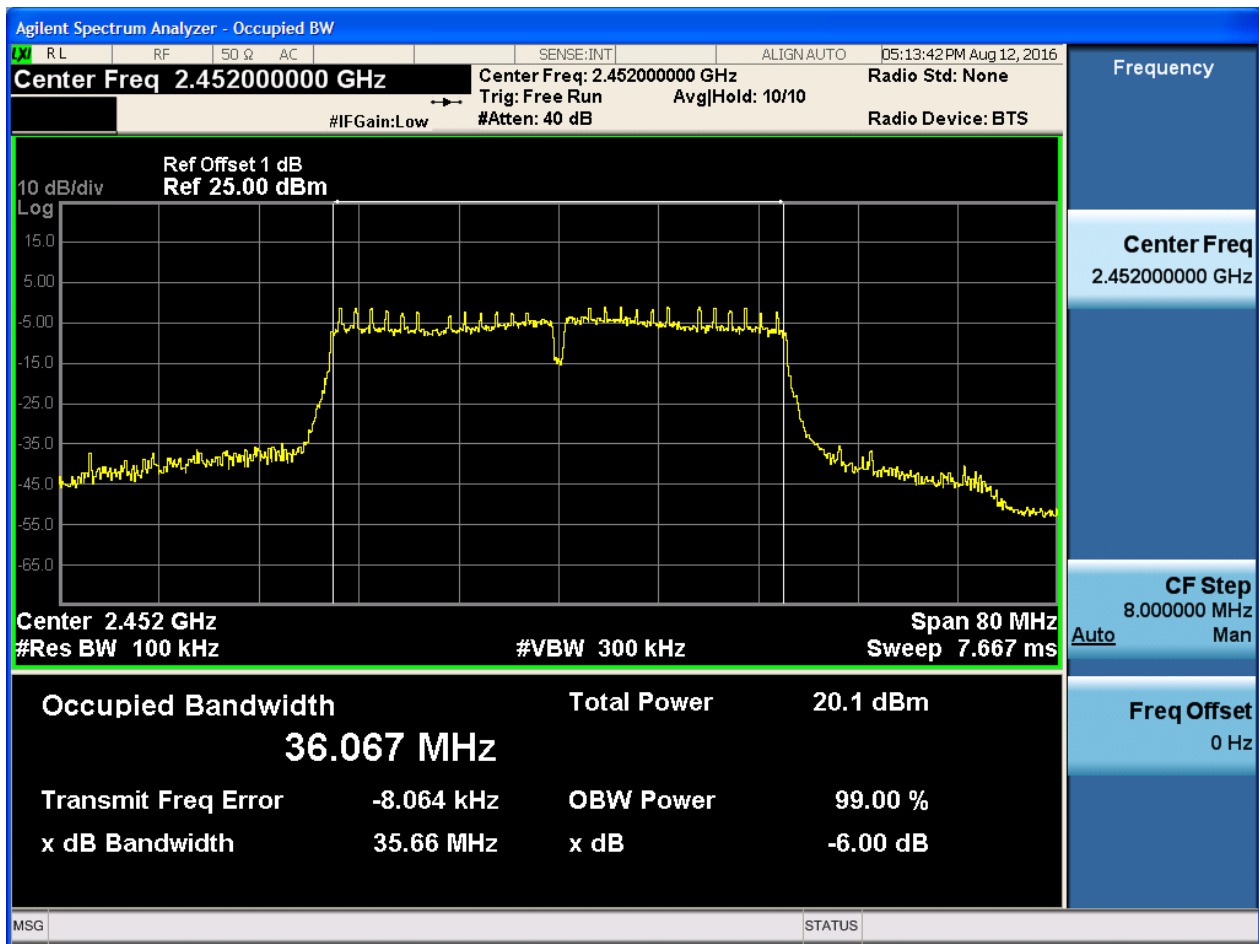


2.11 11N40_M@Ant 1





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.

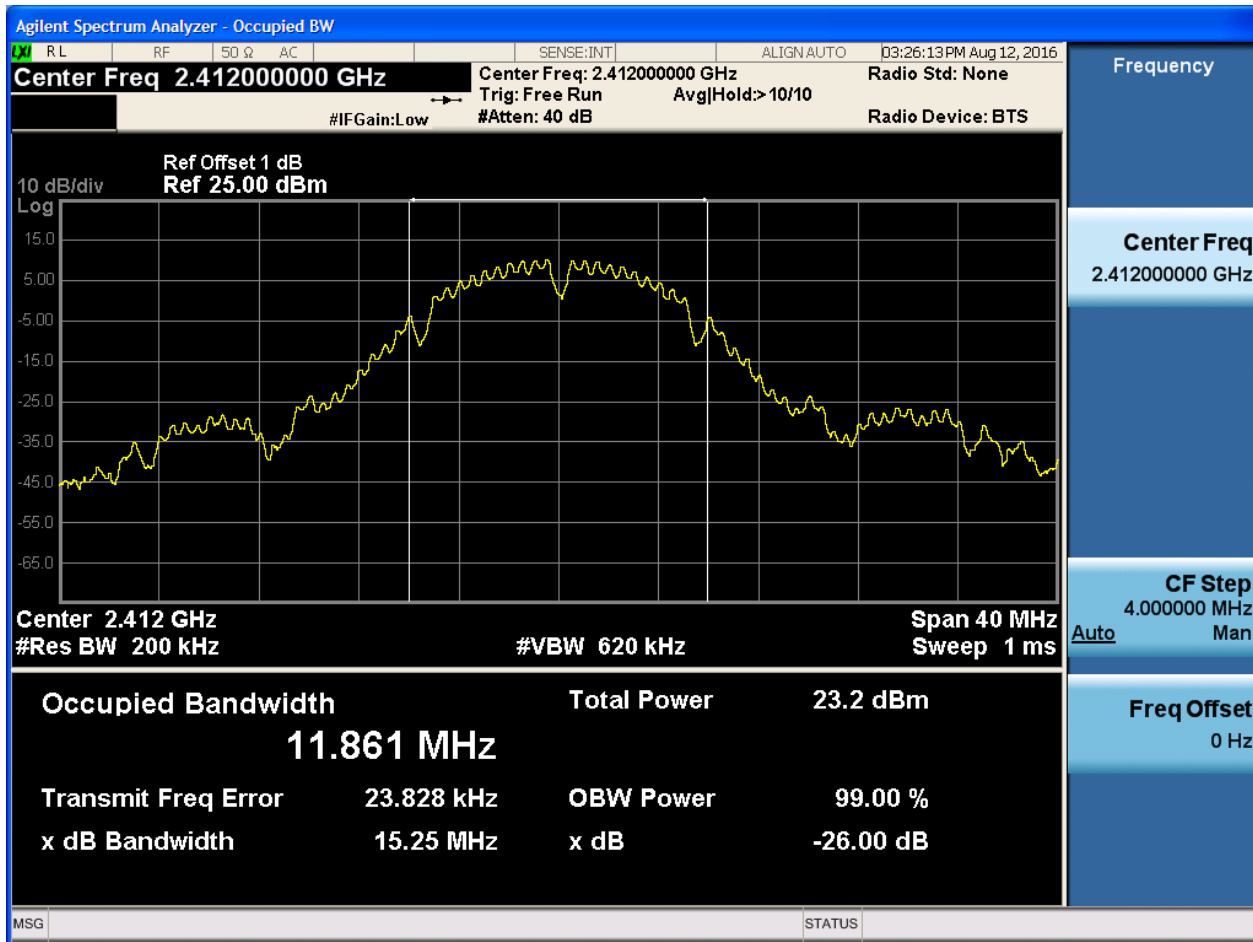
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	11.86	pass
11B	M	2437	Ant 1	11.54	pass
11B	H	2462	Ant 1	11.10	pass
11G	L	2412	Ant 1	16.64	pass
11G	M	2437	Ant 1	16.56	pass
11G	H	2462	Ant 1	16.55	pass
11N20	L	2412	Ant 1	17.77	pass
11N20	M	2437	Ant 1	17.67	pass
11N20	H	2462	Ant 1	17.66	pass
11N40	L	2422	Ant 1	36.15	pass
11N40	M	2437	Ant 1	36.13	pass
11N40	H	2452	Ant 1	36.28	pass



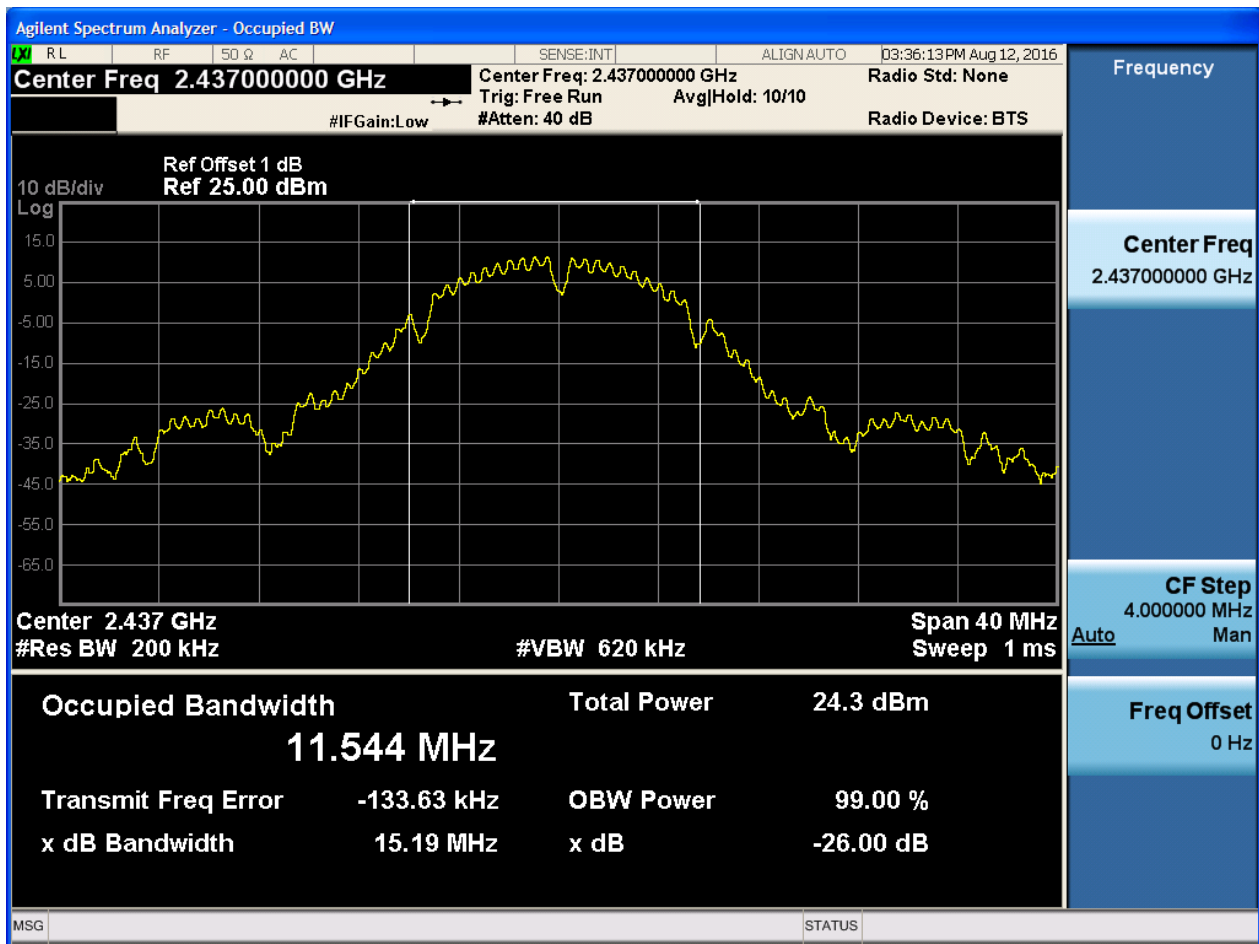
Part II - Test Plots

2.1 11B_L@Ant 1



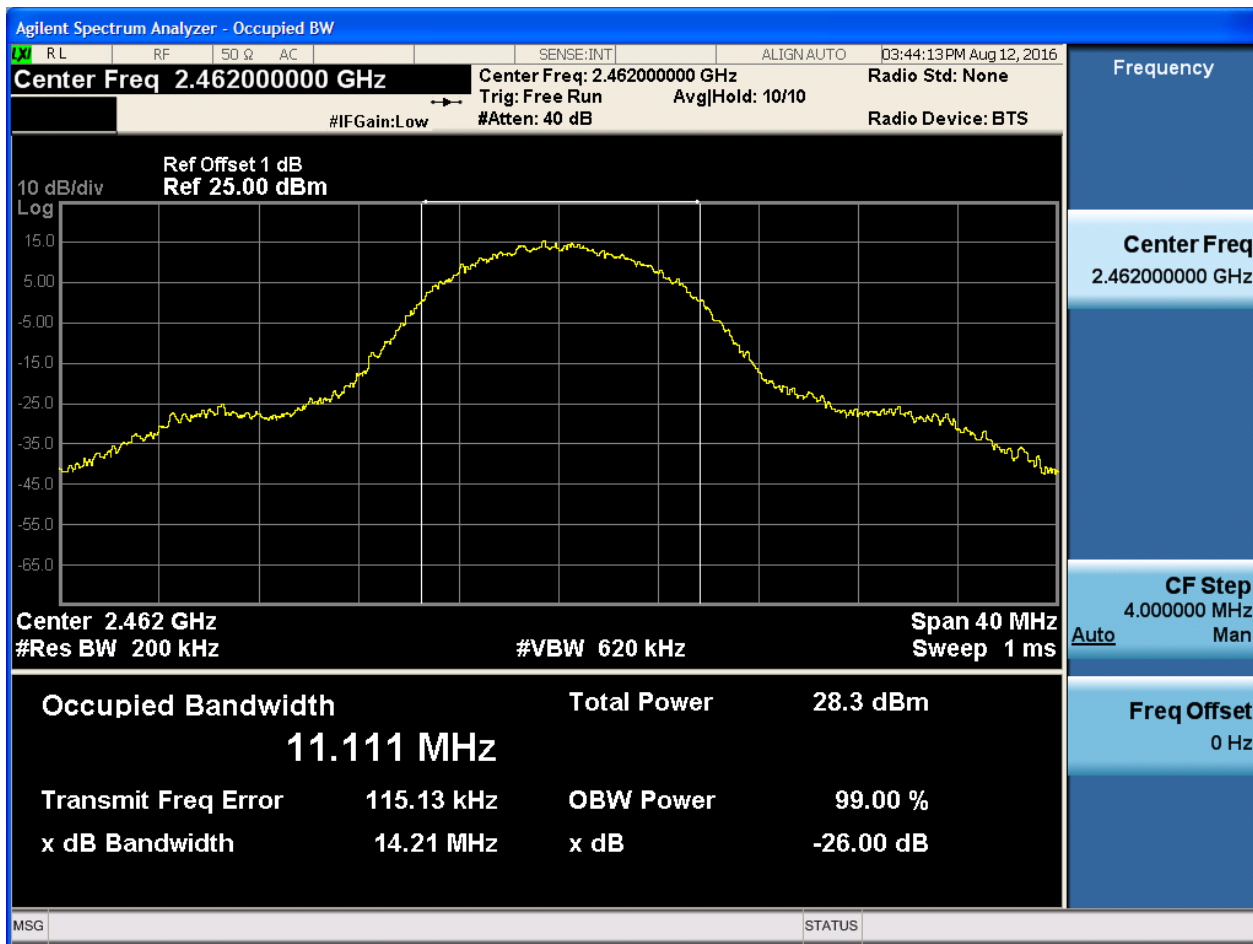


2.2 11B_M@Ant 1



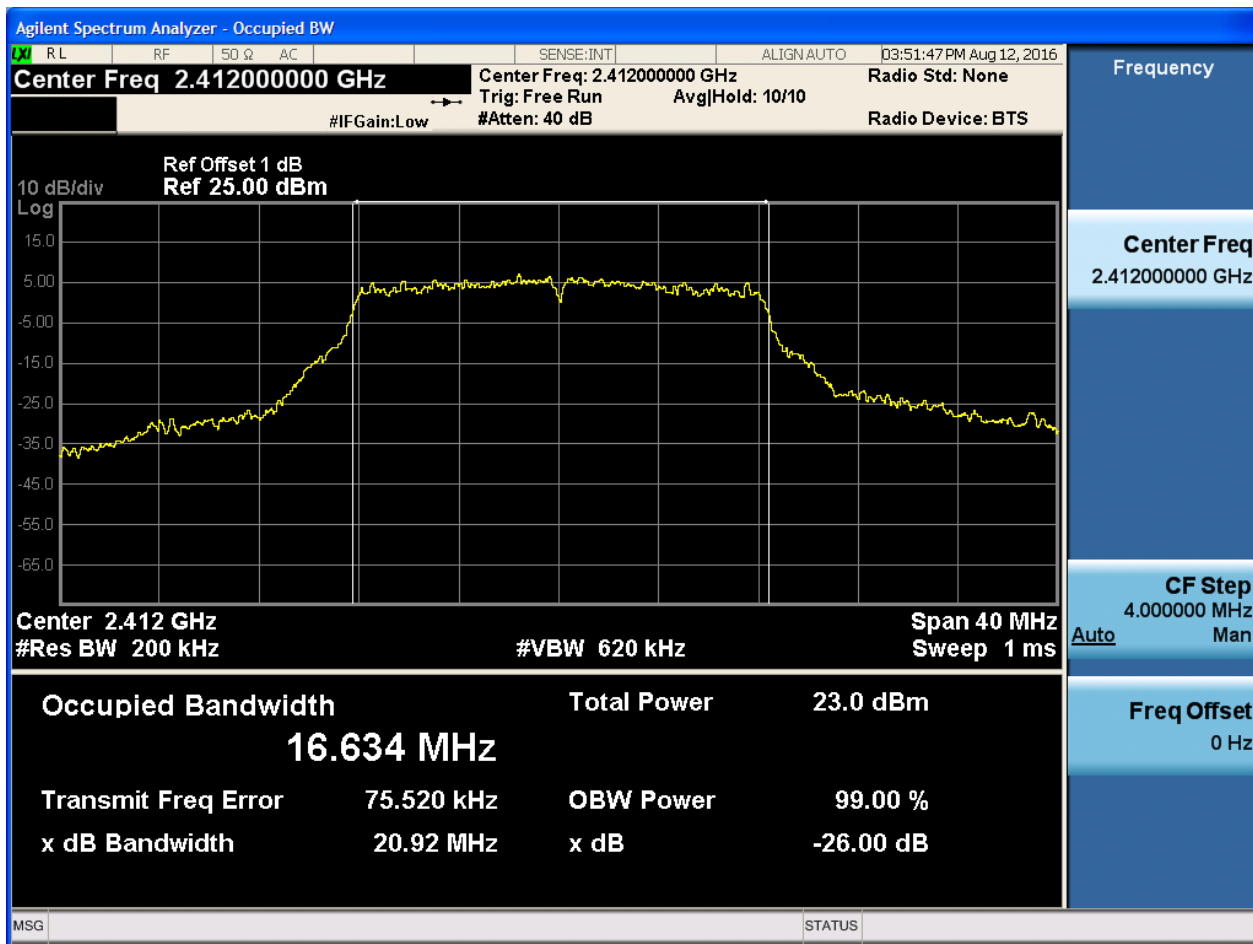


2.3 11B_H@Ant 1



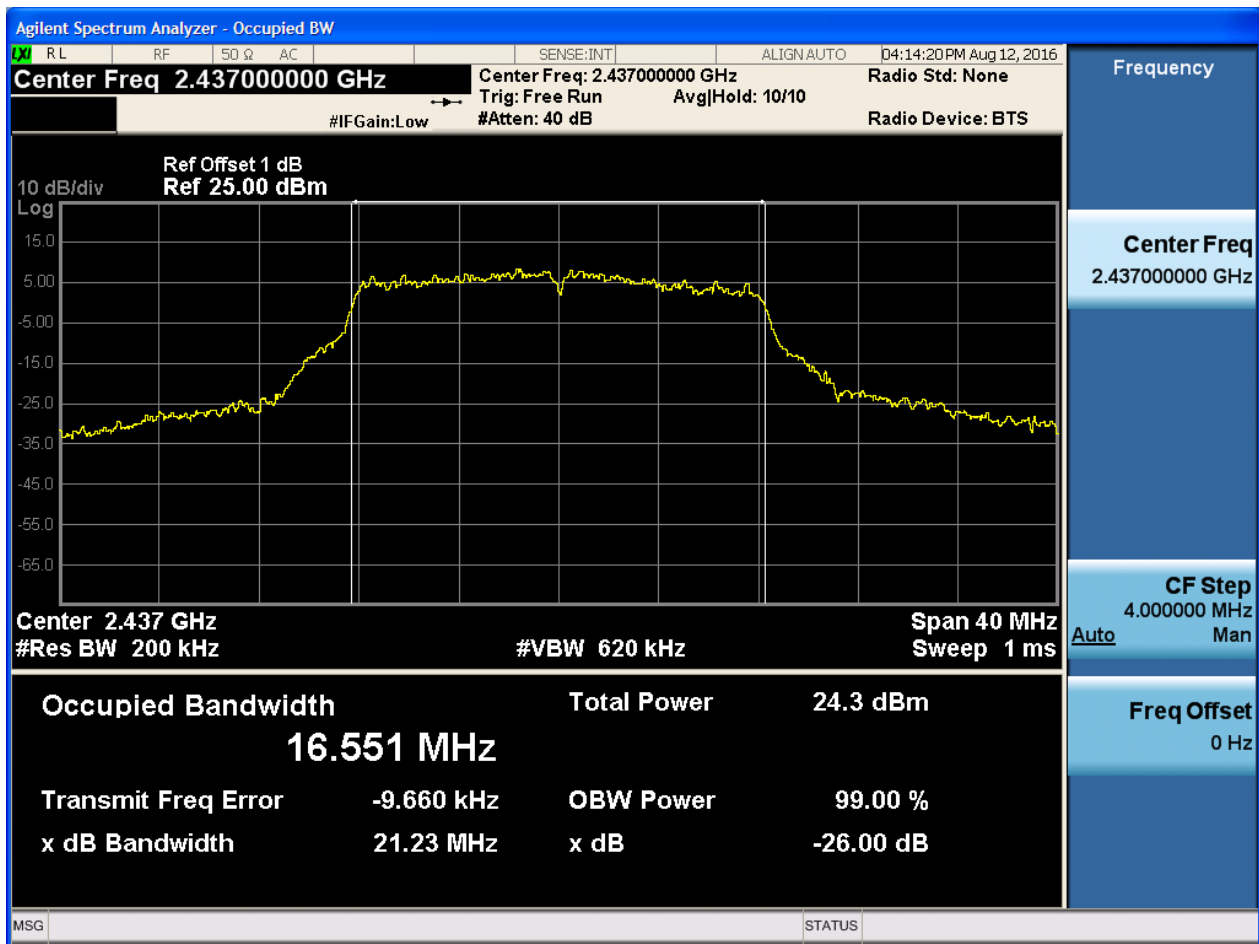


2.4 11G_L@Ant 1



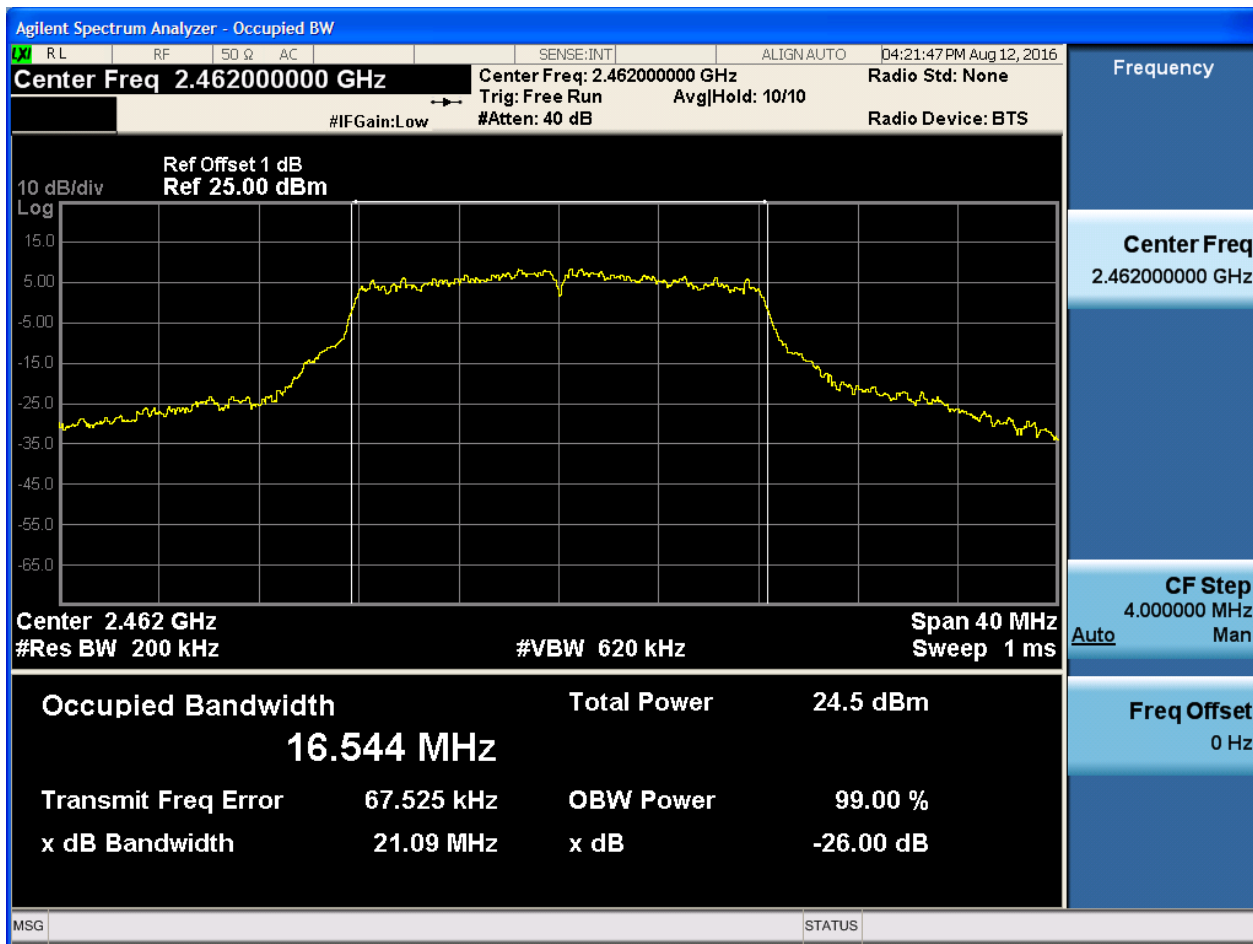


2.5 11G_M@Ant 1



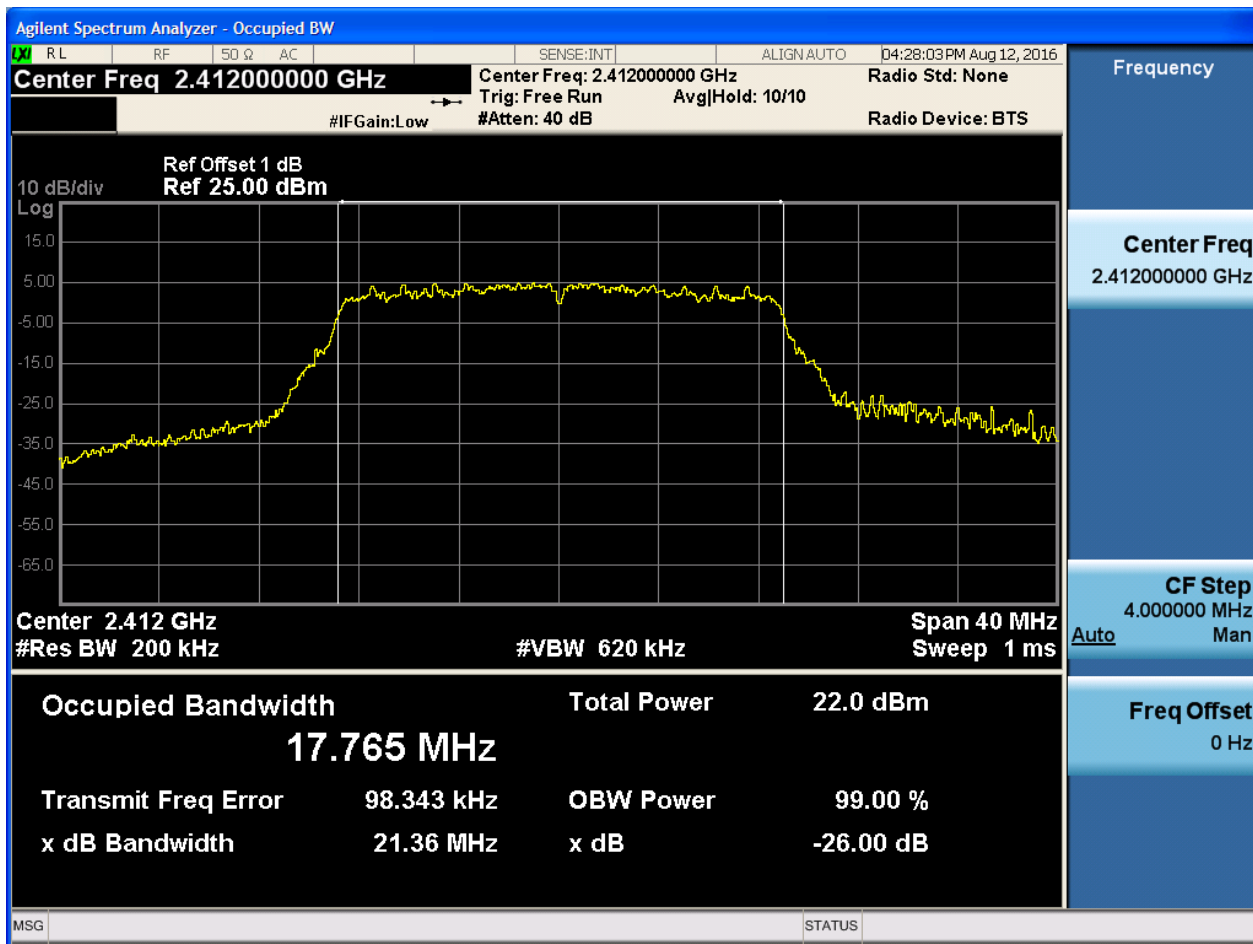


2.6 11G_H@Ant 1



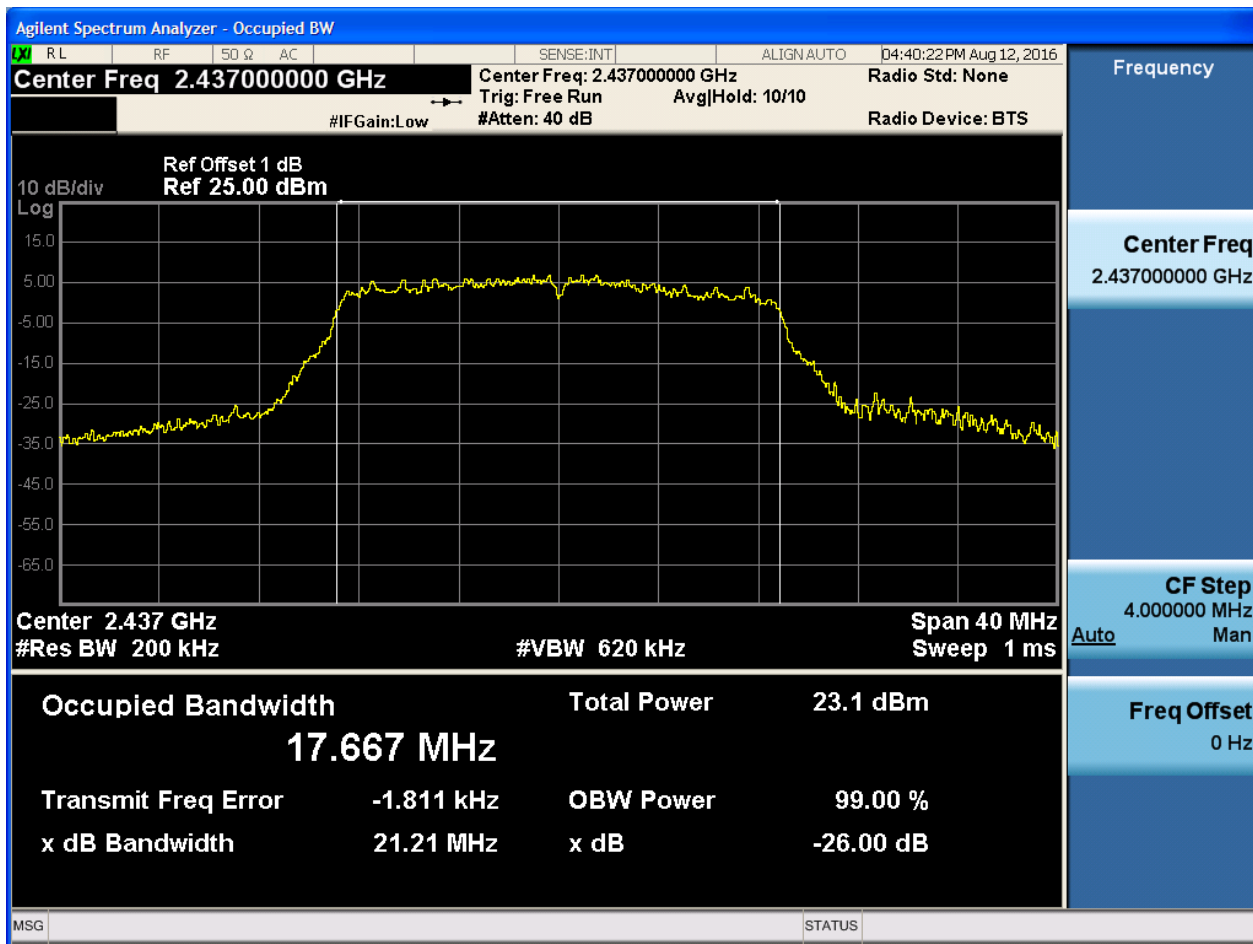


2.7 11N20_L@Ant 1



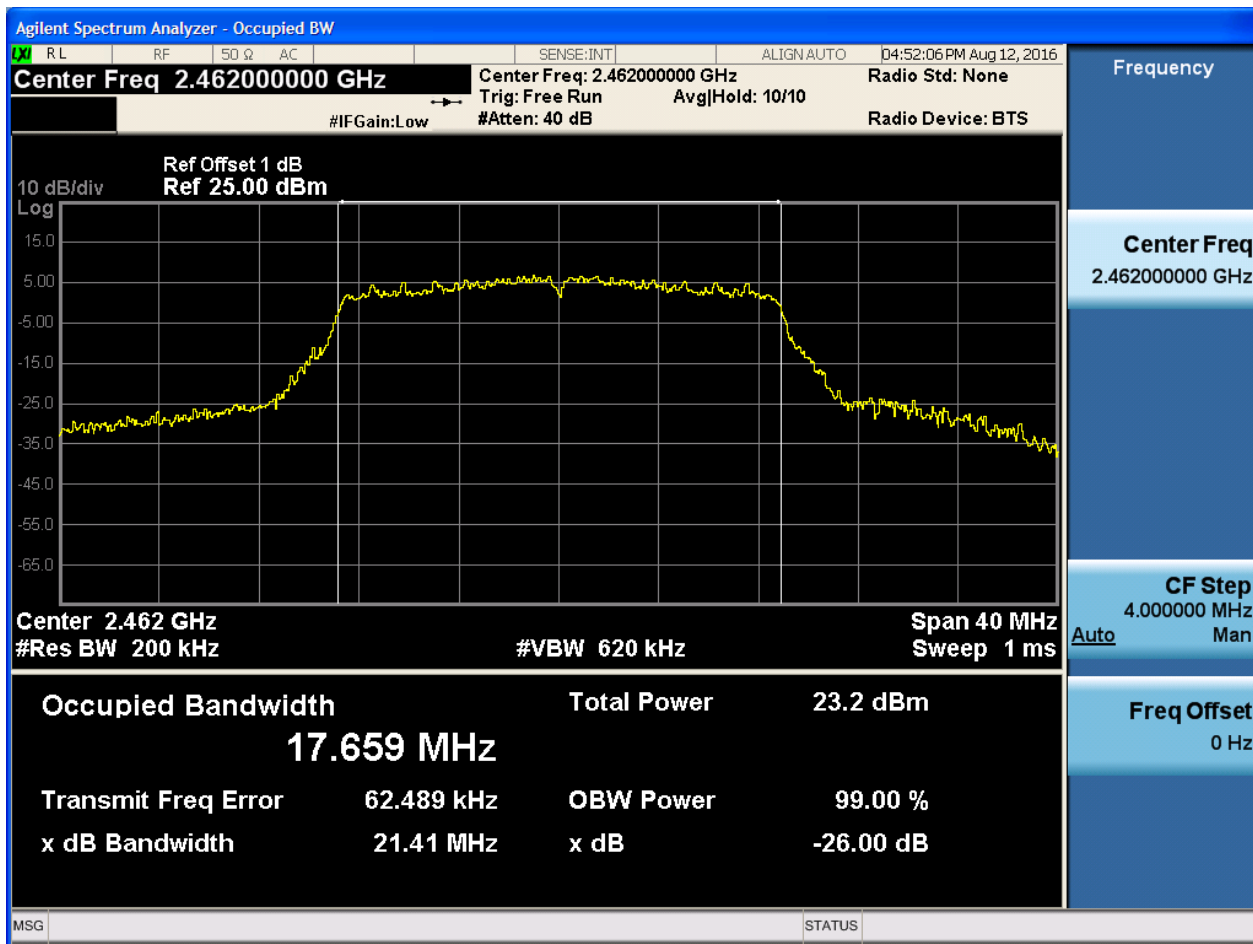


2.8 11N20_M@Ant 1



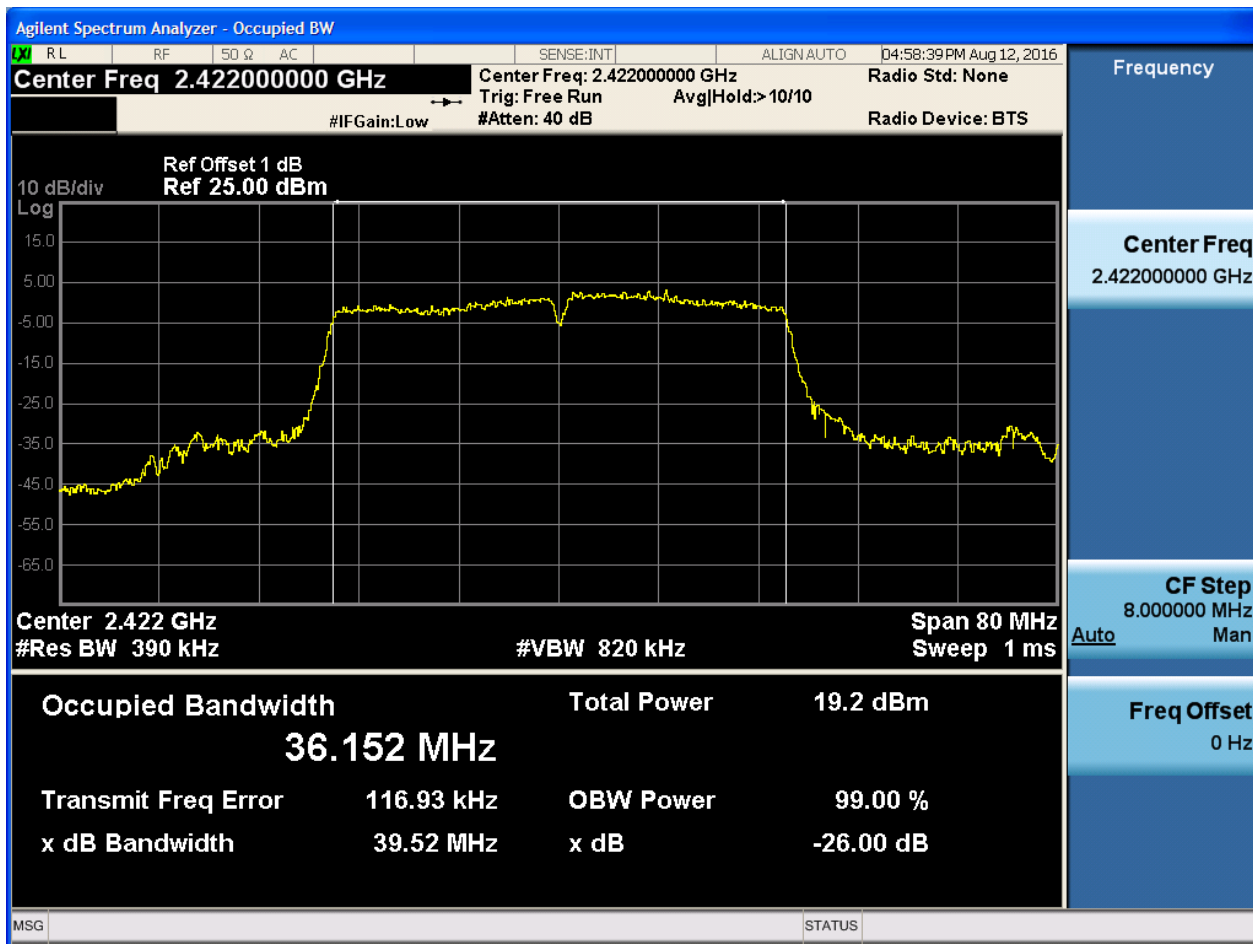


2.9 11N20_H@Ant 1



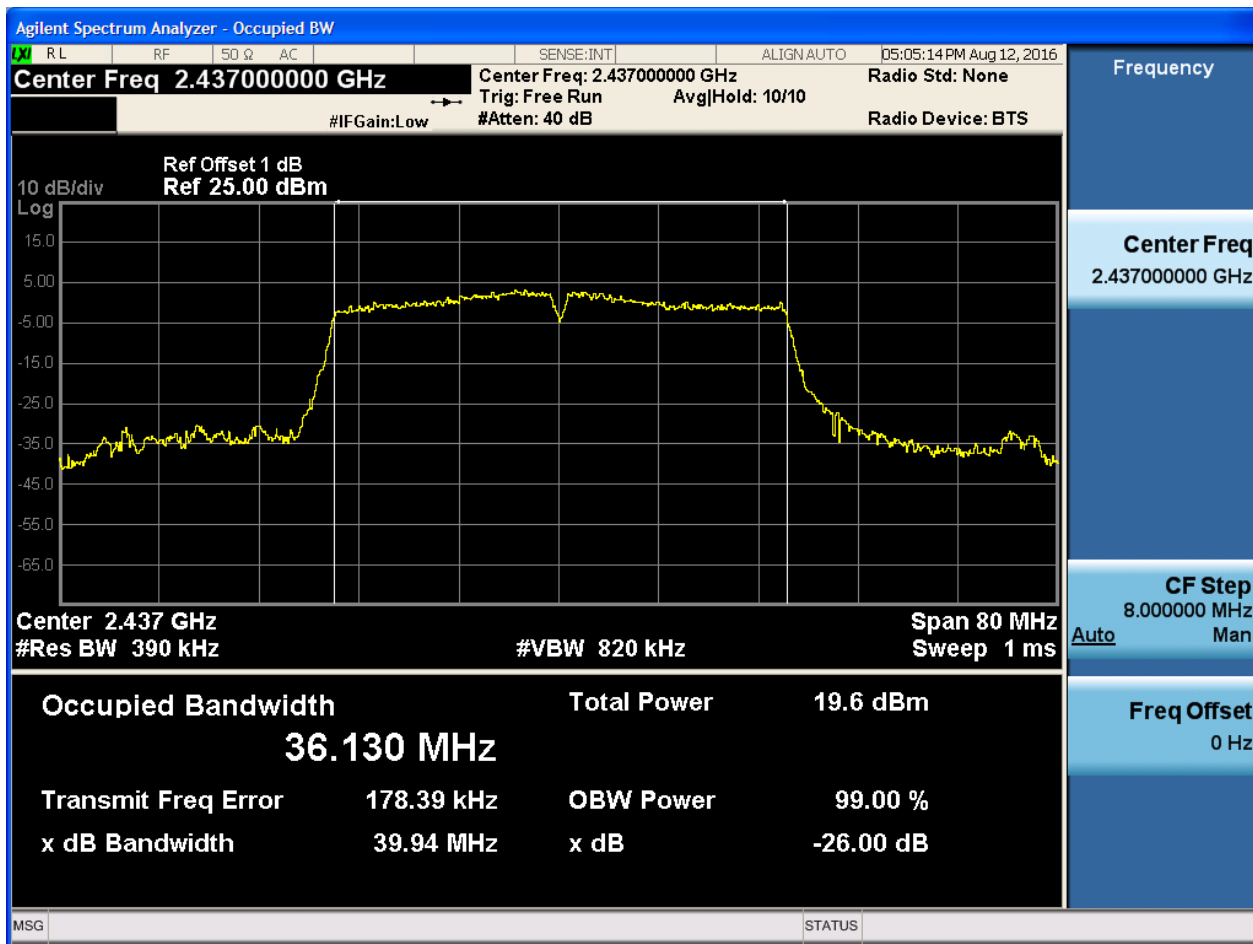


2.10 11N40_L@Ant 1



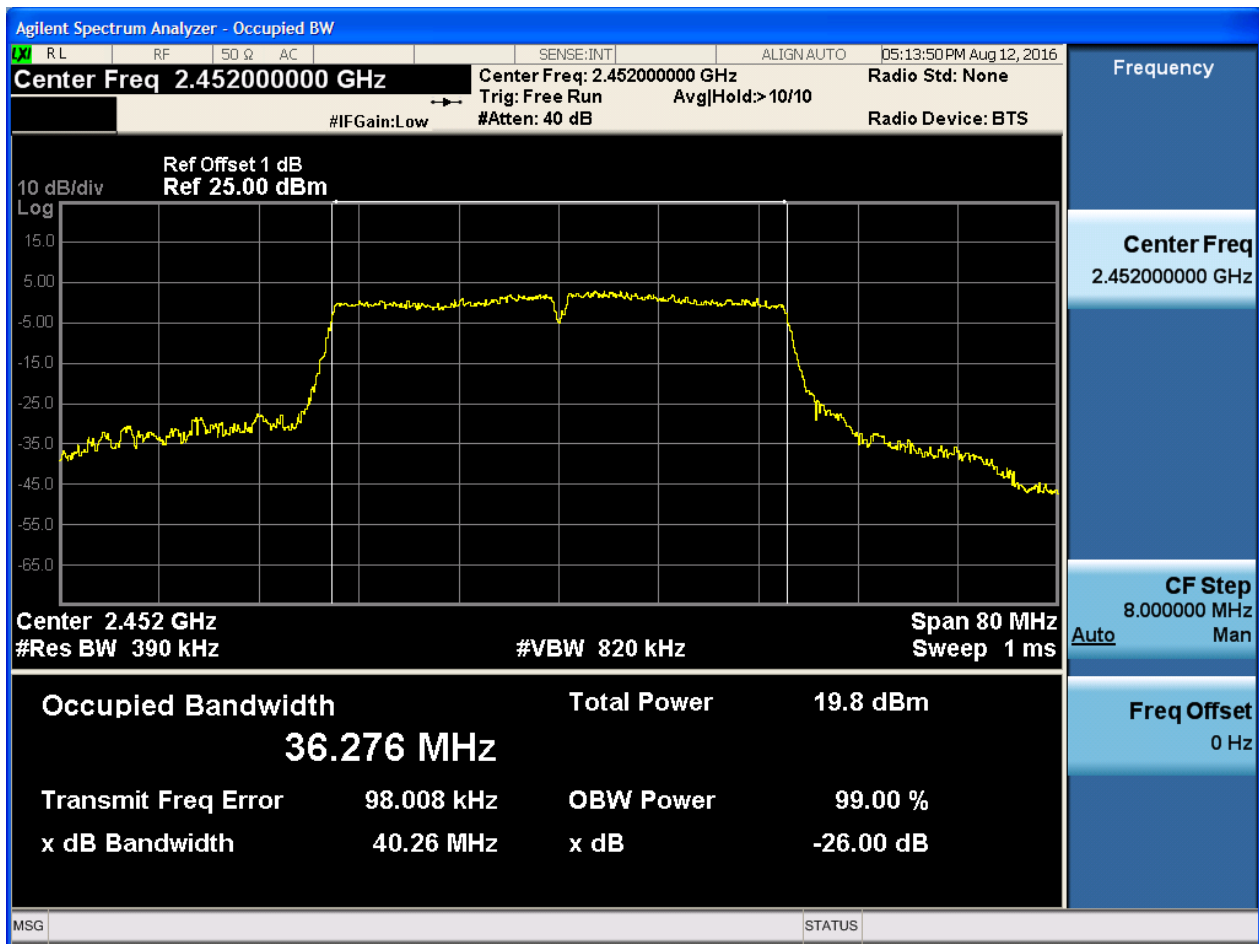


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix C: Duty Cycle

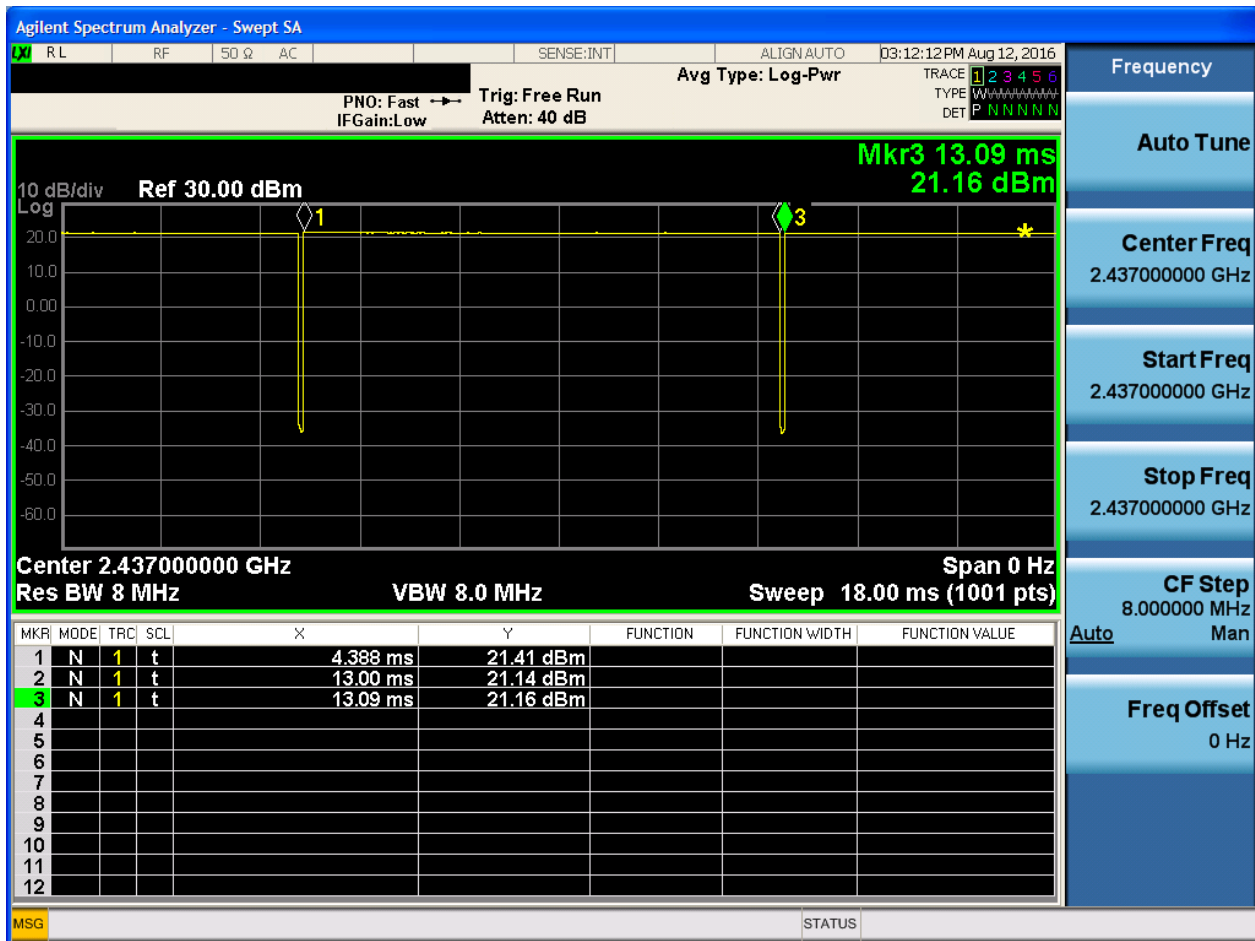
Part I - Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1,CH6,CH11	99
11G	Ant 1: CH1,CH6,CH11	93
11N_20M_SISO	Ant 1: CH1,CH6,CH11	93
11N_40M_SISO	Ant 1: CH3,CH6,CH9	87



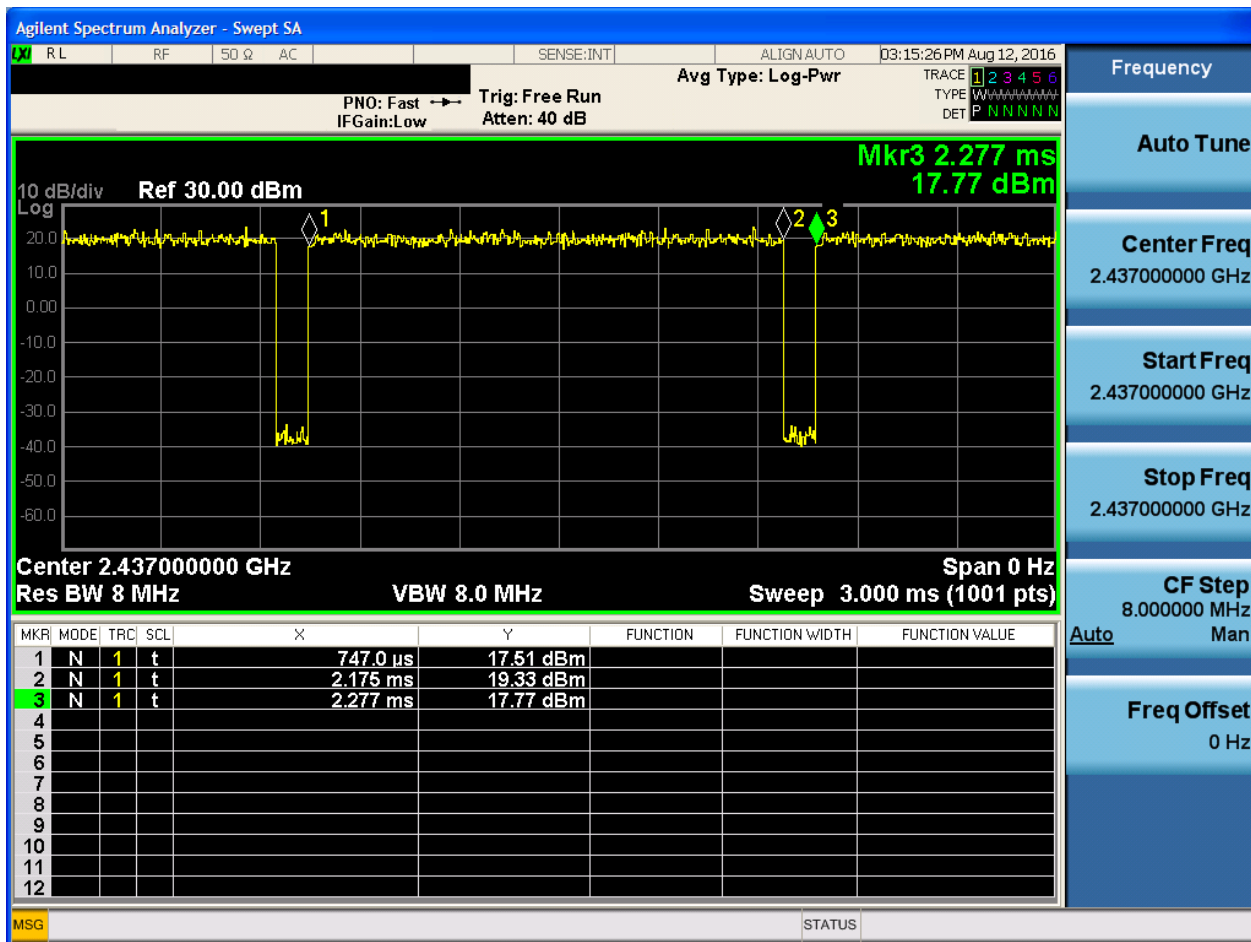
Part II - Test Plots

2.1 11B



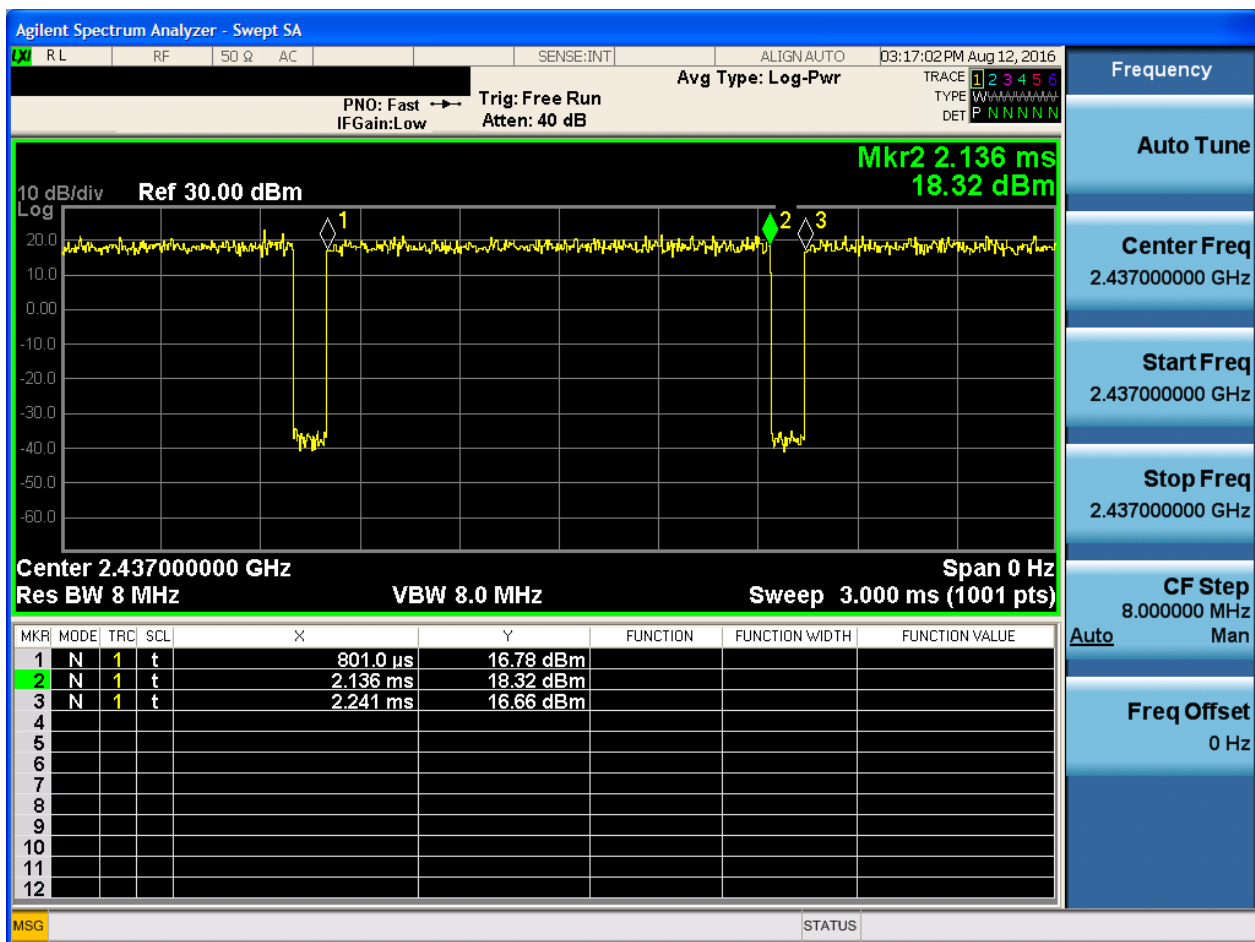


2.2 11G



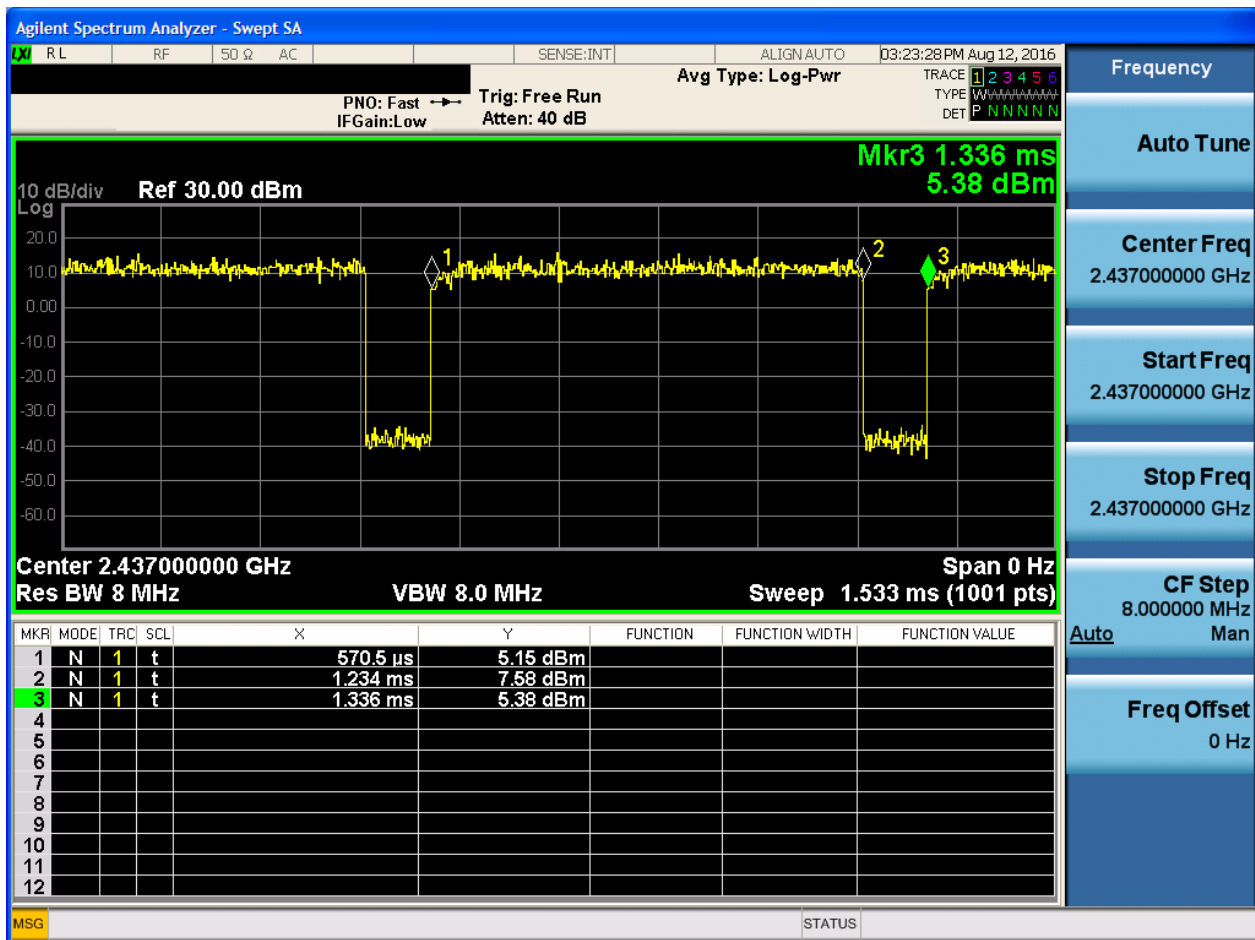


2.3 11N20





2.4 11N40



Appendix D: Maximum Conducted Average Output Power

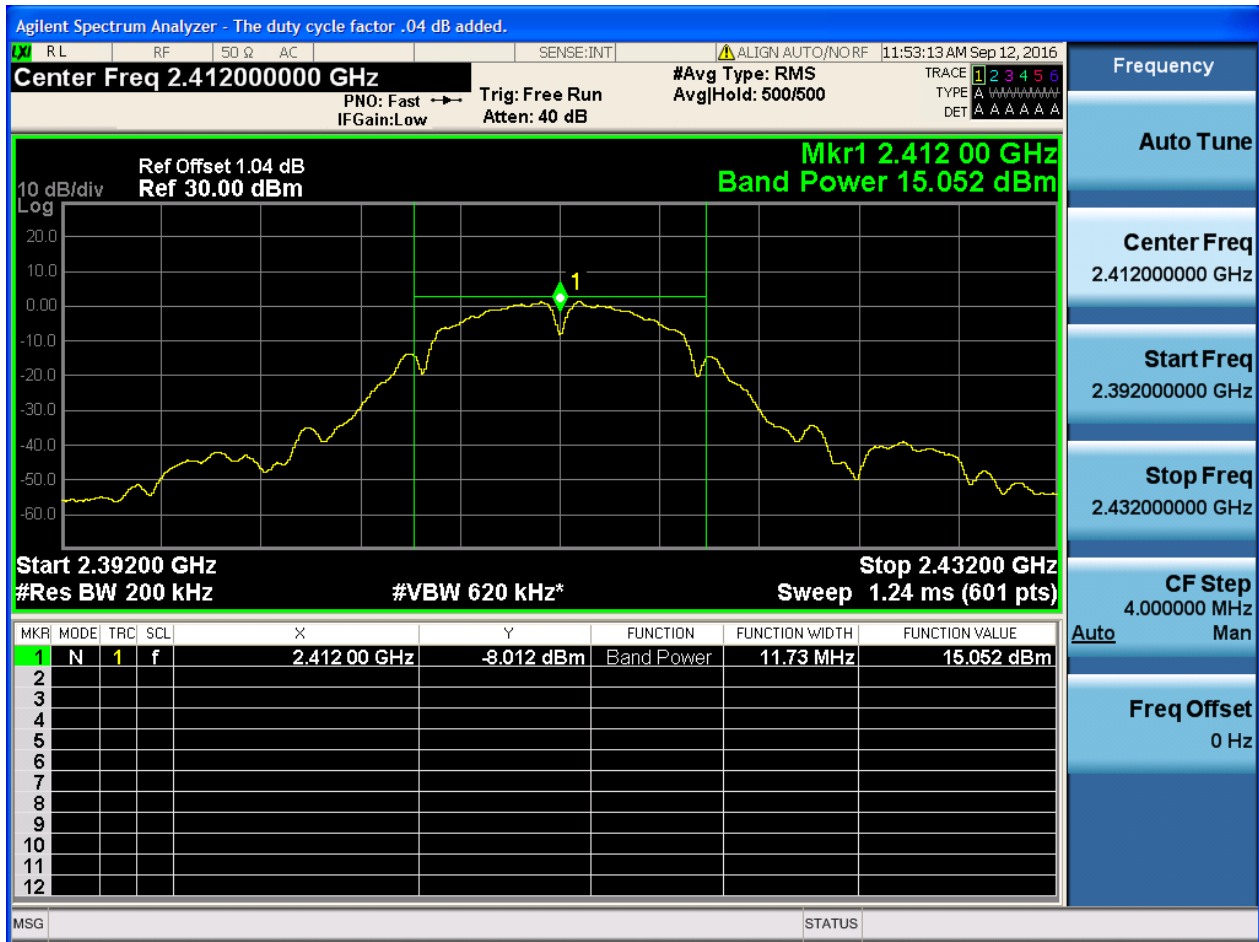
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11B	L	2412	Ant 1	15.05	pass
11B	M	2437	Ant 1	16.20	pass
11B	H	2462	Ant 1	16.65	pass
11G	L	2412	Ant 1	15.00	pass
11G	M	2437	Ant 1	16.42	pass
11G	H	2462	Ant 1	16.49	pass
11N20	L	2412	Ant 1	14.77	pass
11N20	M	2437	Ant 1	15.81	pass
11N20	H	2462	Ant 1	15.97	pass
11N40	L	2422	Ant 1	12.03	pass
11N40	M	2437	Ant 1	12.41	pass
11N40	H	2452	Ant 1	12.58	pass



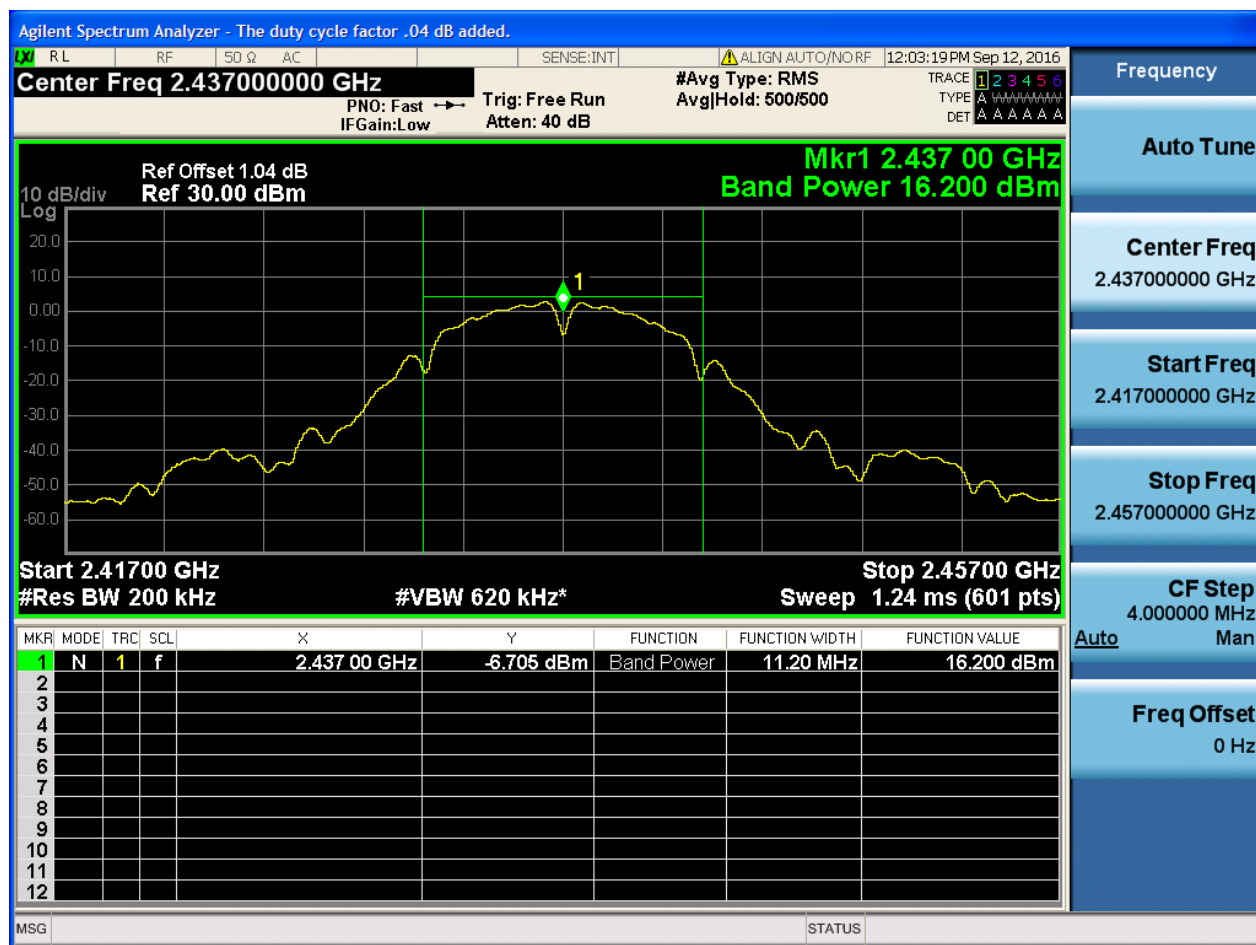
Part II - Test Plots

2.1 11B_L@Ant 1



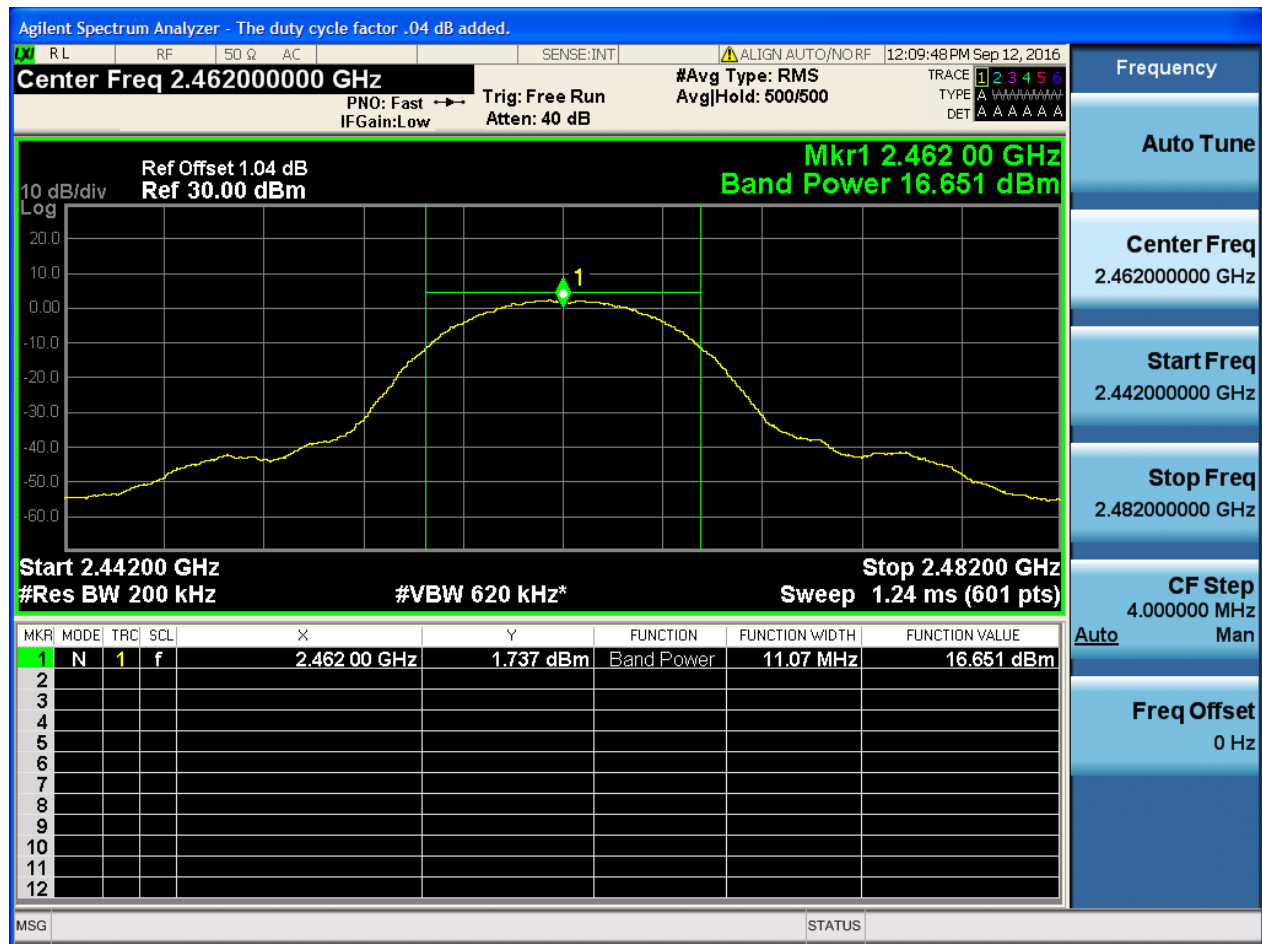


2.2 11B_M@Ant 1



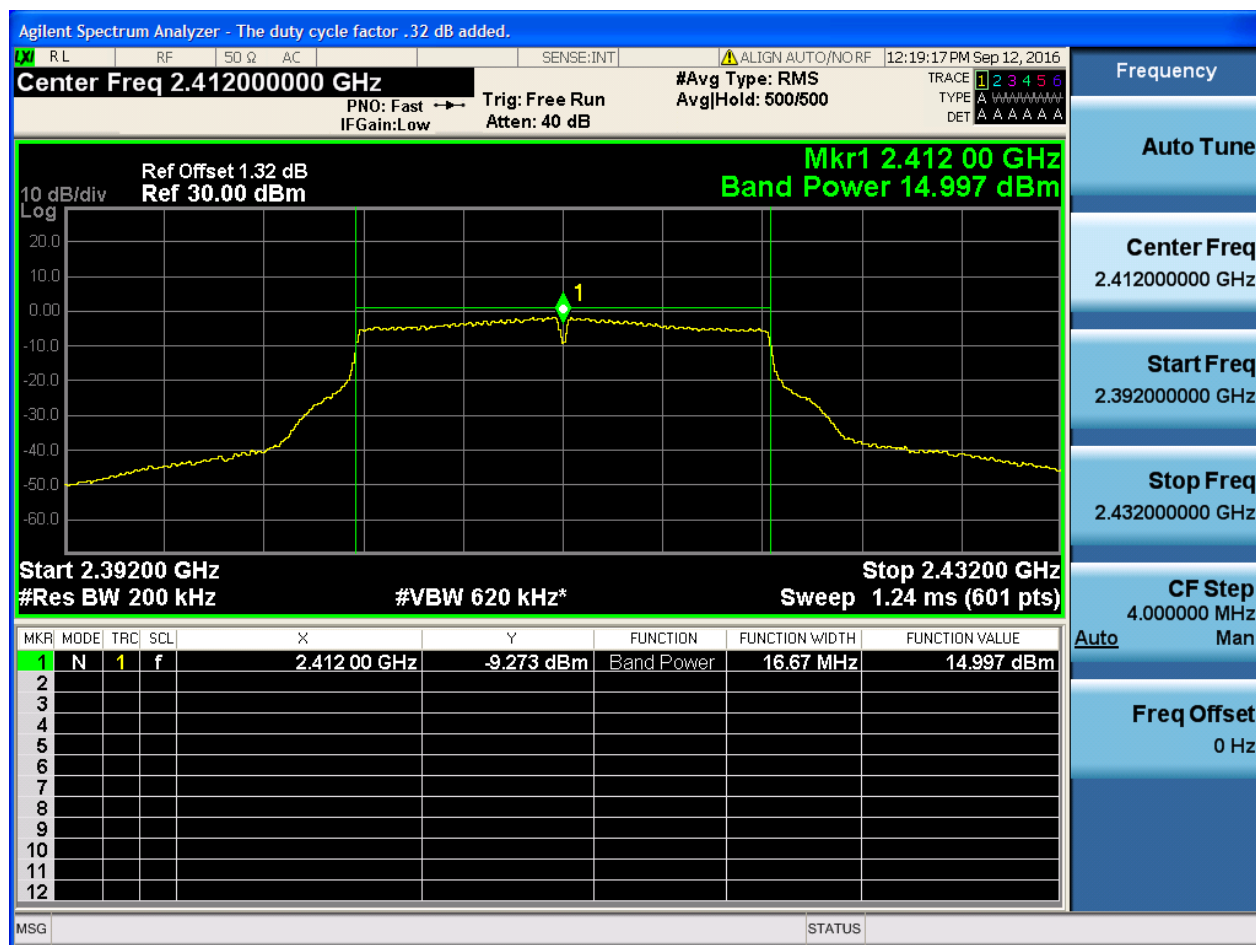


2.3 11B_H@Ant 1



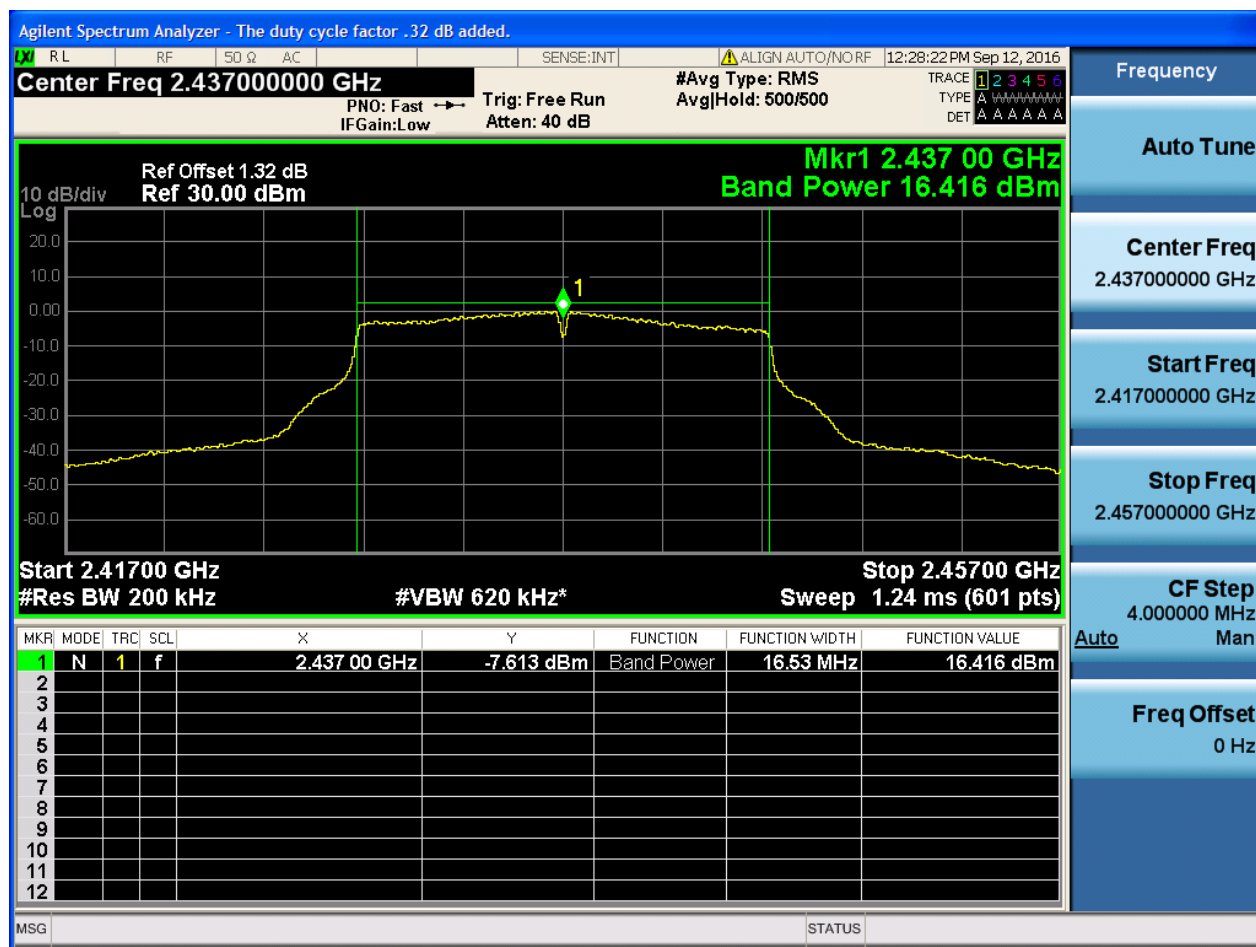


2.4 11G_L@Ant 1



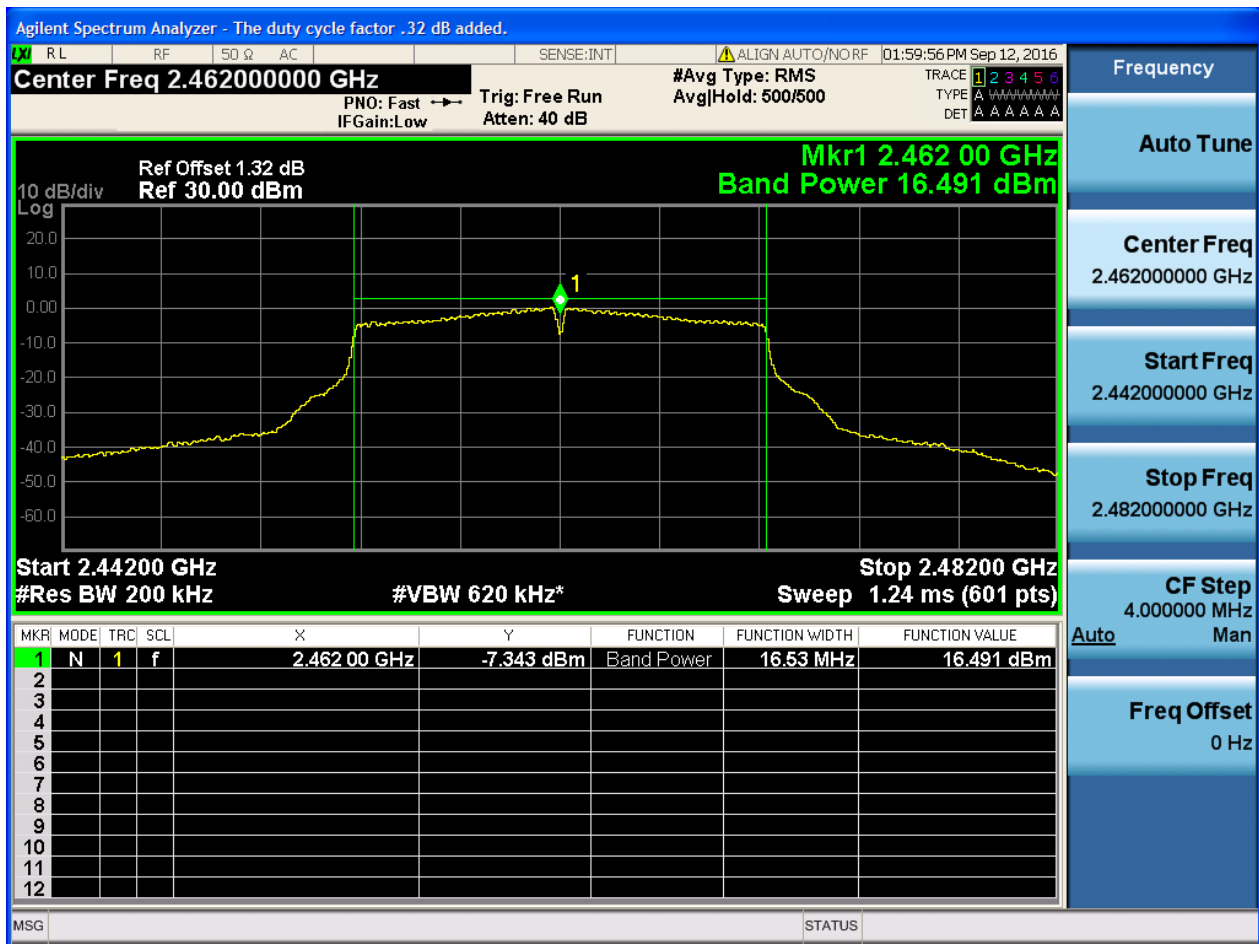


2.5 11G_M@Ant 1



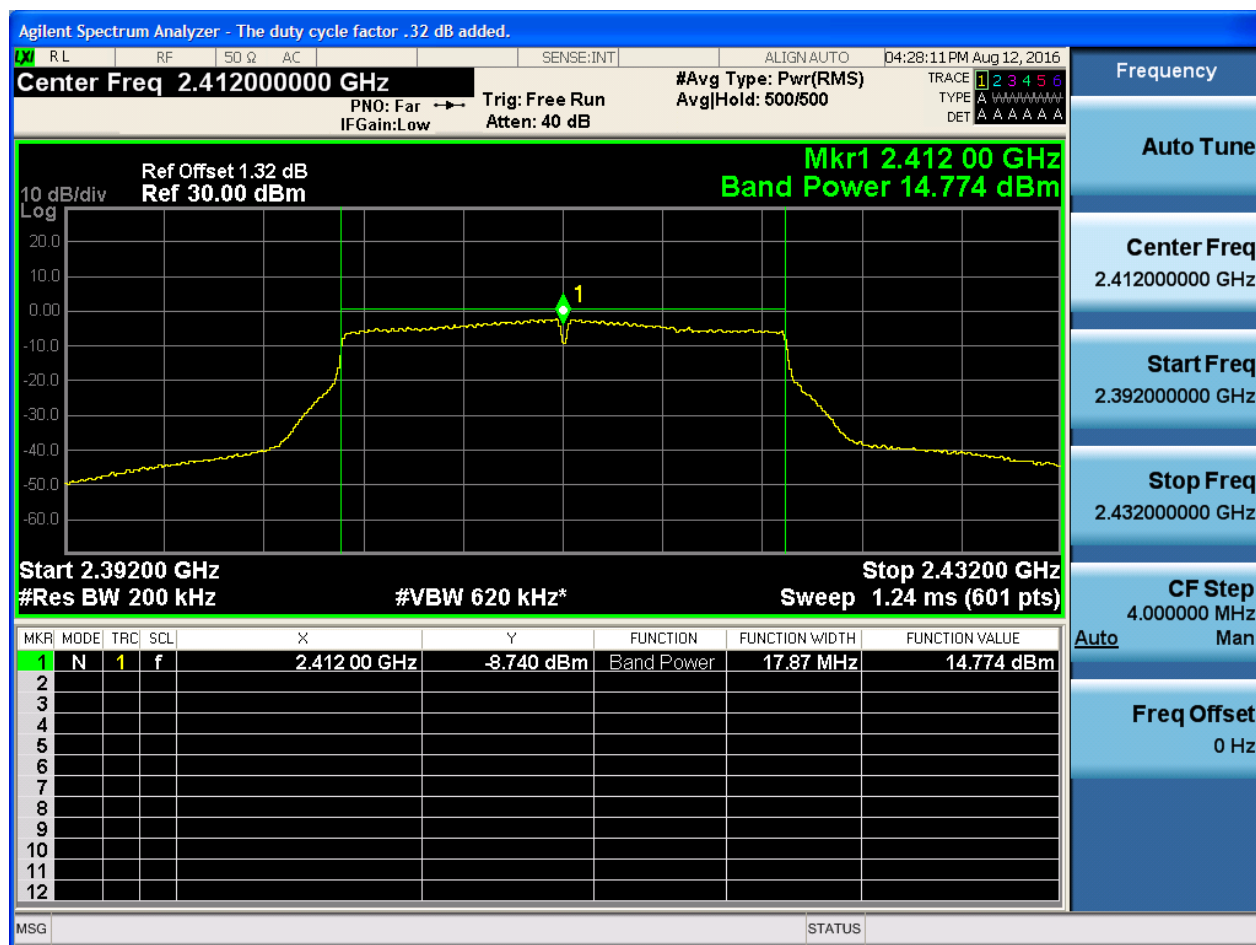


2.6 11G_H@Ant 1



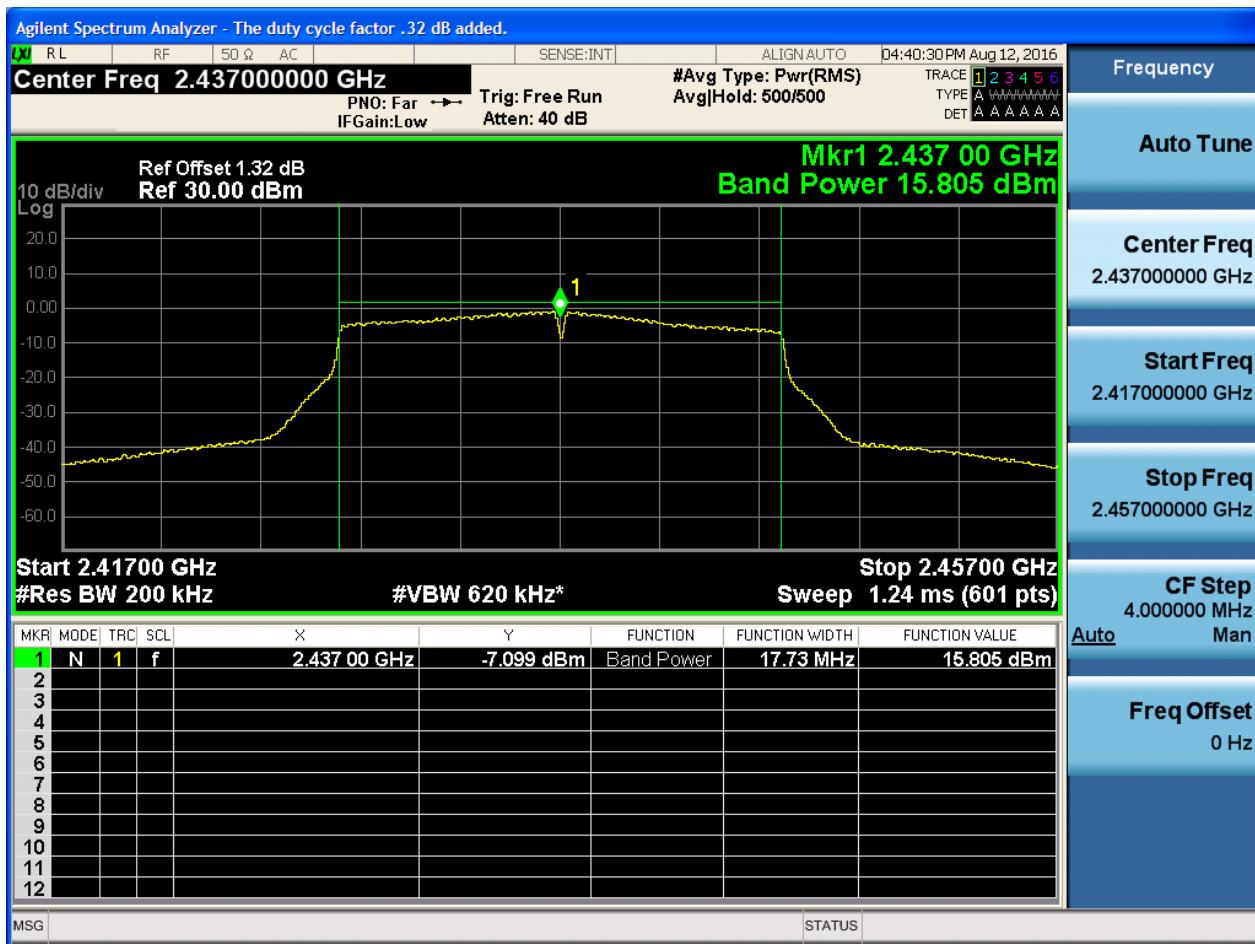


2.7 11N20_L@Ant 1



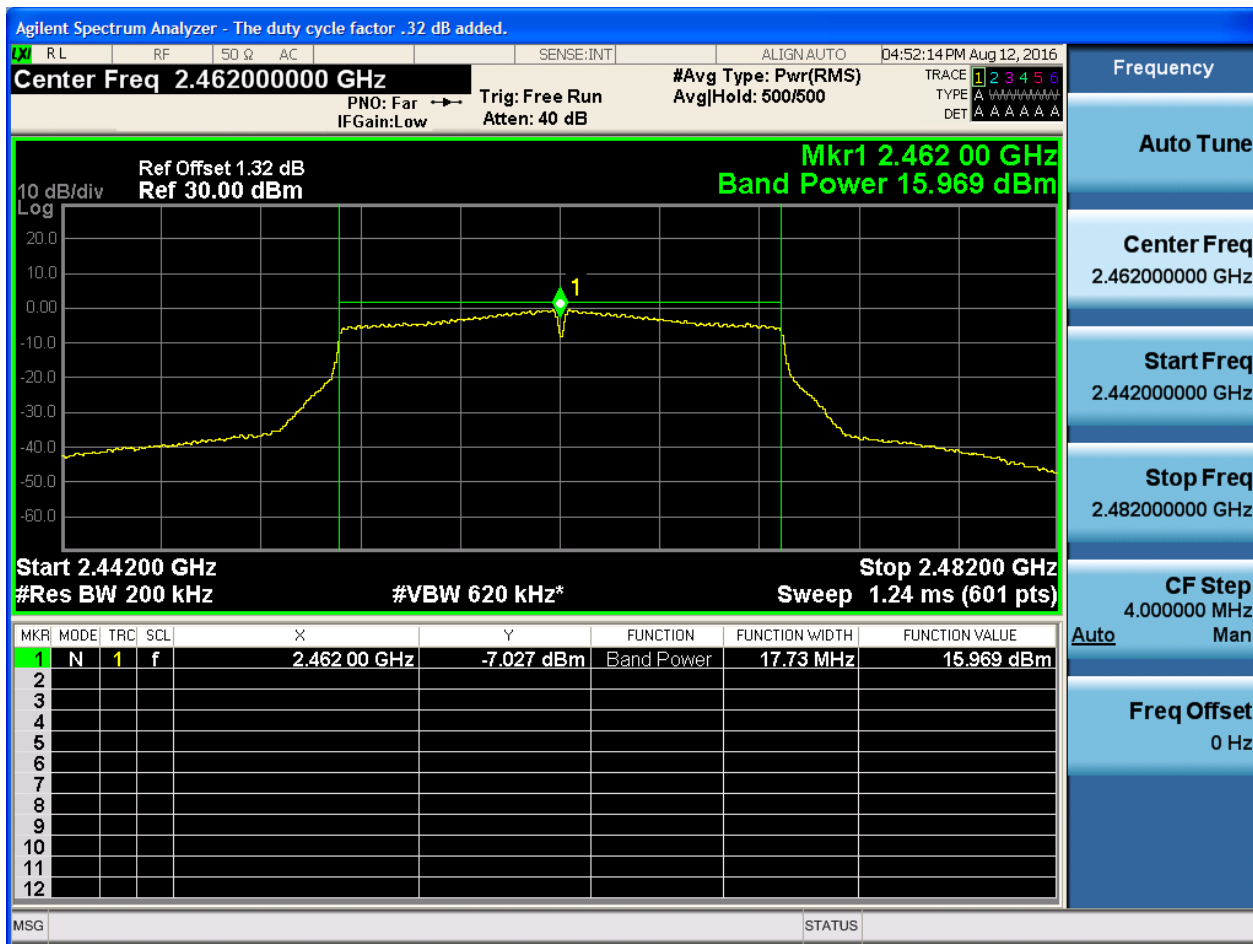


2.8 11N20_M@Ant 1



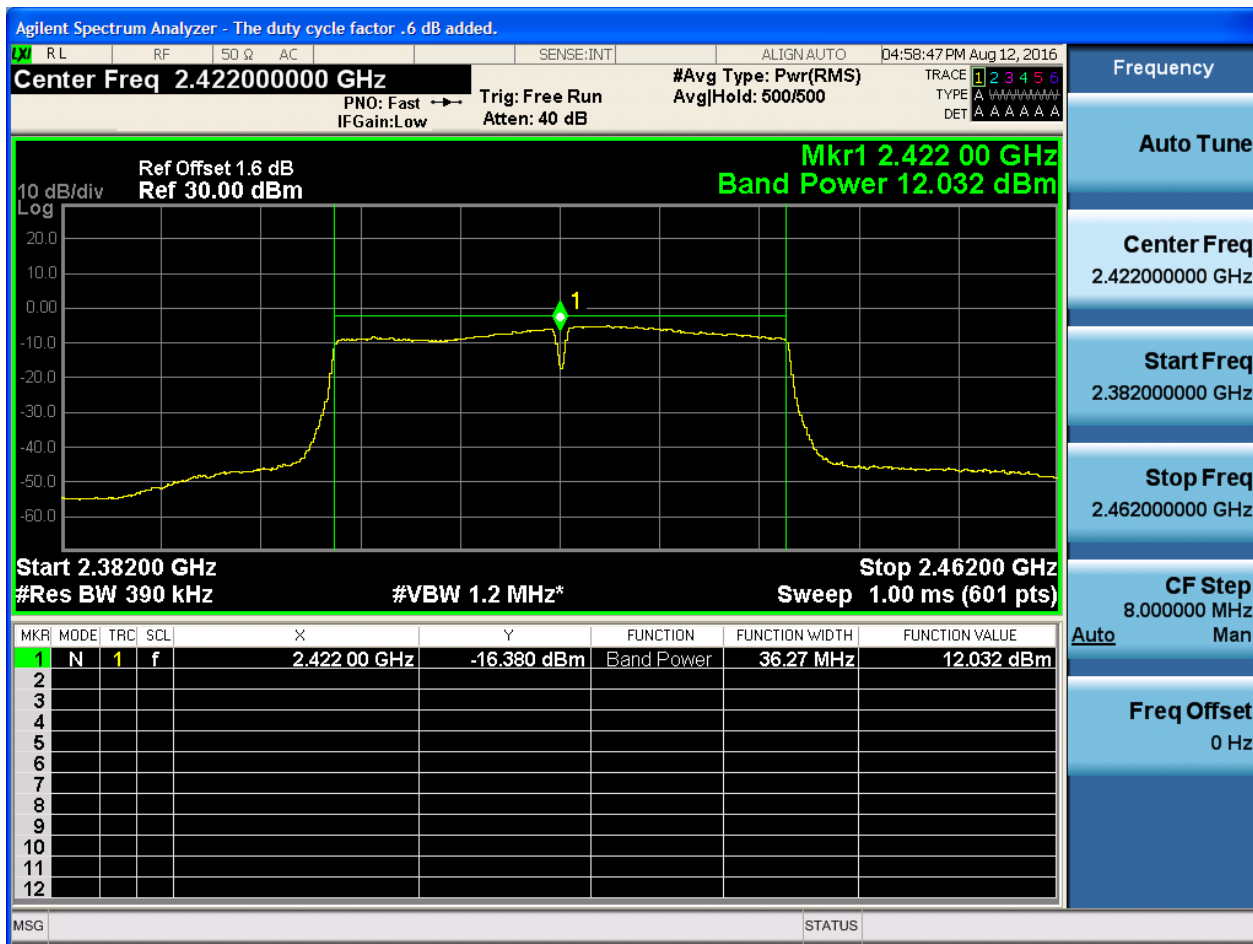


2.9 11N20_H@Ant 1



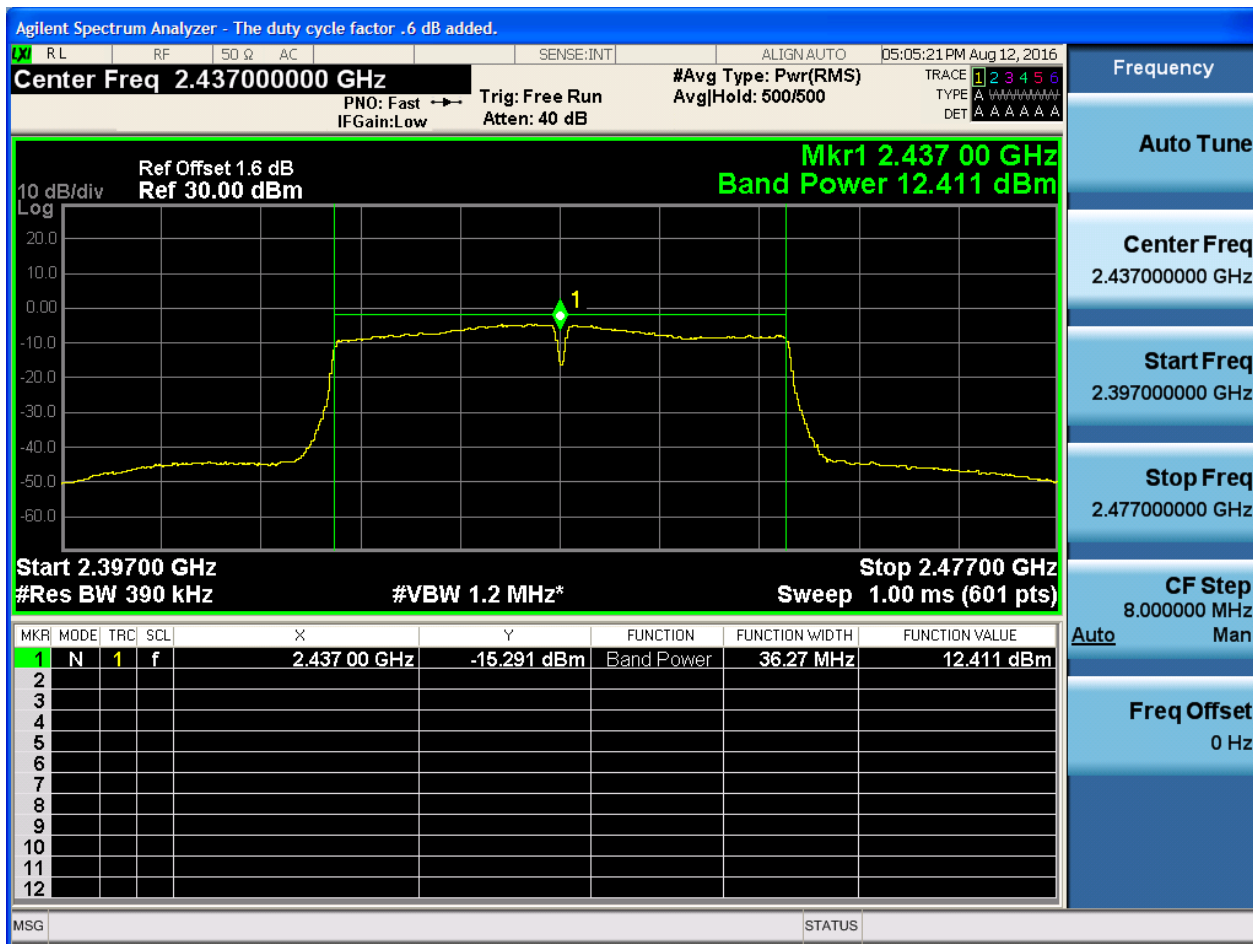


2.10 11N40_L@Ant 1



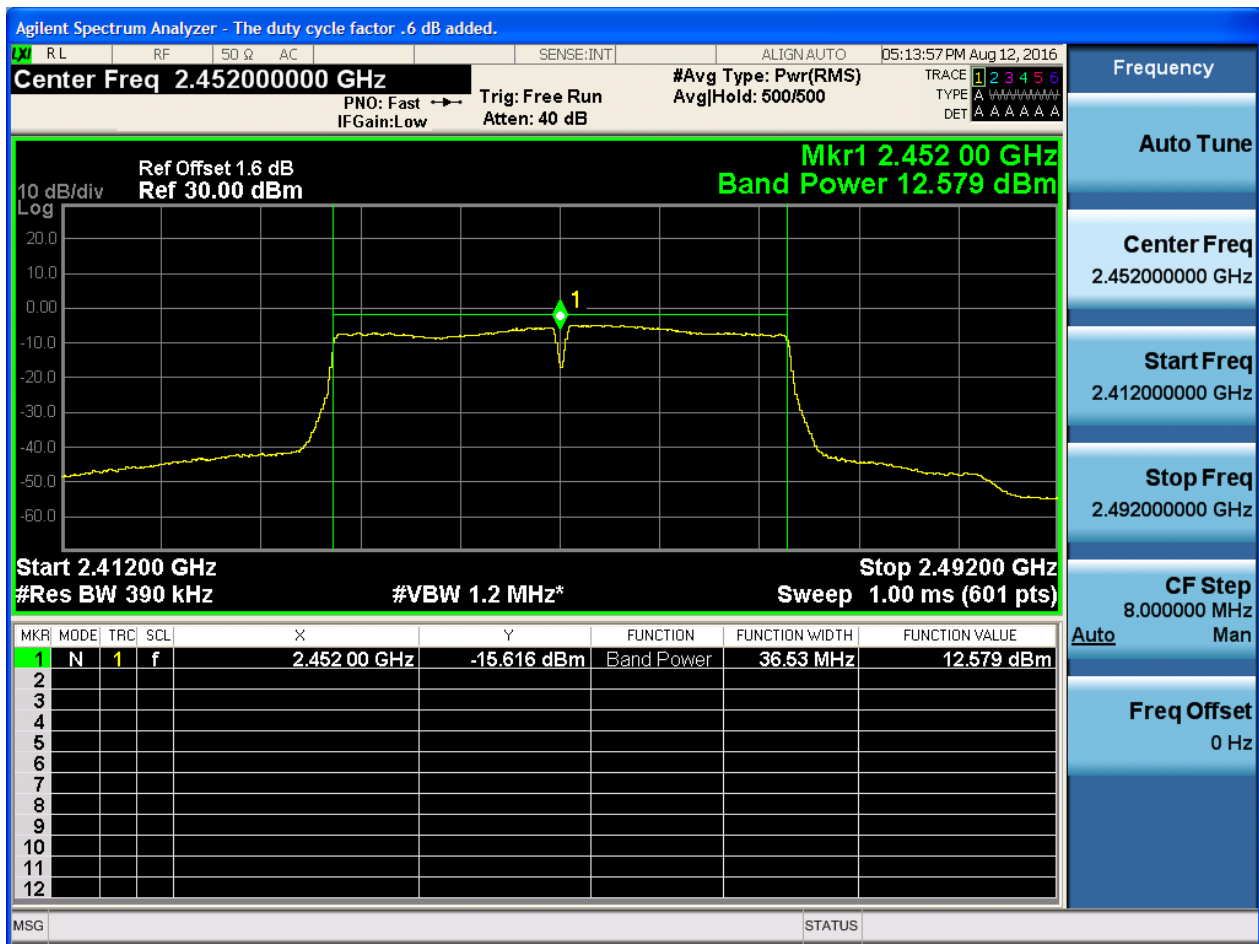


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



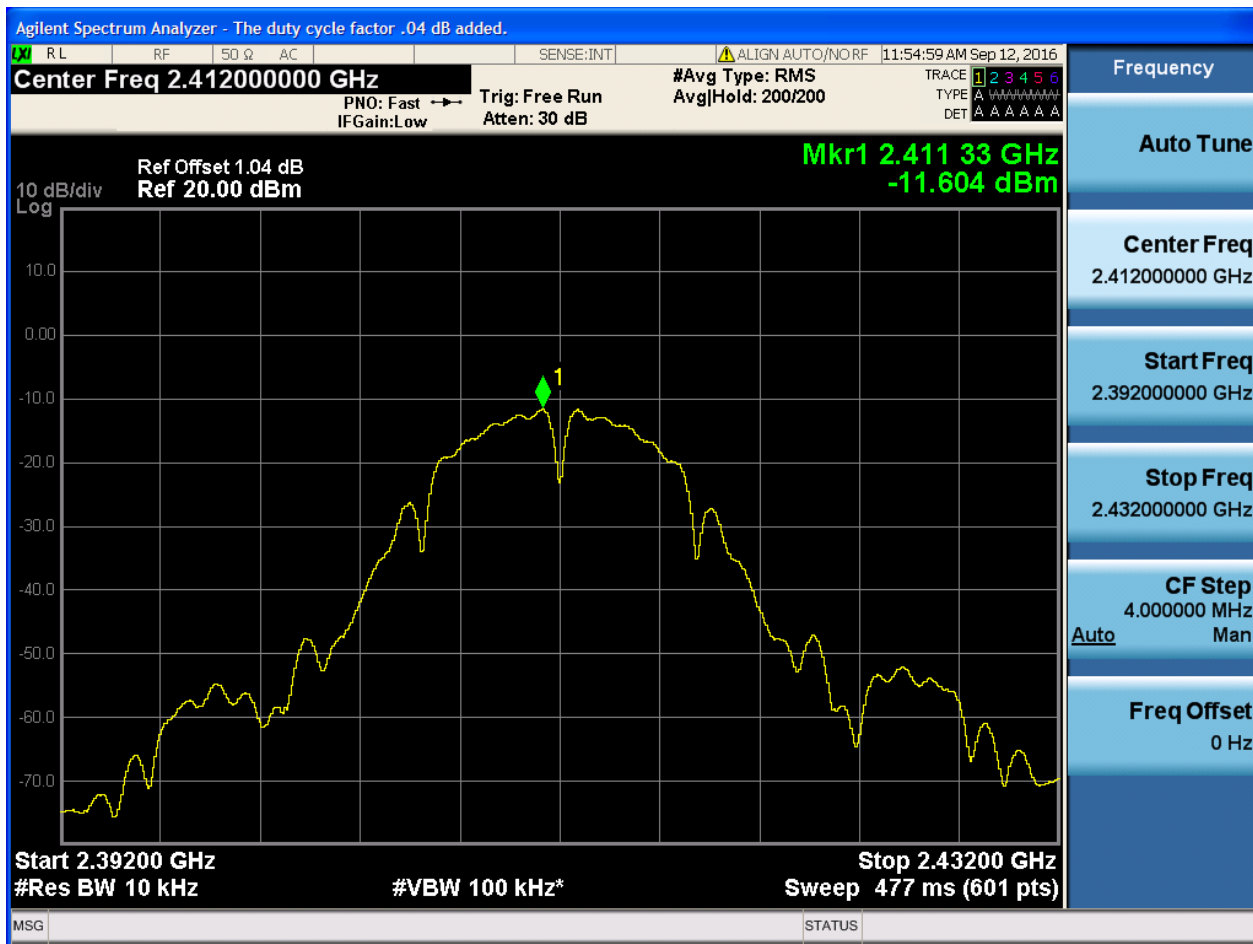
Appendix E: Maximum Power Spectral Density Level

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	PD[MHz]	Verdict
11B	L	2412	Ant 1	-11.60	pass
11B	M	2437	Ant 1	-10.35	pass
11B	H	2462	Ant 1	-10.11	pass
11G	L	2412	Ant 1	-13.13	pass
11G	M	2437	Ant 1	-11.32	pass
11G	H	2462	Ant 1	-11.27	pass
11N20	L	2412	Ant 1	-14.16	pass
11N20	M	2437	Ant 1	-12.55	pass
11N20	H	2462	Ant 1	-12.34	pass
11N40	L	2422	Ant 1	-19.88	pass
11N40	M	2437	Ant 1	-19.41	pass
11N40	H	2452	Ant 1	-19.60	pass

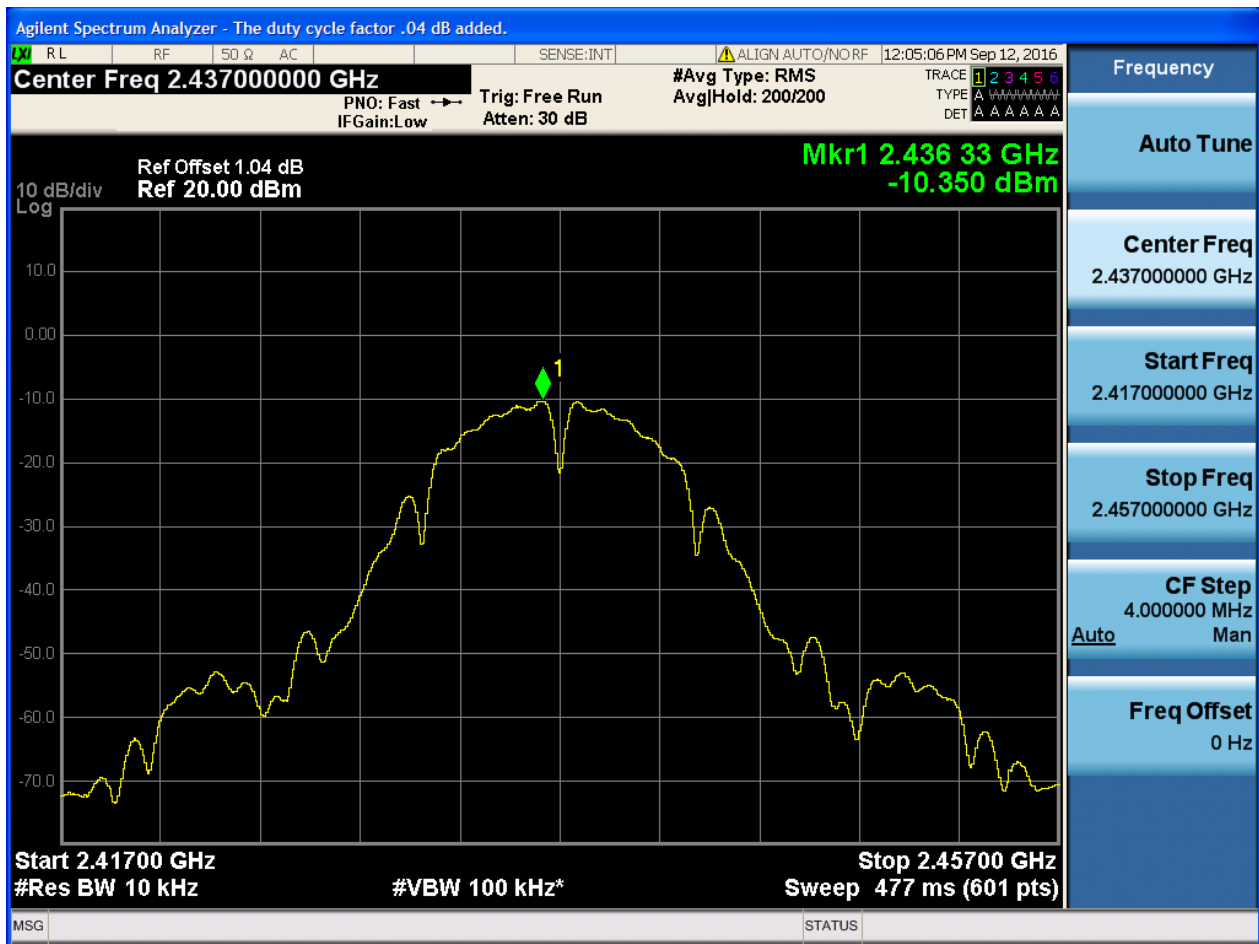
Part II - Test Plots

2.1 11B_L@Ant 1



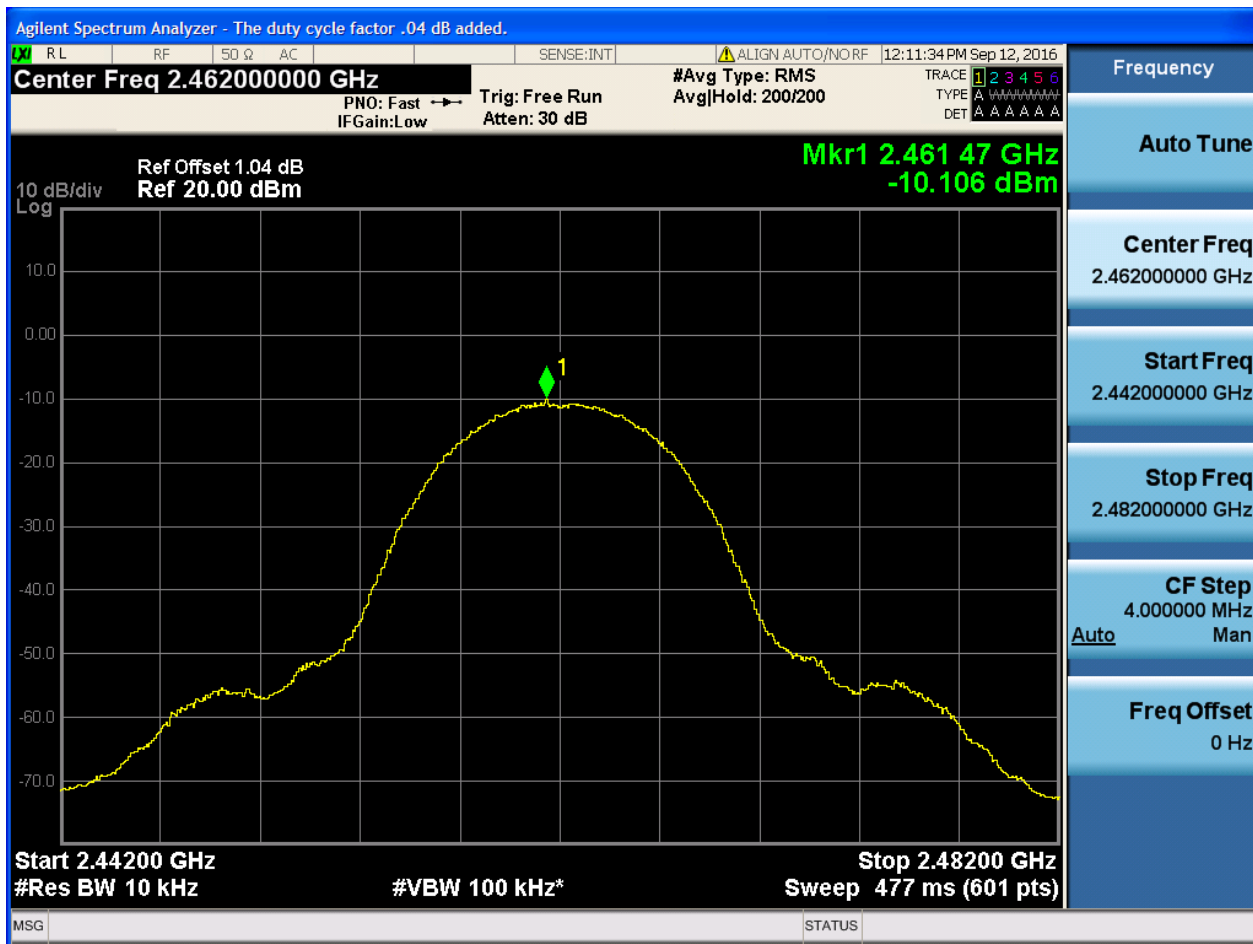


2.2 11B_M@Ant 1



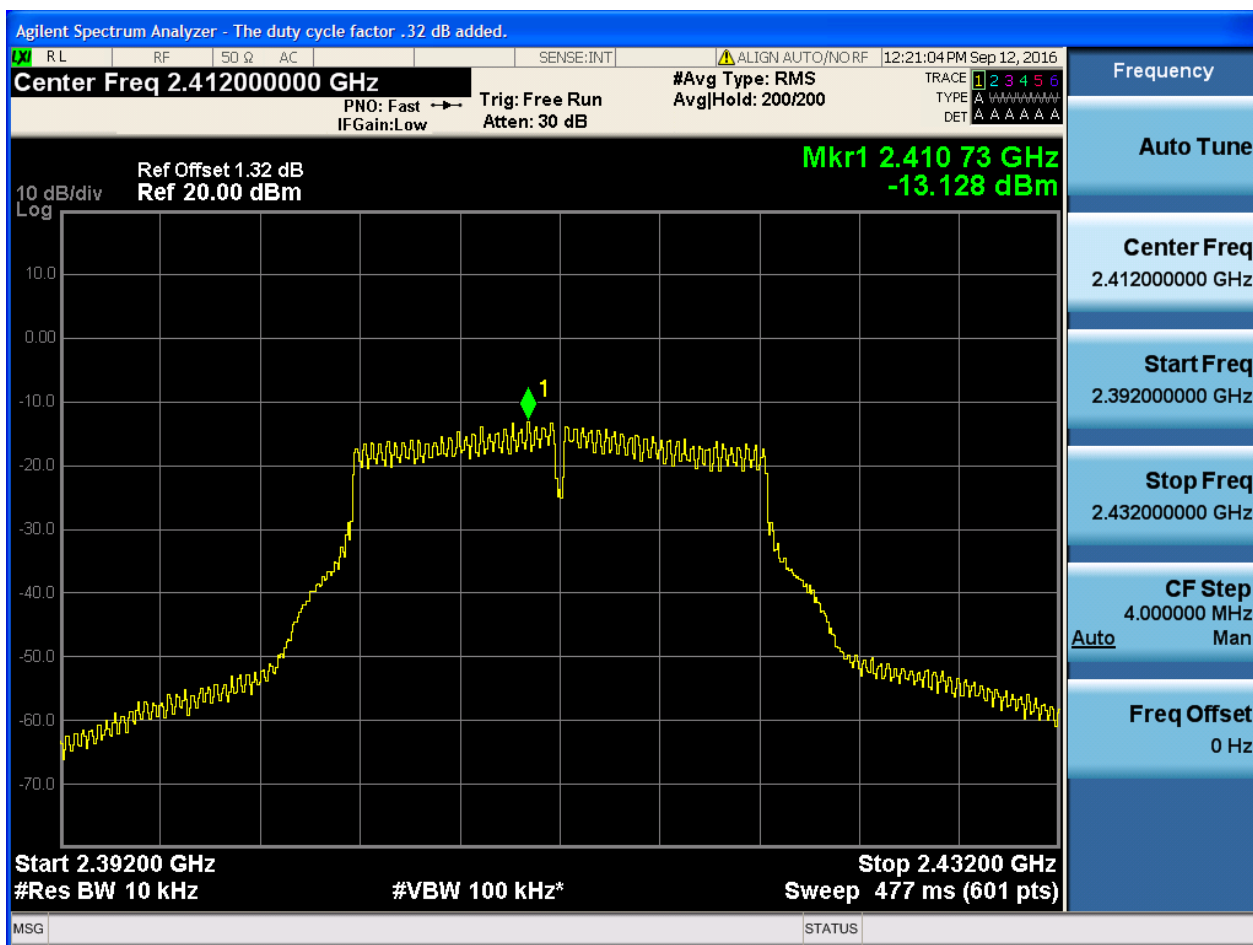


2.3 11B_H@Ant 1





2.4 11G_L@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .32 dB added.

Center Freq 2.437000000 GHz

#Avg Type: RMS
AvgHold: 200/200

Ref Offset 1.32 dB
Ref 20.00 dBm

Mkr1 2.435 73 GHz
-11.318 dBm

Start 2.41700 GHz
#Res BW 10 kHz

Stop 2.45700 GHz
Sweep 477 ms (601 pts)

#VBW 100 kHz*

10 dB/div
Log

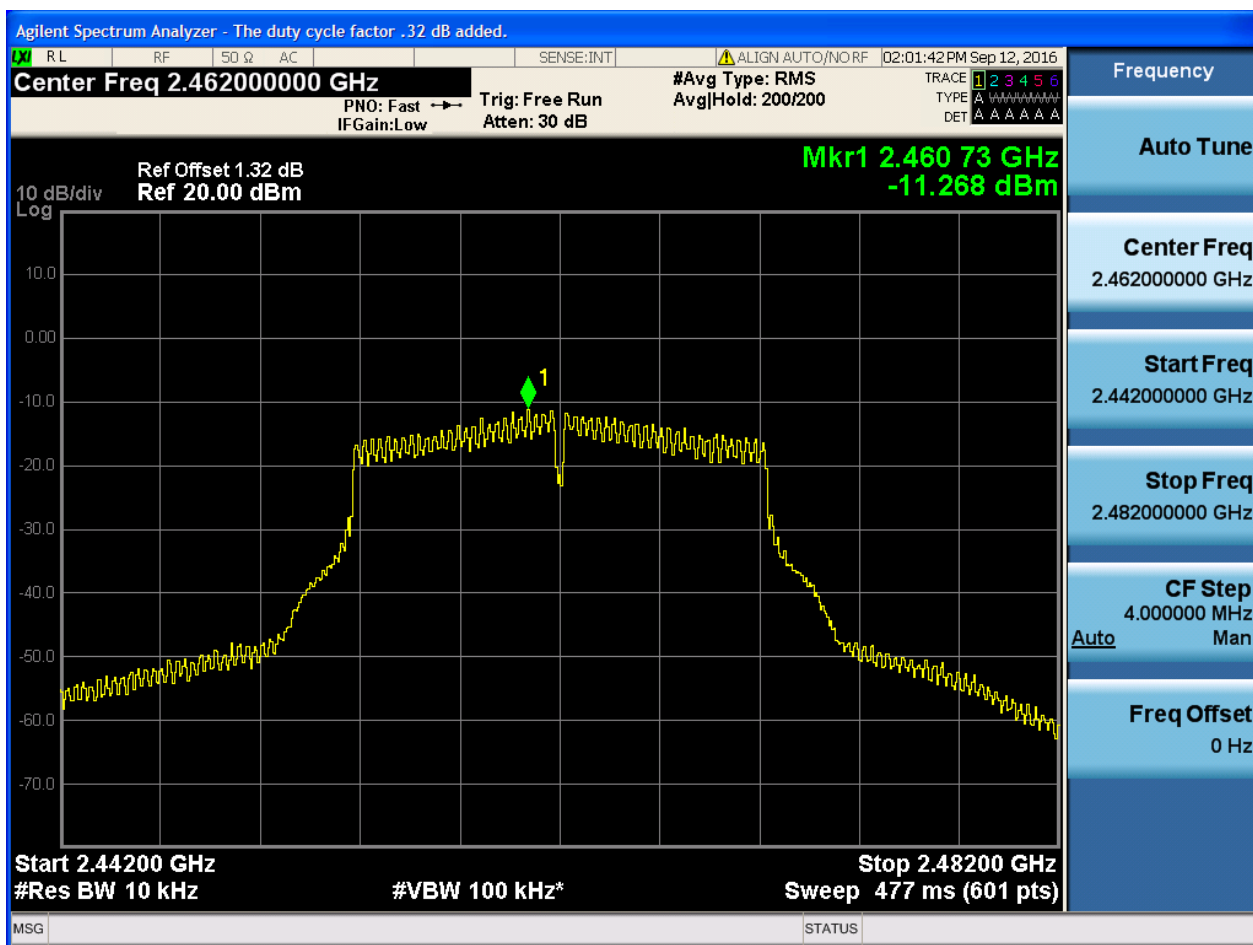
1

The image shows a screenshot of an Agilent Spectrum Analyzer. The main display is a log-frequency plot with a yellow signal trace. The trace shows a broad signal between 2.417 GHz and 2.457 GHz, with a peak at 2.43573 GHz. The peak is marked with a green diamond and the number '1'. The y-axis is labeled '10 dB/div Log' and ranges from -70.0 to 10.0. The x-axis is labeled 'Start 2.41700 GHz' and 'Stop 2.45700 GHz'. The resolution bandwidth is 10 kHz. The sweep time is 477 ms (601 pts). The video bandwidth is 100 kHz. The reference offset is 1.32 dB and the reference power is 20.00 dBm. The average type is RMS and the average hold is 200/200. The center frequency is 2.437000000 GHz. The marker frequency is 2.43573 GHz and the marker power is -11.318 dBm. The status bar at the bottom shows 'MSG' and 'STATUS'.

Frequency
Auto Tune
Center Freq 2.437000000 GHz
Start Freq 2.417000000 GHz
Stop Freq 2.457000000 GHz
CF Step 4.000000 MHz Auto
Freq Offset 0 Hz

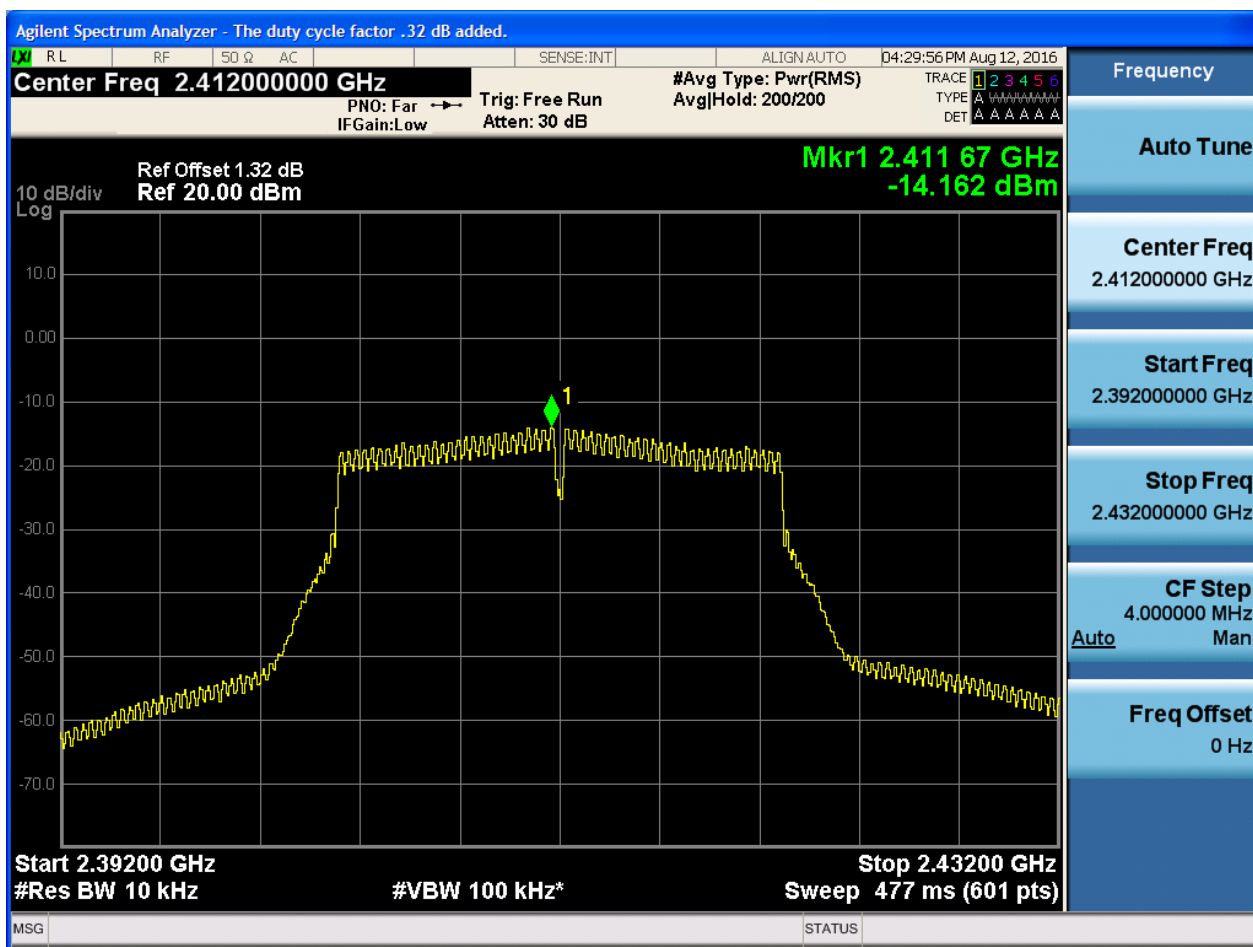


2.6 11G_H@Ant 1



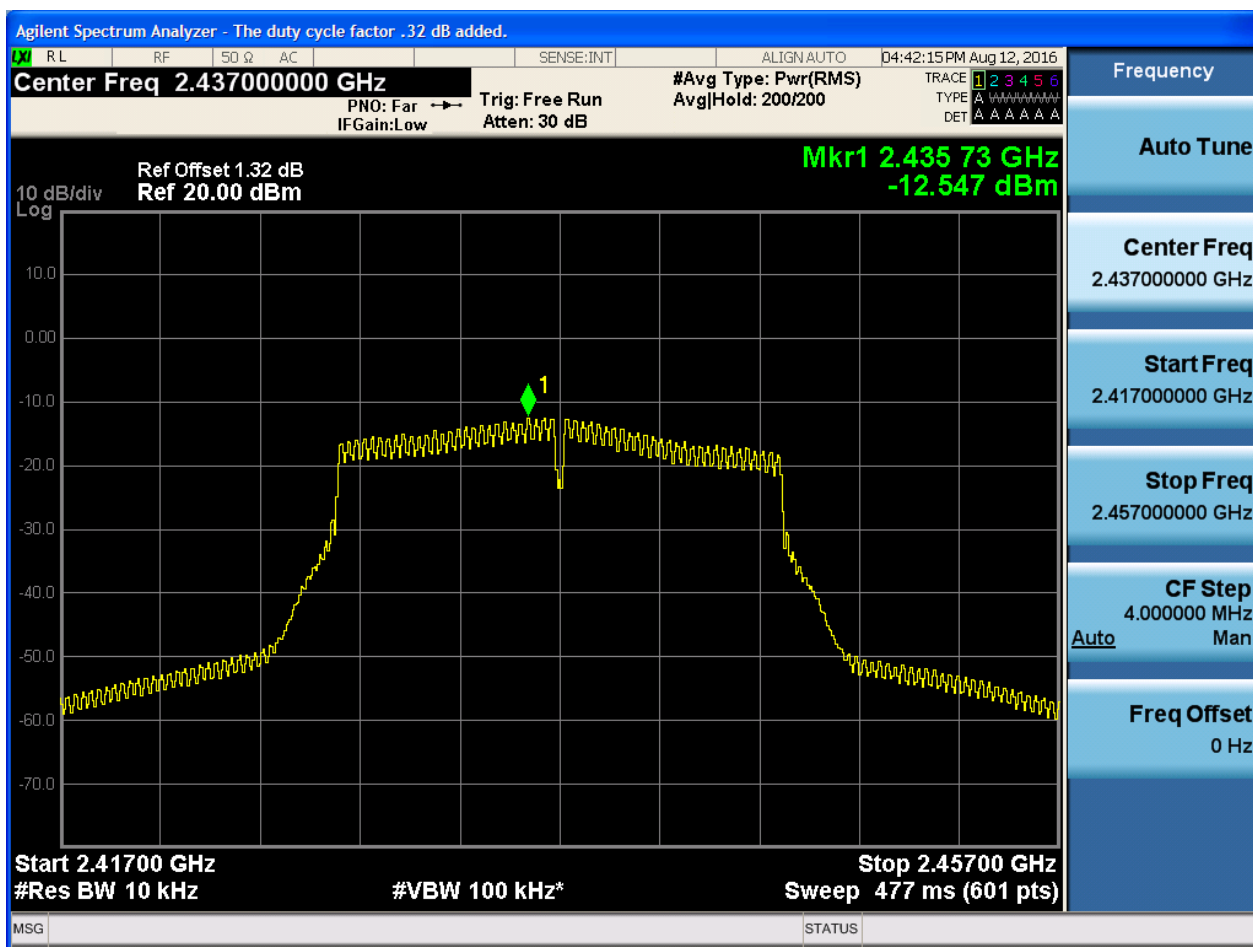


2.7 11N20_L@Ant 1



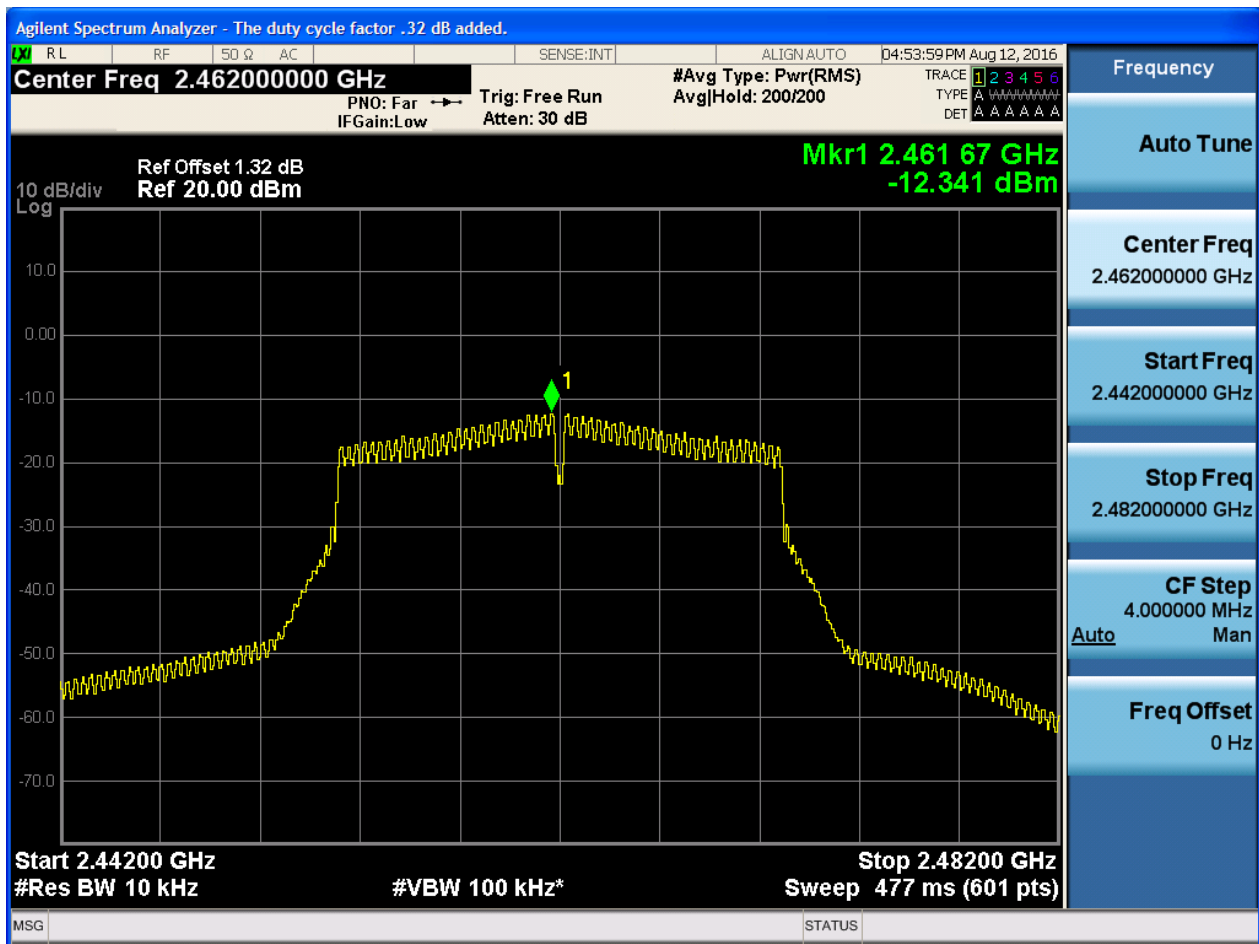


2.8 11N20_M@Ant 1



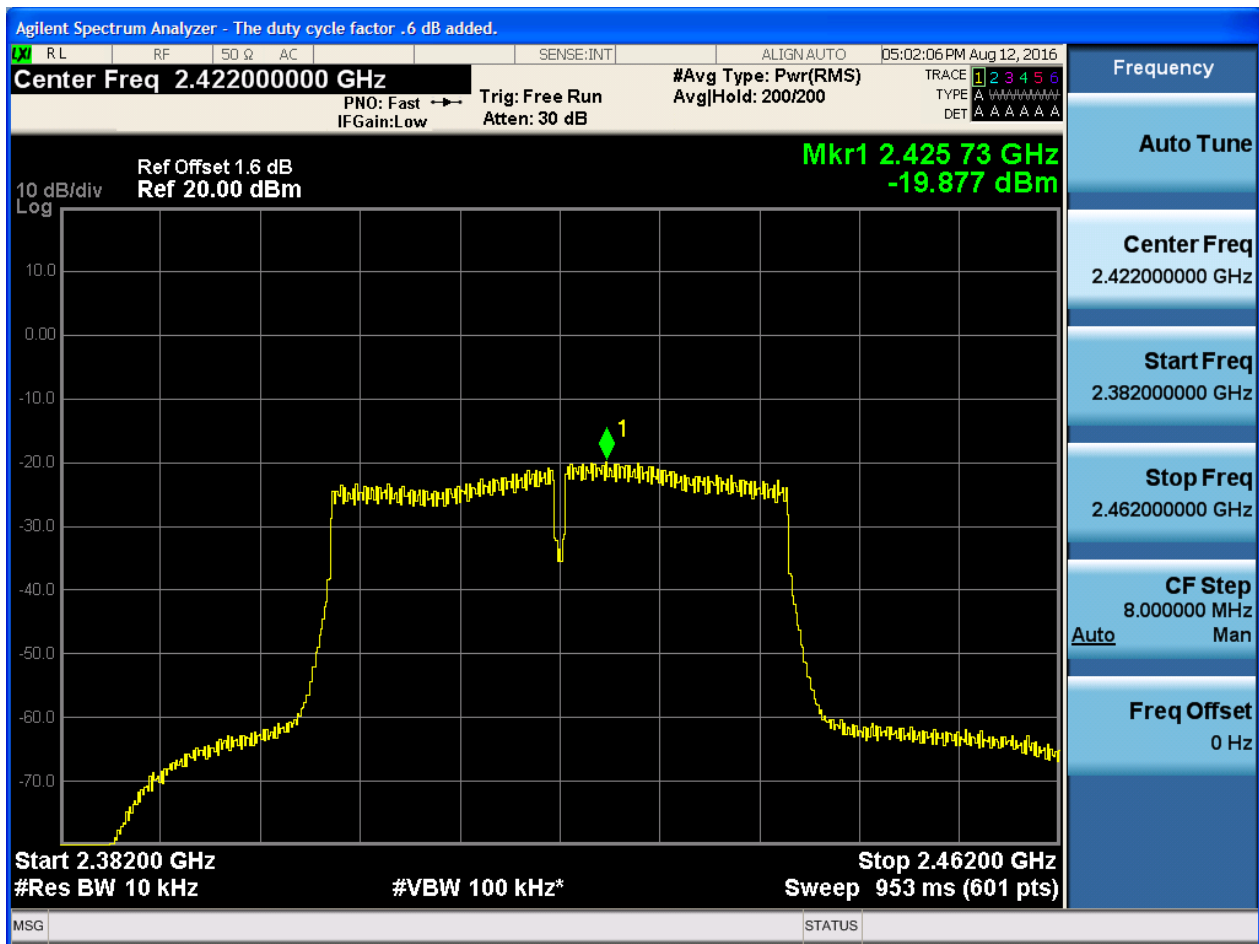


2.9 11N20_H@Ant 1



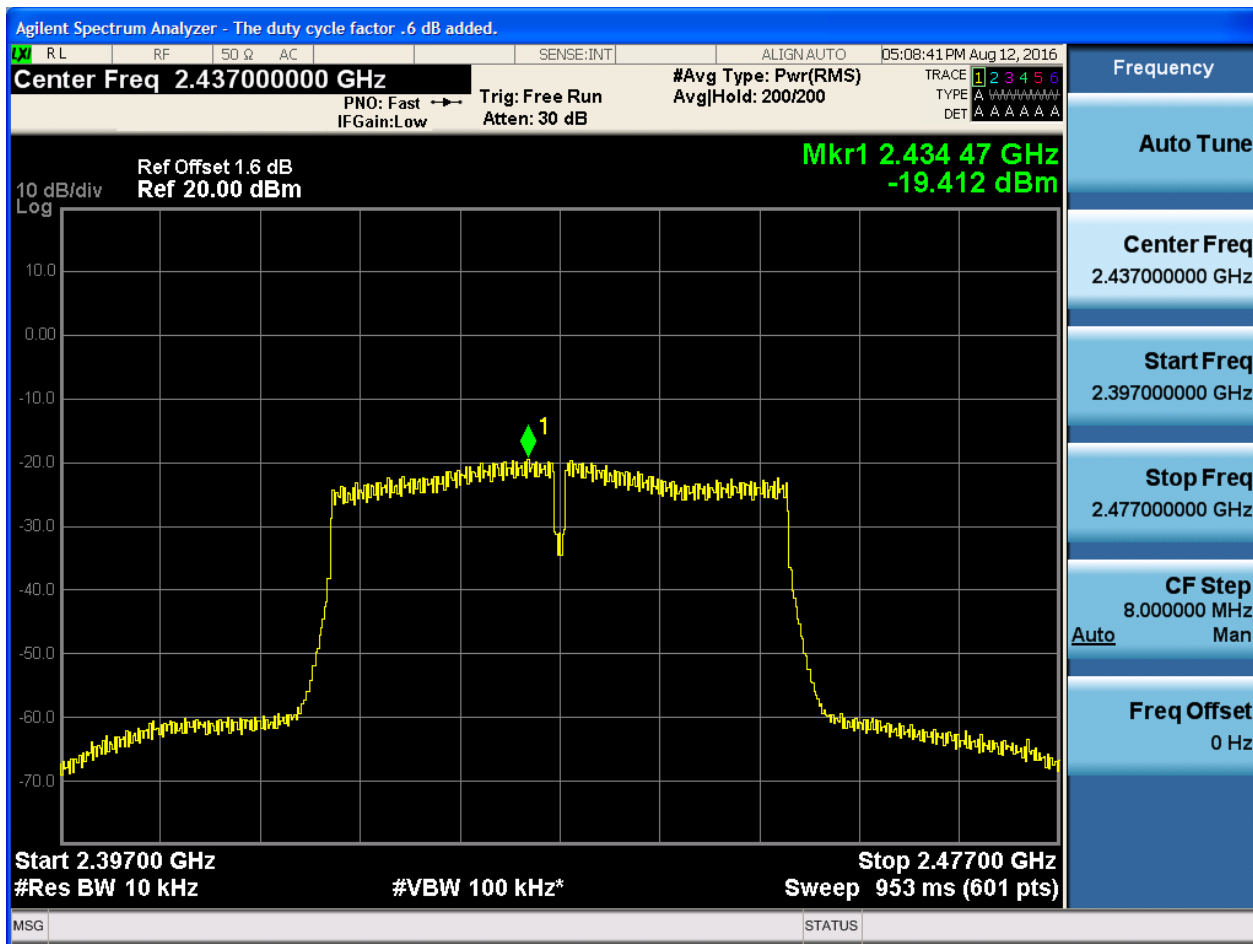


2.10 11N40_L@Ant 1



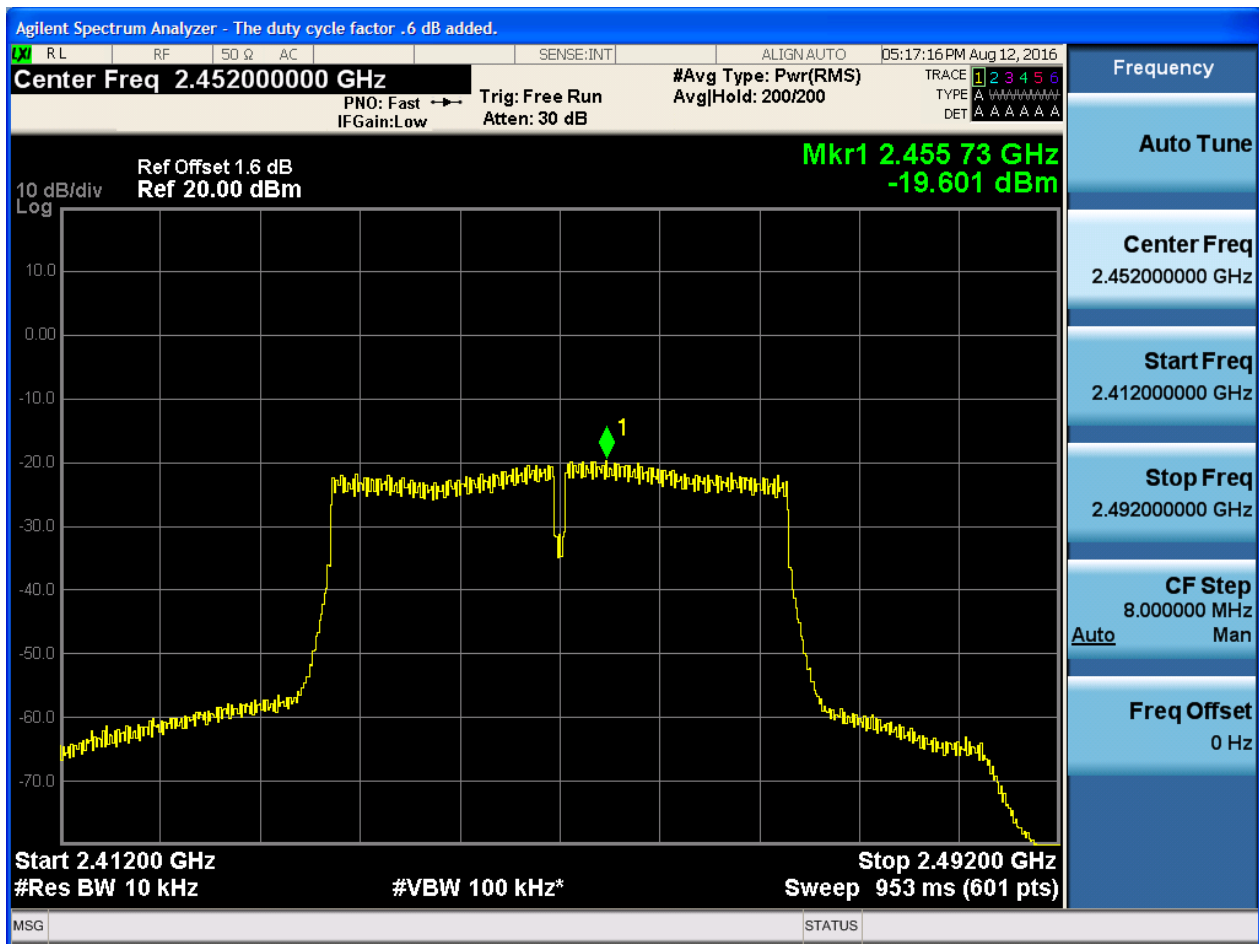


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix F: Band Edges Compliance

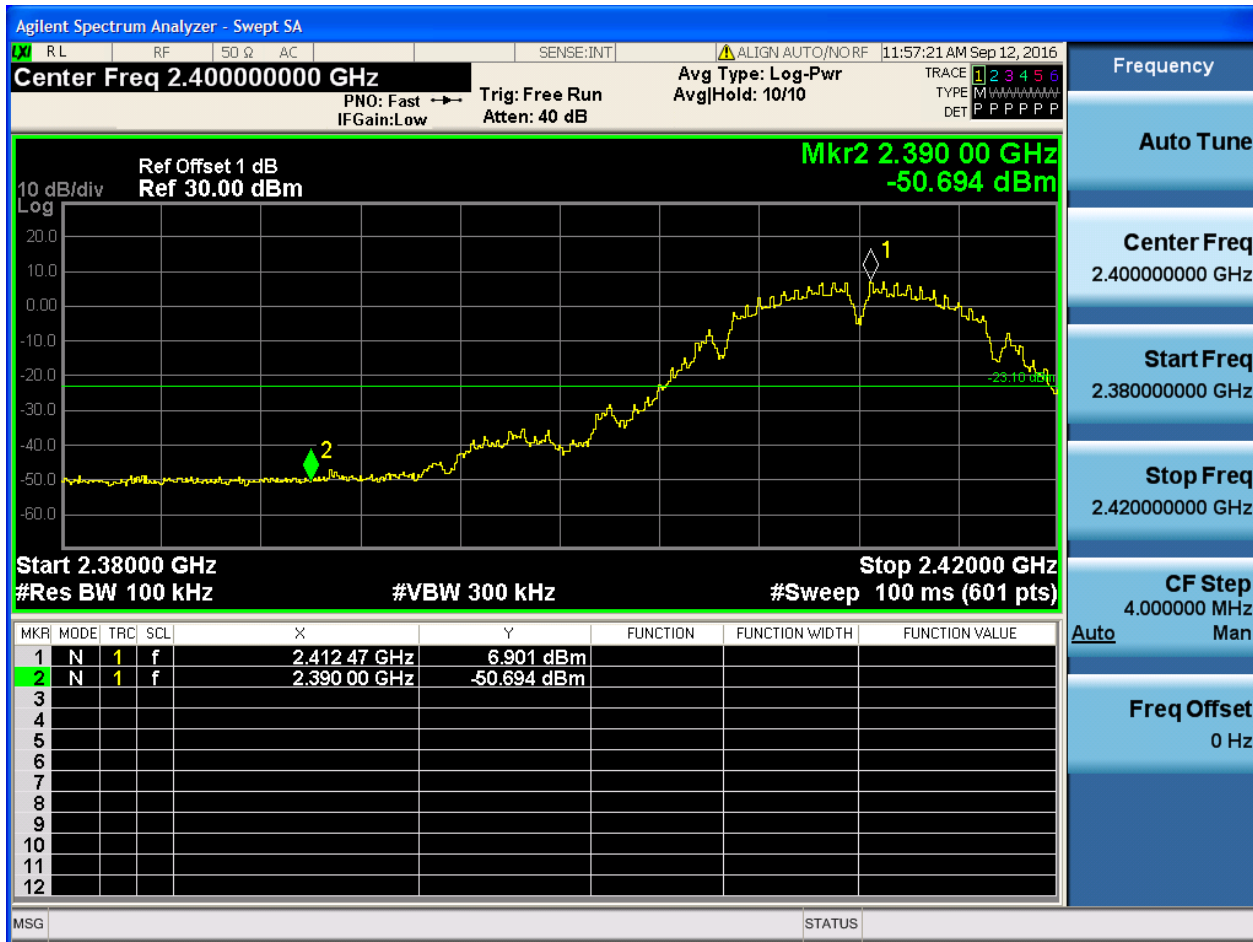
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Carrier Power[dBm]	Max.Spurious Level[dBm]	Verdict
11B	L	2412	Ant 1	6.90	-50.69	pass
11B	H	2462	Ant 1	9.56	-48.14	pass
11G	L	2412	Ant 1	3.53	-47.53	pass
11G	H	2462	Ant 1	4.88	-42.40	pass
11N20	L	2412	Ant 1	3.56	-45.75	pass
11N20	H	2462	Ant 1	4.76	-39.68	pass
11N40	L	2422	Ant 1	-2.96	-47.90	pass
11N40	H	2452	Ant 1	-1.12	-43.75	pass



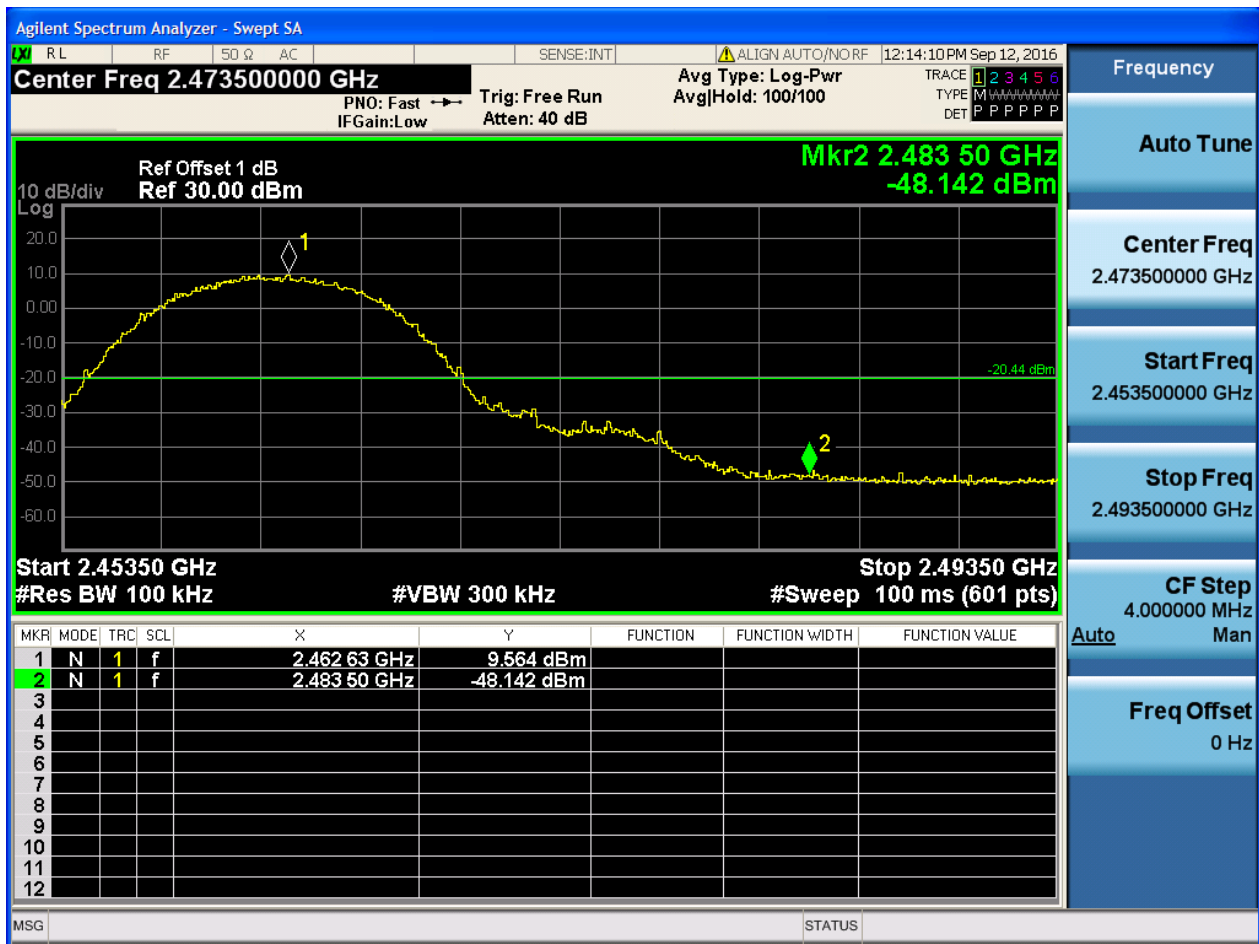
Part II - Test Plots

2.1 11B_L@Ant 1





2.2 11B_H@Ant 1





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO/NO RF 12:23:25 PM Sep 12, 2016

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

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

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

Ref Offset 1 dB Ref 30.00 dBm

Mkr2 2.390 00 GHz -47.532 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	2.405 73 GHz	3.529 dBm			
2	N	1	f	2.390 00 GHz	-47.532 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

Auto

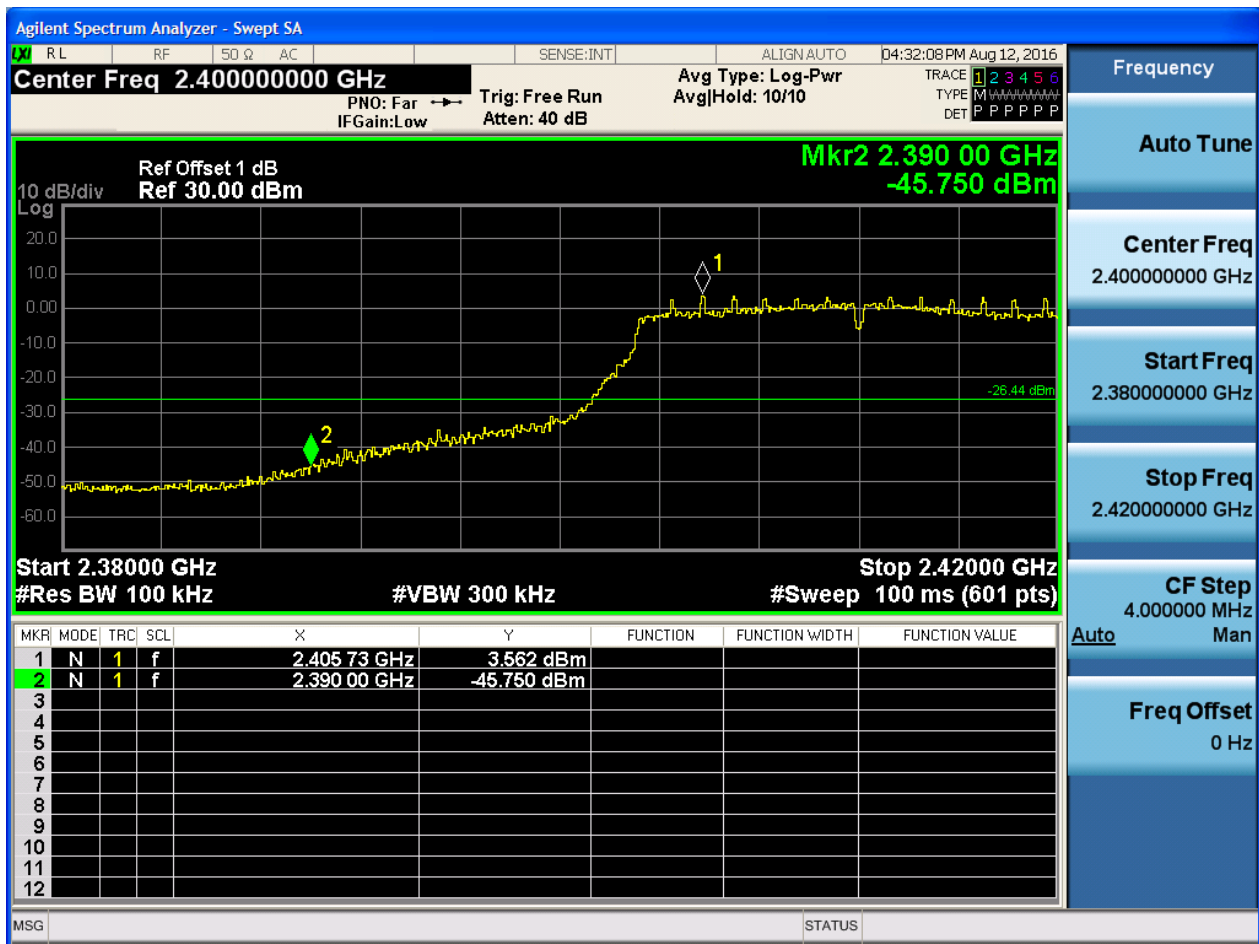


2.4 11G_H@Ant 1





2.5 11N20_L@Ant 1



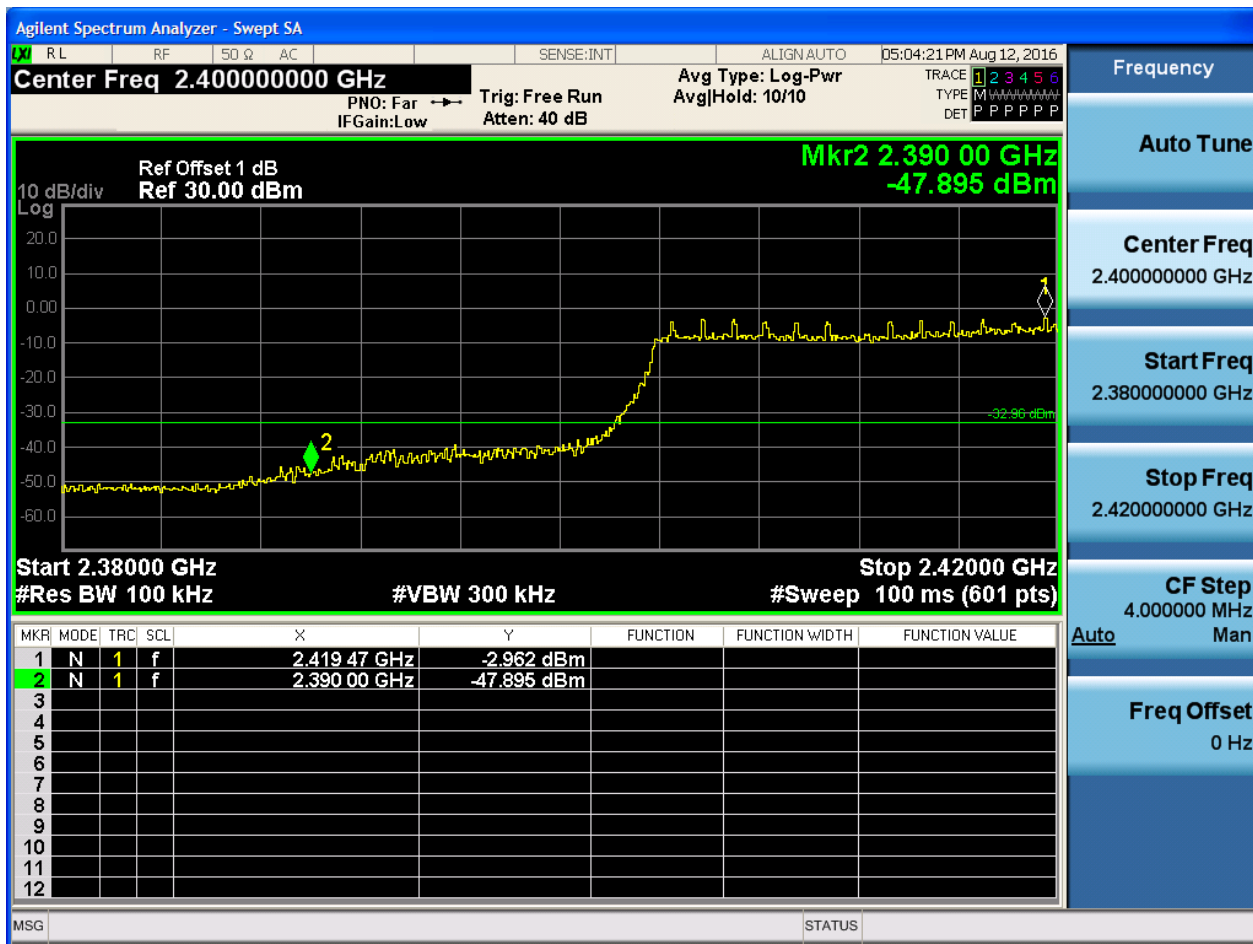


2.6 11N20_H@Ant 1



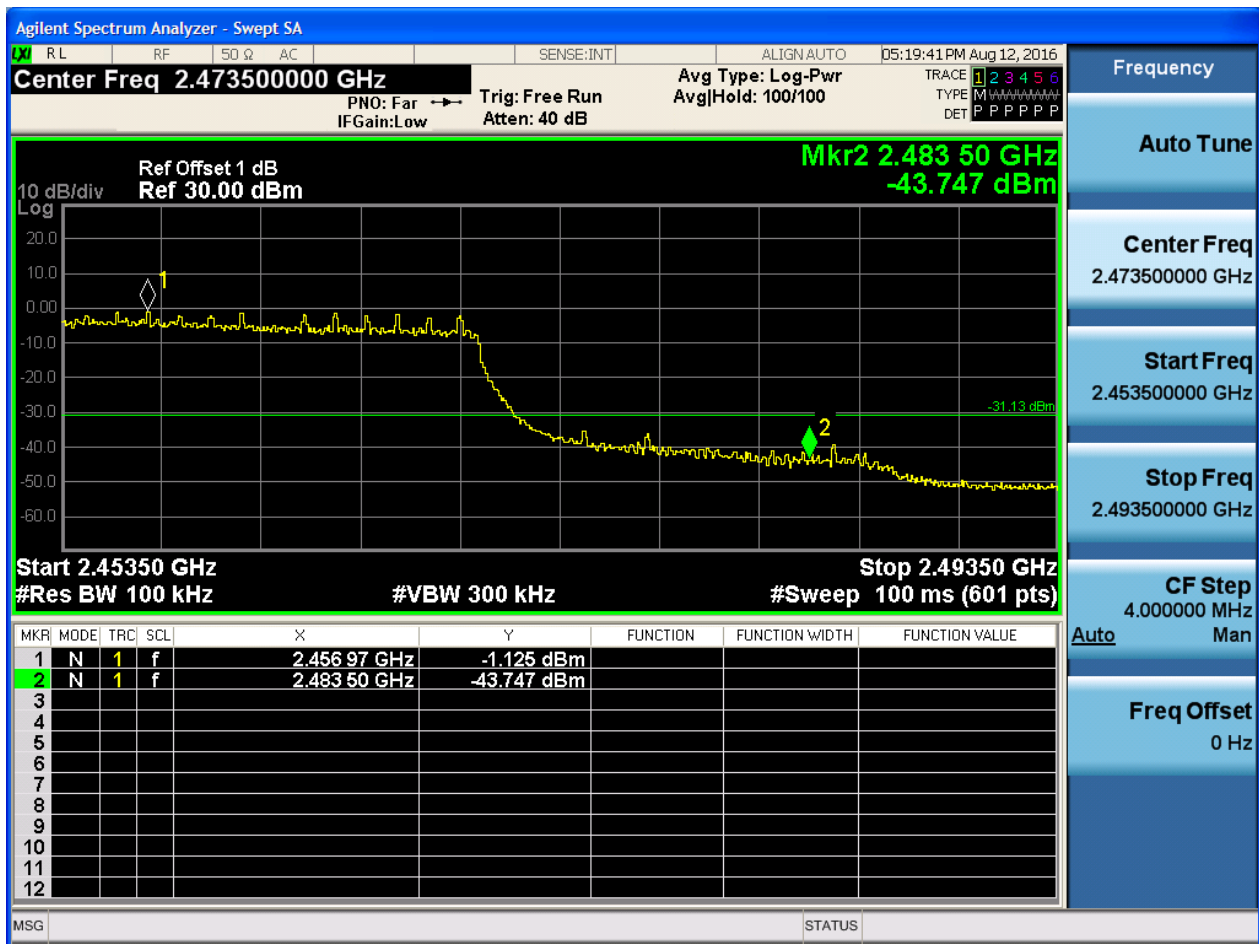


2.7 11N40_L@Ant 1





2.8 11N40_H@Ant 1



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

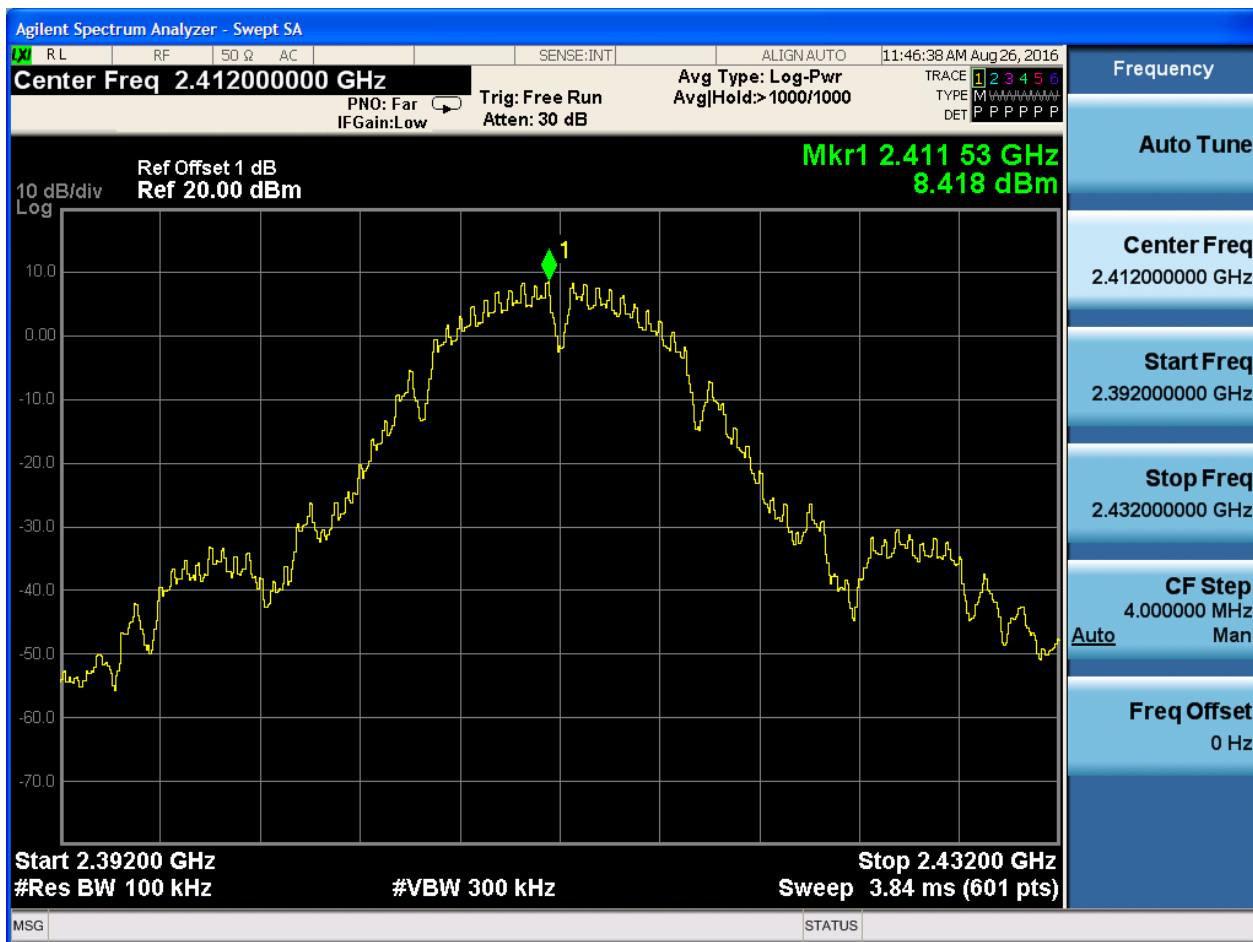
Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	8.42	<limit	pass
11B	M	2437	Ant 1	9.98	<limit	pass
11B	H	2462	Ant 1	11.29	<limit	pass
11G	L	2412	Ant 1	4.77	<limit	pass
11G	M	2437	Ant 1	6.10	<limit	pass
11G	H	2462	Ant 1	6.44	<limit	pass
11N20	L	2412	Ant 1	3.75	<limit	pass
11N20	M	2437	Ant 1	5.31	<limit	pass
11N20	H	2462	Ant 1	5.41	<limit	pass
11N40	L	2422	Ant 1	-1.05	<limit	pass
11N40	M	2437	Ant 1	-0.75	<limit	pass
11N40	H	2452	Ant 1	-0.97	<limit	pass



Part II - Test Plots

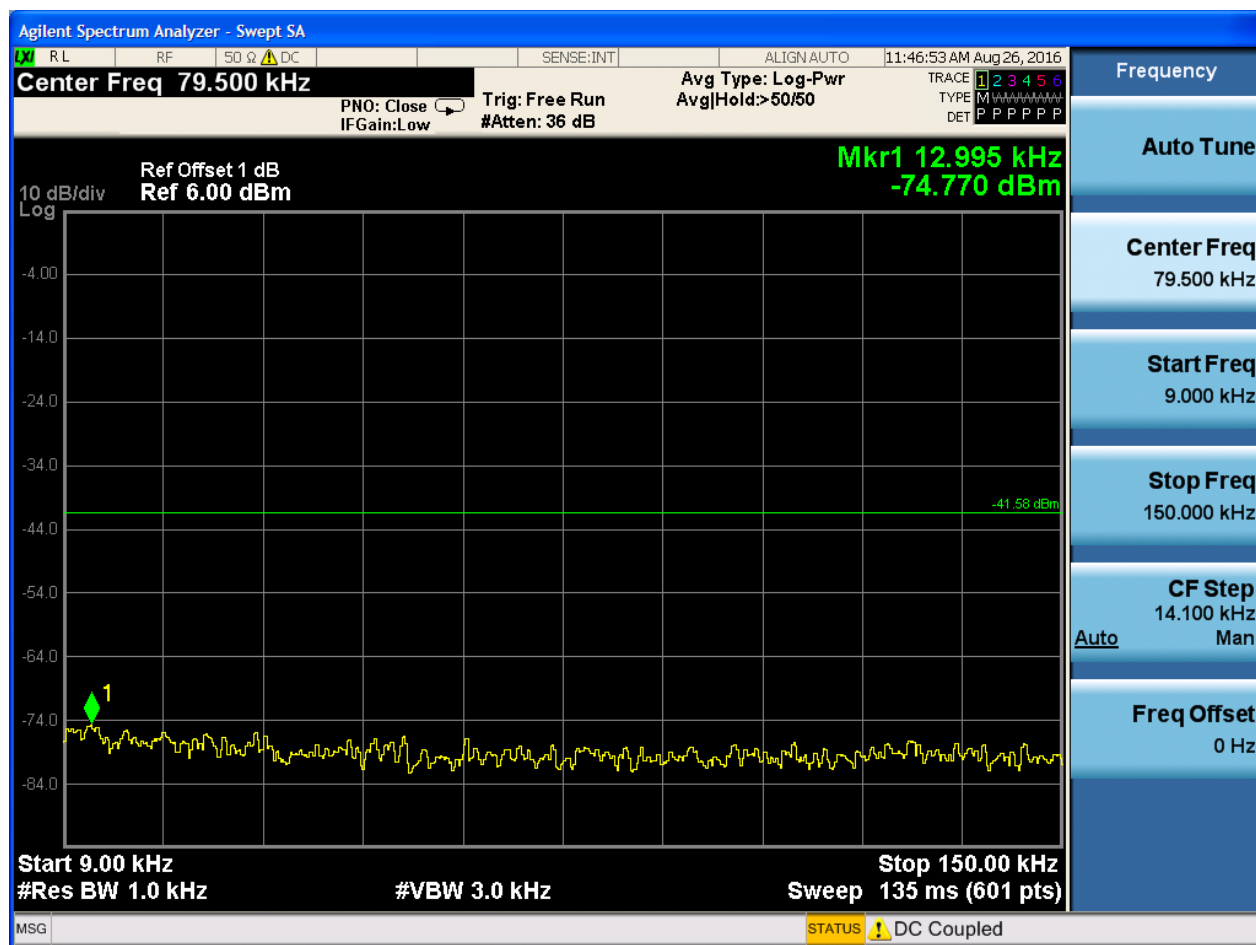
2.1 11B_L@Ant 1

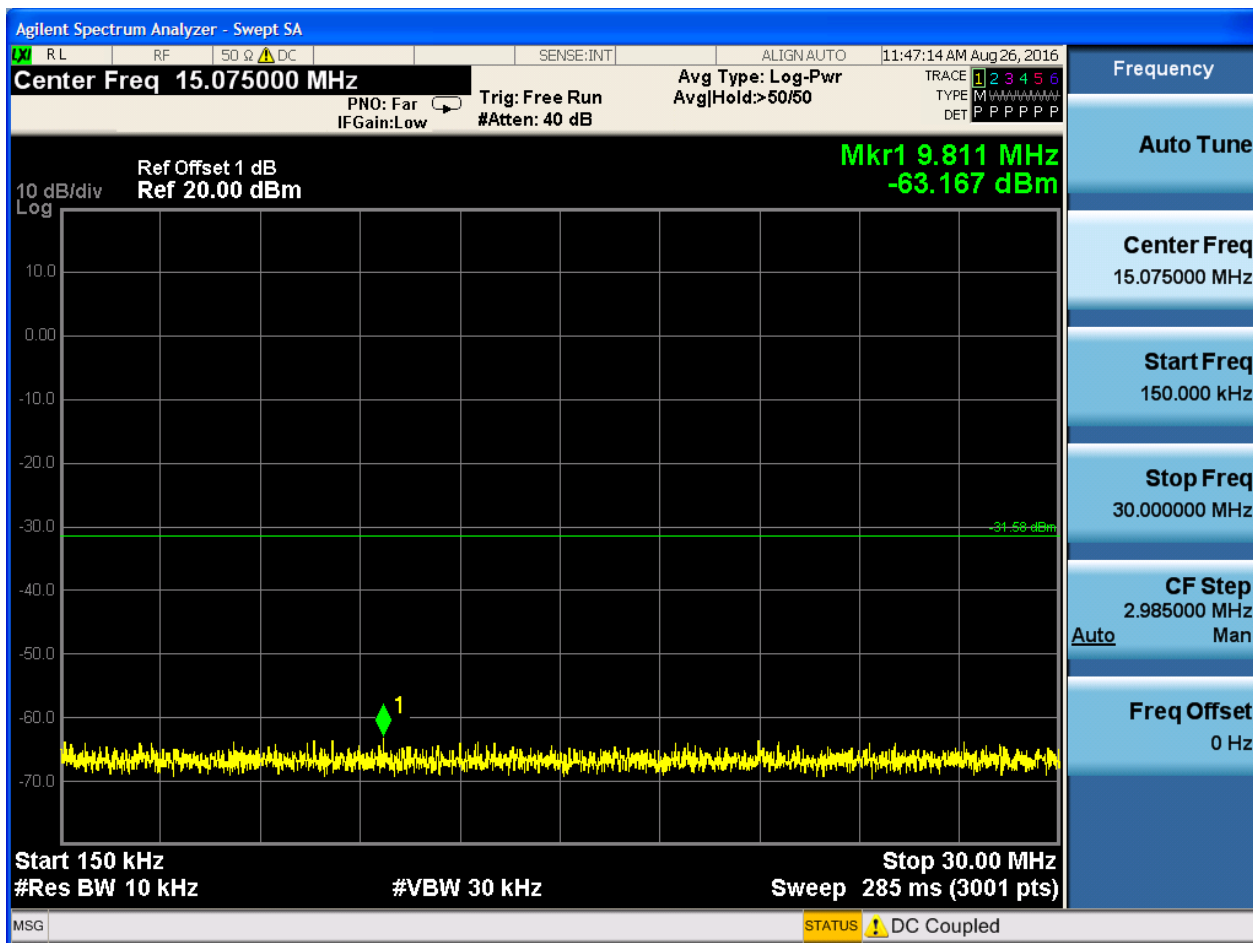
Pref:

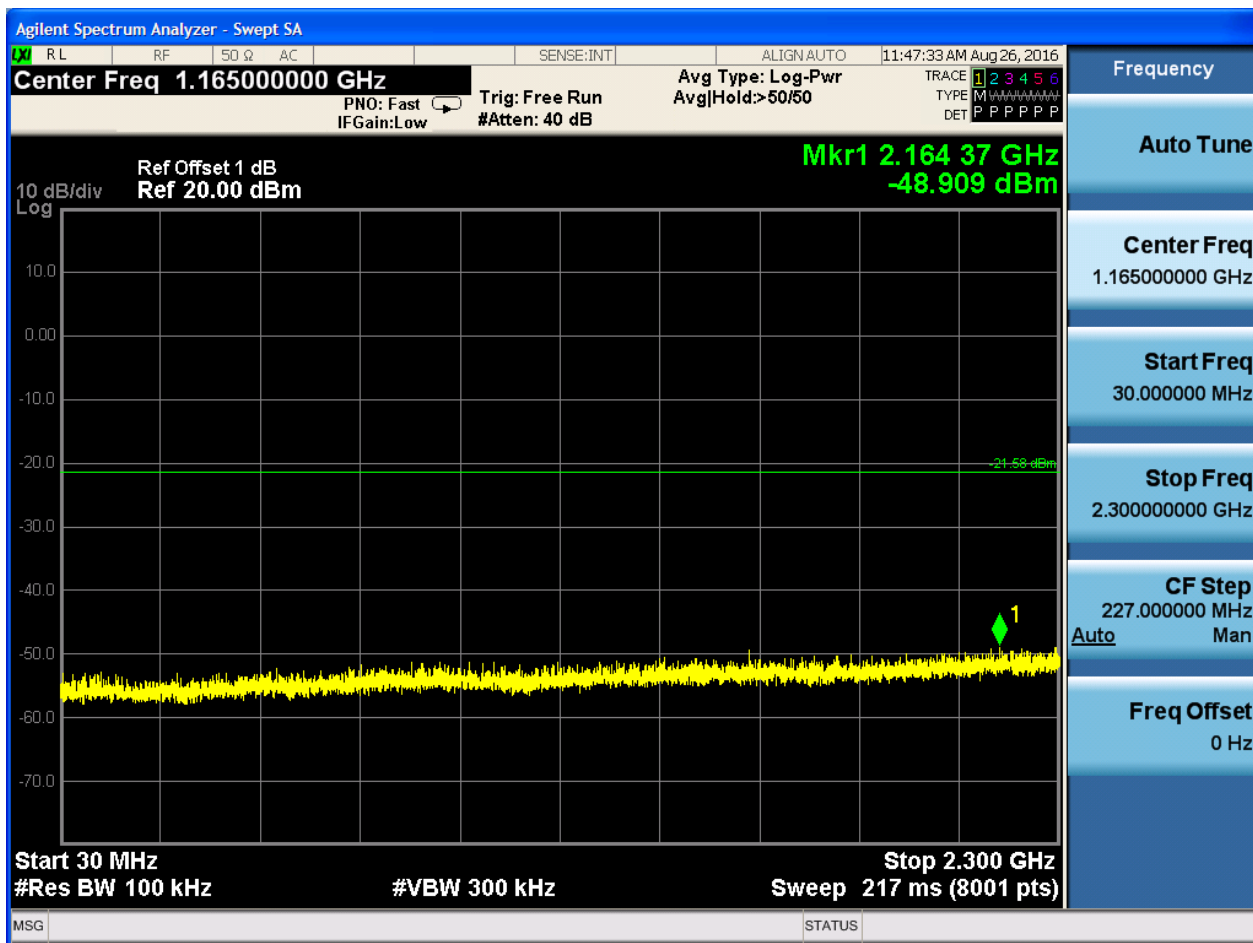


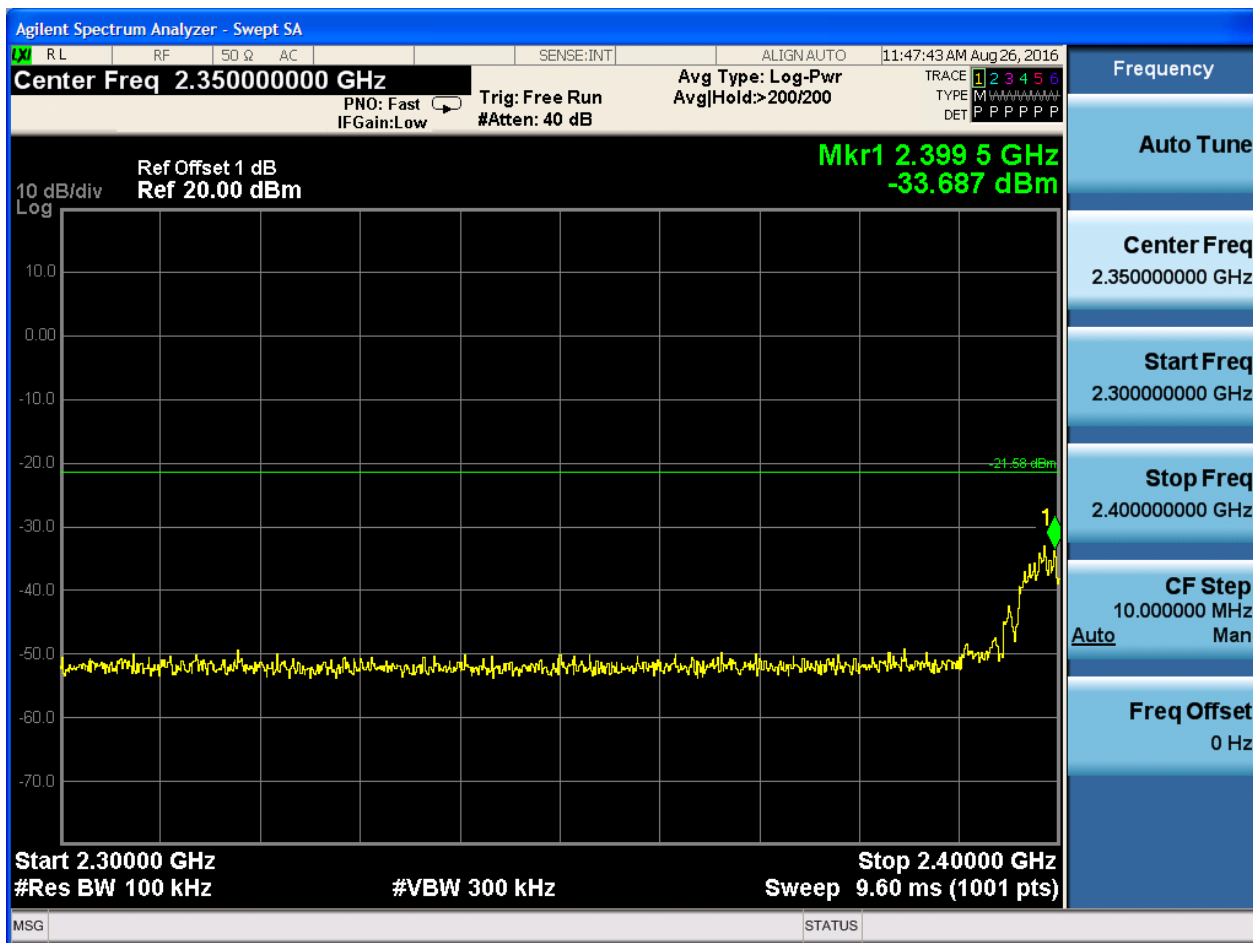


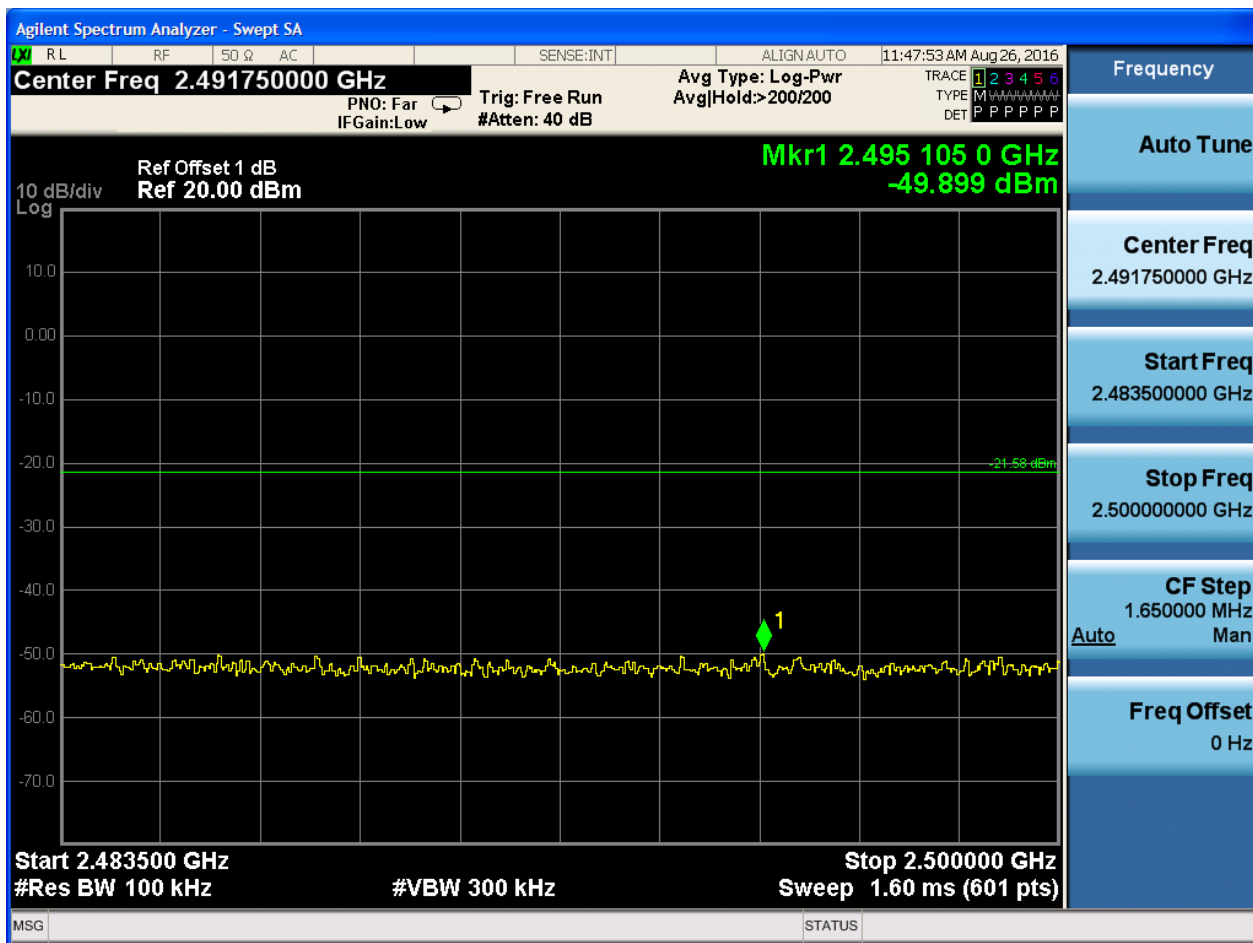
Puw:









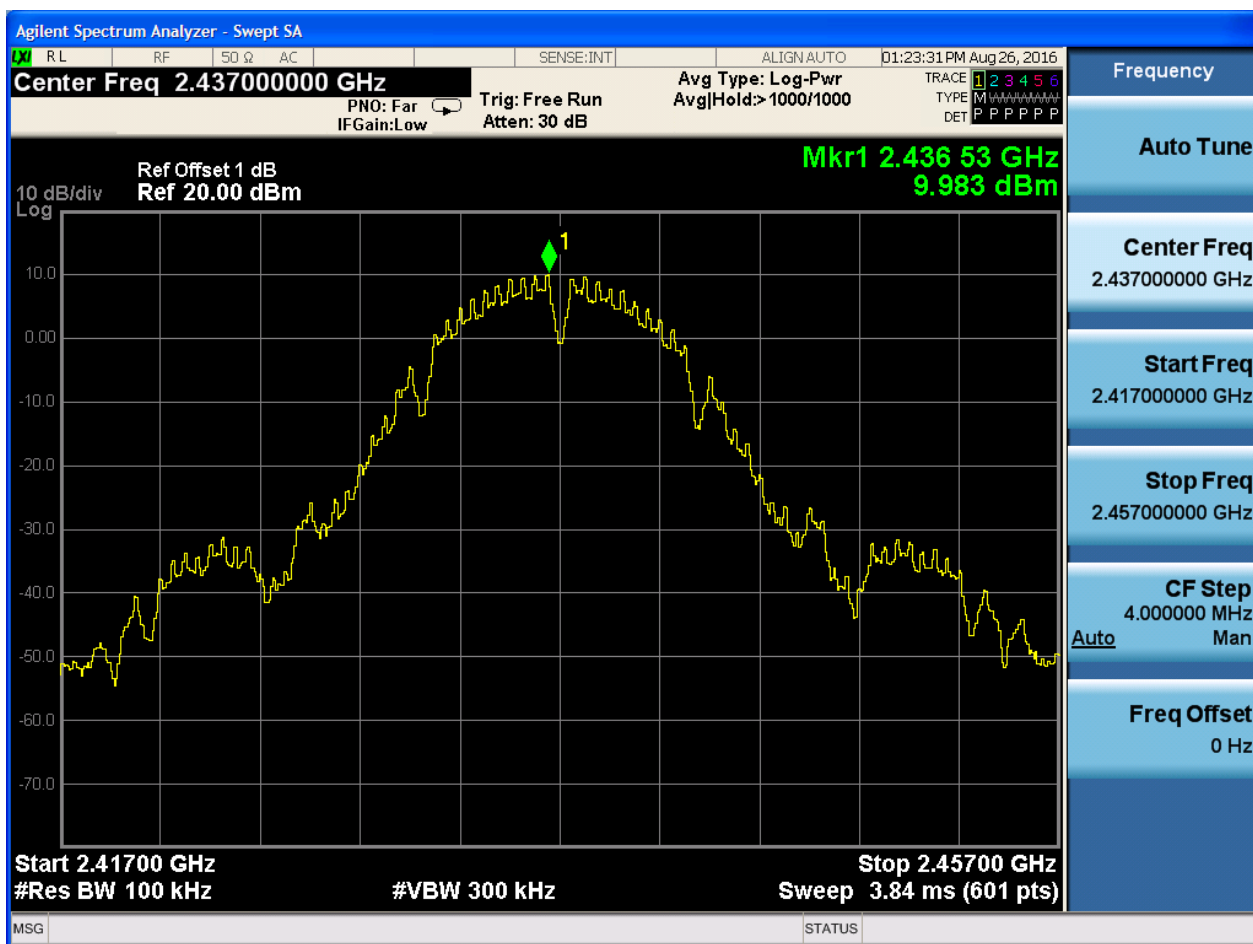






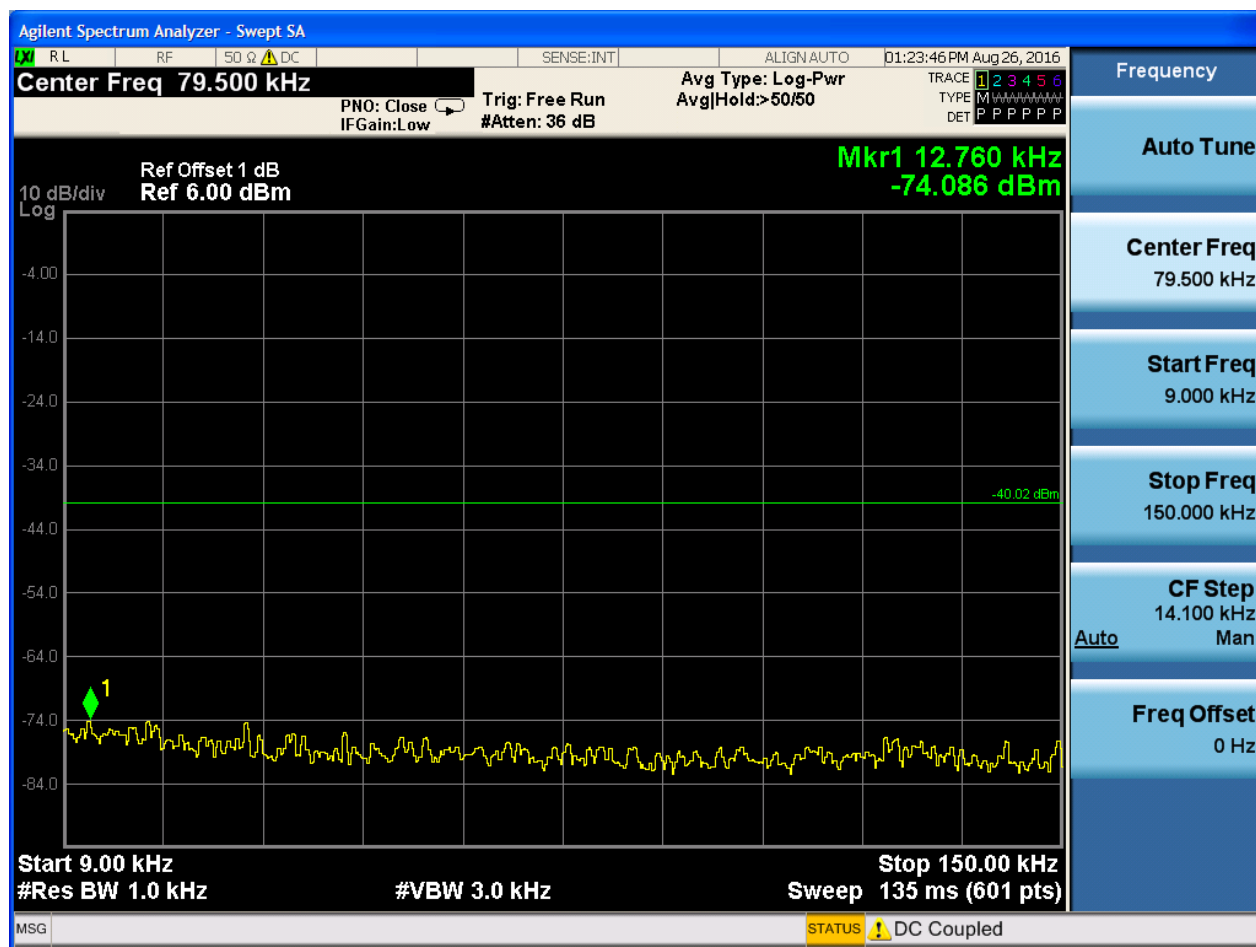
2.3 11B_M@Ant 1

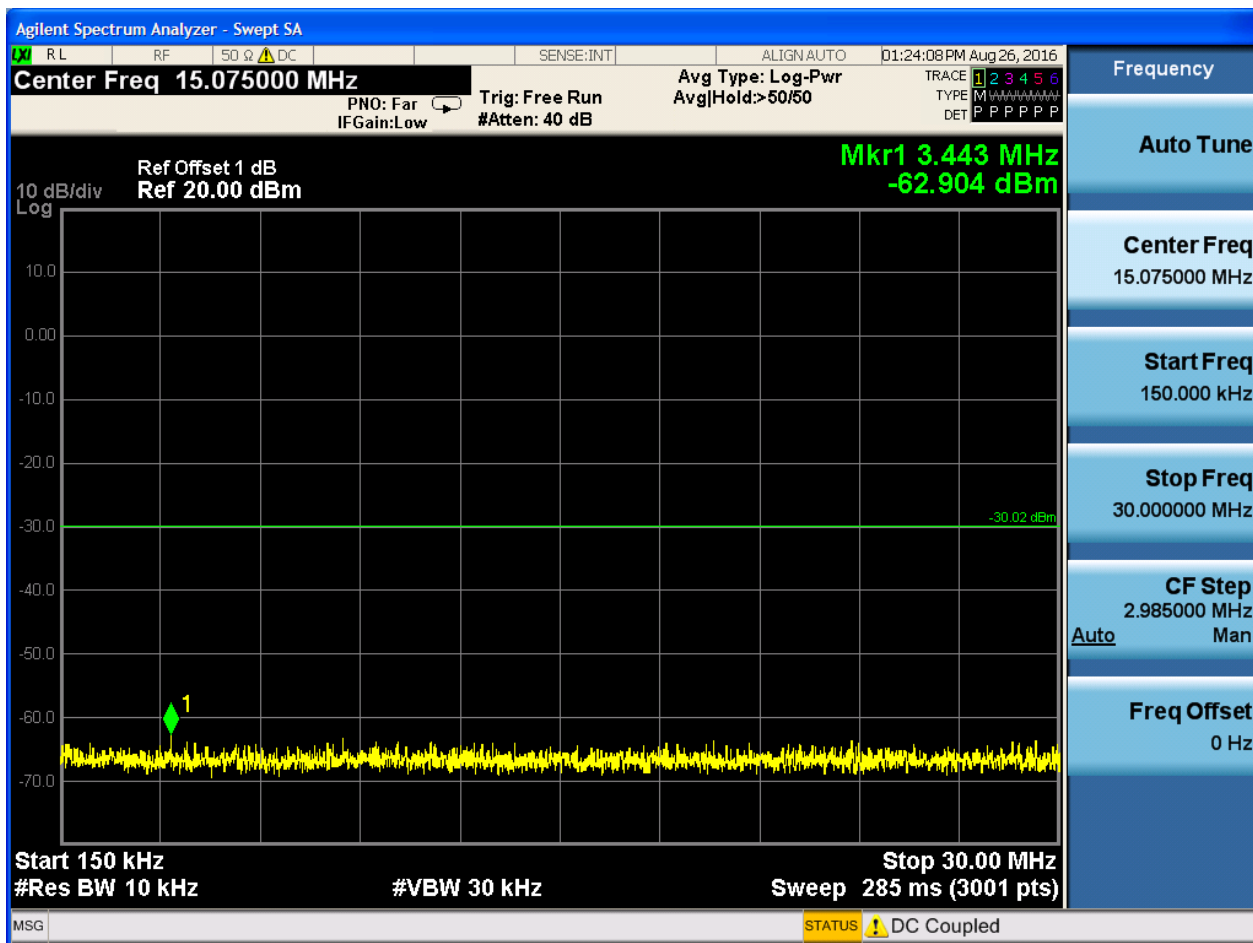
Pref:

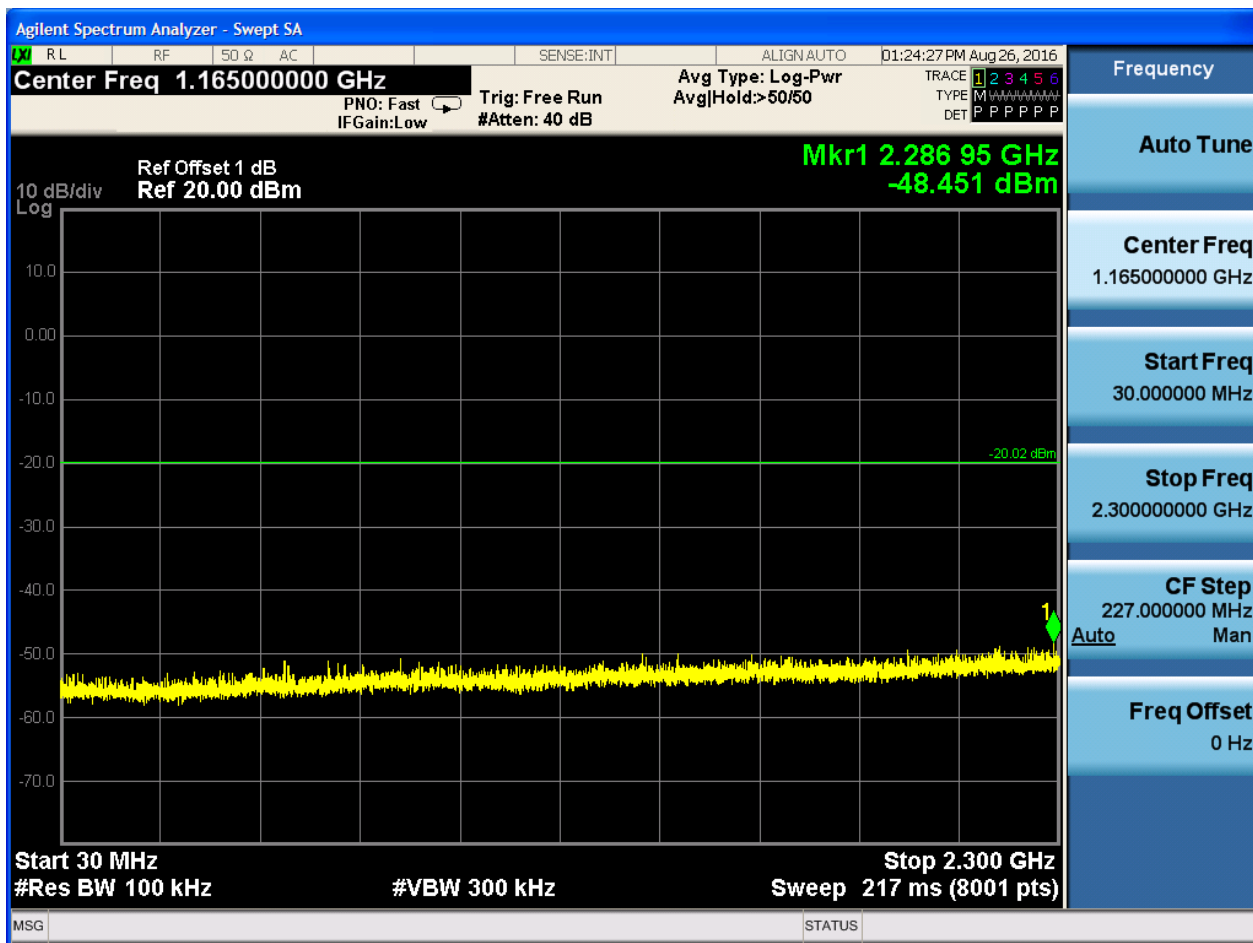


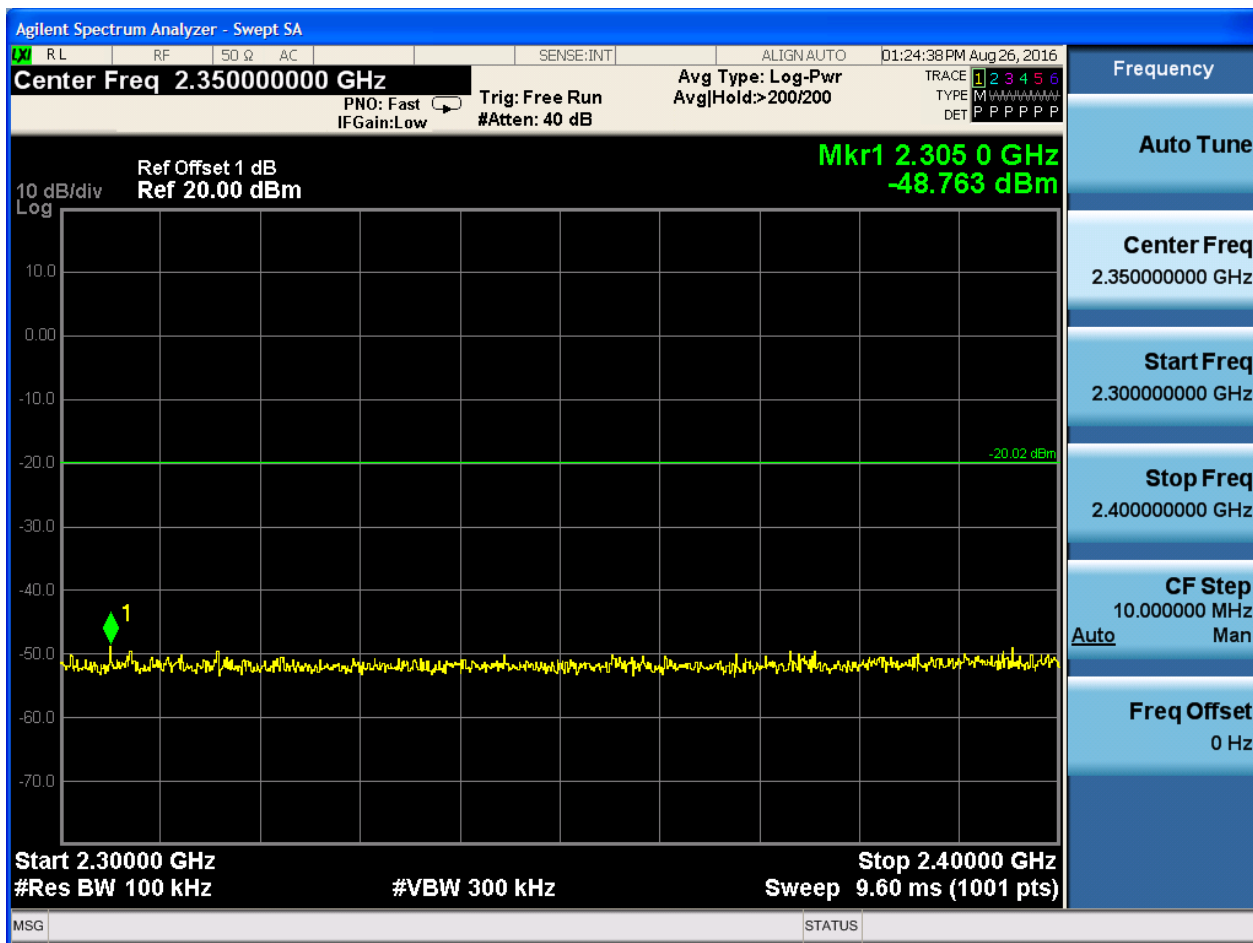


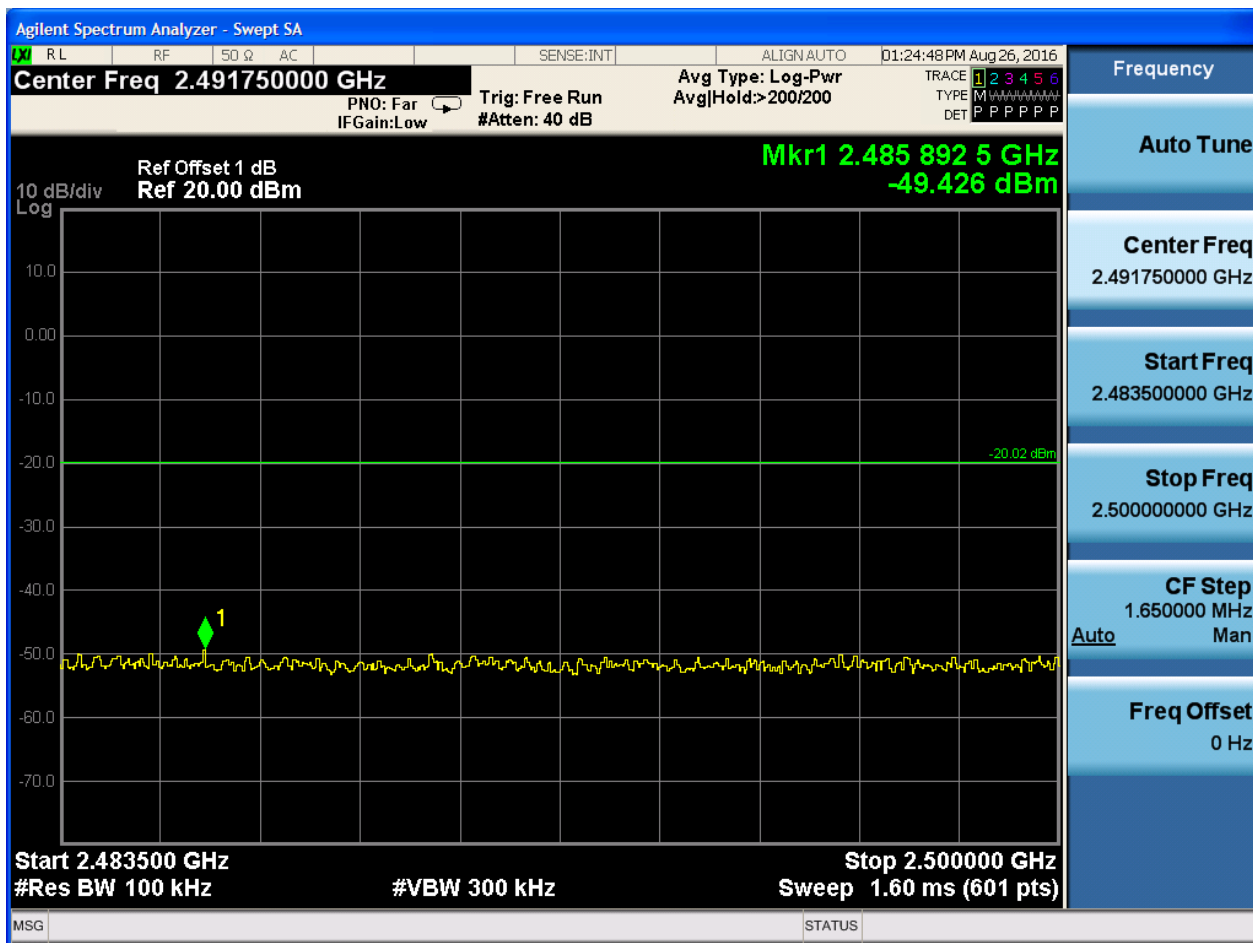
Puw:









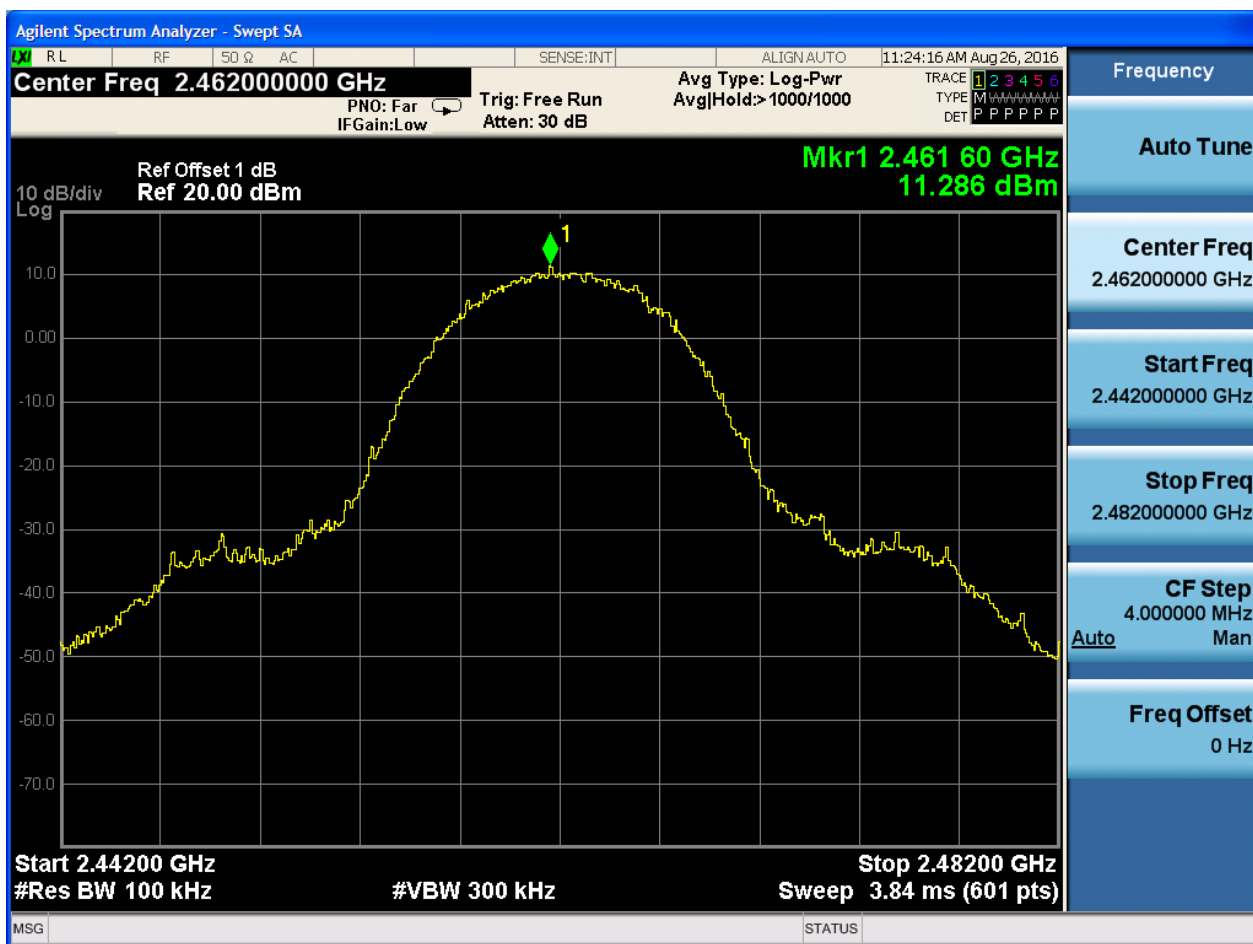






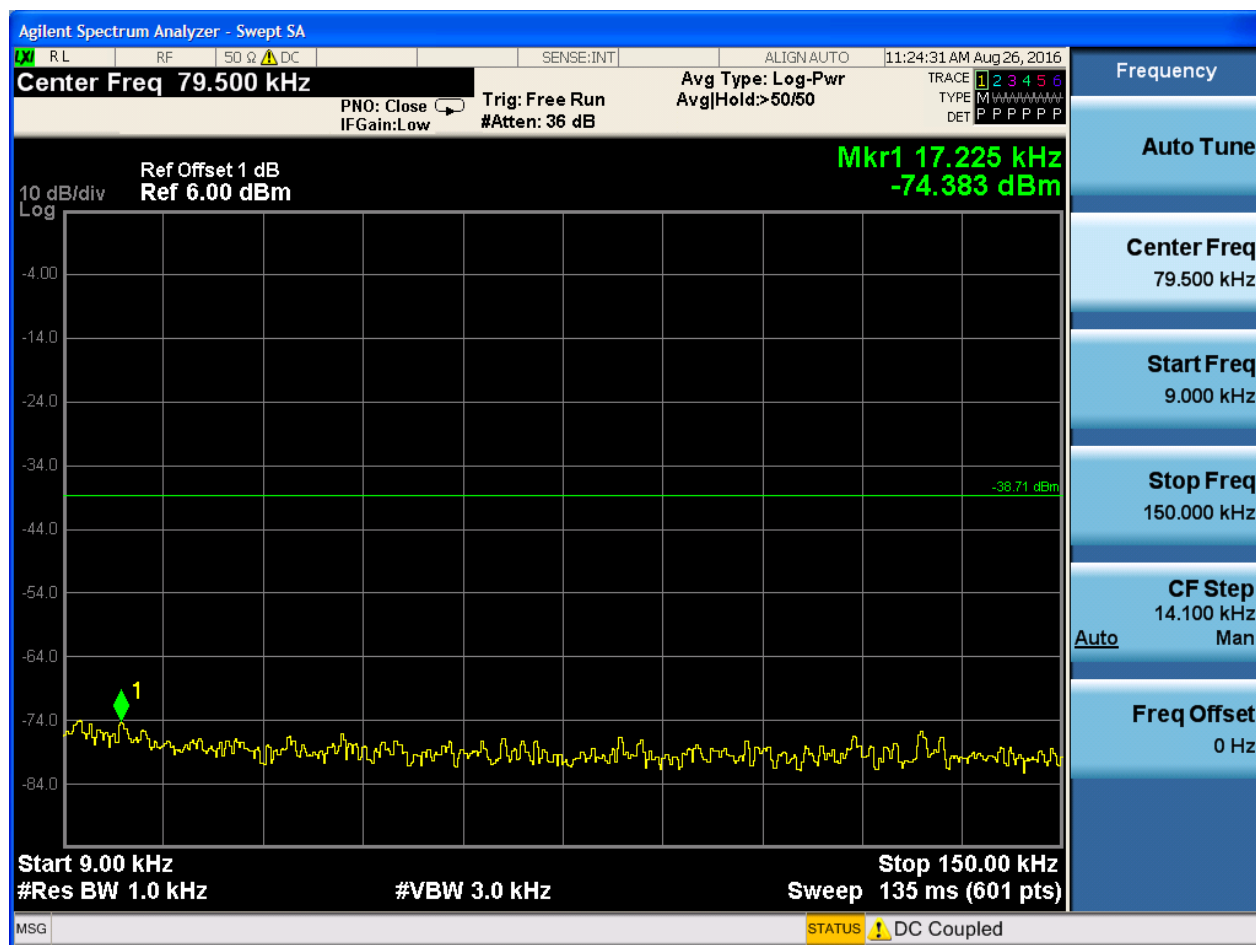
2.5 11B_H@Ant 1

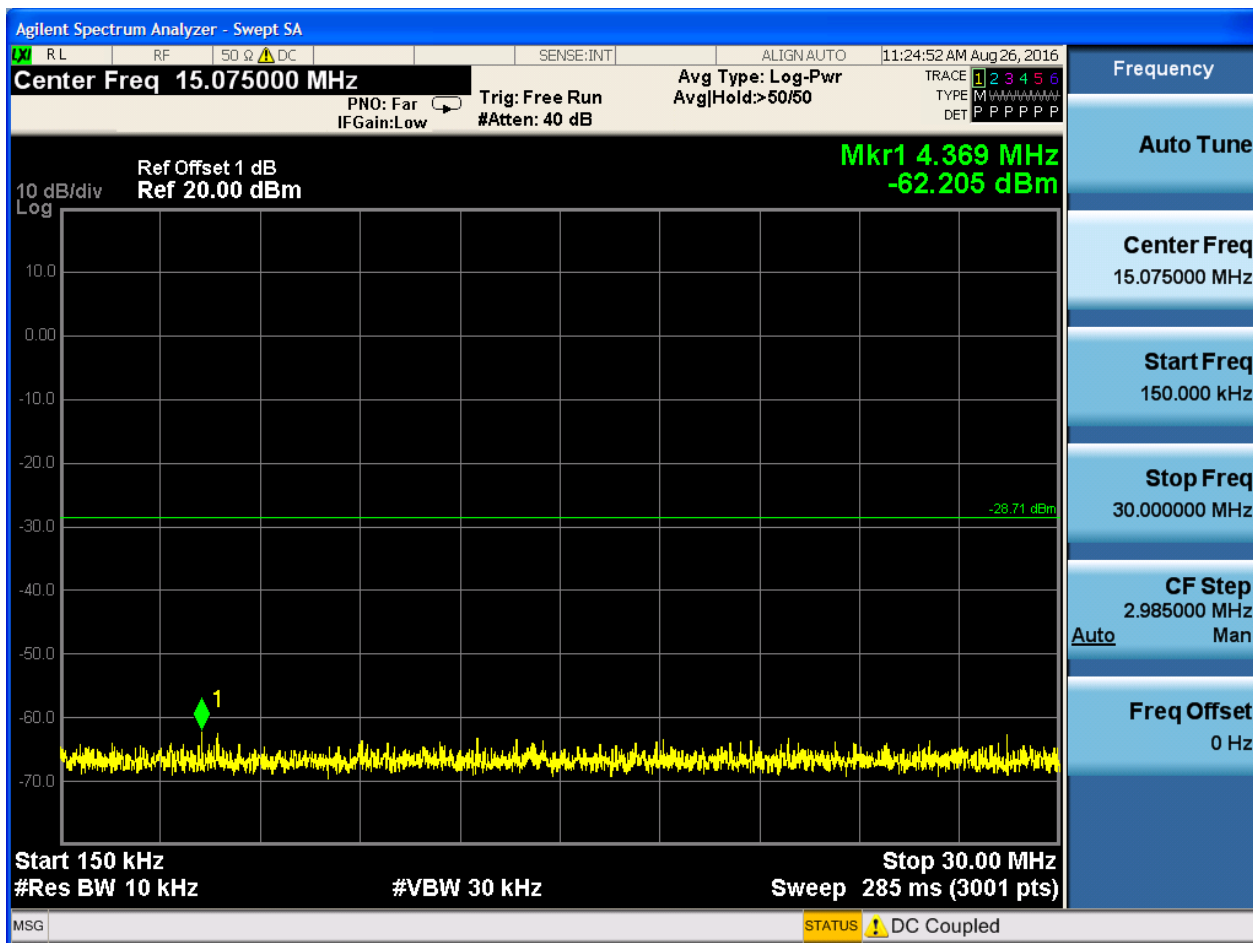
Pref:

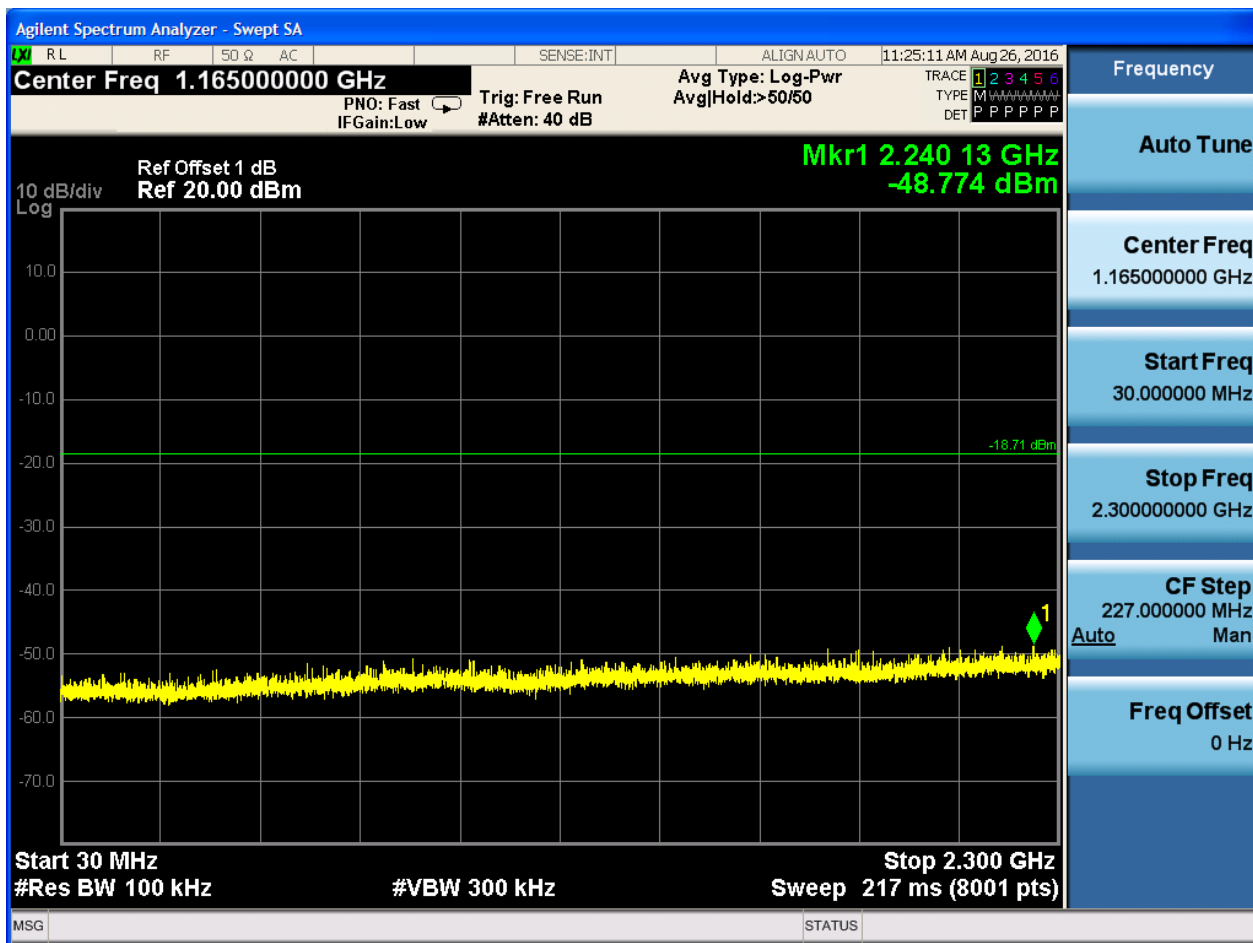


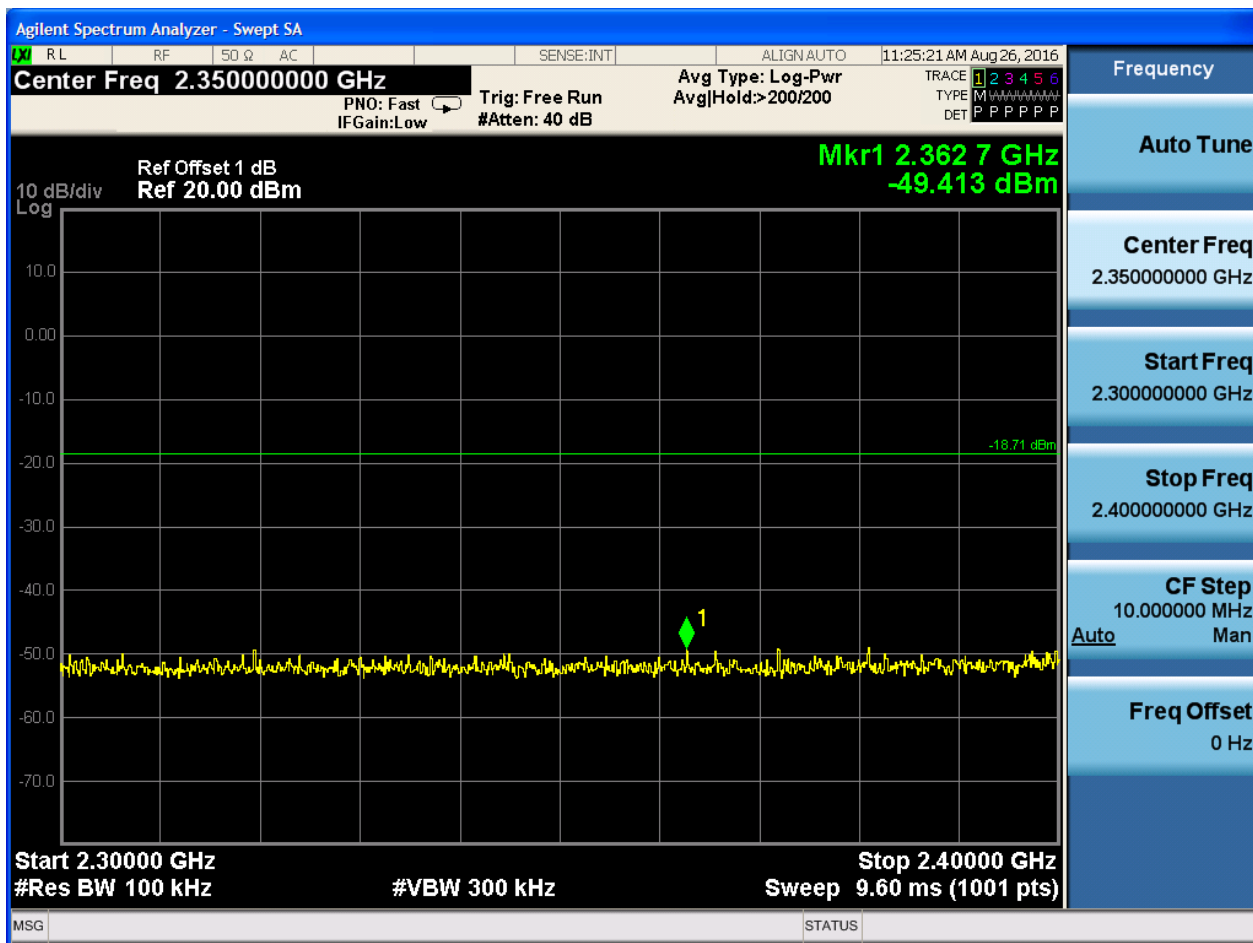


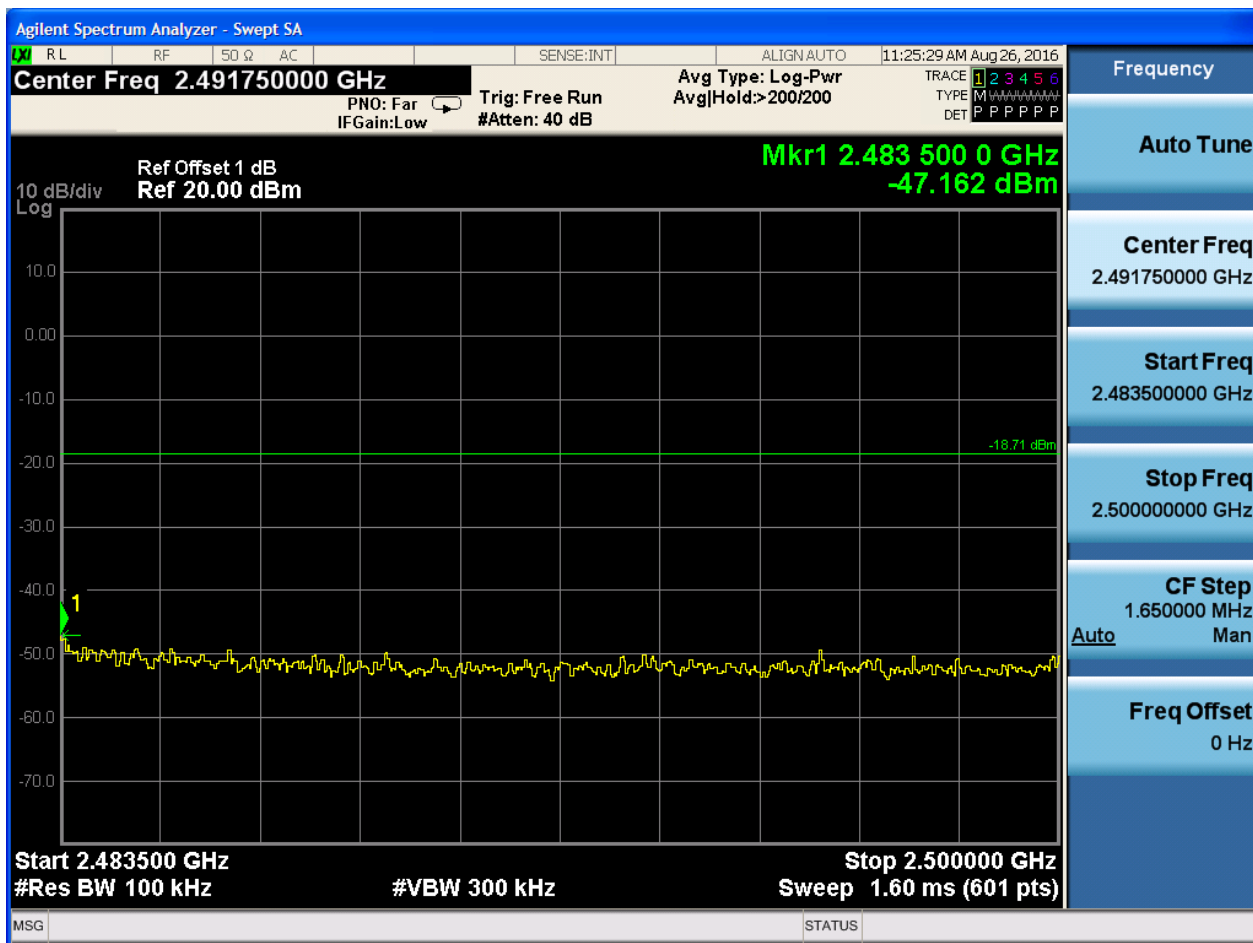
Puw:









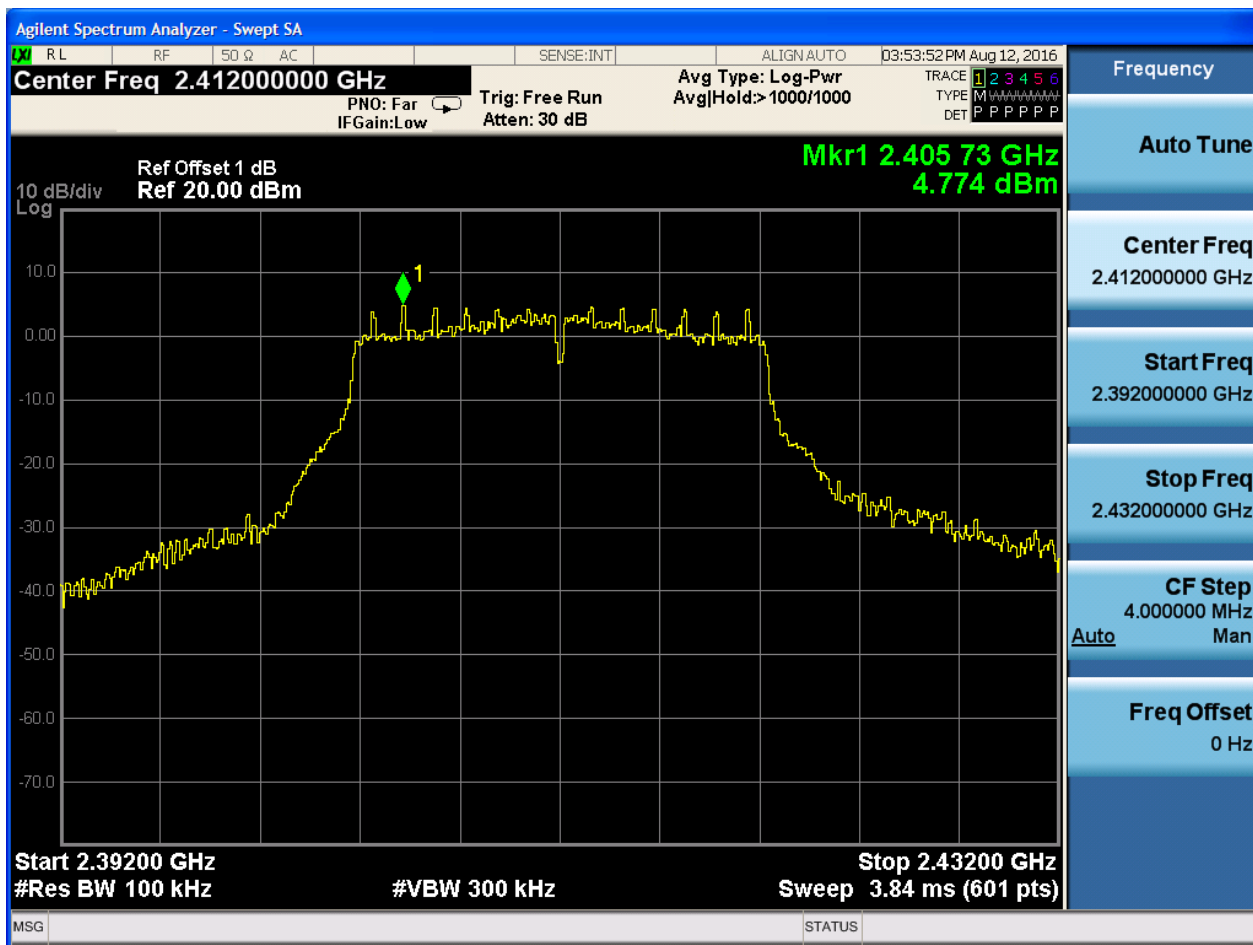






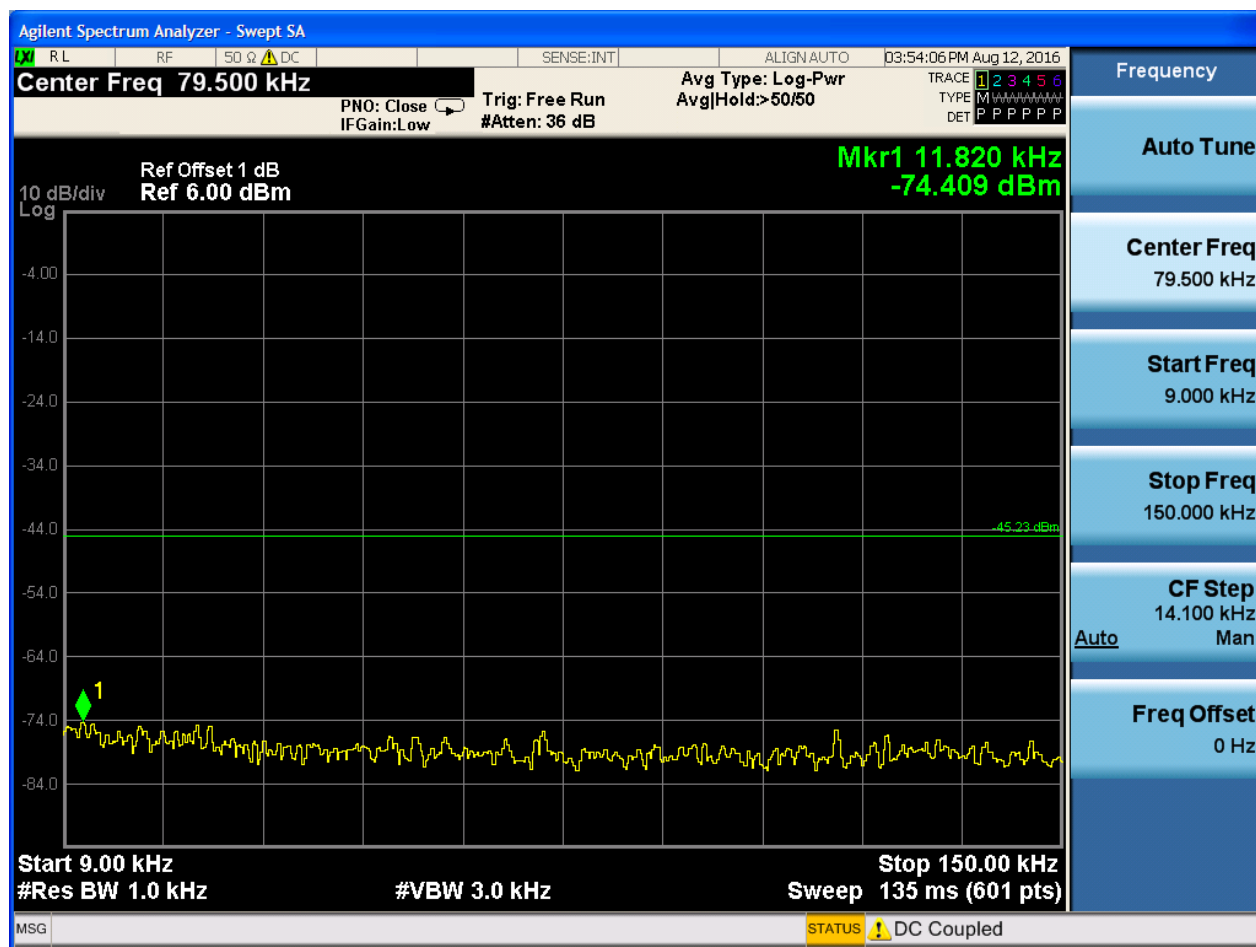
2.4 11G_L@Ant 1

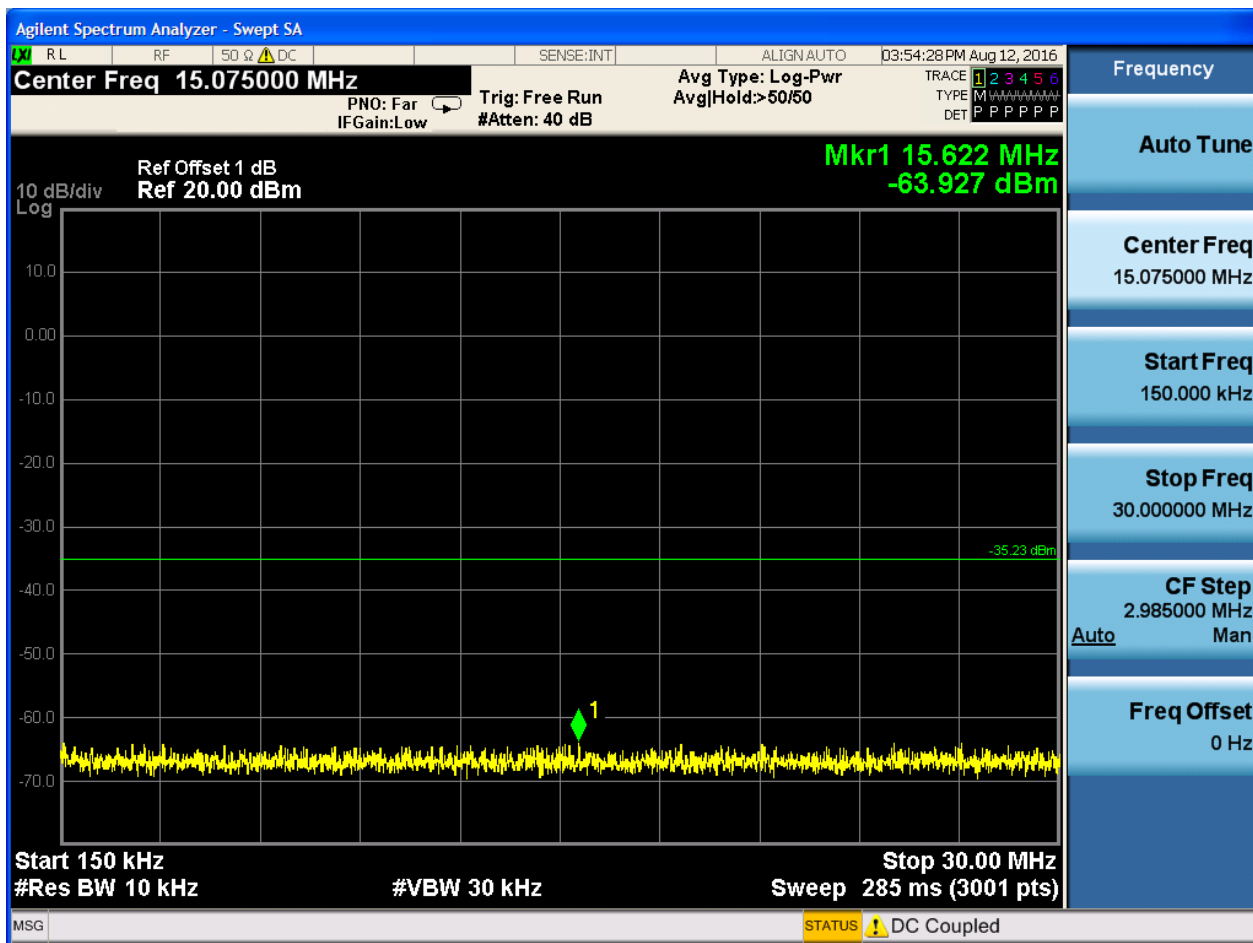
Pref:

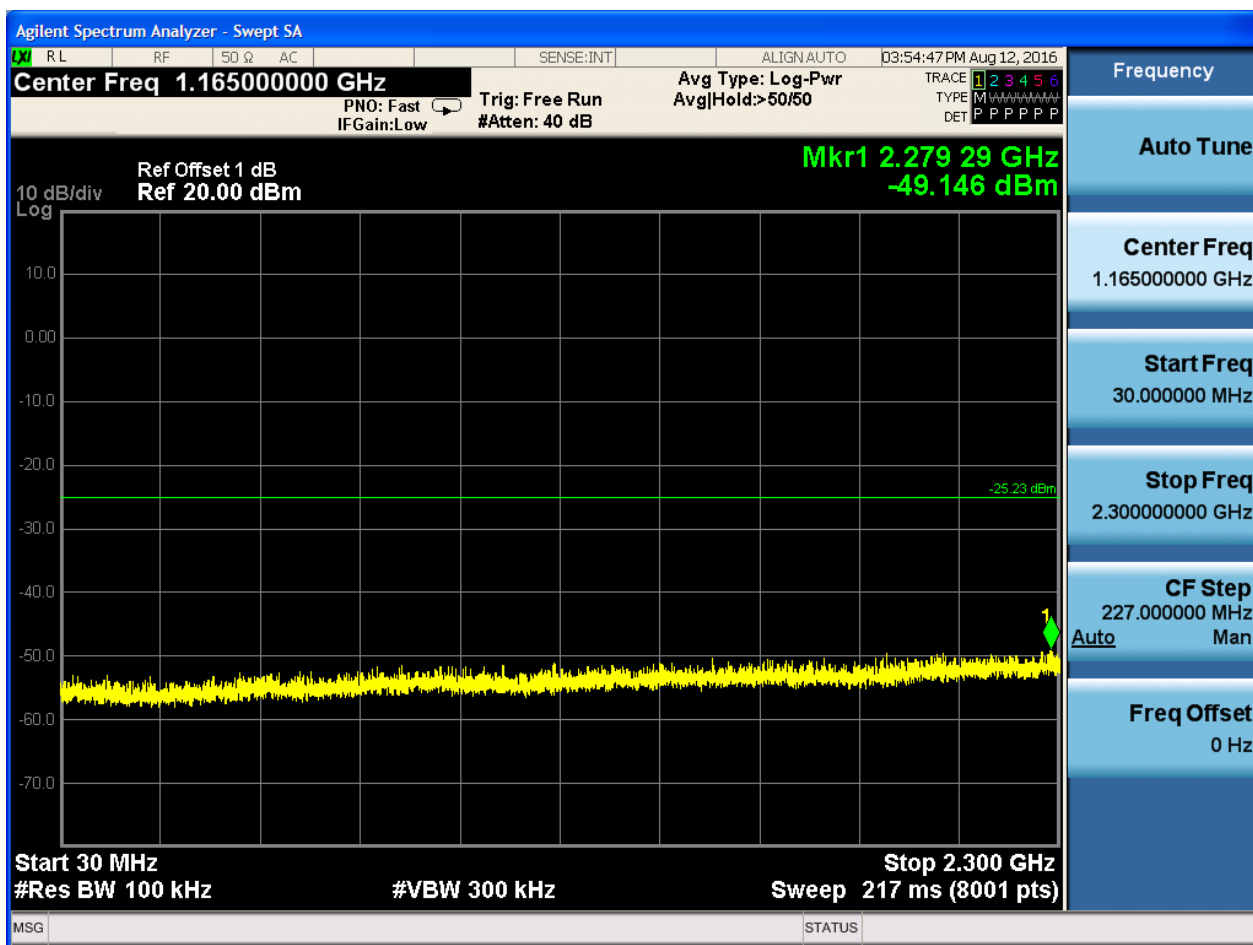


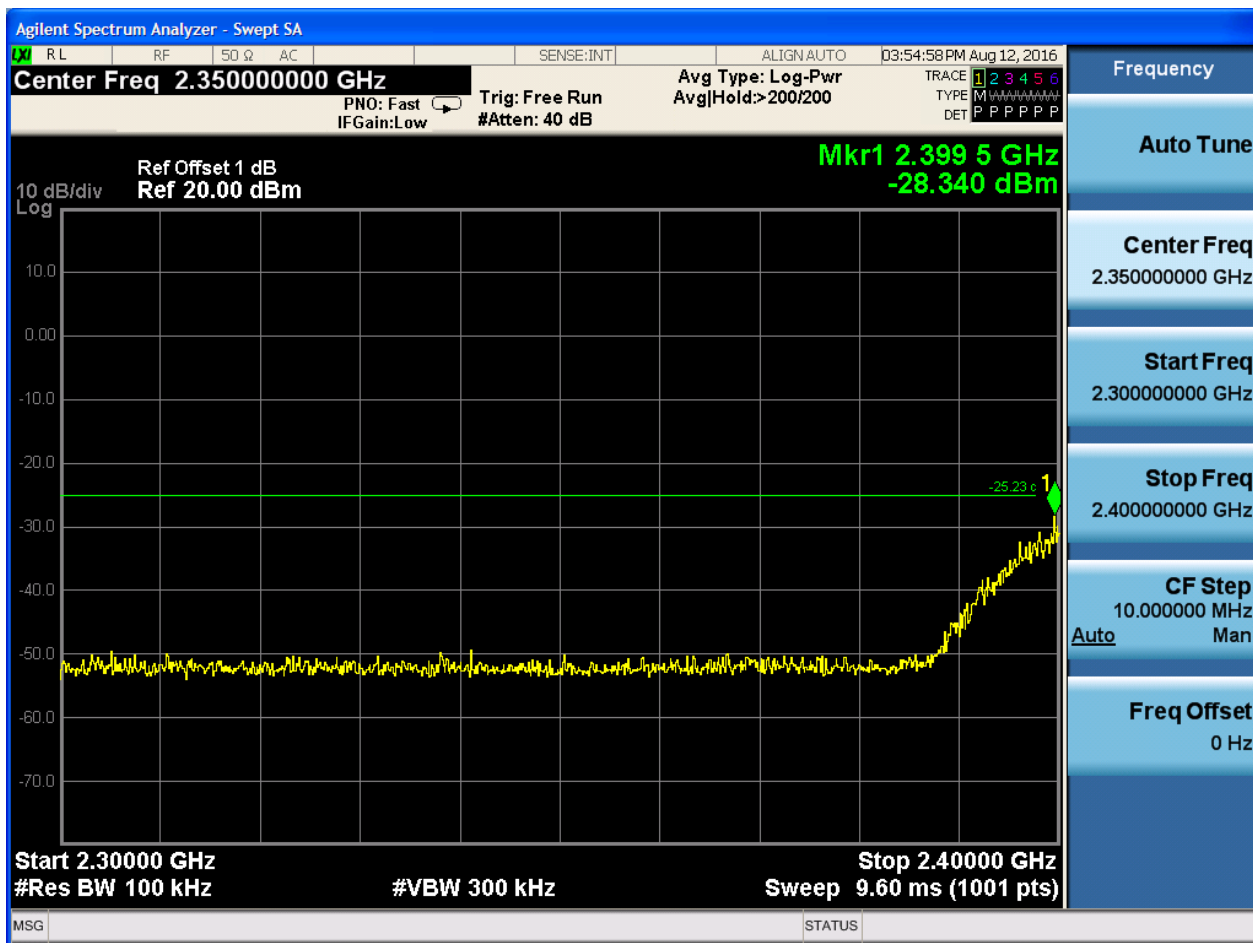


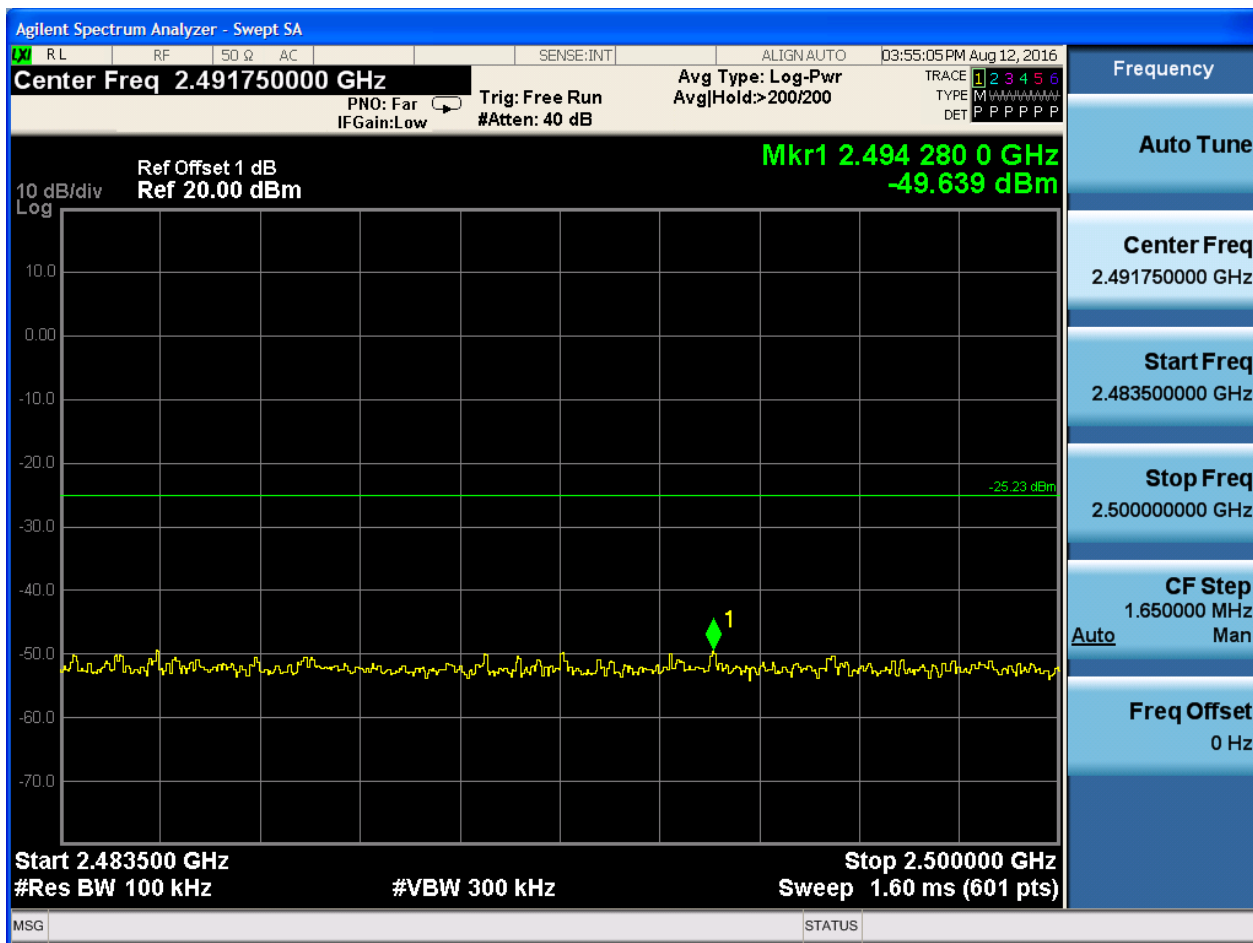
Puw:









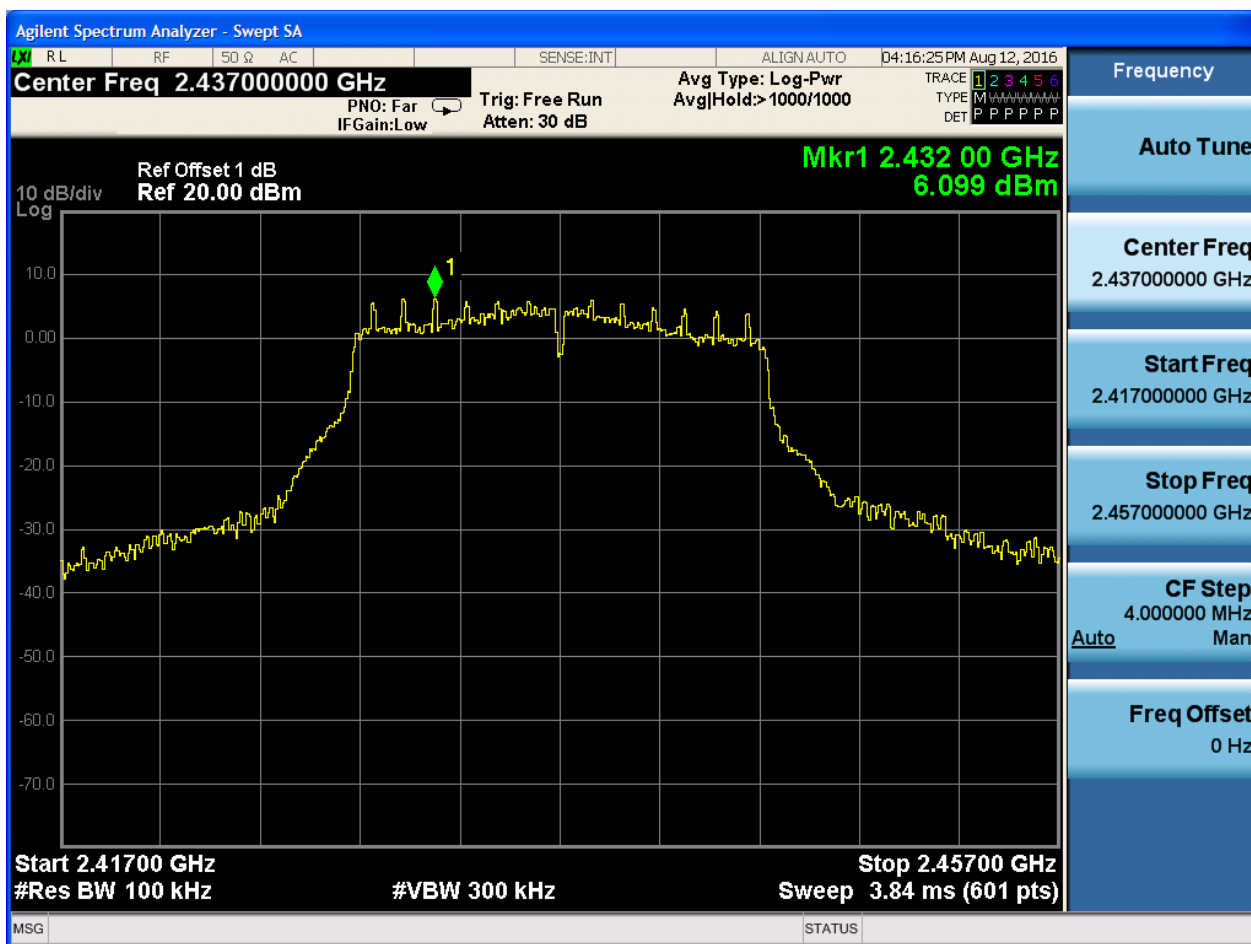






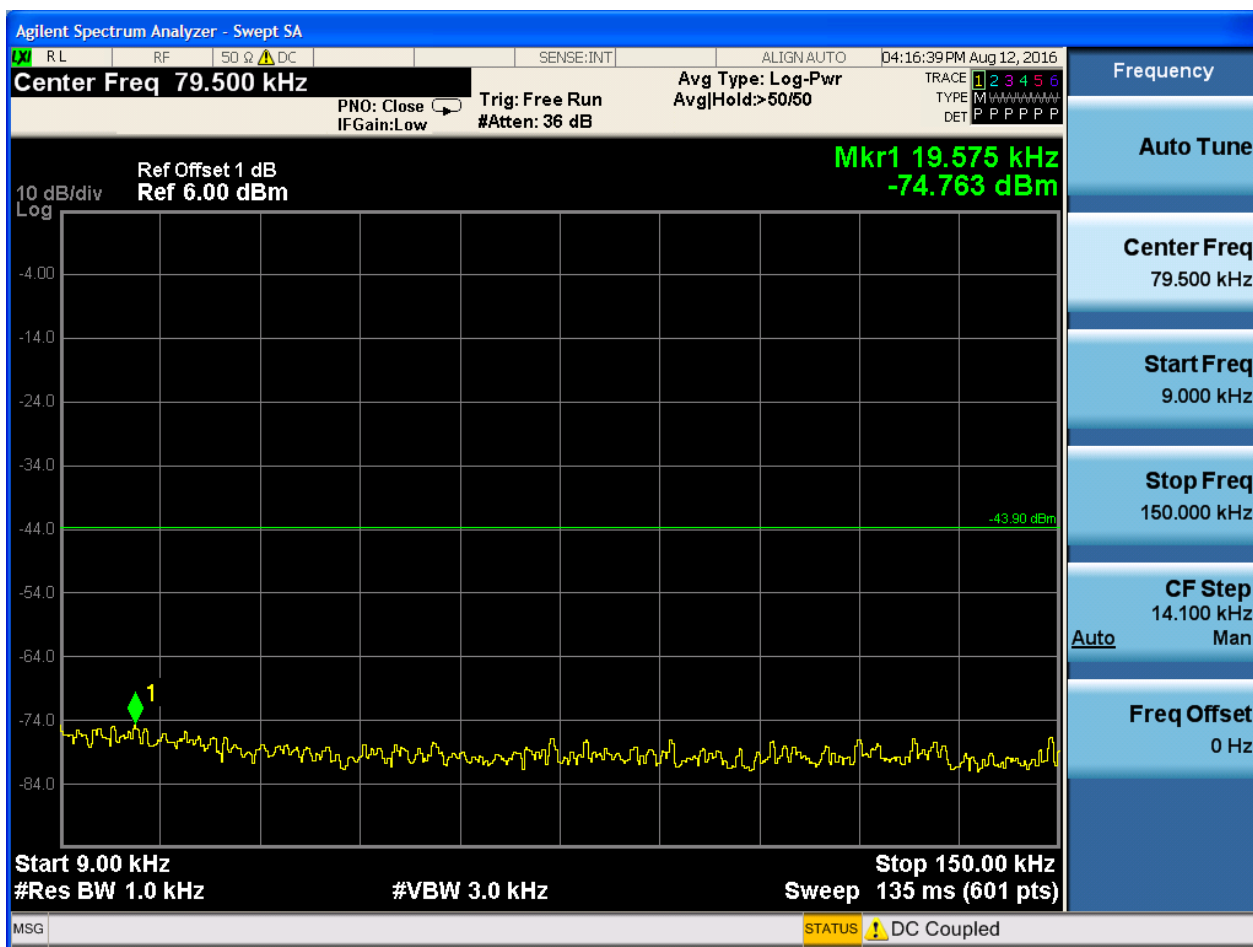
2.5 11G_M@Ant 1

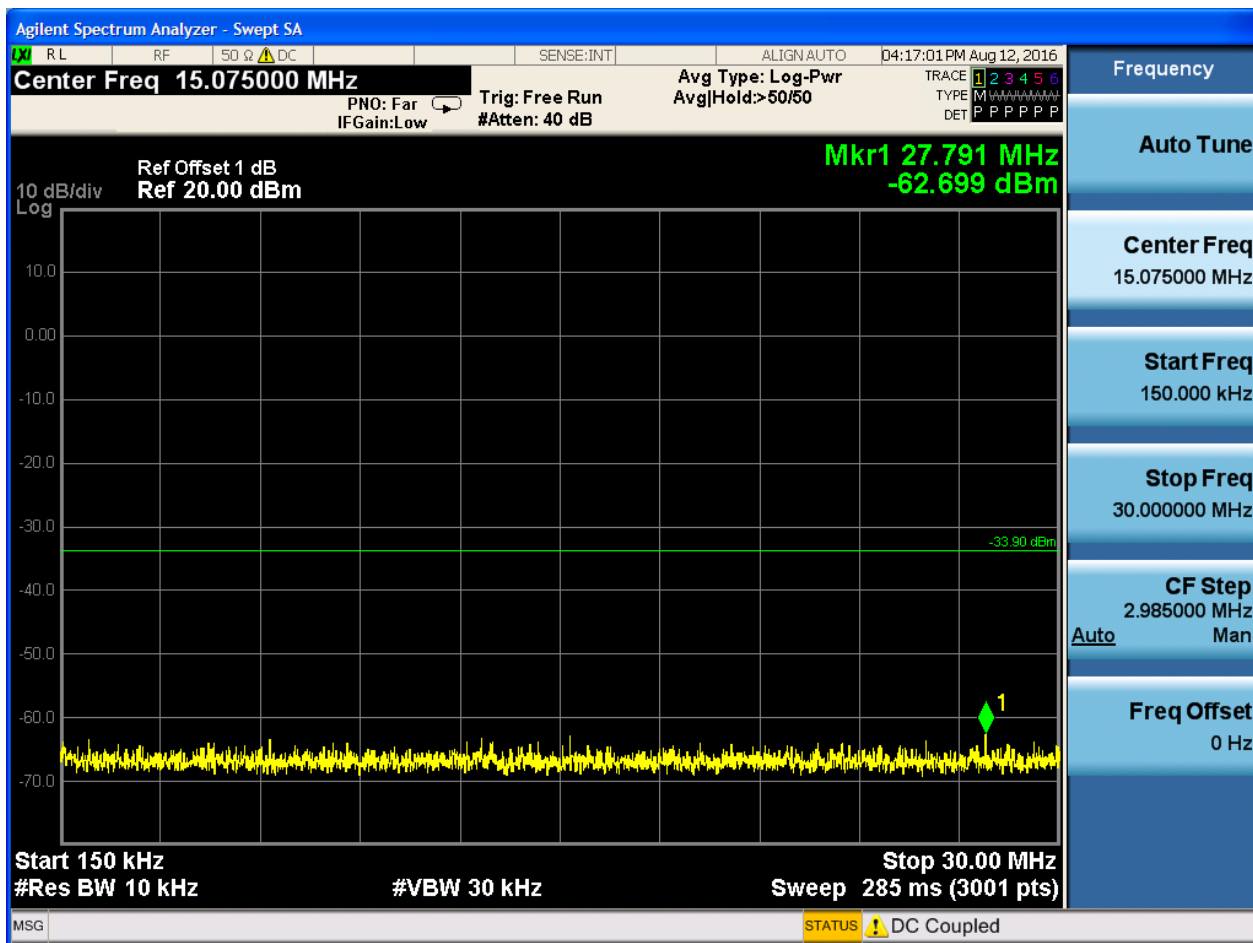
Pref:

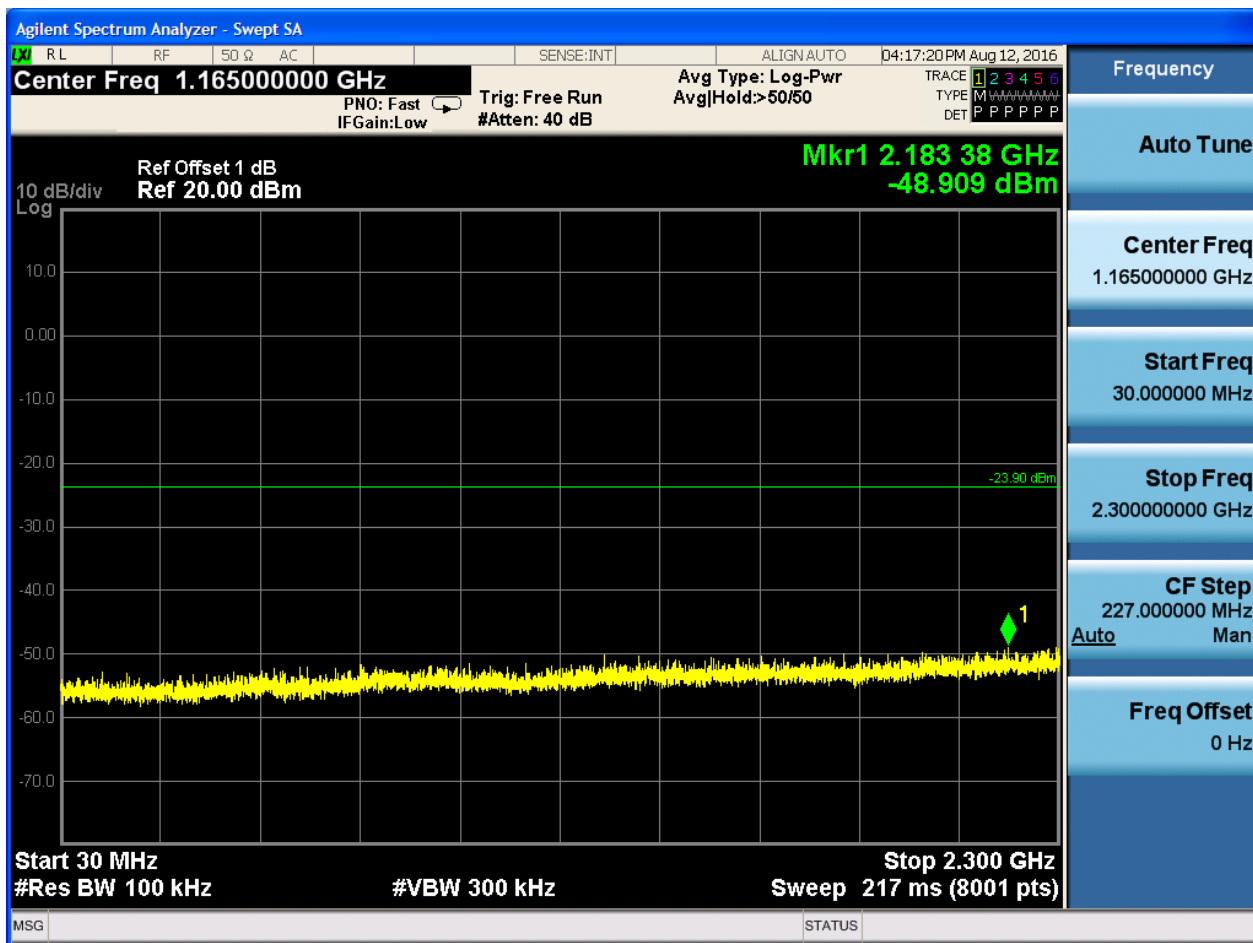


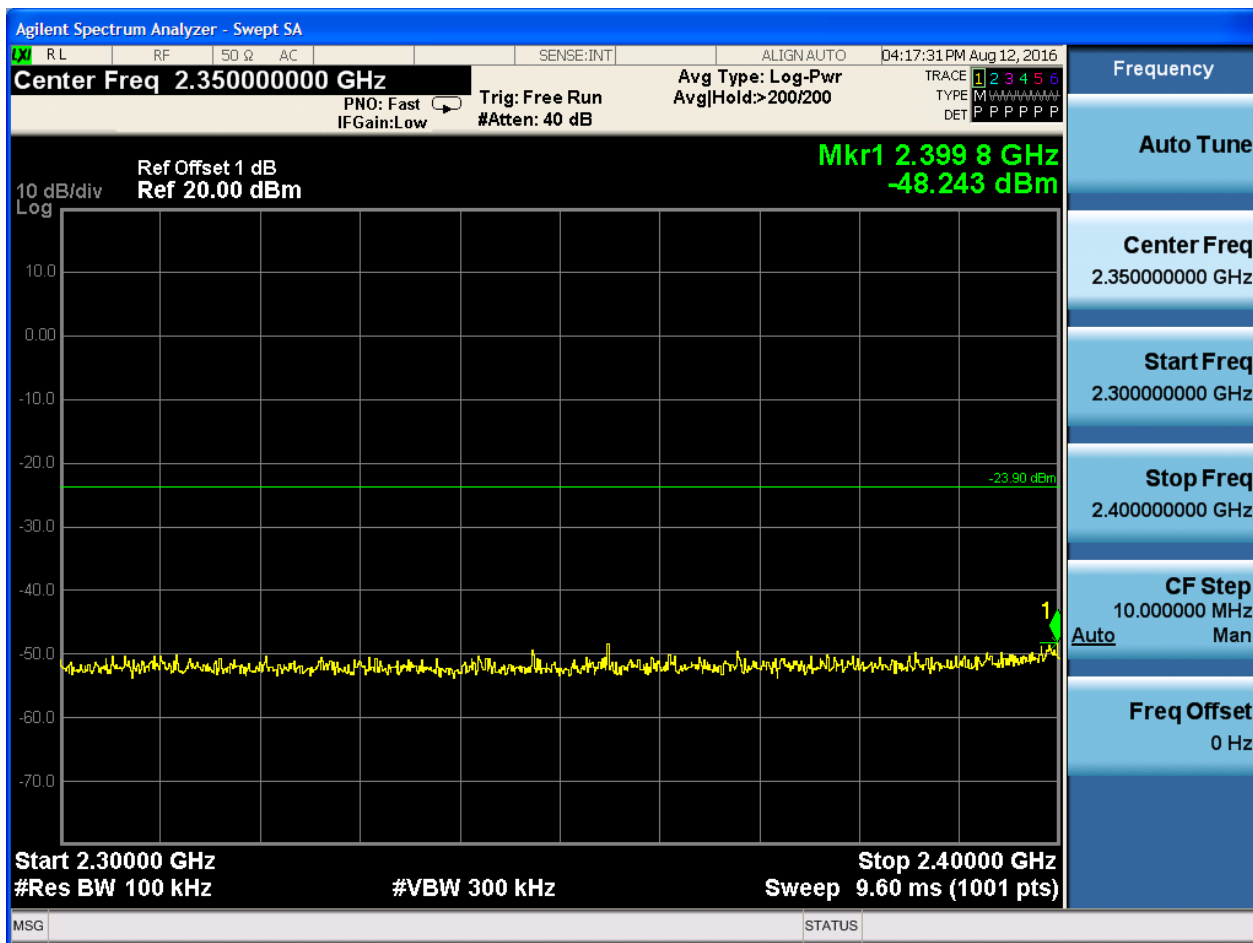


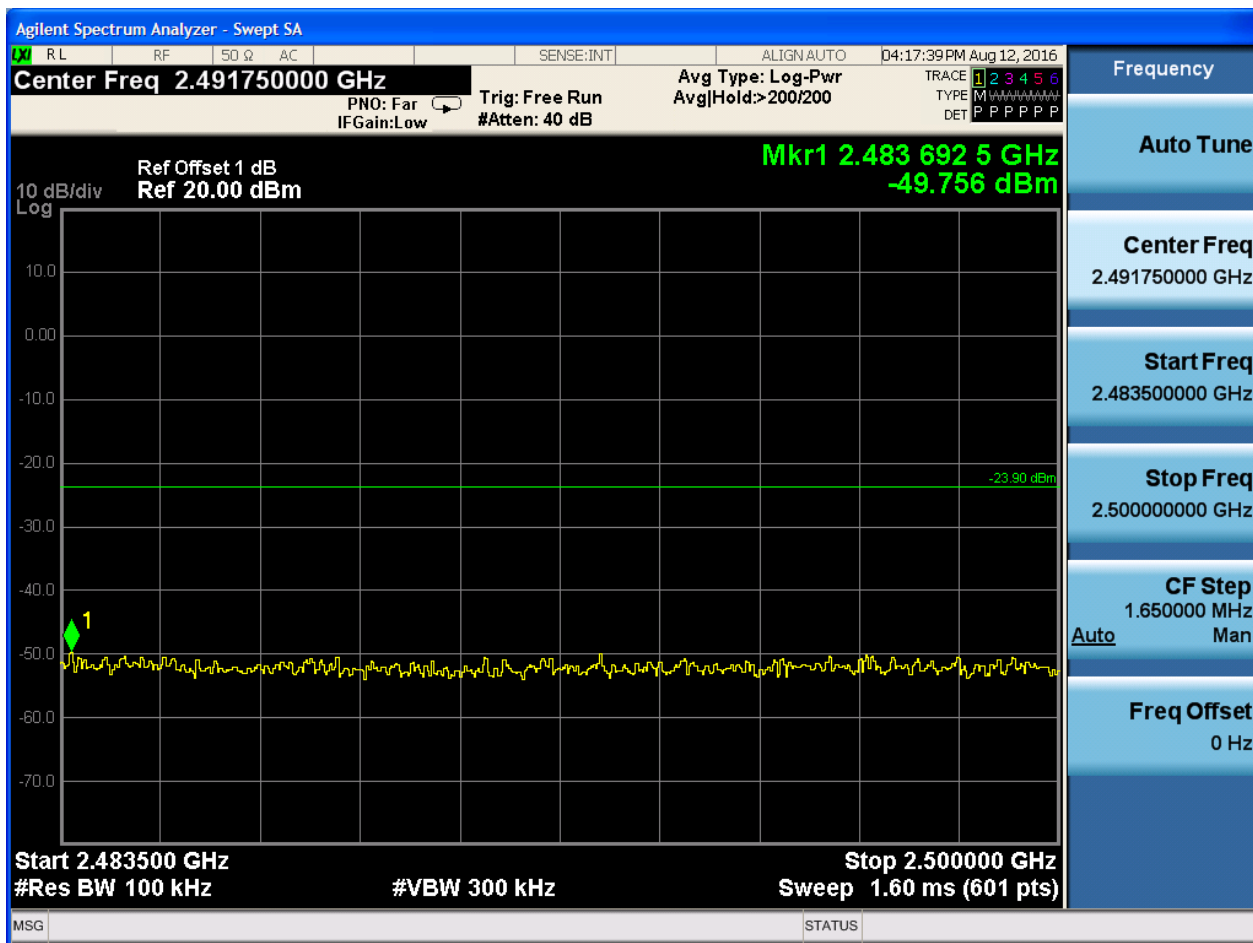
Puw:









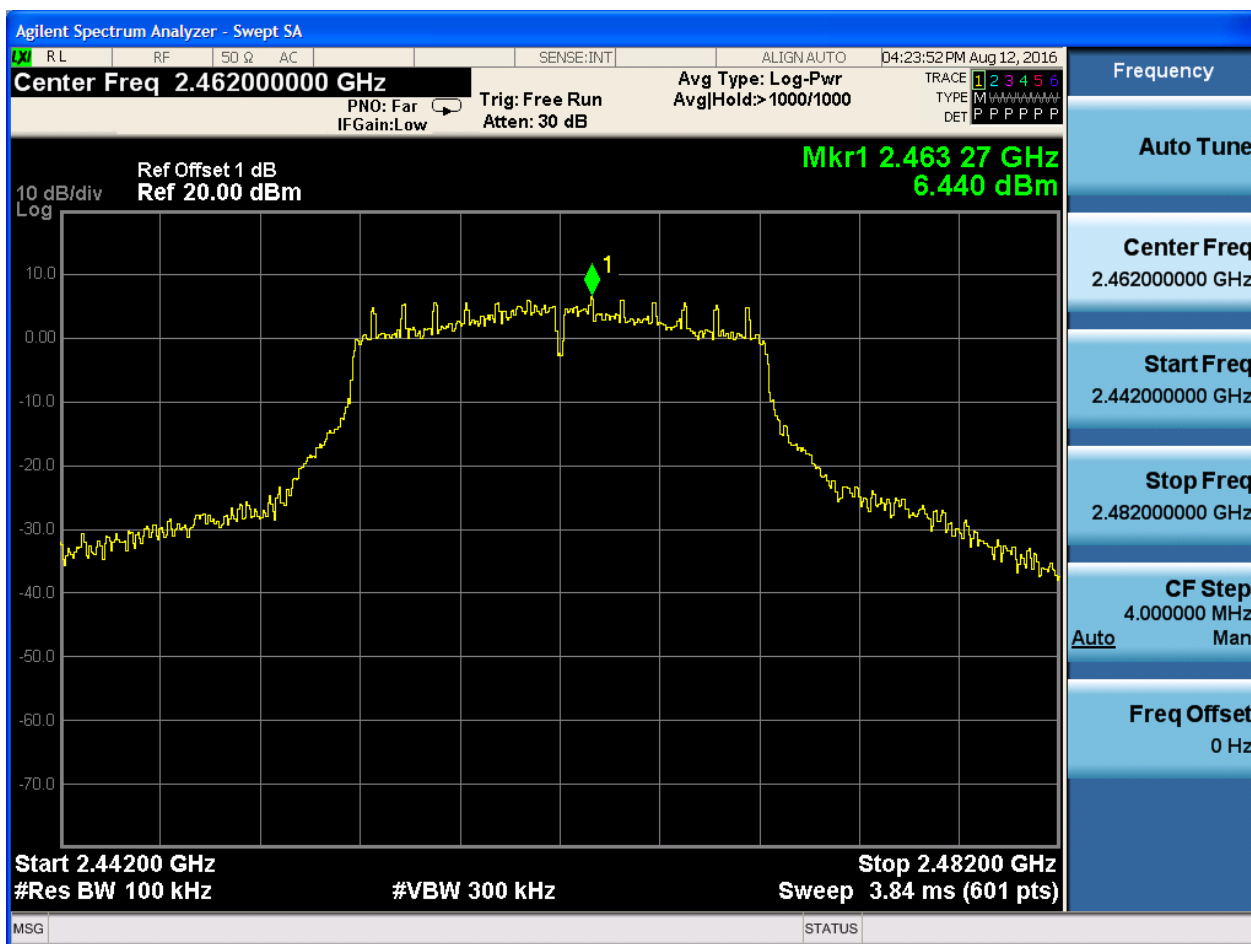






2.6 11G_H@Ant 1

Pref:





Agilent Spectrum Analyzer - Swept SA

Center Freq 79.500 kHz

Ref Offset 1 dB
Ref 6.00 dBm

10 dB/div
Log

Mkr1 9.940 kHz
-73.868 dBm

Start 9.00 kHz
#Res BW 1.0 kHz

Stop 150.00 kHz
Sweep 135 ms (601 pts)

#VBW 3.0 kHz

Auto Tune

Center Freq 79.500 kHz

Start Freq 9.000 kHz

Stop Freq 150.000 kHz

CF Step 14.100 kHz
Man

Freq Offset 0 Hz

STATUS ! DC Coupled

