Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Portable Radio

Test Model: Caribou

Environmental Conditions

Temperature:	23.8 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Paddi Chen
Supervised by:	Nick Peng

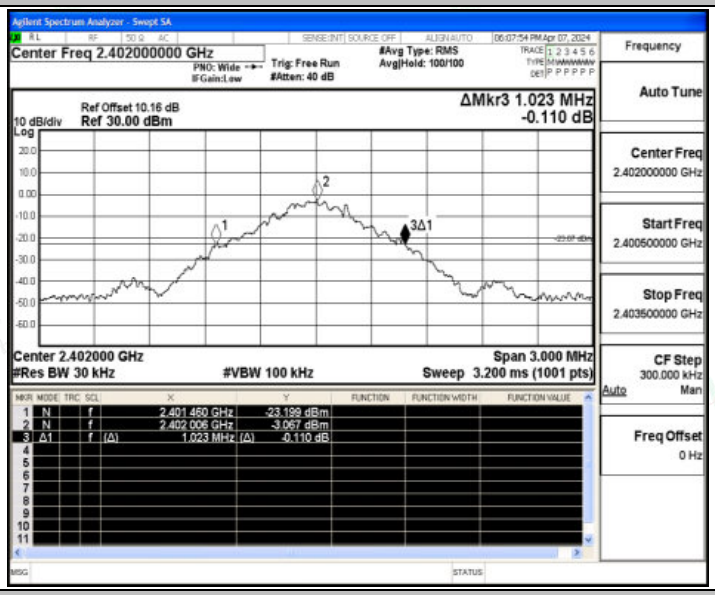
A.1 20dB Emission Bandwidth

Test Result

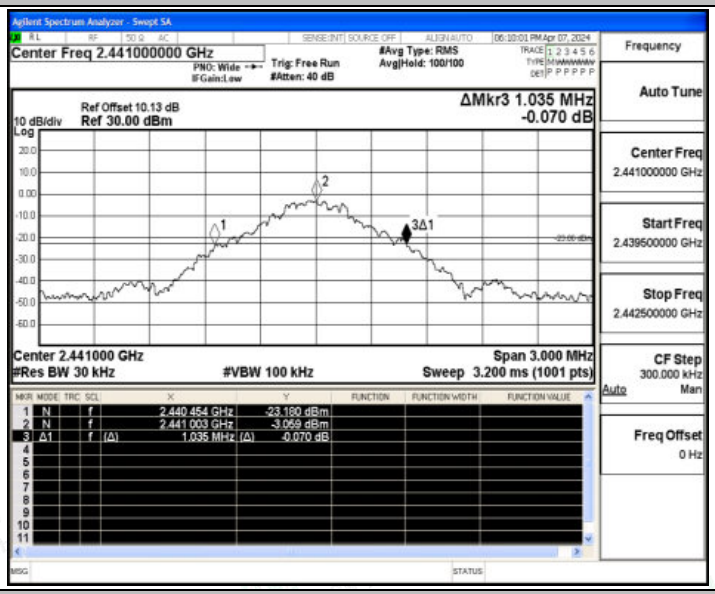
TestMode	Antenna	Frequency [MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit [MHz]	Verdict
DH5	Ant1	2402	1.023	2401.460	2402.483	---	---
		2441	1.035	2440.454	2441.489	---	---
		2480	0.999	2479.484	2480.483	---	---
2DH5	Ant1	2402	1.293	2401.352	2402.645	---	---
		2441	1.323	2440.325	2441.648	---	---
		2480	1.290	2479.355	2480.645	---	---
3DH5	Ant1	2402	1.311	2401.334	2402.645	---	---
		2441	1.317	2440.334	2441.651	---	---
		2480	1.302	2479.340	2480.642	---	---

Test Graphs

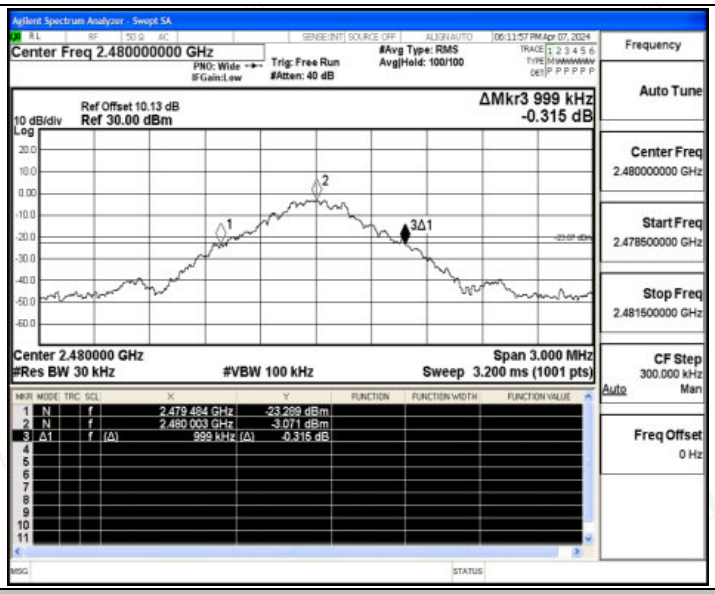
DH5_Ant1_2402



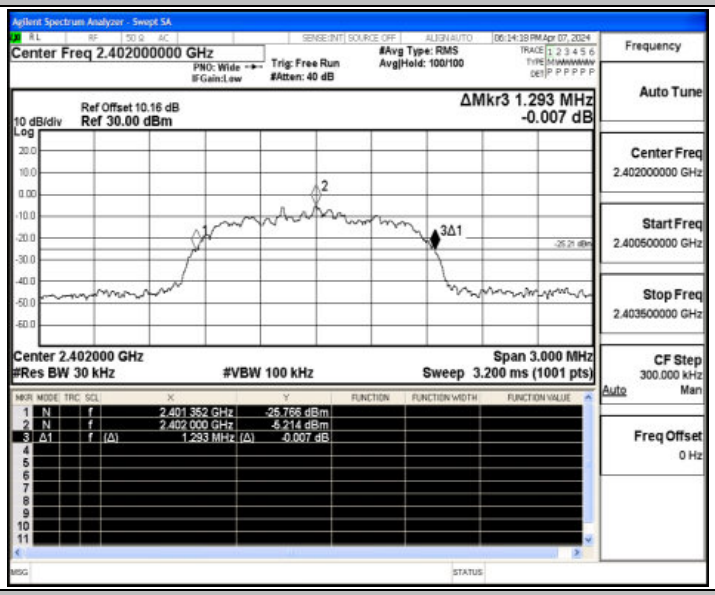
DH5_Ant1_2441



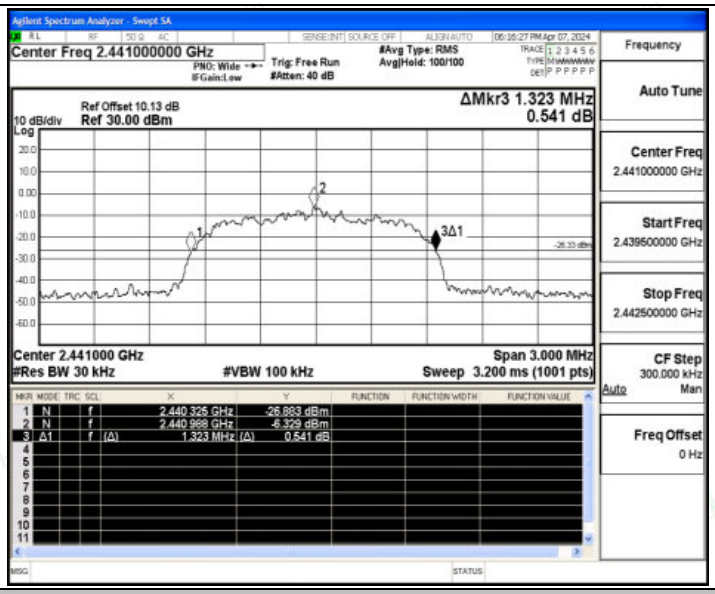
DH5_Ant1_2480



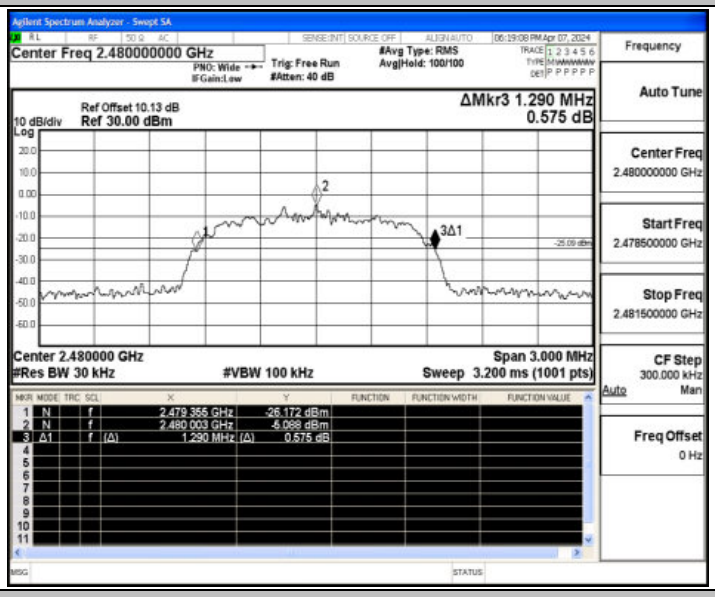
2DH5_Ant1_2402



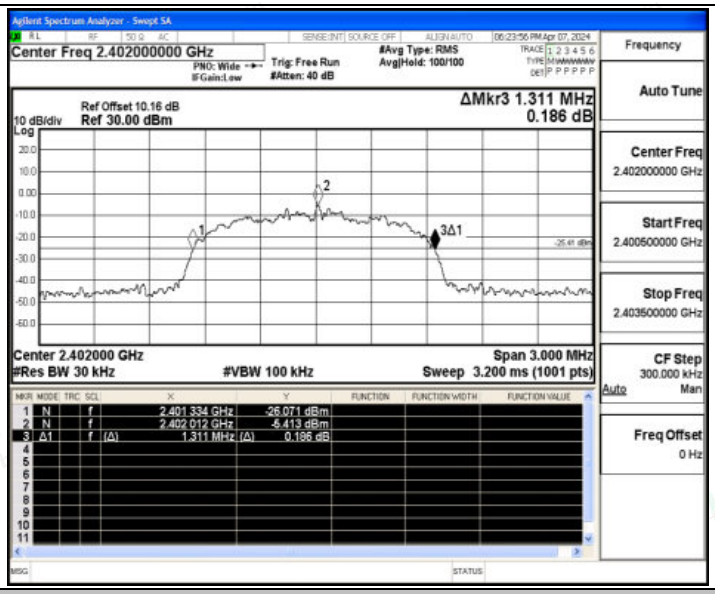
2DH5_Ant1_2441



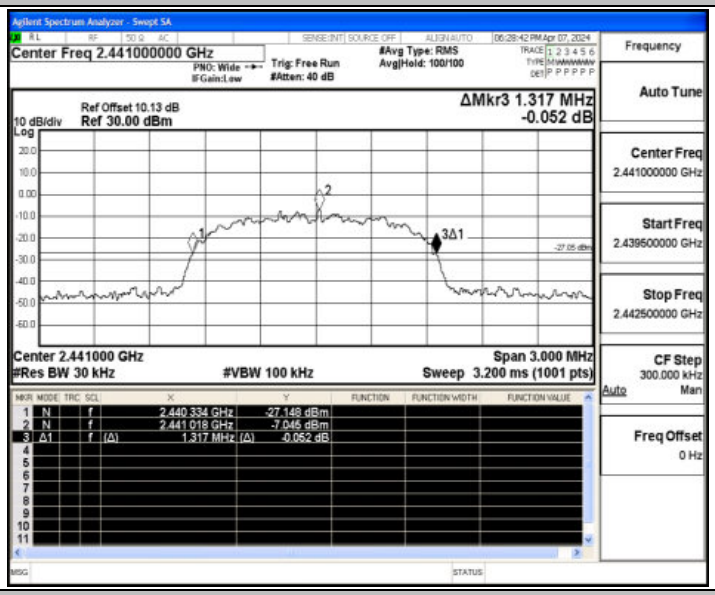
2DH5_Ant1_2480



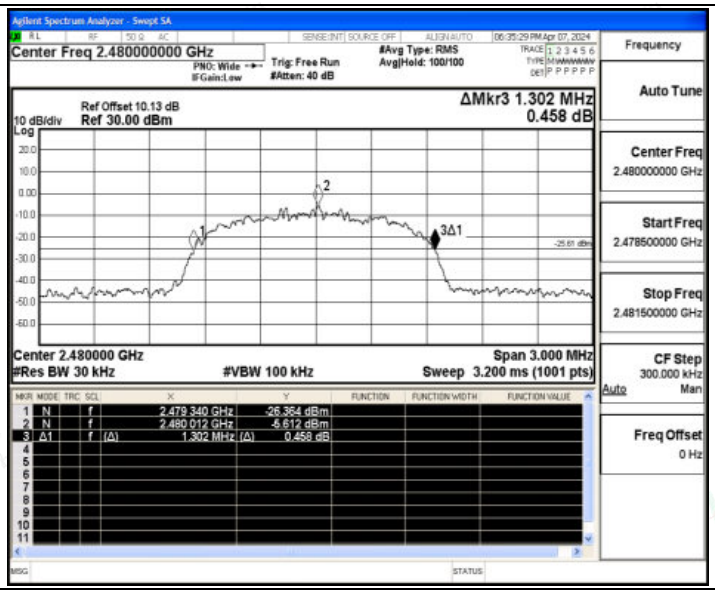
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
06:35:29 PM Apr 07, 2024
Ref Offset 10.13 dB
10 dB/div Ref 30.00 dBm
Log
ΔMkr3 1.302 MHz
0.458 dB
Center 2.480000 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3.000 MHz
Sweep 3.200 ms (1001 pts)
1 N f 2.479 340 GHz -26.364 dBm
2 N f 2.480 012 GHz -6.612 dBm
3 Δ1 f (Δ) 1.302 MHz (Δ) 0.458 dB
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.481500000 GHz
CF Step
300.000 kHz
Auto Man
Freq Offset
0 Hz

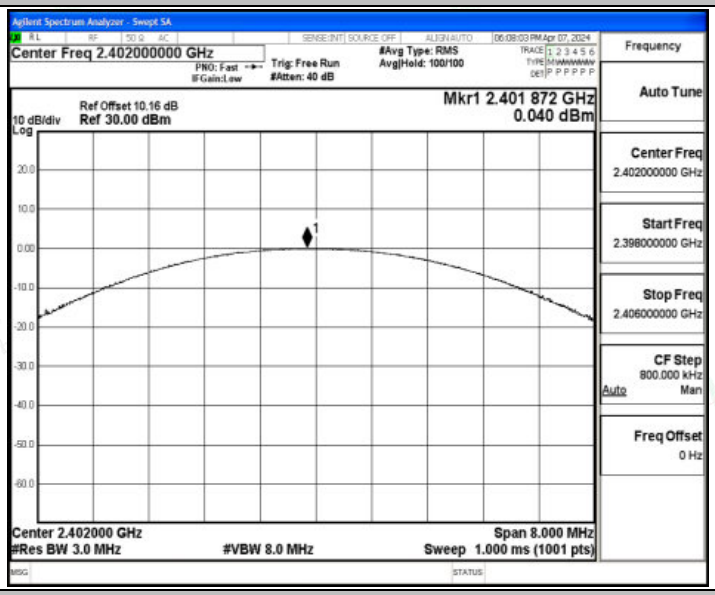
A.2 Maximum conducted output power

Test Result Peak

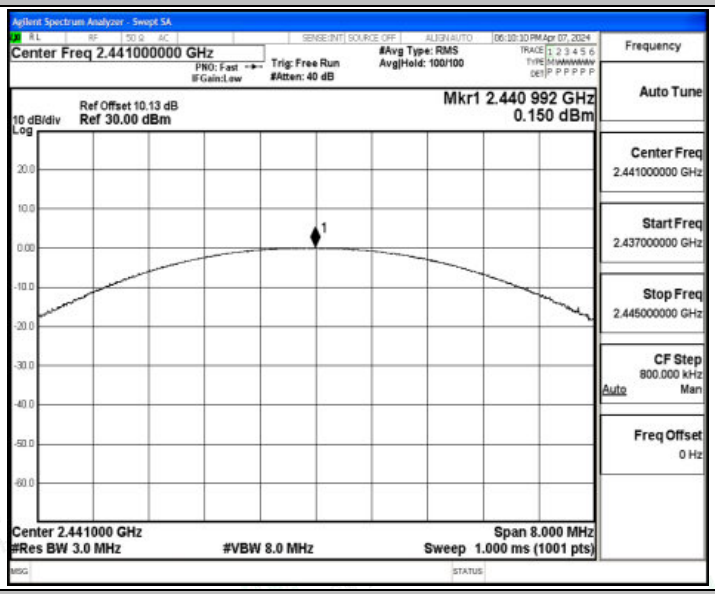
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	0.04	≤20.97	PASS
		2441	**0.15**	≤20.97	PASS
		2480	0.13	≤20.97	PASS
2DH5	Ant1	2402	-0.26	≤20.97	PASS
		2441	-0.28	≤20.97	PASS
		2480	-0.26	≤20.97	PASS
3DH5	Ant1	2402	-0.20	≤20.97	PASS
		2441	-0.10	≤20.97	PASS
		2480	-0.24	≤20.97	PASS

Test Graphs

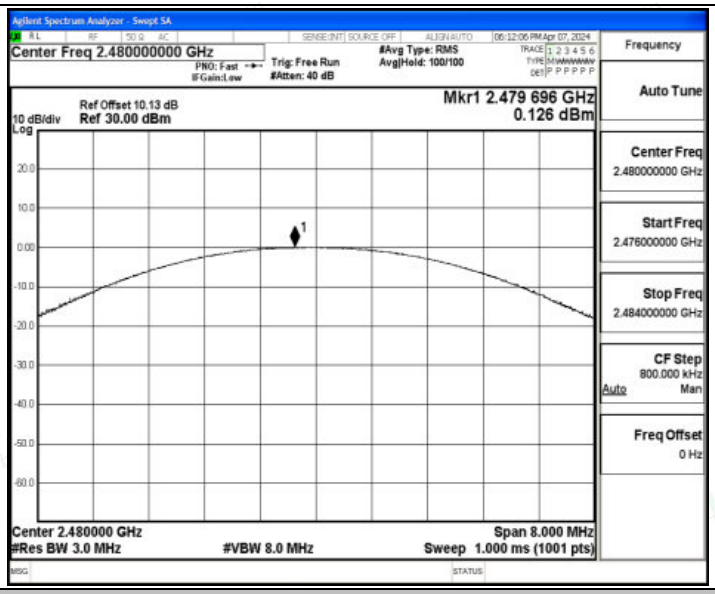
DH5_Ant1_2402



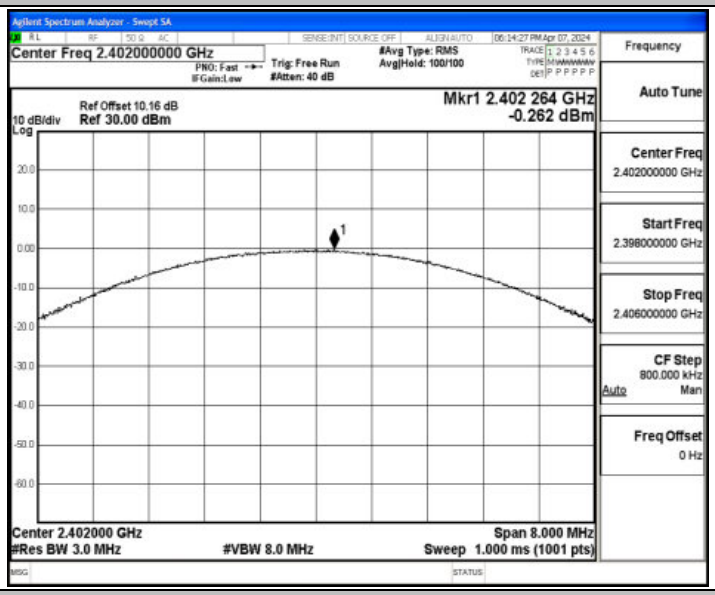
DH5_Ant1_2441



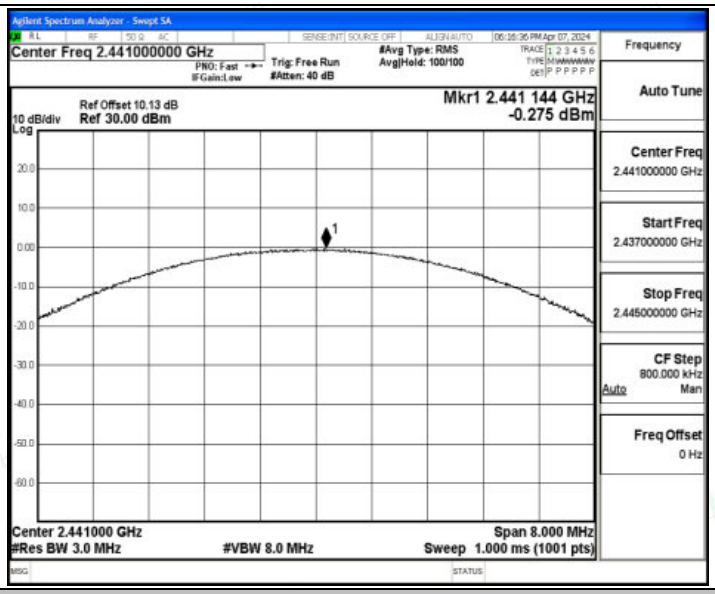
DH5_Ant1_2480



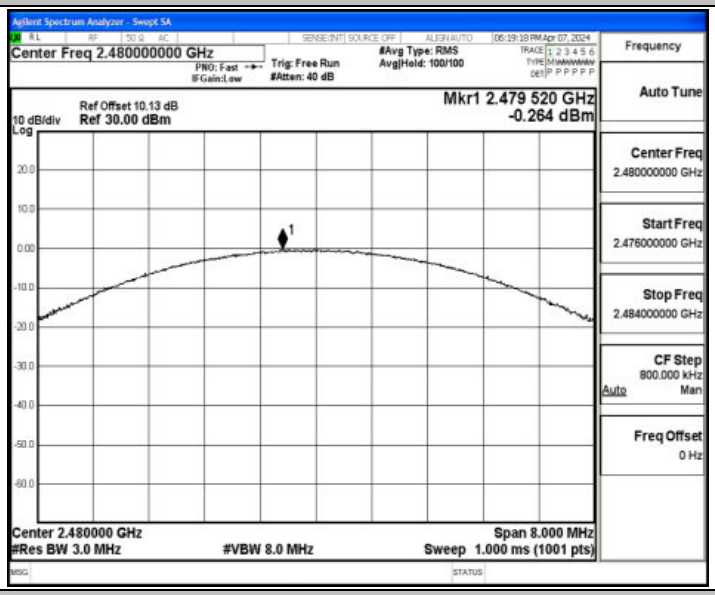
2DH5_Ant1_2402



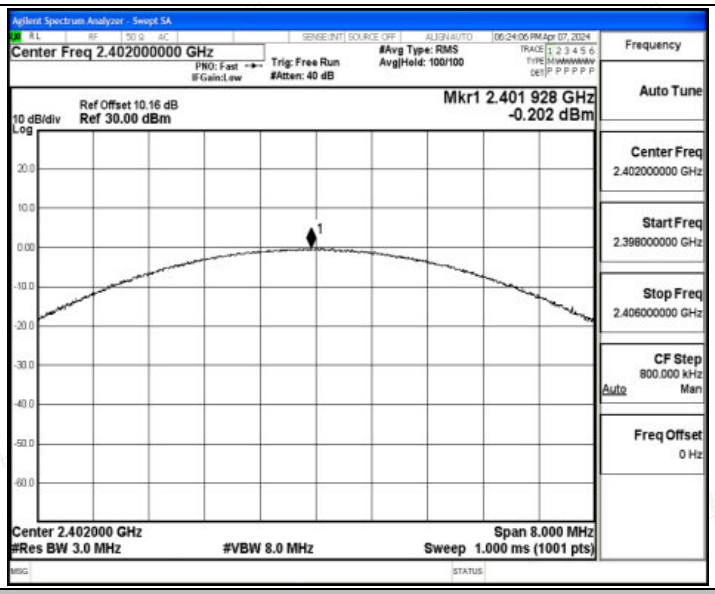
2DH5_Ant1_2441



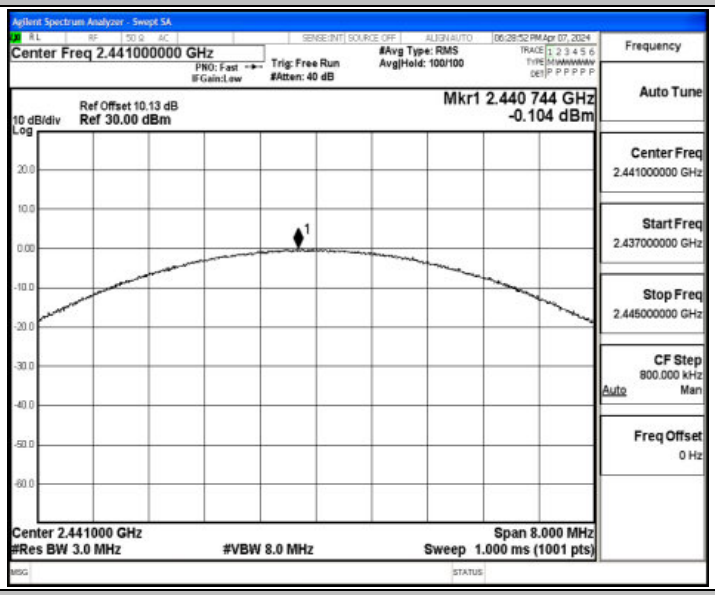
2DH5_Ant1_2480



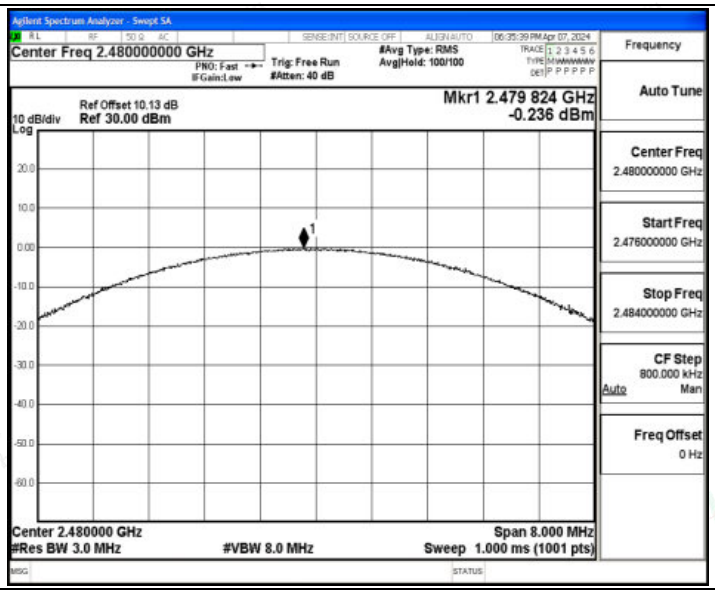
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 100/100
06:35:39 PM Apr 07, 2024
Frequency
Auto Tune
Ref Offset 10.13 dB
10 dB/div Ref 30.00 dBm
Log
Mkr1 2.479 824 GHz
-0.236 dBm
Center Freq
2.480000000 GHz
Start Freq
2.476000000 GHz
Stop Freq
2.484000000 GHz
CF Step
800.000 kHz
Auto Man
Freq Offset
0 Hz
Center 2.480000 GHz
#Res BW 3.0 MHz
#VBW 8.0 MHz
Span 8.000 MHz
Sweep 1.000 ms (1001 pts)

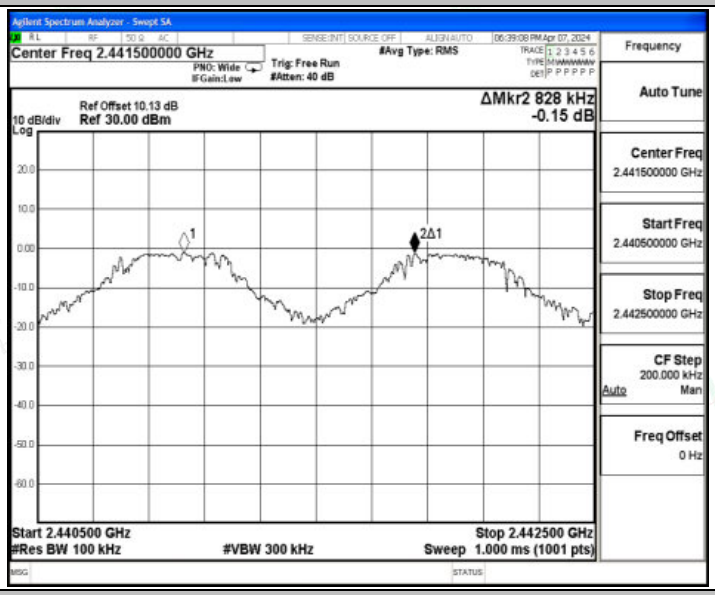
A.3 Carrier frequency separation

Test Result

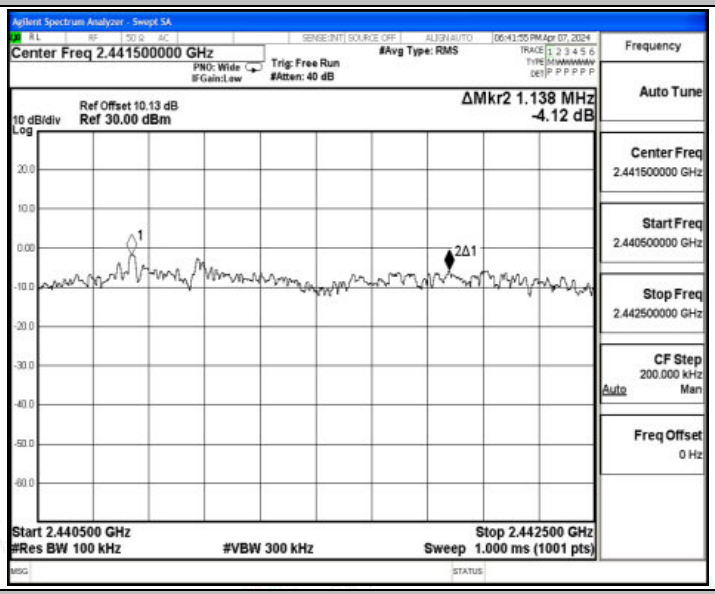
TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.828	≥0.690	PASS
2DH5	Ant1	Hop	1.138	≥0.882	PASS
3DH5	Ant1	Hop	1.282	≥0.878	PASS

Test Graphs

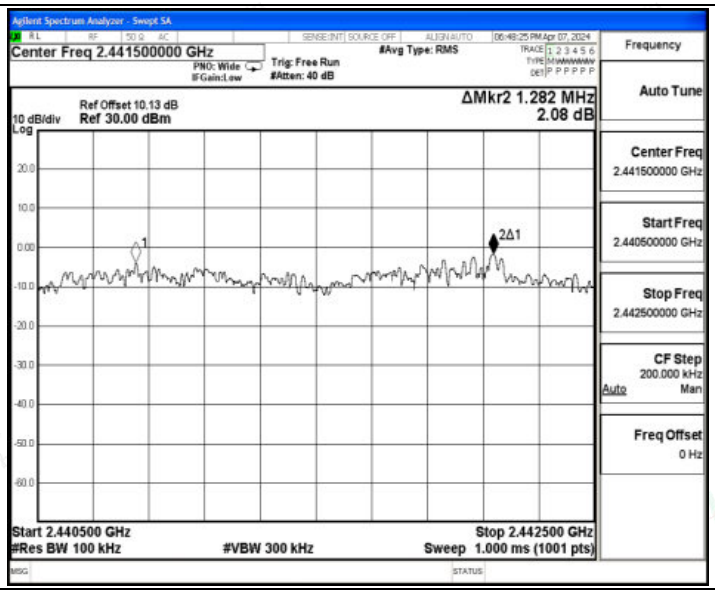
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441500000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
06:48:25 PM Apr 07, 2024
Frequency
Auto Tune
Ref Offset 10.13 dB
10 dB/div Ref 30.00 dBm
Log
ΔMkr2 1.282 MHz
2.08 dB
2Δ1
Center Freq
2.441500000 GHz
Start Freq
2.440500000 GHz
Stop Freq
2.442500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz
Start 2.440500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.442500 GHz
Sweep 1.000 ms (1001 pts)

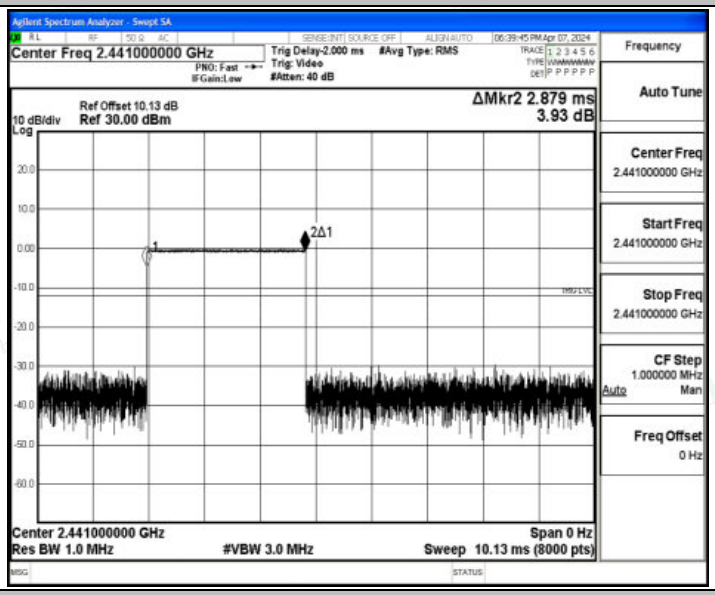
A.4 Time of occupancy

Test Result

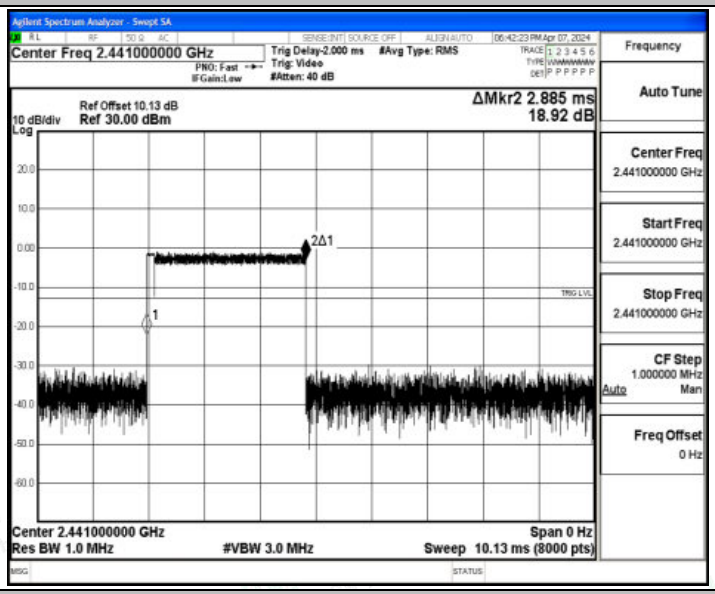
TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.879	106.67	0.307	≤0.4	PASS
2DH5	Ant1	Hop	2.885	106.67	0.308	≤0.4	PASS
3DH5	Ant1	Hop	2.887	106.67	0.308	≤0.4	PASS

Test Graphs

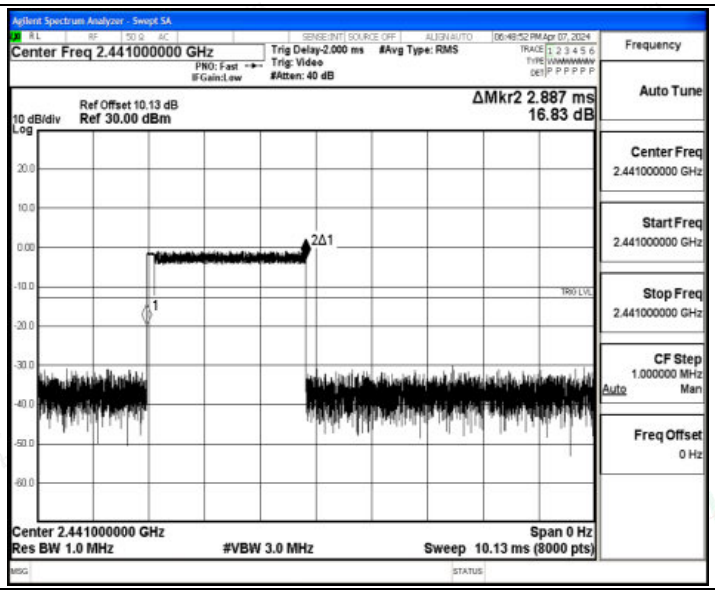
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
Frequency
Auto Tune
Ref Offset 10.13 dB
10 dB/div
Ref 30.00 dBm
ΔMkr2 2.887 ms
16.83 dB
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)

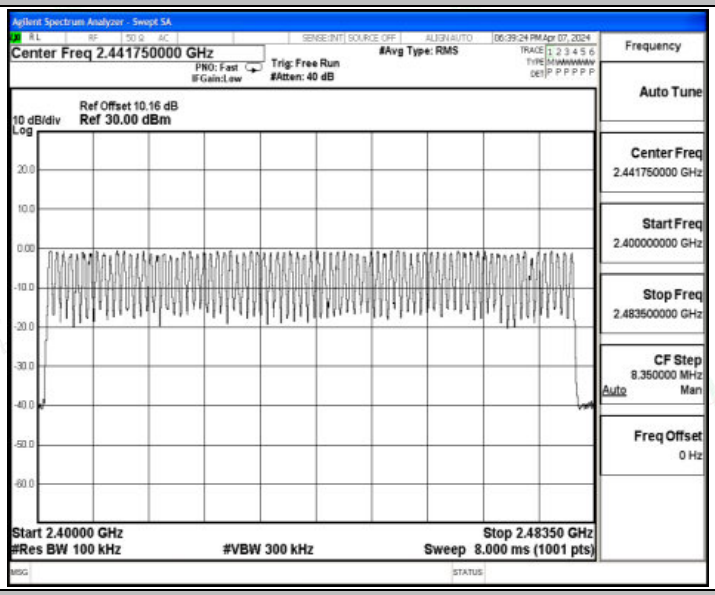
A.5 Number of hopping channels

Test Result

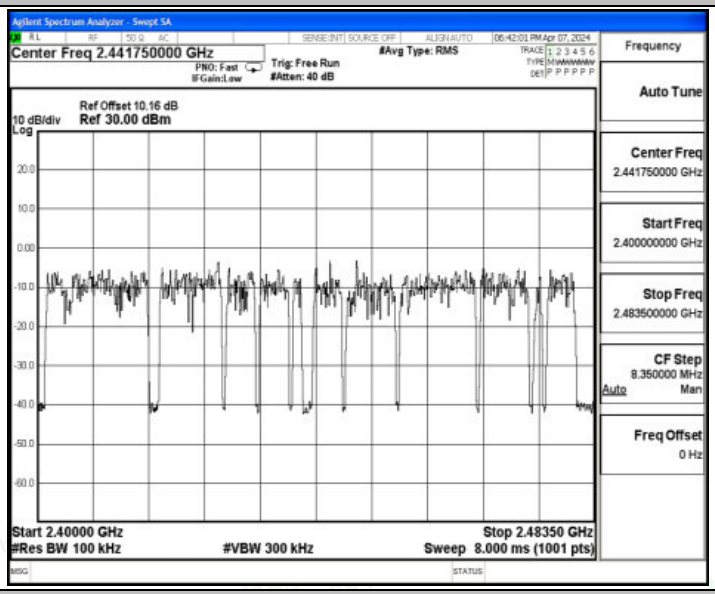
TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

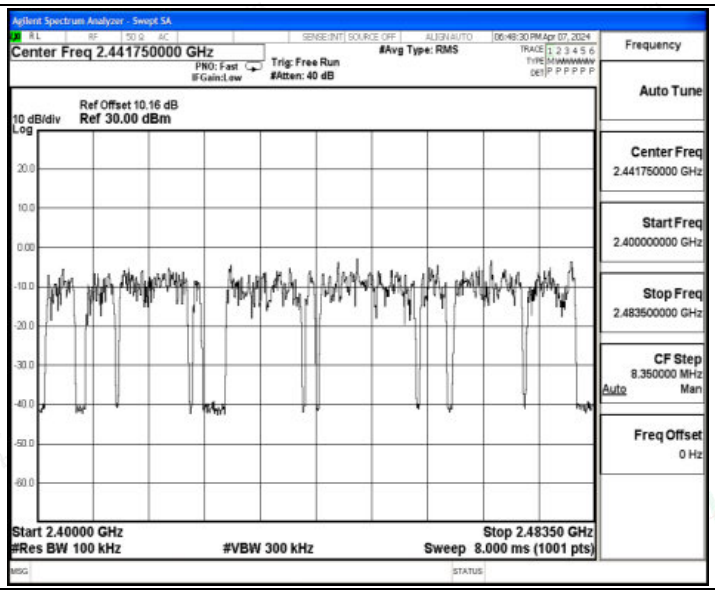
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
06:48:30 PM Apr 07, 2024
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
Ref Offset 10.16 dB
10 dB/div
Ref 30.00 dBm
Log
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)

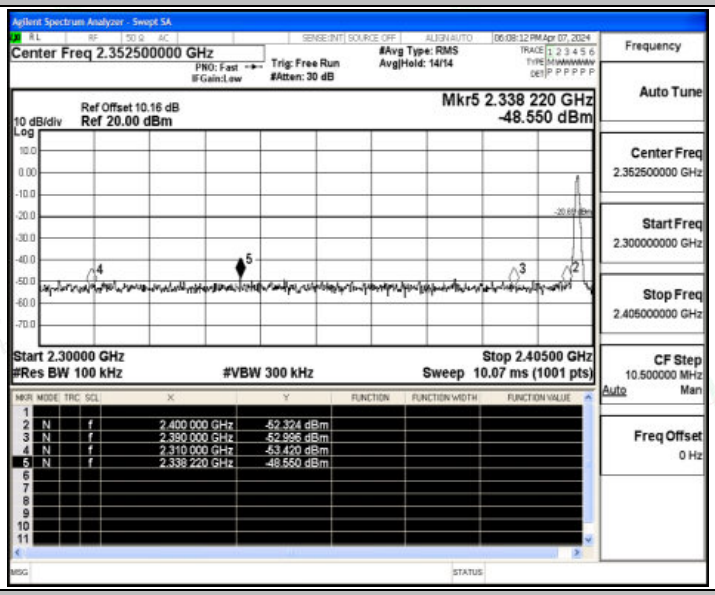
A.6 Band edge measurements

Test Result

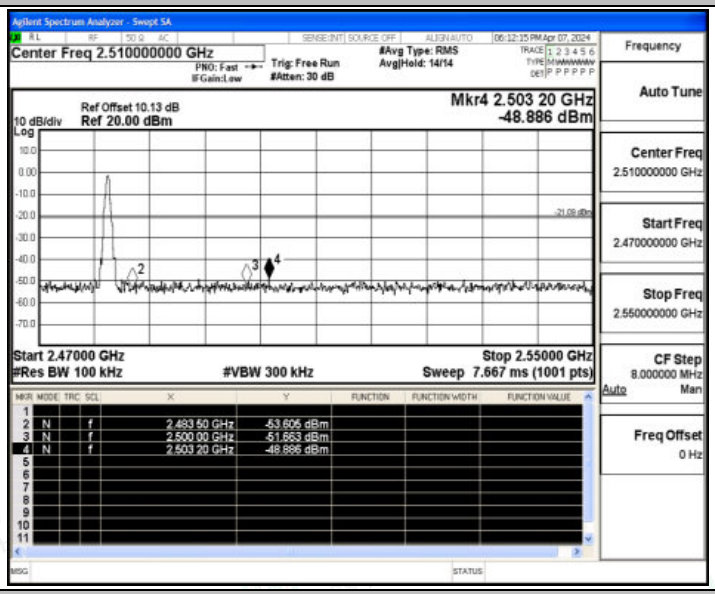
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-0.69	-48.55	≤-20.69	PASS
		High	2480	-1.09	-48.89	≤-21.09	PASS
		Low	Hop_2402	-1.52	-47.78	≤-21.52	PASS
		High	Hop_2480	-0.70	-47.55	≤-20.7	PASS
2DH5	Ant1	Low	2402	-1.95	-49.23	≤-21.95	PASS
		High	2480	-1.65	-48.64	≤-21.65	PASS
		Low	Hop_2402	-5.71	-47.74	≤-25.71	PASS
		High	Hop_2480	-2.02	-47.31	≤-22.02	PASS
3DH5	Ant1	Low	2402	-2.30	-49.22	≤-22.3	PASS
		High	2480	-1.56	-48.61	≤-21.56	PASS
		Low	Hop_2402	-5.08	-48.49	≤-25.08	PASS
		High	Hop_2480	-3.00	-47.19	≤-23	PASS

Test Graphs

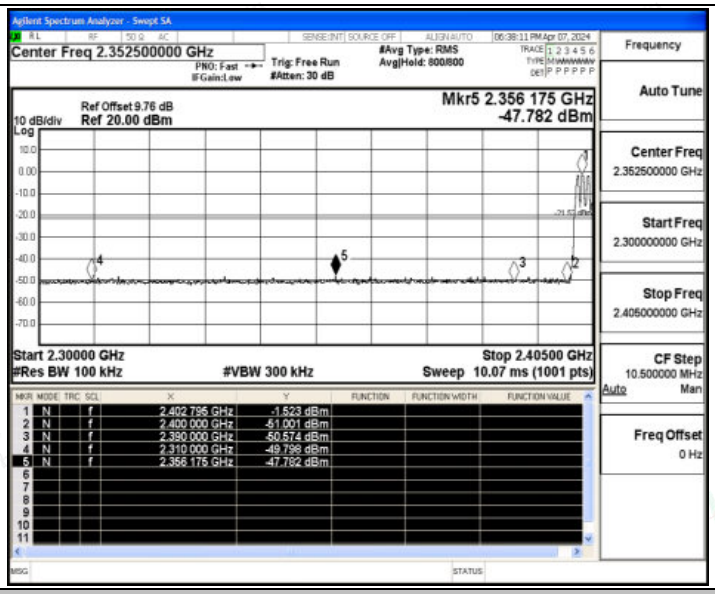
DH5_Ant1_Low_2402



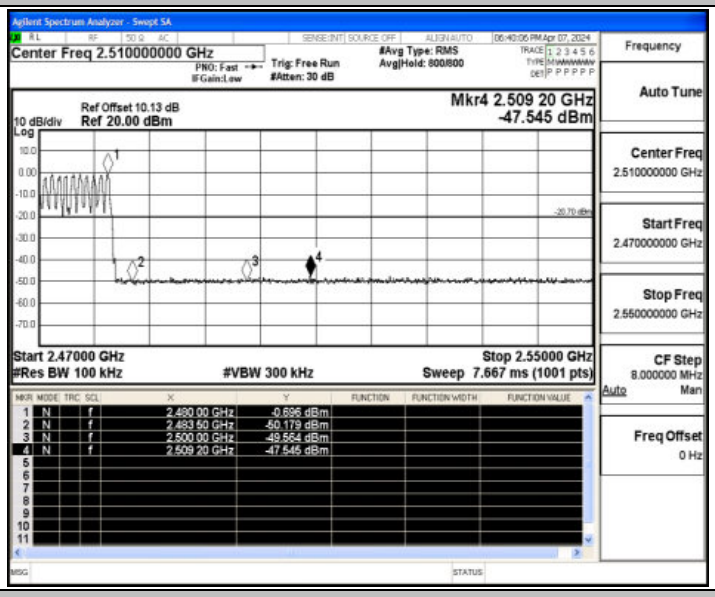
DH5_Ant1_High_2480



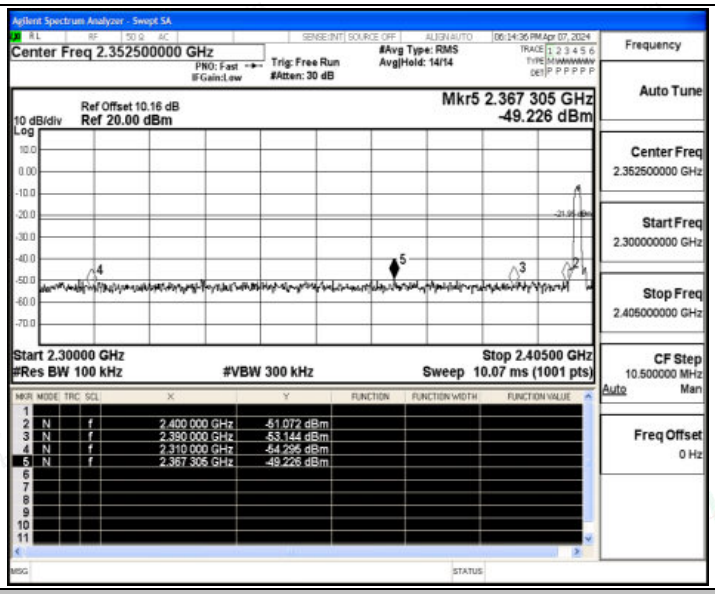
DH5_Ant1_Low_Hop_2402



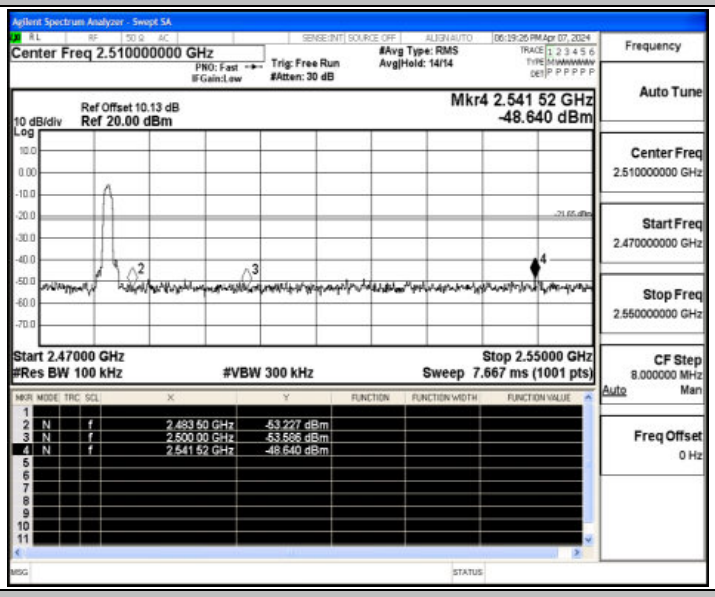
DH5_Ant1_High_Hop_2480



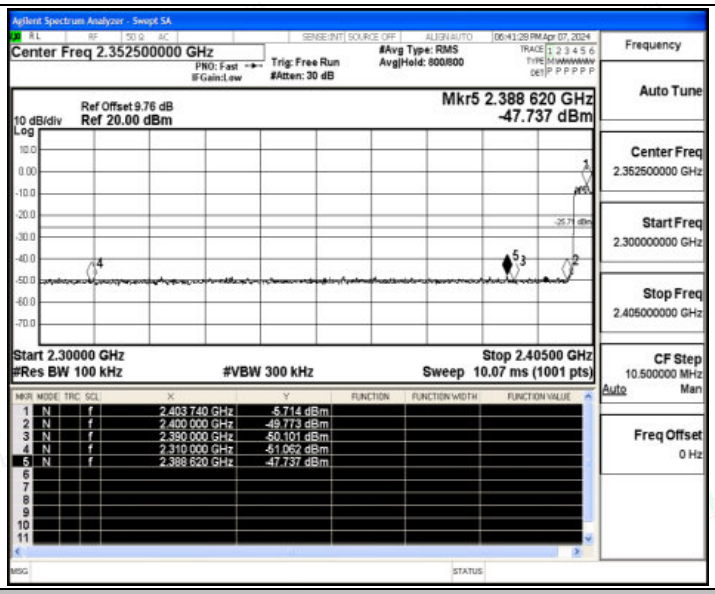
2DH5_Ant1_Low_2402



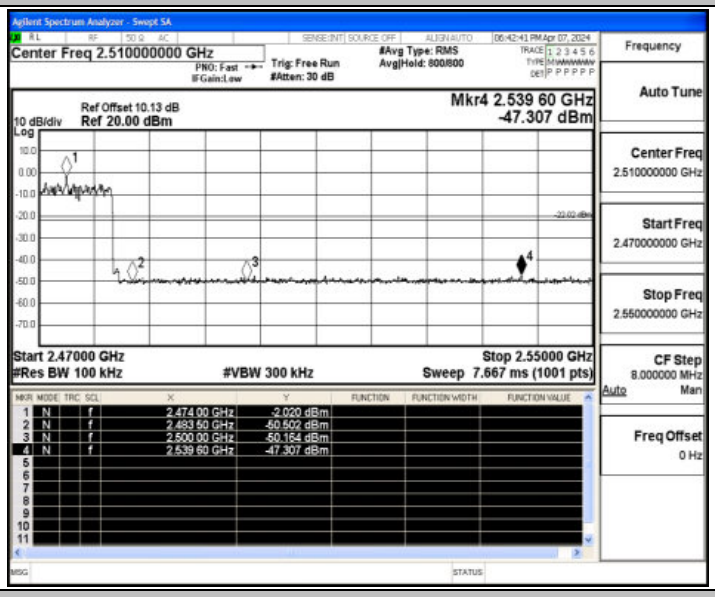
2DH5_Ant1_High_2480



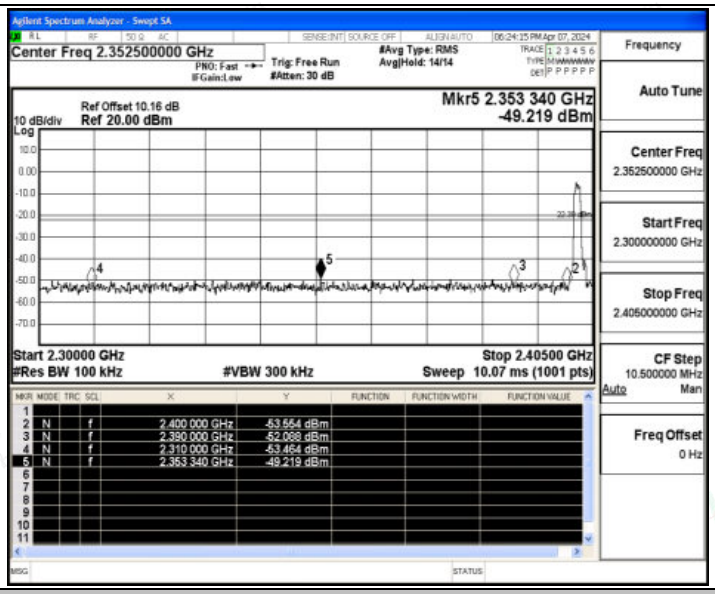
2DH5_Ant1_Low_Hop_2402



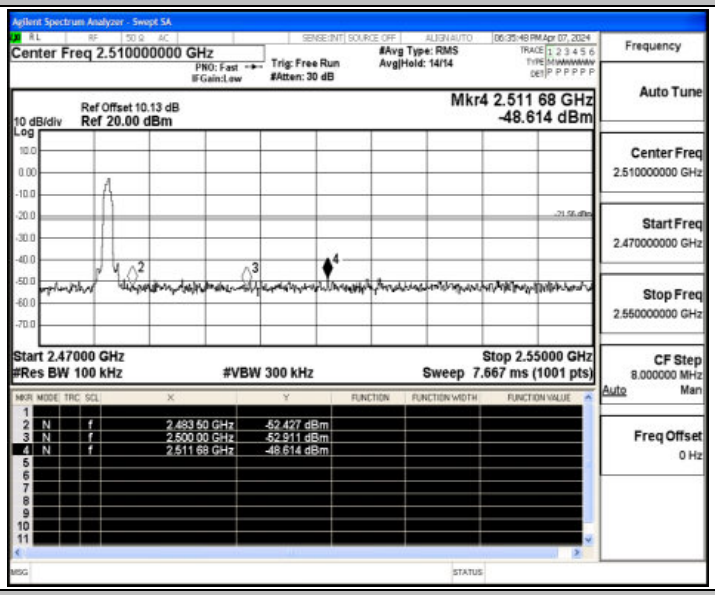
2DH5_Ant1_High_Hop_2480



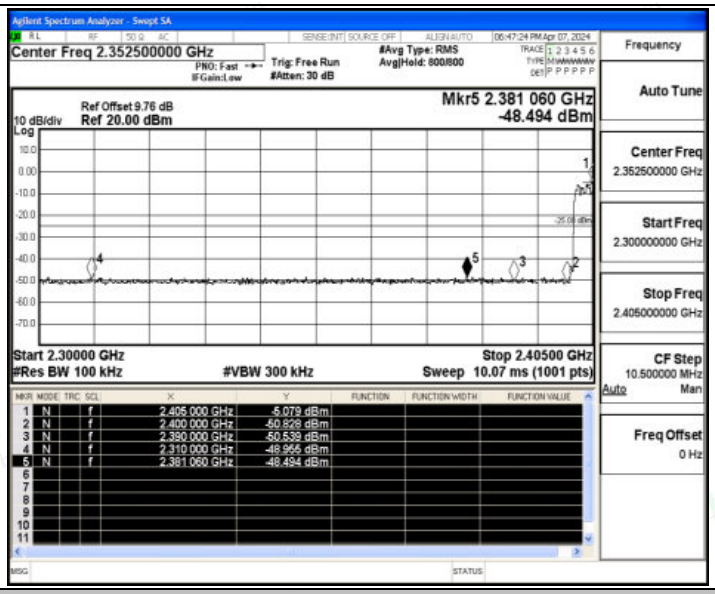
3DH5_Ant1_Low_2402



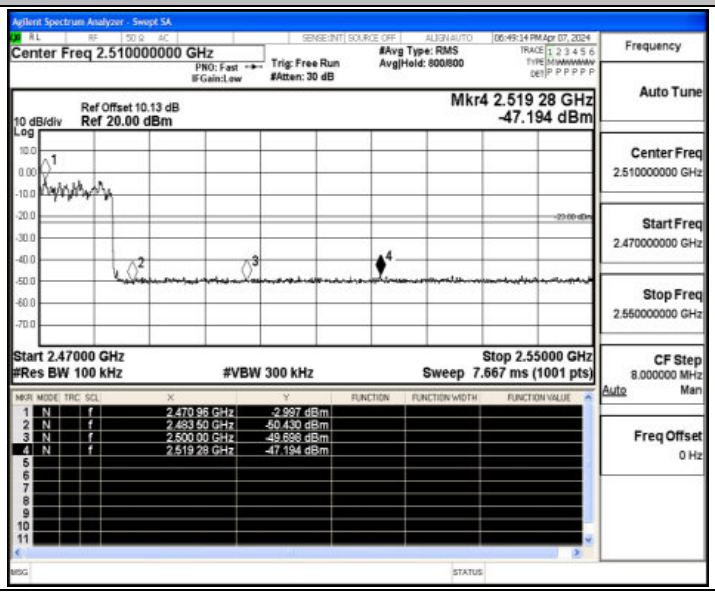
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



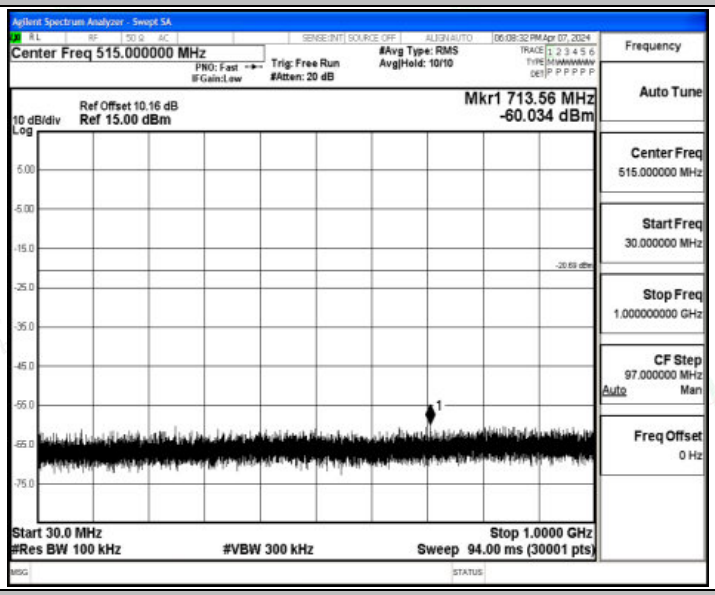
A.7 Conducted Spurious Emission

Test Result

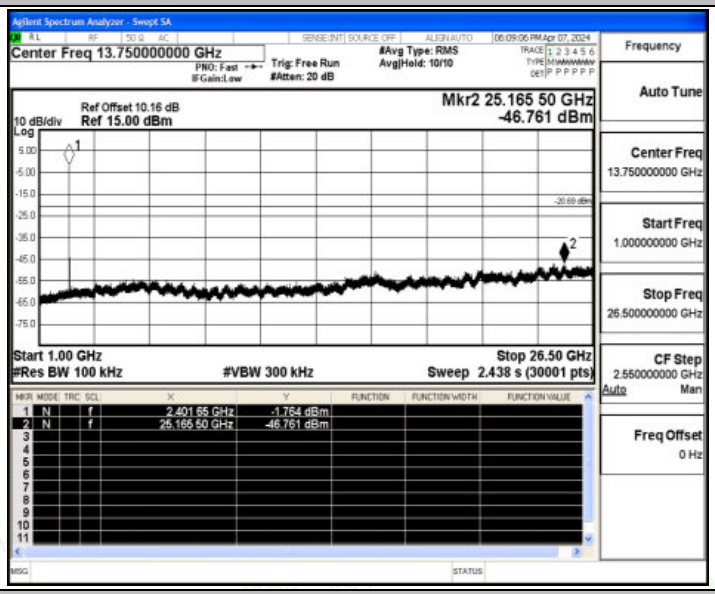
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	30~1000	-0.69	-60.03	≤-20.69	PASS
			1000~26500	-0.69	-46.76	≤-20.69	PASS
		2441	30~1000	-1.24	-58.69	≤-21.24	PASS
			1000~26500	-1.24	-47.07	≤-21.24	PASS
		2480	30~1000	-1.09	-59.25	≤-21.09	PASS
			1000~26500	-1.09	-47.16	≤-21.09	PASS
2DH5	Ant1	2402	30~1000	-1.95	-51.29	≤-21.95	PASS
			1000~26500	-1.95	-47.25	≤-21.95	PASS
		2441	30~1000	-2.39	-59.97	≤-22.39	PASS
			1000~26500	-2.39	-47.06	≤-22.39	PASS
		2480	30~1000	-1.65	-60.24	≤-21.65	PASS
			1000~26500	-1.65	-47.25	≤-21.65	PASS
3DH5	Ant1	2402	30~1000	-2.30	-60.26	≤-22.3	PASS
			1000~26500	-2.30	-46.83	≤-22.3	PASS
		2441	30~1000	-2.09	-59.57	≤-22.09	PASS
			1000~26500	-2.09	-47.43	≤-22.09	PASS
		2480	30~1000	-1.56	-59.7	≤-21.56	PASS
			1000~26500	-1.56	-47.12	≤-21.56	PASS

Test Graphs

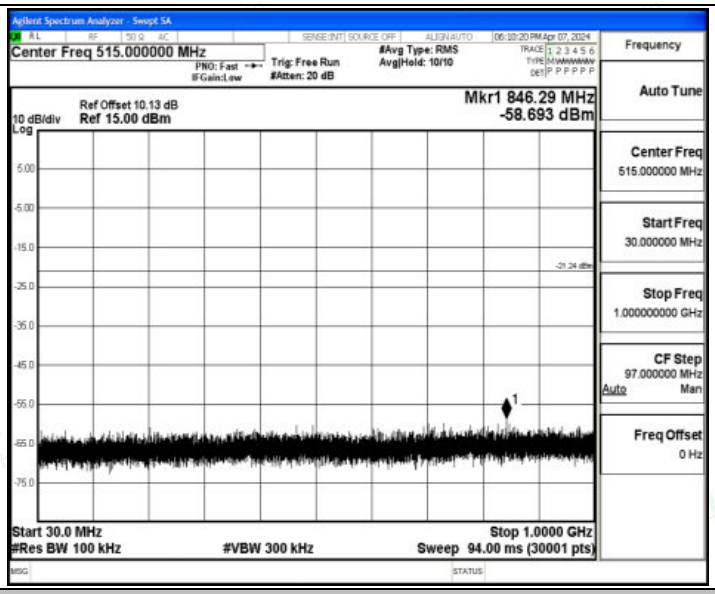
DH5_Ant1_2402_30~1000



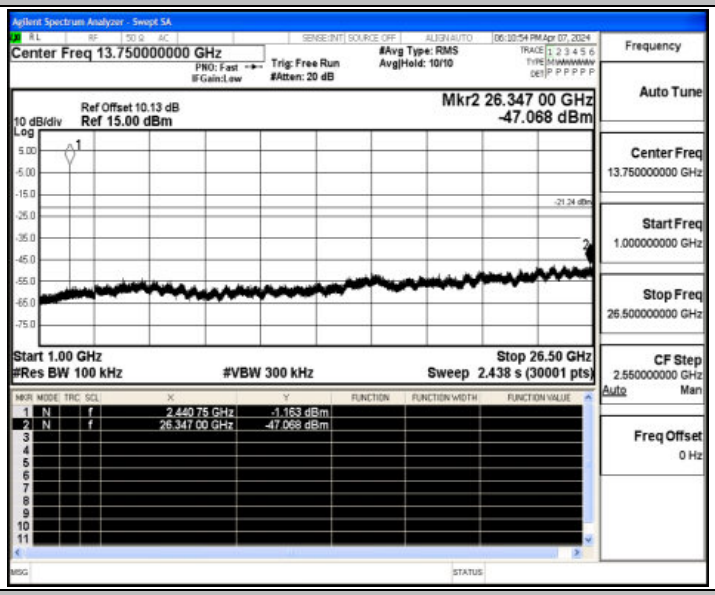
DH5_Ant1_2402_1000~26500



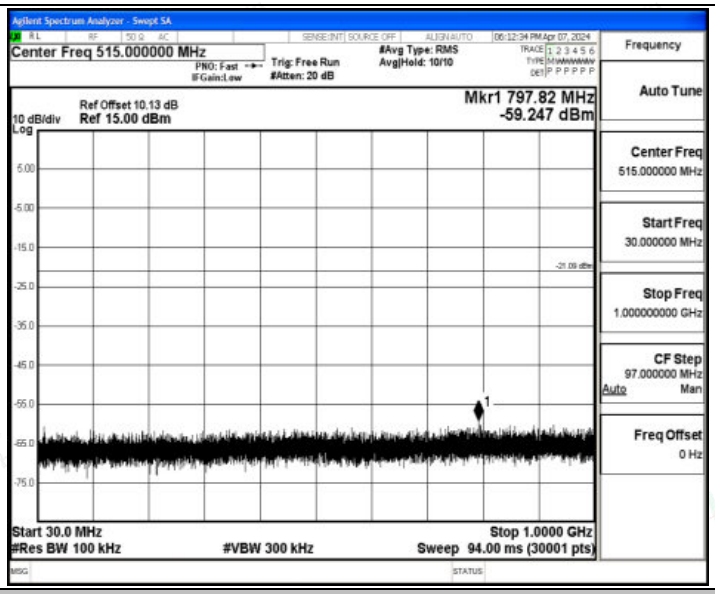
DH5_Ant1_2441_30~1000



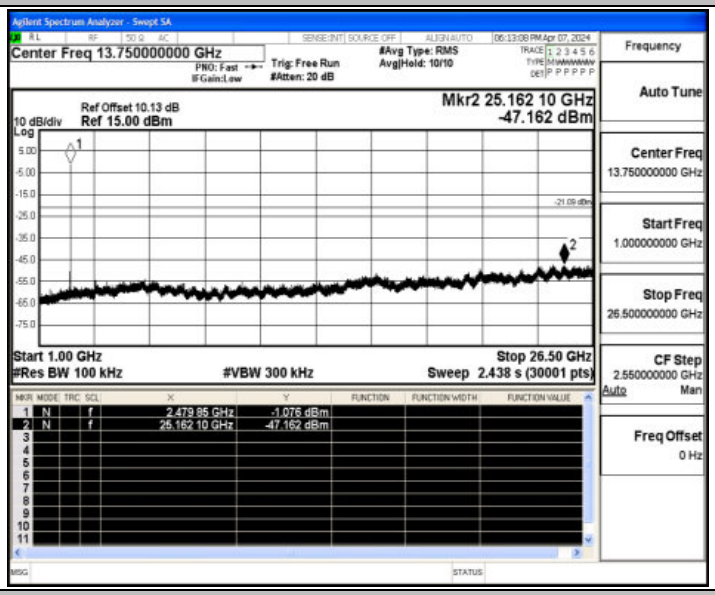
DH5_Ant1_2441_1000~26500



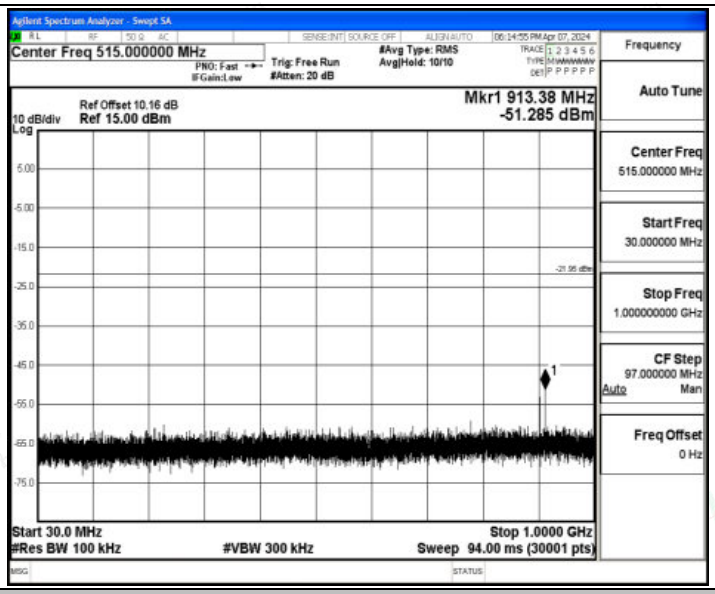
DH5_Ant1_2480_30~1000



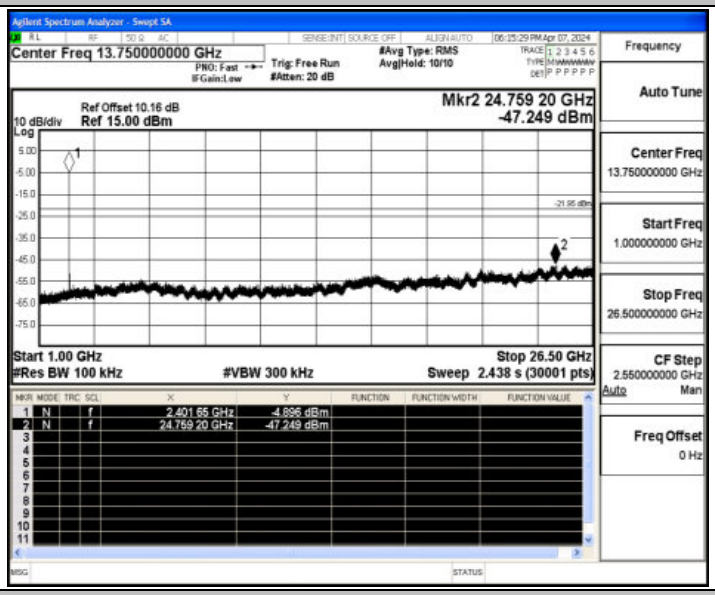
DH5_Ant1_2480_1000~26500



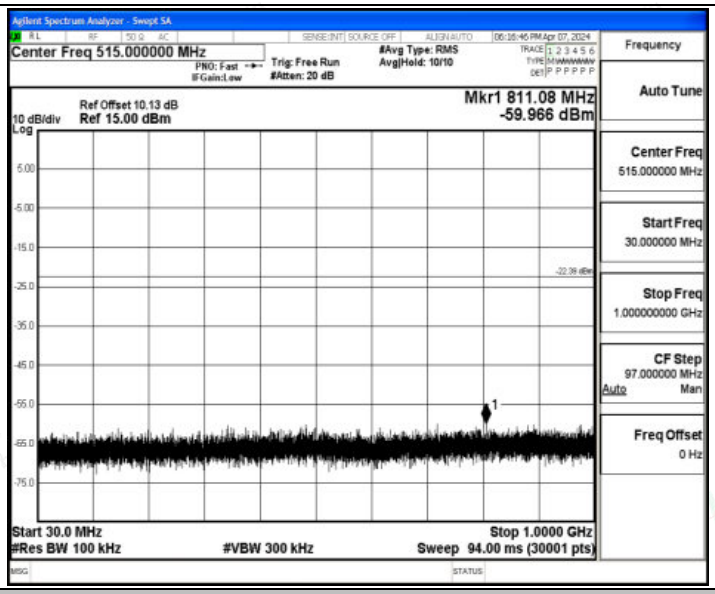
2DH5_Ant1_2402_30~1000



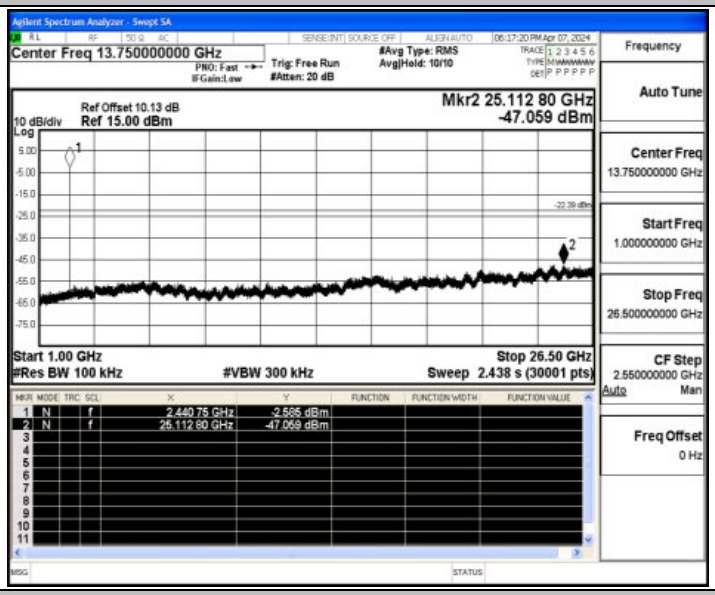
2DH5_Ant1_2402_1000~26500



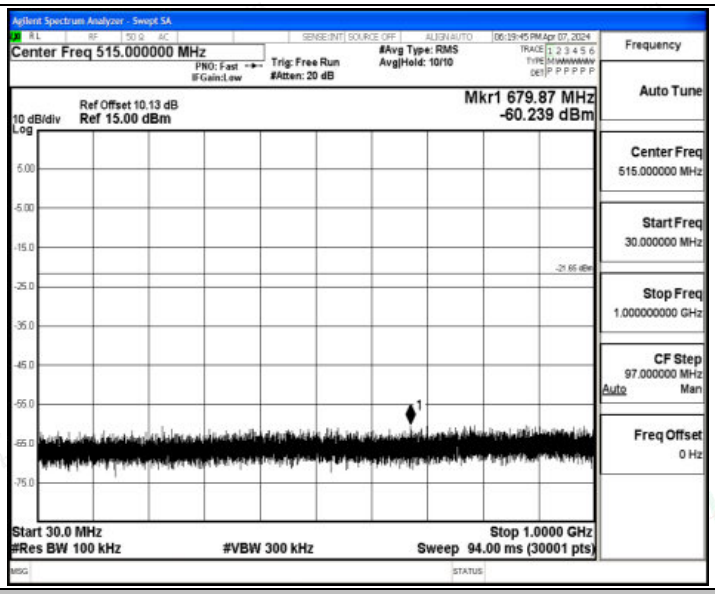
2DH5_Ant1_2441_30~1000



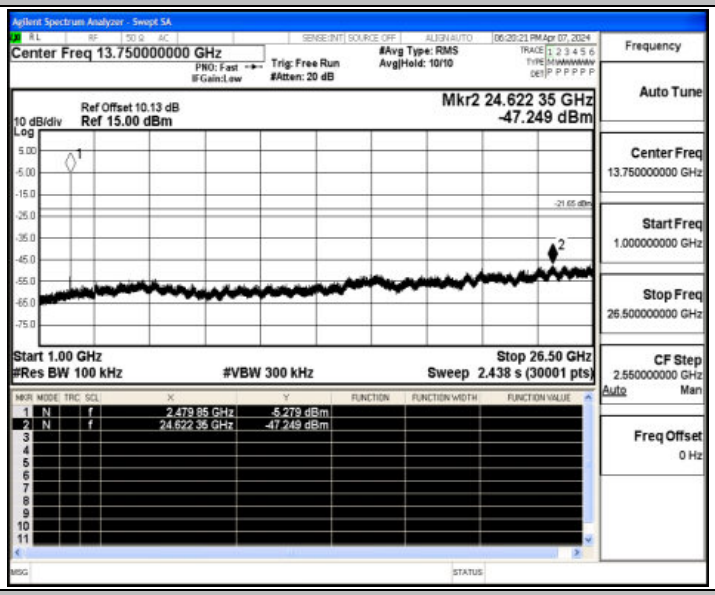
2DH5_Ant1_2441_1000~26500



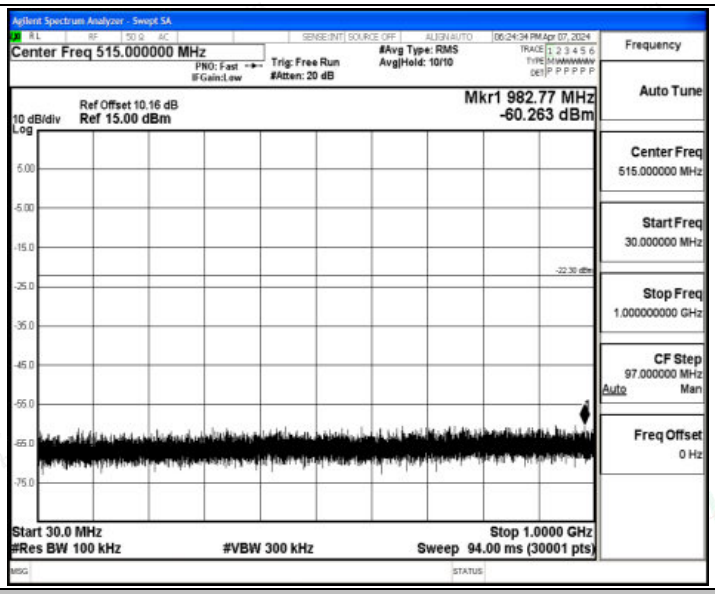
2DH5_Ant1_2480_30~1000



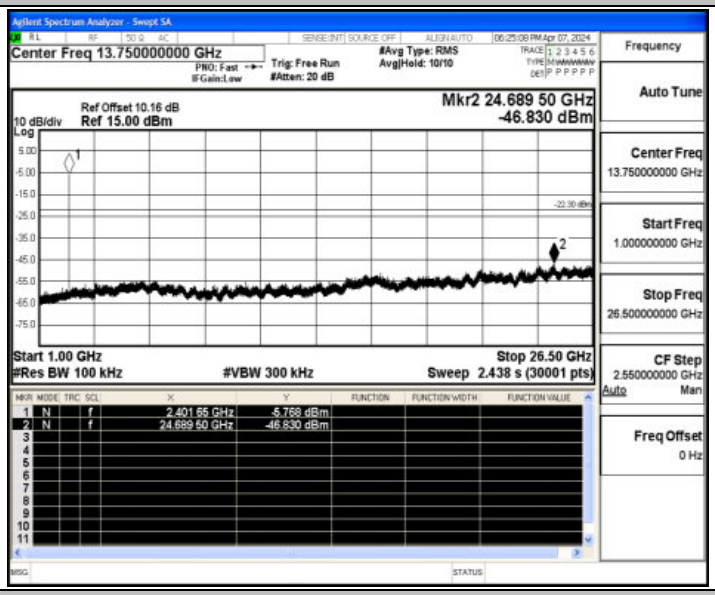
2DH5_Ant1_2480_1000~26500



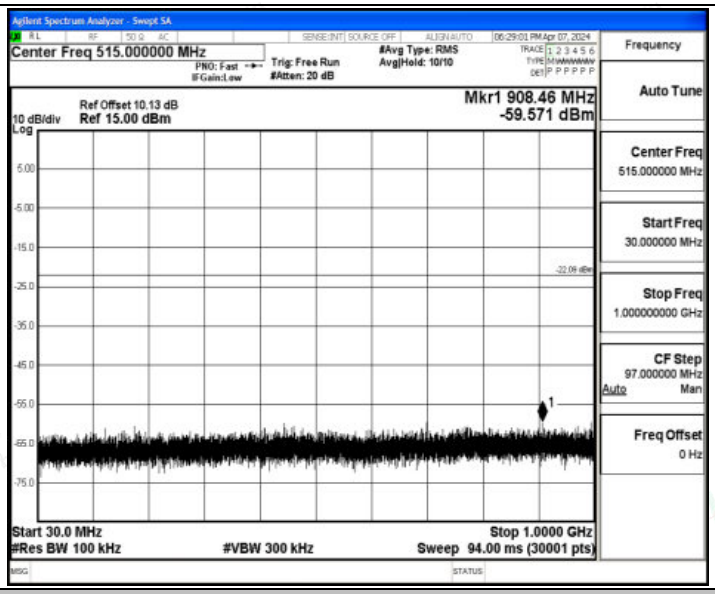
3DH5_Ant1_2402_30~1000



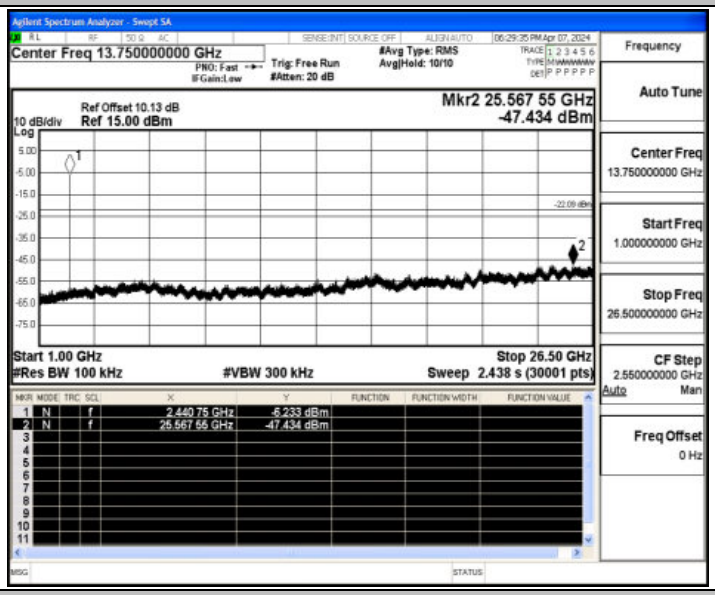
3DH5_Ant1_2402_1000~26500



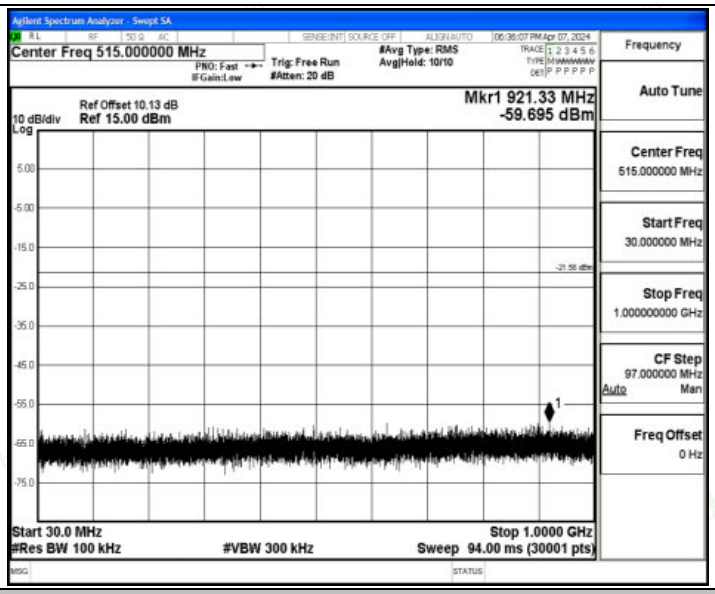
3DH5_Ant1_2441_30~1000



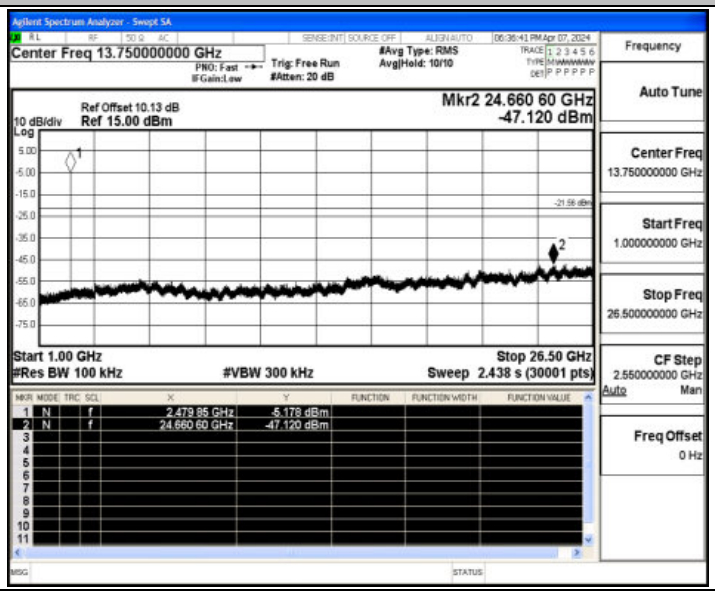
3DH5_Ant1_2441_1000~26500



3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500



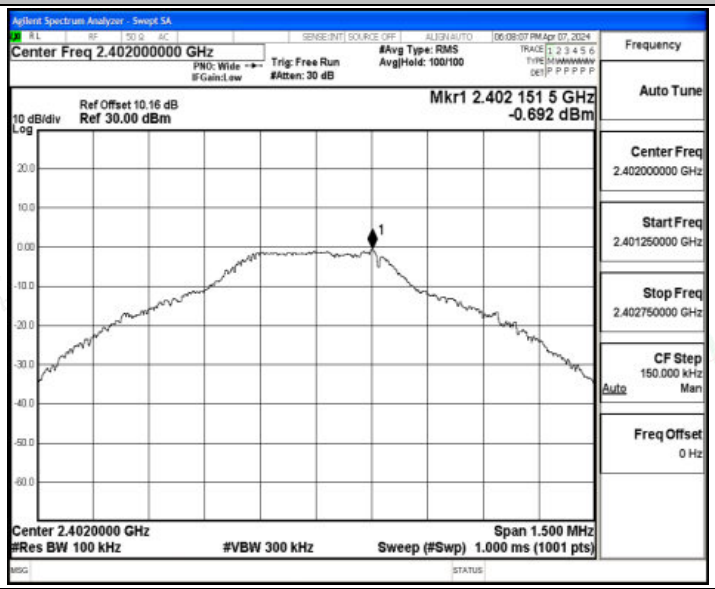
Reference Level

Test Result

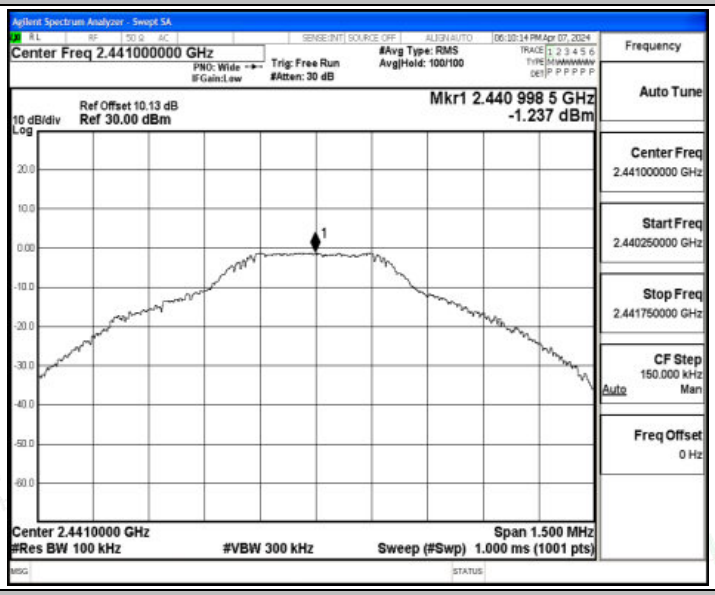
TestMode	Antenna	ChName	Frequency[MHz]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	2402.15	-0.69	---	PASS
		2441	2441.00	-1.24	---	PASS
		2480	2480.00	-1.09	---	PASS
2DH5	Ant1	2402	2402.14	-1.95	---	PASS
		2441	2441.15	-2.39	---	PASS
		2480	2480.15	-1.65	---	PASS
3DH5	Ant1	2402	2402.15	-2.30	---	PASS
		2441	2440.85	-2.09	---	PASS
		2480	2480.15	-1.56	---	PASS

Test Graphs

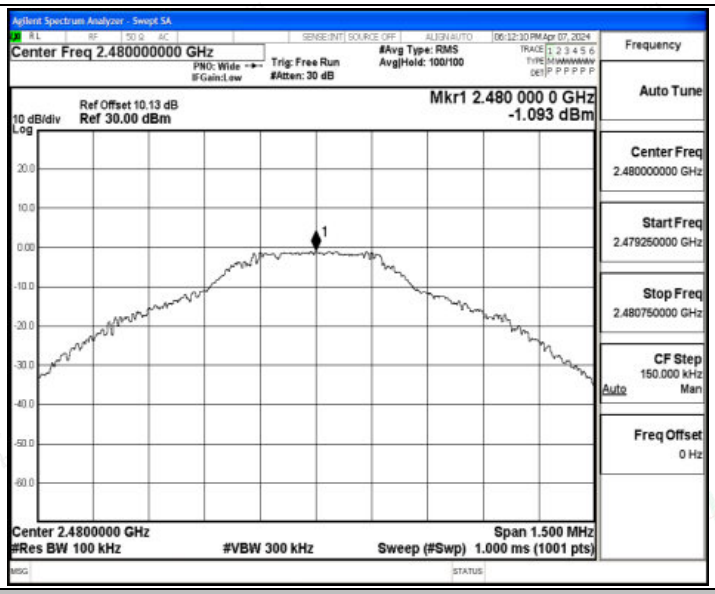
DH5_Ant1_2402



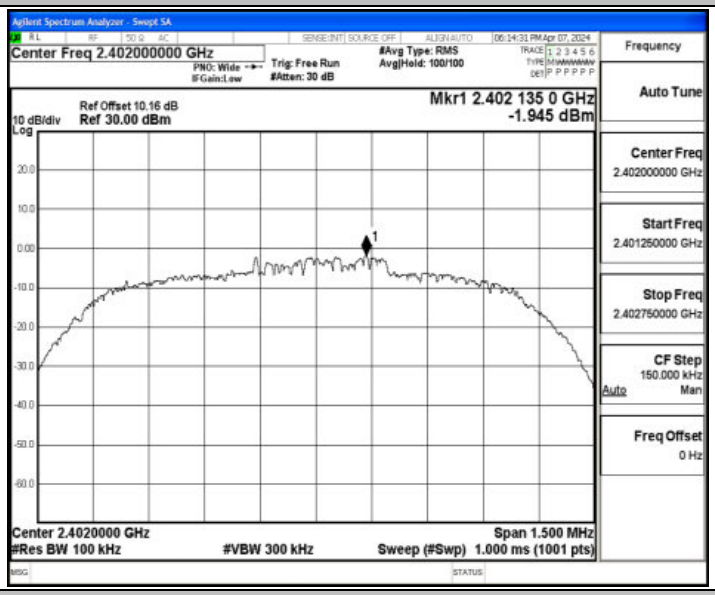
DH5_Ant1_2441



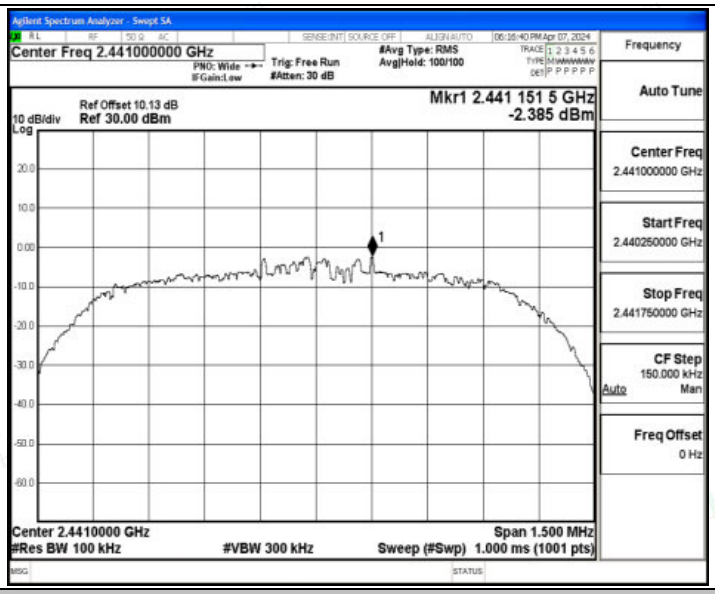
DH5_Ant1_2480



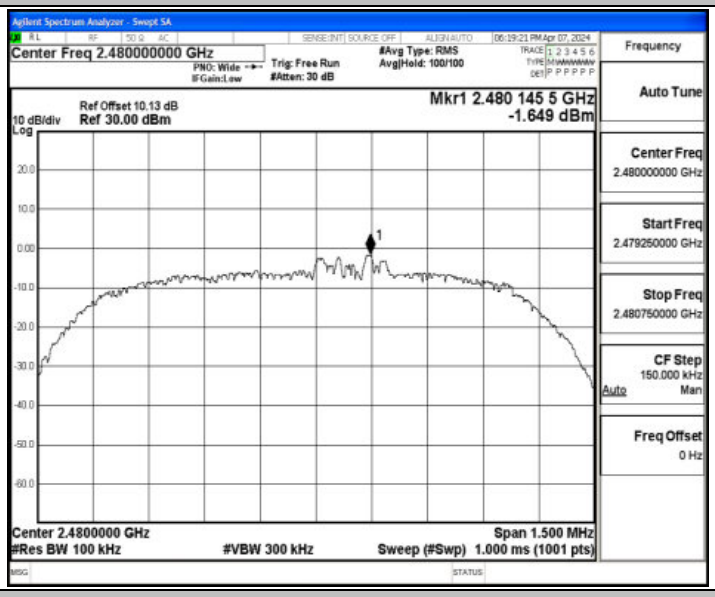
2DH5_Ant1_2402



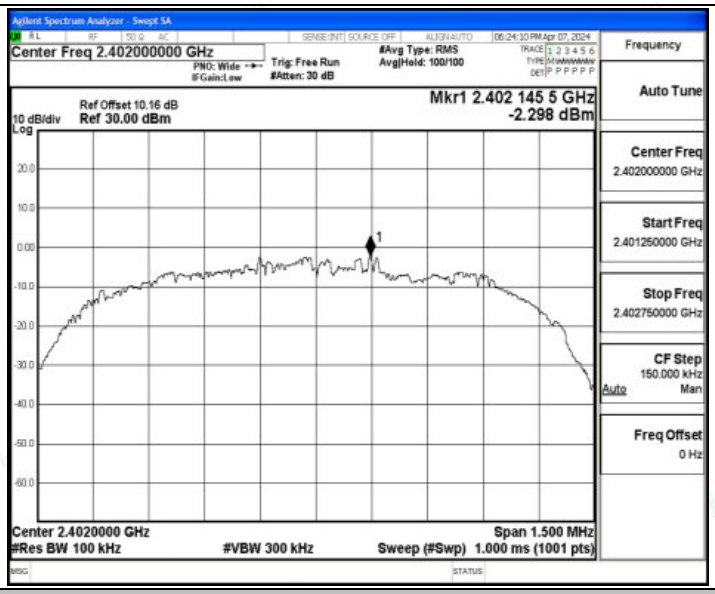
2DH5_Ant1_2441



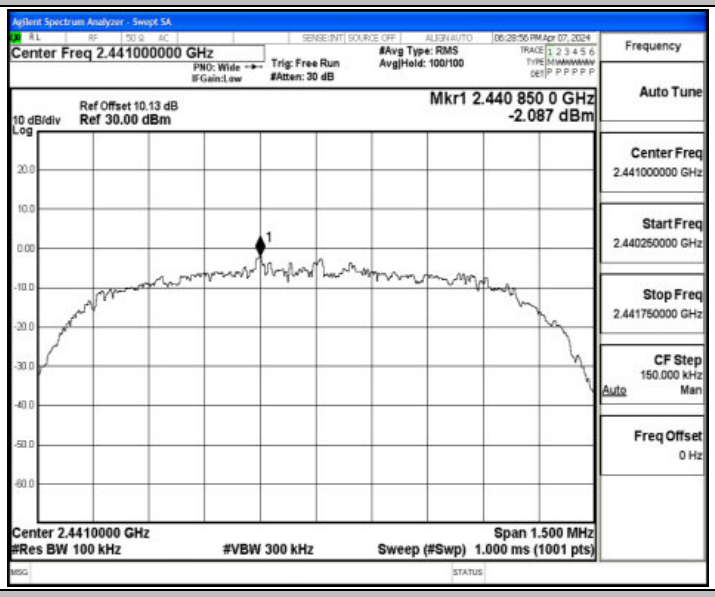
2DH5_Ant1_2480



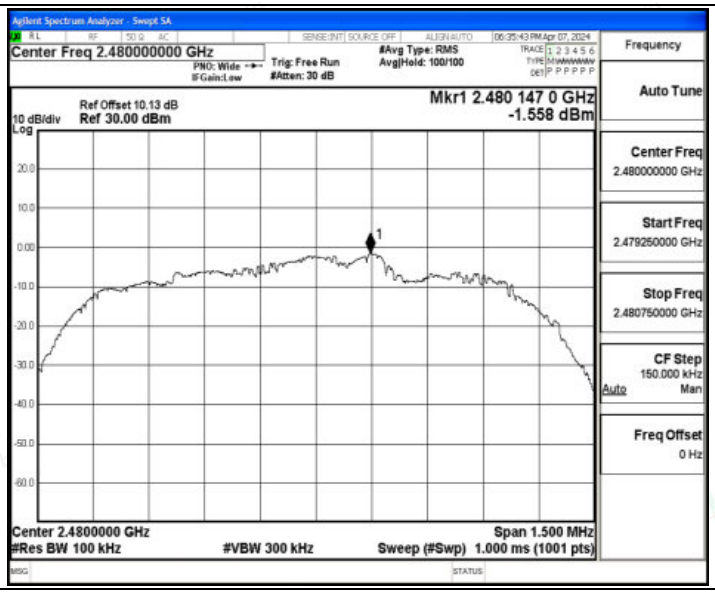
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 100/100
06:35:43 PM Apr 07, 2024
Ref Offset 10.13 dB
10 dB/div Ref 30.00 dBm
Log
Mkr1 2.480 147 0 GHz
-1.558 dBm
Center 2.4800000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 1.500 MHz
Sweep (#Swp) 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479250000 GHz
Stop Freq
2.480750000 GHz
CF Step
150.000 kHz
Auto
Man
Freq Offset
0 Hz

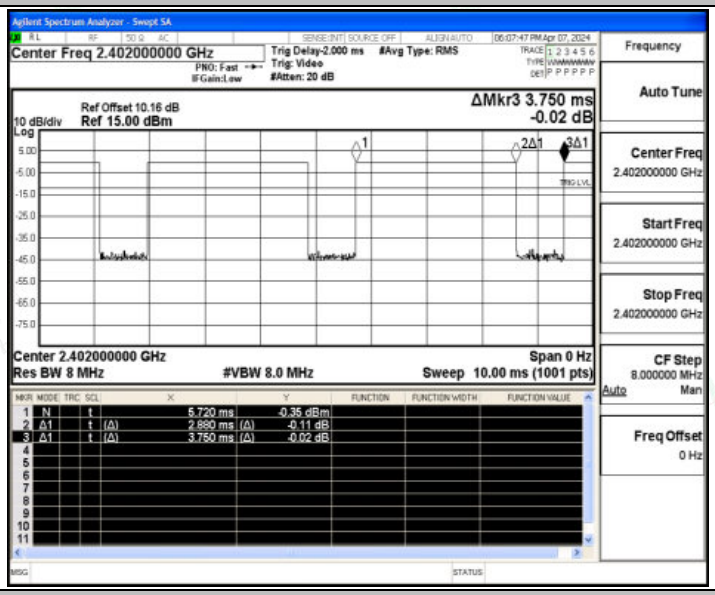
A.8 Duty Cycle

Test Result

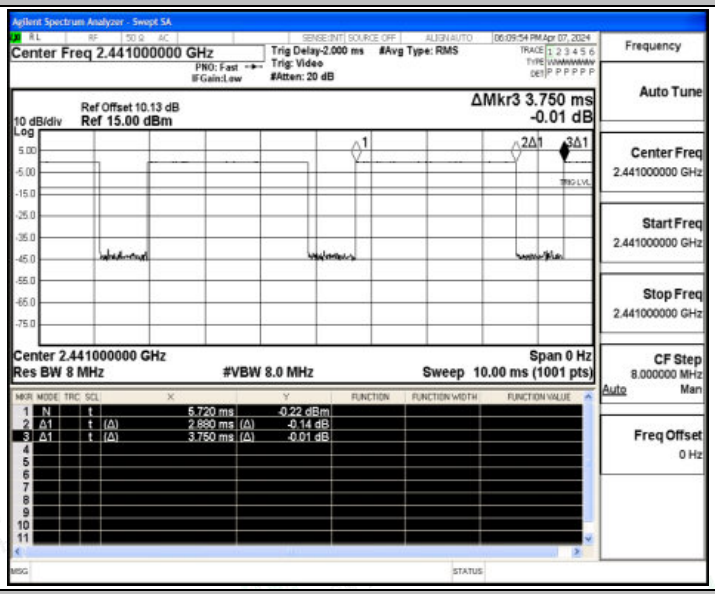
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]	1/T Factor[kHz]
DH5	Ant1	2402	2.88	3.75	76.80	1.15	0.35
		2441	2.88	3.75	76.80	1.15	0.35
		2480	2.89	3.75	77.07	1.13	0.35
2DH5	Ant1	2402	2.89	3.75	77.07	1.13	0.35
		2441	2.89	3.75	77.07	1.13	0.35
		2480	2.89	3.75	77.07	1.13	0.35
3DH5	Ant1	2402	2.89	3.75	77.07	1.13	0.35
		2441	2.89	3.75	77.07	1.13	0.35
		2480	2.89	3.75	77.07	1.13	0.35

Test Graphs

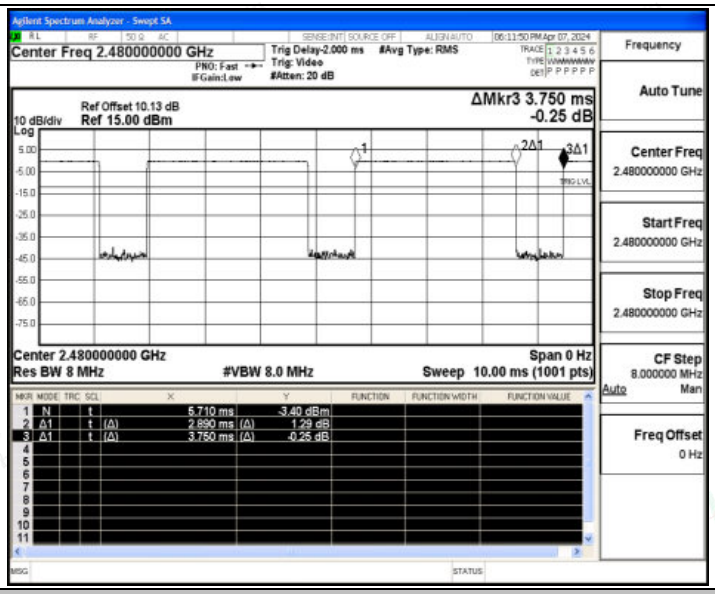
DH5_Ant1_2402



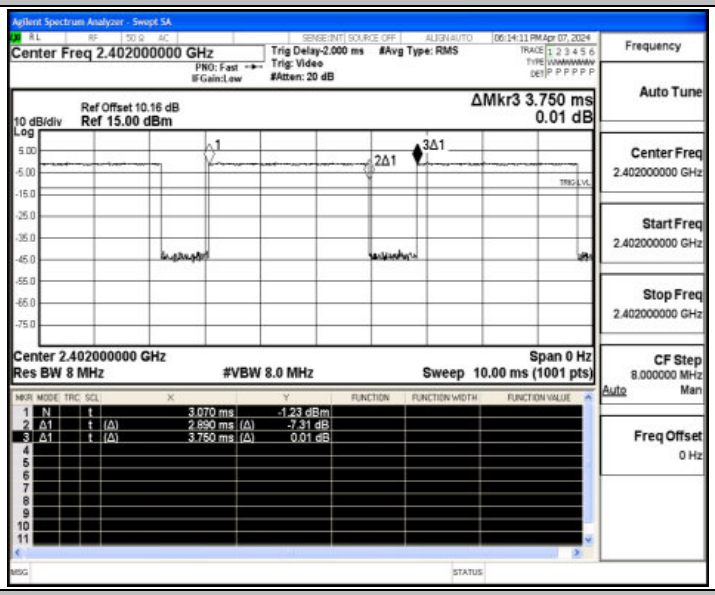
DH5_Ant1_2441



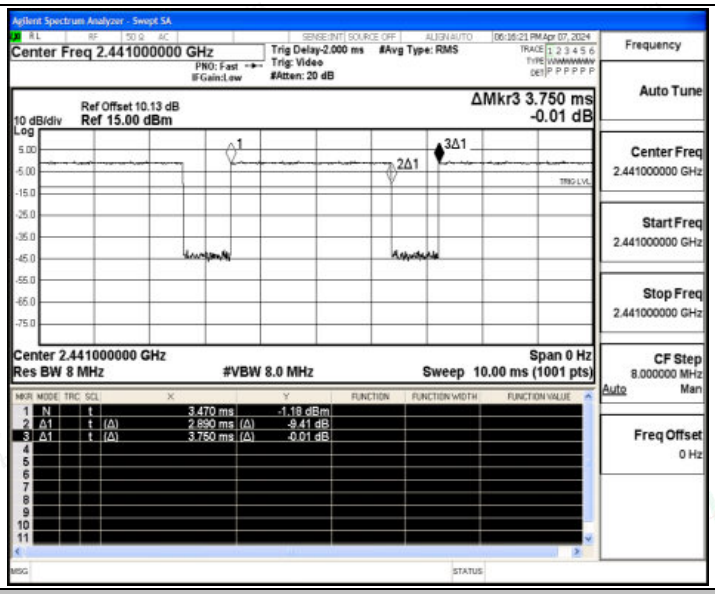
DH5_Ant1_2480



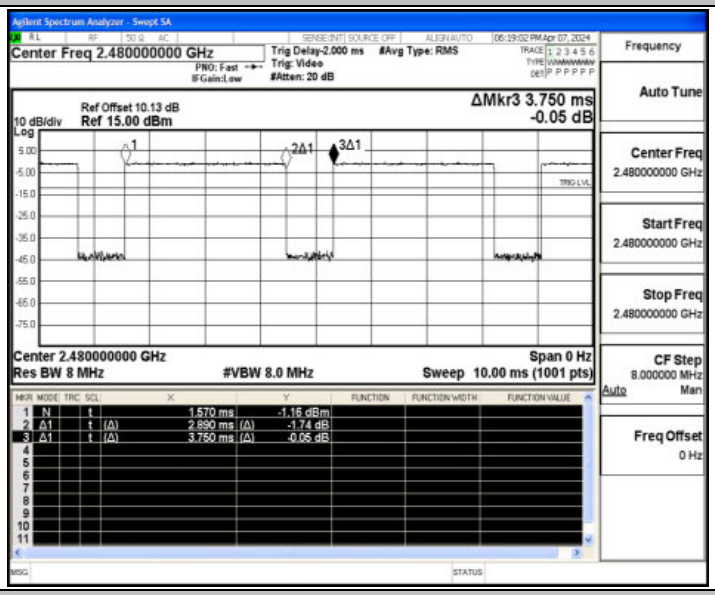
2DH5_Ant1_2402



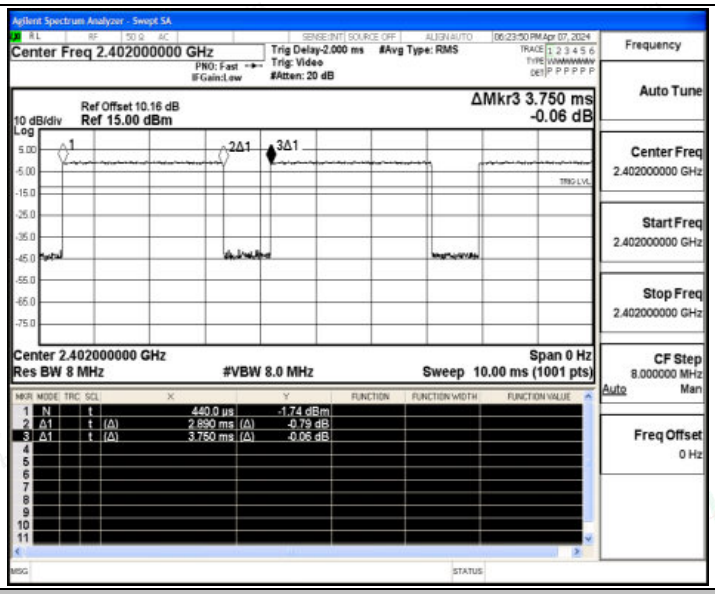
2DH5_Ant1_2441



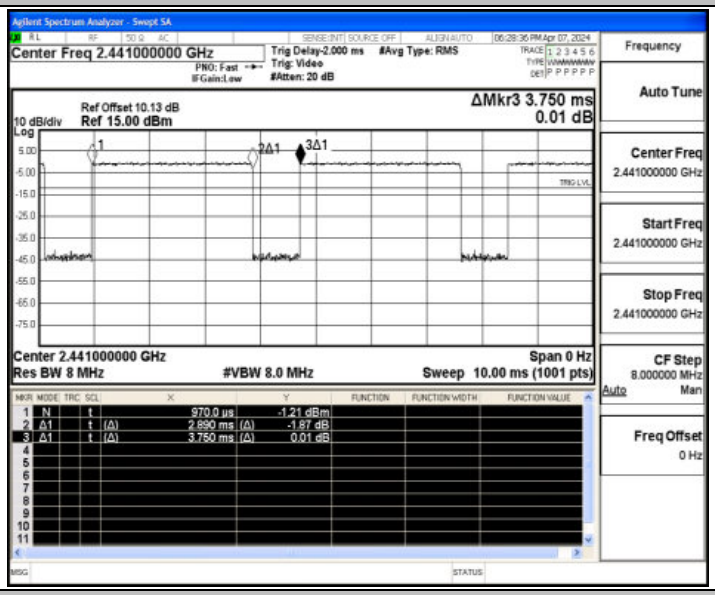
2DH5_Ant1_2480



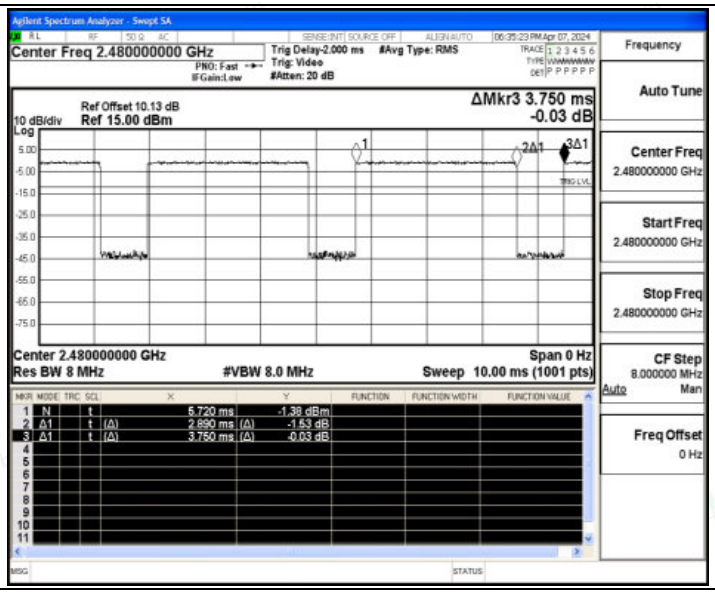
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
Trig Delay-2.000 ms
Trig: Video
#Atten: 20 dB
#Avg Type: RMS
Ref Offset 10.13 dB
10 dB/div Ref 15.00 dBm
ΔMkr3 3.750 ms
-0.03 dB
Center 2.480000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 10.00 ms (1001 pts)
1 N 1 5.720 ms -1.38 dBm
2 Δ1 1 (Δ) 2.890 ms (Δ) -1.53 dB
3 Δ1 1 (Δ) 3.750 ms (Δ) -0.03 dB
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.480000000 GHz
Stop Freq
2.480000000 GHz
CF Step
8.000000 MHz
Auto Man
Freq Offset
0 Hz

A.9 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-47.36	≤-41.20	47.84	≤54	PASS
				AV	2378.960	-45.88	≤-41.20	49.32	≤54	PASS
				AV	2390.000	-46.75	≤-41.20	48.45	≤54	PASS
				Peak	2310.000	-41.13	≤-21.20	54.07	≤74	PASS
				Peak	2325.305	-37.09	≤-21.20	58.11	≤74	PASS
				Peak	2390.000	-41.17	≤-21.20	54.03	≤74	PASS
		High	2480	AV	2483.500	-46.67	≤-41.20	48.53	≤54	PASS
				AV	2498.320	-45.73	≤-41.20	49.47	≤54	PASS
				AV	2500.000	-46.69	≤-41.20	48.51	≤54	PASS
				Peak	2483.500	-38.75	≤-21.20	56.45	≤74	PASS
				Peak	2488.800	-36.07	≤-21.20	59.13	≤74	PASS
				Peak	2500.000	-38.79	≤-21.20	56.41	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-40.8	≤-21.20	54.40	≤74	PASS
				Peak	2371.925	-36.4	≤-21.20	58.80	≤74	PASS
				Peak	2390.000	-40.71	≤-21.20	54.49	≤74	PASS
		High	Hop_2480	Peak	2483.500	-40.15	≤-21.20	55.05	≤74	PASS
				Peak	2496.080	-37.32	≤-21.20	57.88	≤74	PASS
				Peak	2500.000	-38.27	≤-21.20	56.93	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-47.23	≤-41.20	47.97	≤54	PASS
				AV	2382.740	-45.91	≤-41.20	49.29	≤54	PASS
				AV	2390.000	-46.84	≤-41.20	48.36	≤54	PASS
				Peak	2310.000	-39.12	≤-21.20	56.08	≤74	PASS
				Peak	2362.790	-36.99	≤-21.20	58.21	≤74	PASS
				Peak	2390.000	-39.99	≤-21.20	55.21	≤74	PASS
		High	2480	AV	2483.500	-46.54	≤-41.20	48.66	≤54	PASS
				AV	2496.640	-45.68	≤-41.20	49.52	≤54	PASS
				AV	2500.000	-46.25	≤-41.20	48.95	≤54	PASS
				Peak	2483.500	-37.89	≤-21.20	57.31	≤74	PASS
				Peak	2495.440	-37.47	≤-21.20	57.73	≤74	PASS
				Peak	2500.000	-39.96	≤-21.20	55.24	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-39.86	≤-21.20	55.34	≤74	PASS
				Peak	2389.250	-36.89	≤-21.20	58.31	≤74	PASS
				Peak	2390.000	-41.31	≤-21.20	53.89	≤74	PASS
		High	Hop_2480	Peak	2483.500	-38.21	≤-21.20	56.99	≤74	PASS
				Peak	2495.920	-37.16	≤-21.20	58.04	≤74	PASS

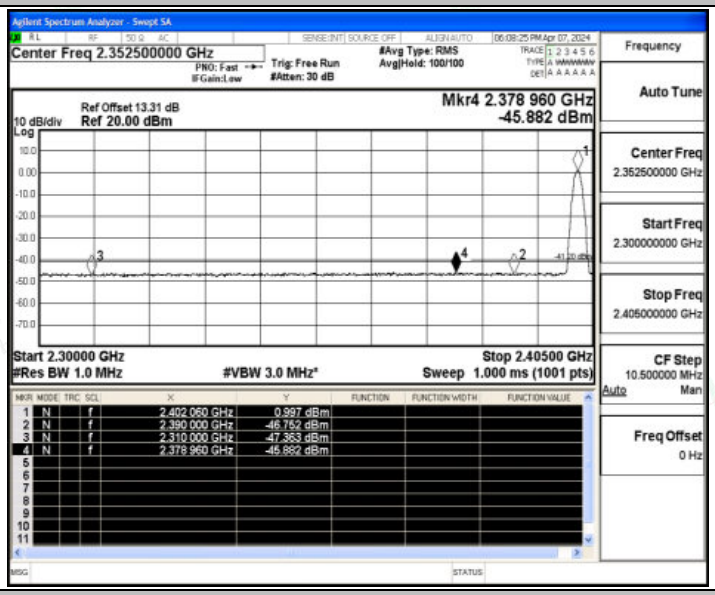
				Peak	2500.000	-40.04	≤-21.20	55.16	≤74	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-47.19	≤-41.20	48.01	≤54	PASS
				AV	2382.425	-45.77	≤-41.20	49.43	≤54	PASS
				AV	2390.000	-46.87	≤-41.20	48.33	≤54	PASS
				Peak	2310.000	-39.67	≤-21.20	55.53	≤74	PASS
				Peak	2351.975	-37.16	≤-21.20	58.04	≤74	PASS
				Peak	2390.000	-40.43	≤-21.20	54.77	≤74	PASS
		High	2480	AV	2483.500	-46.53	≤-41.20	48.67	≤54	PASS
				AV	2493.920	-45.79	≤-41.20	49.41	≤54	PASS
				AV	2500.000	-46.17	≤-41.20	49.03	≤54	PASS
				Peak	2483.500	-40.04	≤-21.20	55.16	≤74	PASS
				Peak	2498.800	-37.09	≤-21.20	58.11	≤74	PASS
				Peak	2500.000	-39.37	≤-21.20	55.83	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-41.41	≤-21.20	53.79	≤74	PASS
				Peak	2367.095	-37.54	≤-21.20	57.66	≤74	PASS
				Peak	2390.000	-39.87	≤-21.20	55.33	≤74	PASS
		High	Hop_2480	Peak	2483.500	-39.27	≤-21.20	55.93	≤74	PASS
				Peak	2492.720	-37.26	≤-21.20	57.94	≤74	PASS
				Peak	2500.000	-40.25	≤-21.20	54.95	≤74	PASS

Note：

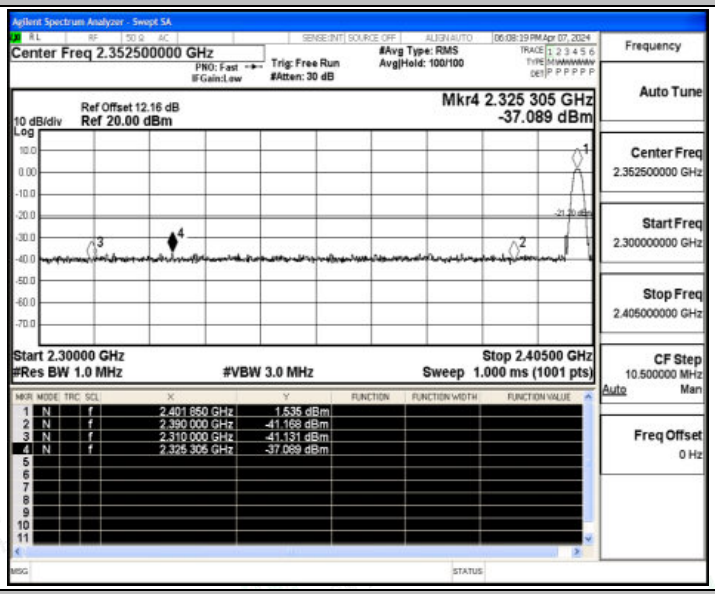
1. The Antenna Gain is compensated in the graph. The Correction Factor is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

DH5_Ant1_Low_2402_AV



DH5_Ant1_Low_2402_Peak



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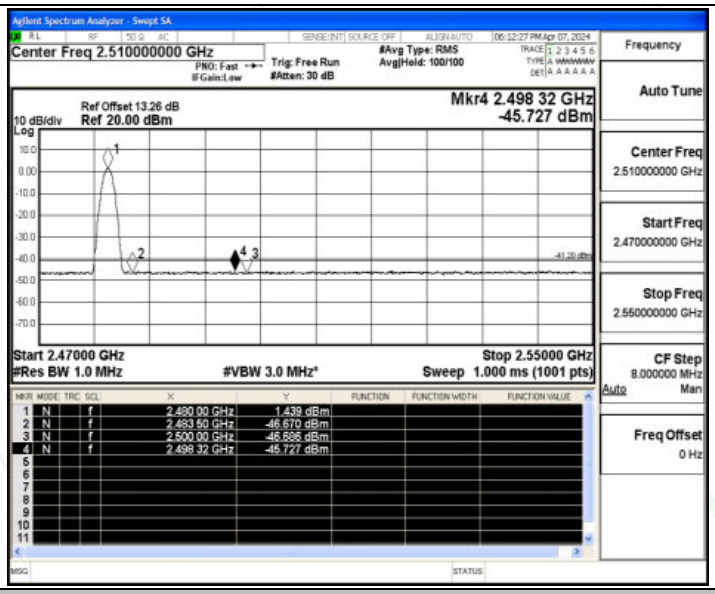

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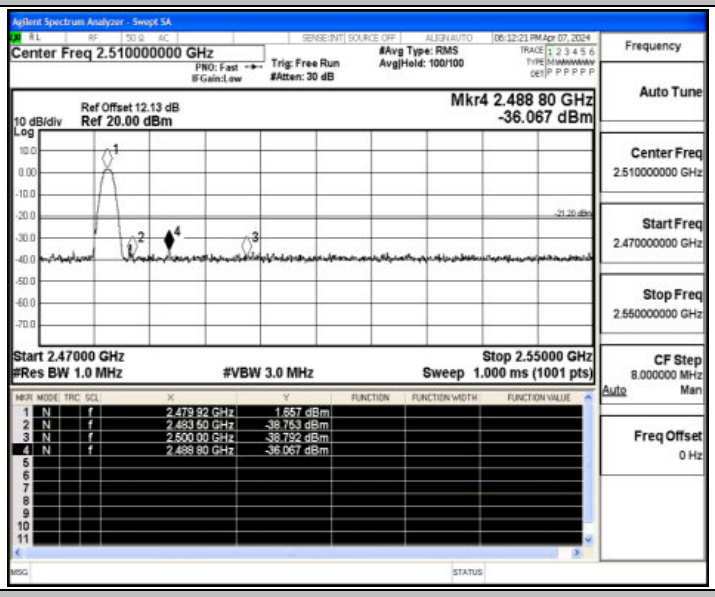

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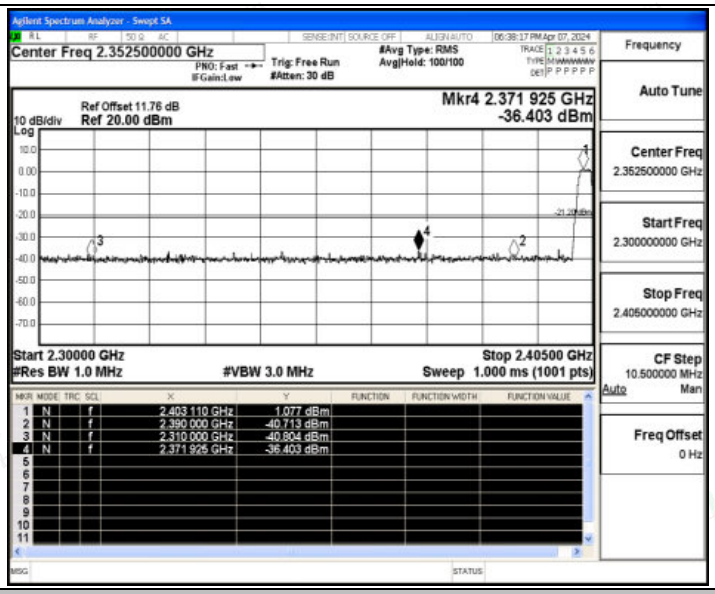

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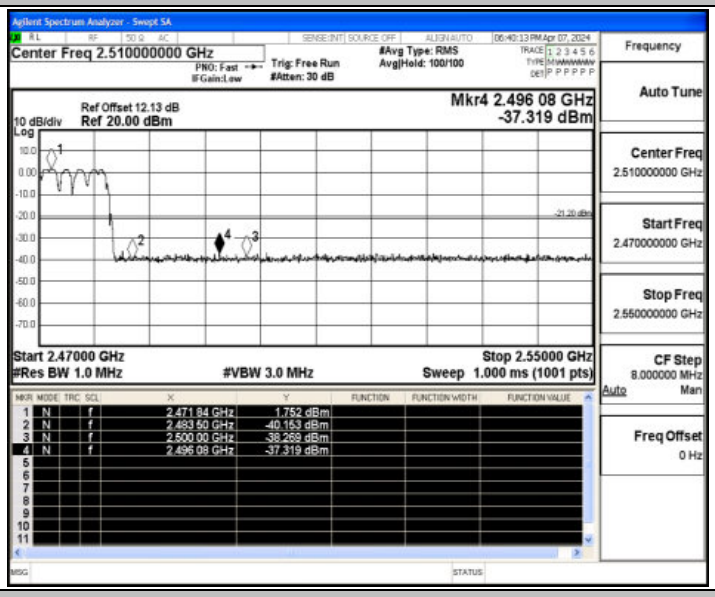

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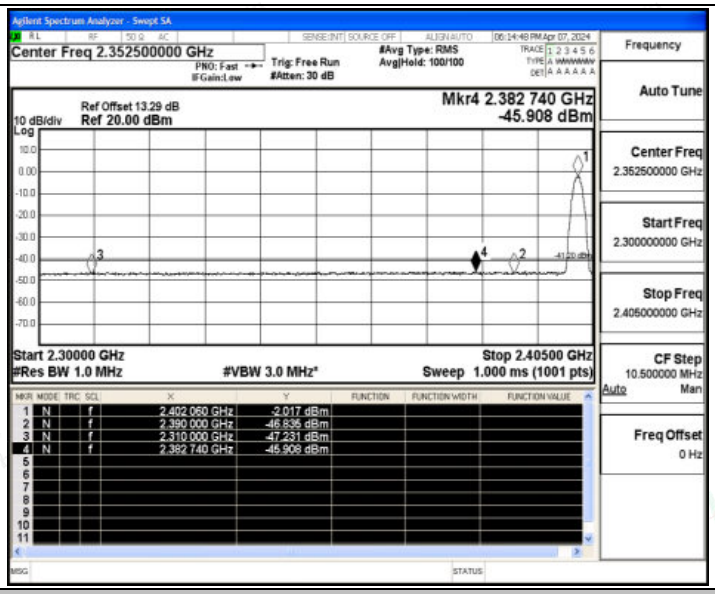

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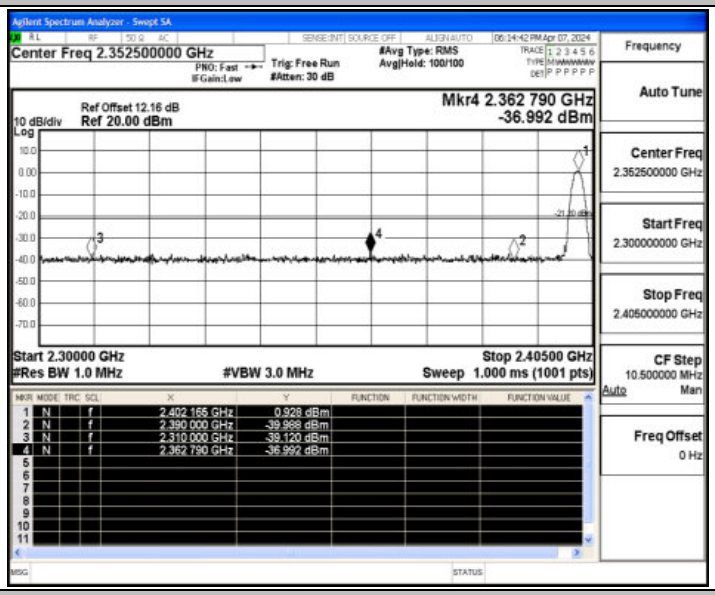

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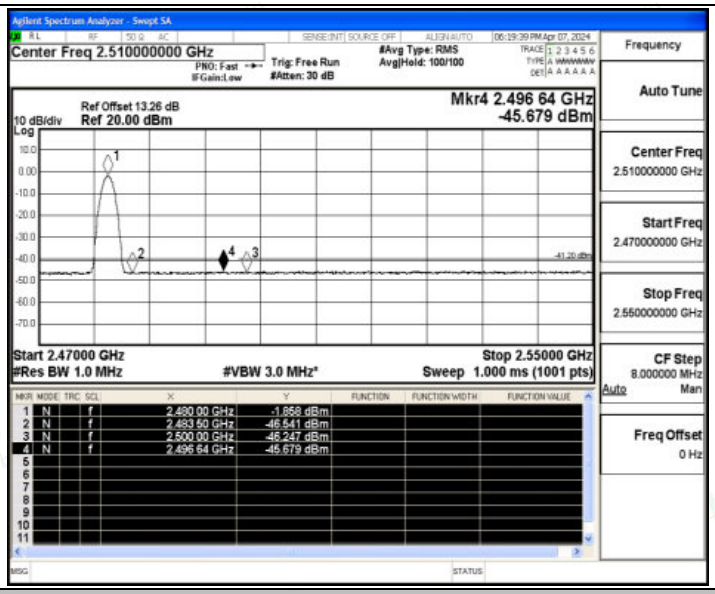

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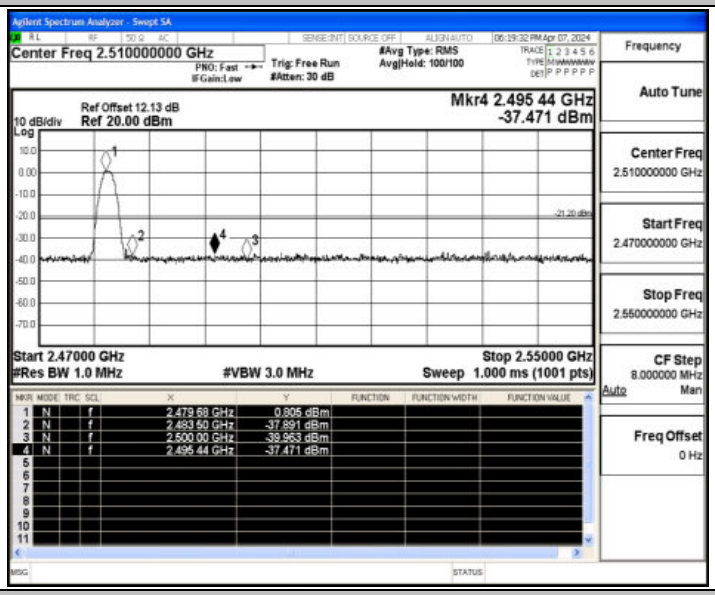

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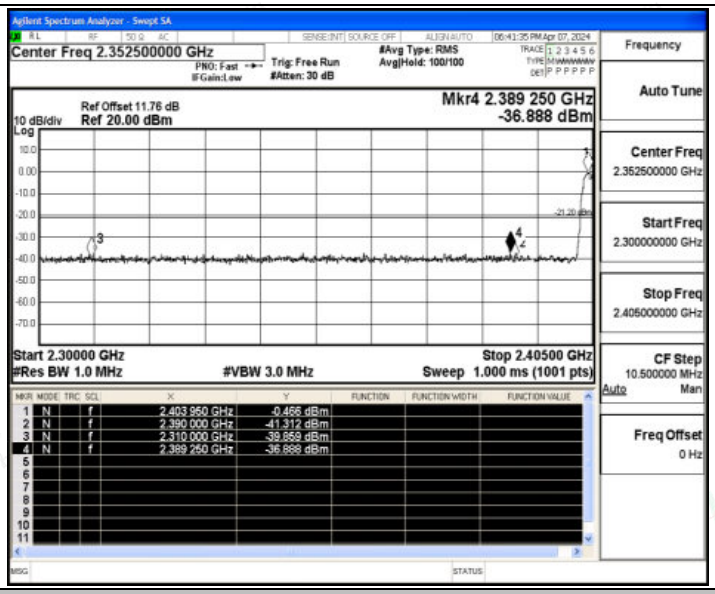

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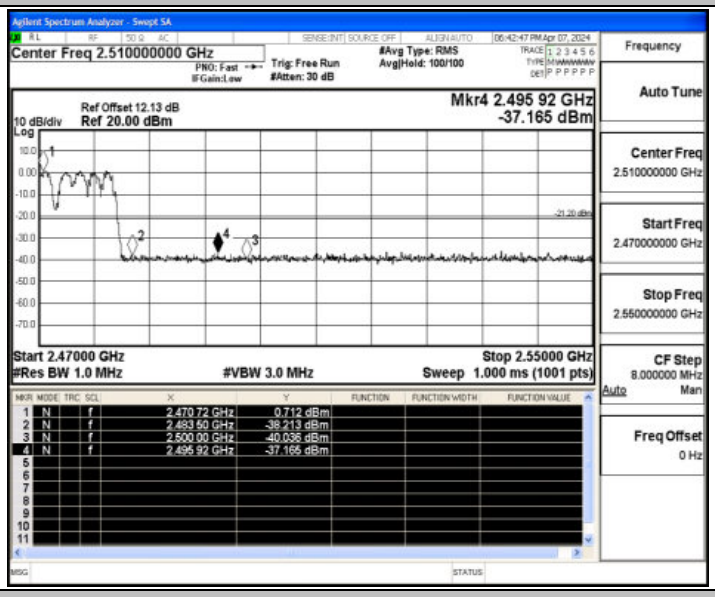

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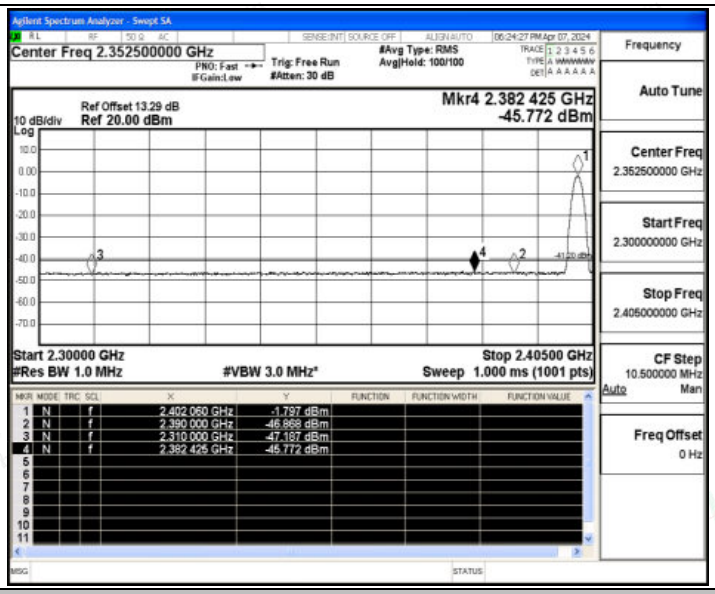

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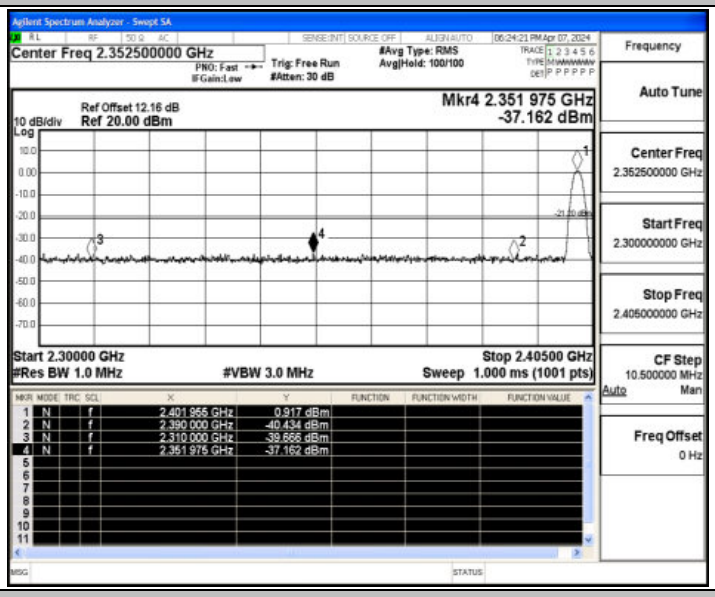

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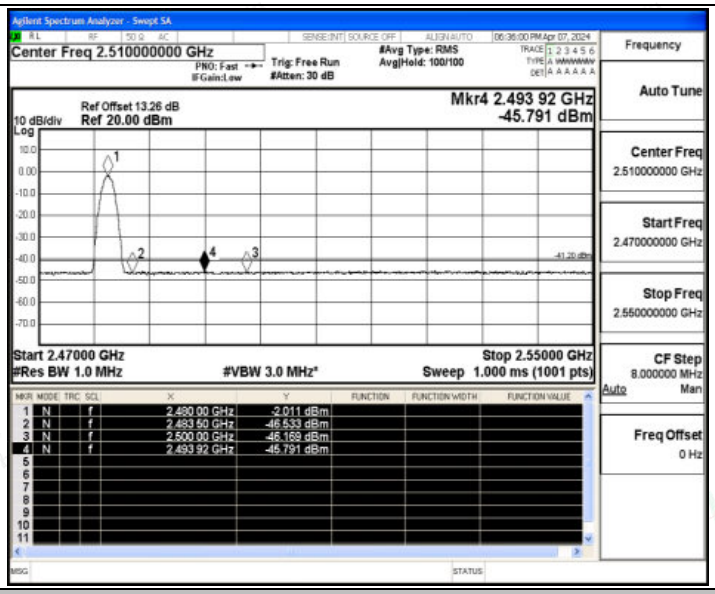

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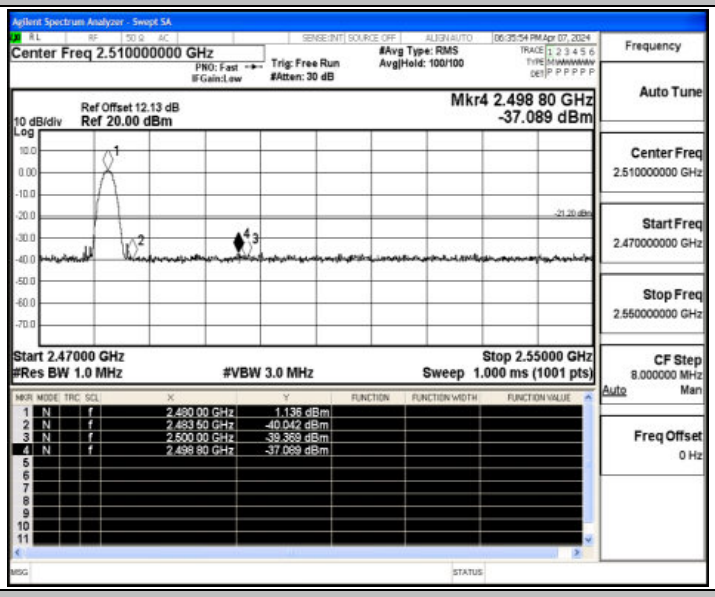

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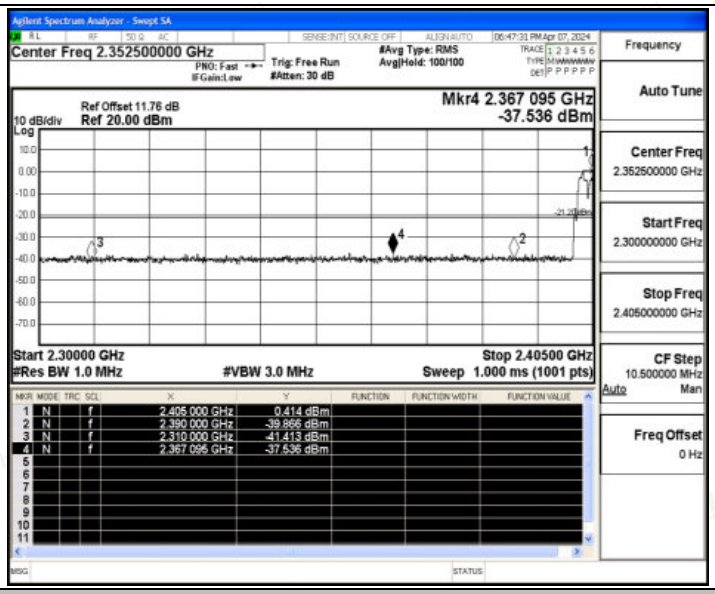
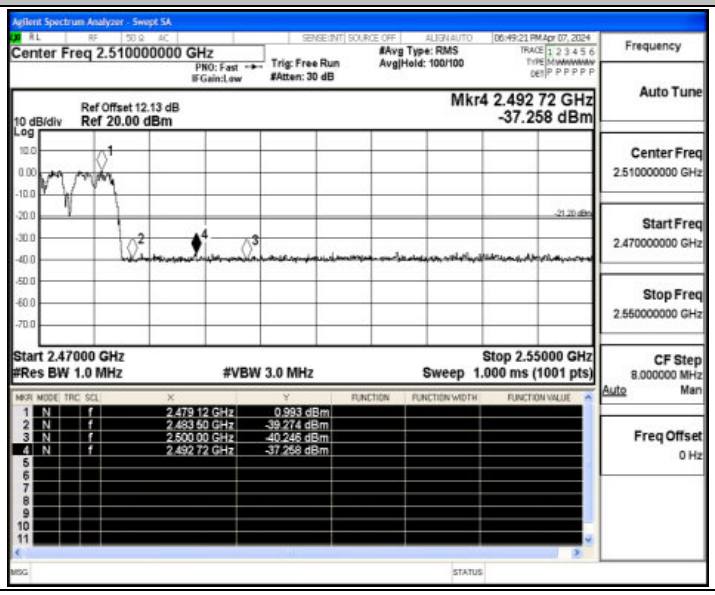
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