

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

General Description of EUT	
EUT Name:	WiFi & BT combo module
Model:	EWN-8822CSS3DA
Sample ID:	HC-C-202408-0012-1-01
Test Standard:	FCC Part 15.247
Environmental Conditions	
Ambient Temperature:	23.9℃
Ambient Humidity:	48%RH
Test Power Supply:	DC 3.3V
Test Engineer:	Jolin Lee
Note: For a more detailed features description, please refer to the report TBR-C-202408-0012-11.	

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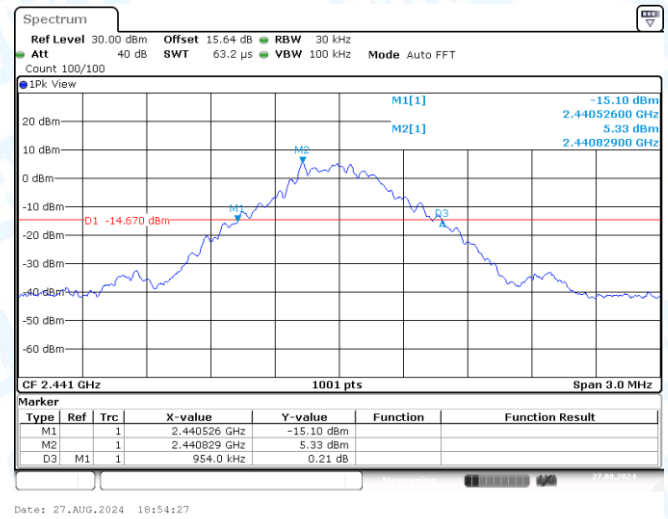
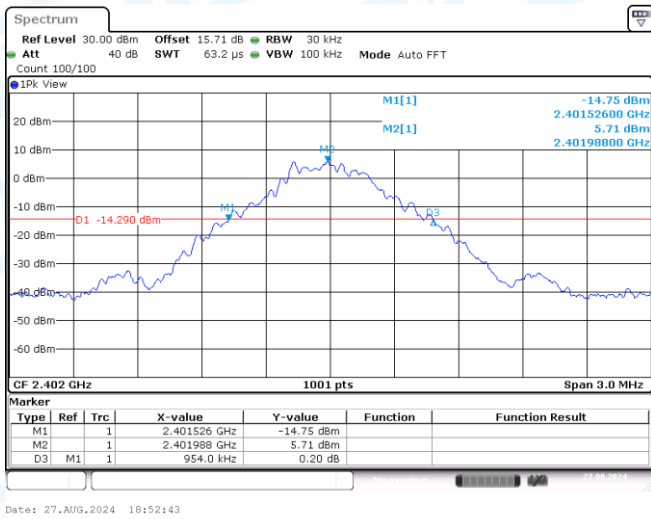
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1: 20dB Emission Bandwidth

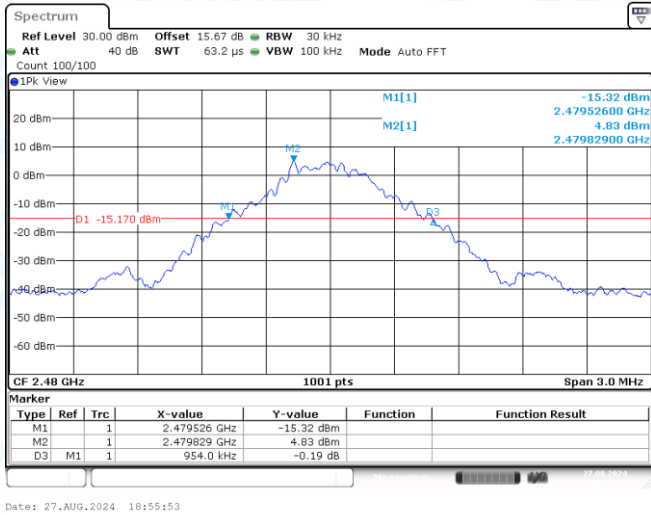
1.1 Test Result

Test Mode	Antenna	Frequency[MHz]	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.95	2401.53	2402.48	---	---
DH5	Ant1	2441	0.95	2440.53	2441.48	---	---
DH5	Ant1	2480	0.95	2479.53	2480.48	---	---
2DH5	Ant1	2402	1.28	2401.36	2402.65	---	---
2DH5	Ant1	2441	1.28	2440.36	2441.65	---	---
2DH5	Ant1	2480	1.28	2479.36	2480.65	---	---
3DH5	Ant1	2402	1.29	2401.35	2402.64	---	---
3DH5	Ant1	2441	1.28	2440.35	2441.63	---	---
3DH5	Ant1	2480	1.29	2479.35	2480.64	---	---

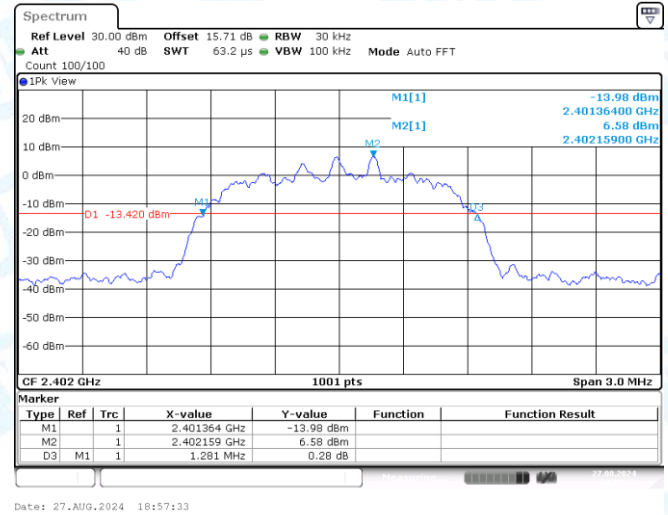
1.2 Test Graphs



DH5-Ant1-2402

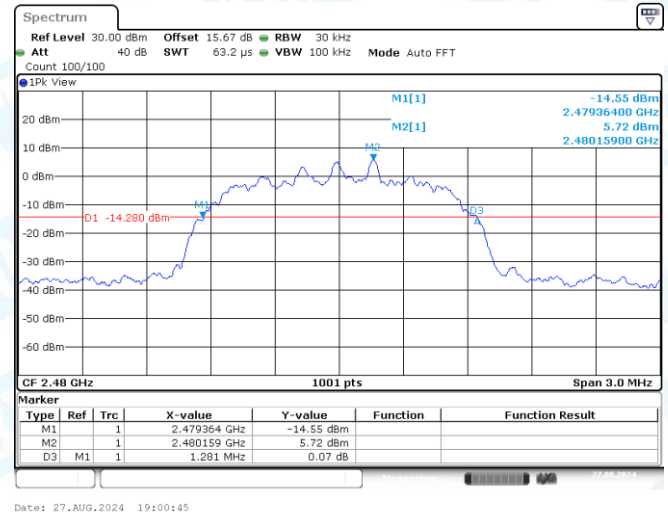
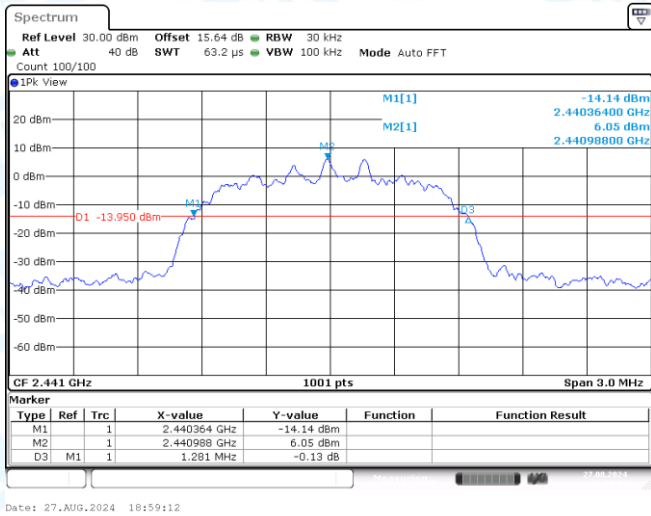


DH5-Ant1-2441



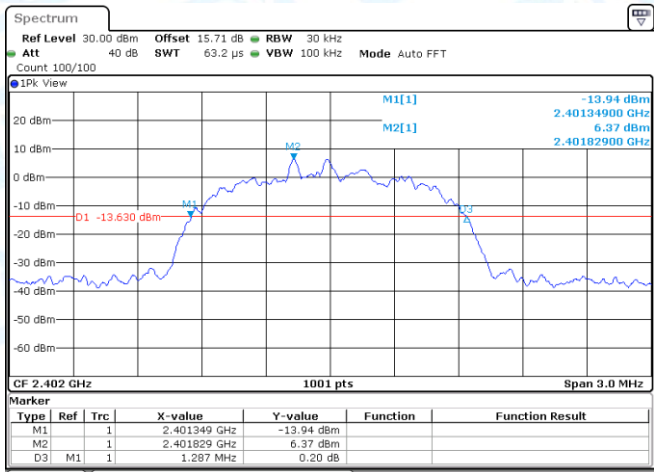
DH5-Ant1-2480

2DH5-Ant1-2402



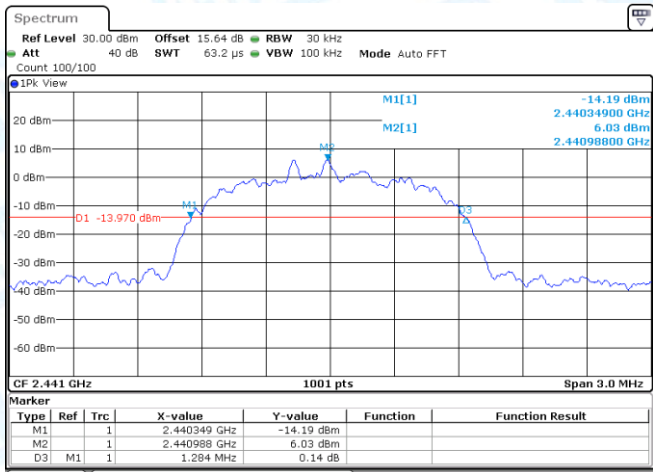
2DH5-Ant1-2441

2DH5-Ant1-2480



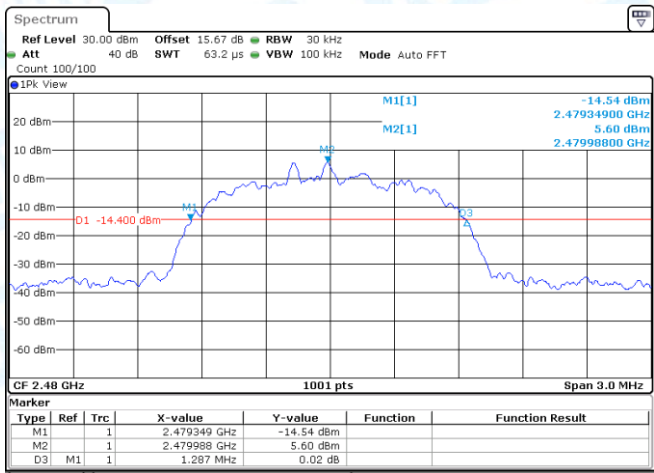
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3DH5-Ant1-2402



Date: 27.AUG.2024 19:04:15

3DH5-Ant1-2441



Date: 27.AUG.2024 19:05:41

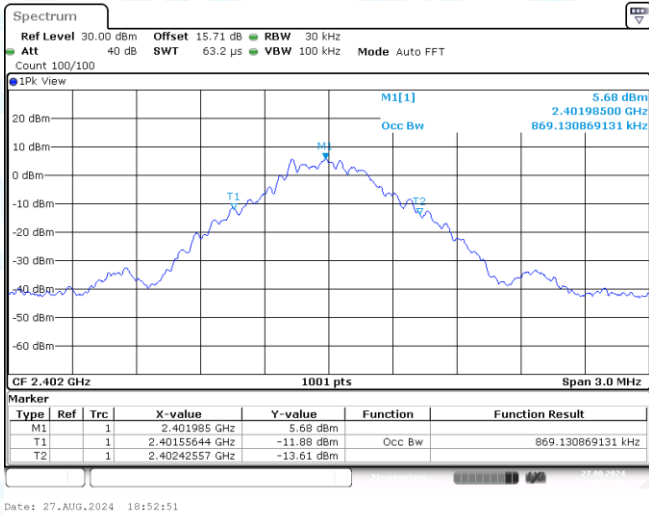
3DH5-Ant1-2480

2: Occupied Channel Bandwidth

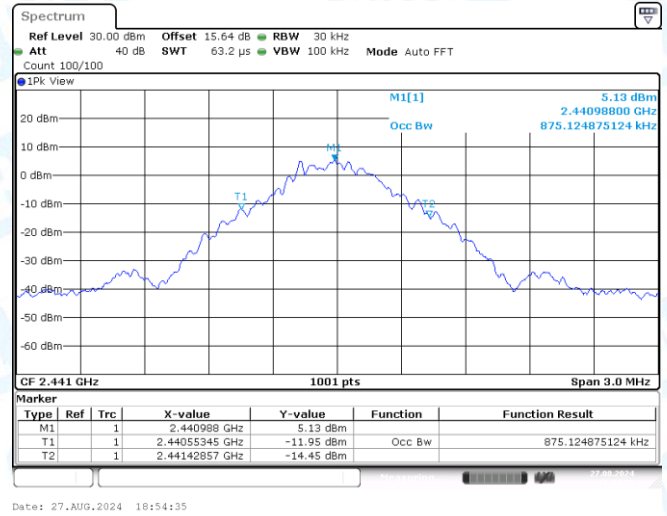
2.1 Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.869	2401.5564	2402.4256	---	---
DH5	Ant1	2441	0.875	2440.5534	2441.4286	---	---
DH5	Ant1	2480	0.872	2479.5534	2480.4256	---	---
2DH5	Ant1	2402	1.169	2401.4066	2402.5754	---	---
2DH5	Ant1	2441	1.163	2440.4096	2441.5724	---	---
2DH5	Ant1	2480	1.166	2479.4066	2480.5724	---	---
3DH5	Ant1	2402	1.166	2401.4126	2402.5784	---	---
3DH5	Ant1	2441	1.172	2440.4096	2441.5814	---	---
3DH5	Ant1	2480	1.169	2479.4096	2480.5784	---	---

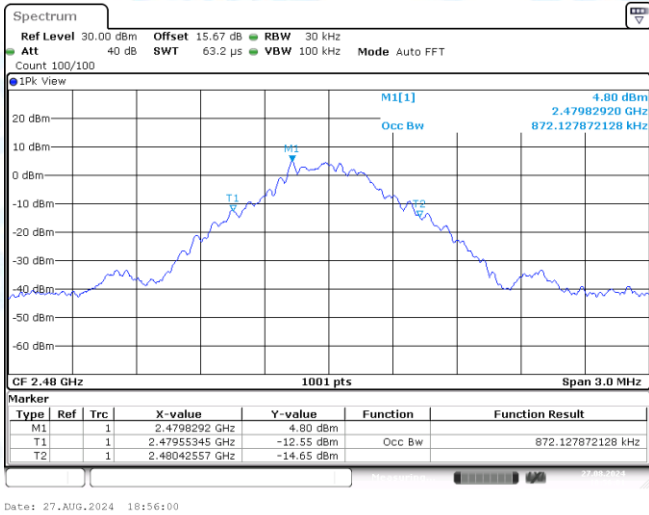
2.2 Test Graphs



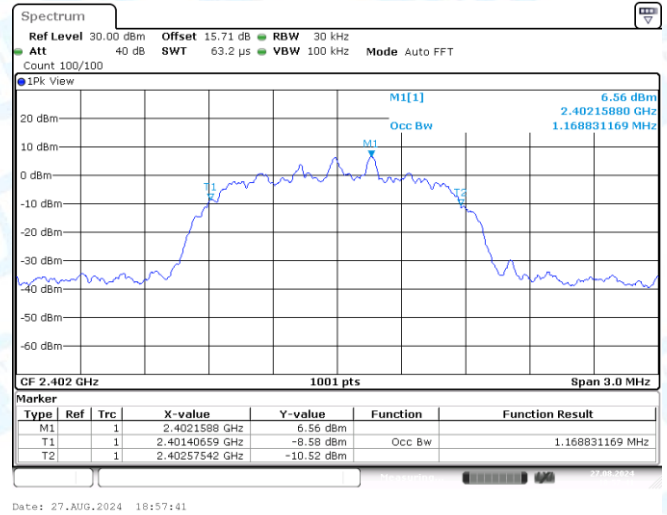
DH5-Ant1-2402



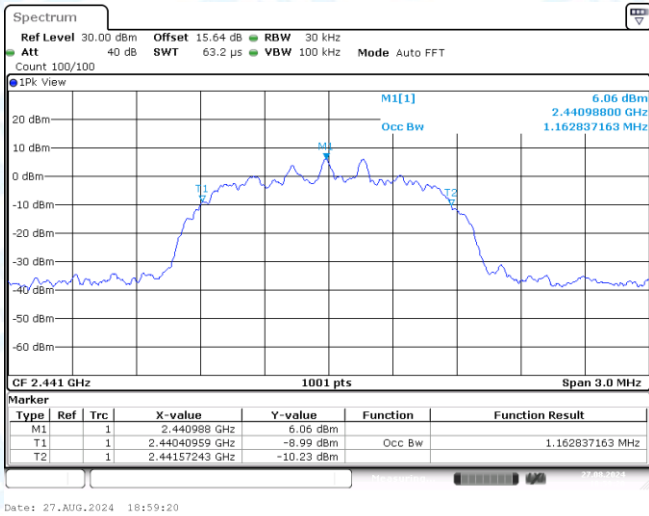
DH5-Ant1-2441



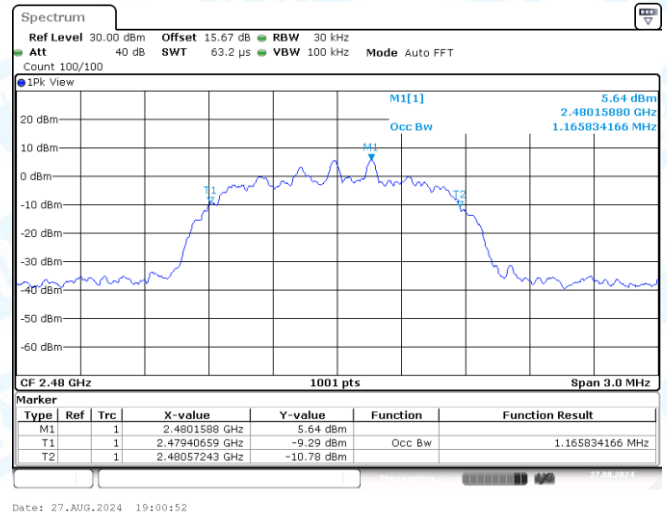
DH5-Ant1-2480



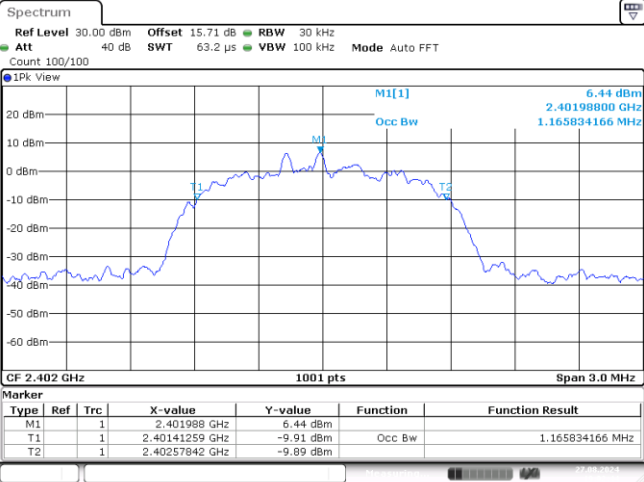
2DH5-Ant1-2402



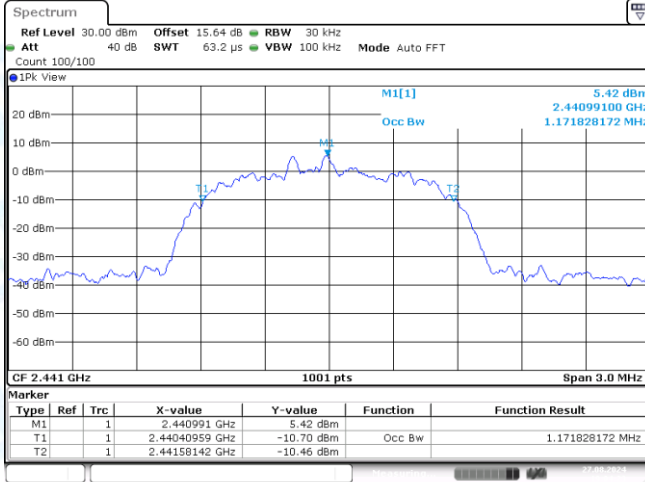
2DH5-Ant1-2441



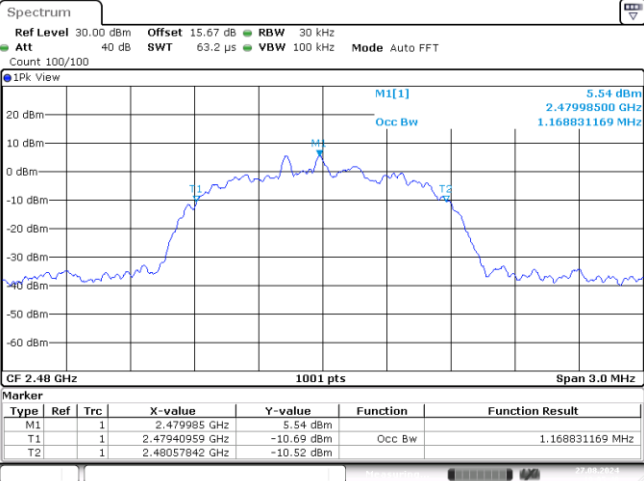
2DH5-Ant1-2480



3DH5-Ant1-2402



3DH5-Ant1-2441



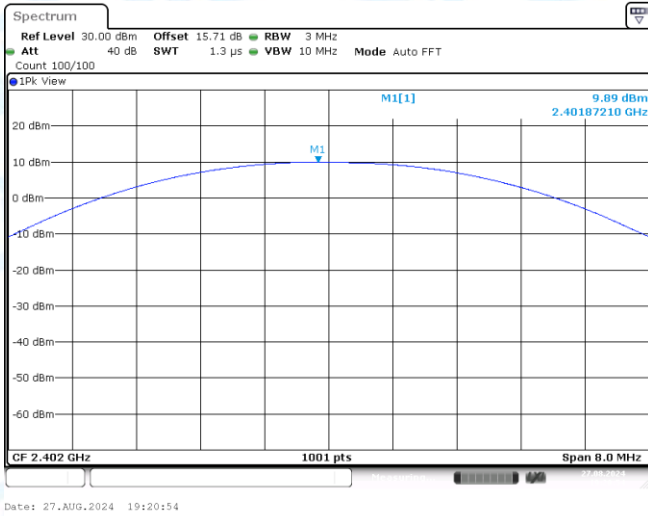
3DH5-Ant1-2480

3: Maximum conducted output power

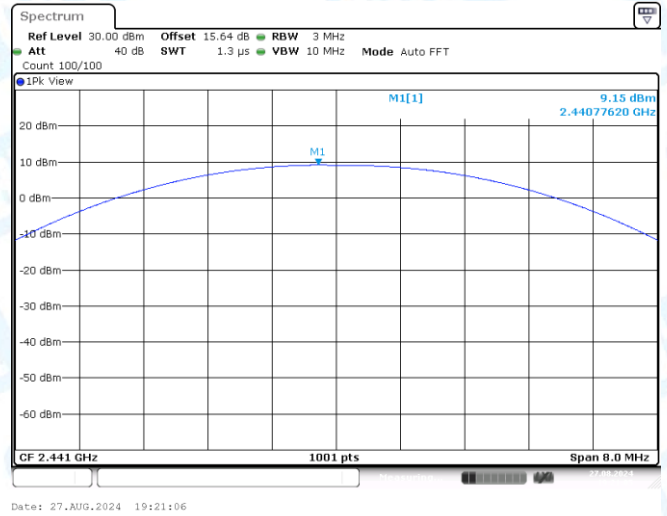
3.1 Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	9.89	≤21	PASS
DH5	Ant1	2441	9.15	≤21	PASS
DH5	Ant1	2480	9.00	≤21	PASS
2DH5	Ant1	2402	11.56	≤21	PASS
2DH5	Ant1	2441	11.19	≤21	PASS
2DH5	Ant1	2480	10.56	≤21	PASS
3DH5	Ant1	2402	11.70	≤21	PASS
3DH5	Ant1	2441	11.53	≤21	PASS
3DH5	Ant1	2480	10.81	≤21	PASS

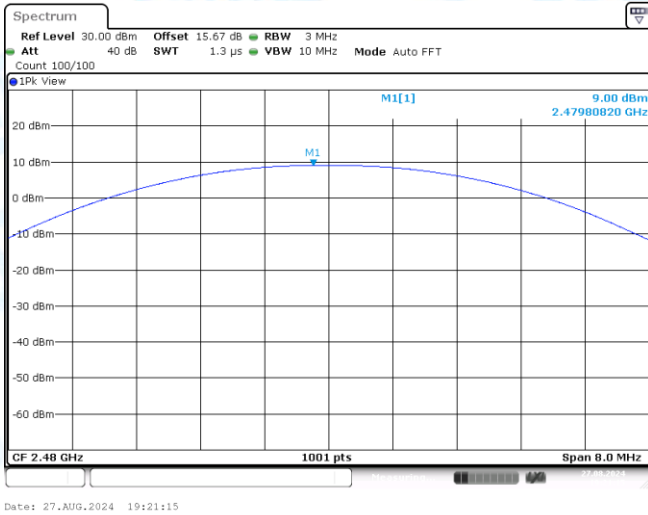
3.2 Test Graphs



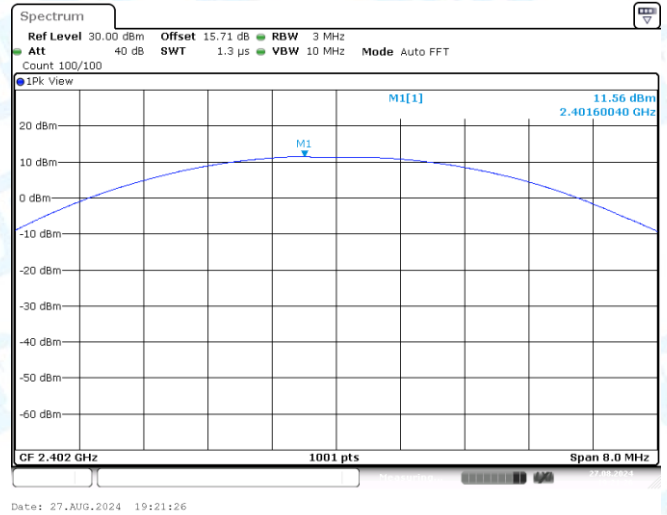
DH5-Ant1-2402-PASS



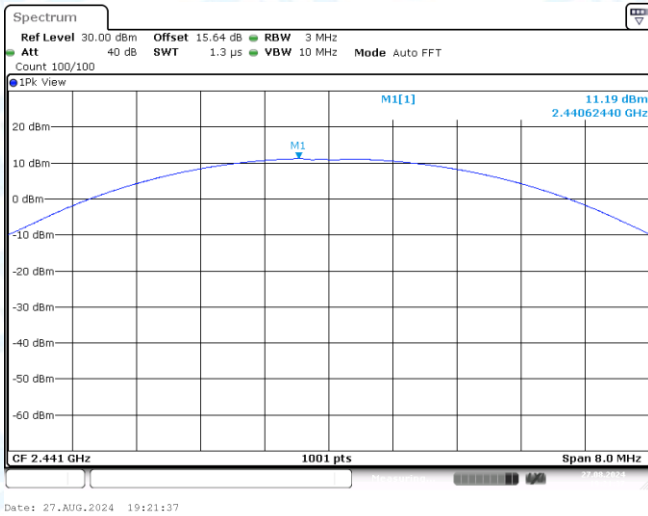
DH5-Ant1-2441-PASS



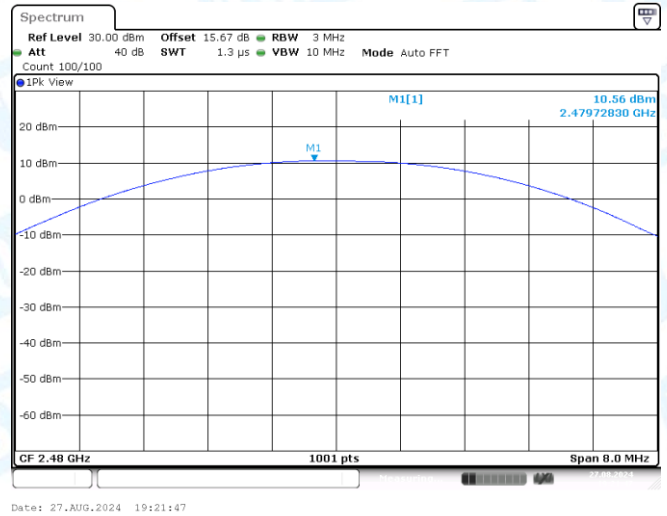
DH5-Ant1-2480-PASS



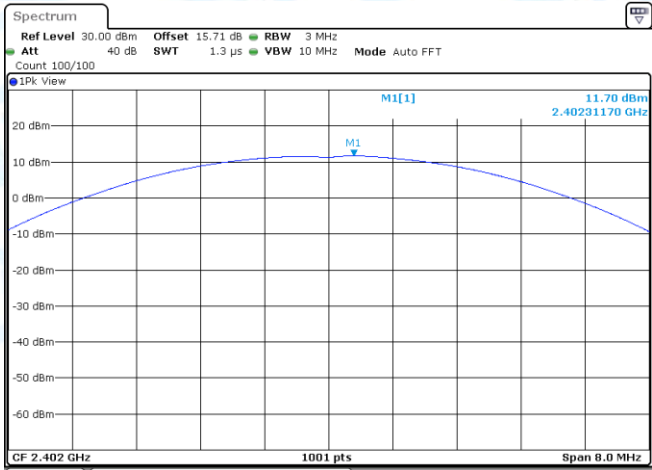
2DH5-Ant1-2402-PASS



2DH5-Ant1-2441-PASS

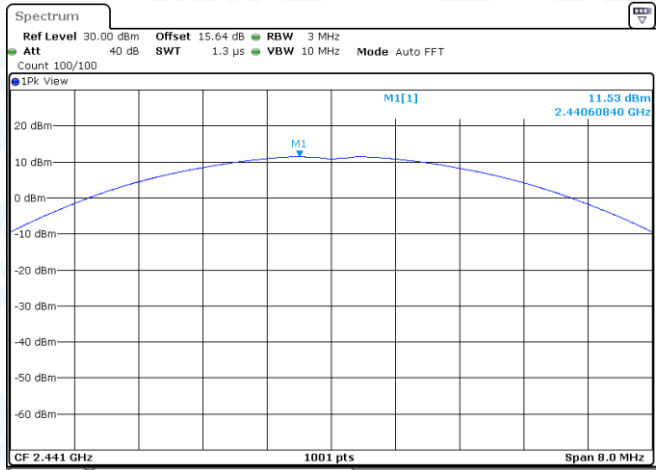


2DH5-Ant1-2480-PASS



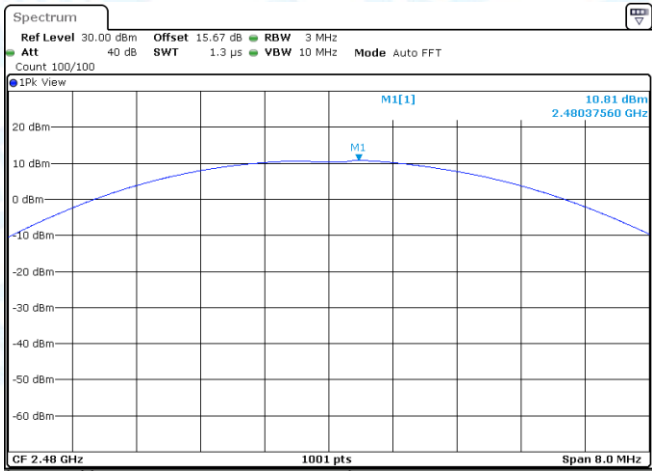
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3DH5-Ant1-2402-PASS



Date: 27.AUG.2024 19:22:08

3DH5-Ant1-2441-PASS



Date: 27.AUG.2024 19:22:18

3DH5-Ant1-2480-PASS

4: Carrier frequency separation

4.1 Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.171	≥ 0.950	PASS
2DH5	Ant1	Hop	0.977	≥ 0.853	PASS
3DH5	Ant1	Hop	1.304	≥ 1.290	PASS

4.2 Test Graphs

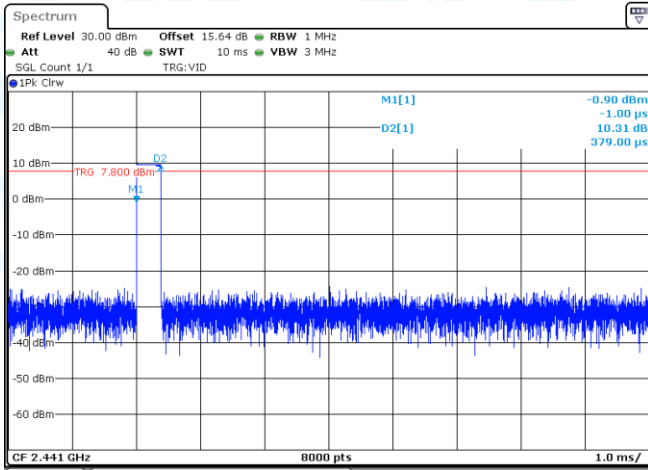


5: Time of occupancy

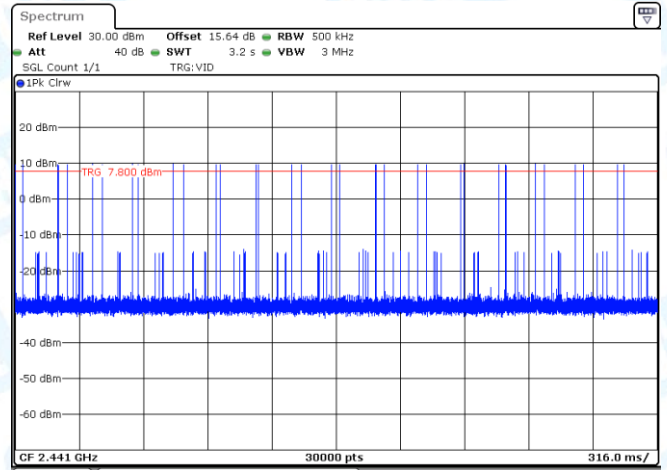
5.1 Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.379	320	0.121	≤0.4	PASS
DH3	Ant1	Hop	1.626	190	0.309	≤0.4	PASS
DH5	Ant1	Hop	2.868	110	0.315	≤0.4	PASS
2DH1	Ant1	Hop	0.388	330	0.128	≤0.4	PASS
2DH3	Ant1	Hop	1.633	160	0.261	≤0.4	PASS
2DH5	Ant1	Hop	2.873	110	0.316	≤0.4	PASS
3DH1	Ant1	Hop	0.389	320	0.124	≤0.4	PASS
3DH3	Ant1	Hop	1.631	200	0.326	≤0.4	PASS
3DH5	Ant1	Hop	2.875	50	0.144	≤0.4	PASS

5.2 Test Graphs



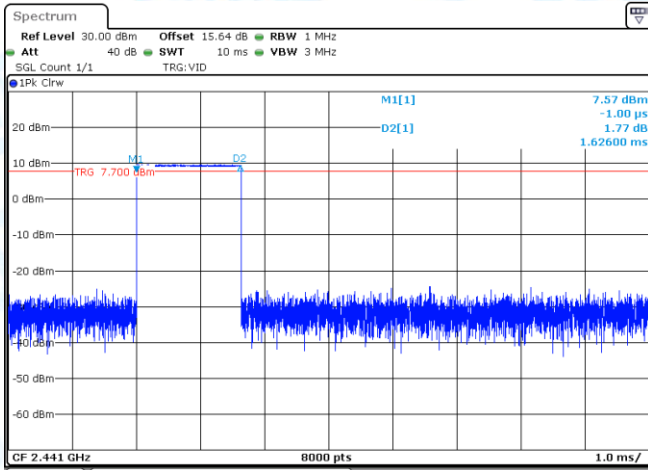
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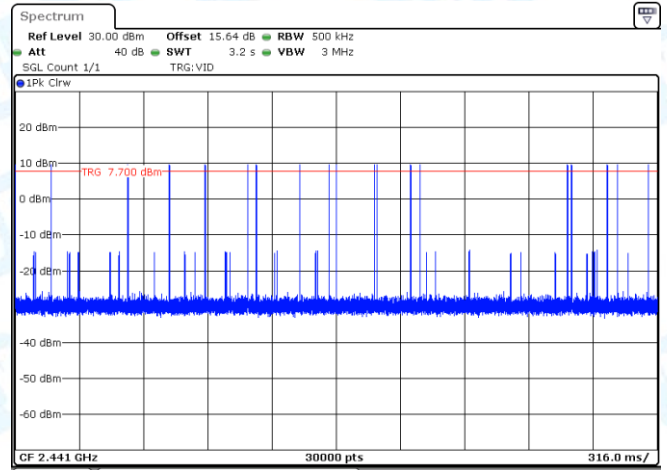
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DH1-Ant1-Hop-PASS

DH1-Ant1-Hop-PASS



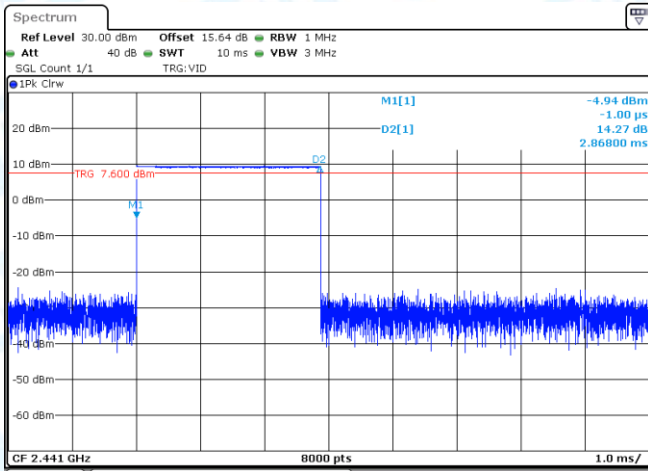
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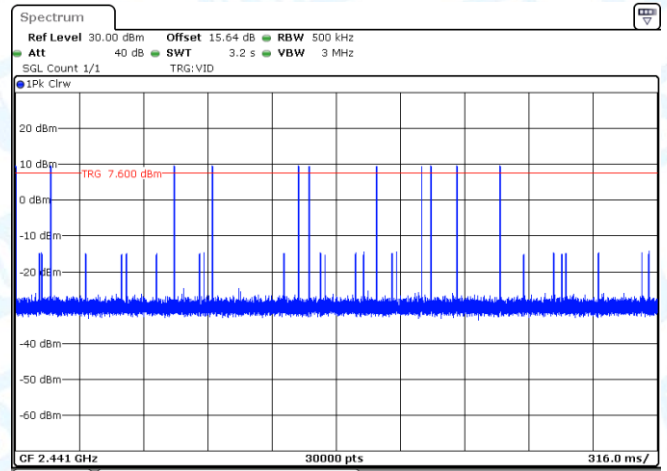
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DH3-Ant1-Hop-PASS

DH3-Ant1-Hop-PASS



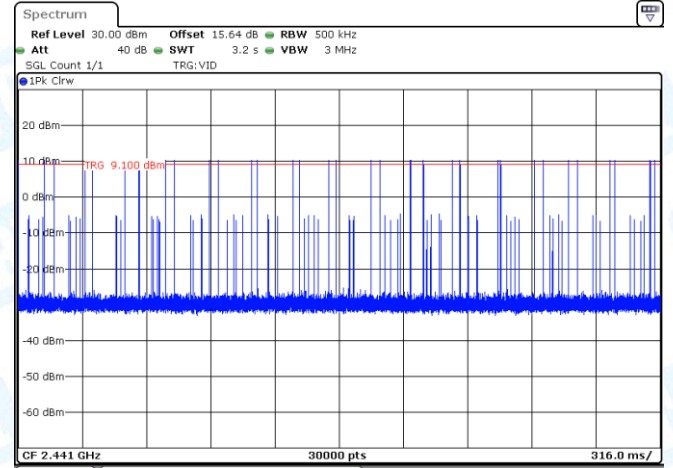
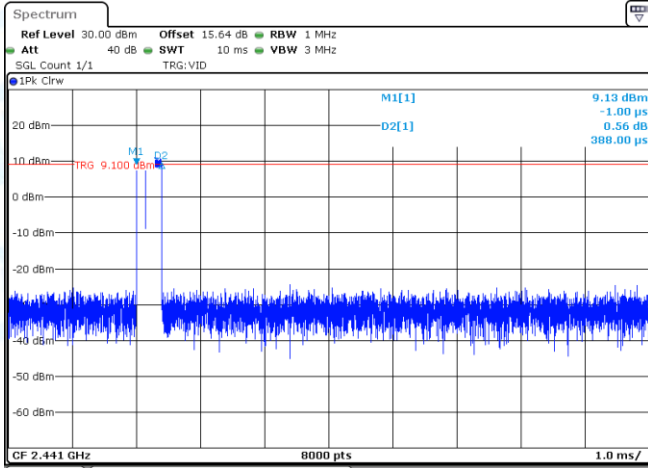
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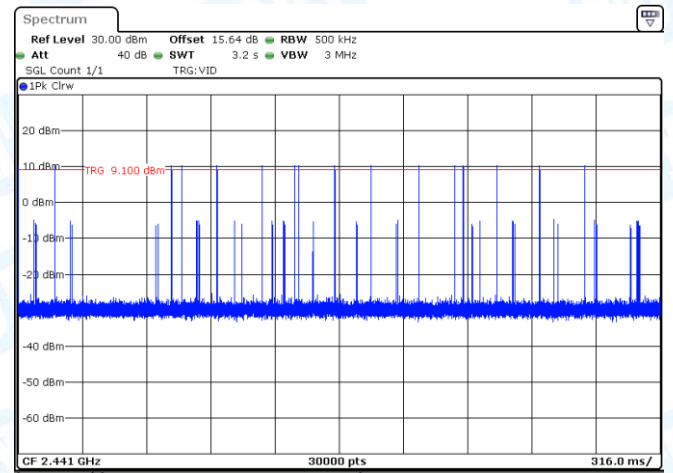
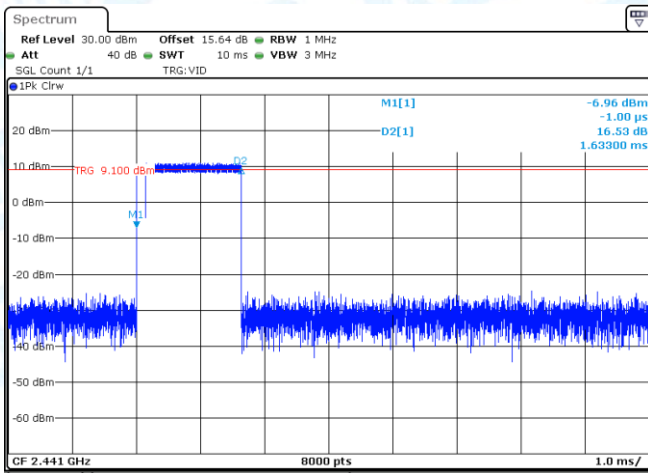
DH5-Ant1-Hop-PASS

DH5-Ant1-Hop-PASS



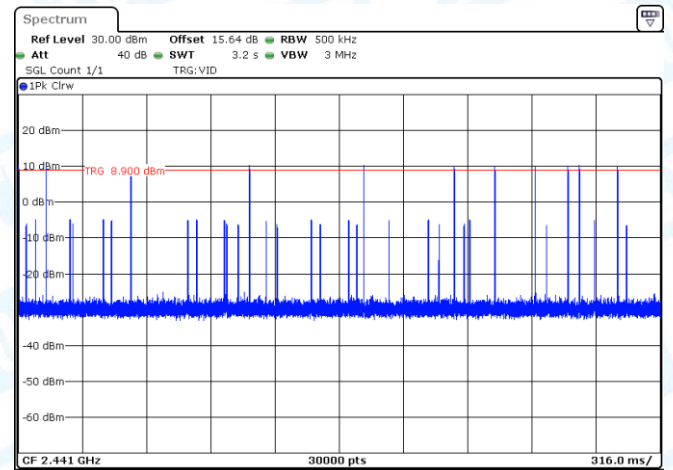
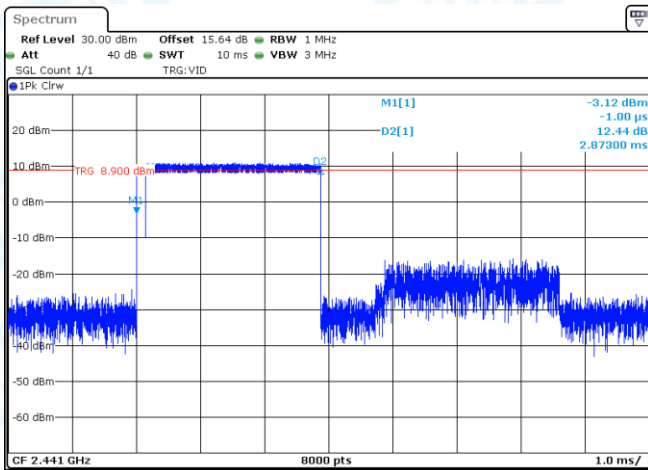
2DH1-Ant1-Hop-PASS

2DH1-Ant1-Hop-PASS



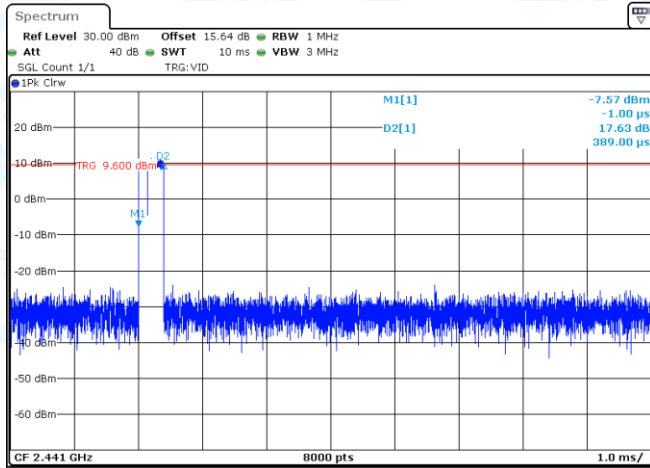
2DH3-Ant1-Hop-PASS

2DH3-Ant1-Hop-PASS



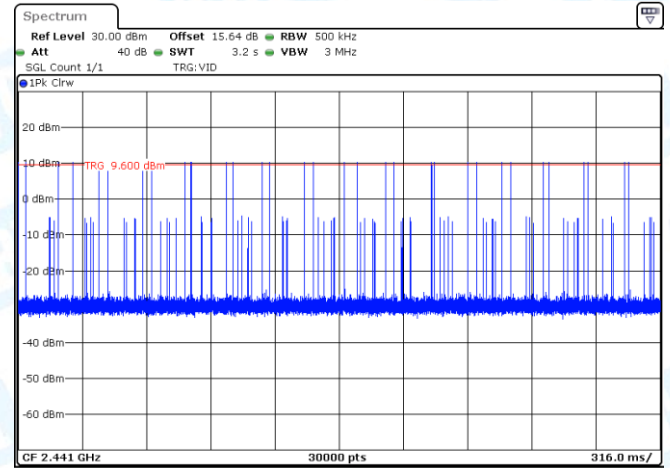
2DH5-Ant1-Hop-PASS

2DH5-Ant1-Hop-PASS



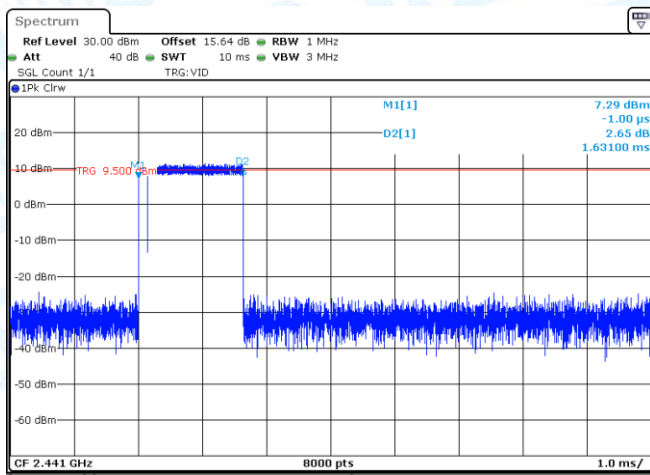
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3DH1-Ant1-Hop-PASS



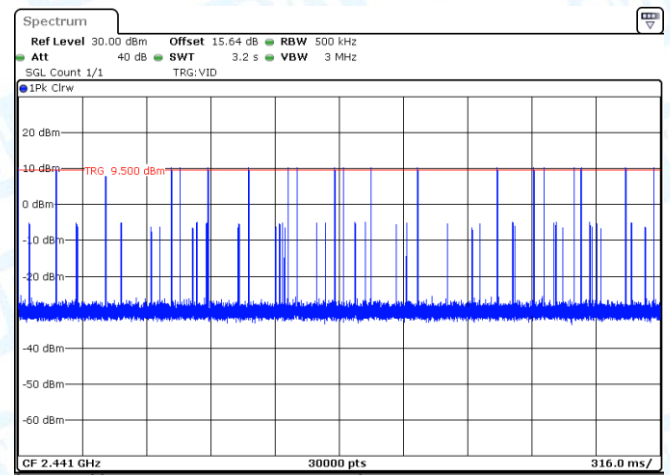
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3DH1-Ant1-Hop-PASS



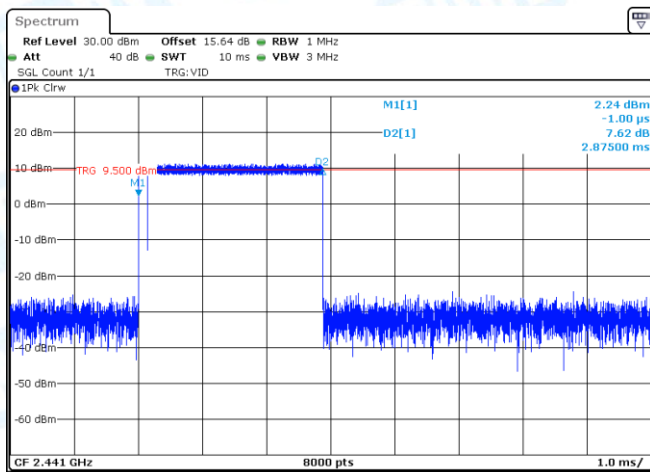
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3DH3-Ant1-Hop-PASS



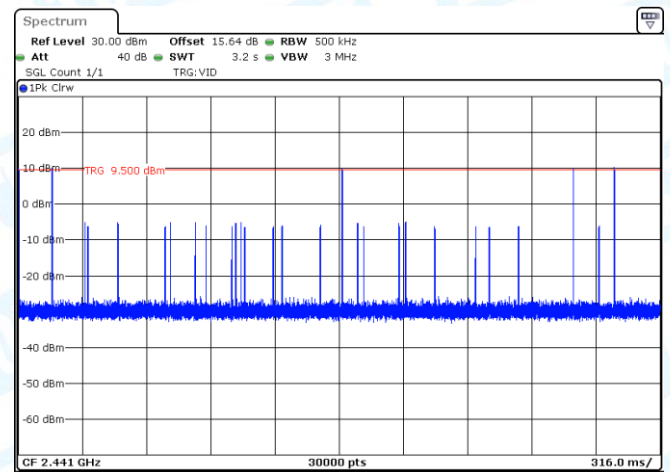
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3DH3-Ant1-Hop-PASS



Date: 27.AUG.2024 19:18:29

3DH5-Ant1-Hop-PASS



Date: 27.AUG.2024 19:18:37

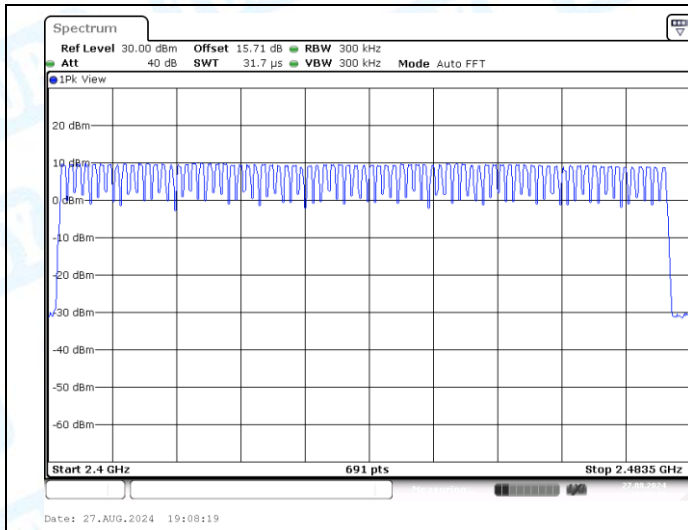
3DH5-Ant1-Hop-PASS

6: Number of hopping channels

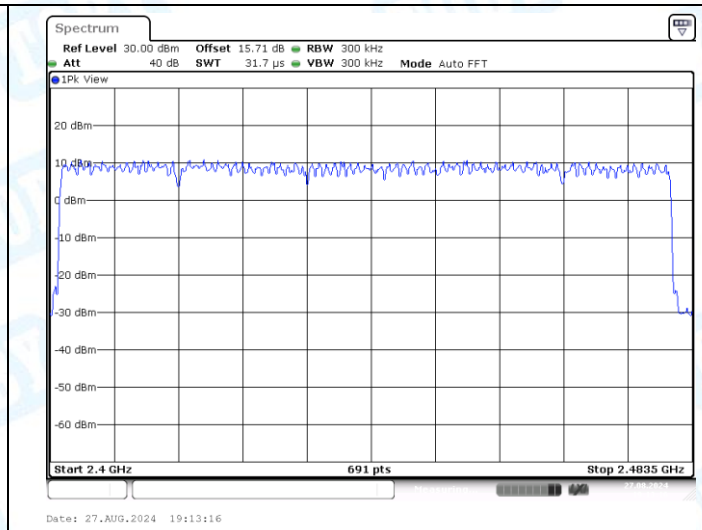
6.1 Test Result

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

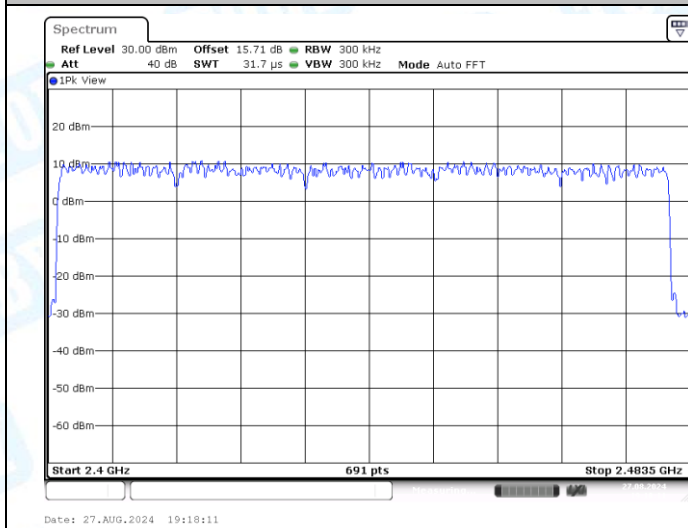
6.2 Test Graphs



DH5-Ant1-Hop-PASS



2DH5-Ant1-Hop-PASS



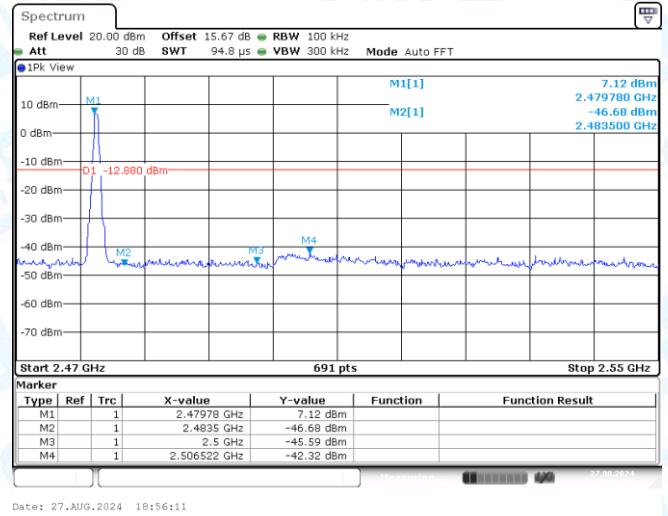
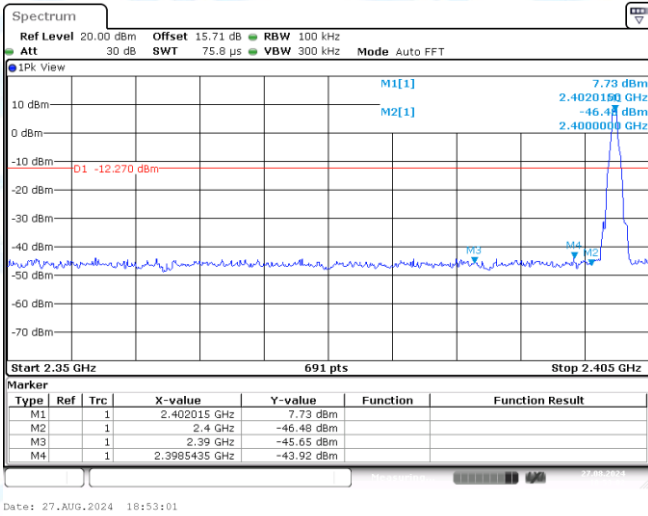
3DH5-Ant1-Hop-PASS

7: Band edge measurements

7.1 Test Result

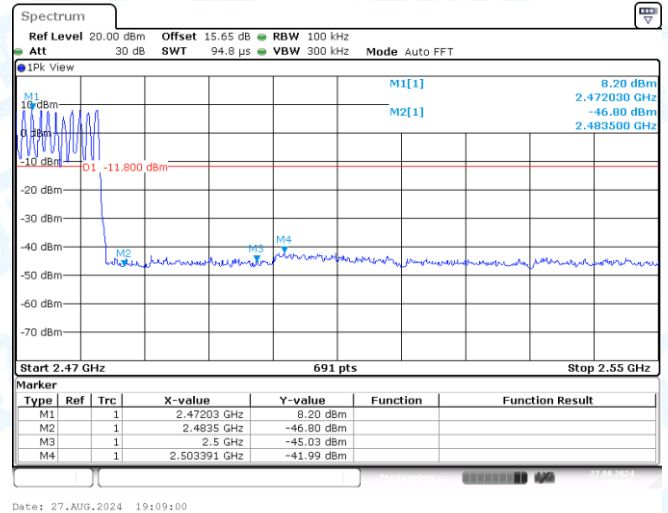
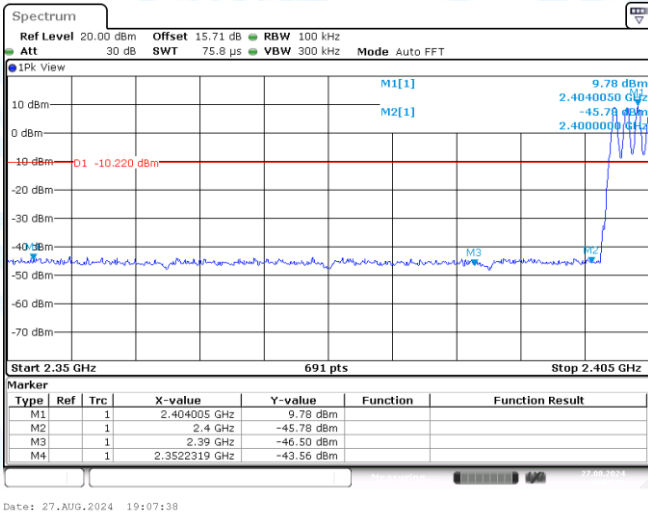
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	7.73	-43.92	≤-12.27	PASS
DH5	Ant1	High	2480	7.12	-42.32	≤-12.88	PASS
DH5	Ant1	Low	Hop_2402	9.78	-43.56	≤-10.22	PASS
DH5	Ant1	High	Hop_2480	8.20	-41.99	≤-11.8	PASS
2DH5	Ant1	Low	2402	8.90	-42.78	≤-11.1	PASS
2DH5	Ant1	High	2480	7.93	-41.58	≤-12.07	PASS
2DH5	Ant1	Low	Hop_2402	8.05	-43.03	≤-11.95	PASS
2DH5	Ant1	High	Hop_2480	9.67	-41.58	≤-10.33	PASS
3DH5	Ant1	Low	2402	8.86	-43.61	≤-11.14	PASS
3DH5	Ant1	High	2480	7.36	-41.1	≤-12.64	PASS
3DH5	Ant1	Low	Hop_2402	10.44	-42.13	≤-9.56	PASS
3DH5	Ant1	High	Hop_2480	8.29	-41.42	≤-11.71	PASS

7.2 Test Graphs



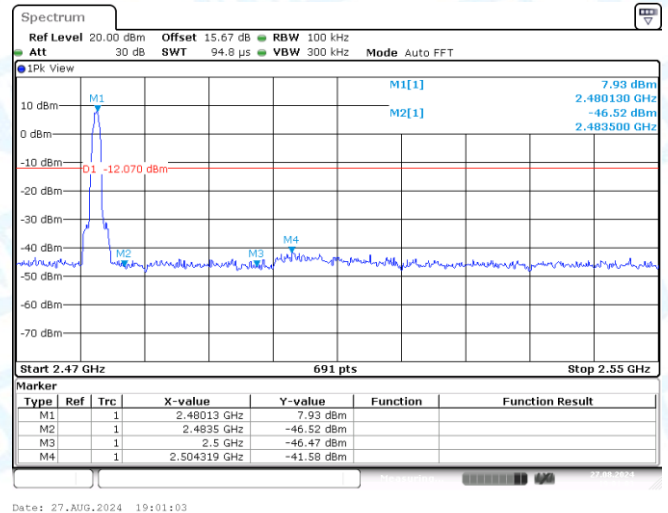
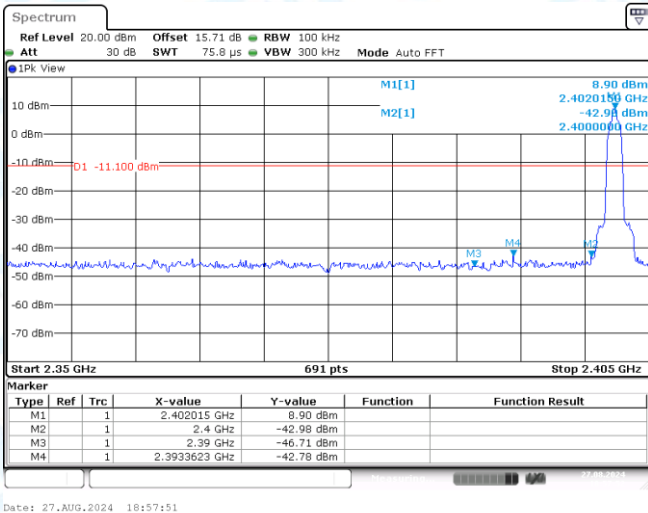
DH5-Ant1-2402-PASS

DH5-Ant1-2480-PASS



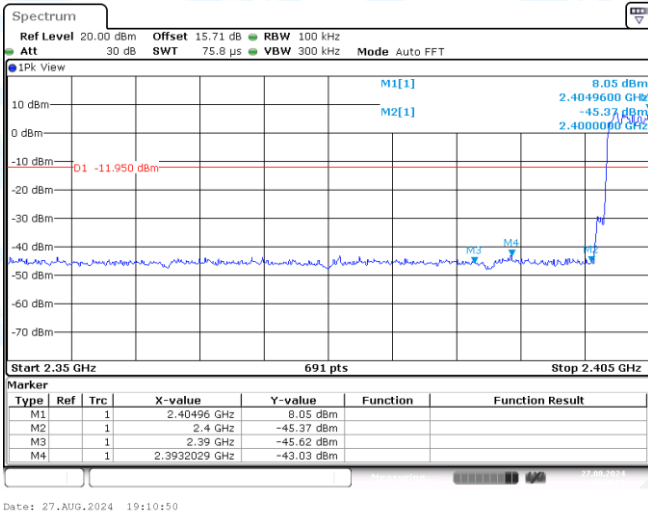
DH5-Ant1-Hop_2402-PASS

DH5-Ant1-Hop_2480-PASS

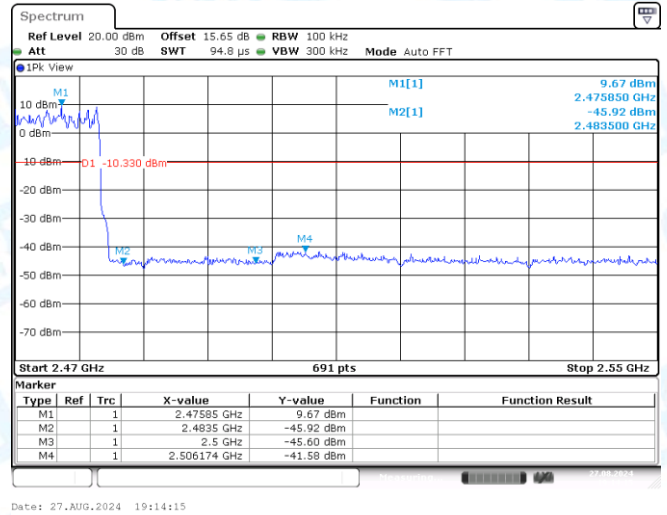


2DH5-Ant1-2402-PASS

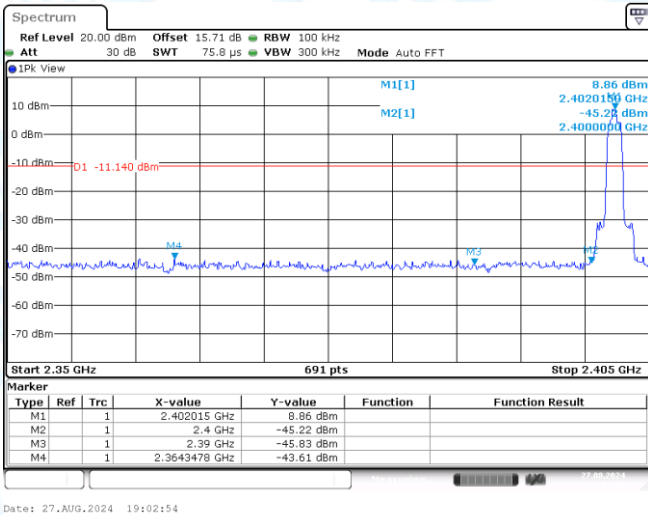
2DH5-Ant1-2480-PASS



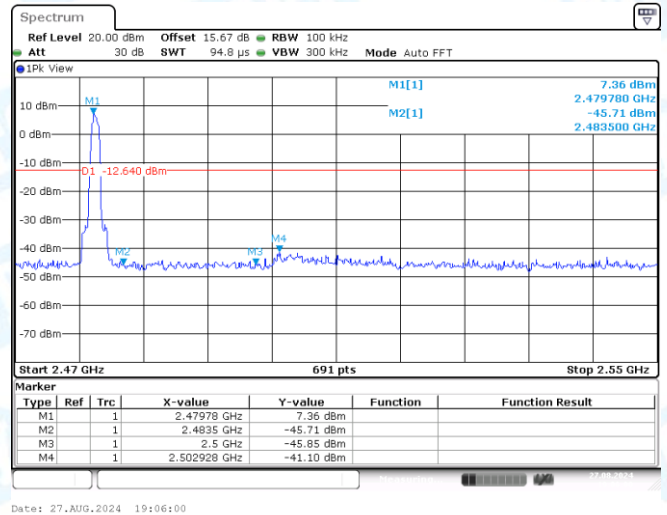
2DH5-Ant1-Hop_2402-PASS



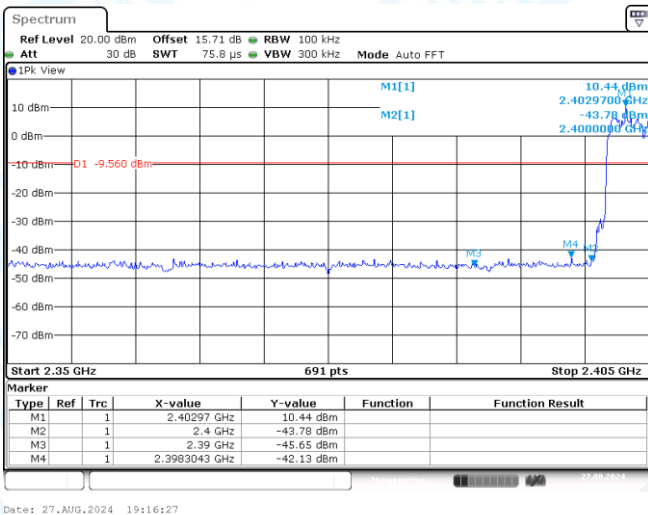
2DH5-Ant1-Hop_2480-PASS



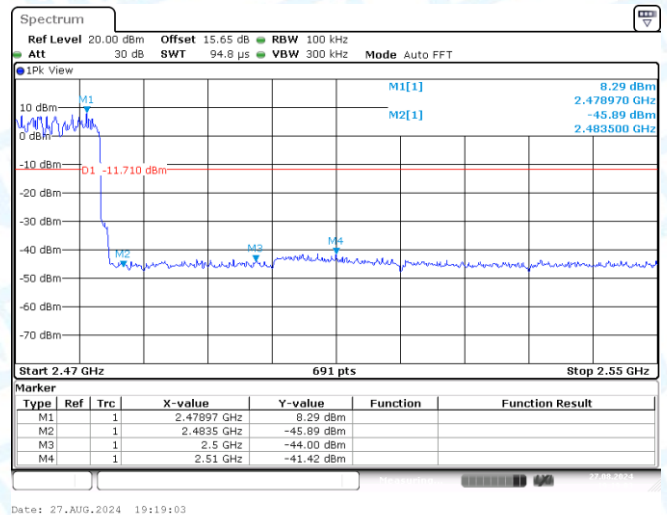
3DH5-Ant1-2402-PASS



3DH5-Ant1-2480-PASS



3DH5-Ant1-Hop_2402-PASS



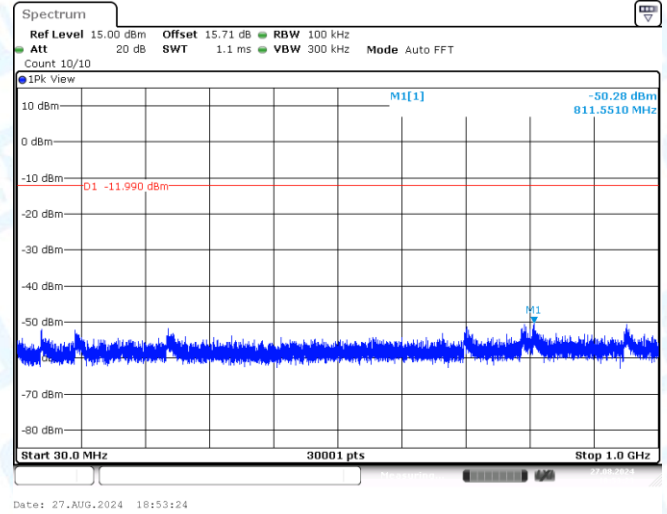
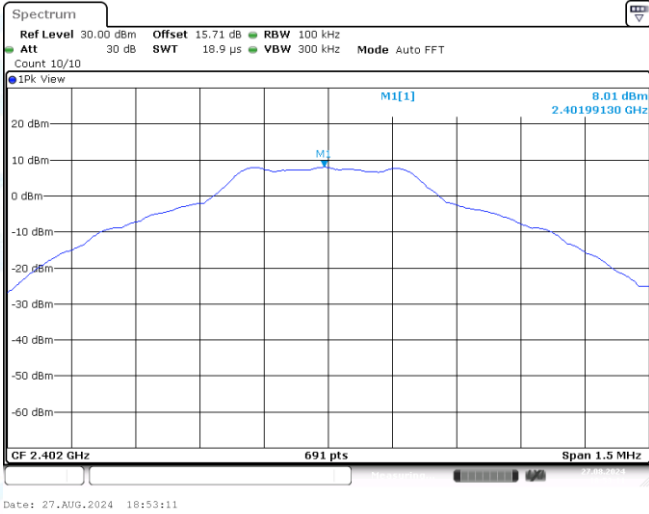
3DH5-Ant1-Hop_2480-PASS

8: Conducted Spurious Emission

8.1 Test Result

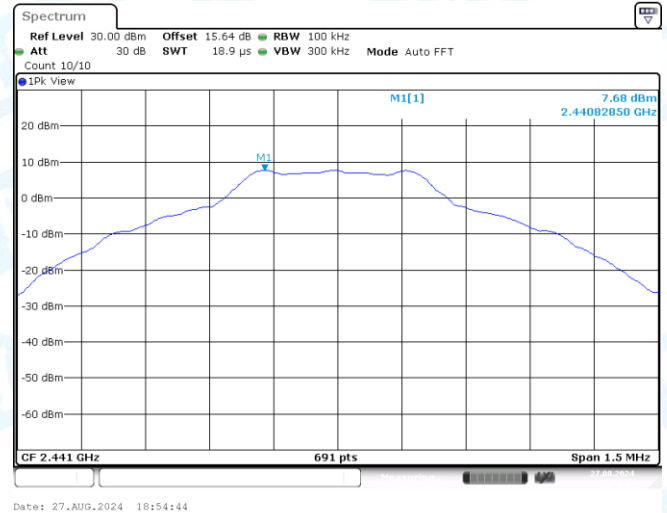
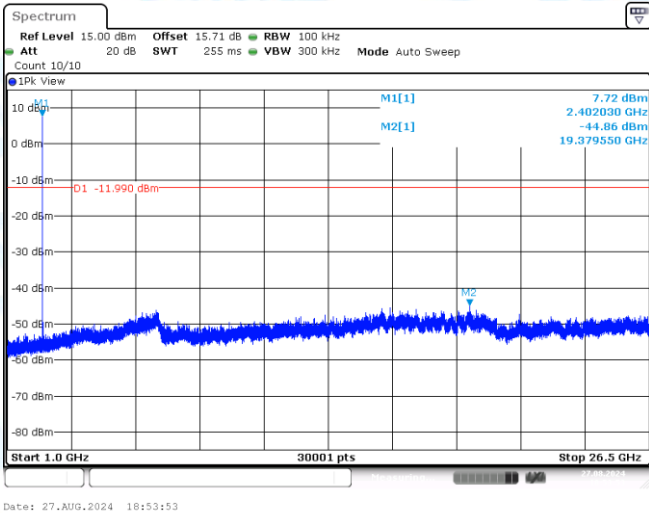
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	8.01	8.01	---	PASS
DH5	Ant1	2402	30~1000	8.01	-50.28	≤-11.99	PASS
DH5	Ant1	2402	1000~26500	8.01	-44.86	≤-11.99	PASS
DH5	Ant1	2441	0~Reference	7.68	7.68	---	PASS
DH5	Ant1	2441	30~1000	7.68	-49.78	≤-12.32	PASS
DH5	Ant1	2441	1000~26500	7.68	-45.91	≤-12.32	PASS
DH5	Ant1	2480	0~Reference	7.10	7.10	---	PASS
DH5	Ant1	2480	30~1000	7.10	-50.91	≤-12.9	PASS
DH5	Ant1	2480	1000~26500	7.10	-45.93	≤-12.9	PASS
2DH5	Ant1	2402	0~Reference	8.77	8.77	---	PASS
2DH5	Ant1	2402	30~1000	8.77	-51.17	≤-11.23	PASS
2DH5	Ant1	2402	1000~26500	8.77	-44.87	≤-11.23	PASS
2DH5	Ant1	2441	0~Reference	8.37	8.37	---	PASS
2DH5	Ant1	2441	30~1000	8.37	-51.43	≤-11.63	PASS
2DH5	Ant1	2441	1000~26500	8.37	-45.51	≤-11.63	PASS
2DH5	Ant1	2480	0~Reference	7.86	7.86	---	PASS
2DH5	Ant1	2480	30~1000	7.86	-49.99	≤-12.14	PASS
2DH5	Ant1	2480	1000~26500	7.86	-45.96	≤-12.14	PASS
3DH5	Ant1	2402	0~Reference	8.82	8.82	---	PASS
3DH5	Ant1	2402	30~1000	8.82	-51.02	≤-11.18	PASS
3DH5	Ant1	2402	1000~26500	8.82	-45.03	≤-11.18	PASS
3DH5	Ant1	2441	0~Reference	8.33	8.33	---	PASS
3DH5	Ant1	2441	30~1000	8.33	-51.82	≤-11.67	PASS
3DH5	Ant1	2441	1000~26500	8.33	-45.87	≤-11.67	PASS
3DH5	Ant1	2480	0~Reference	7.90	7.90	---	PASS
3DH5	Ant1	2480	30~1000	7.90	-51.1	≤-12.1	PASS
3DH5	Ant1	2480	1000~26500	7.90	-45.99	≤-12.1	PASS

8.2 Test Graphs



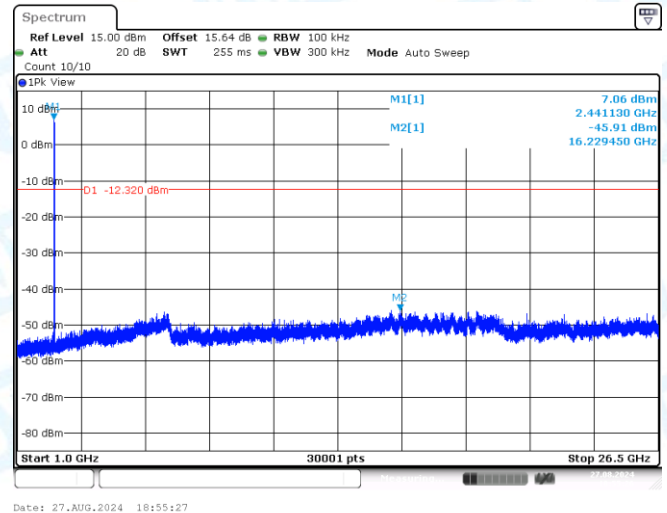
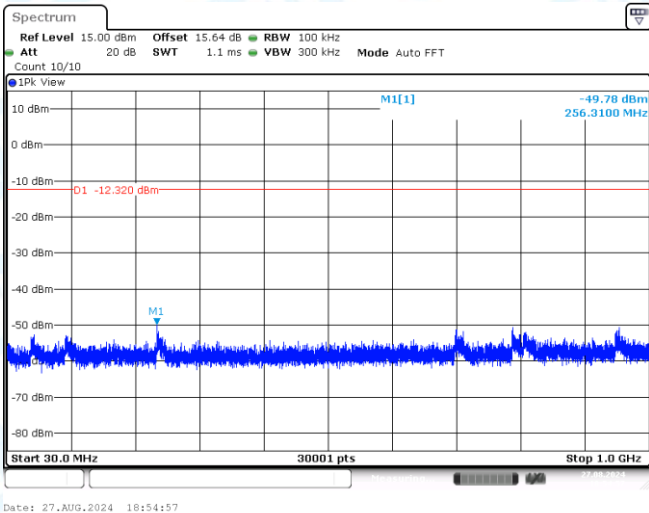
DH5-Ant1-2402-0~Reference-PASS

DH5-Ant1-2402-30~1000-PASS



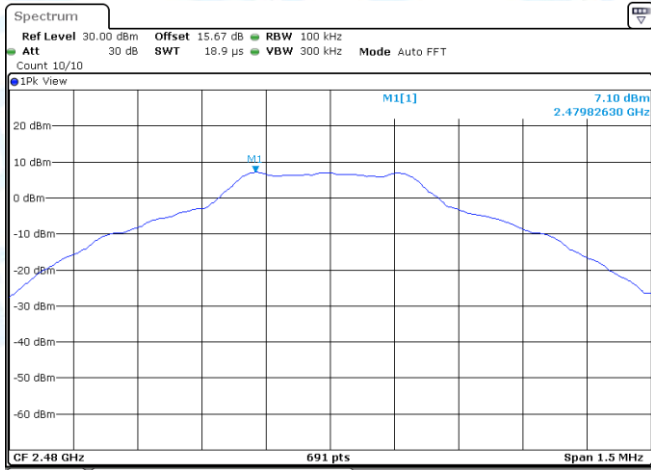
DH5-Ant1-2402-1000~26500-PASS

DH5-Ant1-2441-0~Reference-PASS



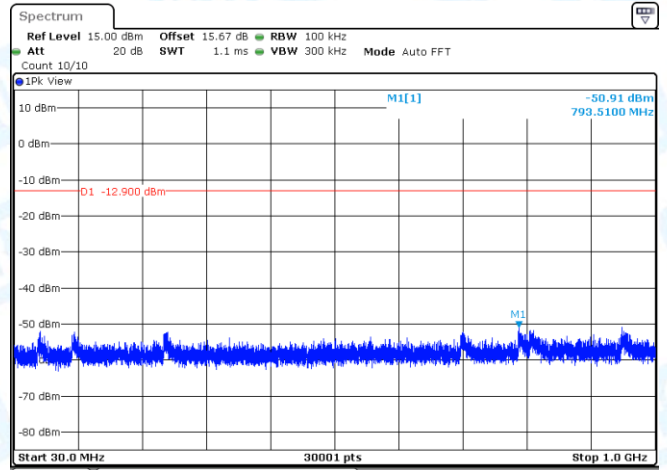
DH5-Ant1-2441-30~1000-PASS

DH5-Ant1-2441-1000~26500-PASS



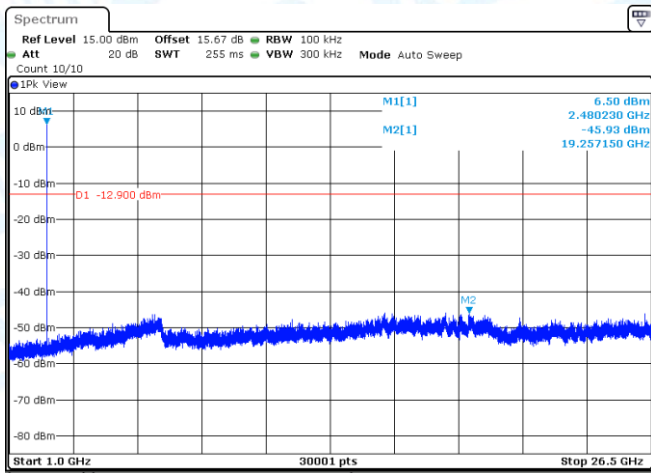
Date: 27.AUG.2024 18:56:21

DH5-Ant1-2480-0~Reference-PASS



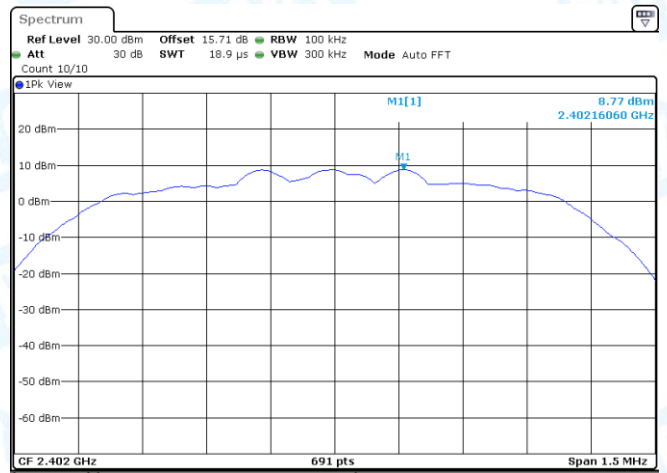
Date: 27.AUG.2024 18:56:33

DH5-Ant1-2480-30~1000-PASS



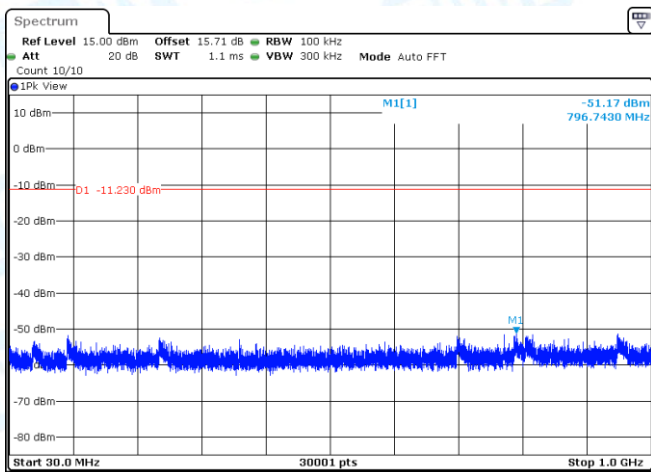
Date: 27.AUG.2024 18:57:03

DH5-Ant1-2480-1000~26500-PASS



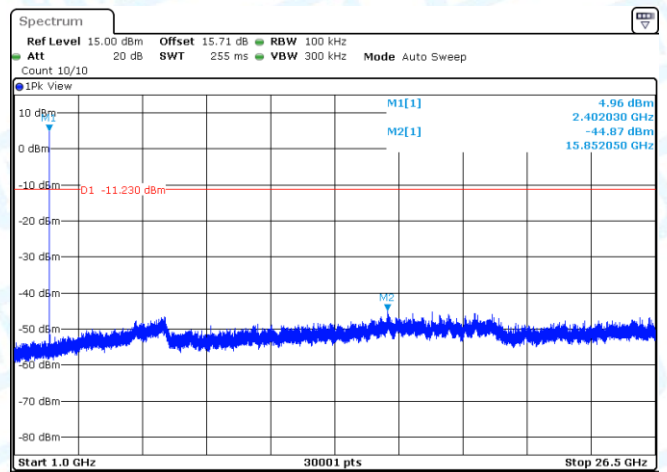
Date: 27.AUG.2024 18:58:01

2DH5-Ant1-2402-0~Reference-PASS



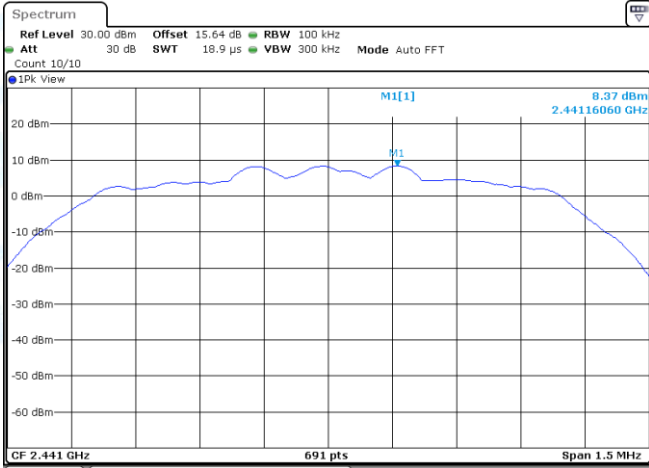
Date: 27.AUG.2024 18:58:13

2DH5-Ant1-2402-30~1000-PASS



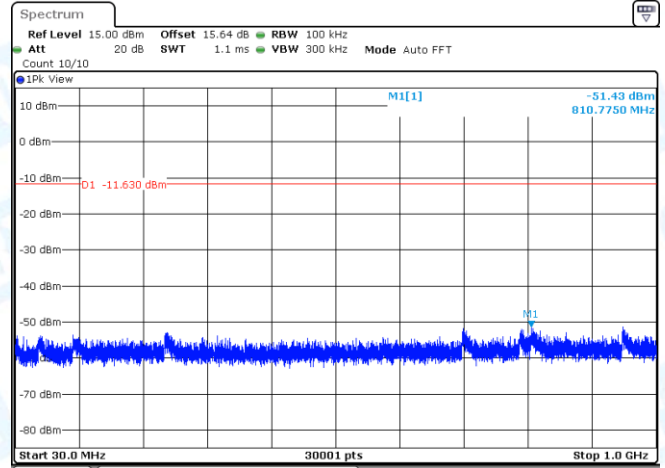
Date: 27.AUG.2024 18:58:43

2DH5-Ant1-2402-1000~26500-PASS



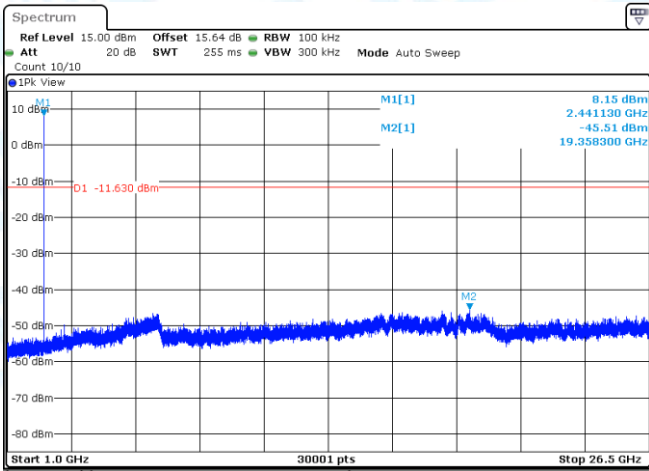
Date: 27.AUG.2024 18:59:29

2DH5-Ant1-2441-0~Reference-PASS



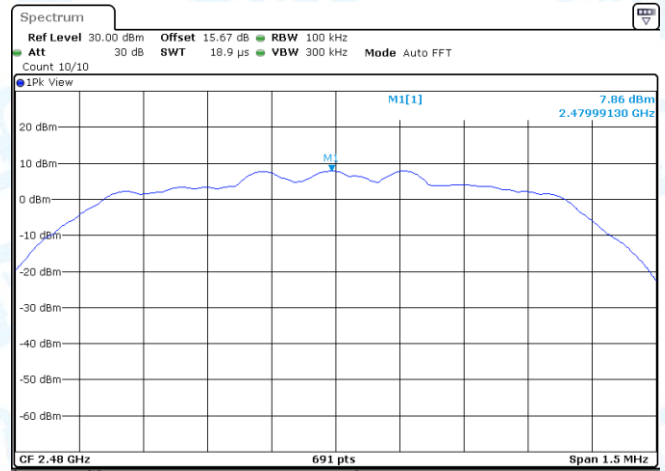
Date: 27.AUG.2024 18:59:42

2DH5-Ant1-2441-30~1000-PASS



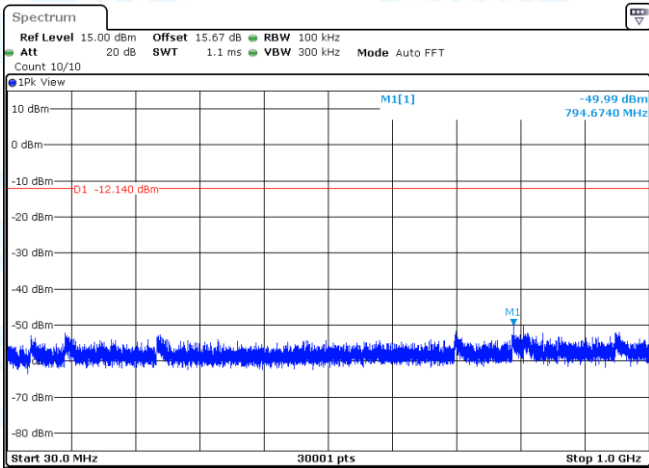
Date: 27.AUG.2024 19:00:12

2DH5-Ant1-2441-1000~26500-PASS



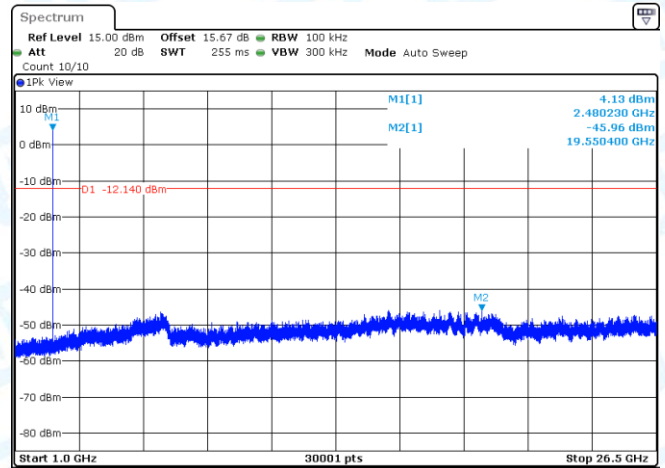
Date: 27.AUG.2024 19:01:13

2DH5-Ant1-2480-0~Reference-PASS



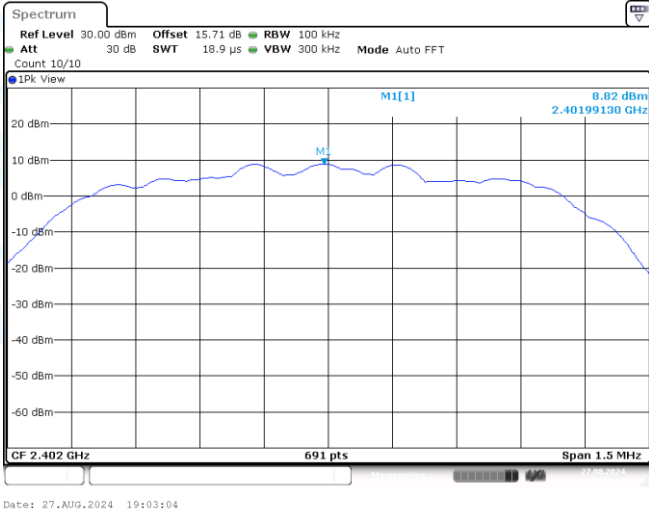
Date: 27.AUG.2024 19:01:25

2DH5-Ant1-2480-30~1000-PASS

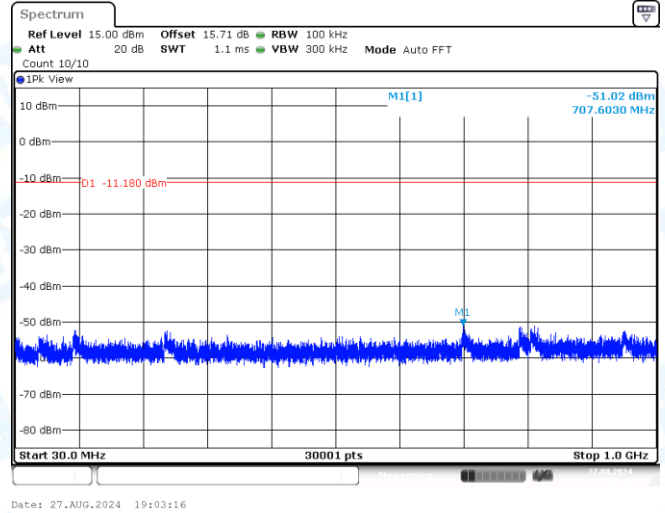


Date: 27.AUG.2024 19:01:55

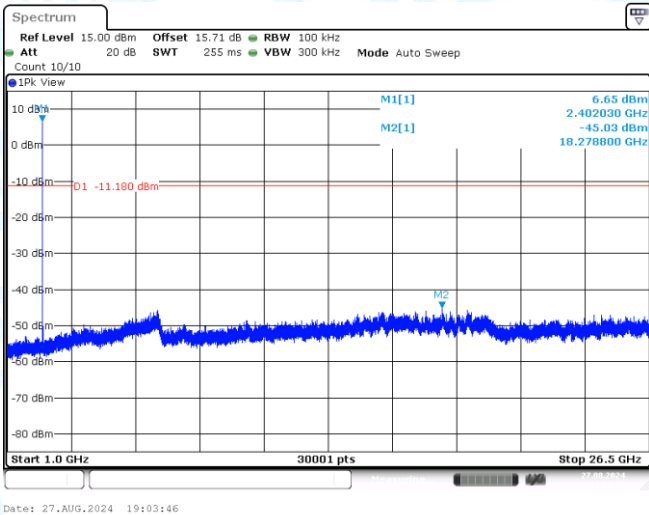
2DH5-Ant1-2480-1000~26500-PASS



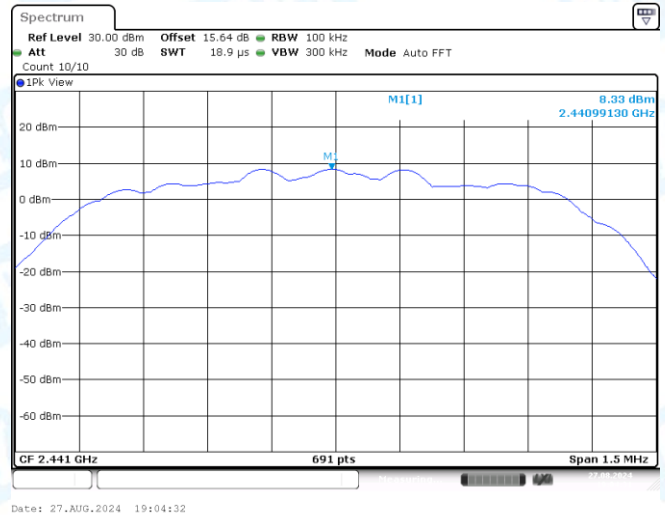
3DH5-Ant1-2402-0~Reference-PASS



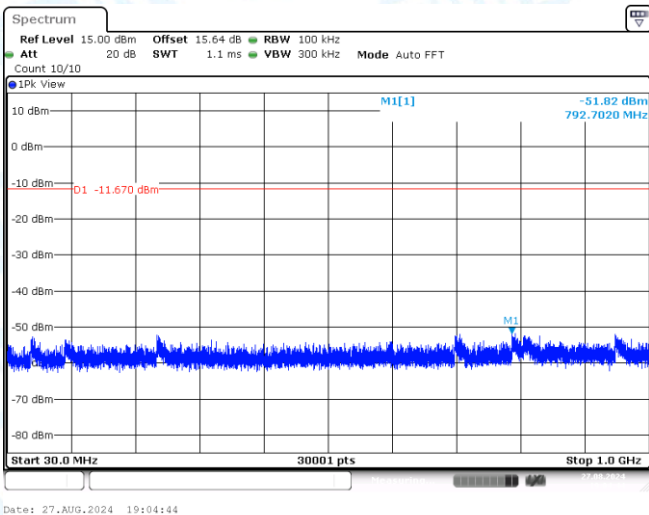
3DH5-Ant1-2402-30~1000-PASS



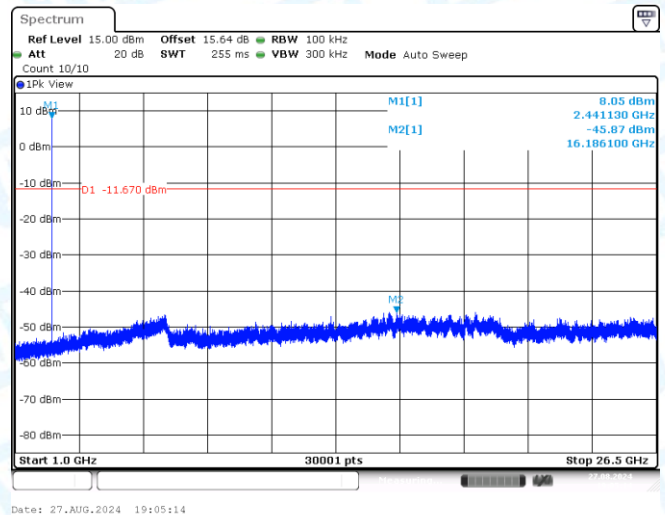
3DH5-Ant1-2402-1000~26500-PASS



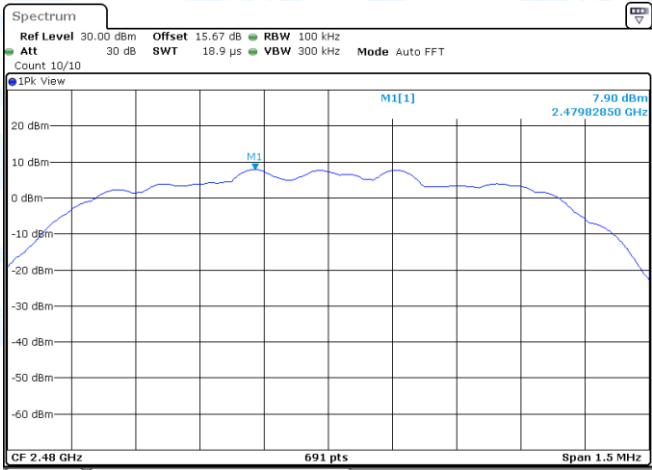
3DH5-Ant1-2441-0~Reference-PASS



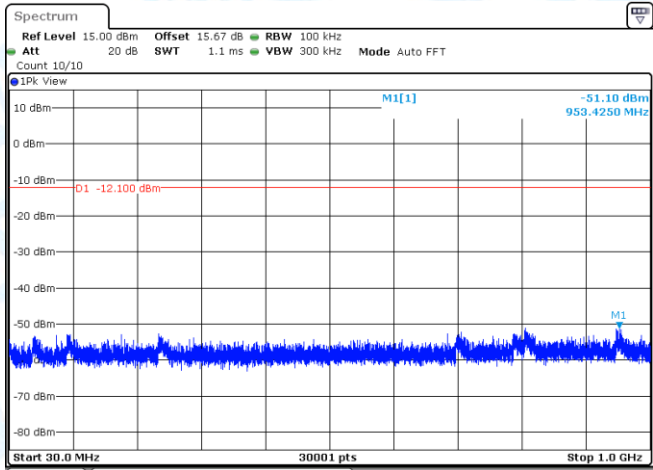
3DH5-Ant1-2441-30~1000-PASS



3DH5-Ant1-2441-1000~26500-PASS



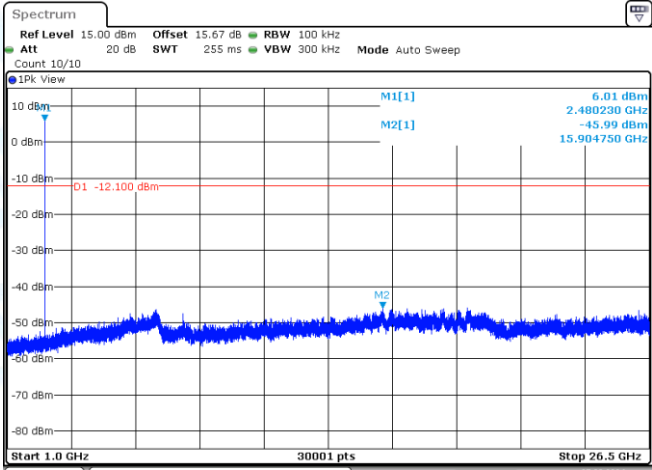
Date: 27.AUG.2024 19:06:09



Date: 27.AUG.2024 19:06:22

3DH5-Ant1-2480-0~Reference-PASS

3DH5-Ant1-2480-30~1000-PASS



Date: 27.AUG.2024 19:06:52

3DH5-Ant1-2480-1000~26500-PASS

9: Duty Cycle

9.1 Test Result

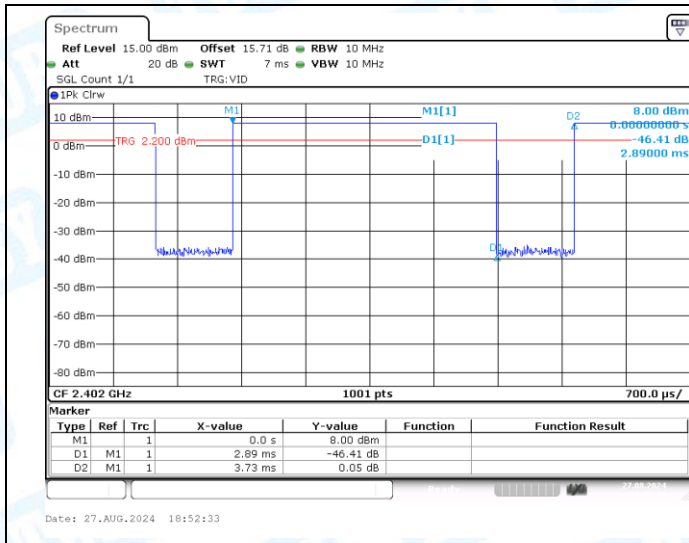
TestMode	Antenna	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	DC Factory	1/T [kHz]
DH5	Ant1	2402	2.89	3.73	77.48	1.11	0.35
DH5	Ant1	2441	2.89	3.73	77.48	1.11	0.35
DH5	Ant1	2480	2.89	3.73	77.48	1.11	0.35
2DH5	Ant1	2402	2.89	3.73	77.48	1.11	0.35
2DH5	Ant1	2441	2.89	3.73	77.48	1.11	0.35
2DH5	Ant1	2480	2.89	3.74	77.27	1.12	0.35
3DH5	Ant1	2402	2.89	3.73	77.48	1.11	0.35
3DH5	Ant1	2441	2.89	3.73	77.48	1.11	0.35
3DH5	Ant1	2480	2.89	3.74	77.27	1.12	0.35

Note: 1, Duty Cycle= Transmission Duration/ Transmission Period

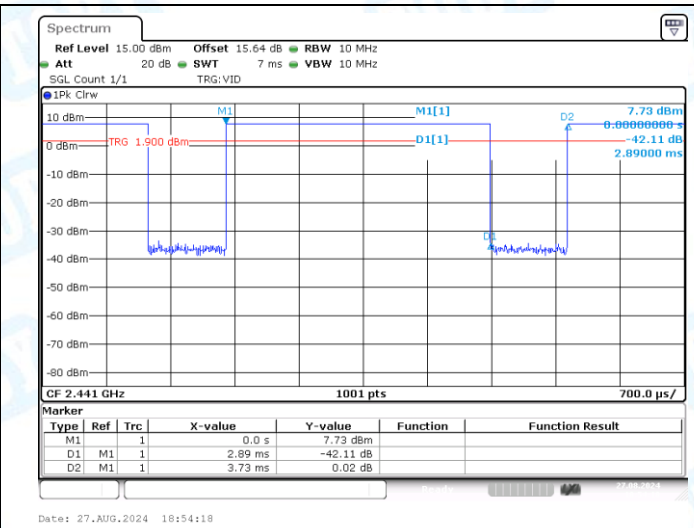
2, DC Factory=10*Log₁₀(1/Duty Cycle)

3, 1/T=1/ Transmission Duration

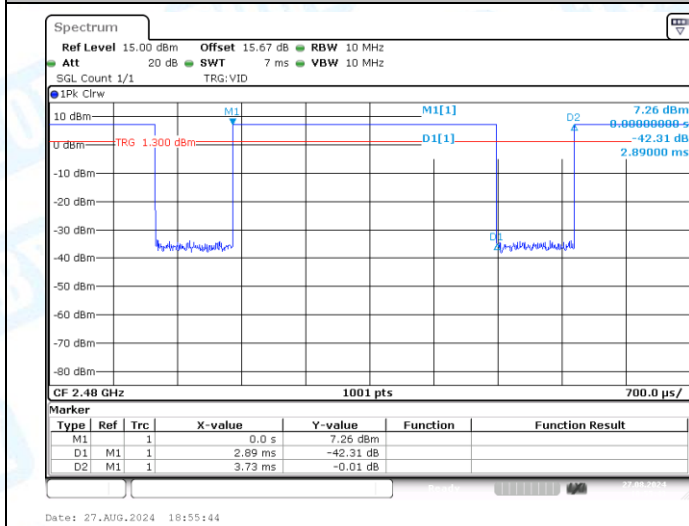
9.2 Test Graphs



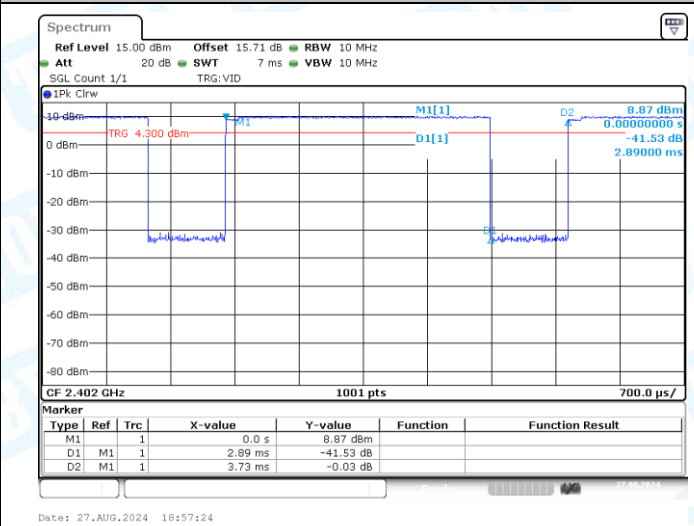
NTVN-DH5-Ant1-2402



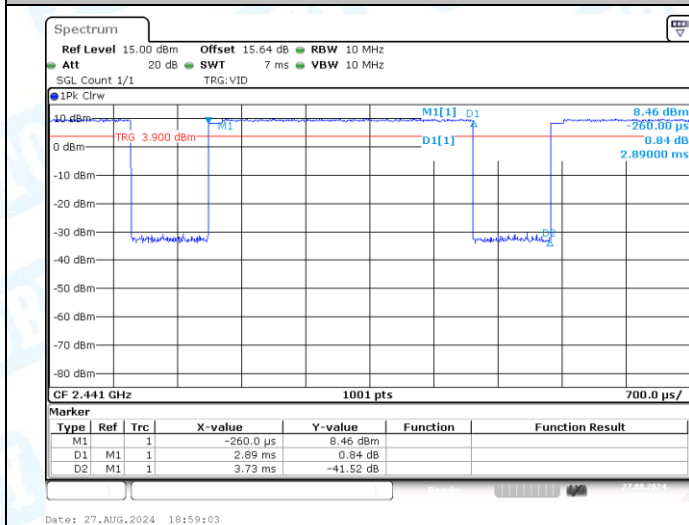
NTVN-DH5-Ant1-2441



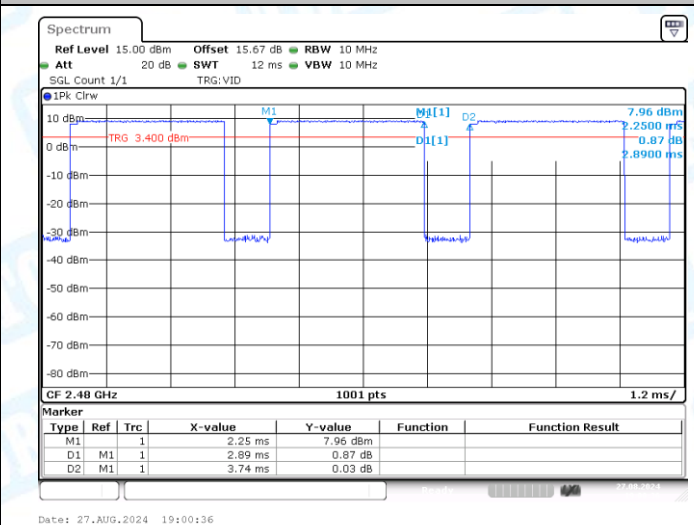
NTVN-DH5-Ant1-2480



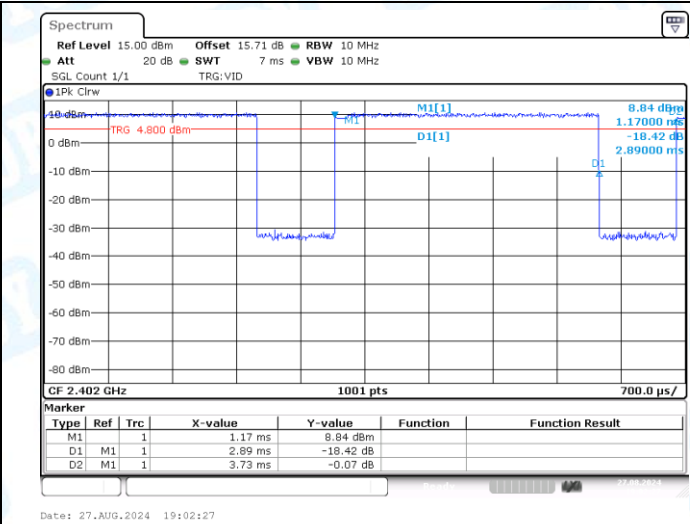
NTVN-2DH5-Ant1-2402



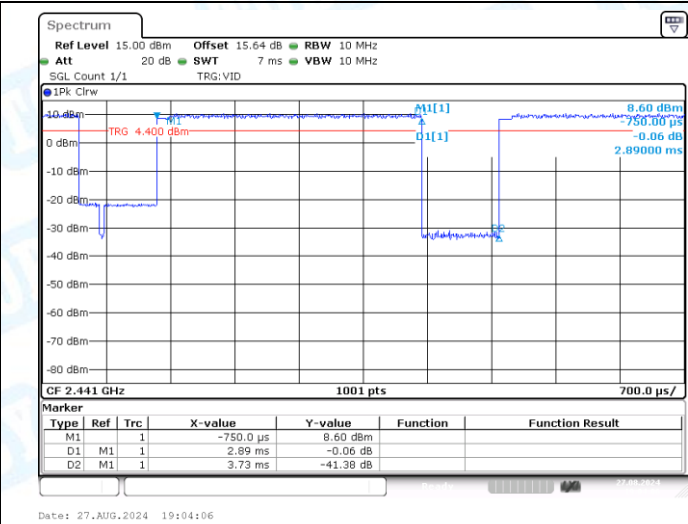
NTVN-2DH5-Ant1-2441



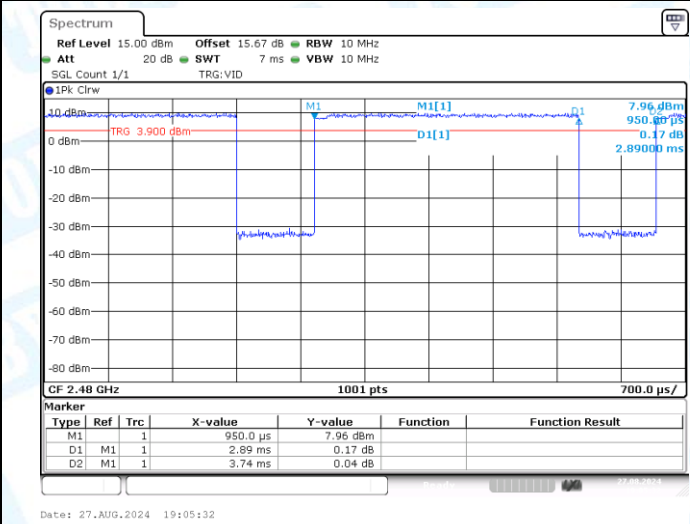
NTVN-2DH5-Ant1-2480



NTNV-3DH5-Ant1-2402



NTNV-3DH5-Ant1-2441



NTNV-3DH5-Ant1-2480

-----END OF THE REPORT-----