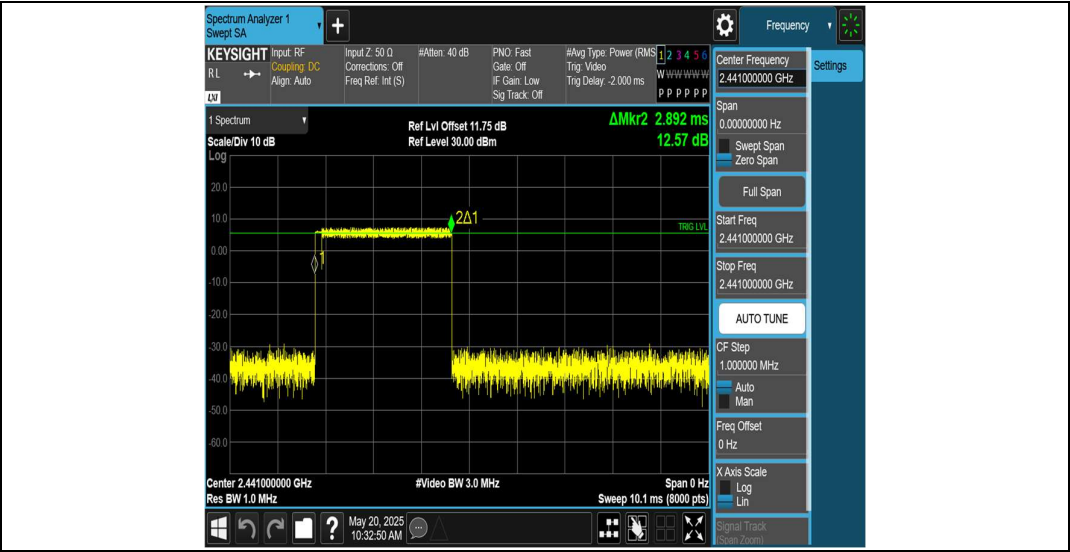




Appendix F: Number of hopping channels

Test Result

TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

The figure consists of three vertically stacked screenshots of a Spectrum Analyzer interface, each showing the frequency response of a different antenna. The interface includes a top status bar, a main spectrum plot, and a right-hand settings panel.

Top Screenshot: DH5_Ant1_Hop

- Top Bar:** Spectrum Analyzer 1, Swept SA, Frequency.
- Keysight Panel:** Input: RF, Coupling: DC, Align: Auto, Input Z: 50 Ω , Corrections: Off, Freq Ref: Int (S), #Atten: 40 dB, PNO: Fast Gate: Off, IF Gain: Low, Sig Track: Off, #Avg Type: Power (RMS), Trg: Free Run, 1 2 3 4 5 6, M W W W W W W W, P P P P P P.
- Plot:** 1 Spectrum, Scale/Div 10 dB, Log, Ref Lvl Offset 11.86 dB, Ref Level 30.00 dBm. The plot shows a signal with a peak around 2.44 GHz.
- Settings Panel:** Center Frequency: 2.441750000 GHz, Span: 83.5000000 MHz, Sweep Span: Zero Span, Full Span, Start Freq: 2.400000000 GHz, Stop Freq: 2.483500000 GHz, AUTO TUNE, CF Step: 8.3500000 MHz, Auto, Man, Freq Offset: 0 Hz, X Axis Scale: Log, Lin, Signal Track: Span Zoom.
- Bottom Bar:** Start 2.40000 GHz, #Res BW 300 kHz, #Video BW 300 kHz, Stop 2.48350 GHz, Sweep 1.13 ms (1001 pts), May 20, 2025 10:27:16 AM.

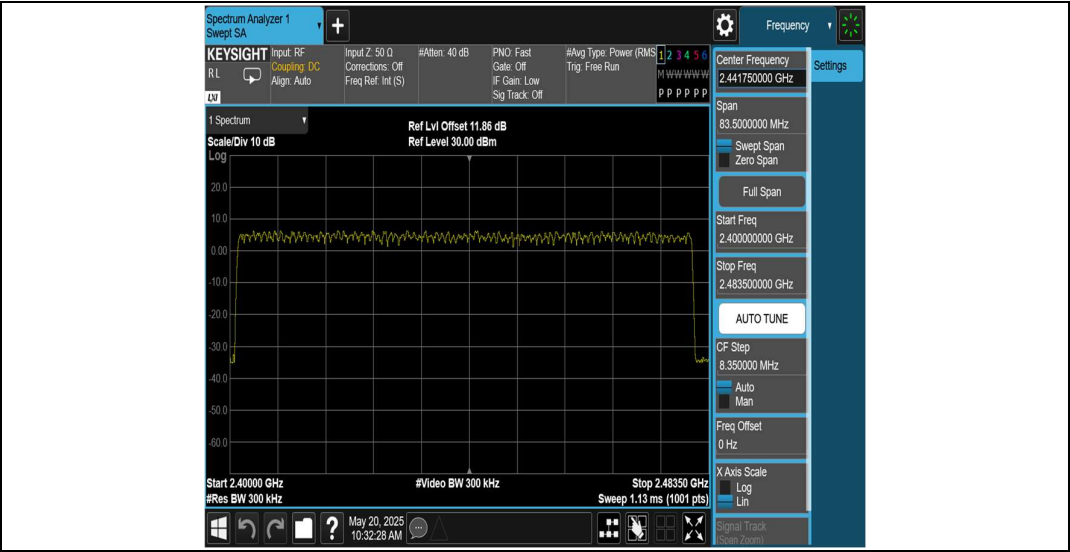
Middle Screenshot: 2DH5_Ant1_Hop

- Top Bar:** Spectrum Analyzer 1, Swept SA, Frequency.
- Keysight Panel:** Input: RF, Coupling: DC, Align: Auto, Input Z: 50 Ω , Corrections: Off, Freq Ref: Int (S), #Atten: 40 dB, PNO: Fast Gate: Off, IF Gain: Low, Sig Track: Off, #Avg Type: Power (RMS), Trg: Free Run, 1 2 3 4 5 6, M W W W W W W W, P P P P P P.
- Plot:** 1 Spectrum, Scale/Div 10 dB, Log, Ref Lvl Offset 11.86 dB, Ref Level 30.00 dBm. The plot shows a signal with a peak around 2.44 GHz.
- Settings Panel:** Center Frequency: 2.441750000 GHz, Span: 83.5000000 MHz, Sweep Span: Zero Span, Full Span, Start Freq: 2.400000000 GHz, Stop Freq: 2.483500000 GHz, AUTO TUNE, CF Step: 8.3500000 MHz, Auto, Man, Freq Offset: 0 Hz, X Axis Scale: Log, Lin, Signal Track: Span Zoom.
- Bottom Bar:** Start 2.40000 GHz, #Res BW 300 kHz, #Video BW 300 kHz, Stop 2.48350 GHz, Sweep 1.13 ms (1001 pts), May 20, 2025 10:30:13 AM.

Bottom Screenshot: 3DH5_Ant1_Hop

- Top Bar:** Spectrum Analyzer 1, Swept SA, Frequency.
- Keysight Panel:** Input: RF, Coupling: DC, Align: Auto, Input Z: 50 Ω , Corrections: Off, Freq Ref: Int (S), #Atten: 40 dB, PNO: Fast Gate: Off, IF Gain: Low, Sig Track: Off, #Avg Type: Power (RMS), Trg: Free Run, 1 2 3 4 5 6, M W W W W W W W, P P P P P P.
- Plot:** 1 Spectrum, Scale/Div 10 dB, Log, Ref Lvl Offset 11.86 dB, Ref Level 30.00 dBm. The plot shows a signal with a peak around 2.44 GHz.
- Settings Panel:** Center Frequency: 2.441750000 GHz, Span: 83.5000000 MHz, Sweep Span: Zero Span, Full Span, Start Freq: 2.400000000 GHz, Stop Freq: 2.483500000 GHz, AUTO TUNE, CF Step: 8.3500000 MHz, Auto, Man, Freq Offset: 0 Hz, X Axis Scale: Log, Lin, Signal Track: Span Zoom.
- Bottom Bar:** Start 2.40000 GHz, #Res BW 300 kHz, #Video BW 300 kHz, Stop 2.48350 GHz, Sweep 1.13 ms (1001 pts), May 20, 2025 10:30:13 AM.

3DH5_Ant1_Hop

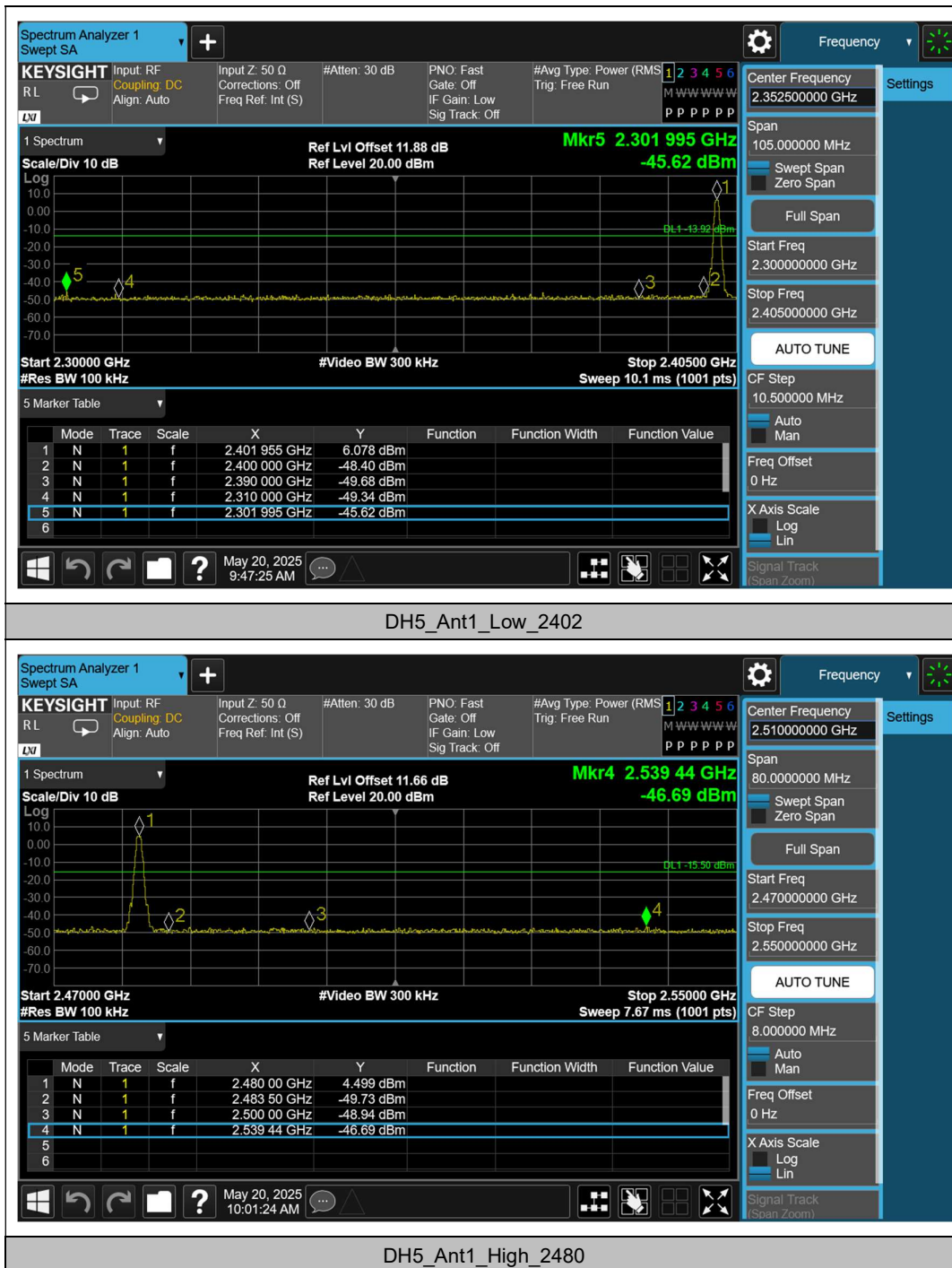


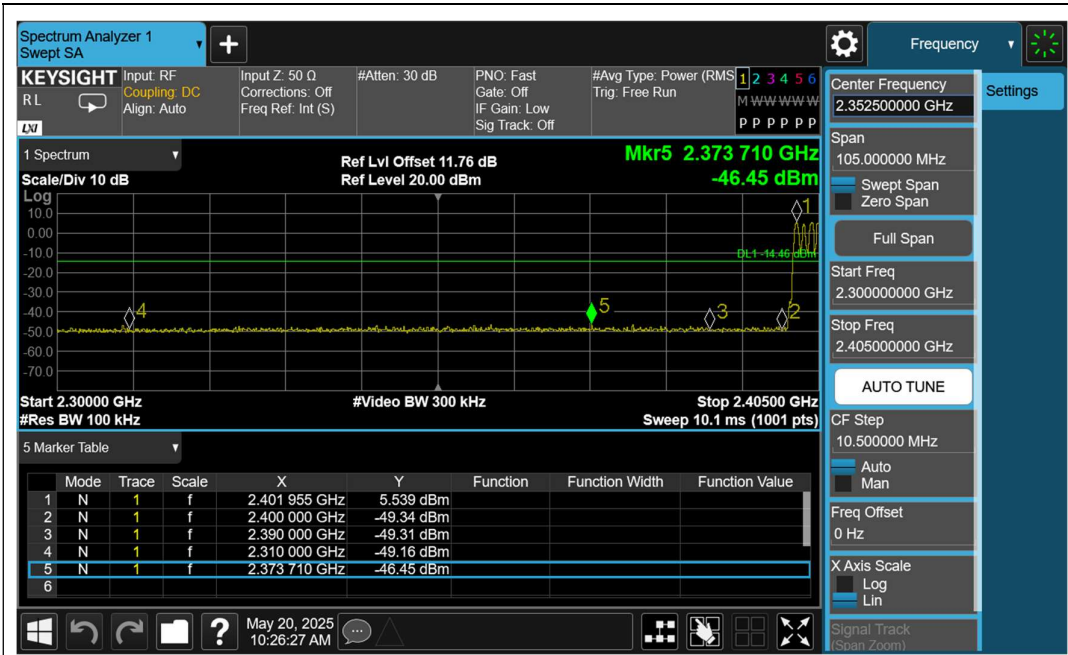
Appendix G: Band edge measurements

Test Result

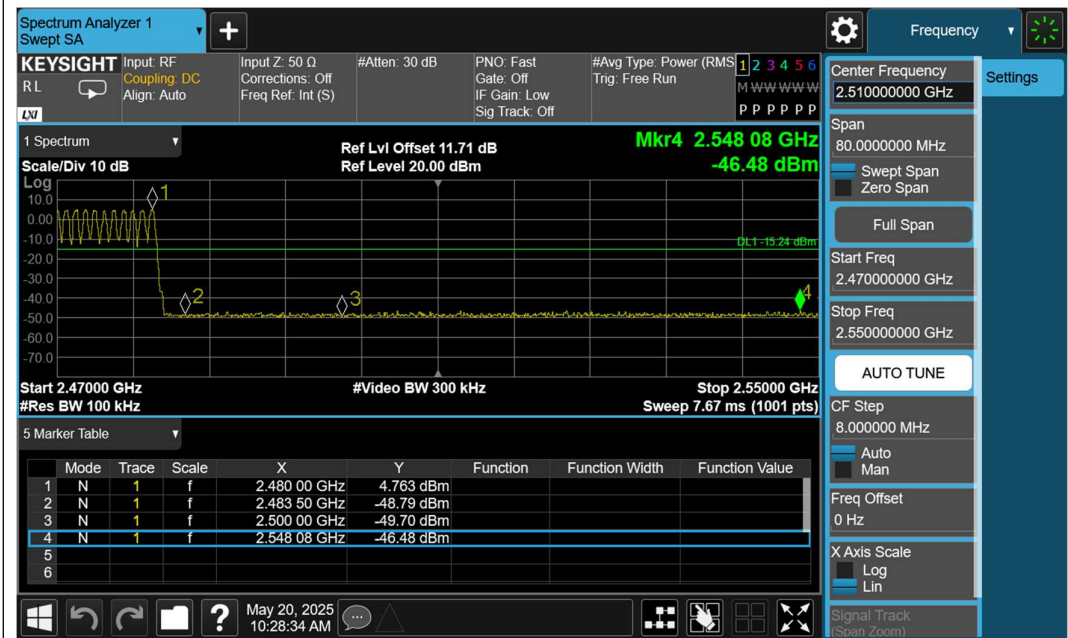
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	6.08	-45.62	≤-13.92	PASS
		High	2480	4.50	-46.69	≤-15.5	PASS
		Low	Hop_2402	5.54	-46.45	≤-14.46	PASS
		High	Hop_2480	4.76	-46.48	≤-15.24	PASS
2DH5	Ant1	Low	2402	4.04	-47.05	≤-15.97	PASS
		High	2480	3.12	-46.47	≤-16.88	PASS
		Low	Hop_2402	4.19	-46.51	≤-15.81	PASS
		High	Hop_2480	5.12	-46.43	≤-14.88	PASS
3DH5	Ant1	Low	2402	4.40	-46.22	≤-15.6	PASS
		High	2480	3.23	-46.01	≤-16.77	PASS
		Low	Hop_2402	4.41	-46.9	≤-15.59	PASS
		High	Hop_2480	4.74	-46.2	≤-15.26	PASS

Test Graphs

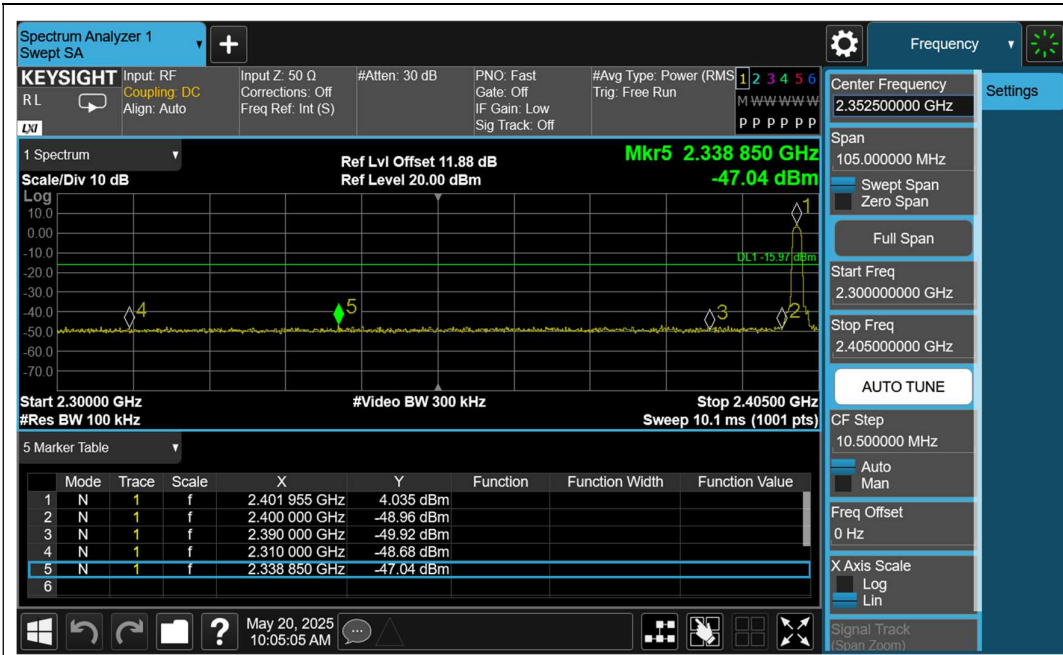




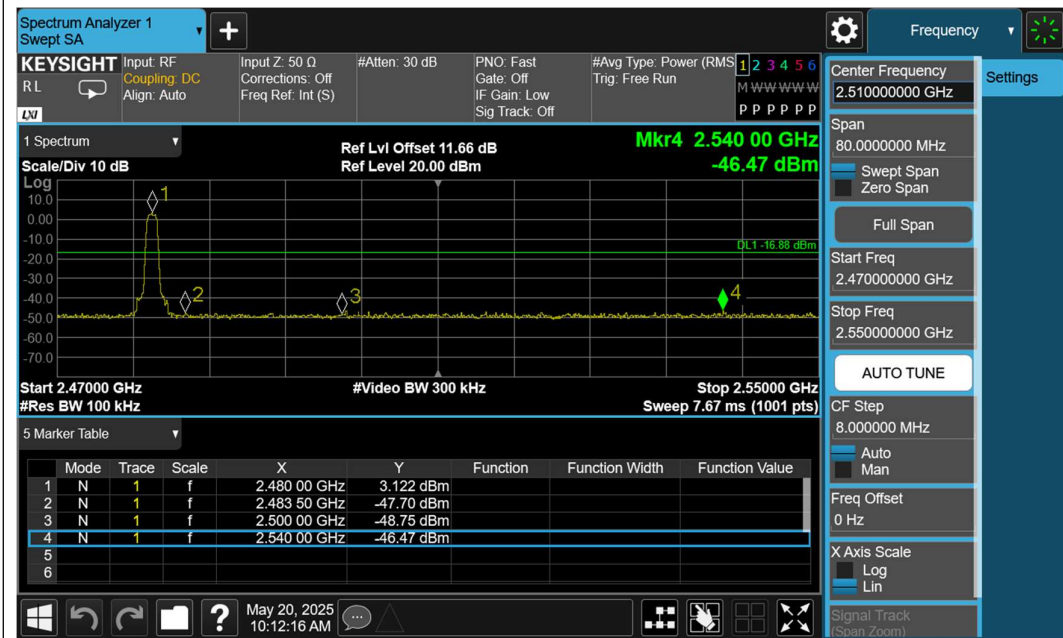
DH5_Ant1_Low_Hop_2402



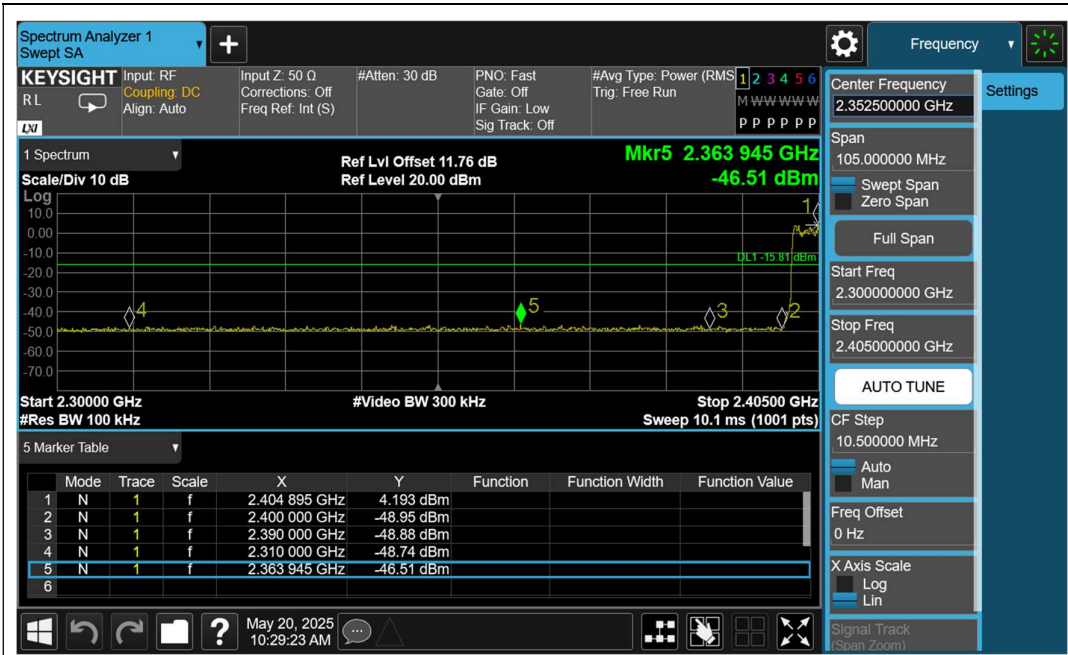
DH5_Ant1_High_Hop_2480



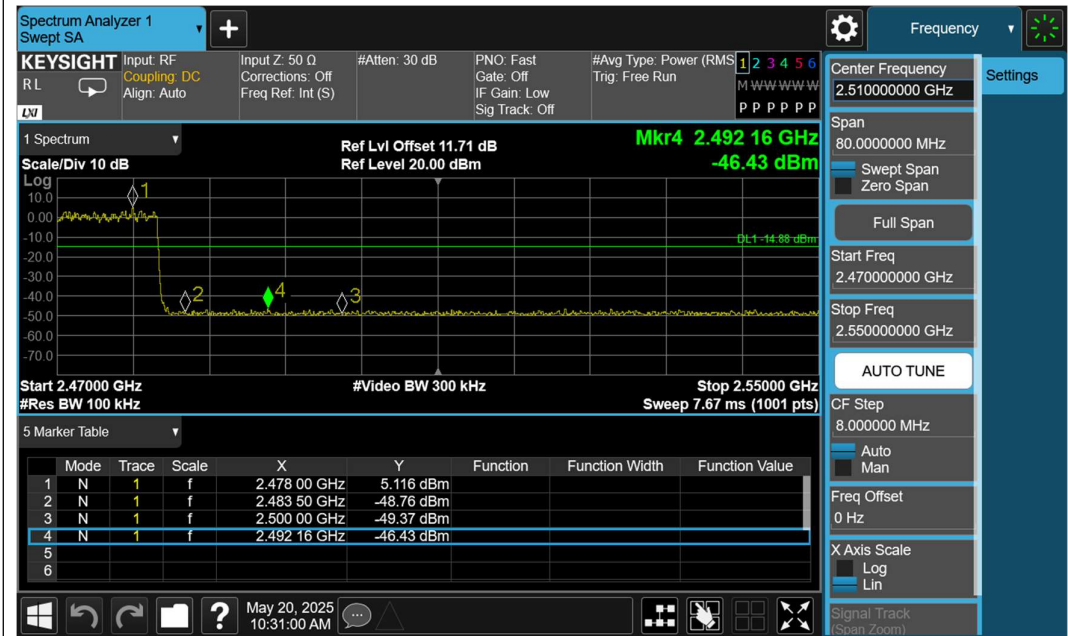
2DH5_Ant1_Low_2402



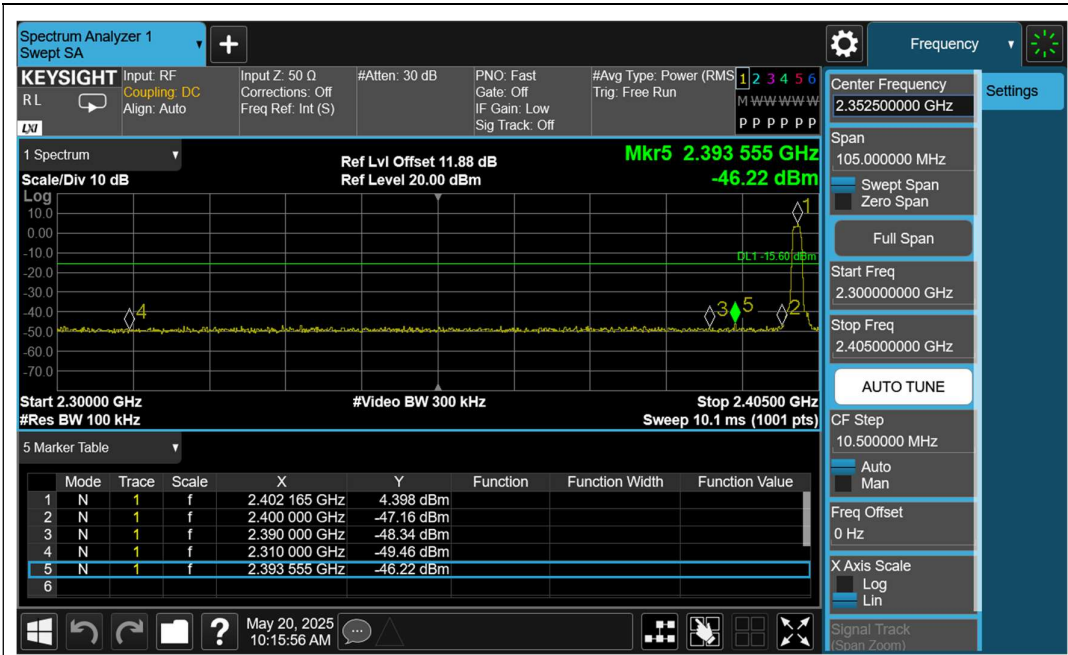
2DH5_Ant1_High_2480



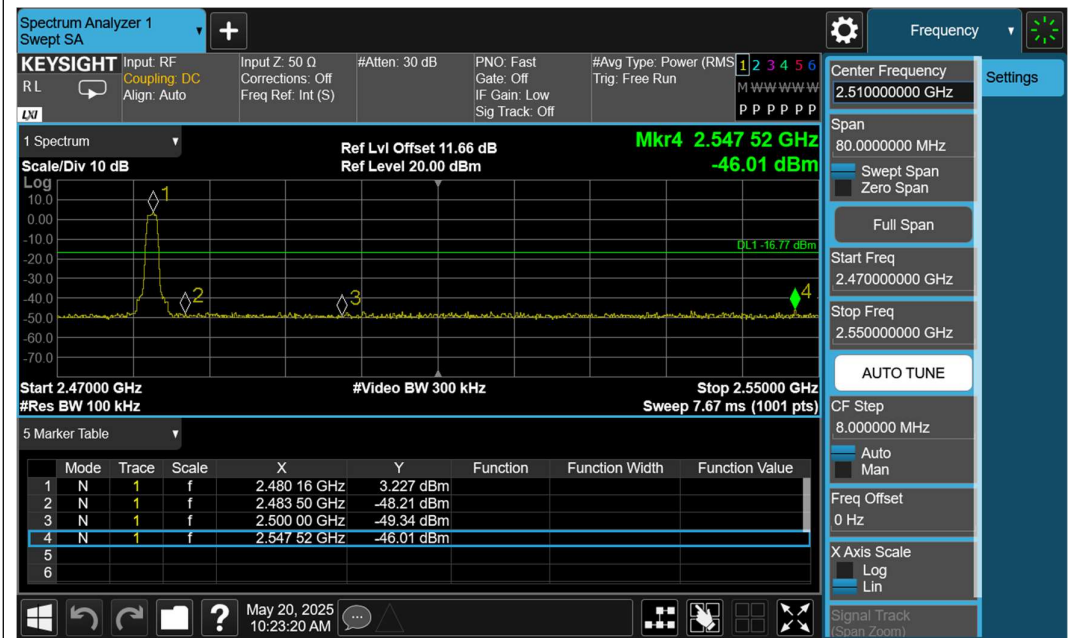
2DH5_Ant1_Low_Hop_2402



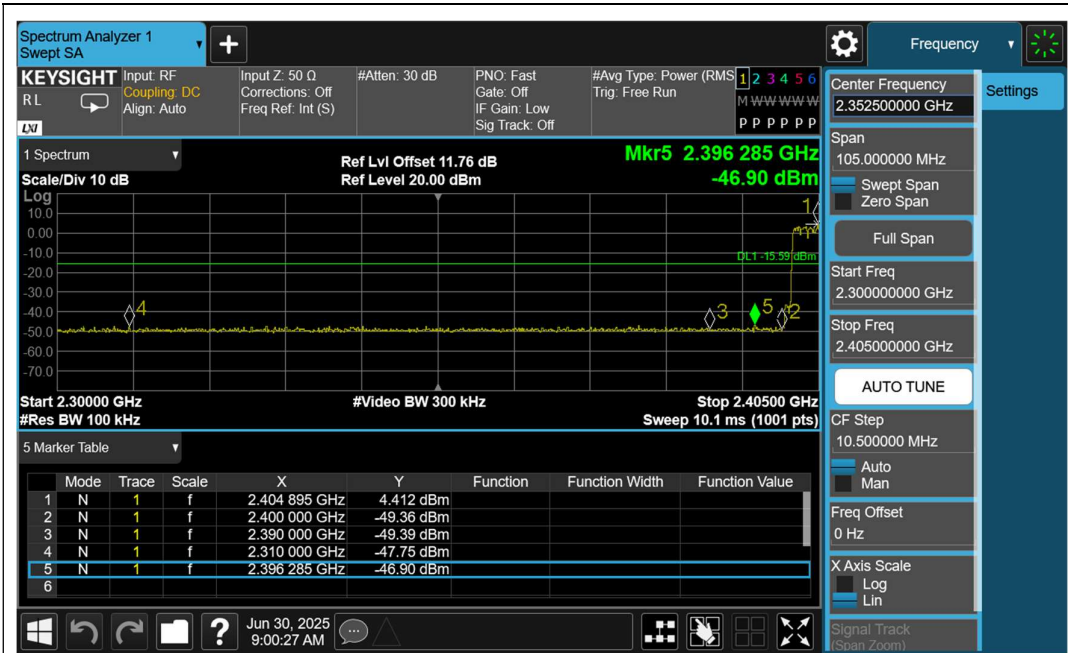
2DH5_Ant1_High_Hop_2480



3DH5_Ant1_Low_2402



3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



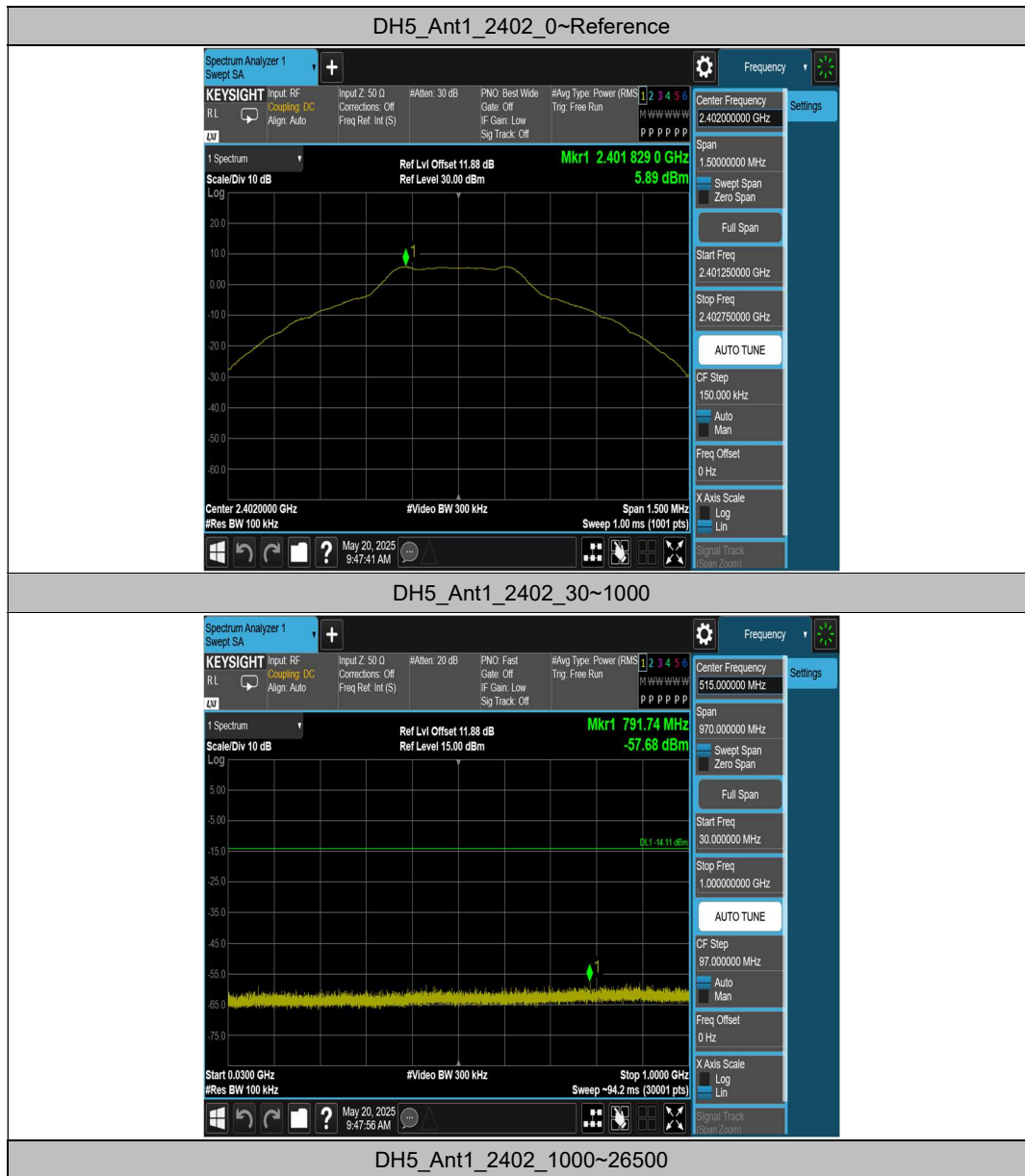
3DH5_Ant1_High_Hop_2480

Appendix H: Conducted Spurious Emission

Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	5.89	5.89	---	PASS
			30~1000	5.89	-57.68	≤-14.11	PASS
			1000~26500	5.89	-49.91	≤-14.11	PASS
		2441	Reference	5.00	5.00	---	PASS
			30~1000	5.00	-58.16	≤-15	PASS
			1000~26500	5.00	-49.87	≤-15	PASS
		2480	Reference	4.34	4.34	---	PASS
			30~1000	4.34	-58.57	≤-15.66	PASS
			1000~26500	4.34	-50.35	≤-15.66	PASS
2DH5	Ant1	2402	Reference	3.48	3.48	---	PASS
			30~1000	3.48	-57.48	≤-16.52	PASS
			1000~26500	3.48	-49.81	≤-16.52	PASS
		2441	Reference	3.27	3.27	---	PASS
			30~1000	3.27	-58.28	≤-16.73	PASS
			1000~26500	3.27	-50.61	≤-16.73	PASS
		2480	Reference	2.59	2.59	---	PASS
			30~1000	2.59	-57.92	≤-17.41	PASS
			1000~26500	2.59	-50.66	≤-17.41	PASS
3DH5	Ant1	2402	Reference	3.96	3.96	---	PASS
			30~1000	3.96	-58.49	≤-16.04	PASS
			1000~26500	3.96	-49.98	≤-16.04	PASS
		2441	Reference	3.67	3.67	---	PASS
			30~1000	3.67	-58.18	≤-16.33	PASS
			1000~26500	3.67	-49.65	≤-16.33	PASS
		2480	Reference	2.99	2.99	---	PASS
			30~1000	2.99	-58.25	≤-17.01	PASS
			1000~26500	2.99	-49.84	≤-17.01	PASS

Test Graphs

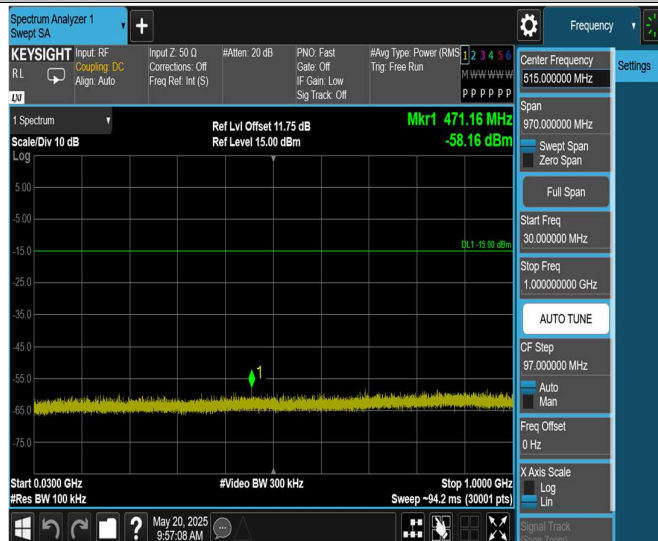




DH5_Ant1_2441_0~Reference



DH5_Ant1_2441_30~1000





DH5_Ant1_2480_0~Reference

Spectrum Analyzer 1
Swept SA

KEYSIGHT
RL

Input: RF
Coupling: DC
Align: Auto

Input Z: 50 Ω
Corrections: Off
Freq Ref: Int (S)

#Atten: 30 dB

PNO: Best Wide
Gate: Off
IF Gain: Low
Sig Track: Off

#Avg Type: Power (RMS)
Trig: Free Run

1 2 3 4 5 6
M P P P P P P

Frequency

Settings

Center Frequency
2.480000000 GHz

Span
1.50000000 MHz
Swept Span
Zero Span
Full Span

Start Freq
2.479250000 GHz

Stop Freq
2.480750000 GHz

AUTO TUNE

CF Step
150.000 kHz

Auto
Man

Freq Offset
0 Hz

X Axis Scale
Log
Lin

Signal Track
(Scan Zoom)

1 Spectrum
Scale/Div 10 dB
Log
Ref Lvl Offset 11.66 dB
Ref Level 30.00 dBm
Mkr1 2.479 826 0 GHz
4.34 dBm
Center 2.4800000 GHz
#Res BW 100 kHz
#Video BW 300 kHz
Span 1.500 MHz
Sweep 1.00 ms (1001 pts)May 20, 2025
10:01:40 AM

DH5_Ant1_2480_30~1000



DH5_Ant1_2480_1000~26500



2DH5_Ant1_2402_0~Reference



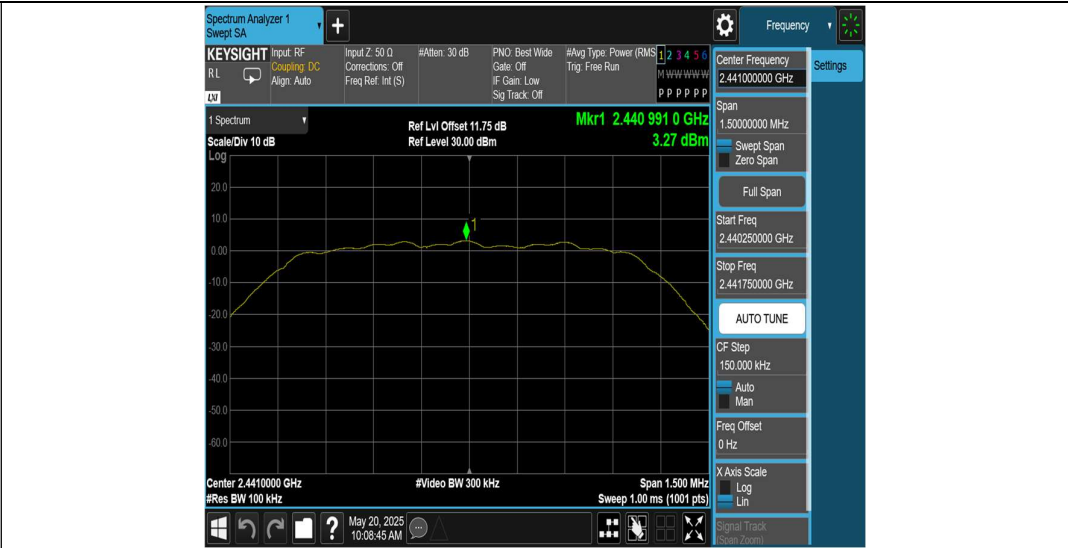
2DH5_Ant1_2402_30~1000



2DH5_Ant1_2402_1000~26500



2DH5_Ant1_2441_0~Reference



2DH5_Ant1_2441_30~1000



2DH5_Ant1_2441_1000~26500



2DH5_Ant1_2480_0~Reference



2DH5_Ant1_2480_30~1000



2DH5_Ant1_2480_1000~26500



3DH5_Ant1_2402_0~Reference



3DH5_Ant1_2402_30~1000

