



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.

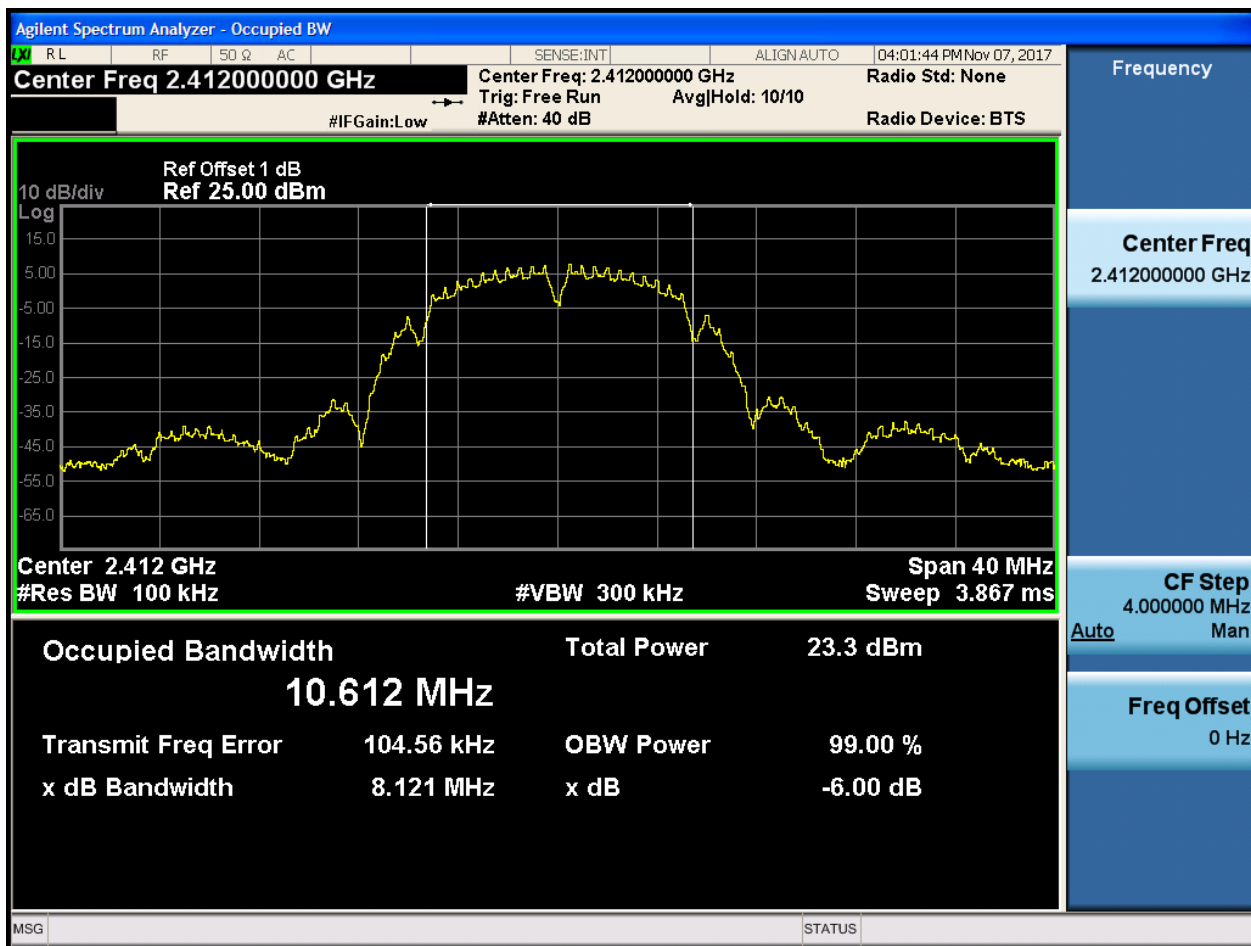
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

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	8.12	pass
11B	H	2462	Ant 1	8.55	pass
11G	L	2412	Ant 1	16.37	pass
11G	M	2437	Ant 1	16.41	pass
11G	H	2462	Ant 1	16.40	pass
11N20	L	2412	Ant 1	17.40	pass
11N20	M	2437	Ant 1	17.63	pass
11N20	H	2462	Ant 1	17.62	pass
11N40	L	2422	Ant 1	35.24	pass
11N40	M	2437	Ant 1	35.31	pass
11N40	H	2452	Ant 1	35.37	pass

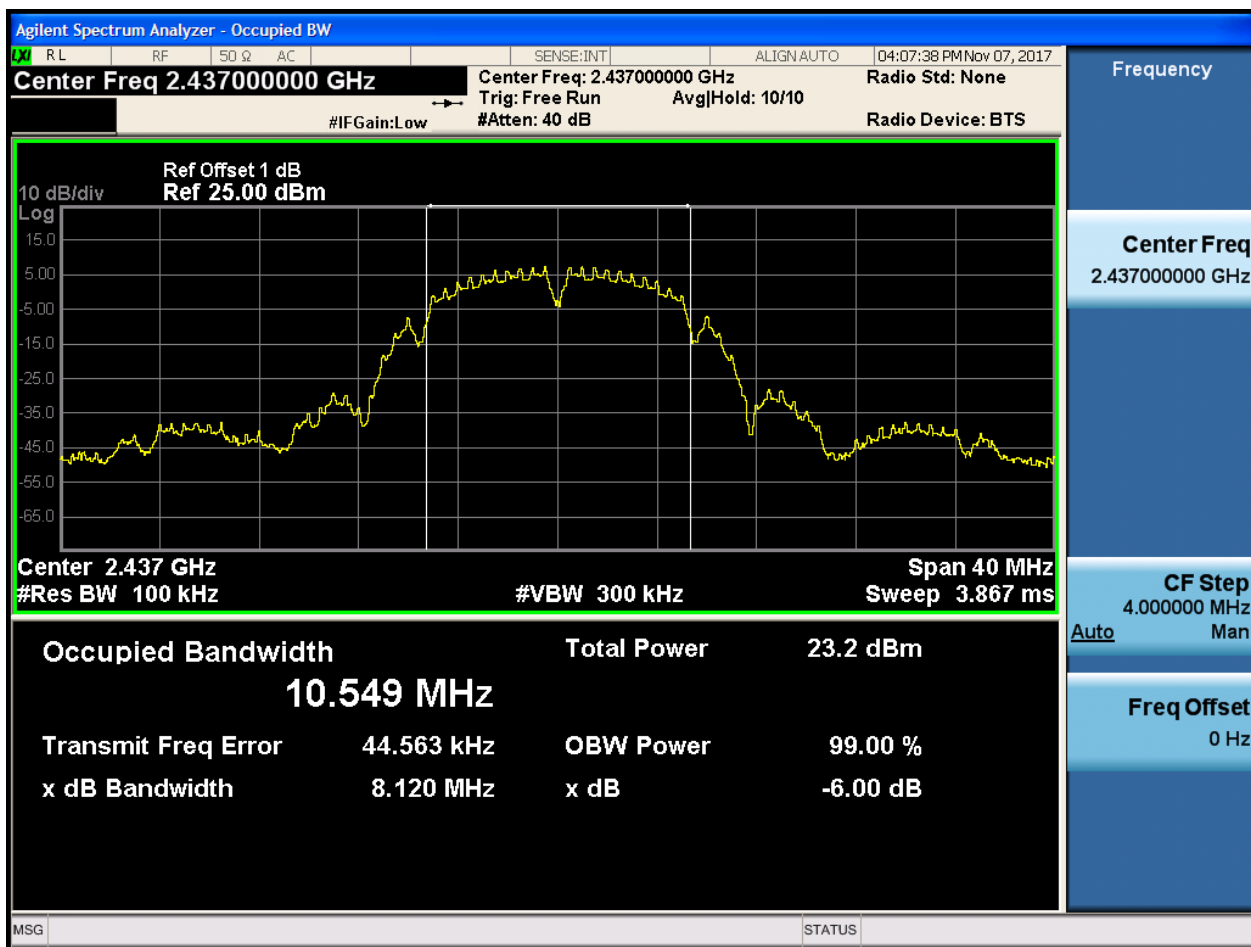
Part II - Test Plots

2.1 11B_L@Ant 1



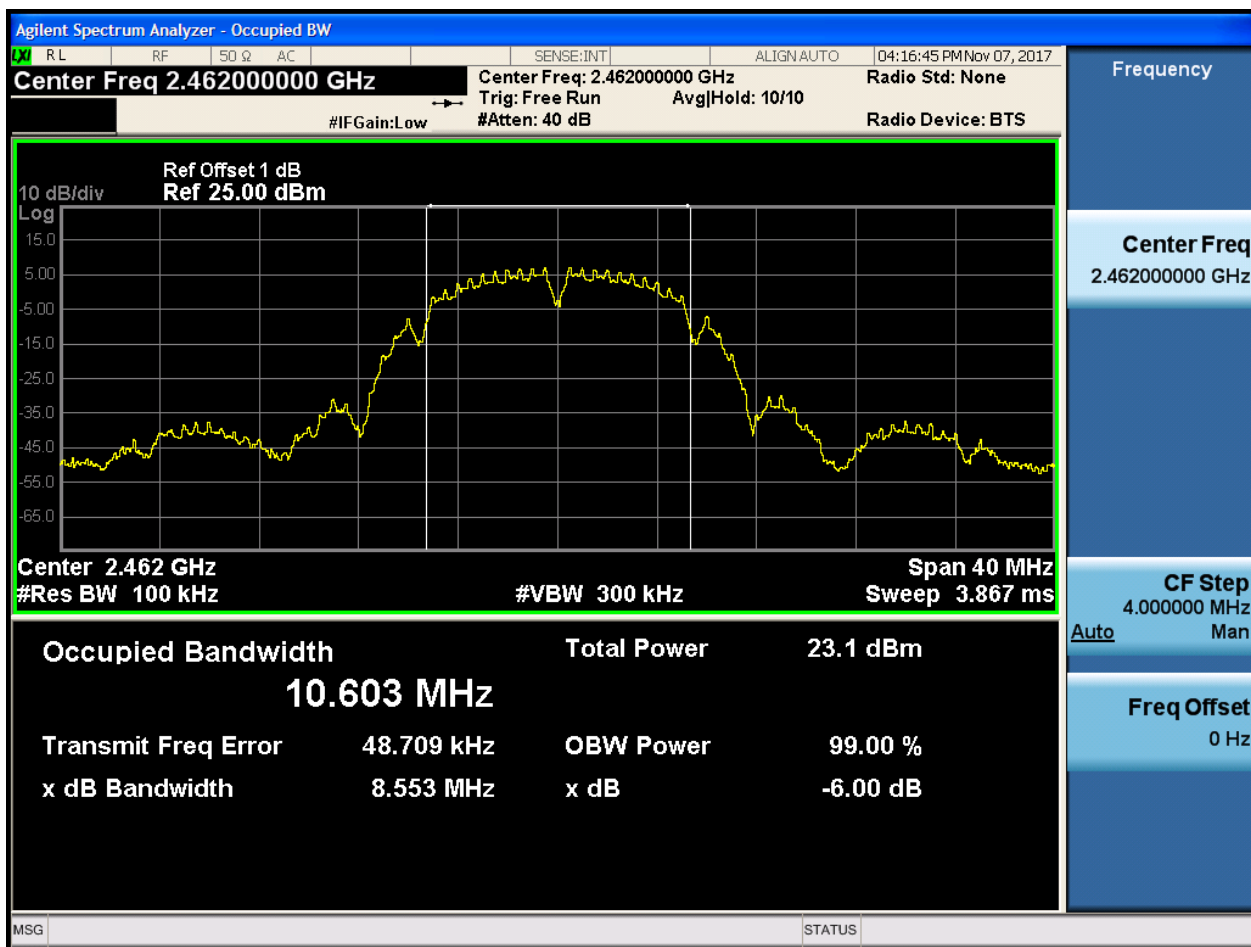


2.2 11B_M@Ant 1



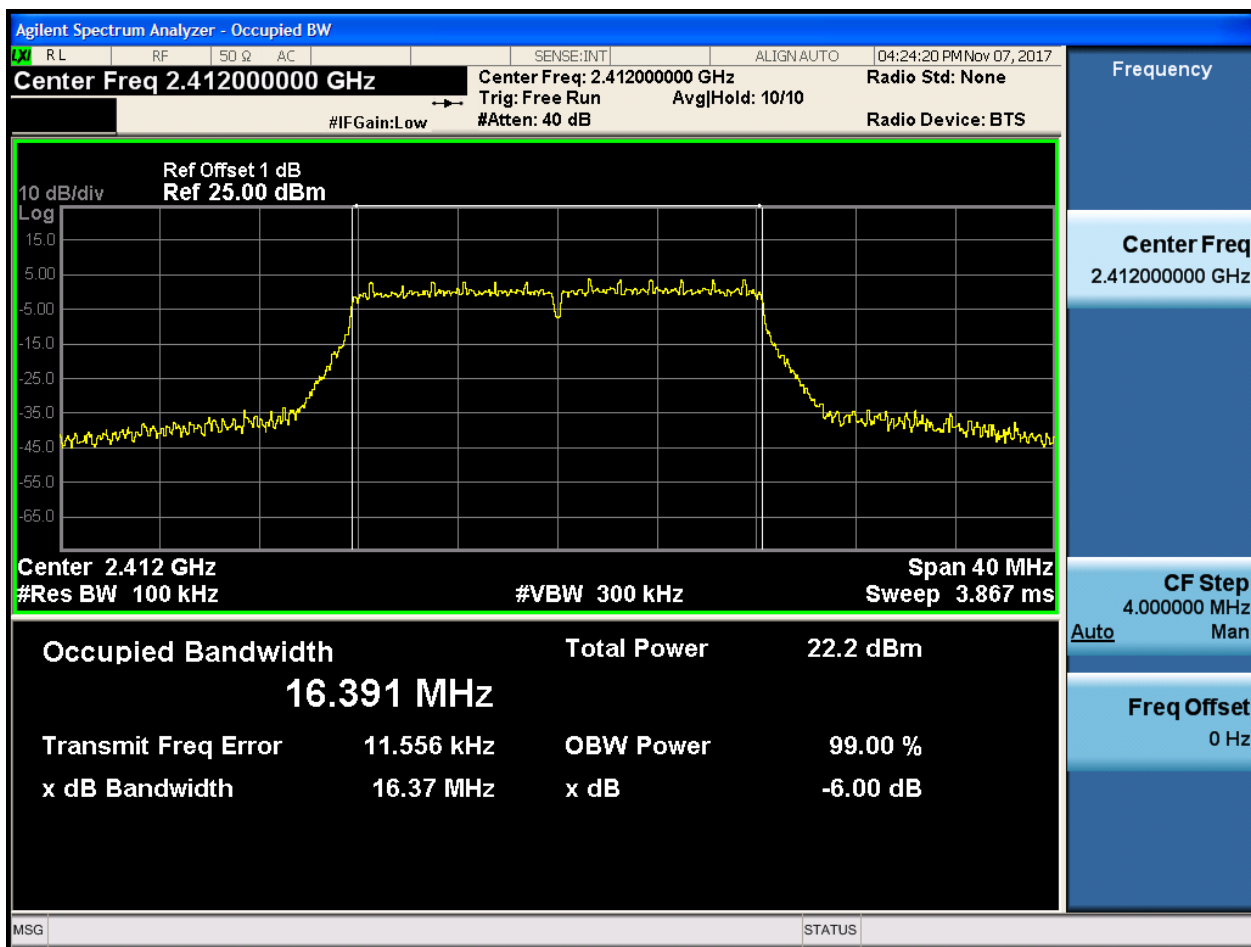


2.3 11B_H@Ant 1



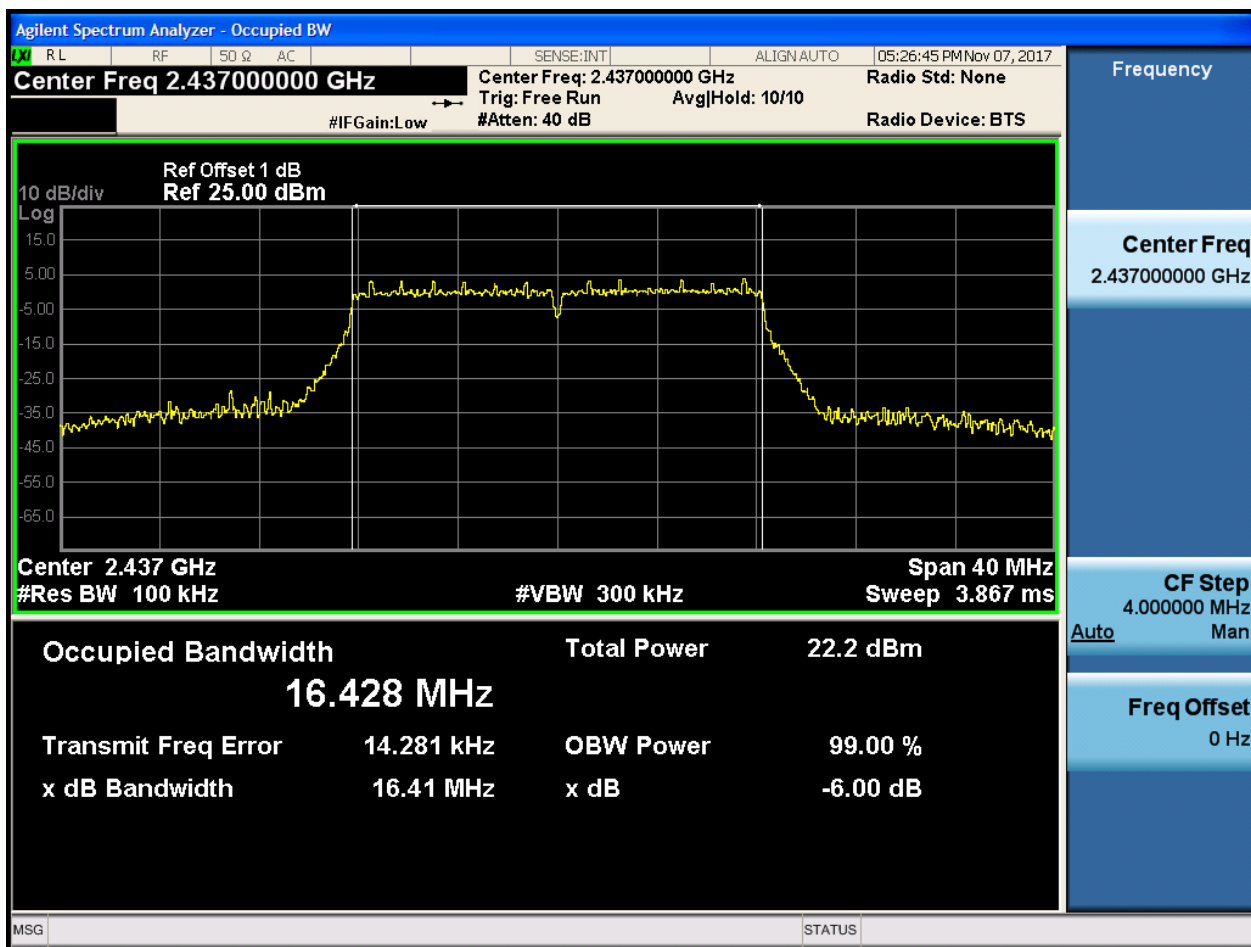


2.4 11G_L@Ant 1



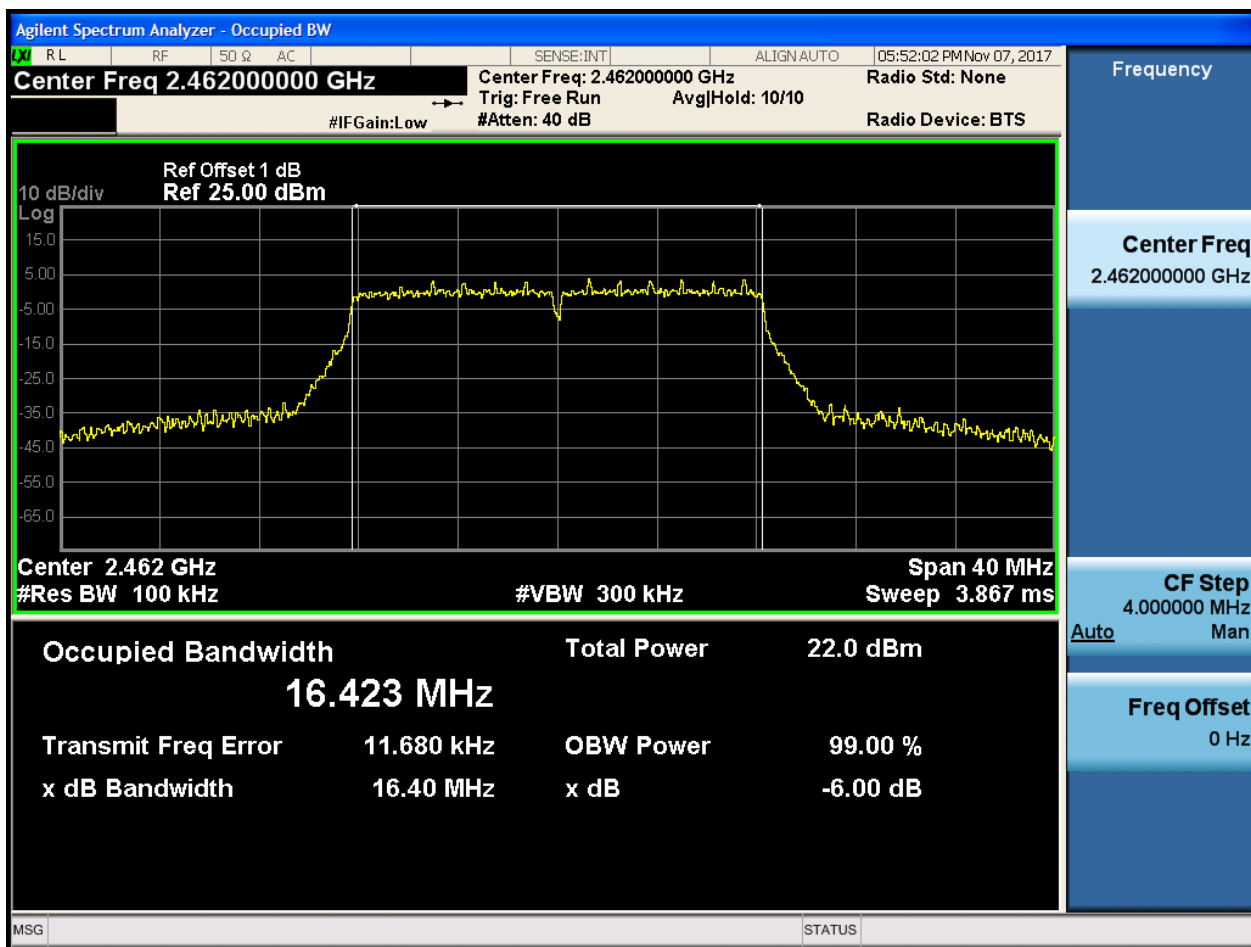


2.5 11G_M@Ant 1



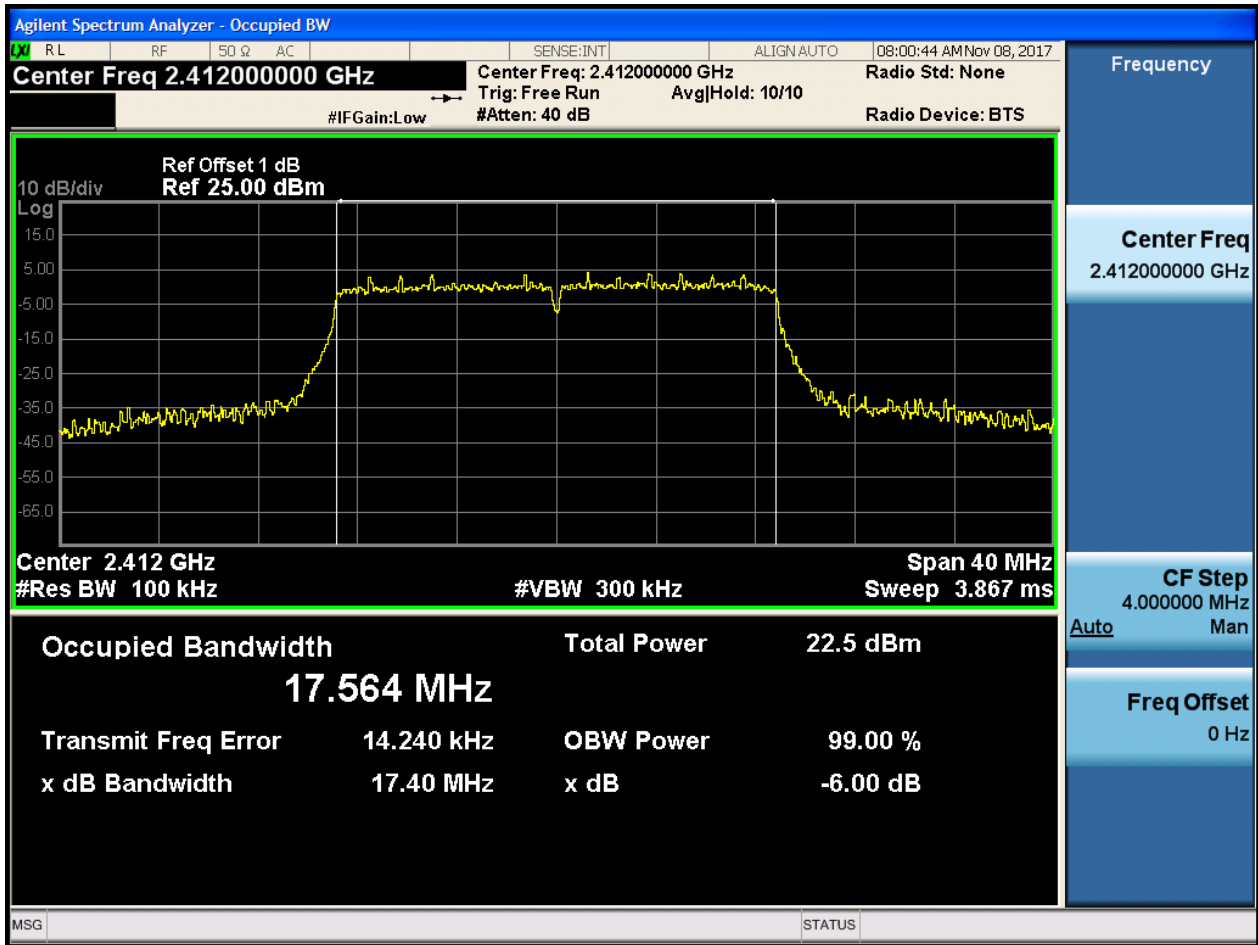


2.6 11G_H@Ant 1



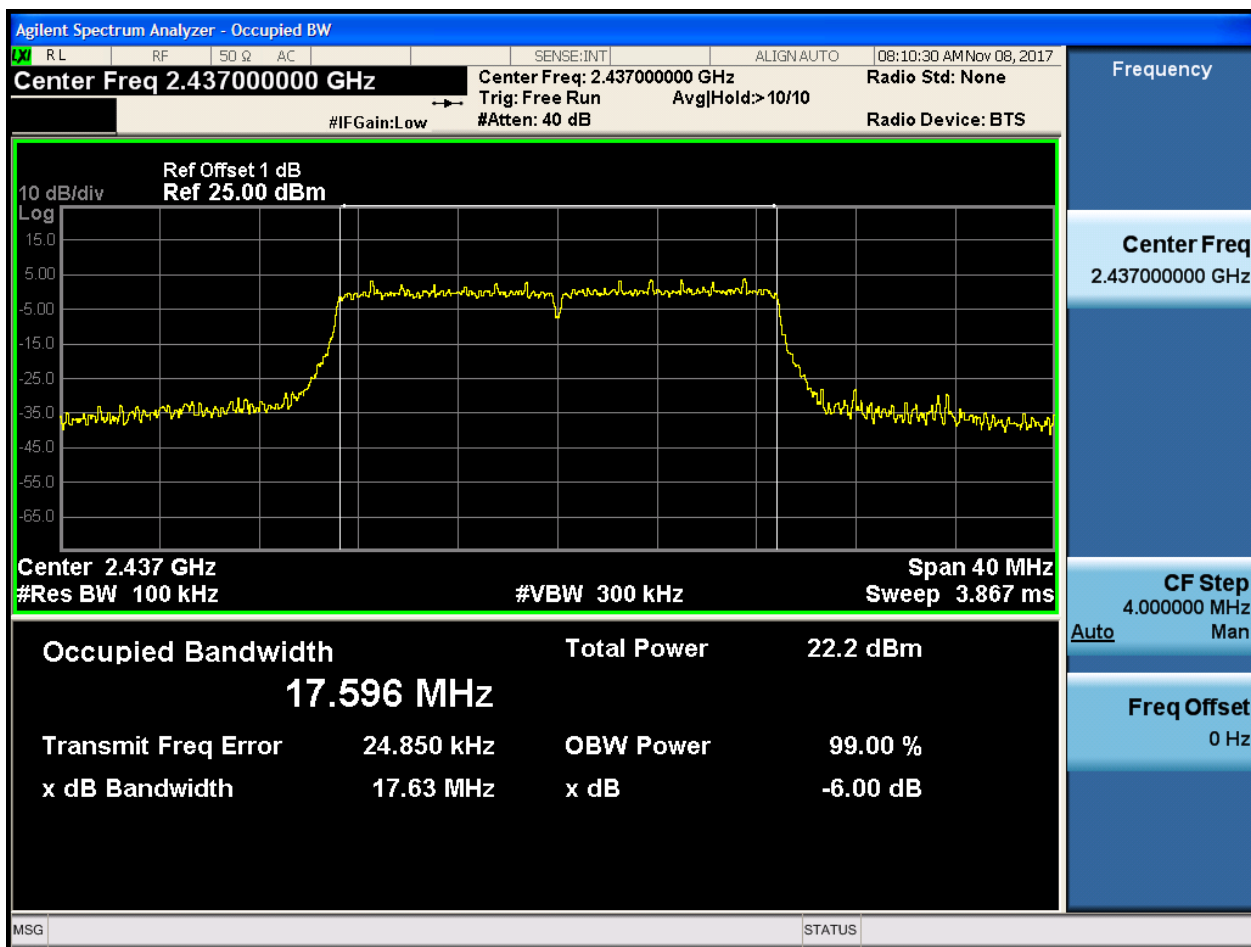


2.7 11N20_L@Ant 1



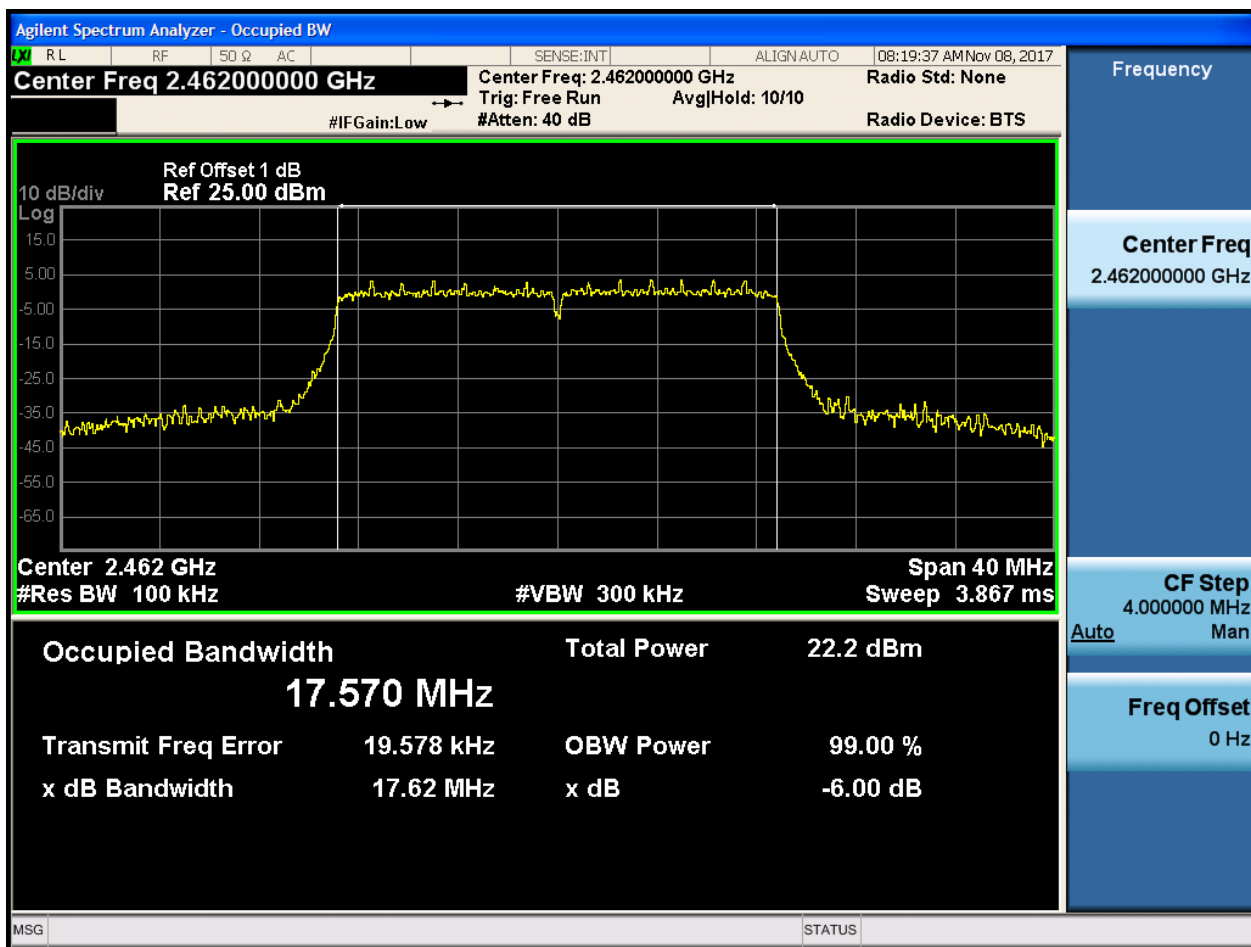


2.8 11N20_M@Ant 1



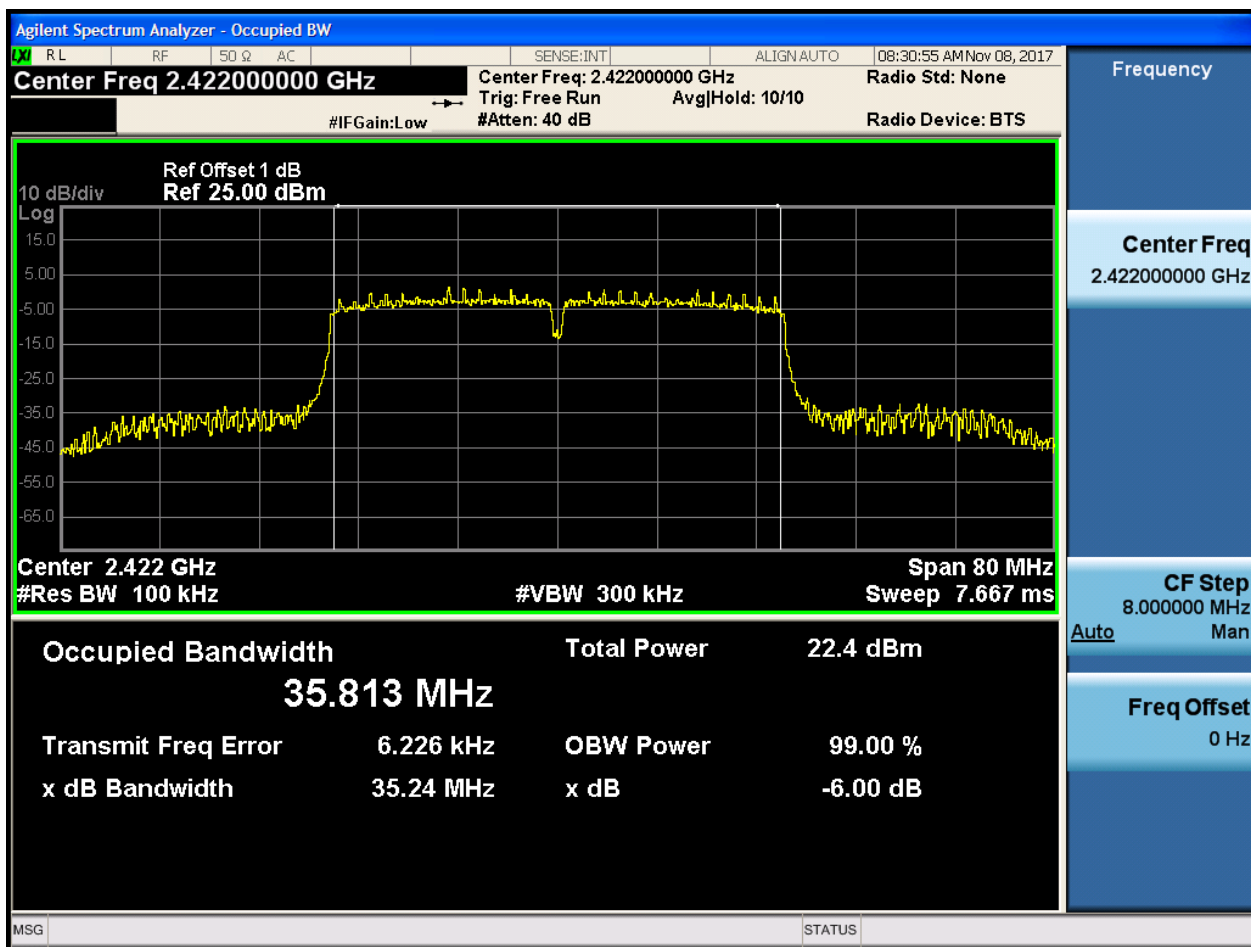


2.9 11N20_H@Ant 1



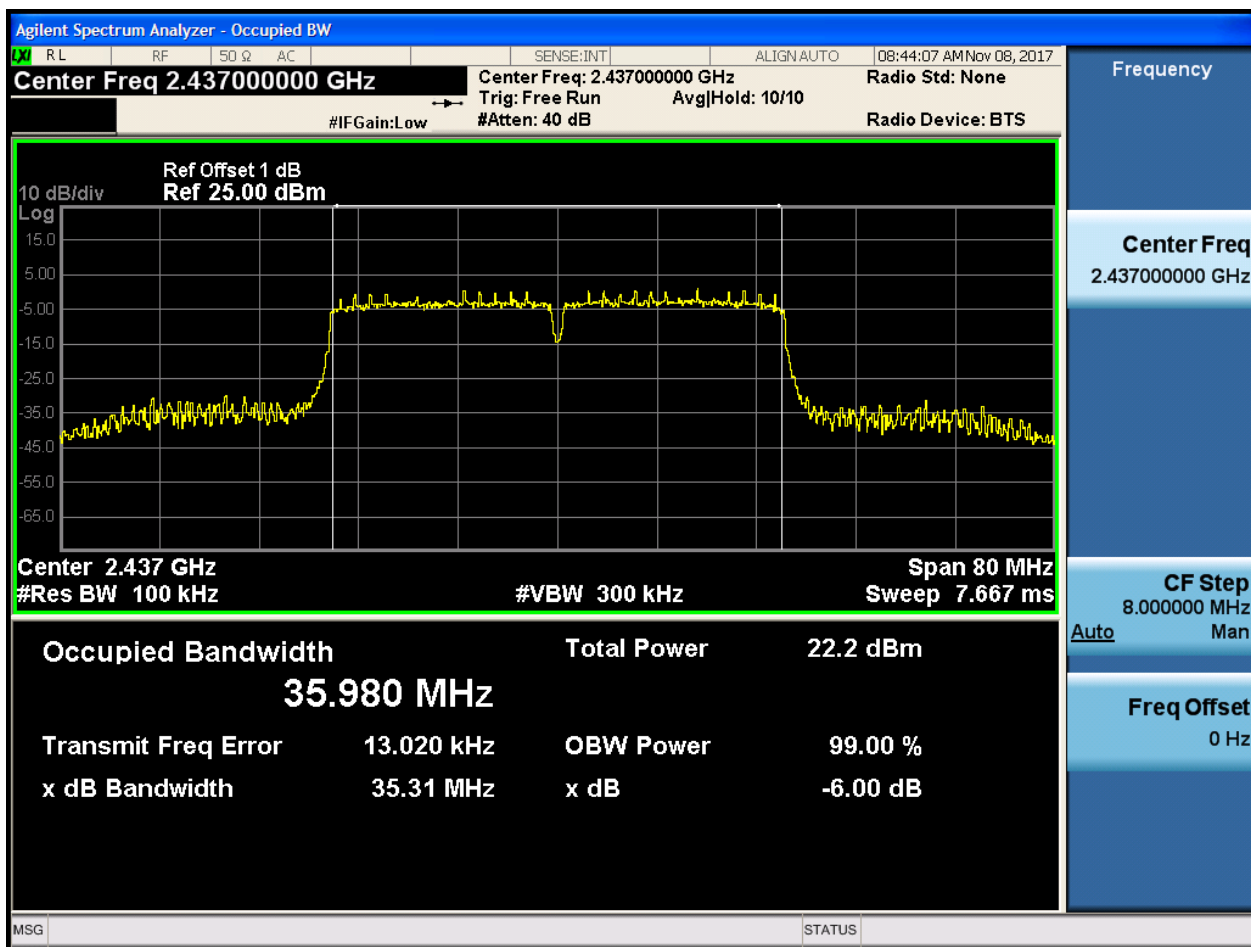


2.10 11N40_L@Ant 1



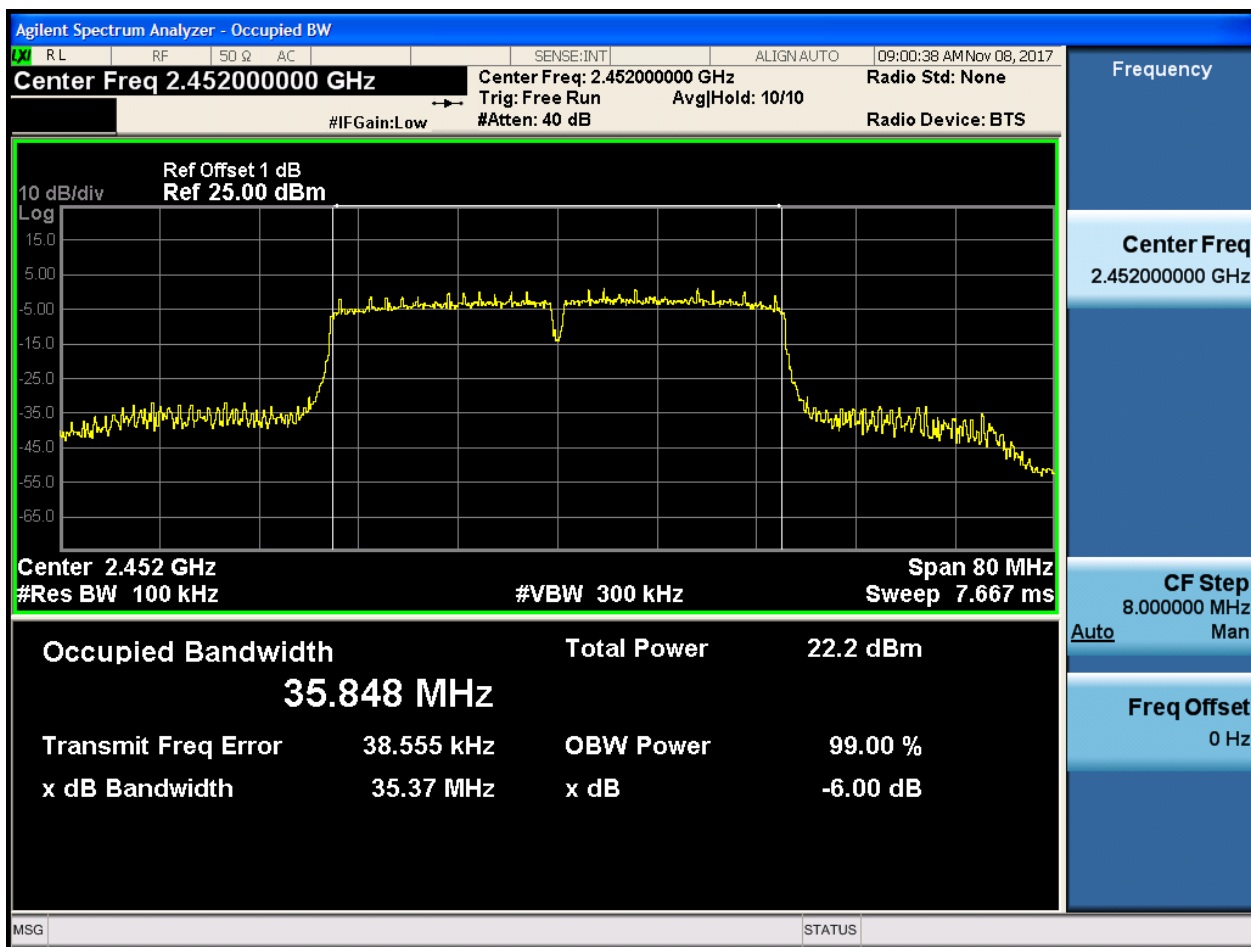


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix B: Occupied Bandwidth

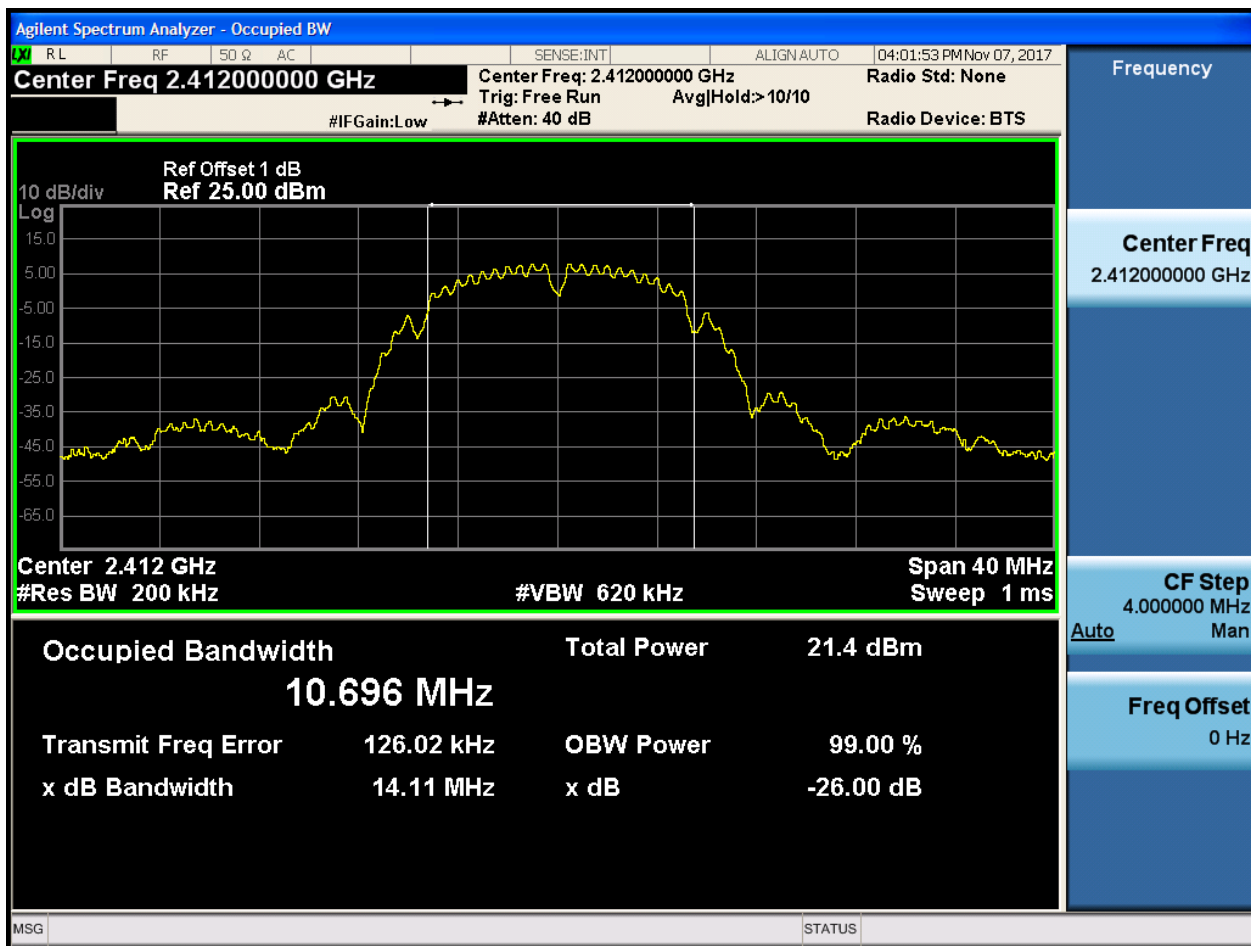
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	10.70	pass
11B	M	2437	Ant 1	10.68	pass
11B	H	2462	Ant 1	10.76	pass
11G	L	2412	Ant 1	16.47	pass
11G	M	2437	Ant 1	16.51	pass
11G	H	2462	Ant 1	16.50	pass
11N20	L	2412	Ant 1	17.58	pass
11N20	M	2437	Ant 1	17.62	pass
11N20	H	2462	Ant 1	17.58	pass
11N40	L	2422	Ant 1	35.89	pass
11N40	M	2437	Ant 1	36.05	pass
11N40	H	2452	Ant 1	35.91	pass

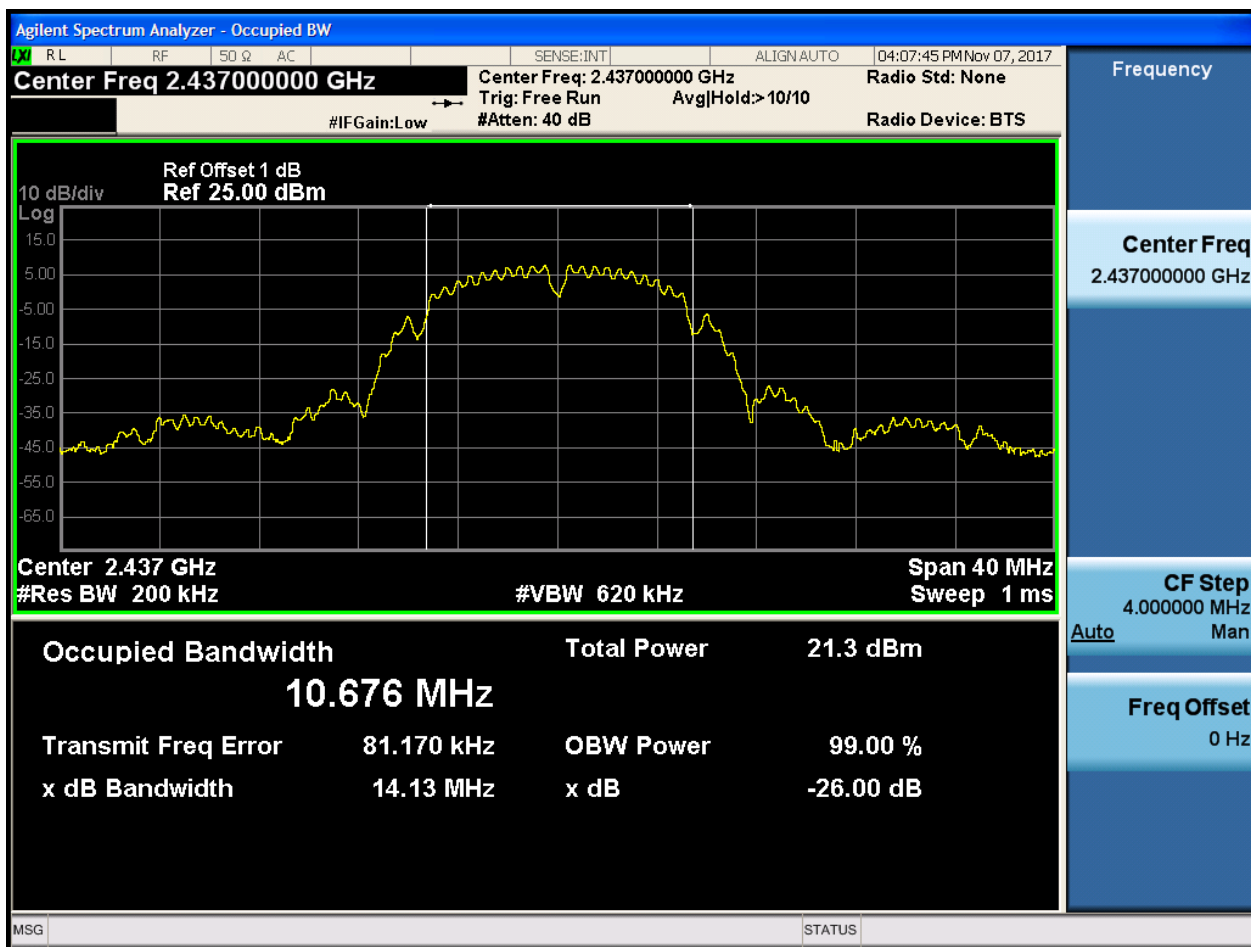
Part II - Test Plots

2.1 11B_L@Ant 1



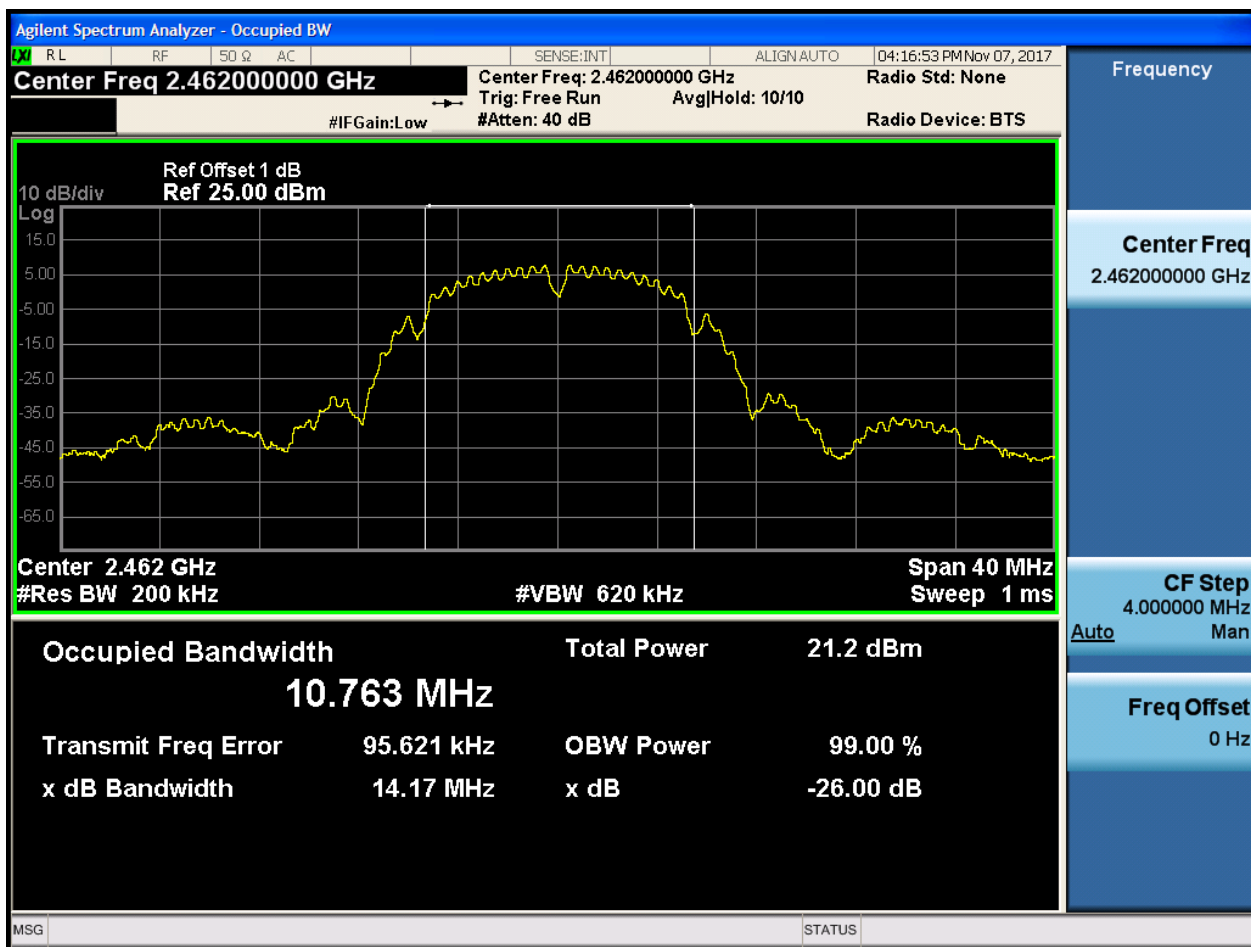


2.2 11B_M@Ant 1



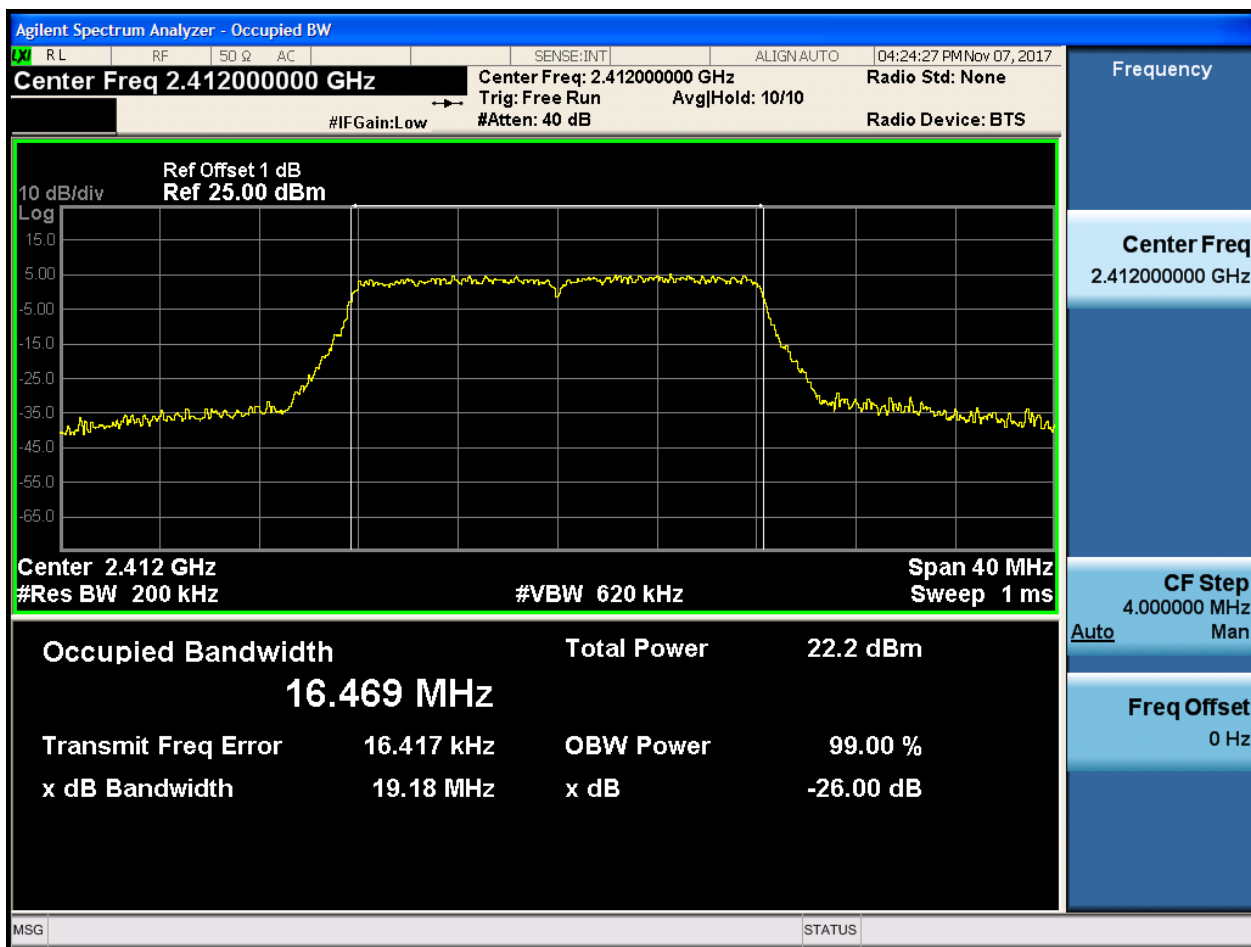


2.3 11B_H@Ant 1



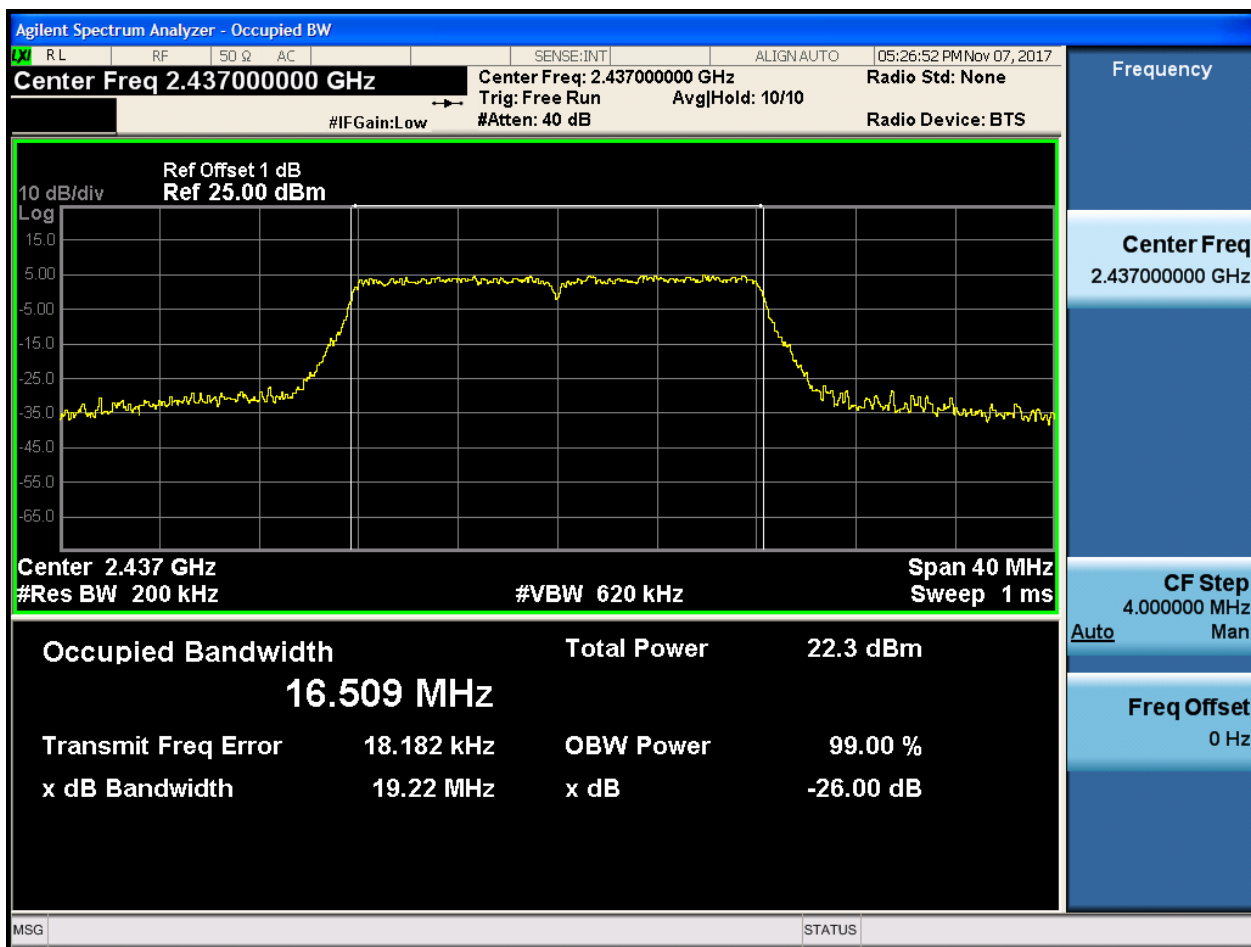


2.4 11G_L@Ant 1



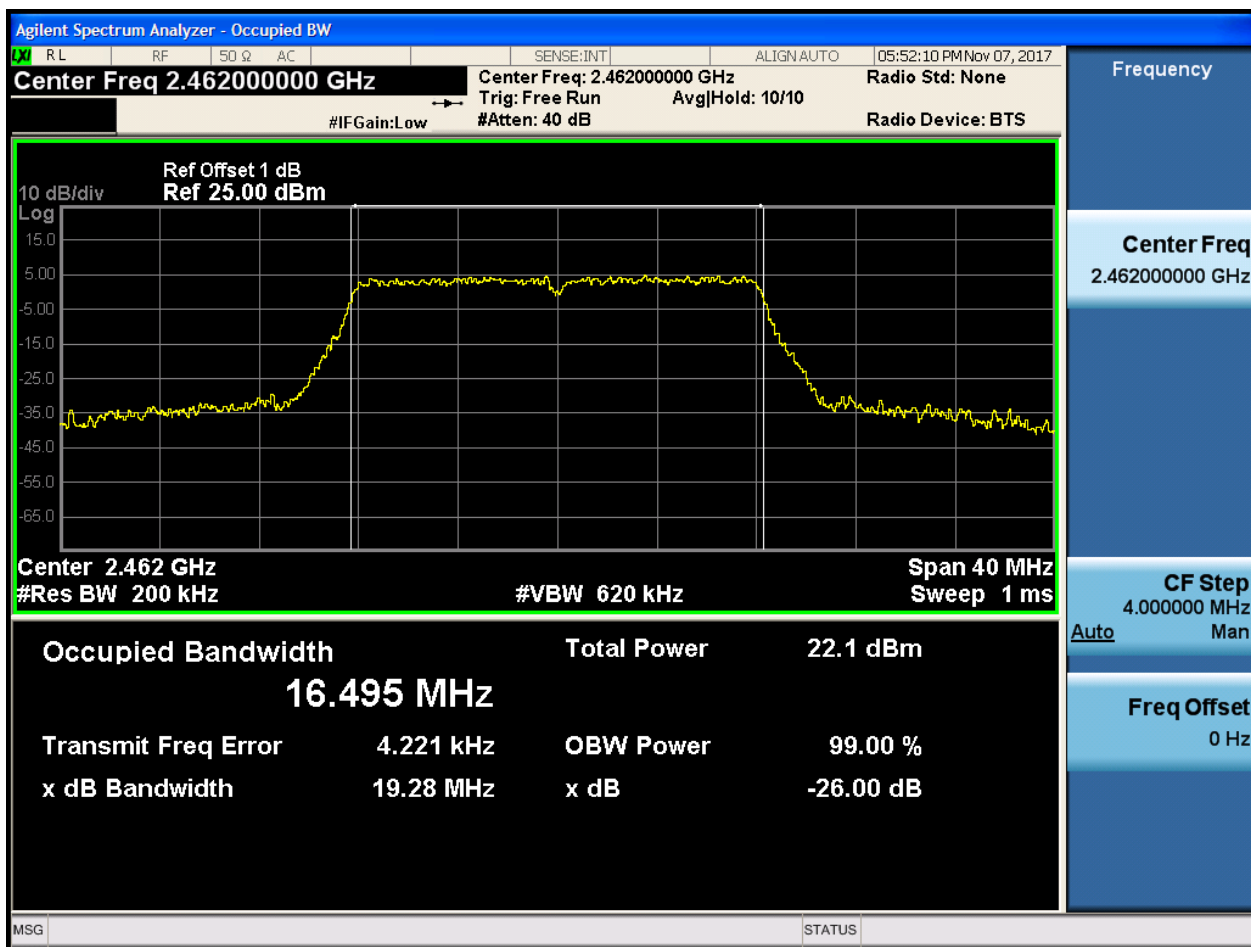


2.5 11G_M@Ant 1



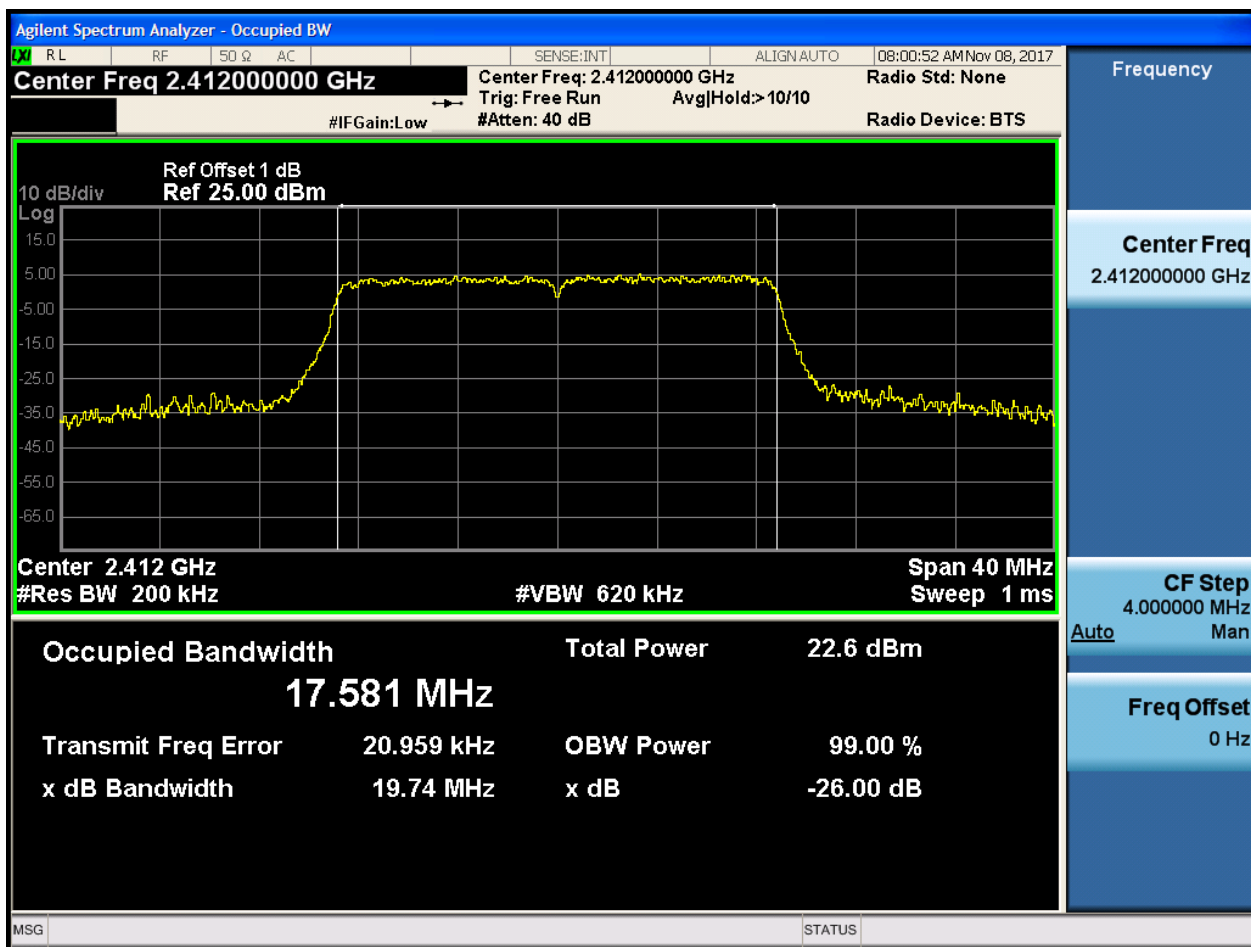


2.6 11G_H@Ant 1



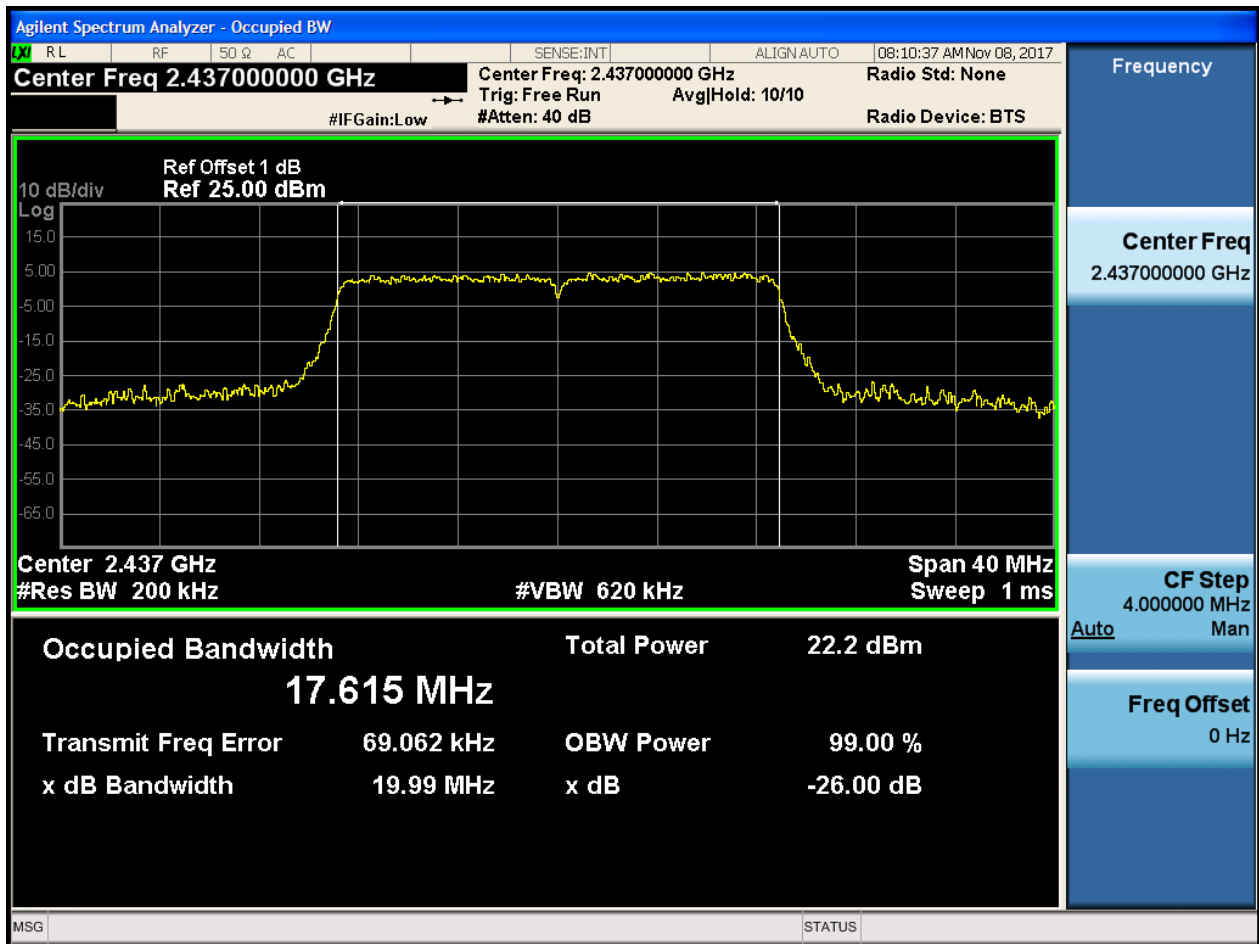


2.7 11N20_L@Ant 1



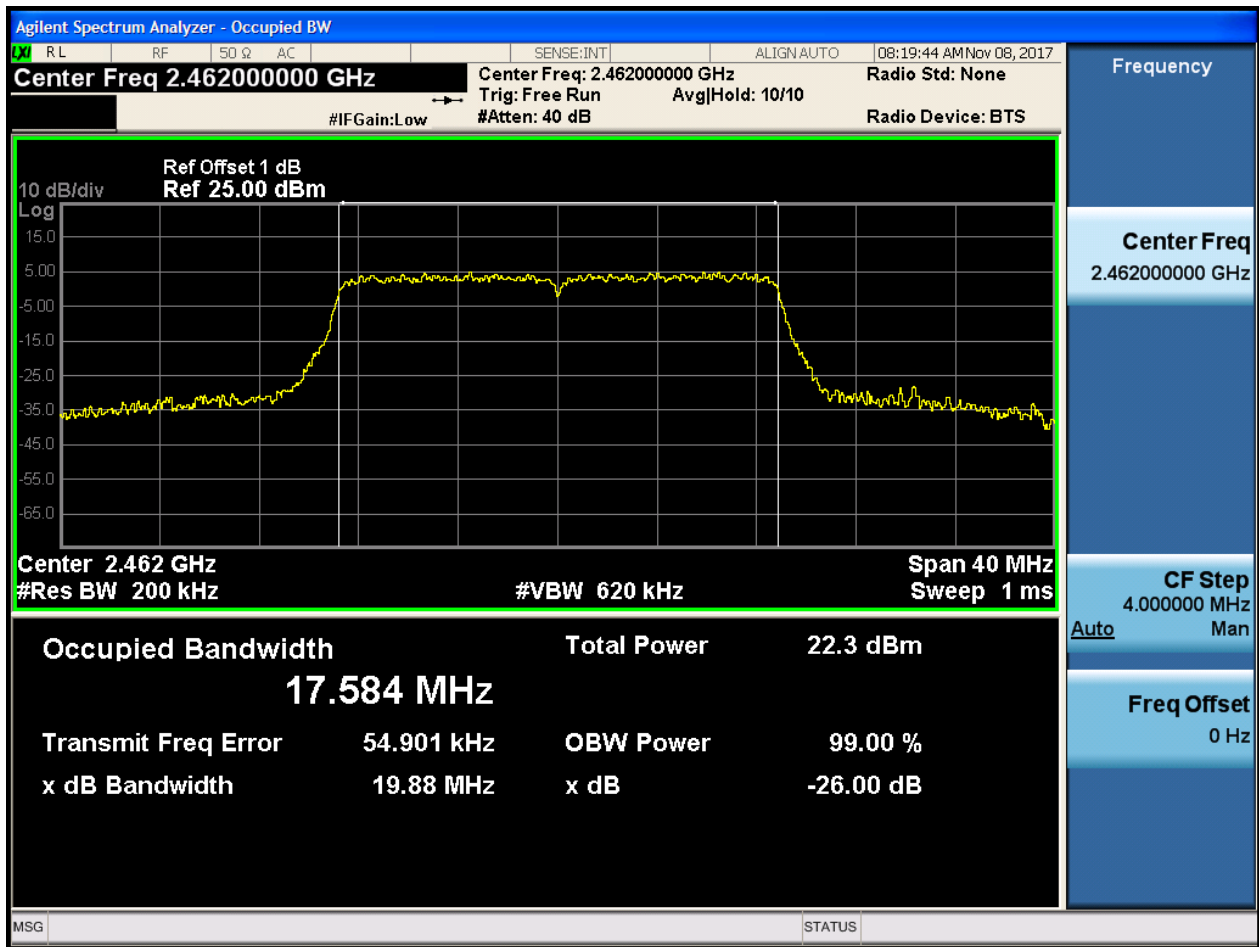


2.8 11N20_M@Ant 1



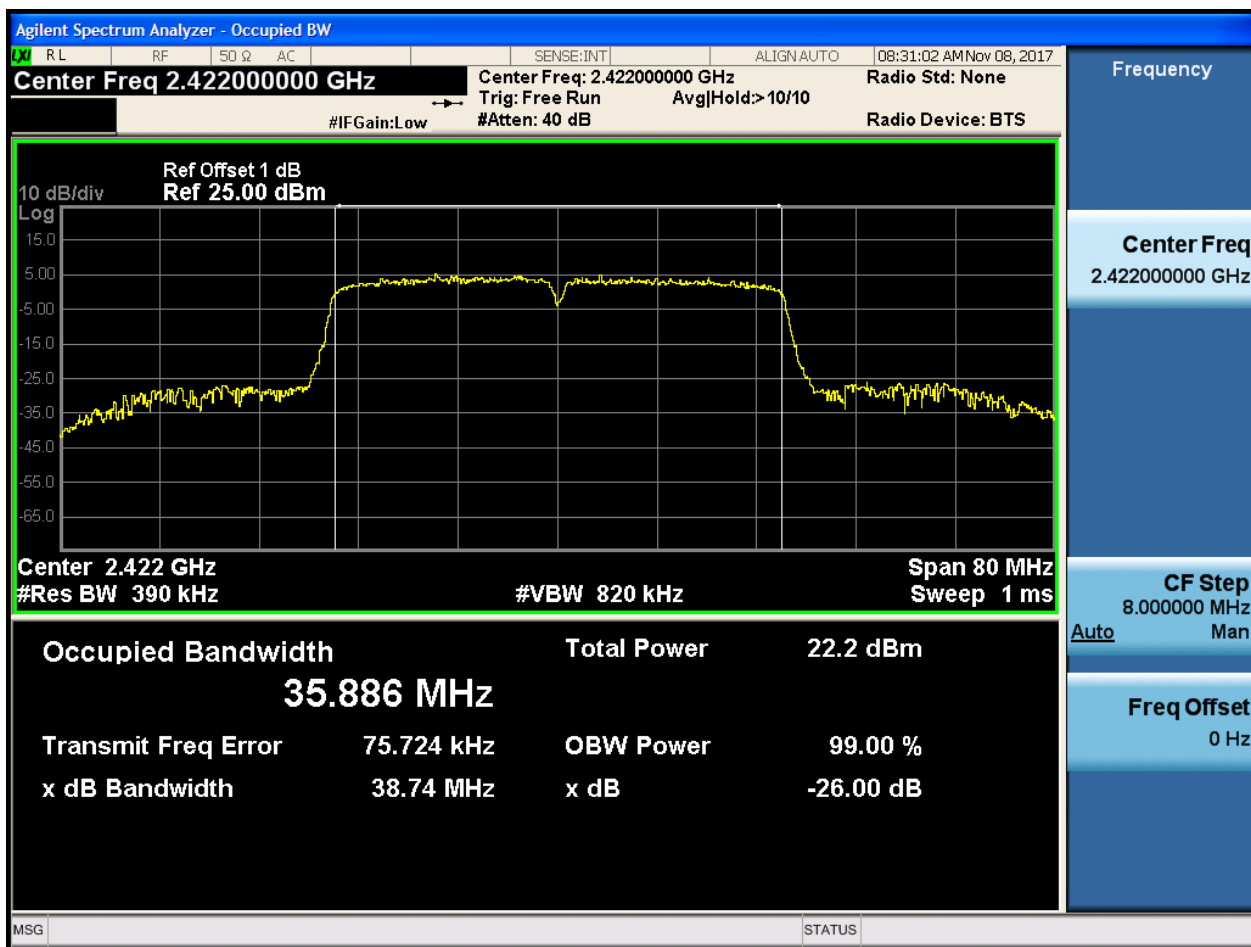


2.9 11N20_H@Ant 1



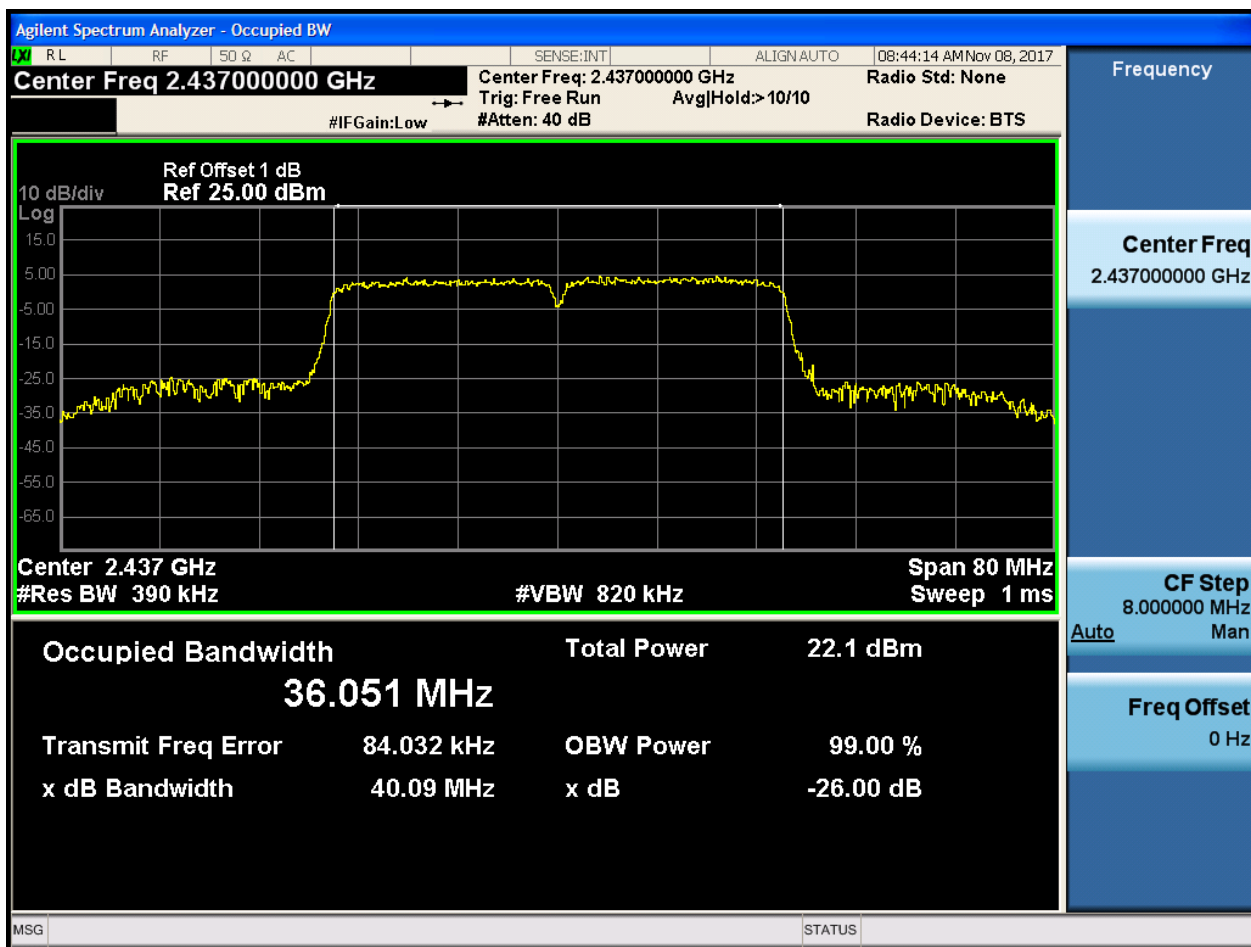


2.10 11N40_L@Ant 1



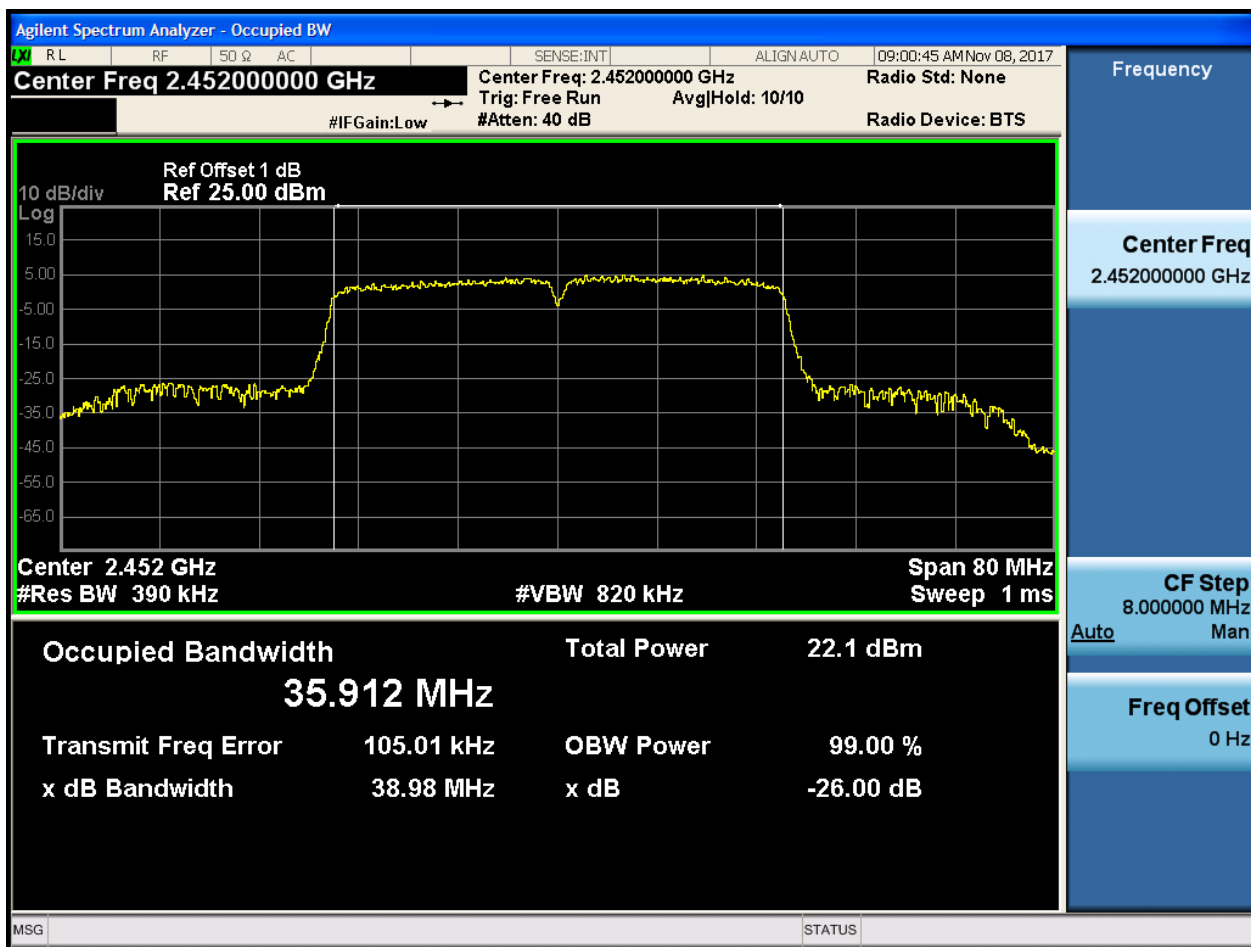


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



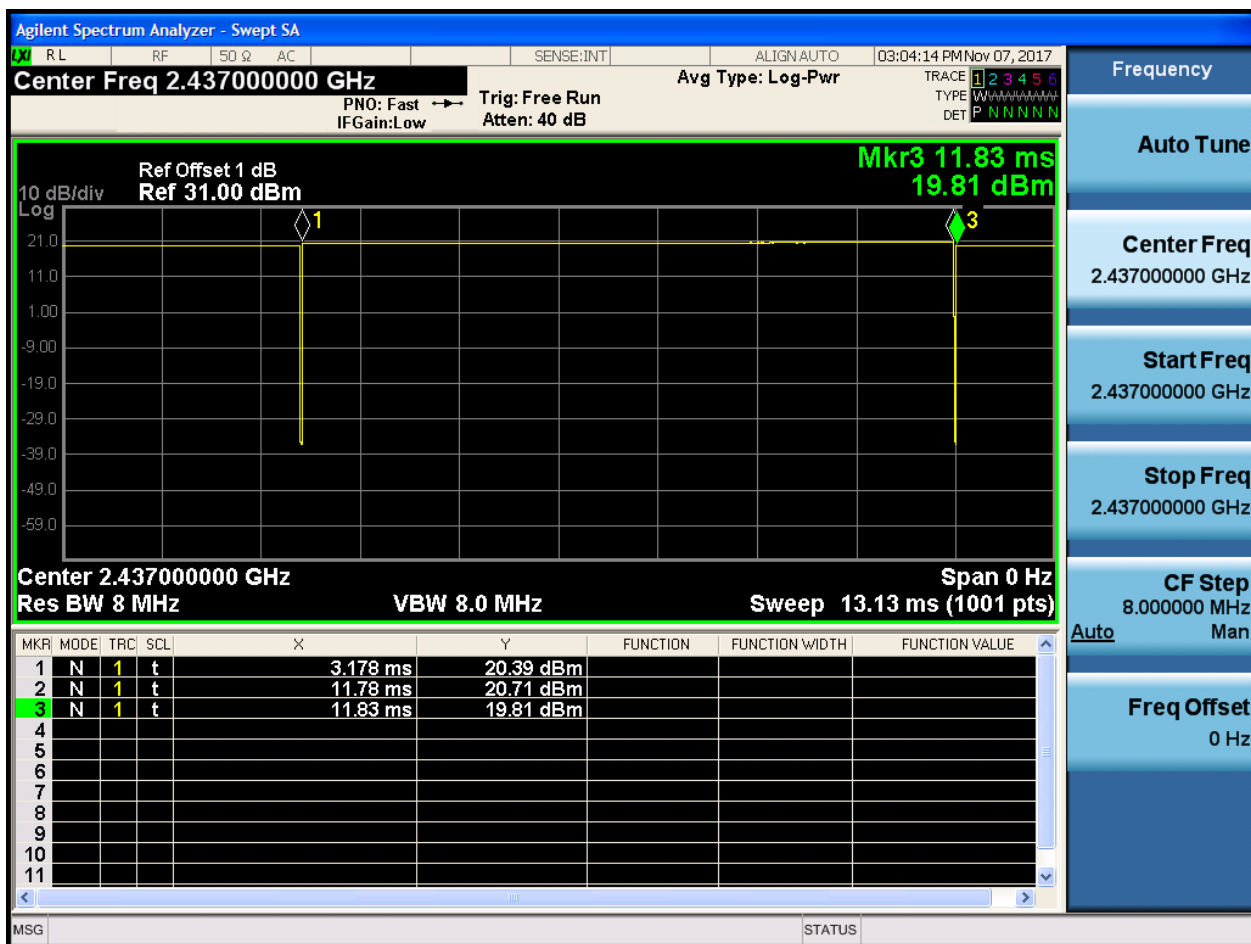
Appendix C: Duty Cycle

Part I - Test Results

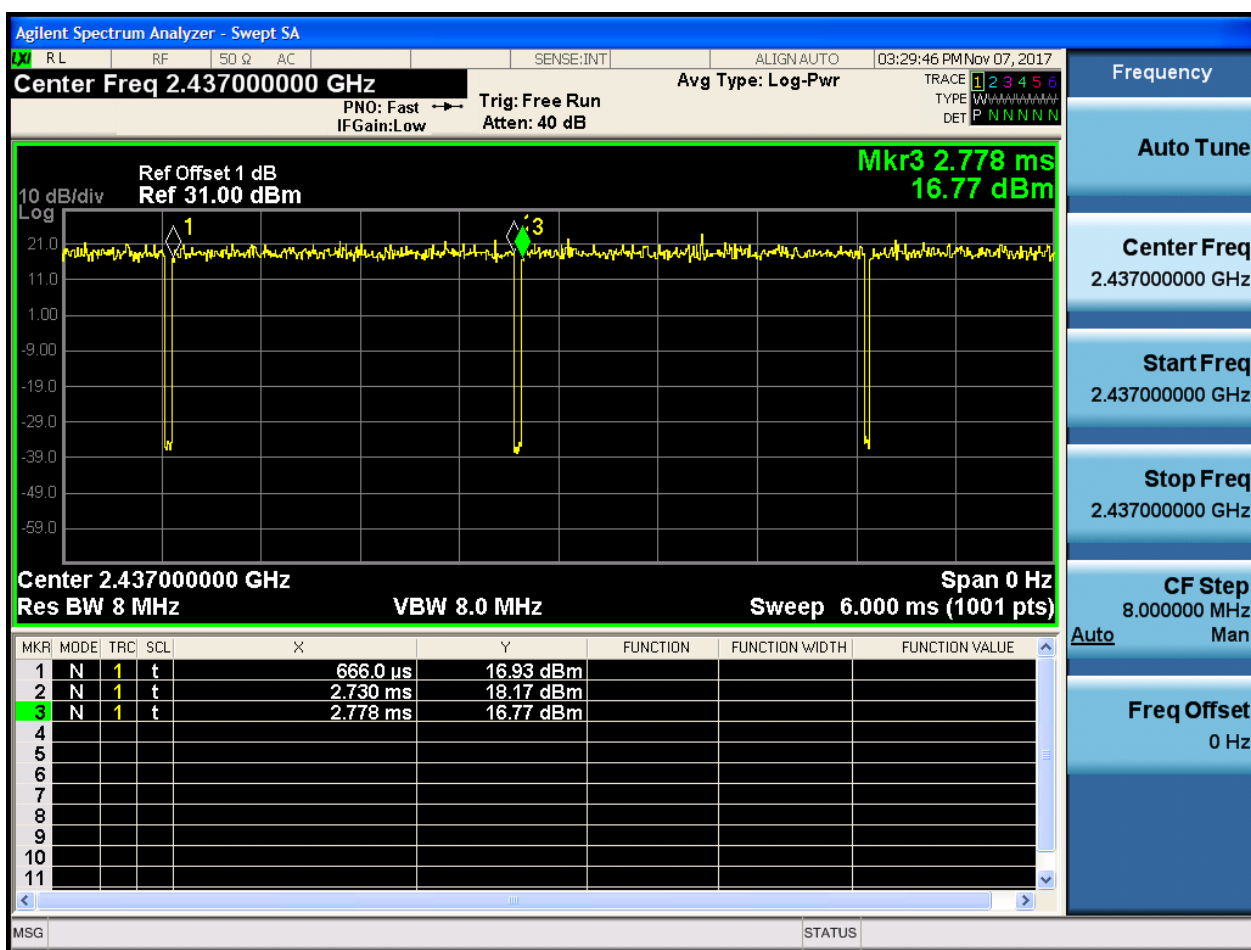
Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1,CH6,CH11	99
11G	Ant 1: CH1,CH6,CH11	98
11N_20M_SISO	Ant 1: CH1,CH6,CH11	98
11N_40M_SISO	Ant 1: CH3,CH6,CH9	97

Part II - Test Plots

2.1 11B



2.2 11G





Agilent Spectrum Analyzer - Swept SA

SENSE:INT ALIGN AUTO 03:31:59 PM Nov 07, 2017

Avg Type: Log-Pwr

TRACE 1 2 3 4 5 6
TYPE WWWWWWWWW
DET P NNNNNN

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

Ref Offset 1 dB
Ref 31.00 dBm

Mkr3 3.174 ms
16.98 dBm

10 dB/div
Log

Center 2.437000000 GHz
Res BW 8 MHz
Span 0 Hz
VBW 8.0 MHz
Sweep 6.000 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t	534.0 μ s	16.61 dBm			
2	N	1	t	3.126 ms	17.08 dBm			
3	N	1	t	3.174 ms	16.98 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.437000000 GHz

Start Freq
2.437000000 GHz

Stop Freq
2.437000000 GHz

CF Step
8.000000 MHz
Man

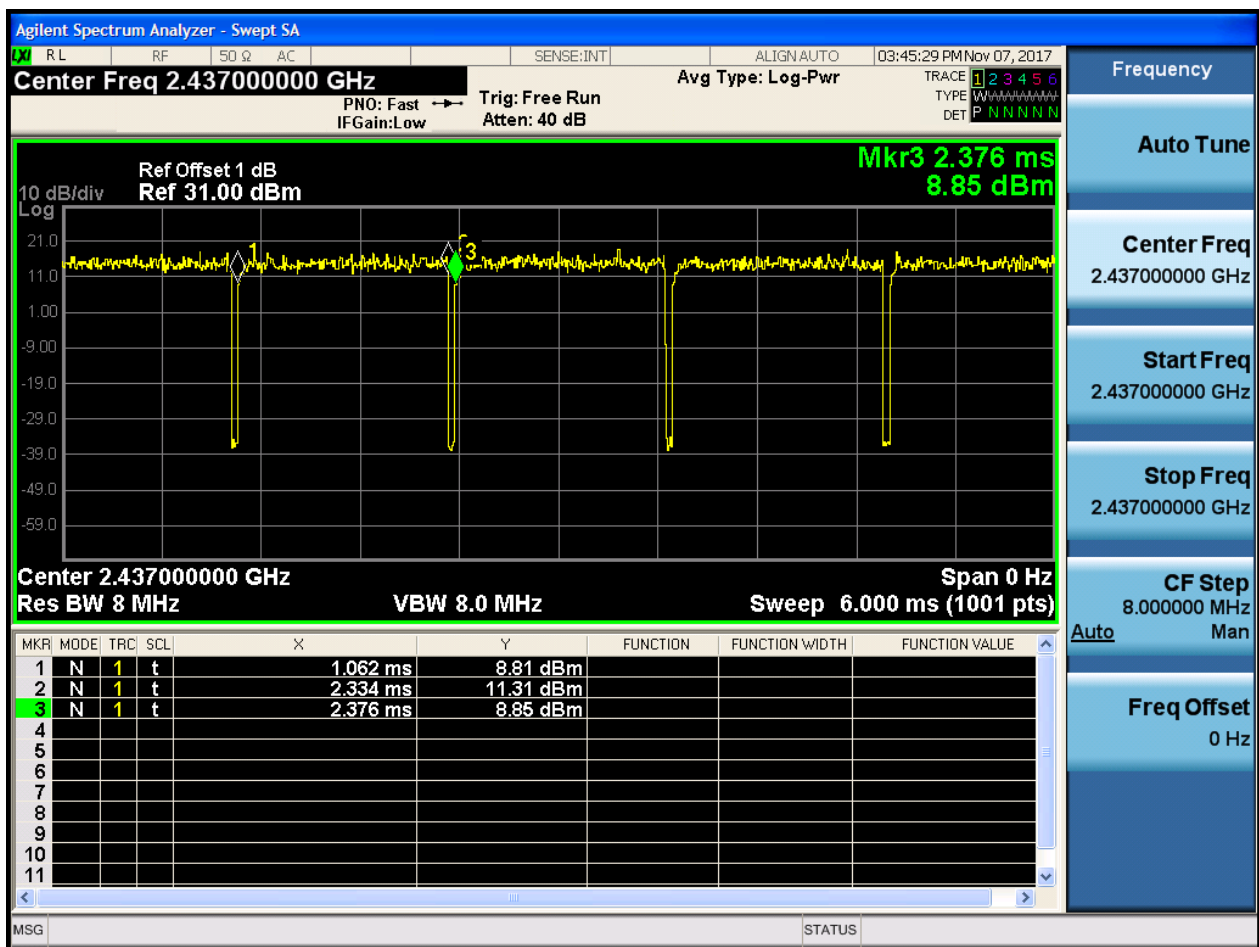
Auto

Freq Offset
0 Hz

MSG STATUS



2.4 11N40



Appendix D: Maximum Conducted Average Output Power

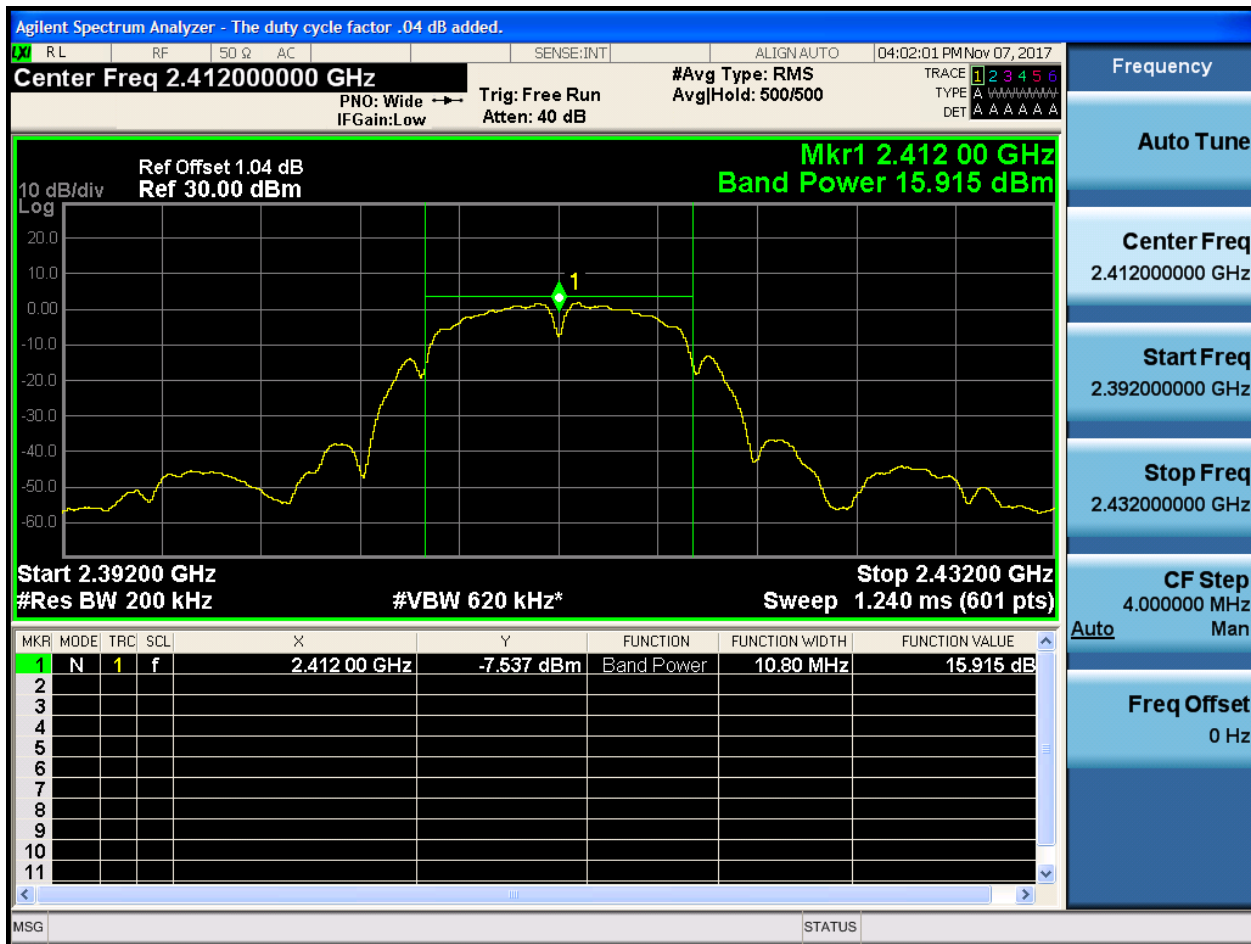
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11B	L	2412	Ant 1	15.92	pass
11B	M	2437	Ant 1	15.78	pass
11B	H	2462	Ant 1	15.69	pass
11G	L	2412	Ant 1	15.17	pass
11G	M	2437	Ant 1	15.22	pass
11G	H	2462	Ant 1	15.06	pass
11N20	L	2412	Ant 1	15.55	pass
11N20	M	2437	Ant 1	15.24	pass
11N20	H	2462	Ant 1	15.21	pass
11N40	L	2422	Ant 1	15.07	pass
11N40	M	2437	Ant 1	14.94	pass
11N40	H	2452	Ant 1	14.94	pass



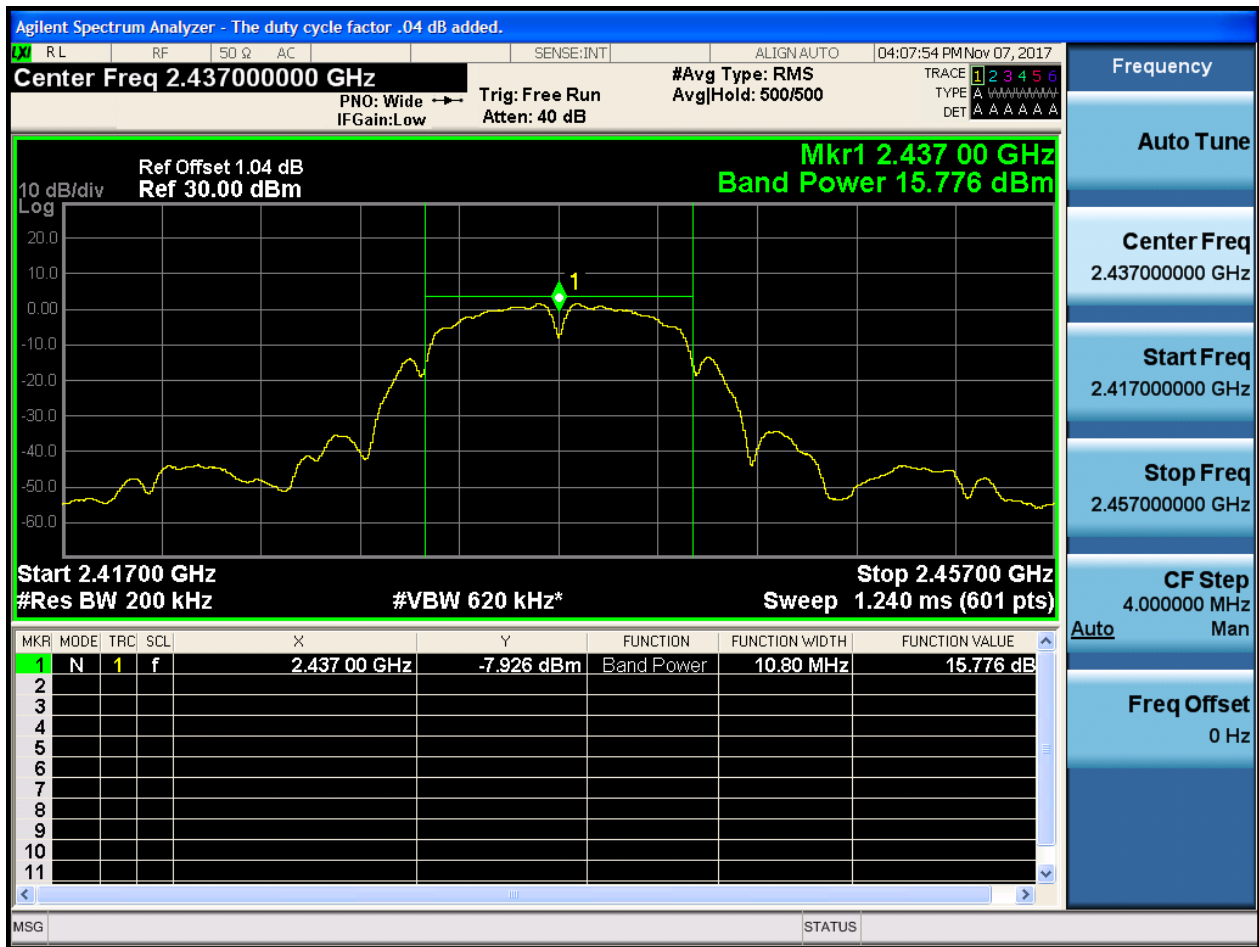
Part II - Test Plots

2.1 11B_L@Ant 1



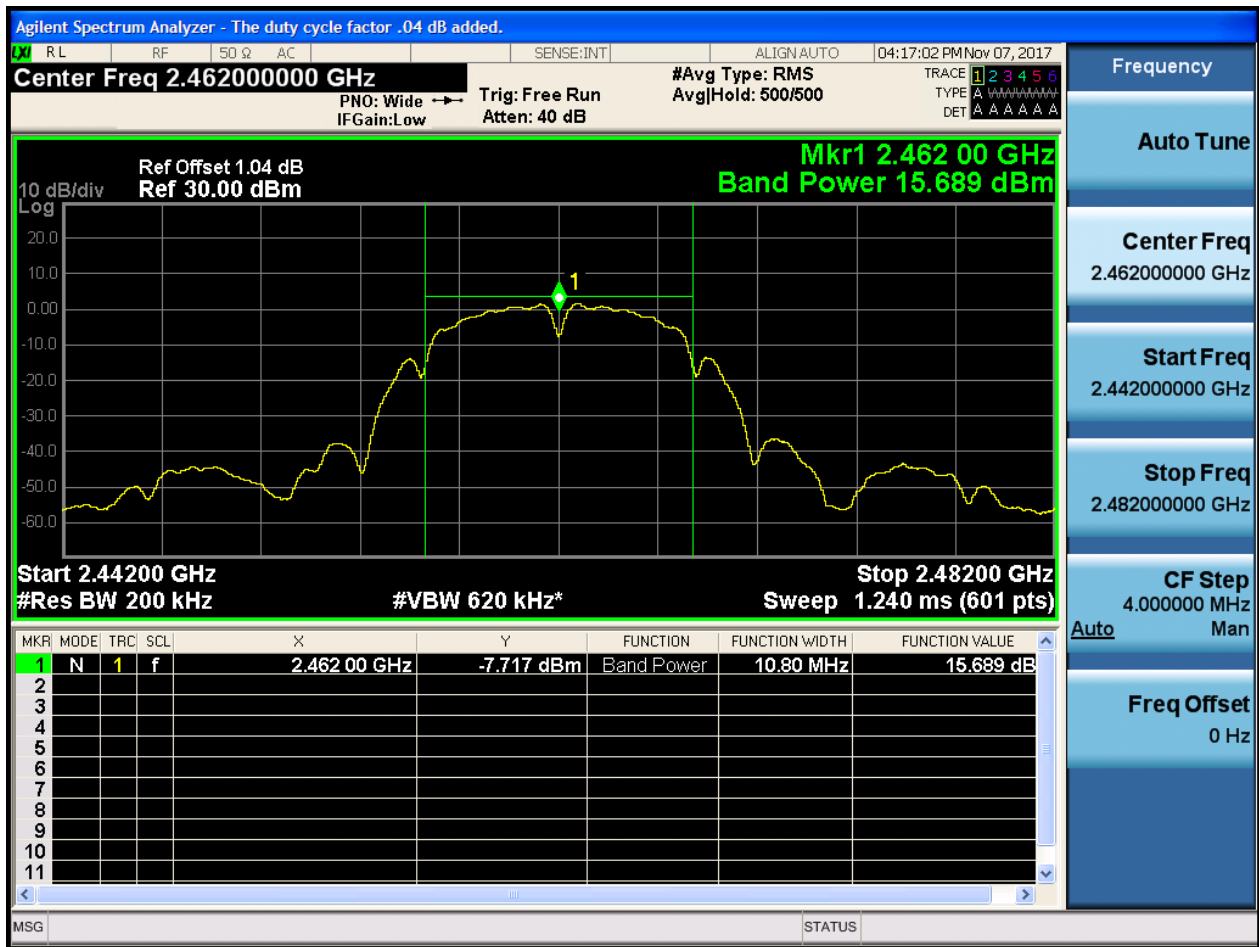


2.2 11B_M@Ant 1





2.3 11B_H@Ant 1





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

Center Freq 2.41200000 GHz

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

Ref Offset 1.09 dB
Ref 30.00 dBm

Mkr1 2.412 00 GHz
Band Power 15.170 dBm

Start 2.39200 GHz
#Res BW 200 kHz

Stop 2.43200 GHz
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	-10.746 dBm	Band Power	16.53 MHz	15.170 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.41200000 GHz

Start Freq
2.392000000 GHz

Stop Freq
2.432000000 GHz

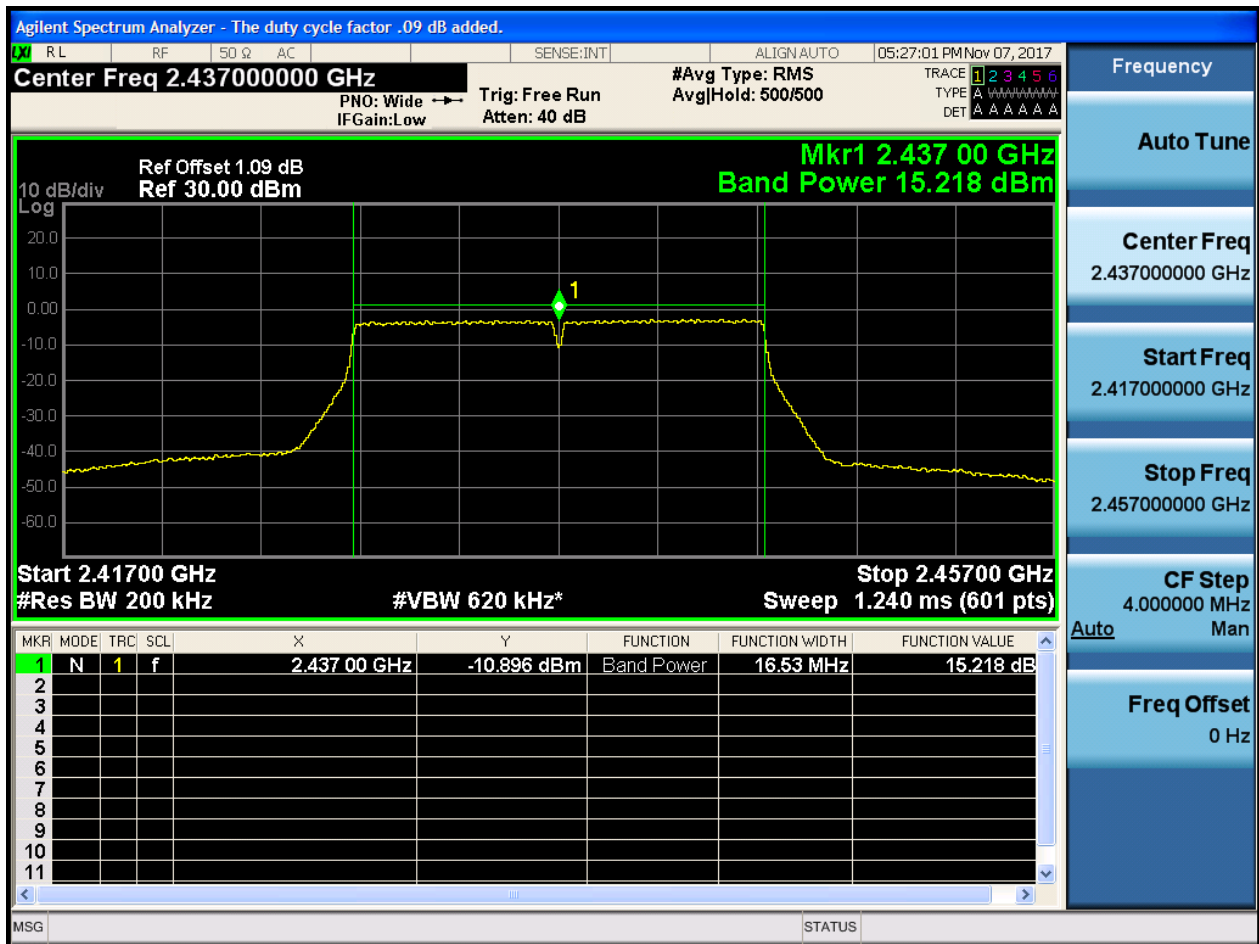
CF Step
4.000000 MHz

Auto

Freq Offset
0 Hz



2.5 11G_M@Ant 1





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

Center Freq 2.46200000 GHz

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

Ref Offset 1.09 dB
Ref 30.00 dBm

Mkr1 2.462 00 GHz
Band Power 15.060 dBm

10 dB/div
Log

Start 2.44200 GHz
#Res BW 200 kHz

Stop 2.48200 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	2.462 00 GHz	-10.659 dBm	Band Power	16.53 MHz	15.060 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

Freq Offset
0 Hz

MSG

STATUS



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

Center Freq 2.41200000 GHz

Ref Offset 1.09 dB
Ref 30.00 dBm

Mkr1 2.412 00 GHz
Band Power 15.551 dBm

Start 2.39200 GHz
#Res BW 200 kHz

Stop 2.43200 GHz
Sweep 1.240 ms (601 pts)

#VBW 620 kHz*

10 dB/div
Log

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.412 00 GHz	-10.406 dBm	Band Power	17.60 MHz	15.551 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.41200000 GHz

Start Freq
2.392000000 GHz

Stop Freq
2.432000000 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 2.437000000 GHz

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

Ref Offset 1.09 dB
Ref 30.00 dBm

Mkr1 2.437 00 GHz
Band Power 15.244 dBm

10 dB/div
Log

Start 2.41700 GHz
#Res BW 200 kHz

#VBW 620 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	-10.694 dBm	Band Power	17.73 MHz	15.244 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.437000000 GHz

Start Freq
2.417000000 GHz

Stop Freq
2.457000000 GHz

CF Step
4.000000 MHz
Man

Auto

Freq Offset
0 Hz



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

Center Freq 2.46200000 GHz

Ref Offset 1.09 dB
Ref 30.00 dBm

Mkr1 2.462 00 GHz
Band Power 15.207 dBm

Start 2.44200 GHz
#Res BW 200 kHz

Stop 2.48200 GHz
Sweep 1.240 ms (601 pts)

#VBW 620 kHz*

10 dB/div
Log

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.462 00 GHz	-10.639 dBm	Band Power	17.60 MHz	15.207 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.46200000 GHz

Start Freq
2.44200000 GHz

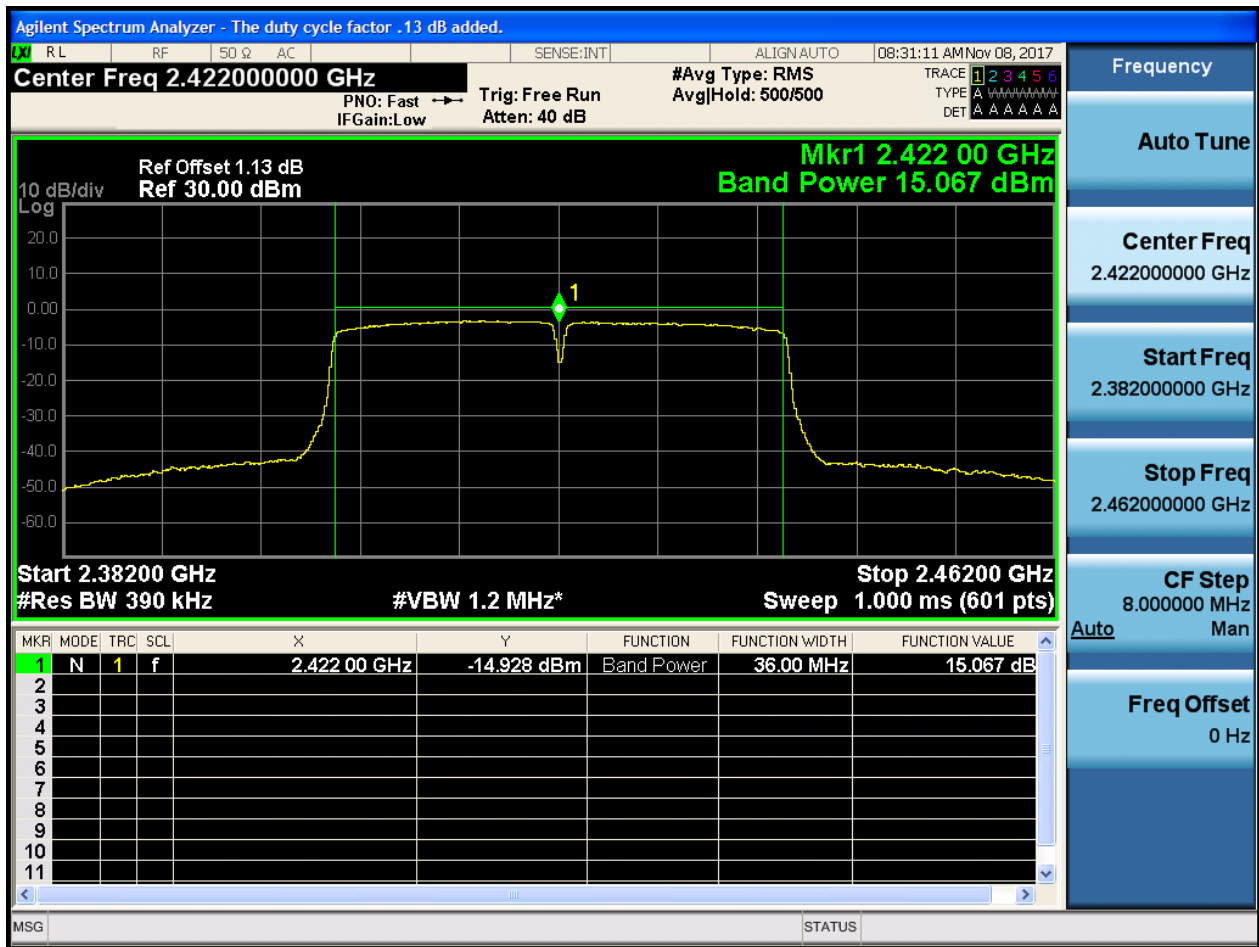
Stop Freq
2.48200000 GHz

CF Step
4.000000 MHz
Man

Freq Offset
0 Hz



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 14.939 dBm

Start 2.39700 GHz
#Res BW 390 kHz

Stop 2.47700 GHz
Sweep 1.000 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.437 00 GHz	-15.421 dBm	Band Power	36.27 MHz	14.939 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

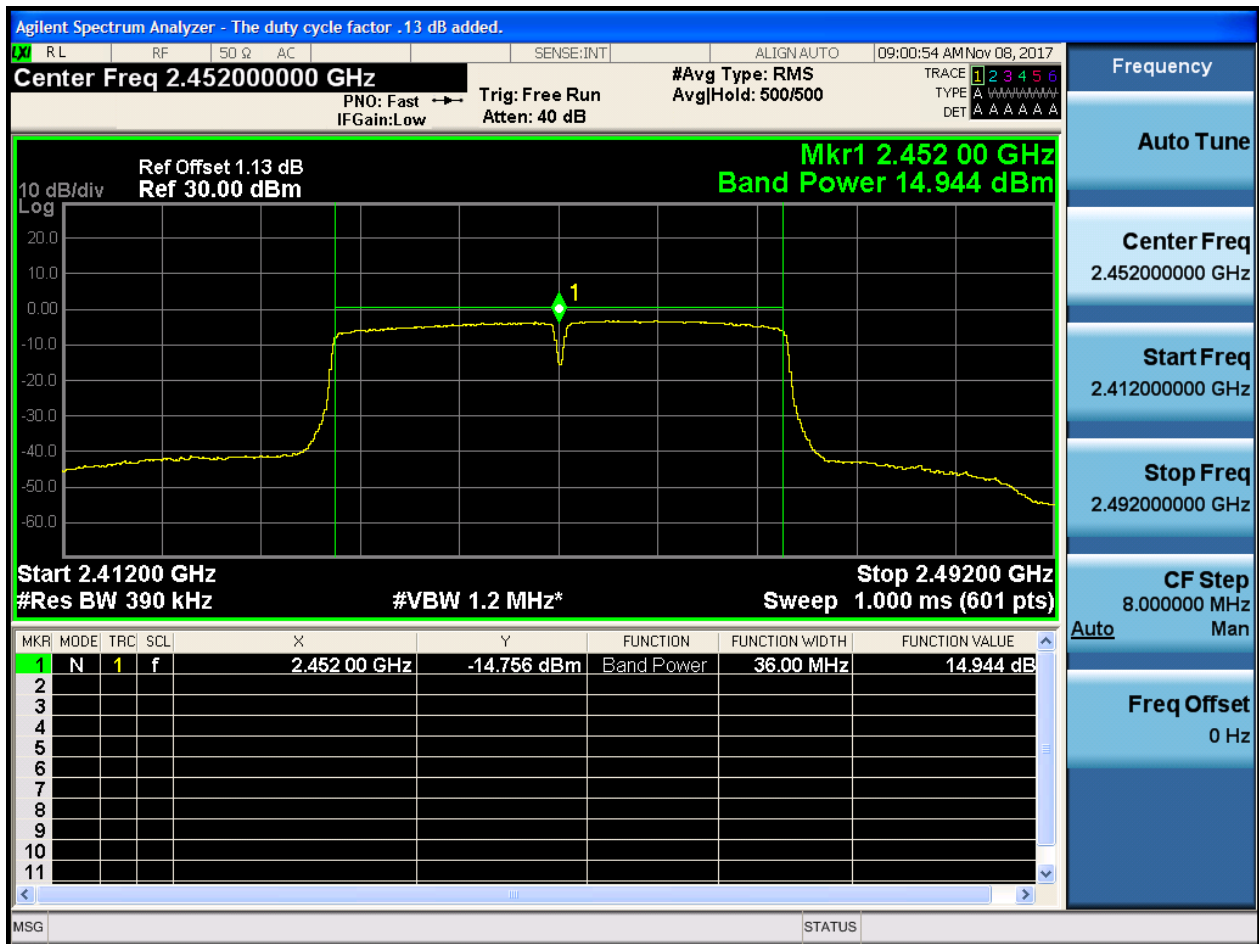
CF Step
8.000000 MHz

Auto

Freq Offset
0 Hz



2.12 11N40_H@Ant 1



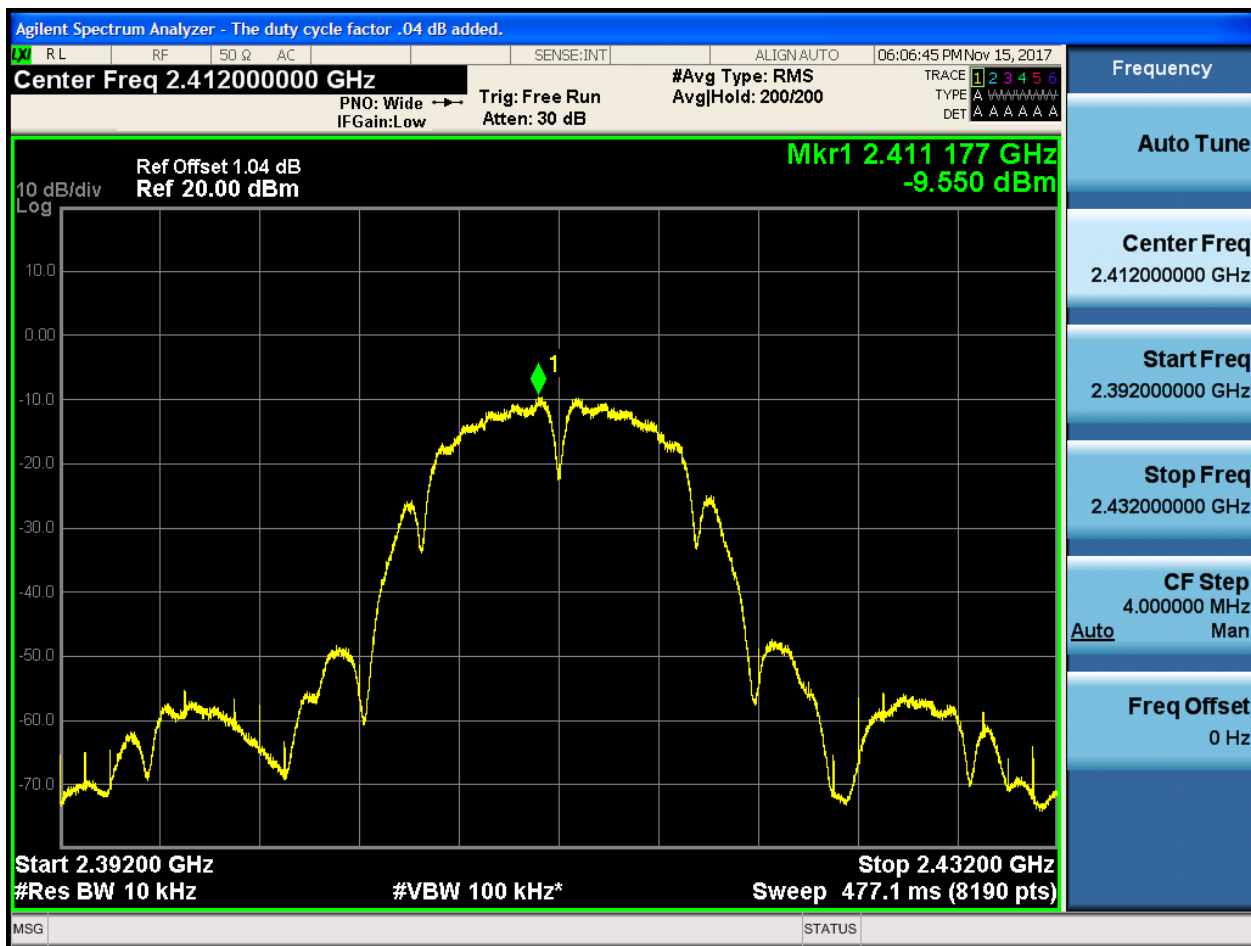
Appendix E: Maximum Power Spectral Density Level

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	PD[MHz]	Verdict
11B	L	2412	Ant 1	-9.55	pass
11B	M	2437	Ant 1	-9.76	pass
11B	H	2462	Ant 1	-10.08	pass
11G	L	2412	Ant 1	-13.77	pass
11G	M	2437	Ant 1	-13.57	pass
11G	H	2462	Ant 1	-14.10	pass
11N20	L	2412	Ant 1	-14.09	pass
11N20	M	2437	Ant 1	-13.98	pass
11N20	H	2462	Ant 1	-14.16	pass
11N40	L	2422	Ant 1	-16.96	pass
11N40	M	2437	Ant 1	-16.67	pass
11N40	H	2452	Ant 1	-16.83	pass

Part II - Test Plots

2.1 11B_L@Ant 1



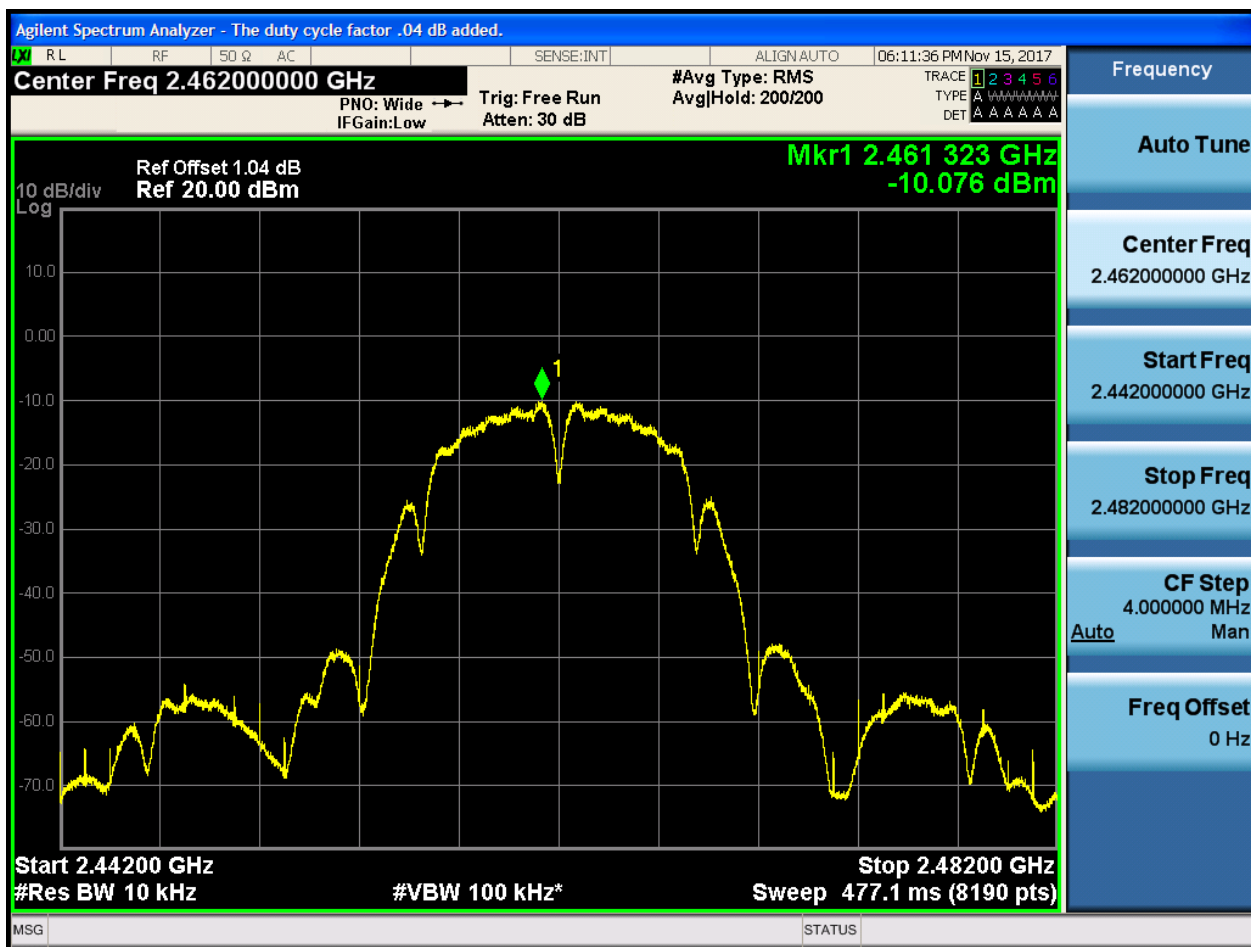


2.2 11B_M@Ant 1



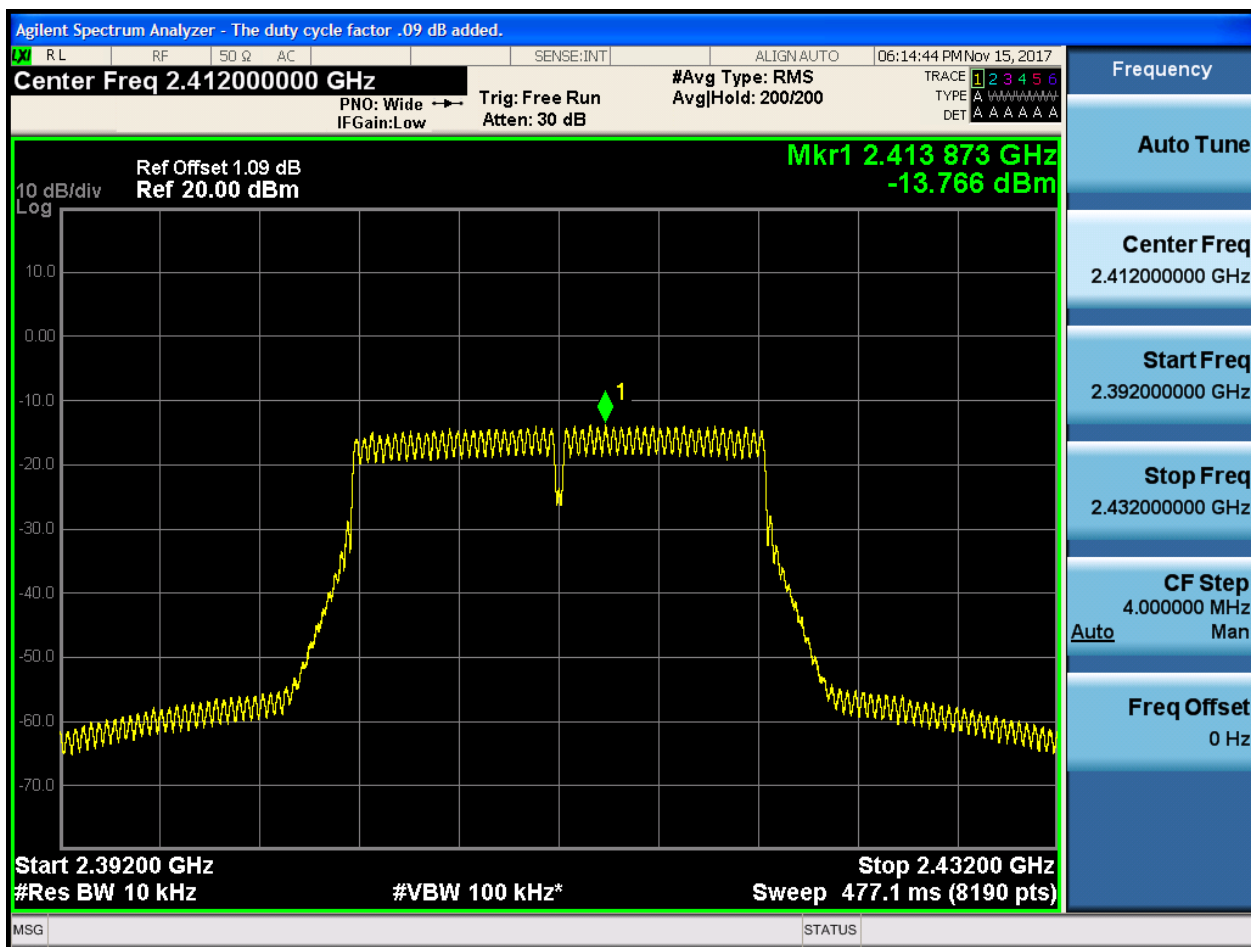


2.3 11B_H@Ant 1



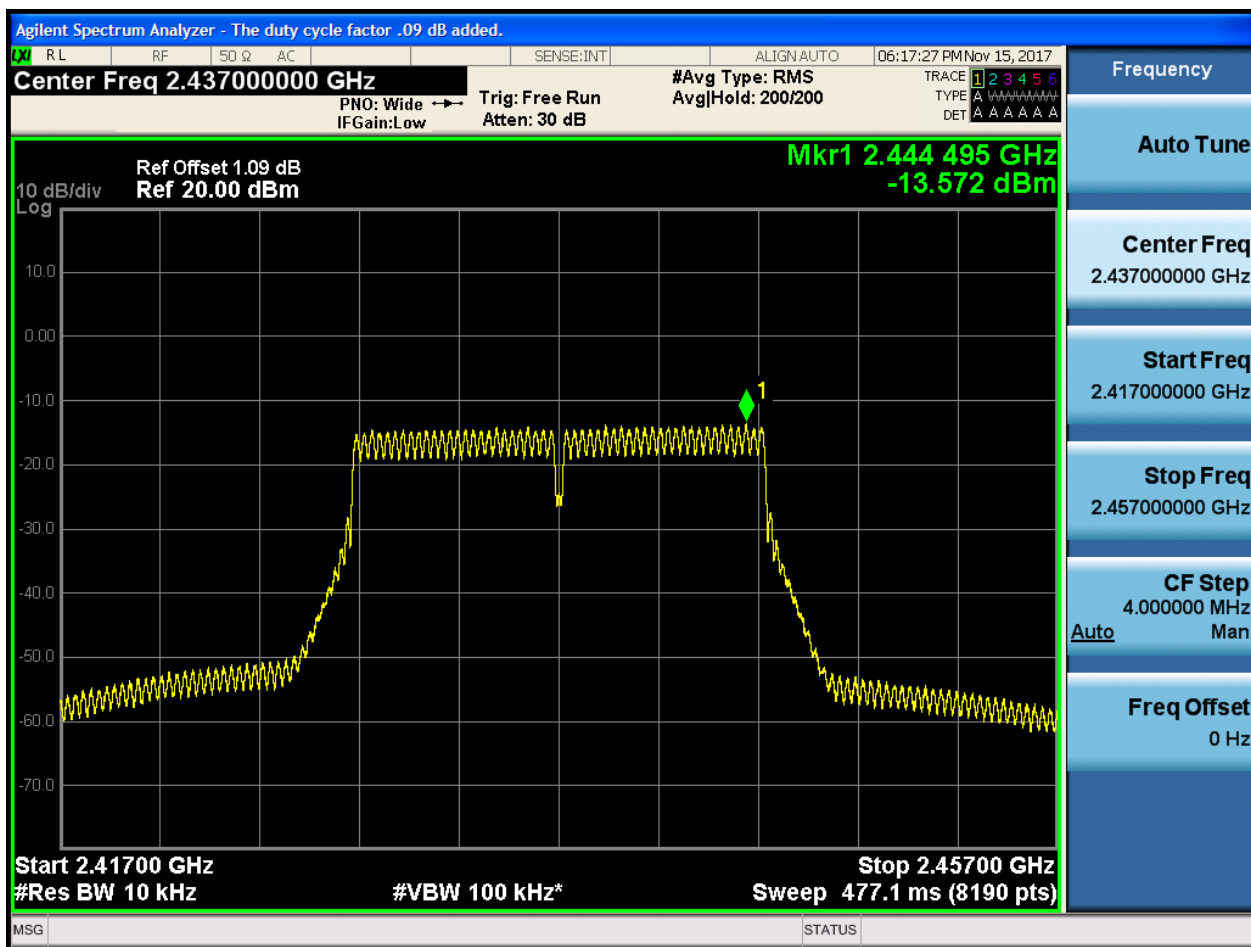


2.4 11G_L@Ant 1



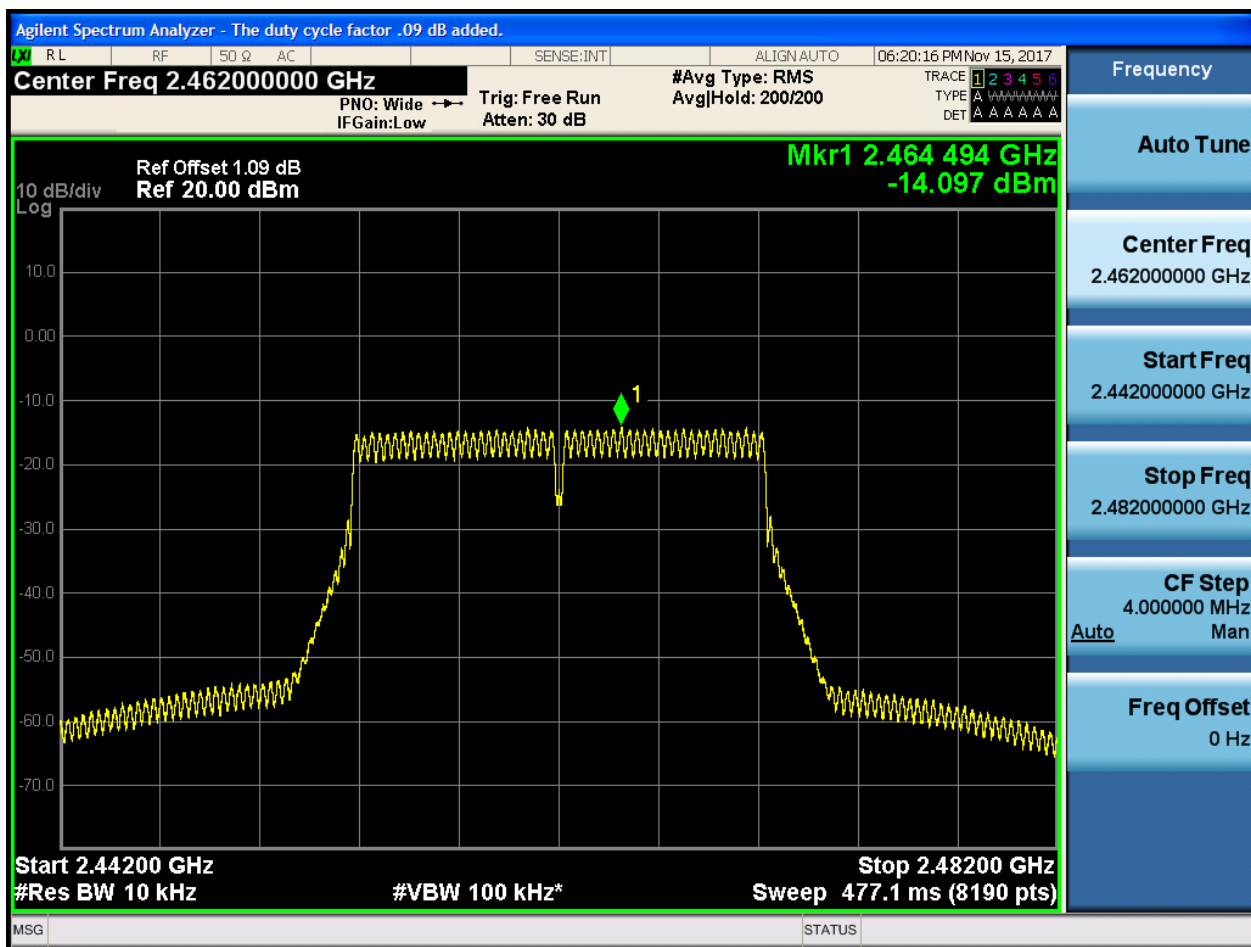


2.5 11G_M@Ant 1



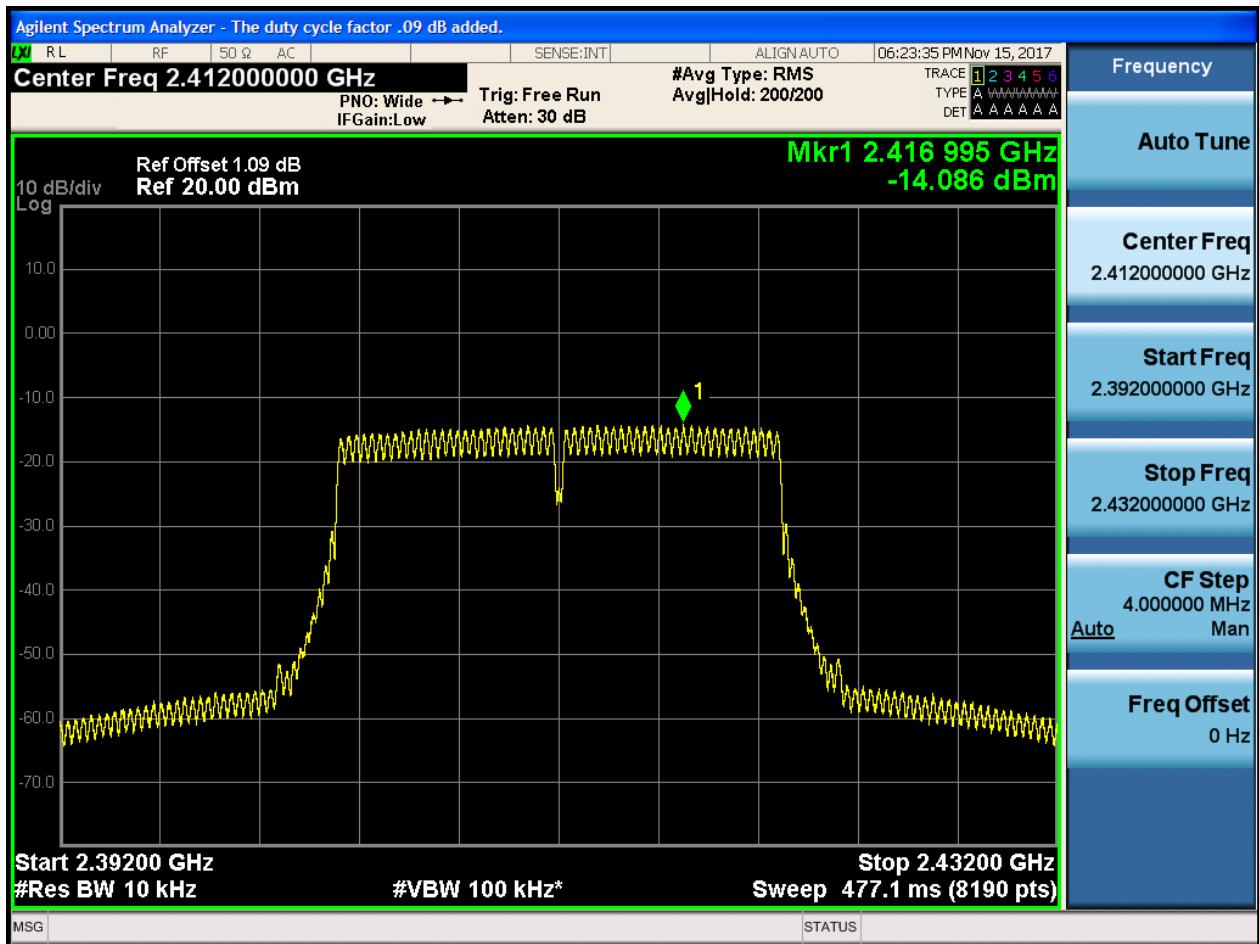


2.6 11G_H@Ant 1





2.7 11N20_L@Ant 1





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

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 06:26:16 PM Nov 15, 2017

Center Freq 2.437000000 GHz #Avg Type: RMS Avg/Hold: 200/200
PNO: Wide → Trig: Free Run
IFGain:Low Atten: 30 dB

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

Ref Offset 1.09 dB
Ref 20.00 dBm

Mkr1 2.445 126 GHz
-13.978 dBm

10 dB/div
Log

Start 2.41700 GHz #Res BW 10 kHz #VBW 100 kHz* Stop 2.45700 GHz Sweep 477.1 ms (8190 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
2.437000000 GHz

Start Freq
2.417000000 GHz

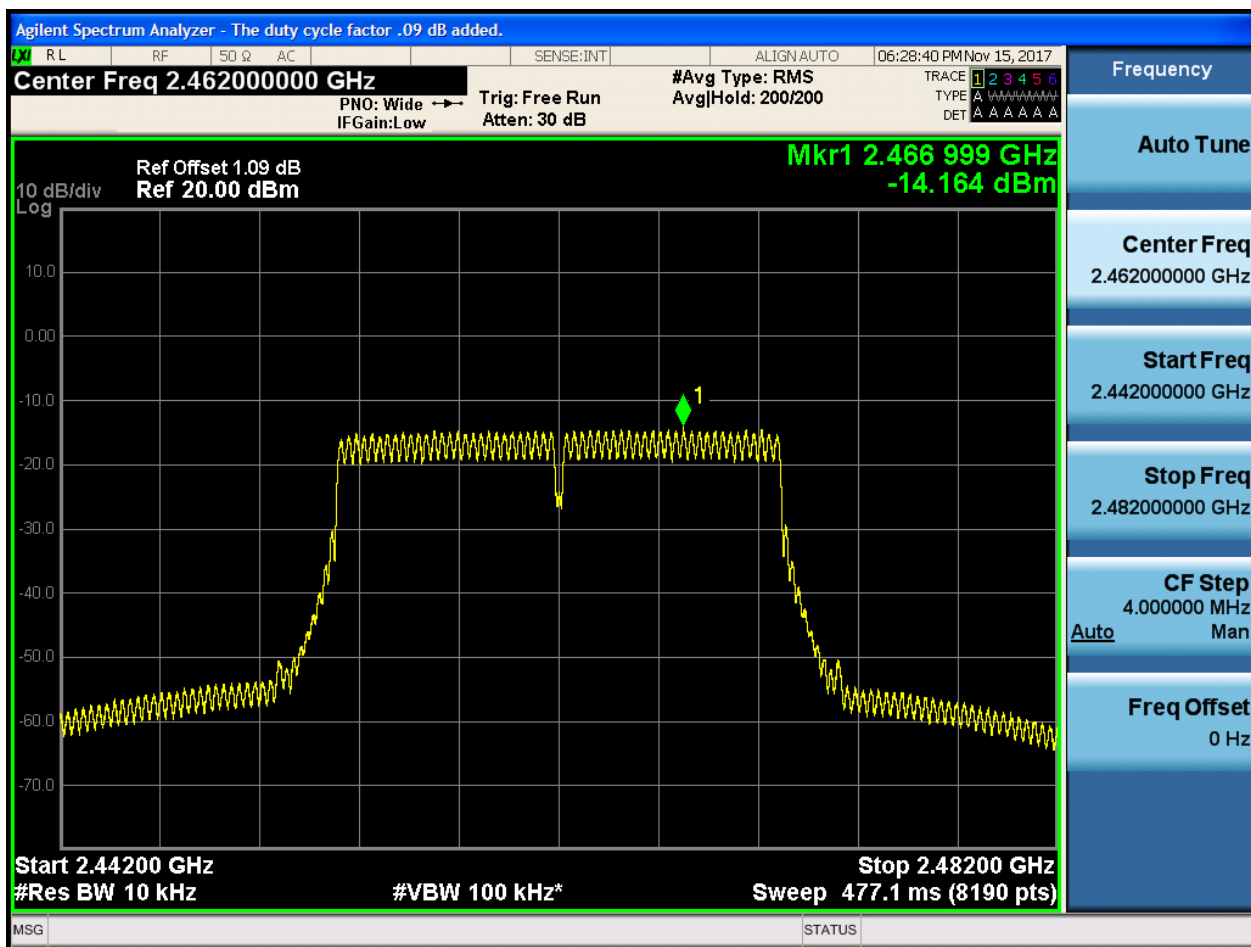
Stop Freq
2.457000000 GHz

CF Step
4.000000 MHz
Auto Man

Freq Offset
0 Hz

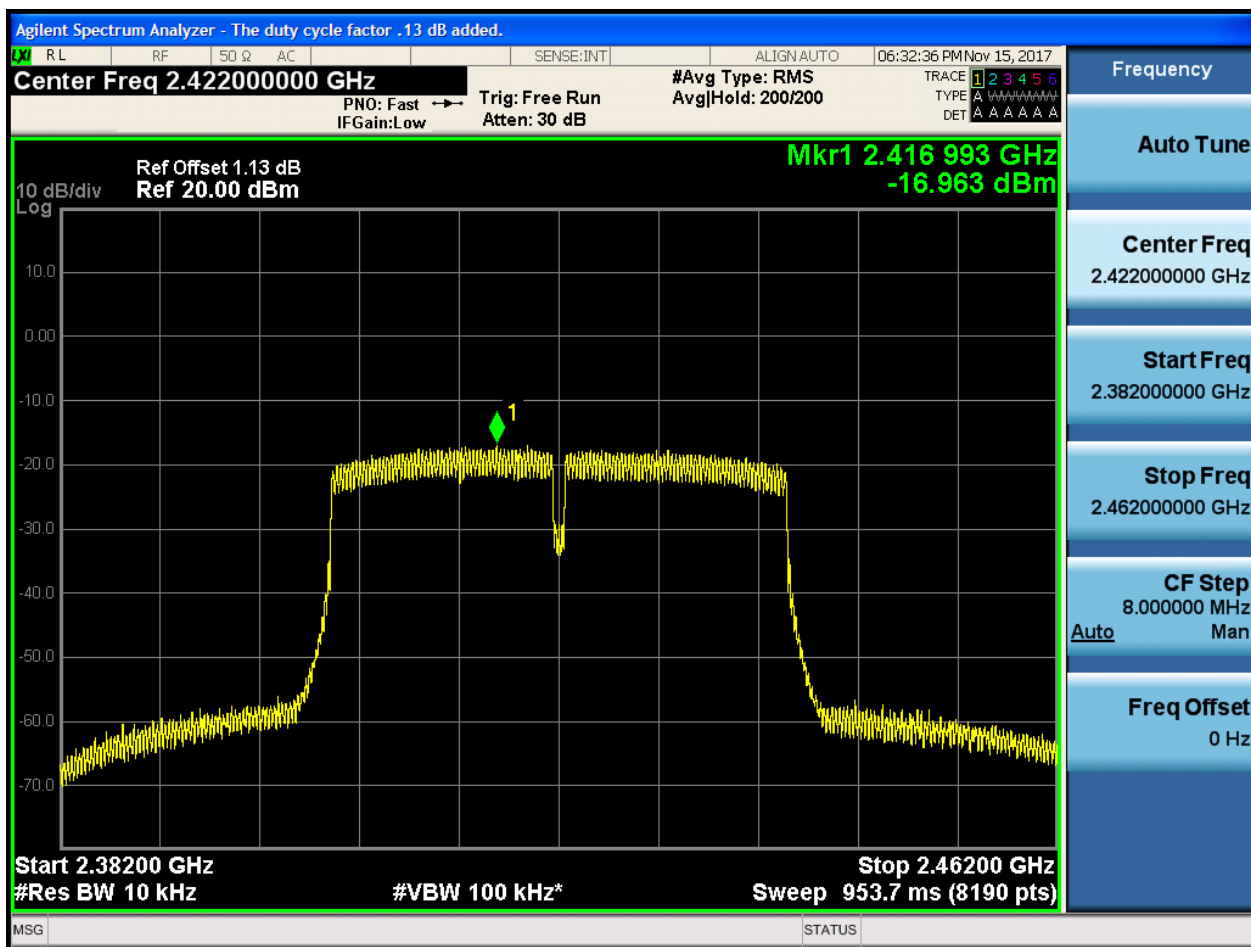


2.9 11N20_H@Ant 1



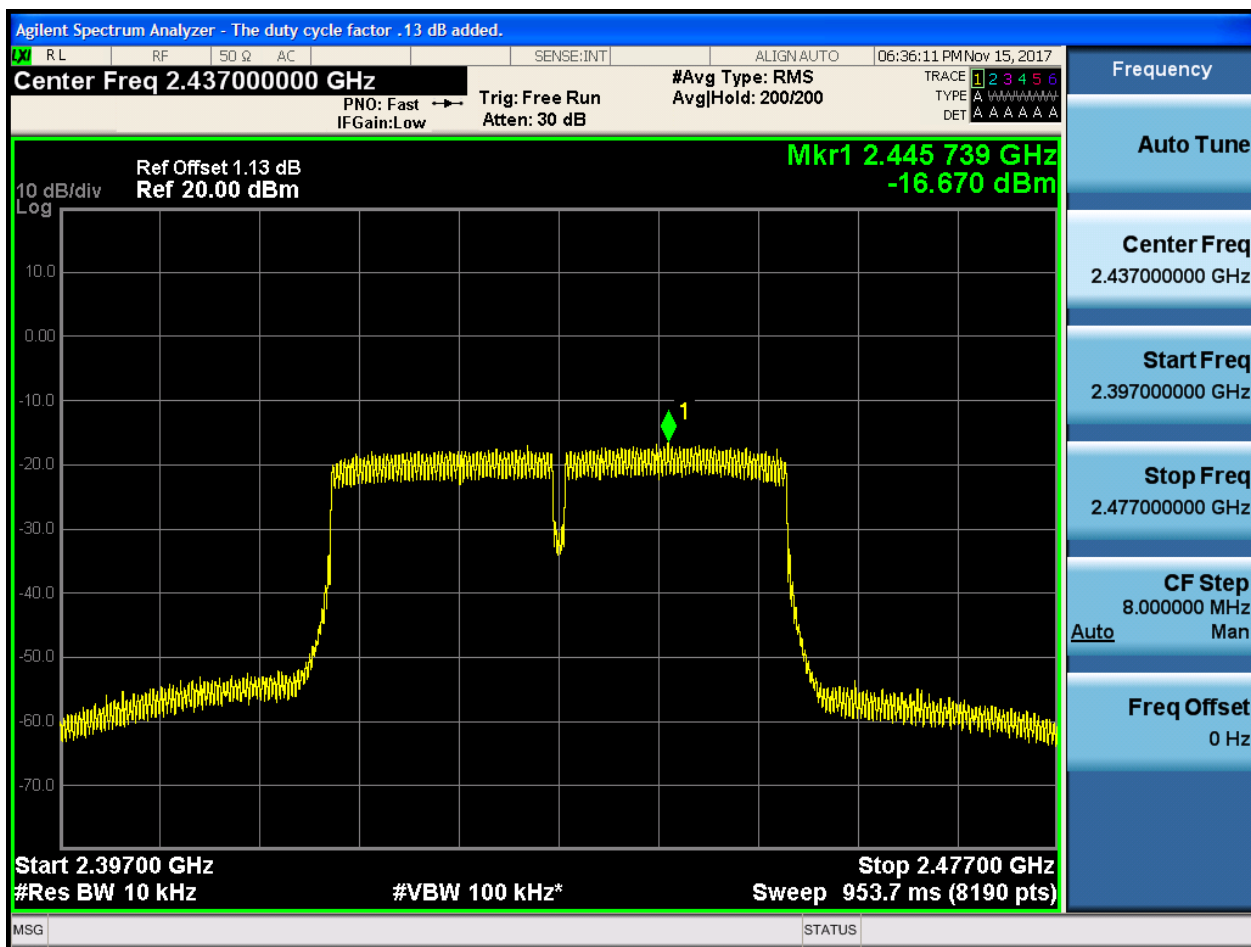


2.10 11N40_L@Ant 1



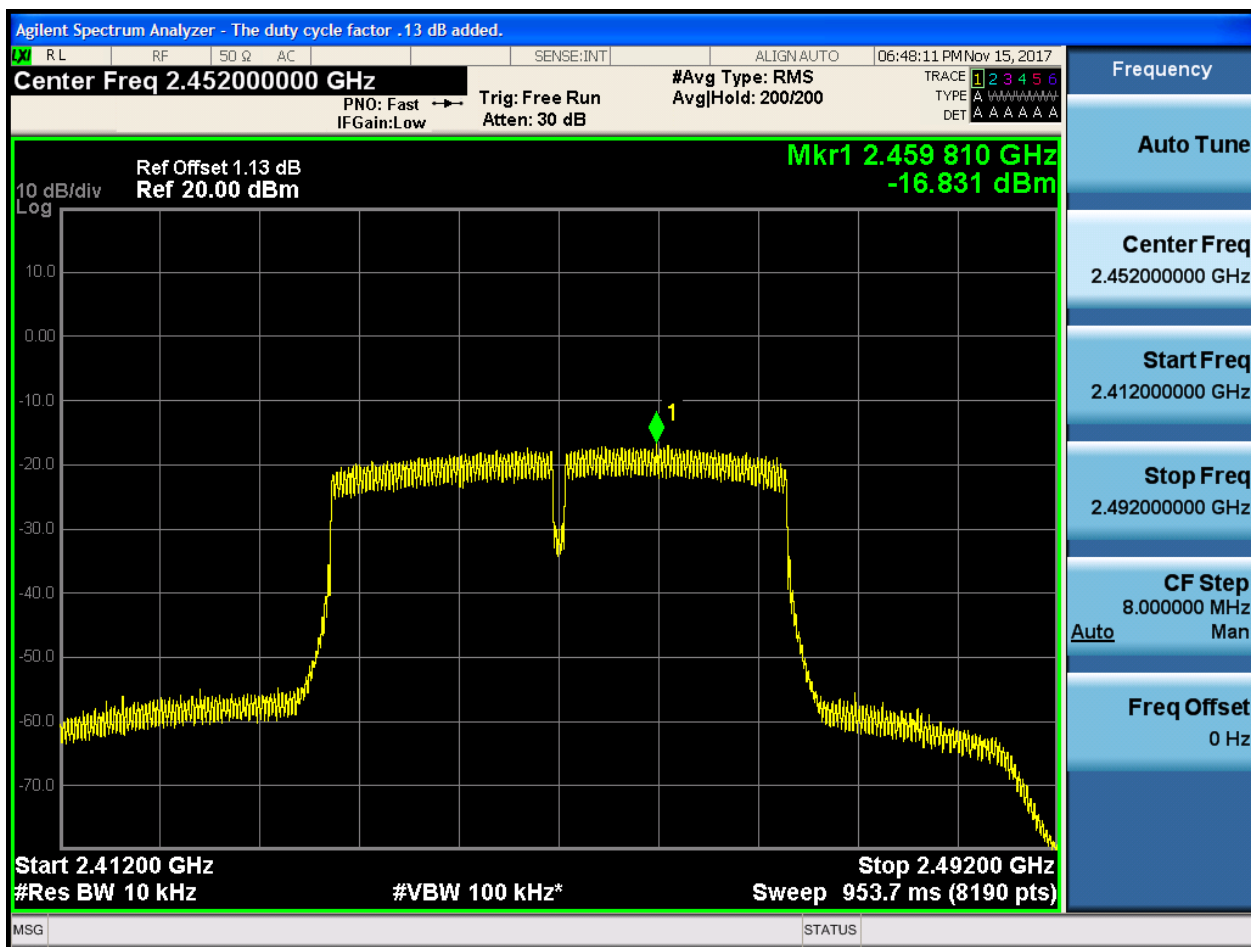


2.11 11N40_M@Ant 1





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	7.44	-43.13	pass
11B	H	2462	Ant 1	7.33	-49.11	pass
11G	L	2412	Ant 1	3.49	-36.83	pass
11G	H	2462	Ant 1	3.42	-43.54	pass
11N20	L	2412	Ant 1	3.91	-36.87	pass
11N20	H	2462	Ant 1	3.48	-42.75	pass
11N40	L	2422	Ant 1	1.13	-39.56	pass
11N40	H	2452	Ant 1	1.16	-38.16	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 1 dB
Ref 30.00 dBm

Mkr2 2.400 00 GHz
-36.832 dBm

10 dB/div
Log

Start 2.38000 GHz
#Res BW 100 kHz

#VBW 300 kHz

Stop 2.42000 GHz
#Sweep 100.0 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.417 00 GHz	3.489 dBm			
2	N	1	f	2.400 00 GHz	-36.832 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
Man

Freq Offset
0 Hz

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
-43.543 dBm

10 dB/div
Log

Start 2.45350 GHz
#Res BW 100 kHz

Stop 2.49350 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	2.469 50 GHz	3.421 dBm			
2	N	1	f	2.483 50 GHz	-43.543 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.473500000 GHz

Start Freq
2.453500000 GHz

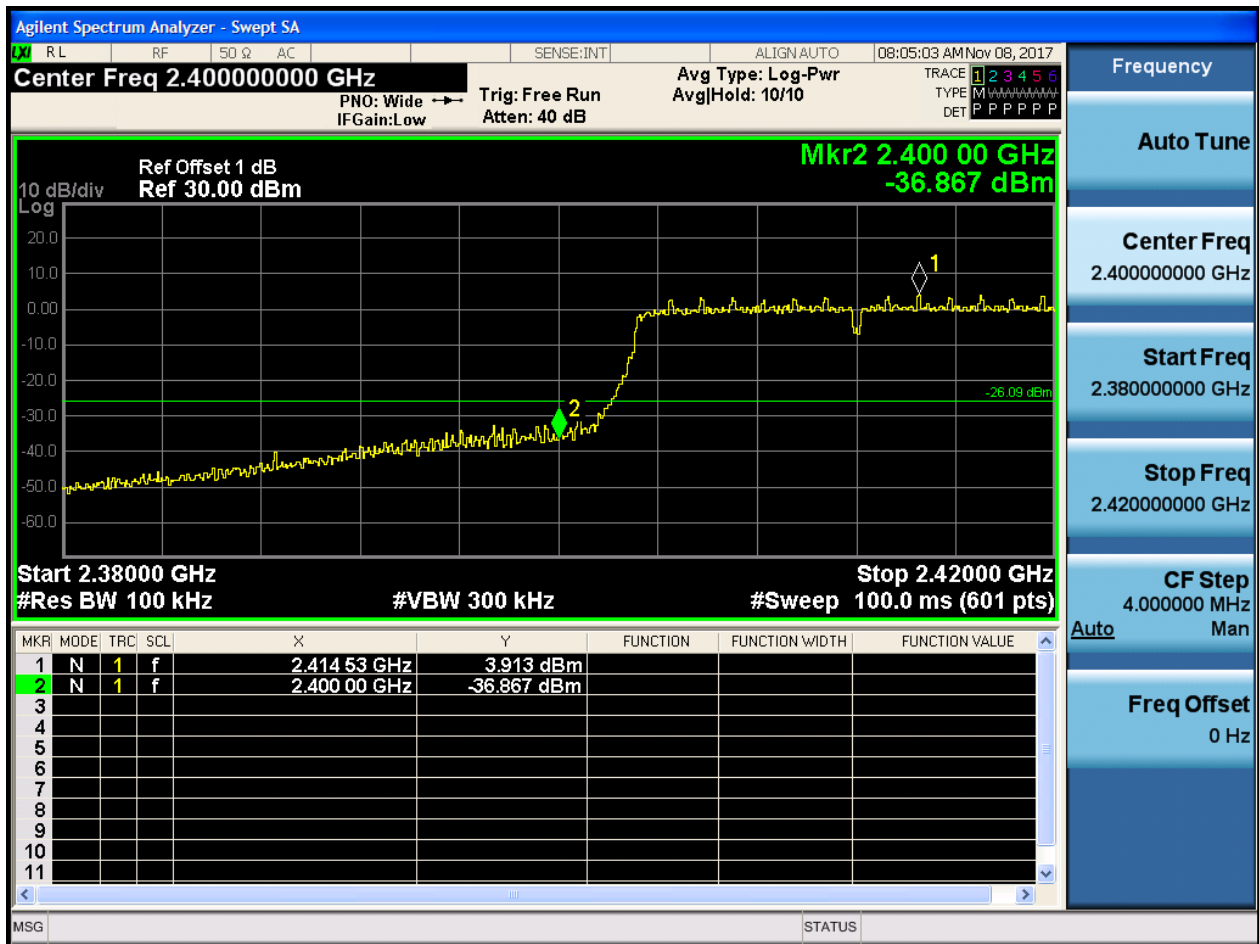
Stop Freq
2.493500000 GHz

CF Step
4.000000 MHz
Man

Freq Offset
0 Hz



2.5 11N20_L@Ant 1





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 08:24:04 AM Nov 08, 2017

Center Freq 2.473500000 GHz Avg Type: Log-Pwr
 PNO: Wide Trg: Free Run
 IFGain:Low Atten: 40 dB

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

Ref Offset 1 dB
 Ref 30.00 dBm

Mkr2 2.483 50 GHz
 -42.751 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	2.469 50 GHz	3.482 dBm			
2	N	1	f	2.483 50 GHz	-42.751 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

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



Agilent Spectrum Analyzer - Swept SA

Center Freq 2.40000000 GHz

Ref Offset 1 dB
Ref 30.00 dBm

Mkr2 2.400 00 GHz
-39.559 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
2.40000000 GHz

Start Freq
2.380000000 GHz

Stop Freq
2.420000000 GHz

CF Step
4.000000 MHz
Man

Freq Offset
0 Hz

10 dB/div
Log

1

2

-26.87 dBm

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.414 47 GHz	1.127 dBm			
2	N	1	f	2.400 00 GHz	-39.559 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

STATUS

[illegible]

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".

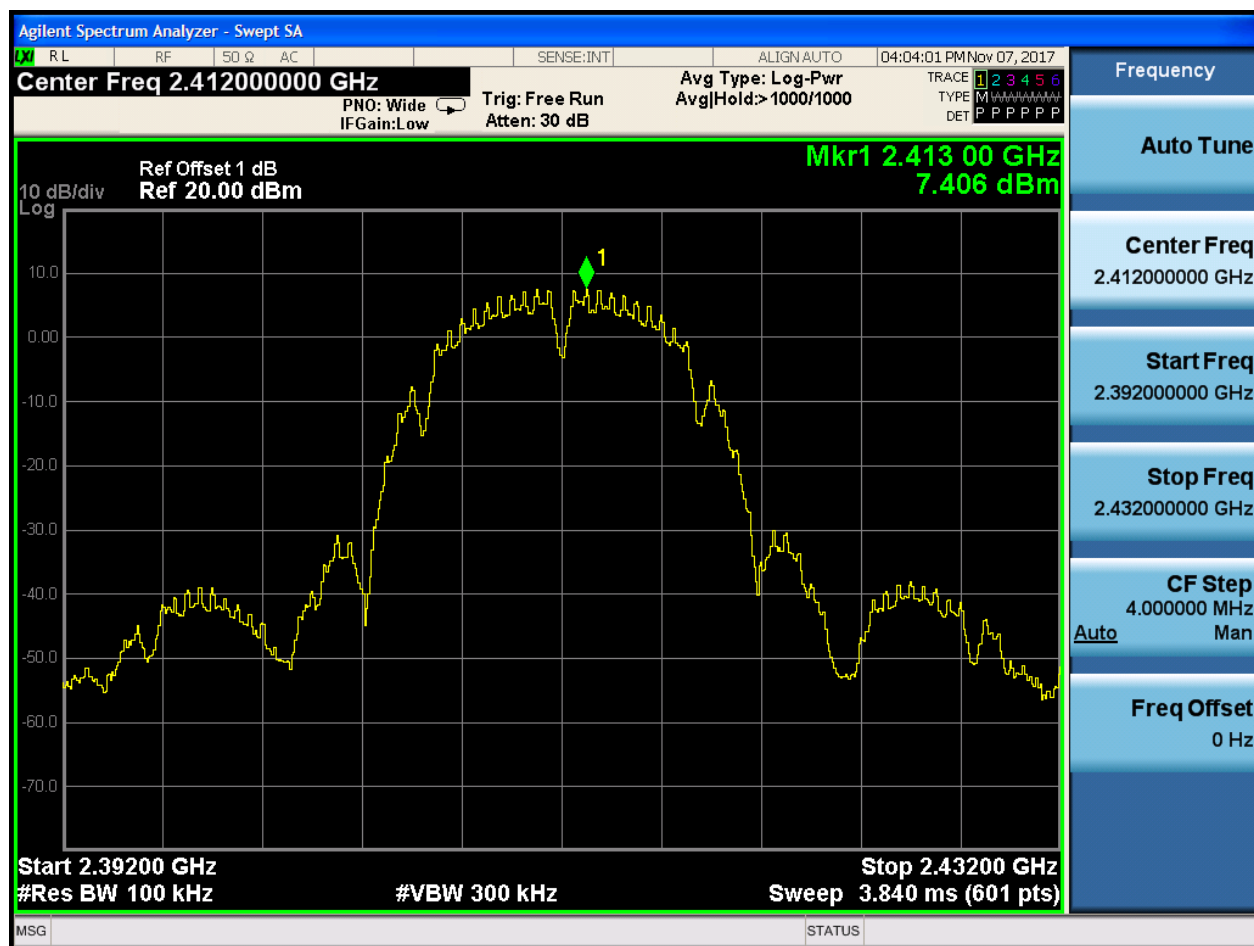
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	7.41	<limit	pass
11B	M	2437	Ant 1	7.35	<limit	pass
11B	H	2462	Ant 1	7.36	<limit	pass
11G	L	2412	Ant 1	3.98	<limit	pass
11G	M	2437	Ant 1	3.75	<limit	pass
11G	H	2462	Ant 1	3.57	<limit	pass
11N20	L	2412	Ant 1	4.15	<limit	pass
11N20	M	2437	Ant 1	3.81	<limit	pass
11N20	H	2462	Ant 1	3.85	<limit	pass
11N40	L	2422	Ant 1	1.35	<limit	pass
11N40	M	2437	Ant 1	1.23	<limit	pass
11N40	H	2452	Ant 1	1.34	<limit	pass

Part II - Test Plots

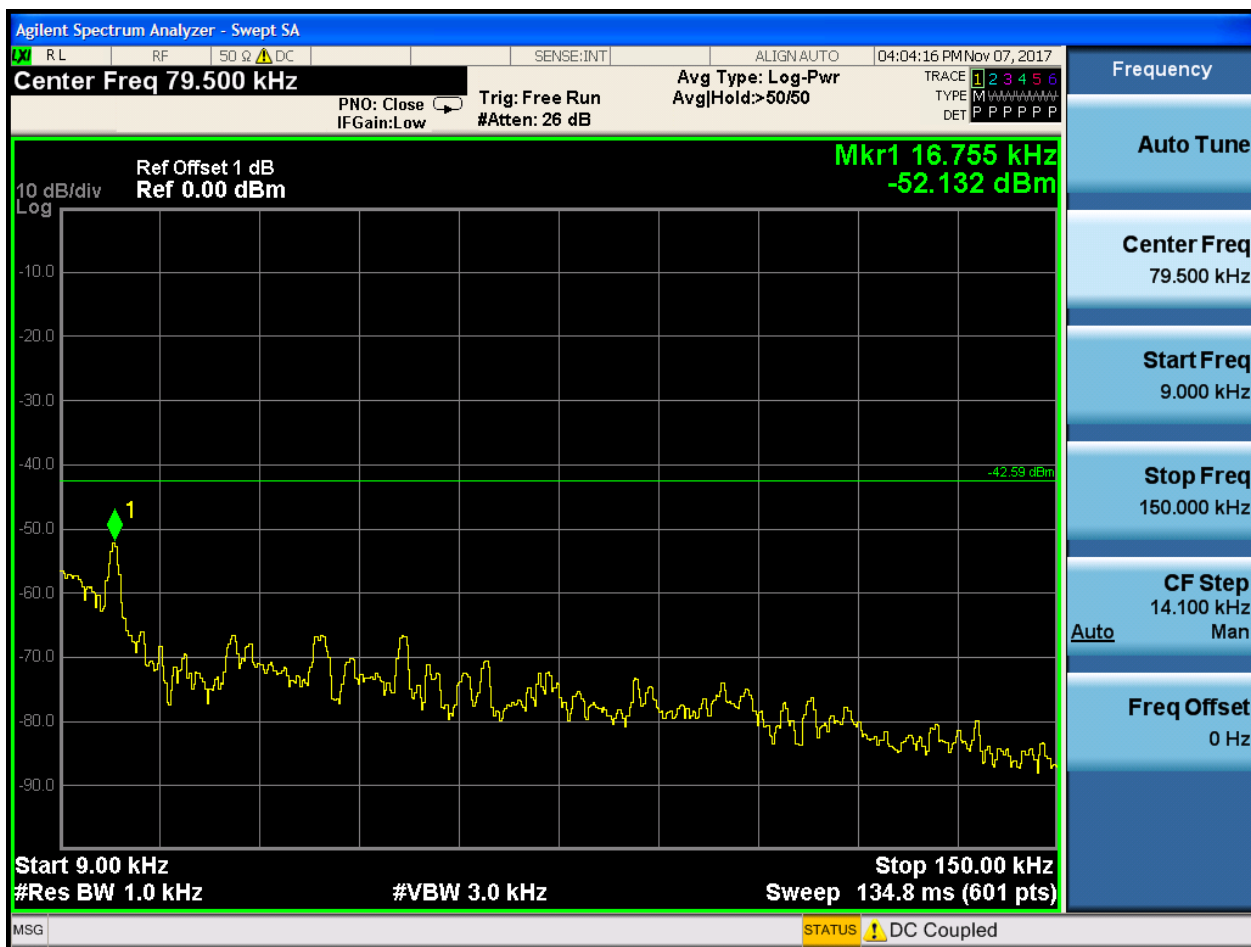
2.1 11B L@Ant 1

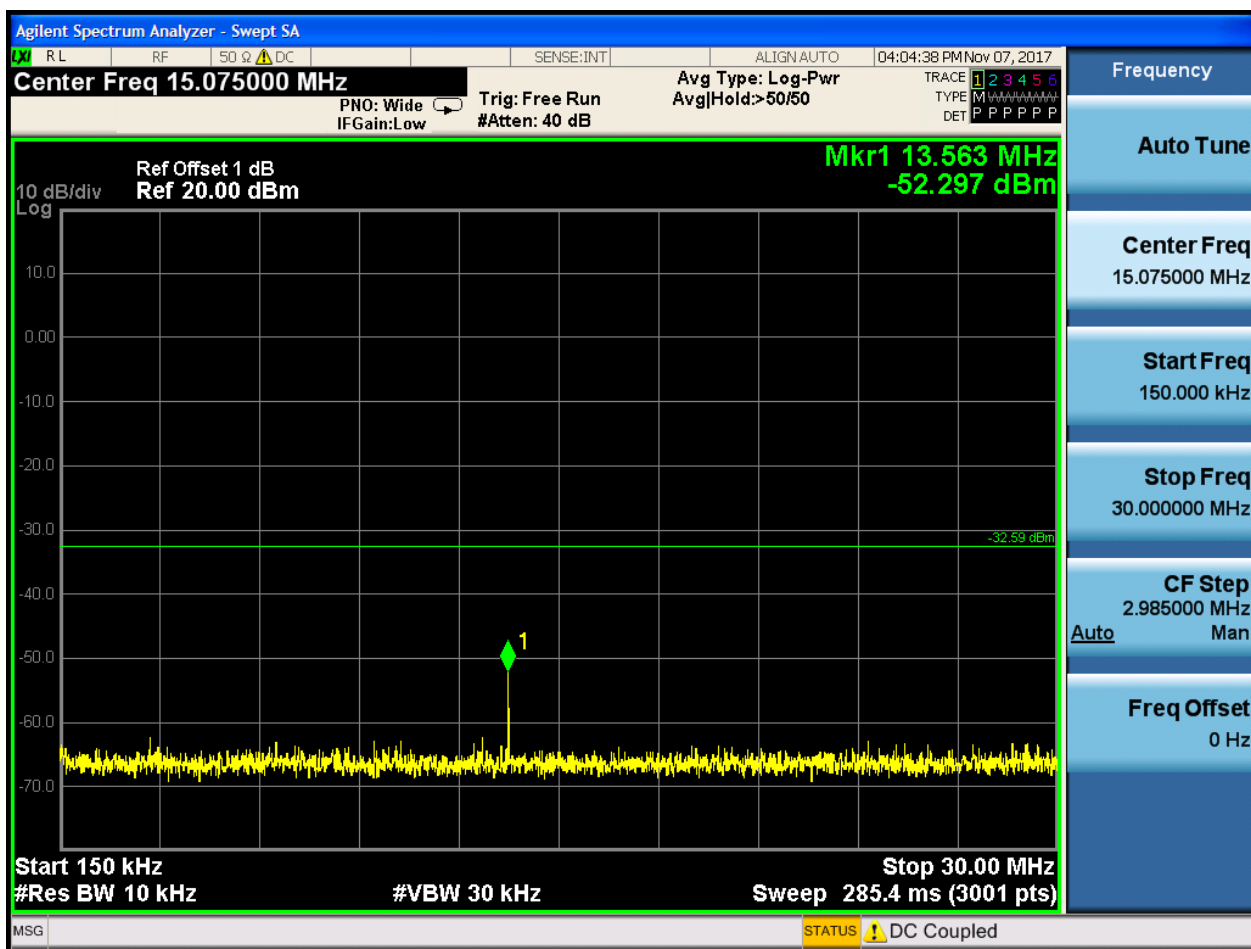
Pref:

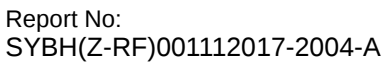


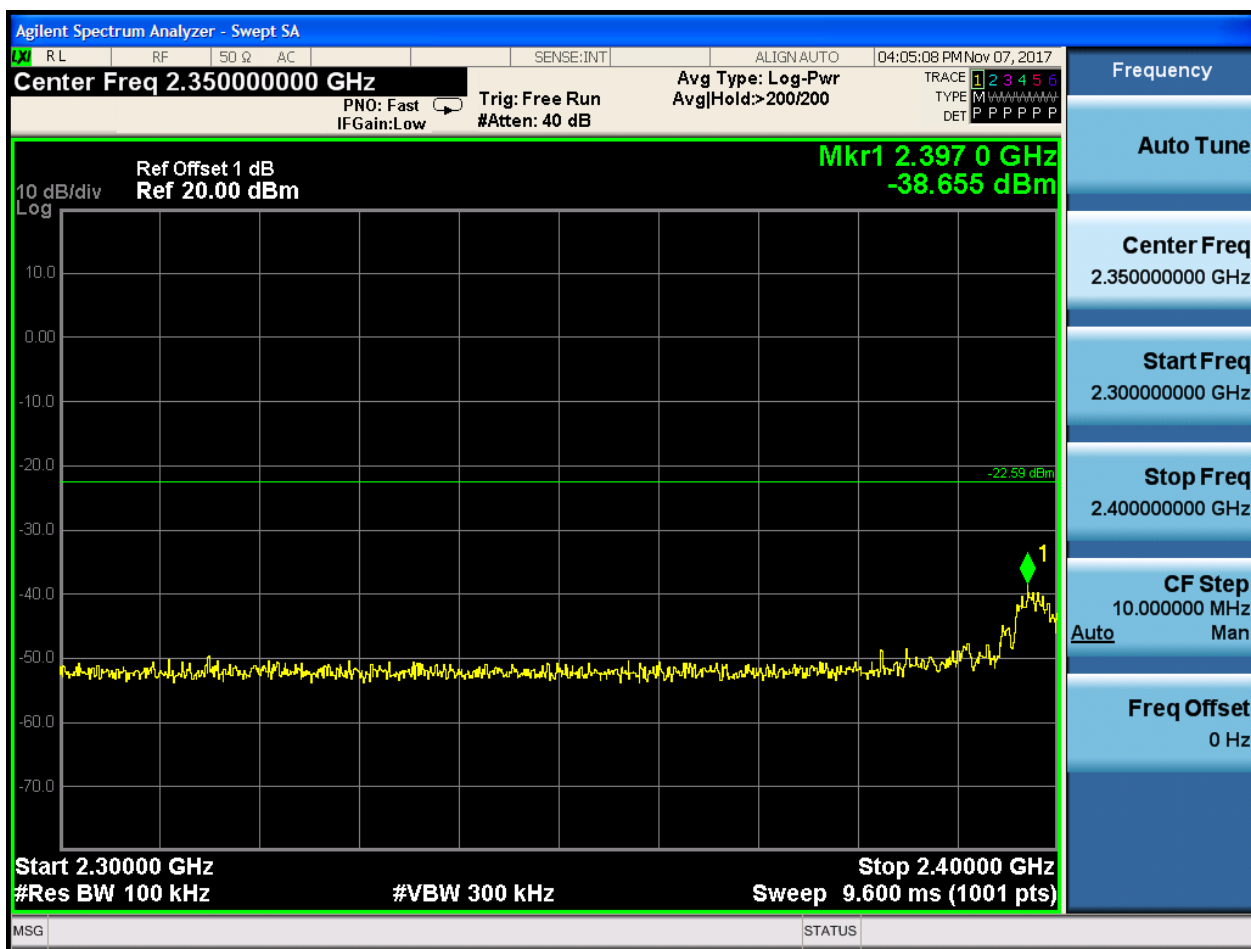


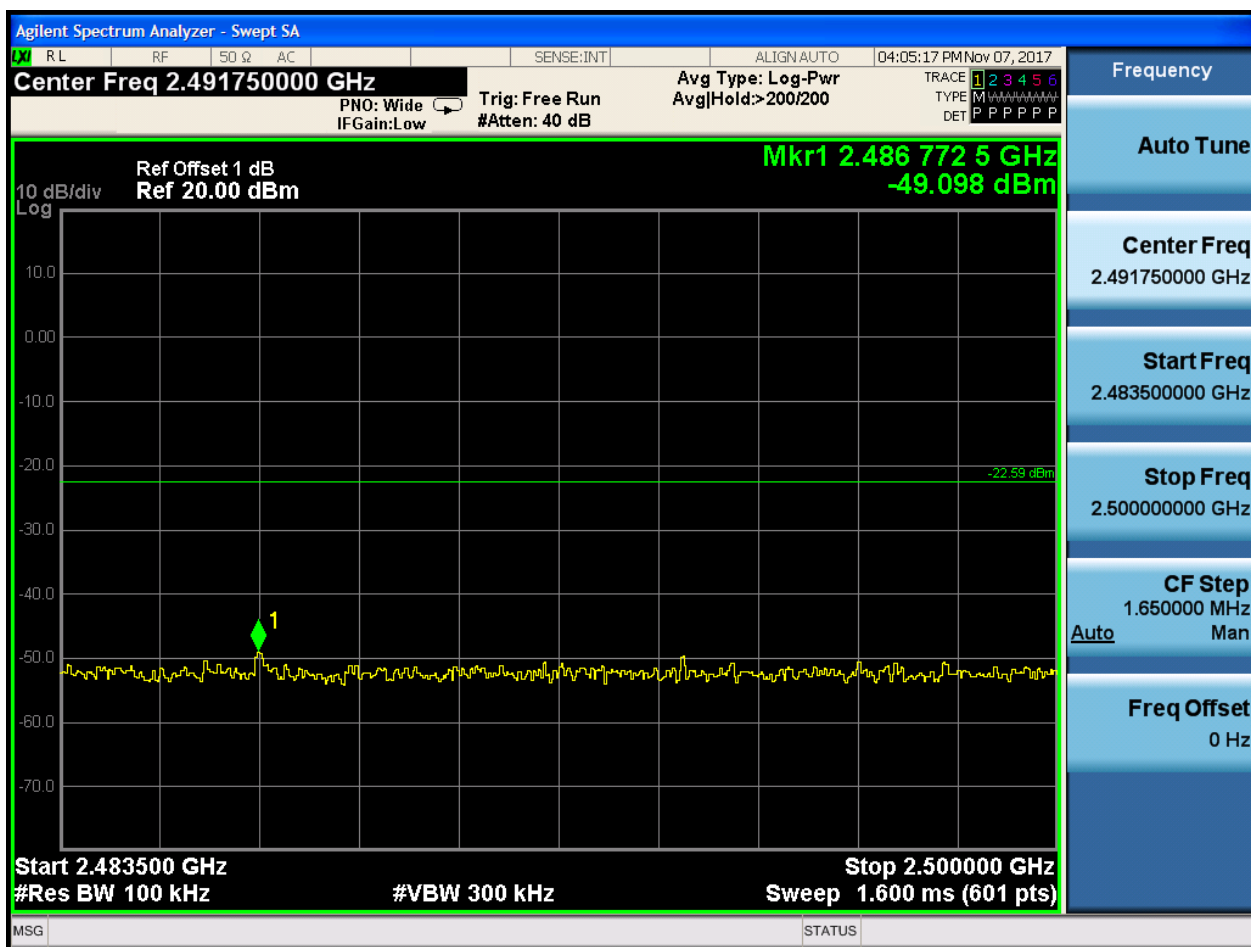
Puw:















2.2 11B_M@Ant 1

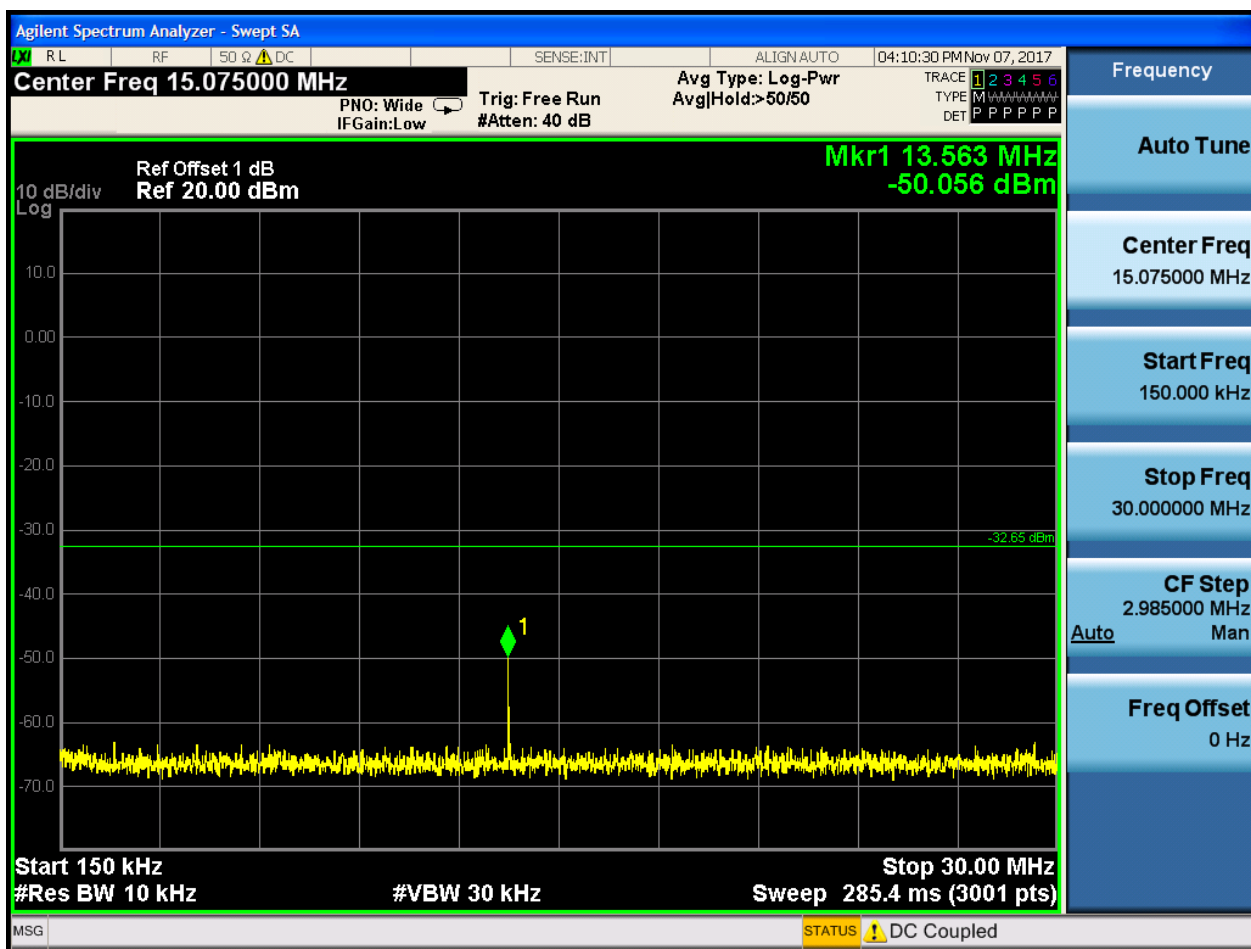
Pref:

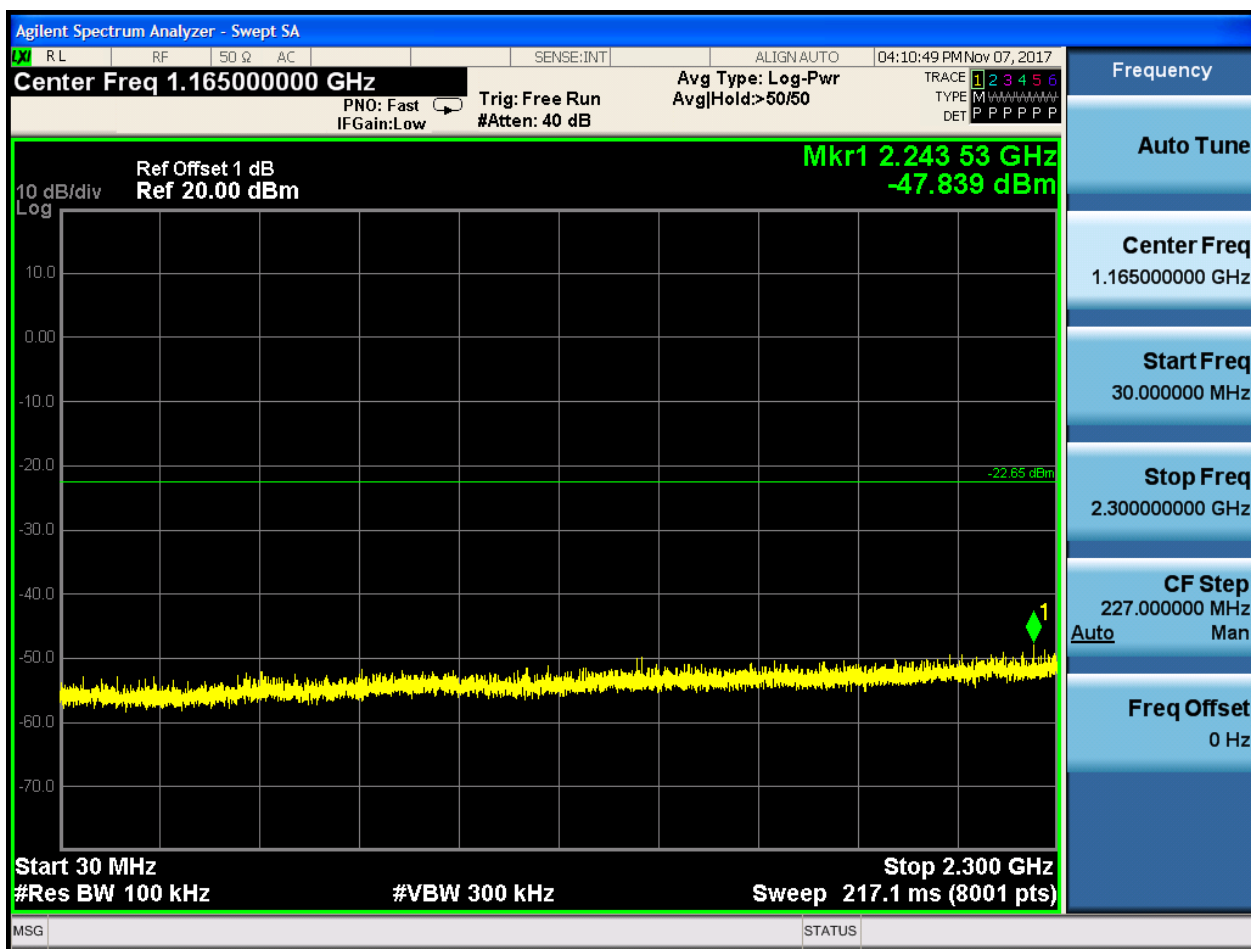


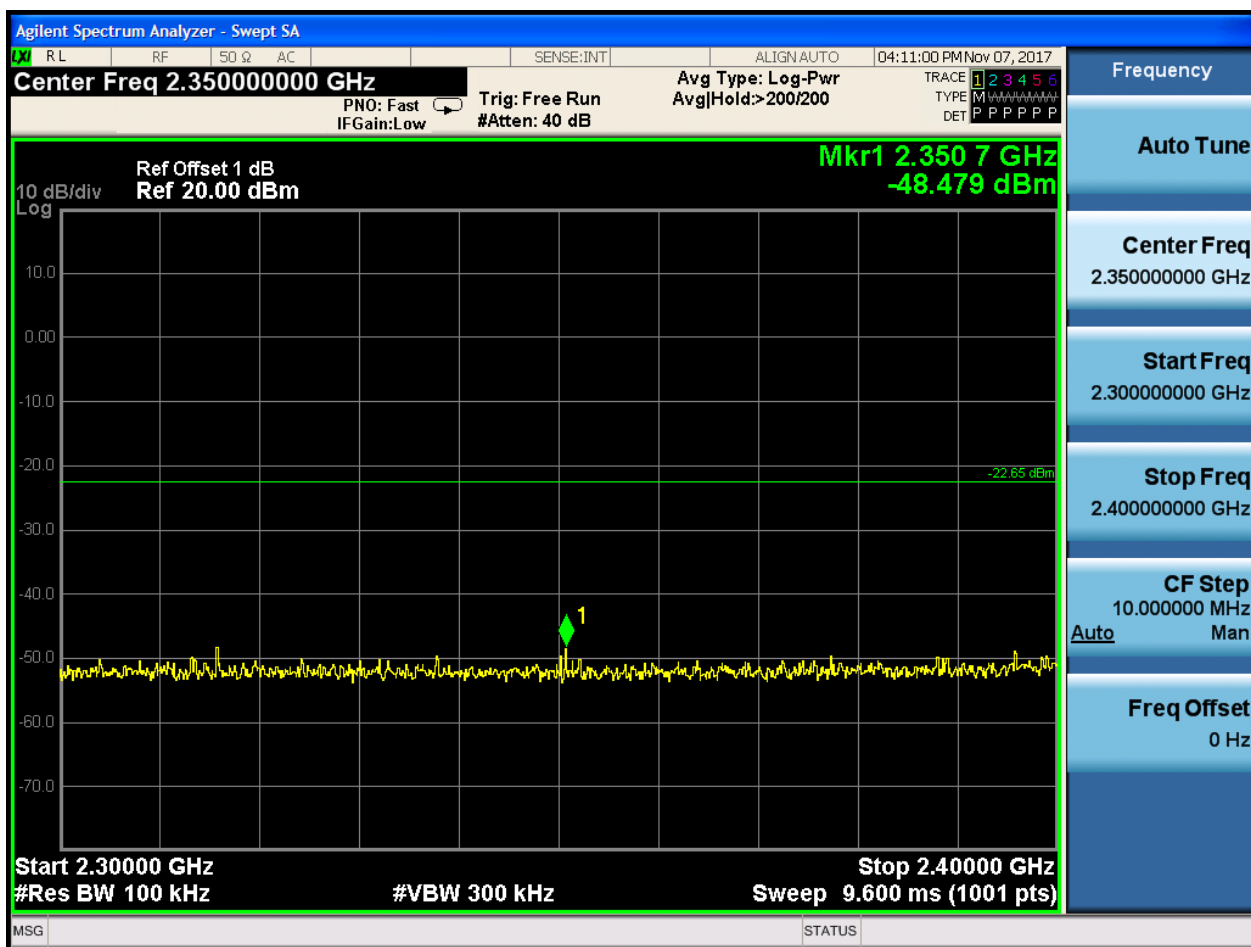


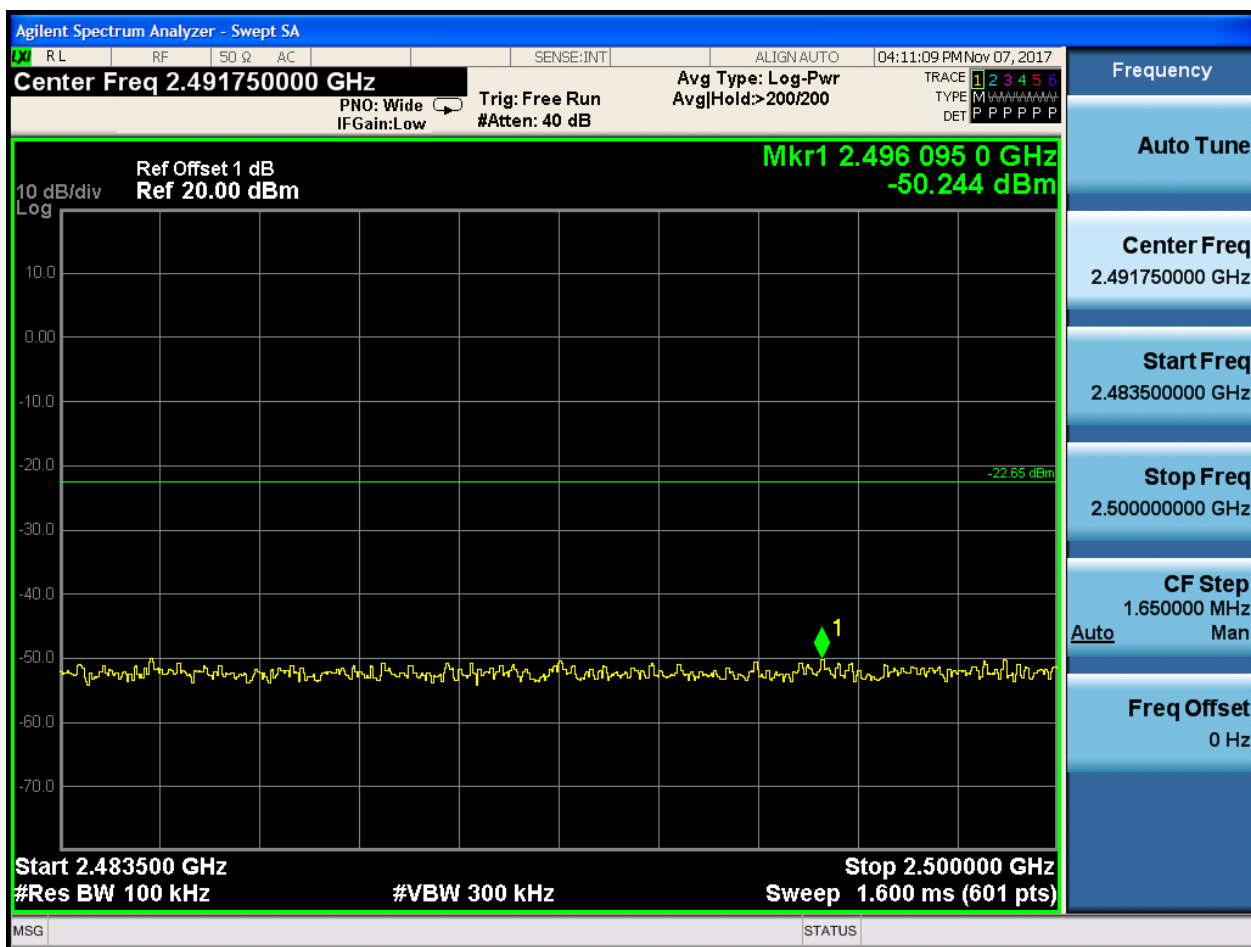
Puw:









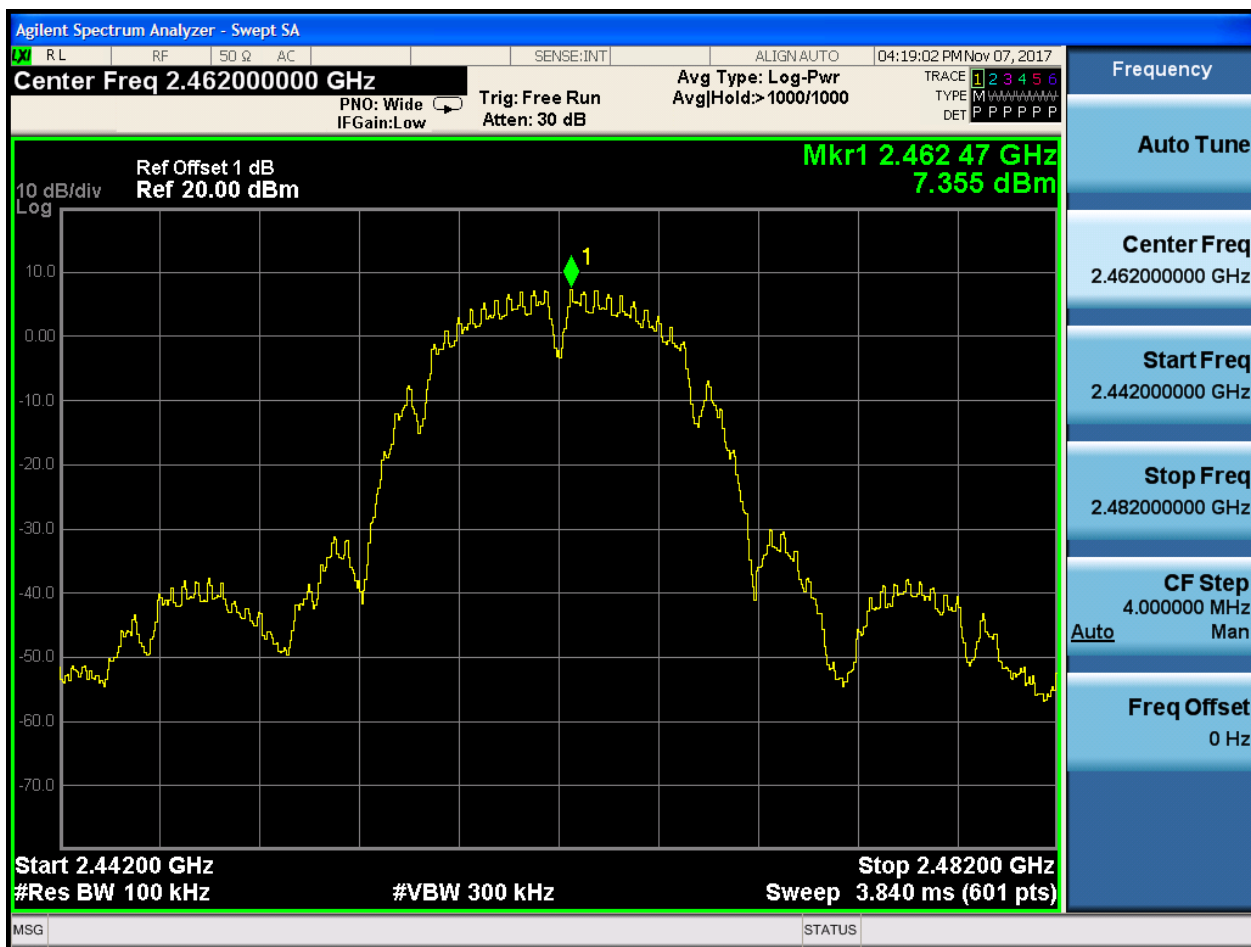






2.3 11B_H@Ant 1

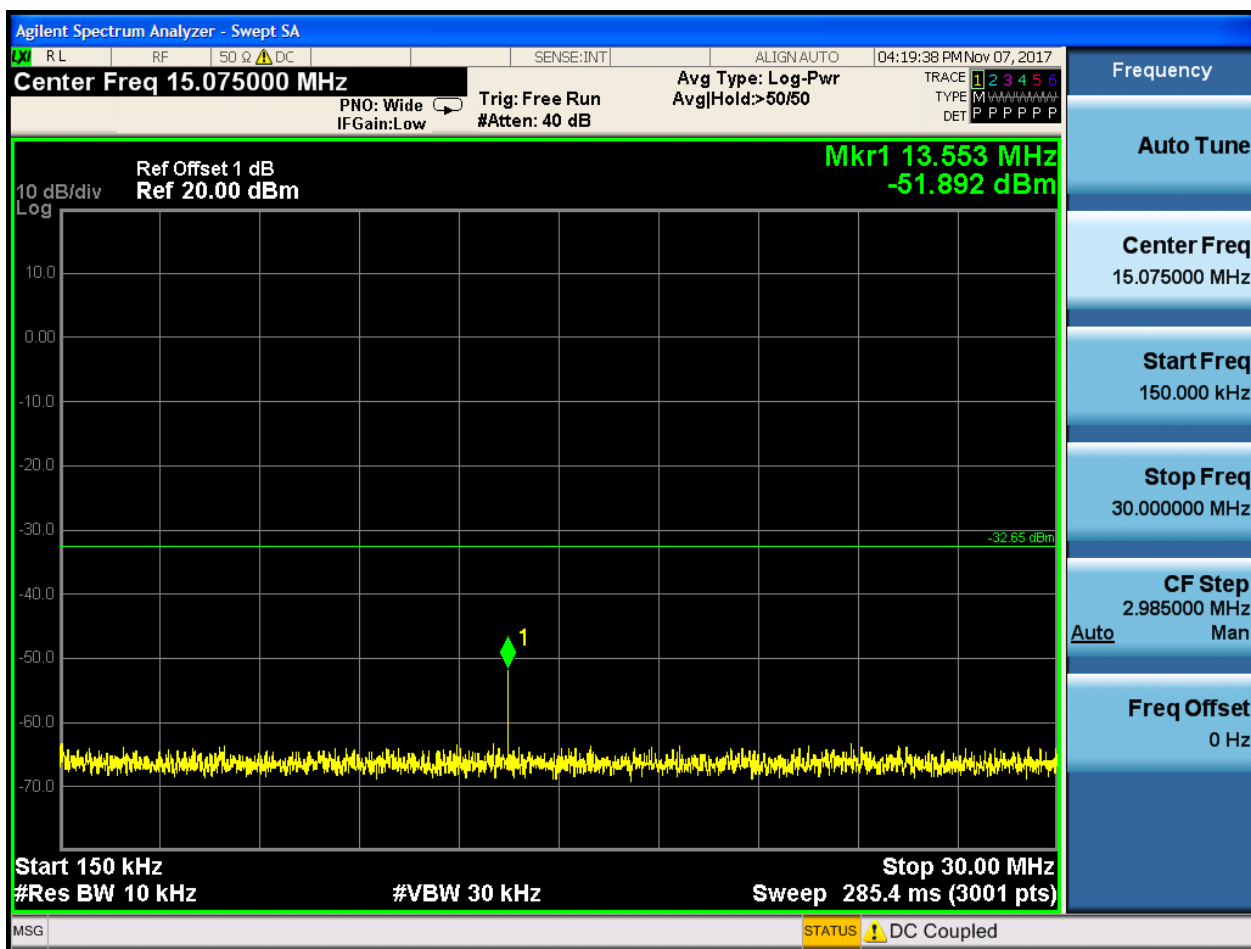
Pref:



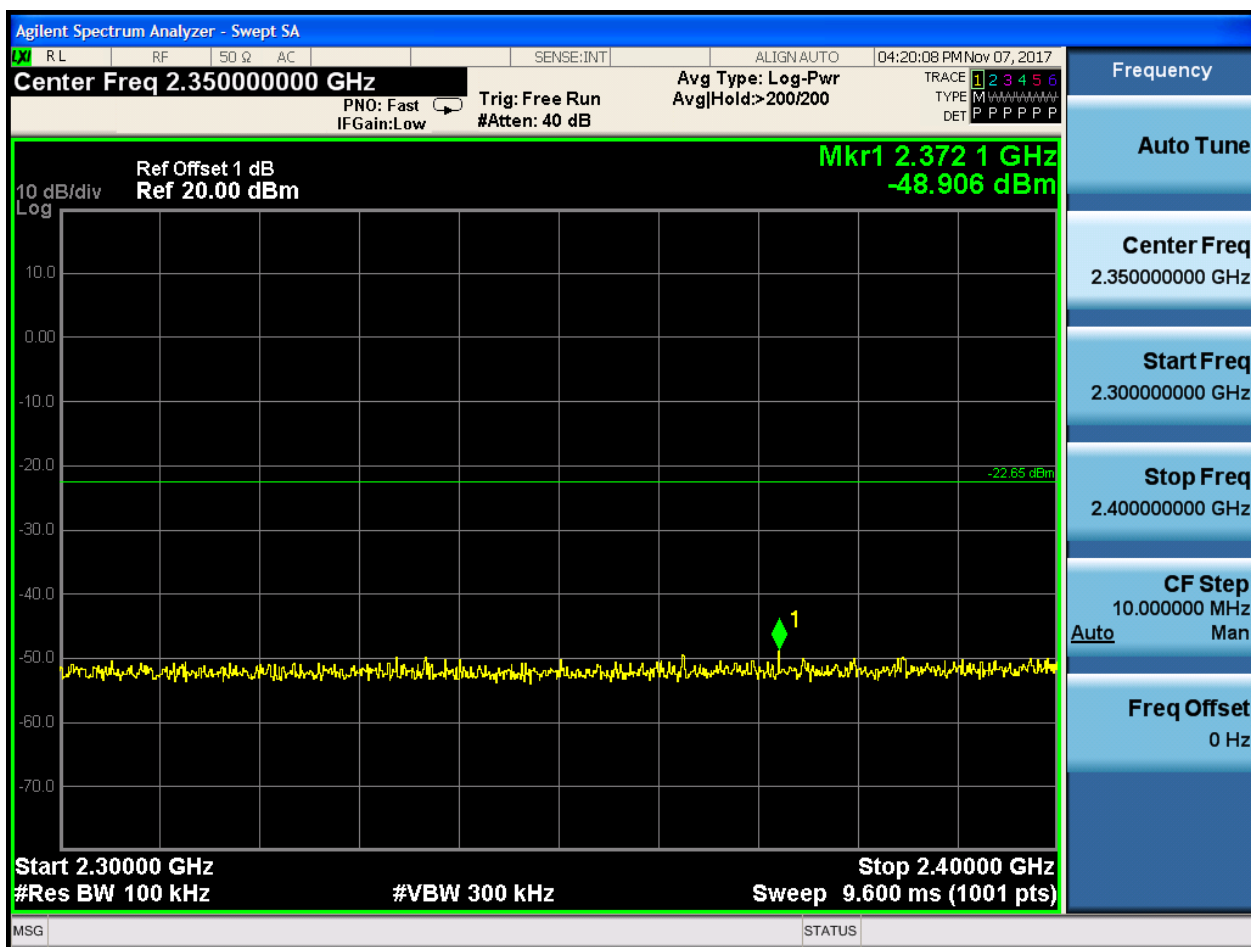


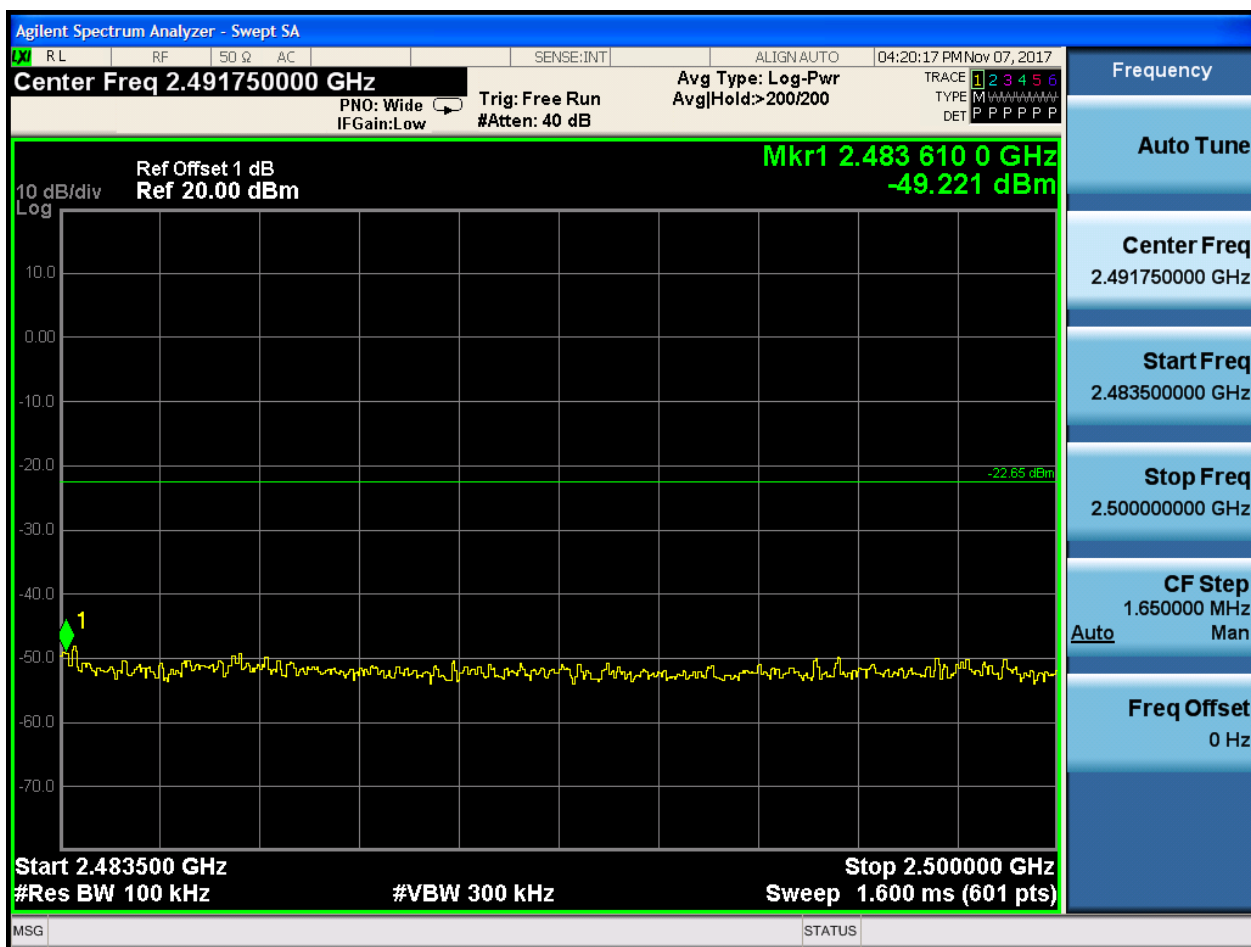
Puw:









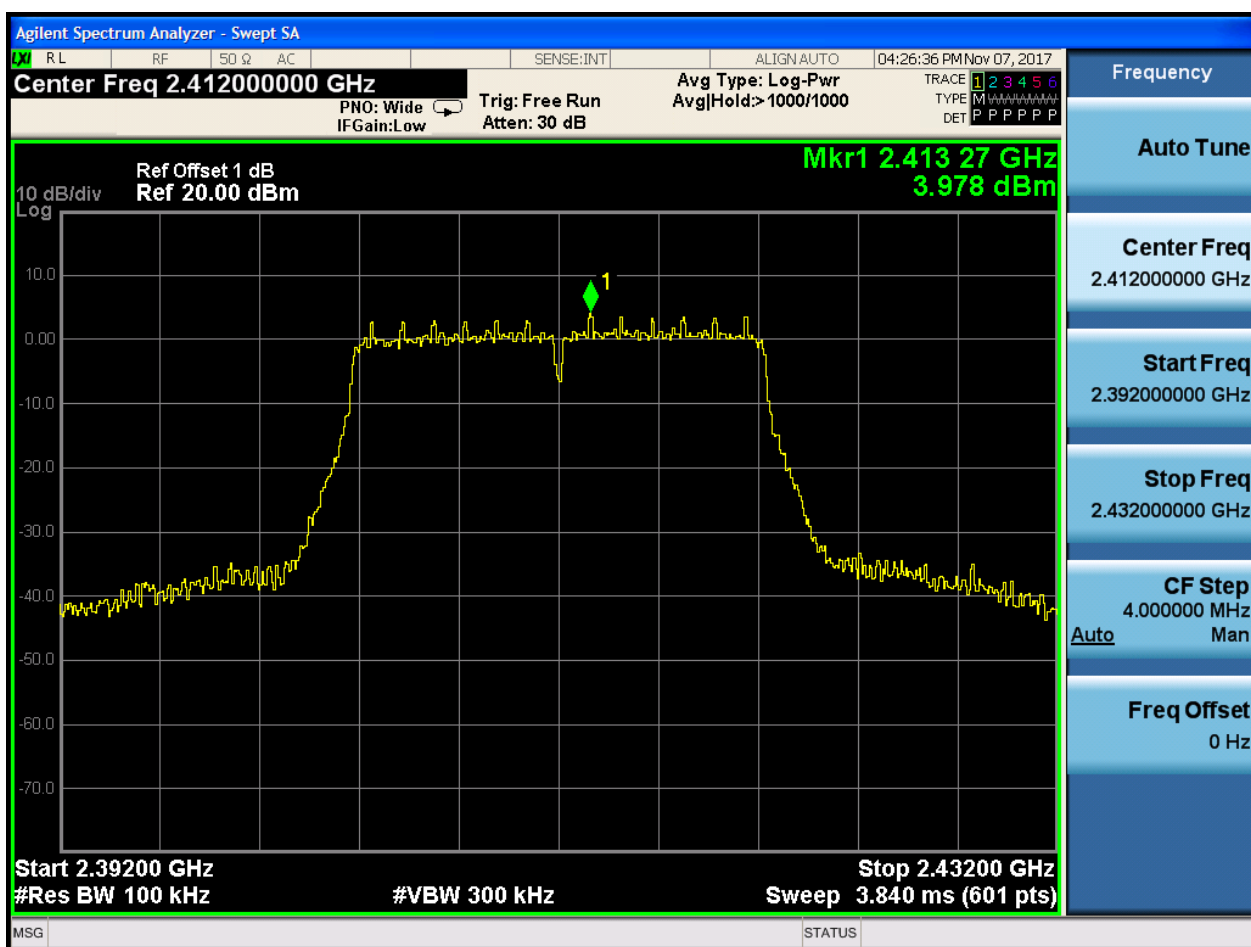






2.4 11G_L@Ant 1

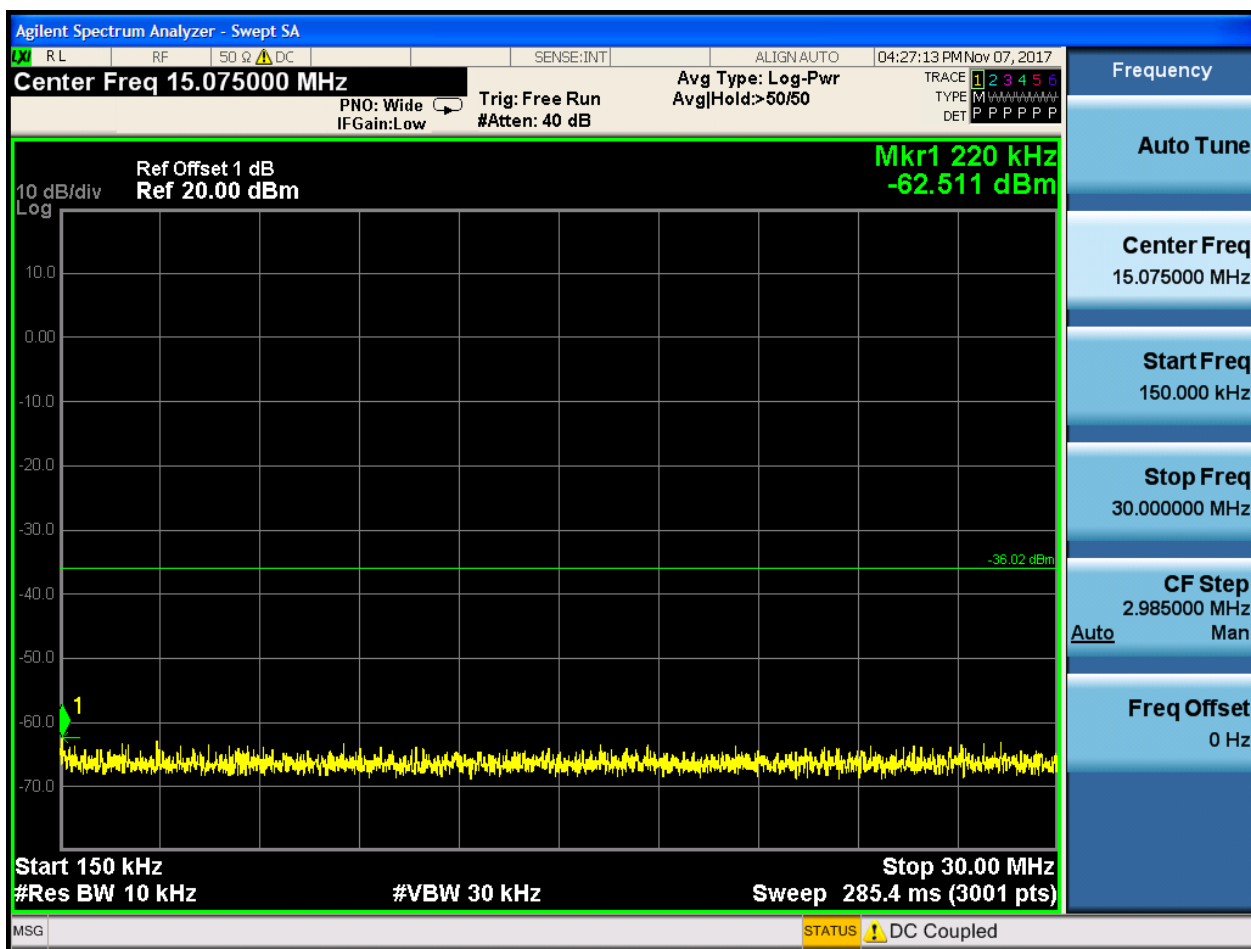
Pref:

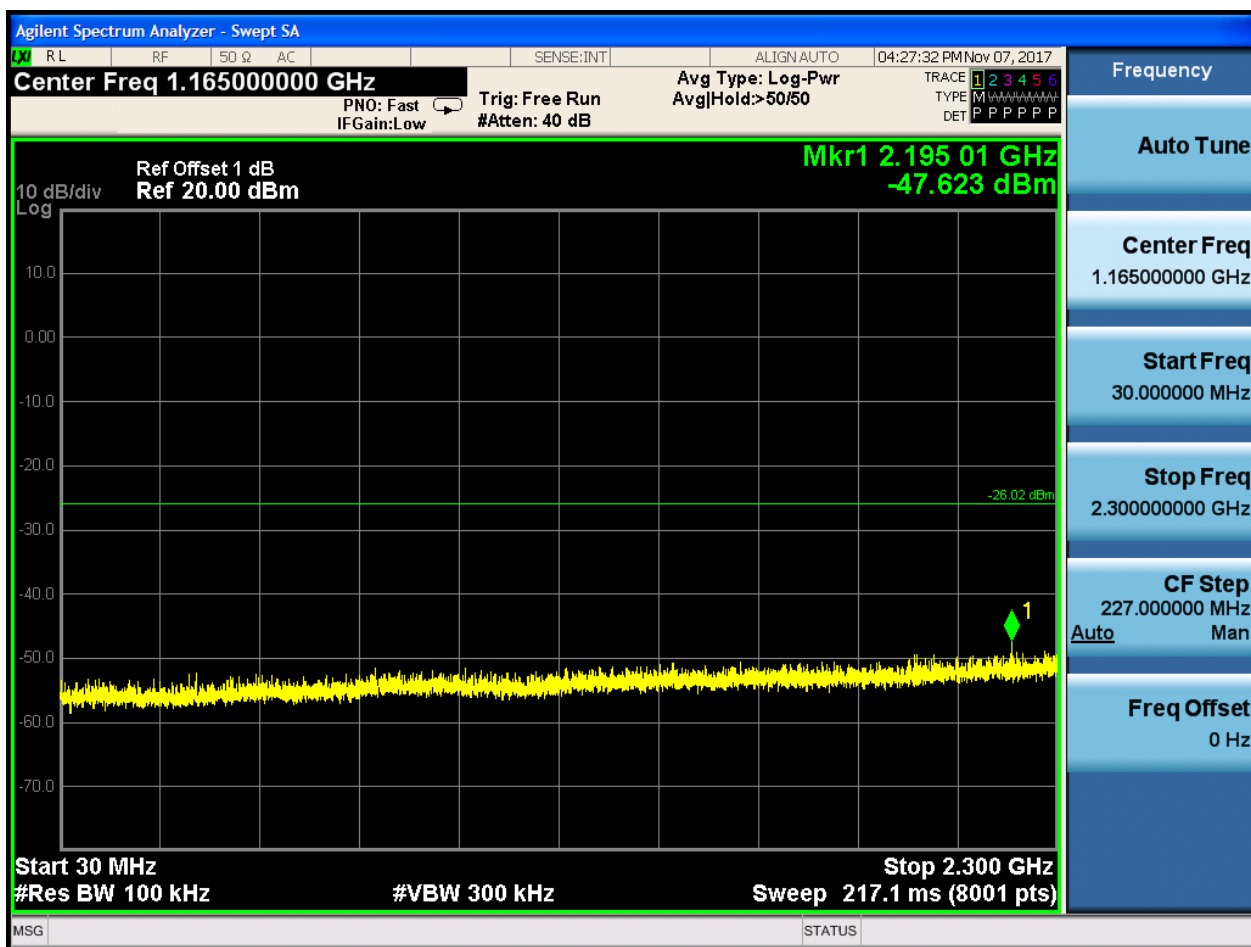


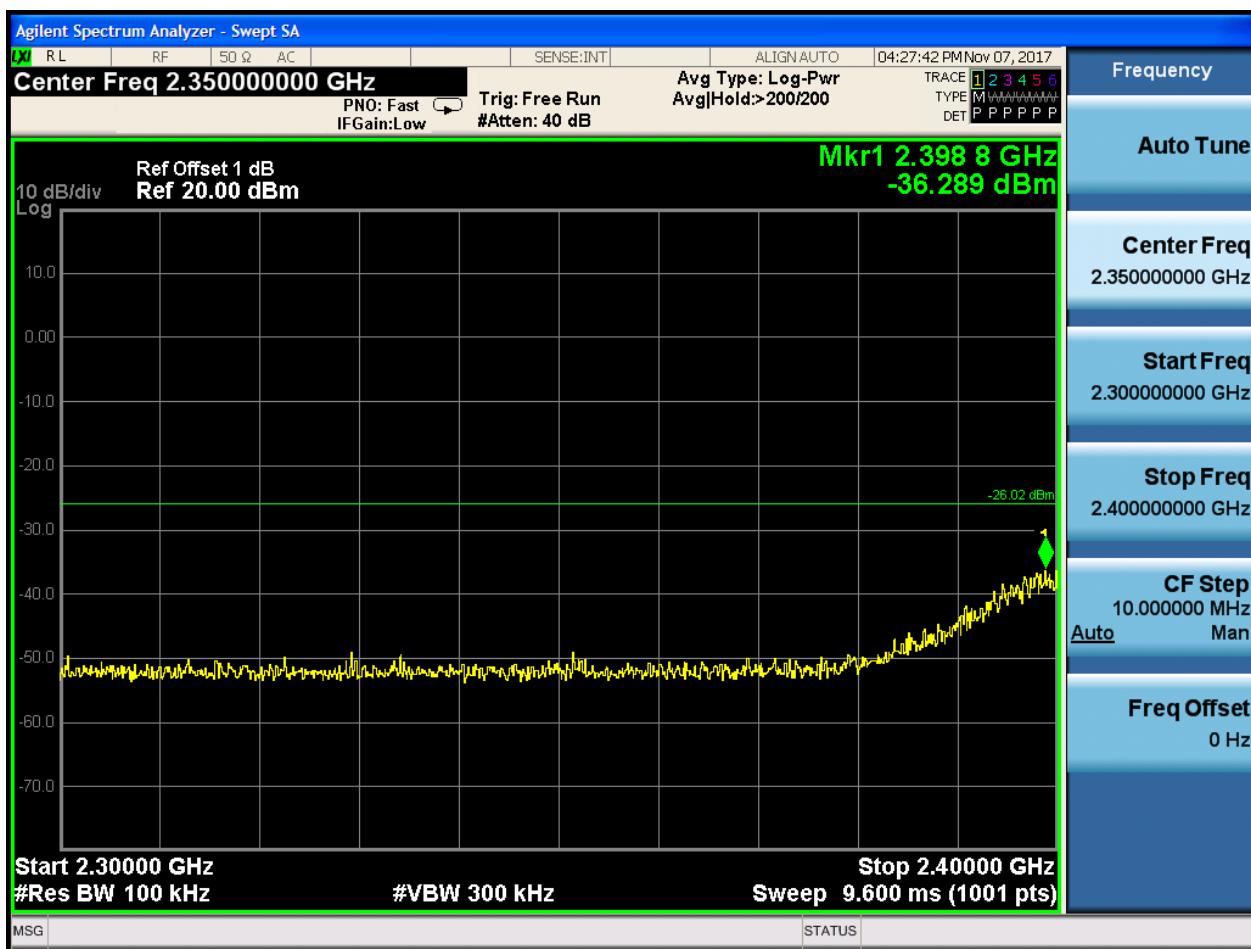


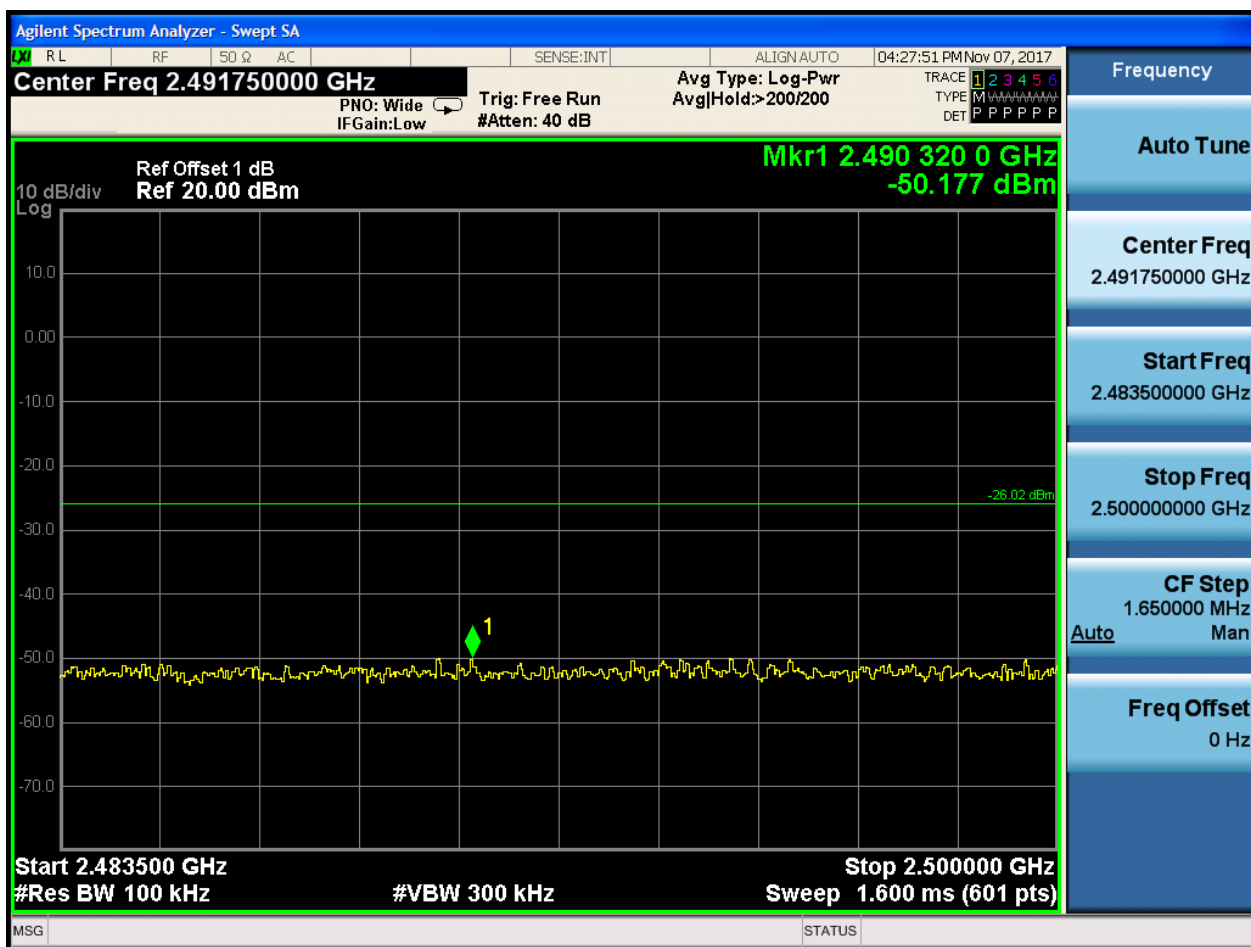
Puw:

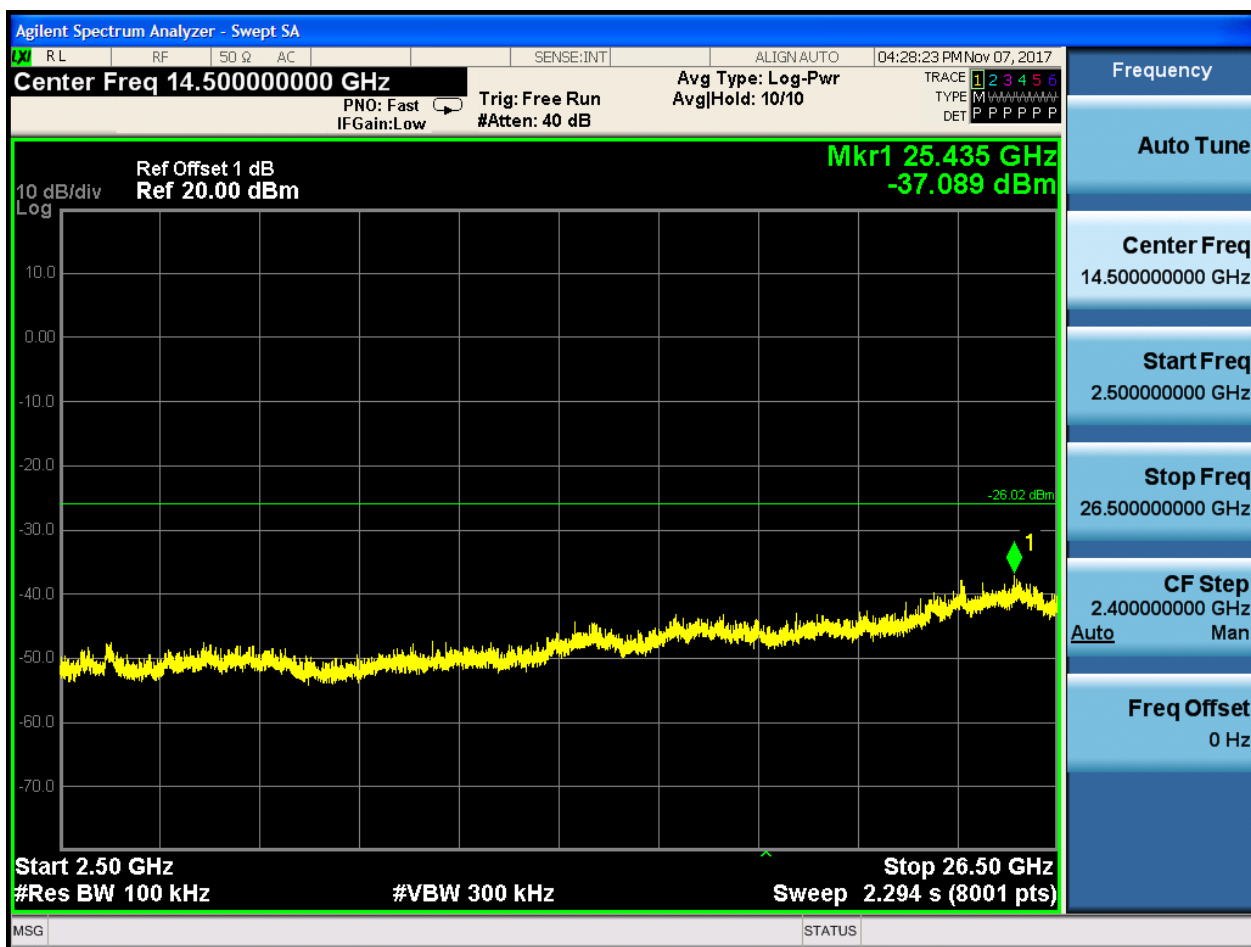








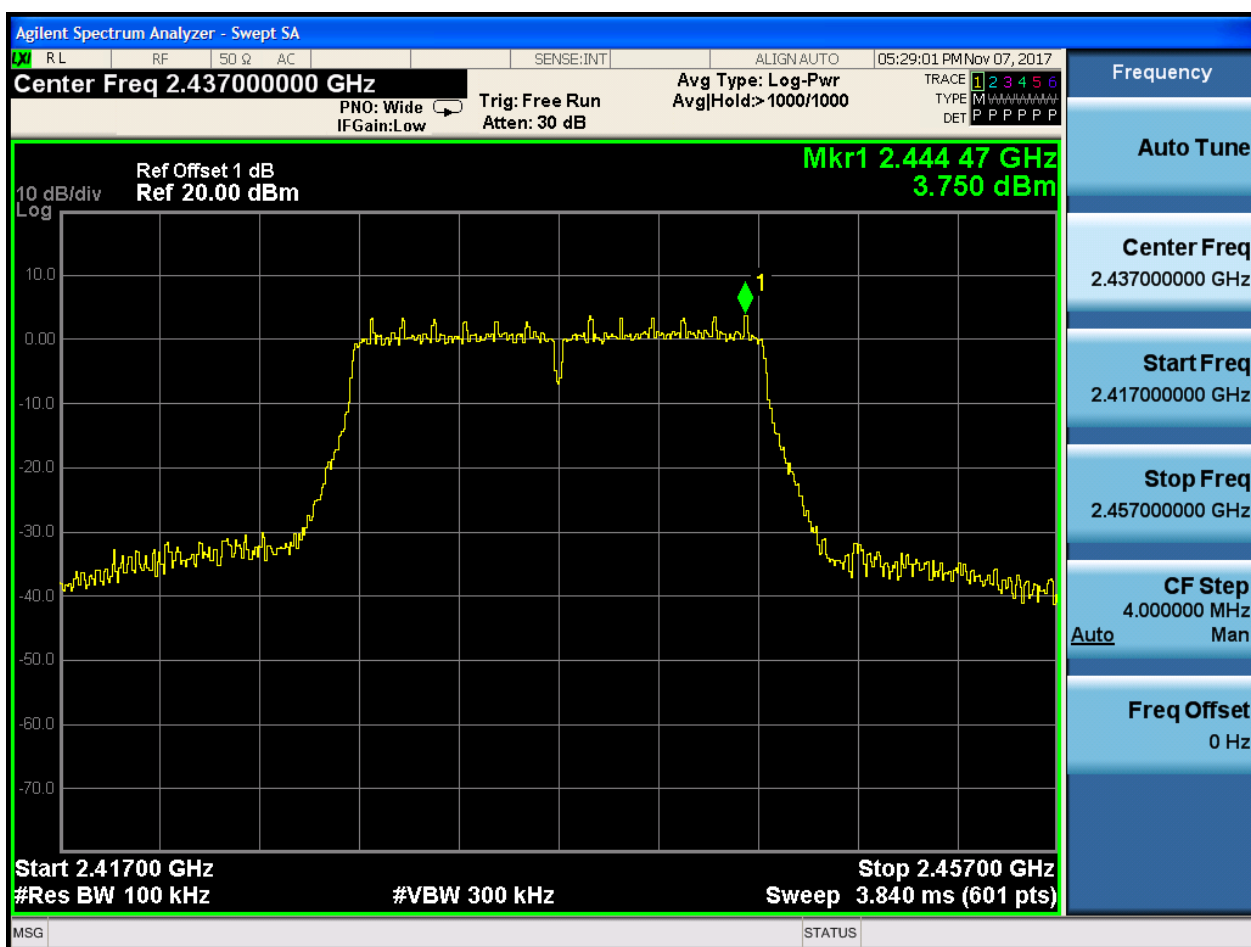






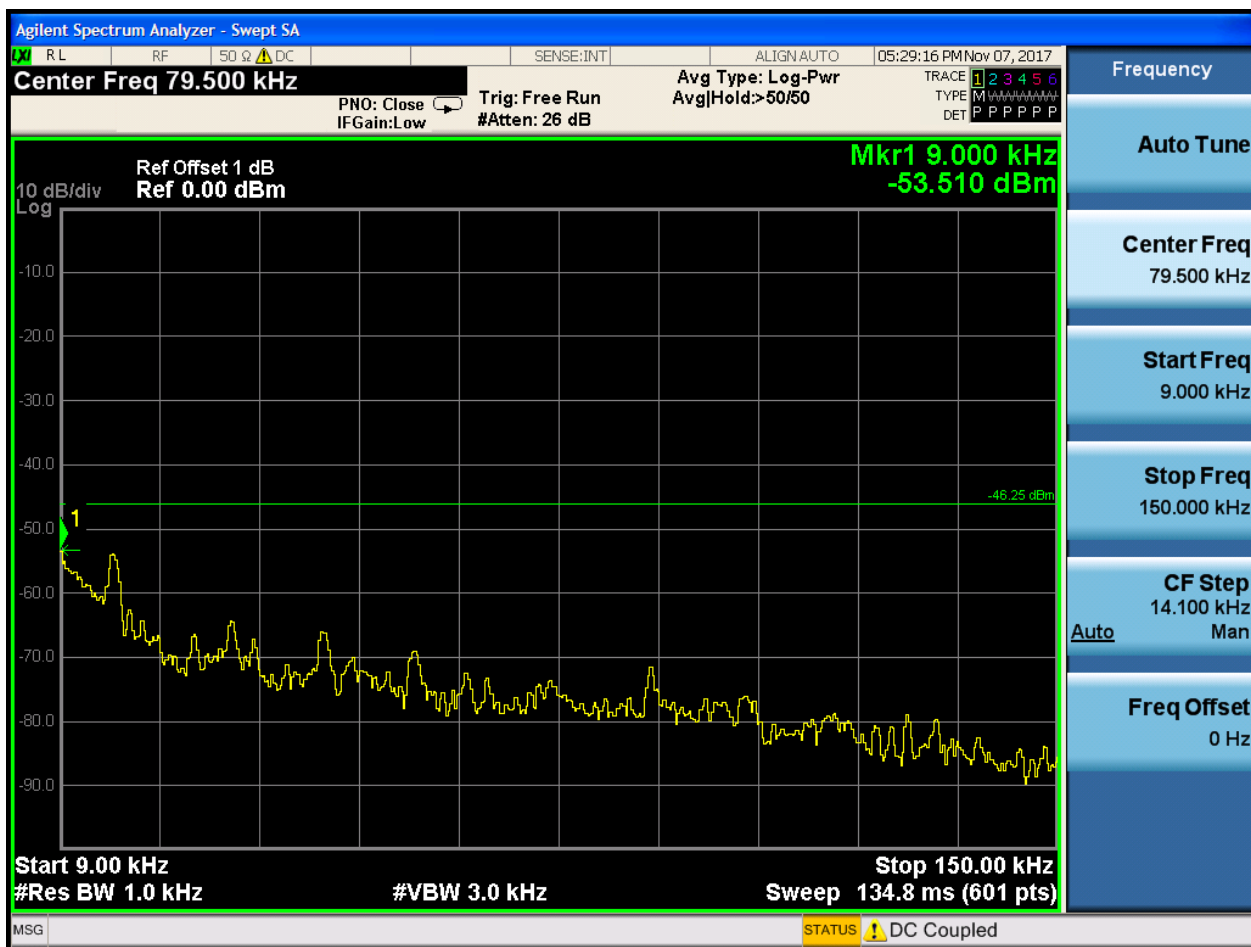
2.5 11G_M@Ant 1

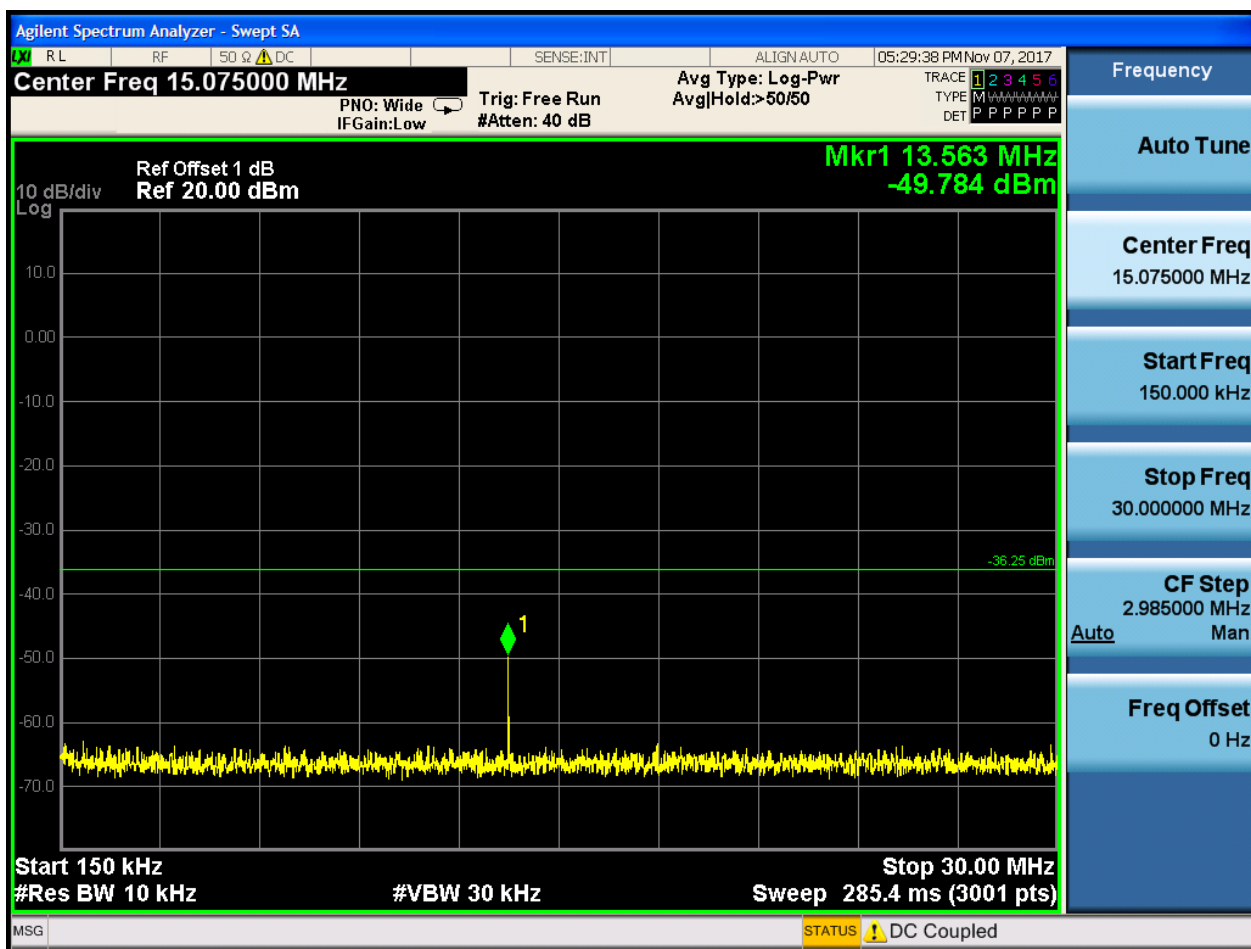
Pref:

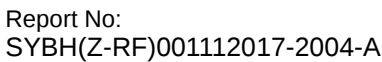


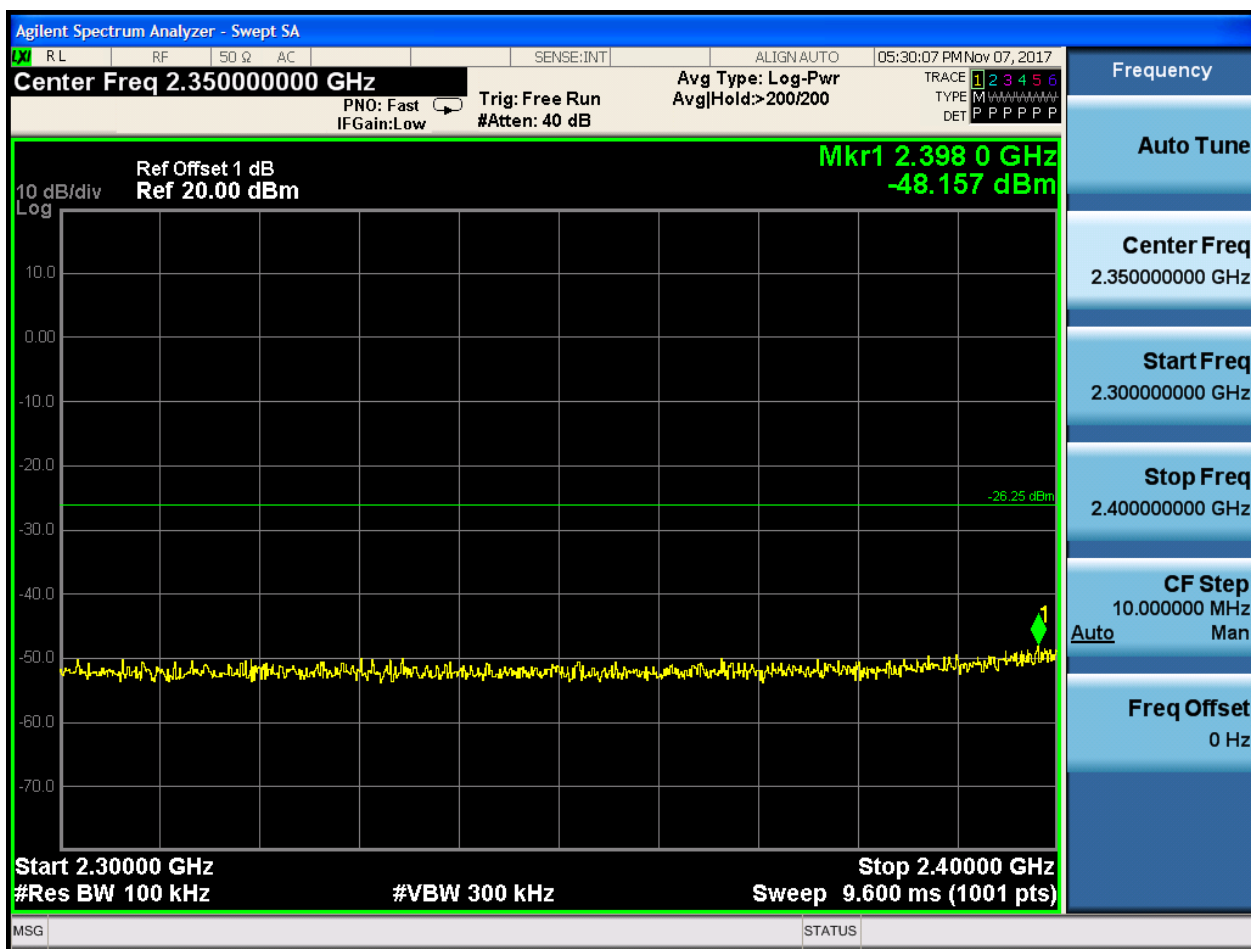


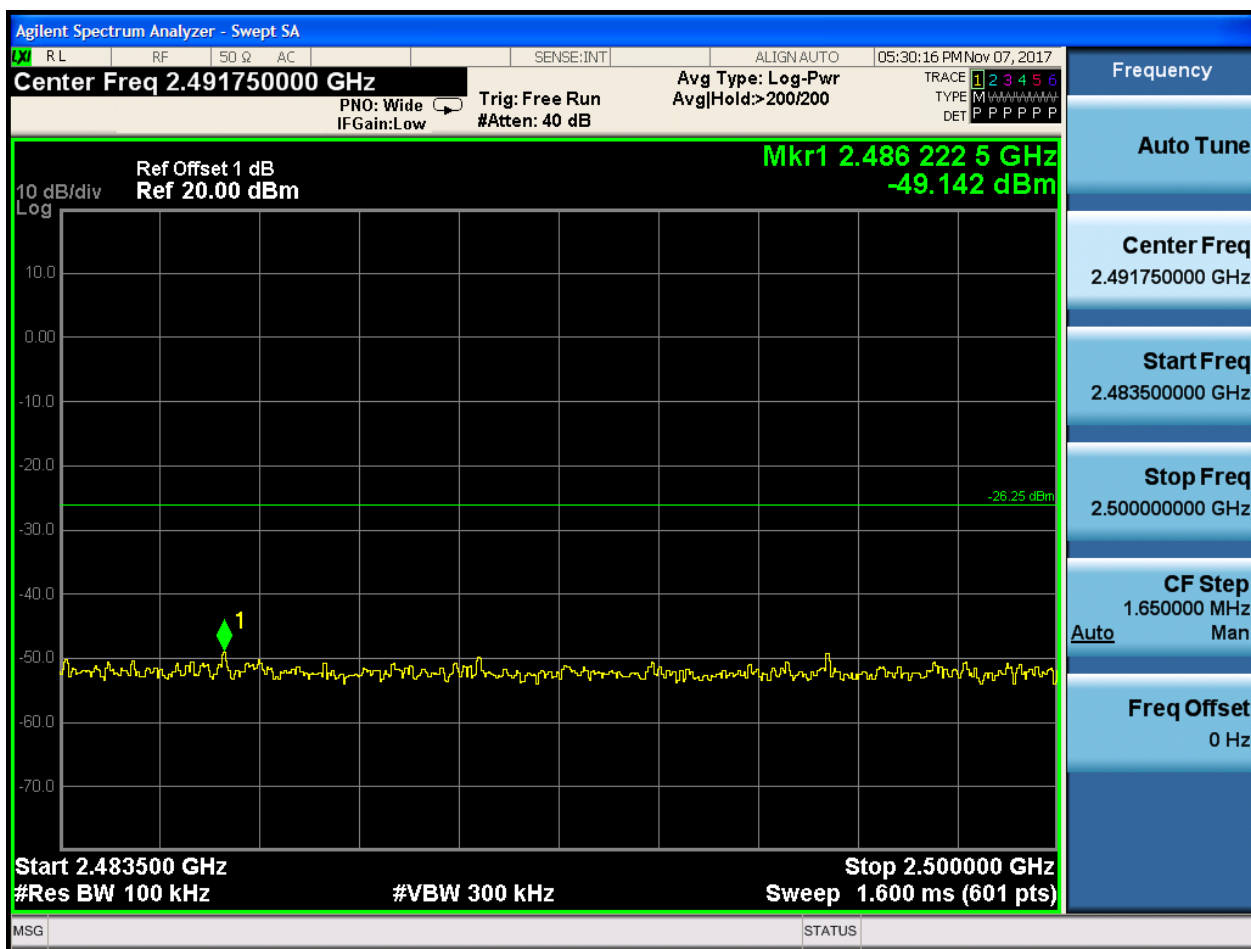
Puw:









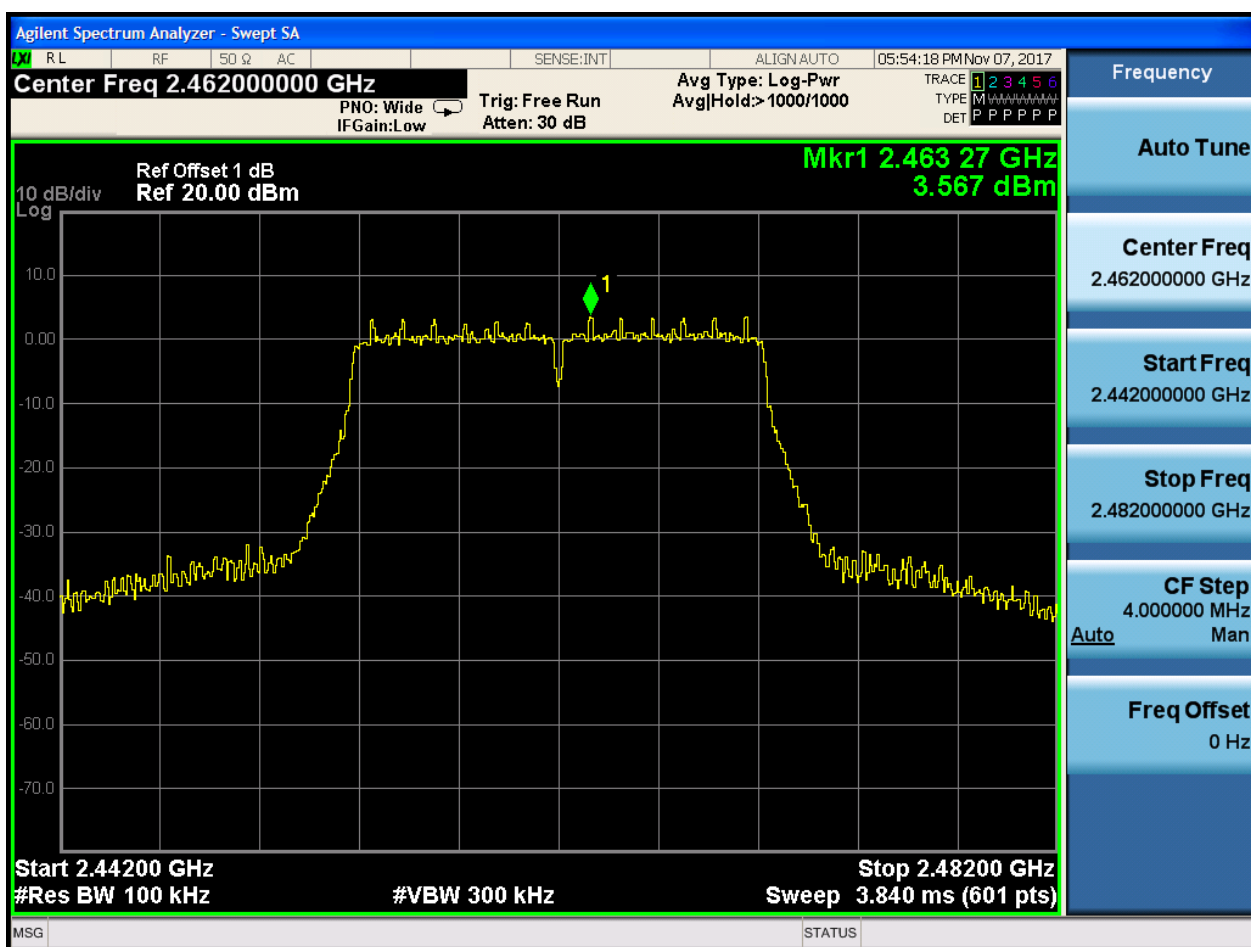






2.6 11G_H@Ant 1

Pref:





Puw:

