



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.

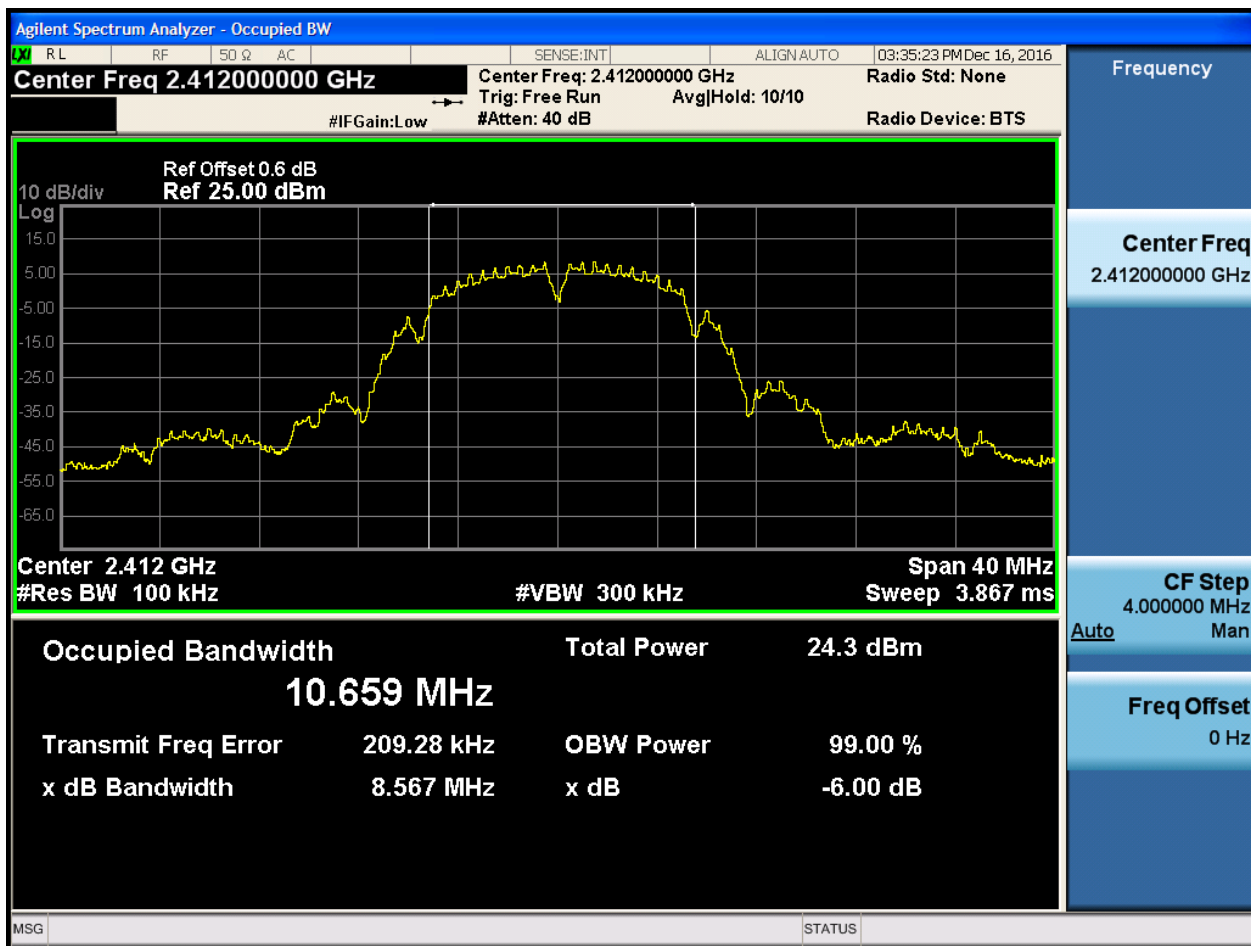
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	DTS6dBBW[MHz]	Verdict
11B	L	2412	Ant 1	8.58	pass
11B	M	2437	Ant 1	8.55	pass
11B	H	2462	Ant 1	8.13	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	17.35	pass
11N20	M	2437	Ant 1	17.63	pass
11N20	H	2462	Ant 1	17.63	pass
11N40	L	2422	Ant 1	35.16	pass
11N40	M	2437	Ant 1	35.75	pass
11N40	H	2452	Ant 1	35.40	pass

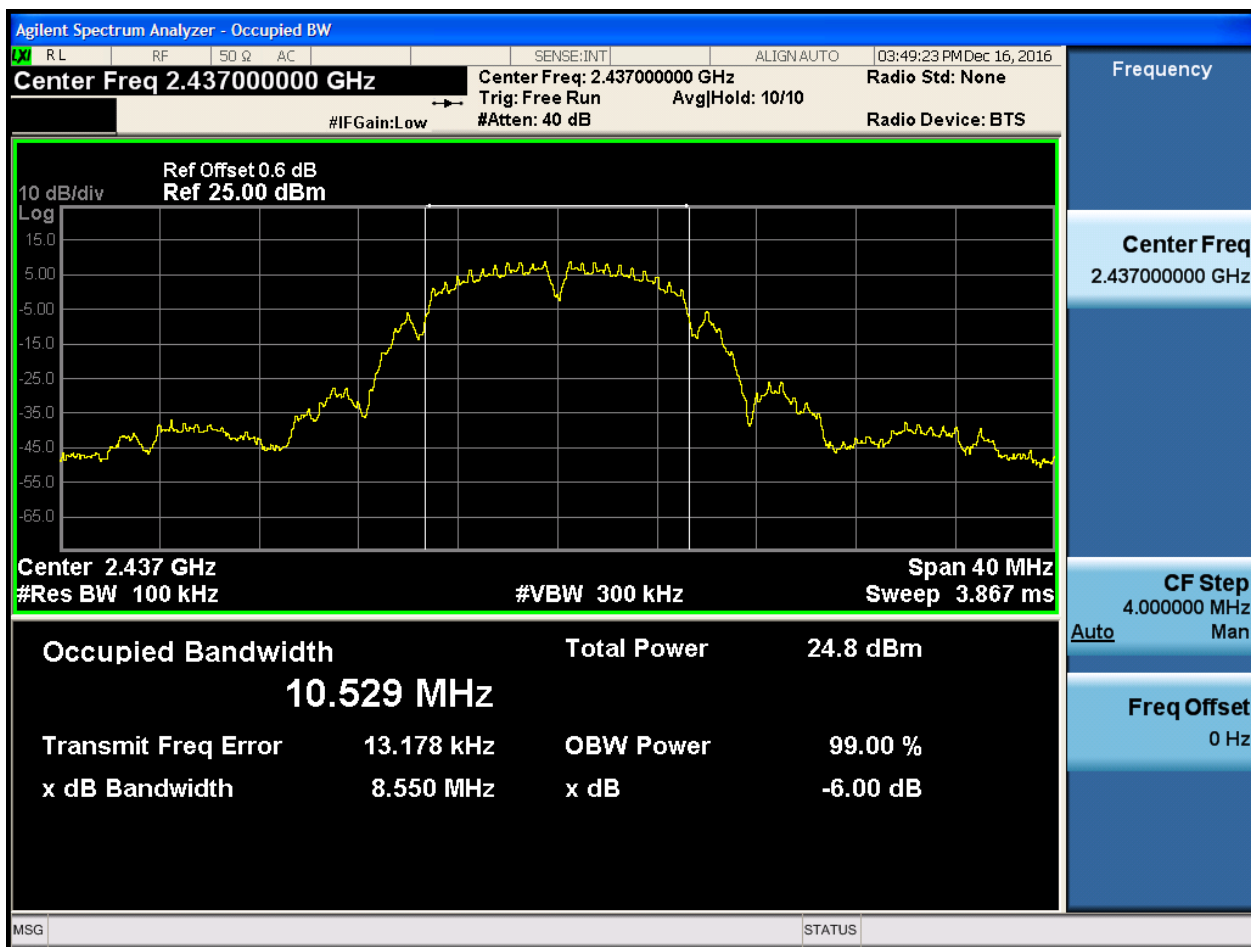
Part II - Test Plots

1.1 11B_L@Ant 1





1.2 11B_M@Ant 1



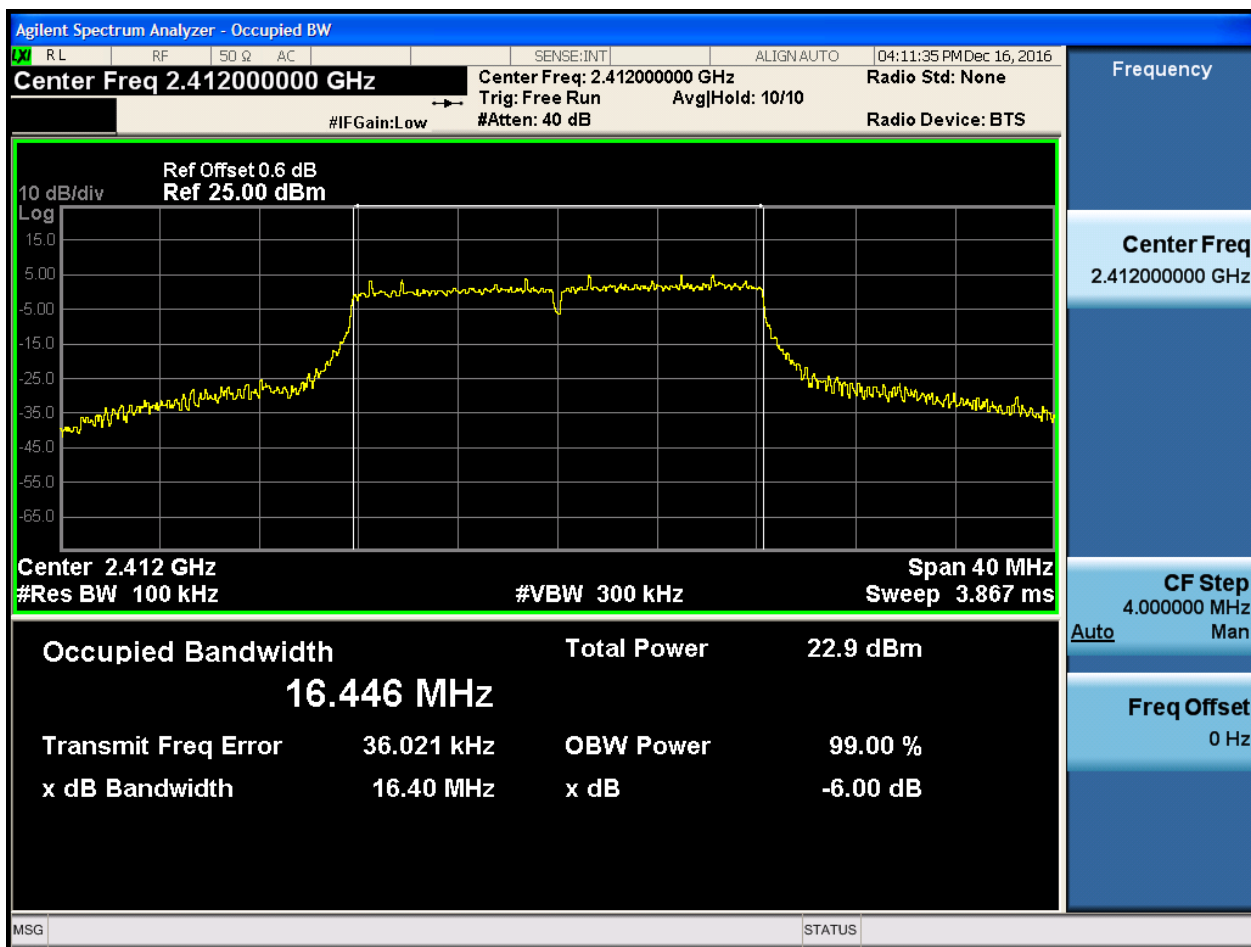


1.3 11B_H@Ant 1



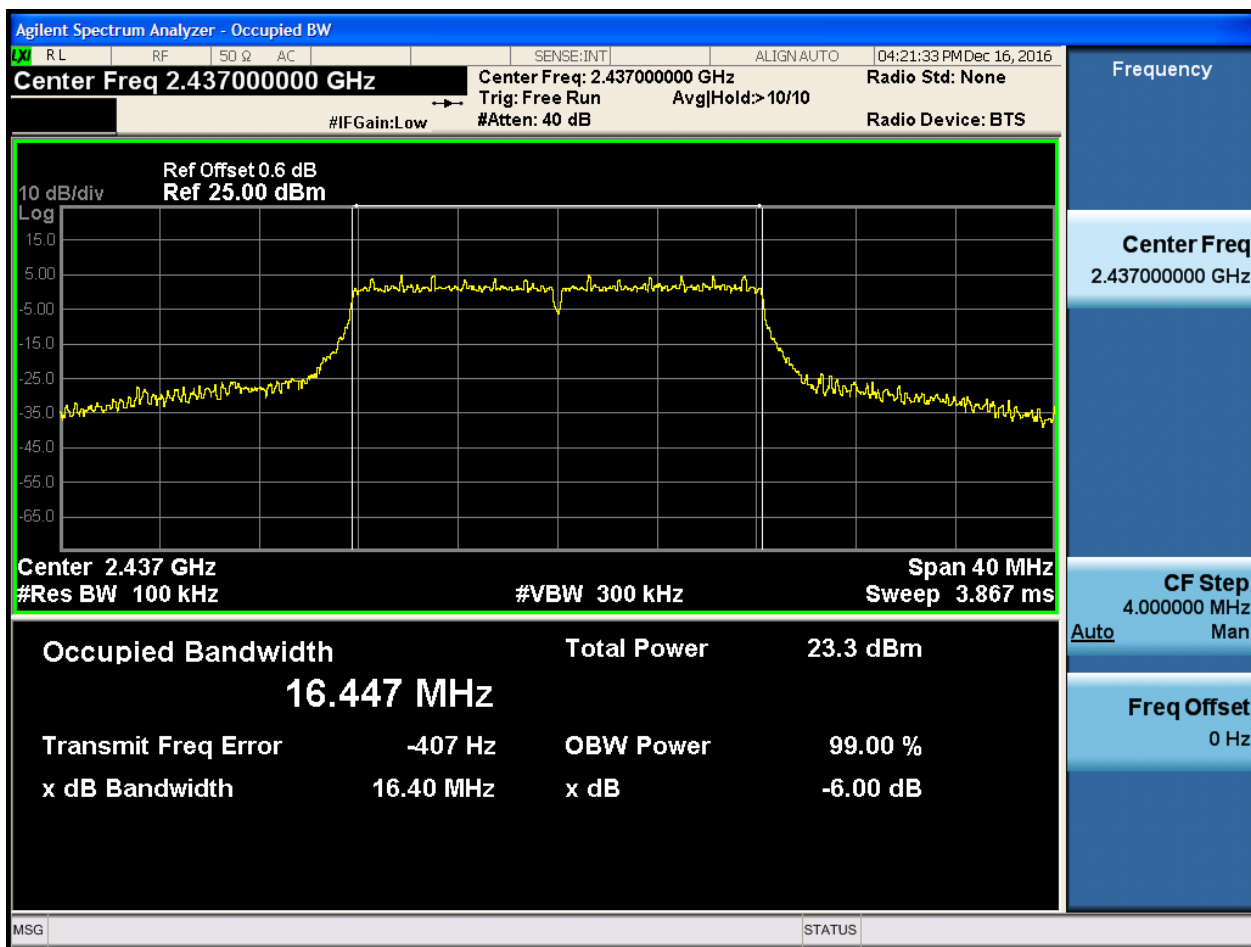


1.4 11G_L@Ant 1



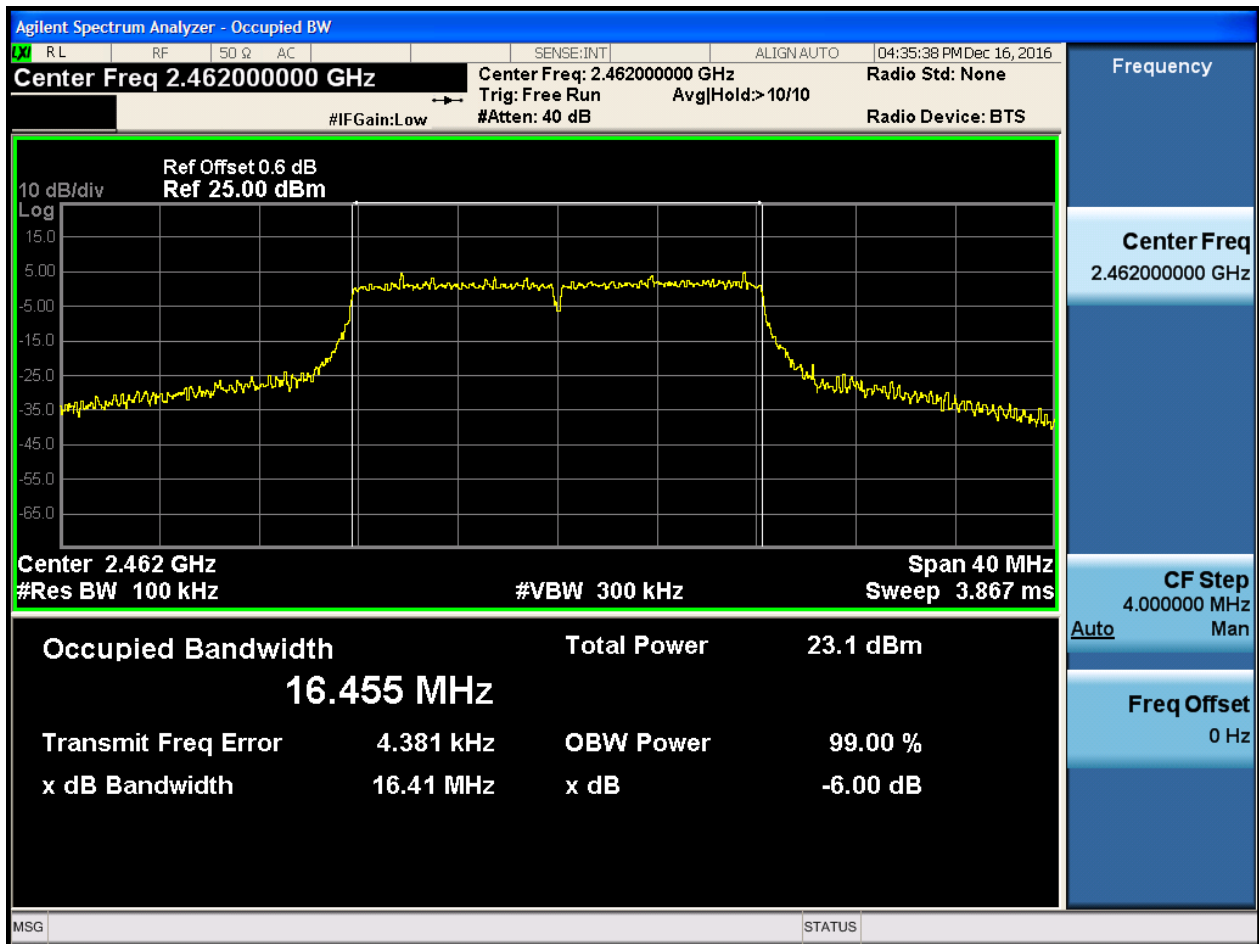


1.5 11G_M@Ant 1



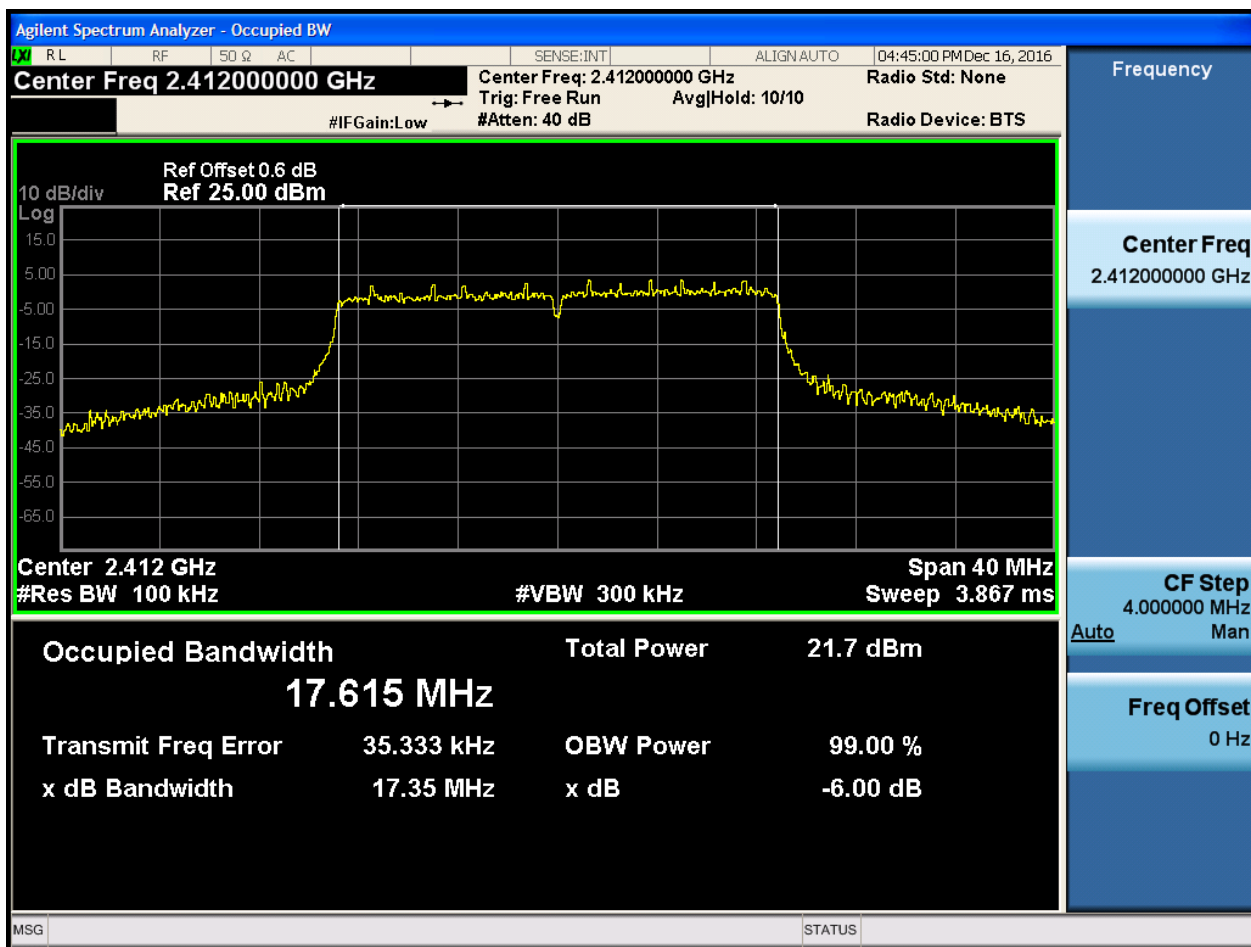


1.6 11G_H@Ant 1



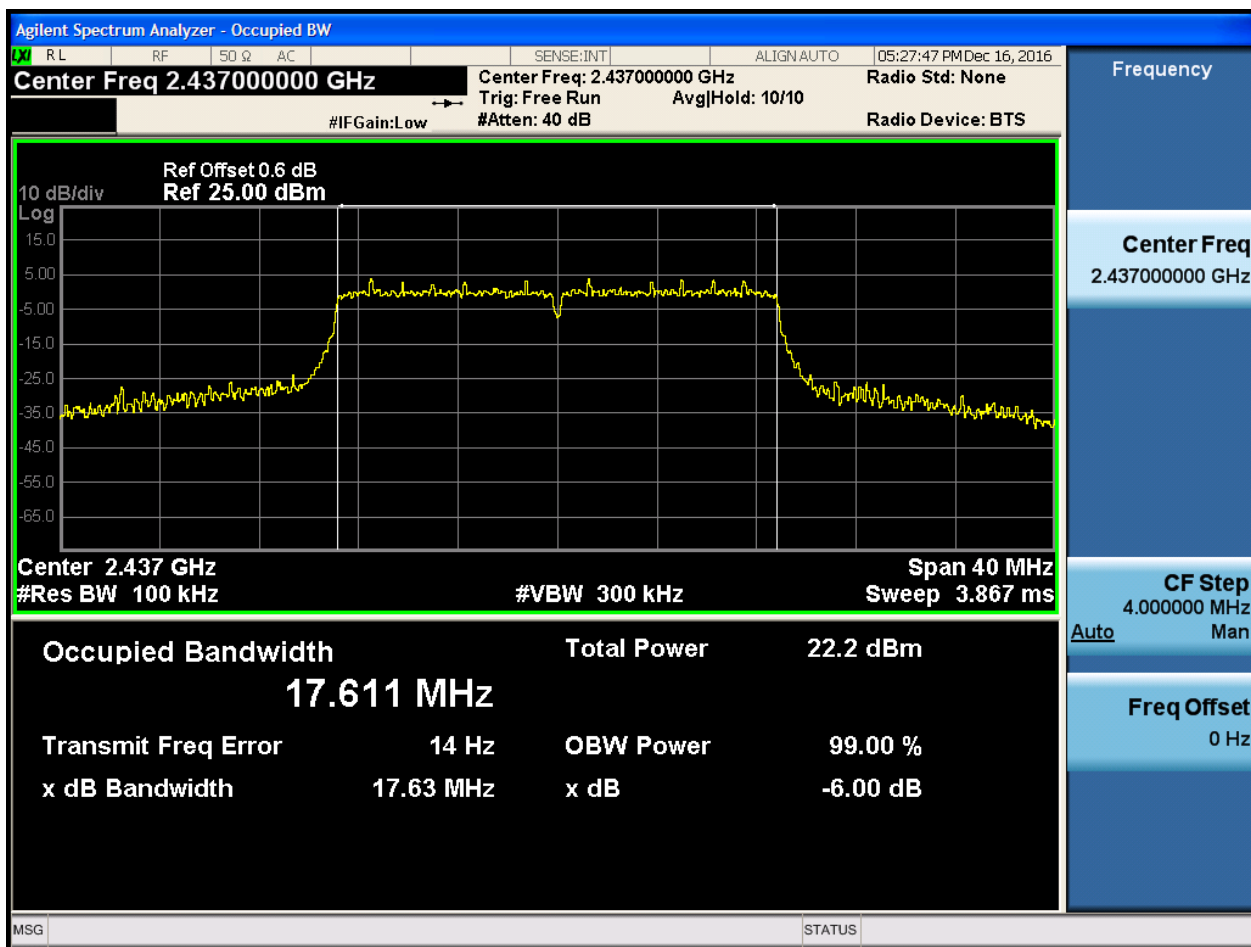


1.7 11N20_L@Ant 1



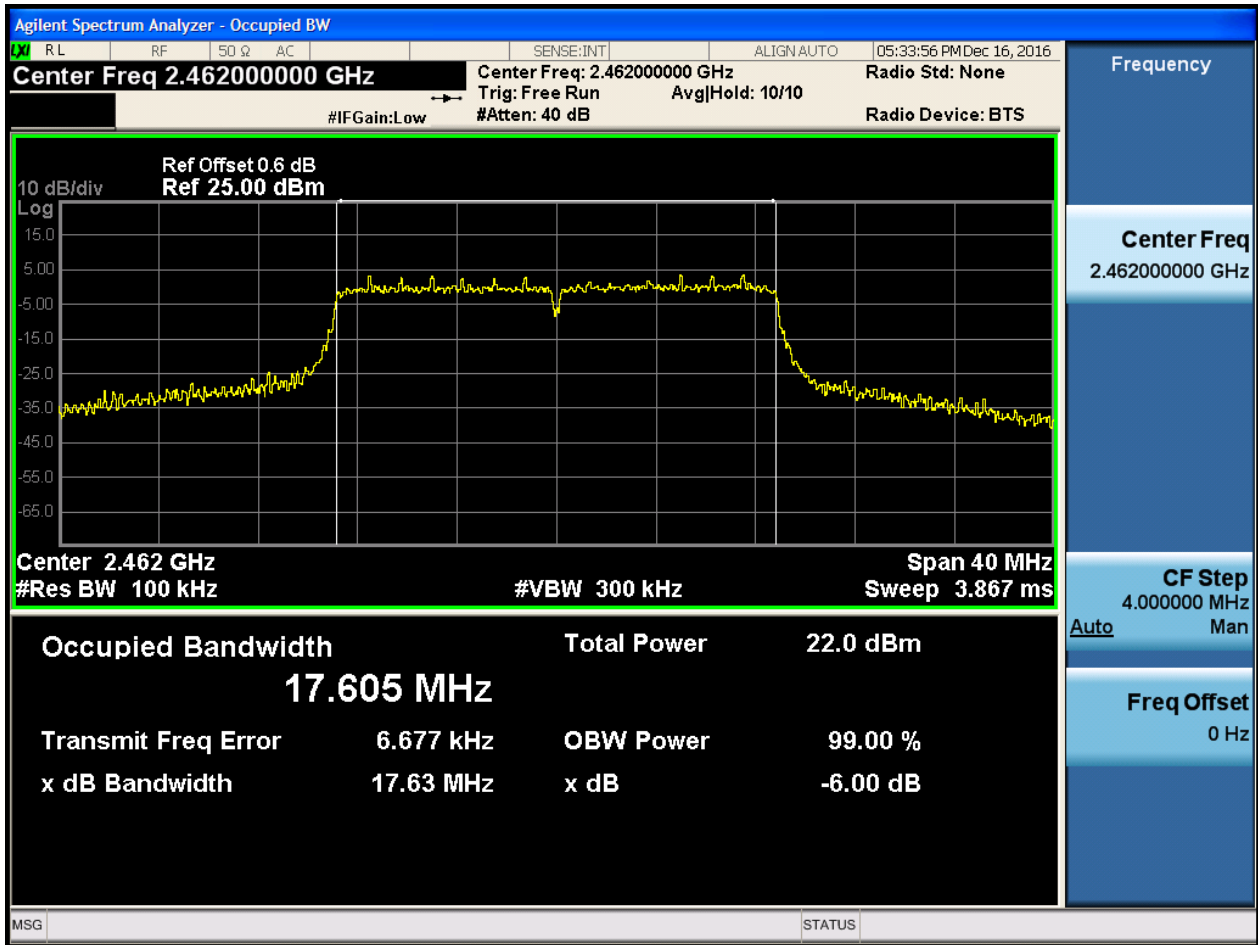


1.8 11N20_M@Ant 1



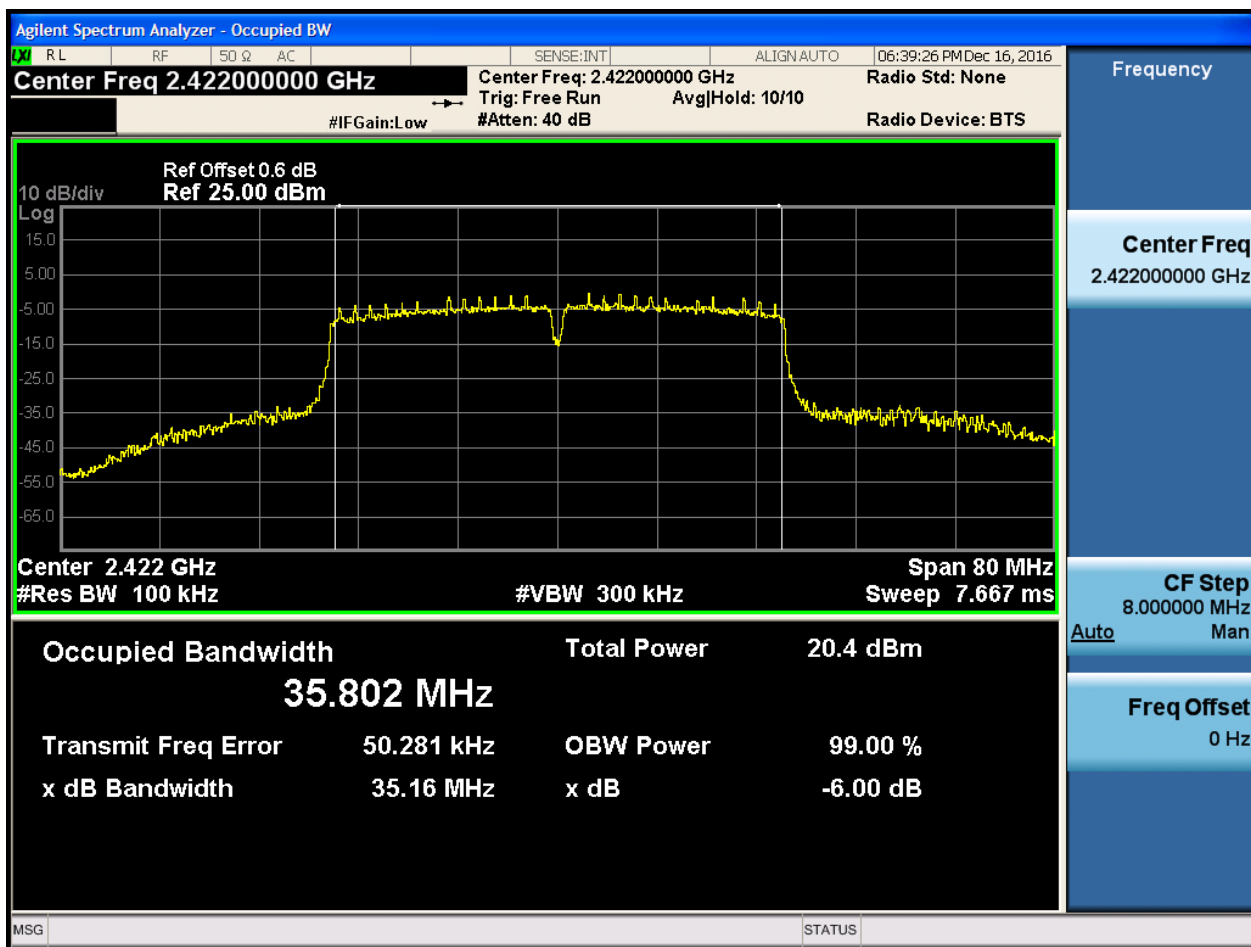


1.9 11N20_H@Ant 1



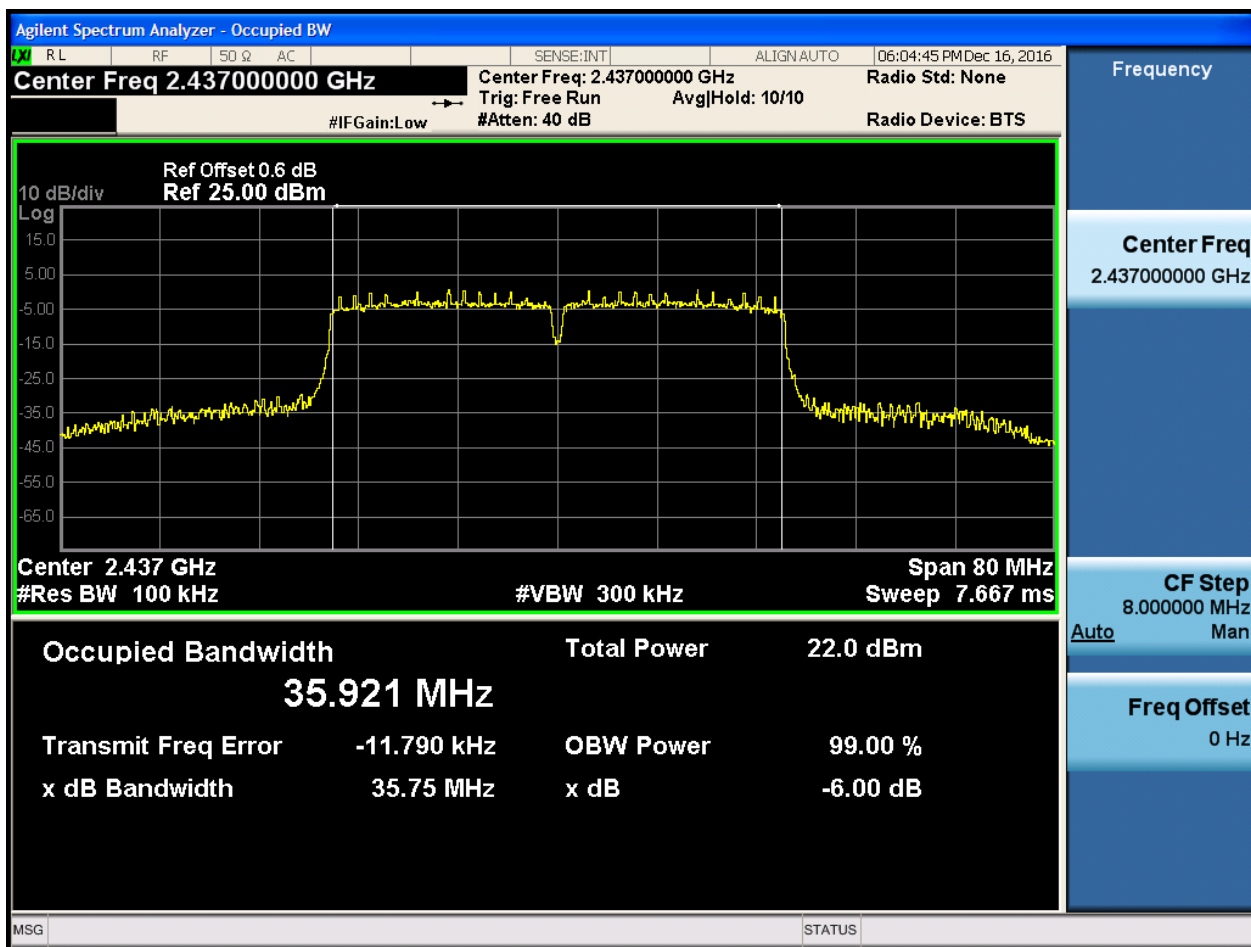


1.10 11N40_L@Ant 1



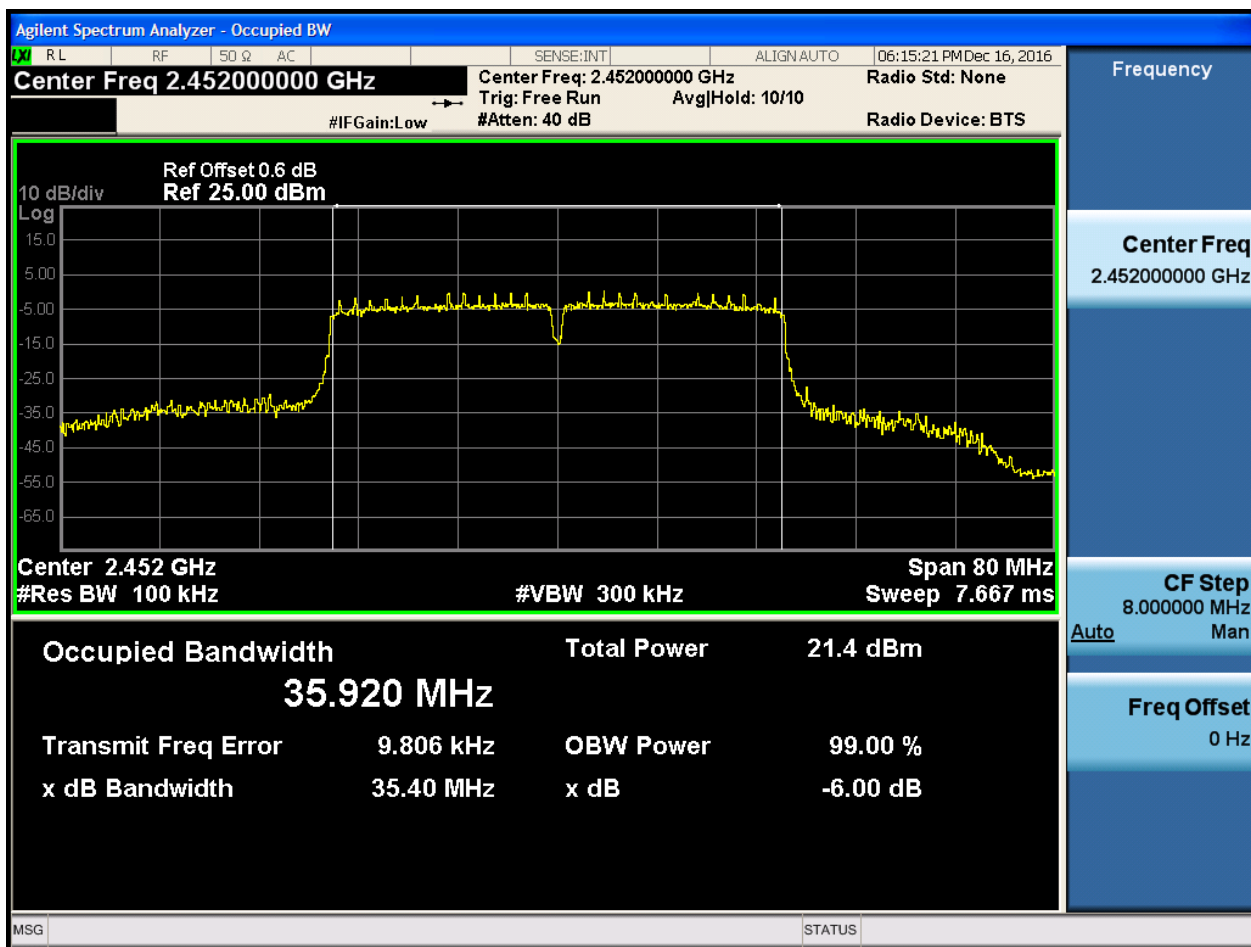


1.11 11N40_M@Ant 1





1.12 11N40_H@Ant 1



Appendix B: Occupied Bandwidth

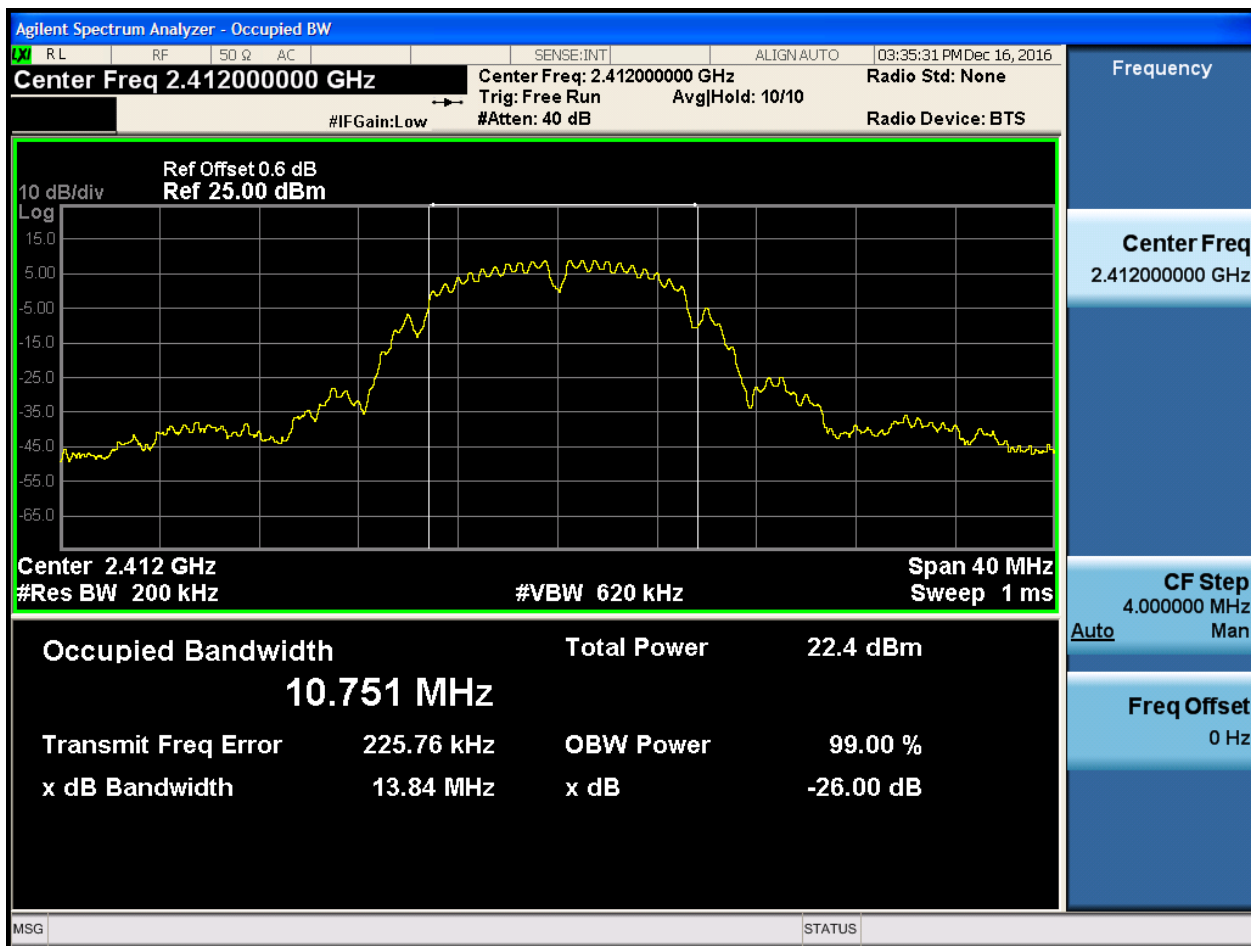
For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Occupied Bandwidth [MHz]	Verdict
11B	L	2412	Ant 1	10.75	pass
11B	M	2437	Ant 1	10.60	pass
11B	H	2462	Ant 1	10.68	pass
11G	L	2412	Ant 1	16.55	pass
11G	M	2437	Ant 1	16.57	pass
11G	H	2462	Ant 1	16.57	pass
11N20	L	2412	Ant 1	17.62	pass
11N20	M	2437	Ant 1	17.66	pass
11N20	H	2462	Ant 1	17.63	pass
11N40	L	2422	Ant 1	35.81	pass
11N40	M	2437	Ant 1	36.00	pass
11N40	H	2452	Ant 1	35.98	pass

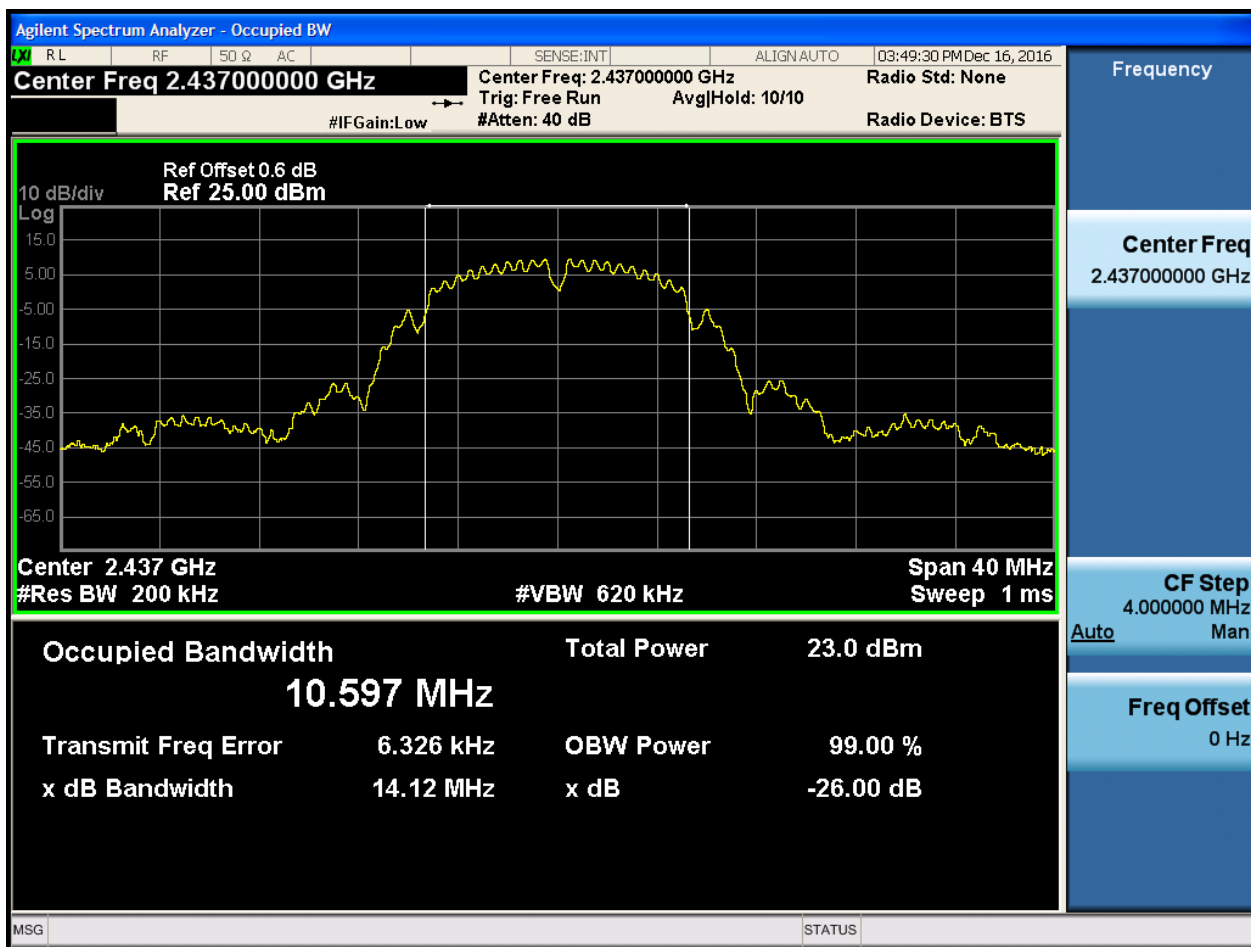
Part II - Test Plots

2.1 11B_L@Ant 1



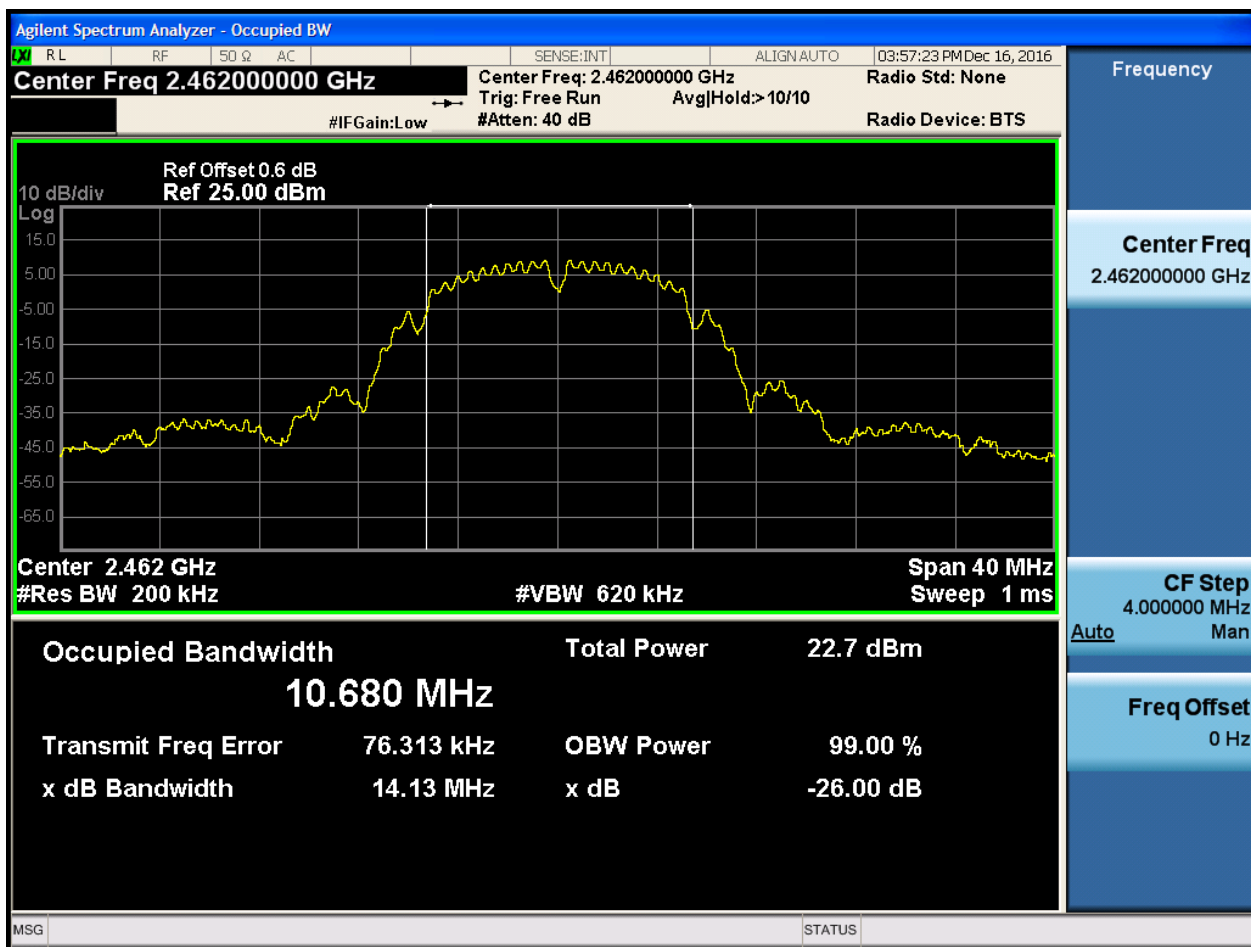


2.2 11B_M@Ant 1



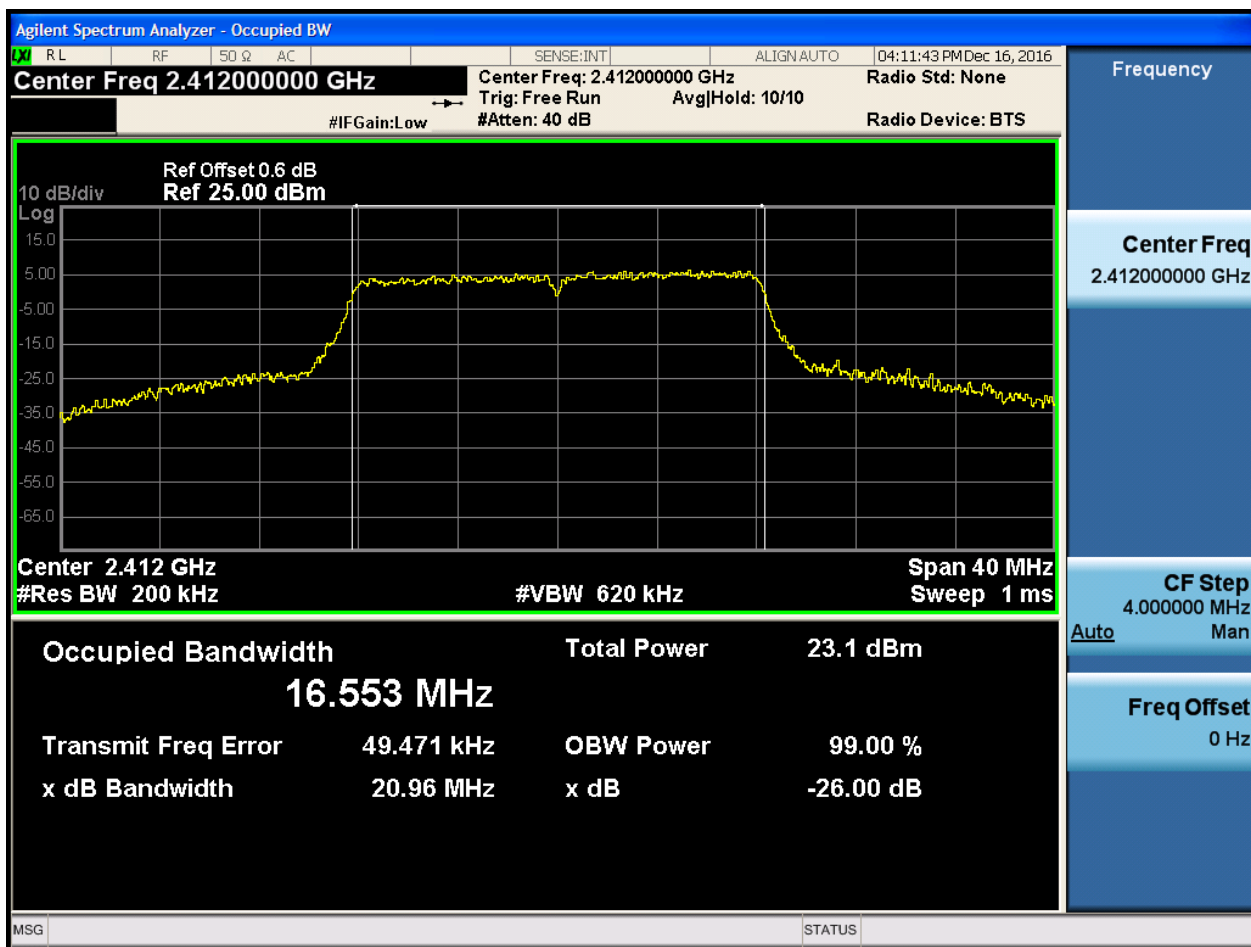


2.3 11B_H@Ant 1



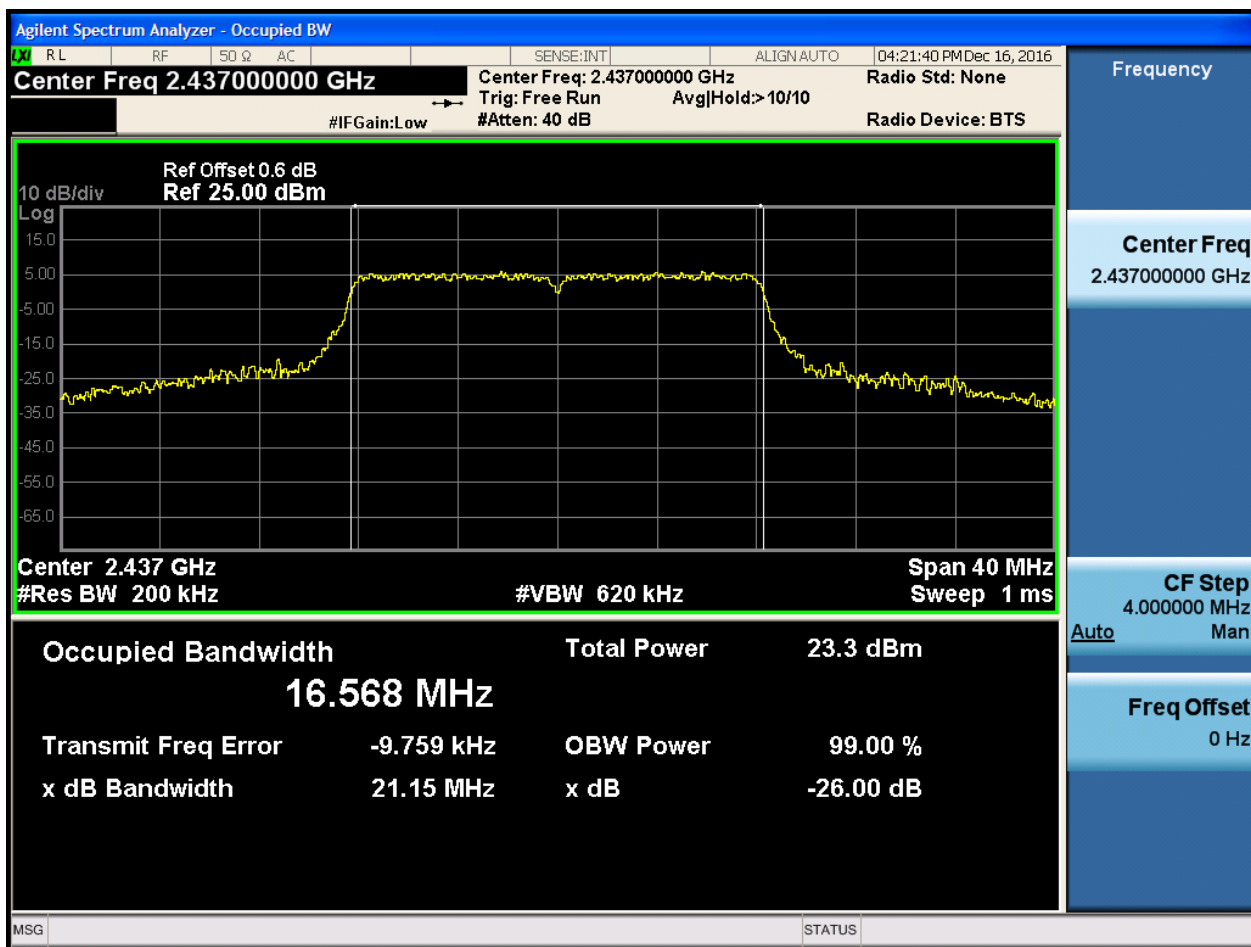


2.4 11G_L@Ant 1



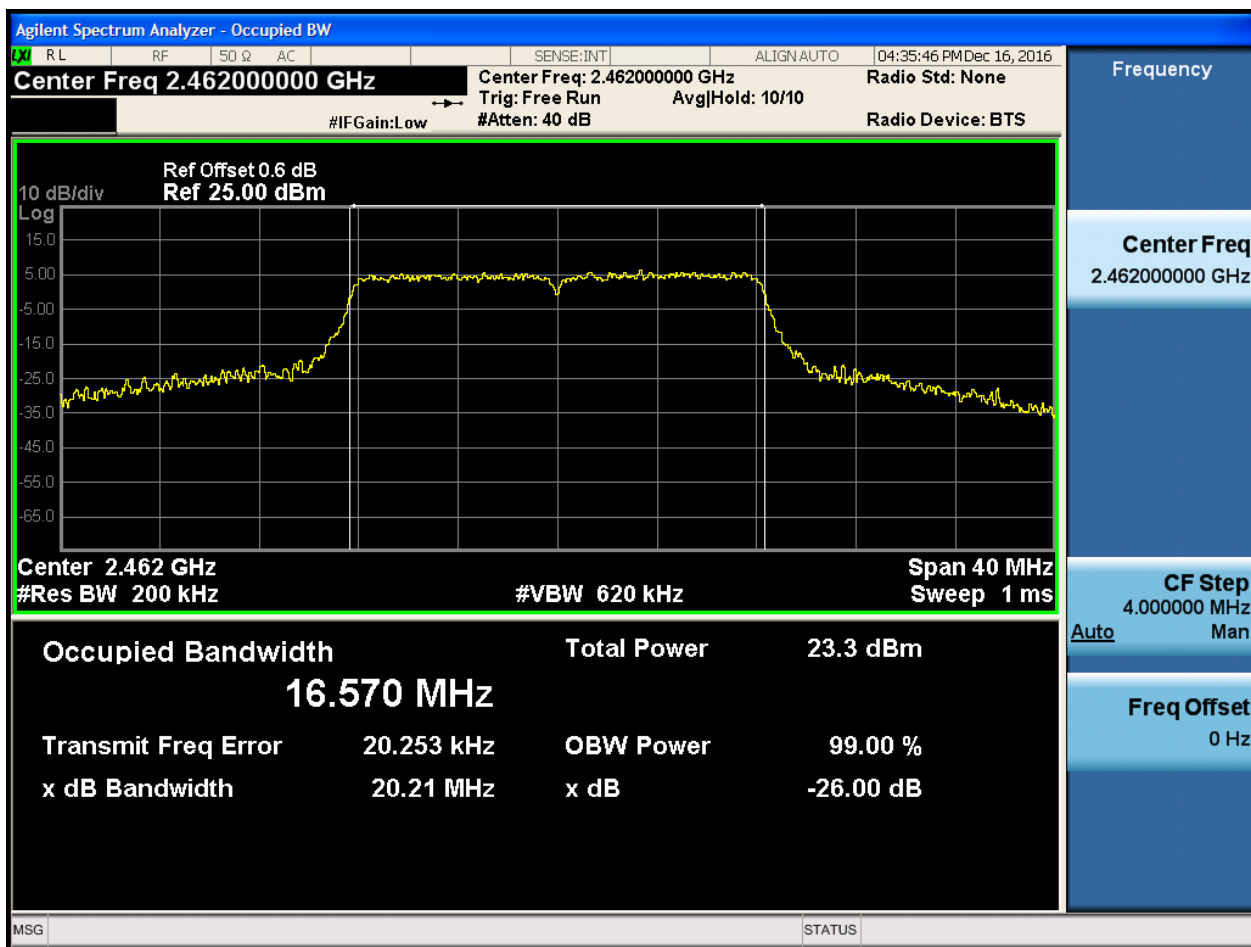


2.5 11G_M@Ant 1



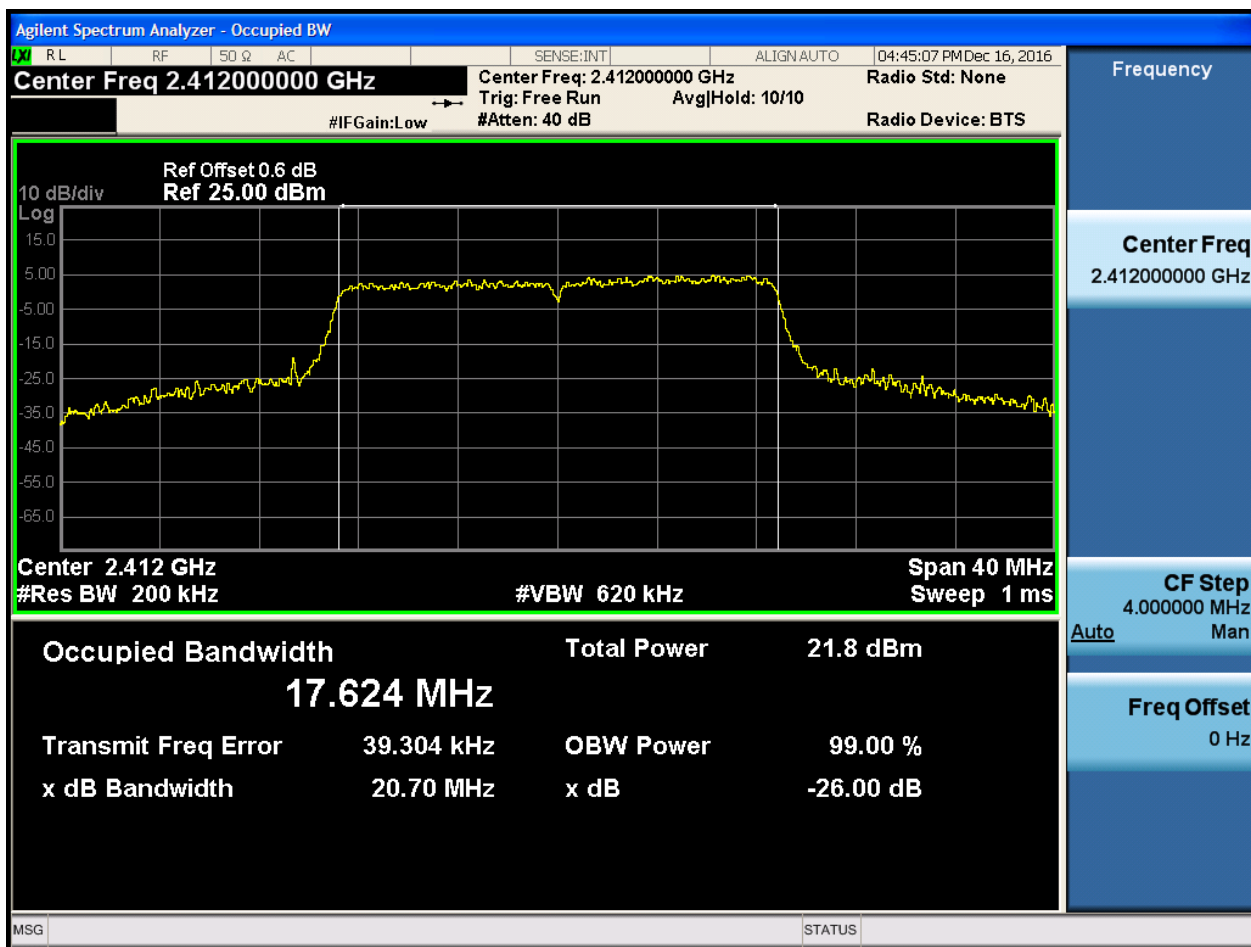


2.6 11G_H@Ant 1



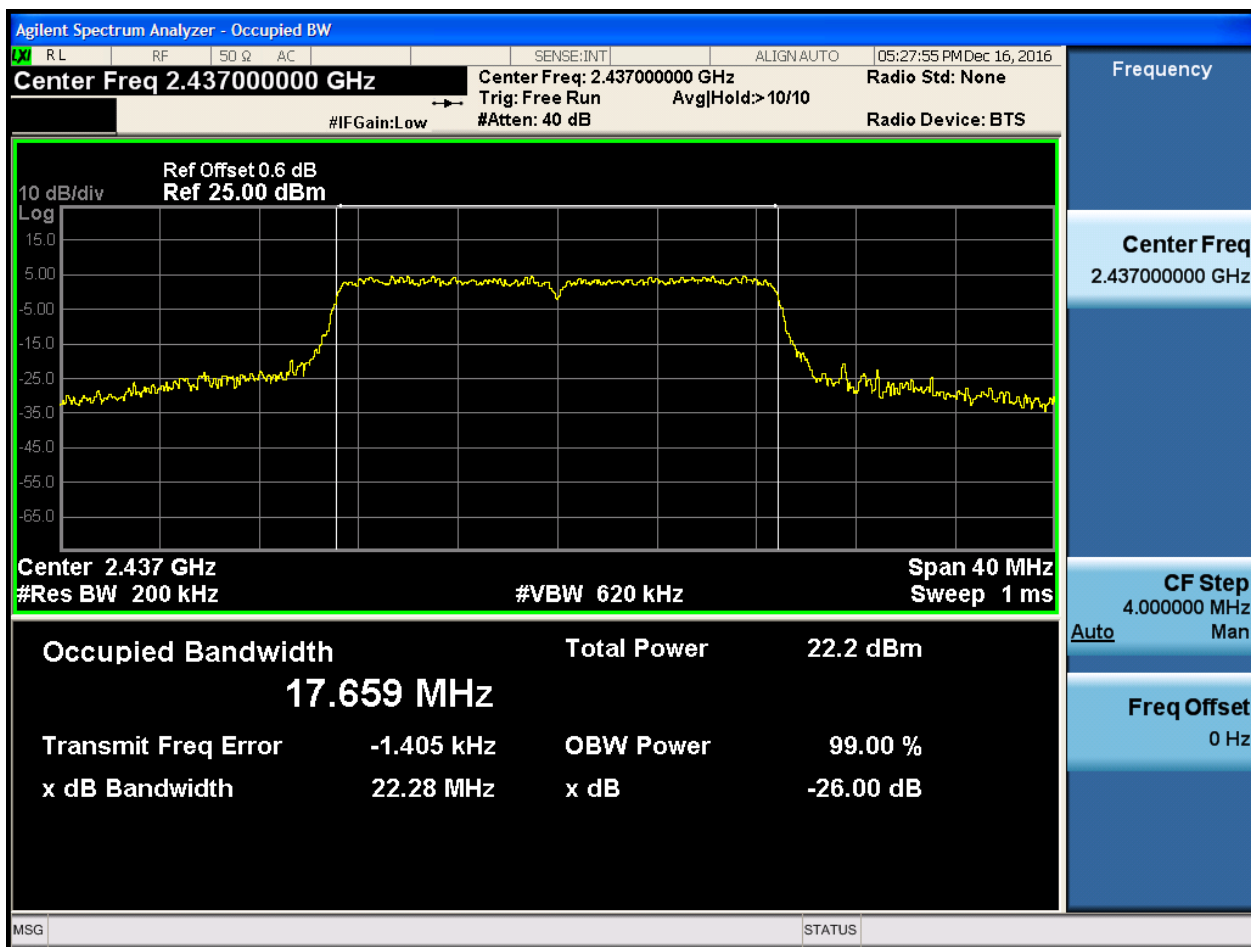


2.7 11N20_L@Ant 1



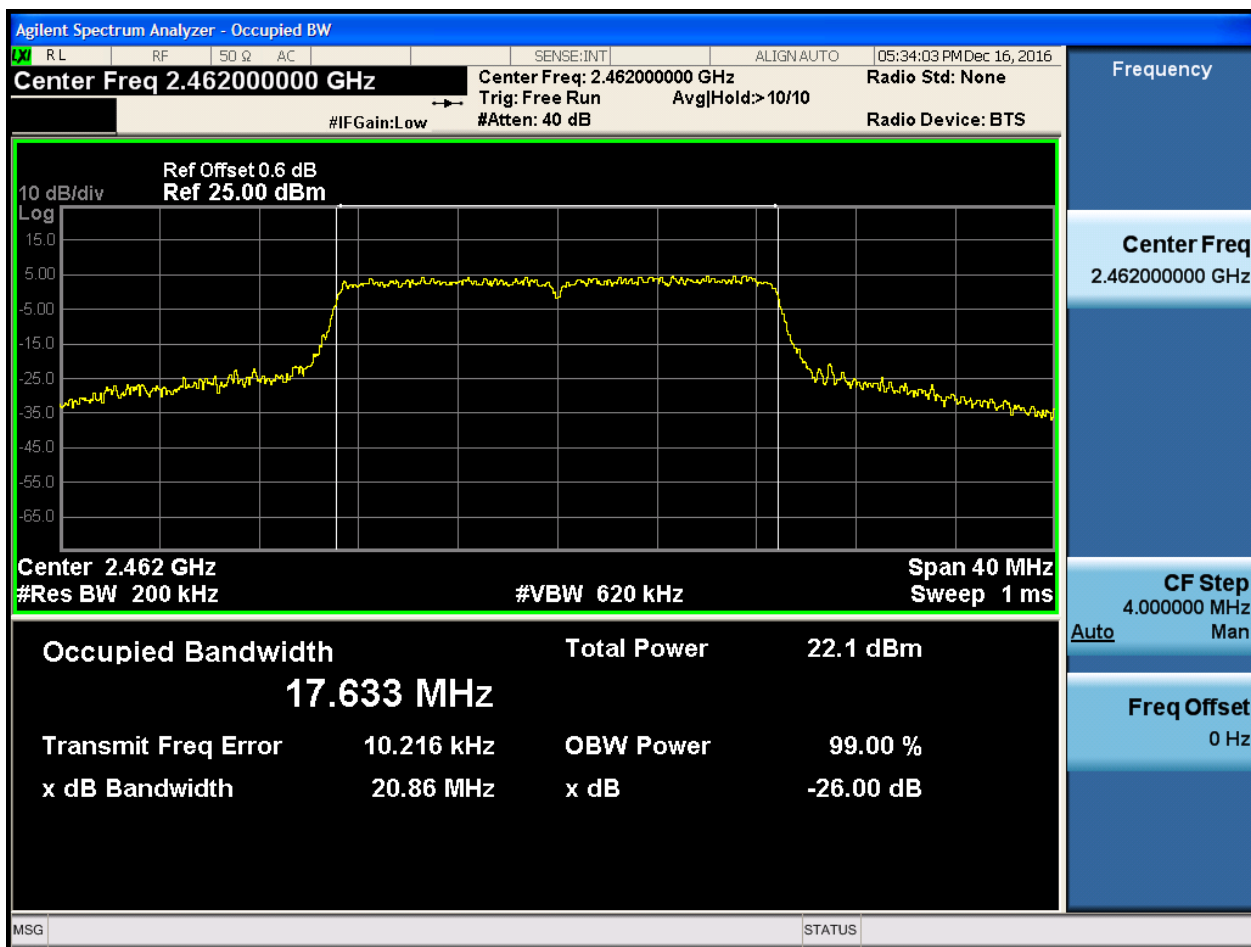


2.8 11N20_M@Ant 1



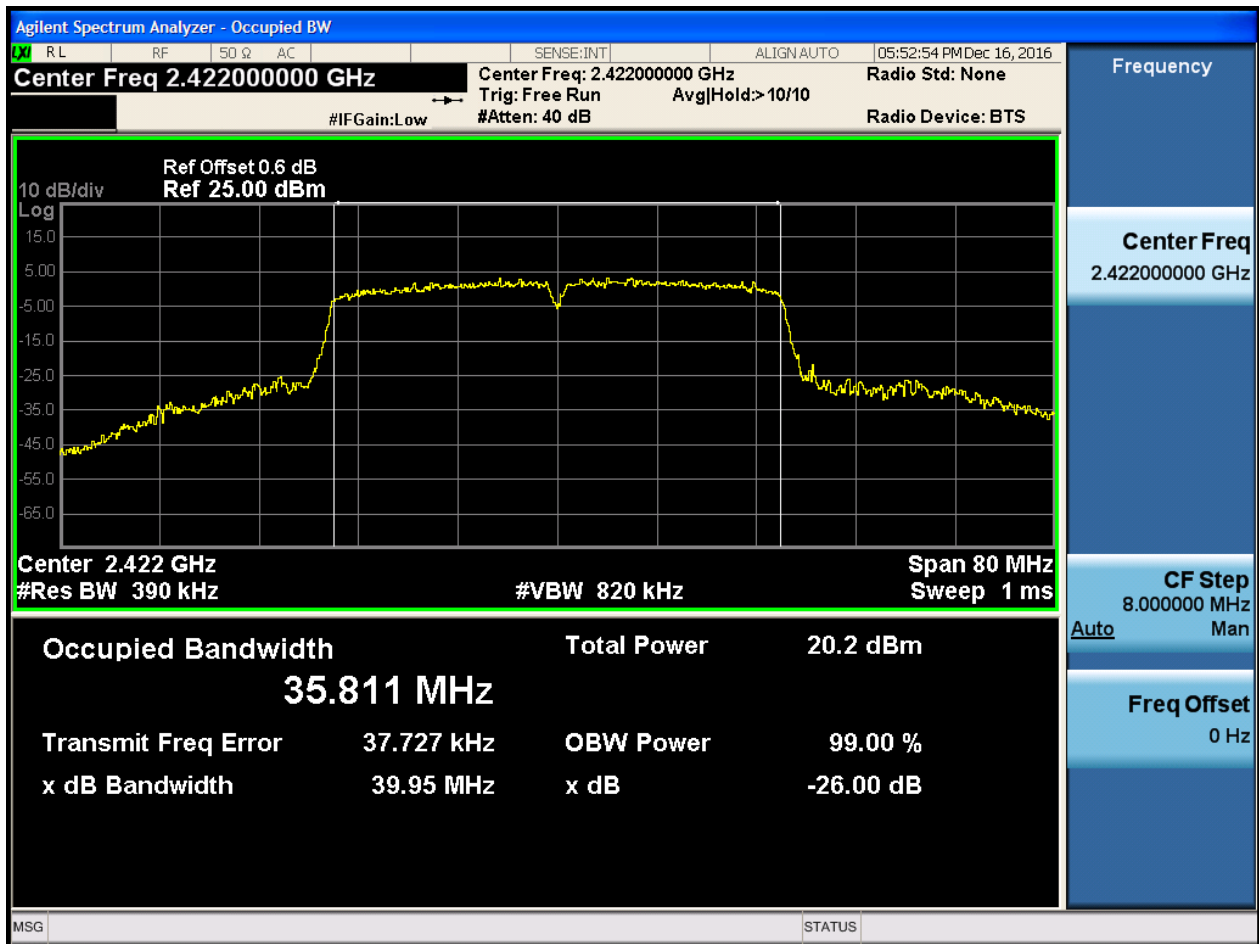


2.9 11N20_H@Ant 1



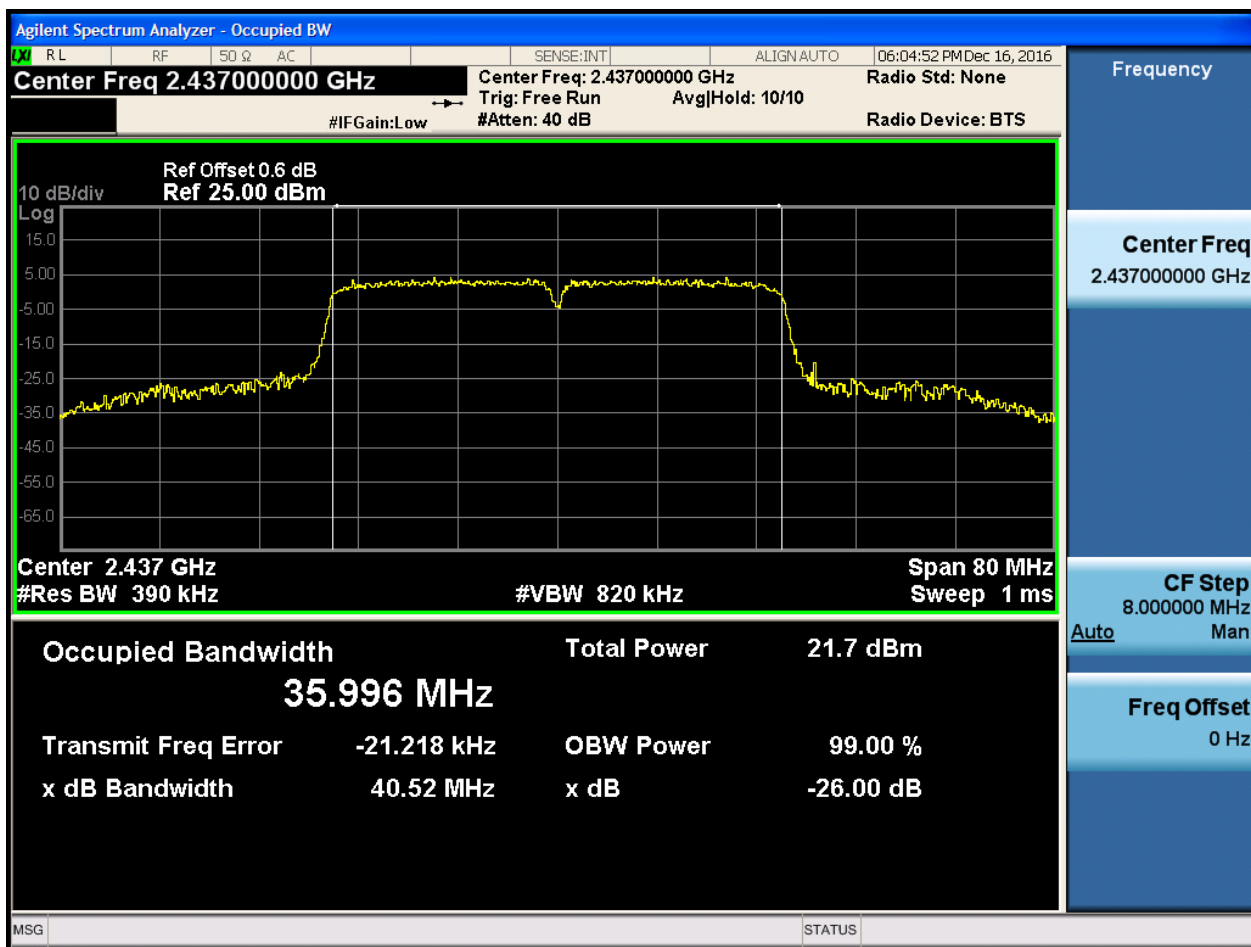


2.10 11N40_L@Ant 1



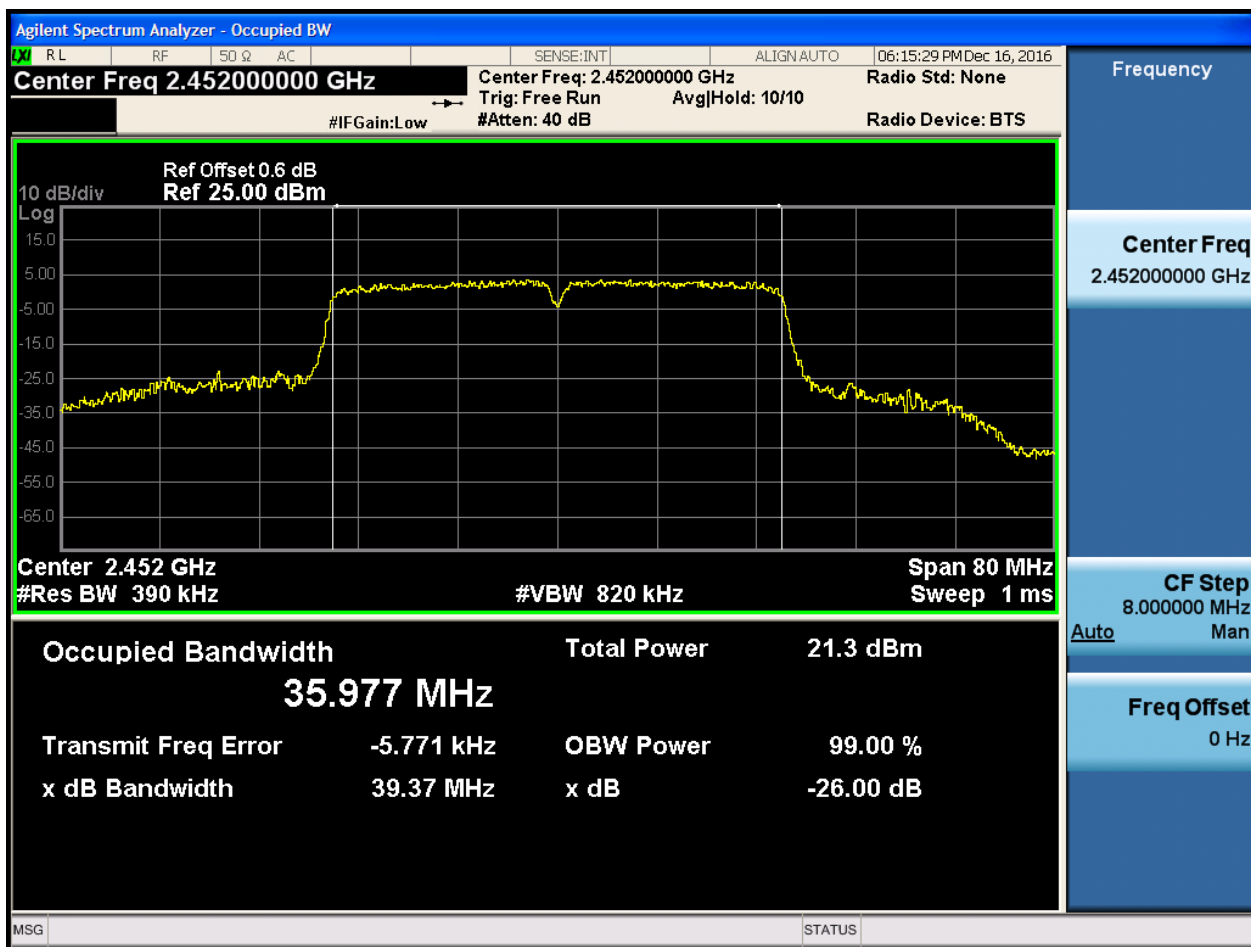


2.11 11N40_M@Ant 1





2.12 11N40_H@Ant 1



Appendix C: Duty Cycle

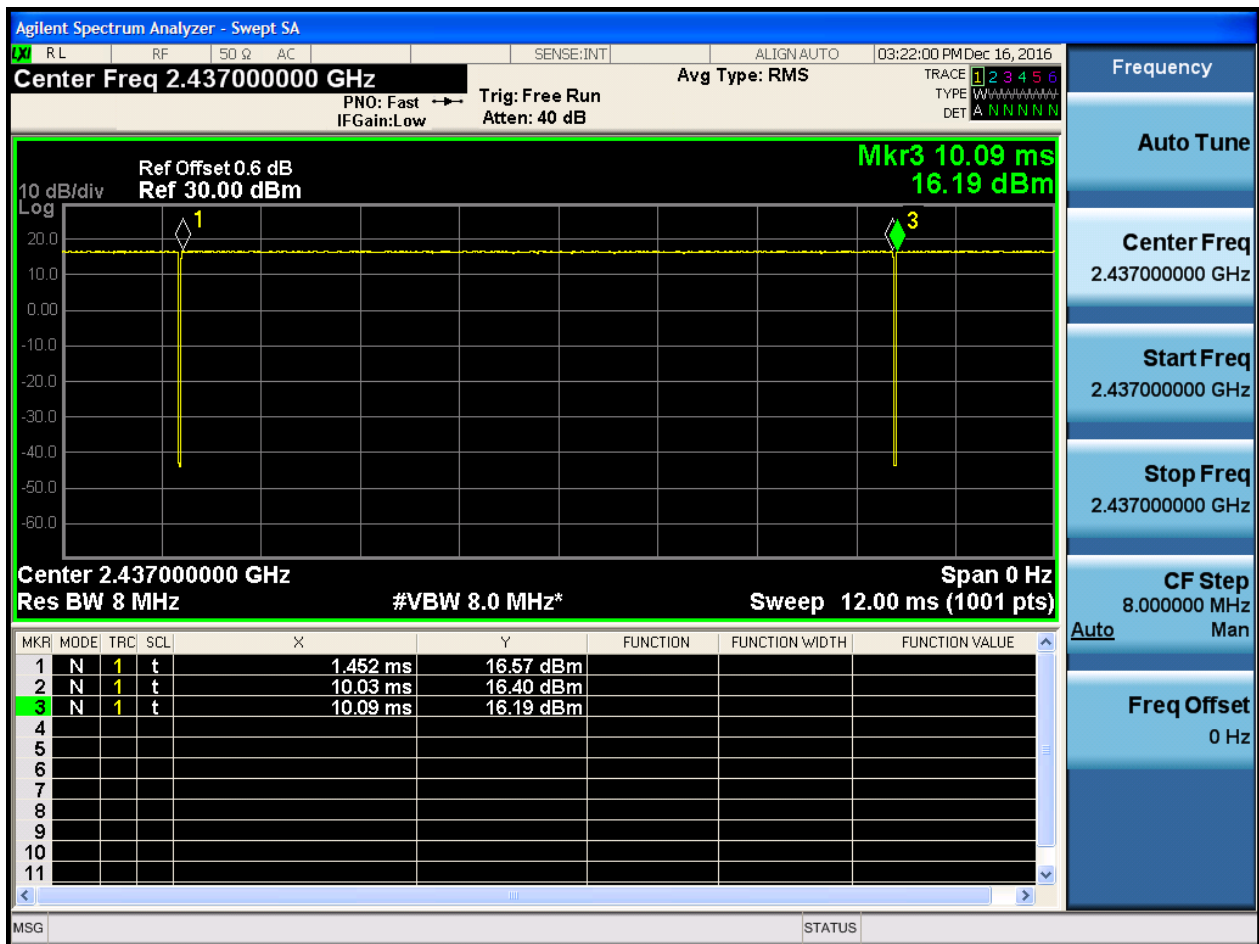
Part I - Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11B	Ant 1: CH1,CH6,CH11	99.3
11G	Ant 1: CH1,CH6,CH11	97.4
11N_20M_SISO	Ant 1: CH1,CH6,CH11	97.9
11N_40M_SISO	Ant 1: CH3,CH6,CH9	96.3



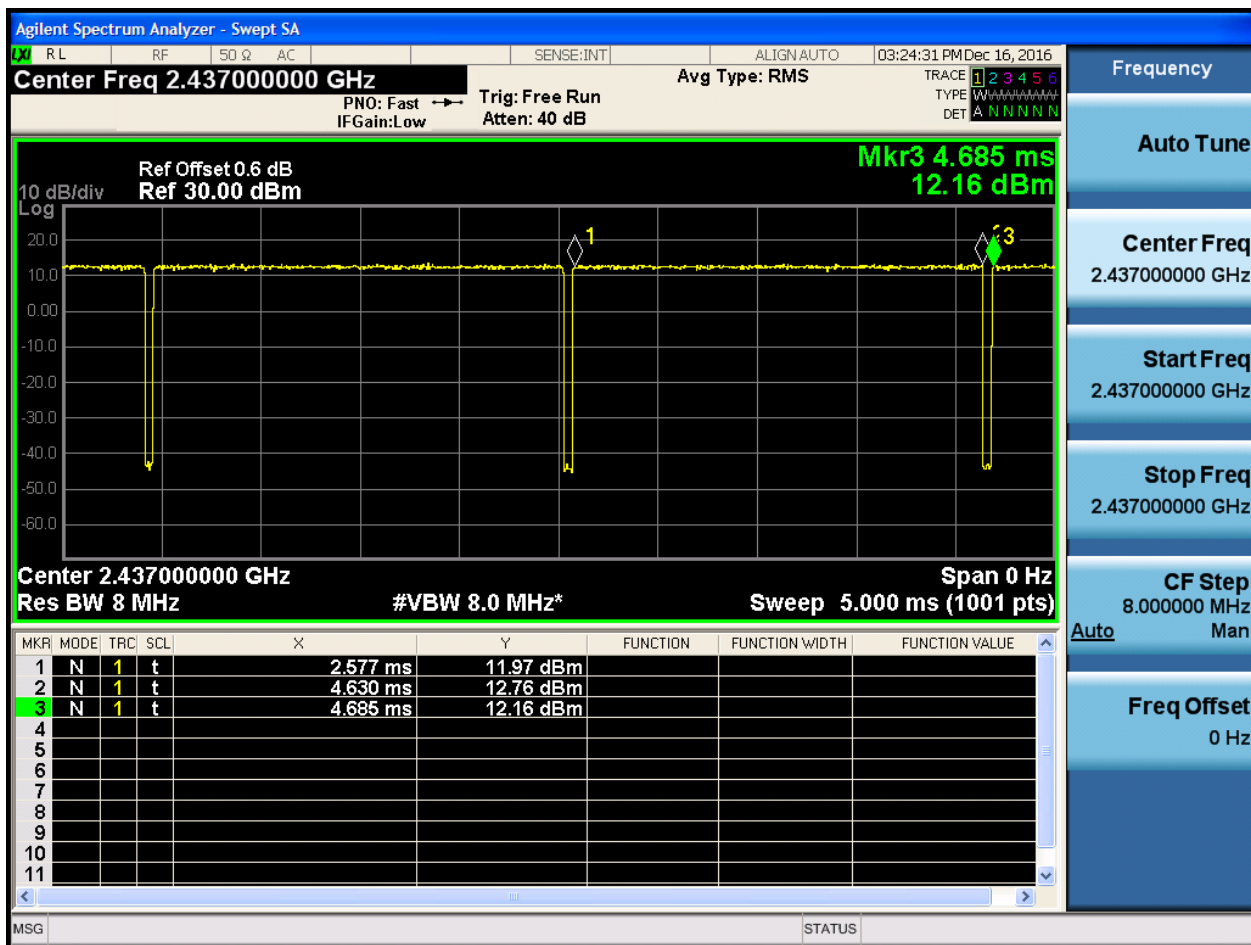
Part II - Test Plots

3.1 11B

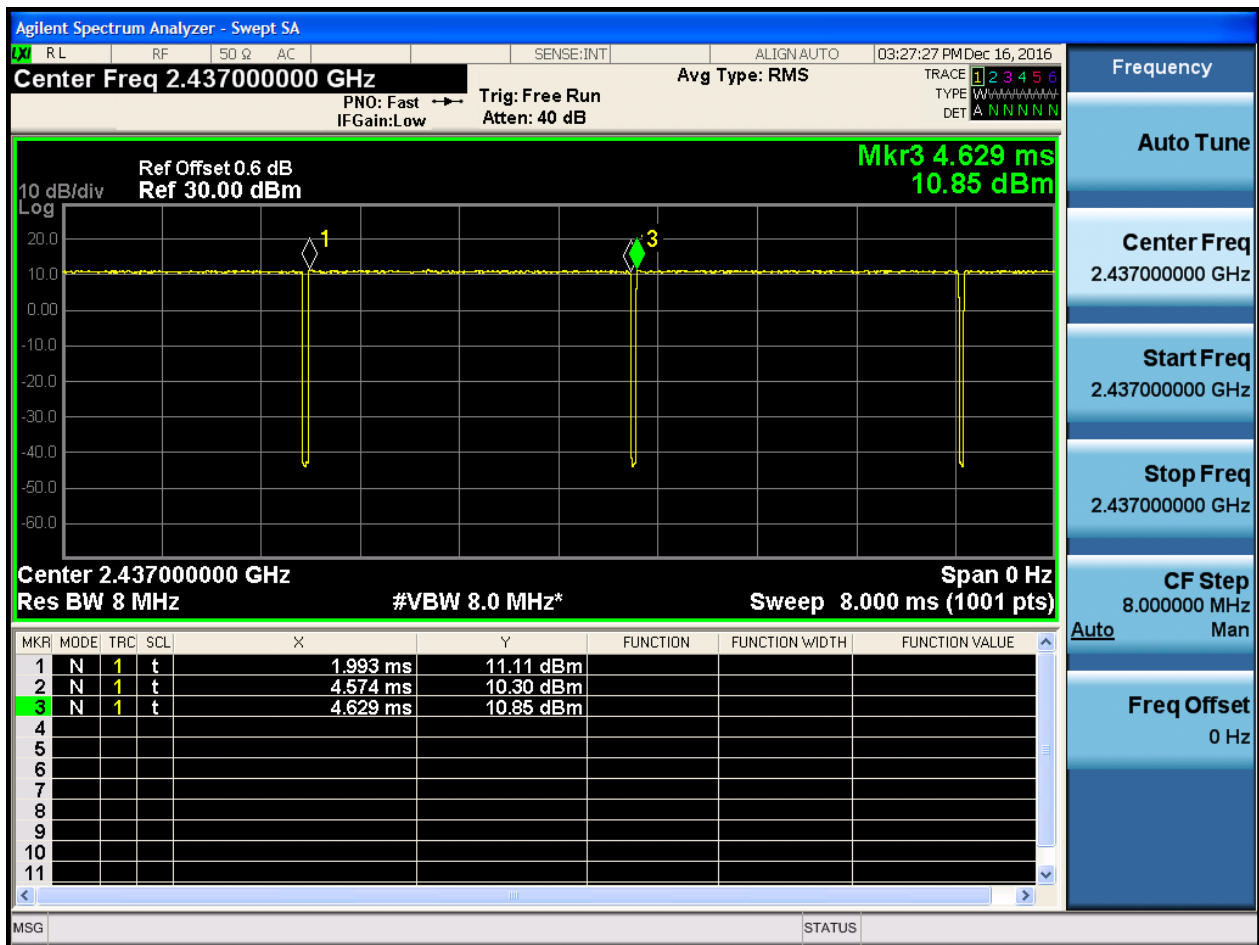




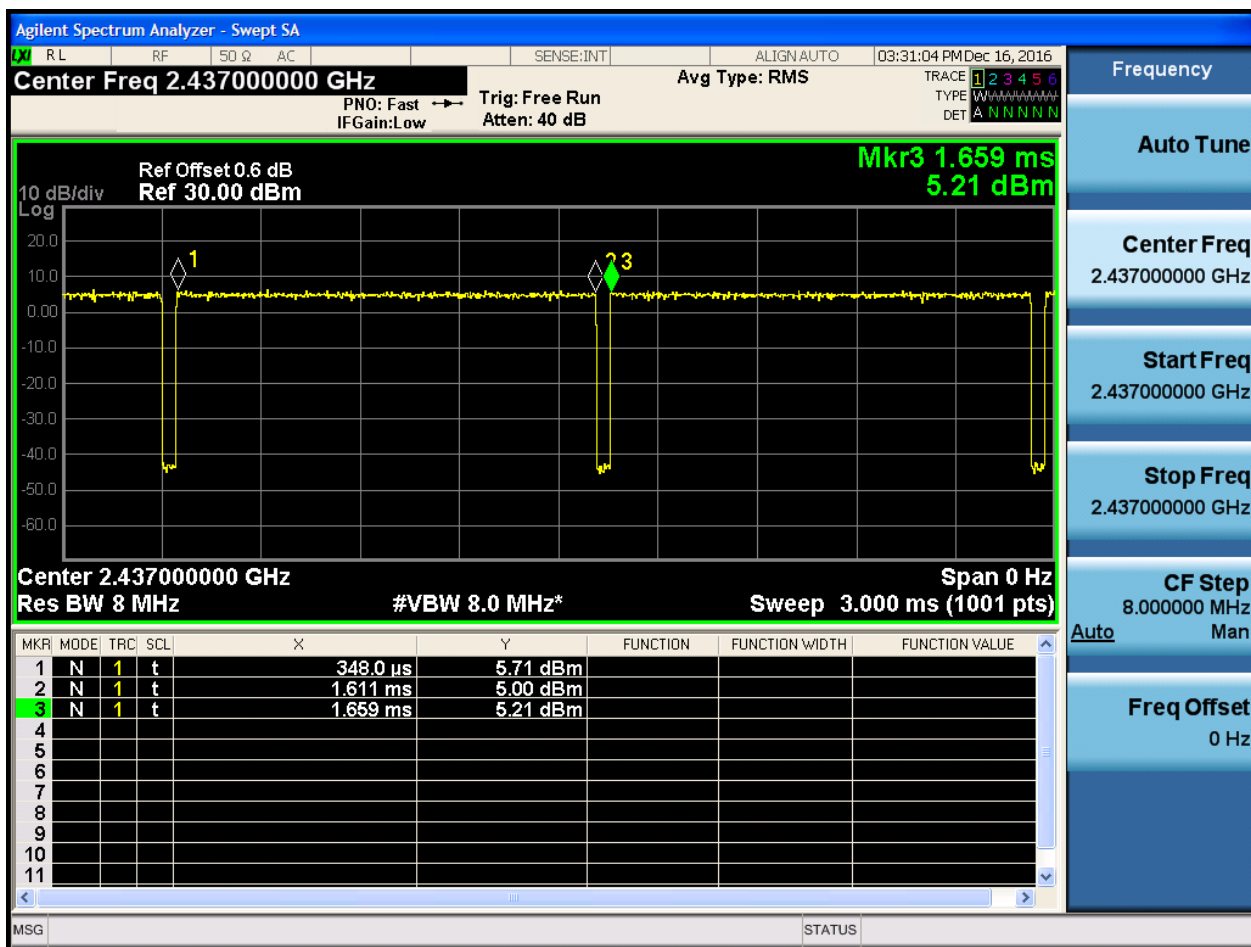
3.2 11G



3.3 11N20



3.4 11N40



Appendix D: Maximum Conducted Average Output Power

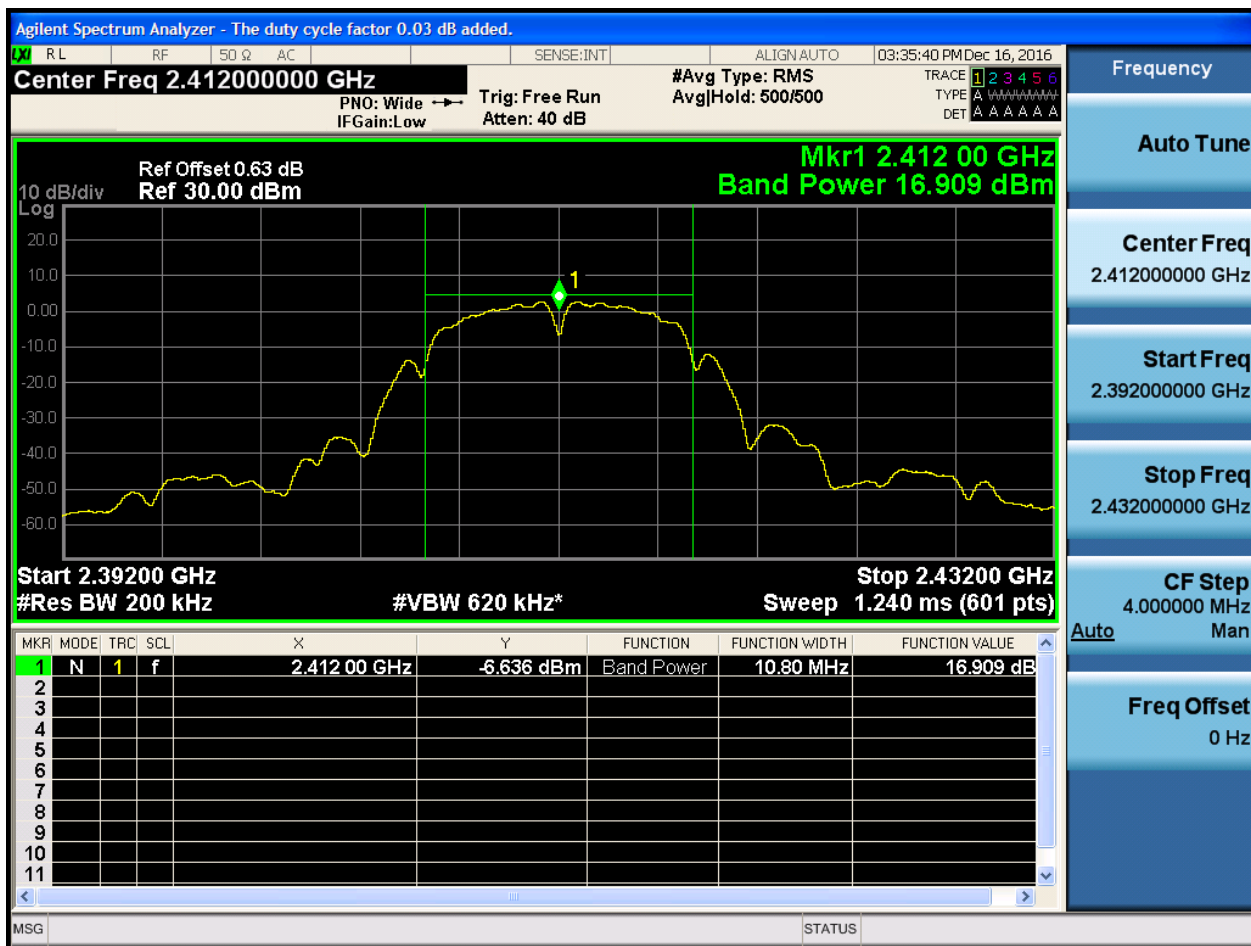
Part I - Test Results

Test Mode	Test Channel	Frequency[MHz]	Ant	Power[dBm]	Verdict
11B	L	2412	Ant 1	16.91	pass
11B	M	2437	Ant 1	17.46	pass
11B	H	2462	Ant 1	17.13	pass
11G	L	2412	Ant 1	16.07	pass
11G	M	2437	Ant 1	16.39	pass
11G	H	2462	Ant 1	16.31	pass
11N20	L	2412	Ant 1	14.74	pass
11N20	M	2437	Ant 1	15.22	pass
11N20	H	2462	Ant 1	15.07	pass
11N40	L	2422	Ant 1	13.08	pass
11N40	M	2437	Ant 1	14.67	pass
11N40	H	2452	Ant 1	14.09	pass



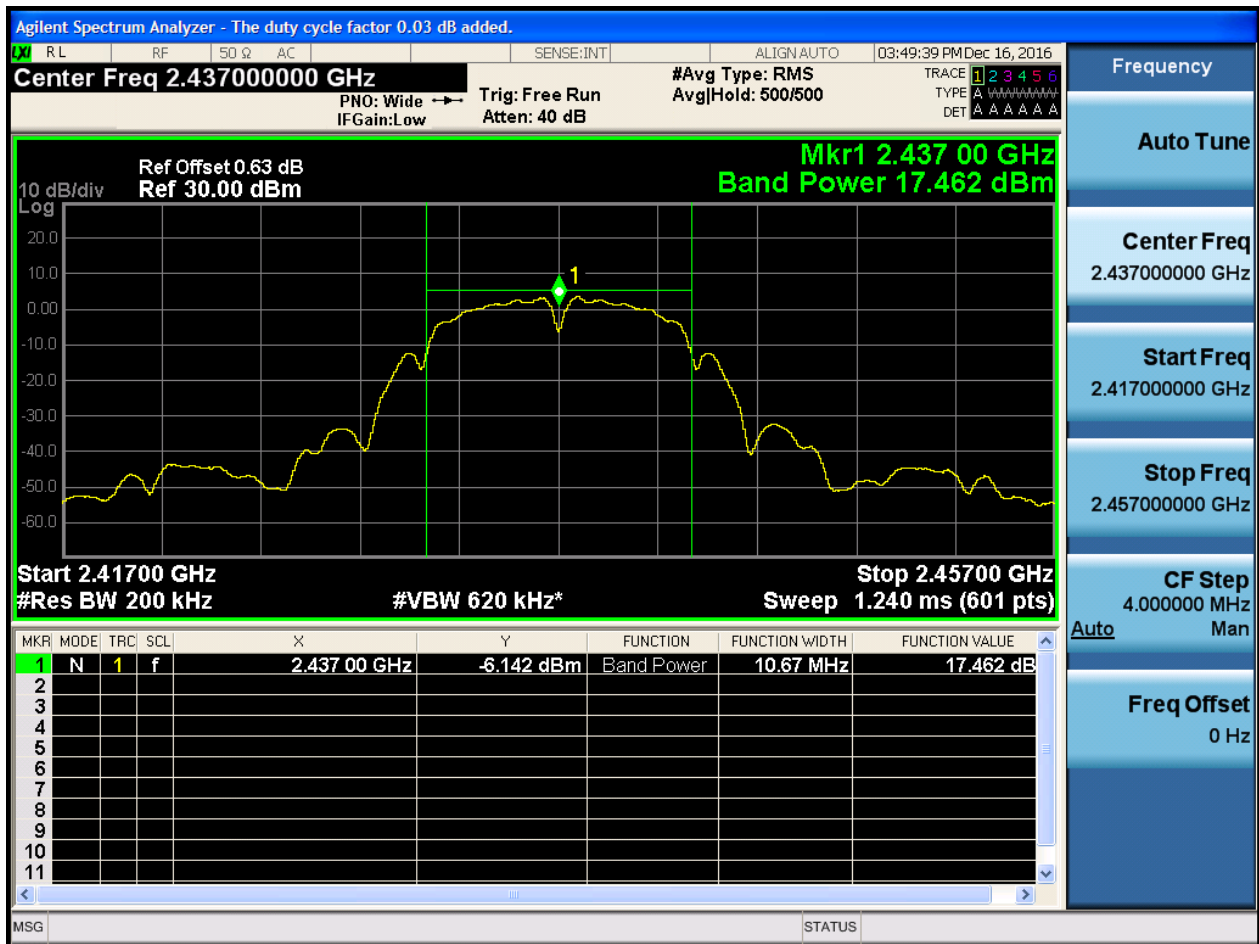
Part II - Test Plots

4.1 11B_L@Ant 1



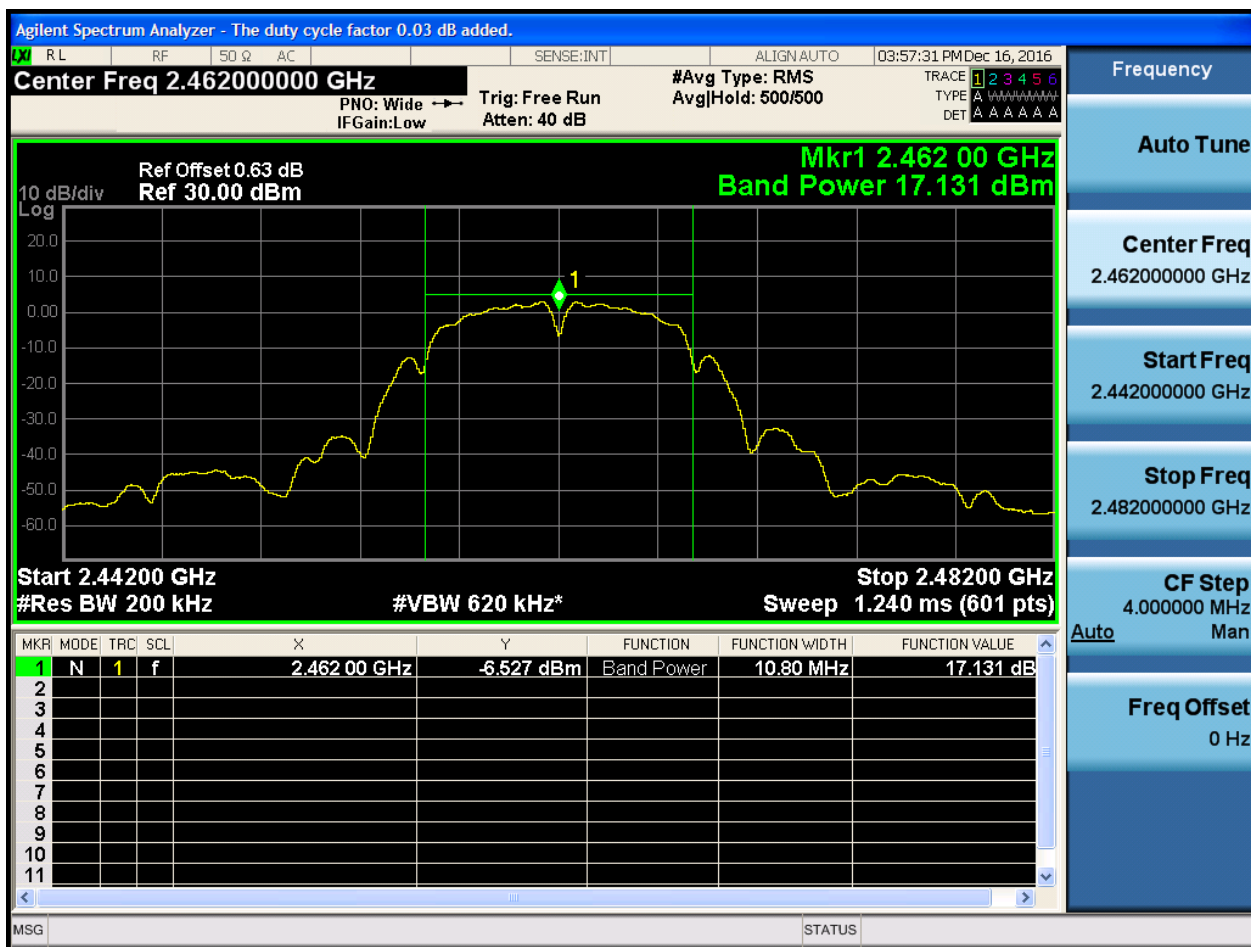


4.2 11B_M@Ant 1



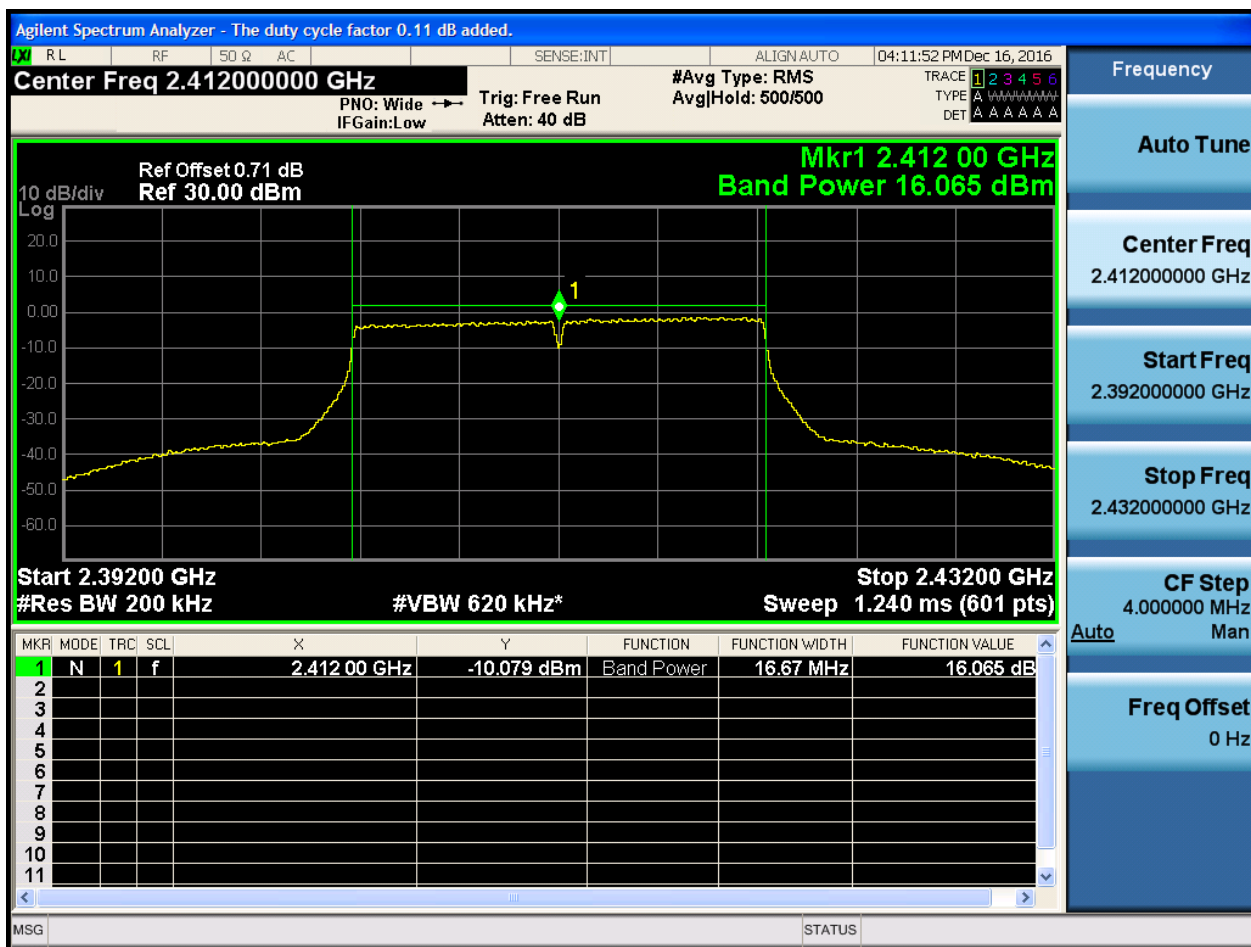


4.3 11B_H@Ant 1

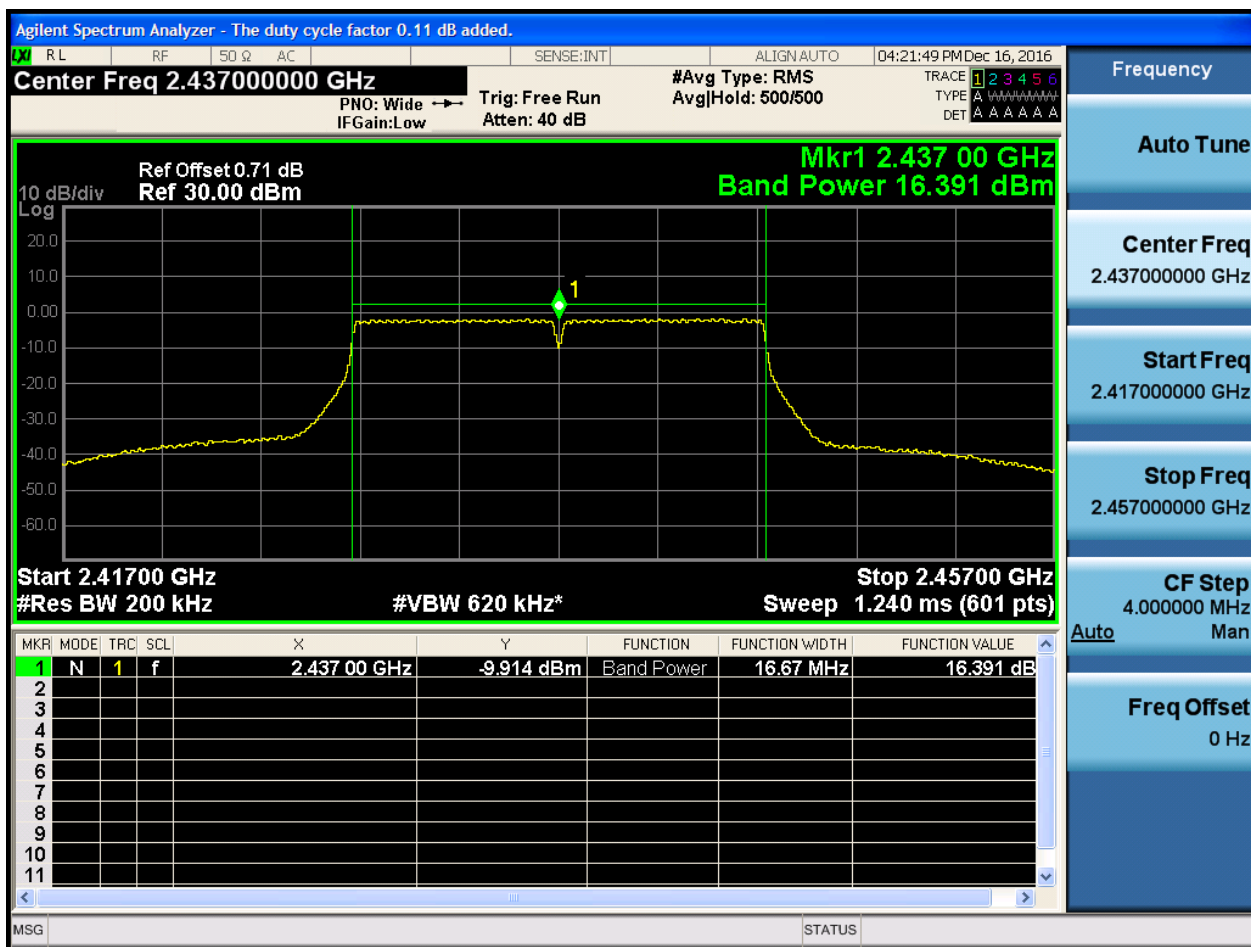




4.4 11G_L@Ant 1

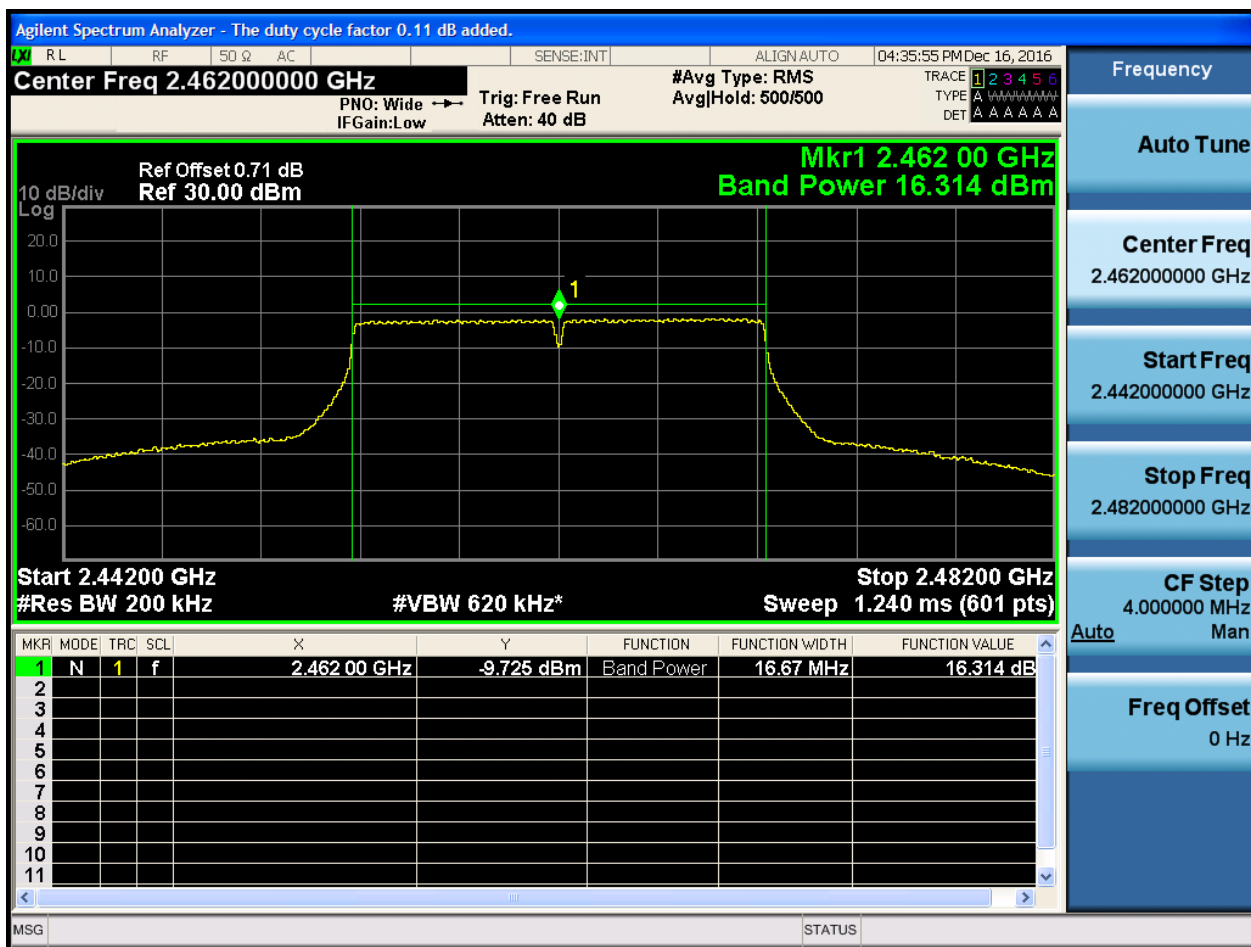


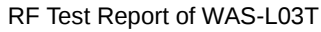
4.5 11G_M@Ant 1





4.6 11G_H@Ant 1





Agilent Spectrum Analyzer - The duty cycle factor 0.09 dB added.

R L RF 50 Ω AC SENSE:INT ALIGN AUTO 04:45:16 PM Dec 16, 2016

Center Freq 2.41200000 GHz

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

#Avg Type: RMS AvgHold: 500/500

TRACE 1 2 3 4 5 6
TYPE A W U V I M N O P Q R S T U V W X Y Z [] ^ _ ` ~ { | } ~
DET A A A A A A

Ref Offset 0.69 dB
Ref 30.00 dBm

Mkr1 2.412 00 GHz
Band Power 14.736 dBm

The main plot area shows a spectrum trace on a grid. The vertical axis is labeled 'Log' and ranges from -60.0 to 20.0 dB/div. The horizontal axis represents frequency. A prominent peak is visible at 2.412 GHz, marked with a green dot and the number '1'. Vertical reference lines are present at approximately 2.392 GHz and 2.432 GHz.

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	-11.642 dBm	Band Power	17.73 MHz	14.736 dB
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

Frequency

Auto Tune

Center Freq
2.41200000 GHz

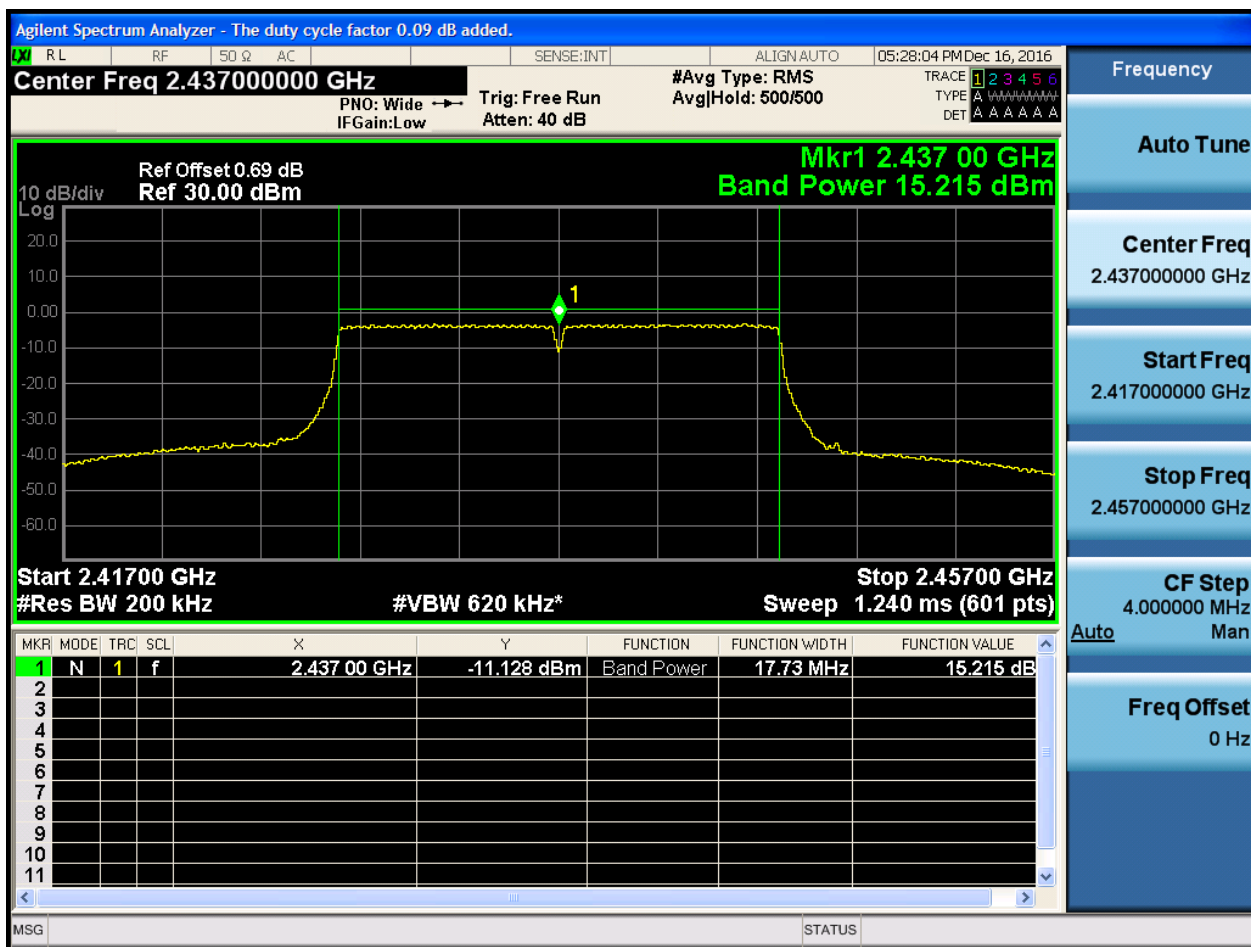
Start Freq
2.392000000 GHz

Stop Freq
2.432000000 GHz

CF Step
4.000000 MHz
Man

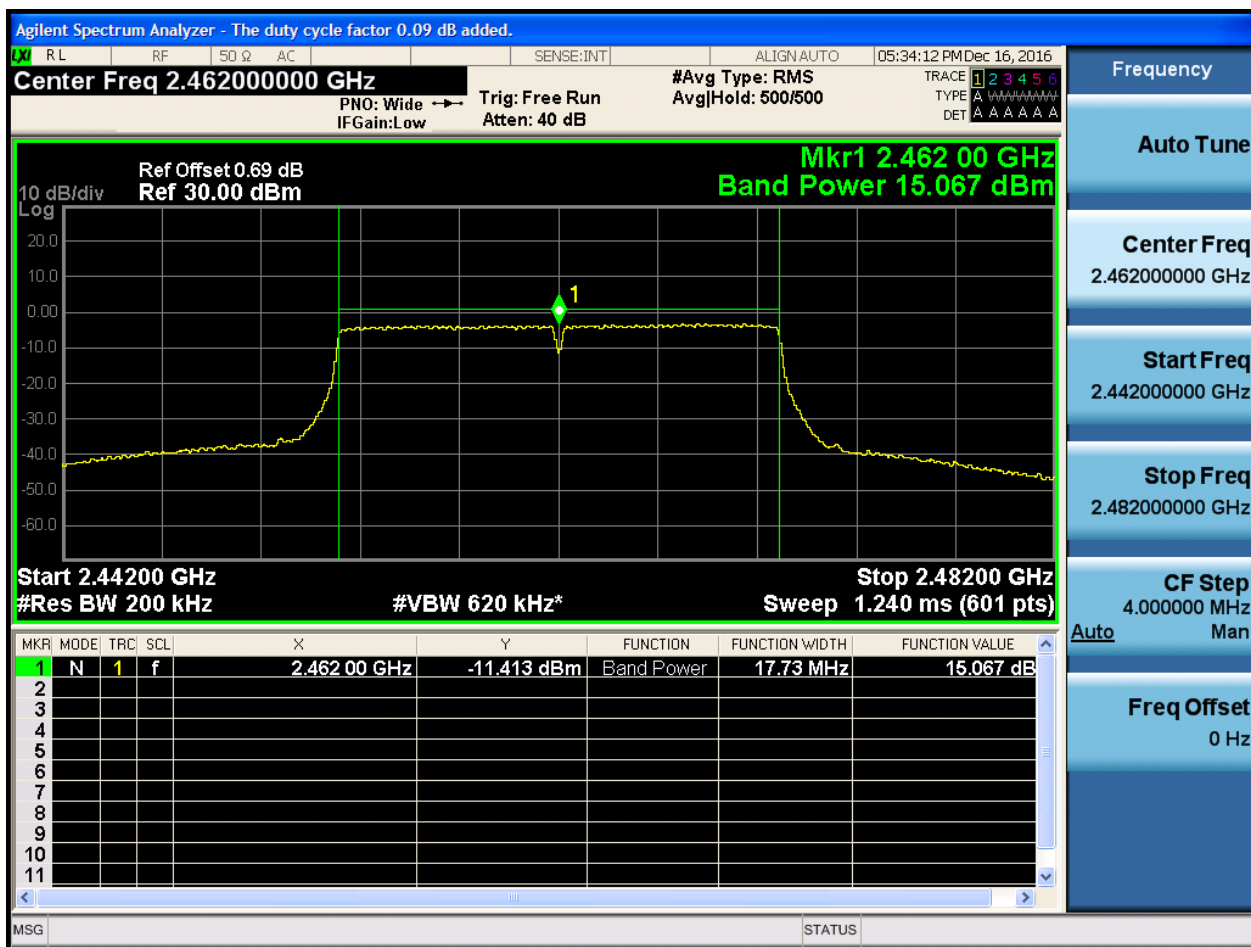
Freq Offset
0 Hz

4.8 11N20_M@Ant 1



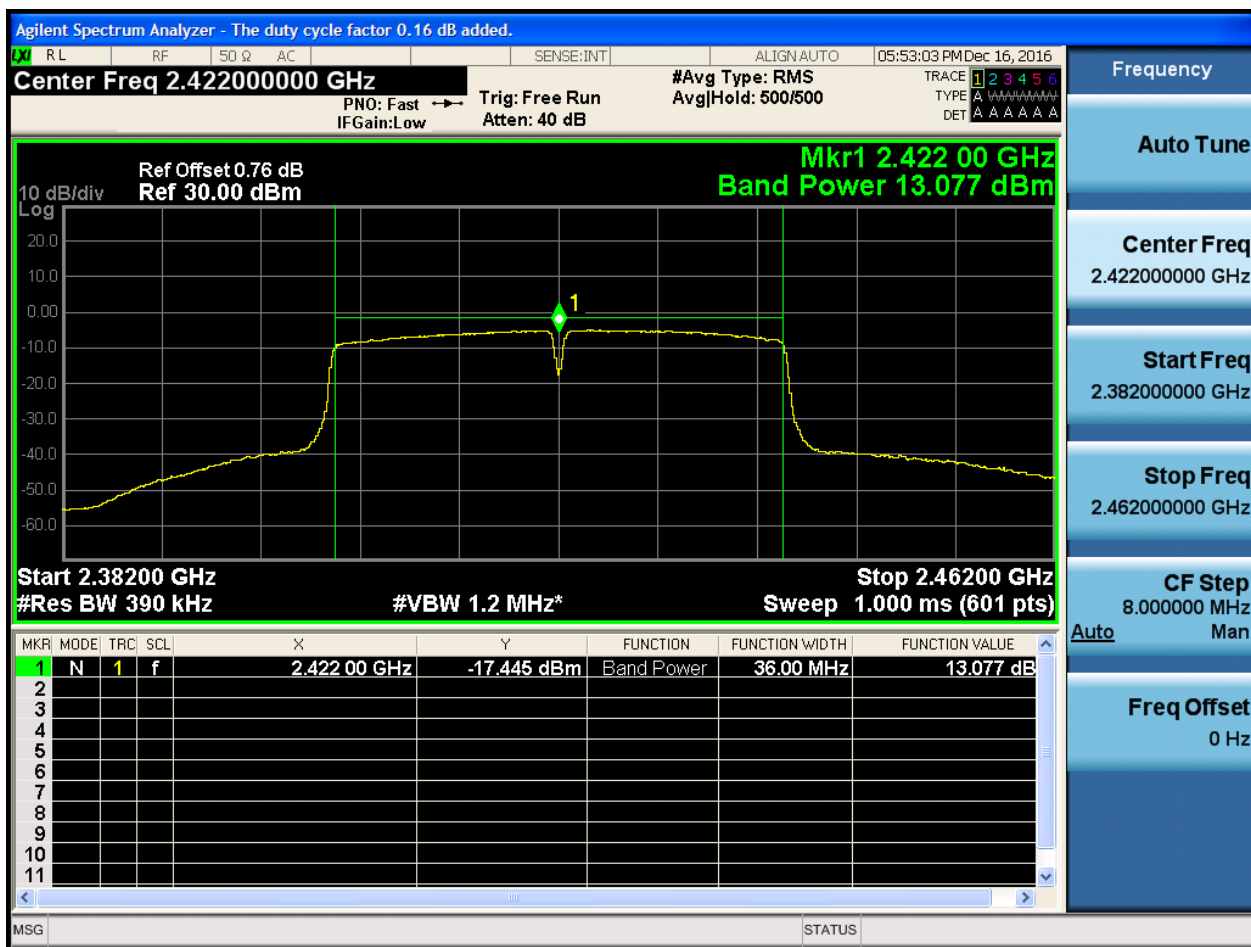


4.9 11N20_H@Ant 1



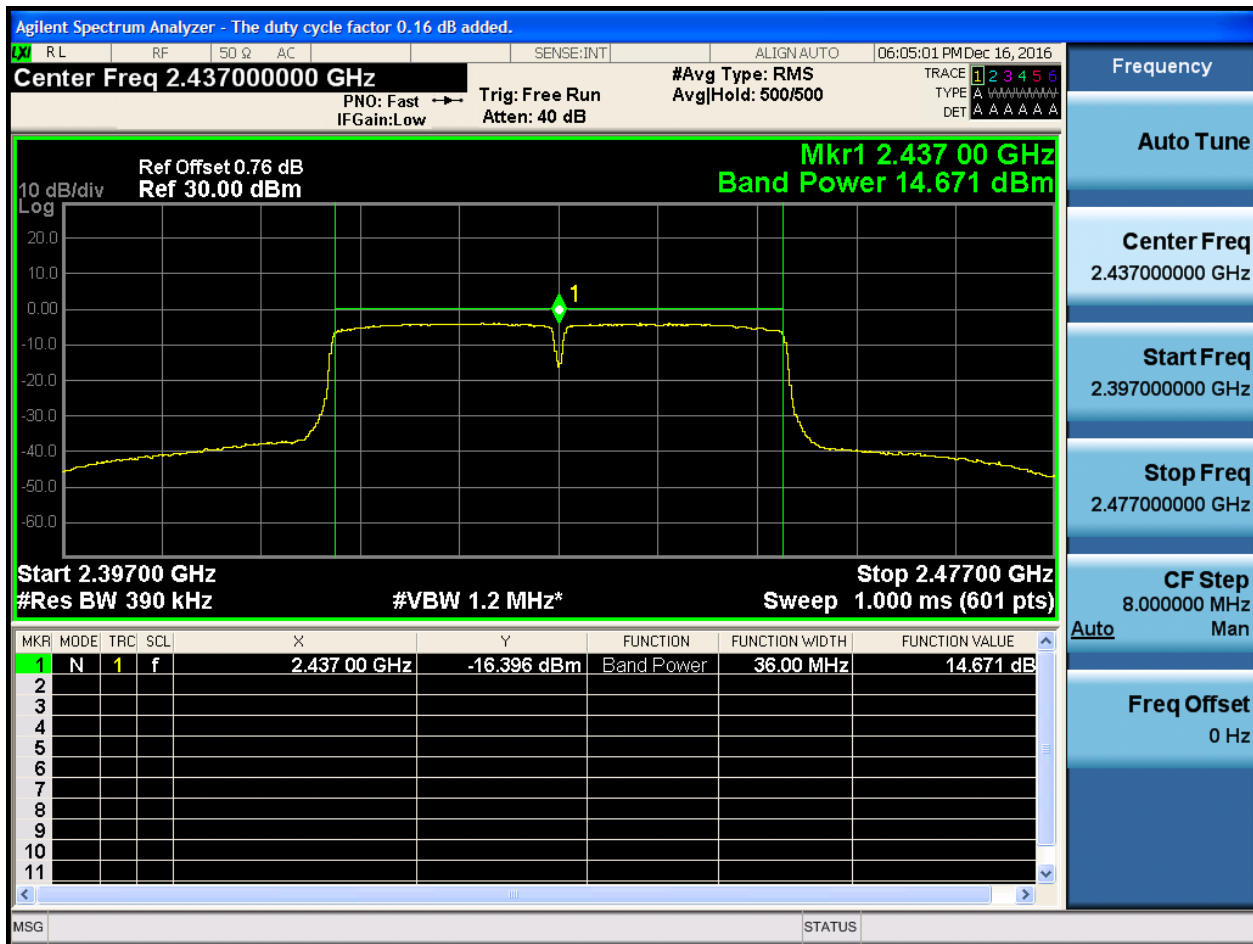


4.10 11N40_L@Ant 1



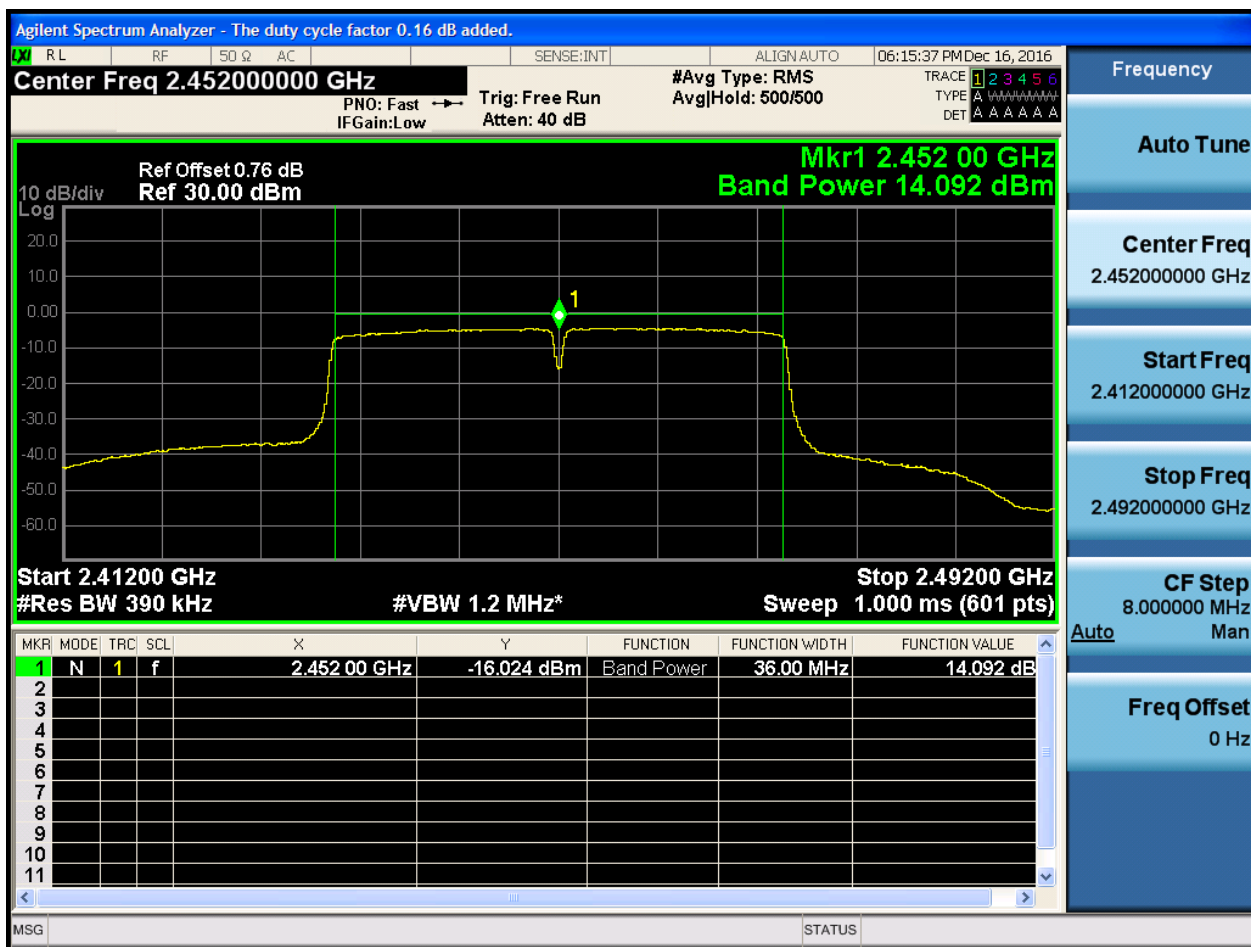


4.11 11N40_M@Ant 1





4.12 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	-9.65	pass
11B	M	2437	Ant 1	-9.30	pass
11B	H	2462	Ant 1	-9.55	pass
11G	L	2412	Ant 1	-13.35	pass
11G	M	2437	Ant 1	-13.72	pass
11G	H	2462	Ant 1	-13.61	pass
11N20	L	2412	Ant 1	-14.80	pass
11N20	M	2437	Ant 1	-15.19	pass
11N20	H	2462	Ant 1	-15.13	pass
11N40	L	2422	Ant 1	-19.86	pass
11N40	M	2437	Ant 1	-18.77	pass
11N40	H	2452	Ant 1	-19.22	pass



Part II - Test Plots

5.1 11B_L@Ant 1



5.2 11B_M@Ant 1



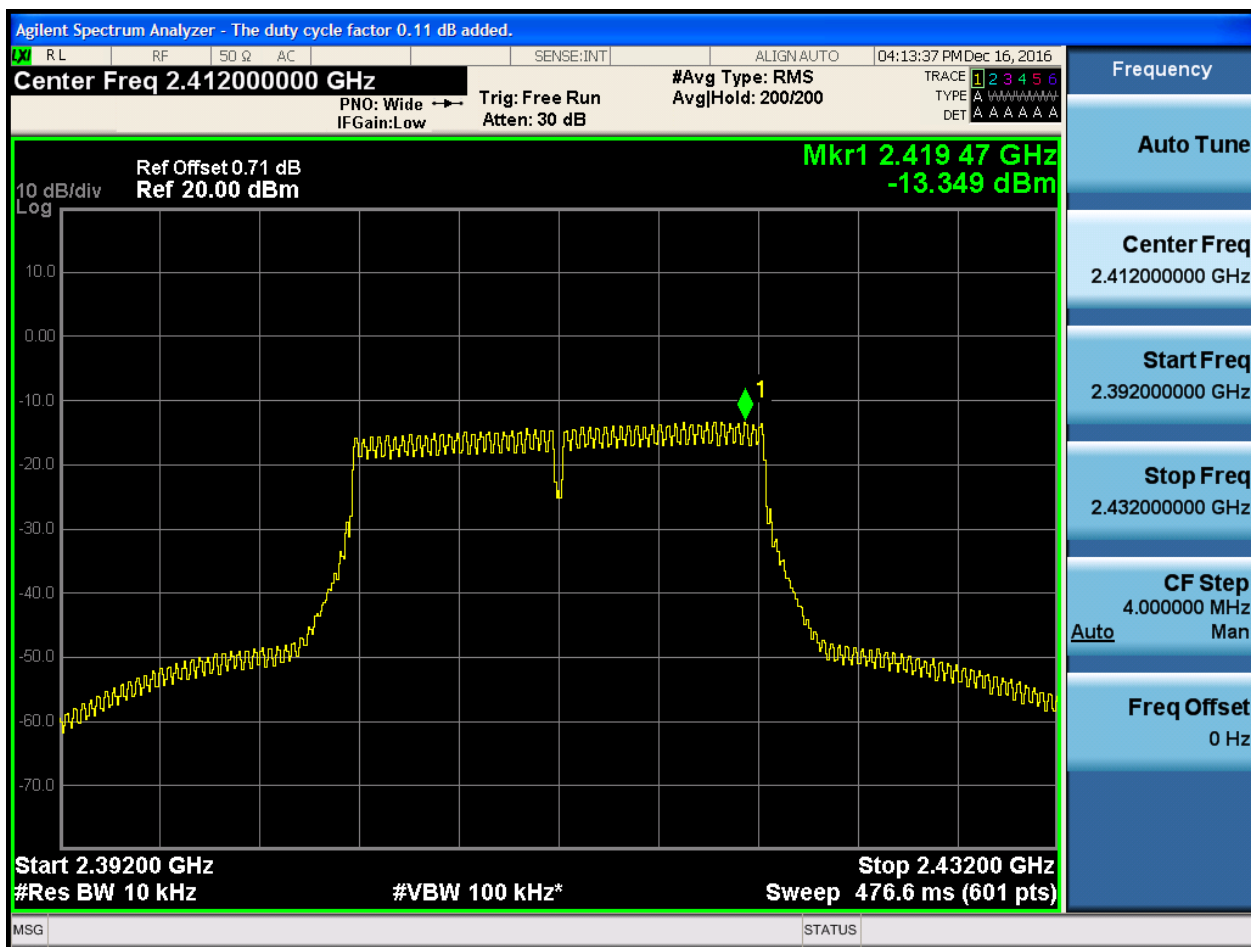


5.3 11B_H@Ant 1



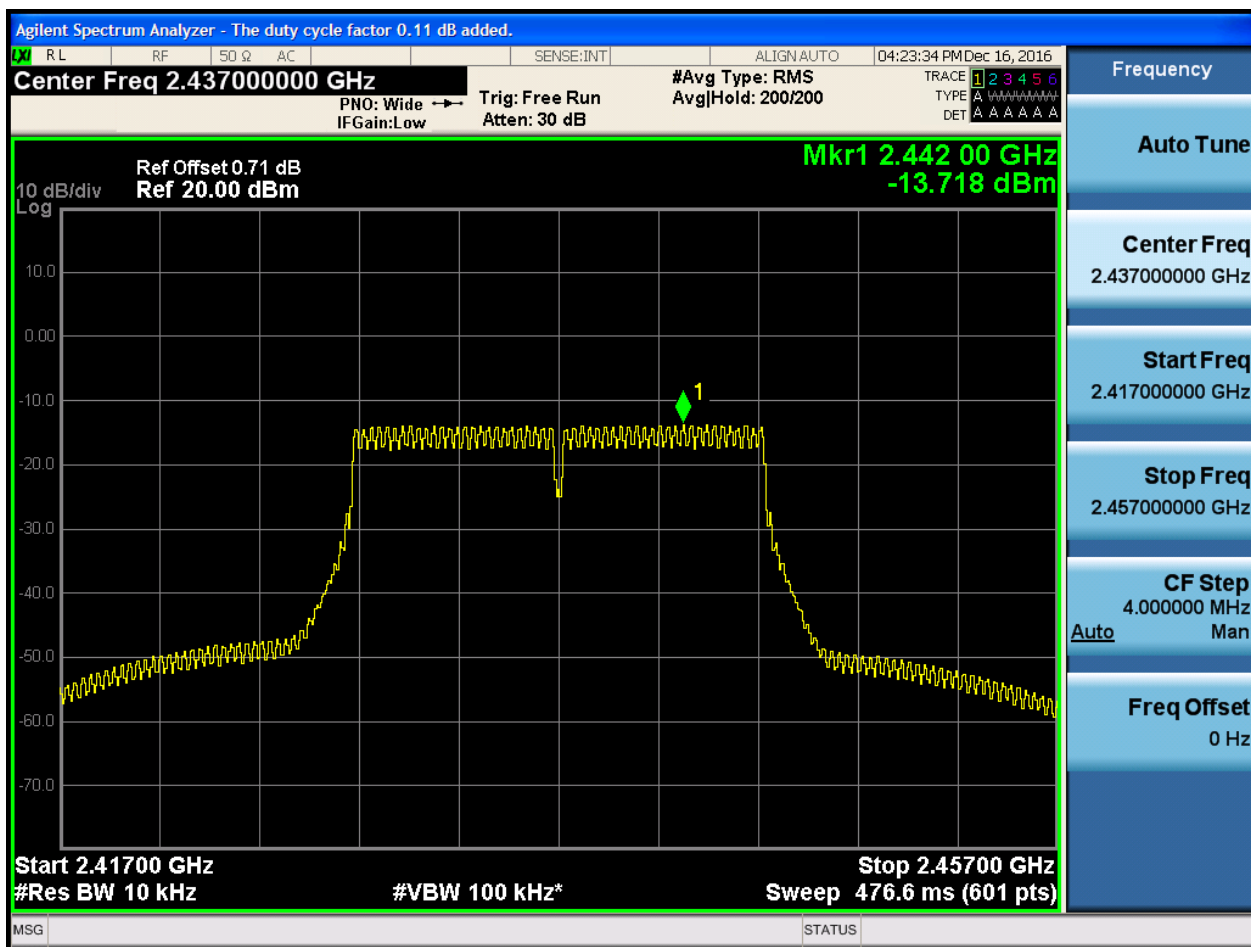


5.4 11G_L@Ant 1



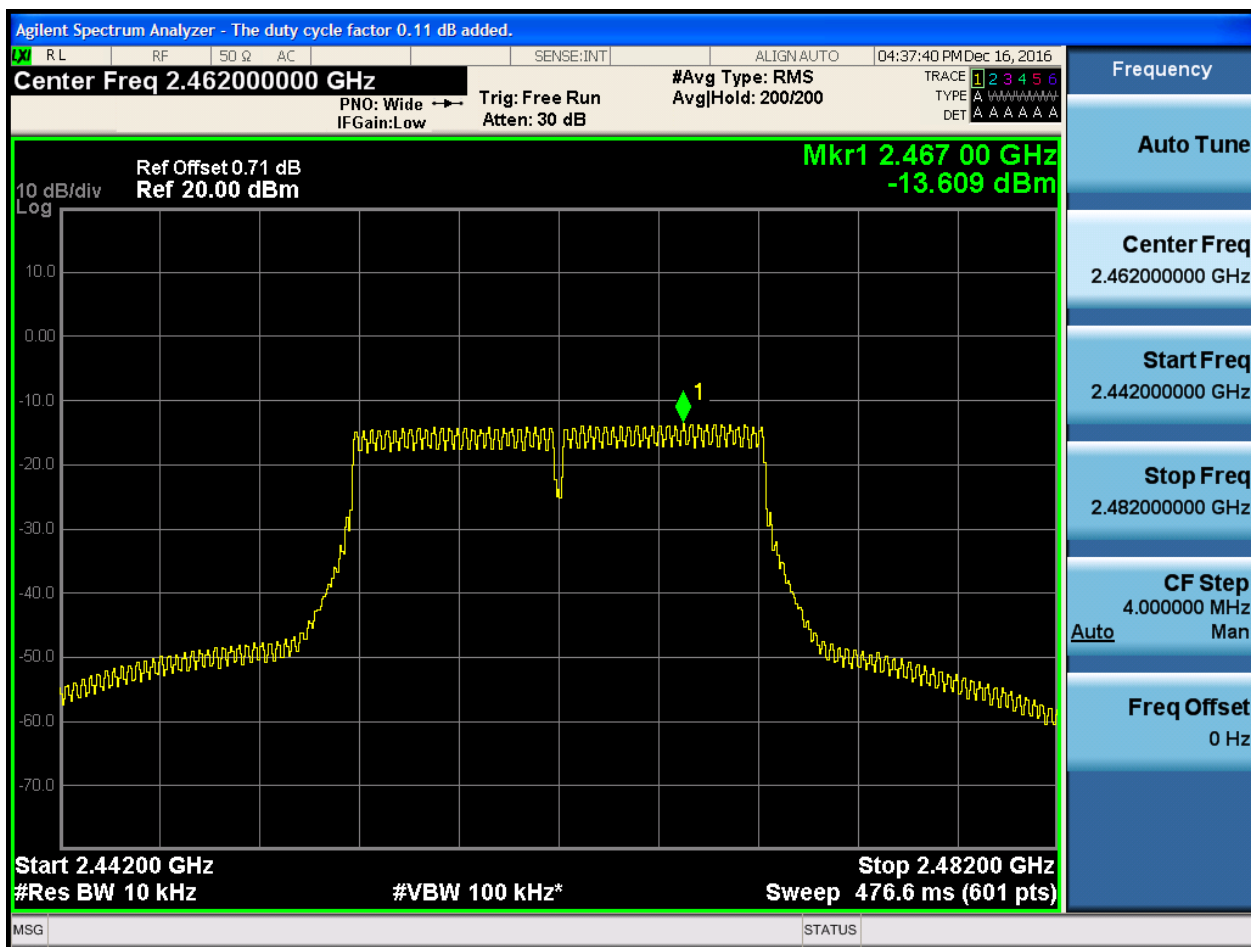


5.5 11G_M@Ant 1



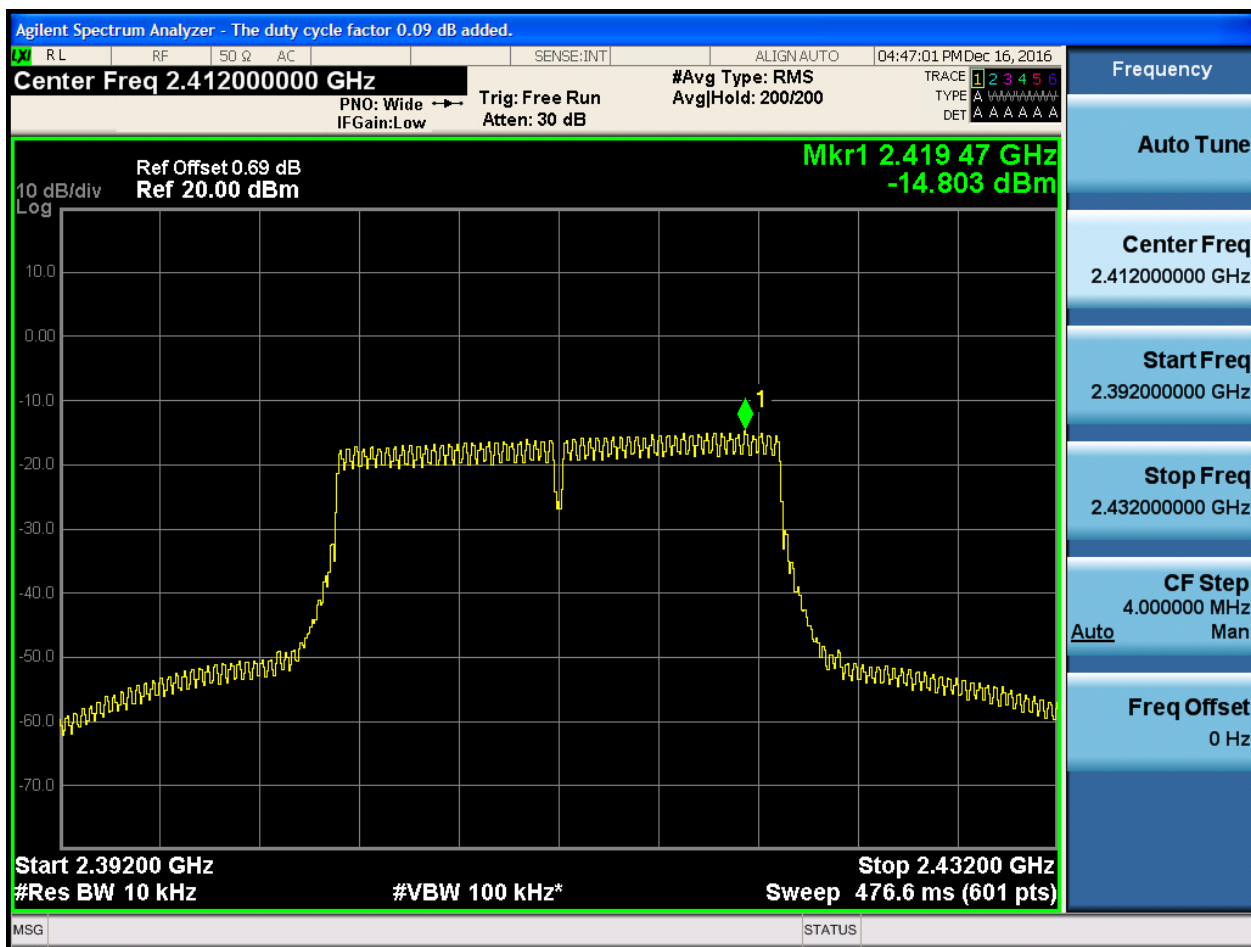


5.6 11G_H@Ant 1



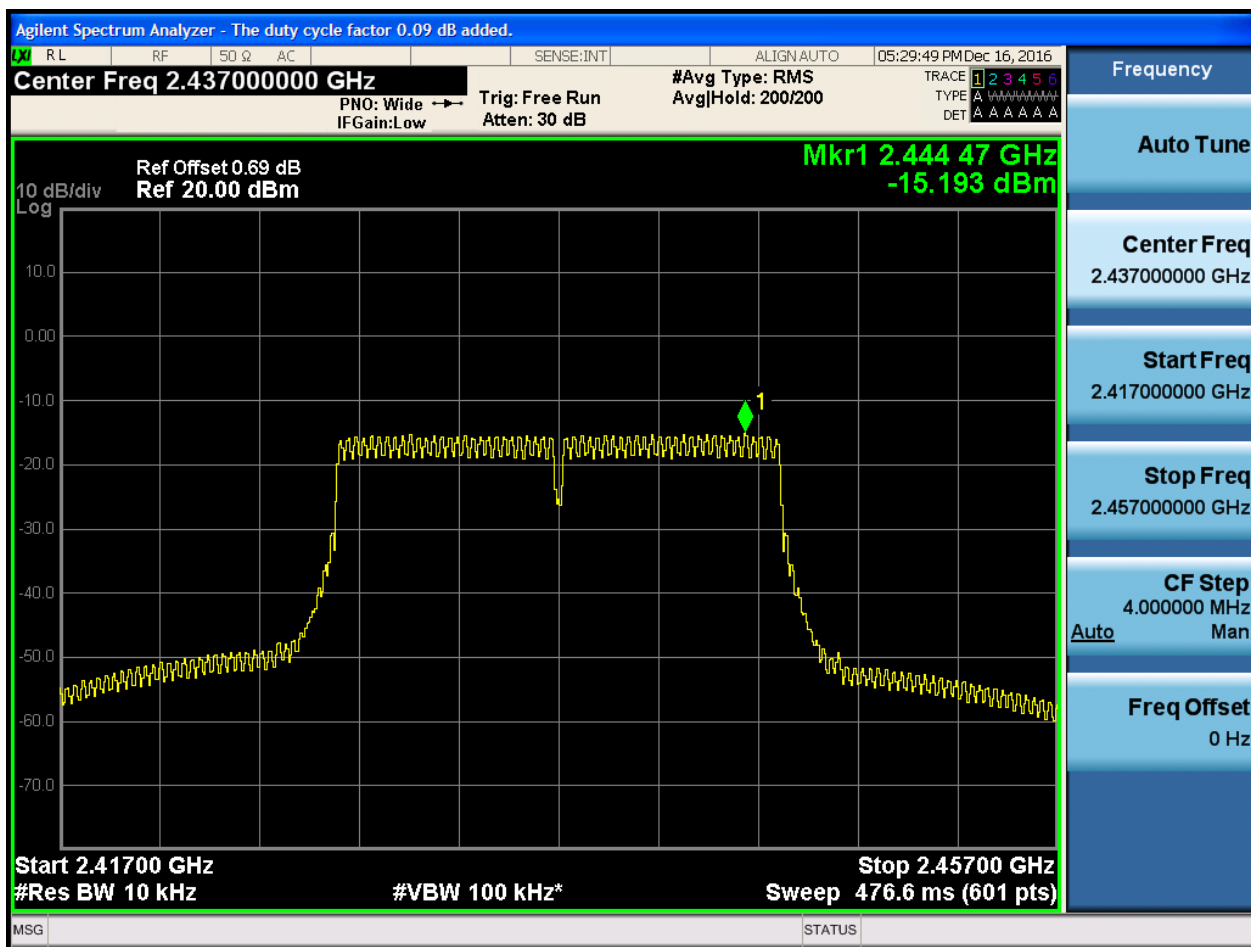


5.7 11N20_L@Ant 1



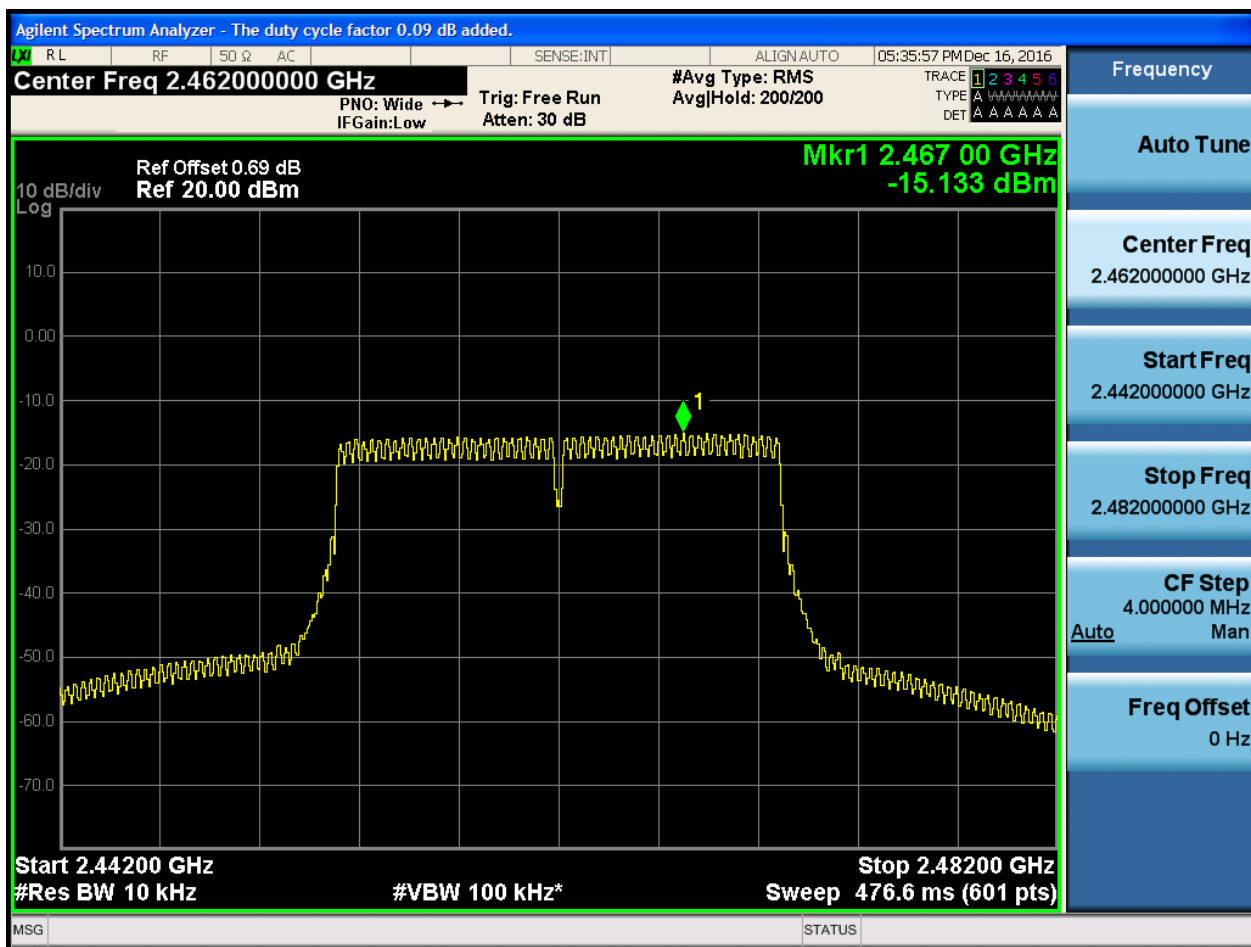


5.8 11N20_M@Ant 1



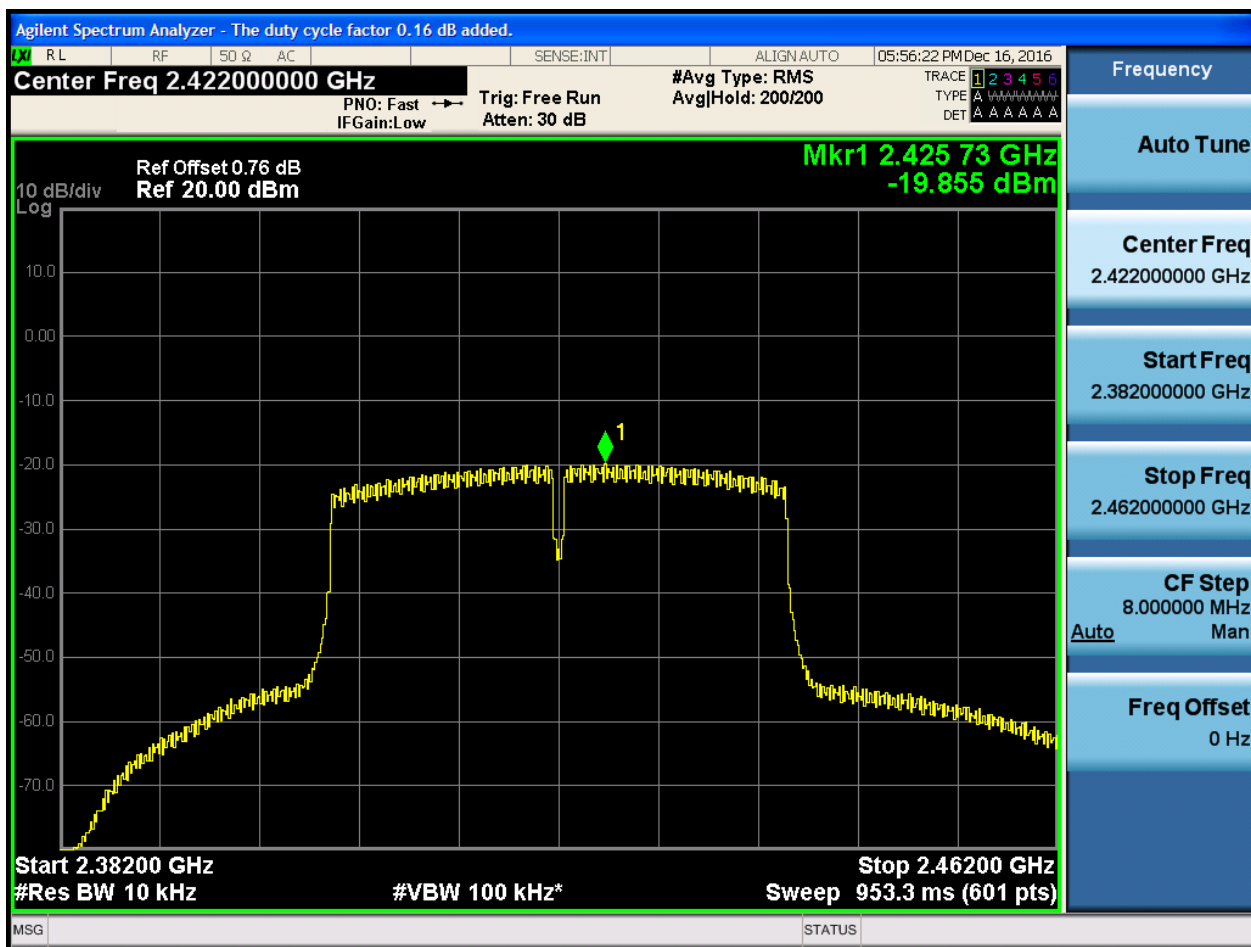


5.9 11N20_H@Ant 1



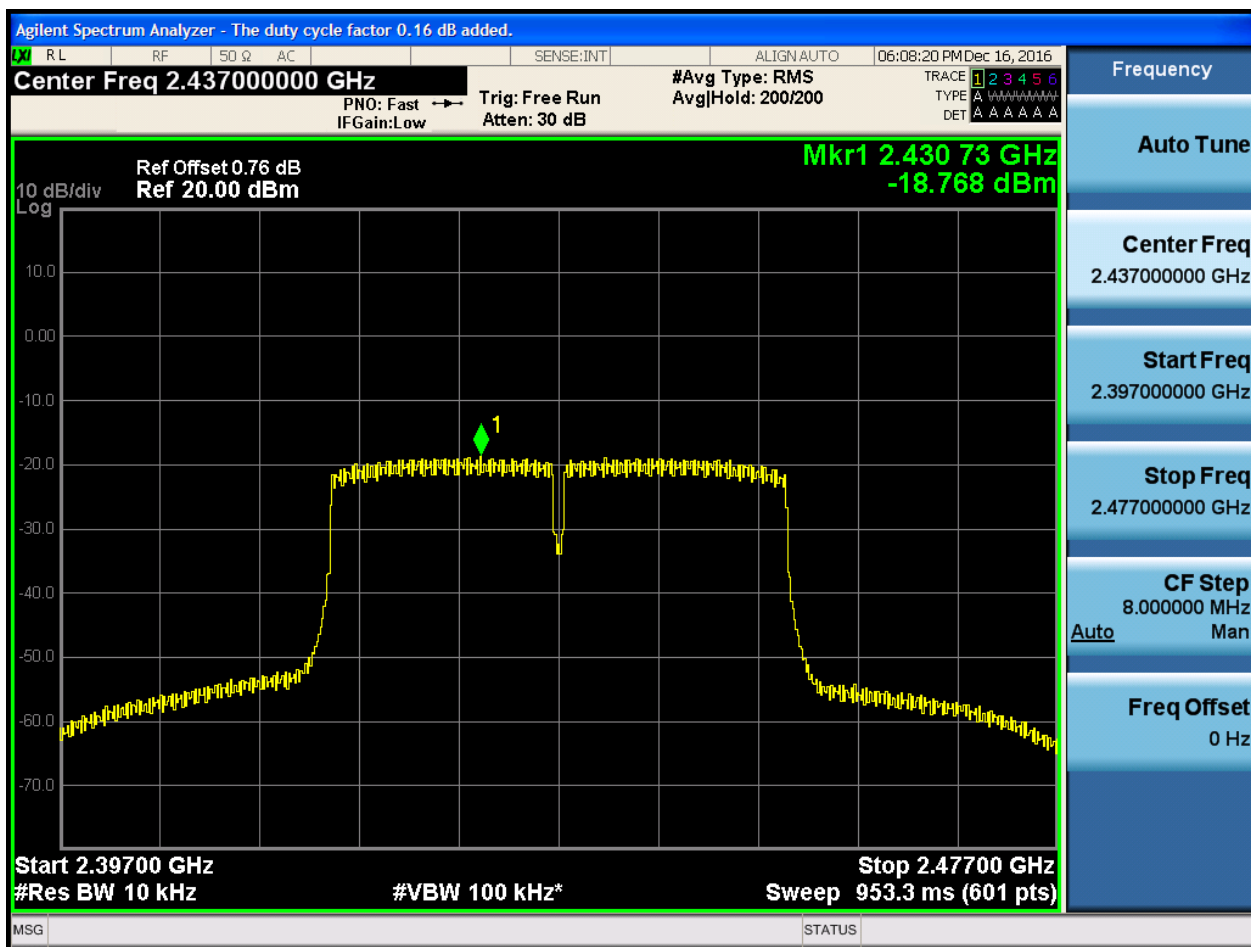


5.10 11N40_L@Ant 1



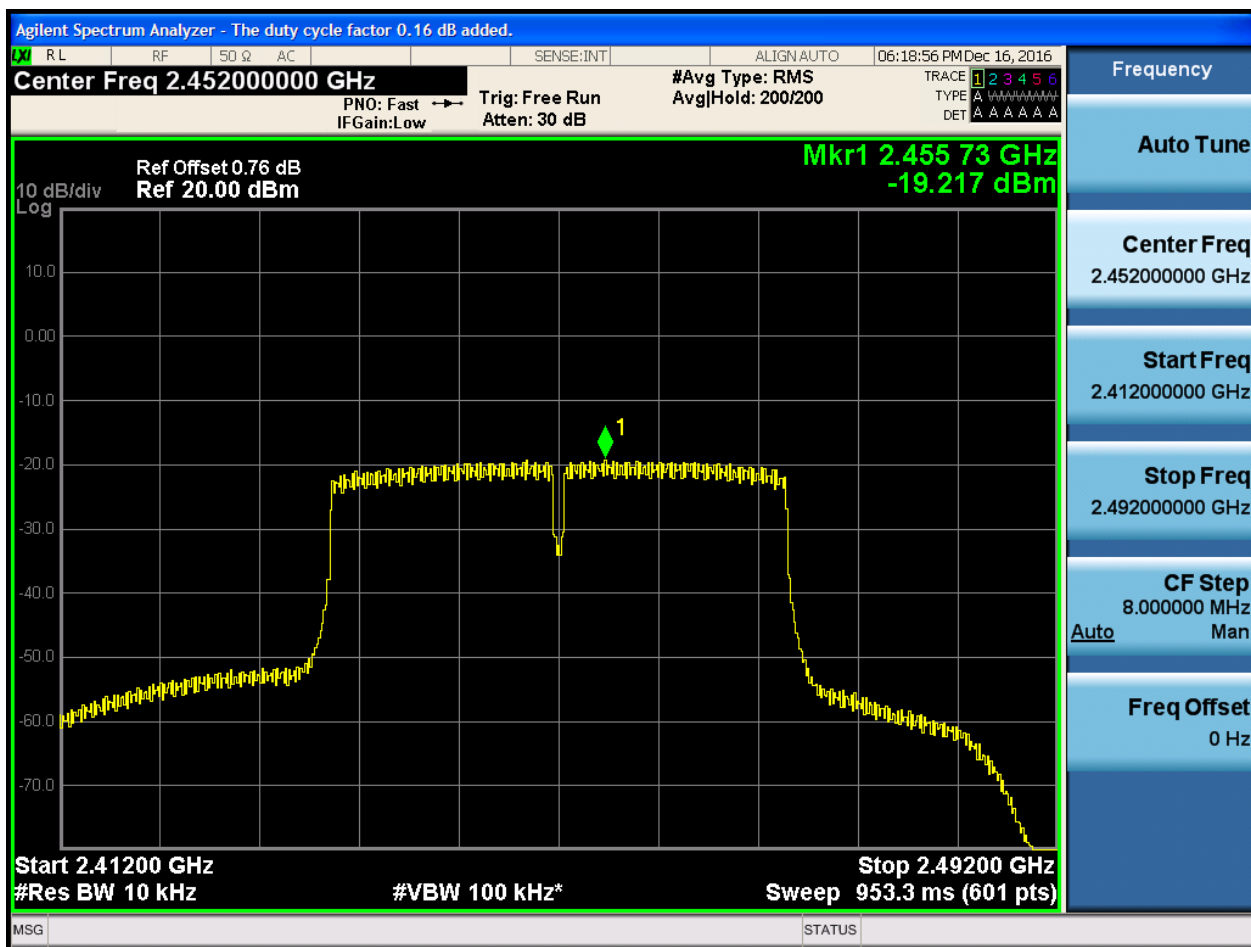


5.11 11N40_M@Ant 1





5.12 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	8.47	-51.87	pass
11B	H	2462	Ant 1	8.58	-47.48	pass
11G	L	2412	Ant 1	5.15	-43.56	pass
11G	H	2462	Ant 1	4.82	-39.35	pass
11N20	L	2412	Ant 1	3.77	-43.80	pass
11N20	H	2462	Ant 1	3.62	-40.71	pass
11N40	L	2422	Ant 1	-1.05	-44.13	pass
11N40	H	2452	Ant 1	0.09	-37.64	pass



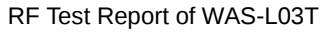
Part II - Test Plots

6.1 11B_L@Ant 1



6.2 11B_H@Ant 1





Agilent Spectrum Analyzer - Swept SA

Center Freq **2.40000000 GHz** Avg Type: Log-Pwr
PNO: Wide → Trig: Free Run Attenuation: 40 dB
IFGain: Low

Frequency: 04:15:53 PM Dec 16, 2016
TRACE 1 2 3 4 5 6
TYPE M W W W W W W W
DET P P P P P P

Ref Offset 0.6 dB
Ref 30.00 dBm

Mkr2 2.390 00 GHz
-43.557 dBm

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.419 53 GHz	5.154 dBm			
2	N	1	f	2.390 00 GHz	-43.557 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

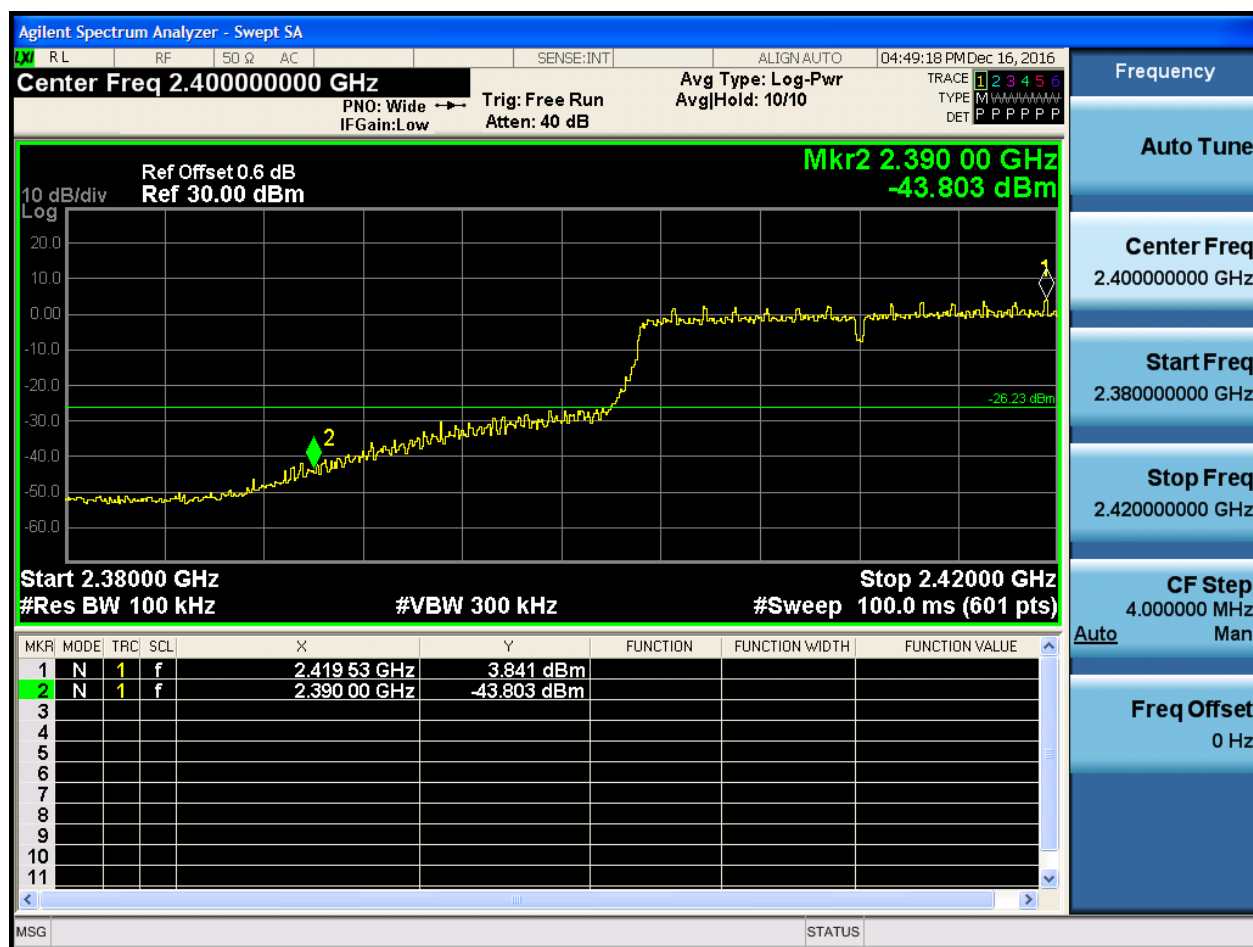
Start 2.38000 GHz Stop 2.42000 GHz
#Res BW 100 kHz #VBW 300 kHz #Sweep 100.0 ms (601 pts)

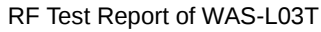
Auto Tune
Center Freq 2.40000000 GHz
Start Freq 2.38000000 GHz
Stop Freq 2.42000000 GHz
CF Step 4.000000 MHz Man
Freq Offset 0 Hz

6.4 11G_H@Ant 1

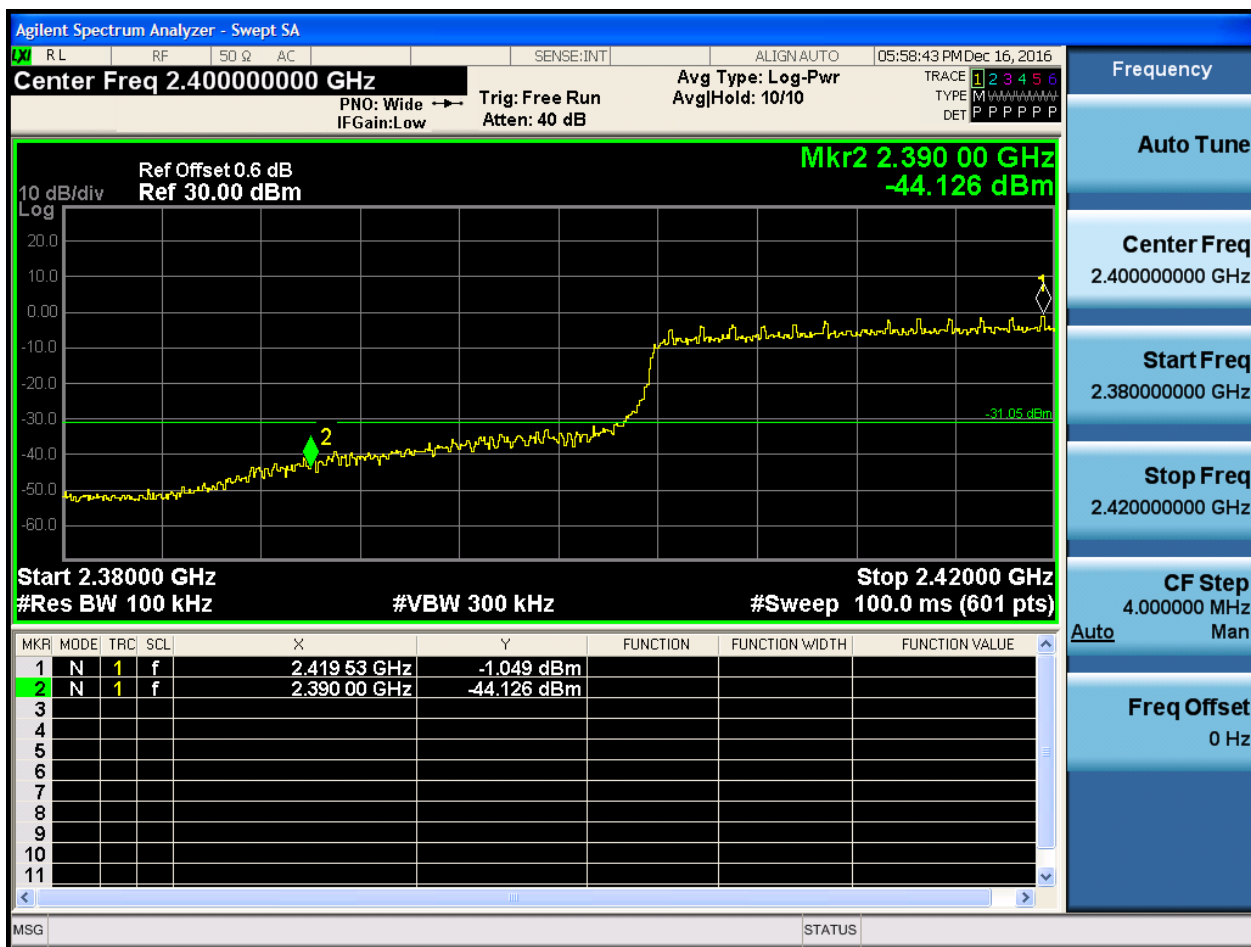


6.5 11N20_L@Ant 1



[illegible]

6.7 11N40_L@Ant 1



6.8 11N40_H@Ant 1



Appendix G: Unwanted Emissions into Non-Restricted Frequency

Bands

In this Appendix, the "Pref", which is used as the reference level, refers to the peak power level in any 100 kHz bandwidth within the fundamental emission, the "Puw" refers to the maximum emission power in 100 kHz band segments outside of the authorized frequency band.

Considering that the higher ratio of RBW to the span for the frequency ranges below 30 MHz makes the results determination be complicated, a narrower RBW other than 100 kHz is used for these ranges. The measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \times \lg(100 [kHz]/\text{narrower RBW [kHz]})$. As to this Appendix, the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

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

In the result table, the "< Limit" denotes that "The Puw [dBm] is less than Pref[dBm]-30[dBm], see test plots for detailed".

Part I - Test Results

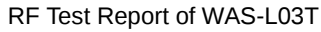
Test Mode	Test Channel	Frequency[MHz]	Ant	Pref[dBm]	Puw[dBm]	Verdict
11B	L	2412	Ant 1	8.77	<limit	pass
11B	M	2437	Ant 1	9.06	<limit	pass
11B	H	2462	Ant 1	8.80	<limit	pass
11G	L	2412	Ant 1	5.27	<limit	pass
11G	M	2437	Ant 1	4.97	<limit	pass
11G	H	2462	Ant 1	5.02	<limit	pass
11N20	L	2412	Ant 1	3.97	<limit	pass
11N20	M	2437	Ant 1	3.64	<limit	pass
11N20	H	2462	Ant 1	3.72	<limit	pass
11N40	L	2422	Ant 1	-0.35	<limit	pass
11N40	M	2437	Ant 1	0.72	<limit	pass
11N40	H	2452	Ant 1	0.26	<limit	pass

Part II - Test Plots

7.1 11B L@Ant 1

Pref:





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN: AUTO 06:54:55 PM Dec 16, 2016

Start Freq 9.000 kHz

PN0: Close Trig: Free Run Avg Type: Log-Pwr
IFGain:Low #Atten: 50 dB AvgHold: >50/50

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

Ref Offset 0.6 dB
Ref 16.60 dBm

Mkr1 9.235 kHz
-60.543 dBm

10 dB/div
Log

6.60
-3.40
-13.4
-23.4
-33.4
-43.4
-53.4
-63.4
-73.4

-41.23 dBm

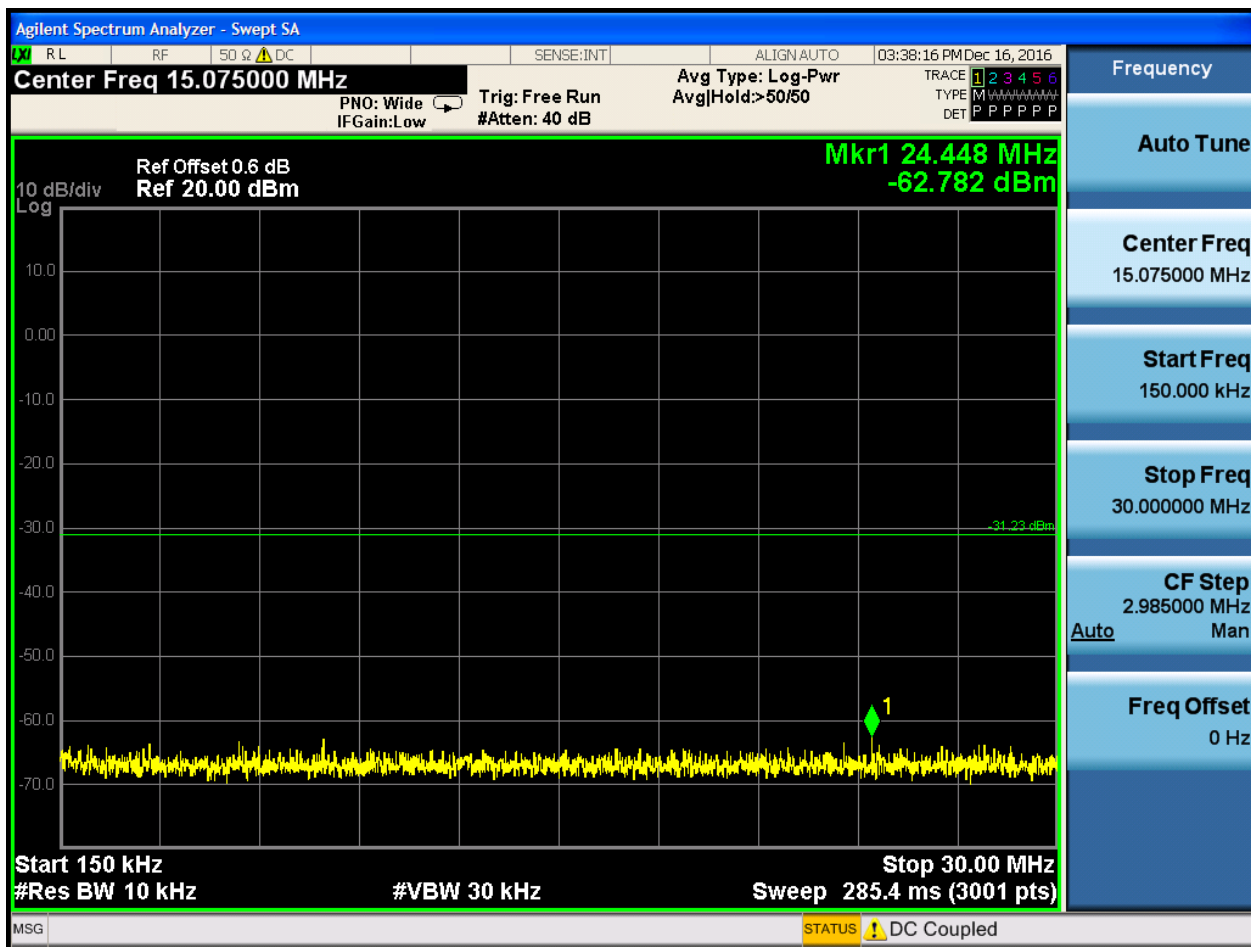
1

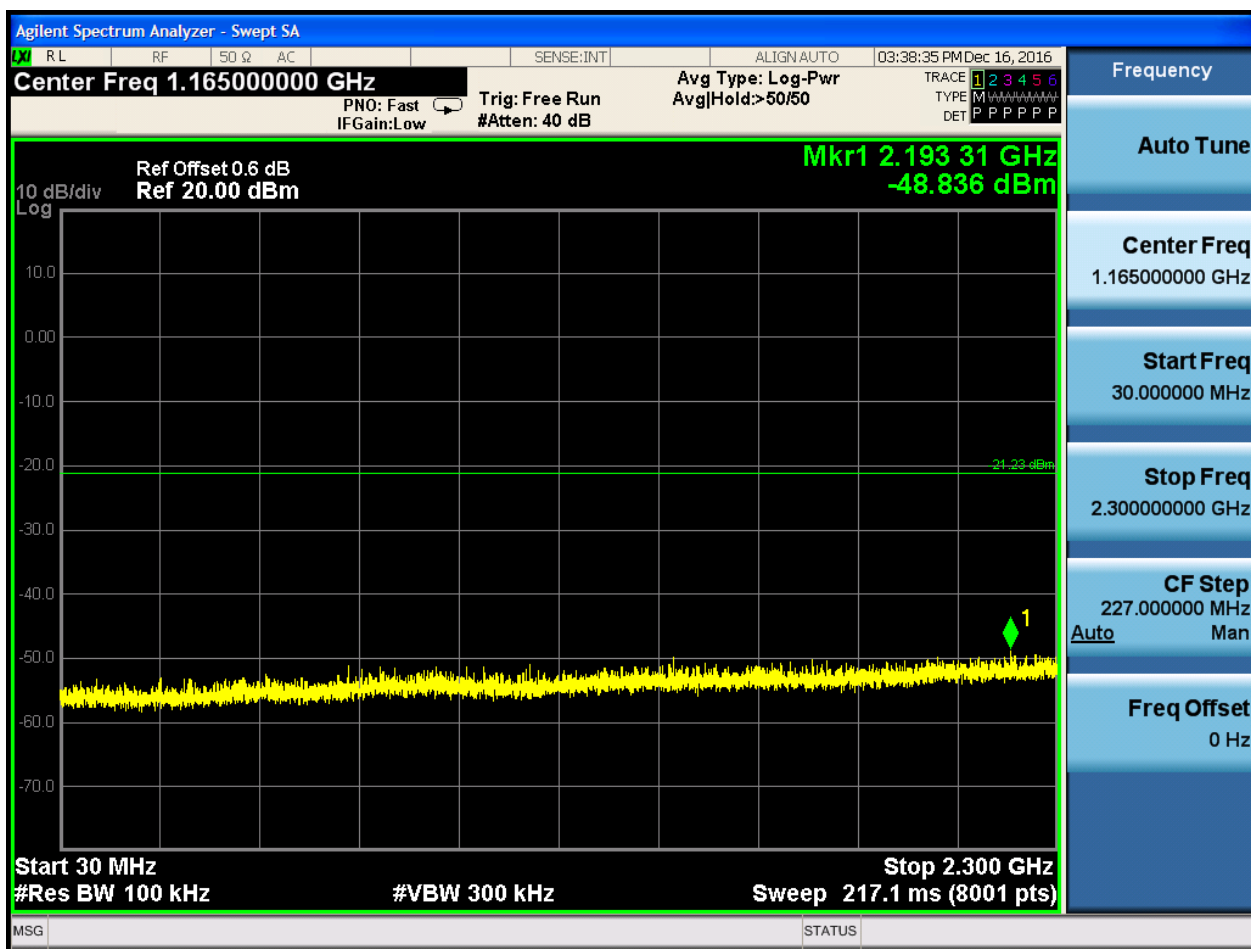
Start 9.00 kHz
#Res BW 1.0 kHz

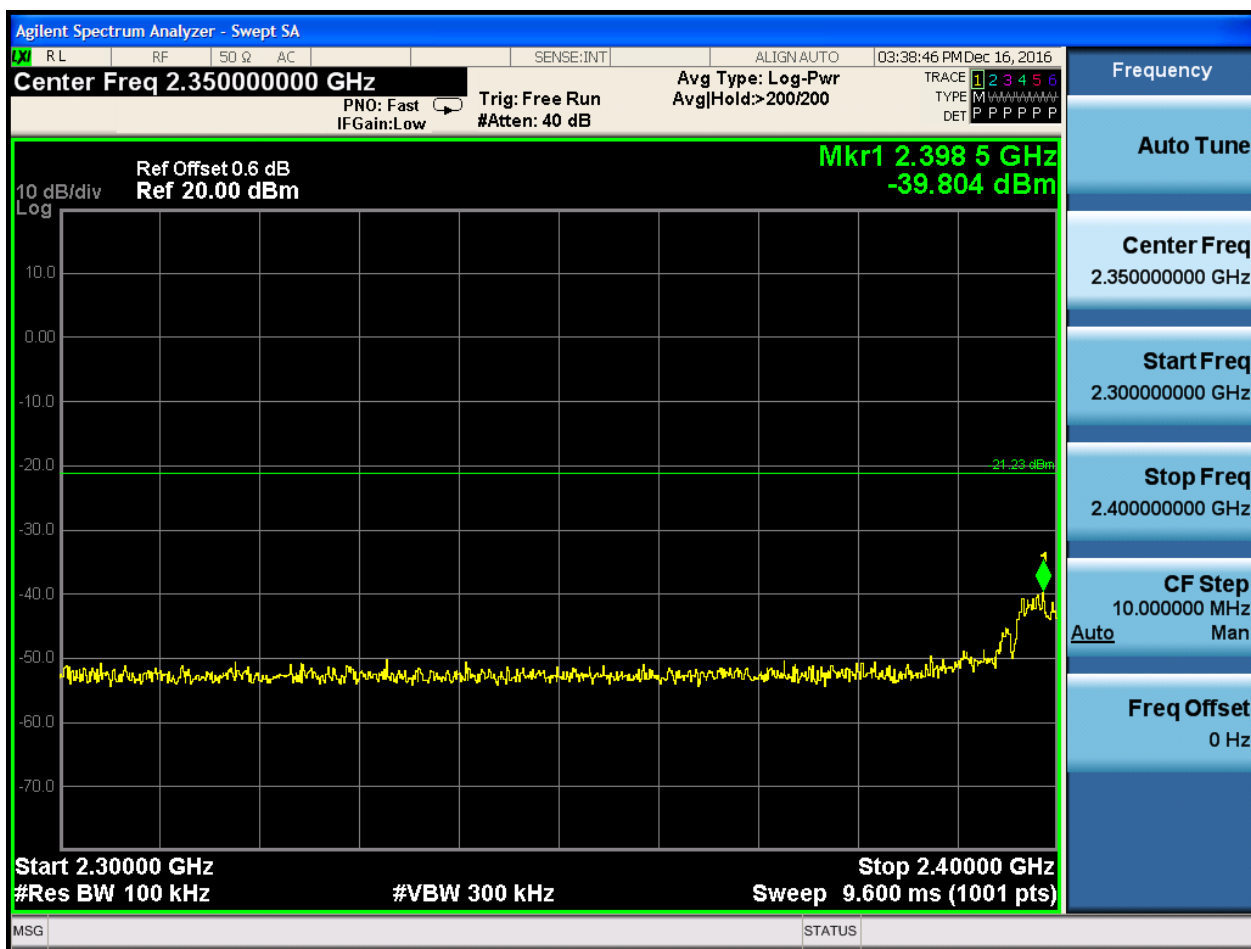
Stop 150.00 kHz
#VBW 3.0 kHz
Sweep 134.8 ms (601 pts)

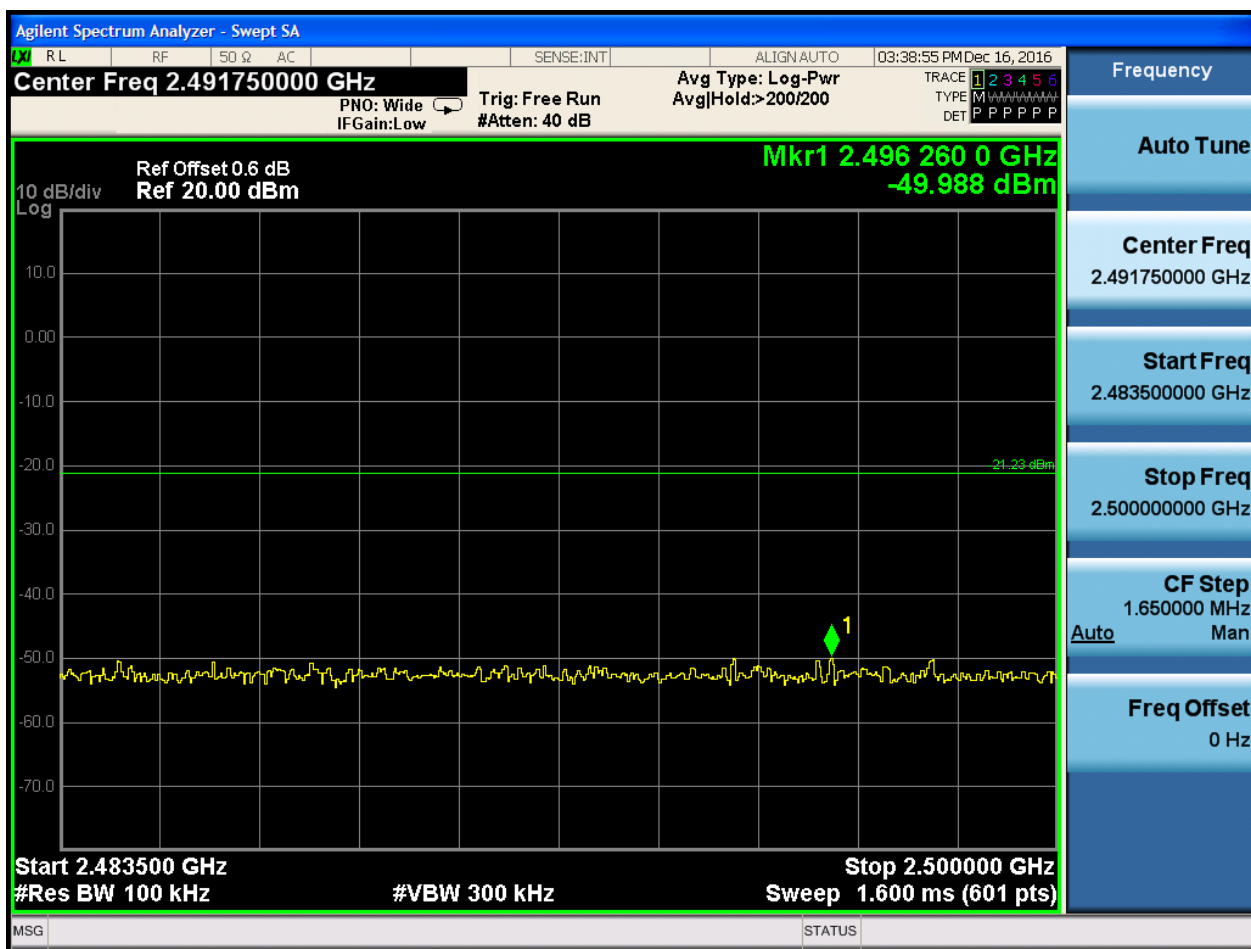
Auto Tune
Center Freq 79.500 kHz
Start Freq 9.000 kHz
Stop Freq 150.00 kHz
CF Step 14.100 kHz
Auto Man
Freq Offset 0 Hz

MSG STATUS DC Coupled







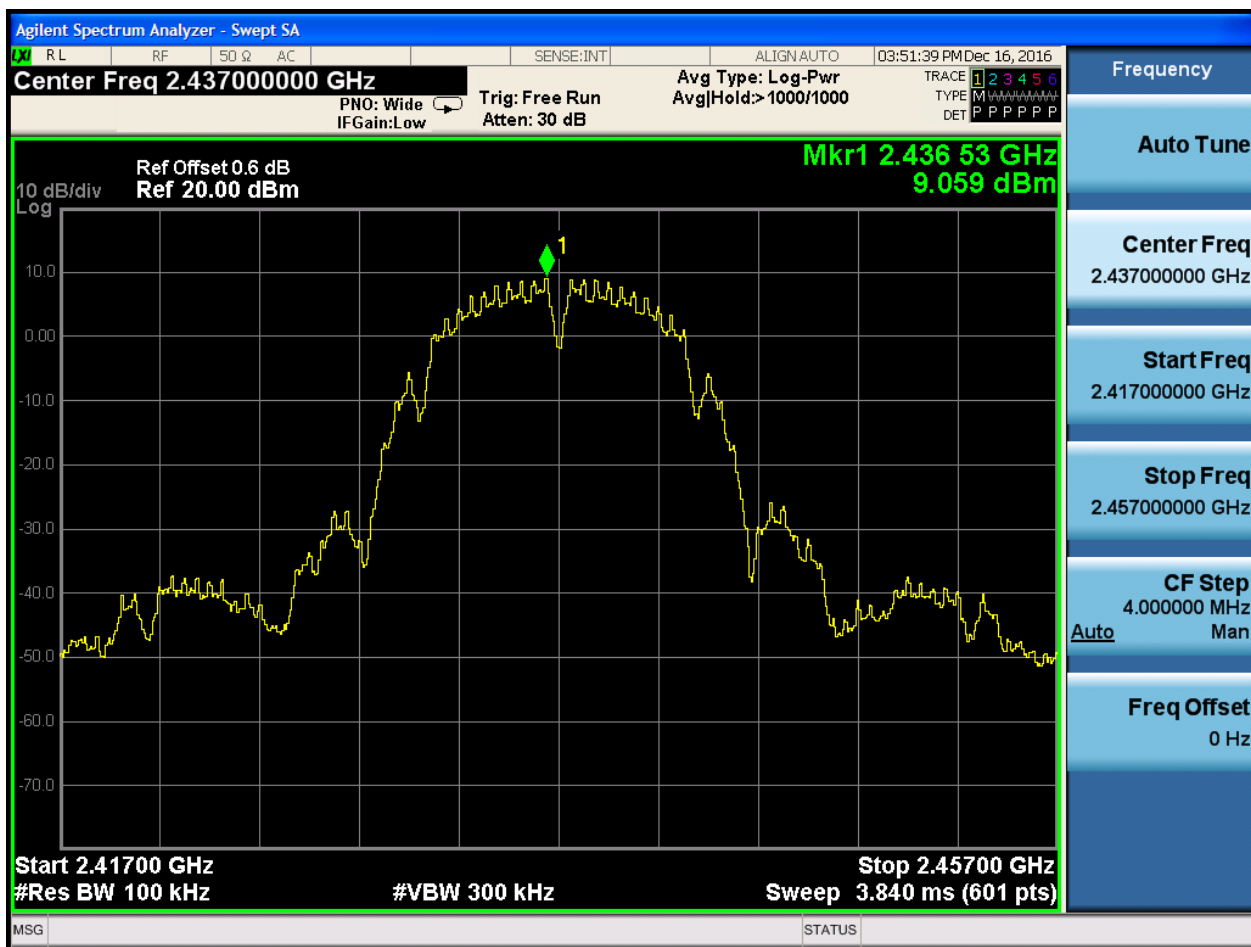


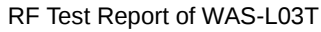




7.2 11B_M@Ant 1

Pref:





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω DC SENSE:INT ALIGN: AUTO 06:57:08 PM Dec 16, 2016

Start Freq 9.000 kHz

PN0: Close Trig: Free Run Avg Type: Log-Pwr
IFGain:Low #Atten: 50 dB AvgHold: >50/50

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

10 dB/div Ref Offset 0.6 dB
Log Ref 16.60 dBm

Mkr1 9.235 kHz
-58.737 dBm

6.60
-3.40
-13.4
-23.4
-33.4
-43.4
-53.4
-63.4
-73.4

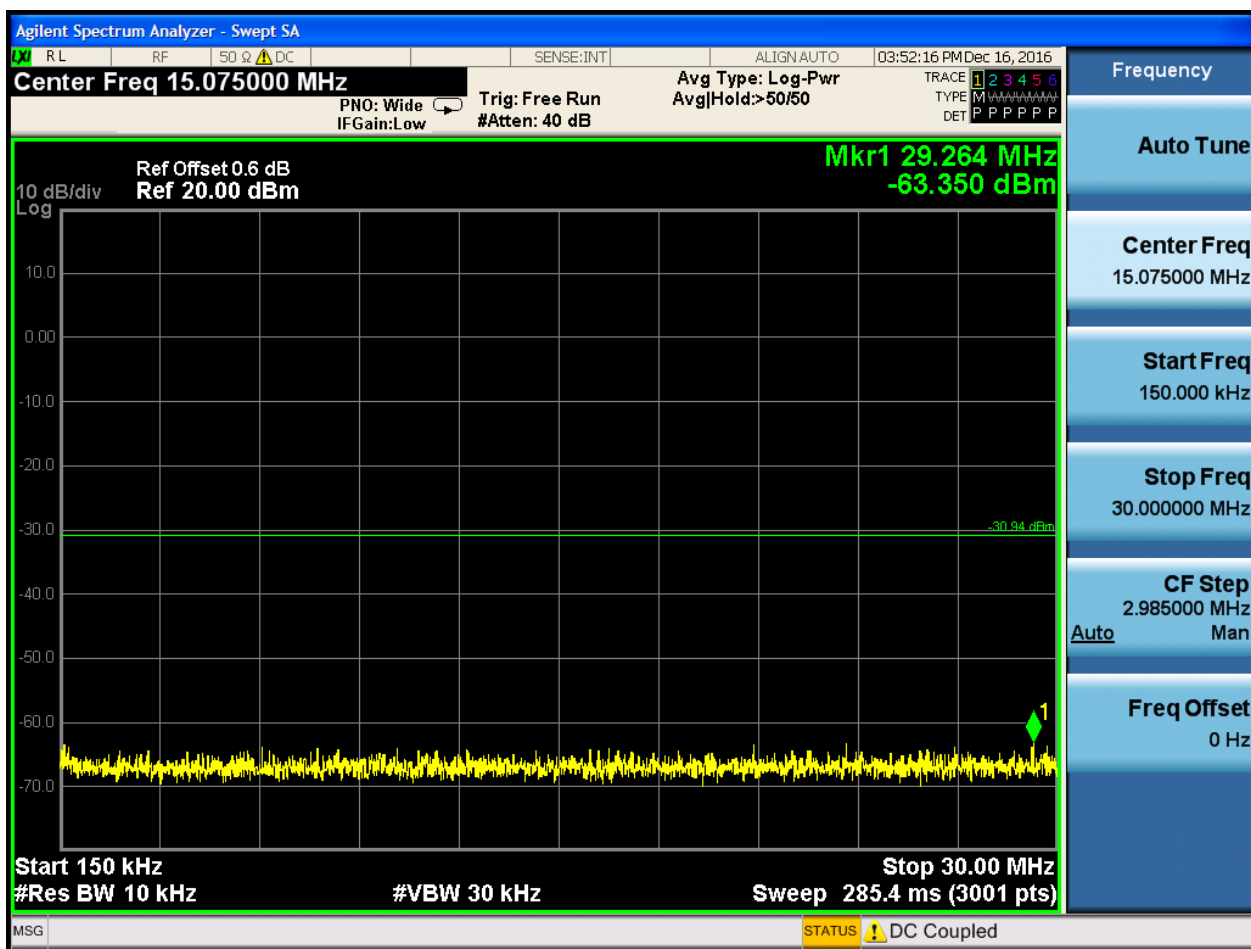
-40.94 dBm

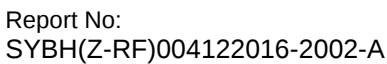
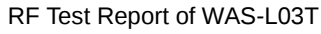
1

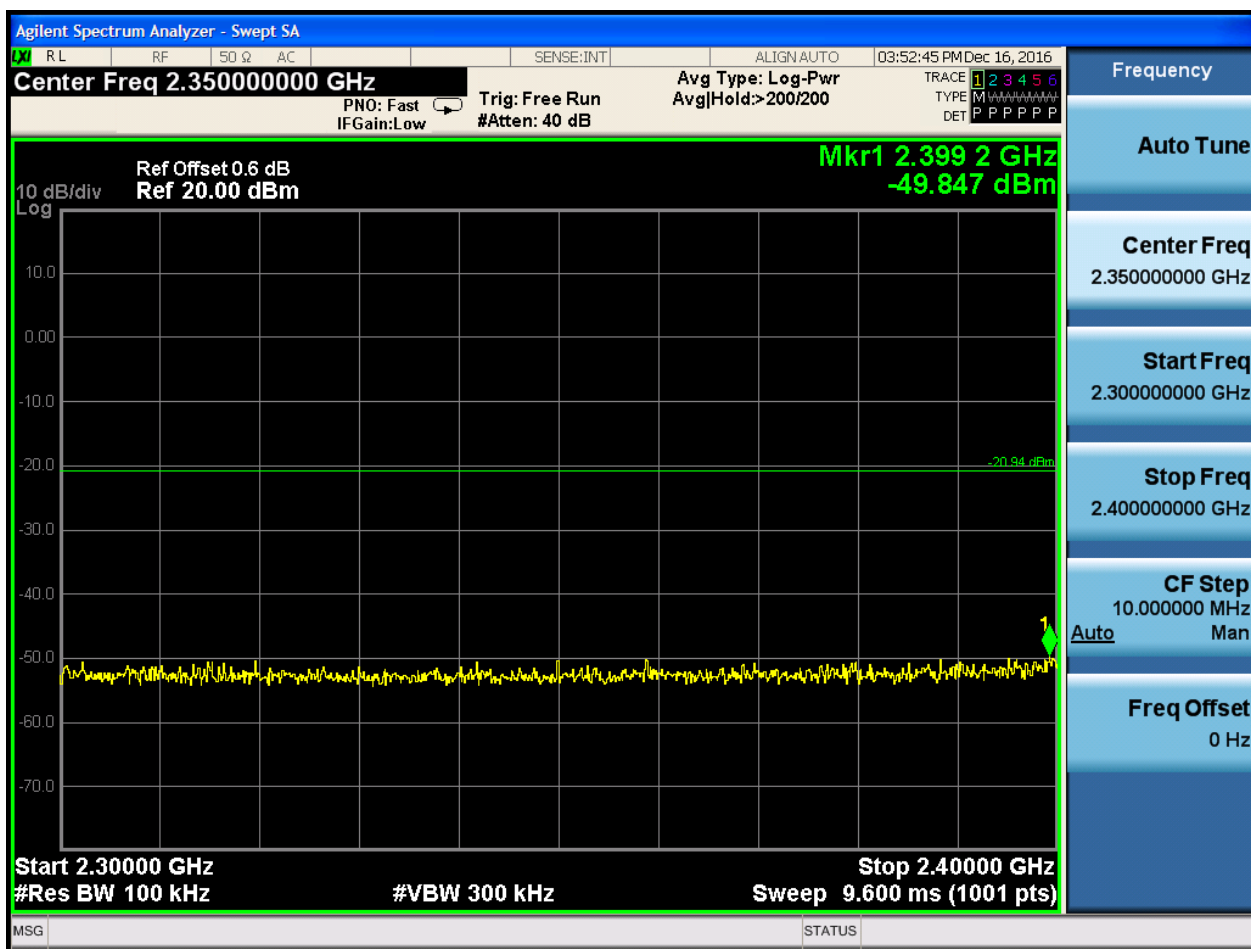
Start 9.00 kHz Stop 150.00 kHz
#Res BW 1.0 kHz #VBW 3.0 kHz Sweep 134.8 ms (601 pts)

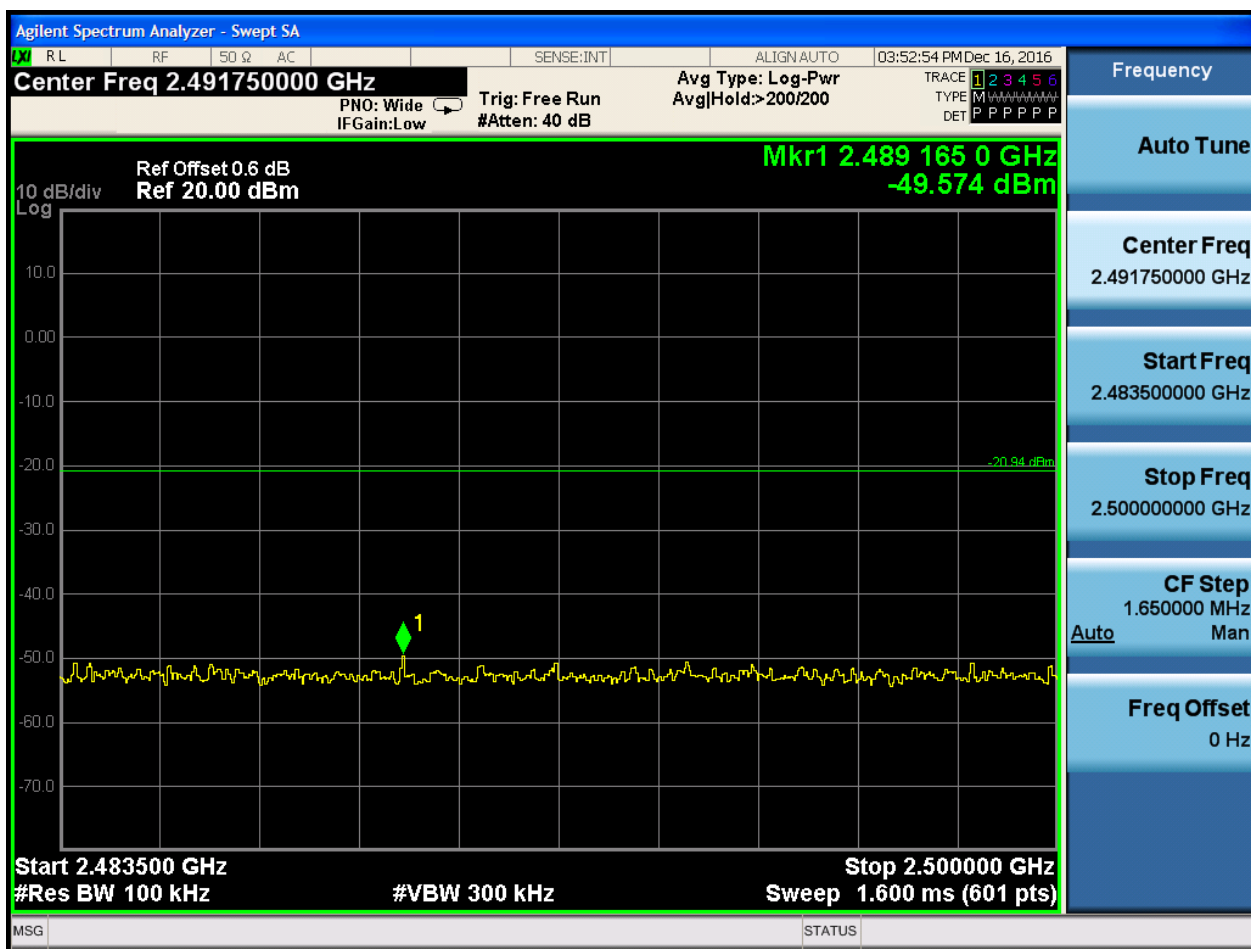
Auto Tune
Center Freq 79.500 kHz
Start Freq 9.000 kHz
Stop Freq 150.000 kHz
CF Step 14.100 kHz
Auto Man
Freq Offset 0 Hz

MSG STATUS DC Coupled













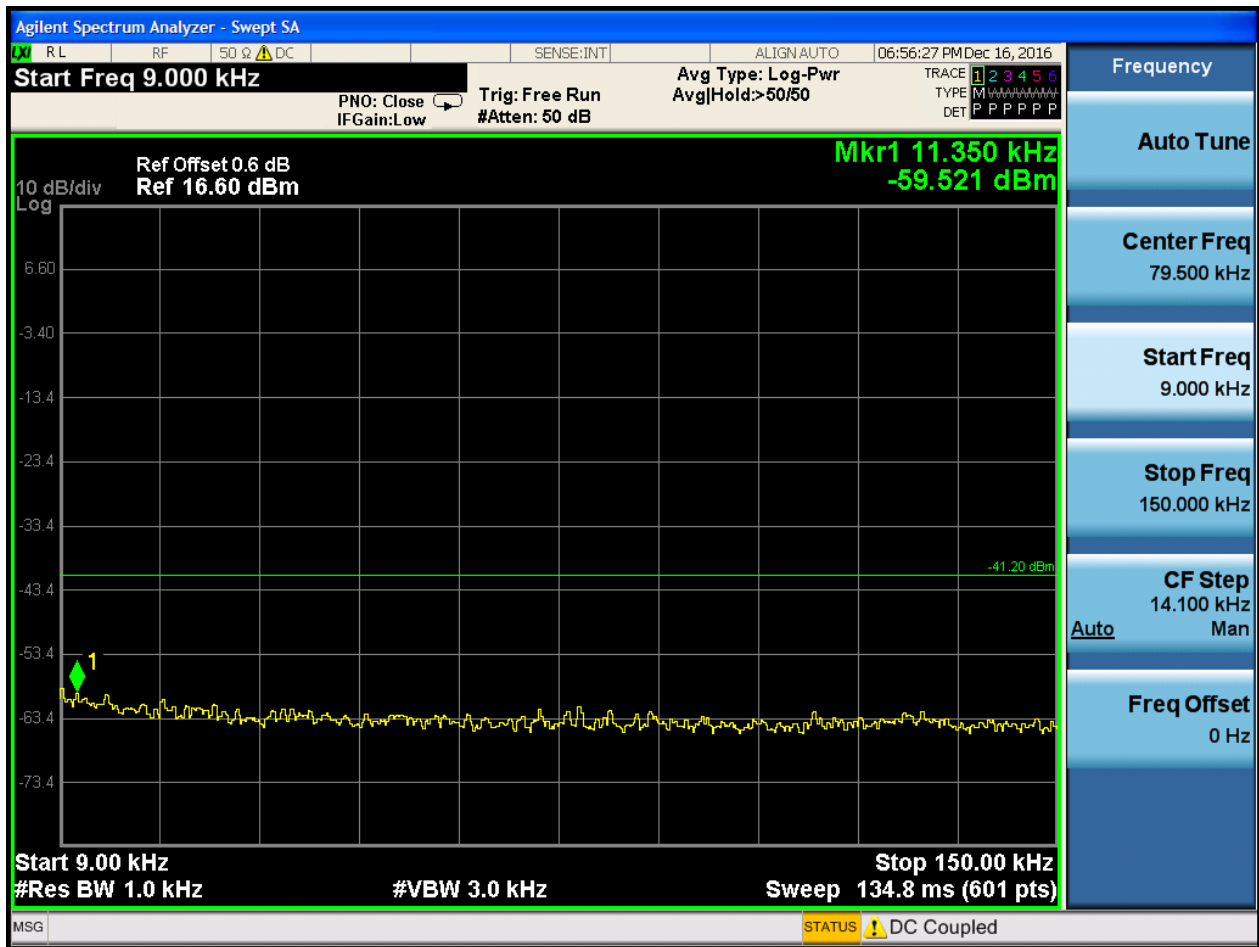
7.3 11B_H@Ant 1

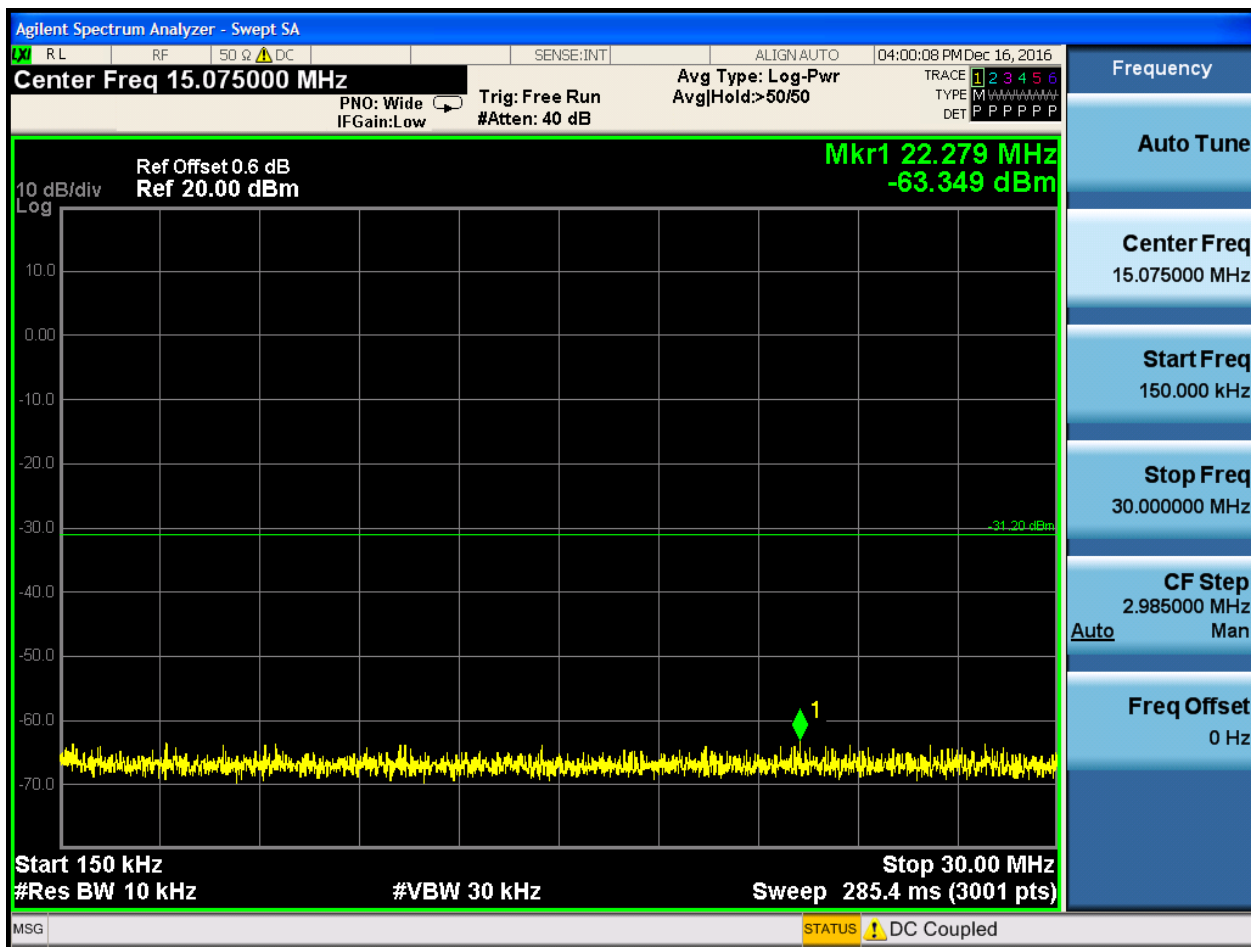
Pref:

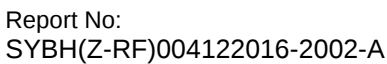
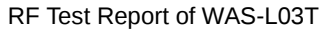


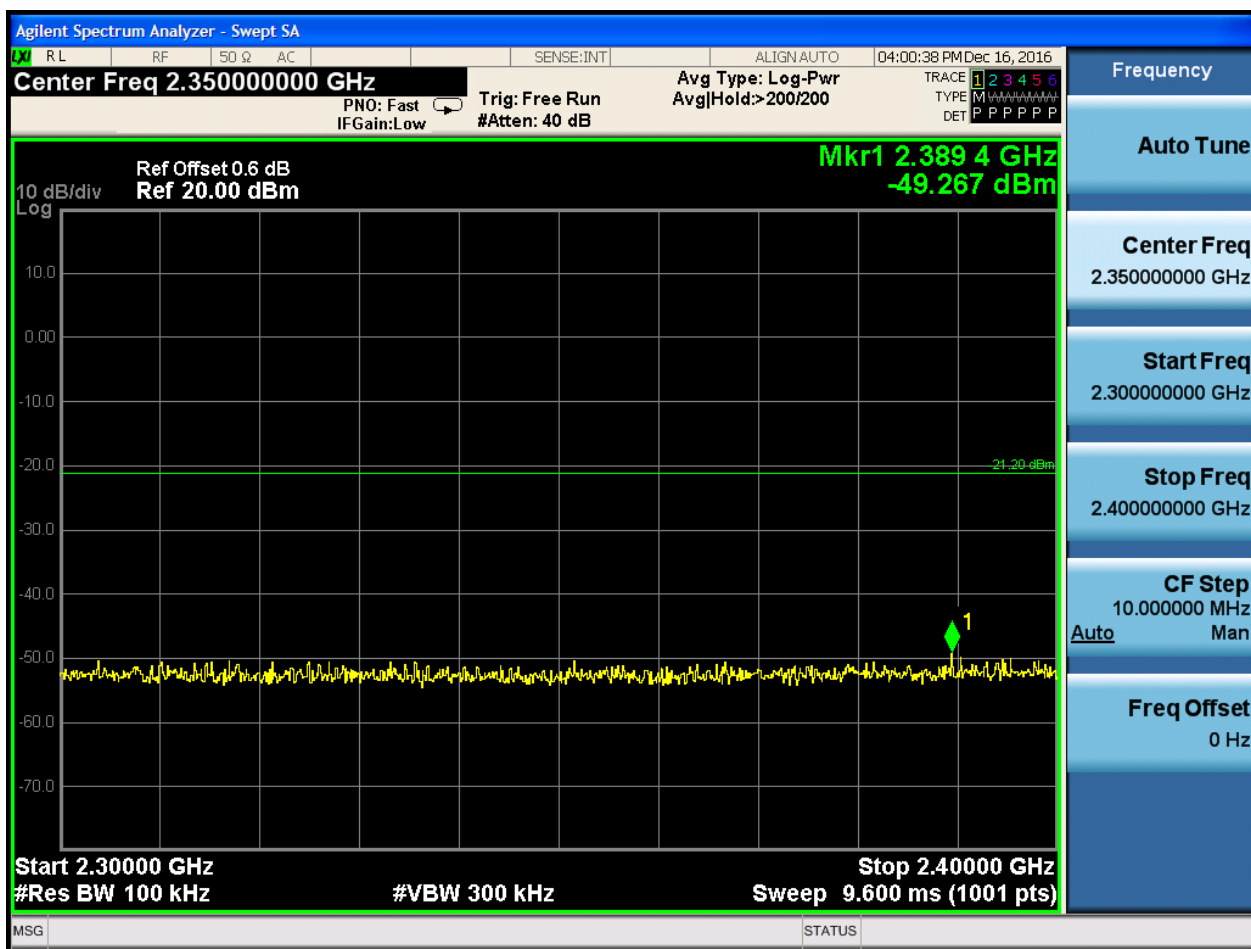


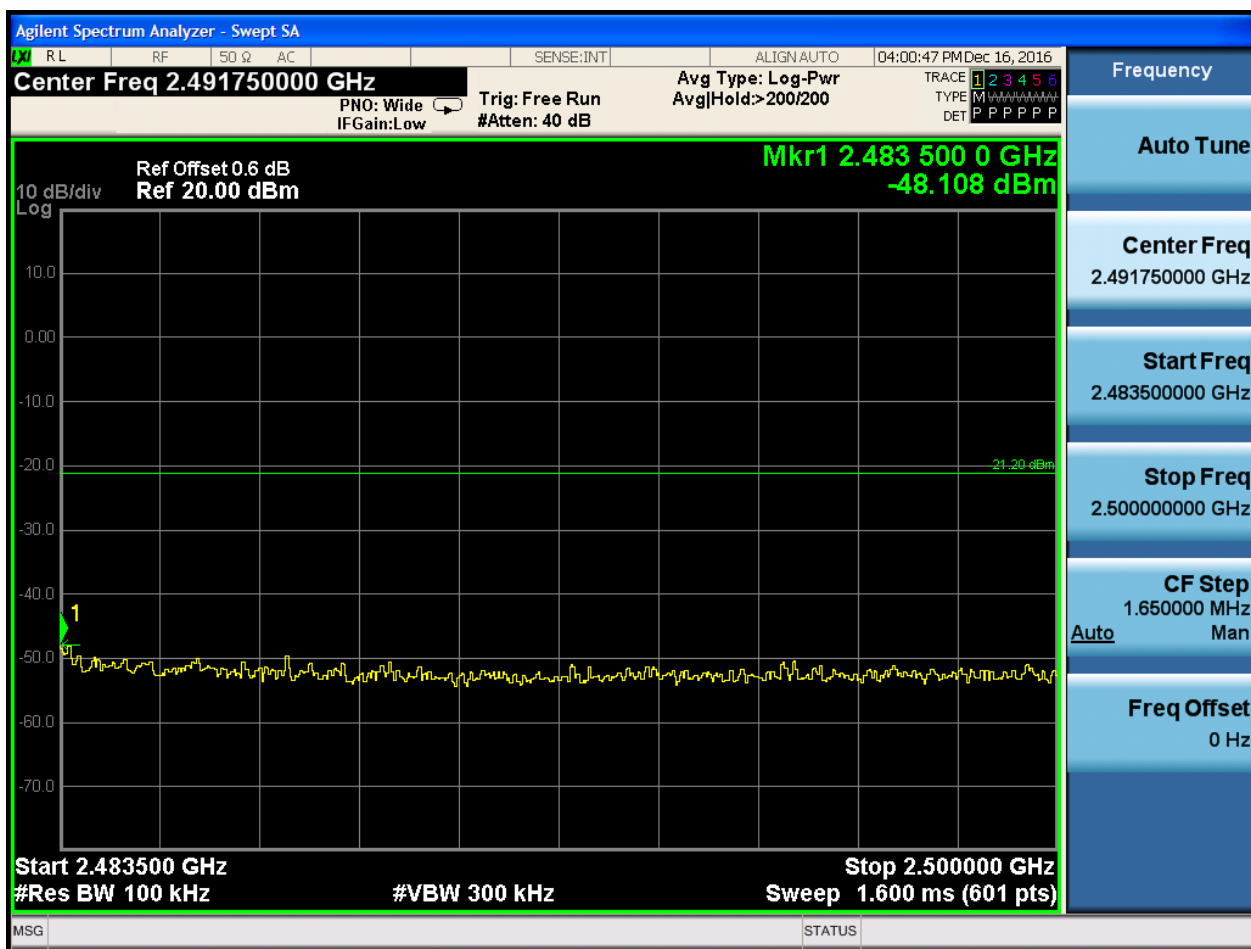
Puw:

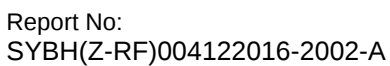
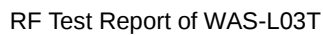








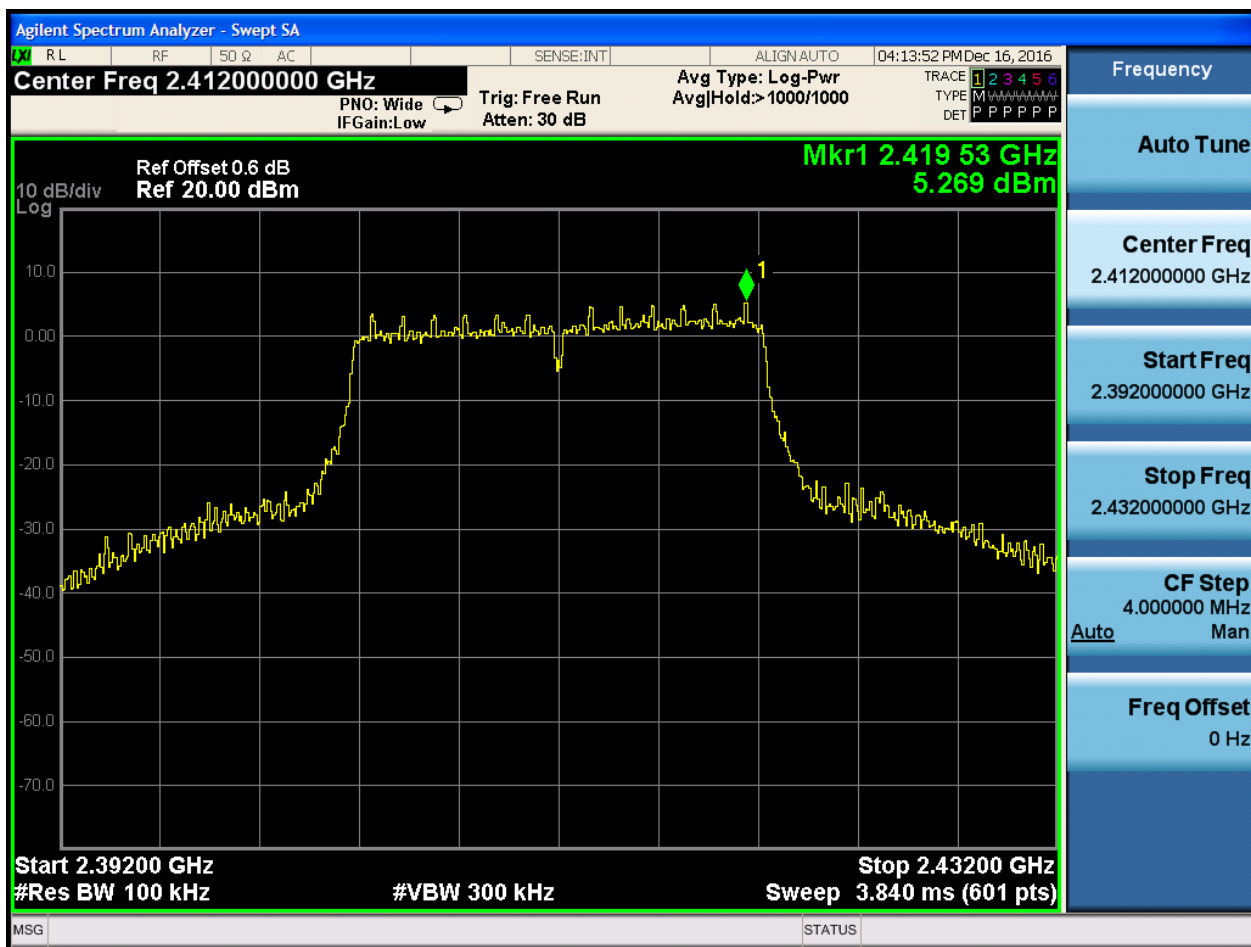


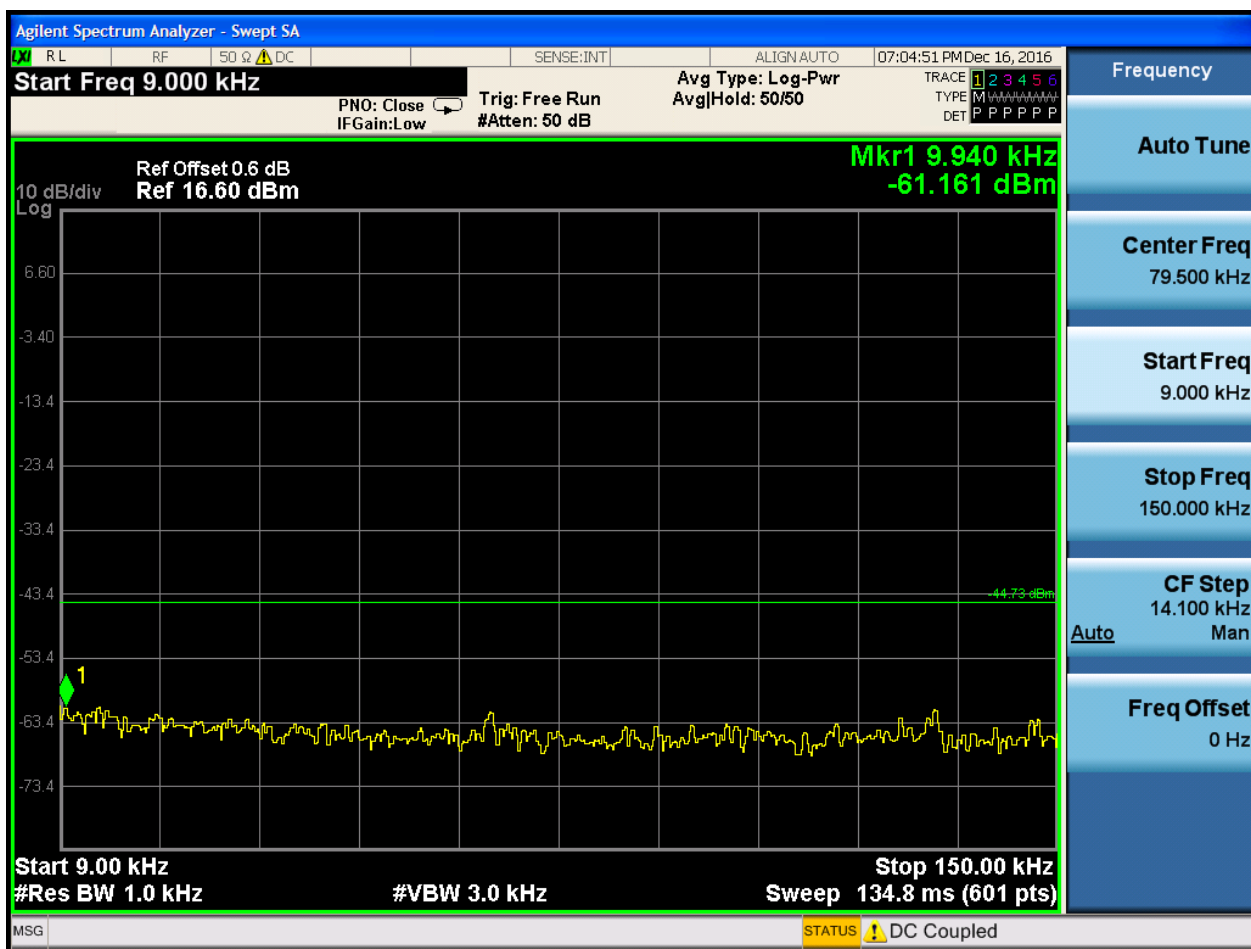




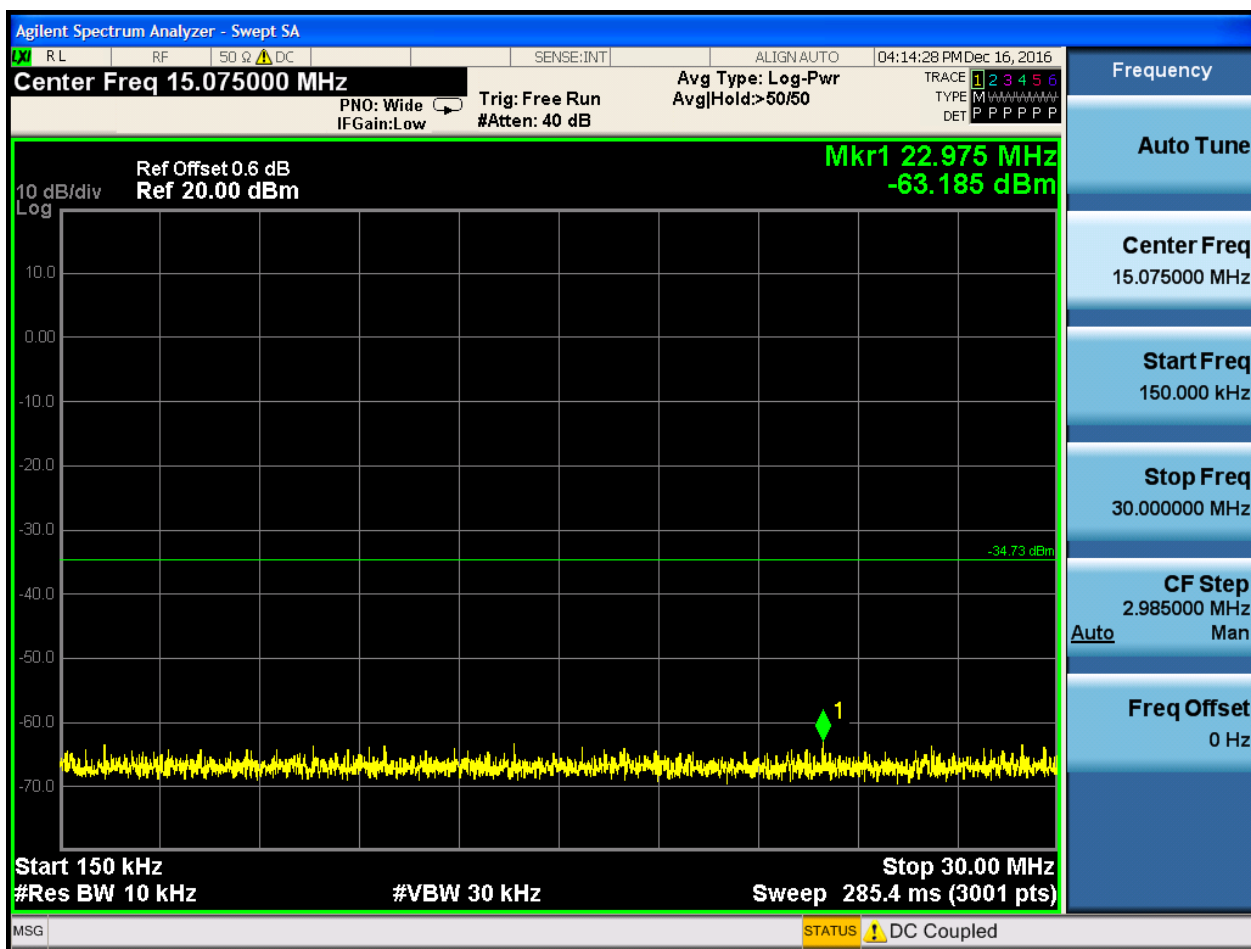
7.4 11G_L@Ant 1

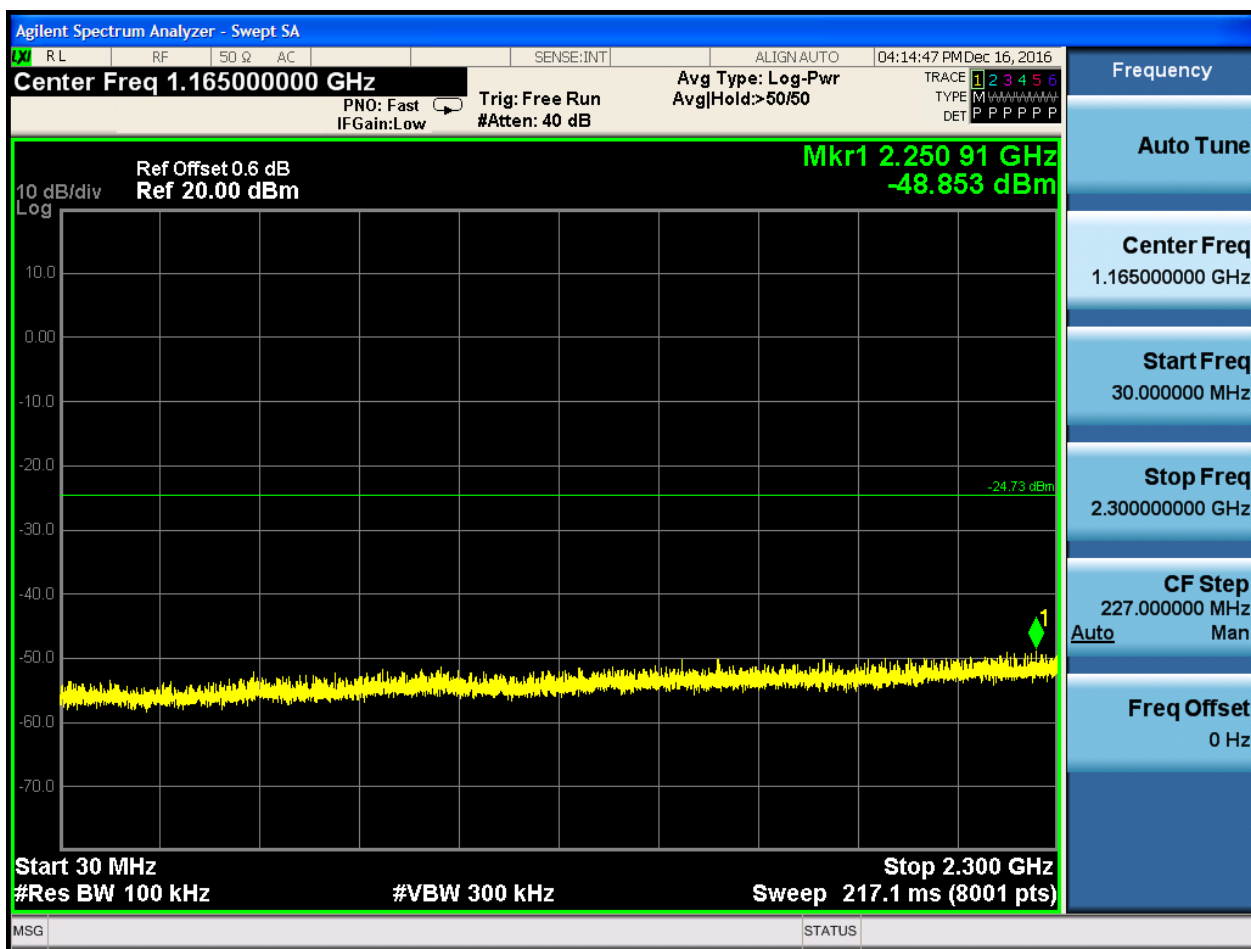
Pref:

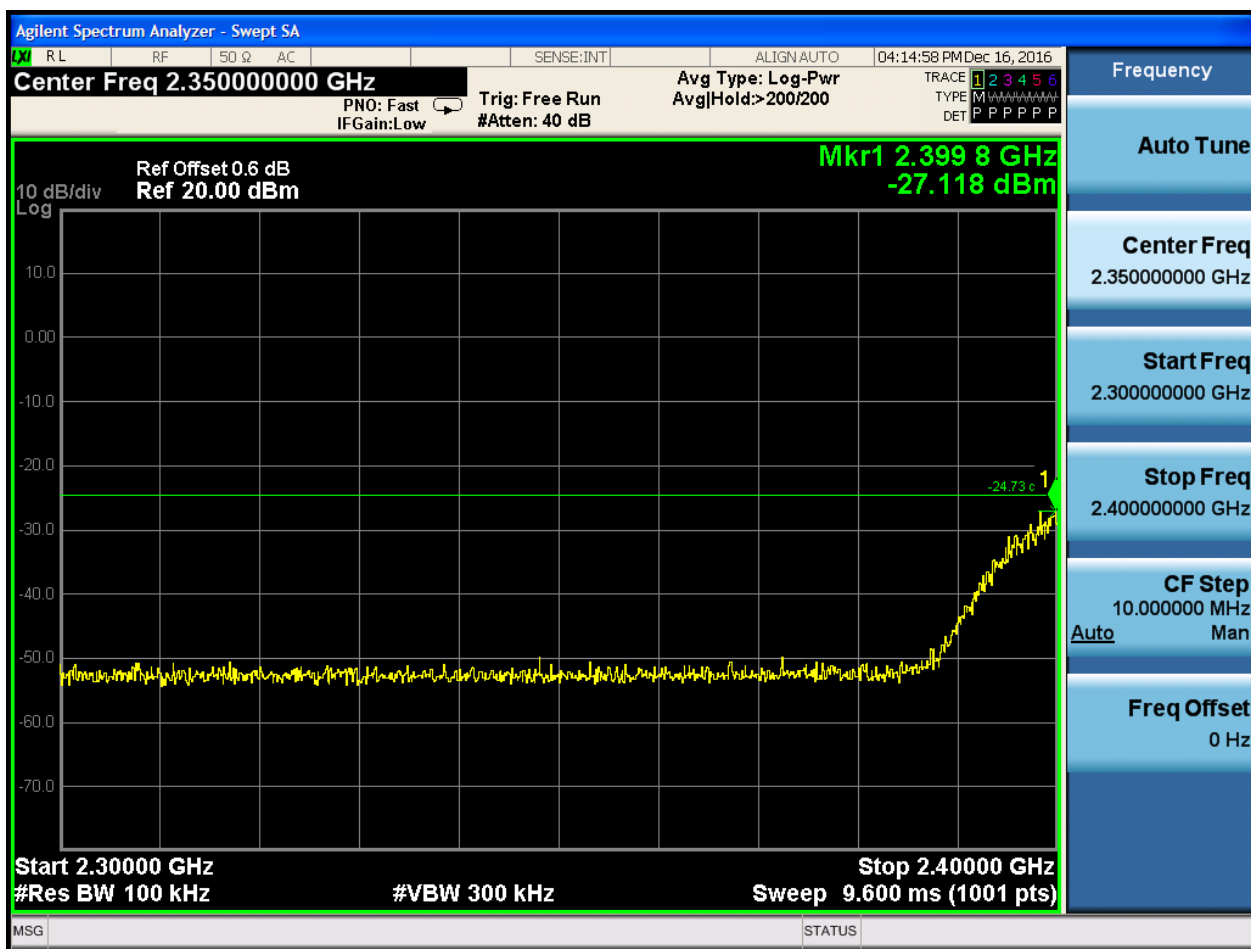


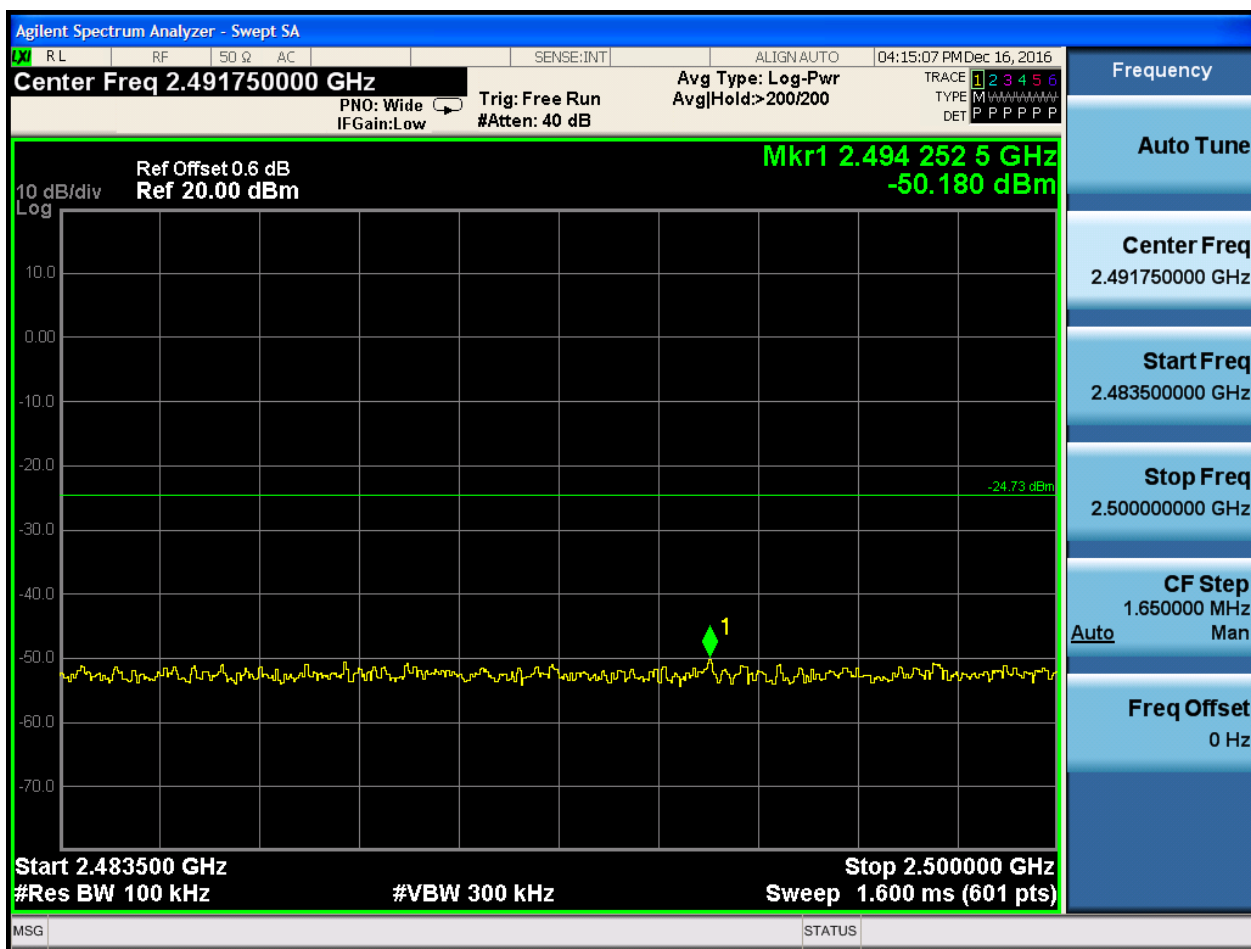


Puw:







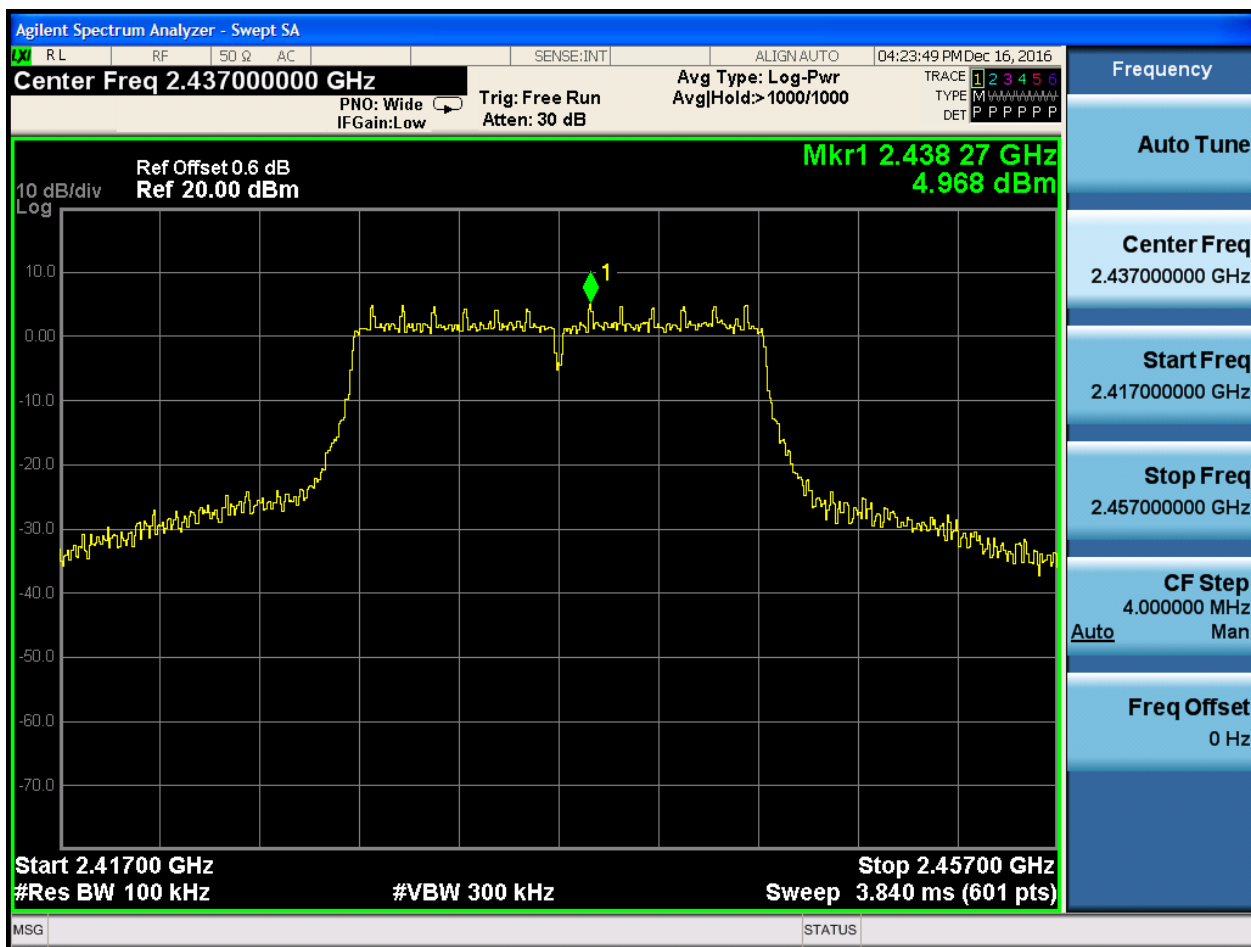






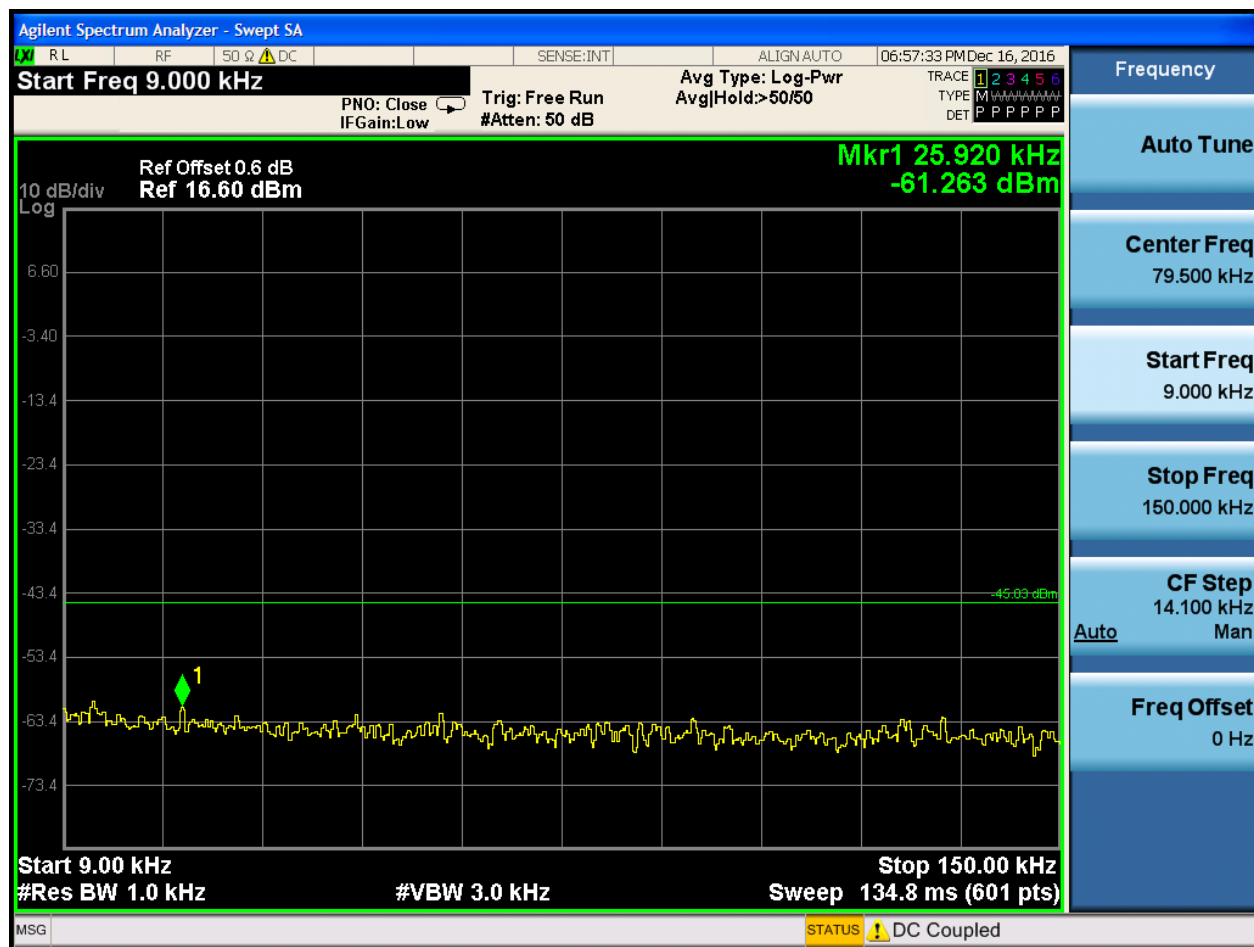
7.5 11G_M@Ant 1

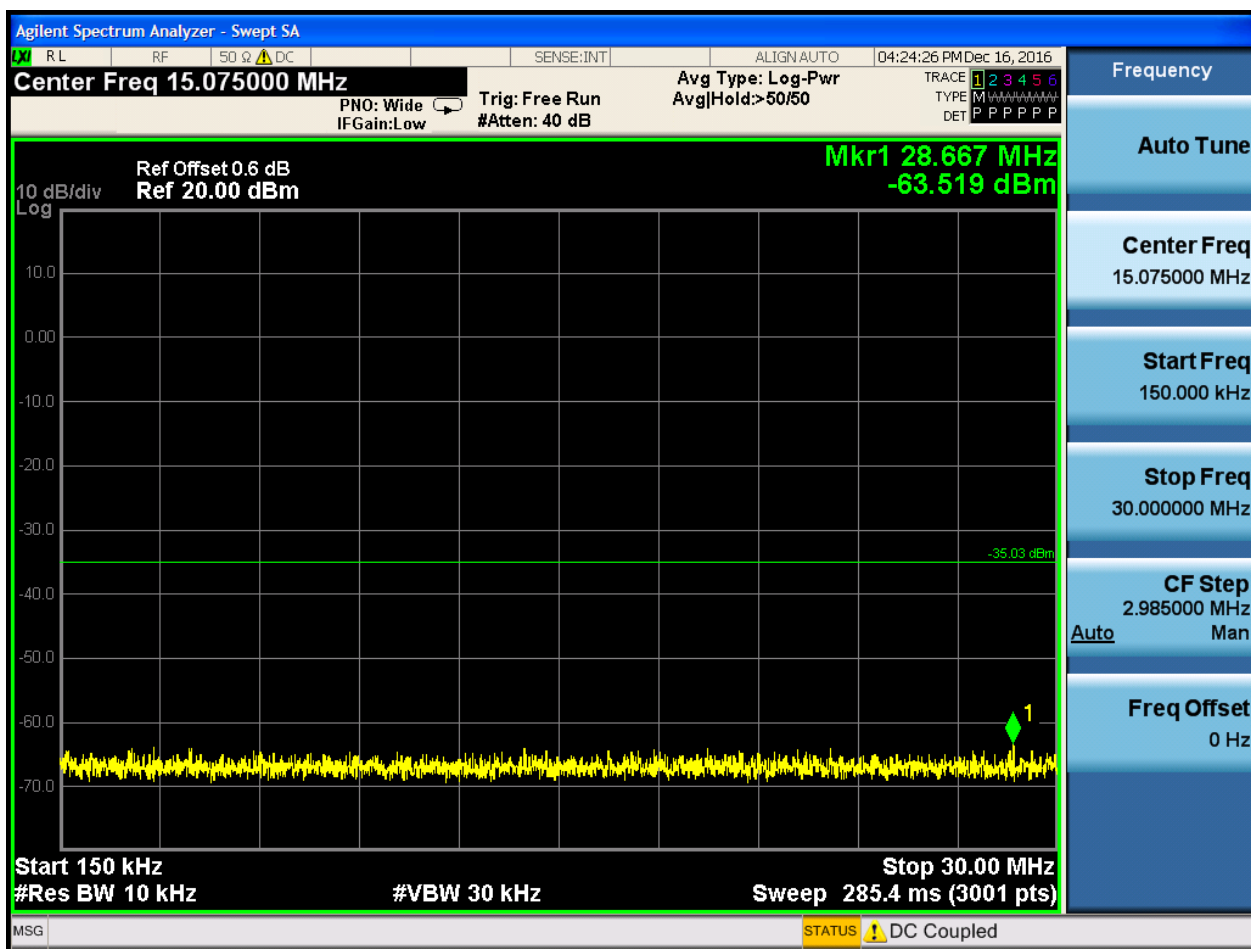
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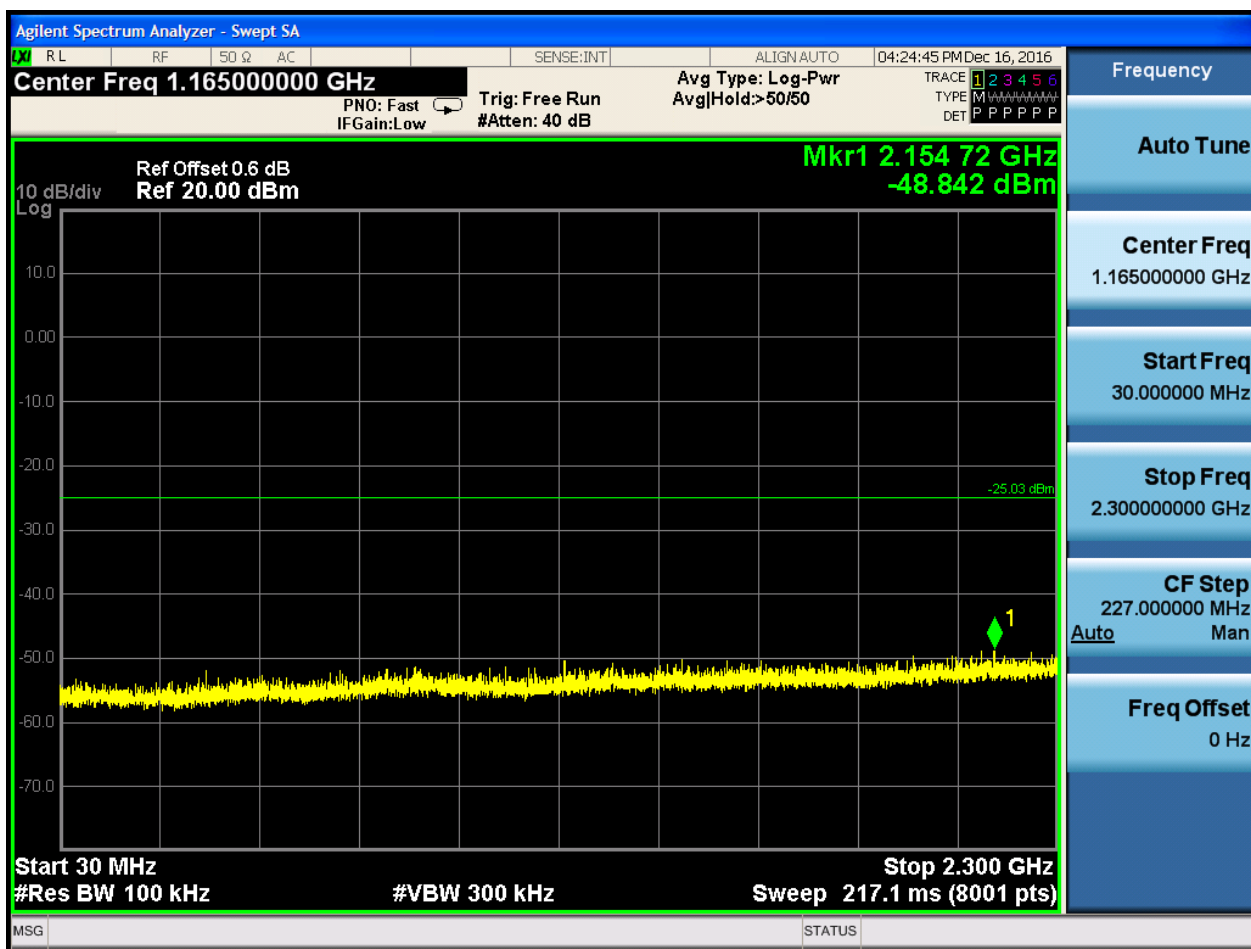


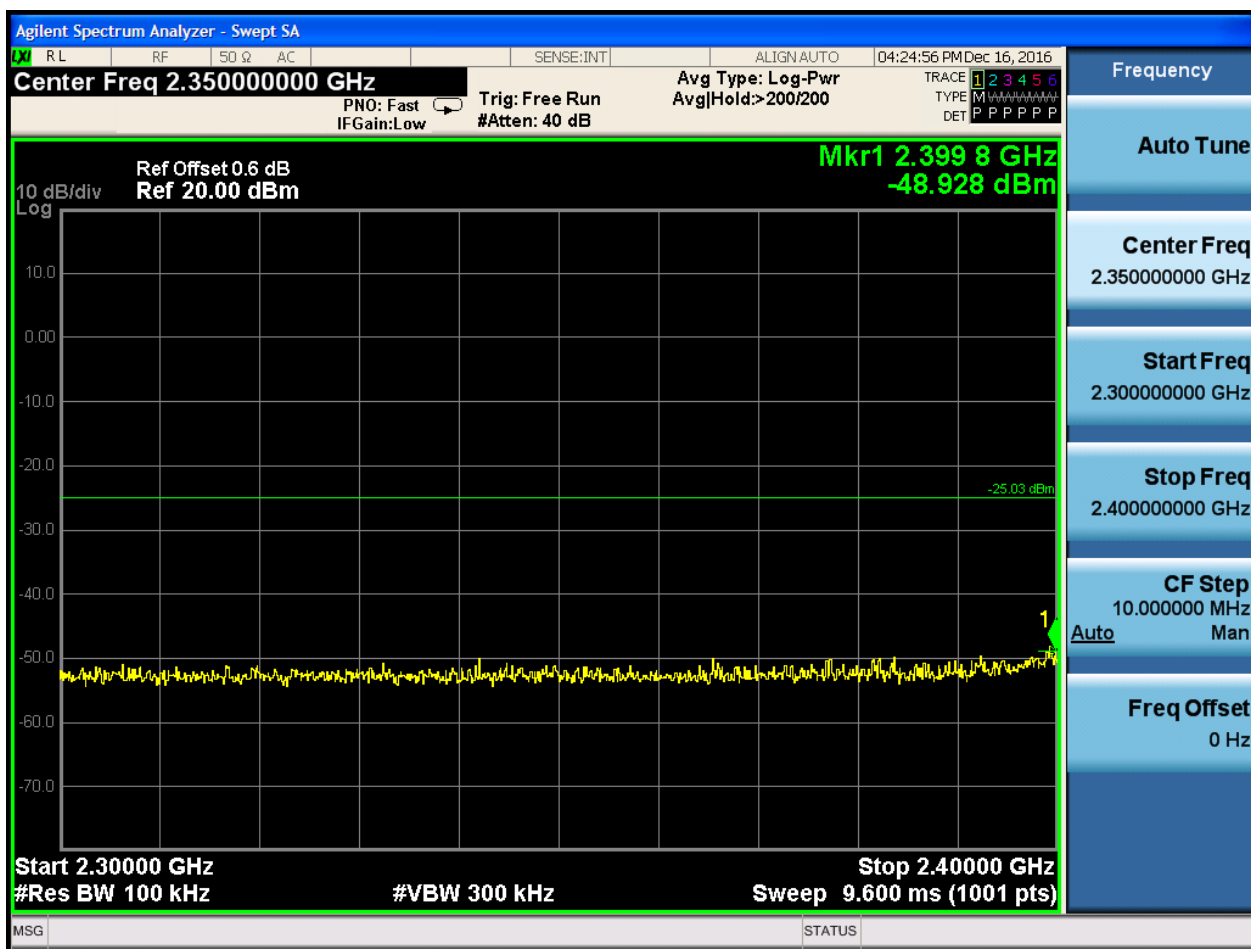


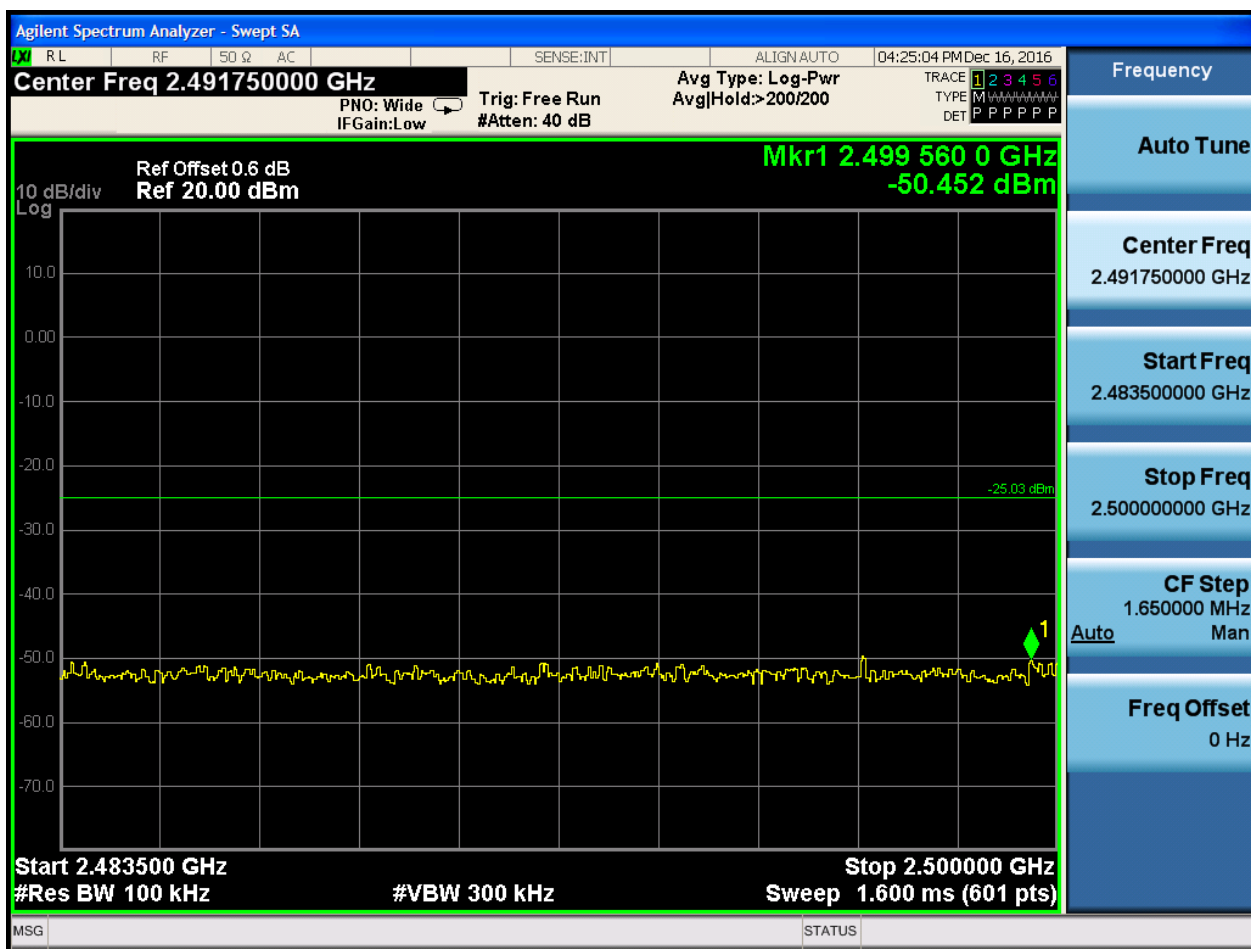
Puw:









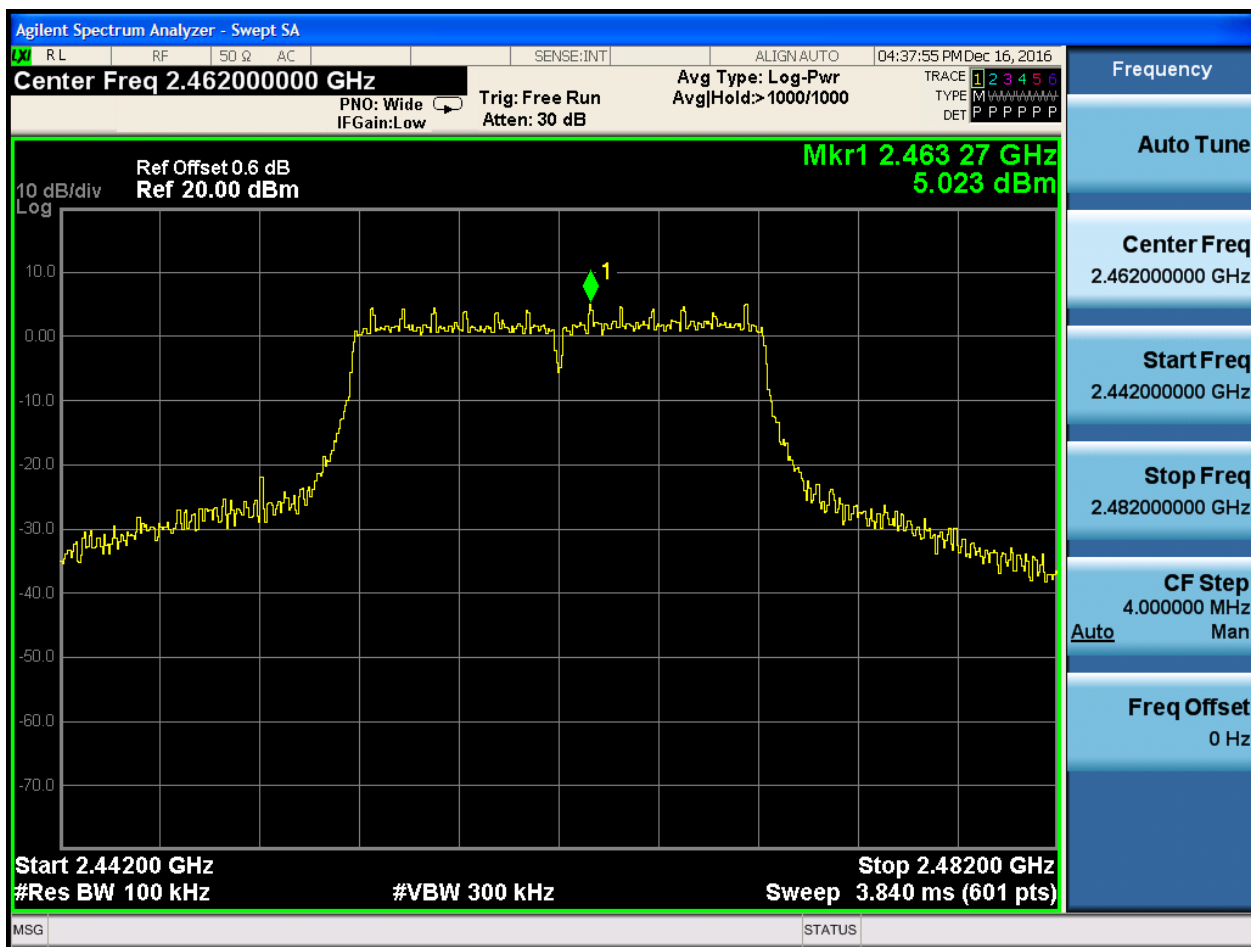






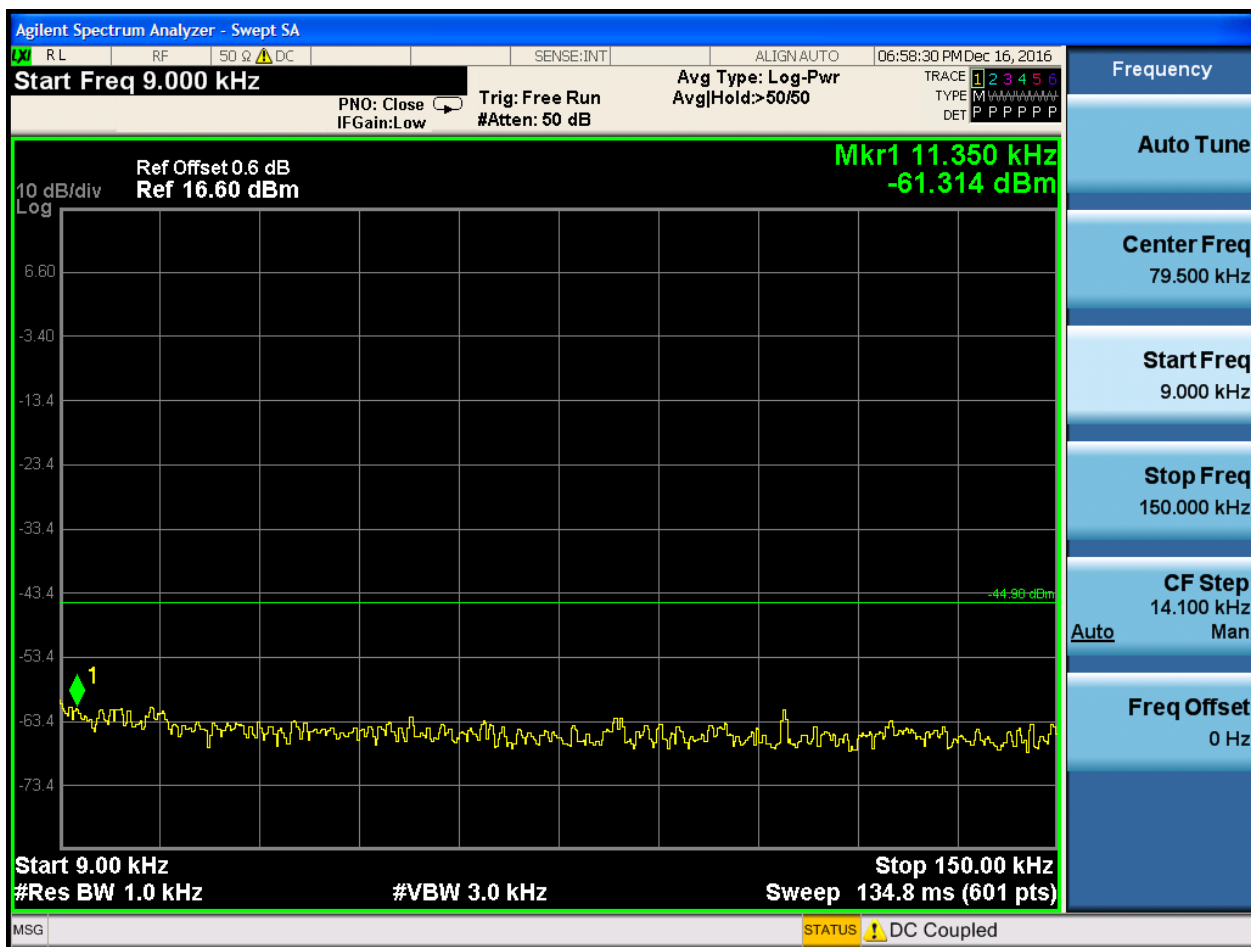
7.6 11G_H@Ant 1

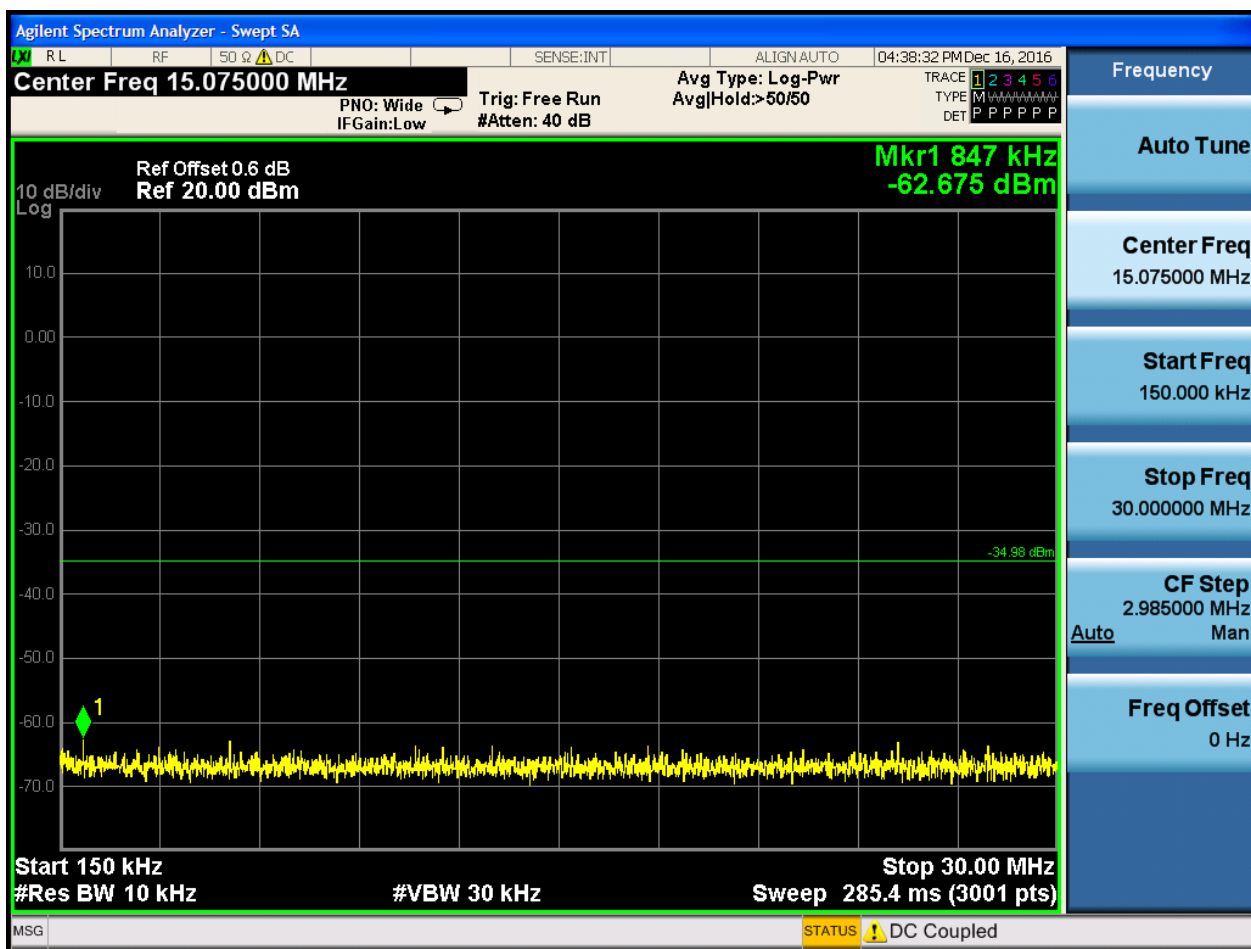
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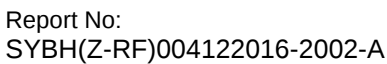
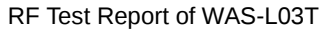


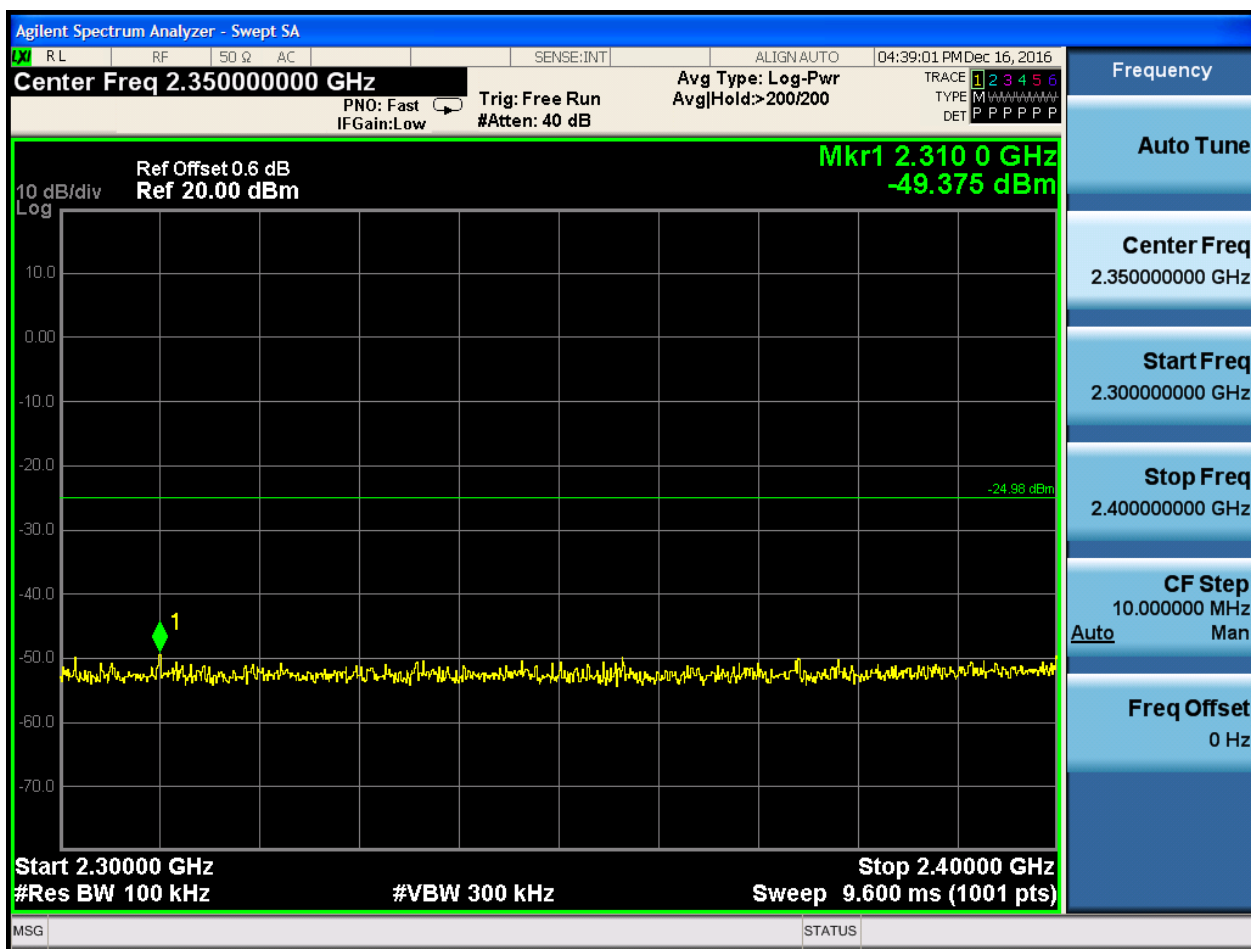


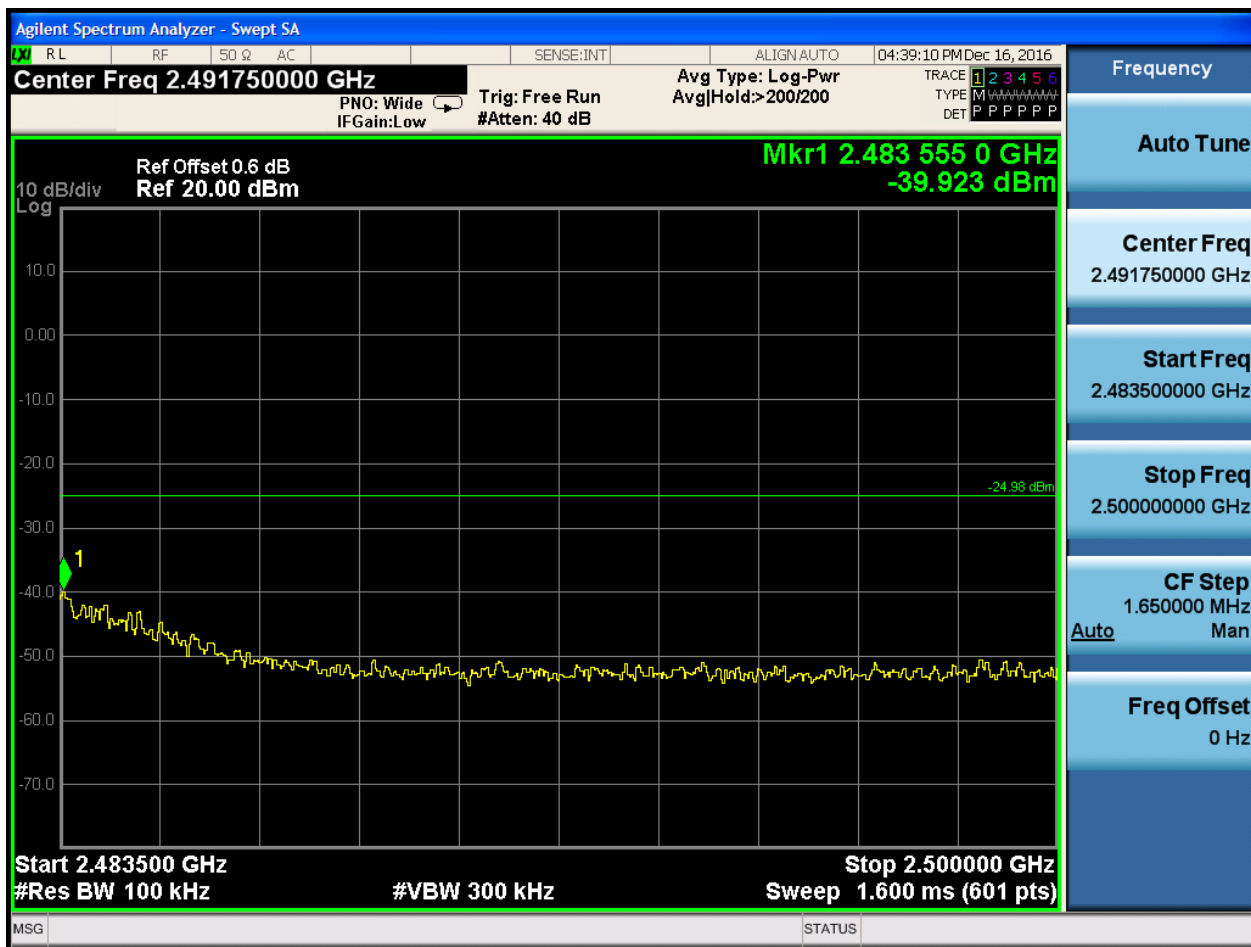
Puw:









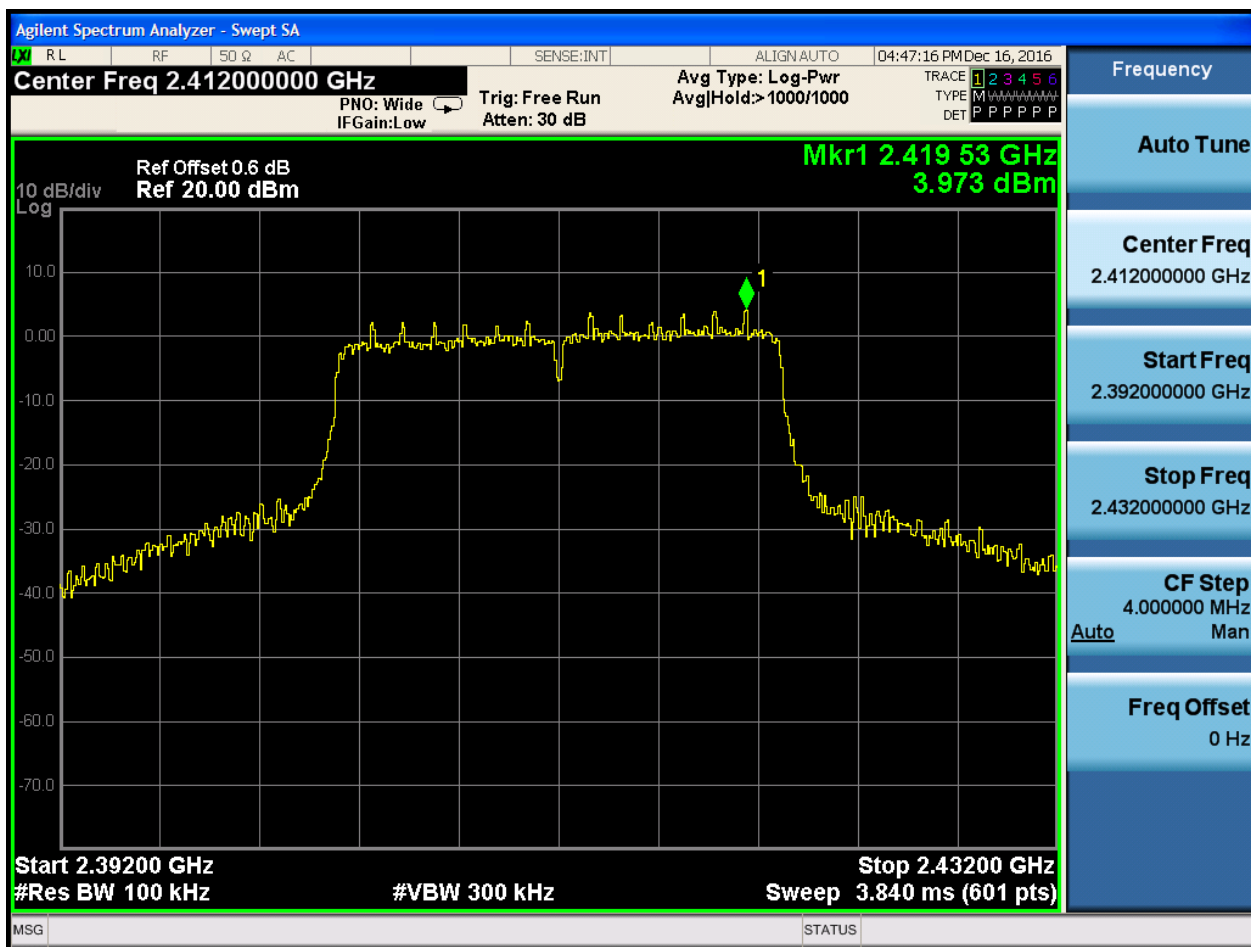






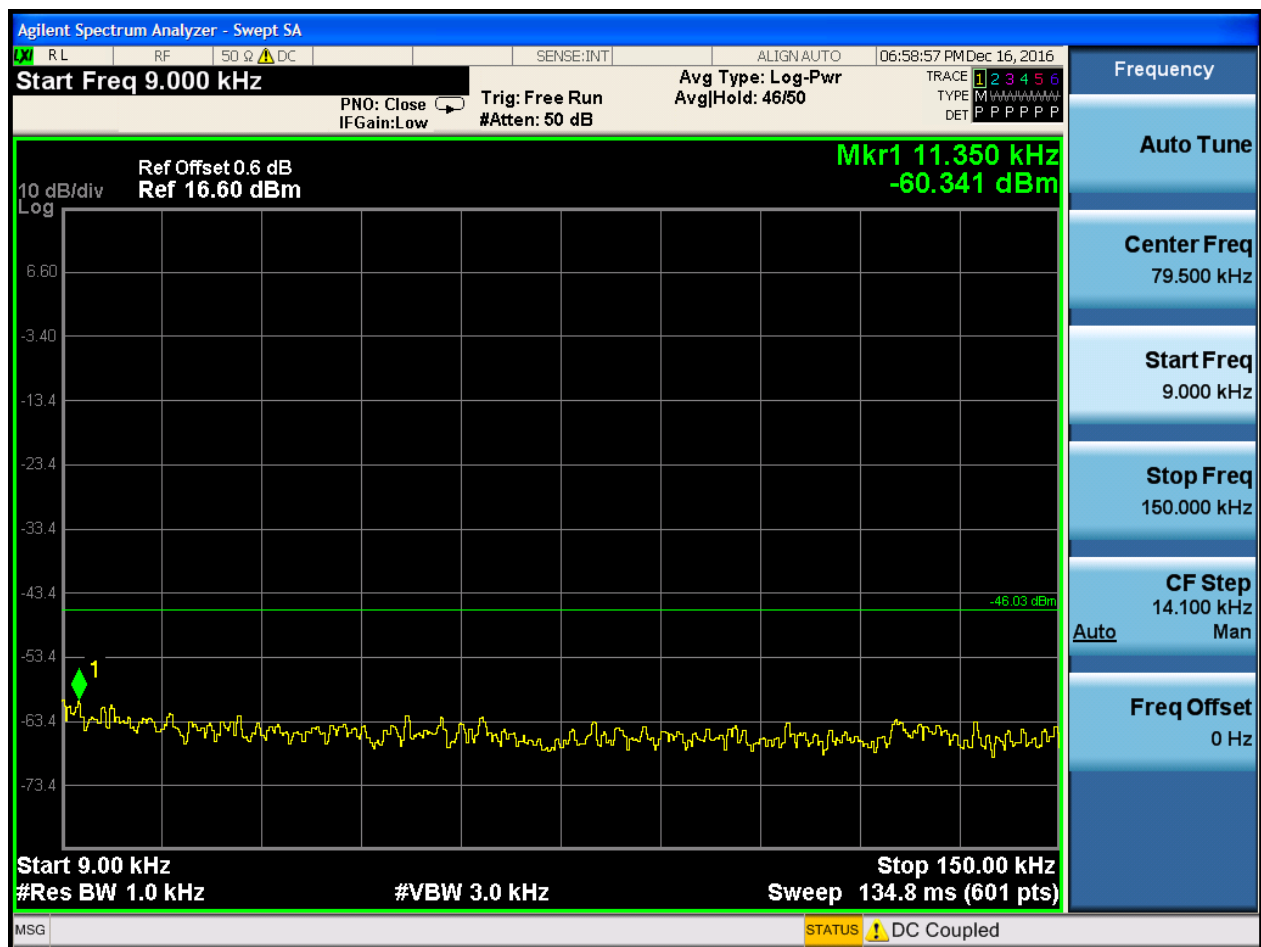
7.7 11N20_L@Ant 1

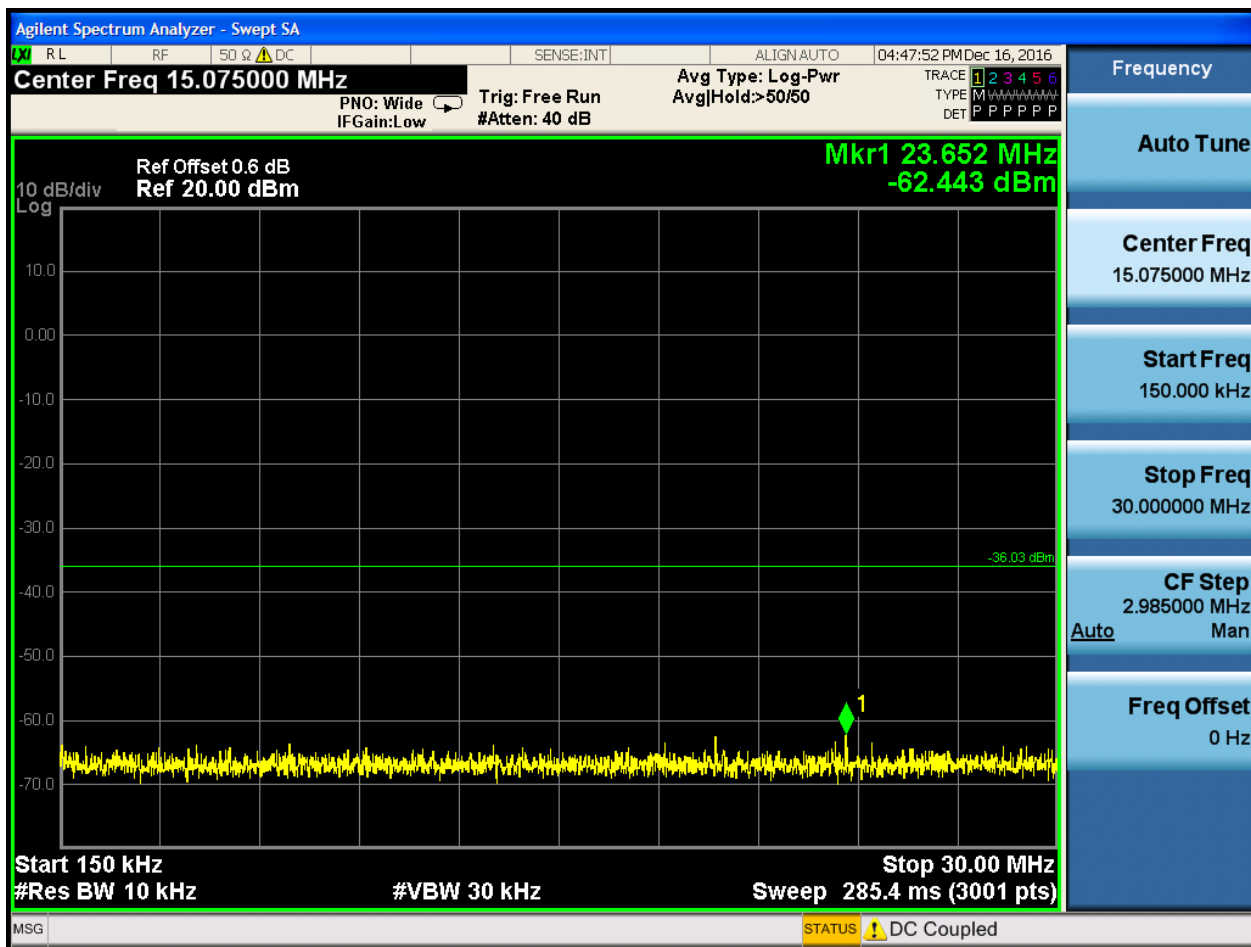
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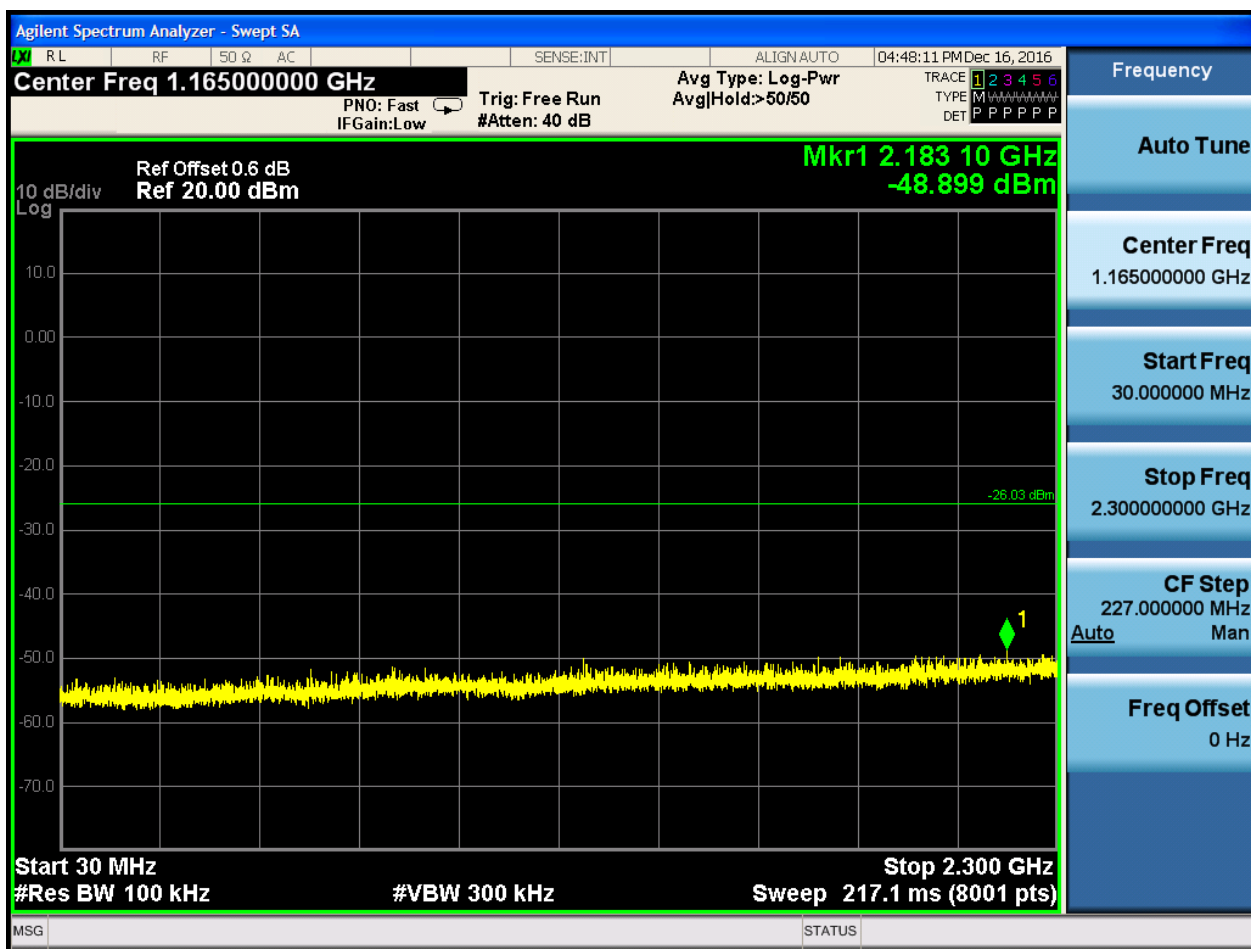


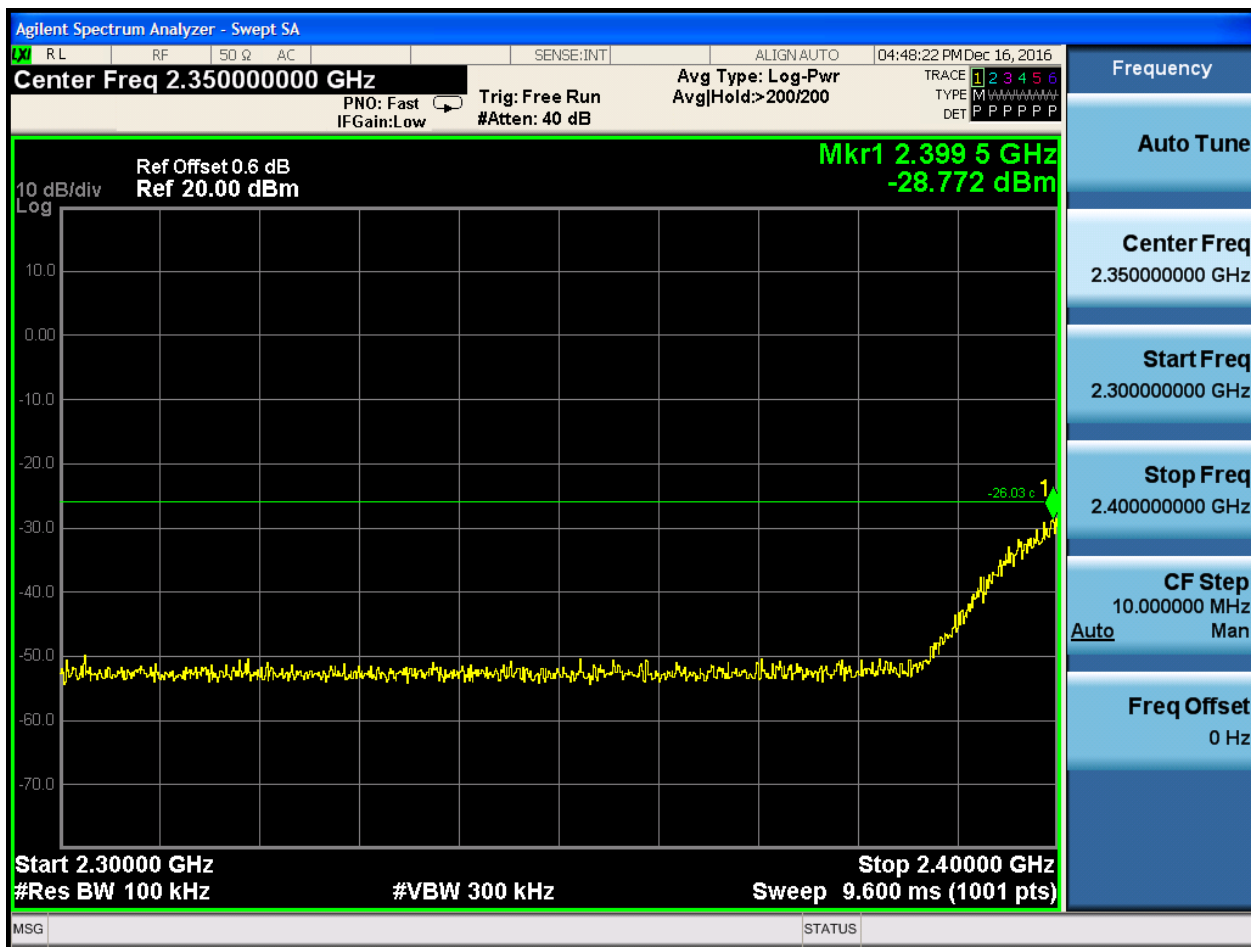


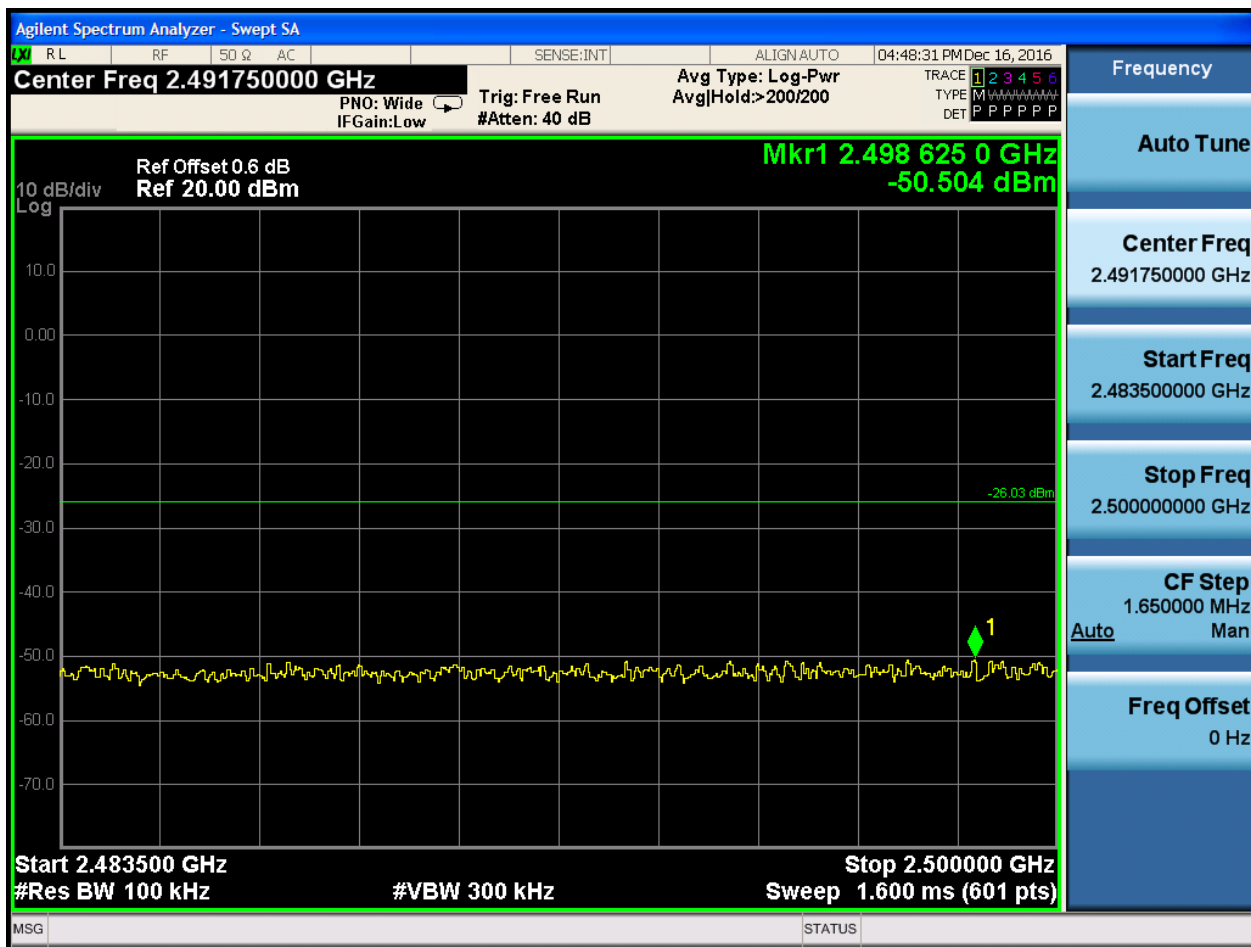
Puw:









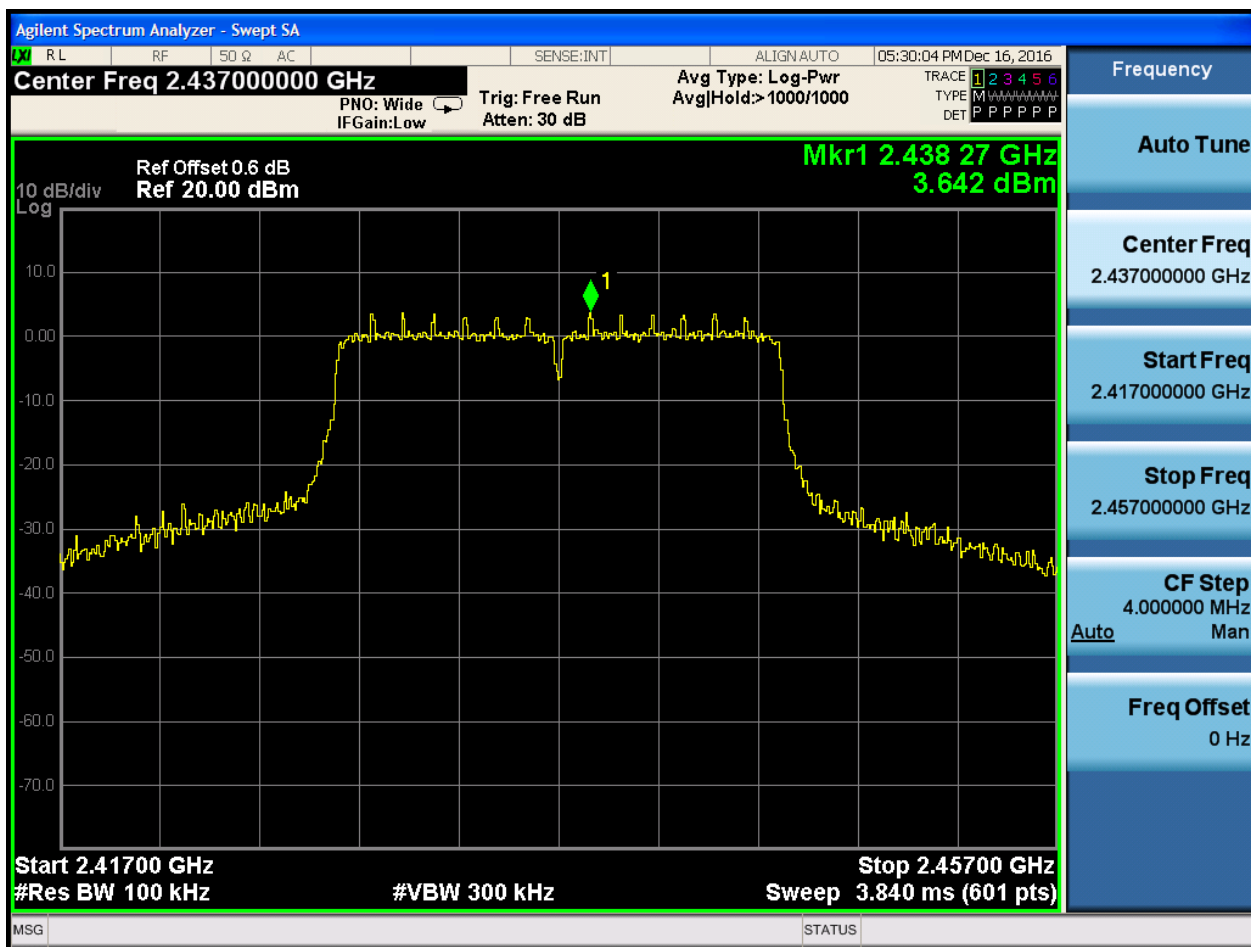






7.8 11N20_M@Ant 1

Pref:





Puw:

