Case No. : GTS20220915002-1-6	
Ambient Condition: 26 ℃, 46 %RH,	
Test Date: 2022.10.9	**Test Engineer:** Jenny zeng

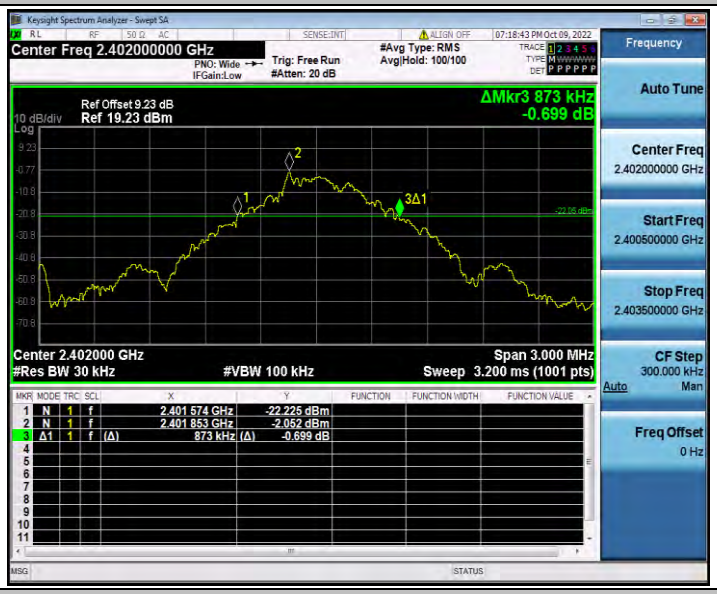
Appendix A.1: 20dB Emission Bandwidth

Test Result

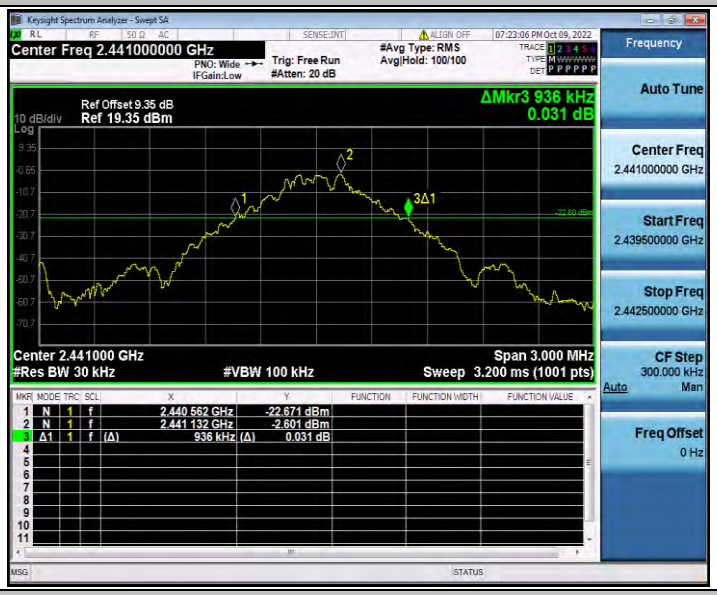
TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.873	2401.574	2402.447	---	---
		2441	0.936	2440.562	2441.498	---	---
		2480	0.882	2479.565	2480.447	---	---
2DH1	Ant1	2402	1.218	2401.397	2402.615	---	---
		2441	1.239	2440.394	2441.633	---	---
		2480	1.263	2479.382	2480.645	---	---
3DH1	Ant1	2402	1.218	2401.418	2402.636	---	---
		2441	1.224	2440.412	2441.636	---	---
		2480	1.221	2479.412	2480.633	---	---

Test Graphs

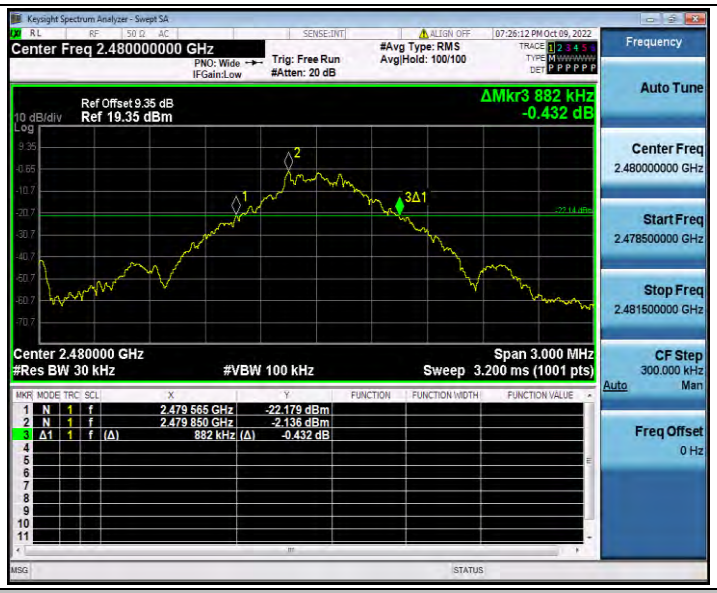
DH1_Ant1_2402



DH1_Ant1_2441



DH1_Ant1_2480



2DH1_Ant1_2402

2DH1_Ant1_2441

2DH1_Ant1_2480

3DH1_Ant1_2402

3DH1_Ant1_2441

3DH1_Ant1_2480

Appendix A.2: Occupied Channel Bandwidth

Test Result

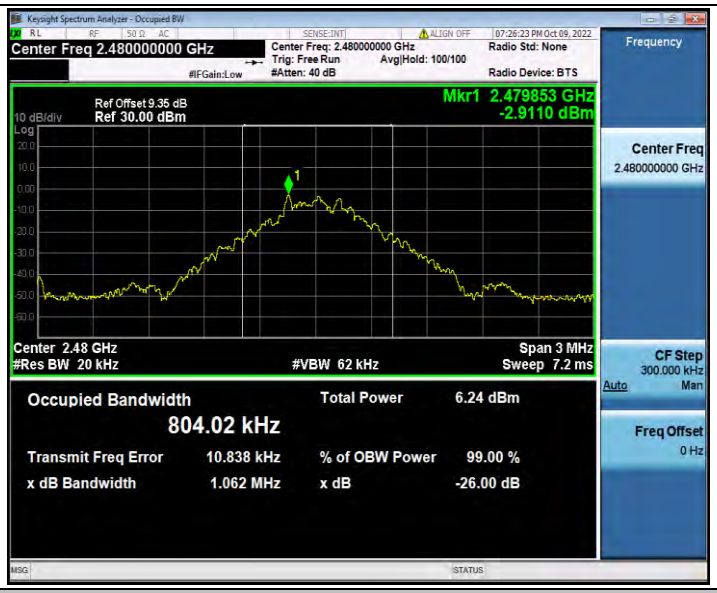
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH1	Ant1	2402	0.81067	2401.607	2402.417	---	---
		2441	0.81636	2440.603	2441.420	---	---
		2480	0.80402	2479.609	2480.413	---	---
2DH1	Ant1	2402	1.1549	2401.435	2402.590	---	---
		2441	1.1579	2440.431	2441.589	---	---
		2480	1.1616	2479.428	2480.589	---	---
3DH1	Ant1	2402	1.1507	2401.449	2402.599	---	---
		2441	1.1504	2440.450	2441.600	---	---
		2480	1.1499	2479.447	2480.597	---	---

Test Graphs

DH1_Ant1_2402

DH1_Ant1_2441

DH1_Ant1_2480



2DH1_Ant1_2402

2DH1_Ant1_2441

2DH1_Ant1_2480

3DH1_Ant1_2402

3DH1_Ant1_2441

3DH1_Ant1_2480

Appendix A.3: Maximum conducted output power

Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
DH1	Ant1	2402	-0.09	≤20.97	PASS
		2441	0.57	≤20.97	PASS
		2480	0.12	≤20.97	PASS
2DH1	Ant1	2402	0.71	≤20.97	PASS
		2441	1.19	≤20.97	PASS
		2480	0.86	≤20.97	PASS
3DH1	Ant1	2402	1.28	≤20.97	PASS
		2441	1.82	≤20.97	PASS
		2480	1.44	≤20.97	PASS

Appendix A.4: Carrier frequency separation

Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH1	Ant1	Hop_2402	1.004	≥0.624	PASS
		Hop_2441	1.002	≥0.624	PASS
		Hop_2480	0.998	≥0.624	PASS
2DH1	Ant1	Hop_2402	1.000	≥0.842	PASS
		Hop_2441	0.998	≥0.842	PASS
		Hop_2480	1.000	≥0.842	PASS
3DH1	Ant1	Hop_2402	0.998	≥0.816	PASS
		Hop_2441	1.148	≥0.816	PASS
		Hop_2480	0.998	≥0.816	PASS

Test Graphs

DH1_Ant1_Hop_2402

DH1_Ant1_Hop_2441

DH1_Ant1_Hop_2480

2DH1_Ant1_Hop_2402

2DH1_Ant1_Hop_2441

2DH1_Ant1_Hop_2480

3DH1_Ant1_Hop_2402

3DH1_Ant1_Hop_2441

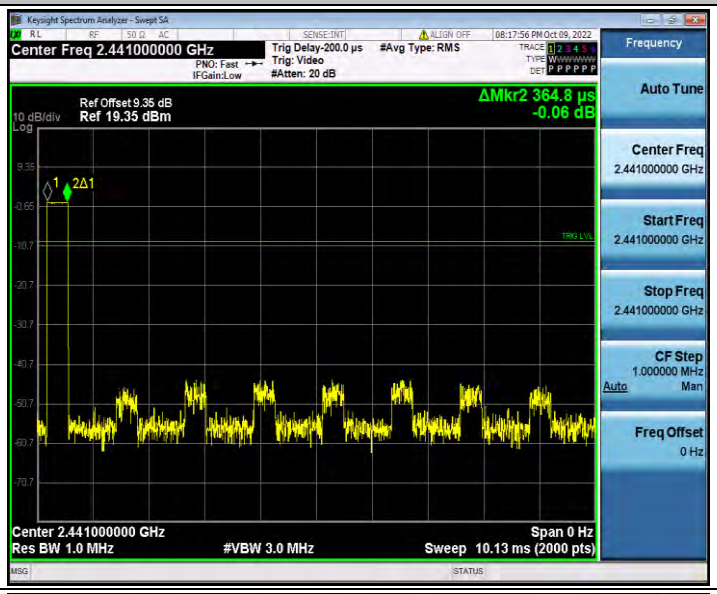
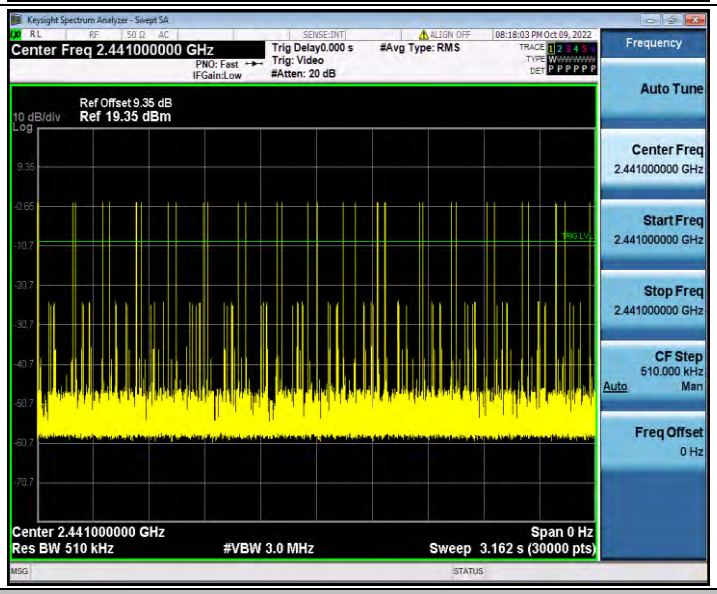
3DH1_Ant1_Hop_2480

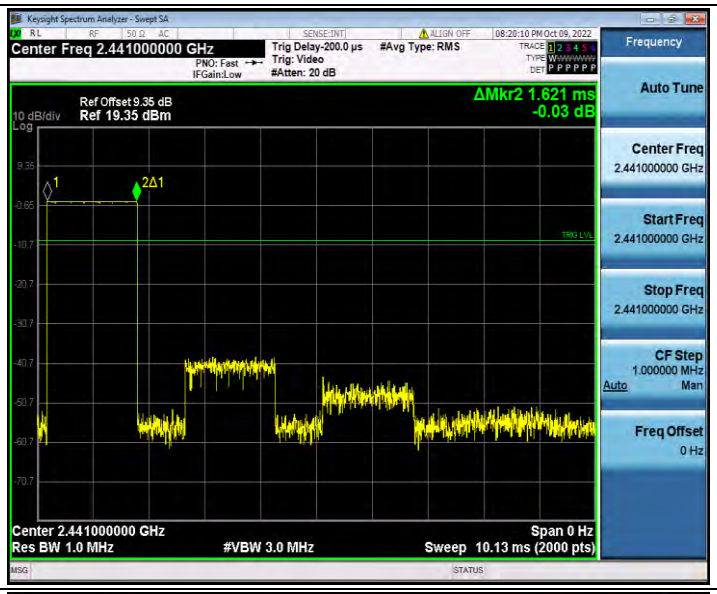
Appendix A.5: Time of occupancy

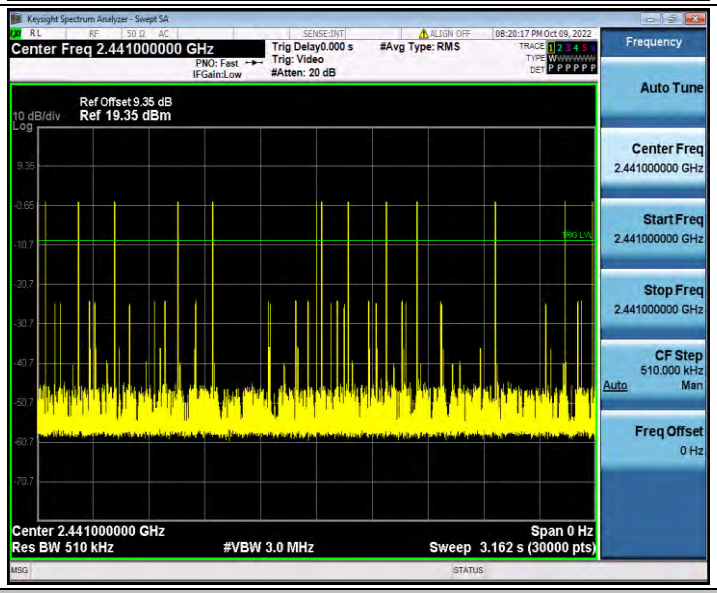
Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.36	330	0.12	≤0.4	PASS
DH3	Ant1	Hop	1.62	140	0.227	≤0.4	PASS
DH5	Ant1	Hop	2.87	70	0.201	≤0.4	PASS
2DH1	Ant1	Hop	0.37	330	0.124	≤0.4	PASS
2DH3	Ant1	Hop	1.63	180	0.293	≤0.4	PASS
2DH5	Ant1	Hop	2.88	120	0.345	≤0.4	PASS
3DH1	Ant1	Hop	0.37	330	0.123	≤0.4	PASS
3DH3	Ant1	Hop	1.61	200	0.322	≤0.4	PASS
3DH5	Ant1	Hop	2.88	120	0.345	≤0.4	PASS

Test Graphs

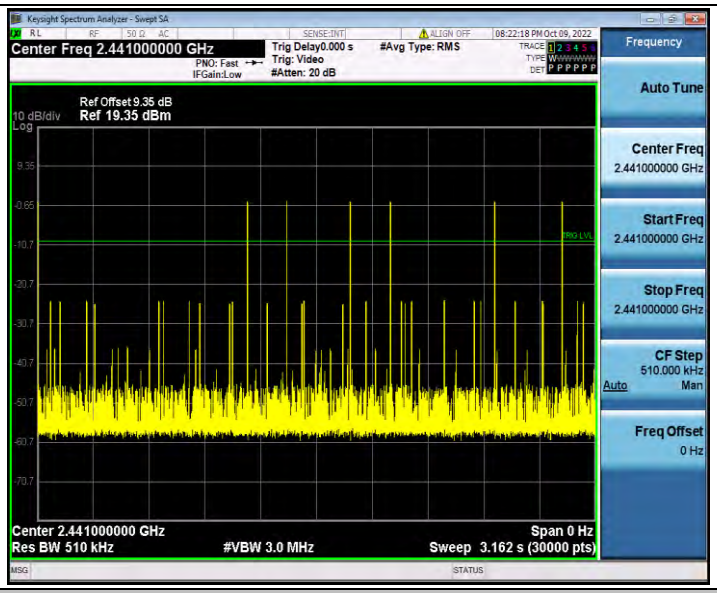
DH1_Ant1_Hop


DH3_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-200.0 µs
#Avg Type: RMS
Trig: Video
#Atten: 20 dB
PNO: Fast
IFGain:Low
Ref Offset 9.35 dB
10 dB/div
Ref 19.35 dBm
ΔMkr2 1.621 ms
-0.03 dB
Center 2.441000000 GHz
Span 0 Hz
Res BW 1.0 MHz
#VBW 3.0 MHz
Sweep 10.13 ms (2000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Freq Offset
0 Hz

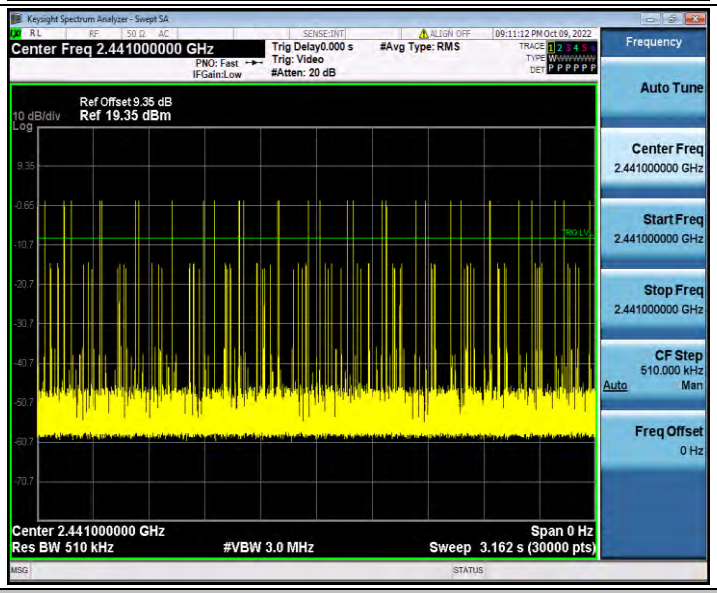

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
#Avg Type: RMS
Trig: Video
#Atten: 20 dB
PNO: Fast
IFGain:Low
Ref Offset 9.35 dB
10 dB/div
Ref 19.35 dBm
Center 2.441000000 GHz
Span 0 Hz
Res BW 510 kHz
#VBW 3.0 MHz
Sweep 3.162 s (30000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
510.000 kHz
Freq Offset
0 Hz

DH5_Ant1_Hop

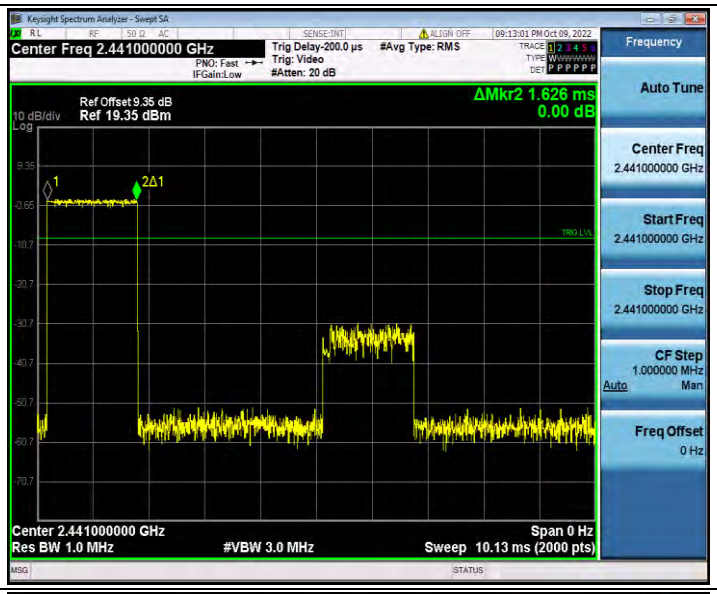
Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-200.0 µs
#Avg Type: RMS
Trig: Video
#Atten: 20 dB
PNO: Fast
IFGain:Low
Ref Offset 9.35 dB
10 dB/div
Ref 19.35 dBm
ΔMkr2 2.868 ms
-0.06 dB
Center 2.441000000 GHz
Span 0 Hz
Res BW 1.0 MHz
#VBW 3.0 MHz
Sweep 10.13 ms (2000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Freq Offset
0 Hz

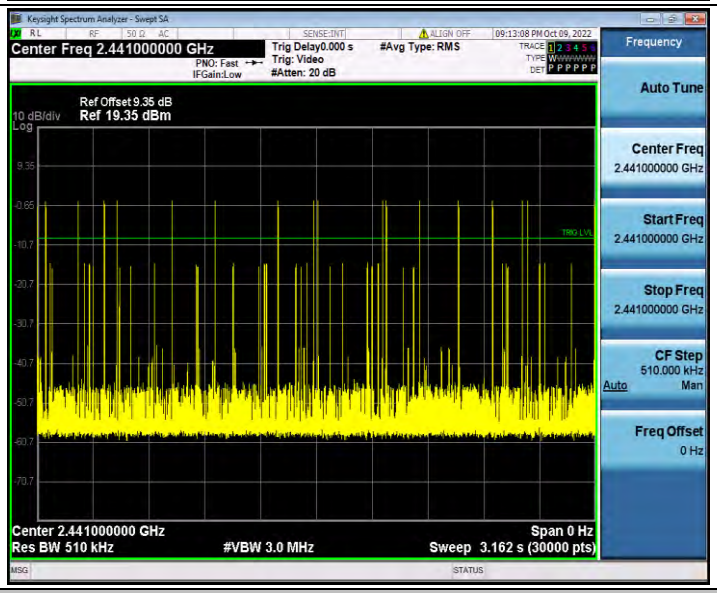


2DH1_Ant1_Hop

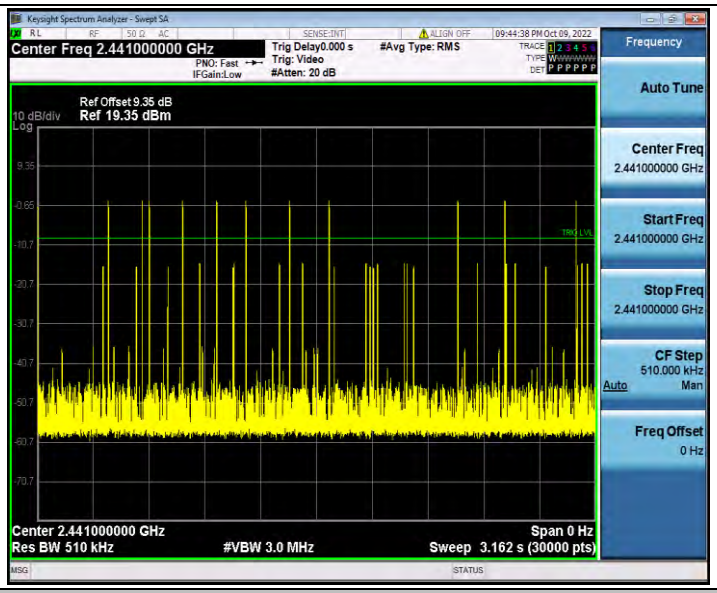


2DH3_Ant1_Hop

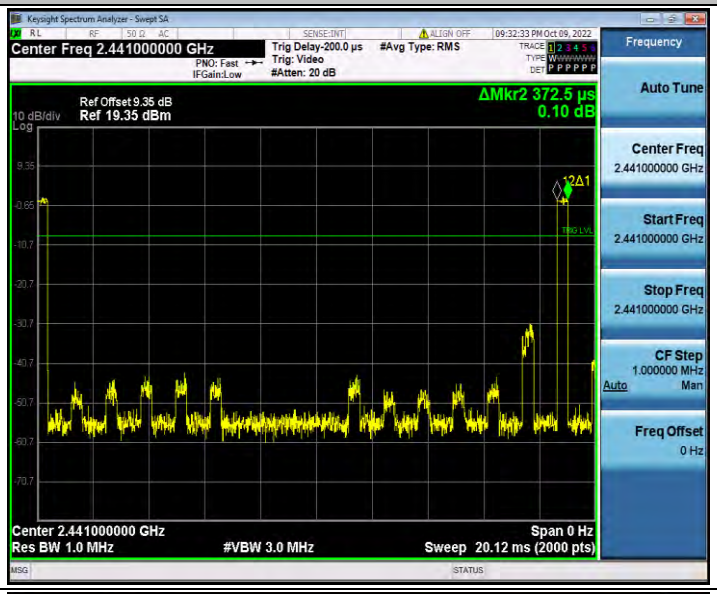


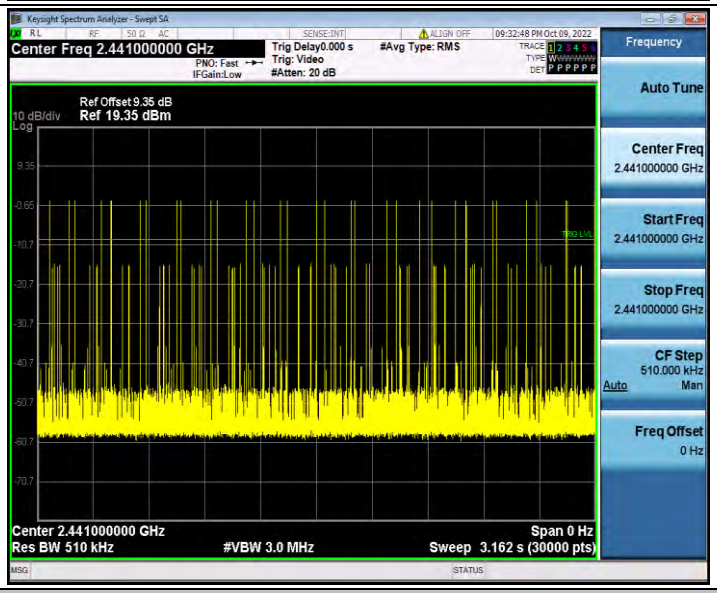


2DH5_Ant1_Hop

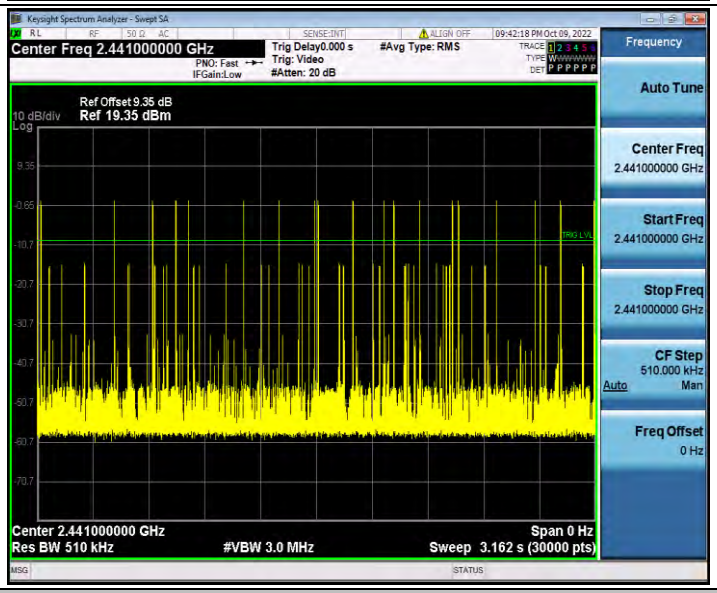


3DH1_Ant1_Hop

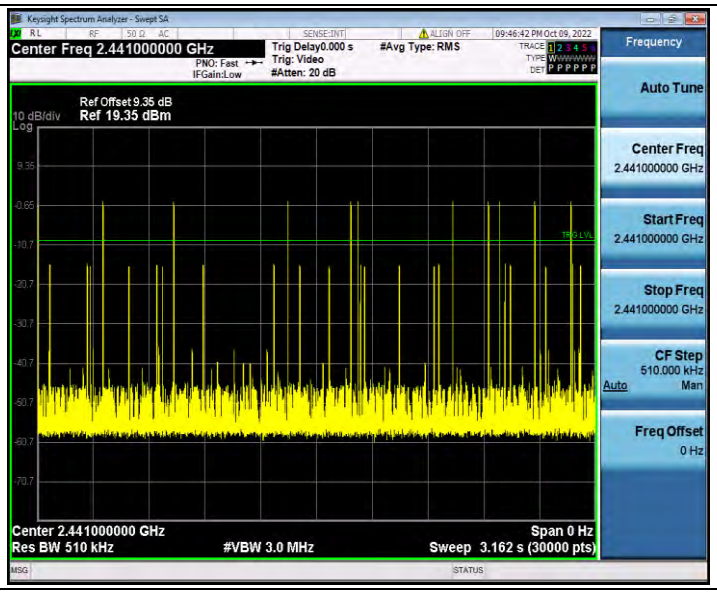




3DH3_Ant1_Hop



3DH5_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN OFF
09:46:42 PM Oct 09, 2022
Center Freq 2.441000000 GHz
PNO: Fast
IFGain:Low
Trig Delay 0.000 s
Trig: Video
#Atten: 20 dB
#Avg Type: RMS
TRACE 1 2 3 4 5 6
TYPE W W W W W W
DET P P P P P P
Ref Offset 9.35 dB
10 dB/div
Ref 19.35 dBm
Log
9.35
-0.65
-10.7
-20.7
-30.7
-40.7
-50.7
-60.7
-70.7
TRIG LVL
Center 2.441000000 GHz
Span 0 Hz
Res BW 510 kHz
#VBW 3.0 MHz
Sweep 3.162 s (30000 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
510.000 kHz
Auto
Man
Freq Offset
0 Hz

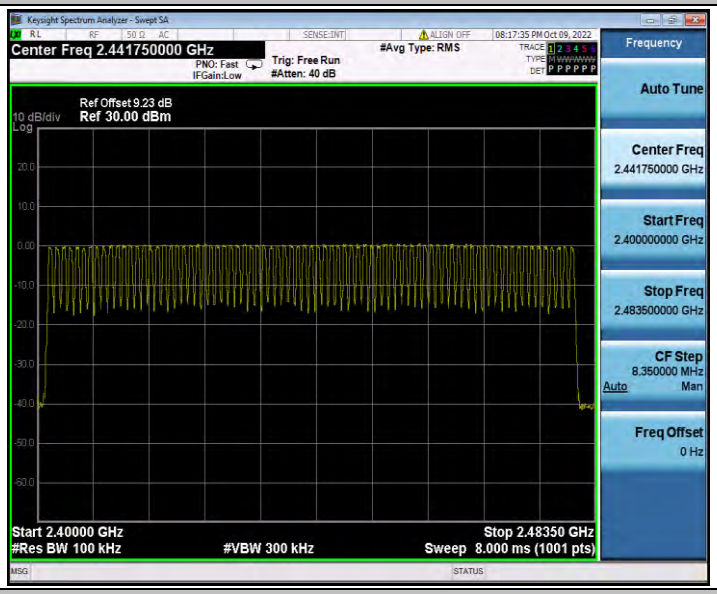
Appendix A.6: Number of hopping channels

Test Result

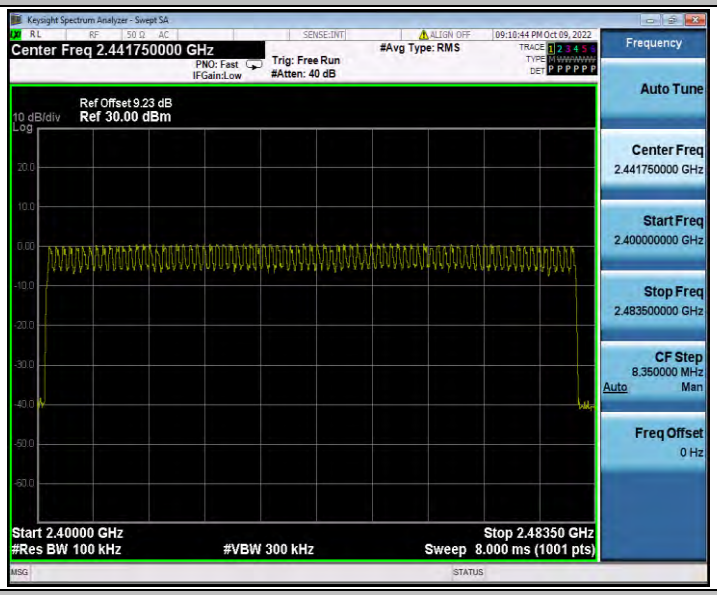
TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH1	Ant1	Hop	79	≥15	PASS
2DH1	Ant1	Hop	79	≥15	PASS
3DH1	Ant1	Hop	79	≥15	PASS

Test Graphs

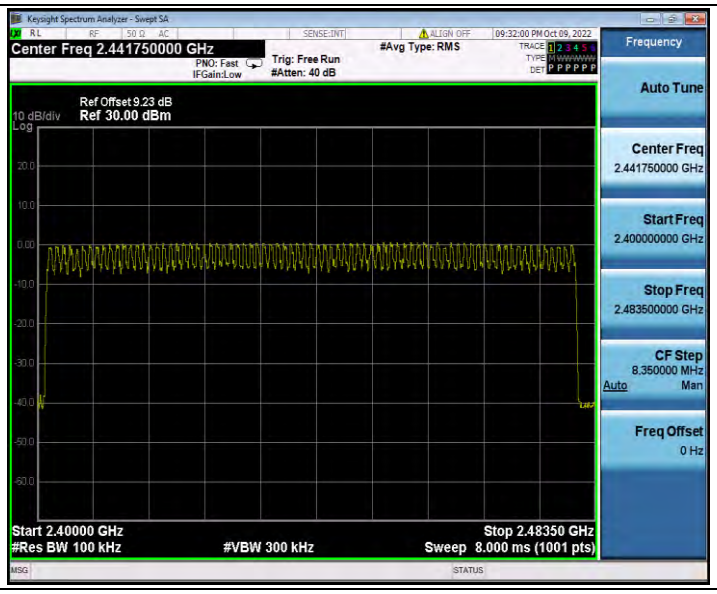
DH1_Ant1_Hop



2DH1_Ant1_Hop



3DH1_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN OFF
09:32:00 PM Oct 09, 2022
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P P P P P P
Ref Offset 9.23 dB
10 dB/div
Ref 30.00 dBm
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto
Man
Freq Offset
0 Hz

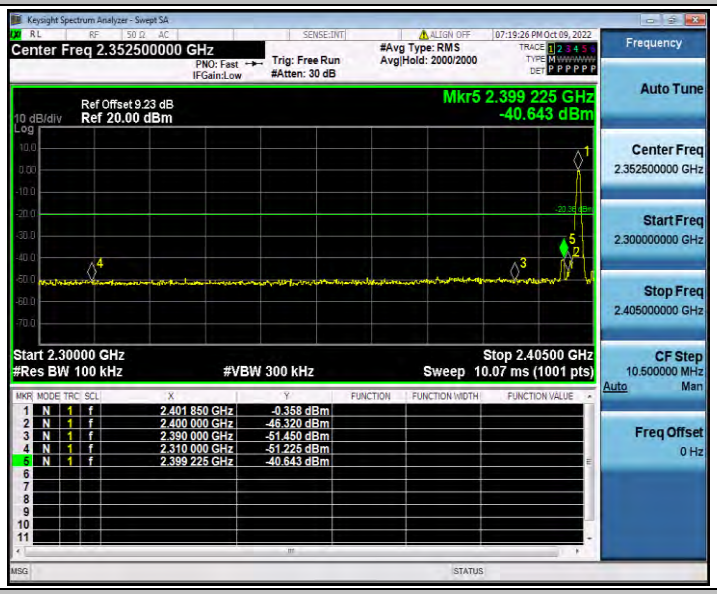
Appendix A.7: Band edge measurements

Test Result

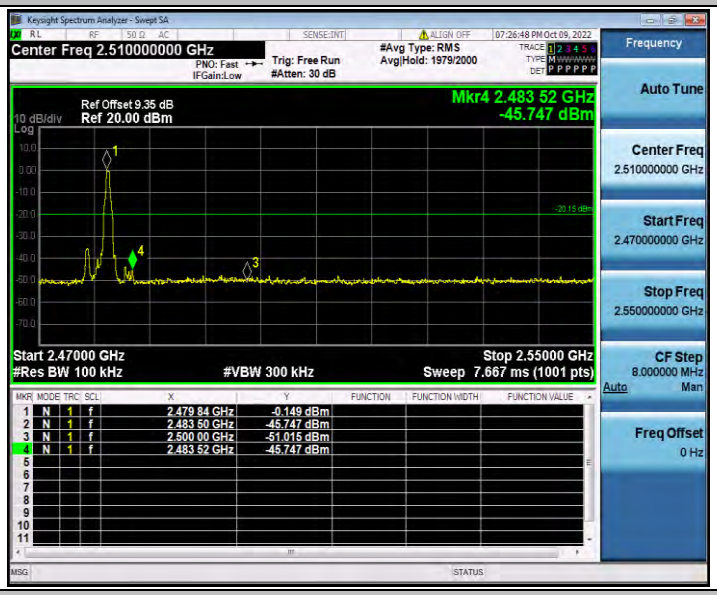
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	Low	2402	-0.36	-40.64	≤-20.36	PASS
		High	2480	-0.15	-45.75	≤-20.15	PASS
		Low	Hop_2402	-1.00	-49.07	≤-21	PASS
		High	Hop_2480	-0.26	-48.34	≤-20.26	PASS
2DH1	Ant1	Low	2402	-0.41	-41.02	≤-20.41	PASS
		High	2480	-0.15	-46.81	≤-20.15	PASS
		Low	Hop_2402	-0.31	-49.18	≤-20.31	PASS
		High	Hop_2480	-0.08	-46.79	≤-20.08	PASS
3DH1	Ant1	Low	2402	-0.37	-40.86	≤-20.37	PASS
		High	2480	-0.20	-46.62	≤-20.2	PASS
		Low	Hop_2402	-0.21	-48.98	≤-20.21	PASS
		High	Hop_2480	0.18	-48.8	≤-19.82	PASS

Test Graphs

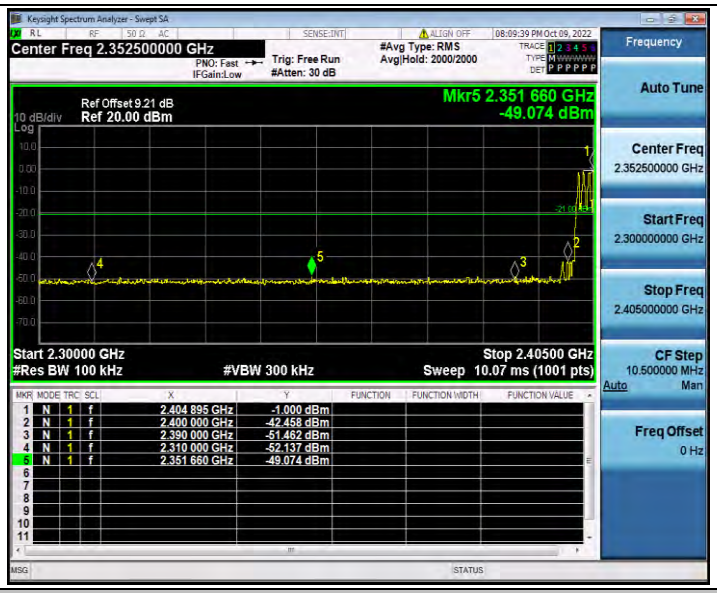
DH1_Ant1_Low_2402



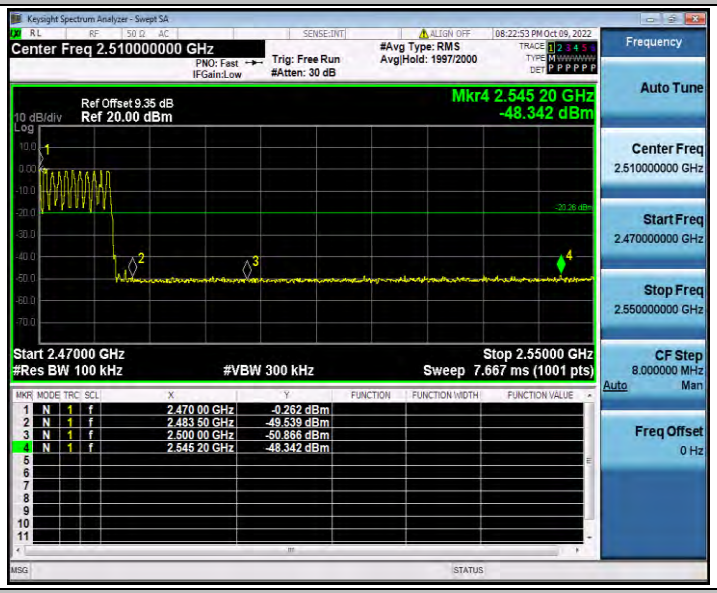
DH1_Ant1_High_2480



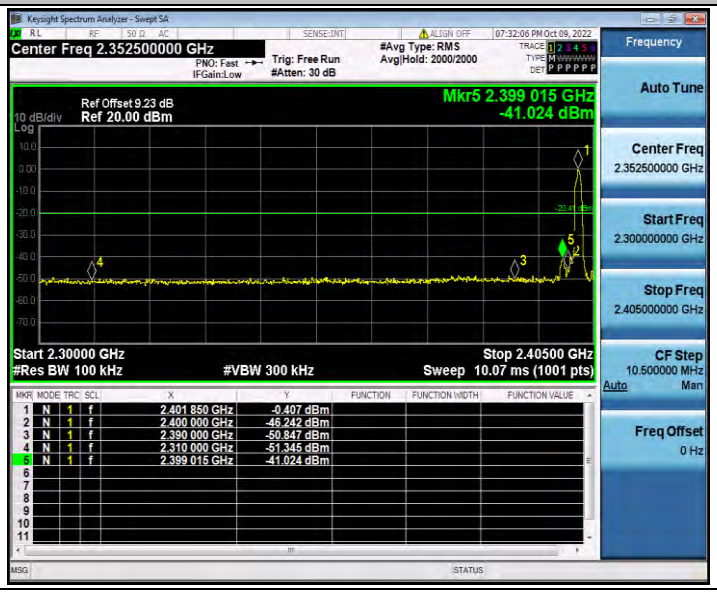
DH1_Ant1_Low_Hop_2402



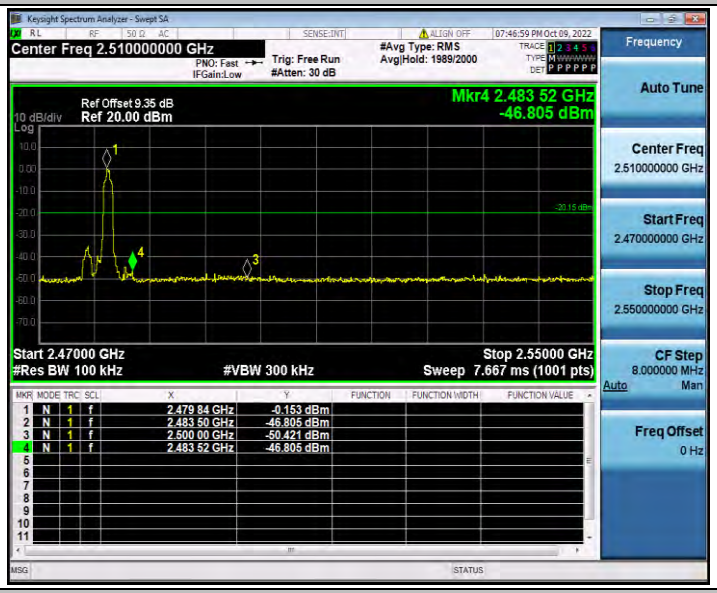
DH1_Ant1_High_Hop_2480



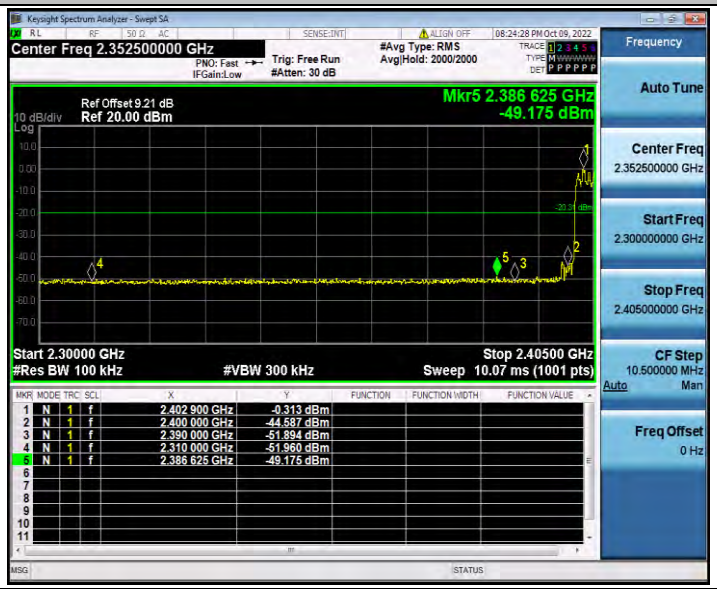
2DH1_Ant1_Low_2402



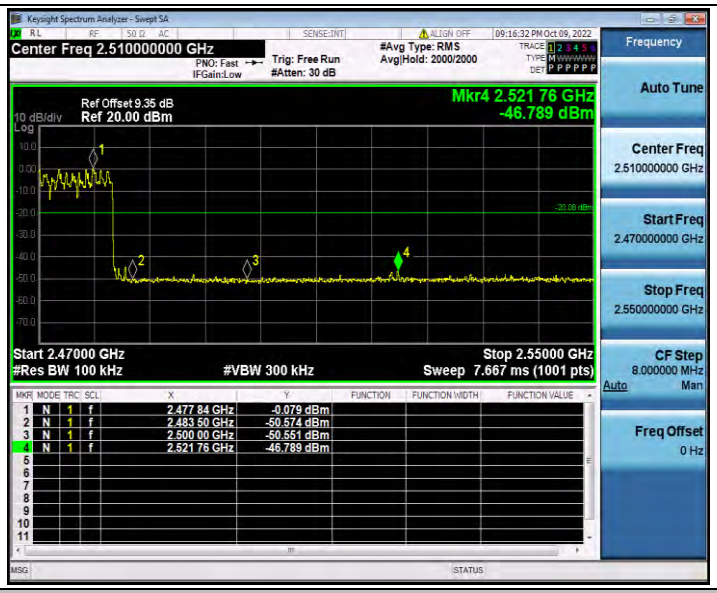
2DH1_Ant1_High_2480



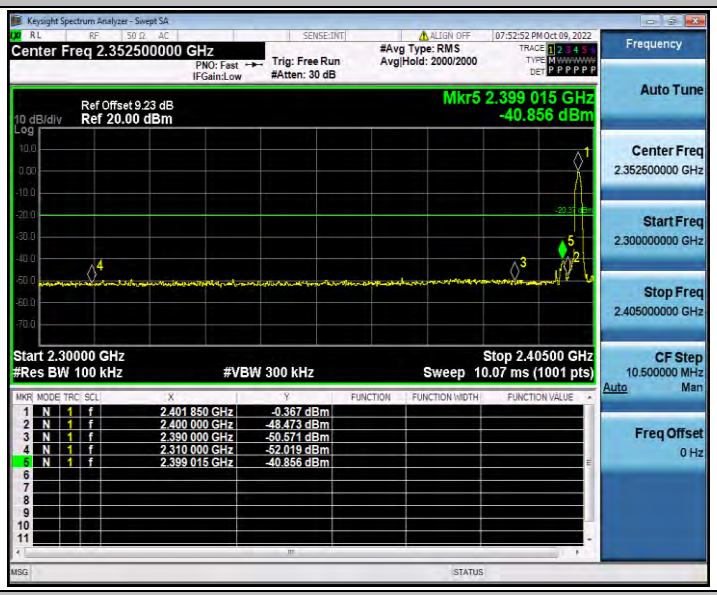
2DH1_Ant1_Low_Hop_2402



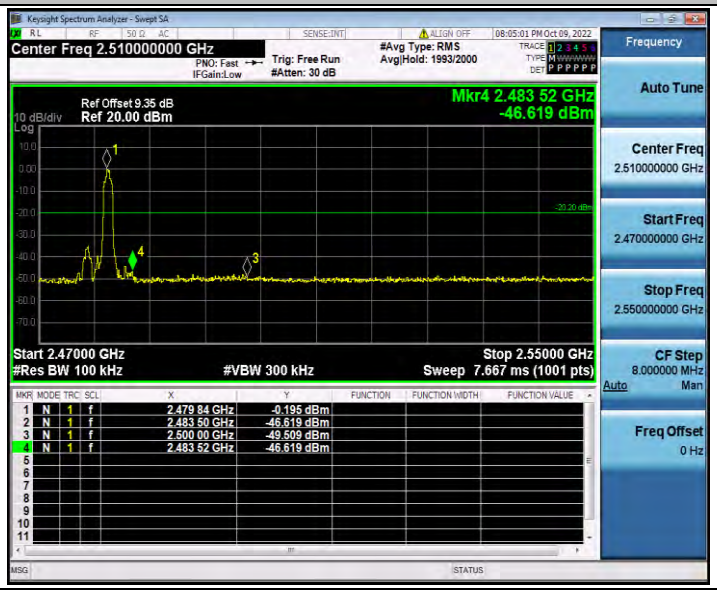
2DH1_Ant1_High_Hop_2480



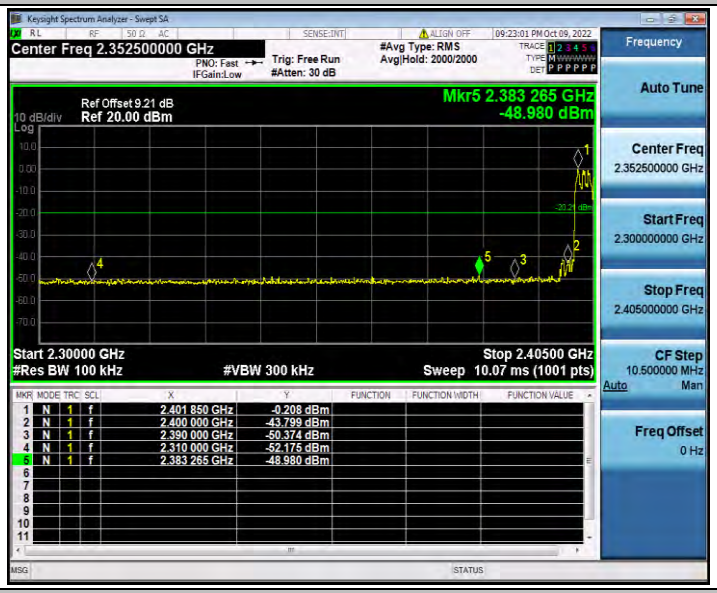
3DH1_Ant1_Low_2402



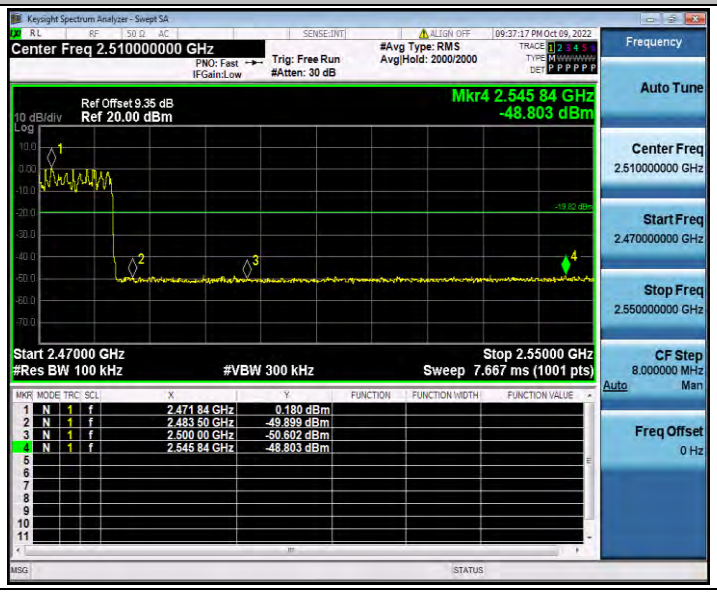
3DH1_Ant1_High_2480



3DH1_Ant1_Low_Hop_2402



3DH1_Ant1_High_Hop_2480



Appendix A.8: Conducted Spurious Emission

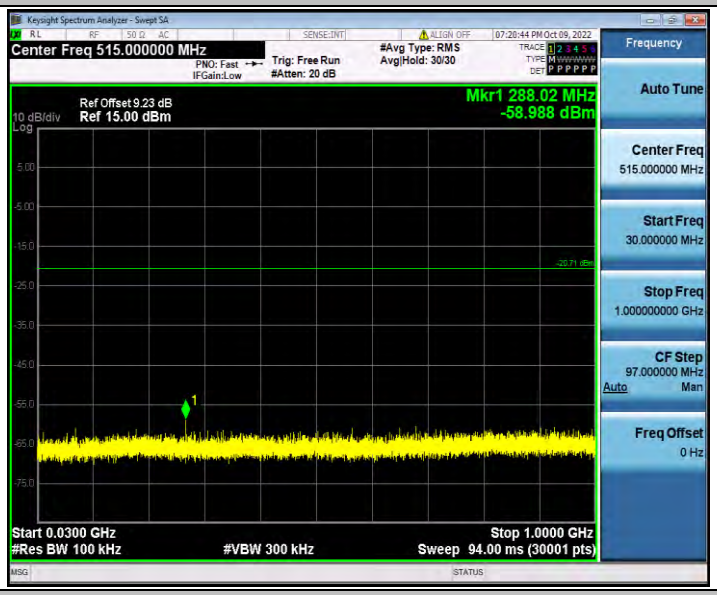
Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH1	Ant1	2402	Reference	-0.71	-0.71	---	PASS
			30~1000	-0.71	-58.99	≤-20.71	PASS
			1000~26500	-0.71	-47.9	≤-20.71	PASS
		2441	Reference	-0.15	-0.15	---	PASS
			30~1000	-0.15	-59.49	≤-20.15	PASS
			1000~26500	-0.15	-47.45	≤-20.15	PASS
		2480	Reference	-0.23	-0.23	---	PASS
			30~1000	-0.23	-57.92	≤-20.23	PASS
			1000~26500	-0.23	-43.81	≤-20.23	PASS
2DH1	Ant1	2402	Reference	-0.45	-0.45	---	PASS
			30~1000	-0.45	-59.7	≤-20.45	PASS
			1000~26500	-0.45	-47.86	≤-20.45	PASS
		2441	Reference	0.19	0.19	---	PASS
			30~1000	0.19	-59.02	≤-19.81	PASS
			1000~26500	0.19	-47.17	≤-19.81	PASS
		2480	Reference	-0.21	-0.21	---	PASS
			30~1000	-0.21	-59.62	≤-20.21	PASS
			1000~26500	-0.21	-47.76	≤-20.21	PASS
3DH1	Ant1	2402	Reference	-0.67	-0.67	---	PASS
			30~1000	-0.67	-59.31	≤-20.67	PASS
			1000~26500	-0.67	-47.3	≤-20.67	PASS
		2441	Reference	-0.23	-0.23	---	PASS
			30~1000	-0.23	-56.8	≤-20.23	PASS
			1000~26500	-0.23	-47.84	≤-20.23	PASS
		2480	Reference	-0.59	-0.59	---	PASS
			30~1000	-0.59	-58.62	≤-20.59	PASS
			1000~26500	-0.59	-47.57	≤-20.59	PASS

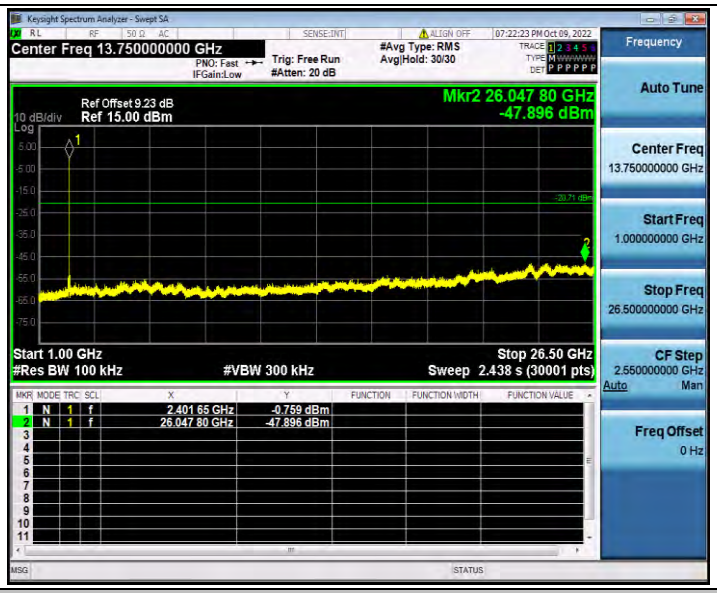
Test Graphs

DH1_Ant1_2402_0~Reference

DH1_Ant1_2402_30~1000



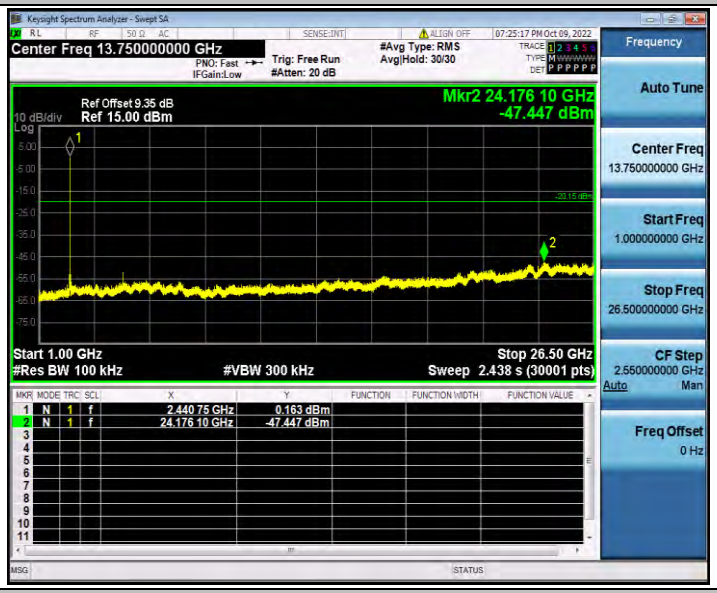
DH1_Ant1_2402_1000~26500



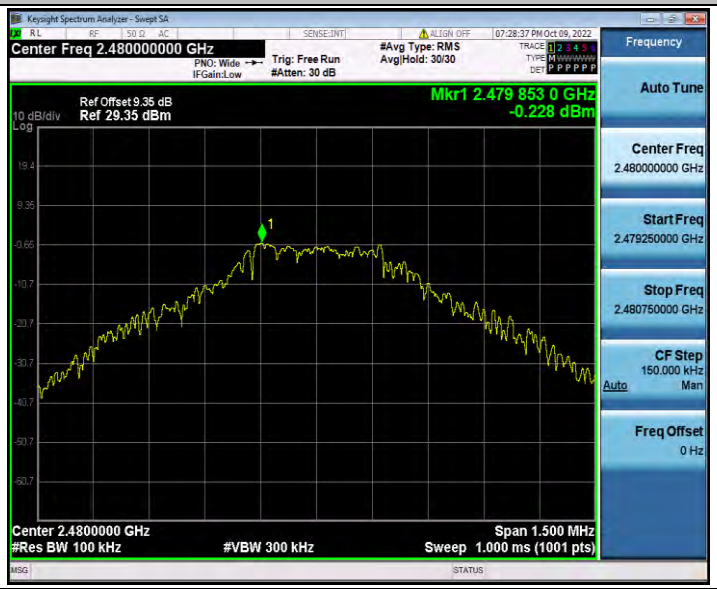
DH1_Ant1_2441_0~Reference

DH1_Ant1_2441_30~1000

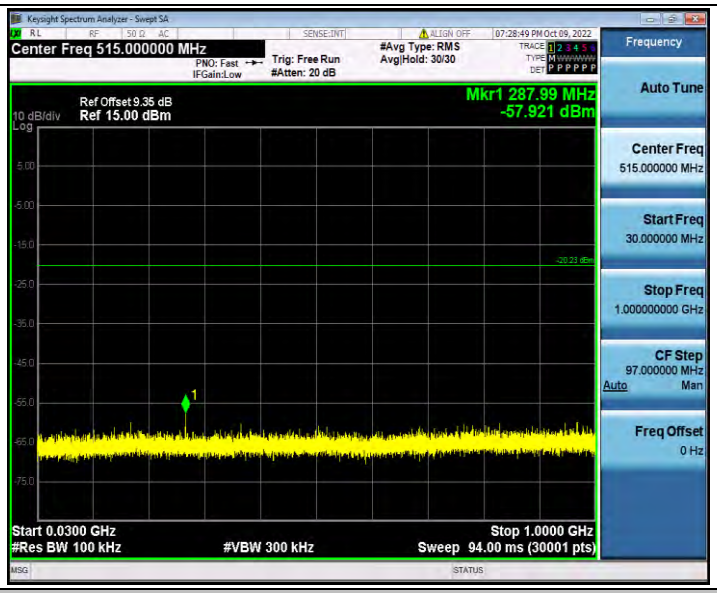
DH1_Ant1_2441_1000~26500



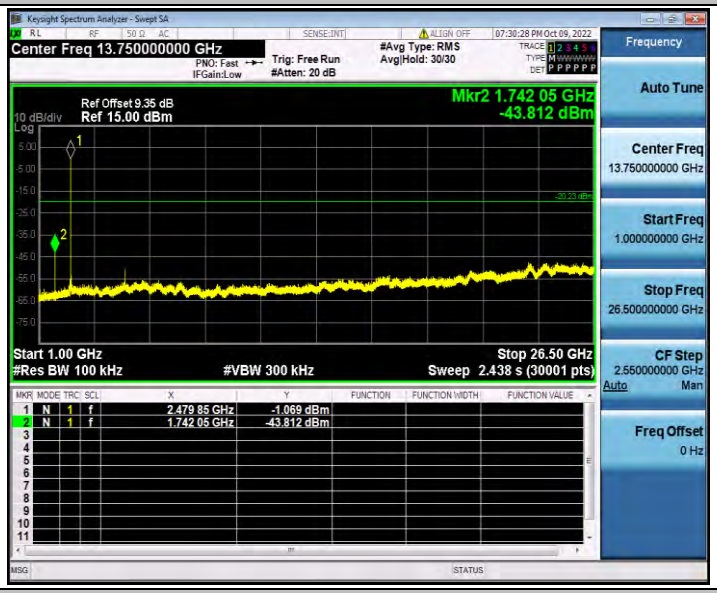
DH1_Ant1_2480_0~Reference



DH1_Ant1_2480_30~1000

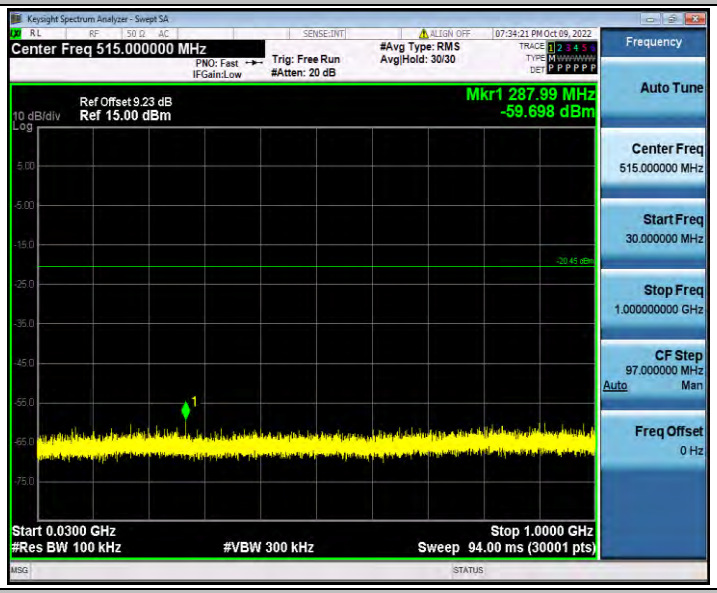


DH1_Ant1_2480_1000~26500



2DH1_Ant1_2402_0~Reference

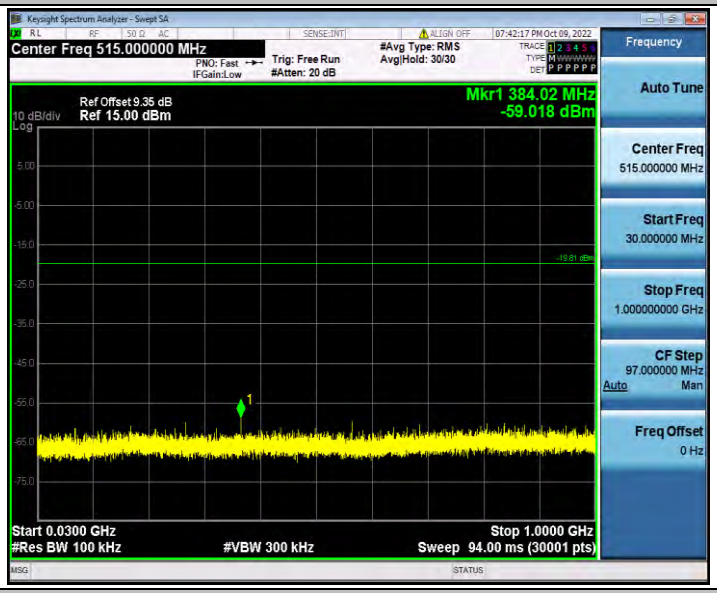
2DH1_Ant1_2402_30~1000



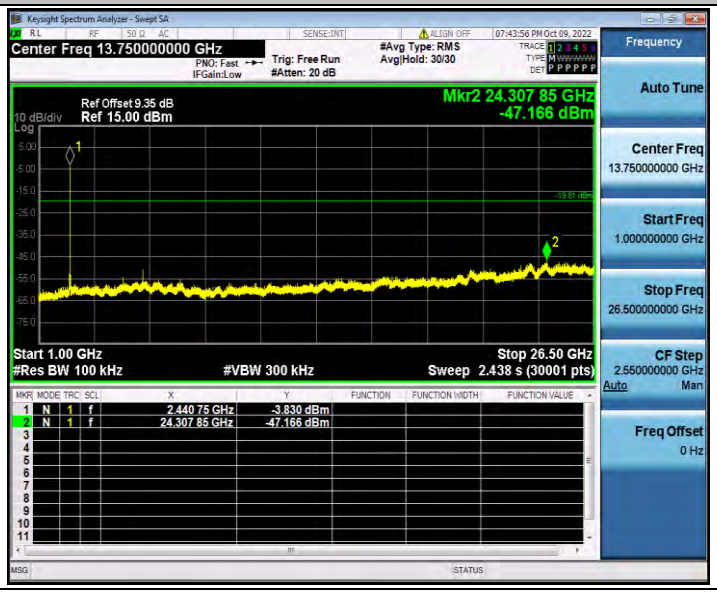
2DH1_Ant1_2402_1000~26500

2DH1_Ant1_2441_0~Reference

2DH1_Ant1_2441_30~1000

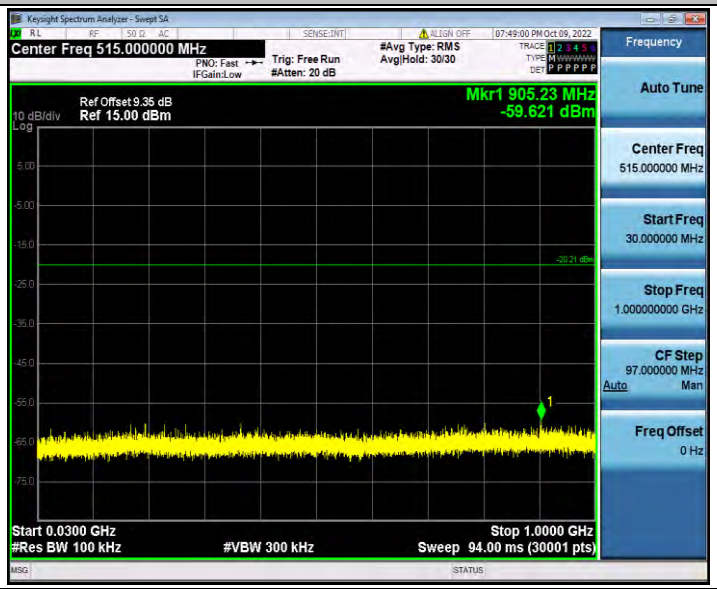


2DH1_Ant1_2441_1000~26500

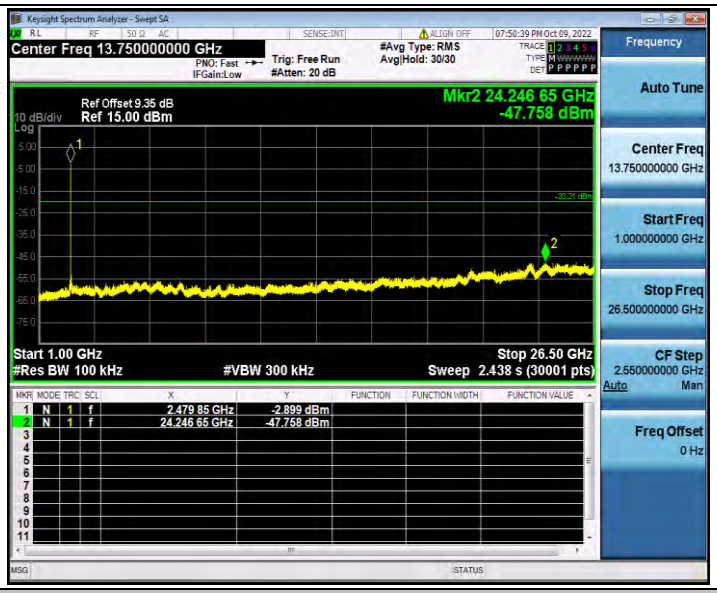


2DH1_Ant1_2480_0~Reference

2DH1_Ant1_2480_30~1000



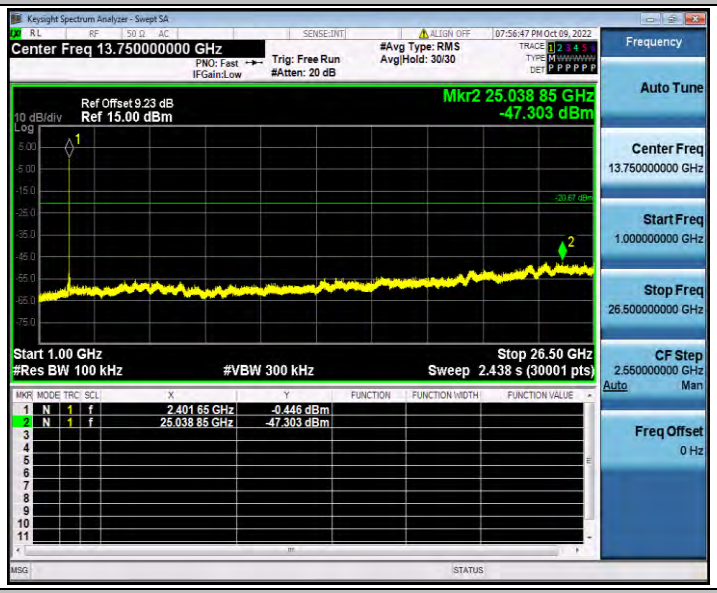
2DH1_Ant1_2480_1000~26500



3DH1_Ant1_2402_0~Reference

3DH1_Ant1_2402_30~1000

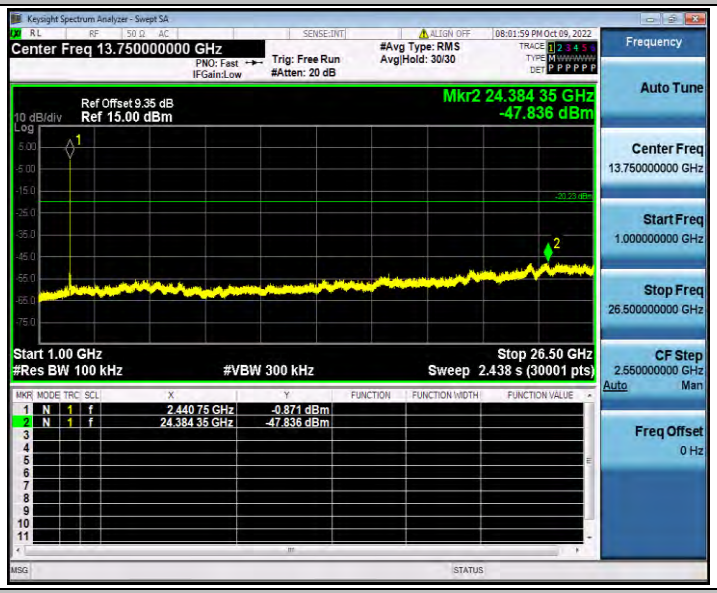
3DH1_Ant1_2402_1000~26500



3DH1_Ant1_2441_0~Reference

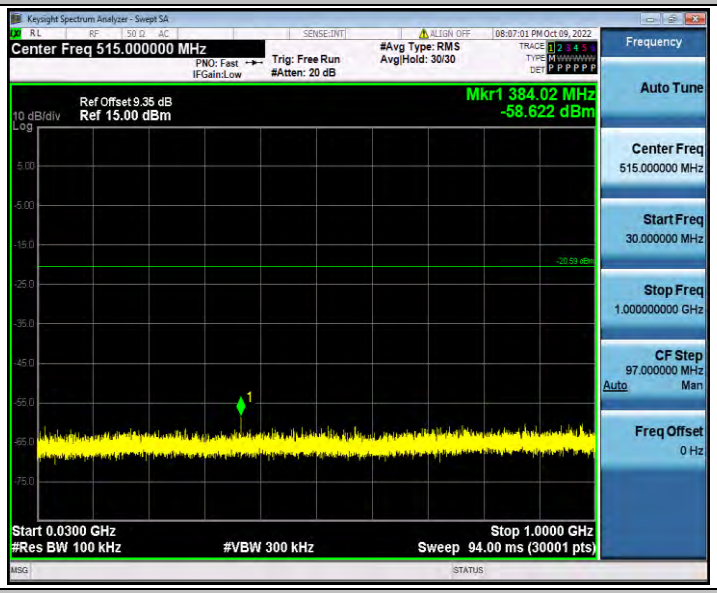
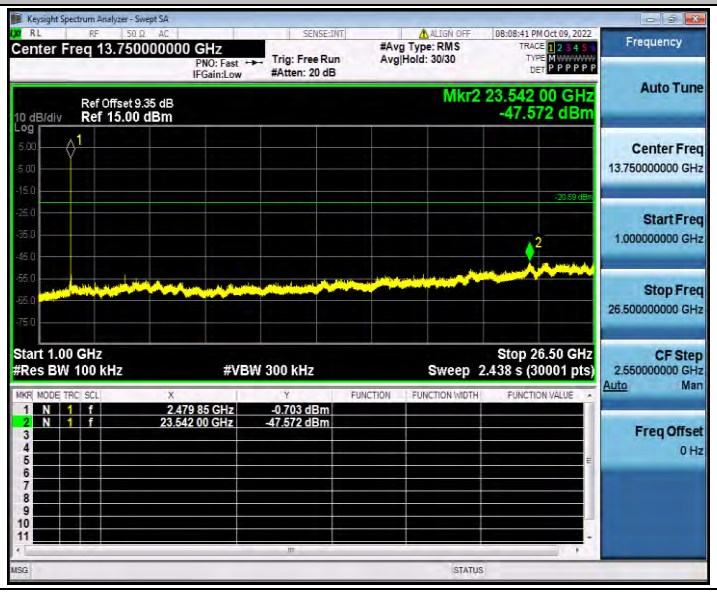
3DH1_Ant1_2441_30~1000

3DH1_Ant1_2441_1000~26500



3DH1_Ant1_2480_0~Reference

3DH1_Ant1_2480_30~1000



3DH1_Ant1_2480_1000~26500