



Appendix for Test report

Appendix A: DTS (6 dB) Bandwidth

In this document, the "DTS6dBBW" refers to the measured "DTS (6 dB) Bandwidth" value. In this Appendix, the "fc(DTS6dBBW)" refers to the centre of the measured "DTS6dBBW". The introduction of the "fc(DTS6dBBW)" is due to that other measurements use it as the spectrum analyzer setting.

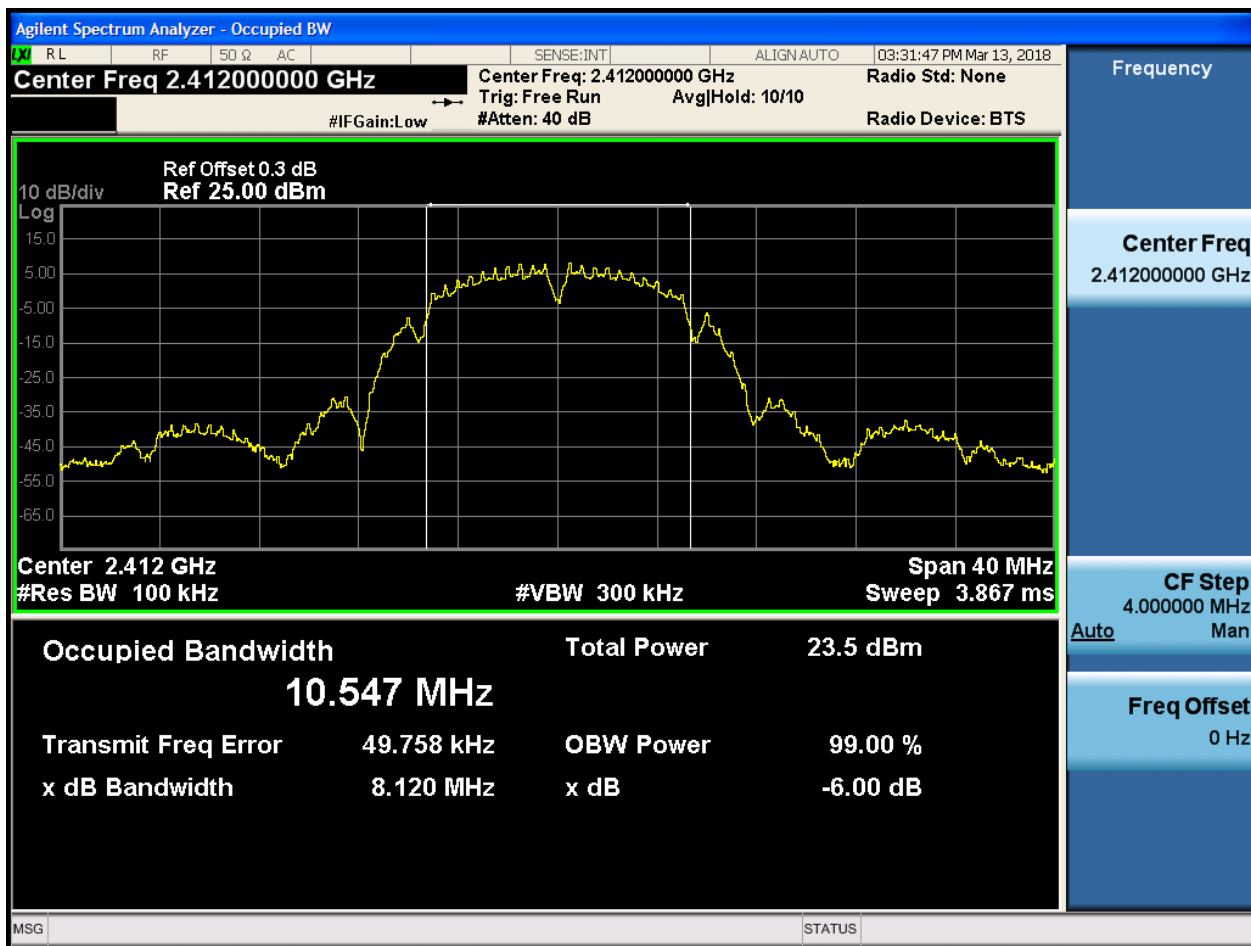
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	8.12	pass
11B	M	2437	Ant 1	8.62	pass
11B	H	2462	Ant 1	8.10	pass
11G	L	2412	Ant 1	16.40	pass
11G	M	2437	Ant 1	16.40	pass
11G	H	2462	Ant 1	16.41	pass
11N20	L	2412	Ant 1	17.61	pass
11N20	M	2437	Ant 1	17.61	pass
11N20	H	2462	Ant 1	17.61	pass
11N40	L	2422	Ant 1	35.42	pass
11N40	M	2437	Ant 1	35.61	pass
11N40	H	2452	Ant 1	35.16	pass

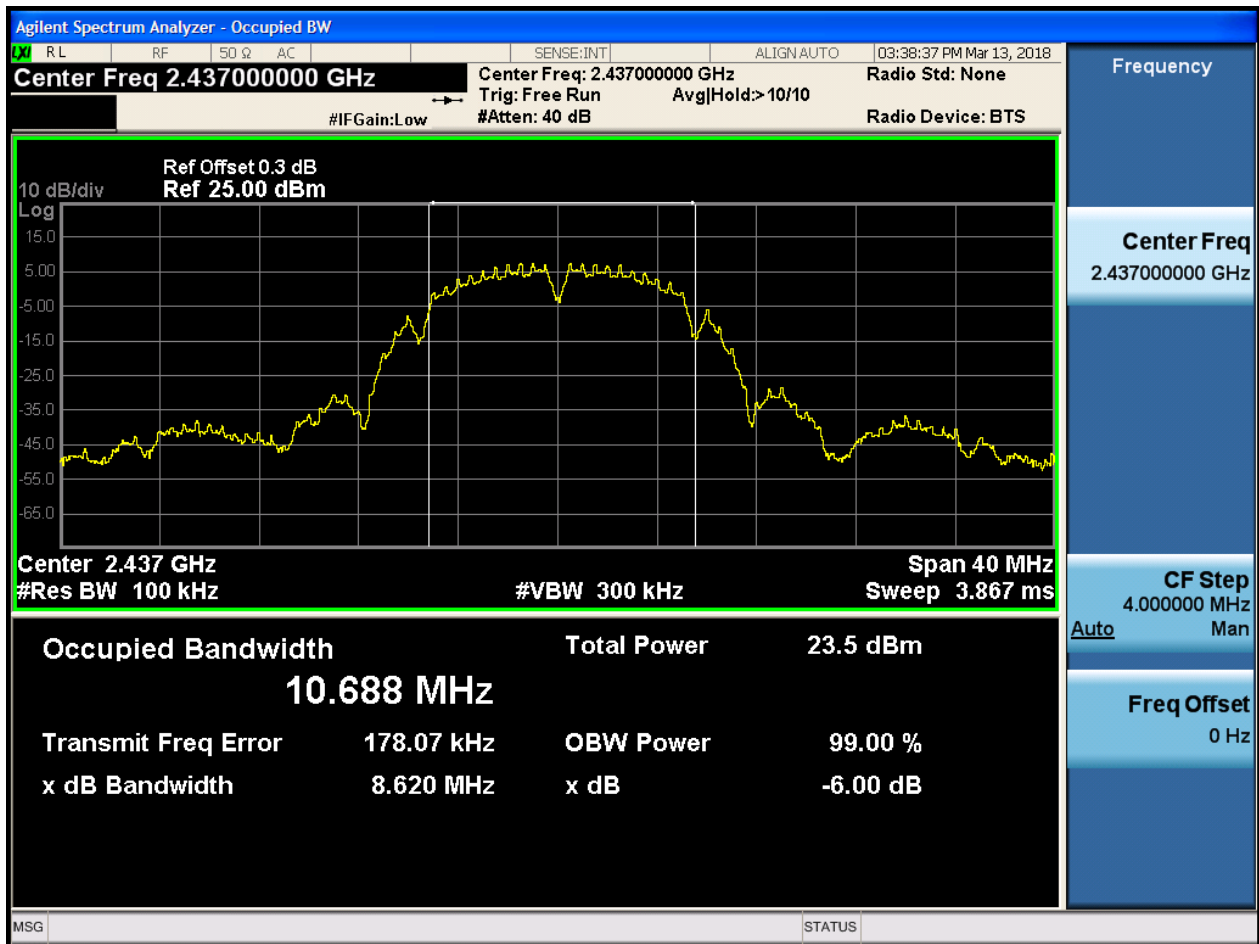
Part II - Test Plots

2.1 11B_L@Ant 1



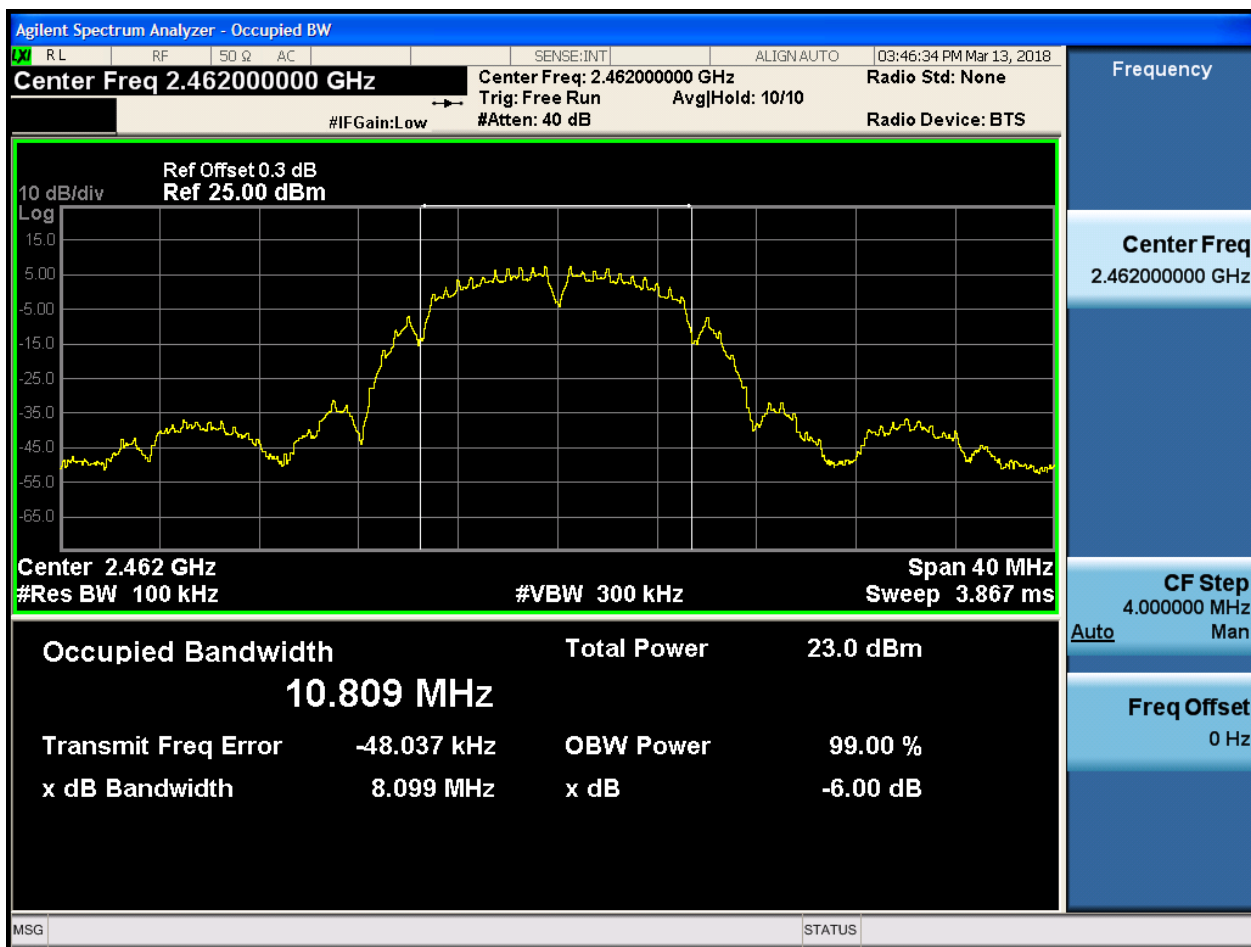


2.2 11B_M@Ant 1



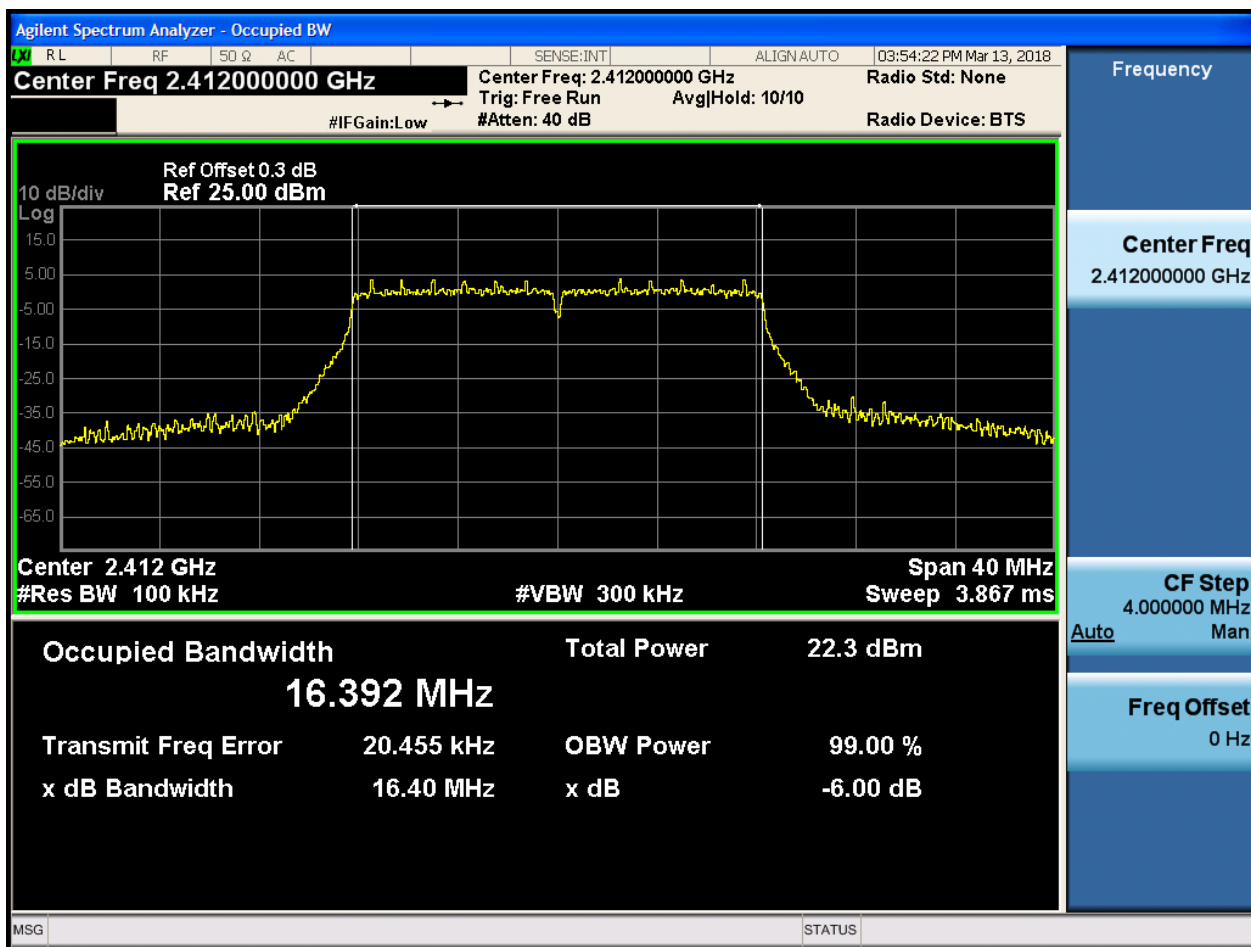


2.3 11B_H@Ant 1



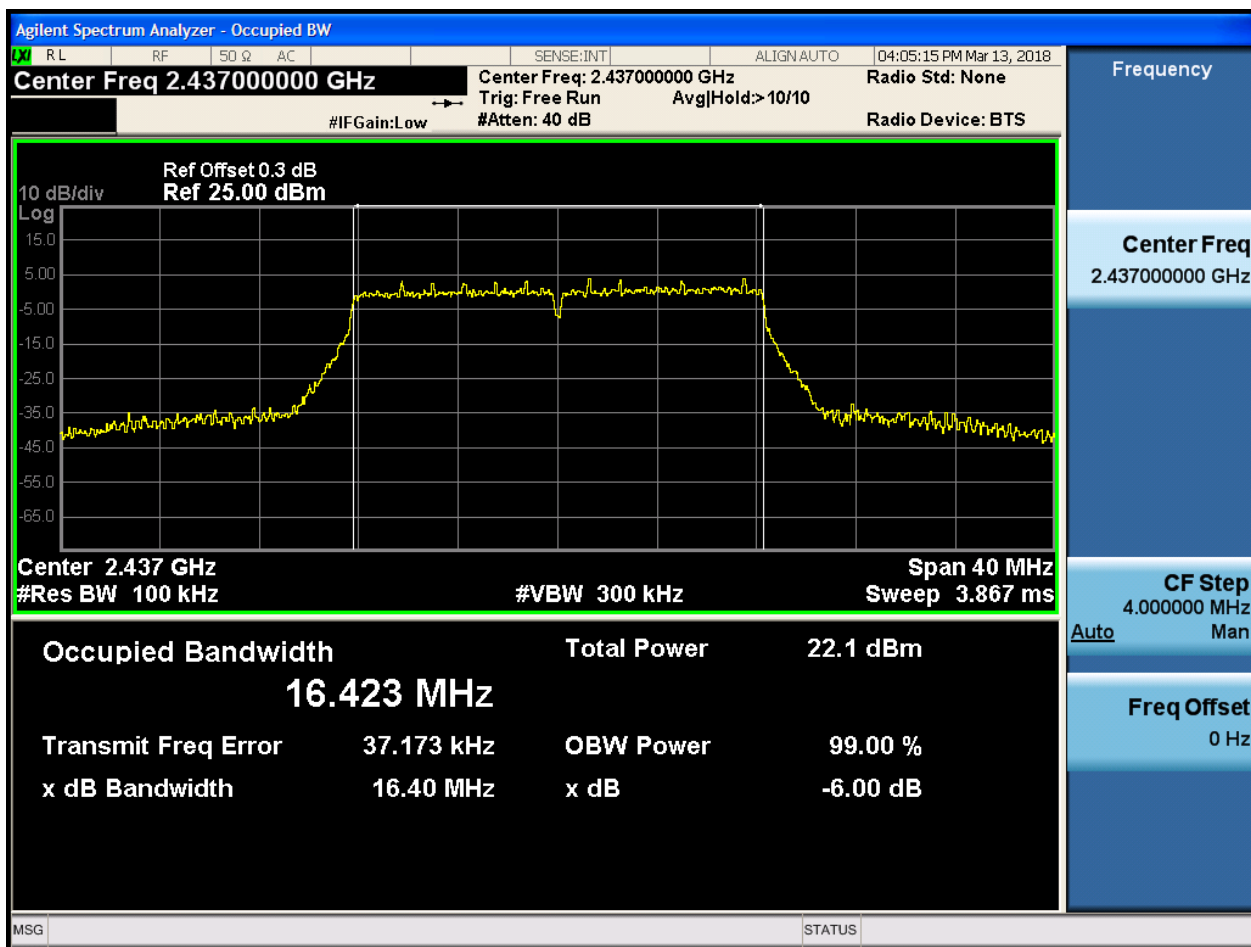


2.4 11G_L@Ant 1



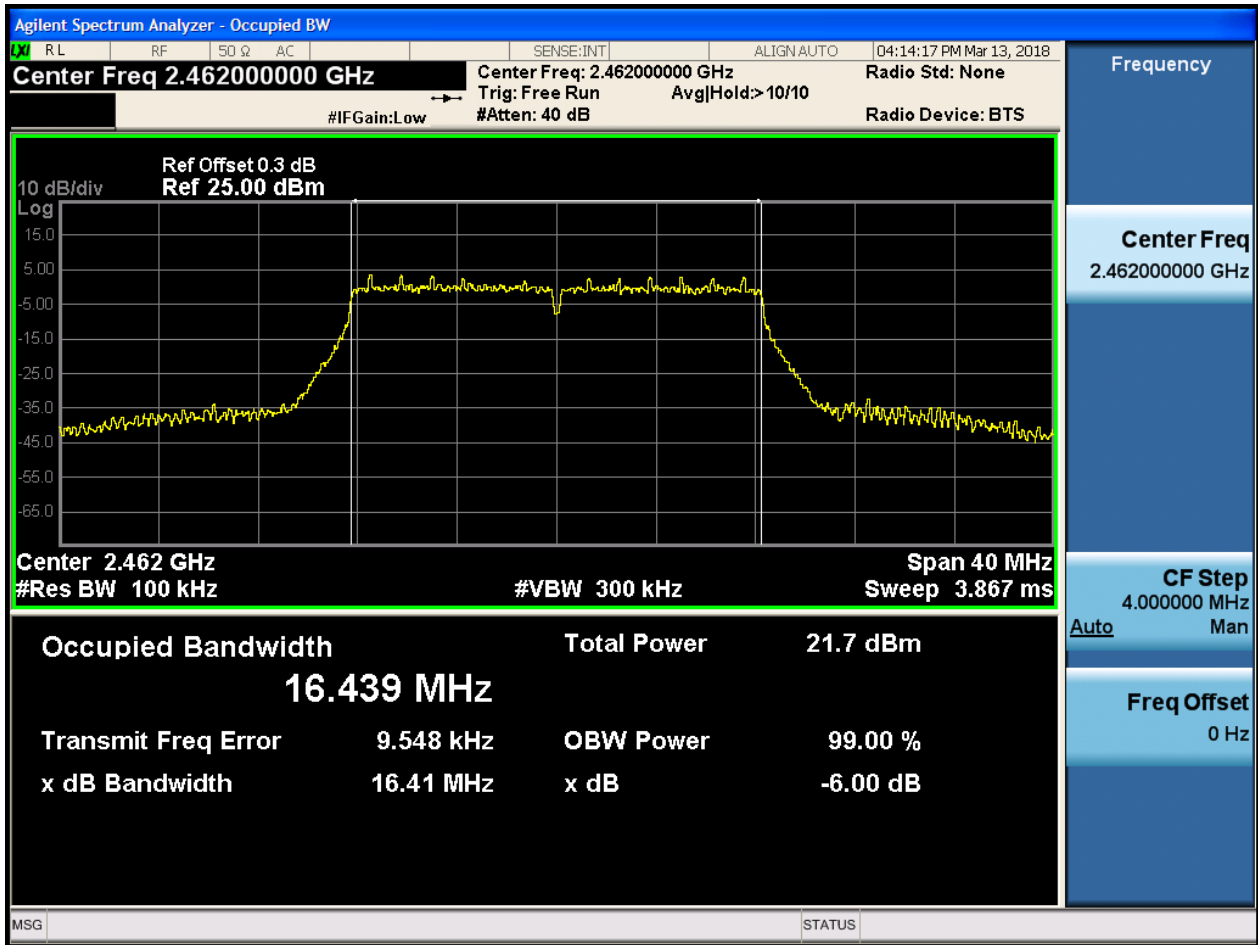


2.5 11G_M@Ant 1



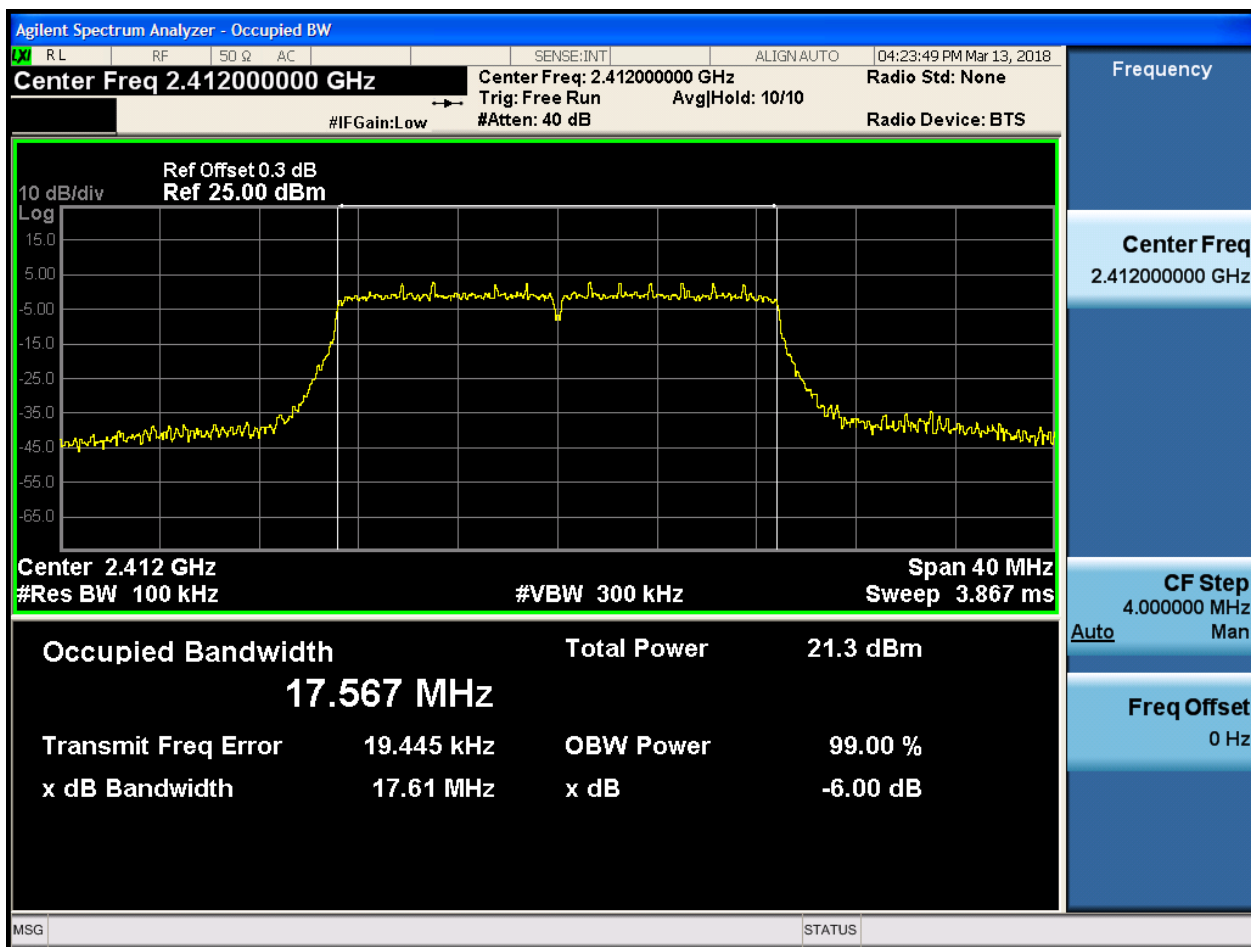


2.6 11G_H@Ant 1



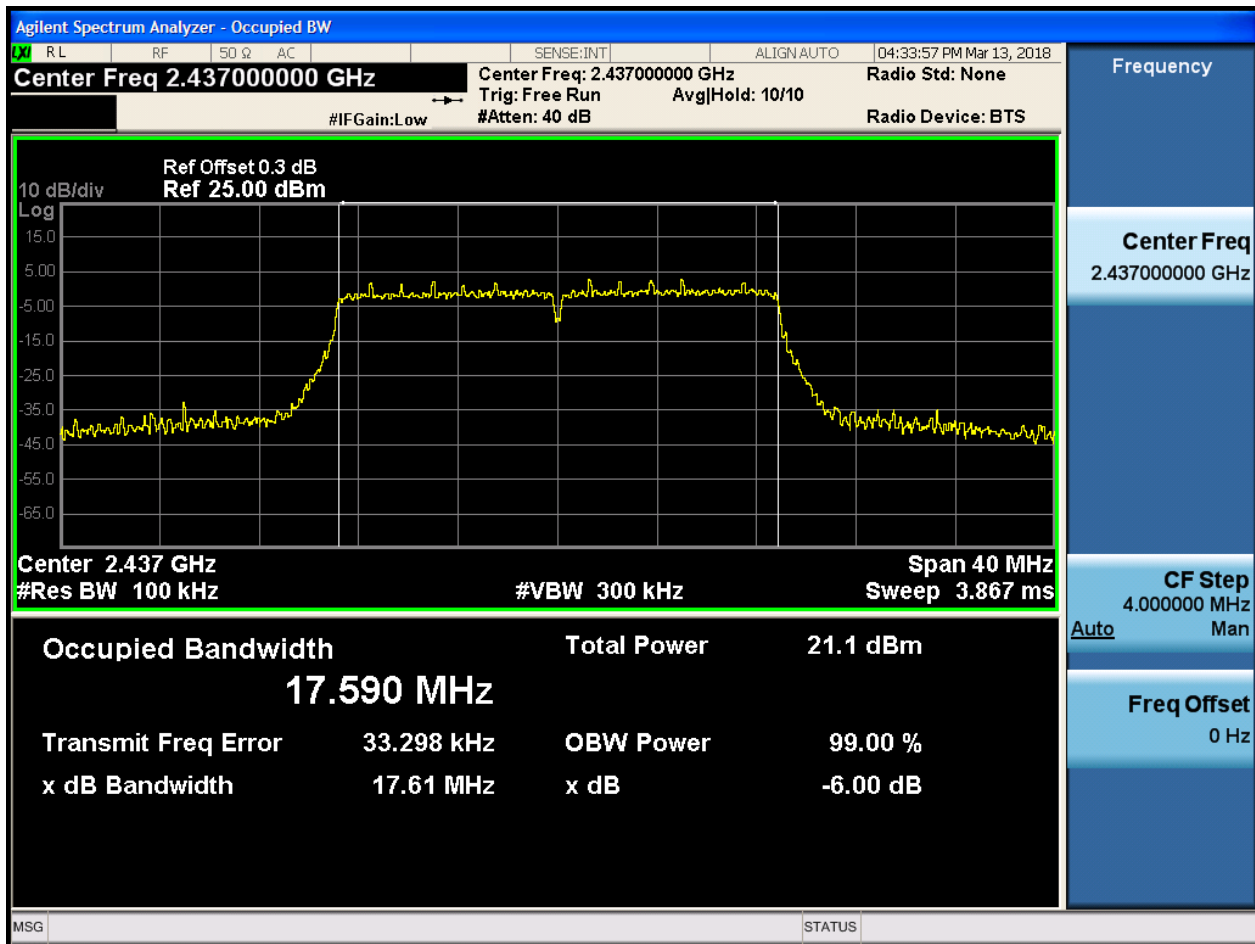


2.7 11N20_L@Ant 1



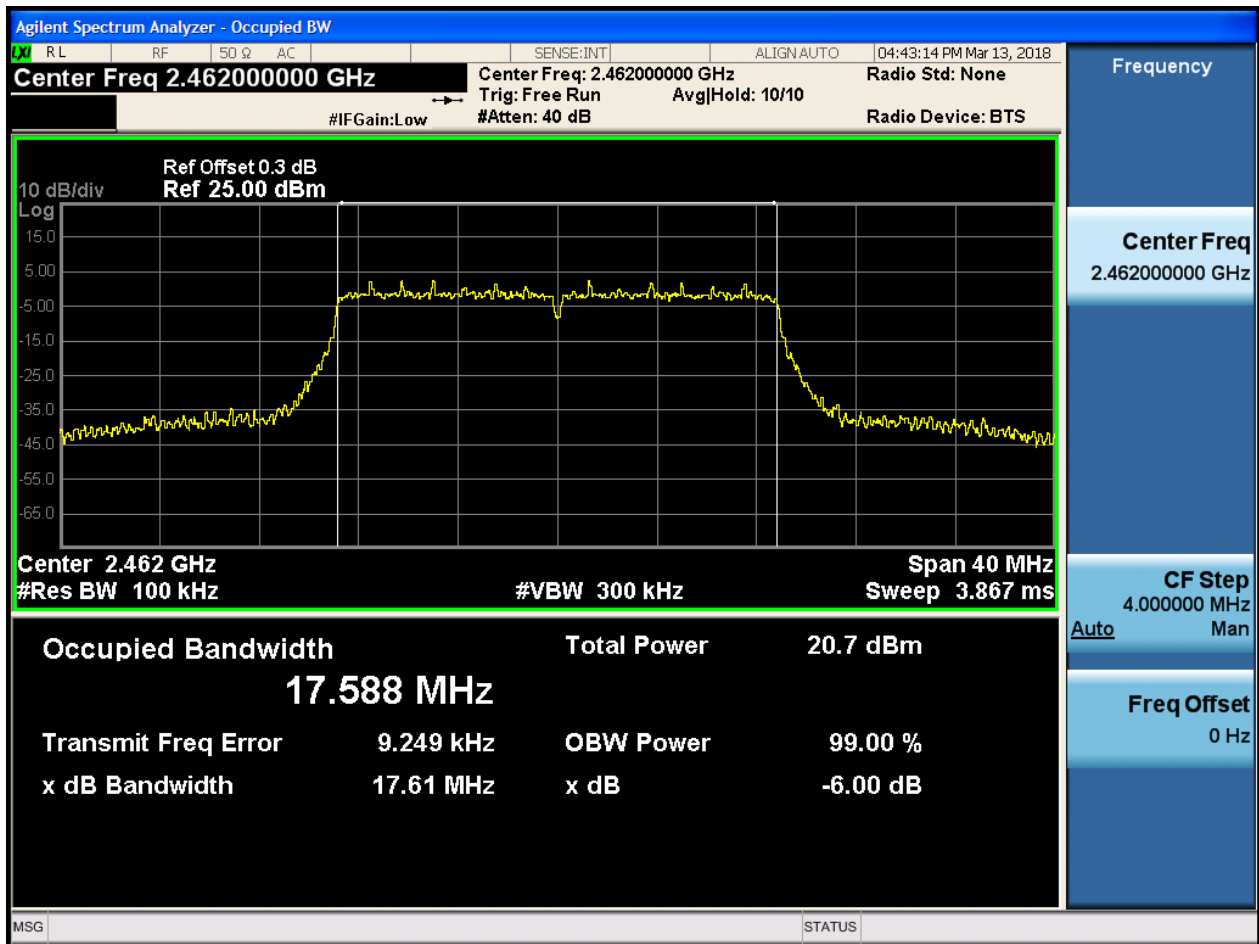


2.8 11N20_M@Ant 1



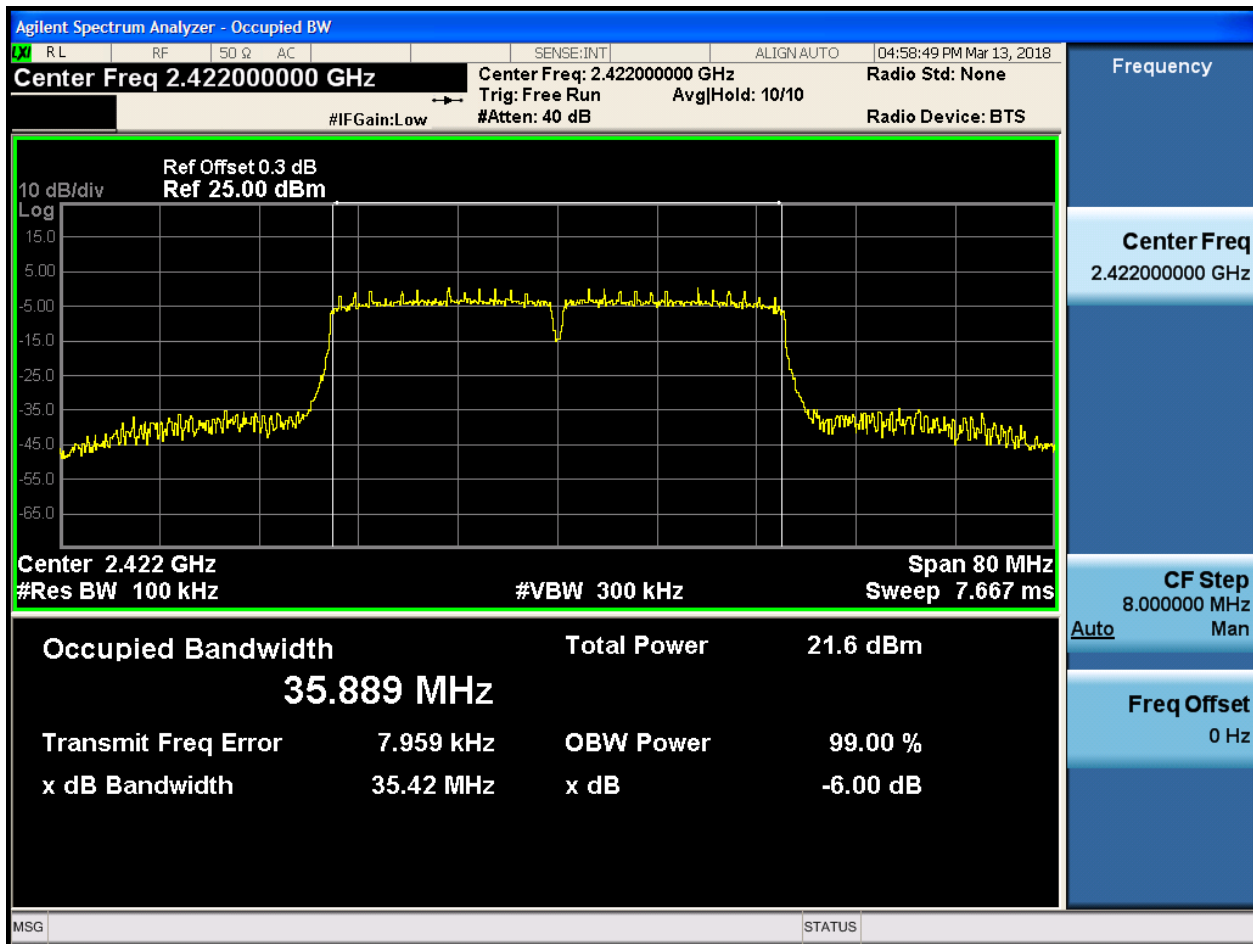


2.9 11N20_H@Ant 1



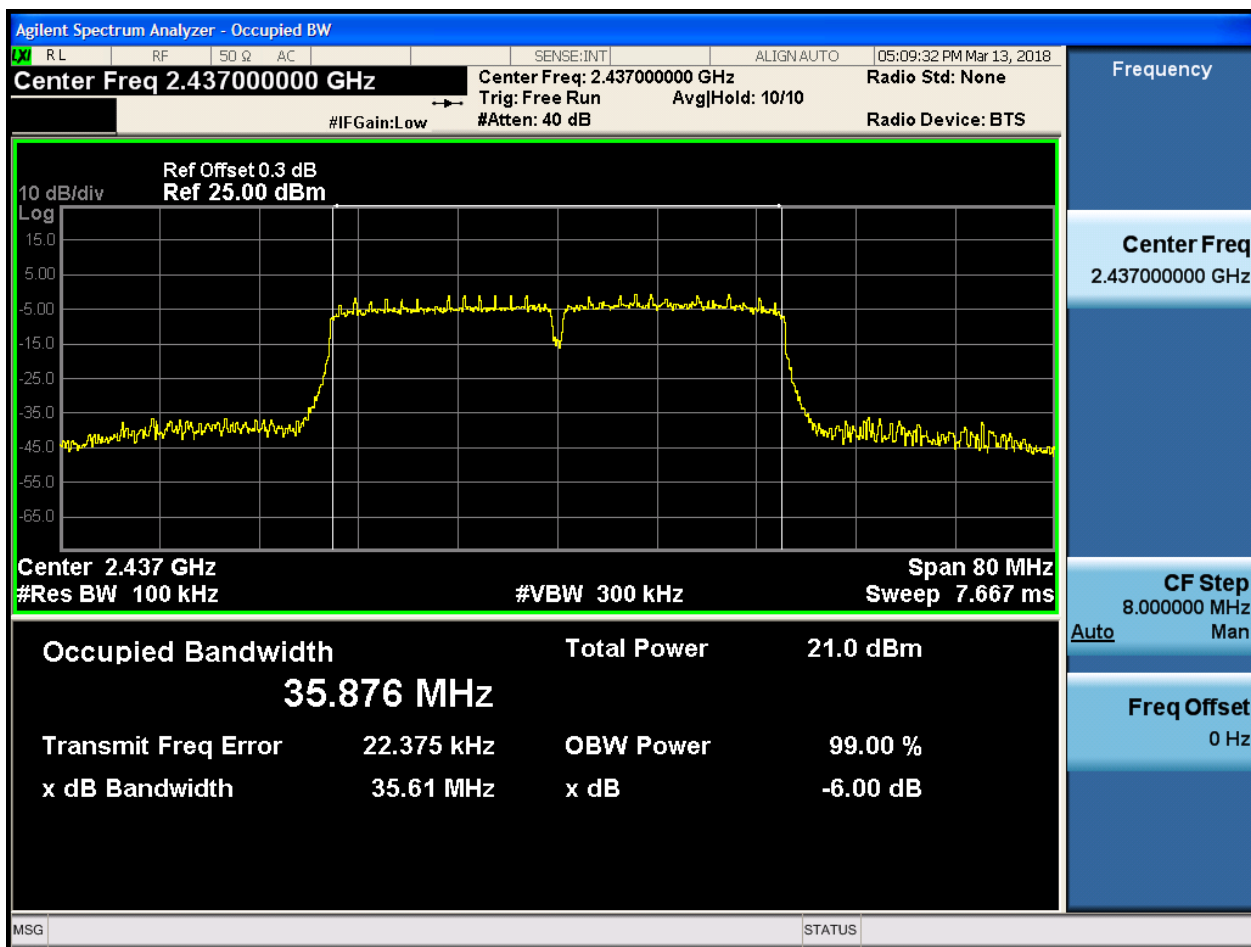


2.10 11N40_L@Ant 1



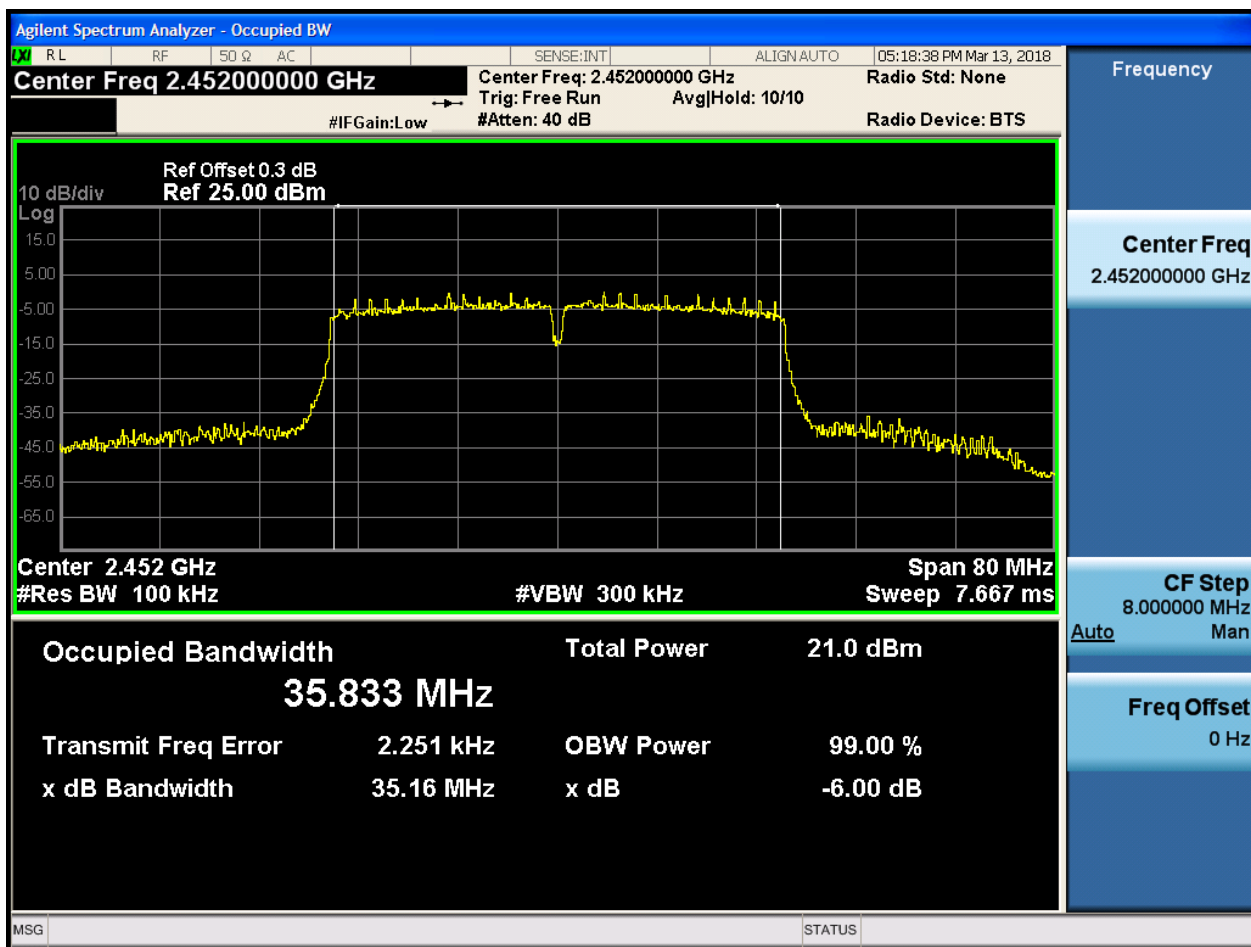


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix B: Occupied Bandwidth

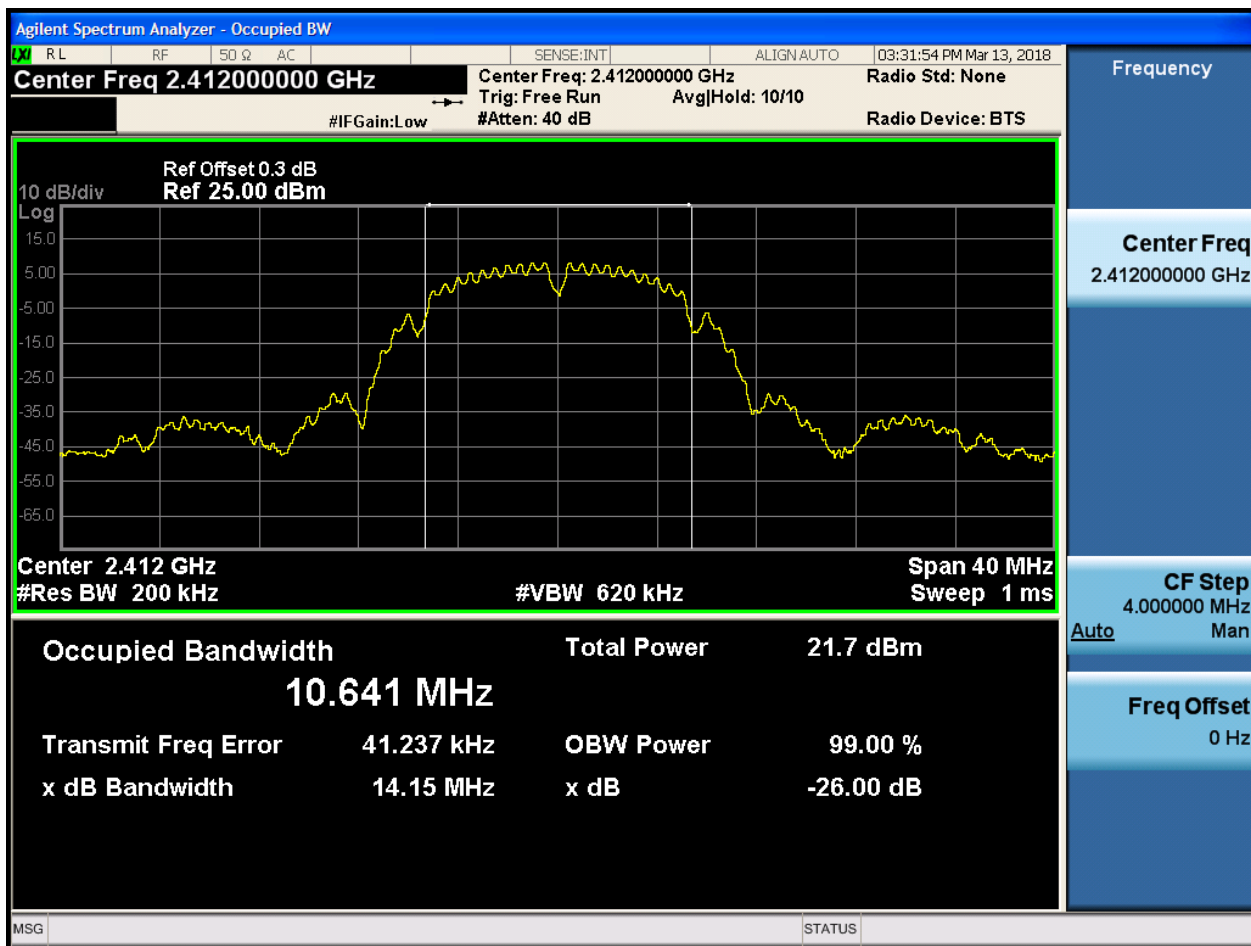
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	10.64	pass
11B	M	2437	Ant 1	10.75	pass
11B	H	2462	Ant 1	10.83	pass
11G	L	2412	Ant 1	16.48	pass
11G	M	2437	Ant 1	16.48	pass
11G	H	2462	Ant 1	16.52	pass
11N20	L	2412	Ant 1	17.58	pass
11N20	M	2437	Ant 1	17.59	pass
11N20	H	2462	Ant 1	17.61	pass
11N40	L	2422	Ant 1	35.96	pass
11N40	M	2437	Ant 1	35.94	pass
11N40	H	2452	Ant 1	35.88	pass

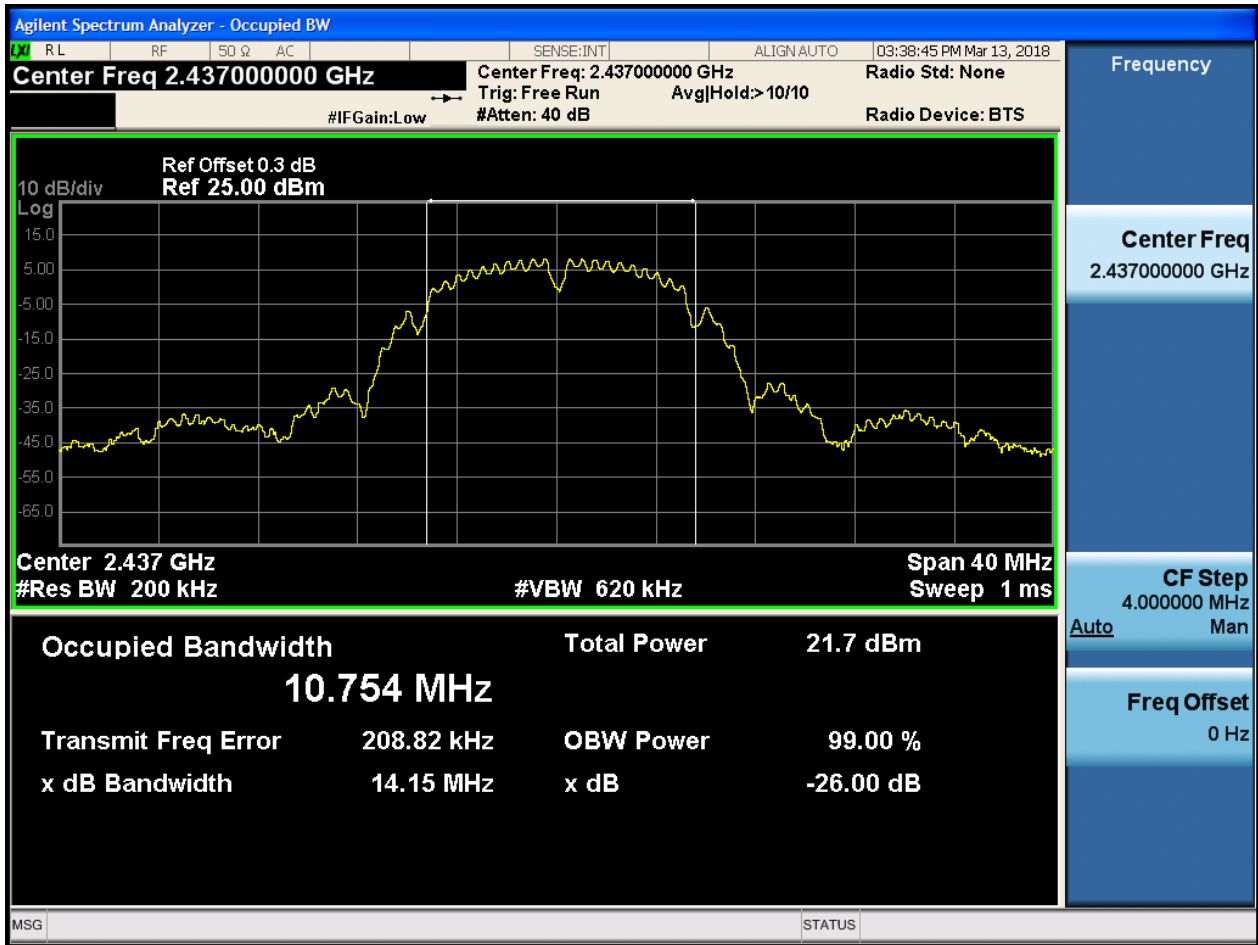
Part II - Test Plots

2.1 11B_L@Ant 1



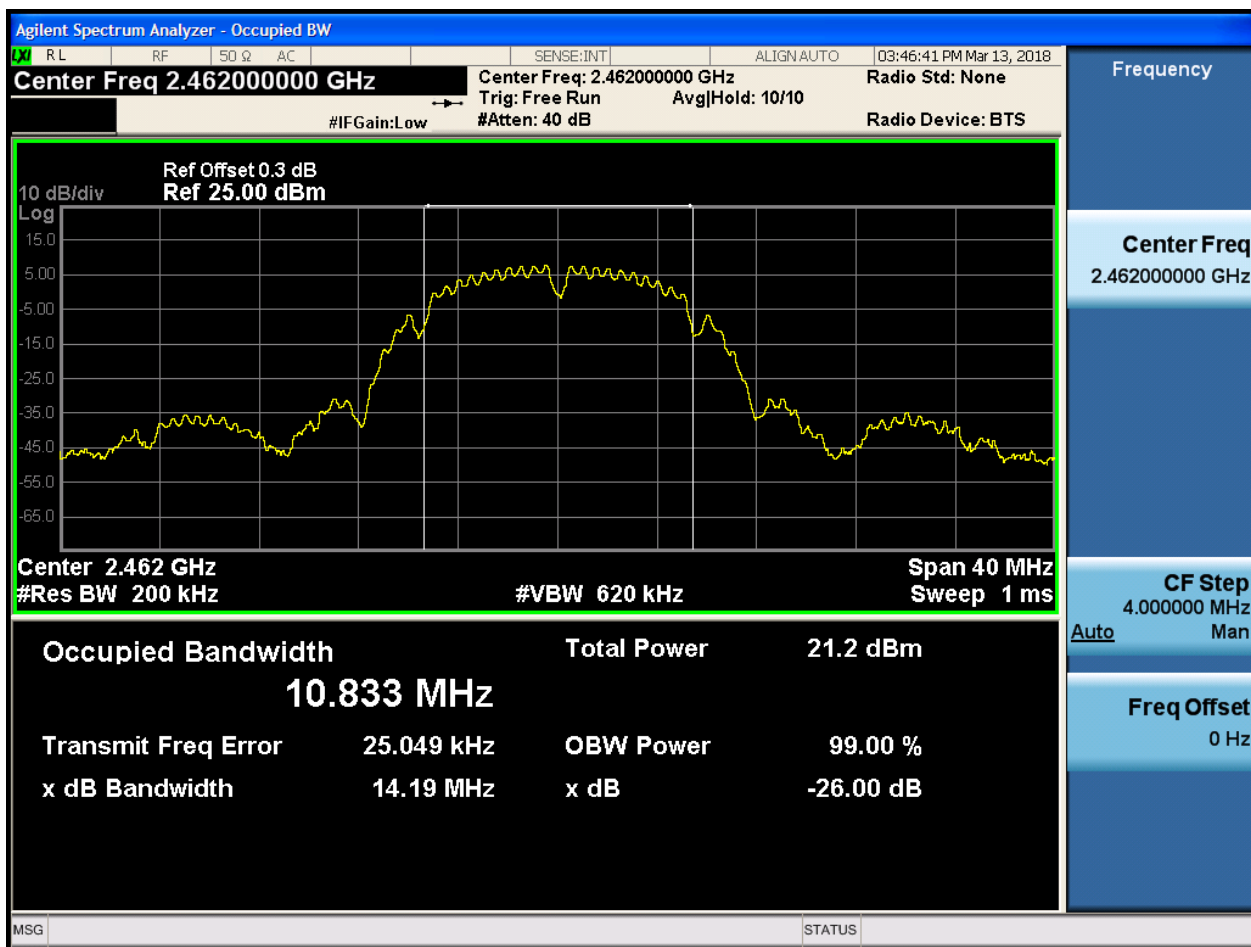


2.2 11B_M@Ant 1



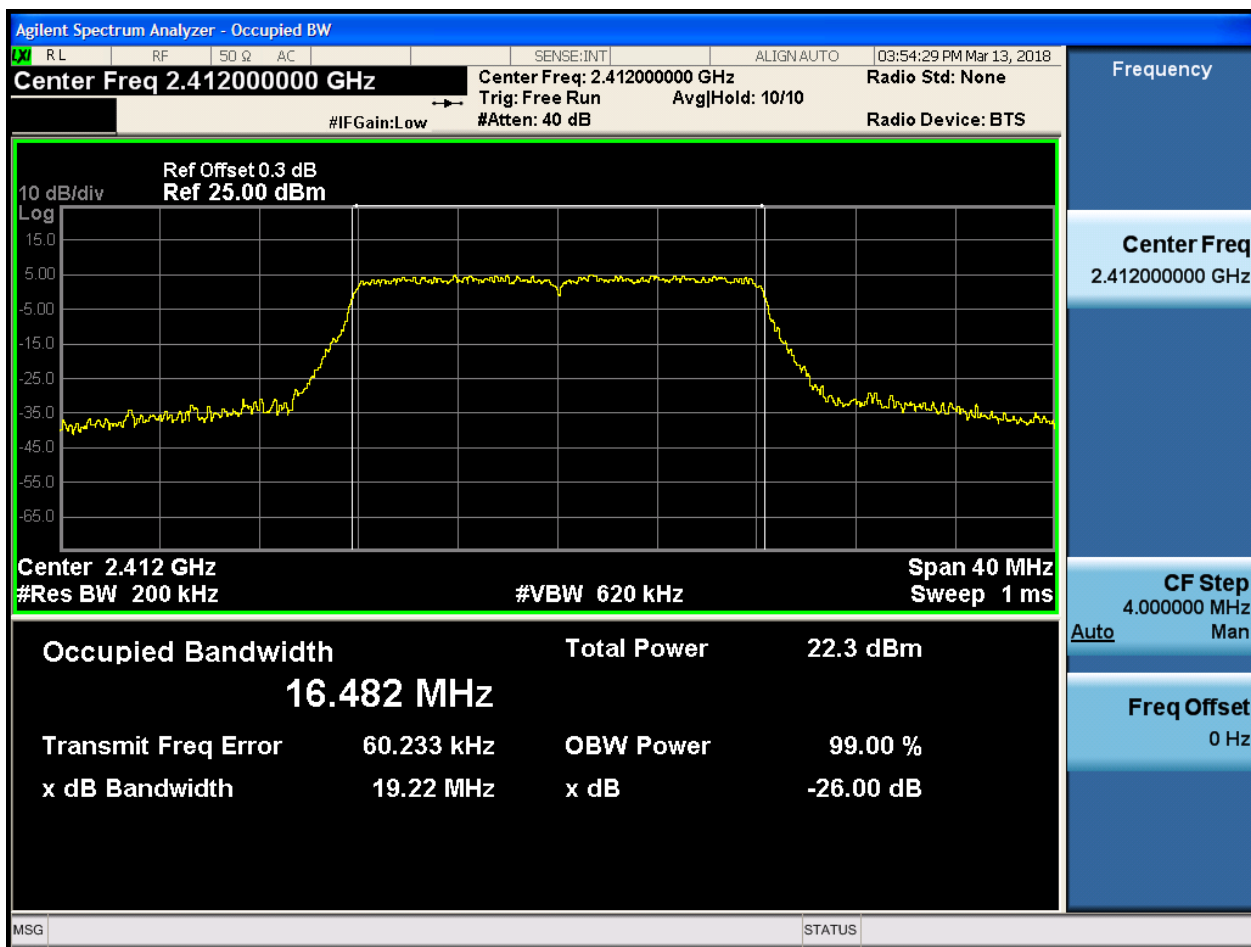


2.3 11B_H@Ant 1



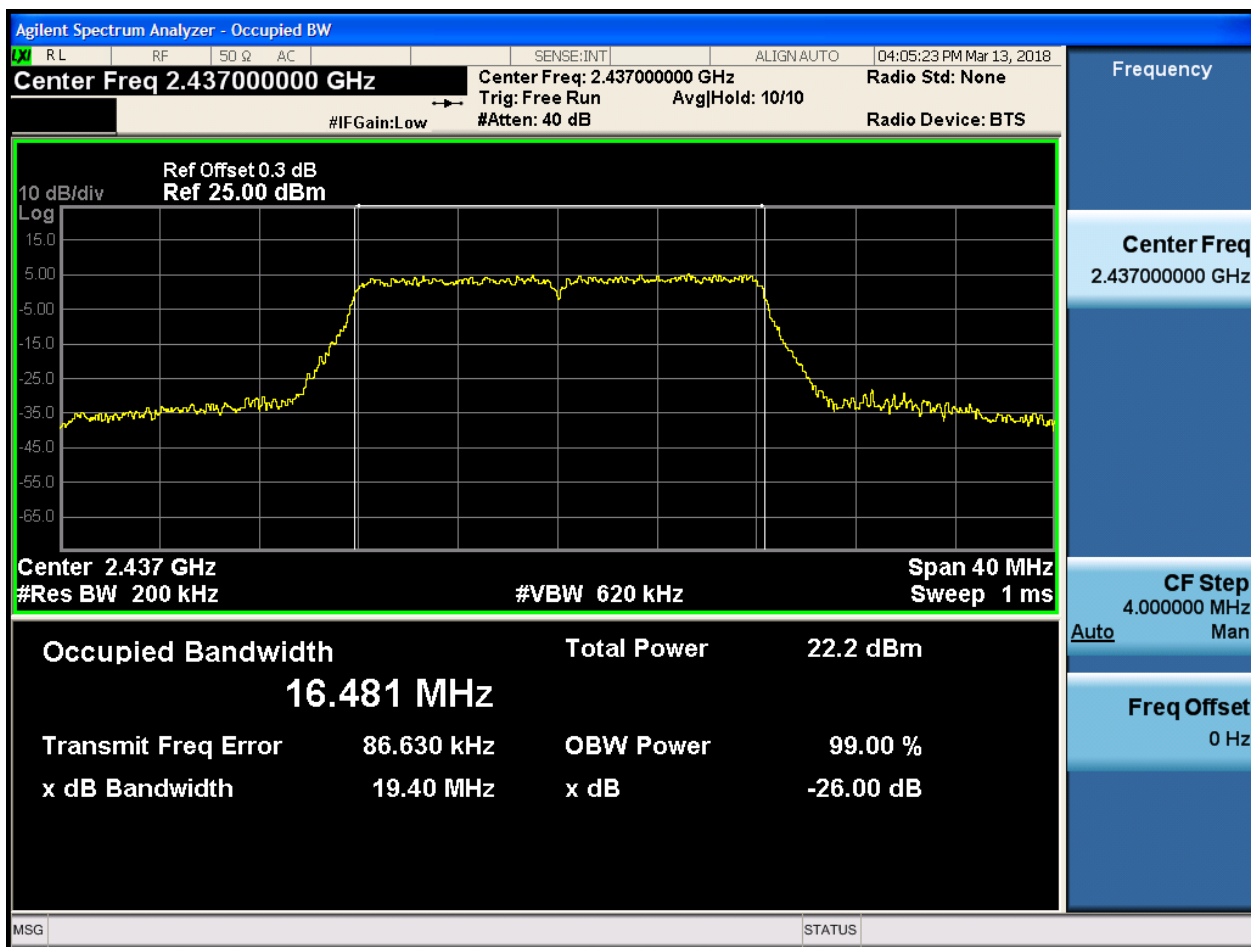


2.4 11G_L@Ant 1



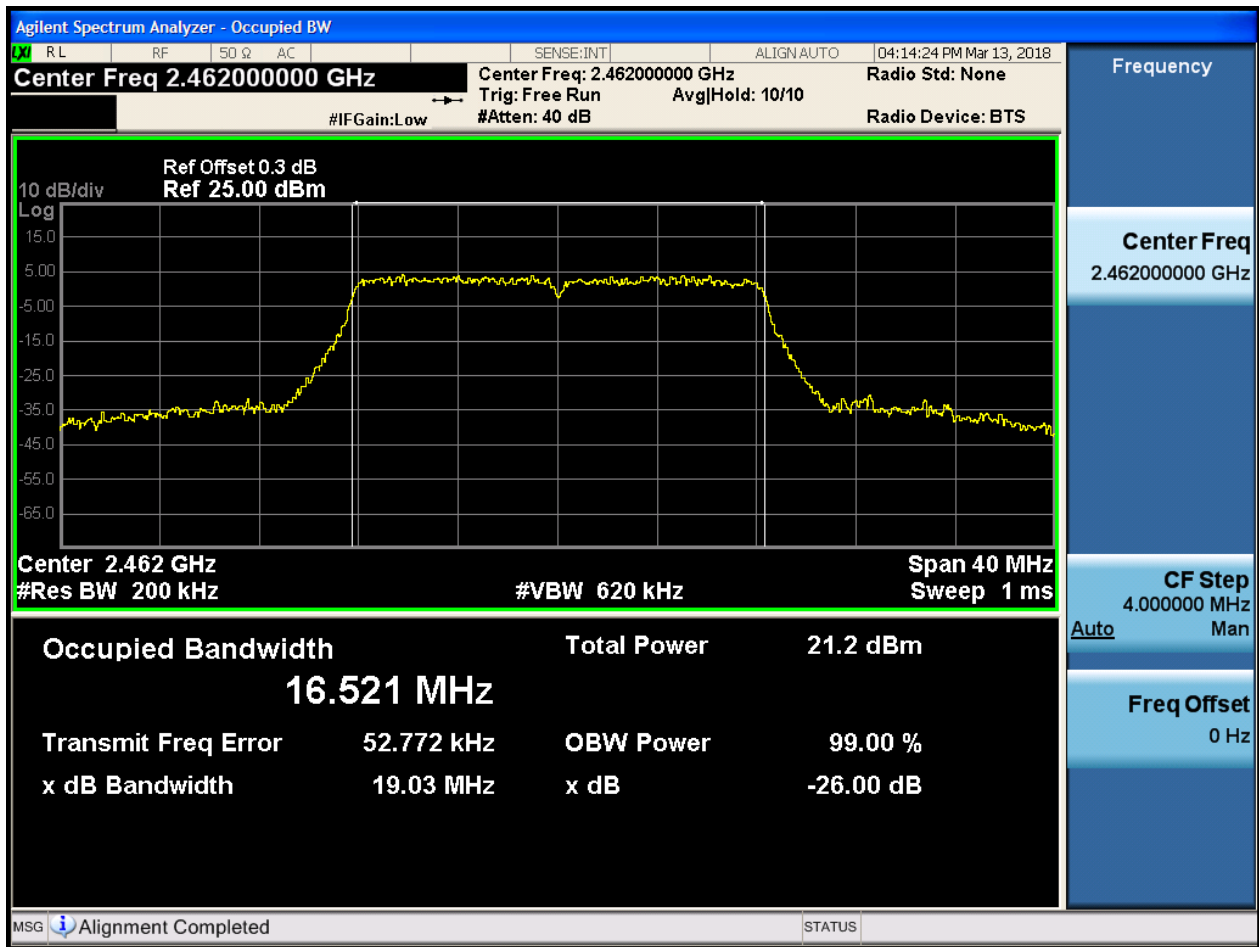


2.5 11G_M@Ant 1



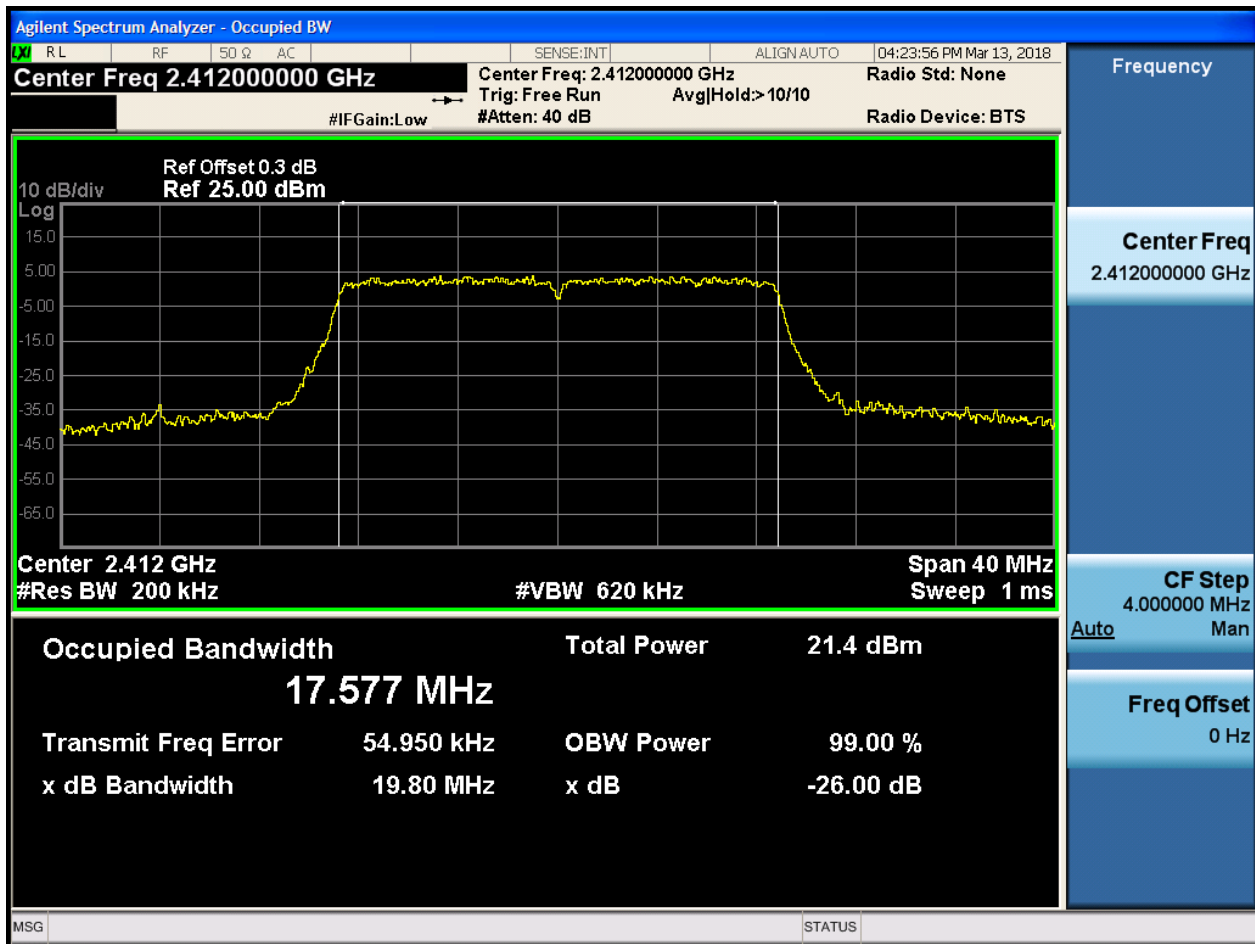


2.6 11G_H@Ant 1



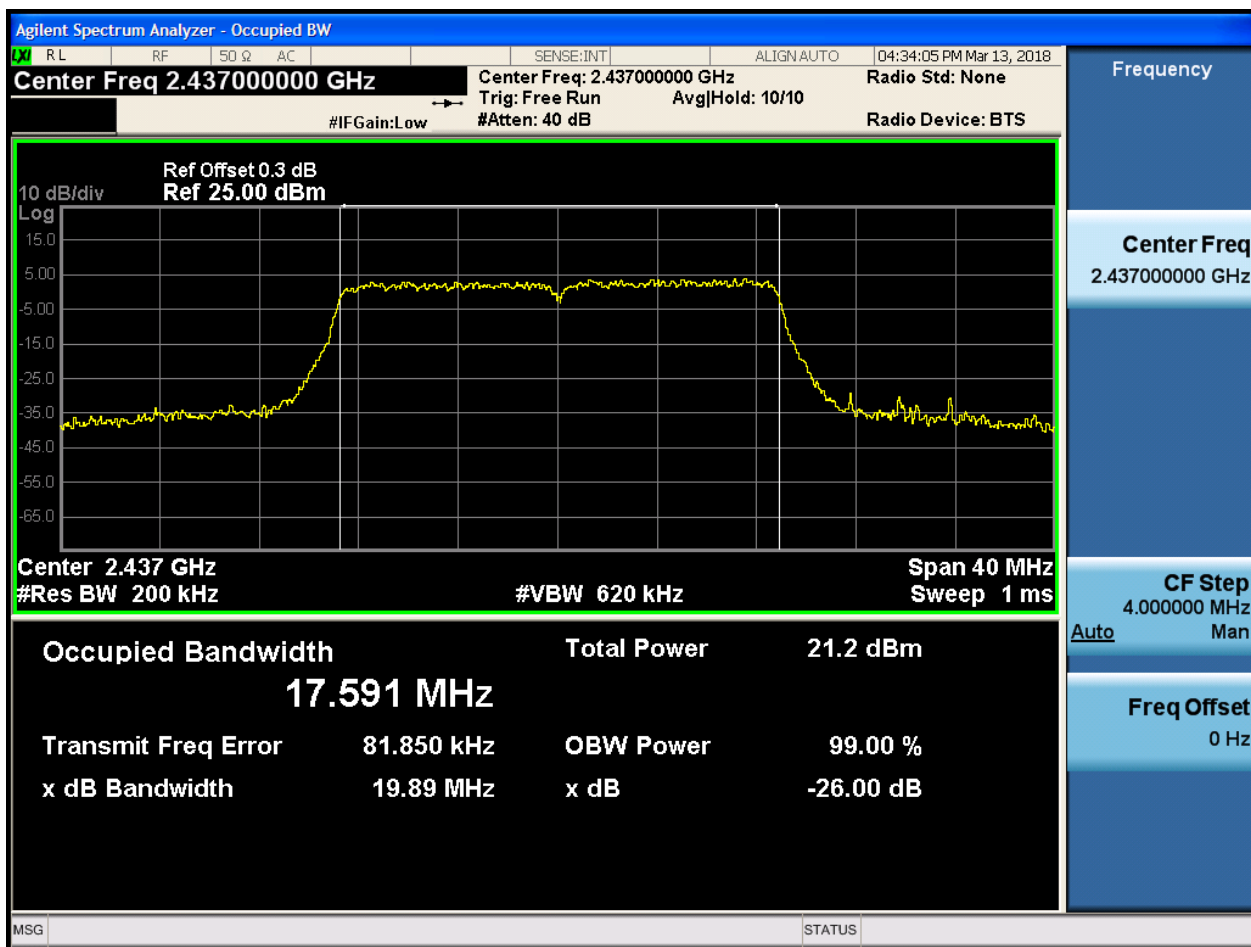


2.7 11N20_L@Ant 1



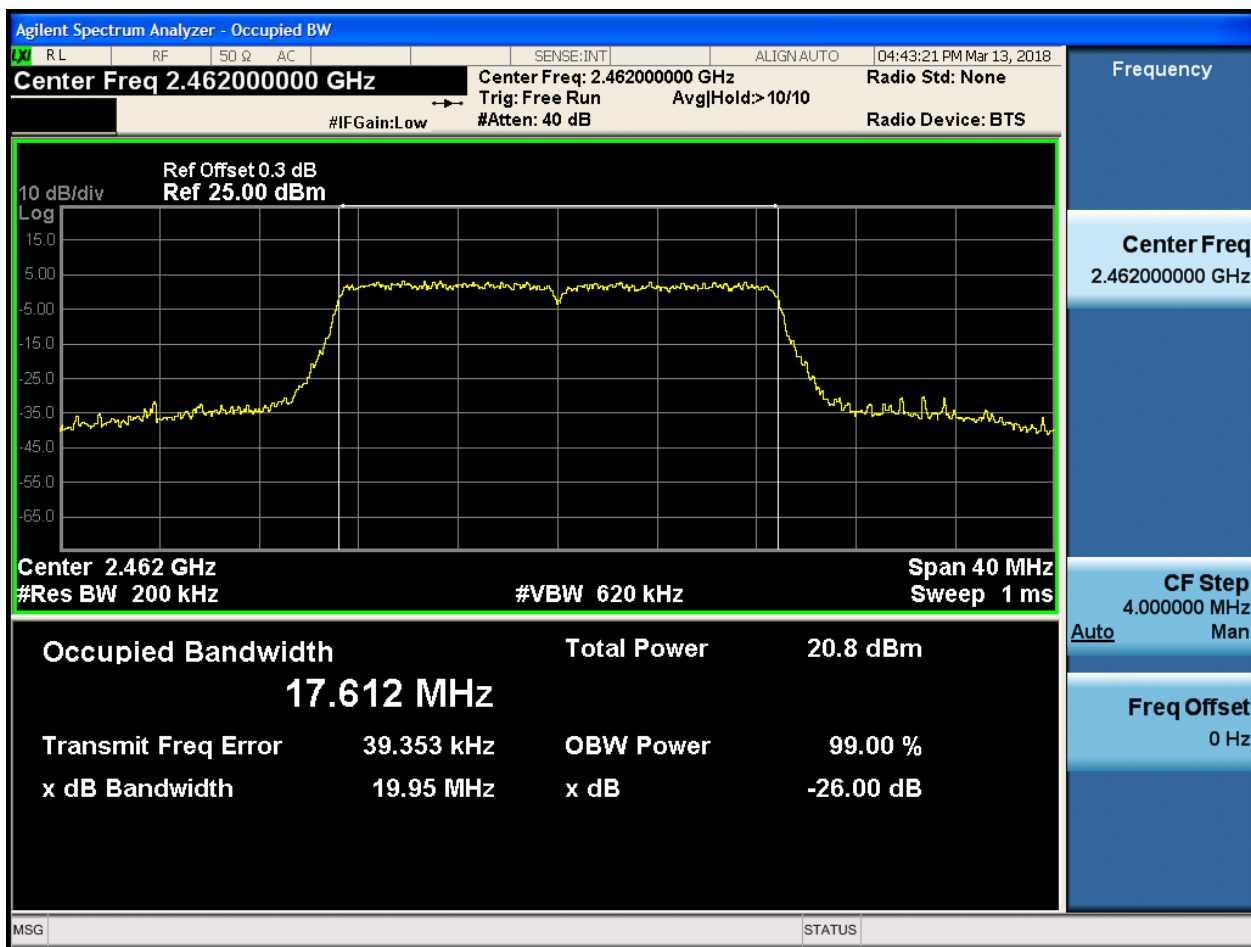


2.8 11N20_M@Ant 1



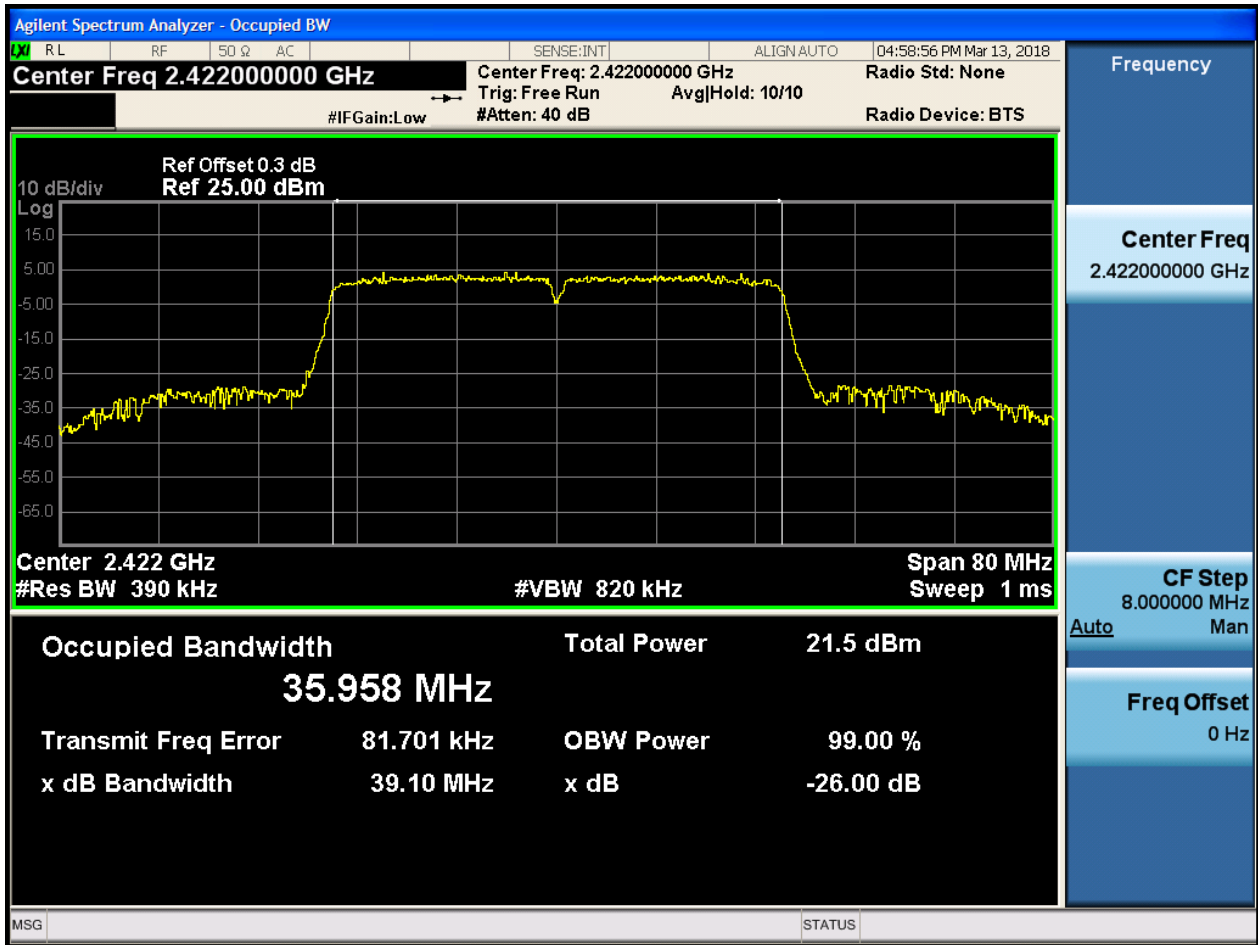


2.9 11N20_H@Ant 1



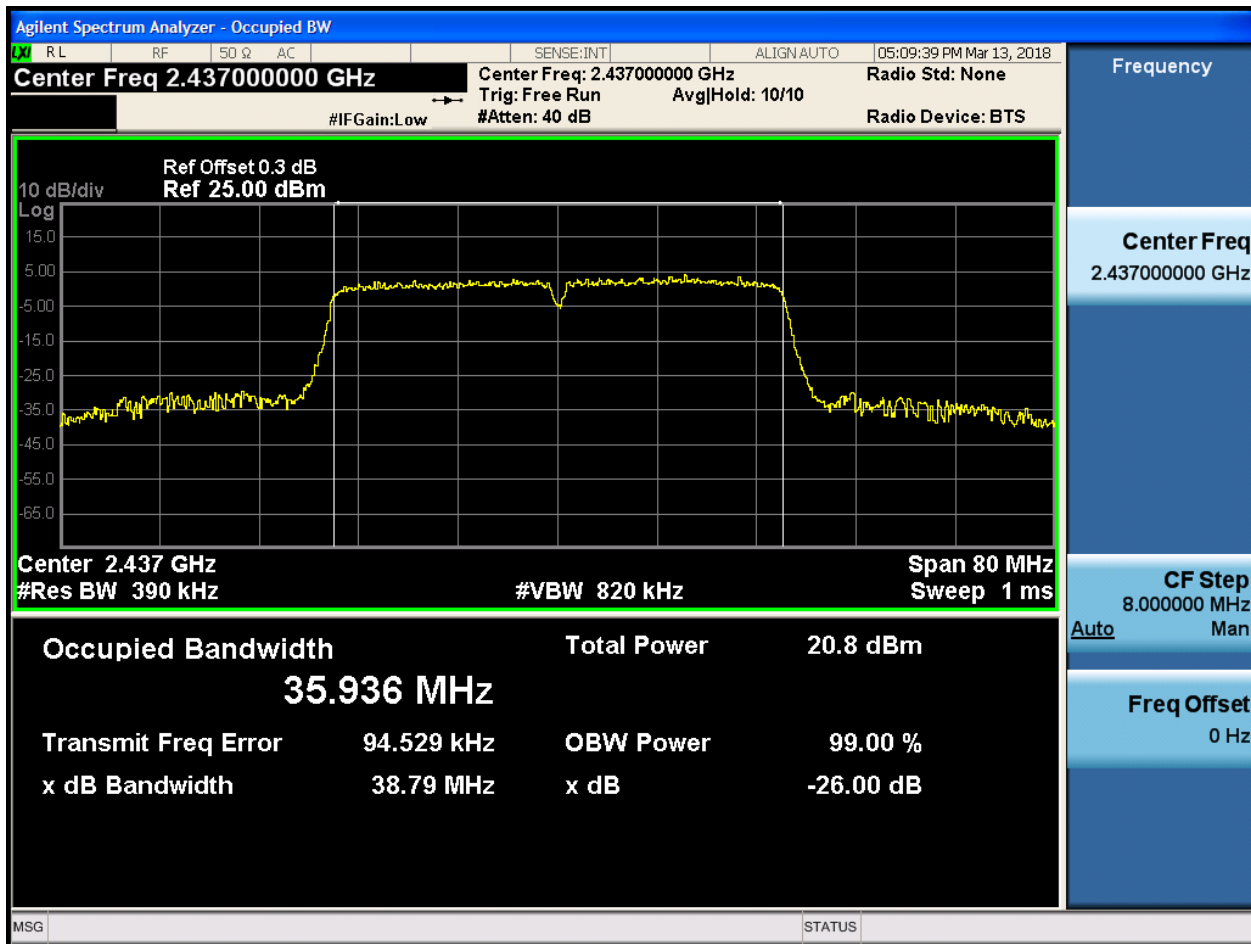


2.10 11N40_L@Ant 1



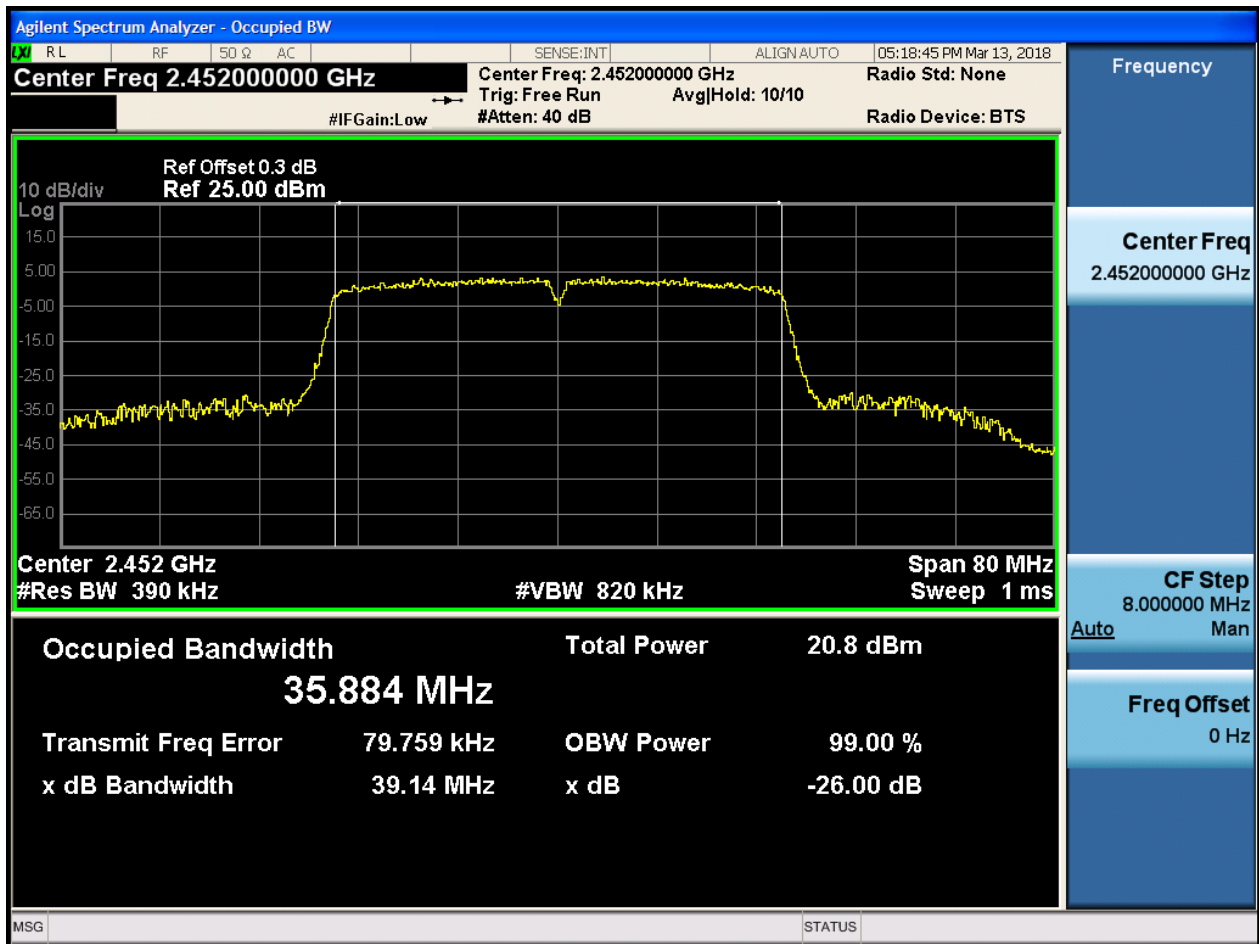


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix C: Duty Cycle

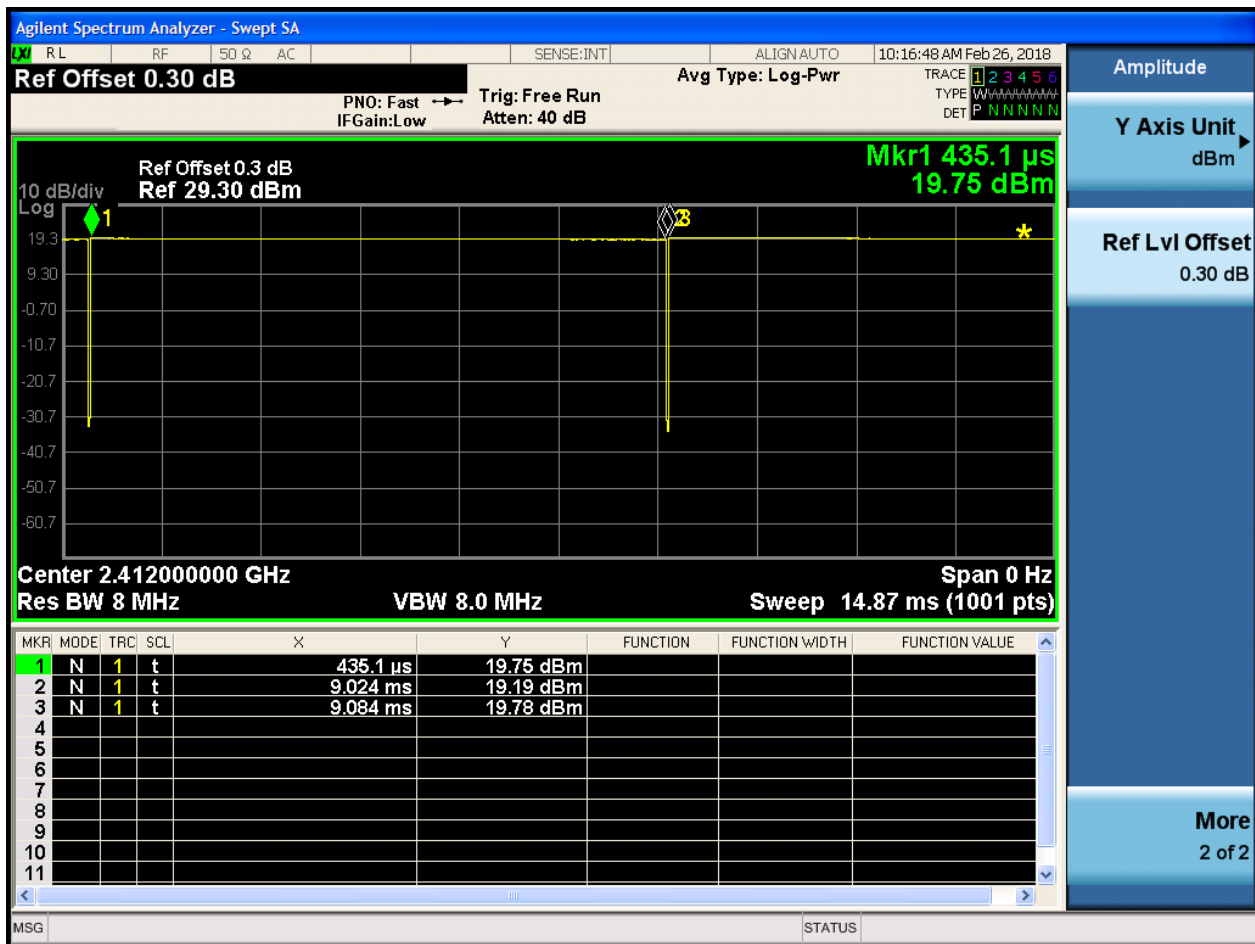
Part I - Test Results

Test Mode	TX Freq. [MHz]	Ant	Duty cycle [%]
11B	CH1,CH6,CH11	Ant 1	99
11G	CH1,CH6,CH11	Ant 1	98
11N20SISO	CH1,CH6,CH11	Ant 1	98
11N40SISO	CH3, CH6,CH9	Ant 1	96.5



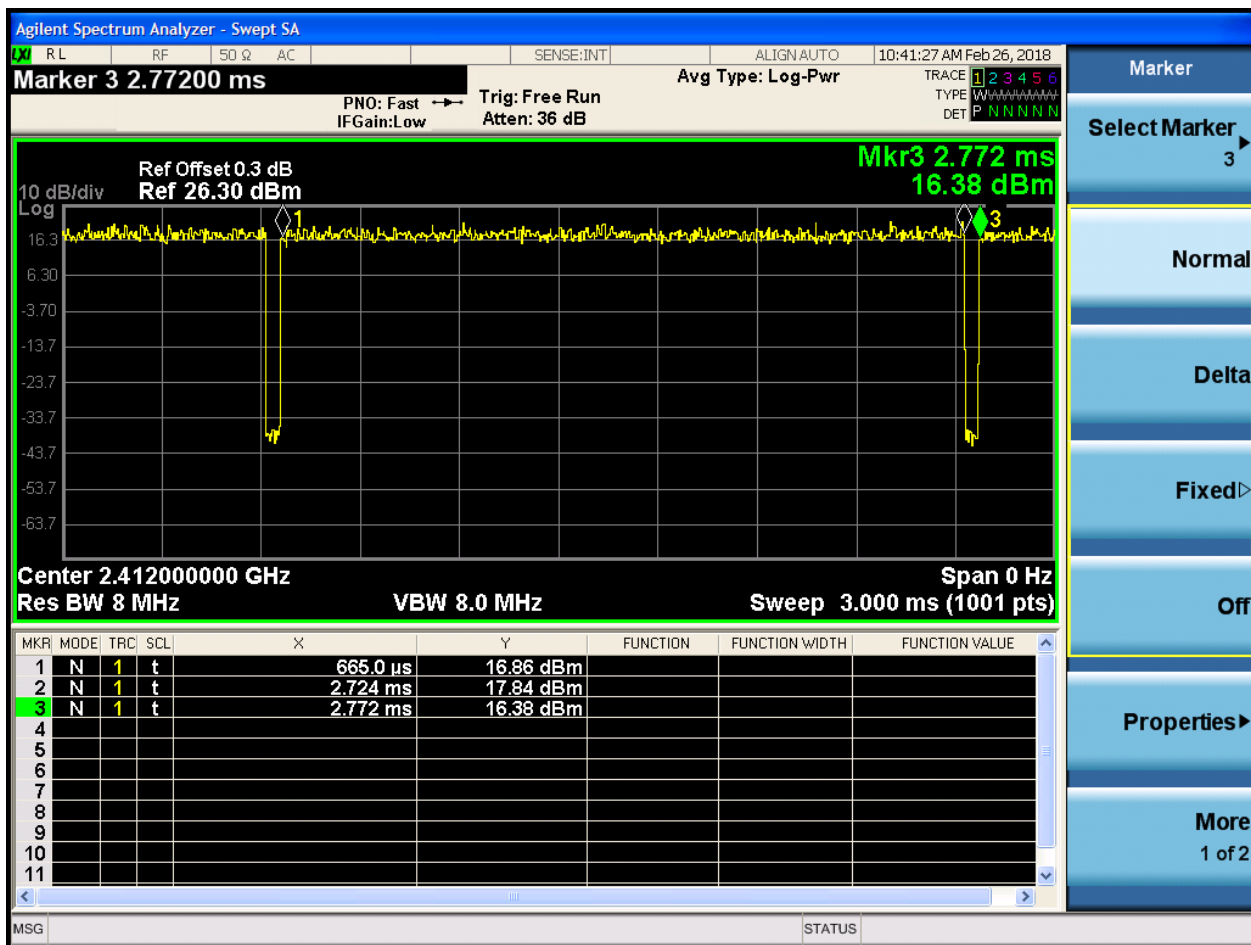
Part II - Test Plots

2.1 11B_L@Ant 1

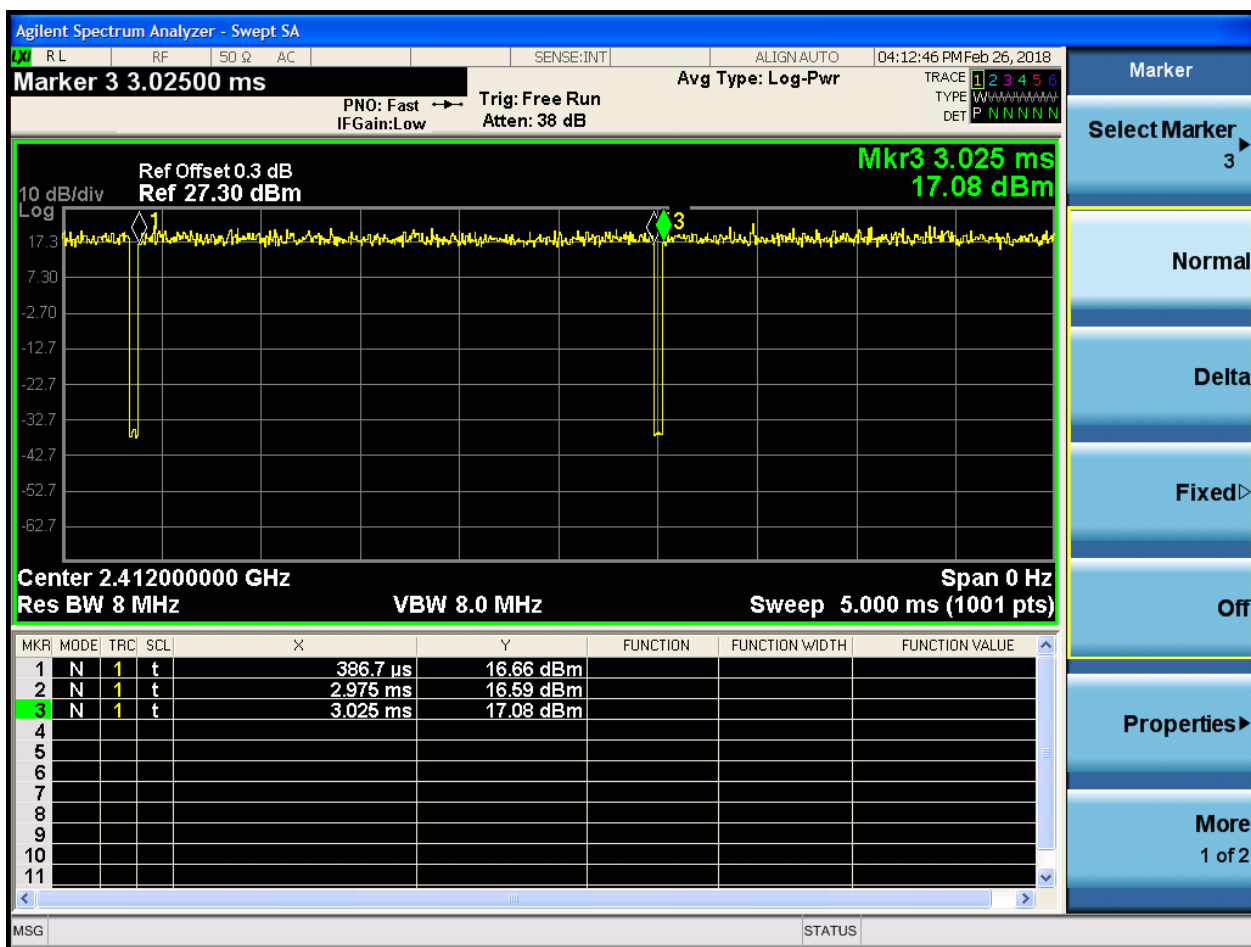




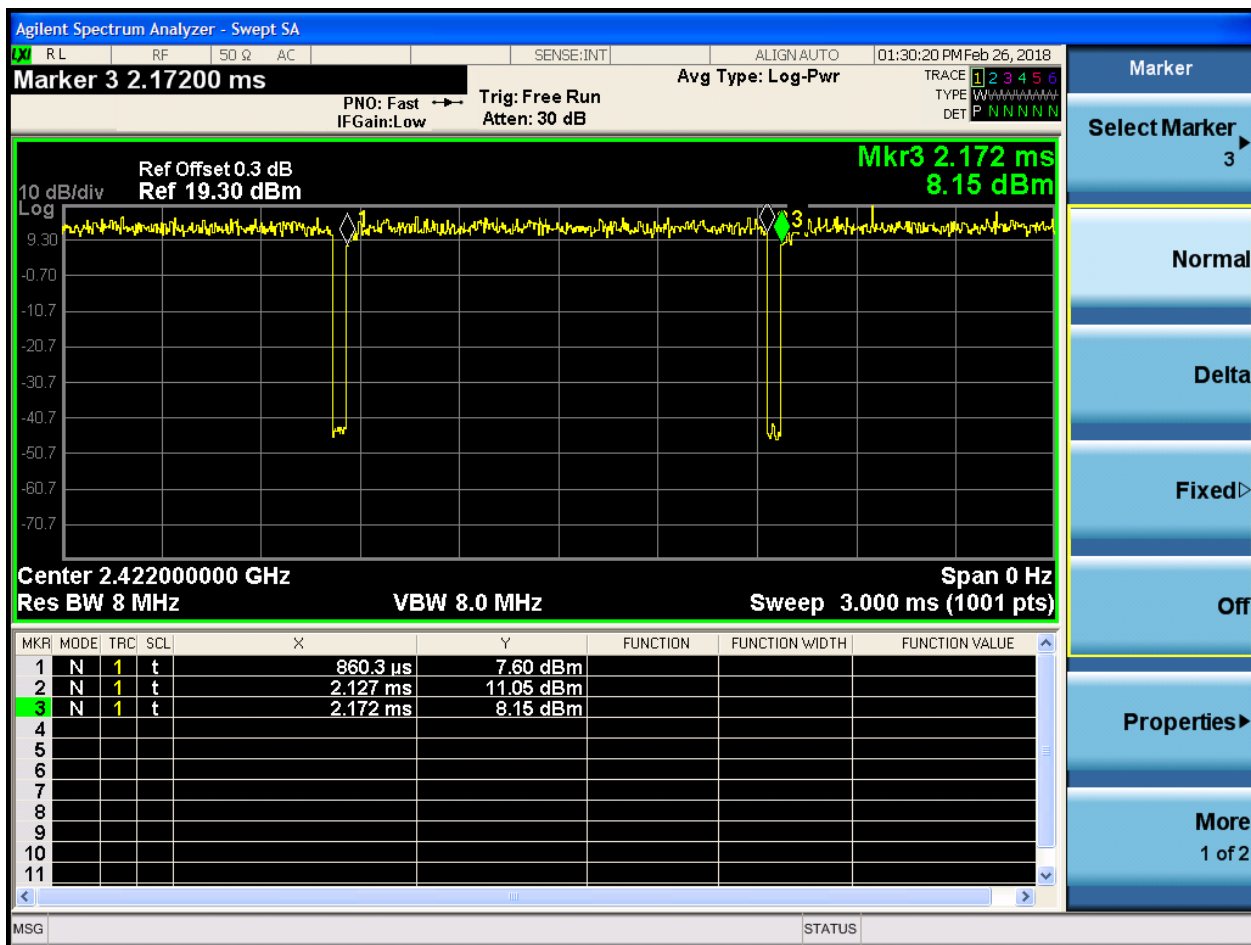
2.2 11G_L@Ant 1



2.3 11N20_L@Ant 1



2.4 11N40_L@Ant 1



Appendix D: Maximum Conducted Average Output Power

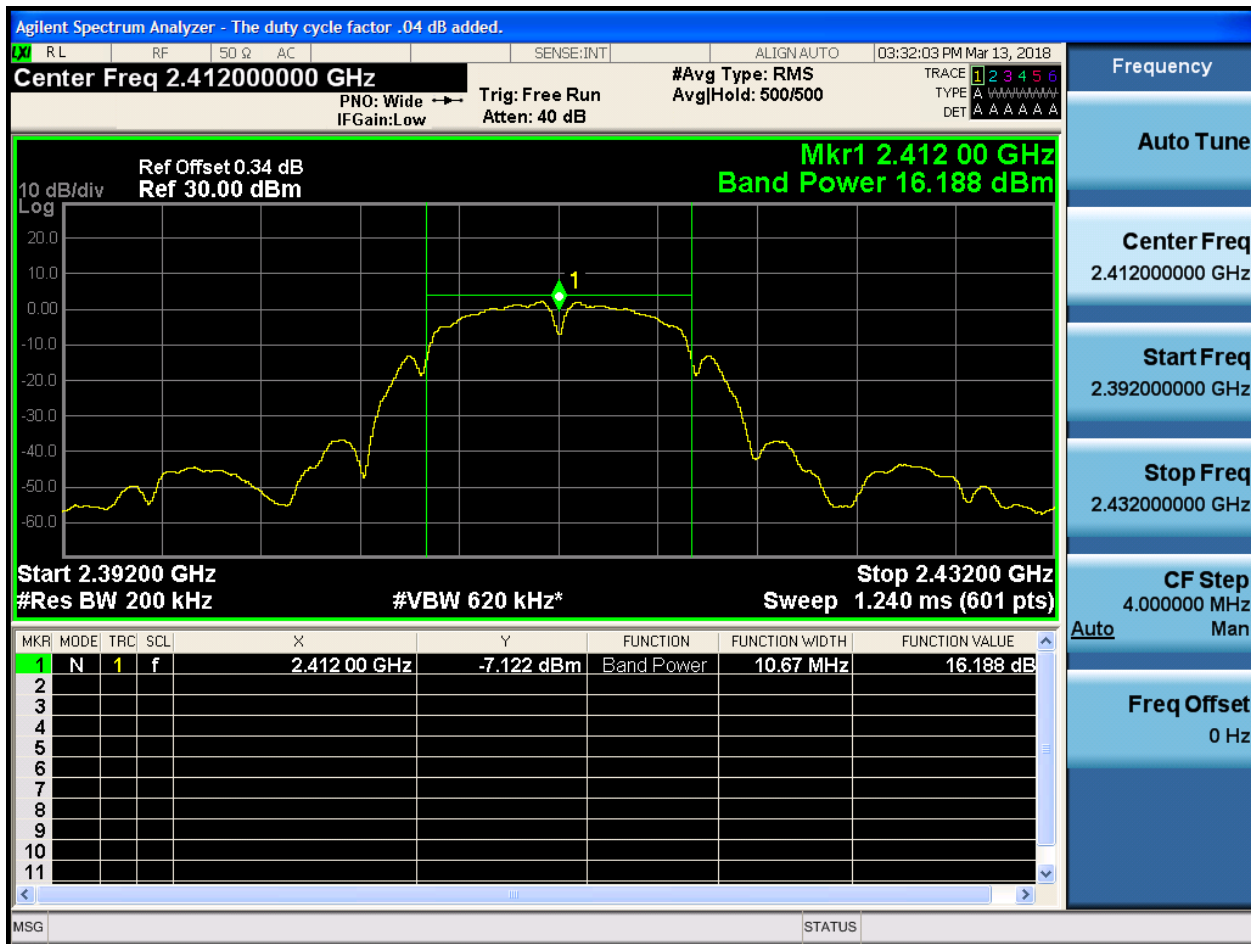
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Duty Cycle [%]	Power[dBm]	Verdict
11B	L	2412	Ant 1	99	16.19	pass
11B	M	2437	Ant 1	99	16.20	pass
11B	H	2462	Ant 1	99	15.64	pass
11G	L	2412	Ant 1	98	15.33	pass
11G	M	2437	Ant 1	98	15.17	pass
11G	H	2462	Ant 1	98	14.72	pass
11N20	L	2412	Ant 1	98	14.27	pass
11N20	M	2437	Ant 1	98	14.15	pass
11N20	H	2462	Ant 1	98	13.75	pass
11N40	L	2422	Ant 1	96.5	14.36	pass
11N40	M	2437	Ant 1	96.5	13.73	pass
11N40	H	2452	Ant 1	96.5	13.72	pass



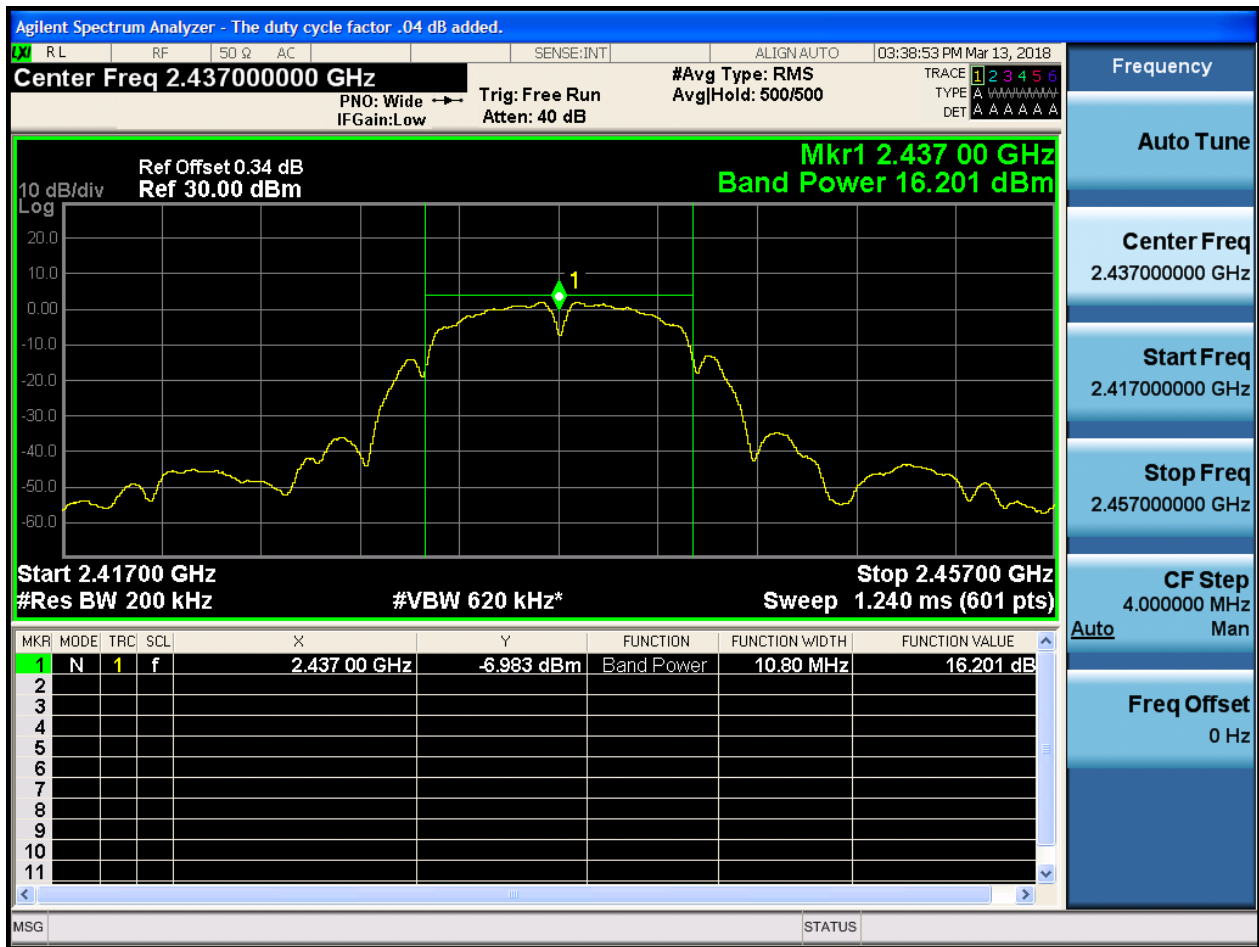
Part II - Test Plots

2.1 11B_L@Ant 1



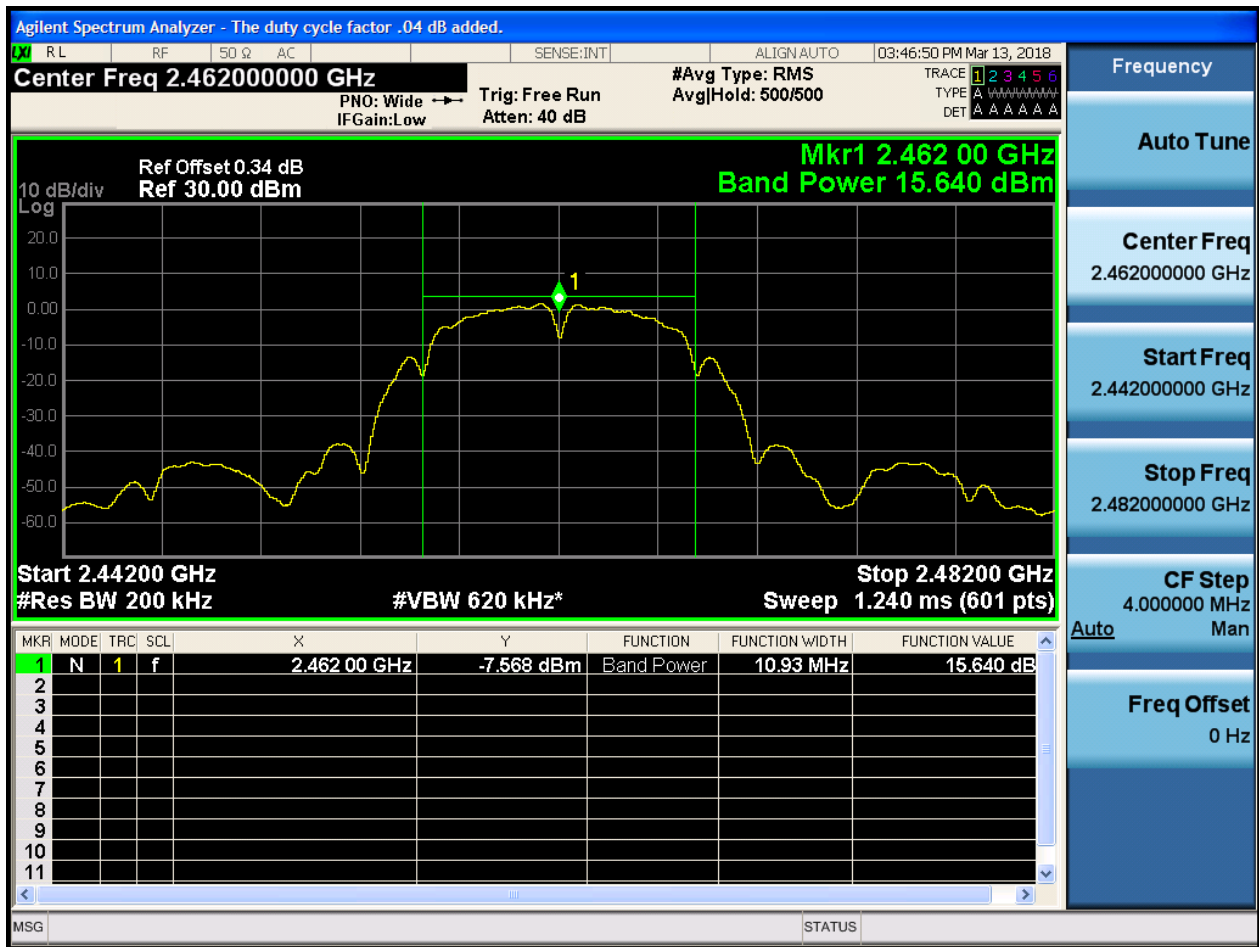


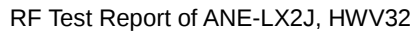
2.2 11B_M@Ant 1





2.3 11B_H@Ant 1





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

Center Freq 2.41200000 GHz

#Avg Type: RMS
AvgHold: 500/500

03:54:38 PM Mar 13, 2018

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

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

Ref Offset 0.39 dB
Ref 30.00 dBm

Mkr1 2.412 00 GHz
Band Power 15.330 dBm

Start 2.39200 GHz
#Res BW 200 kHz

Stop 2.43200 GHz
Sweep 1.240 ms (601 pts)

#VBW 620 kHz*

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 00 GHz	-9.786 dBm	Band Power	16.53 MHz	15.330 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

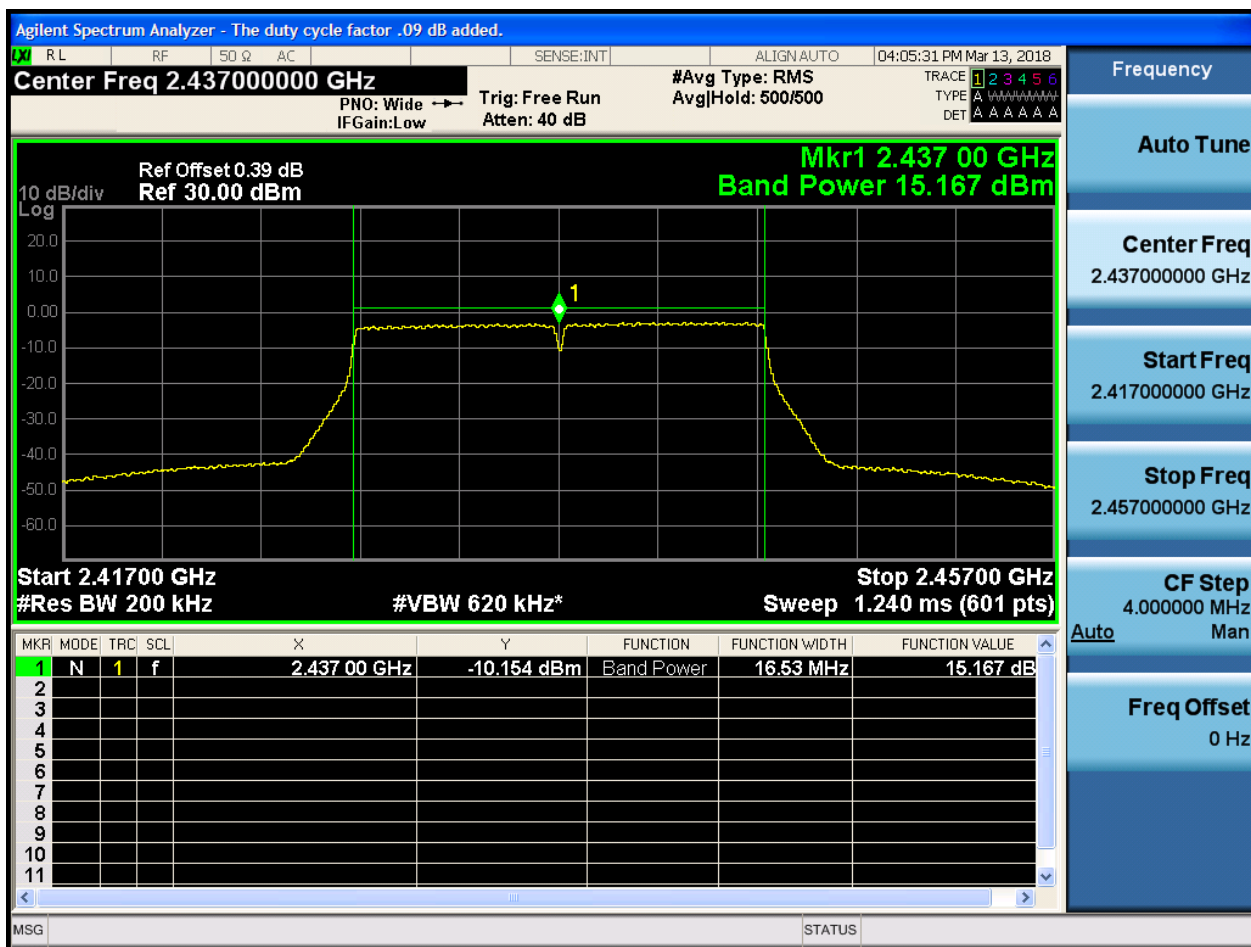
Stop Freq
2.432000000 GHz

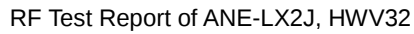
CF Step
4.000000 MHz
Man

Freq Offset
0 Hz



2.5 11G_M@Ant 1



[illegible]



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

Center Freq 2.41200000 GHz

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

Ref Offset 0.39 dB
Ref 30.00 dBm

Mkr1 2.412 00 GHz
Band Power 14.268 dBm

Start 2.39200 GHz
#Res BW 200 kHz

Stop 2.43200 GHz
Sweep 1.240 ms (601 pts)

#VBW 620 kHz*

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 00 GHz	-11.383 dBm	Band Power	17.60 MHz	14.268 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.41200000 GHz

Start Freq
2.39200000 GHz

Stop Freq
2.43200000 GHz

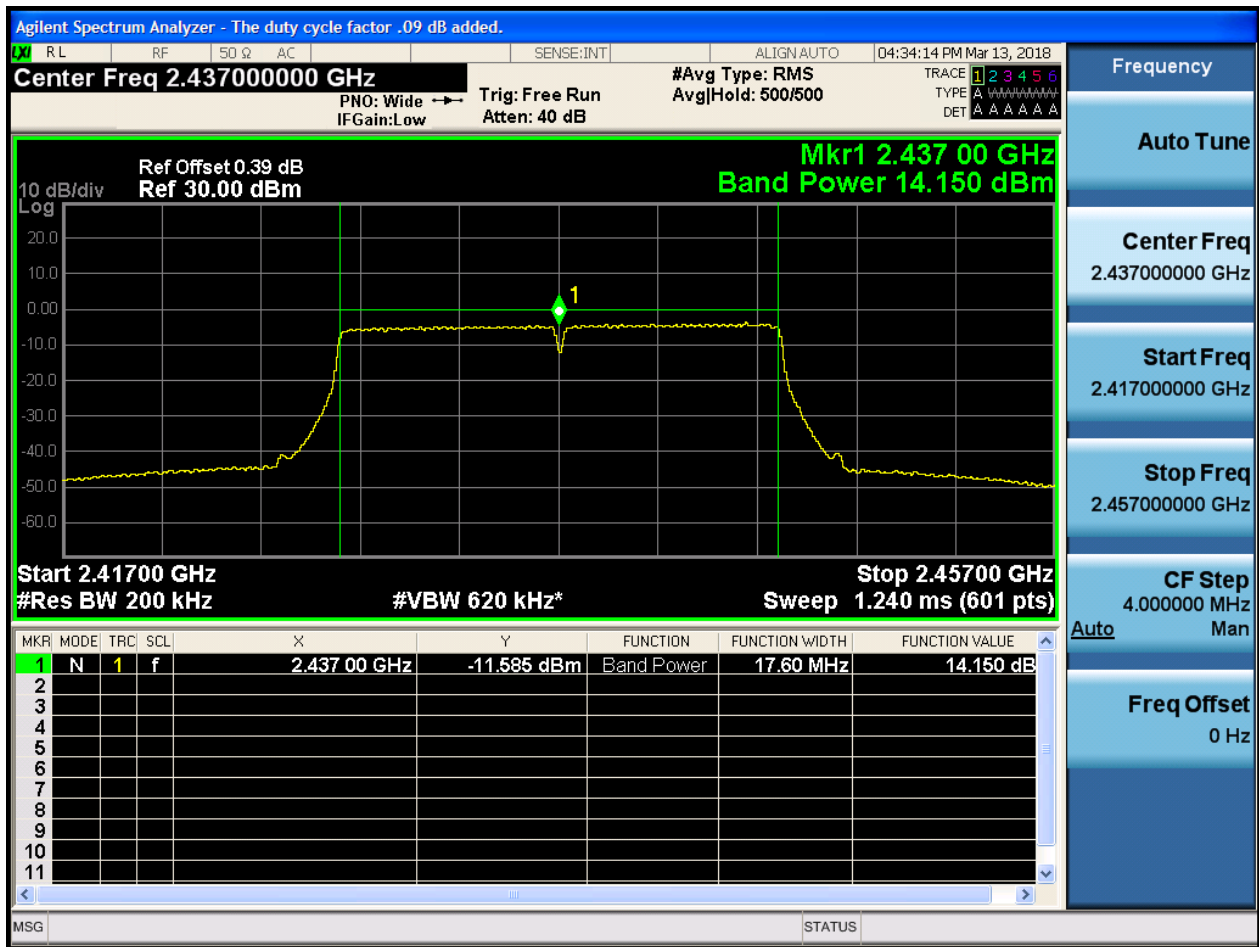
CF Step
4.000000 MHz

Auto Man

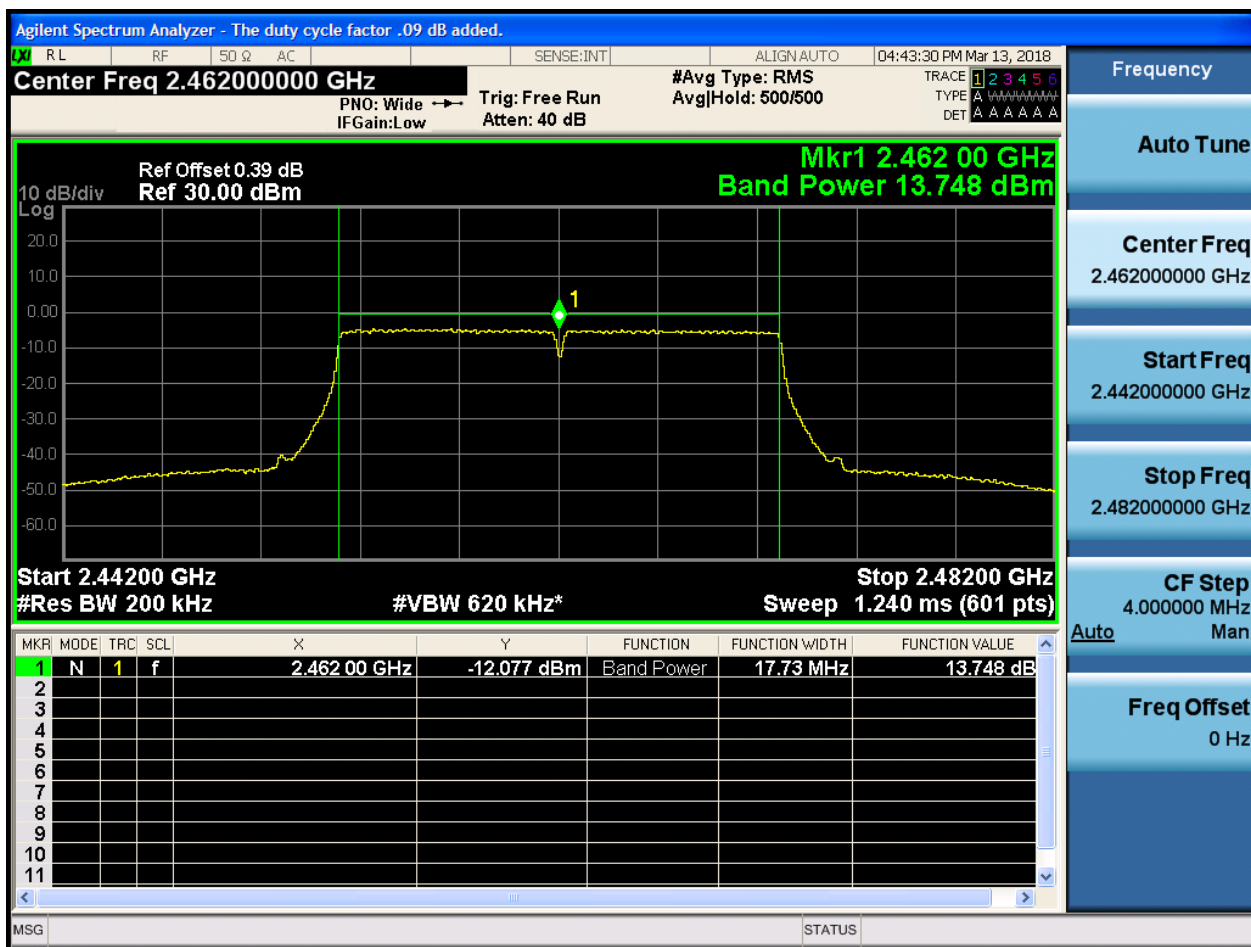
Freq Offset
0 Hz



2.8 11N20_M@Ant 1

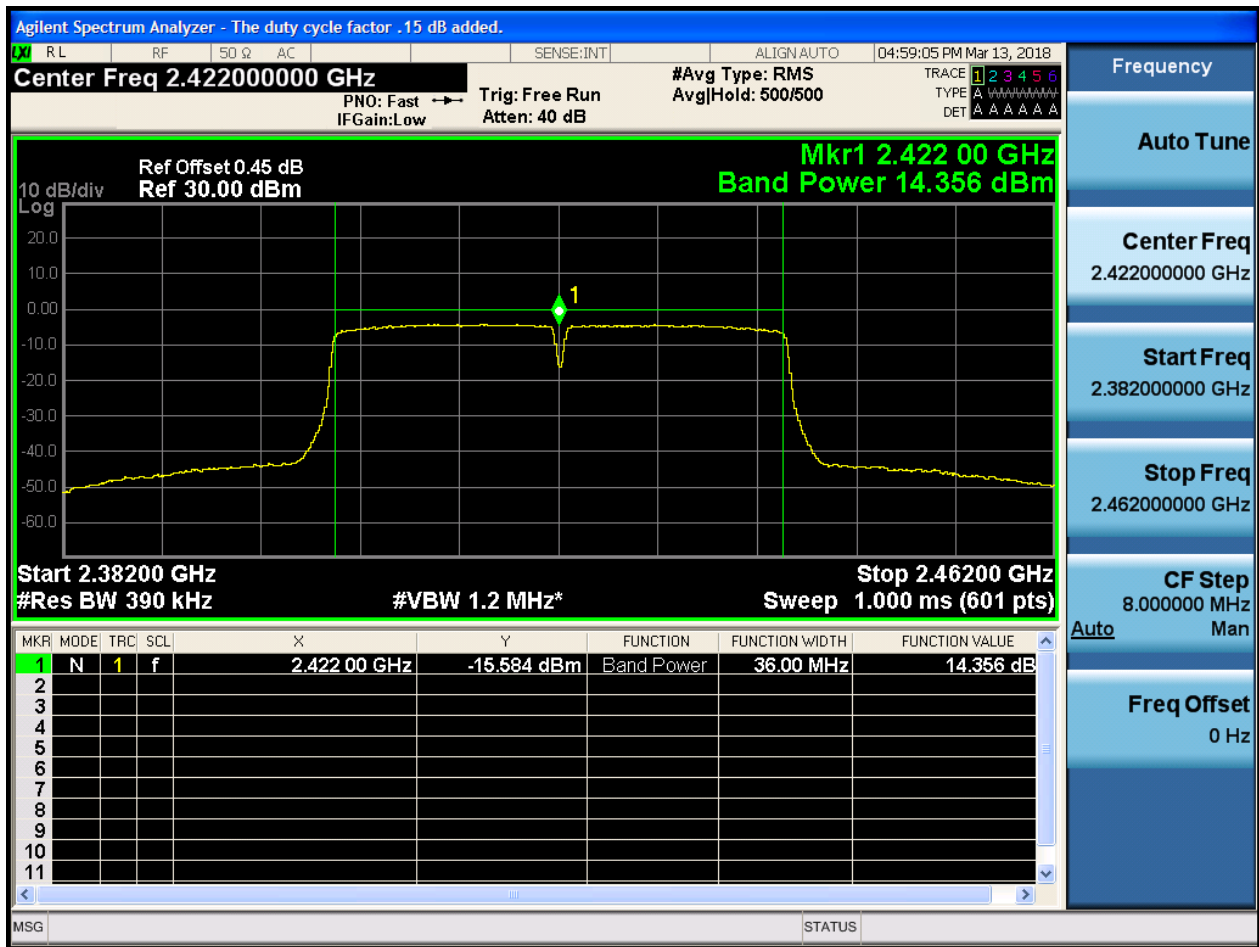


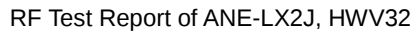
2.9 11N20_H@Ant 1





2.10 11N40_L@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .15 dB added.

Center Freq 2.437000000 GHz

#Avg Type: RMS
AvgHold: 500/500

05:09:48 PM Mar 13, 2018

TRACE 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: 40 dB

Ref Offset 0.45 dB
Ref 30.00 dBm

Mkr1 2.437 00 GHz
Band Power 13.728 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	-16.555 dBm	Band Power	36.00 MHz	13.728 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.437000000 GHz

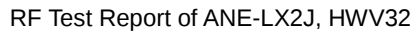
Start Freq
2.397000000 GHz

Stop Freq
2.477000000 GHz

CF Step
8.000000 MHz
Man

Auto

Freq Offset
0 Hz



Agilent Spectrum Analyzer - The duty cycle factor .15 dB added.

Center Freq 2.45200000 GHz

#Avg Type: RMS
AvgHold: 500/500

05:18:54 PM Mar 13, 2018

TRACE 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: 40 dB

Ref Offset 0.45 dB
Ref 30.00 dBm

Mkr1 2.452 00 GHz
Band Power 13.723 dBm

10 dB/div
Log

Start 2.41200 GHz
#Res BW 390 kHz

Stop 2.49200 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	2.452 00 GHz	-15.543 dBm	Band Power	36.00 MHz	13.723 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.45200000 GHz

Start Freq
2.41200000 GHz

Stop Freq
2.49200000 GHz

CF Step
8.000000 MHz
Man

Auto

Freq Offset
0 Hz

Appendix E: Maximum Power Spectral Density Level

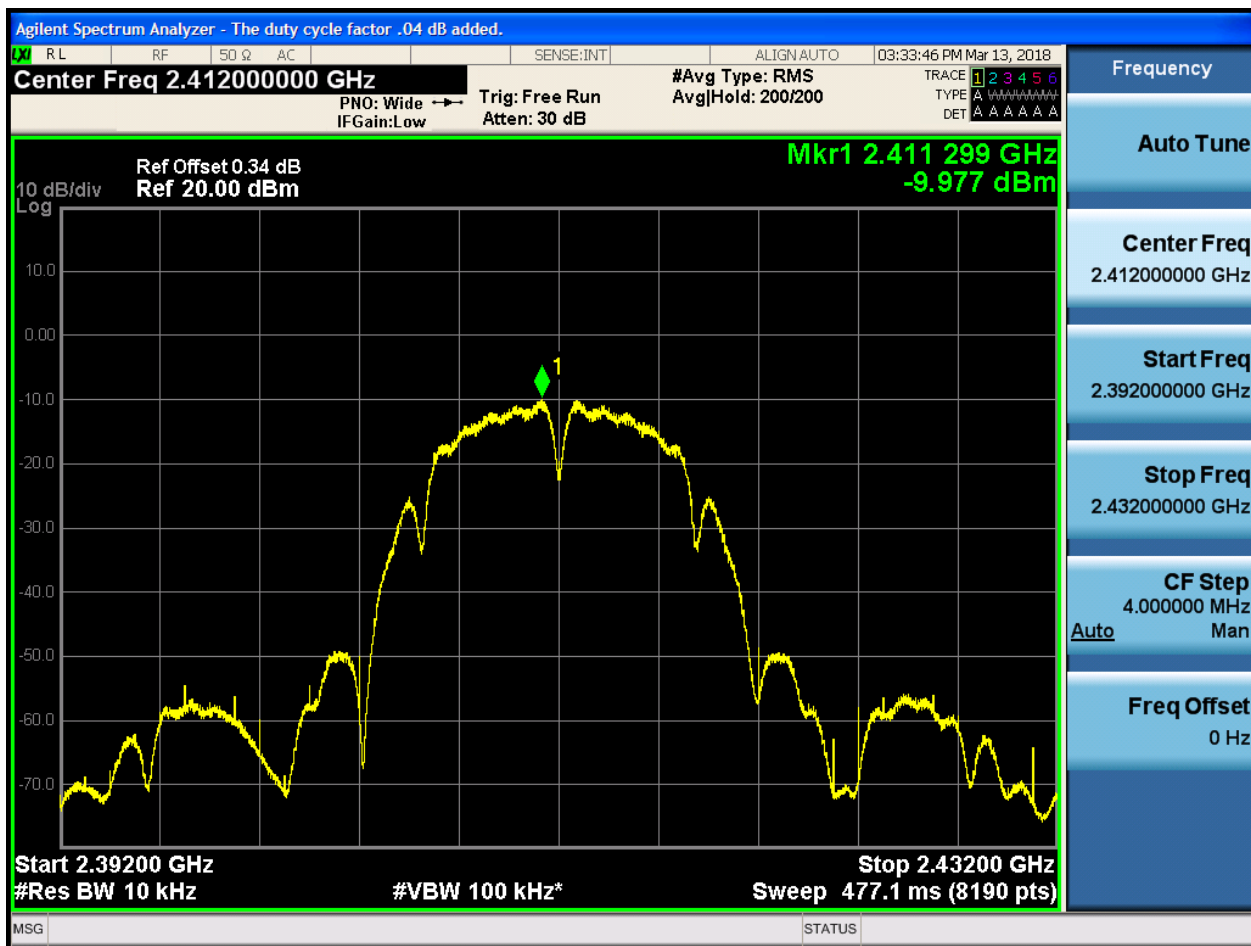
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Duty Cycle [%]	PD[MHz]	Verdict
11B	L	2412	Ant 1	99	-9.98	pass
11B	M	2437	Ant 1	99	-10.05	pass
11B	H	2462	Ant 1	99	-10.18	pass
11G	L	2412	Ant 1	98	-14.35	pass
11G	M	2437	Ant 1	98	-13.97	pass
11G	H	2462	Ant 1	98	-14.94	pass
11N20	L	2412	Ant 1	98	-15.24	pass
11N20	M	2437	Ant 1	98	-15.36	pass
11N20	H	2462	Ant 1	98	-16.08	pass
11N40	L	2422	Ant 1	96.5	-17.94	pass
11N40	M	2437	Ant 1	96.5	-18.17	pass
11N40	H	2452	Ant 1	96.5	-18.24	pass



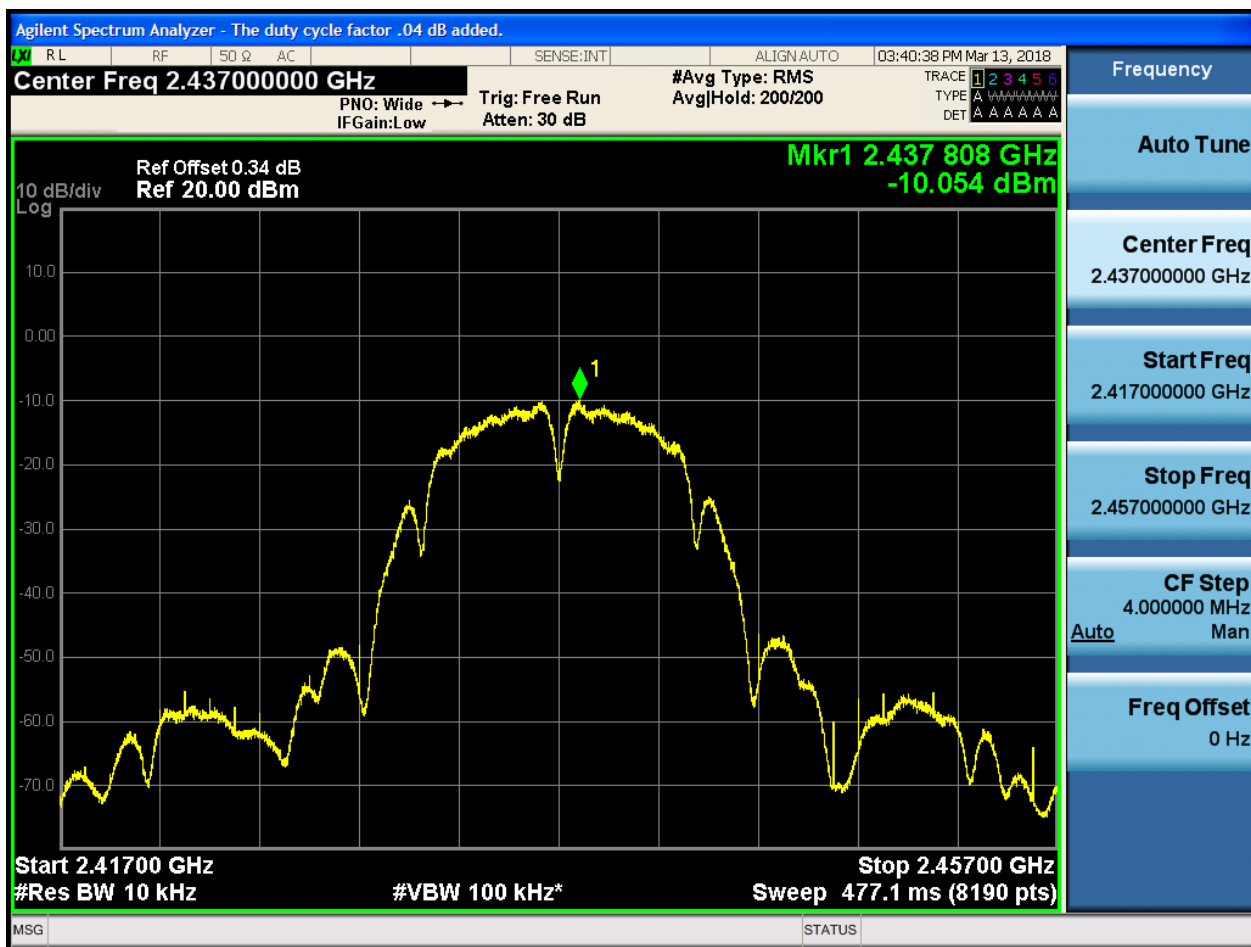
Part II - Test Plots

2.1 11B_L@Ant 1





2.2 11B_M@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor .04 dB added.

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 03:48:32 PM Mar 13, 2018

Center Freq 2.462000000 GHz #Avg Type: RMS AvgHold: 200/200

PNO: Wide $\rightarrow$ Trig: Free Run IFGain:Low Atten: 30 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 0.34 dB
Ref 20.00 dBm

**Mkr1 2.461 196 GHz
-10.183 dBm**

10 dB/div
Log

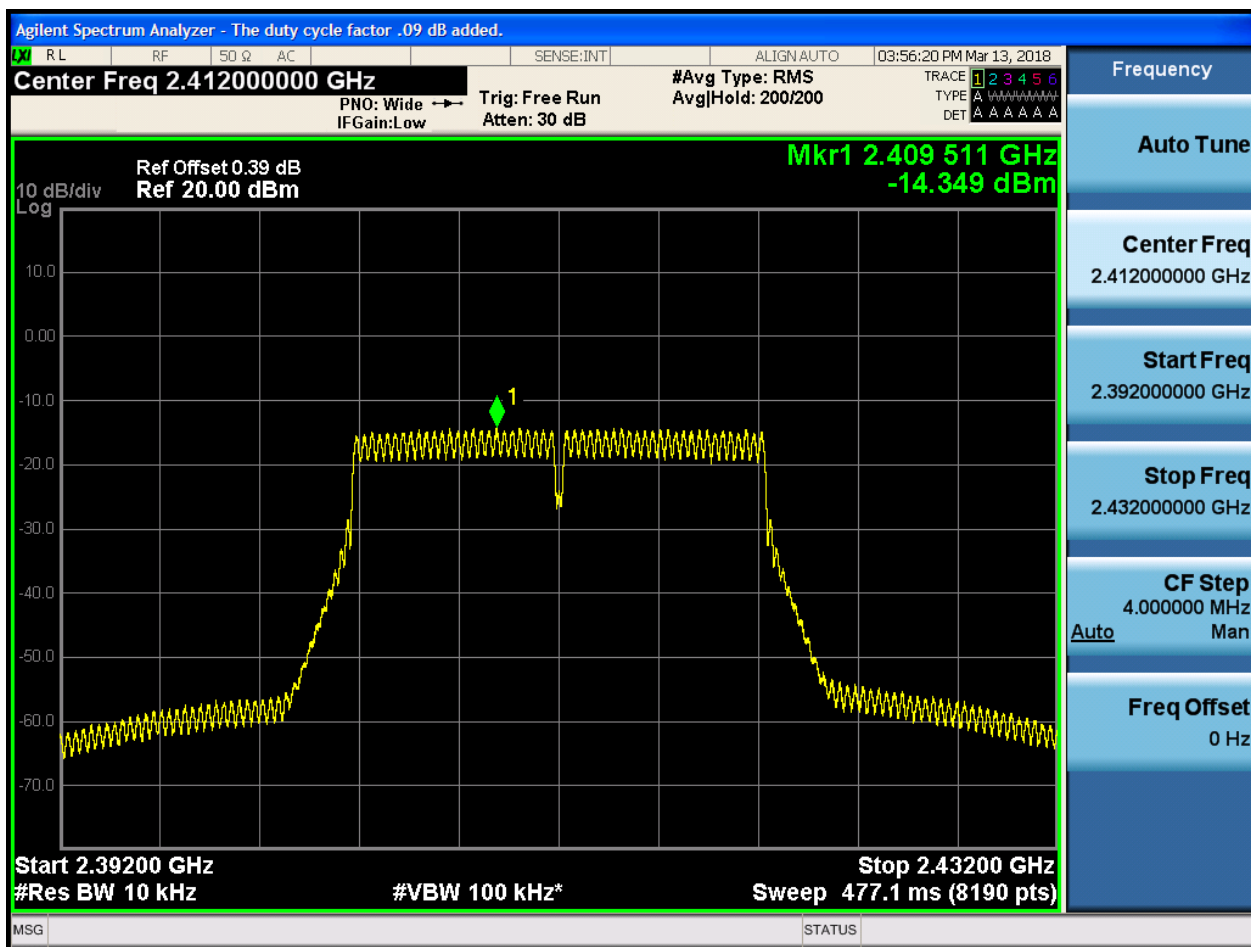
Start 2.44200 GHz Stop 2.48200 GHz
#Res BW 10 kHz #VBW 100 kHz* Sweep 477.1 ms (8190 pts)

Frequency
Auto Tune
Center Freq 2.462000000 GHz
Start Freq 2.442000000 GHz
Stop Freq 2.482000000 GHz
CF Step 4.000000 MHz Auto Man
Freq Offset 0 Hz

MSG STATUS

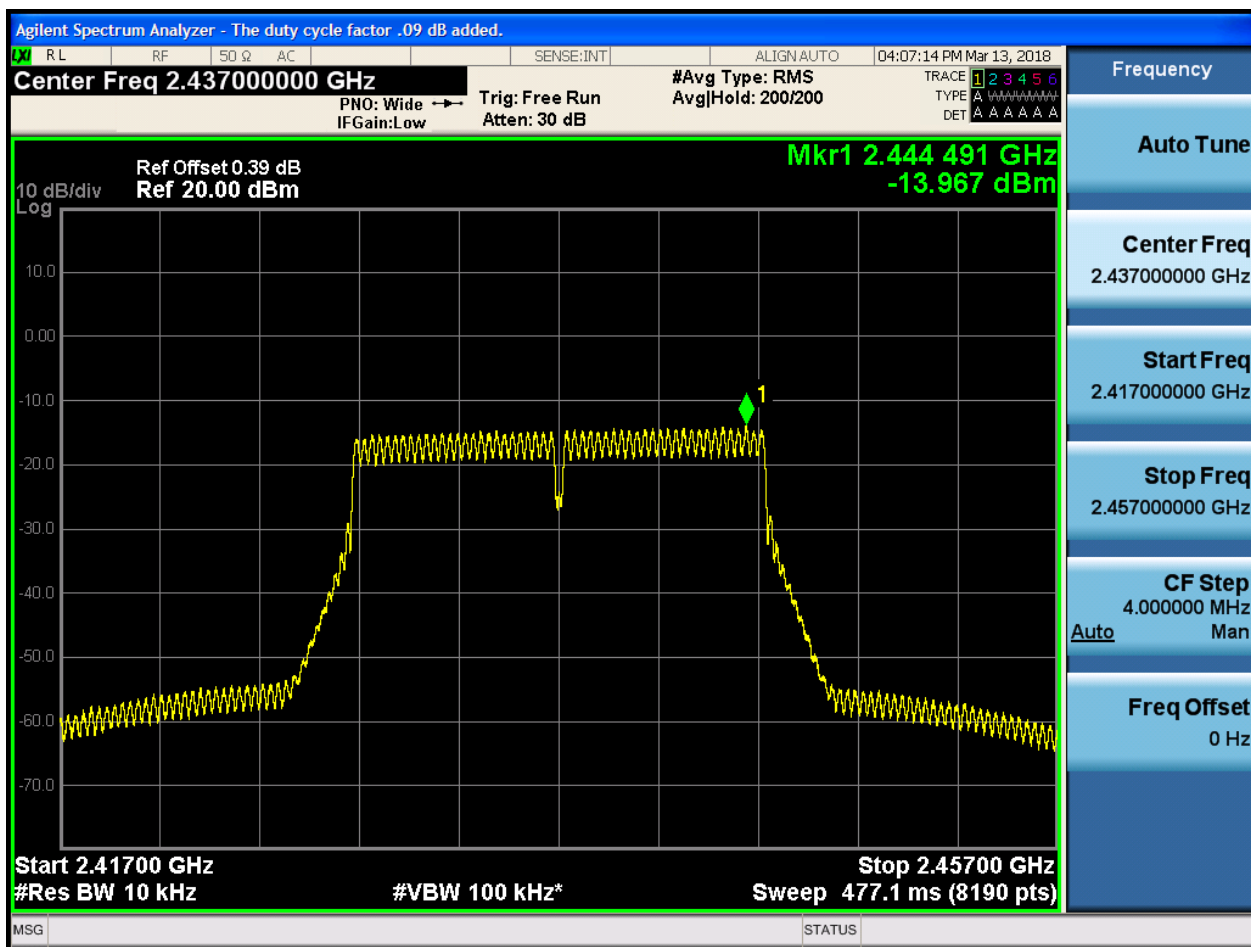


2.4 11G_L@Ant 1



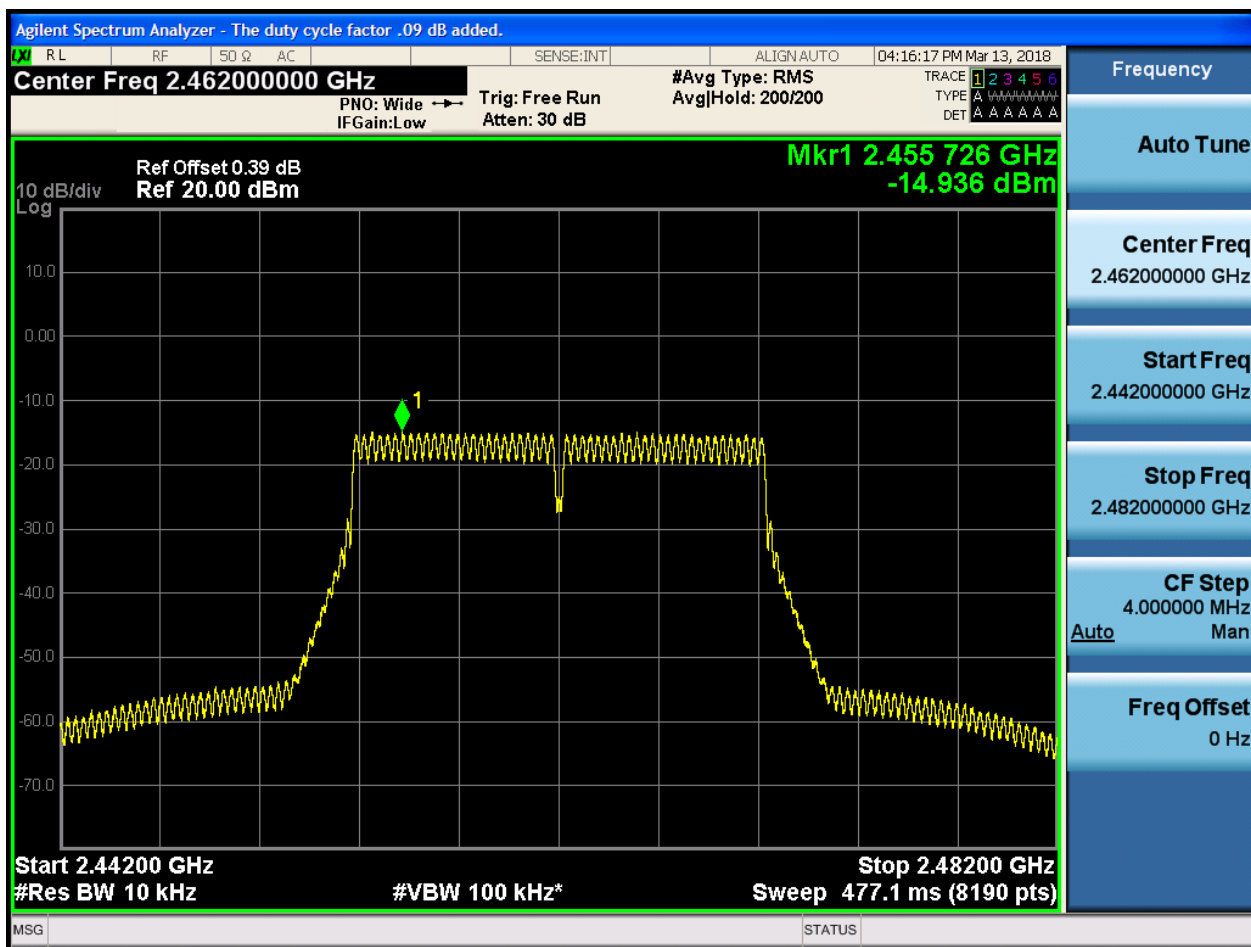


2.5 11G_M@Ant 1



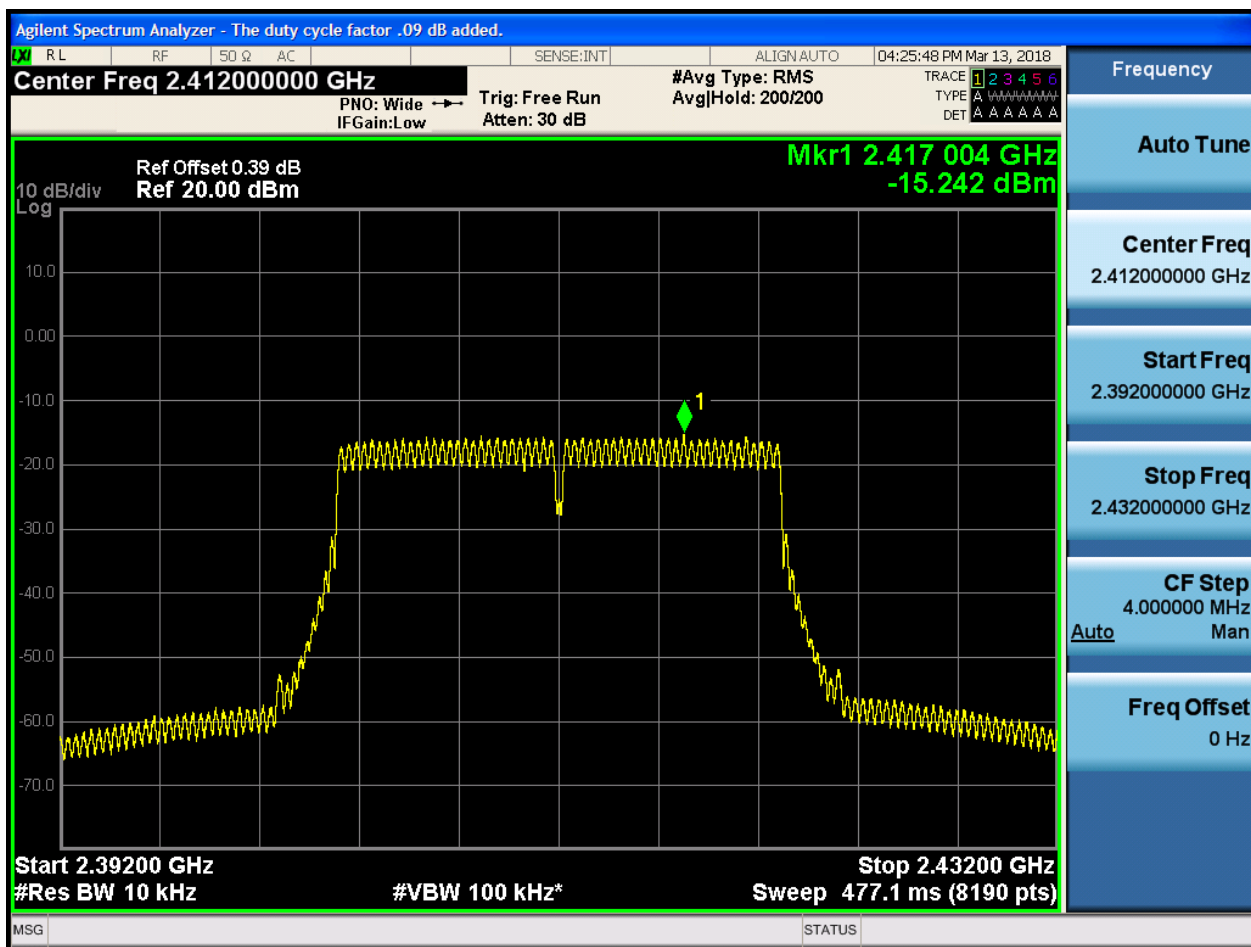


2.6 11G_H@Ant 1



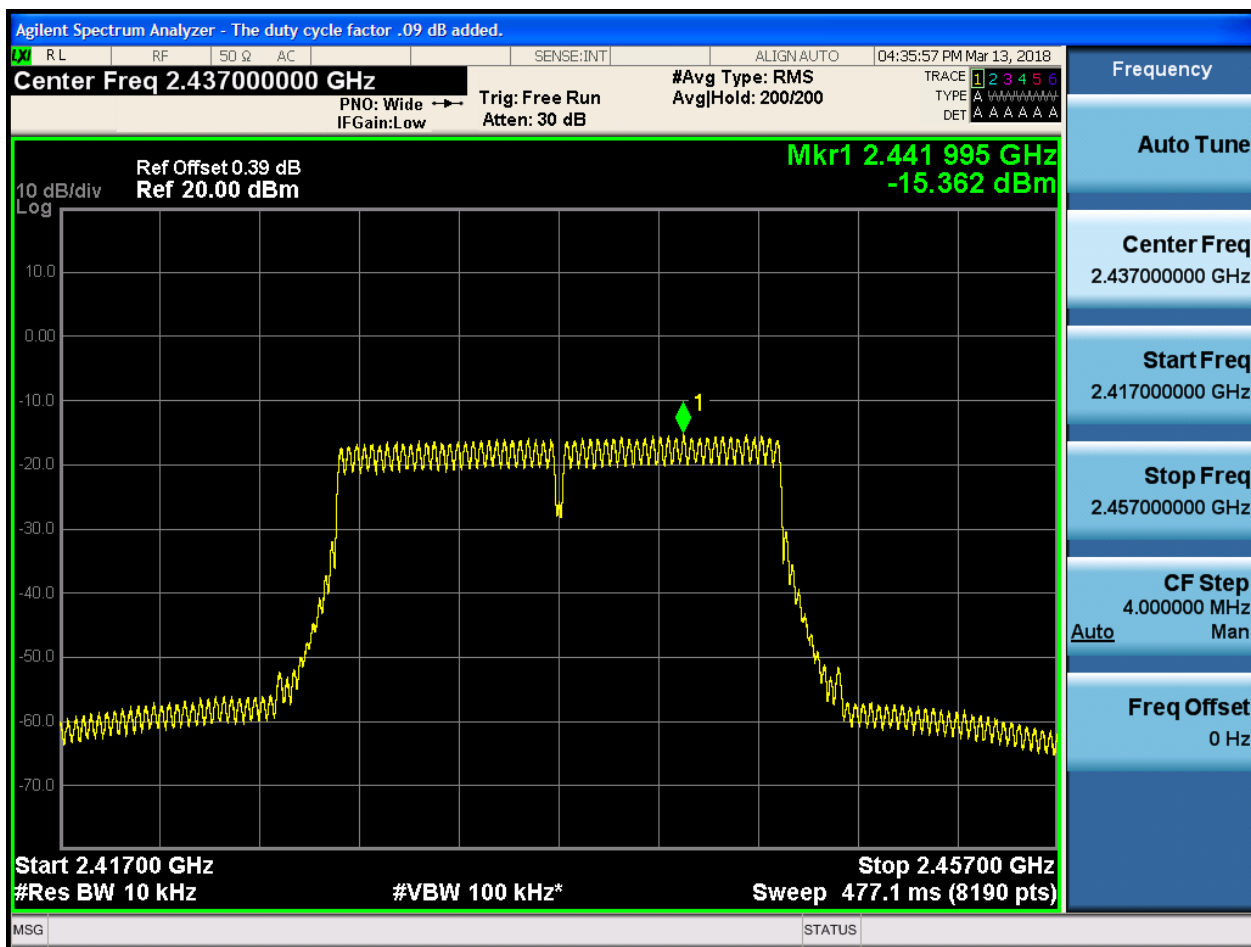


2.7 11N20_L@Ant 1



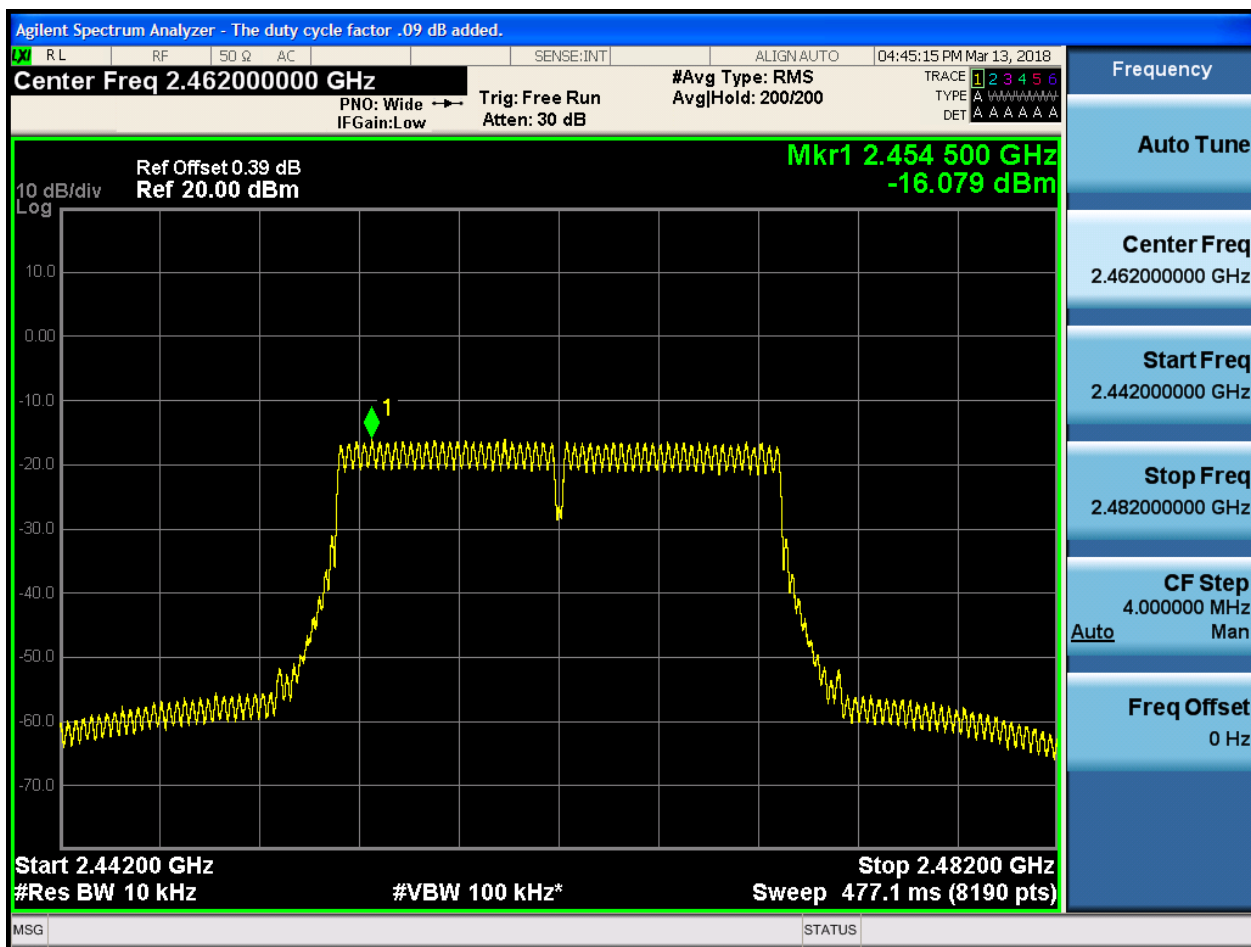


2.8 11N20_M@Ant 1



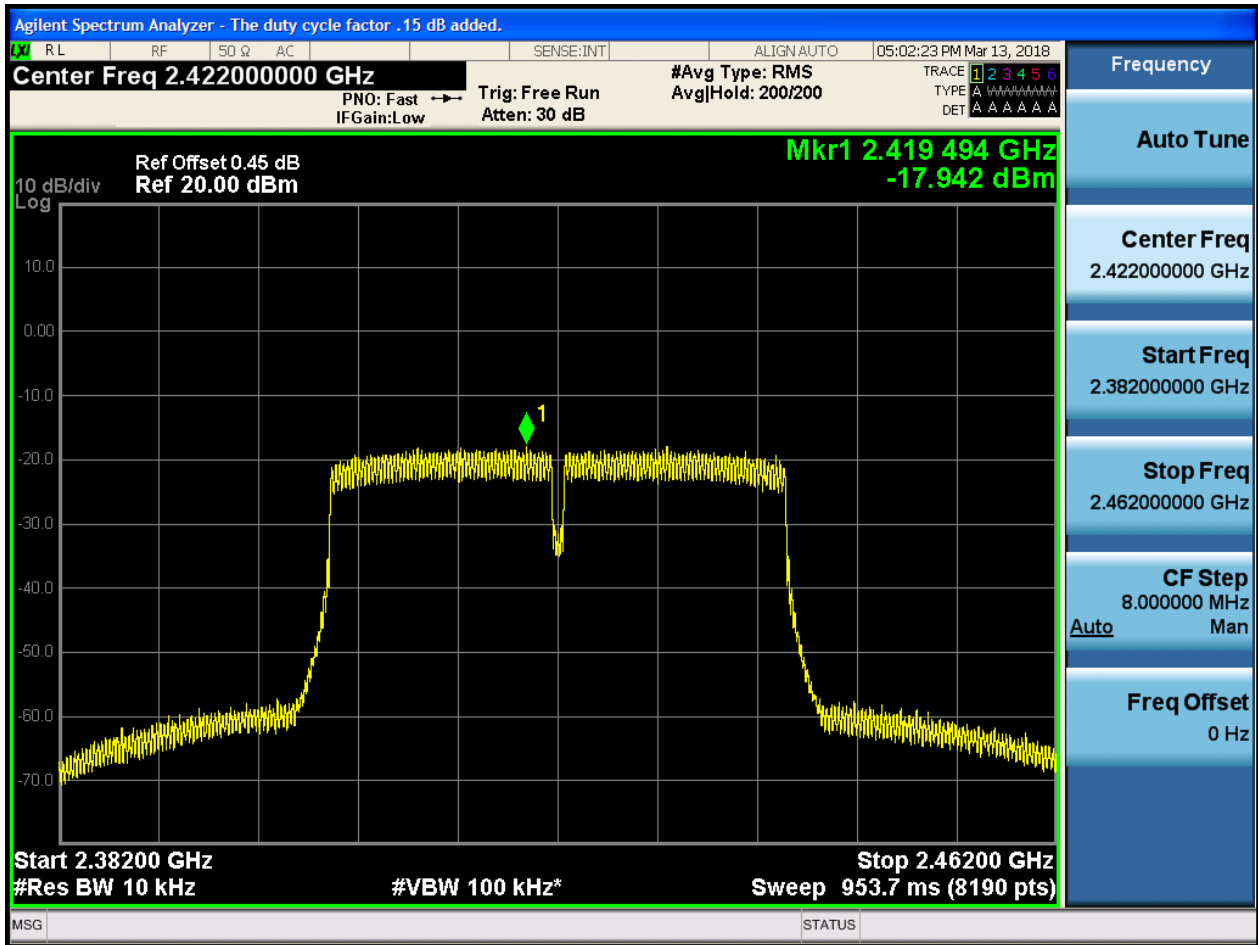


2.9 11N20_H@Ant 1



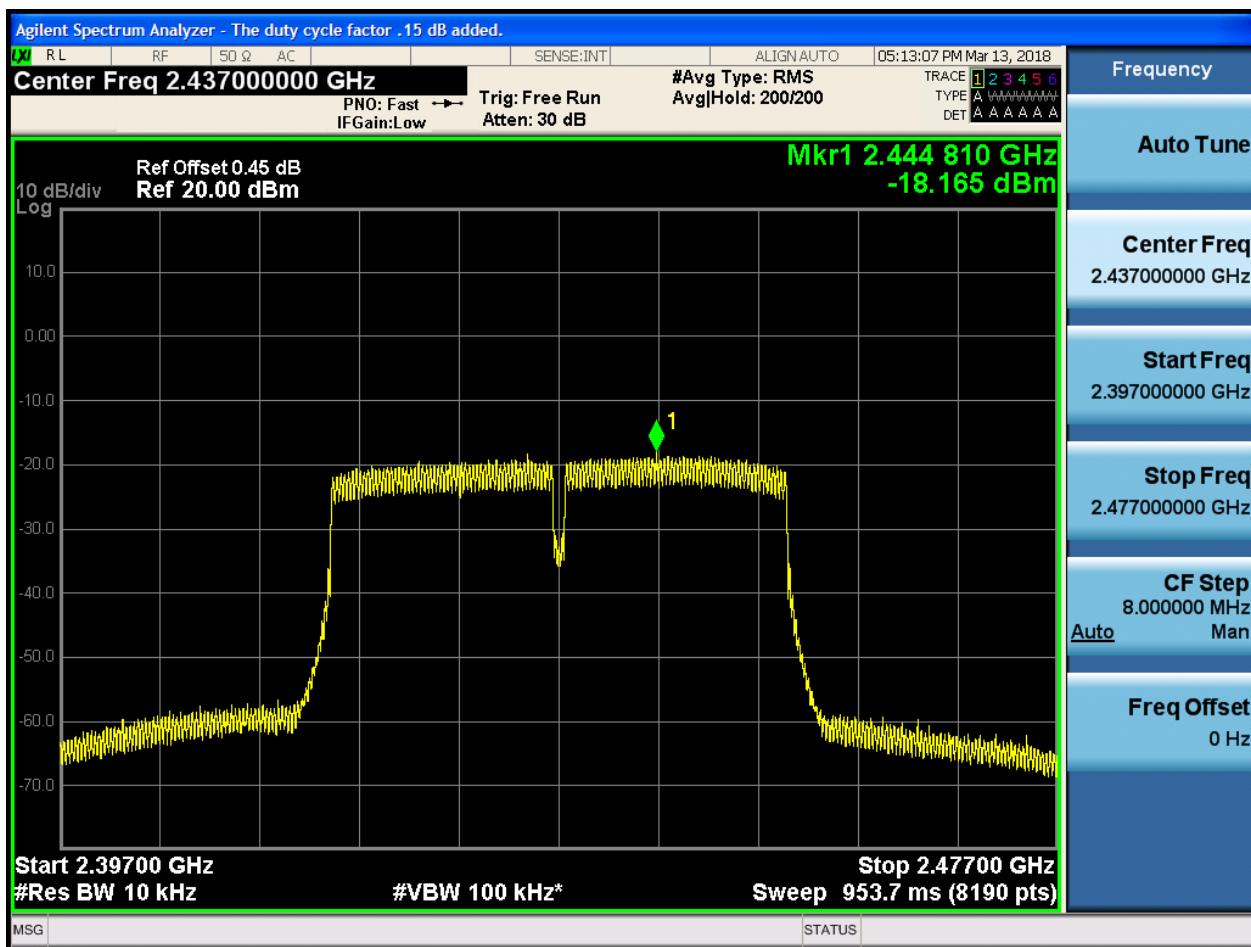


2.10 11N40_L@Ant 1



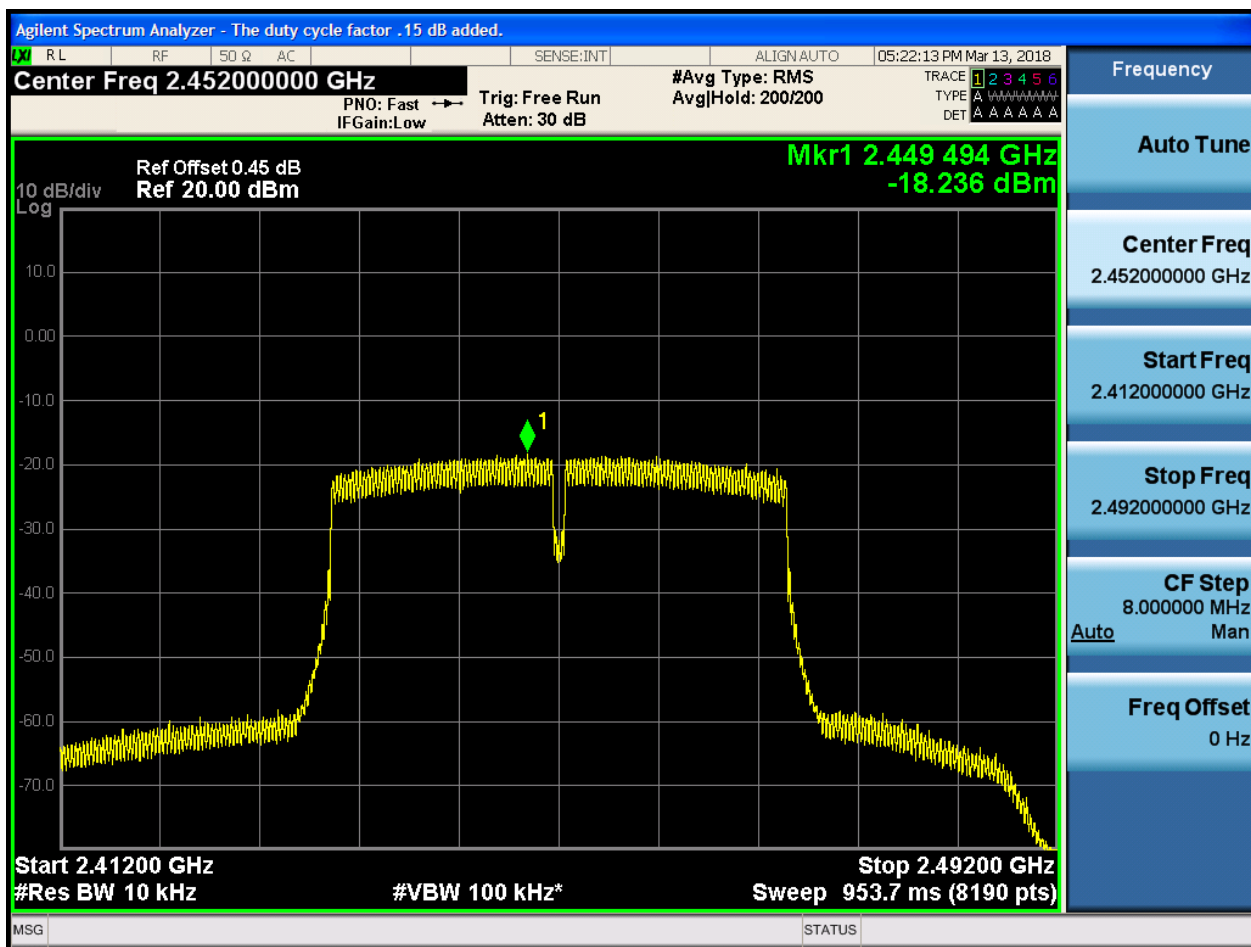


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix 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	8.05	-43.93	pass
11B	H	2462	Ant 1	7.24	-47.14	pass
11G	L	2412	Ant 1	3.59	-36.80	pass
11G	H	2462	Ant 1	3.39	-44.80	pass
11N20	L	2412	Ant 1	2.60	-39.44	pass
11N20	H	2462	Ant 1	2.27	-43.74	pass
11N40	L	2422	Ant 1	0.15	-40.26	pass
11N40	H	2452	Ant 1	-0.09	-40.43	pass



Part II - Test Plots

2.1 11B_L@Ant 1





2.2 11B_H@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.40000000 GHz

Ref Offset 0.3 dB
Ref 30.00 dBm

Mkr2 2.400 00 GHz
-36.802 dBm

Start 2.38000 GHz
#Res BW 100 kHz

Stop 2.42000 GHz
#Sweep 100.0 ms (601 pts)

#VBW 300 kHz

10 dB/div
Log

20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0

2.414 53 GHz
3.594 dBm

2.400 00 GHz
-36.802 dBm

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.414 53 GHz	3.594 dBm			
2	N	1	f	2.400 00 GHz	-36.802 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.40000000 GHz

Start Freq
2.38000000 GHz

Stop Freq
2.42000000 GHz

CF Step
4.000000 MHz

Auto

Freq Offset
0 Hz

MSG

STATUS

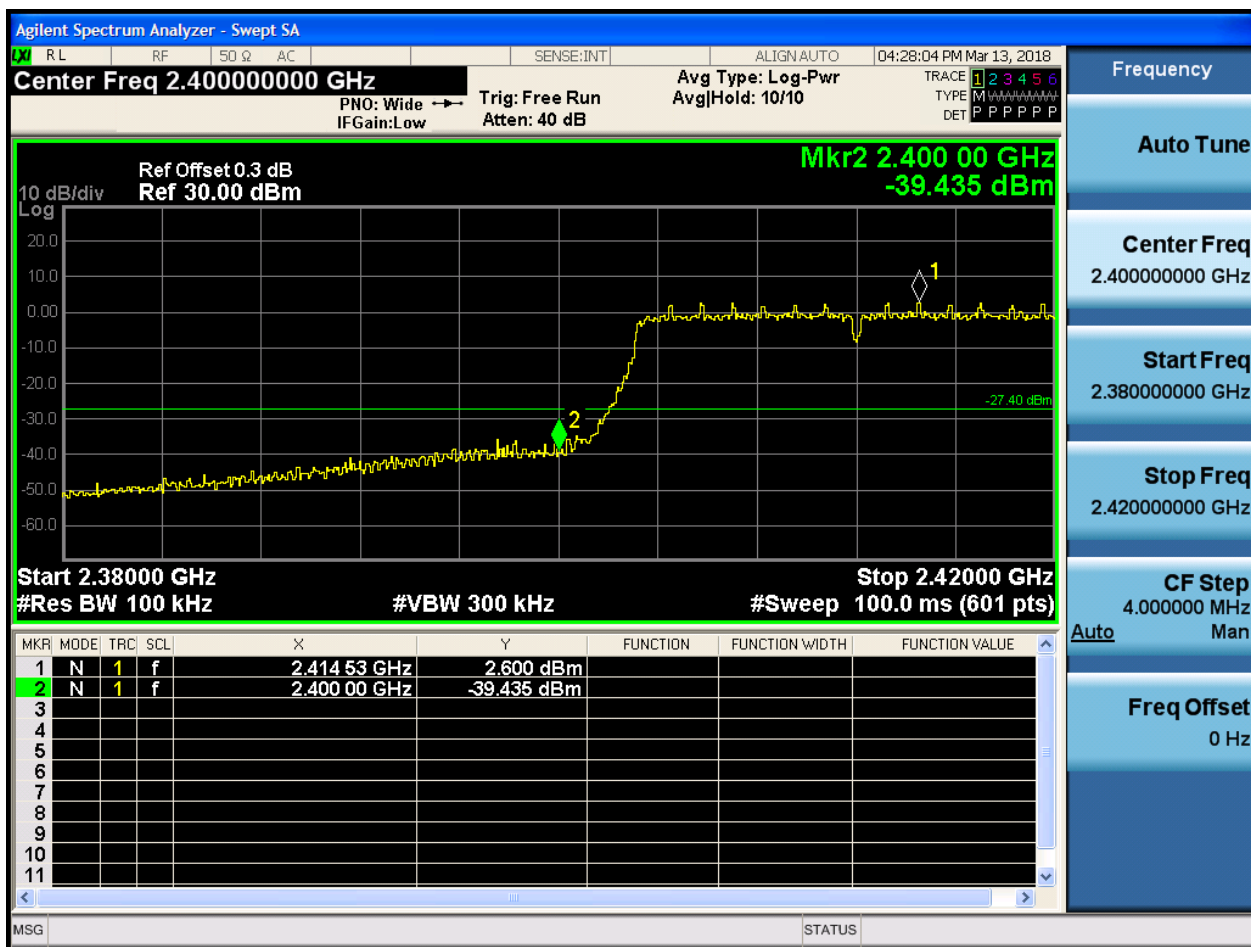


2.4 11G_H@Ant 1





2.5 11N20_L@Ant 1





2.6 11N20_H@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq 2.40000000 GHz

Ref Offset 0.3 dB
Ref 30.00 dBm

Mkr2 2.400 00 GHz
-40.263 dBm

Start 2.38000 GHz
#Res BW 100 kHz

Stop 2.42000 GHz
#Sweep 100.0 ms (601 pts)

#VBW 300 kHz

10 dB/div
Log

20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0

2.414 53 GHz
0.150 dBm

2.400 00 GHz
-40.263 dBm

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.414 53 GHz	0.150 dBm			
2	N	1	f	2.400 00 GHz	-40.263 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

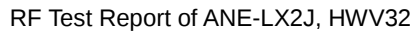
Center Freq
2.400000000 GHz

Start Freq
2.380000000 GHz

Stop Freq
2.420000000 GHz

CF Step
4.000000 MHz
Auto

Freq Offset
0 Hz



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 05:24:43 PM Mar 13, 2018

Center Freq 2.47350000 GHz Avg Type: Log-Pwr
 PNO: Wide → Trig: Free Run Att: 40 dB
 IFGain:Low TYPE M P P P P P P DET

Ref Offset 0.3 dB Mkr2 2.483 50 GHz
 Ref 30.00 dBm -40.427 dBm

10 dB/div Log

Start 2.45350 GHz Stop 2.49350 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	2.455 77 GHz	-0.094 dBm			
2	N	1	f	2.483 50 GHz	-40.427 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.47350000 GHz

Start Freq
2.45350000 GHz

Stop Freq
2.49350000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

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

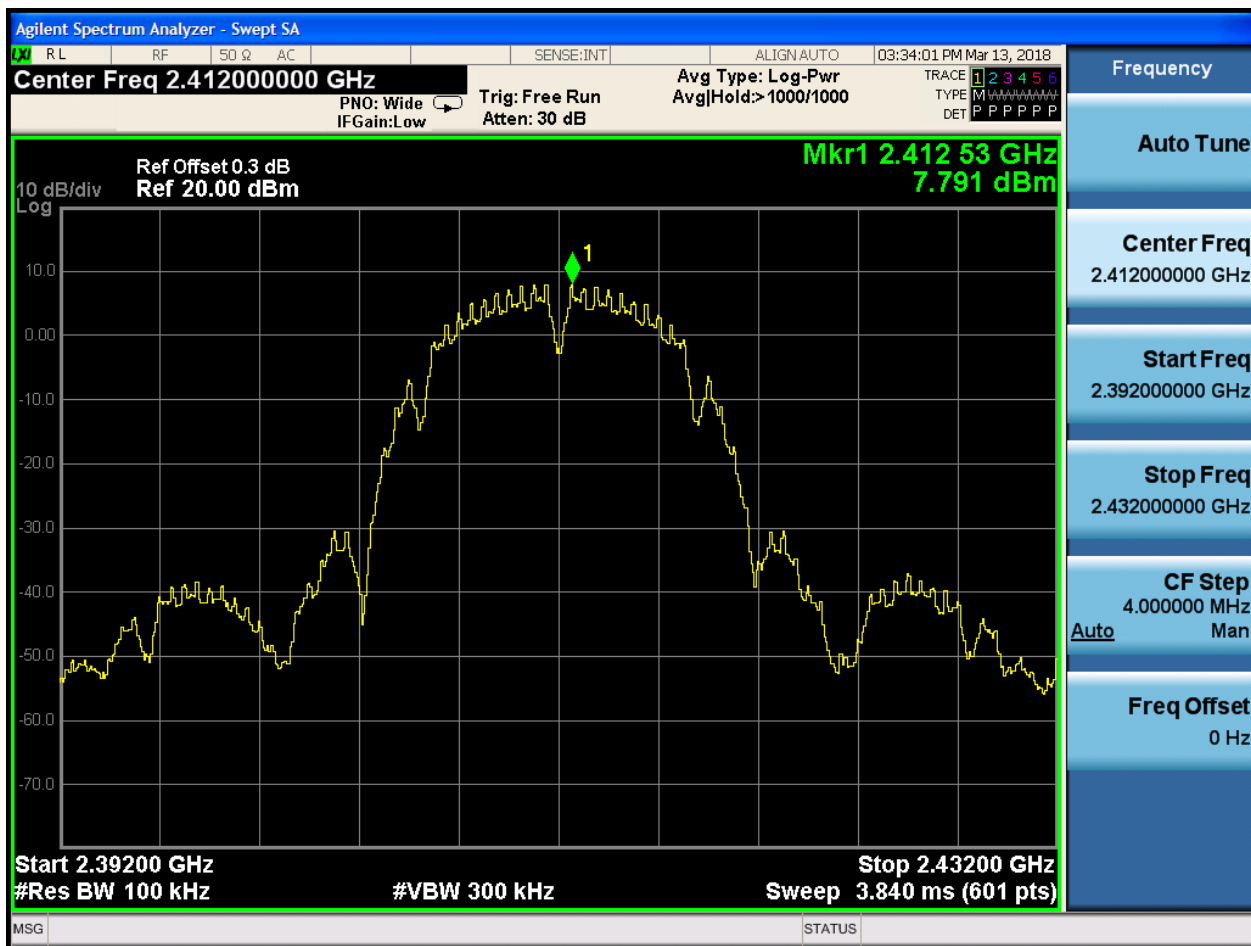
Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	7.79	<limit	pass
11B	M	2437	Ant 1	7.89	<limit	pass
11B	H	2462	Ant 1	7.37	<limit	pass
11G	L	2412	Ant 1	4.06	<limit	pass
11G	M	2437	Ant 1	4.05	<limit	pass
11G	H	2462	Ant 1	3.47	<limit	pass
11N20	L	2412	Ant 1	3.03	<limit	pass
11N20	M	2437	Ant 1	2.50	<limit	pass
11N20	H	2462	Ant 1	2.40	<limit	pass
11N40	L	2422	Ant 1	0.49	<limit	pass
11N40	M	2437	Ant 1	0.30	<limit	pass
11N40	H	2452	Ant 1	0.07	<limit	pass



Part II - Test Plots

2.1 11B_L@Ant 1

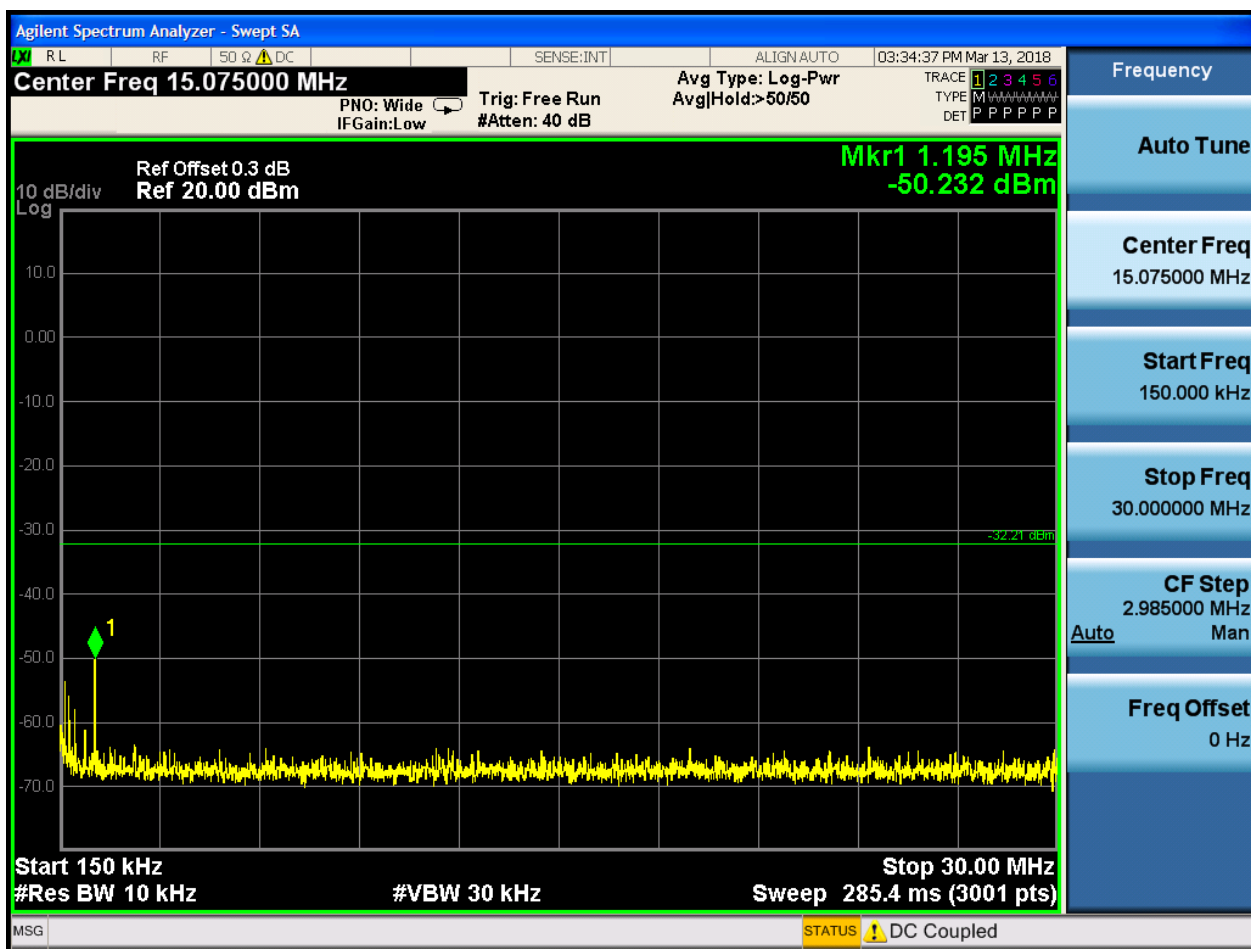
Pref:

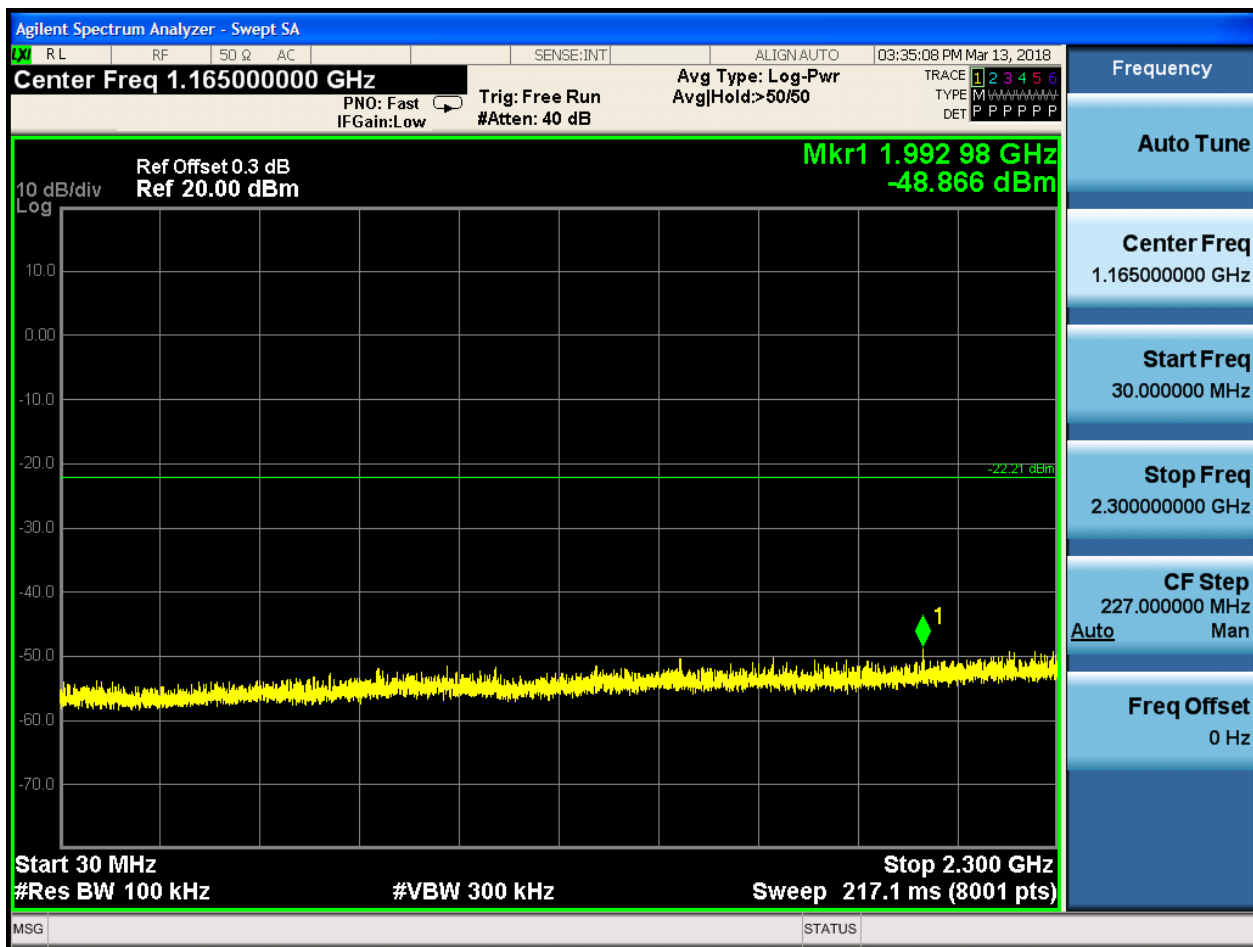


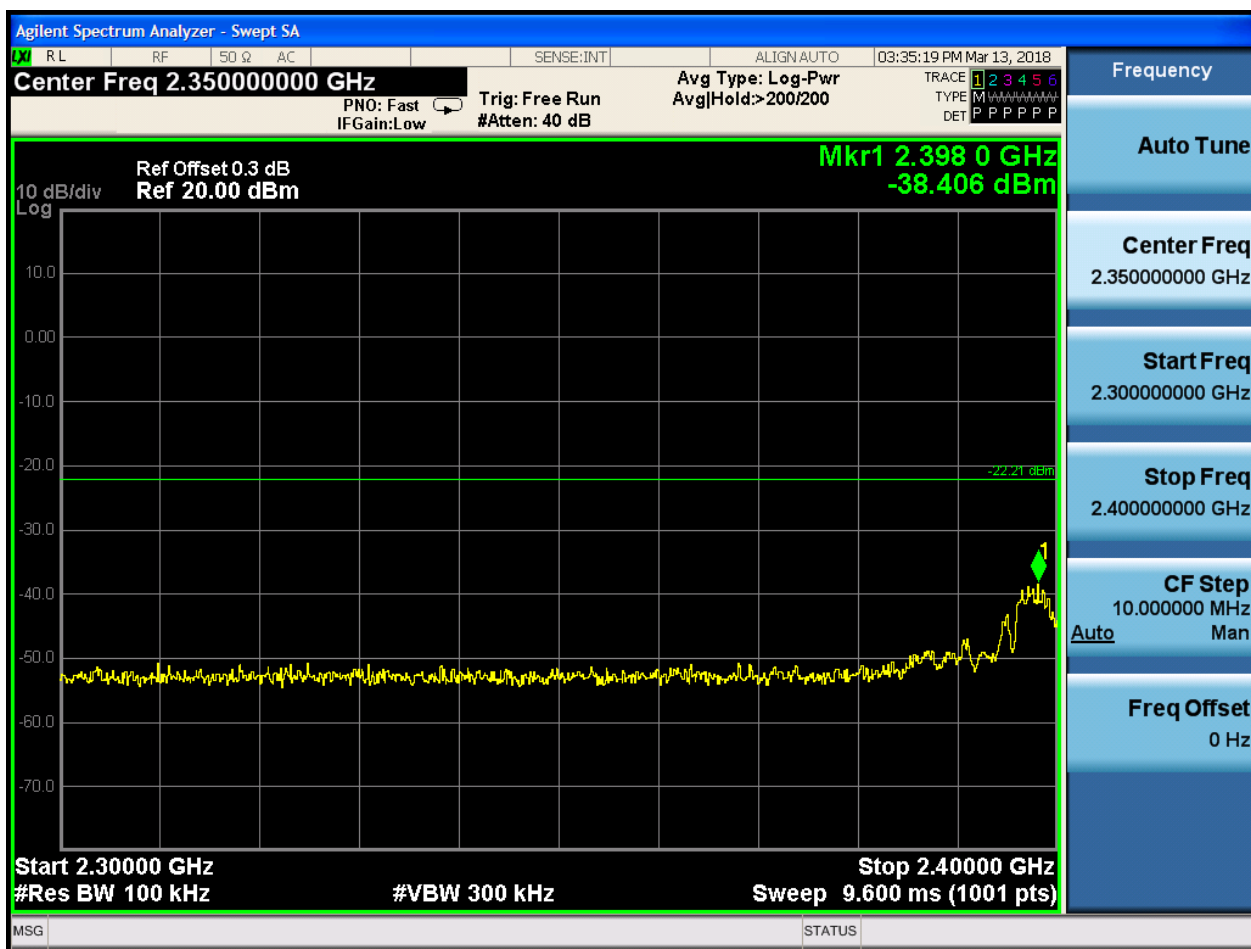


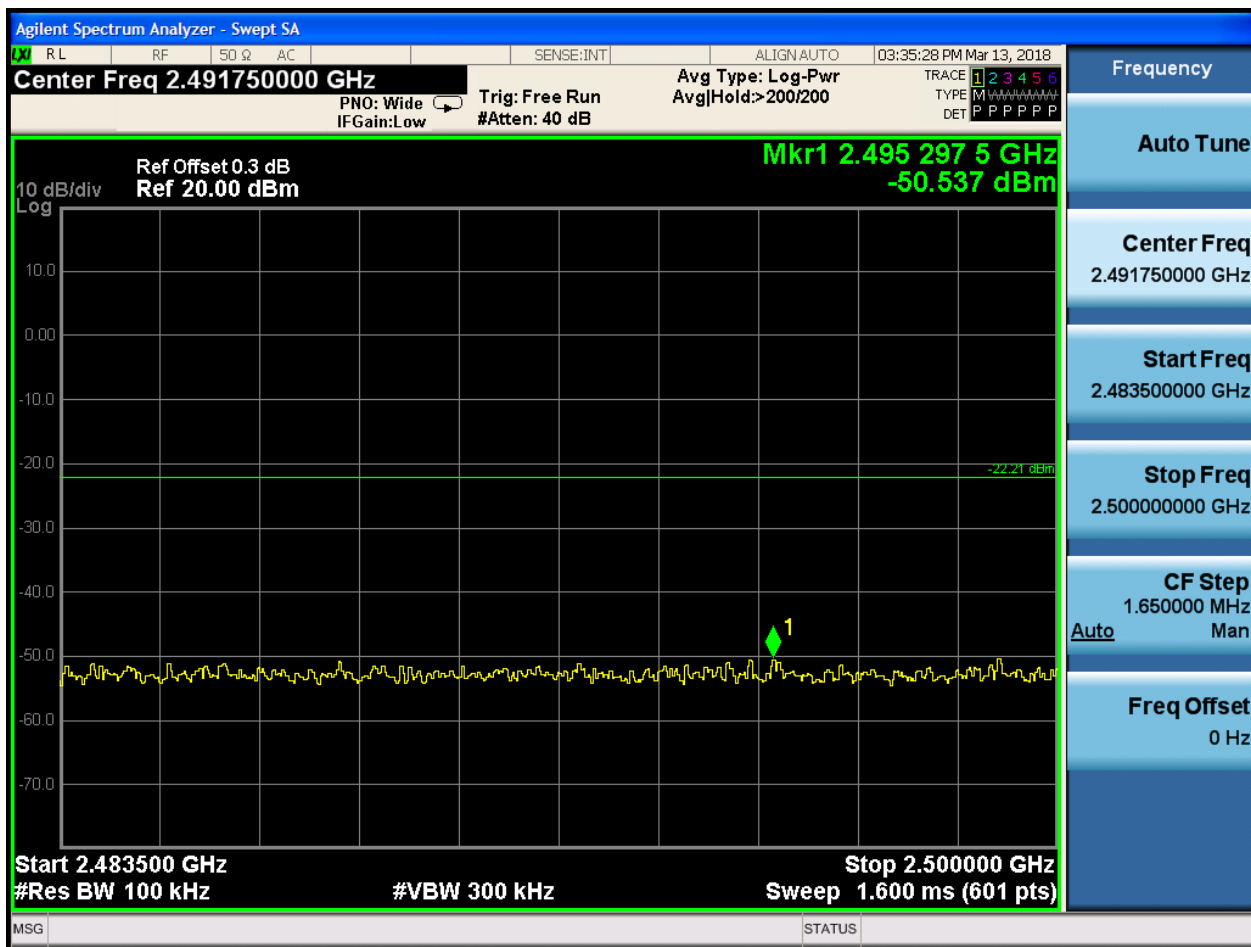
Puw:









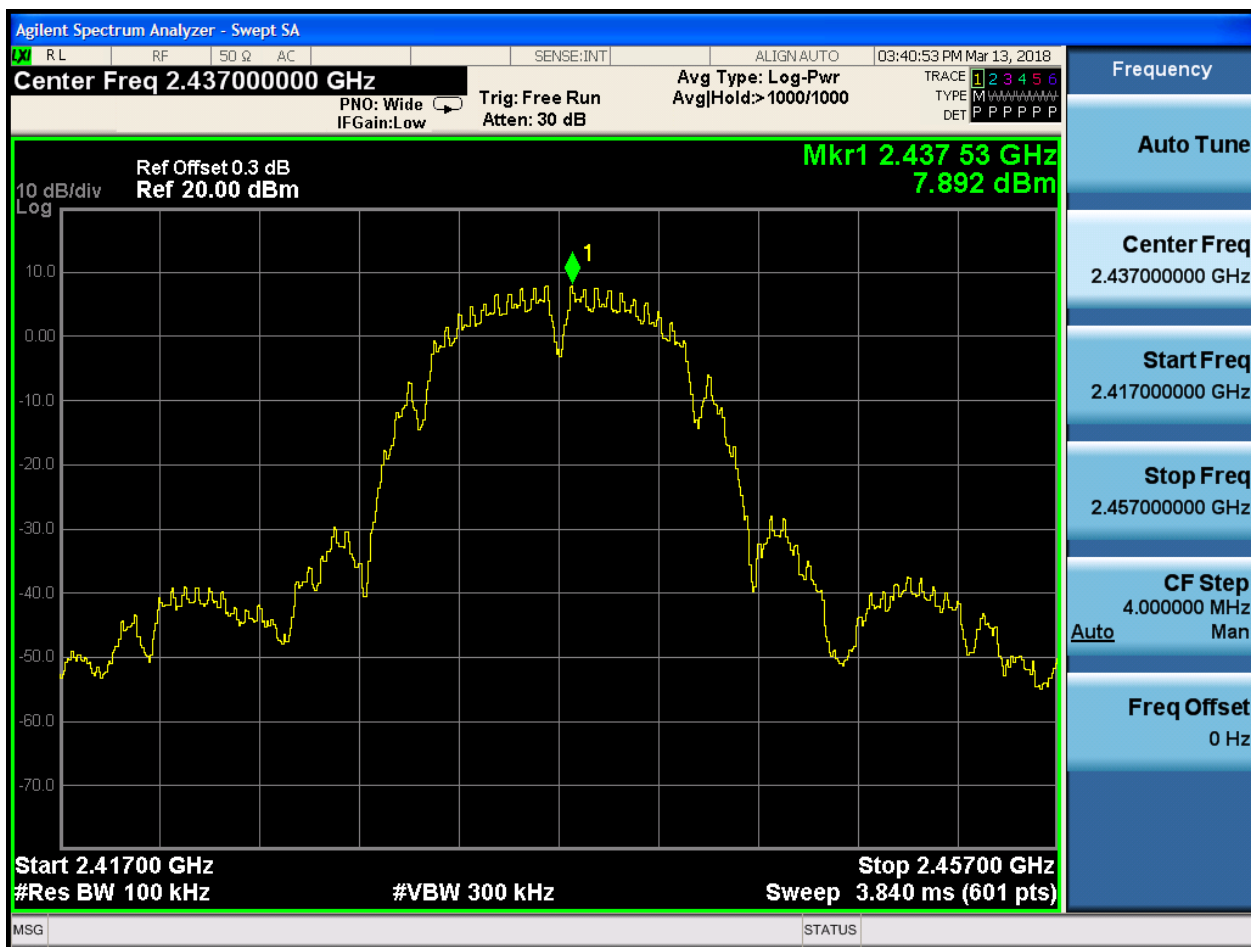






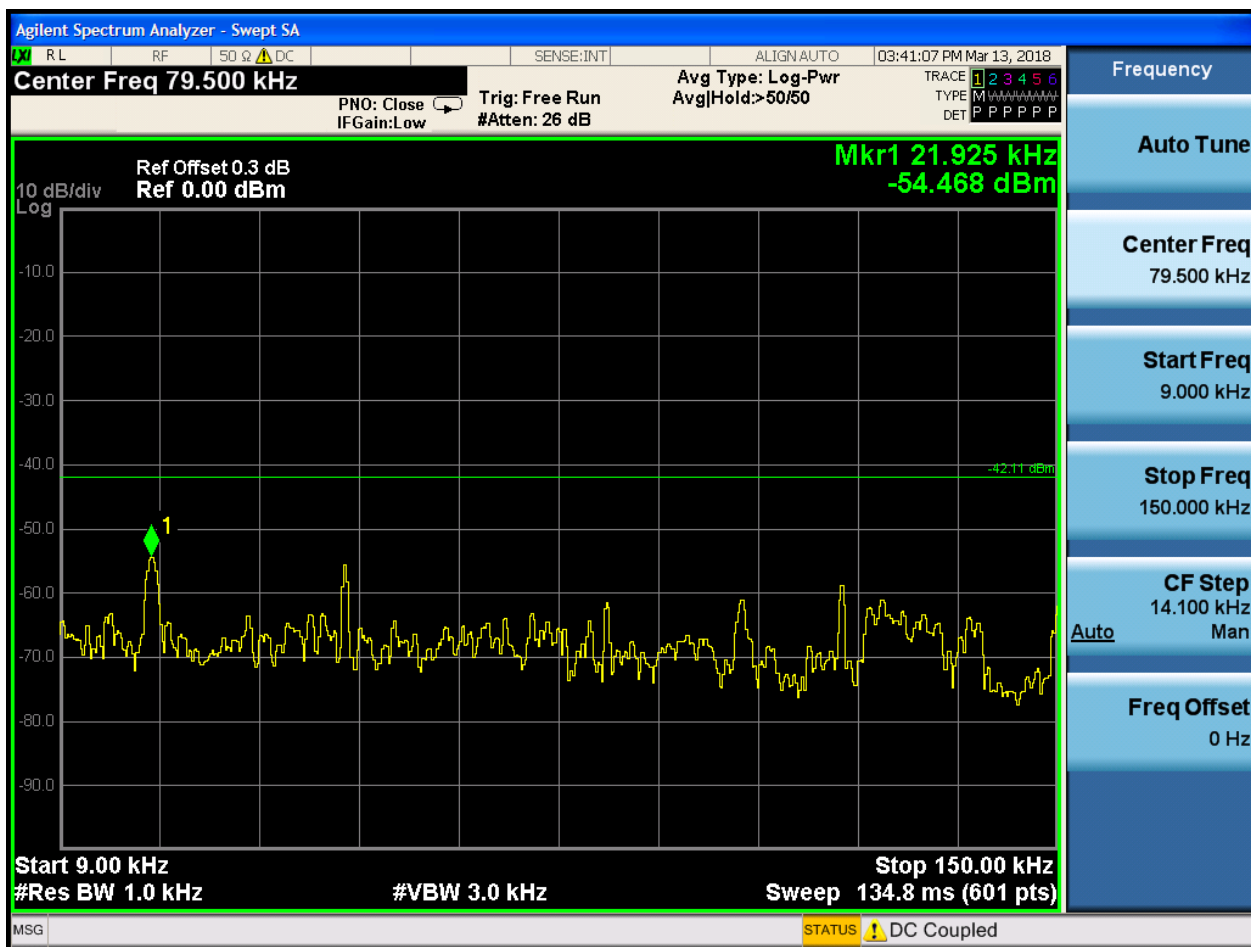
2.2 11B_M@Ant 1

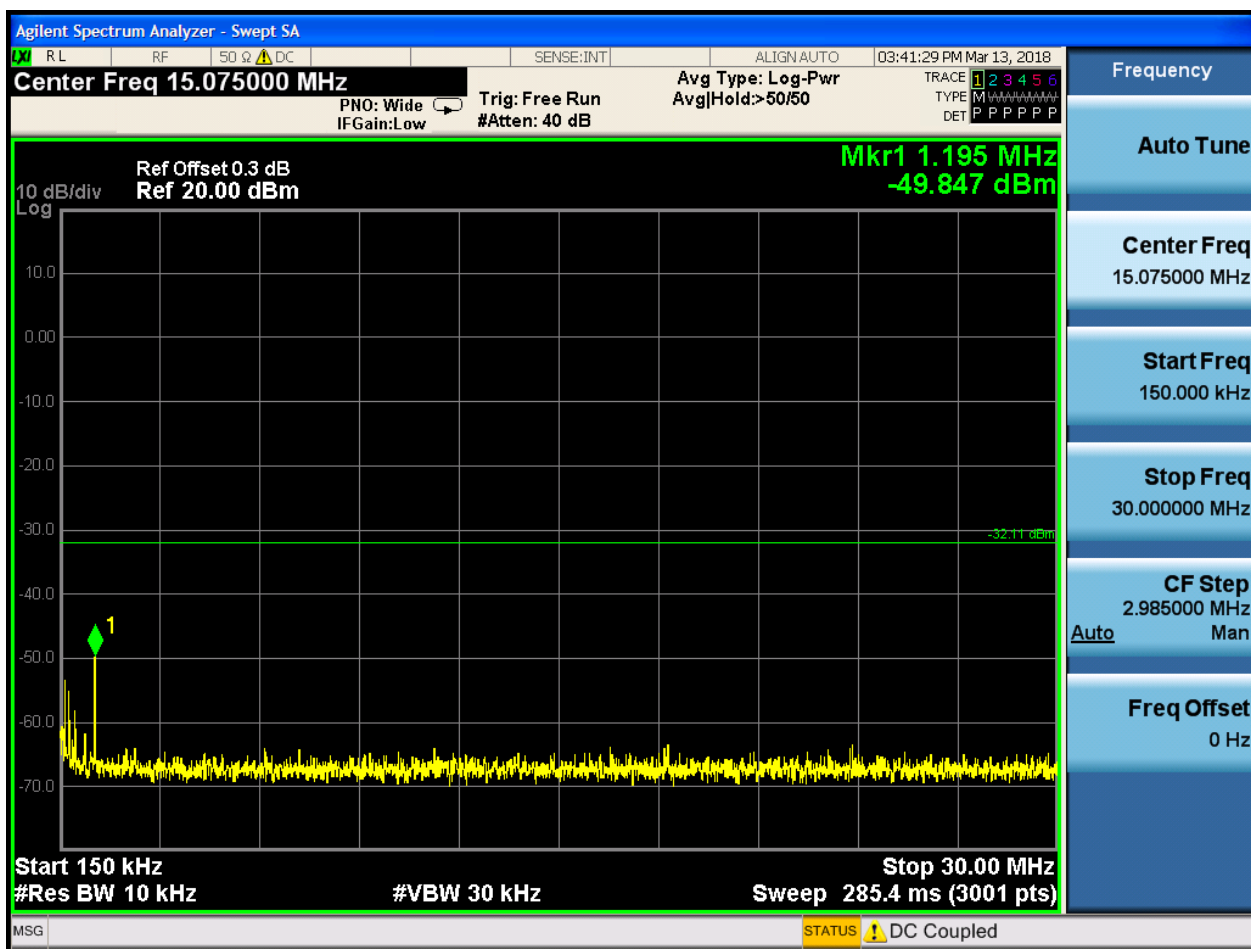
Pref:

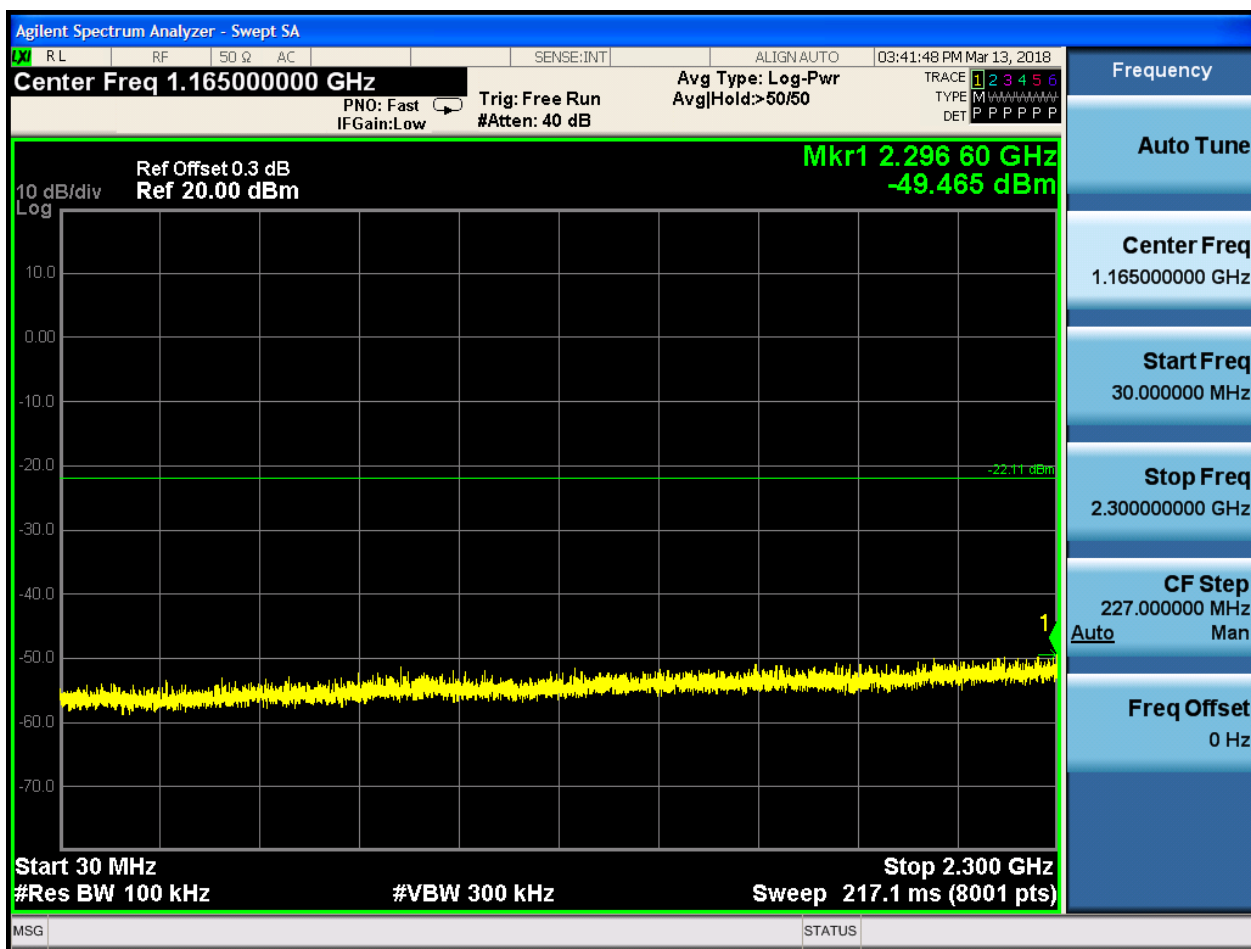


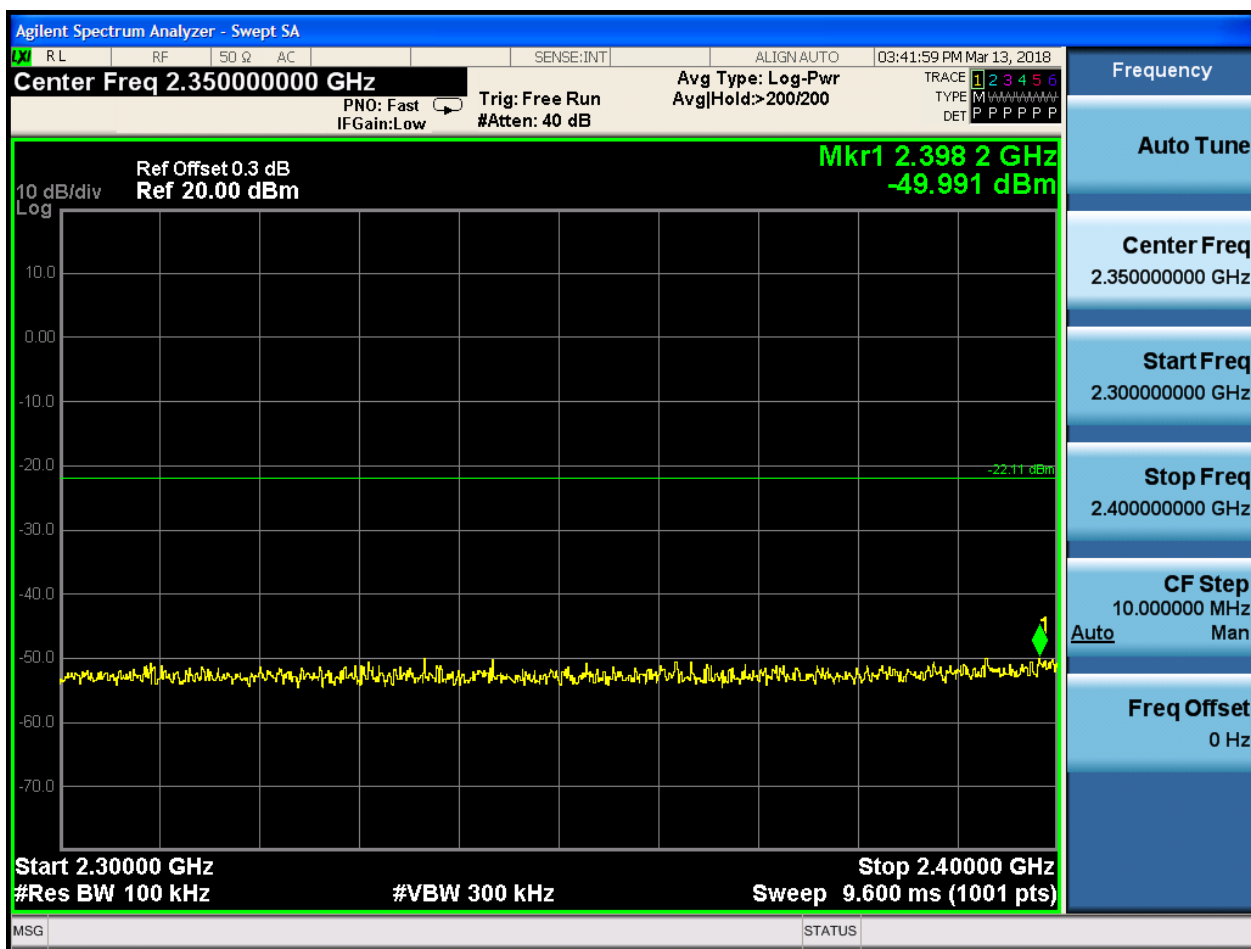


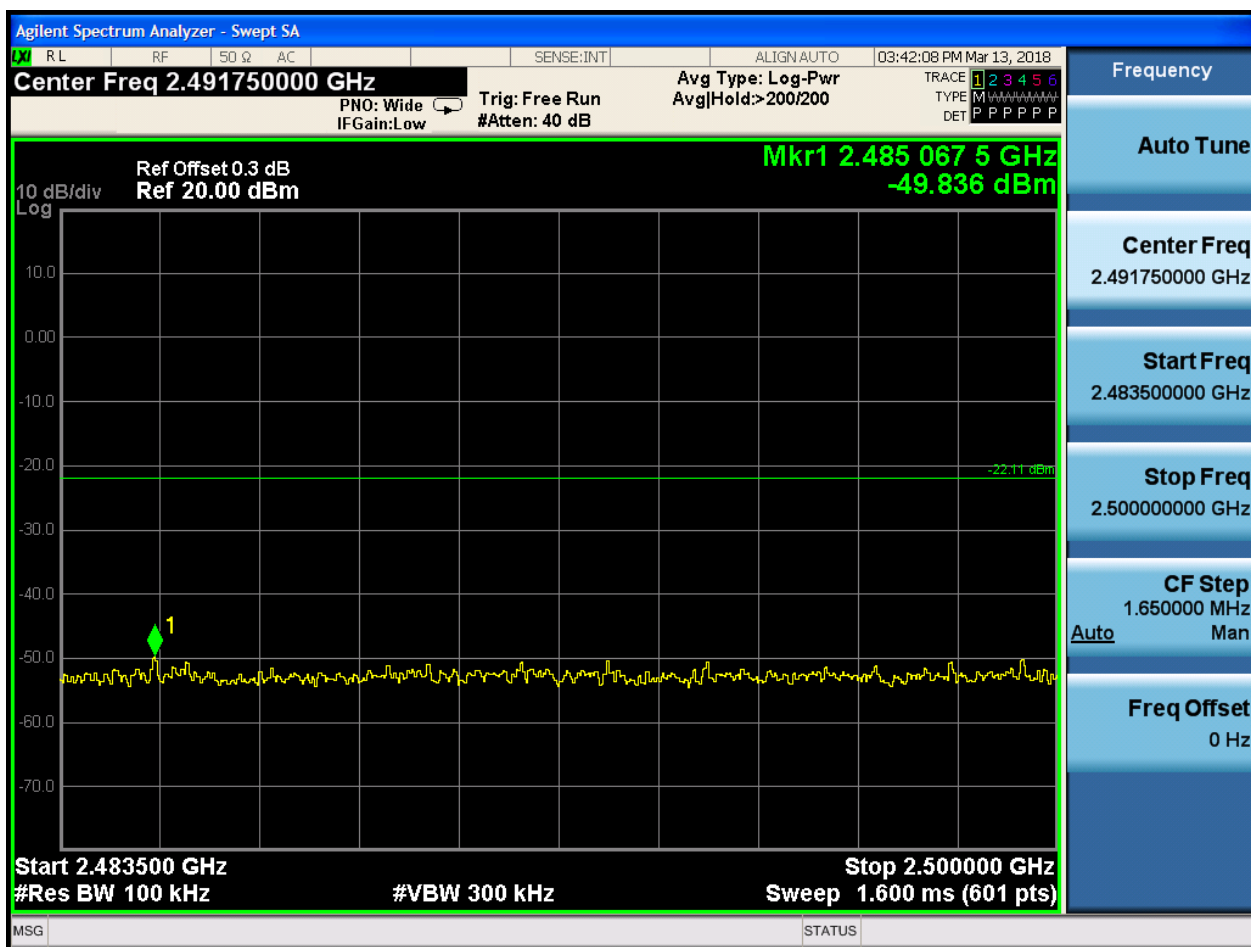
Puw:















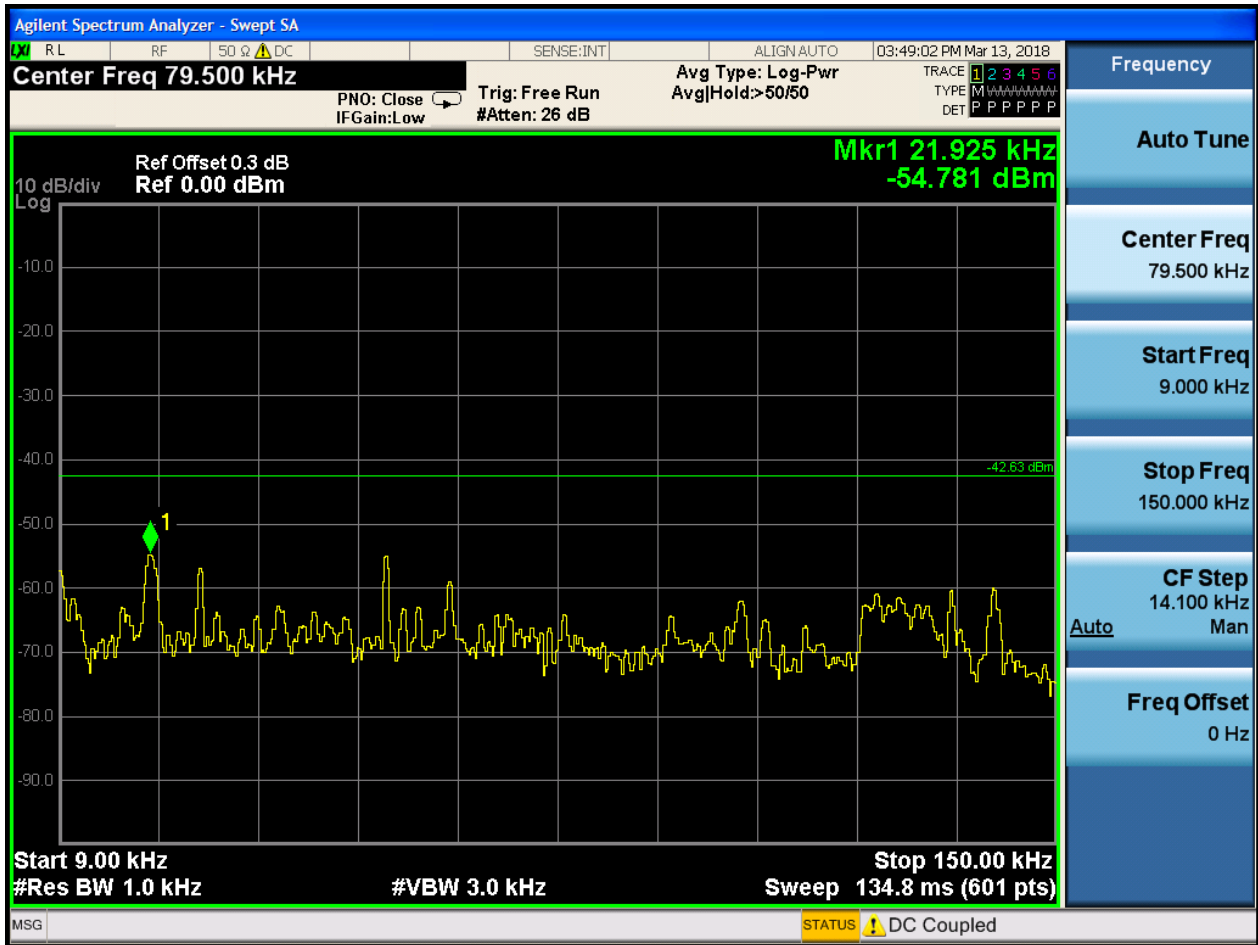
2.3 11B_H@Ant 1

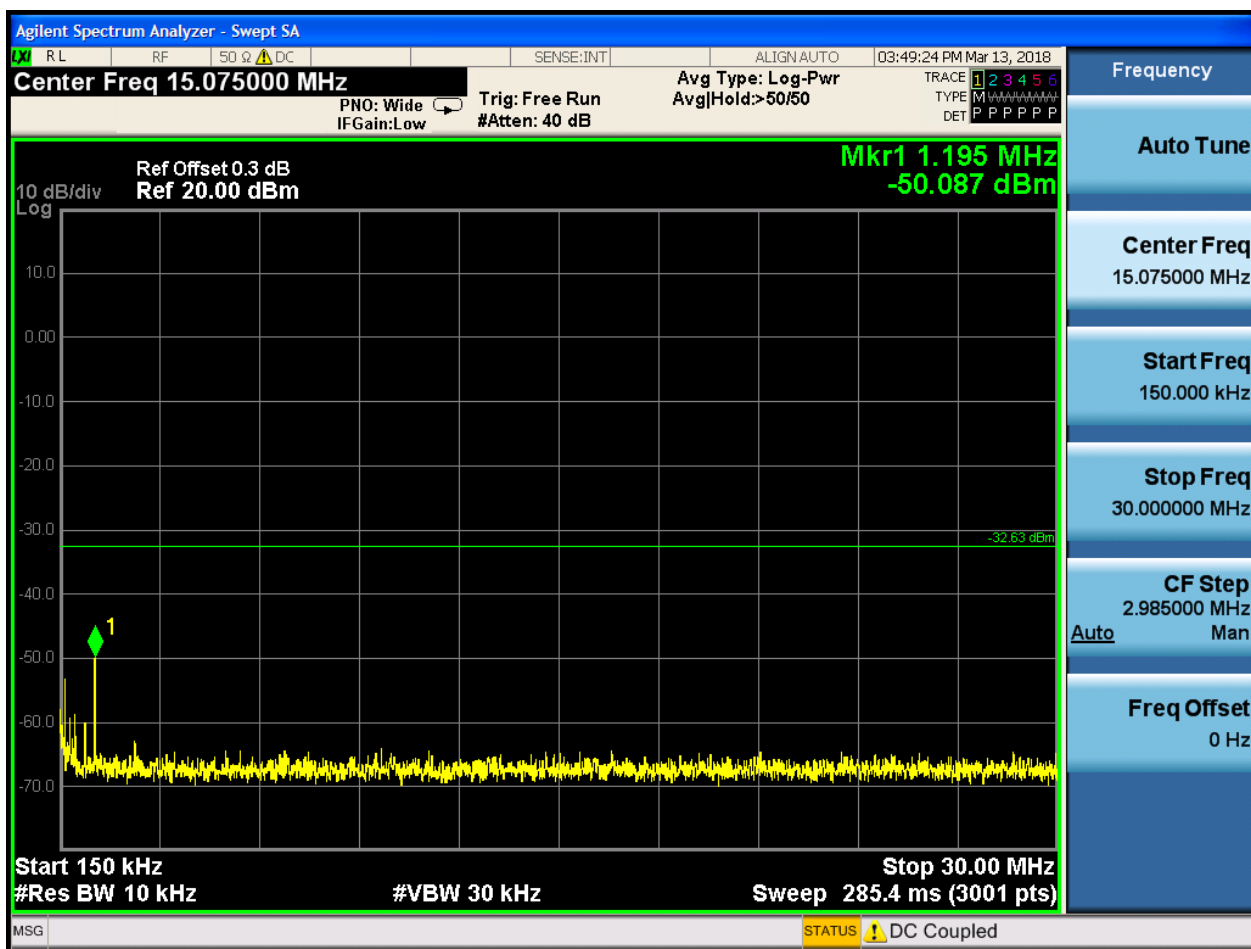
Pref:

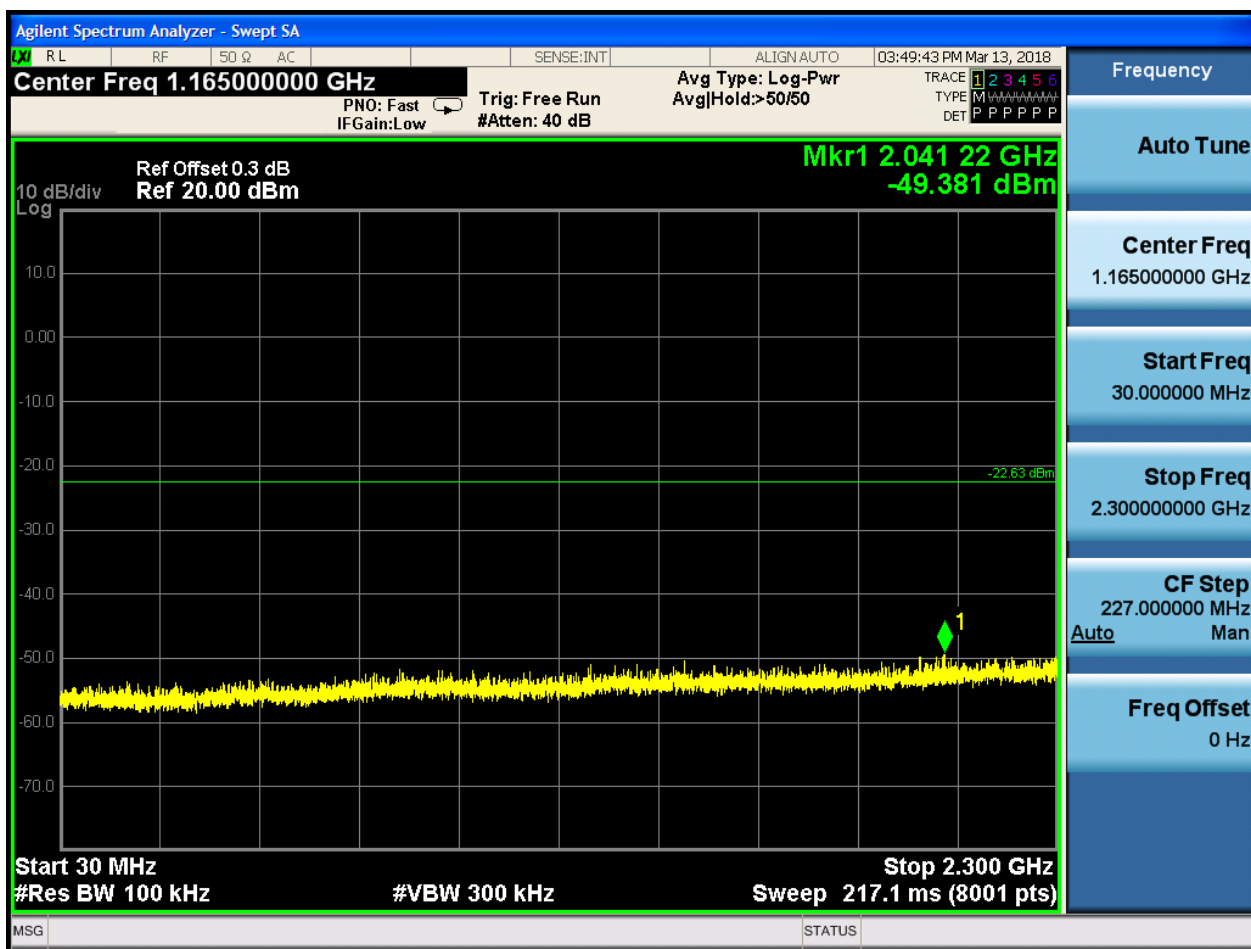


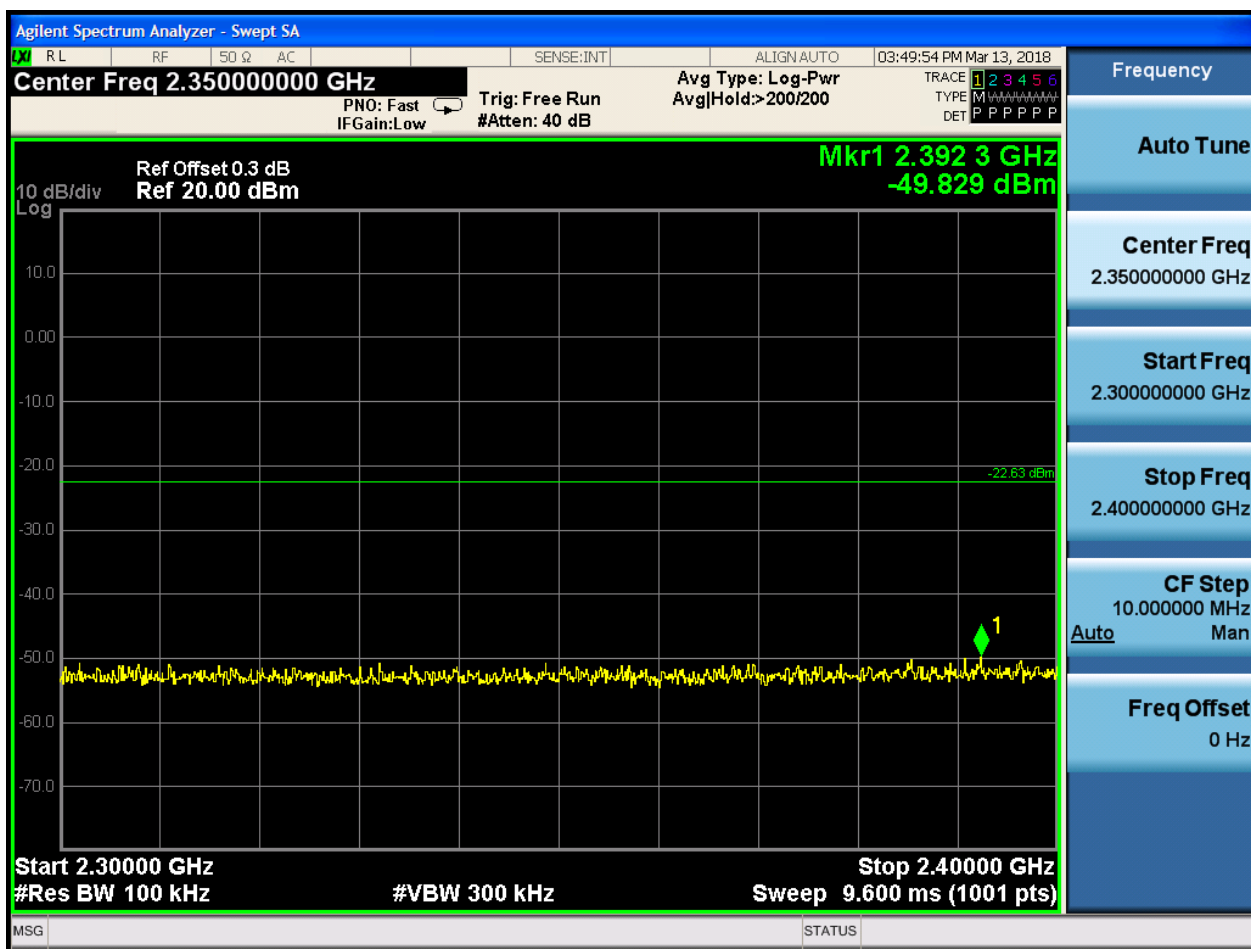


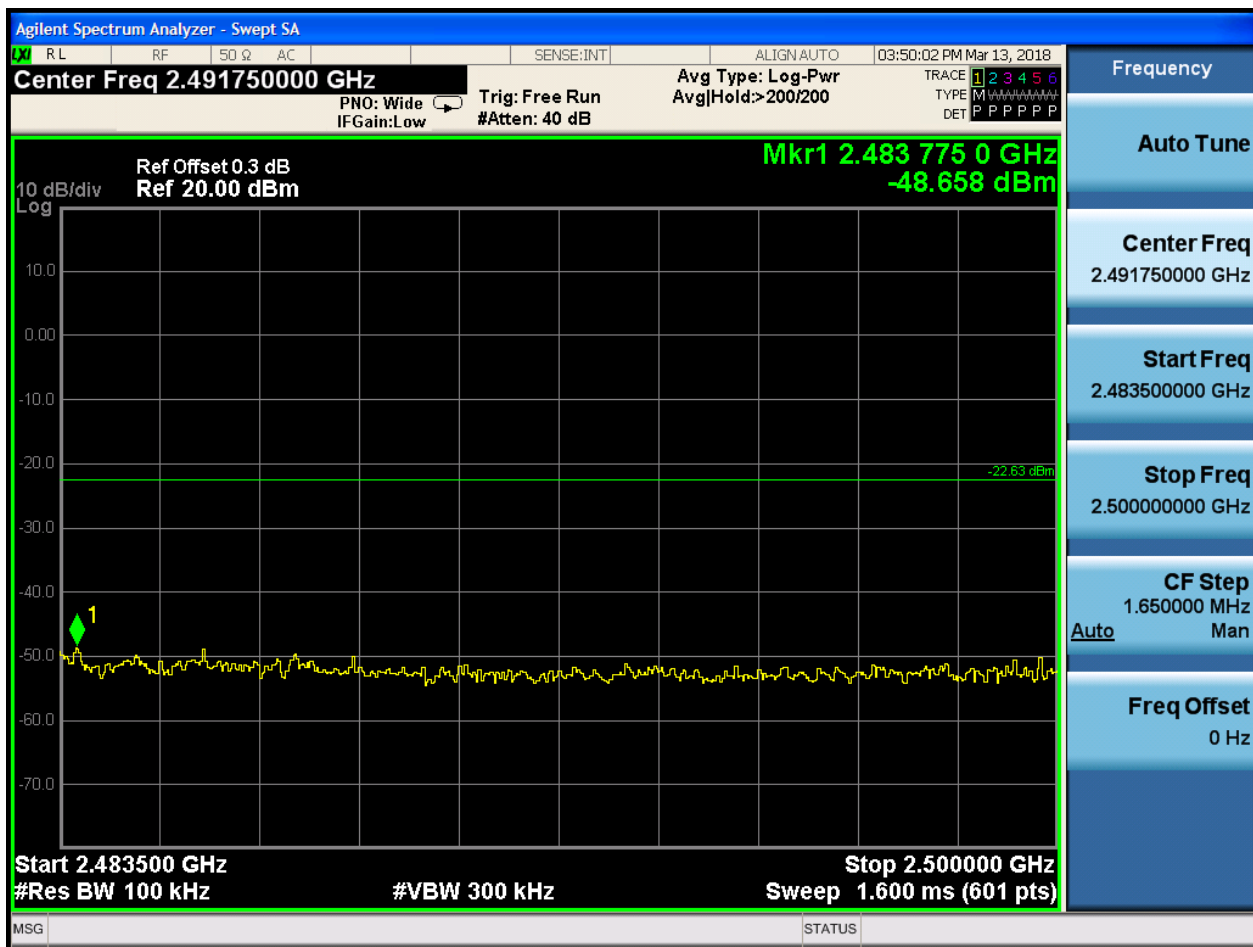
Puw:









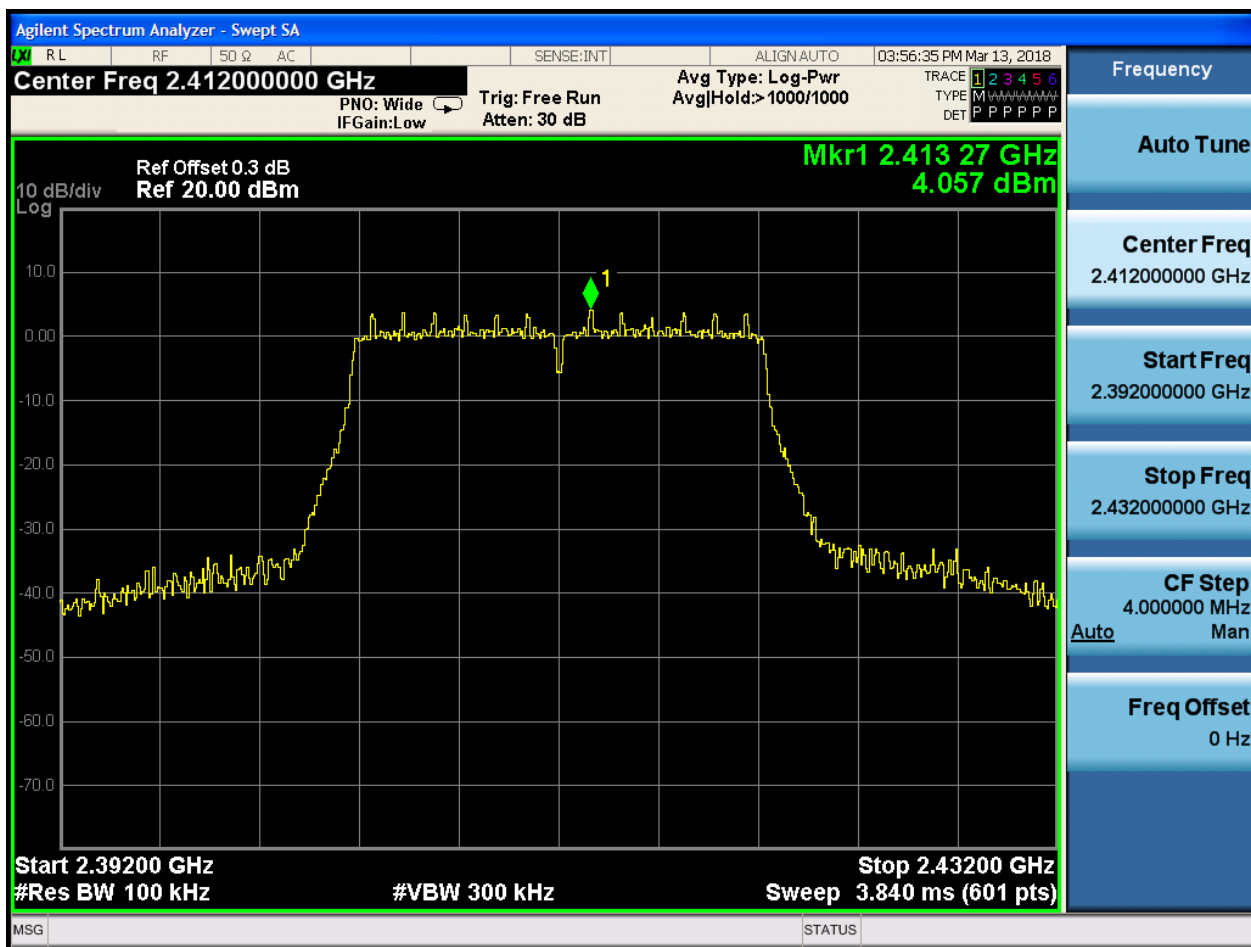






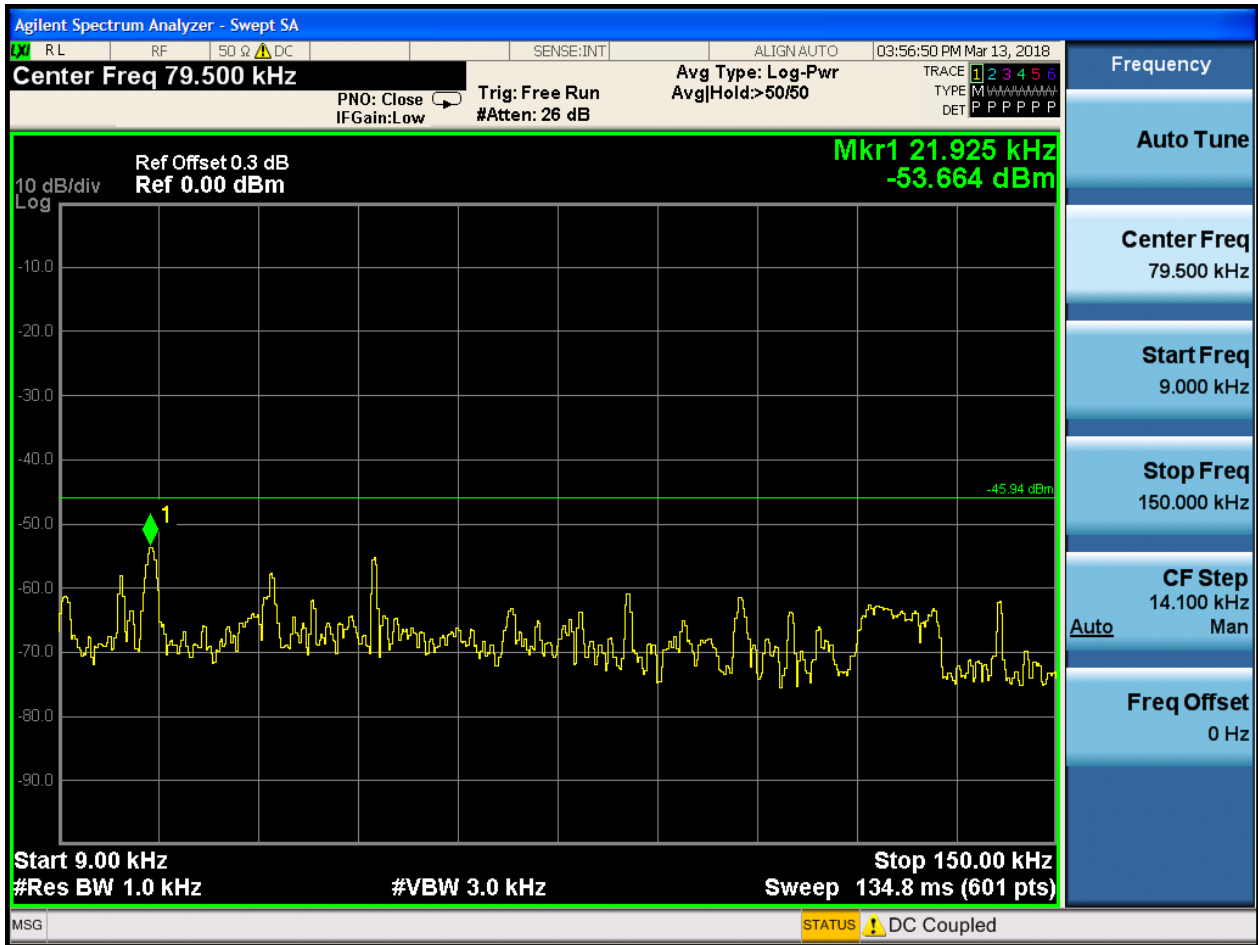
2.4 11G_L@Ant 1

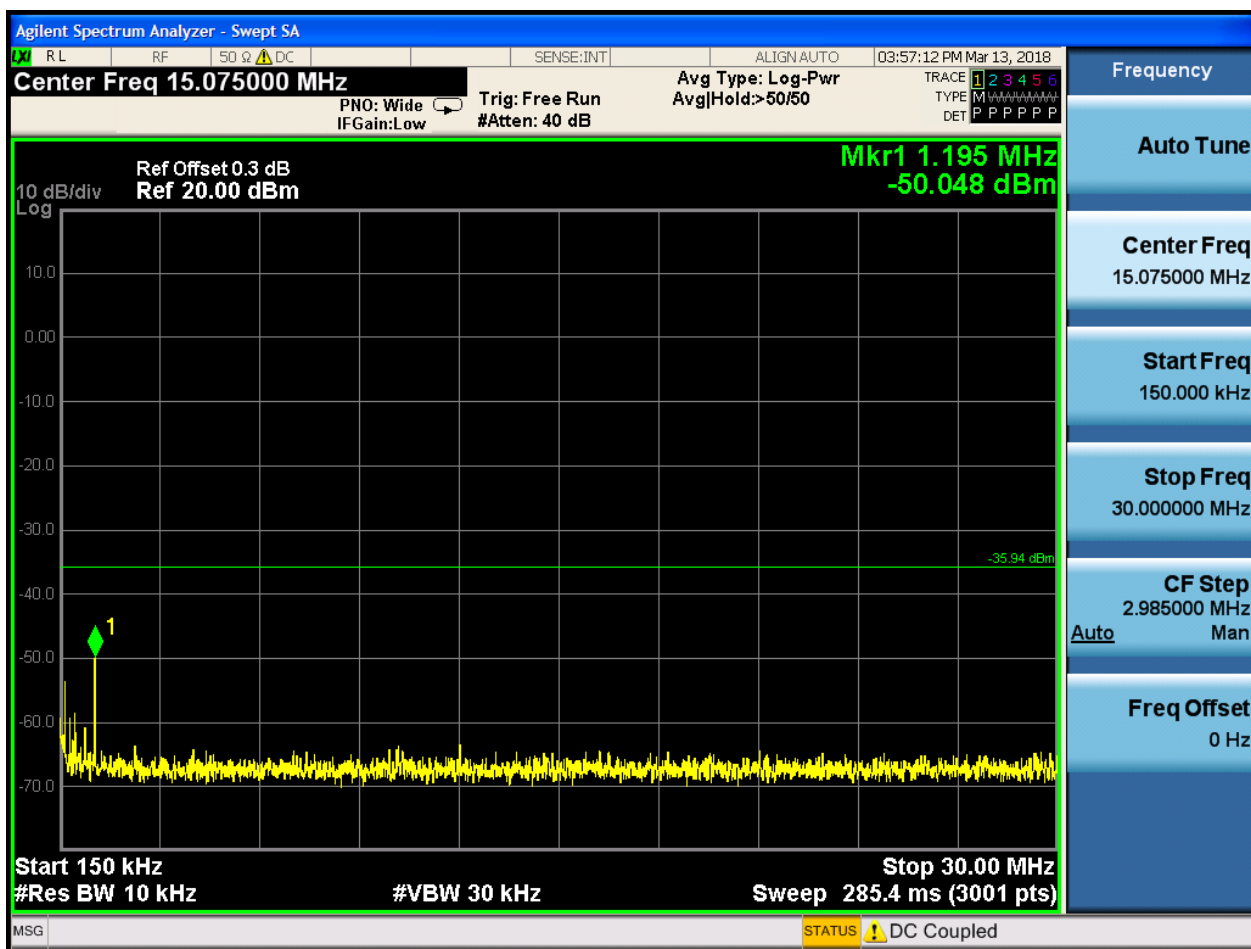
Pref:

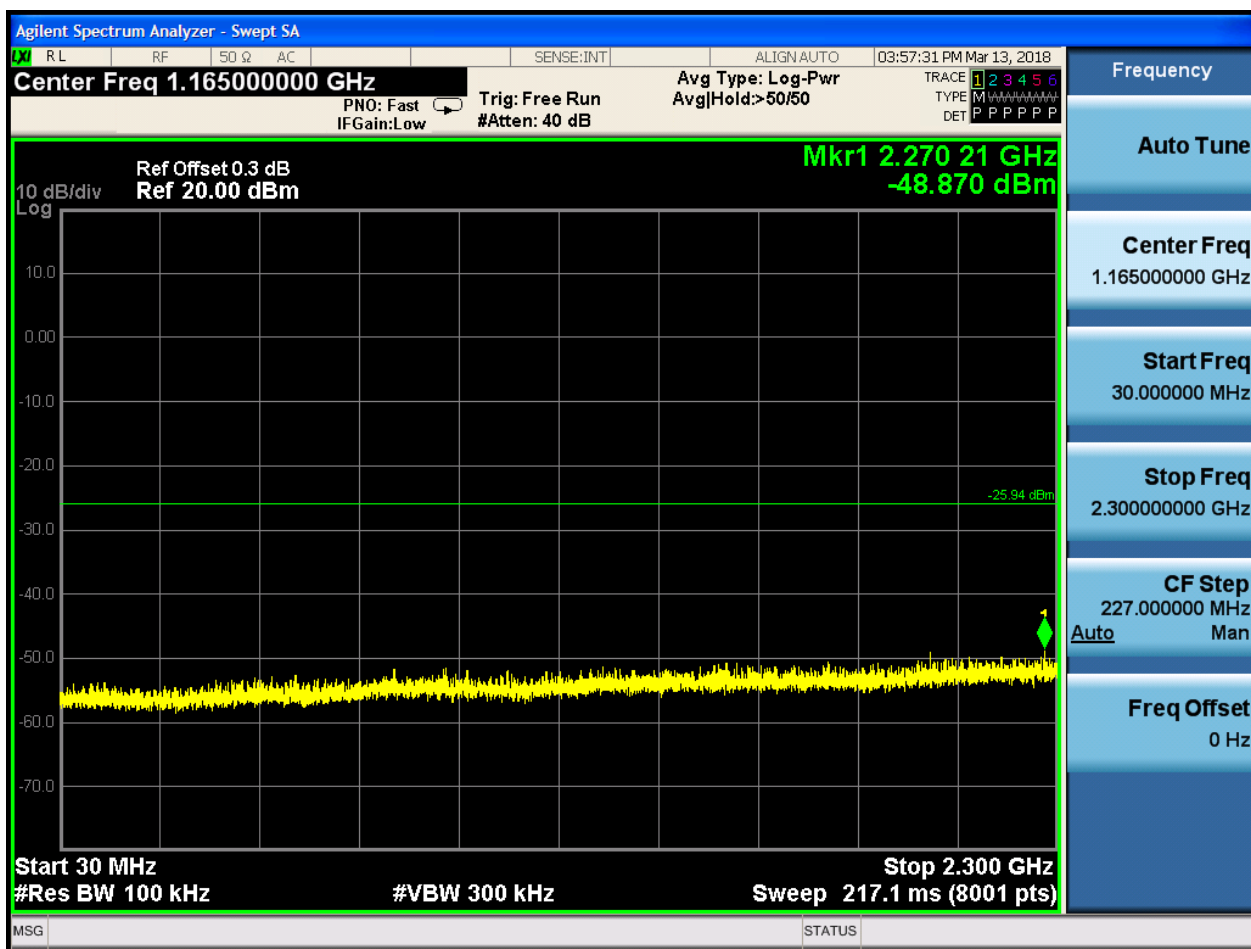




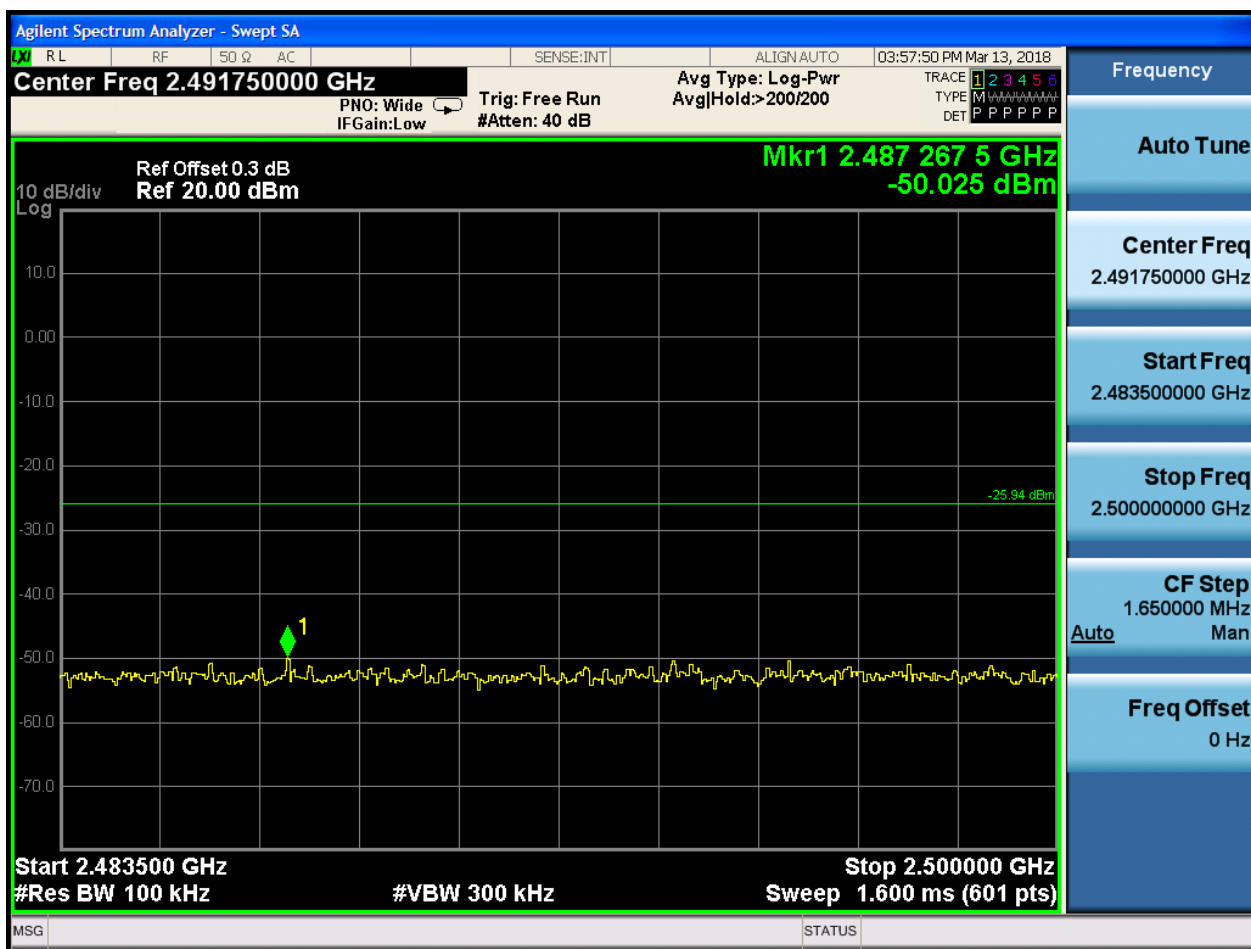
Puw:









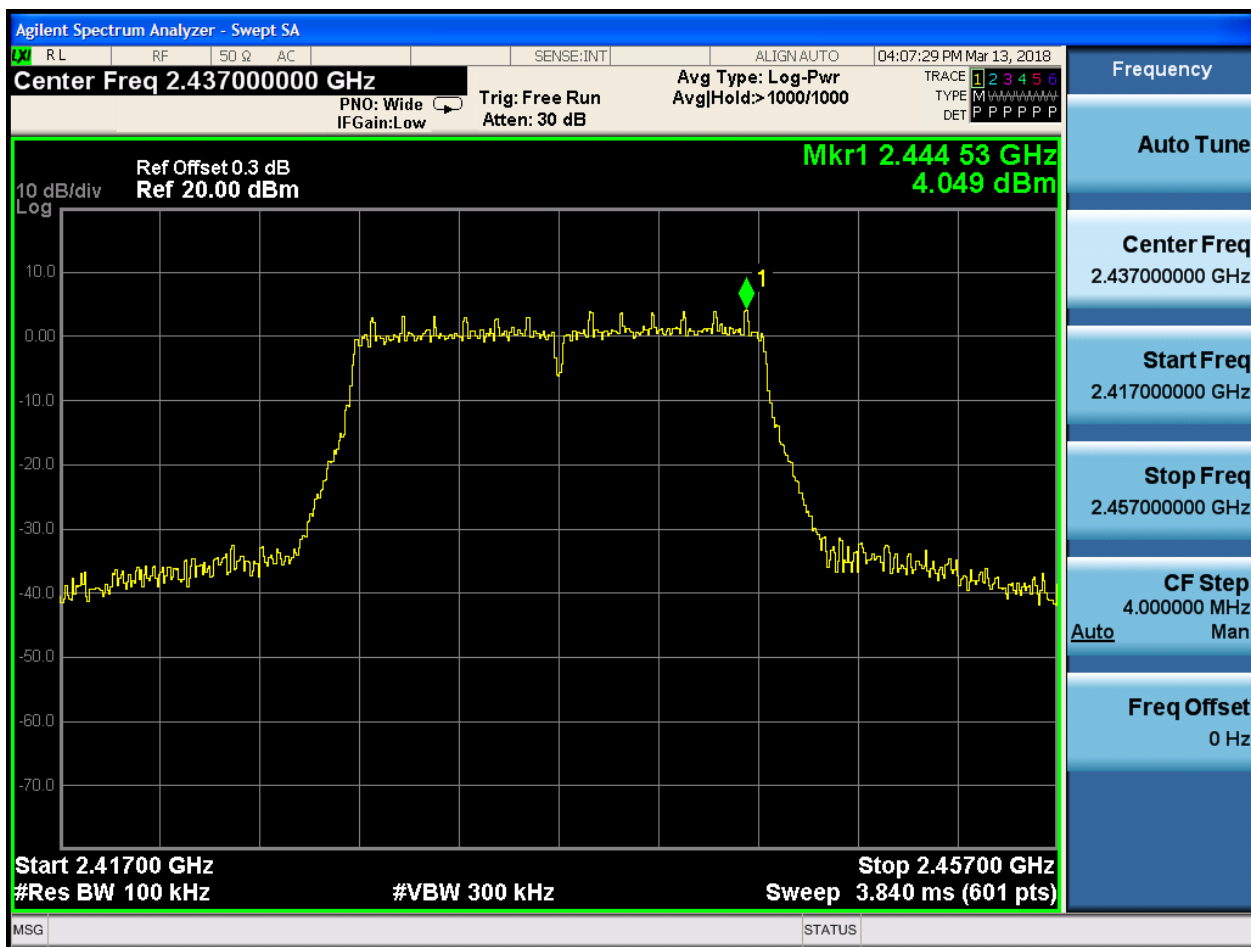






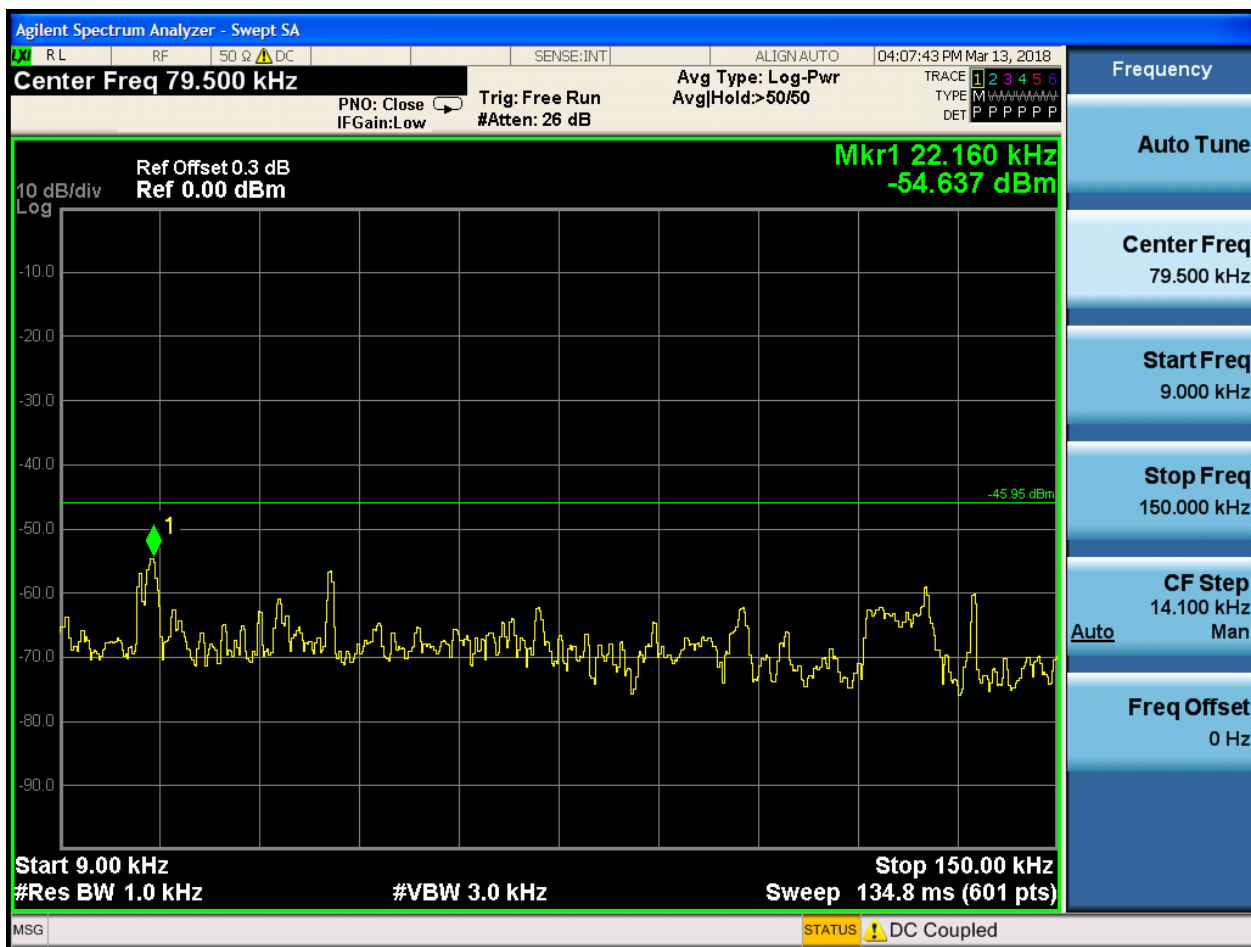
2.5 11G_M@Ant 1

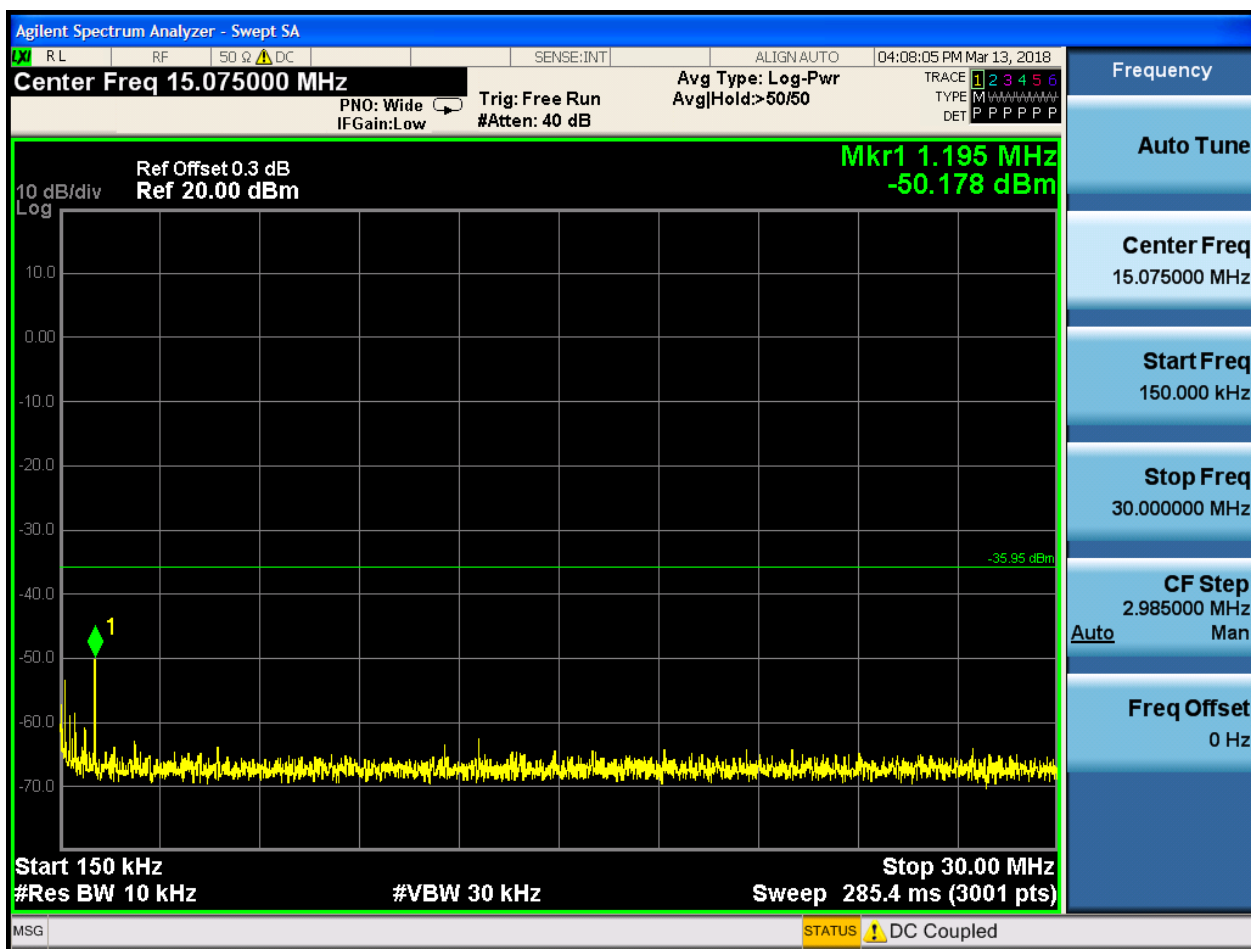
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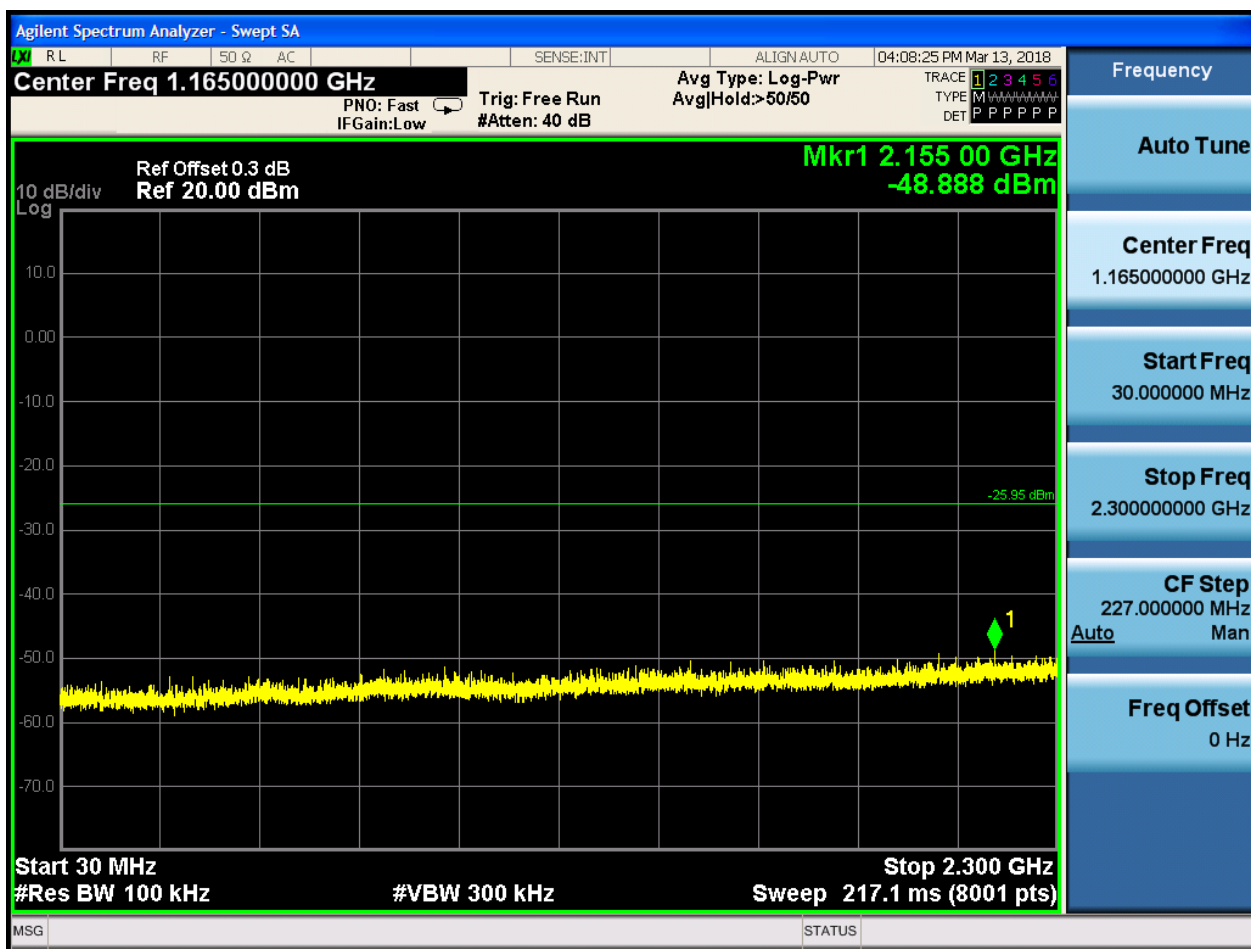


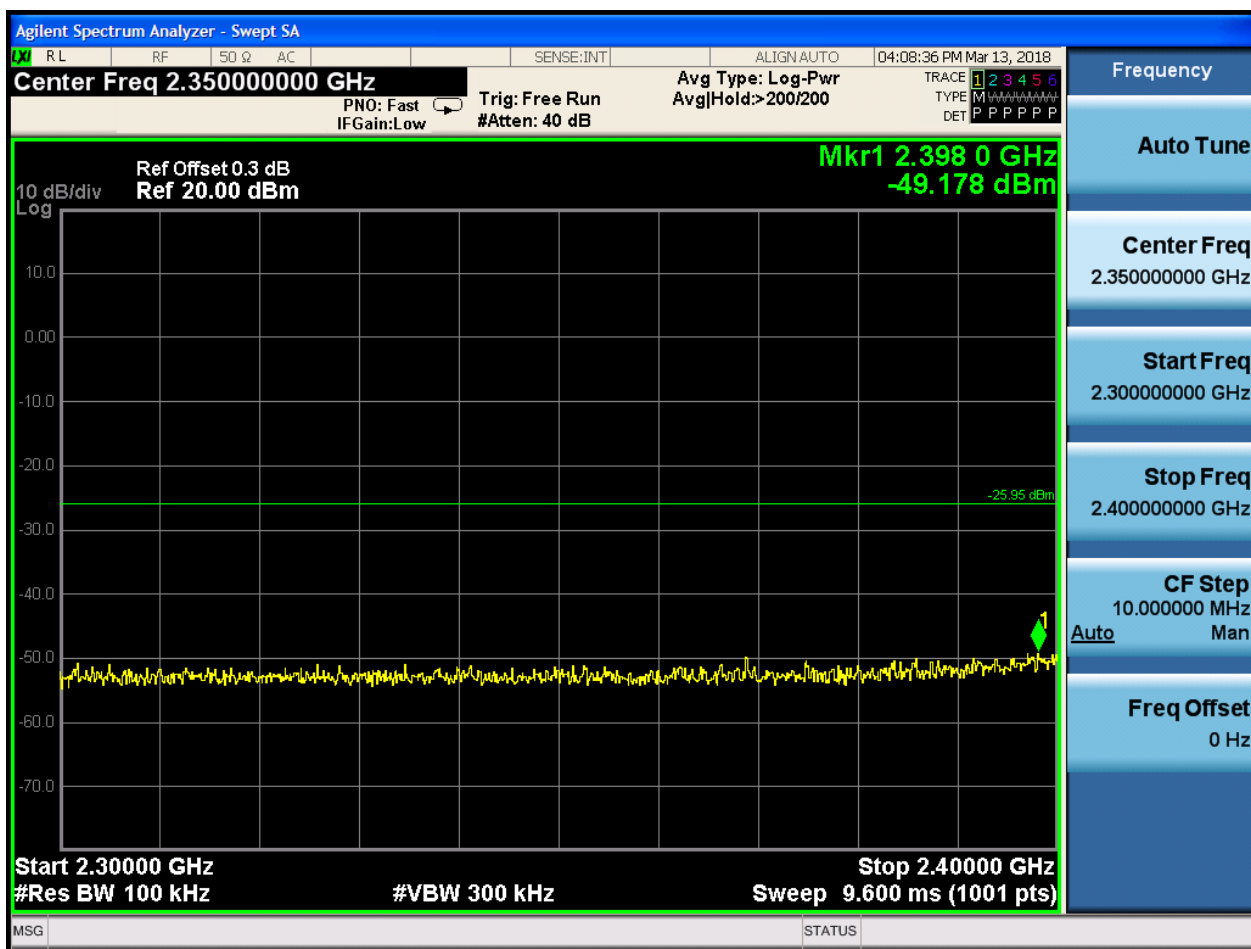


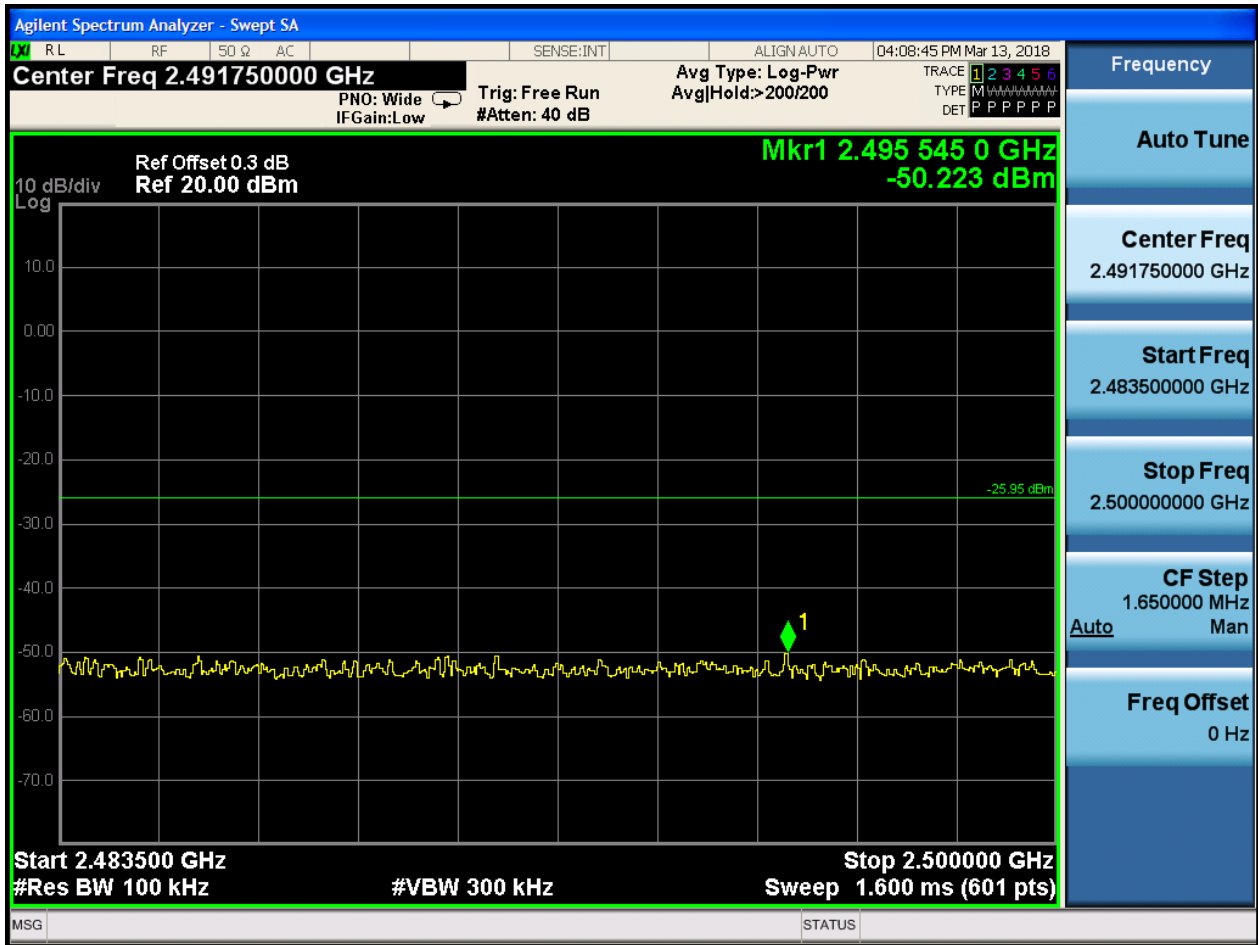
Puw:









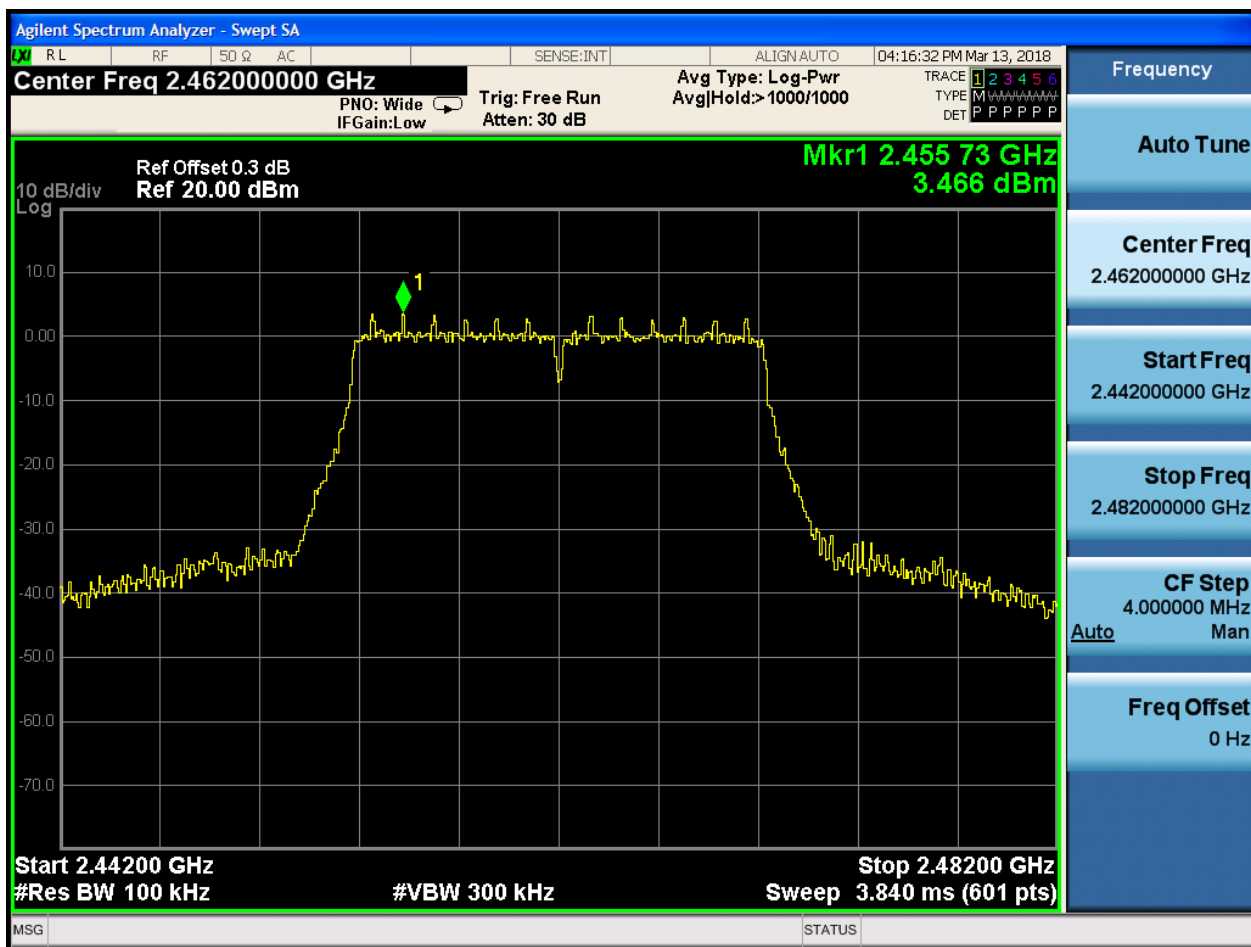






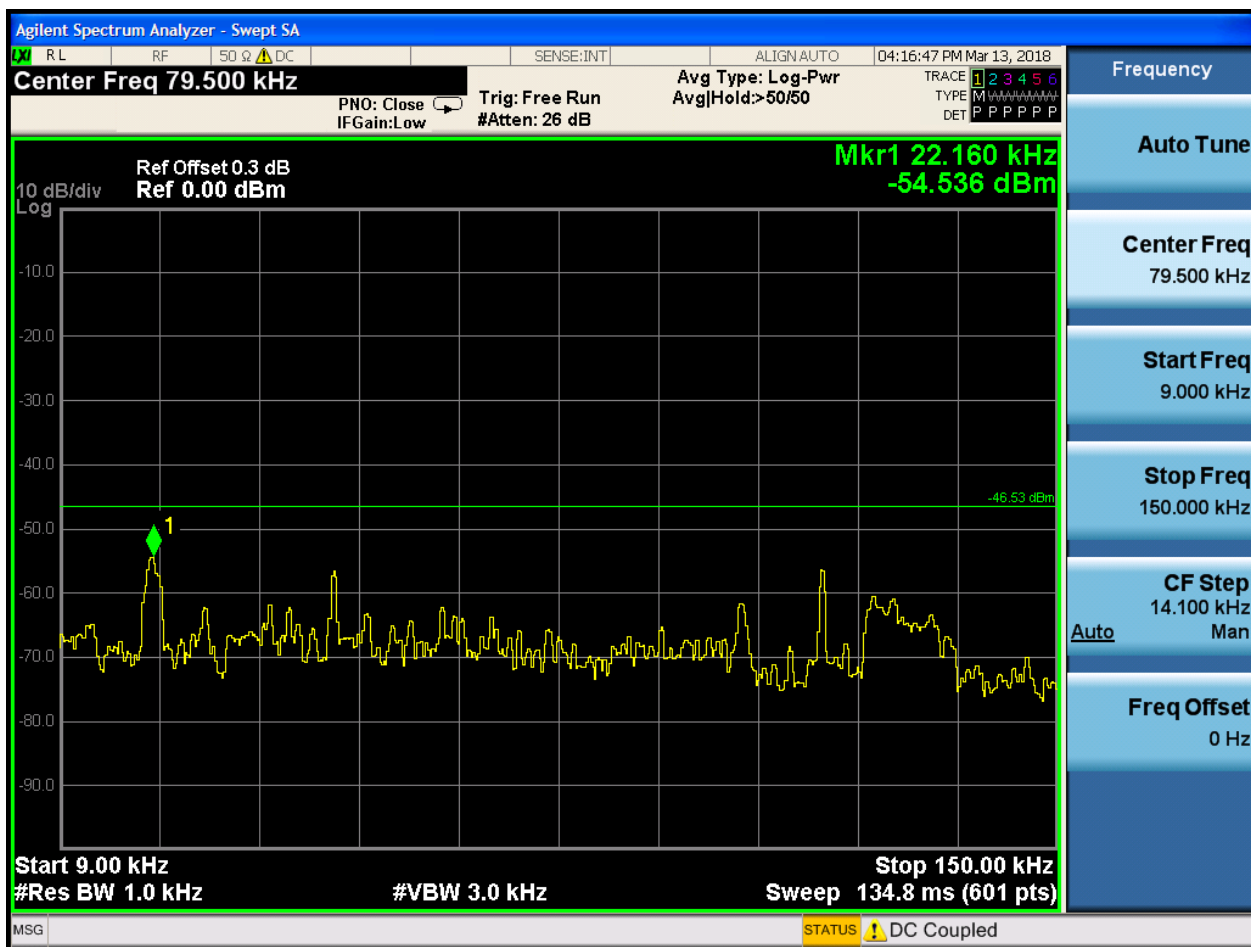
2.6 11G_H@Ant 1

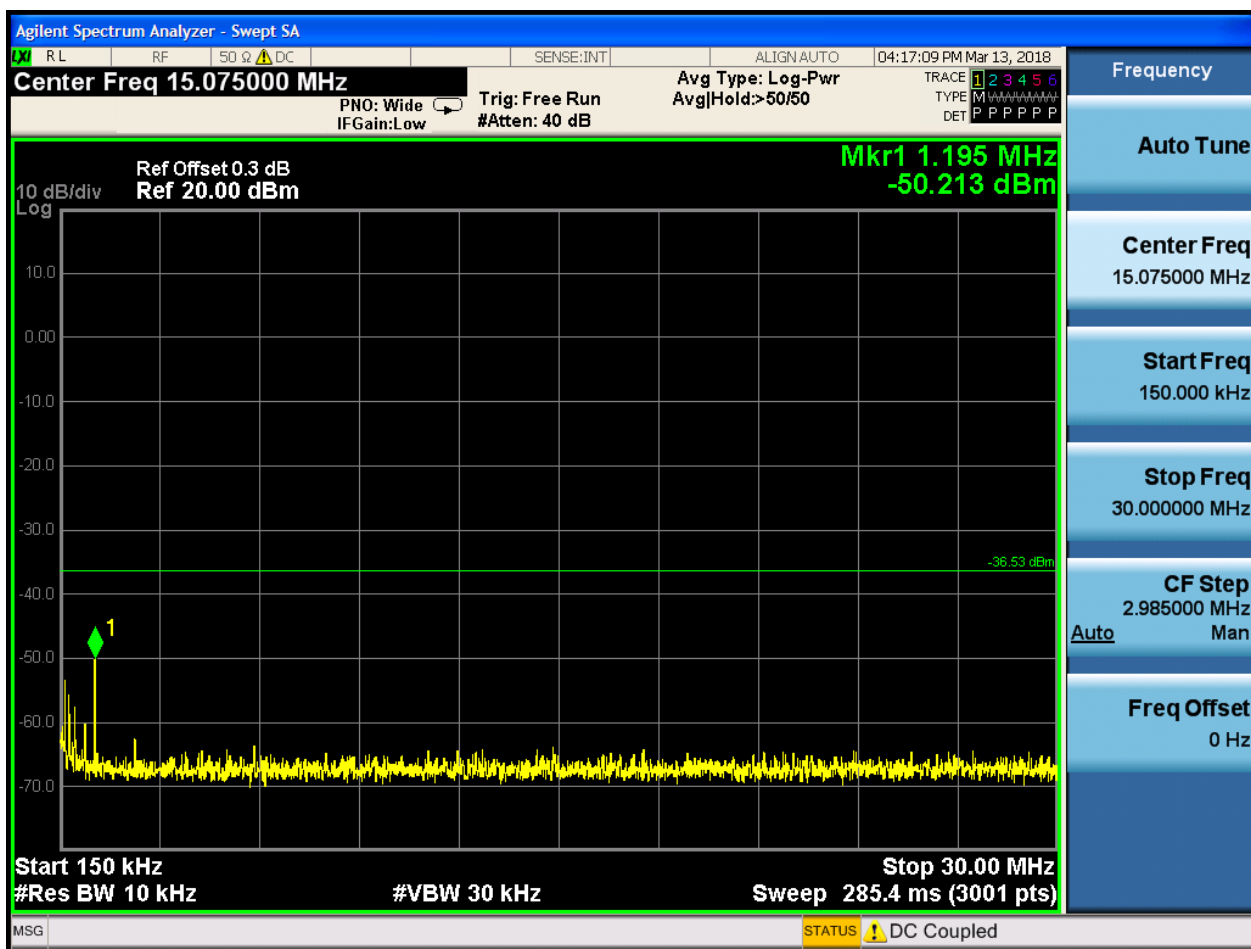
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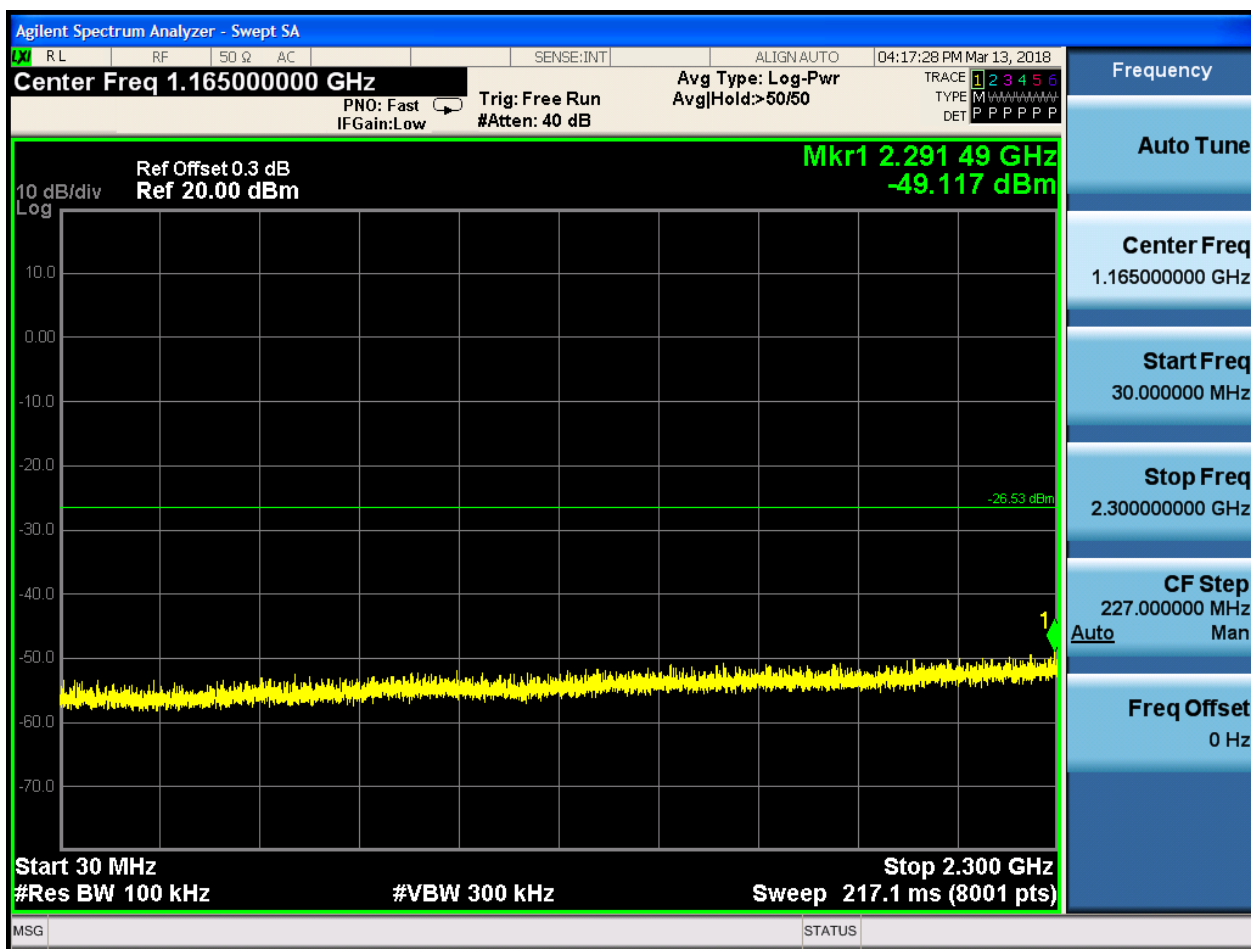


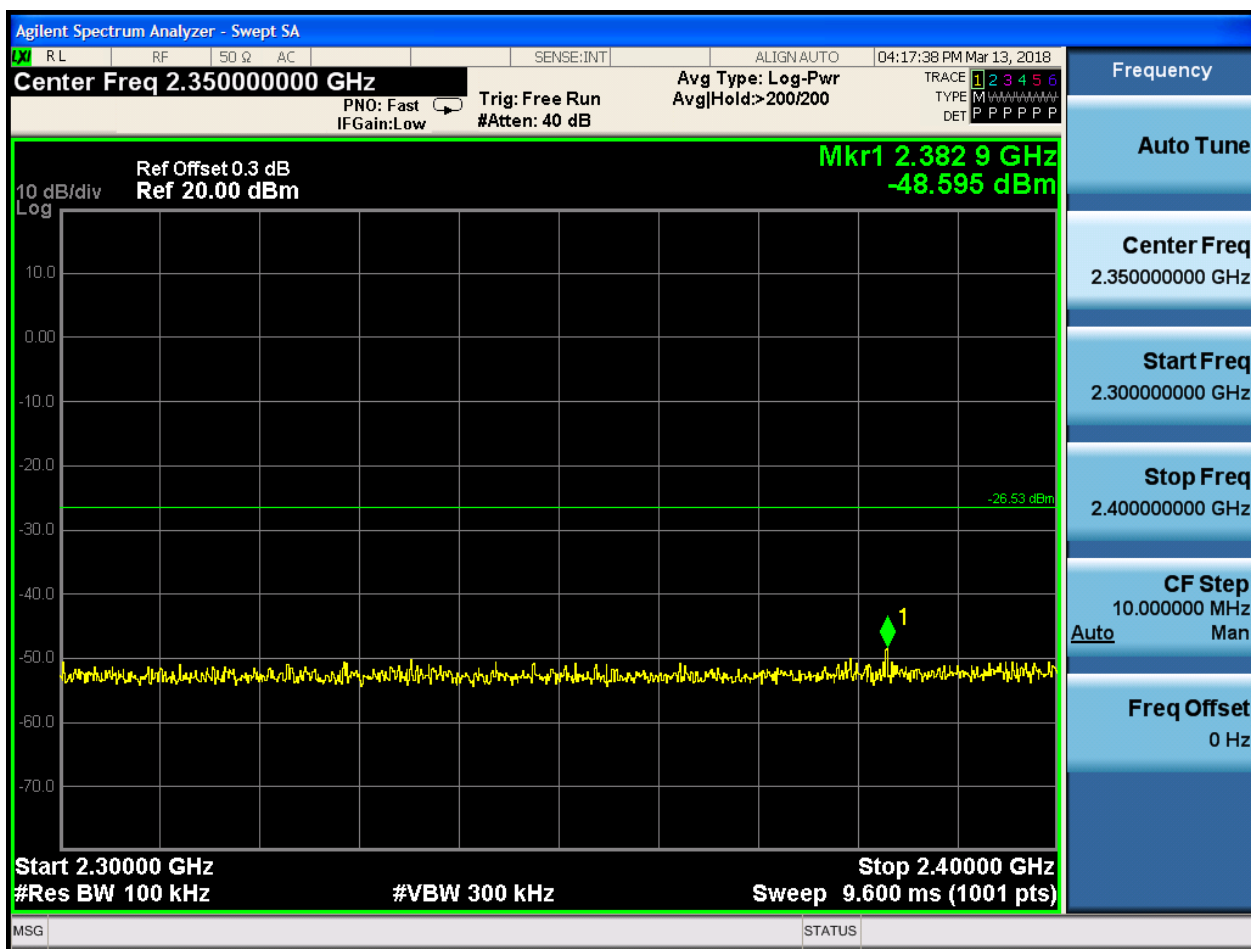


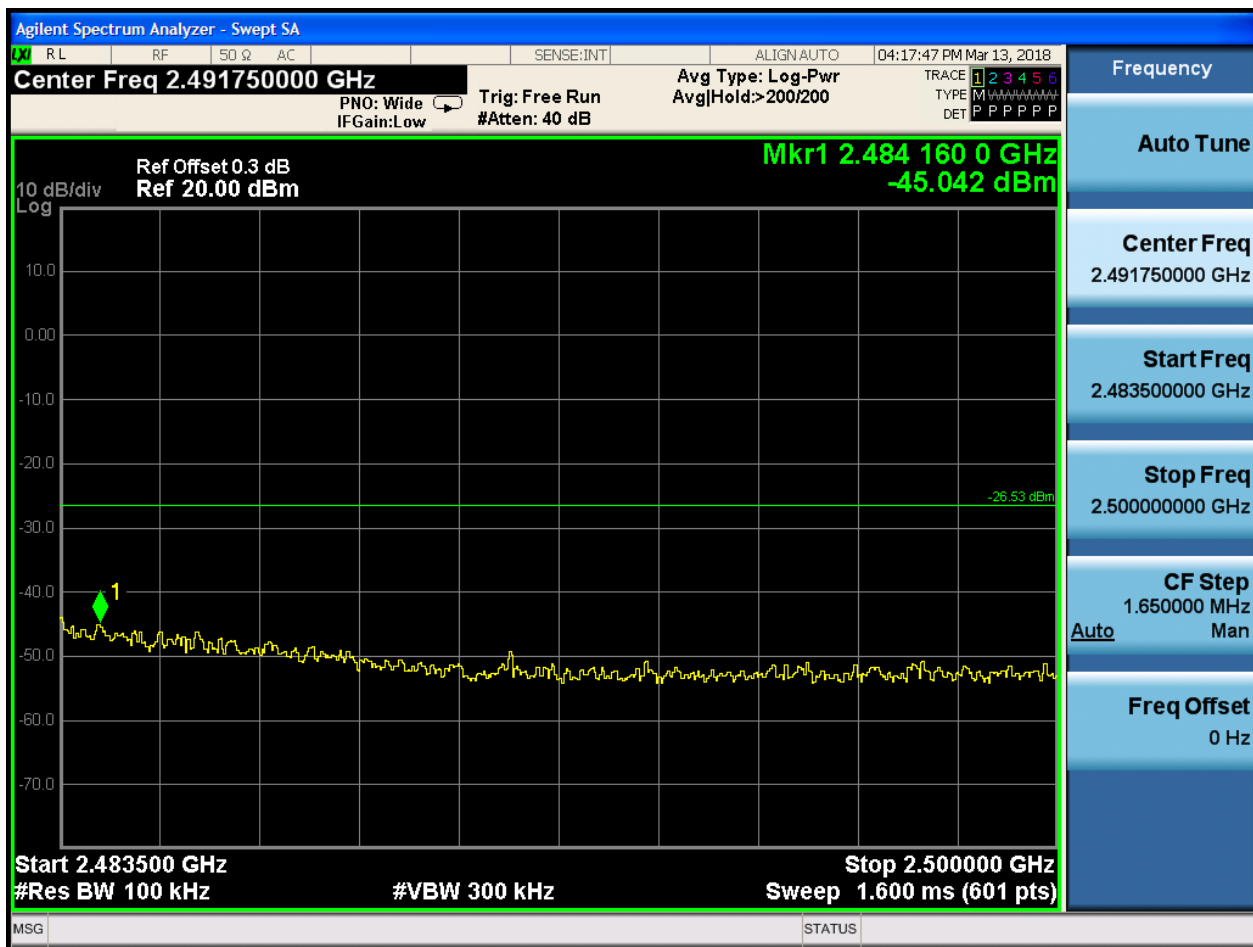
Puw:









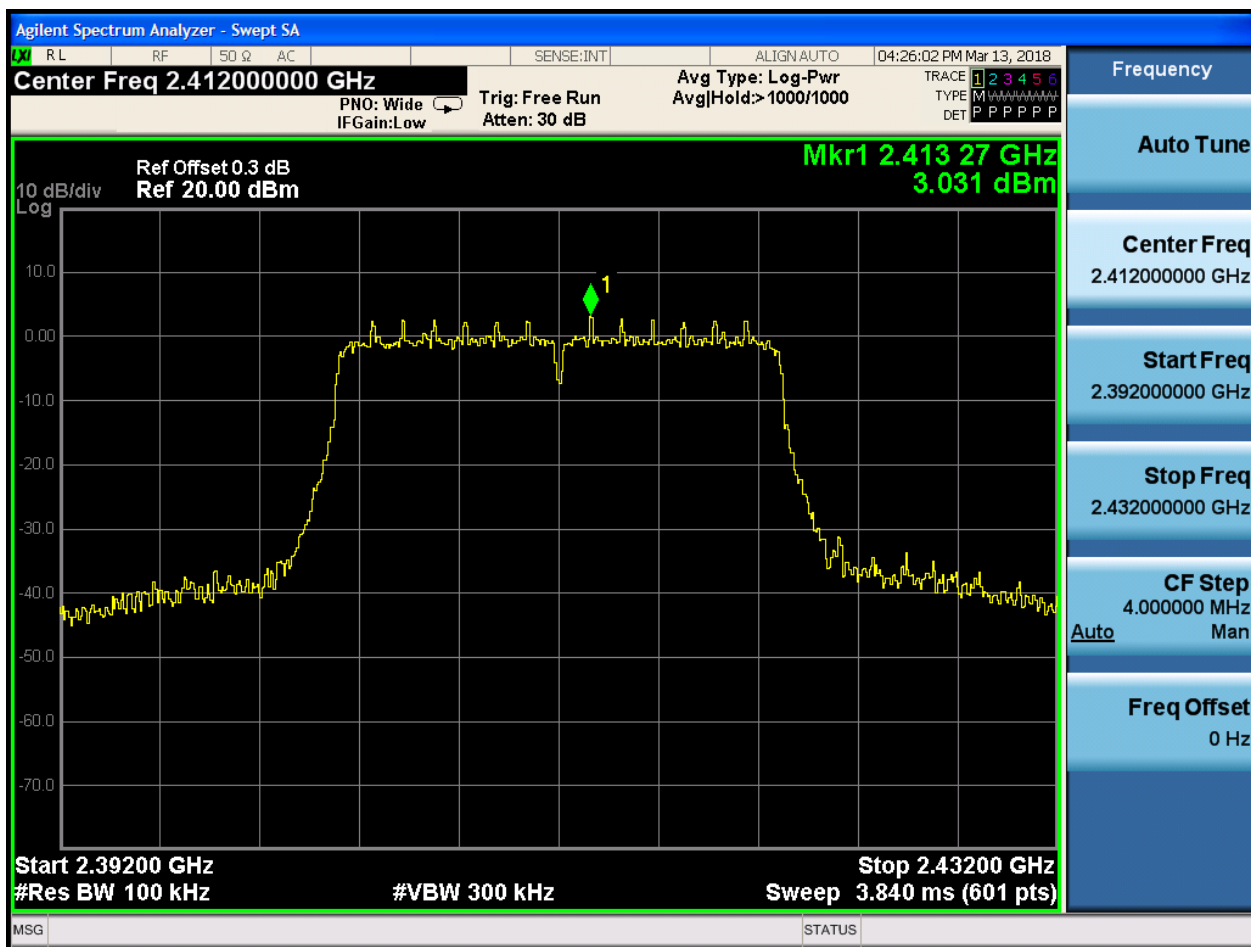






2.7 11N20_L@Ant 1

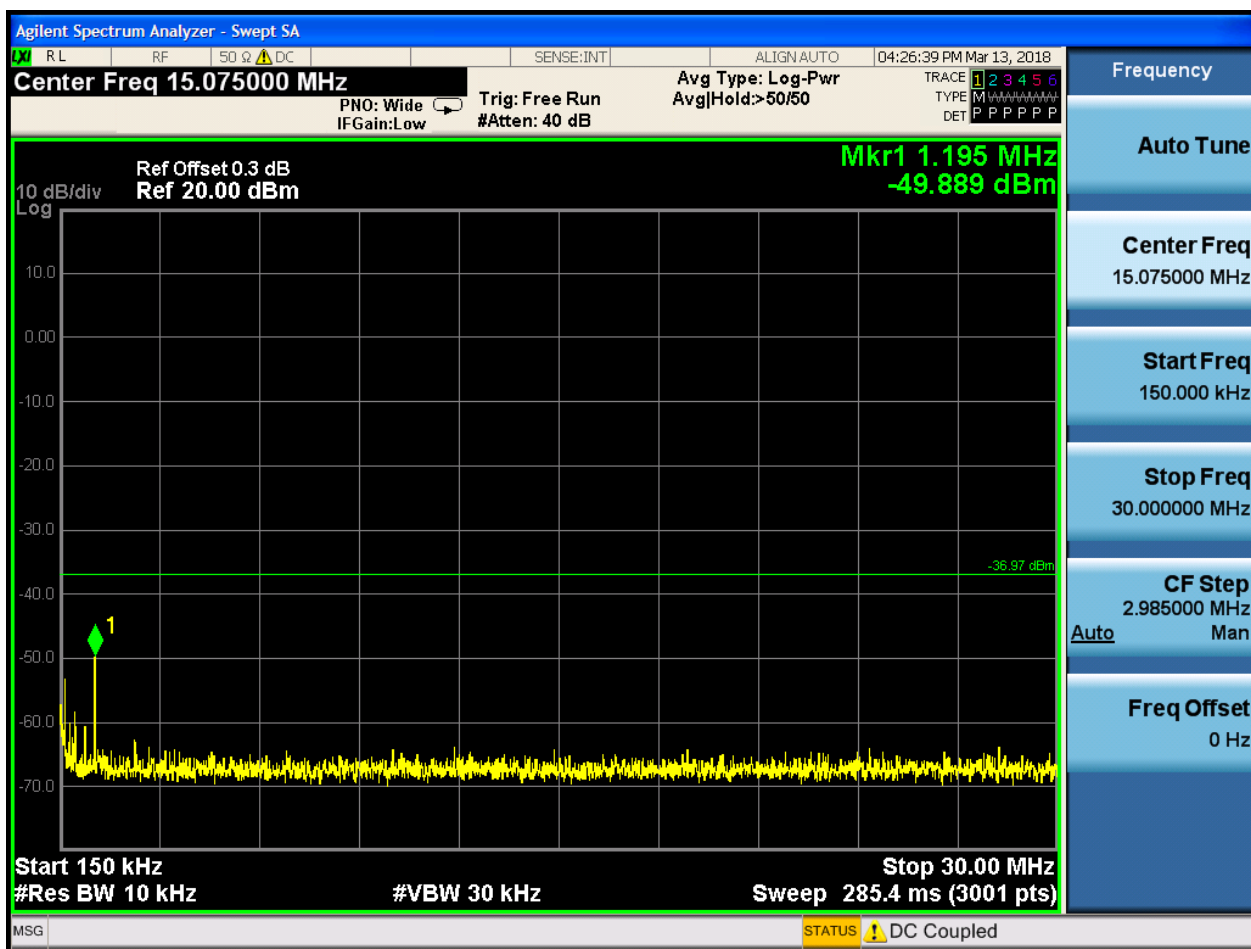
Pref:

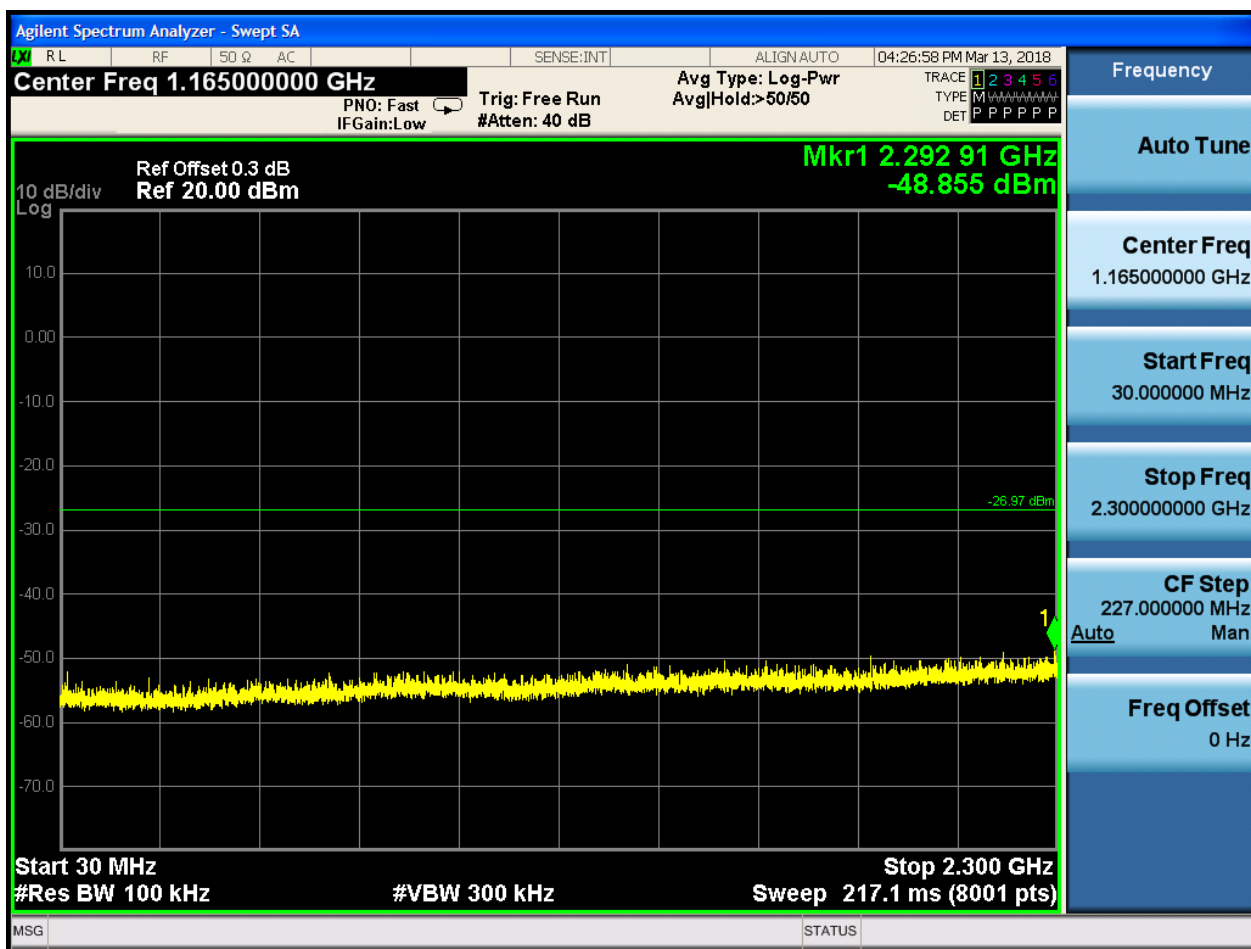


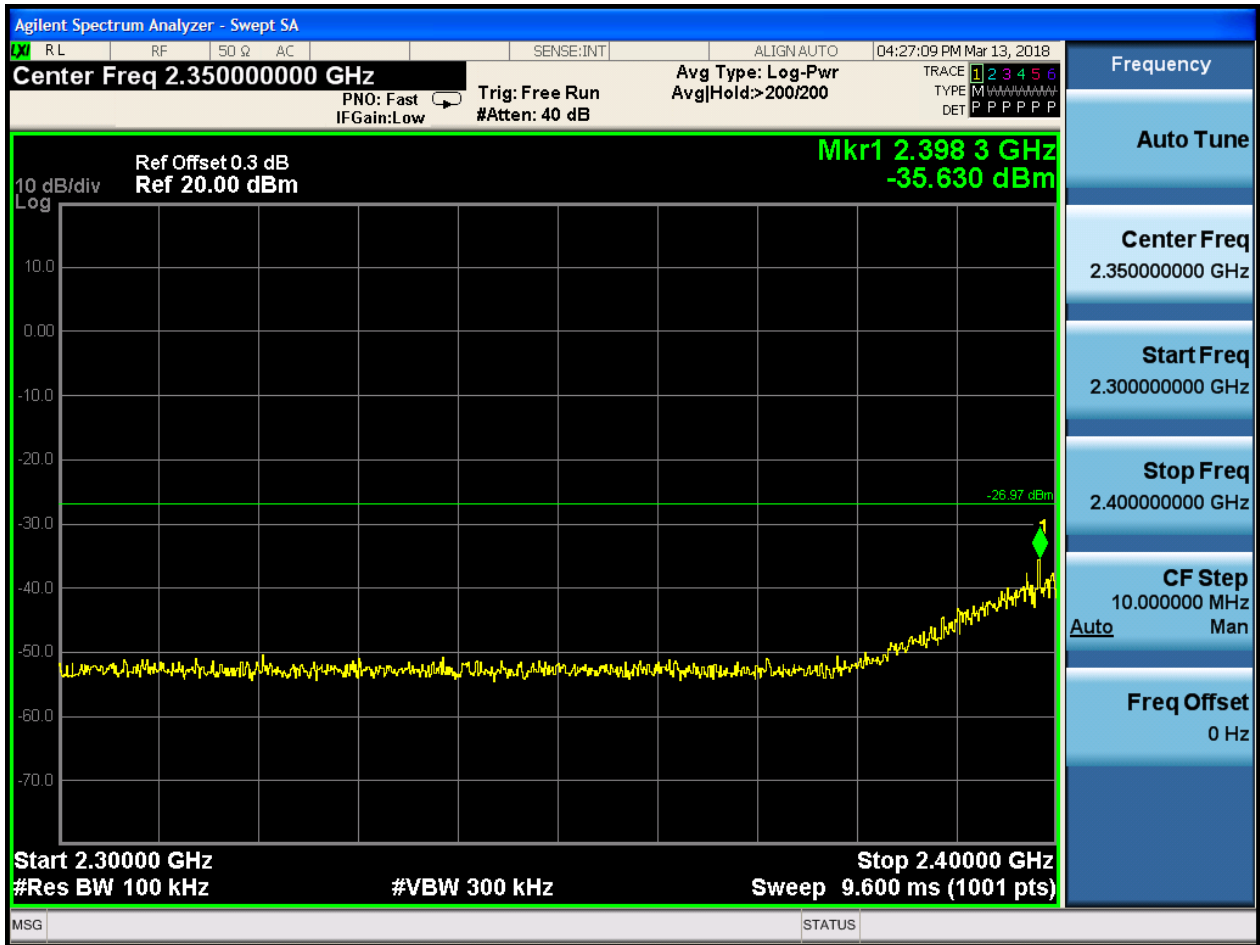


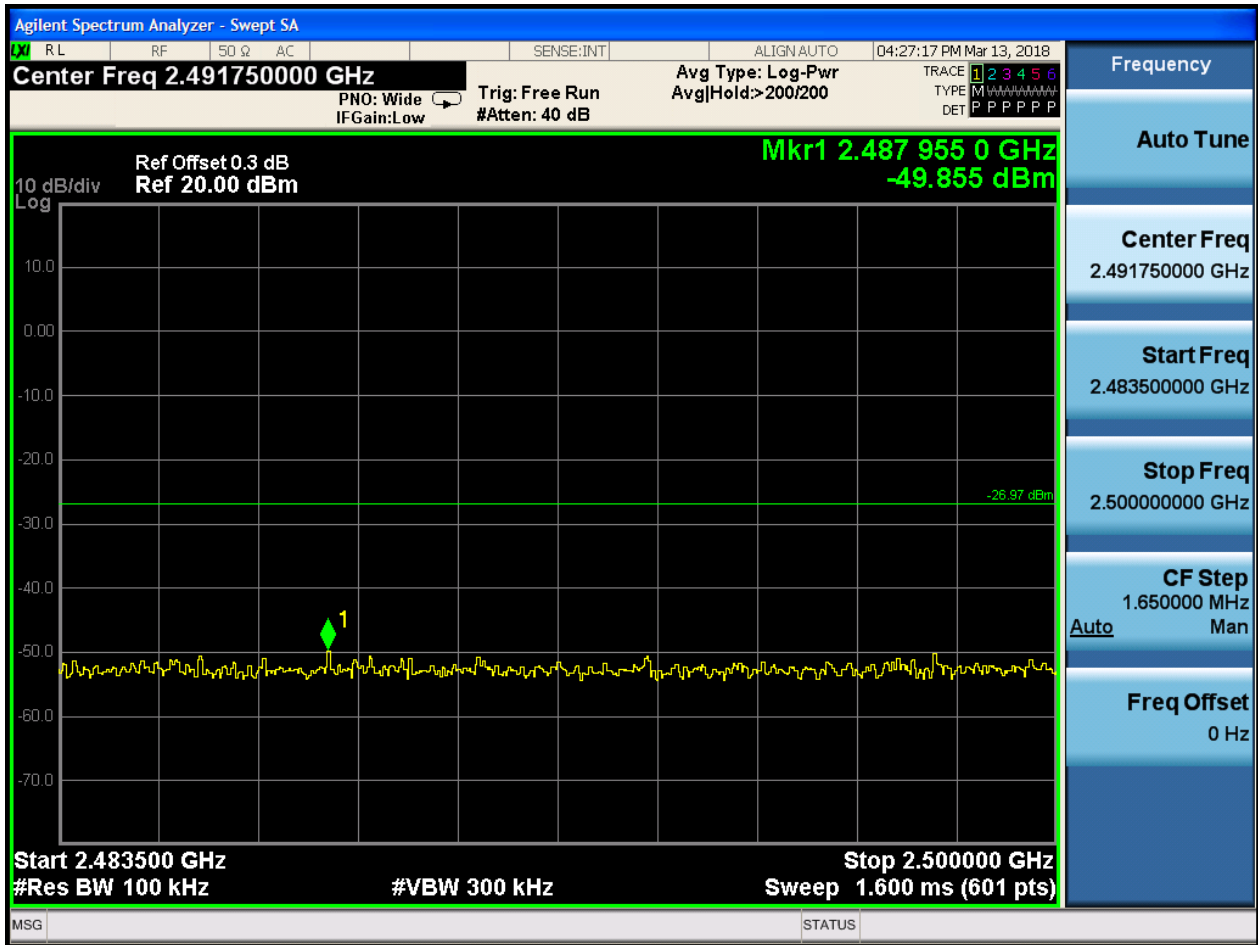
Puw:









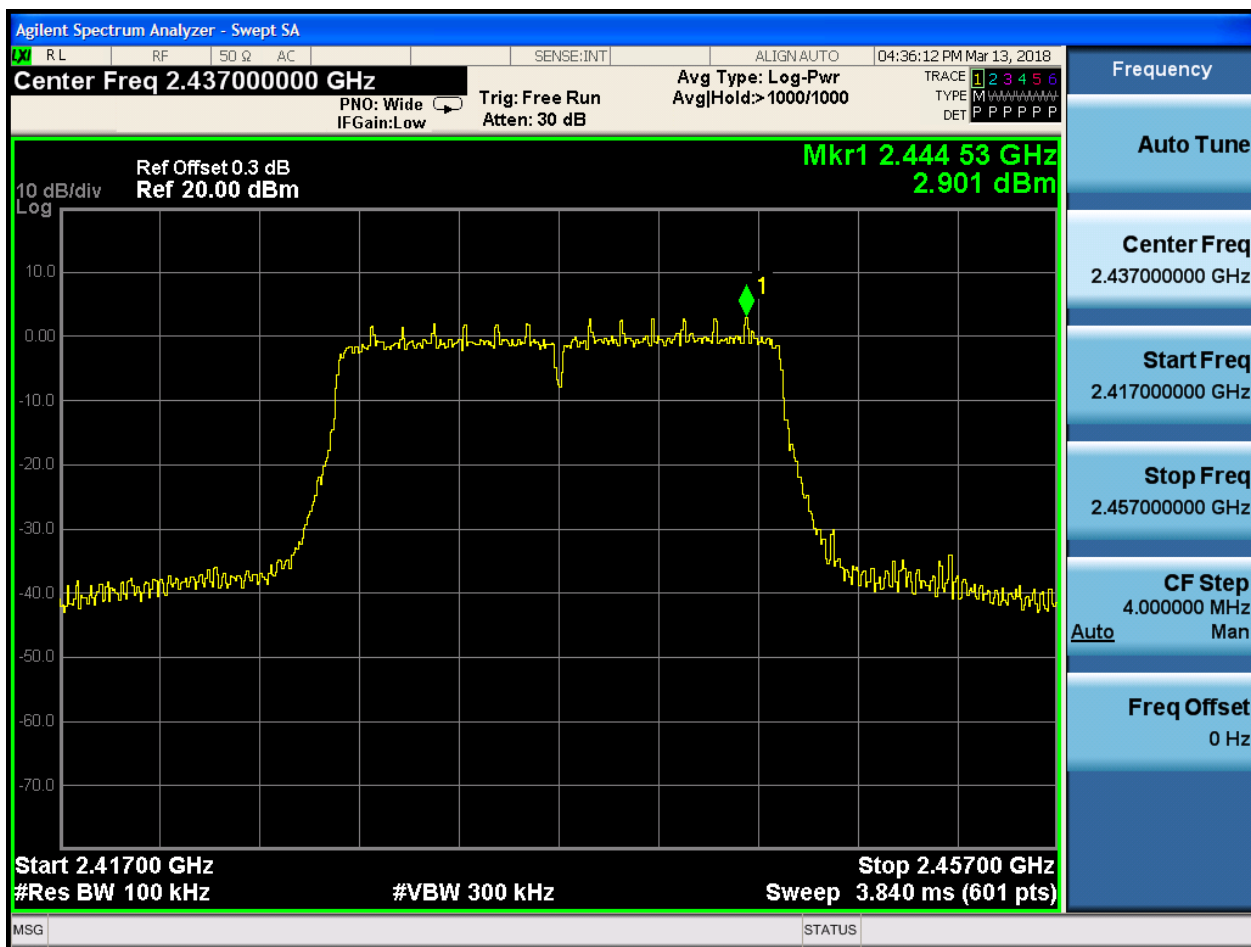






2.8 11N20_M@Ant 1

Pref:





Puw:

