Appendix Test Data

Report No.:	18220WC30197701	Test Sample No.:	1-2-2
Start Test Date:	2023.09.27	Finish Test Date:	2023.10.08
Test Engineer:	Hayman Chen	Auditor:	Rick Luo
Temperature:	26.3℃	Relative Humidity:	53.8%
Pressure:	101kPa		

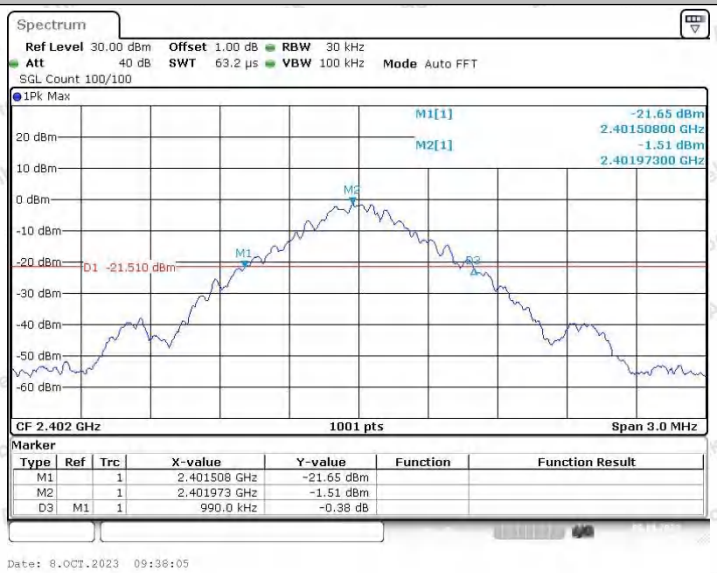
Appendix A: 20dB Emission Bandwidth

Test Result

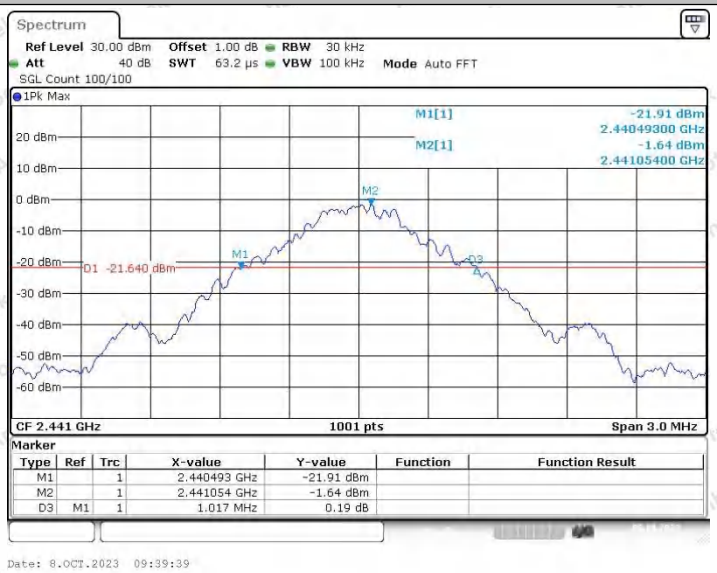
TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.99	2401.51	2402.50	---	---
		2441	1.02	2440.49	2441.51	---	---
		2480	1.02	2479.49	2480.51	---	---
2DH5	Ant1	2402	1.31	2401.34	2402.65	---	---
		2441	1.33	2440.33	2441.66	---	---
		2480	1.32	2479.33	2480.65	---	---
3DH5	Ant1	2402	1.29	2401.36	2402.64	---	---
		2441	1.30	2440.35	2441.64	---	---
		2480	1.33	2479.33	2480.66	---	---

Test Graphs

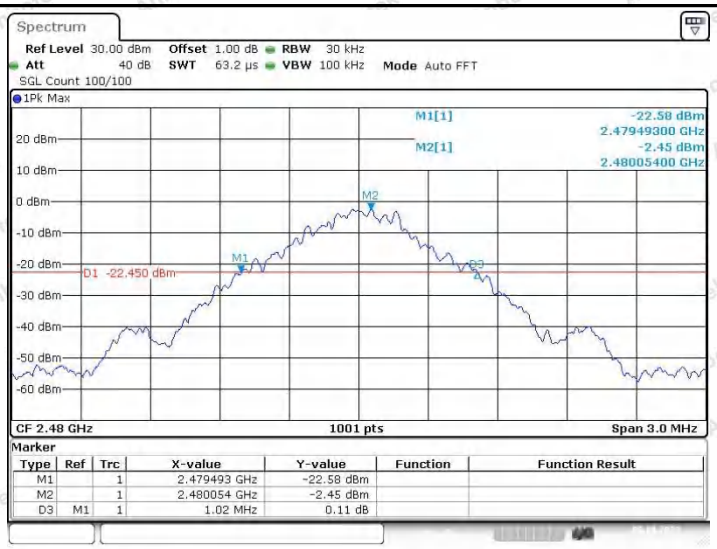
DH5_Ant1_2402



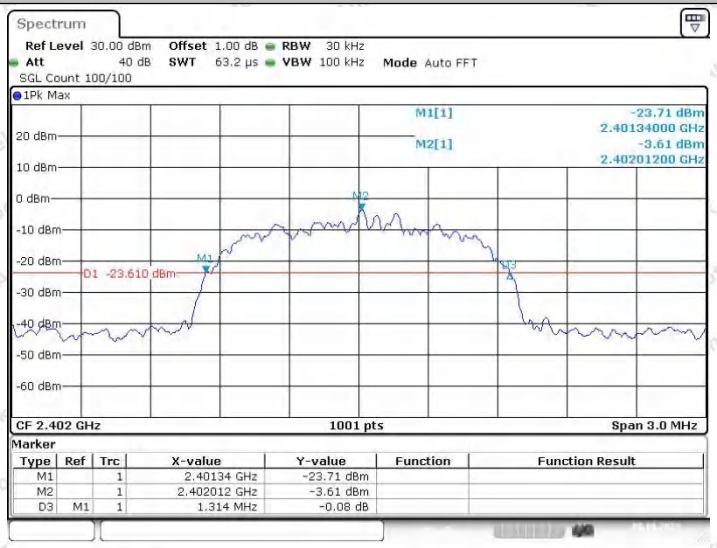
DH5_Ant1_2441



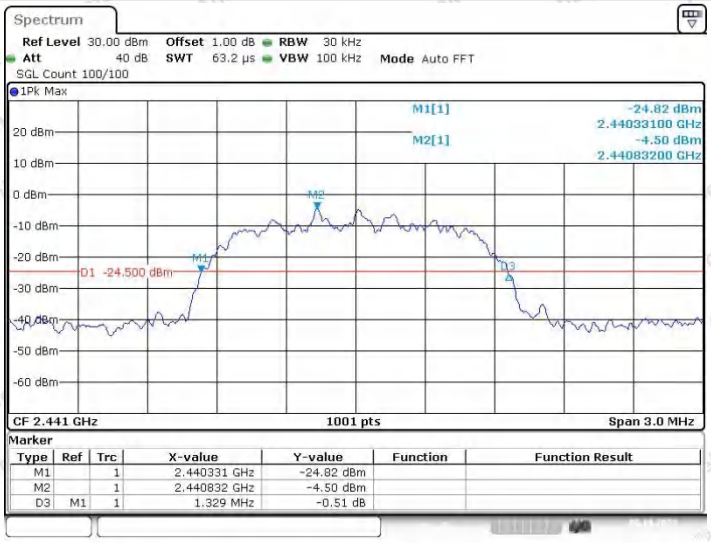
DH5_Ant1_2480



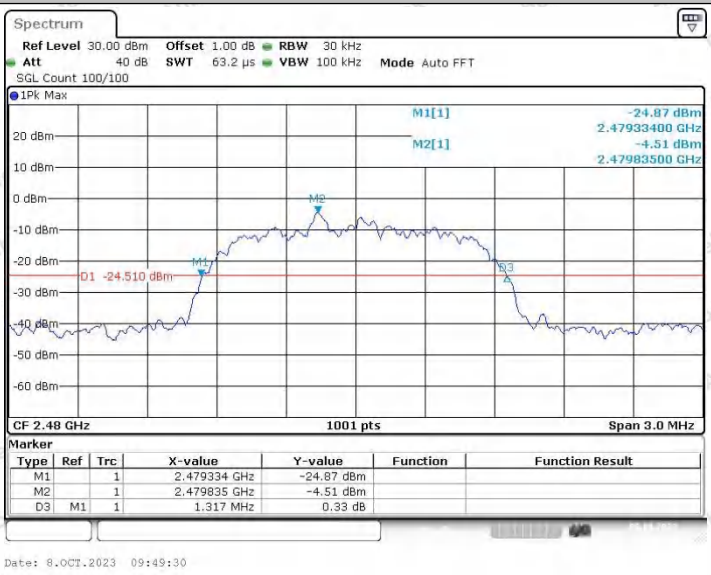
2DH5_Ant1_2402



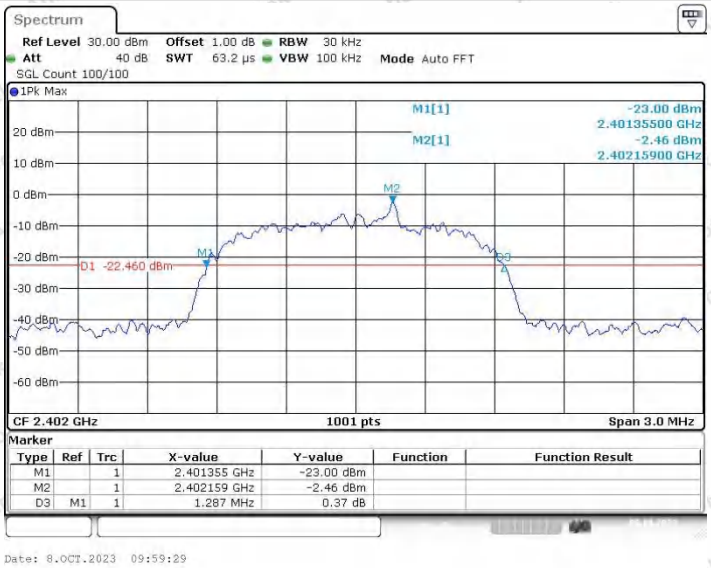
2DH5_Ant1_2441



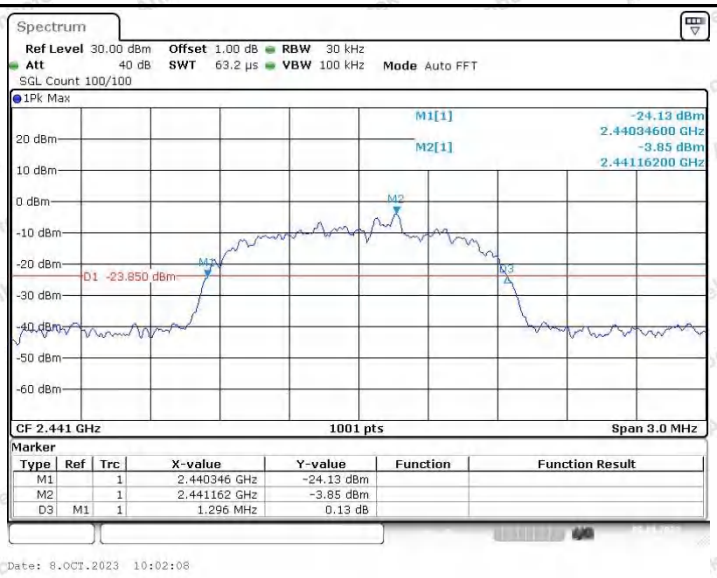
2DH5_Ant1_2480



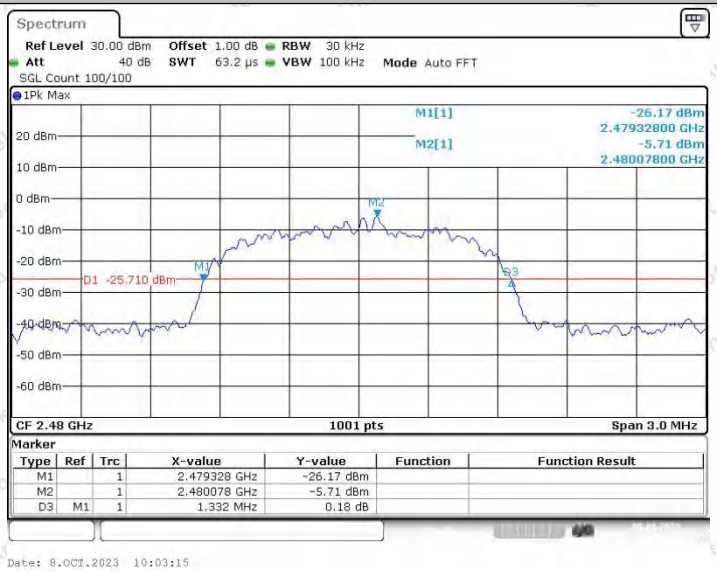
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



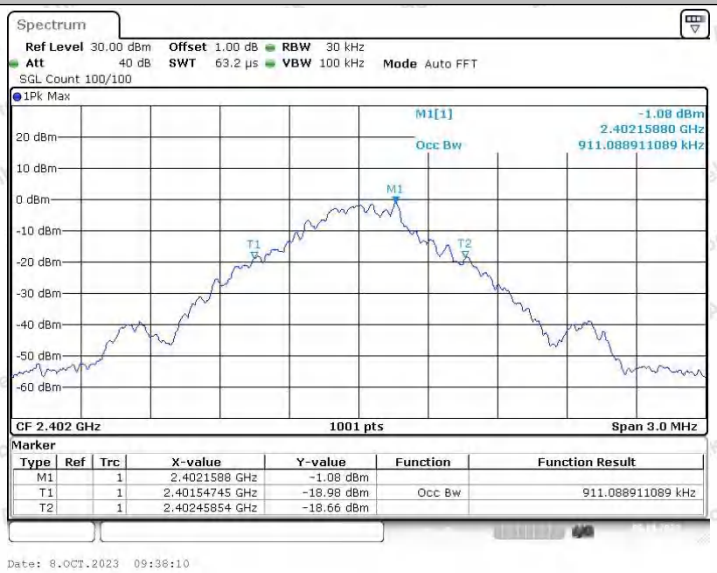
Appendix B: Occupied Channel Bandwidth

Test Result

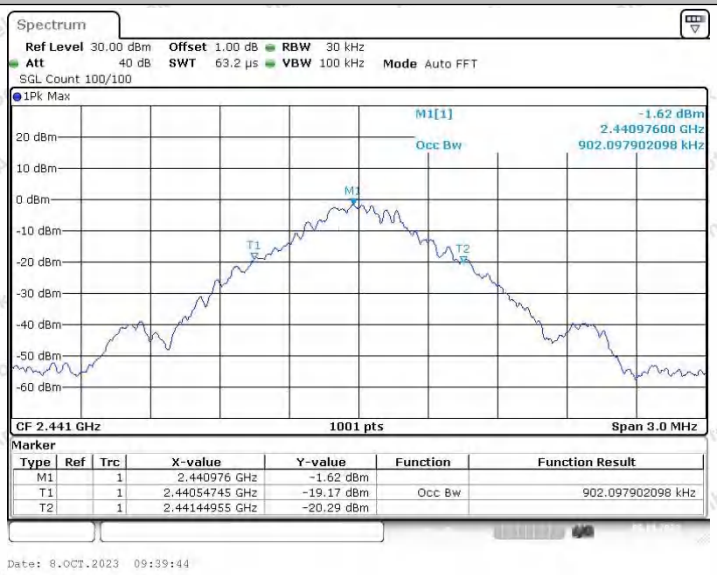
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.911	2401.5475	2402.4585	---	---
		2441	0.902	2440.5475	2441.4496	---	---
		2480	0.893	2479.5504	2480.4436	---	---
2DH5	Ant1	2402	1.193	2401.4006	2402.5934	---	---
		2441	1.19	2440.4066	2441.5964	---	---
		2480	1.181	2479.4066	2480.5874	---	---
3DH5	Ant1	2402	1.208	2401.3886	2402.5964	---	---
		2441	1.214	2440.3856	2441.5994	---	---
		2480	1.211	2479.3886	2480.5994	---	---

Test Graphs

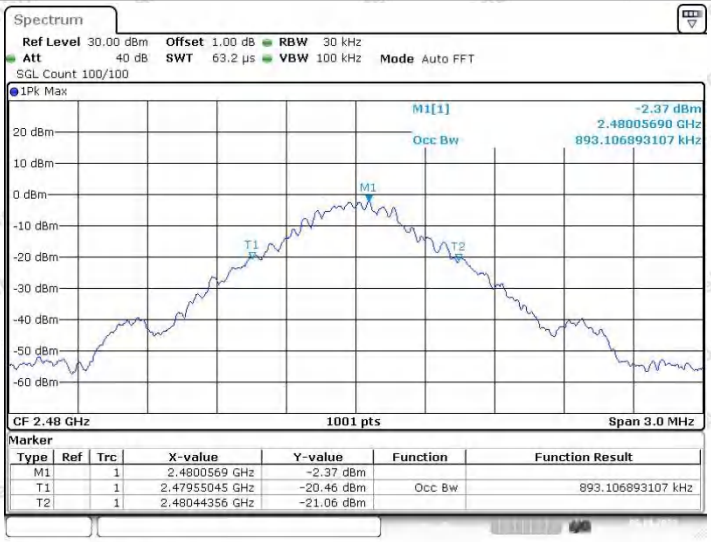
DH5_Ant1_2402



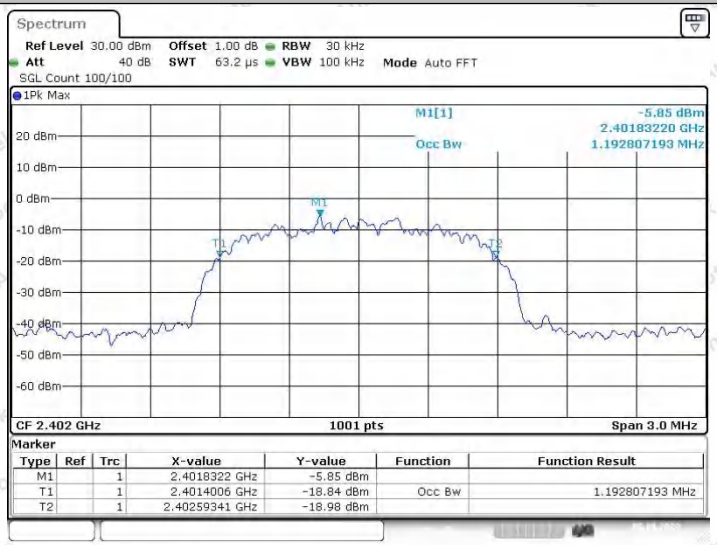
DH5_Ant1_2441



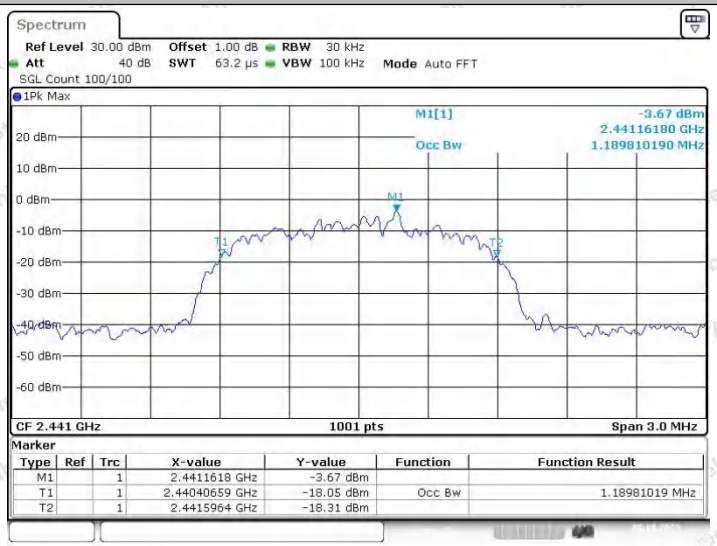
DH5_Ant1_2480



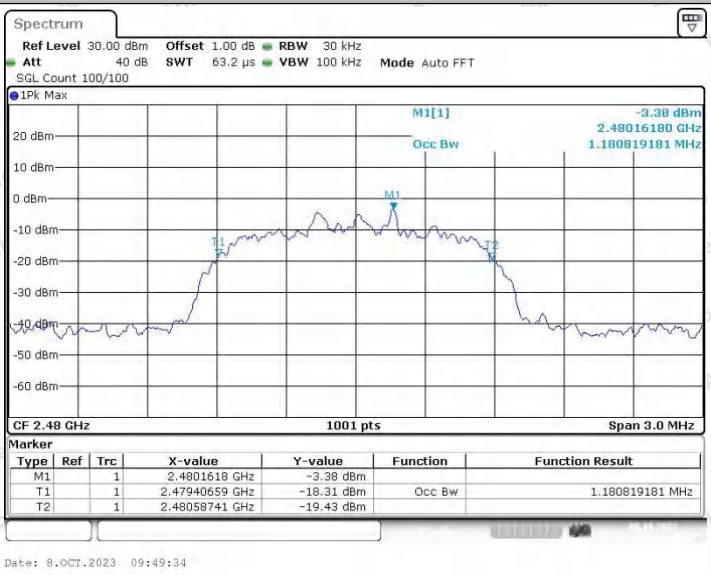
2DH5_Ant1_2402



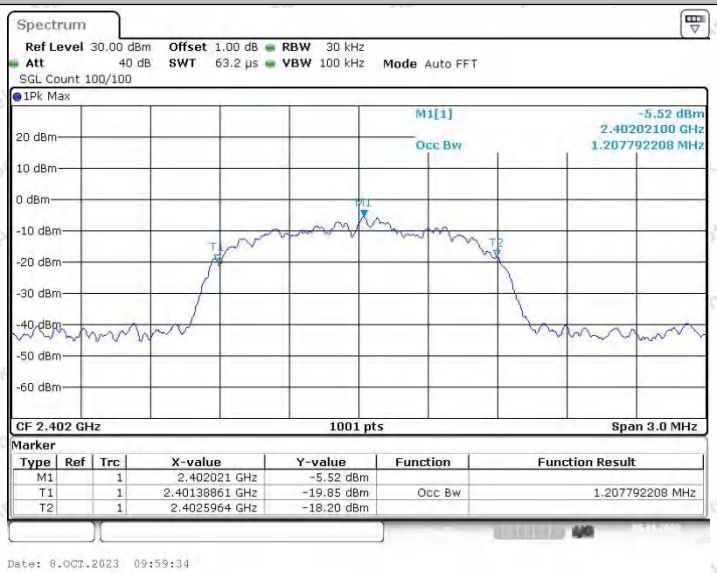
2DH5_Ant1_2441



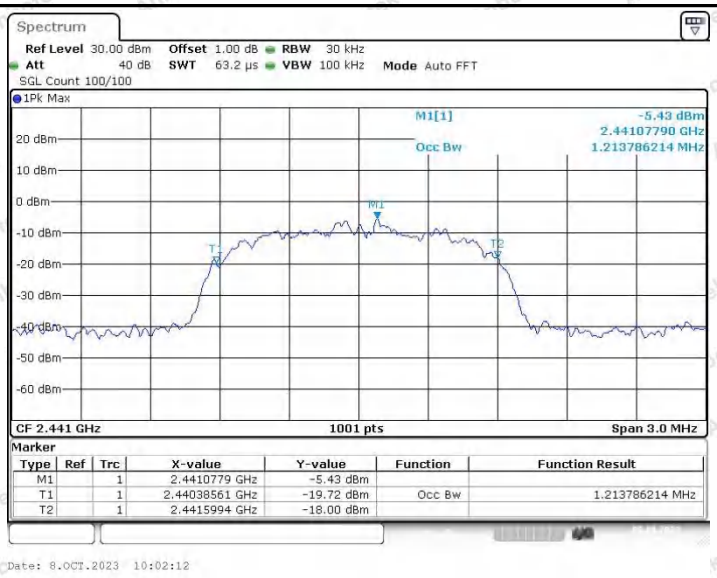
2DH5_Ant1_2480



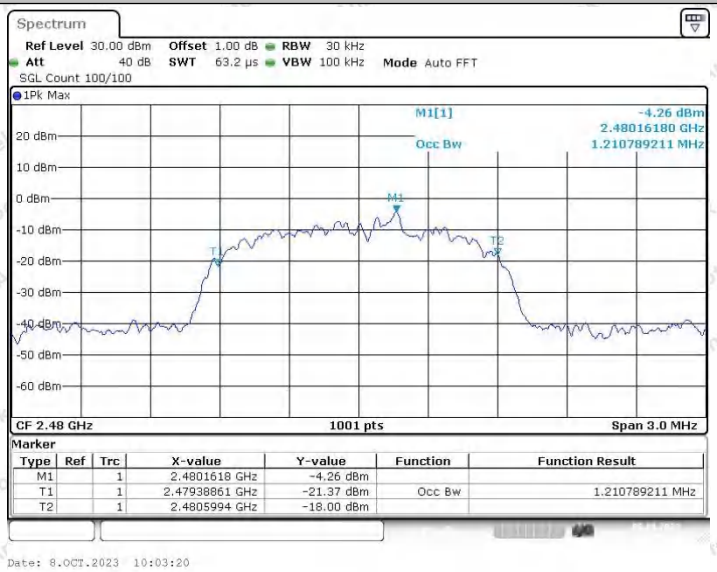
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



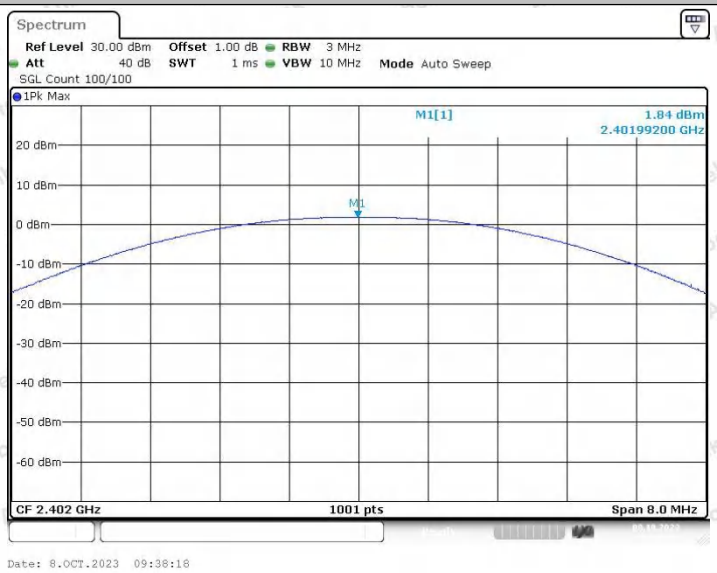
Appendix C: Maximum conducted output power

Test Result Peak

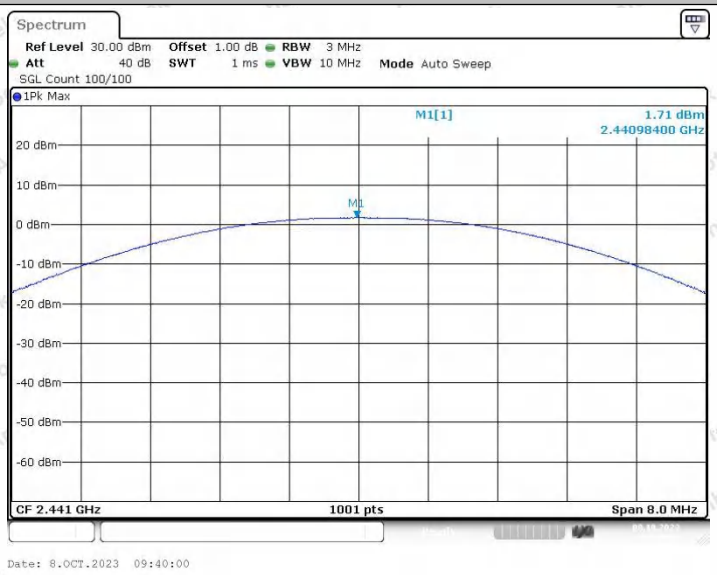
Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	1.84	≤20.97	PASS
		2441	1.71	≤20.97	PASS
		2480	1.03	≤20.97	PASS
2DH5	Ant1	2402	1.20	≤20.97	PASS
		2441	1.06	≤20.97	PASS
		2480	0.45	≤20.97	PASS
3DH5	Ant1	2402	1.31	≤20.97	PASS
		2441	1.27	≤20.97	PASS
		2480	0.60	≤20.97	PASS

Test Graphs

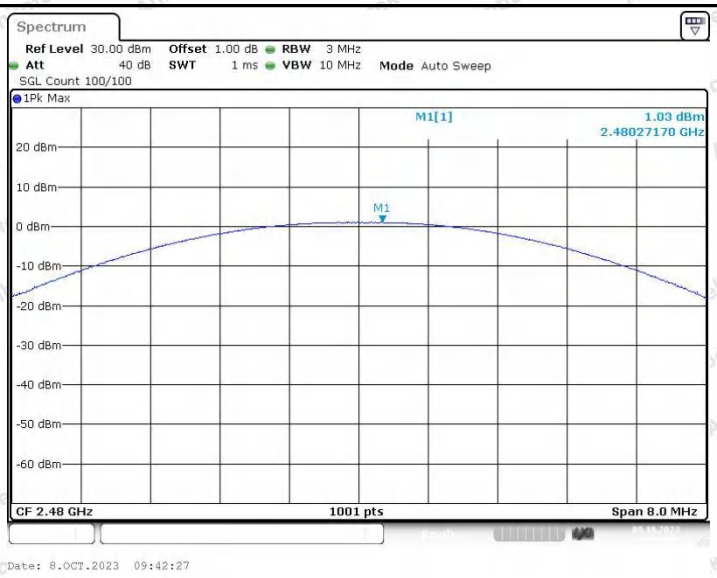
DH5_Ant1_2402



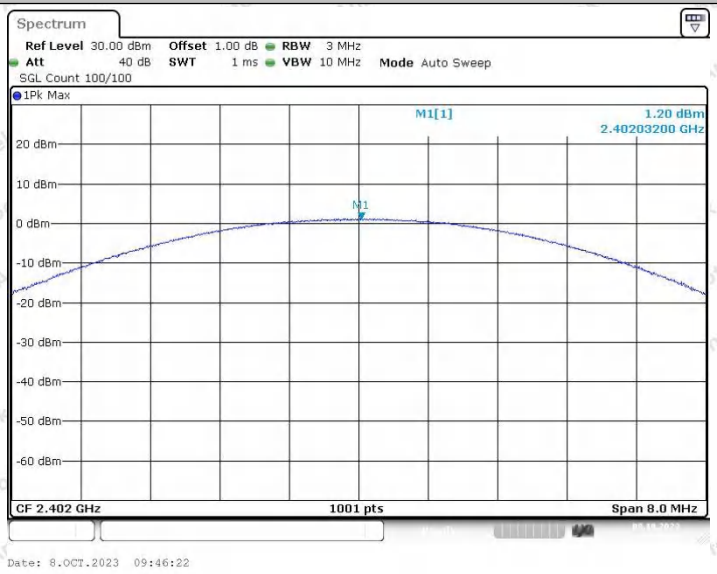
DH5_Ant1_2441



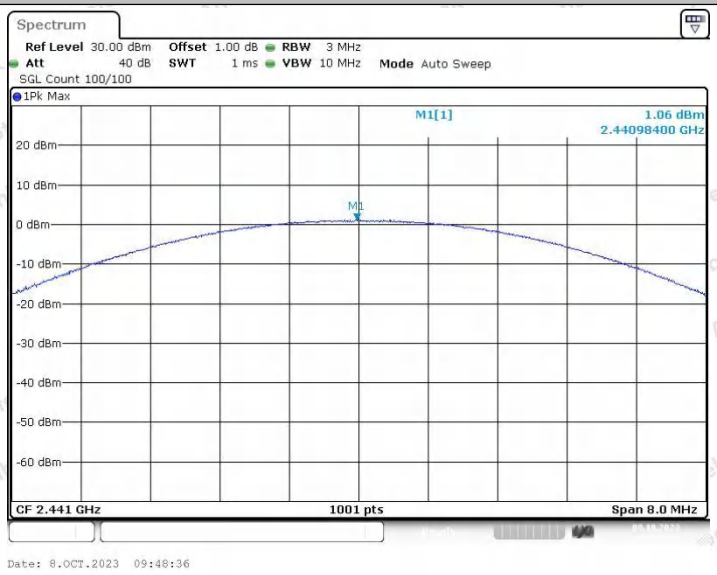
DH5_Ant1_2480



2DH5_Ant1_2402

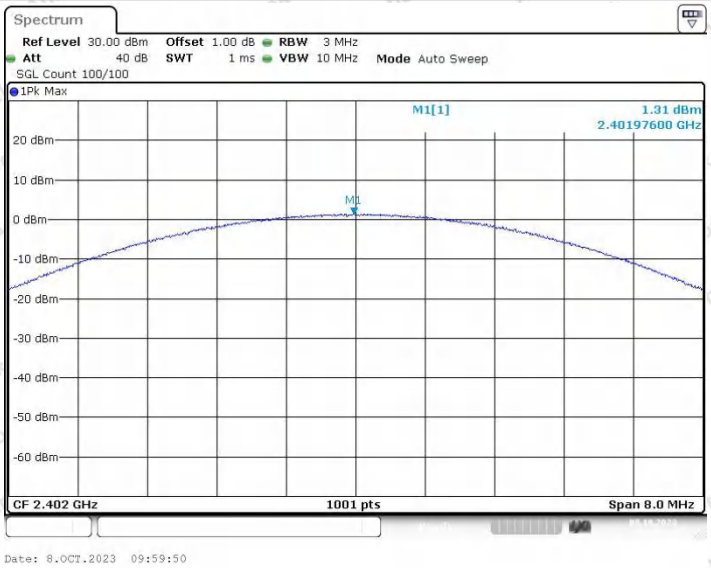


2DH5_Ant1_2441

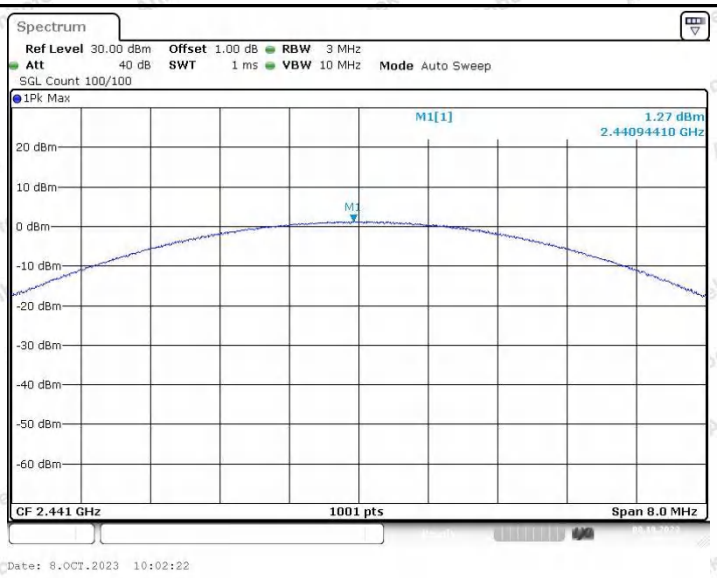


2DH5_Ant1_2480

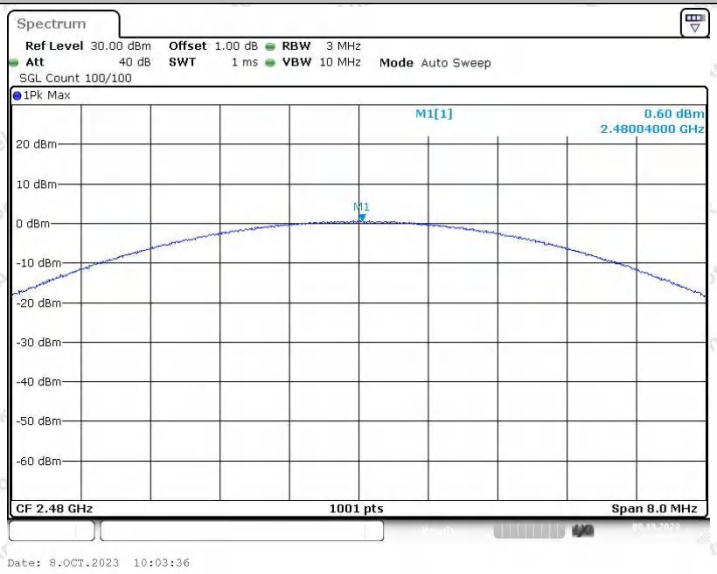
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



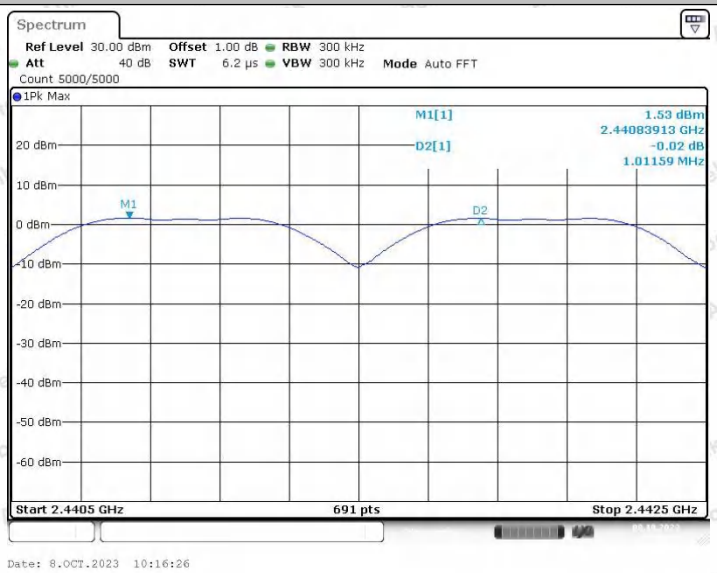
Appendix D: Carrier frequency separation

Test Result

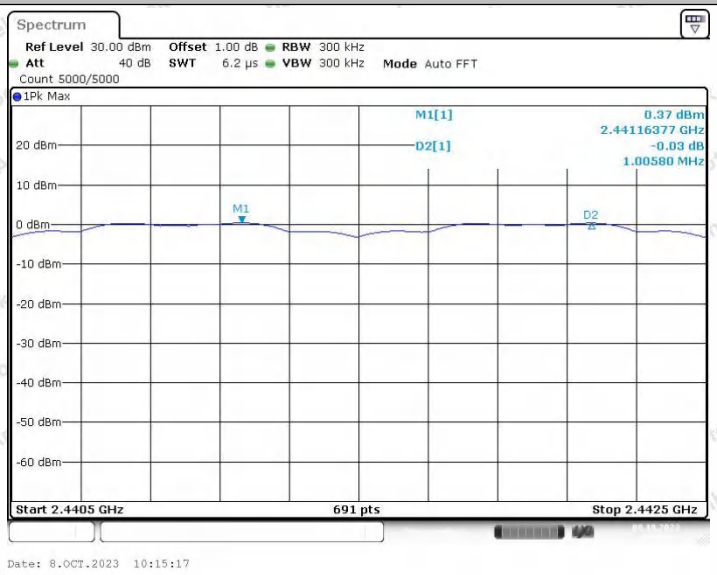
TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.012	≥0.680	PASS
2DH5	Ant1	Hop	1.006	≥0.887	PASS
3DH5	Ant1	Hop	1.017	≥0.887	PASS

Test Graphs

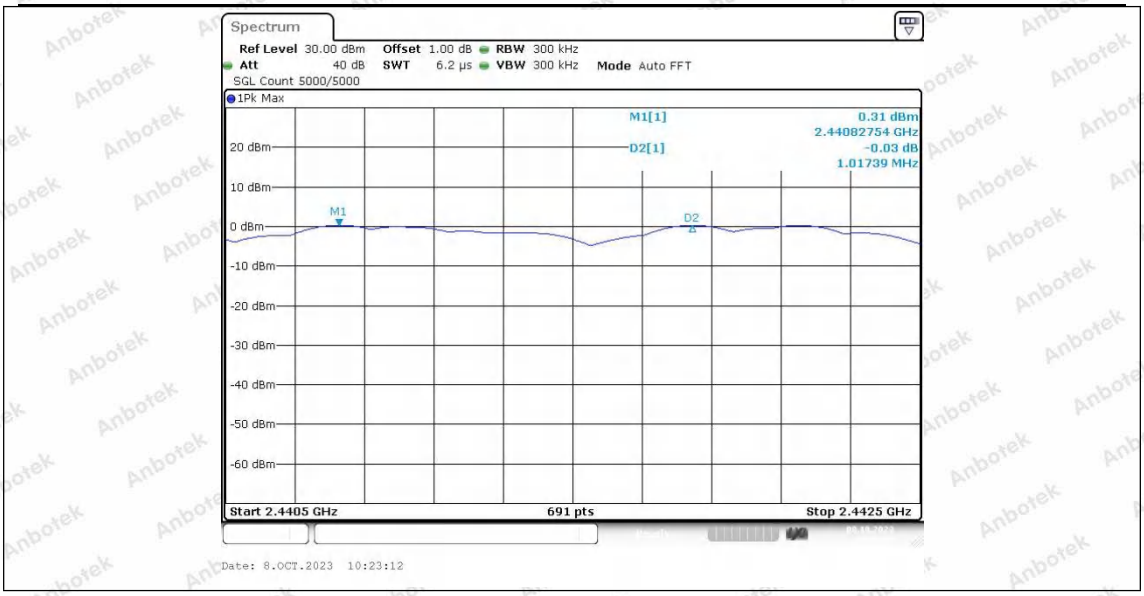
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop


Spectrum
Ref Level 30.00 dBm Offset 1.00 dB RBW 300 kHz
Att 40 dB SWT 6.2 µs VBW 300 kHz Mode Auto FFT
SGL Count 5000/5000
1Pk Max
M1[1] 0.31 dBm
2.44082754 GHz
D2[1] -0.03 dB
1.01739 MHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
M1
D2
Start 2.4405 GHz
691 pts
Stop 2.4425 GHz
Date: 8.OCT.2023 10:23:12

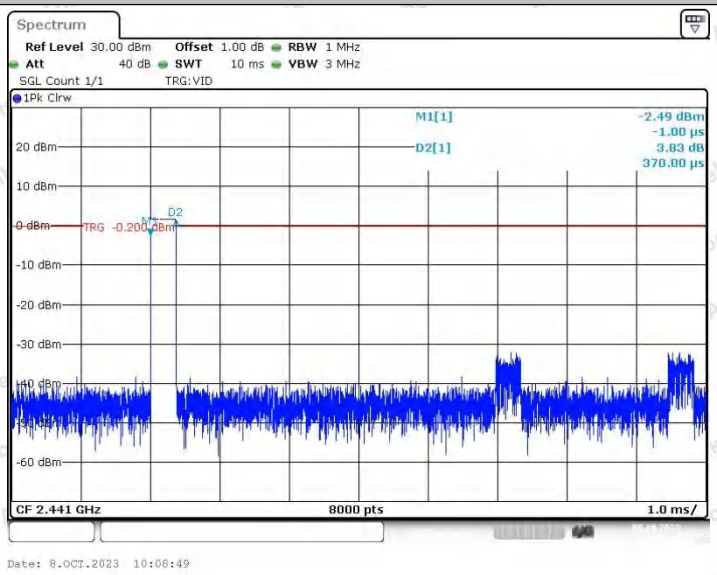
Appendix E: Time of occupancy

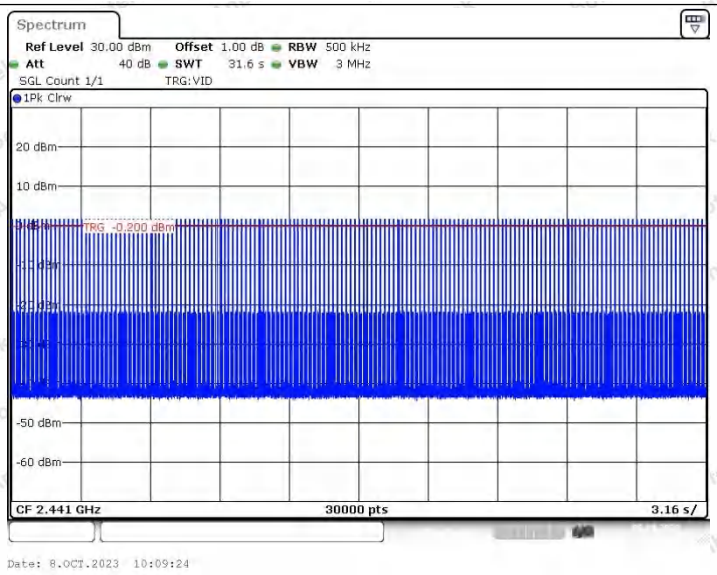
Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.370	314	0.116	≤0.4	PASS
DH3	Ant1	Hop	1.618	158	0.256	≤0.4	PASS
DH5	Ant1	Hop	2.859	110	0.314	≤0.4	PASS
2DH1	Ant1	Hop	0.378	314	0.119	≤0.4	PASS
2DH3	Ant1	Hop	1.623	158	0.256	≤0.4	PASS
2DH5	Ant1	Hop	2.863	101	0.289	≤0.4	PASS
3DH1	Ant1	Hop	0.379	314	0.119	≤0.4	PASS
3DH3	Ant1	Hop	1.621	159	0.258	≤0.4	PASS
3DH5	Ant1	Hop	2.864	110	0.315	≤0.4	PASS

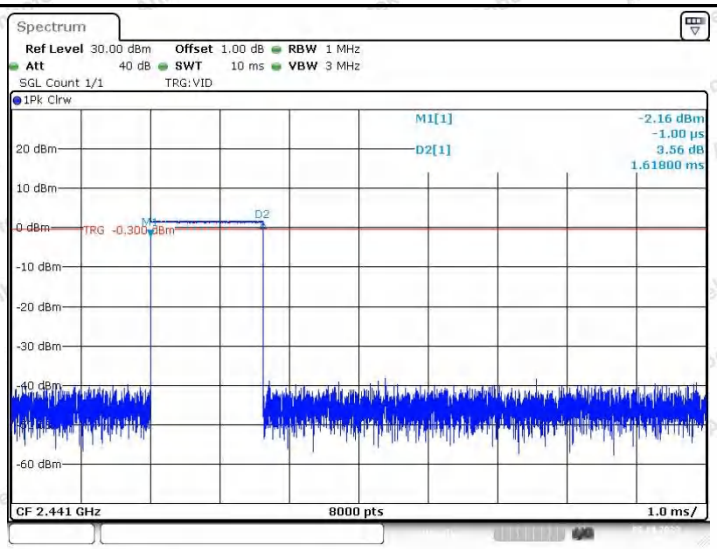
Test Graphs

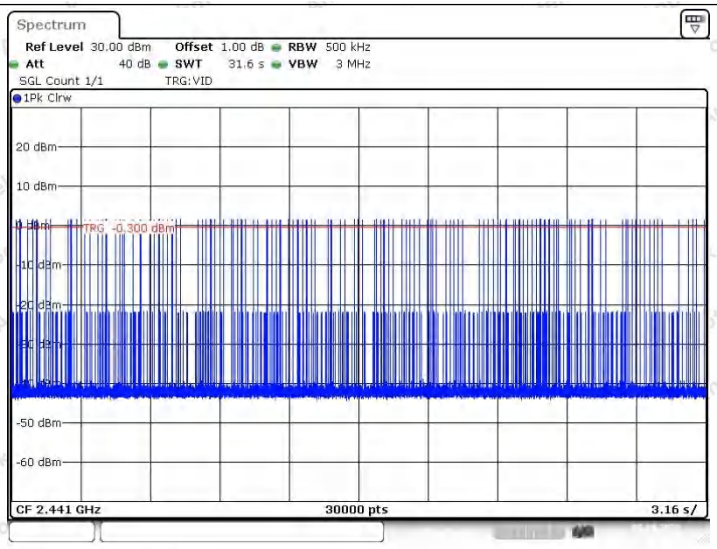
DH1_Ant1_Hop



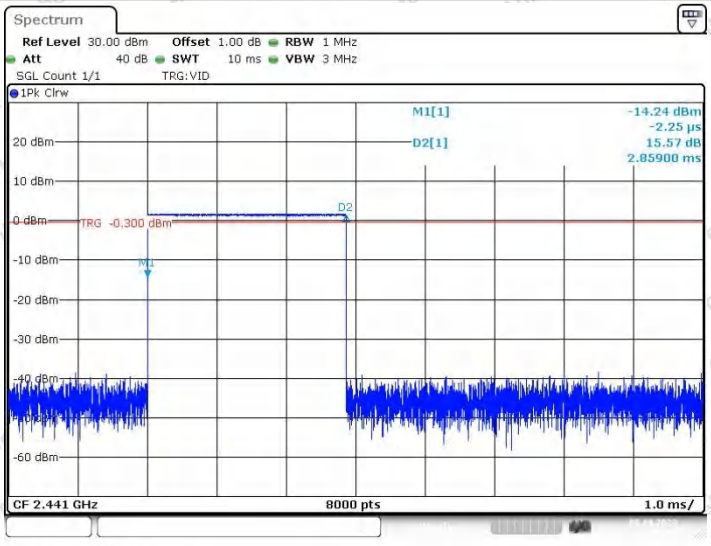


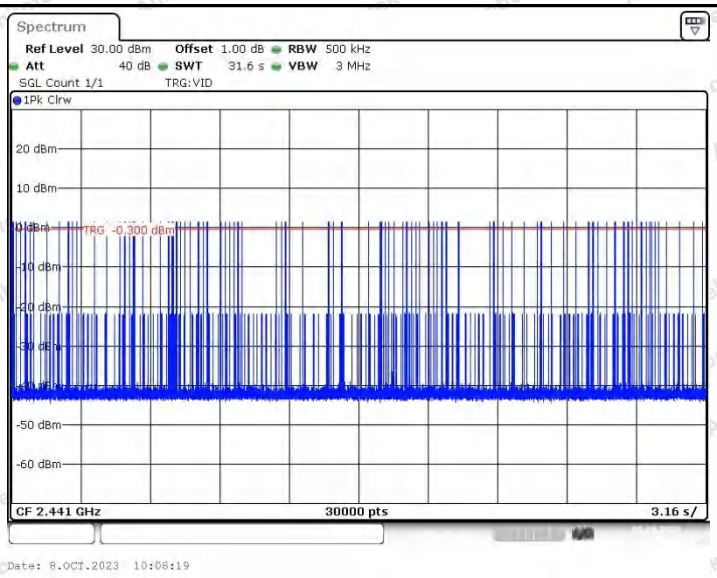
DH3_Ant1_Hop


Spectrum
Ref Level 30.00 dBm Offset 1.00 dB RBW 1 MHz
Att 40 dB SWT 10 ms VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
M1[1] -2.16 dBm
-1.00 µs
D2[1] 3.56 dB
1.61800 ms
20 dBm
10 dBm
0 dBm
TRG -0.300 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-60 dBm
CF 2.441 GHz 8000 pts 1.0 ms/
Date: 8.OCT.2023 10:09:50

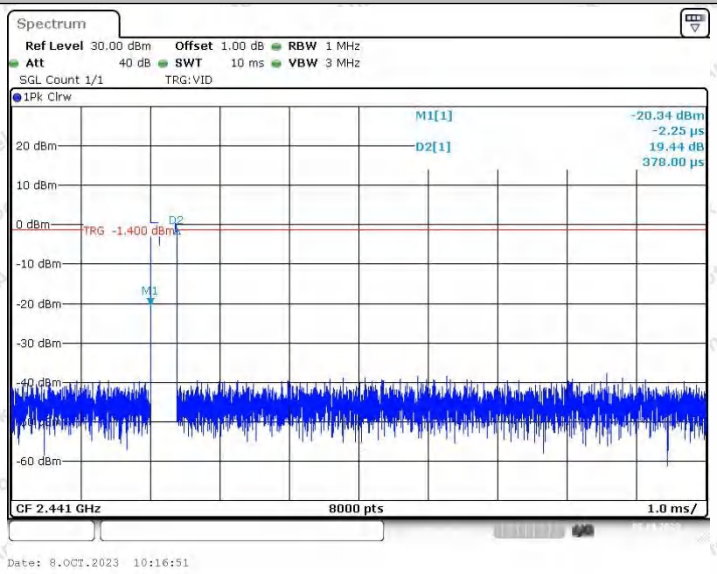

Spectrum
Ref Level 30.00 dBm Offset 1.00 dB RBW 500 kHz
Att 40 dB SWT 31.6 s VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
20 dBm
10 dBm
TRG -0.300 dBm
-50 dBm
-60 dBm
CF 2.441 GHz 30000 pts 3.16 s/
Date: 8.OCT.2023 10:10:25

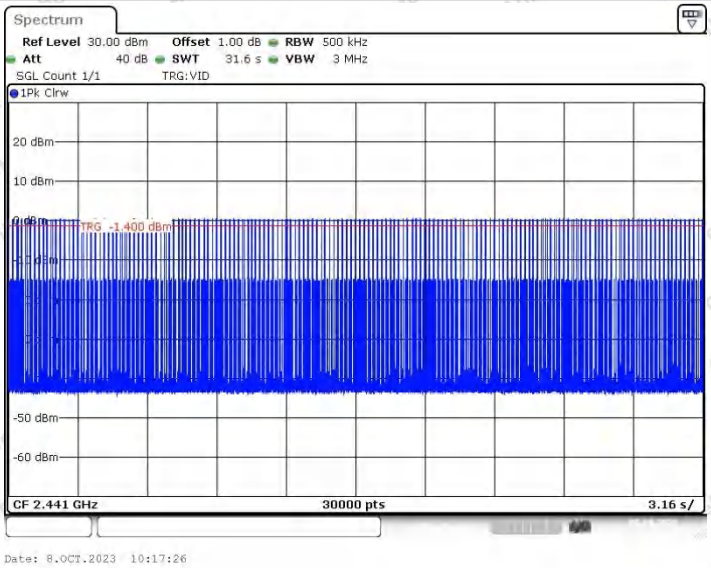
DH5_Ant1_Hop


Spectrum
Ref Level 30.00 dBm Offset 1.00 dB RBW 1 MHz
Att 40 dB SWT 10 ms VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
M1[1] -14.24 dBm
-2.25 µs
D2[1] 15.57 dB
2.85900 ms
20 dBm
10 dBm
0 dBm
TRG -0.300 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-60 dBm
CF 2.441 GHz 8000 pts 1.0 ms/
Date: 8.OCT.2023 10:07:44

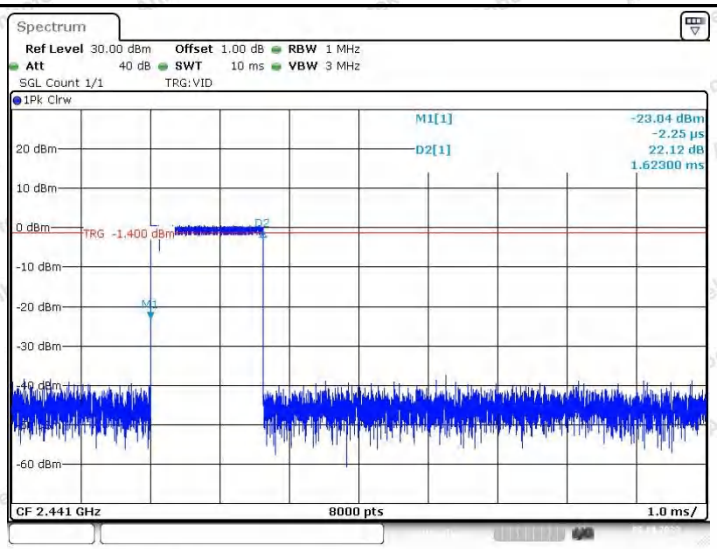


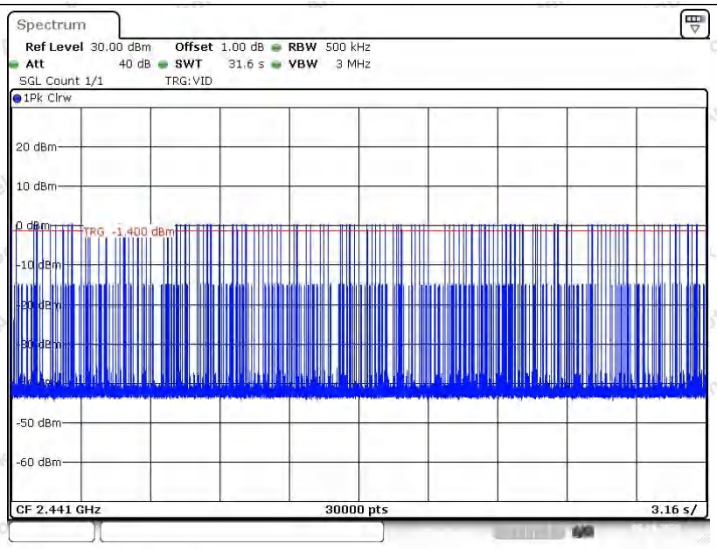
2DH1_Ant1_Hop



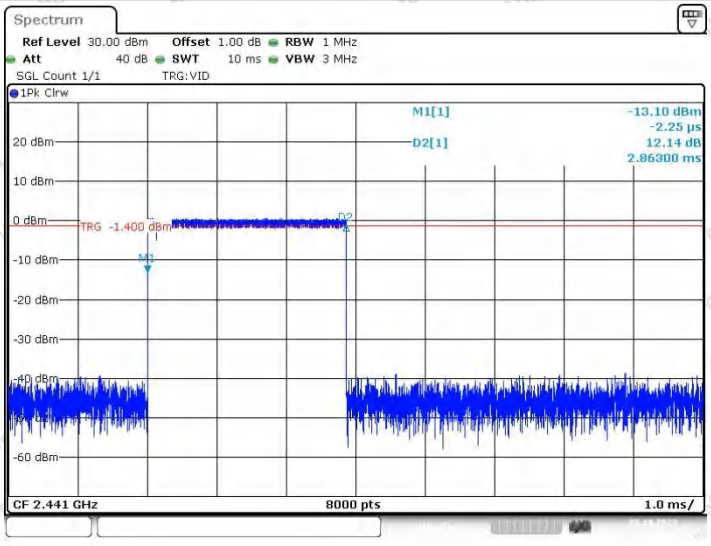


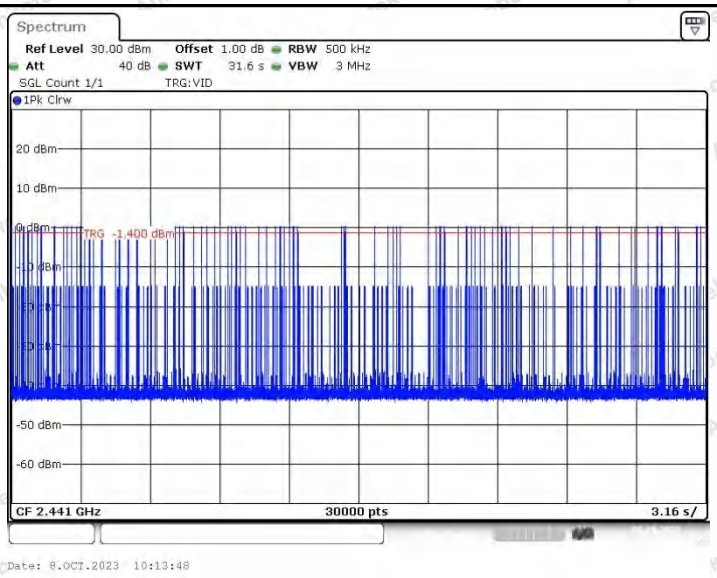
2DH3_Ant1_Hop



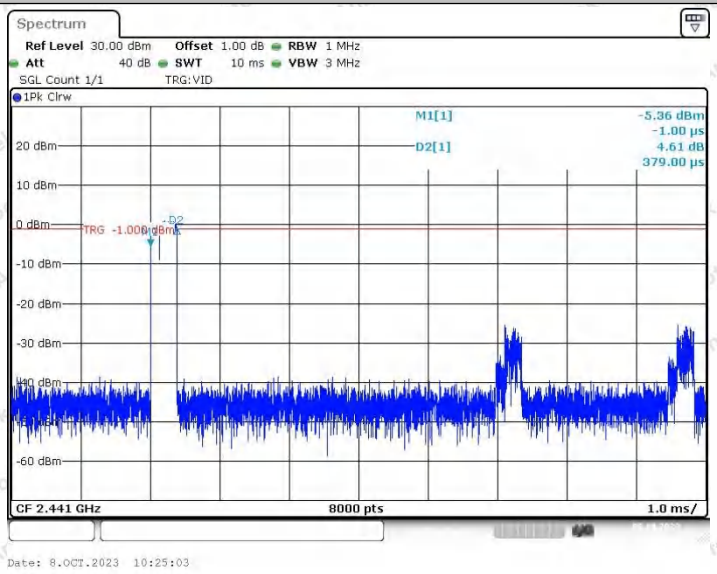


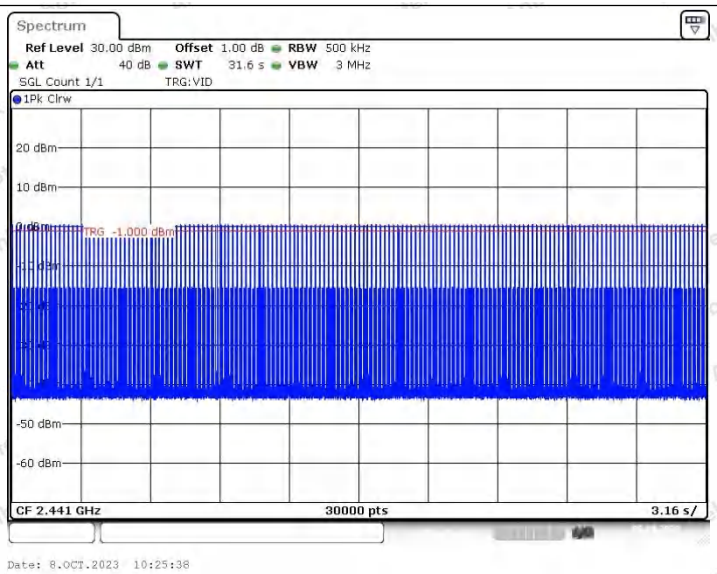
2DH5_Ant1_Hop



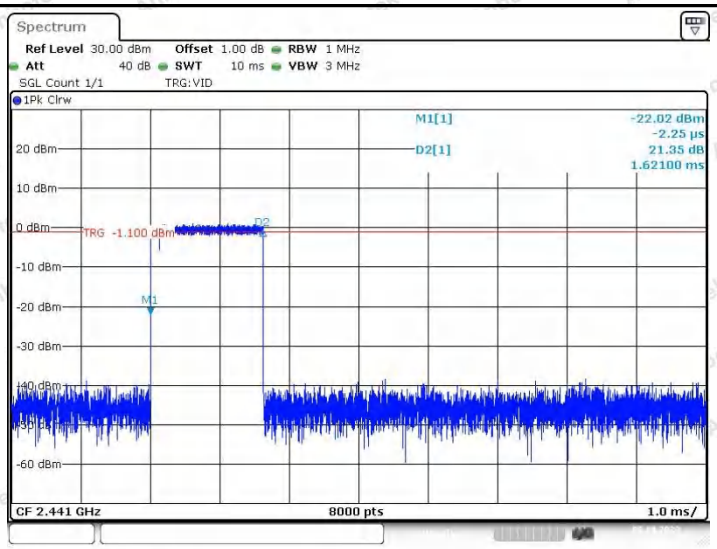


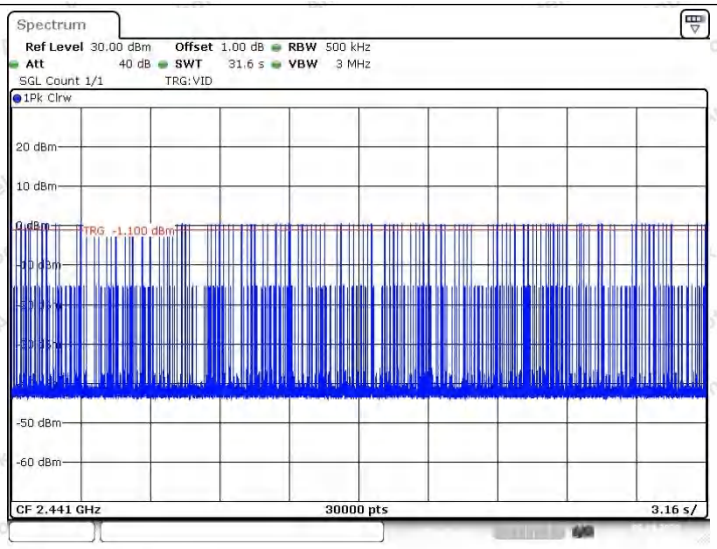
3DH1_Ant1_Hop



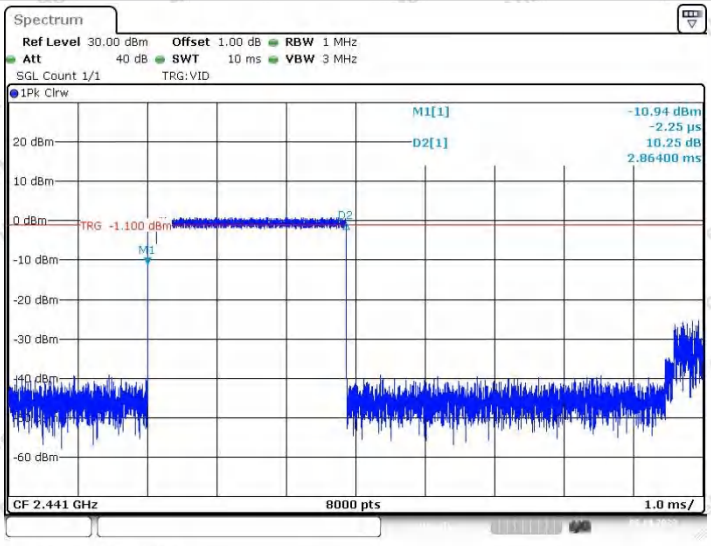


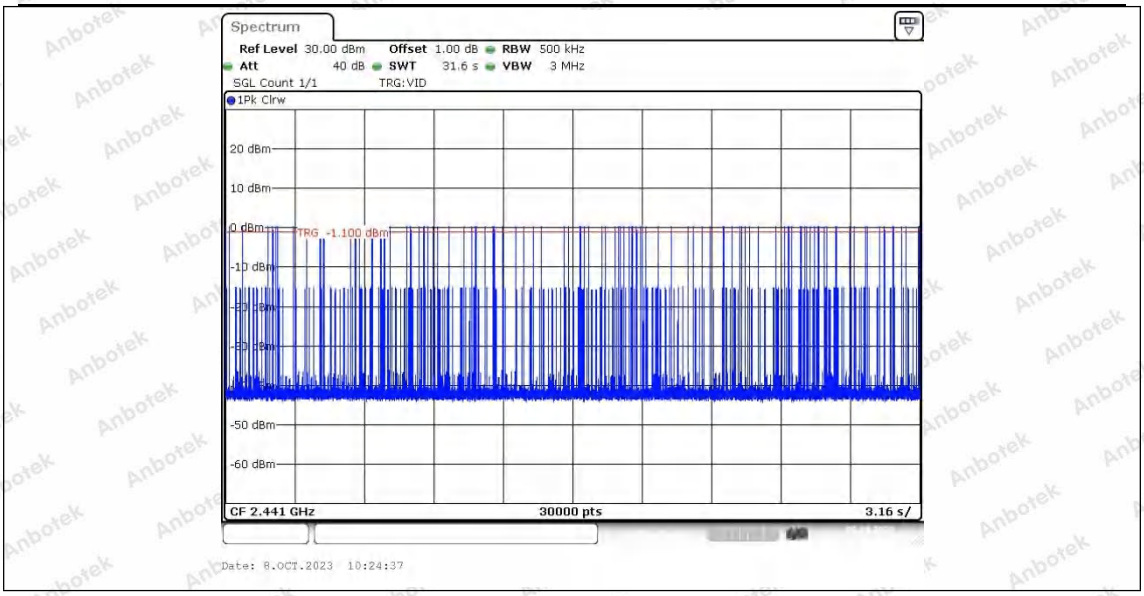
3DH3_Ant1_Hop





3DH5_Ant1_Hop




Spectrum
Ref Level 30.00 dBm Offset 1.00 dB RBW 500 kHz
Att 40 dB SWT 31.6 s VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
20 dBm
10 dBm
0 dBm
TRG -1.100 dBm
-10 dBm
-50 dBm
-60 dBm
CF 2.441 GHz
30000 pts
3.16 s/
Date: 8.OCT.2023 10:24:37

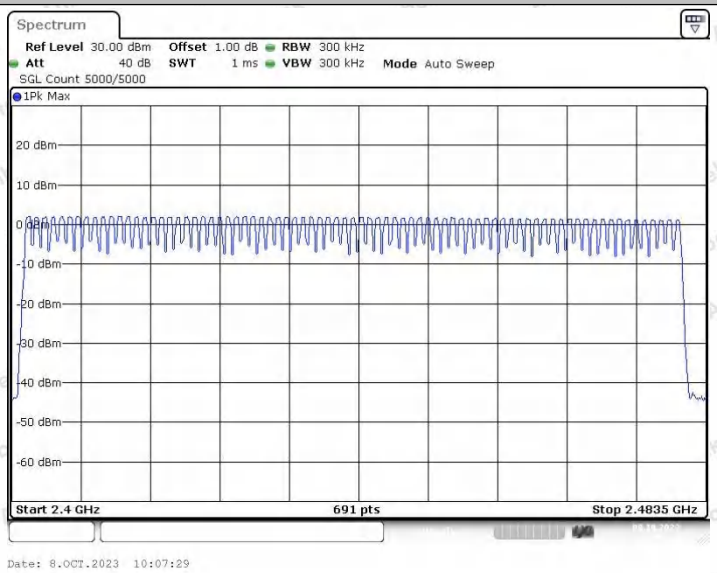
Appendix F: Number of hopping channels

Test Result

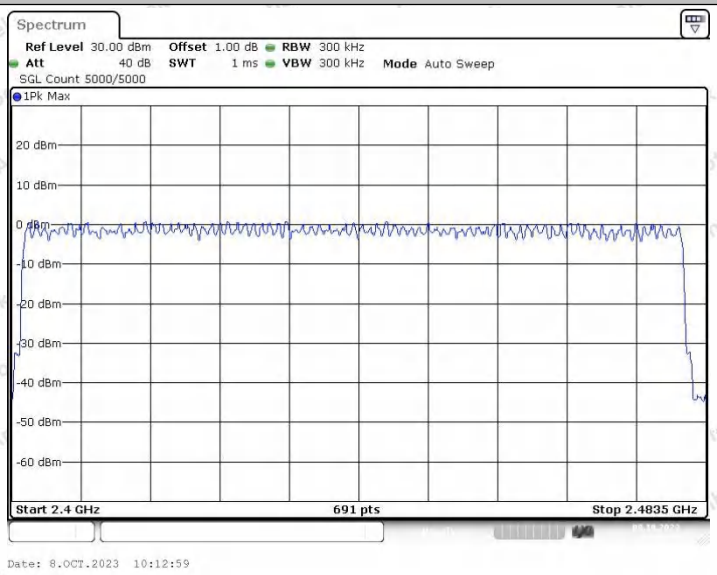
TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

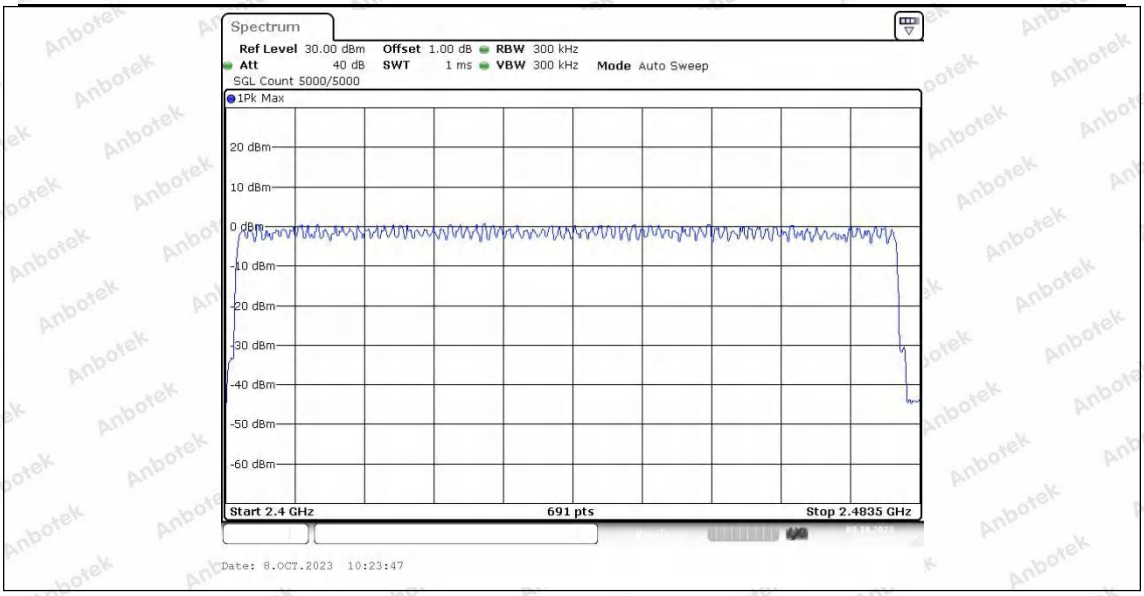
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop


Spectrum
Ref Level 30.00 dBm Offset 1.00 dB RBW 300 kHz
Att 40 dB SWT 1 ms VBW 300 kHz Mode Auto Sweep
SGL Count 5000/5000
1Pk Max
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
Start 2.4 GHz
691 pts
Stop 2.4835 GHz
Date: 8.OCT.2023 10:23:47

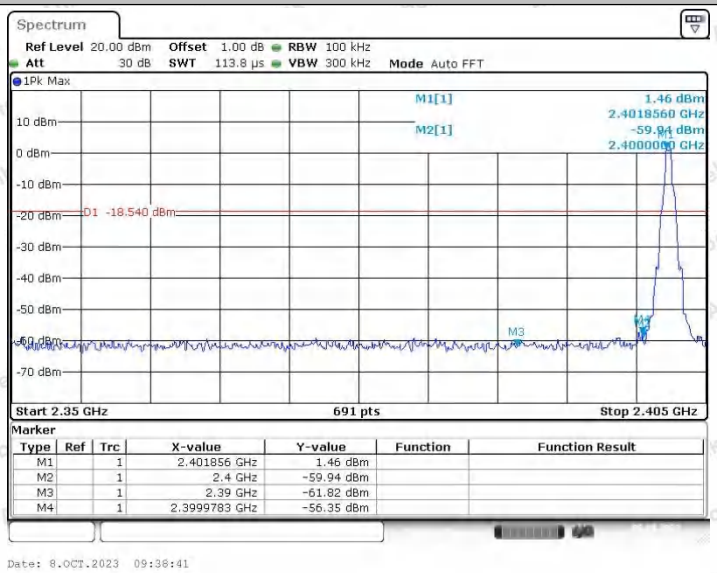
Appendix G: Band edge measurements

Test Result

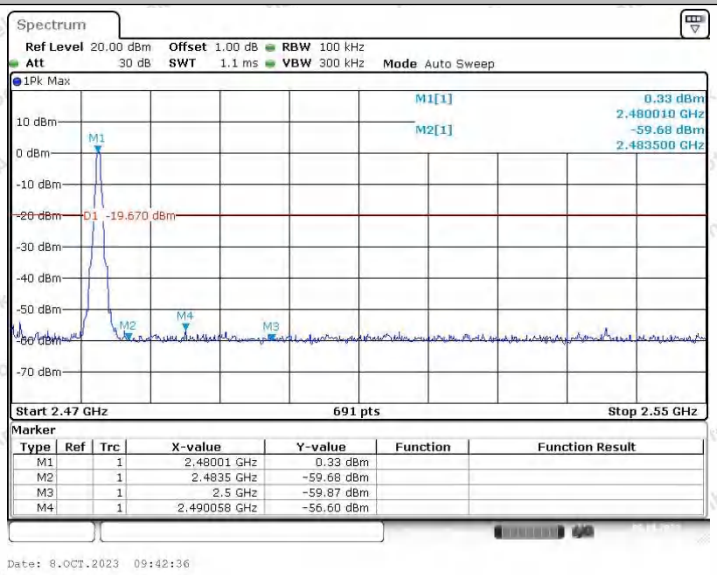
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	1.46	-56.35	≤-18.54	PASS
		High	2480	0.33	-56.6	≤-19.67	PASS
		Low	Hop_2402	0.85	-57.5	≤-19.15	PASS
		High	Hop_2480	0.84	-56.86	≤-19.16	PASS
2DH5	Ant1	Low	2402	-1.53	-56.93	≤-21.53	PASS
		High	2480	-1.16	-55.67	≤-21.16	PASS
		Low	Hop_2402	-2.82	-58.32	≤-22.82	PASS
		High	Hop_2480	-1.17	-56.59	≤-21.17	PASS
3DH5	Ant1	Low	2402	0.20	-56.47	≤-19.8	PASS
		High	2480	-0.42	-56.22	≤-20.42	PASS
		Low	Hop_2402	0.33	-58.17	≤-19.67	PASS
		High	Hop_2480	-1.10	-57.07	≤-21.1	PASS

Test Graphs

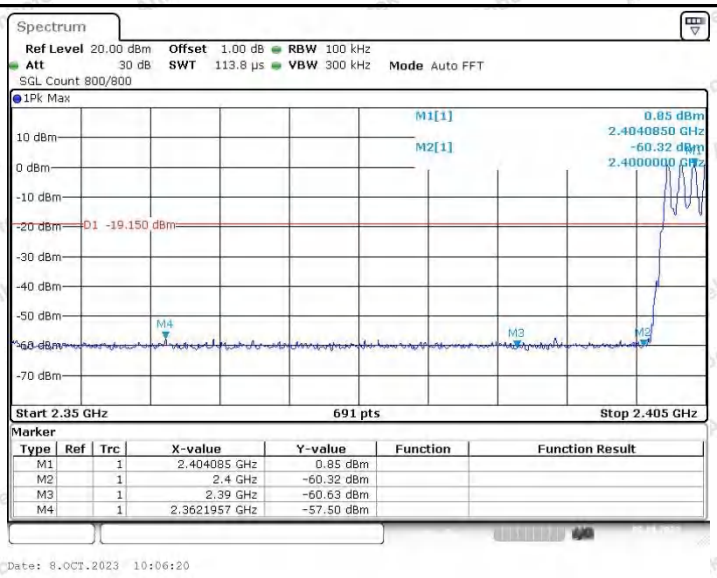
DH5_Ant1_Low_2402



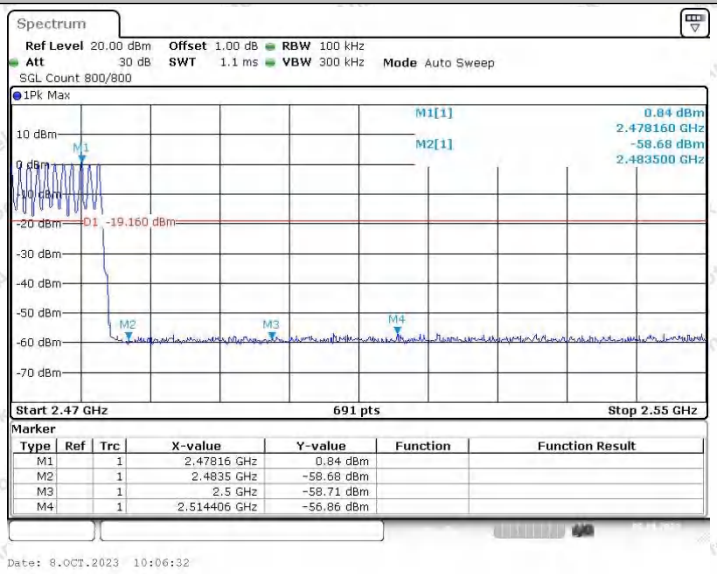
DH5_Ant1_High_2480



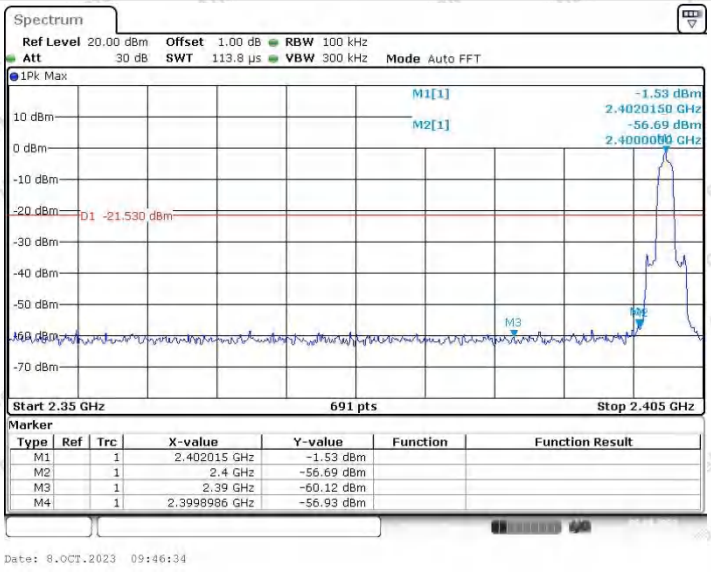
DH5_Ant1_Low_Hop_2402



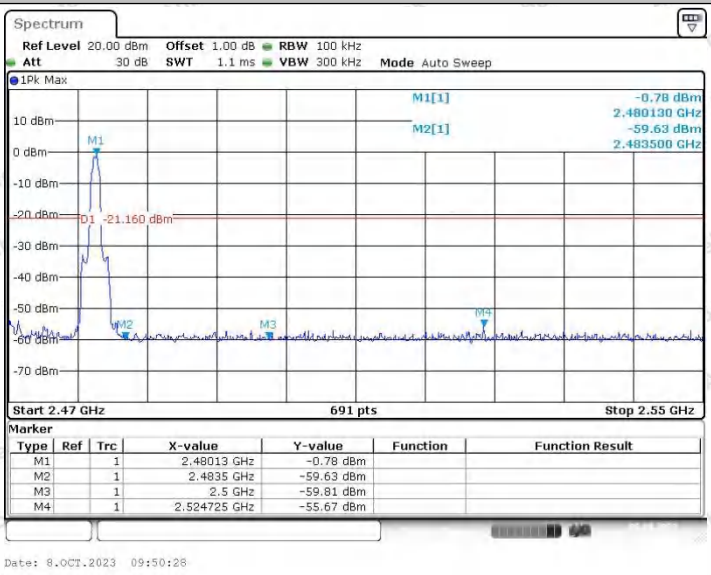
DH5_Ant1_High_Hop_2480



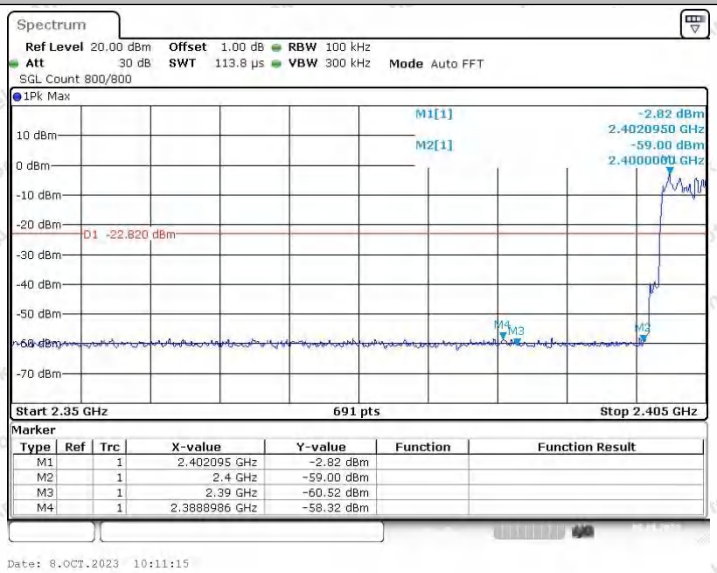
2DH5_Ant1_Low_2402



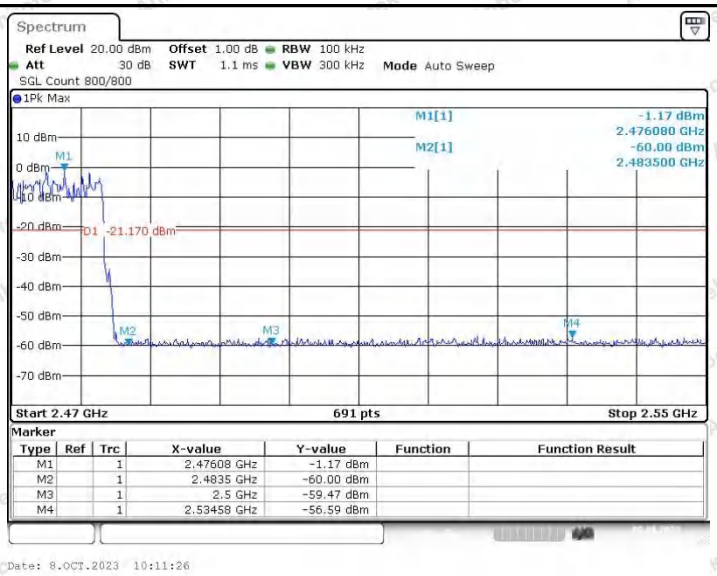
2DH5_Ant1_High_2480



2DH5_Ant1_Low_Hop_2402

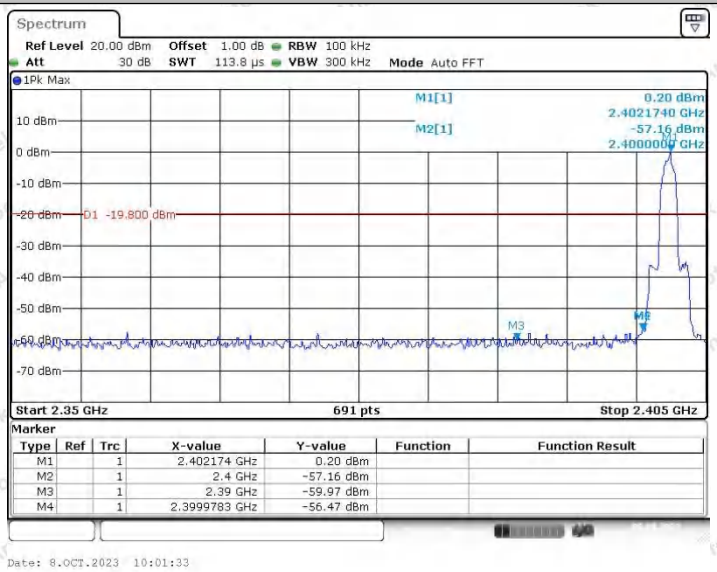


2DH5_Ant1_High_Hop_2480



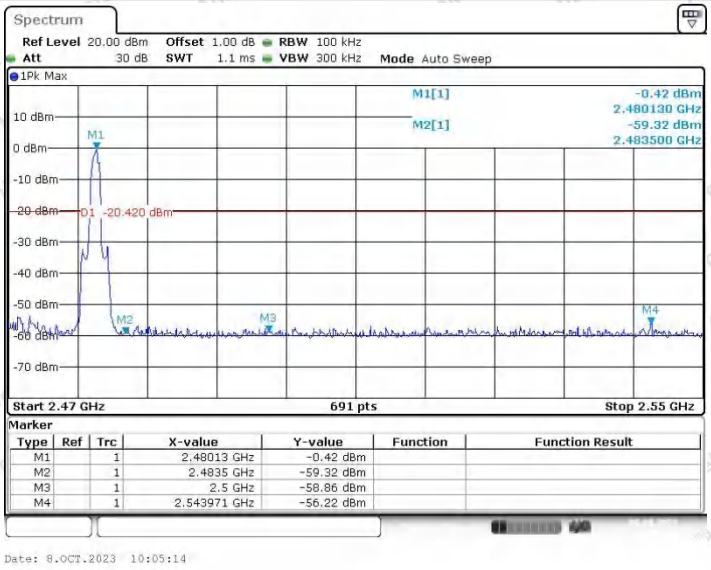
Marker						
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47608 GHz	-1.17 dBm		
M2		1	2.4835 GHz	-60.00 dBm		
M3		1	2.5 GHz	-59.47 dBm		
M4		1	2.53458 GHz	-56.59 dBm		

3DH5_Ant1_Low_2402



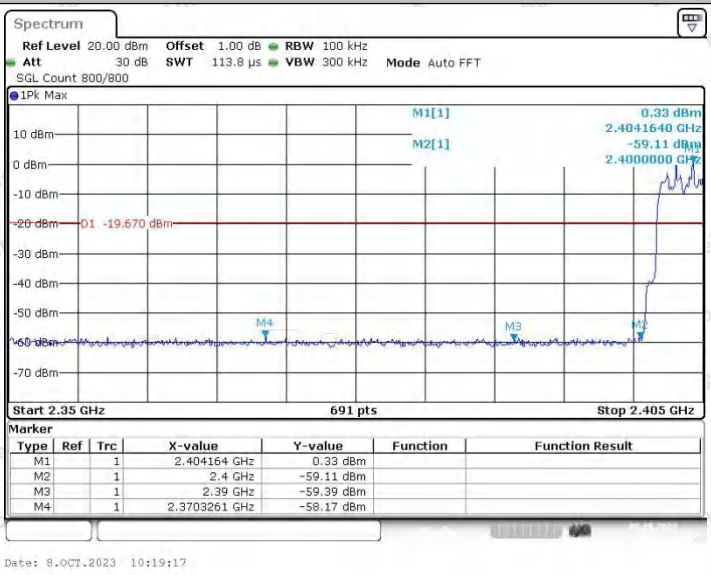
Marker						
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.402174 GHz	0.20 dBm		
M2		1	2.4 GHz	-57.16 dBm		
M3		1	2.39 GHz	-59.97 dBm		
M4		1	2.3999783 GHz	-56.47 dBm		

3DH5_Ant1_High_2480

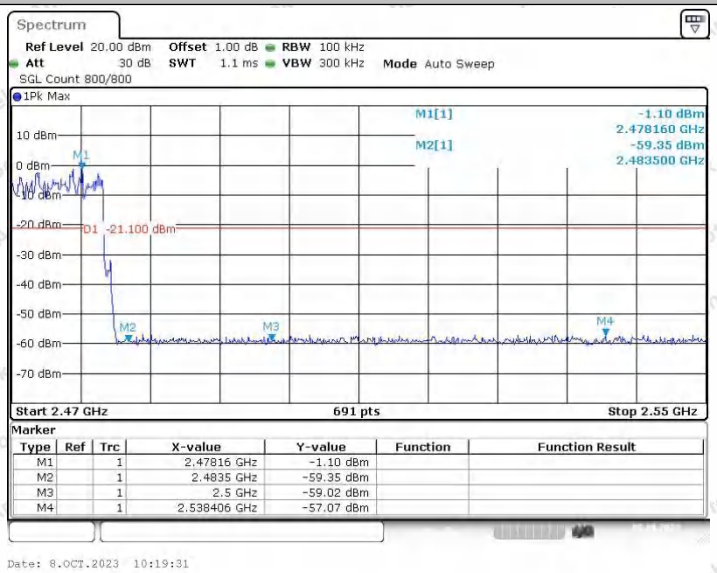


Marker						
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.48013 GHz	-0.42 dBm		
M2		1	2.4835 GHz	-59.32 dBm		
M3		1	2.5 GHz	-58.86 dBm		
M4		1	2.543971 GHz	-56.22 dBm		

3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



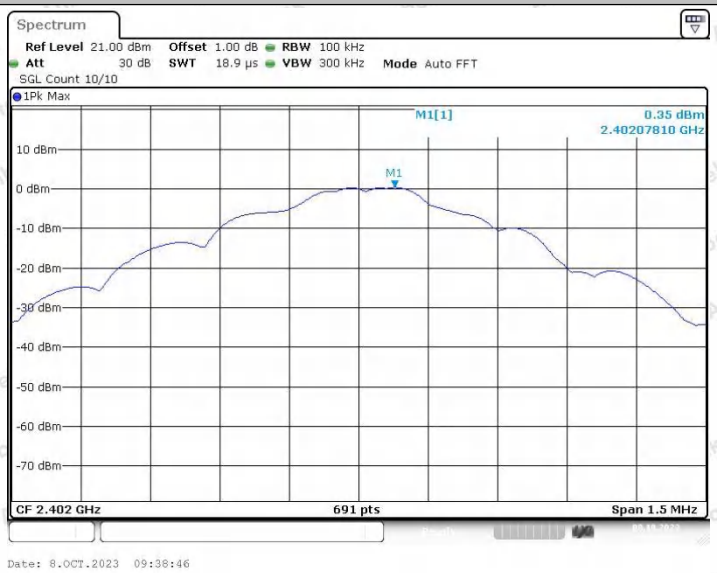
Appendix H: Conducted Spurious Emission

Test Result

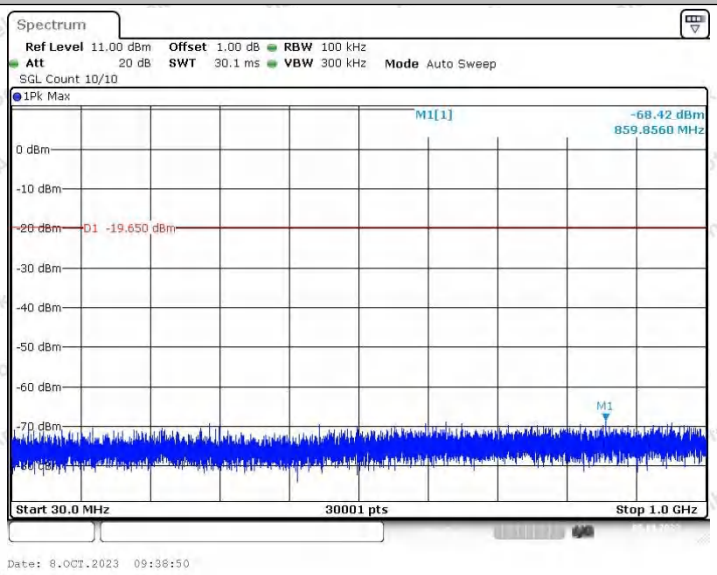
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	0.35	0.35	---	PASS
			30~1000	0.35	-68.42	≤-19.65	PASS
			1000~26500	0.35	-60.01	≤-19.65	PASS
		2441	Reference	0.26	0.26	---	PASS
			30~1000	0.26	-68.24	≤-19.74	PASS
			1000~26500	0.26	-60.05	≤-19.74	PASS
		2480	Reference	-0.48	-0.48	---	PASS
			30~1000	-0.48	-68.26	≤-20.48	PASS
			1000~26500	-0.48	-59.33	≤-20.48	PASS
2DH5	Ant1	2402	Reference	-4.24	-4.24	---	PASS
			30~1000	-4.24	-68.45	≤-24.24	PASS
			1000~26500	-4.24	-59.78	≤-24.24	PASS
		2441	Reference	-4.73	-4.73	---	PASS
			30~1000	-4.73	-68.89	≤-24.73	PASS
			1000~26500	-4.73	-60.25	≤-24.73	PASS
		2480	Reference	-4.30	-4.30	---	PASS
			30~1000	-4.30	-69.29	≤-24.3	PASS
			1000~26500	-4.30	-60.16	≤-24.3	PASS
3DH5	Ant1	2402	Reference	-0.74	-0.74	---	PASS
			30~1000	-0.74	-68.4	≤-20.74	PASS
			1000~26500	-0.74	-59.97	≤-20.74	PASS
		2441	Reference	-0.33	-0.33	---	PASS
			30~1000	-0.33	-52.39	≤-20.33	PASS
			1000~26500	-0.33	-59.93	≤-20.33	PASS
		2480	Reference	-5.21	-5.21	---	PASS
			30~1000	-5.21	-69.07	≤-25.21	PASS
			1000~26500	-5.21	-60.43	≤-25.21	PASS

Test Graphs

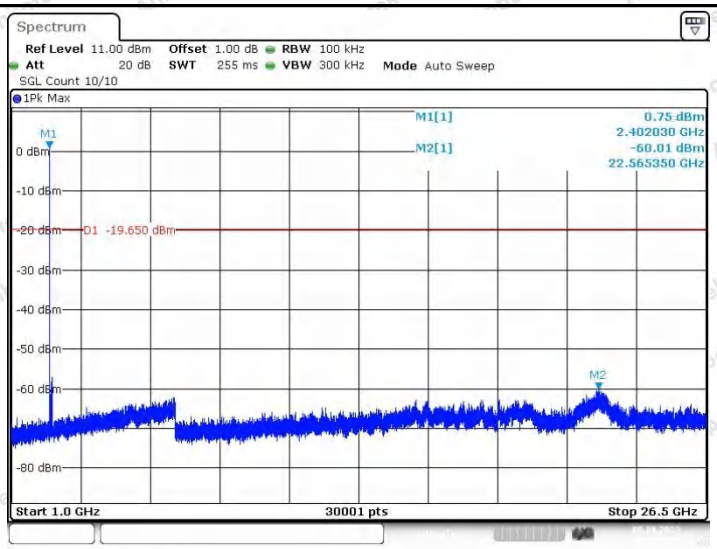
DH5_Ant1_2402_0~Reference



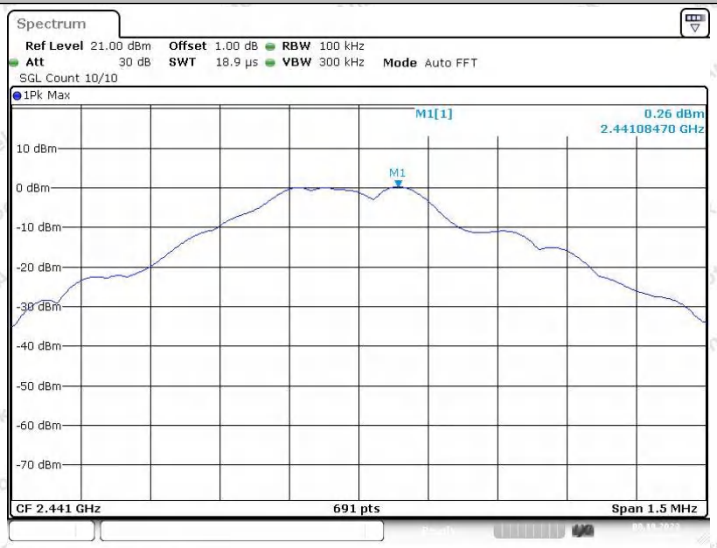
DH5_Ant1_2402_30~1000



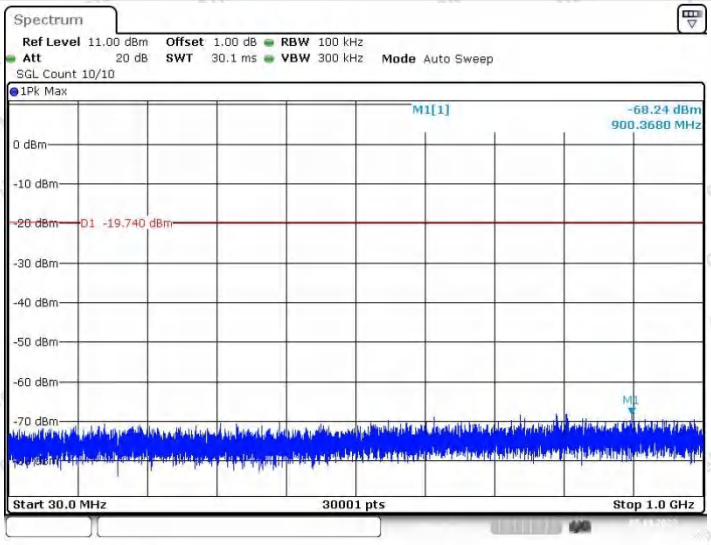
DH5_Ant1_2402_1000~26500



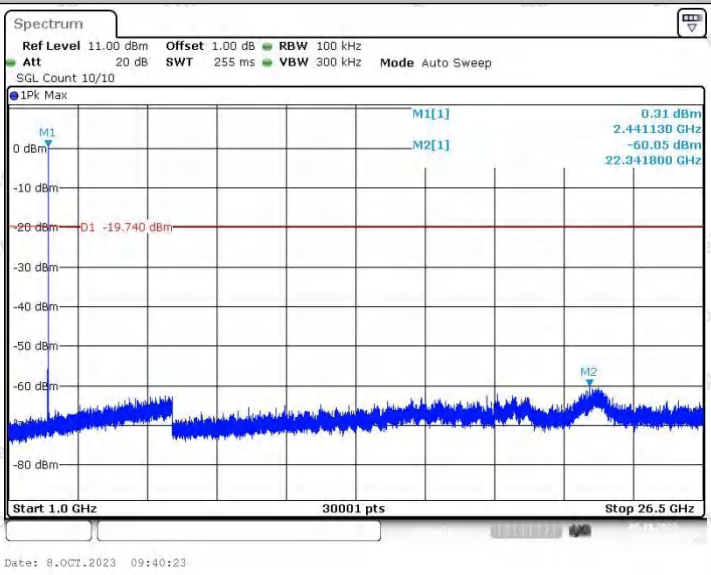
DH5_Ant1_2441_0~Reference



DH5_Ant1_2441_30~1000

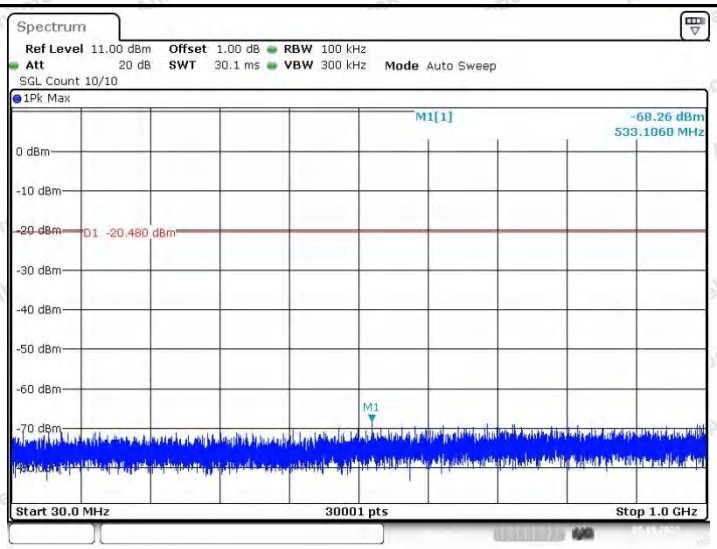


DH5_Ant1_2441_1000~26500

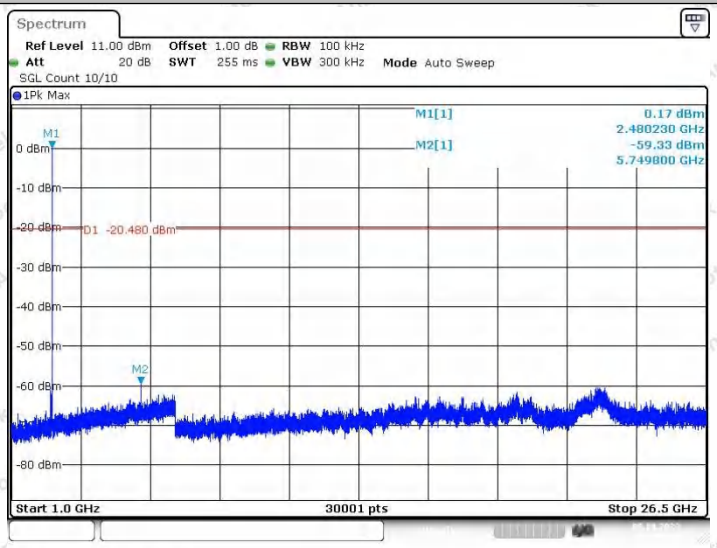


DH5_Ant1_2480_0~Reference

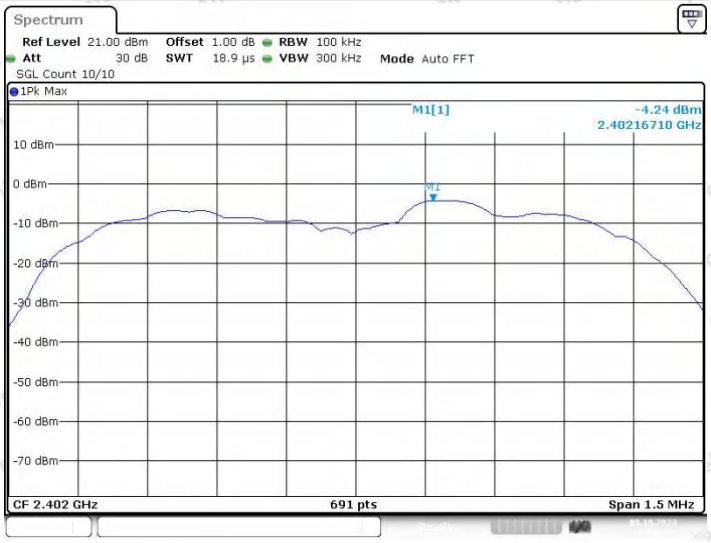
DH5_Ant1_2480_30~1000



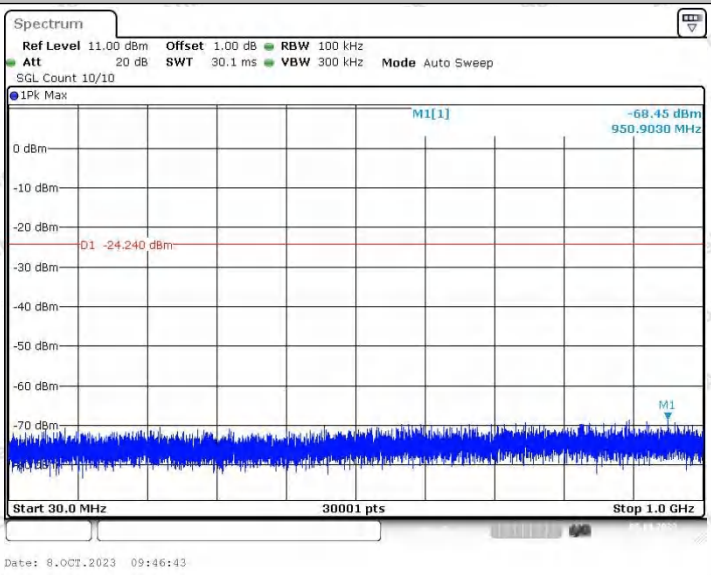
DH5_Ant1_2480_1000~26500



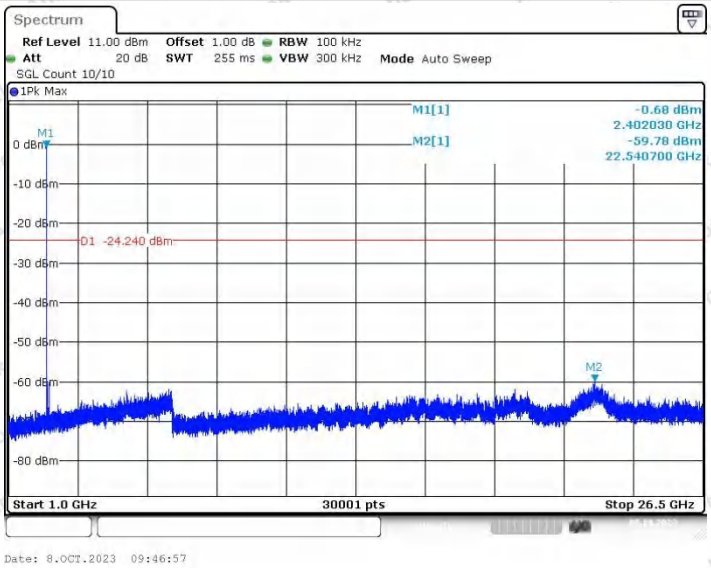
2DH5_Ant1_2402_0~Reference



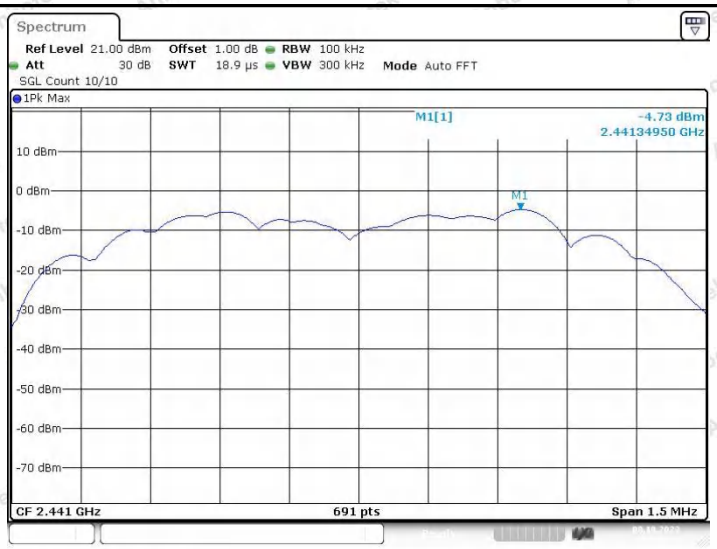
2DH5_Ant1_2402_30~1000



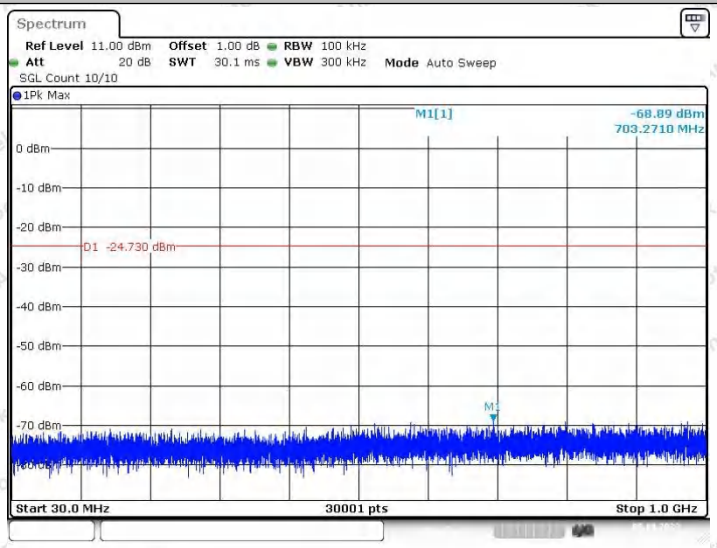
2DH5_Ant1_2402_1000~26500



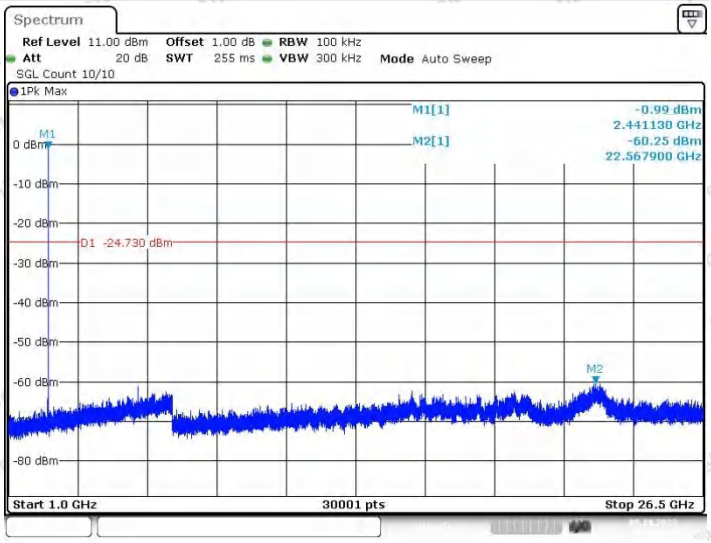
2DH5_Ant1_2441_0~Reference



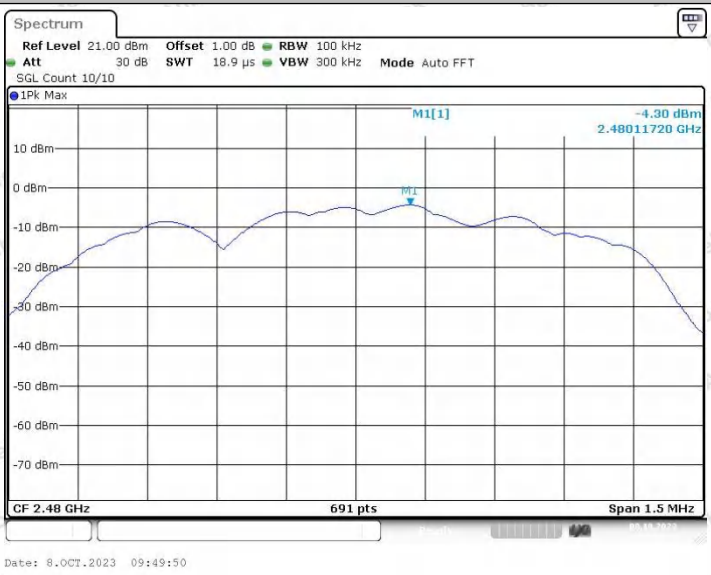
2DH5_Ant1_2441_30~1000



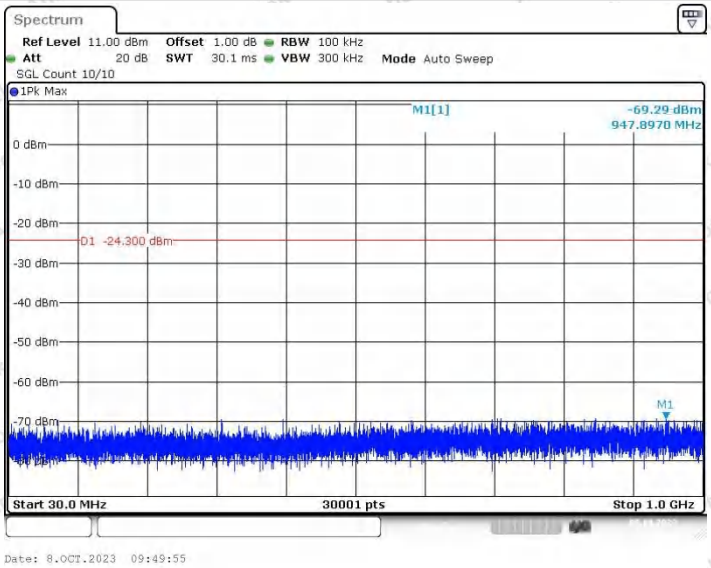
2DH5_Ant1_2441_1000~26500



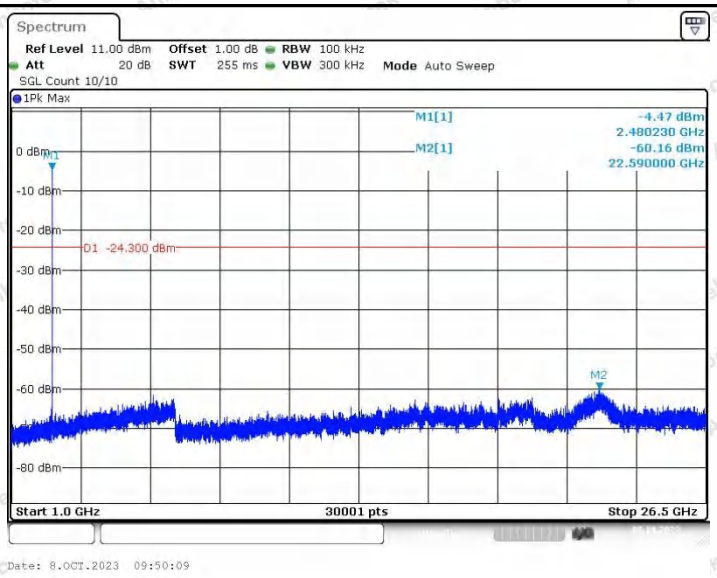
2DH5_Ant1_2480_0~Reference



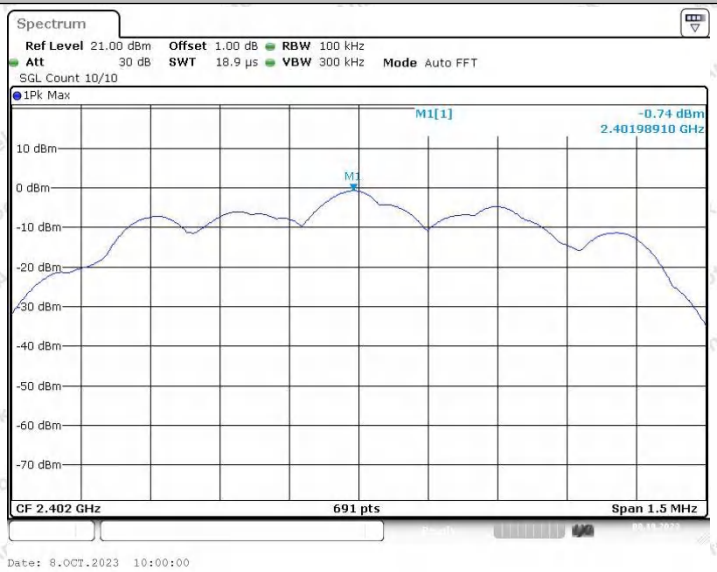
2DH5_Ant1_2480_30~1000



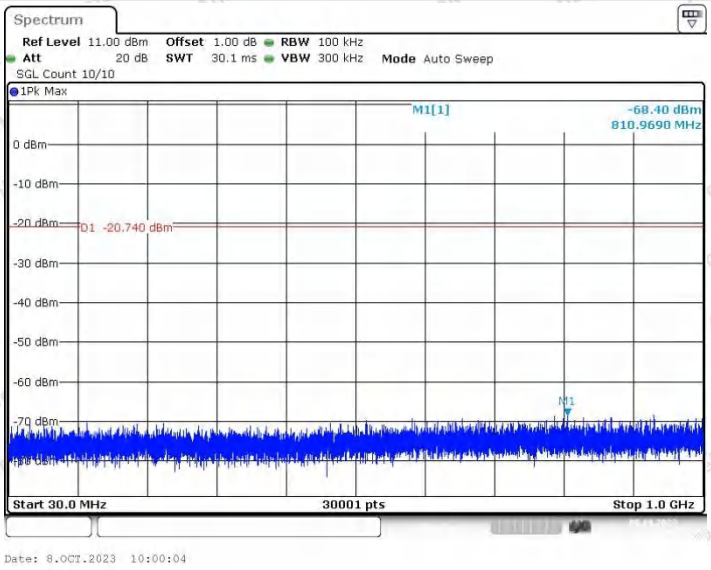
2DH5_Ant1_2480_1000~26500



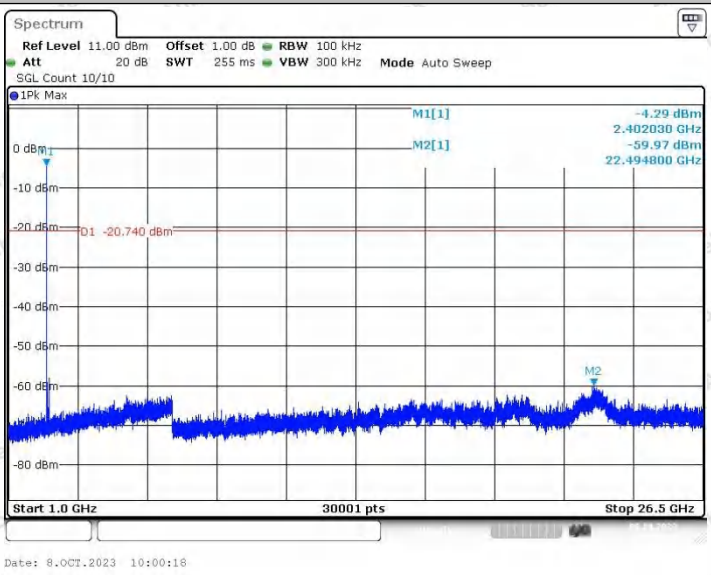
3DH5_Ant1_2402_0~Reference



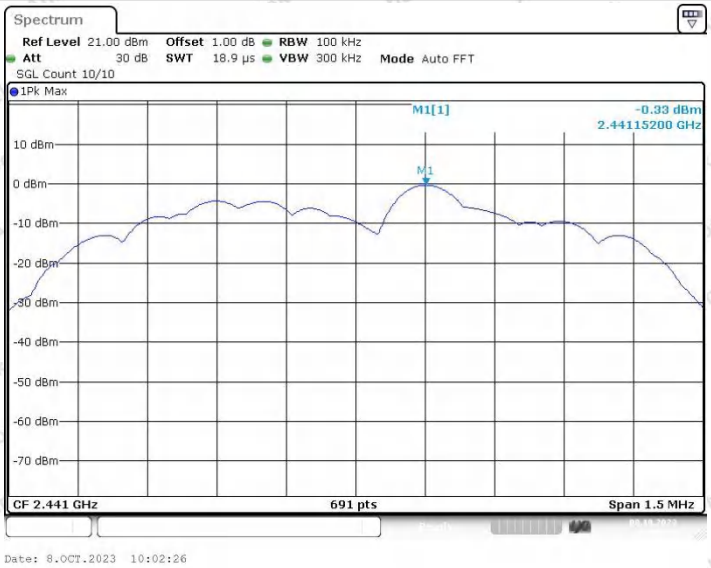
3DH5_Ant1_2402_30~1000



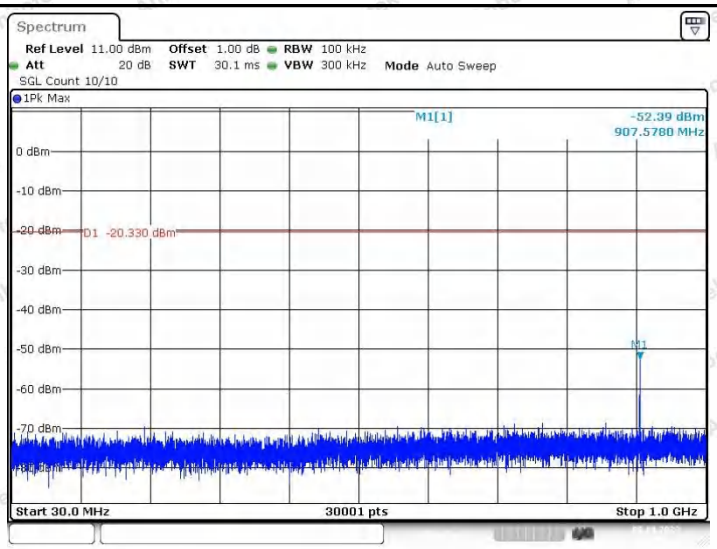
3DH5_Ant1_2402_1000~26500



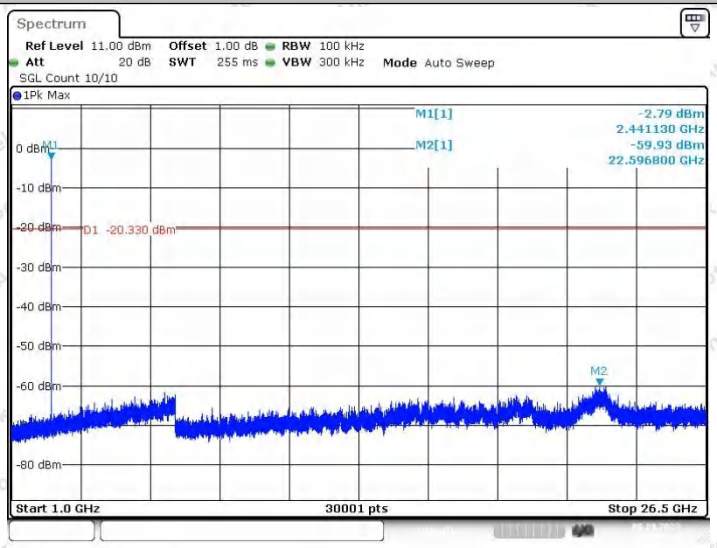
3DH5_Ant1_2441_0~Reference



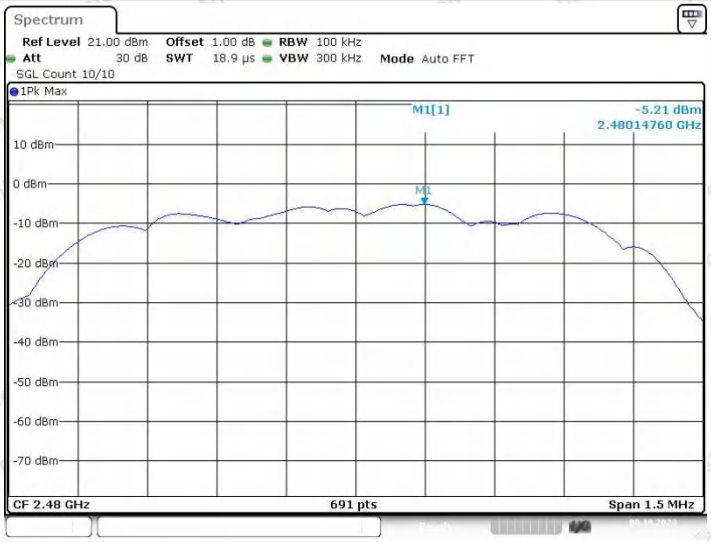
3DH5_Ant1_2441_30~1000



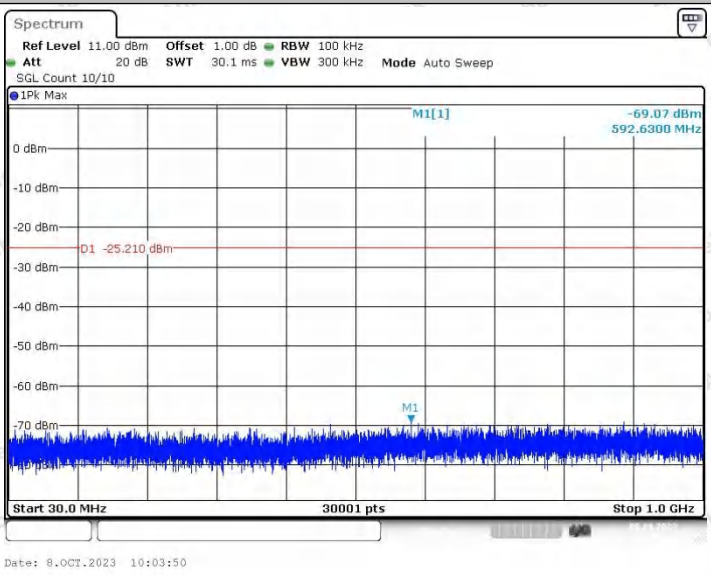
3DH5_Ant1_2441_1000~26500



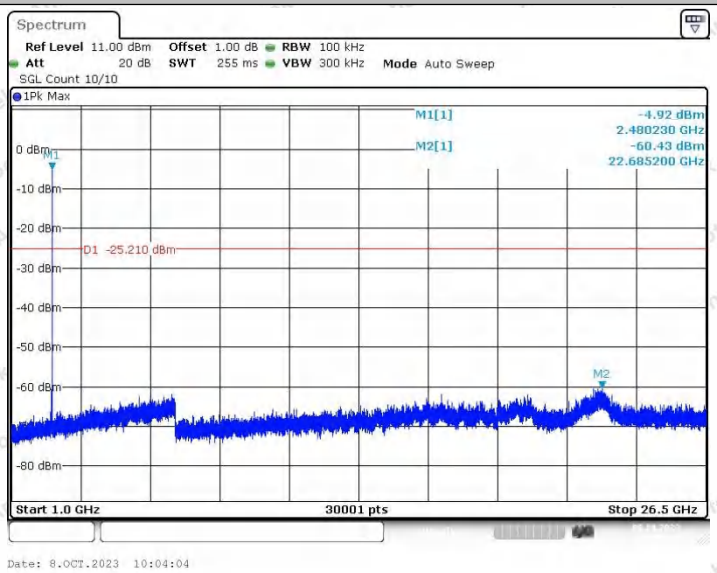
3DH5_Ant1_2480_0~Reference



3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500



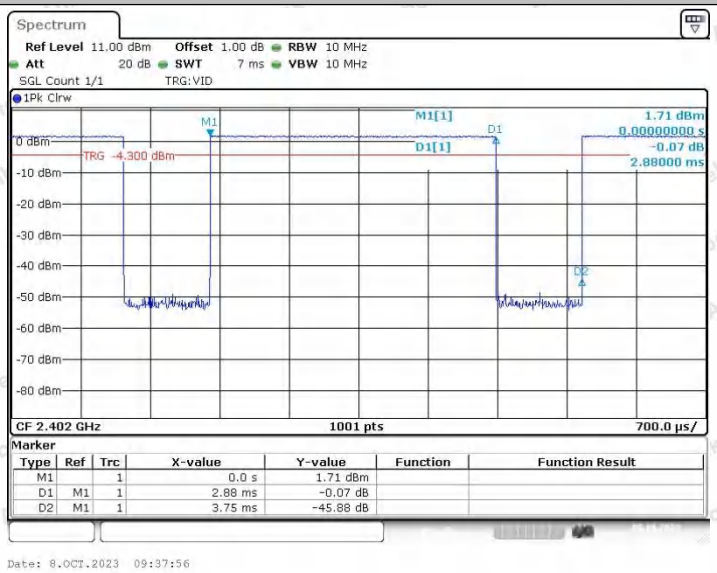
Appendix I: Duty Cycle

Test Result

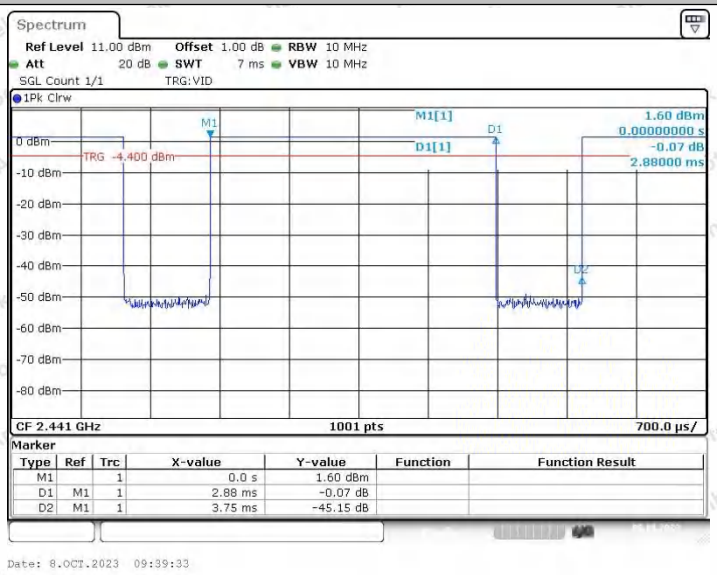
TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
DH5	Ant1	2402	2.88	3.75	76.80	1.15
		2441	2.88	3.75	76.80	1.15
		2480	2.88	3.75	76.80	1.15
2DH5	Ant1	2402	2.88	3.75	76.80	1.15
		2441	2.88	3.75	76.80	1.15
		2480	2.87	3.74	76.74	1.15
3DH5	Ant1	2402	2.89	3.75	77.07	1.13
		2441	2.89	3.75	77.07	1.13
		2480	2.88	3.74	77.01	1.13

Test Graphs

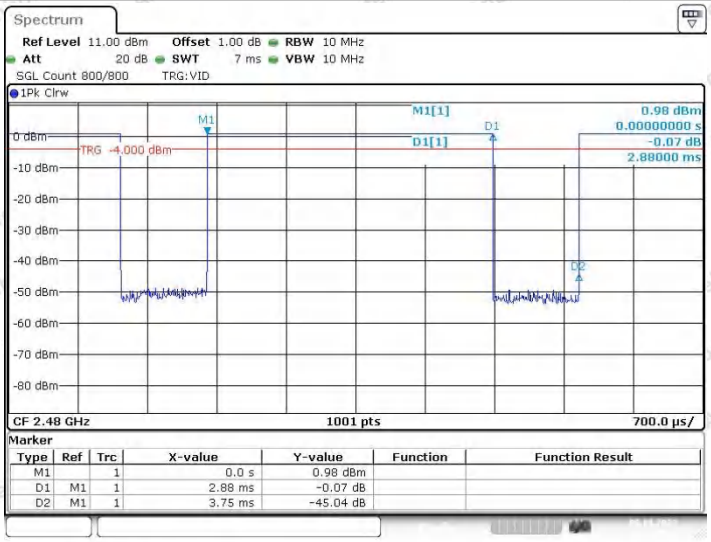
DH5_Ant1_2402



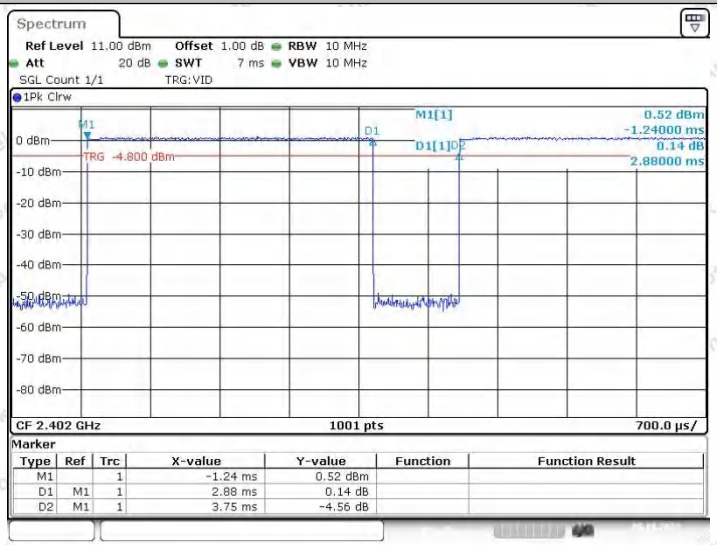
DH5_Ant1_2441



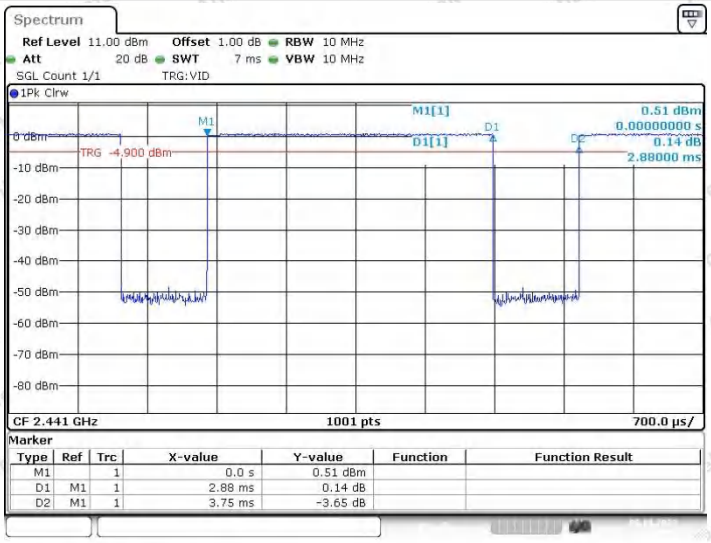
DH5_Ant1_2480



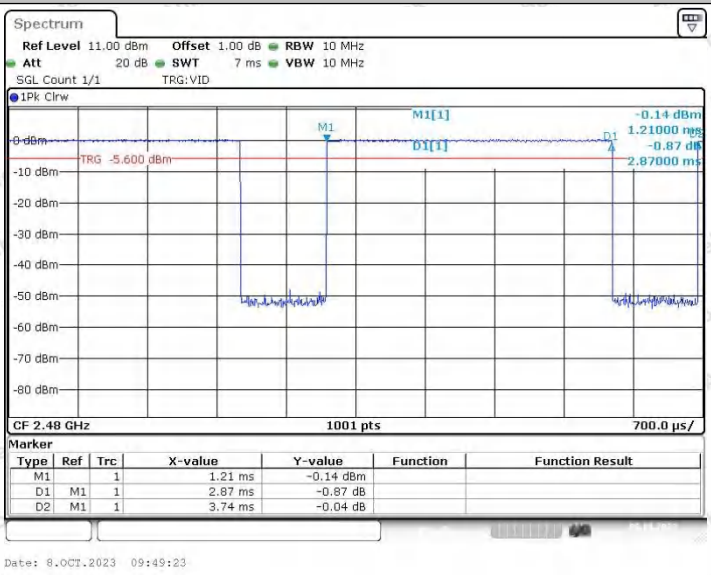
2DH5_Ant1_2402



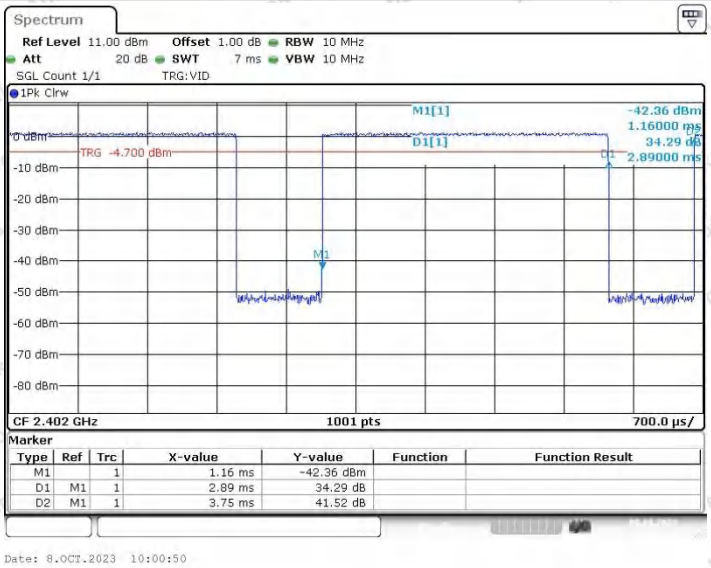
2DH5_Ant1_2441



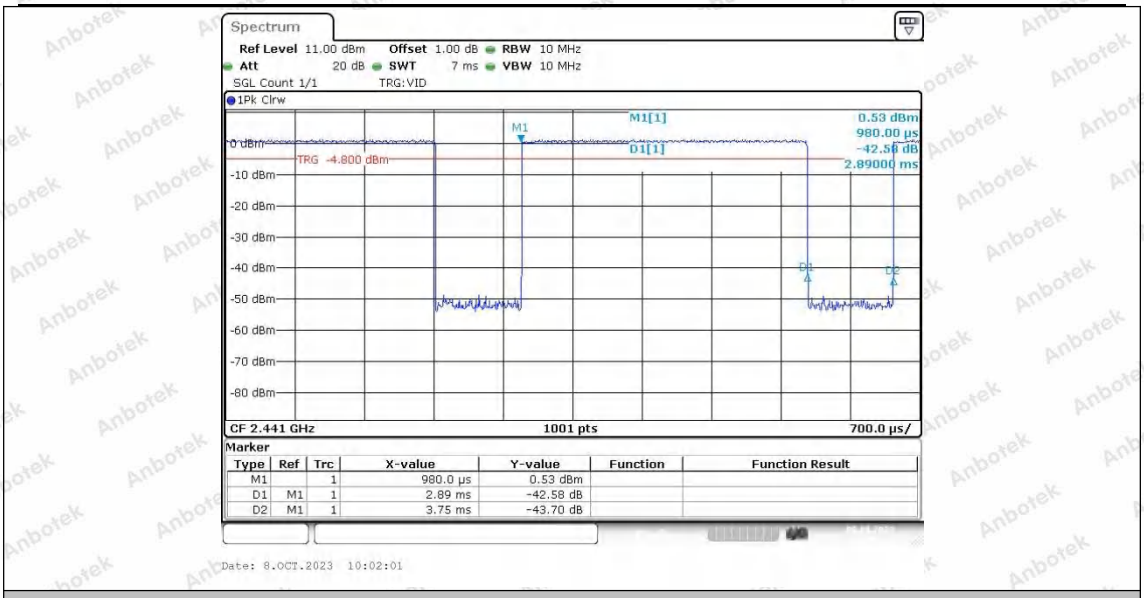
2DH5_Ant1_2480



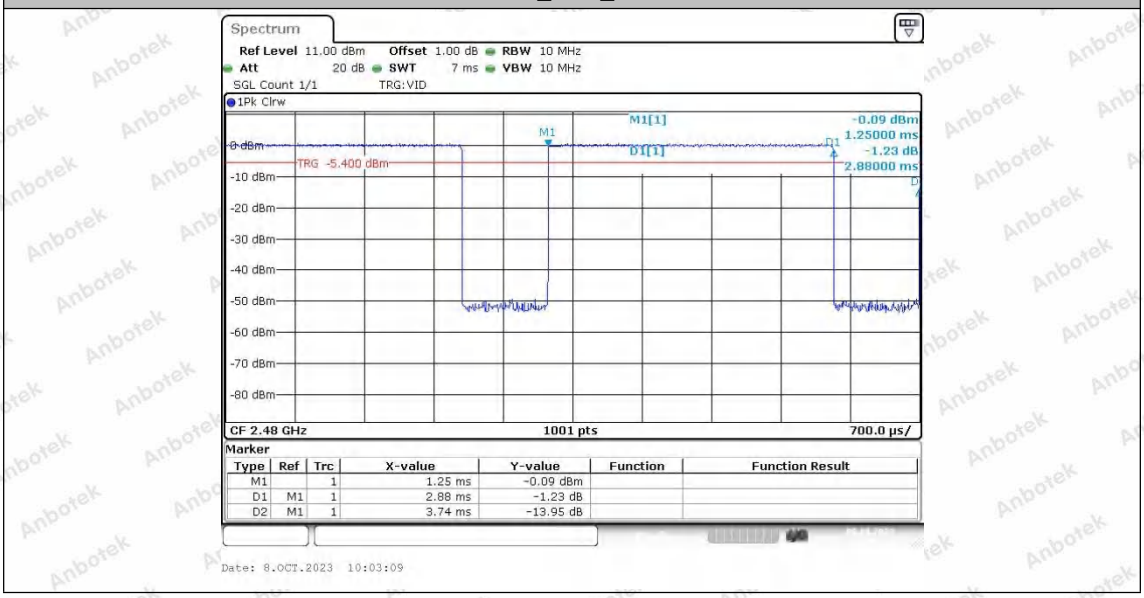
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



---End---