



Appendix for Testreport

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

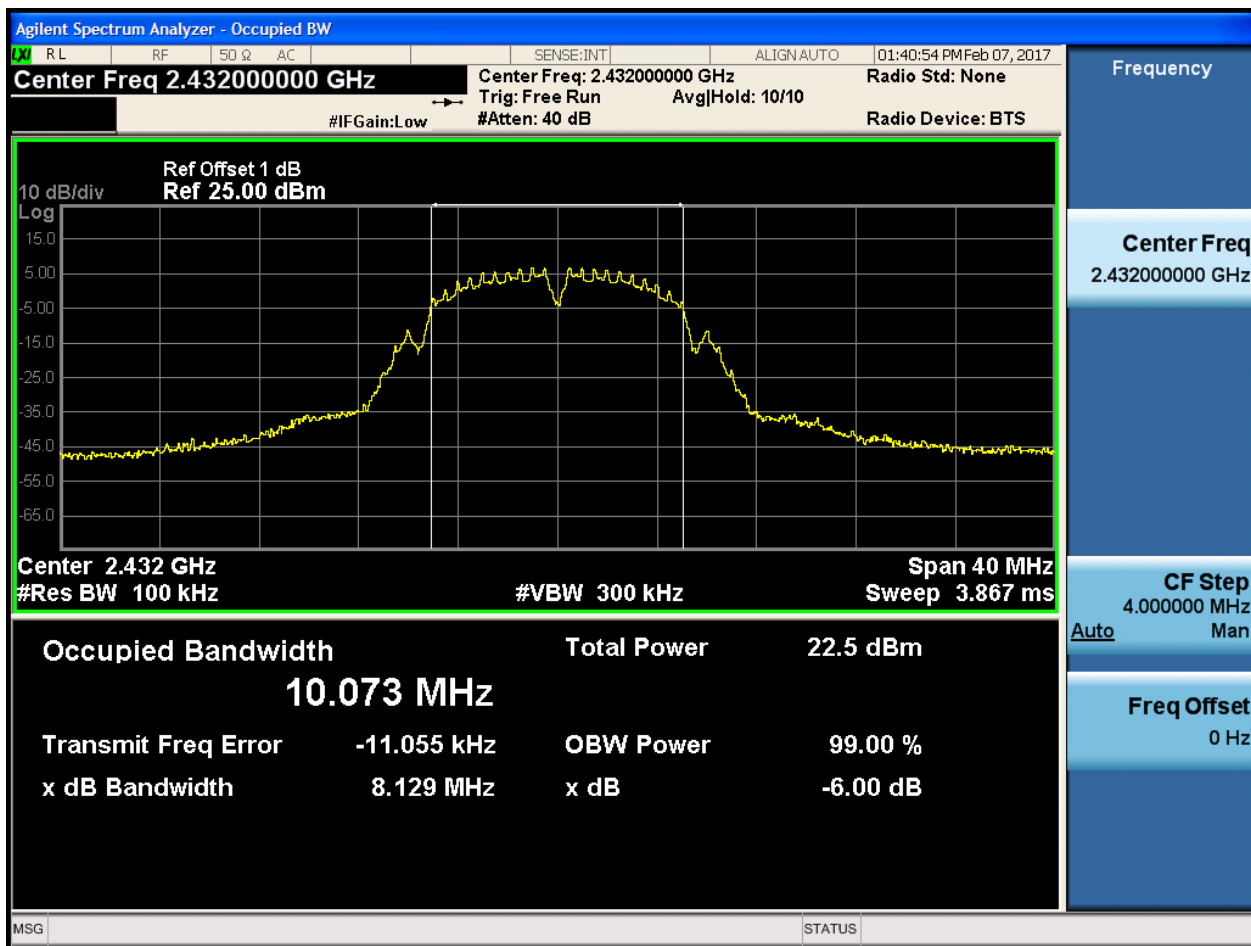
Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2432	Ant 1	8.13	pass
11B	L	2432	Ant 2	8.10	pass
11B	M	2447	Ant 1	8.58	pass
11B	M	2447	Ant 2	8.12	pass
11B	H	2462	Ant 1	8.11	pass
11B	H	2462	Ant 2	8.11	pass
11G	L	2432	Ant 1	16.48	pass
11G	L	2432	Ant 2	16.44	pass
11G	M	2447	Ant 1	16.45	pass
11G	M	2447	Ant 2	16.52	pass
11G	H	2462	Ant 1	16.47	pass
11G	H	2462	Ant 2	16.48	pass
11N20	L	2432	Ant 1	17.74	pass
11N20	L	2432	Ant 2	17.75	pass
11N20	M	2447	Ant 1	17.80	pass
11N20	M	2447	Ant 2	17.74	pass
11N20	H	2462	Ant 1	17.78	pass
11N20	H	2462	Ant 2	17.76	pass
11N20m	L	2432	Ant 1	17.76	pass
11N20m	L	2432	Ant 2	17.76	pass
11N20m	M	2447	Ant 1	17.75	pass
11N20m	M	2447	Ant 2	17.72	pass
11N20m	H	2462	Ant 1	17.73	pass
11N20m	H	2462	Ant 2	17.76	pass
11N40	L	2442	Ant 1	36.45	pass
11N40	L	2442	Ant 2	36.52	pass
11N40	M	2447	Ant 1	36.41	pass
11N40	M	2447	Ant 2	36.35	pass



Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11N40	H	2452	Ant 1	36.40	pass
11N40	H	2452	Ant 2	36.37	pass
11N40m	L	2442	Ant 1	36.42	pass
11N40m	L	2442	Ant 2	36.37	pass
11N40m	M	2447	Ant 1	36.38	pass
11N40m	M	2447	Ant 2	36.16	pass
11N40m	H	2452	Ant 1	36.02	pass
11N40m	H	2452	Ant 2	36.30	pass

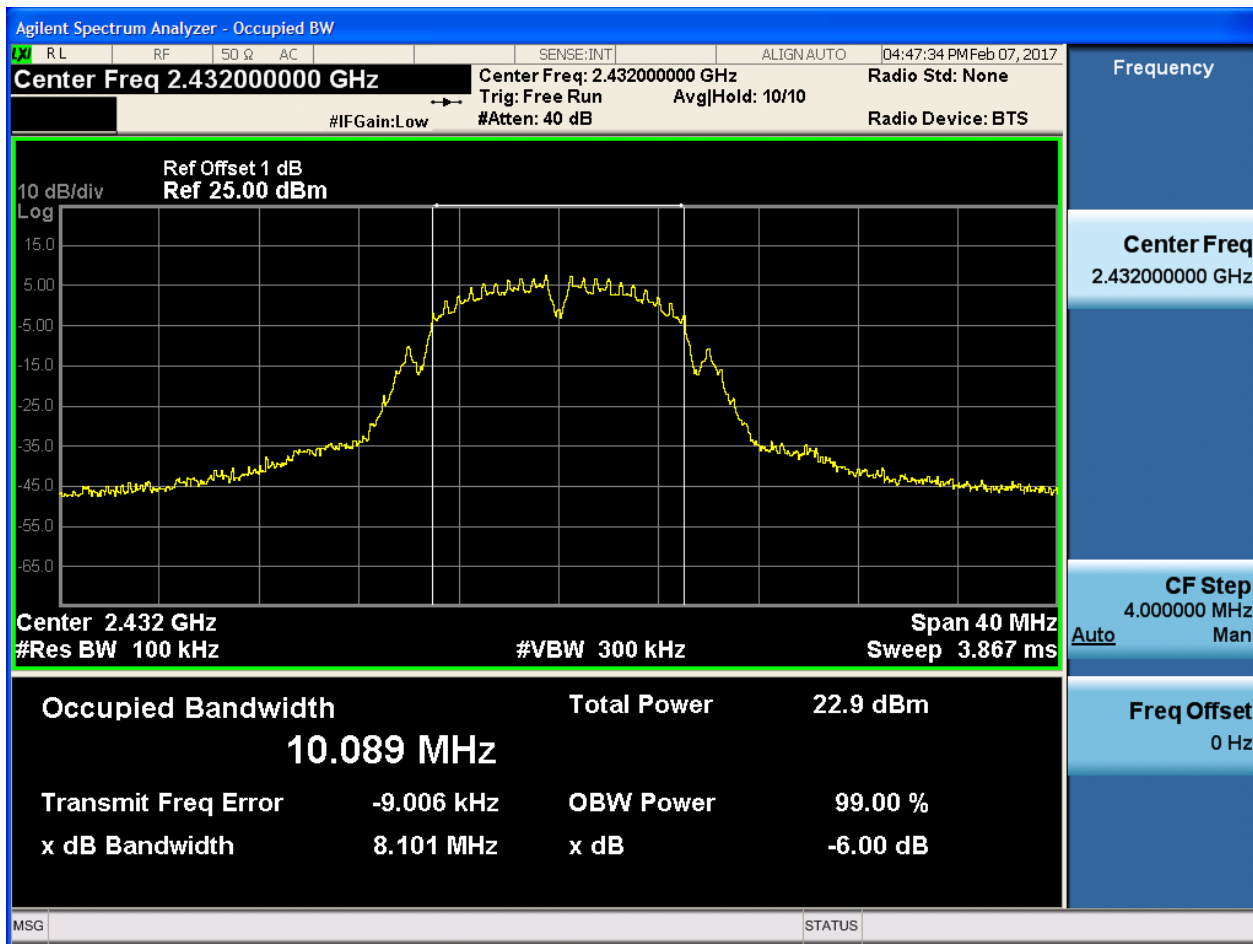
Part II - Test Plots

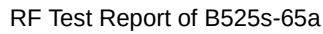
2.1 11B_L@Ant 1





2.2 11B_L@Ant 2





Agilent Spectrum Analyzer - Occupied BW

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 01:47:50 PM Feb 07, 2017

Center Freq 2.447000000 GHz Center Freq: 2.447000000 GHz Radio Std: None
Trig: Free Run Avg/Hold: 10/10
#IFGain:Low #Atten: 40 dB Radio Device: BTS

Ref Offset 1 dB
Ref 25.00 dBm

10 dB/div
Log

Center 2.447 GHz Span 40 MHz
#Res BW 100 kHz #VBW 300 kHz Sweep 3.867 ms

Occupied Bandwidth		Total Power	
10.102 MHz		23.1 dBm	
Transmit Freq Error	30.907 kHz	OBW Power	99.00 %
x dB Bandwidth	8.576 MHz	x dB	-6.00 dB

Frequency

Center Freq
2.447000000 GHz

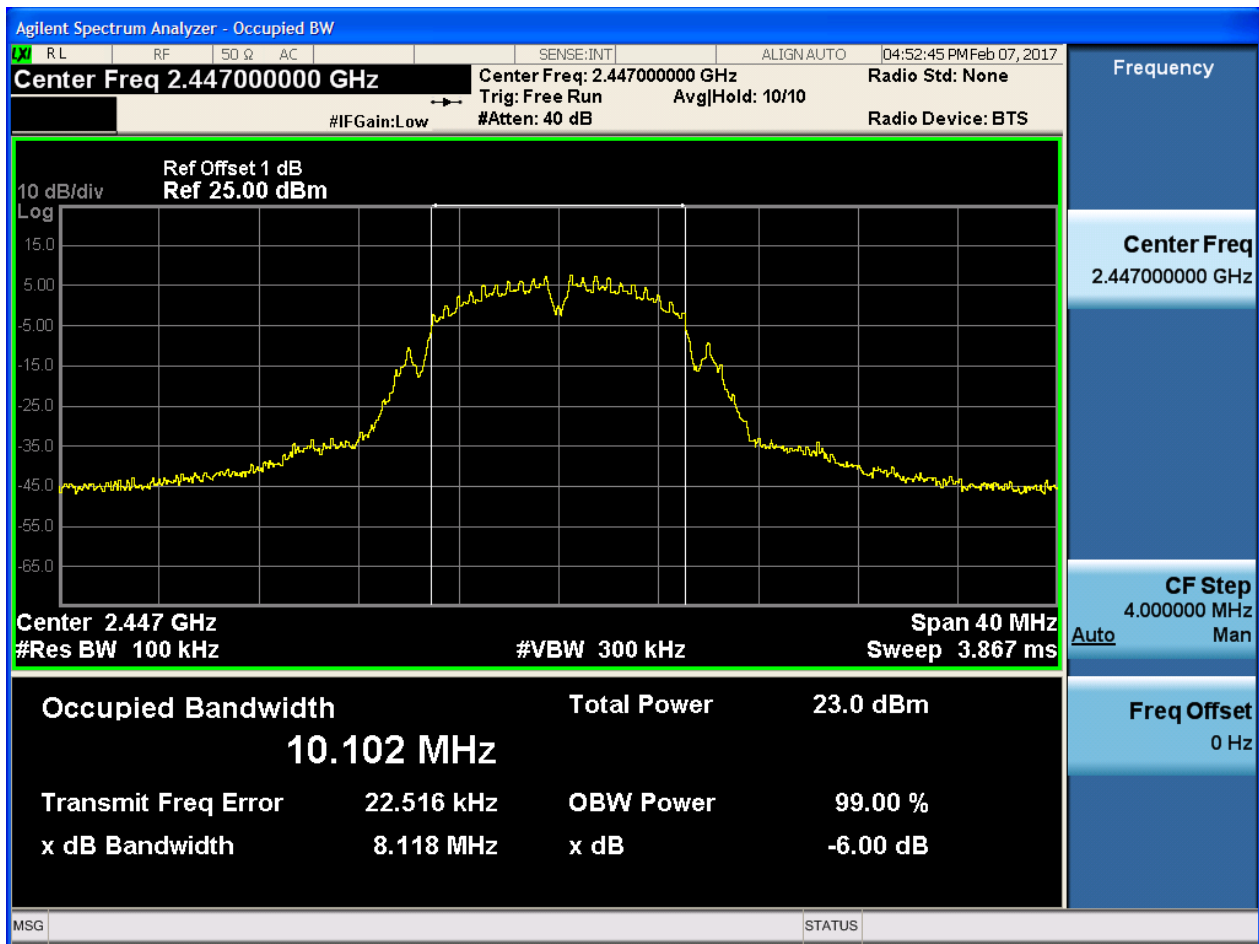
CF Step
4.000000 MHz
Man

Freq Offset
0 Hz

MSG STATUS

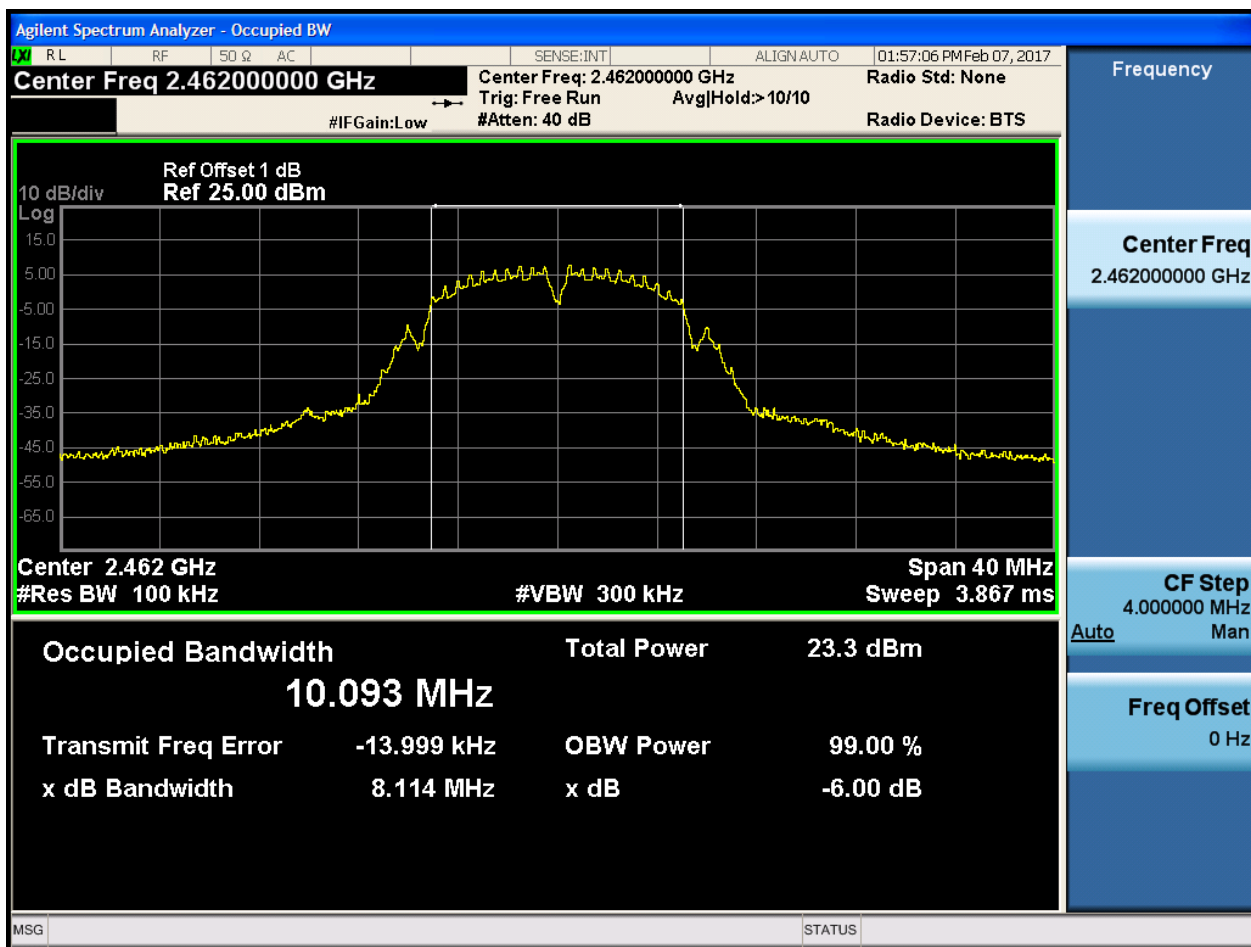


2.4 11B_M@Ant 2



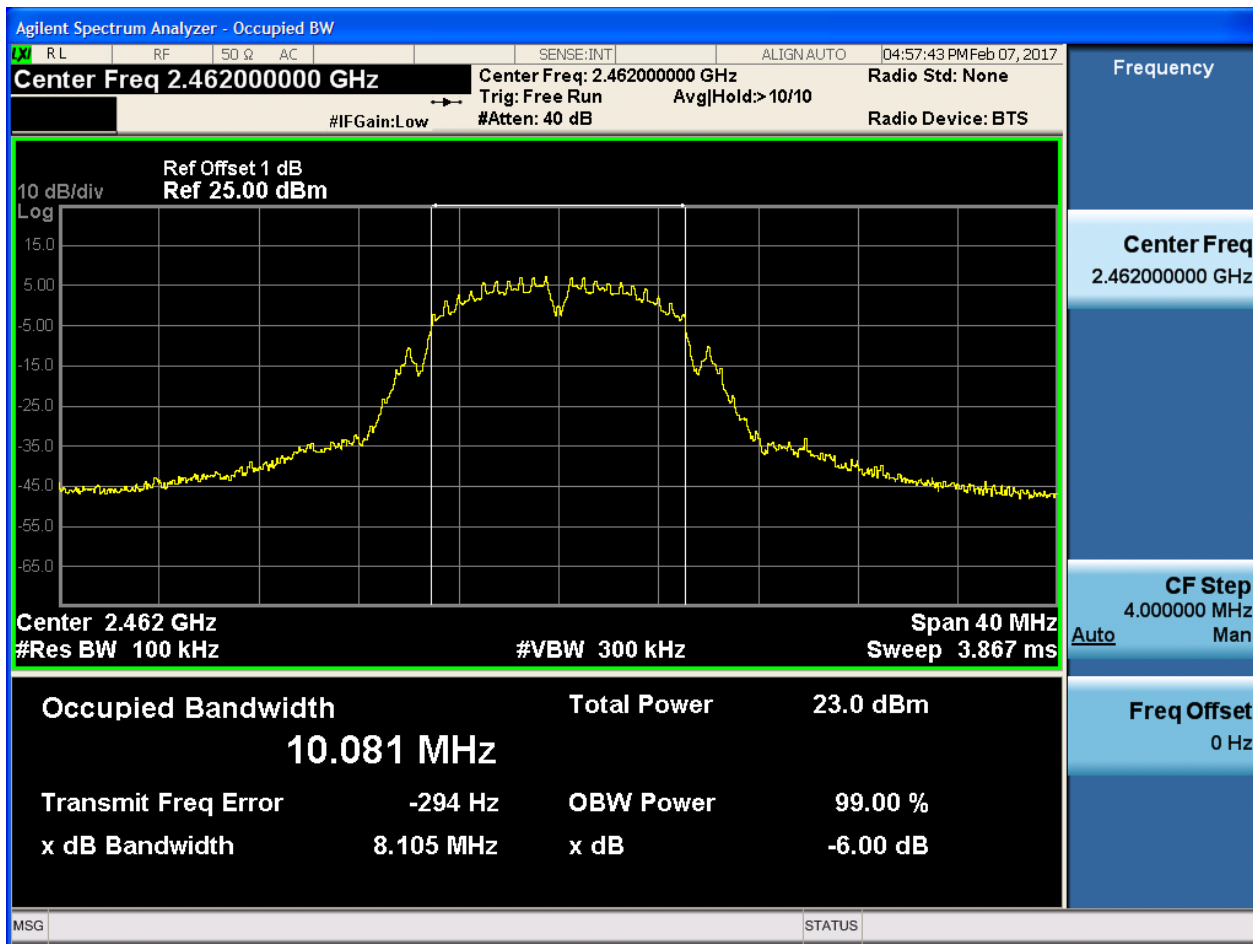


2.5 11B_H@Ant 1



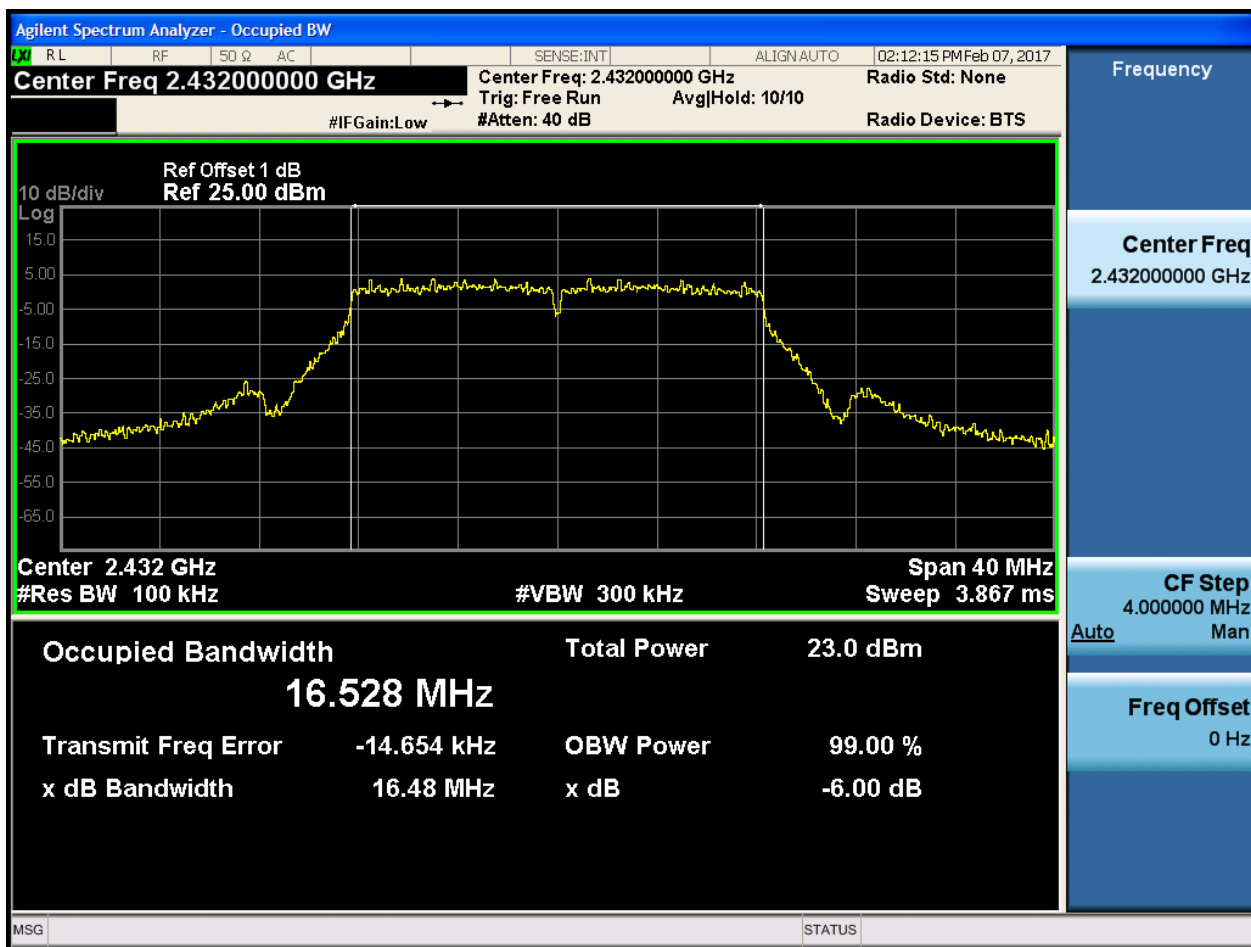


2.6 11B_H@Ant 2



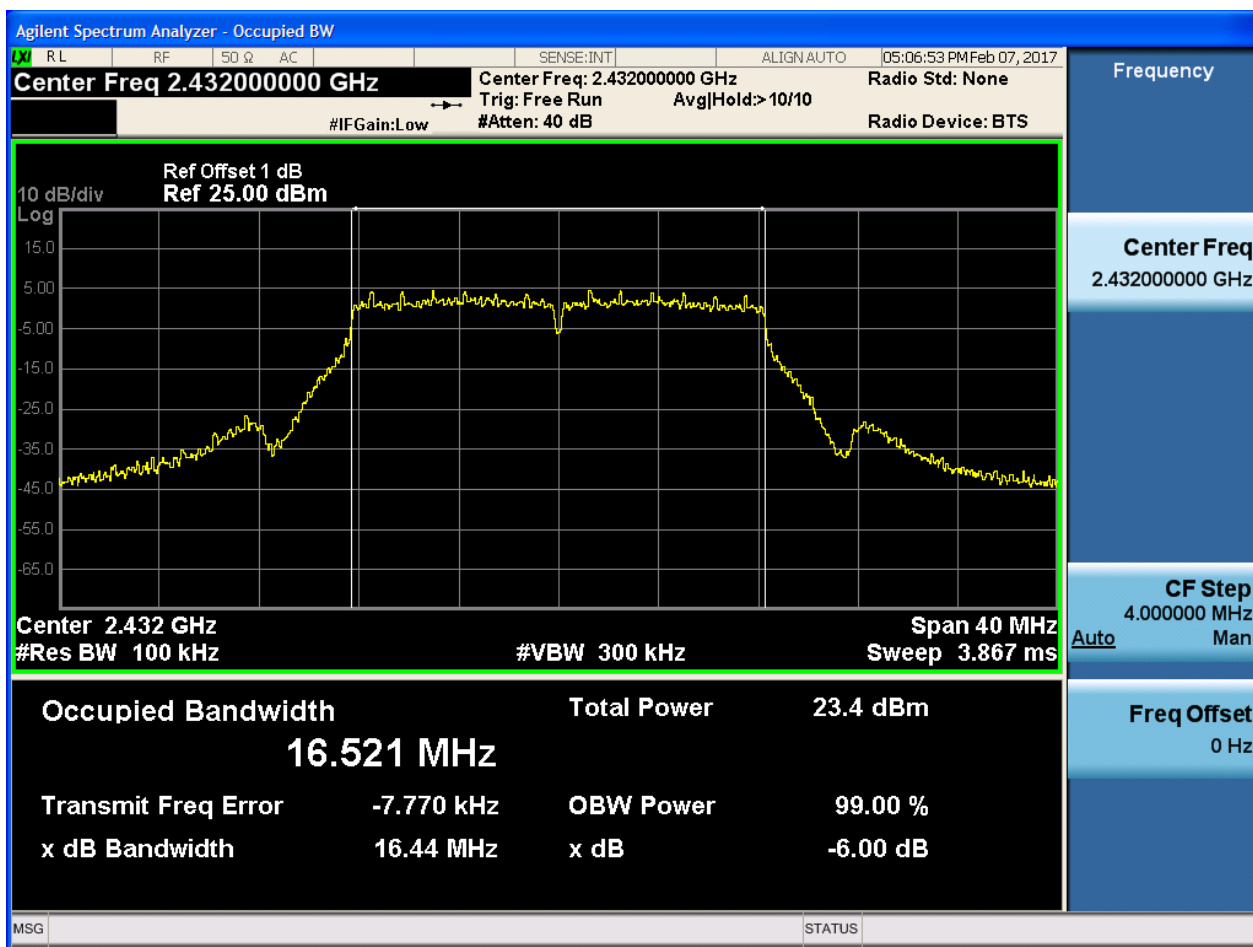


2.7 11G_L@Ant 1



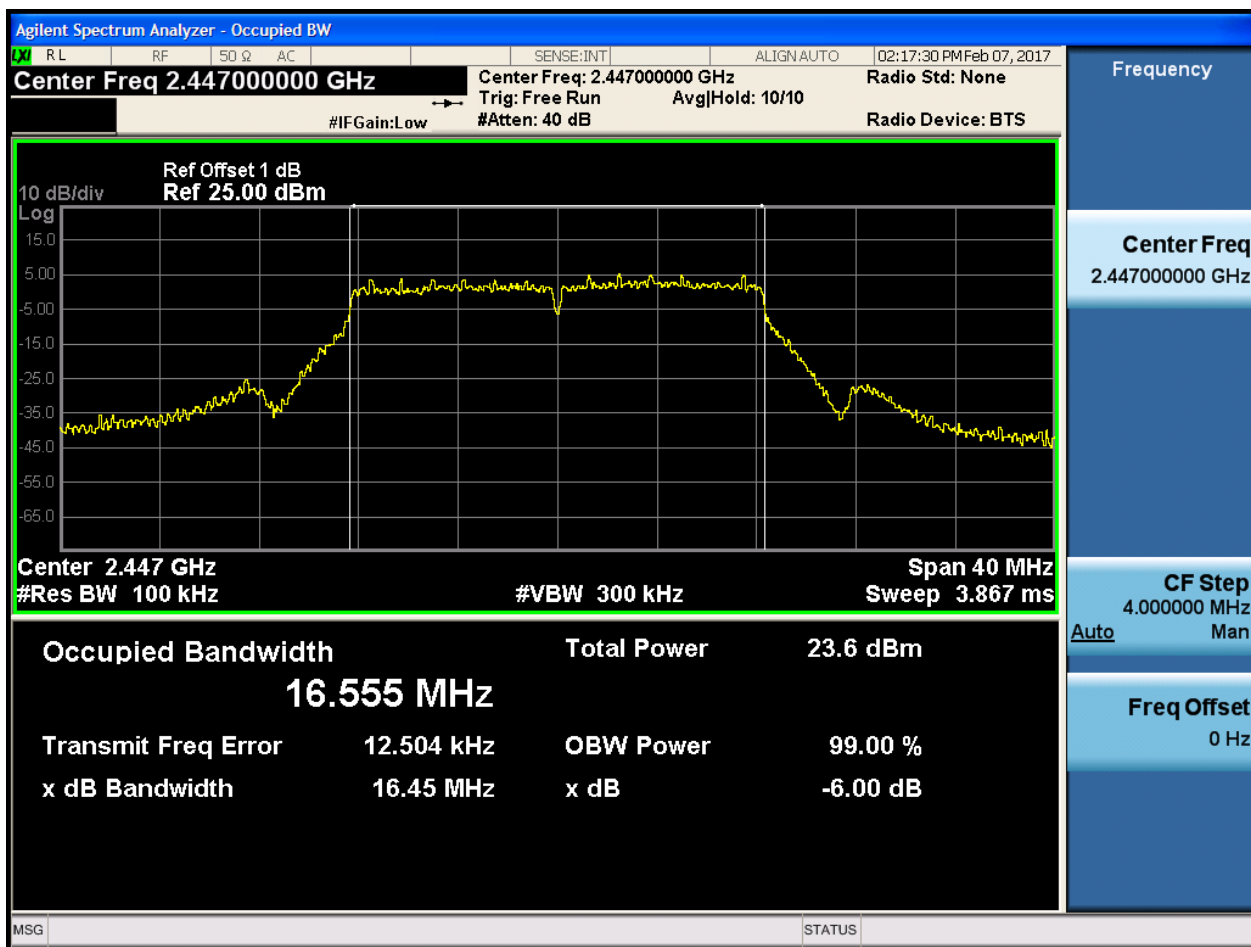


2.8 11G_L@Ant 2



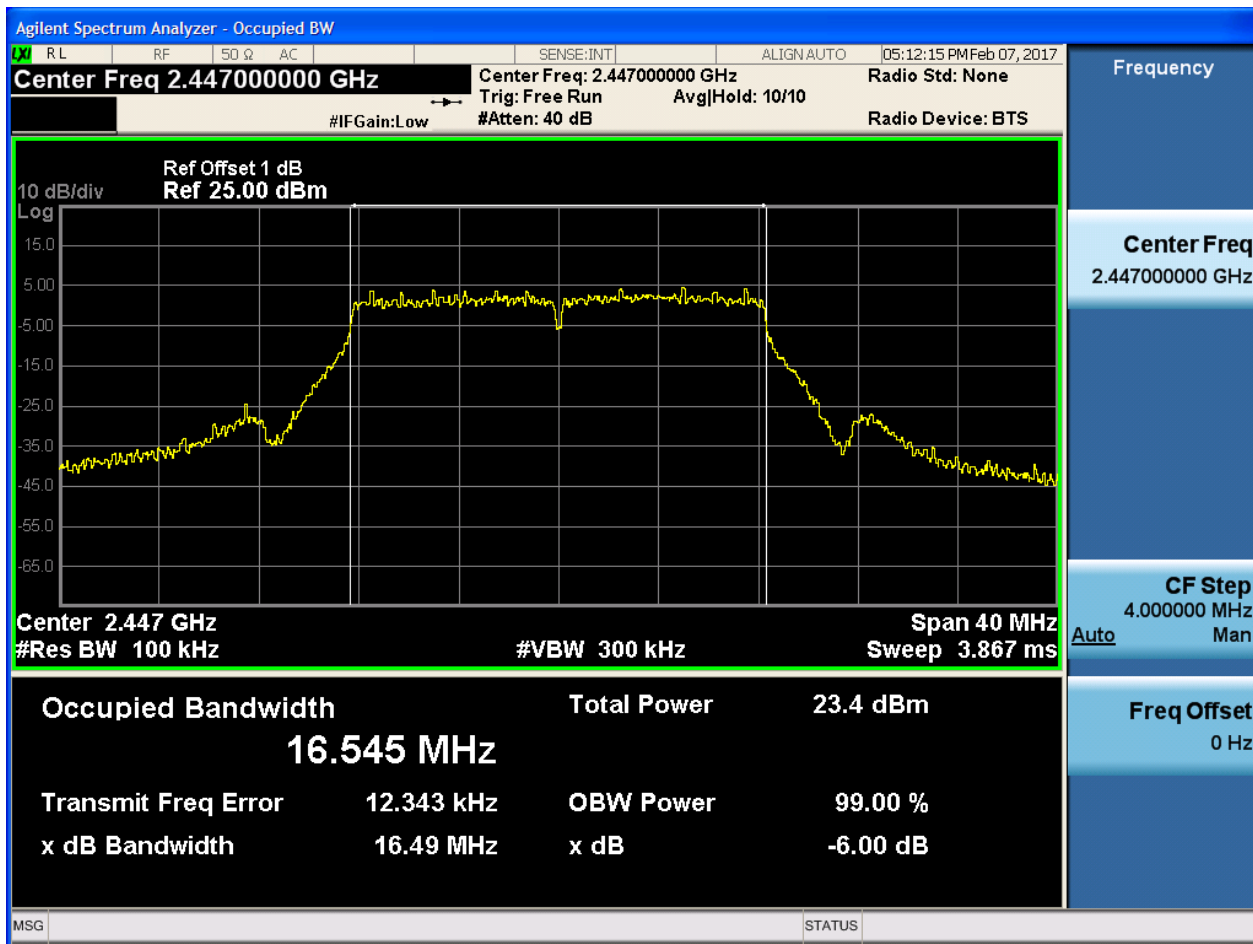


2.9 11G_M@Ant 1



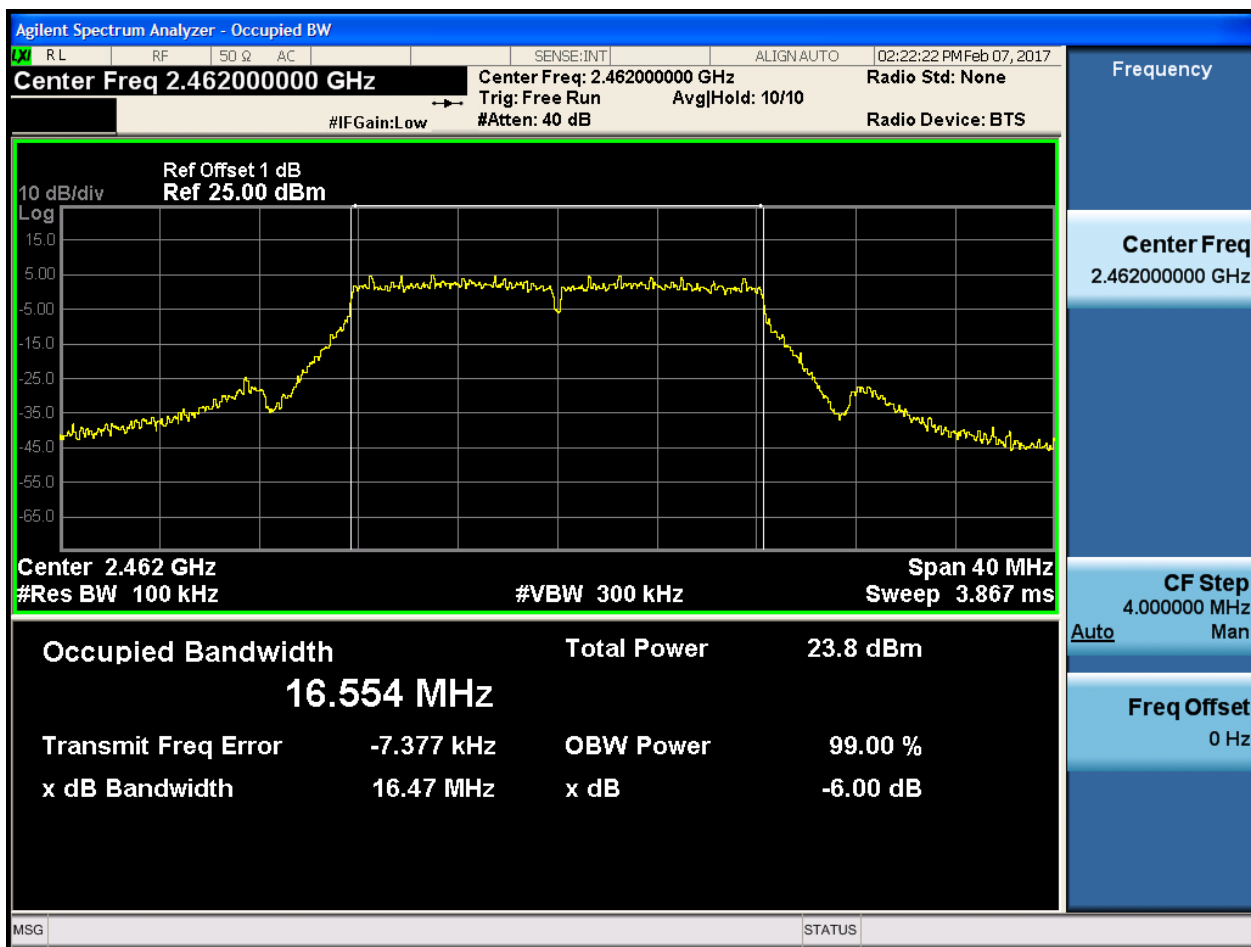


2.10 11G_M@Ant 2



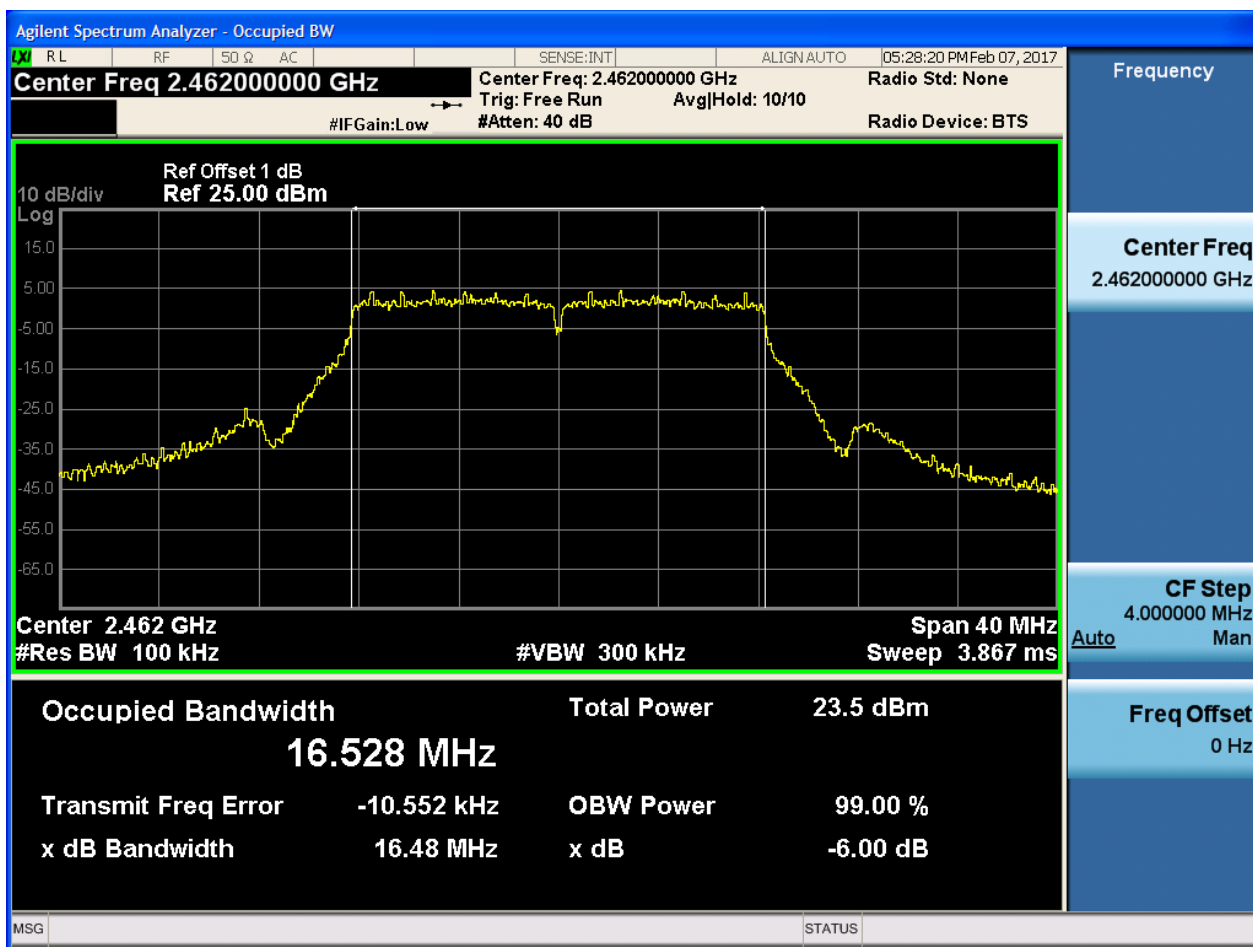


2.11 11G_H@Ant 1



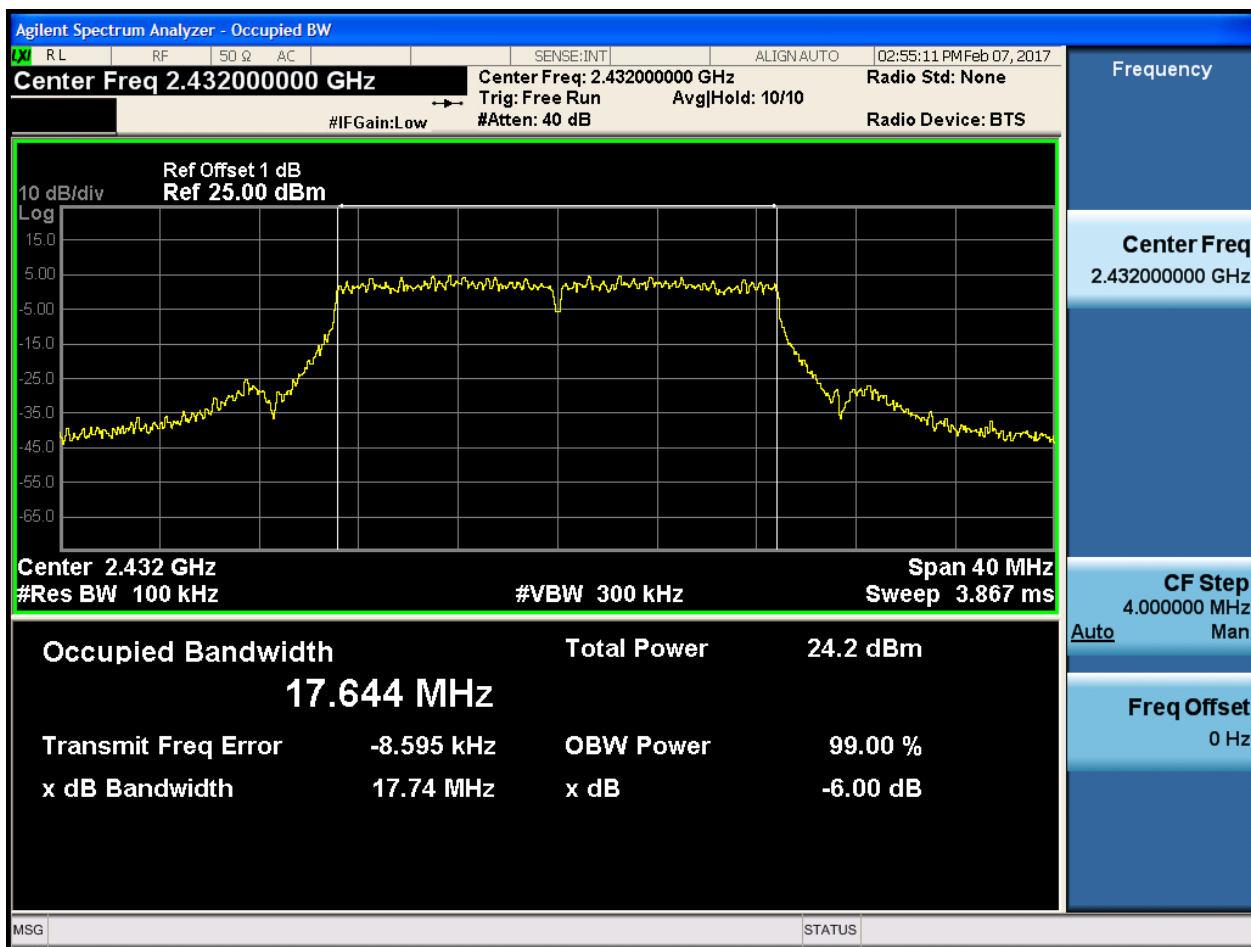


2.12 11G_H@Ant 2



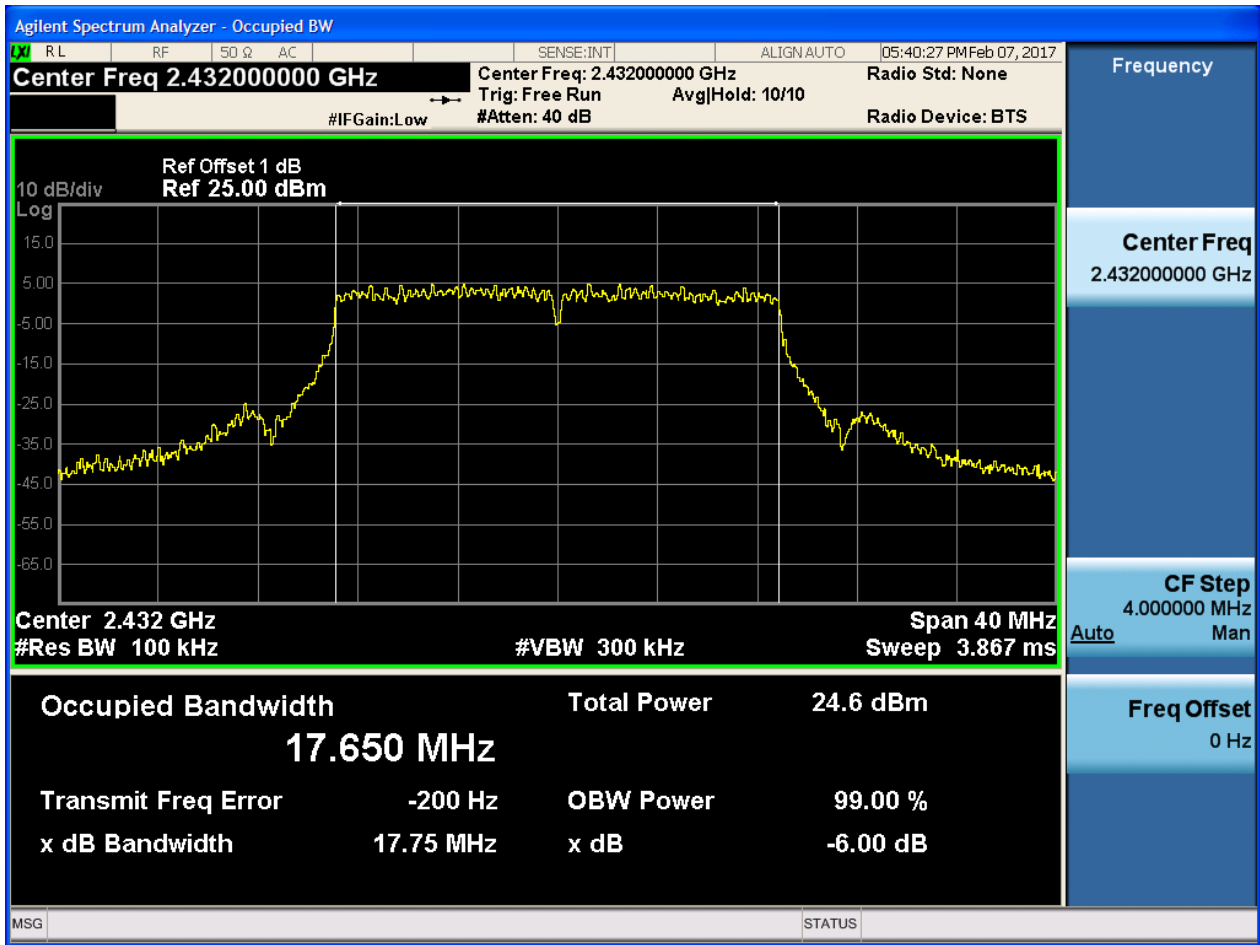


2.13 11N20_L@Ant 1



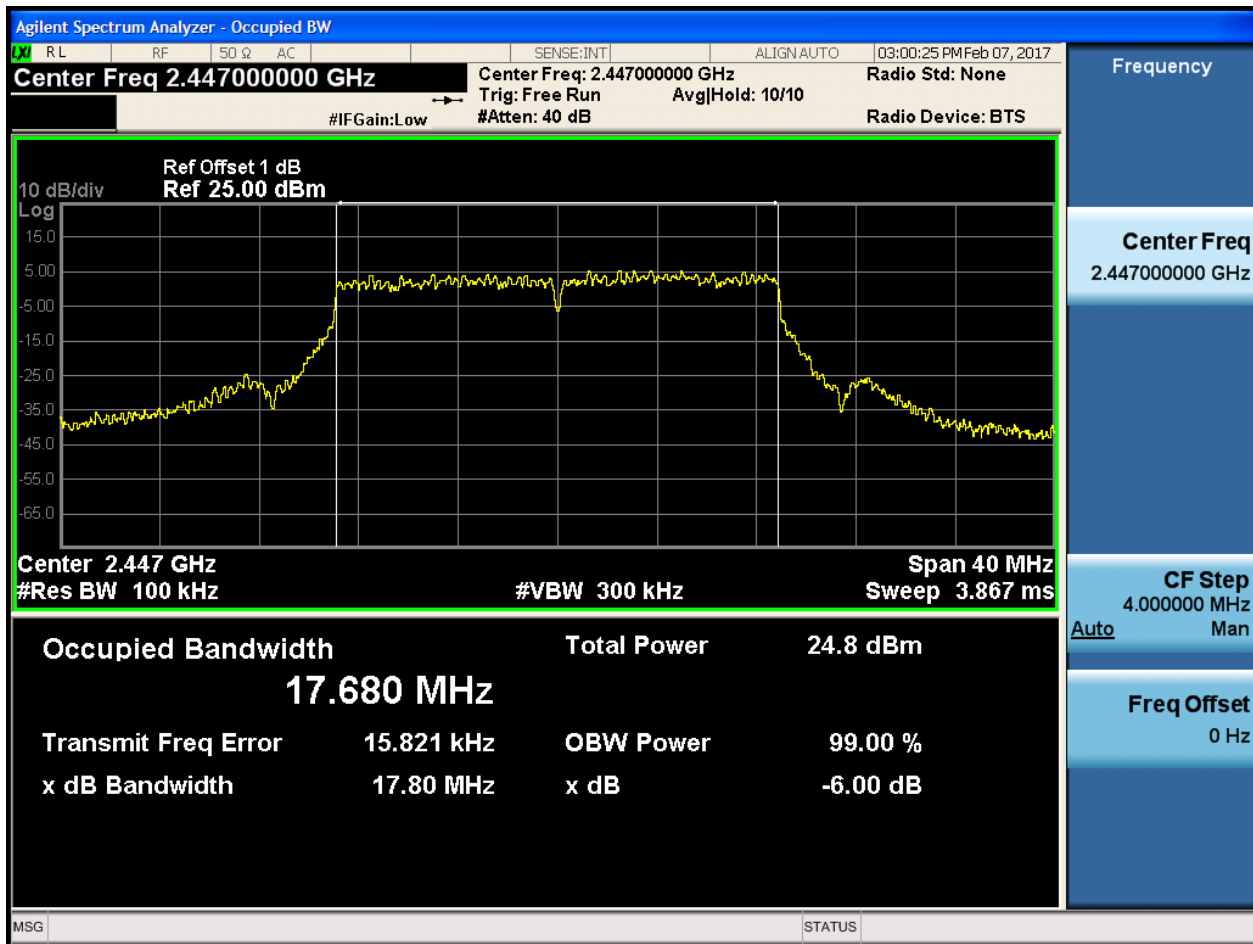


2.14 11N20_L@Ant 2



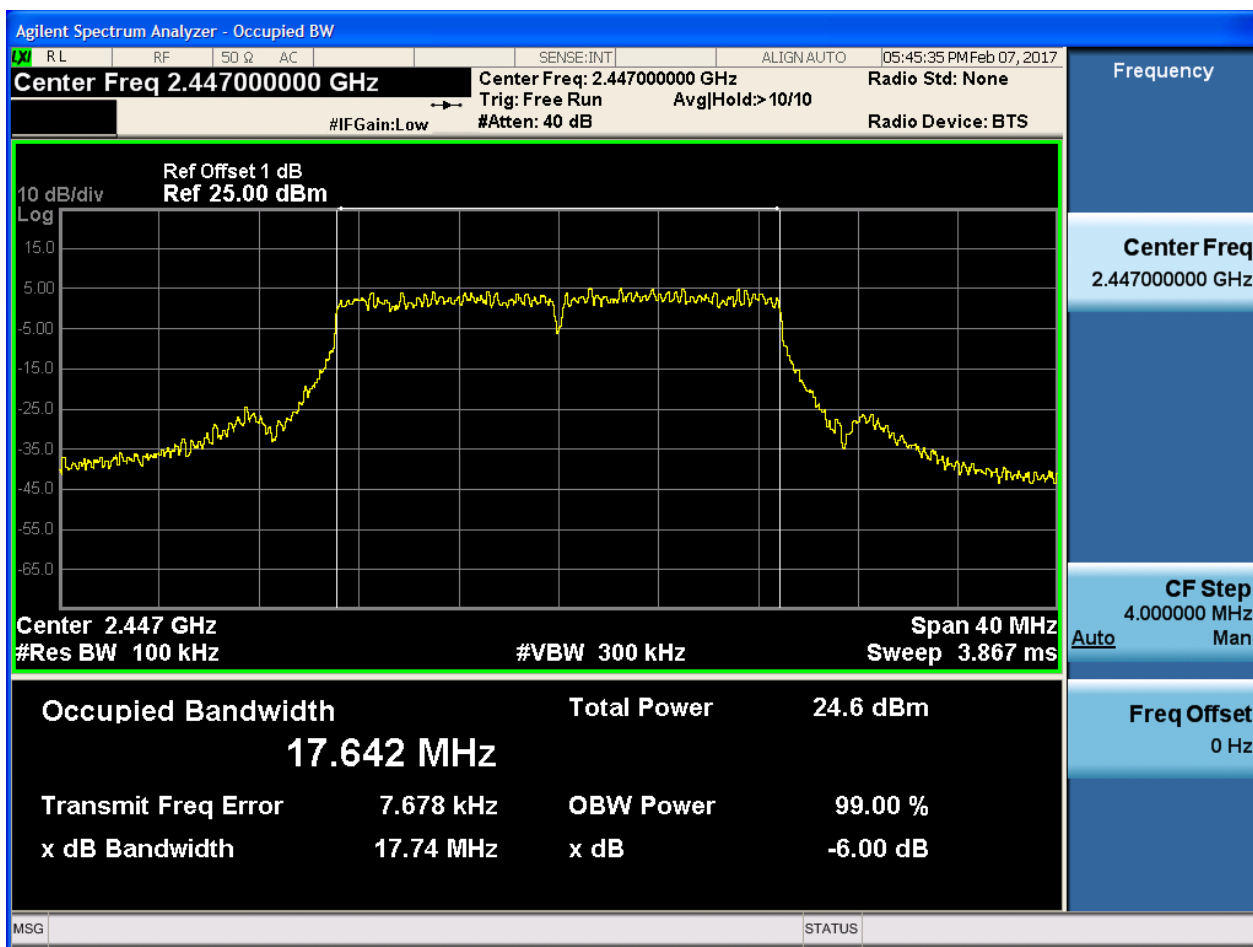


2.15 11N20_M@Ant 1



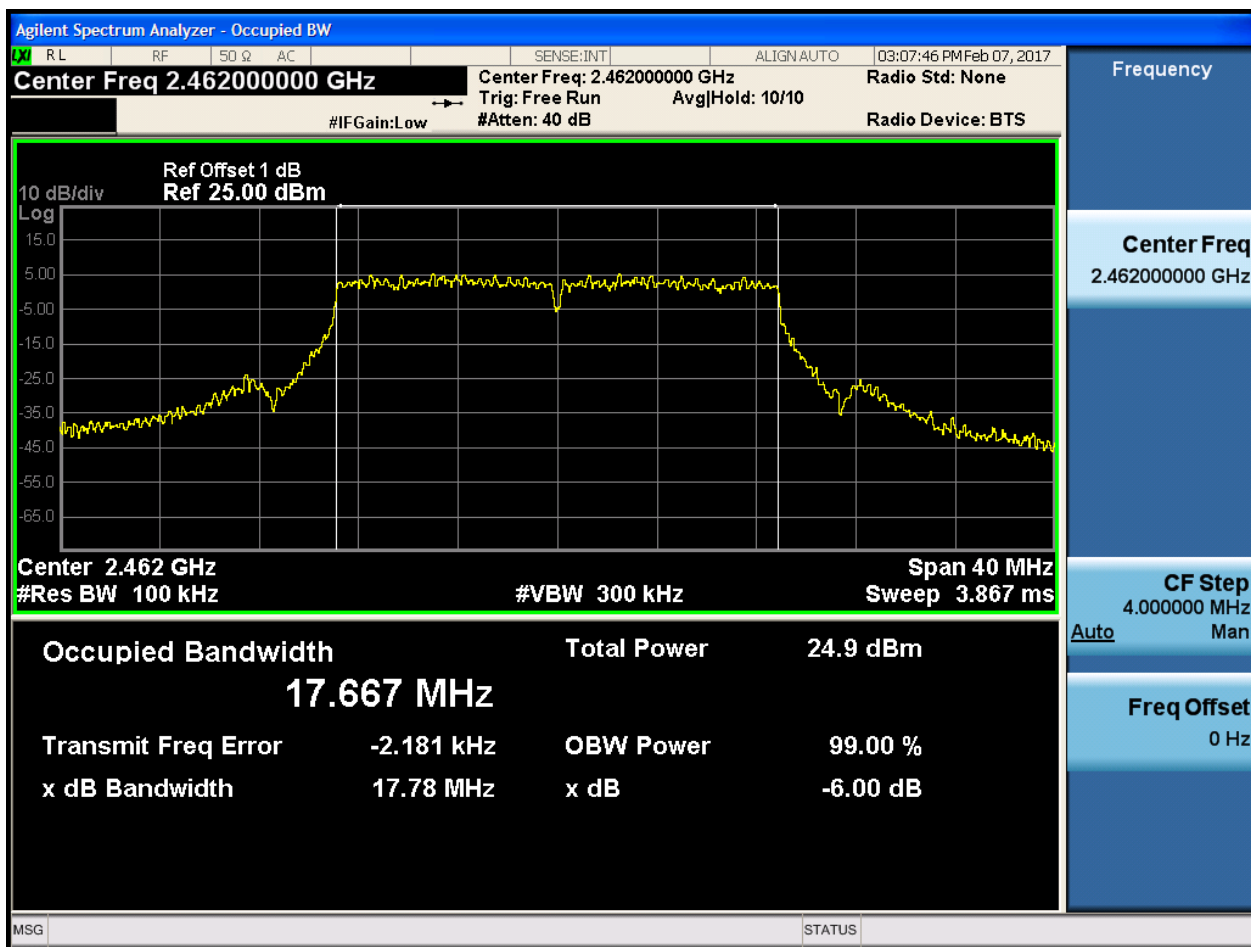


2.16 11N20_M@Ant 2



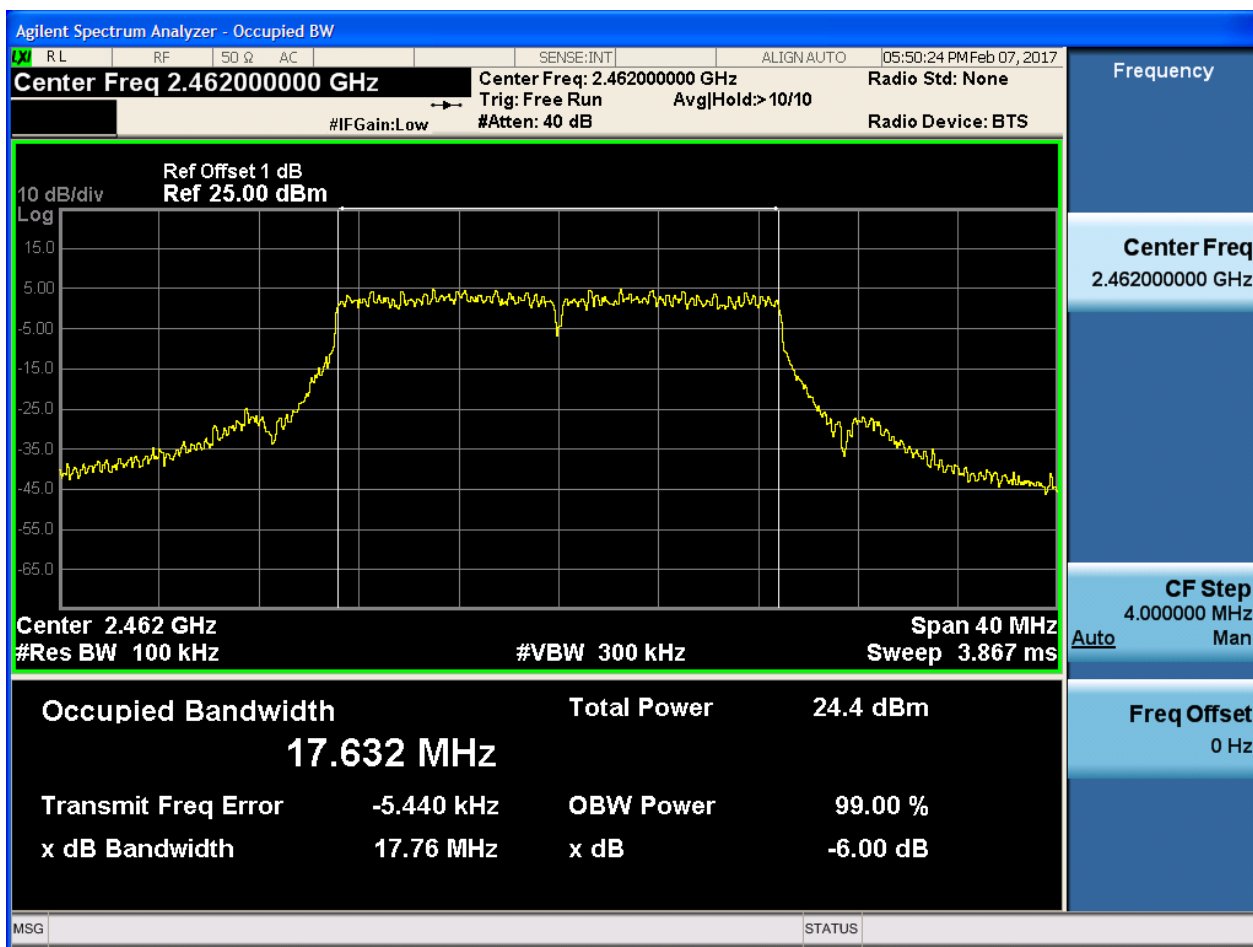


2.17 11N20_H@Ant 1



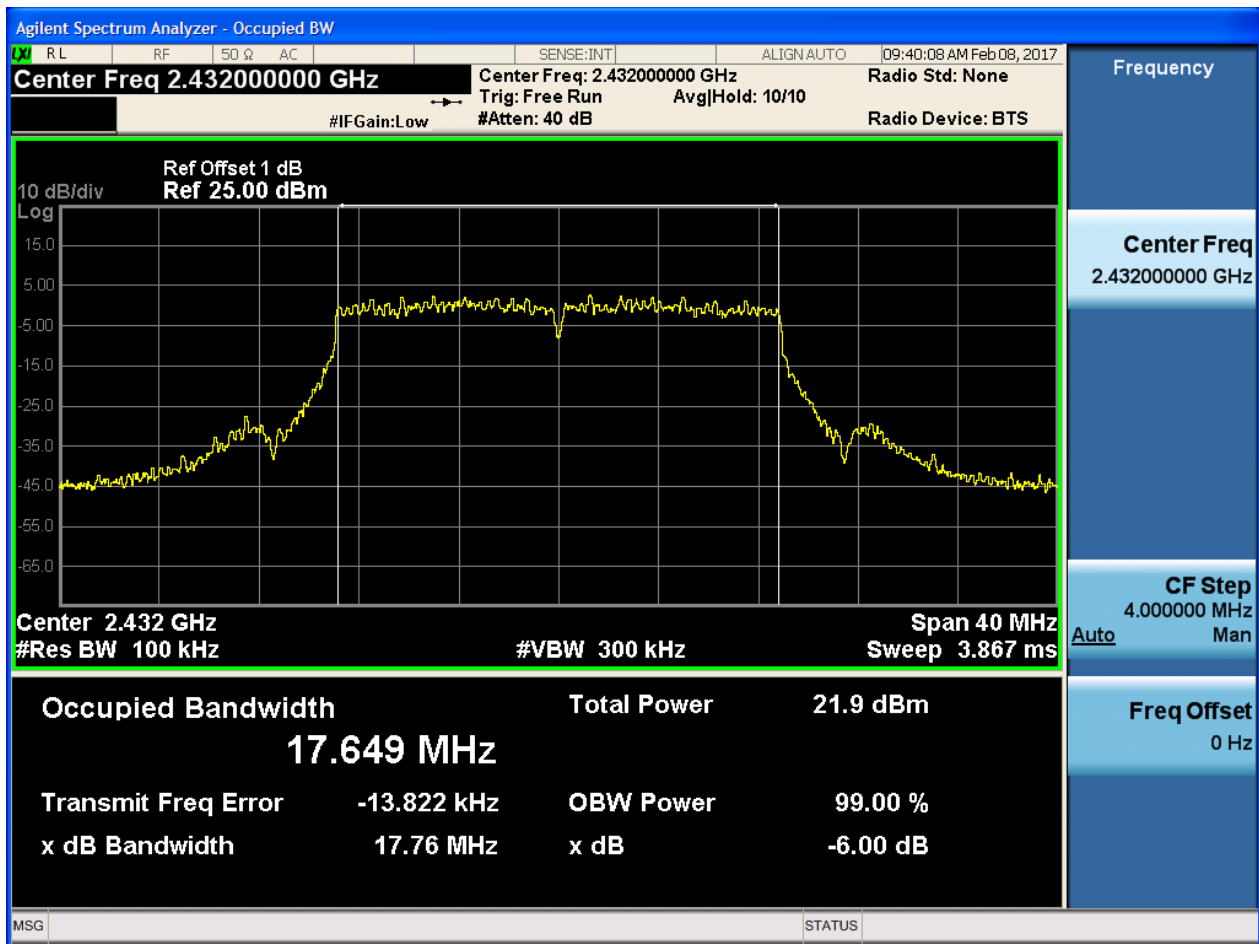


2.18 11N20_H@Ant 2



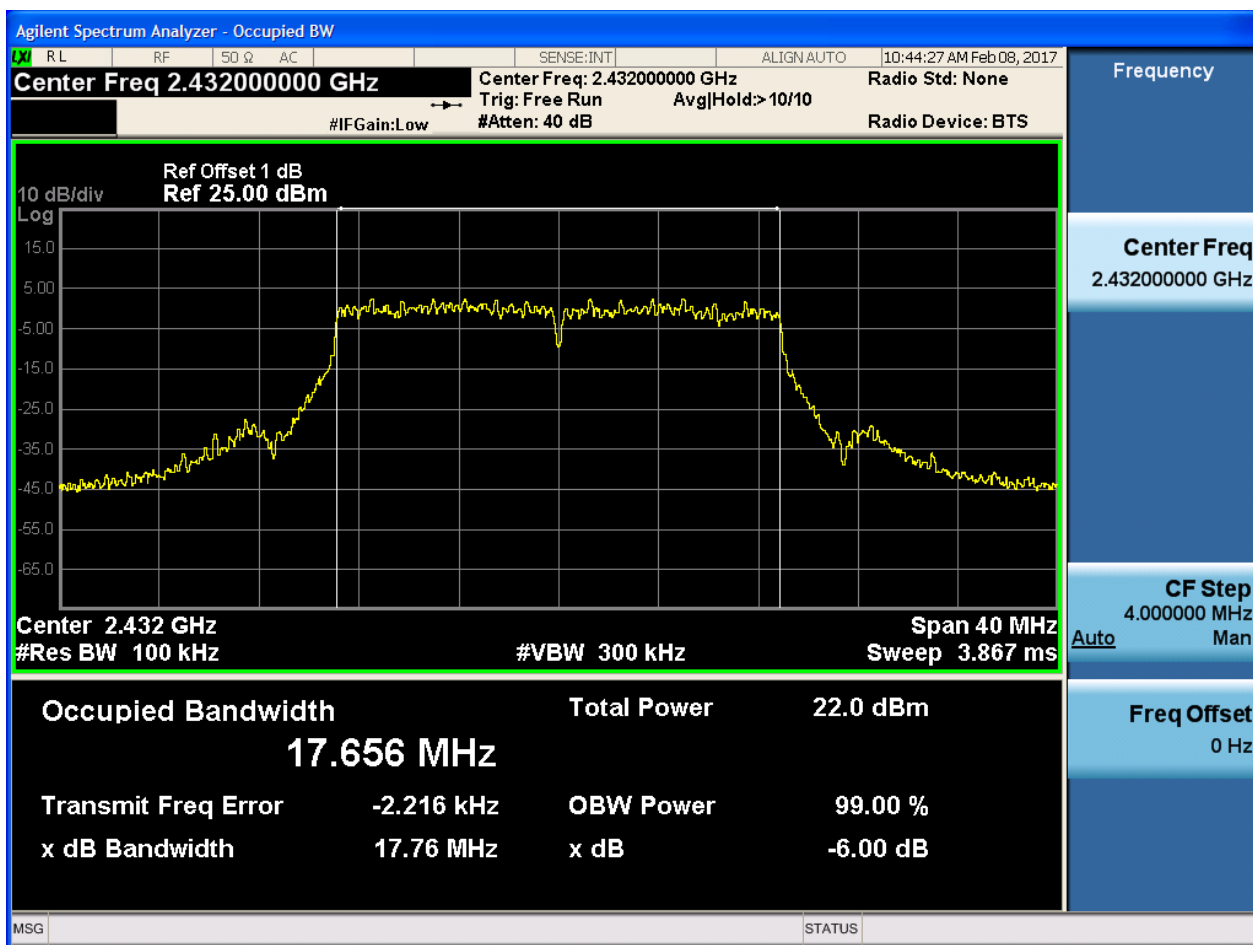


2.19 11N20m_L@Ant 1



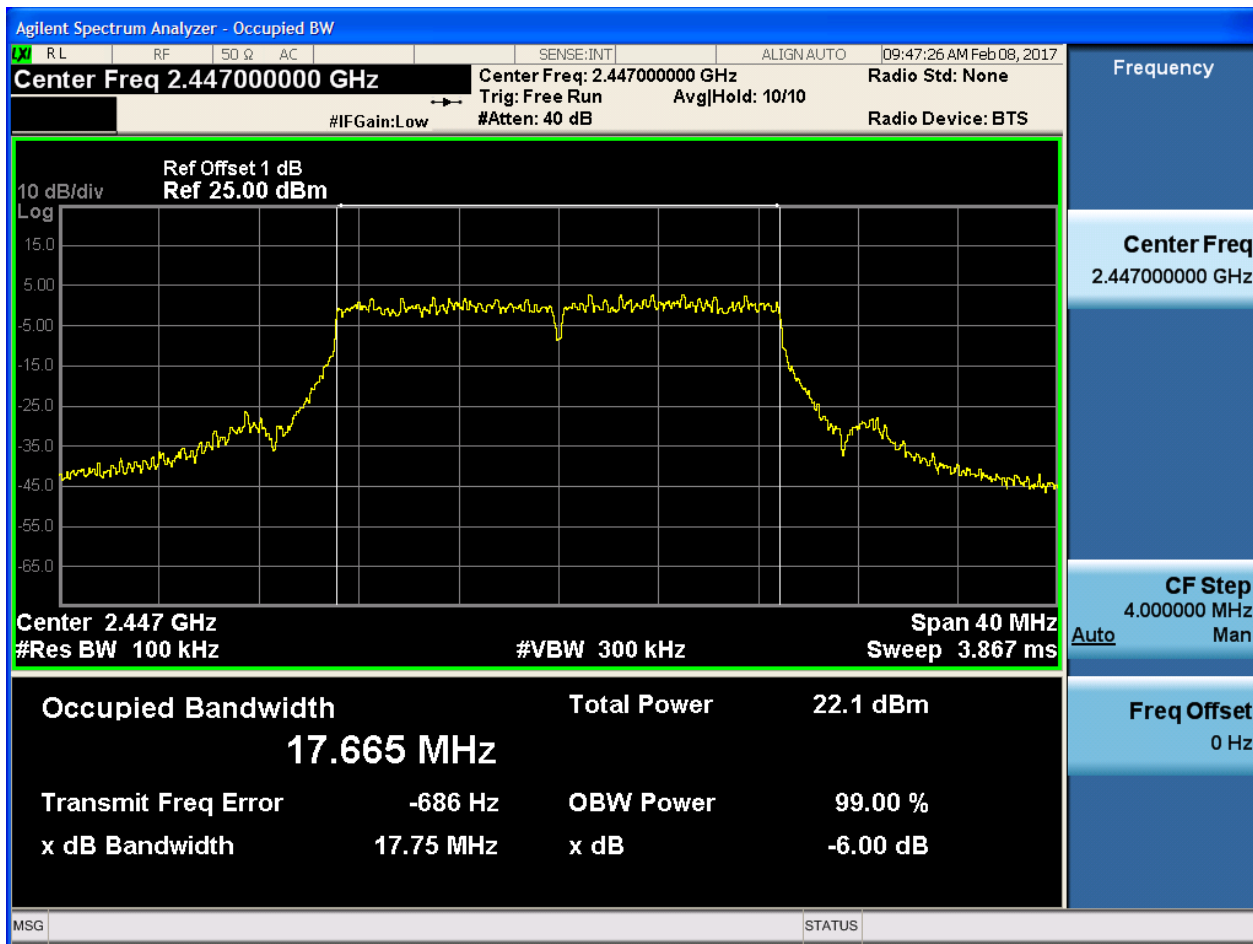


2.20 11N20m_L@Ant 2



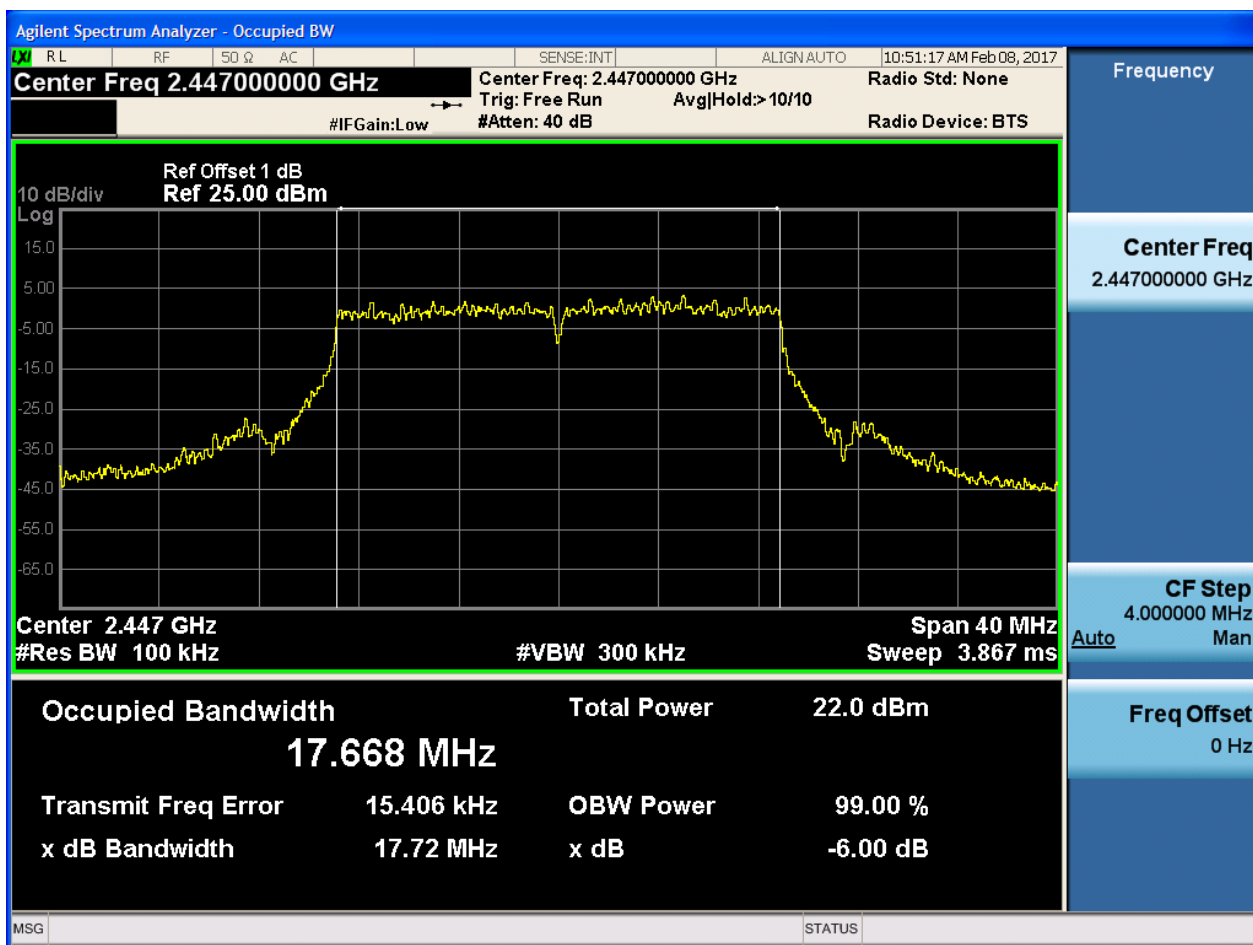


2.21 11N20m_M@Ant 1



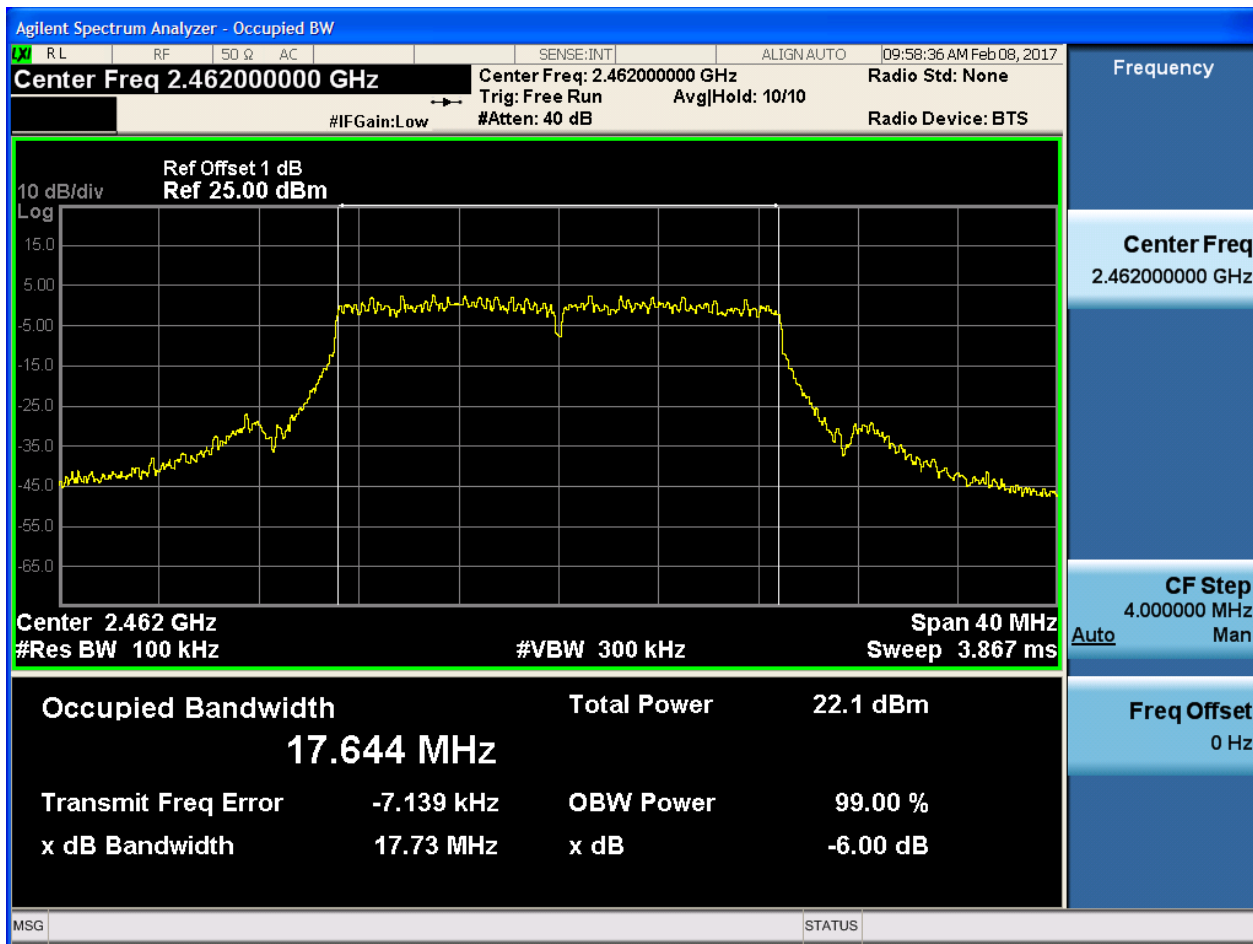


2.22 11N20m_M@Ant 2



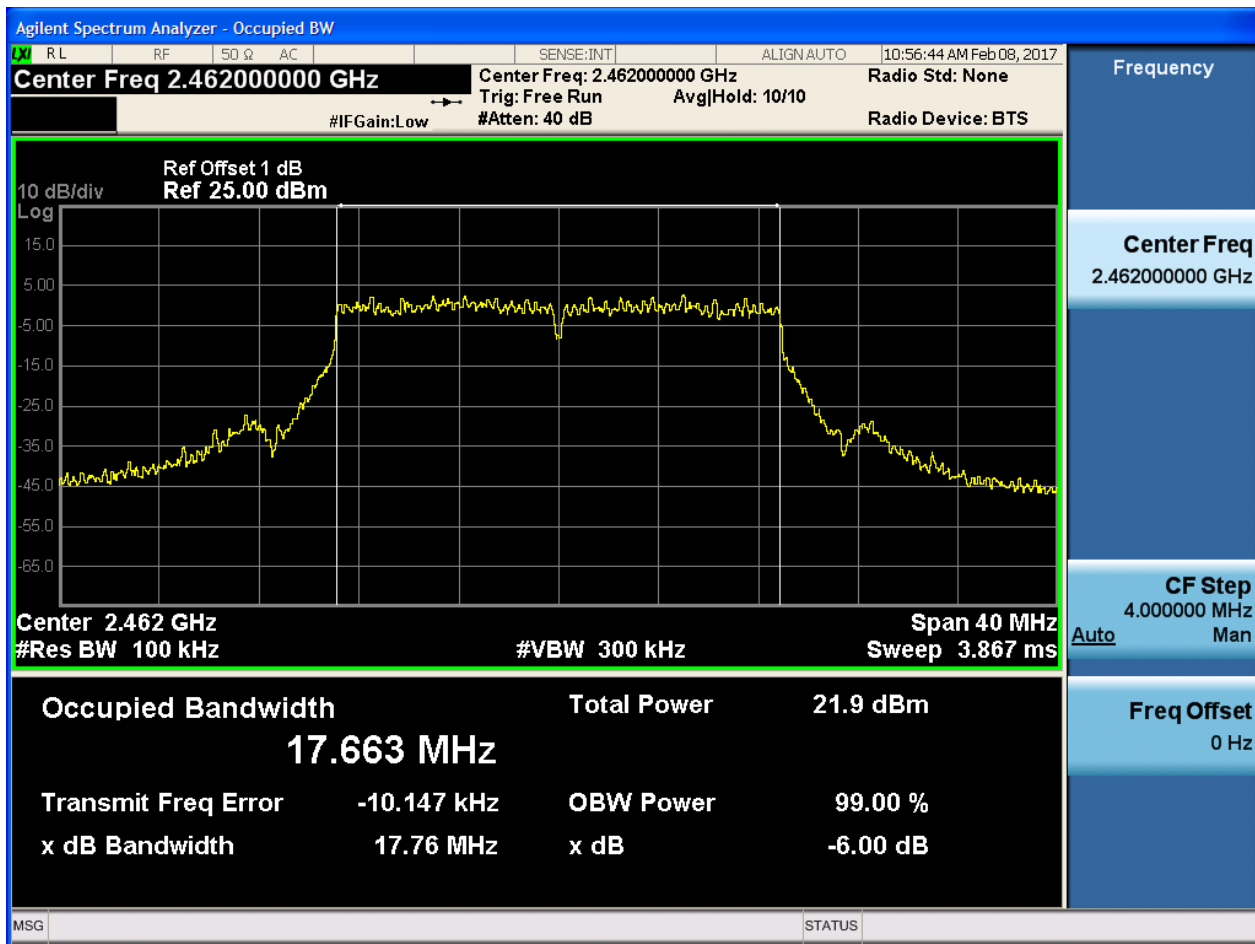


2.23 11N20m_H@Ant 1



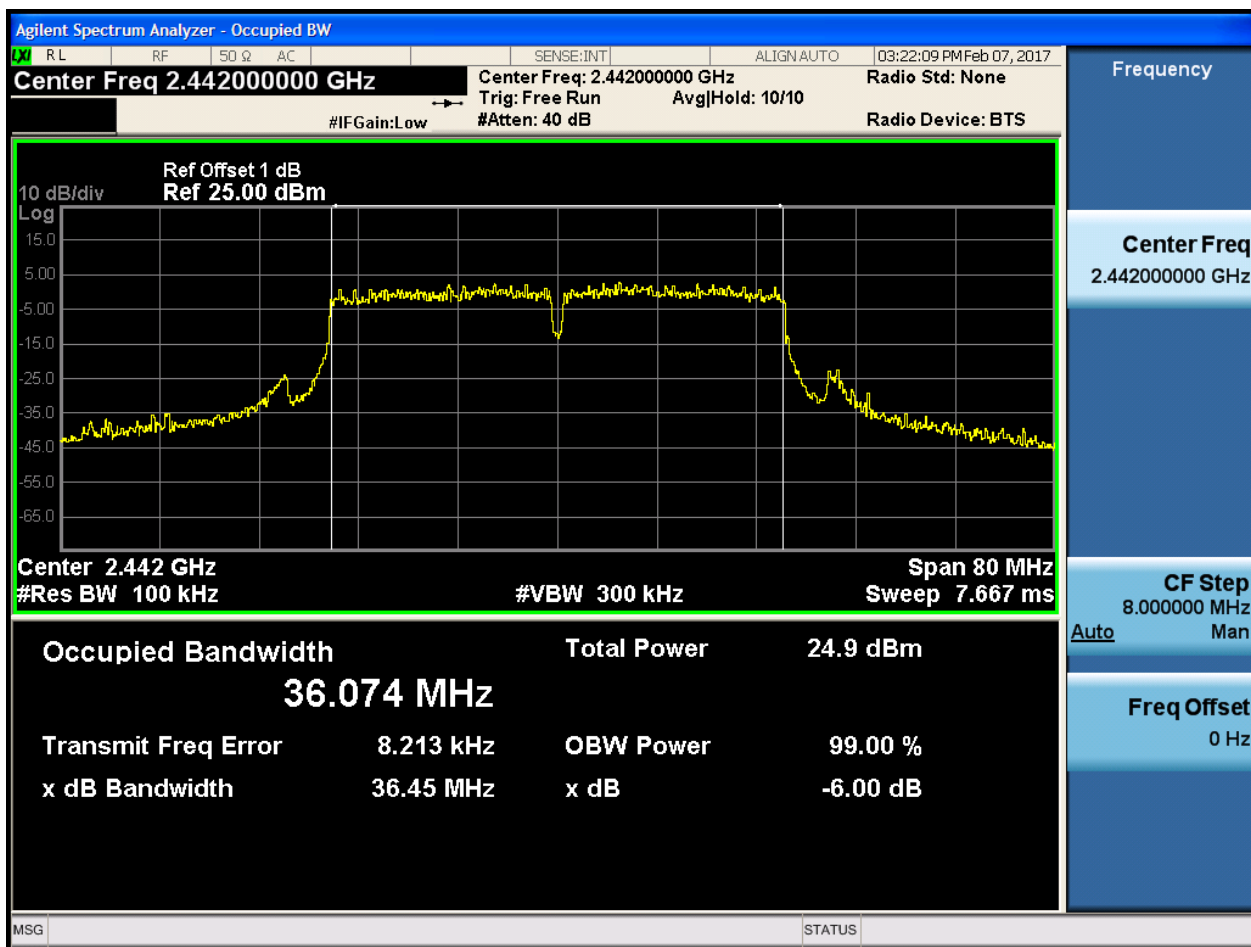


2.24 11N20m_H@Ant 2



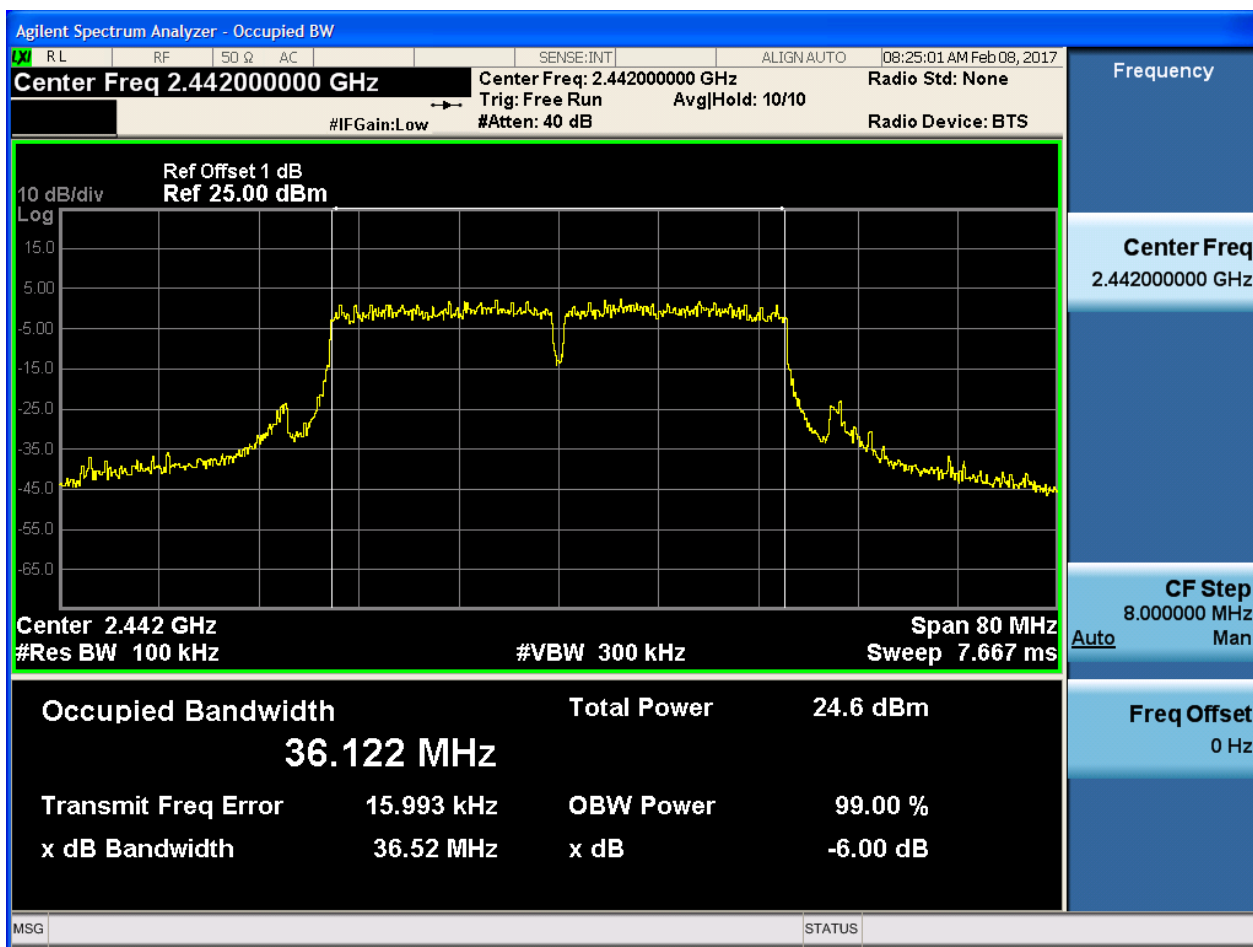


2.25 11N40_L@Ant 1



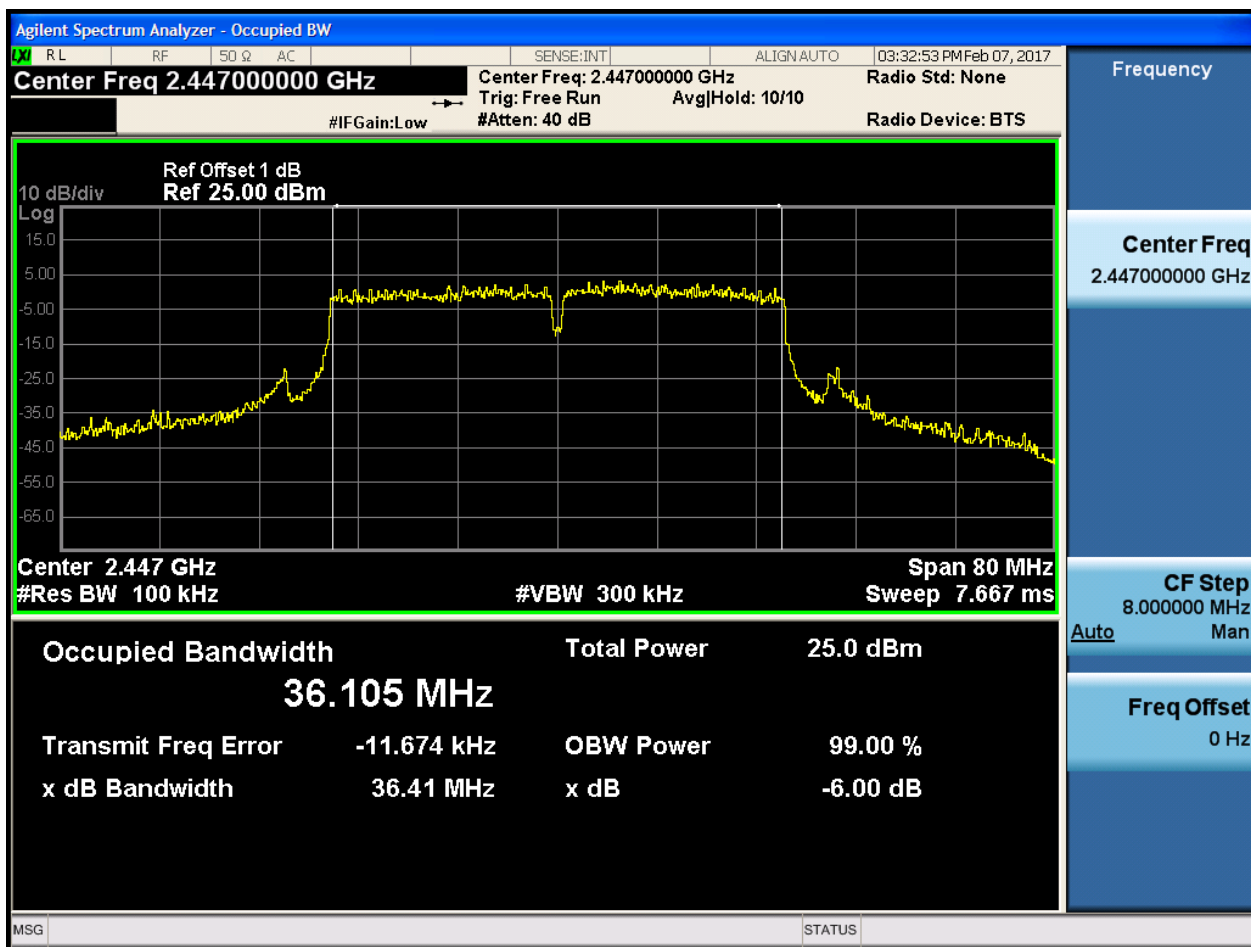


2.26 11N40_L@Ant 2



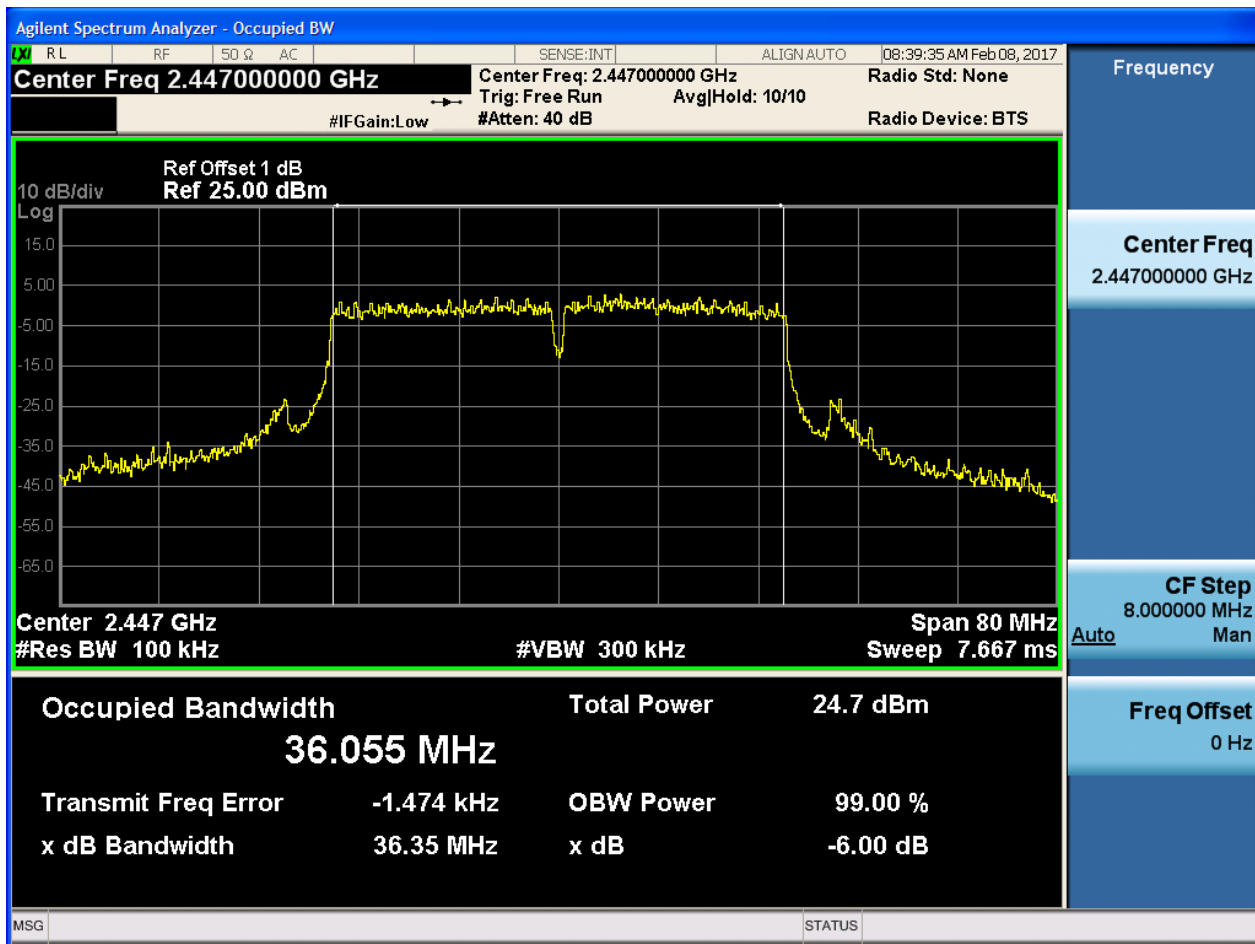


2.27 11N40_M@Ant 1



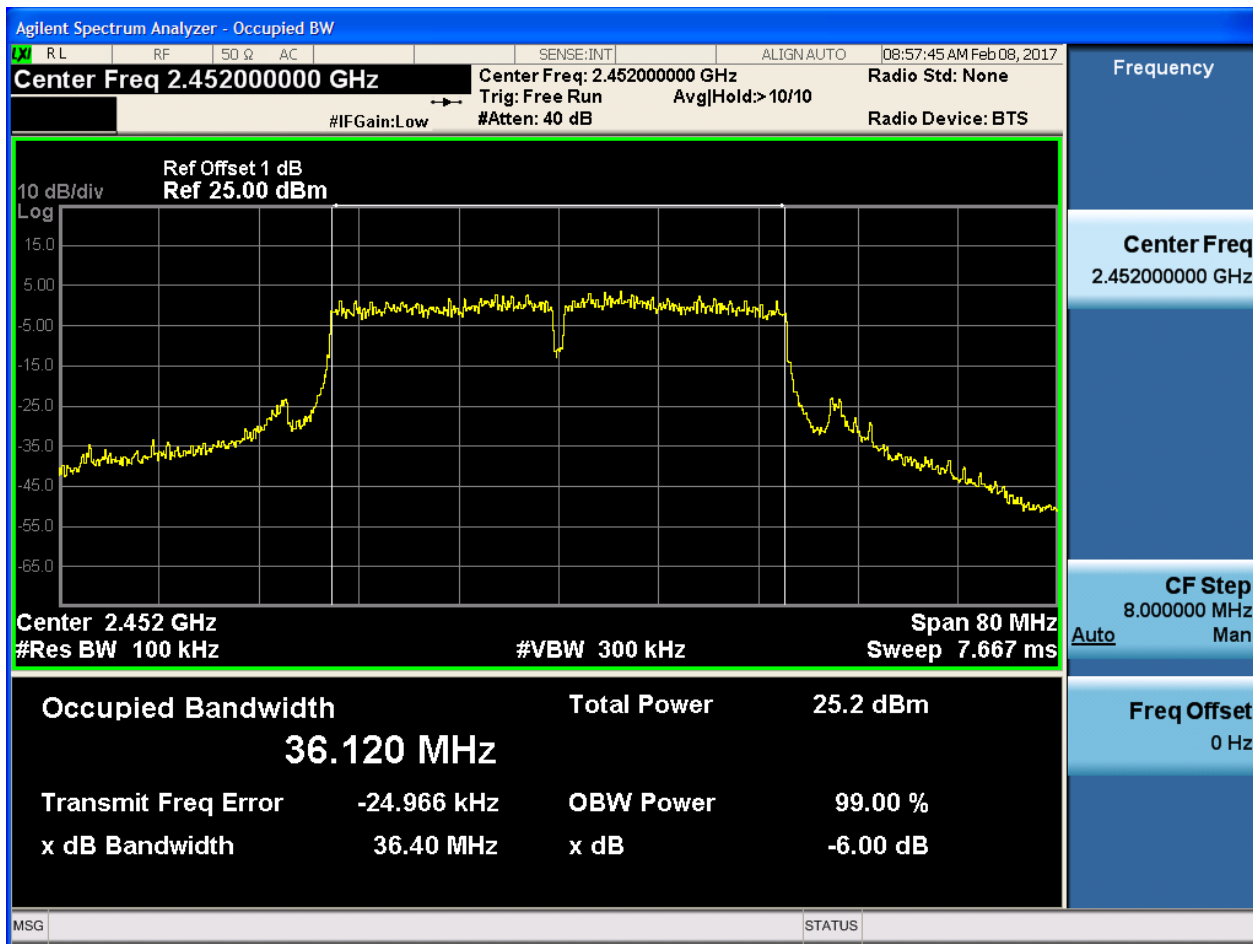


2.28 11N40_M@Ant 2



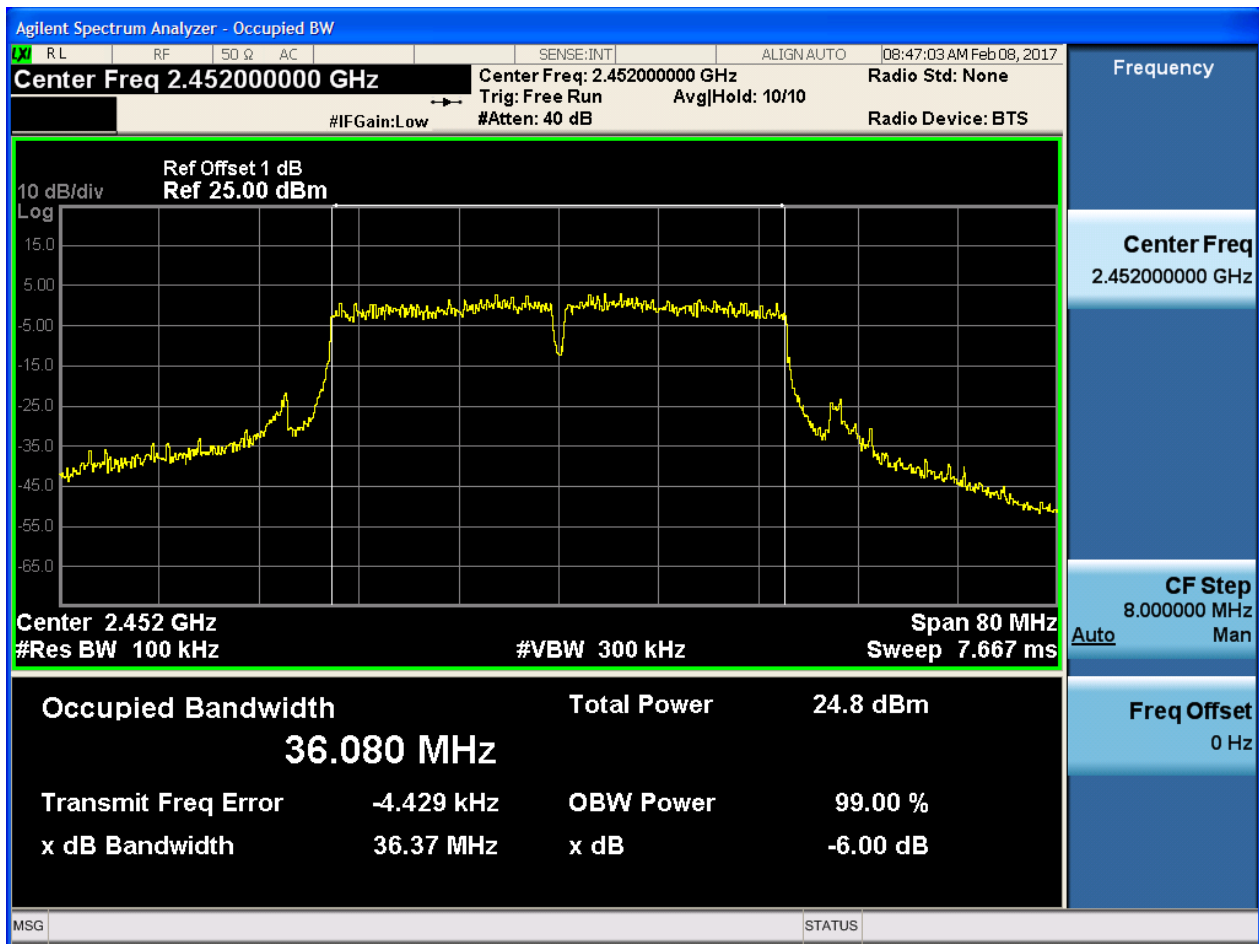


2.29 11N40_H@Ant 1



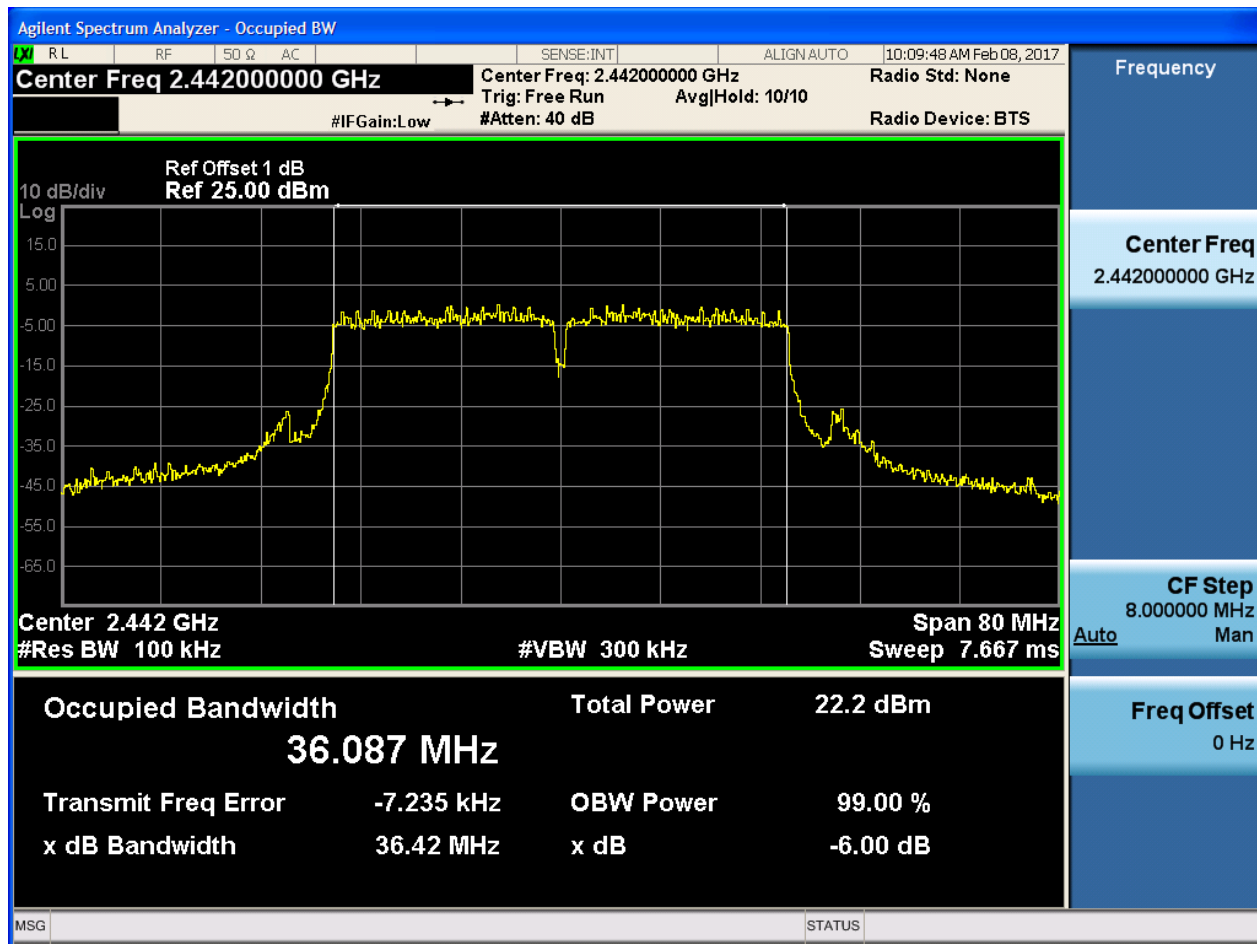


2.30 11N40_H@Ant 2



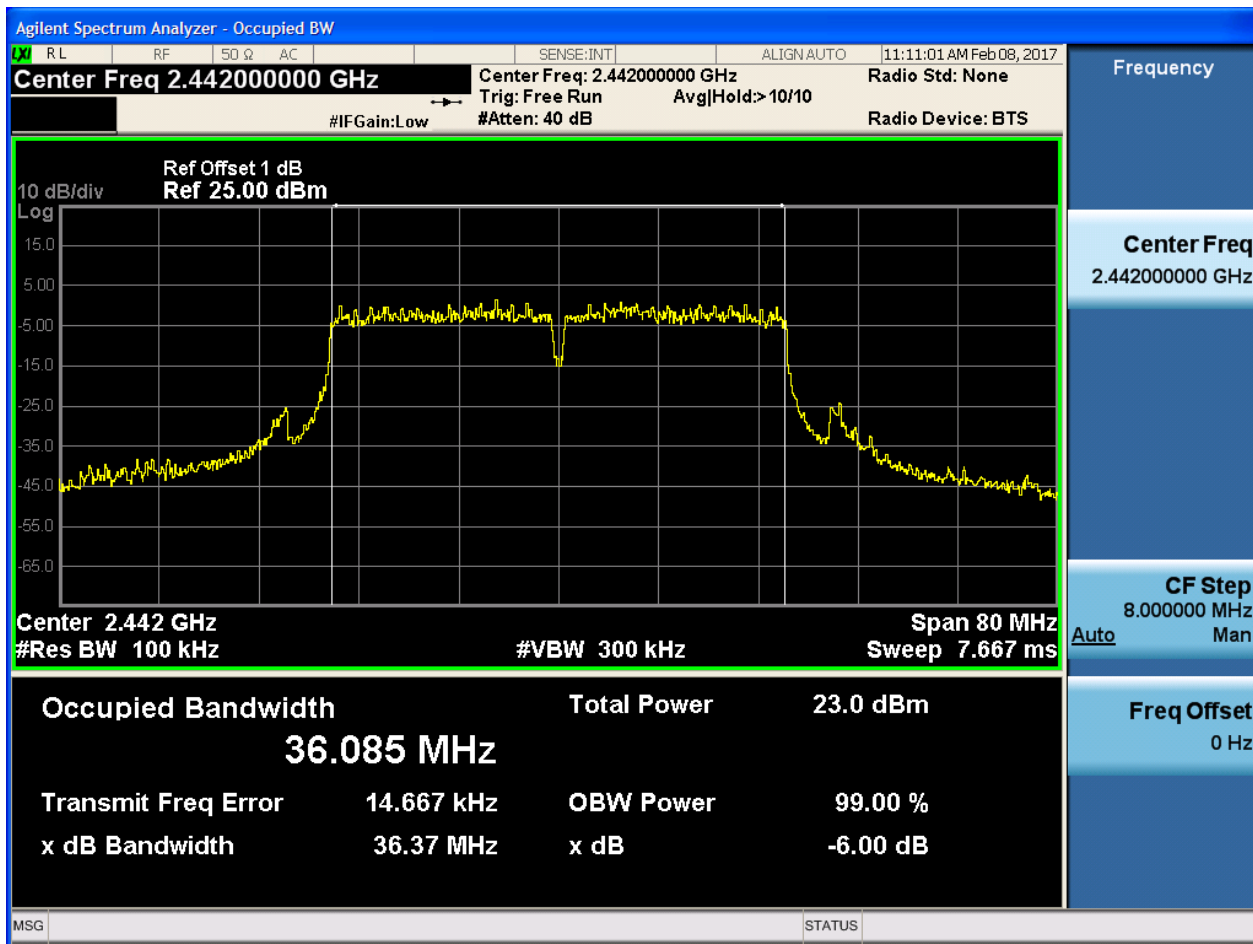


2.31 11N40m_L@Ant 1



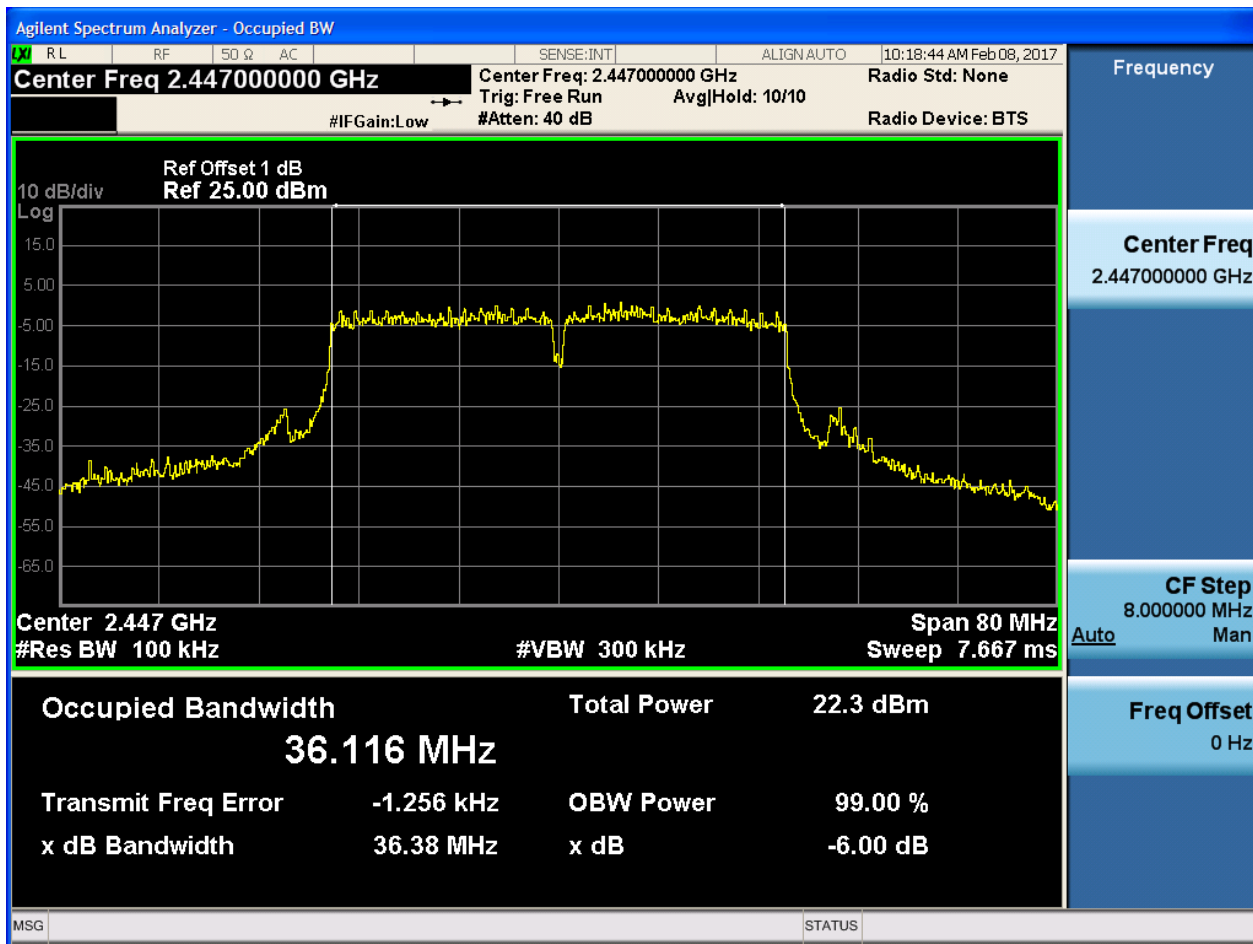


2.32 11N40m_L@Ant 2



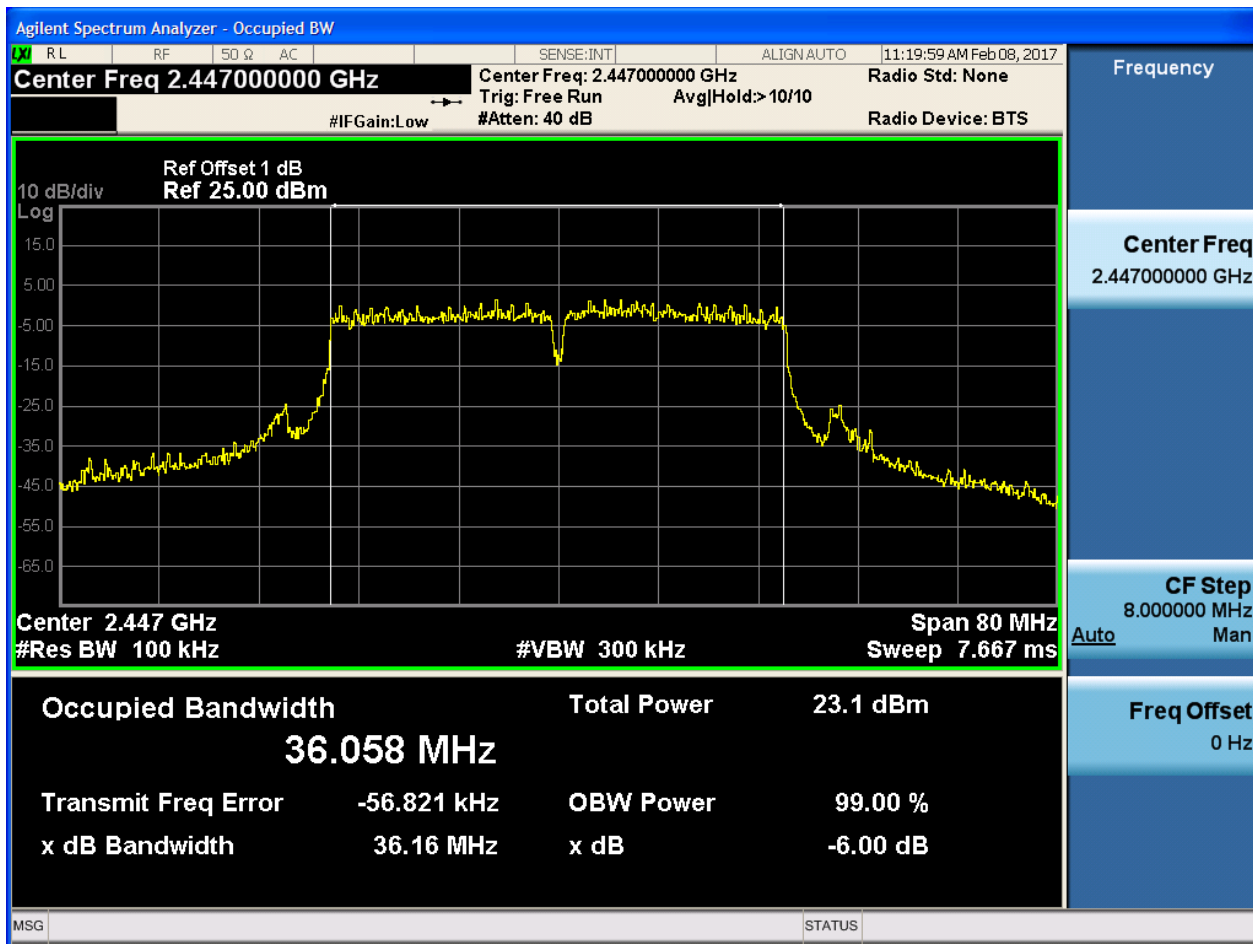


2.33 11N40m_M@Ant 1



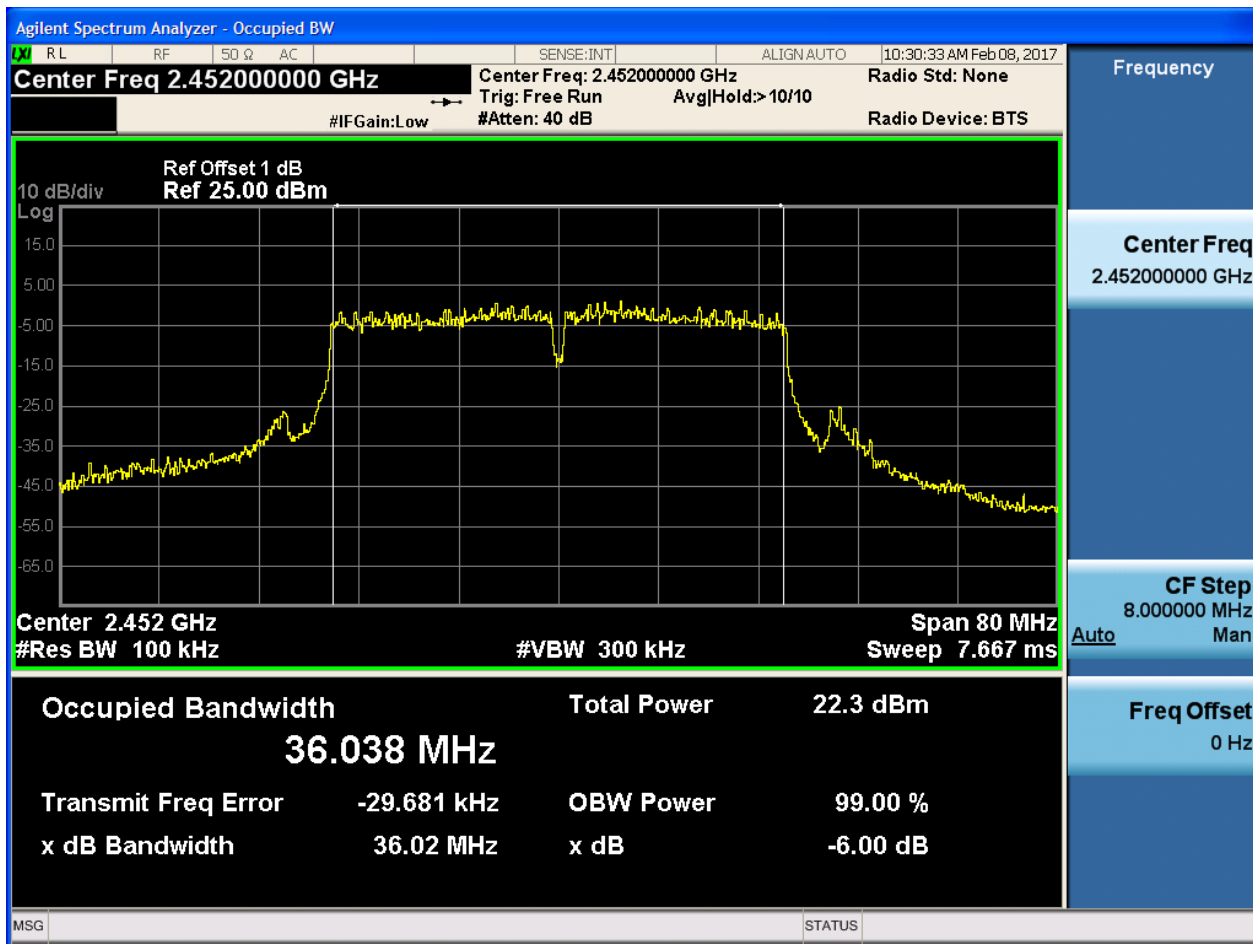


2.34 11N40m_M@Ant 2



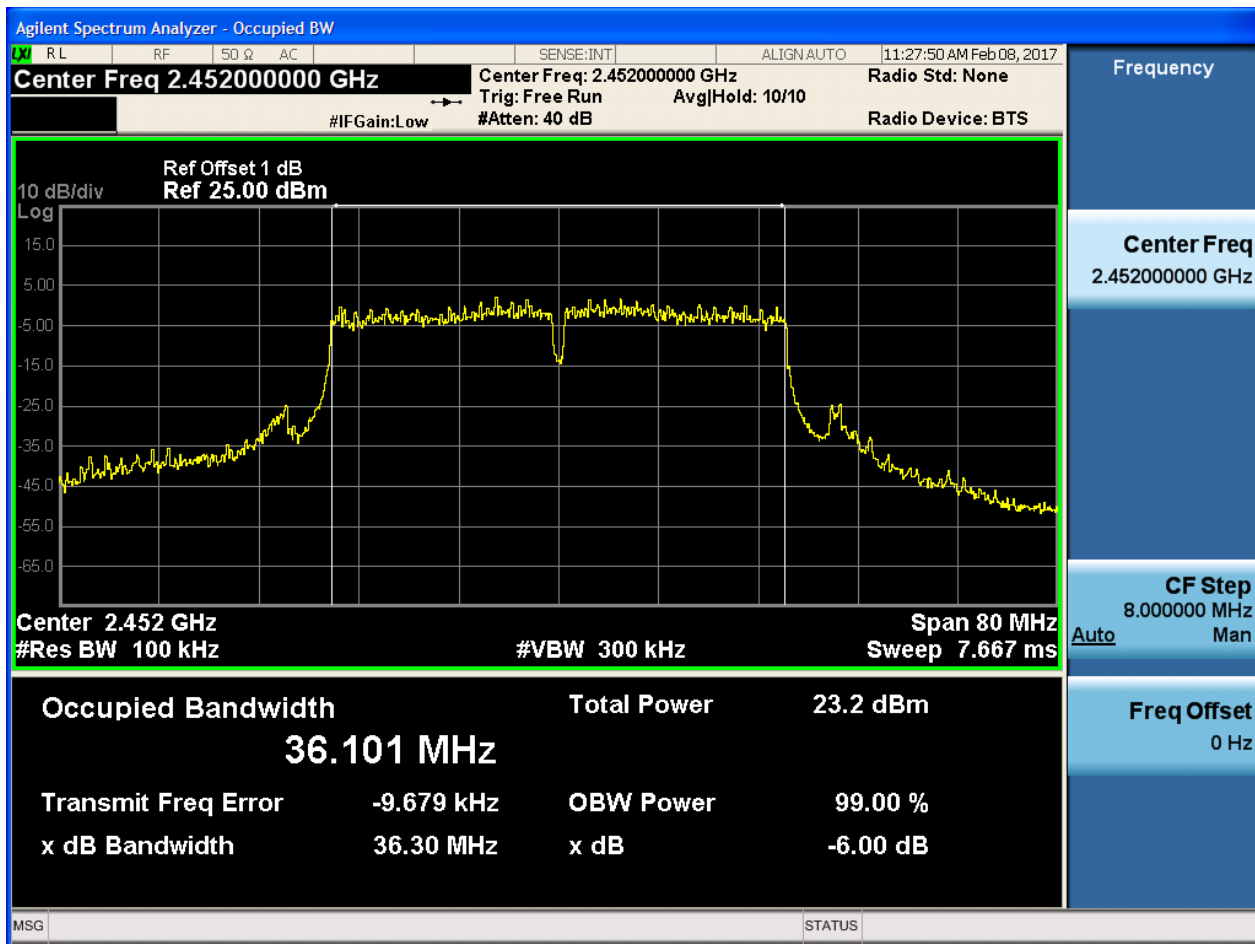


2.35 11N40m_H@Ant 1





2.36 11N40m_H@Ant 2



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

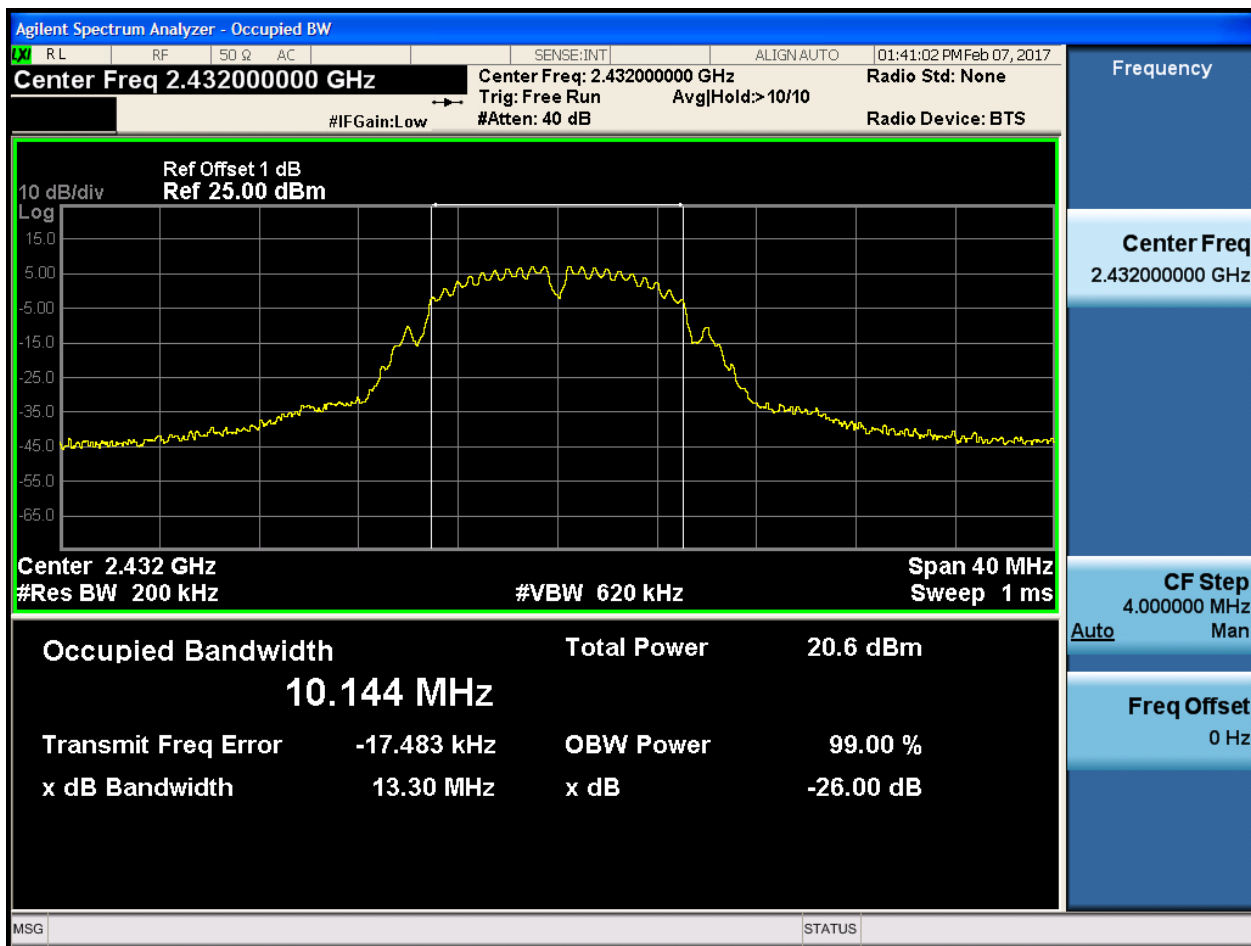
Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2432	Ant 1	10.14	pass
11B	L	2432	Ant 2	10.15	pass
11B	M	2447	Ant 1	10.16	pass
11B	M	2447	Ant 2	10.16	pass
11B	H	2462	Ant 1	10.16	pass
11B	H	2462	Ant 2	10.16	pass
11G	L	2432	Ant 1	16.73	pass
11G	L	2432	Ant 2	16.70	pass
11G	M	2447	Ant 1	16.74	pass
11G	M	2447	Ant 2	16.74	pass
11G	H	2462	Ant 1	16.73	pass
11G	H	2462	Ant 2	16.73	pass
11N20	L	2432	Ant 1	17.71	pass
11N20	L	2432	Ant 2	17.71	pass
11N20	M	2447	Ant 1	17.76	pass
11N20	M	2447	Ant 2	17.76	pass
11N20	H	2462	Ant 1	17.72	pass
11N20	H	2462	Ant 2	17.72	pass
11N20m	L	2432	Ant 1	17.75	pass
11N20m	L	2432	Ant 2	17.72	pass
11N20m	M	2447	Ant 1	17.75	pass
11N20m	M	2447	Ant 2	17.73	pass
11N20m	H	2462	Ant 1	17.75	pass
11N20m	H	2462	Ant 2	17.76	pass
11N40	L	2442	Ant 1	36.23	pass
11N40	L	2442	Ant 2	36.20	pass
11N40	M	2447	Ant 1	36.11	pass
11N40	M	2447	Ant 2	36.18	pass
11N40	H	2452	Ant 1	36.17	pass
11N40	H	2452	Ant 2	36.17	pass
11N40m	L	2442	Ant 1	36.17	pass
11N40m	L	2442	Ant 2	36.22	pass
11N40m	M	2447	Ant 1	36.20	pass
11N40m	M	2447	Ant 2	36.19	pass



Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11N40m	H	2452	Ant 1	36.18	pass
11N40m	H	2452	Ant 2	36.15	pass

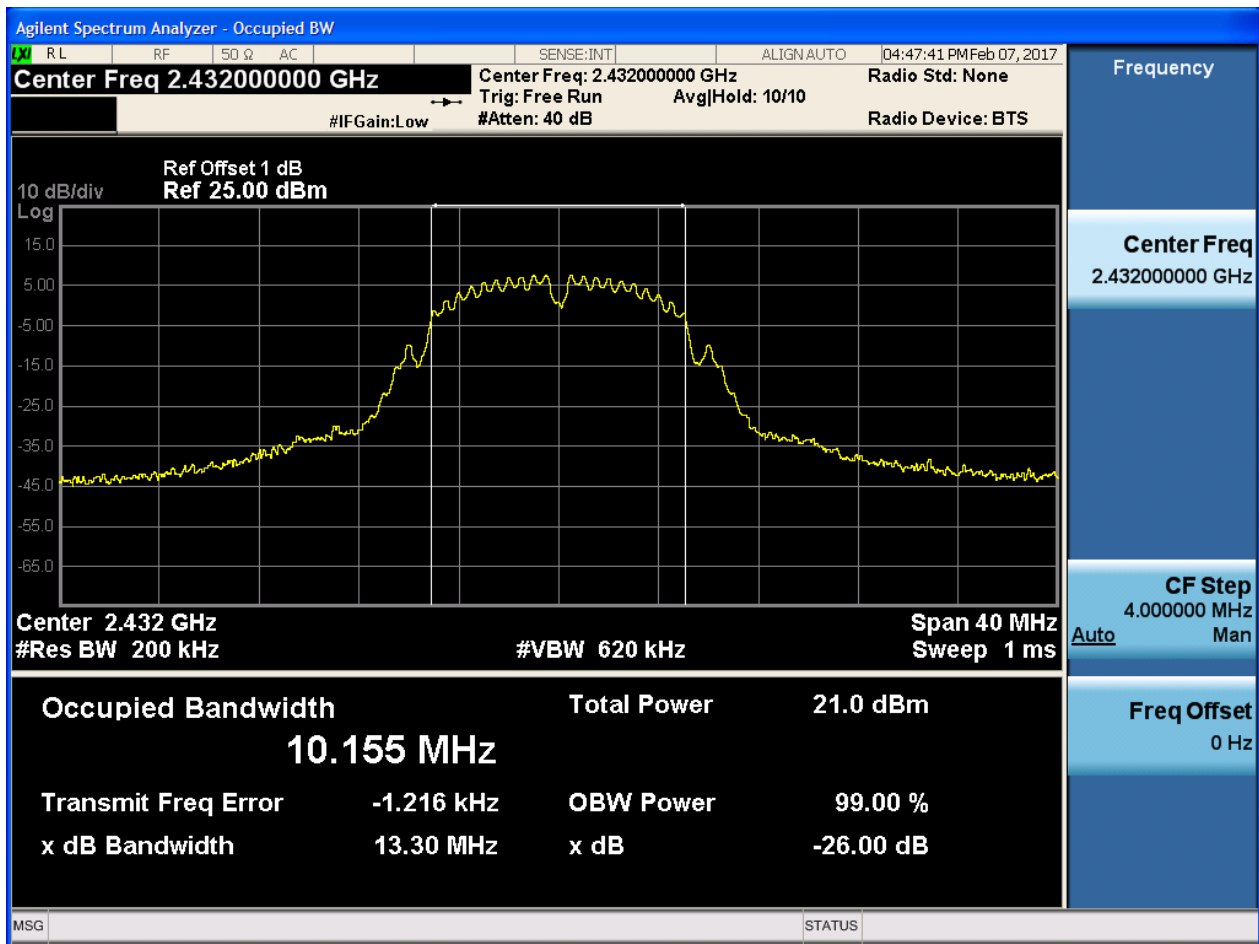
Part II - Test Plots

2.1 11B_L@Ant 1



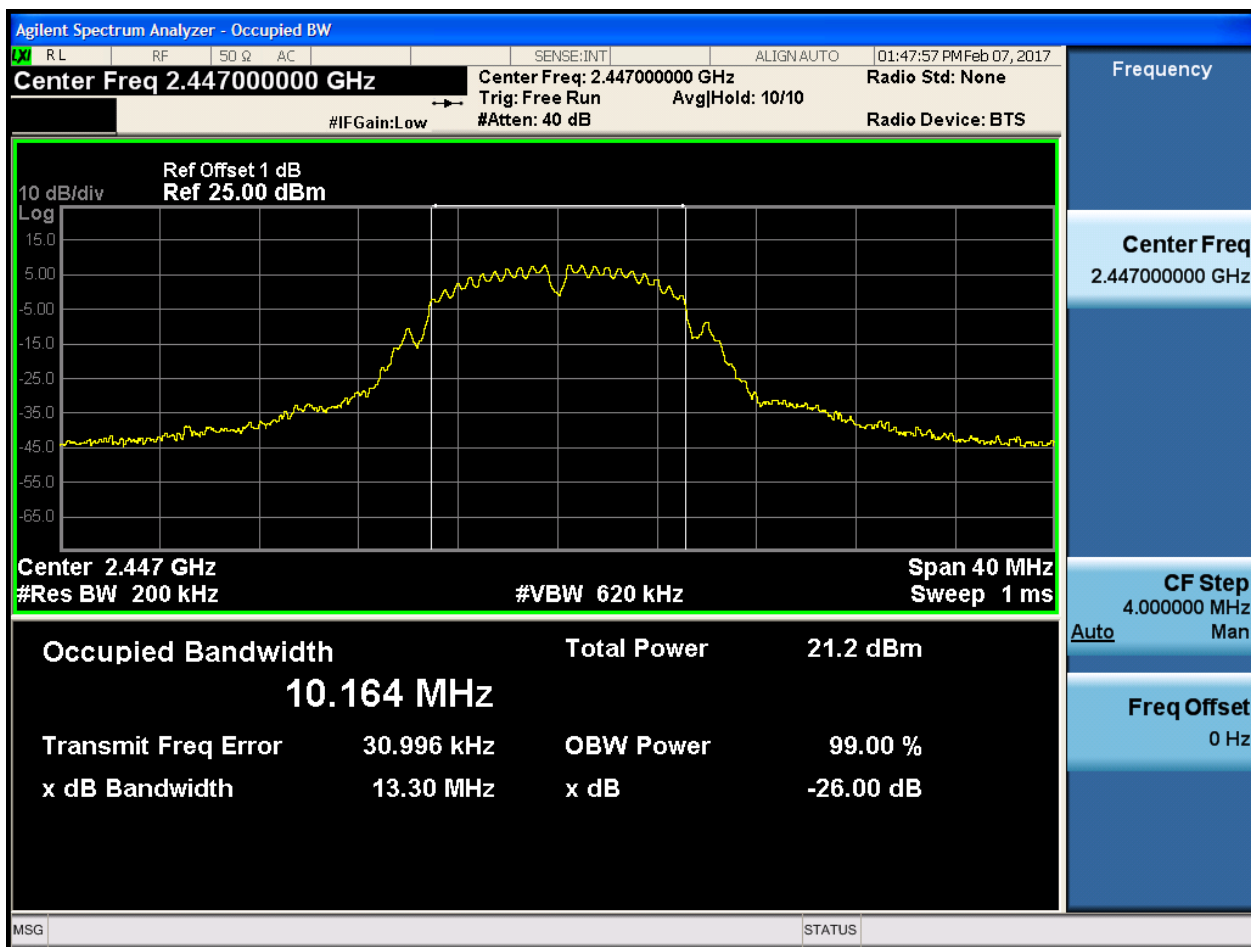


2.2 11B_L@Ant 2



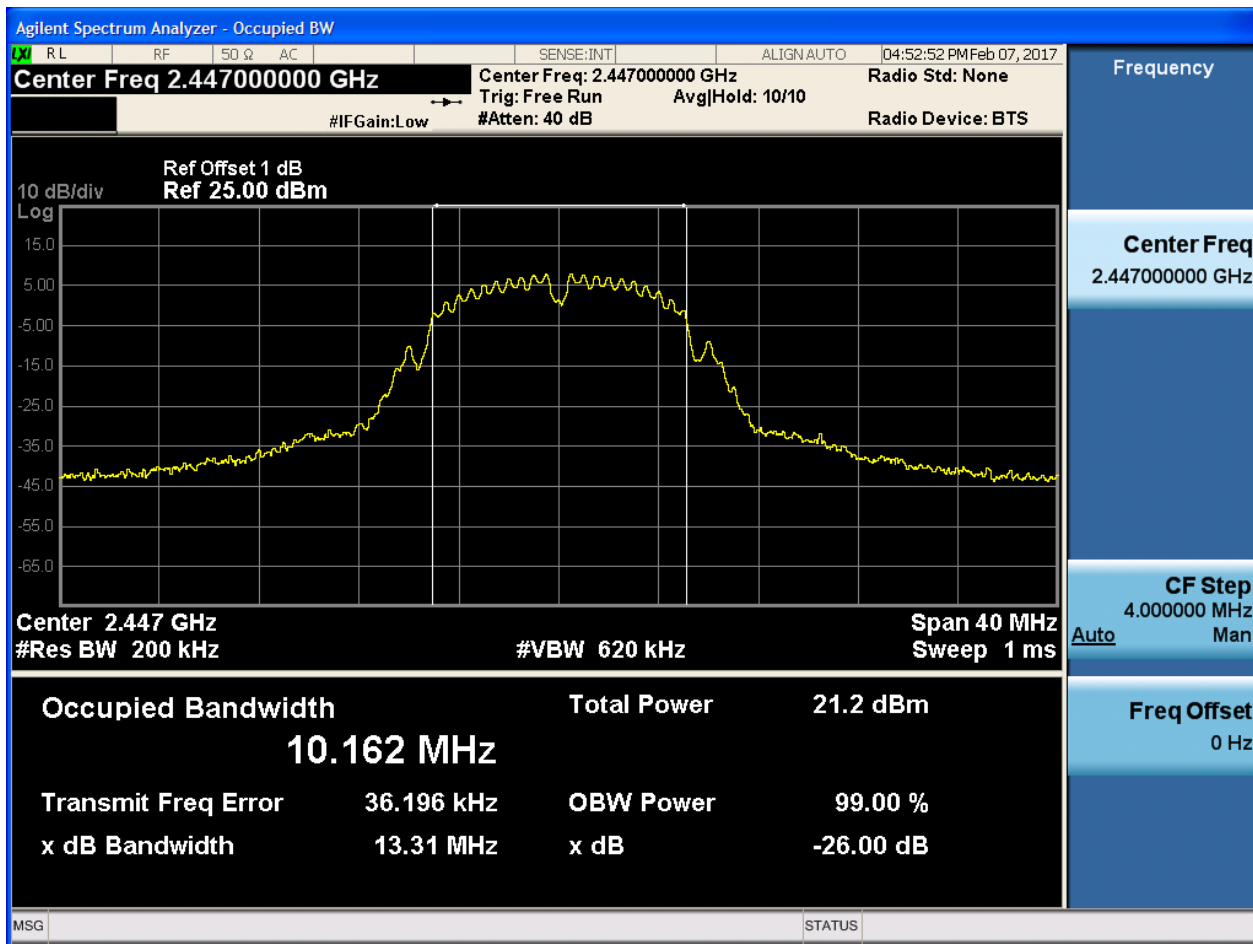


2.3 11B_M@Ant 1



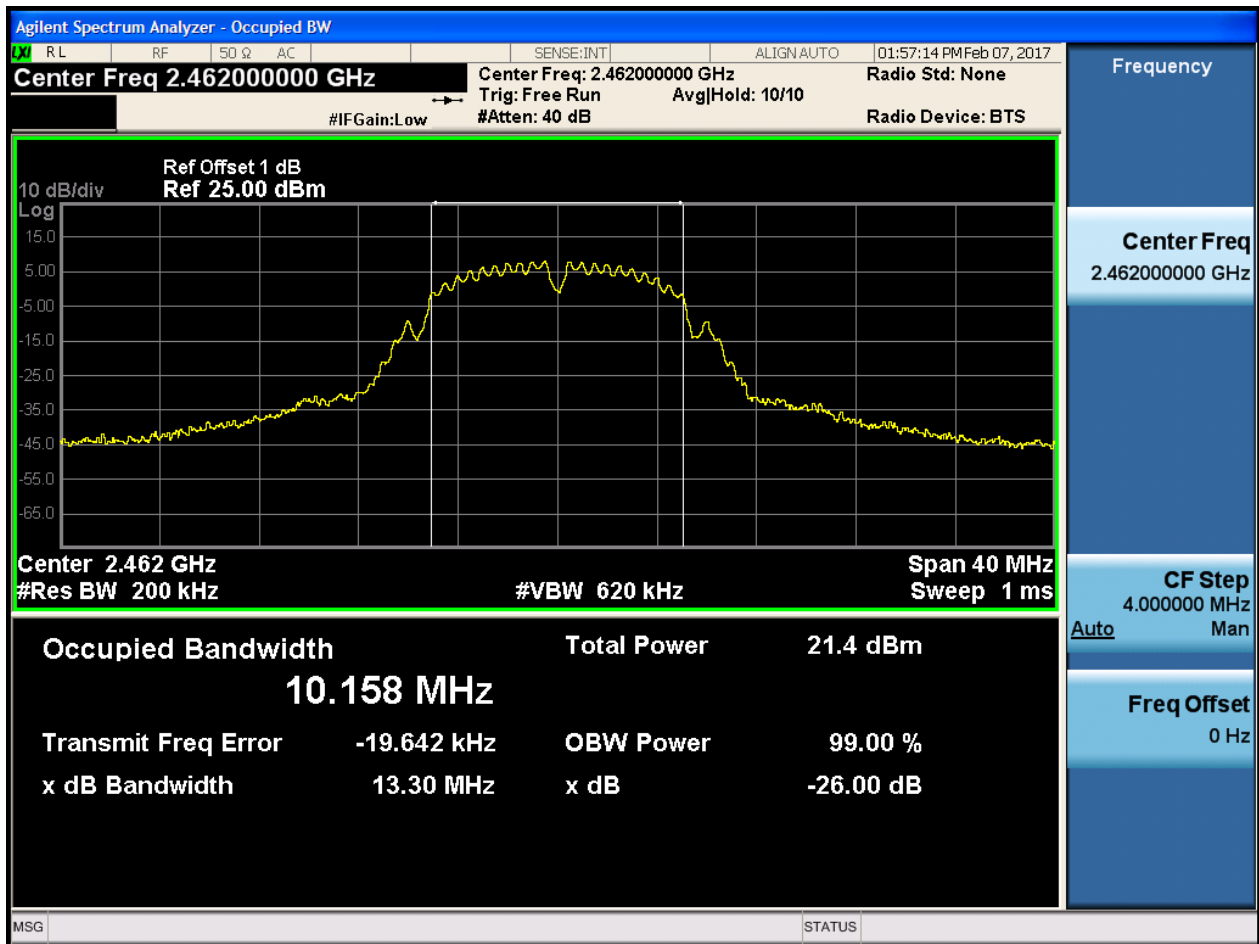


2.4 11B_M@Ant 2



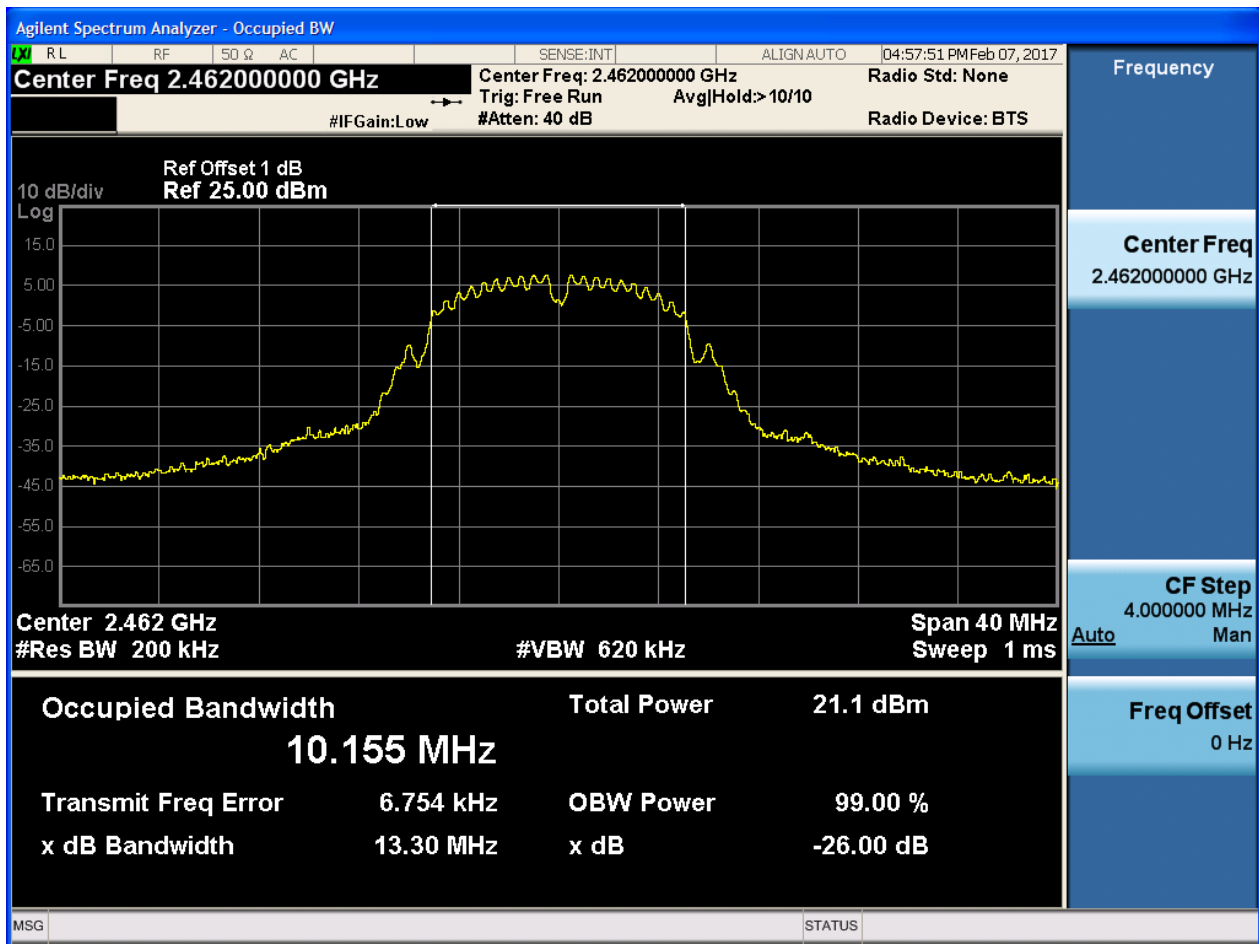


2.5 11B_H@Ant 1



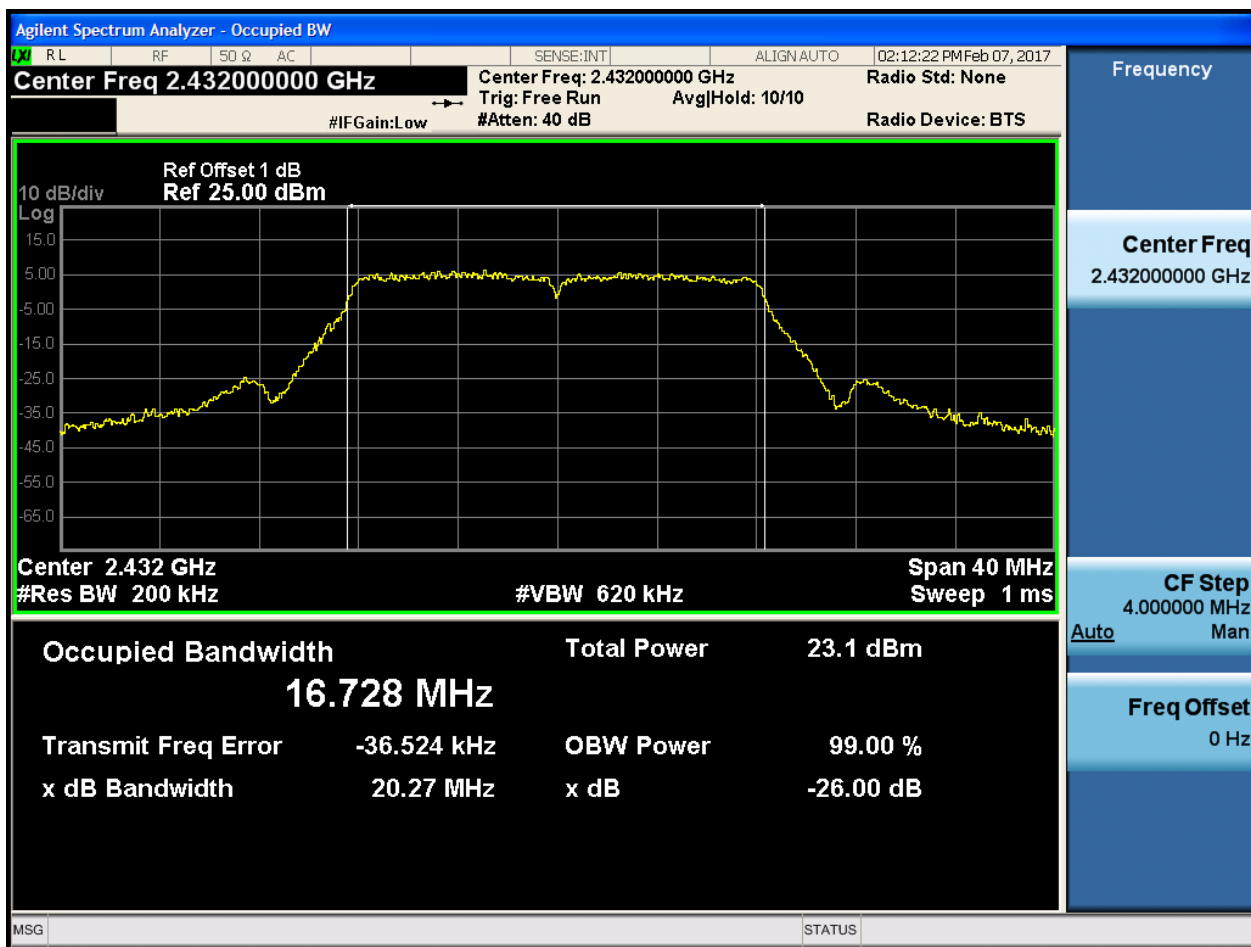


2.6 11B_H@Ant 2



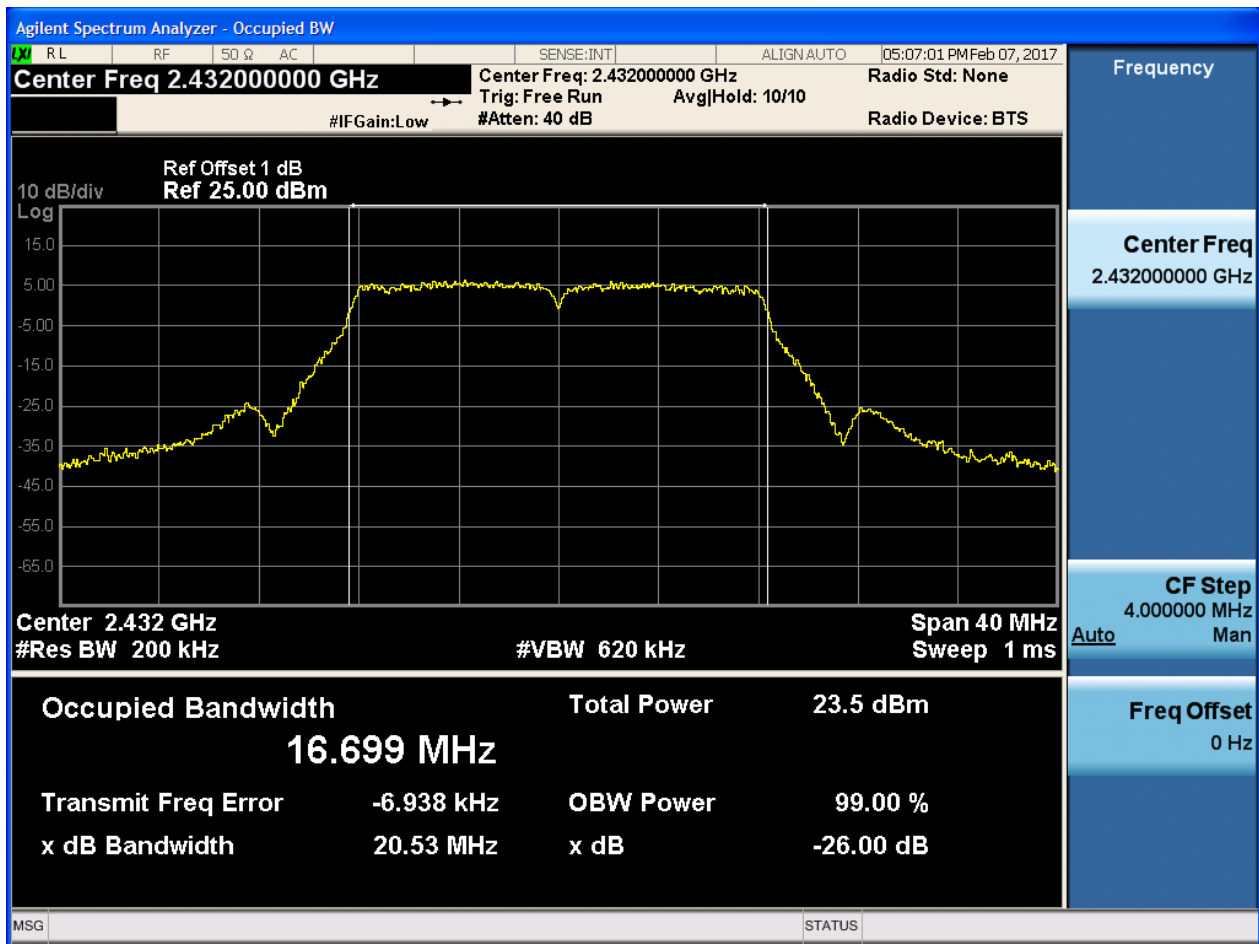


2.7 11G_L@Ant 1



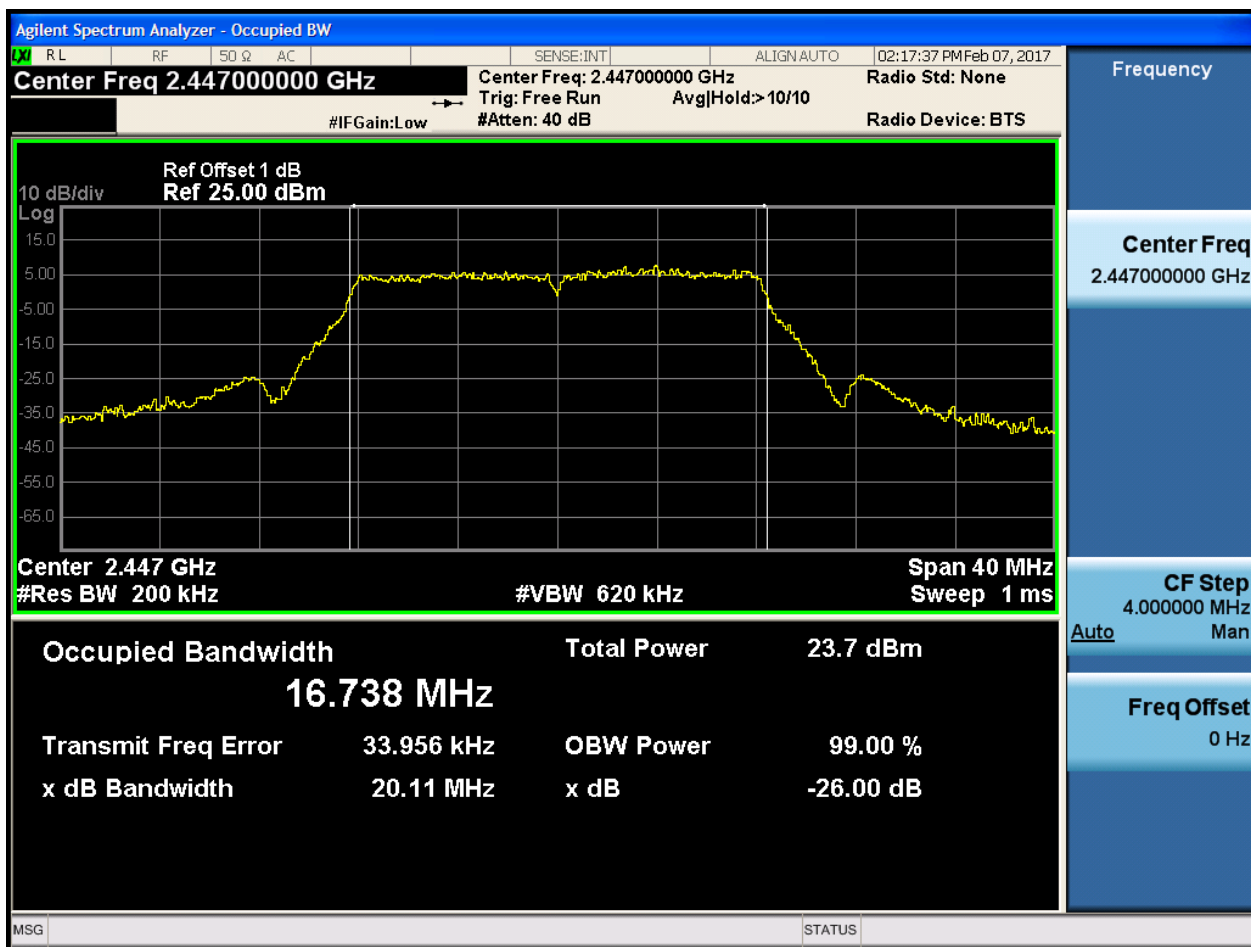


2.8 11G_L@Ant 2



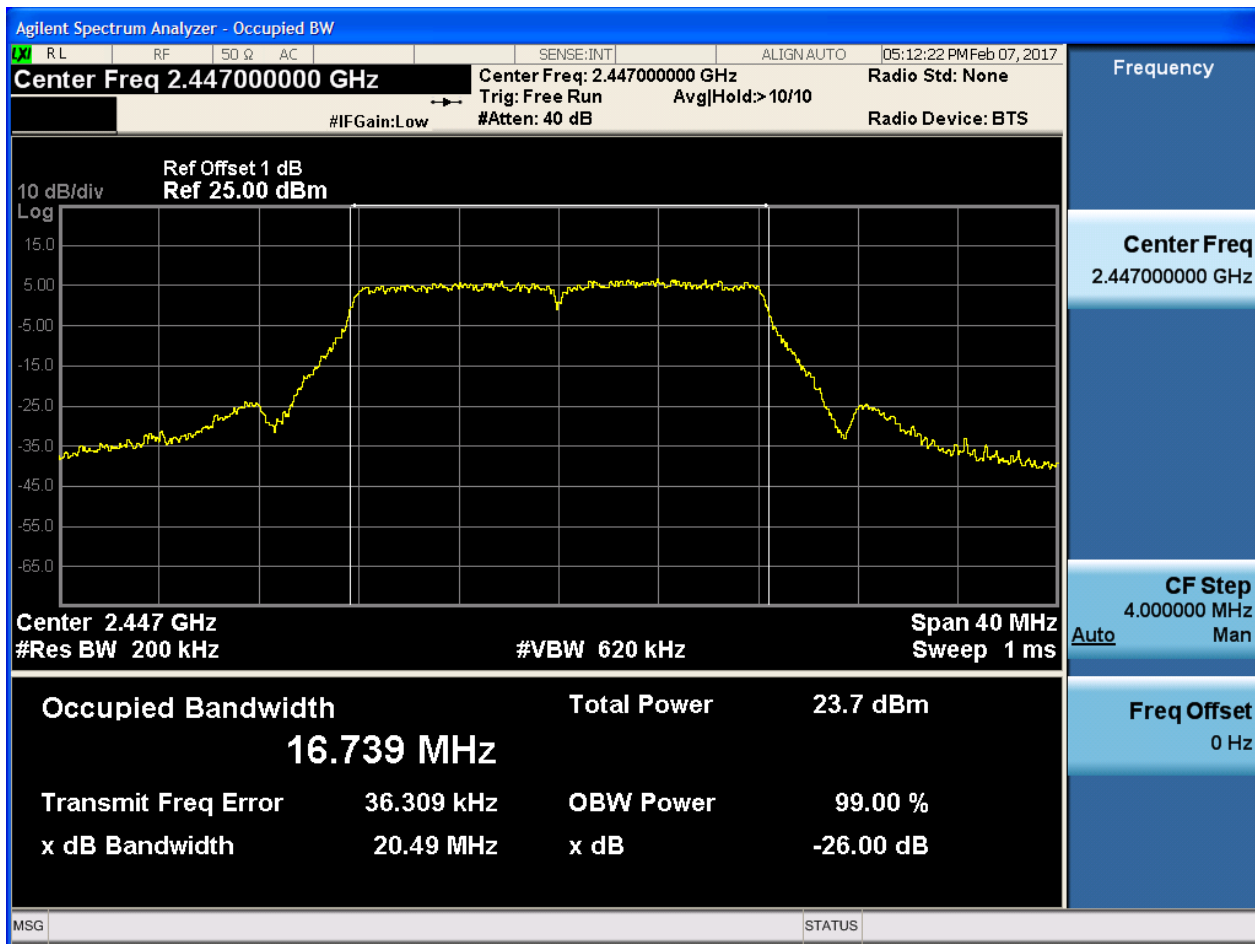


2.9 11G_M@Ant 1



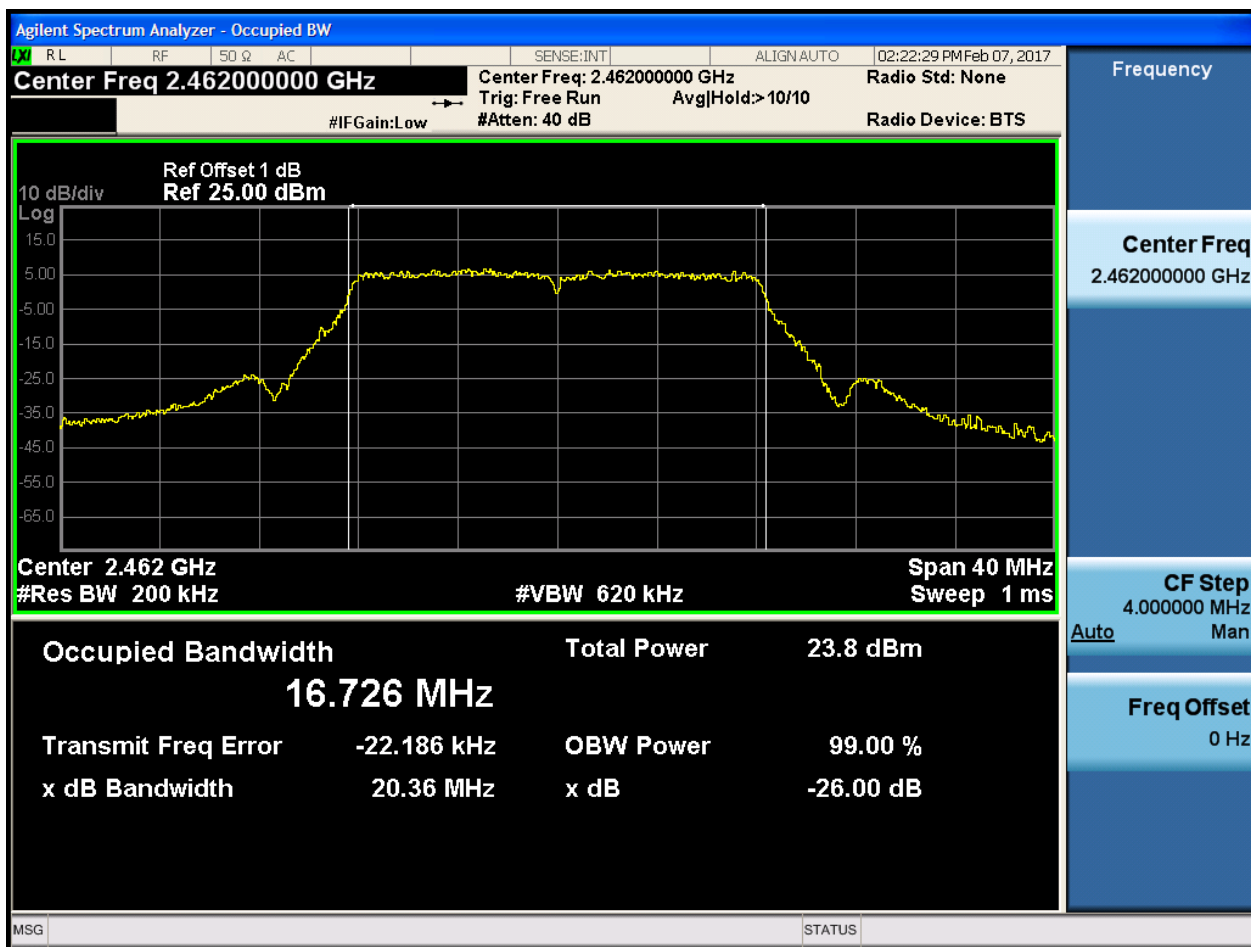


2.10 11G_M@Ant 2



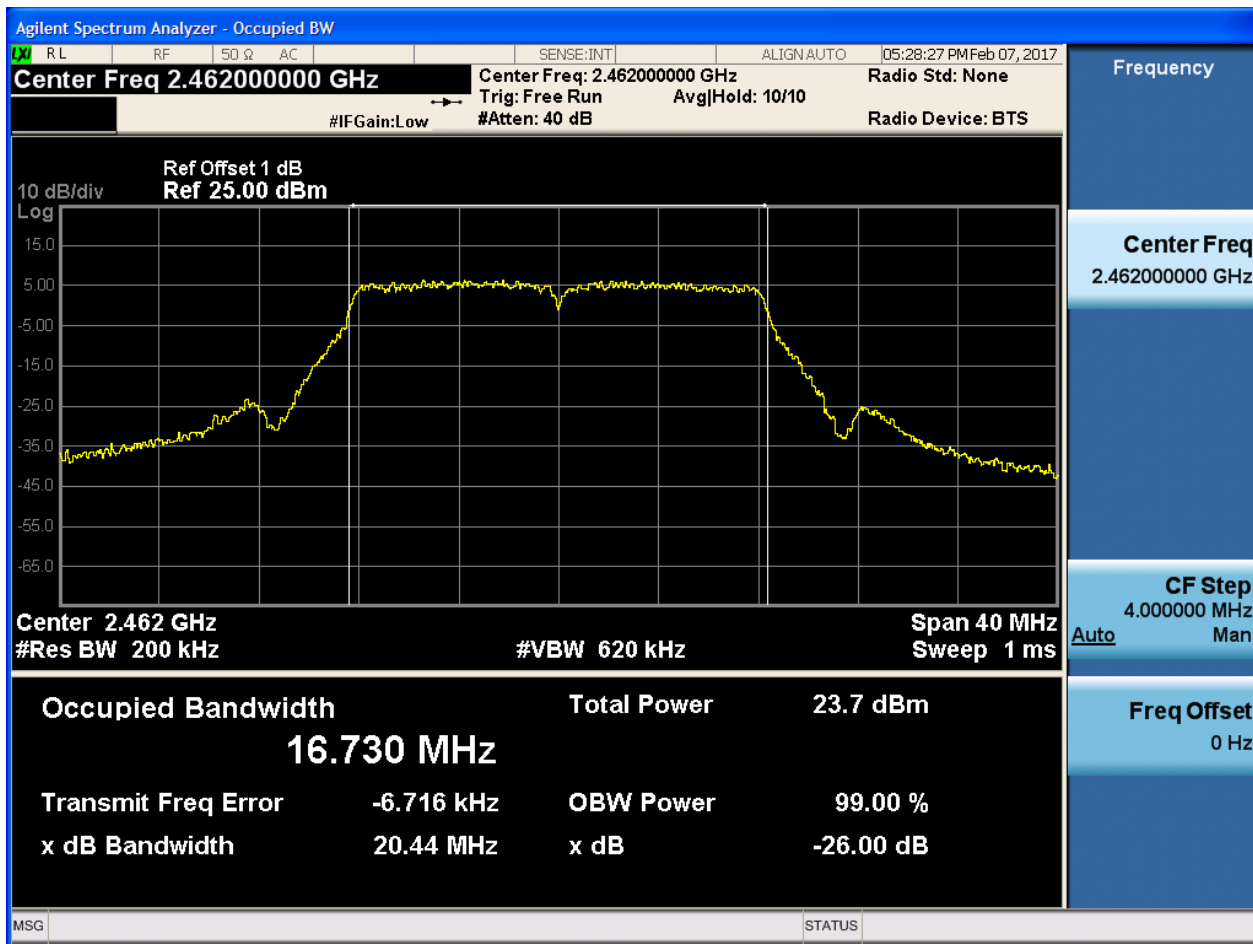


2.11 11G_H@Ant 1



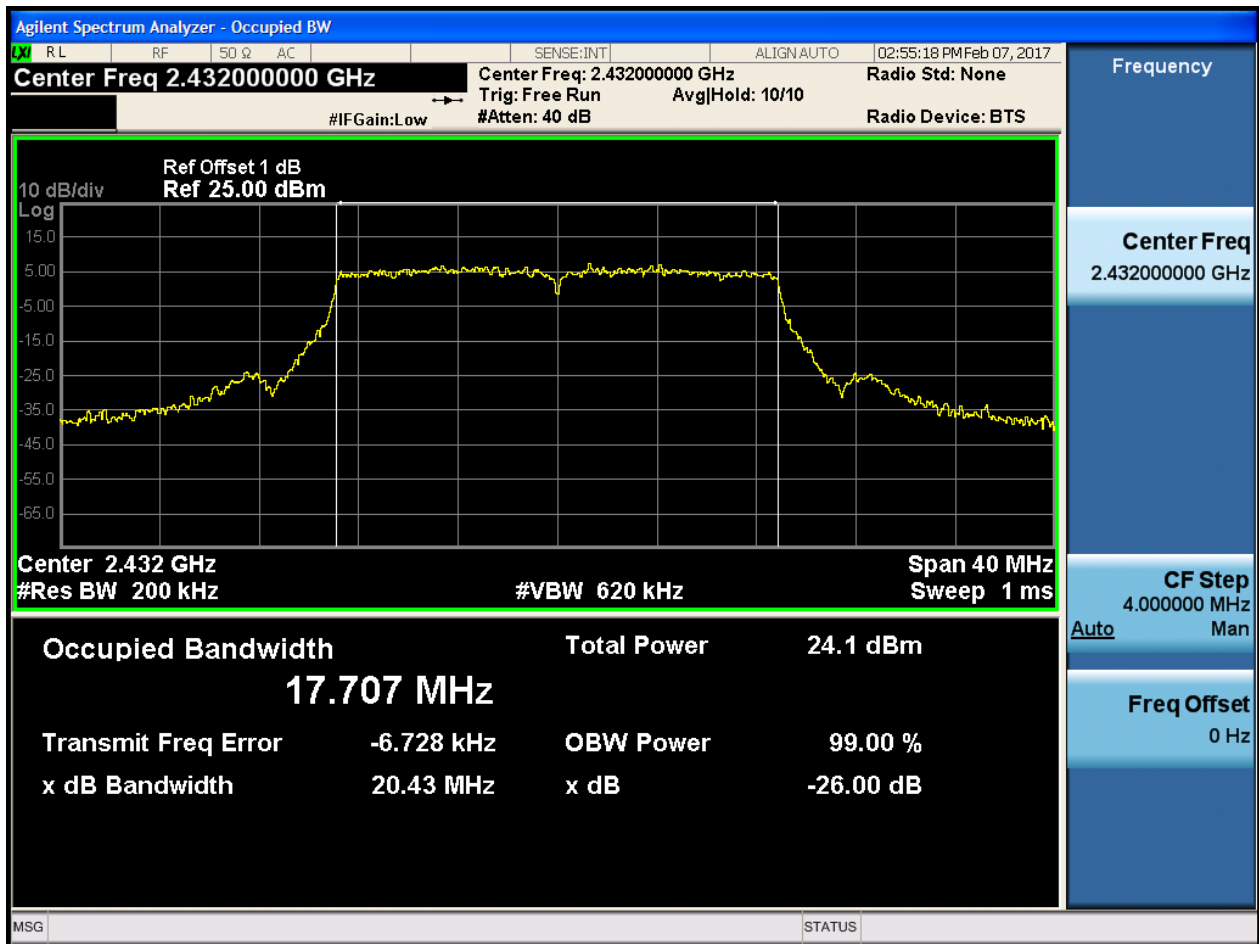


2.12 11G_H@Ant 2



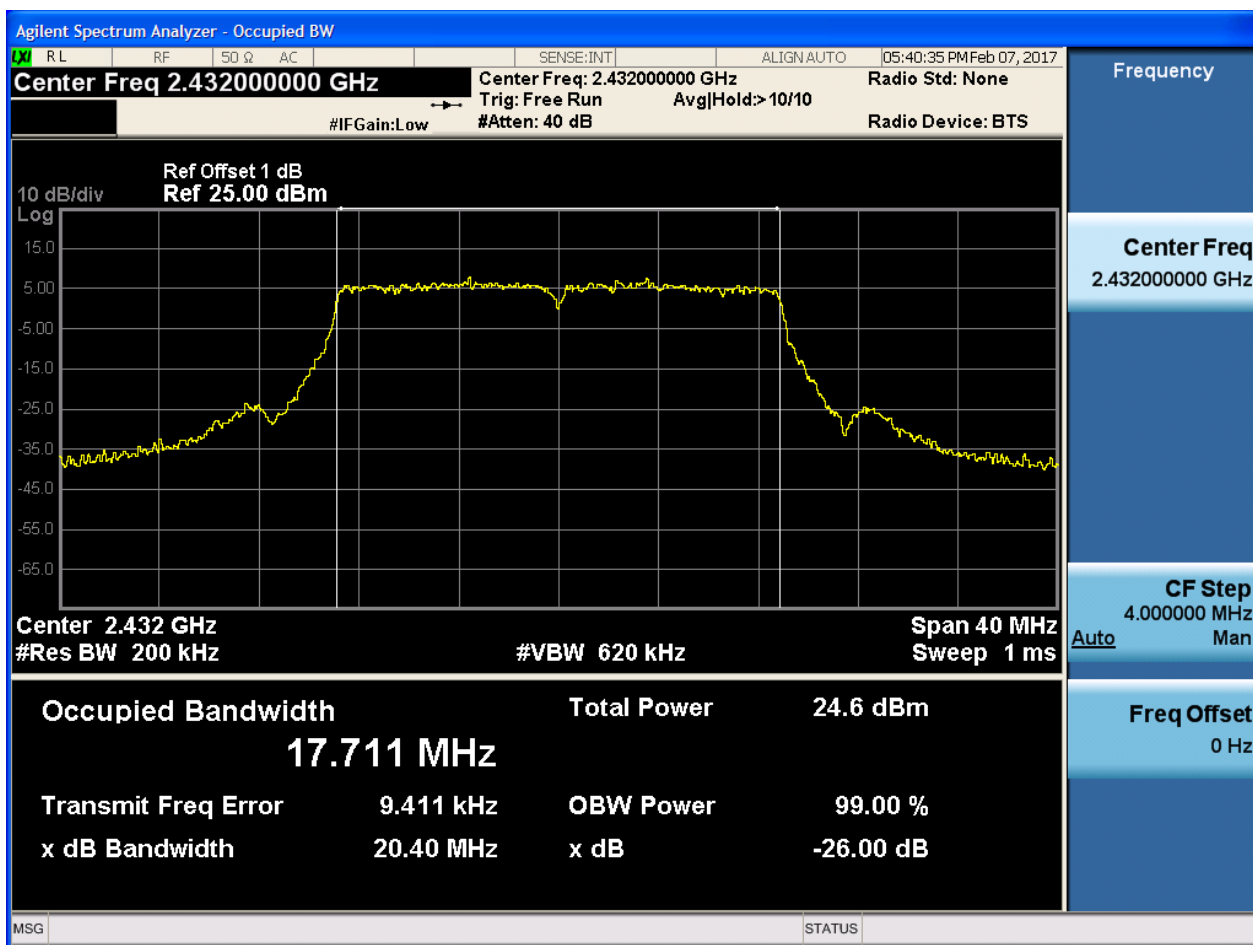


2.13 11N20_L@Ant 1



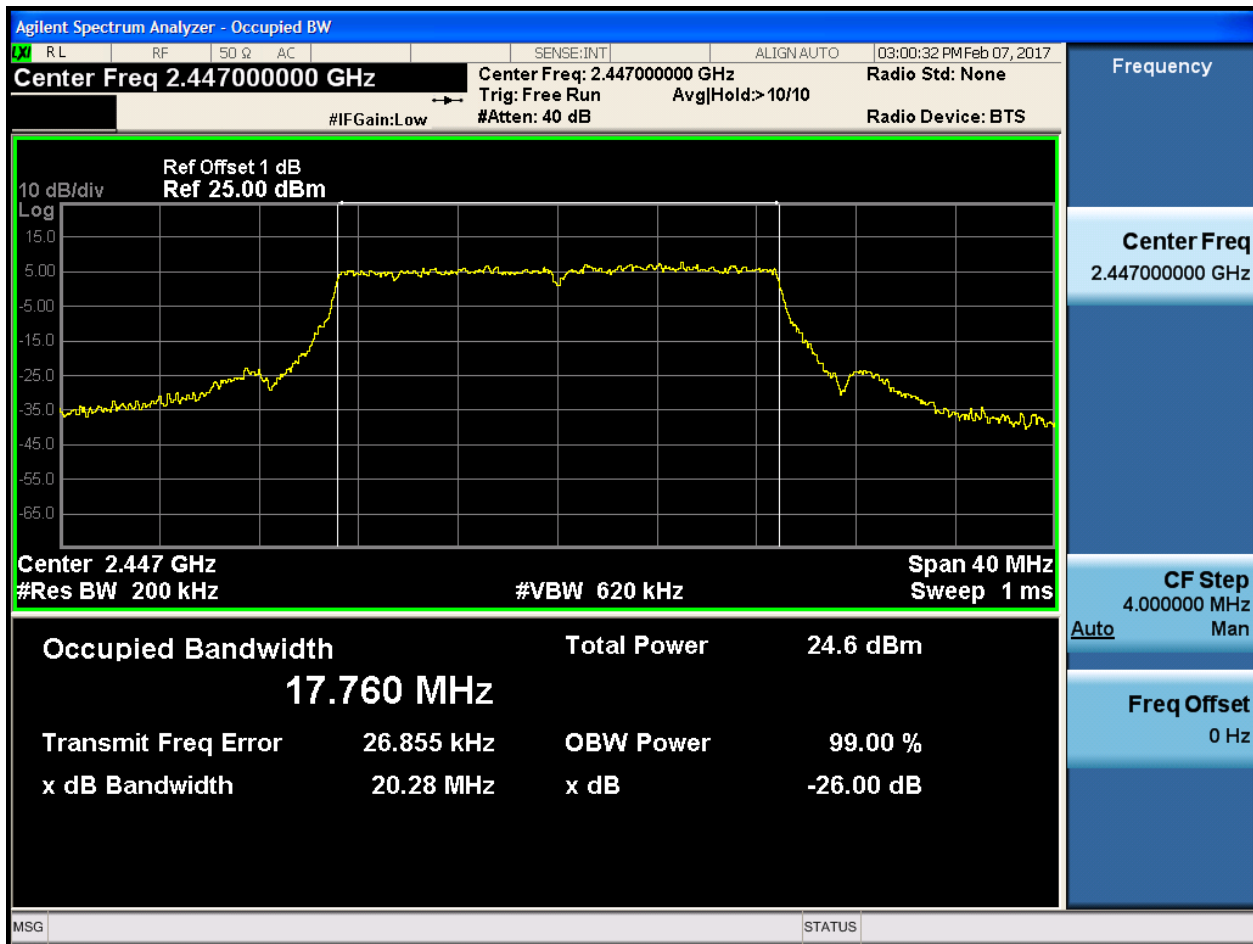


2.14 11N20_L@Ant 2



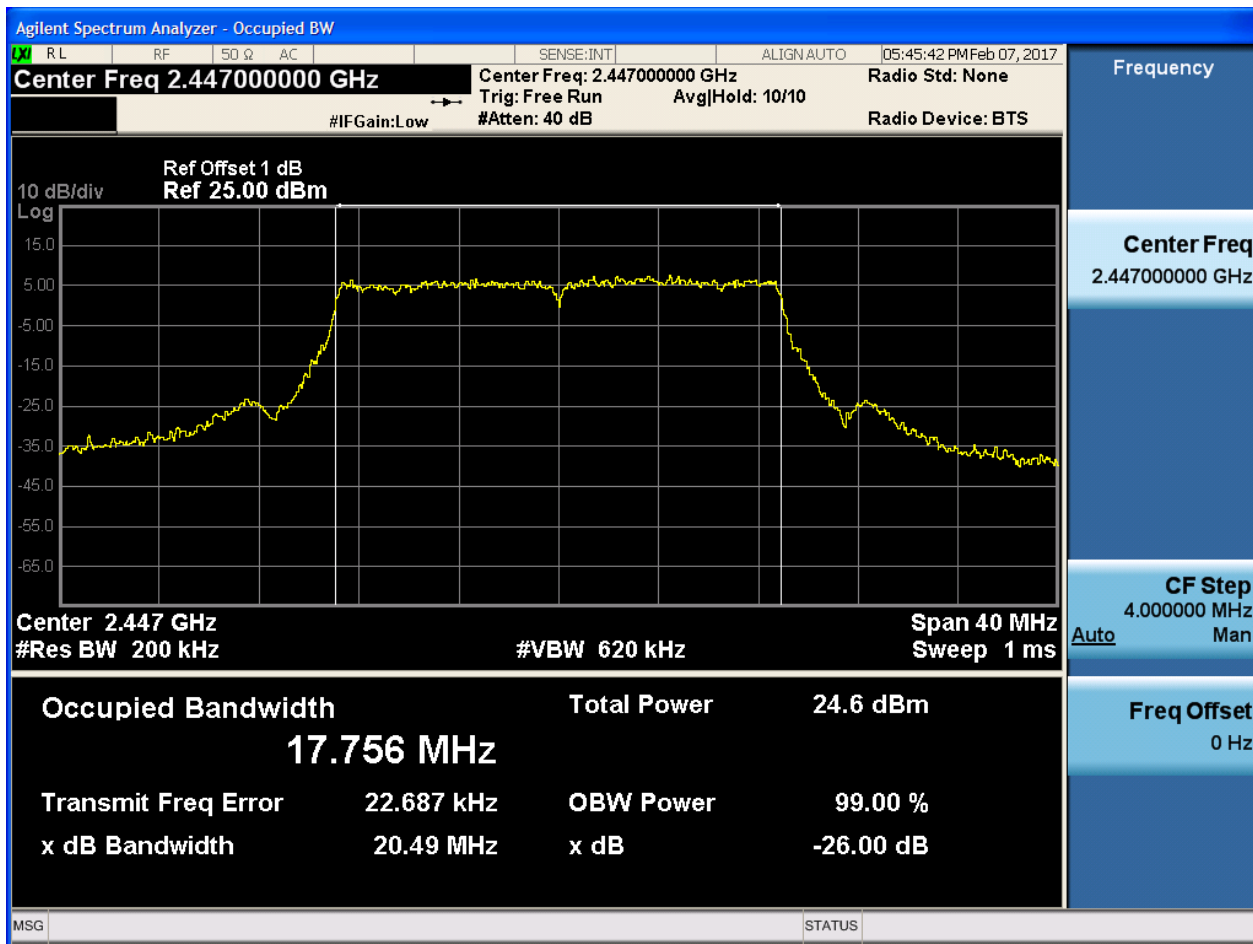


2.15 11N20_M@Ant 1



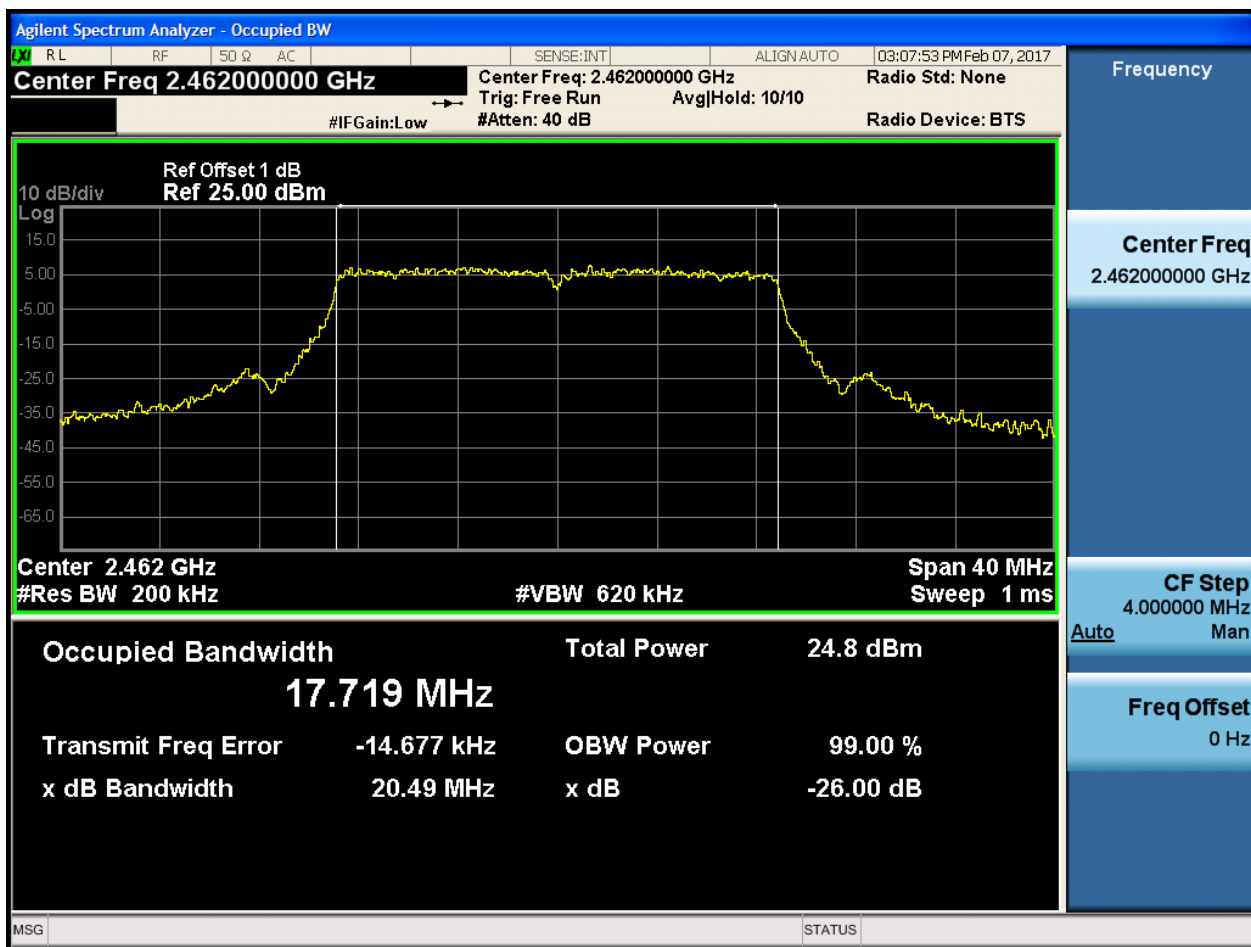


2.16 11N20_M@Ant 2



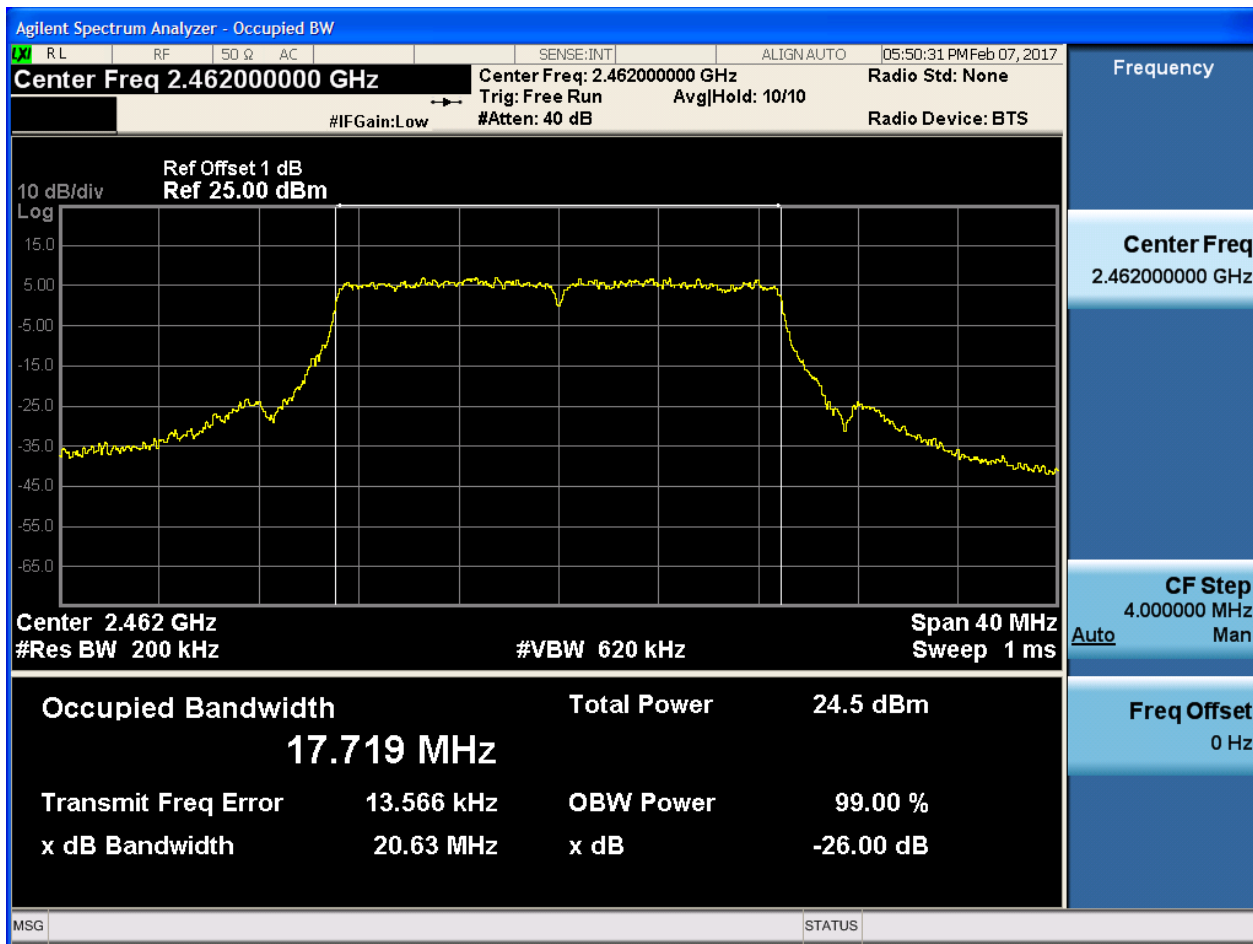


2.17 11N20_H@Ant 1



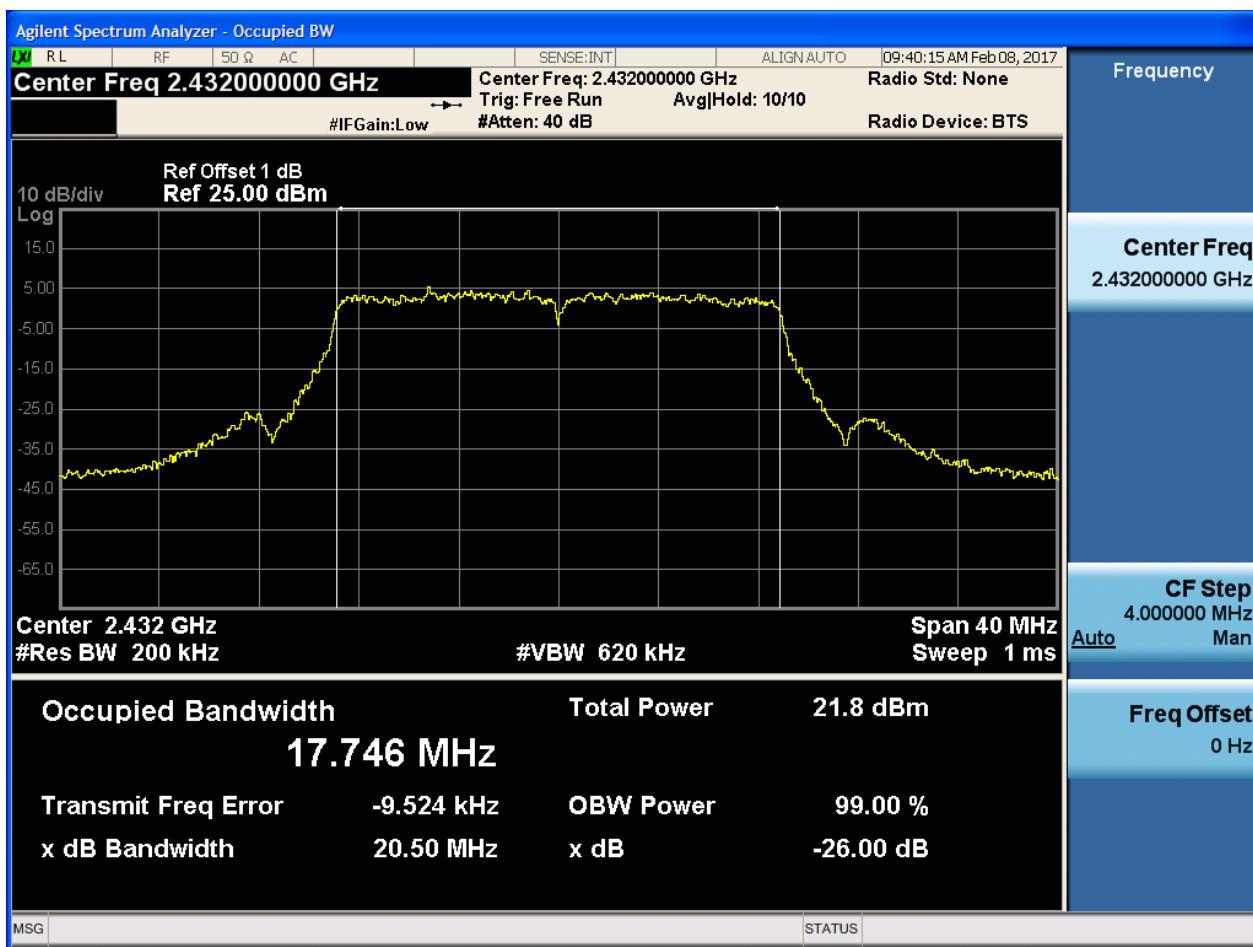


2.18 11N20_H@Ant 2



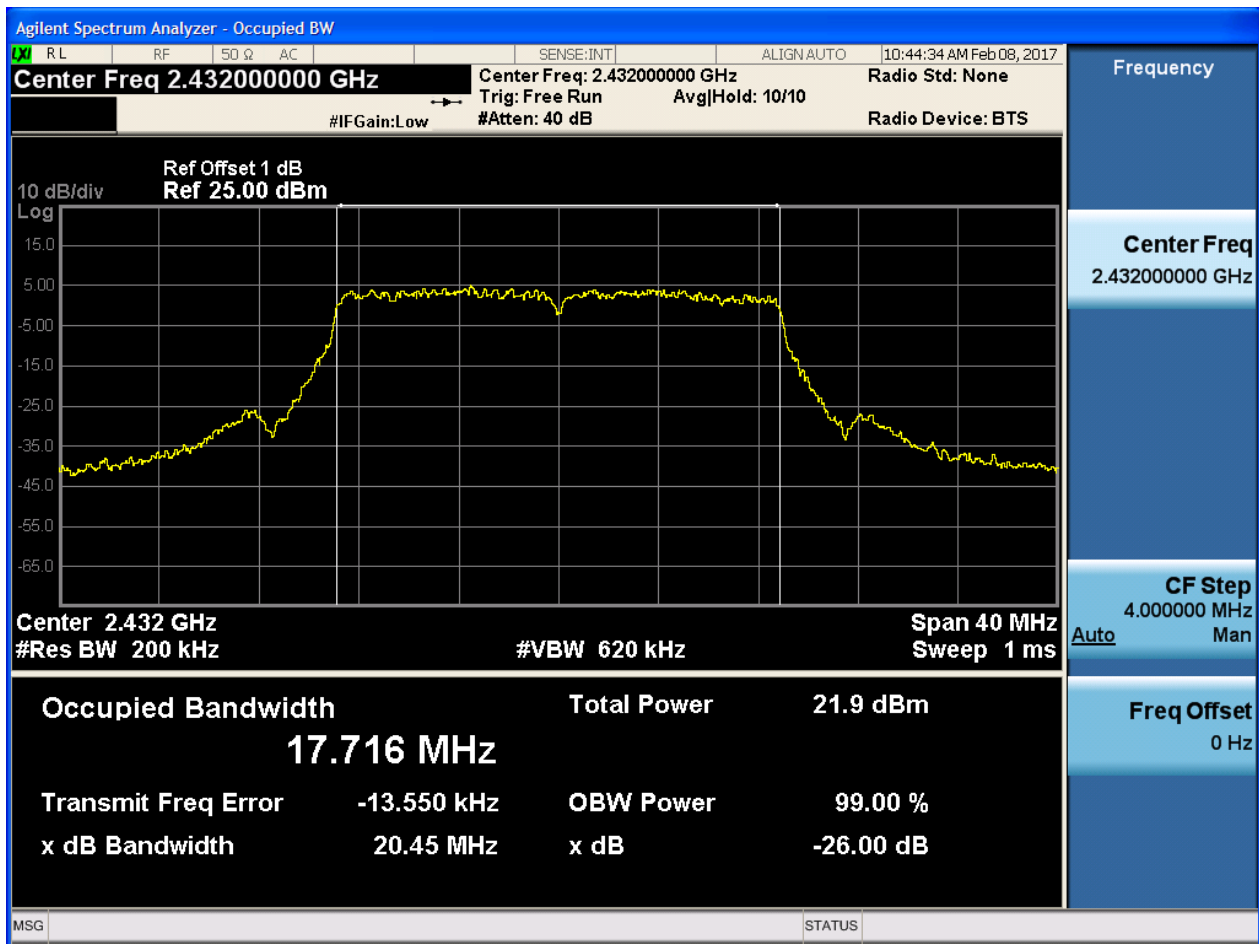


2.19 11N20m_L@Ant 1



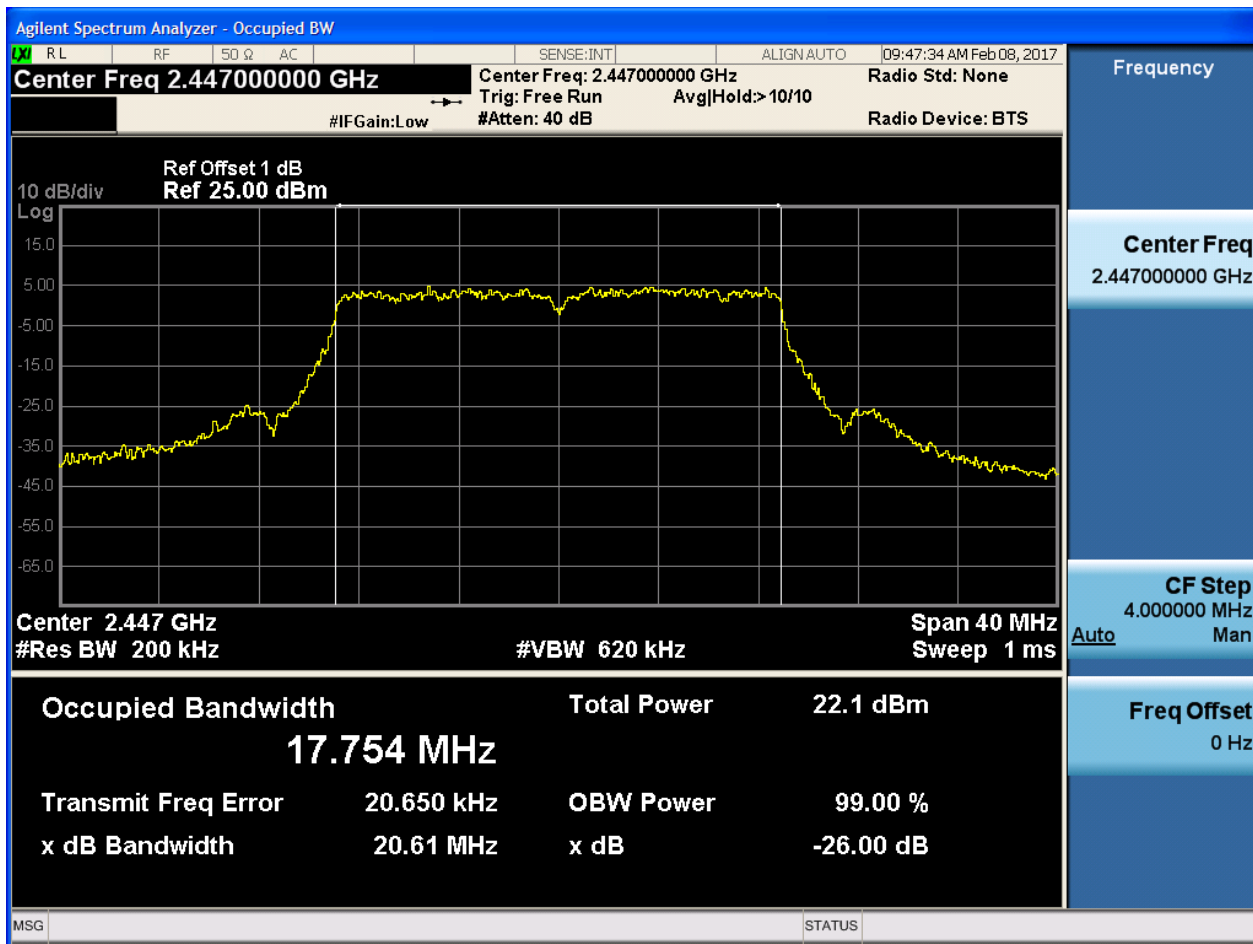


2.20 11N20m_L@Ant 2



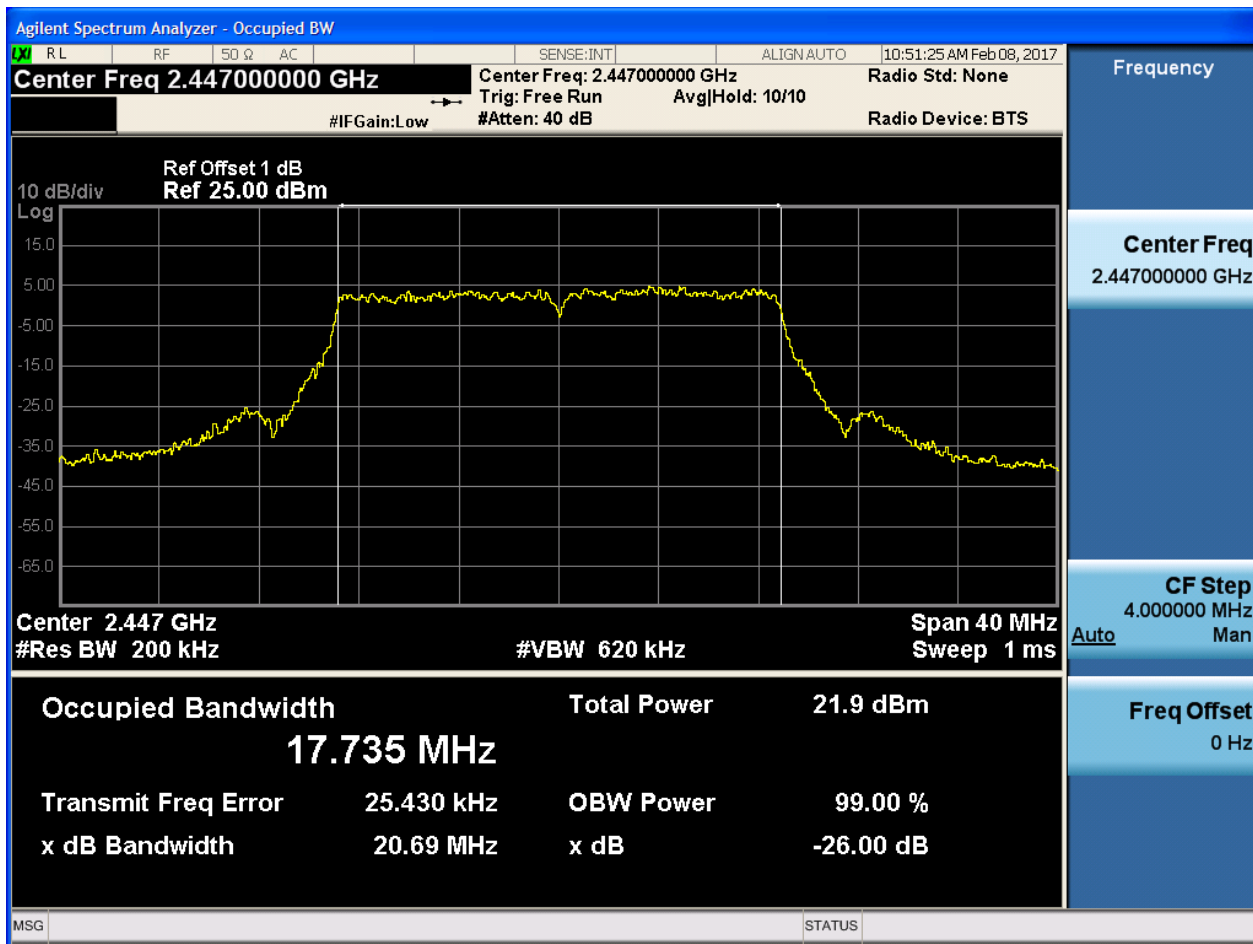


2.21 11N20m_M@Ant 1



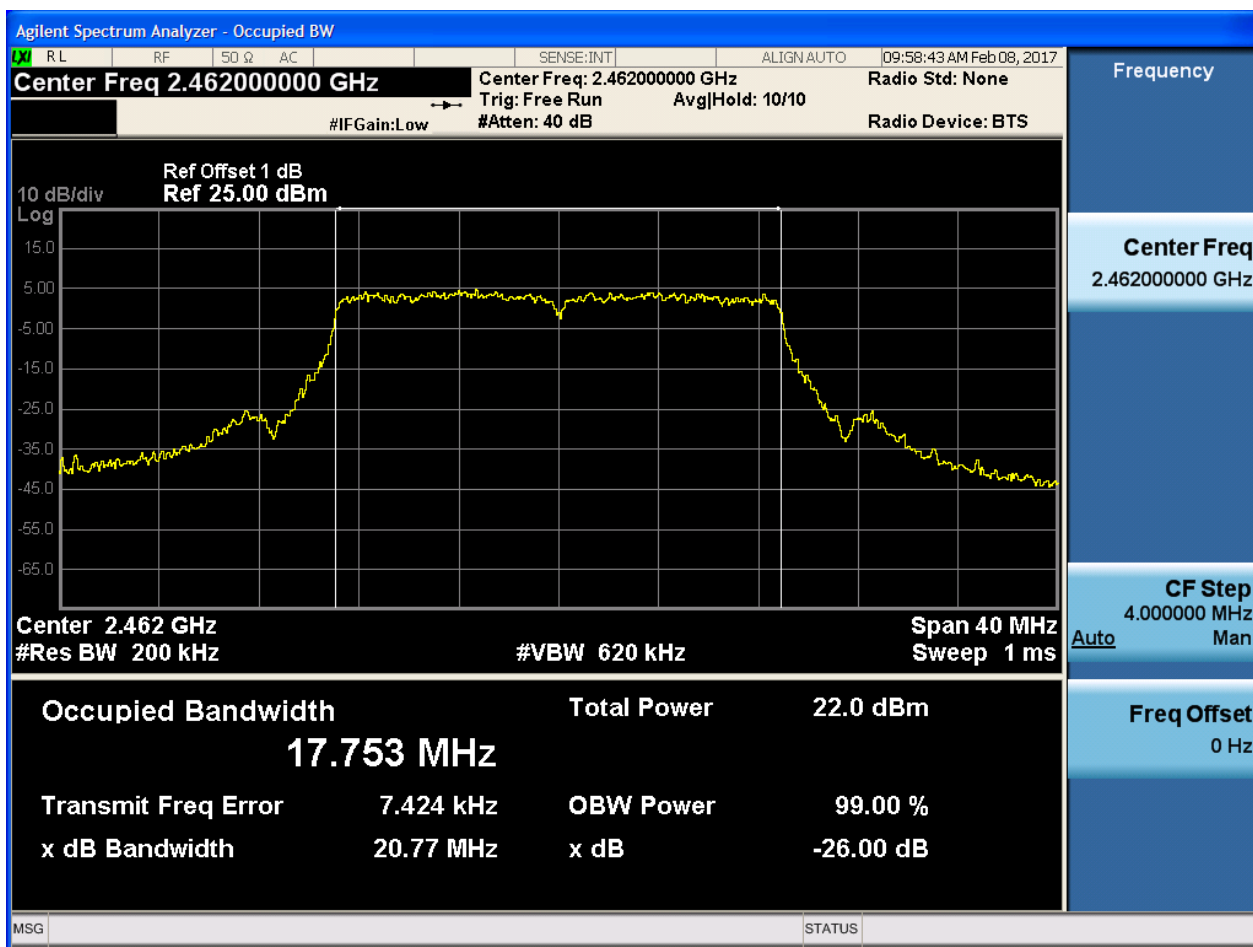


2.22 11N20m_M@Ant 2



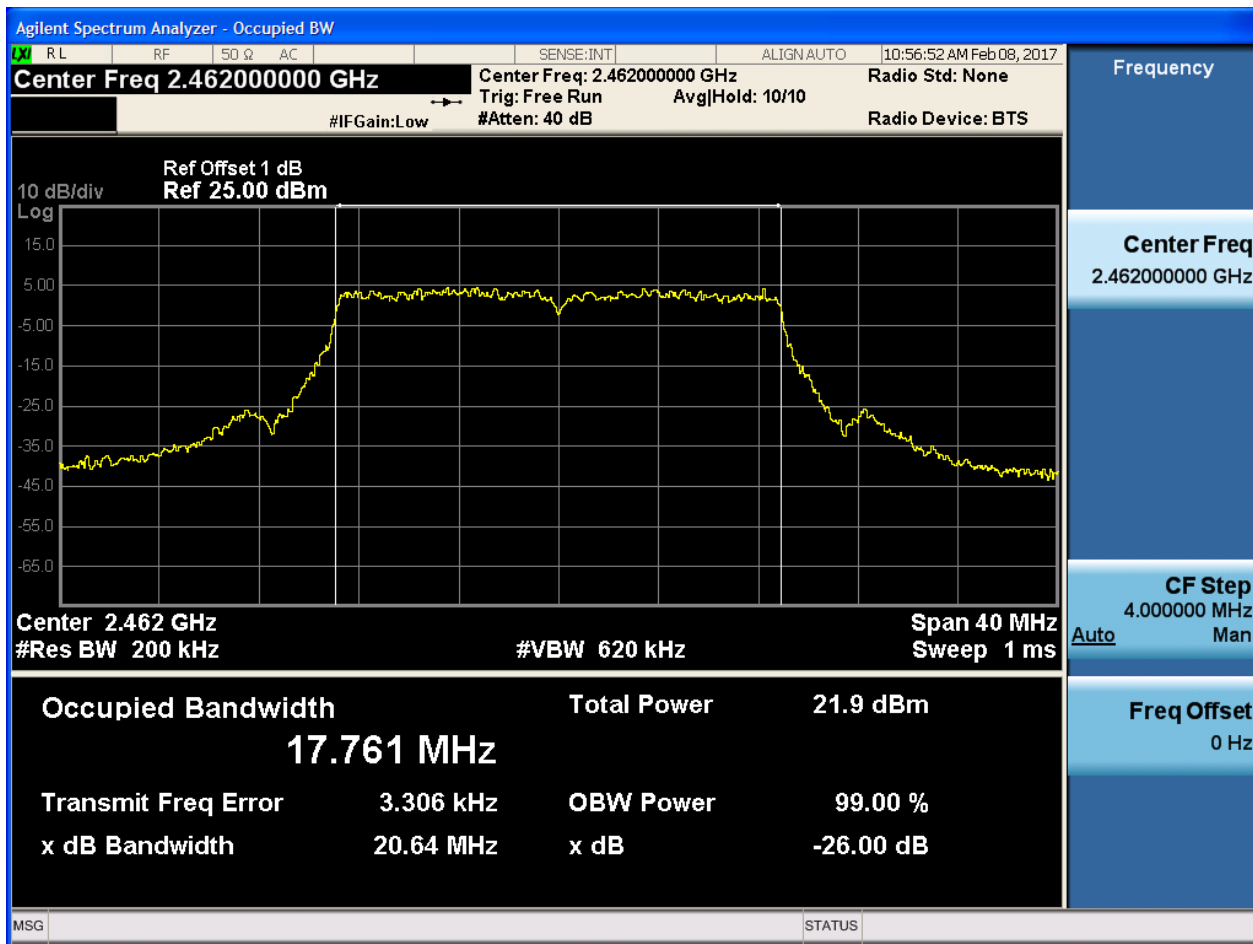


2.23 11N20m_H@Ant 1



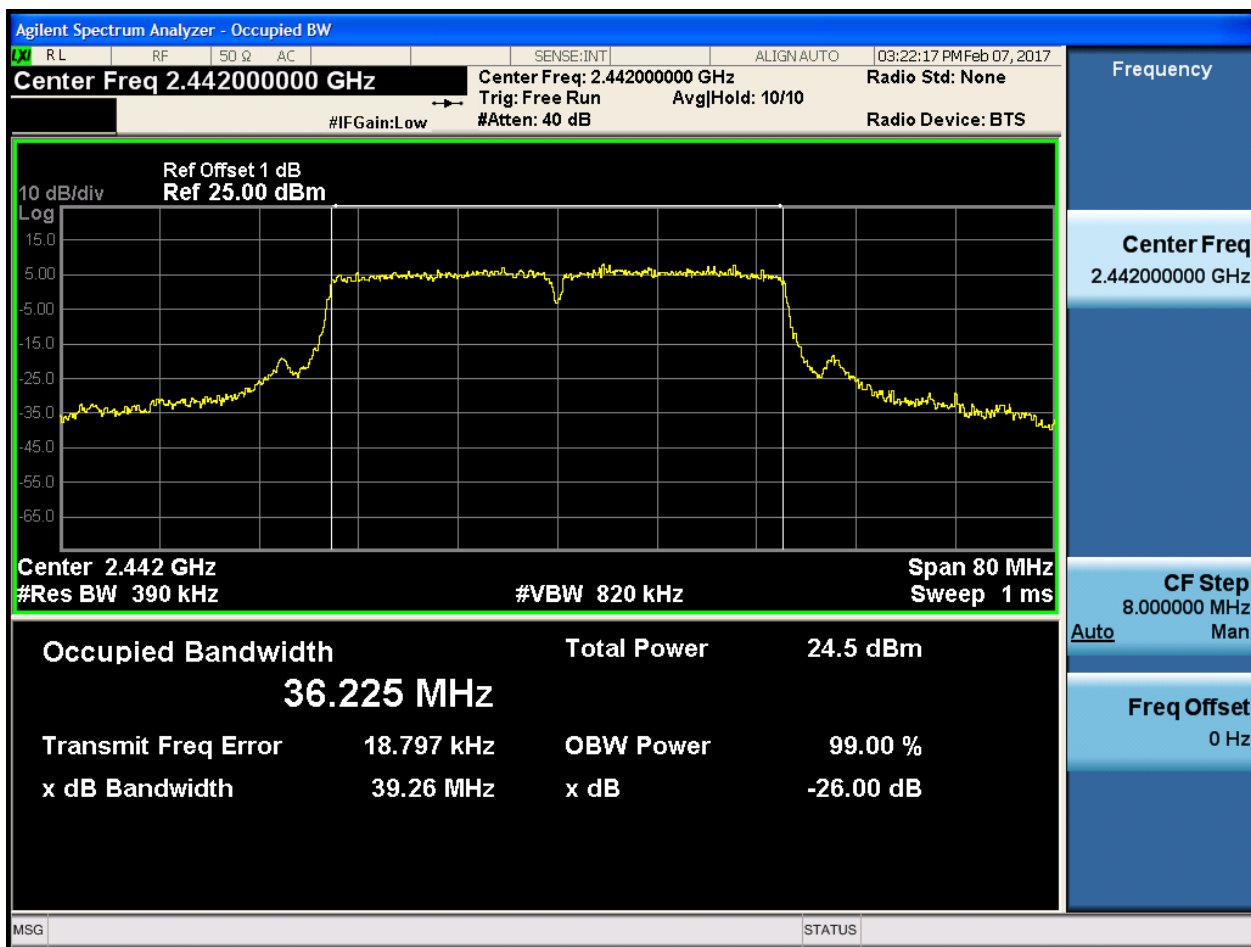


2.24 11N20m_H@Ant 2



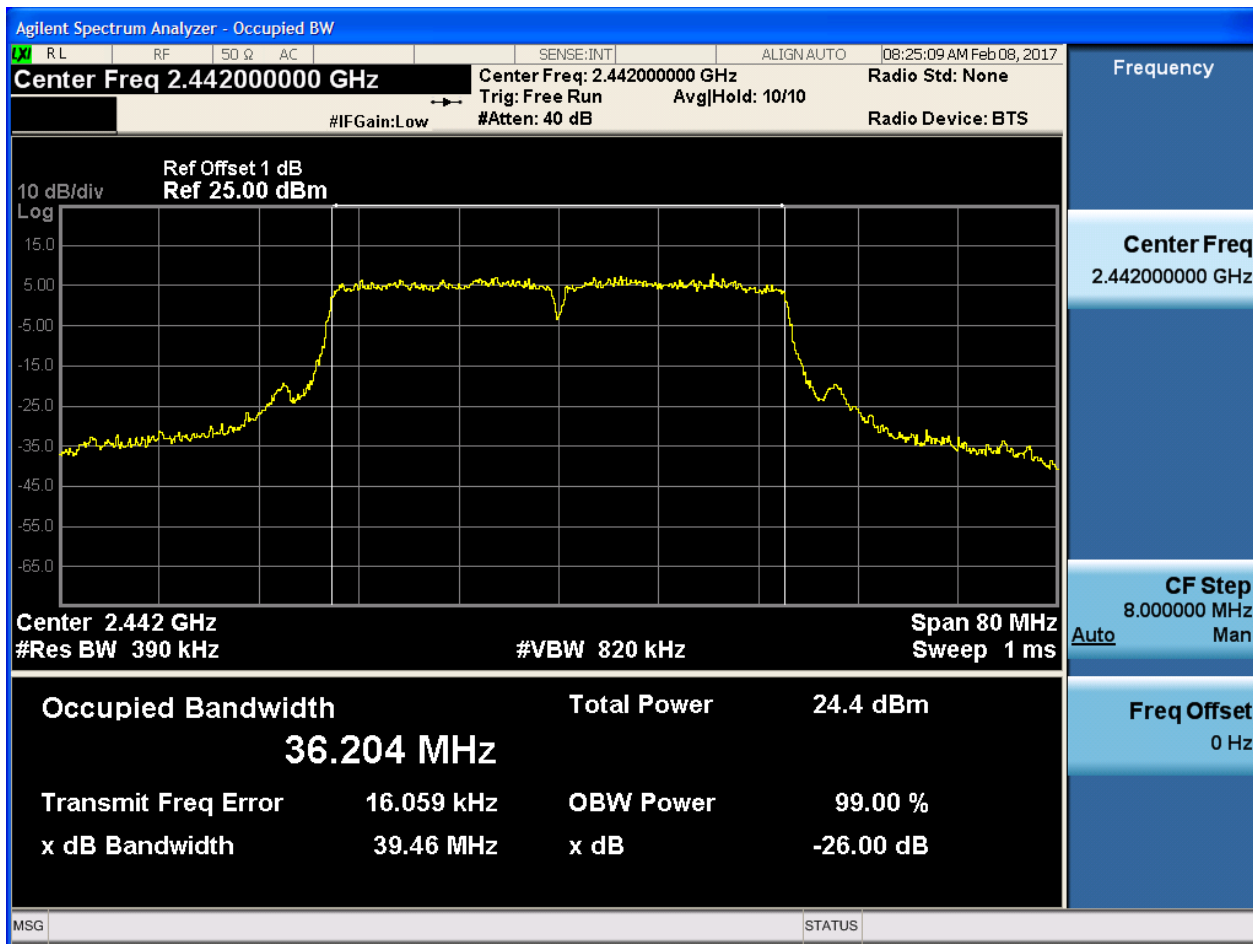


2.25 11N40_L@Ant 1



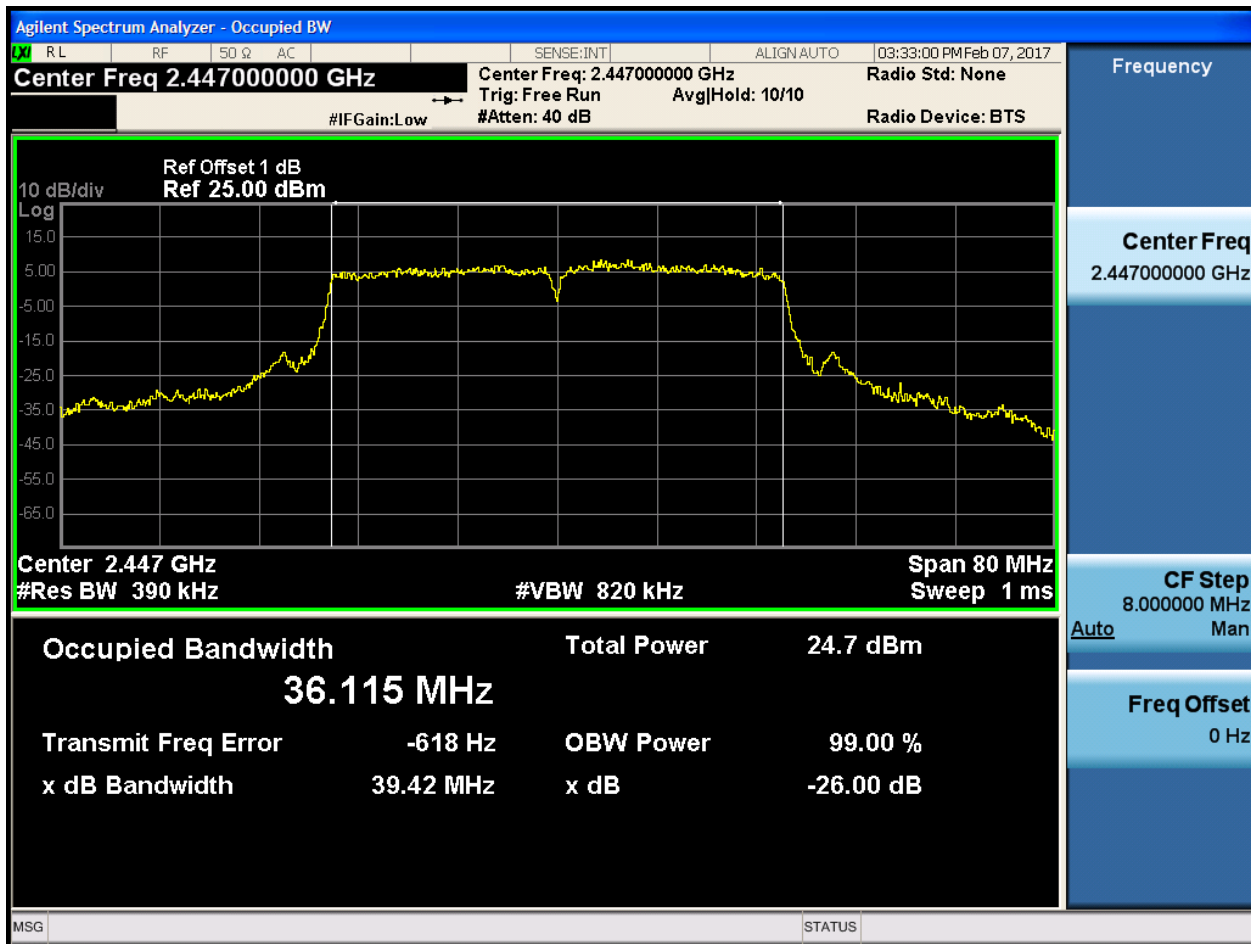


2.26 11N40_L@Ant 2



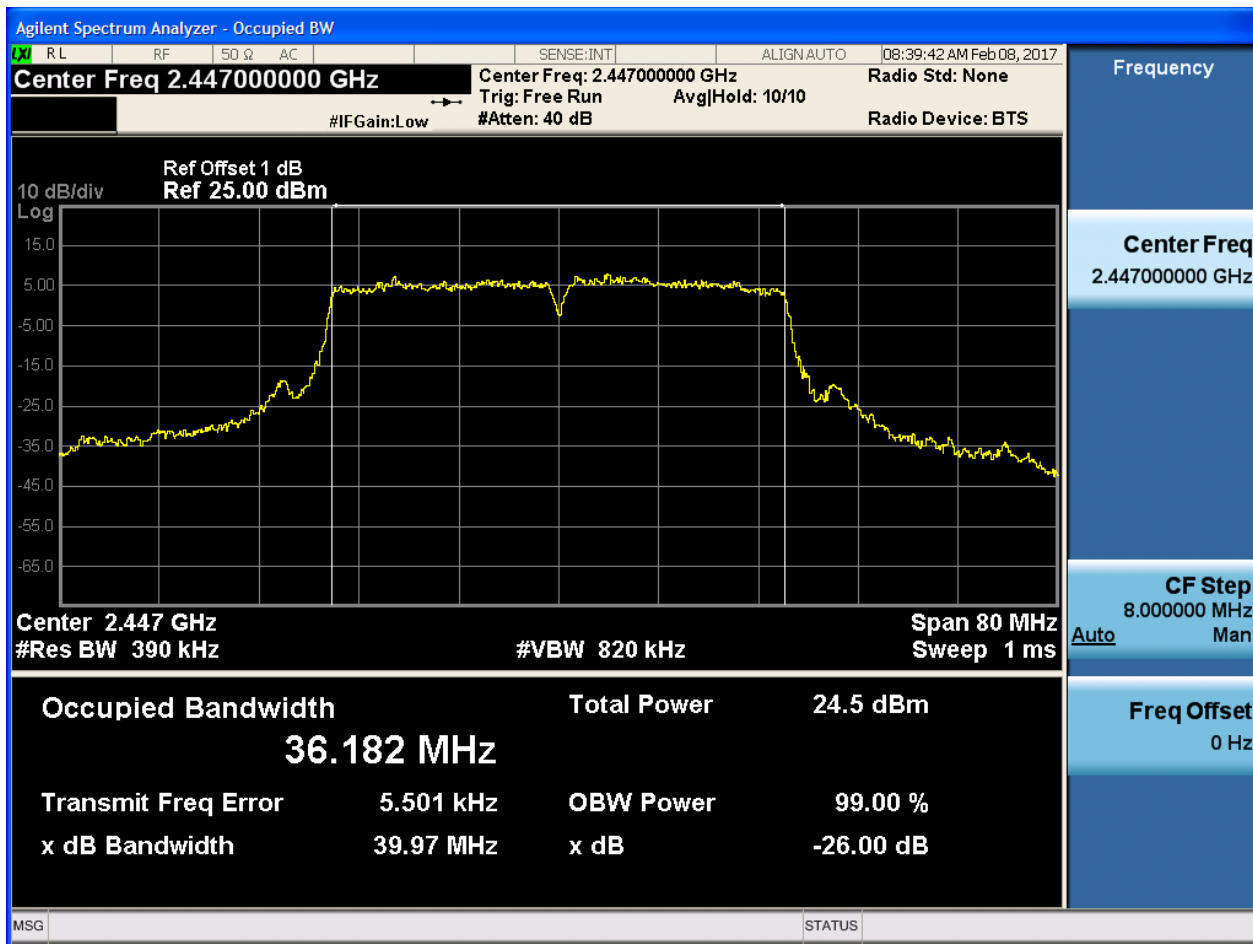


2.27 11N40_M@Ant 1



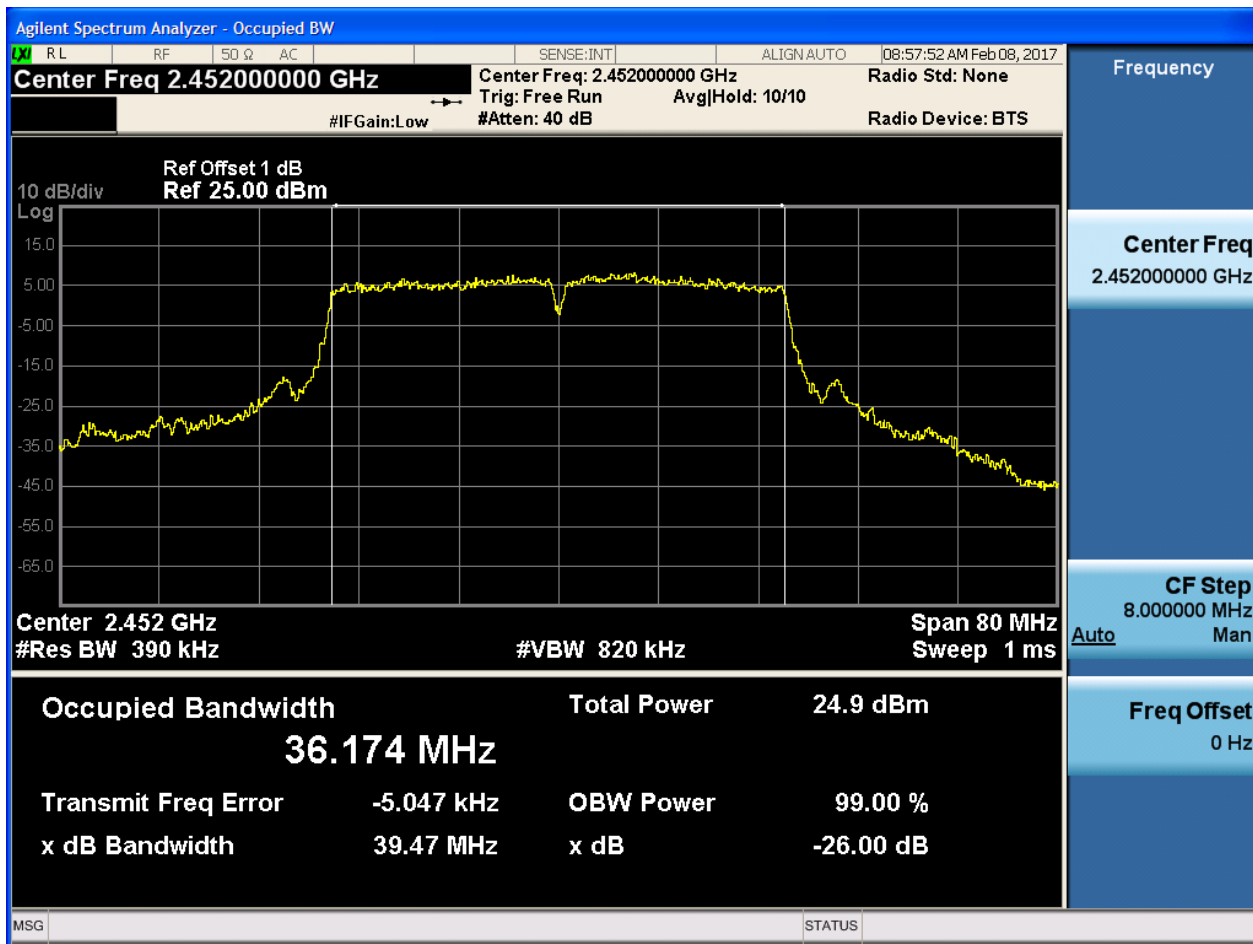


2.28 11N40_M@Ant 2



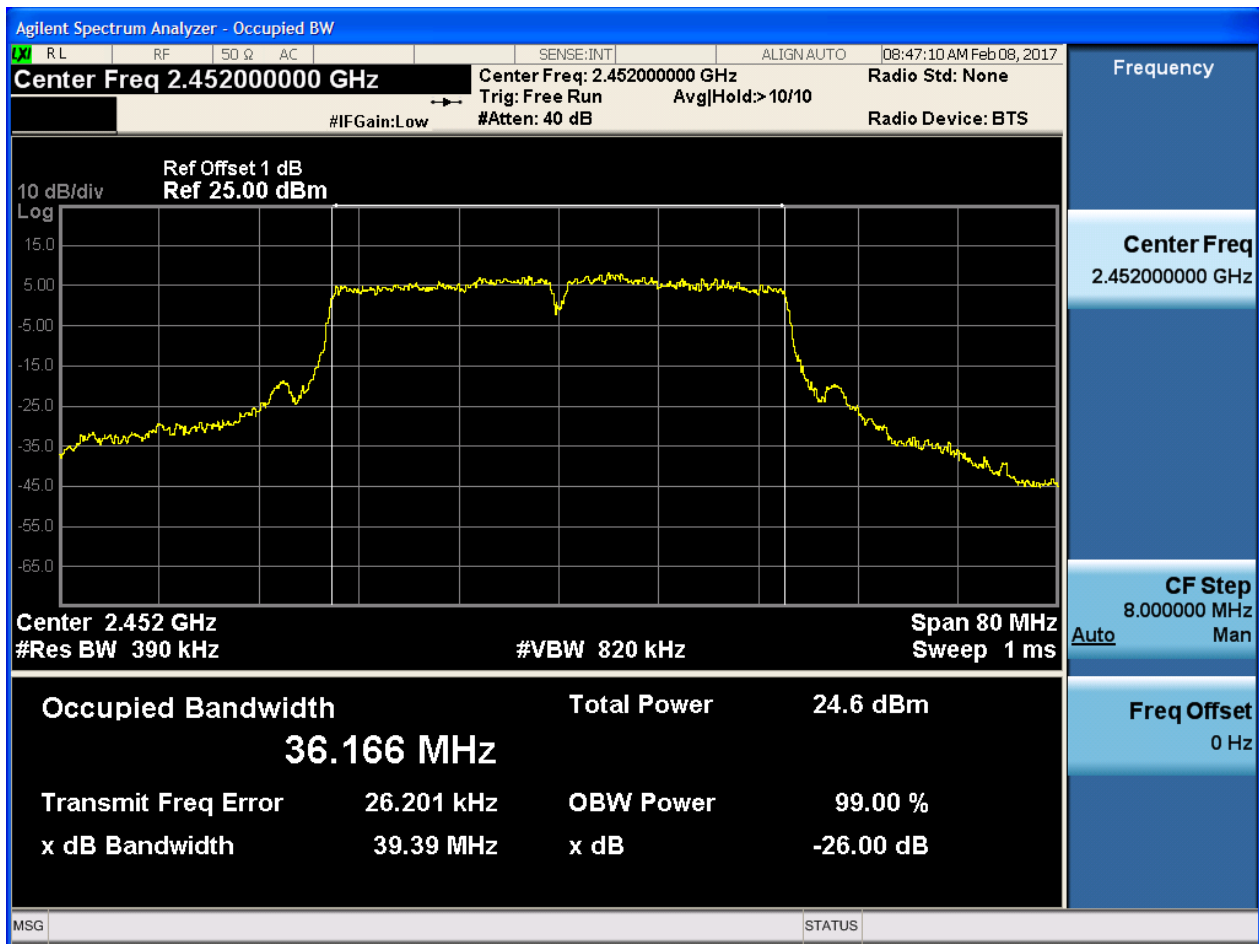


2.29 11N40_H@Ant 1



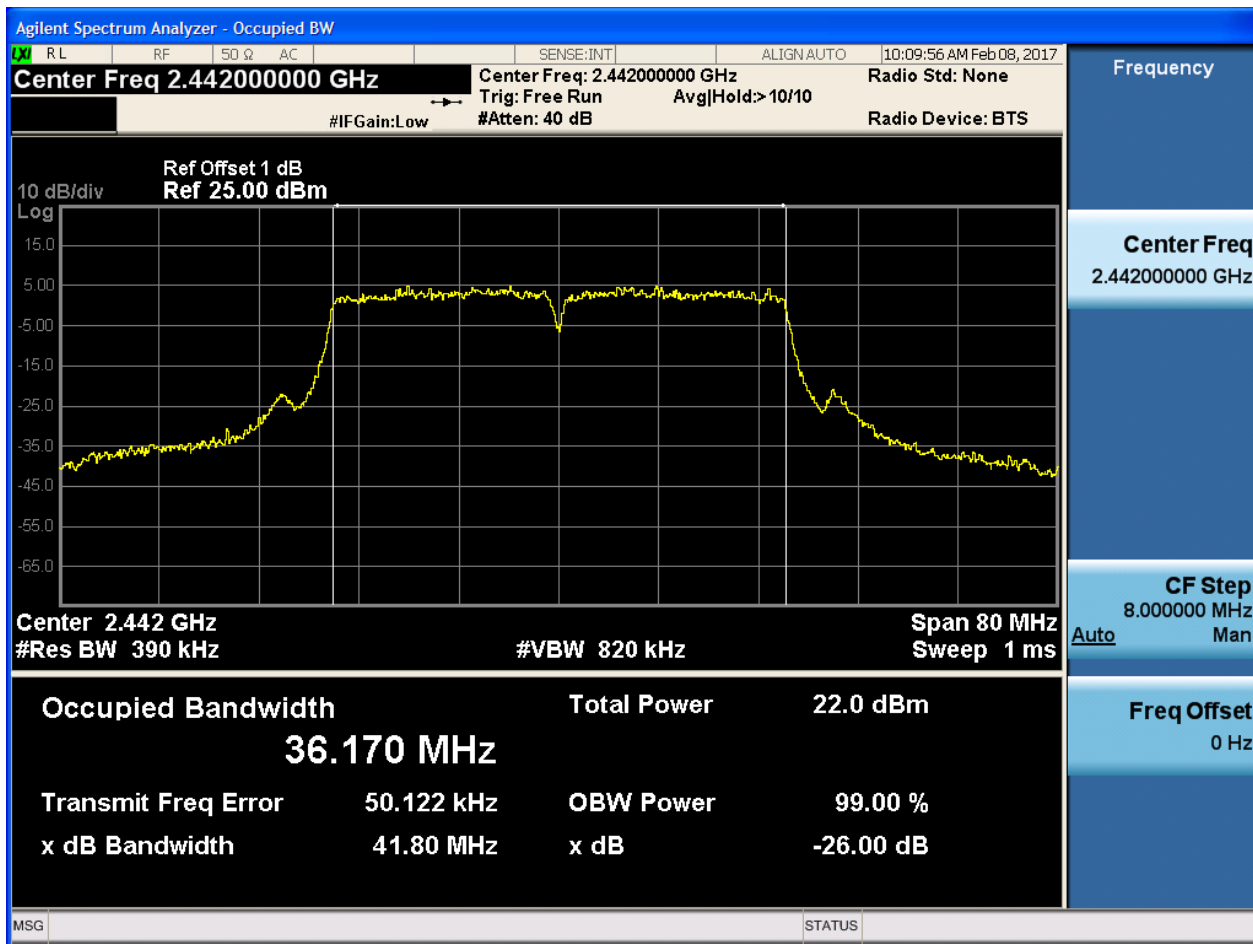


2.30 11N40_H@Ant 2



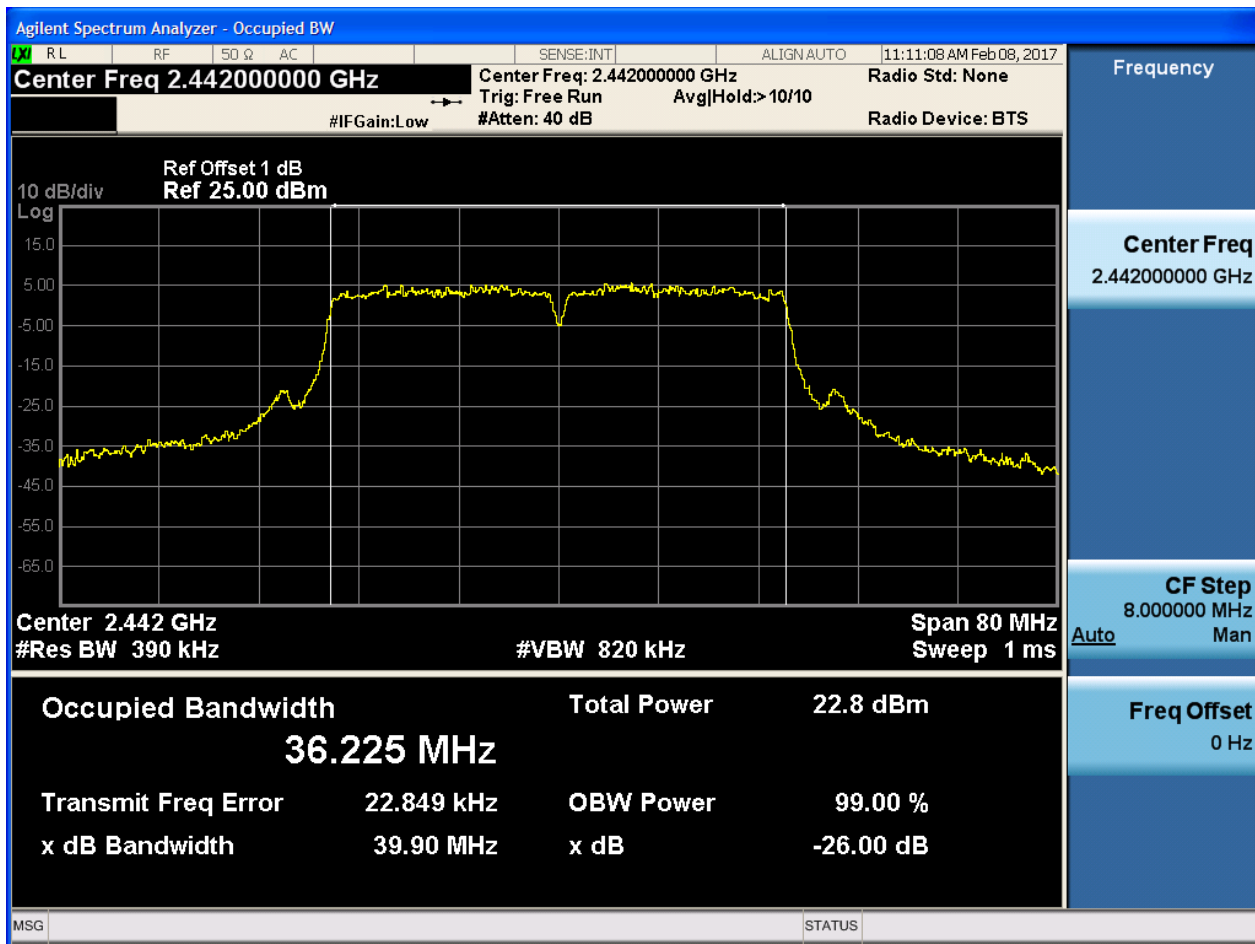


2.31 11N40m_L@Ant 1



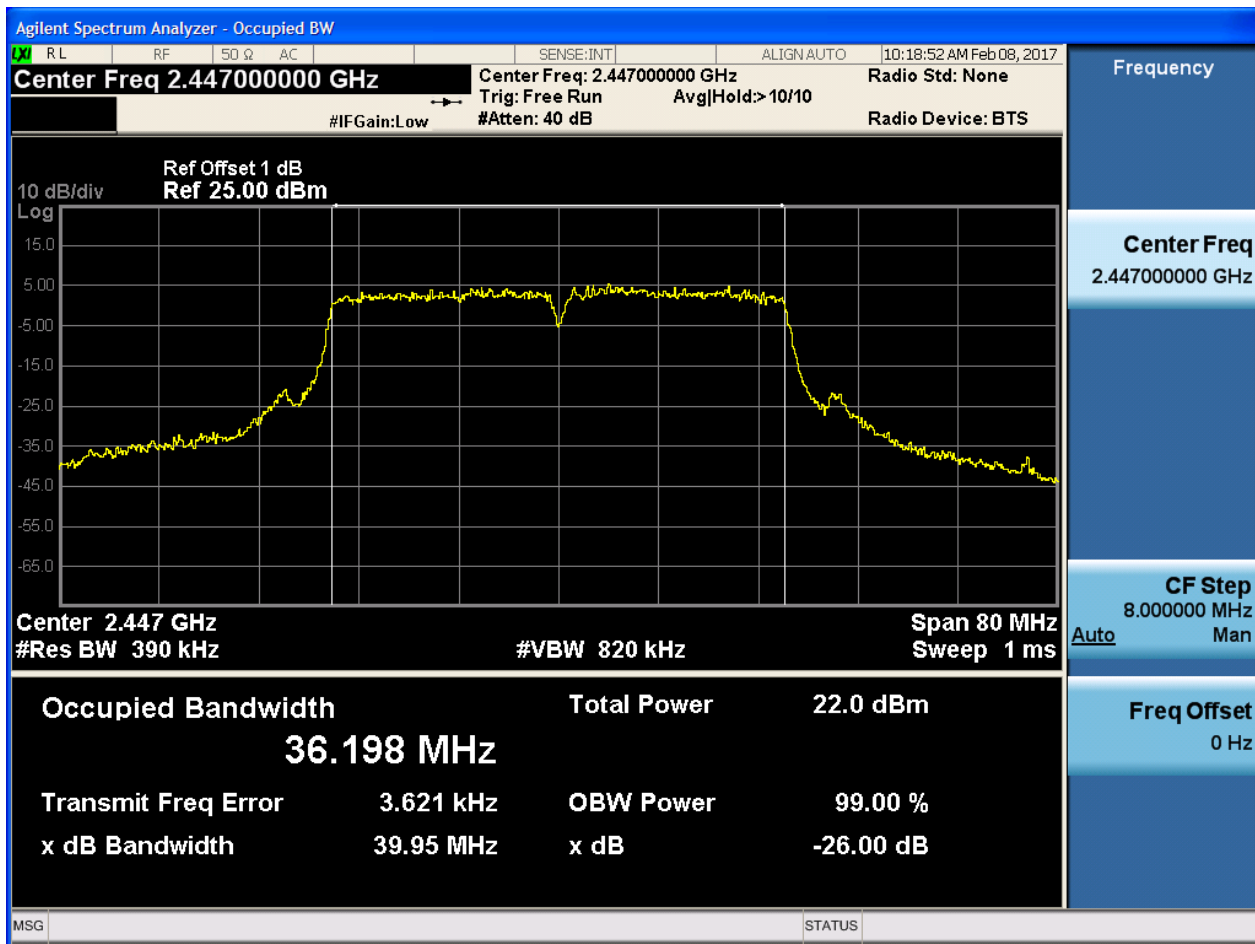


2.32 11N40m_L@Ant 2



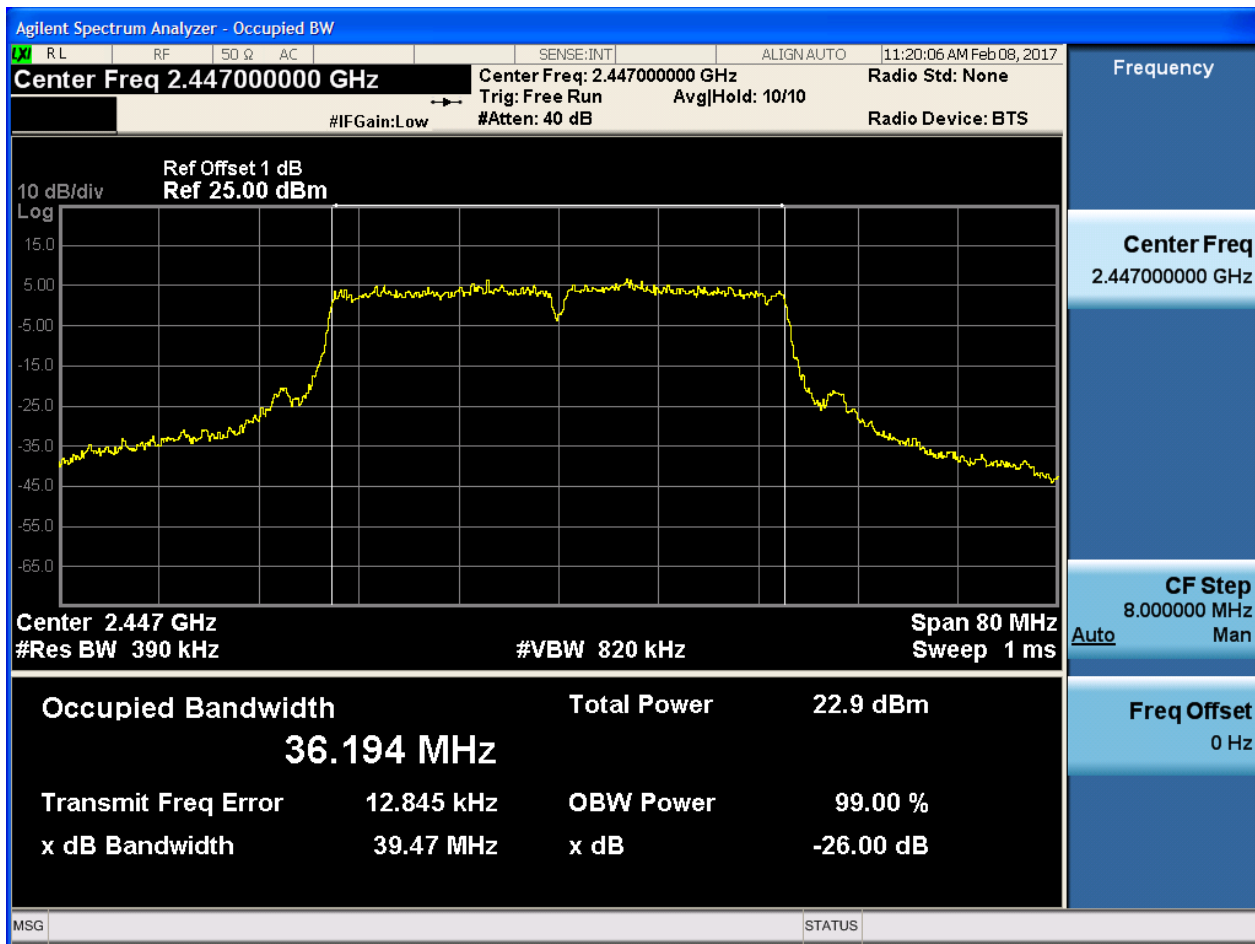


2.33 11N40m_M@Ant 1



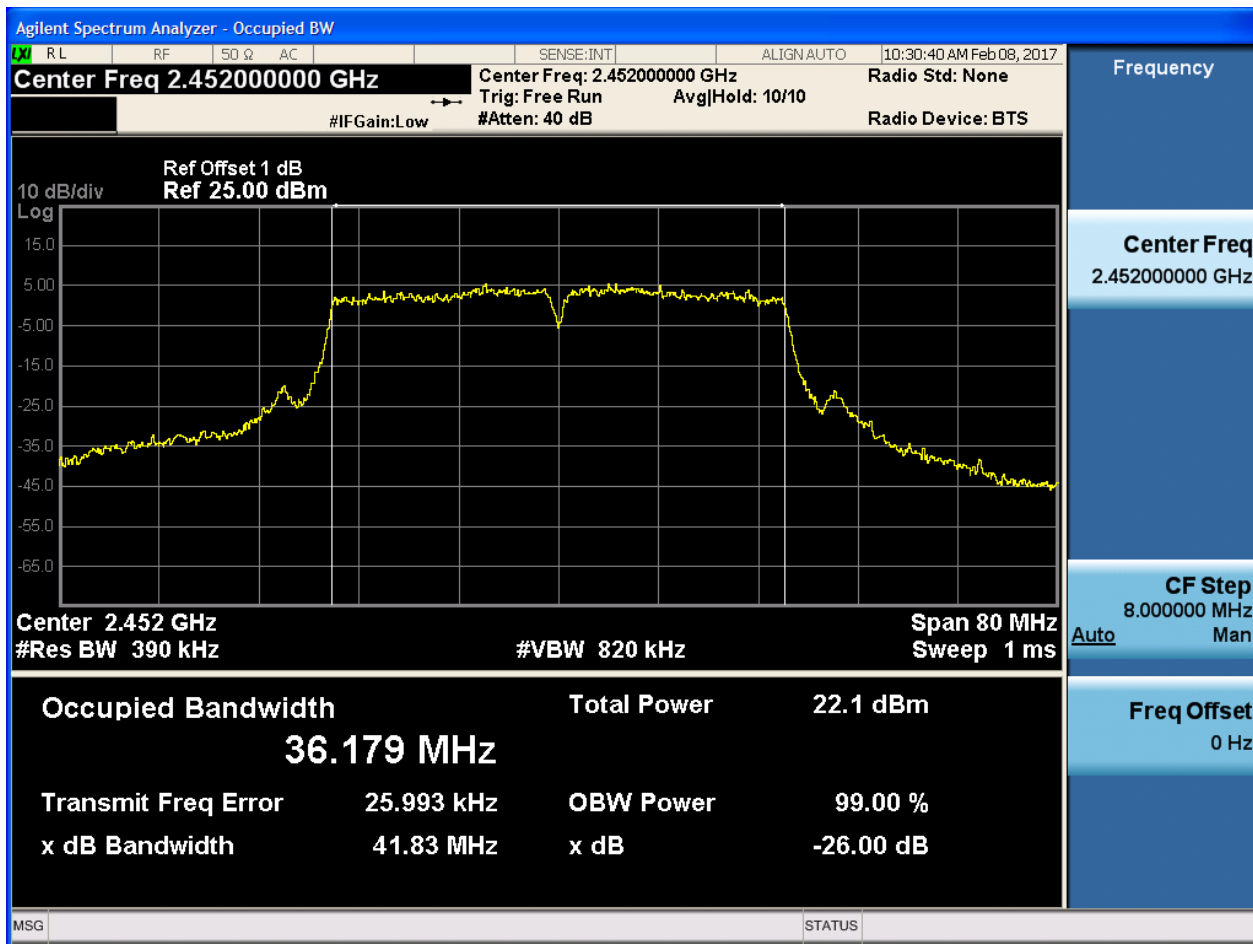


2.34 11N40m_M@Ant 2



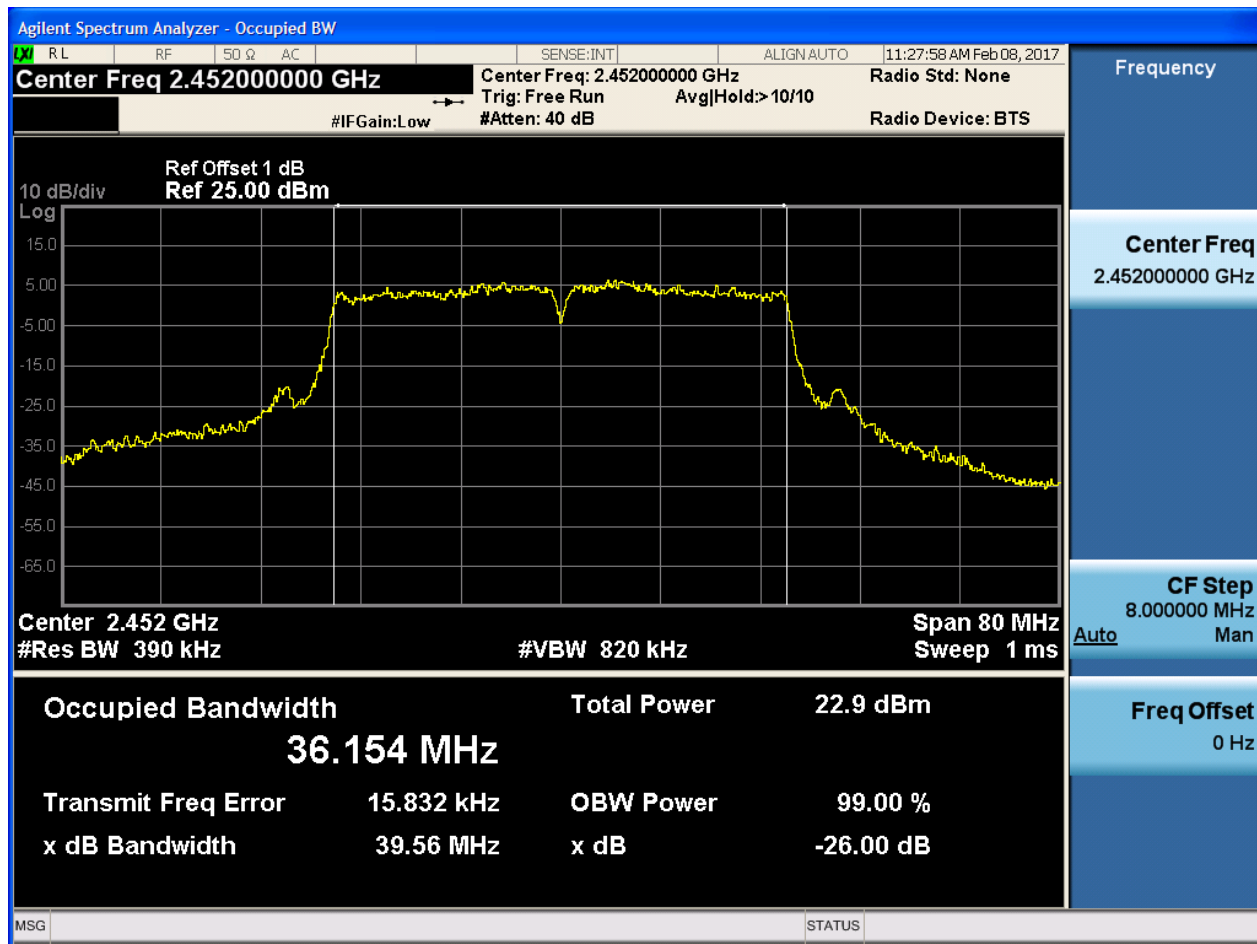


2.35 11N40m_H@Ant 1





2.36 11N40m_H@Ant 2



Appendix C: Duty Cycle

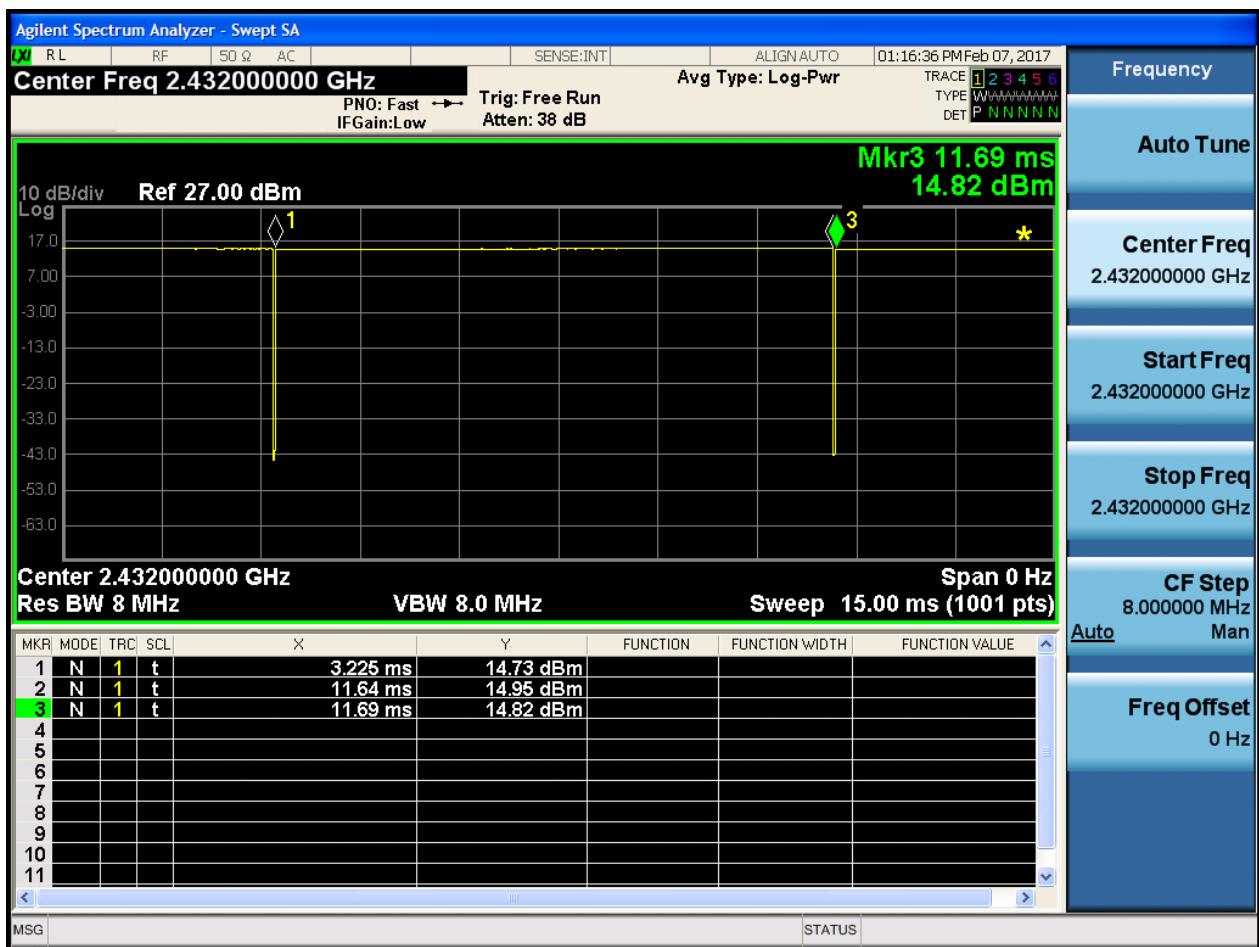
Part I - Test Results

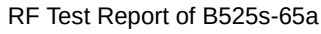
Test Mode	TX Freq. [MHz]	Ant	Duty cycle [%]
11B	CH5,CH8,CH11	Ant 1	99
11B	CH5,CH8,CH11	Ant 2	99
11G	CH5,CH8,CH11	Ant 1	96.5
11G	CH5,CH8,CH11	Ant 2	96.5
11N20SISO	CH5,CH8,CH11	Ant 1	76
11N20SISO	CH5,CH8,CH11	Ant 2	76
11N20MIMO	CH5,CH8,CH11	Ant 1	67
11N20MIMO	CH5,CH8,CH11	Ant 2	67
11N40SISO	CH7,CH8,CH9	Ant 1	64.5
11N40SISO	CH7,CH8,CH9	Ant 2	64.5
11N40MIMO	CH7,CH8,CH9	Ant 1	60
11N40MIMO	CH7,CH8,CH9	Ant 2	60



Part II - Test Plots

2.1 11B_ANT1





Agilent Spectrum Analyzer - Swept SA

MX R L RF 50 Ω AC SENSE:INT ALIGN AUTO 09:45:49 AM Feb 07, 2017

GPIB Address 17 Avg Type: Log-Pwr PNO: Fast Trig: Free Run IFGain:Low Atten: 40 dB TRACE 1 2 3 4 5 6 TYPE P NNNNNN DET

10 dB/div Ref 30.00 dBm

Mkr3 13.01 ms 18.37 dBm

Center 2.432000000 GHz Span 0 Hz
Res BW 8 MHz VBW 8.0 MHz Sweep 15.00 ms (1001 pts)

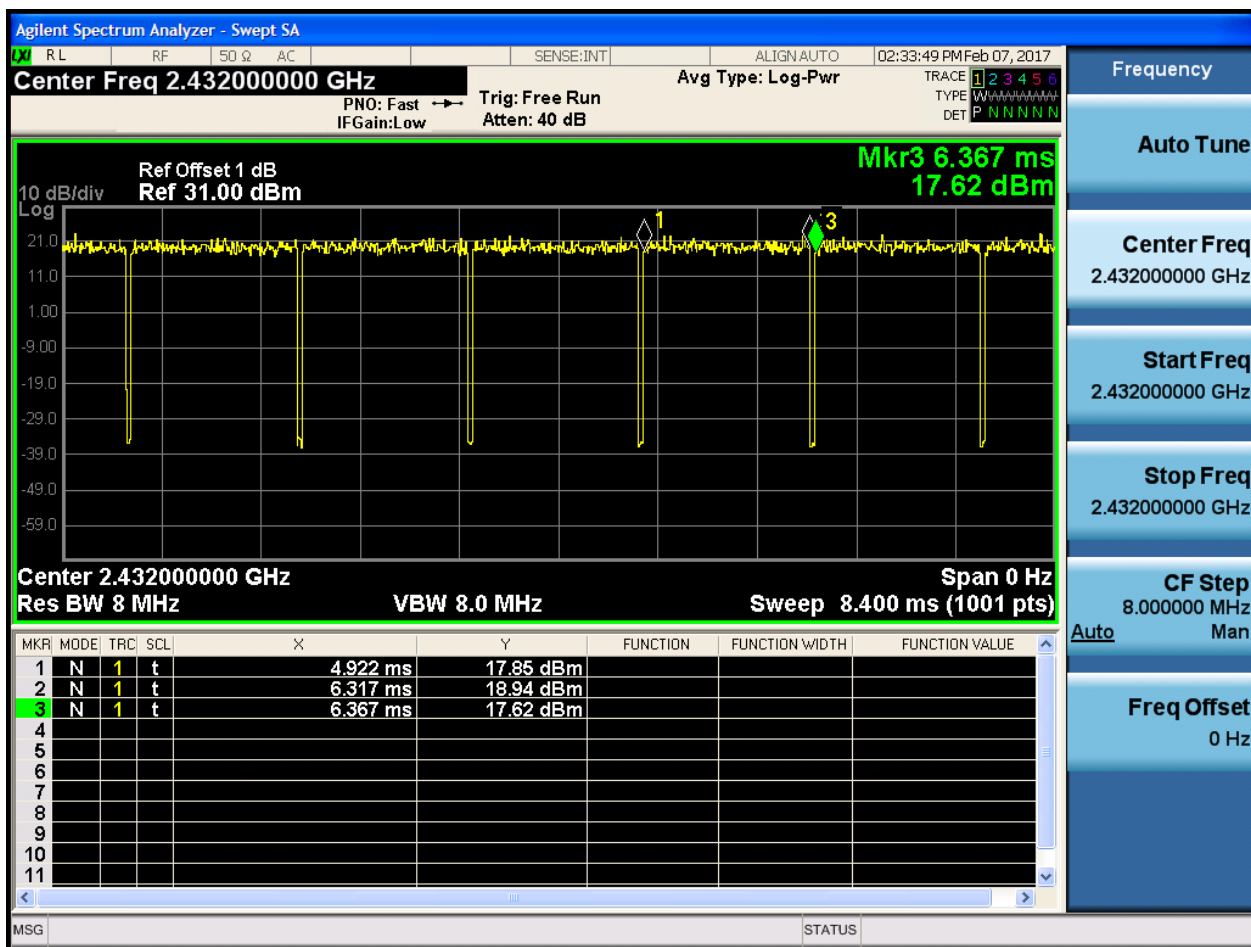
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	t	4.545 ms	18.03 dBm			
2	N	1	t	12.96 ms	18.28 dBm			
3	N	1	t	13.01 ms	18.37 dBm			
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

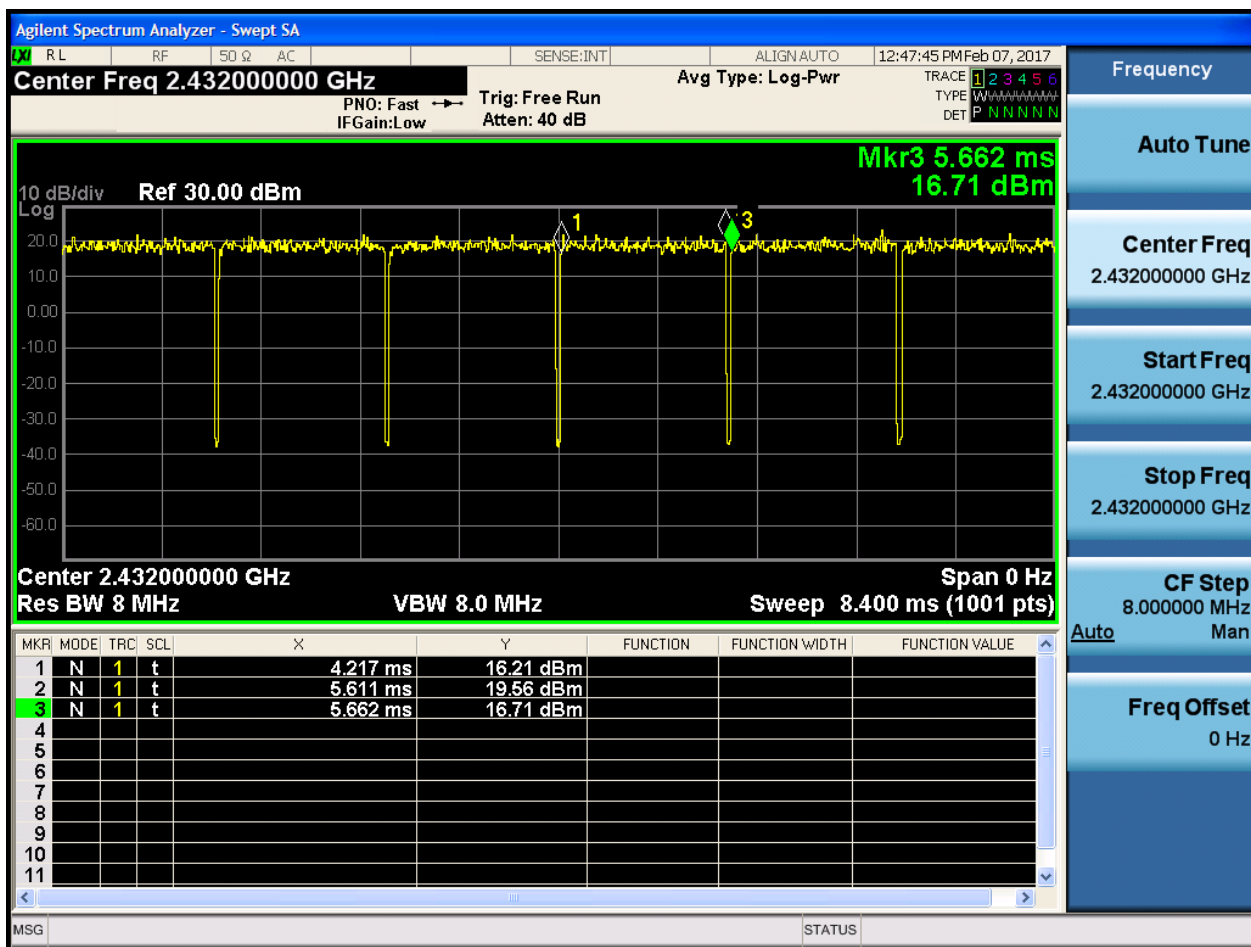
GPIB Address 17
GPIB Controller Disabled



2.3 11G_ANT1

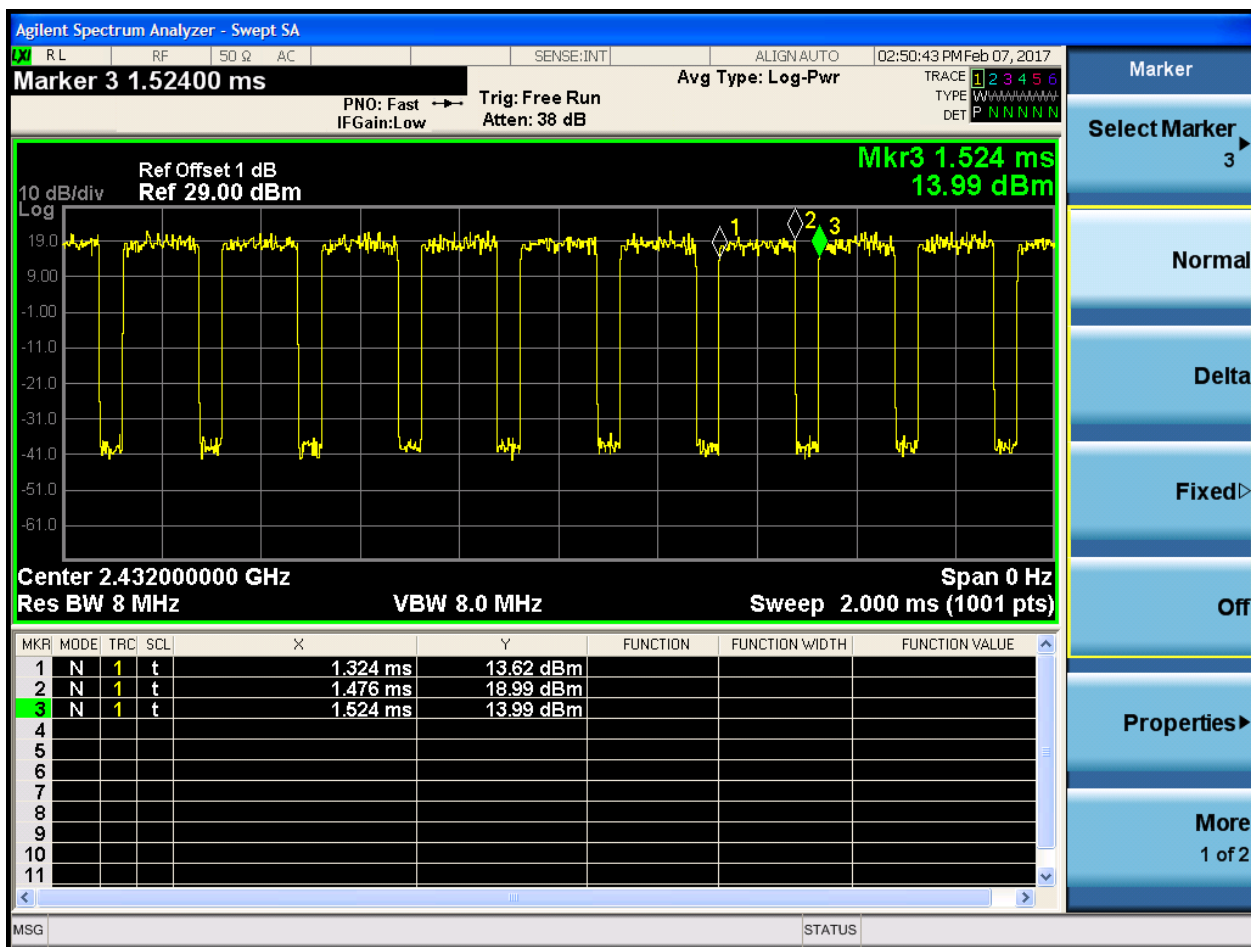


2.4 11G_ANT2



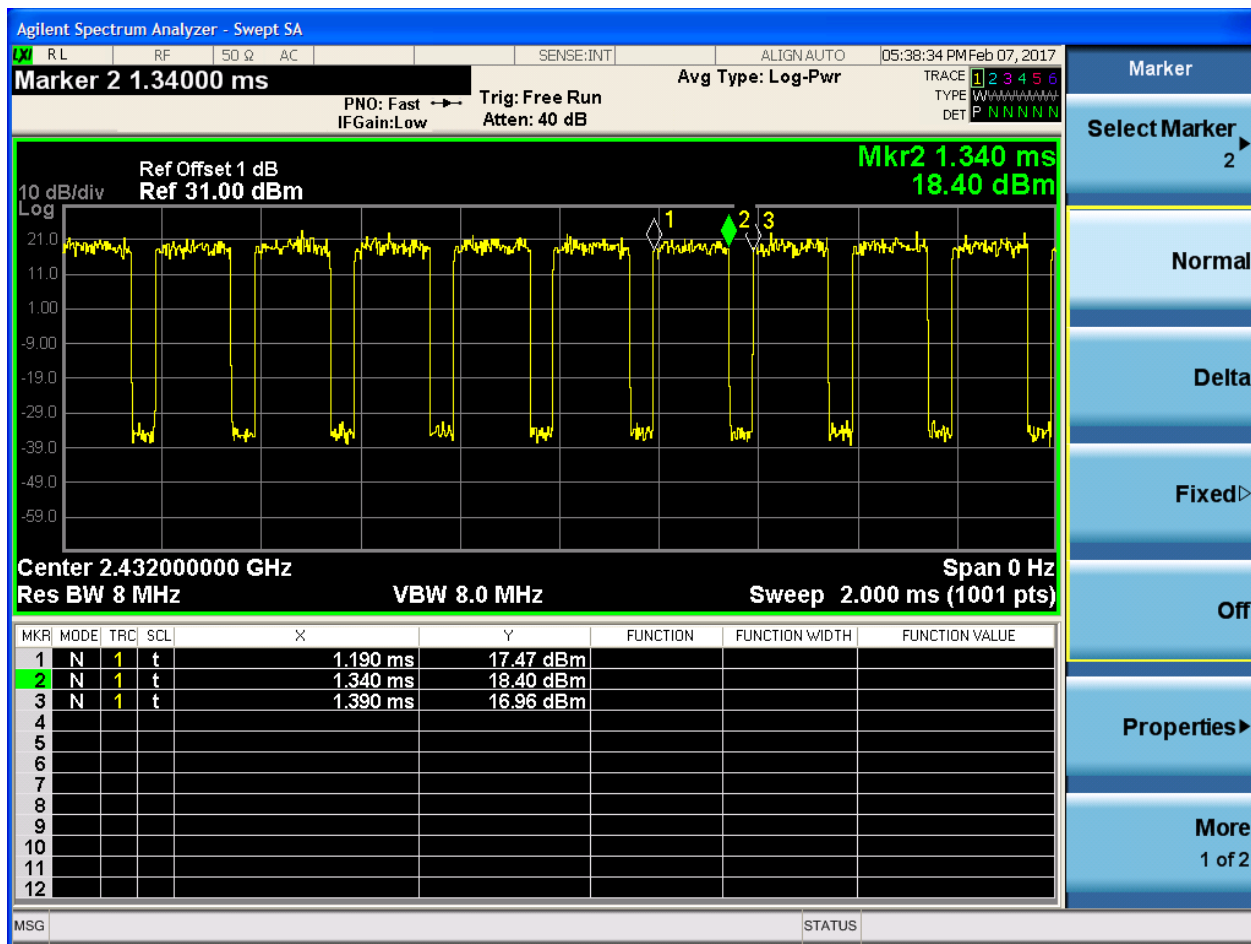


2.5 11N20SISO_ANT1



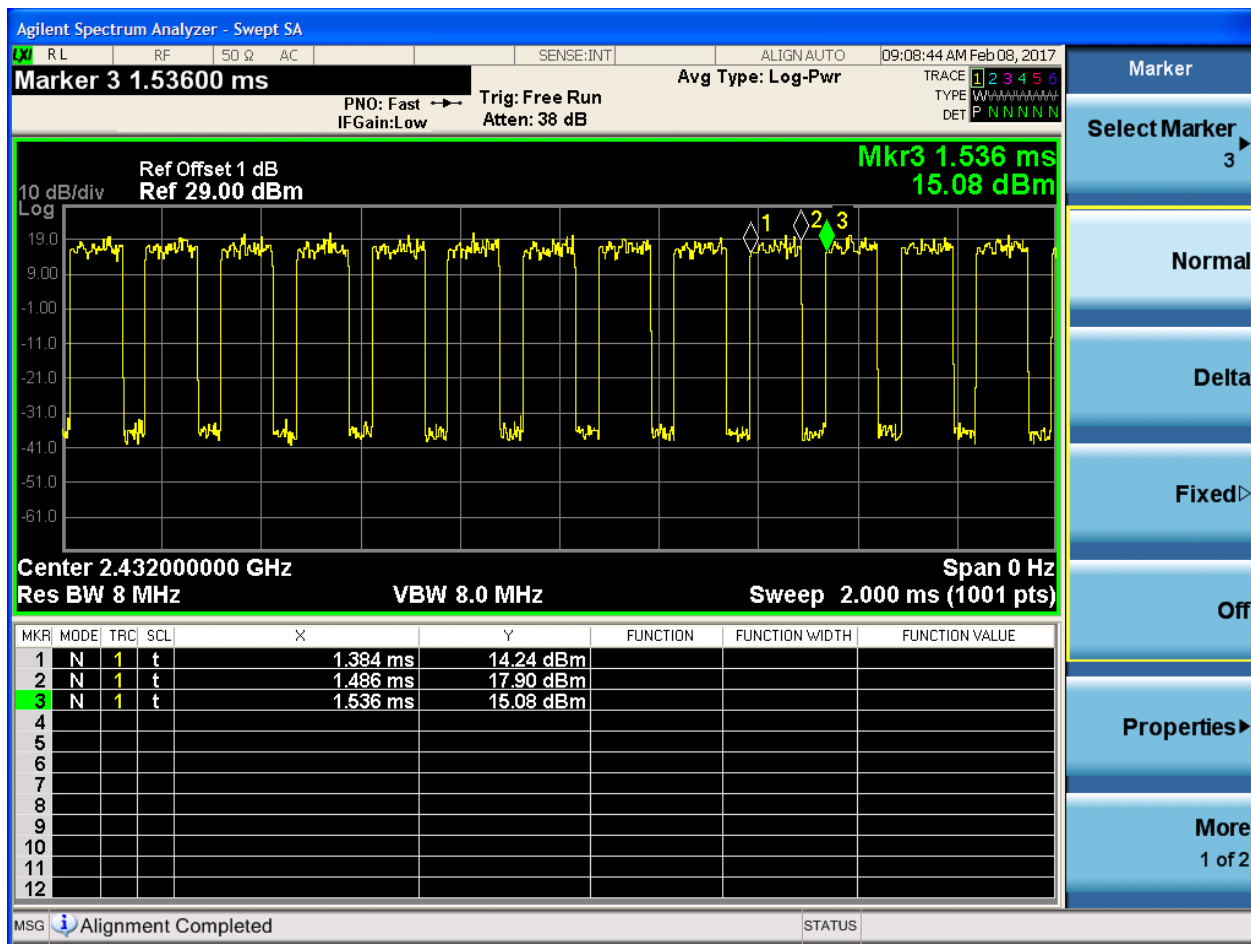


2.6 11N20SISO_ANT2



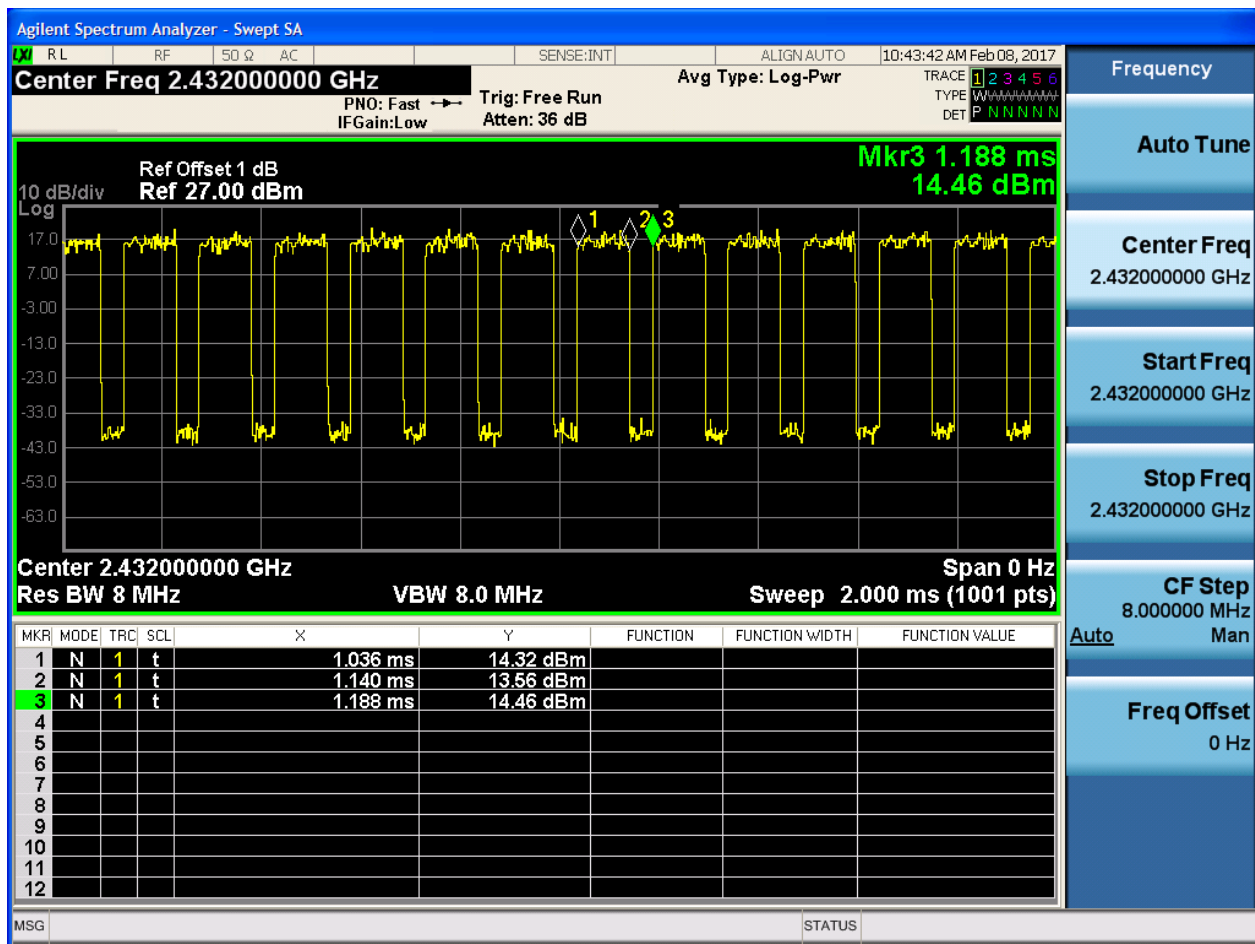


2.7 11N20MIMO_ANT1



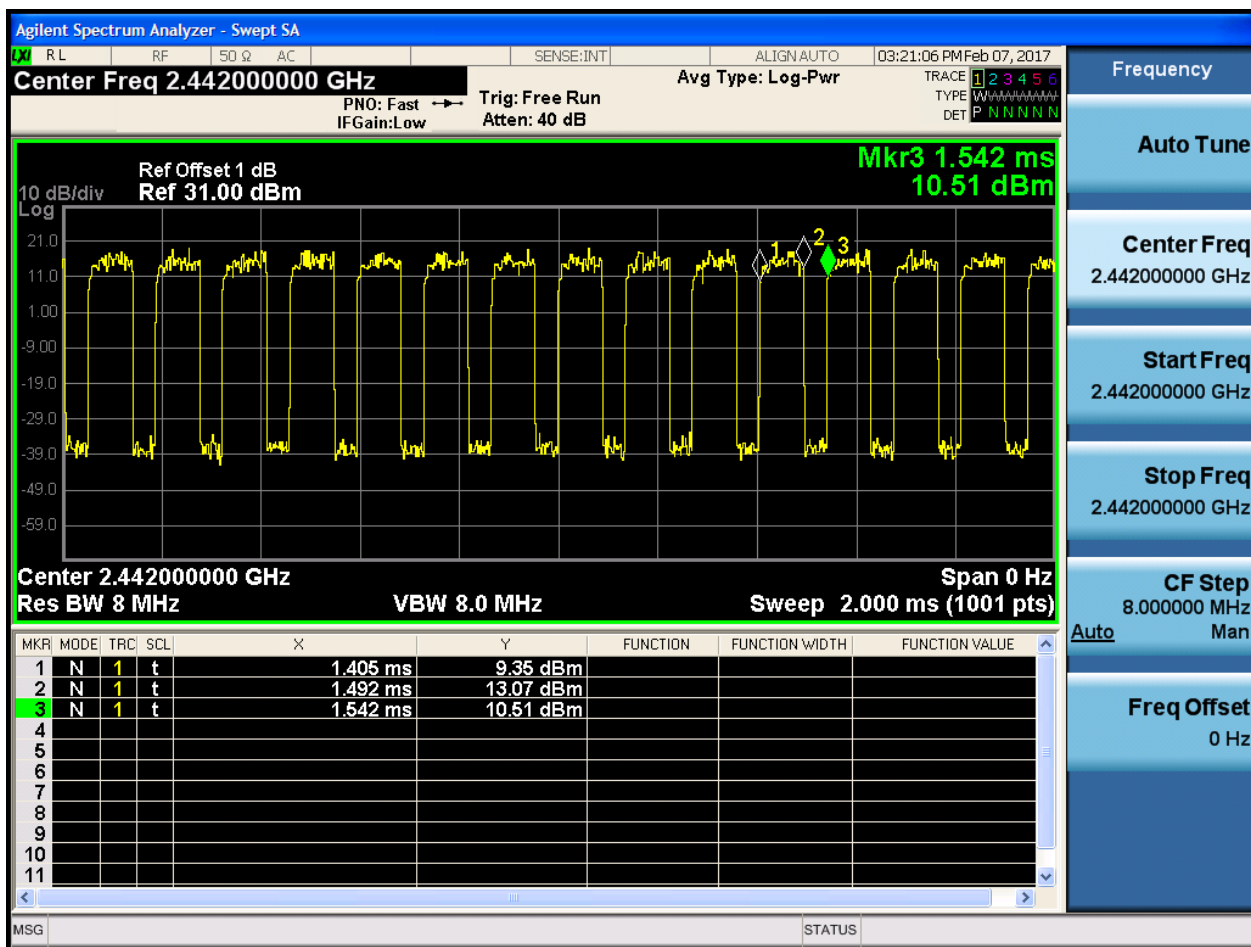


2.8 11N20MIMO_ANT2



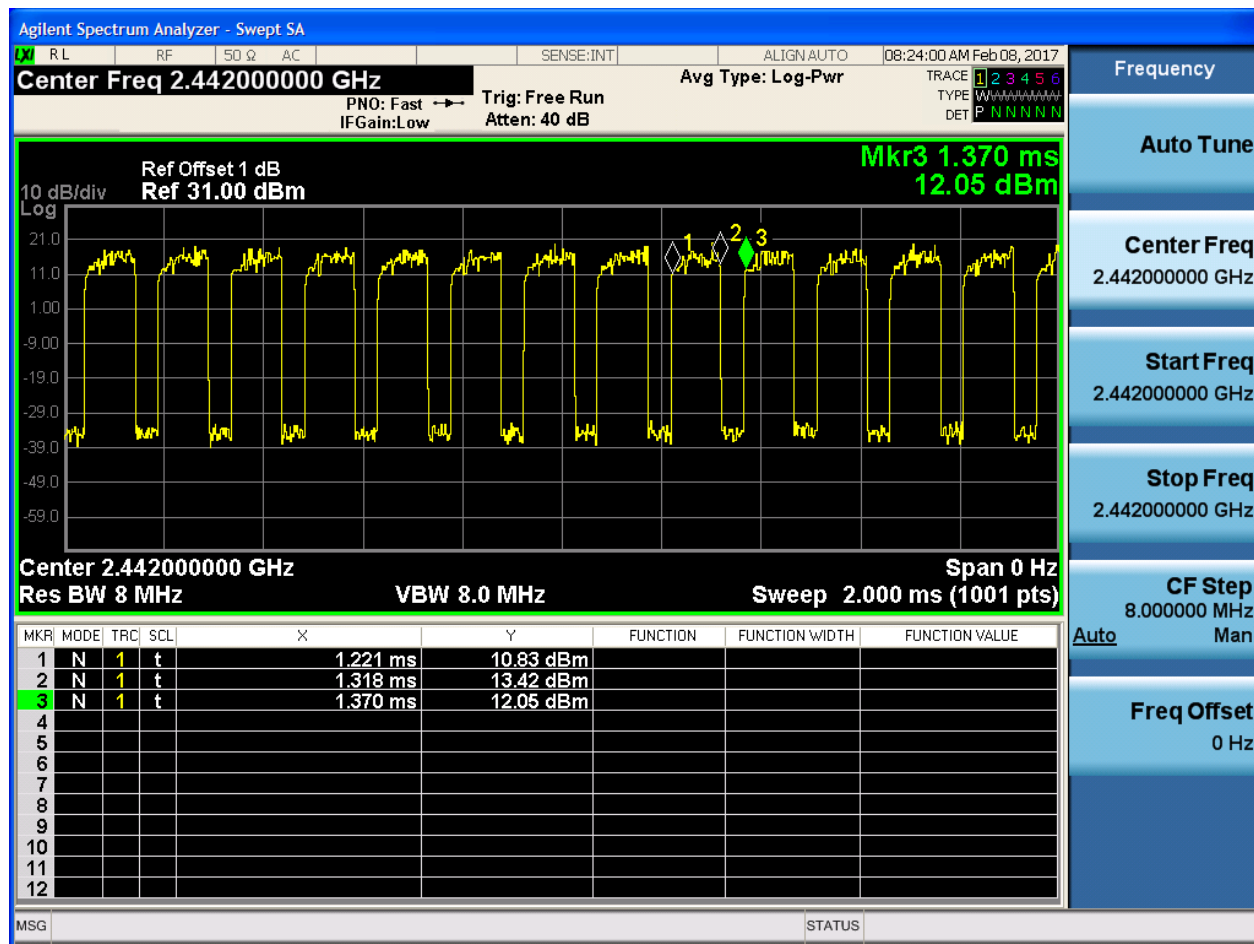


2.9 11N40SISO_ANT1



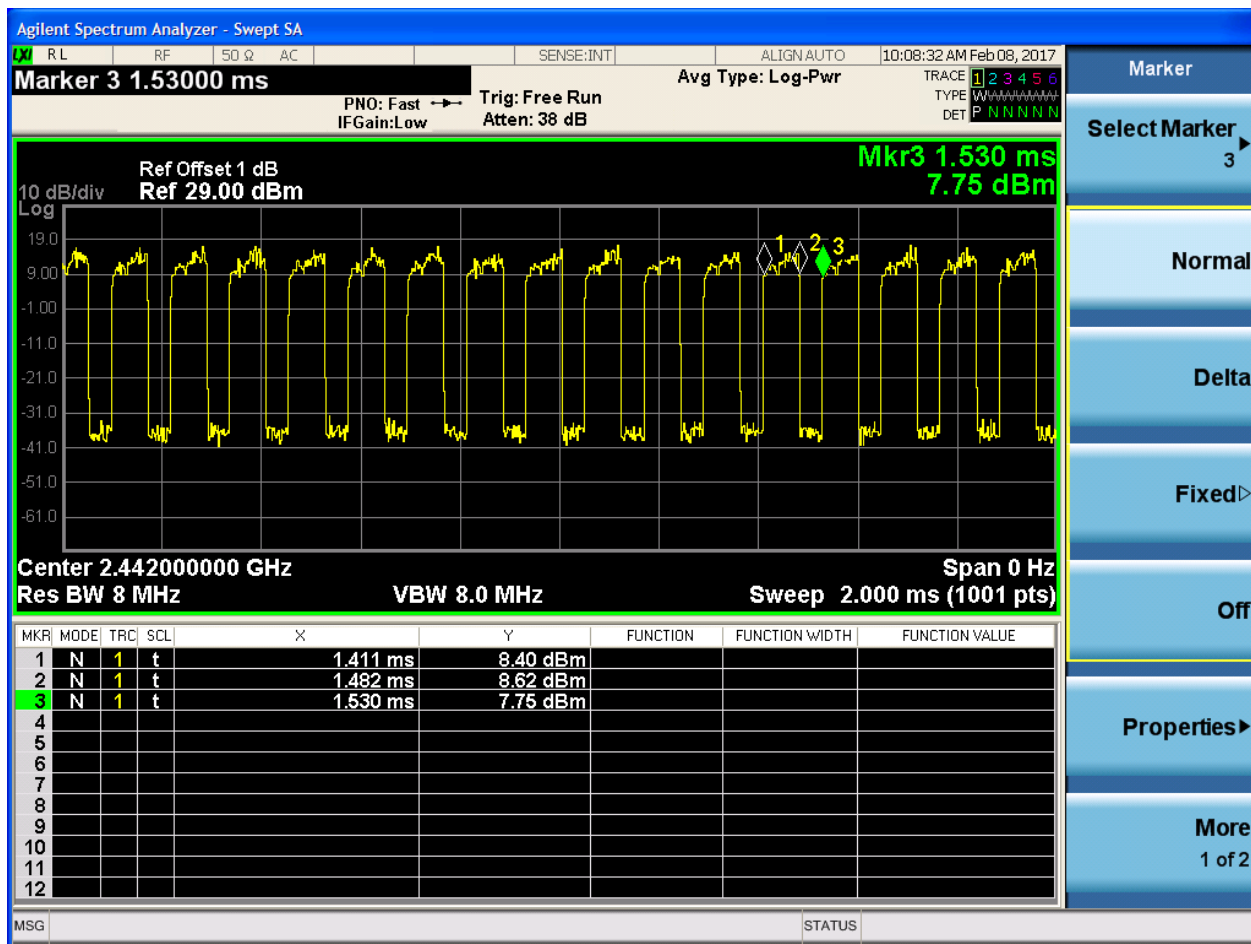


2.10 11N40SISO_ANT2



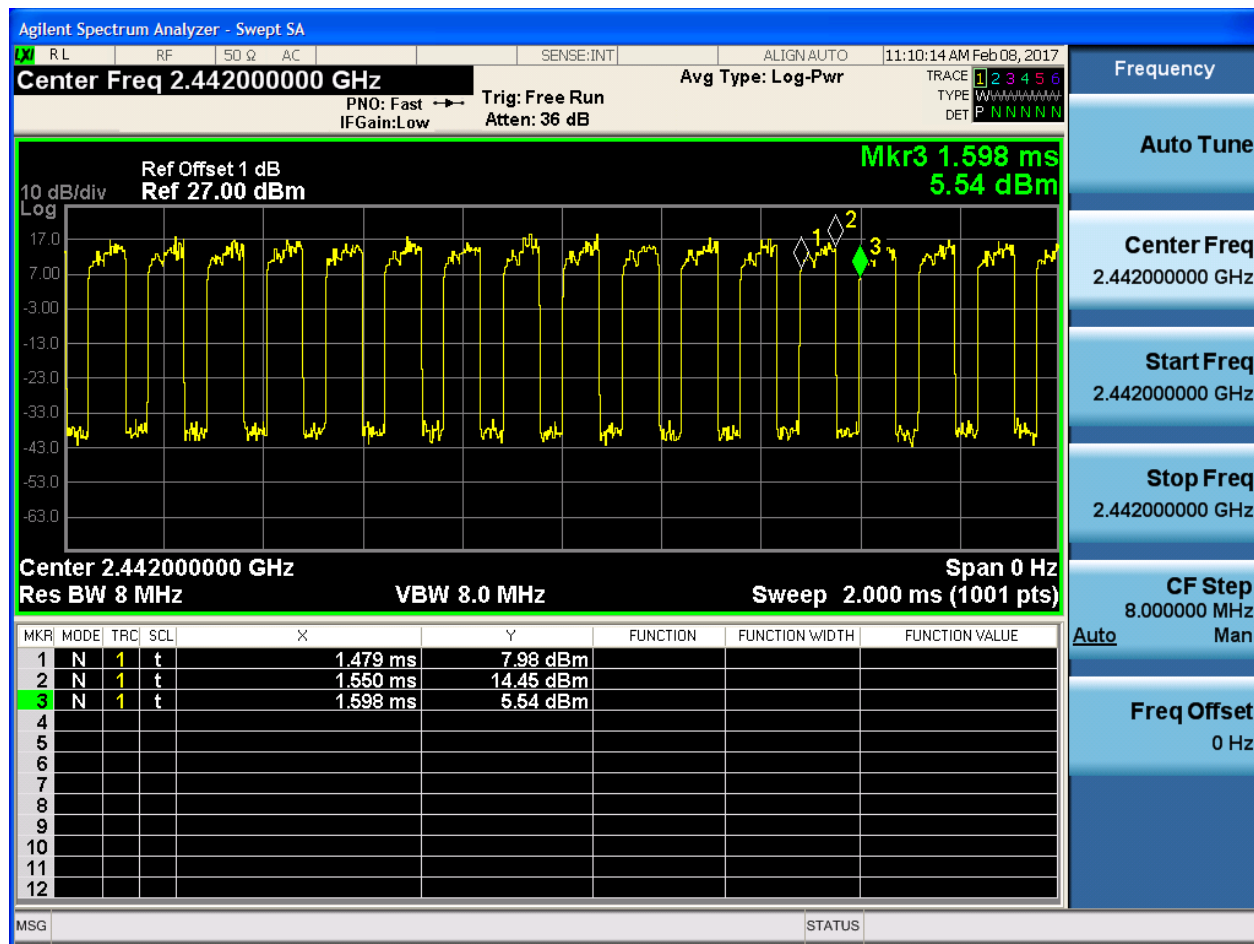


2.11 11N40MIMO_ANT1





2.12 11N40MIMO_ANT2



Appendix D: Maximum Conducted Average Output Power

Part I - Test Results

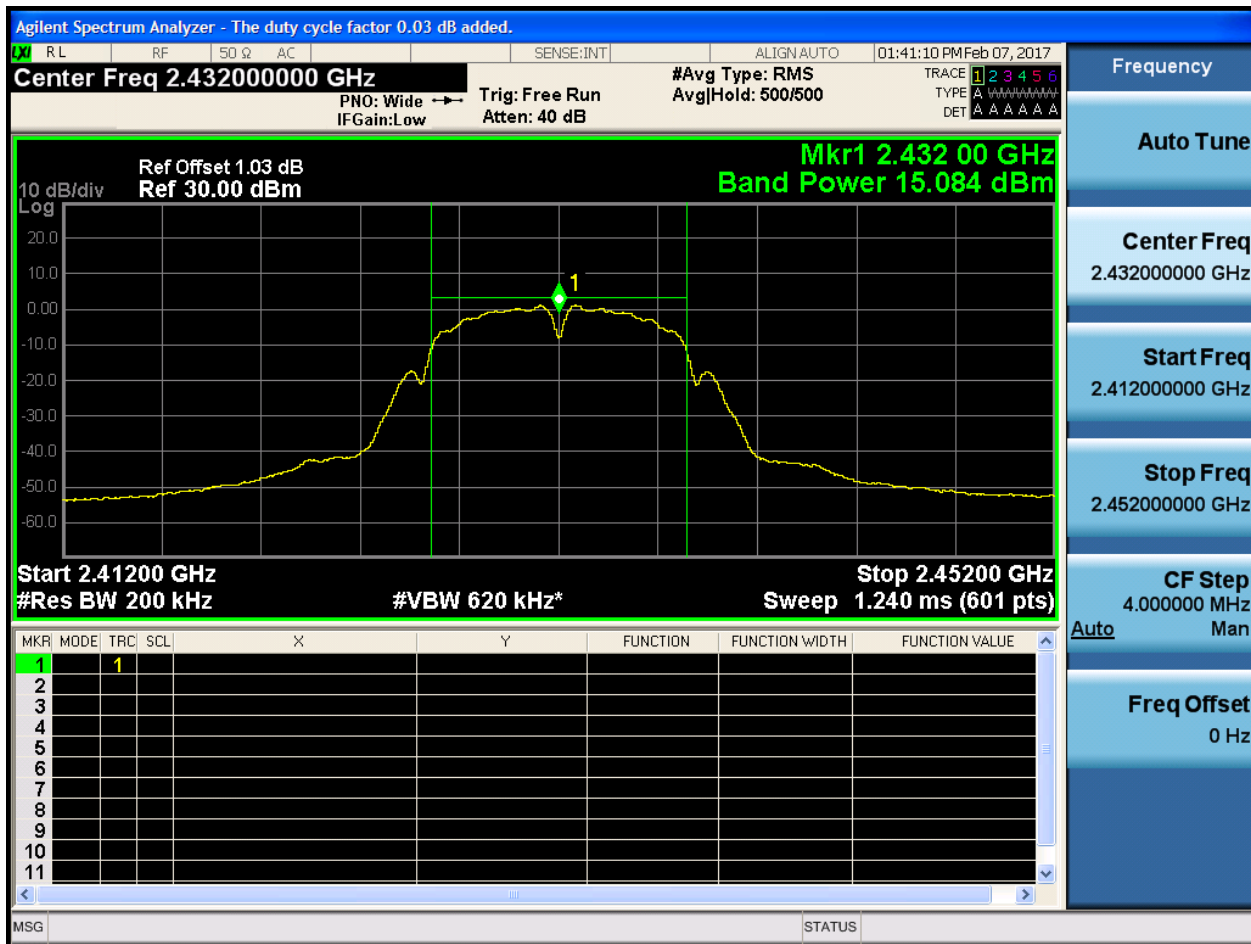
Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11B	L	2432	Ant 1	15.08	pass
11B	L	2432	Ant 2	15.47	pass
11B	M	2447	Ant 1	15.66	pass
11B	M	2447	Ant 2	15.60	pass
11B	H	2462	Ant 1	15.90	pass
11B	H	2462	Ant 2	15.57	pass
11G	L	2432	Ant 1	16.14	pass
11G	L	2432	Ant 2	16.40	pass
11G	M	2447	Ant 1	16.71	pass
11G	M	2447	Ant 2	16.54	pass
11G	H	2462	Ant 1	16.82	pass
11G	H	2462	Ant 2	16.58	pass
11N20	L	2432	Ant 1	16.41	pass
11N20	L	2432	Ant 2	16.70	pass
11N20	M	2447	Ant 1	17.00	pass
11N20	M	2447	Ant 2	16.70	pass
11N20	H	2462	Ant 1	17.10	pass
11N20	H	2462	Ant 2	16.66	pass
11N20m	L	2432	Ant 1	14.09	pass
11N20m	L	2432	Ant 2	14.18	pass
11N20m	L	2432	SUM	17.15	pass
11N20m	M	2447	Ant 1	14.36	pass
11N20m	M	2447	Ant 2	14.18	pass
11N20m	M	2447	SUM	17.28	pass
11N20m	H	2462	Ant 1	14.49	pass
11N20m	H	2462	Ant 2	14.17	pass
11N20m	H	2462	SUM	17.34	pass
11N40	L	2442	Ant 1	17.17	pass
11N40	L	2442	Ant 2	16.96	pass
11N40	M	2447	Ant 1	17.19	pass
11N40	M	2447	Ant 2	17.00	pass
11N40	H	2452	Ant 1	17.55	pass
11N40	H	2452	Ant 2	17.06	pass
11N40m	L	2442	Ant 1	14.39	pass
11N40m	L	2442	Ant 2	15.35	pass

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11N40m	L	2442	SUM	17.91	pass
11N40m	M	2447	Ant 1	14.48	pass
11N40m	M	2447	Ant 2	15.39	pass
11N40m	M	2447	SUM	17.97	pass
11N40m	H	2452	Ant 1	14.44	pass
11N40m	H	2452	Ant 2	15.43	pass
11N40m	H	2452	SUM	17.97	pass



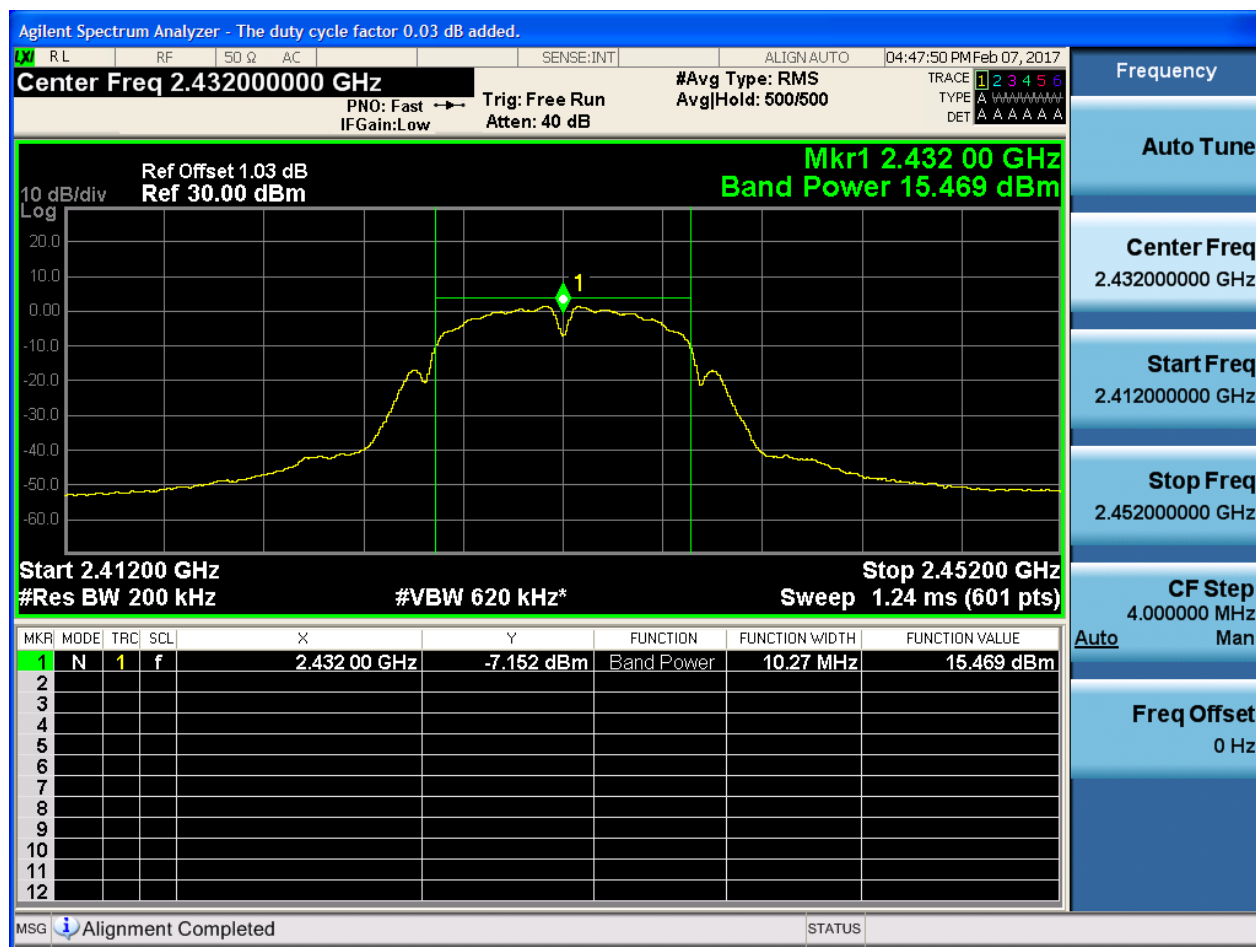
Part II - Test Plots

2.1 11B_L@Ant 1



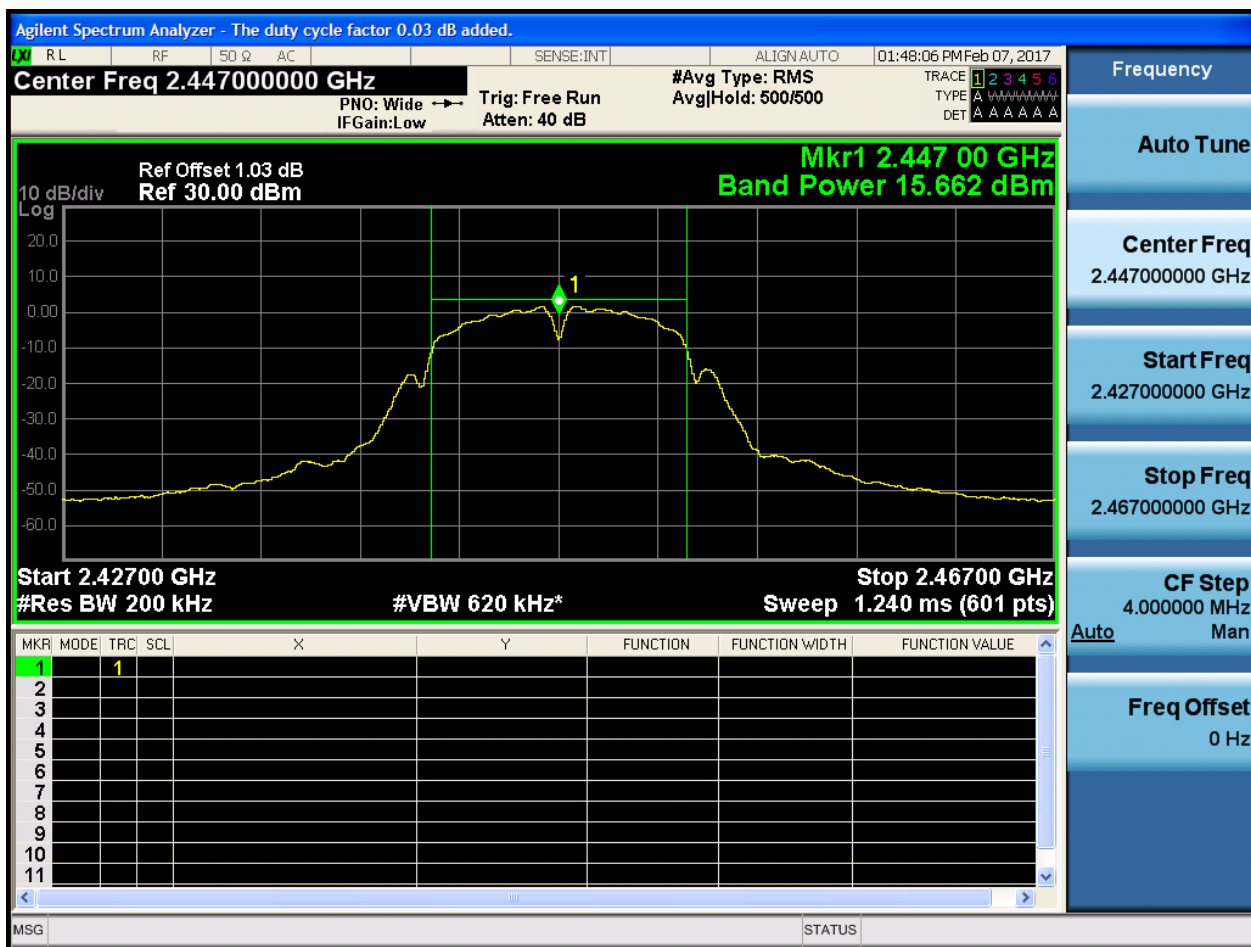


2.2 11B_L@Ant 2



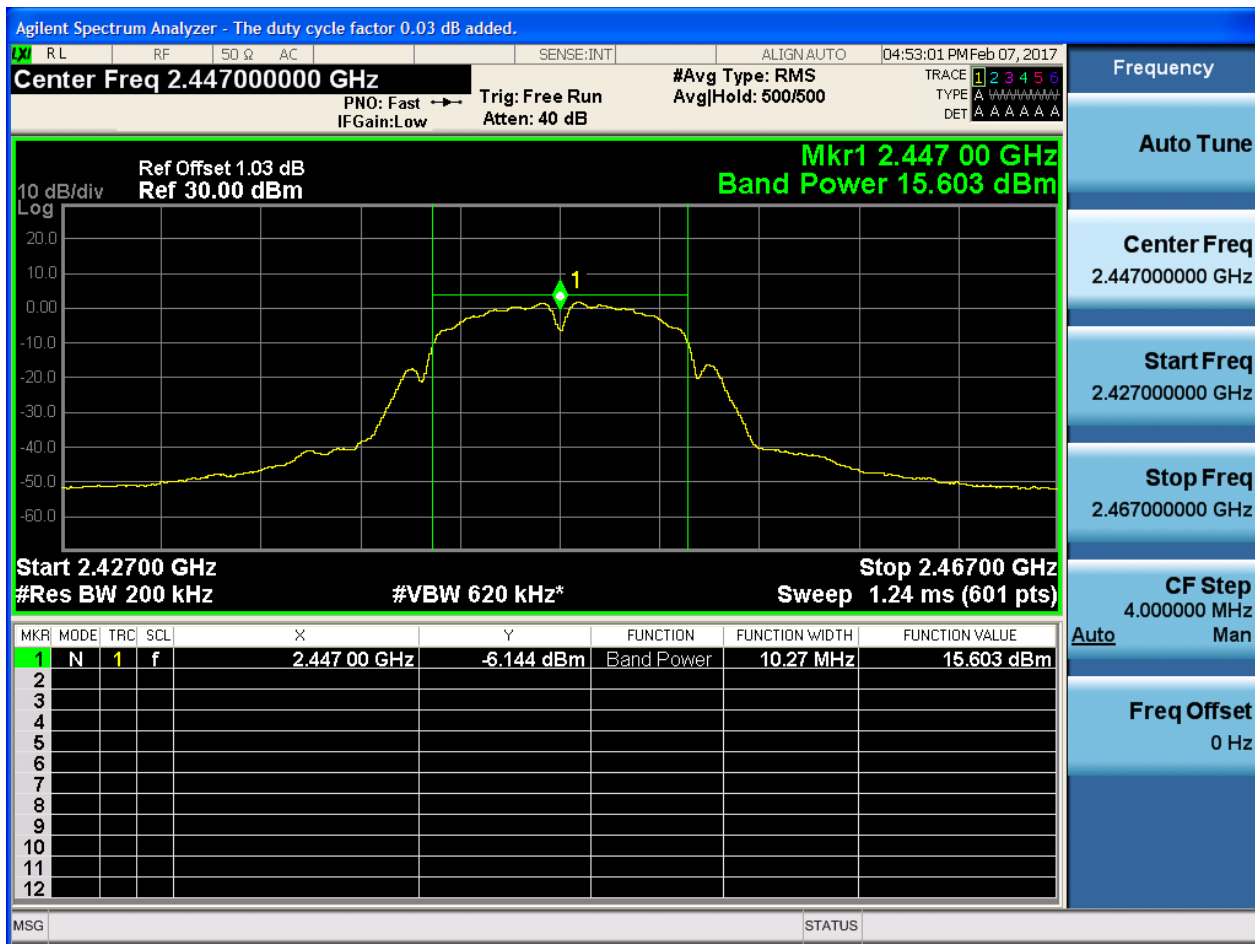


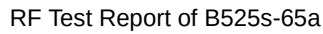
2.3 11B_M@Ant 1





2.4 11B_M@Ant 2





Agilent Spectrum Analyzer - The duty cycle factor 0.03 dB added.

Center Freq 2.46200000 GHz

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

Ref Offset 1.03 dB
Ref 30.00 dBm

Mkr1 2.462 00 GHz
Band Power 15.896 dBm

Start 2.44200 GHz
#Res BW 200 kHz

Stop 2.48200 GHz
Sweep 1.240 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1		1						
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

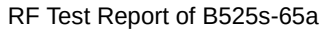
Center Freq
2.46200000 GHz

Start Freq
2.44200000 GHz

Stop Freq
2.48200000 GHz

CF Step
4.000000 MHz
Auto

Freq Offset
0 Hz



Agilent Spectrum Analyzer - The duty cycle factor 0.03 dB added.

RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 04:57:59 PM Feb 07, 2017

Center Freq 2.46200000 GHz #Avg Type: RMS
 PNO: Fast Trig: Free Run Avg|Hold: 500/500
 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 1.03 dB
 Ref 30.00 dBm

Mkr1 2.462 00 GHz
Band Power 15.568 dBm

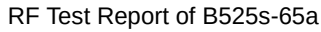
10 dB/div
 Log

Start 2.44200 GHz Stop 2.48200 GHz
 #Res BW 200 kHz #VBW 620 kHz* Sweep 1.24 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.462 00 GHz	-6.168 dBm	Band Power	10.27 MHz	15.568 dBm
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

MSG STATUS

Frequency
 Auto Tune
 Center Freq 2.46200000 GHz
 Start Freq 2.442000000 GHz
 Stop Freq 2.482000000 GHz
 CF Step 4.000000 MHz Man
 Freq Offset 0 Hz



Agilent Spectrum Analyzer - The duty cycle factor 0.15 dB added.

Center Freq 2.43200000 GHz

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

Ref Offset 1.15 dB
Ref 30.00 dBm

Mkr1 2.432 00 GHz
Band Power 16.143 dBm

Start 2.41200 GHz
#Res BW 200 kHz

Stop 2.45200 GHz
Sweep 1.240 ms (601 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.432 00 GHz	-10.085 dBm	Band Power	16.80 MHz	16.143 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq
2.43200000 GHz

Start Freq
2.41200000 GHz

Stop Freq
2.45200000 GHz

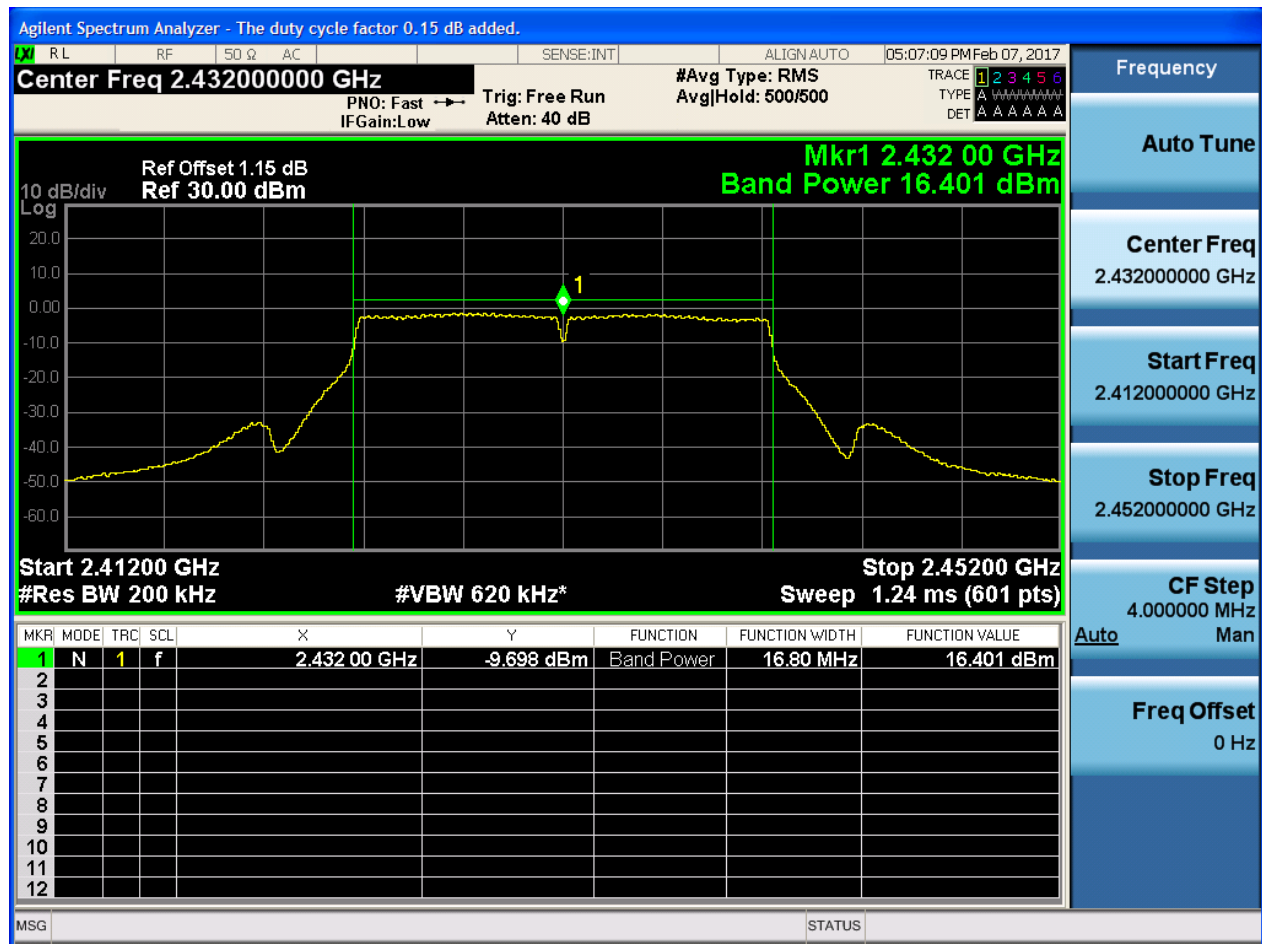
CF Step
4.000000 MHz

Auto

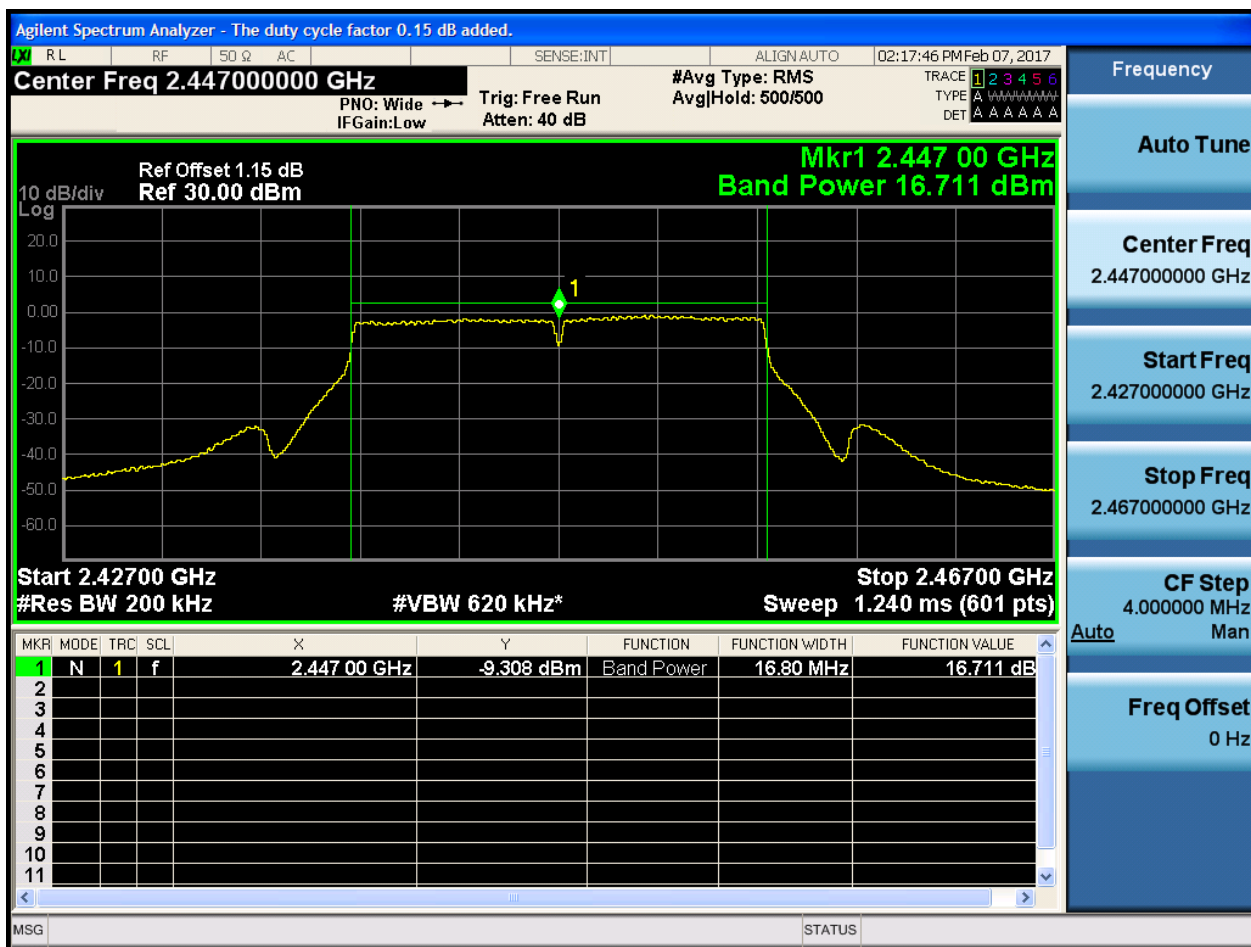
Freq Offset
0 Hz



2.8 11G_L@Ant 2

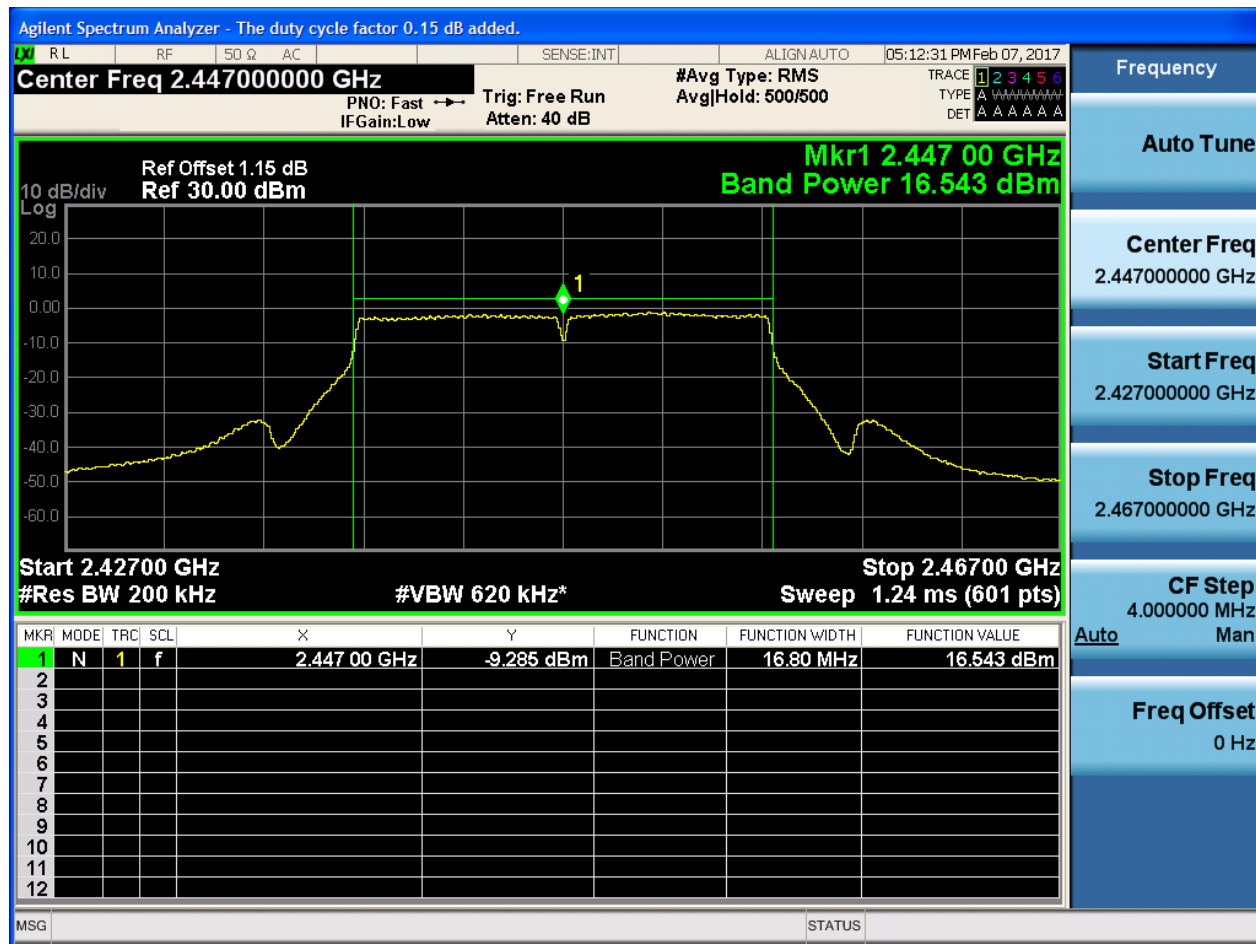


2.9 11G_M@Ant 1



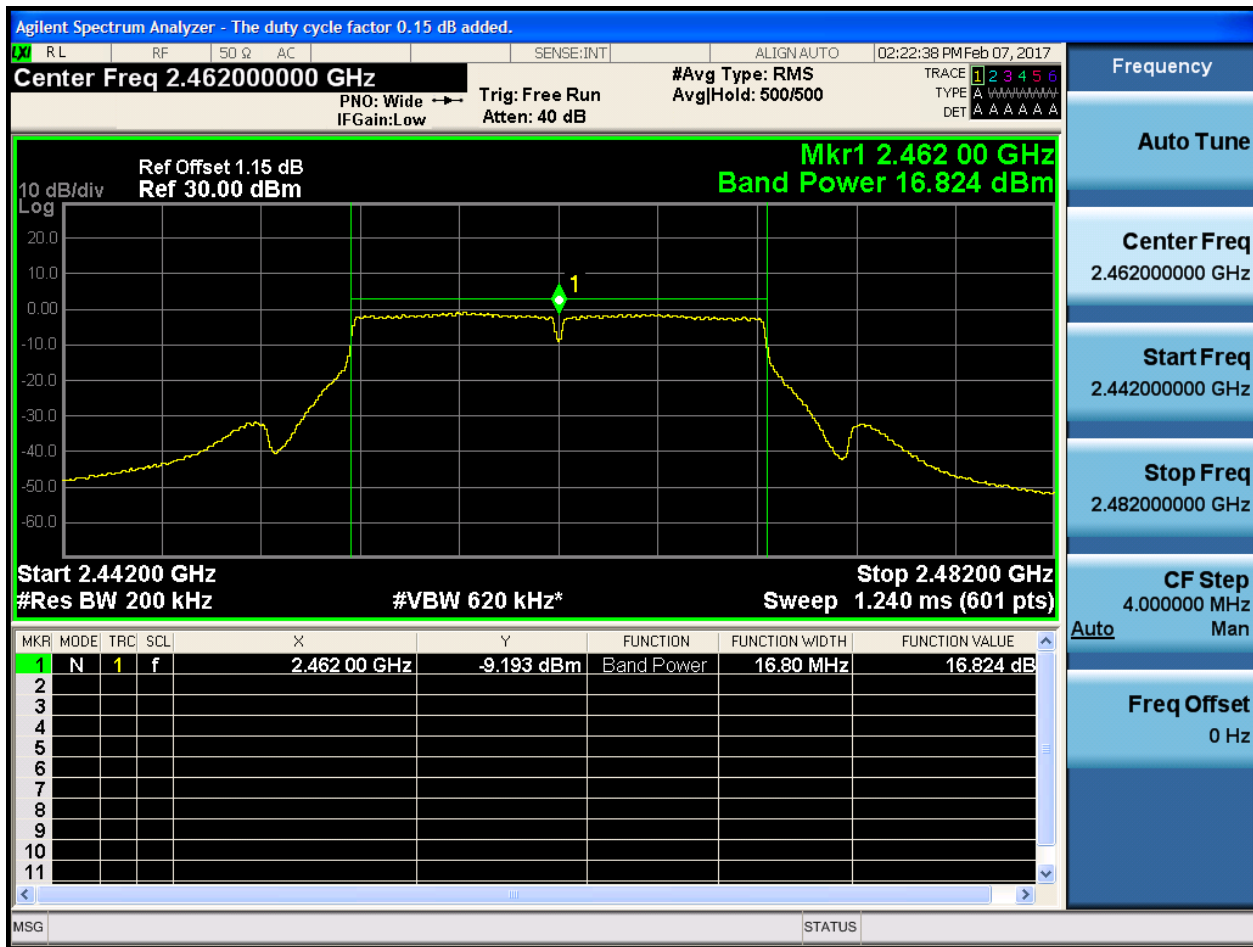


2.10 11G_M@Ant 2



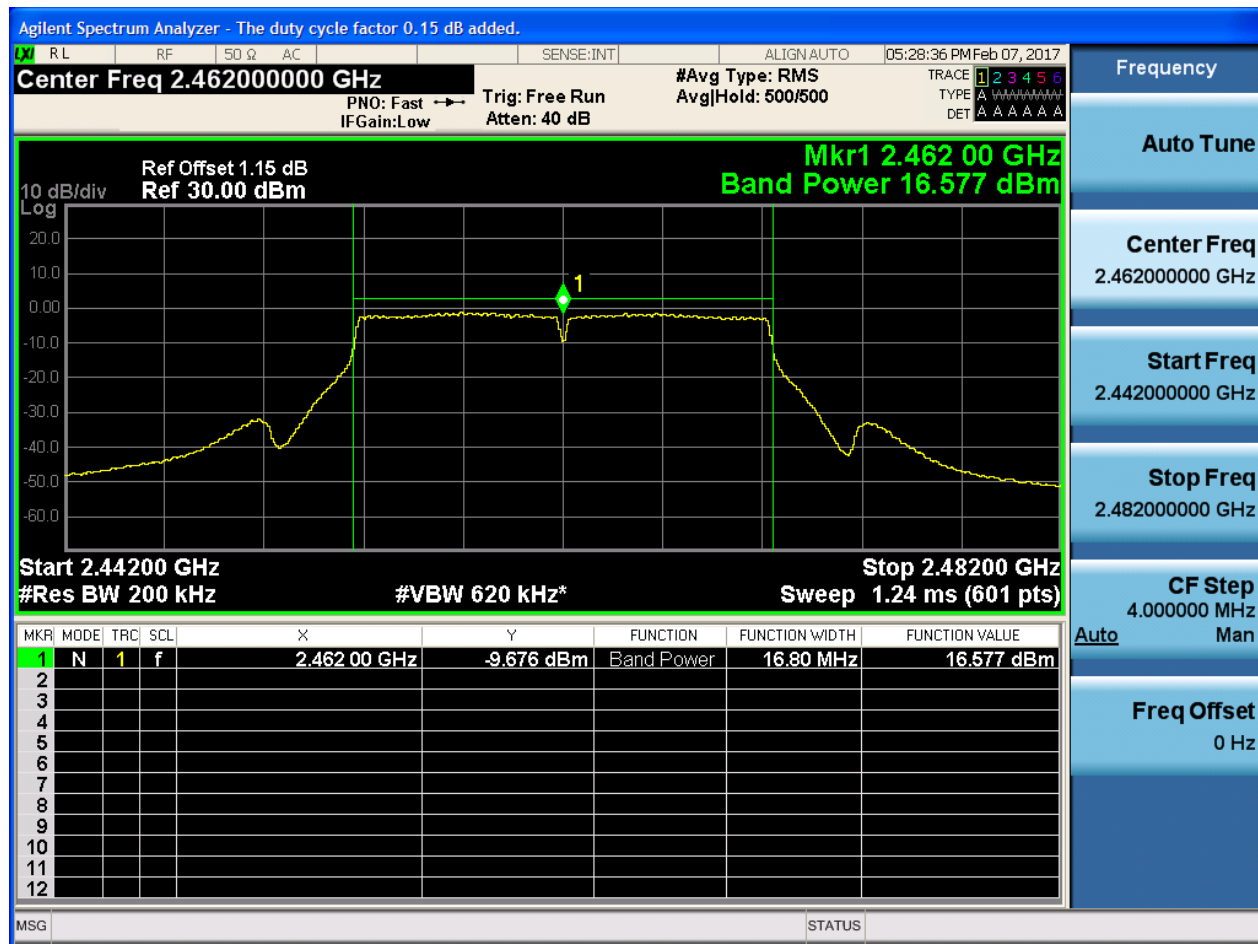


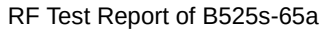
2.11 11G_H@Ant 1





2.12 11G_H@Ant 2





Agilent Spectrum Analyzer - The duty cycle factor 1.19 dB added.

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 02:55:27 PM Feb 07, 2017

Center Freq 2.43200000 GHz #Avg Type: RMS
 PNO: Wide → Trig: Free Run AvgHold: 500/500
 IFGain:Low Atten: 38 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 2.19 dB
 Ref 30.00 dBm

Mkr1 2.432 00 GHz
Band Power 16.413 dBm

Start 2.41200 GHz Stop 2.45200 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	2.432 00 GHz	-10.587 dBm	Band Power	17.73 MHz	16.413 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.43200000 GHz

Start Freq
2.41200000 GHz

Stop Freq
2.45200000 GHz

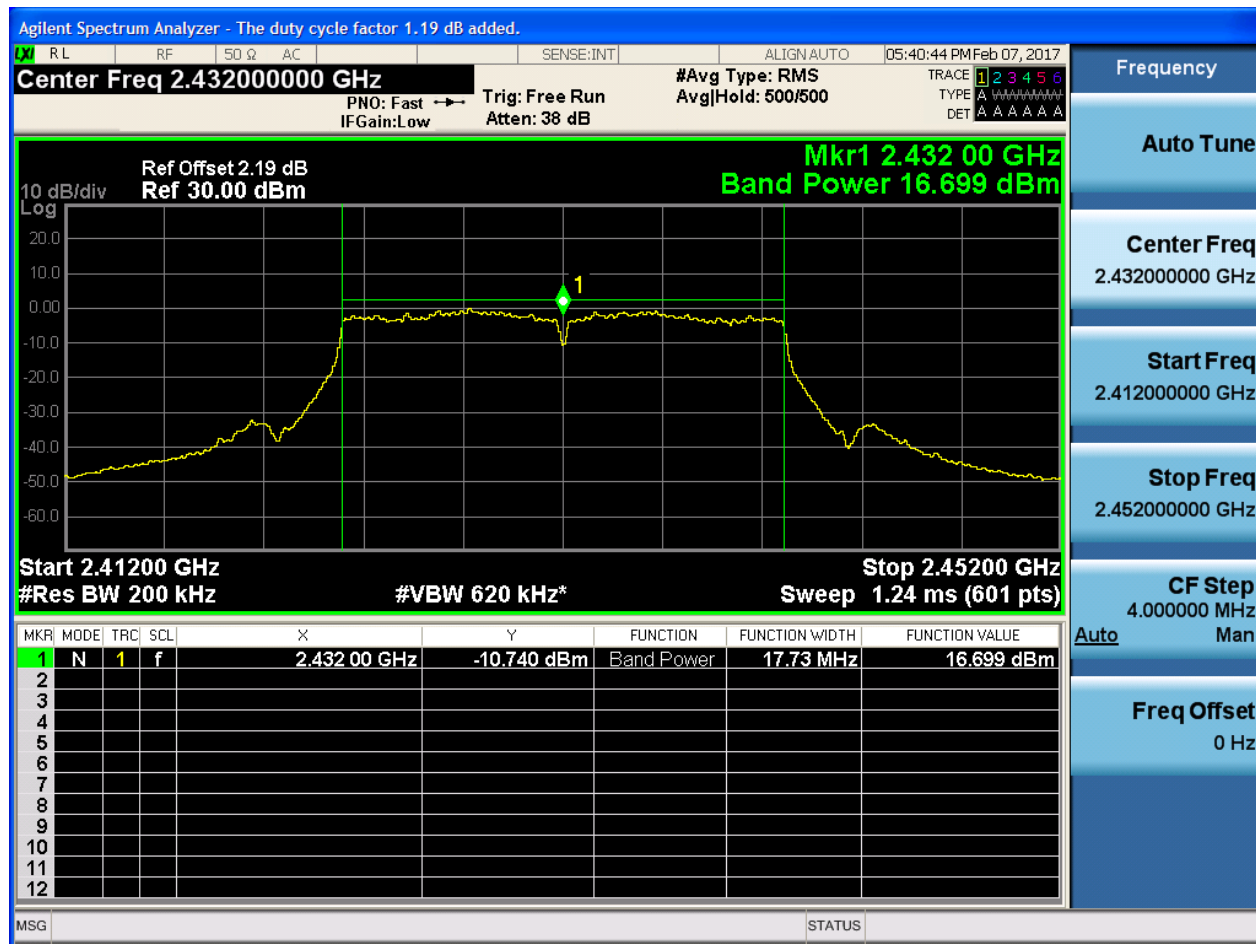
CF Step
4.000000 MHz

Auto Man

Freq Offset
0 Hz

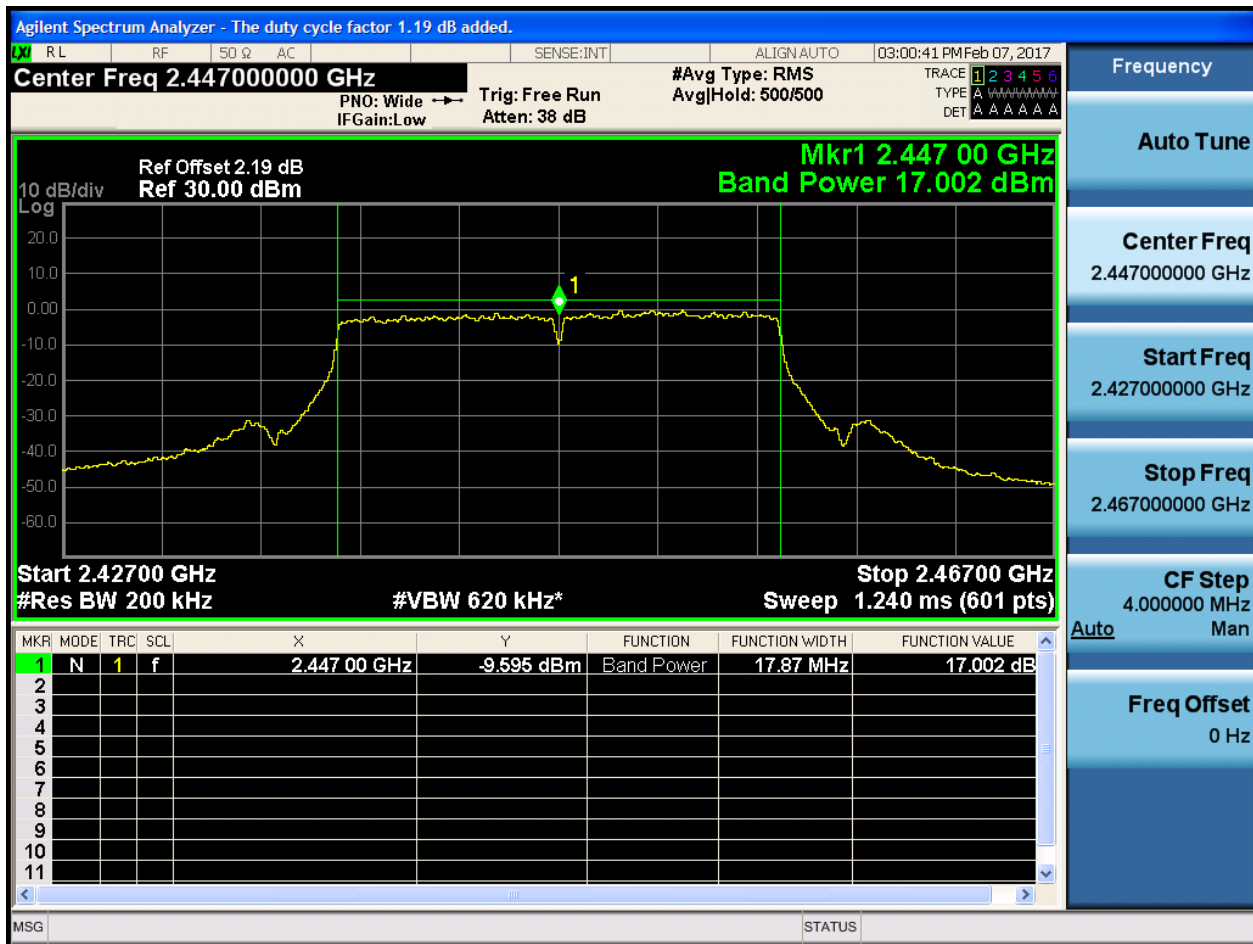


2.14 11N20_L@Ant 2



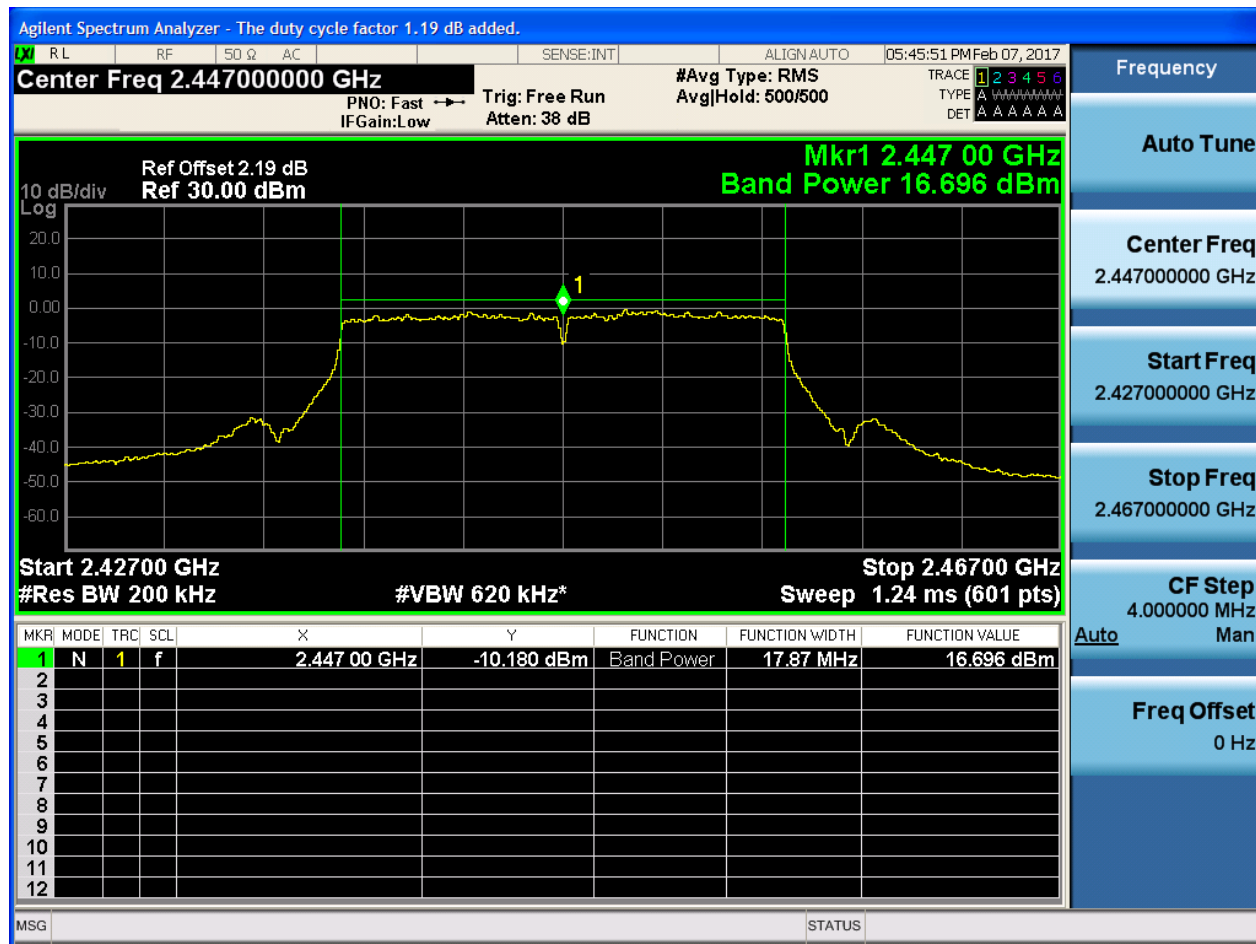


2.15 11N20_M@Ant 1



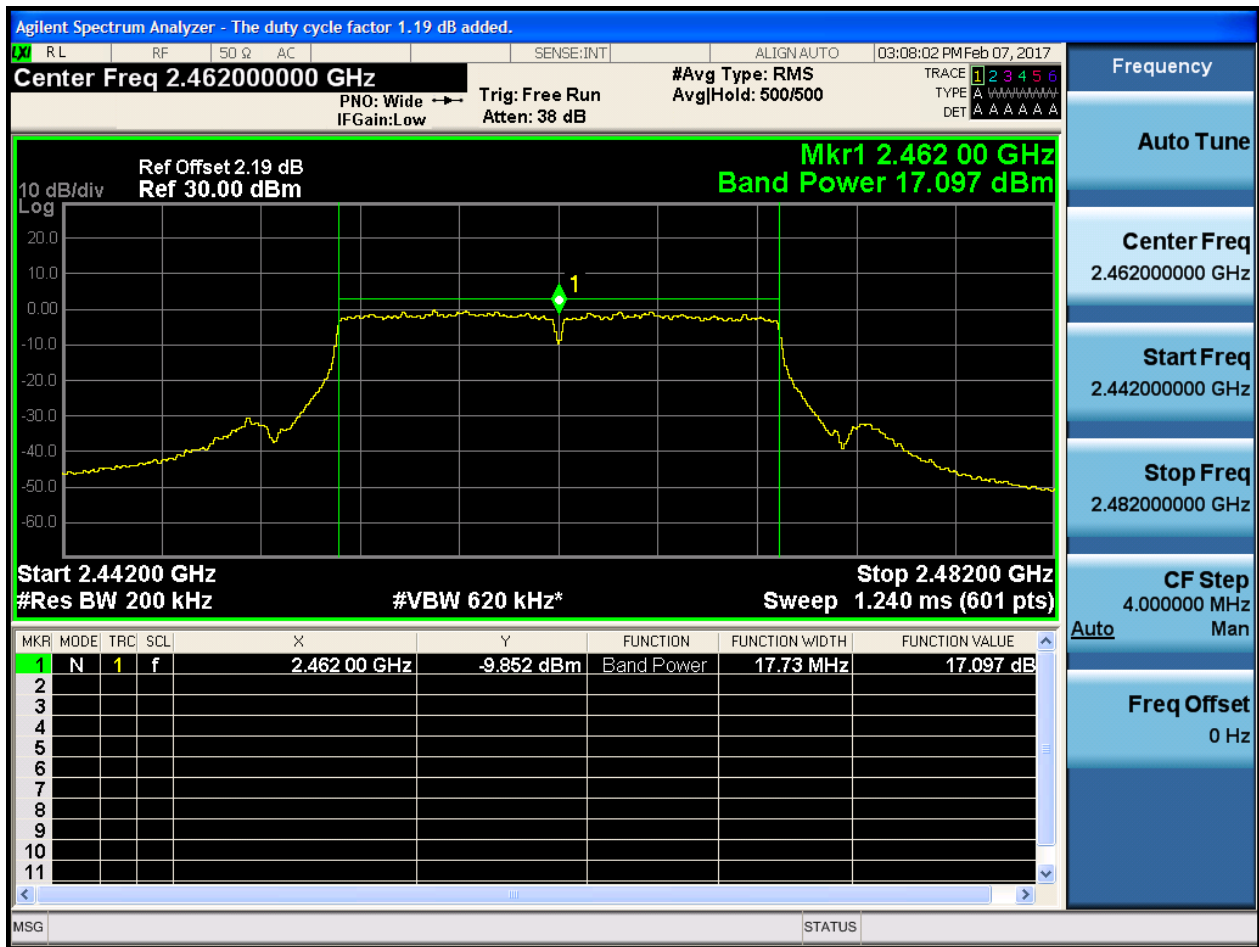


2.16 11N20_M@Ant 2



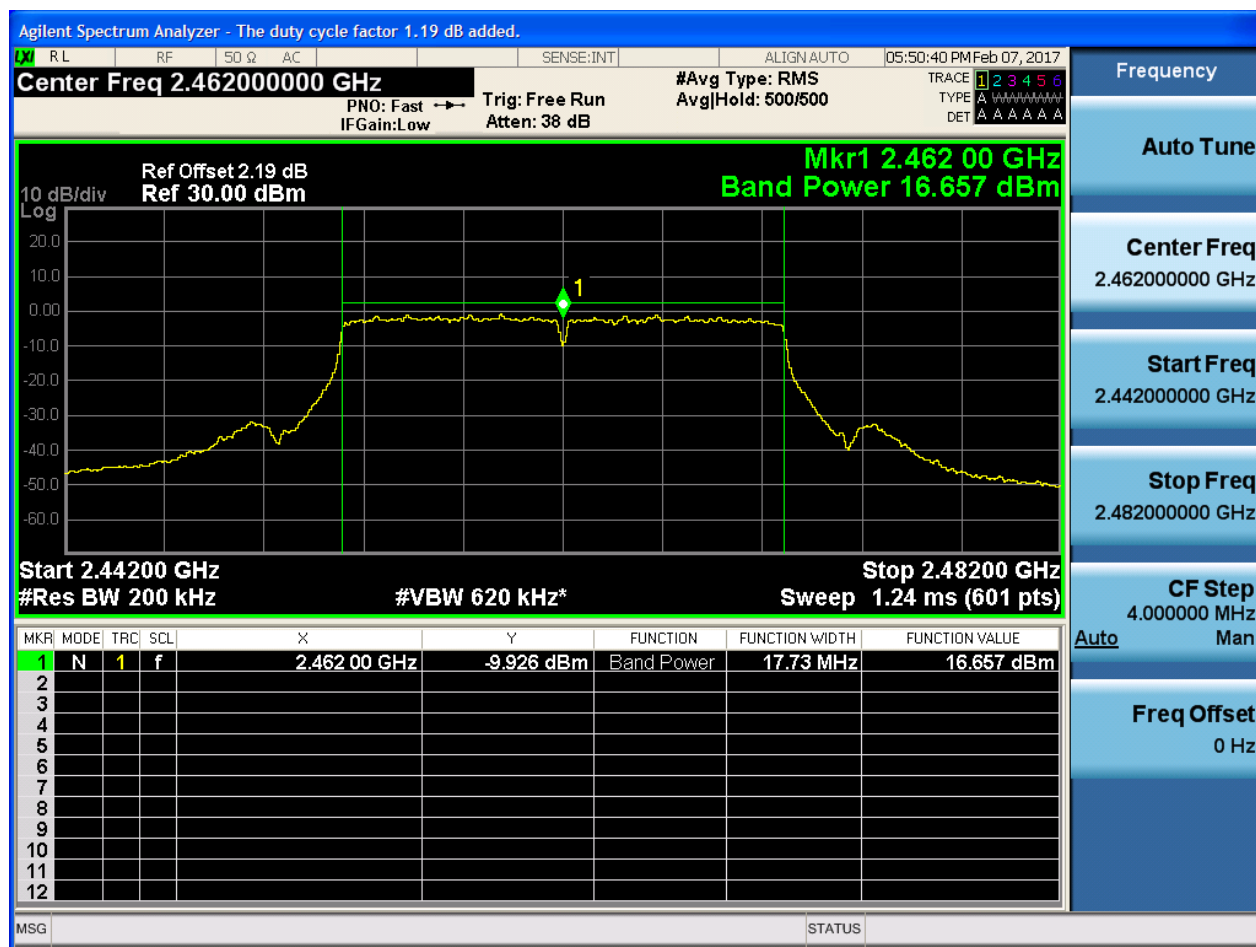


2.17 11N20_H@Ant 1



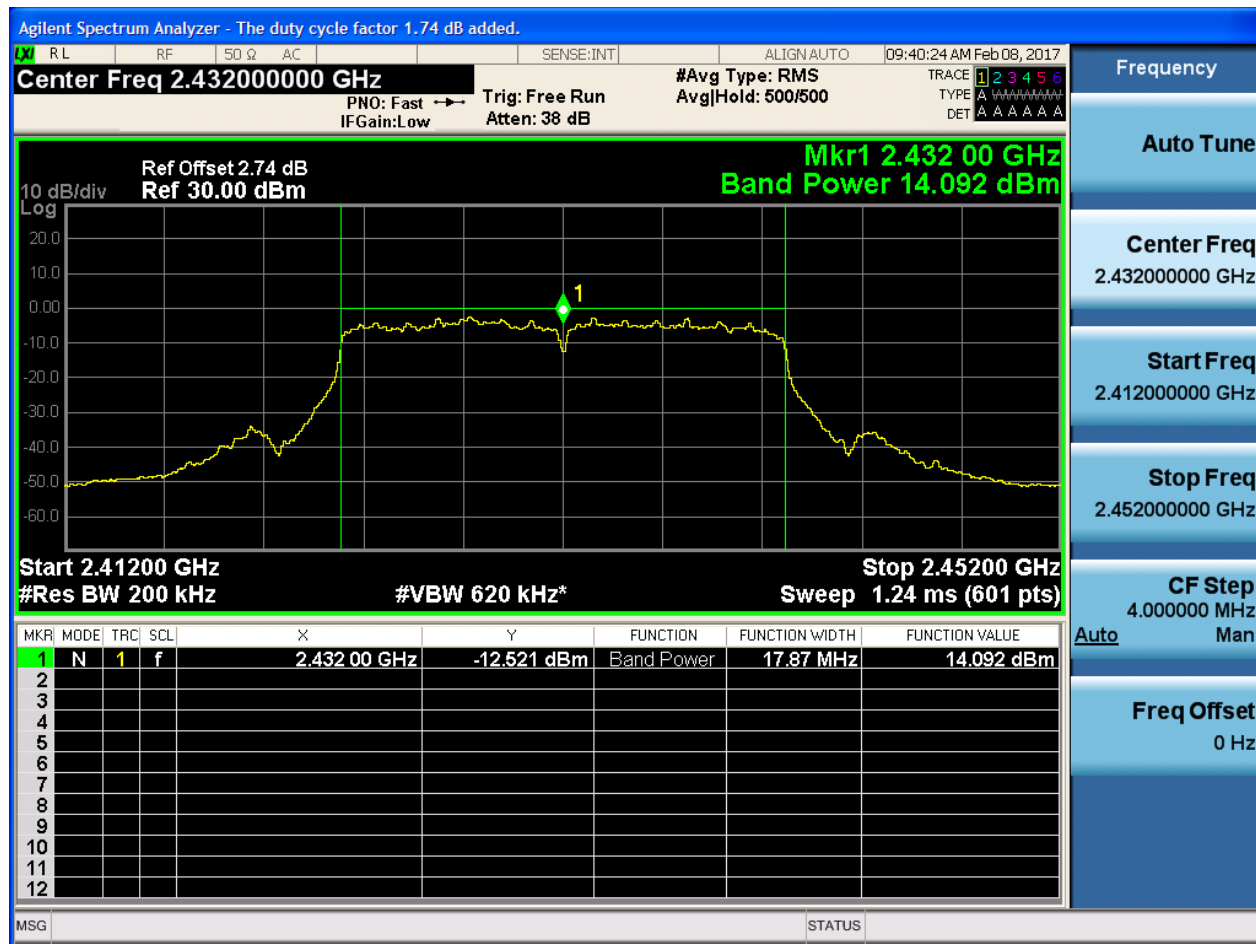


2.18 11N20_H@Ant 2



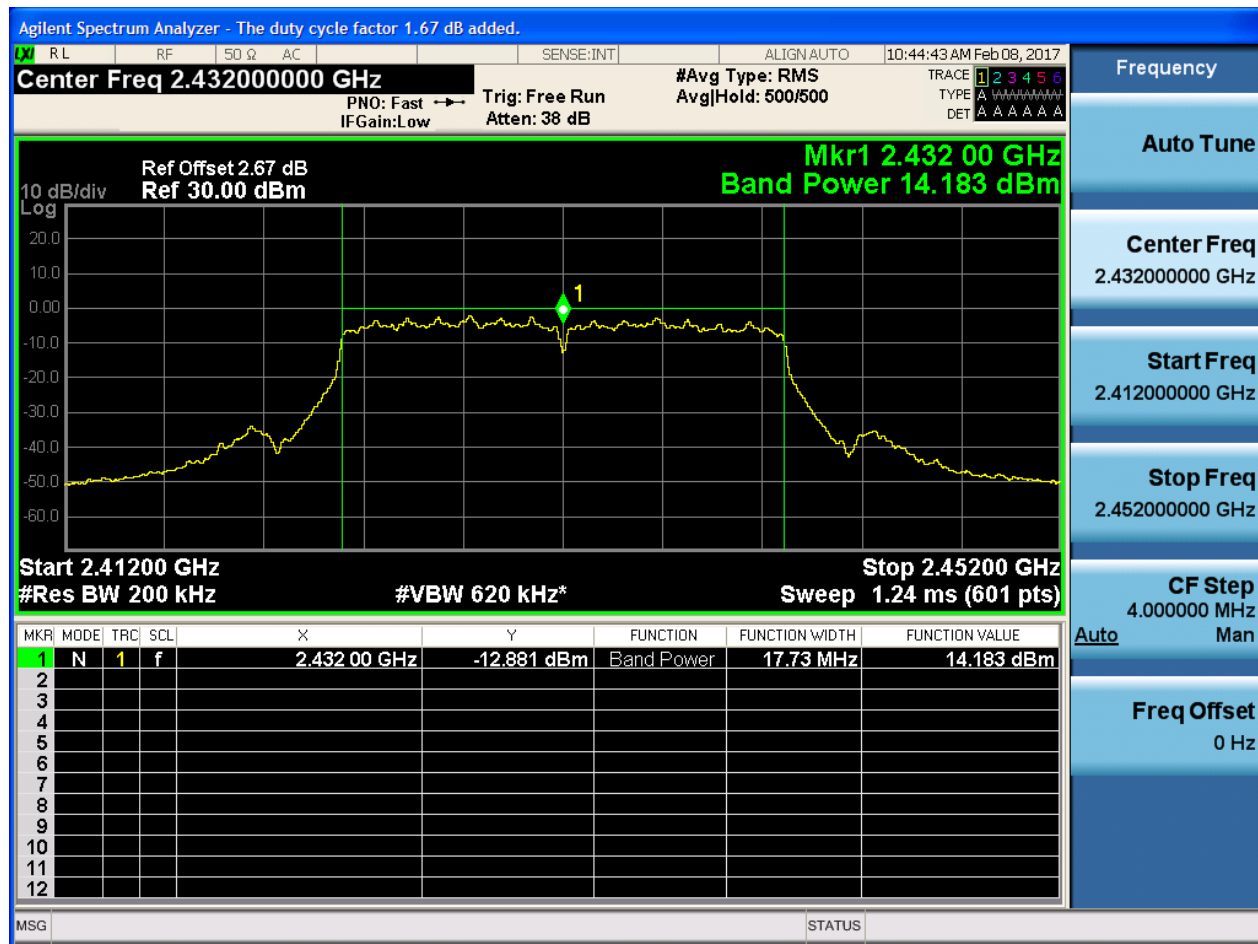


2.19 11N20m_L@Ant 1





2.20 11N20m_L@Ant 2





2.21 11N20m_M@Ant 1

