

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

General Description of EUT	
EUT Name:	Wearable Wireless speaker
Model:	WS15
Sample ID:	HC-C-202411-0278-01-2#
Test Standard:	FCC Part 15.247
Environmental Conditions	
Ambient Temperature:	25°C
Ambient Humidity:	45%RH
Test Power Supply:	DC 3.7V
Test Engineer:	ZKN.zhou
Note: For a more detailed features description, please refer to the report TBR-C-202411-0278-3	

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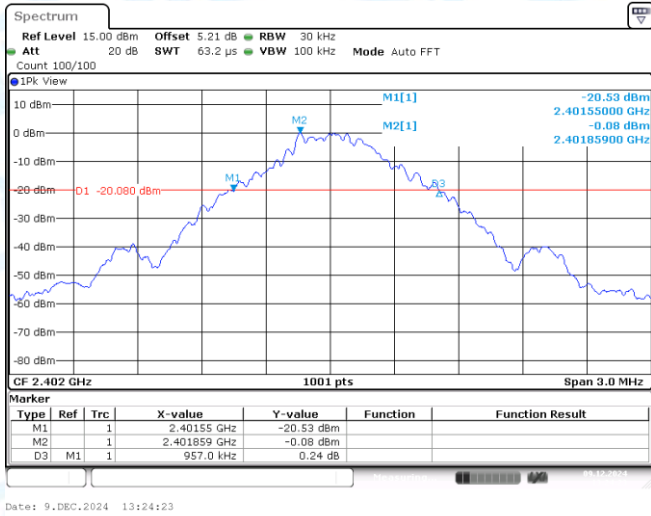
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1. 20dB Emission Bandwidth

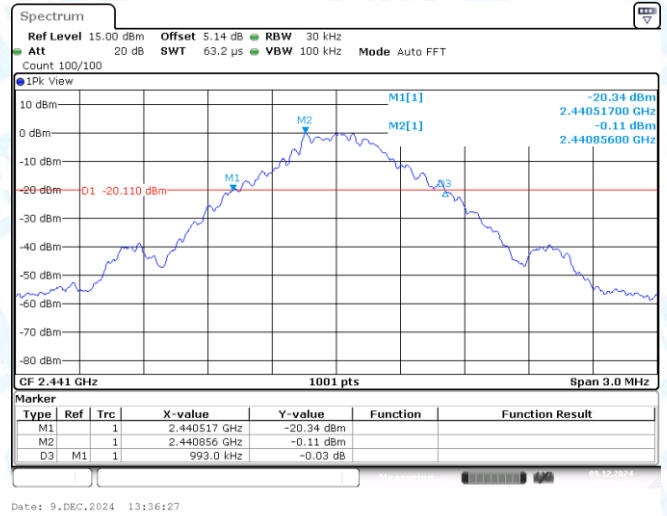
1.1 Test Result

Test Mode	Antenna	Frequency[MHz]	20dB EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.96	2401.55	2402.51	---	---
DH5	Ant1	2441	0.99	2440.52	2441.51	---	---
DH5	Ant1	2480	1.00	2479.52	2480.51	---	---
2DH5	Ant1	2402	1.29	2401.39	2402.68	---	---
2DH5	Ant1	2441	1.32	2440.36	2441.68	---	---
2DH5	Ant1	2480	1.32	2479.36	2480.68	---	---

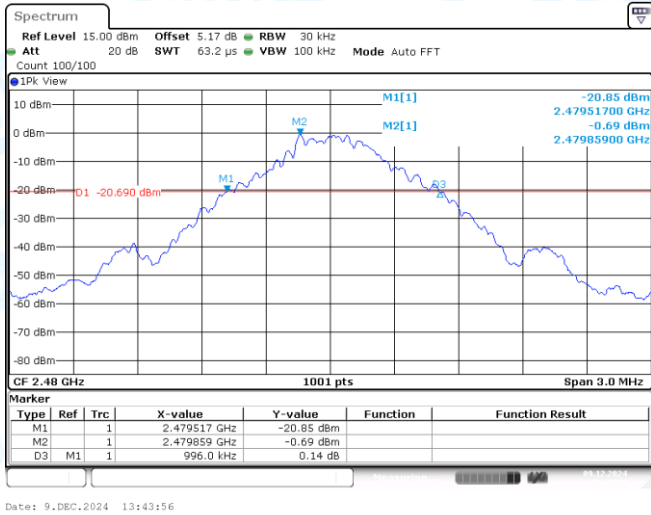
1.2 Test Graphs



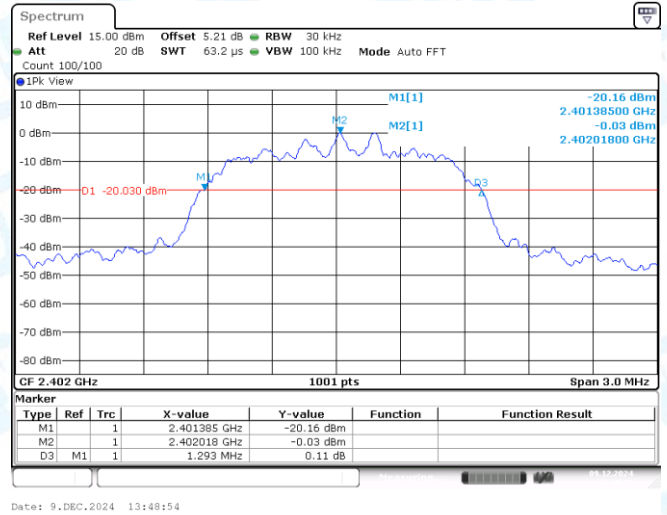
DH5-Ant1-2402



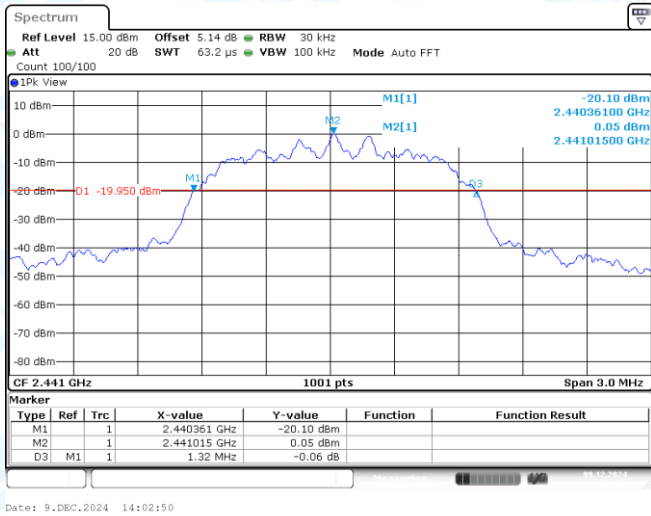
DH5-Ant1-2441



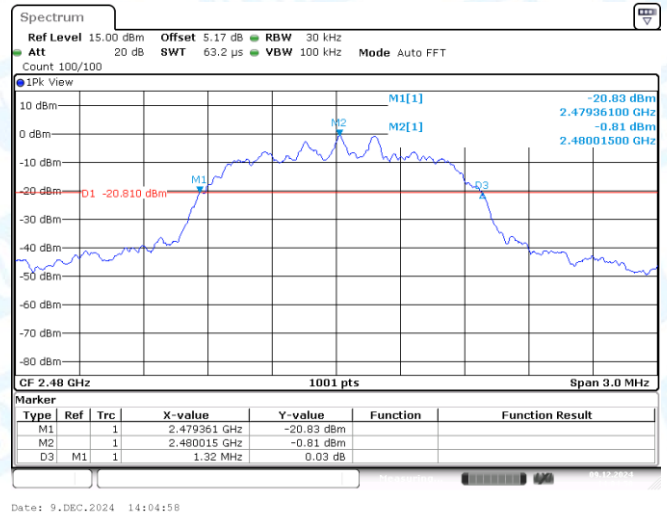
DH5-Ant1-2480



2DH5-Ant1-2402



2DH5-Ant1-2441



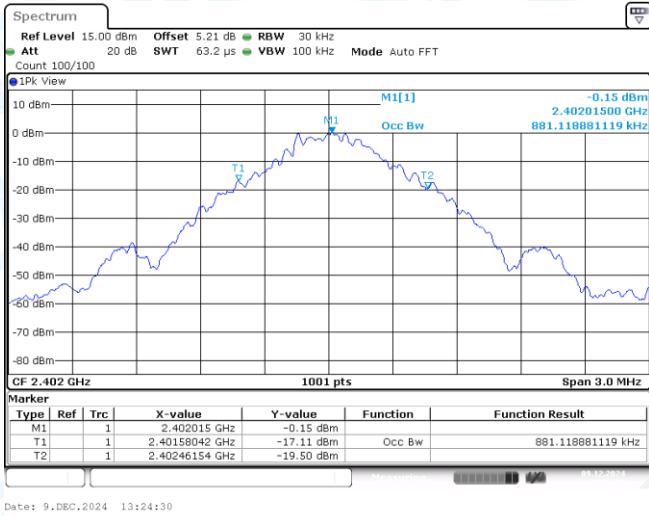
2DH5-Ant1-2480

2. Occupied Channel Bandwidth

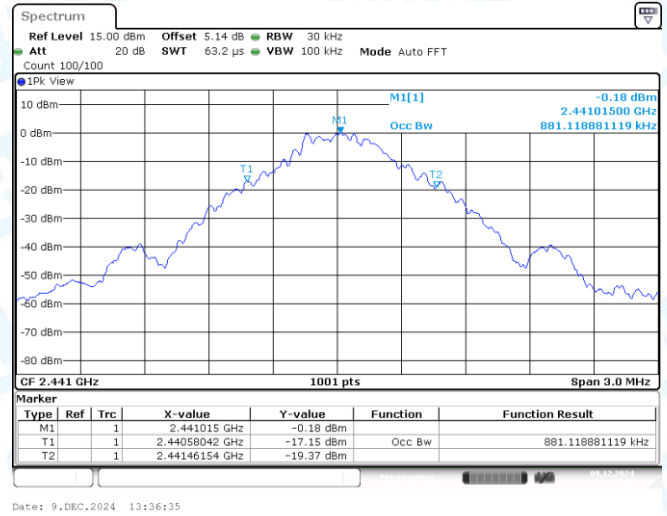
2.1 Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.881	2401.5804	2402.4615	---	---
DH5	Ant1	2441	0.881	2440.5804	2441.4615	---	---
DH5	Ant1	2480	0.89	2479.5774	2480.4675	---	---
2DH5	Ant1	2402	1.178	2401.4306	2402.6084	---	---
2DH5	Ant1	2441	1.181	2440.4306	2441.6114	---	---
2DH5	Ant1	2480	1.184	2479.4276	2480.6114	---	---

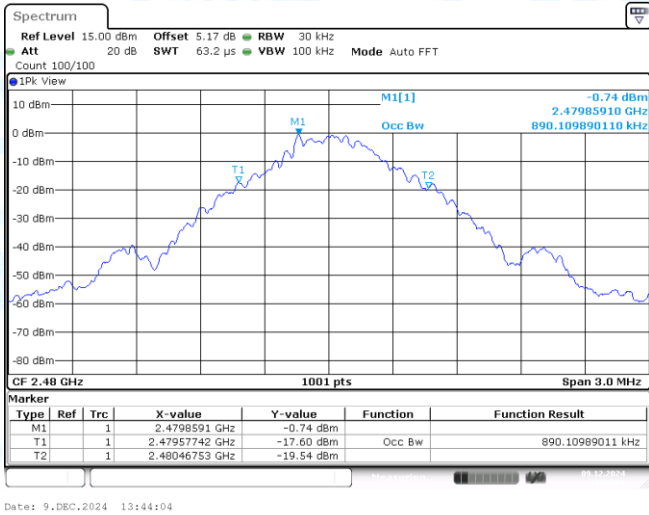
2.2 Test Graphs



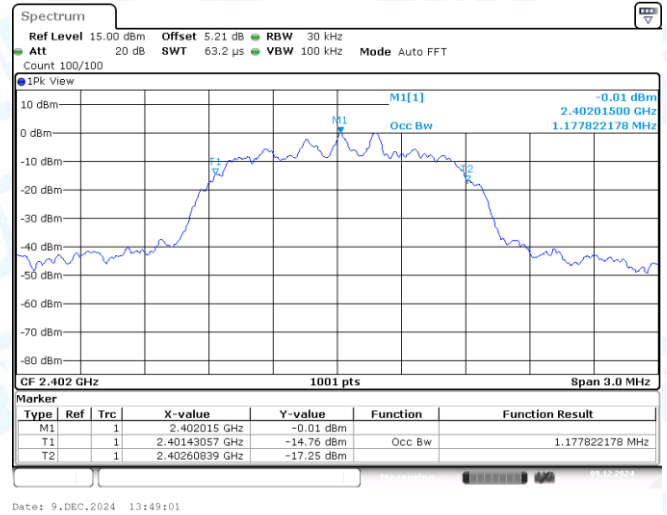
DH5-Ant1-2402



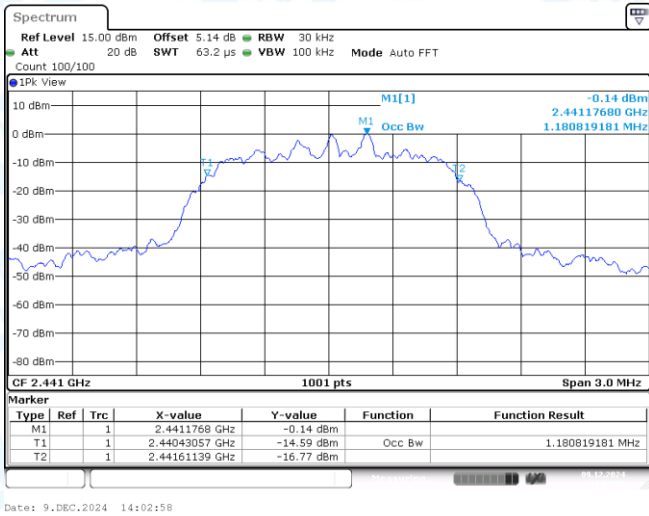
DH5-Ant1-2441



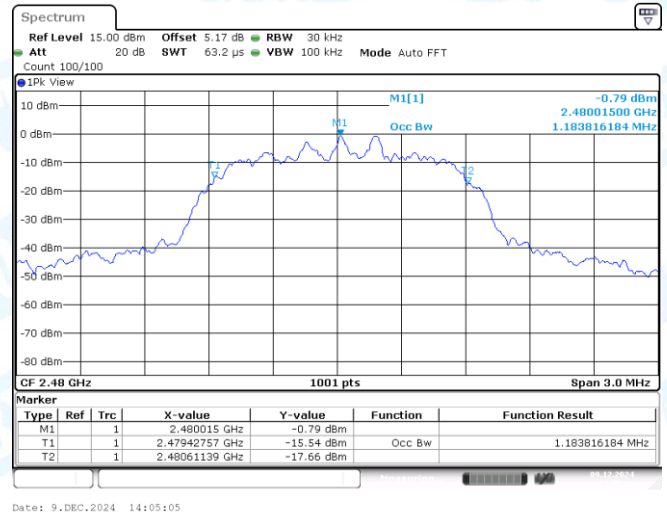
DH5-Ant1-2480



2DH5-Ant1-2402



2DH5-Ant1-2441



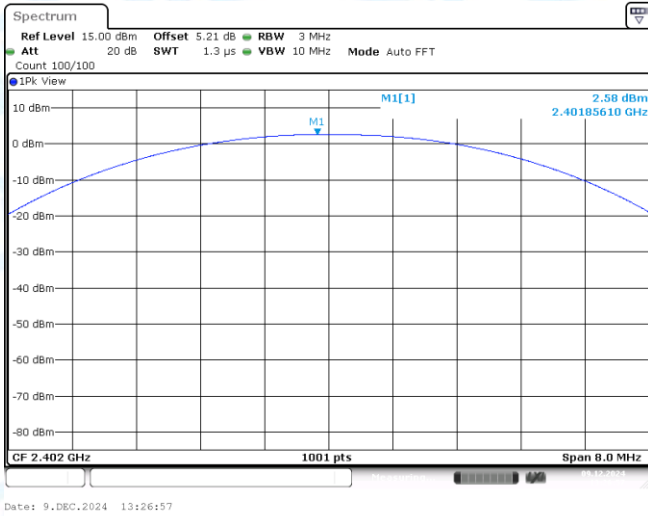
2DH5-Ant1-2480

3. Maximum conducted output power

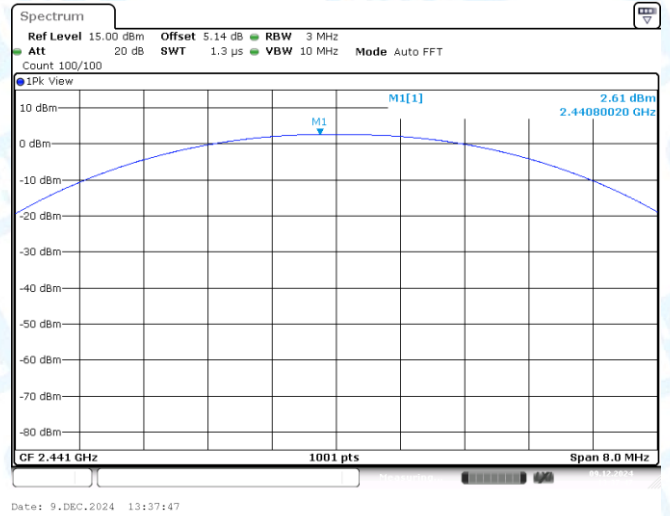
3.1 Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
DH5	Ant1	2402	2.58	≤20.97	PASS
DH5	Ant1	2441	2.61	≤20.97	PASS
DH5	Ant1	2480	1.95	≤20.97	PASS
2DH5	Ant1	2402	3.38	≤20.97	PASS
2DH5	Ant1	2441	3.39	≤20.97	PASS
2DH5	Ant1	2480	2.48	≤20.97	PASS

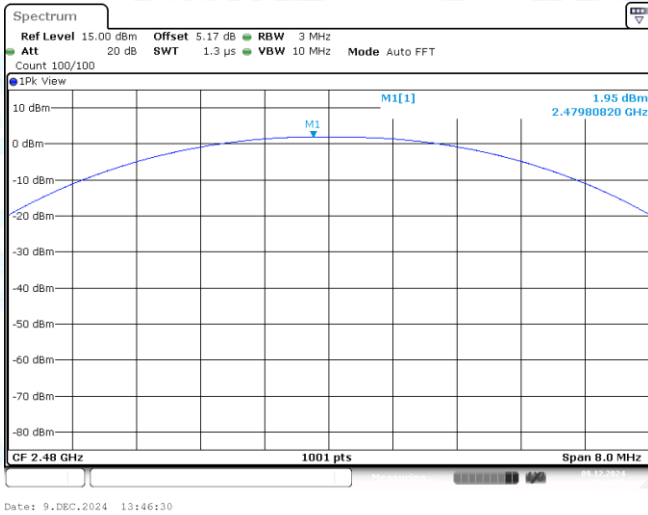
3.2 Test Graphs



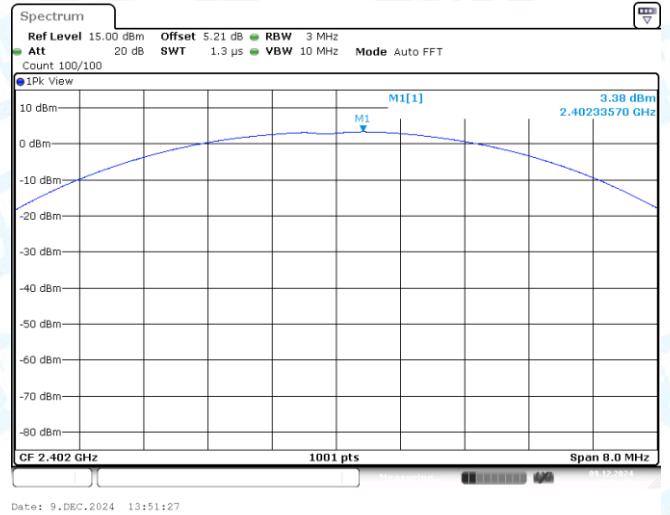
DH5-Ant1-2402-PASS



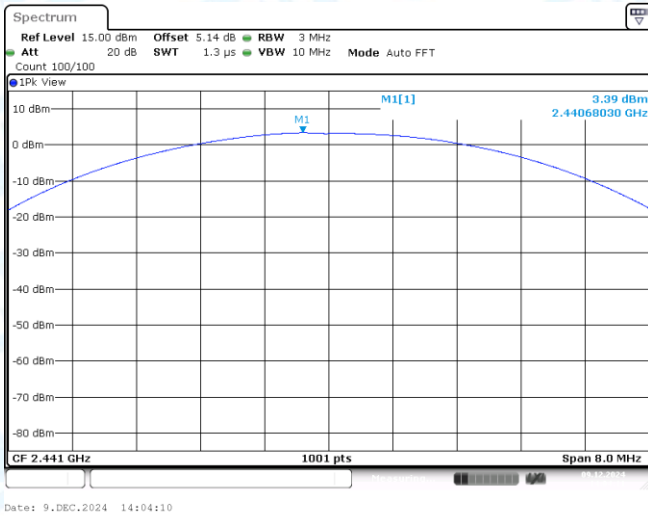
DH5-Ant1-2441-PASS



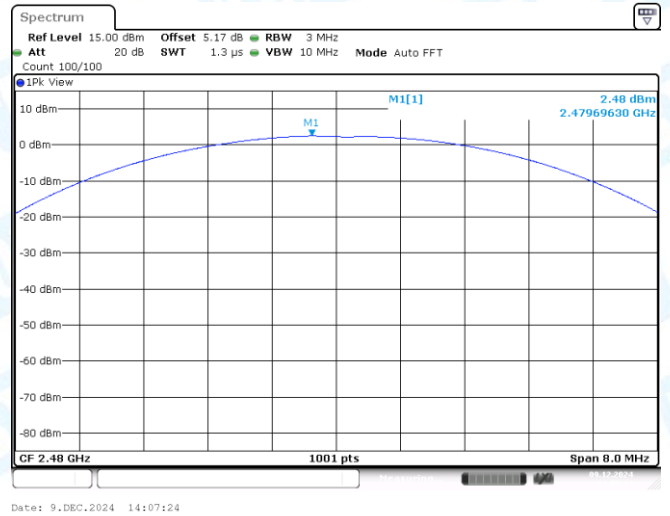
DH5-Ant1-2480-PASS



2DH5-Ant1-2402-PASS



2DH5-Ant1-2441-PASS



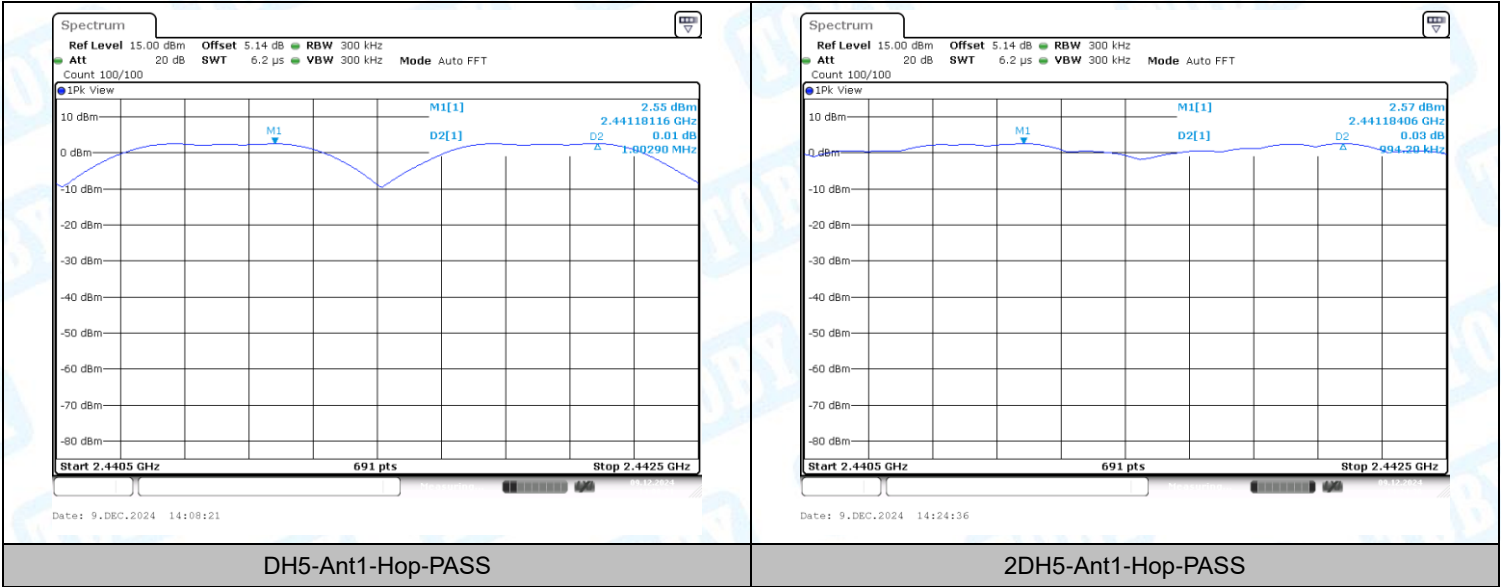
2DH5-Ant1-2480-PASS

4. Carrier frequency separation

4.1 Test Result

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.003	≥ 1.000	PASS
2DH5	Ant1	Hop	0.994	≥ 0.880	PASS

4.2 Test Graphs

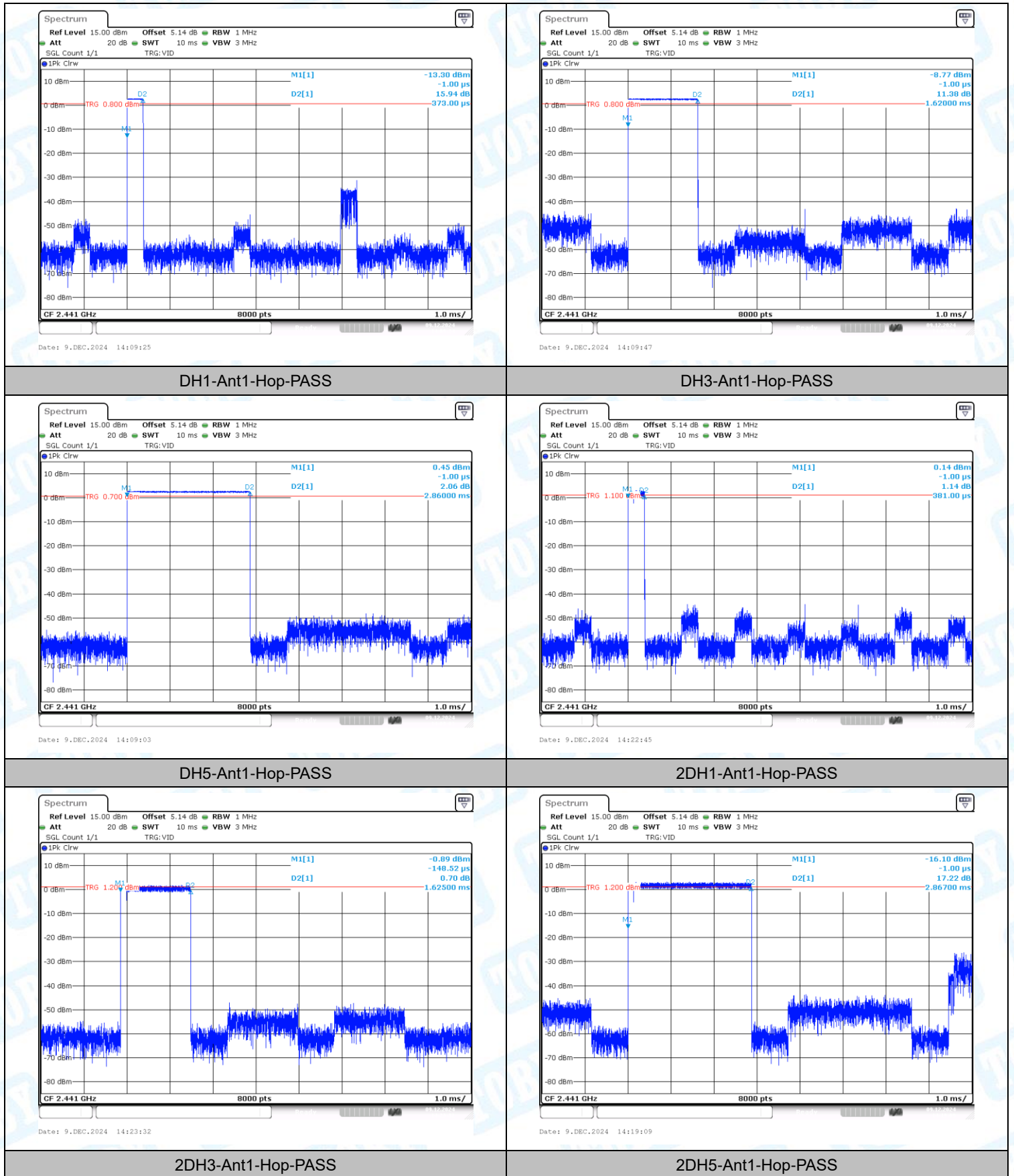


5. Time of occupancy

5.1 Test Result

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.373	320	0.119	≤0.4	PASS
DH3	Ant1	Hop	1.620	160	0.259	≤0.4	PASS
DH5	Ant1	Hop	2.860	106.67	0.305	≤0.4	PASS
2DH1	Ant1	Hop	0.381	320	0.122	≤0.4	PASS
2DH3	Ant1	Hop	1.625	160	0.26	≤0.4	PASS
2DH5	Ant1	Hop	2.867	106.67	0.306	≤0.4	PASS

5.2 Test Graphs

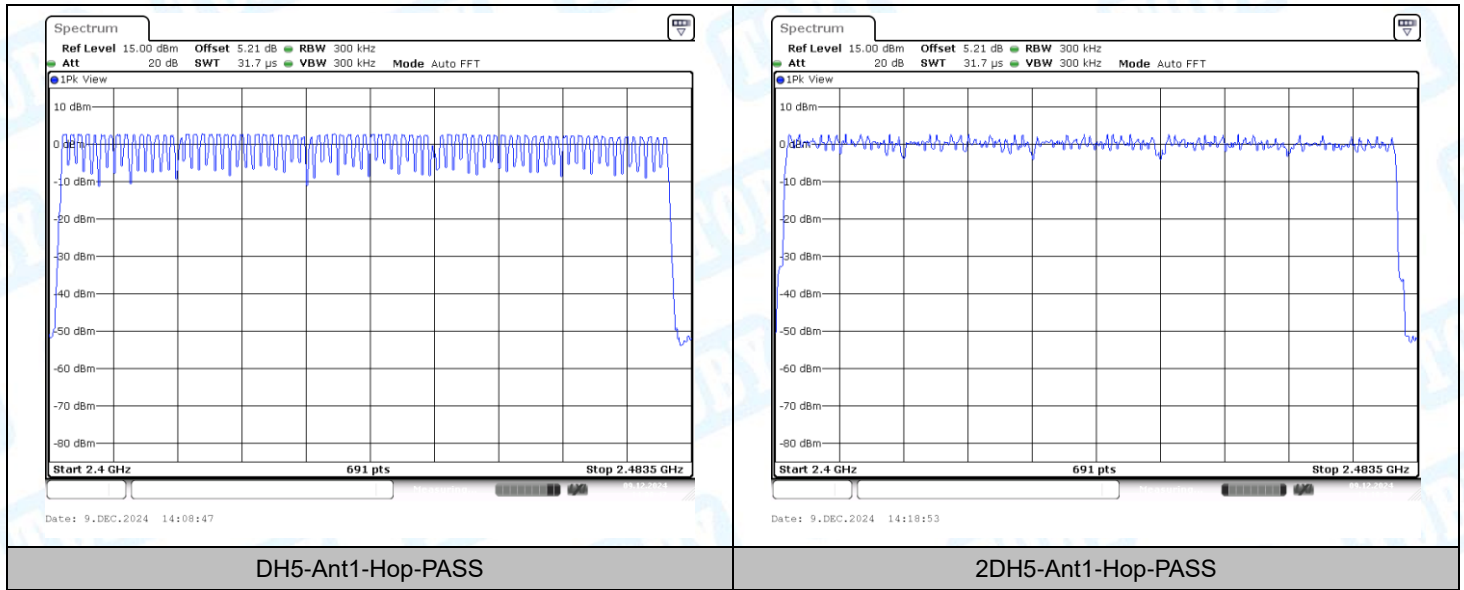


6. Number of hopping channels

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

6.2 Test Graphs

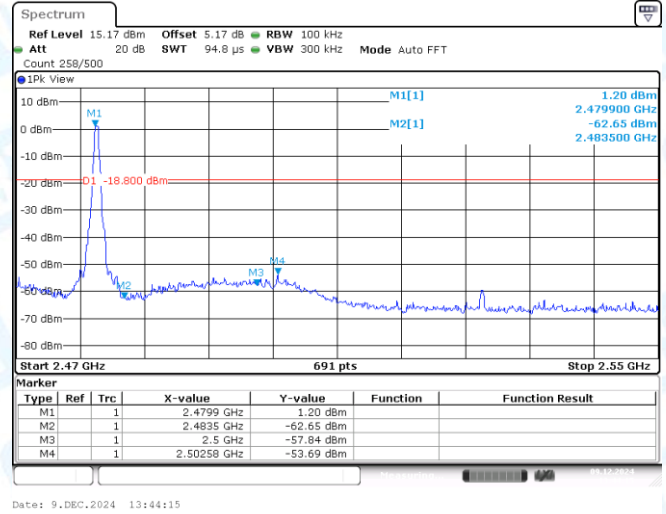
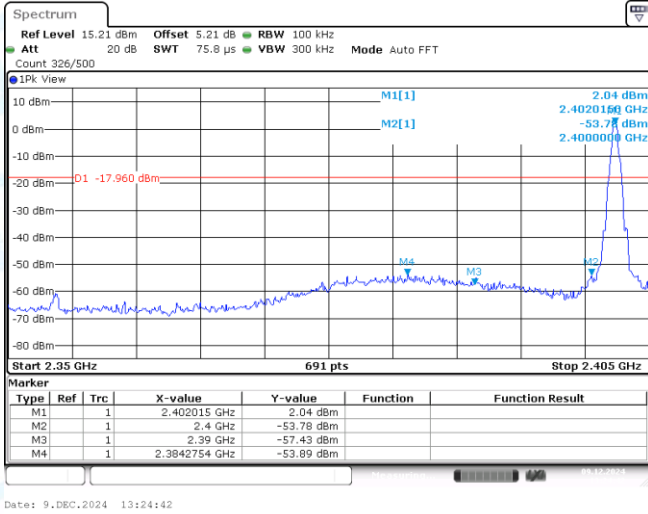


7. Band edge measurements

7.1 Test Result

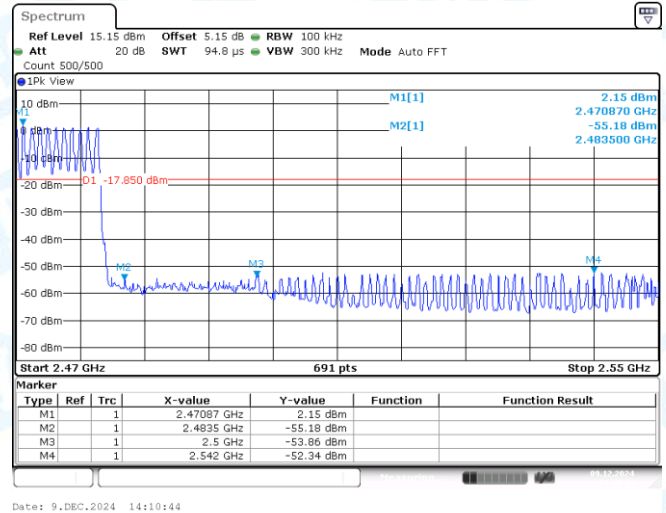
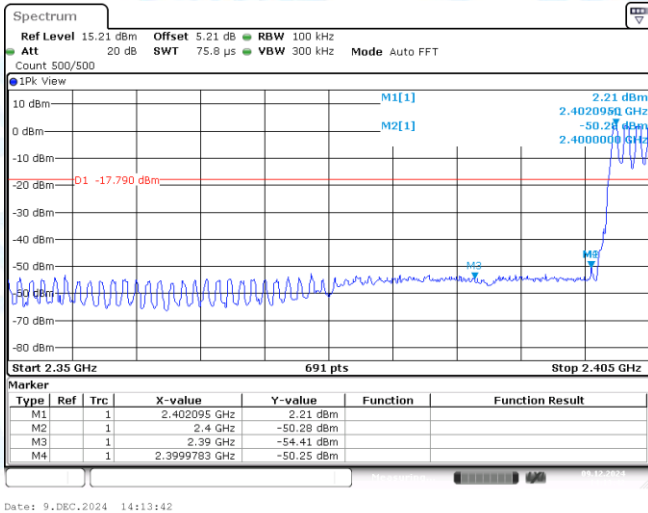
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	2.04	-53.89	≤-17.96	PASS
DH5	Ant1	High	2480	1.20	-53.69	≤-18.8	PASS
DH5	Ant1	Low	Hop_2402	2.21	-50.25	≤-17.79	PASS
DH5	Ant1	High	Hop_2480	2.15	-52.34	≤-17.85	PASS
2DH5	Ant1	Low	2402	1.98	-53.2	≤-18.02	PASS
2DH5	Ant1	High	2480	1.62	-54.74	≤-18.38	PASS
2DH5	Ant1	Low	Hop_2402	2.41	-52.26	≤-17.59	PASS
2DH5	Ant1	High	Hop_2480	1.45	-52.18	≤-18.55	PASS

7.2 Test Graphs



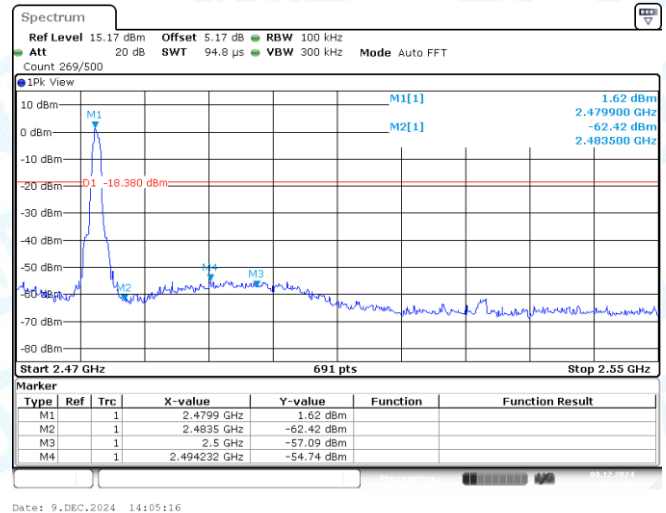
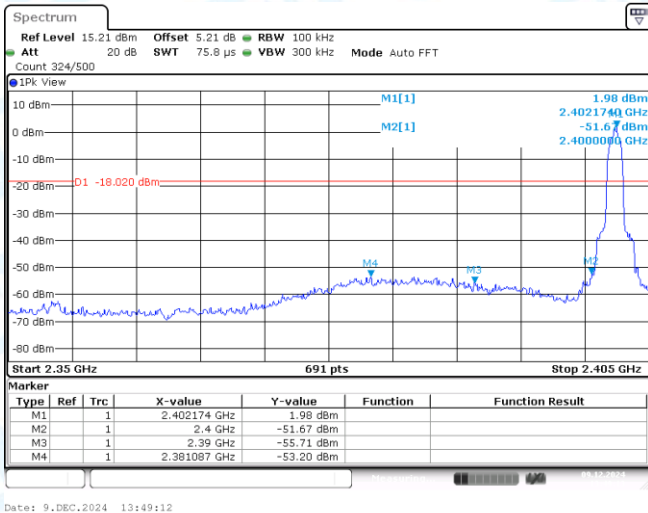
DH5-Ant1-2402-PASS

DH5-Ant1-2480-PASS



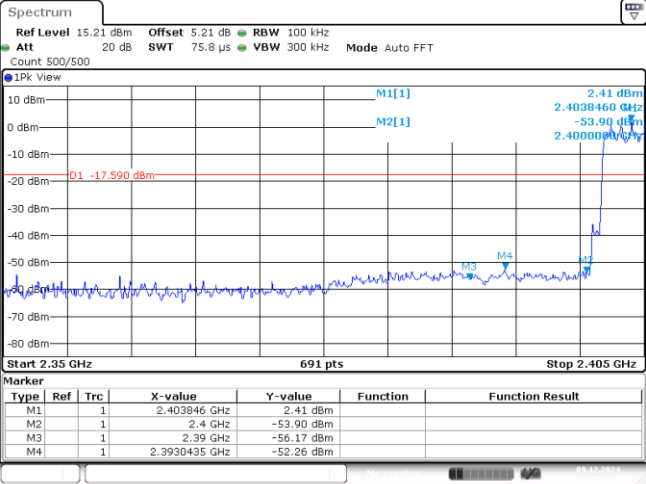
DH5-Ant1-Hop_2402-PASS

DH5-Ant1-Hop_2480-PASS

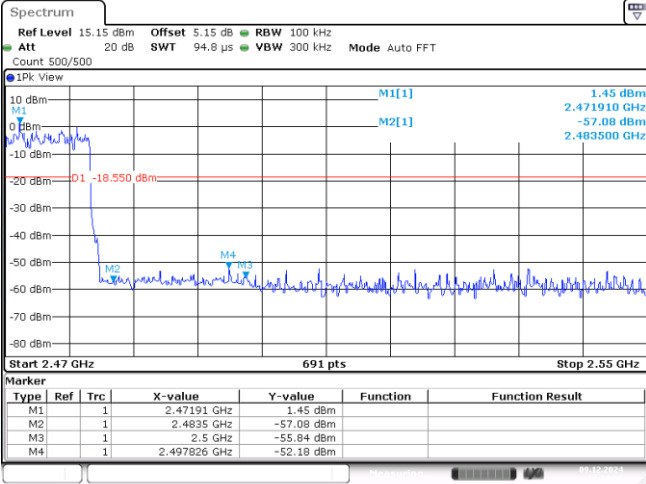


2DH5-Ant1-2402-PASS

2DH5-Ant1-2480-PASS



2DH5-Ant1-Hop_2402-PASS



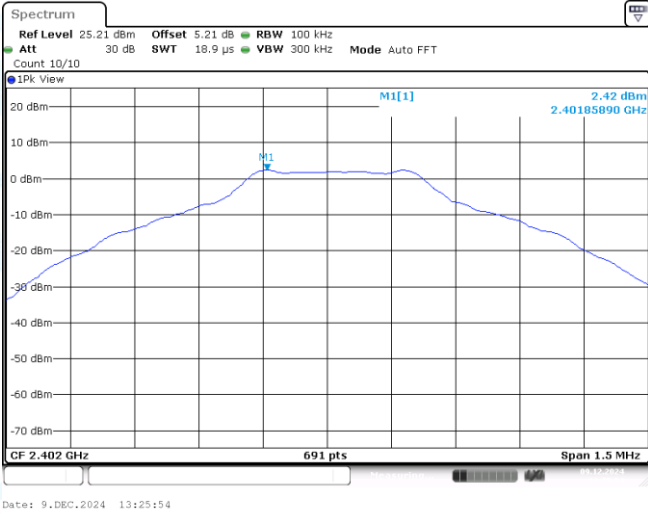
2DH5-Ant1-Hop_2480-PASS

8. Conducted Spurious Emission

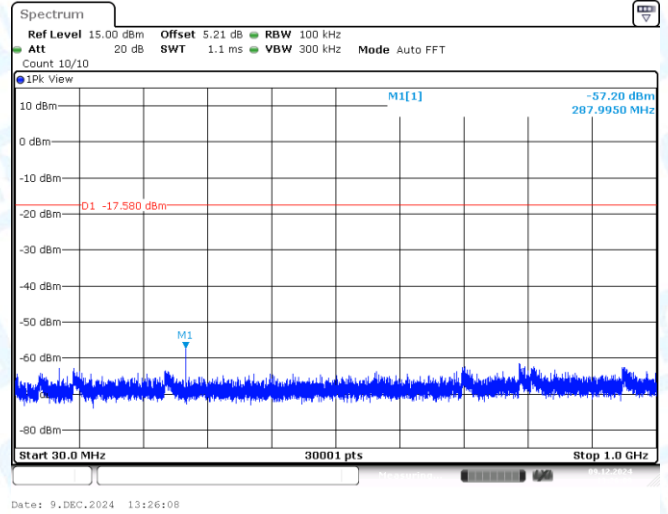
8.1 Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	2.42	2.42	---	PASS
DH5	Ant1	2402	30~1000	2.42	-57.2	≤-17.58	PASS
DH5	Ant1	2402	1000~26500	2.42	-42.44	≤-17.58	PASS
DH5	Ant1	2441	0~Reference	2.38	2.38	---	PASS
DH5	Ant1	2441	30~1000	2.38	-46.06	≤-17.62	PASS
DH5	Ant1	2441	1000~26500	2.38	-41.26	≤-17.62	PASS
DH5	Ant1	2480	0~Reference	1.68	1.68	---	PASS
DH5	Ant1	2480	30~1000	1.68	-58.46	≤-18.32	PASS
DH5	Ant1	2480	1000~26500	1.68	-40.22	≤-18.32	PASS
2DH5	Ant1	2402	0~Reference	2.57	2.57	---	PASS
2DH5	Ant1	2402	30~1000	2.57	-44.67	≤-17.43	PASS
2DH5	Ant1	2402	1000~26500	2.57	-44.12	≤-17.43	PASS
2DH5	Ant1	2441	0~Reference	2.51	2.51	---	PASS
2DH5	Ant1	2441	30~1000	2.51	-56.8	≤-17.49	PASS
2DH5	Ant1	2441	1000~26500	2.51	-40.81	≤-17.49	PASS
2DH5	Ant1	2480	0~Reference	1.77	1.77	---	PASS
2DH5	Ant1	2480	30~1000	1.77	-44.63	≤-18.23	PASS
2DH5	Ant1	2480	1000~26500	1.77	-43.16	≤-18.23	PASS

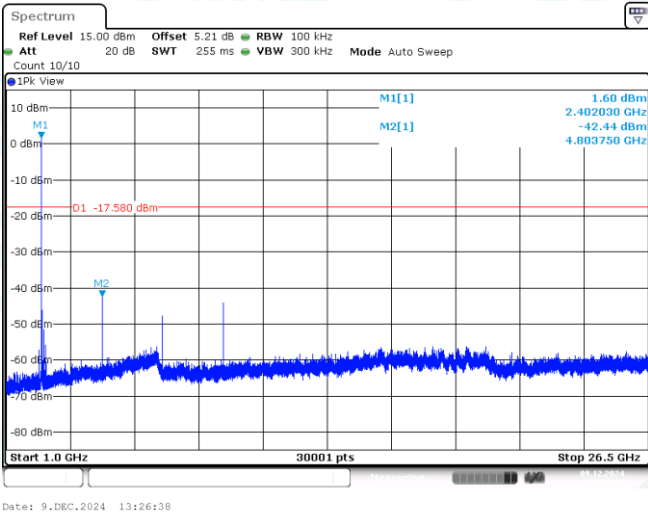
8.2 Test Graphs



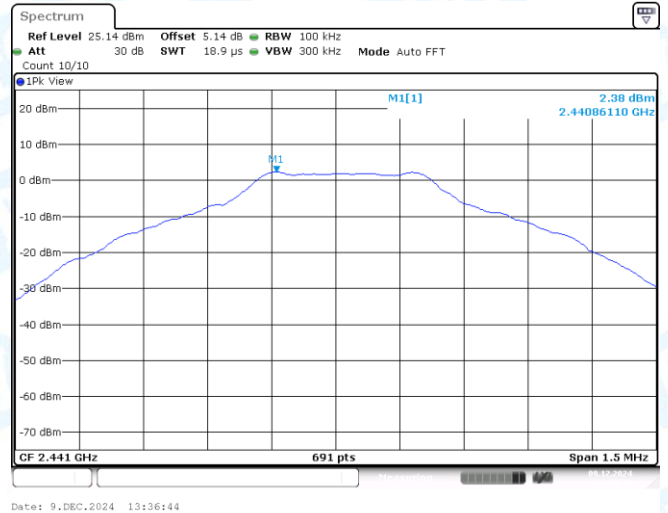
DH5-Ant1-2402-0~Reference-PASS



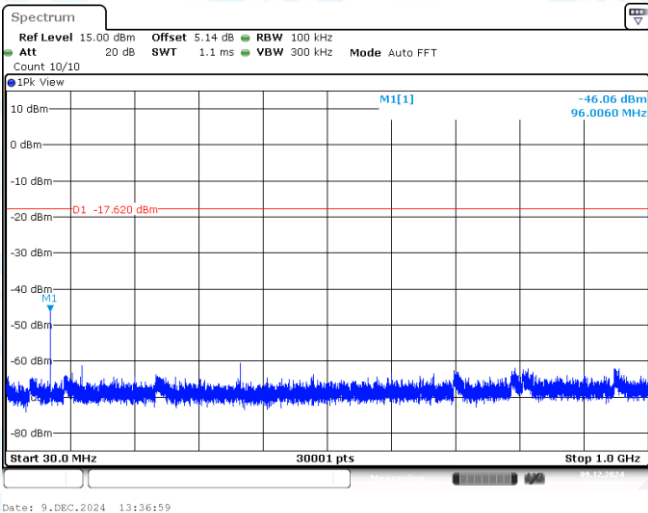
DH5-Ant1-2402-30~1000-PASS



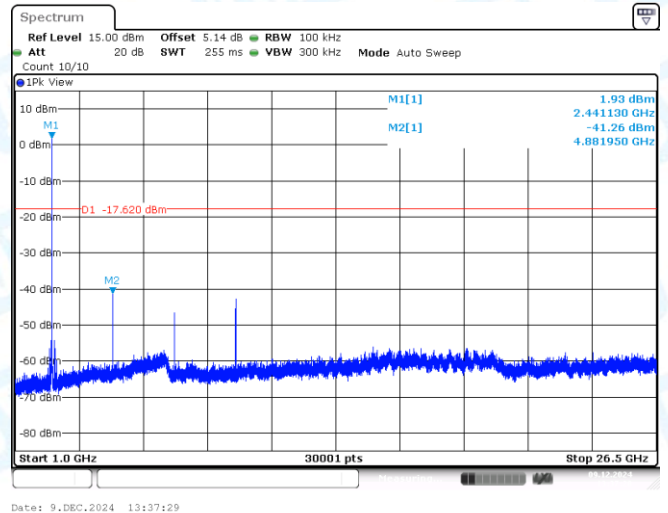
DH5-Ant1-2402-1000~26500-PASS



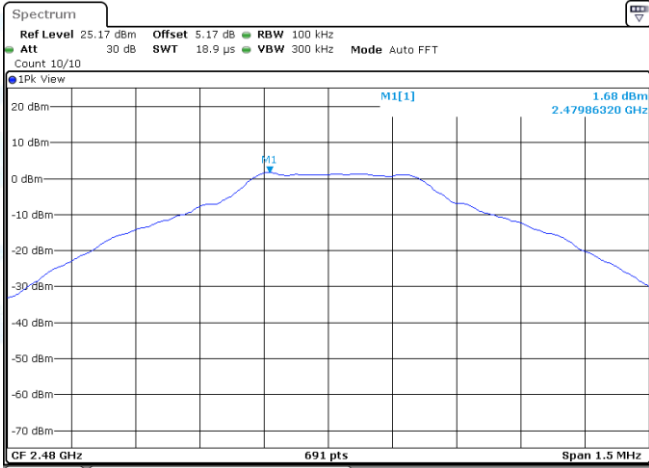
DH5-Ant1-2441-0~Reference-PASS



DH5-Ant1-2441-30~1000-PASS

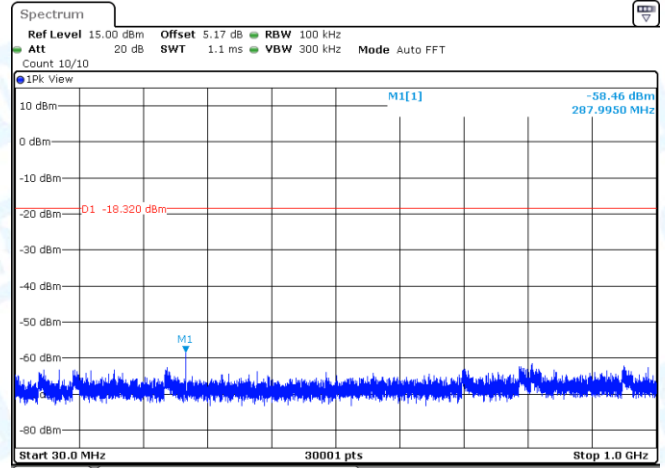


DH5-Ant1-2441-1000~26500-PASS



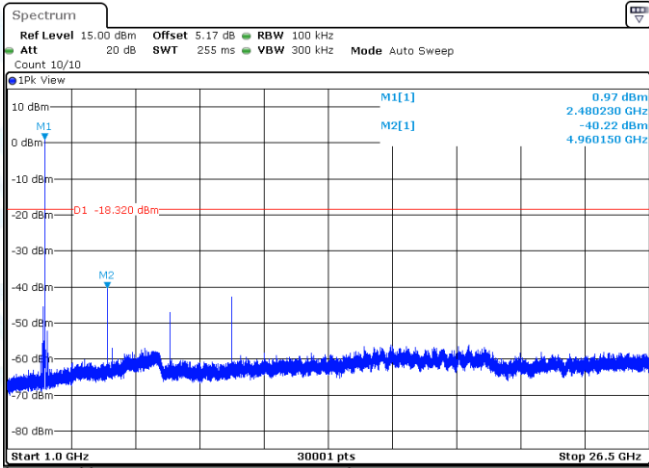
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DH5-Ant1-2480-0~Reference-PASS



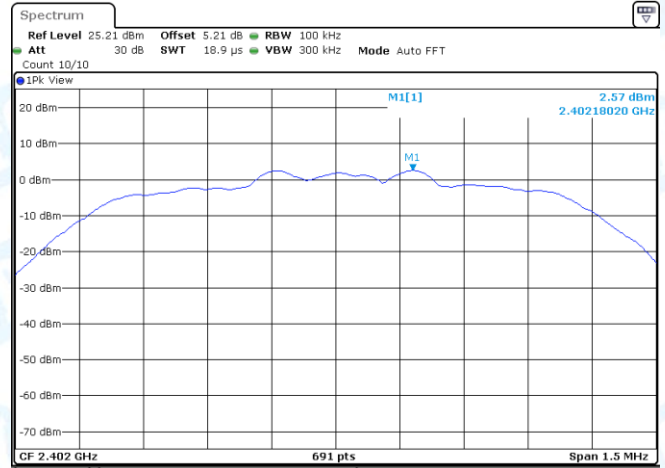
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DH5-Ant1-2480-30~1000-PASS



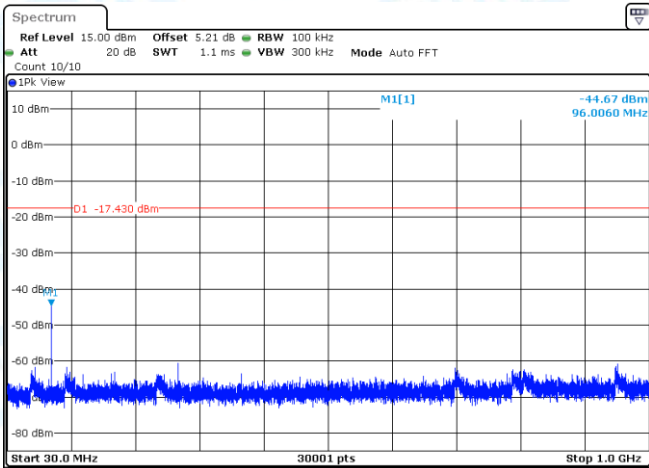
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DH5-Ant1-2480-1000~26500-PASS



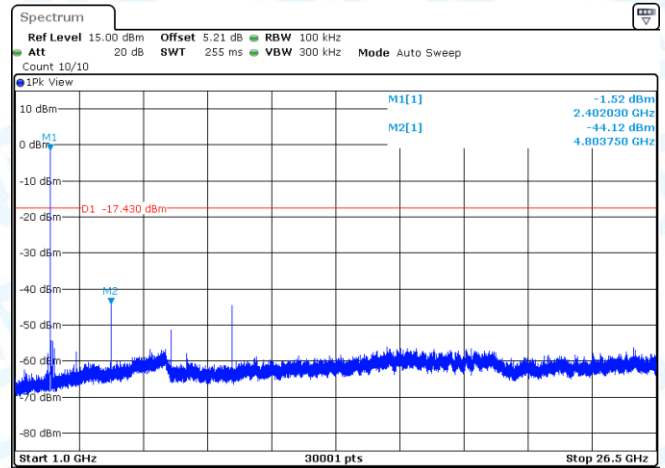
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2DH5-Ant1-2402-0~Reference-PASS



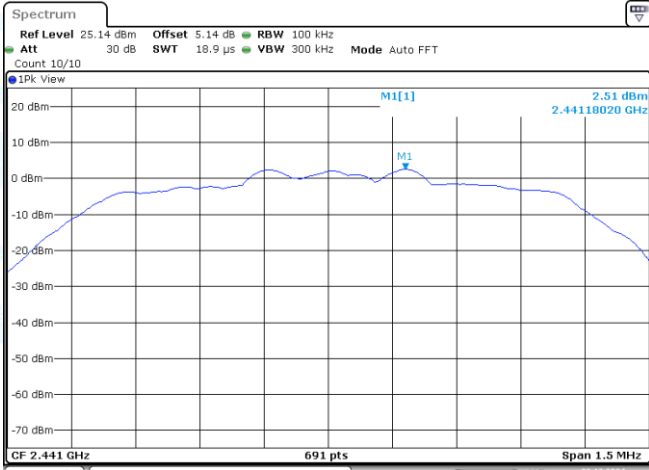
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2DH5-Ant1-2402-30~1000-PASS



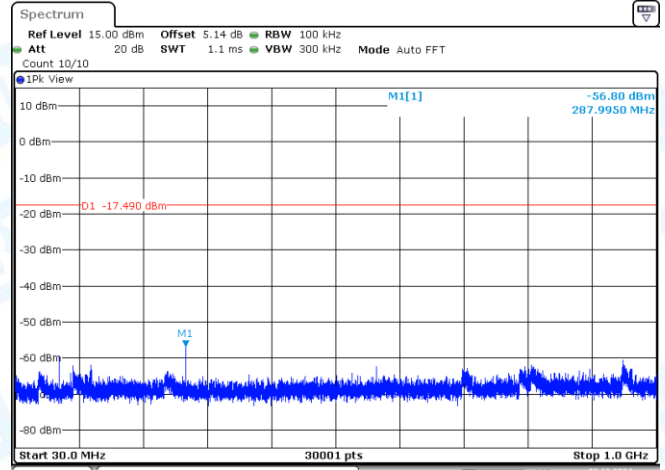
Date: 9.DEC.2024 13:51:09

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



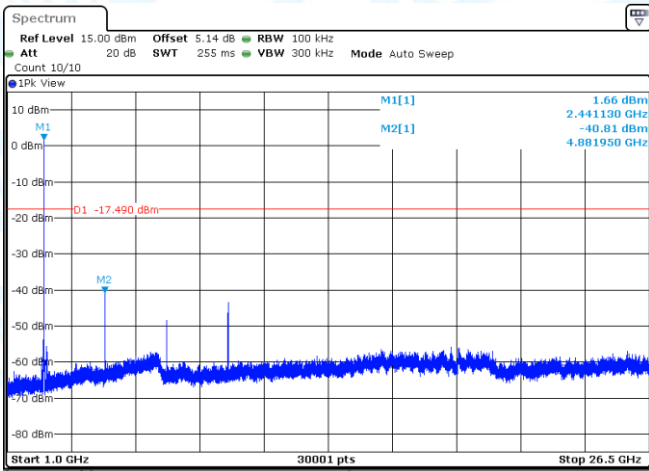
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2DH5-Ant1-2441-0~Reference-PASS



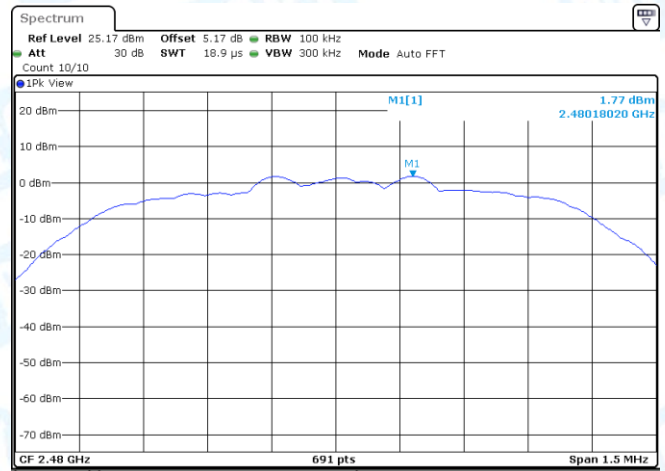
Date: 9.DEC.2024 14:03:22

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



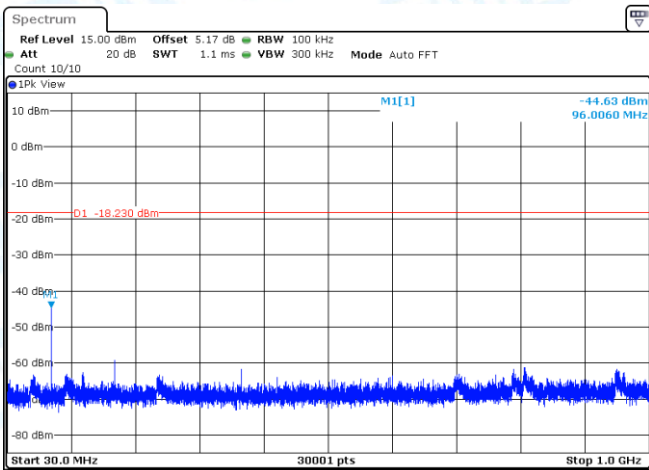
Date: 9.DEC.2024 14:03:52

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



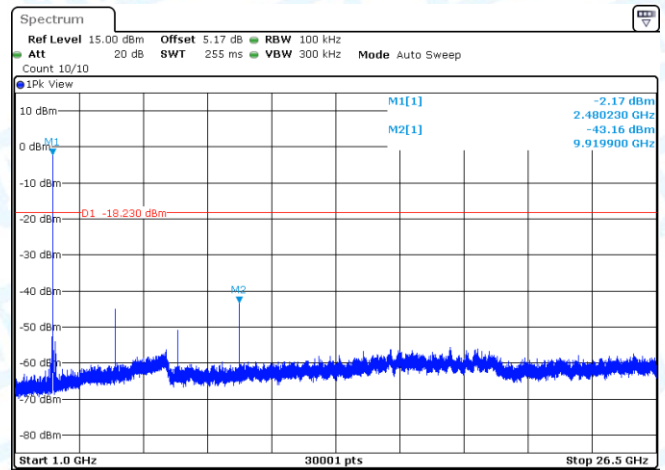
Date: 9.DEC.2024 14:06:28

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



Date: 9.DEC.2024 14:06:43

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



Date: 9.DEC.2024 14:07:13

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

9. Duty Cycle

9.1 Test Result

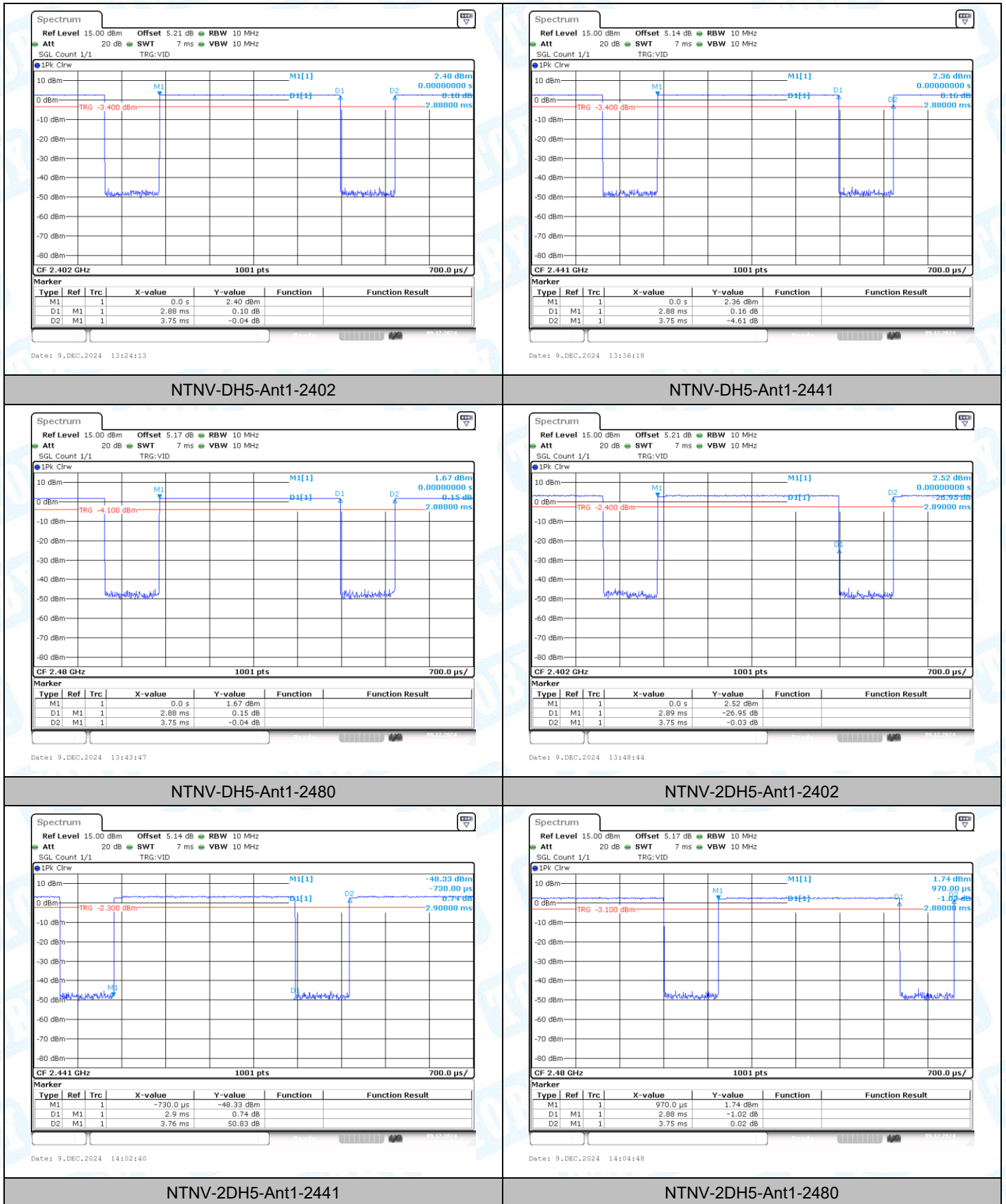
TestMode	Antenna	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	DC Factory	1/T [kHz]
DH5	Ant1	2402	2.88	3.75	76.80	1.15	0.35
DH5	Ant1	2441	2.88	3.75	76.80	1.15	0.35
DH5	Ant1	2480	2.88	3.75	76.80	1.15	0.35
2DH5	Ant1	2402	2.89	3.75	77.07	1.13	0.35
2DH5	Ant1	2441	2.90	3.76	77.13	1.13	0.34
2DH5	Ant1	2480	2.88	3.75	76.80	1.15	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



10. Emissions in Restricted Bands

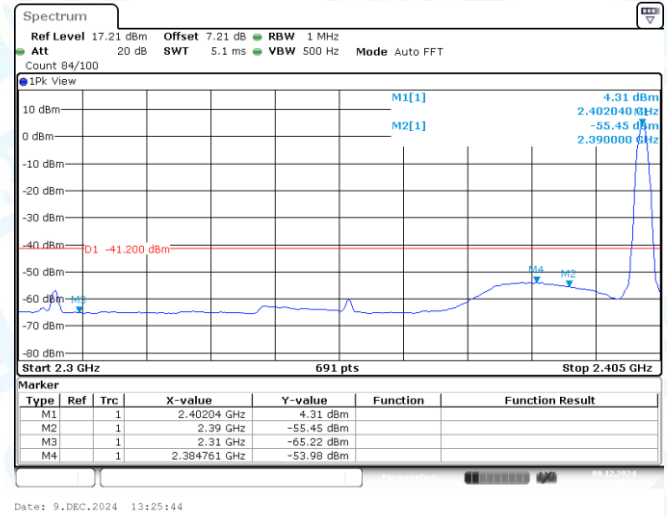
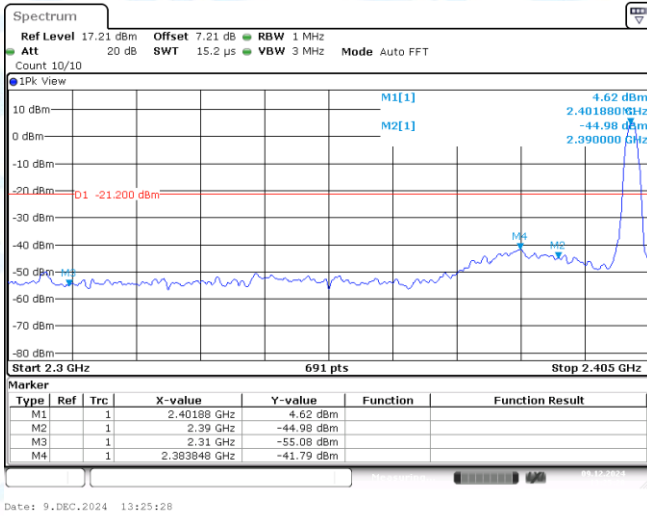
10.1 Test Result

Test Mode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	Peak	2390.000	-44.98	≤-21.20	50.22	≤74	PASS
DH5	Ant1	Low	2402	Peak	2310.000	-55.08	≤-21.20	40.12	≤74	PASS
DH5	Ant1	Low	2402	Peak	2383.848	-41.79	≤-21.20	53.41	≤74	PASS
DH5	Ant1	Low	2402	AV	2390.000	-55.45	≤-41.20	39.75	≤54	PASS
DH5	Ant1	Low	2402	AV	2310.000	-65.22	≤-41.20	29.98	≤54	PASS
DH5	Ant1	Low	2402	AV	2384.761	-53.98	≤-41.20	41.22	≤54	PASS
DH5	Ant1	High	2480	Peak	2483.500	-50.12	≤-21.20	45.08	≤74	PASS
DH5	Ant1	High	2480	Peak	2500.000	-44.89	≤-21.20	50.31	≤74	PASS
DH5	Ant1	High	2480	Peak	2495.623	-43.57	≤-21.20	51.63	≤74	PASS
DH5	Ant1	High	2480	AV	2483.500	-59.35	≤-41.20	35.85	≤54	PASS
DH5	Ant1	High	2480	AV	2500.000	-54.9	≤-41.20	40.30	≤54	PASS
DH5	Ant1	High	2480	AV	2498.406	-54.74	≤-41.20	40.46	≤54	PASS
2DH5	Ant1	Low	2402	Peak	2390.000	-44.04	≤-21.20	51.16	≤74	PASS
2DH5	Ant1	Low	2402	Peak	2310.000	-53.61	≤-21.20	41.59	≤74	PASS
2DH5	Ant1	Low	2402	Peak	2382.326	-41.71	≤-21.20	53.49	≤74	PASS
2DH5	Ant1	Low	2402	AV	2390.000	-54.99	≤-41.20	40.21	≤54	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-65.06	≤-41.20	30.14	≤54	PASS
2DH5	Ant1	Low	2402	AV	2381.413	-53.4	≤-41.20	41.80	≤54	PASS
2DH5	Ant1	High	2480	Peak	2483.500	-50.58	≤-21.20	44.62	≤74	PASS
2DH5	Ant1	High	2480	Peak	2500.000	-43.92	≤-21.20	51.28	≤74	PASS
2DH5	Ant1	High	2480	Peak	2492.493	-42.56	≤-21.20	52.64	≤74	PASS
2DH5	Ant1	High	2480	AV	2483.500	-59.7	≤-41.20	35.50	≤54	PASS
2DH5	Ant1	High	2480	AV	2500.000	-54.39	≤-41.20	40.81	≤54	PASS
2DH5	Ant1	High	2480	AV	2498.290	-54.25	≤-41.20	40.95	≤54	PASS

Note:

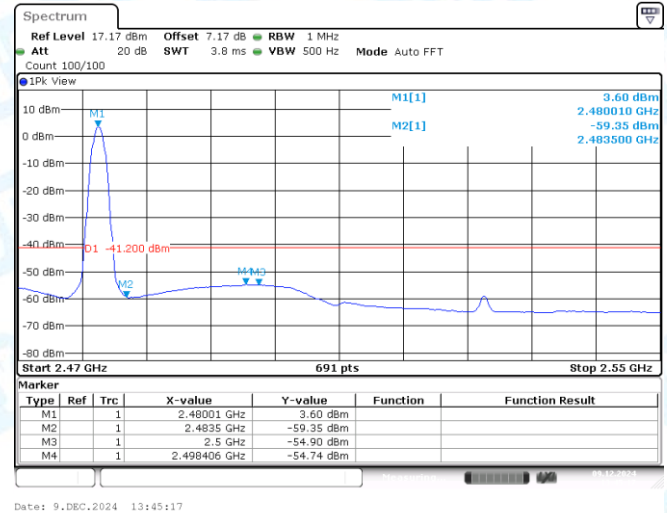
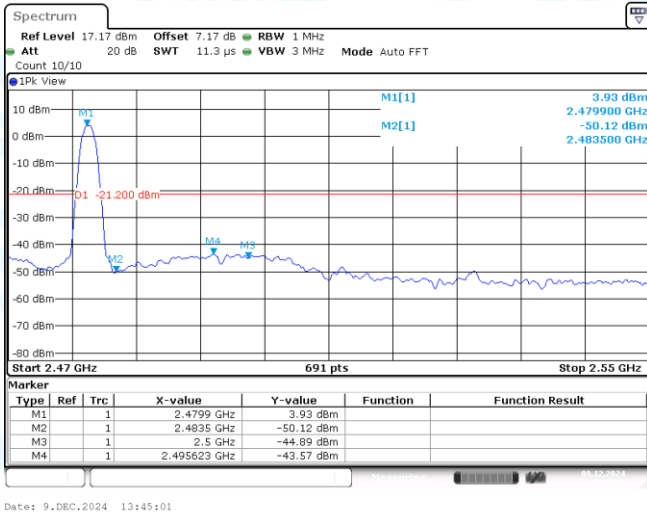
- The Antenna Gain is compensated in the graph.
- The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

10.2 Test Graphs



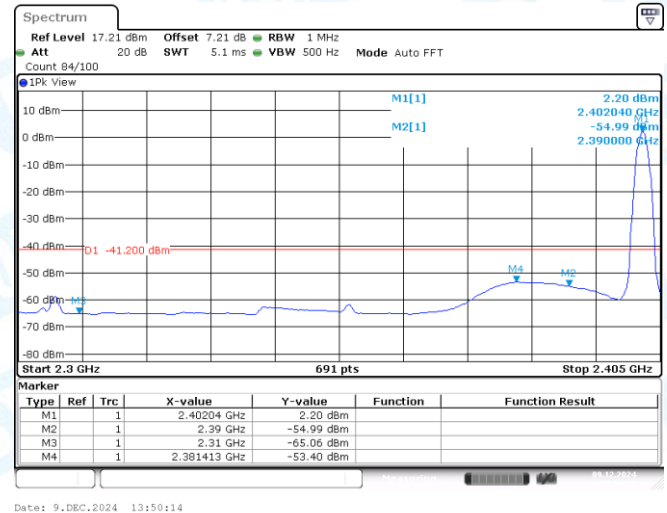
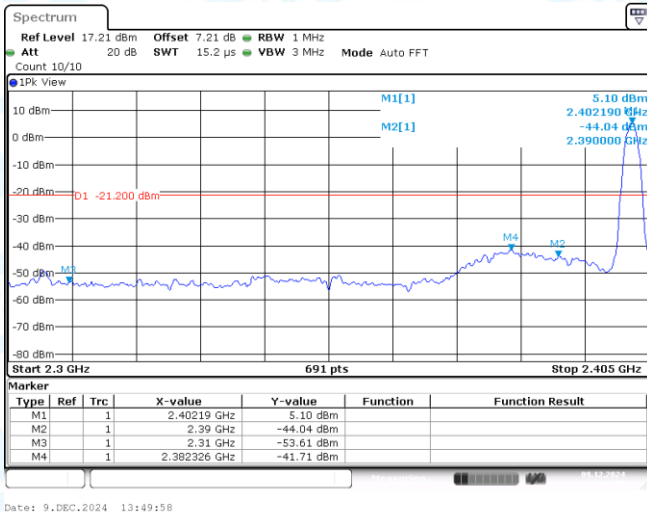
DH5-Ant1-2402-PASS

DH5-Ant1-2402-PASS



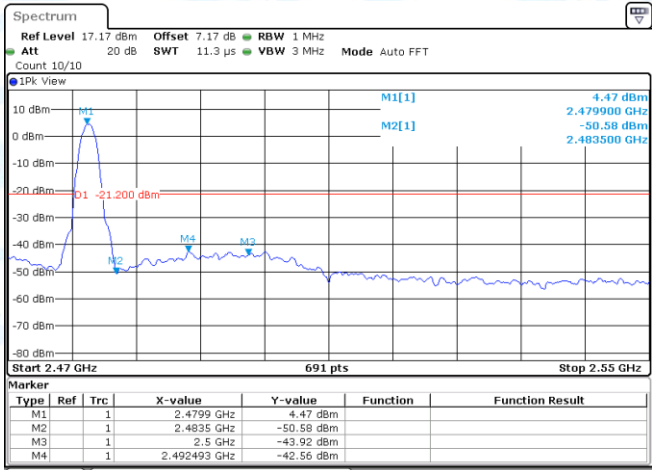
DH5-Ant1-2480-PASS

DH5-Ant1-2480-PASS

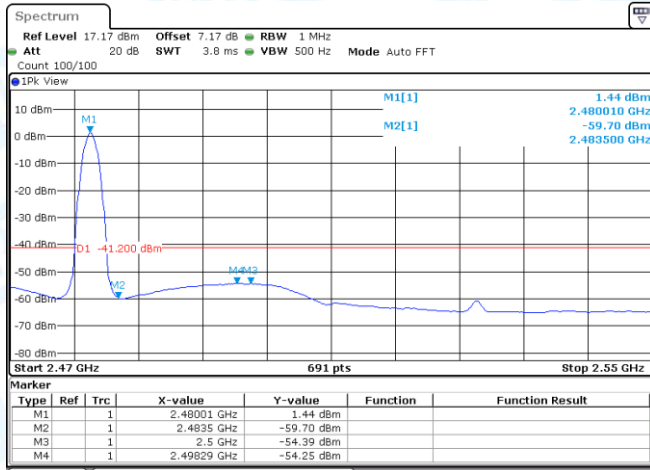


2DH5-Ant1-2402-PASS

2DH5-Ant1-2402-PASS



2DH5-Ant1-2480-PASS



2DH5-Ant1-2480-PASS

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