



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.

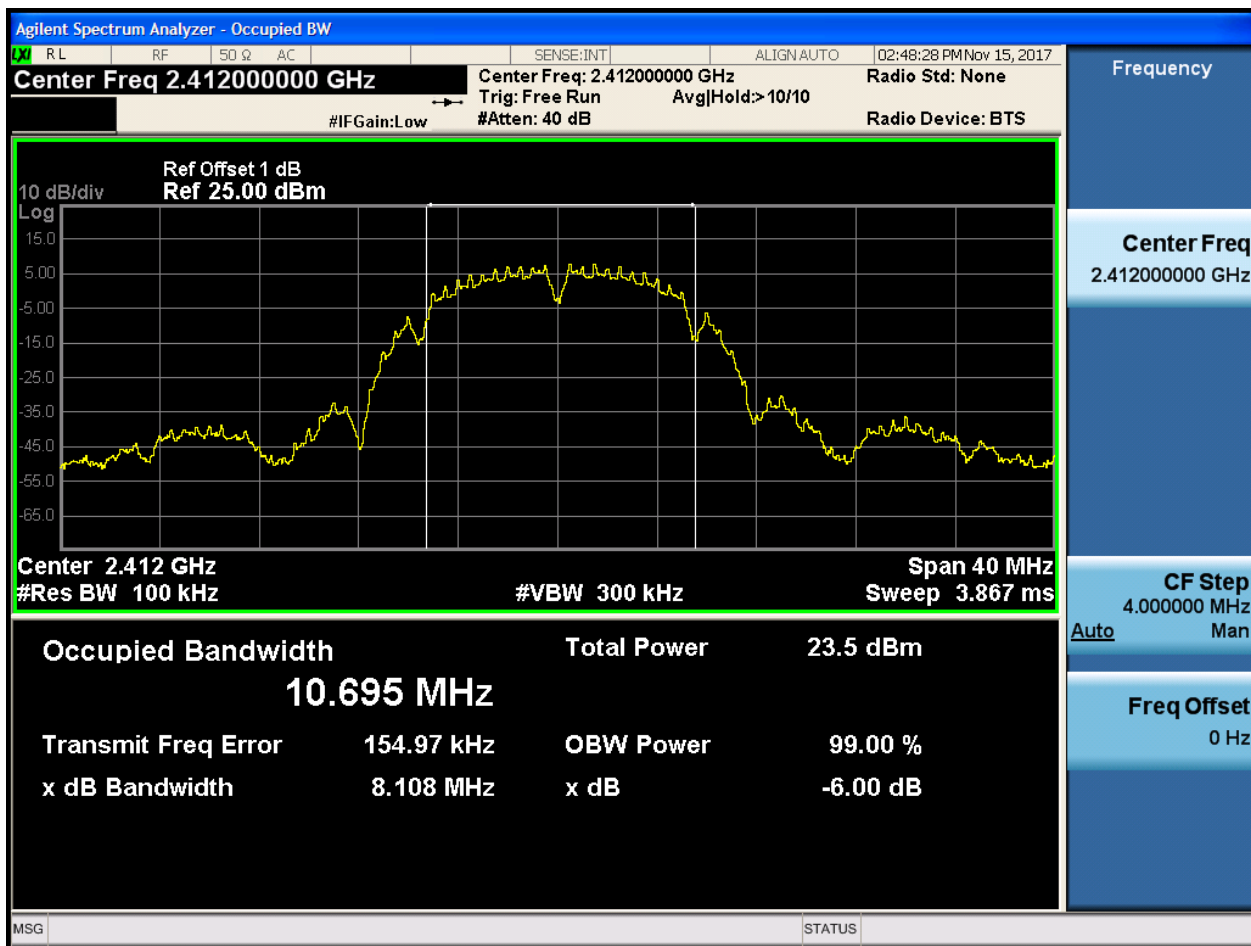
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	8.11	pass
11B	M	2437	Ant 1	9.06	pass
11B	H	2462	Ant 1	8.11	pass
11G	L	2412	Ant 1	16.40	pass
11G	M	2437	Ant 1	16.43	pass
11G	H	2462	Ant 1	16.40	pass
11N20	L	2412	Ant 1	17.43	pass
11N20	M	2437	Ant 1	17.65	pass
11N20	H	2462	Ant 1	17.62	pass
11N40	L	2422	Ant 1	34.87	pass
11N40	M	2437	Ant 1	35.63	pass
11N40	H	2452	Ant 1	35.45	pass

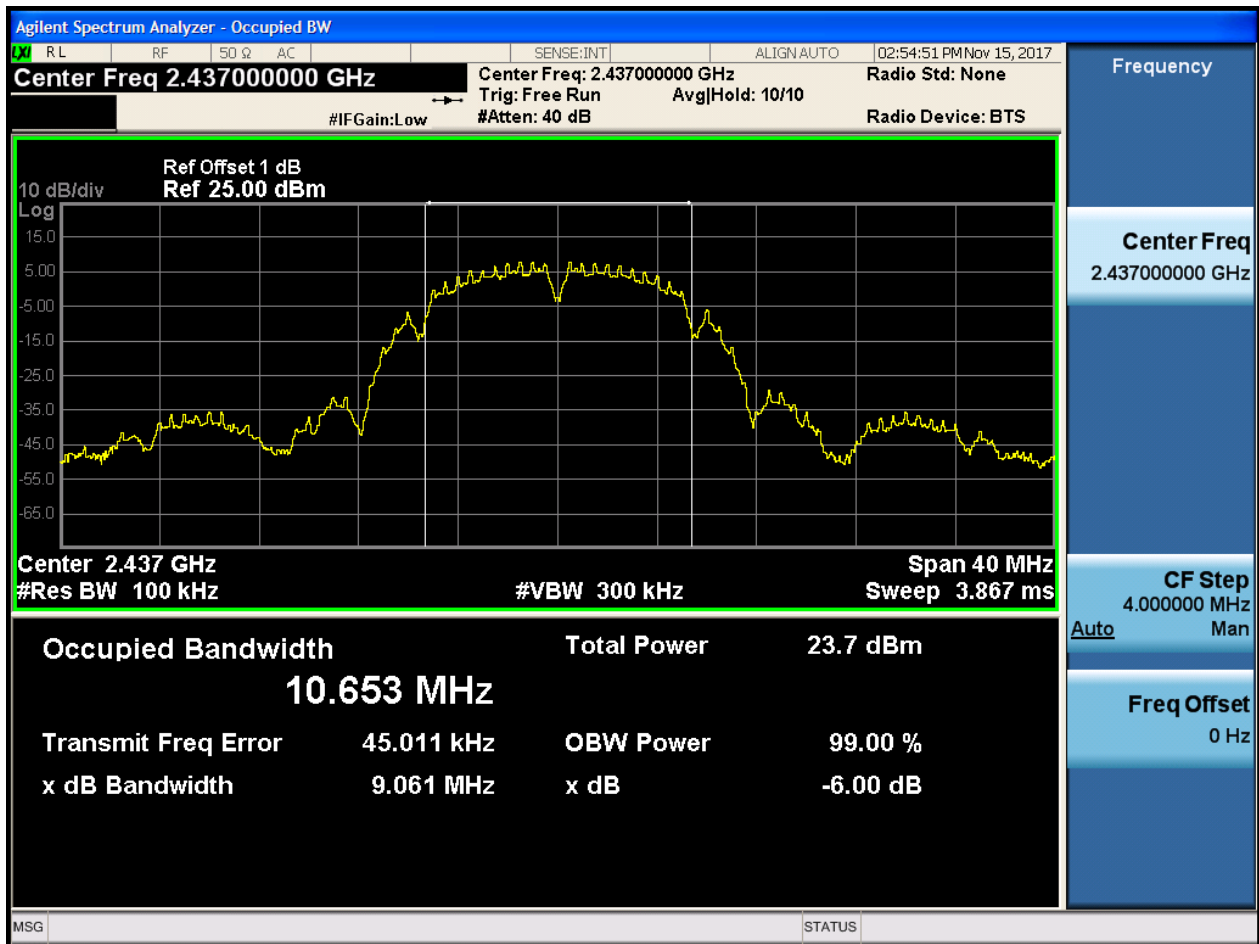
Part II - Test Plots

2.1 11B_L@Ant 1



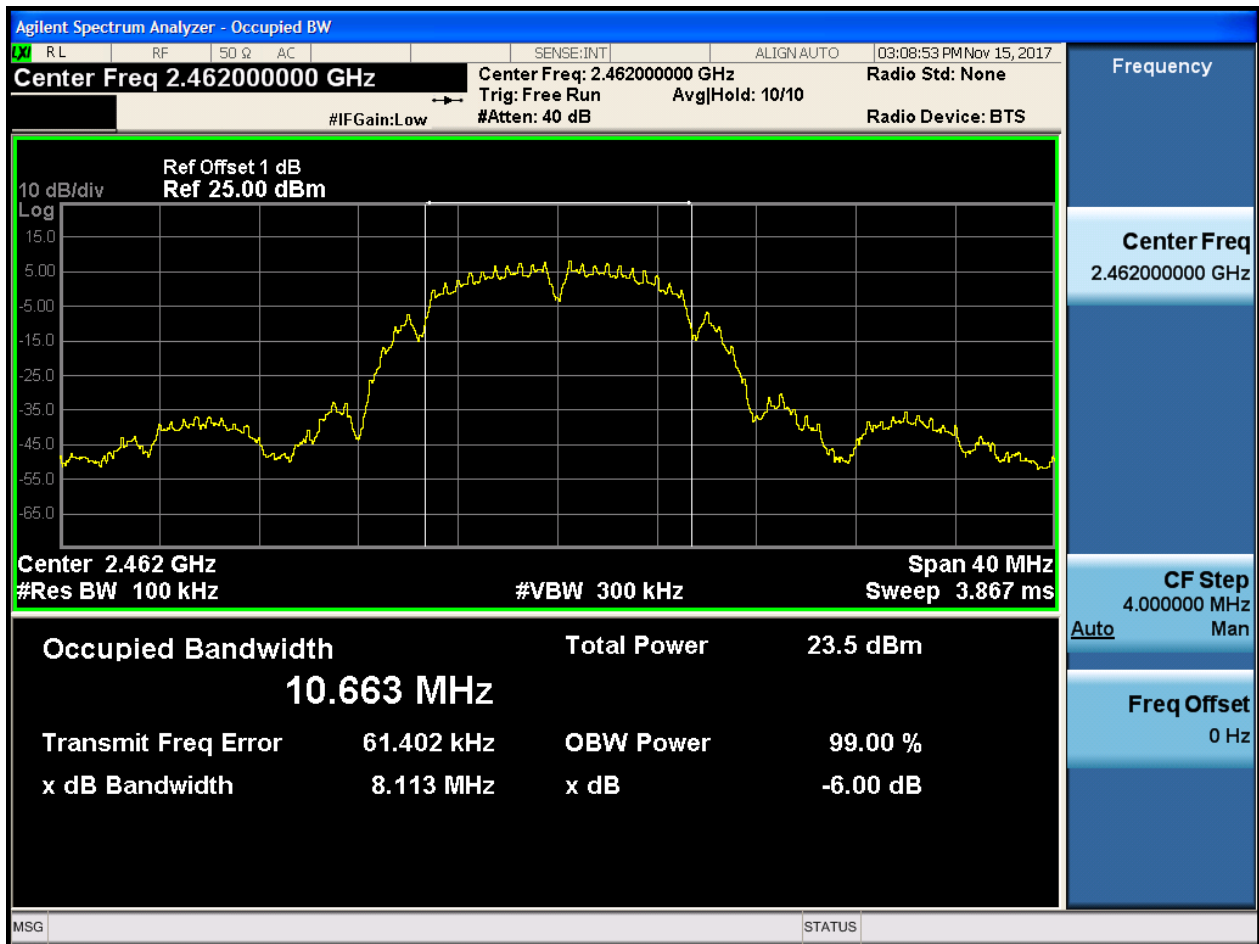


2.2 11B_M@Ant 1



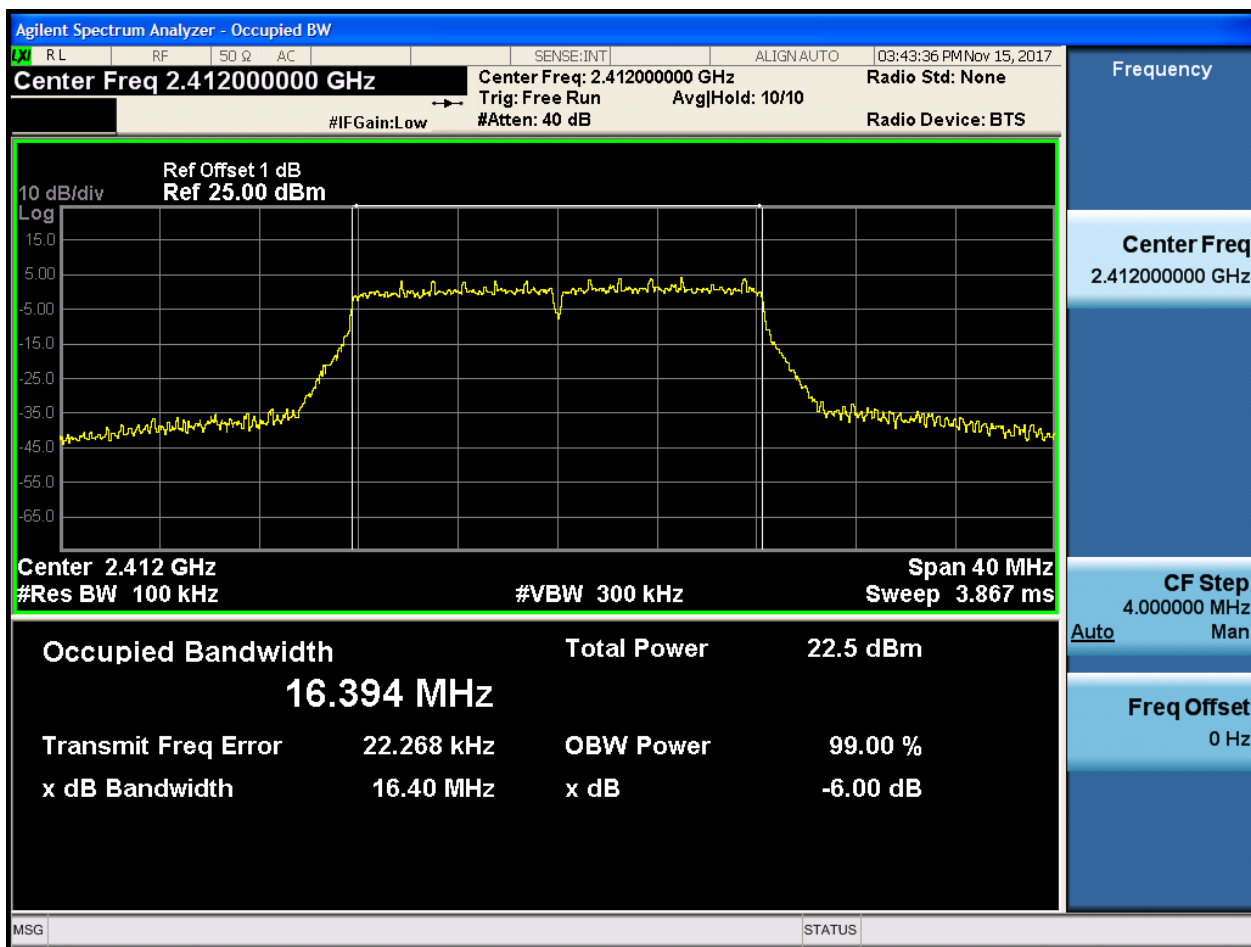


2.3 11B_H@Ant 1



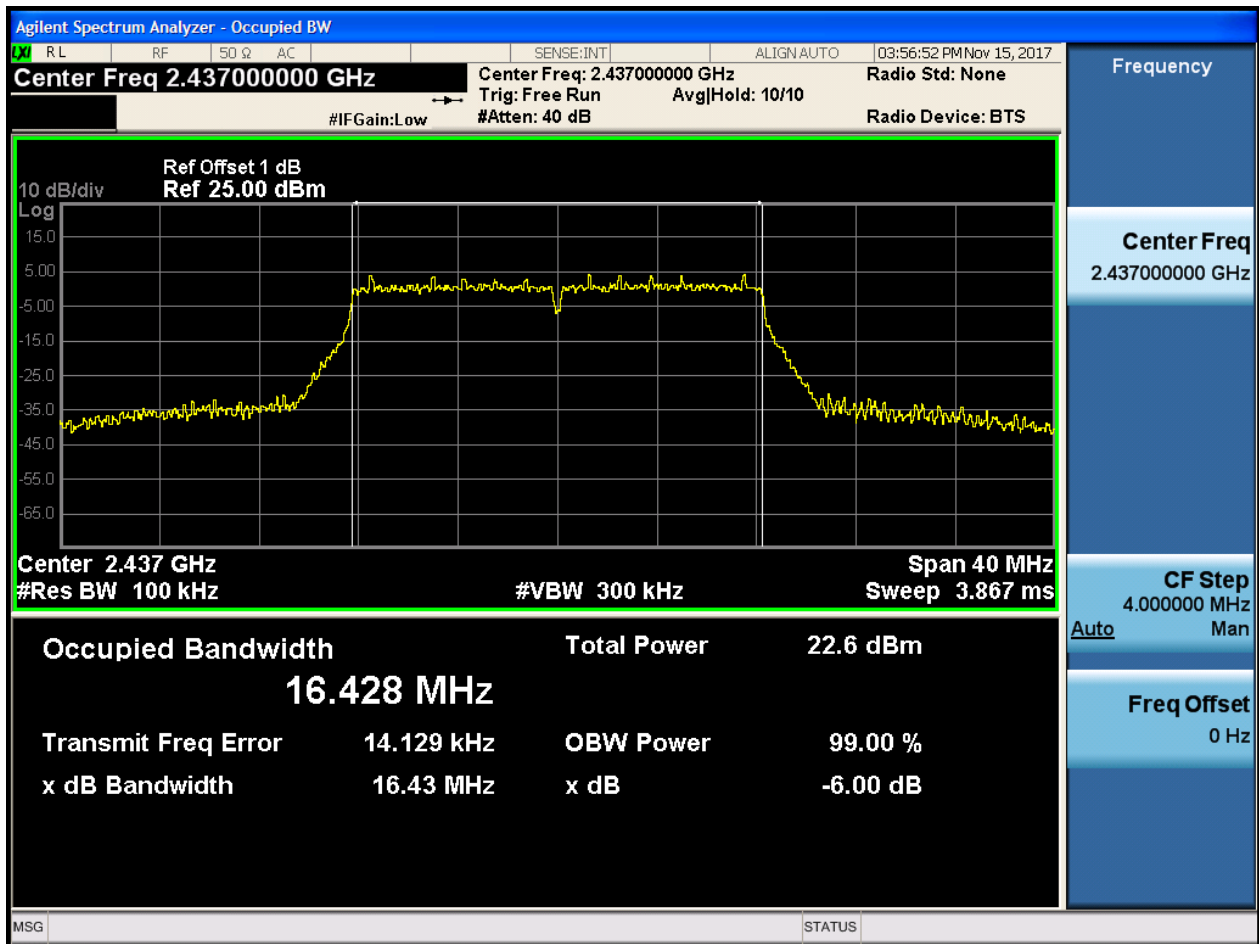


2.4 11G_L@Ant 1



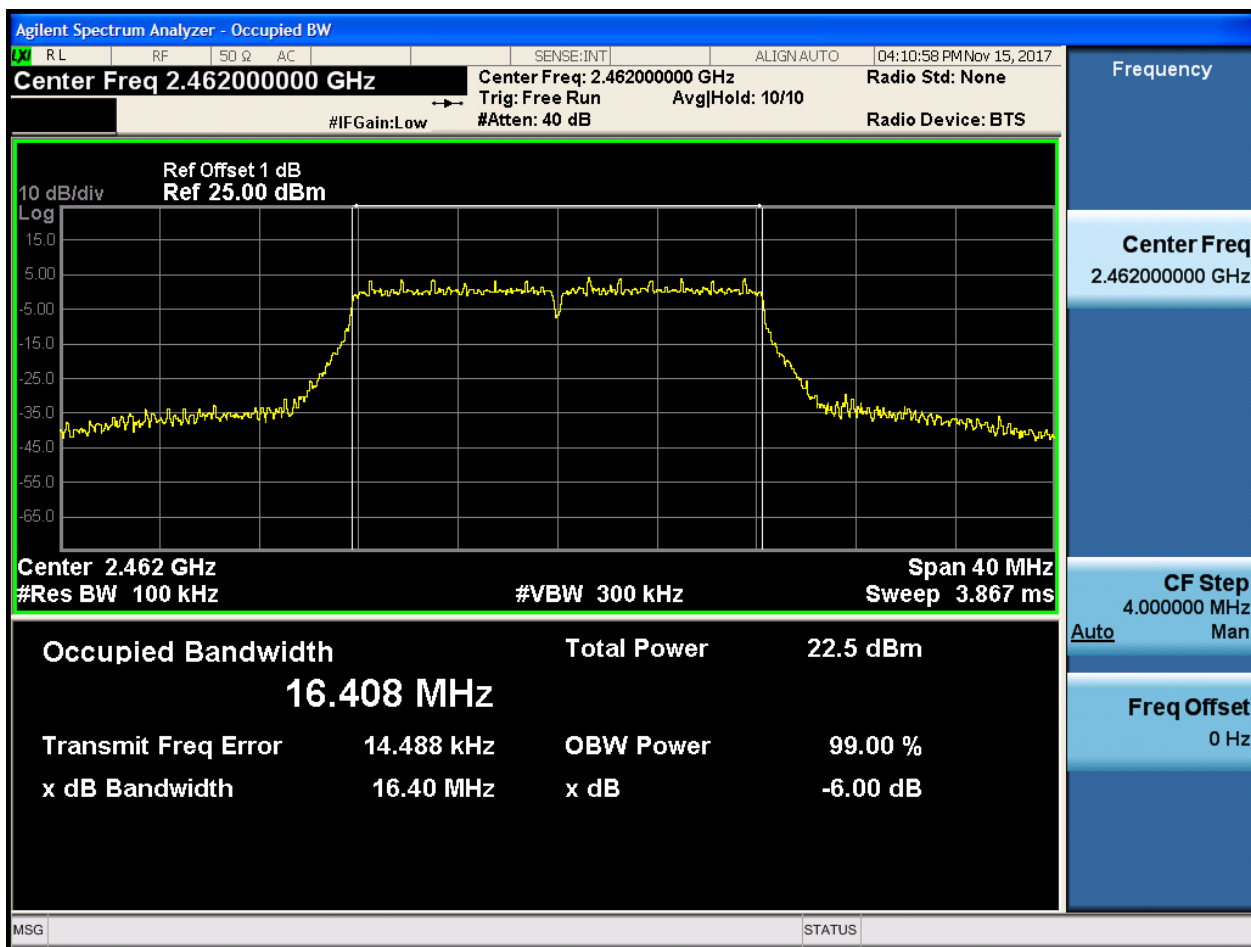


2.5 11G_M@Ant 1



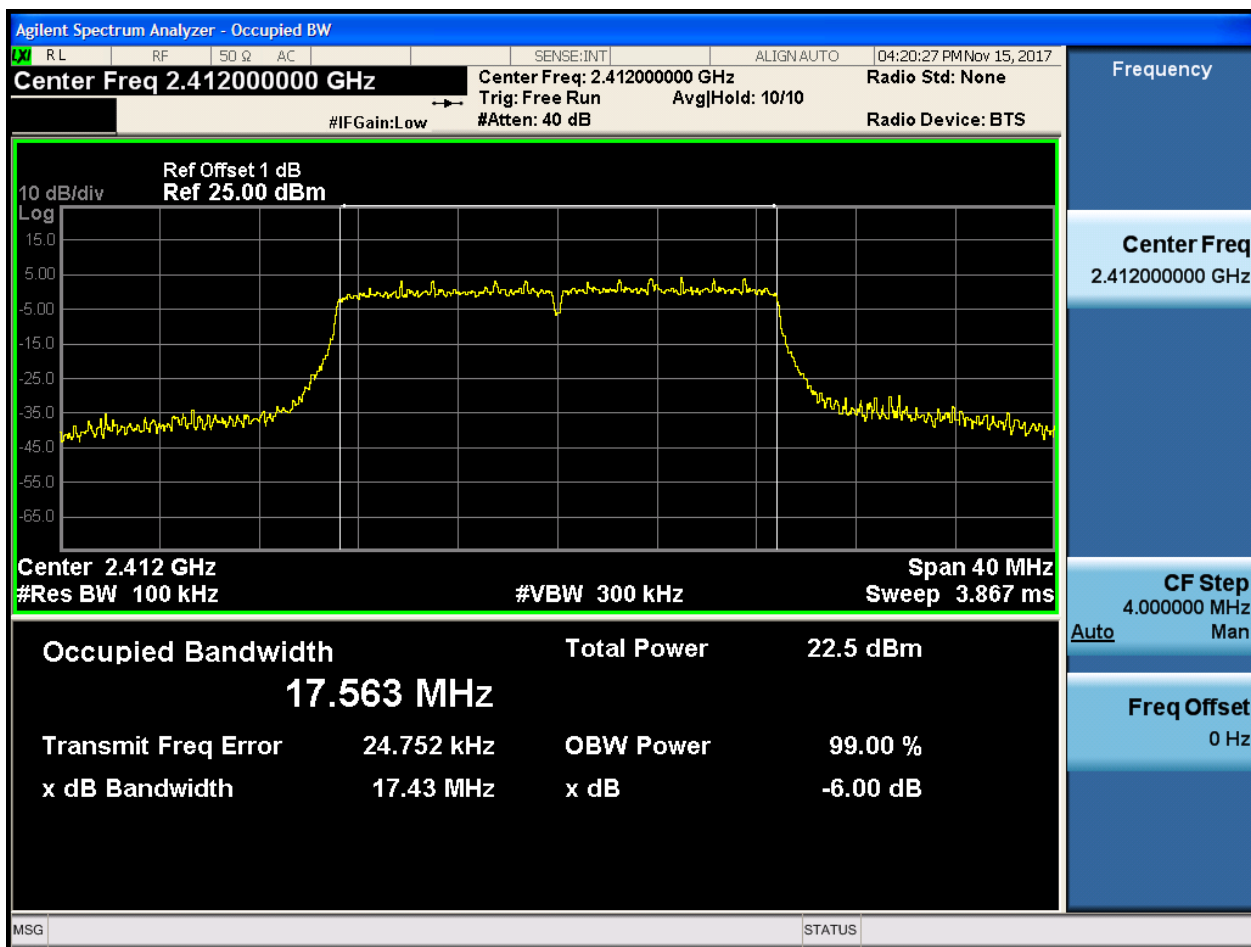


2.6 11G_H@Ant 1



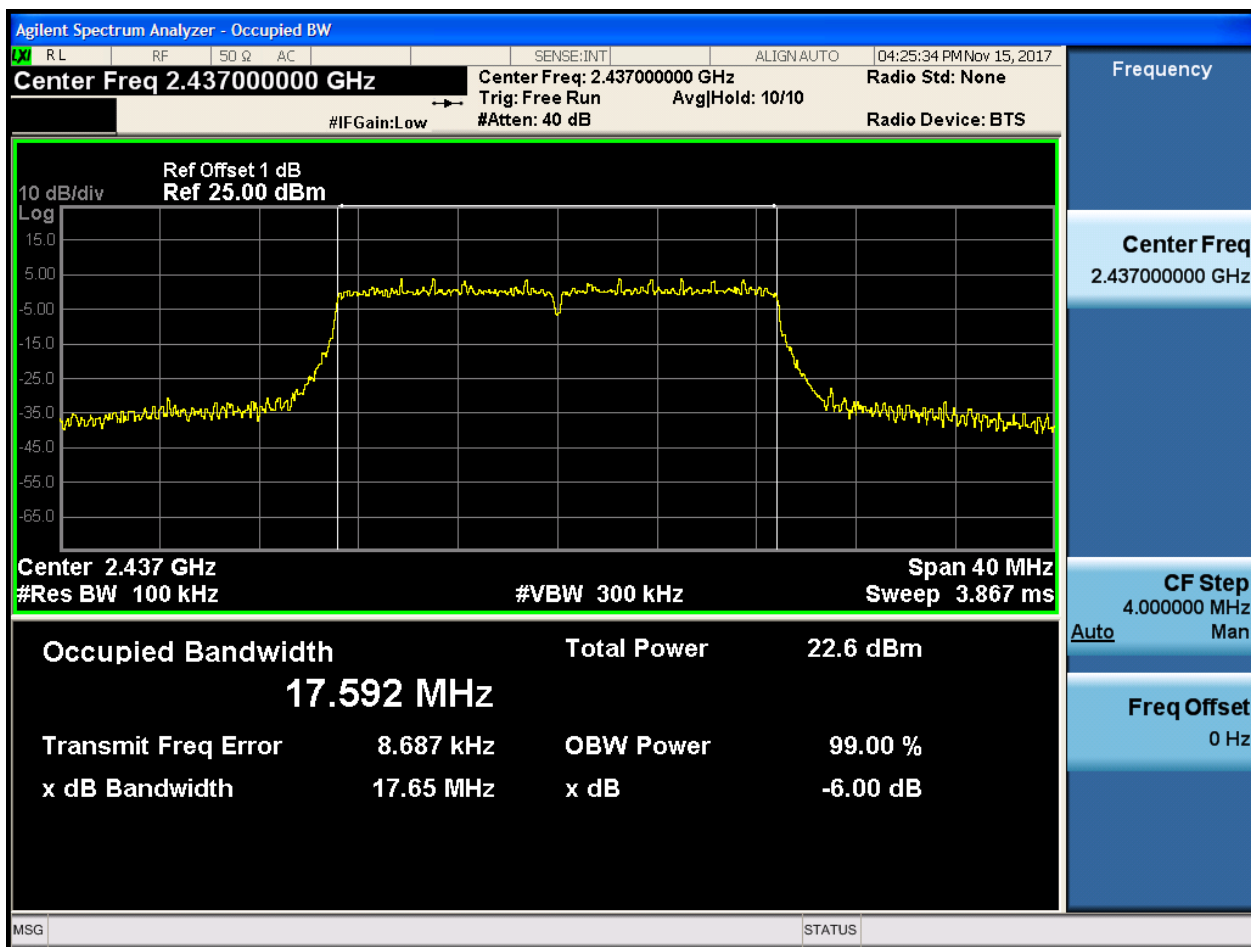


2.7 11N20_L@Ant 1



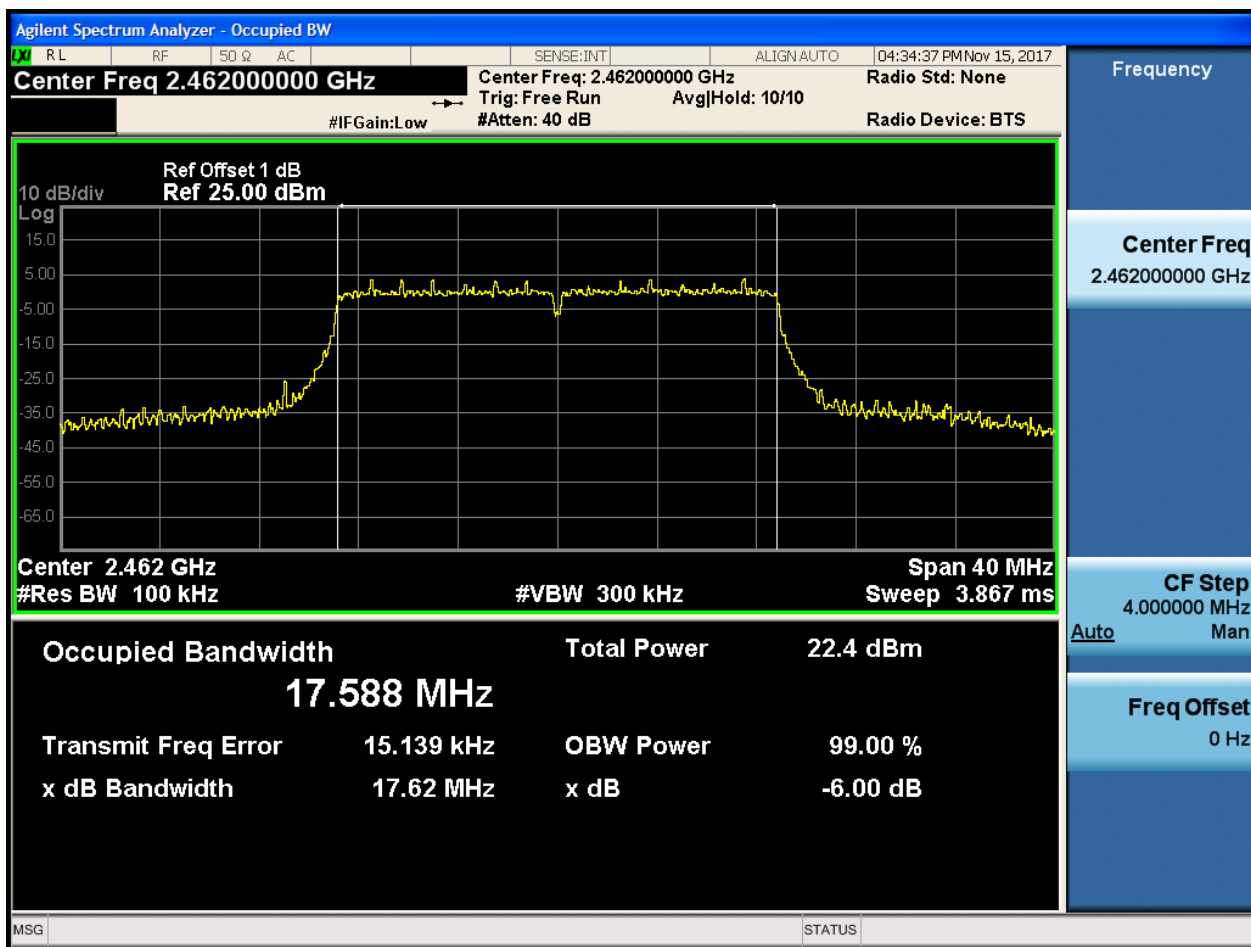


2.8 11N20_M@Ant 1



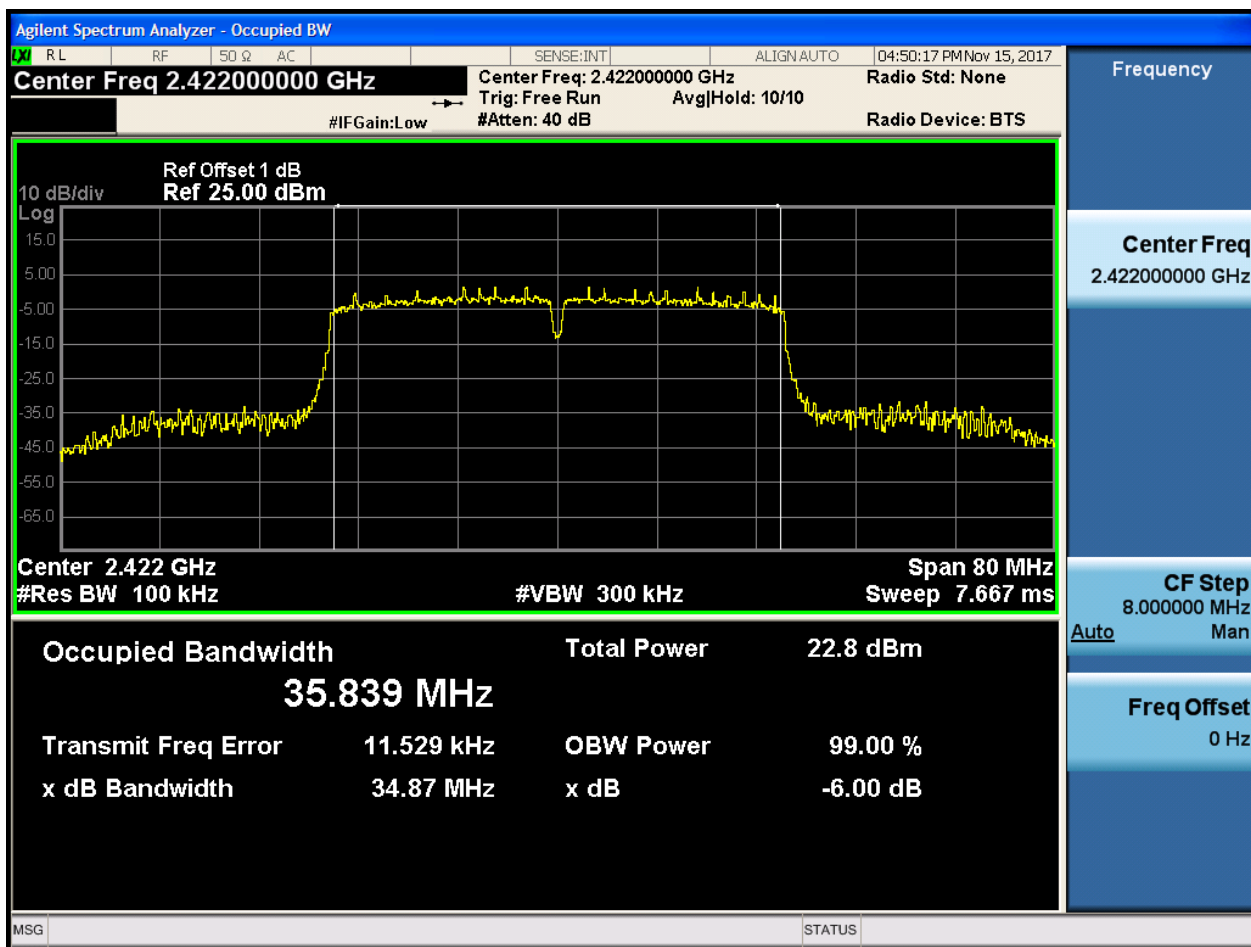


2.9 11N20_H@Ant 1



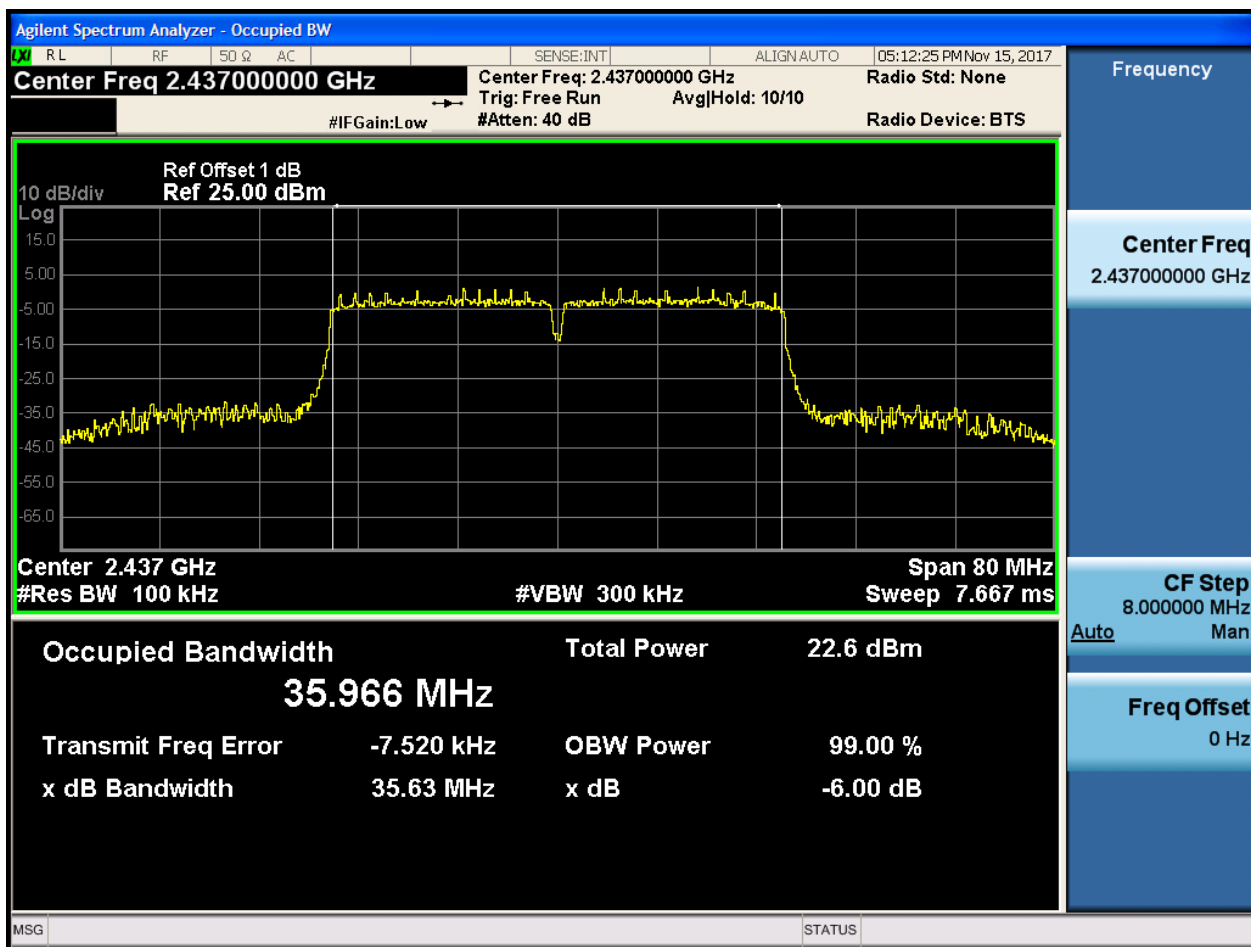


2.10 11N40_L@Ant 1



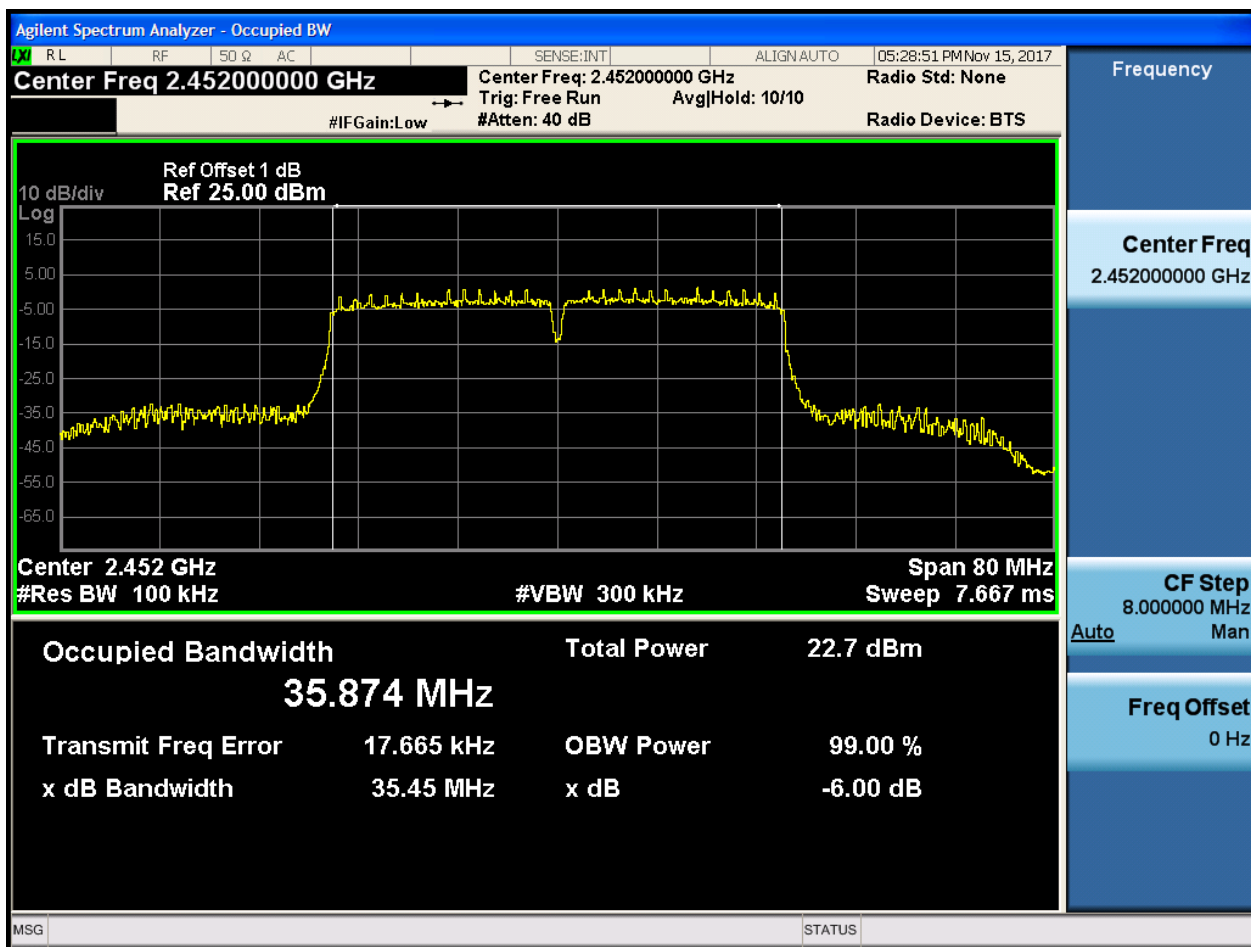


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix B: Occupied Bandwidth

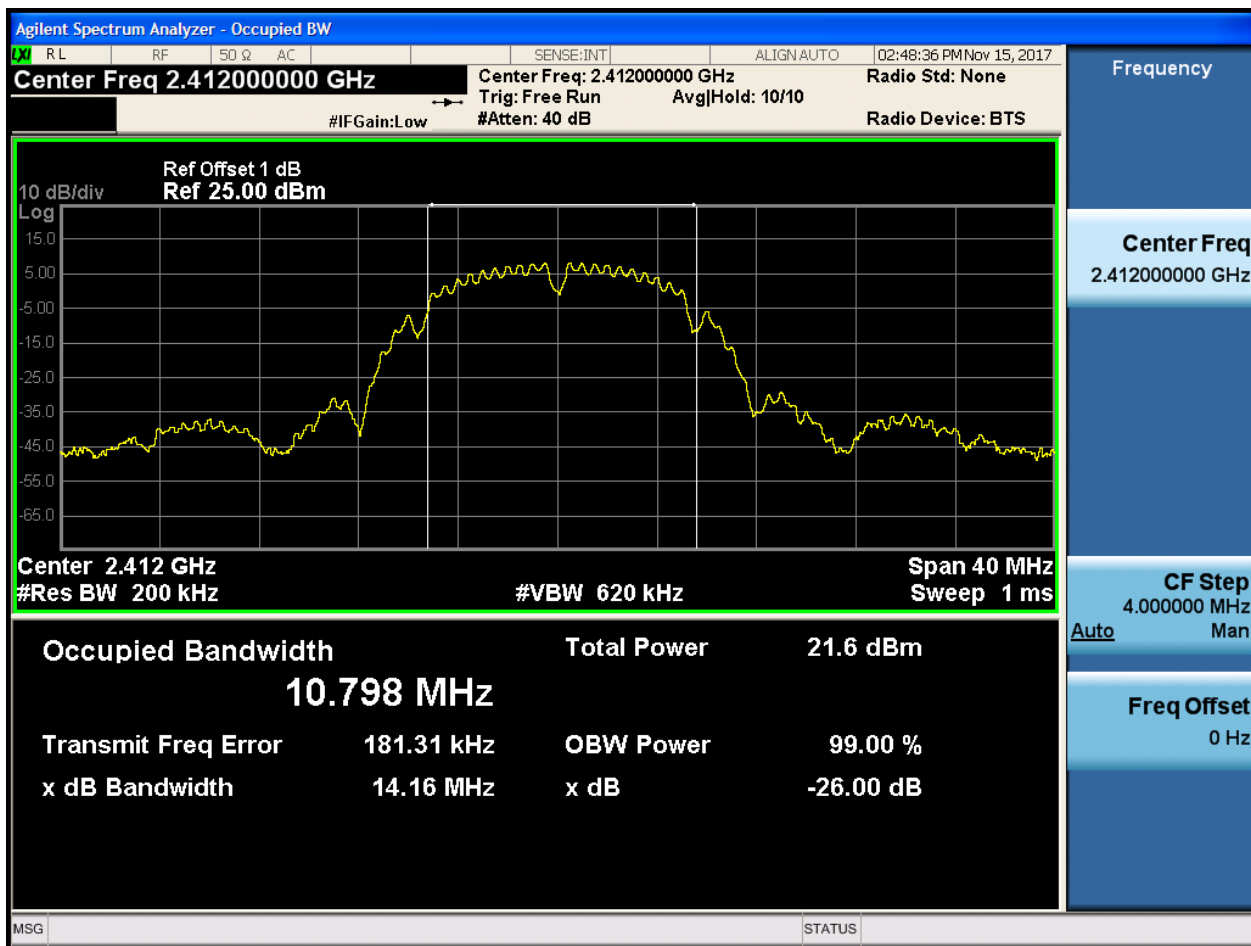
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	10.80	pass
11B	M	2437	Ant 1	10.82	pass
11B	H	2462	Ant 1	10.90	pass
11G	L	2412	Ant 1	16.49	pass
11G	M	2437	Ant 1	16.49	pass
11G	H	2462	Ant 1	16.50	pass
11N20	L	2412	Ant 1	17.57	pass
11N20	M	2437	Ant 1	17.61	pass
11N20	H	2462	Ant 1	17.60	pass
11N40	L	2422	Ant 1	35.86	pass
11N40	M	2437	Ant 1	36.01	pass
11N40	H	2452	Ant 1	35.93	pass

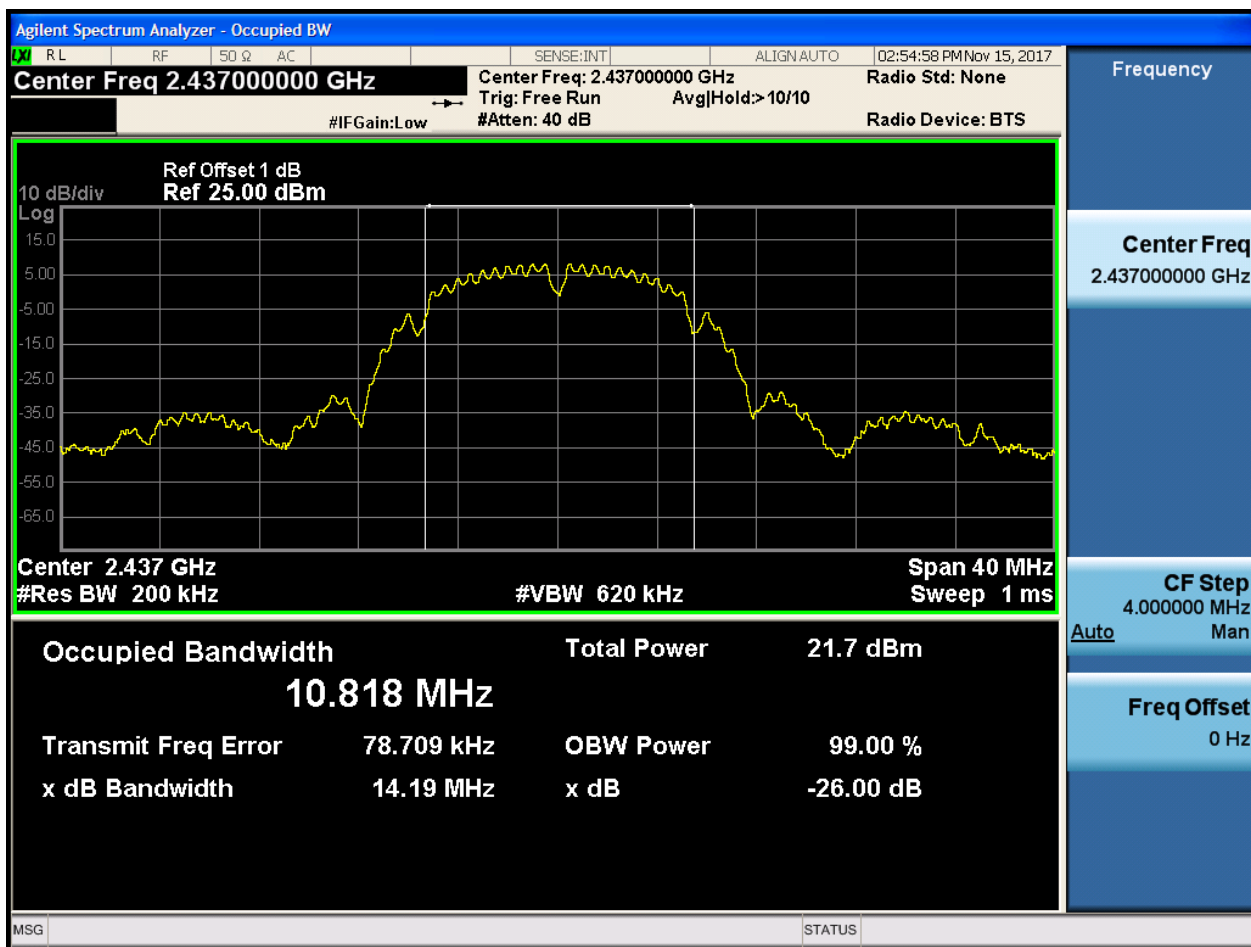
Part II - Test Plots

2.1 11B_L@Ant 1



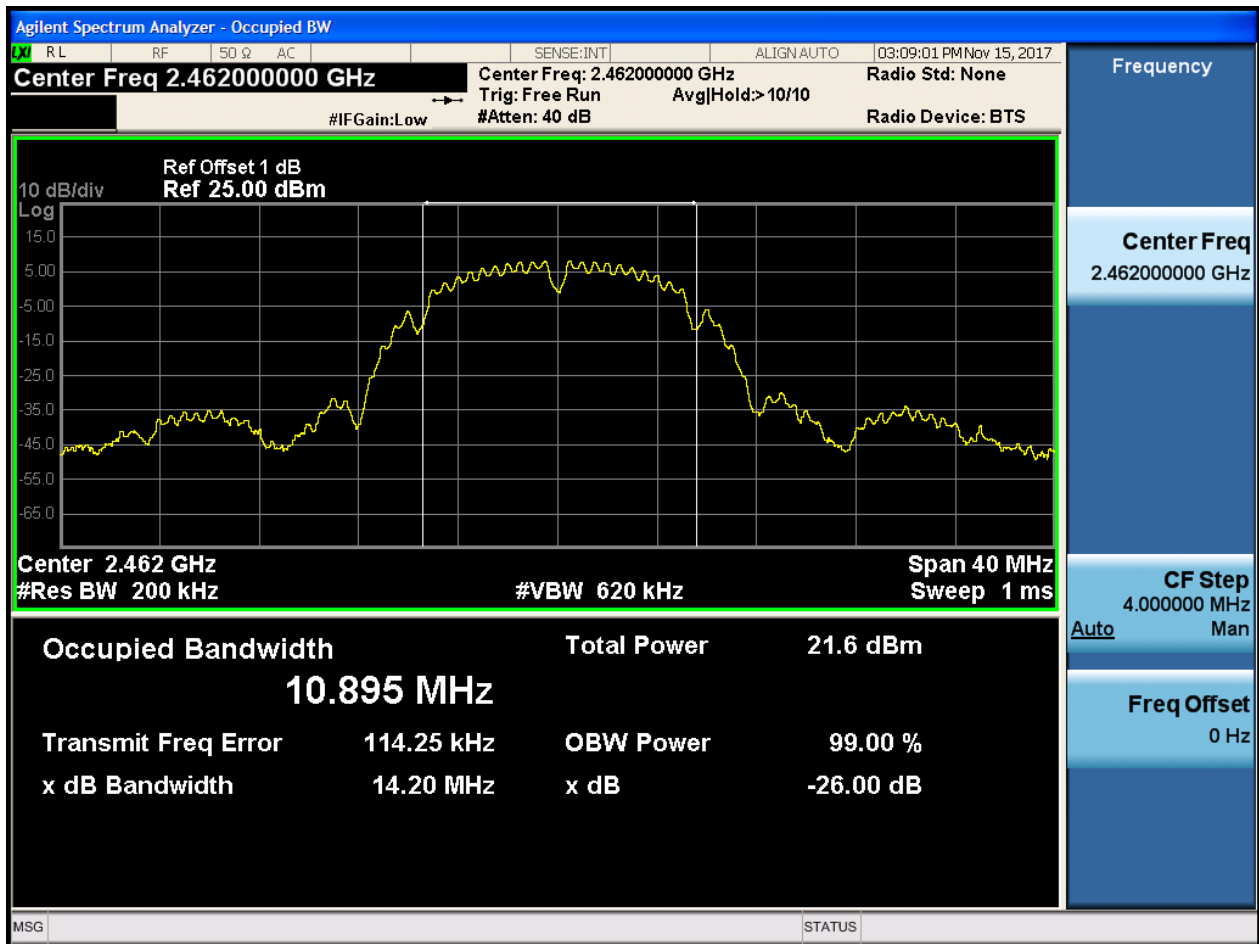


2.2 11B_M@Ant 1



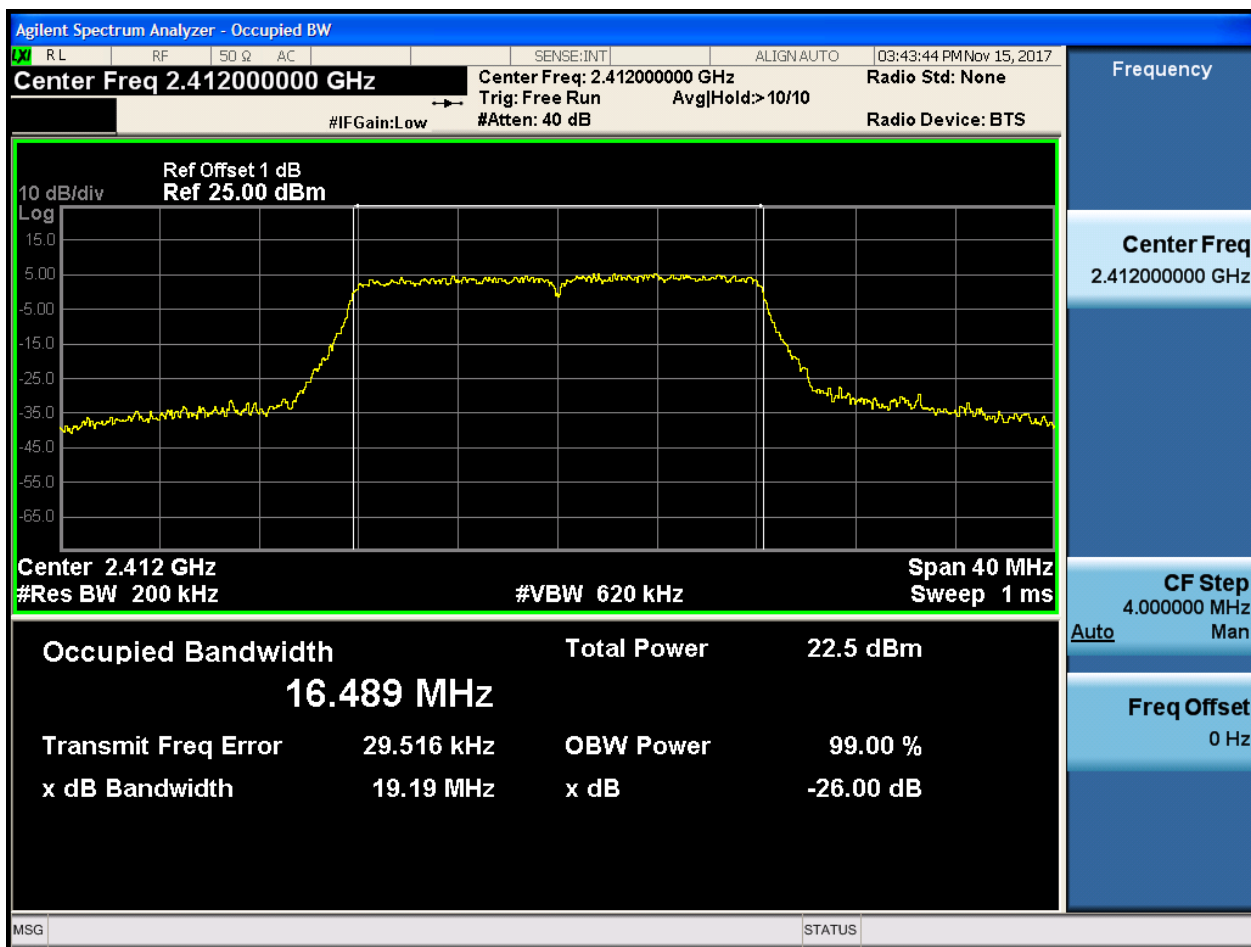


2.3 11B_H@Ant 1



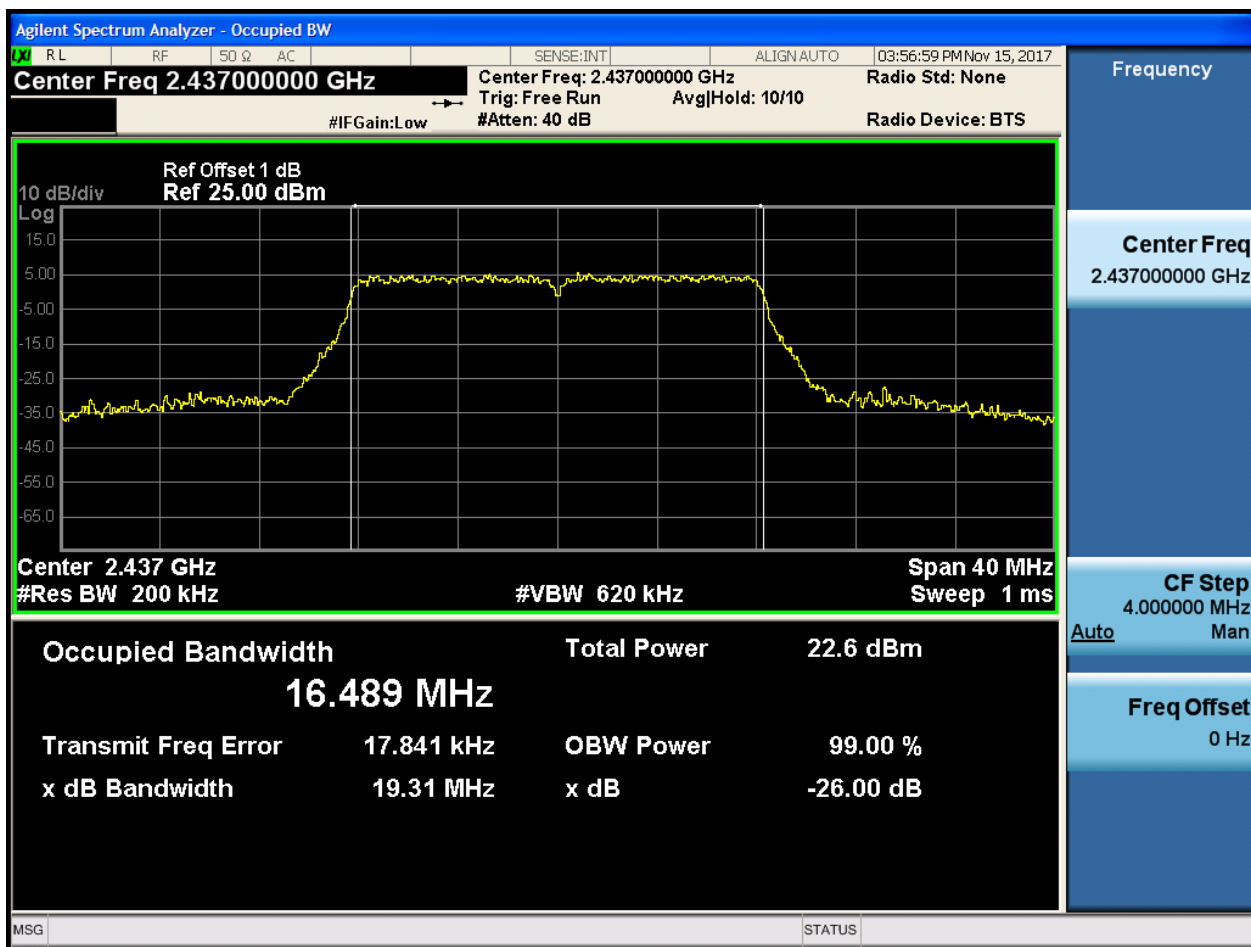


2.4 11G_L@Ant 1



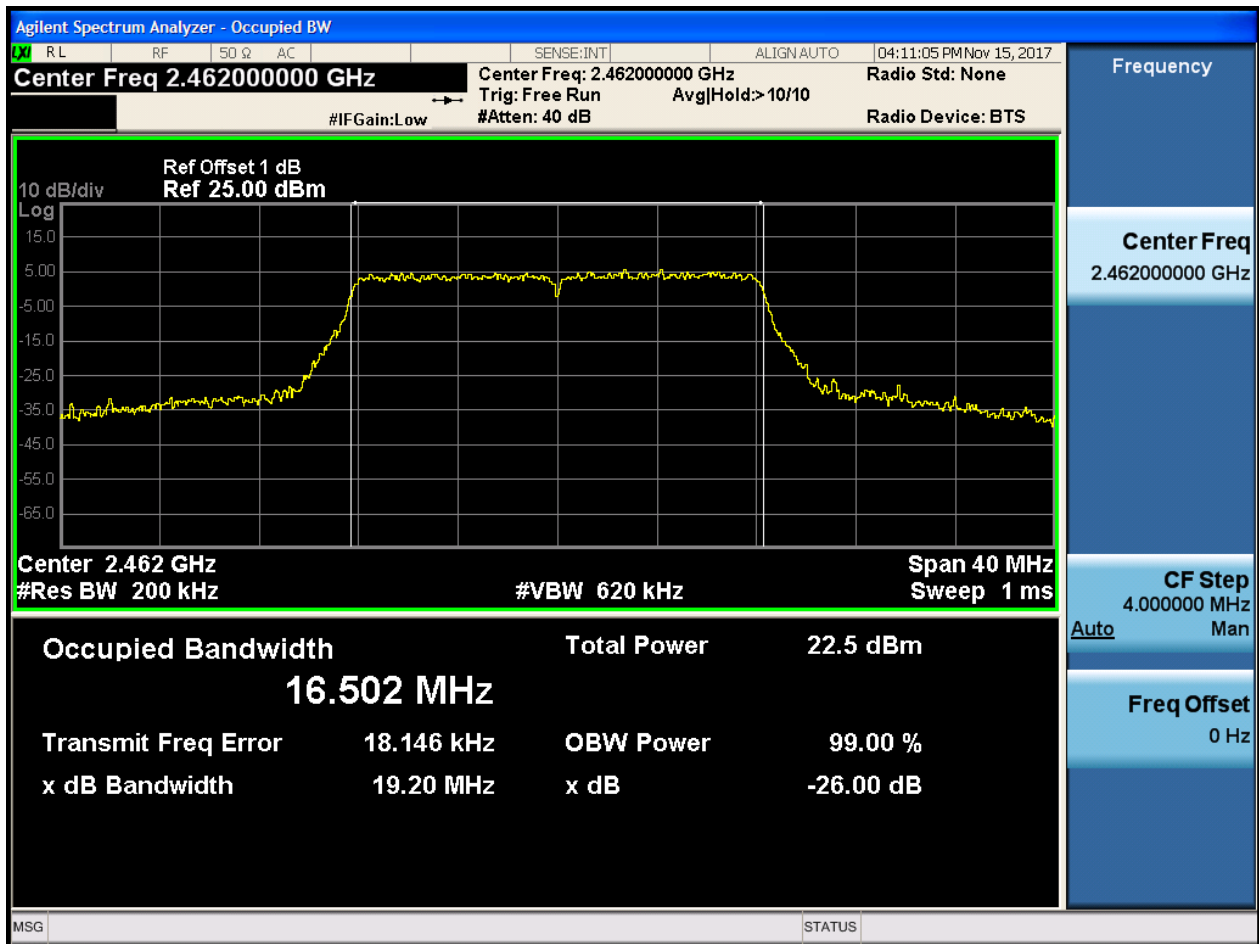


2.5 11G_M@Ant 1



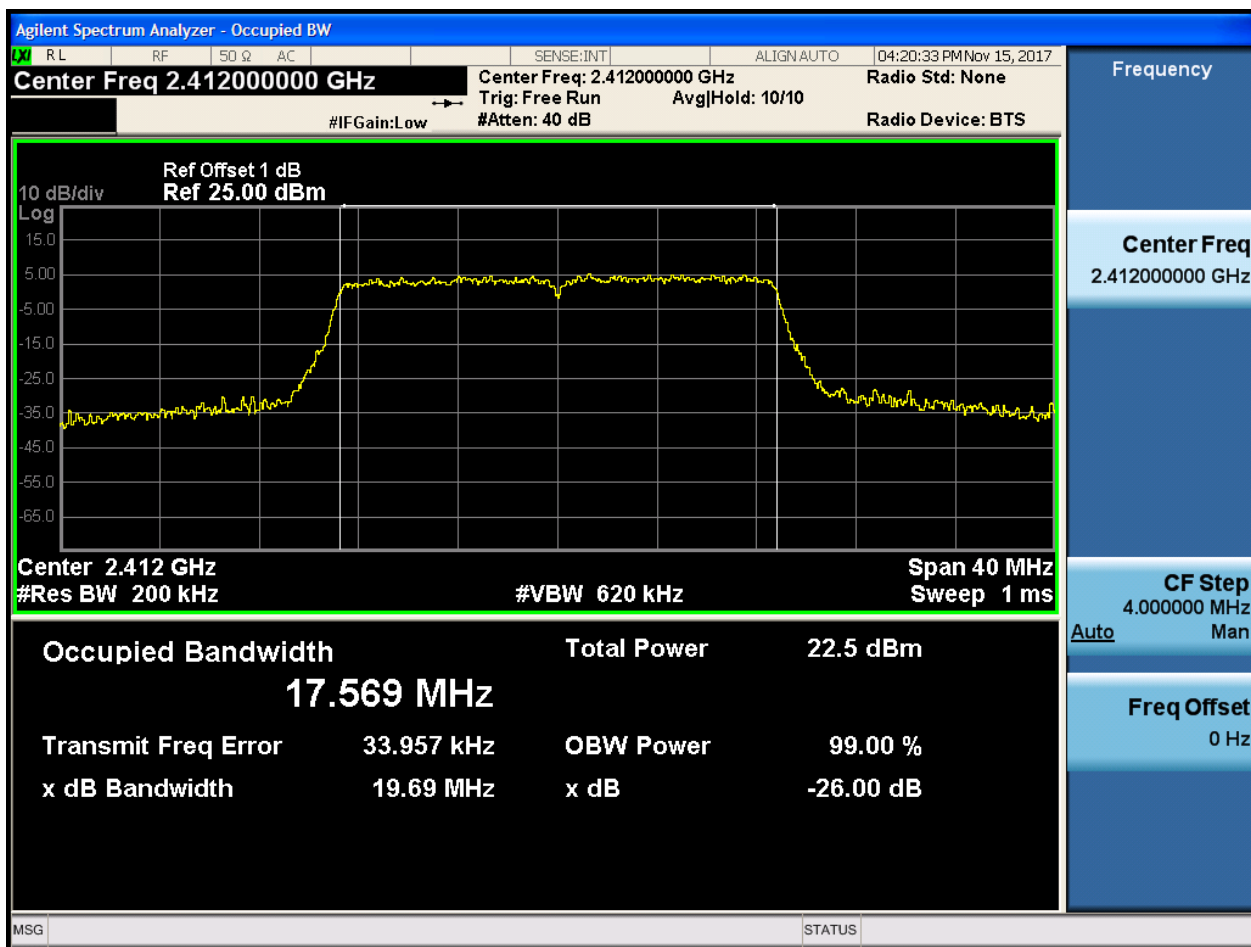


2.6 11G_H@Ant 1



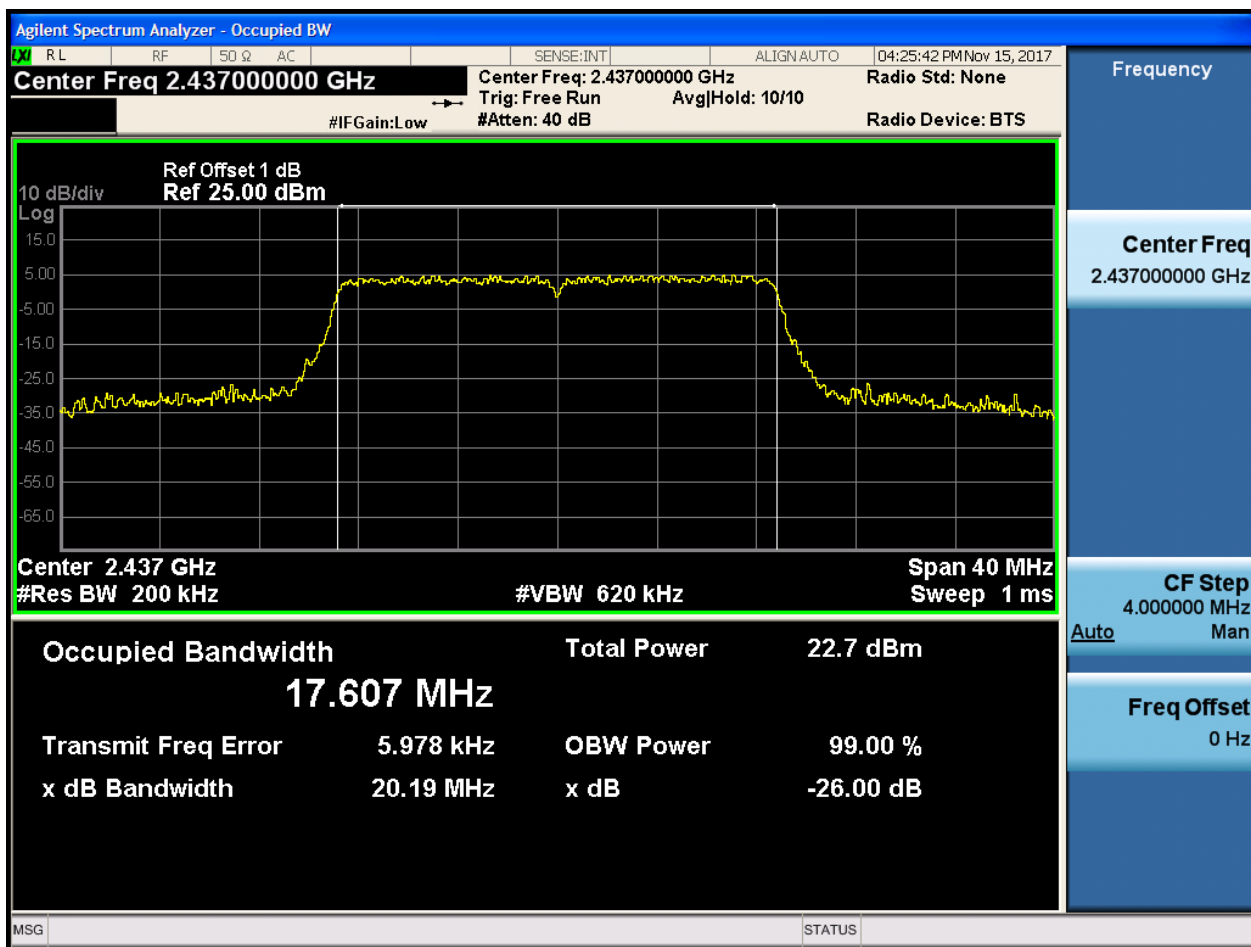


2.7 11N20_L@Ant 1



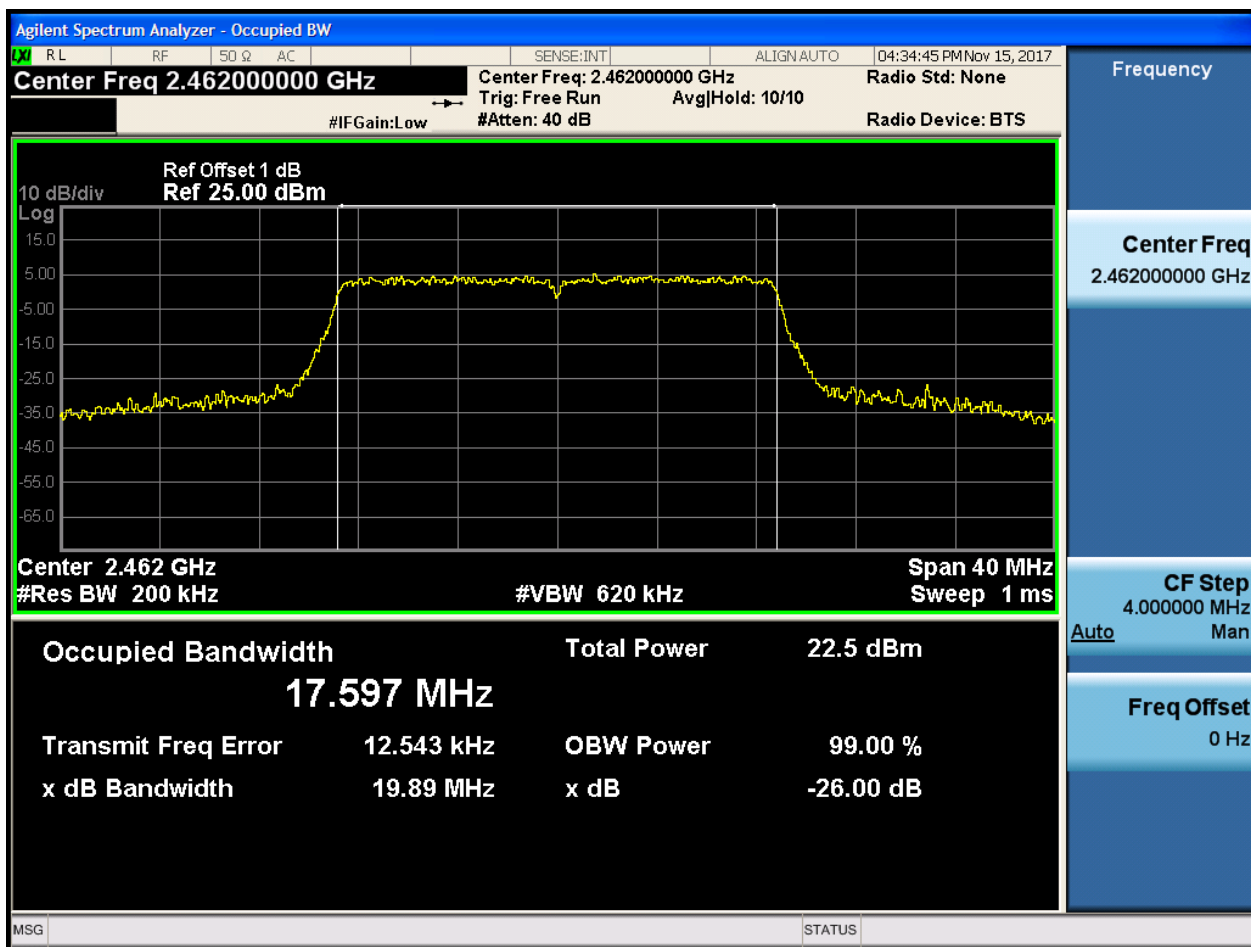


2.8 11N20_M@Ant 1





2.9 11N20_H@Ant 1





Agilent Spectrum Analyzer - Occupied BW

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 04:50:25 PM Nov 15, 2017

Center Freq 2.422000000 GHz Center Freq: 2.422000000 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 Freq 2.422 GHz Span 80 MHz
 #Res BW 390 kHz #VBW 820 kHz Sweep 1 ms

Occupied Bandwidth		Total Power	
35.864 MHz		22.6 dBm	

Transmit Freq Error		OBW Power	
-8.469 kHz		99.00 %	
x dB Bandwidth		x dB	
38.78 MHz		-26.00 dB	

Frequency

Center Freq
 2.422000000 GHz

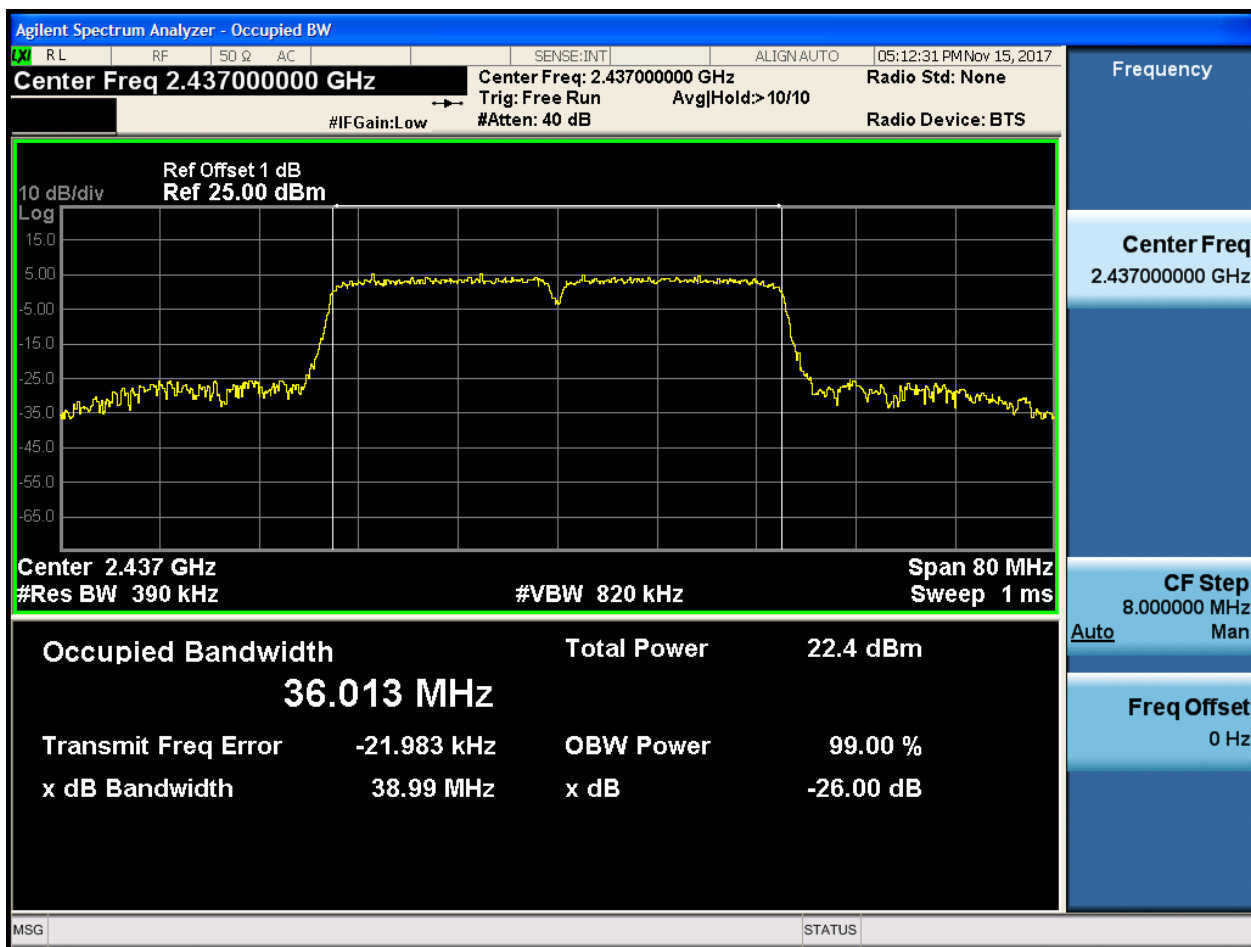
CF Step
 8.000000 MHz
 Auto Man

Freq Offset
 0 Hz

MSG STATUS

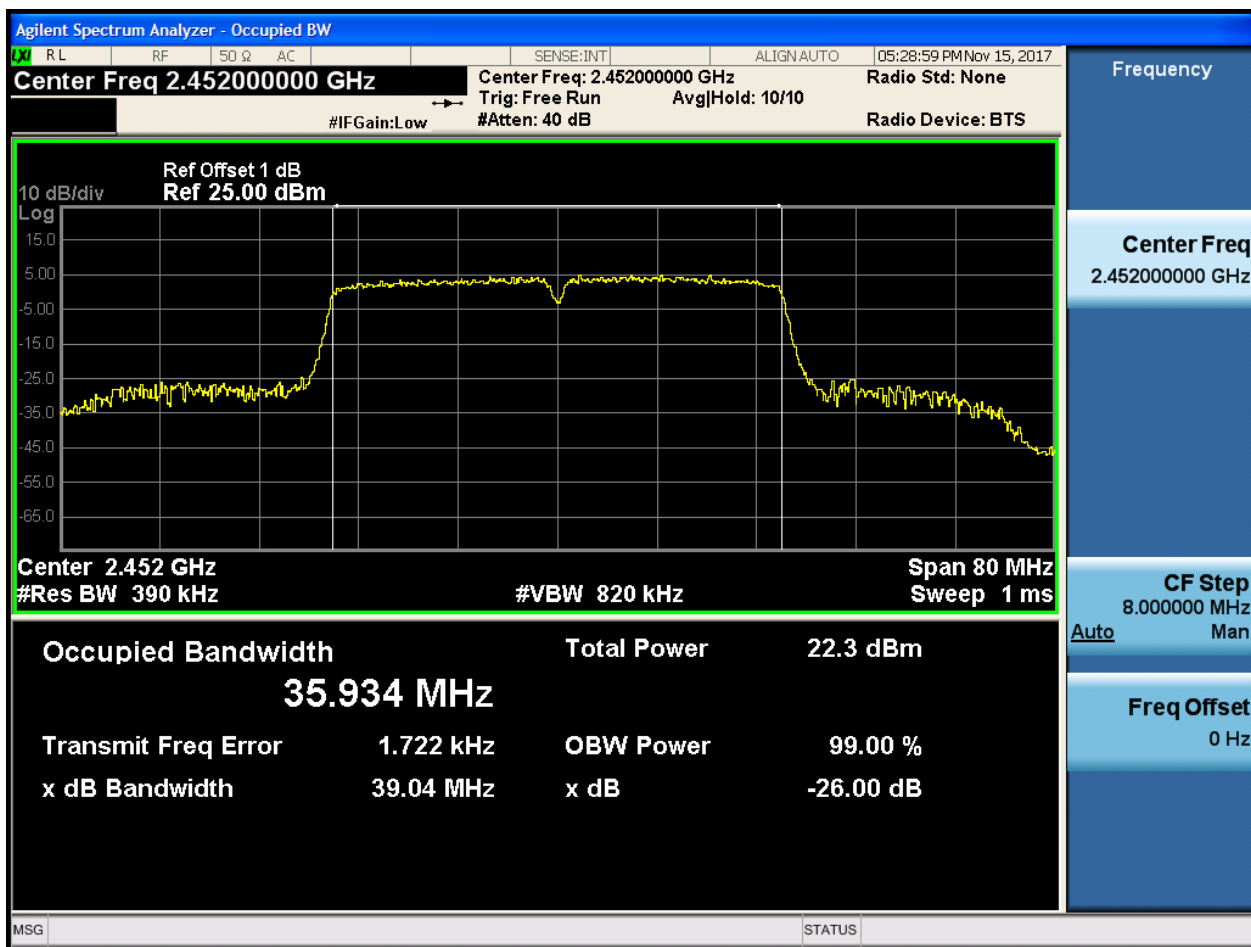


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix C: Duty Cycle

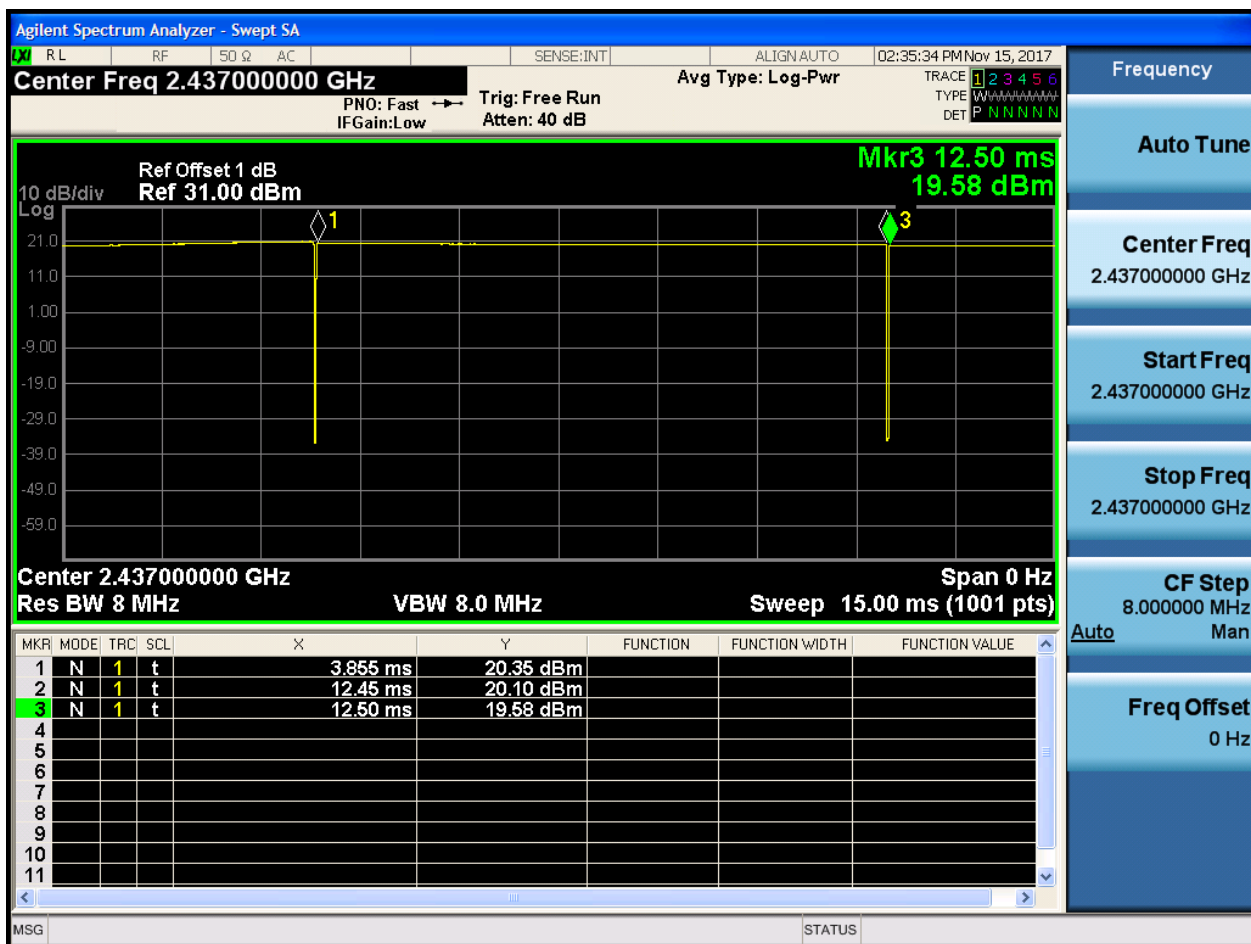
Part I - Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1,CH6,CH11	99
11G	Ant 1: CH1,CH6,CH11	98
11N_20M_SISO	Ant 1: CH1,CH6,CH11	98
11N_40M_SISO	Ant 1: CH3,CH6,CH9	97



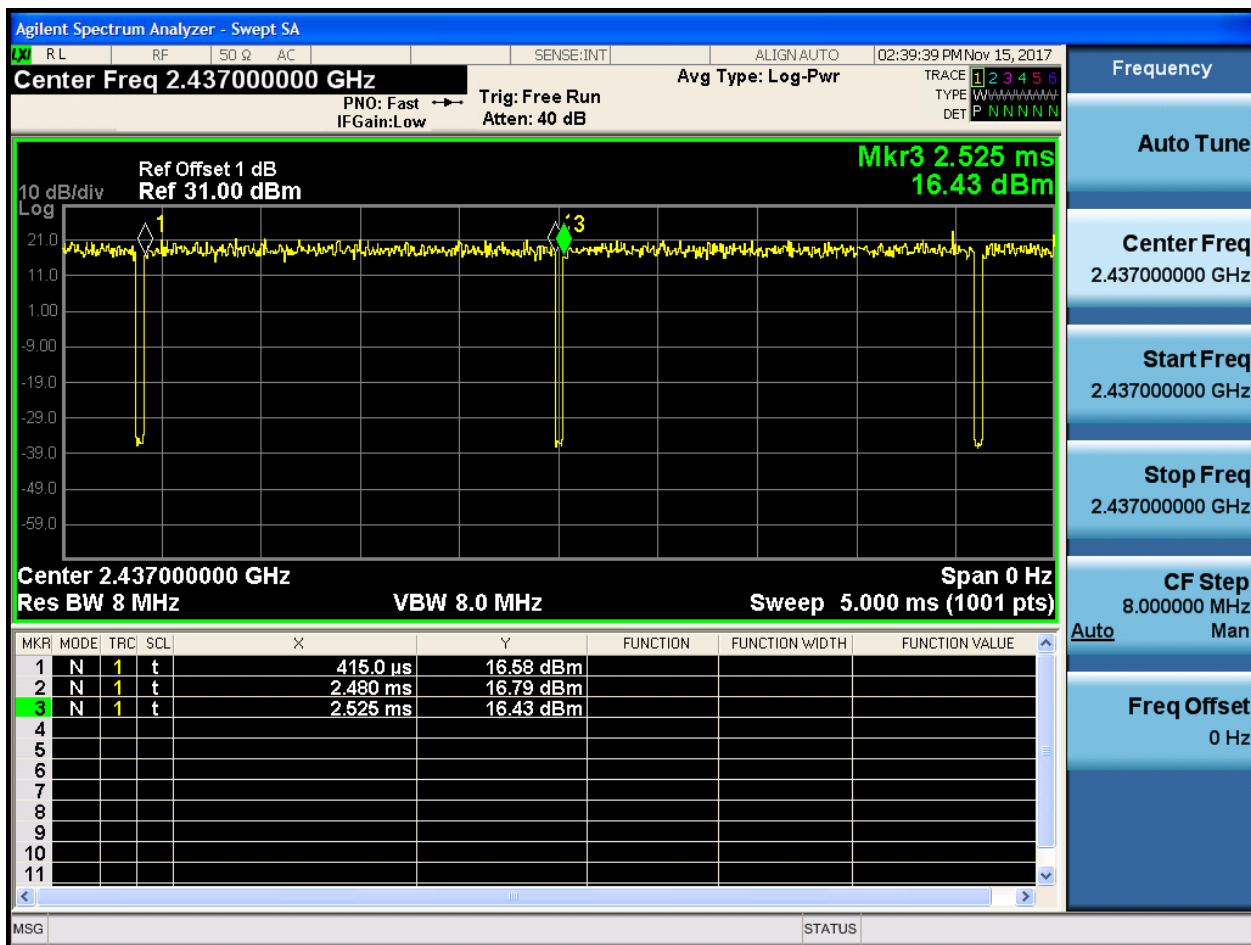
Part II - Test Plots

2.1 11B



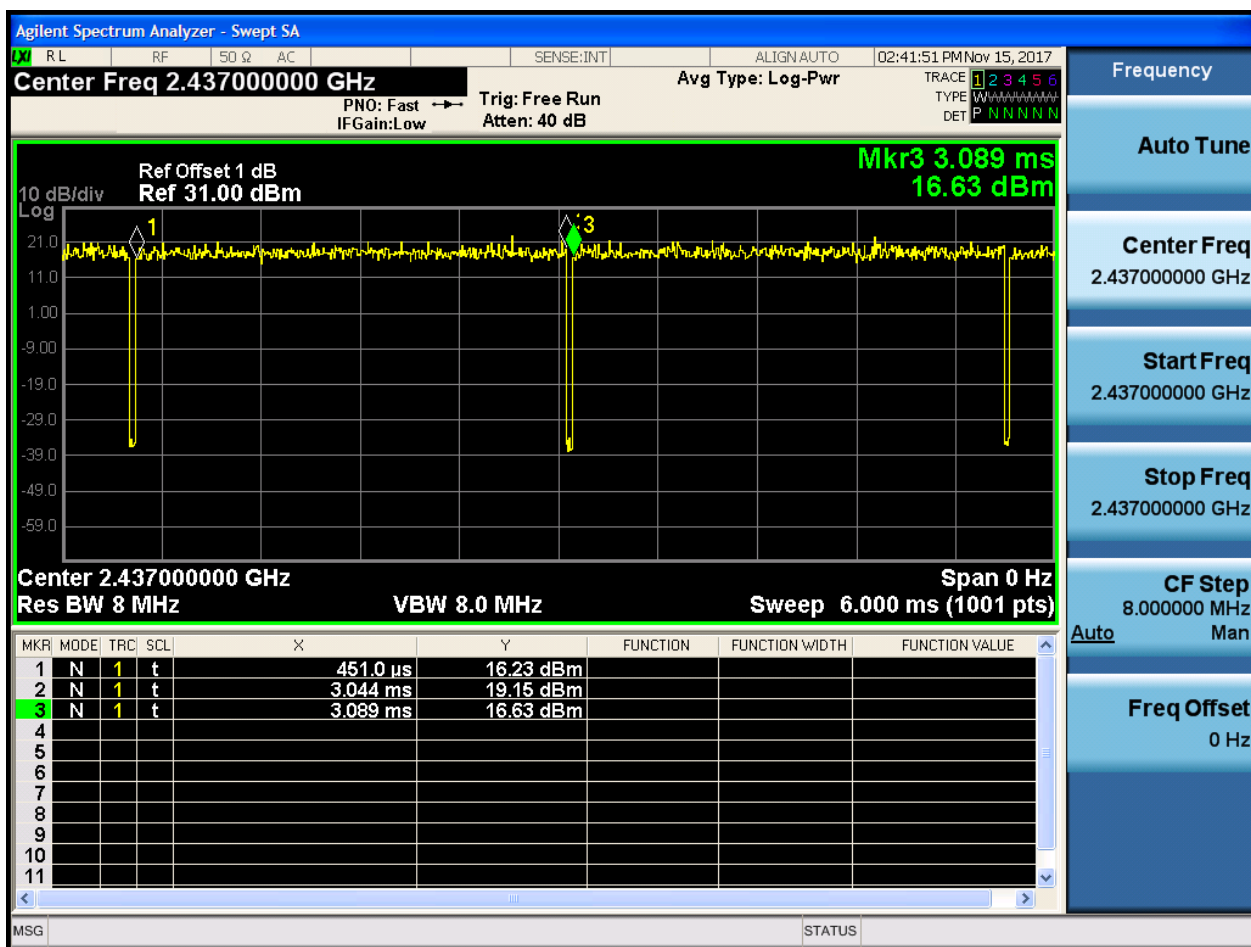


2.2 11G



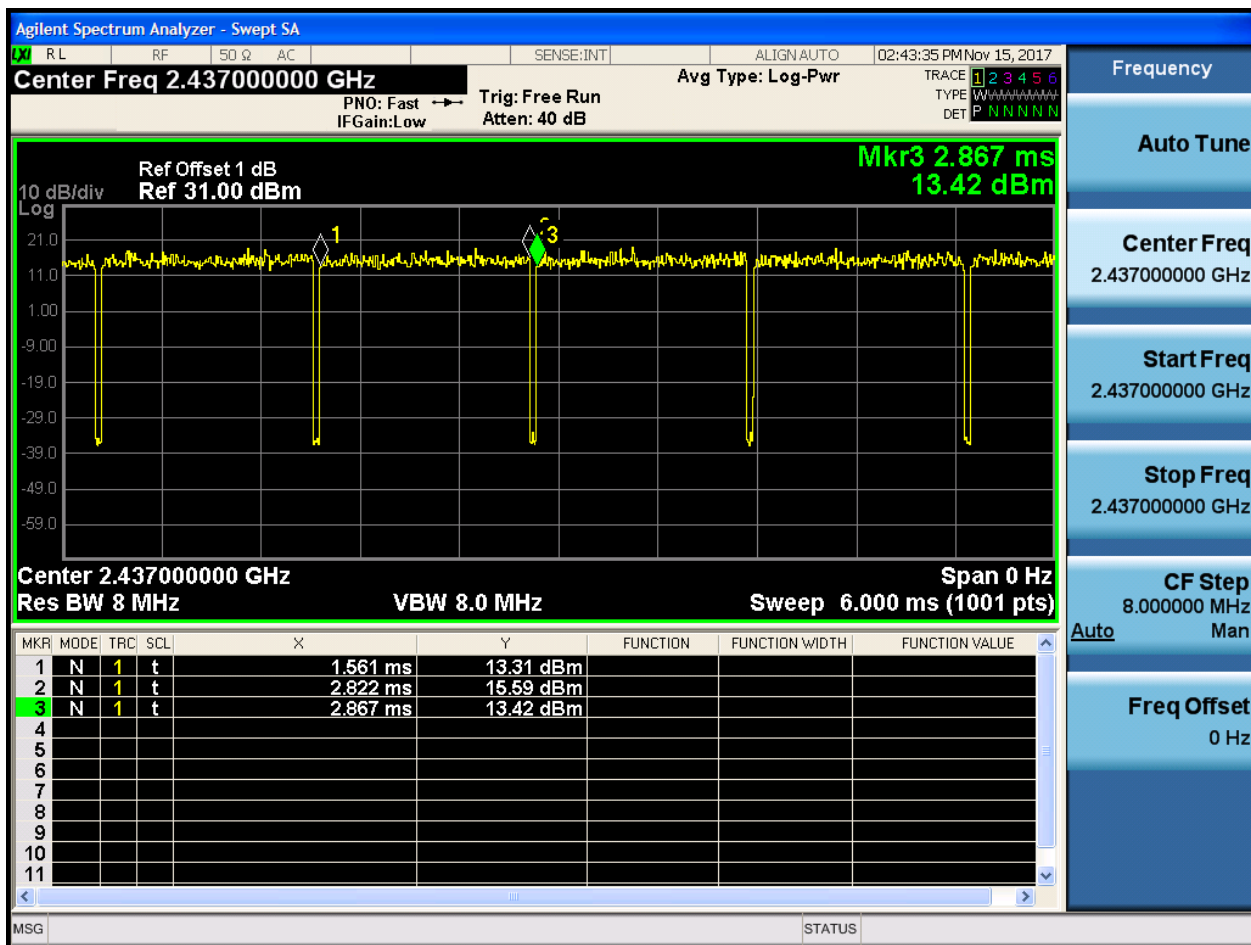


2.3 11N20





2.4 11N40



Appendix C: Maximum Conducted Average Output Power

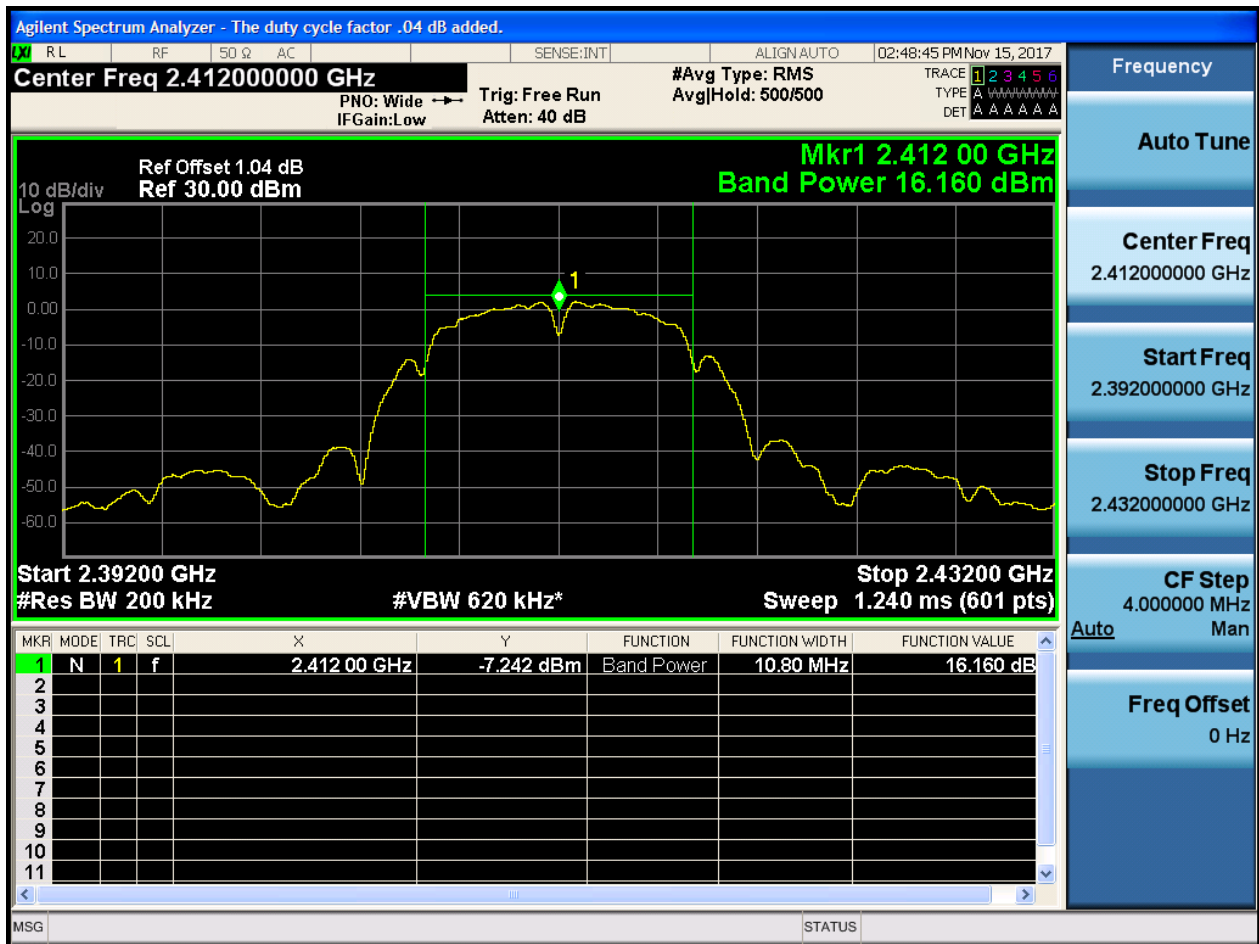
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Duty Cycle [%]	Power[dBm]	Verdict
11B	L	2412	Ant 1	99	16.16	pass
11B	M	2437	Ant 1	99	16.24	pass
11B	H	2462	Ant 1	99	16.11	pass
11G	L	2412	Ant 1	98	15.46	pass
11G	M	2437	Ant 1	98	15.64	pass
11G	H	2462	Ant 1	98	15.46	pass
11N20	L	2412	Ant 1	98	15.50	pass
11N20	M	2437	Ant 1	98	15.66	pass
11N20	H	2462	Ant 1	98	15.46	pass
11N40	L	2422	Ant 1	97	15.54	pass
11N40	M	2437	Ant 1	97	15.36	pass
11N40	H	2452	Ant 1	97	15.36	pass



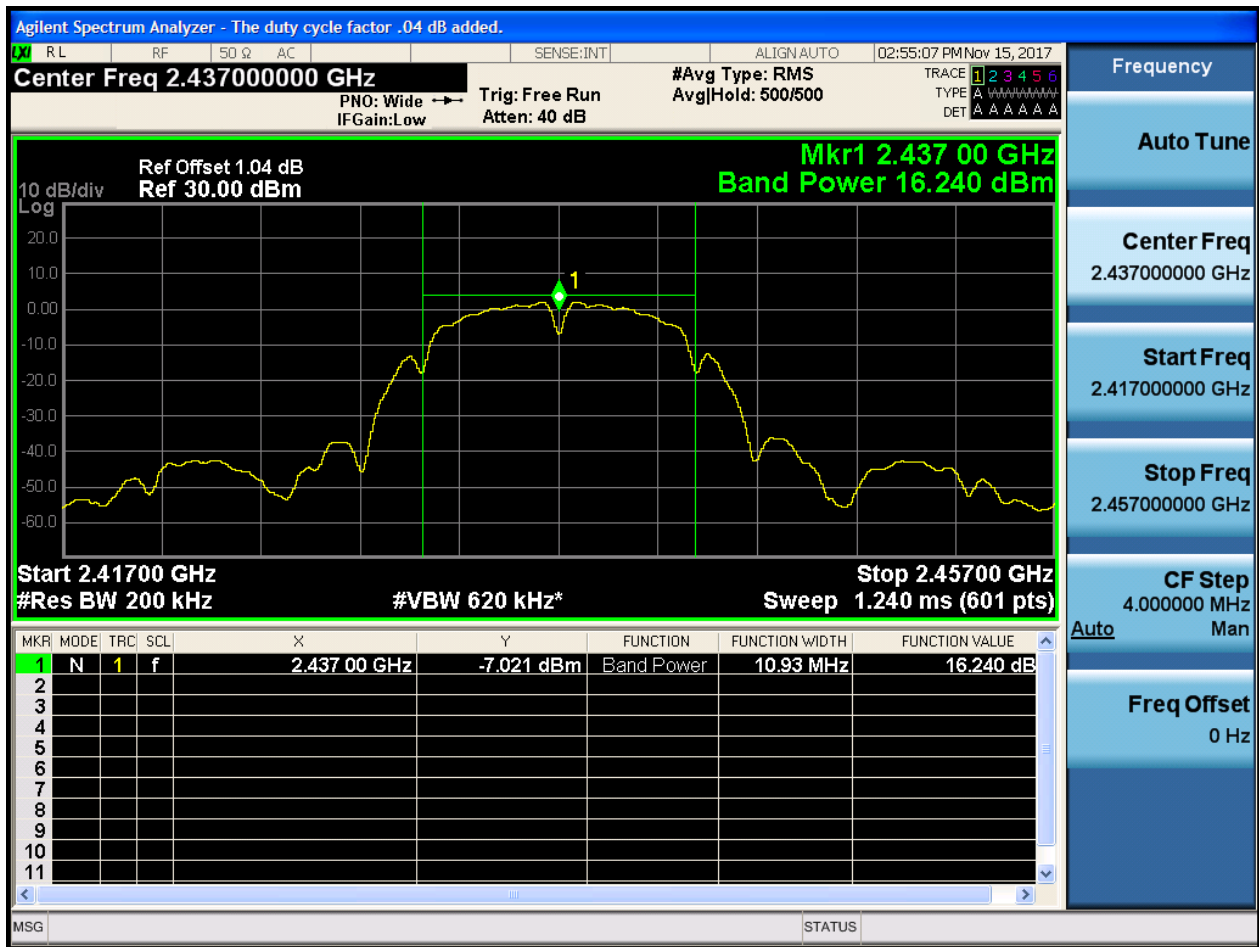
Part II - Test Plots

2.1 11B_L@Ant 1



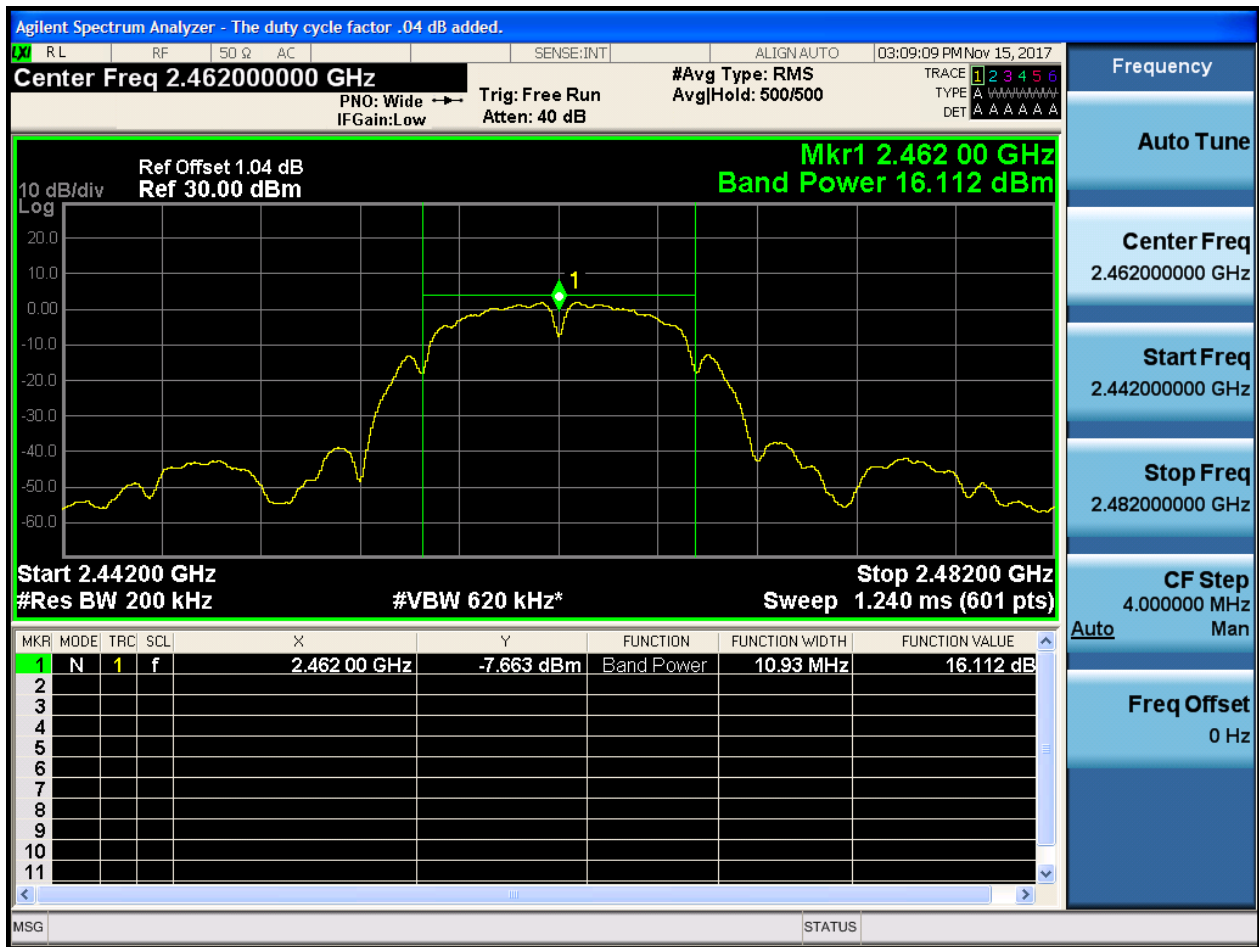


2.2 11B_M@Ant 1



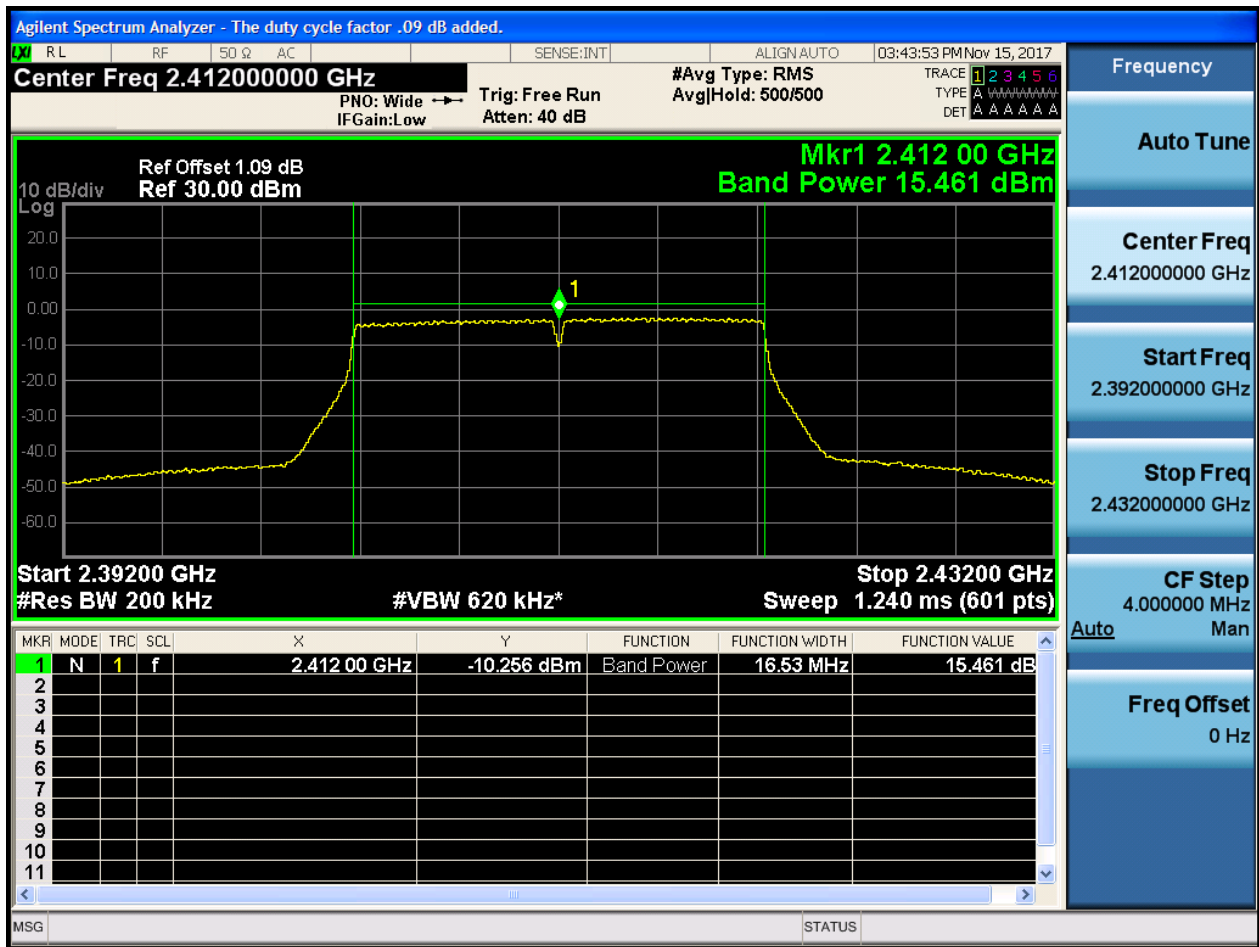


2.3 11B_H@Ant 1



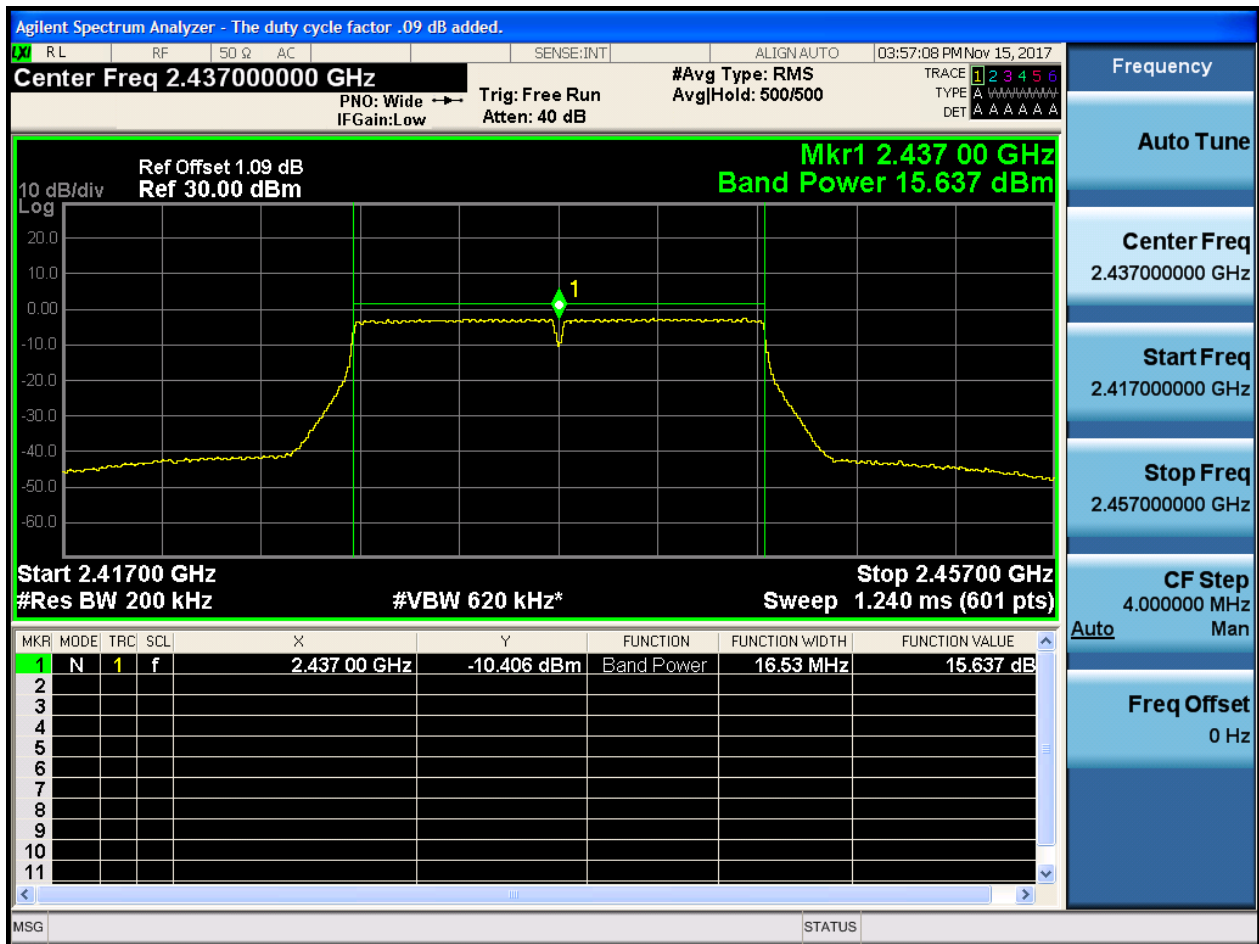


2.4 11G_L@Ant 1



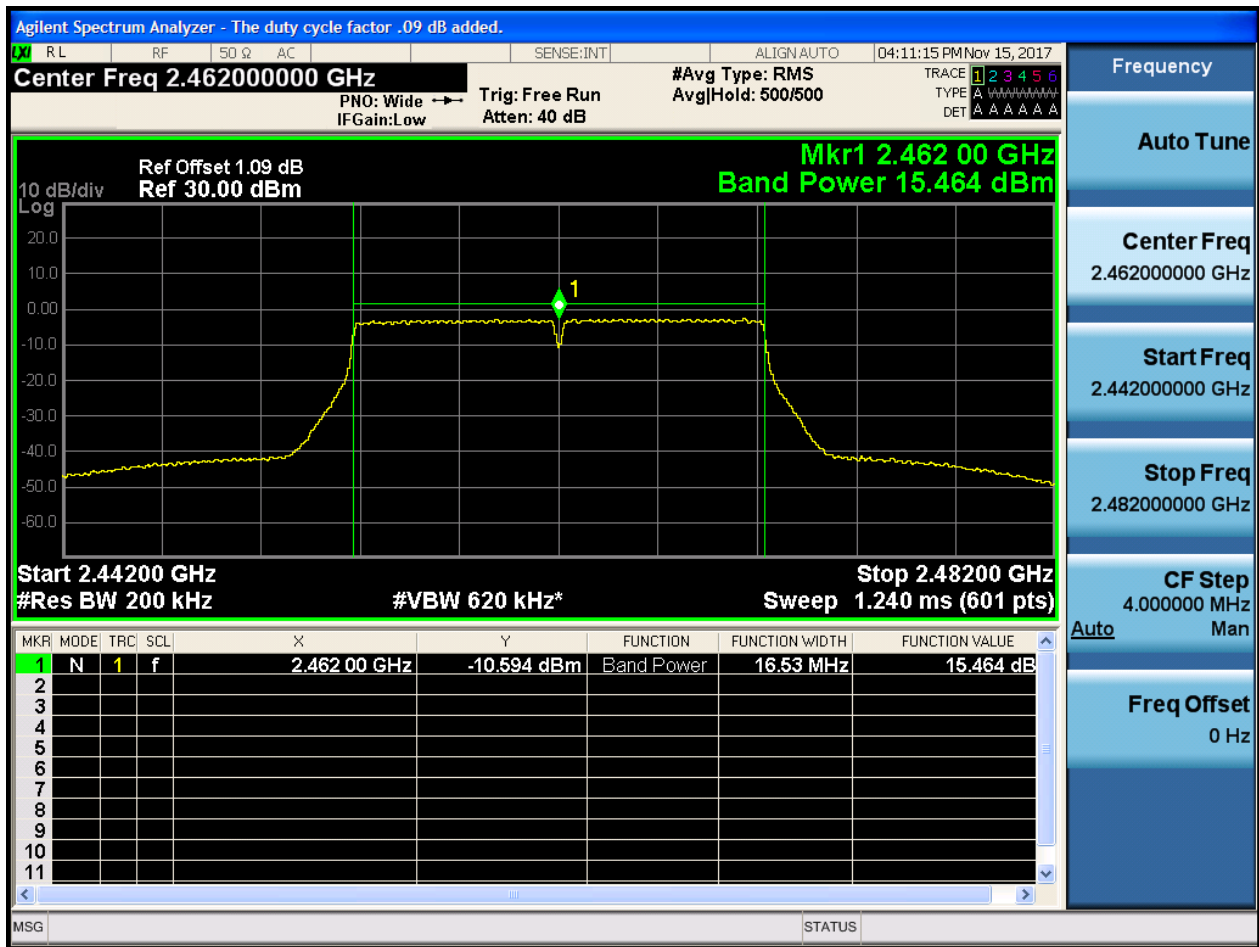


2.5 11G_M@Ant 1



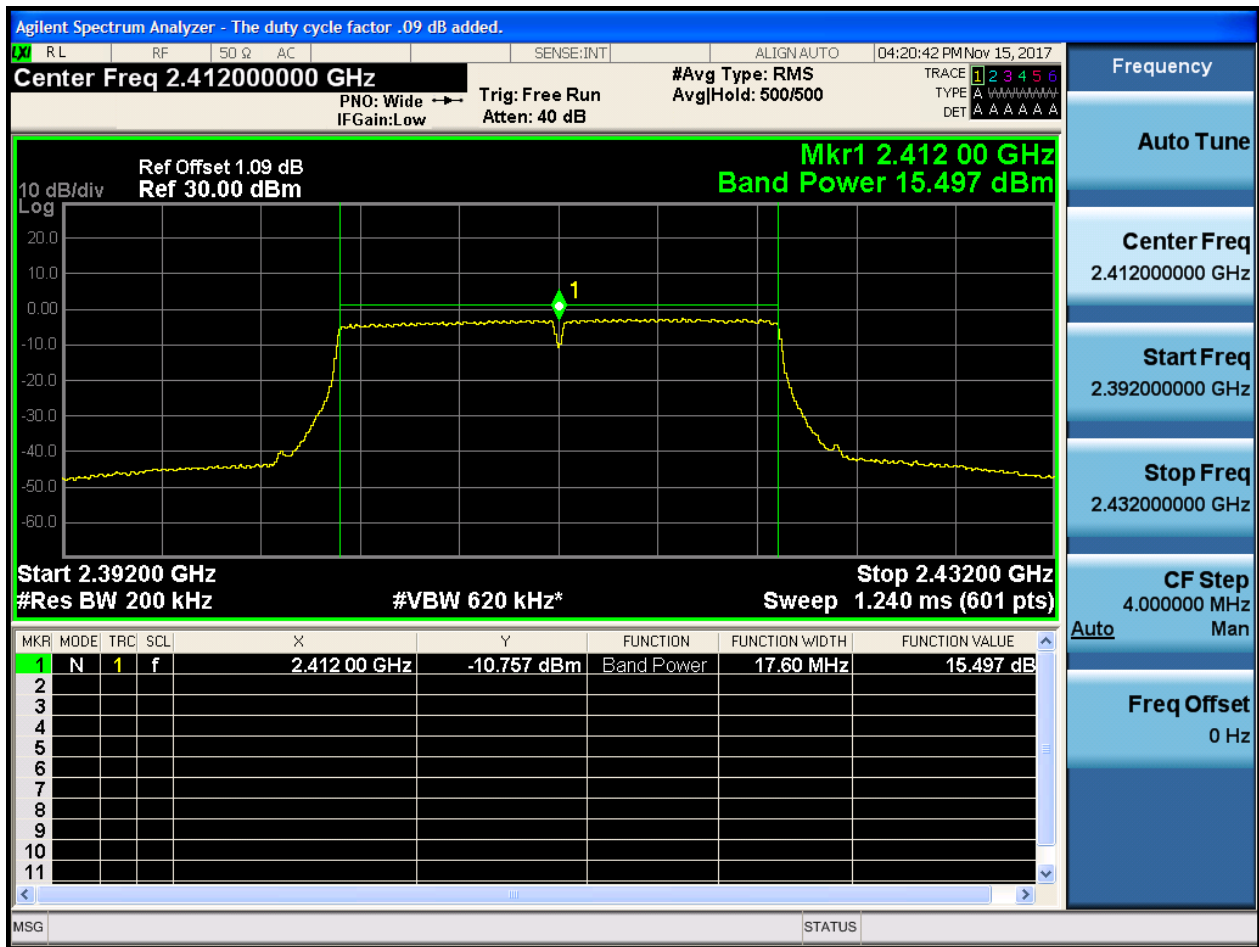


2.6 11G_H@Ant 1





2.7 11N20_L@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .09 dB added.

Center Freq 2.43700000 GHz

Ref Offset 1.09 dB
Ref 30.00 dBm

Mkr1 2.437 00 GHz
Band Power 15.658 dBm

10 dB/div
Log

Start 2.41700 GHz
#Res BW 200 kHz

Stop 2.45700 GHz
Sweep 1.240 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.437 00 GHz	-10.643 dBm	Band Power	17.73 MHz	15.658 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.43700000 GHz

Start Freq
2.41700000 GHz

Stop Freq
2.45700000 GHz

CF Step
4.000000 MHz
Man

Auto

Freq Offset
0 Hz

MSG

STATUS



Agilent Spectrum Analyzer - The duty cycle factor .09 dB added.

Center Freq 2.46200000 GHz #Avg Type: RMS Avg|Hold: 500/500

PNO: Wide Trg: Free Run IFGain: Low Atten: 40 dB

Ref Offset 1.09 dB Ref 30.00 dBm

Mkr1 2.462 00 GHz Band Power 15.462 dBm

Start 2.44200 GHz Stop 2.48200 GHz

#Res BW 200 kHz #VBW 620 kHz* Sweep 1.240 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.462 00 GHz	-10.849 dBm	Band Power	17.60 MHz	15.462 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq 2.46200000 GHz

Start Freq 2.44200000 GHz

Stop Freq 2.48200000 GHz

CF Step 4.000000 MHz

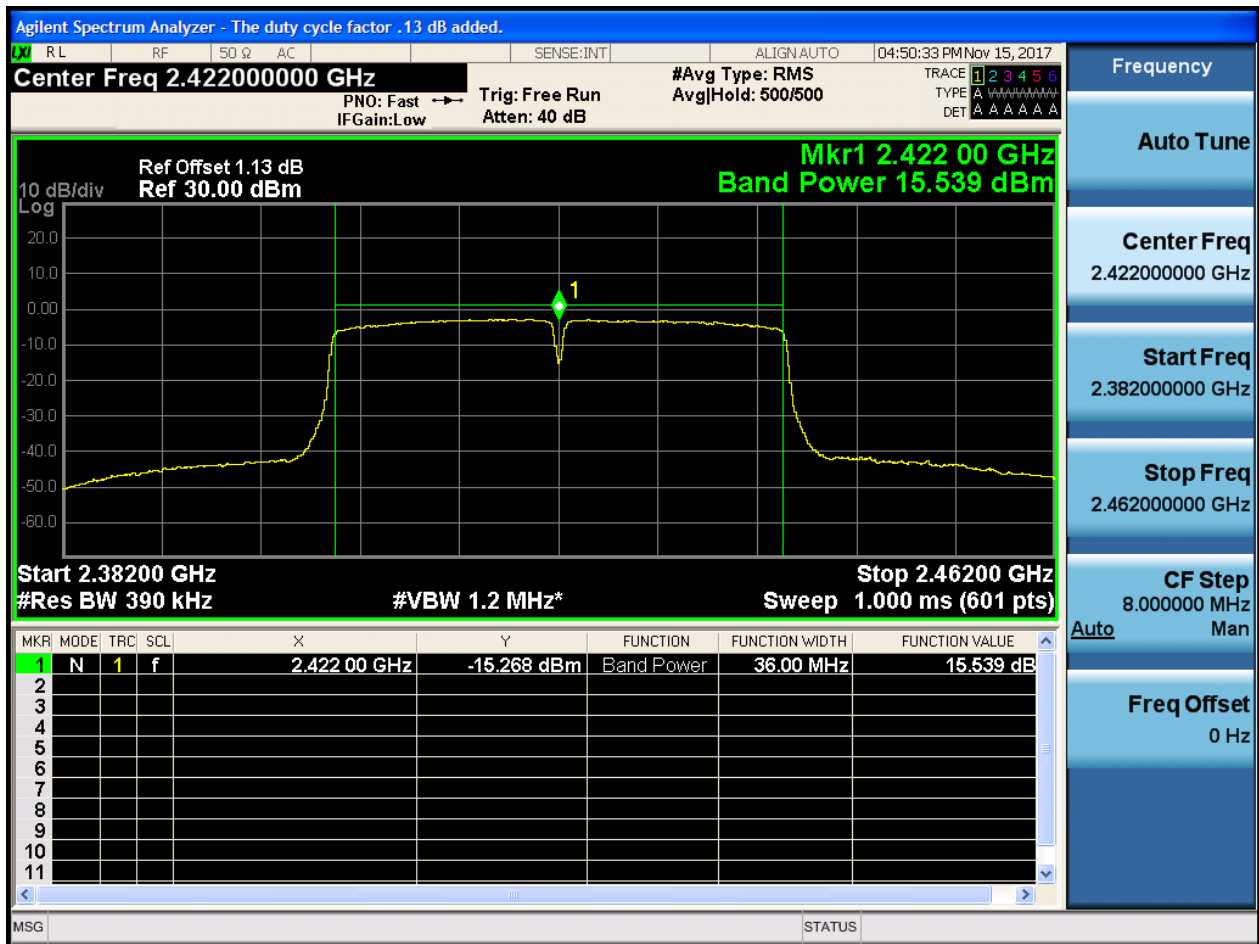
Auto Man

Freq Offset 0 Hz

MSG STATUS



2.10 11N40_L@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .13 dB added.

Center Freq 2.43700000 GHz

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

Ref Offset 1.13 dB
Ref 30.00 dBm

Mkr1 2.437 00 GHz
Band Power 15.360 dBm

Start 2.39700 GHz
#Res BW 390 kHz

Stop 2.47700 GHz
Sweep 1.000 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	-15.141 dBm	Band Power	36.27 MHz	15.360 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.43700000 GHz

Start Freq
2.39700000 GHz

Stop Freq
2.47700000 GHz

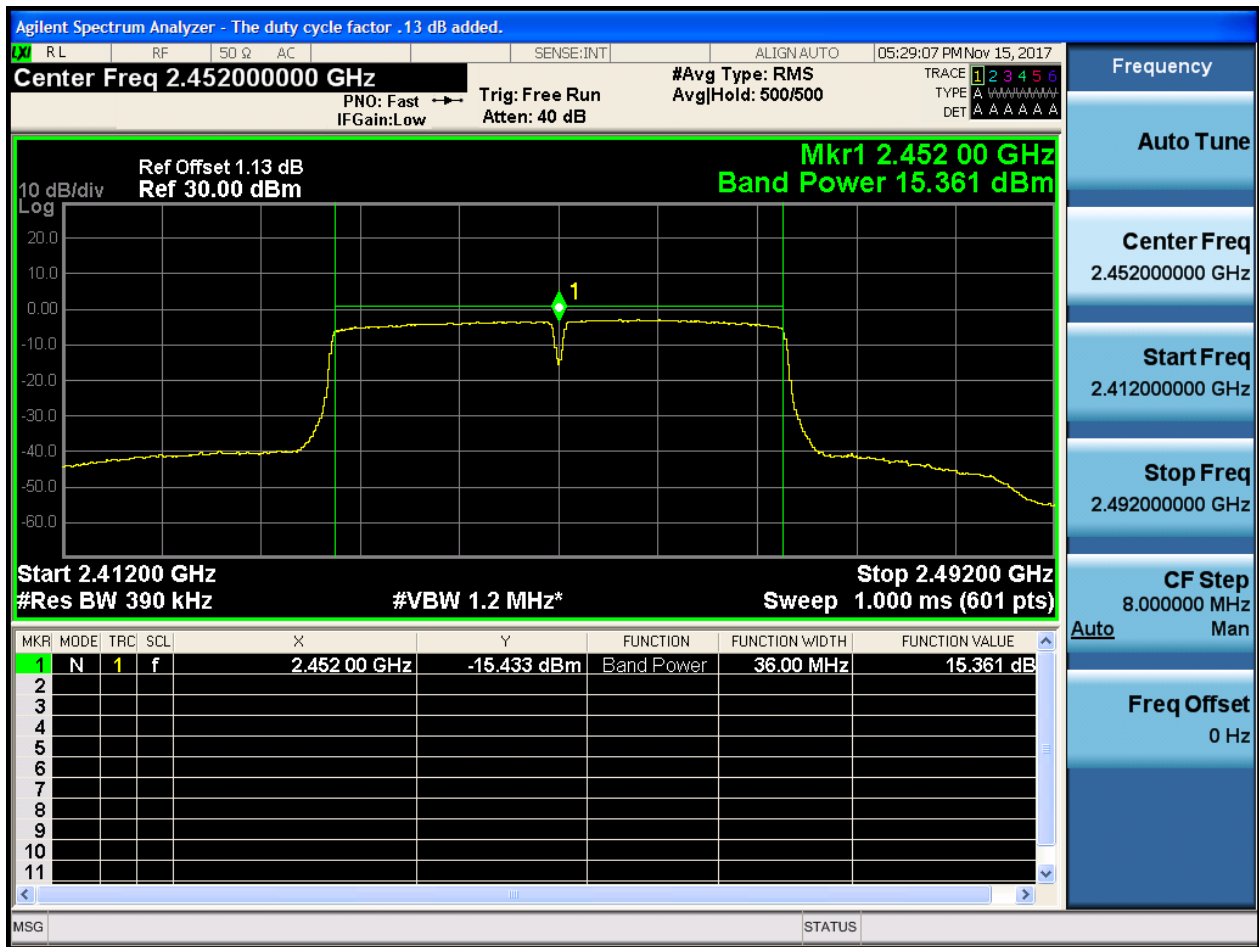
CF Step
8.000000 MHz

Auto

Freq Offset
0 Hz



2.12 11N40_H@Ant 1



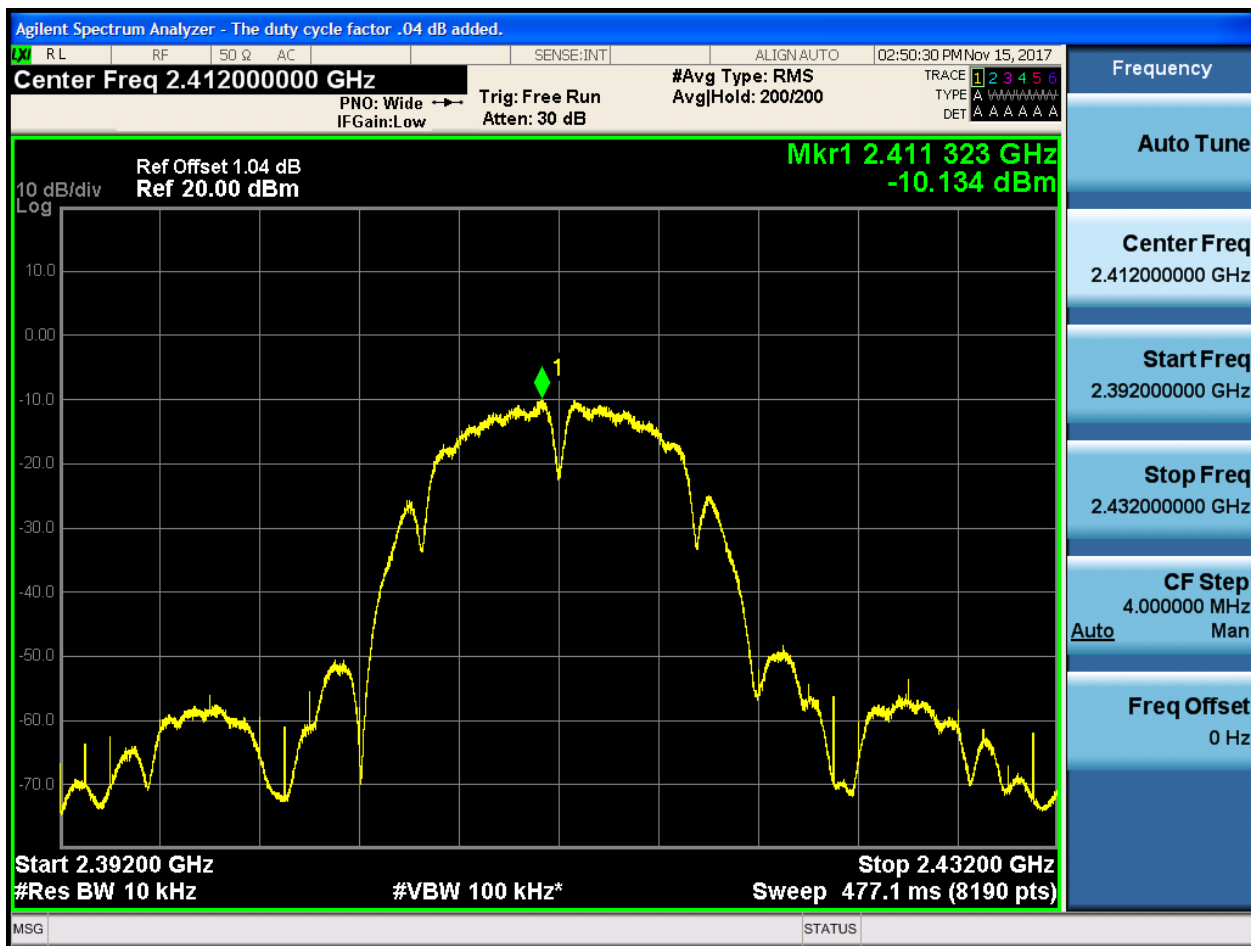
Appendix D: Maximum Power Spectral Density Level

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Duty Cycle [%]	PSD[dBm/10 kHz]	Verdict
11B	L	2412	Ant 1	99	-10.13	pass
11B	M	2437	Ant 1	99	-9.93	pass
11B	H	2462	Ant 1	99	-10.04	pass
11G	L	2412	Ant 1	98	-13.27	pass
11G	M	2437	Ant 1	98	-13.89	pass
11G	H	2462	Ant 1	98	-14.08	pass
11N20	L	2412	Ant 1	98	-14.00	pass
11N20	M	2437	Ant 1	98	-14.09	pass
11N20	H	2462	Ant 1	98	-14.14	pass
11N40	L	2422	Ant 1	97	-16.26	pass
11N40	M	2437	Ant 1	97	-17.02	pass
11N40	H	2452	Ant 1	97	-16.78	pass

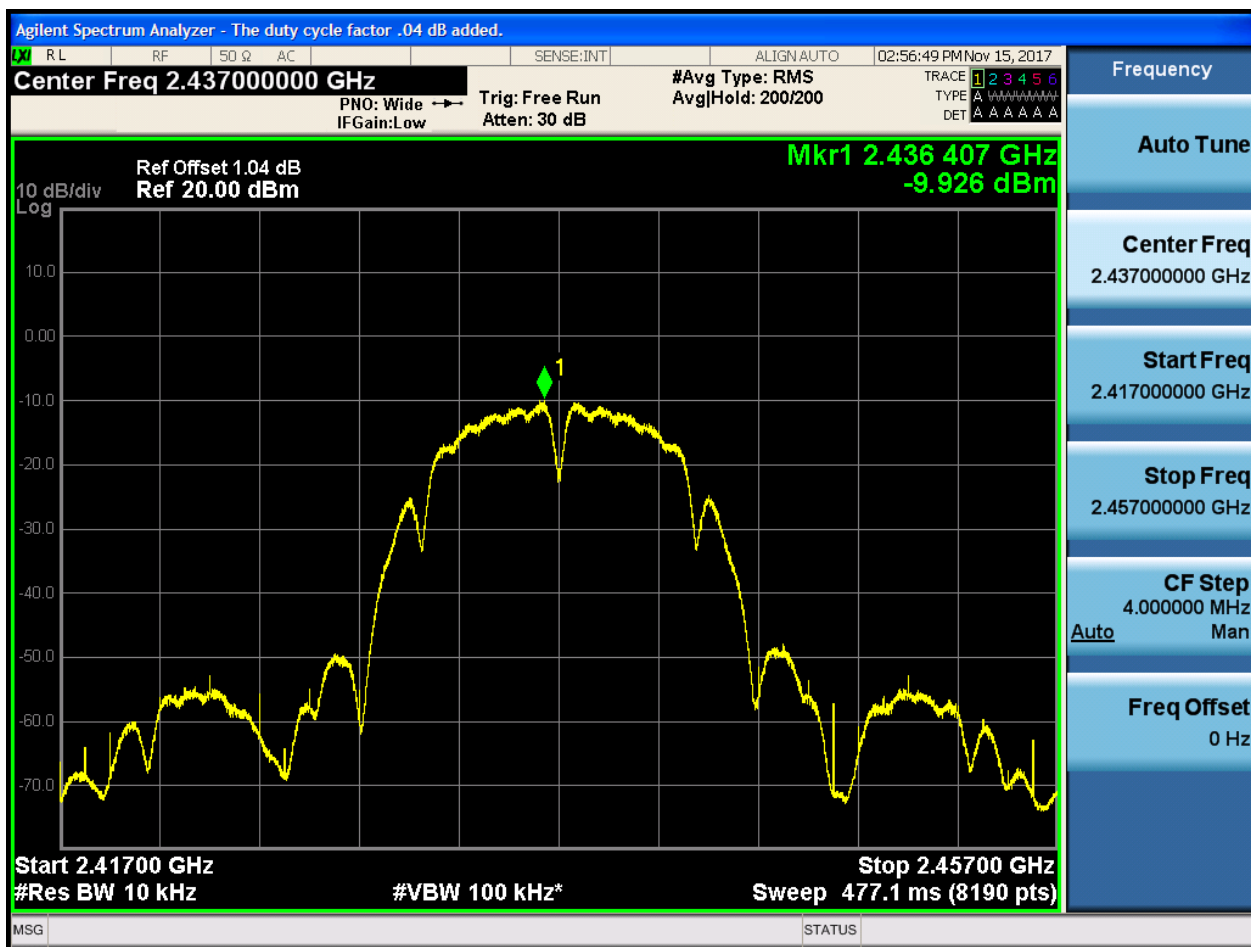
Part II - Test Plots

2.1 11B_L@Ant 1



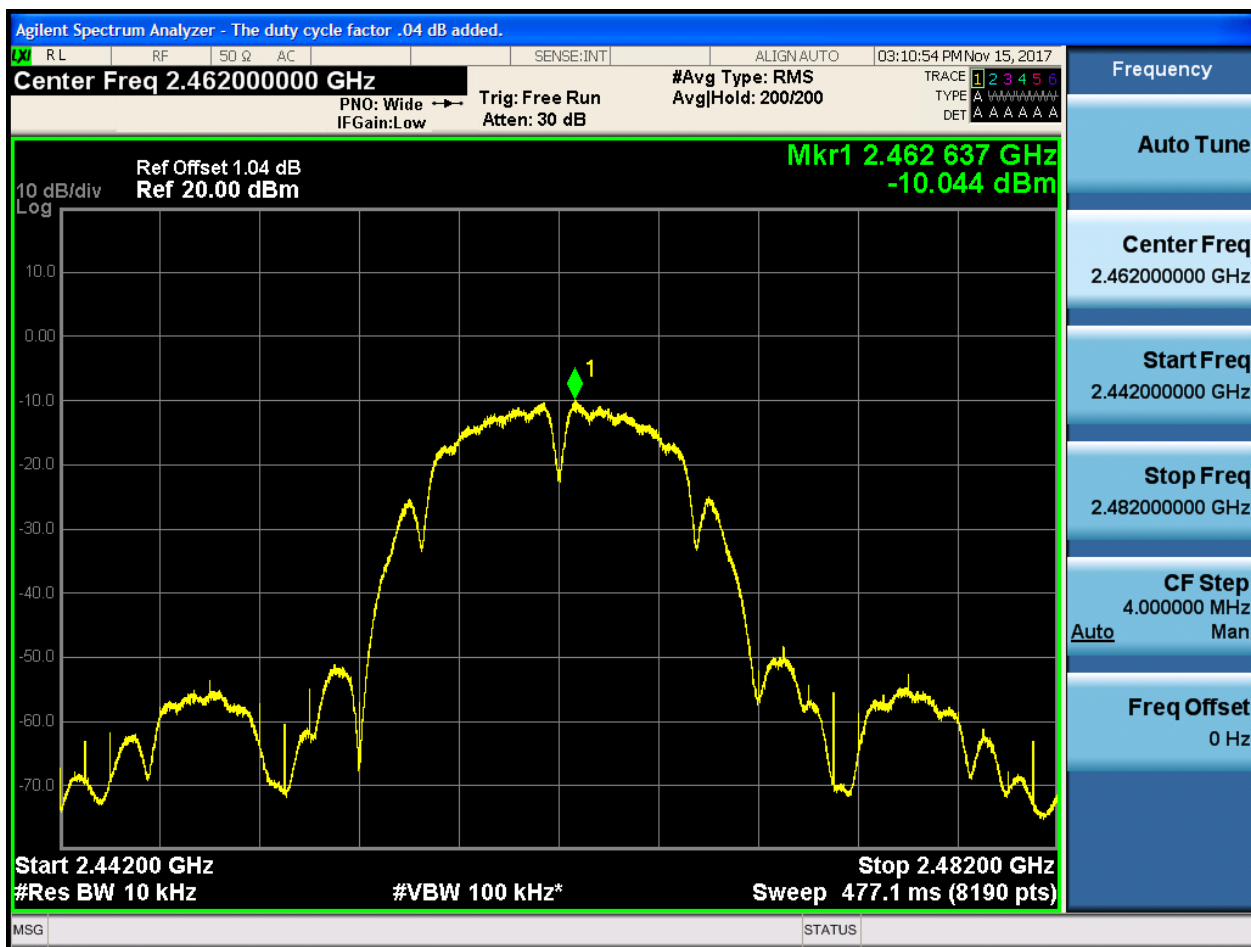


2.2 11B_M@Ant 1



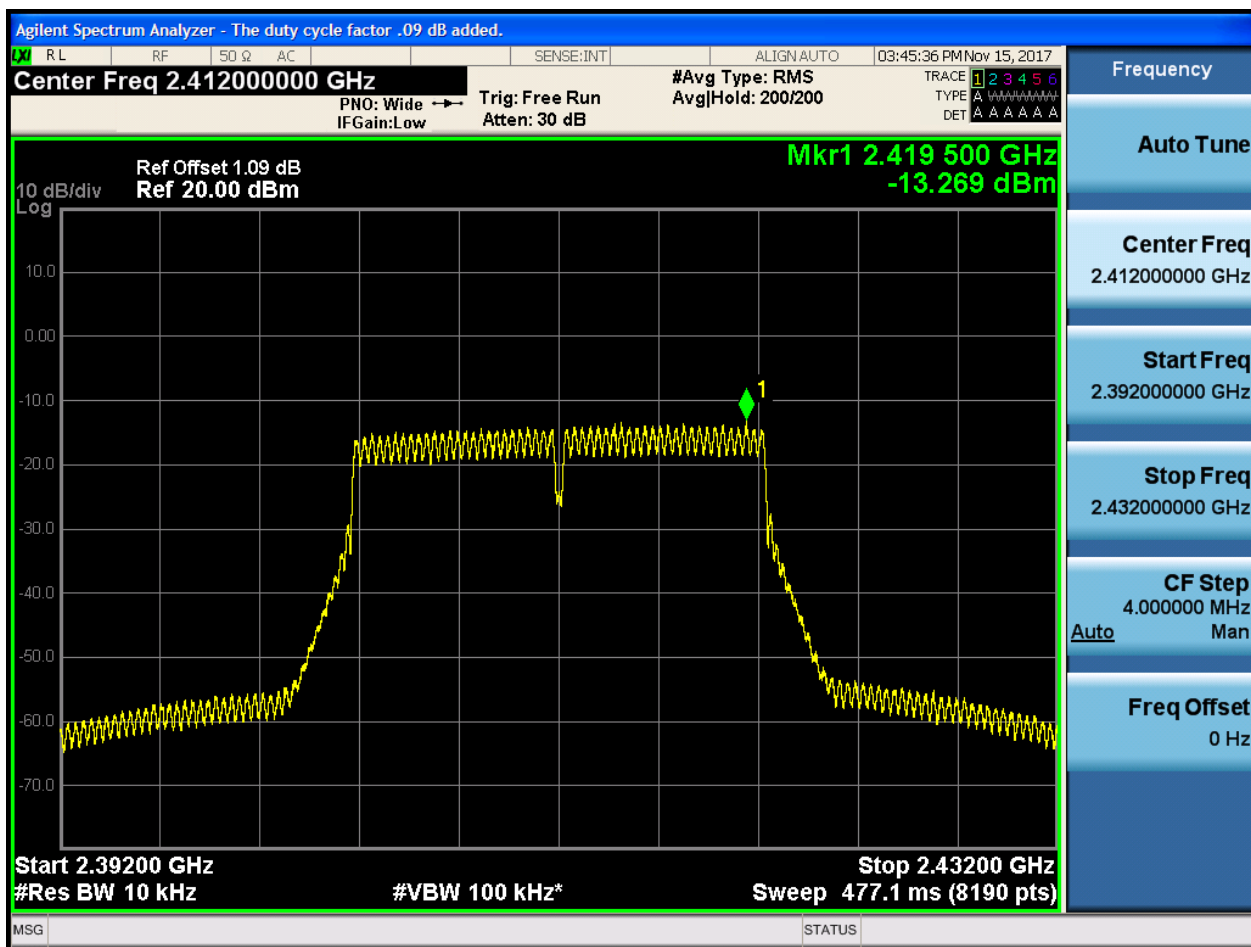


2.3 11B_H@Ant 1



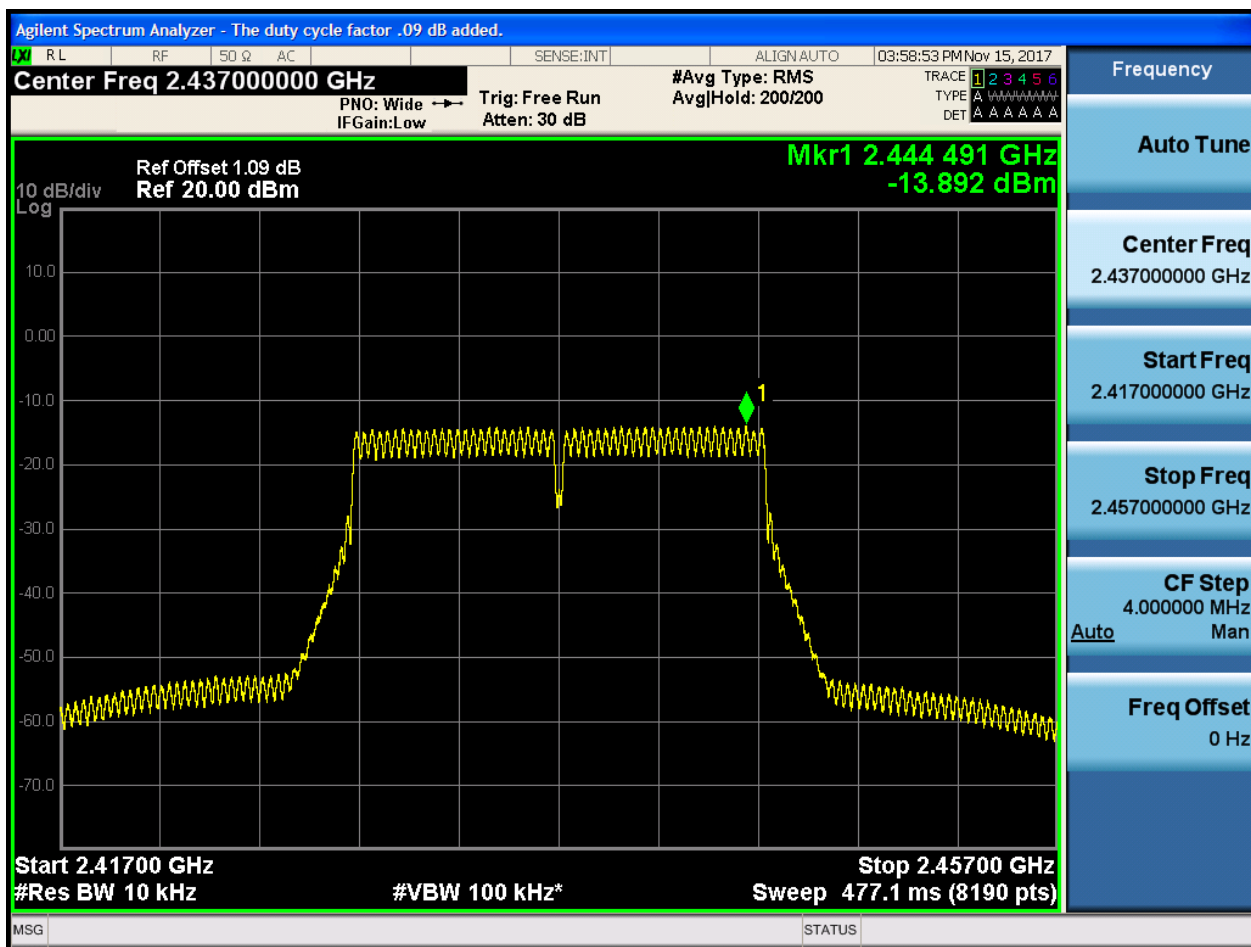


2.4 11G_L@Ant 1



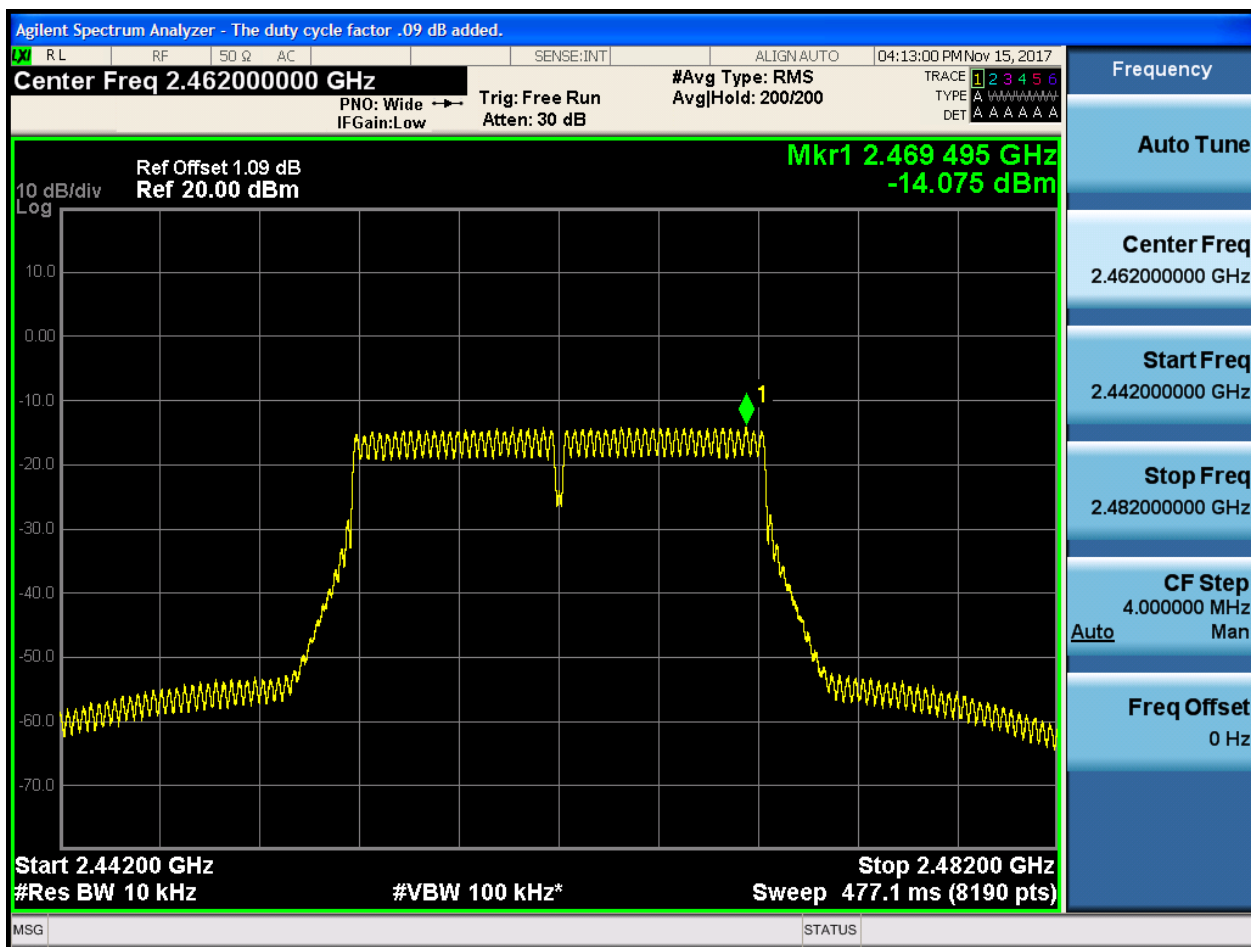


2.5 11G_M@Ant 1



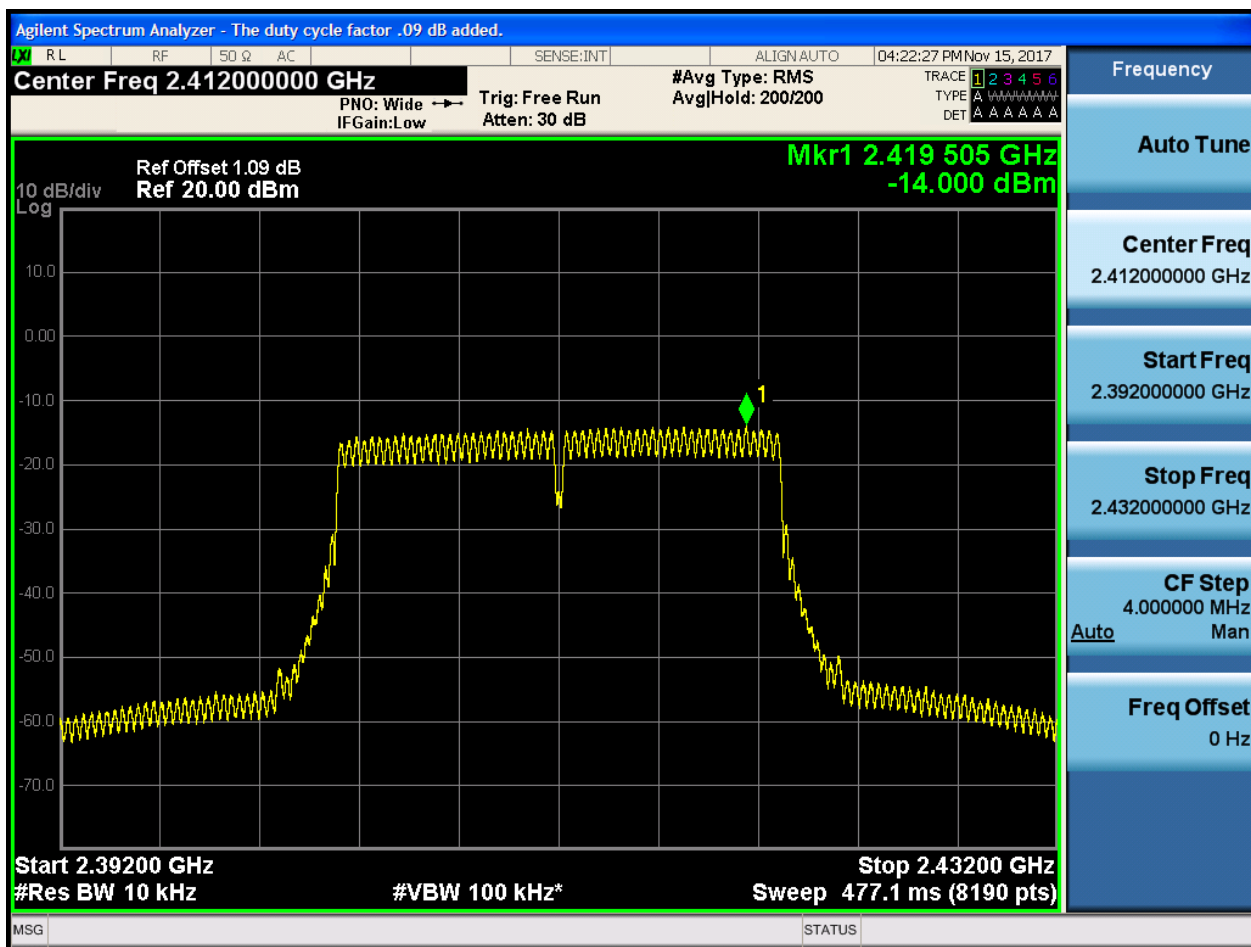


2.6 11G_H@Ant 1



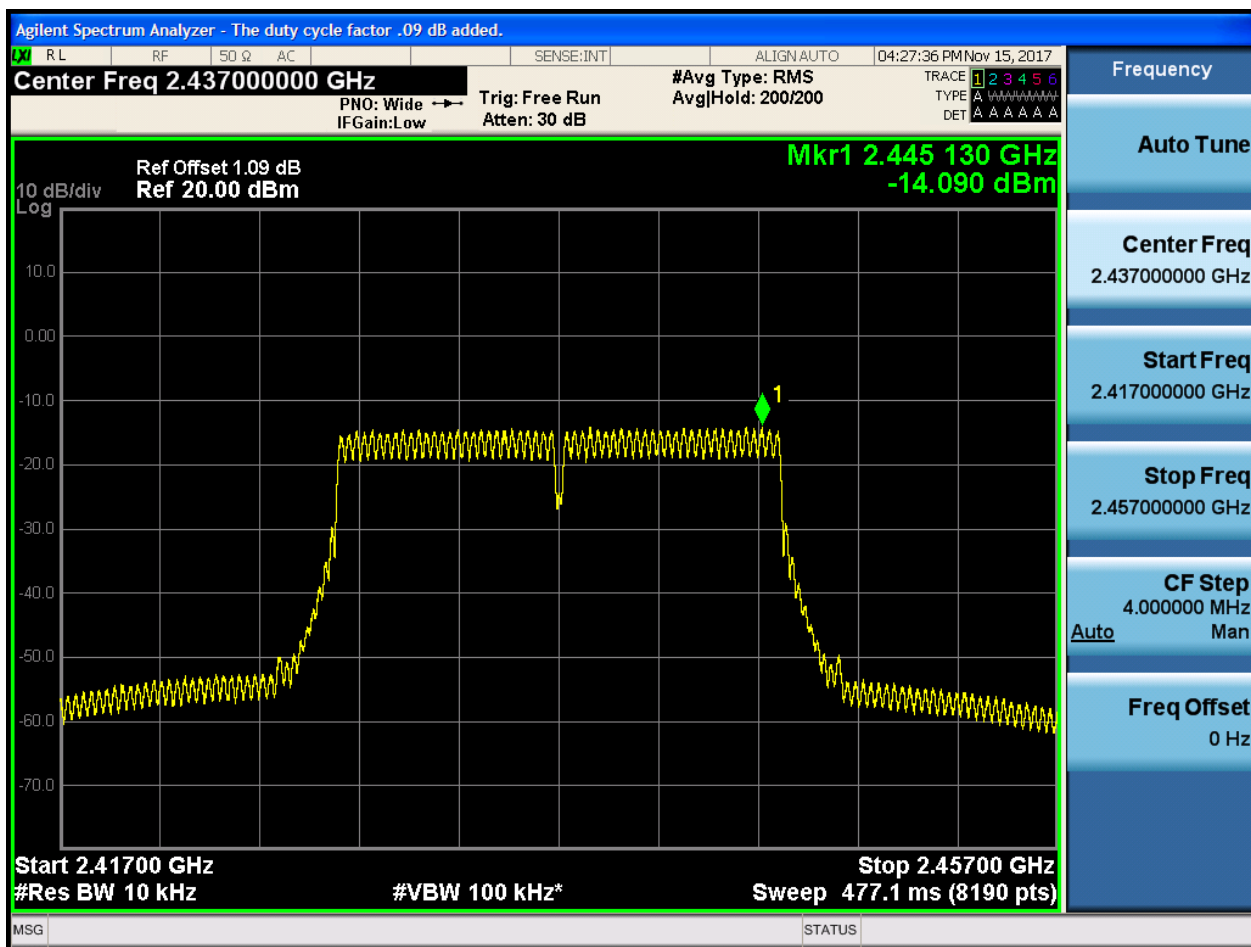


2.7 11N20_L@Ant 1



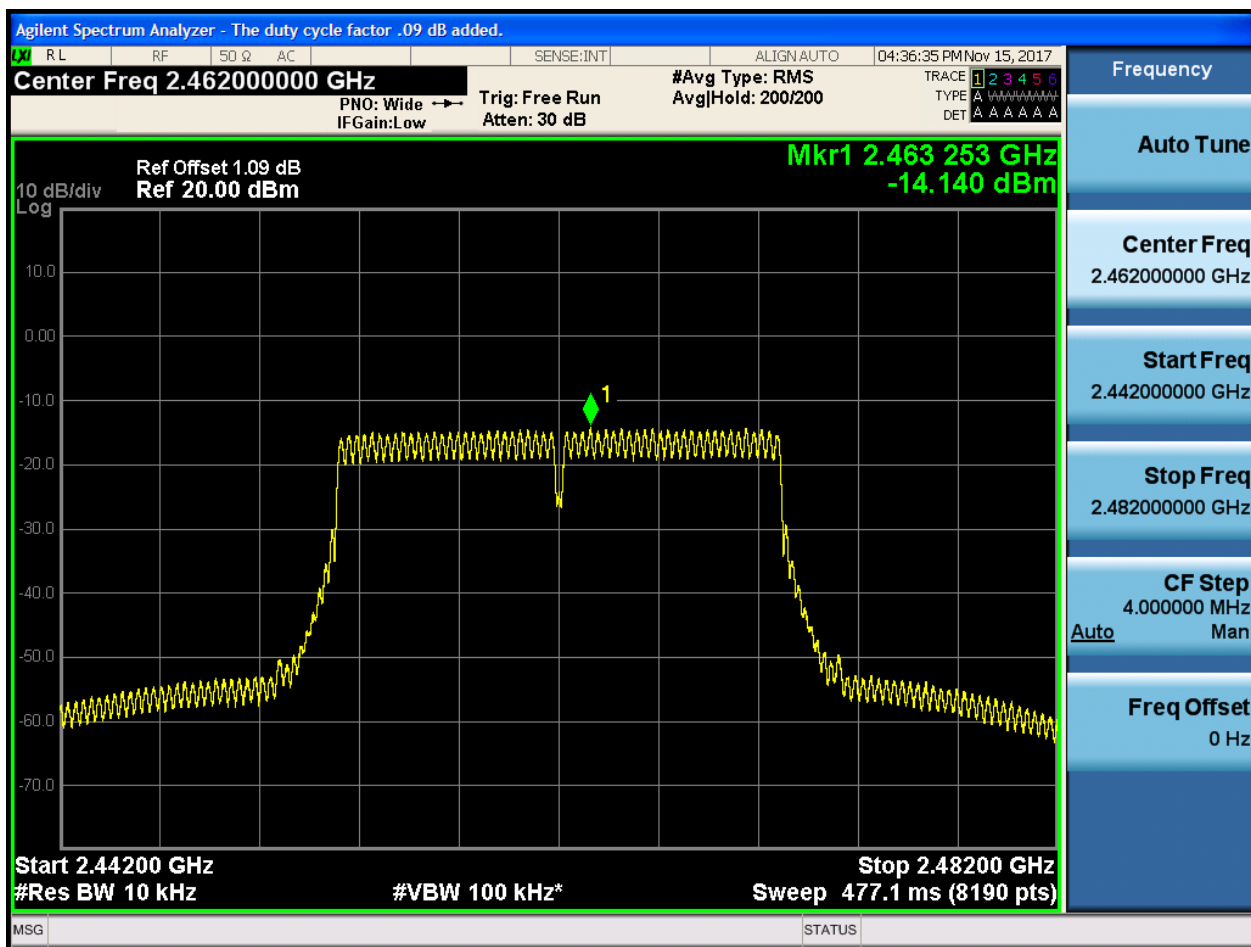


2.8 11N20_M@Ant 1



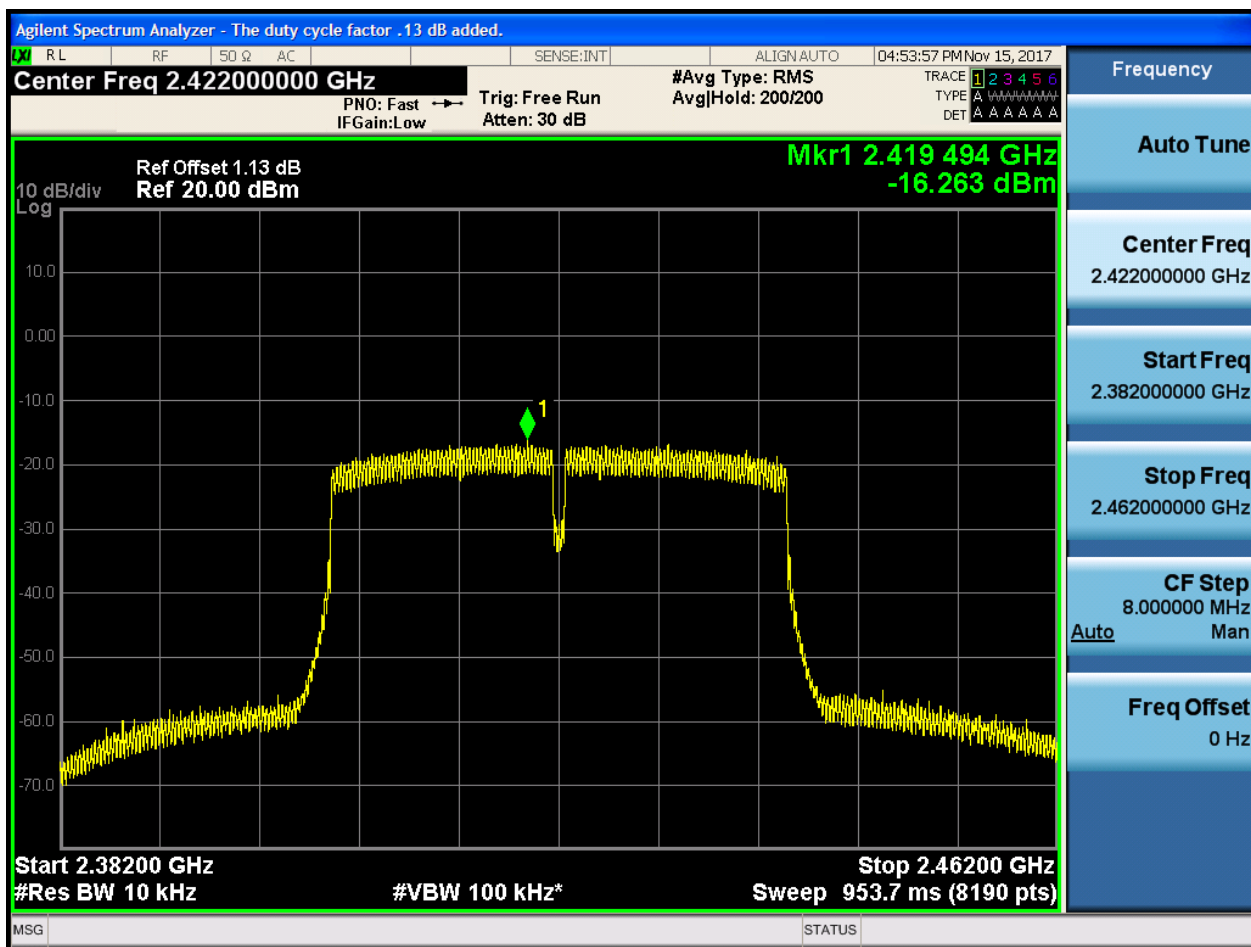


2.9 11N20_H@Ant 1



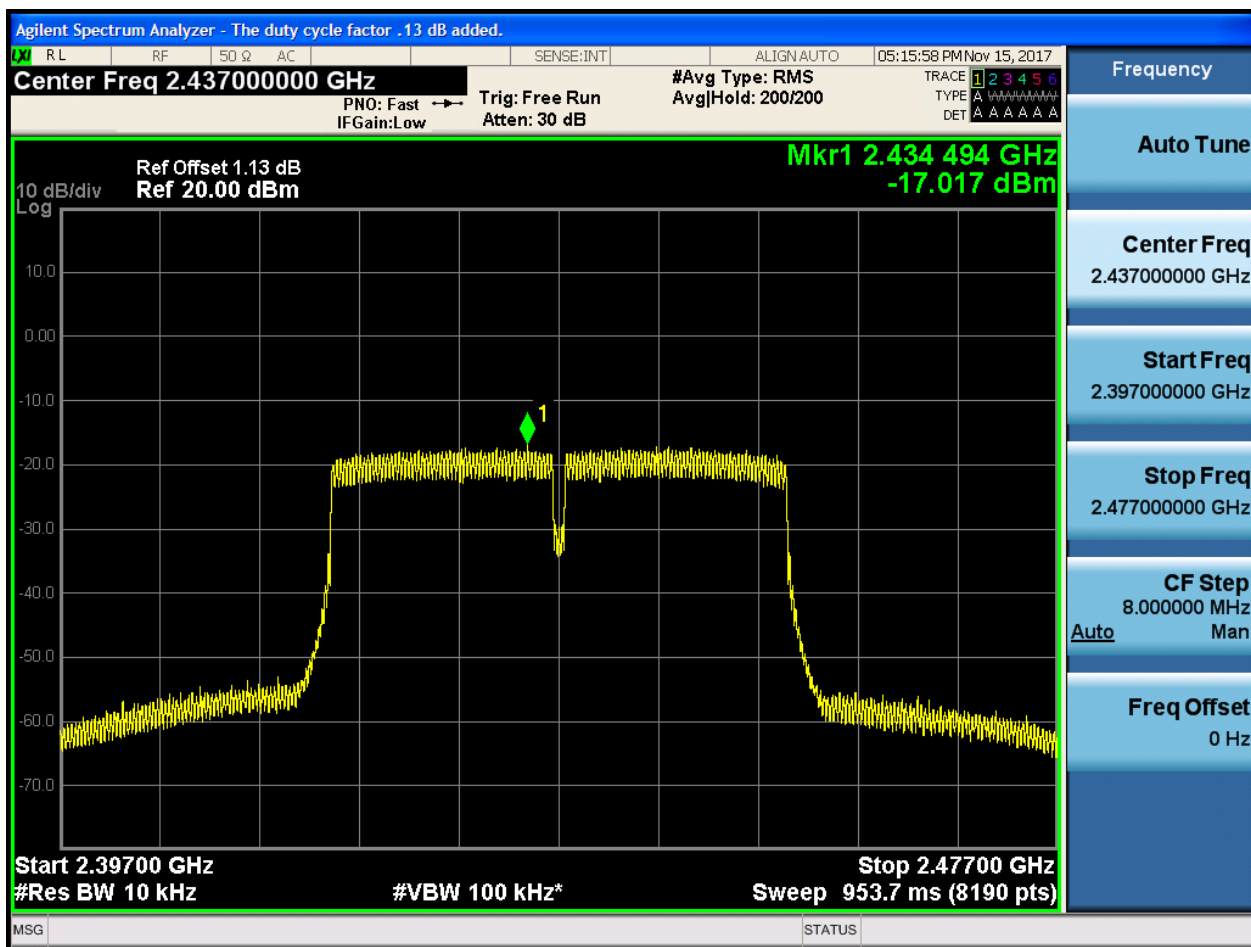


2.10 11N40_L@Ant 1



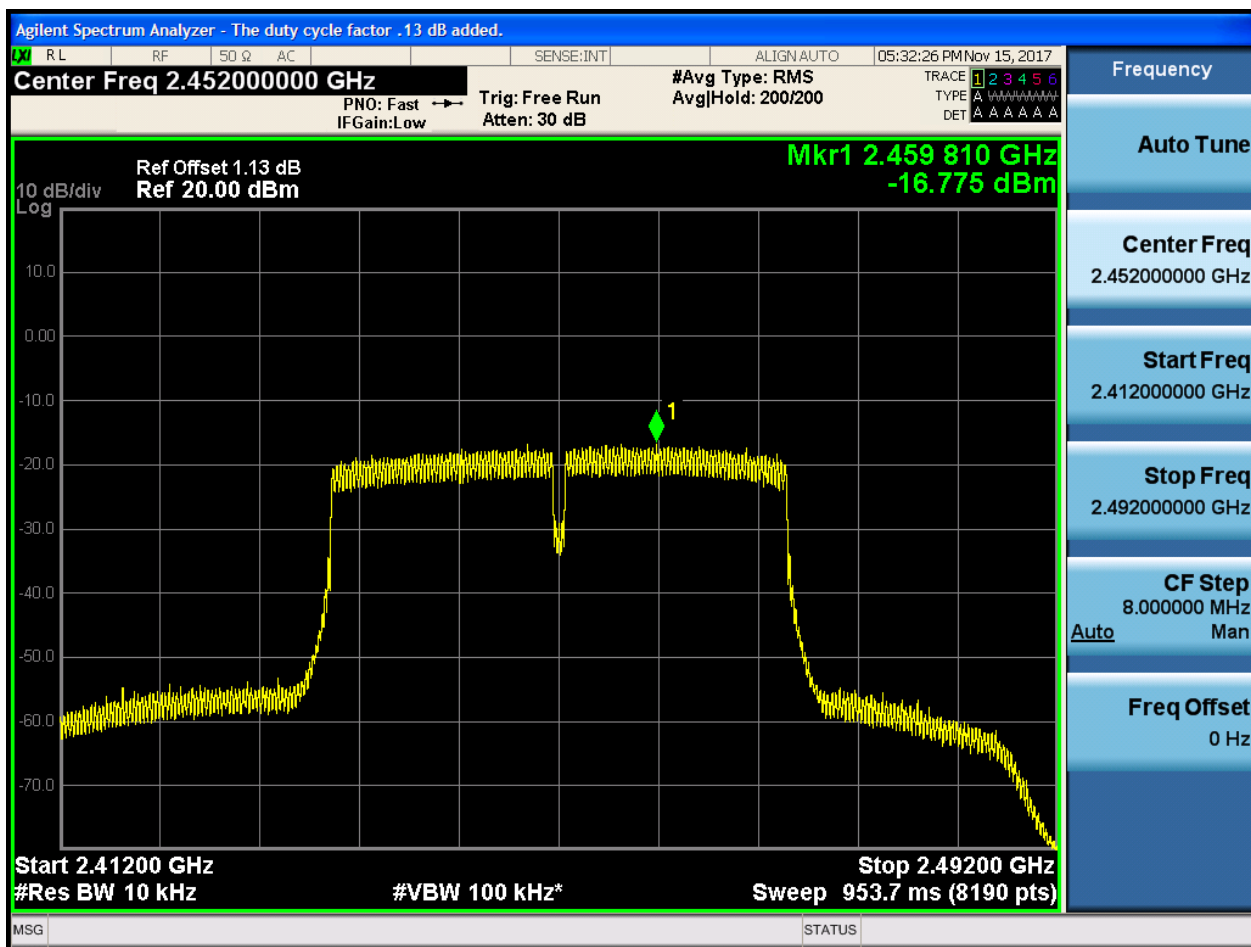


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix E: 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	8.11	-44.61	pass
11B	H	2462	Ant 1	7.86	-47.59	pass
11G	L	2412	Ant 1	3.98	-37.84	pass
11G	H	2462	Ant 1	3.89	-43.36	pass
11N20	L	2412	Ant 1	3.82	-38.35	pass
11N20	H	2462	Ant 1	3.89	-41.23	pass
11N40	L	2422	Ant 1	1.48	-39.06	pass
11N40	H	2452	Ant 1	1.49	-36.95	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
-47.594 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

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

10 dB/div
Log

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.462 50 GHz	7.859 dBm			
2	N	1	f	2.483 50 GHz	-47.594 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.40000000 GHz

Ref Offset 1 dB
Ref 30.00 dBm

Mkr2 2.400 00 GHz
-37.841 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
2.400000000 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	2.417 00 GHz	3.983 dBm			
2	N	1	f	2.400 00 GHz	-37.841 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.473500000 GHz

Ref Offset 1 dB
Ref 30.00 dBm

Mkr2 2.483 50 GHz
-43.358 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

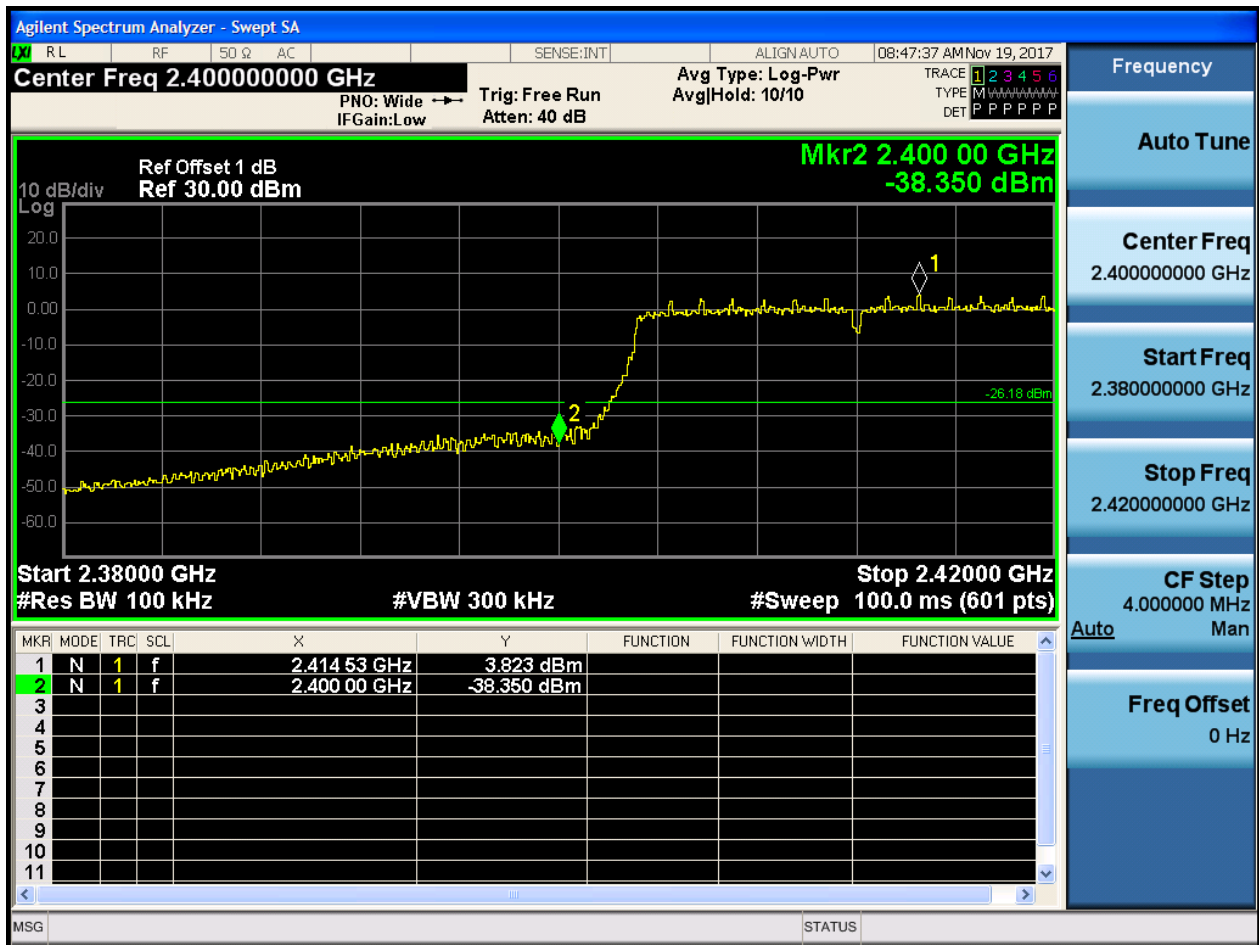
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.469 50 GHz	3.886 dBm			
2	N	1	f	2.483 50 GHz	-43.358 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS



2.5 11N20_L@Ant 1





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 IF Gain: Low Atten: 40 dB TYPE M DET P P P P P

Ref Offset 1 dB Ref 30.00 dBm Mkr2 2.400 00 GHz -39.056 dBm

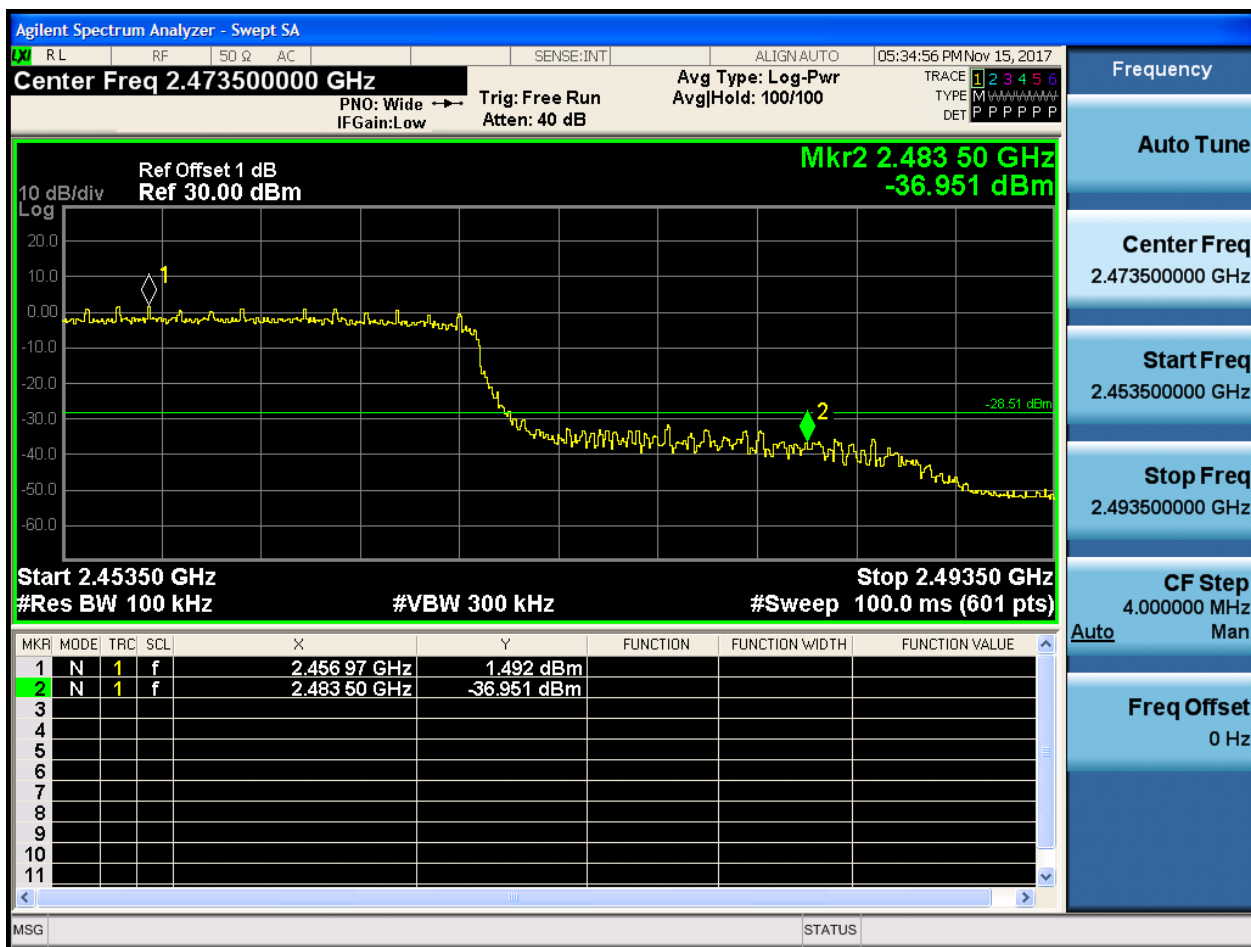
Start 2.38000 GHz Stop 2.42000 GHz
#Res BW 100 kHz #VBW 300 kHz #Sweep 100.0 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.414 53 GHz	-1.495 dBm			
2	N	1	f	2.400 00 GHz	-39.056 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

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



2.8 11N40_H@Ant 1



Appendix F: 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".

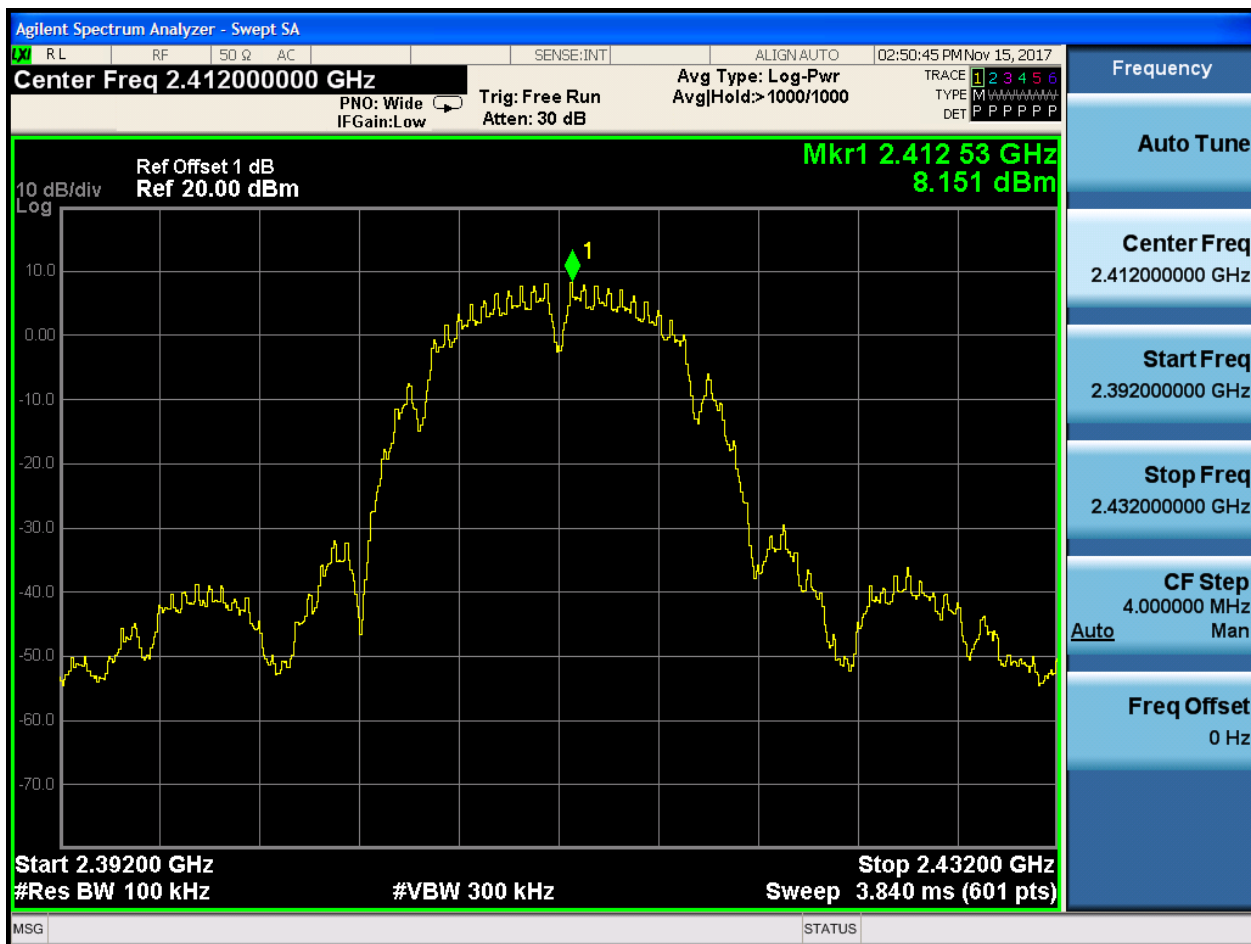
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	8.15	<limit	pass
11B	M	2437	Ant 1	7.96	<limit	pass
11B	H	2462	Ant 1	8.03	<limit	pass
11G	L	2412	Ant 1	4.42	<limit	pass
11G	M	2437	Ant 1	4.26	<limit	pass
11G	H	2462	Ant 1	4.27	<limit	pass
11N20	L	2412	Ant 1	4.06	<limit	pass
11N20	M	2437	Ant 1	4.12	<limit	pass
11N20	H	2462	Ant 1	4.23	<limit	pass
11N40	L	2422	Ant 1	1.60	<limit	pass
11N40	M	2437	Ant 1	1.44	<limit	pass
11N40	H	2452	Ant 1	1.64	<limit	pass

Part II - Test Plots

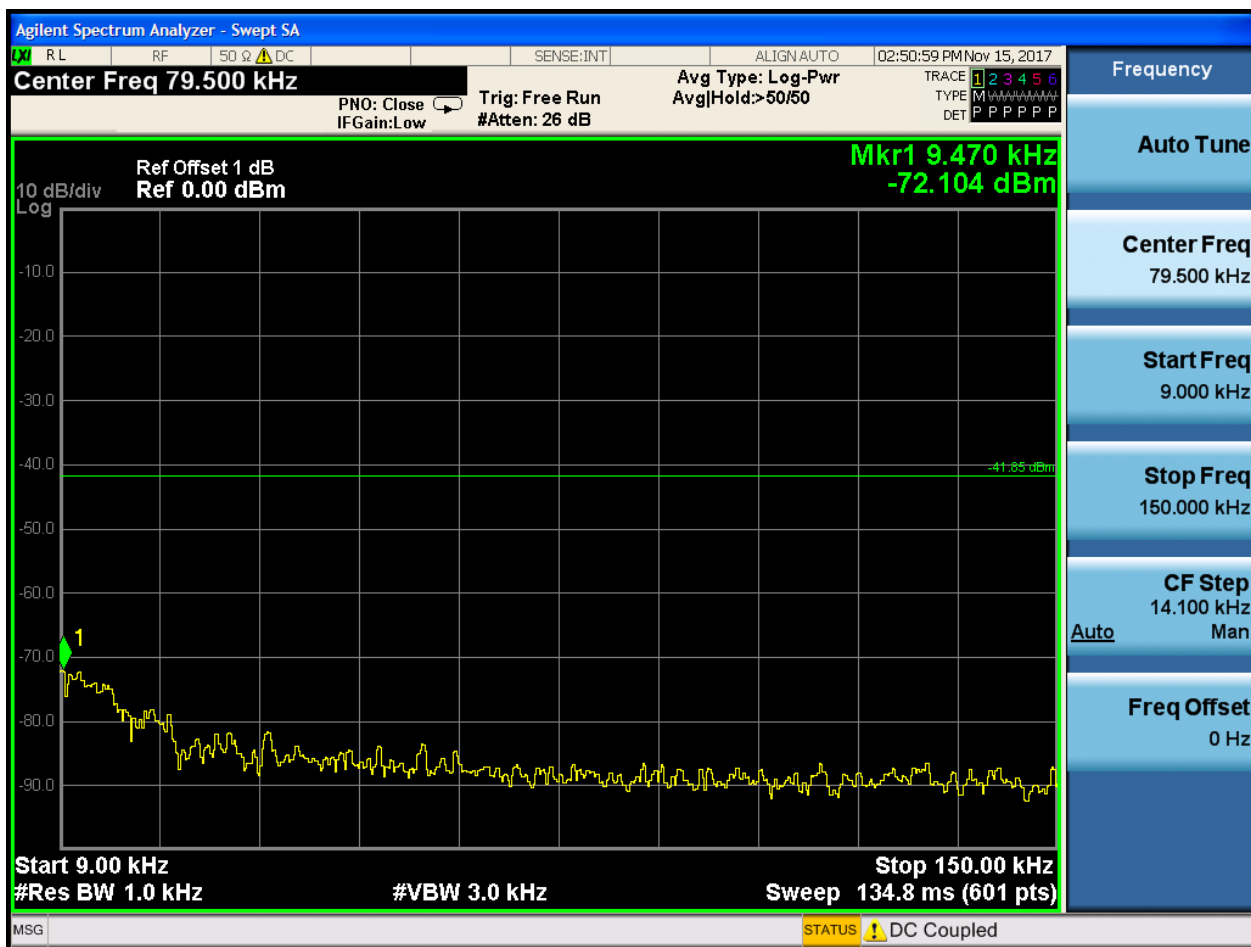
2.1 11B_L@Ant 1

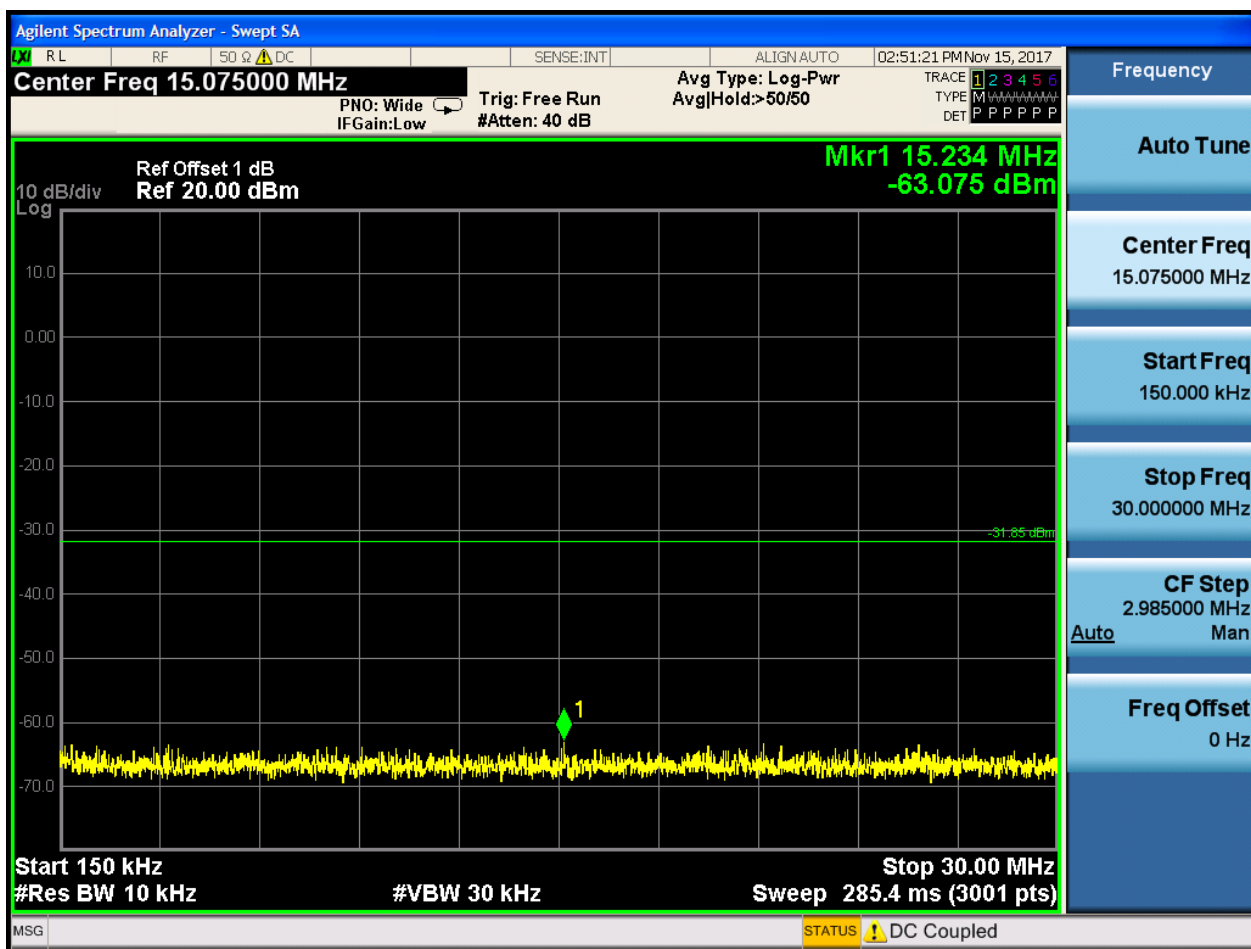
Pref:

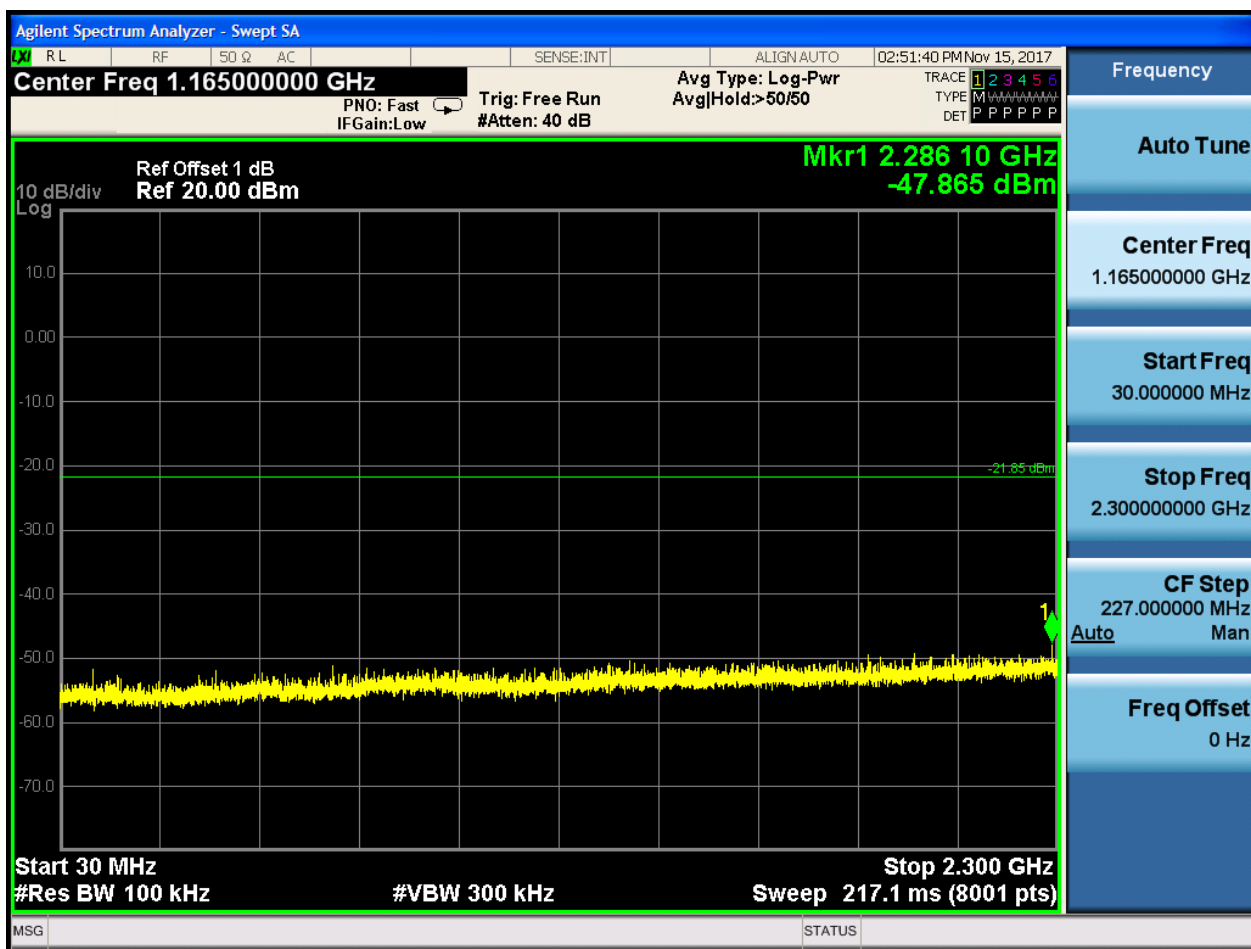


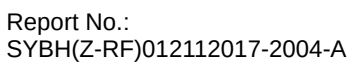


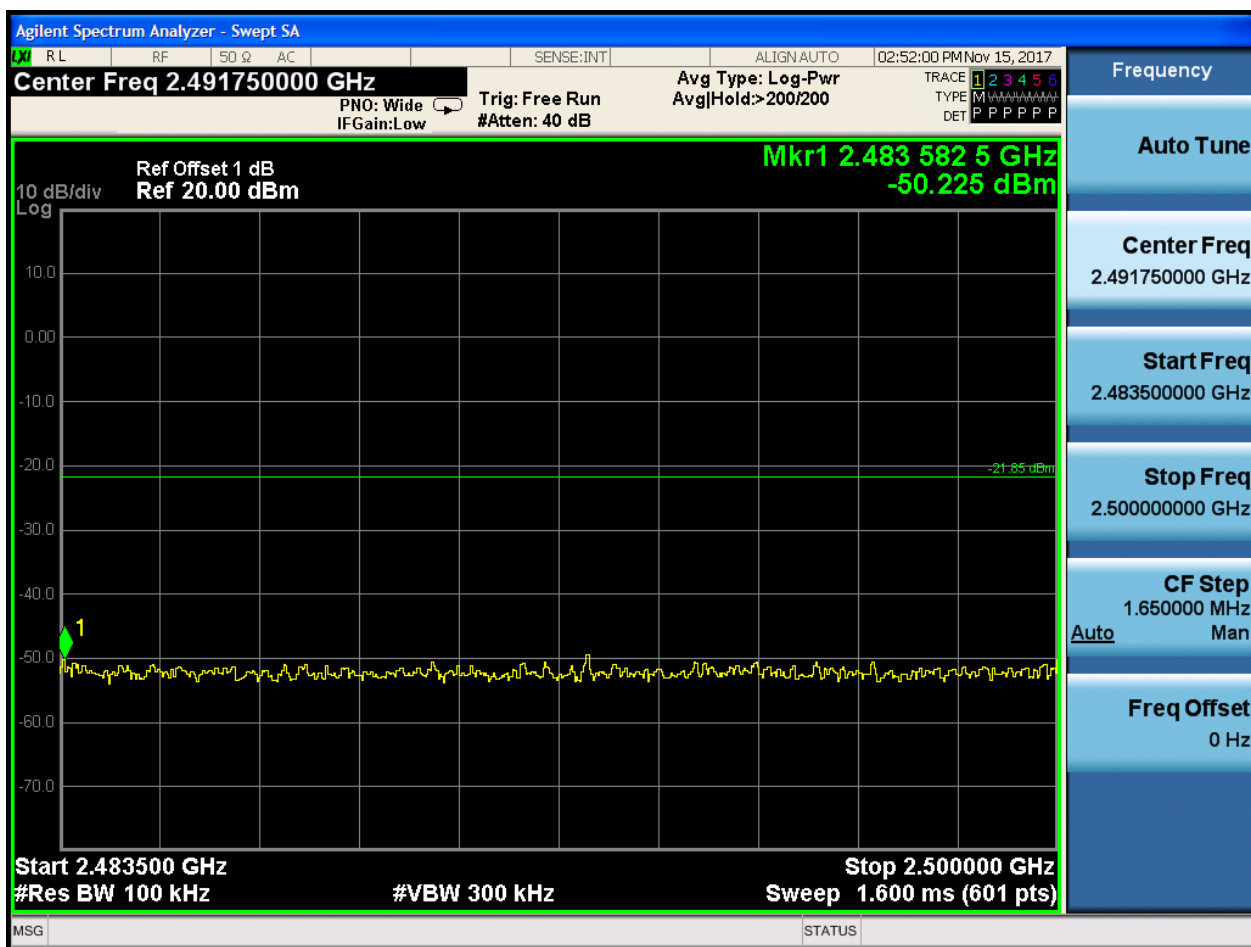
Puw:









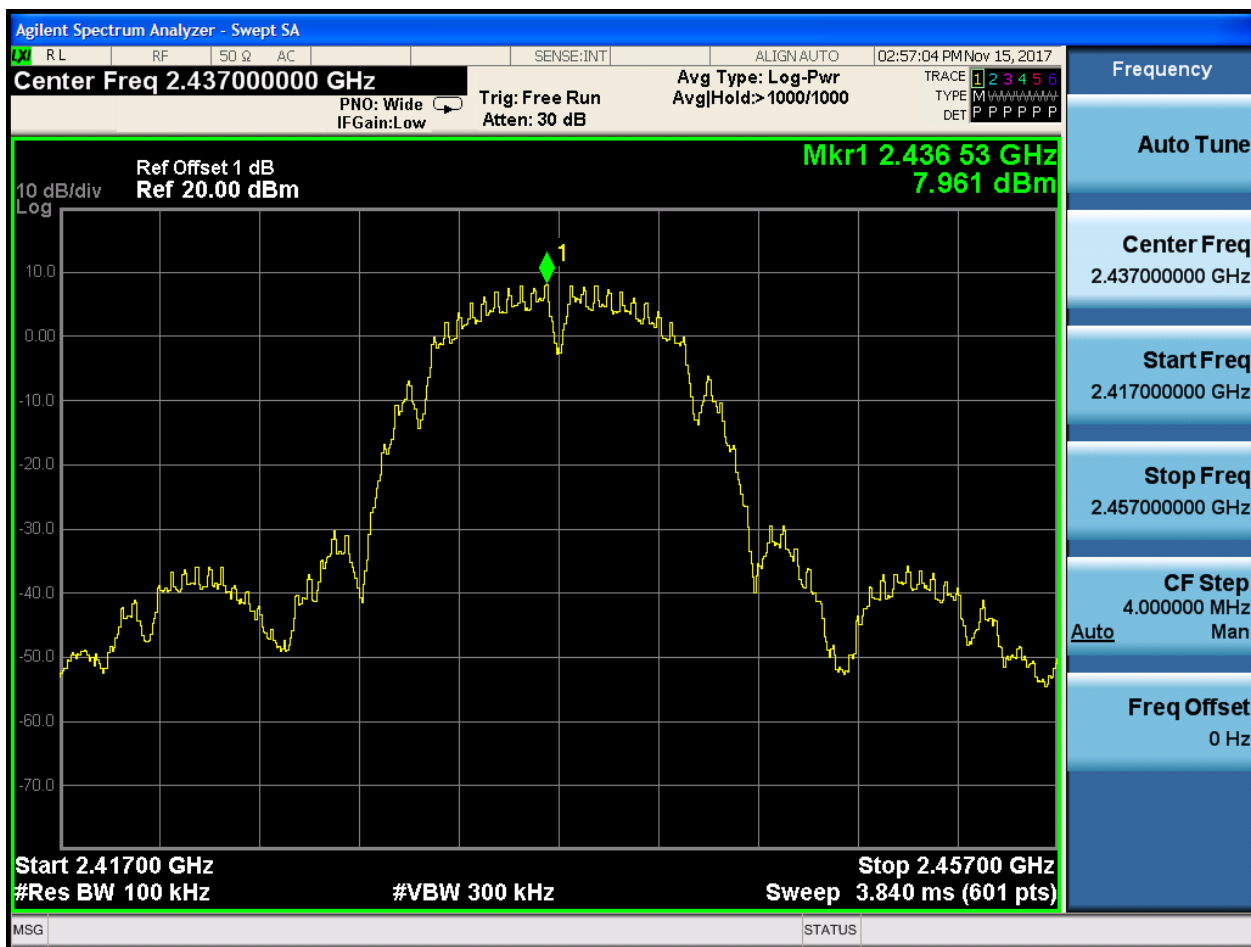






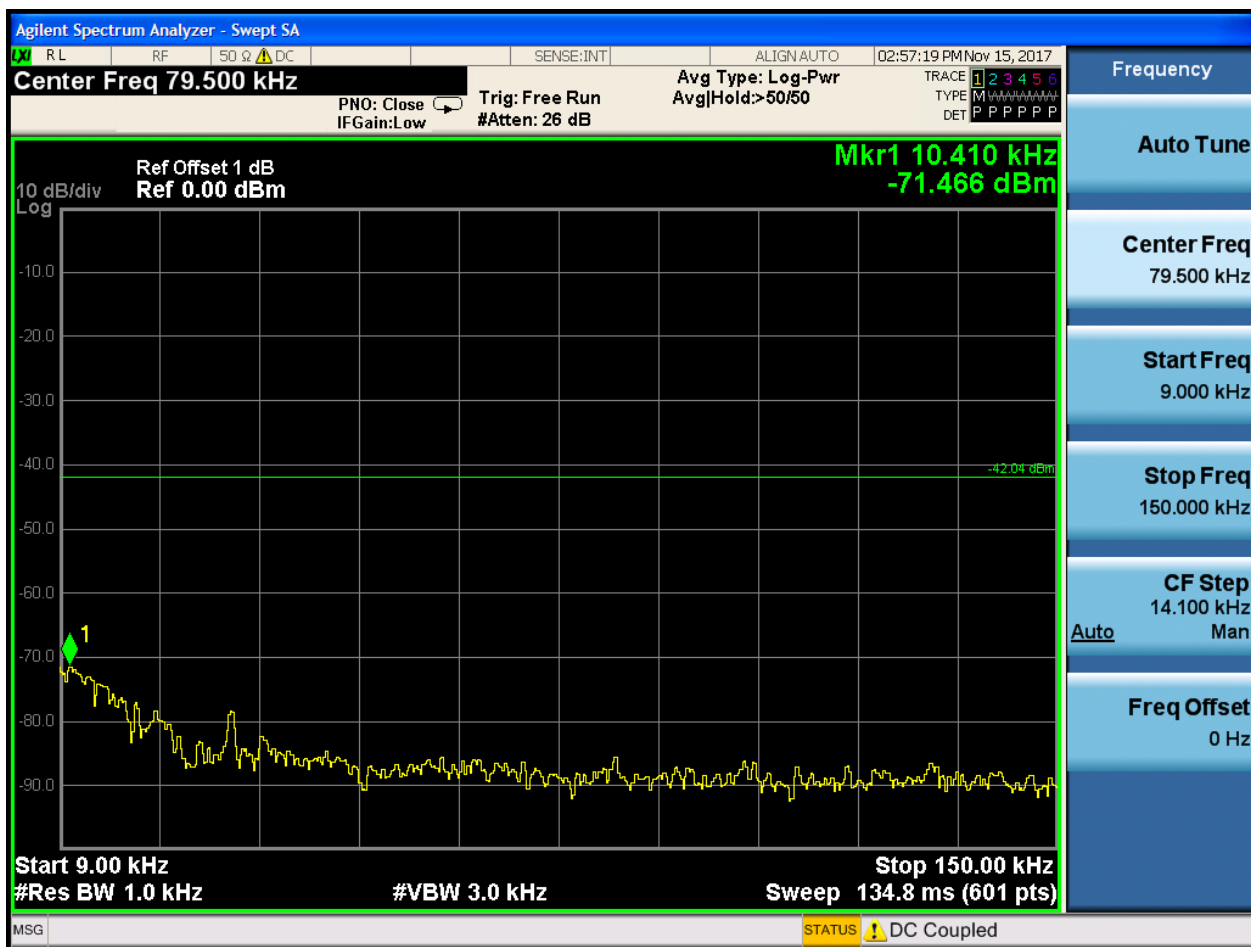
2.2 11B_M@Ant 1

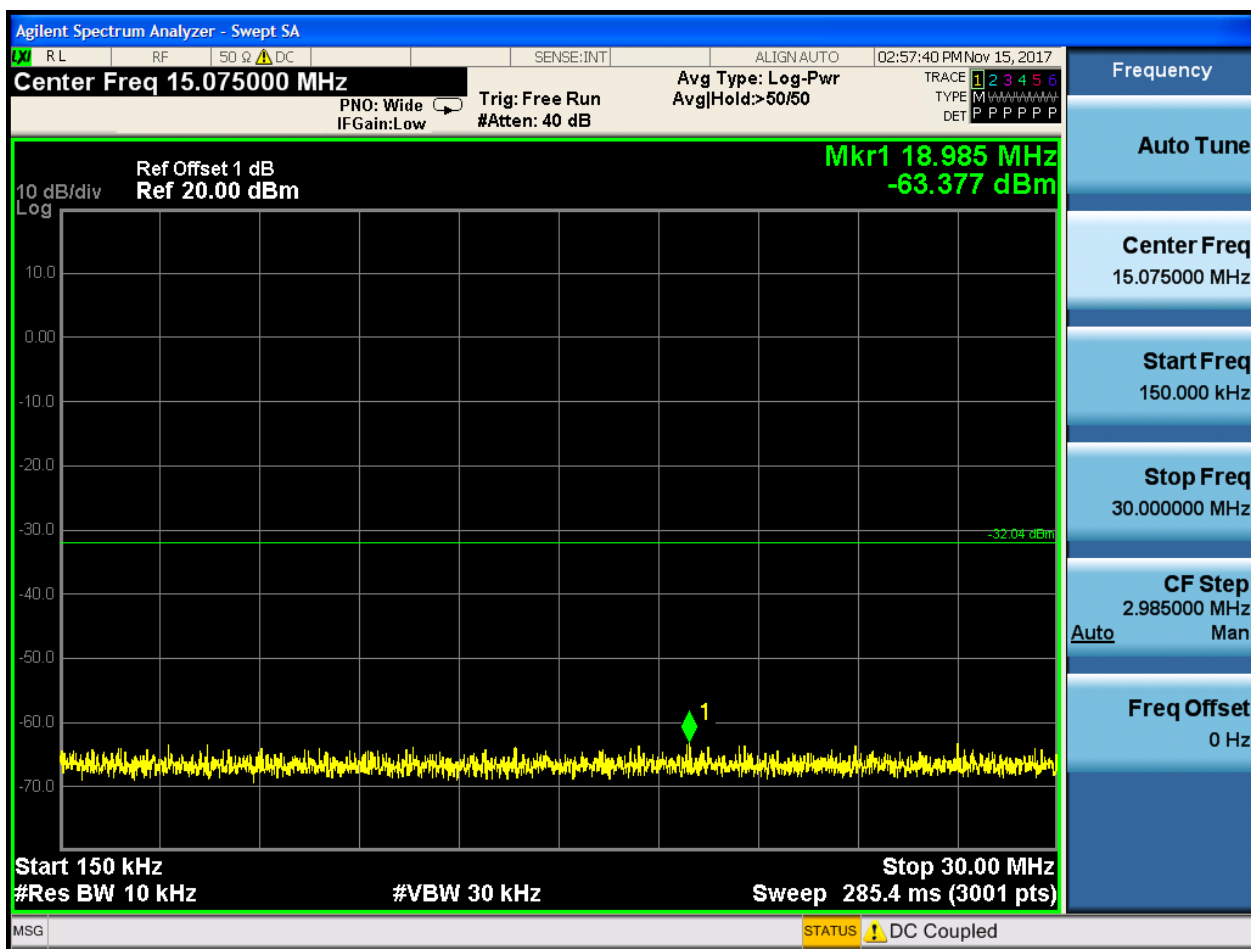
Pref:

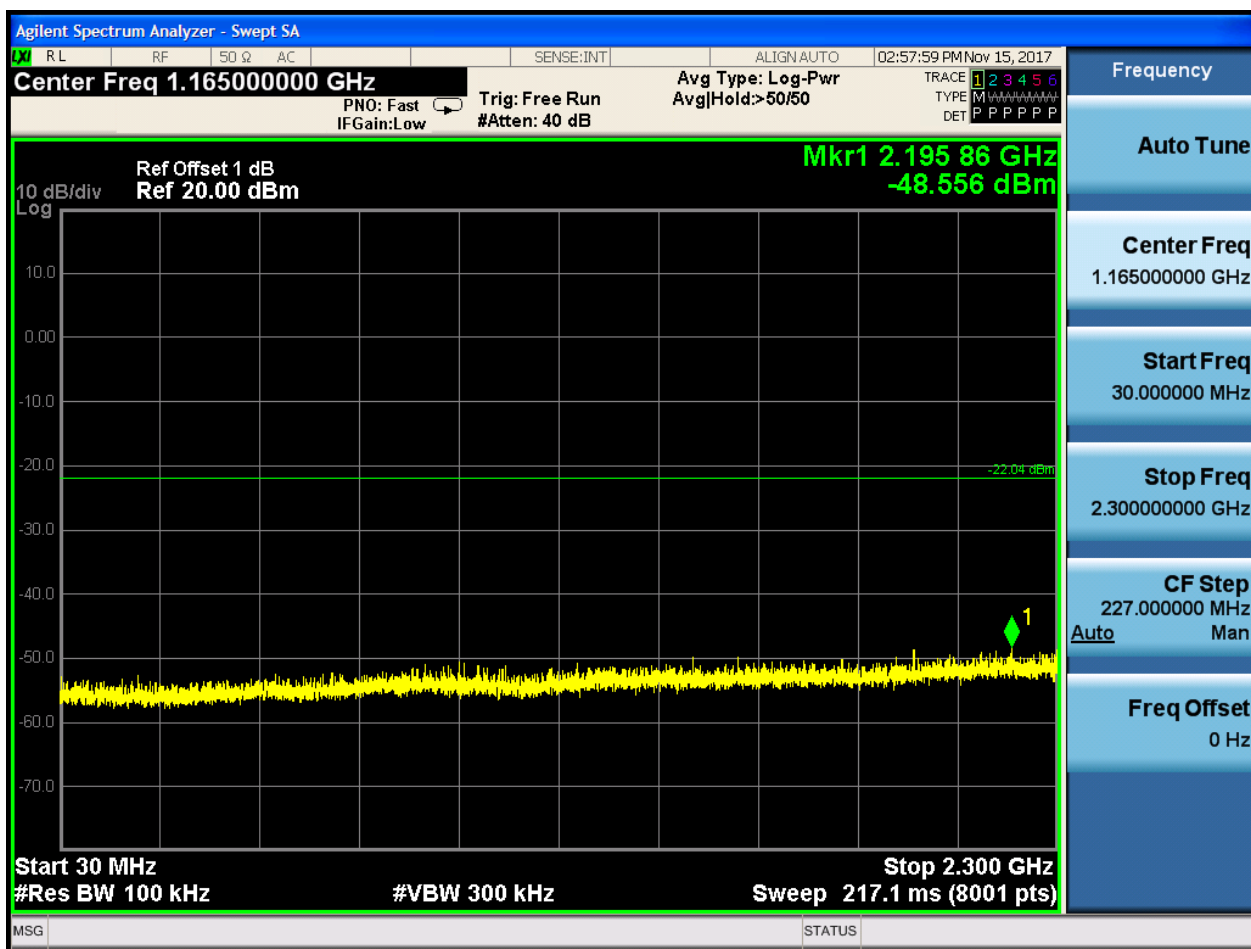


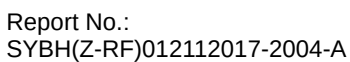


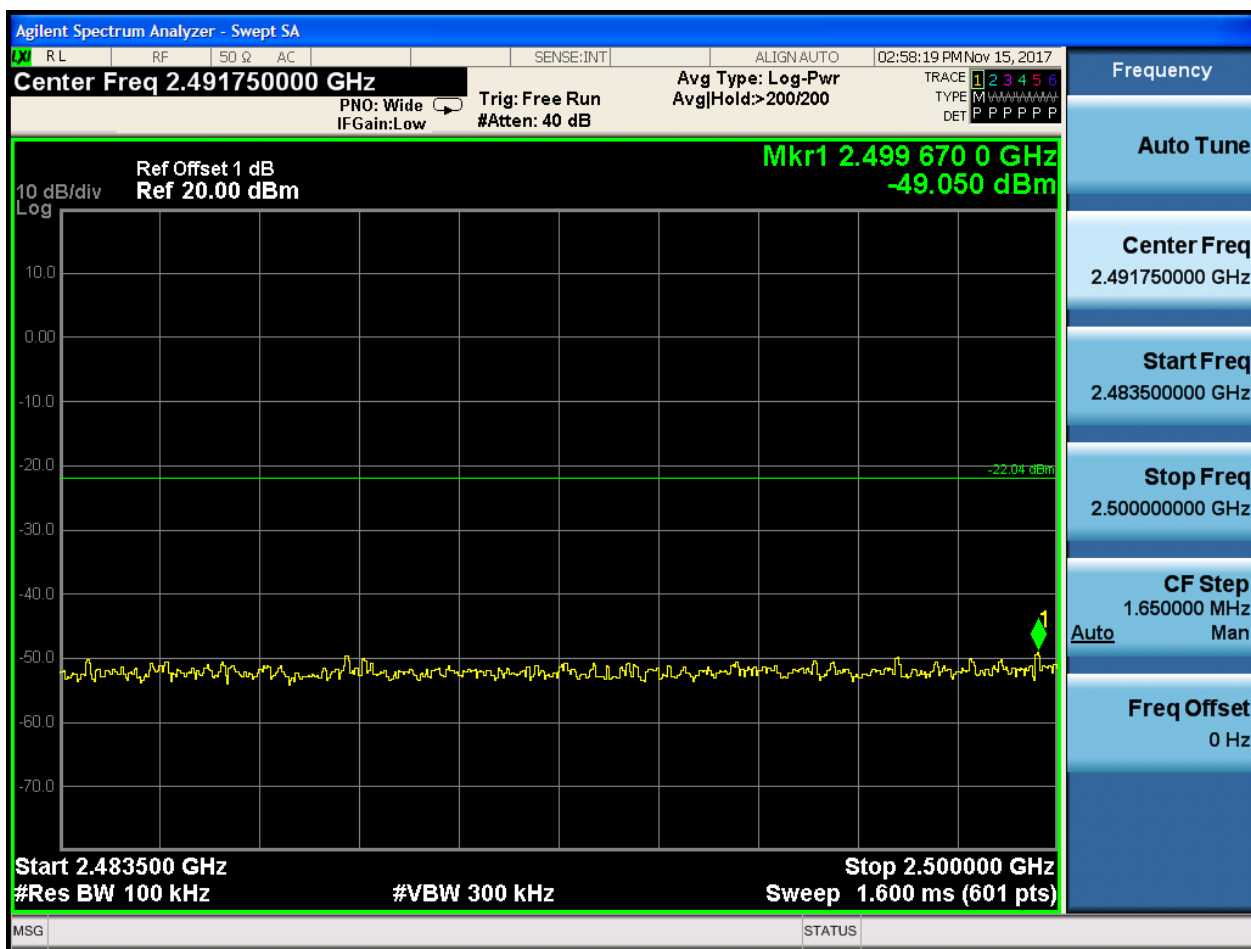
Puw:















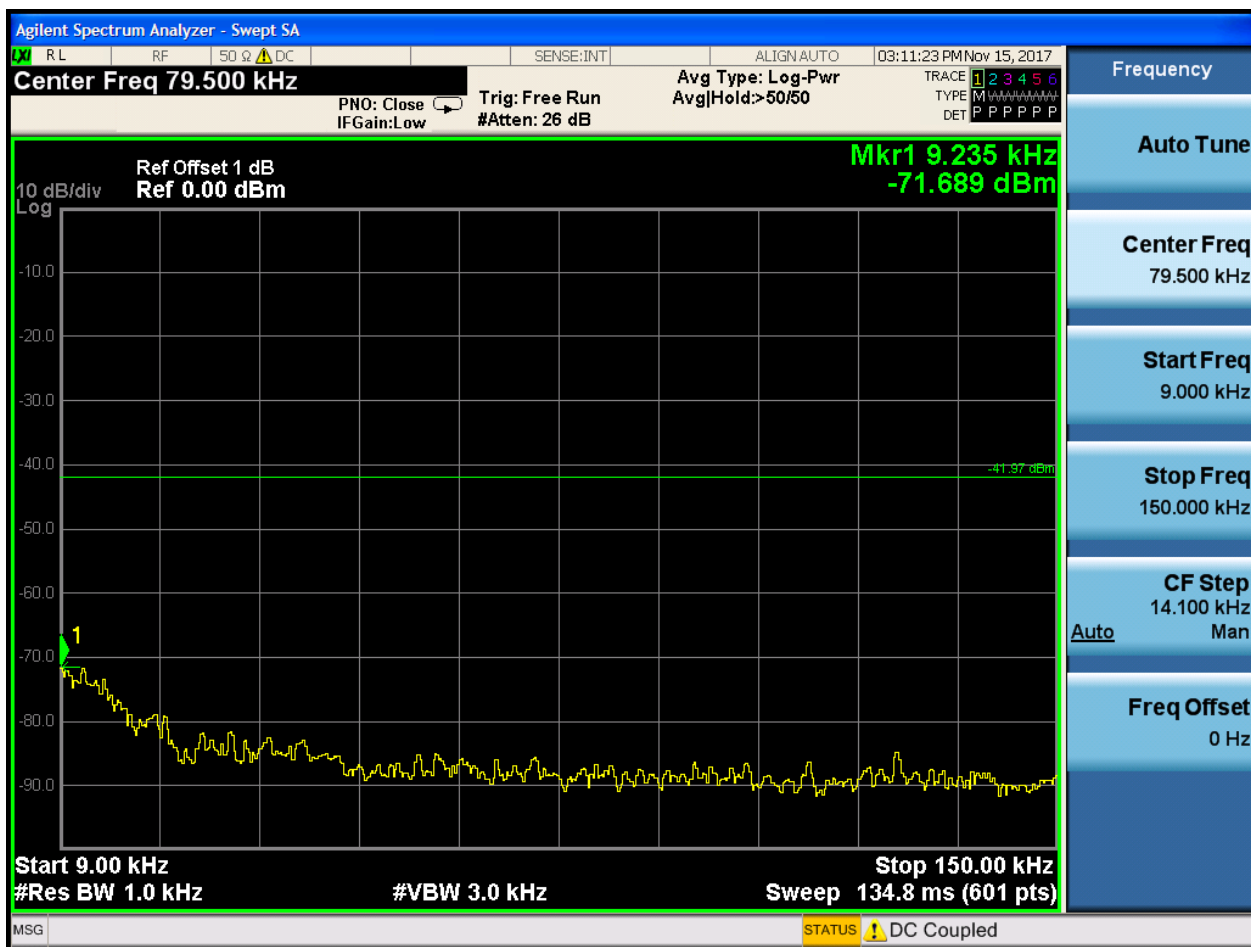
2.3 11B_H@Ant 1

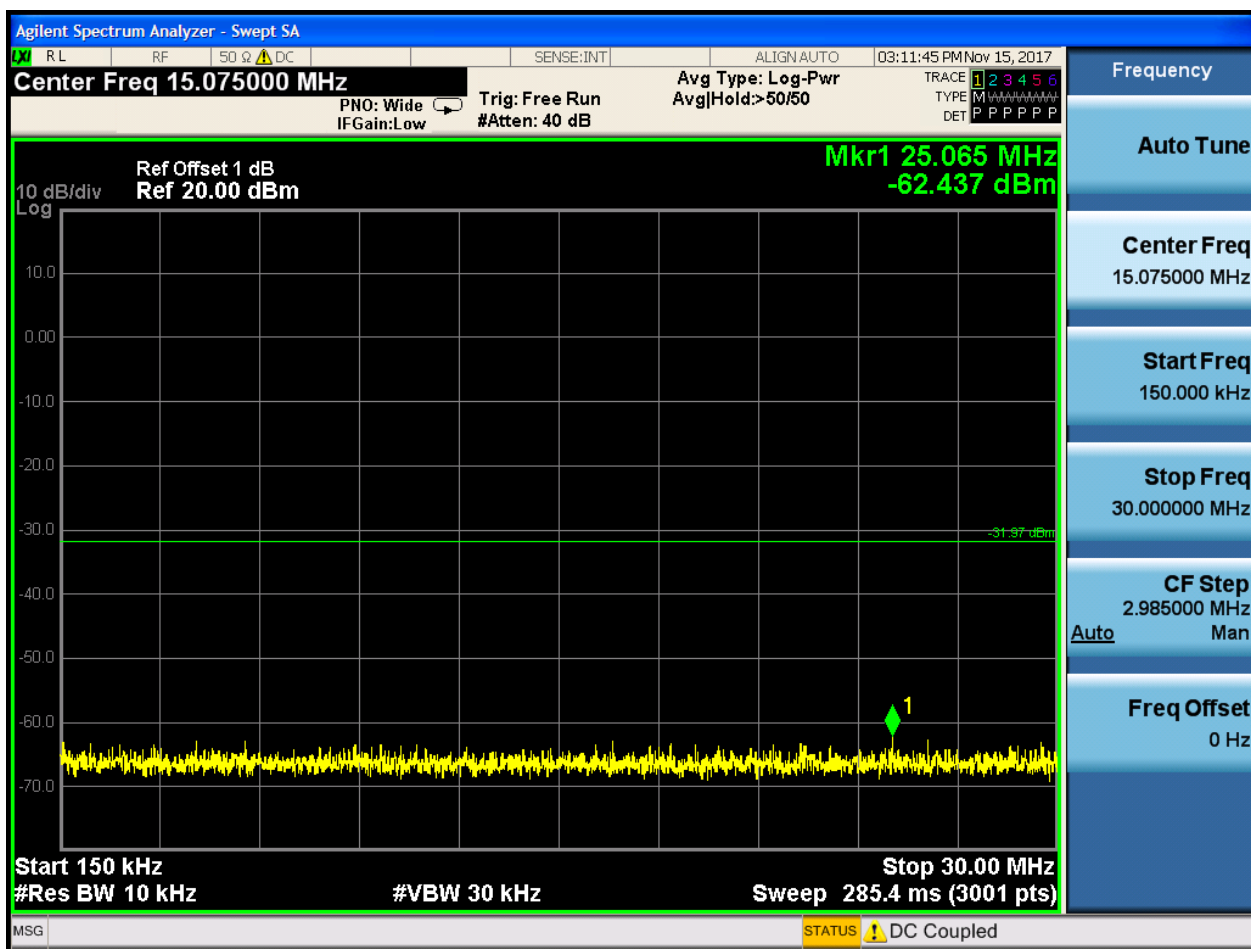
Pref:

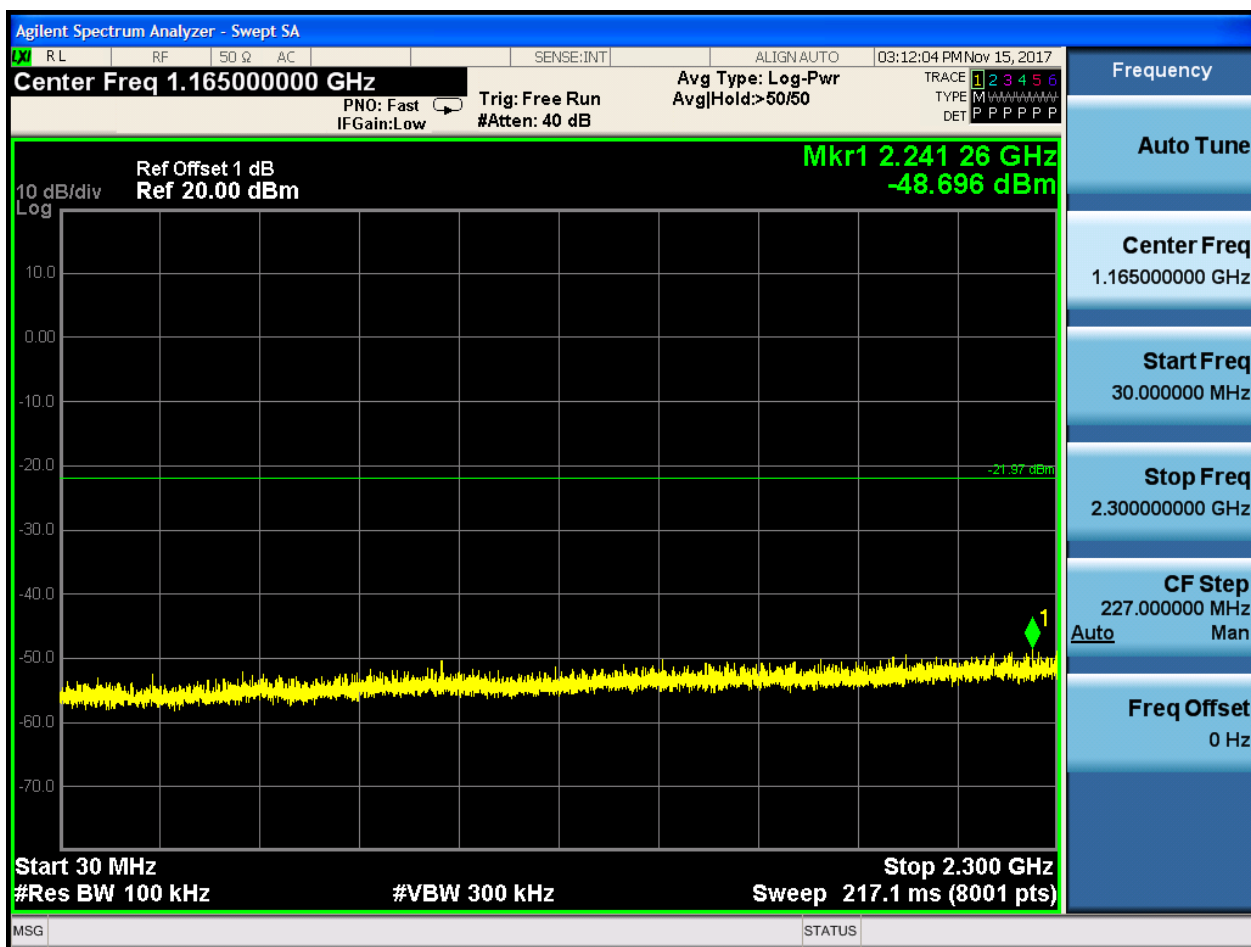


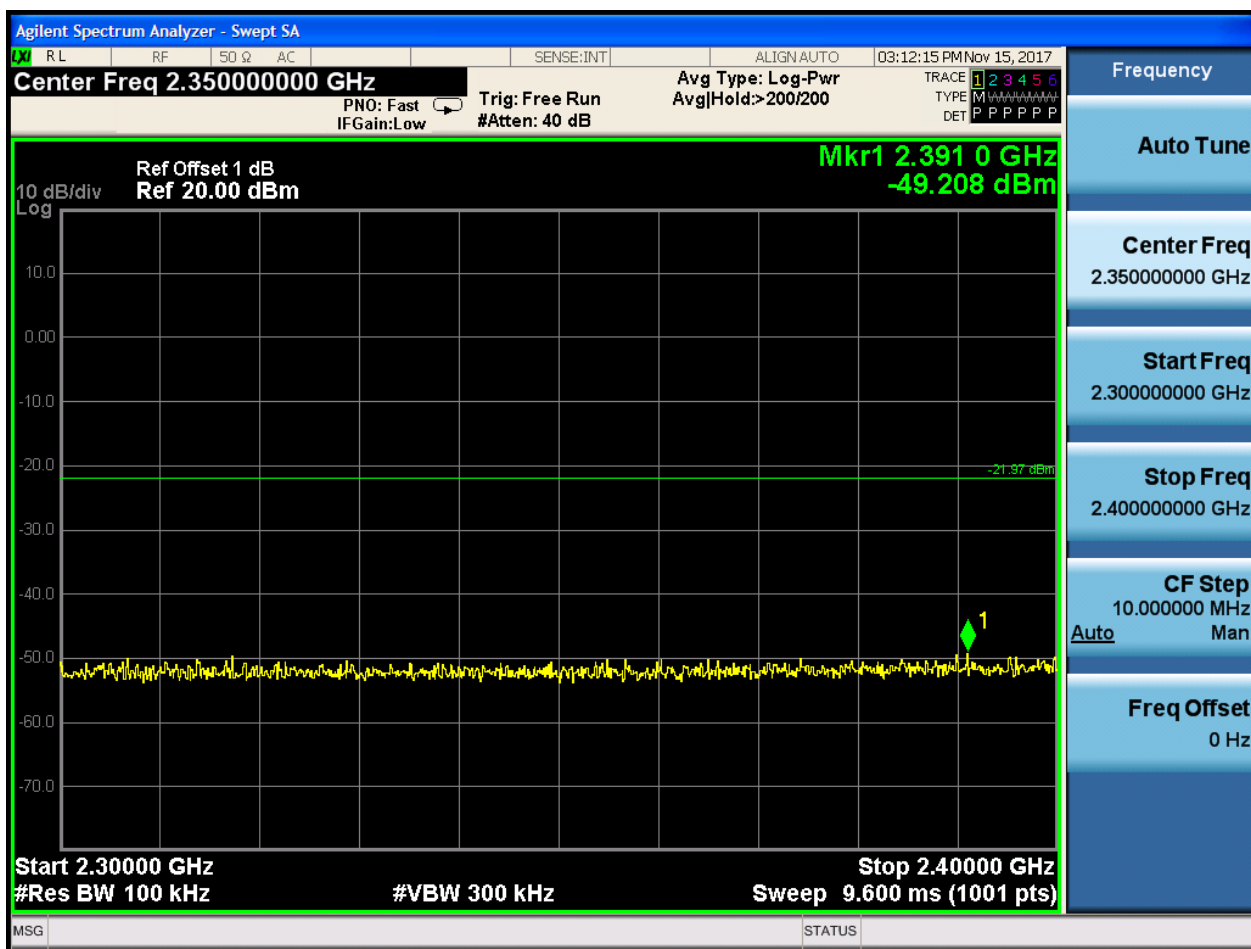


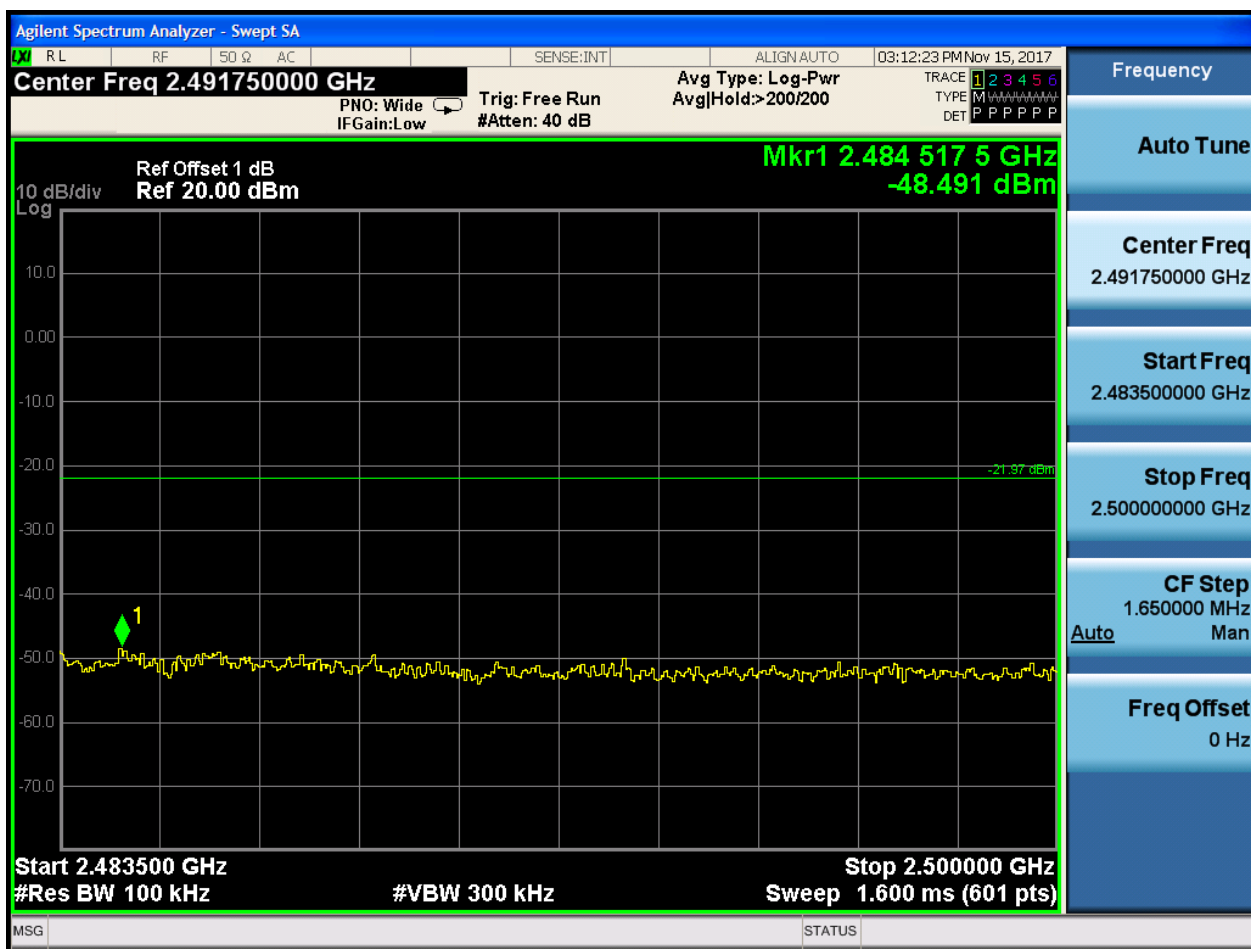
Puw:









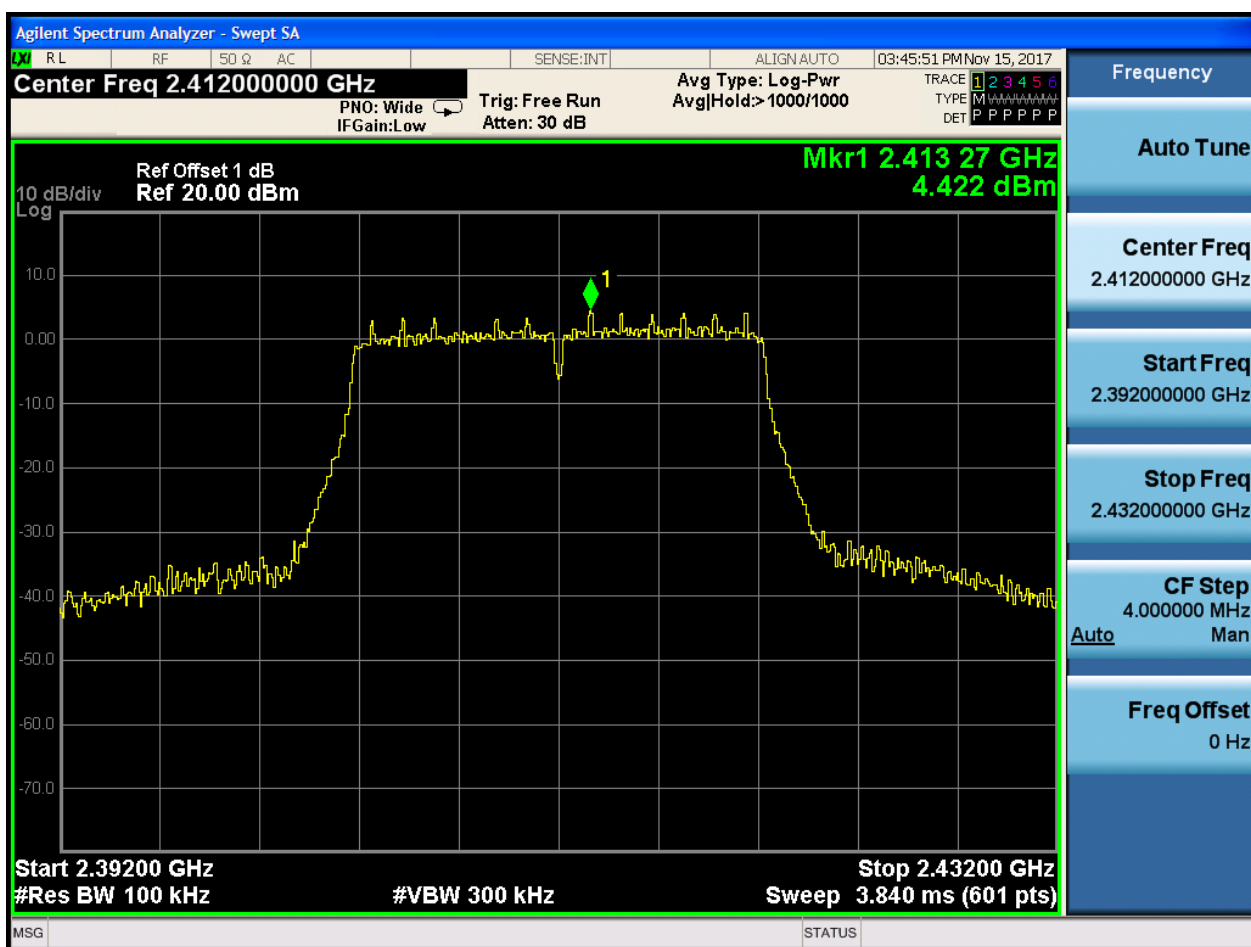






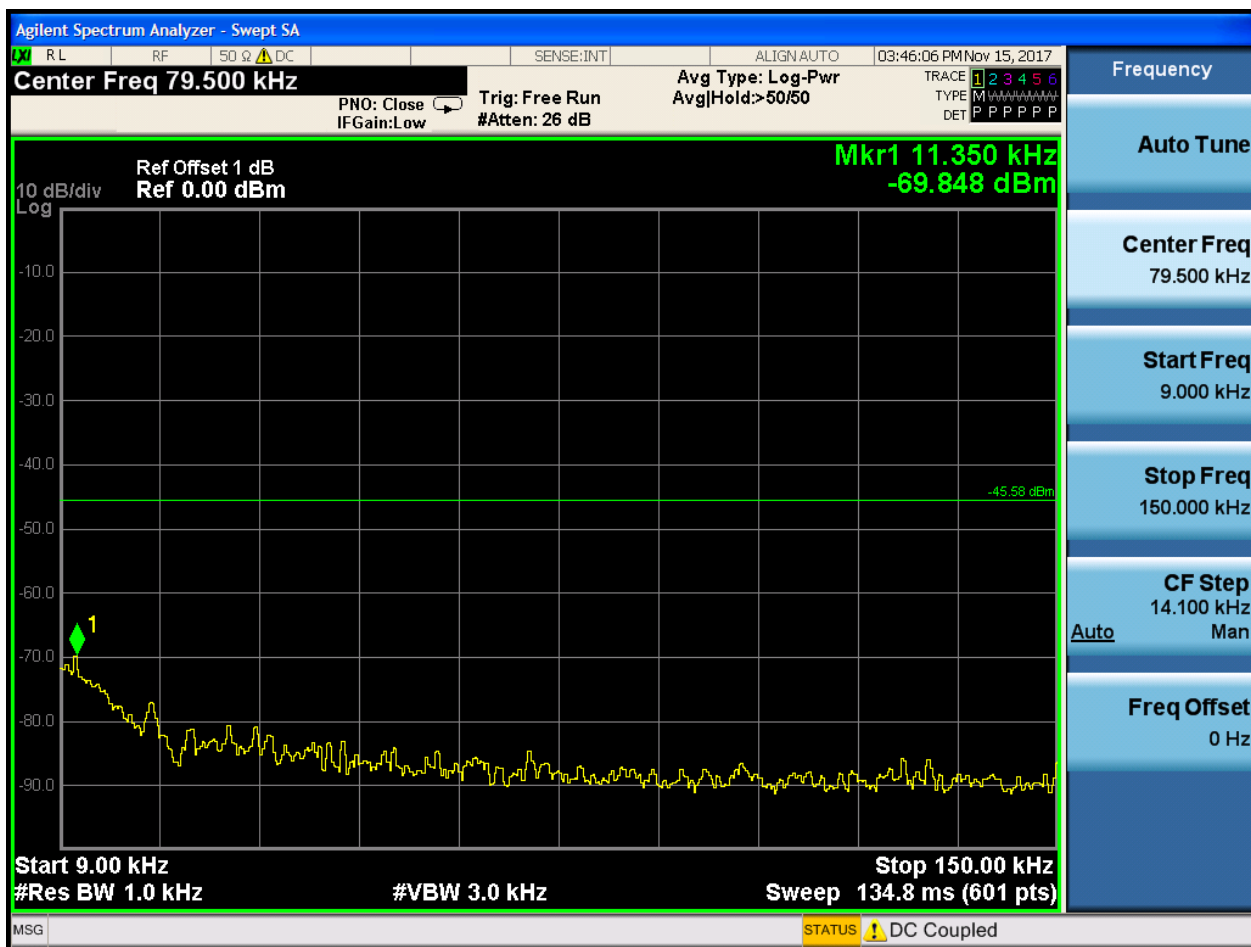
2.4 11G_L@Ant 1

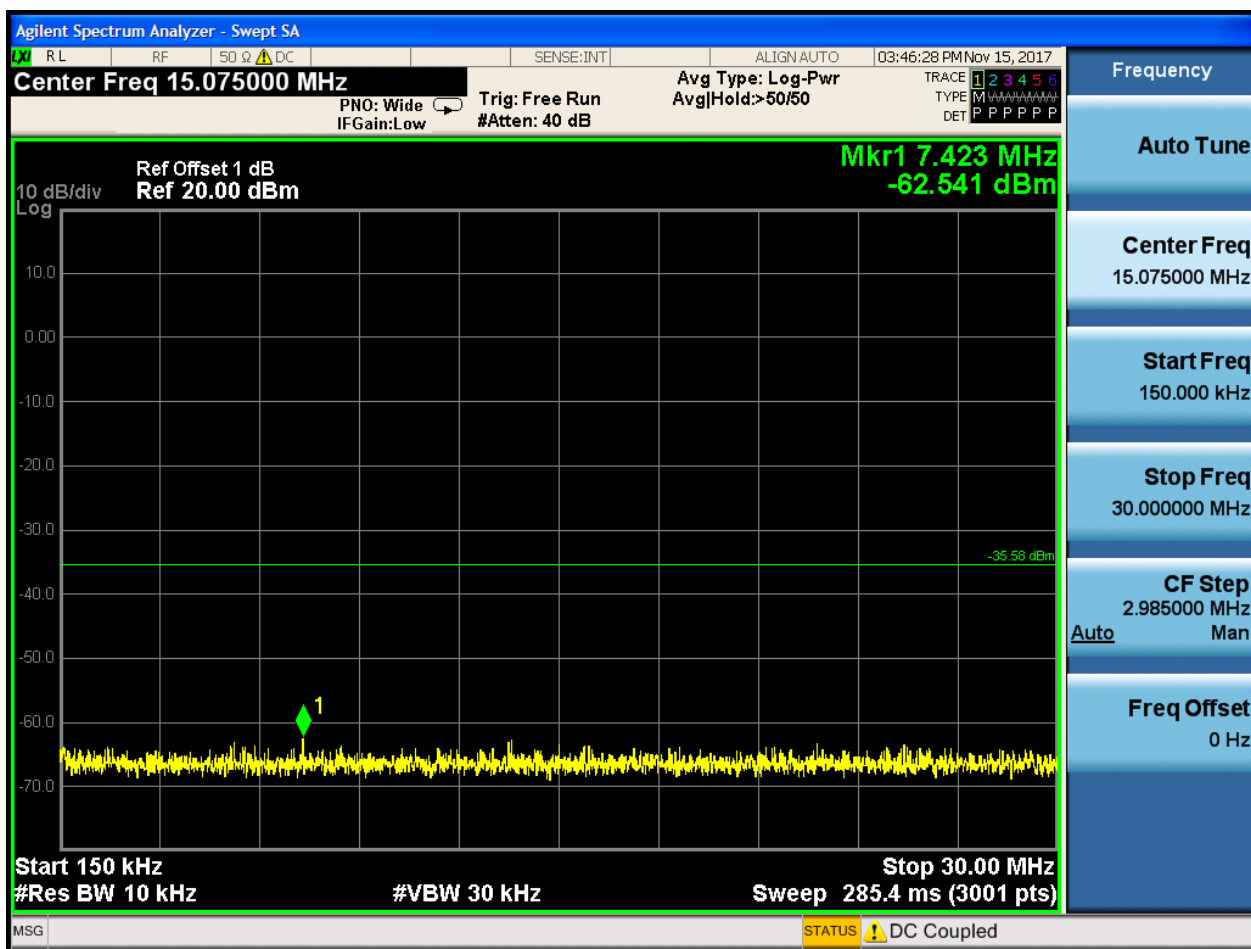
Pref:

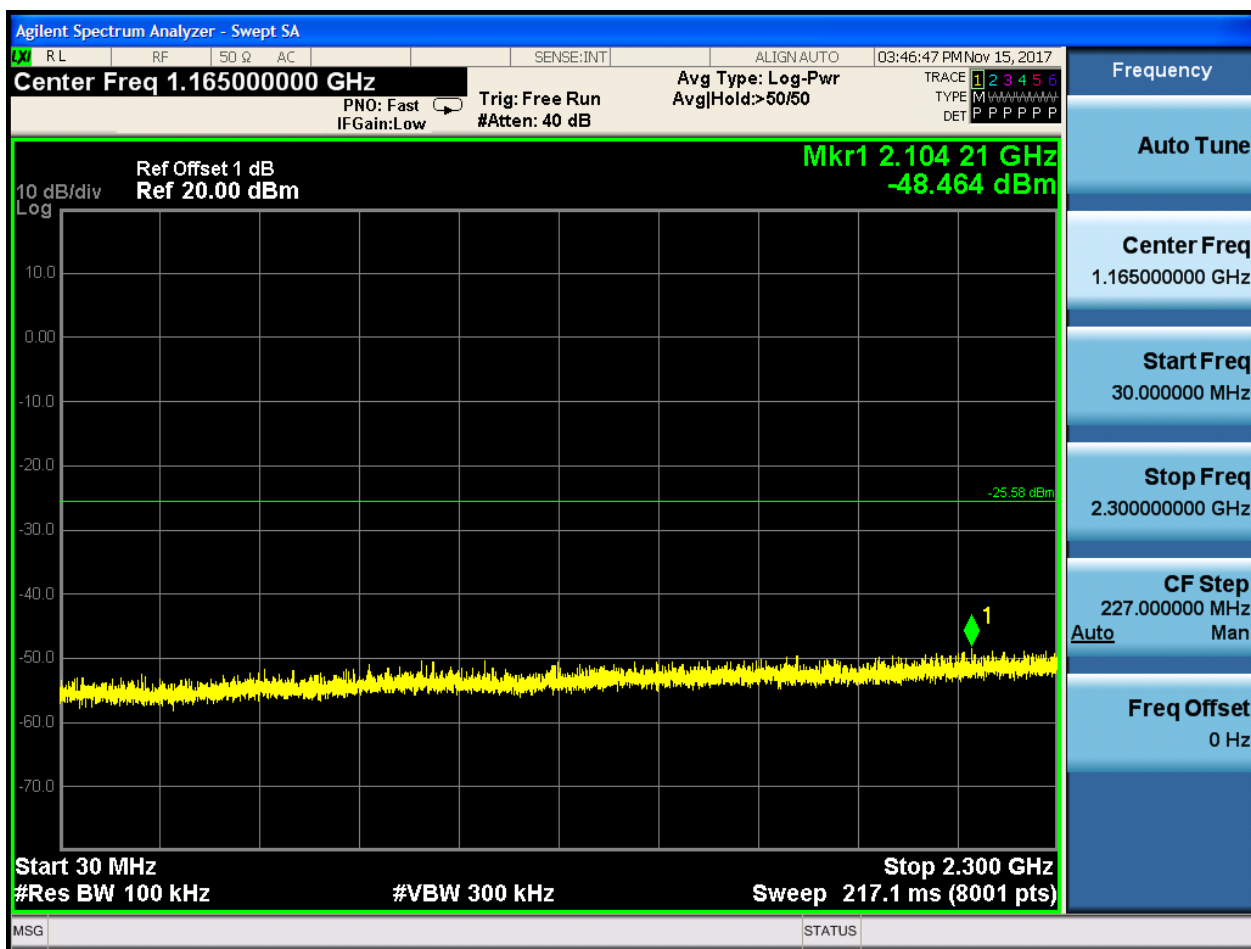


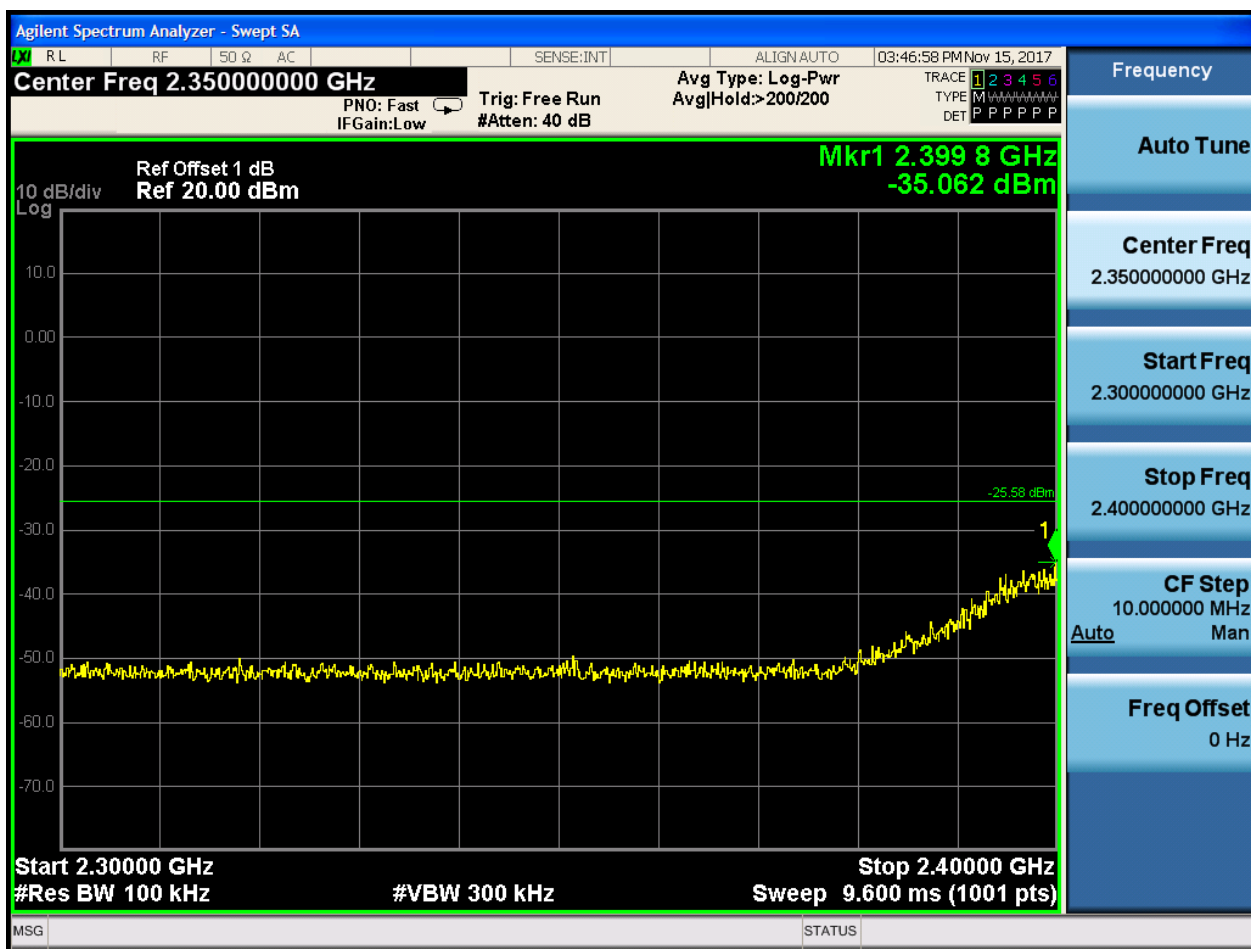


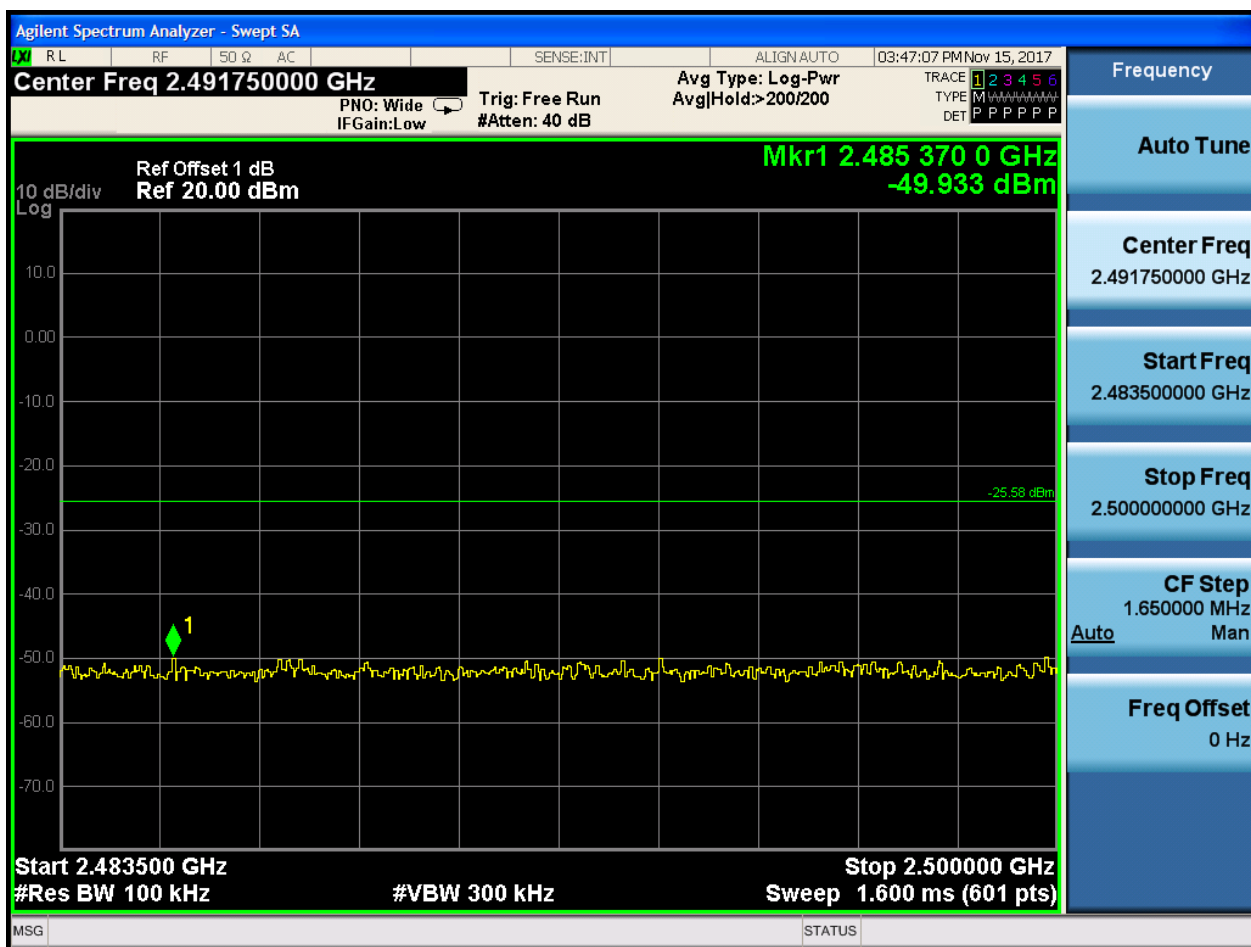
Puw:









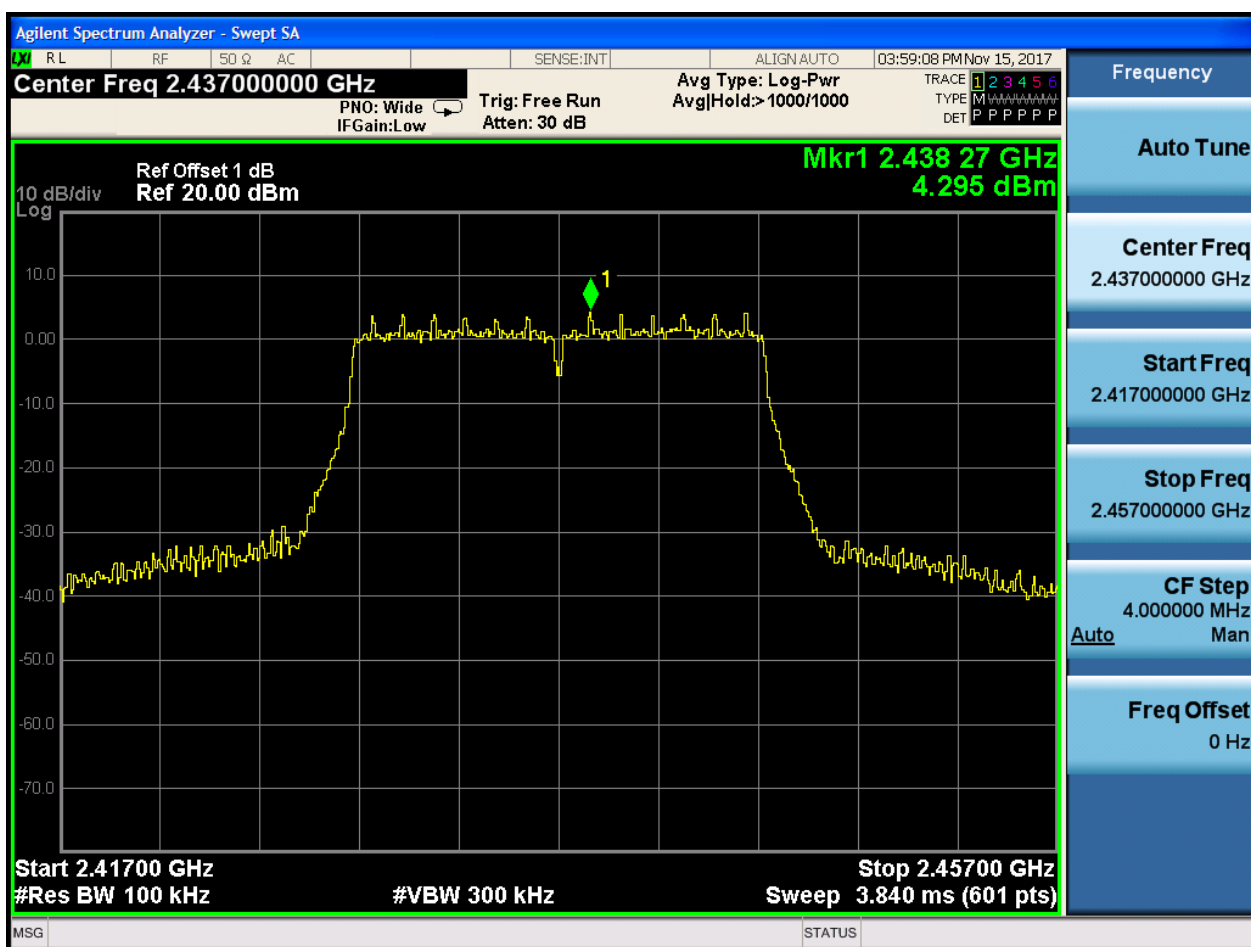






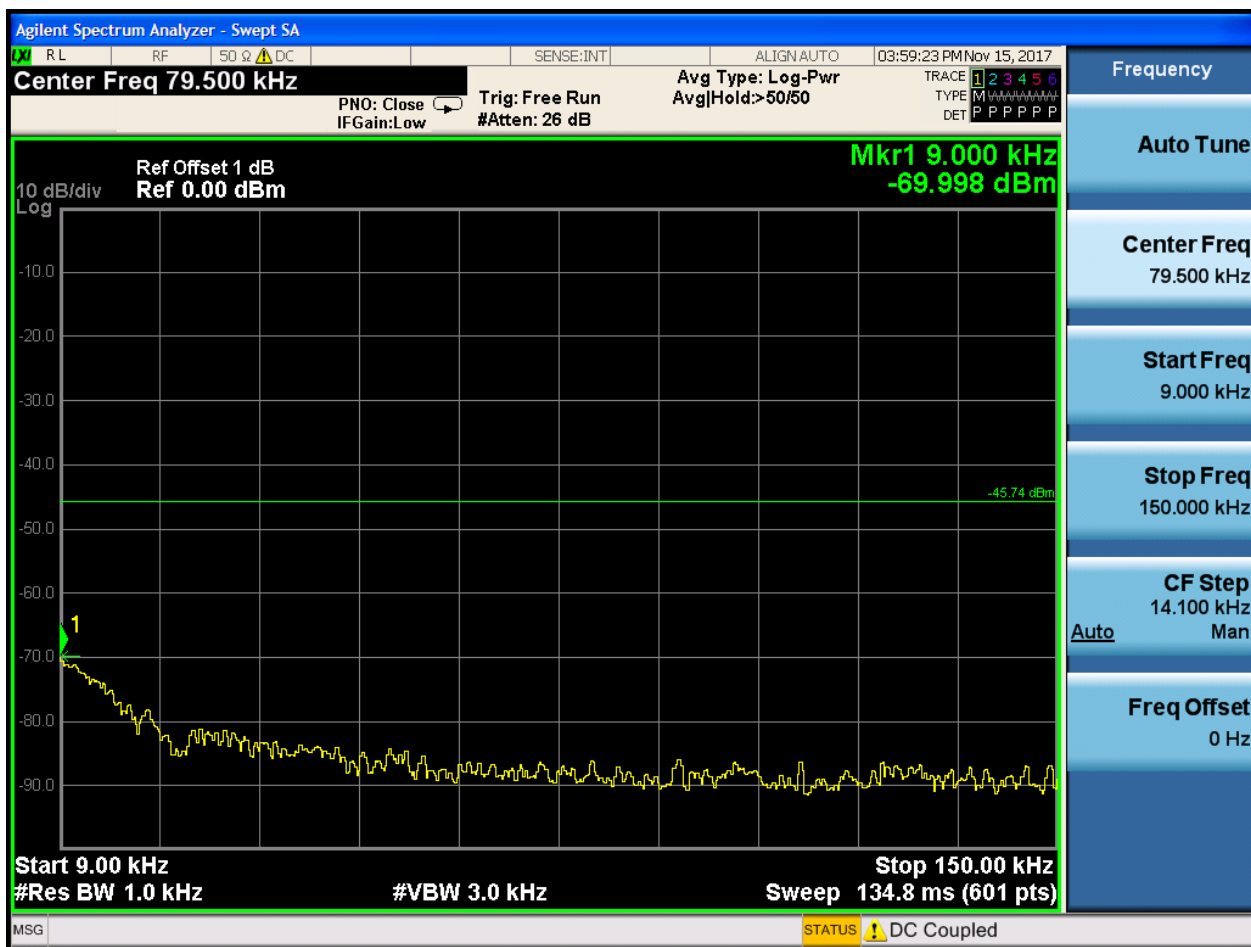
2.5 11G_M@Ant 1

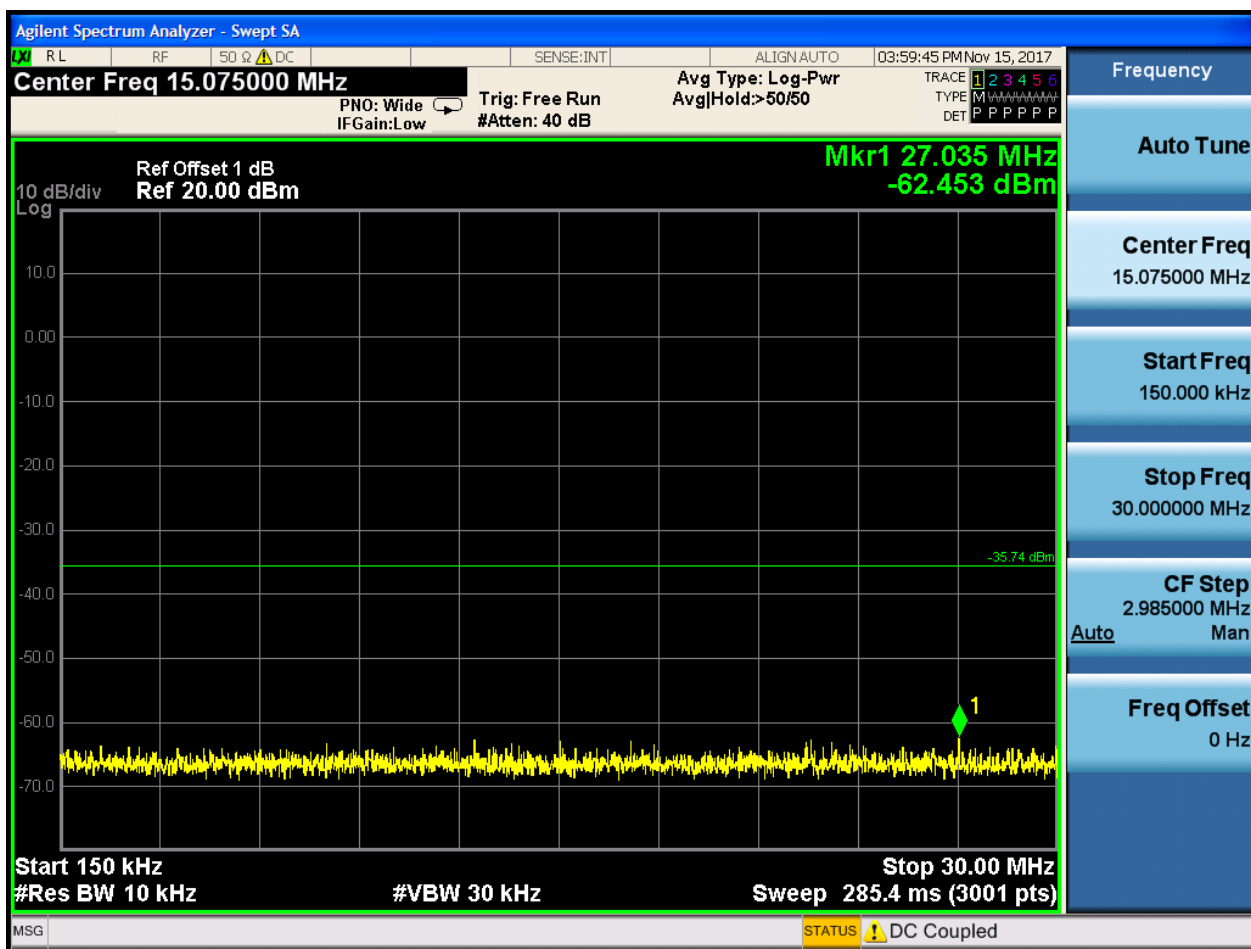
Pref:

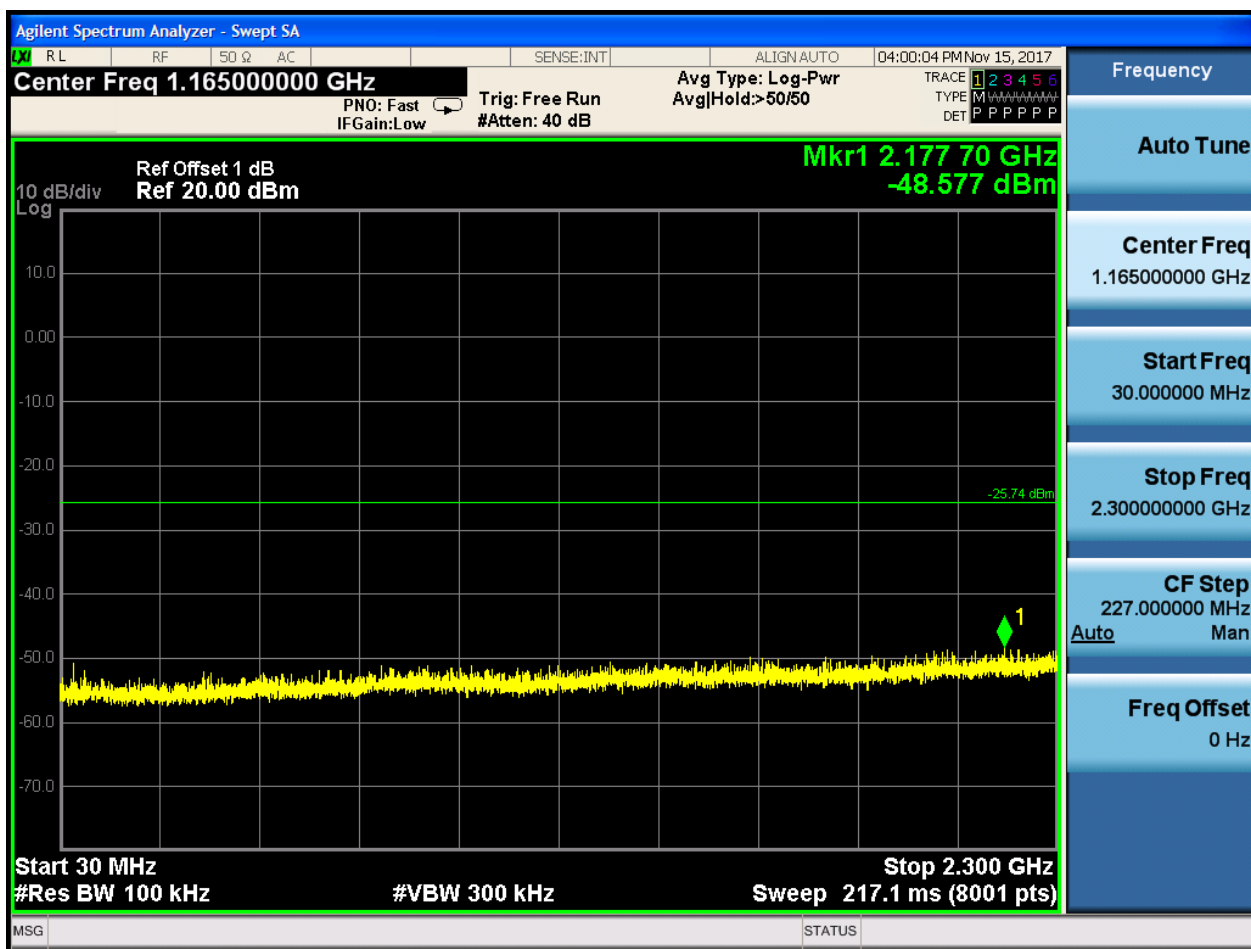


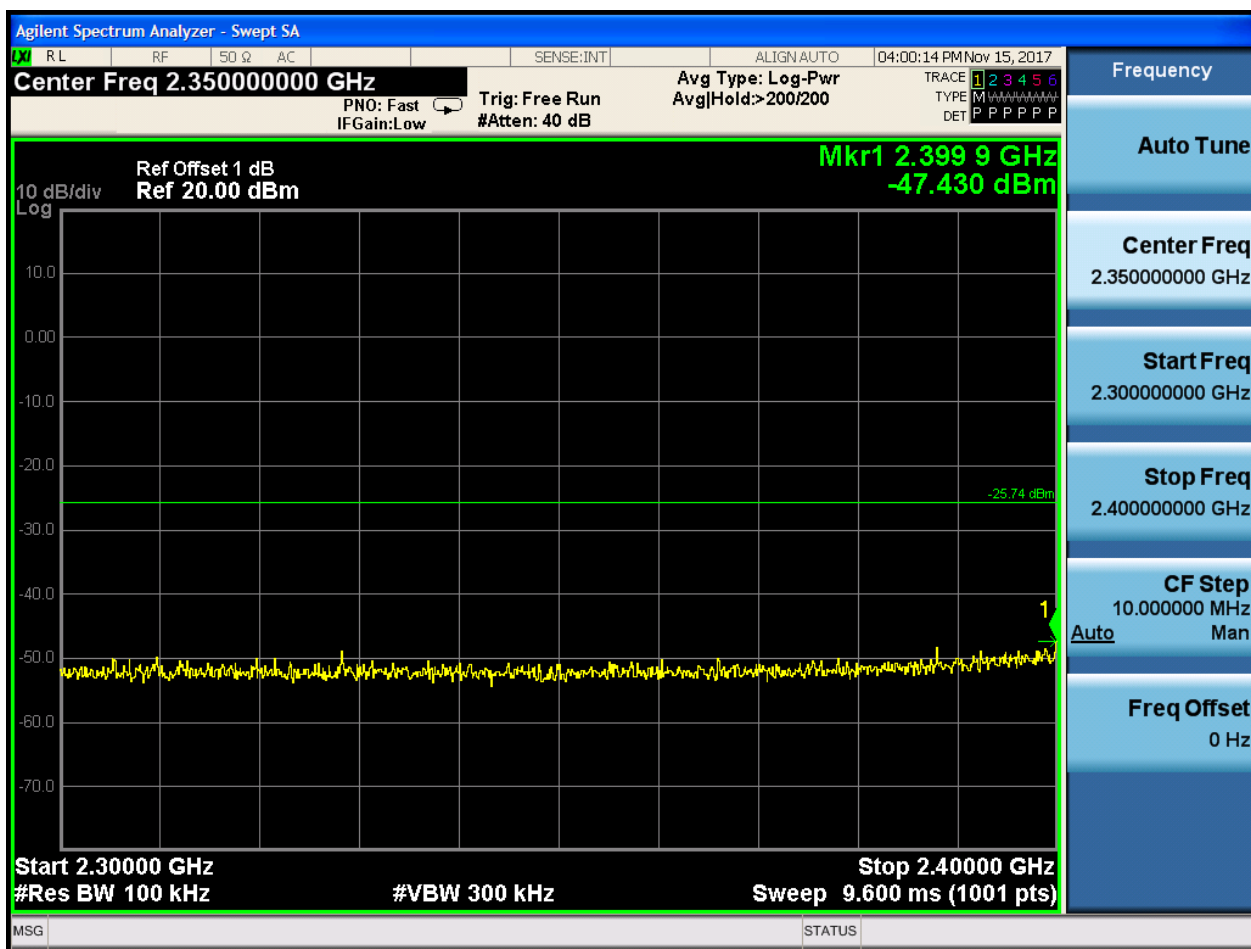


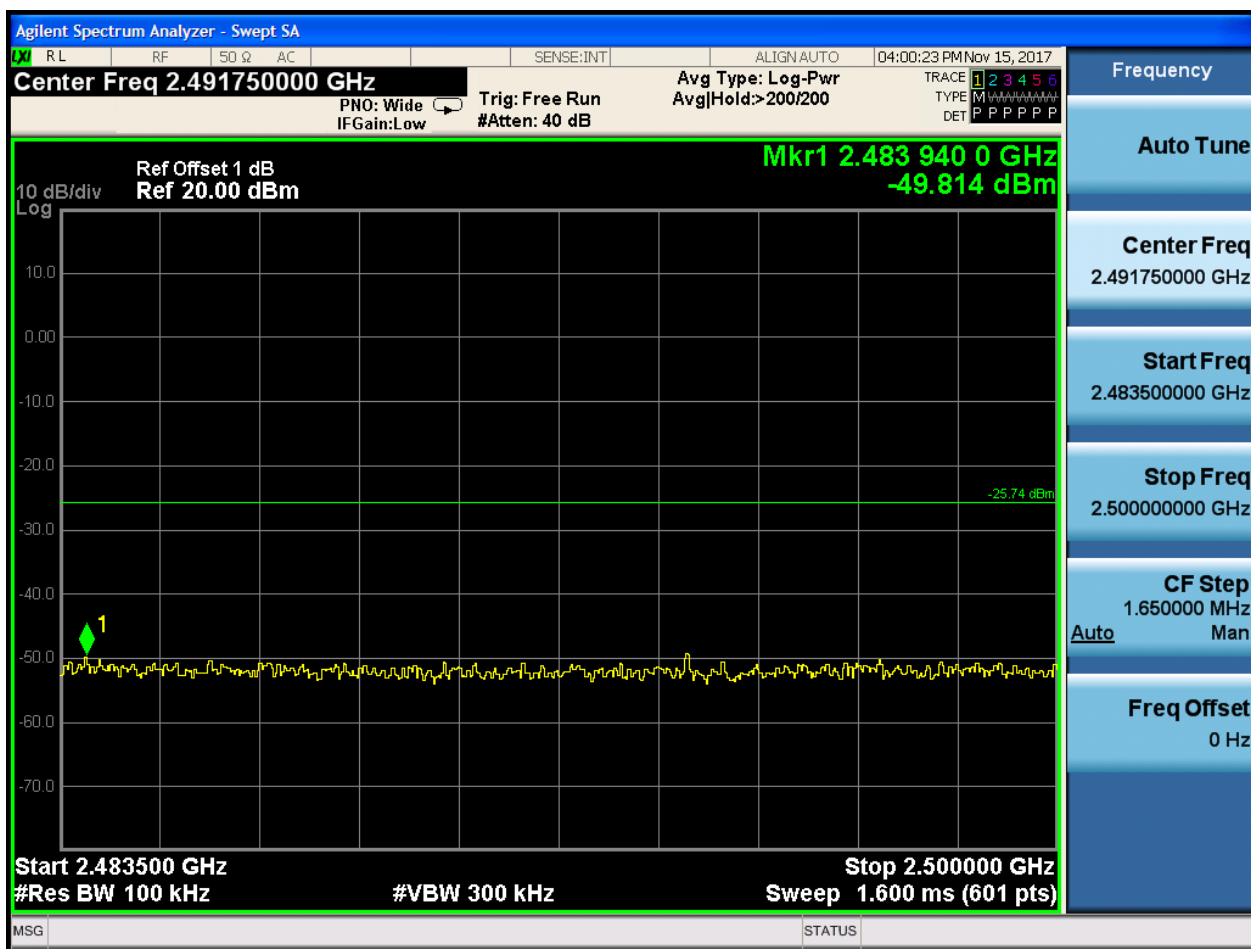
Puw:









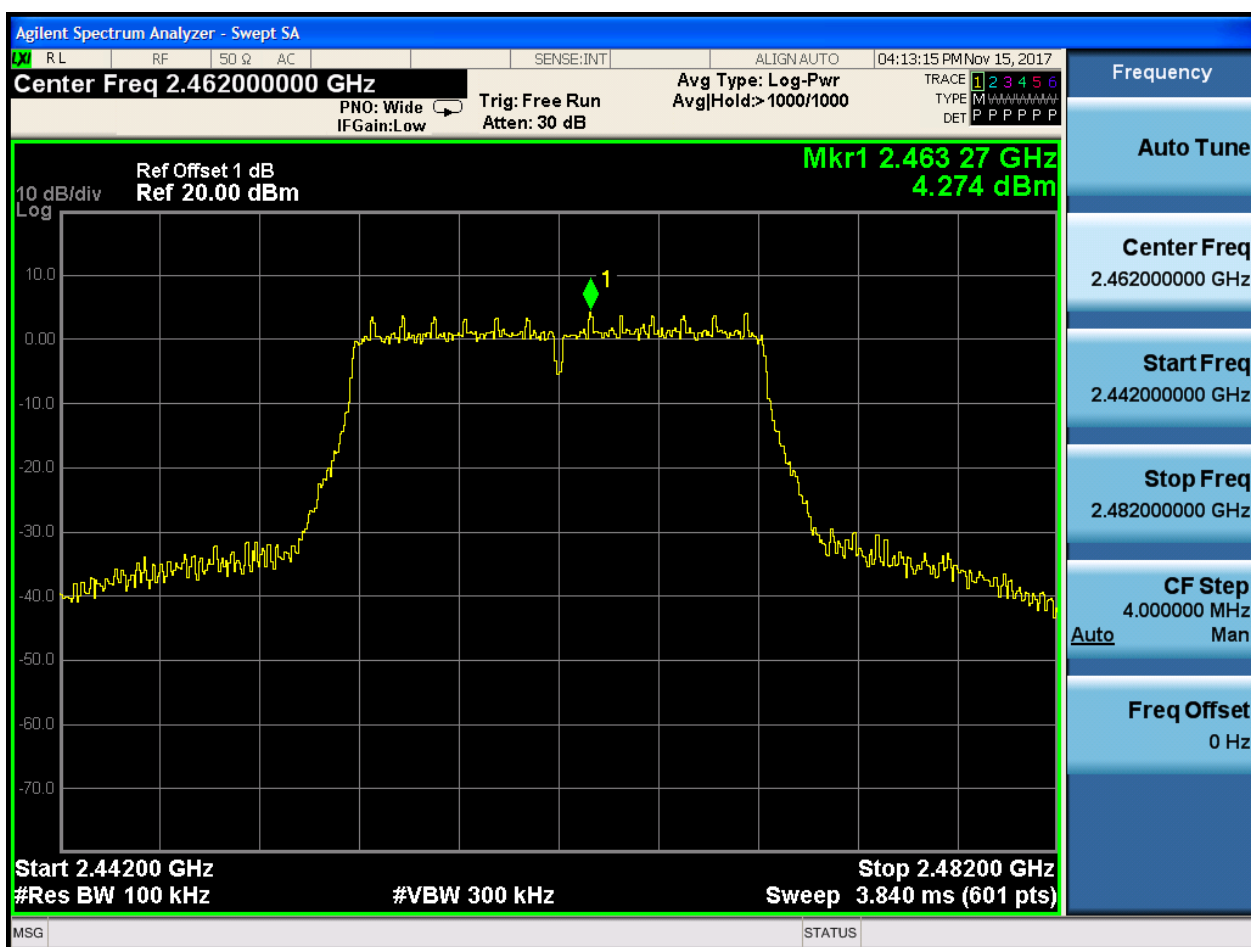






2.6 11G_H@Ant 1

Pref:





Puw:

