



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.

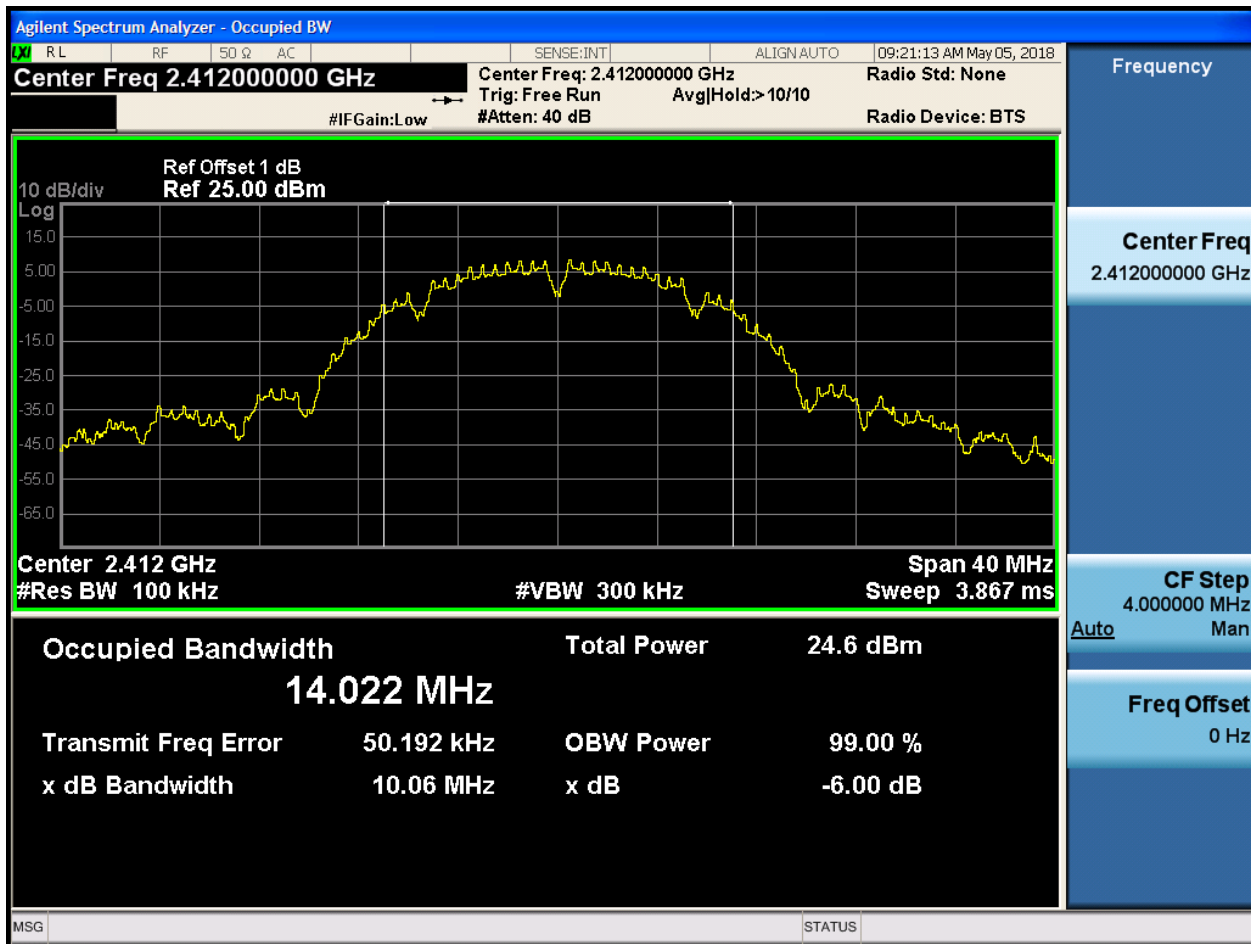
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	10.06	pass
11B	M	2437	Ant 1	10.07	pass
11B	H	2462	Ant 1	10.04	pass
11G	L	2412	Ant 1	16.39	pass
11G	L	2417	Ant 1	16.42	pass
11G	M	2437	Ant 1	16.42	pass
11G	H	2457	Ant 1	16.41	pass
11G	H	2462	Ant 1	16.43	pass
11N20	L	2412	Ant 1	17.60	pass
11N20	M	2437	Ant 1	17.65	pass
11N20	H	2462	Ant 1	17.61	pass
11N40	L	2422	Ant 1	35.61	pass
11N40	M	2437	Ant 1	35.25	pass
11N40	H	2452	Ant 1	35.21	pass

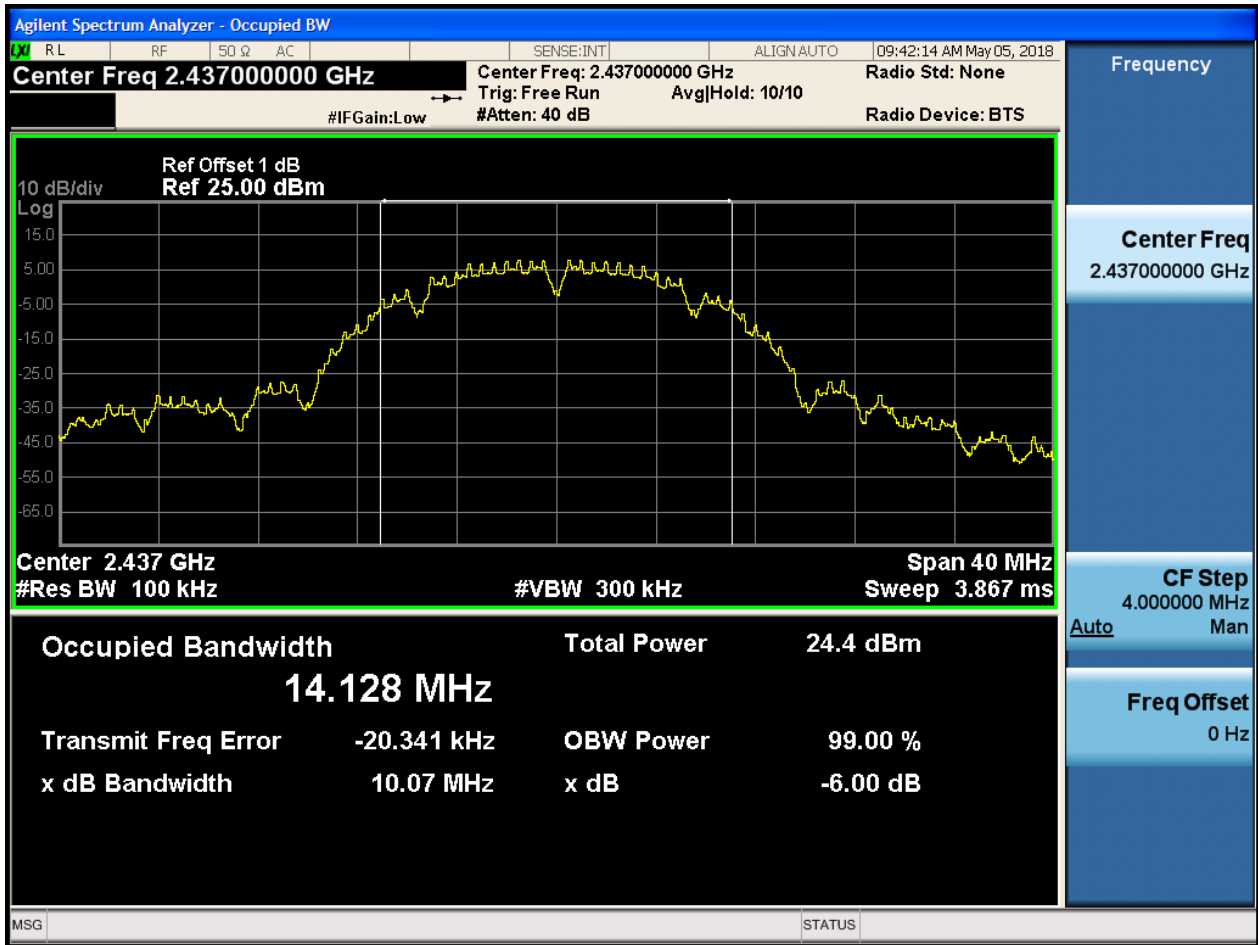
Part II - Test Plots

2.1 11B_L_2412@Ant 1



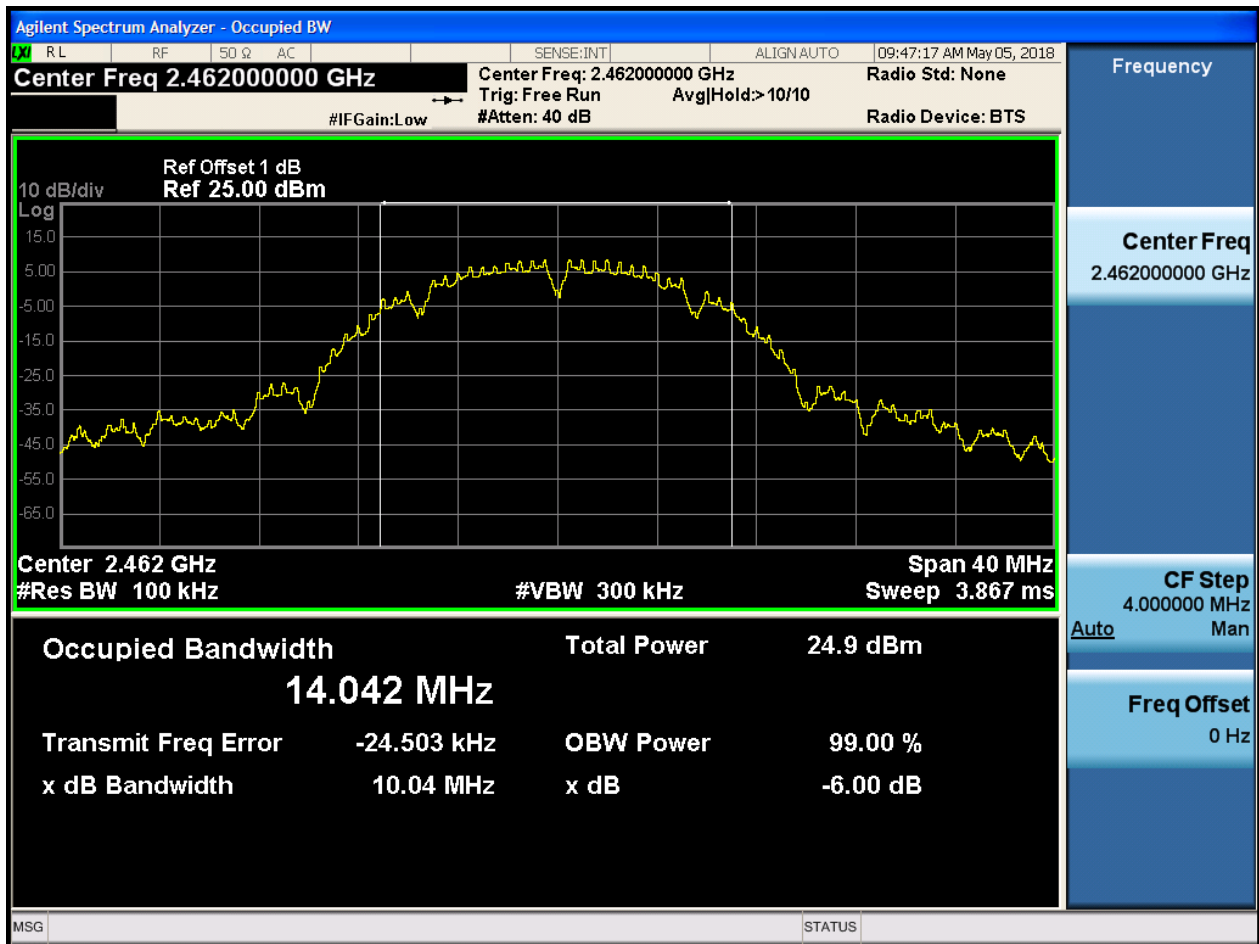


2.2 11B_M_2437@Ant 1



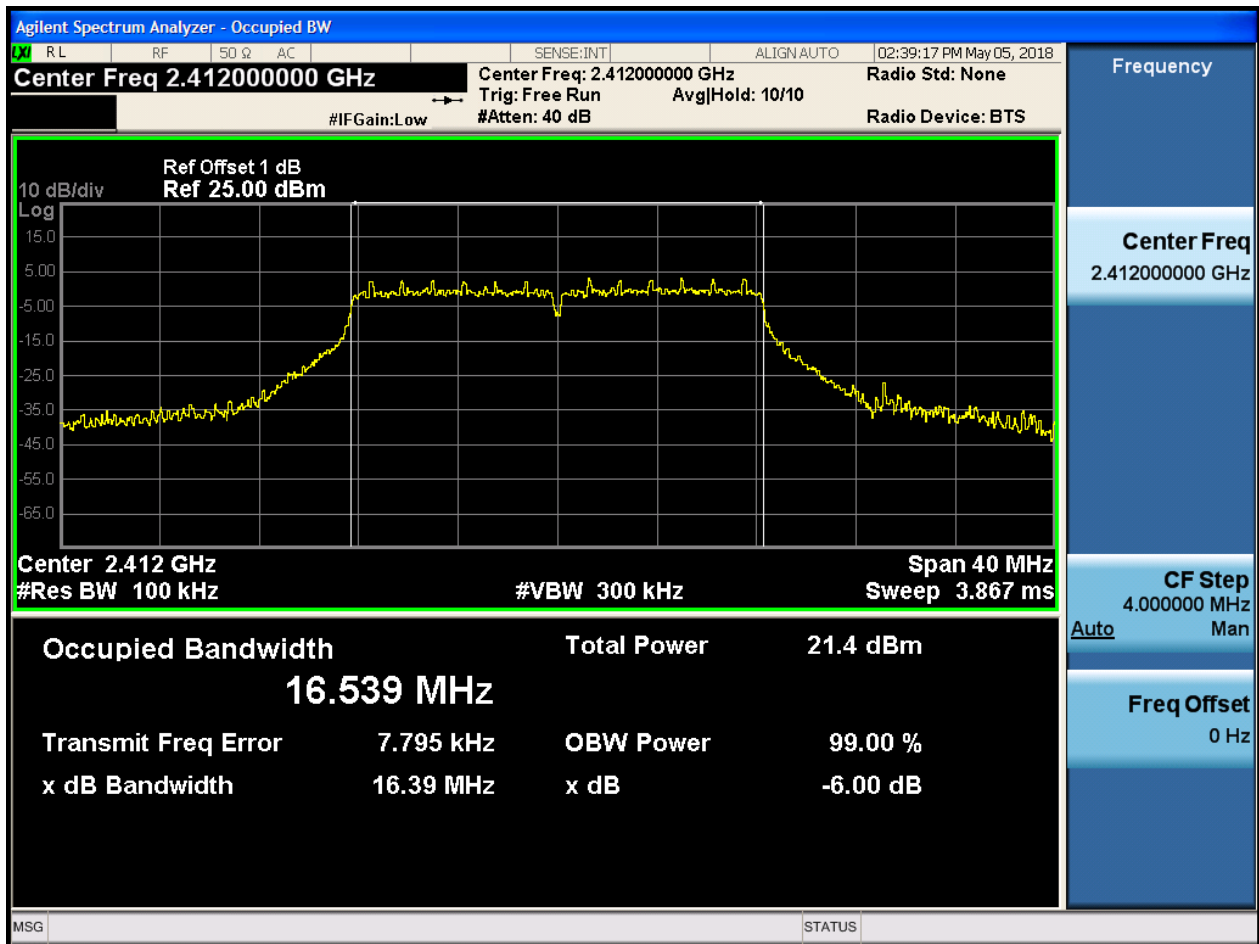


2.3 11B_H_2462@Ant 1



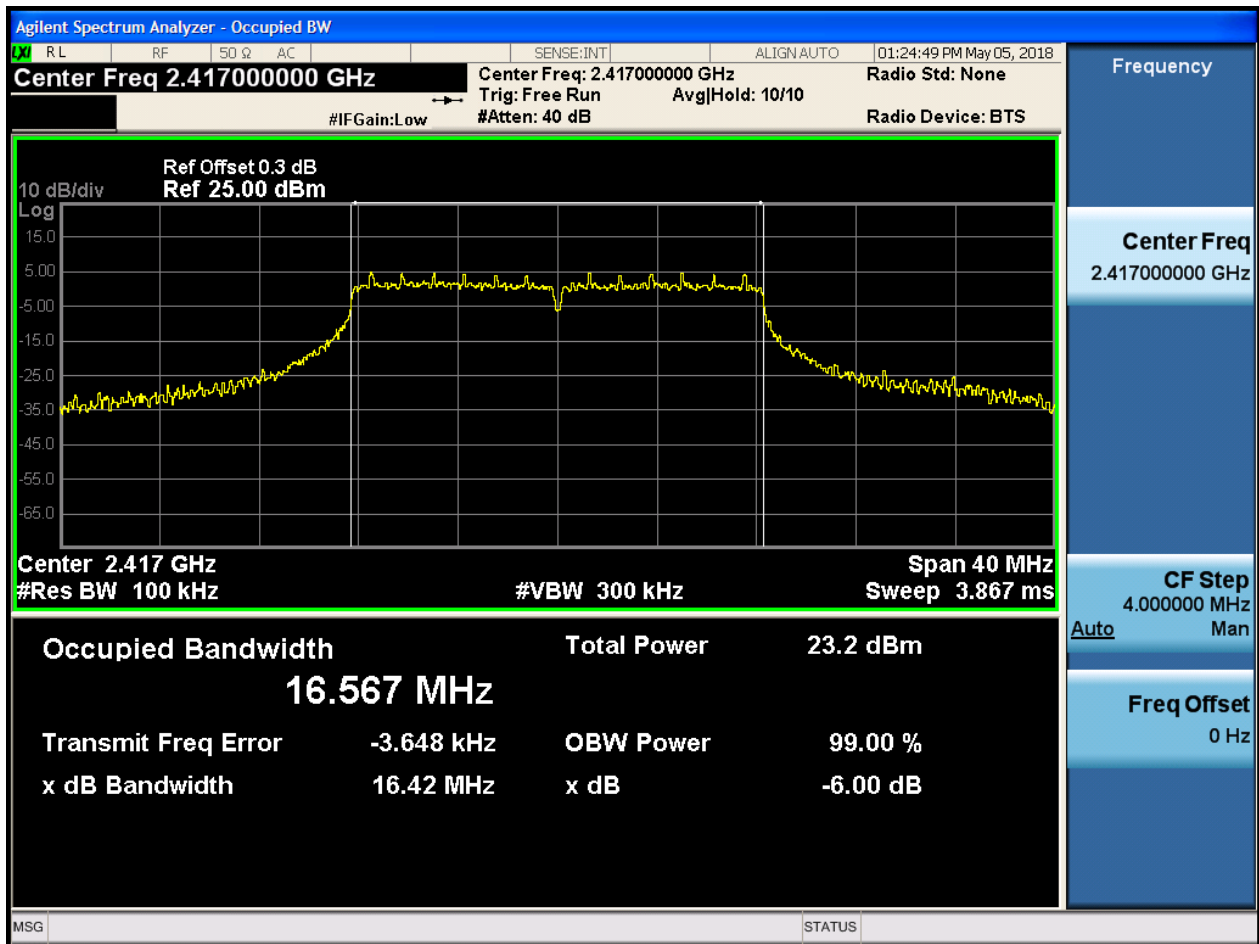


2.4 11G_L_2412@Ant 1



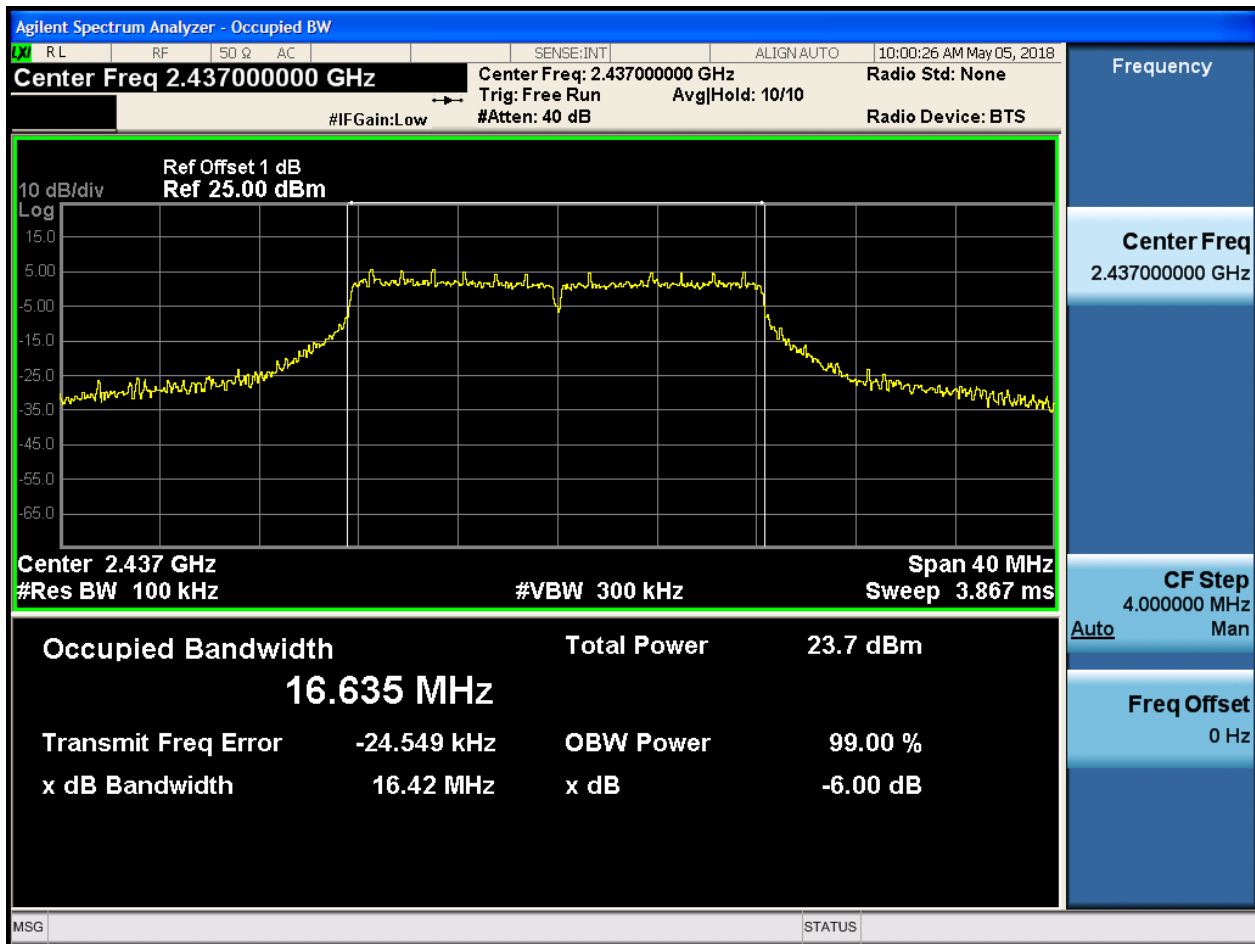


2.5 11G_L_2417@Ant 1



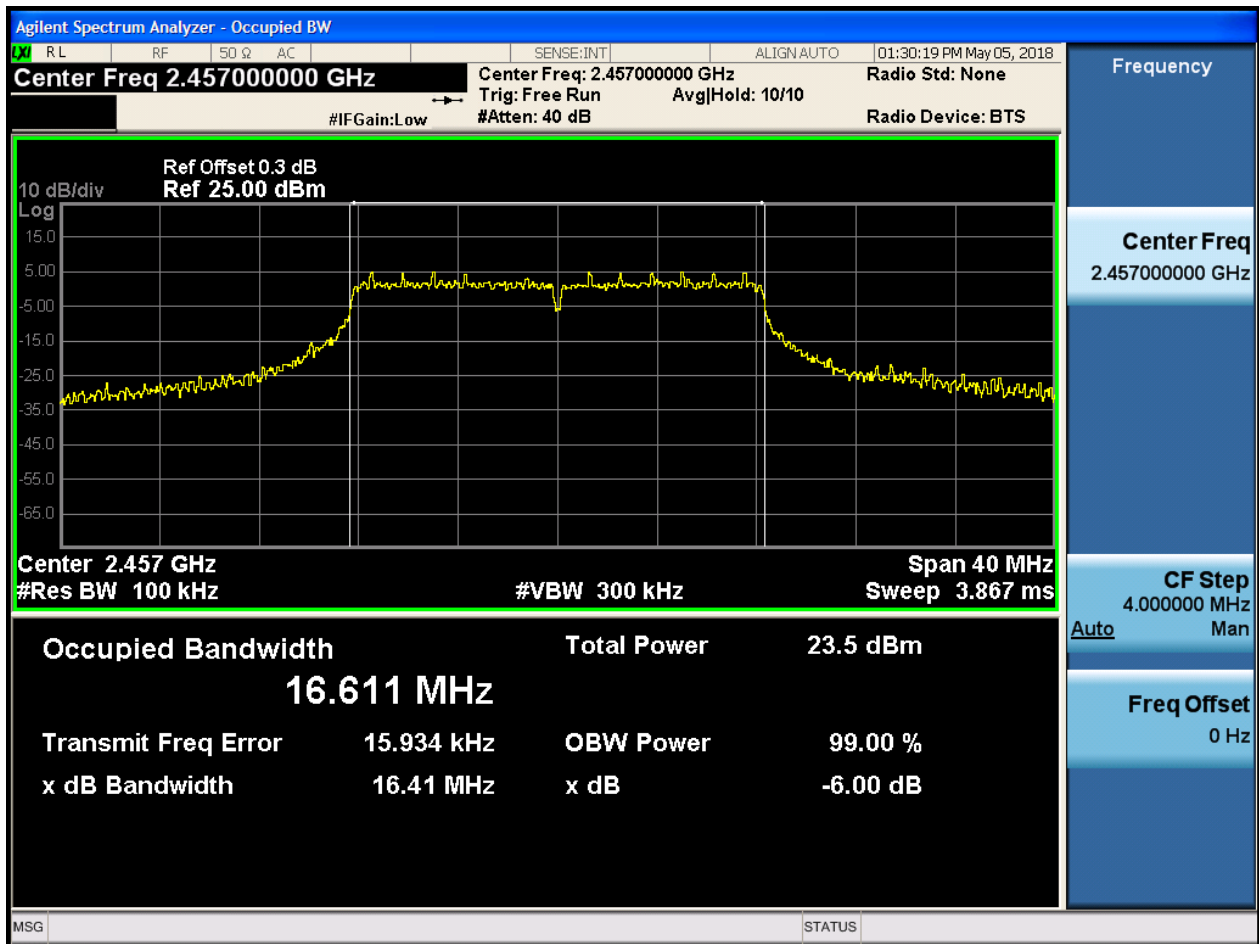


2.6 11G_M_2437@Ant 1



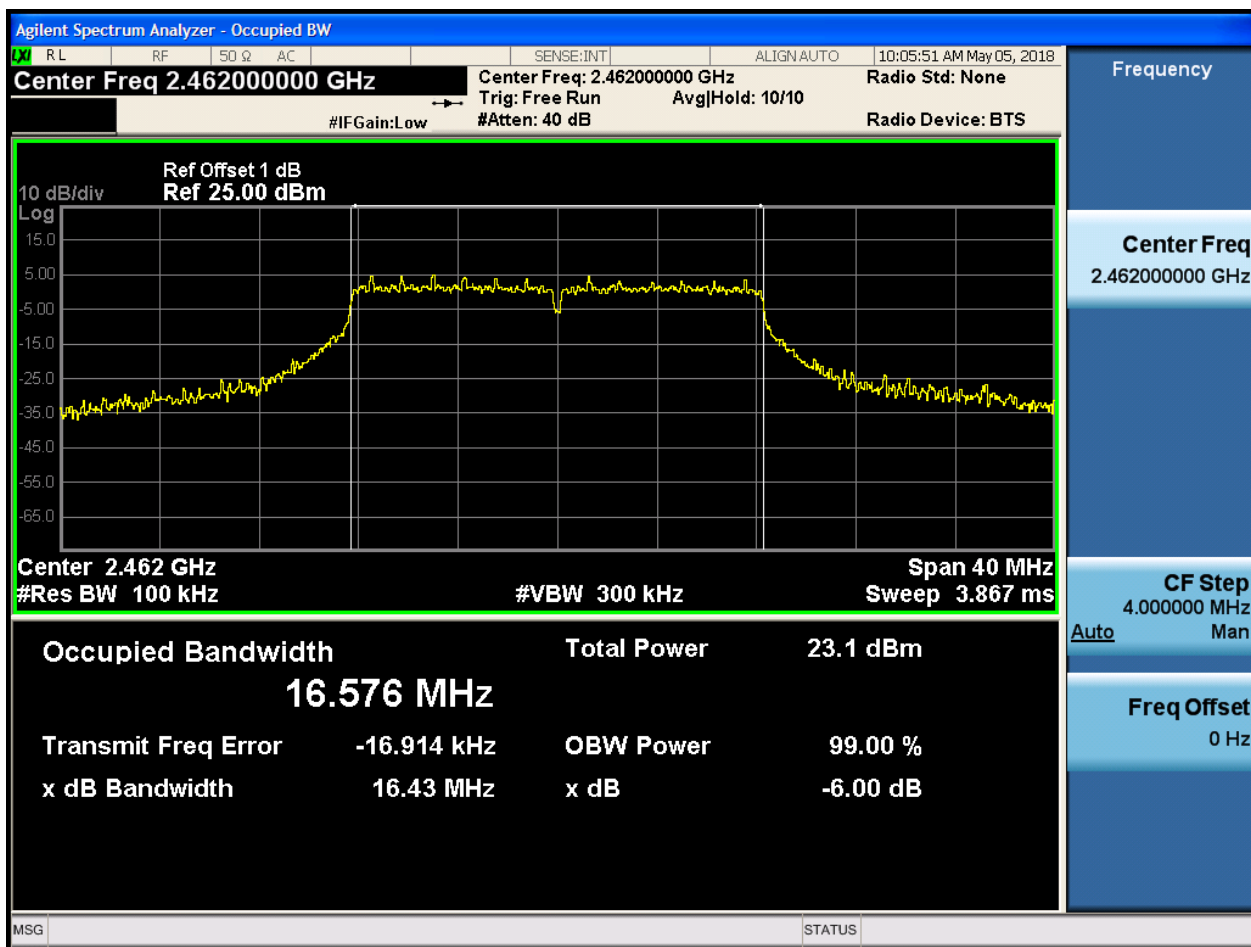


2.7 11G_H_2457@Ant 1



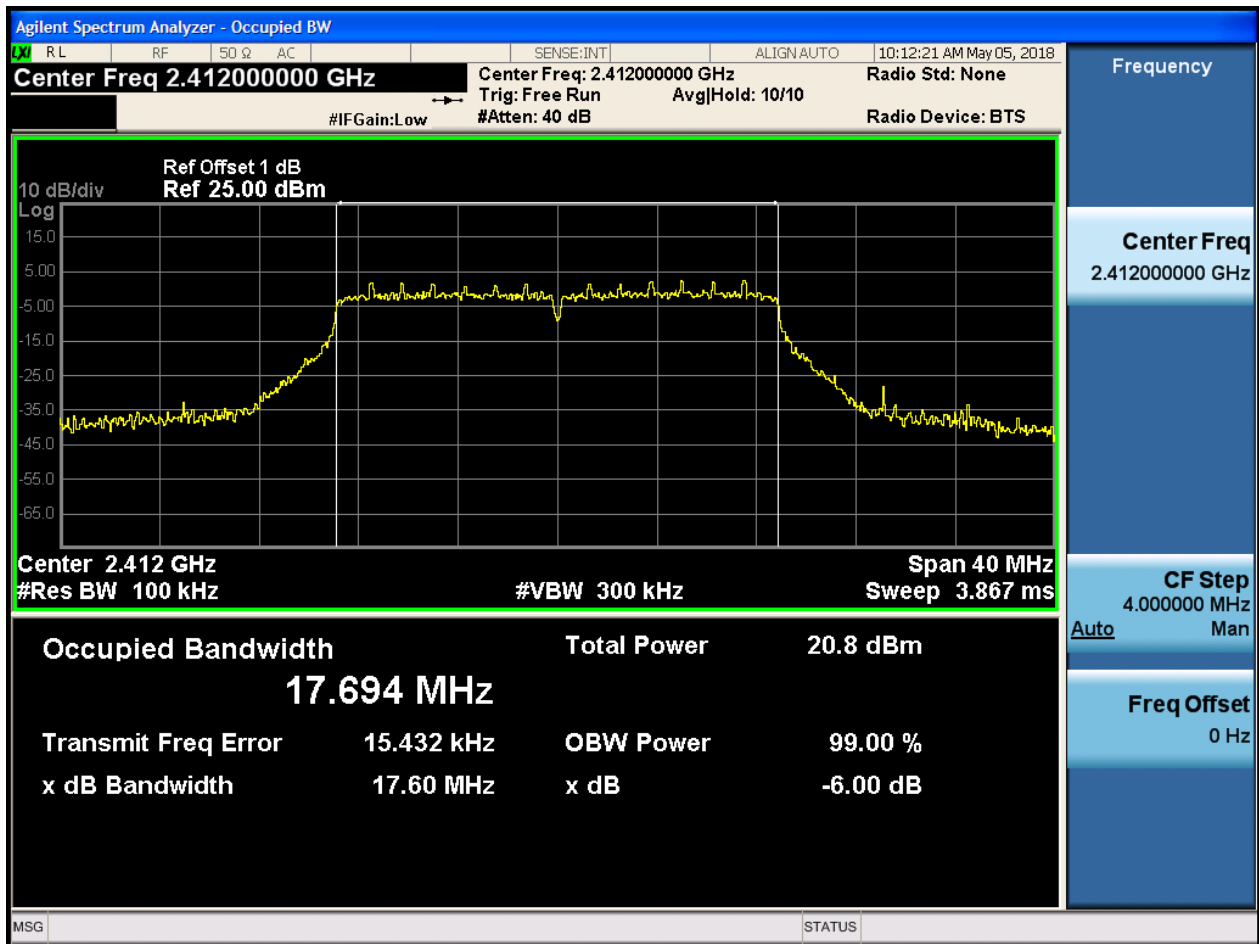


2.8 11G_H_2462@Ant 1



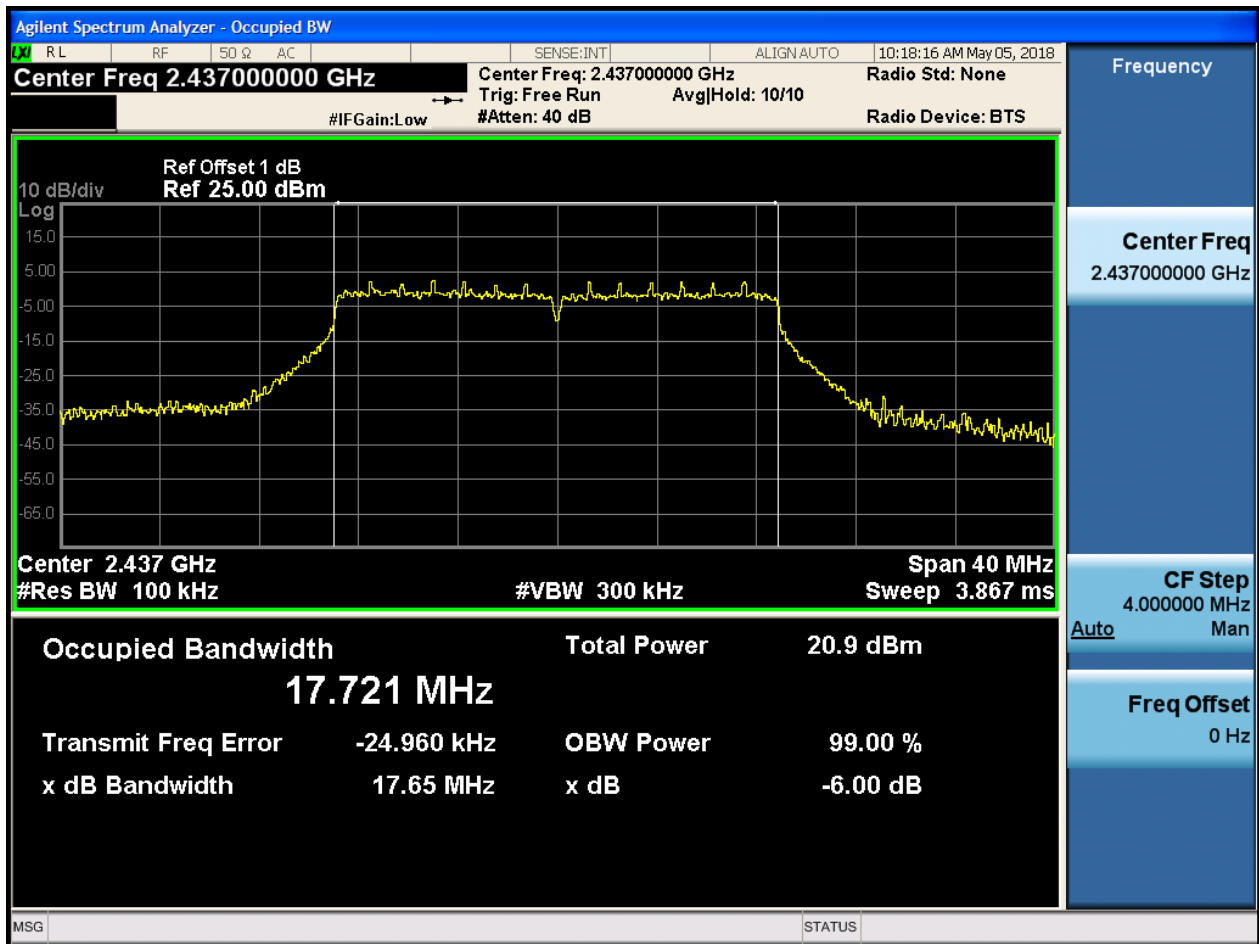


2.9 11N20_L_2412@Ant 1



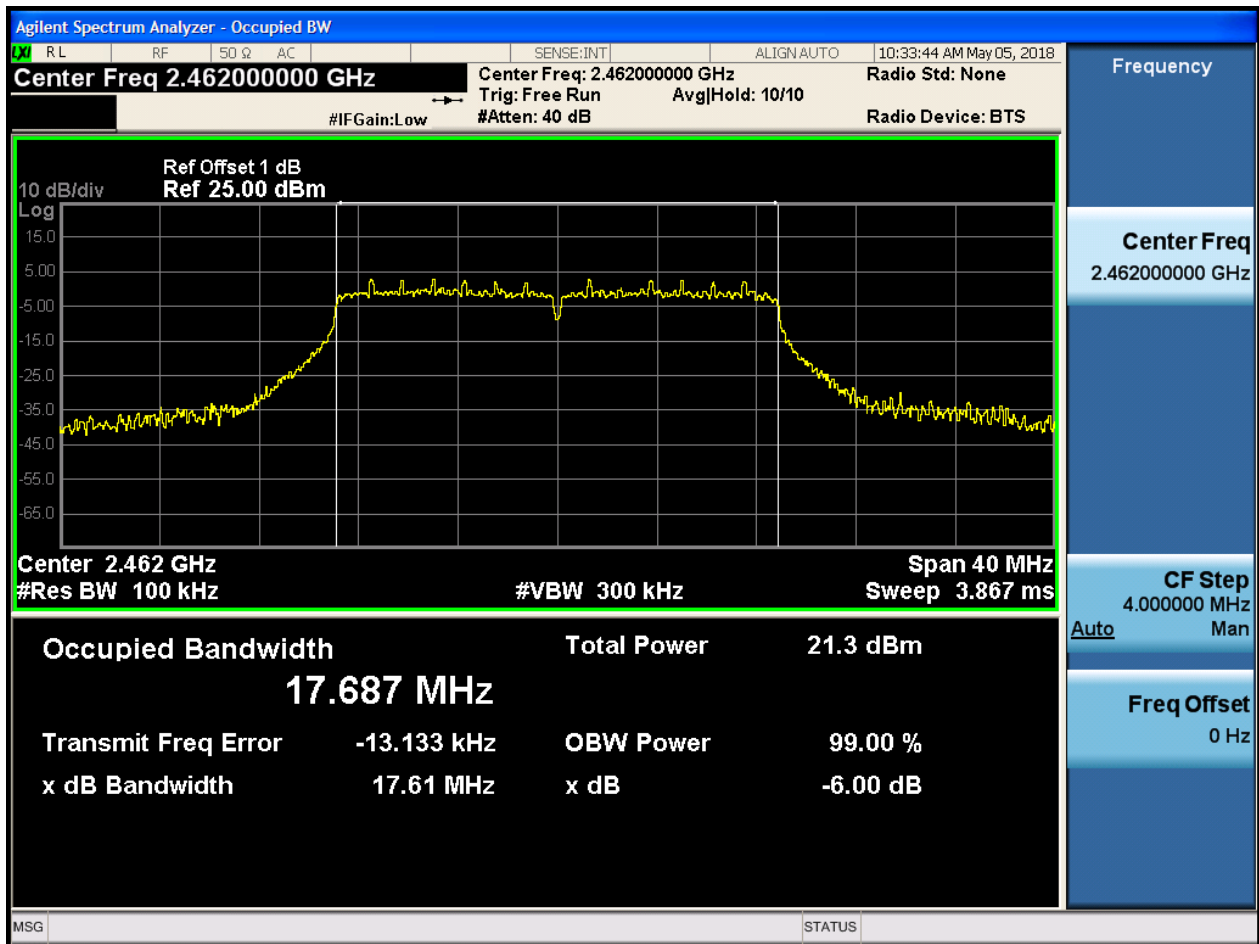


2.10 11N20_M_2437@Ant 1



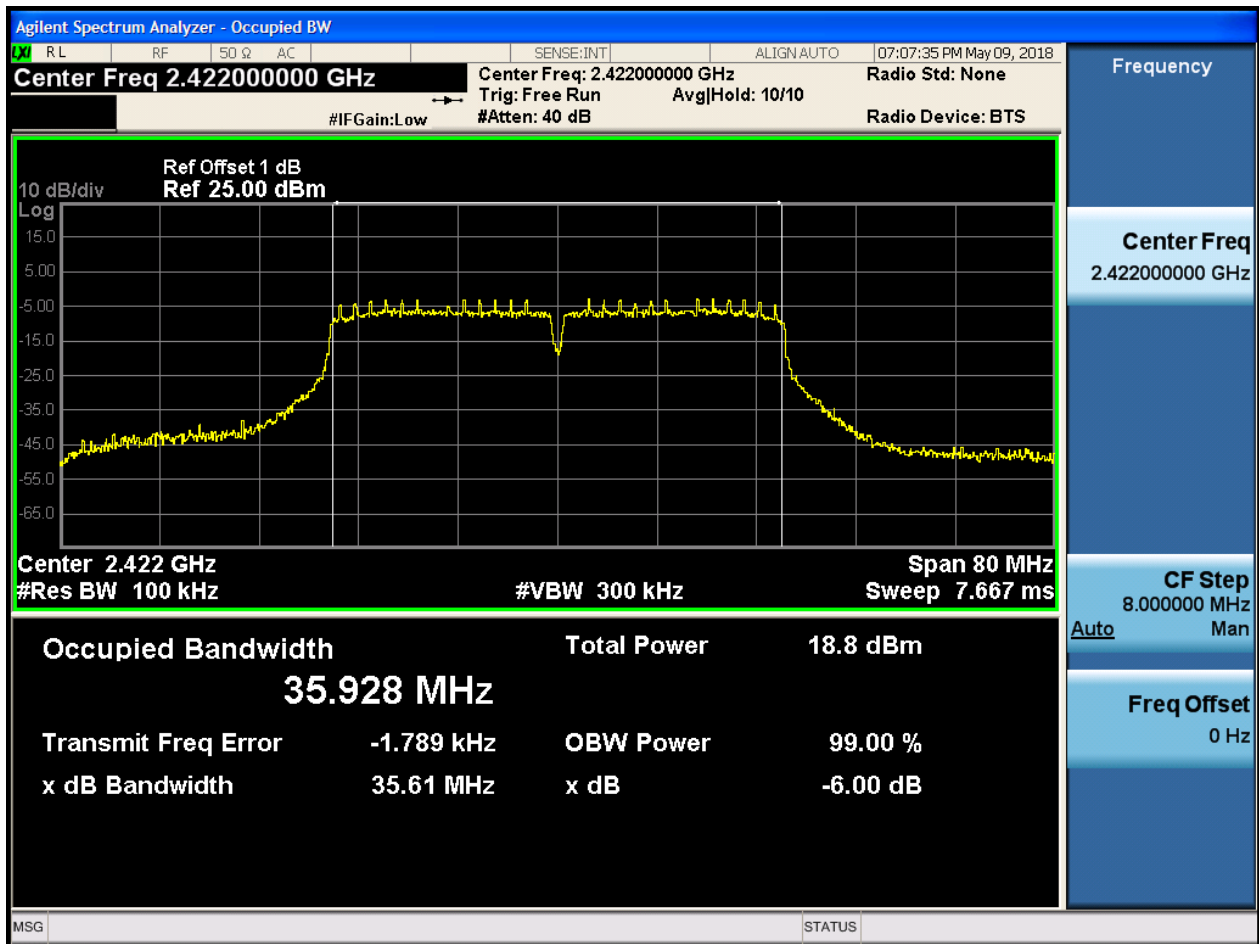


2.11 11N20_H_2462@Ant 1



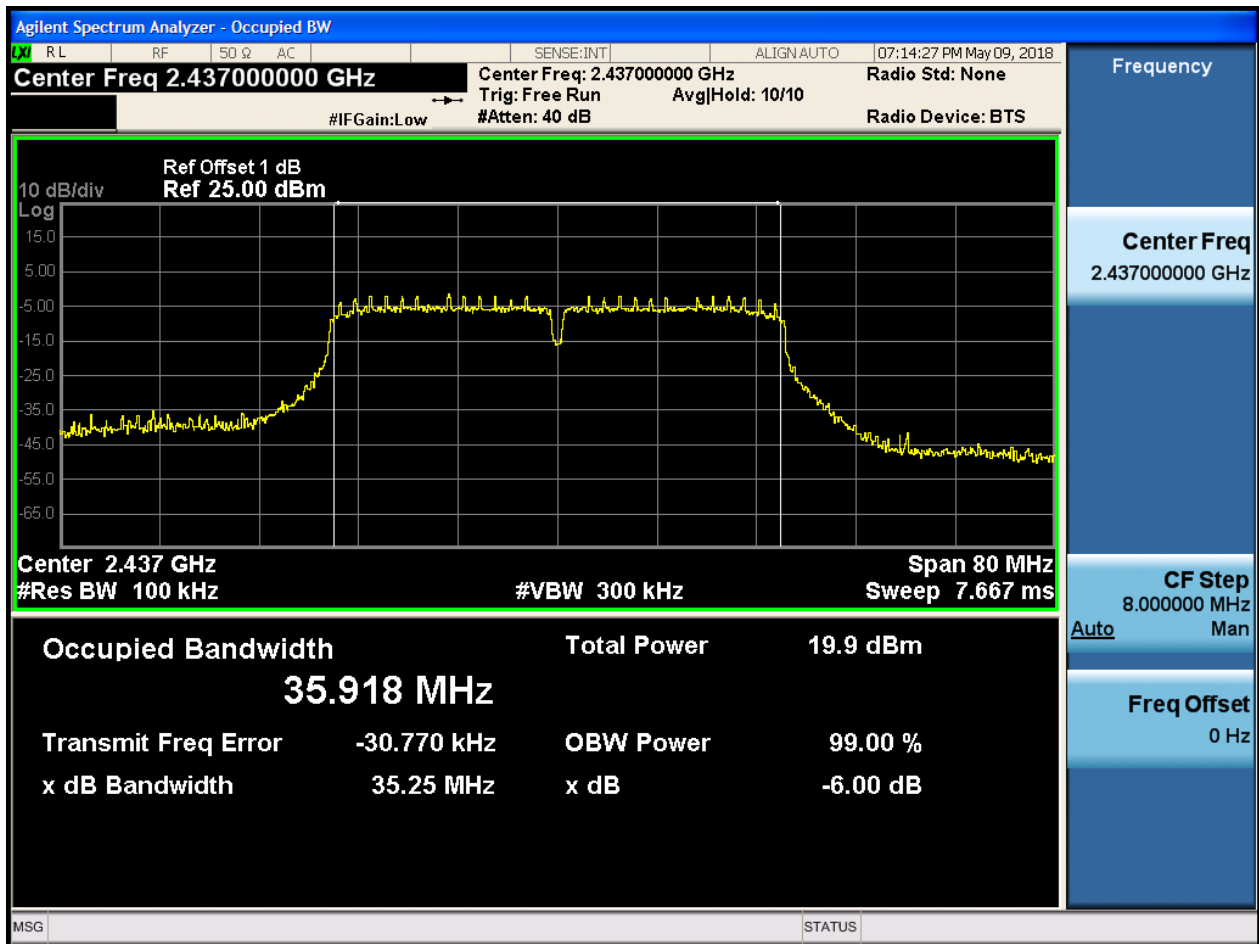


2.12 11N40_L_2422@Ant 1



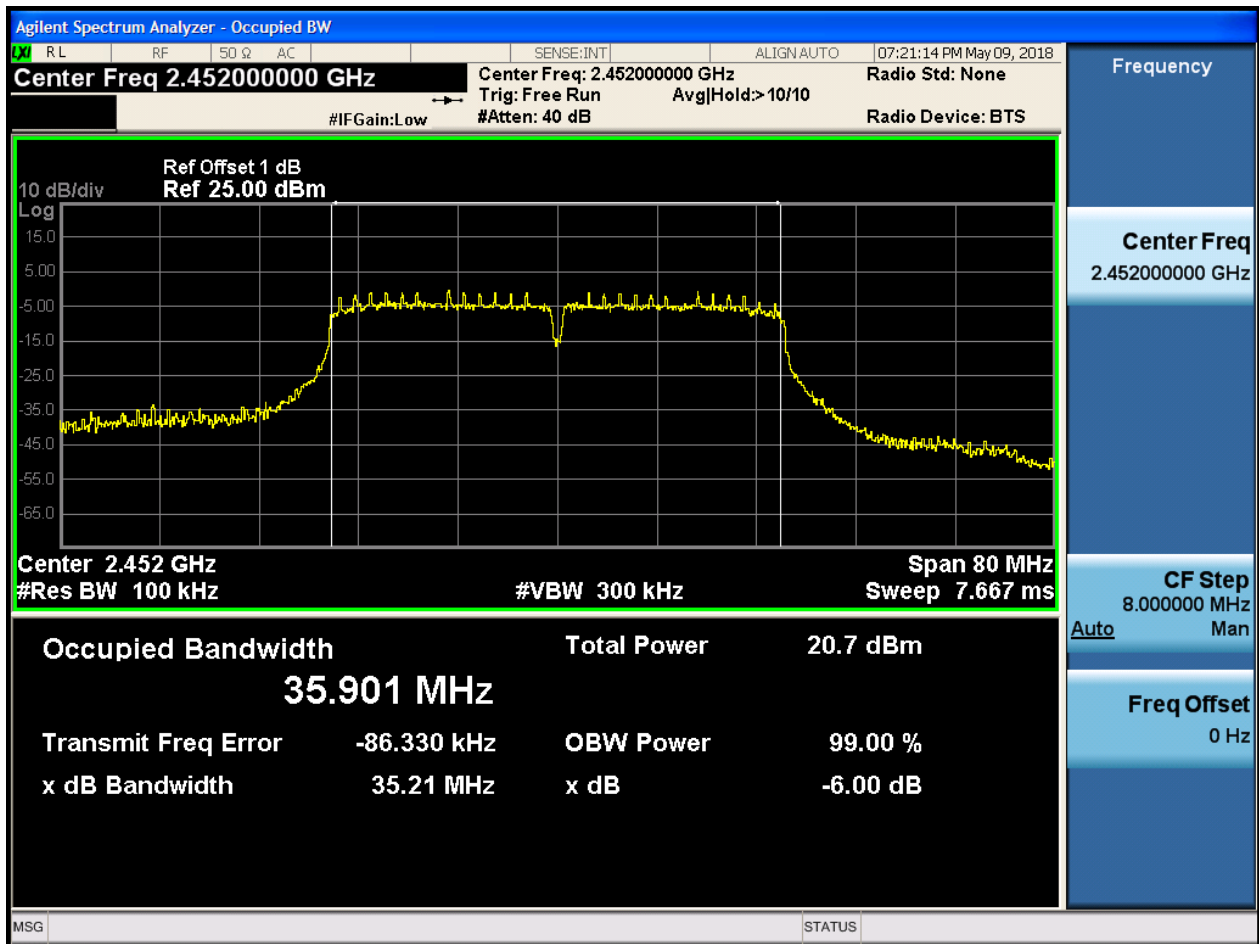


2.13 11N40_M_2437@Ant 1





2.14 11N40_H_2452@Ant 1



Appendix B: Occupied Bandwidth

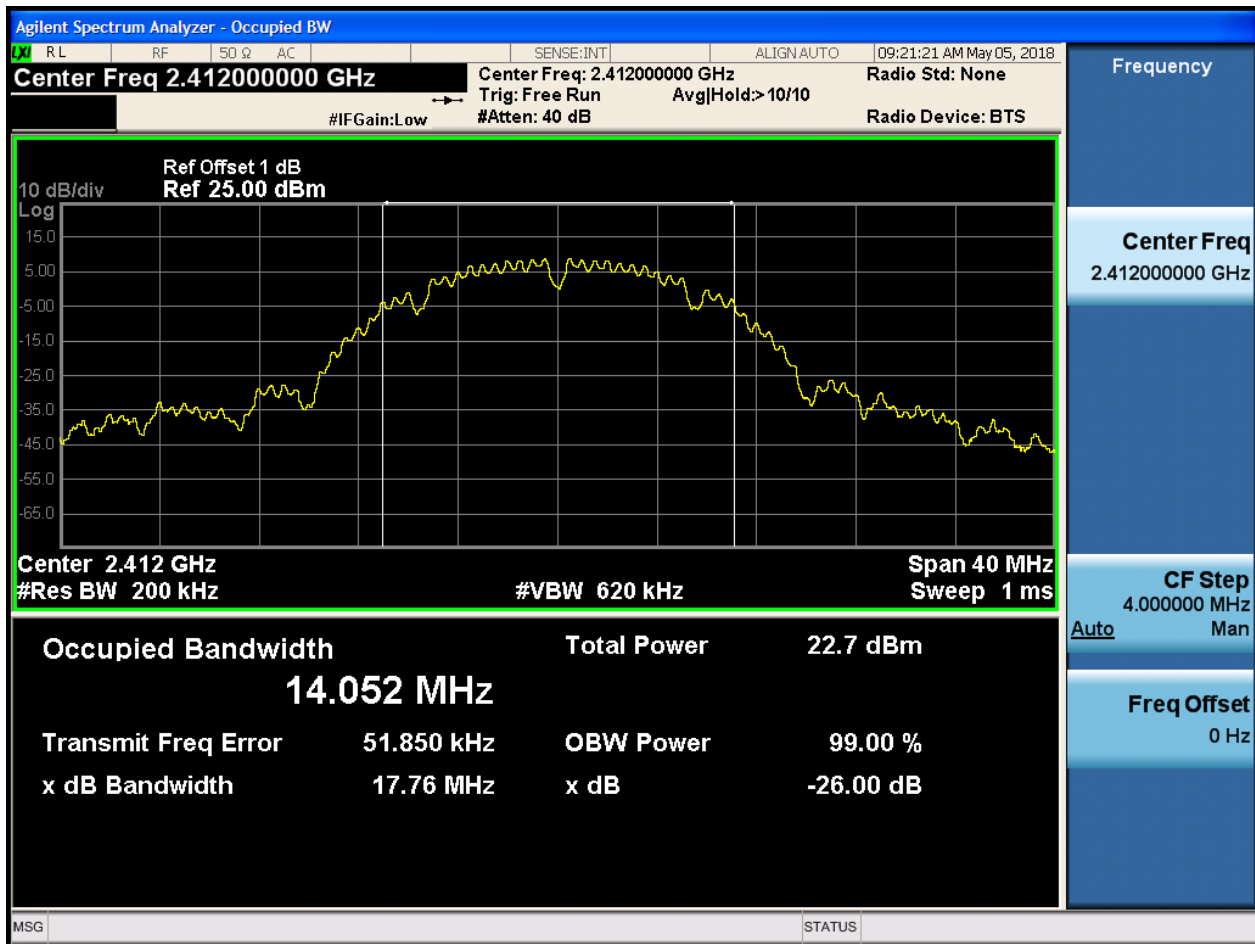
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	14.05	pass
11B	M	2437	Ant 1	14.17	pass
11B	H	2462	Ant 1	14.06	pass
11G	L	2412	Ant 1	16.76	pass
11G	L	2417	Ant 1	16.81	pass
11G	M	2437	Ant 1	16.94	pass
11G	H	2457	Ant 1	16.93	pass
11G	H	2462	Ant 1	16.79	pass
11N20	L	2412	Ant 1	17.79	pass
11N20	M	2437	Ant 1	17.93	pass
11N20	H	2462	Ant 1	17.85	pass
11N40	L	2422	Ant 1	36.19	pass
11N40	M	2437	Ant 1	36.14	pass
11N40	H	2452	Ant 1	36.10	pass

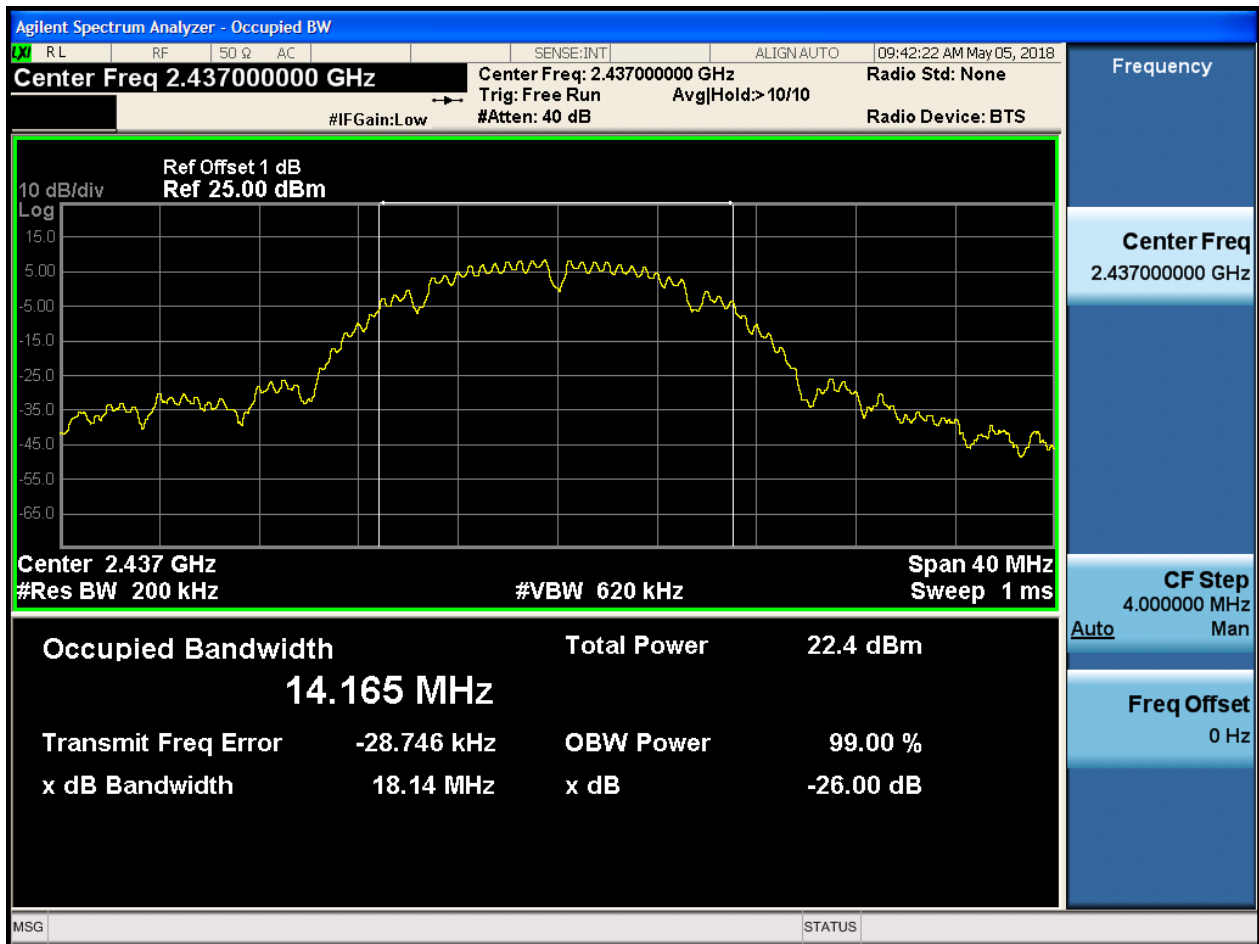
Part II - Test Plots

2.1 11B_L_2412@Ant 1





2.2 11B_M_2437@Ant 1

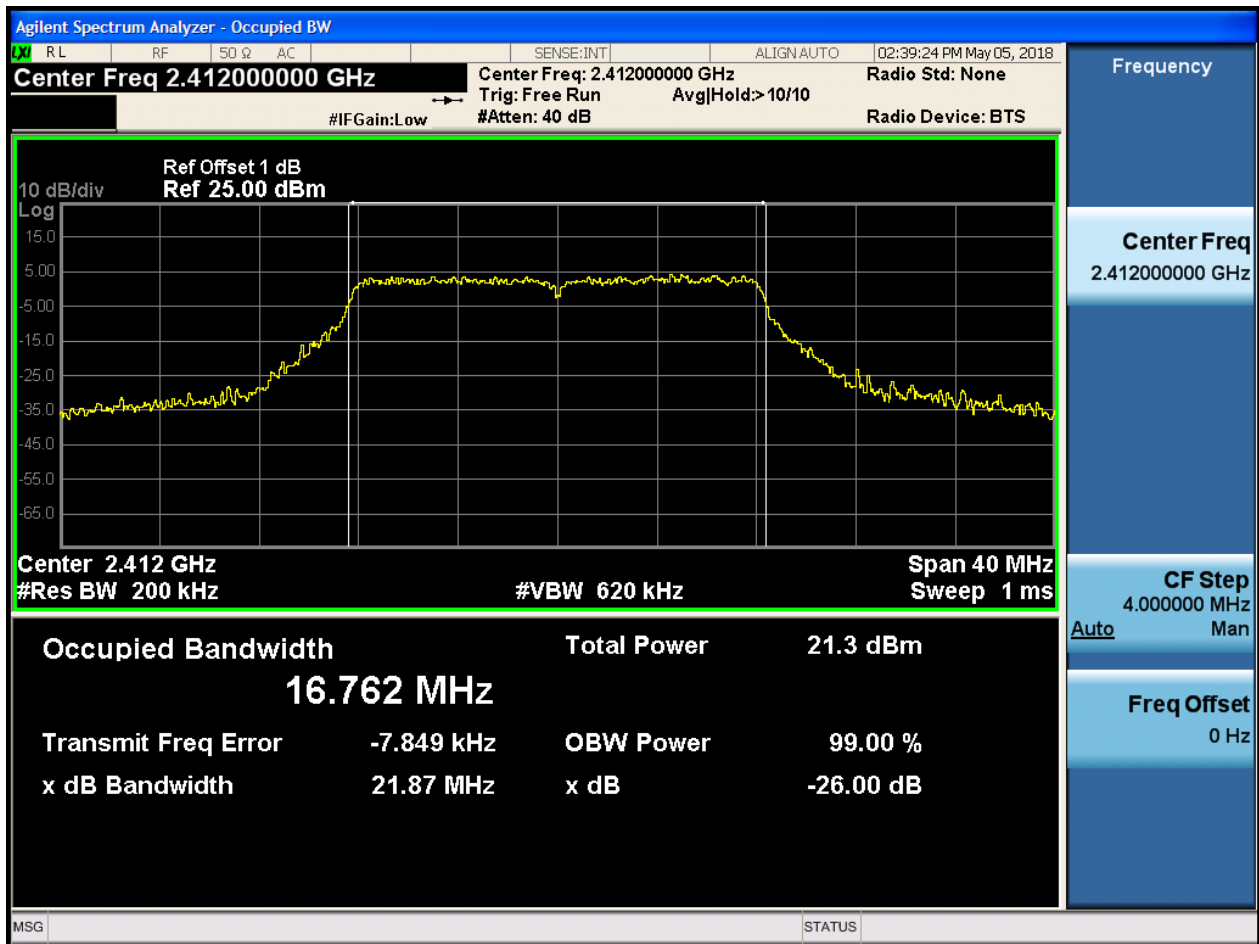


2.3 11B_H_2462@Ant 1



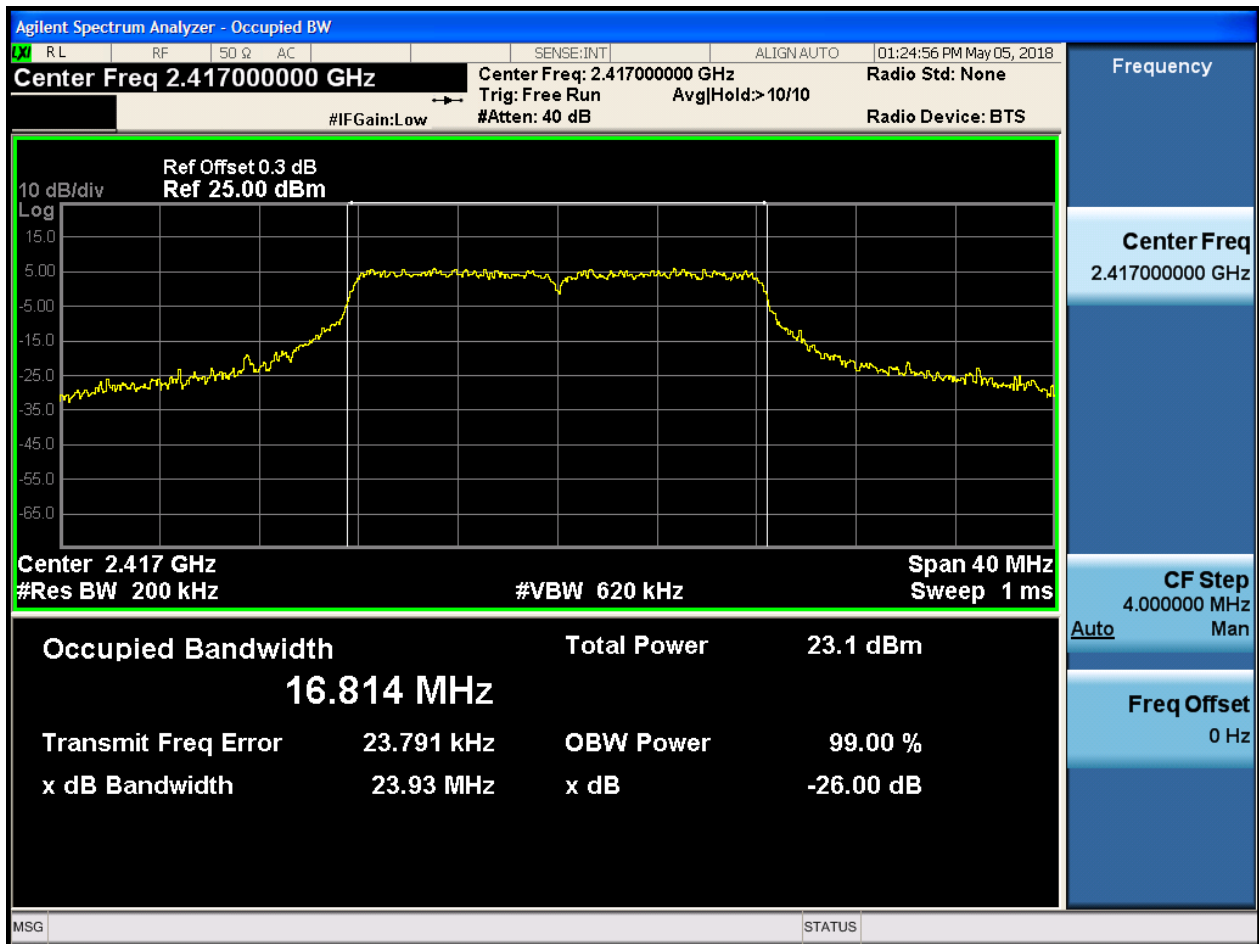


2.4 11G_L_2412@Ant 1



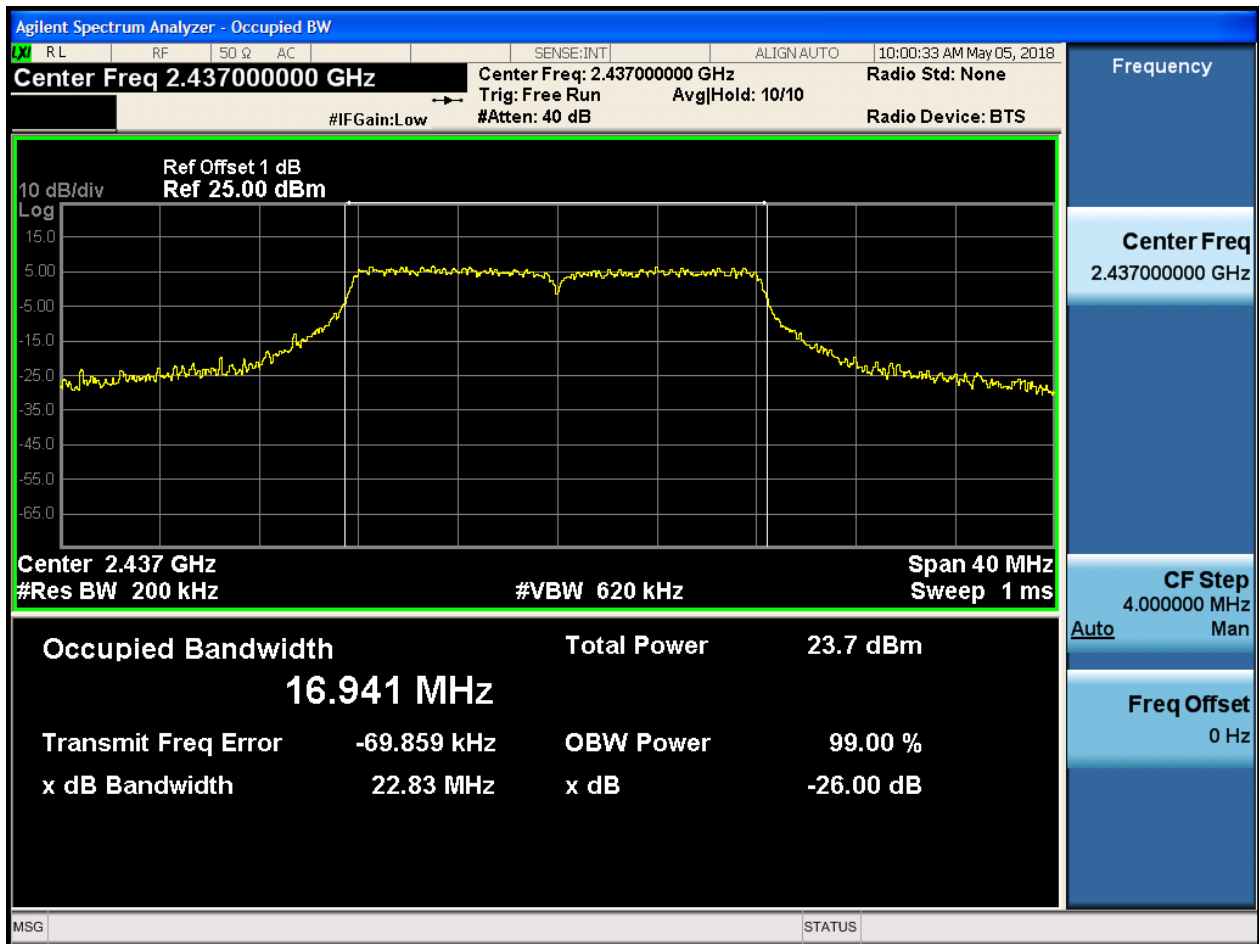


2.5 11G_L_2417@Ant 1



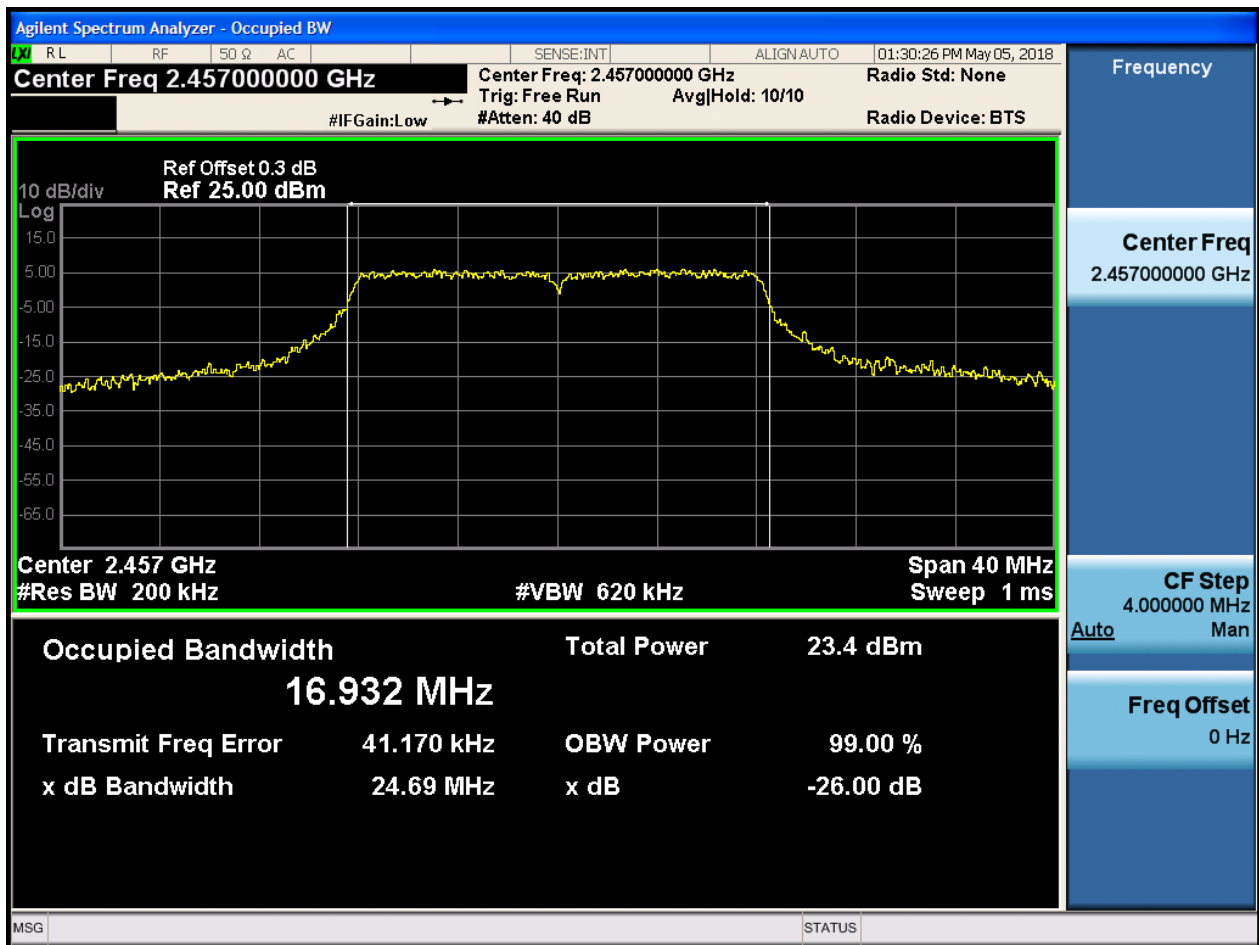


2.6 11G_M_2437@Ant 1



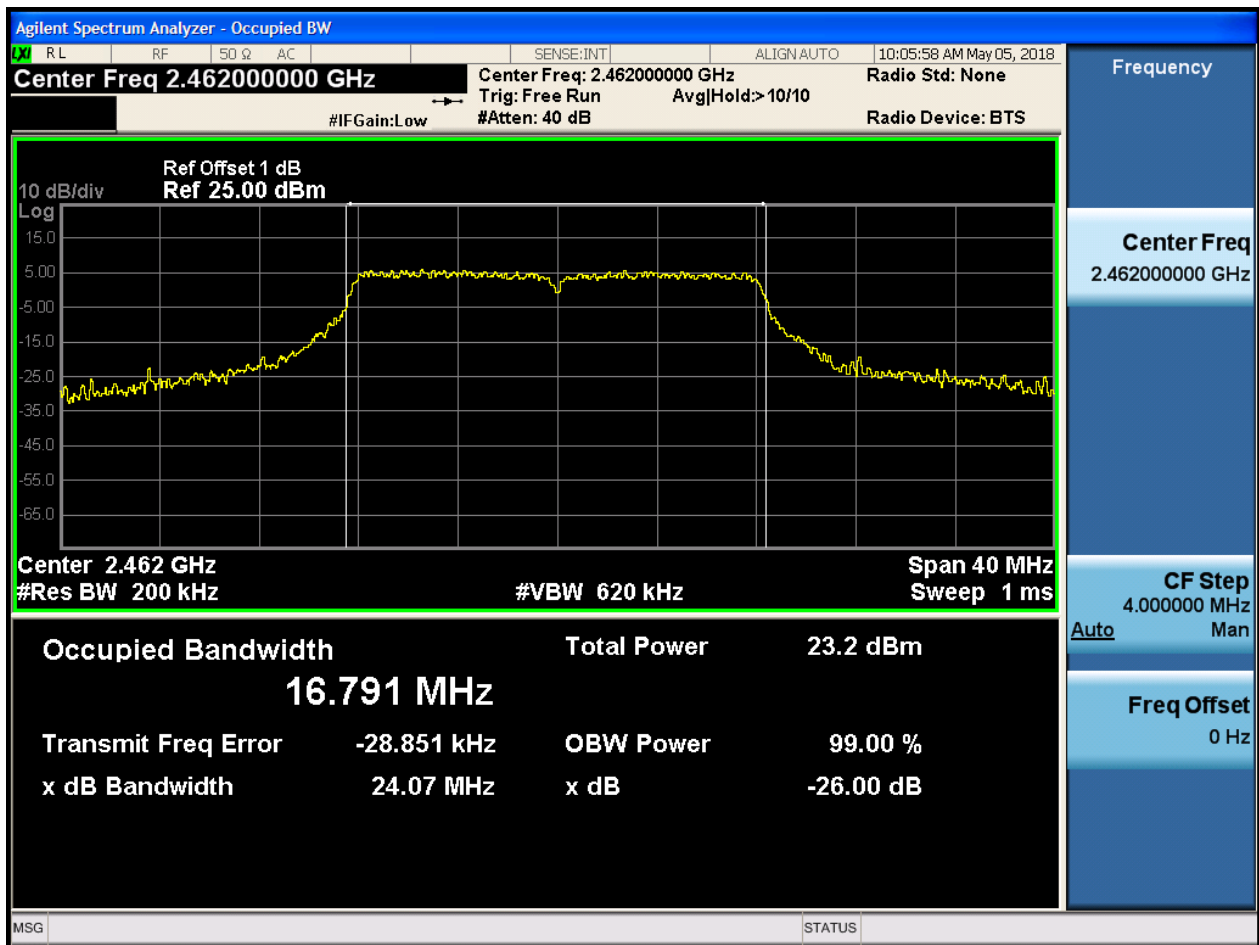


2.7 11G_H_2457@Ant 1



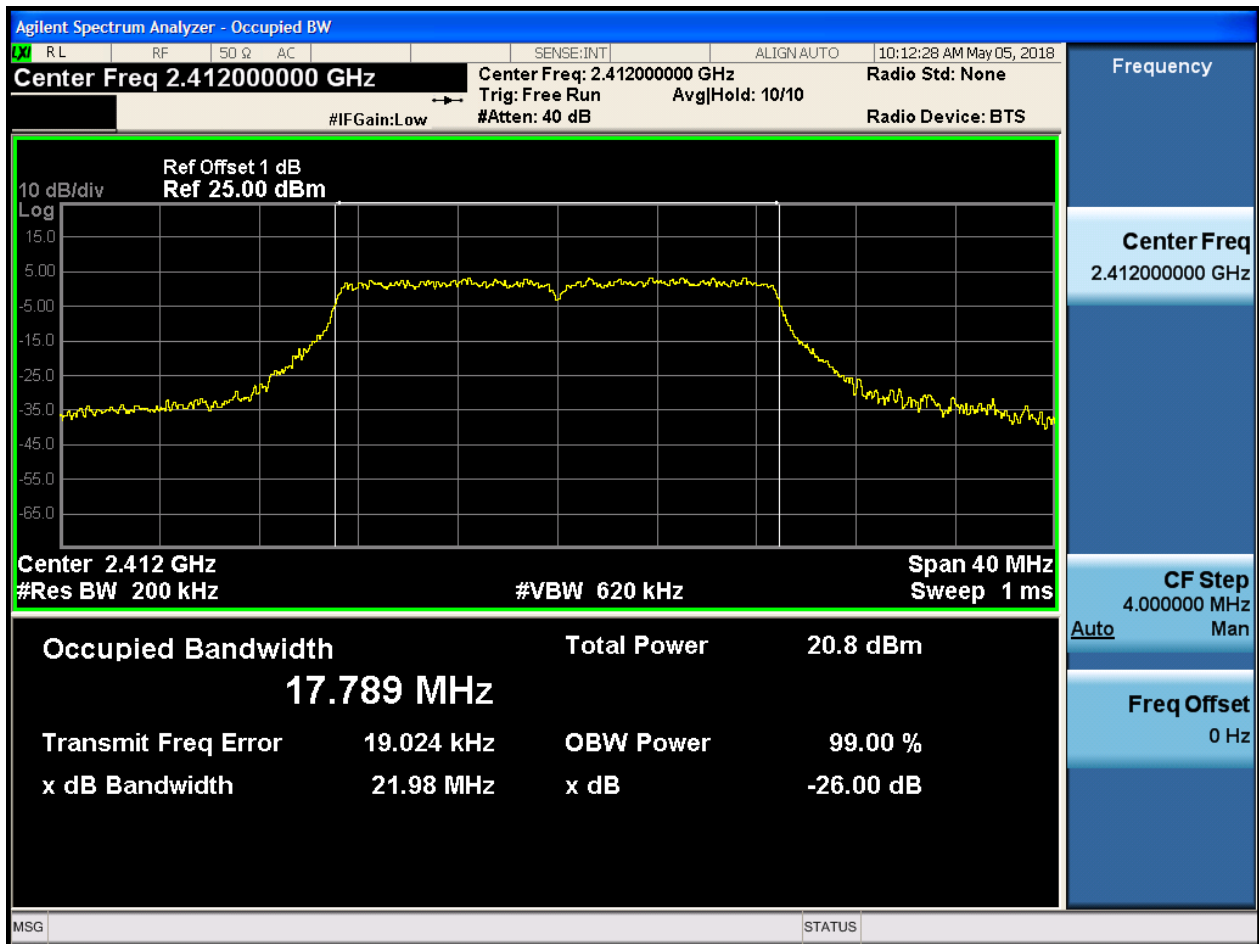


2.8 11G_H_2462@Ant 1



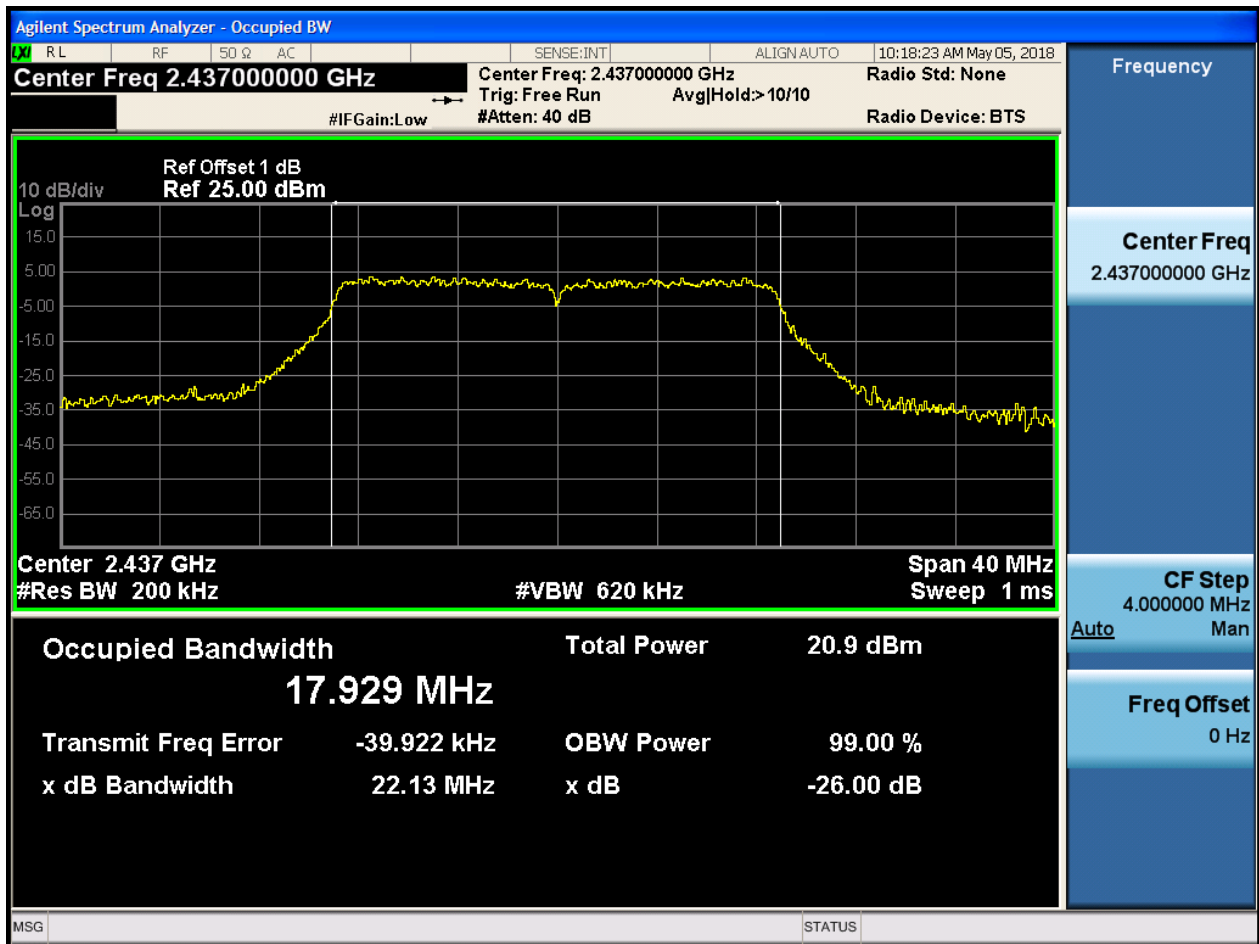


2.9 11N20_L_2412@Ant 1



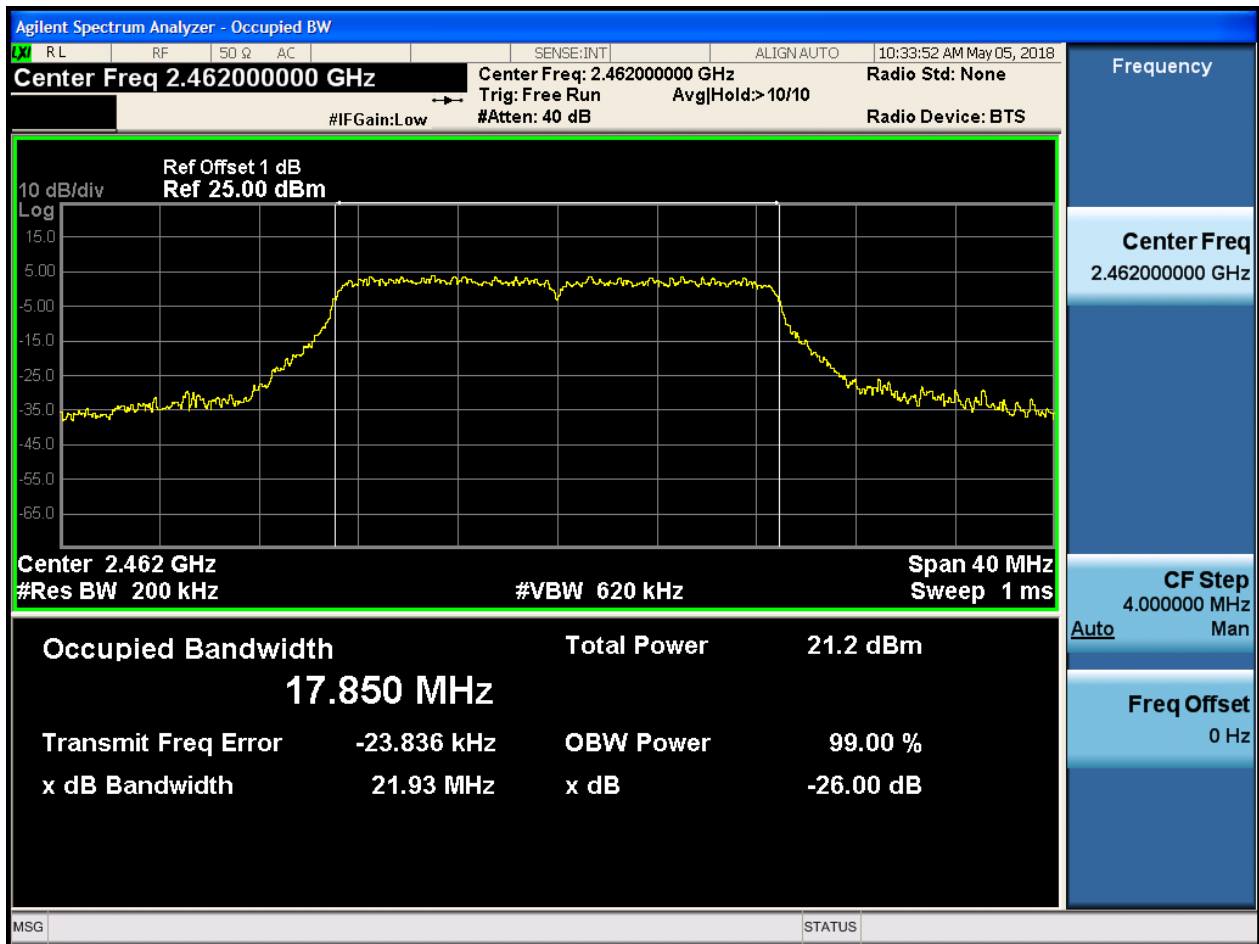


2.10 11N20_M_2437@Ant 1



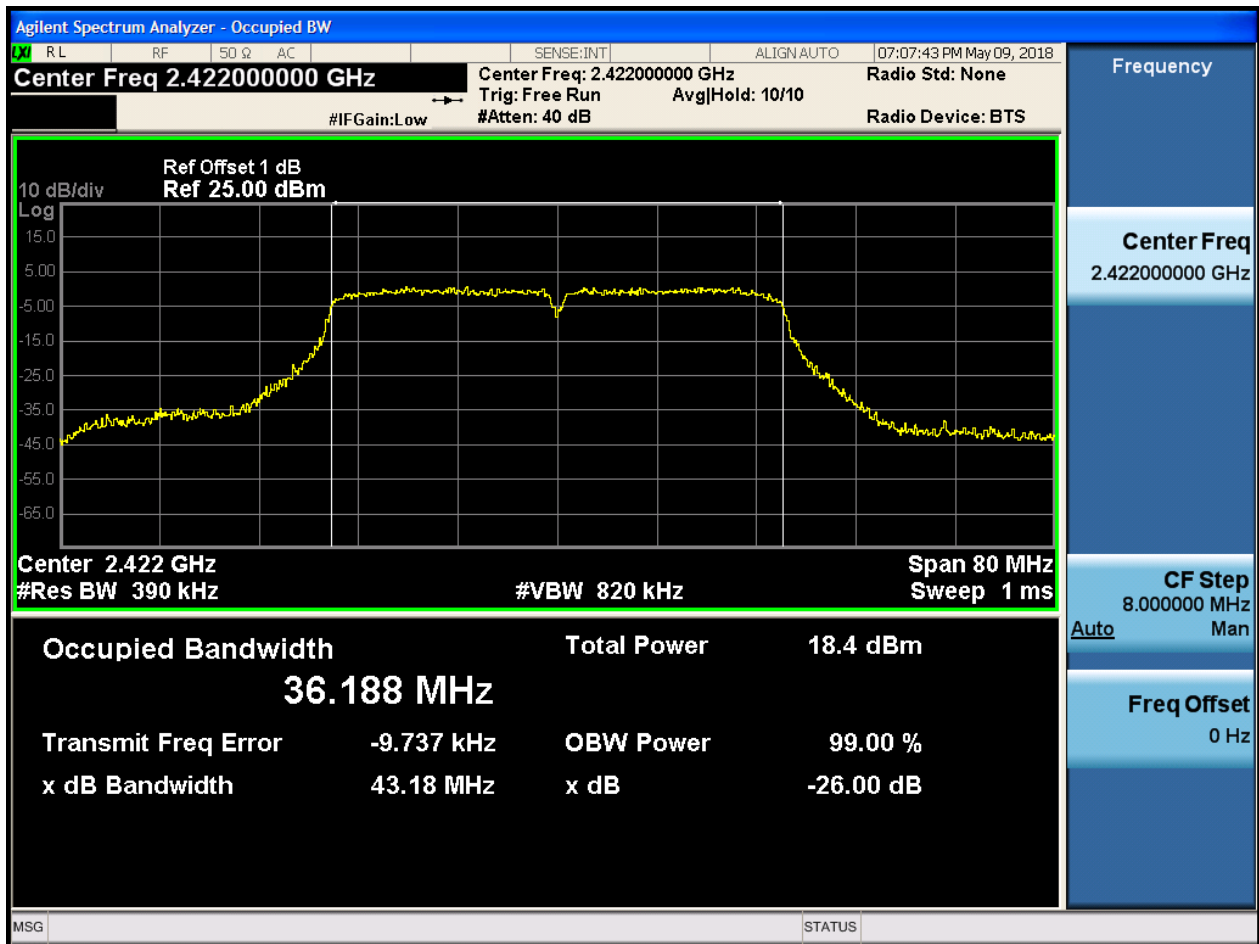


2.11 11N20_H_2462@Ant 1



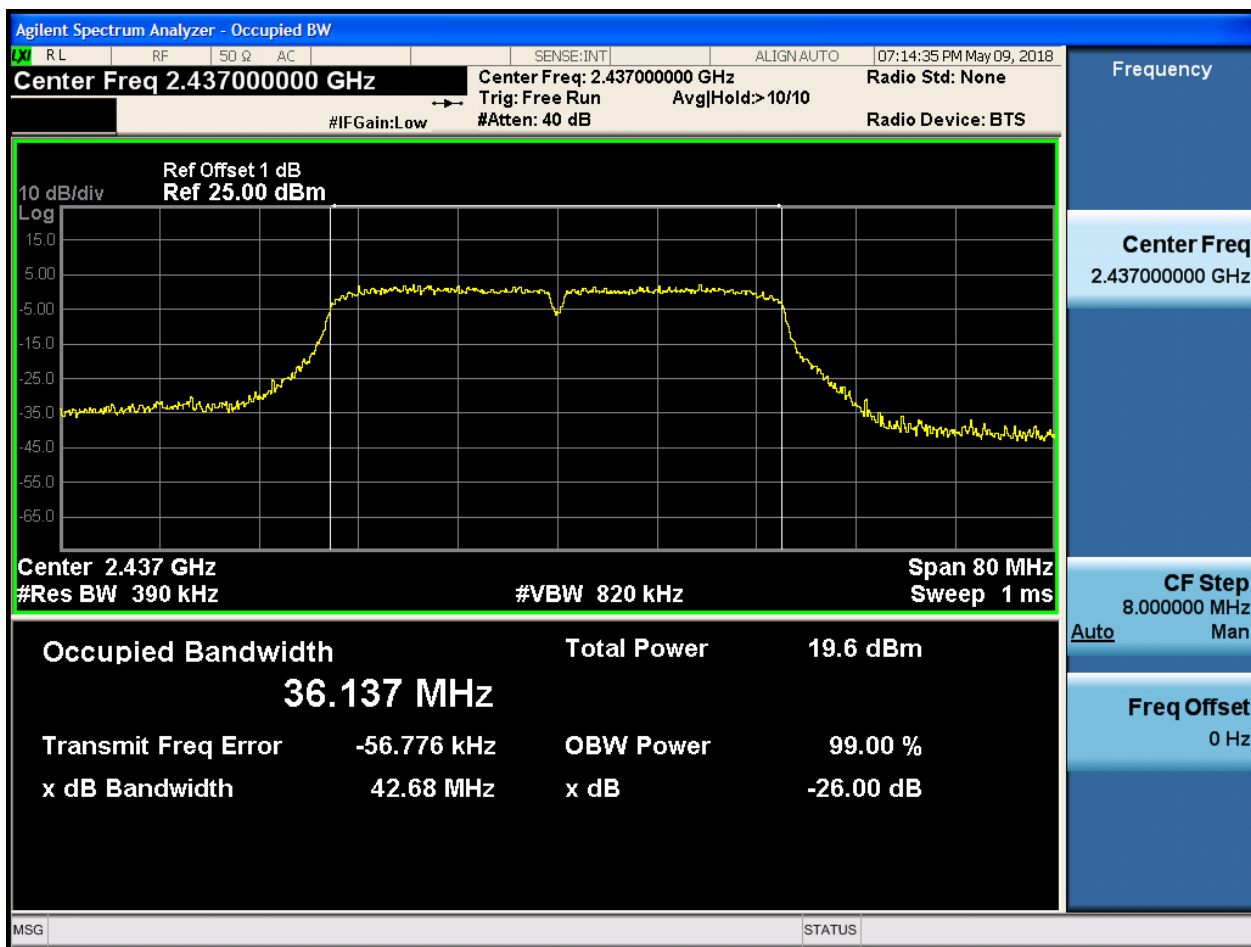


2.12 11N40_L_2422@Ant 1



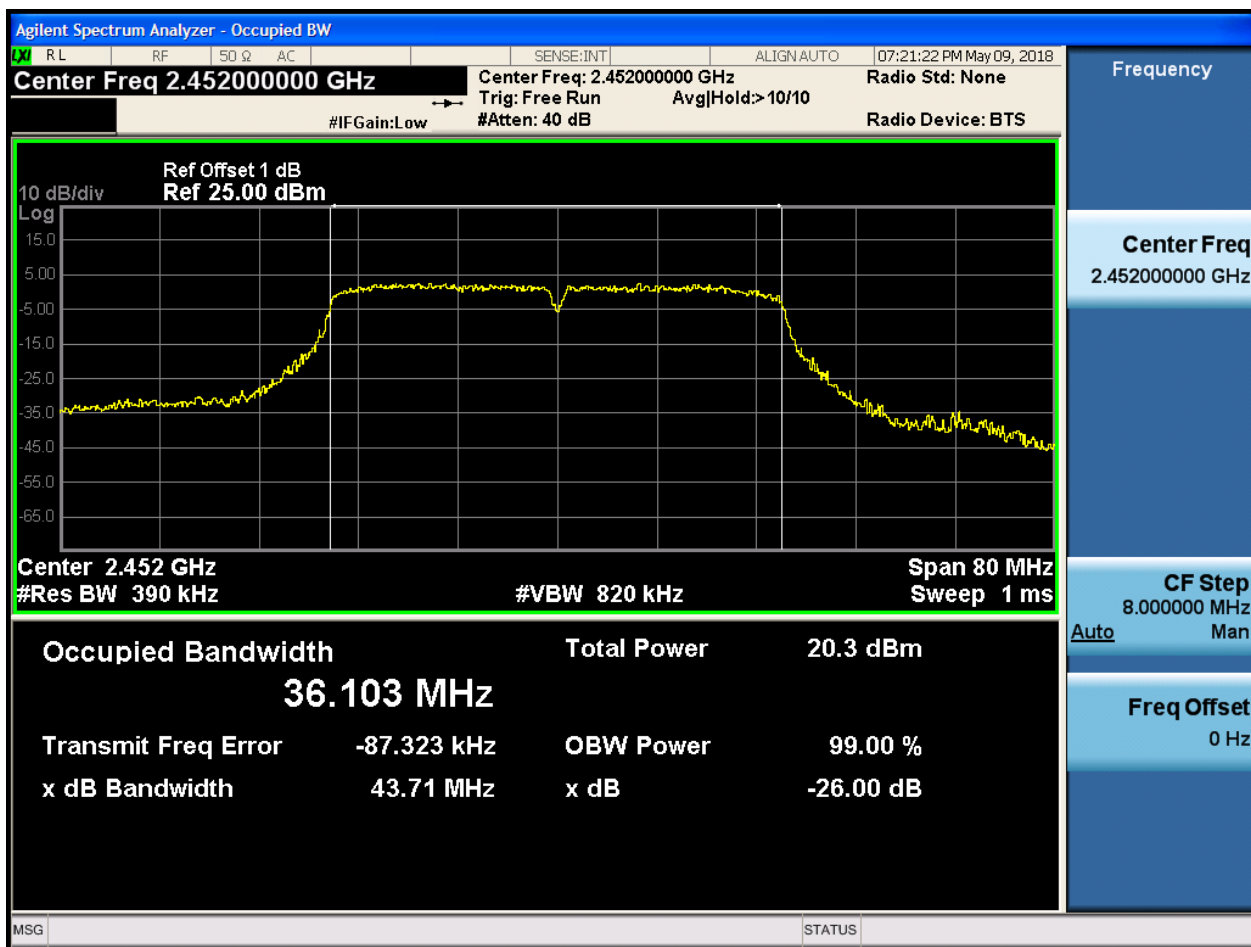


2.13 11N40_M_2437@Ant 1





2.14 11N40_H_2452@Ant 1



Appendix C: Duty Cycle

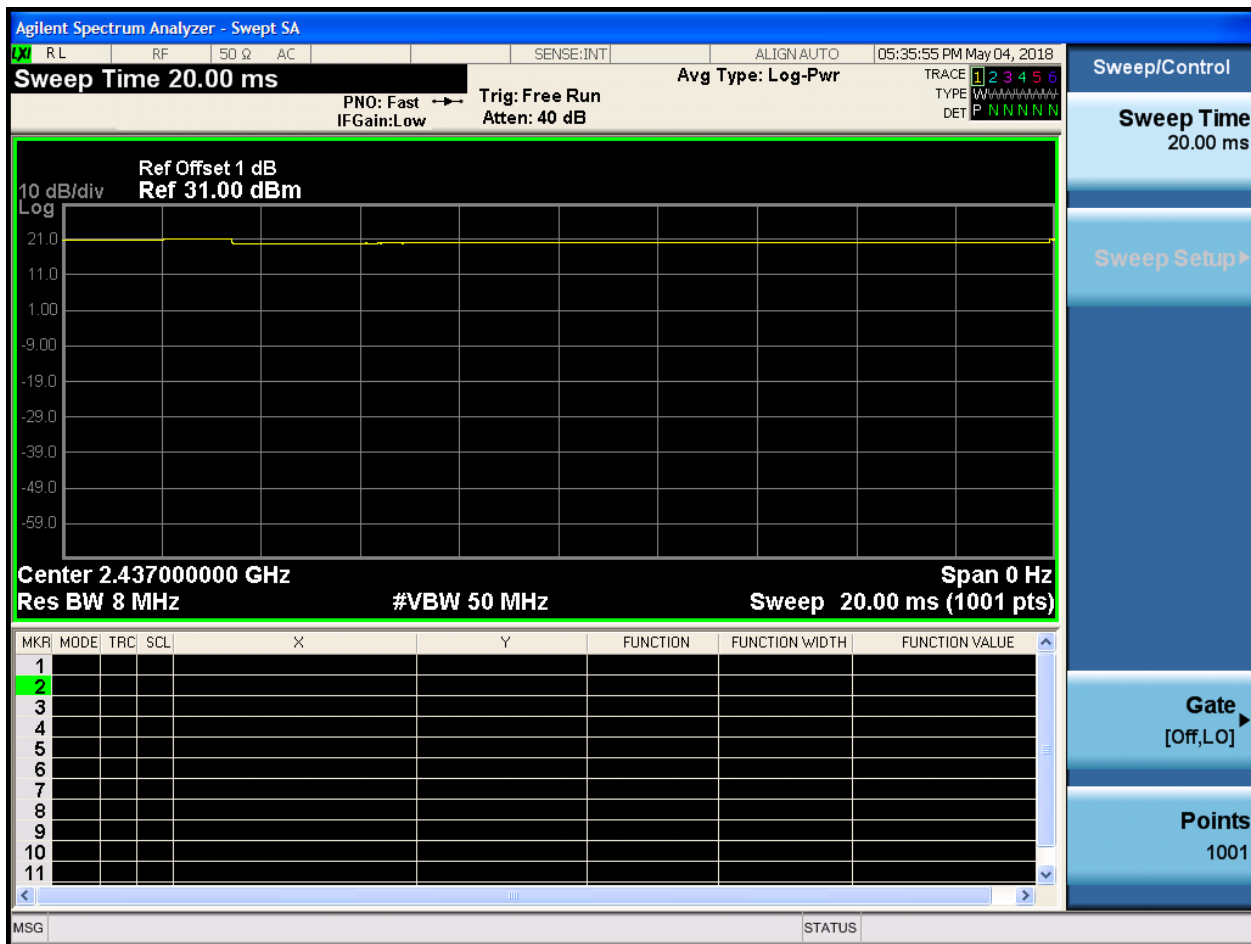
Part I - Test Results

Test Mode	TX Freq. [MHz]	Ant	Duty cycle [%]
11B	CH1,CH6,CH11	Ant 1	100.0
11G	CH1,CH2,CH6,CH10,CH11	Ant 1	98.6
11N20	CH1,CH6,CH11	Ant 1	98.6
11N40	CH3,CH6,CH9	Ant 1	97.2

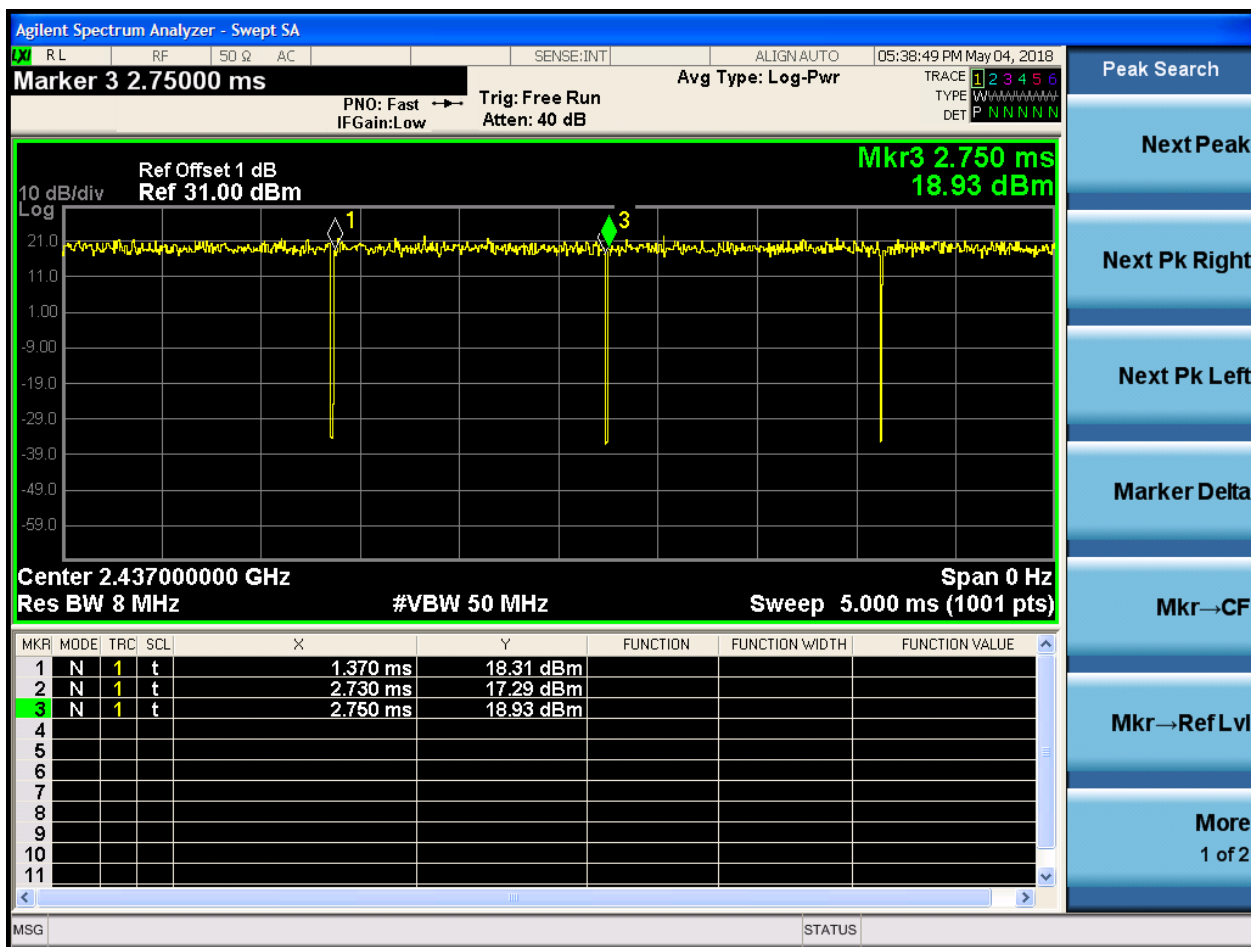


Part II - Test Plots

11B_ANT1

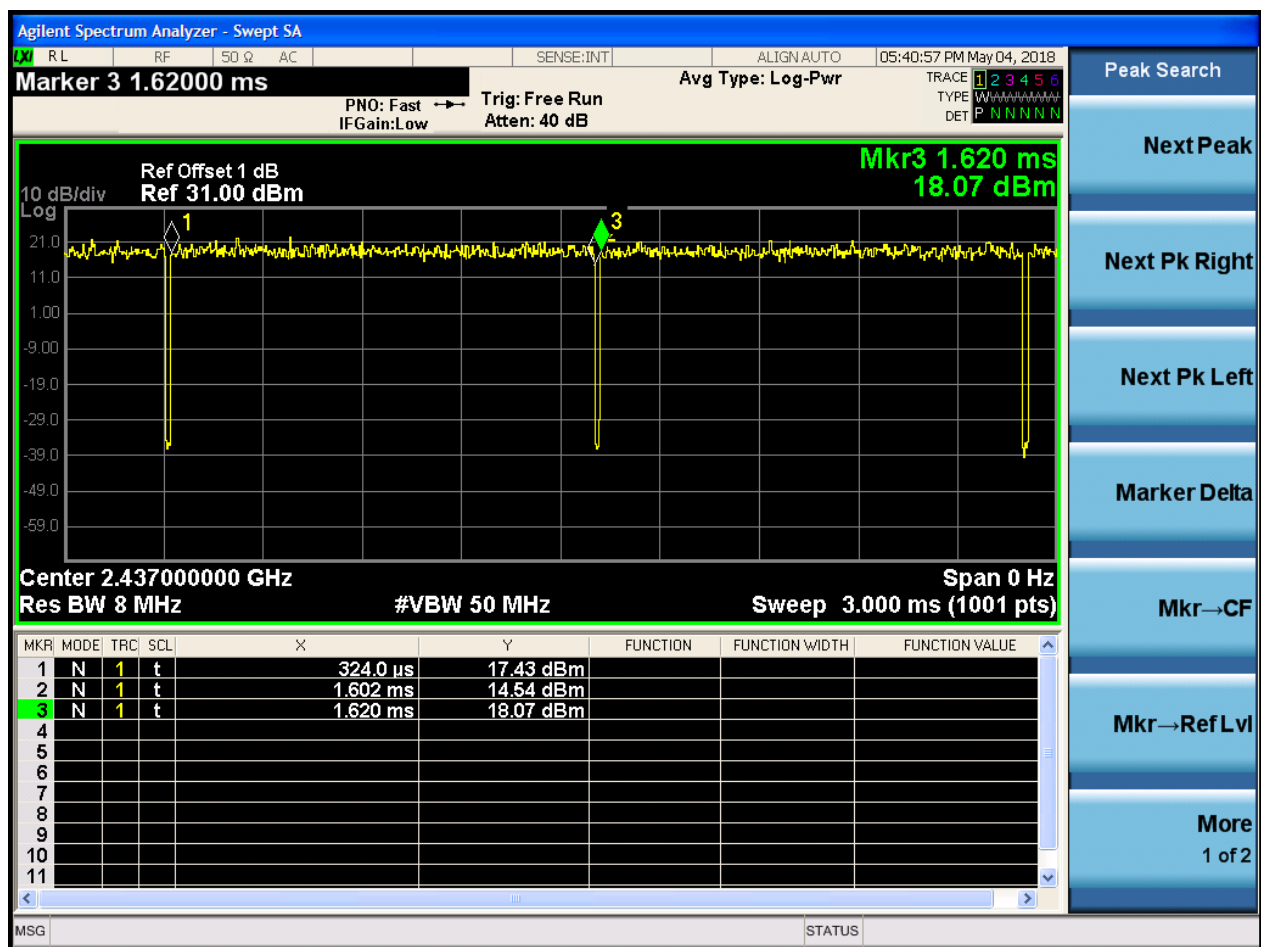


11G_ANT1

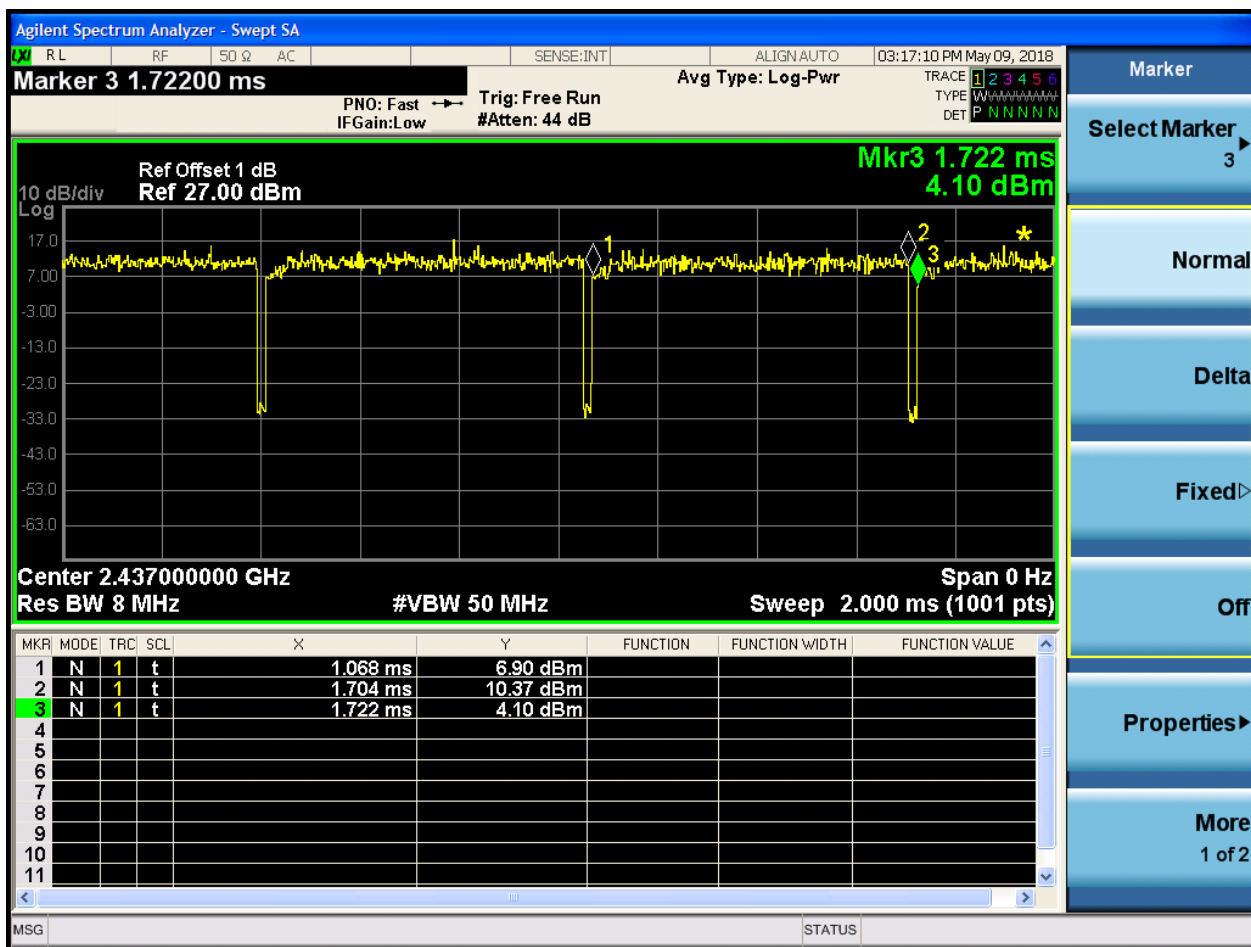




11N20_ANT1



11N40_ANT1



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	100	17.16	pass
11B	M	2437	Ant 1	100	16.87	pass
11B	H	2462	Ant 1	100	17.47	pass
11G	L	2412	Ant 1	98.6	14.31	pass
11G	L	2417	Ant 1	98.6	16.06	pass
11G	M	2437	Ant 1	98.6	16.59	pass
11G	H	2457	Ant 1	98.6	16.39	pass
11G	H	2462	Ant 1	98.6	16.08	pass
11N20	L	2412	Ant 1	98.6	13.64	pass
11N20	M	2437	Ant 1	98.6	13.81	pass
11N20	H	2462	Ant 1	98.6	14.15	pass
11N40	L	2422	Ant 1	97.2	11.60	pass
11N40	M	2437	Ant 1	97.2	12.44	pass
11N40	H	2452	Ant 1	97.2	13.15	pass



Part II - Test Plots

2.1 11B_L_2412@Ant 1





2.2 11B_M_2437@Ant 1



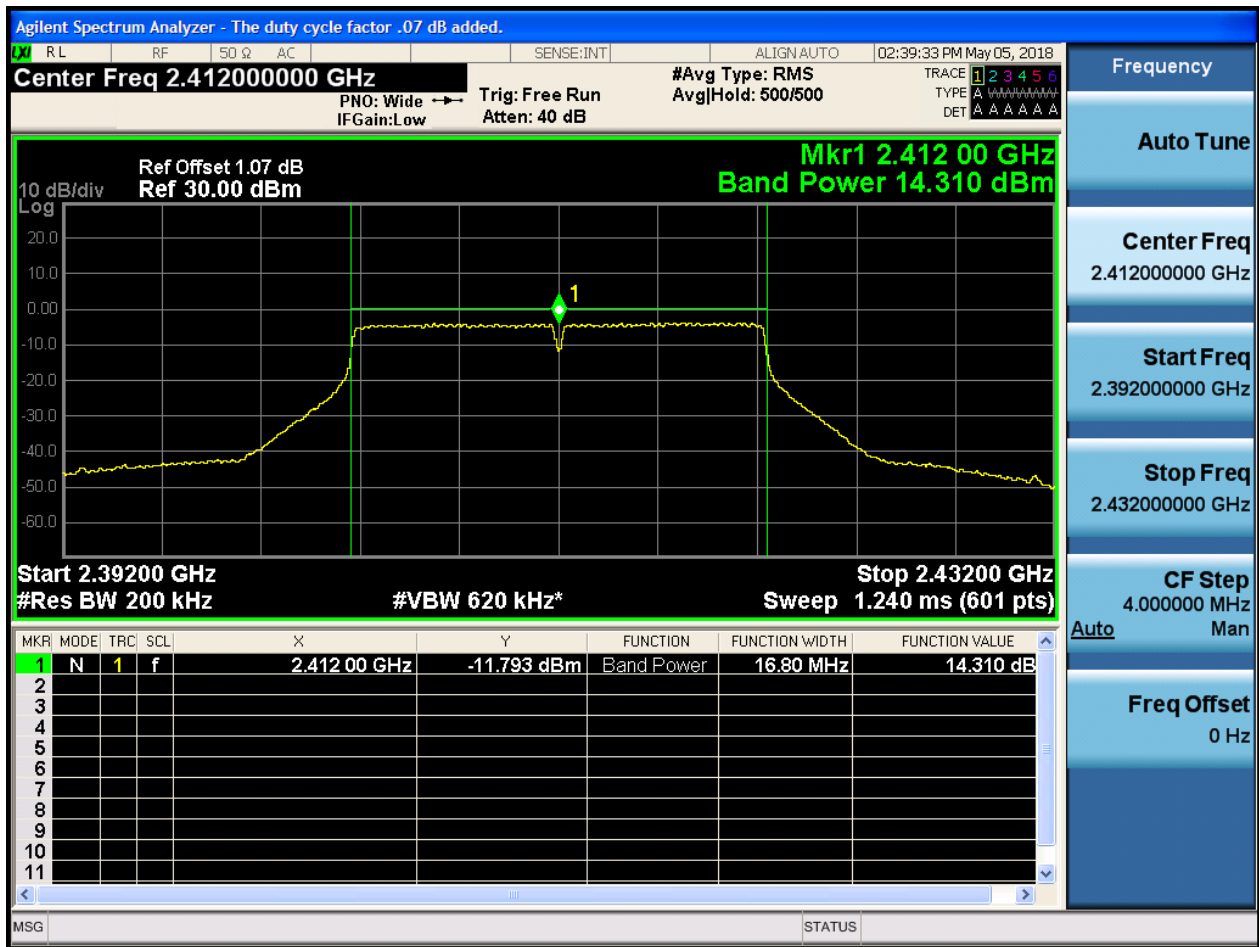


2.3 11B_H_2462@Ant 1



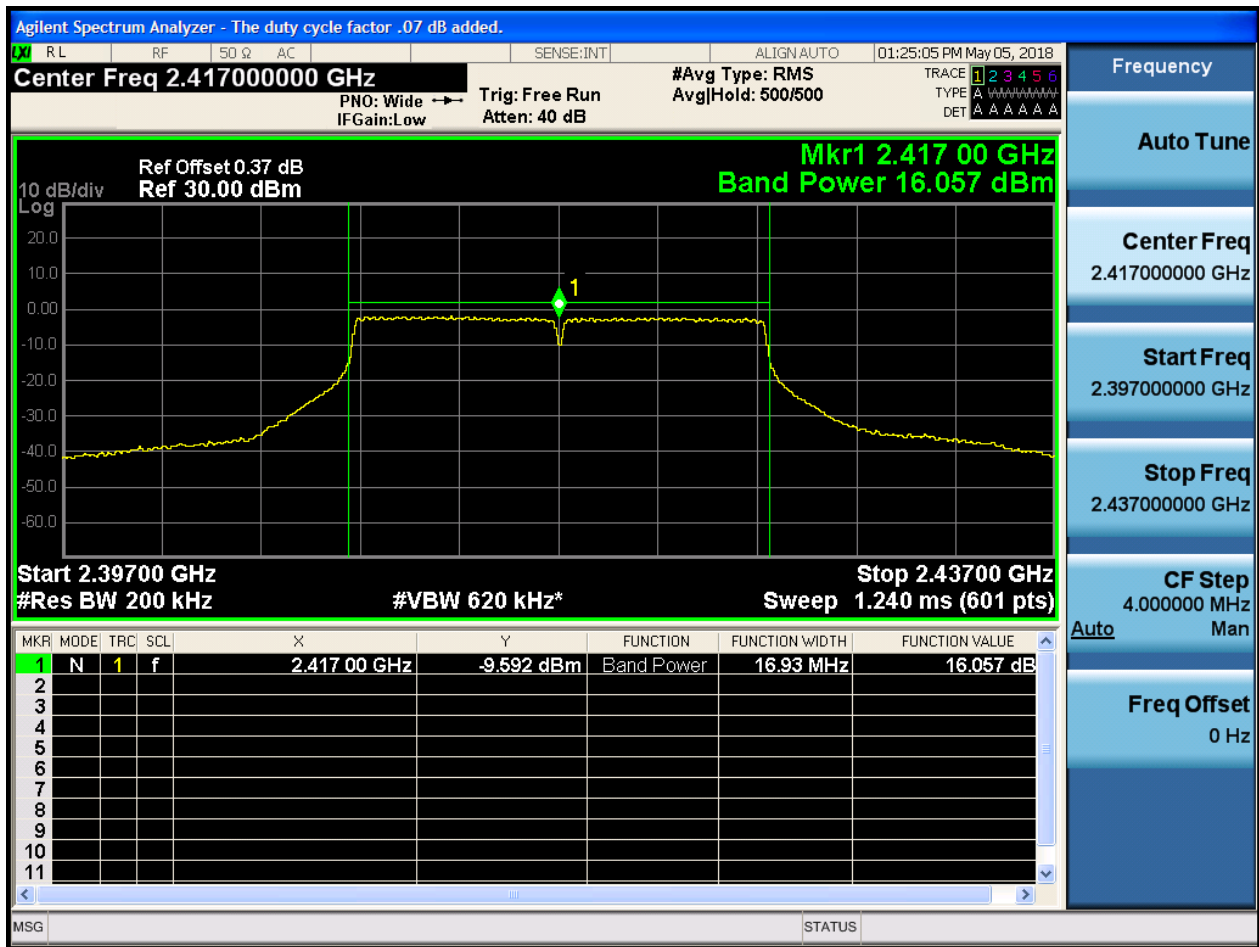


2.4 11G_L_2412@Ant 1



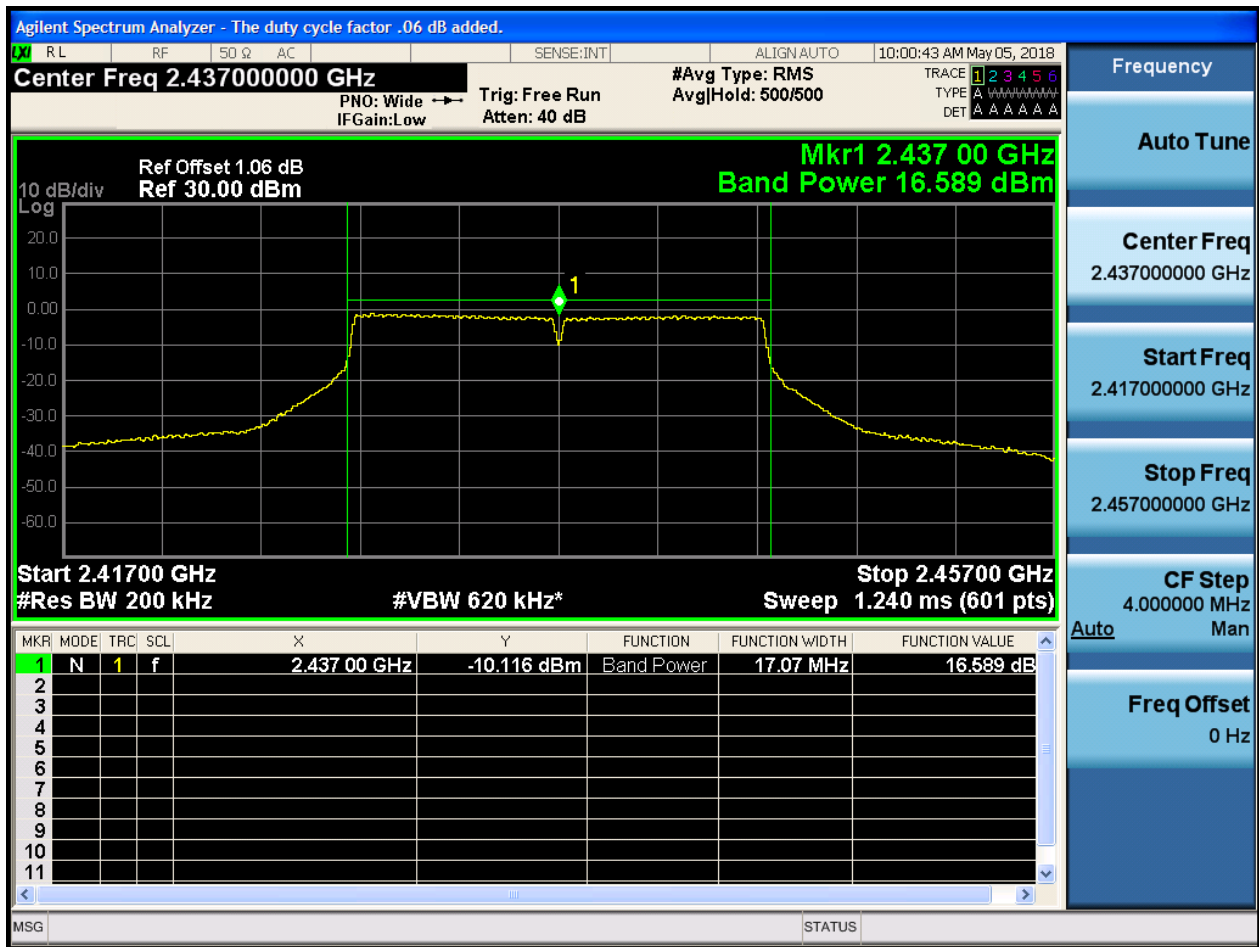


2.5 11G_L_2417@Ant 1



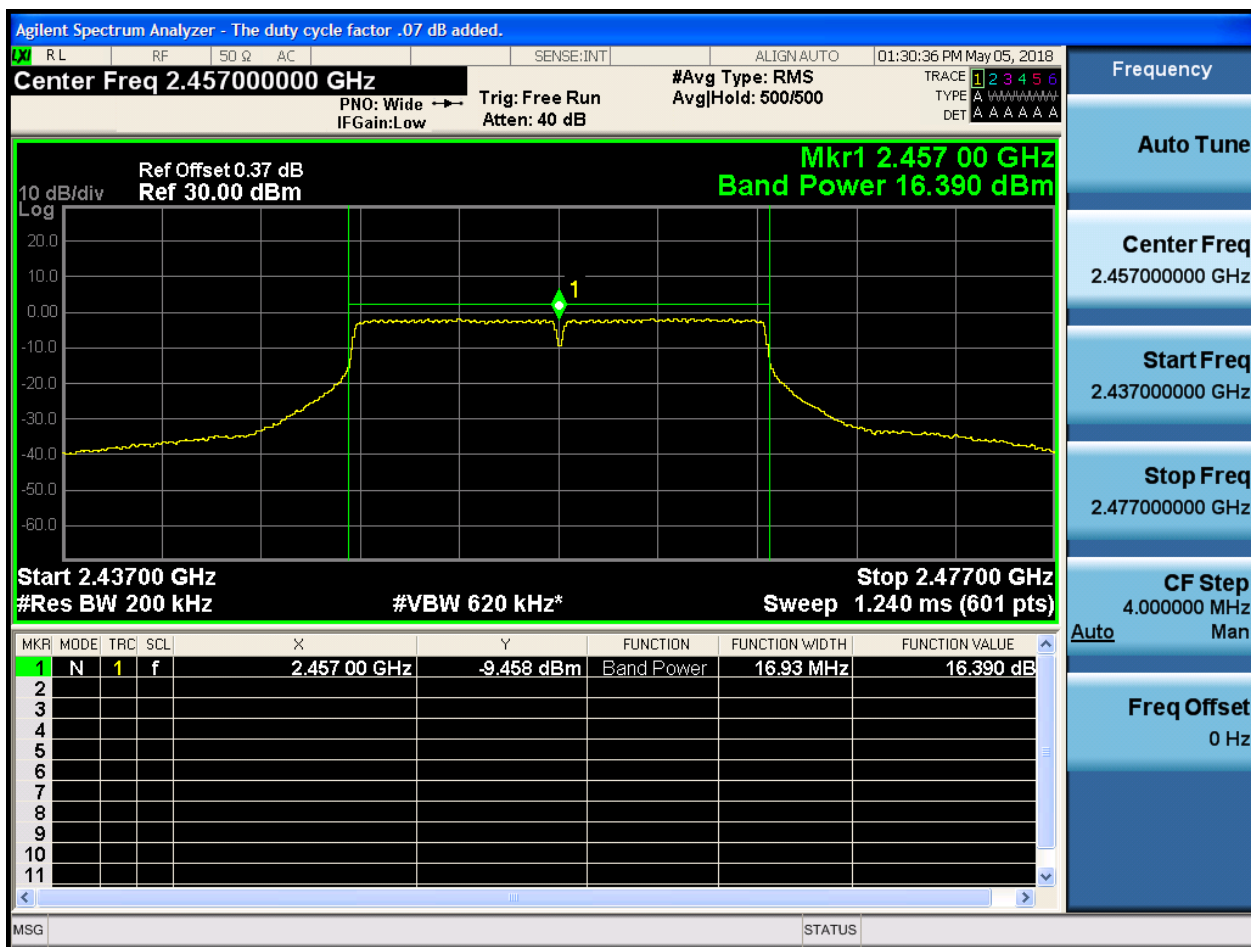


2.6 11G_M_2442@Ant 1



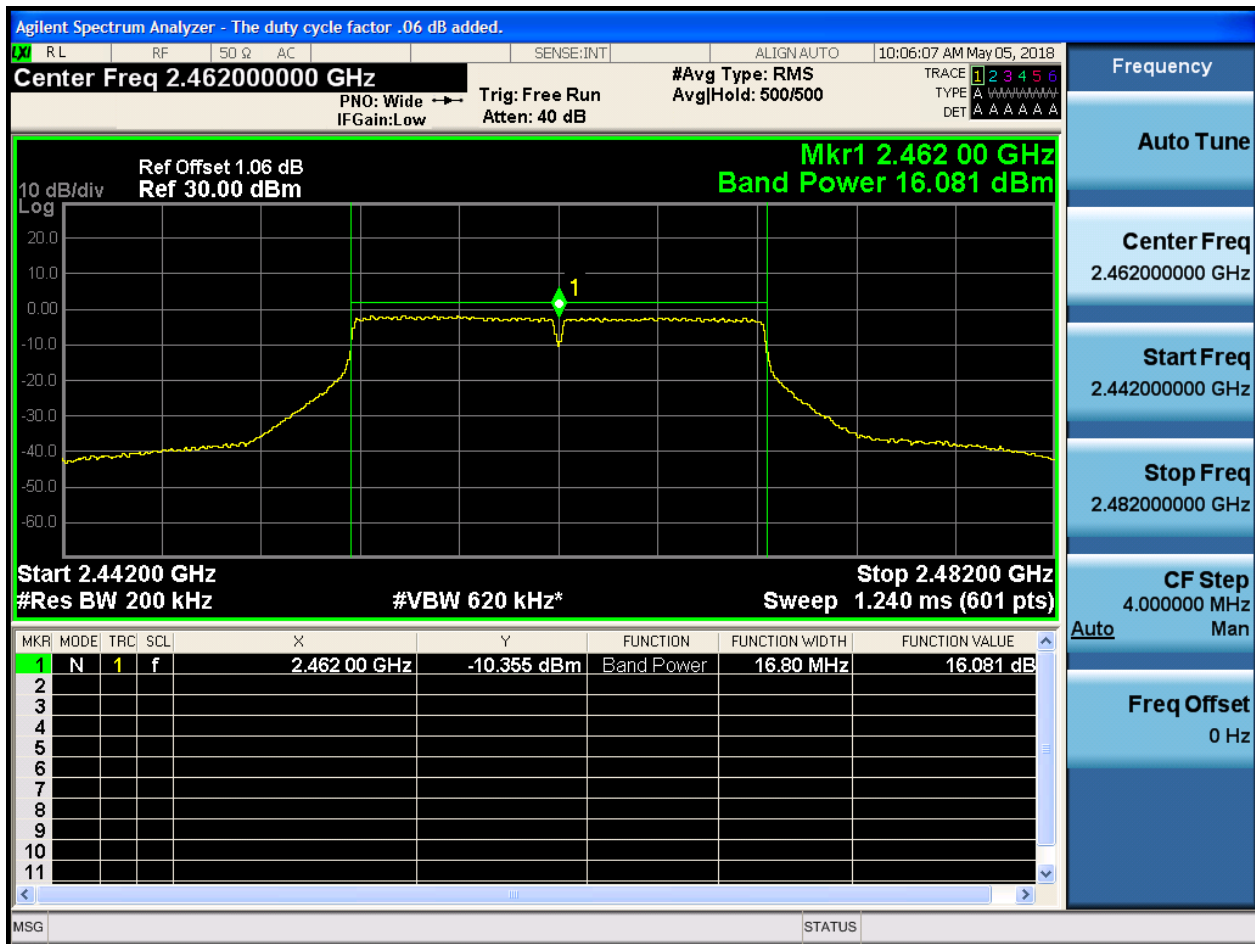


2.7 11G_H_2457@Ant 1





2.8 11G_H_2462@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .06 dB added.

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 10:12:37 AM May 05, 2018

Center Freq 2.41200000 GHz #Avg Type: RMS AvgHold: 500/500
 PNO: Wide → 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 1.06 dB
 Ref 30.00 dBm

Mkr1 2.412 00 GHz
Band Power 13.640 dBm

Start 2.39200 GHz Stop 2.43200 GHz
 #Res BW 200 kHz #VBW 620 kHz* Sweep 1.240 ms (601 pts)

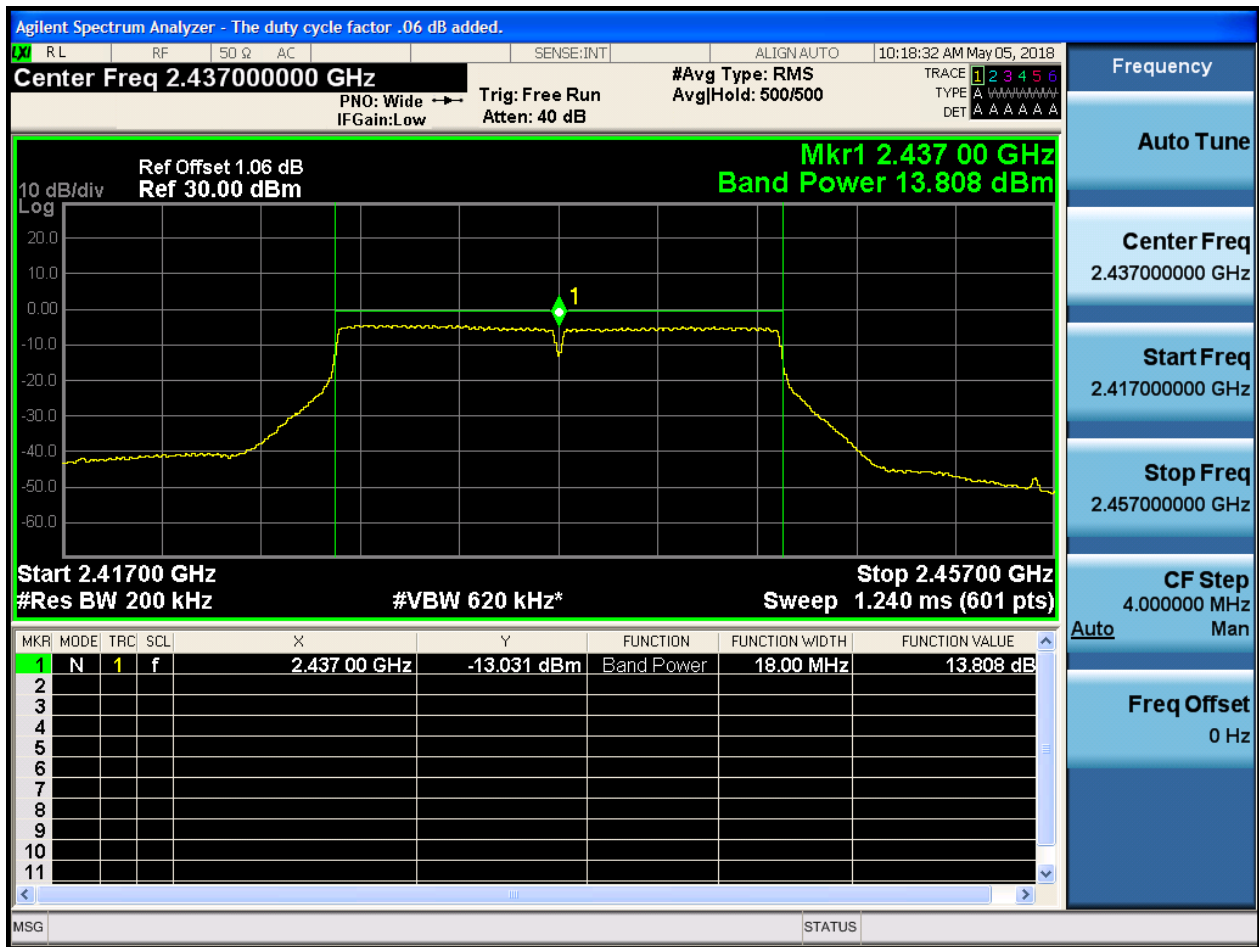
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 00 GHz	-12.744 dBm	Band Power	17.87 MHz	13.640 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency
 Auto Tune
 Center Freq 2.41200000 GHz
 Start Freq 2.392000000 GHz
 Stop Freq 2.432000000 GHz
 CF Step 4.000000 MHz
 Auto Man
 Freq Offset 0 Hz

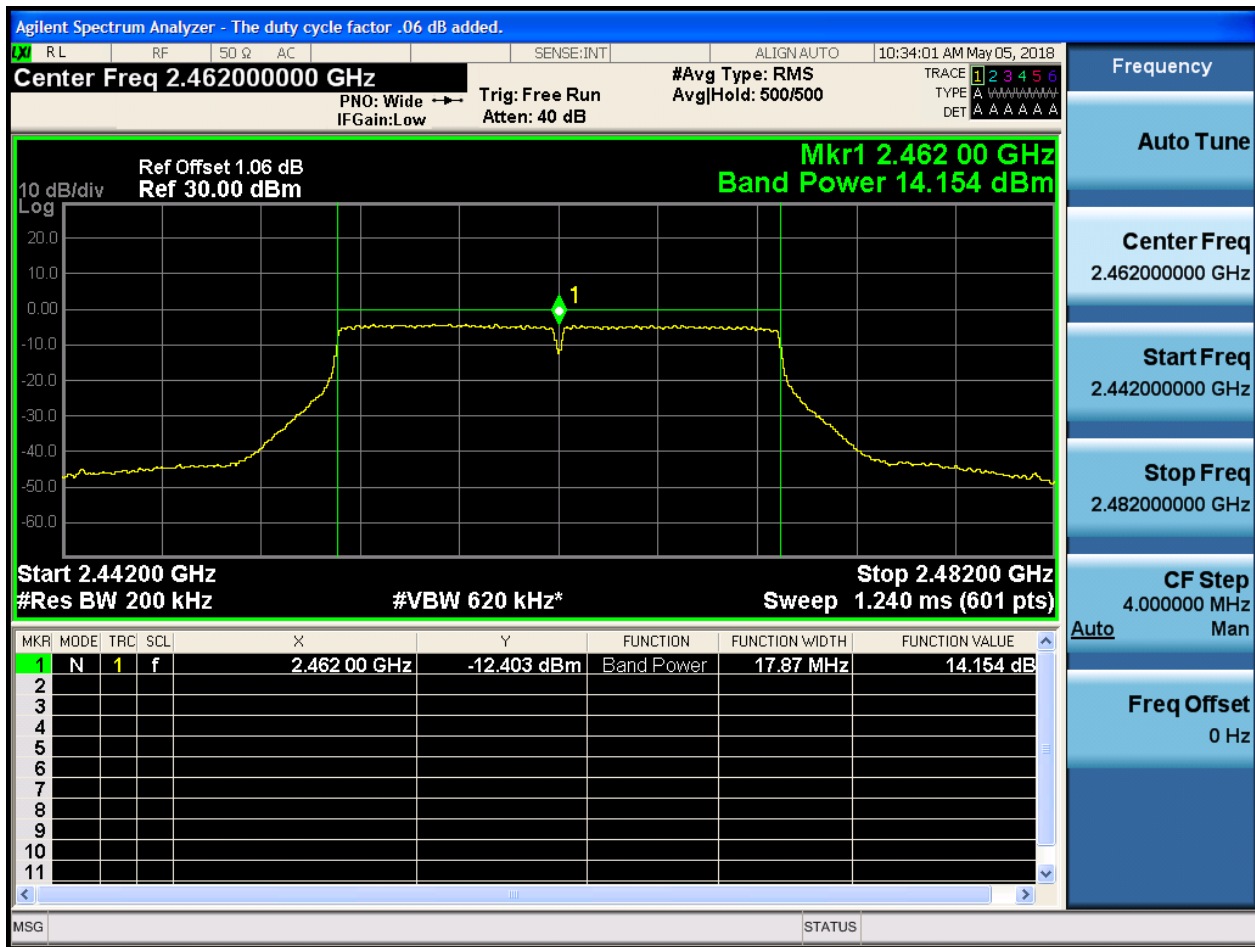


2.10 11N20_M_2437@Ant 1



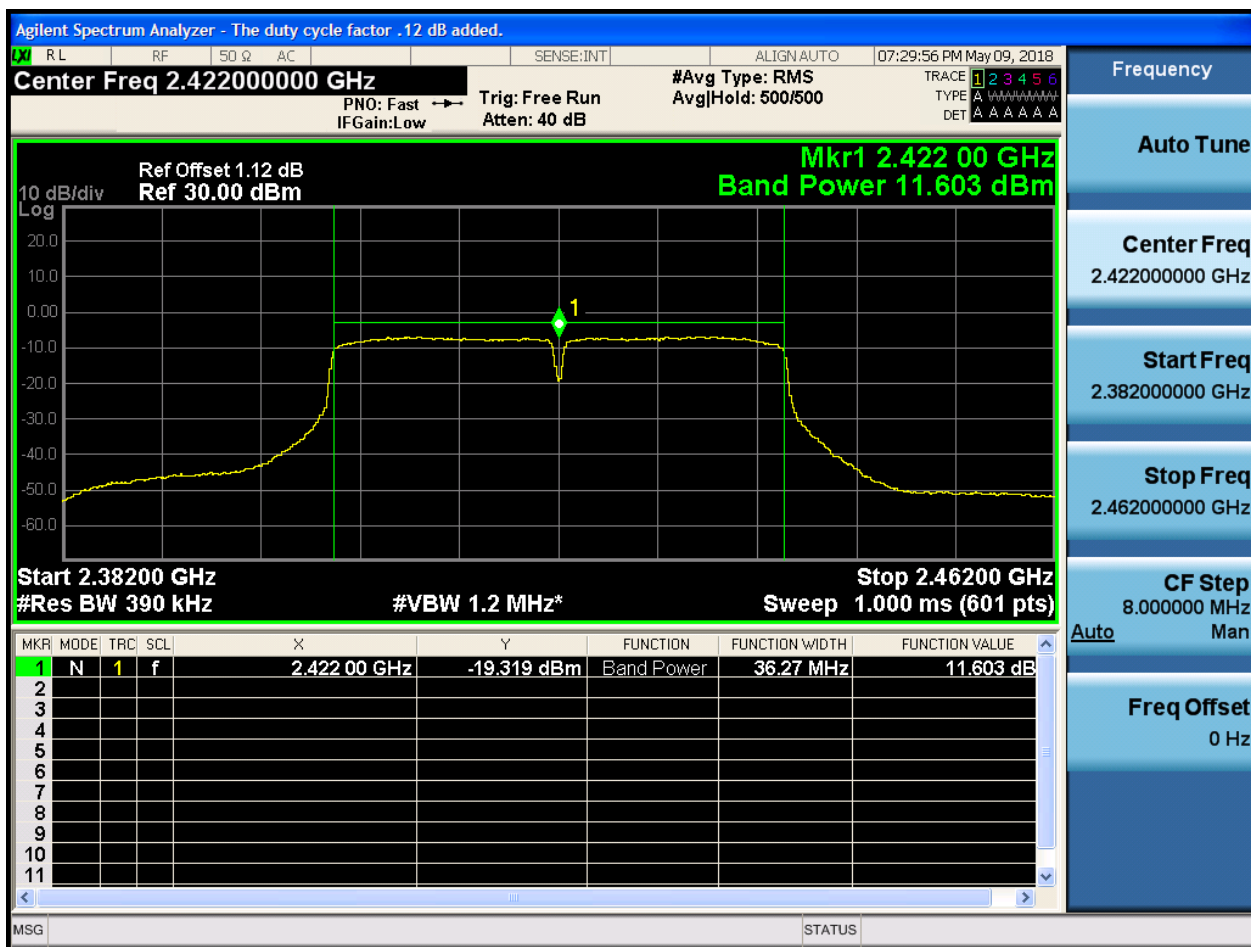


2.11 11N20_H_2462@Ant 1



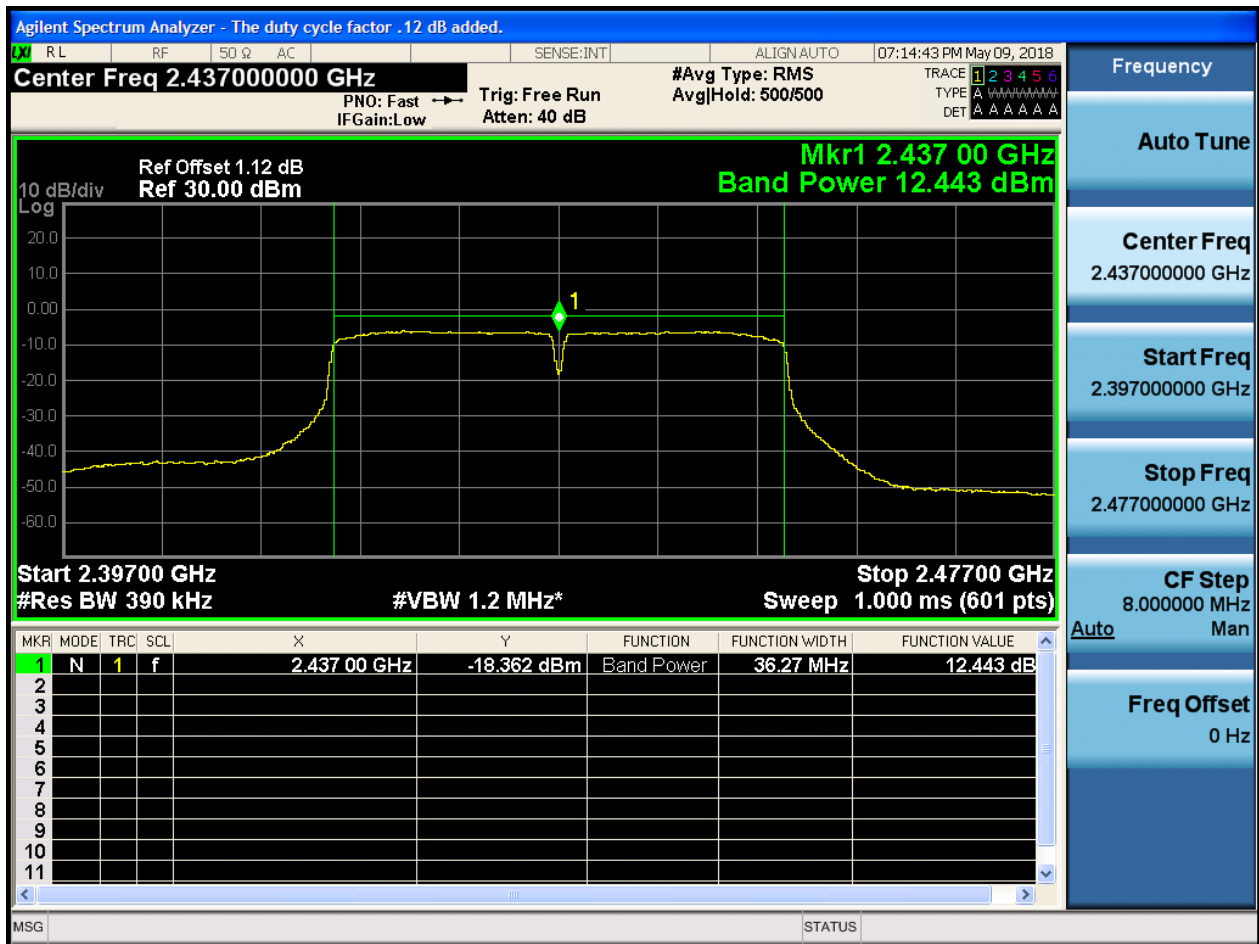


2.12 11N40_L_2422@Ant 1



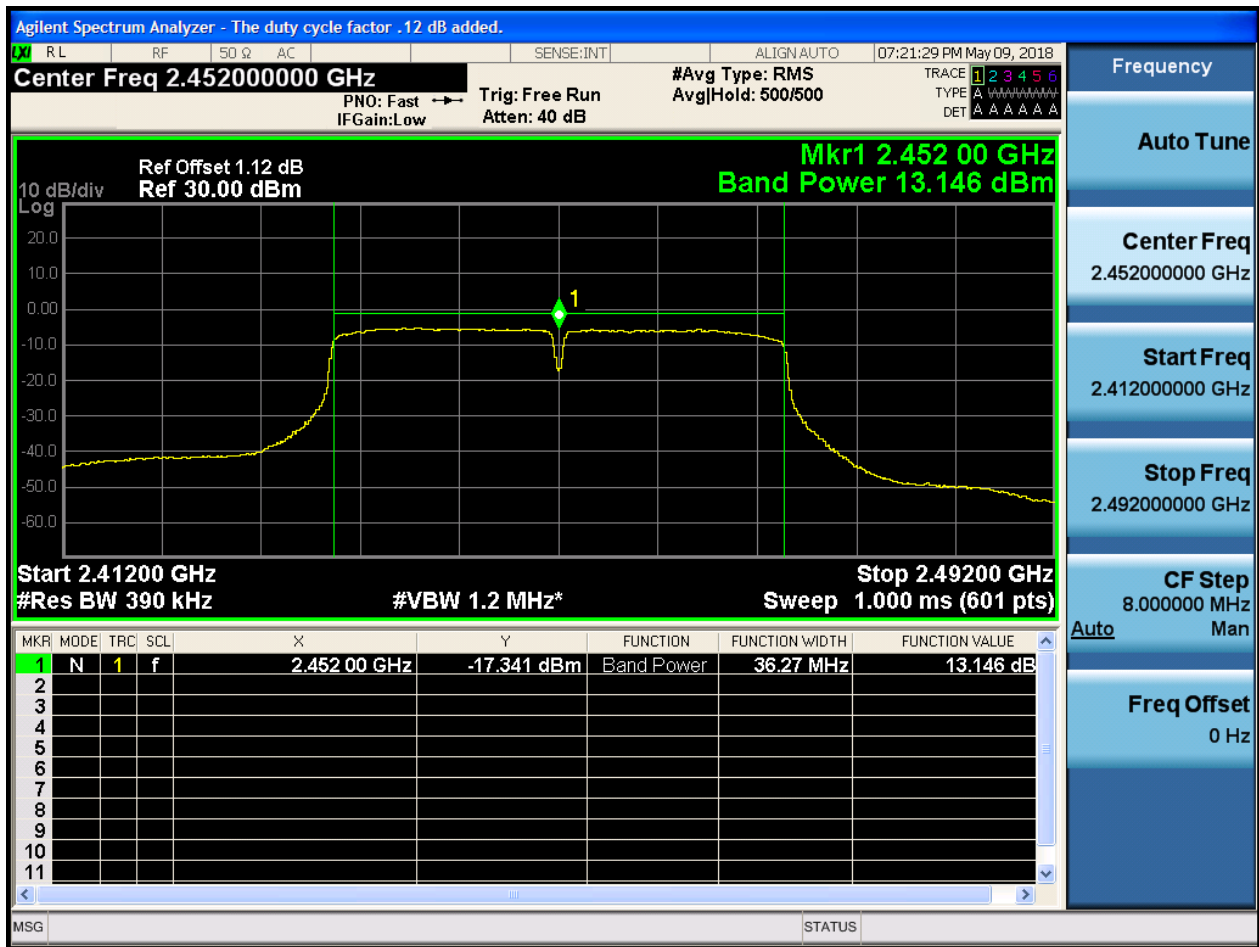


2.13 11N40_M_2437@Ant 1





2.14 11N40_H_2452@Ant 1



Appendix E: Maximum Power Spectral Density Level

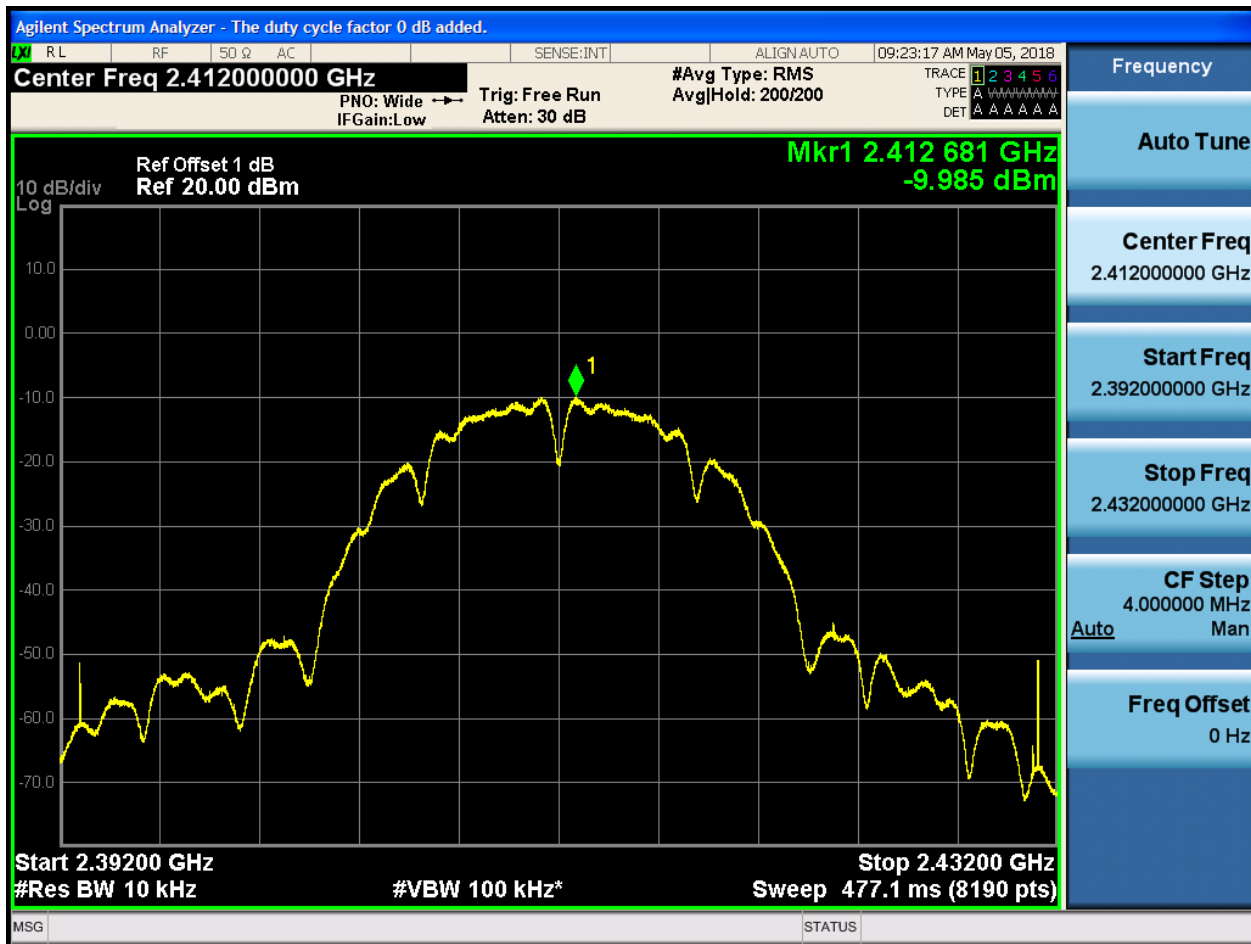
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Duty Cycle [%]	PSD[dBm/10 kHz]	Verdict
11B	L	2412	Ant 1	100	-9.99	pass
11B	M	2437	Ant 1	100	-10.46	pass
11B	H	2462	Ant 1	100	-9.69	pass
11G	L	2412	Ant 1	98.6	-14.84	pass
11G	L	2417	Ant 1	98.6	-13.33	pass
11G	M	2437	Ant 1	98.6	-12.71	pass
11G	H	2457	Ant 1	98.6	-13.11	pass
11G	H	2462	Ant 1	98.6	-13.32	pass
11N20	L	2412	Ant 1	98.6	-15.73	pass
11N20	M	2437	Ant 1	98.6	-15.64	pass
11N20	H	2462	Ant 1	98.6	-15.41	pass
11N40	L	2422	Ant 1	97.2	-20.54	pass
11N40	M	2437	Ant 1	97.2	-18.83	pass
11N40	H	2452	Ant 1	97.2	-18.17	pass



Part II - Test Plots

2.1 11B_L_2412@Ant 1





2.2 11B_M_2437@Ant 1



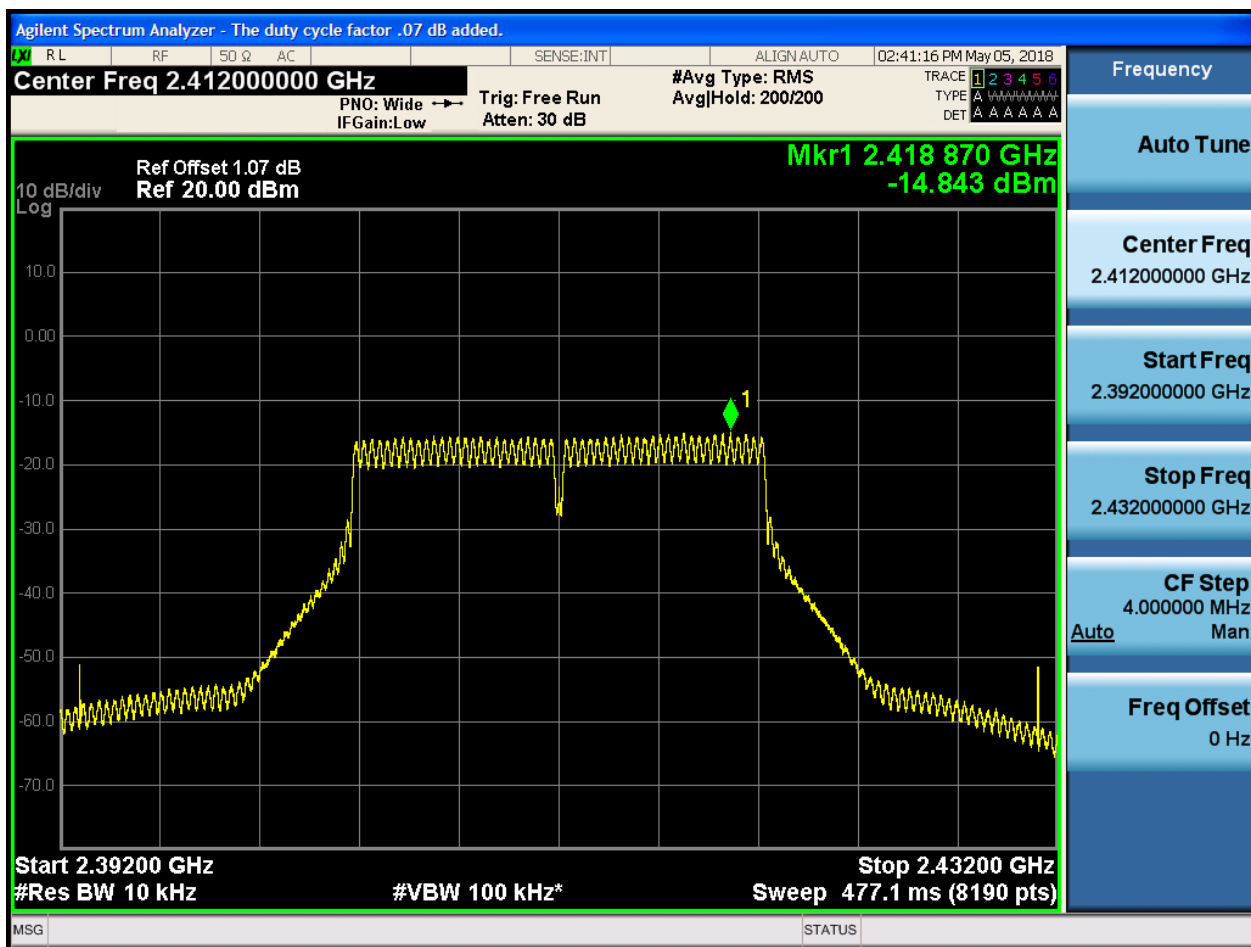


2.3 11B_H_2462@Ant 1



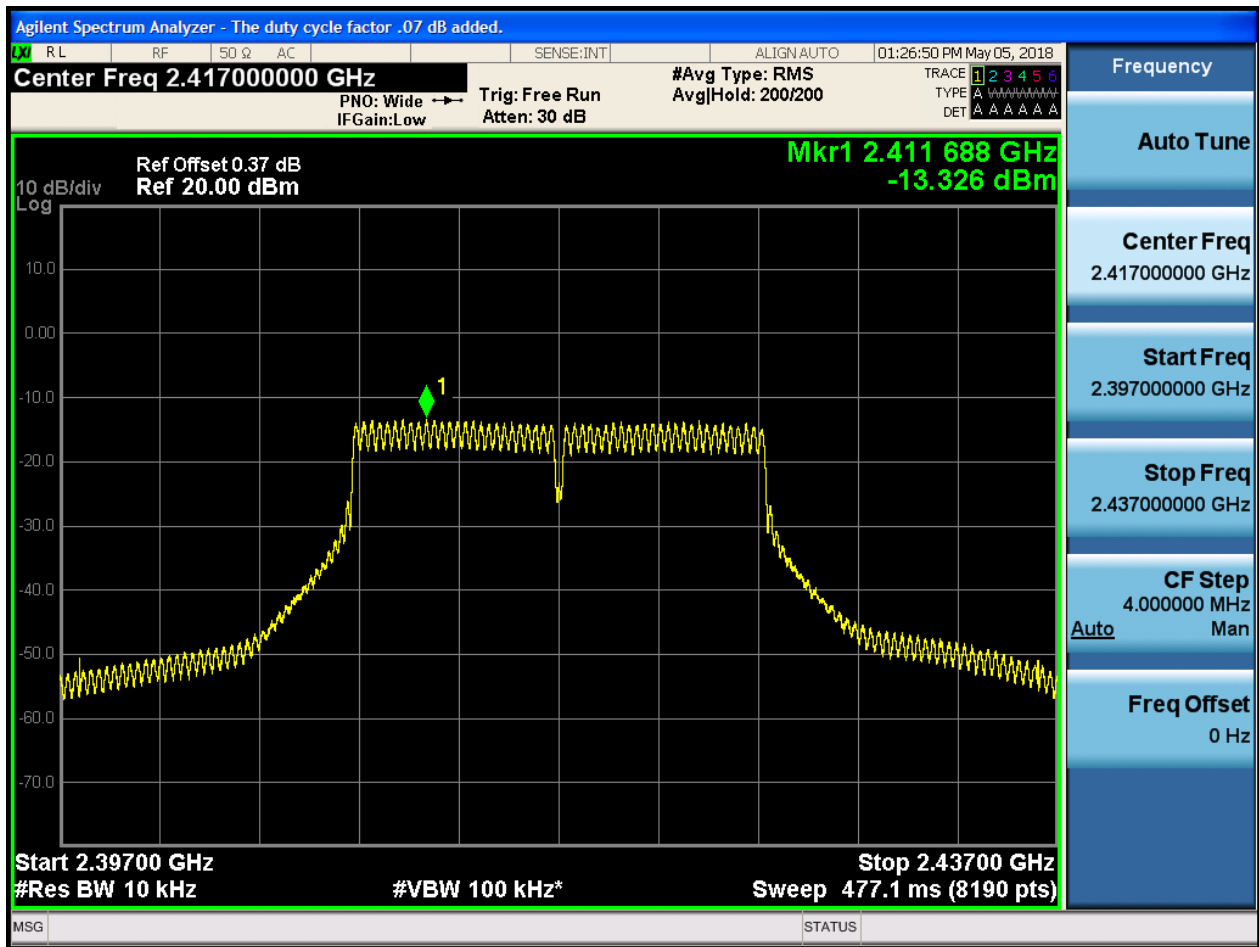


2.4 11G_L_2412@Ant 1



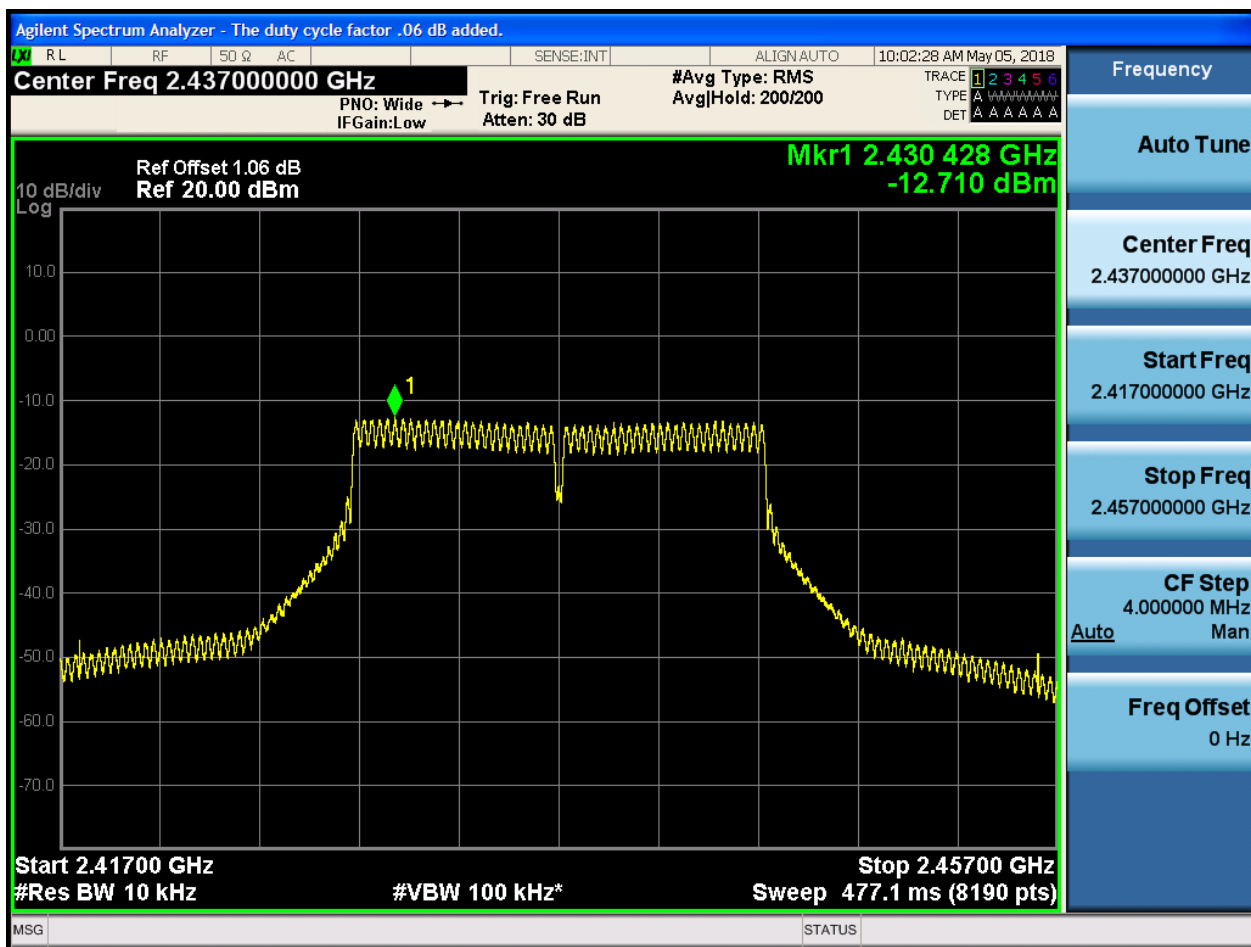


2.5 11G_L_2417@Ant 1



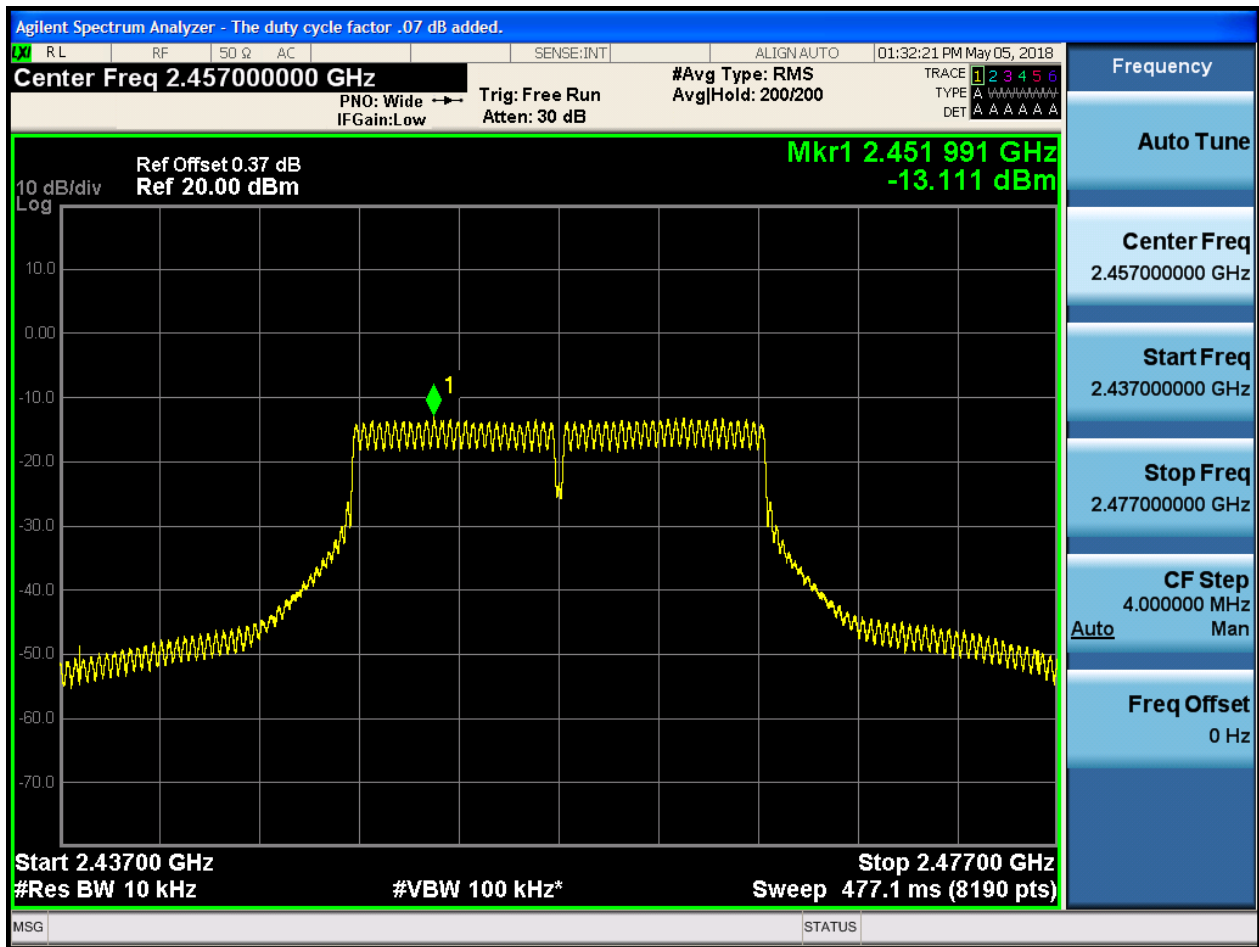


2.6 11G_M_2437@Ant 1



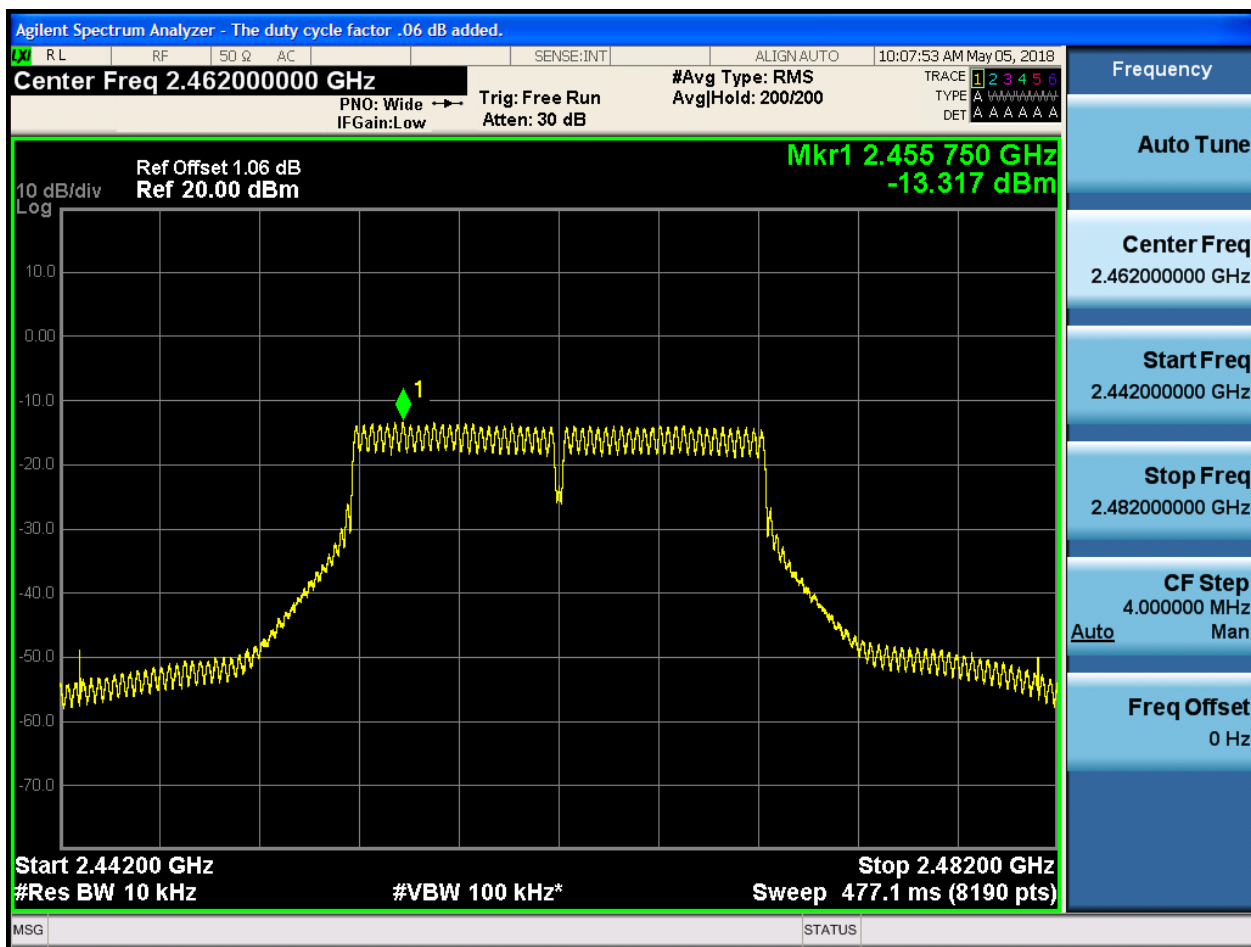


2.7 11G_H_2457@Ant 1



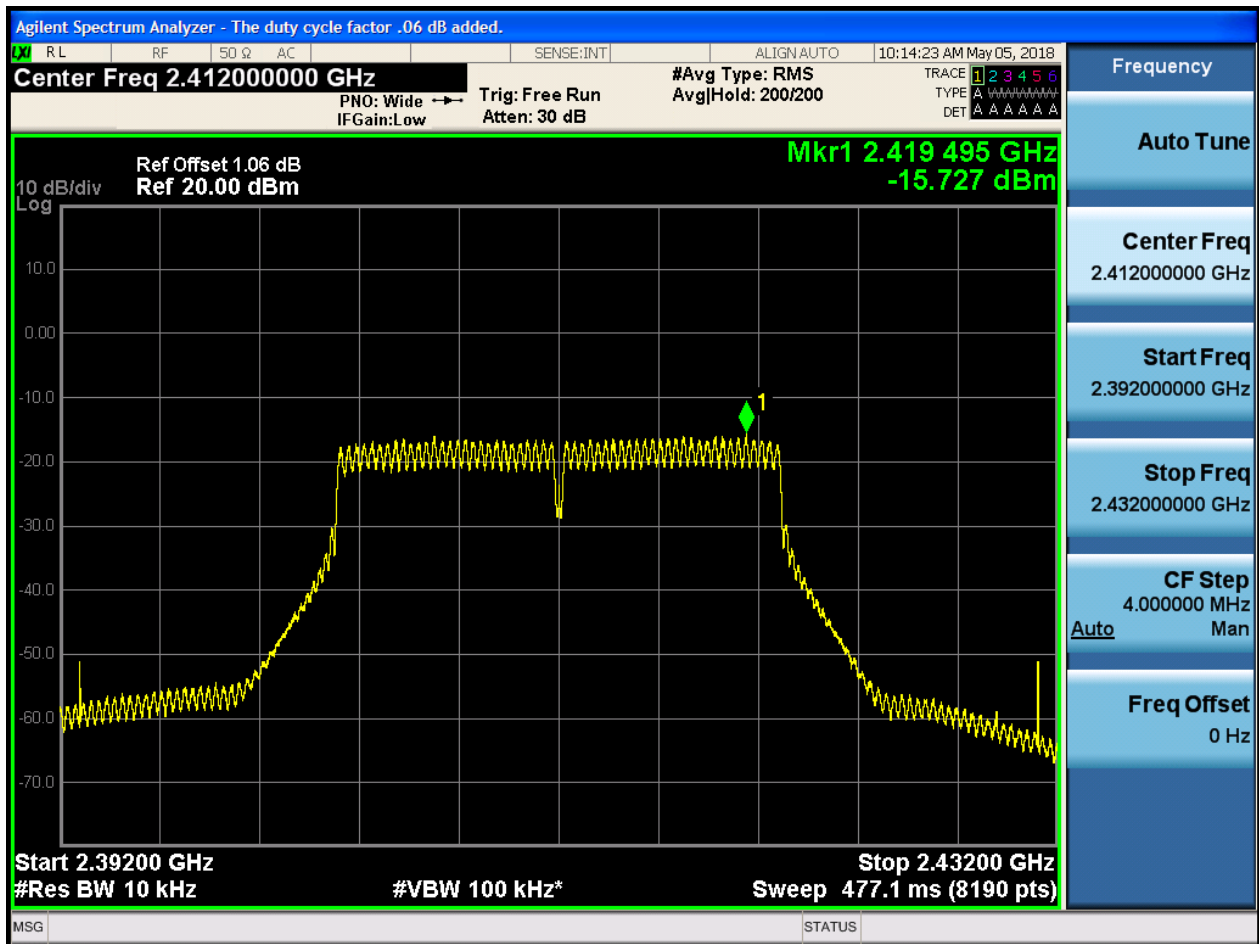


2.8 11G_H_2462@Ant 1



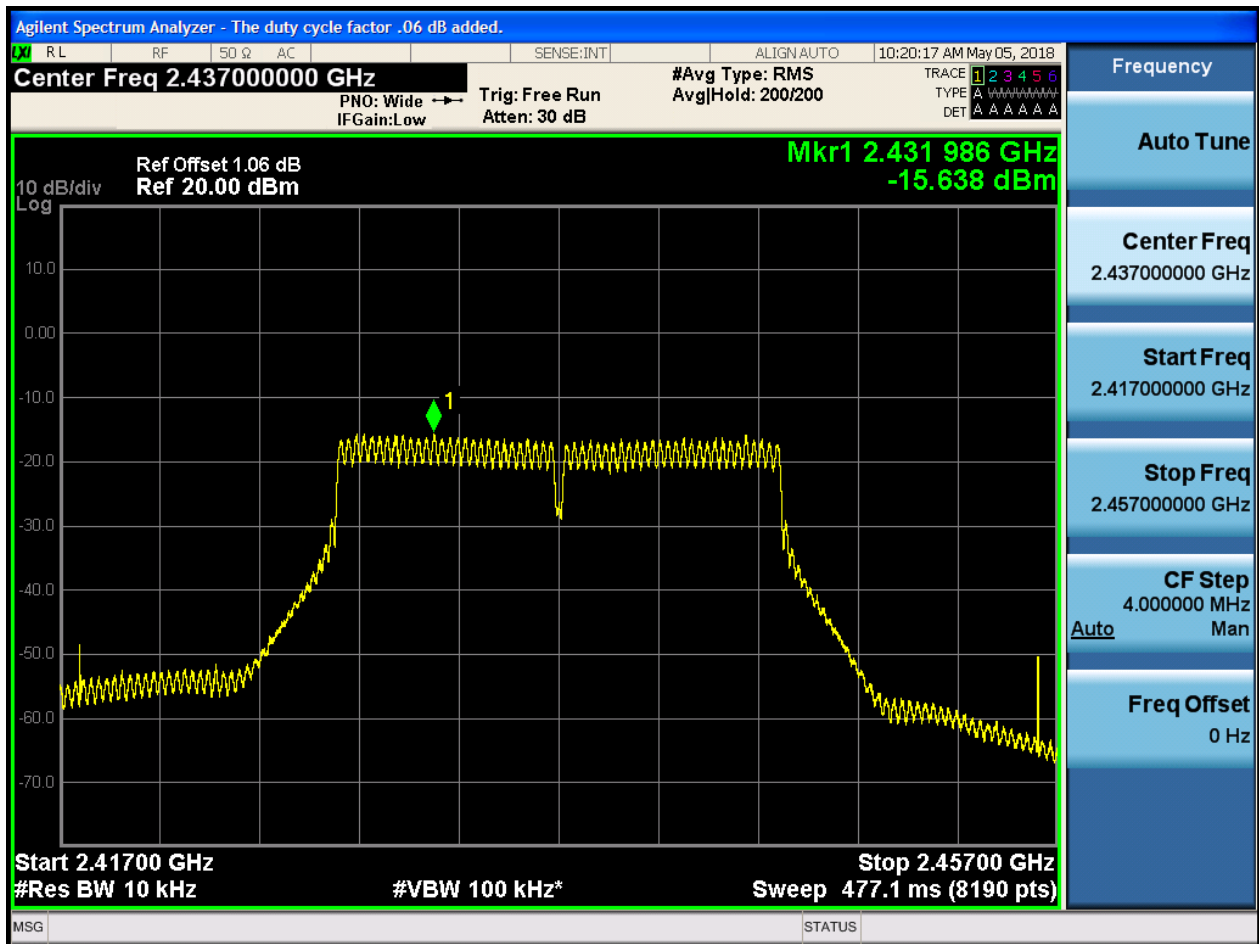


2.9 11N20_L_2412@Ant 1



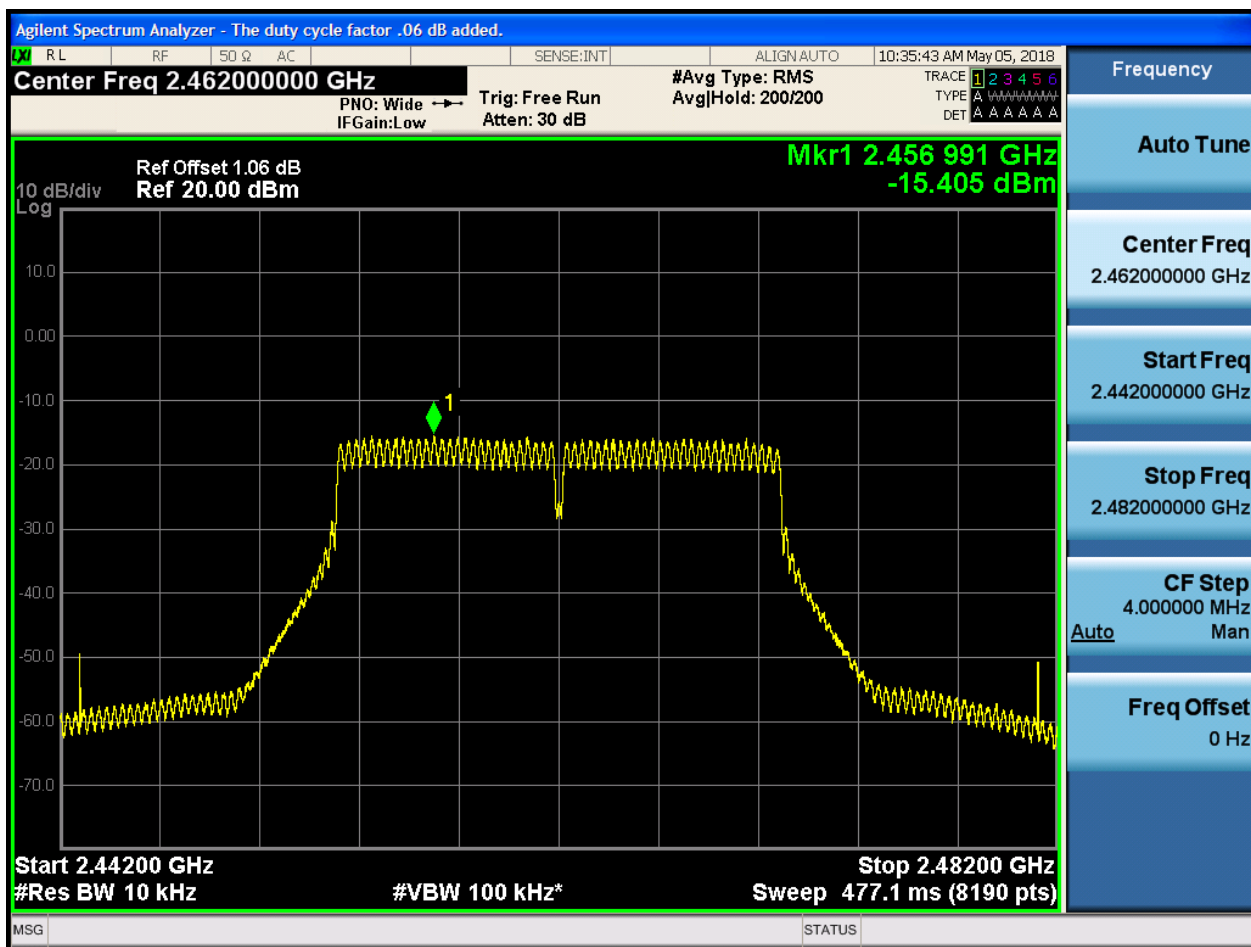


2.10 11N20_M_2437@Ant 1



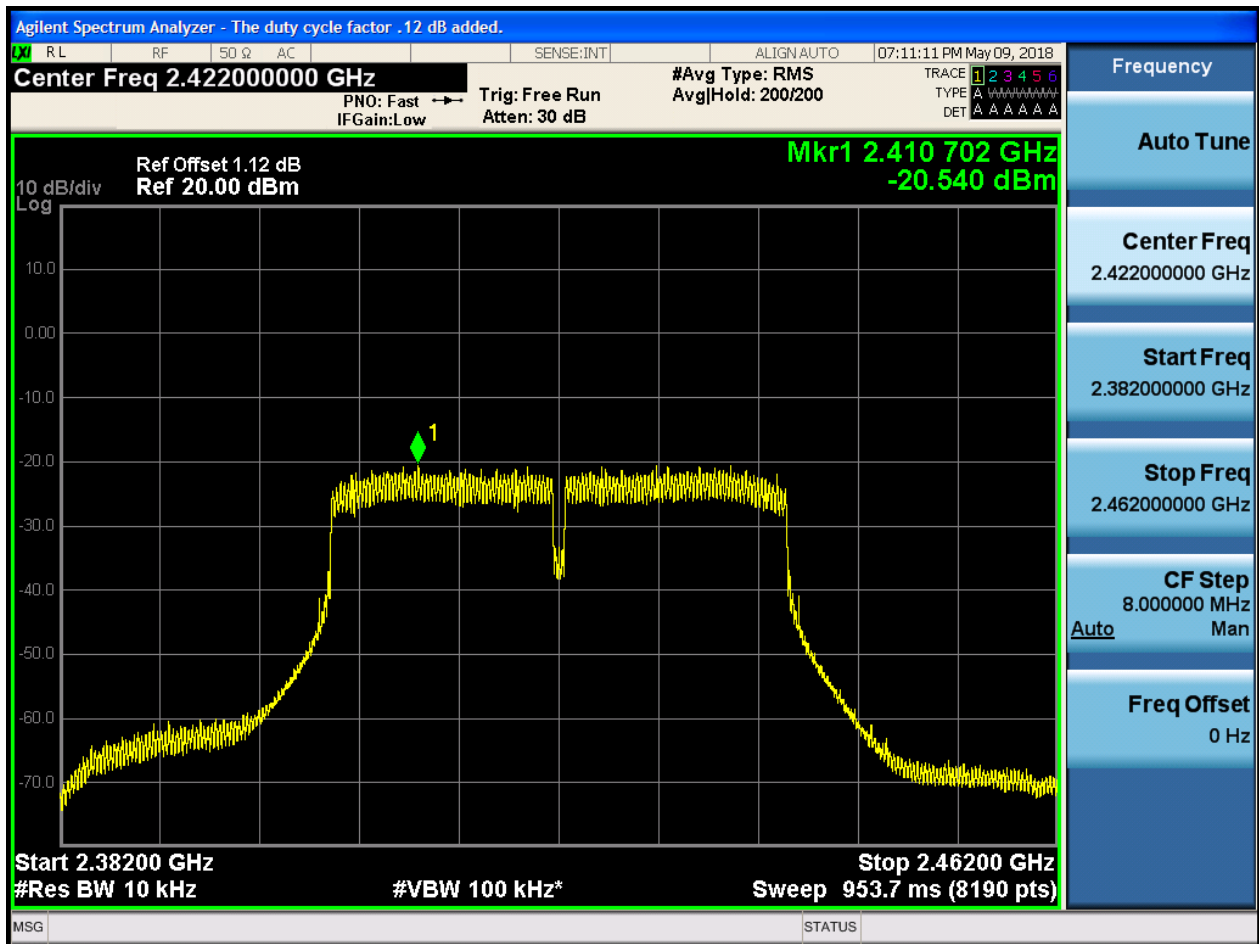


2.11 11N20_H_2462@Ant 1



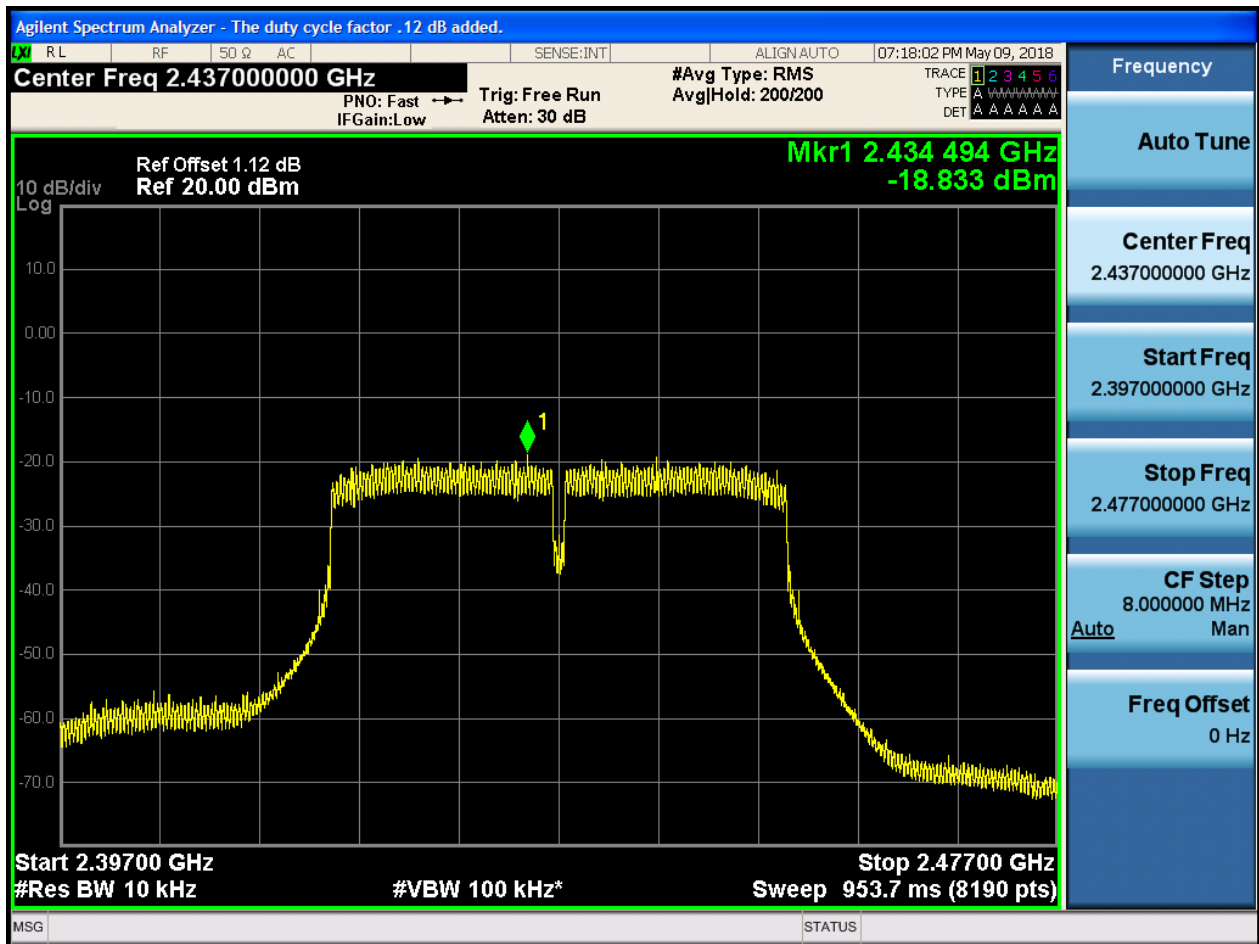


2.12 11N40_L_2422@Ant 1



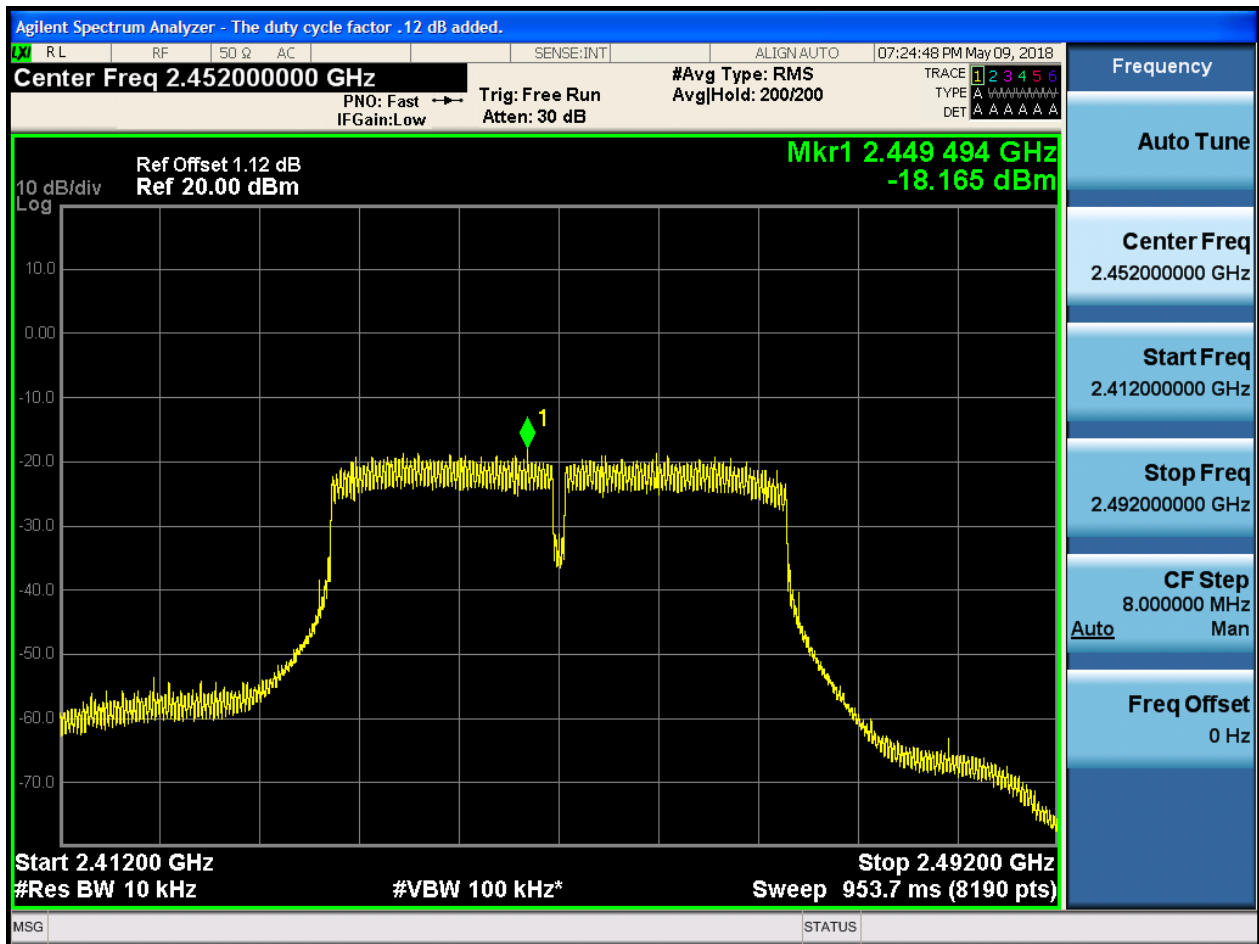


2.13 11N40_M_2437@Ant 1





2.14 11N40_H_2452@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	7.99	-29.96	pass
11B	H	2462	Ant 1	8.76	-50.24	pass
11G	L	2412	Ant 1	3.16	-30.88	pass
11G	L	2417	Ant 1	4.83	-32.09	pass
11G	H	2457	Ant 1	5.04	-42.36	pass
11G	H	2462	Ant 1	4.88	-34.54	pass
11N20	L	2412	Ant 1	2.31	-33.22	pass
11N20	H	2462	Ant 1	2.88	-40.24	pass
11N40	L	2422	Ant 1	-3.08	-35.32	pass
11N40	H	2452	Ant 1	-1.30	-45.17	pass



Part II - Test Plots

2.1 11B_L_2412@Ant 1





2.2 11B_H_2462@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.40000000 GHz

Ref Offset 1 dB
Ref 30.00 dBm

10 dB/div
Log

Mkr2 2.400 00 GHz
-30.882 dBm

Start 2.38000 GHz
#Res BW 100 kHz

Stop 2.42000 GHz
#Sweep 100.0 ms (601 pts)

#VBW 300 kHz

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.417 00 GHz	3.158 dBm			
2	N	1	f	2.400 00 GHz	-30.882 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.400000000 GHz

Start Freq
2.380000000 GHz

Stop Freq
2.420000000 GHz

CF Step
4.000000 MHz
Auto

Freq Offset
0 Hz



2.4 11G_L_2417@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.471500000 GHz

Ref Offset 0.3 dB
Ref 30.00 dBm

Mkr2 2.483 50 GHz
-42.356 dBm

Start 2.44650 GHz
#Res BW 100 kHz

Stop 2.49650 GHz
#Sweep 100.0 ms (1001 pts)

#VBW 300 kHz

Trig: Free Run
Atten: 40 dB

PNO: Fast
IFGain:Low

Avg Type: Log-Pwr
Avg/Hold: 100/100

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

Frequency

Auto Tune

Center Freq
2.471500000 GHz

Start Freq
2.446500000 GHz

Stop Freq
2.496500000 GHz

CF Step
5.000000 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 00 GHz	5.039 dBm			
2	N	1	f	2.483 50 GHz	-42.356 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS

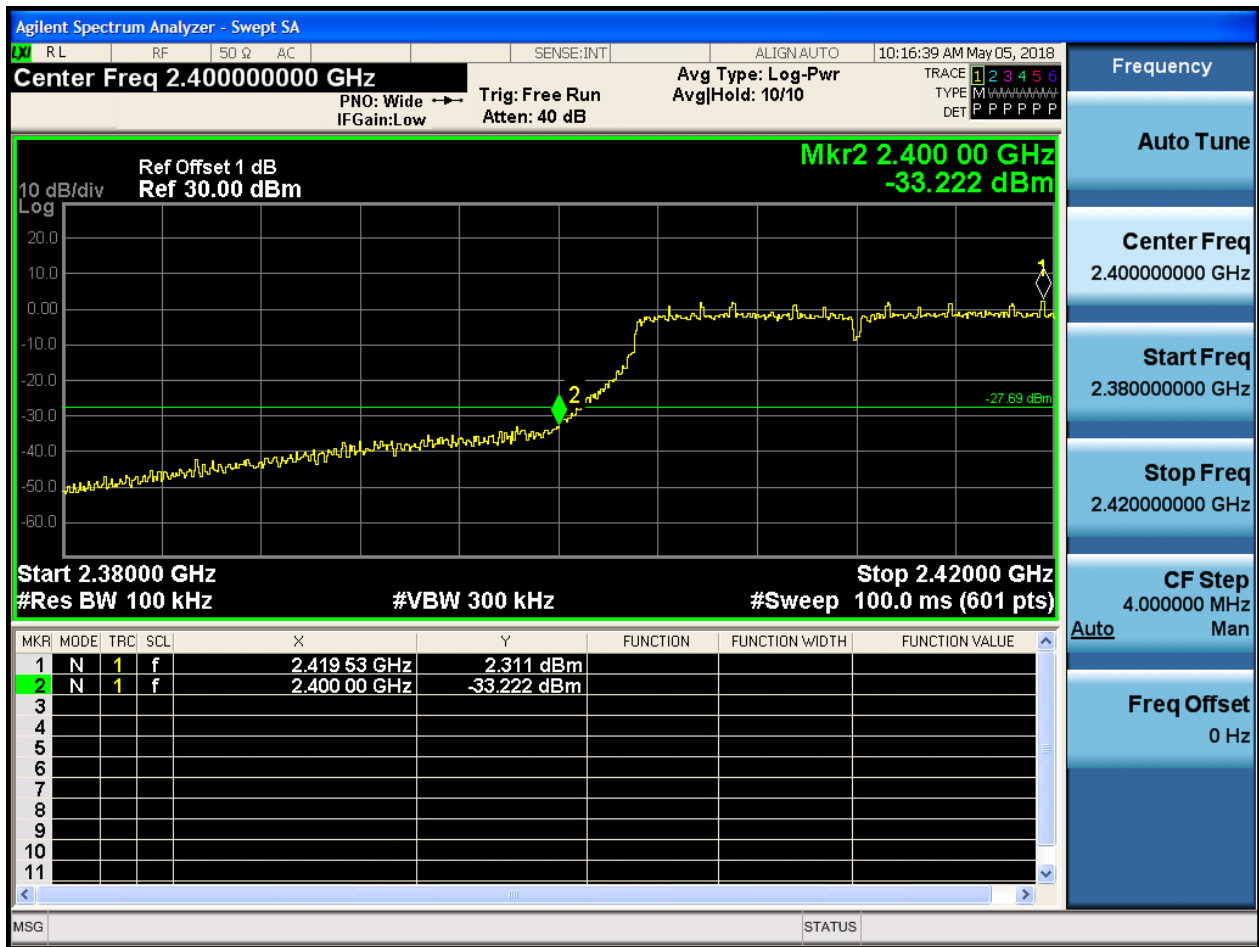


2.6 11G_H_2462@Ant 1





2.7 11N20_L_2412@Ant 1



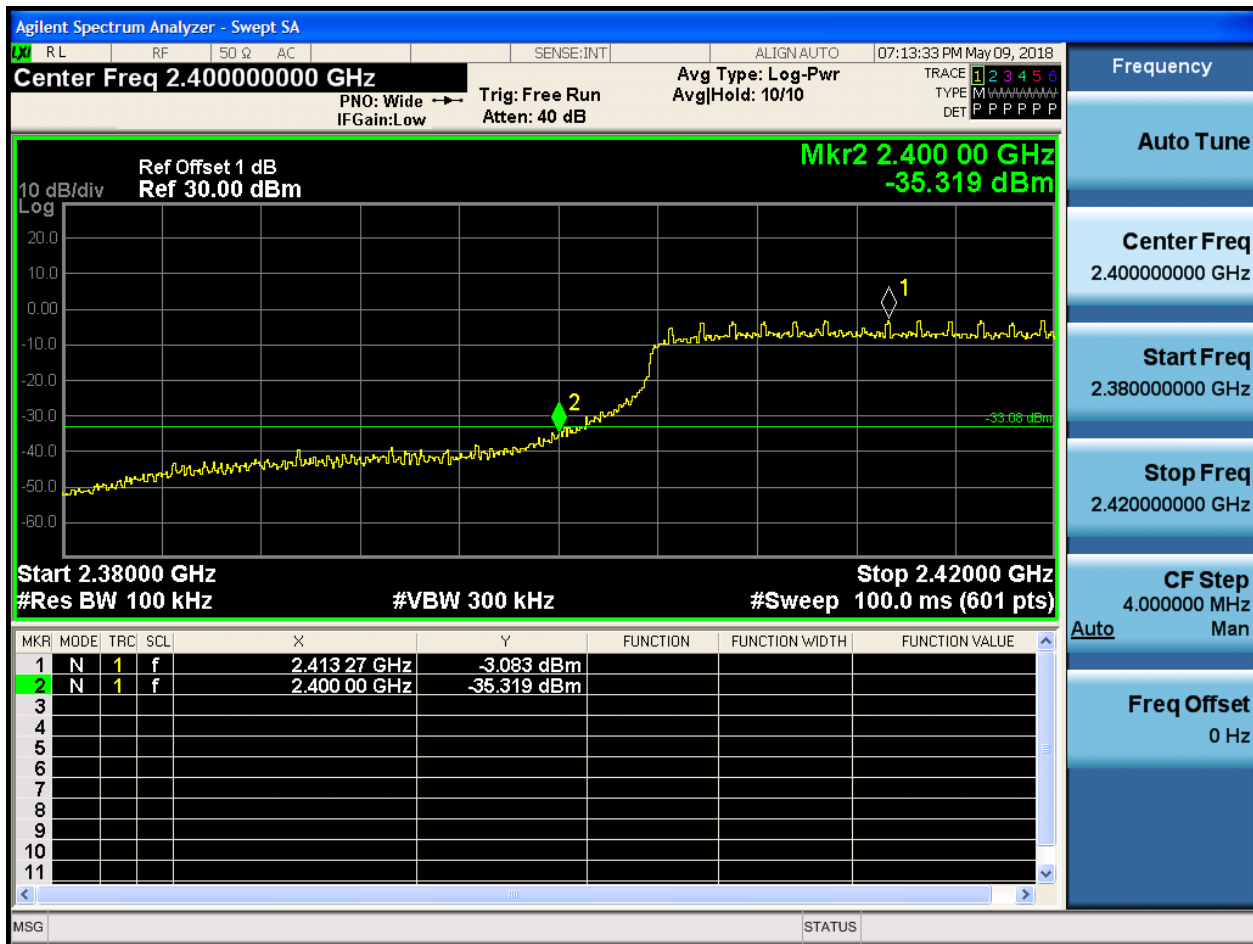


2.8 11N20_H_2462@Ant 1





2.9 11N40_L_2422@Ant 1





2.10 11N40_H_2452@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

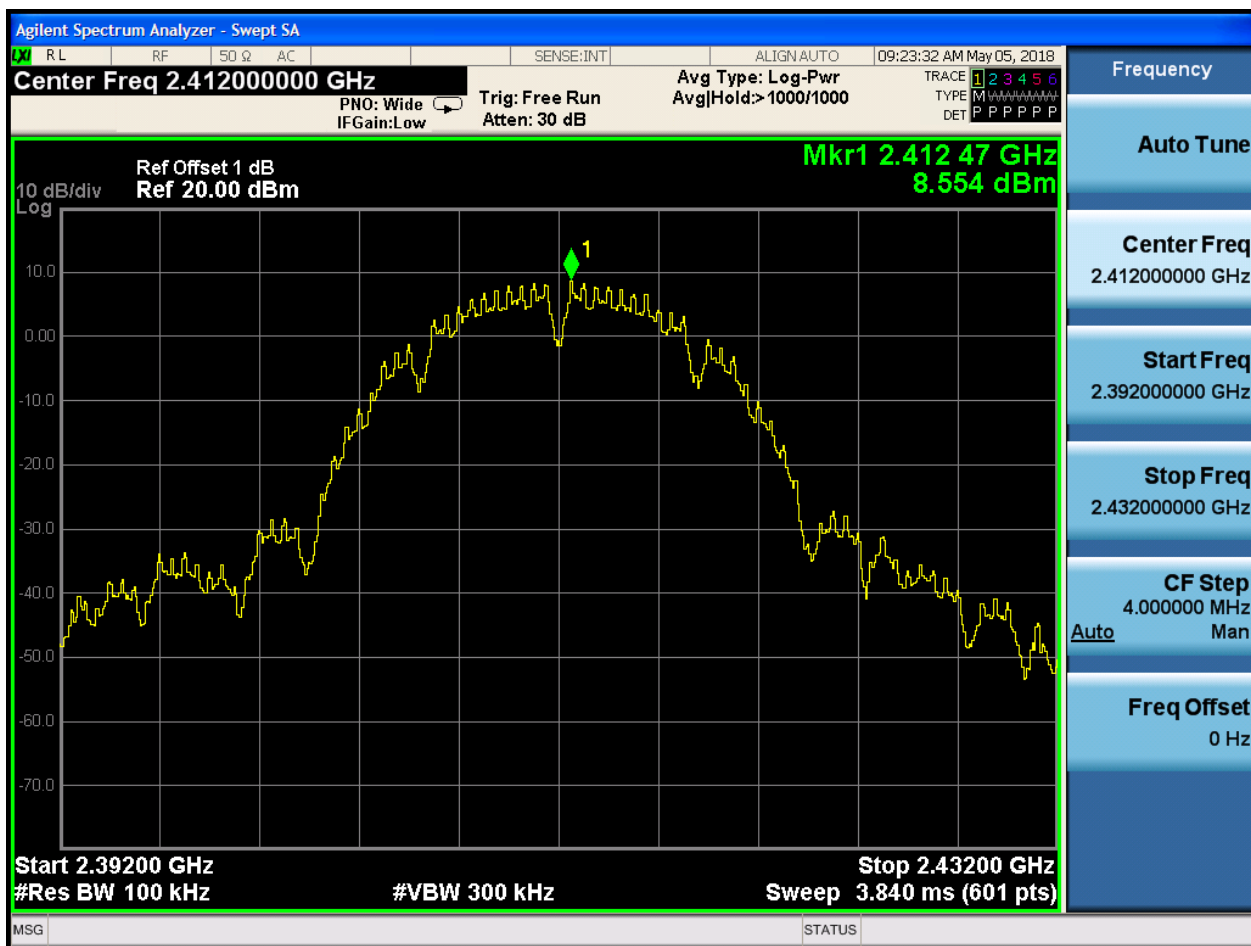
Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	8.55	<limit	pass
11B	M	2437	Ant 1	8.13	<limit	pass
11B	H	2462	Ant 1	8.99	<limit	pass
11G	L	2412	Ant 1	3.22	<limit	pass
11G	L	2417	Ant 1	4.84	<limit	pass
11G	M	2437	Ant 1	5.72	<limit	pass
11G	H	2457	Ant 1	5.06	<limit	pass
11G	H	2462	Ant 1	4.86	<limit	pass
11N20	L	2412	Ant 1	2.47	<limit	pass
11N20	M	2437	Ant 1	2.60	<limit	pass
11N20	H	2462	Ant 1	2.83	<limit	pass
11N40	L	2422	Ant 1	-2.20	<limit	pass
11N40	M	2437	Ant 1	-1.32	<limit	pass
11N40	H	2452	Ant 1	-0.45	<limit	pass



Part II - Test Plots

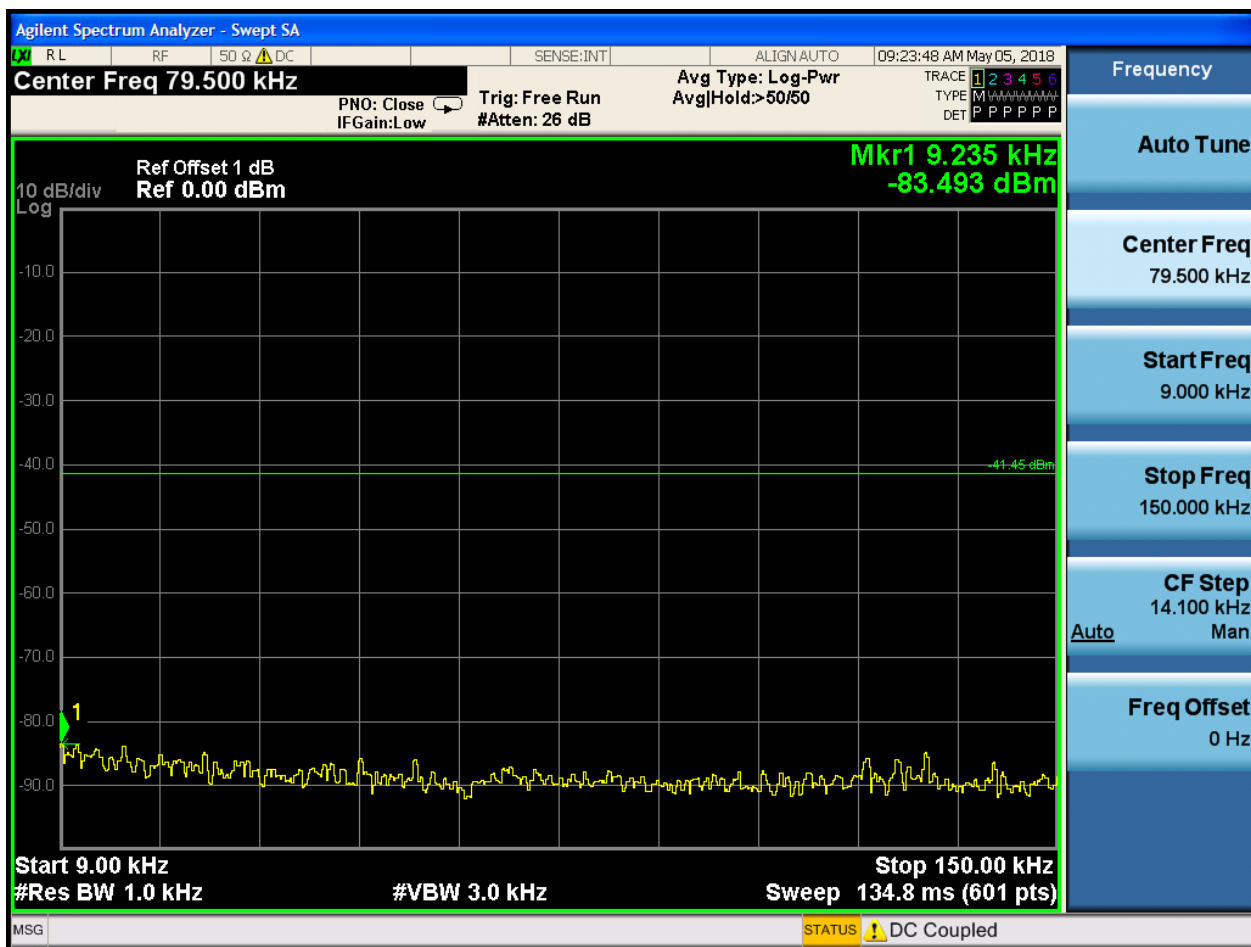
2.1 11B_L_2412@Ant 1

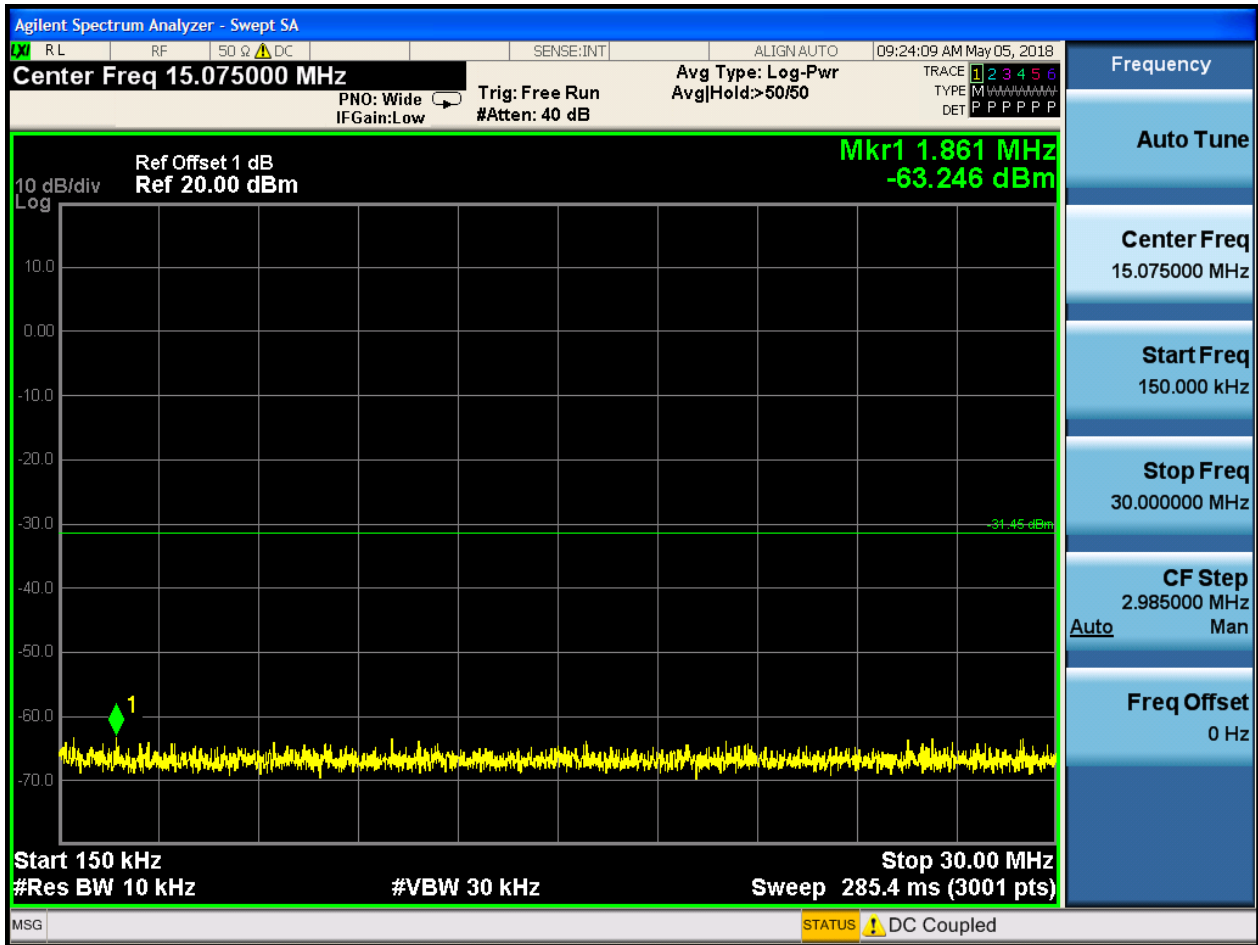
Pref:

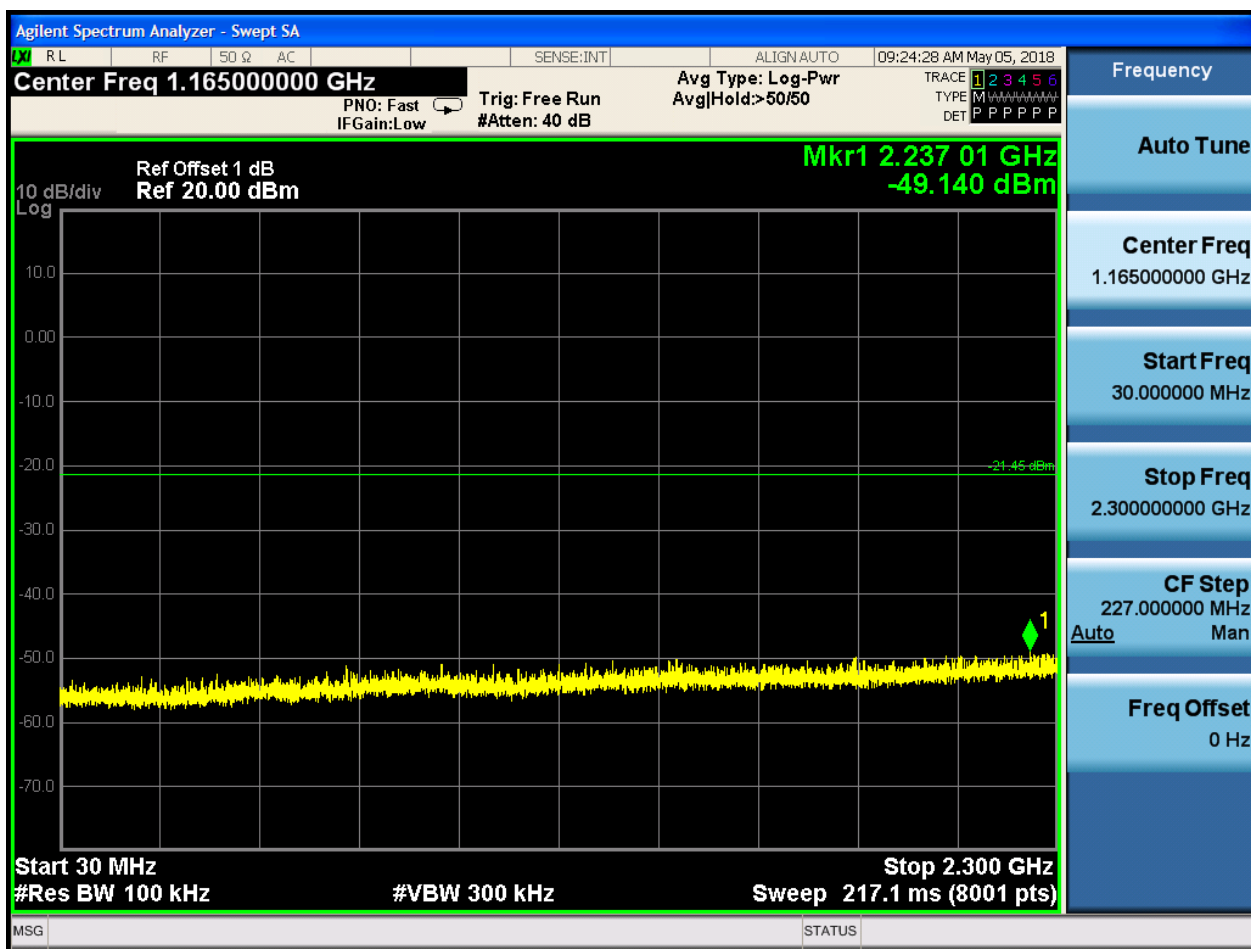




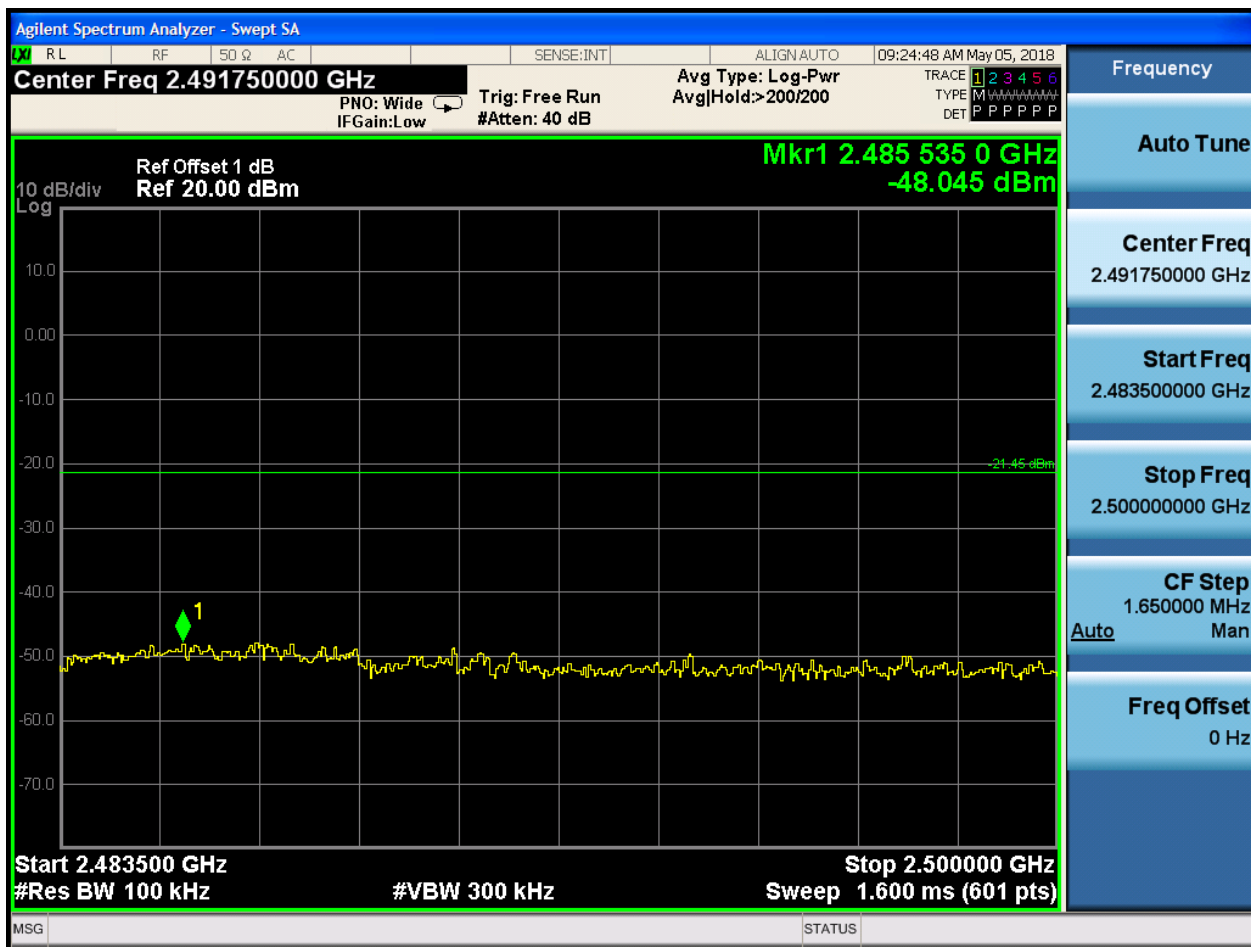
Puw:







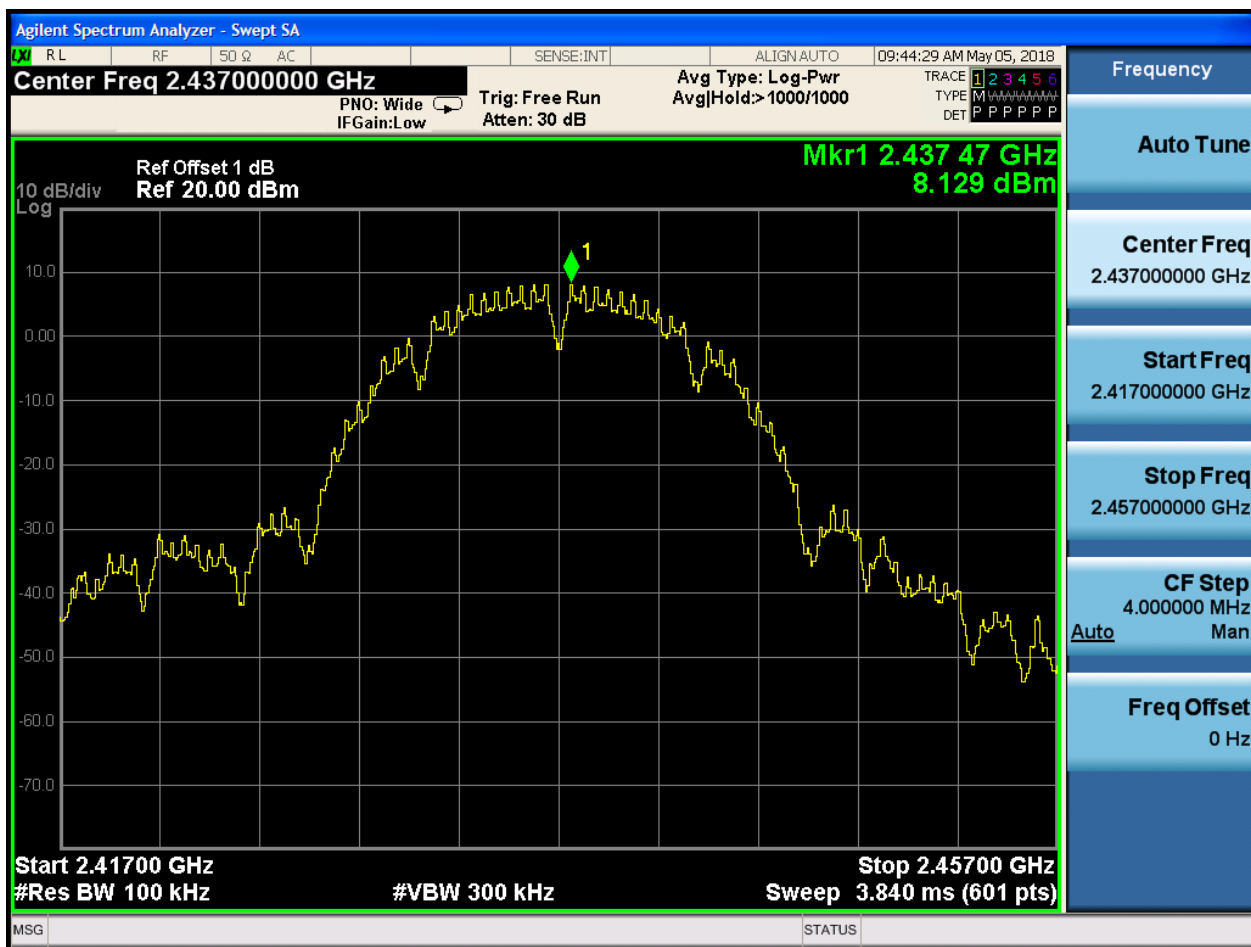






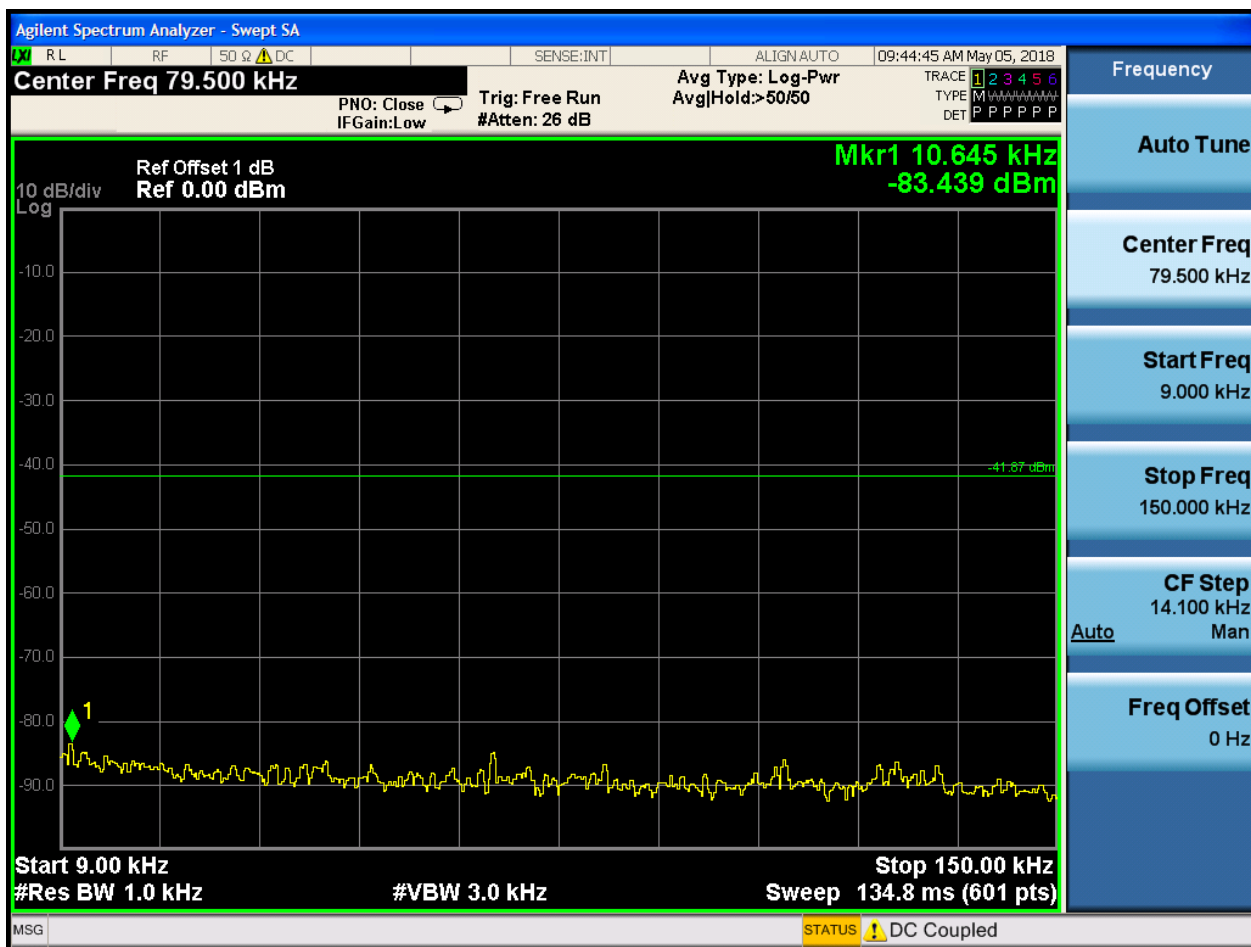
2.2 11B_M_2437@Ant 1

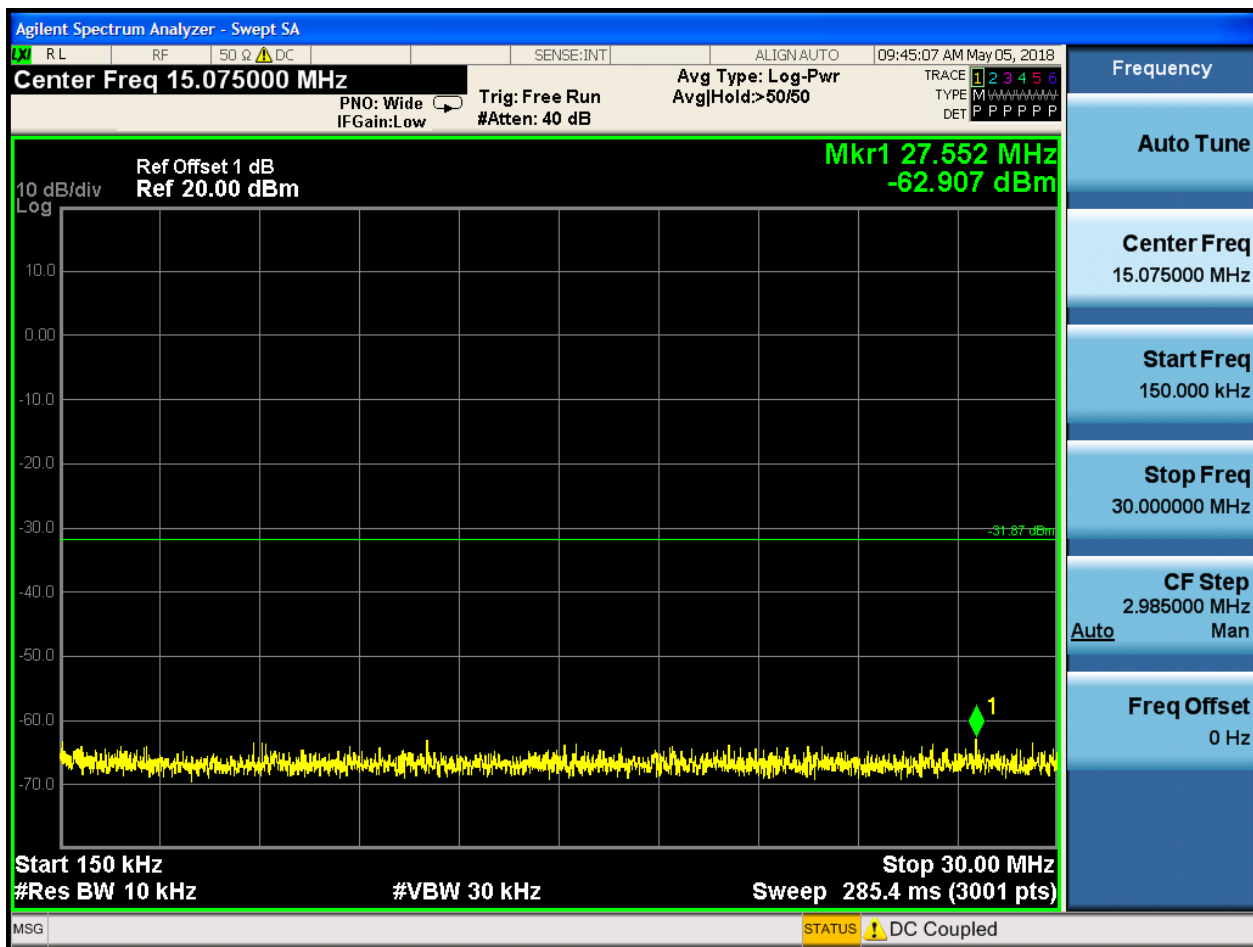
Pref:

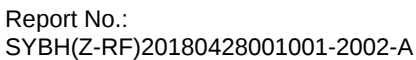


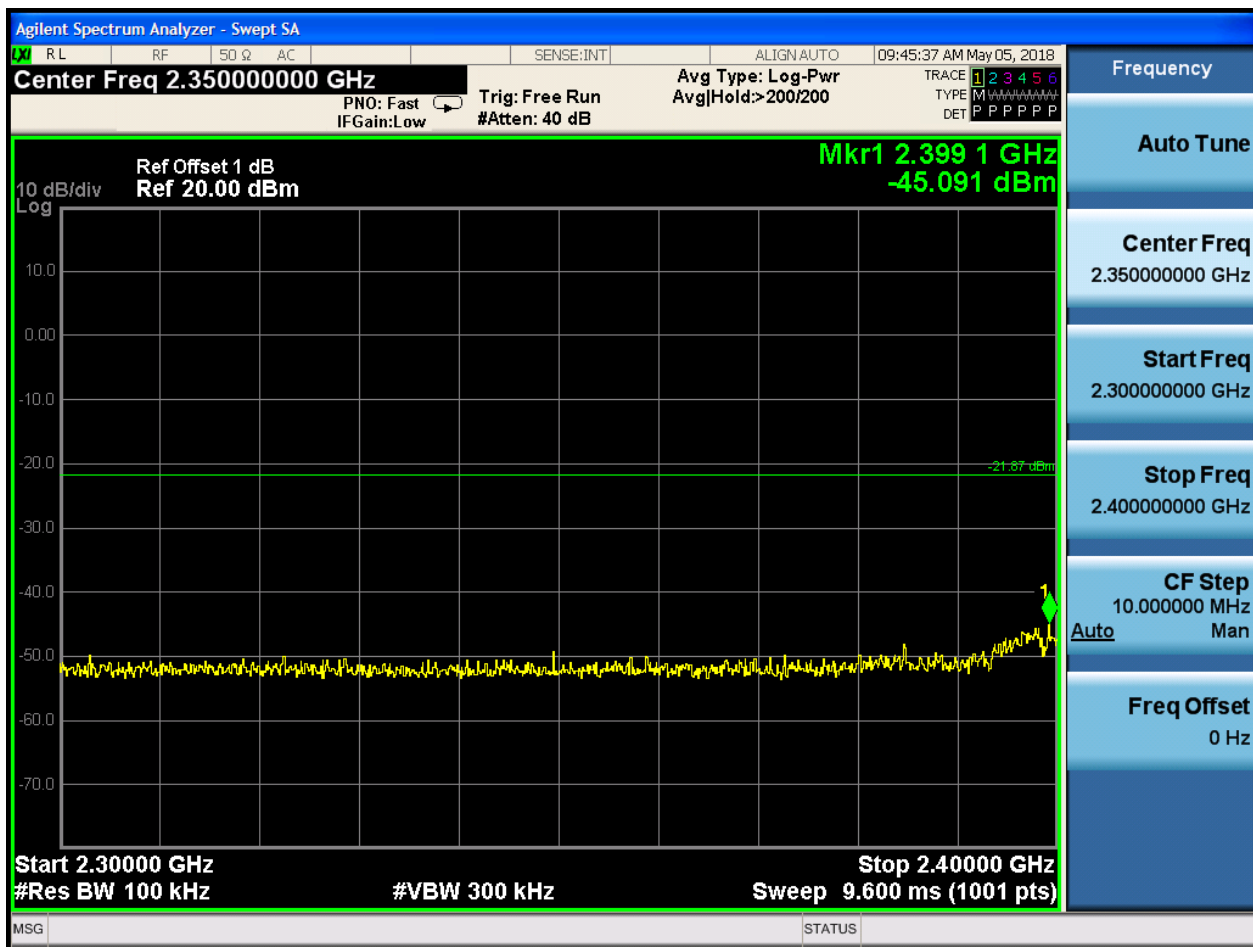


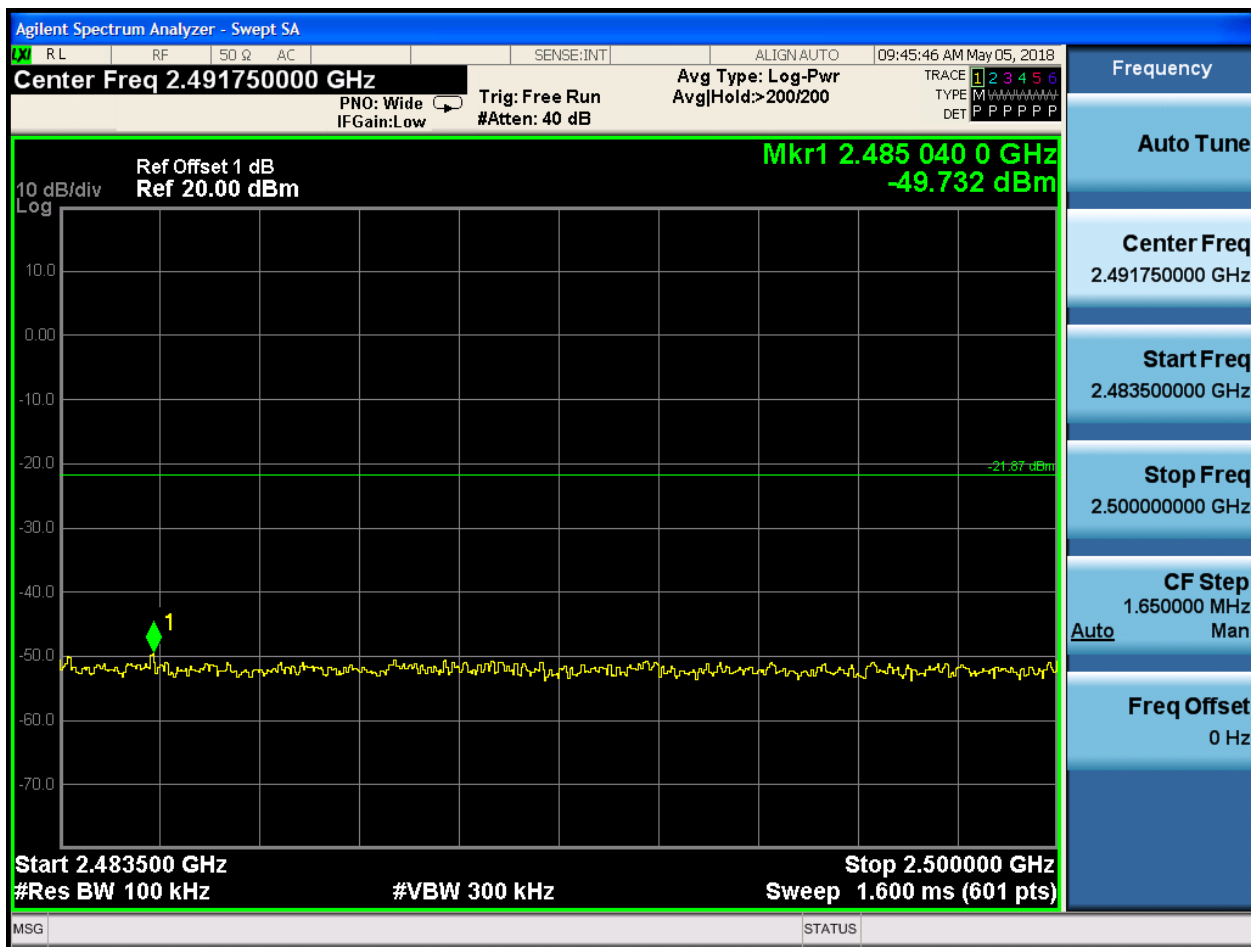
Puw:







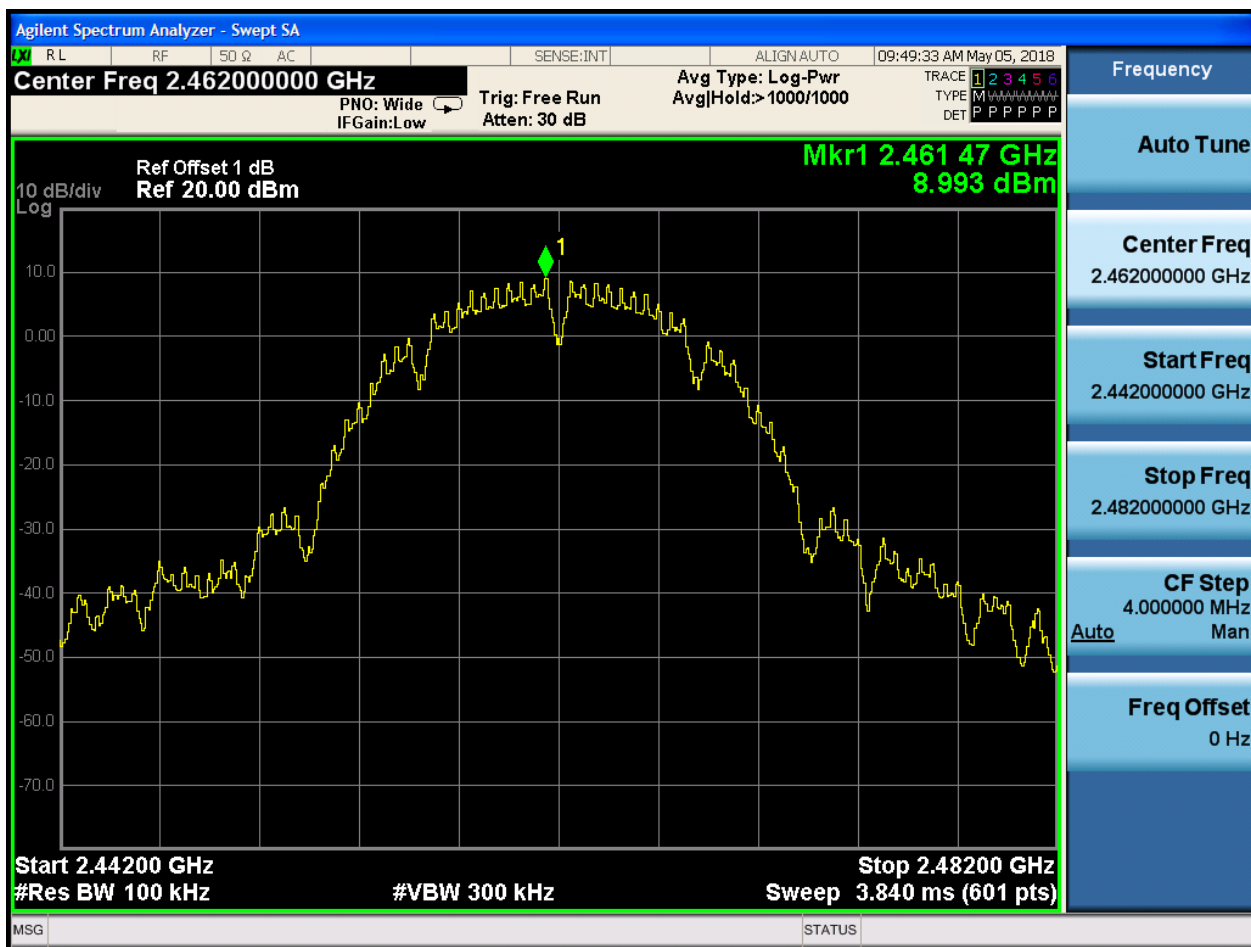






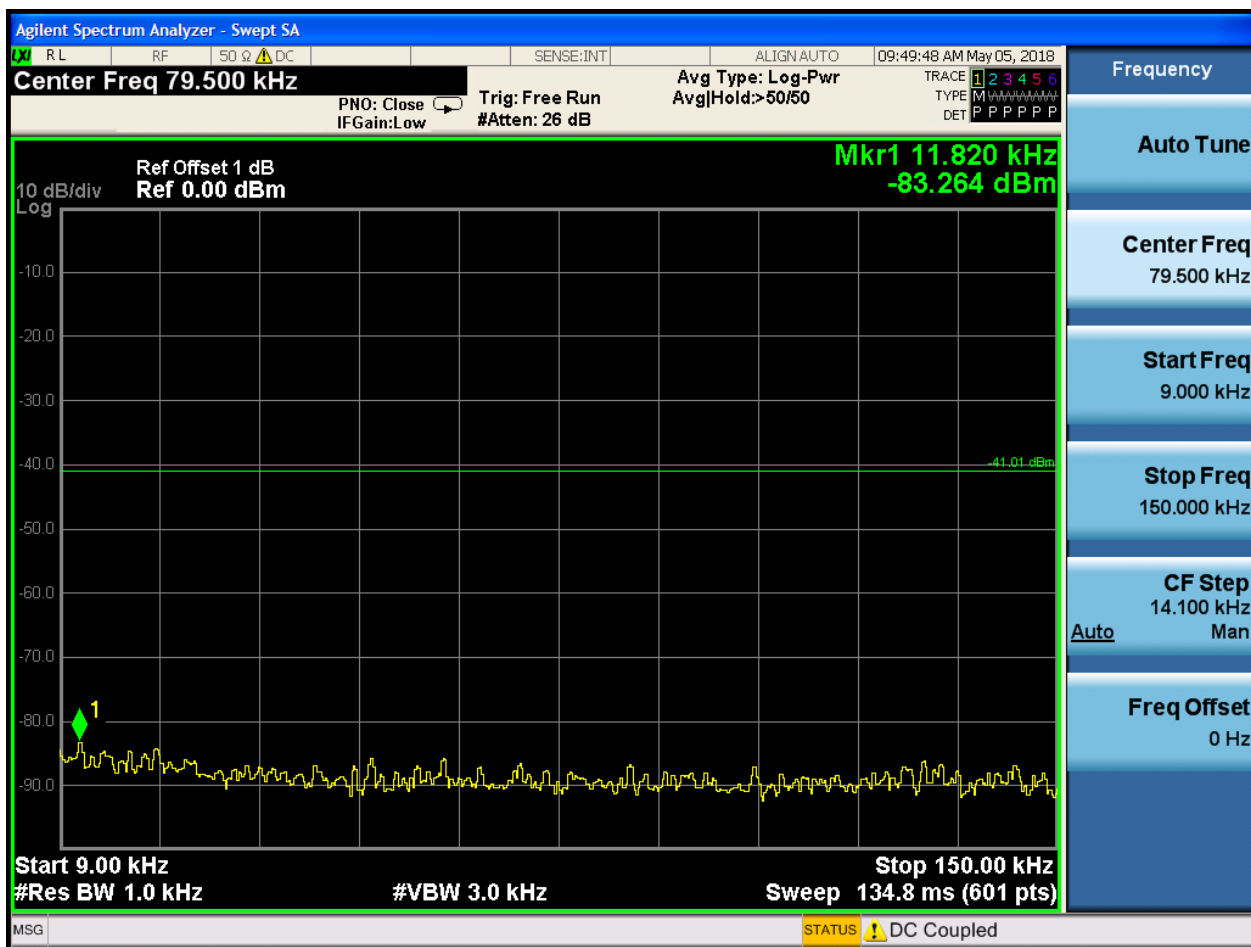
2.3 11B_H_2462@Ant 1

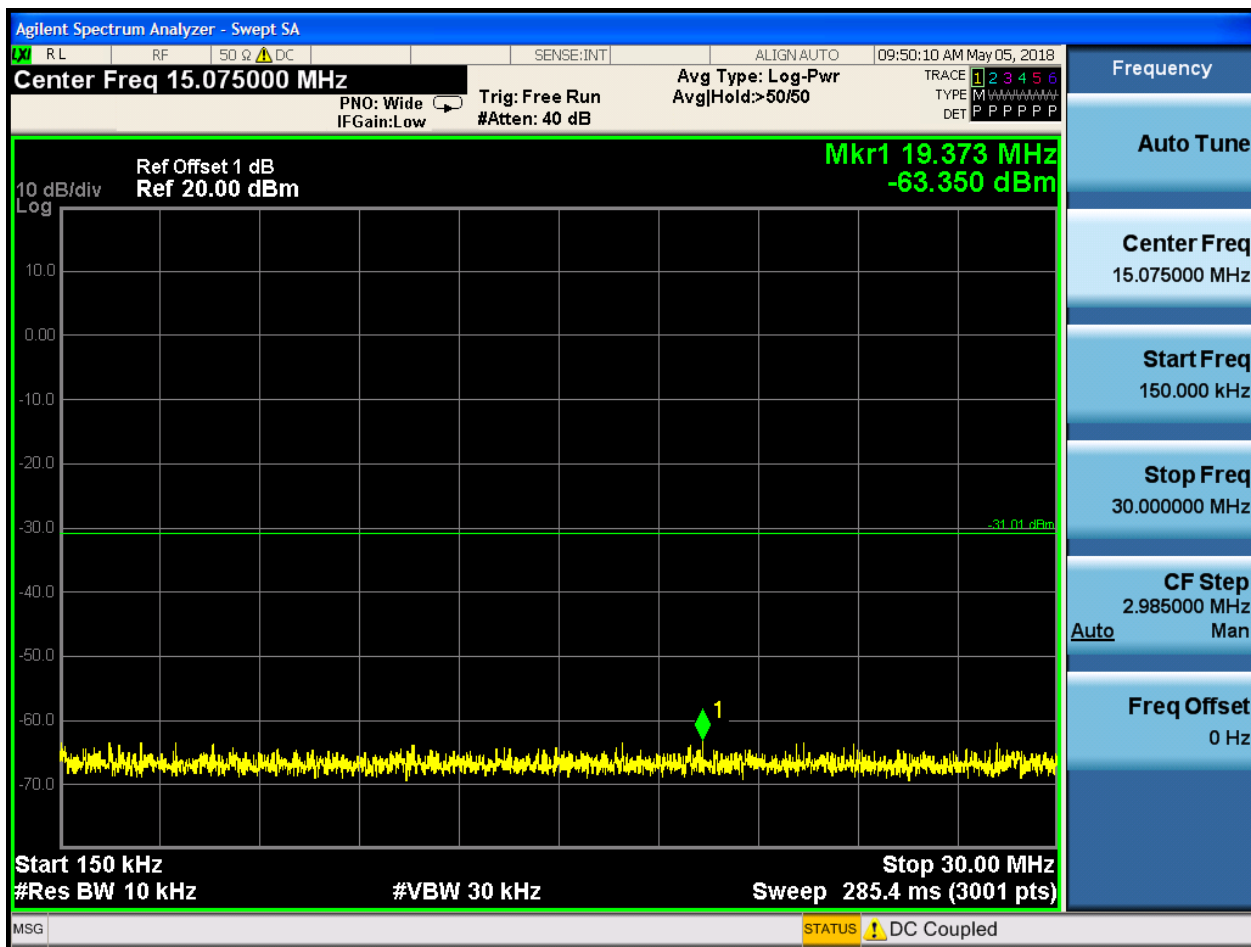
Pref:



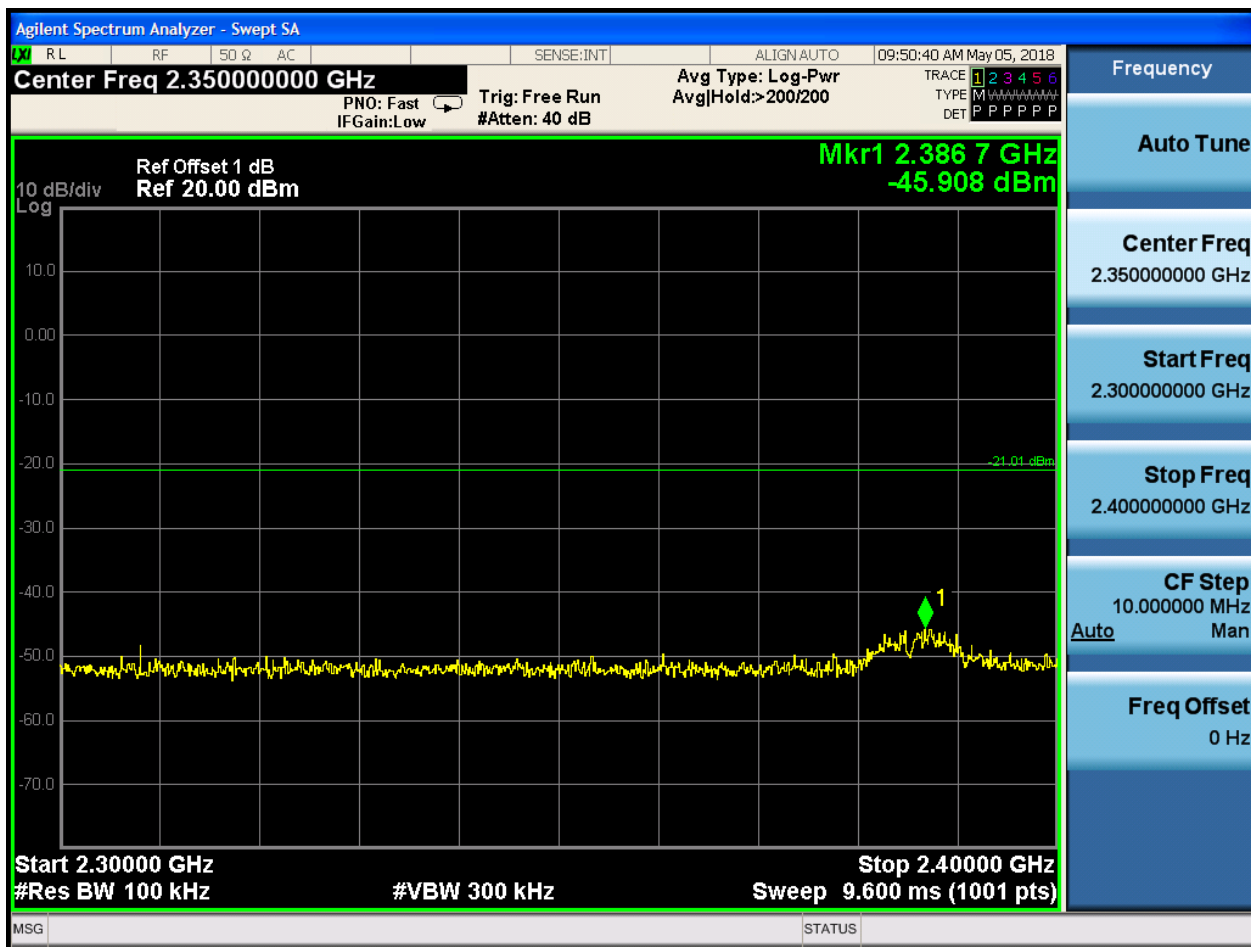


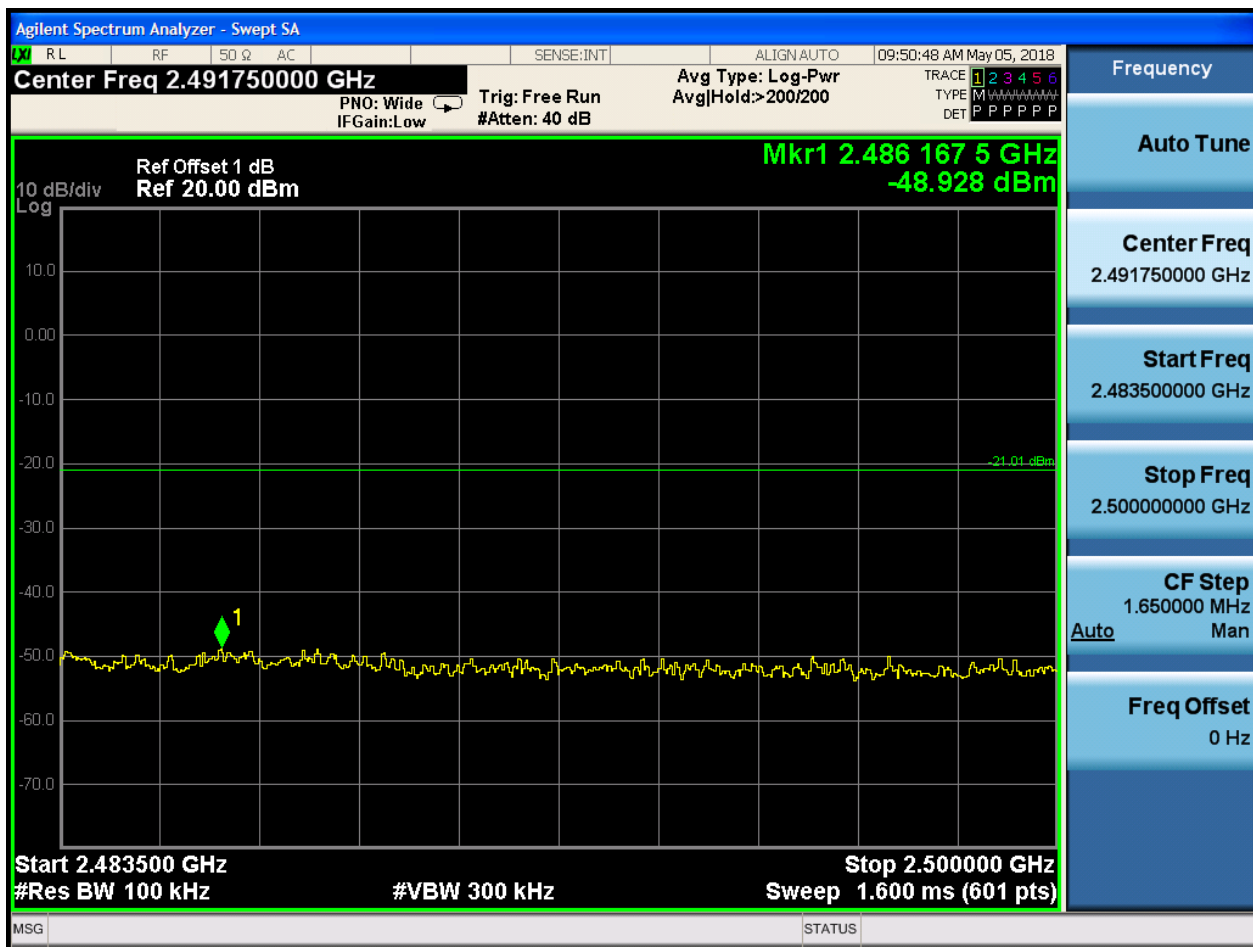
Puw:















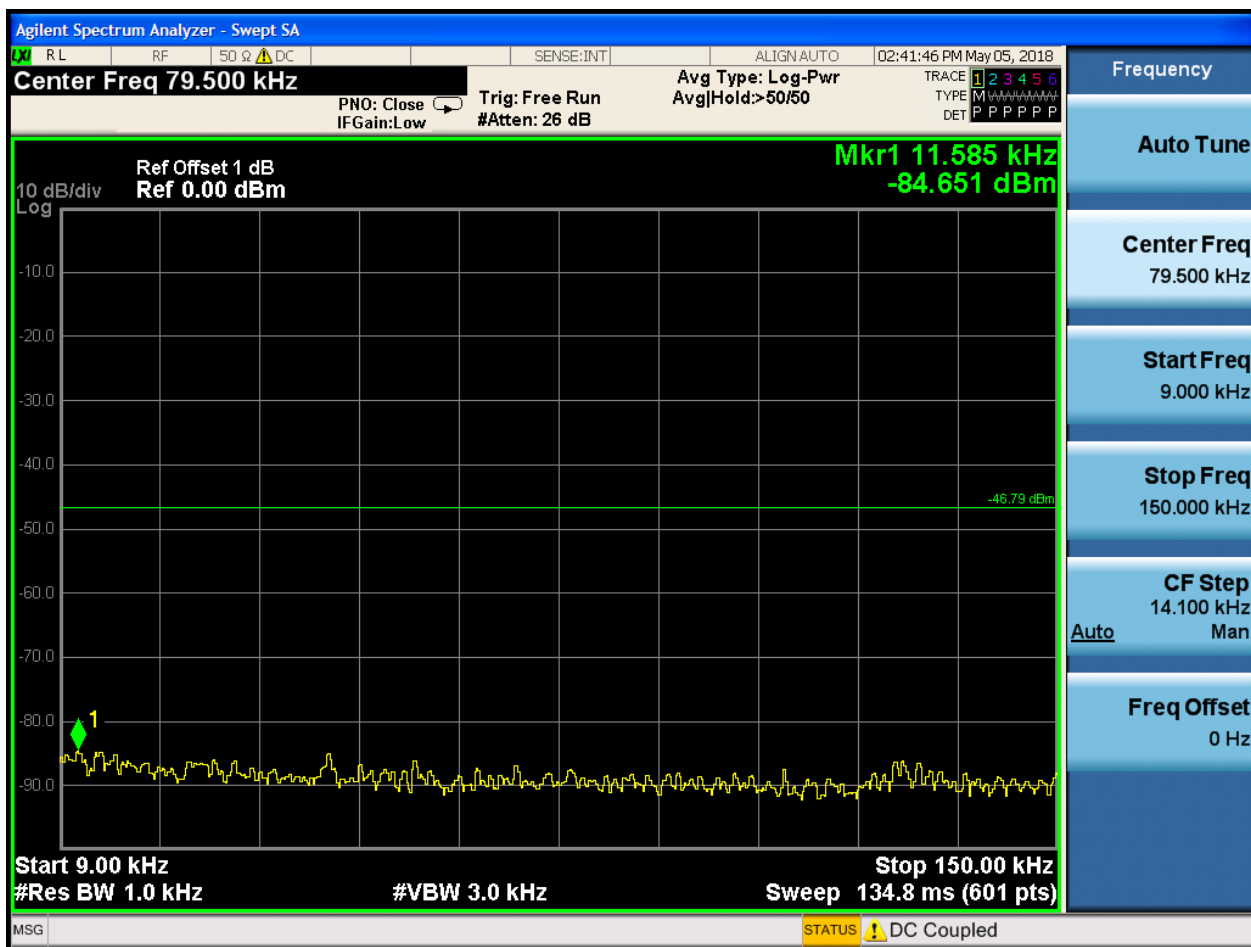
2.4 11G_L_2412@Ant 1

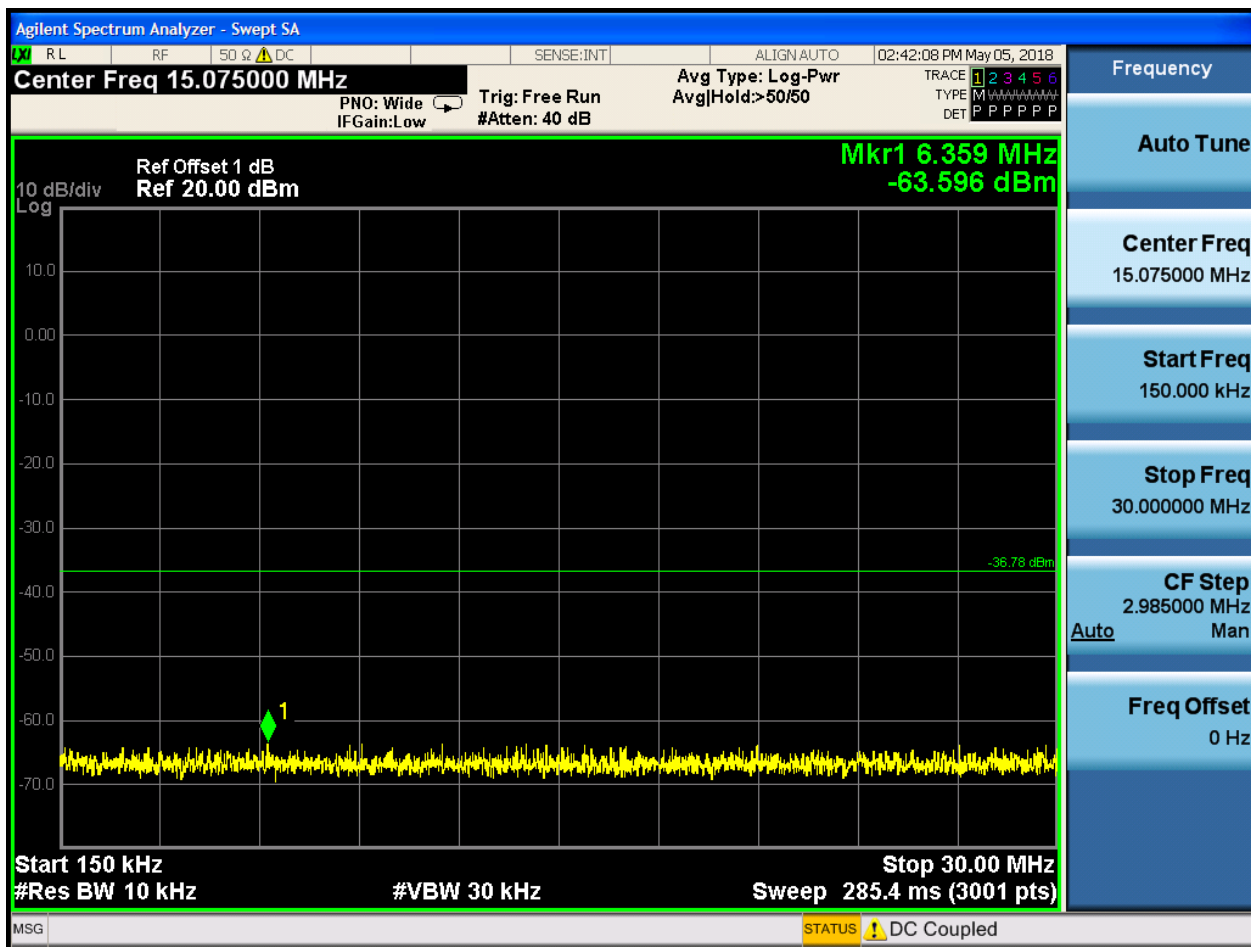
Pref:

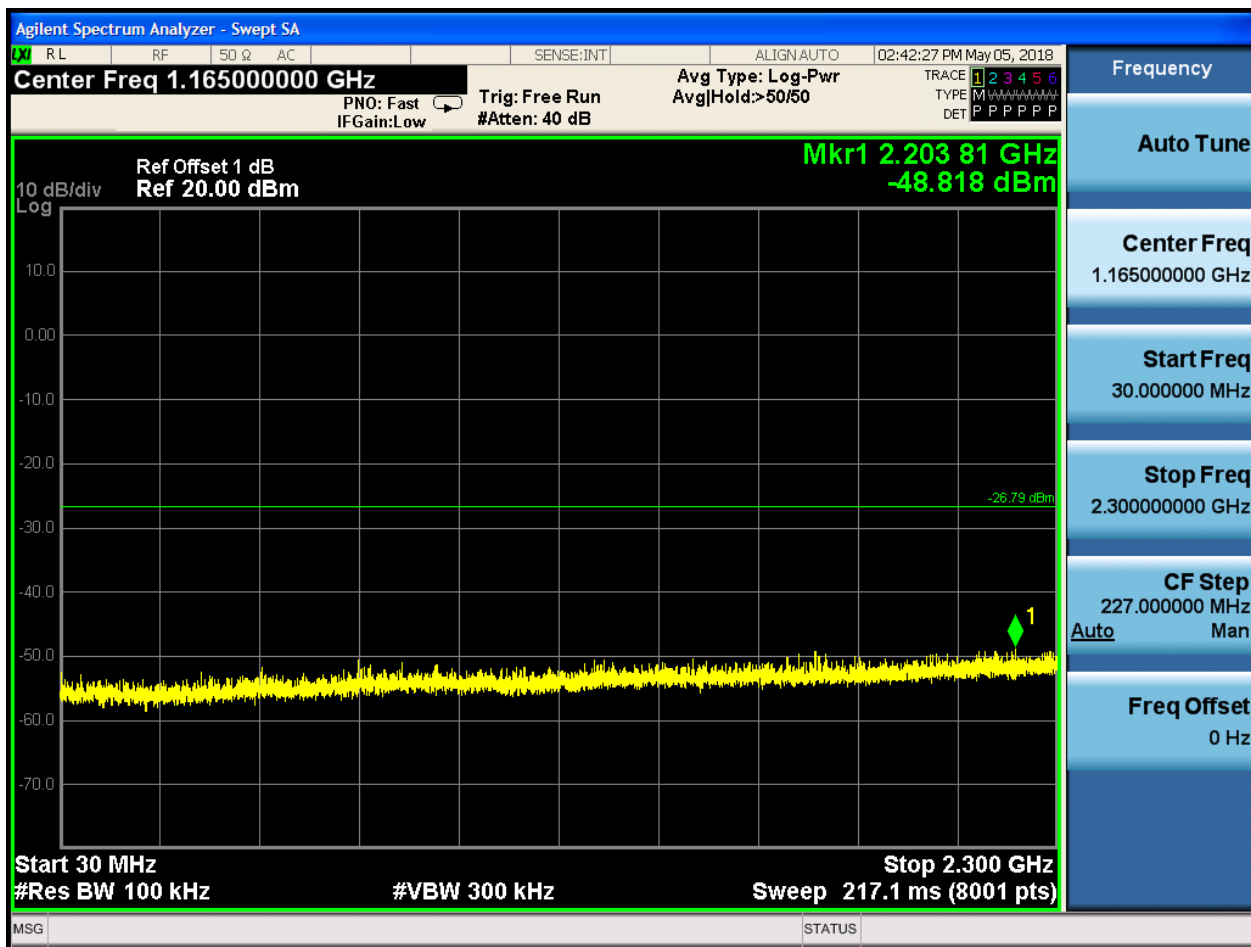


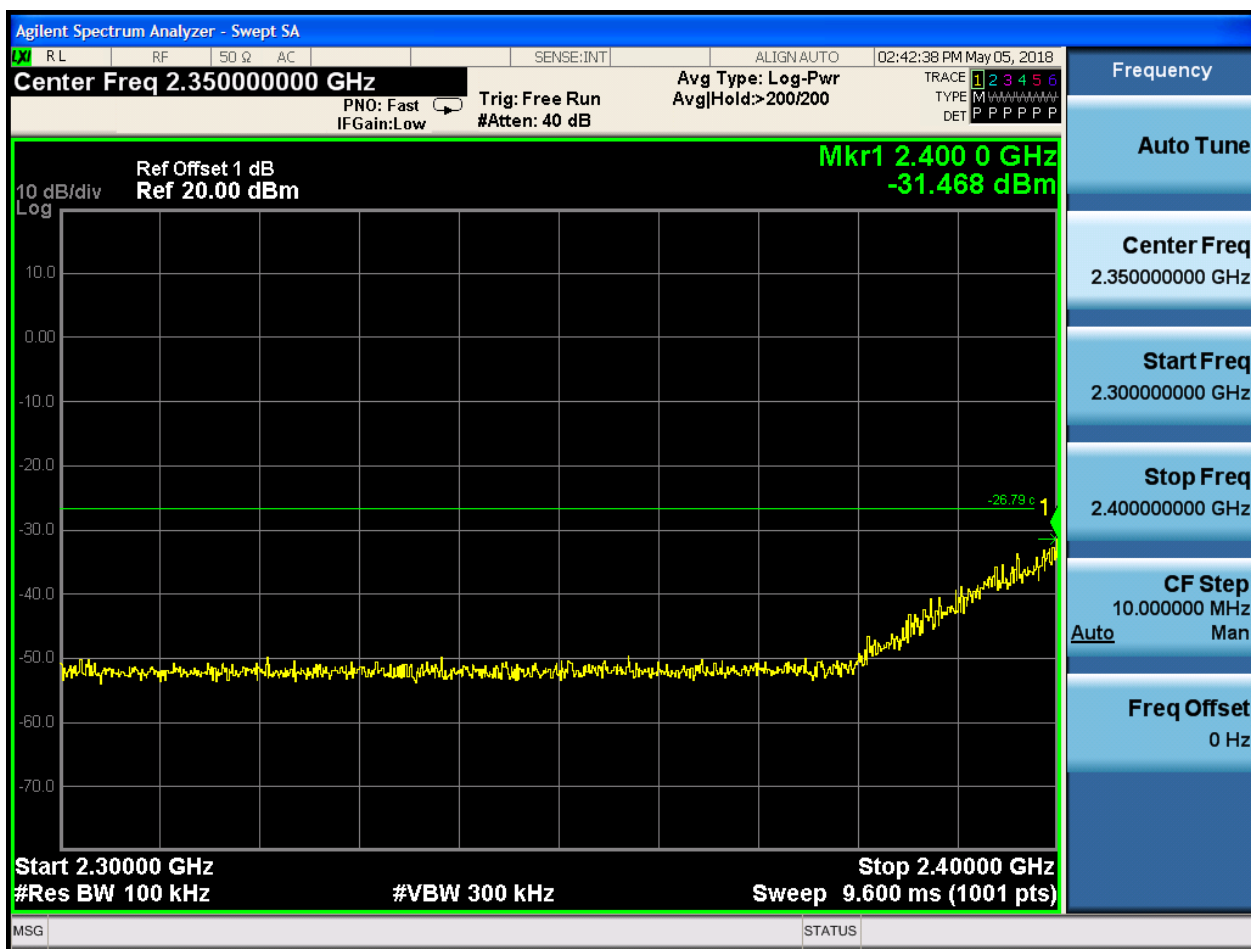


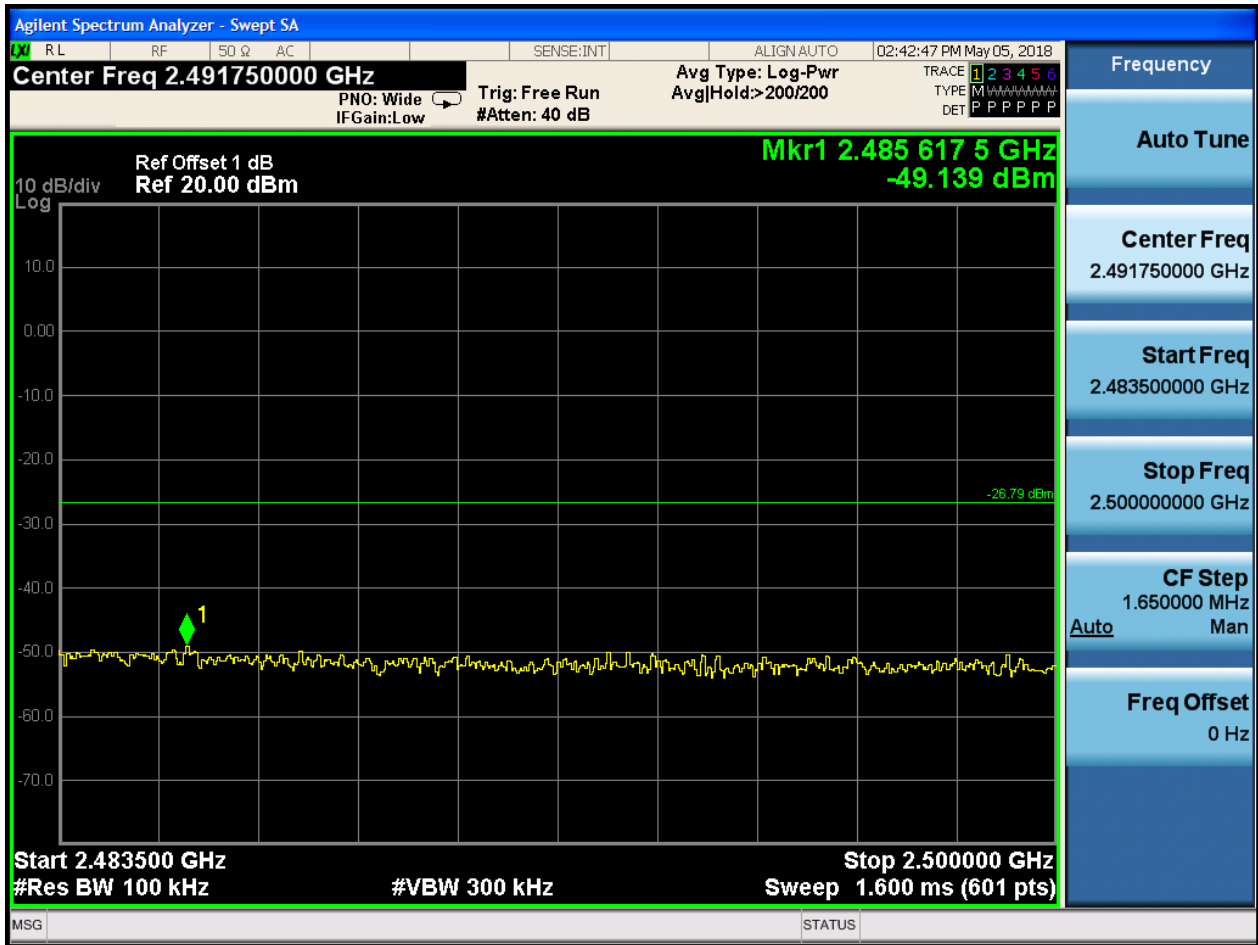
Puw:









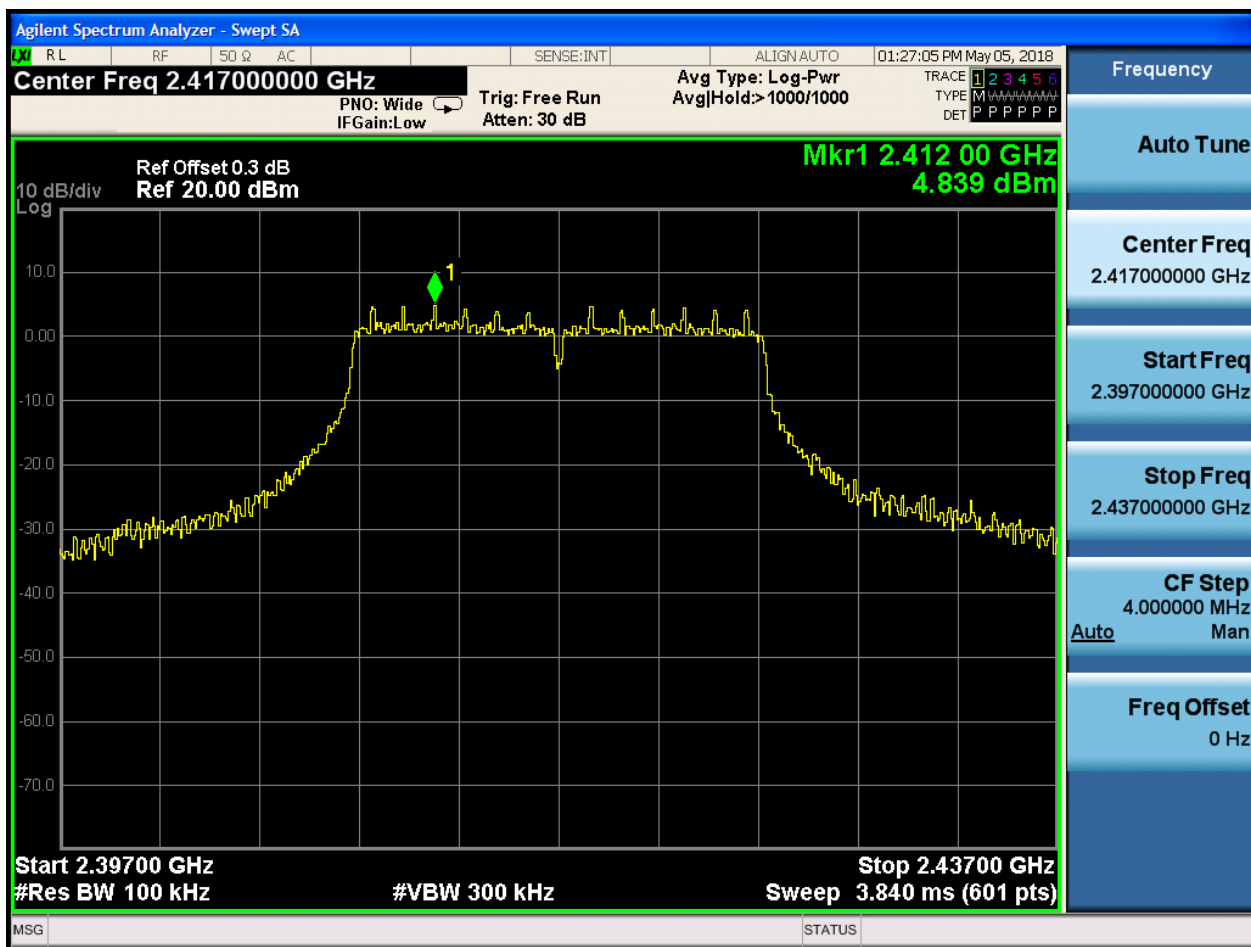






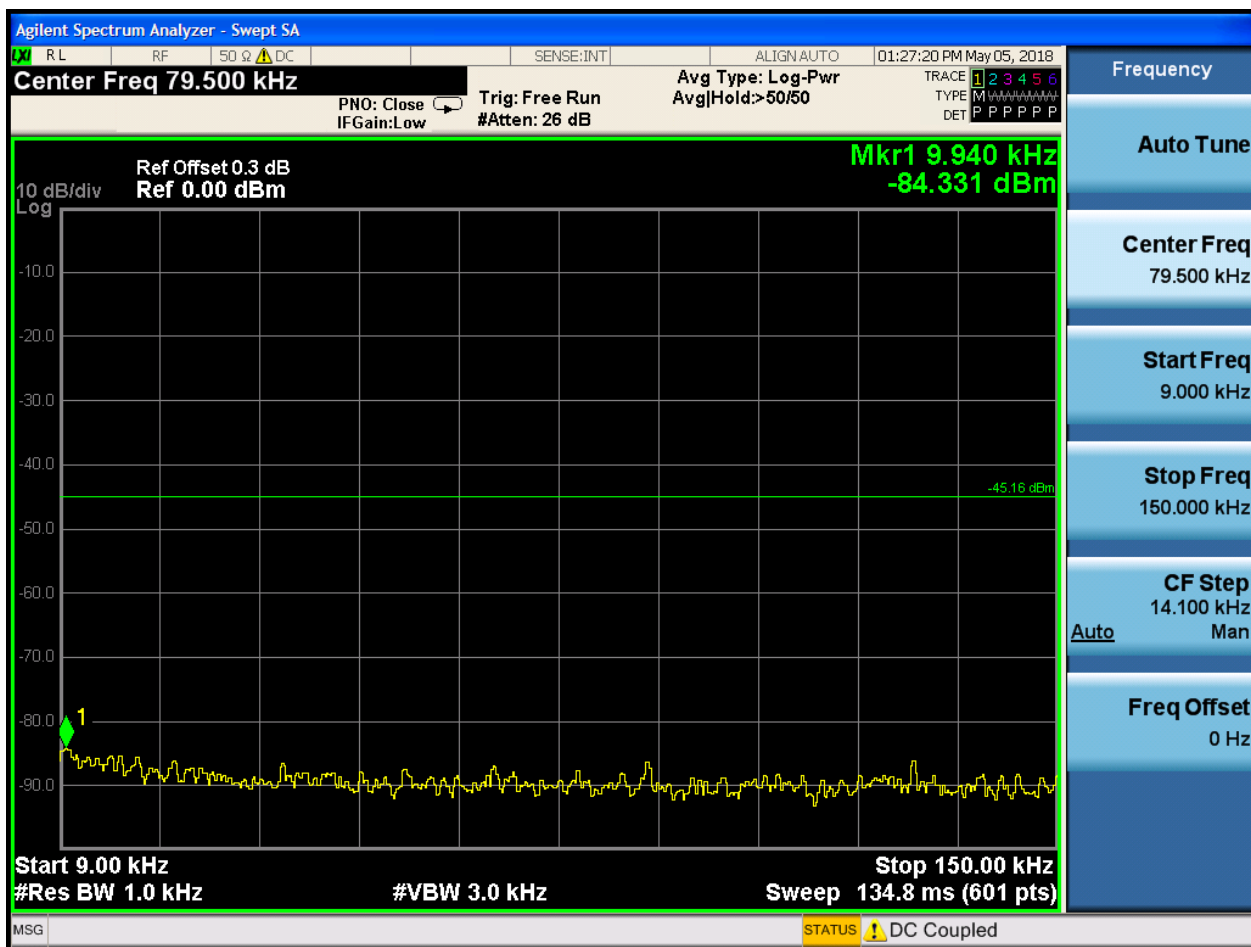
2.5 11G_L_2417@Ant 1

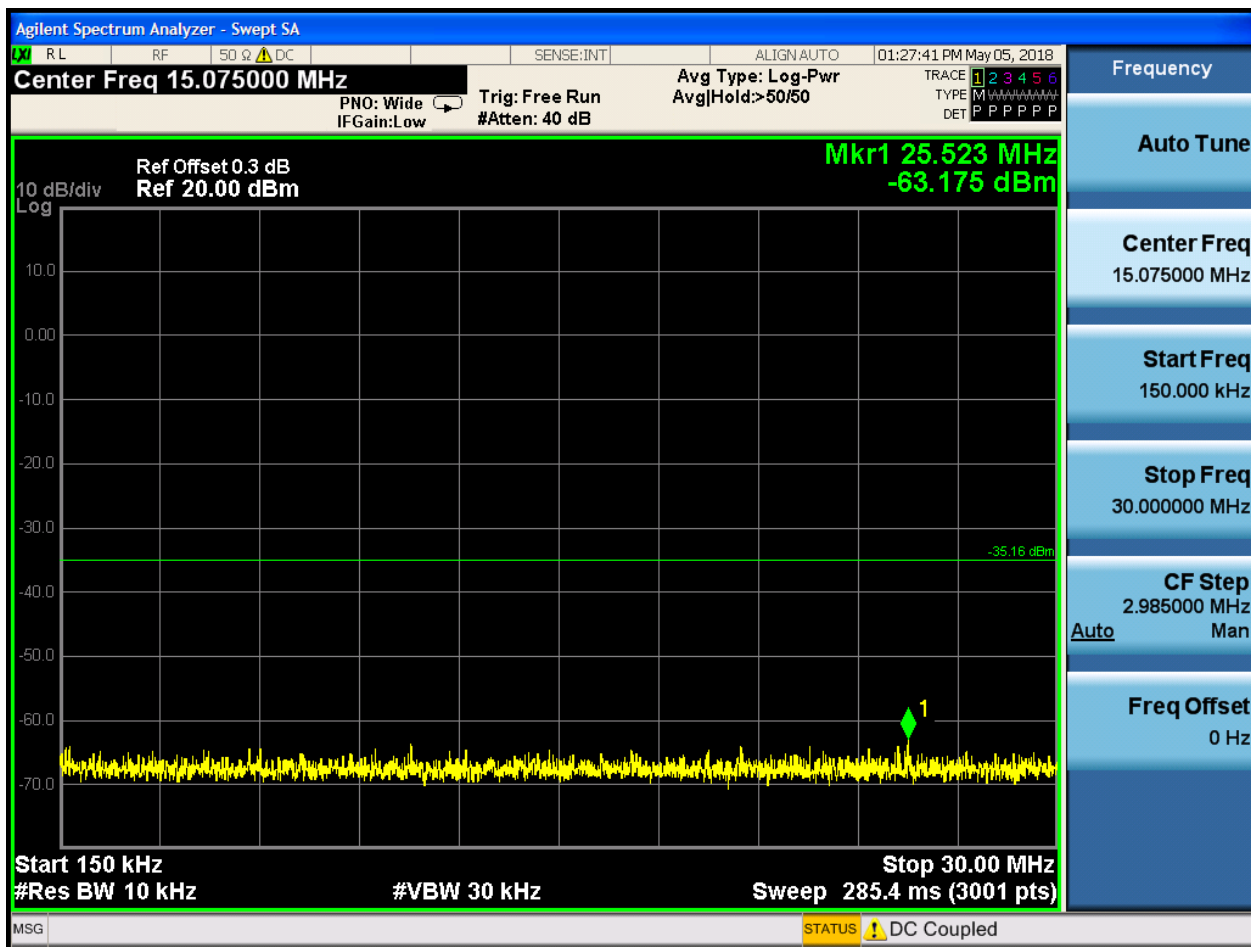
Pref:

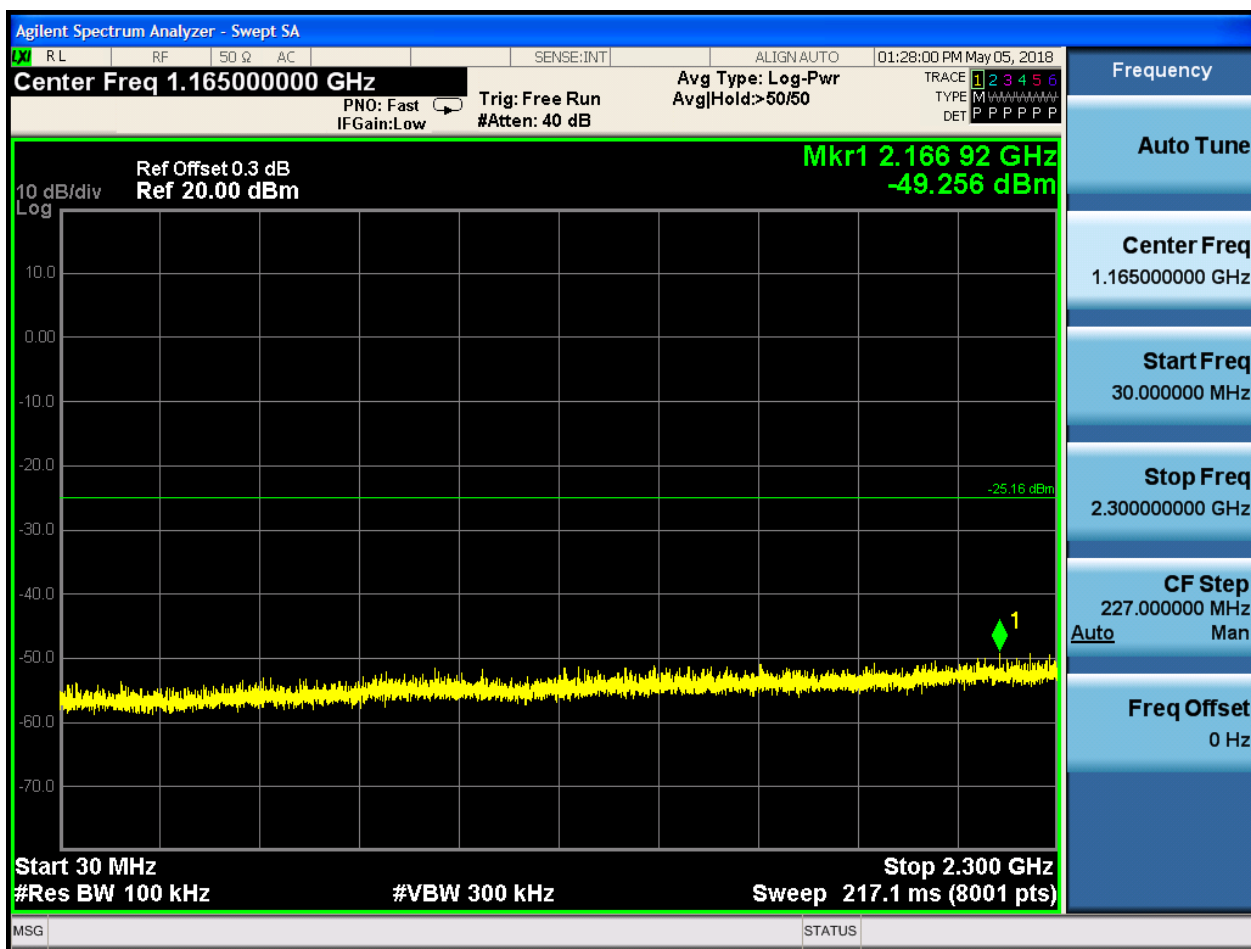


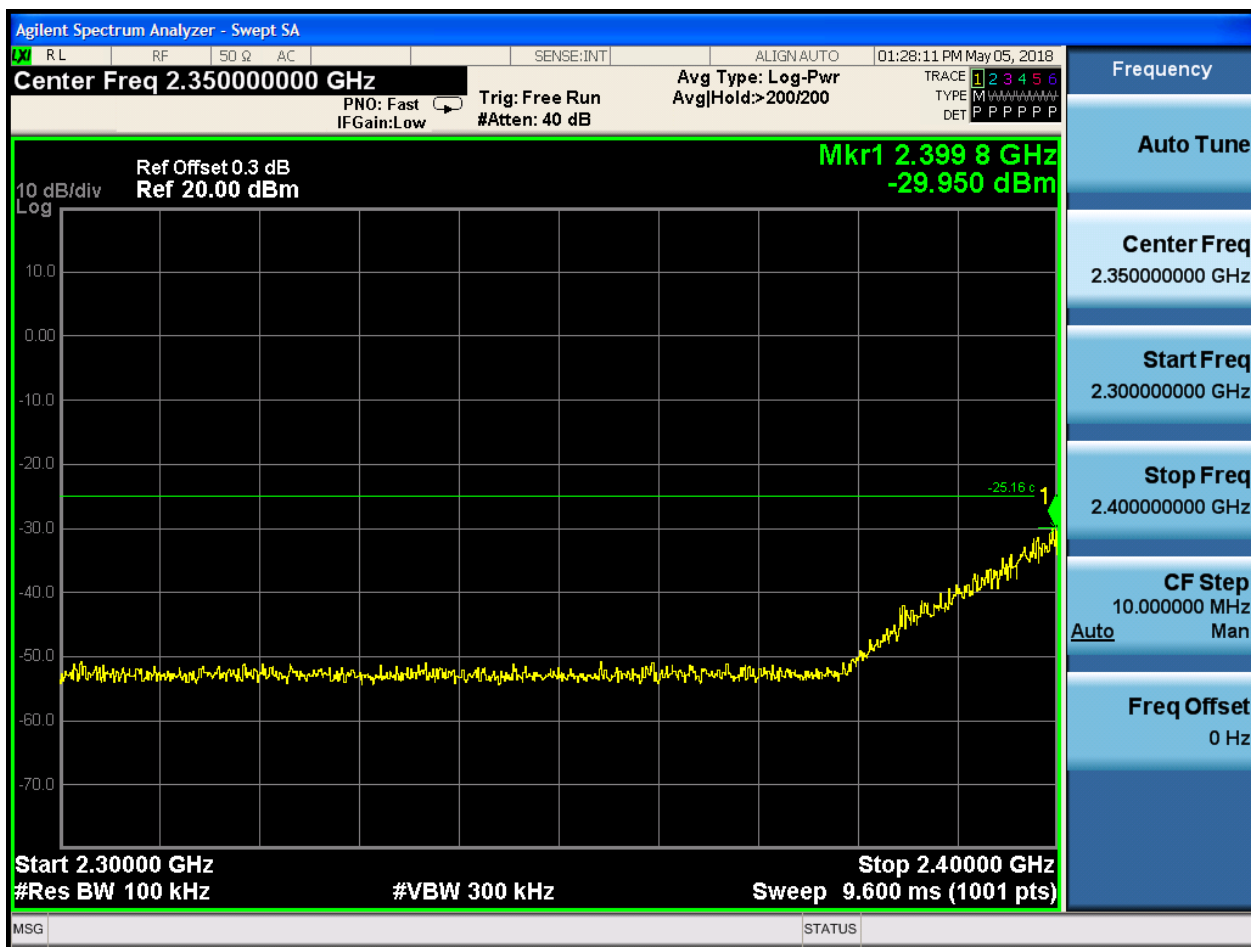


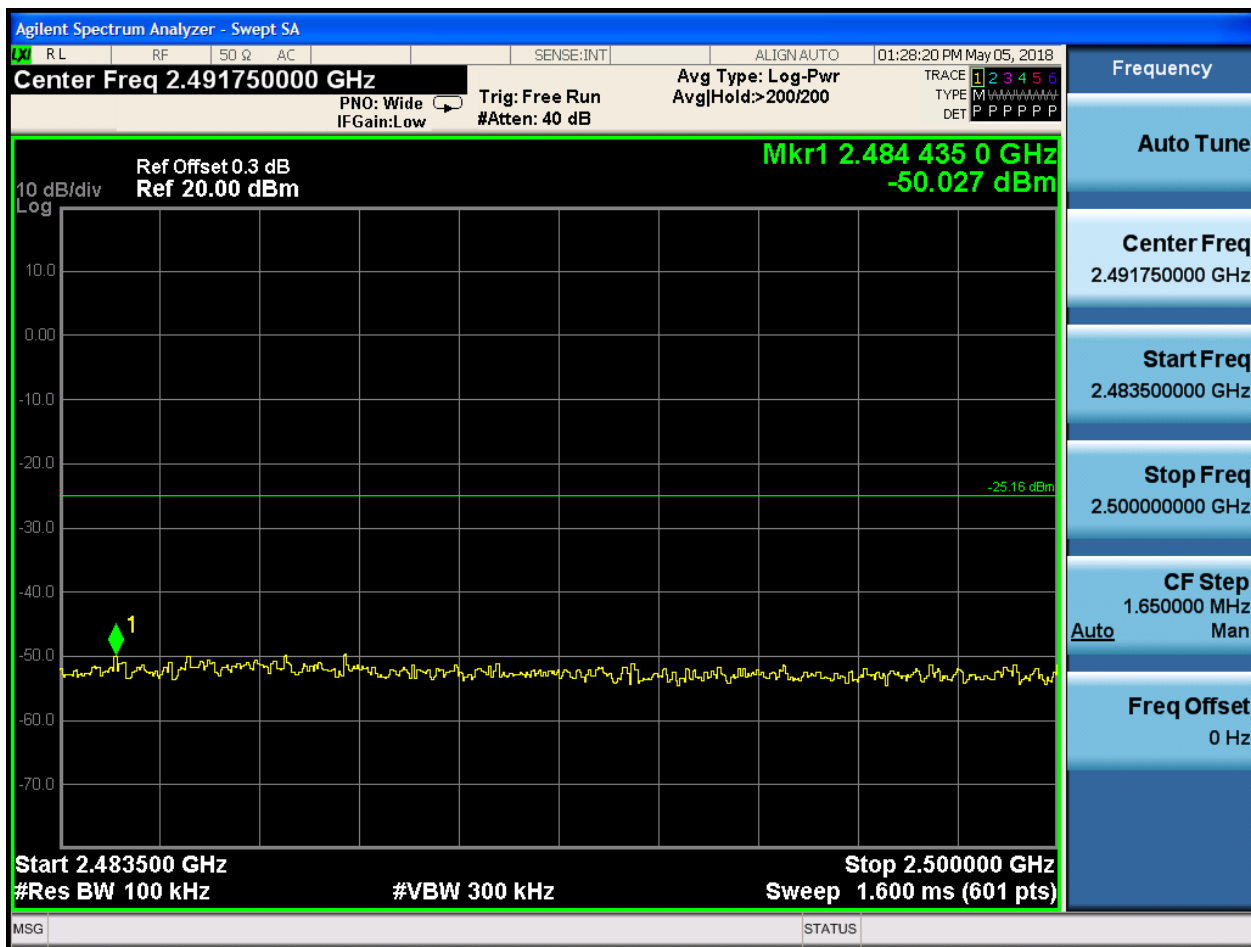
Puw:









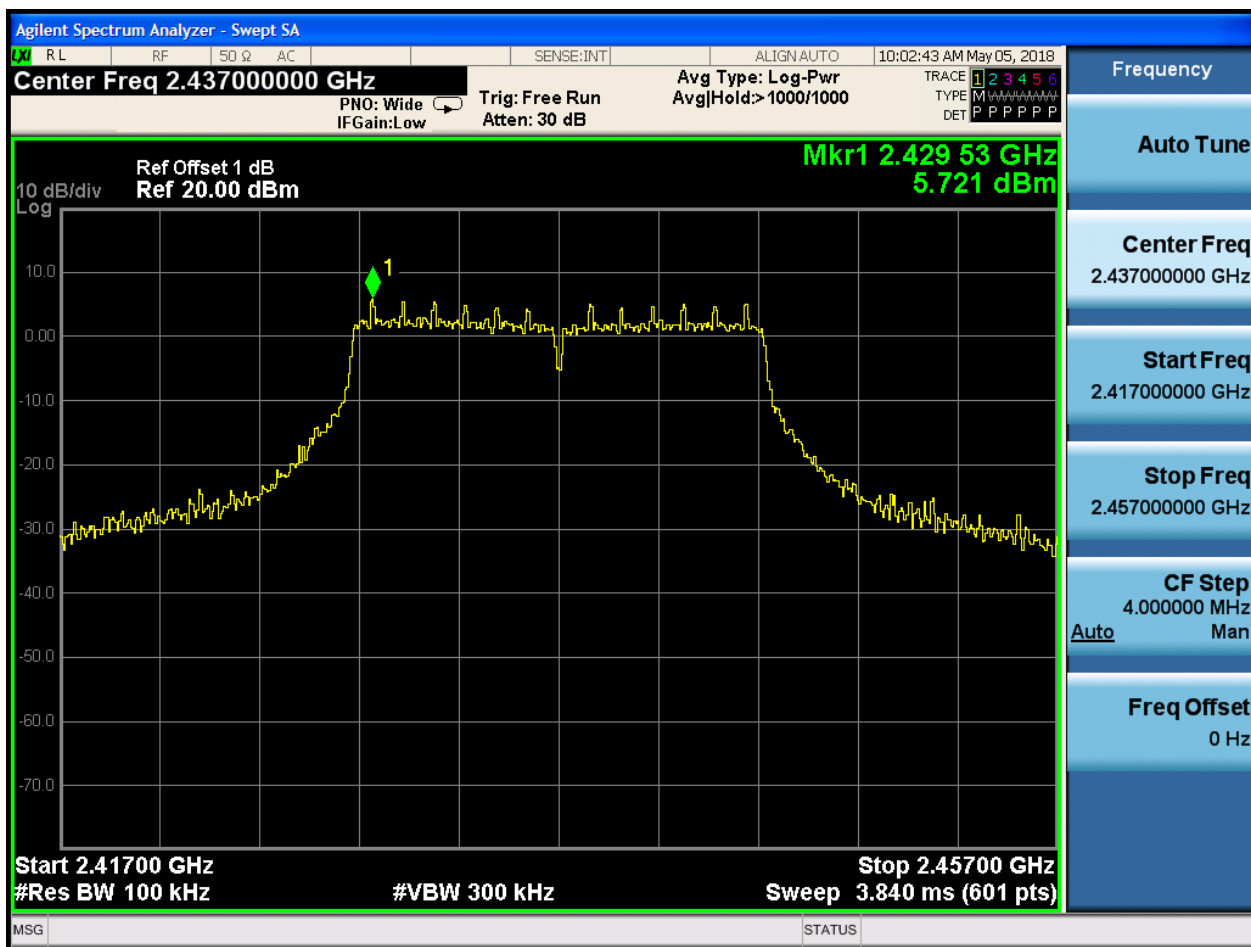






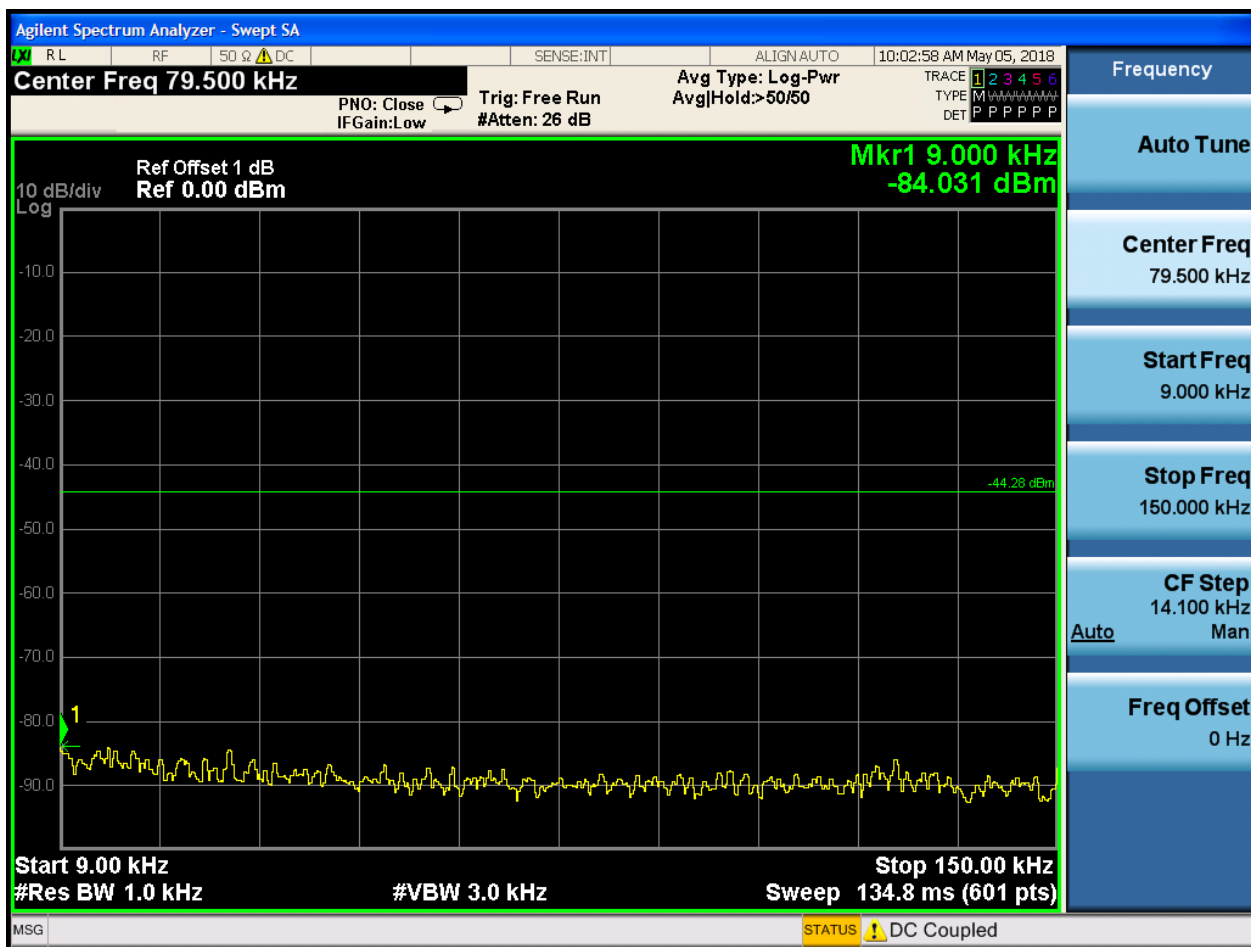
2.6 11G_M_2437@Ant 1

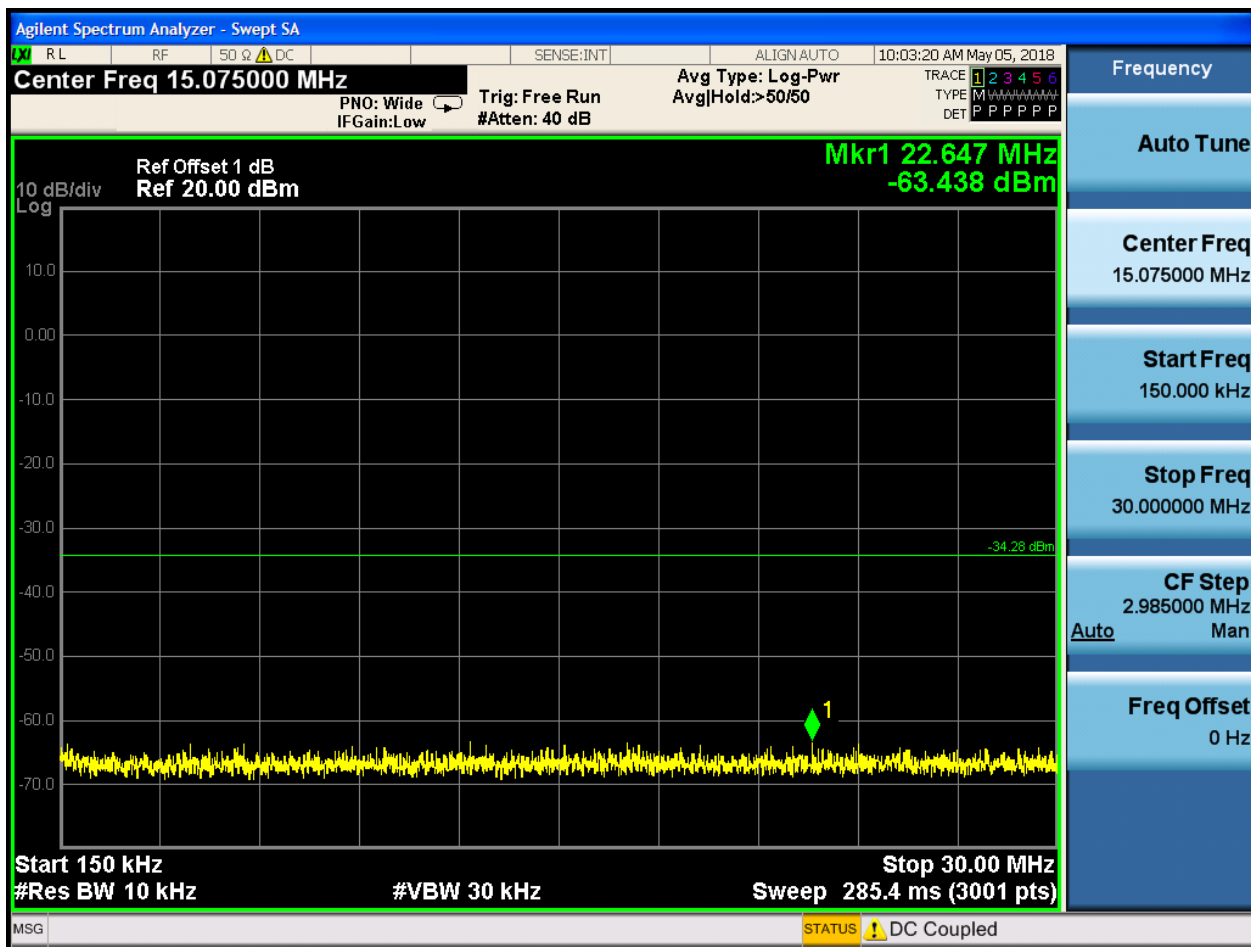
Pref:

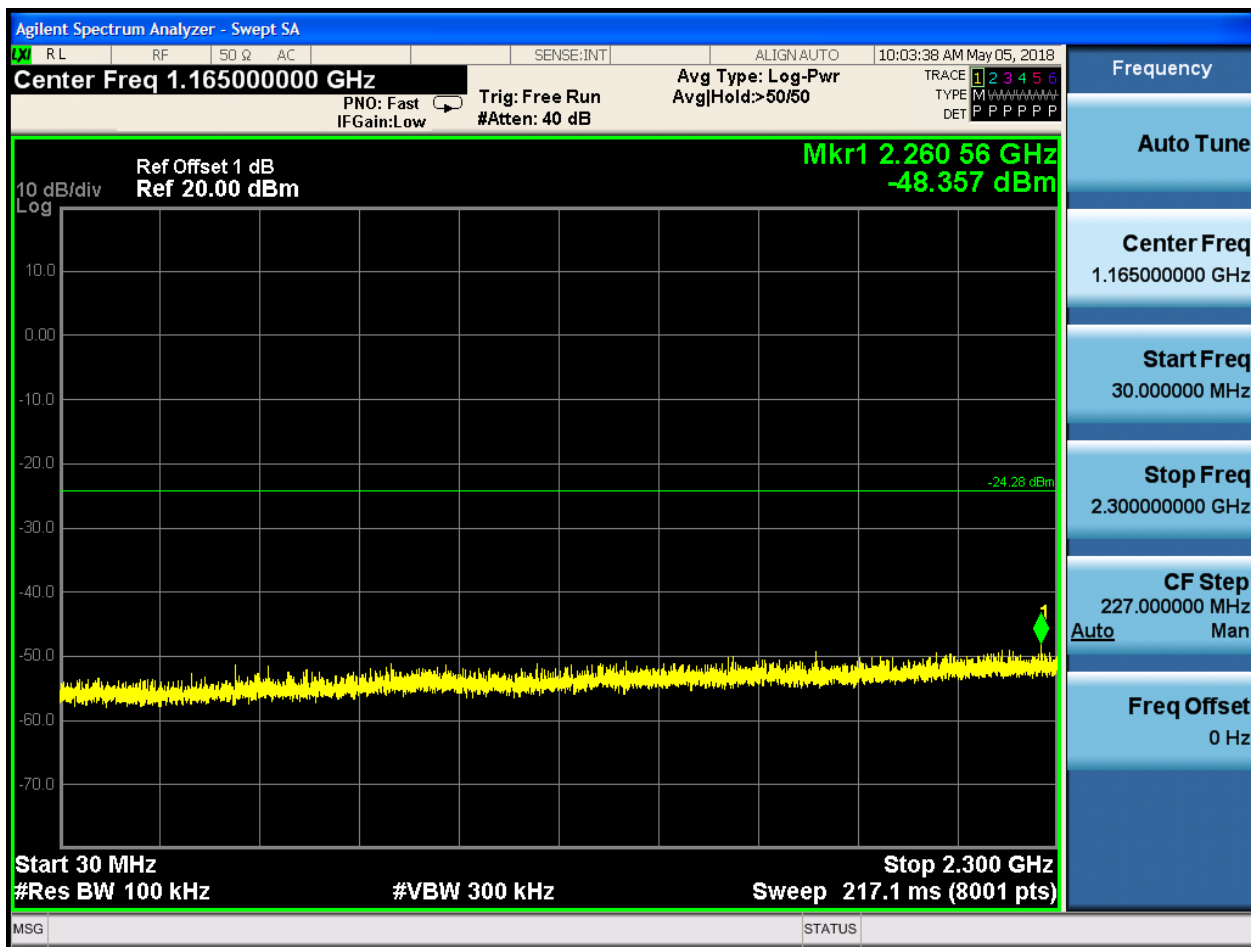


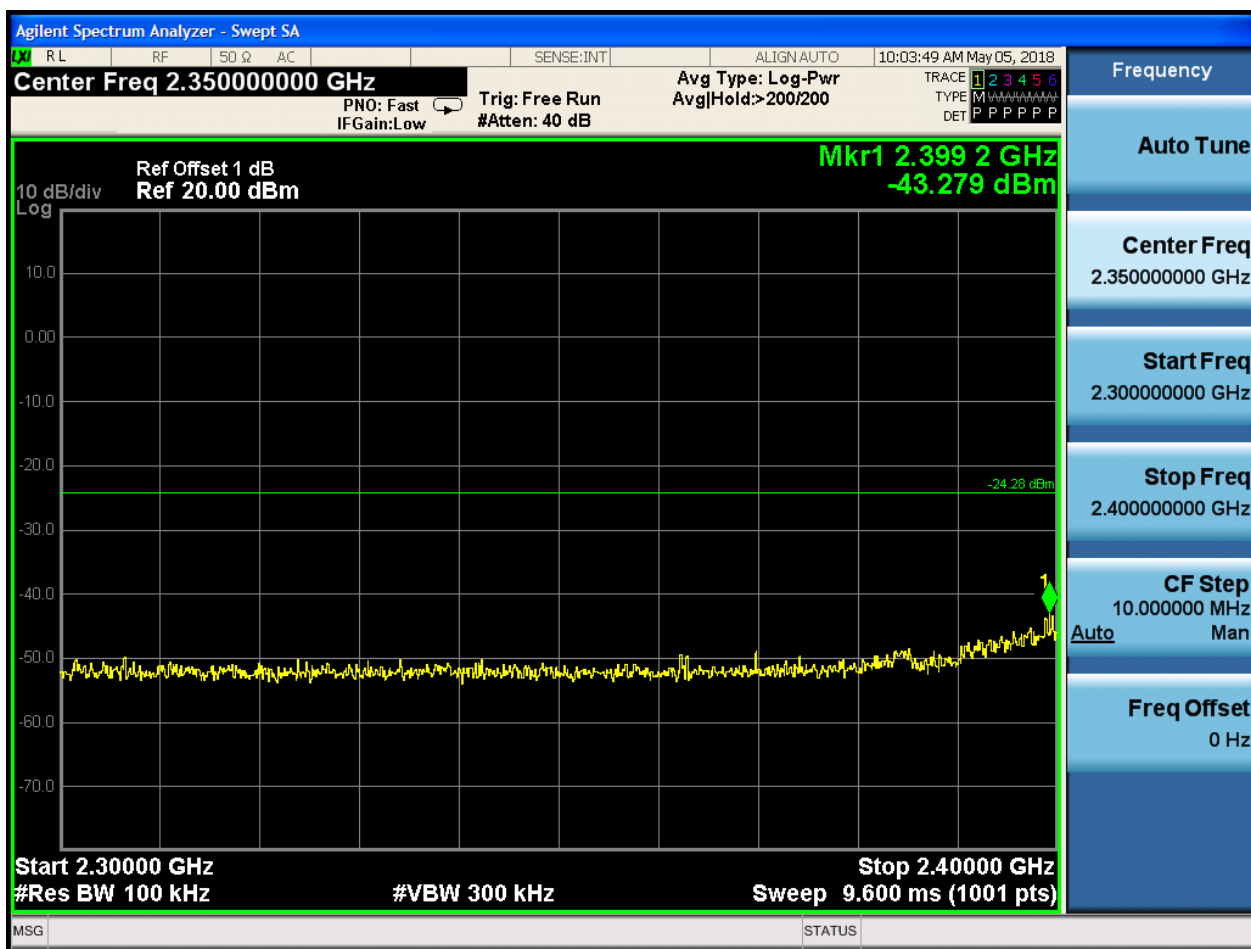


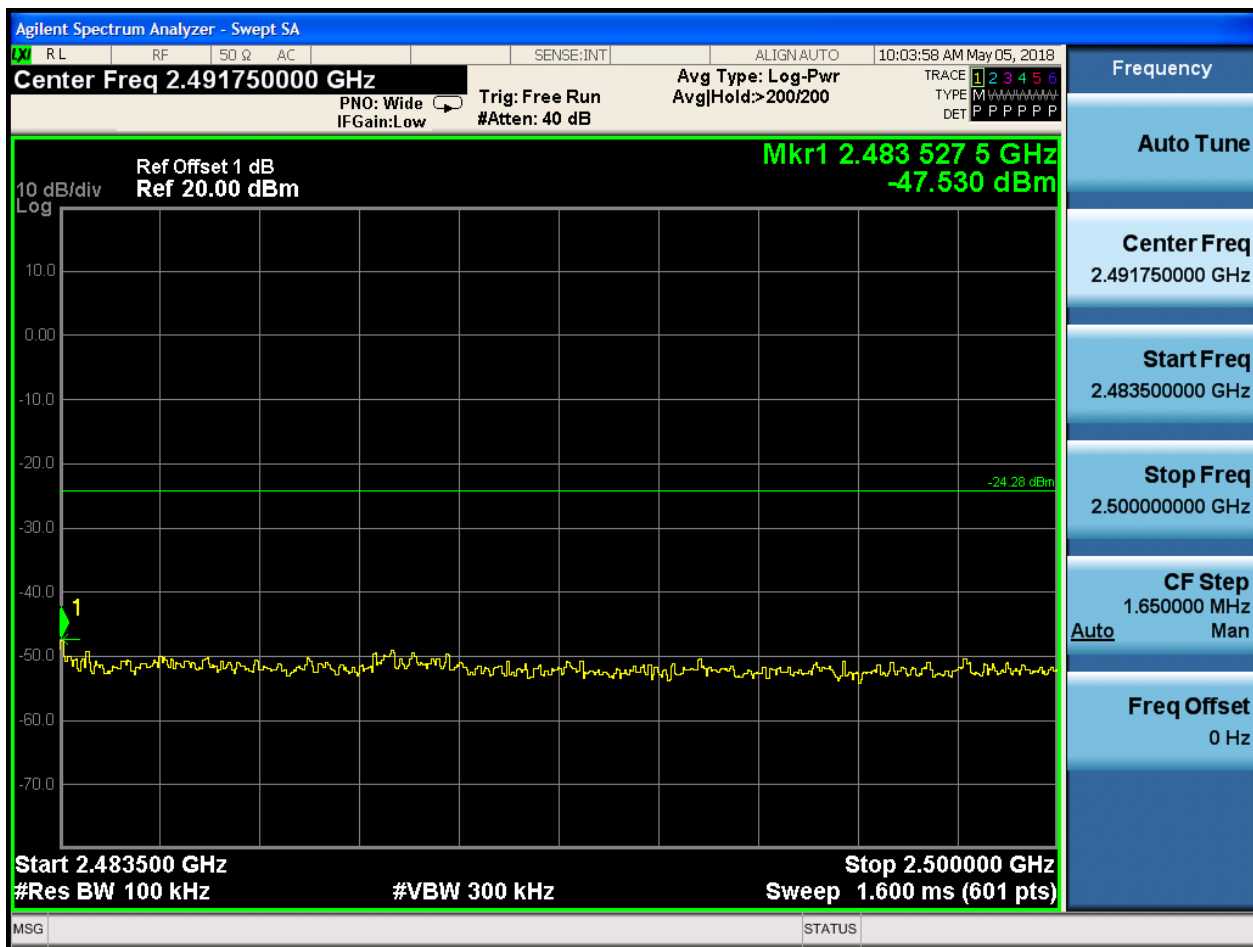
Puw:

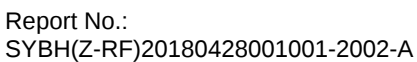








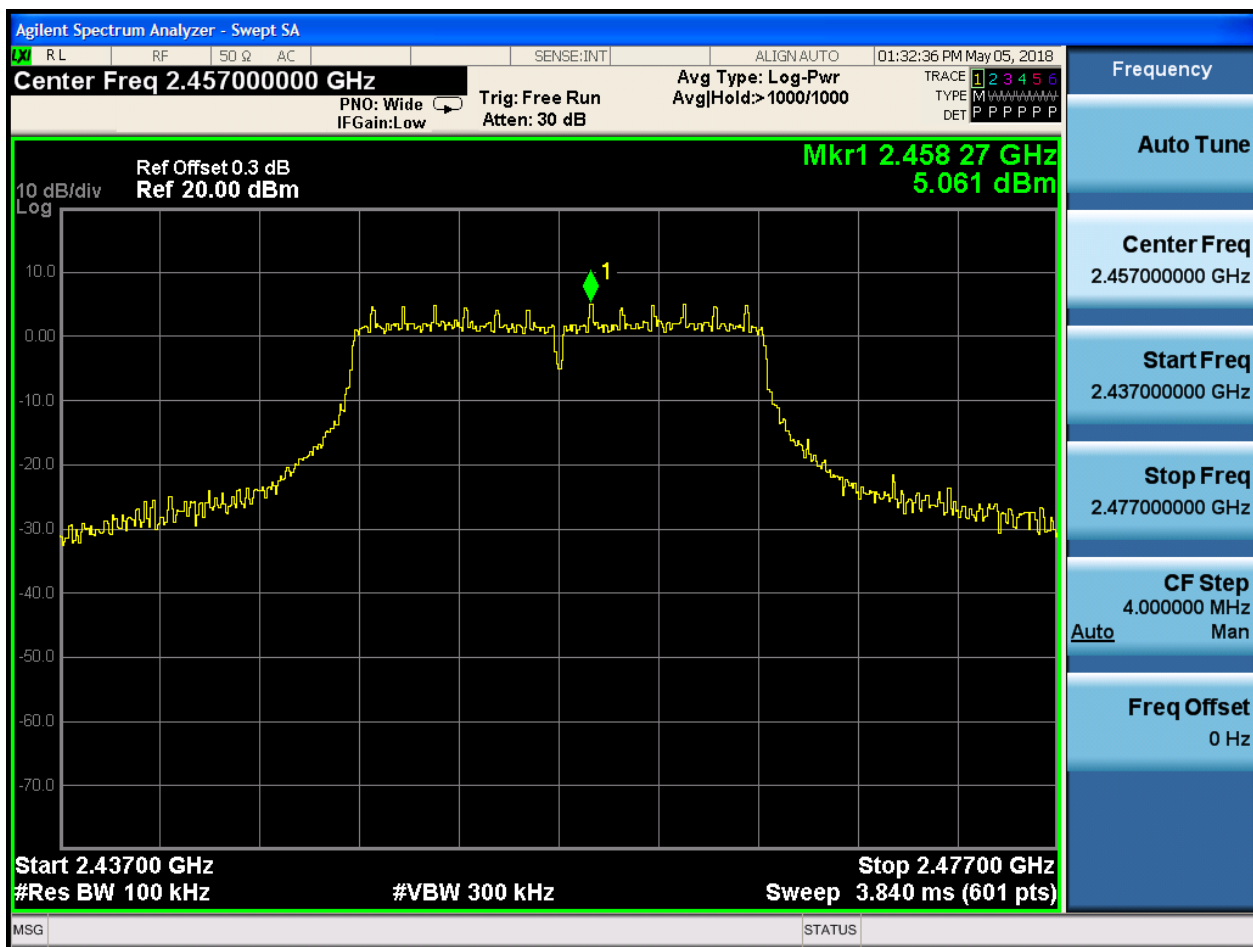






2.7 11G_H_2457@Ant 1

Pref:





Puw:

