

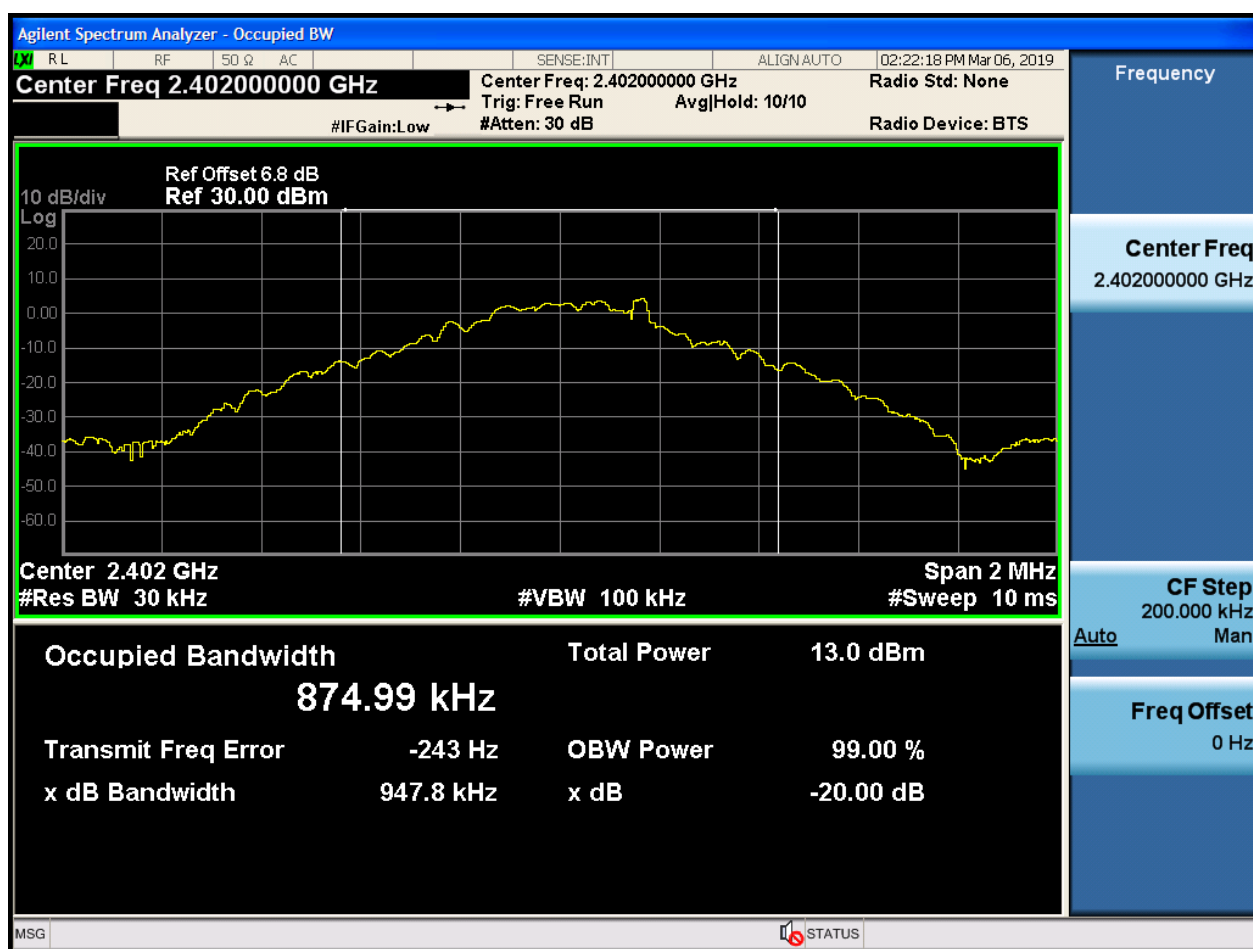
Appendix A: 20dB Emission Bandwidth (EBW)

1 Result Table

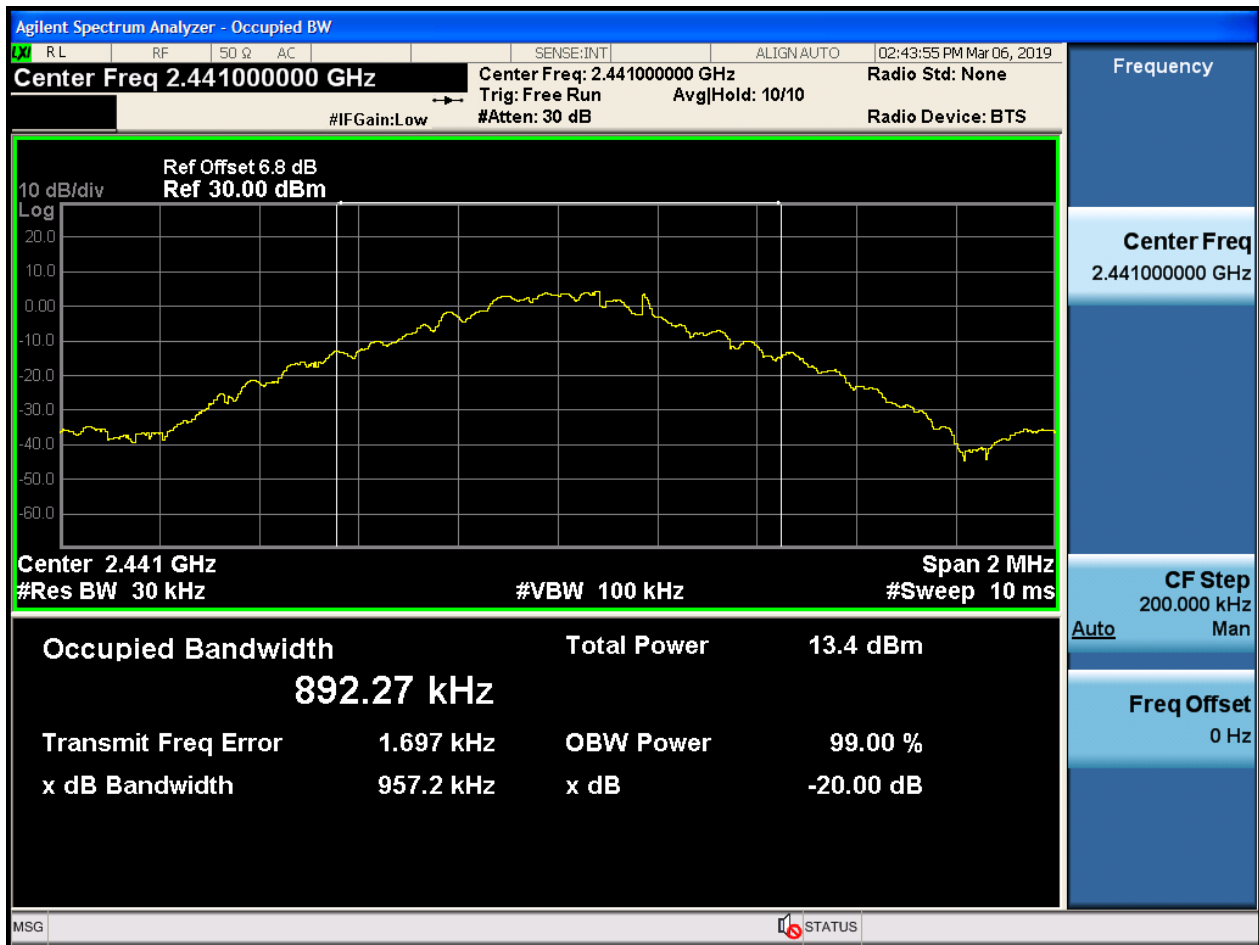
EUT Conf.	EBW [MHz]	Limit[MHz]	Verdict
TM1_DH5_Ch0	0.95	---	Pass
TM1_DH5_Ch39	0.96	---	Pass
TM1_DH5_Ch78	0.95	---	Pass
TM2_2DH5_Ch0	1.27	---	Pass
TM2_2DH5_Ch39	1.27	---	Pass
TM2_2DH5_Ch78	1.27	---	Pass
TM3_3DH5_Ch0	1.27	---	Pass
TM3_3DH5_Ch39	1.27	---	Pass
TM3_3DH5_Ch78	1.27	---	Pass

2 Test Plot

2.1 TM1_DH5_Ch0



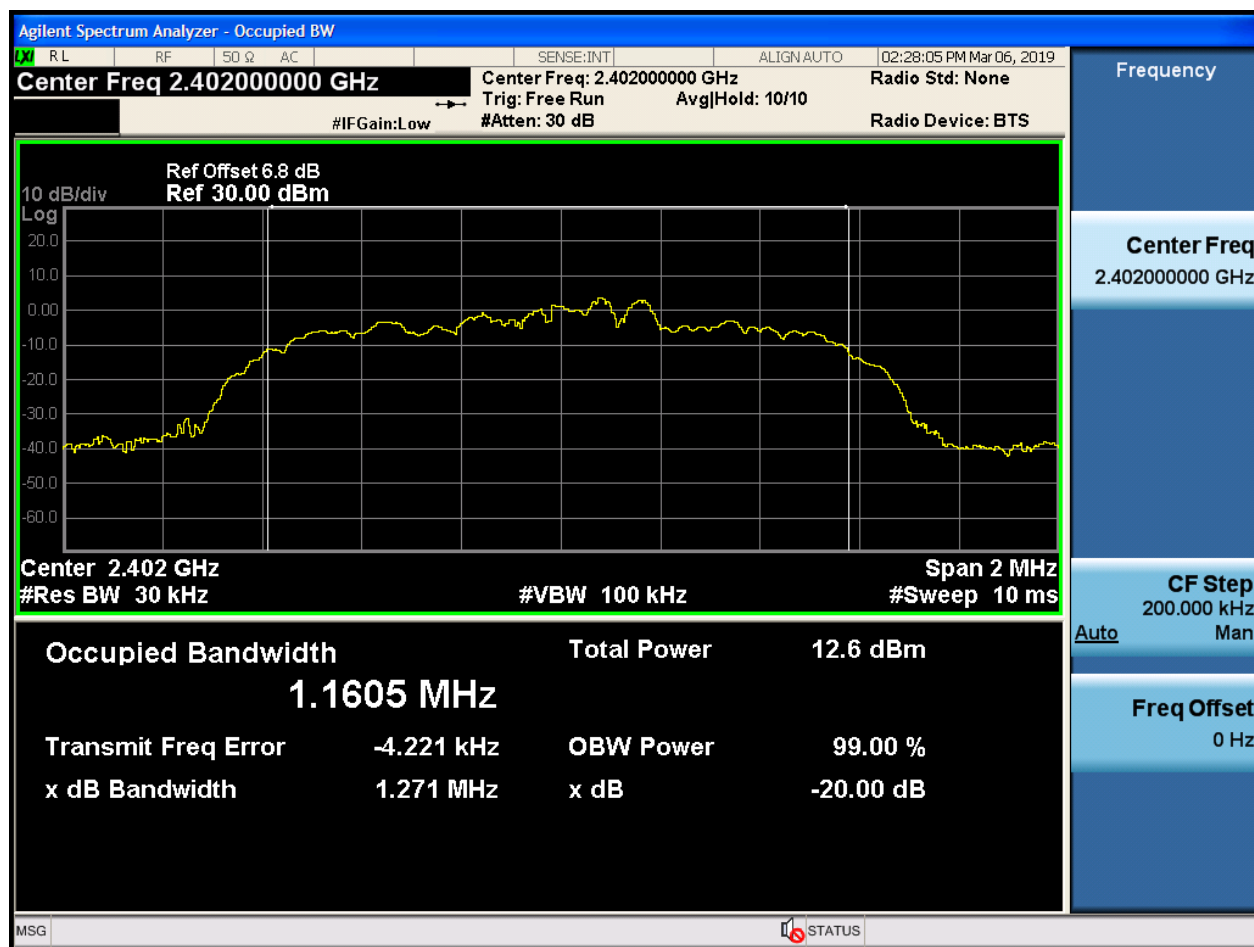
2.2 TM1_DH5_Ch39



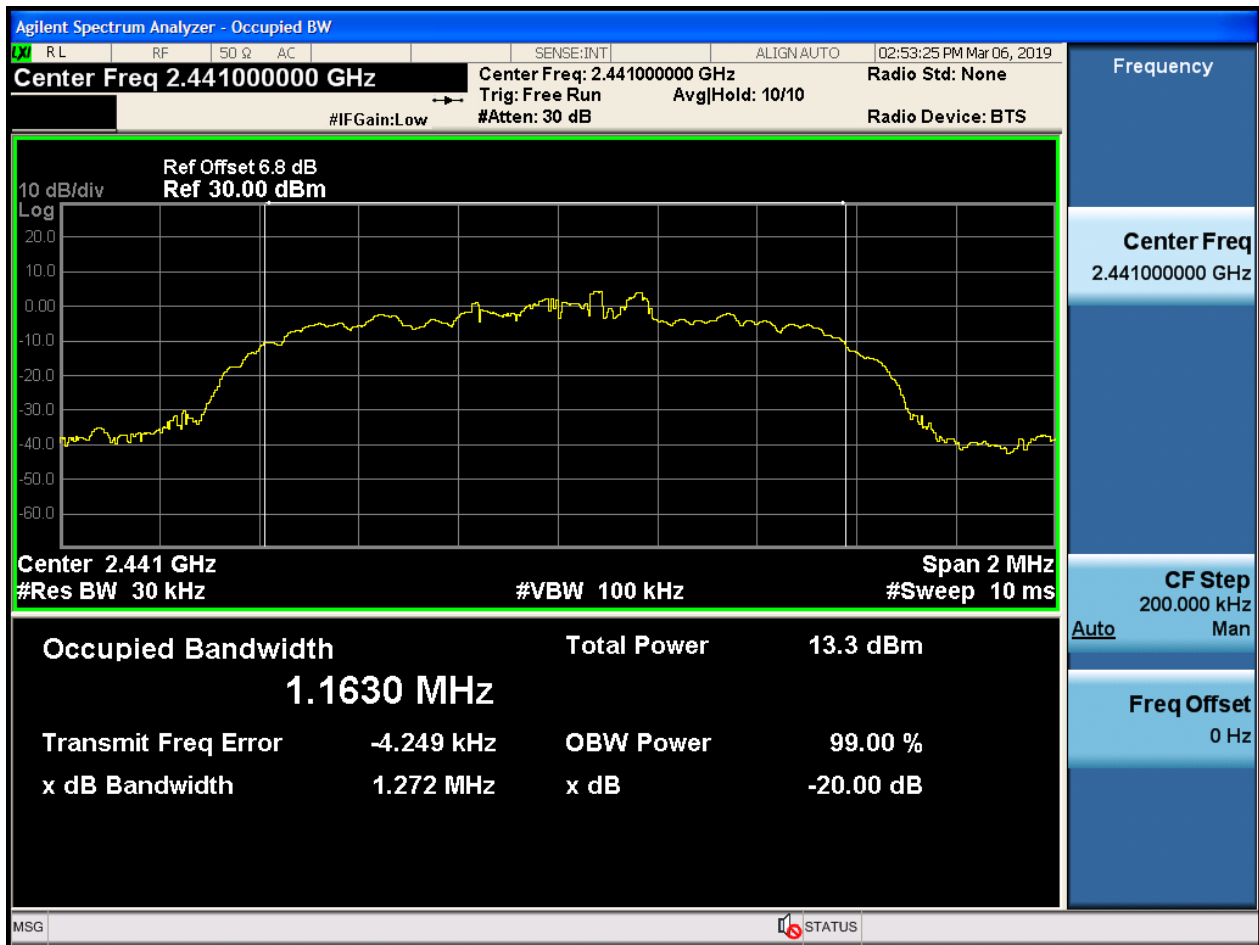
2.3 TM1_DH5_Ch78



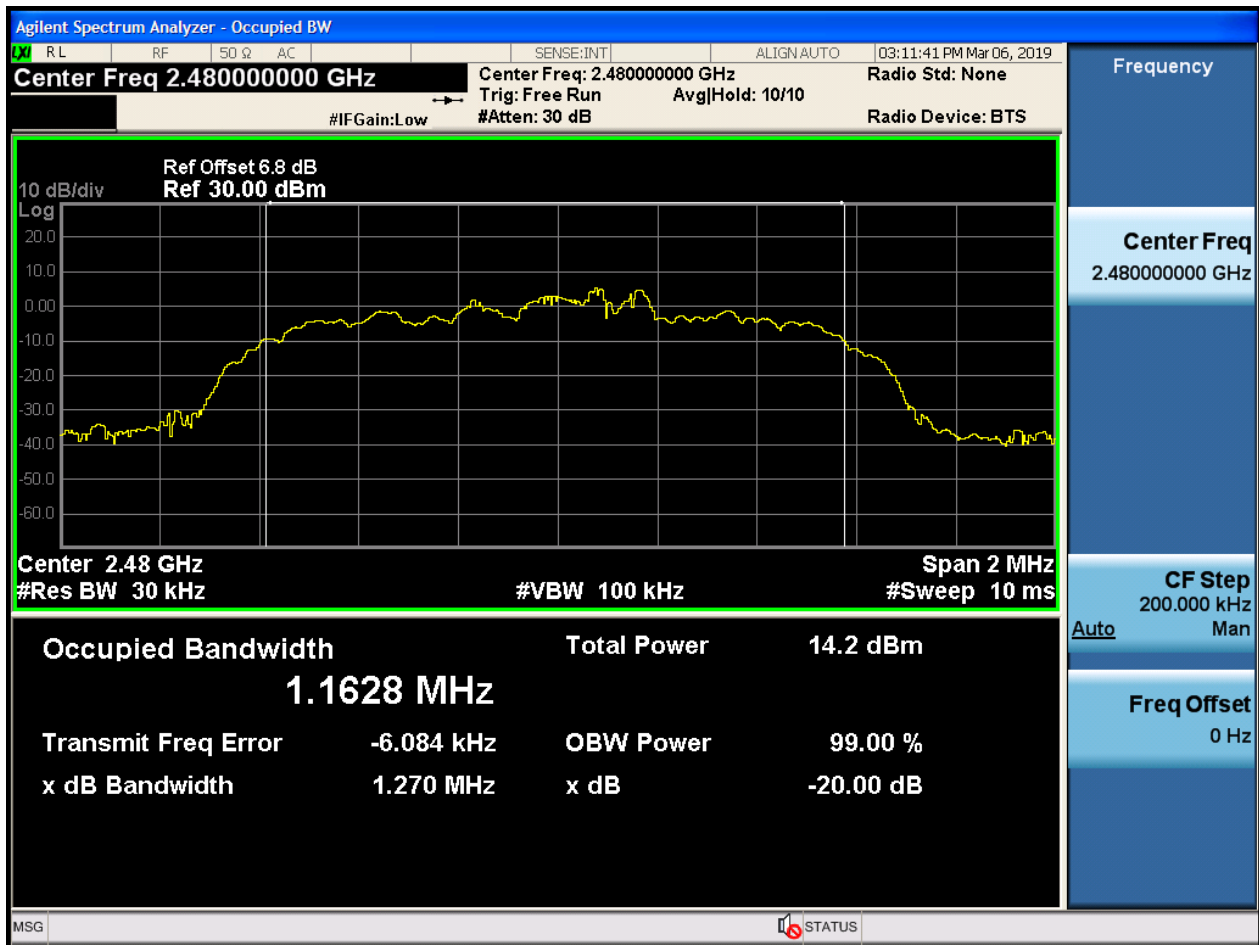
2.4 TM2_2DH5_Ch0



2.5 TM2_2DH5_Ch39



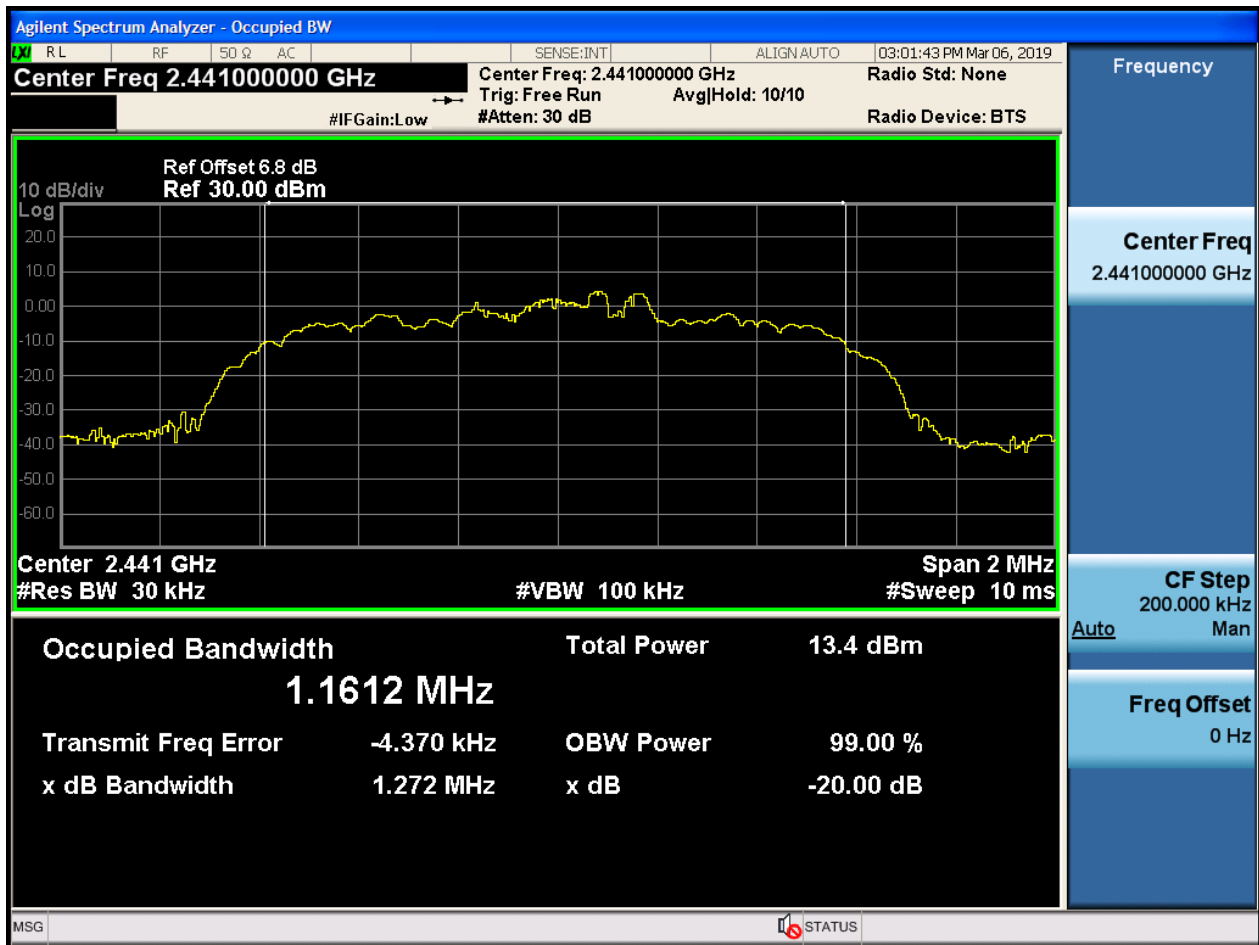
2.6 TM2_2DH5_Ch78



2.7 TM3_3DH5_Ch0



2.8 TM3_3DH5_Ch39



2.9 TM3_3DH5_Ch78



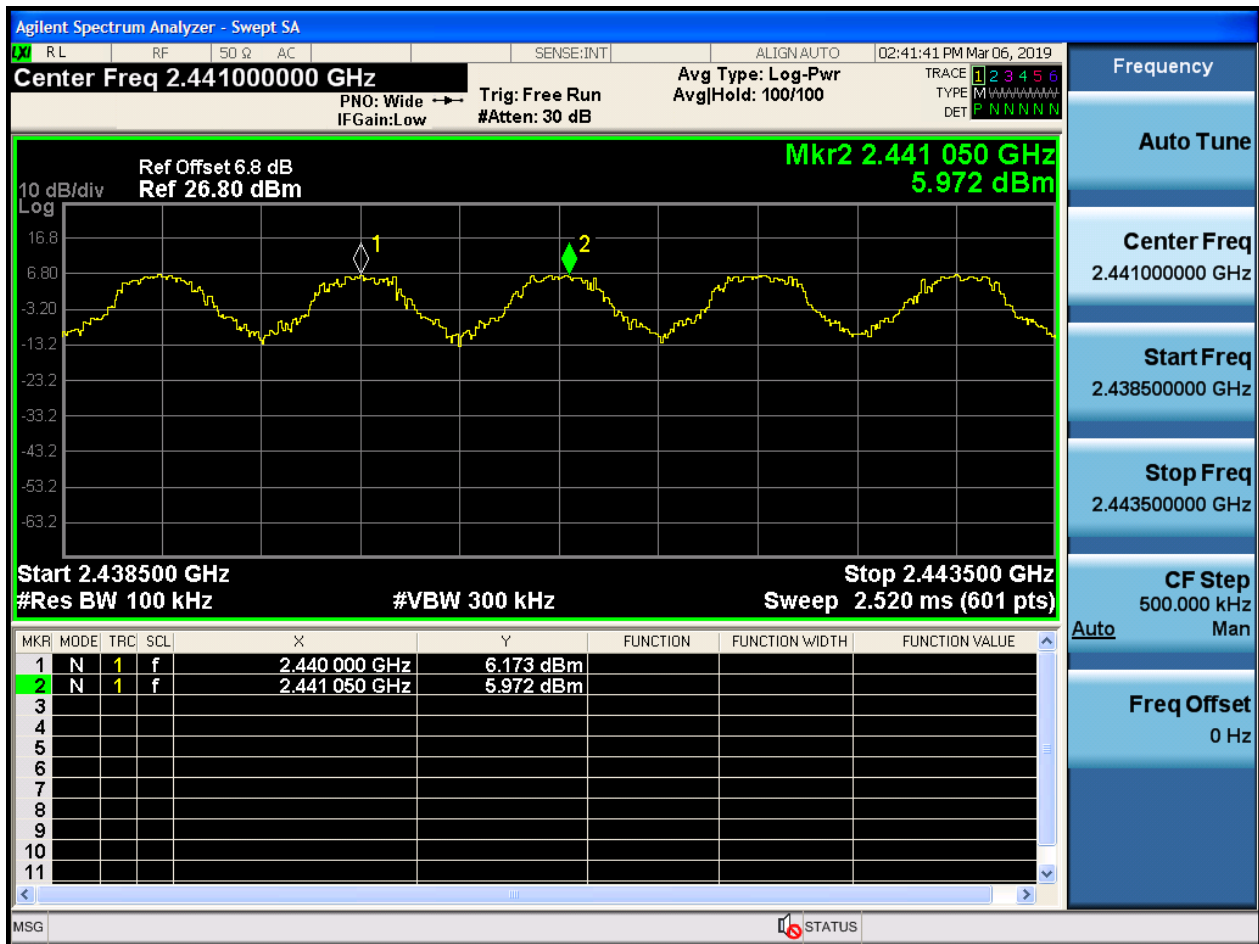
Appendix B: Carrier Frequency Separation

3 Result Table

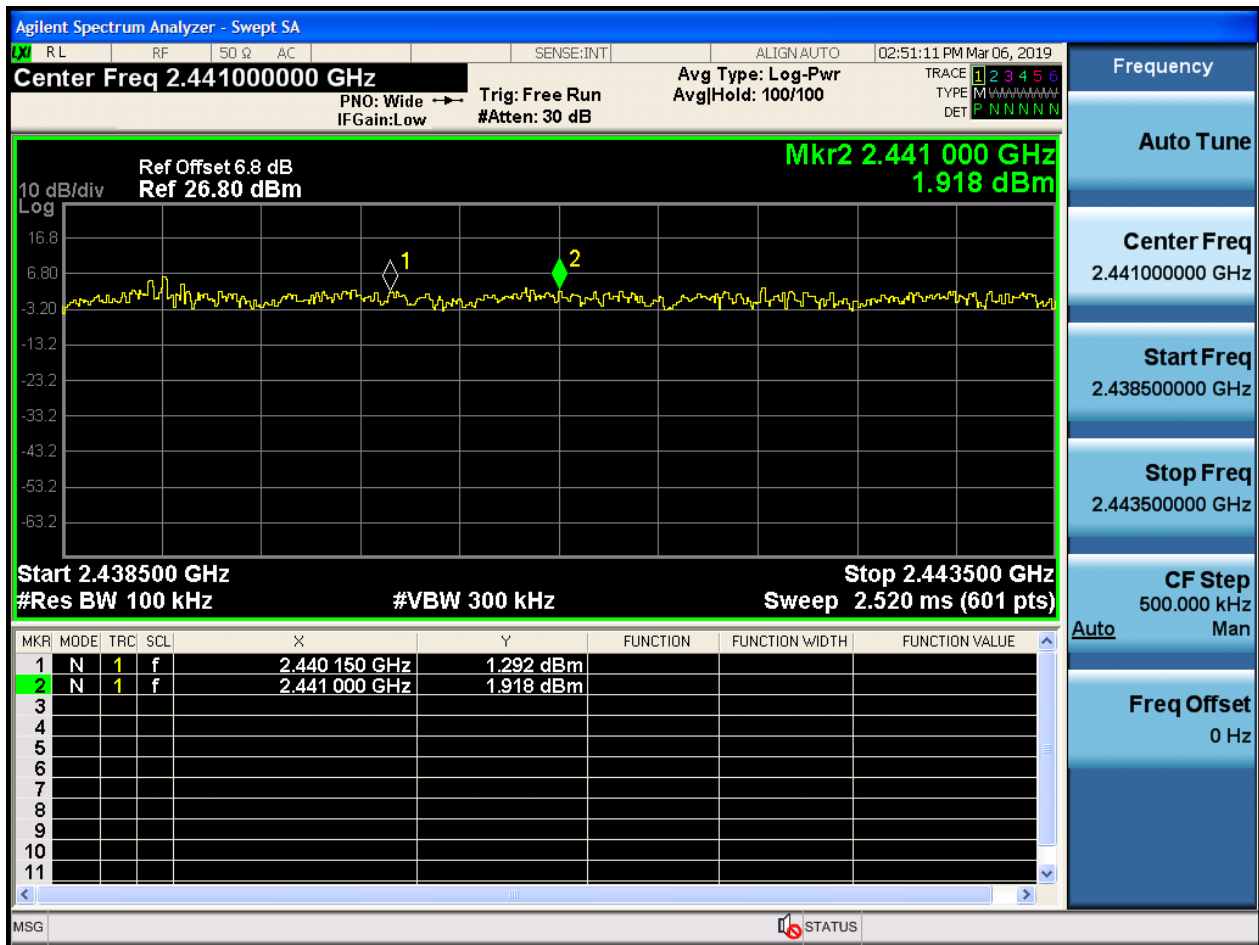
EUT Conf.	Carrier Frequency Separation [MHz]	Limit[MHz]	Verdict
TM1_DH5_Hop	1.05	≥ 0.633	Pass
TM2_2DH5_Hop	0.85	≥ 0.847	Pass
TM3_3DH5_Hop	1	≥ 0.847	Pass

4 Test Plot

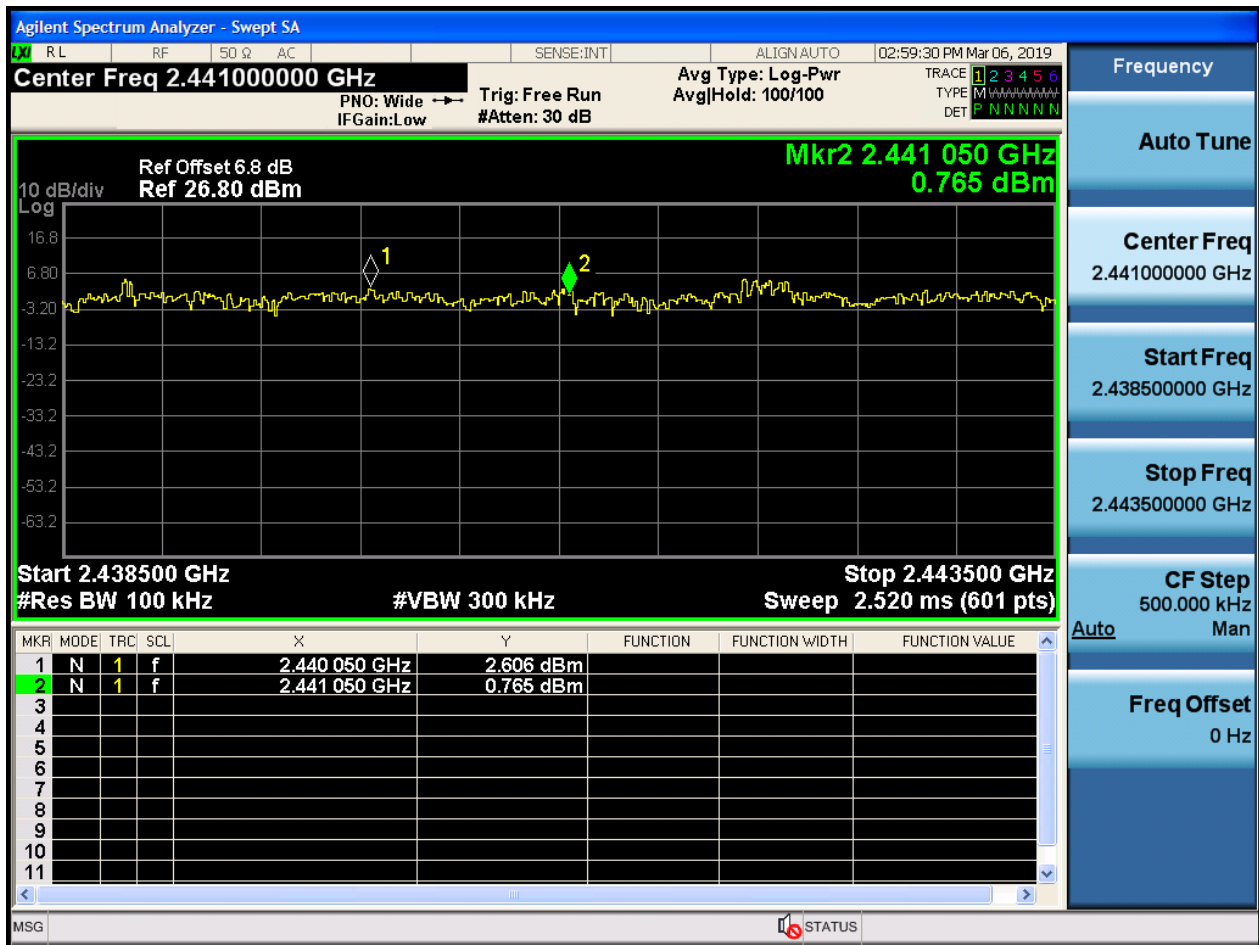
4.1 TM1_DH5_Hop



4.2 TM2_2DH5_Hop



4.3 TM3_3DH5_Hop



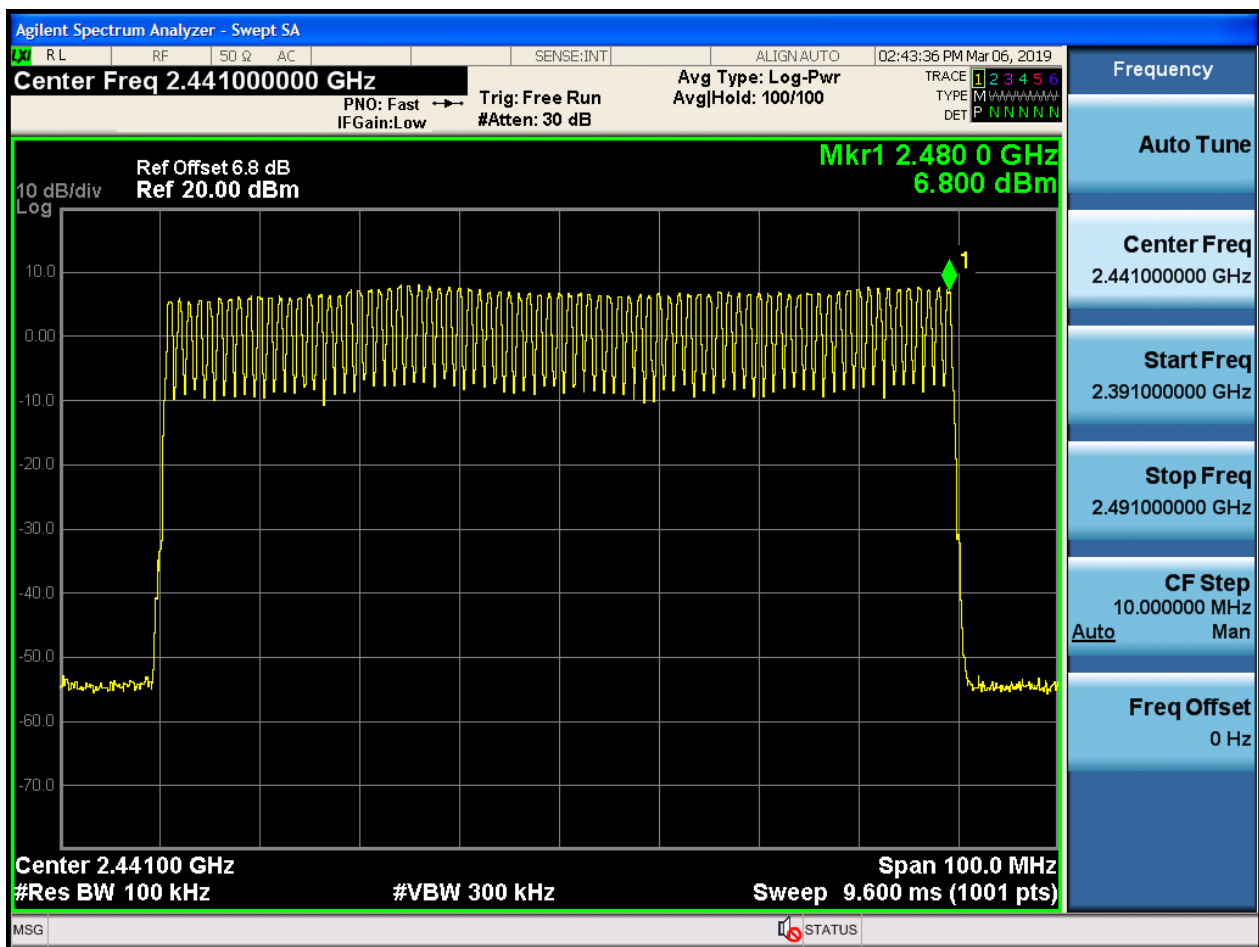
Appendix C: Number of Hopping Channel

5 Result Table

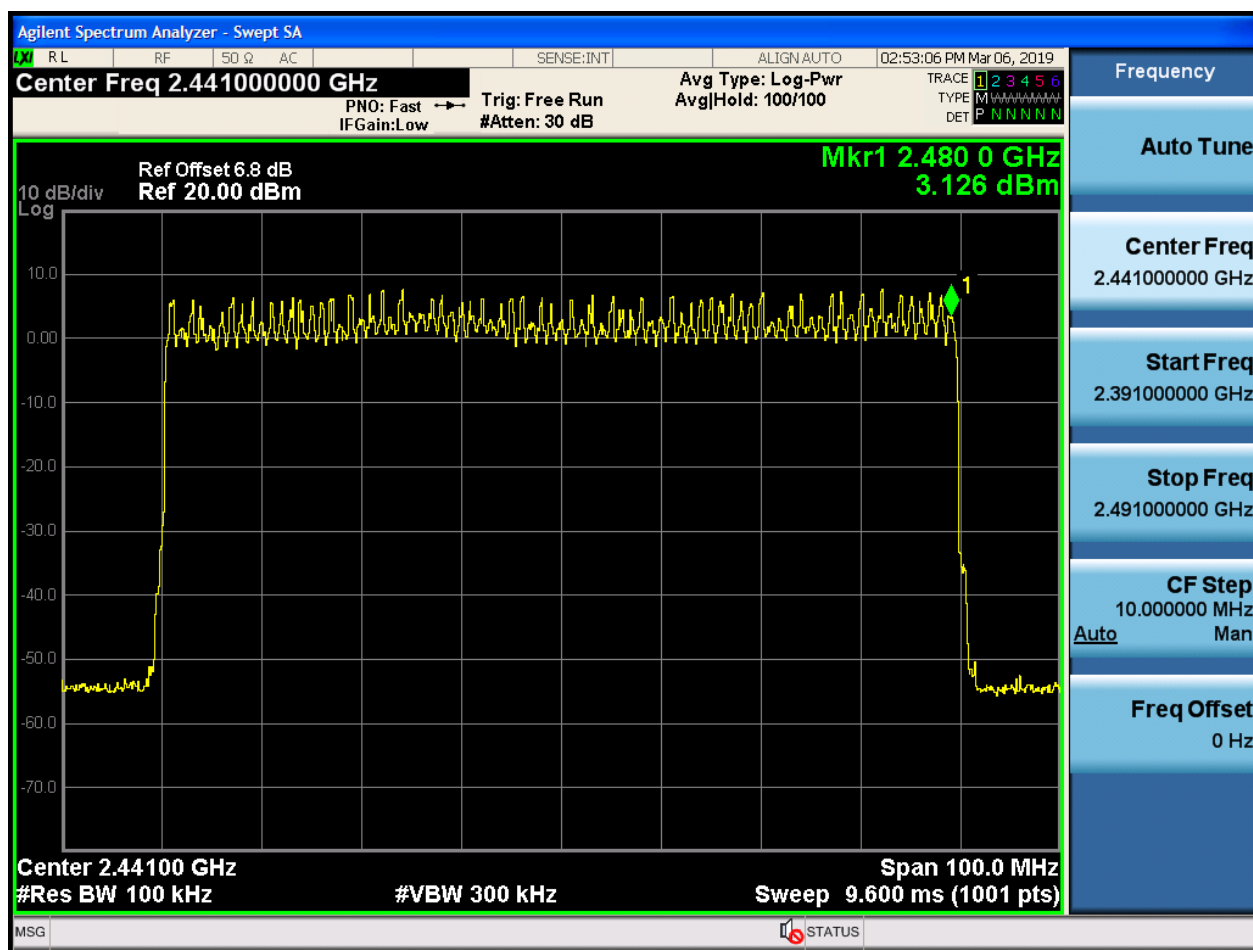
EUT Conf.	Number of Hopping Channel	Limit	Verdict
TM1_DH5_Hop	79	≥ 15	Pass
TM2_2DH5_Hop	79	≥ 15	Pass
TM3_3DH5_Hop	79	≥ 15	Pass

6 Test Plot

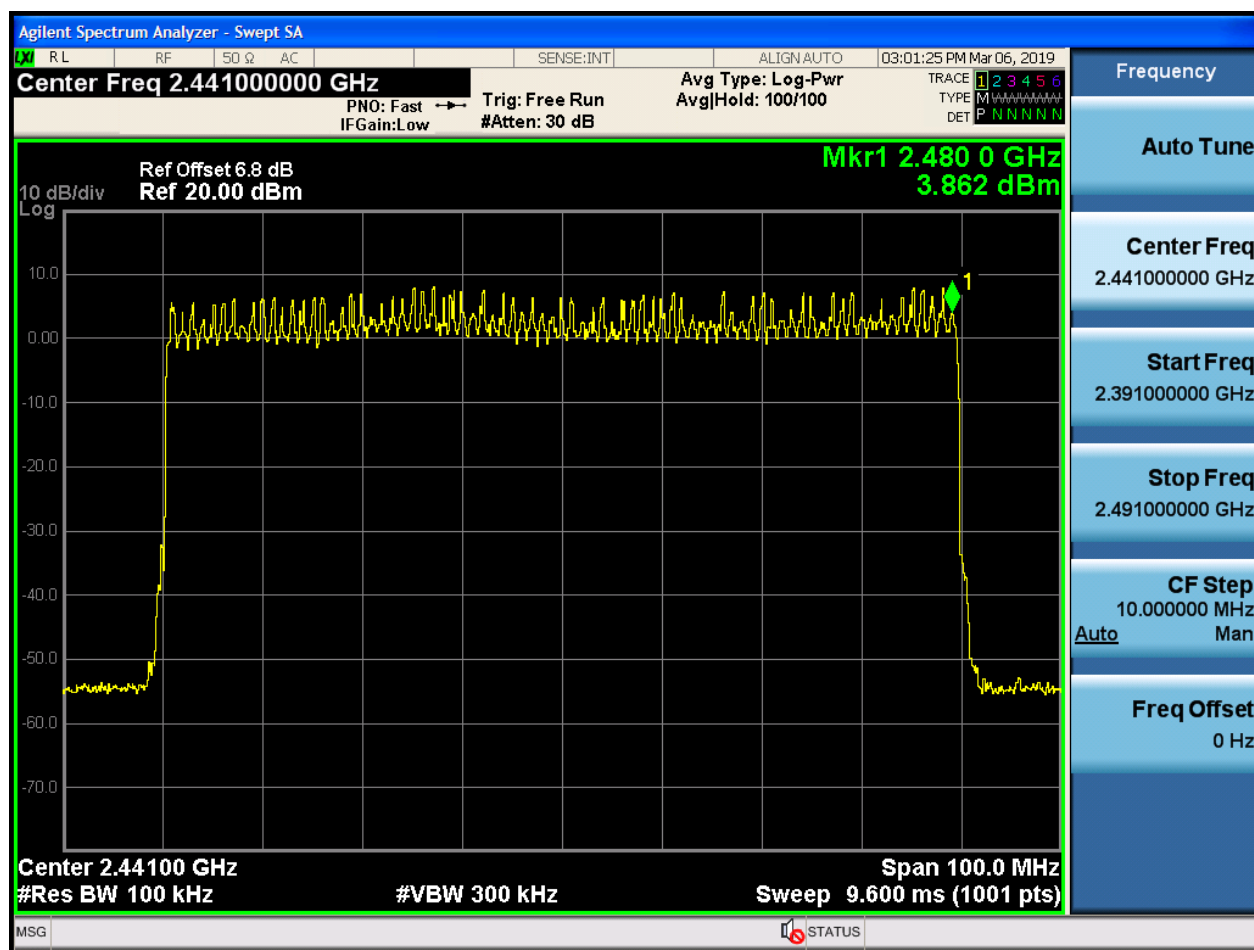
6.1 TM1_DH5_Hop



6.2 TM2_2DH5_Hop



6.3 TM3_3DH5_Hop



Appendix D: Time of Occupancy (Dwell Time)

7 Result Table

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:

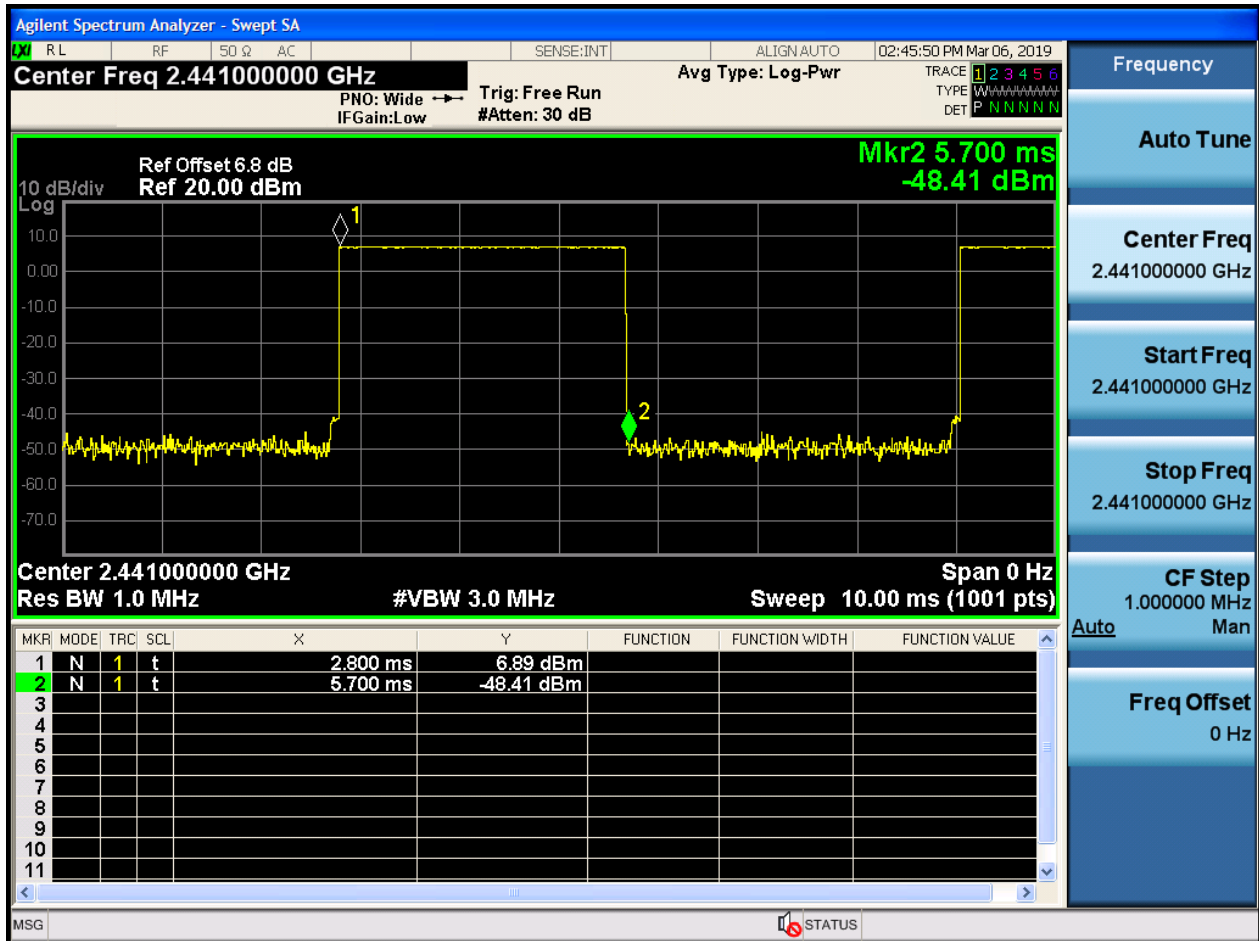
- The duration for dwell time calculation: $0.4 \text{ [s]} * \text{hopping number} = 0.4 \text{ [s]} * 79 \text{ [ch]} = 31.6 \text{ [s*ch]}$;
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a hopping rate of 1600 [ch*hop/s] for all channels. So the final hopping rate for all channels is $1600 / 6 = 266.67 \text{ [ch*hop/s]}$;
- The hops per second on one channel: $266.67 \text{ [ch*hop/s]} / 79 \text{ [ch]} = 3.38 \text{ [hop/s]}$;
- The total hops for all channels within the dwell time calculation duration: $3.38 \text{ [hop/s]} * 31.6 \text{ [s*ch]} = 106.67 \text{ [hop*ch]}$;
- The dwell time for all channels hopping: $106.67 \text{ [hop*ch]} * \text{Burst Width [ms/hop/ch]}$.

EUT Conf.	Burst Width [s/hop/ch]	Total Hops [hop*ch]	Dwell Time [ms]	Verdict
TM1_DH5_Ch39	0.0029	106.67	0.309	Pass
TM2_2DH5_Ch39	0.0029	106.67	0.309	Pass
TM3_3DH5_Ch39	0.0029	106.67	0.309	Pass

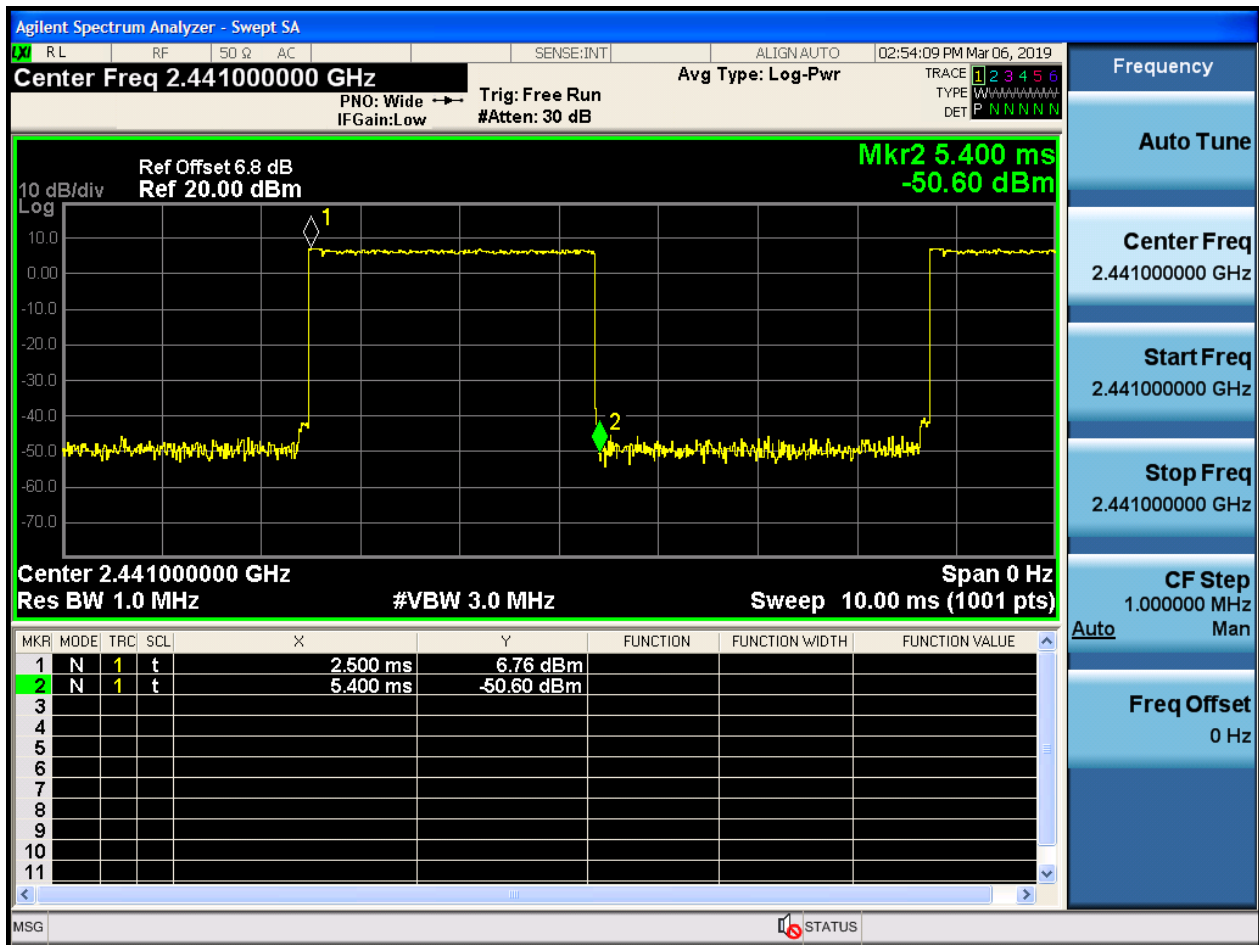
8 Test Plot

NOTE: The test plots are only for Burst Width measurements.

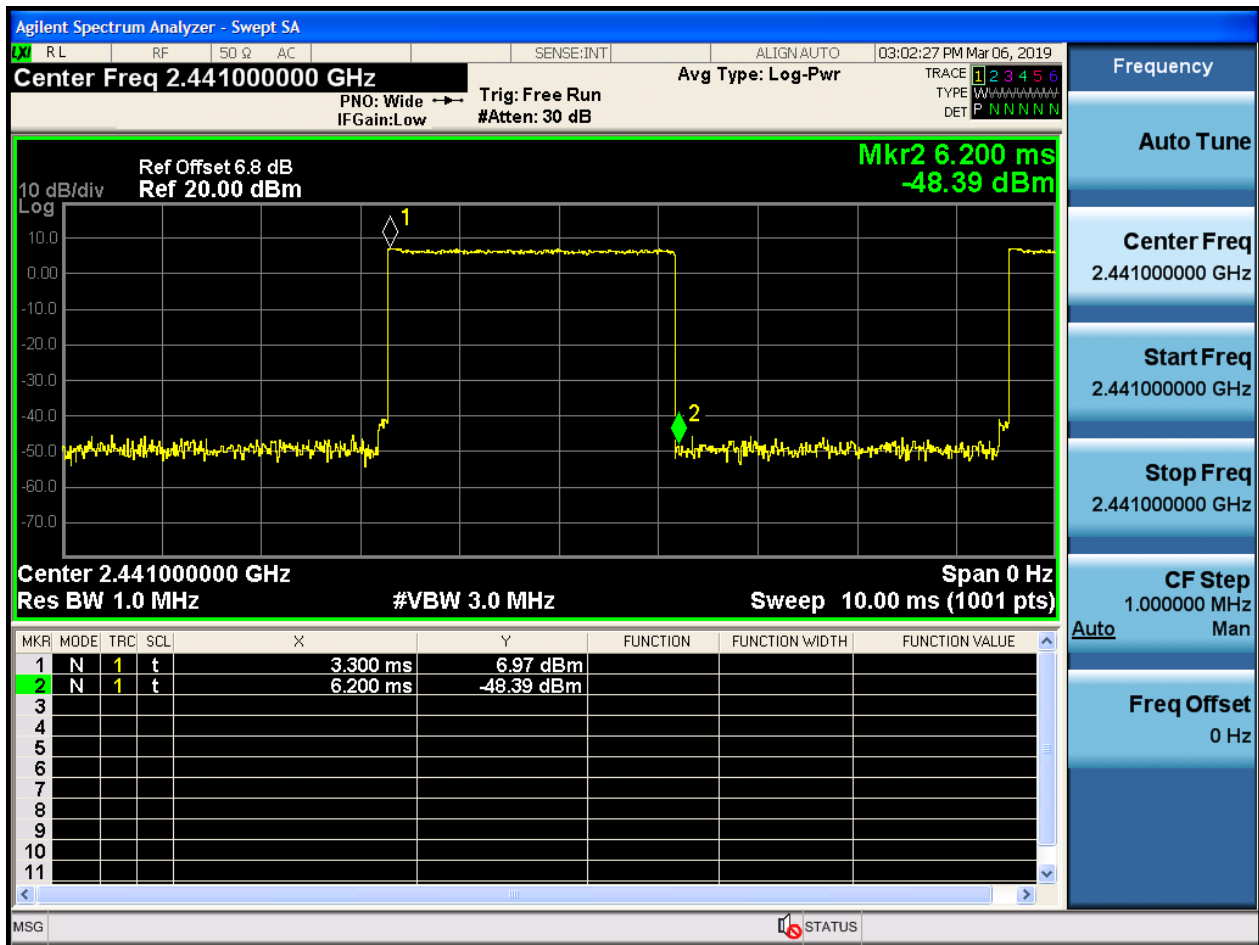
8.1 TM1_DH5_Ch39



8.2 TM2_2DH5_Ch39



8.3 TM3_3DH5_Ch39



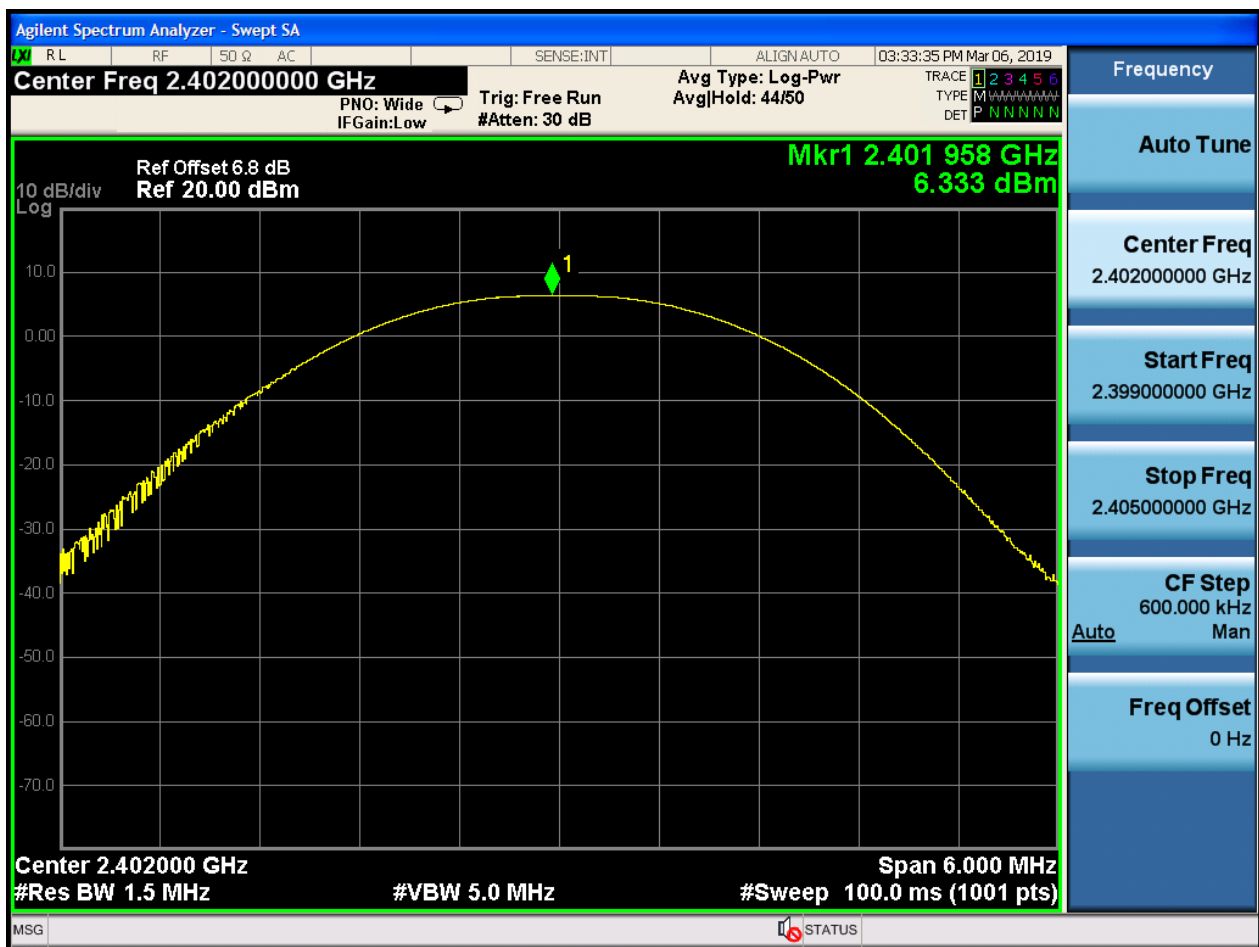
Appendix E: Maximum Peak Conducted Output Power

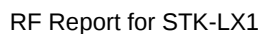
9 Result Table

EUT Conf.	Max. Peak Power [dBm]	Limit[dBm]	Verdict
TM1_DH5_Ch0	6.333	30	Pass
TM1_DH5_Ch39	7.054	30	Pass
TM1_DH5_Ch78	7.886	30	Pass
TM2_2DH5_Ch0	6.568	30	Pass
TM2_2DH5_Ch39	7.316	30	Pass
TM2_2DH5_Ch78	8.133	30	Pass
TM3_3DH5_Ch0	6.578	30	Pass
TM3_3DH5_Ch39	7.335	30	Pass
TM3_3DH5_Ch78	8.148	30	Pass

10 Test Plot

10.1 TM1_DH5_Ch0





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 02:44:12 PM Mar 06, 2019

Center Freq 2.441000000 GHz Avg Type: Log-Pwr PNO: Wide Trig: Free Run IFGain:Low #Atten: 30 dB

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

Ref Offset 6.8 dB Mkr1 2.440 946 GHz
Ref 20.00 dBm 7.054 dBm

10 dB/div Log

Center 2.441000 GHz Span 6.000 MHz
#Res BW 1.5 MHz #VBW 5.0 MHz #Sweep 100.0 ms (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
2.441000000 GHz

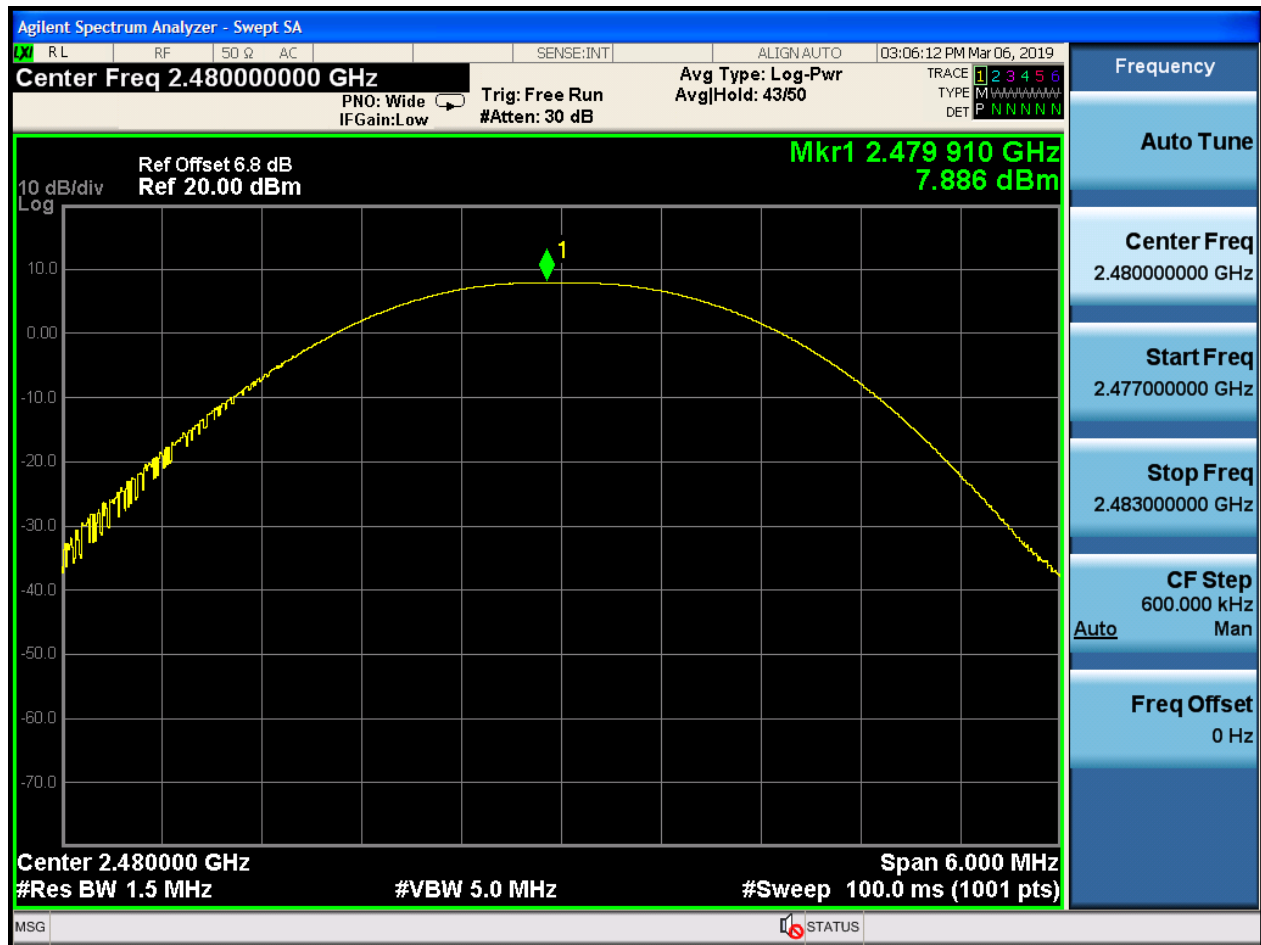
Start Freq
2.438000000 GHz

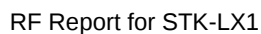
Stop Freq
2.444000000 GHz

CF Step
600.000 kHz
Auto Man

Freq Offset
0 Hz

10.3 TM1_DH5_Ch78





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 03:34:00 PM Mar 06, 2019

Center Freq 2.40200000 GHz

PNO: Wide IFGain:Low Trig: Free Run #Atten: 30 dB

Avg Type: Log-Pwr Avg|Hold: 44/50

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

Ref Offset 6.8 dB
Ref 20.00 dBm

Mkr1 2.402 060 GHz
6.568 dBm

10 dB/div
Log

Center 2.402000 GHz
#Res BW 1.5 MHz #VBW 5.0 MHz #Sweep 100.0 ms (1001 pts)

Span 6.000 MHz

MSG STATUS

Frequency

Auto Tune

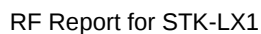
Center Freq
2.402000000 GHz

Start Freq
2.399000000 GHz

Stop Freq
2.405000000 GHz

CF Step
600.000 kHz
Auto Man

Freq Offset
0 Hz



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 02:53:42 PM Mar 06, 2019

Center Freq 2.441000000 GHz

PNO: Wide IFGain:Low Trig: Free Run #Atten: 30 dB

Avg Type: Log-Pwr Avg|Hold: 32/50

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

Ref Offset 6.8 dB
Ref 20.00 dBm

Mkr1 2.441 084 GHz
7.316 dBm

10 dB/div
Log

Center 2.441000 GHz
#Res BW 1.5 MHz #VBW 5.0 MHz Span 6.000 MHz
#Sweep 100.0 ms (1001 pts)

MSG STATUS

Frequency

Auto Tune

Center Freq
2.441000000 GHz

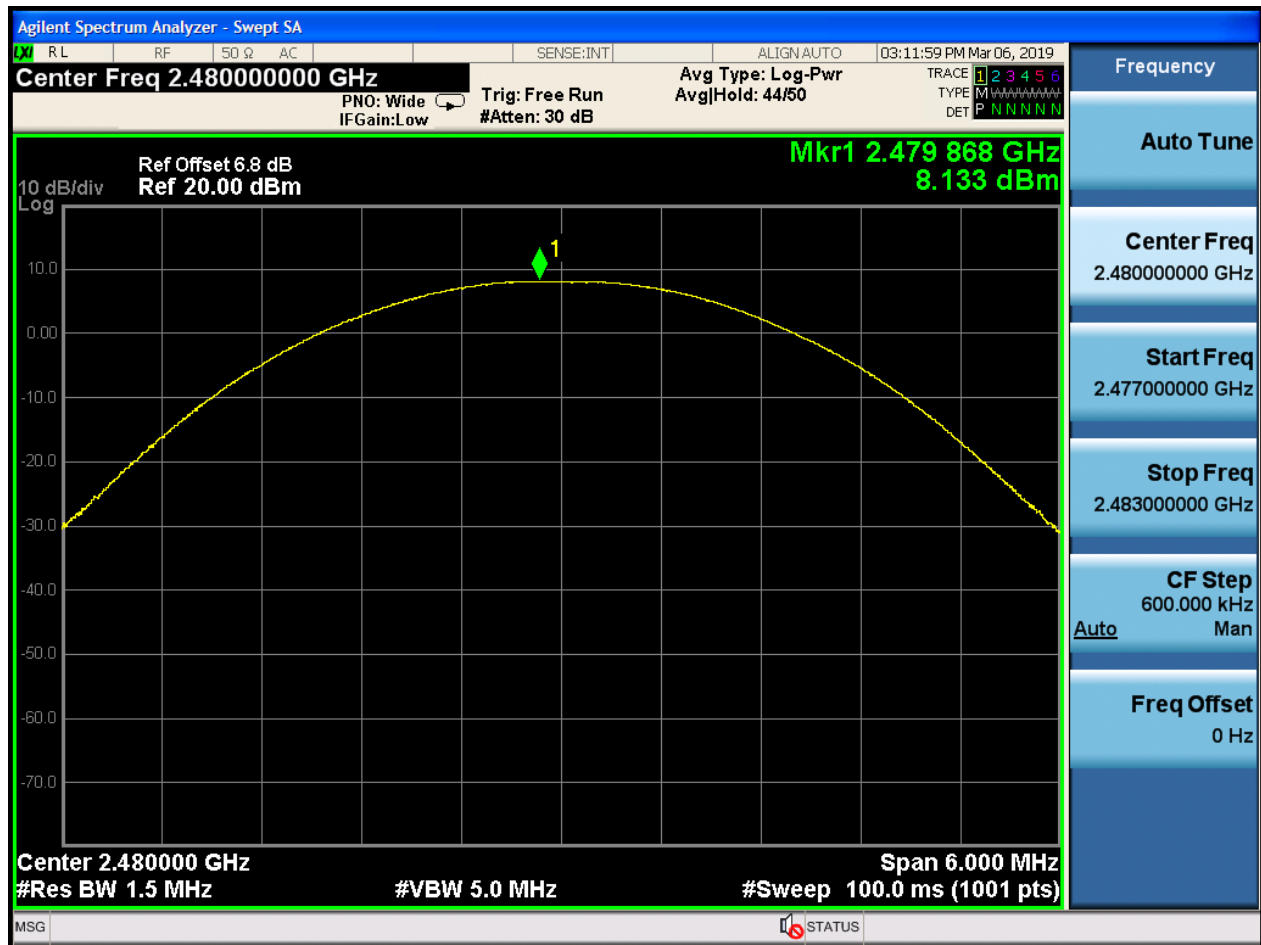
Start Freq
2.438000000 GHz

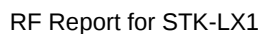
Stop Freq
2.444000000 GHz

CF Step
600.000 kHz
Auto Man

Freq Offset
0 Hz

10.6 TM2_2DH5_Ch78





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 03:34:25 PM Mar 06, 2019

Center Freq 2.40200000 GHz

PNO: Wide IFGain:Low Trig: Free Run #Atten: 30 dB

Avg Type: Log-Pwr Avg|Hold: 44/50

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

Ref Offset 6.8 dB
Ref 20.00 dBm

Mkr1 2.402 108 GHz
6.578 dBm

10 dB/div
Log

Center 2.402000 GHz
#Res BW 1.5 MHz

#VBW 5.0 MHz

Span 6.000 MHz
#Sweep 100.0 ms (1001 pts)

MSG STATUS

Frequency

Auto Tune

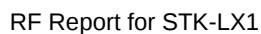
Center Freq
2.40200000 GHz

Start Freq
2.39900000 GHz

Stop Freq
2.40500000 GHz

CF Step
600.000 kHz
Auto Man

Freq Offset
0 Hz



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 03:02:01 PM Mar 06, 2019

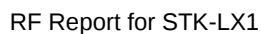
Center Freq 2.441000000 GHz PNO: Wide Trg: Free Run Avg Type: Log-Pwr TRACE 1 2 3 4 5 6
IFGain: Low #Atten: 30 dB Avg|Hold: 32/50 TYPE M NNNNNN
DET P NNNNN

Ref Offset 6.8 dB Mkr1 2.441 102 GHz
Ref 20.00 dBm 7.335 dBm

10 dB/div
Log

Center 2.441000 GHz Span 6.000 MHz
#Res BW 1.5 MHz #VBW 5.0 MHz #Sweep 100.0 ms (1001 pts)

Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.438000000 GHz
Stop Freq 2.444000000 GHz
CF Step 600.000 kHz
Auto Man
Freq Offset 0 Hz



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 03:17:49 PM Mar 06, 2019

Center Freq 2.480000000 GHz

PNO: Wide IFGain:Low Trig: Free Run #Atten: 30 dB

Avg Type: Log-Pwr Avg|Hold: 44/50

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

Ref Offset 6.8 dB
Ref 20.00 dBm

Mkr1 2.479 874 GHz
8.148 dBm

10 dB/div
Log

Center 2.480000 GHz

#Res BW 1.5 MHz

#VBW 5.0 MHz

Span 6.000 MHz

#Sweep 100.0 ms (1001 pts)

MSG STATUS

Appendix F: Band edge spurious emission

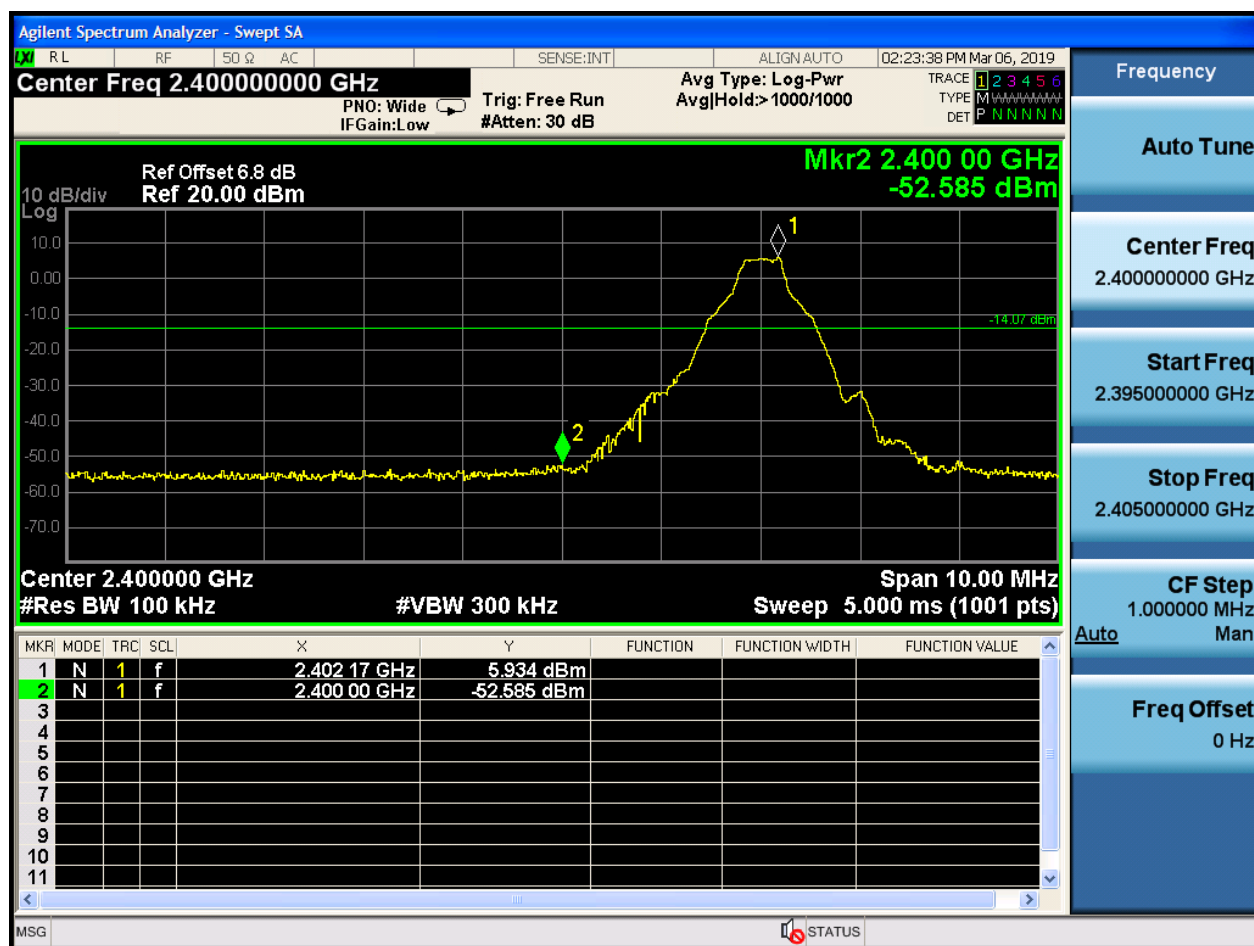
11 Result Table

EUT Conf.	Channel No.	Carrier Frequency [MHz]	Max. Spurious Level [dBm]	Frequency Hopping	Carrier Power [dBm/100 kHz]	Limit [dBm/100 kHz]	Result
TM1_DH5_Ch0	0	2402	-52.585	Off	5.934	-14.066	Pass
	-	-	-56.702	On	6.064	-13.936	Pass
TM1_DH5_Ch78	78	2480	-55.771	Off	7.552	-12.448	Pass
	-	-	-55.46	On	7.749	-12.251	Pass
TM2_2DH5_Ch0	0	2402	-50.799	Off	5.982	-14.018	Pass
	-	-	-55.384	On	4.809	-15.191	Pass
TM2_2DH5_Ch78	78	2480	-54.135	Off	7.585	-12.415	Pass
	-	-	-55.233	On	7.144	-12.856	Pass
TM3_3DH5_Ch0	0	2402	-50.43	Off	6.027	-13.973	Pass
	-	-	-53.479	On	3.882	-16.118	Pass
TM3_3DH5_Ch78	78	2480	-55.013	Off	7.569	-12.431	Pass
	-	-	-56.619	On	4.31	-15.69	Pass

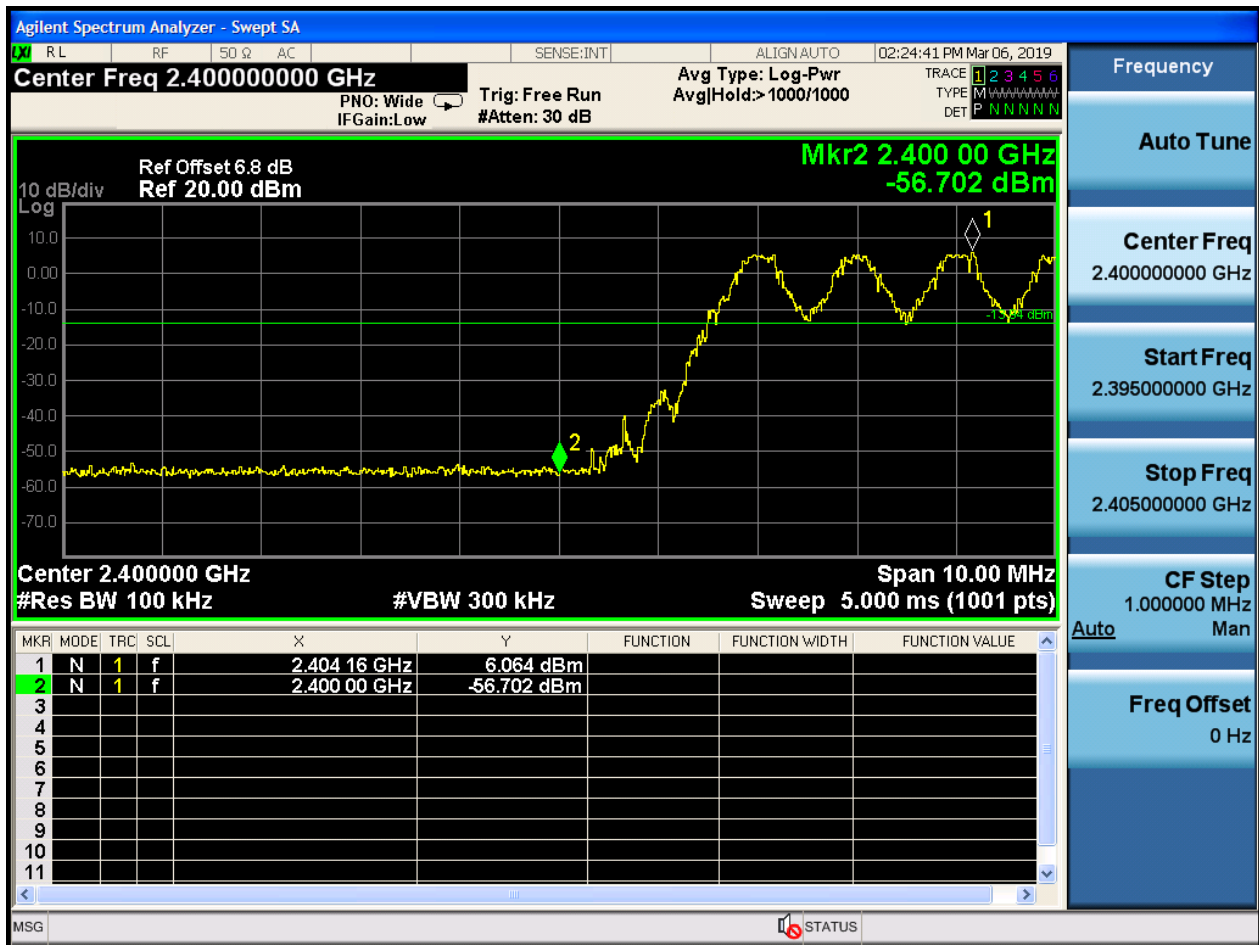
12 Test Plot

12.1 TM1_DH5_Ch0

No hopping

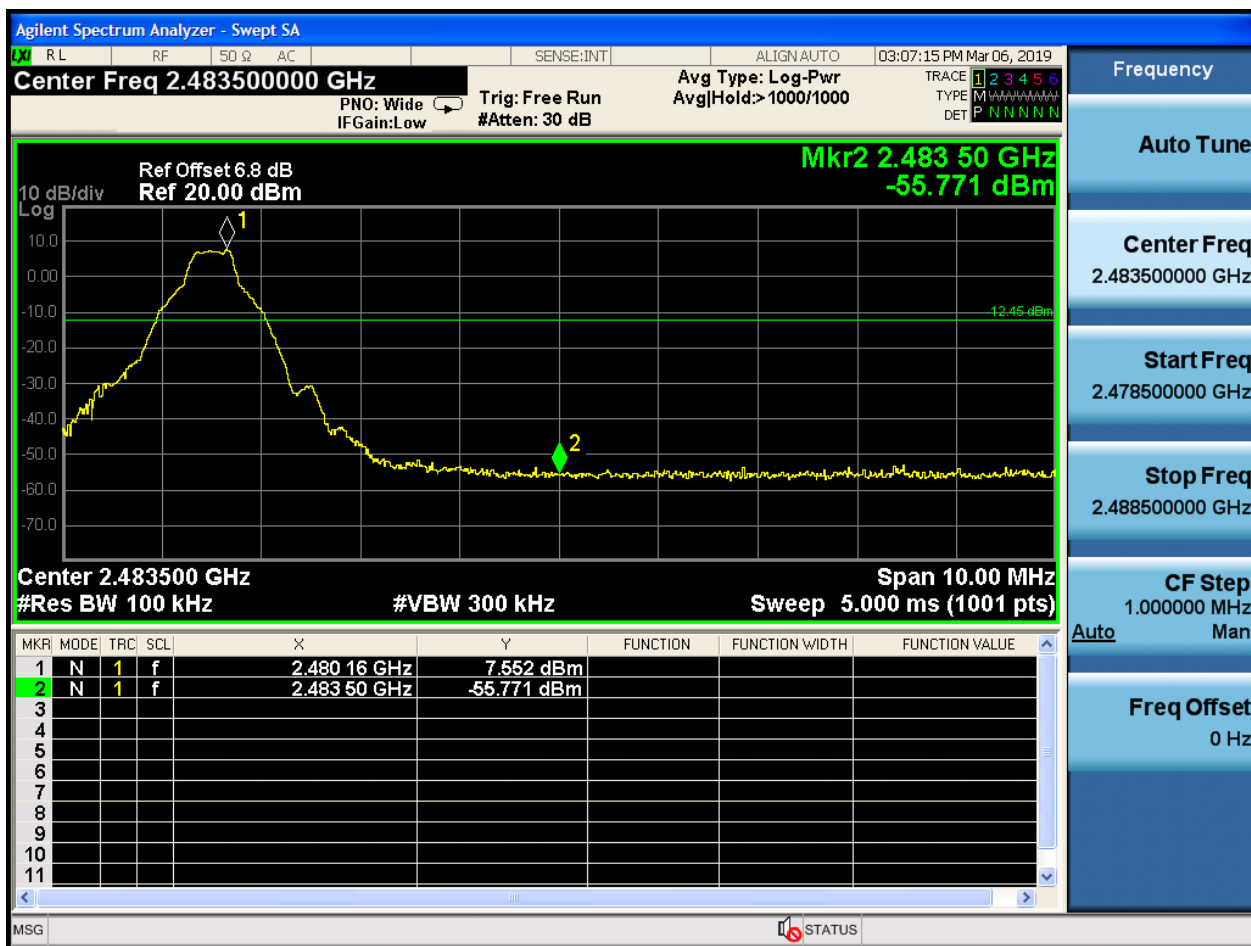


With hopping

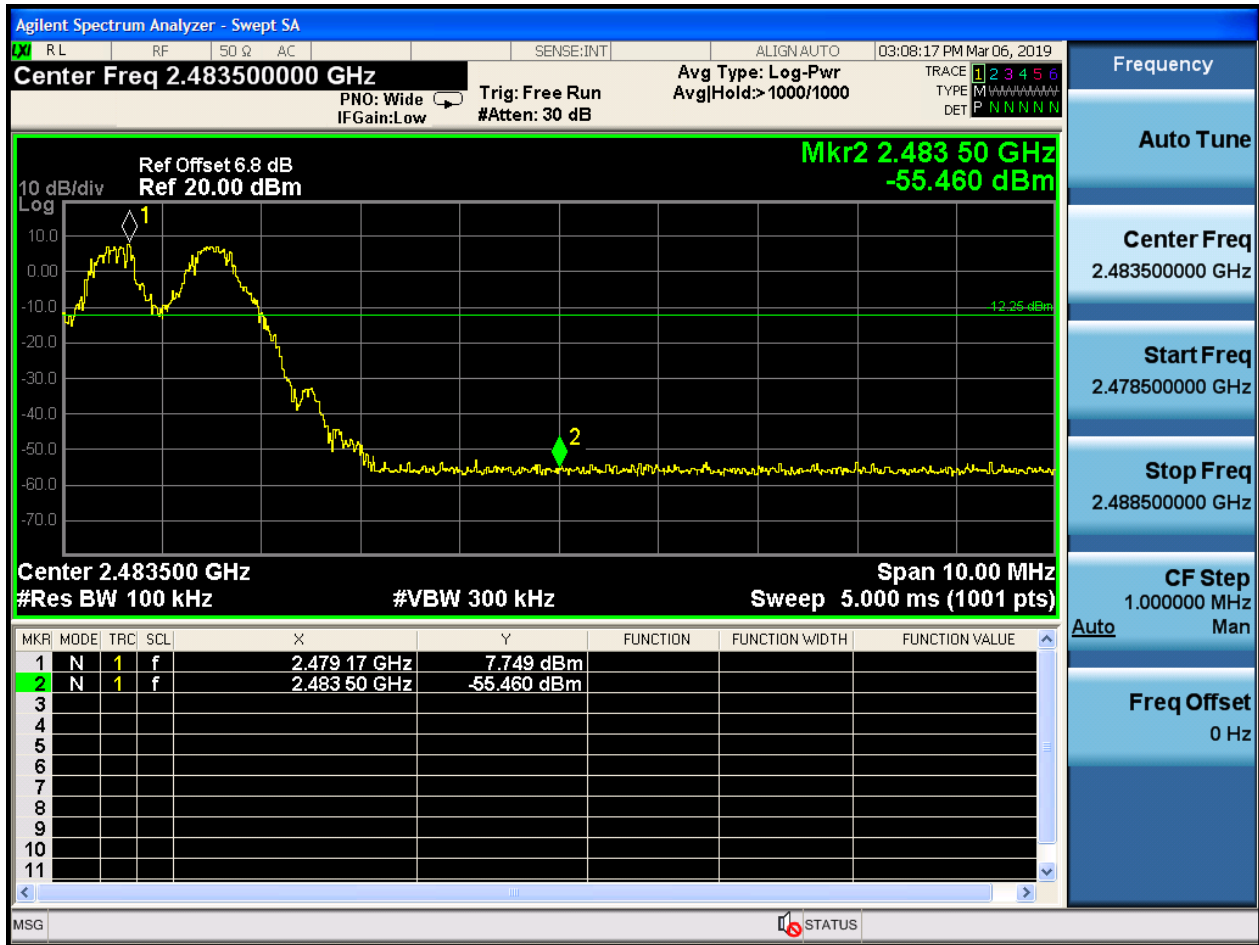


12.2 TM1_DH5_Ch78

No hopping

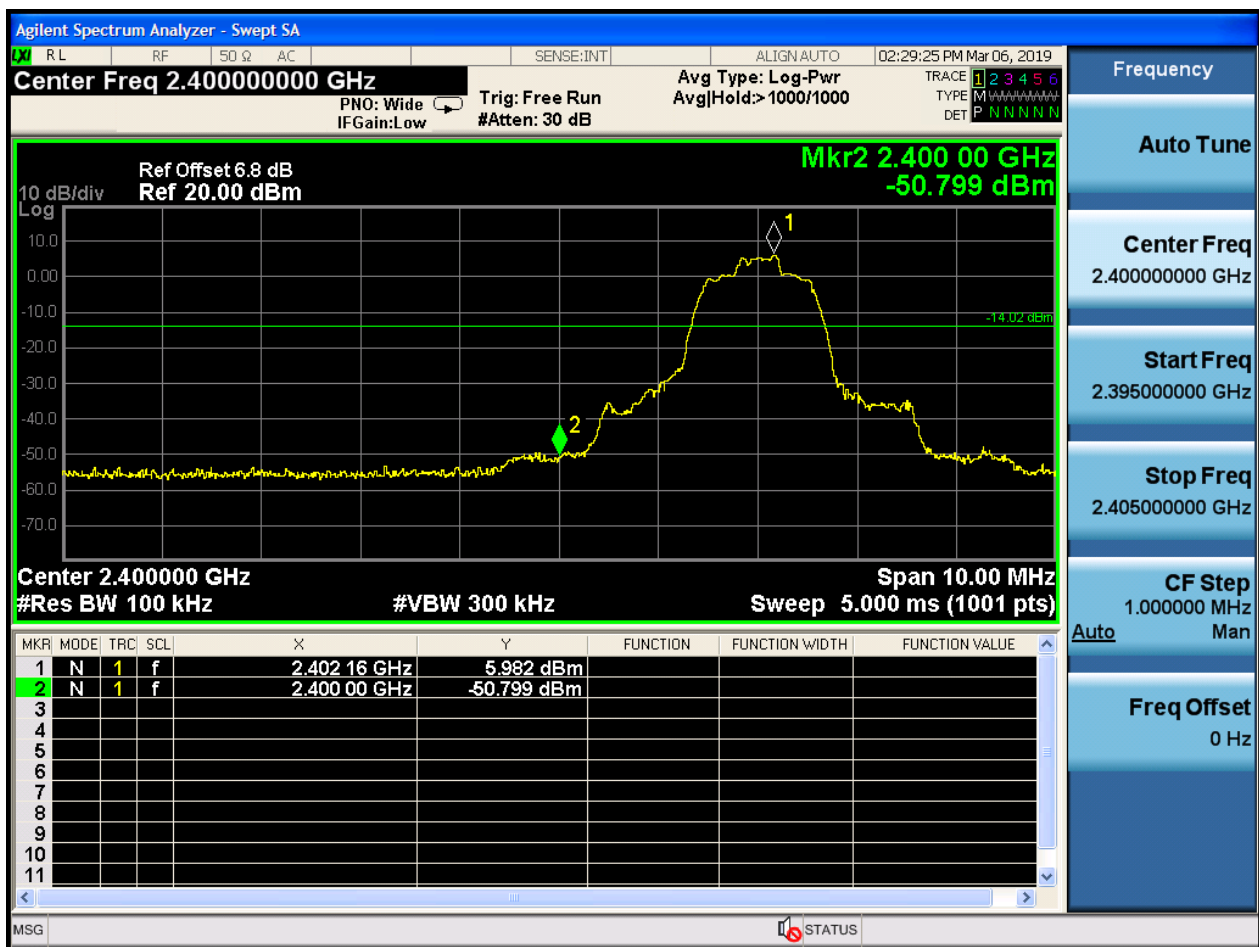


With hopping

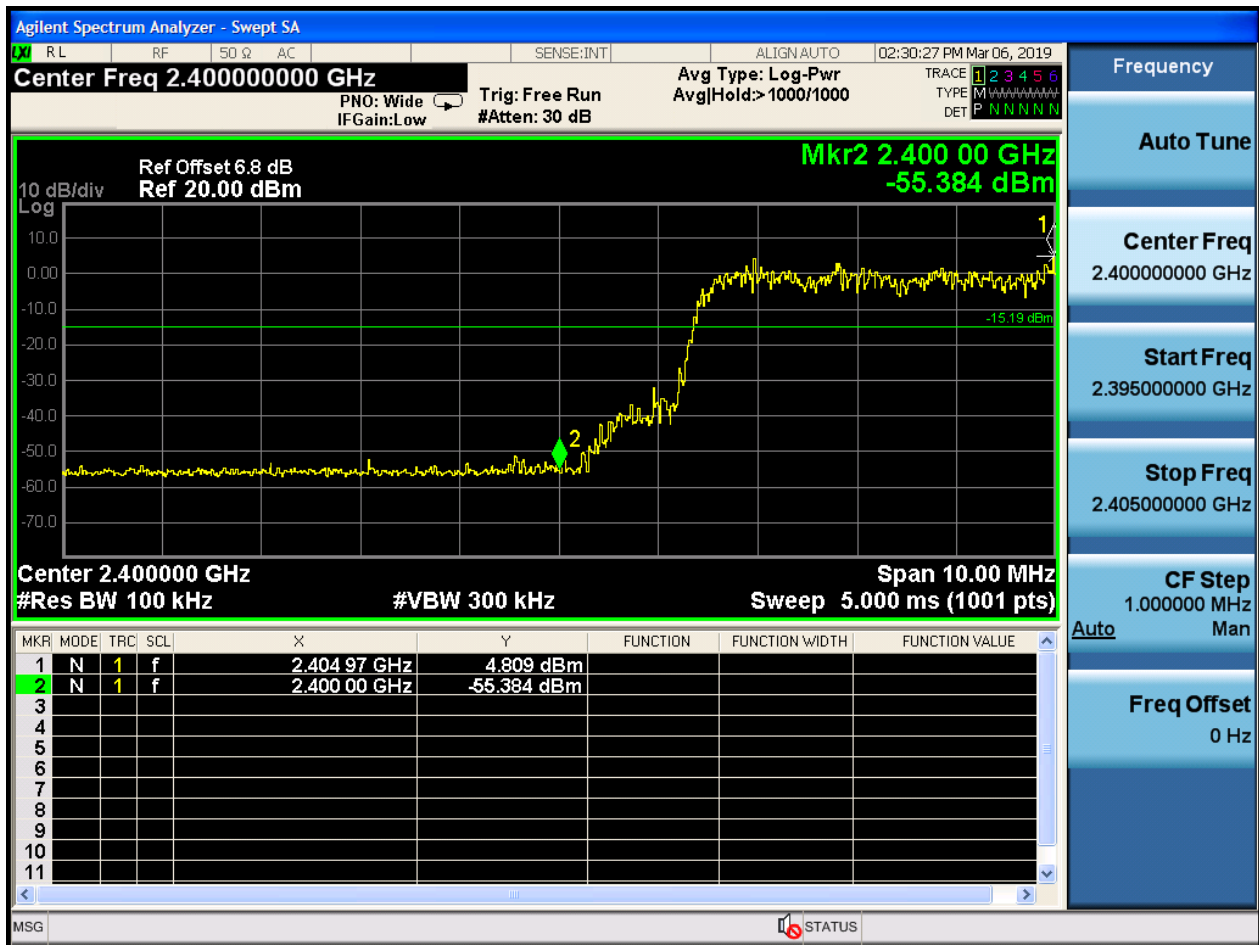


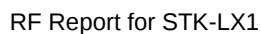
12.3 TM2_2DH5_Ch0

No hopping

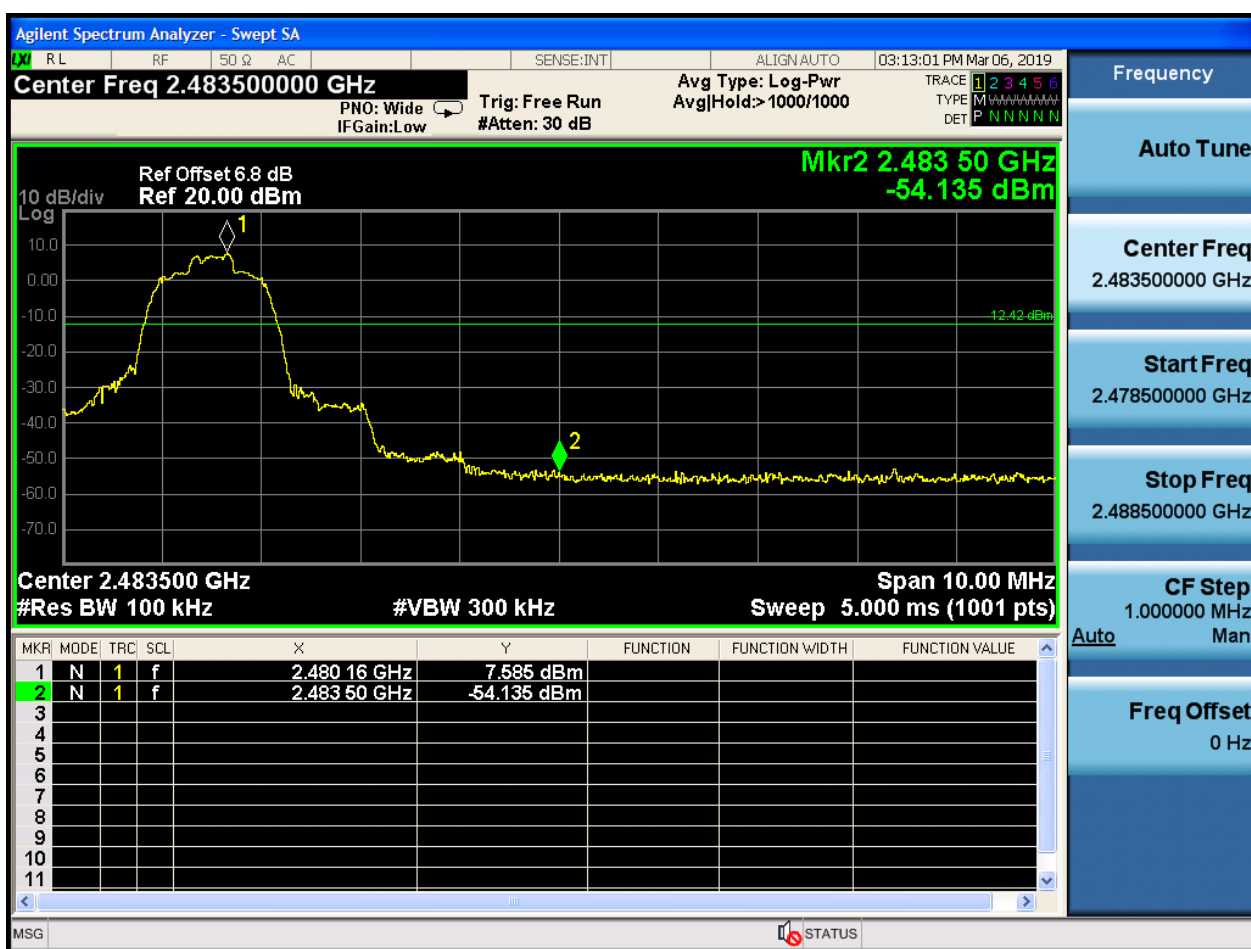


With hopping

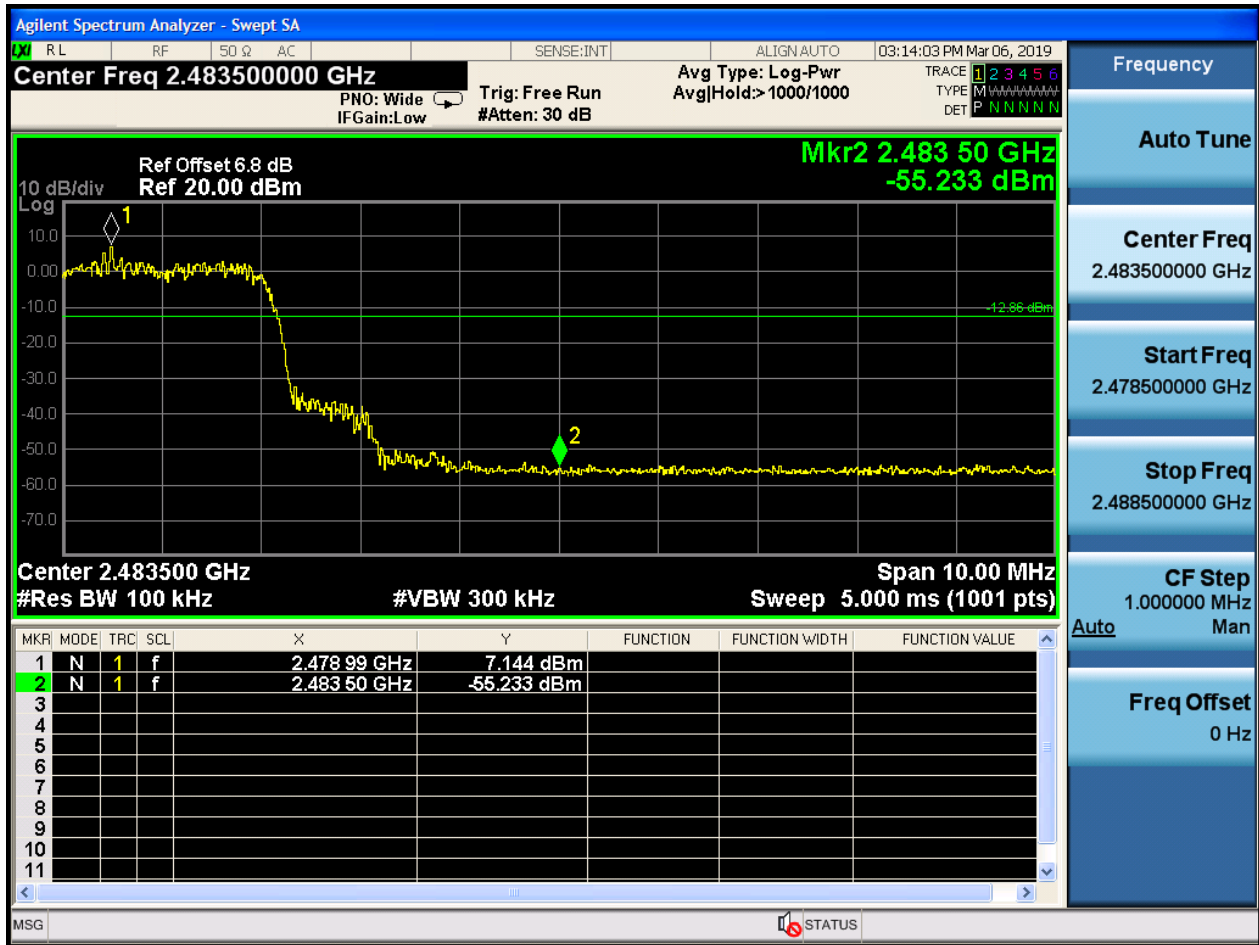




No hopping



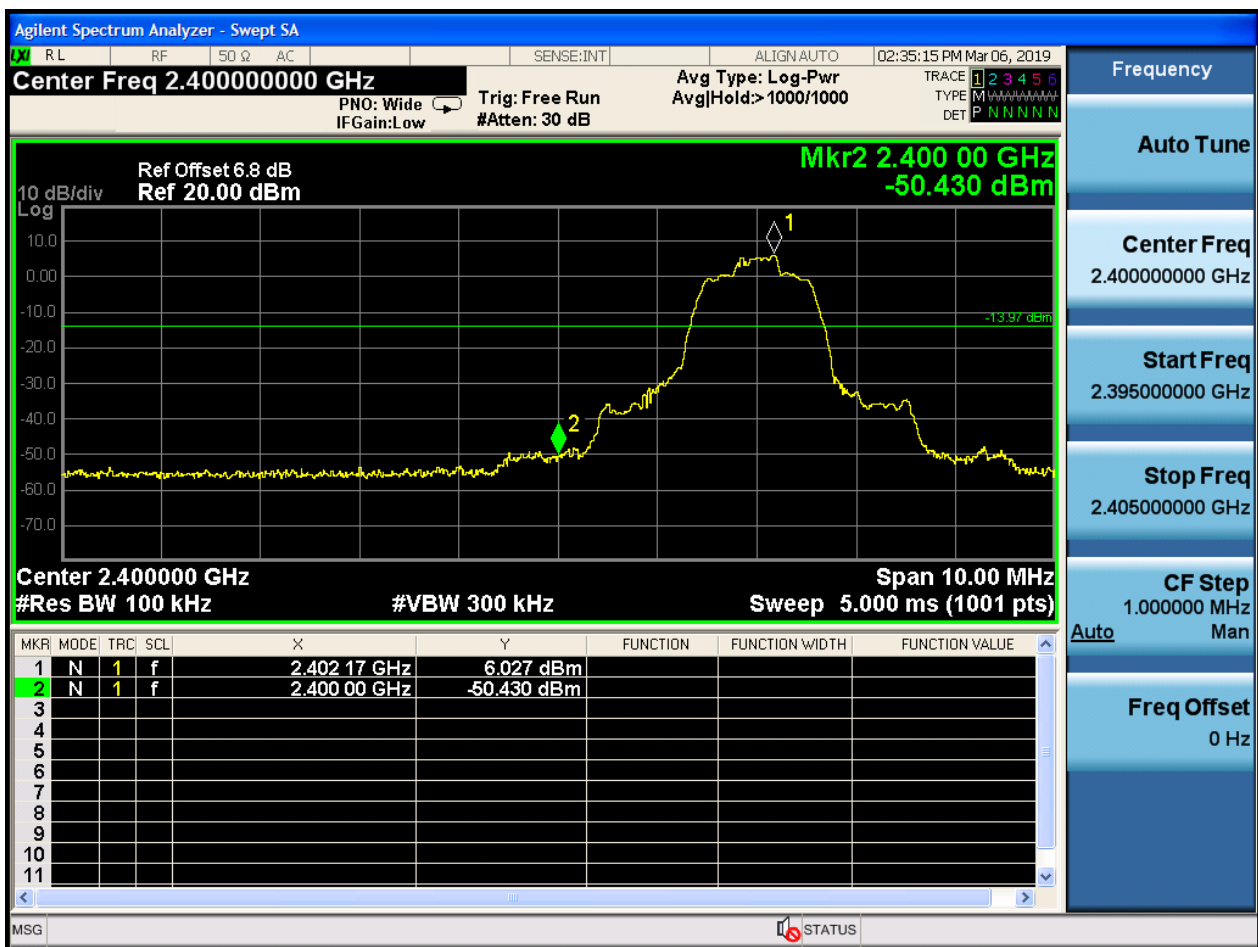
With hopping



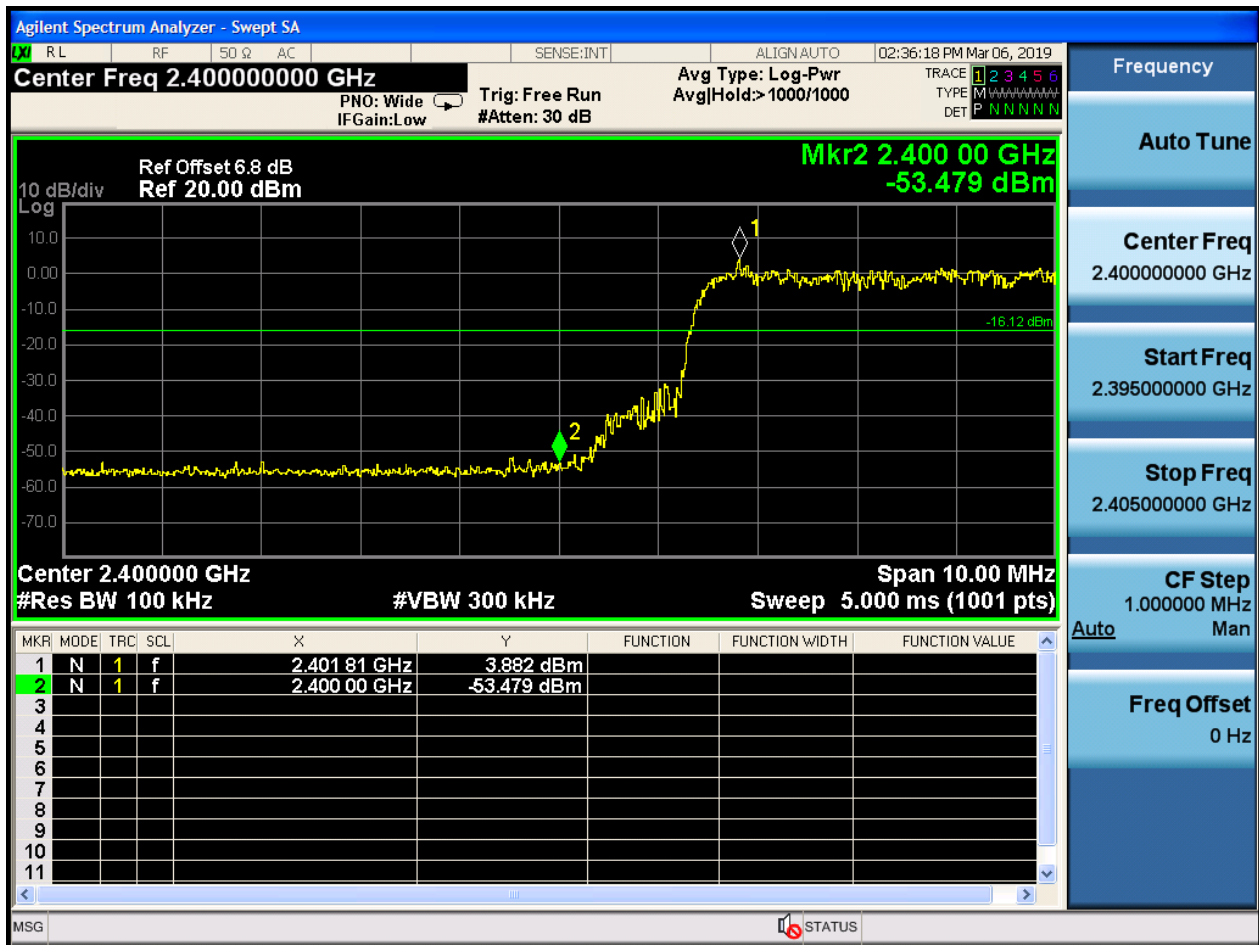


12.5 TM3_3DH5_Ch0

No hopping

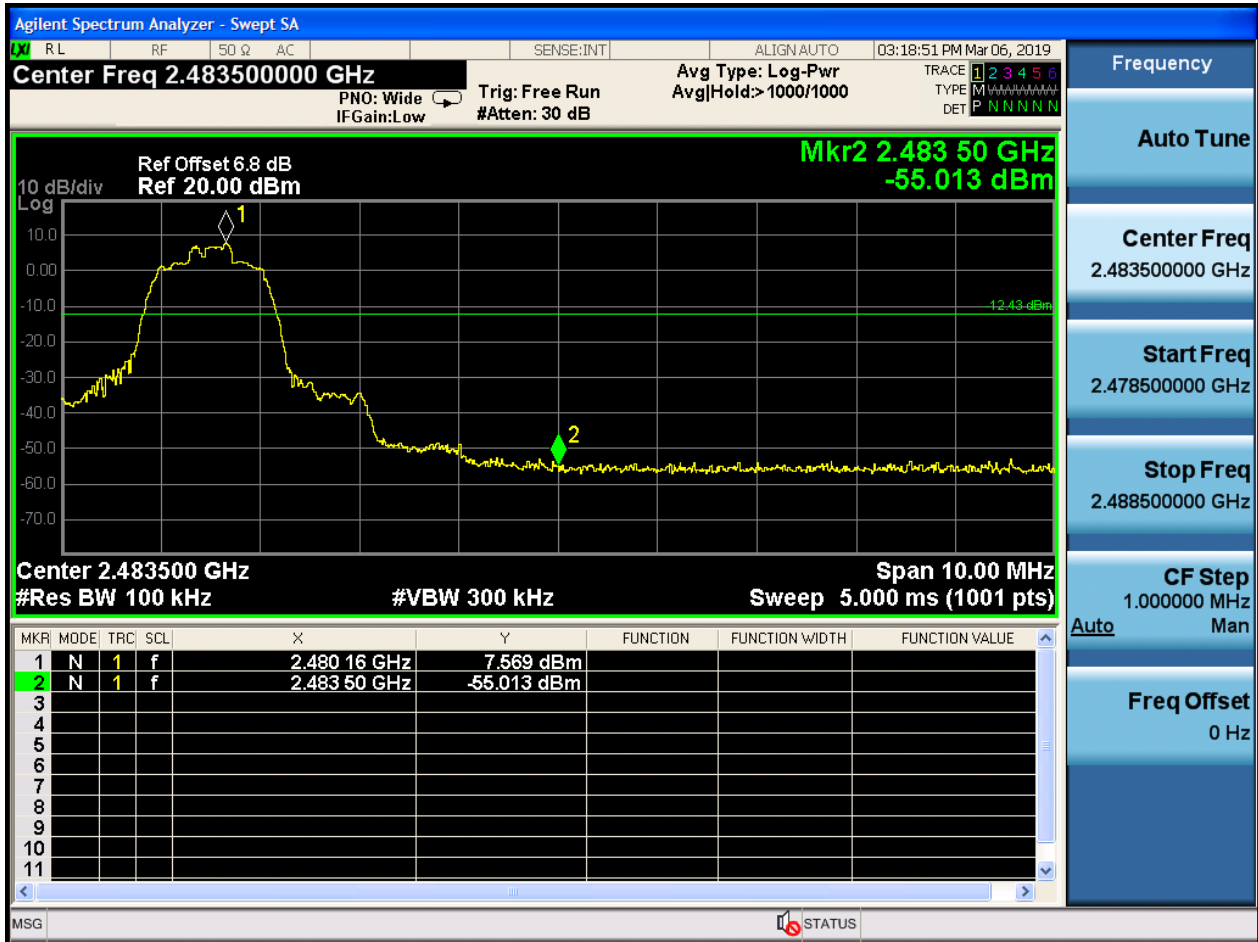


With hopping

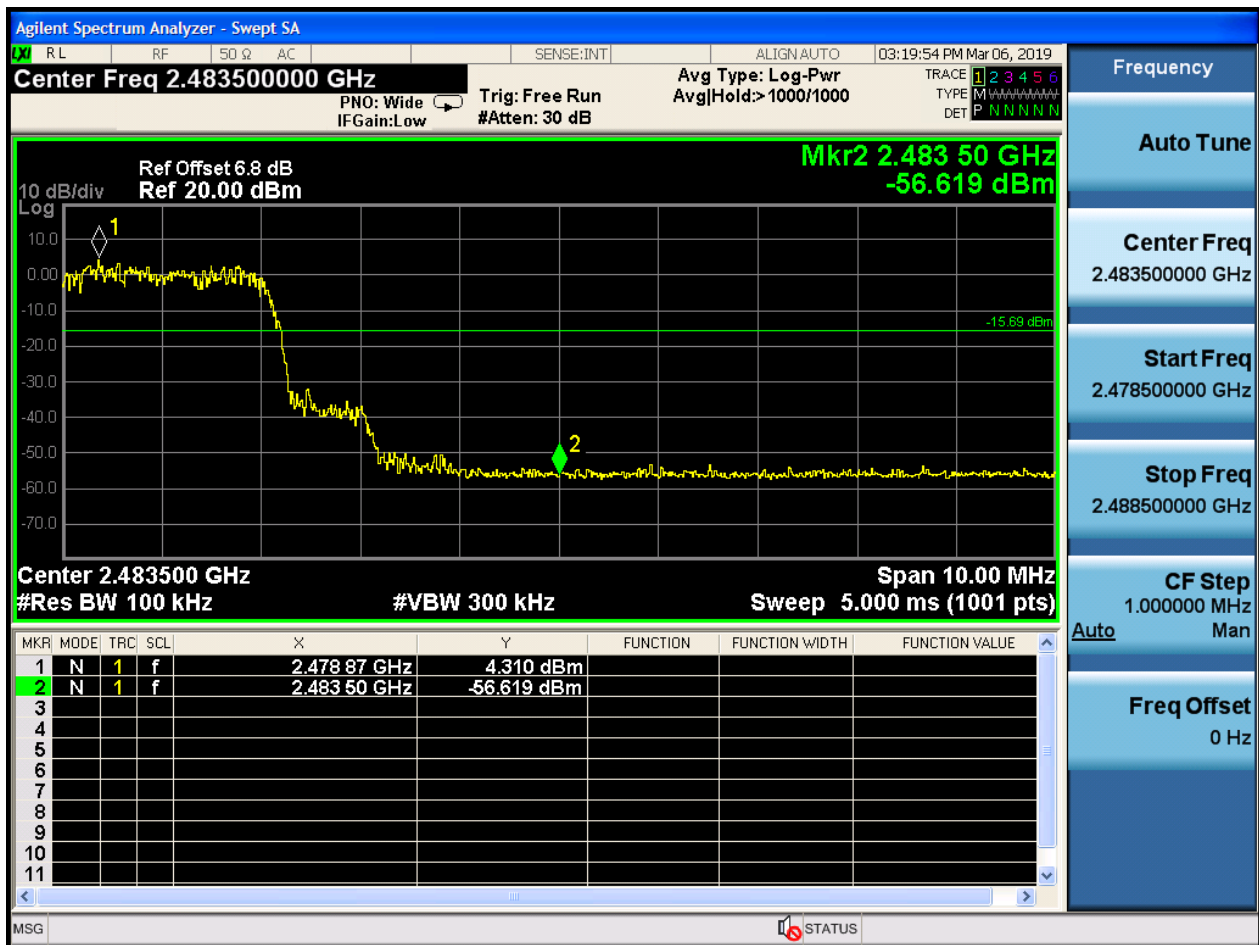


12.6 TM3_3DH5_Ch78

No hopping



With hopping



Appendix G: Conducted RF Spurious Emission

13 Result Table

In this Appendix, the “Pref” refers to the peak power level in any 100 kHz bandwidth within the fundamental emission which is used as the reference level, 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.

In the result table, the “< Limit” denotes that “The Puw [dBm] is less than Pref [dBm] - 20 [dB], see test plots for detailed”.

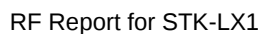
EUT Conf.	Pref [dBm/100 kHz]	Puw	Verdict
TM1_DH5_Ch0	6.008	< Limit	Pass
TM1_DH5_Ch39	6.783	< Limit	Pass
TM1_DH5_Ch78	7.575	< Limit	Pass
TM2_2DH5_Ch0	5.995	< Limit	Pass
TM2_2DH5_Ch39	6.825	< Limit	Pass
TM2_2DH5_Ch78	7.595	< Limit	Pass
TM3_3DH5_Ch0	6.051	< Limit	Pass
TM3_3DH5_Ch39	6.853	< Limit	Pass
TM3_3DH5_Ch78	7.601	< Limit	Pass

14 Test Plot

14.1 TM1_DH5_Ch0

14.1.1 Pref





Agilent Spectrum Analyzer - Swept SA

Center Freq 79.500 kHz

Ref Offset 7 dB
Ref 20.00 dBm

10 dB/div
Log

Start 9.00 kHz
#Res BW 1.0 kHz

Stop 150.00 kHz
Sweep 134.8 ms (1000 pts)

#VBW 3.0 kHz

Mkr1 9.00 kHz
-72.509 dBm

-33.99 dBm

Frequency

Auto Tune

Center Freq
79.500 kHz

Start Freq
9.000 kHz

Stop Freq
150.000 kHz

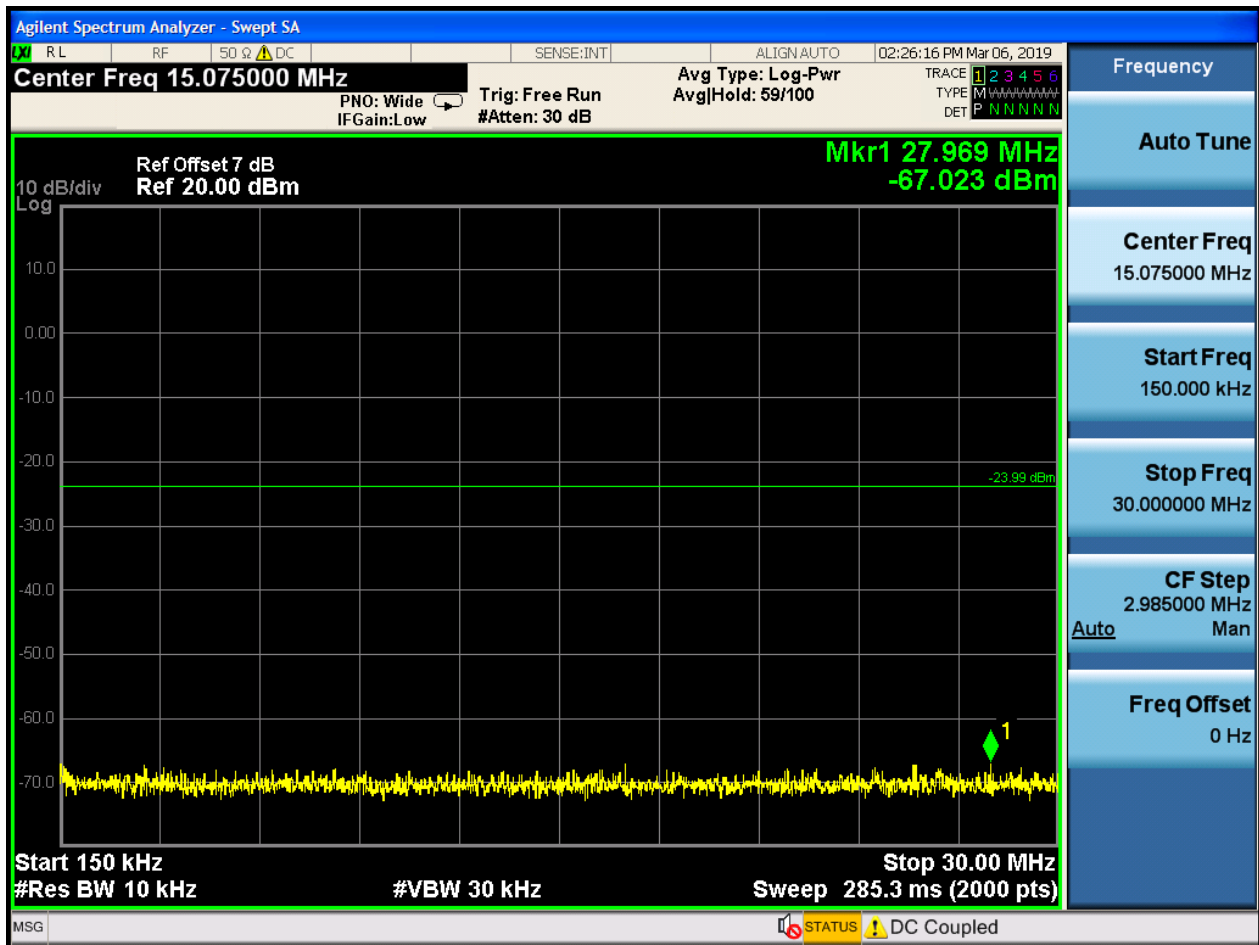
CF Step
14.100 kHz
Man

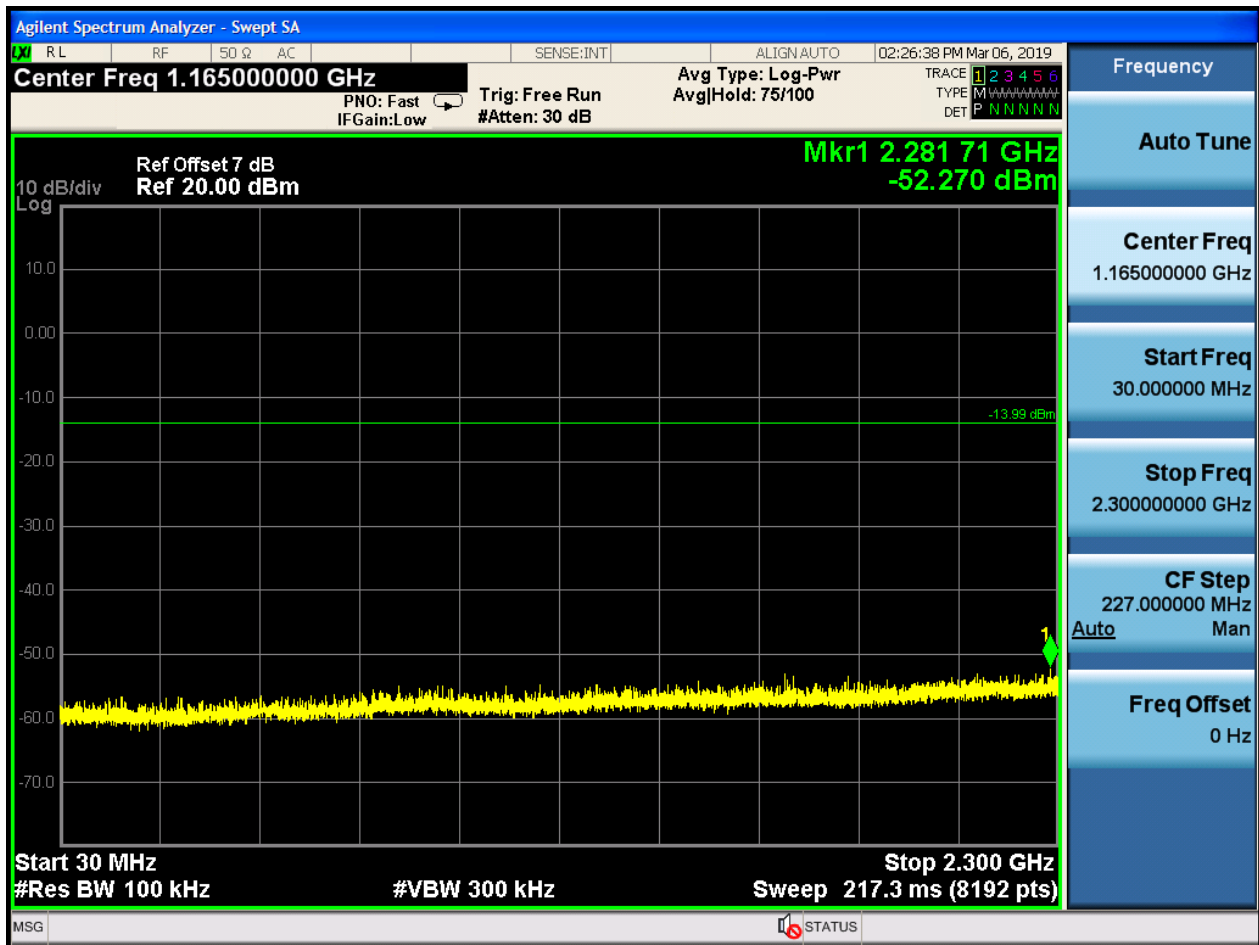
Freq Offset
0 Hz

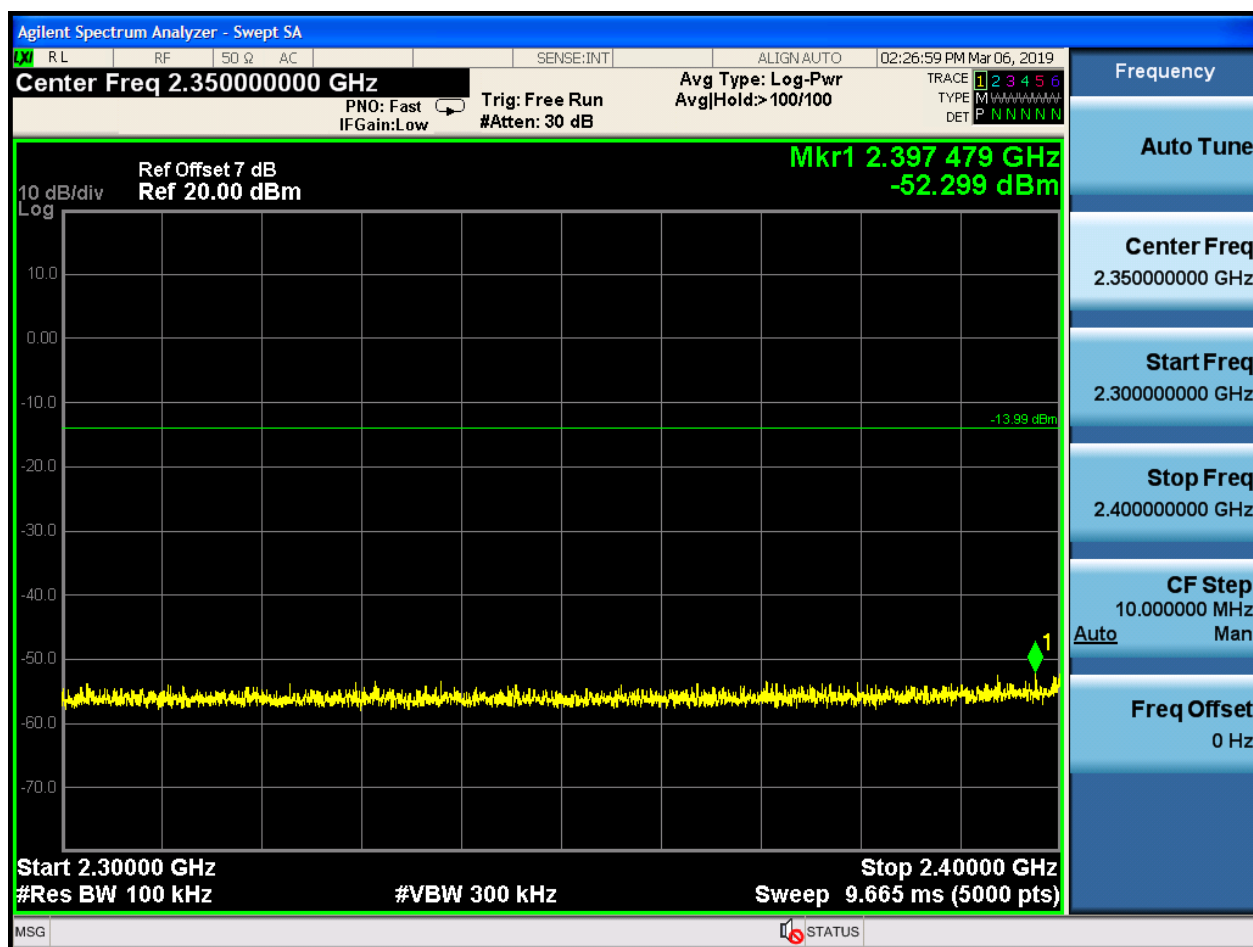
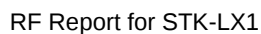
MSG

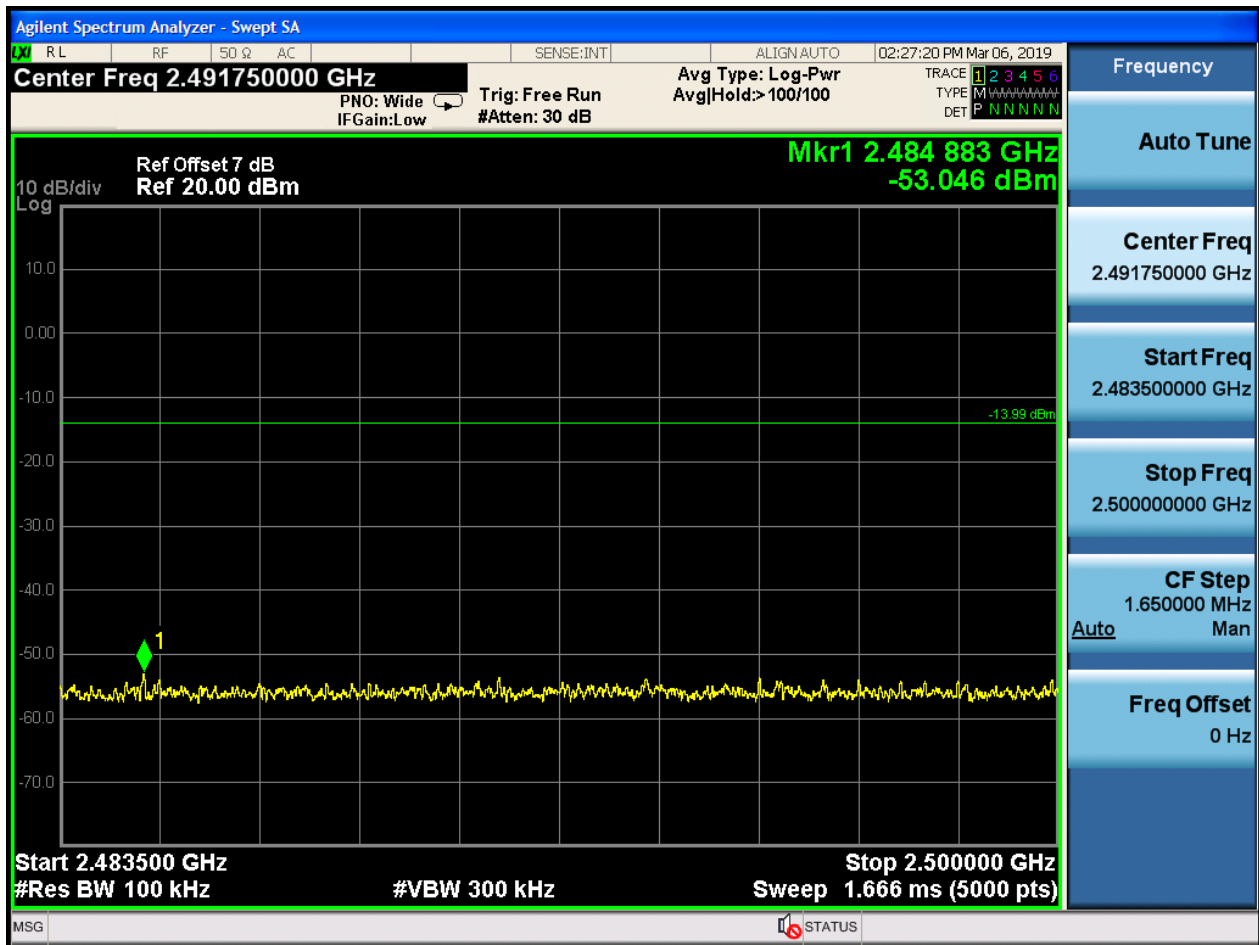
STATUS

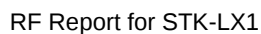
DC Coupled





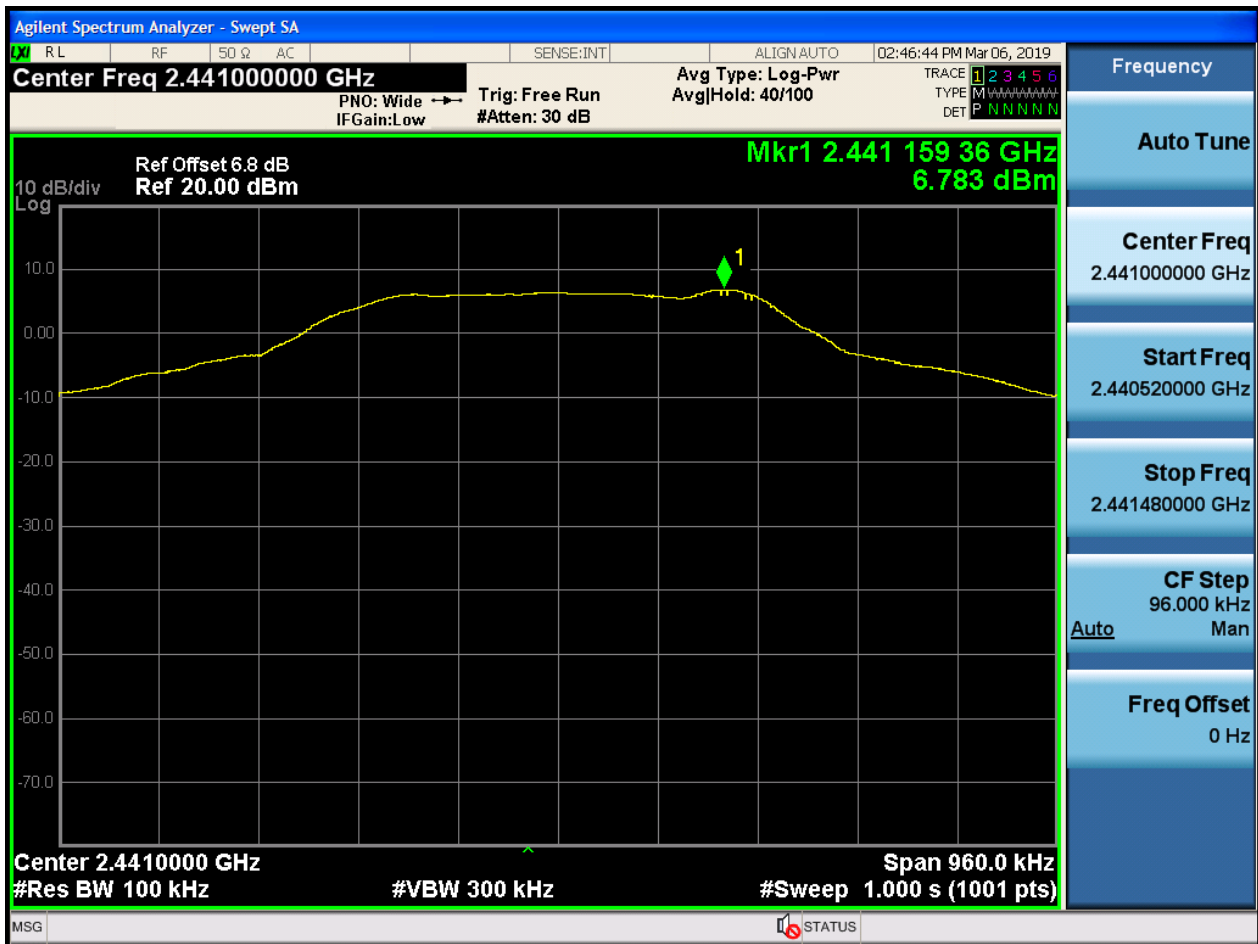


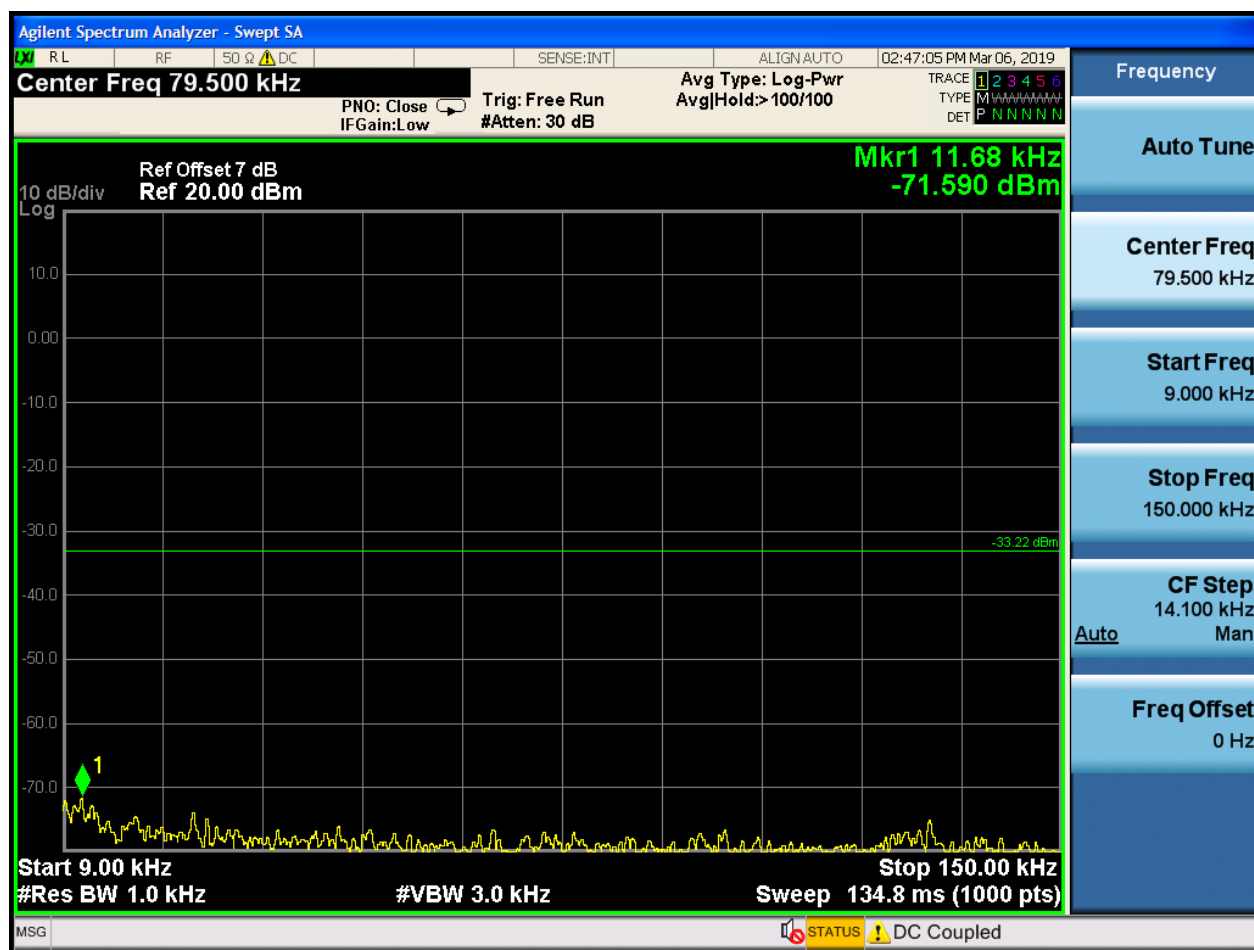
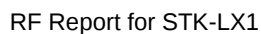


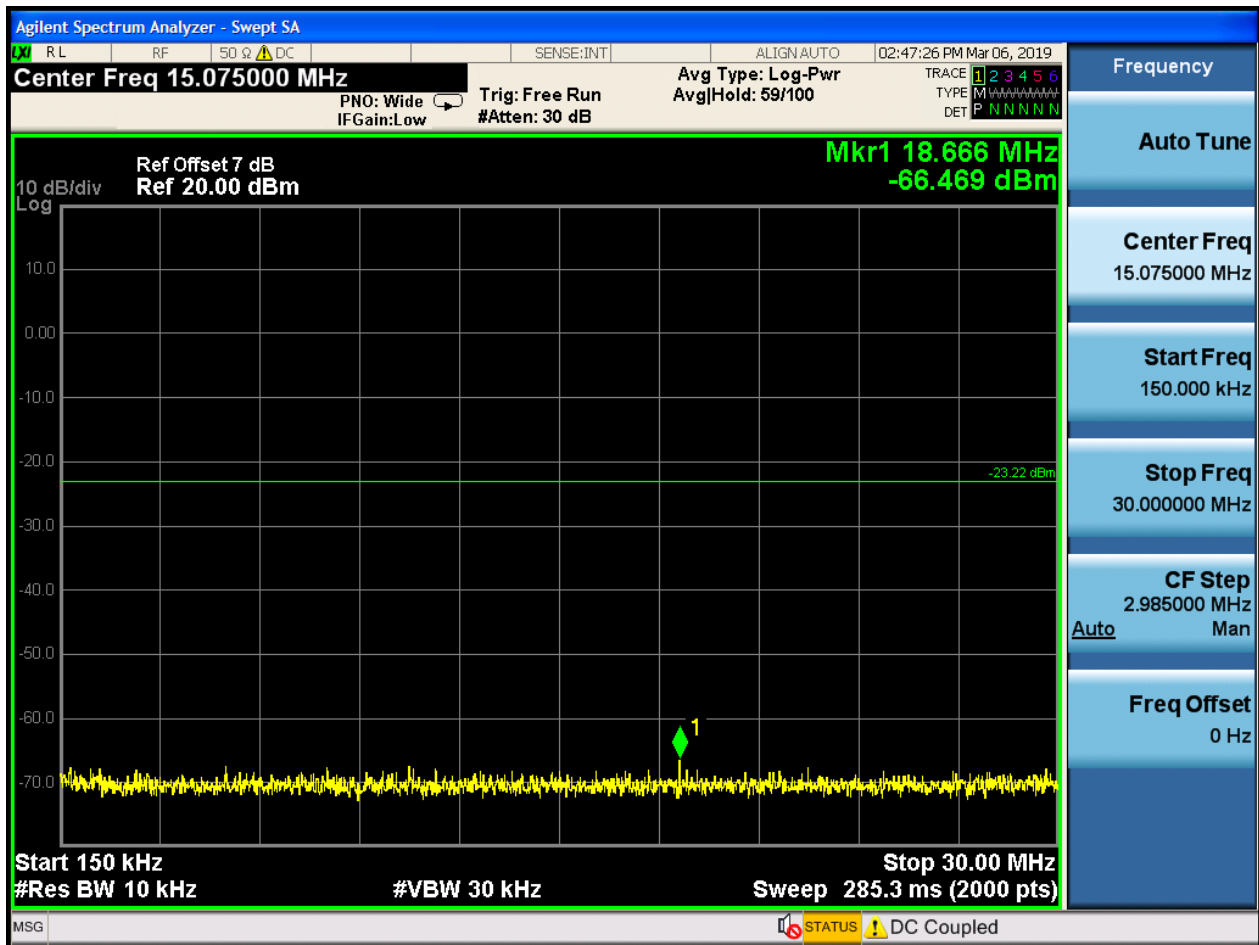


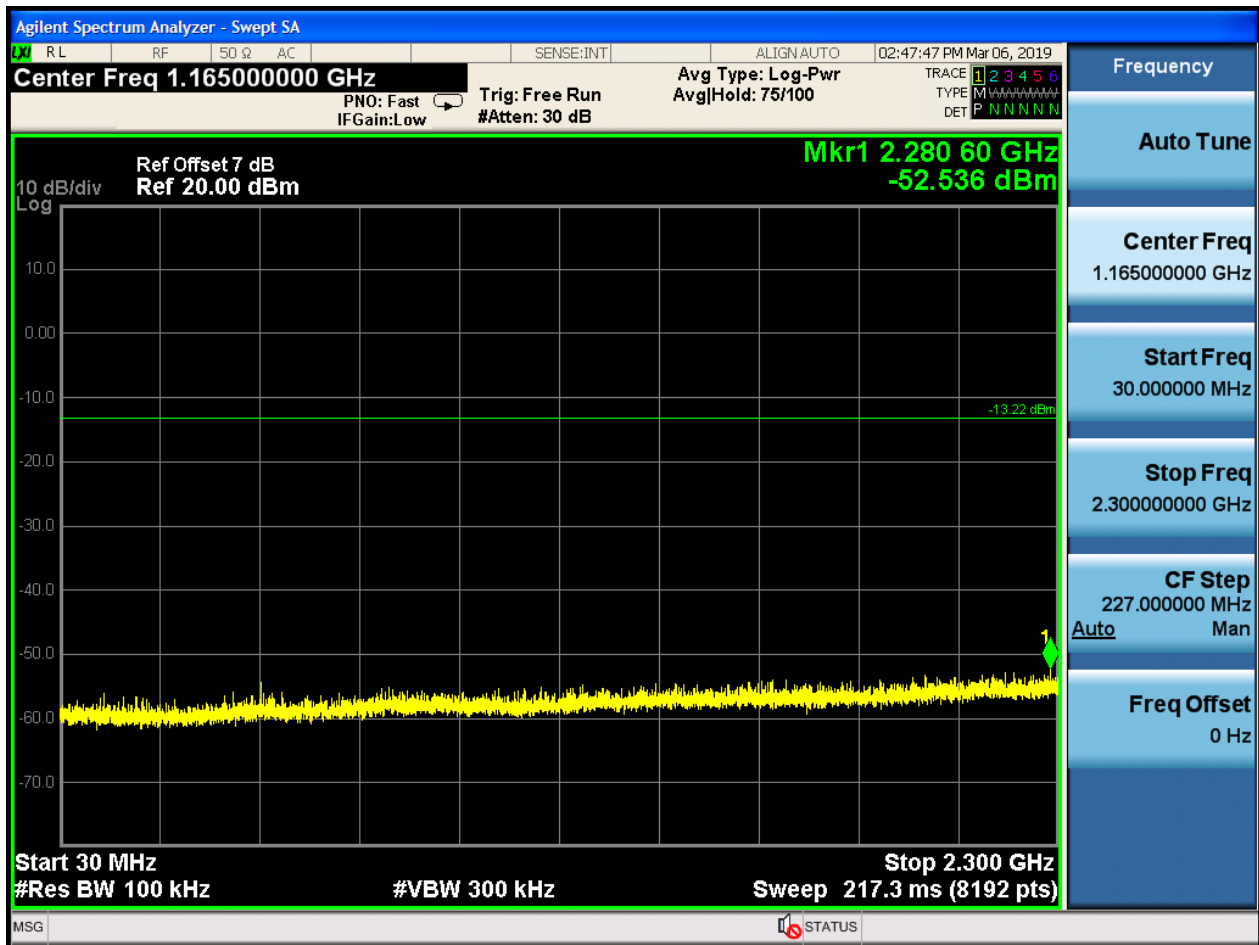
14.2 TM1_DH5_Ch39

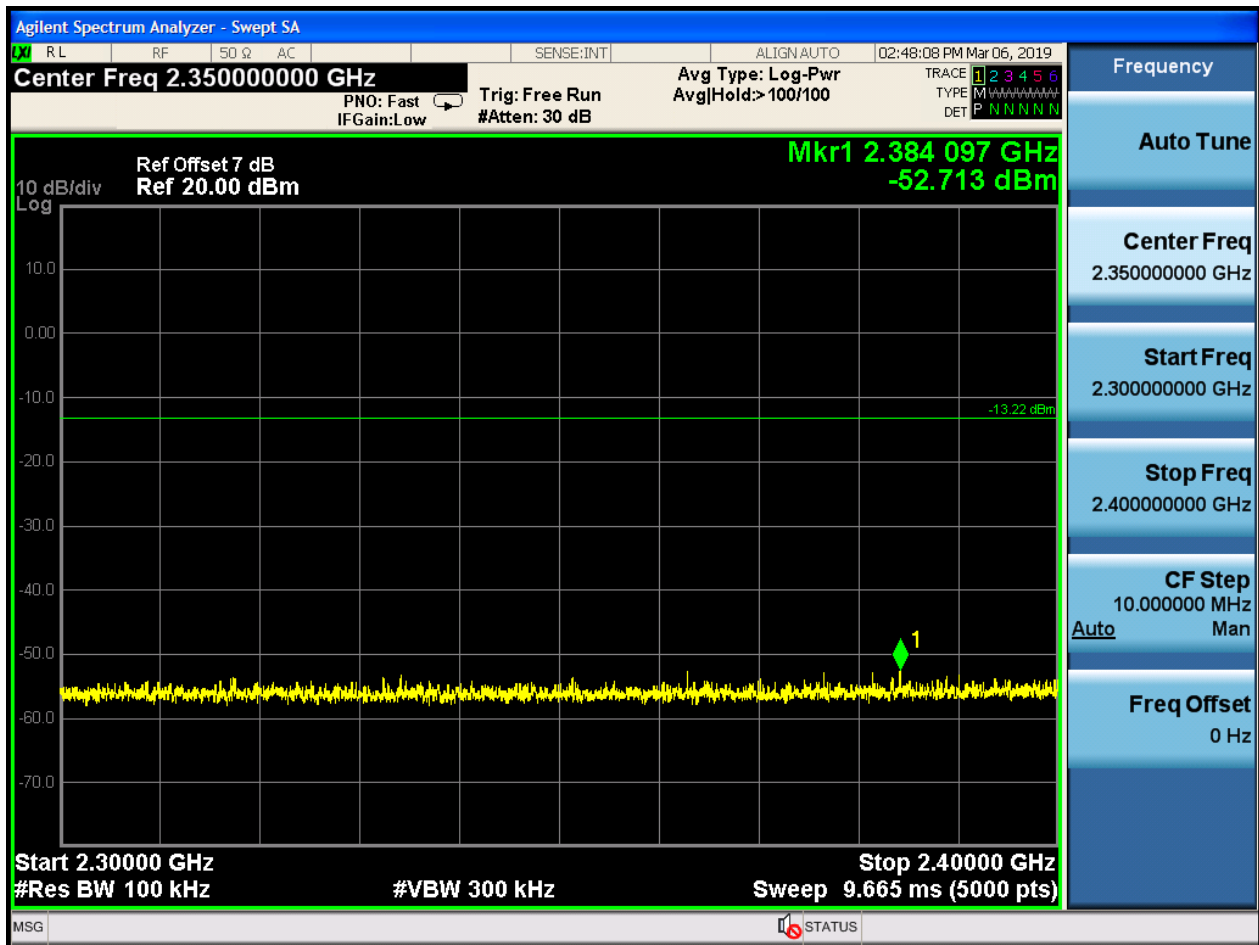
14.2.1 Pref

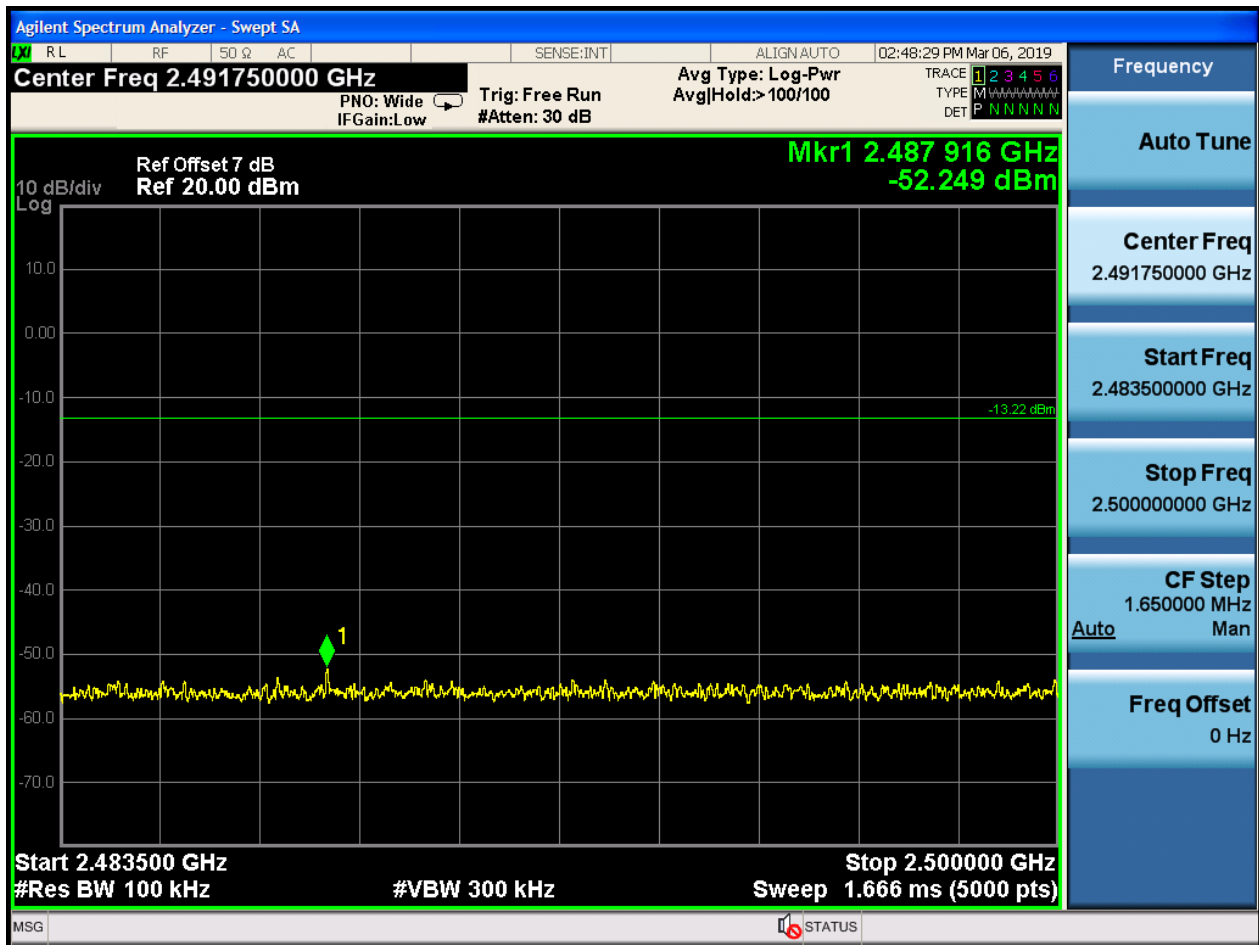








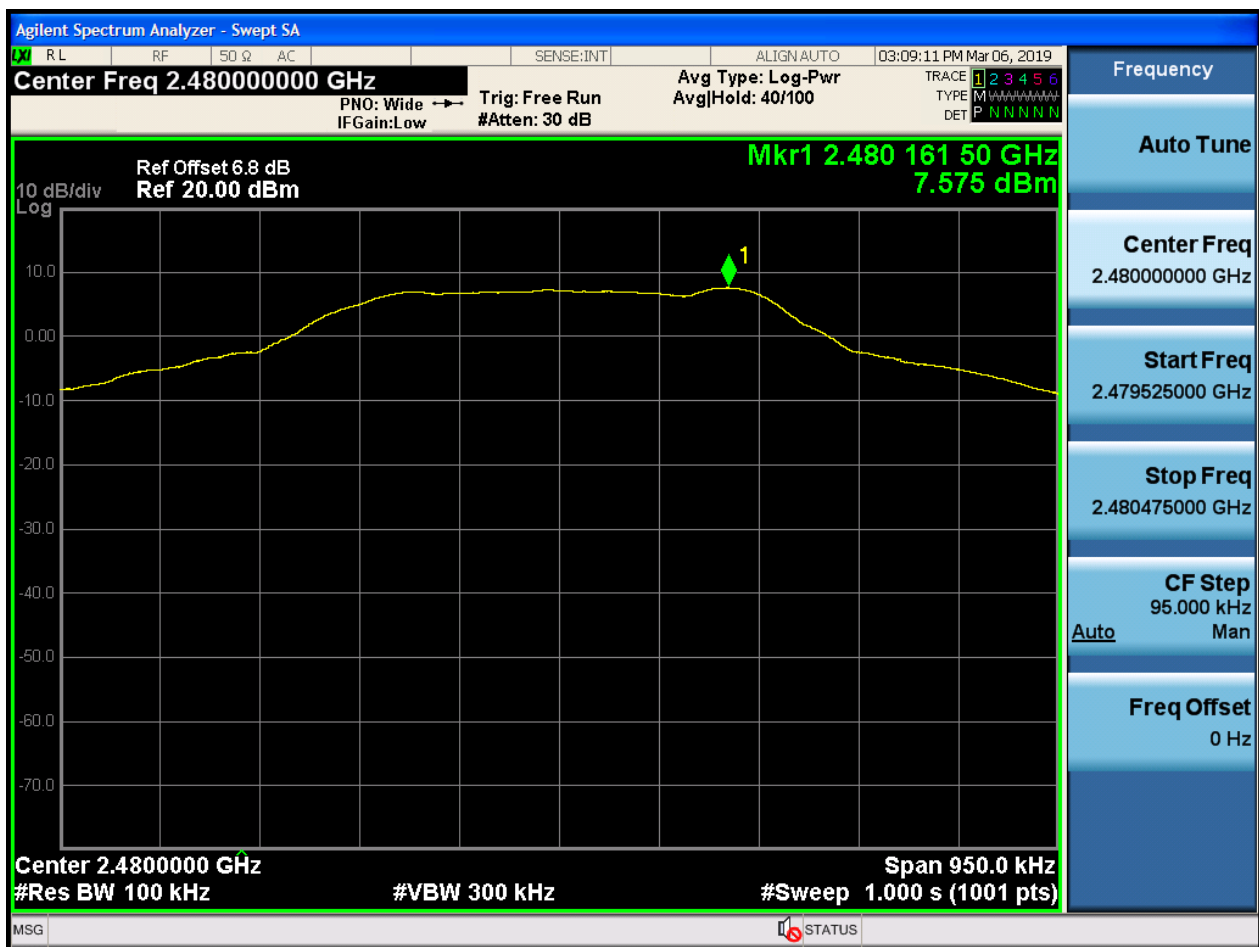


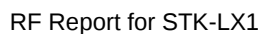




14.3 TM1_DH5_Ch78

14.3.1 Pref





Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω Δ DC SENSE:INT ALIGN: AUTO 03:09:32 PM Mar 06, 2019

Center Freq 79.500 kHz PNO: Close Trig: Free Run Avg Type: Log-Pwr Avg|Hold:>100/100

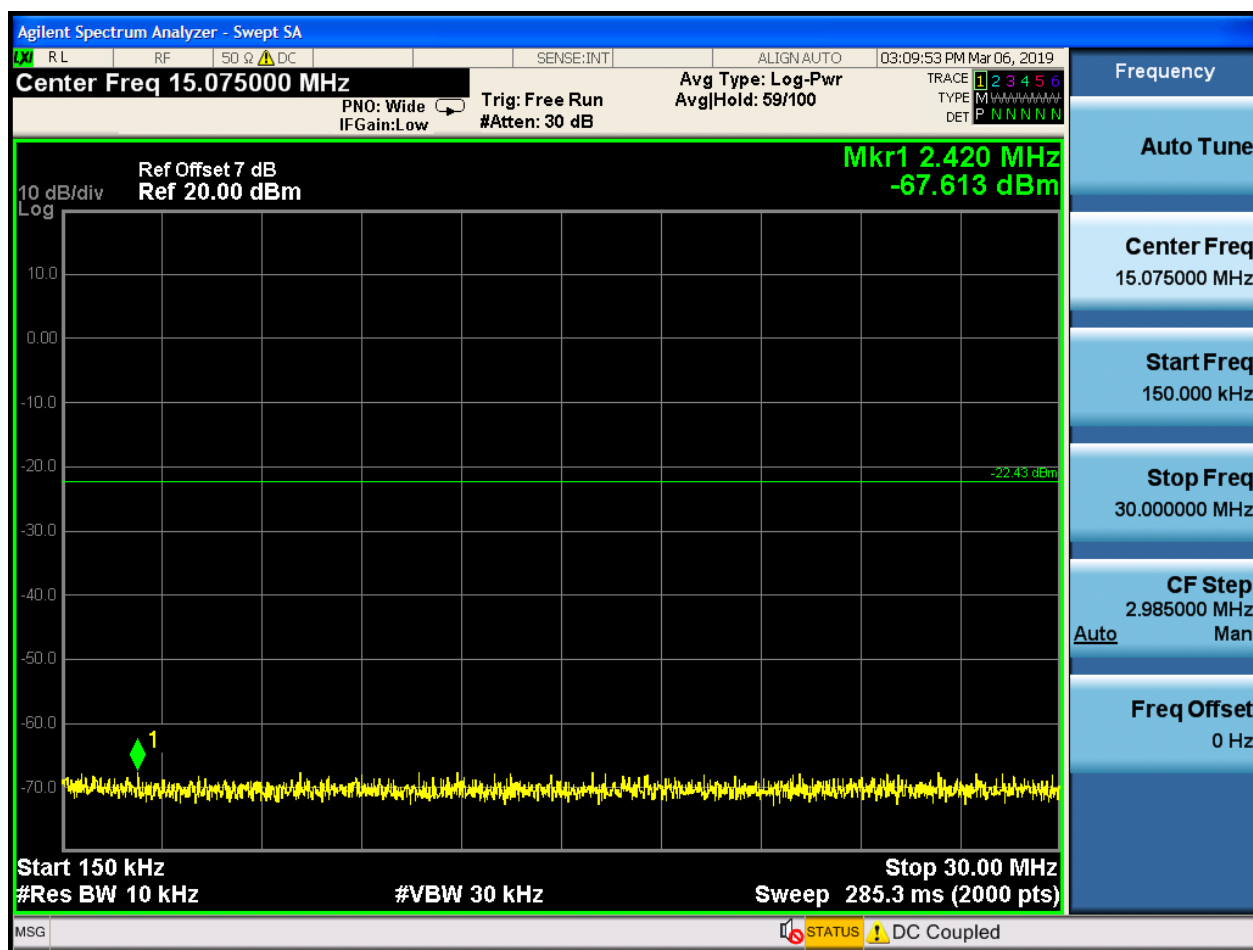
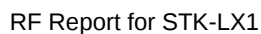
IFGain:Low #Atten: 30 dB TRACE 1 2 3 4 5 6 TYPE M P N N N N N N DET P N N N N N N

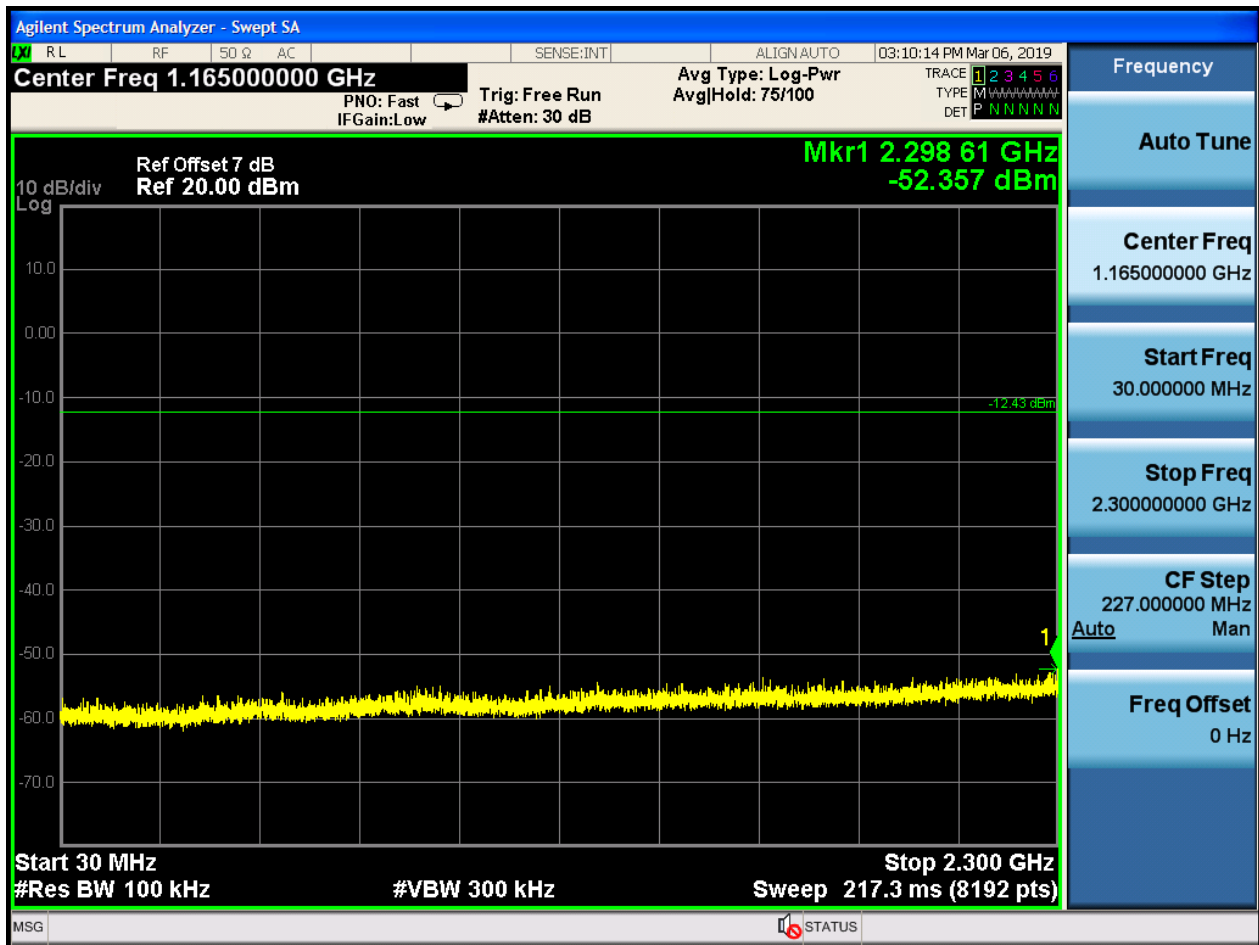
Ref Offset 7 dB Mkr1 12.25 kHz
Ref 20.00 dBm -73.071 dBm

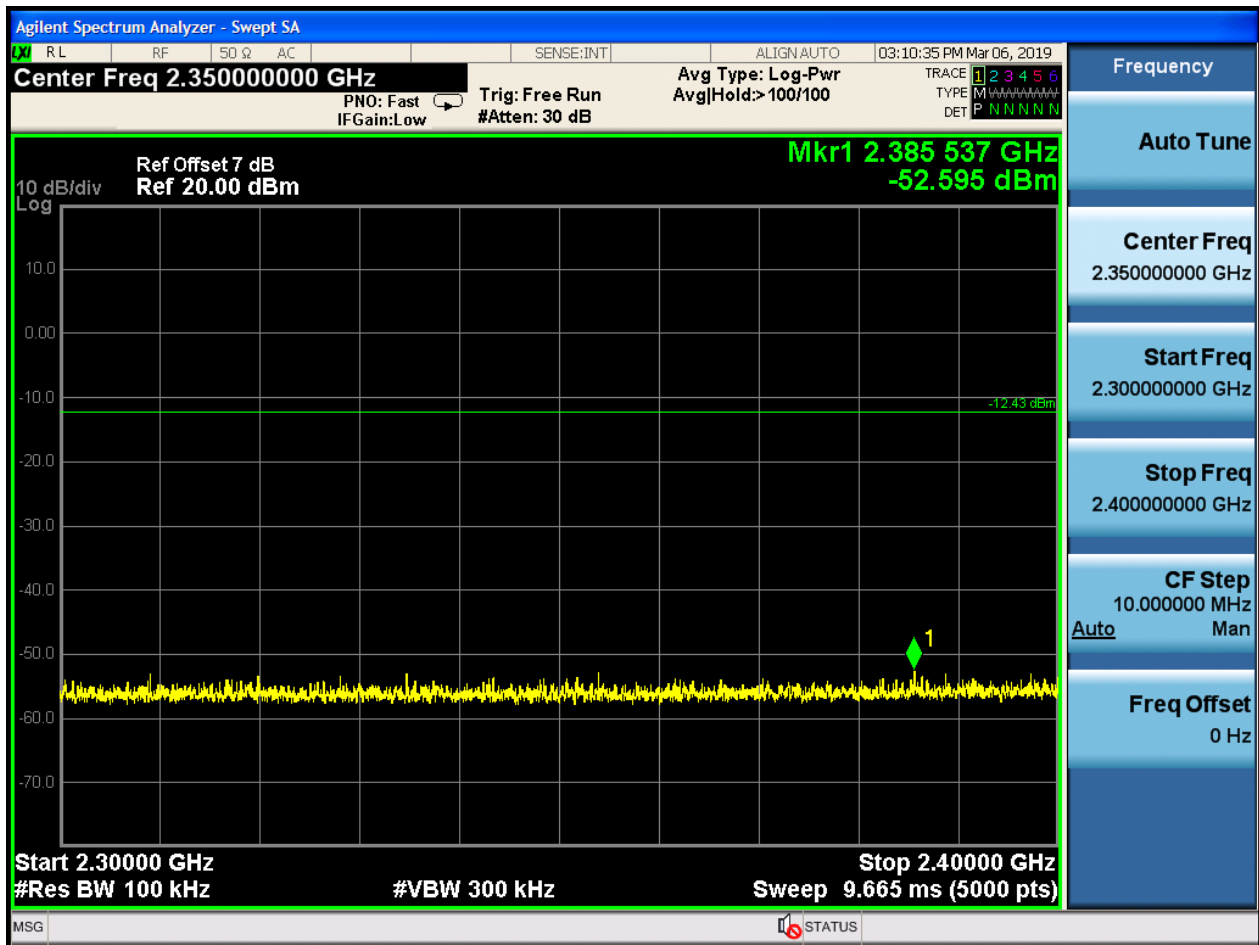
10 dB/div Log

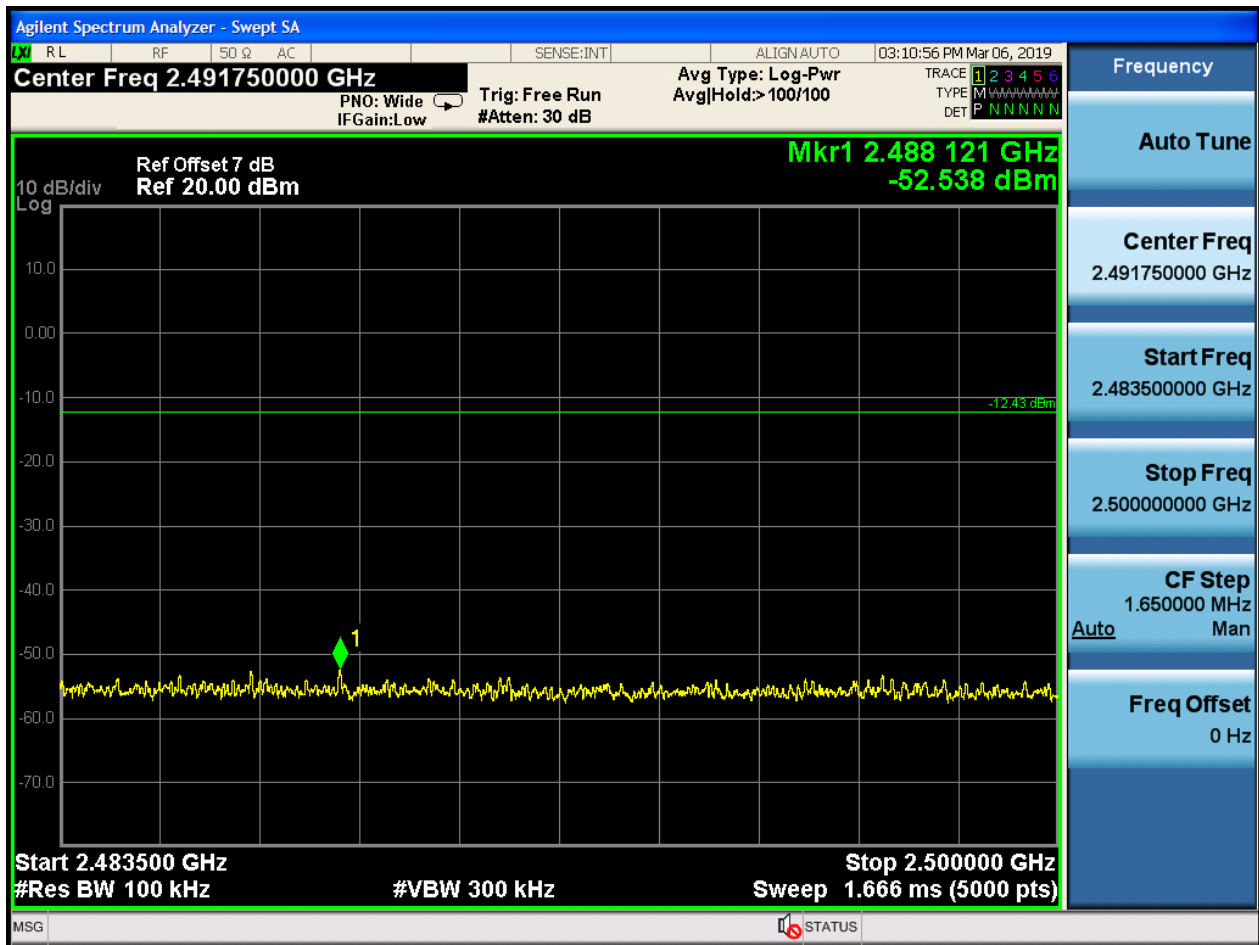
Start 9.00 kHz Stop 150.00 kHz
#Res BW 1.0 kHz #VBW 3.0 kHz Sweep 134.8 ms (1000 pts)

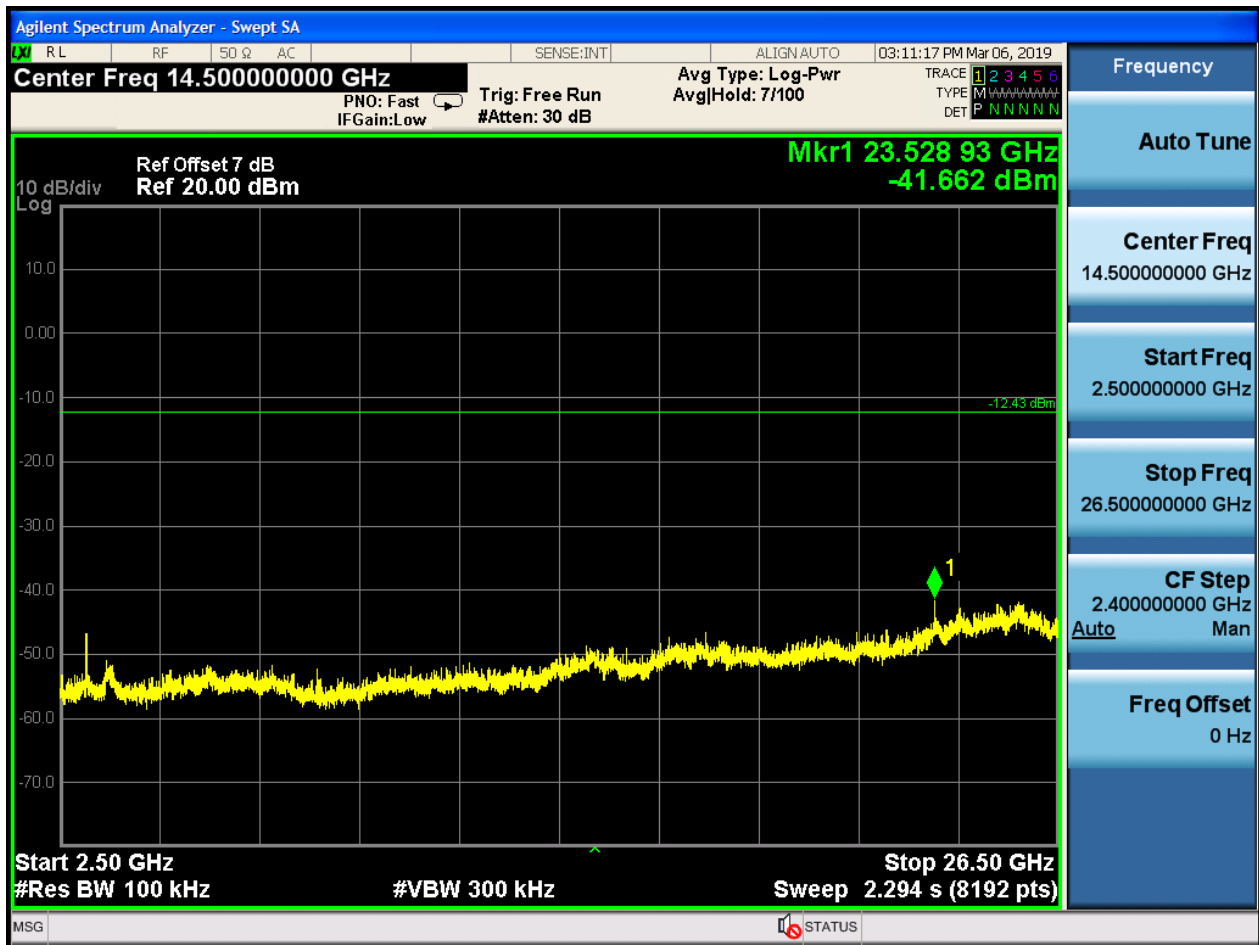
MSG STATUS DC Coupled









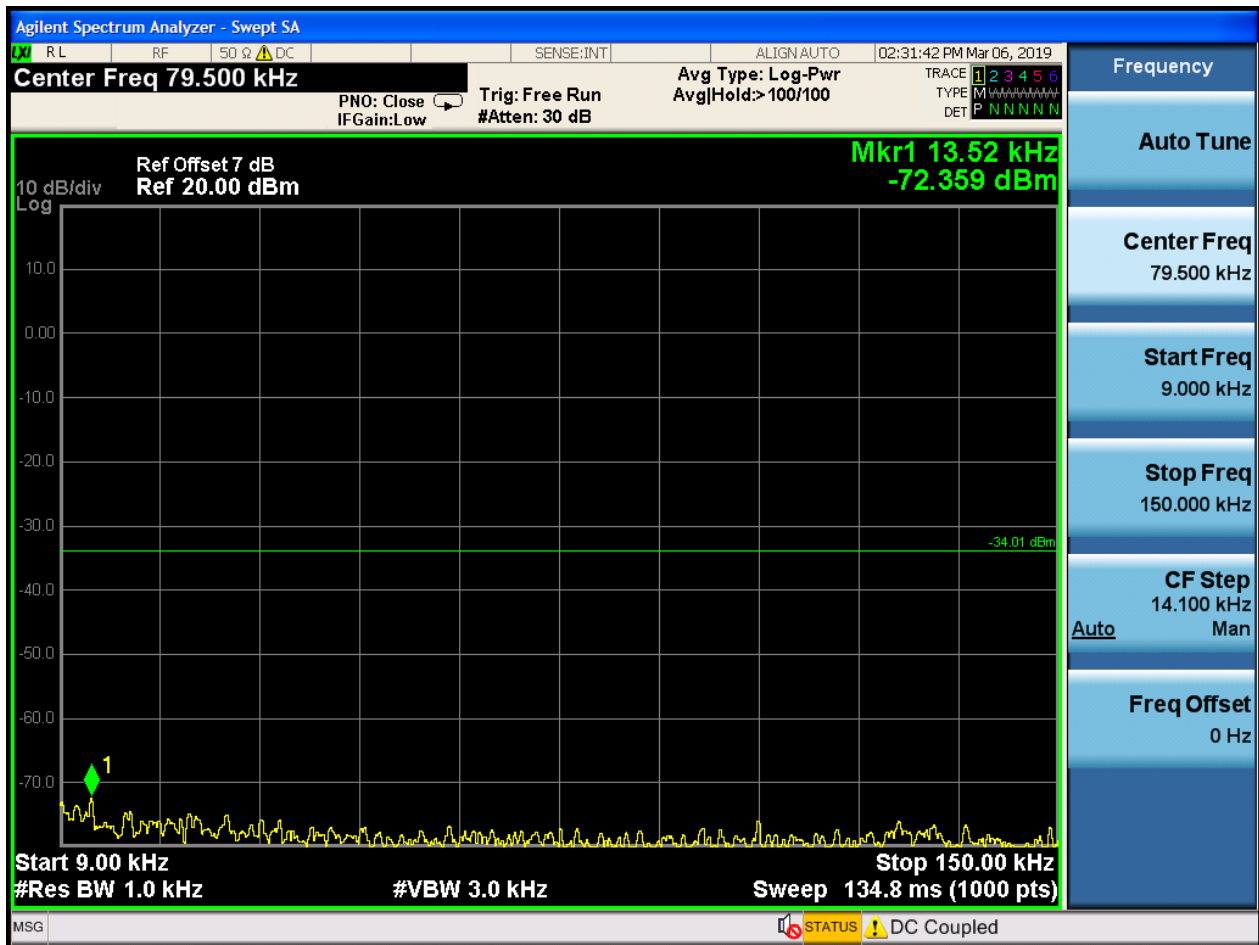


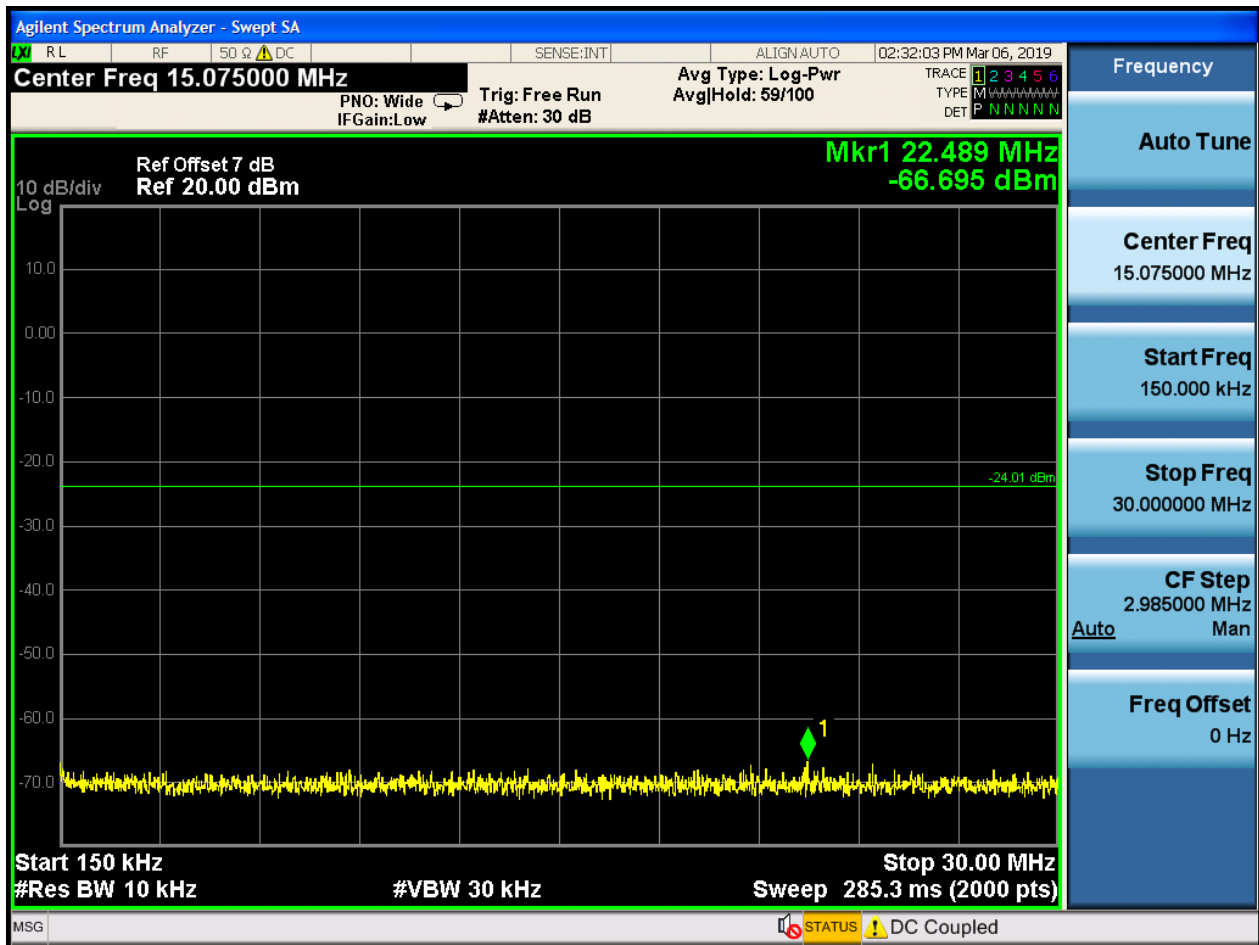
14.4 TM2_2DH5_Ch0

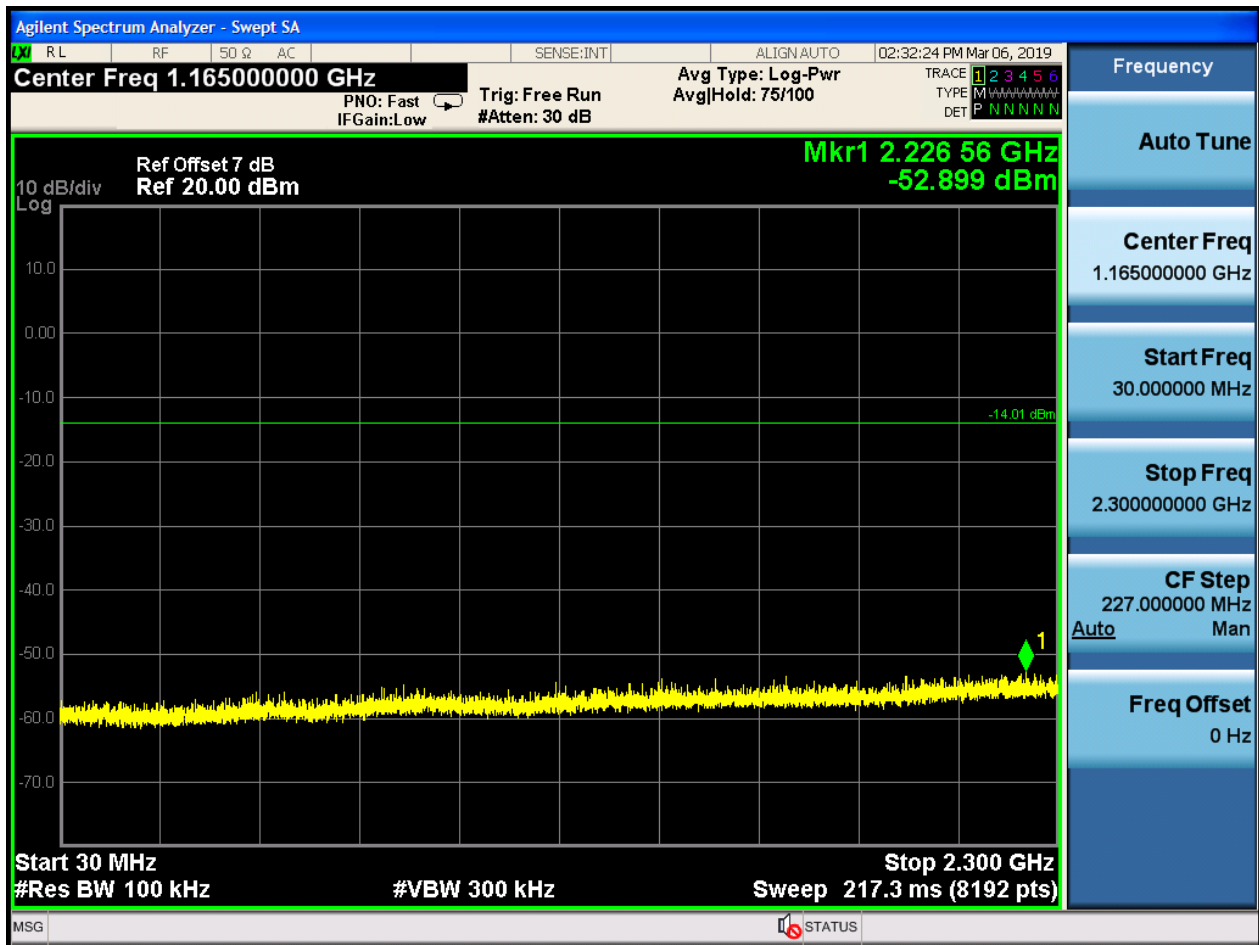
14.4.1 Pref

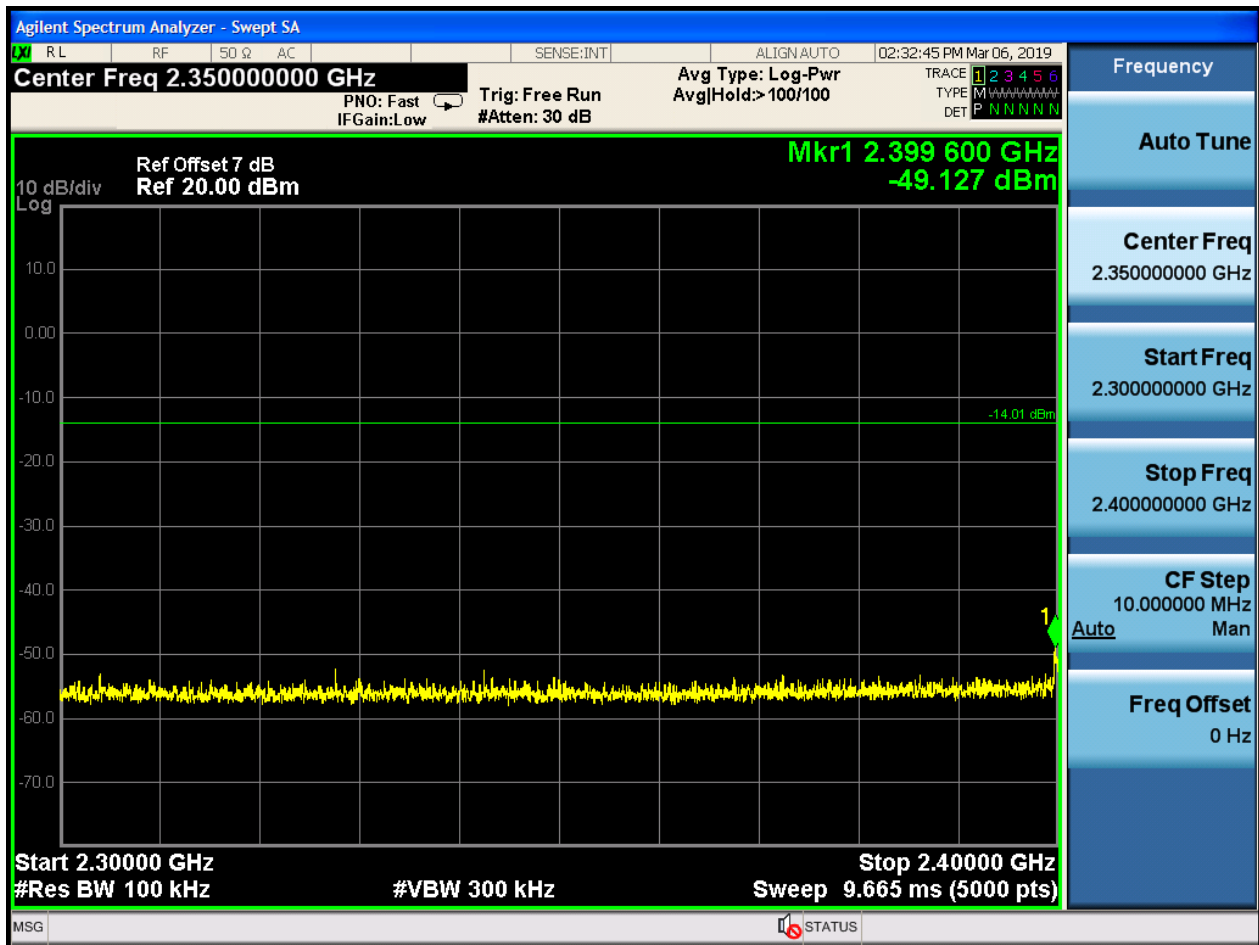


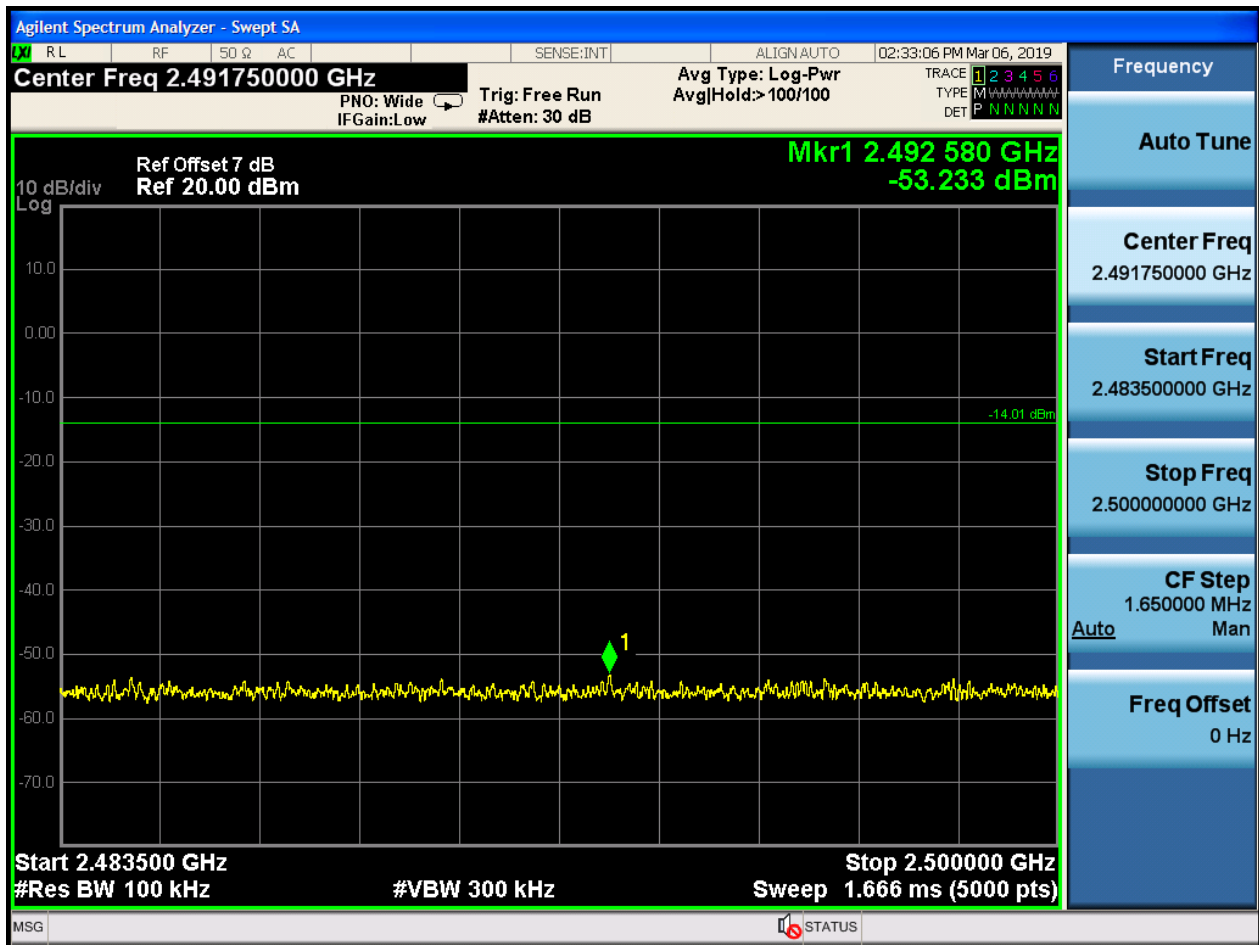
14.4.2 Puw







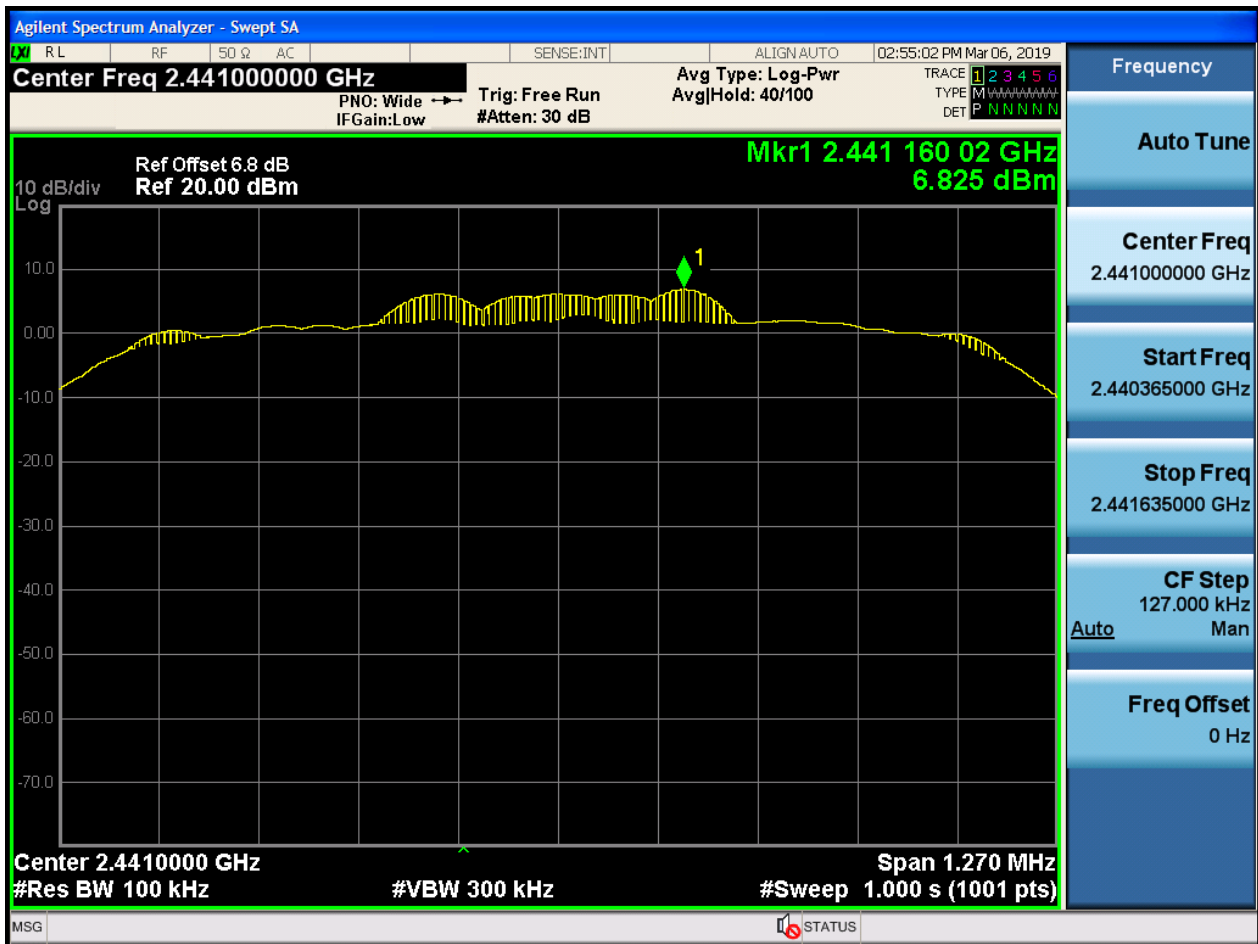




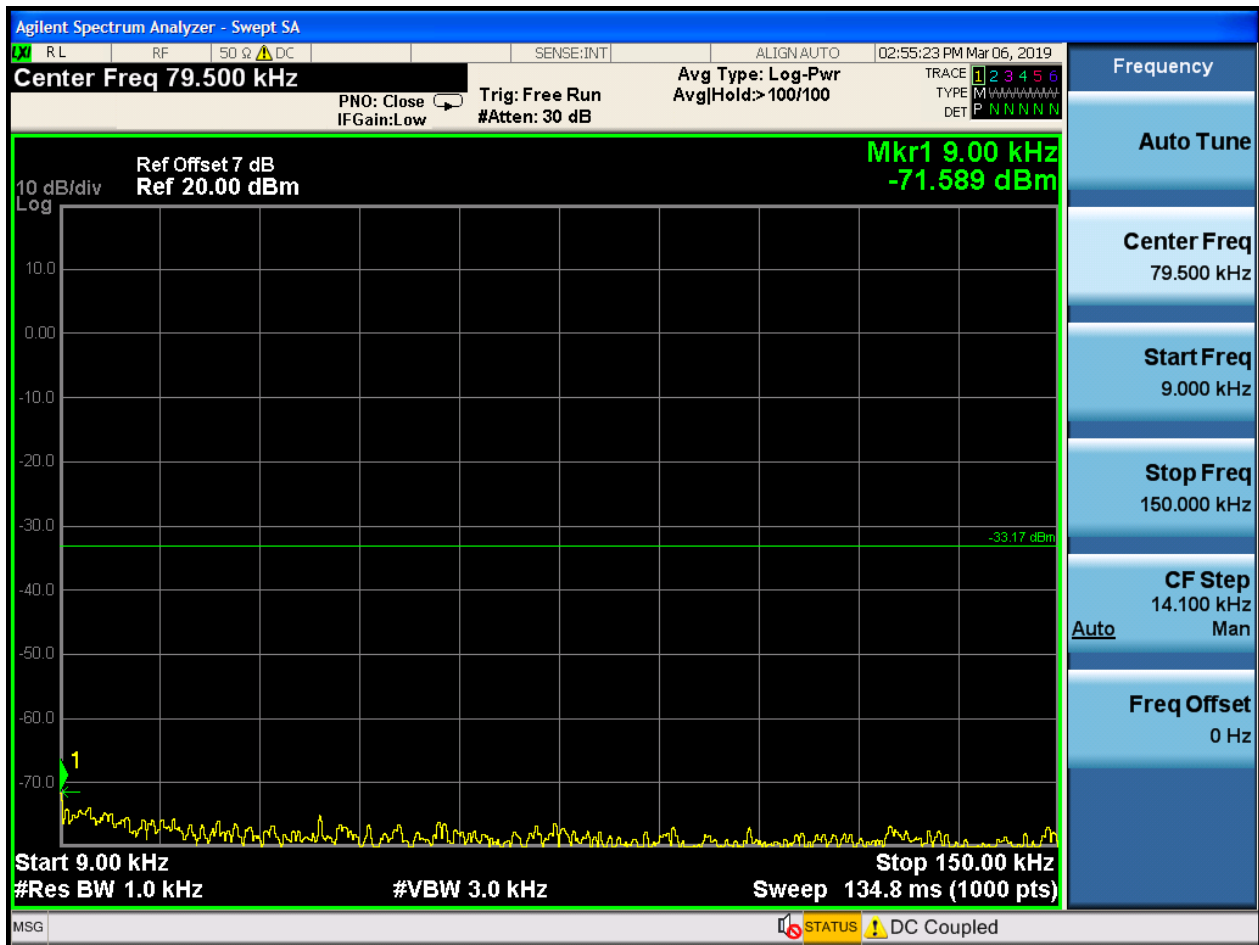


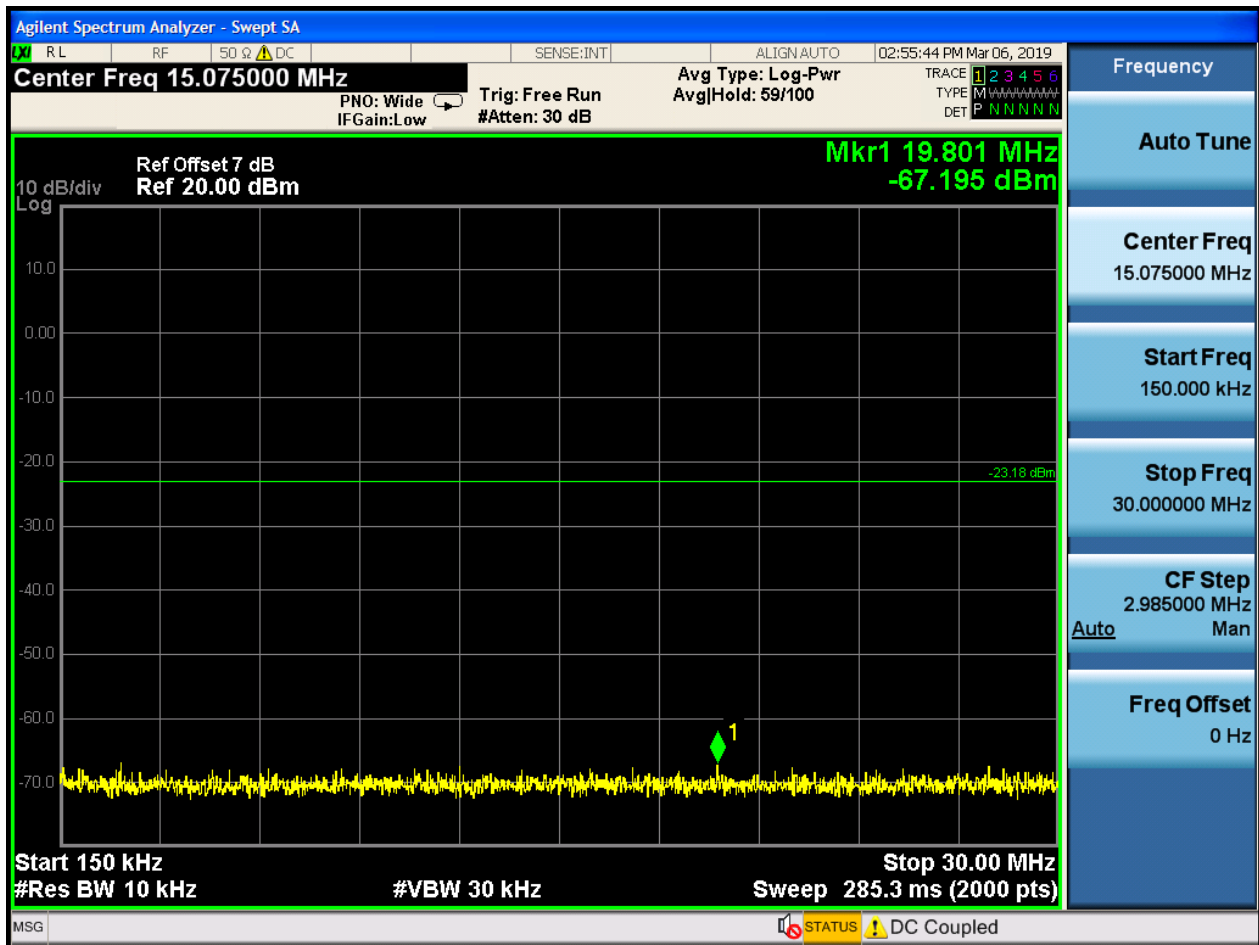
14.5 TM2_2DH5_Ch39

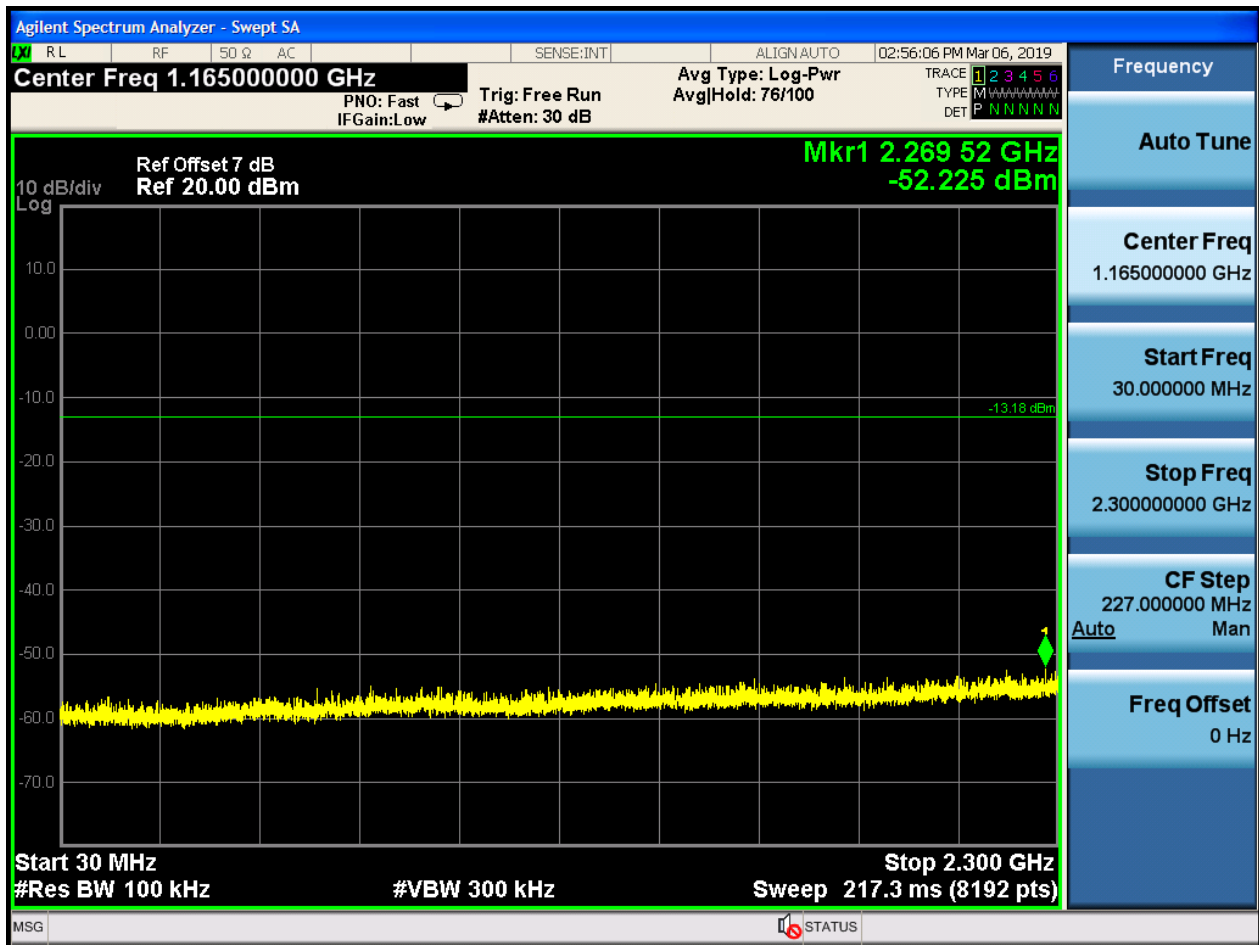
14.5.1 Pref

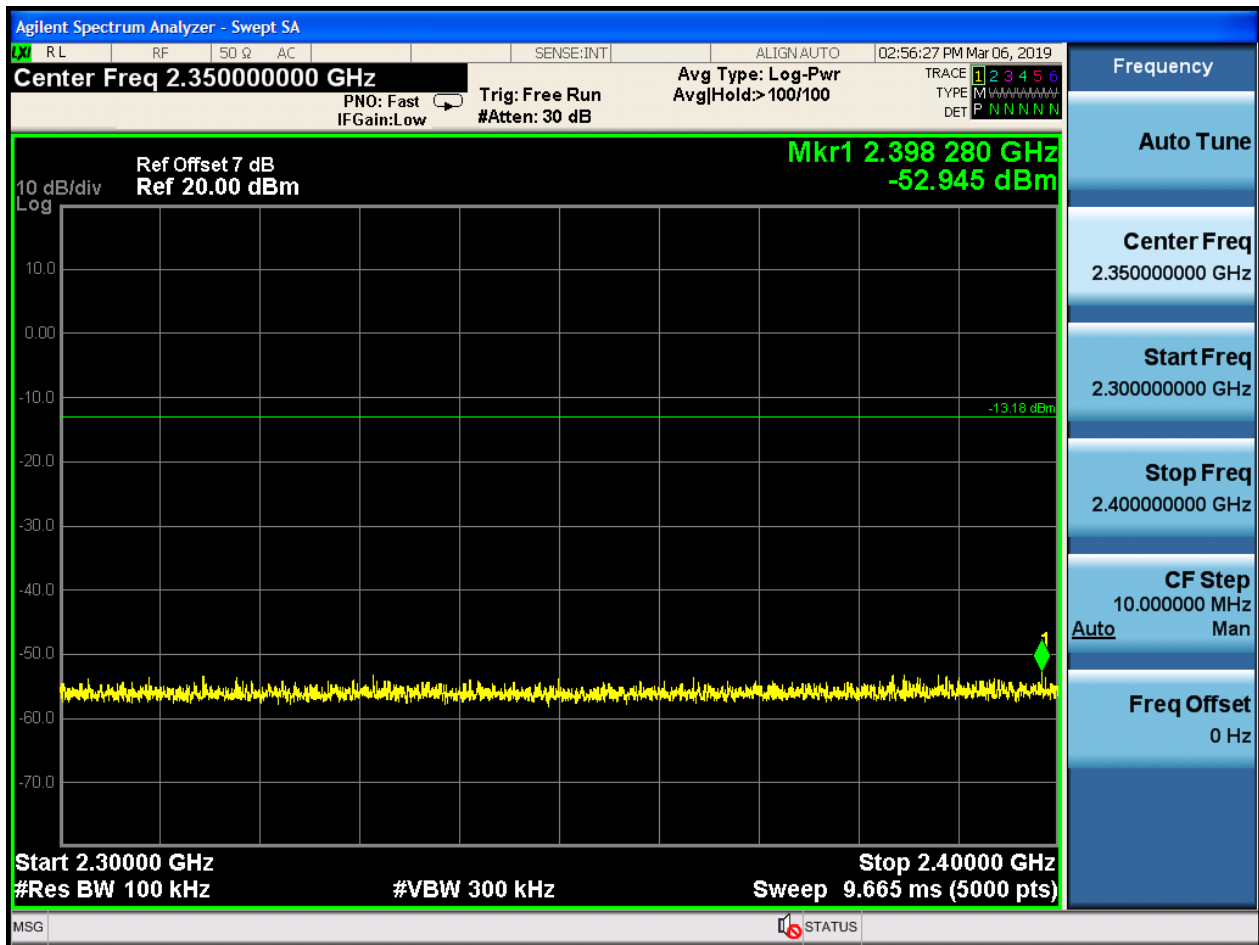


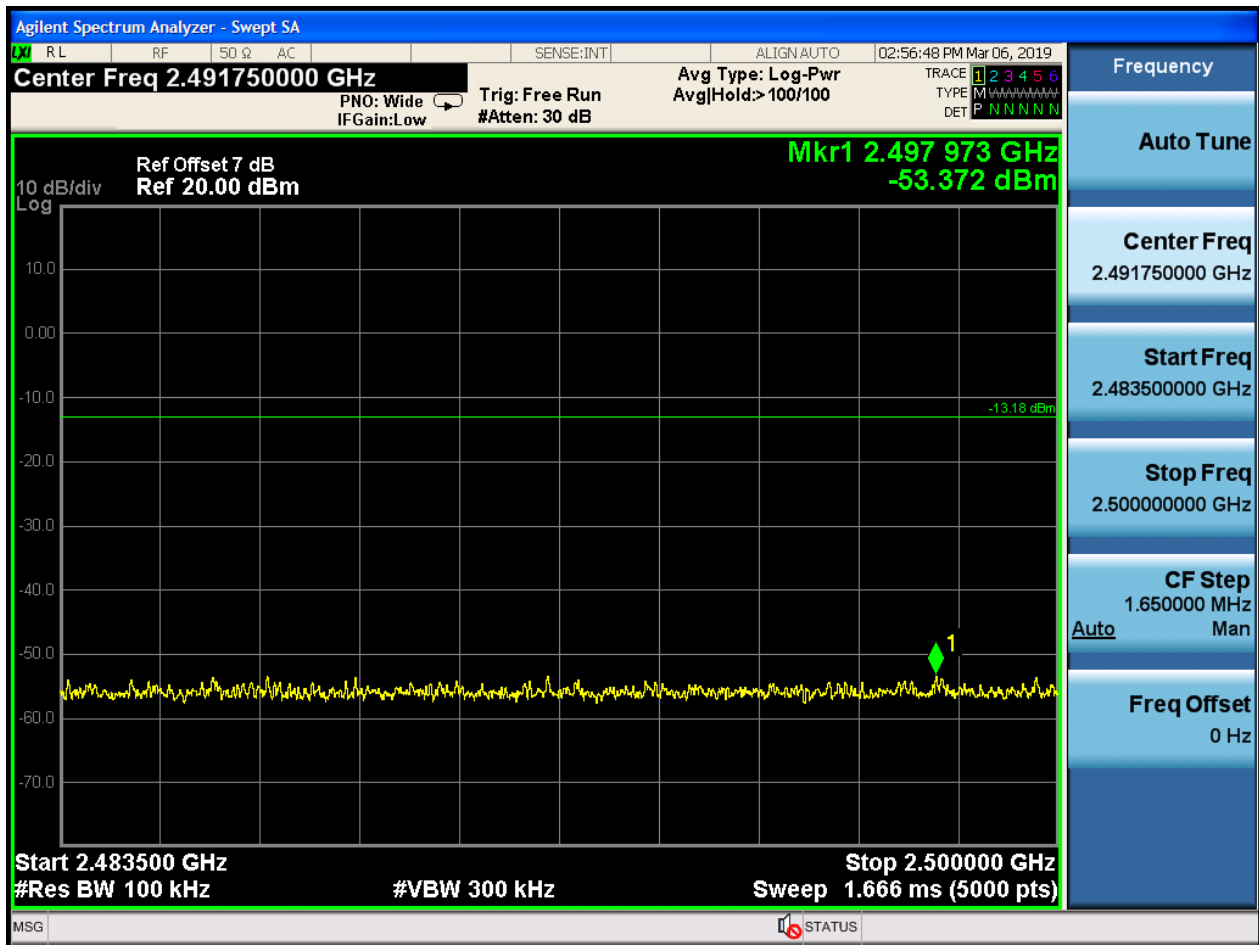
14.5.2 Puw

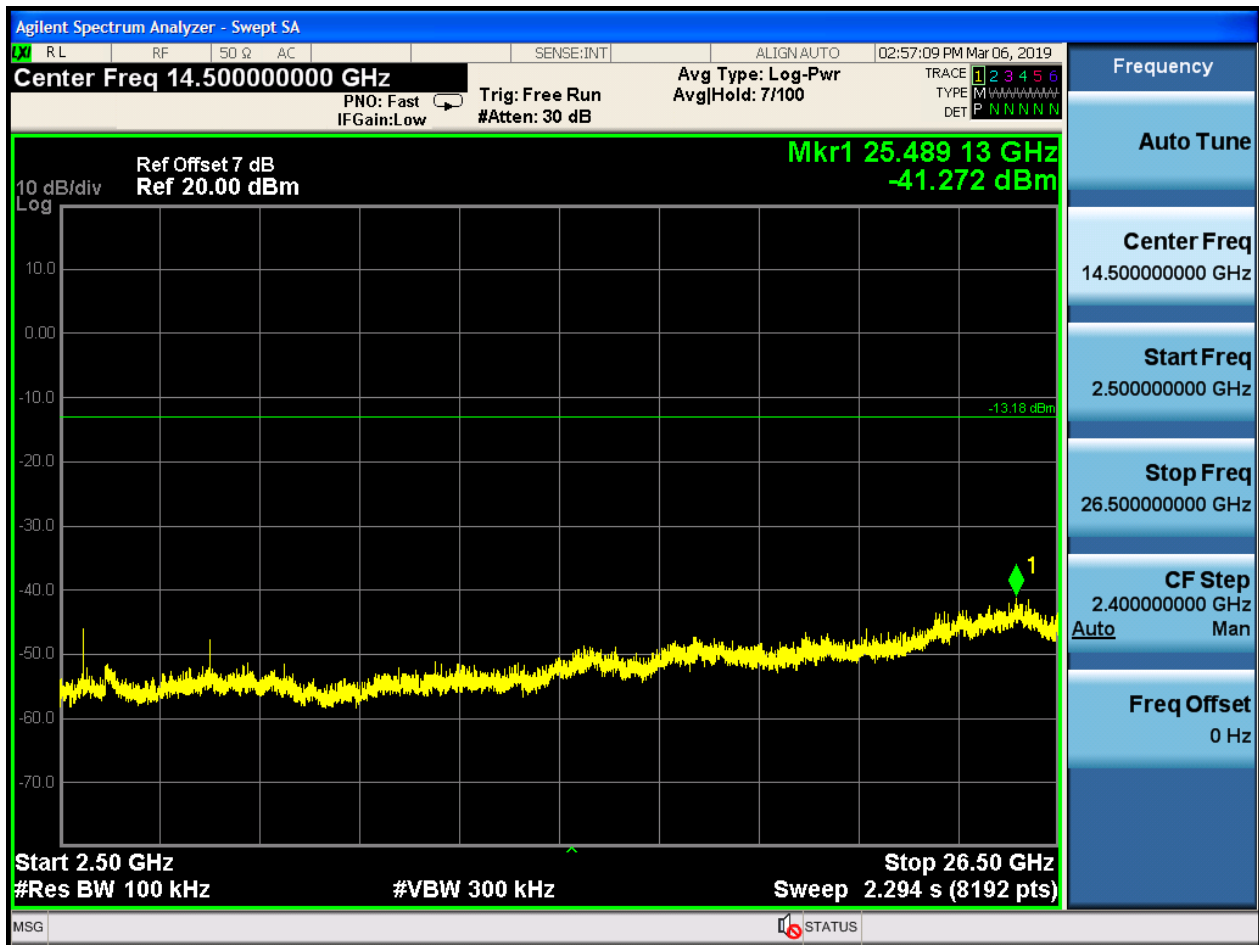






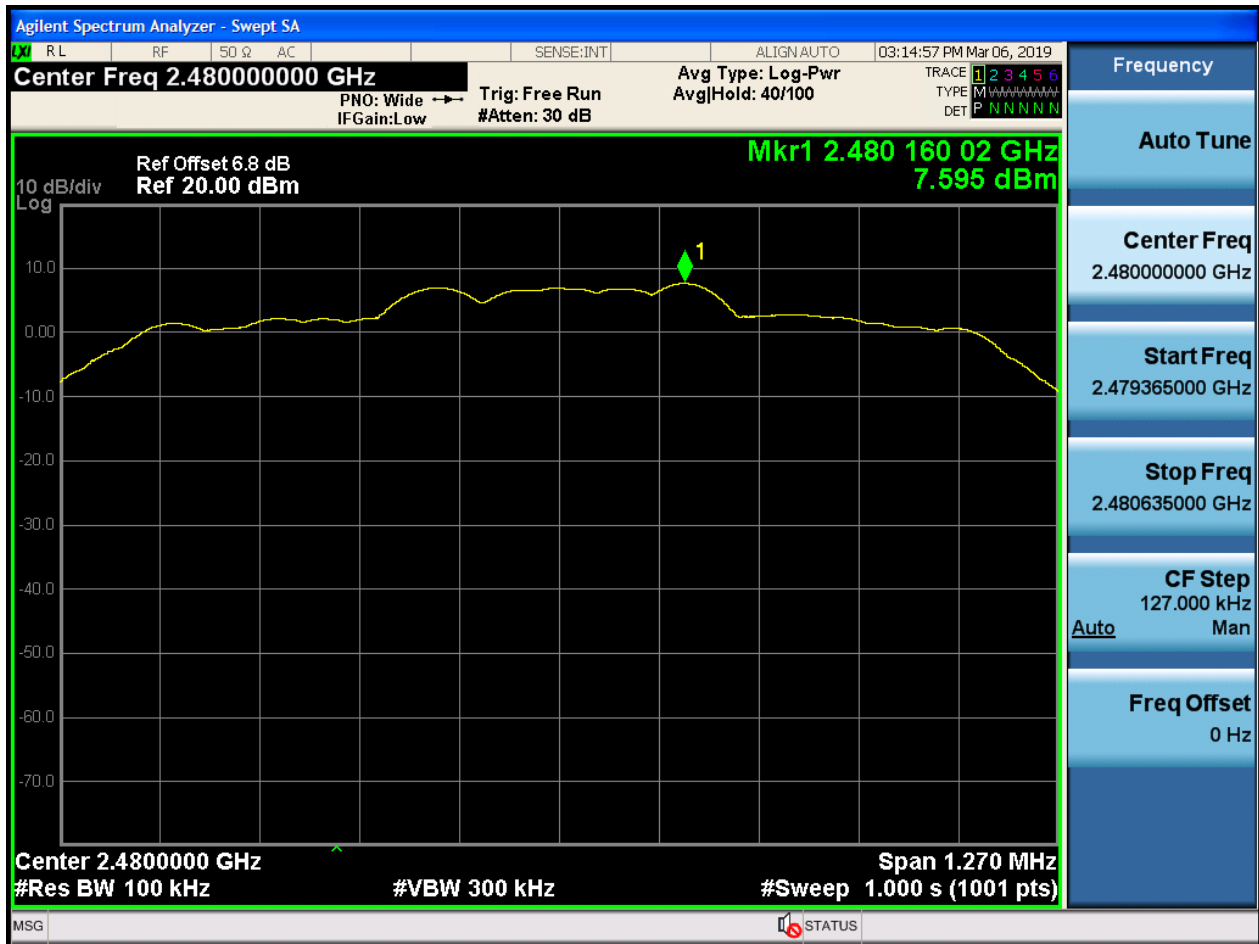




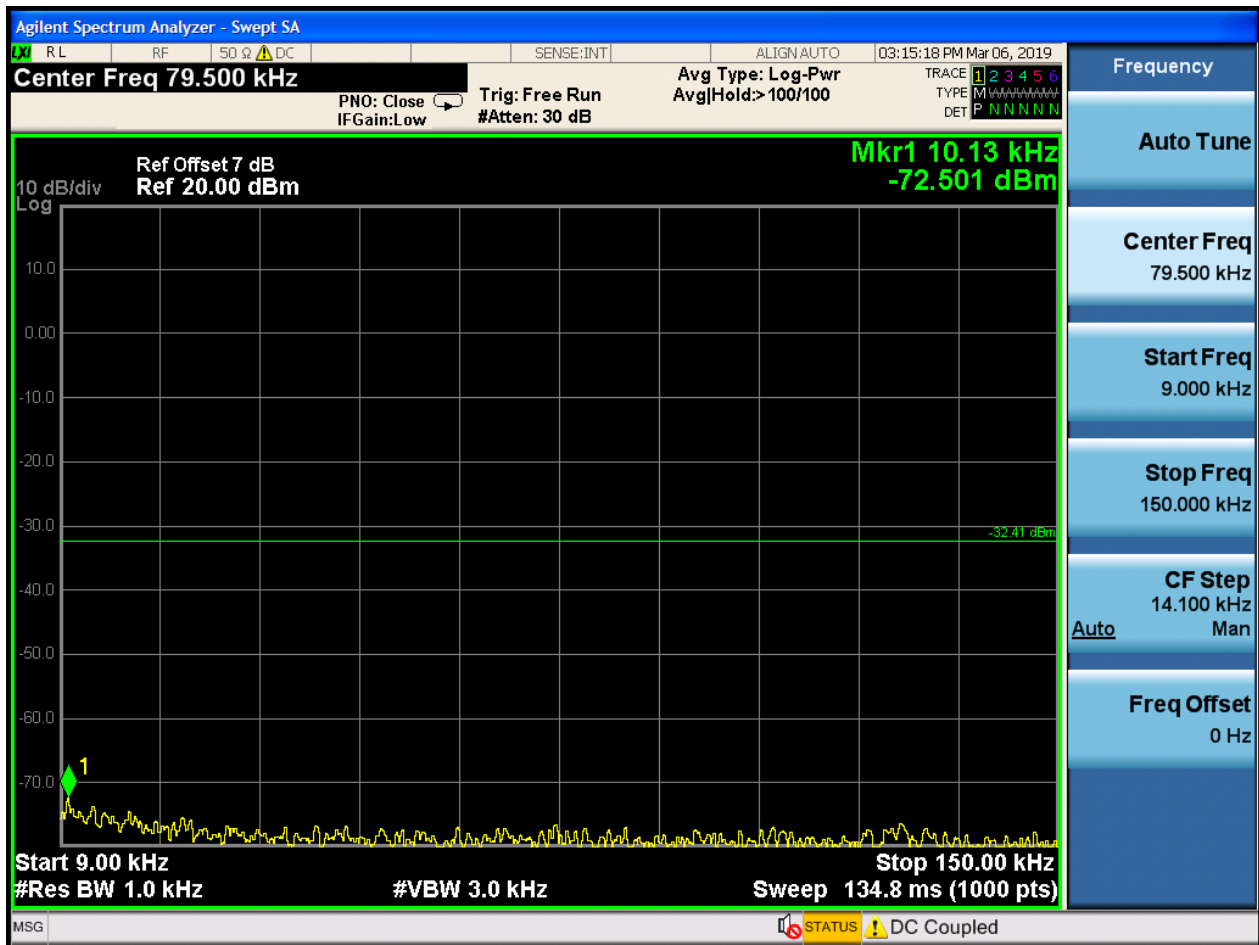


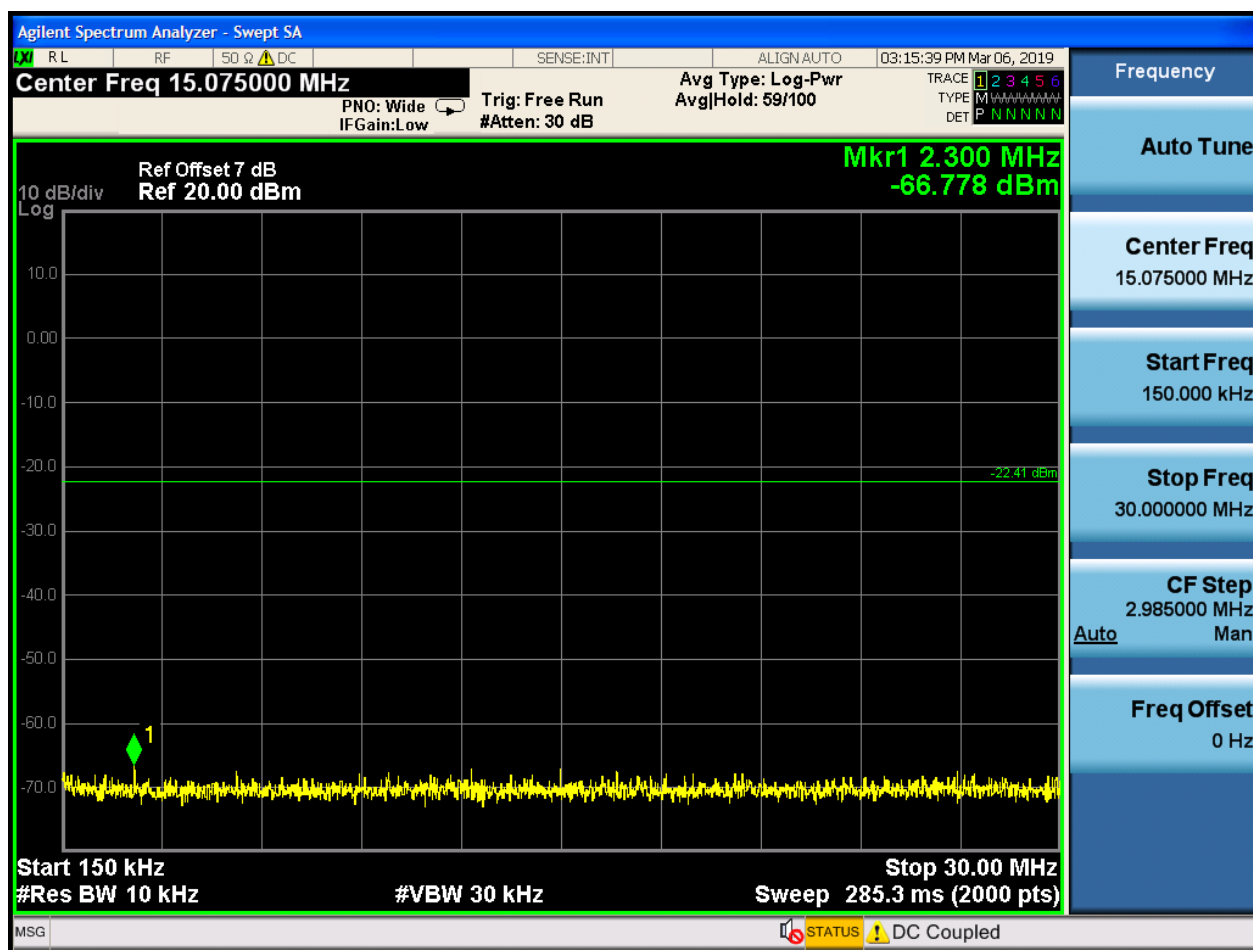
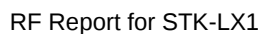
14.6 TM2_2DH5_Ch78

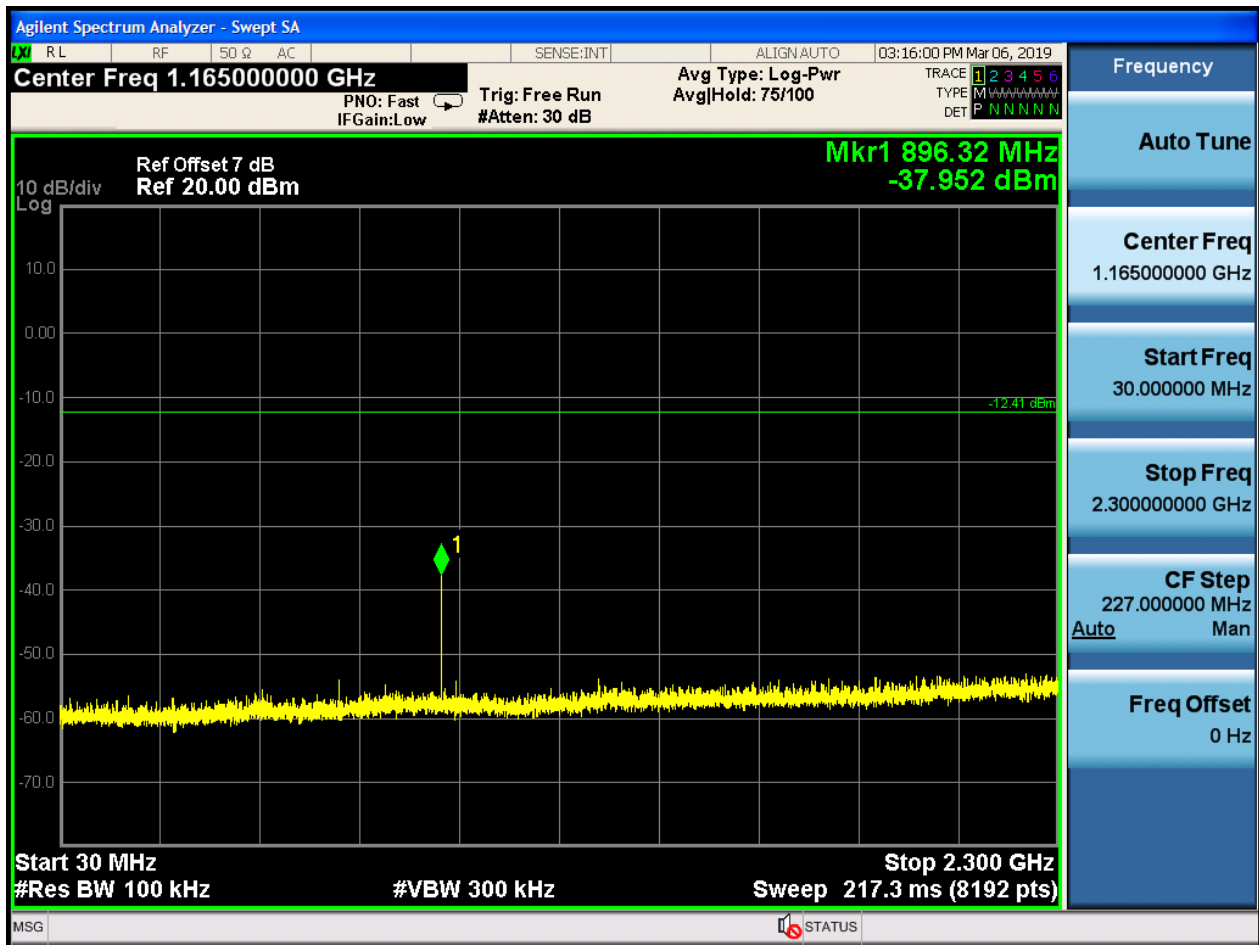
14.6.1 Pref

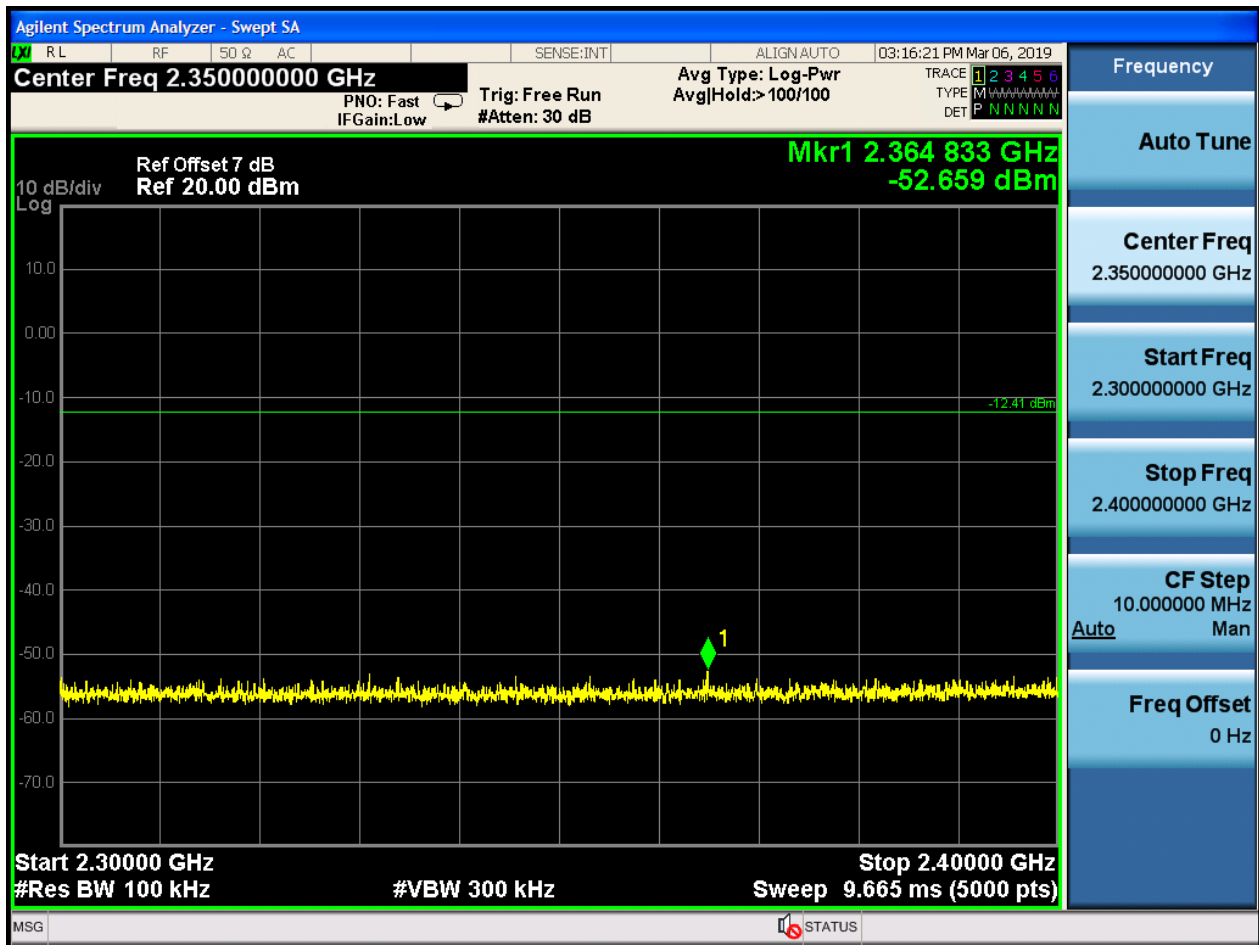


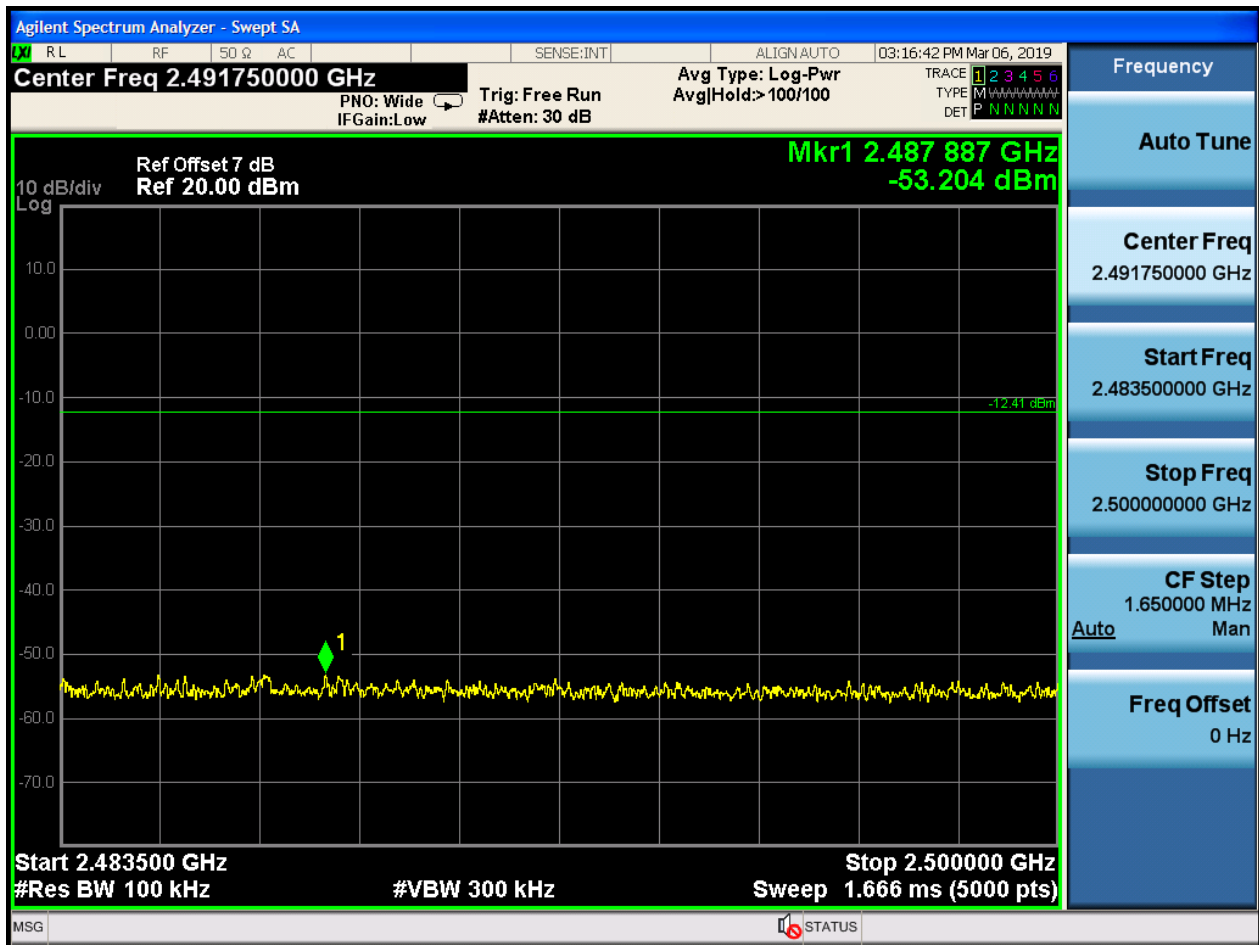
14.6.2 Puw











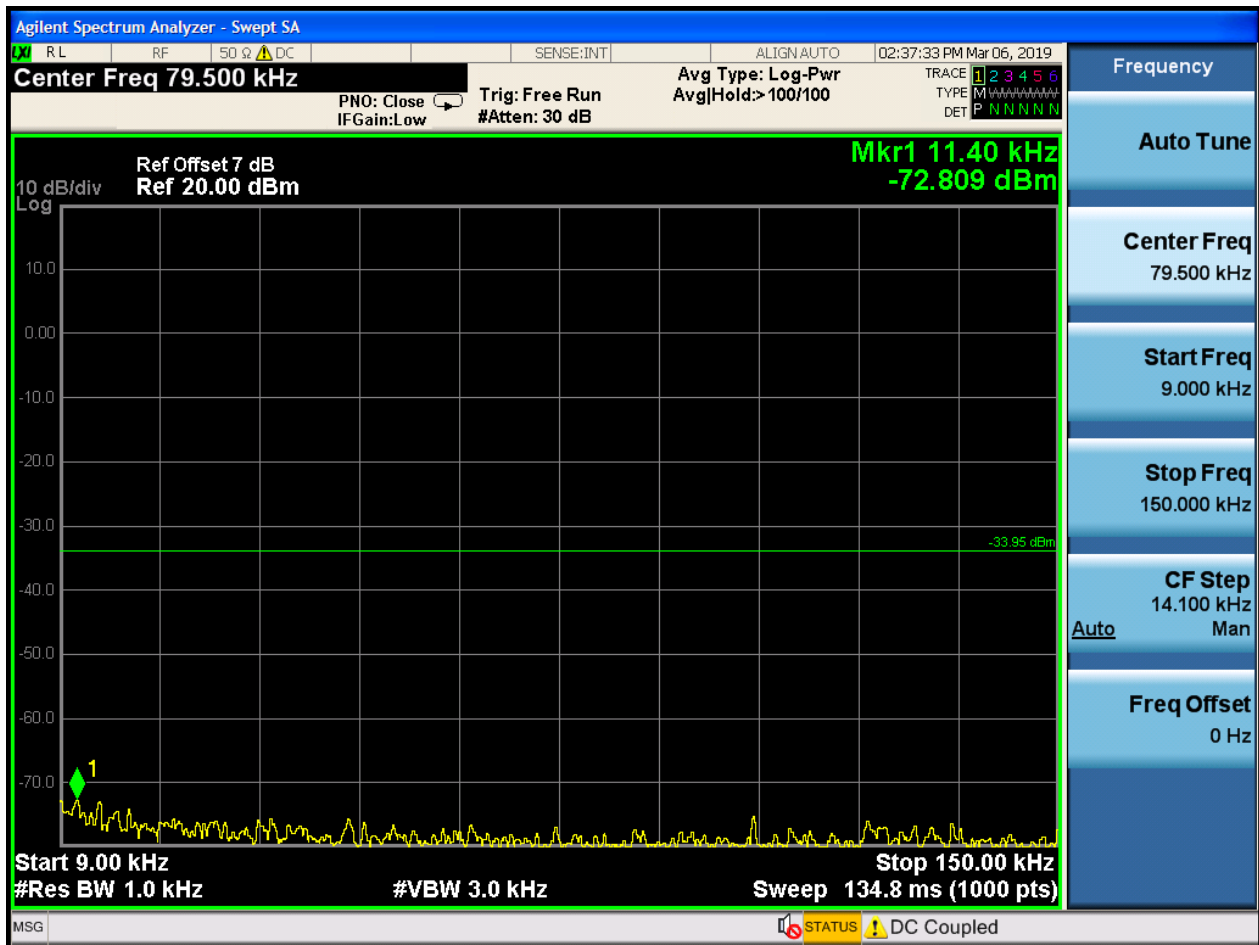


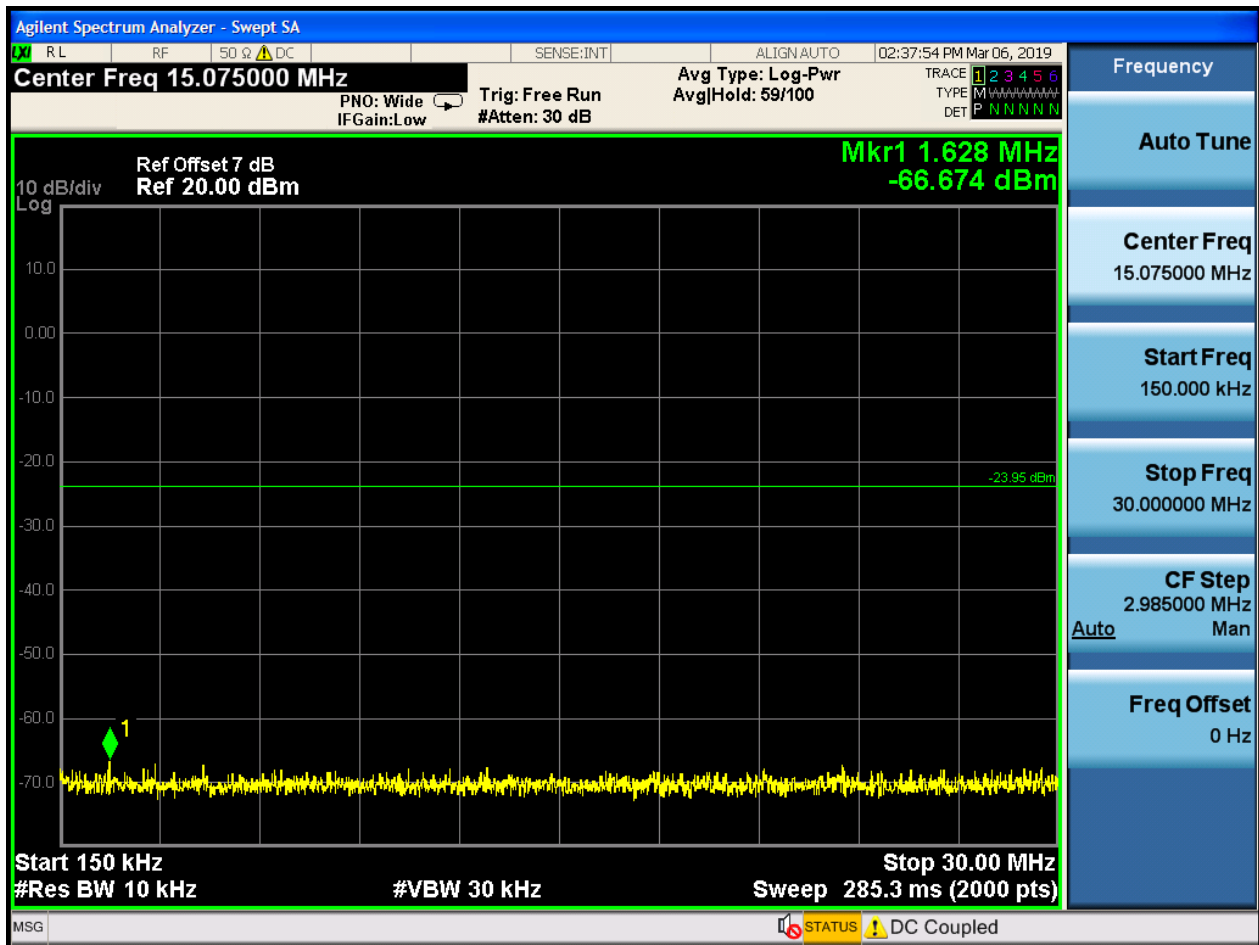
14.7 TM3_3DH5_Ch0

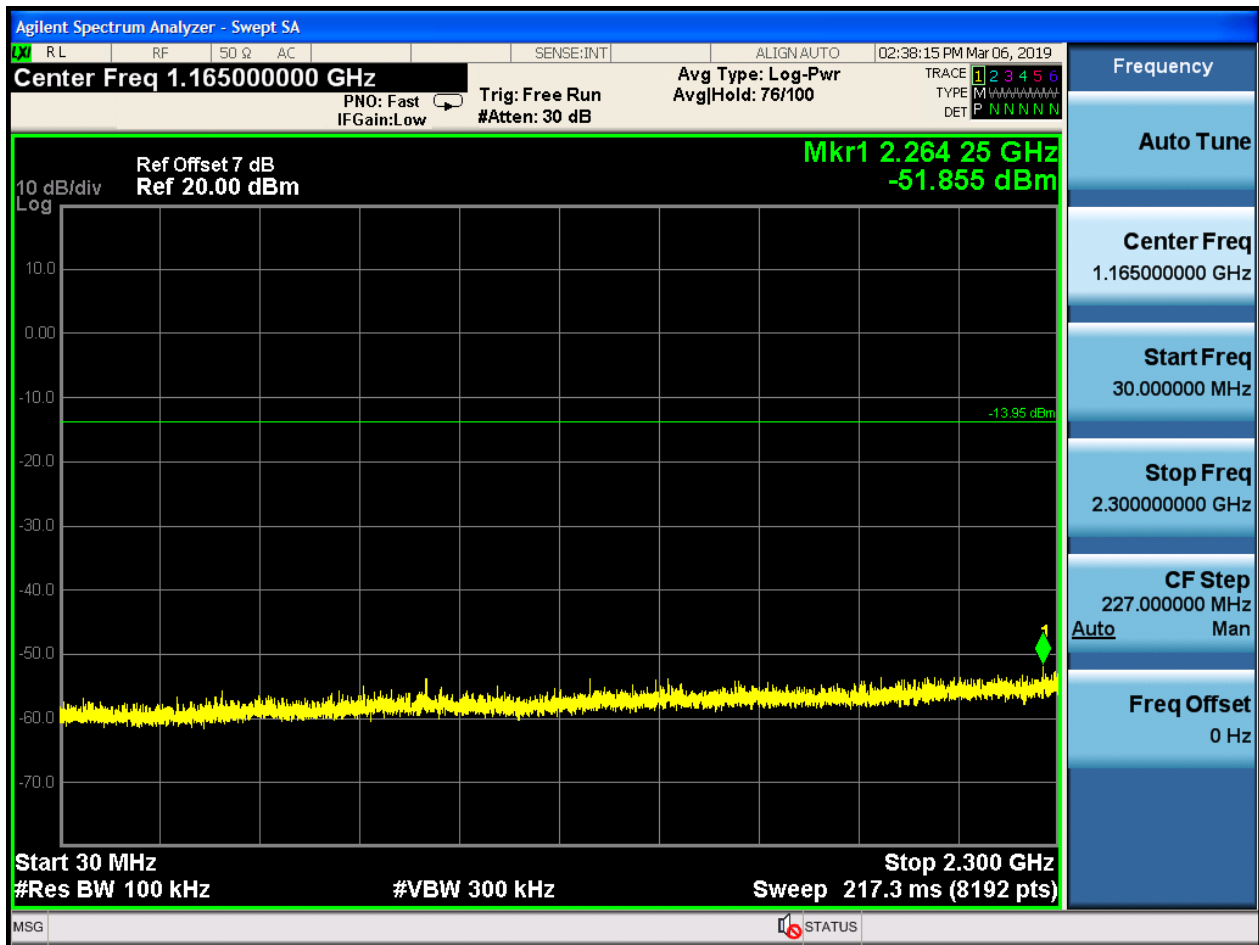
14.7.1 Pref

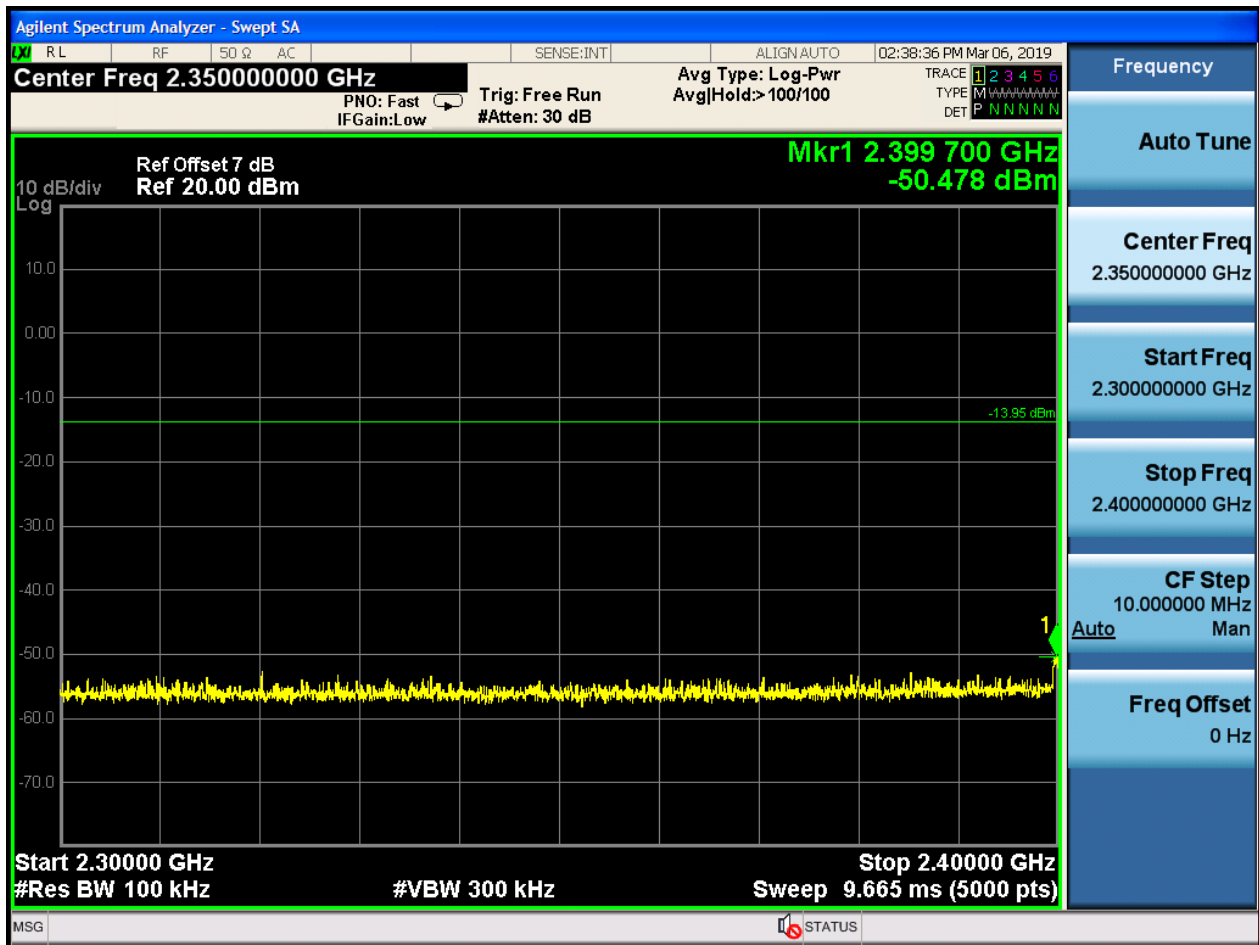


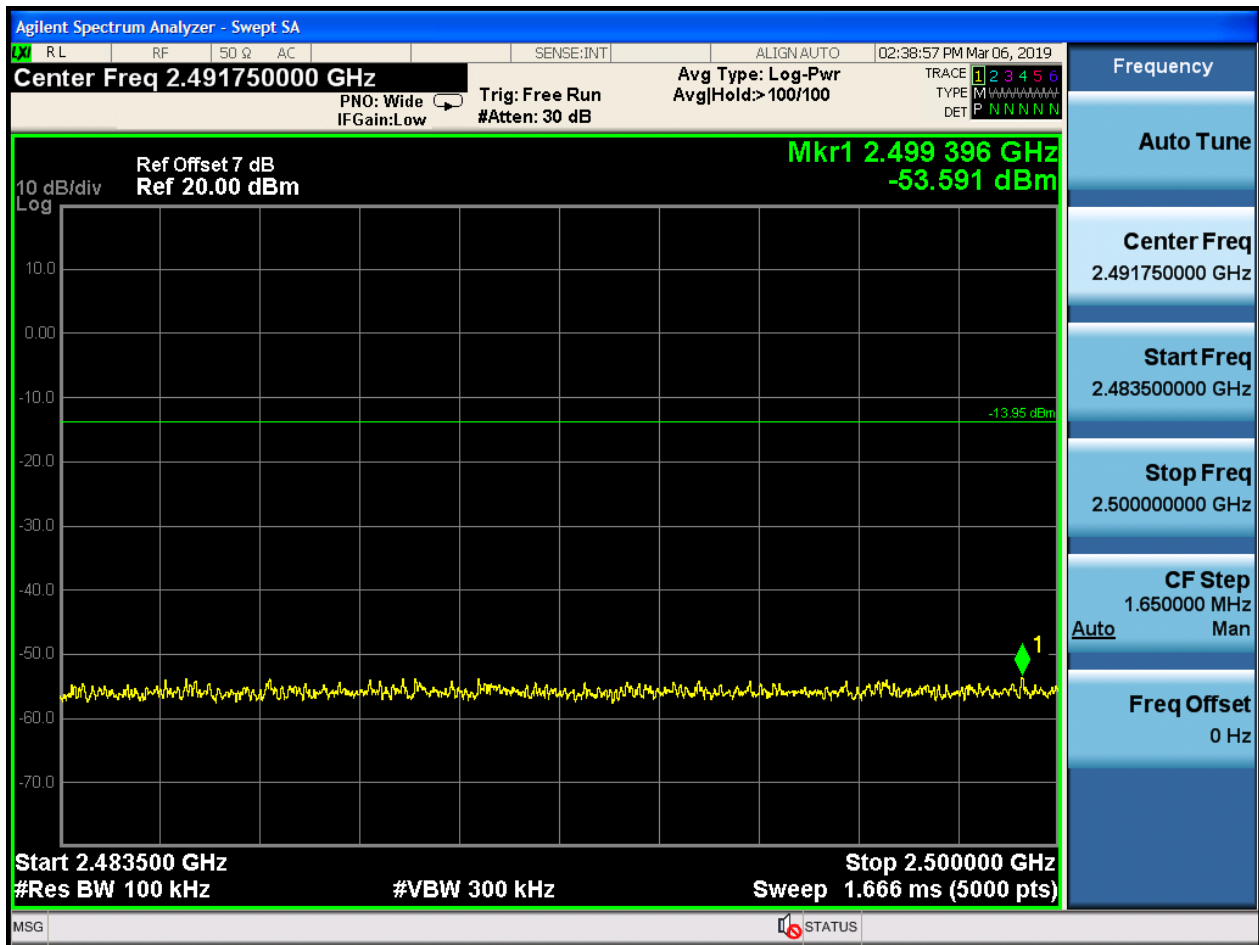
14.7.2 Puw







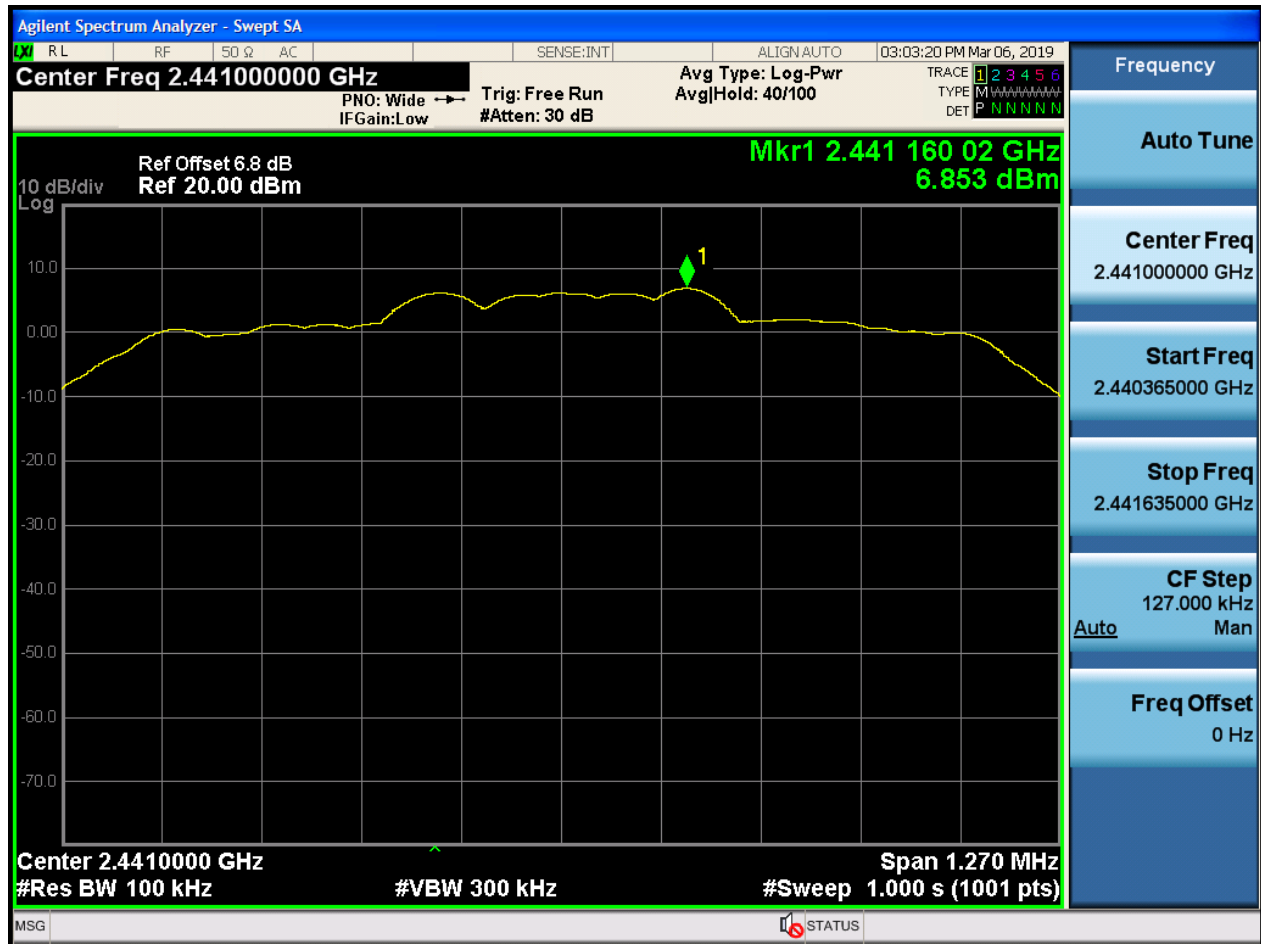




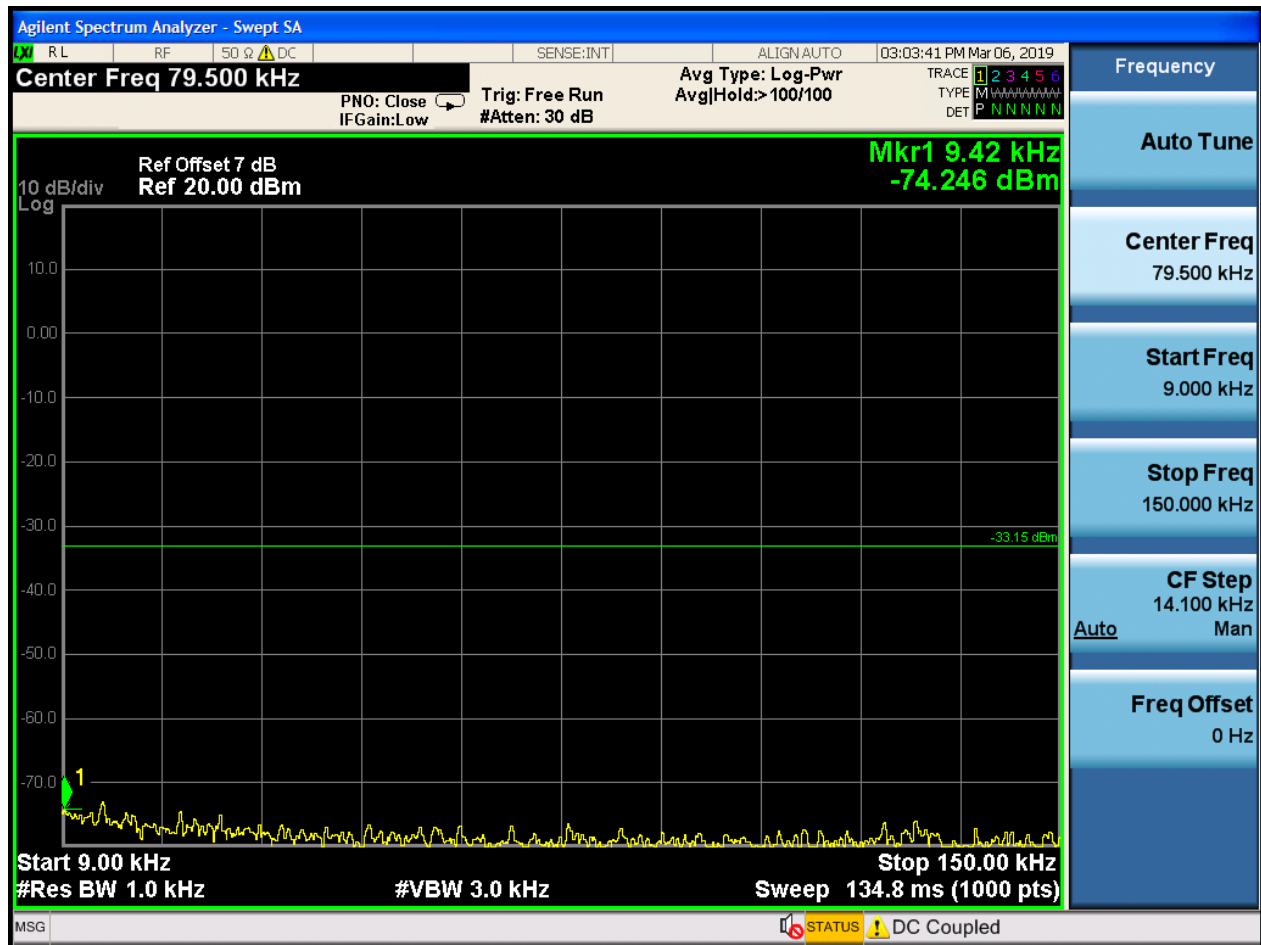


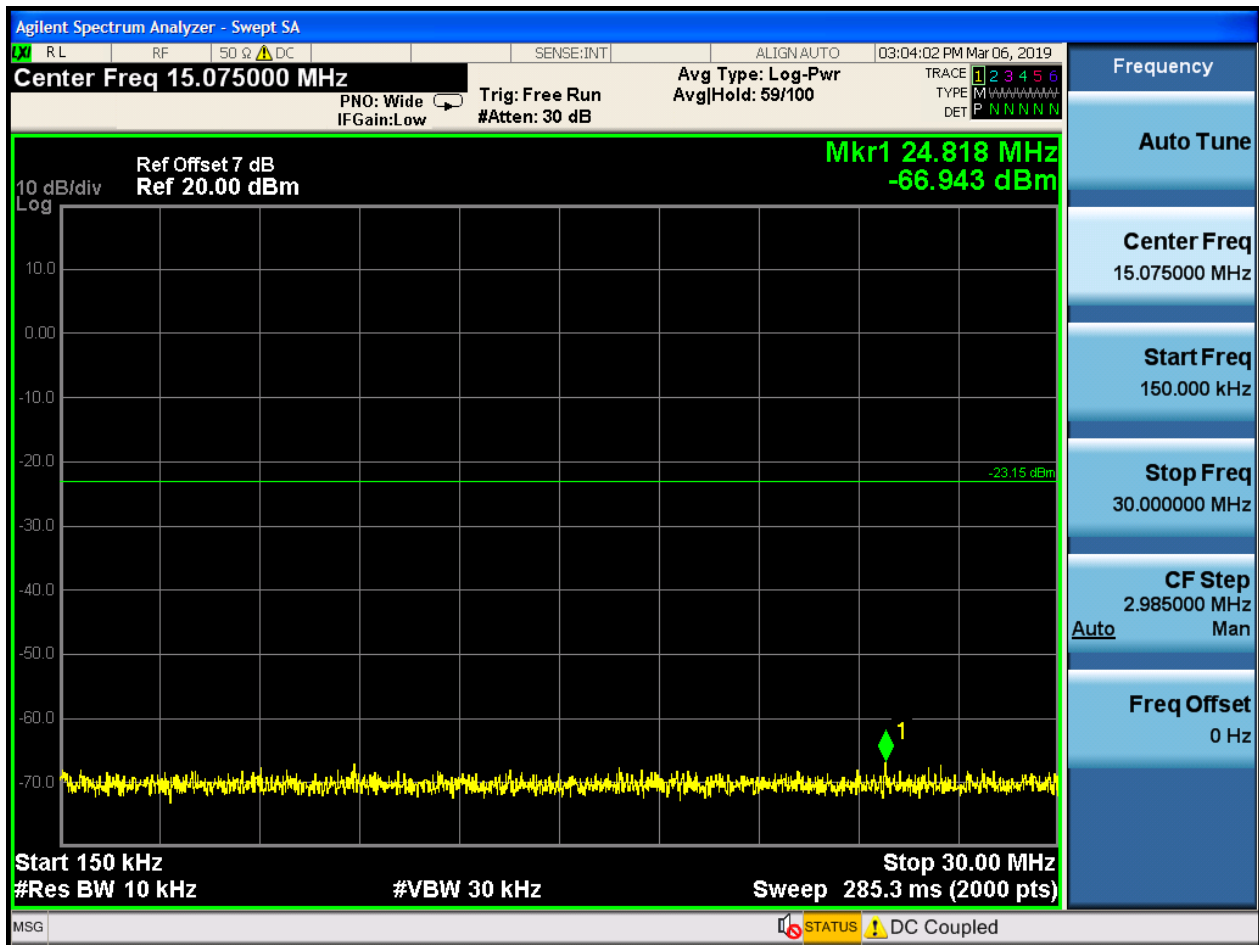
14.8 TM3_3DH5_Ch39

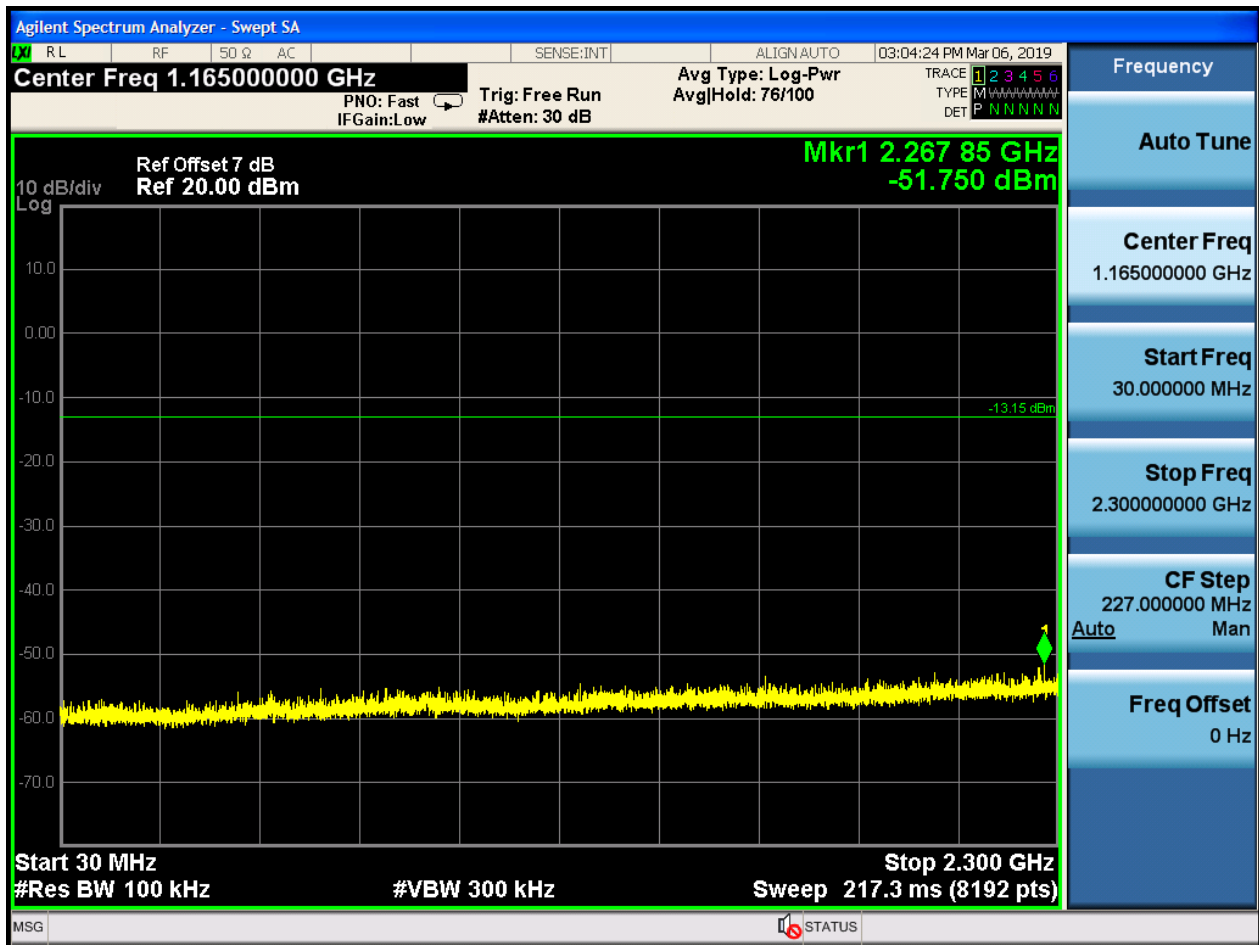
14.8.1 Pref

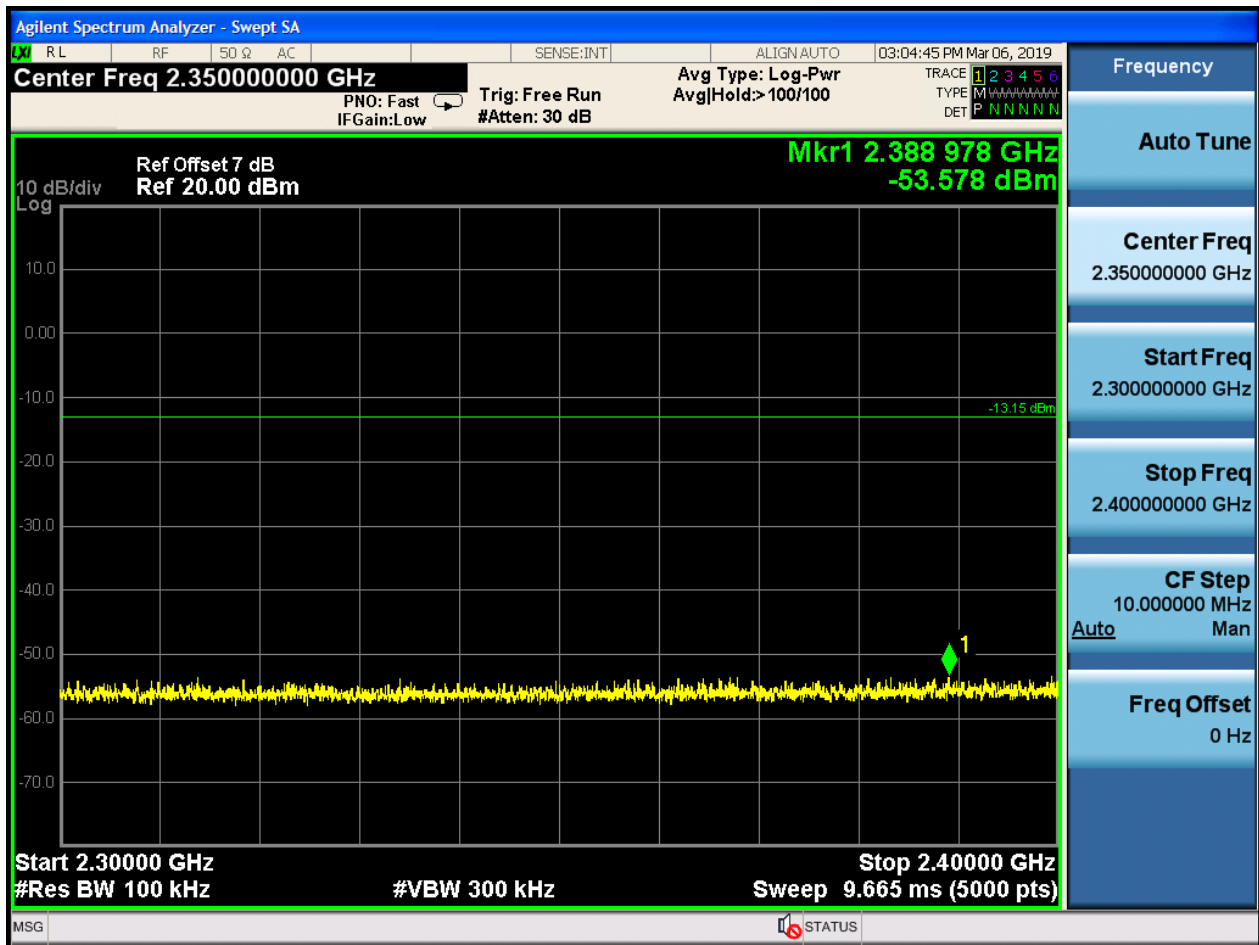


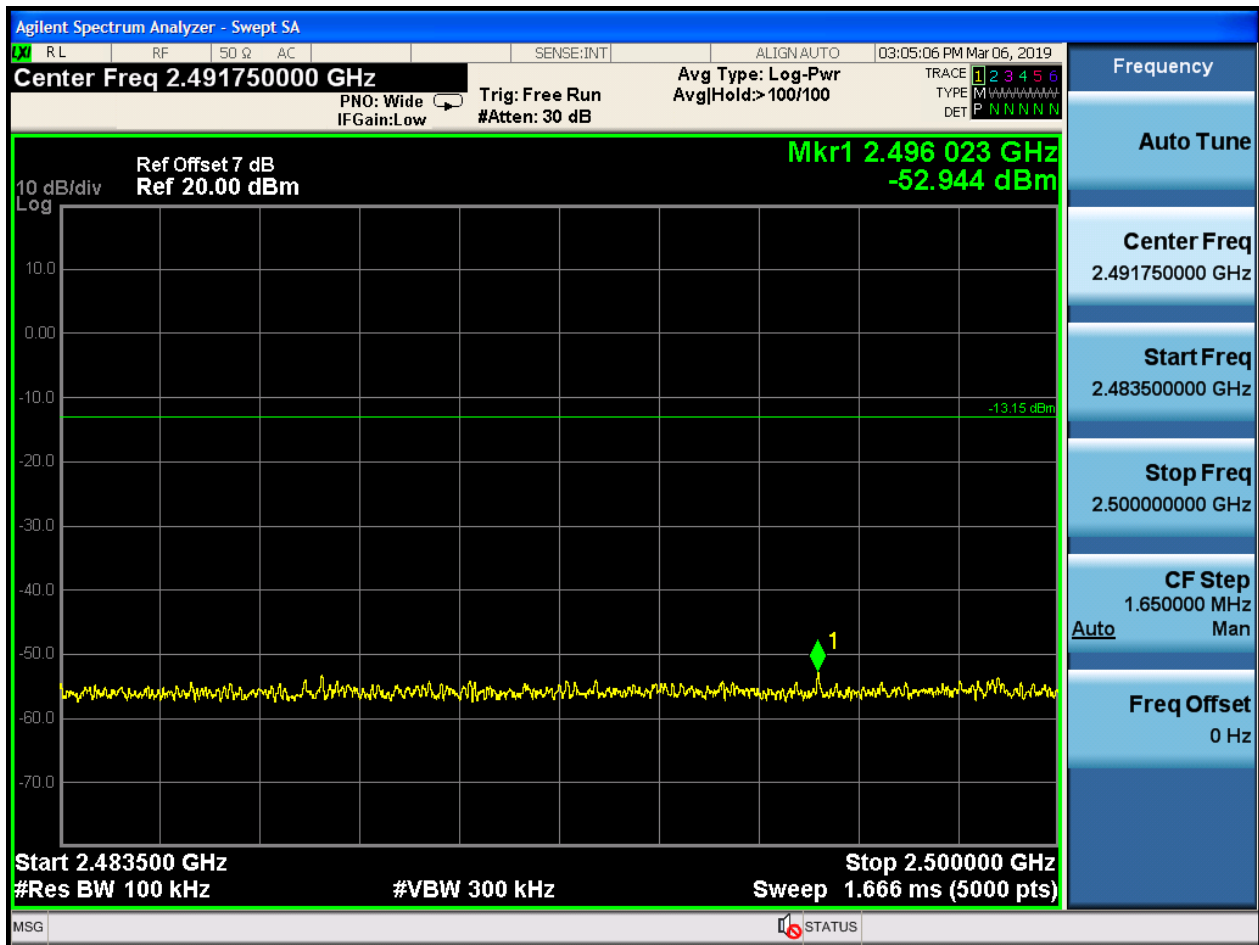
14.8.2 Puw



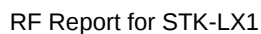




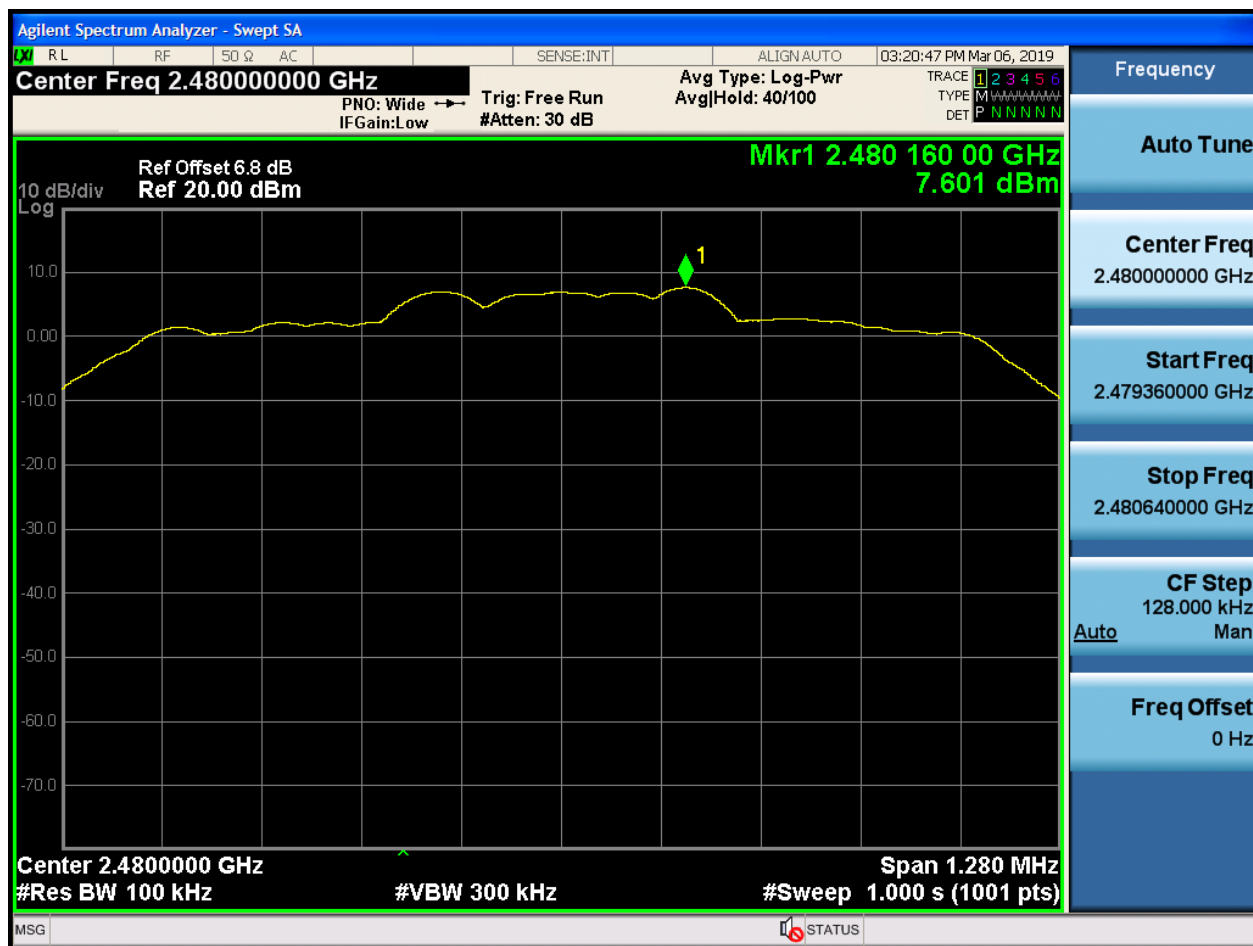




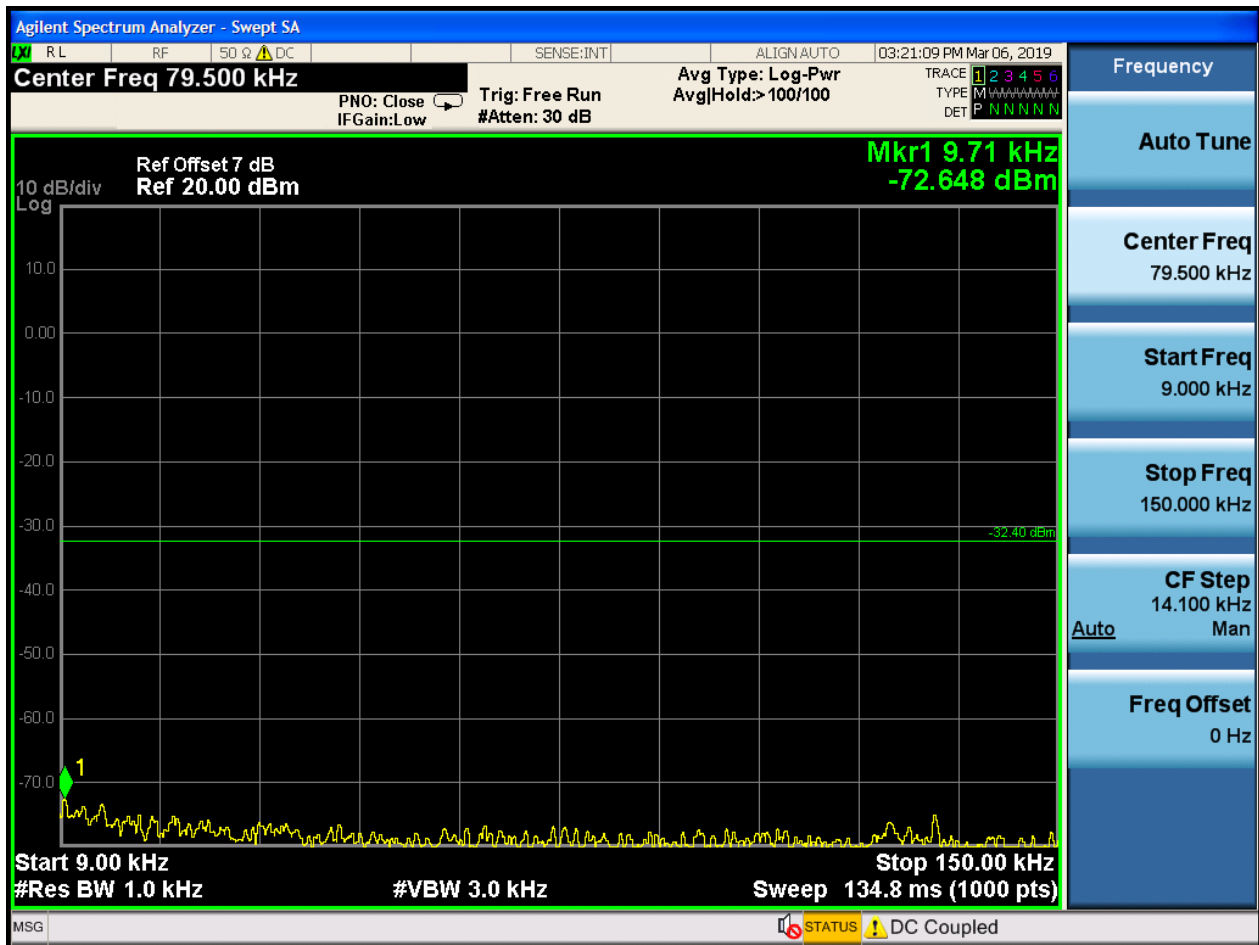


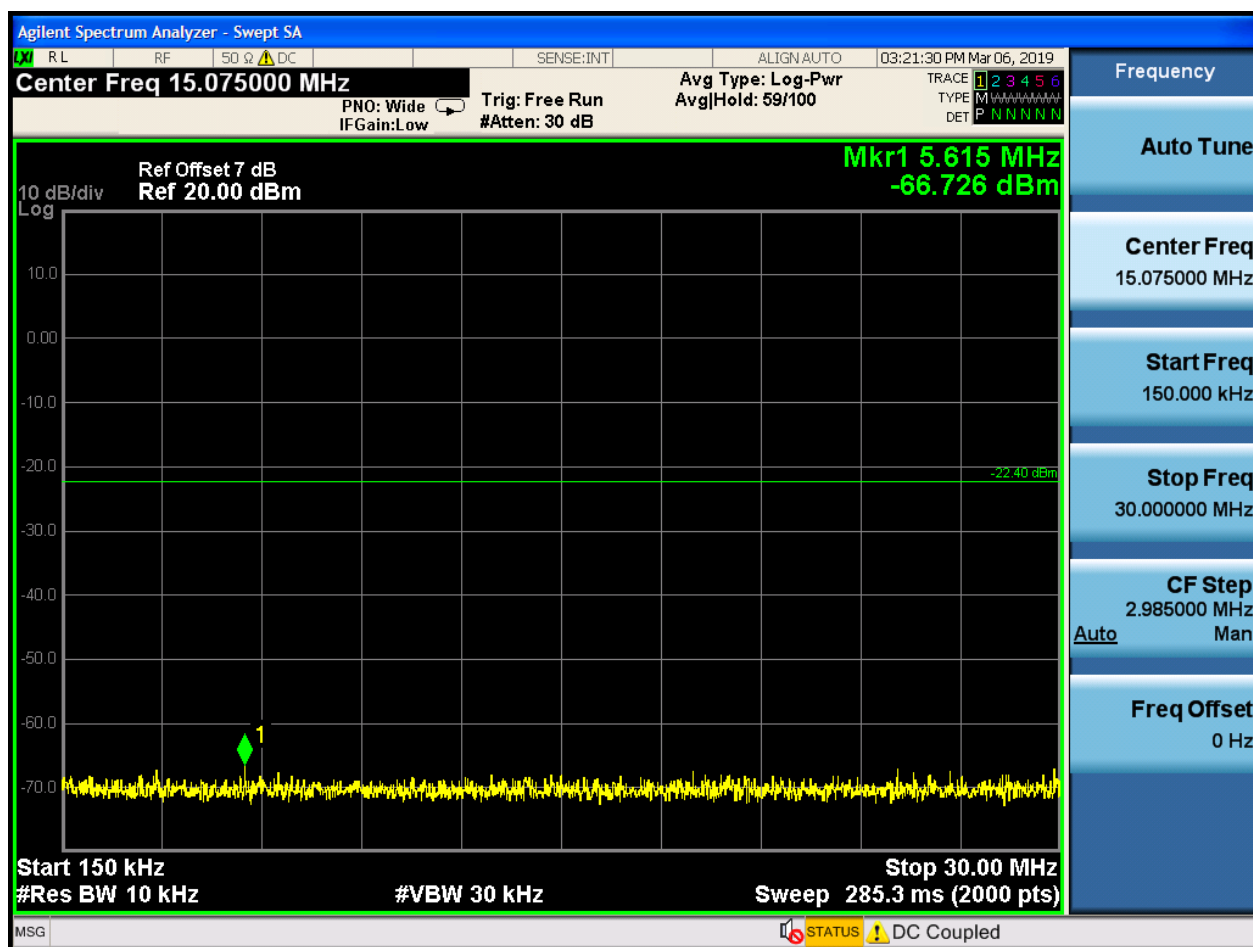
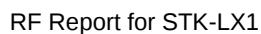


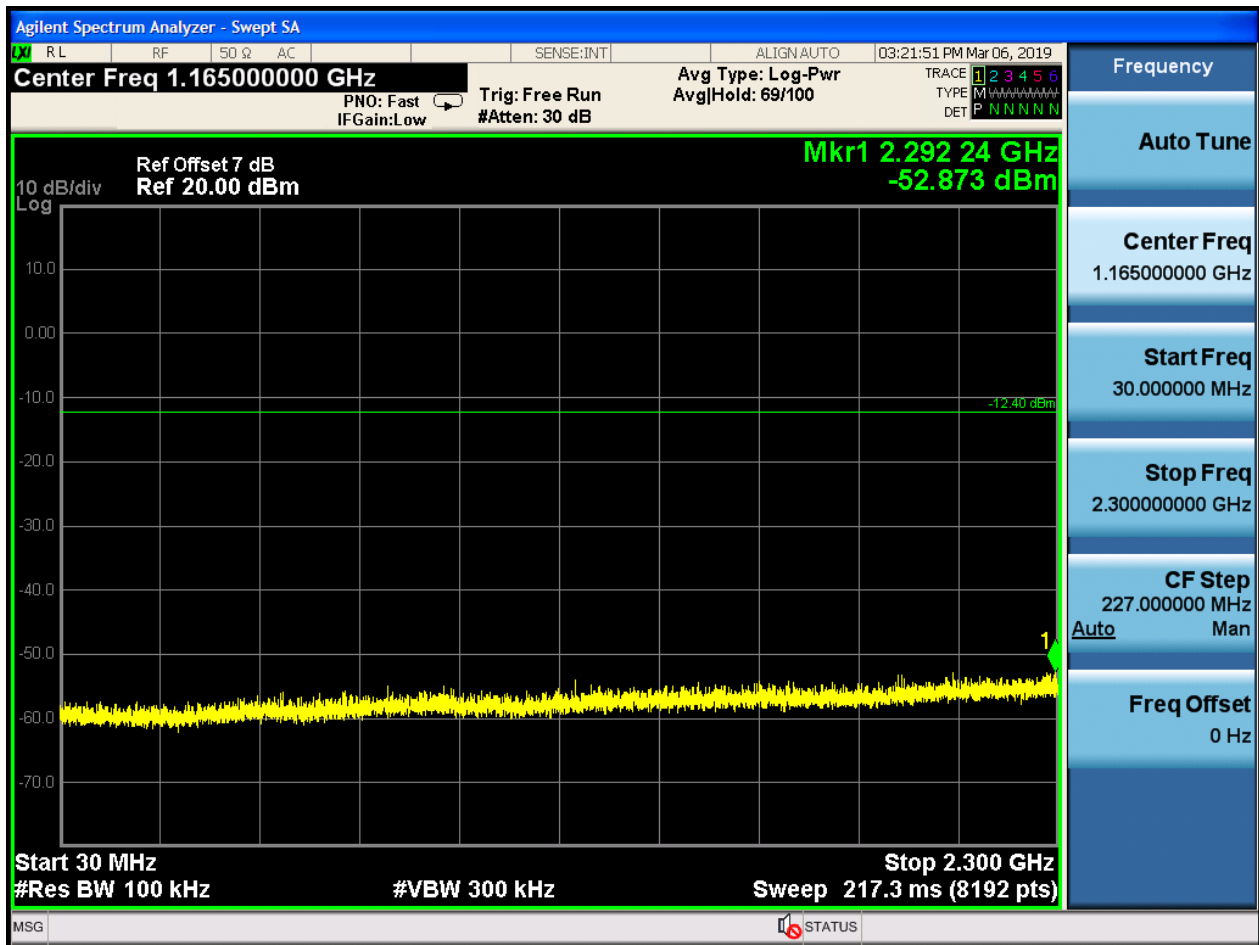
14.9.1 Pref

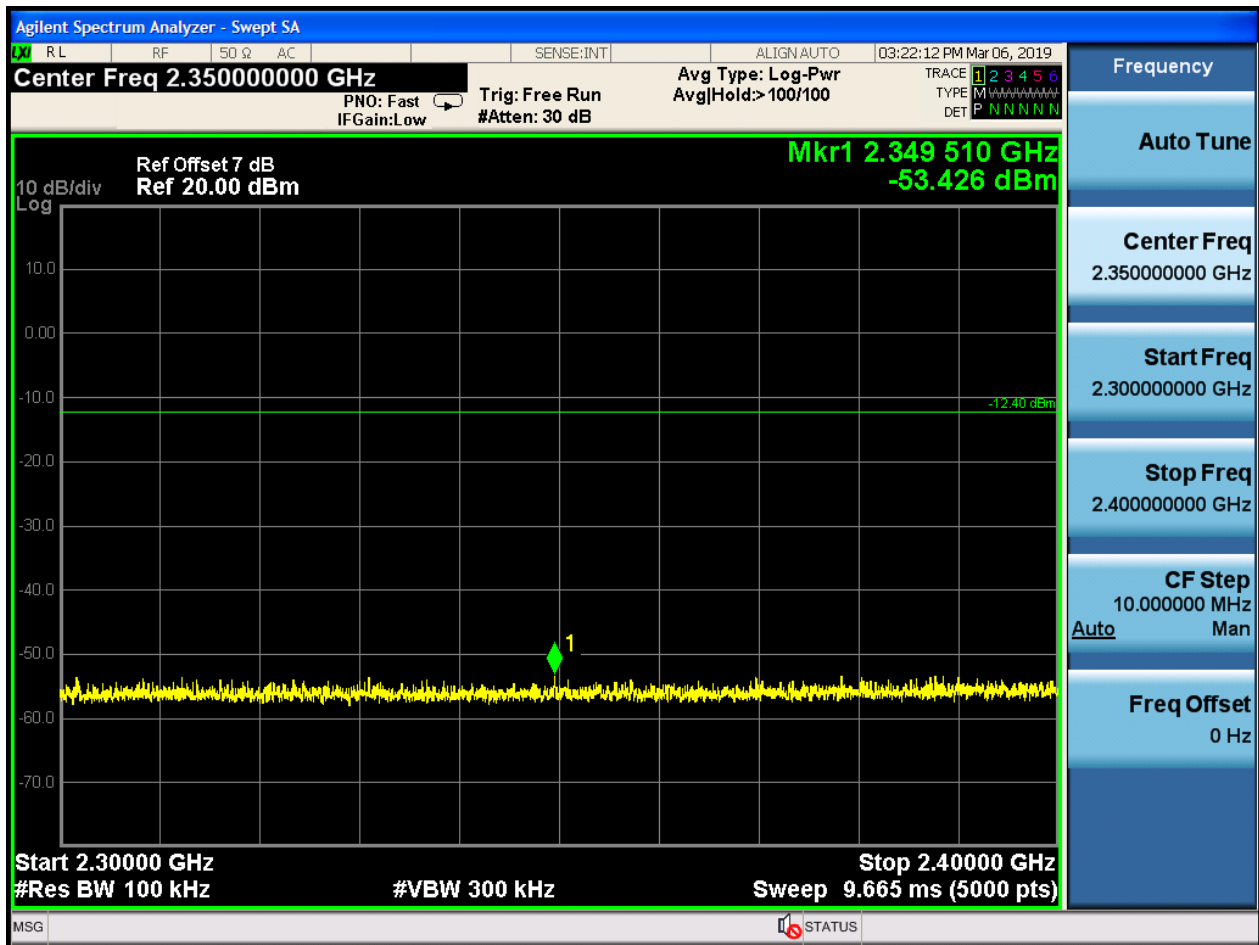


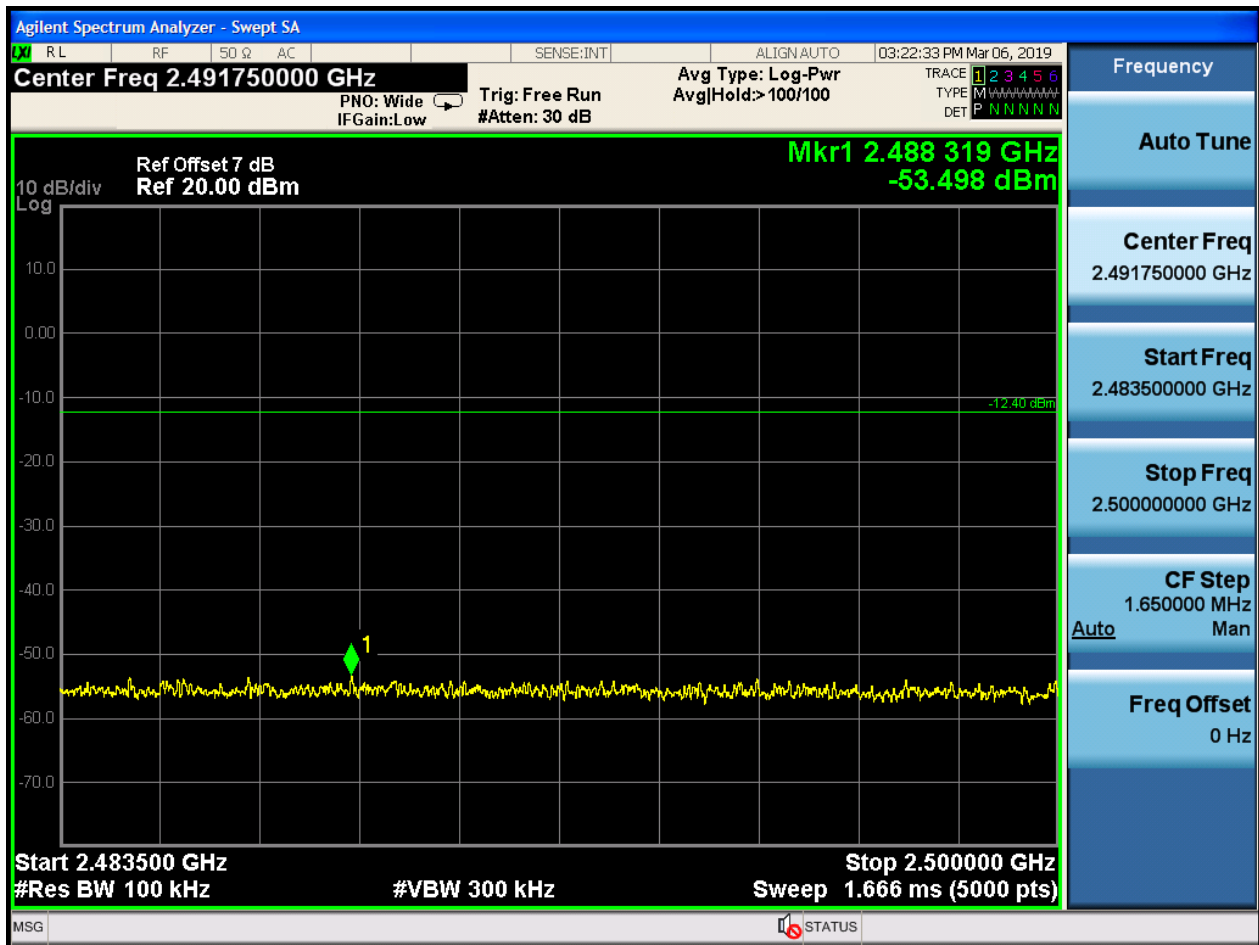
14.9.2 Puw













END