

RF Test Data for Bluetooth (BDR+EDR) (Conducted Measurements)

General Description of EUT	
Product Name:	WiFi & BT combo module
Test Model:	EWN-8852BER3BB-HF
Sample ID:	202205-0049-01-02#
Environmental Conditions	
Temperature:	25°C
Relative Humidity:	55%
Test Voltage:	DC 3.3V
Test Engineer:	Huangjianping
Note: For a more detailed features description, please refer to the report TBR-C-202205-0049-1	

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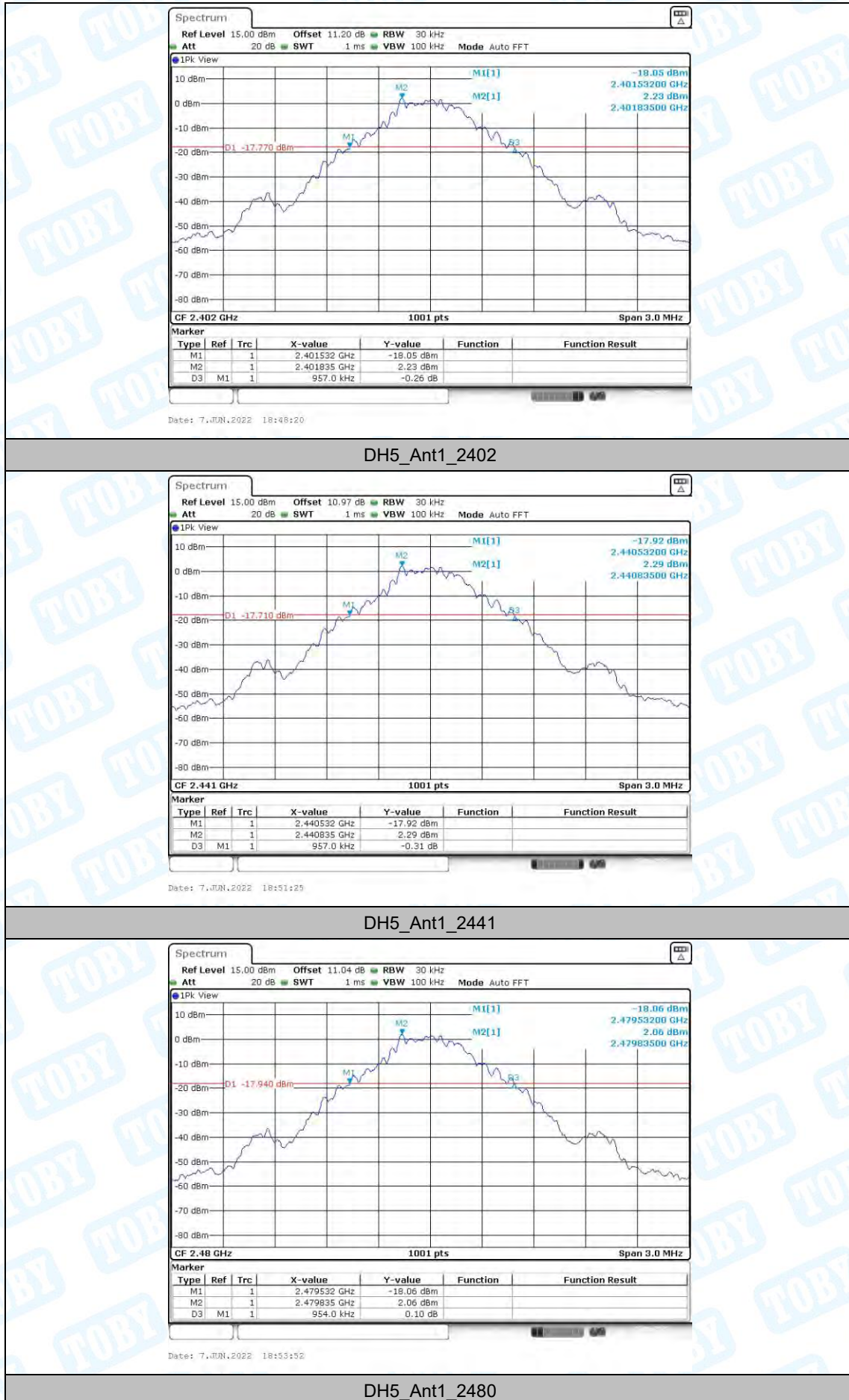
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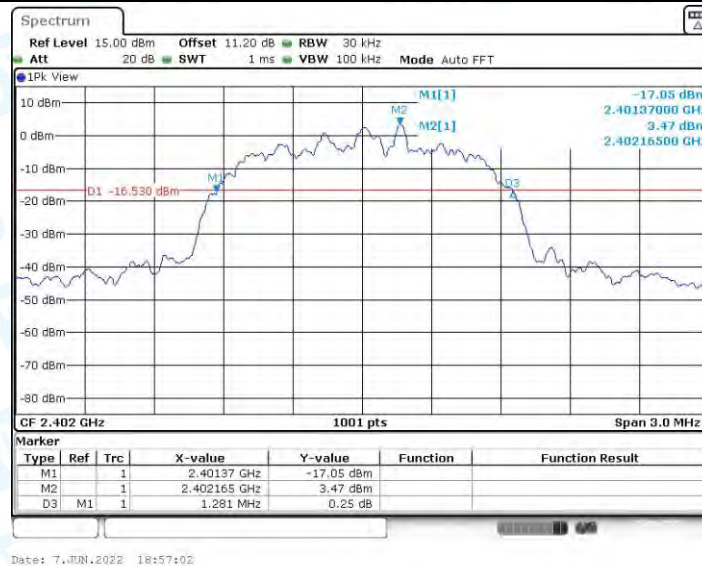
1. 20dB Emission Bandwidth

1.1. Test Result

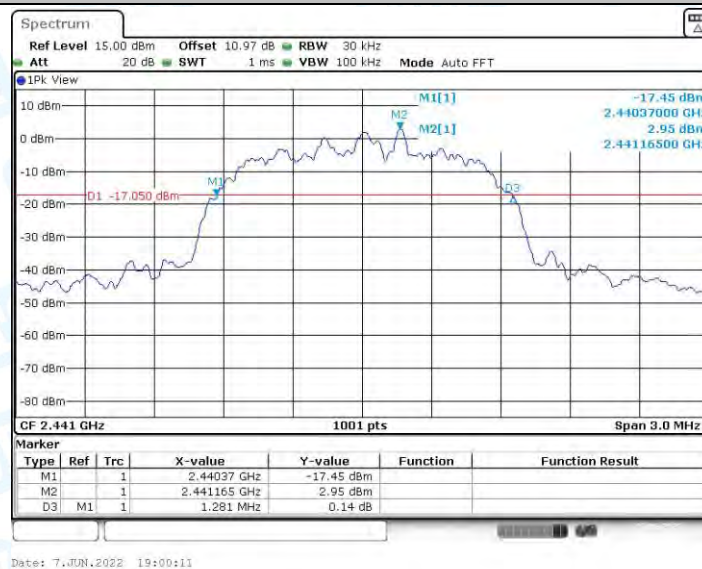
TestMode	Antenna	Channel	20db EBW[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.96	---	---
		2441	0.96	---	---
		2480	0.95	---	---
2DH5	Ant1	2402	1.28	---	---
		2441	1.28	---	---
		2480	1.28	---	---
3DH5	Ant1	2402	1.29	---	---
		2441	1.29	---	---
		2480	1.29	---	---

1.2. Test Graphs





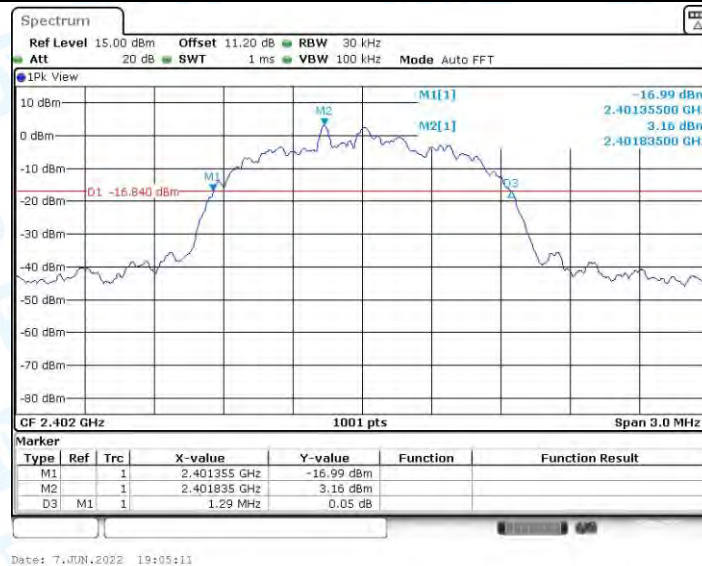
2DH5_Ant1_2402



2DH5_Ant1_2441



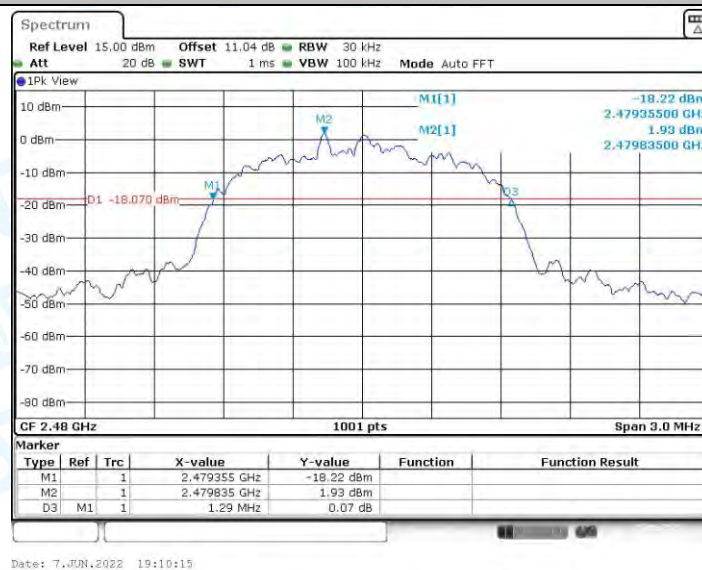
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



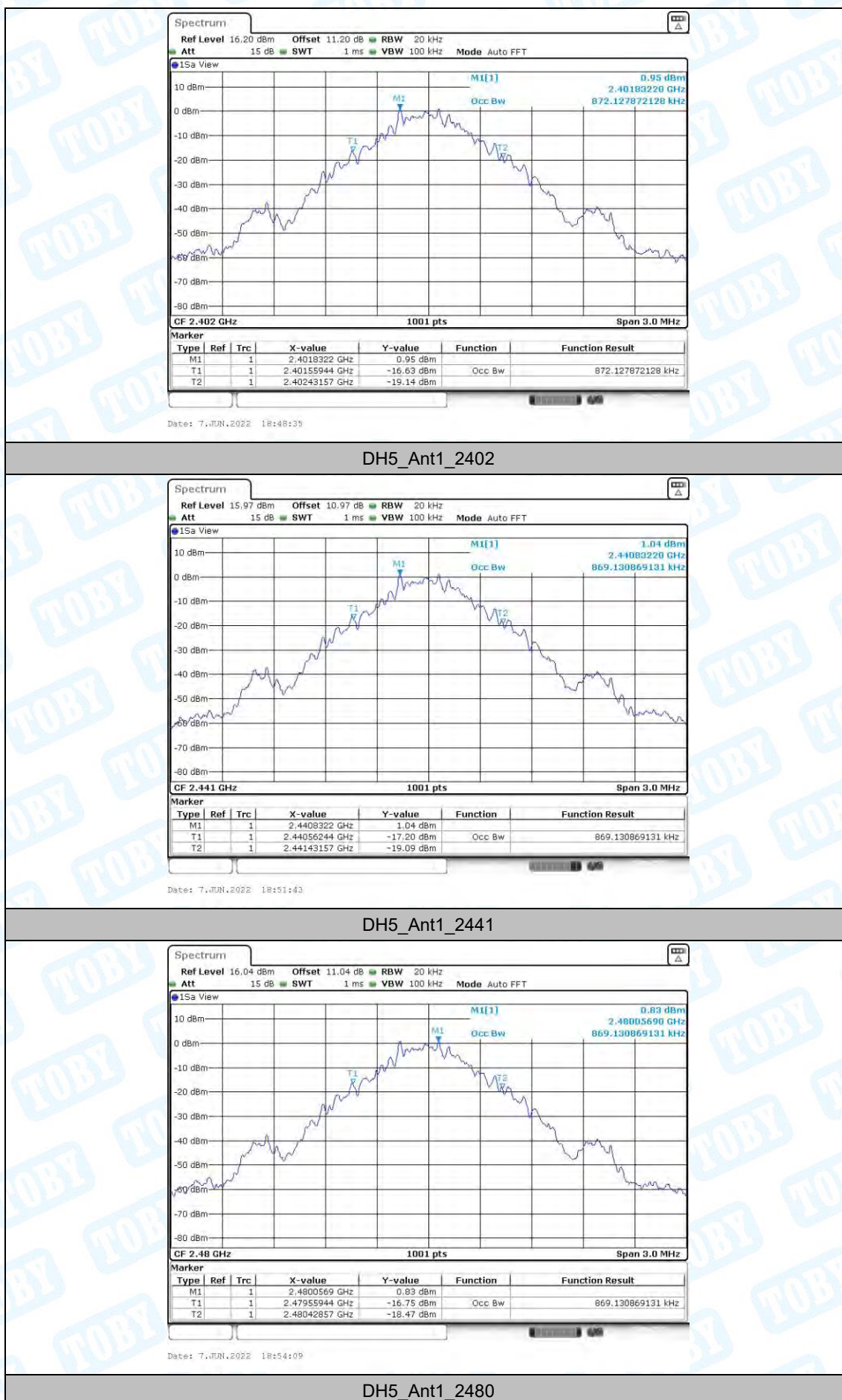
3DH5_Ant1_2480

2. Occupied Channel Bandwidth

2.1. Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.872	2401.559	2402.432	---	---
		2441	0.869	2440.562	2441.432	---	---
		2480	0.869	2479.559	2480.429	---	---
2DH5	Ant1	2402	1.163	2401.416	2402.578	---	---
		2441	1.163	2440.416	2441.578	---	---
		2480	1.163	2479.416	2480.578	---	---
3DH5	Ant1	2402	1.169	2401.413	2402.581	---	---
		2441	1.169	2440.413	2441.581	---	---
		2480	1.169	2479.413	2480.581	---	---

2.2. Test Graphs





2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



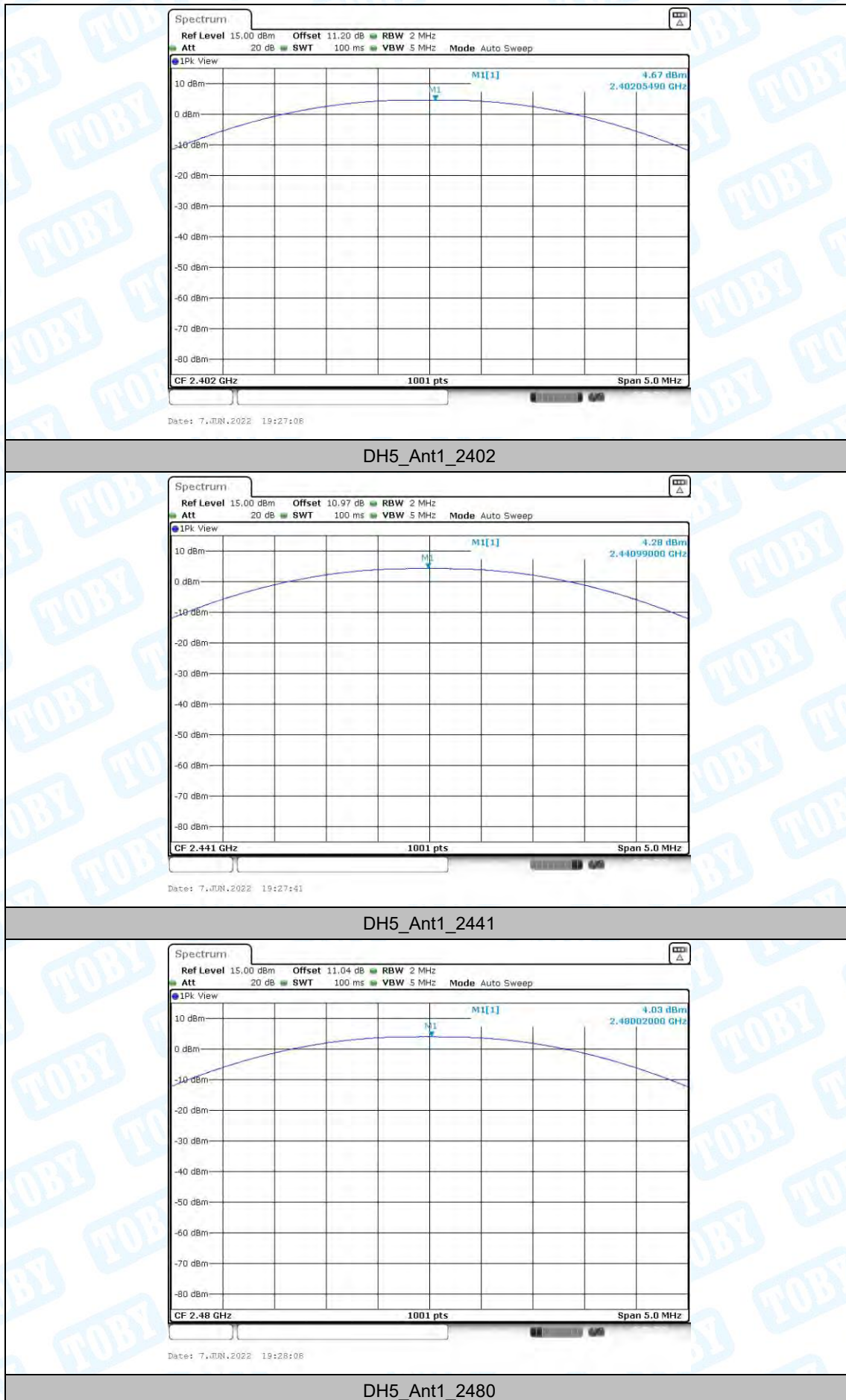
3DH5_Ant1_2480

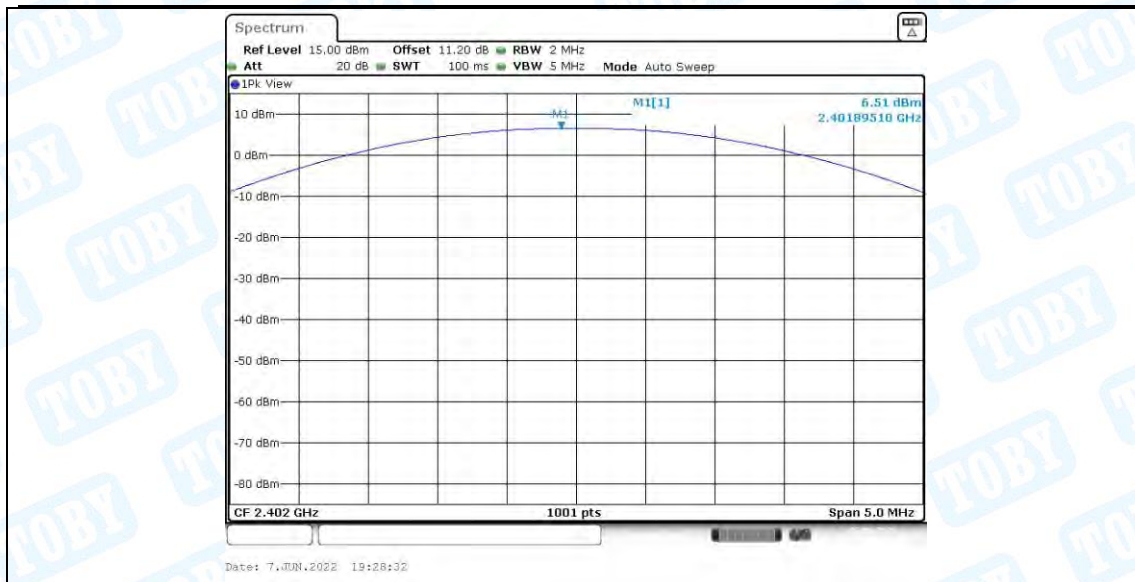
3. Maximum conducted output power

3.1. Test Result

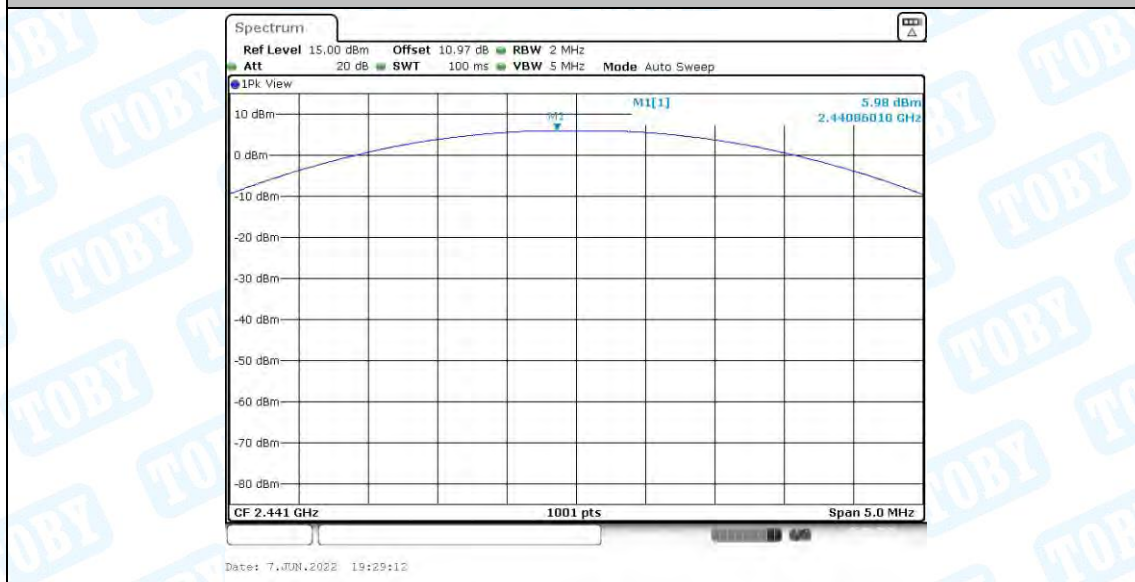
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	4.67	≤20.97	PASS
		2441	4.28	≤20.97	PASS
		2480	4.03	≤20.97	PASS
2DH5	Ant1	2402	6.51	≤20.97	PASS
		2441	5.98	≤20.97	PASS
		2480	5.69	≤20.97	PASS
3DH5	Ant1	2402	7.54	≤20.97	PASS
		2441	6.6	≤20.97	PASS
		2480	5.88	≤20.97	PASS

3.2.Test Graphs





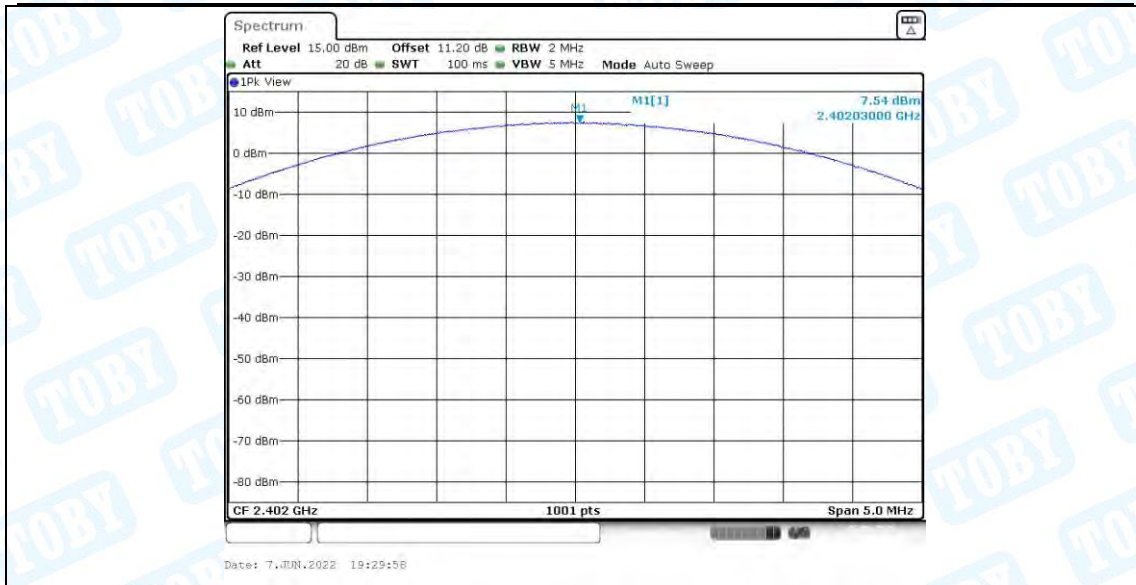
2DH5_Ant1_2402



2DH5_Ant1_2441



2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



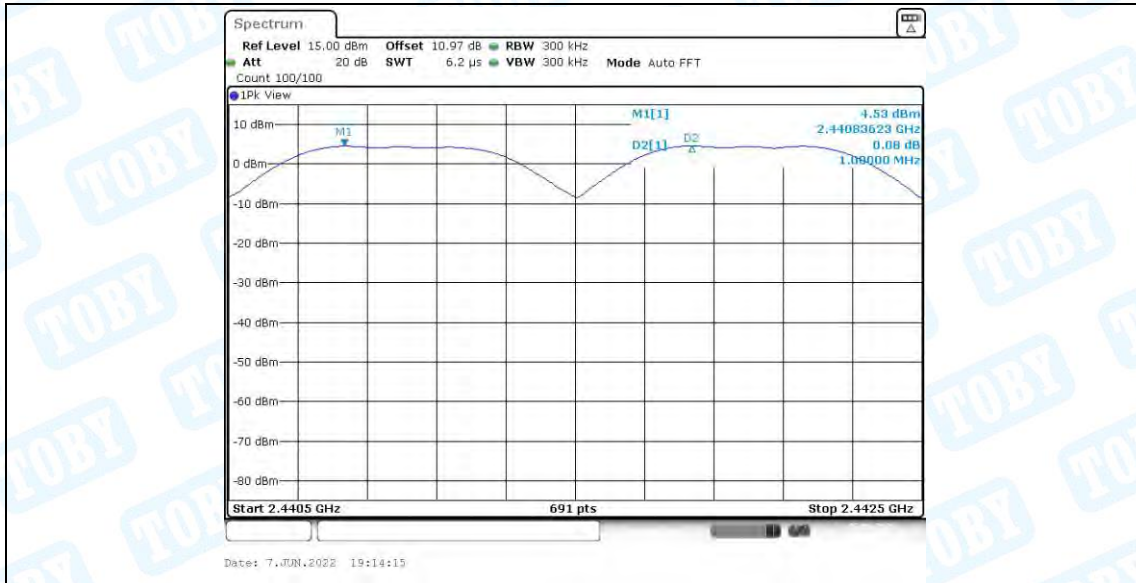
3DH5_Ant1_2480

4. Carrier frequency separation

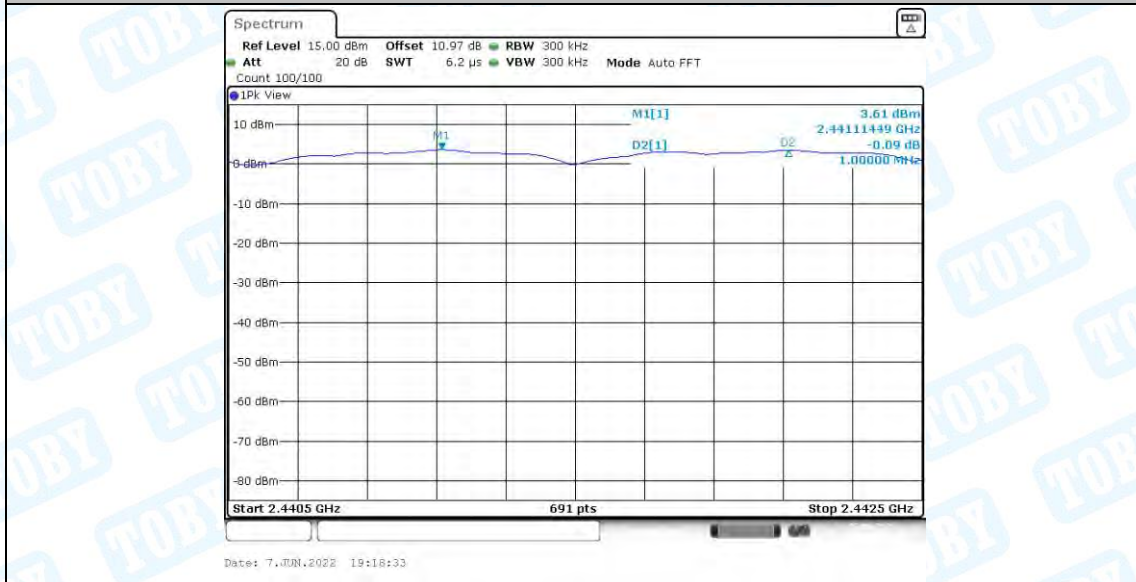
4.1. Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1	≥ 0.960	PASS
2DH5	Ant1	Hop	1	≥ 0.853	PASS
3DH5	Ant1	Hop	0.861	≥ 0.860	PASS

4.2.Test Graphs



DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

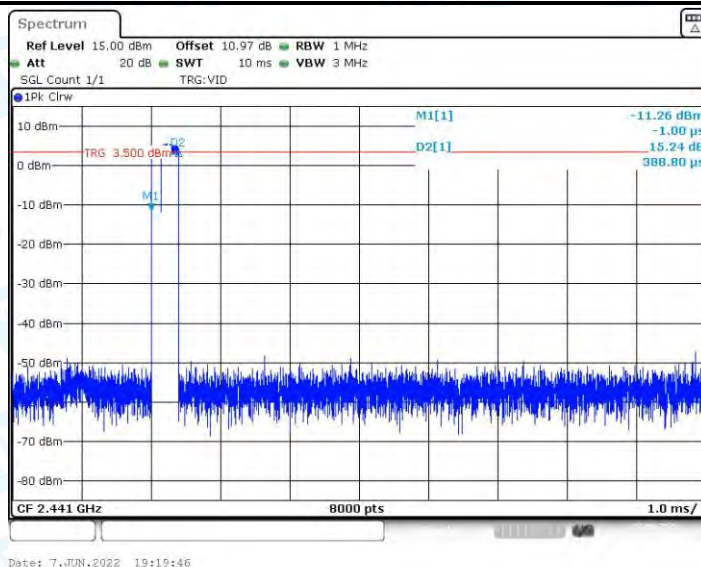
5. Time of occupancy

5.1. Test Result

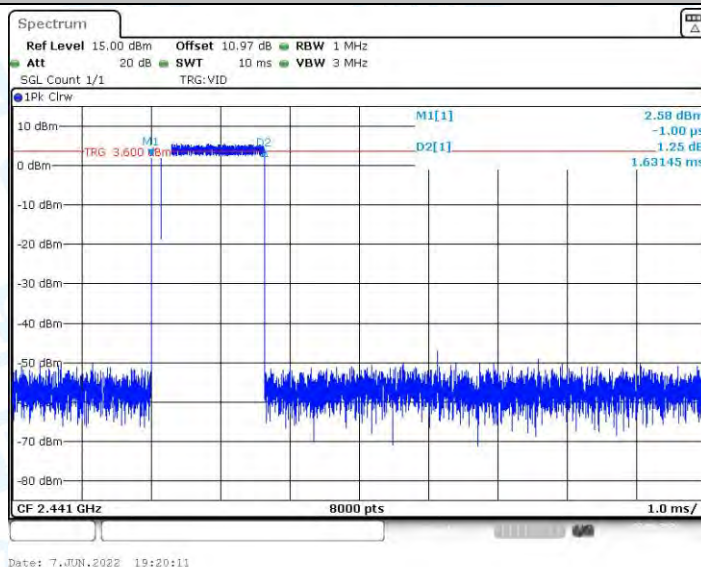
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.38	320	0.121	≤0.4	PASS
DH3	Ant1	Hop	1.63	160	0.26	≤0.4	PASS
DH5	Ant1	Hop	2.87	106.67	0.306	≤0.4	PASS
2DH1	Ant1	Hop	0.39	320	0.124	≤0.4	PASS
2DH3	Ant1	Hop	1.63	160	0.261	≤0.4	PASS
2DH5	Ant1	Hop	2.87	106.67	0.306	≤0.4	PASS
3DH1	Ant1	Hop	0.39	320	0.124	≤0.4	PASS
3DH3	Ant1	Hop	1.63	160	0.261	≤0.4	PASS
3DH5	Ant1	Hop	2.87	106.67	0.307	≤0.4	PASS

5.2. Test Graphs

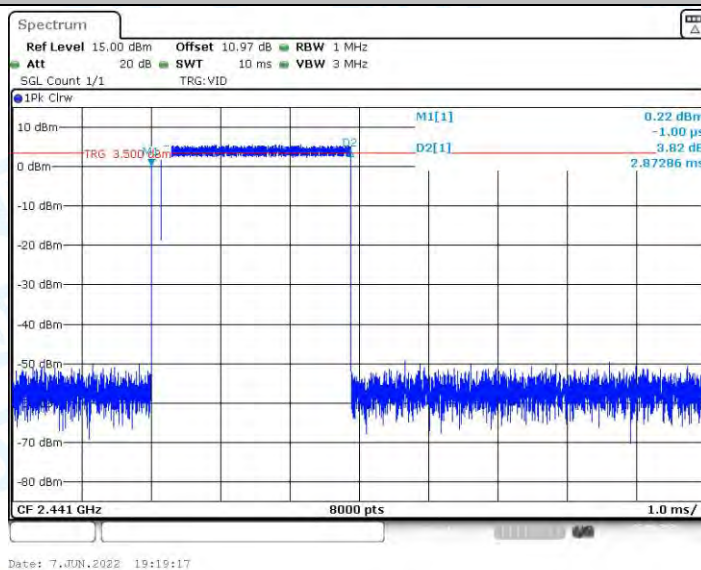




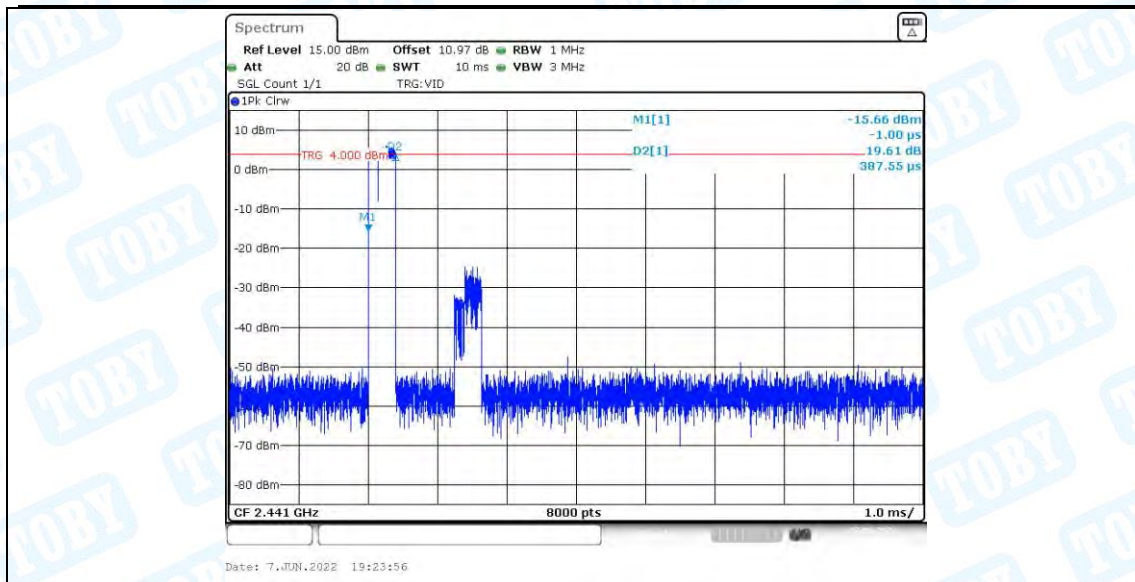
2DH1_Ant1_Hop



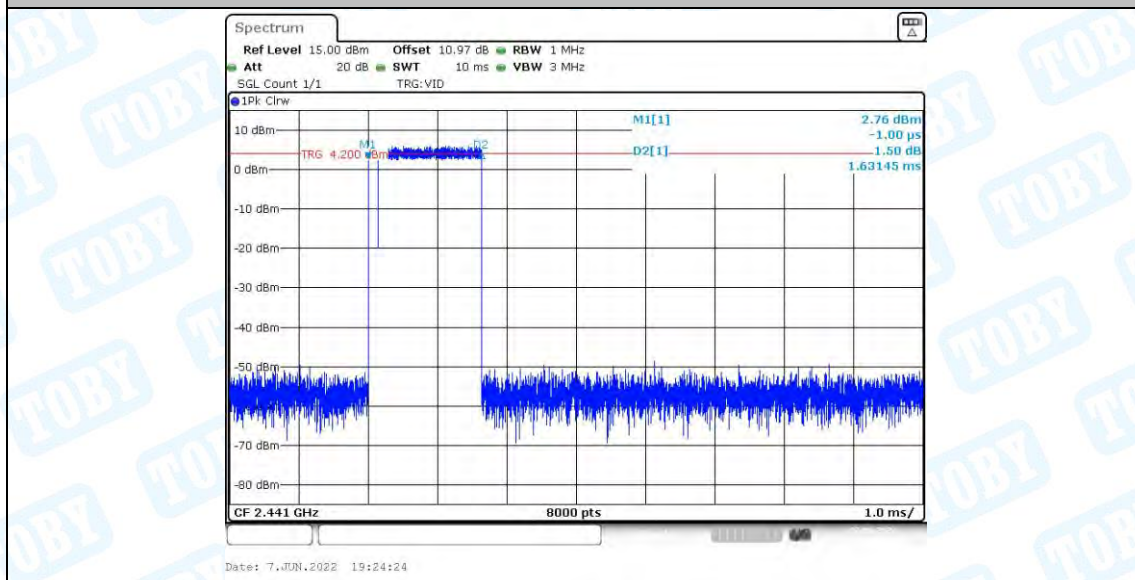
2DH3_Ant1_Hop



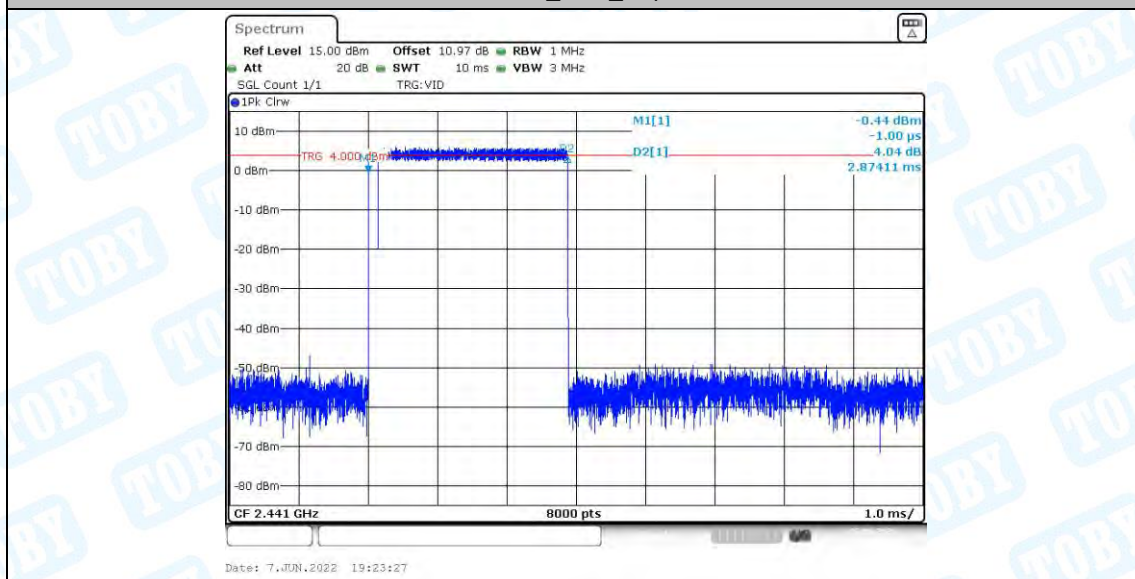
2DH5_Ant1_Hop



3DH1_Ant1_Hop



3DH3_Ant1_Hop



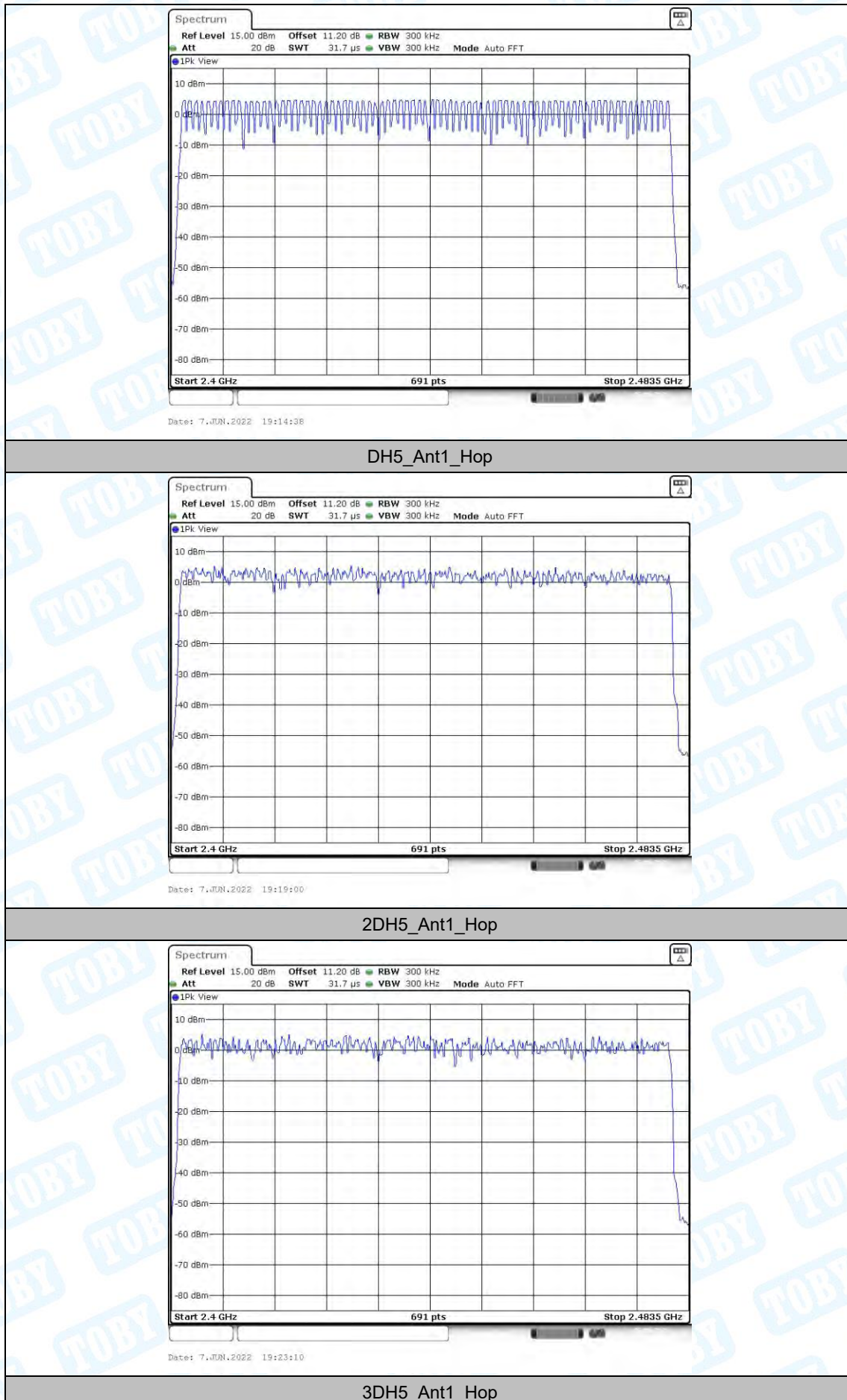
3DH5_Ant1_Hop

6. Number of hopping channels

6.1. Test Result

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

6.2.Test Graphs

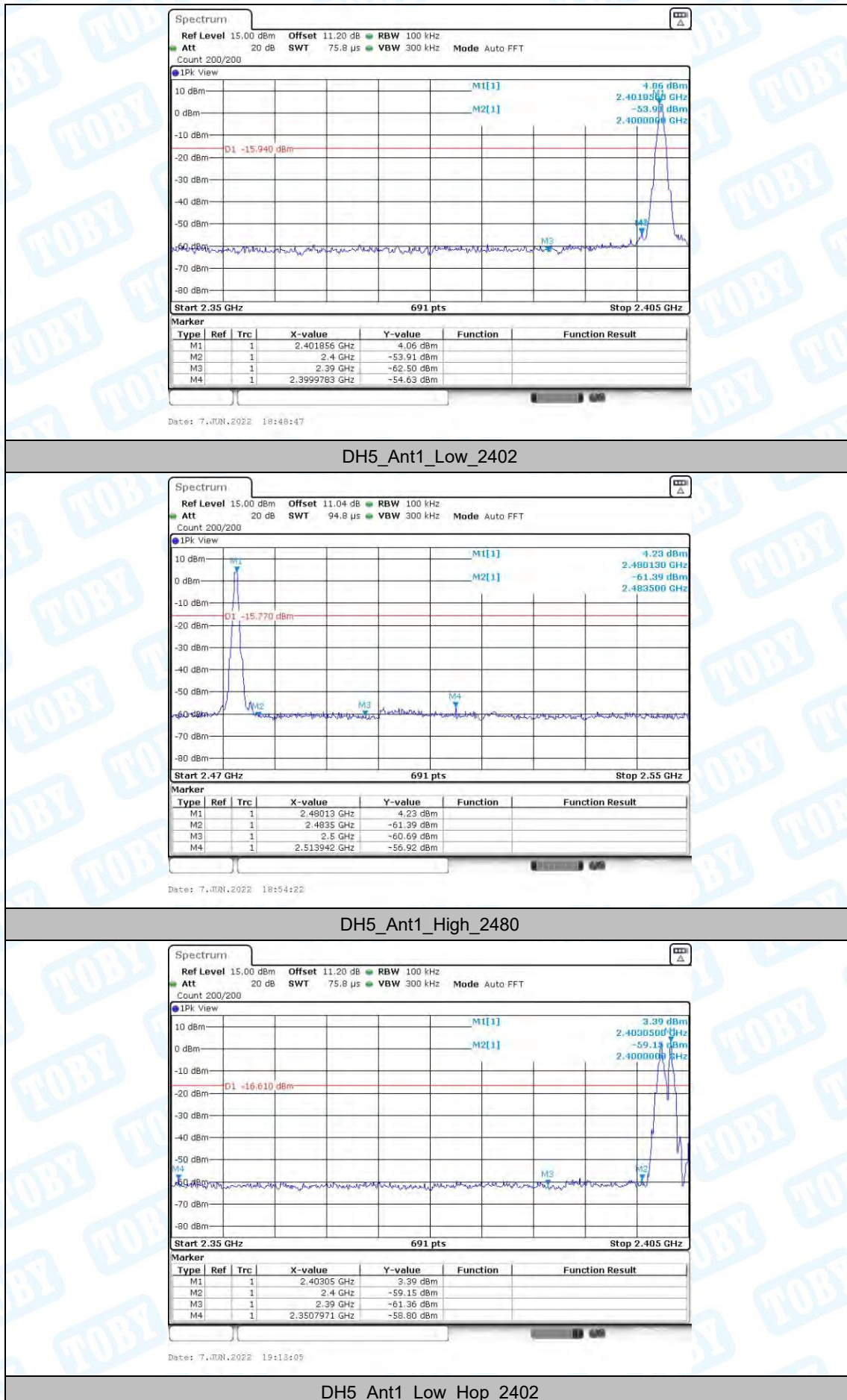


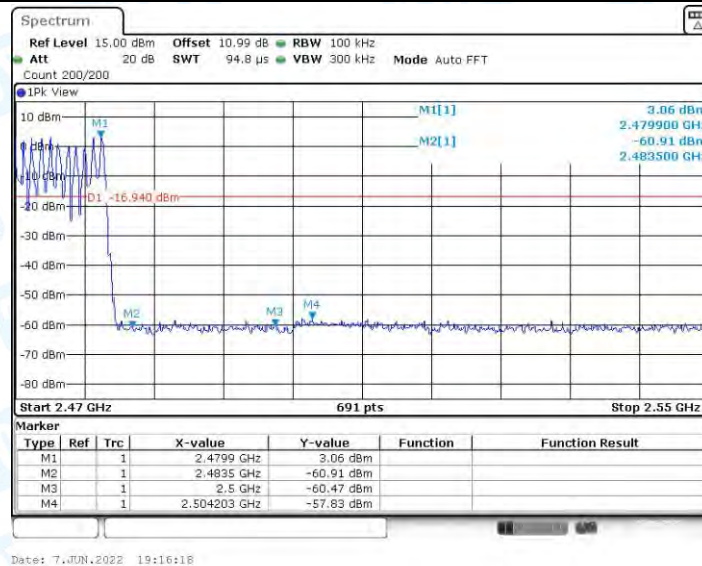
7. Band edge measurements

7.1. Test Result

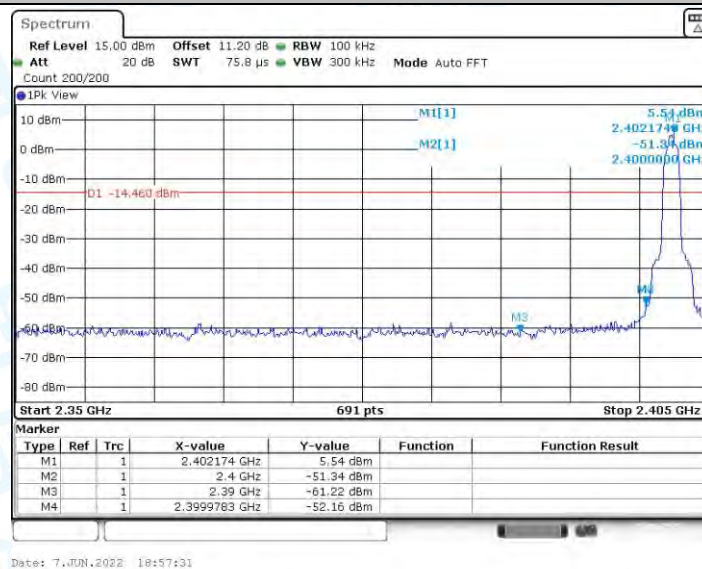
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	4.06	-54.63	≤ -15.94	PASS
		High	2480	4.23	-56.92	≤ -15.77	PASS
		Low	Hop_2402	3.39	-58.8	≤ -16.61	PASS
		High	Hop_2480	3.06	-57.83	≤ -16.94	PASS
2DH5	Ant1	Low	2402	5.54	-52.16	≤ -14.46	PASS
		High	2480	3.74	-56.48	≤ -16.26	PASS
		Low	Hop_2402	0.57	-59.06	≤ -19.43	PASS
		High	Hop_2480	1.50	-57.34	≤ -18.5	PASS
3DH5	Ant1	Low	2402	5.57	-52.45	≤ -14.43	PASS
		High	2480	4.13	-56.72	≤ -15.87	PASS
		Low	Hop_2402	2.20	-58.95	≤ -17.8	PASS
		High	Hop_2480	0.42	-57.77	≤ -19.58	PASS

7.2. Test Graphs

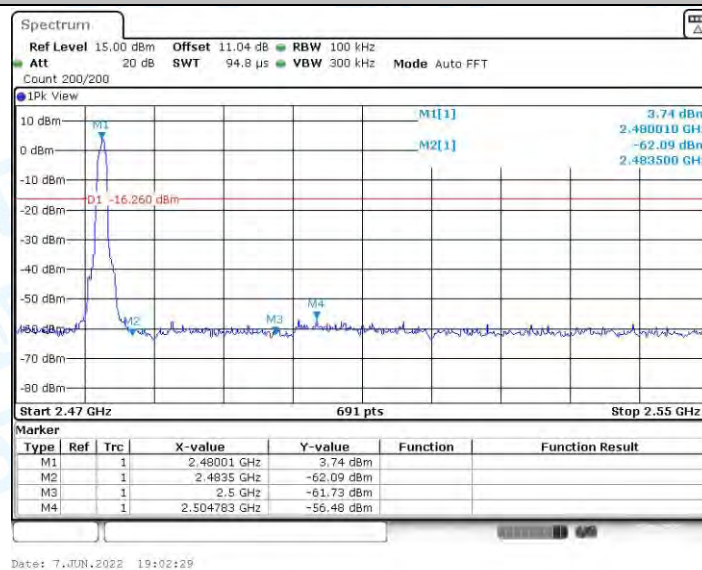




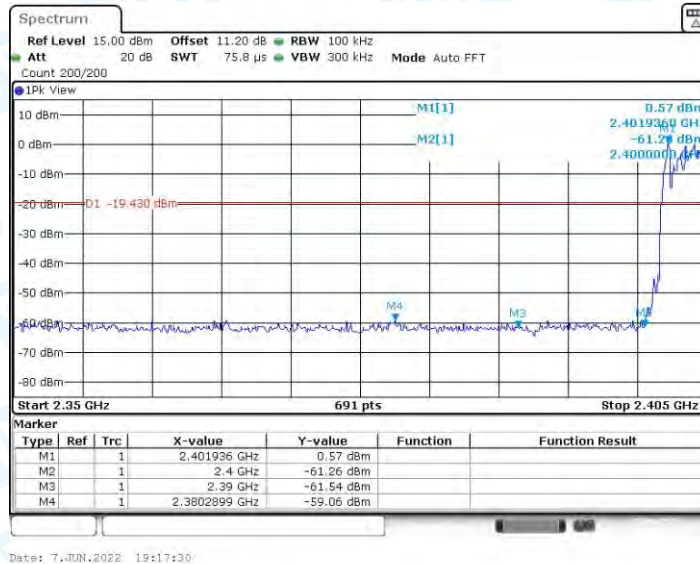
DH5_Ant1_High_Hop_2480



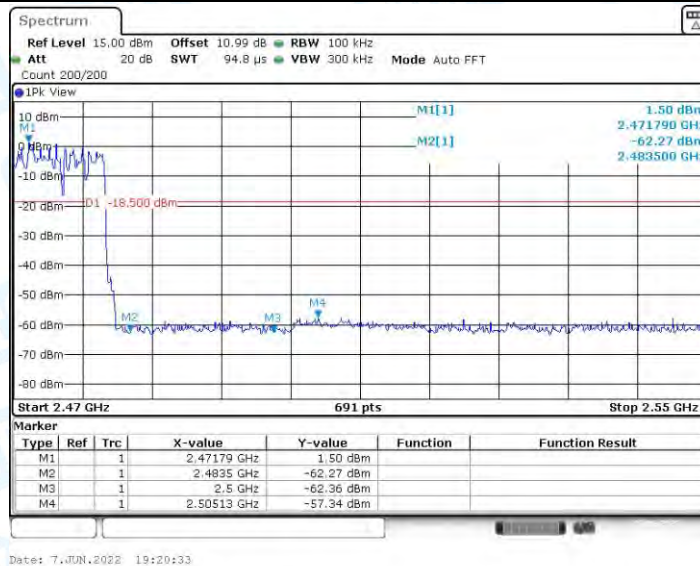
2DH5_Ant1_Low_2402



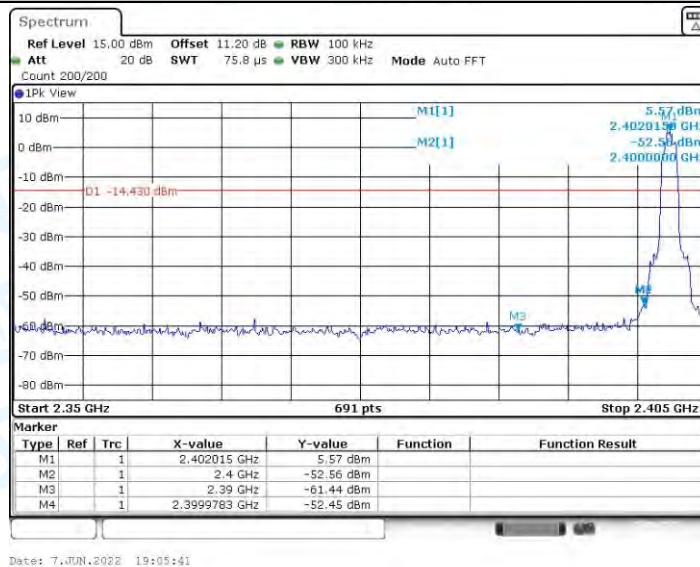
2DH5_Ant1_High_2480



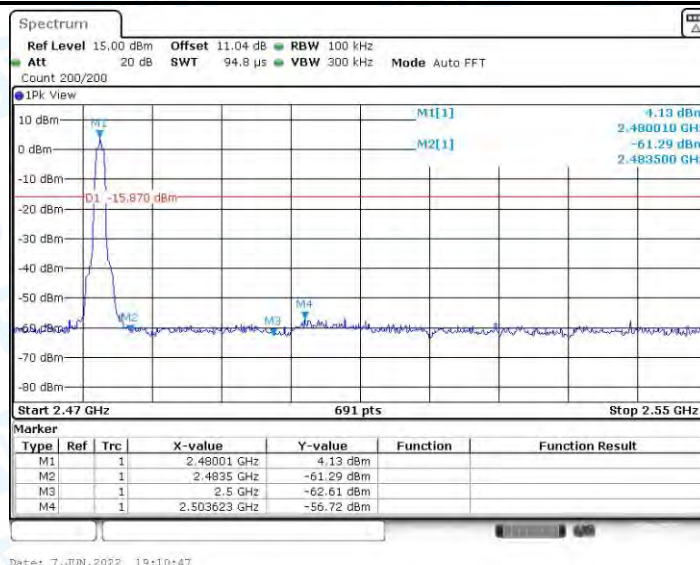
2DH5_Ant1_Low_Hop_2402



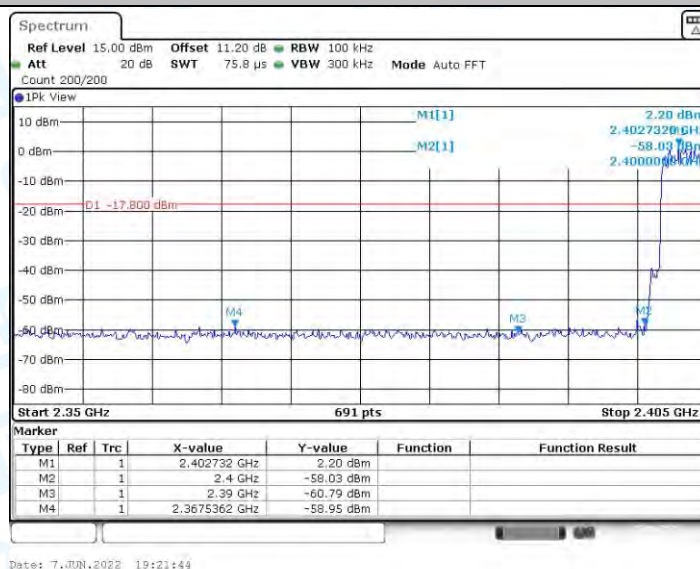
2DH5_Ant1_High_Hop_2480



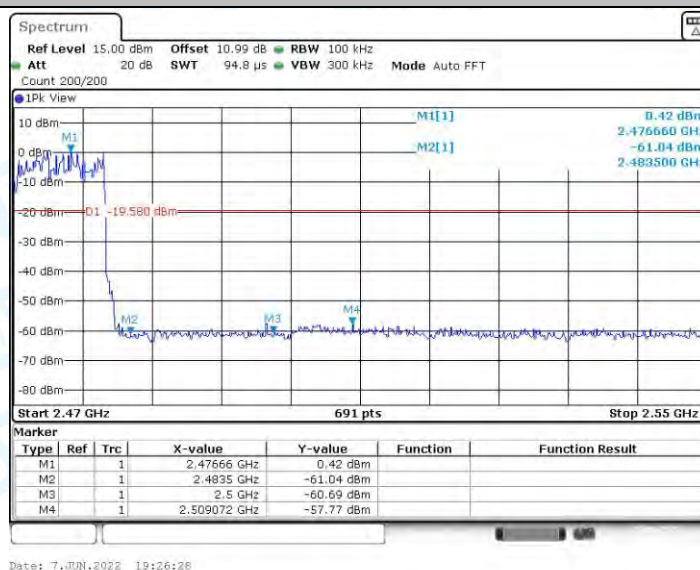
3DH5_Ant1_Low_2402



3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



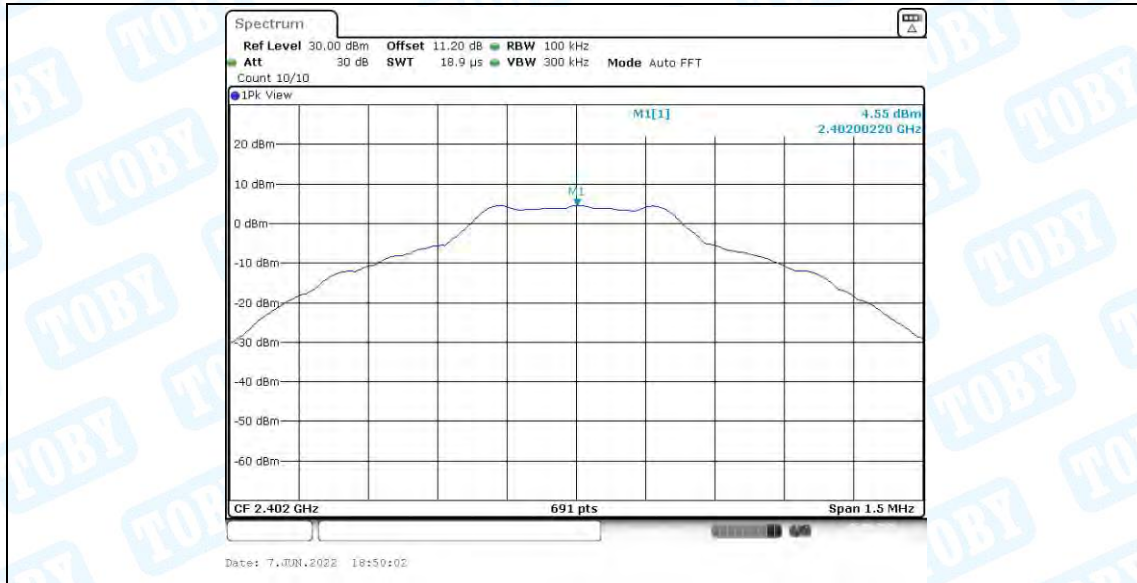
3DH5_Ant1_High_Hop_2480

8. Conducted Spurious Emission

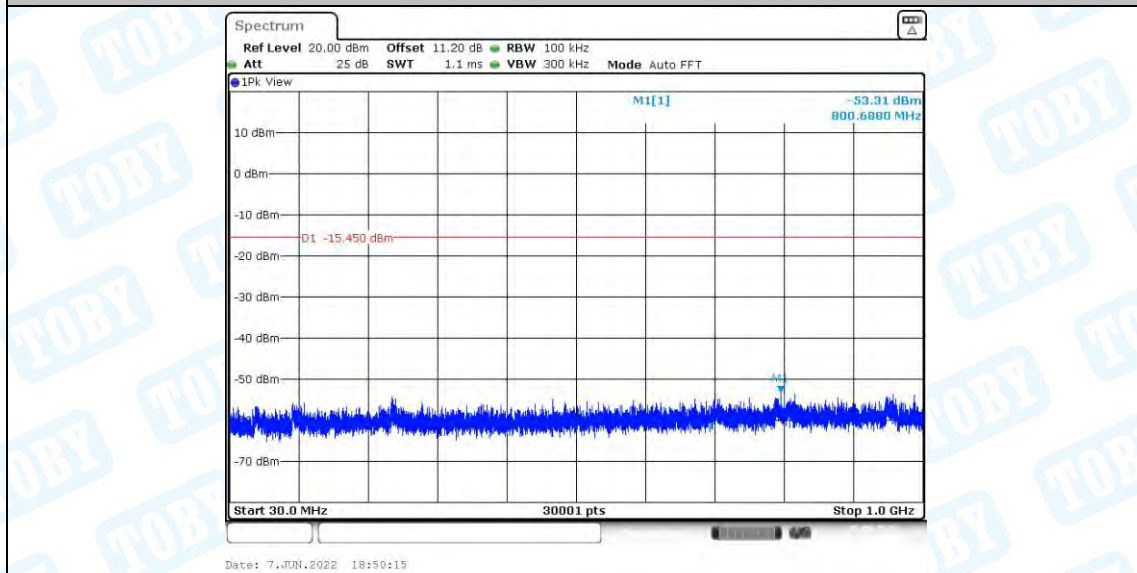
8.1. Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	4.55	4.55	---	PASS
			30~1000	4.55	-53.31	≤-15.45	PASS
			1000~26500	4.55	-46.81	≤-15.45	PASS
		2441	Reference	4.55	4.55	---	PASS
			30~1000	4.55	-53.58	≤-15.45	PASS
			1000~26500	4.55	-47.39	≤-15.45	PASS
		2480	Reference	4.32	4.32	---	PASS
			30~1000	4.32	-53.26	≤-15.68	PASS
			1000~26500	4.32	-47.17	≤-15.68	PASS
2DH5	Ant1	2402	Reference	5.50	5.50	---	PASS
			30~1000	5.50	-53.61	≤-14.5	PASS
			1000~26500	5.50	-46.95	≤-14.5	PASS
		2441	Reference	4.95	4.95	---	PASS
			30~1000	4.95	-53.7	≤-15.05	PASS
			1000~26500	4.95	-46.88	≤-15.05	PASS
		2480	Reference	4.21	4.21	---	PASS
			30~1000	4.21	-52.62	≤-15.79	PASS
			1000~26500	4.21	-47.53	≤-15.79	PASS
3DH5	Ant1	2402	Reference	5.50	5.50	---	PASS
			30~1000	5.50	-53.65	≤-14.5	PASS
			1000~26500	5.50	-47.35	≤-14.5	PASS
		2441	Reference	4.93	4.93	---	PASS
			30~1000	4.93	-53.6	≤-15.07	PASS
			1000~26500	4.93	-47.3	≤-15.07	PASS
		2480	Reference	4.21	4.21	---	PASS
			30~1000	4.21	-54.36	≤-15.79	PASS
			1000~26500	4.21	-47.76	≤-15.79	PASS

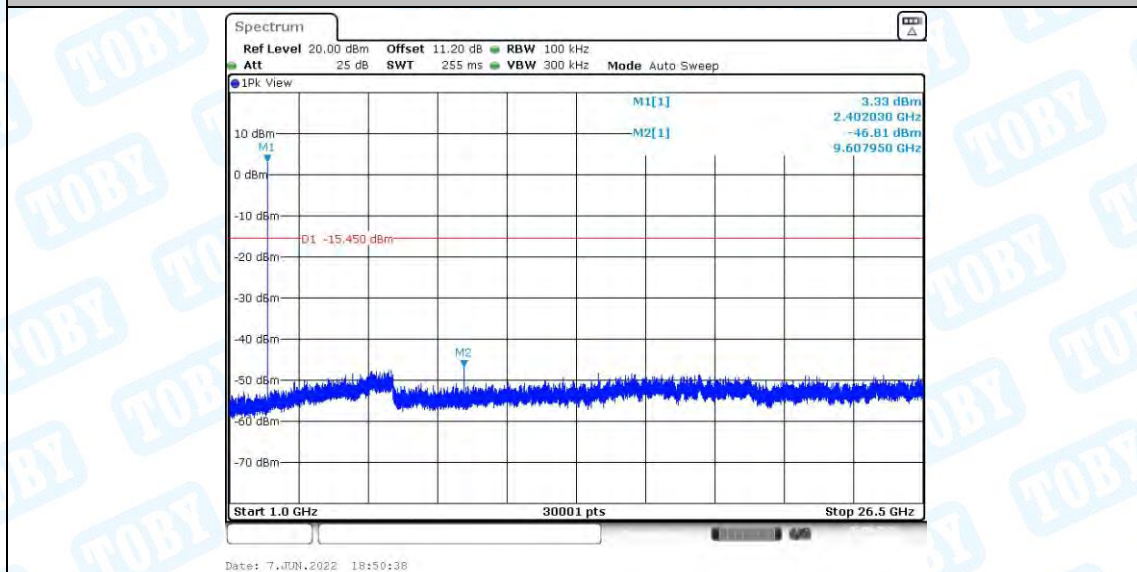
8.2.Test Graphs



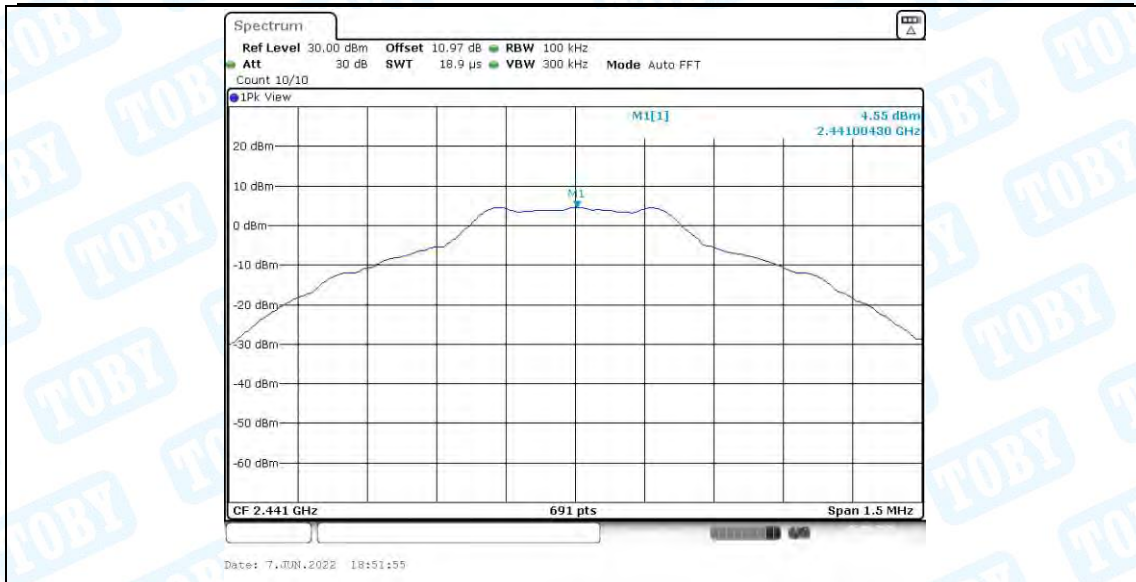
DH5_Ant1_2402_0~Reference



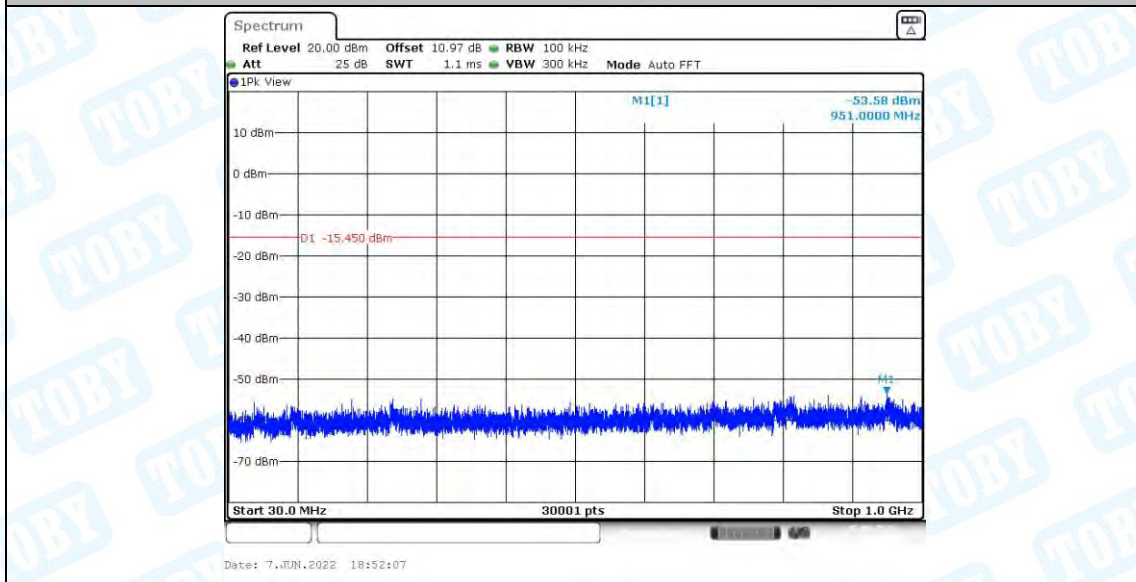
DH5_Ant1_2402_30~1000



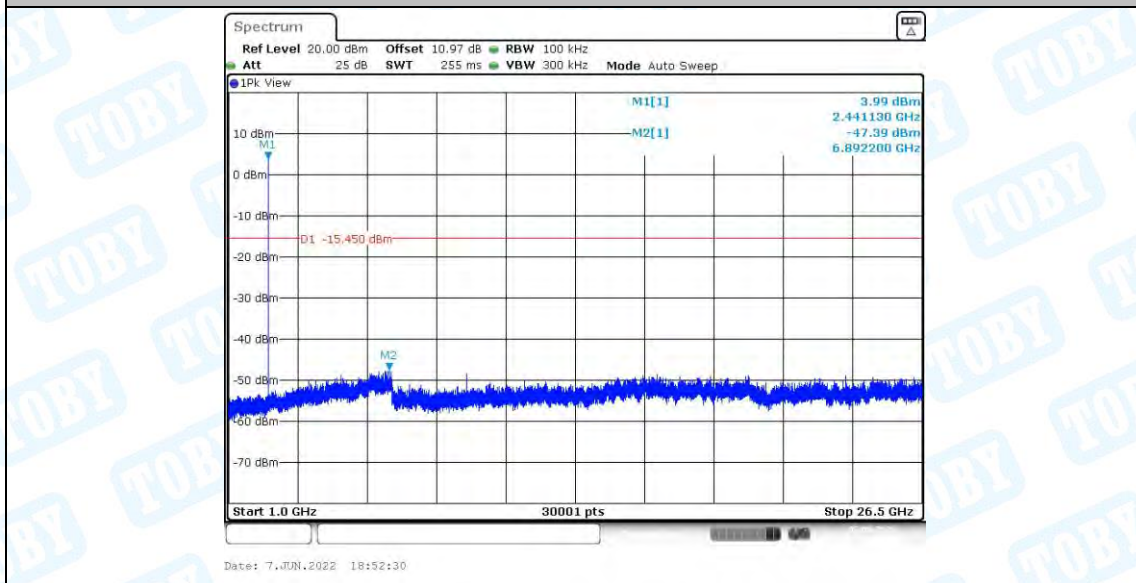
DH5_Ant1_2402_1000~26500



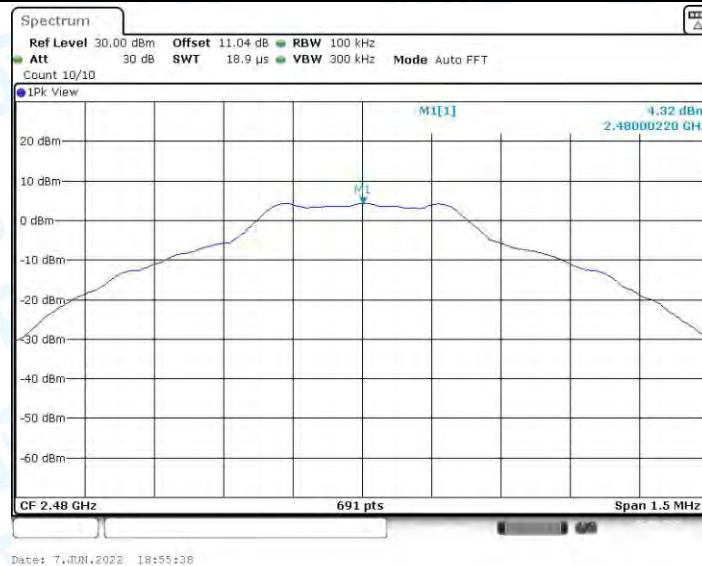
DH5_Ant1_2441_0~Reference



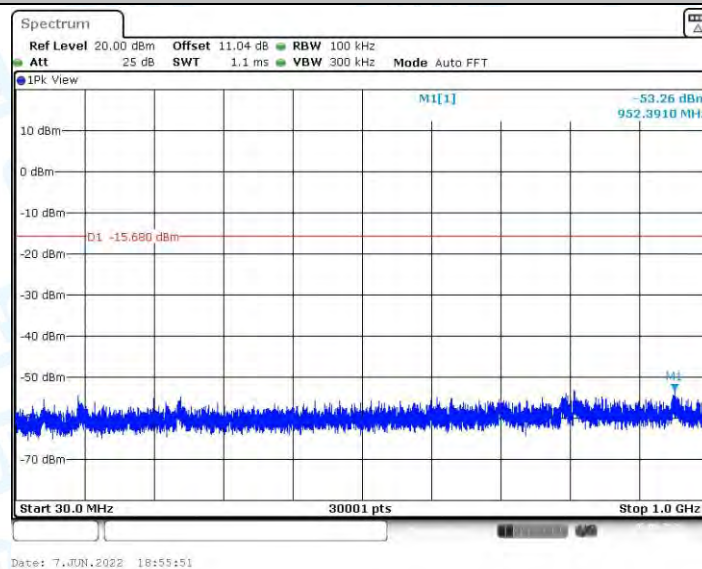
DH5_Ant1_2441_30~1000



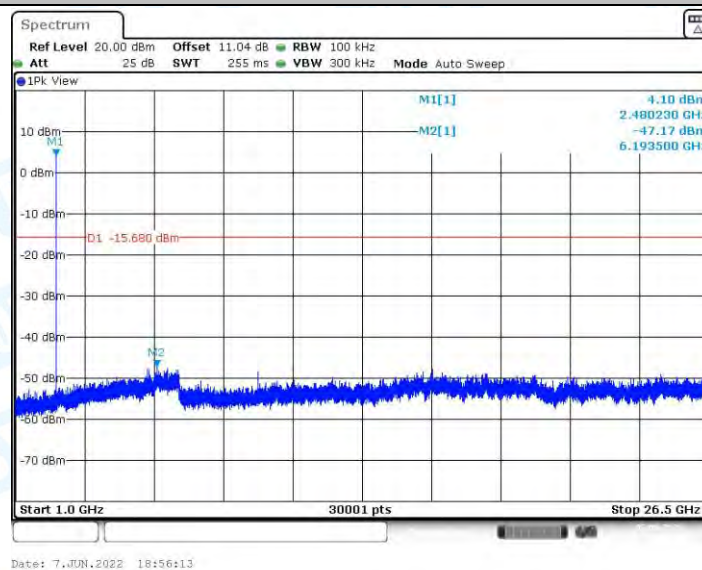
DH5_Ant1_2441_1000~26500



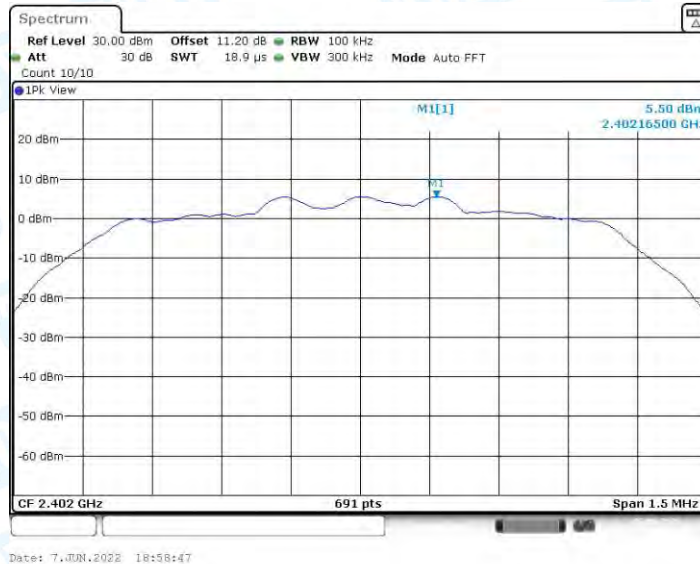
DH5_Ant1_2480_0~Reference



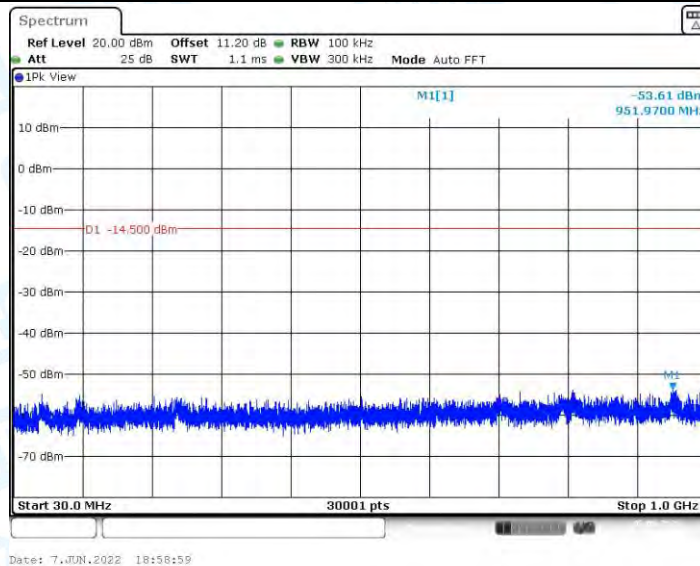
DH5_Ant1_2480_30~1000



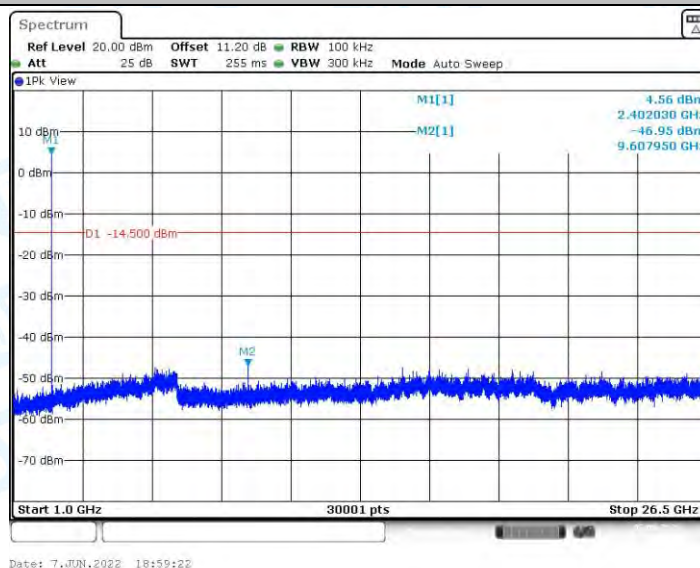
DH5_Ant1_2480_1000~26500



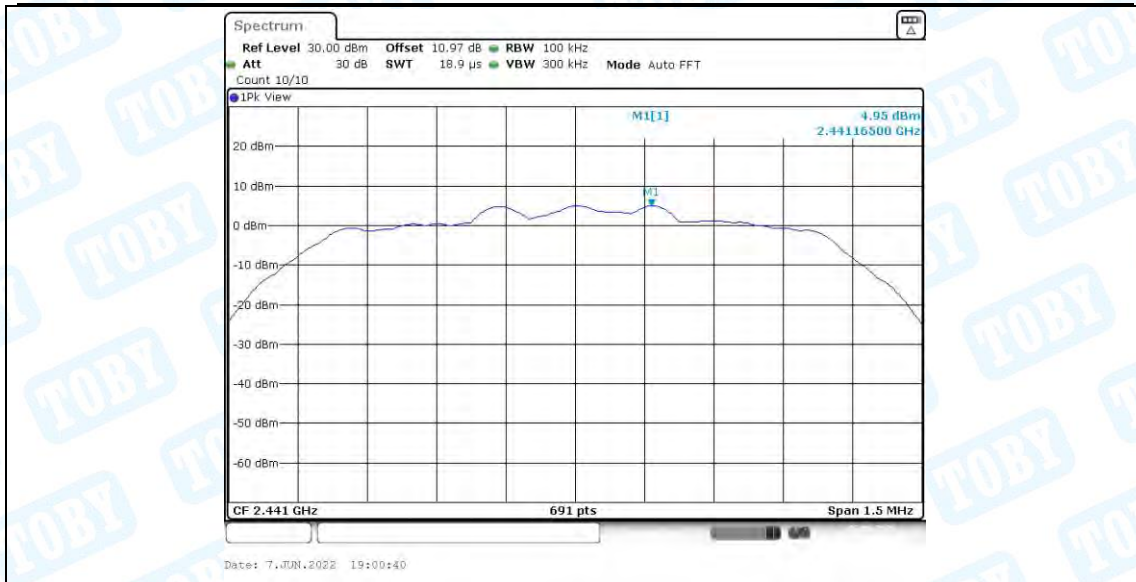
2DH5_Ant1_2402_0~Reference



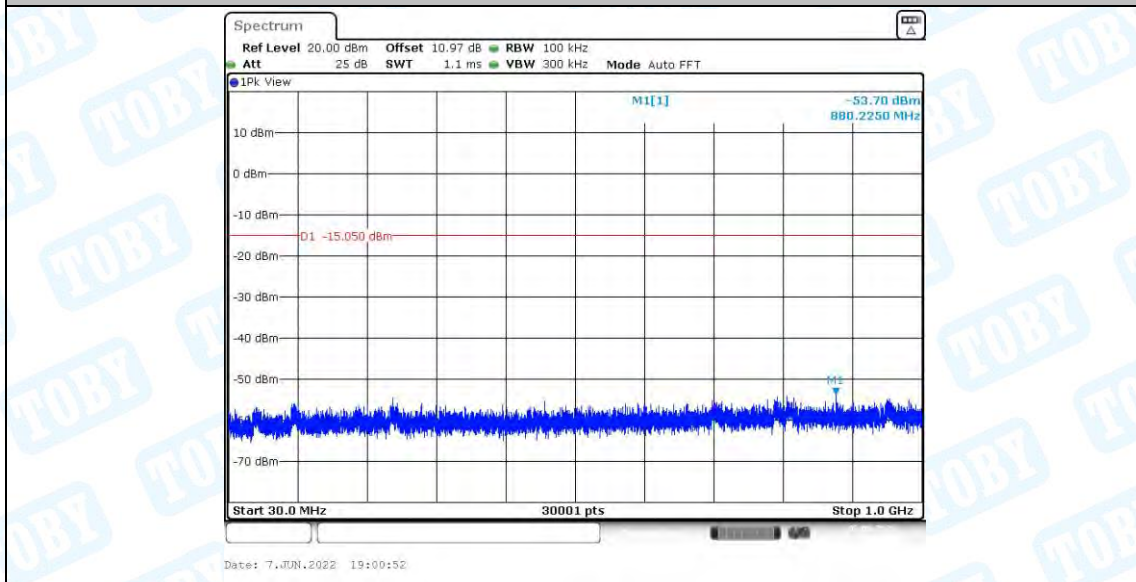
2DH5_Ant1_2402_30~1000



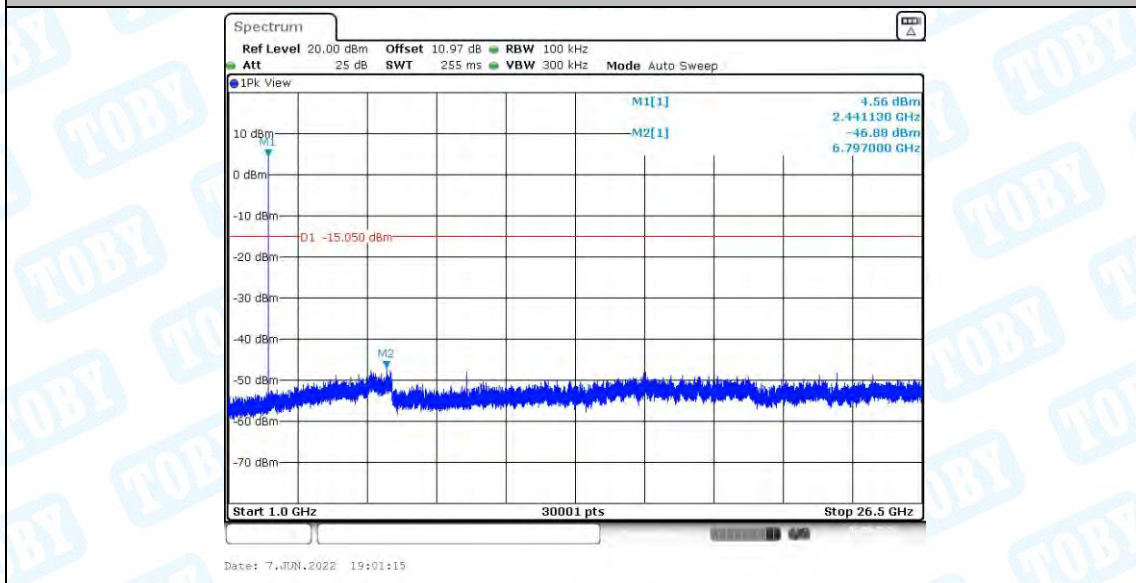
2DH5_Ant1_2402_1000~26500



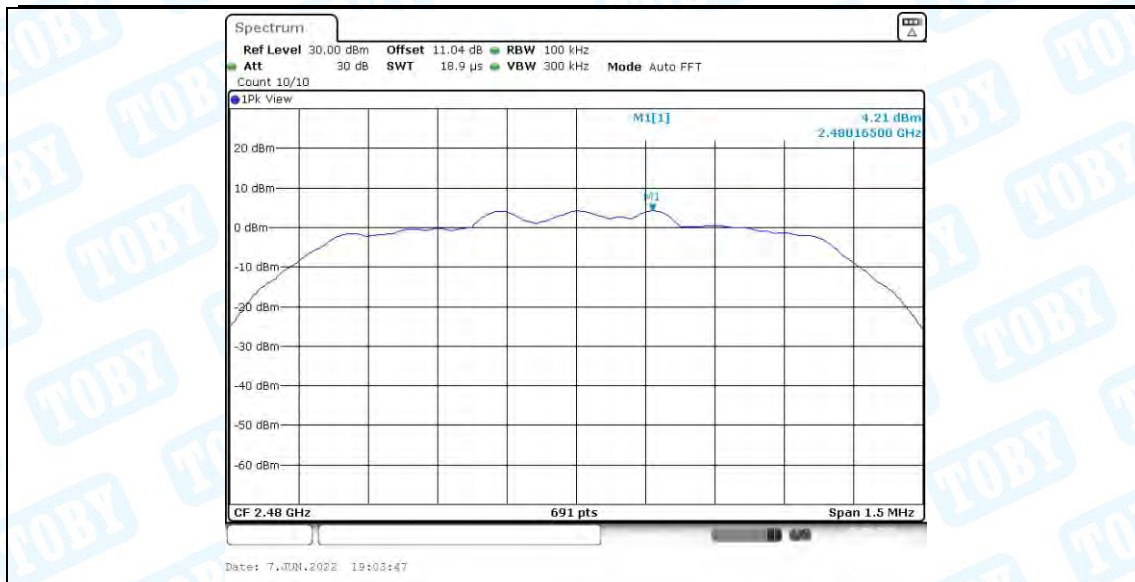
2DH5_Ant1_2441_0~Reference



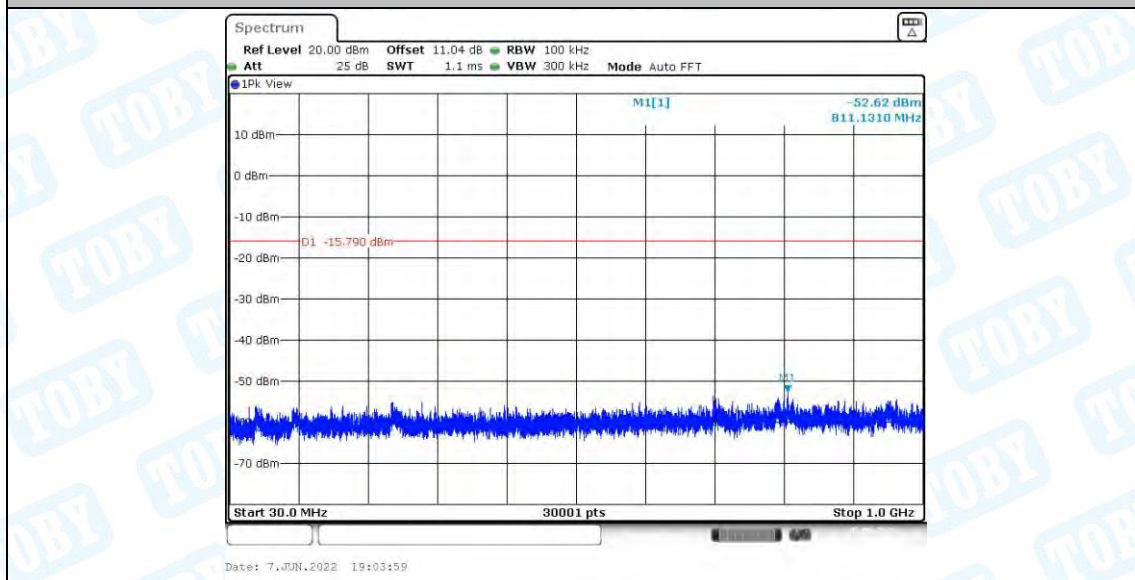
2DH5_Ant1_2441_30~1000



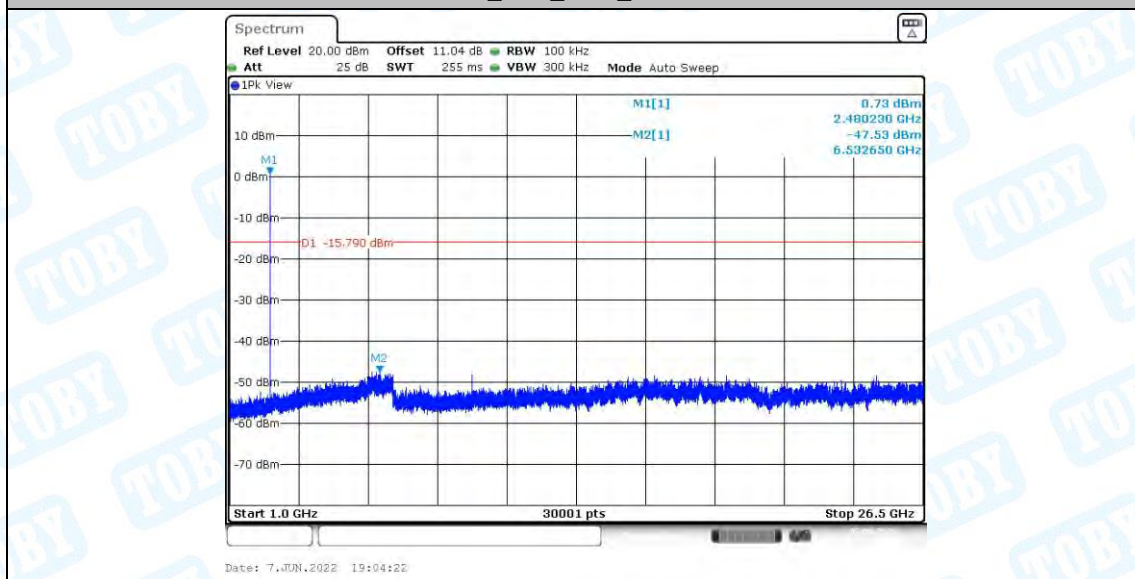
2DH5_Ant1_2441_1000~26500



2DH5_Ant1_2480_0~Reference



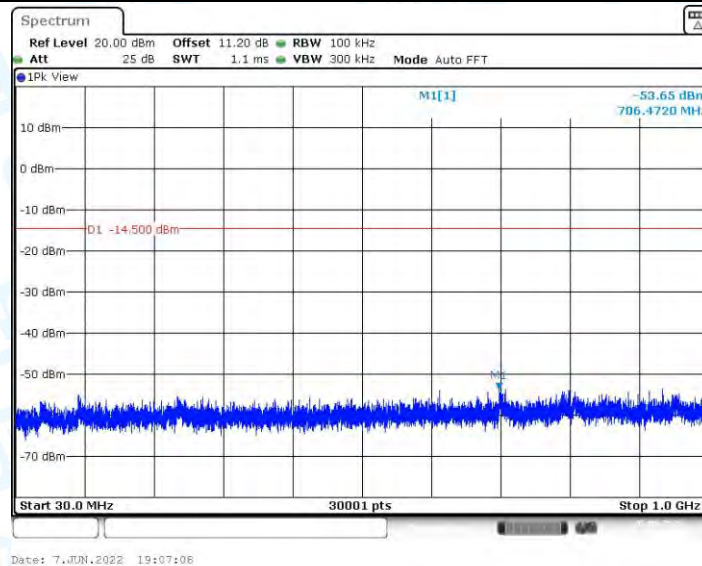
2DH5_Ant1_2480_30~1000



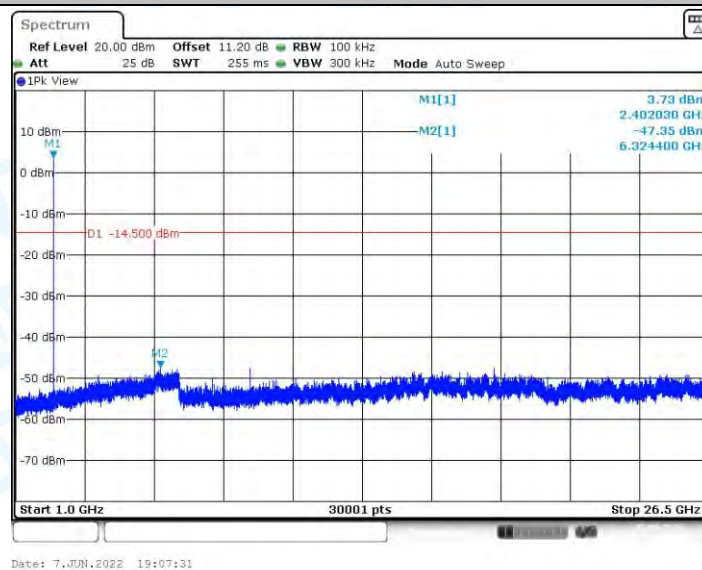
2DH5_Ant1_2480_1000~26500



3DH5_Ant1_2402_0~Reference



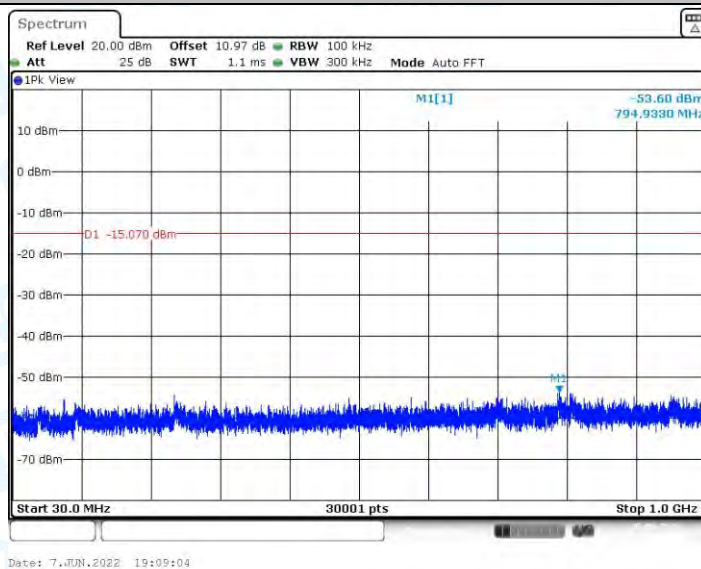
3DH5_Ant1_2402_30~1000



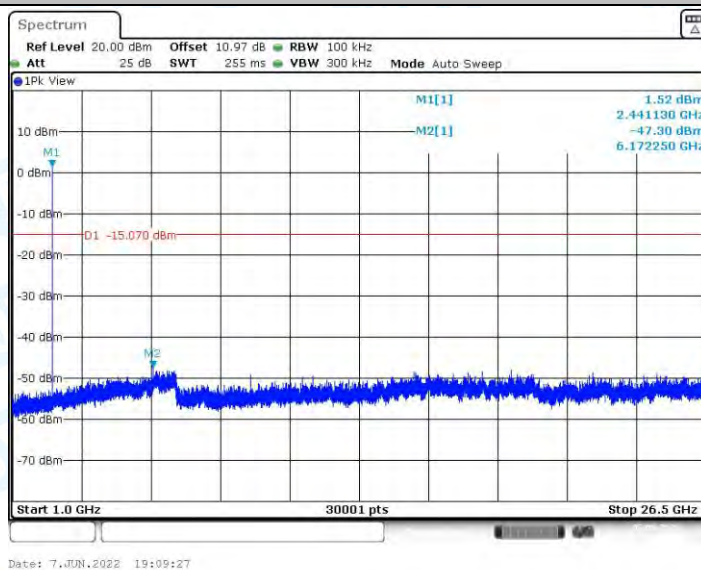
3DH5_Ant1_2402_1000~26500



3DH5_Ant1_2441_0~Reference



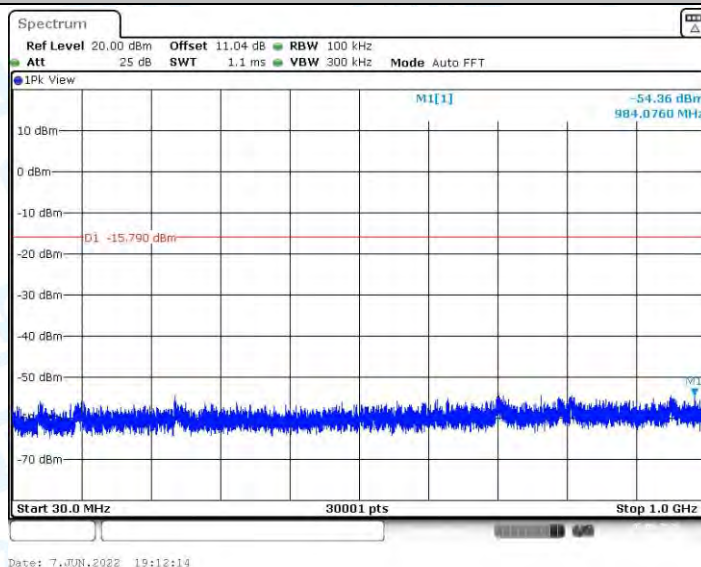
3DH5_Ant1_2441_30~1000



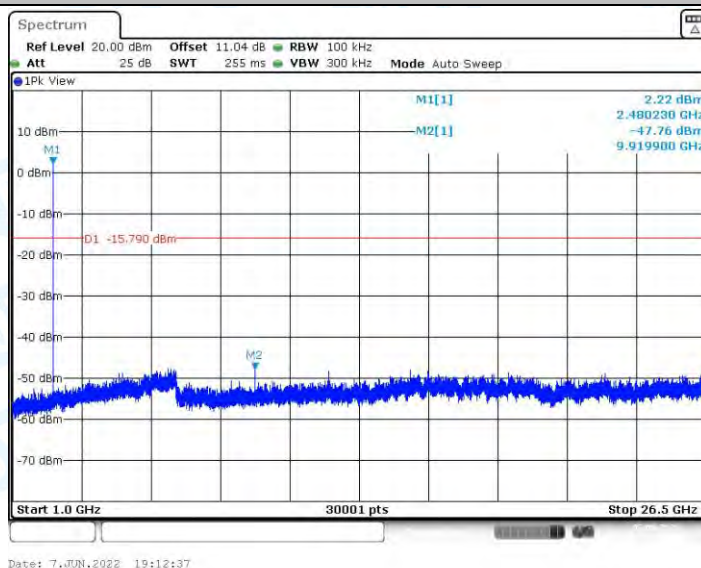
3DH5_Ant1_2441_1000~26500



3DH5_Ant1_2480_0~Reference



3DH5_Ant1_2480_30~1000



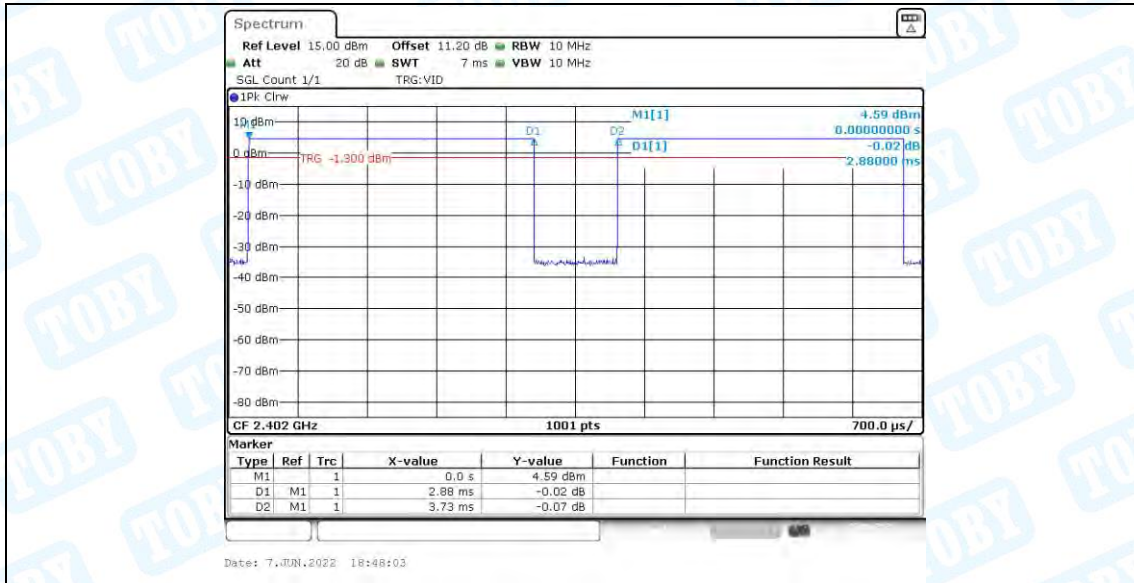
3DH5_Ant1_2480_1000~26500

9. Duty Cycle

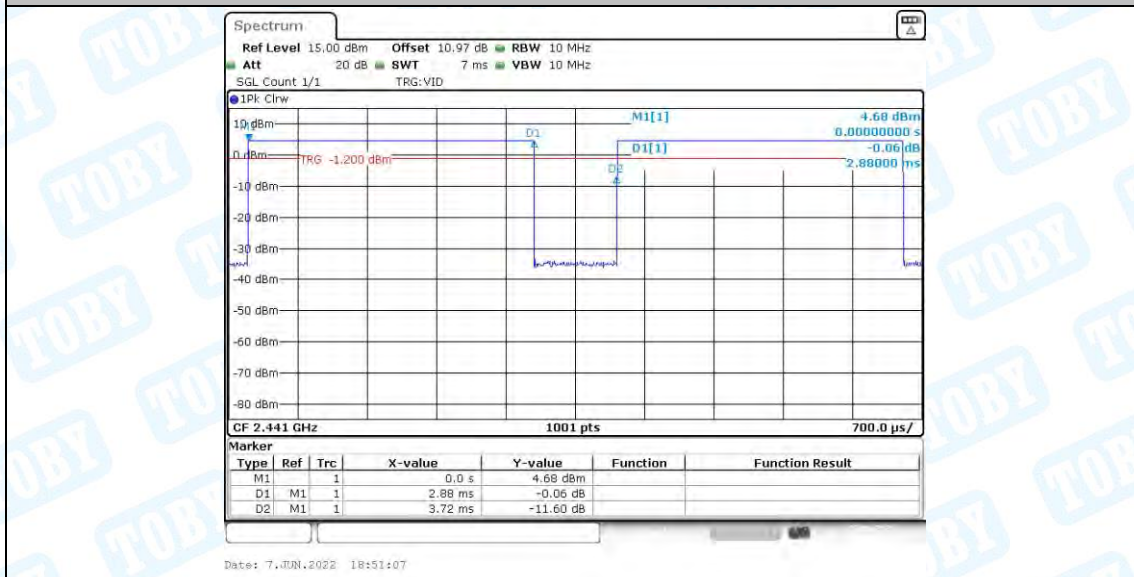
9.1. Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T [KHz]	Limit	Verdict
DH5	Ant1	2402	2.88	3.73	77.21	0.35	---	---
		2441	2.88	3.72	77.42	0.35	---	---
		2480	2.89	3.73	77.48	0.35	---	---
2DH5	Ant1	2402	2.89	3.74	77.27	0.35	---	---
		2441	2.88	3.73	77.21	0.35	---	---
		2480	2.89	3.73	77.48	0.35	---	---
3DH5	Ant1	2402	2.89	3.73	77.48	0.35	---	---
		2441	2.89	3.73	77.48	0.35	---	---
		2480	2.89	3.74	77.27	0.35	---	---
Note:1/T=1/ Transmission Duration								

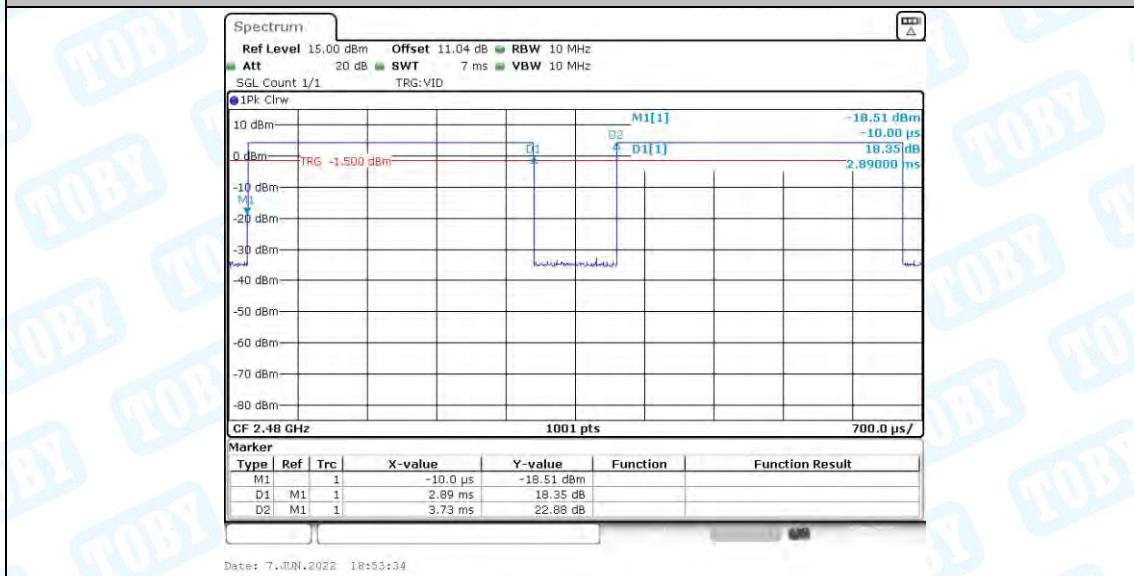
9.2.Test Graphs



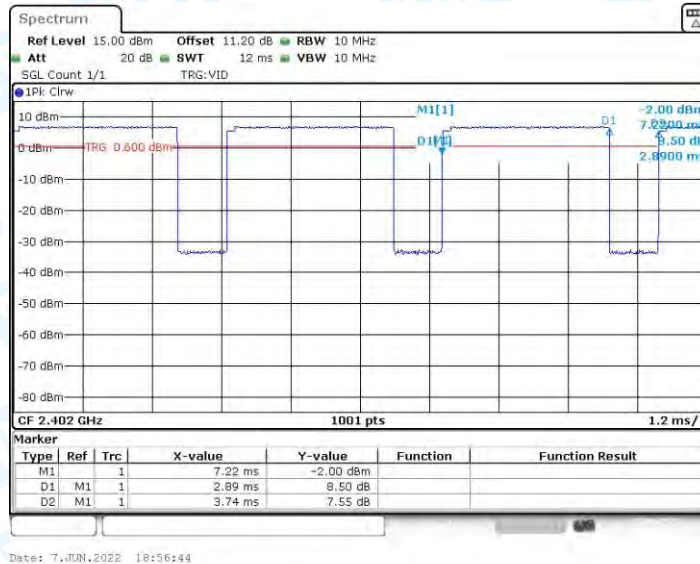
DH5_Ant1_2402



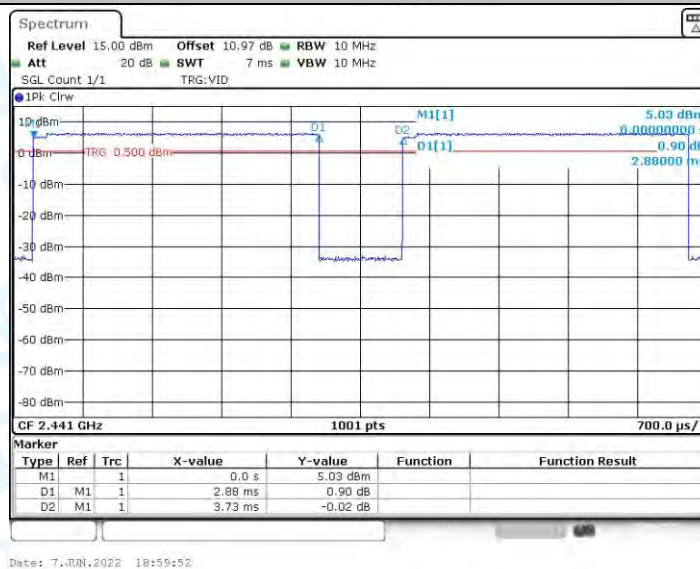
DH5_Ant1_2441



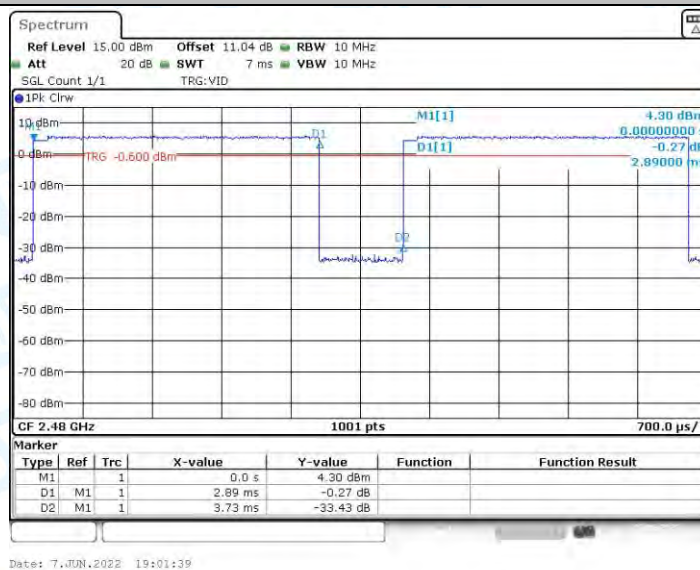
DH5_Ant1_2480



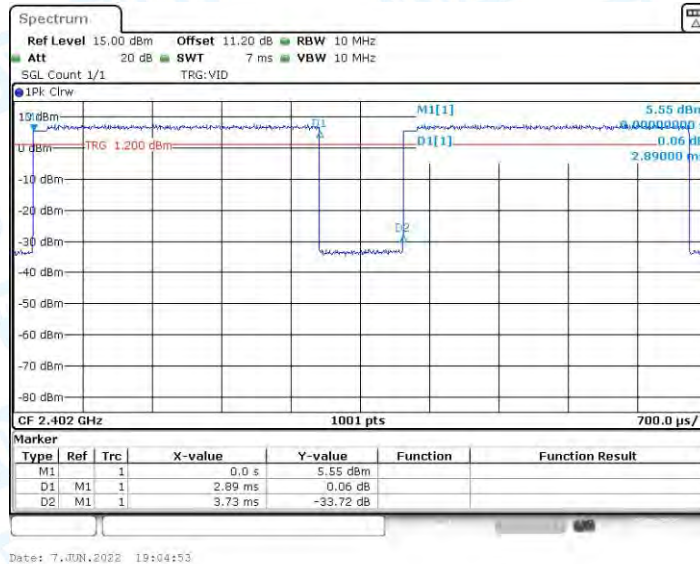
2DH5_Ant1_2402



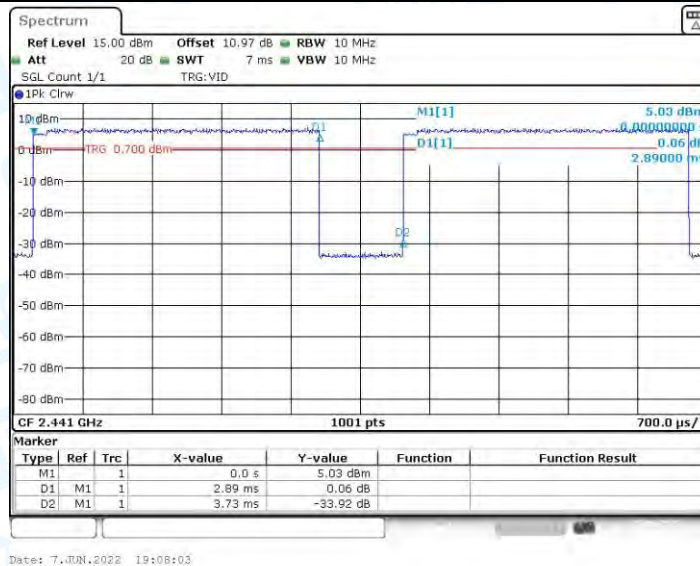
2DH5_Ant1_2441



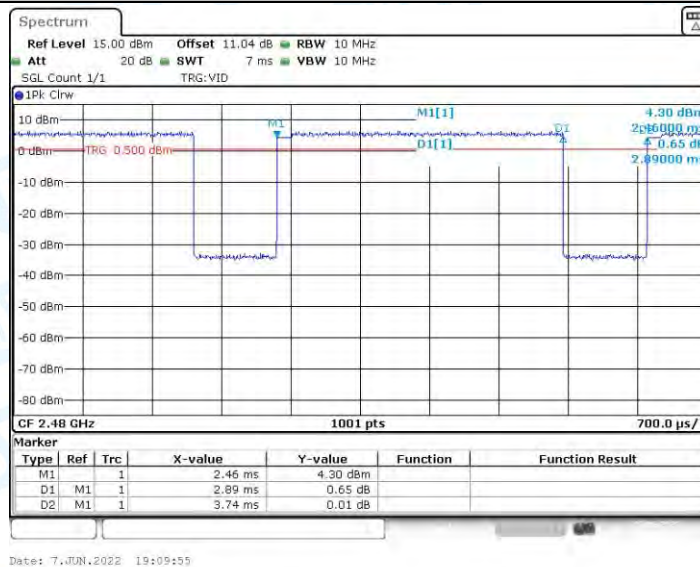
2DH5_Ant1_2480



3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480

10. Emissions in Restricted Bands

10.1. Test Result

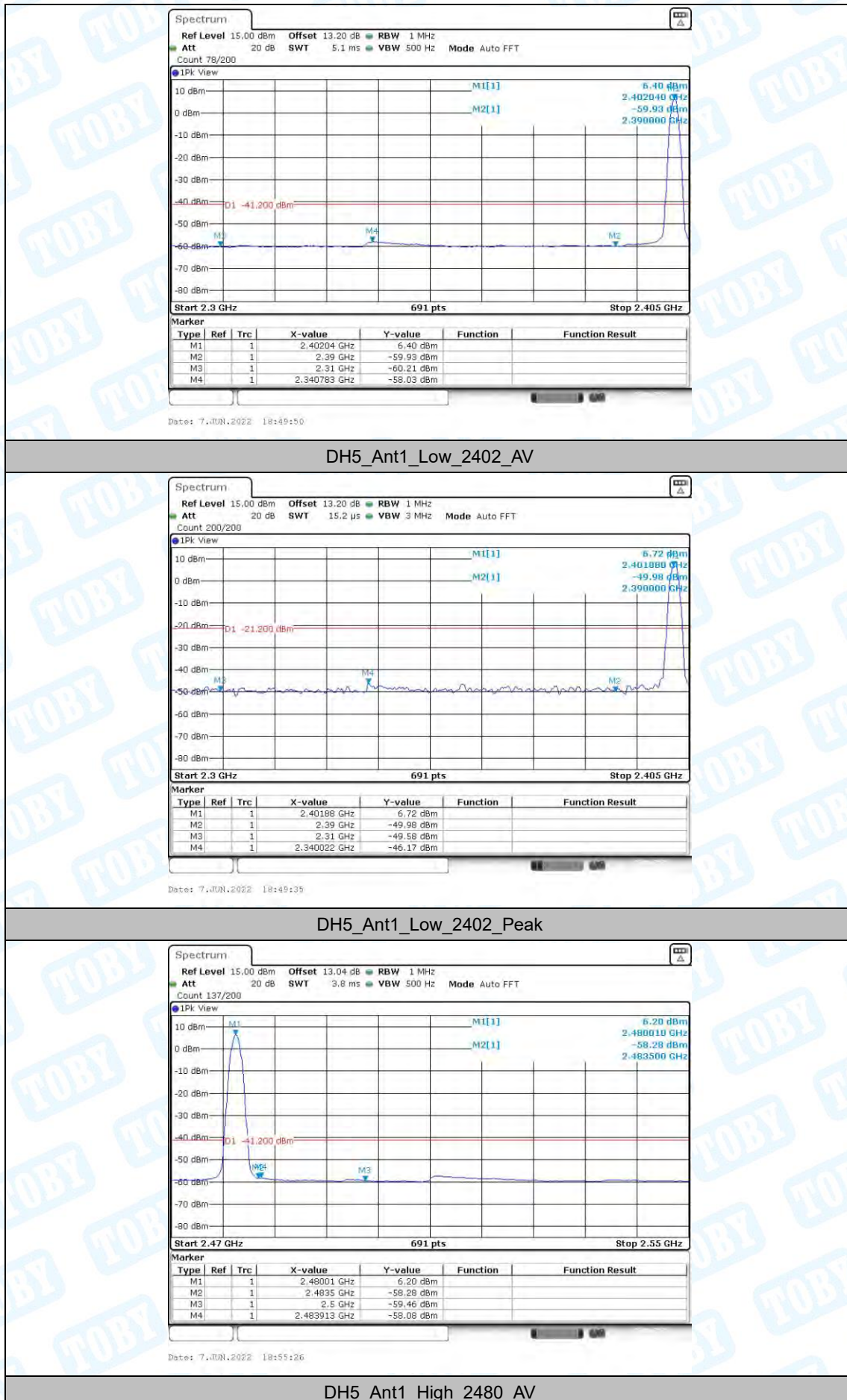
TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-60.21	≤-41.20	PASS
				AV	2340.783	-58.03	≤-41.20	PASS
				AV	2390.000	-59.93	≤-41.20	PASS
				Peak	2310.000	-49.58	≤-21.20	PASS
				Peak	2340.022	-46.17	≤-21.20	PASS
				Peak	2390.000	-49.98	≤-21.20	PASS
		High	2480	AV	2483.500	-58.28	≤-41.20	PASS
				AV	2483.913	-58.08	≤-41.20	PASS
				AV	2500.000	-59.46	≤-41.20	PASS
				Peak	2483.500	-48.94	≤-21.20	PASS
				Peak	2486.928	-47.12	≤-21.20	PASS
				Peak	2500.000	-48.81	≤-21.20	PASS
		Low	Hop_240 2	Peak	2310.000	-49.78	≤-21.20	PASS
				Peak	2386.891	-44.43	≤-21.20	PASS
				Peak	2390.000	-47.41	≤-21.20	PASS
		High	Hop_248 0	Peak	2483.500	-49.7	≤-21.20	PASS
				Peak	2497.942	-45.86	≤-21.20	PASS
				Peak	2500.000	-47.61	≤-21.20	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-60.05	≤-41.20	PASS
				AV	2340.783	-57.87	≤-41.20	PASS
				AV	2390.000	-60.02	≤-41.20	PASS
				Peak	2310.000	-50.41	≤-21.20	PASS
				Peak	2341.543	-46.12	≤-21.20	PASS
				Peak	2390.000	-49.42	≤-21.20	PASS
		High	2480	AV	2483.500	-58.32	≤-41.20	PASS
				AV	2483.913	-58.33	≤-41.20	PASS
				AV	2500.000	-59.36	≤-41.20	PASS
				Peak	2483.500	-49.28	≤-21.20	PASS
				Peak	2499.913	-46.5	≤-21.20	PASS
				Peak	2500.000	-46.47	≤-21.20	PASS
		Low	Hop_240 2	Peak	2310.000	-50.08	≤-21.20	PASS
				Peak	2340.630	-46.64	≤-21.20	PASS
				Peak	2390.000	-50.52	≤-21.20	PASS
		High	Hop_248 0	Peak	2483.500	-50.56	≤-21.20	PASS
				Peak	2488.435	-47.34	≤-21.20	PASS
				Peak	2500.000	-48.44	≤-21.20	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-60.23	≤-41.20	PASS
				AV	2340.022	-57.91	≤-41.20	PASS
				AV	2390.000	-59.92	≤-41.20	PASS
				Peak	2310.000	-48.74	≤-21.20	PASS
				Peak	2340.478	-45.51	≤-21.20	PASS

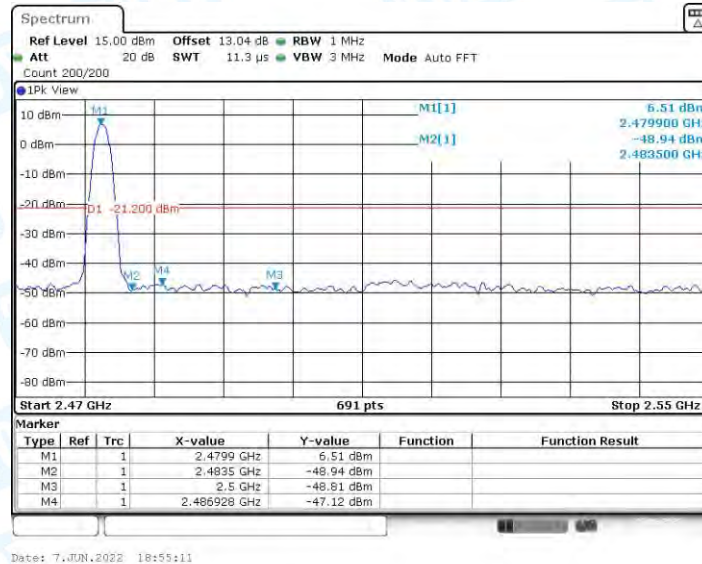
		High	2480	Peak	2390.000	-49.93	≤ -21.20	PASS
				AV	2483.500	-58.2	≤ -41.20	PASS
				AV	2483.565	-58.28	≤ -41.20	PASS
				AV	2500.000	-59.51	≤ -41.20	PASS
				Peak	2483.500	-49.21	≤ -21.20	PASS
				Peak	2485.652	-45.33	≤ -21.20	PASS
				Peak	2500.000	-47.41	≤ -21.20	PASS
		Low	Hop_240 2	Peak	2310.000	-49.5	≤ -21.20	PASS
				Peak	2320.543	-46.63	≤ -21.20	PASS
				Peak	2390.000	-49.44	≤ -21.20	PASS
		High	Hop_248 0	Peak	2483.500	-50.18	≤ -21.20	PASS
				Peak	2493.884	-45.99	≤ -21.20	PASS
				Peak	2500.000	-48.25	≤ -21.20	PASS

Note:

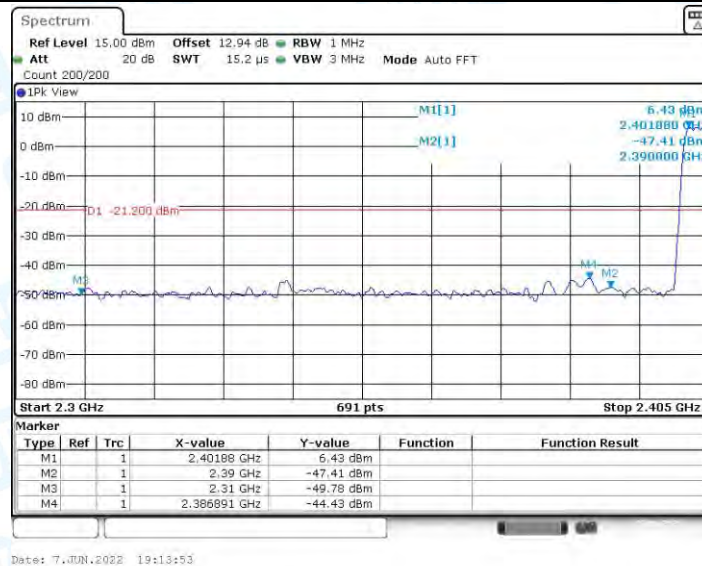
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

10.2. Test Graphs

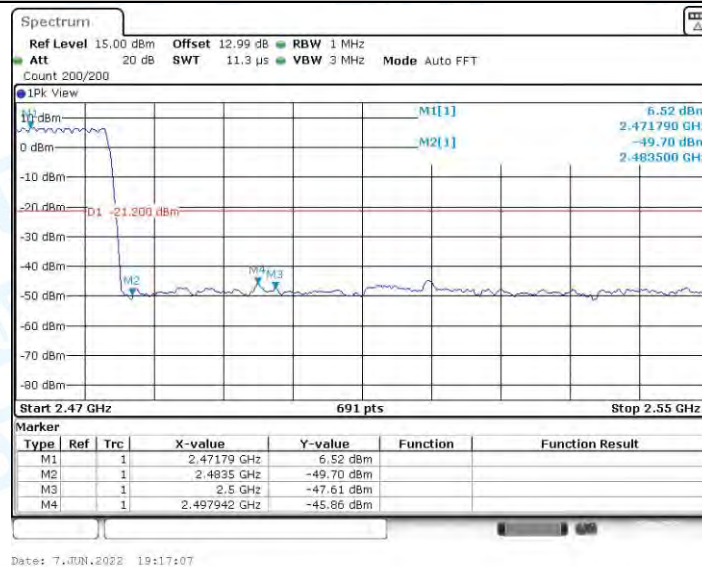




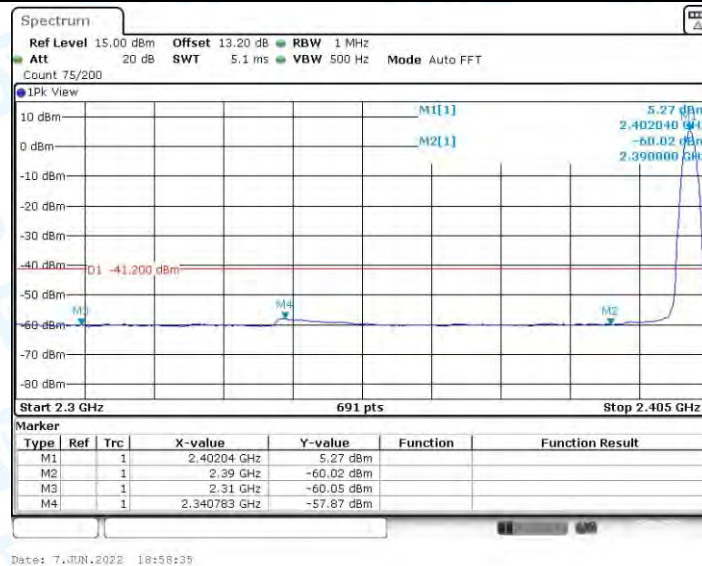
DH5_Ant1_High_2480_Peak



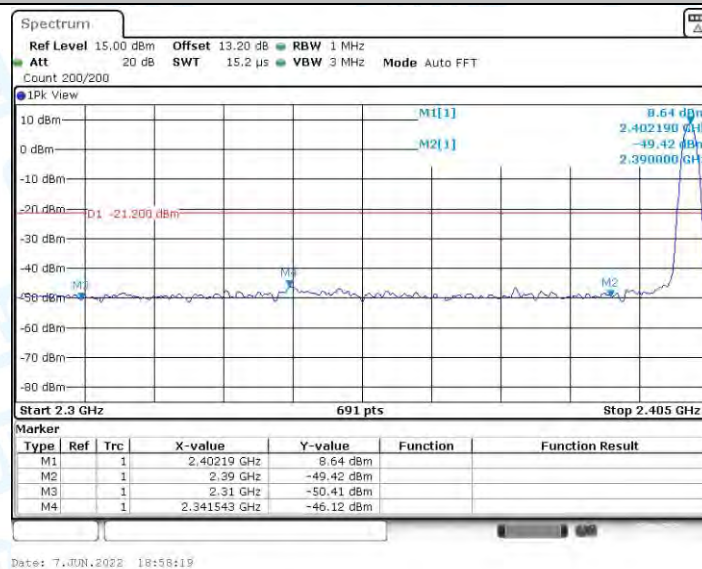
DH5_Ant1_Low_Hop_2402_Peak



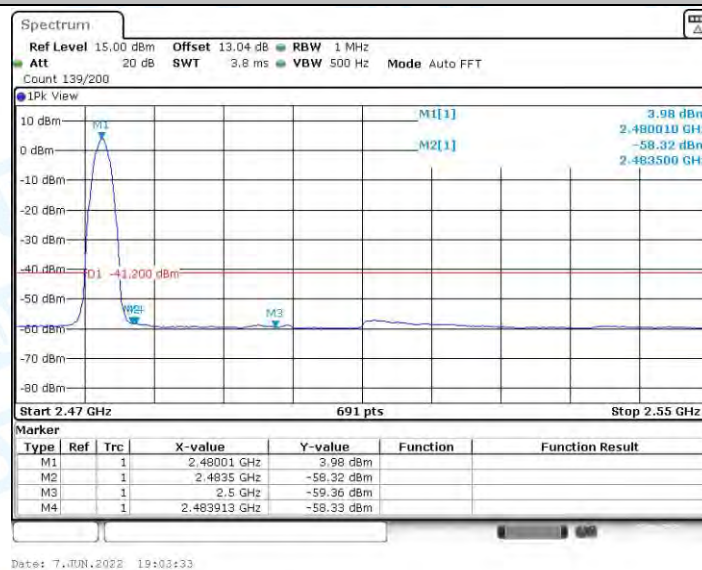
DH5_Ant1_High_Hop_2480_Peak



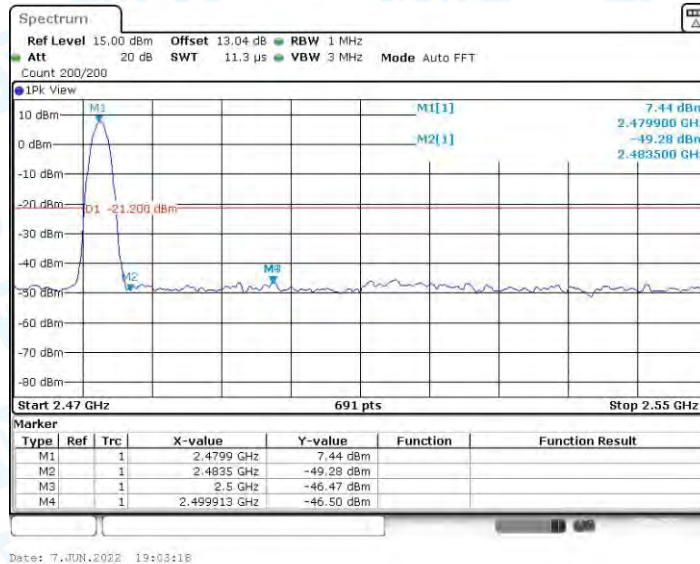
2DH5_Ant1_Low_2402_AV



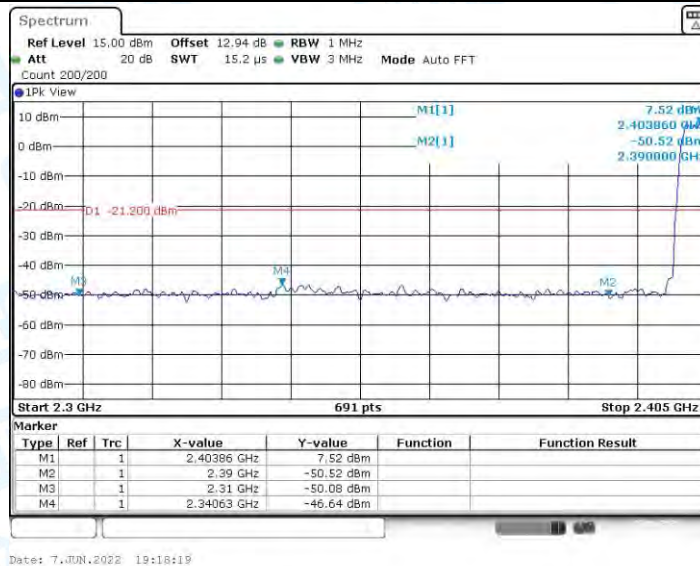
2DH5_Ant1_Low_2402_Peak



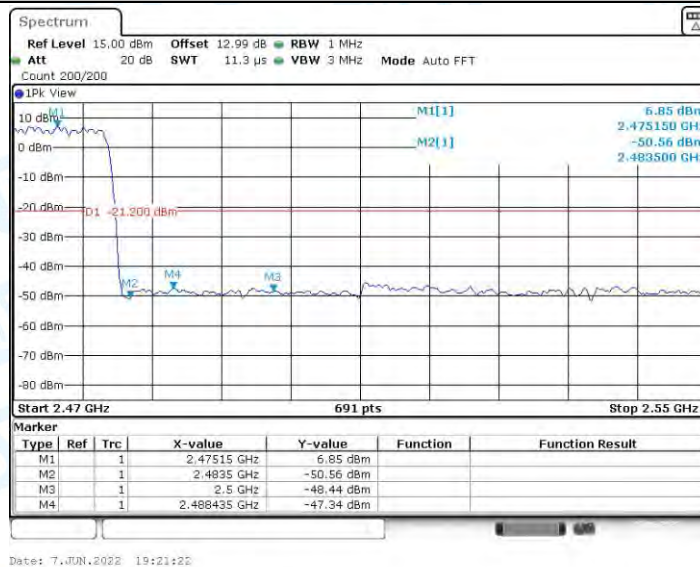
2DH5_Ant1_High_2480_AV



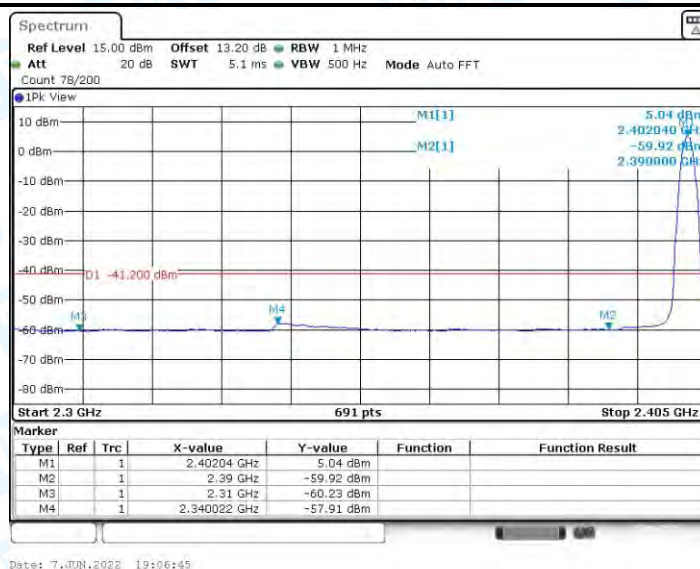
2DH5_Ant1_High_2480_Peak



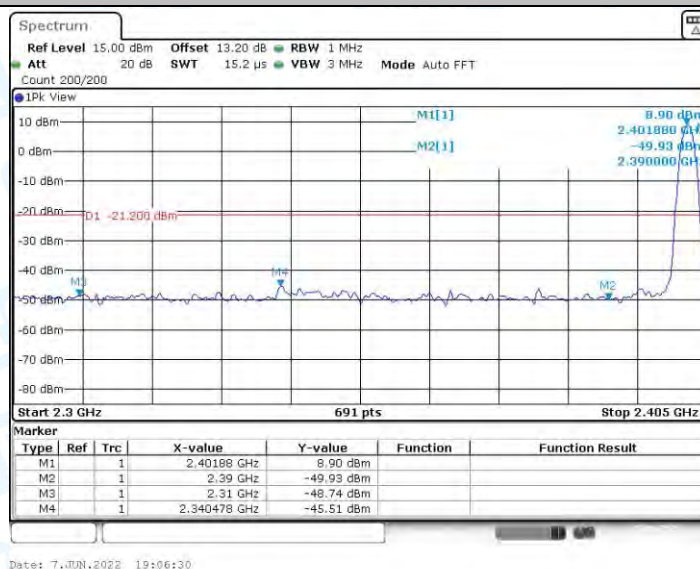
2DH5_Ant1_Low_Hop_2402_Peak



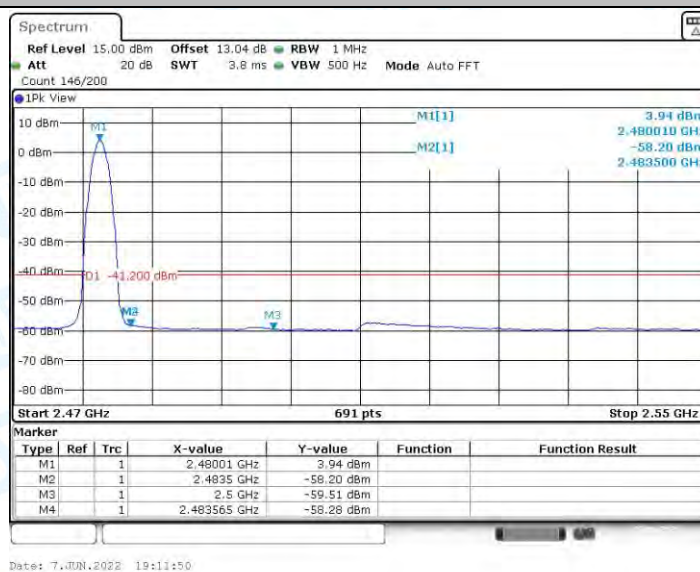
2DH5_Ant1_High_Hop_2480_Peak



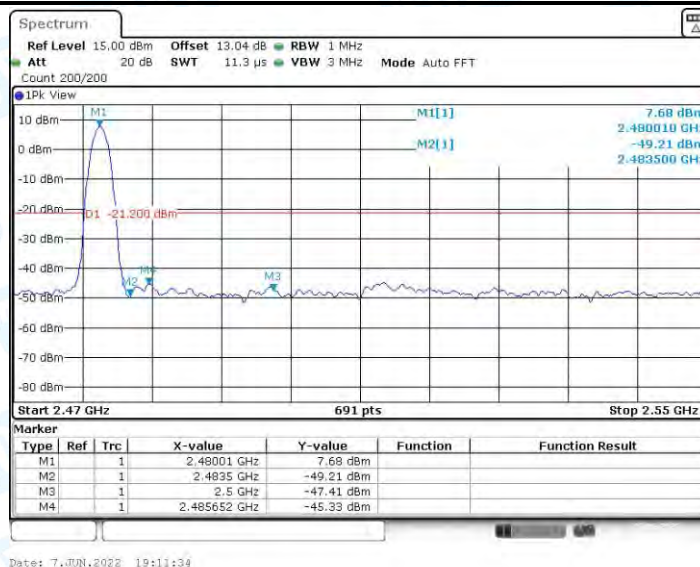
3DH5_Ant1_Low_2402_AV



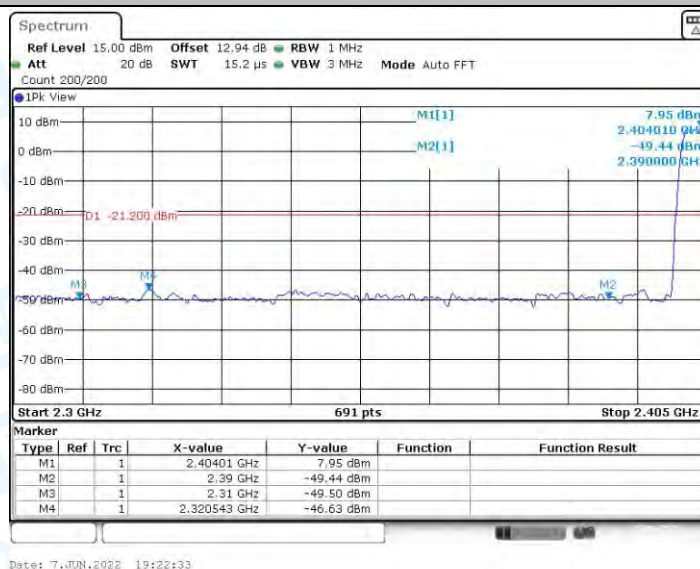
3DH5_Ant1_Low_2402_Peak



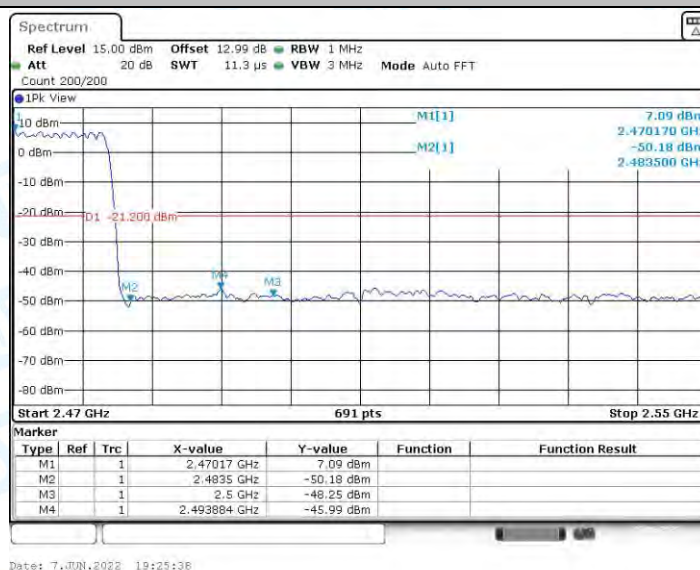
3DH5_Ant1_High_2480_AV



3DH5_Ant1_High_2480_Peak



3DH5_Ant1_Low_Hop_2402_Peak



3DH5_Ant1_High_Hop_2480_Peak

-----End of the report-----