



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.

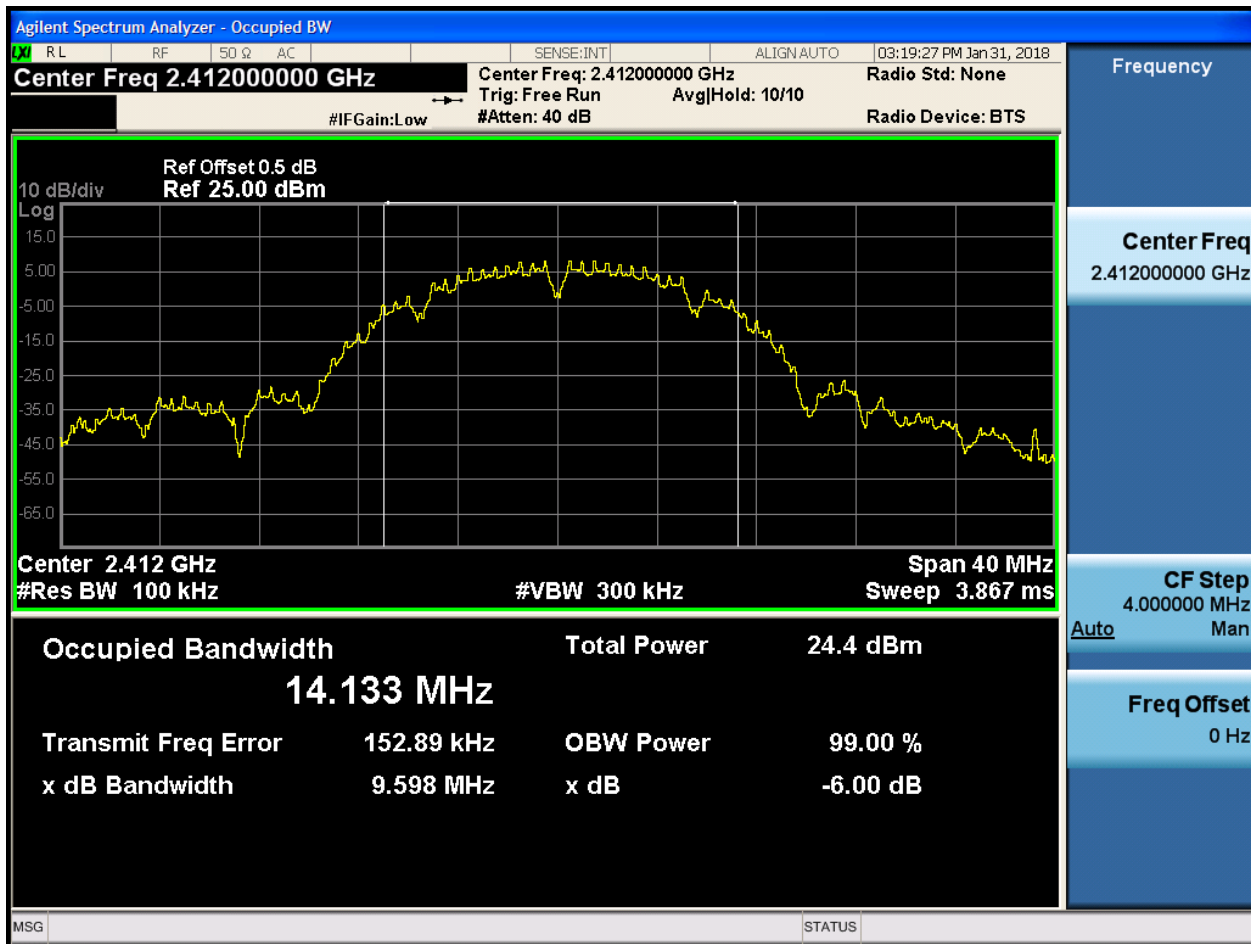
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	9.60	pass
11B	M	2437	Ant 1	9.59	pass
11B	H	2462	Ant 1	9.58	pass
11G	L	2412	Ant 1	16.43	pass
11G	L	2417	Ant 1	16.37	pass
11G	M	2437	Ant 1	16.38	pass
11G	H	2457	Ant 1	16.51	pass
11G	H	2462	Ant 1	16.43	pass
11N20	L	2412	Ant 1	17.19	pass
11N20	M	2437	Ant 1	17.21	pass
11N20	H	2462	Ant 1	17.63	pass
11N40	L	2422	Ant 1	35.20	pass
11N40	M	2437	Ant 1	35.19	pass
11N40	H	2452	Ant 1	35.51	pass



Part II - Test Plots

2.1 11B_L@Ant 1



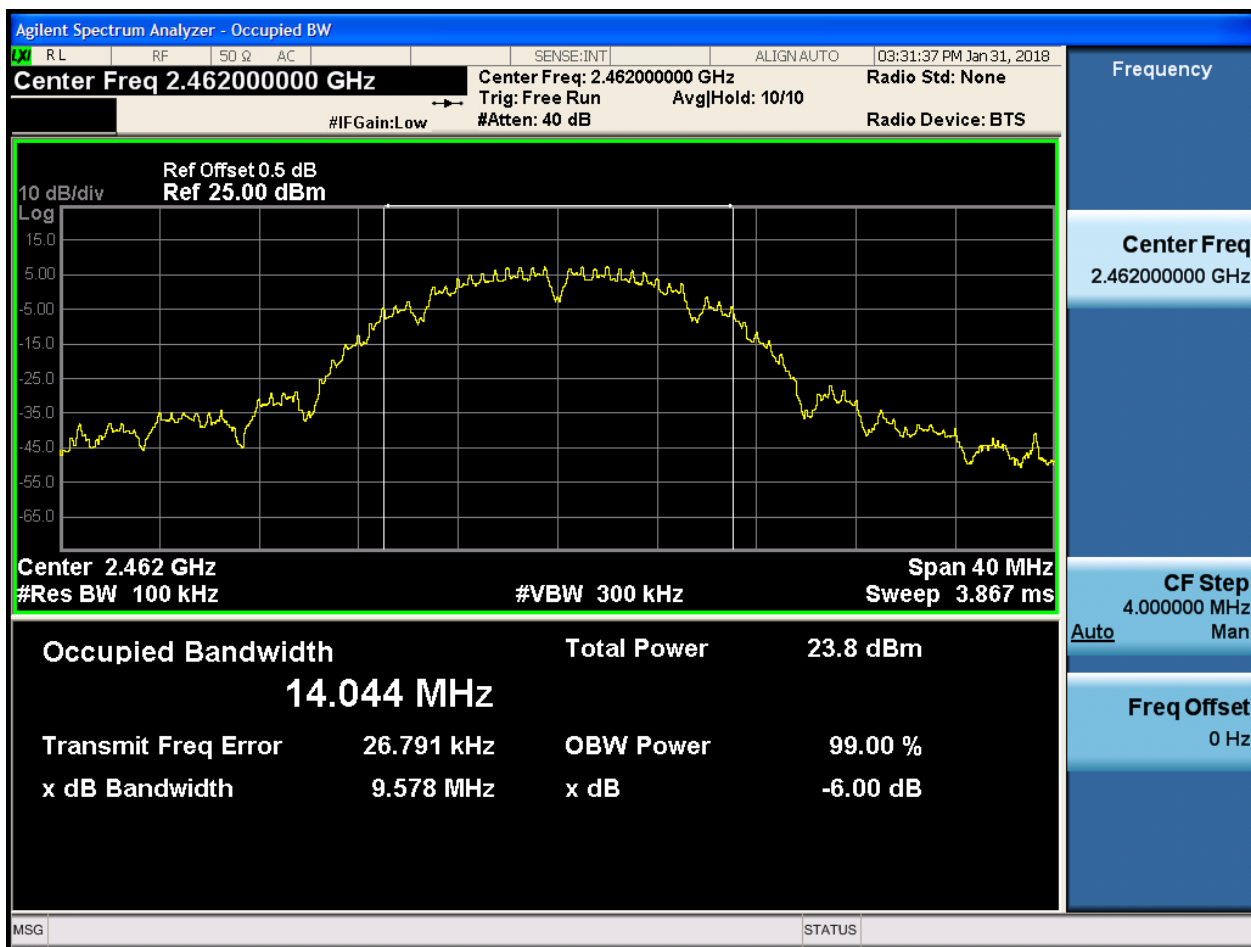


2.2 11B_M@Ant 1



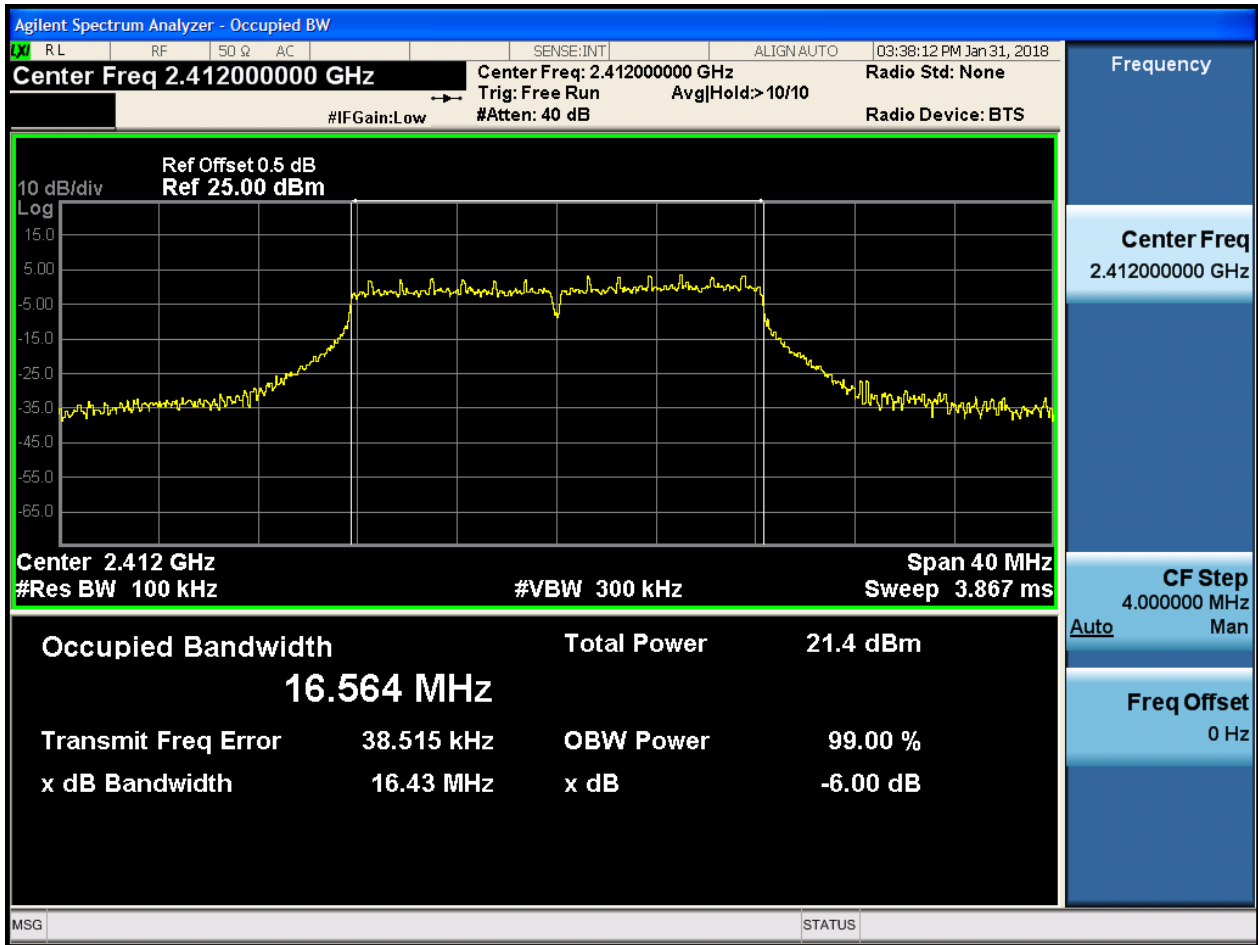


2.3 11B_H@Ant1



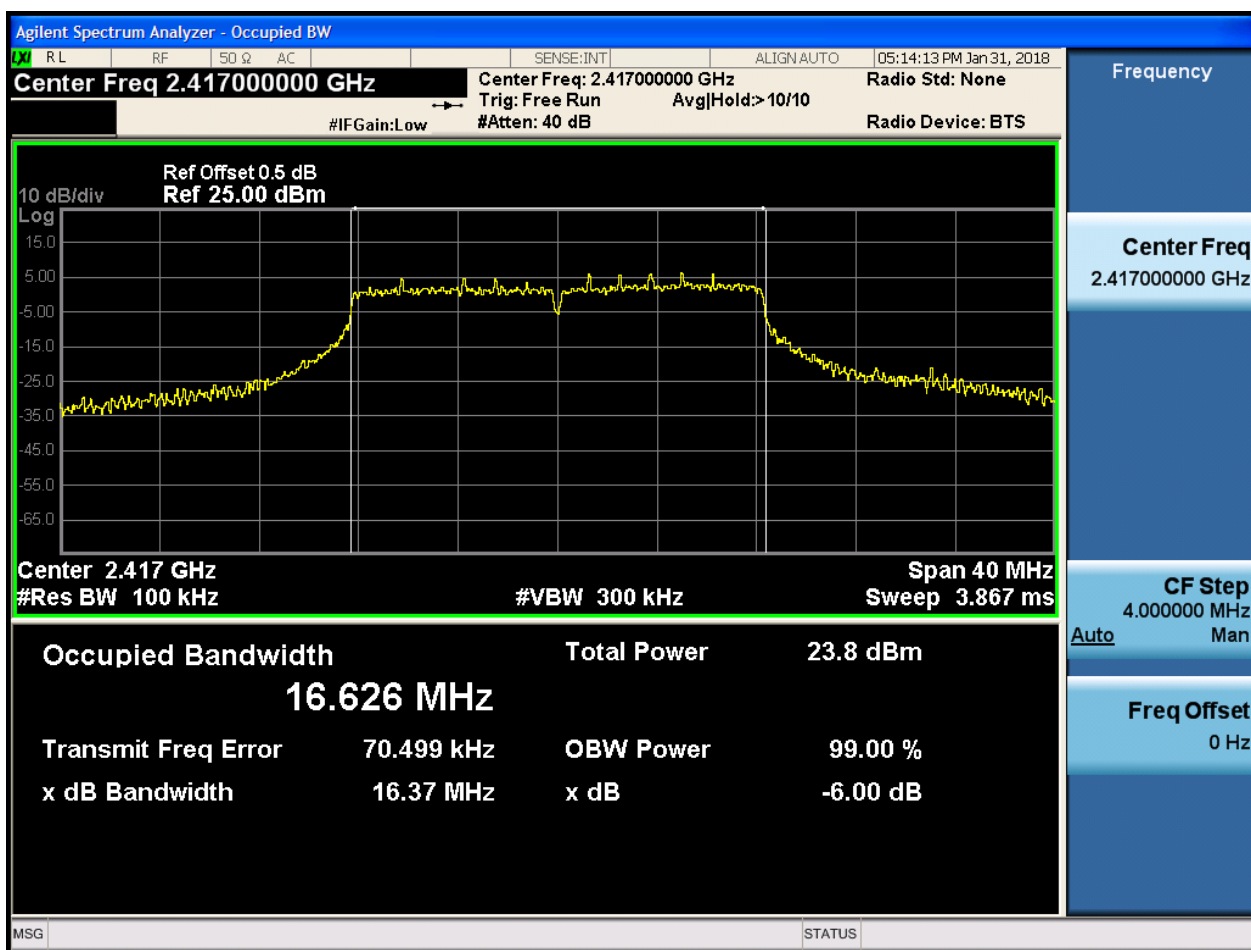


2.4 11G_L_2412@Ant 1



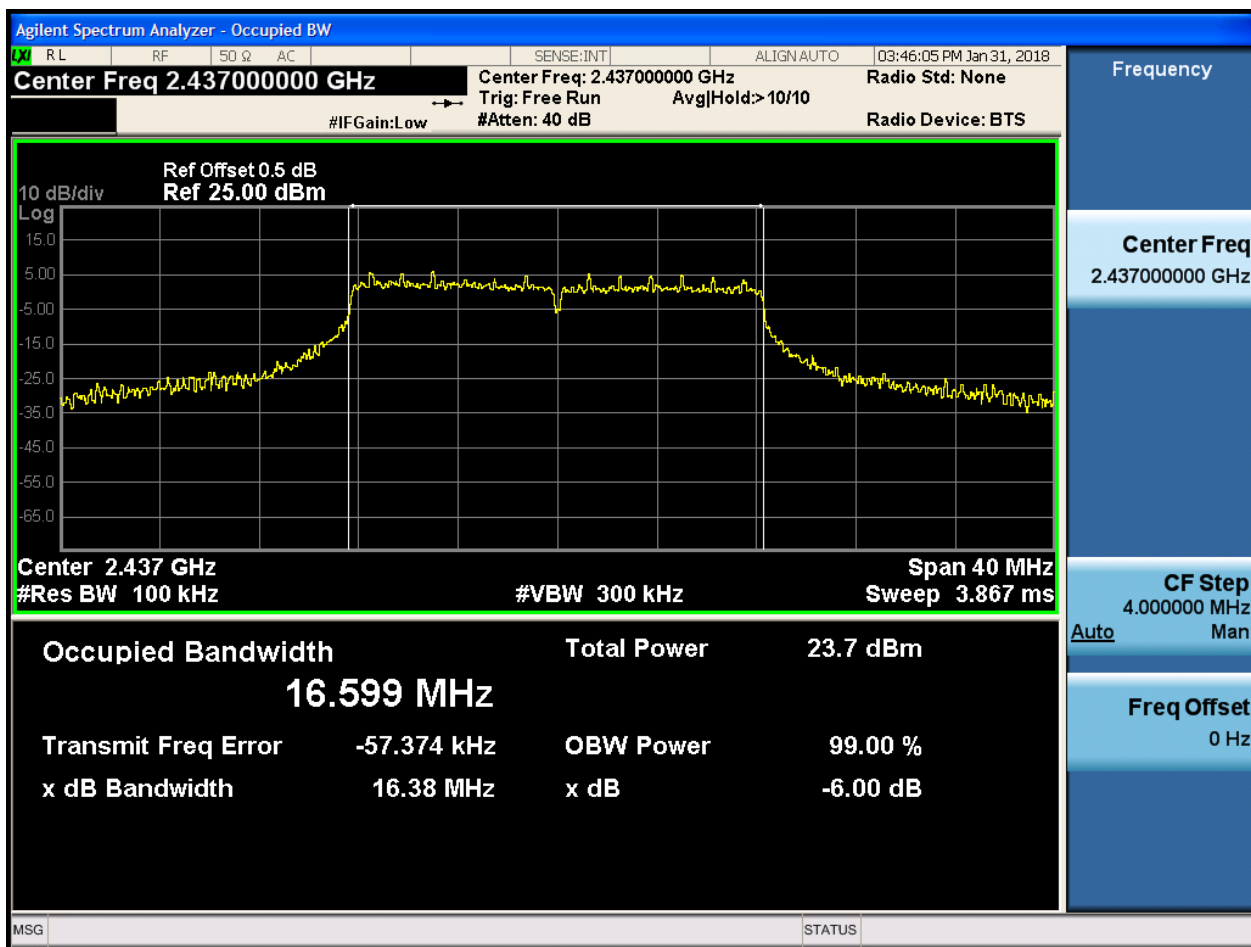


2.5 11G_L_2417@Ant 1



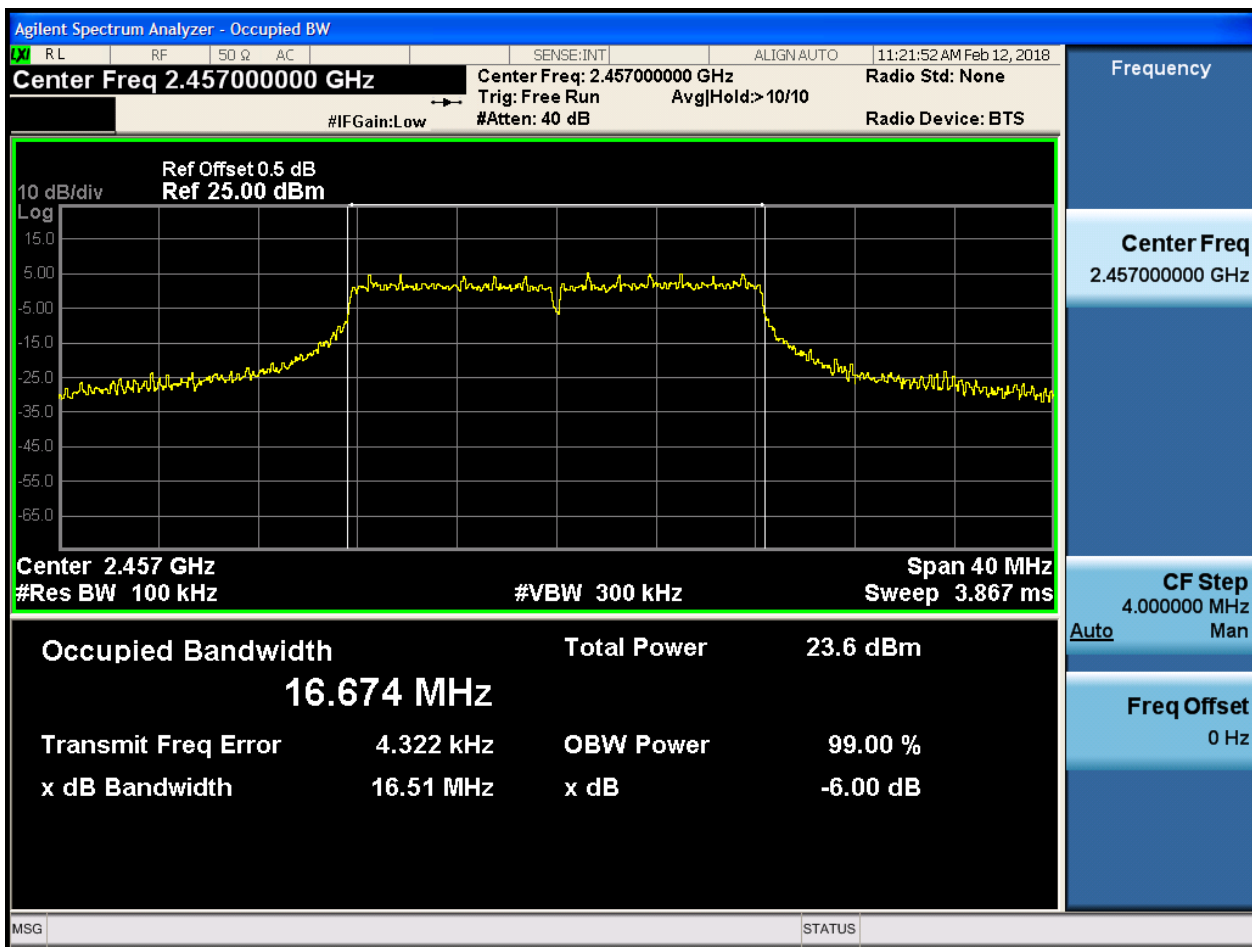


2.6 11G_M@Ant 1



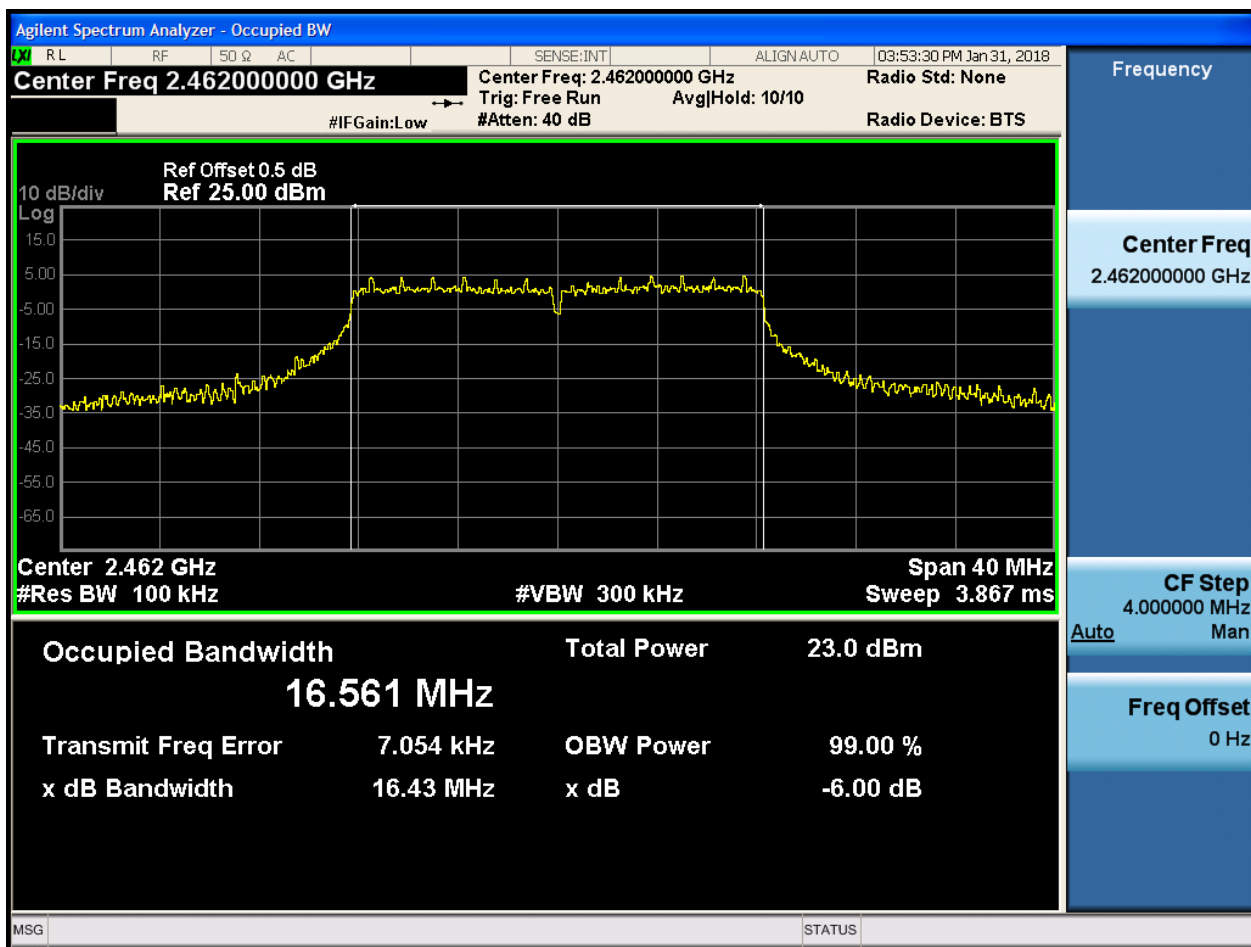


2.7 11G_H_2457@Ant 1



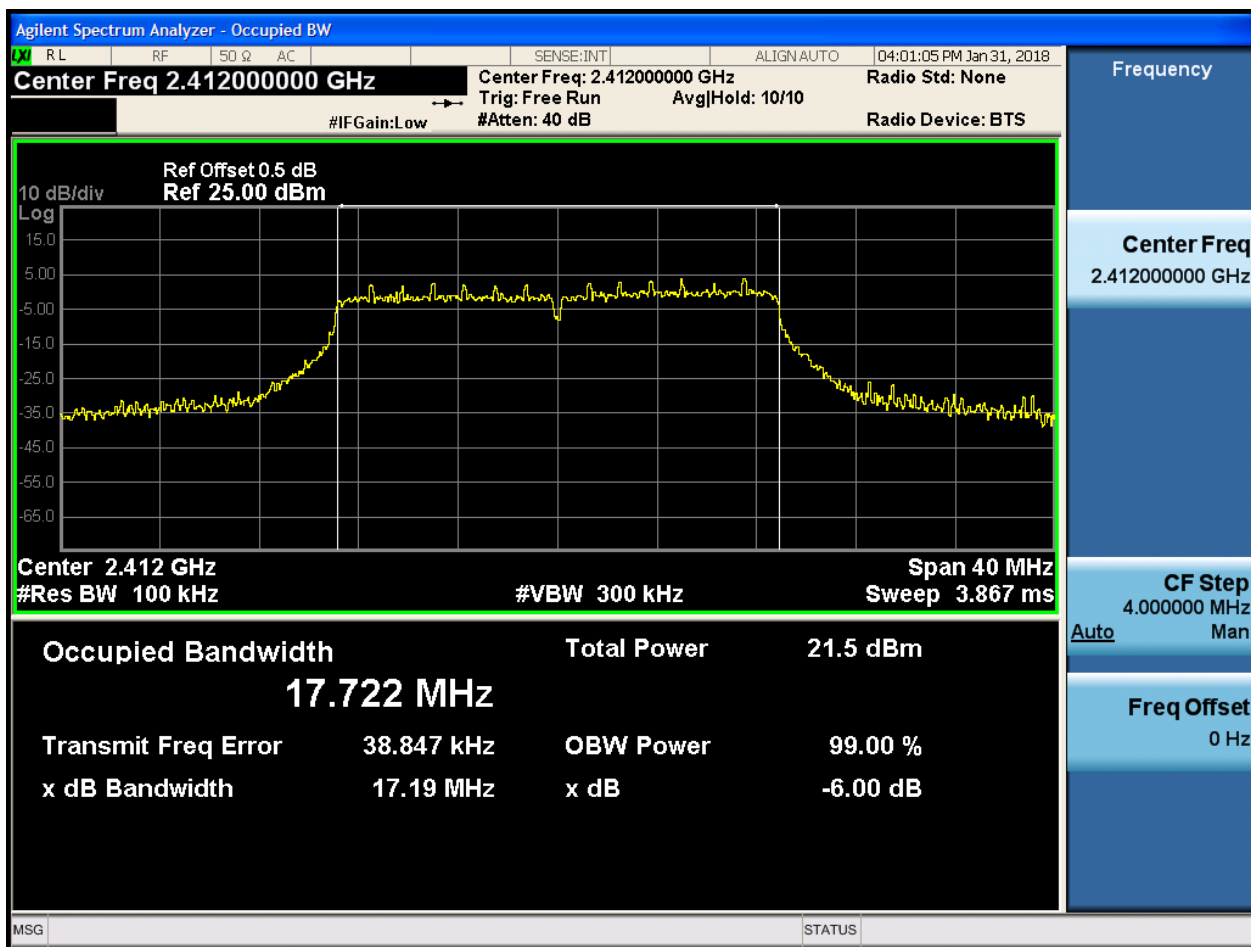


2.8 11G_H_2462@Ant 1



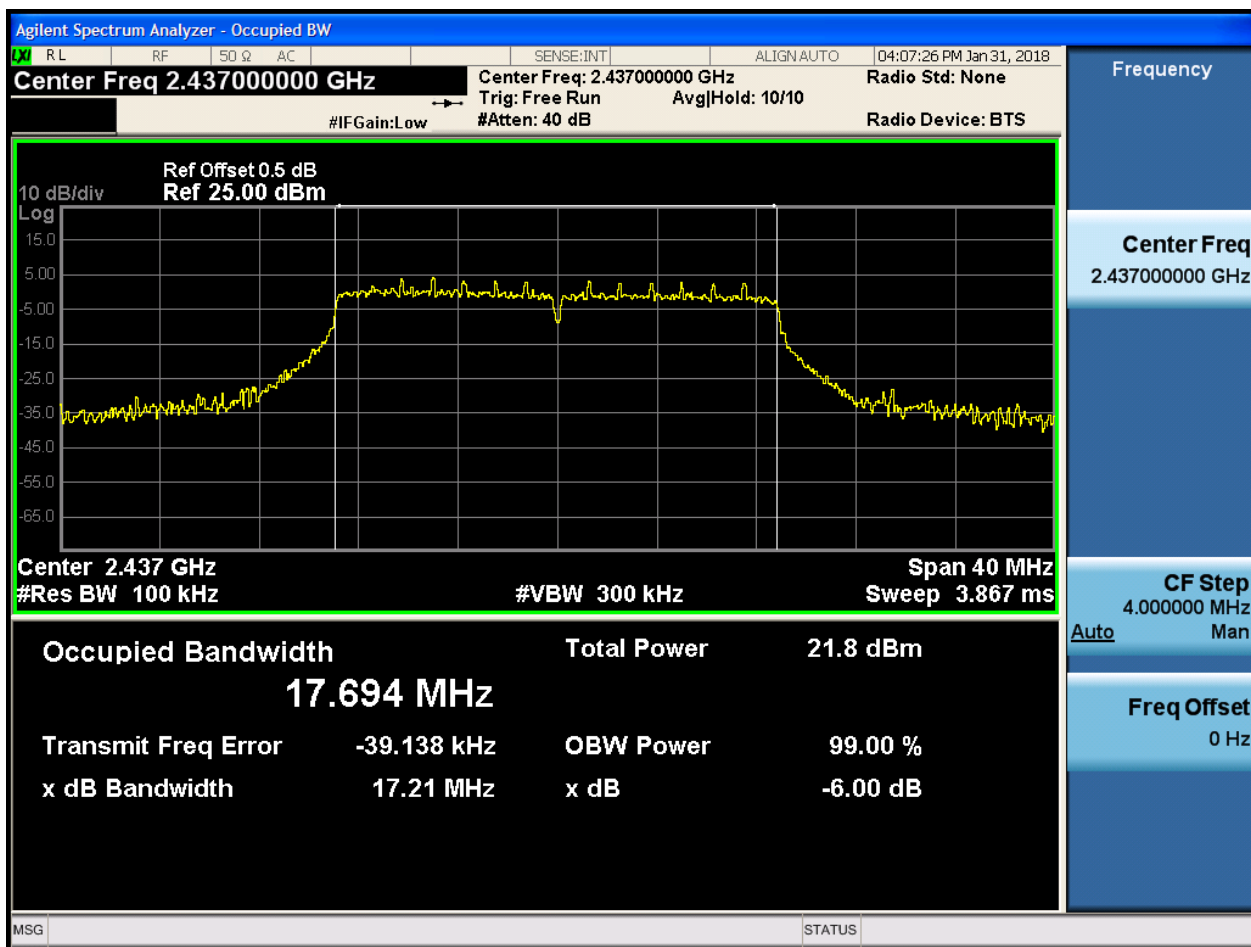


2.9 11N20_L@Ant 1



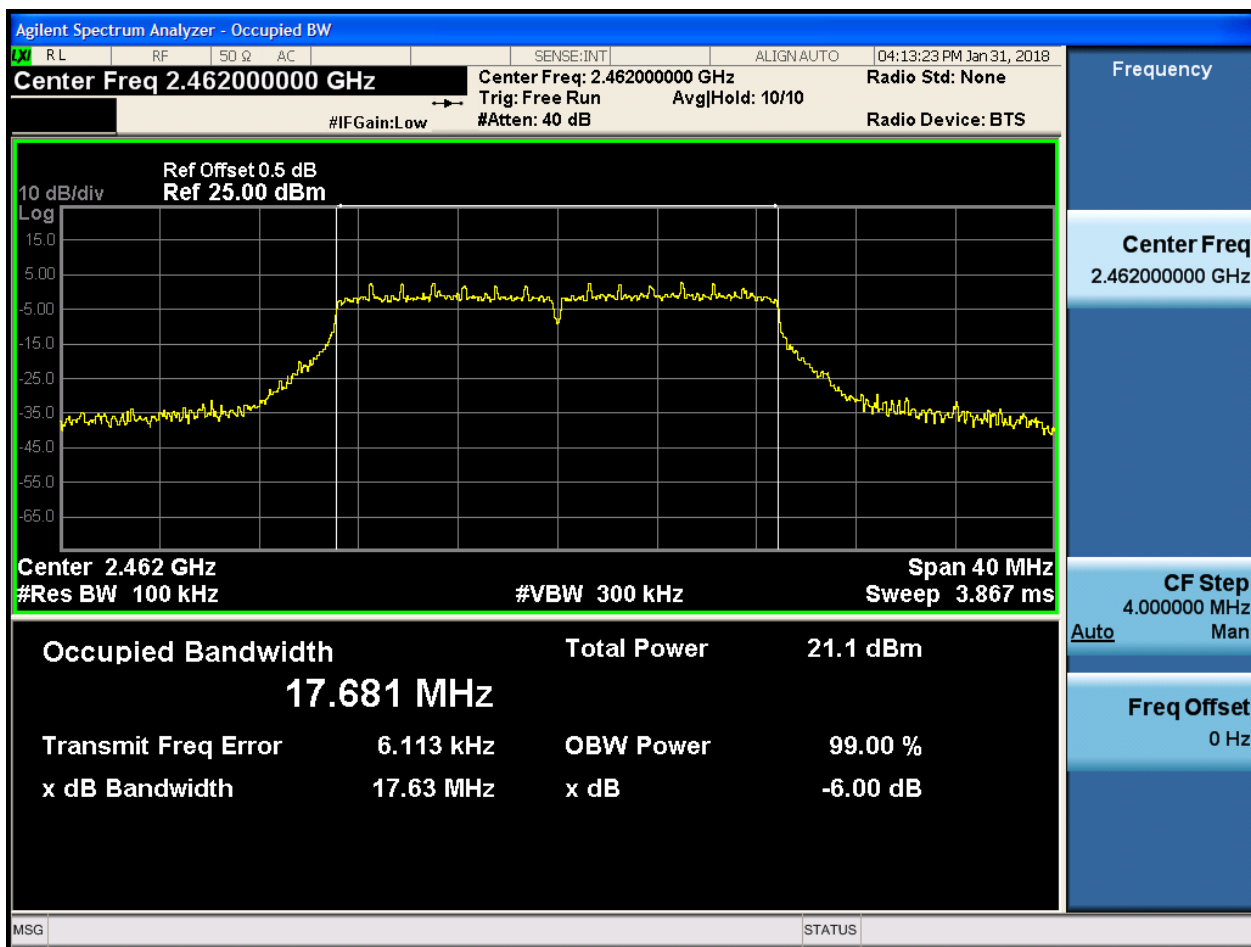


2.10 11N20_M@Ant 1



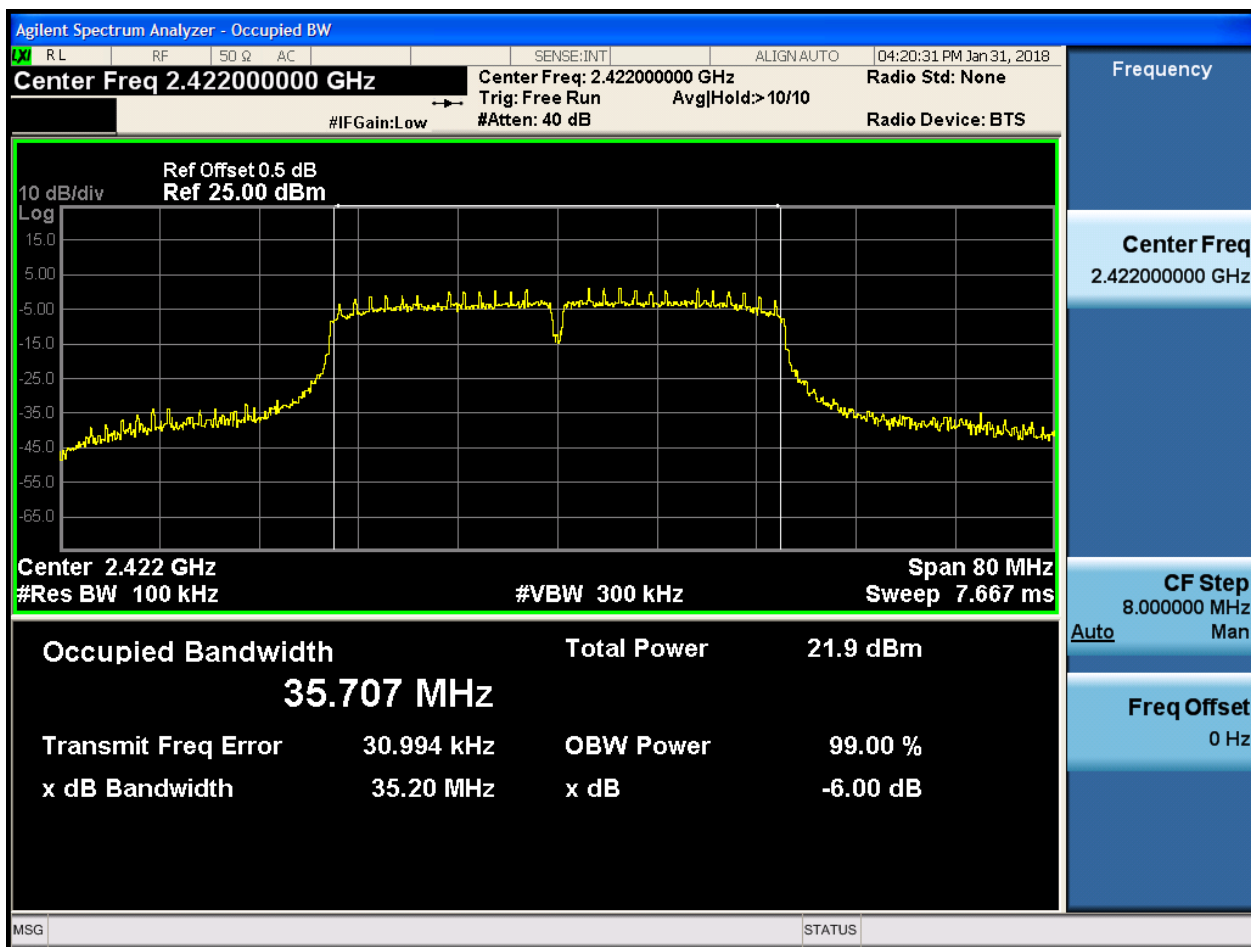


2.11 11N20_H@Ant 1



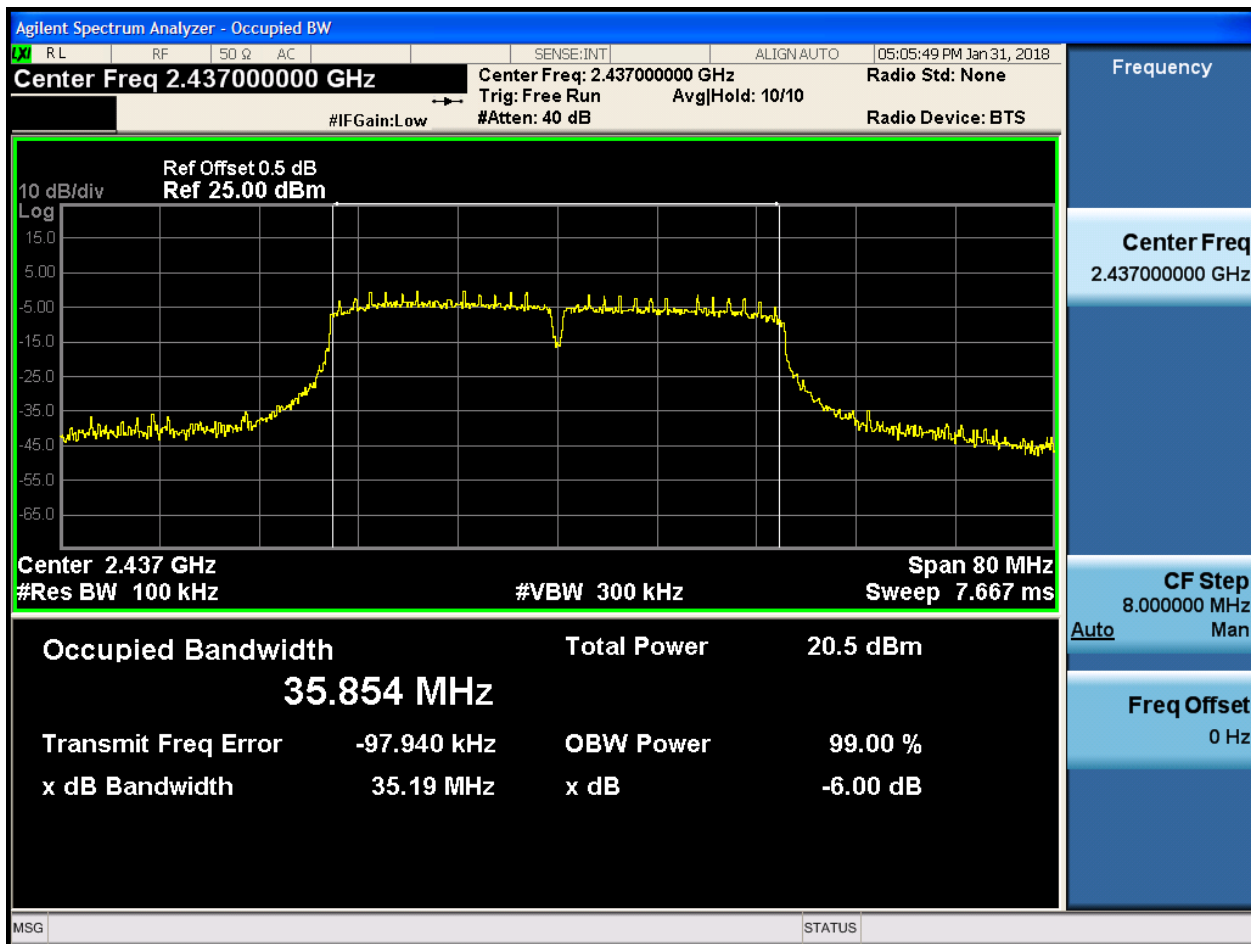


2.12 11N40_L@Ant 1



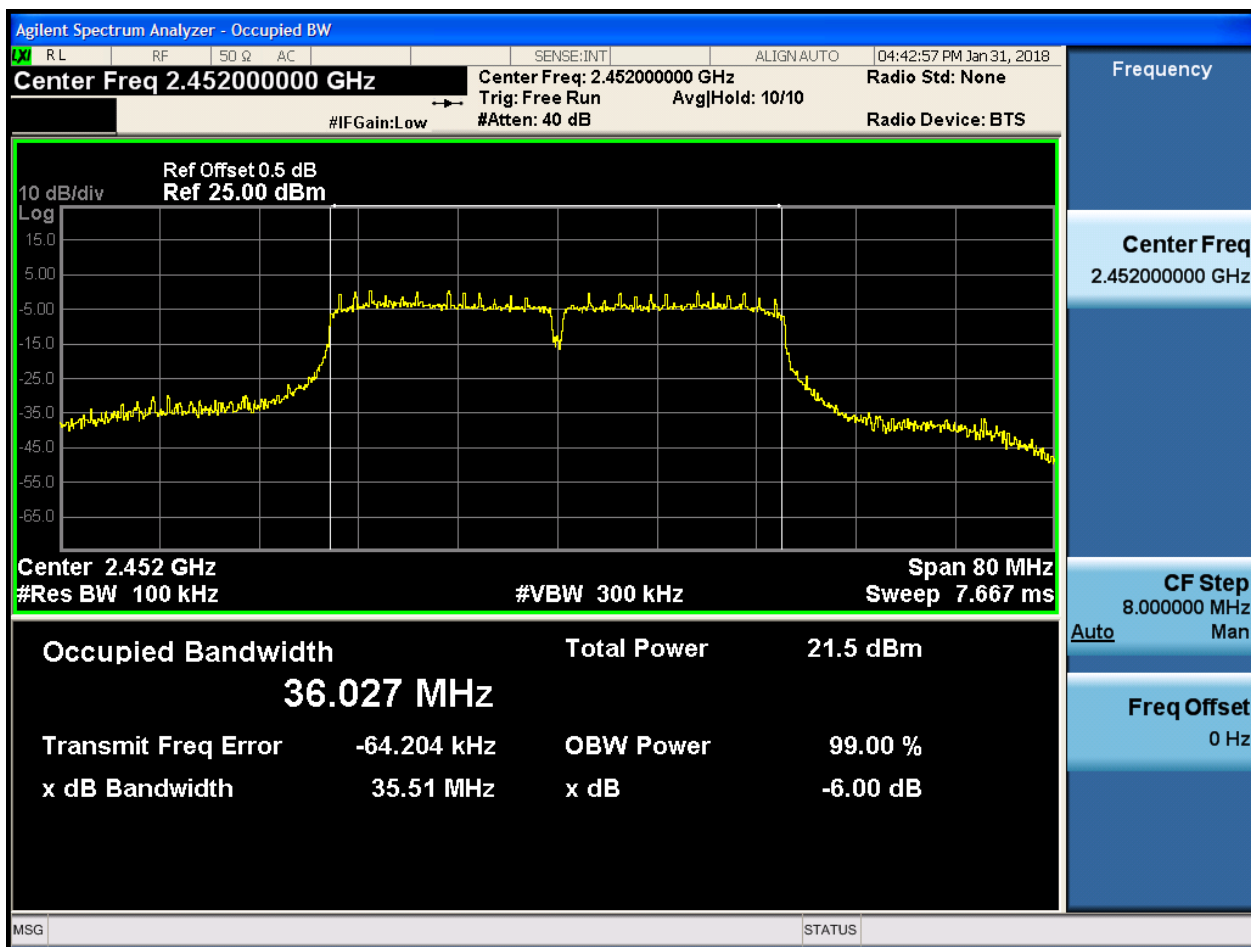


2.13 11N40_M@Ant 1





2.14 11N40_H@Ant 1



Appendix B: Occupied Bandwidth

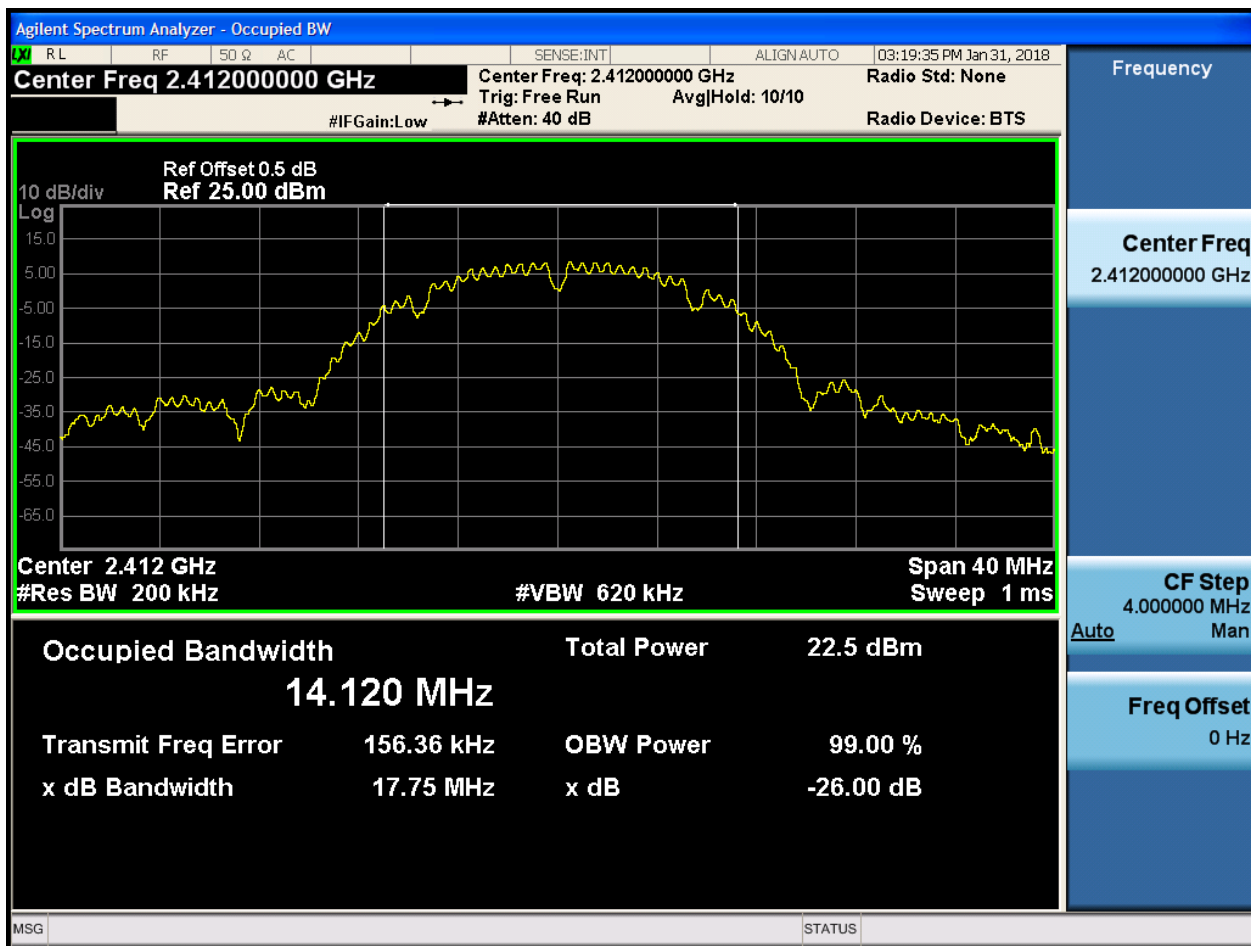
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	14.12	pass
11B	M	2437	Ant 1	14.09	pass
11B	H	2462	Ant 1	14.04	pass
11G	L	2412	Ant 1	16.87	pass
11G	L	2417	Ant 1	16.97	pass
11G	M	2437	Ant 1	16.95	pass
11G	H	2457	Ant 1	17.01	pass
11G	H	2462	Ant 1	16.84	pass
11N20	L	2412	Ant 1	17.87	pass
11N20	M	2437	Ant 1	17.82	pass
11N20	H	2462	Ant 1	17.85	pass
11N40	L	2422	Ant 1	35.97	pass
11N40	M	2437	Ant 1	36.04	pass
11N40	H	2452	Ant 1	36.25	pass

Part II - Test Plots

2.1 11B_L@Ant 1



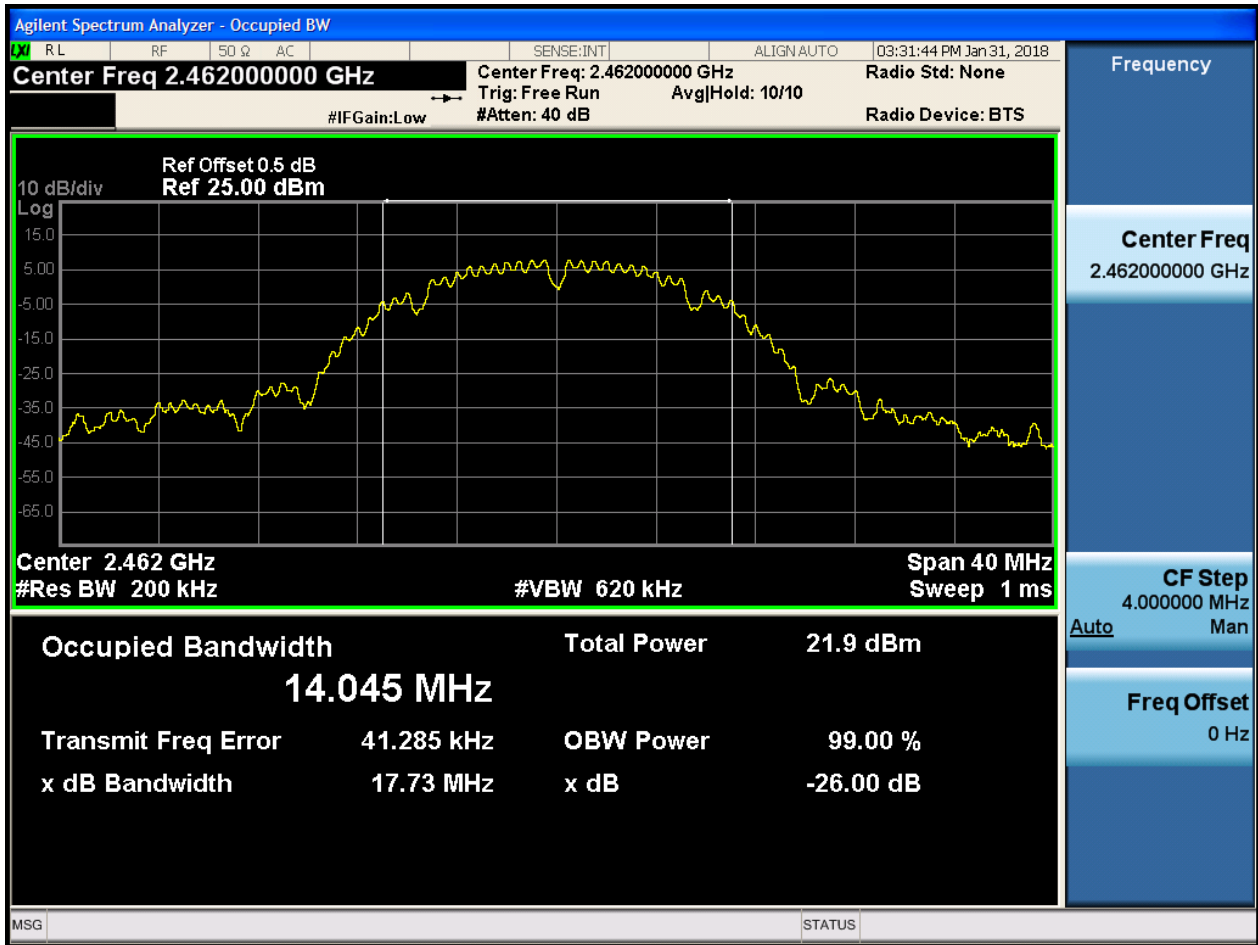


2.2 11B_M@Ant 1



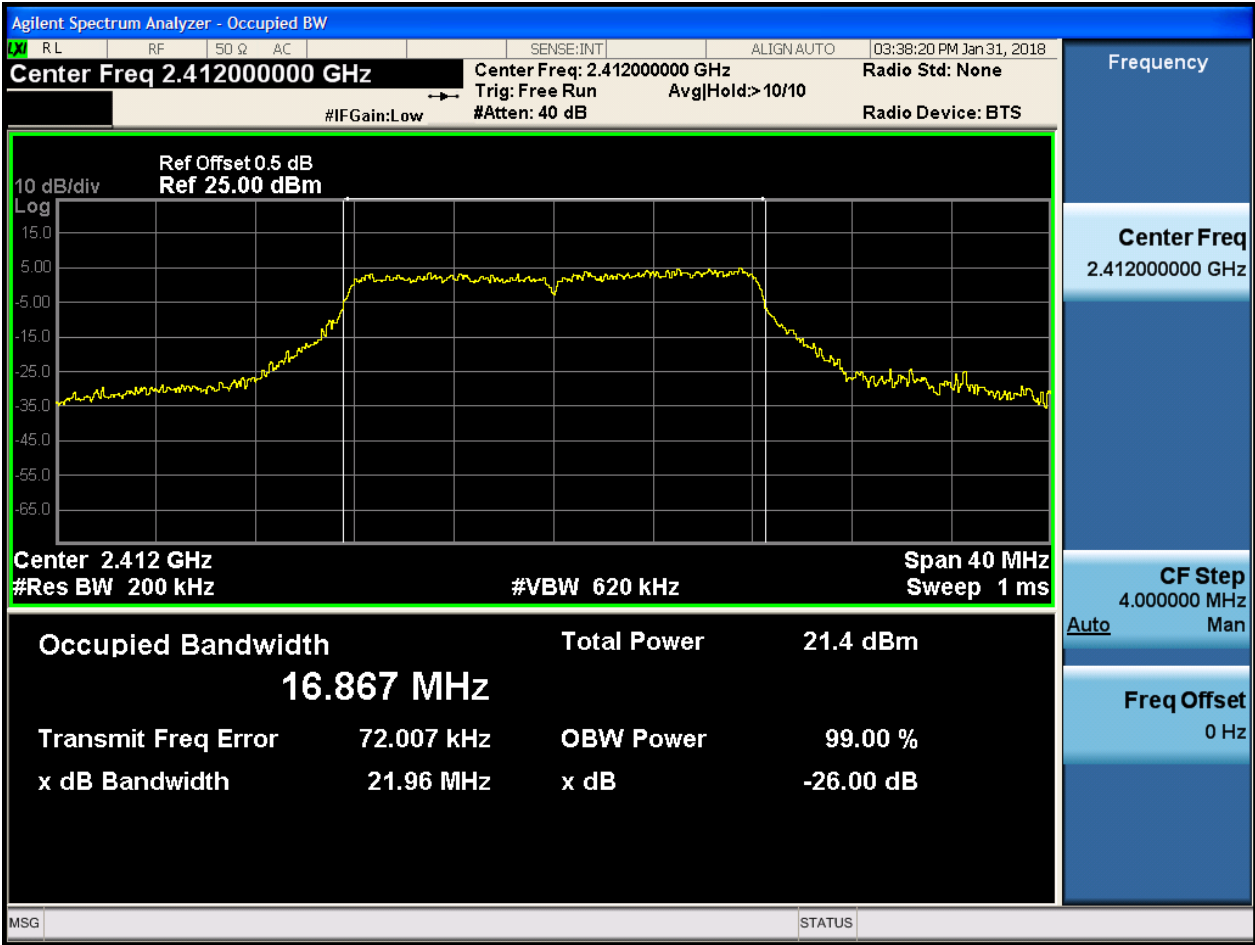


2.3 11B_H@Ant 1



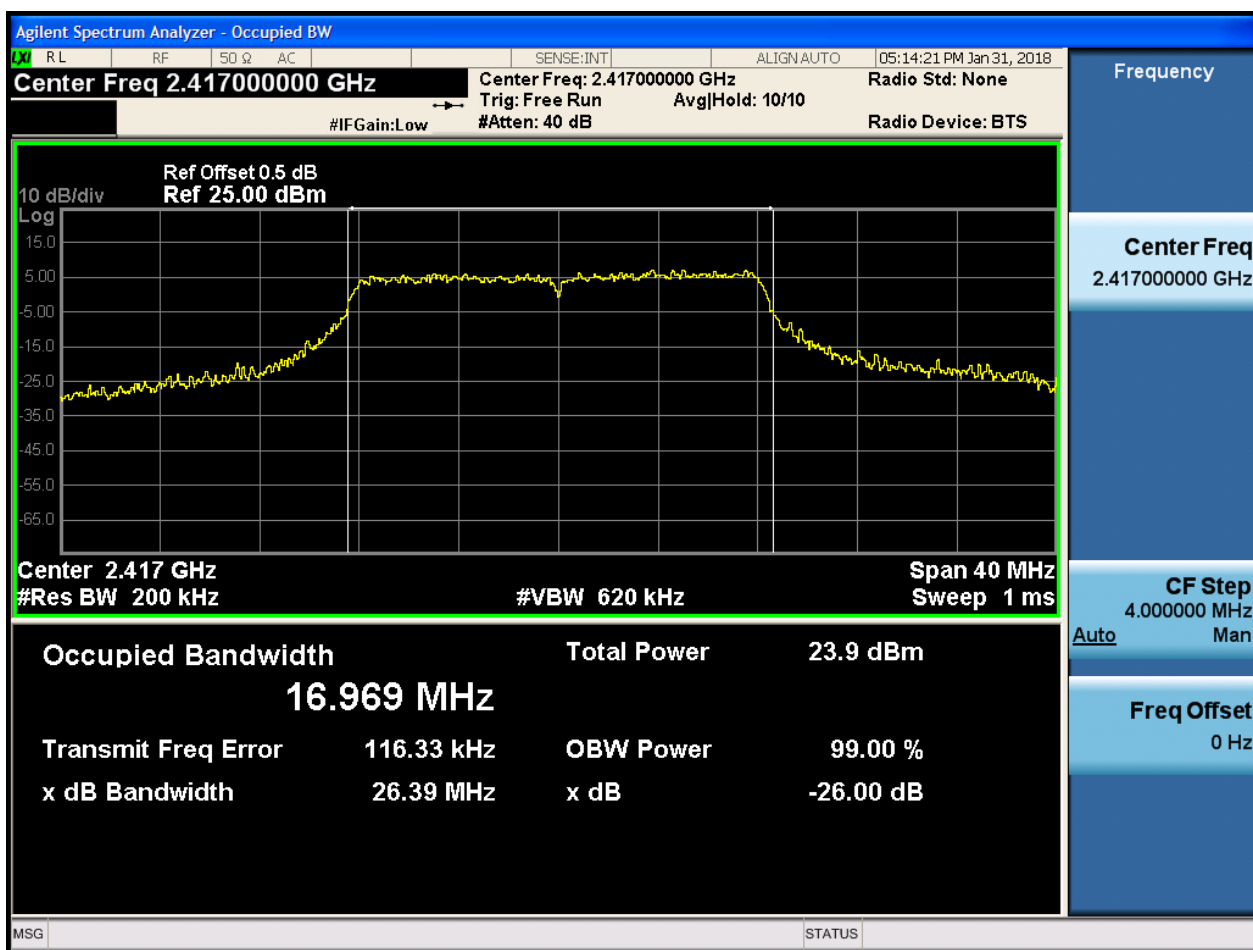


2.4 11G_L_2412@Ant 1



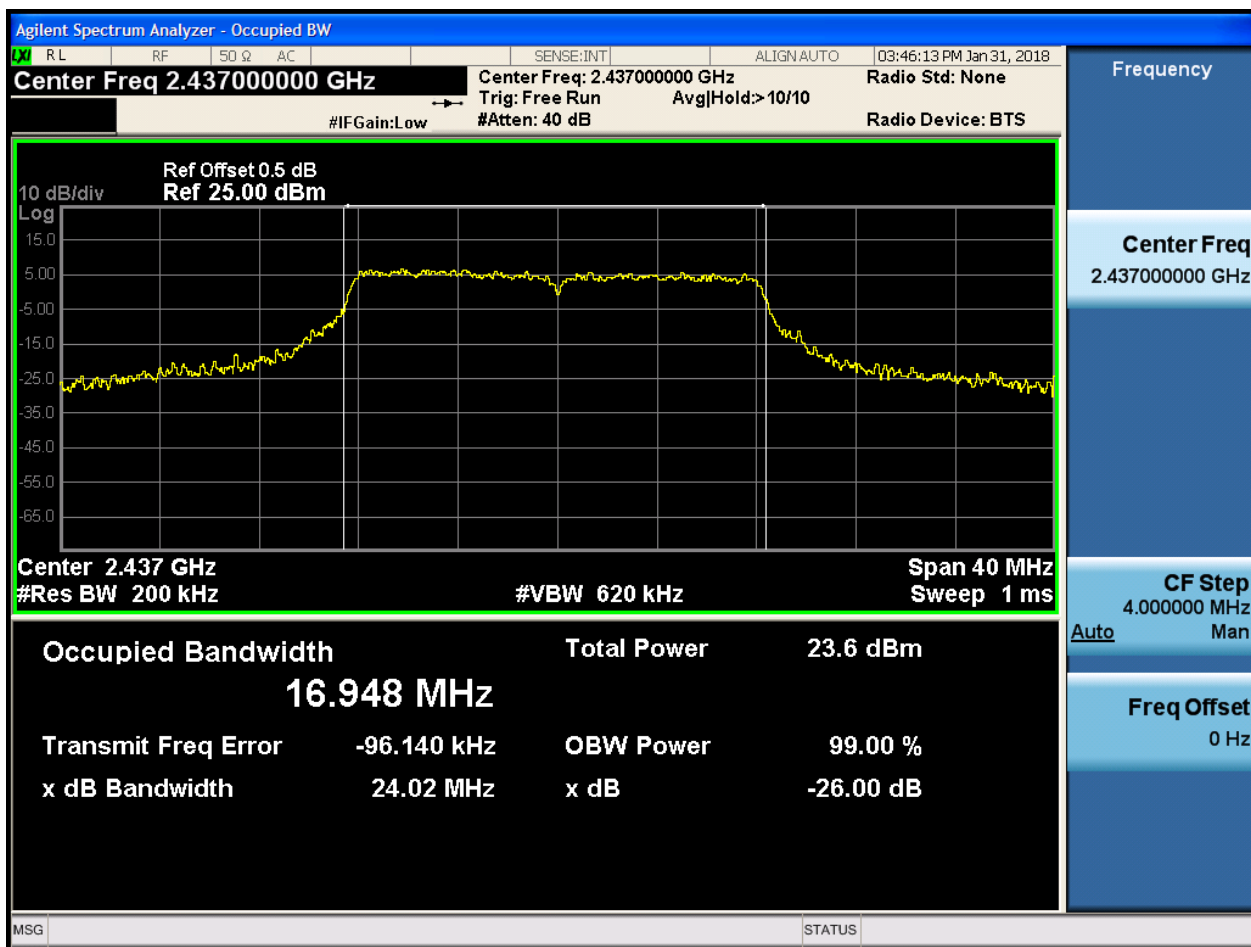


2.5 11G_L_2417@Ant 1



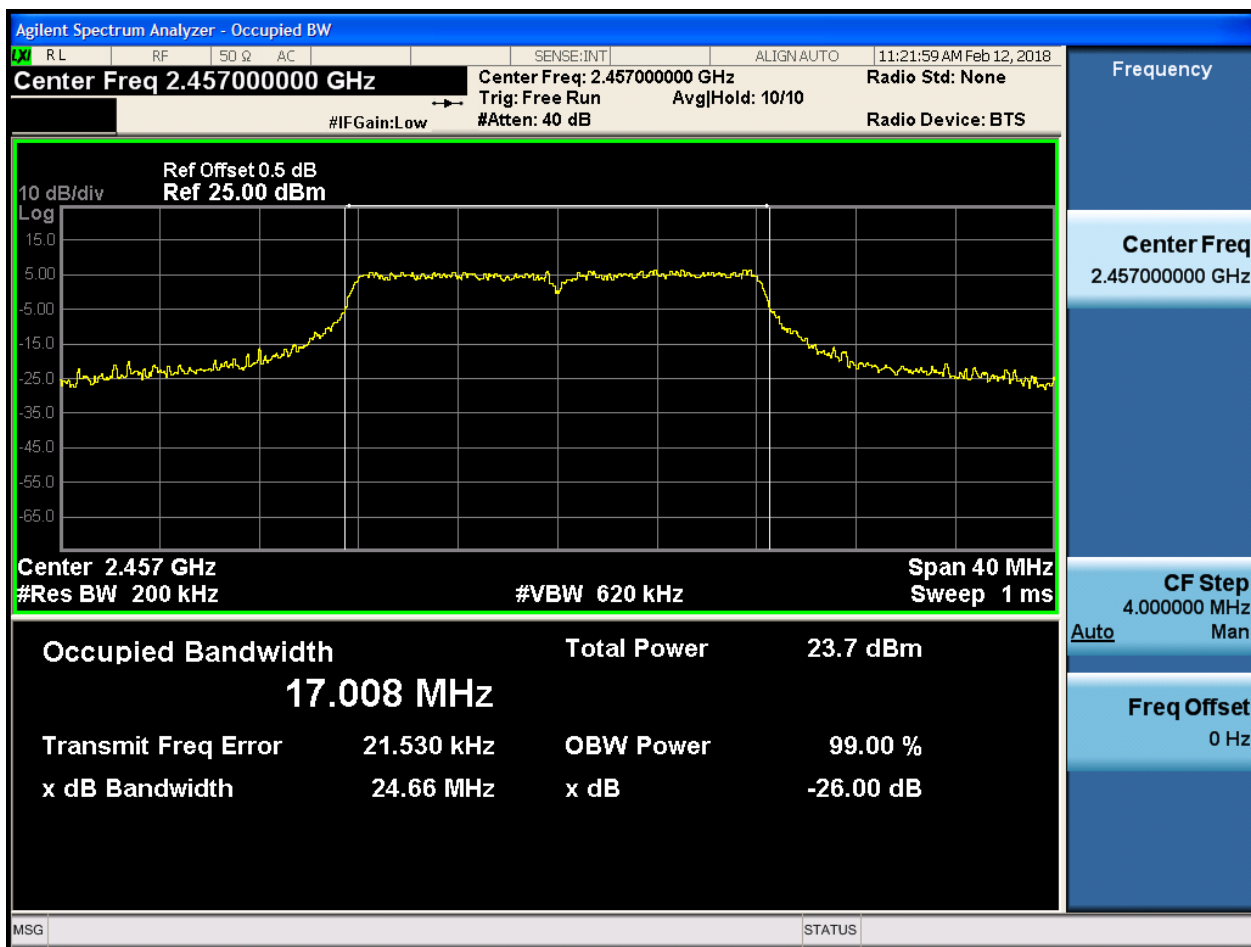


2.6 11G_M@Ant 1



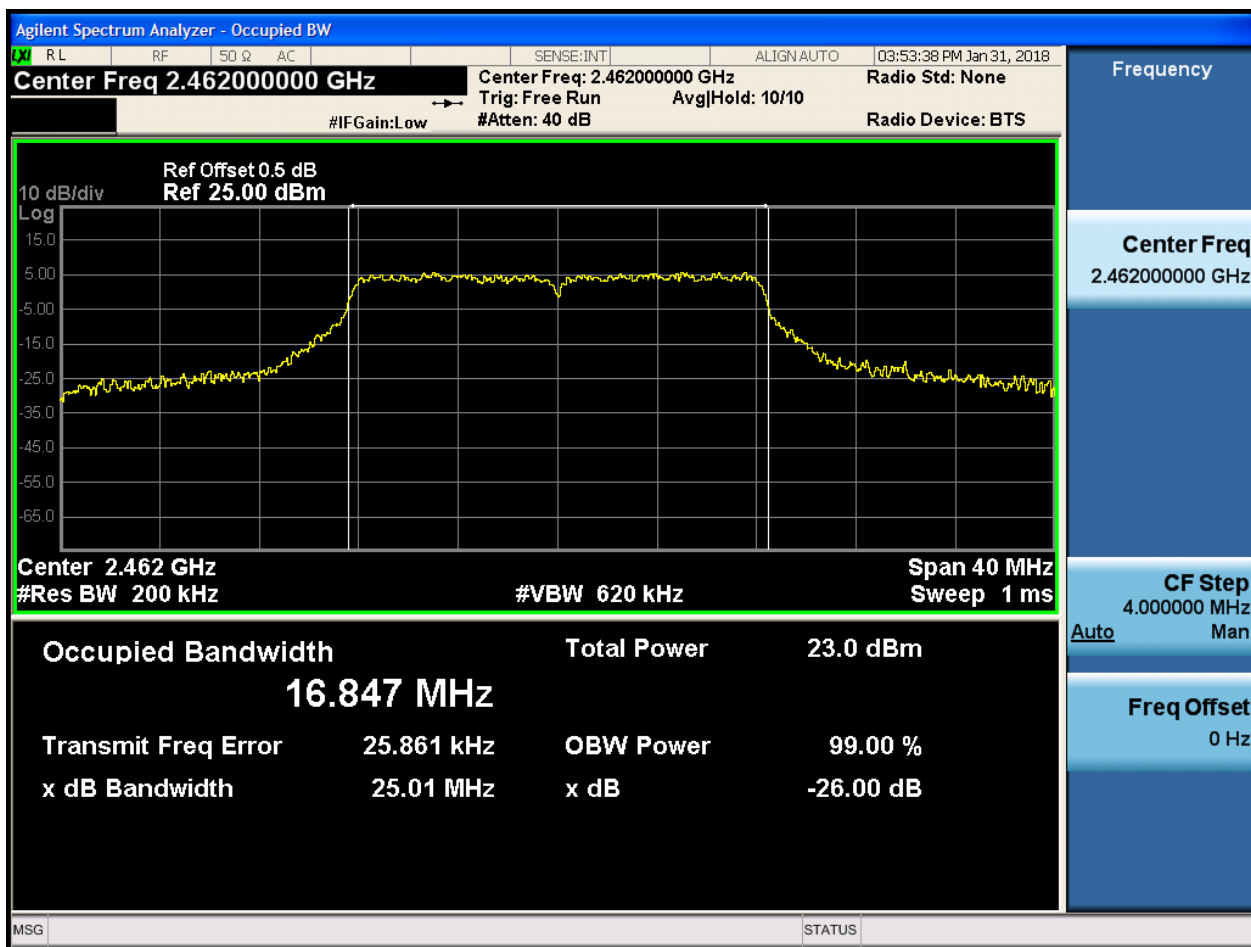


2.7 11G_H_2457@Ant 1



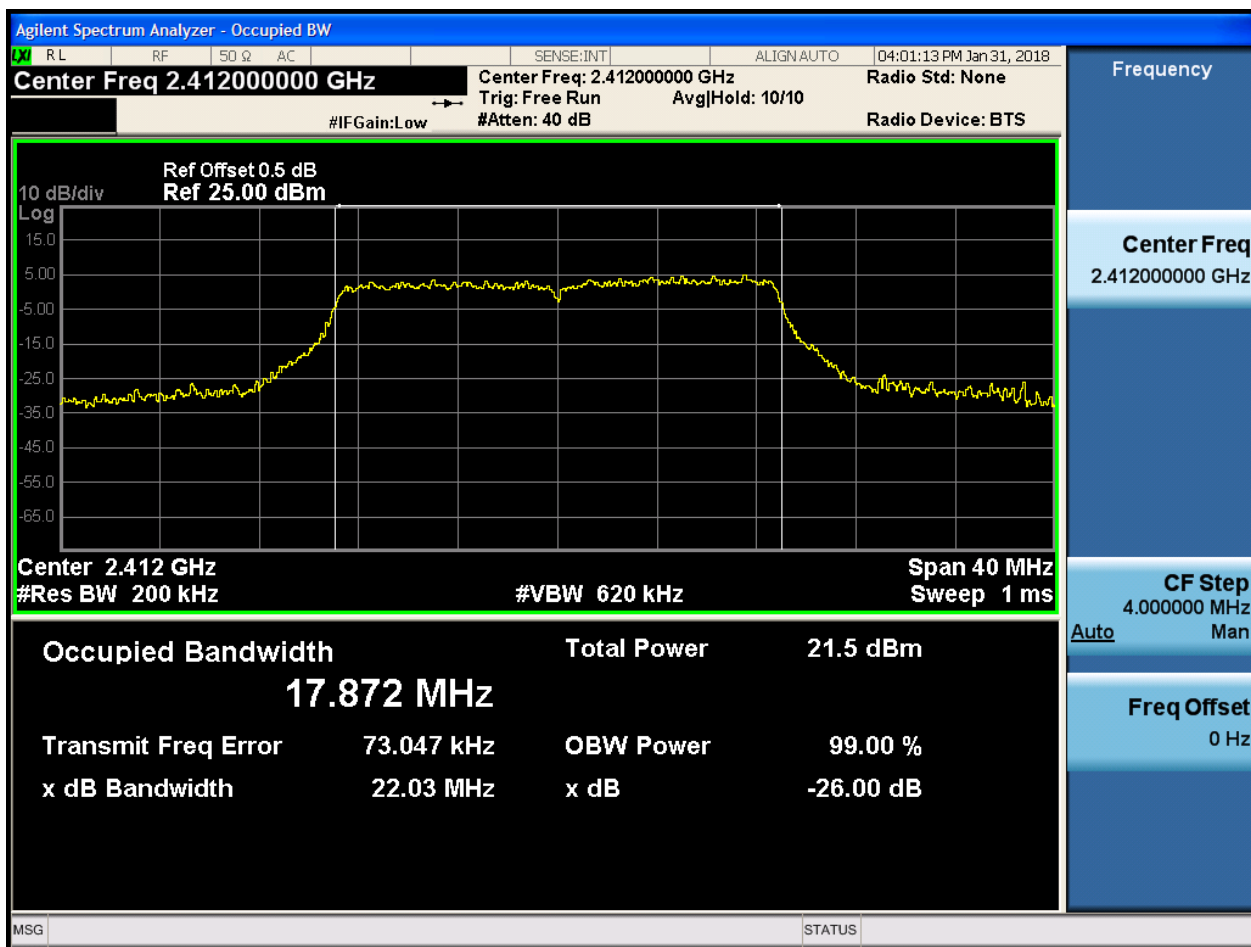


2.8 11G_H_2462@Ant 1



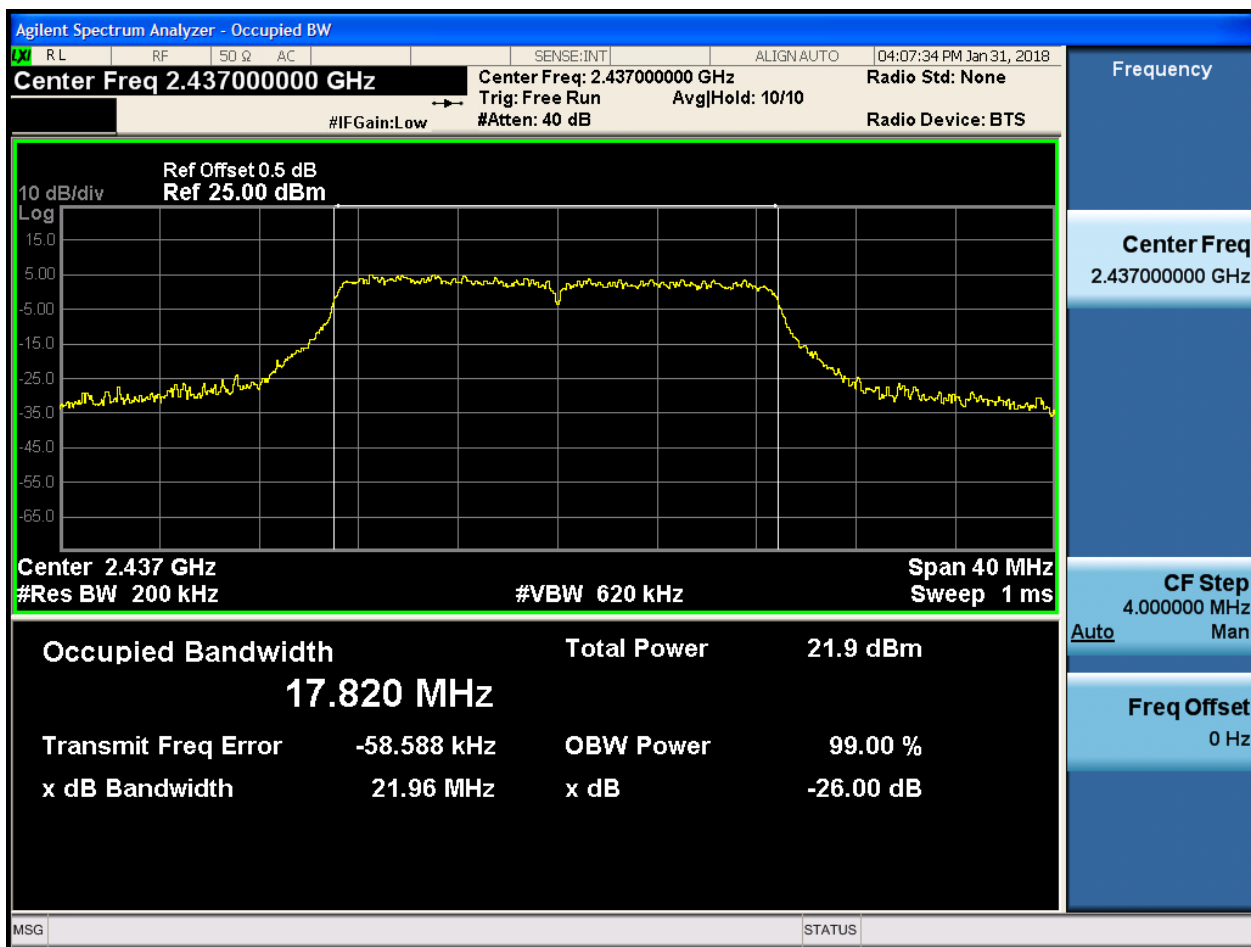


2.9 11N20_L@Ant 1



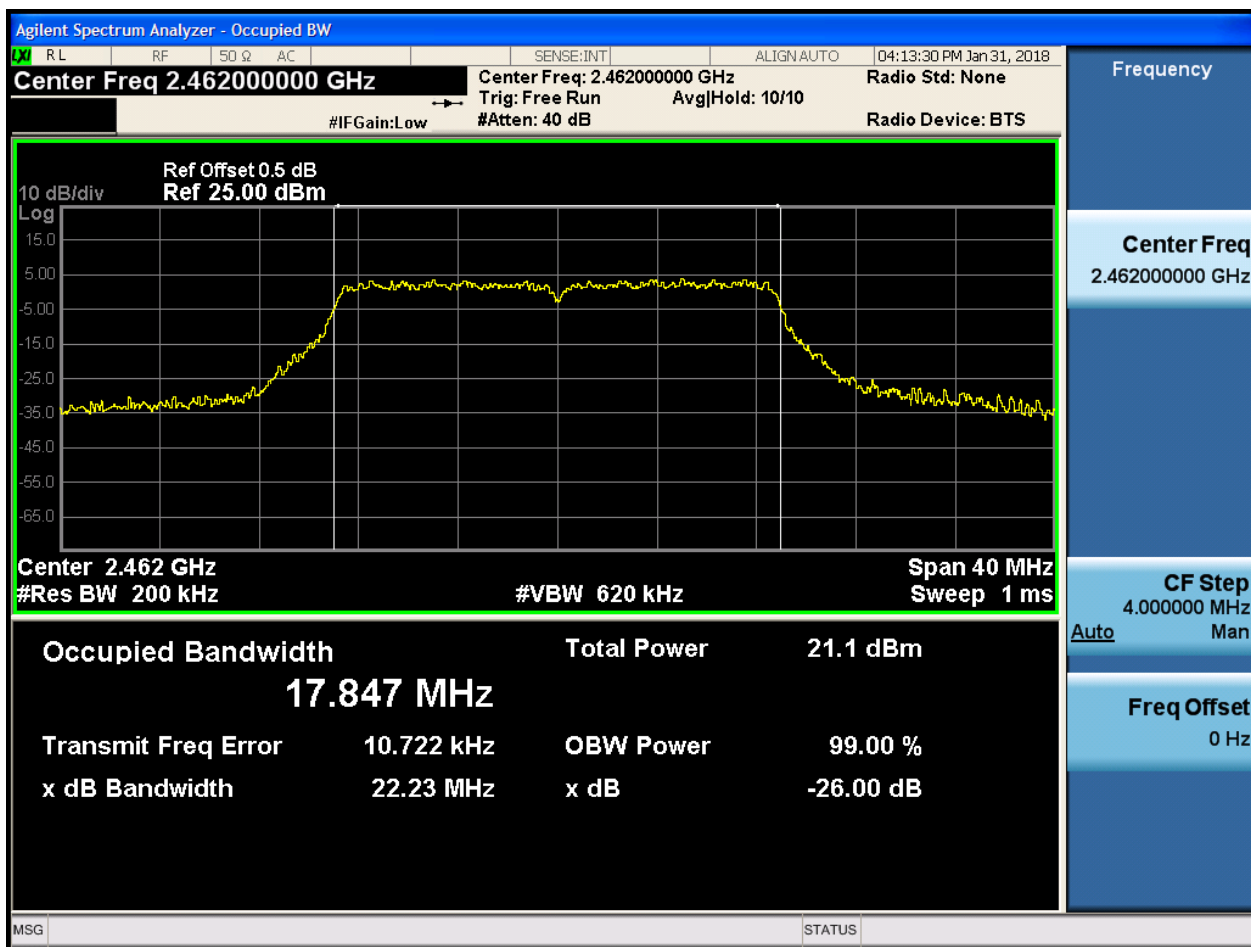


2.10 11N20_M@Ant 1



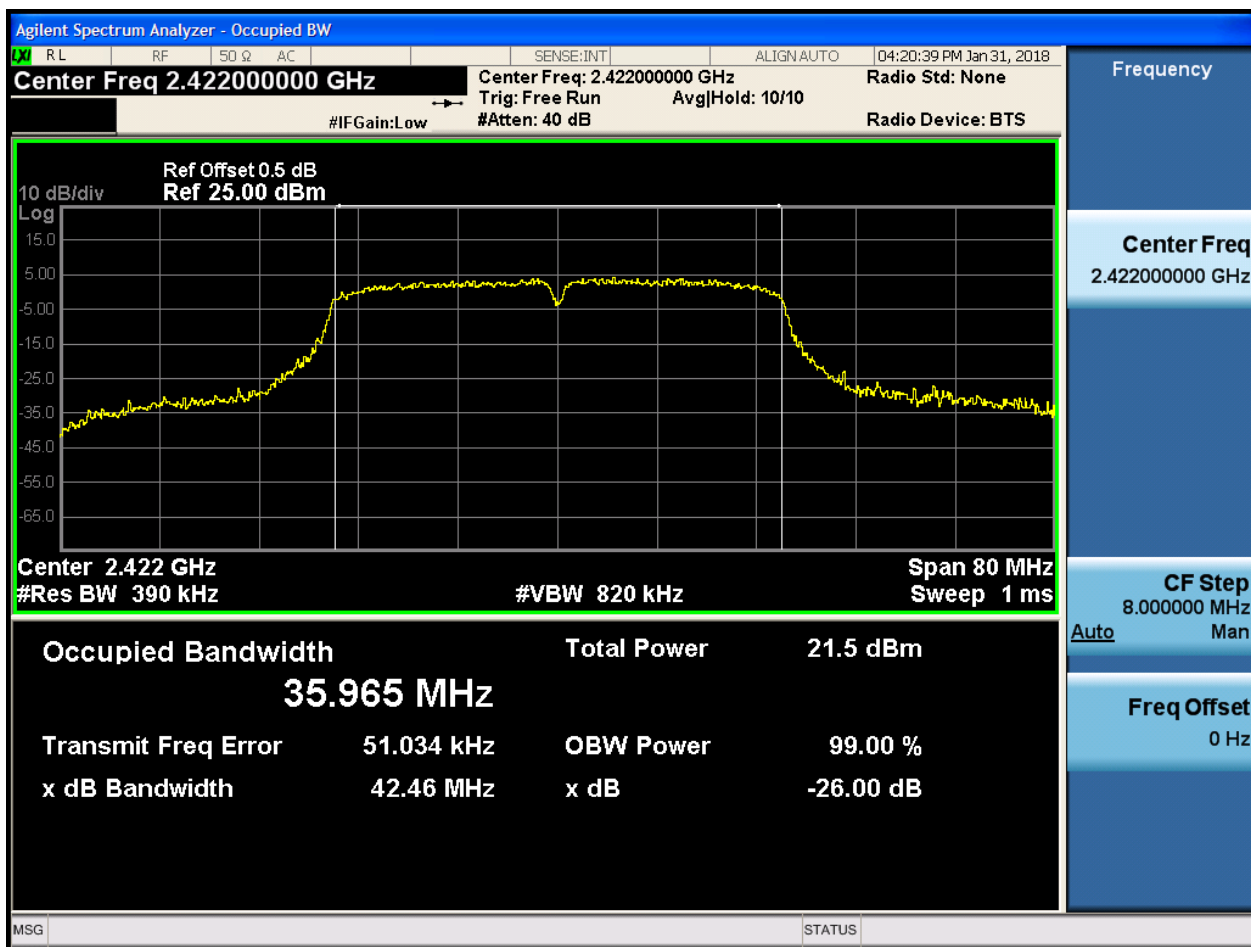


2.11 11N20_H@Ant 1



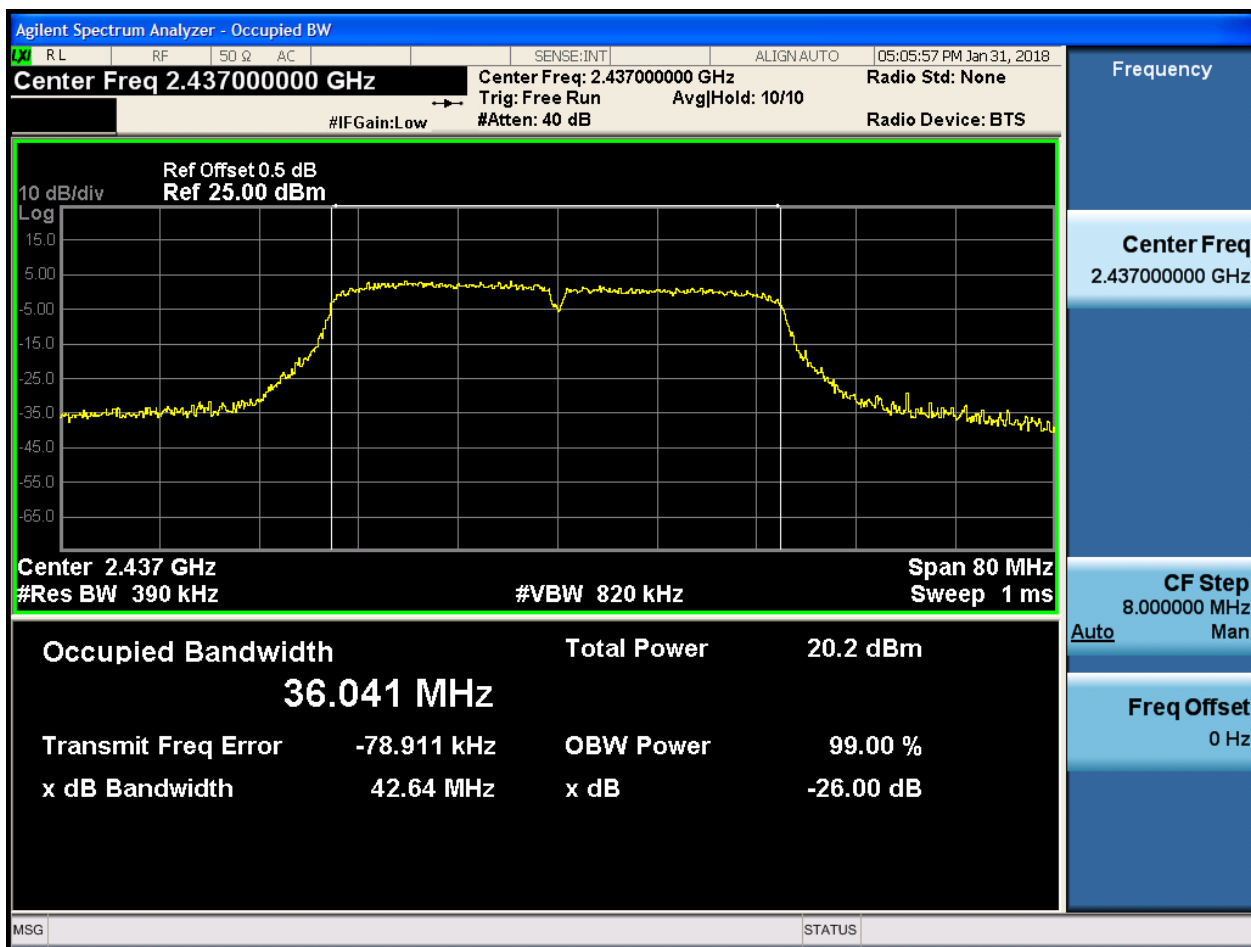


2.12 11N40_L@Ant 1



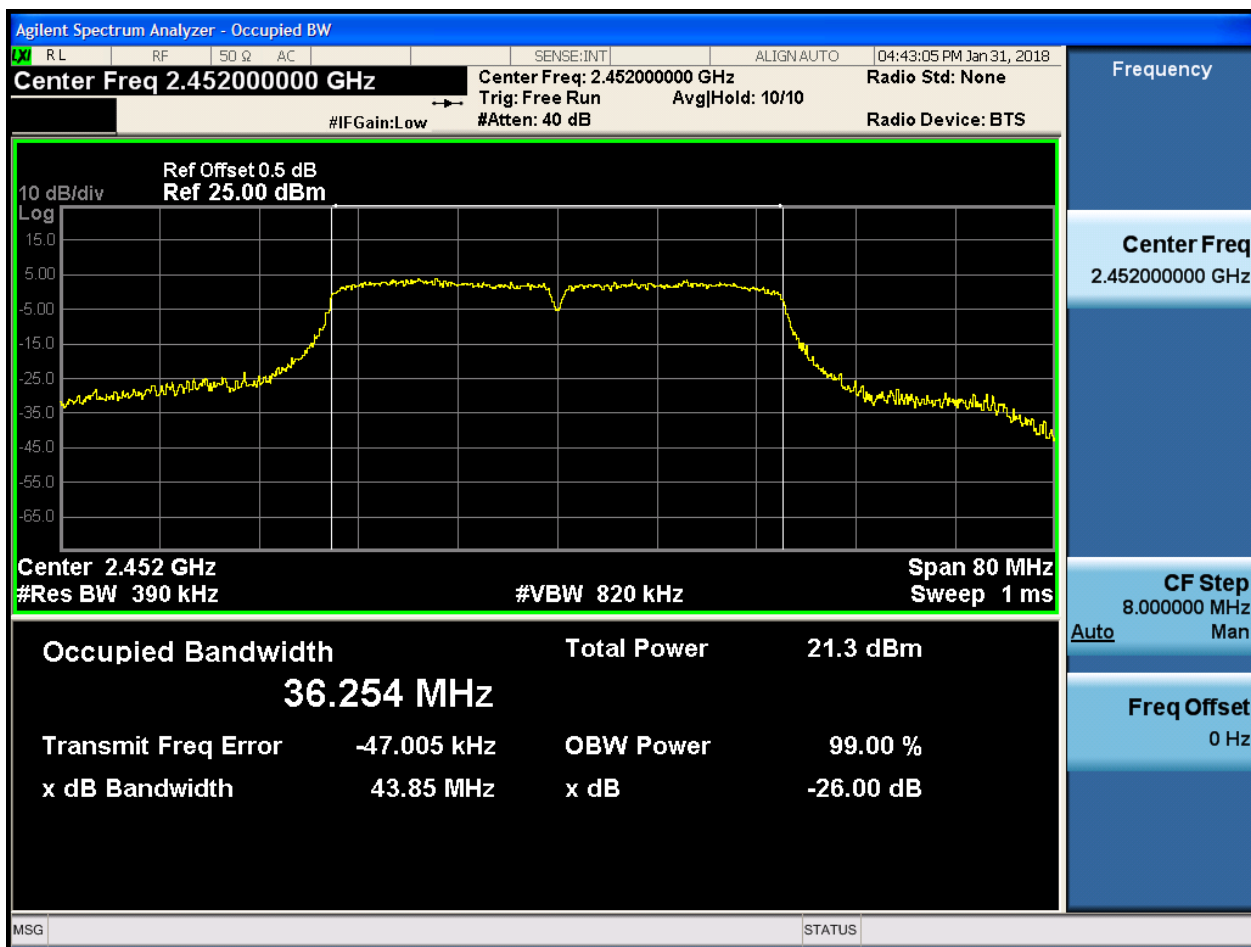


2.13 11N40_M@Ant 1





2.14 11N40_H@Ant 1





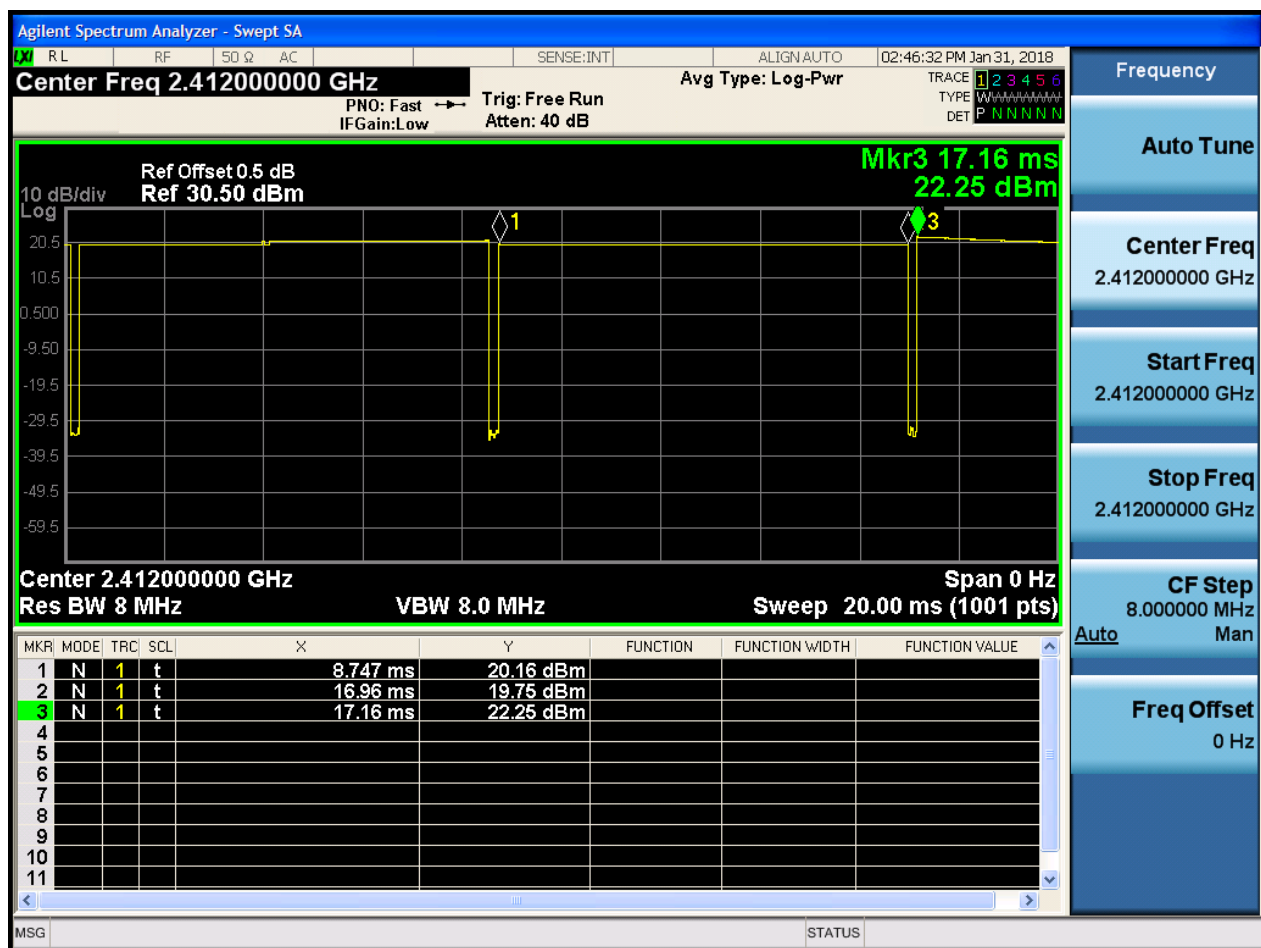
Appendix C: Duty Cycle

Part I - Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant1:CH1,CH6,CH11	98
11G	Ant1:CH1,CH2,CH6,CH11	87
11N20M	Ant1:CH1, CH6,CH11	86
11N40M	Ant1:CH3, CH6,CH9	76

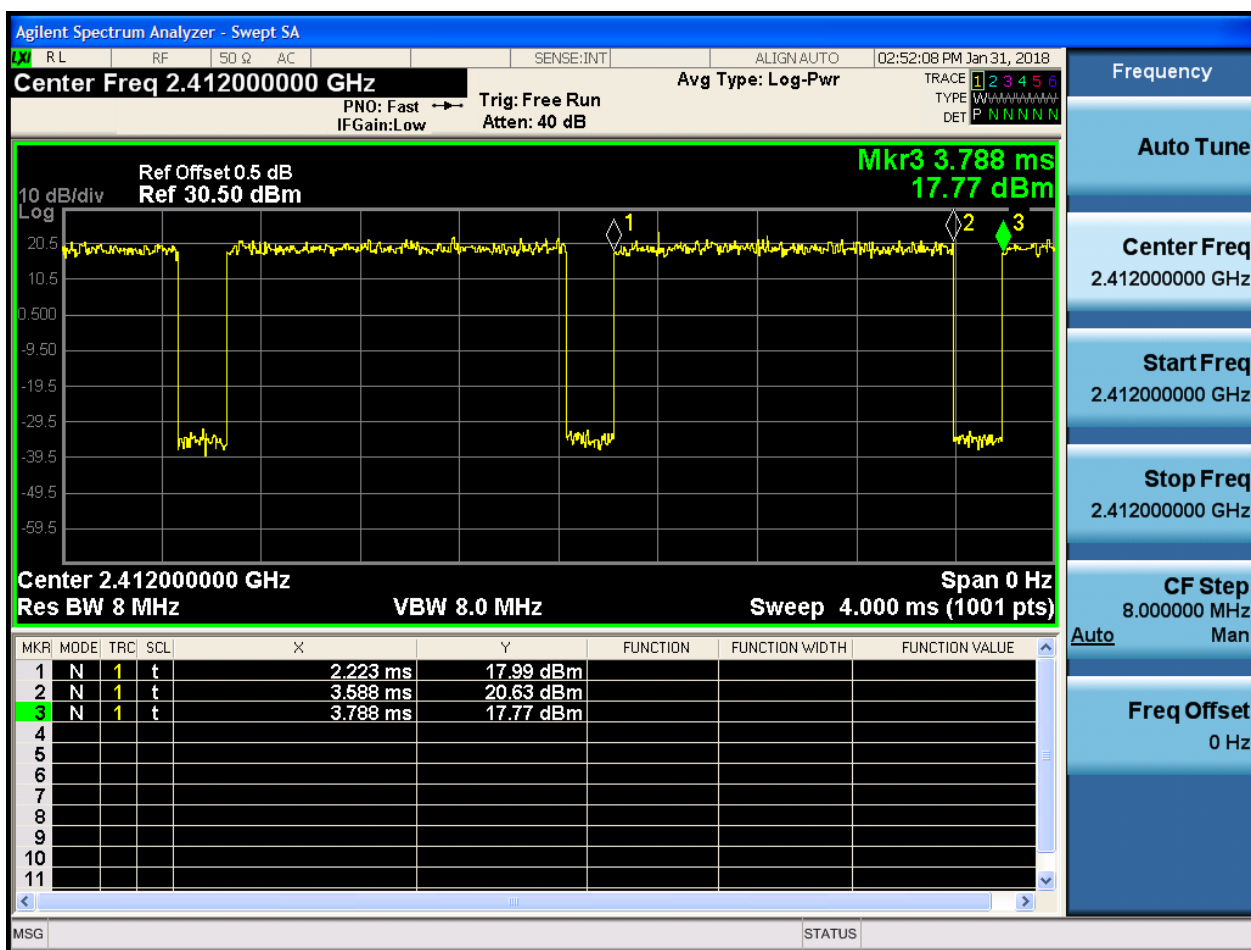
Part II - Test Plots

2.1 11B @Ant 1



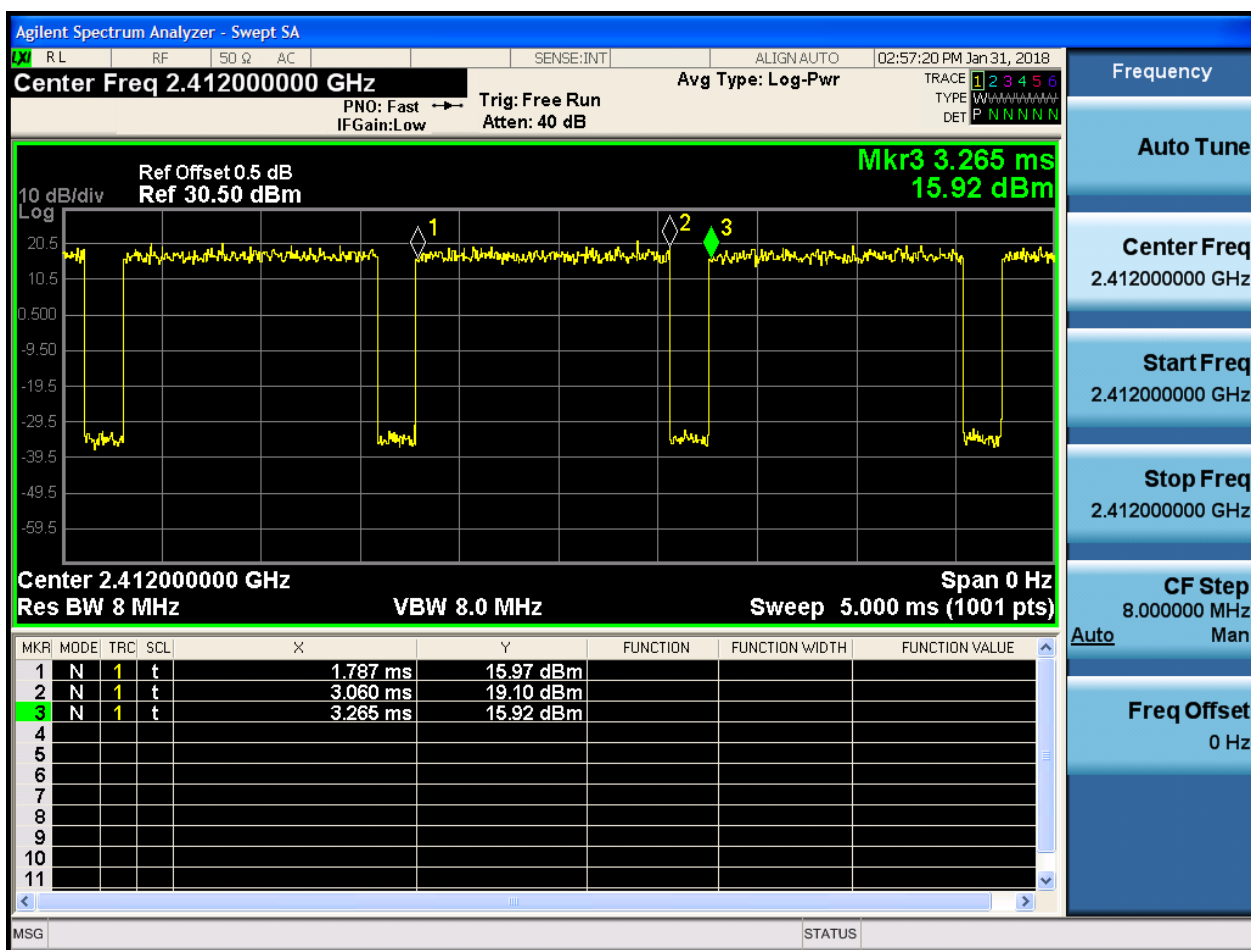


2.2 11G @Ant 1



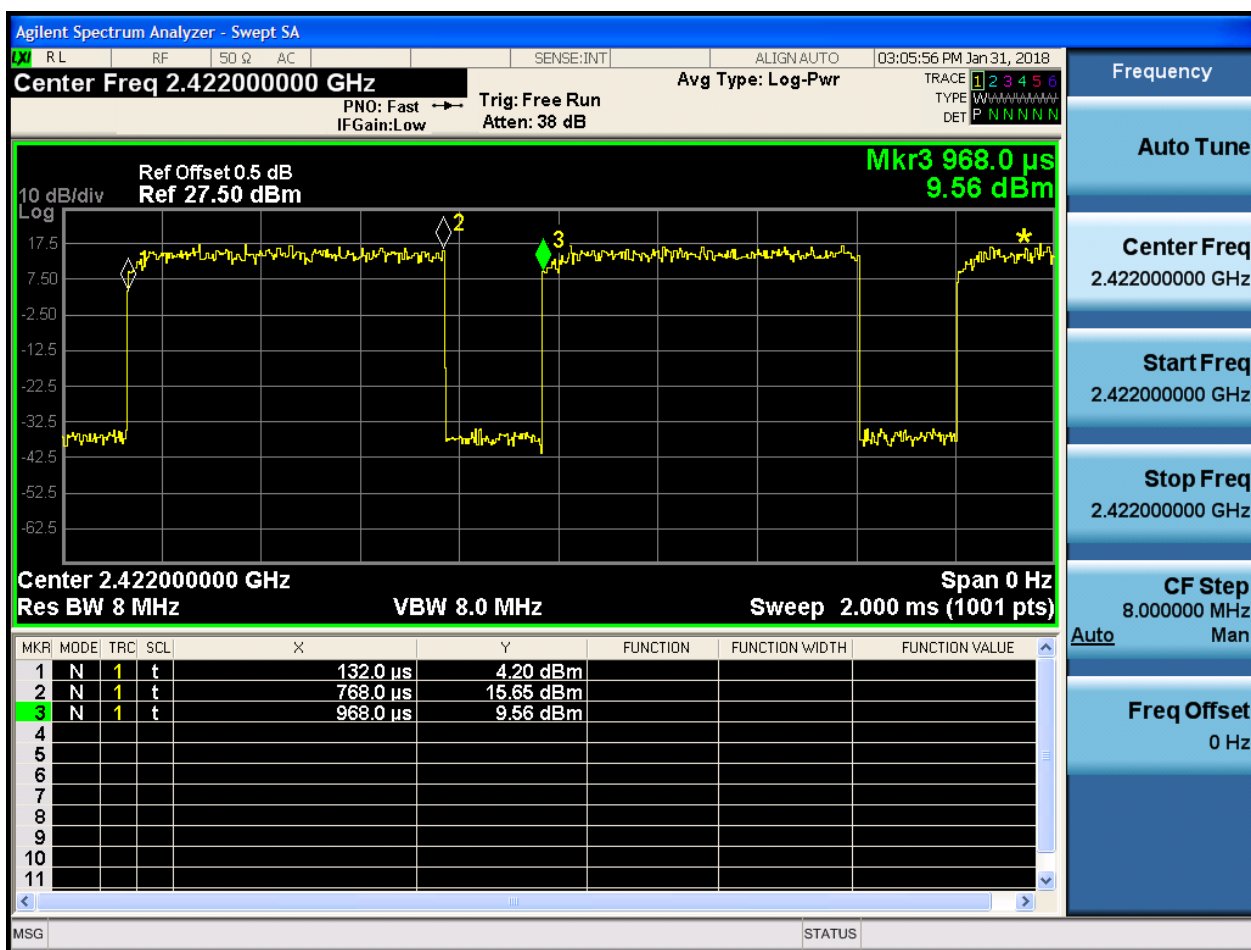


2.3 11N20M @Ant 1





2.4 11N40M @Ant 1



Appendix D: Maximum Conducted Average Output Power

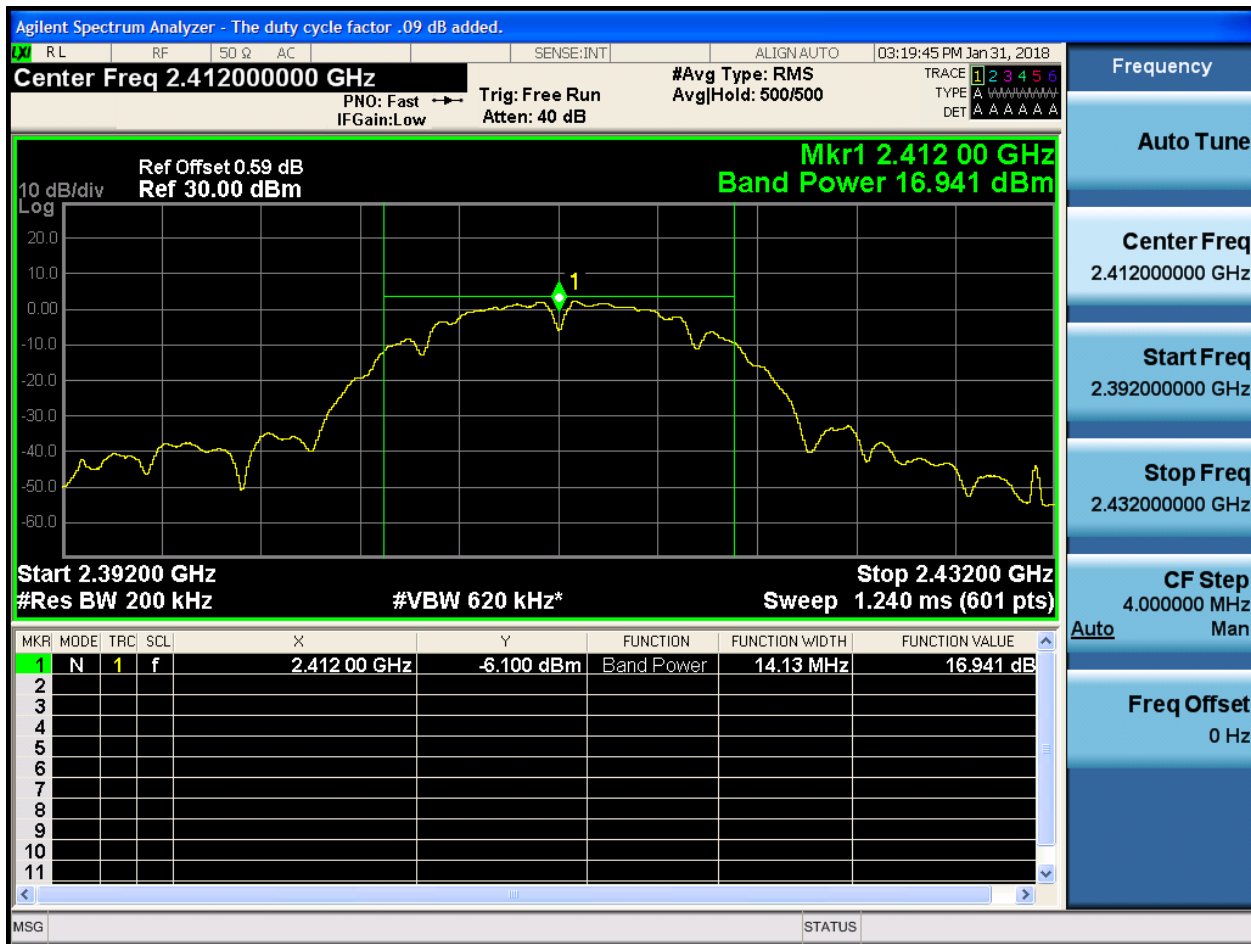
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Duty Cycle [%]	Power[dBm]	Verdict
11B	L	2412	Ant 1	98	16.94	pass
11B	M	2437	Ant 1	98	17.02	pass
11B	H	2462	Ant 1	98	16.35	pass
11G	L	2412	Ant 1	87	14.26	pass
11G	L	2417	Ant 1	87	16.67	pass
11G	M	2437	Ant 1	87	16.65	pass
11G	H	2457	Ant 1	87	16.72	pass
11G	H	2462	Ant 1	87	15.04	pass
11N20	L	2412	Ant 1	86	14.14	pass
11N20	M	2437	Ant 1	86	14.74	pass
11N20	H	2462	Ant 1	86	13.88	pass
11N40	L	2422	Ant 1	76	13.97	pass
11N40	M	2437	Ant 1	76	13.22	pass
11N40	H	2452	Ant 1	76	13.33	pass



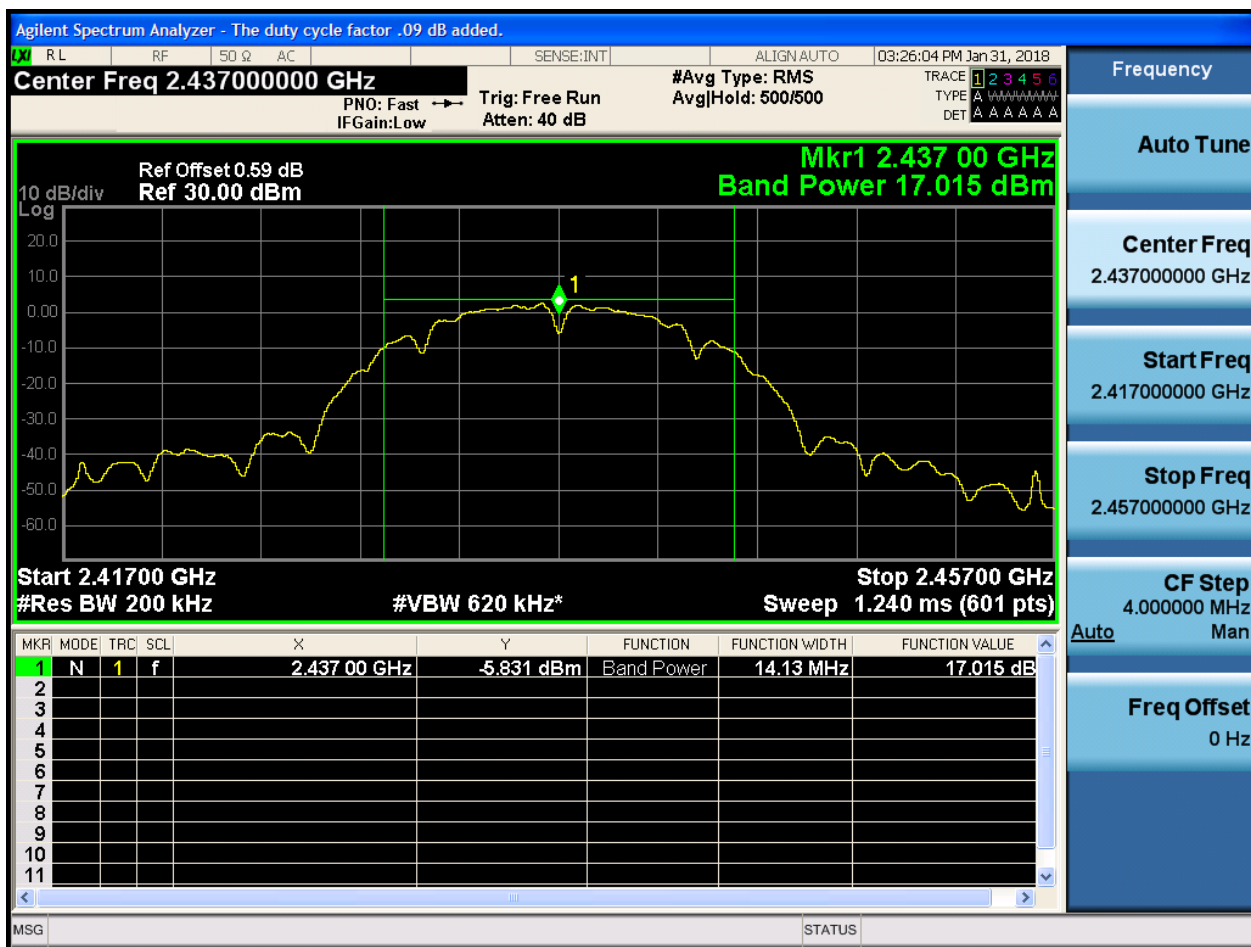
Part II - Test Plots

2.1 11B_L@Ant 1





2.2 11B_M@Ant 1



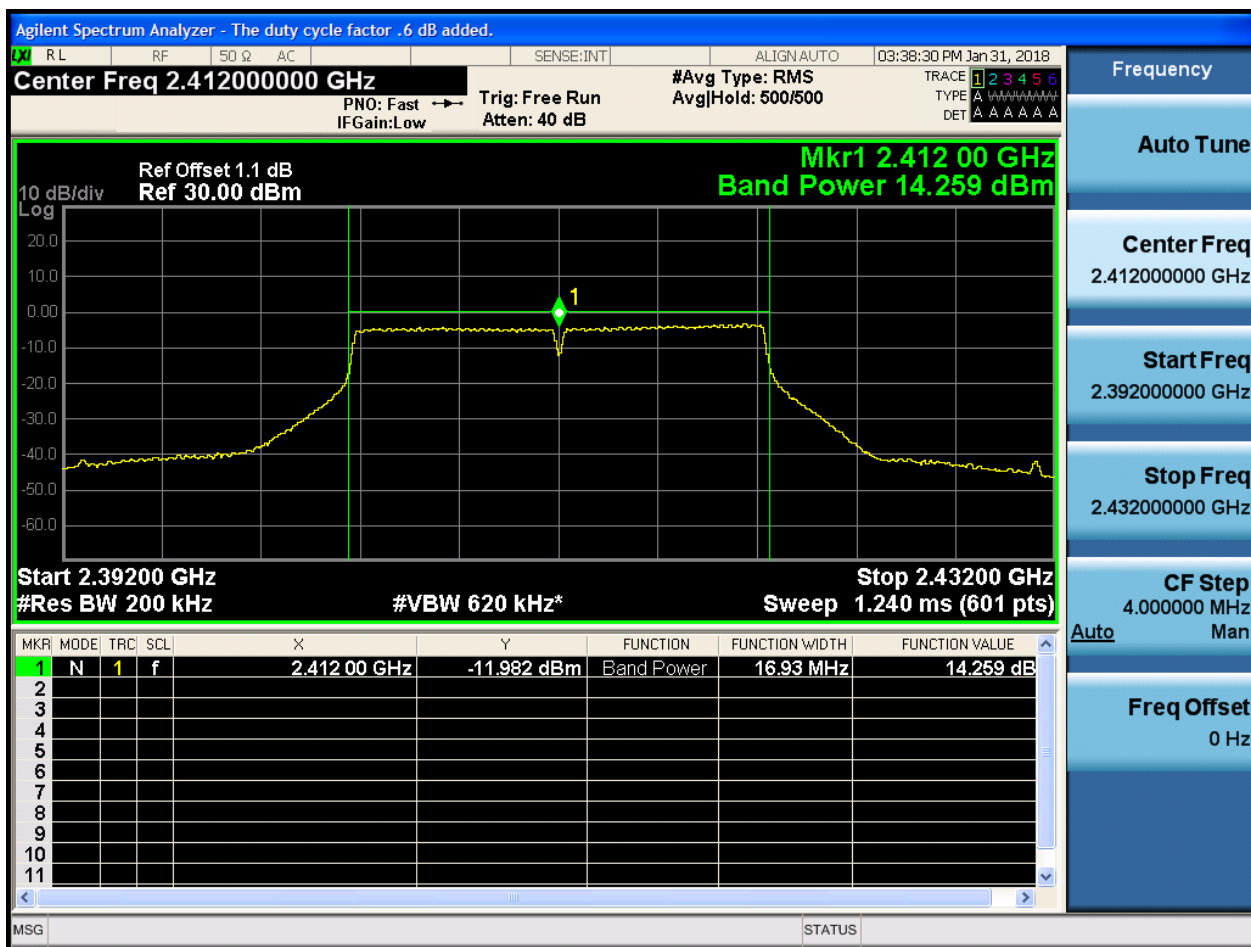


2.3 11B_H@Ant 1



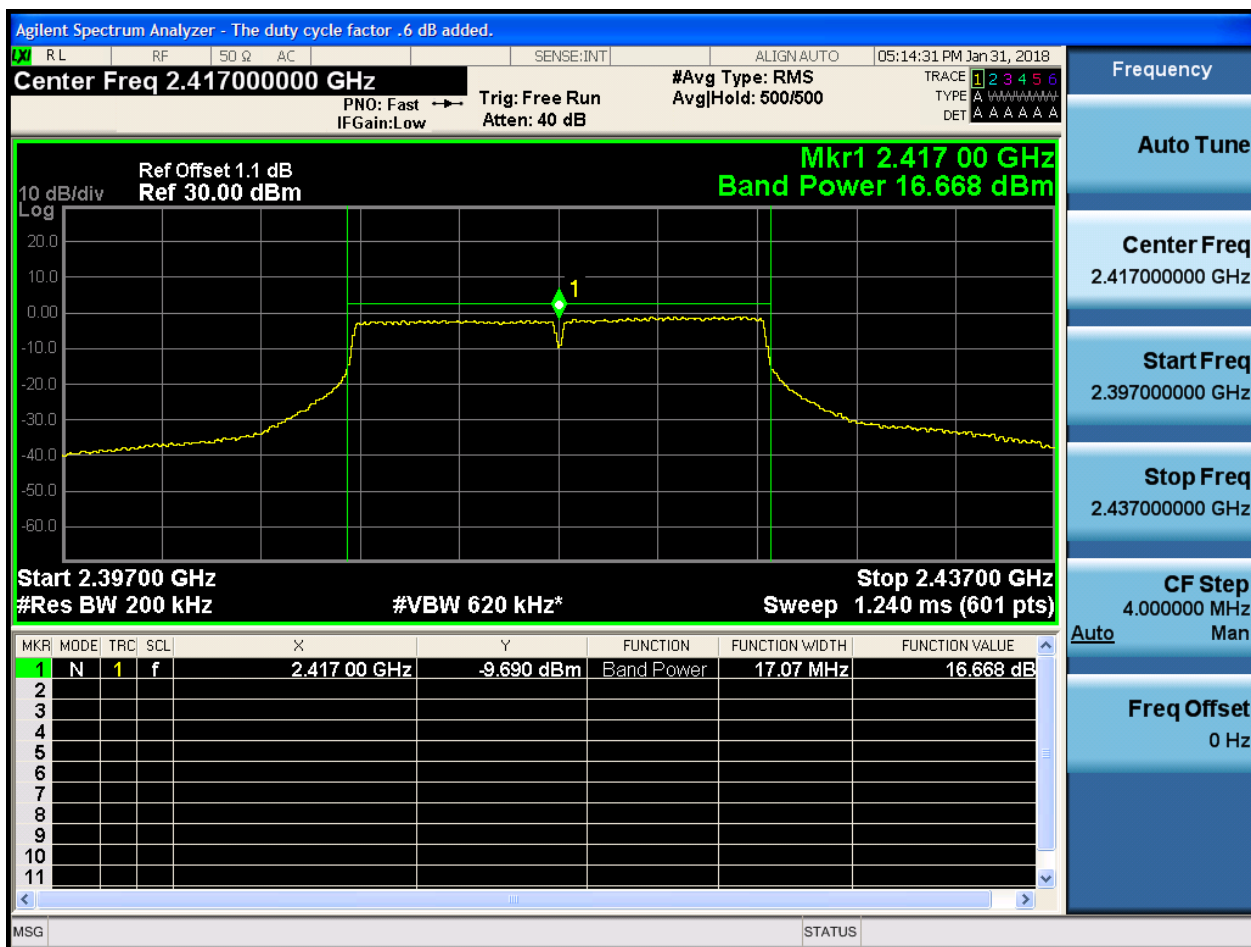


2.4 11G_L_2412@Ant 1



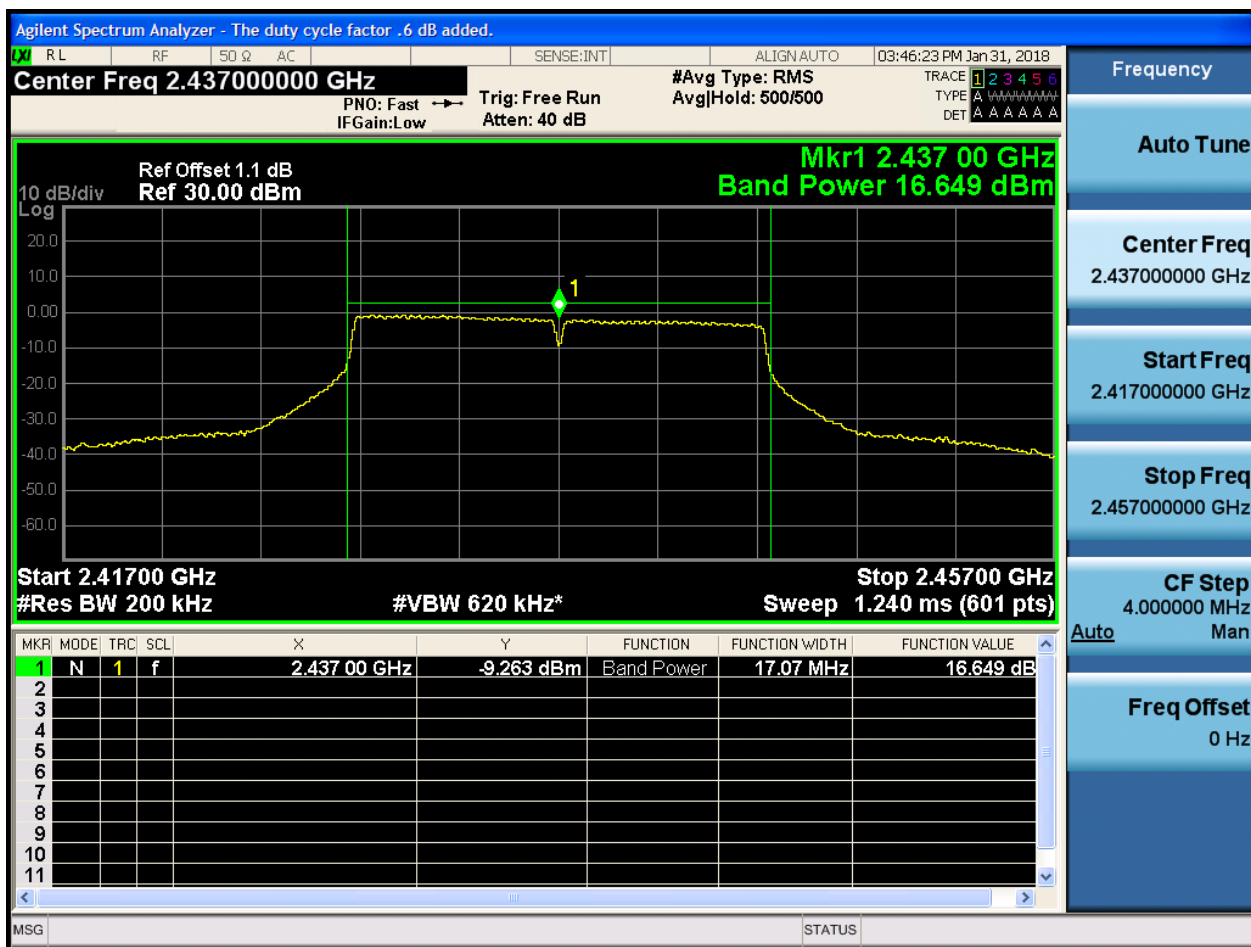


2.5 11G_L_2417@Ant 1



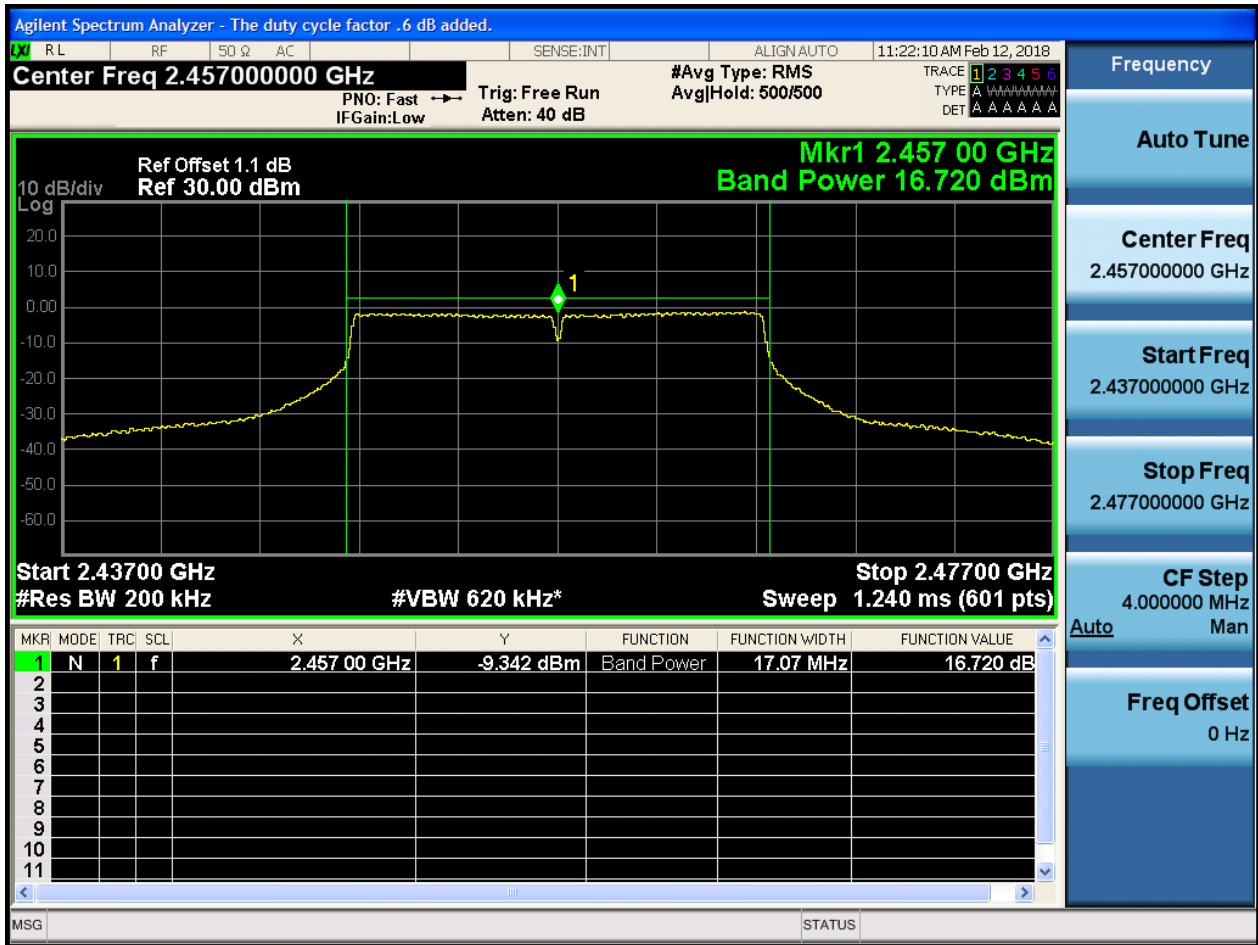


2.6 11G_M@Ant 1



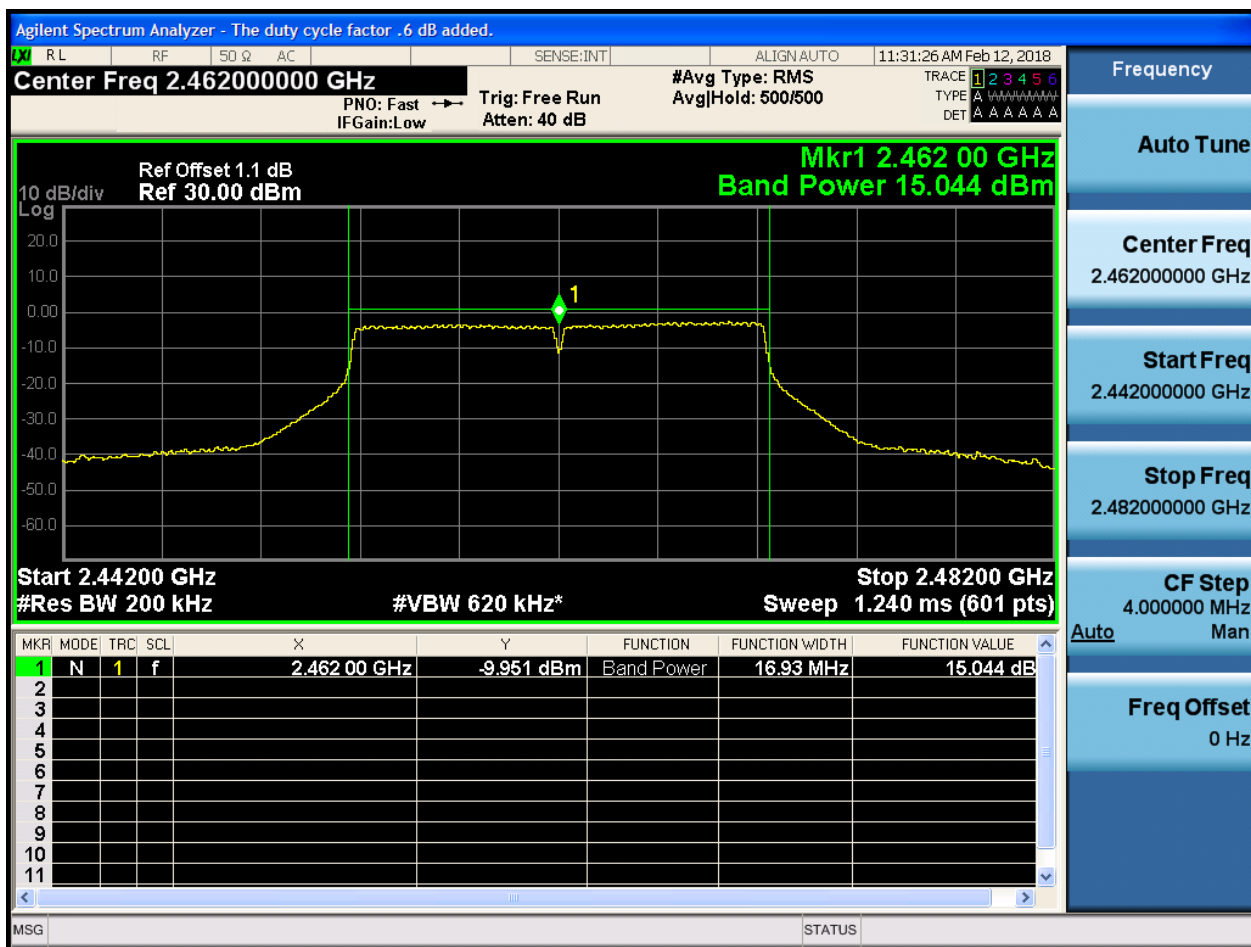


2.7 11G_H_2457@Ant 1



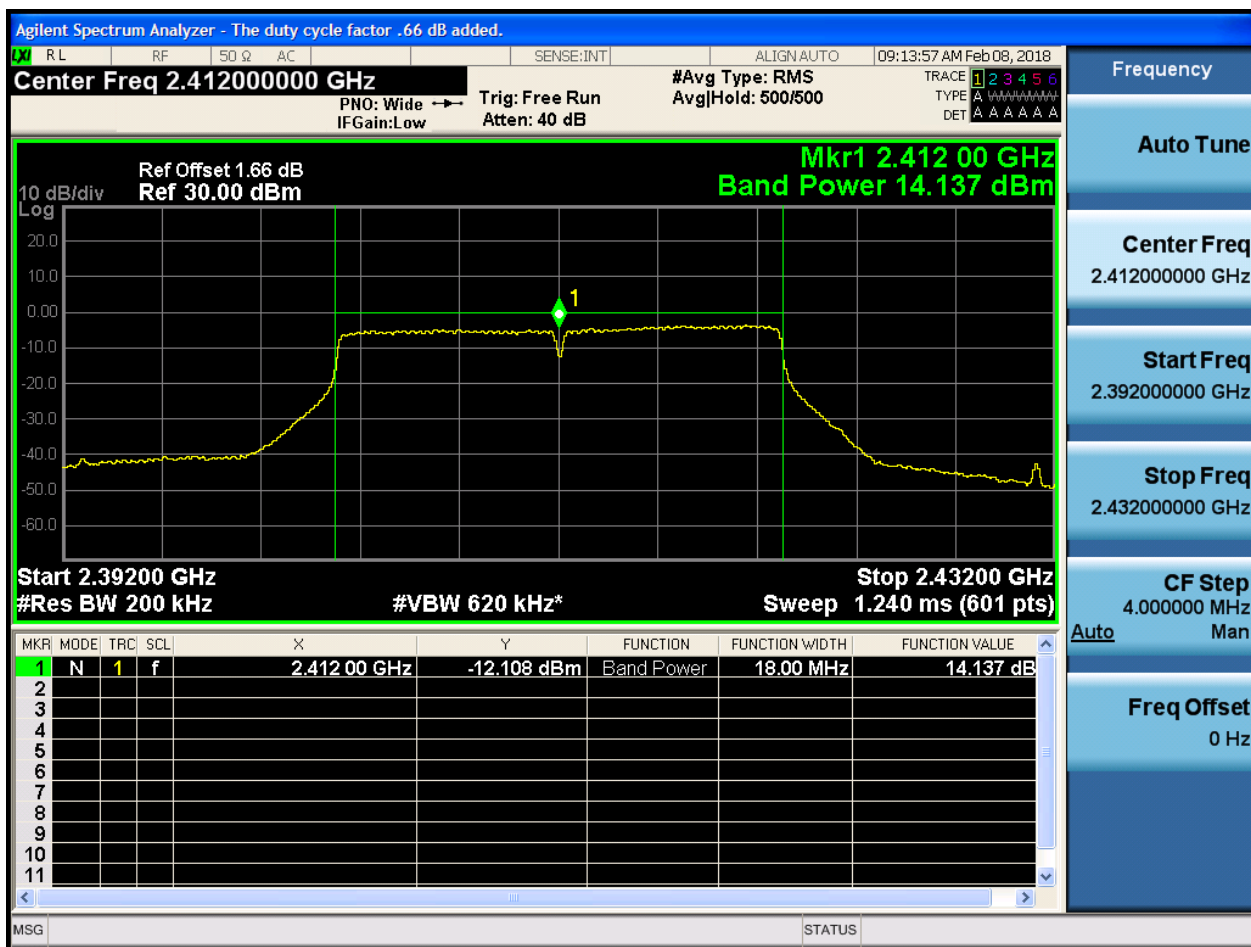


2.8 11G_H_2462@Ant 1



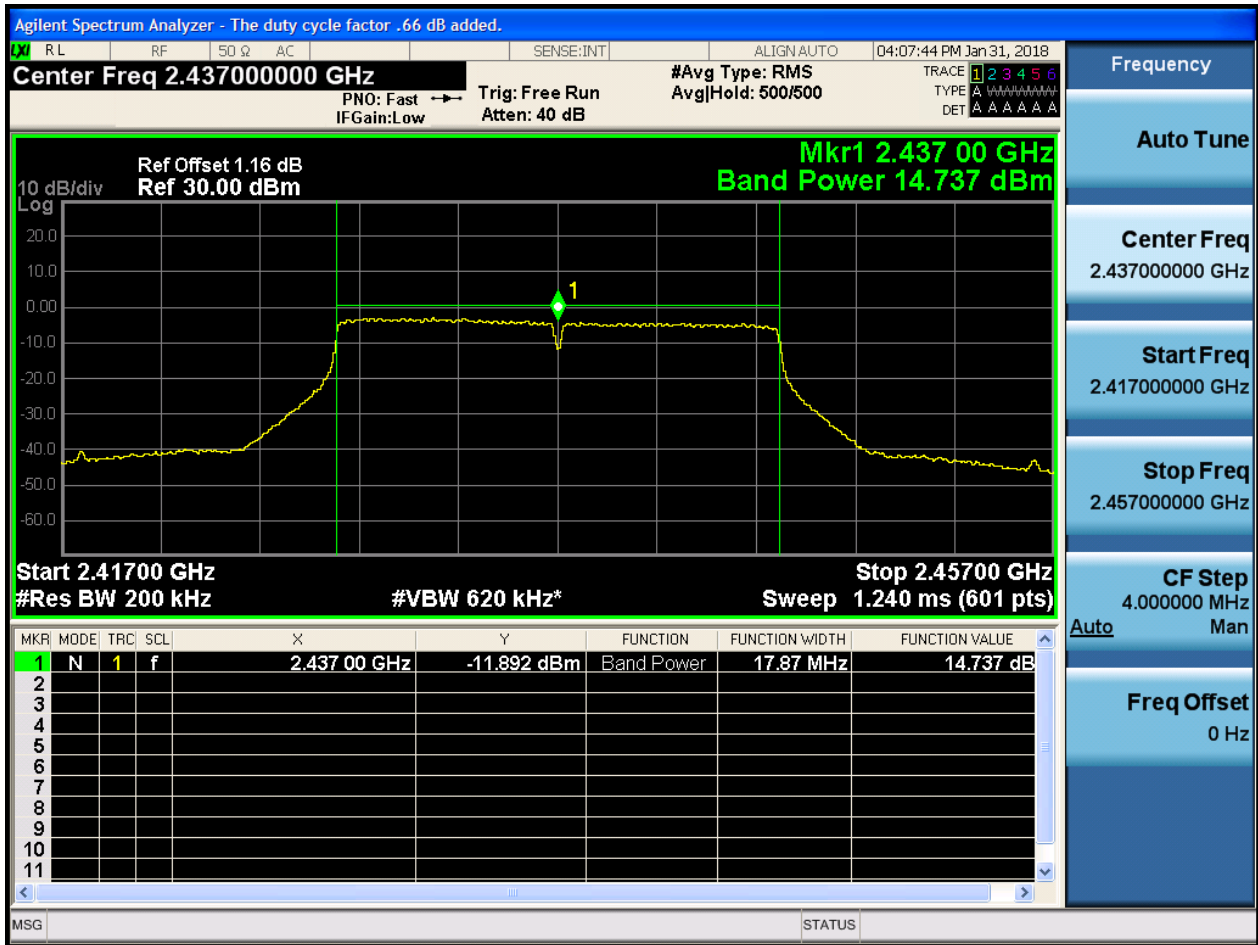


2.9 11N20_L@Ant 1



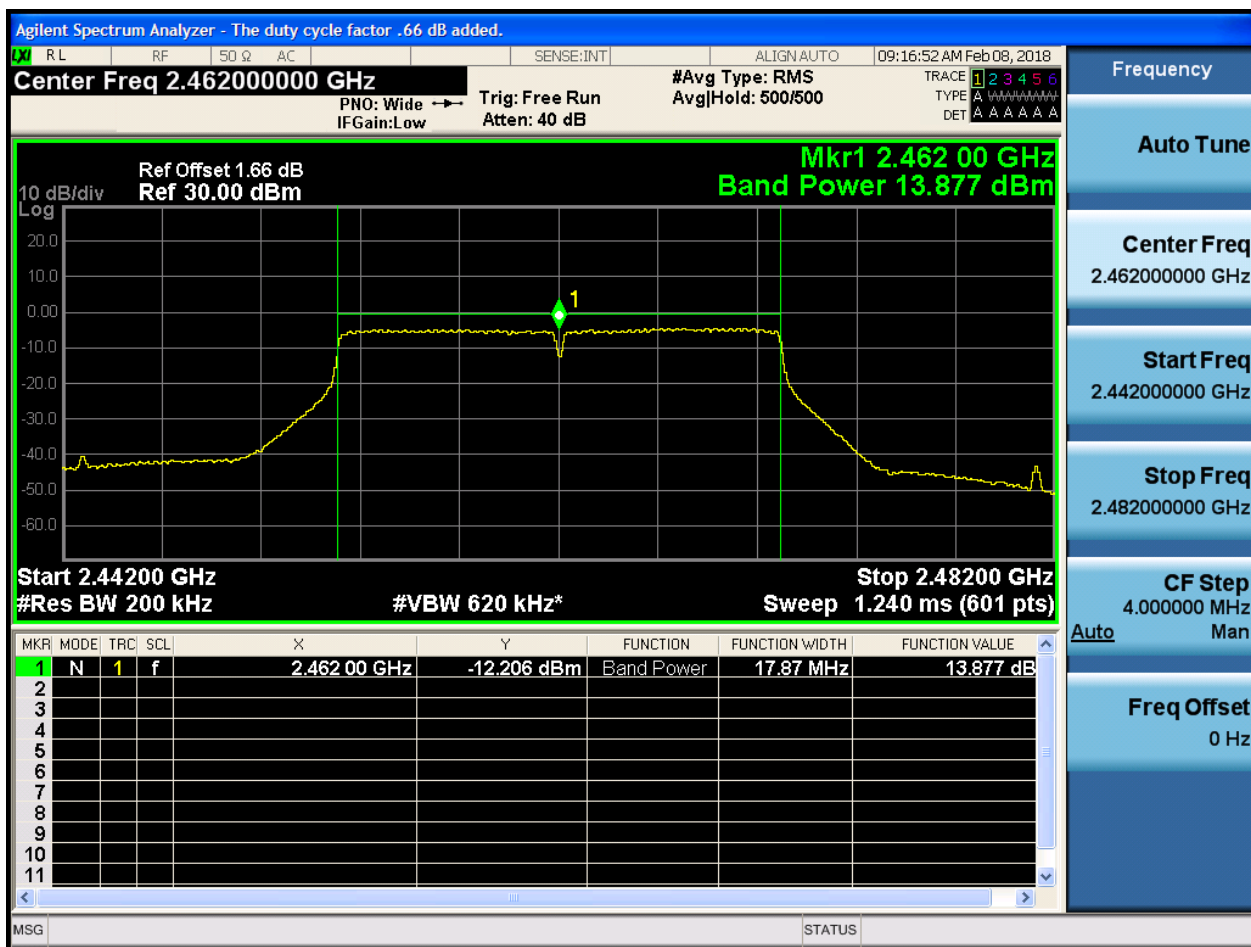


2.10 11N20_M@Ant 1



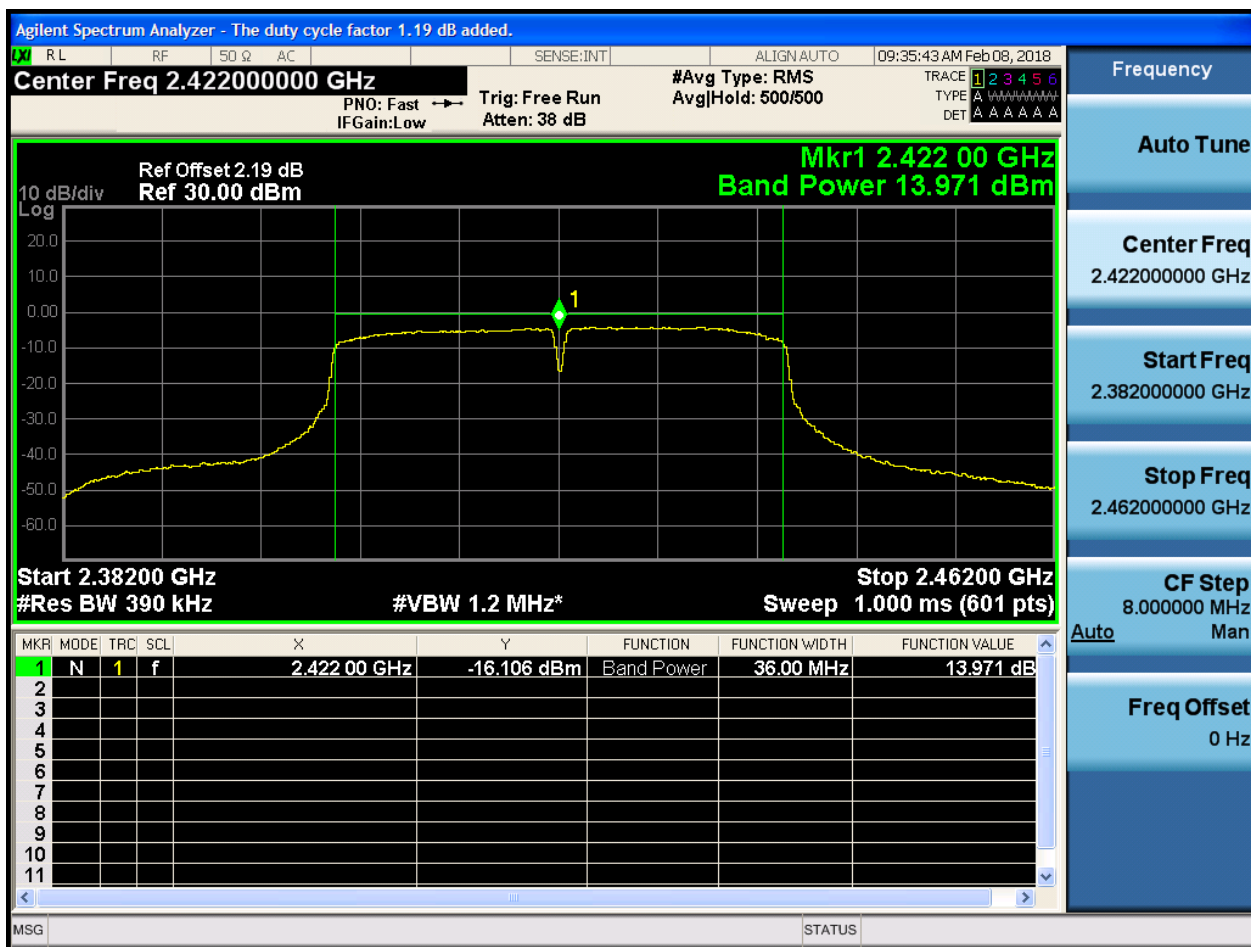


2.11 11N20_H@Ant 1



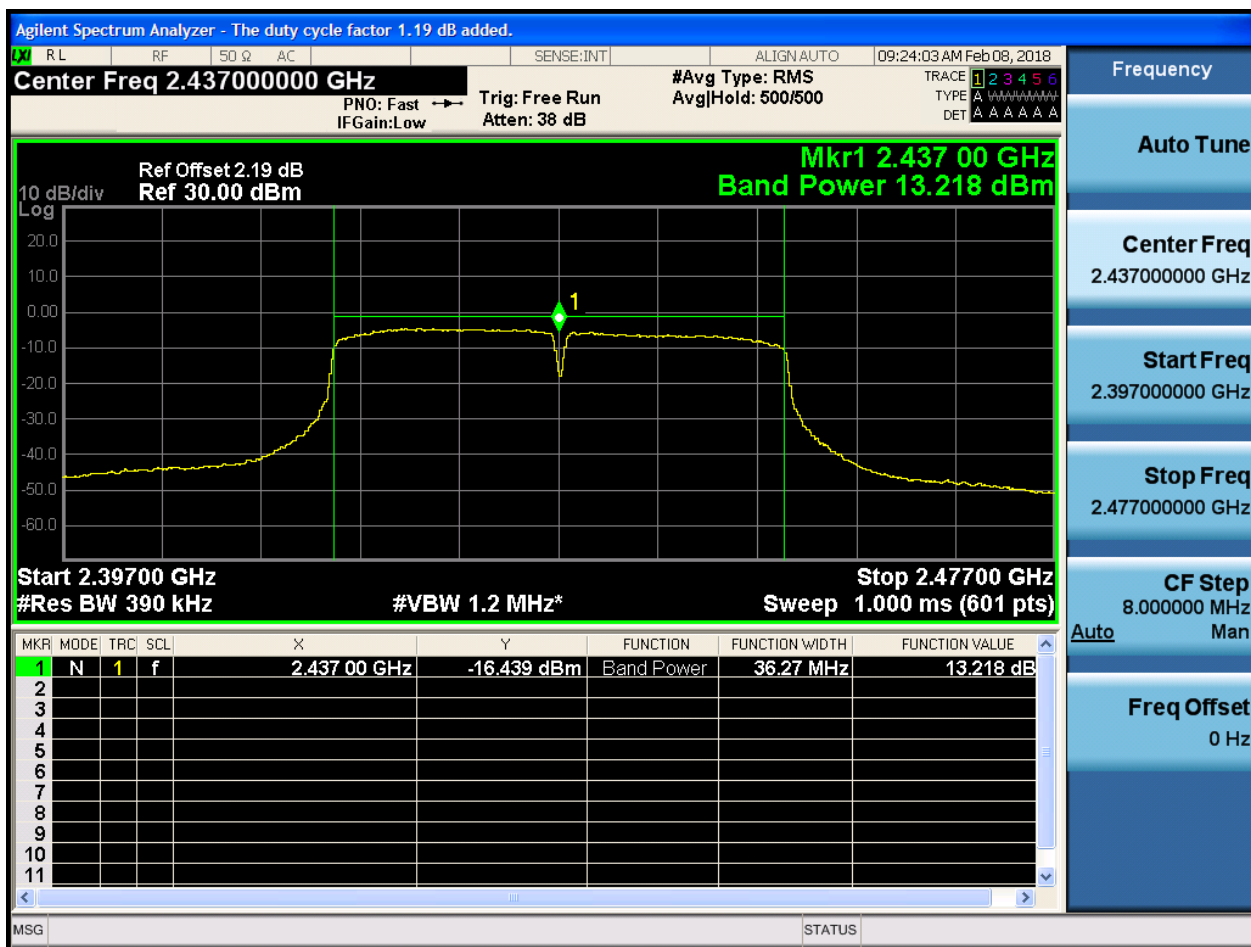


2.12 11N40_L@Ant 1



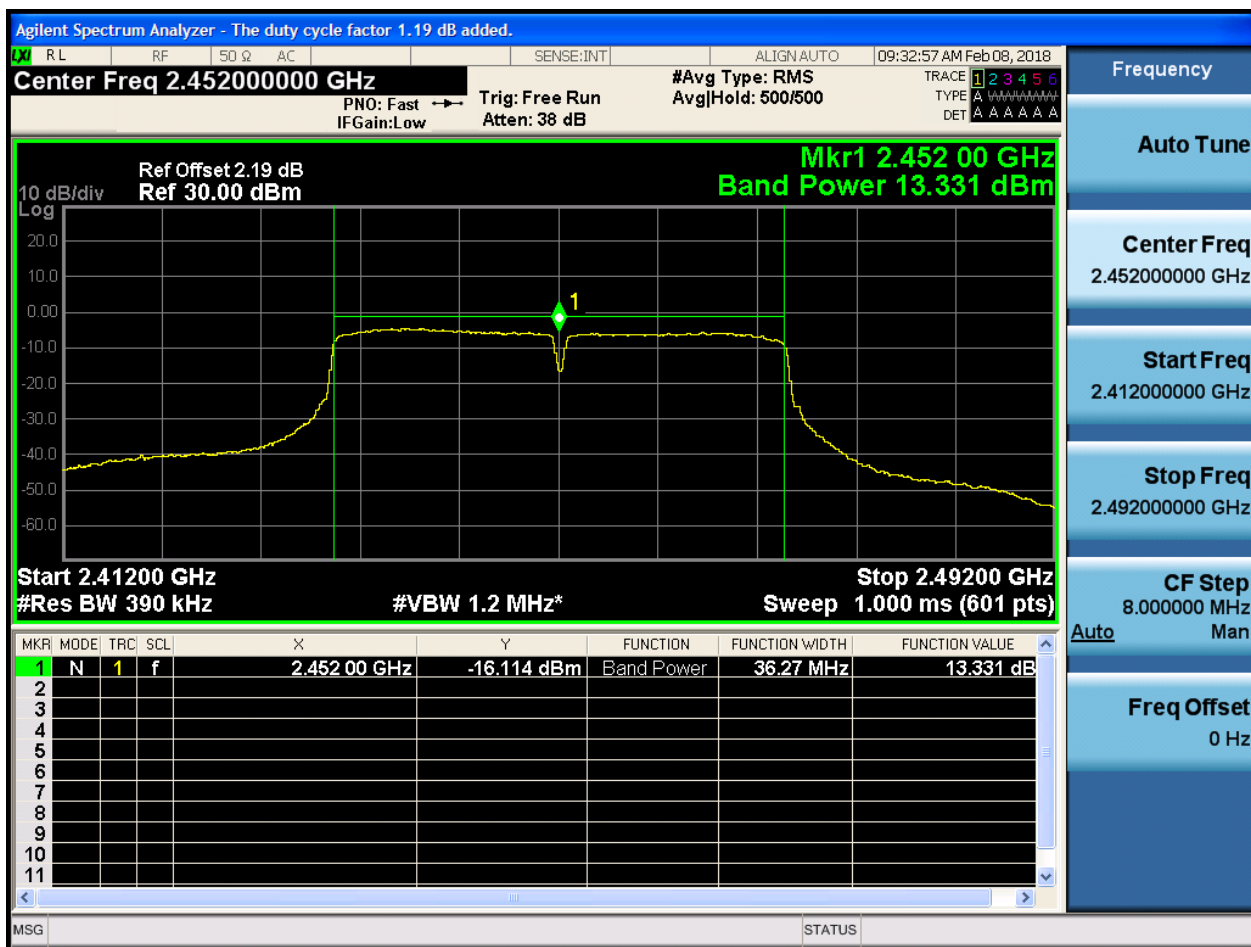


2.13 11N40_M@Ant 1





2.14 11N40_H@Ant 1



Appendix E: Maximum Power Spectral Density Level

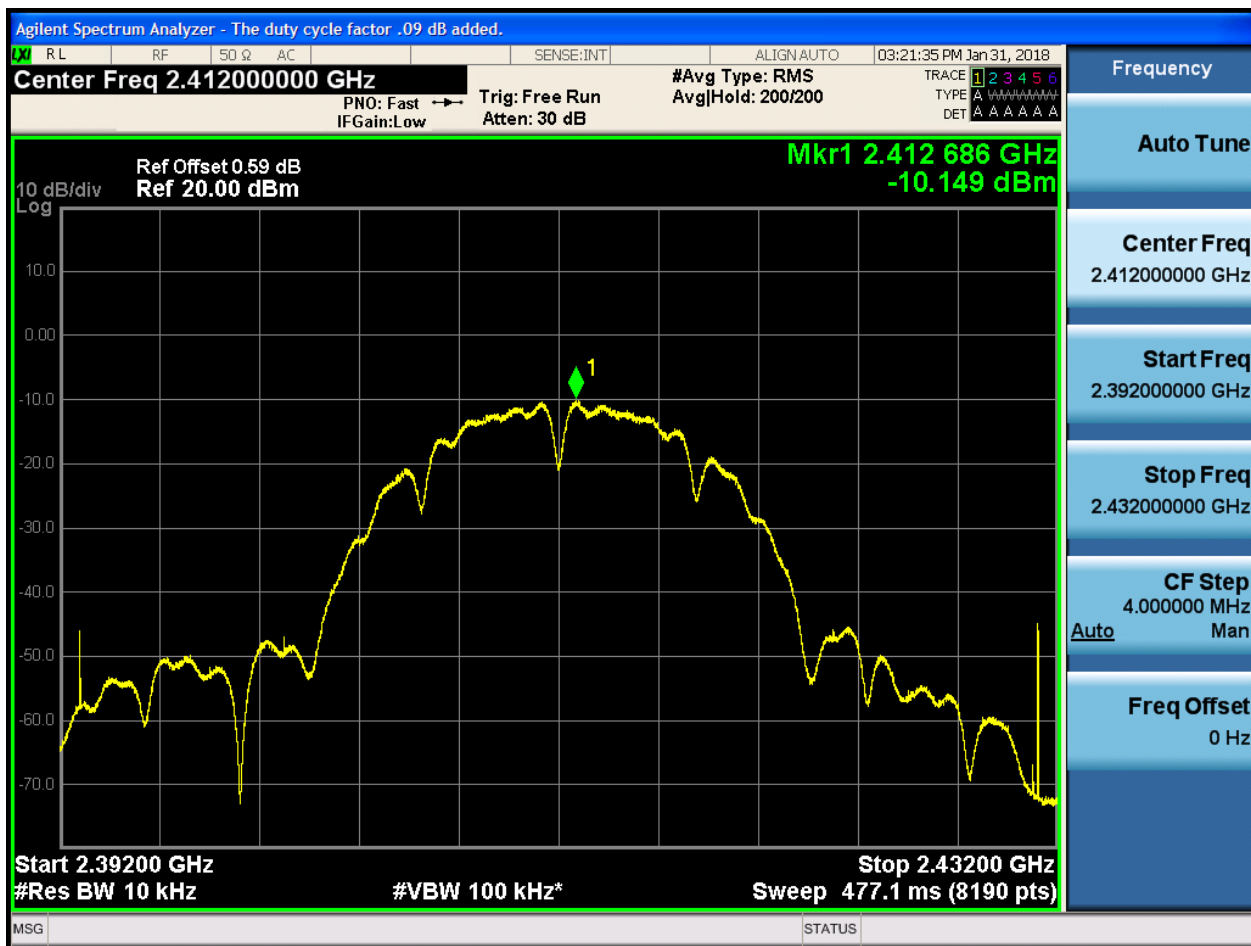
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Duty Cycle [%]	PSD[dBm/10 kHz]	Verdict
11B	L	2412	Ant 1	98	-10.15	pass
11B	M	2437	Ant 1	98	-10.01	pass
11B	H	2462	Ant 1	98	-10.71	pass
11G	L	2412	Ant 1	87	-14.31	pass
11G	L	2417	Ant 1	87	-12.34	pass
11G	M	2437	Ant 1	87	-12.1	pass
11G	H	2457	Ant 1	87	-13.30	pass
11G	H	2462	Ant 1	87	-13.39	pass
11N20	L	2412	Ant 1	86	-14.22	pass
11N20	M	2437	Ant 1	86	-14.1	pass
11N20	H	2462	Ant 1	86	-14.64	pass
11N40	L	2422	Ant 1	76	-16.83	pass
11N40	M	2437	Ant 1	76	-17.63	pass
11N40	H	2452	Ant 1	76	-17.3	pass



Part II - Test Plots

2.1 11B_L@Ant 1





2.2 11B_M@Ant 1

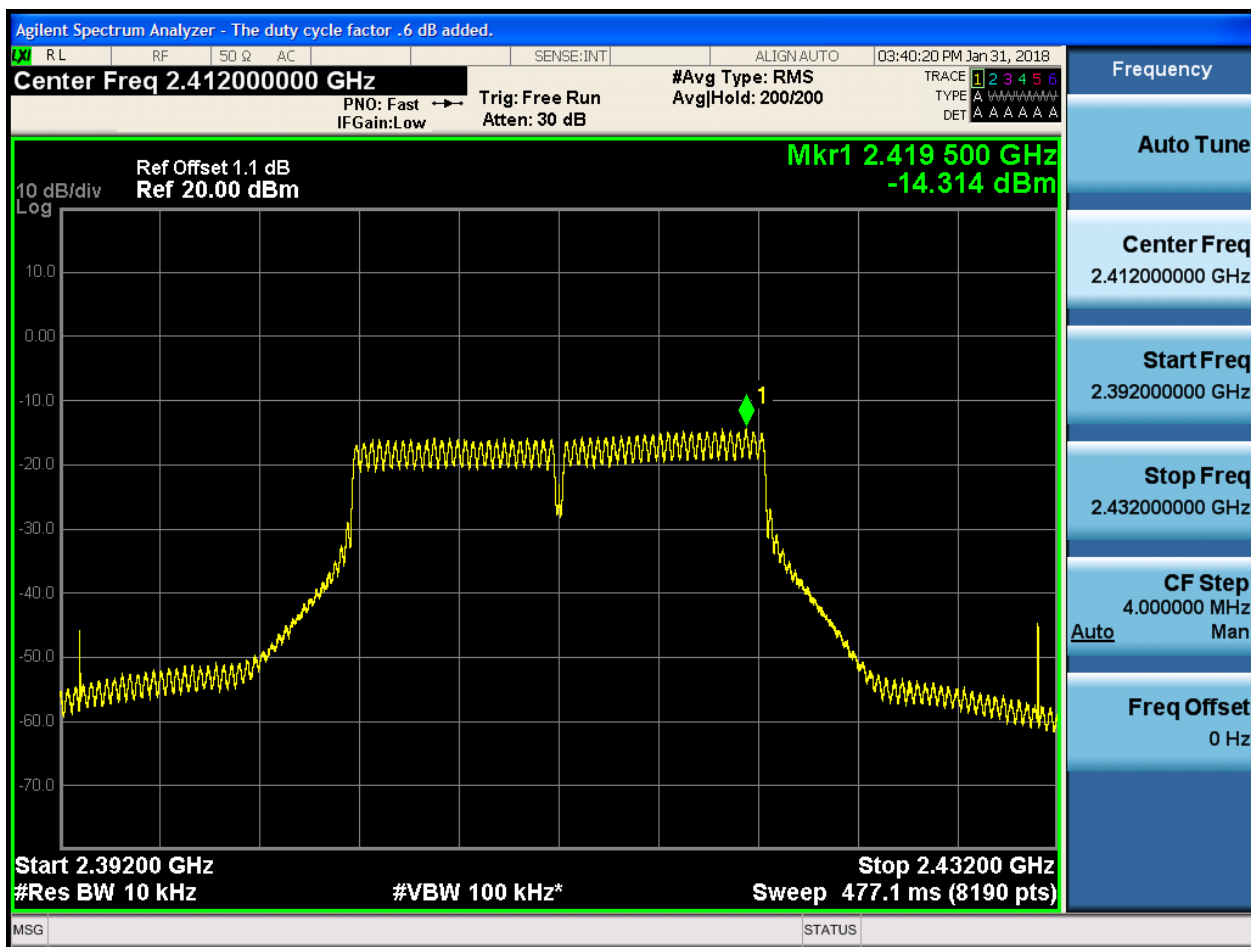


2.3 11B_H@Ant 1



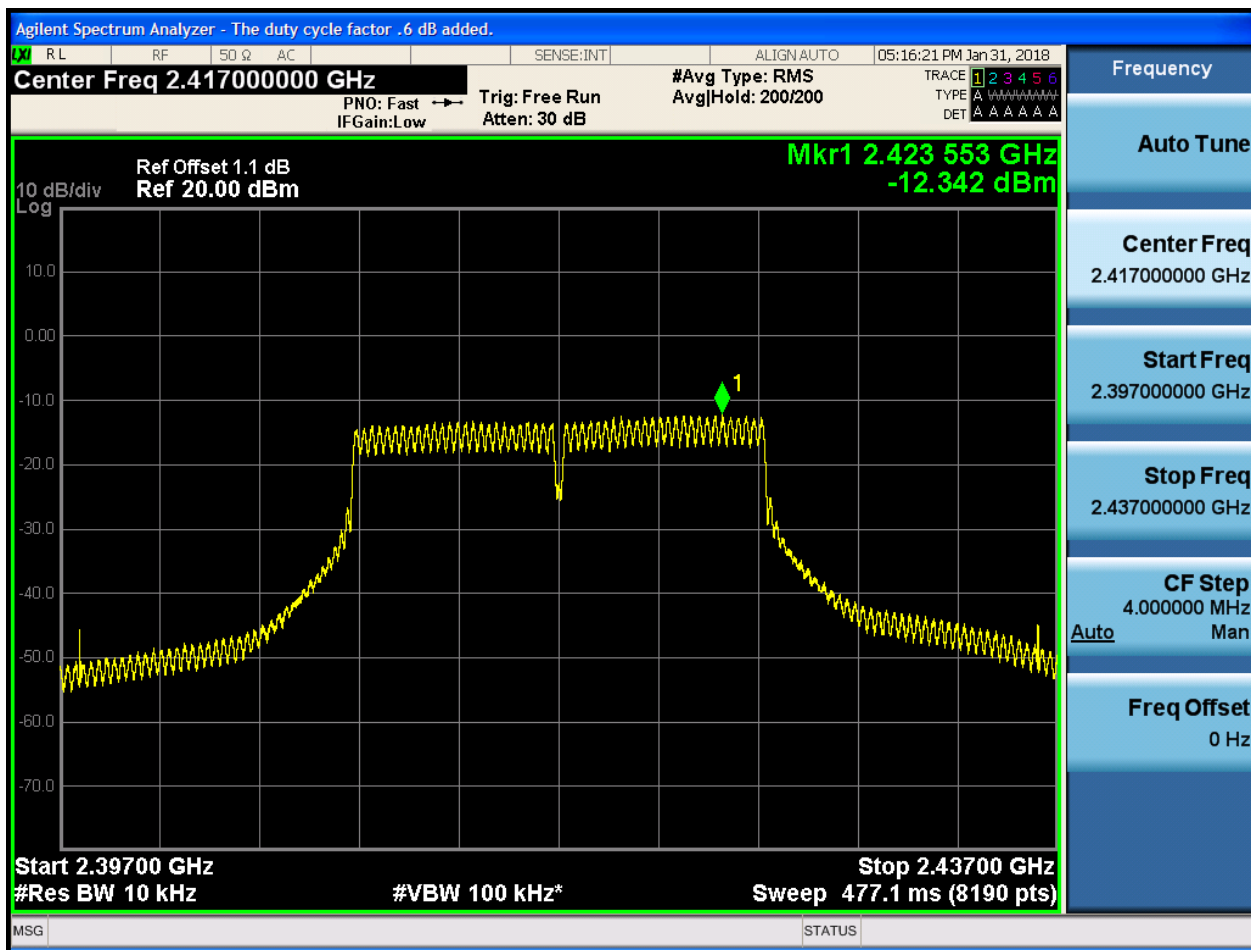


2.4 11G_L_2412@Ant 1



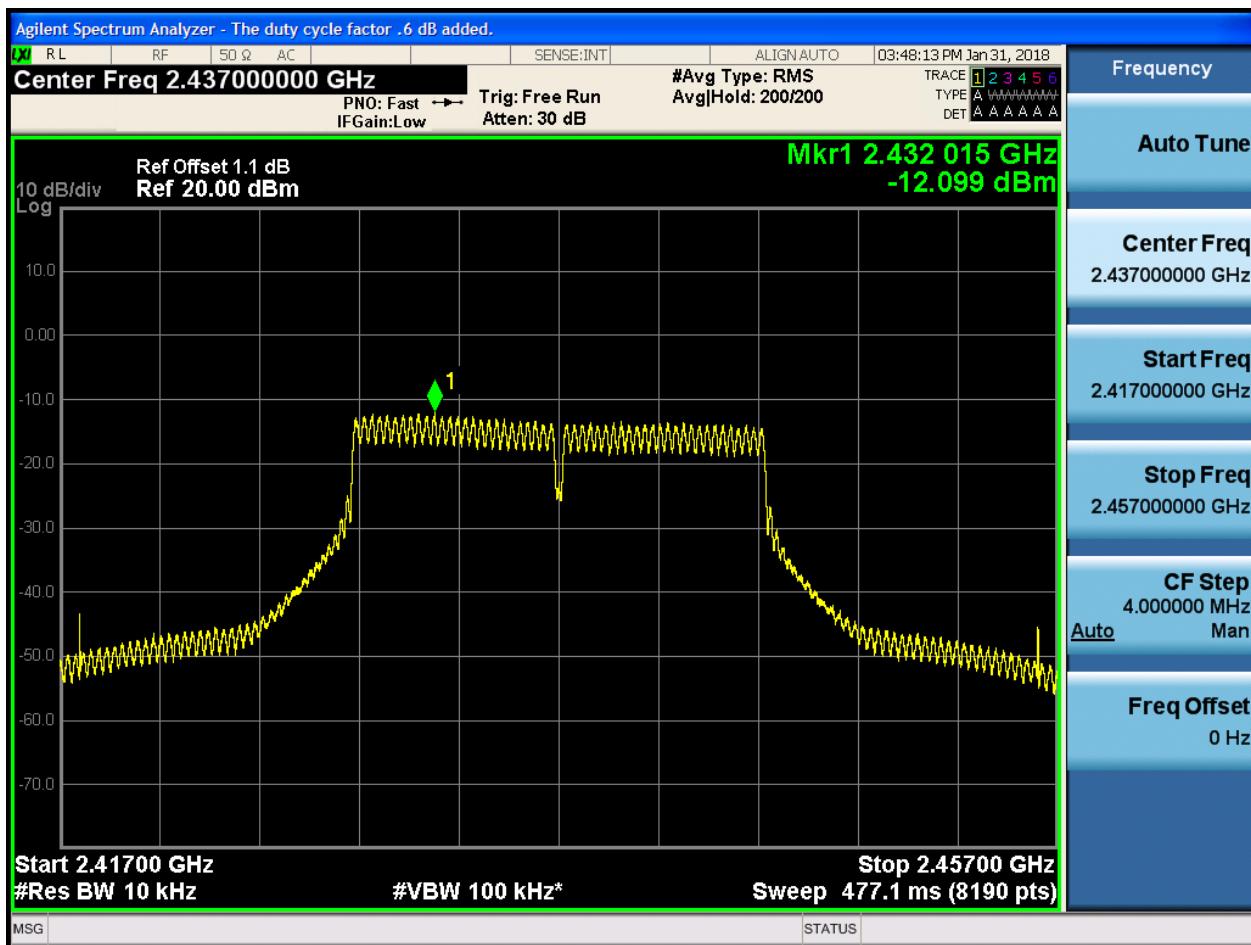


2.5 11G_L_2417@Ant 1





2.6 11G_M@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .6 dB added.

Center Freq 2.457000000 GHz

#Avg Type: RMS
Avg/Hold: 200/200

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

PNO: Fast → Trig: Free Run
IFGain: Low Atten: 30 dB

Ref Offset 1.1 dB
Ref 20.00 dBm

Mkr1 2.463 53 GHz
-13.289 dBm

Start 2.43700 GHz
#Res BW 10 kHz
#VBW 100 kHz*

Stop 2.47700 GHz
Sweep 477.1 ms (8190 pts)

Frequency

Auto Tune

Center Freq
2.457000000 GHz

Start Freq
2.437000000 GHz

Stop Freq
2.477000000 GHz

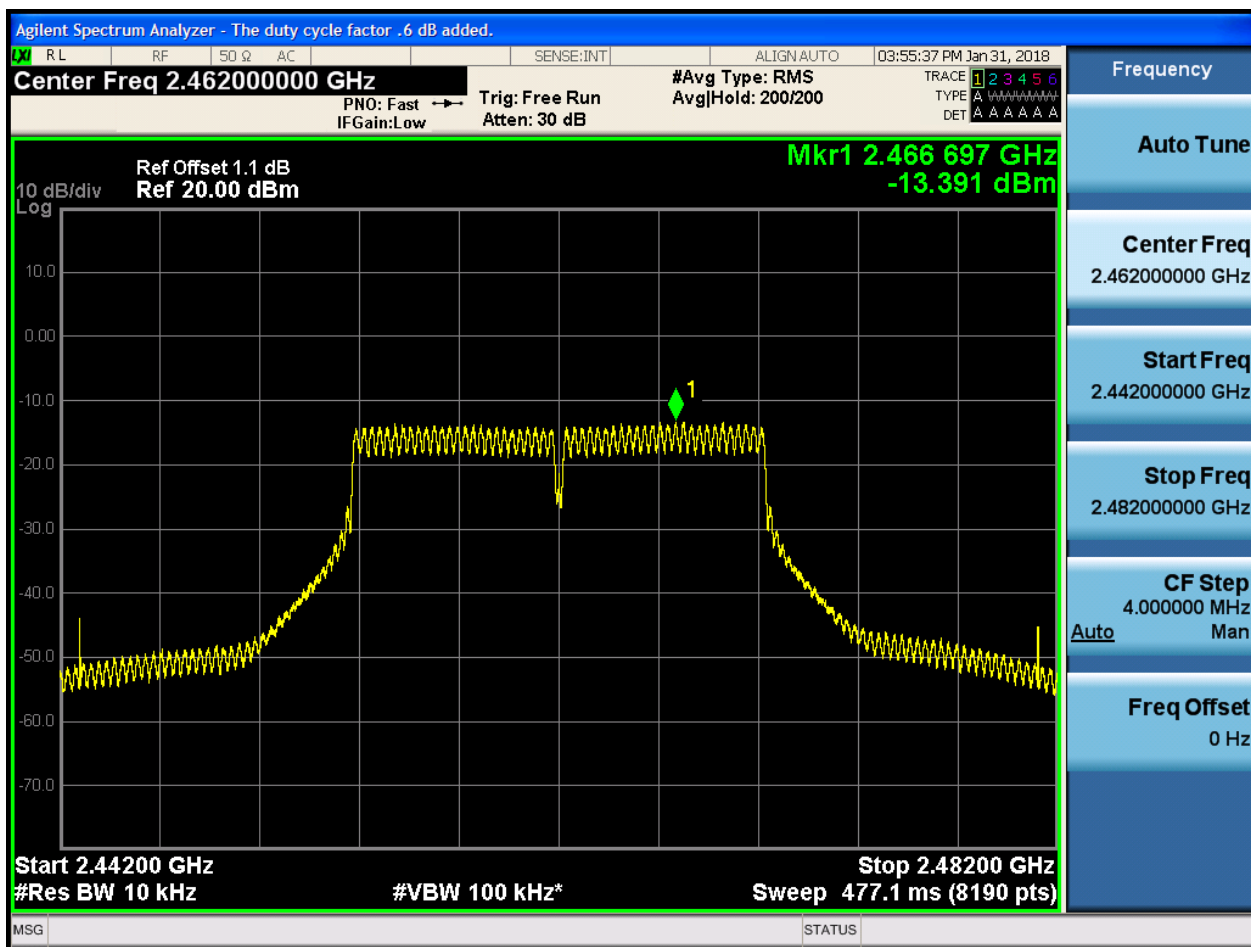
CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

MSG STATUS

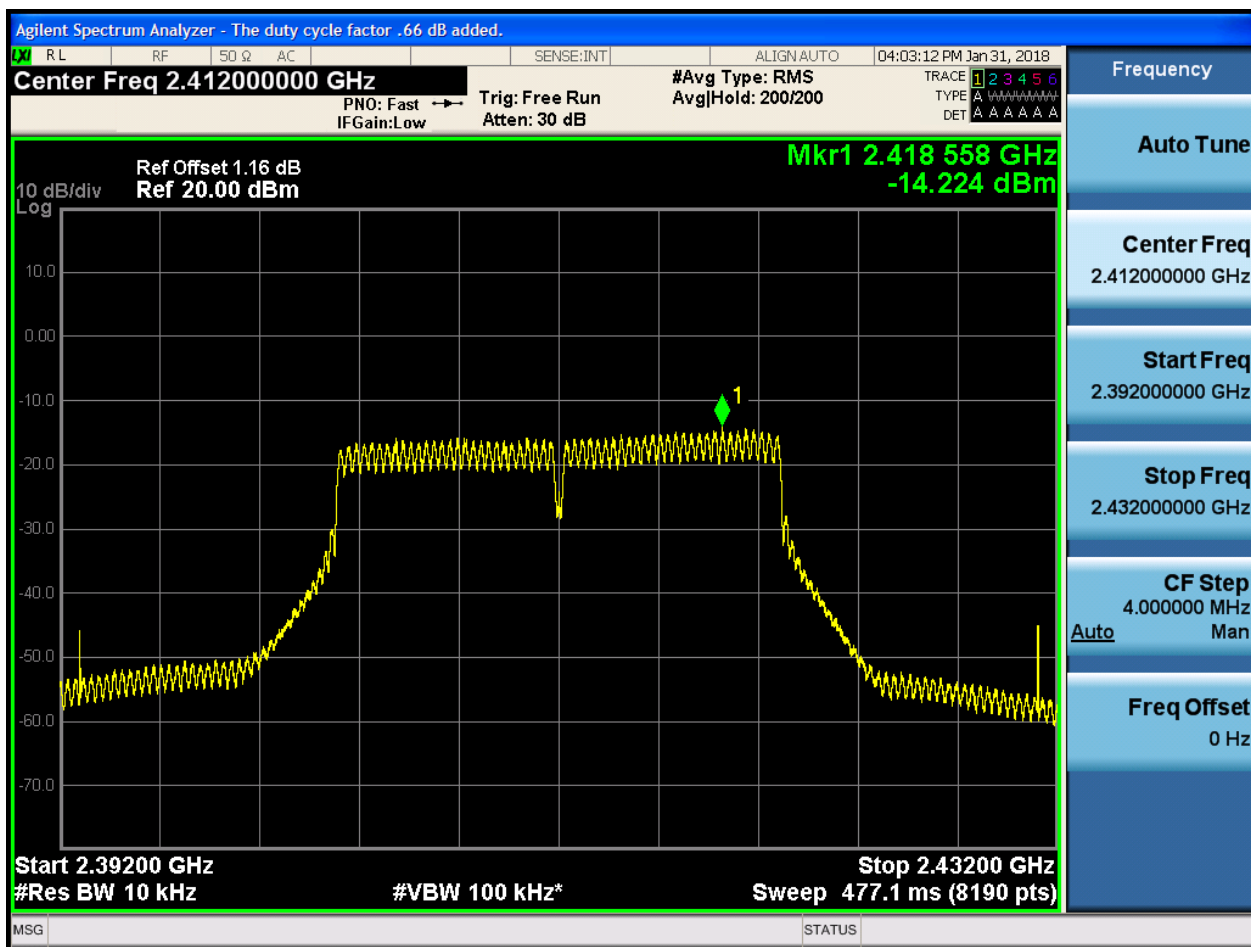


2.8 11G_H_2462@Ant 1



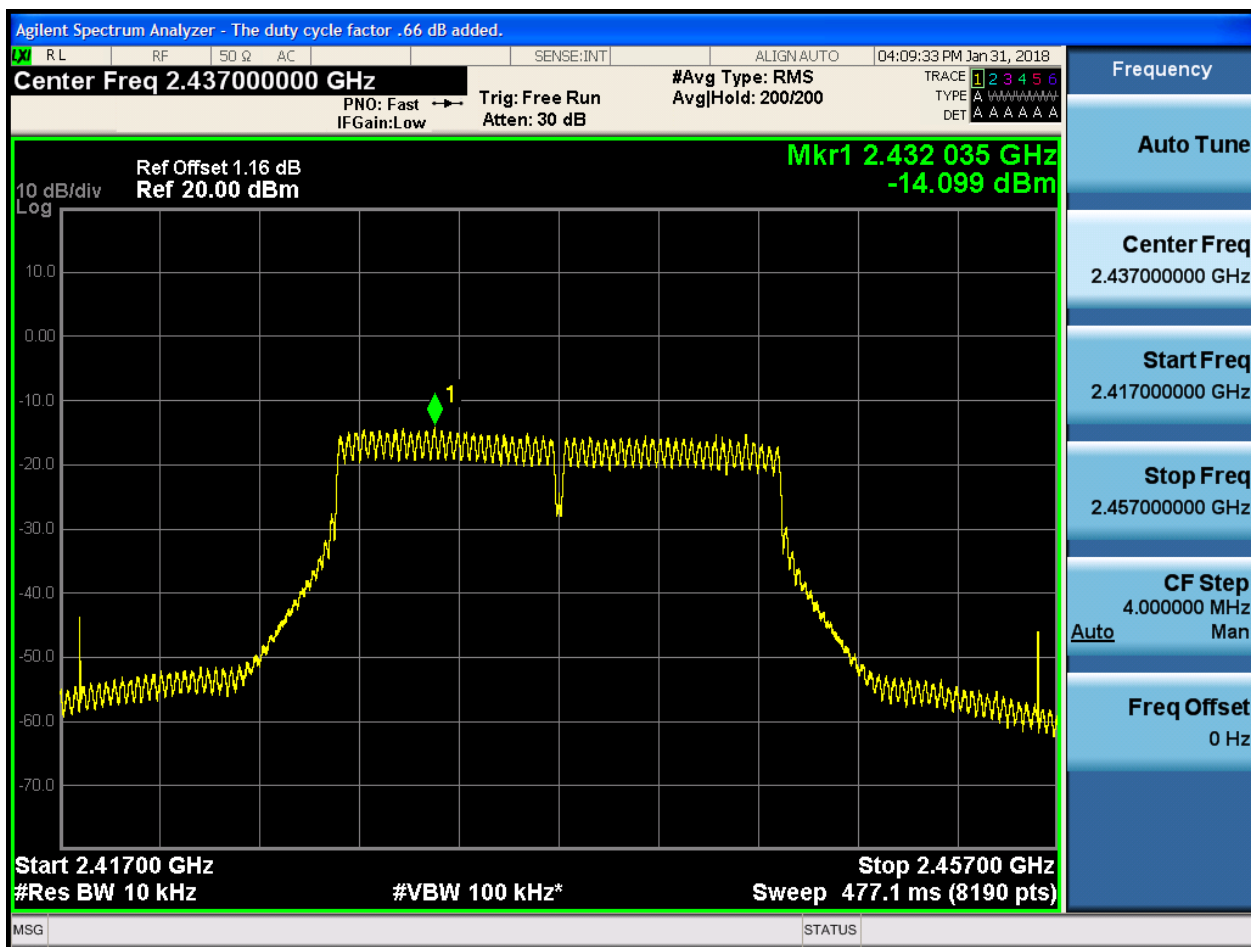


2.9 11N20_L@Ant 1



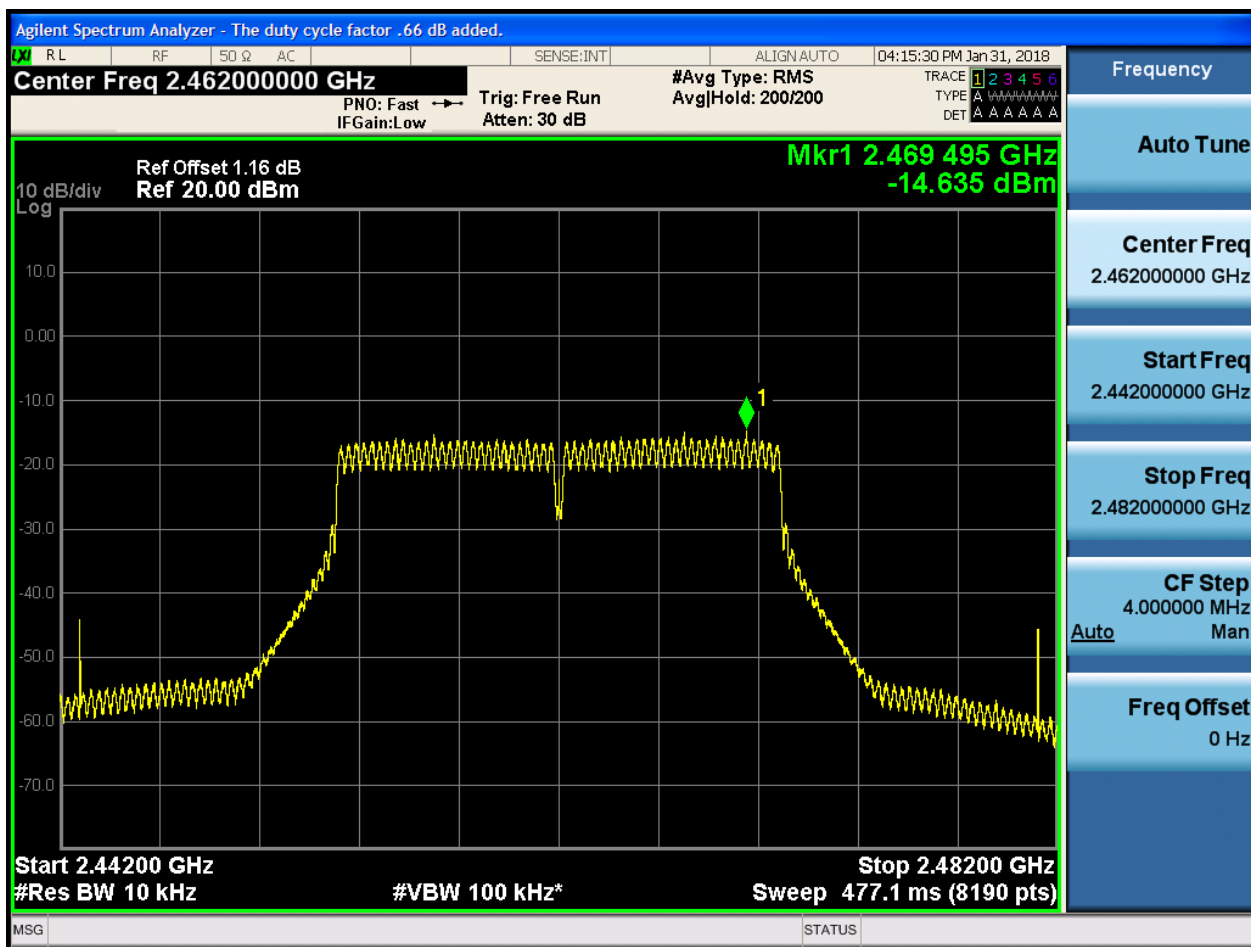


2.10 11N20_M@Ant 1



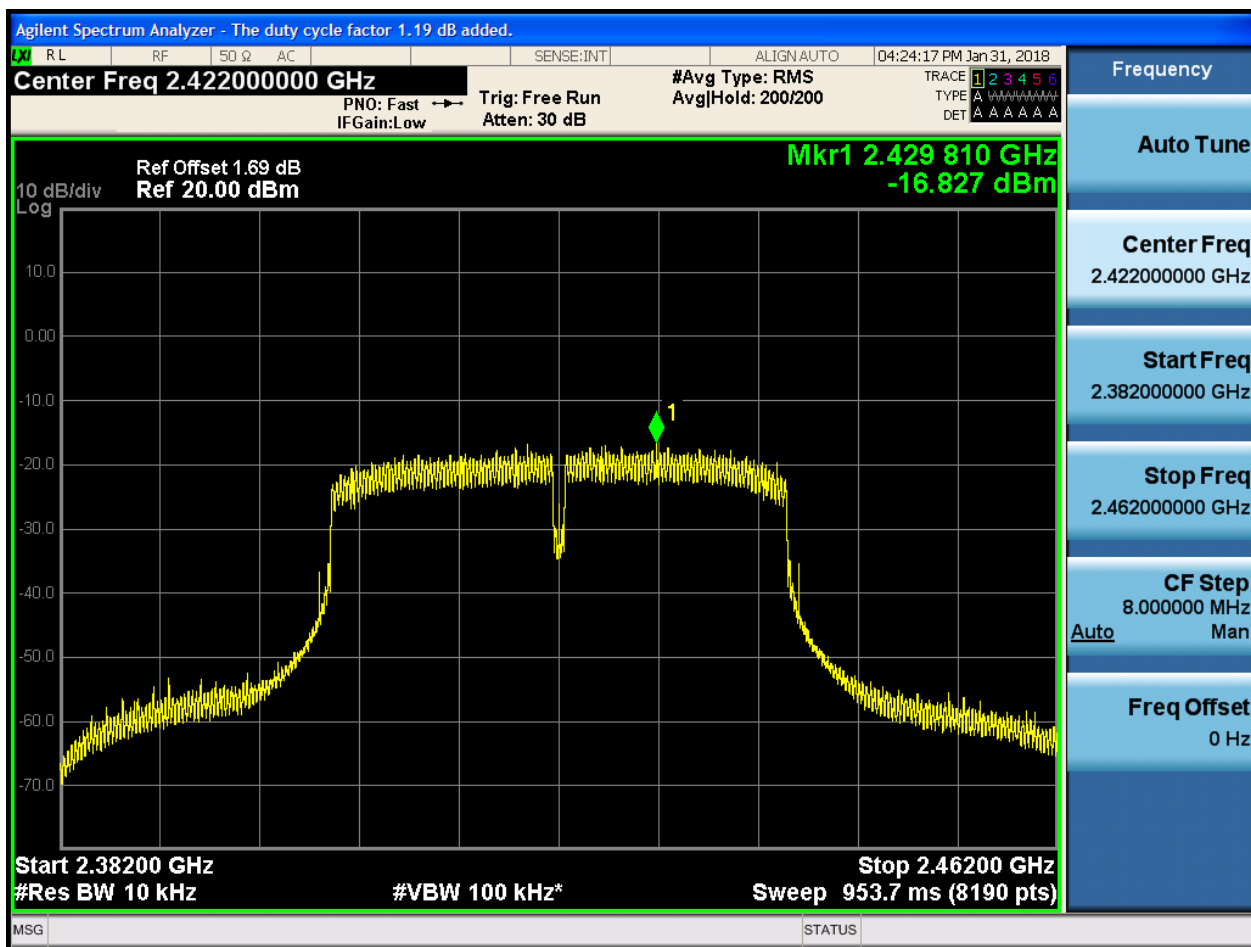


2.11 11N20_H@Ant 1



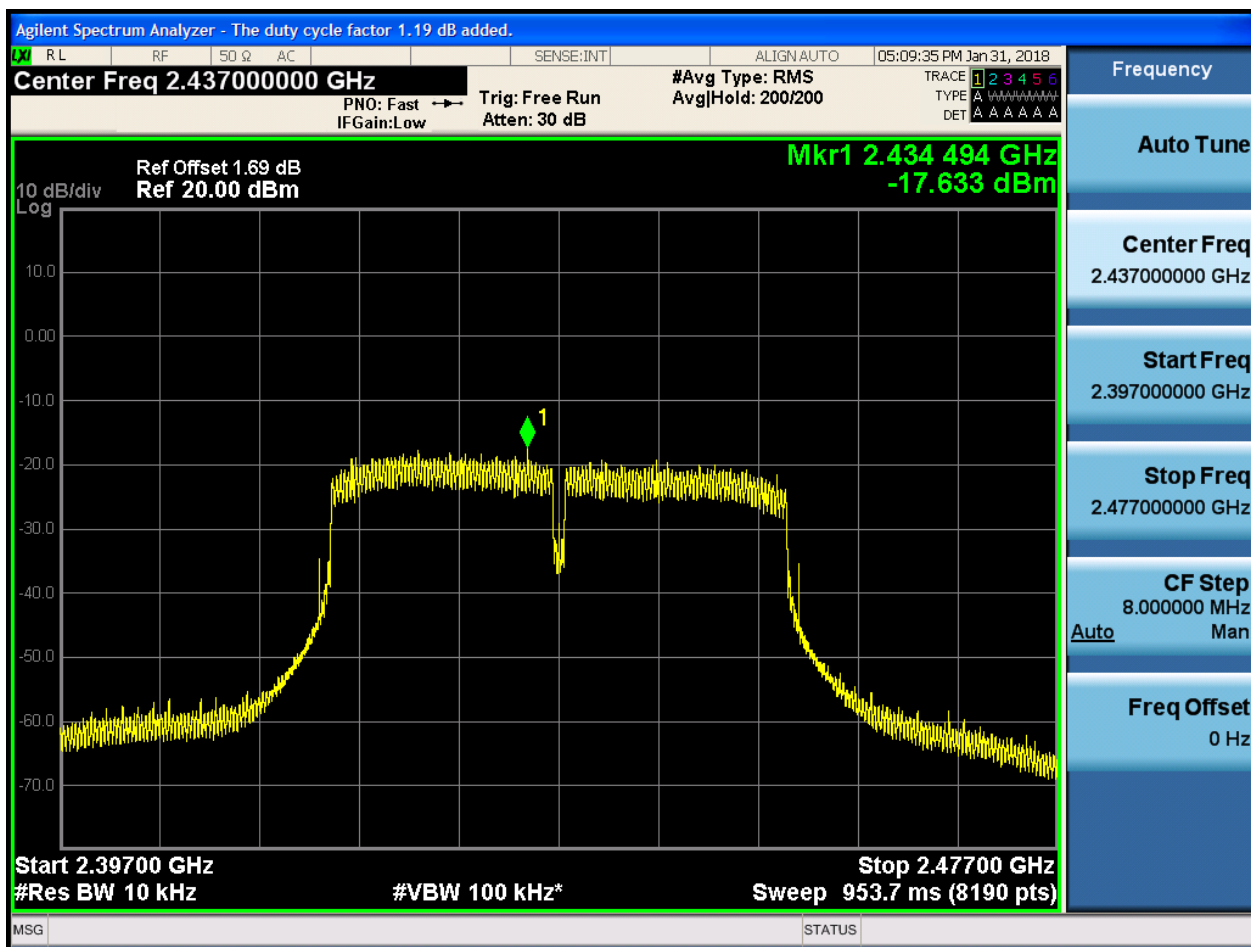


2.12 11N40_L@Ant 1



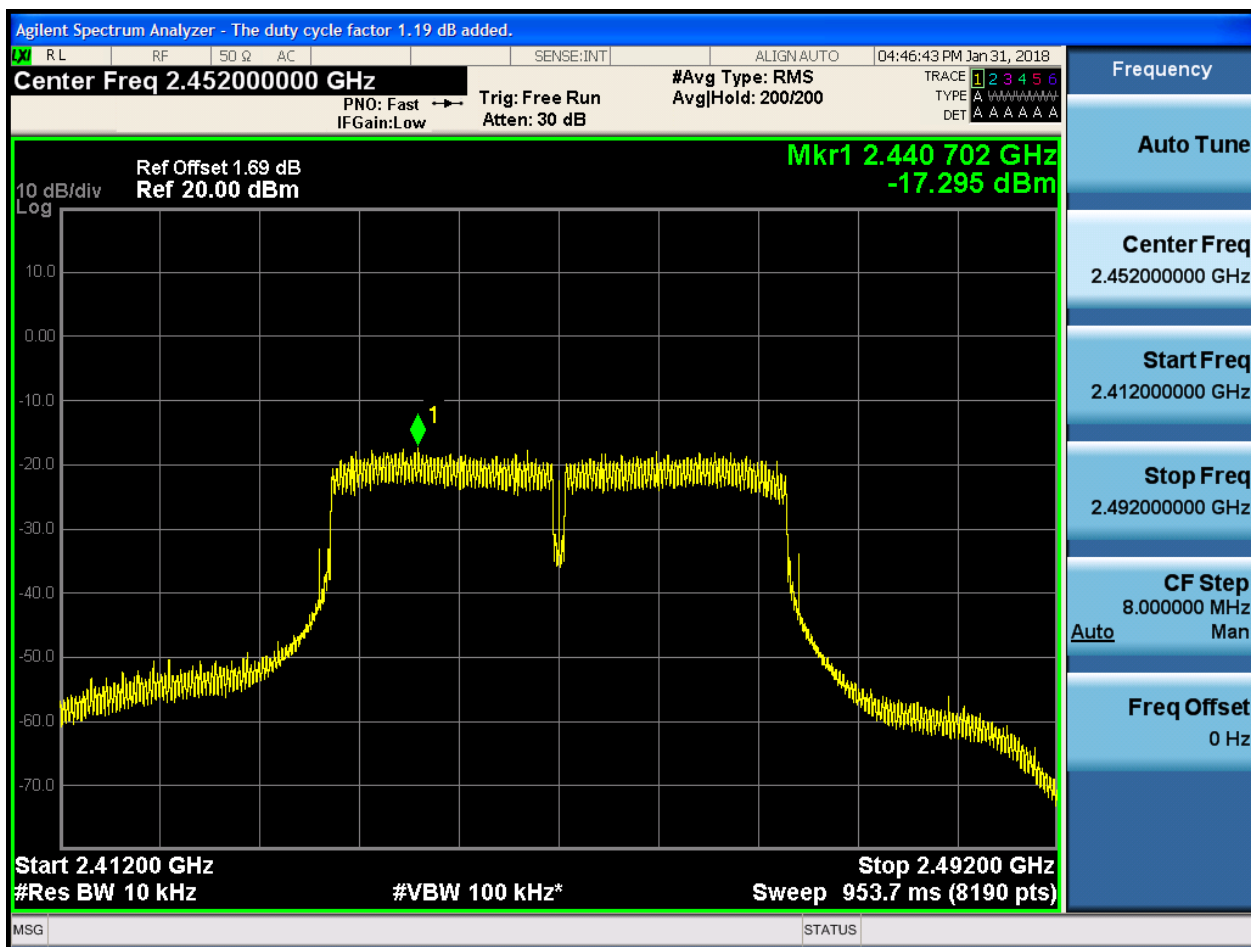


2.13 11N40_M@Ant 1





2.14 11N40_H@Ant 1



Appendix F: Band Edges Compliance

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Carrier Power[dBm]	Max.Spurious Level[dBm]	Verdict
11B	L	2412	Ant 1	8.08	-29.47	pass
11B	H	2462	Ant 1	7.73	-47.98	pass
11G	L	2412	Ant 1	3.80	-29.67	pass
11G	L	2417	Ant 1	6.21	-29.93	pass
11G	H	2457	Ant 1	5.24	-40.23	pass
11G	H	2462	Ant 1	4.75	-31.49	pass
11N20	L	2412	Ant 1	3.88	-29.76	pass
11N20	H	2462	Ant 1	2.80	-38.87	pass
11N40	L	2422	Ant 1	0.66	-33.24	pass
11N40	H	2452	Ant 1	-0.07	-38.48	pass



Part II - Test Plots

2.1 11B_L@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.473500000 GHz

Ref Offset 0.5 dB
Ref 30.00 dBm

Mkr2 2.483 50 GHz
-47.981 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

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.462 50 GHz	7.732 dBm			
2	N	1	f	2.483 50 GHz	-47.981 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS



Agilent Spectrum Analyzer - Swept SA

Center Freq **2.40000000 GHz** Avg Type: Log-Pwr
PNO: Fast Trig: Free Run Avg/Hold: 10/10
IFGain:Low Atten: 40 dB

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

Mkr2 2.400 00 GHz
-29.670 dBm

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.419 47 GHz	3.801 dBm			
2	N	1	f	2.400 00 GHz	-29.670 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Ref Offset 0.5 dB
Ref 30.00 dBm

10 dB/div
Log

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

2.4 11G_L_2417@Ant 1





2.5 11G_H_2457@Ant 1



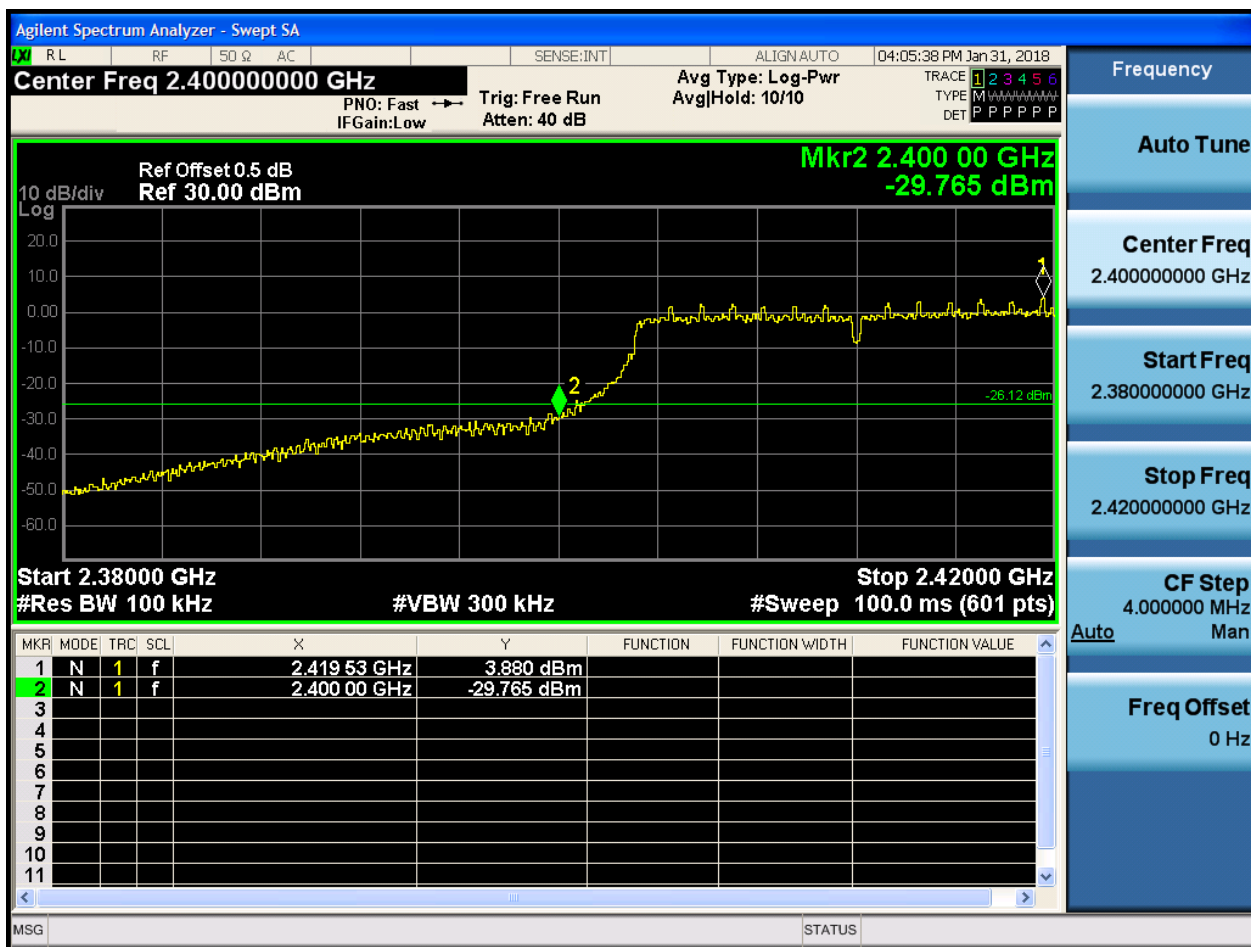


2.6 11G_H_2462@Ant 1





2.7 11N20_L@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.473500000 GHz

Trig: Free Run

Atten: 40 dB

Avg Type: Log-Pwr

Avg/Hold: 100/100

Ref Offset 0.5 dB

Ref 30.00 dBm

Mkr2 2.483 50 GHz

-38.873 dBm

10 dB/div

Log

Start 2.45350 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.49350 GHz

#Sweep 100.0 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.467 03 GHz	-27.20 dBm			
2	N	1	f	2.483 50 GHz	-38.873 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq 2.473500000 GHz

Start Freq 2.453500000 GHz

Stop Freq 2.493500000 GHz

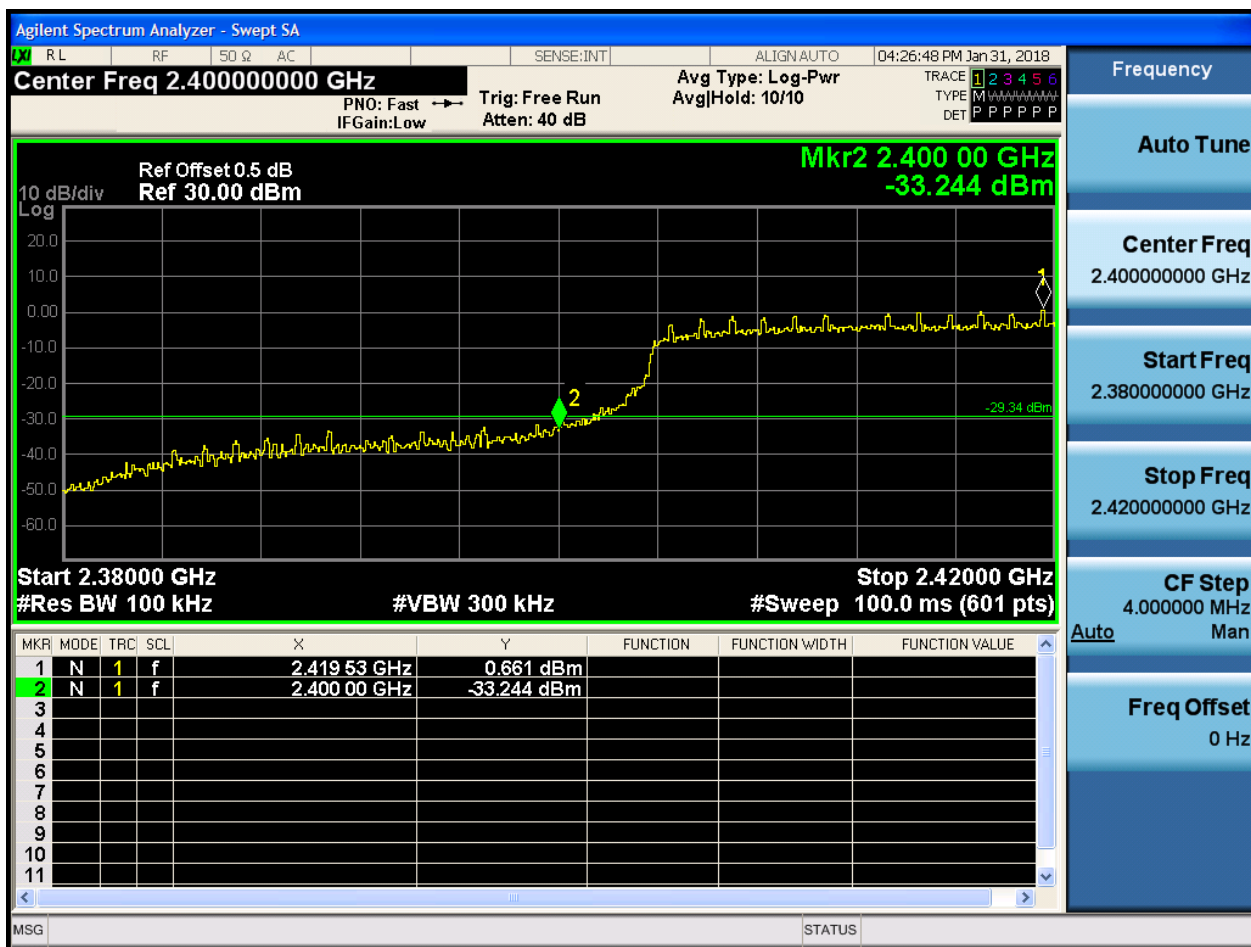
CF Step 4.000000 MHz

Auto

Freq Offset 0 Hz



2.9 11N40_L@Ant 1



2.10 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	8.18	<limit	pass
11B	M	2437	Ant 1	8.45	<limit	pass
11B	H	2462	Ant 1	7.90	<limit	pass
11G	L	2412	Ant 1	3.91	<limit	pass
11G	L	2417	Ant 1	6.35	<limit	pass
11G	M	2437	Ant 1	6.05	<limit	pass
11G	H	2462	Ant 1	4.81	<limit	pass
11N20	L	2412	Ant 1	3.98	<limit	pass
11N20	M	2437	Ant 1	4.23	<limit	pass
11N20	H	2462	Ant 1	2.91	<limit	pass
11N40	L	2422	Ant 1	1.07	<limit	pass
11N40	M	2437	Ant 1	0.22	<limit	pass
11N40	H	2452	Ant 1	0.49	<limit	pass



Part II - Test Plots

2.1 11B_L@Ant 1

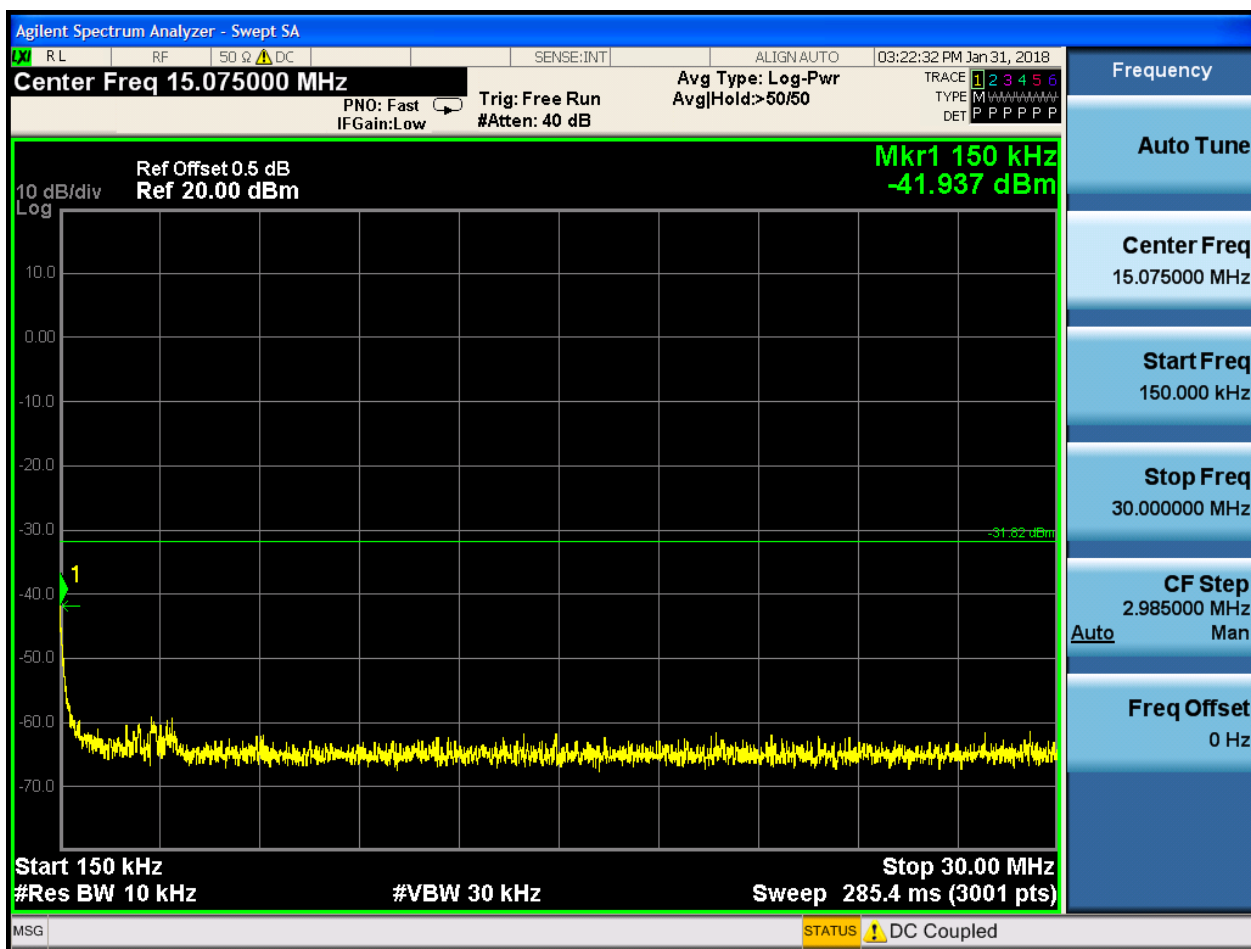
Pref:

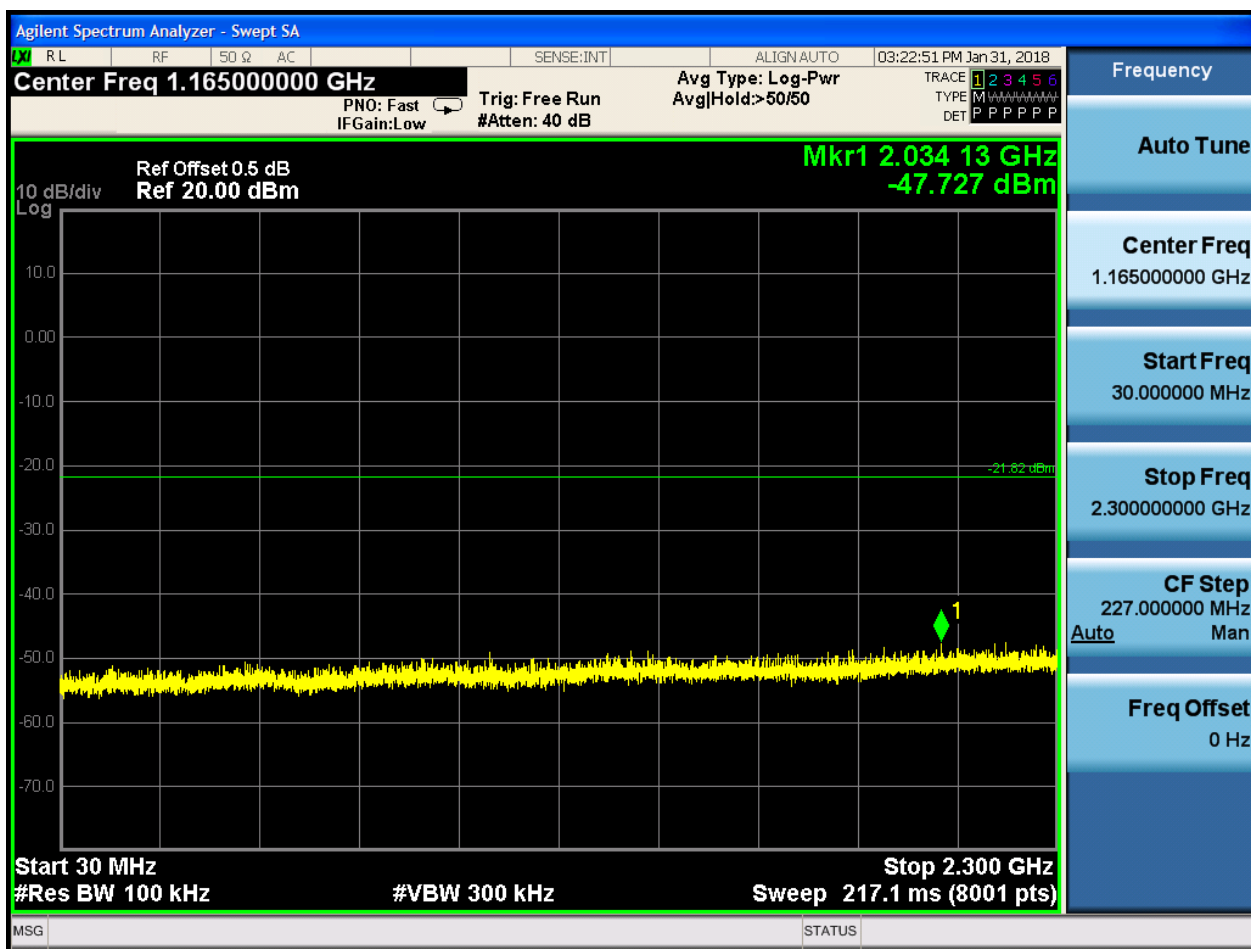


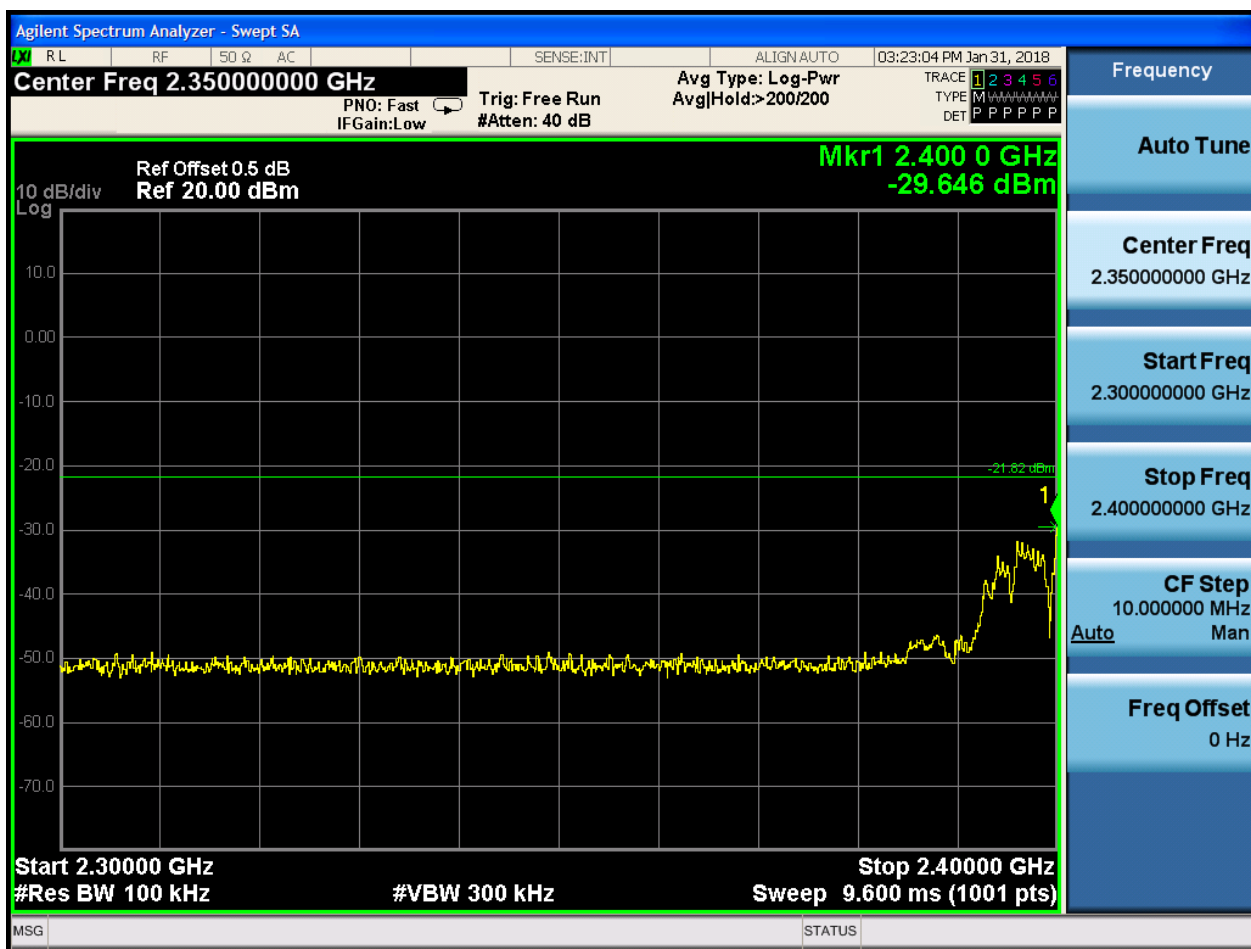


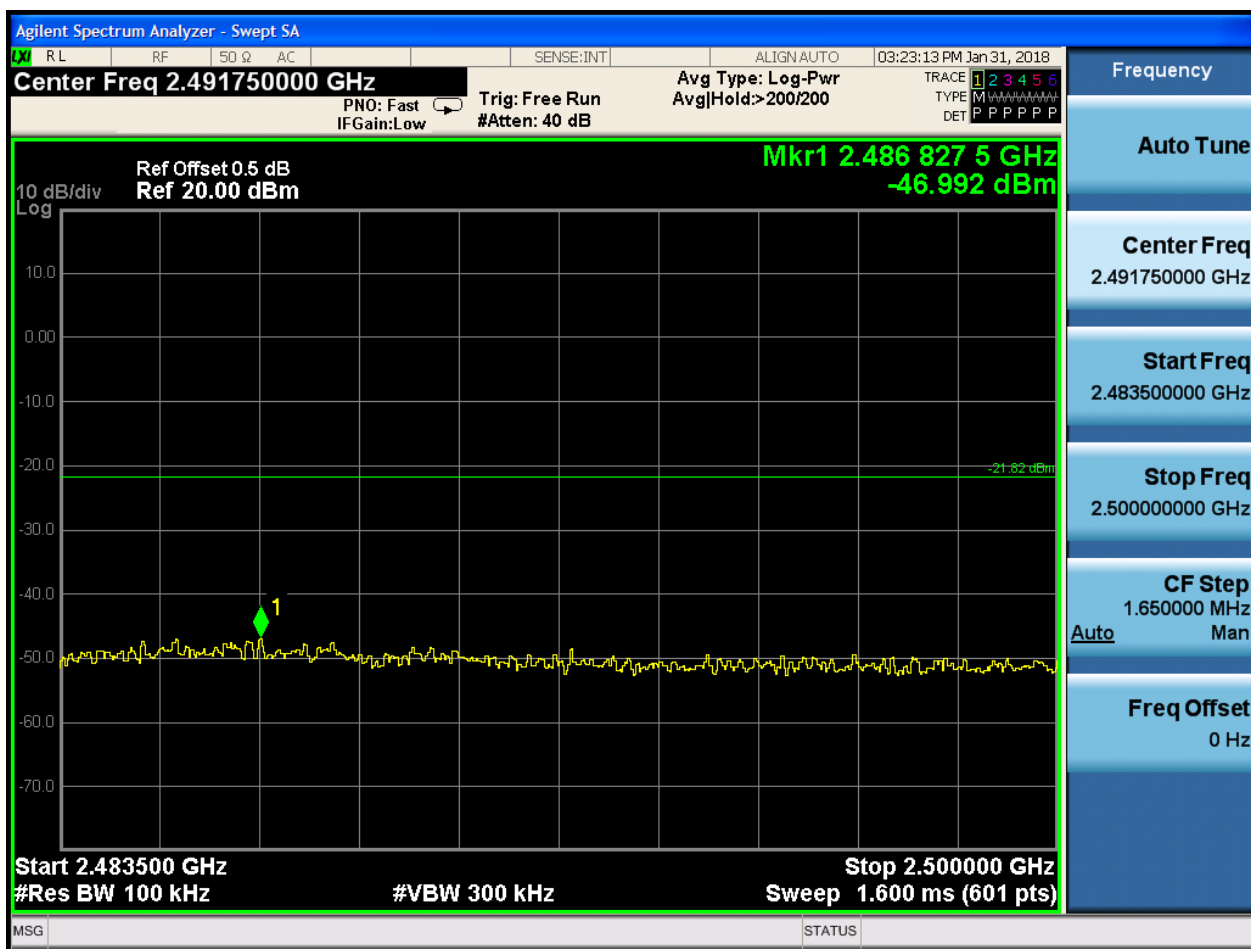
Puw:









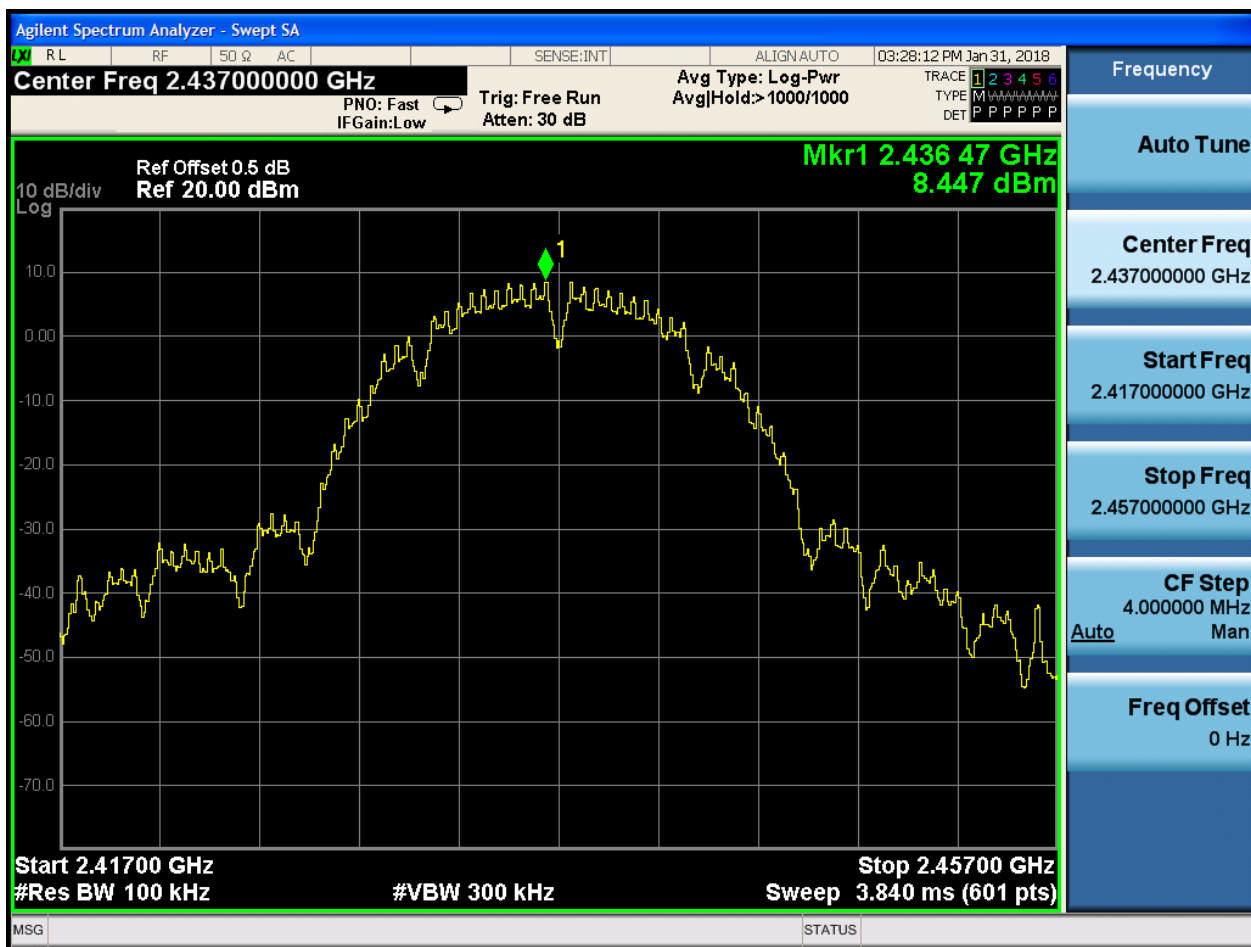






2.2 11B_M@Ant 1

Pref:





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN AUTO 03:28:27 PM Jan 31, 2018

Center Freq 79.500 kHz

PNO: Wide Trig: Free Run
IFGain:Low #Atten: 26 dB

Avg Type: Log-Pwr
Avg/Hold: >50/50

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

Ref Offset 0.5 dB
Ref 0.00 dBm

Mkr1 9.000 kHz
-54.808 dBm

10 dB/div
Log

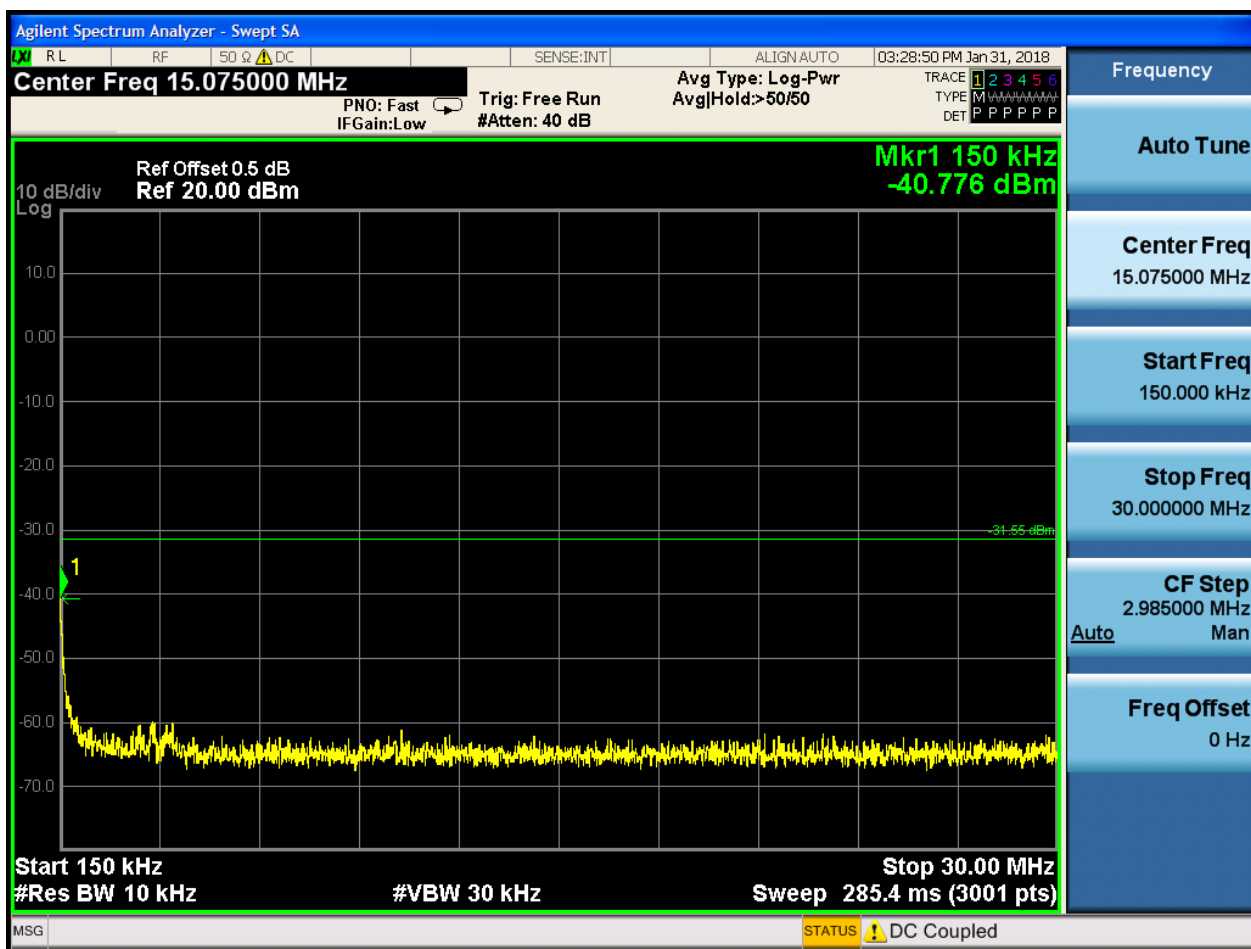
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0

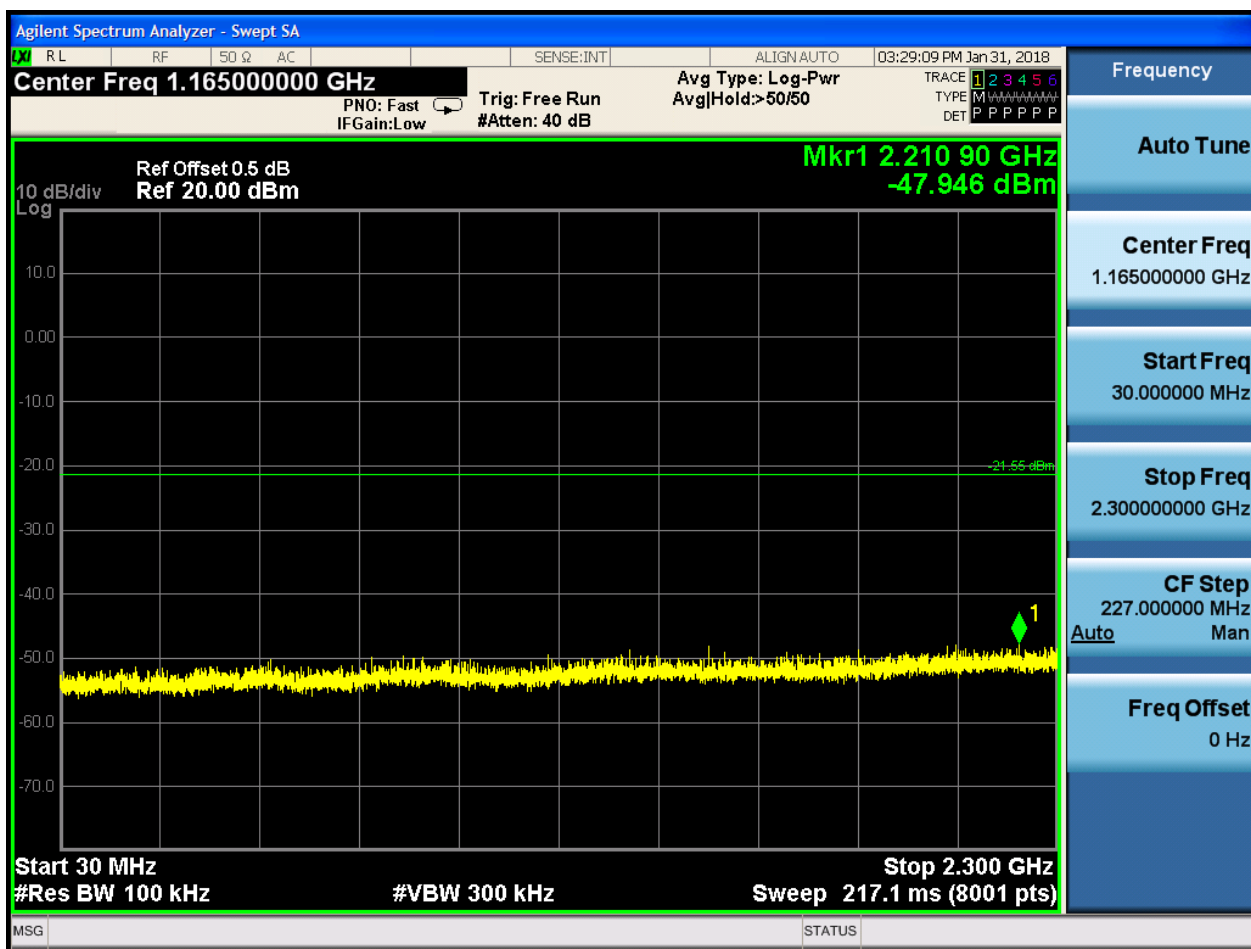
-41.55 dBm

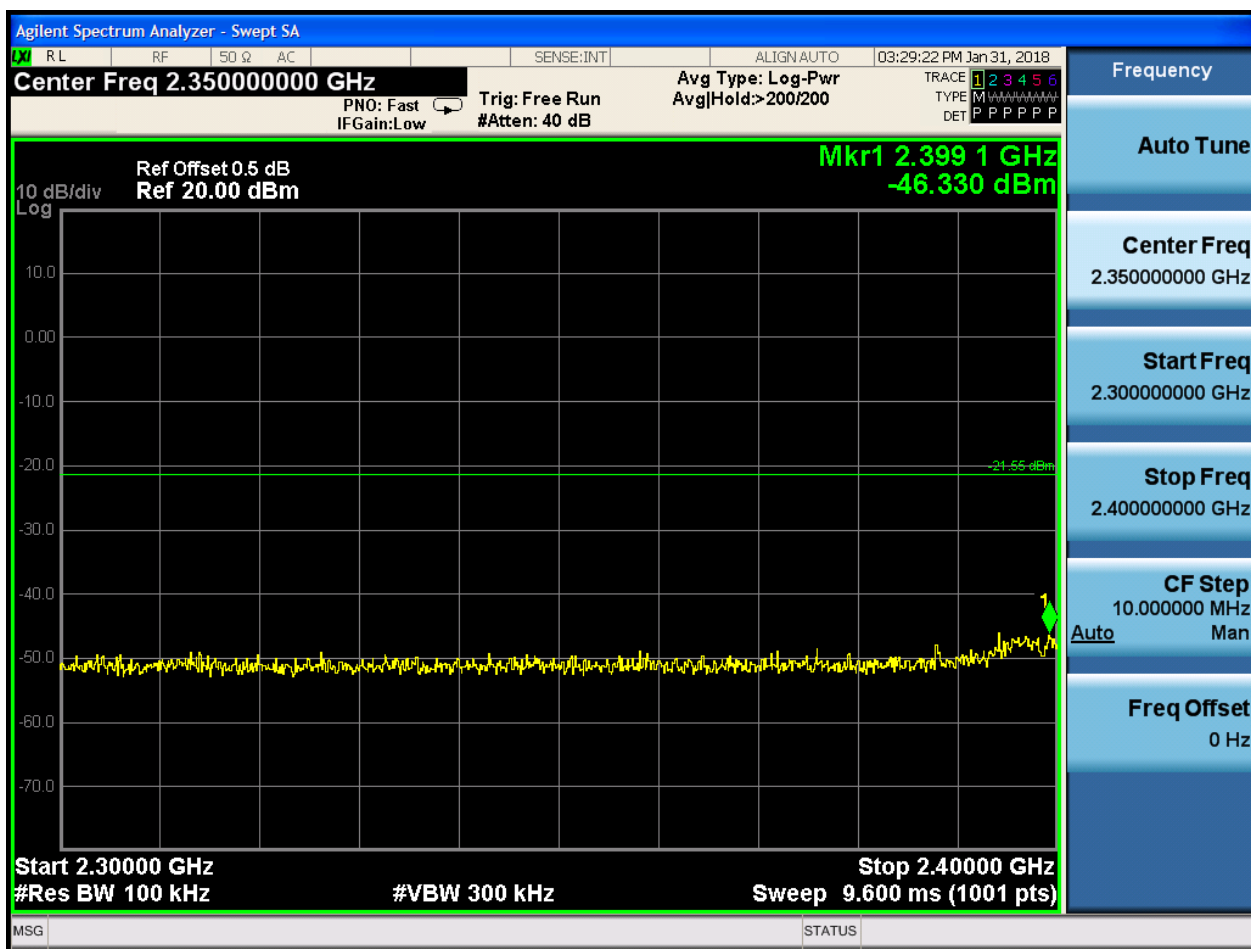
Start 9.00 kHz Stop 150.00 kHz
#Res BW 1.0 kHz #VBW 3.0 kHz Sweep 134.8 ms (601 pts)

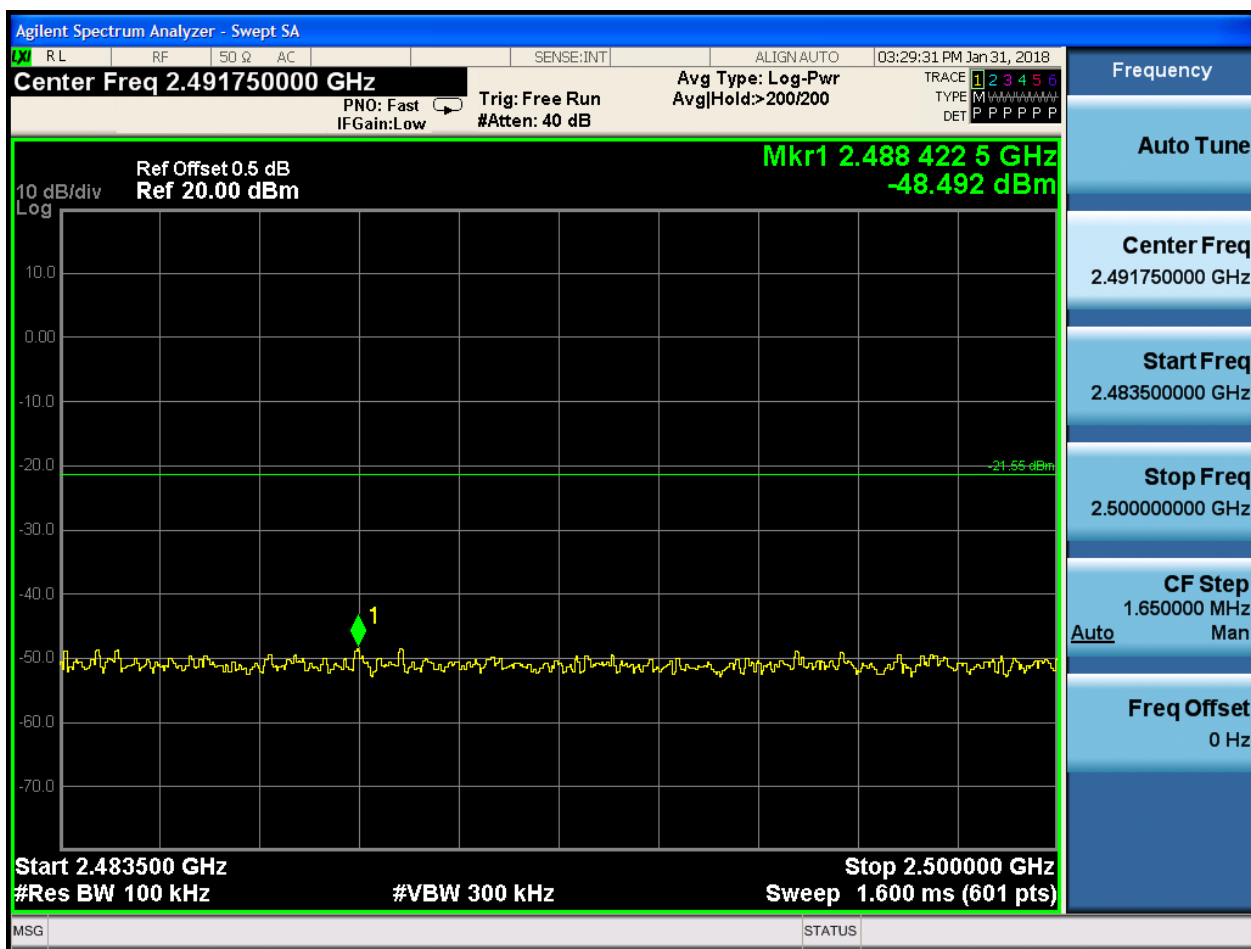
Frequency
Auto Tune
Center Freq 79.500 kHz
Start Freq 9.000 kHz
Stop Freq 150.000 kHz
CF Step 14.100 kHz Man
Auto
Freq Offset 0 Hz

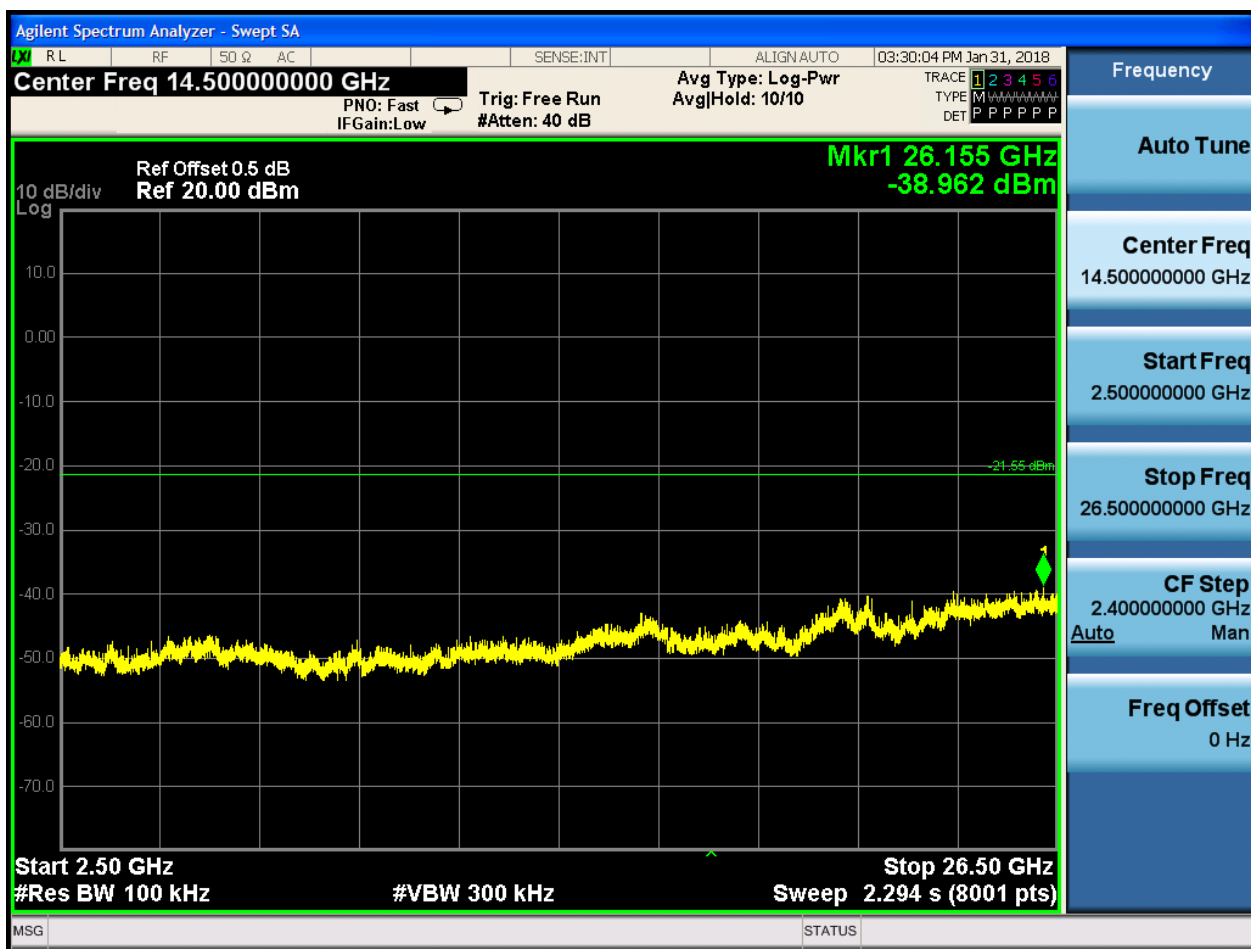
MSG STATUS ⚠ DC Coupled











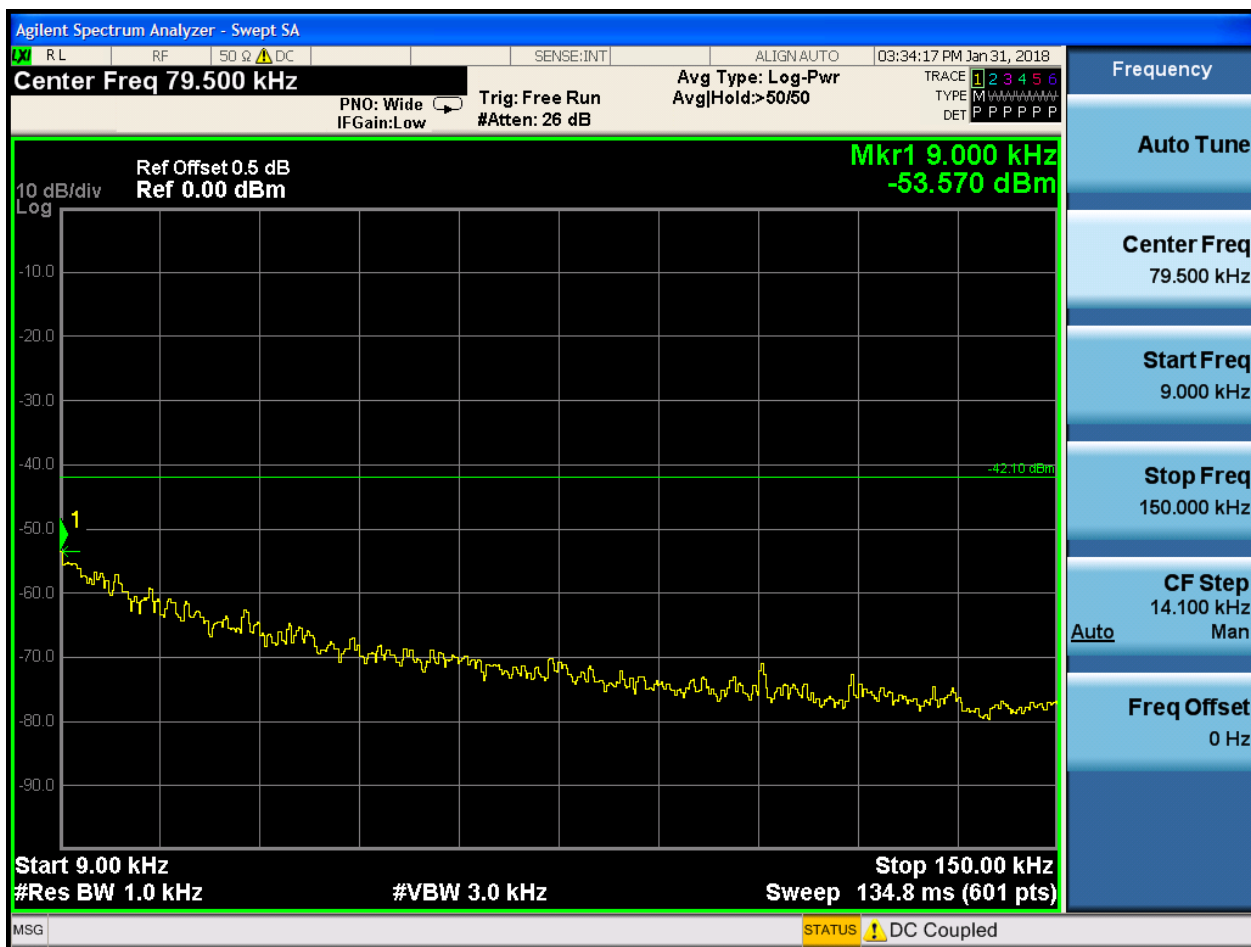
2.3 11B_H@Ant 1

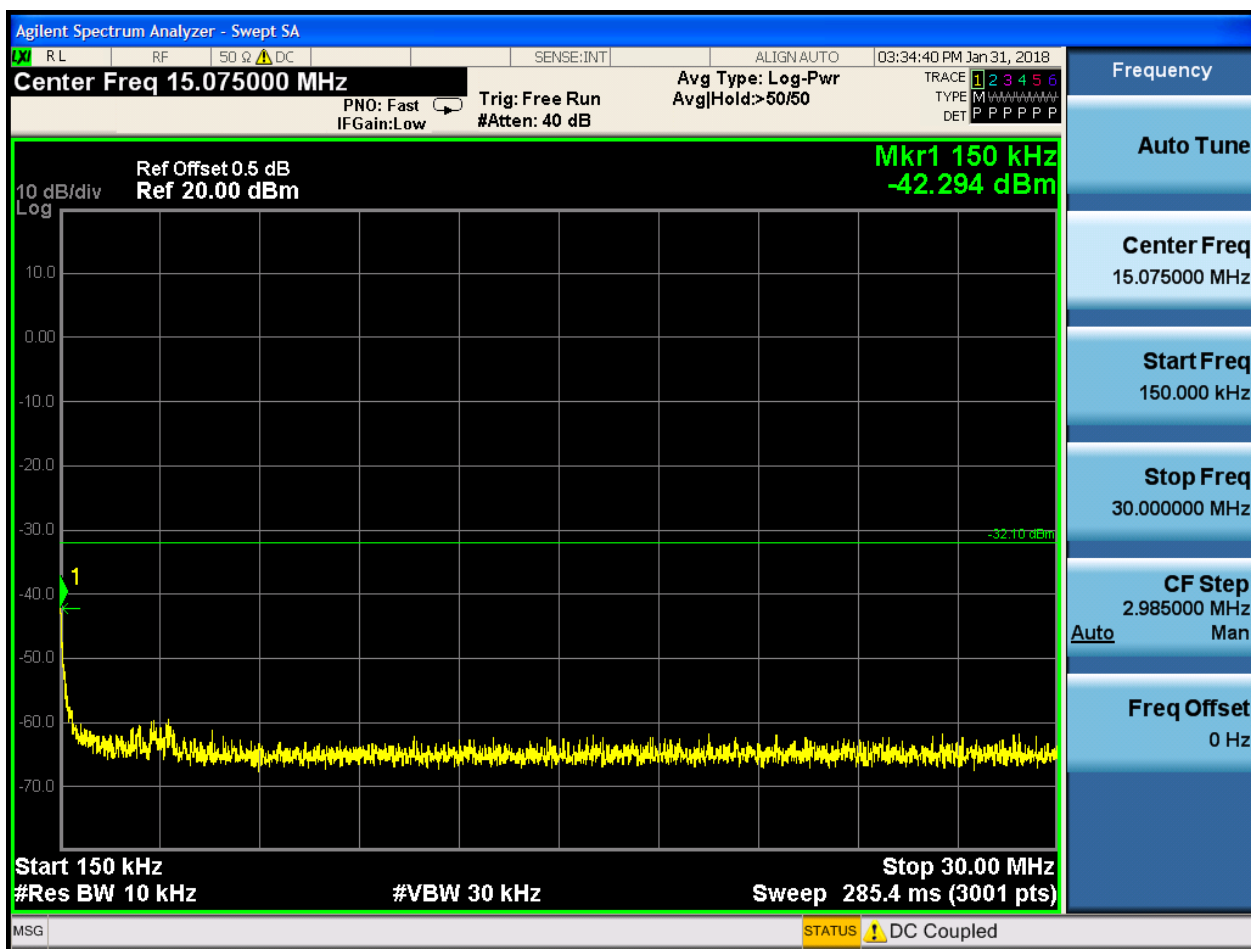
Pref:

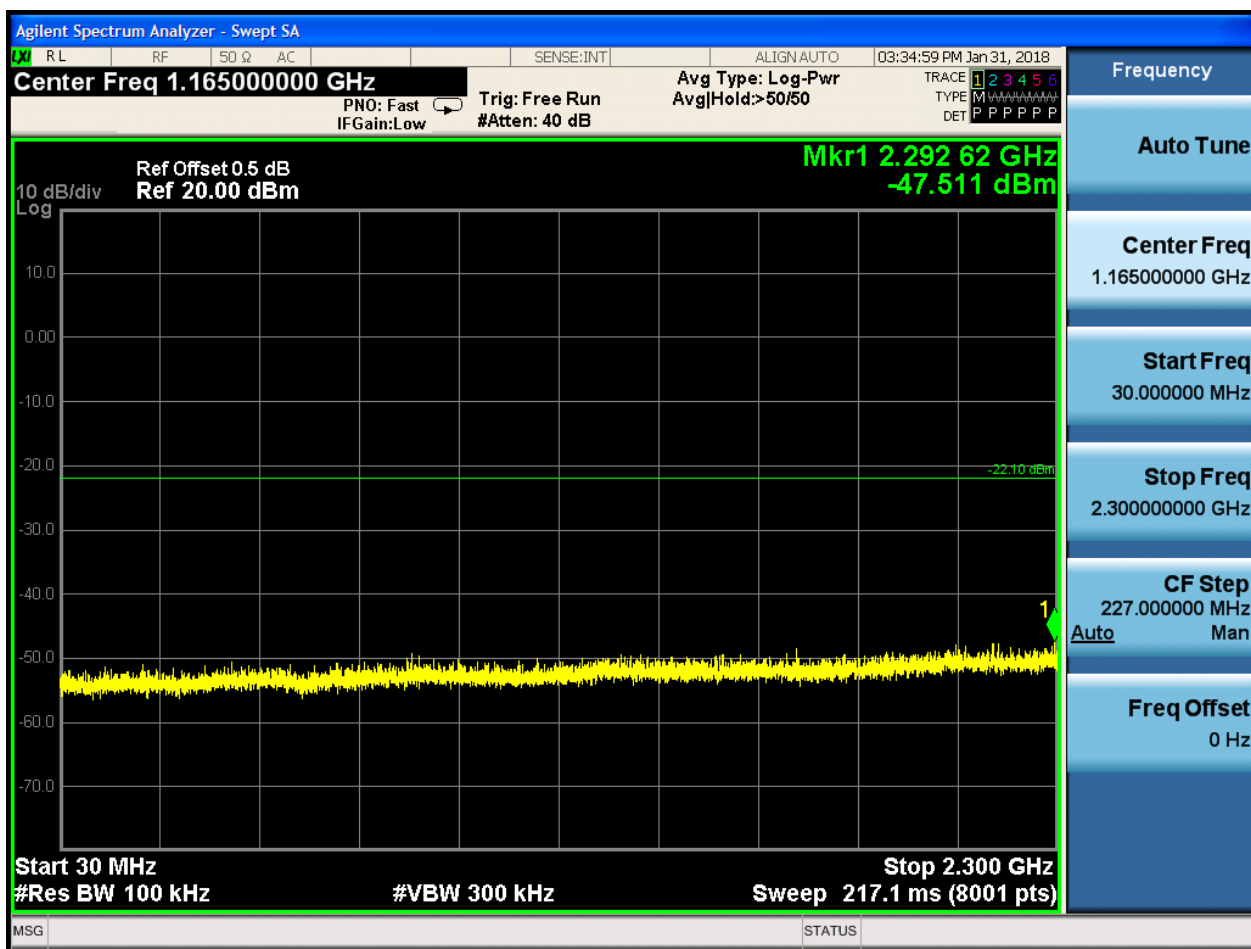


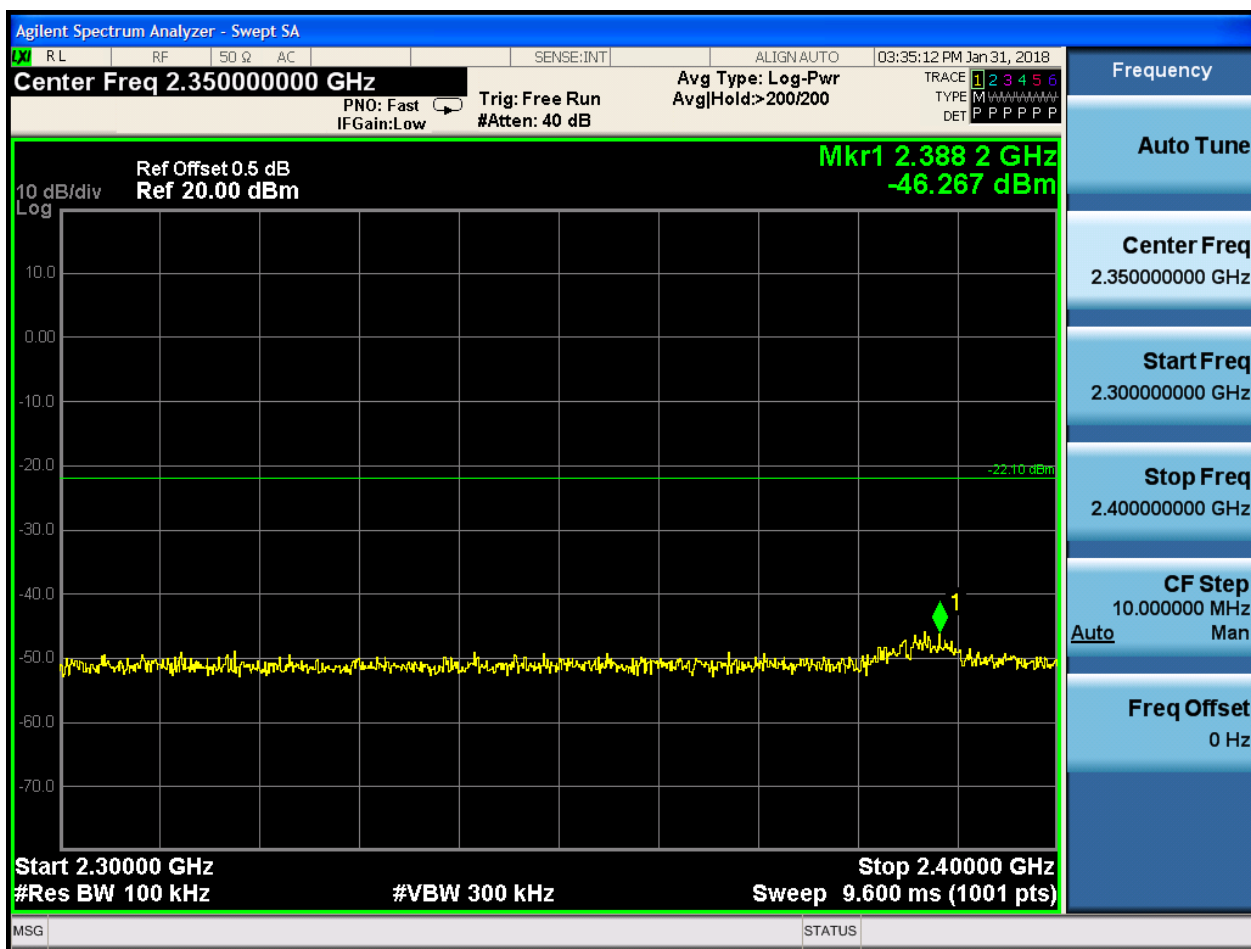


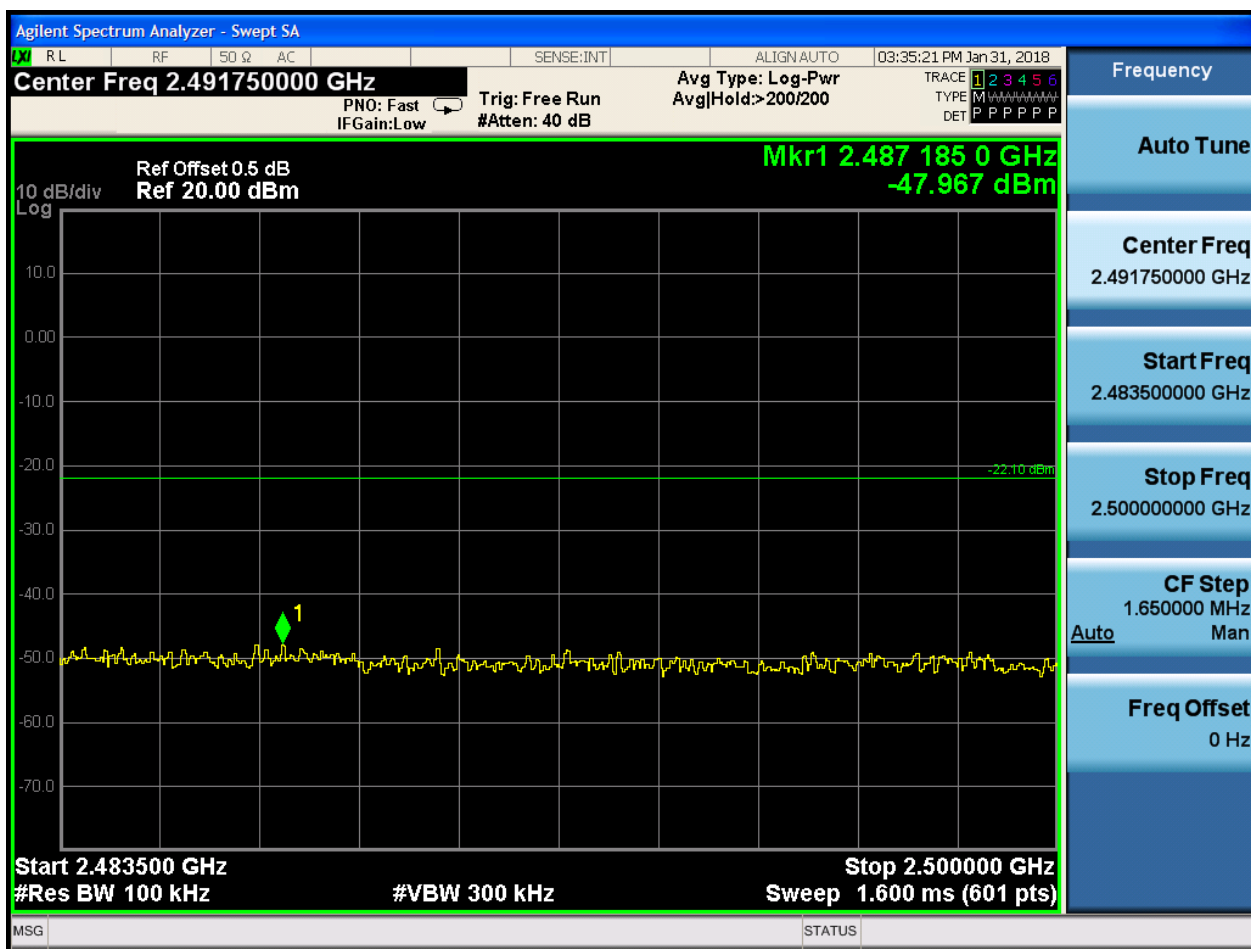
Puw:

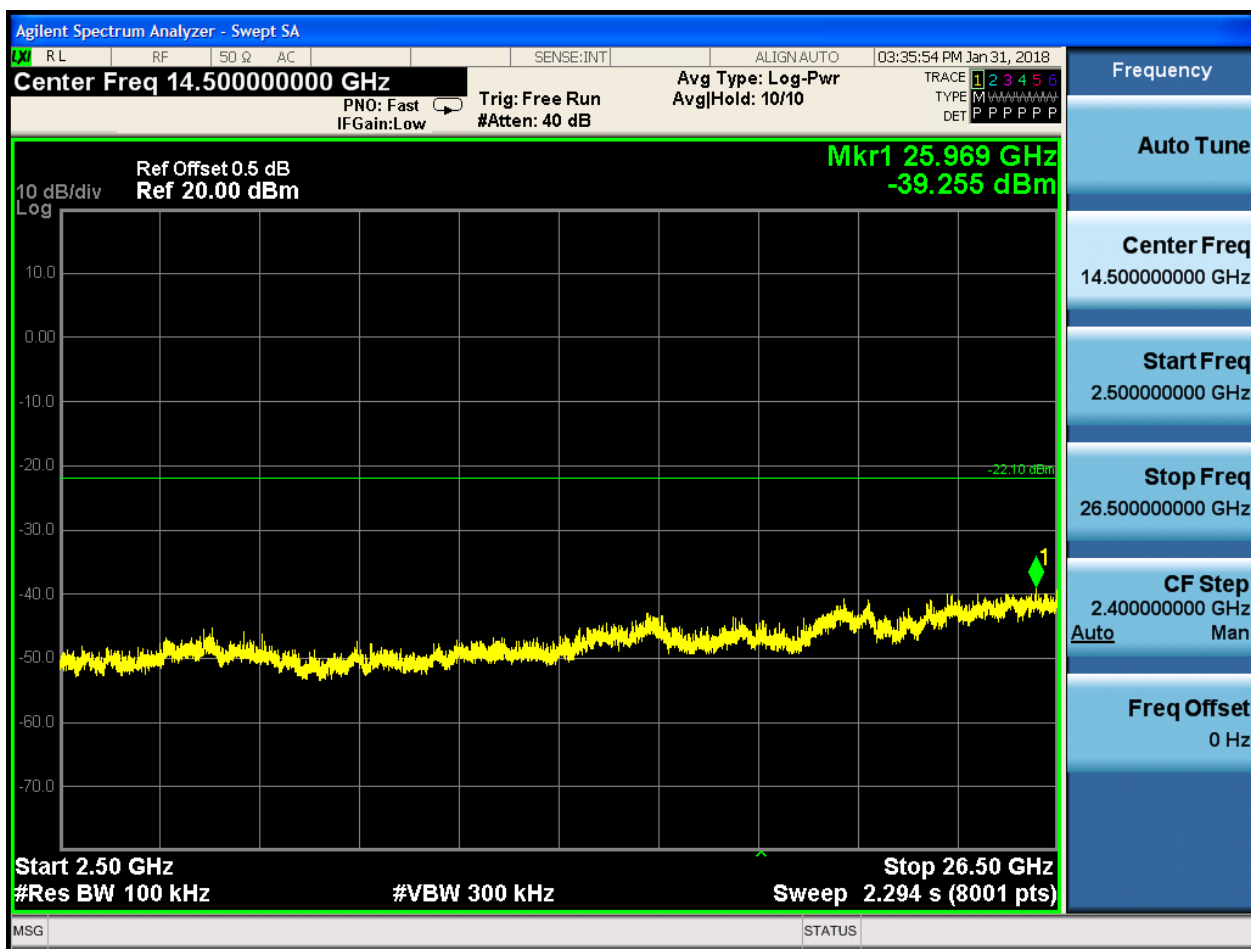








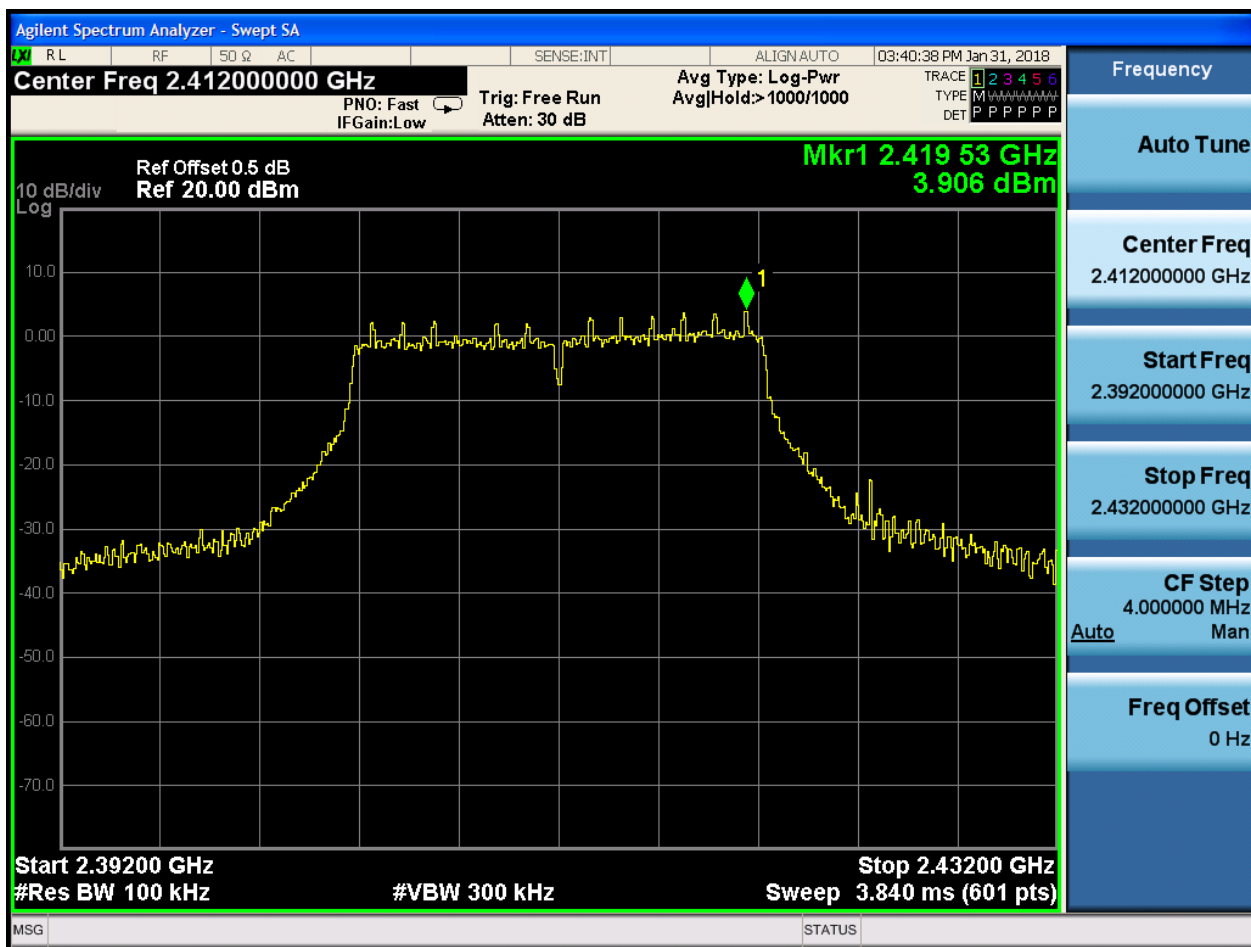






2.4 11G_L_2412@Ant 1

Pref:





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN:AUTO 03:40:53 PM Jan 31, 2018

Center Freq 79.500 kHz

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

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

Ref Offset 0.5 dB
Ref 0.00 dBm

**Mkr1 10.175 kHz
-53.612 dBm**

10 dB/div
Log

Start 9.00 kHz Stop 150.00 kHz
#Res BW 1.0 kHz #VBW 3.0 kHz Sweep 134.8 ms (601 pts)

MSG STATUS DC Coupled

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