

RF Test Data for 2.4G Wi-Fi (Conducted Measurements)

General Description of EUT	
EUT Name:	WiFi & BT combo module
Model:	EWN-8852BSN3DB
Sample ID:	HC-C-202501-0081-01-01
Test Standard:	FCC Part 15.247 & RSS 247 Issue 3
Environmental Conditions	
Ambient Temperature:	22.5°C
Ambient Humidity:	48%
Test Power Supply:	DC3.3V
Test Engineer:	Gold.Zhang
Note: For a more detailed features description, please refer to the report TBR-C-202501-0081-16	

Contents

1: DTS Bandwidth.....	3
1.1 Test Result	3
1.2 Test Graphs	4
2: Occupied Channel Bandwidth	10
2.1 Test Result	10
2.2 Test Graphs	11
3: Maximum conducted output power	17
3.1 Test Result Average	17
4: Maximum power spectral density	19
4.1 Test Result	19
4.2 Test Graphs	21
5: Band edge measurements	27
5.1 Test Result	27
5.2 Test Graphs	28
6: Conducted Spurious Emission	32
6.1 Test Result	32
6.2 Test Graphs	35
7: Duty Cycle	53
7.1 Test Result	53
7.2 Test Graphs	54

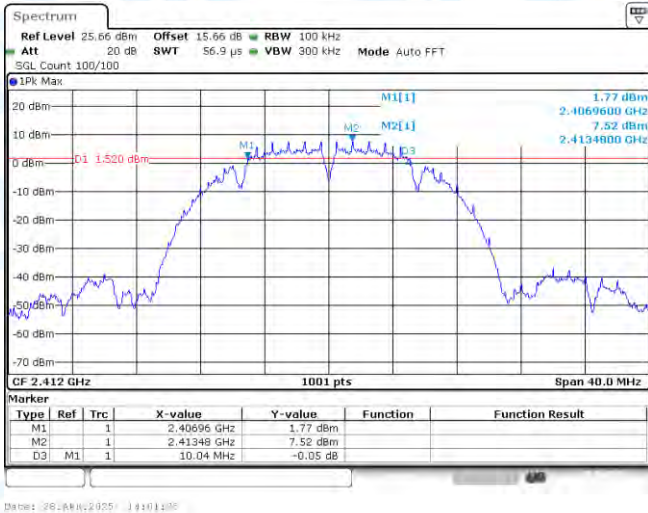
1: DTS Bandwidth

1.1 Test Result

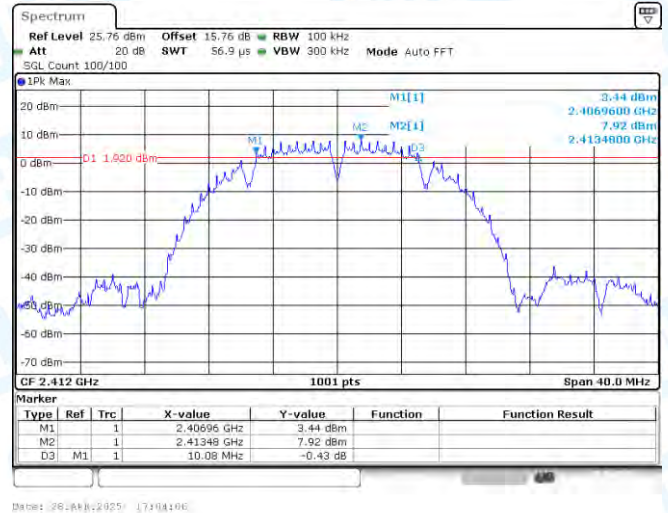
TestMode	Ant.	Frequency [MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	10.04	2406.96	2417.00	0.5	PASS
11B	Ant2	2412	10.08	2406.96	2417.04	0.5	PASS
11B	Ant1	2437	10.12	2431.92	2442.04	0.5	PASS
11B	Ant2	2437	11.08	2430.96	2442.04	0.5	PASS
11B	Ant1	2462	11.08	2455.96	2467.04	0.5	PASS
11B	Ant2	2462	10.08	2456.96	2467.04	0.5	PASS
11G	Ant2	2412	16.32	2403.84	2420.16	0.5	PASS
11G	Ant1	2412	16.36	2403.80	2420.16	0.5	PASS
11G	Ant2	2437	16.36	2428.80	2445.16	0.5	PASS
11G	Ant1	2437	16.40	2428.80	2445.20	0.5	PASS
11G	Ant1	2462	16.32	2453.84	2470.16	0.5	PASS
11G	Ant2	2462	16.36	2453.80	2470.16	0.5	PASS
11N20-CDD	Ant1	2412	17.56	2403.20	2420.76	0.5	PASS
11N20-CDD	Ant2	2412	17.52	2403.24	2420.76	0.5	PASS
11N20-CDD	Ant1	2437	17.60	2428.20	2445.80	0.5	PASS
11N20-CDD	Ant2	2437	17.40	2428.36	2445.76	0.5	PASS
11N20-CDD	Ant1	2462	17.64	2453.16	2470.80	0.5	PASS
11N20-CDD	Ant2	2462	17.44	2453.20	2470.64	0.5	PASS
11N40-CDD	Ant1	2422	36.16	2403.92	2440.08	0.5	PASS
11N40-CDD	Ant2	2422	36.16	2403.92	2440.08	0.5	PASS
11N40-CDD	Ant1	2437	36.32	2418.92	2455.24	0.5	PASS
11N40-CDD	Ant2	2437	36.16	2418.92	2455.08	0.5	PASS
11N40-CDD	Ant1	2452	36.32	2433.92	2470.24	0.5	PASS
11N40-CDD	Ant2	2452	36.48	2433.76	2470.24	0.5	PASS
11AX20-CDD	Ant1	2412	19.00	2402.48	2421.48	0.5	PASS
11AX20-CDD	Ant2	2412	18.68	2402.60	2421.28	0.5	PASS
11AX20-CDD	Ant1	2437	18.80	2427.56	2446.36	0.5	PASS
11AX20-CDD	Ant2	2437	18.84	2427.56	2446.40	0.5	PASS
11AX20-CDD	Ant1	2462	18.92	2452.56	2471.48	0.5	PASS
11AX20-CDD	Ant2	2462	18.88	2452.52	2471.40	0.5	PASS
11AX40-CDD	Ant1	2422	37.92	2403.04	2440.96	0.5	PASS
11AX40-CDD	Ant2	2422	38.00	2403.04	2441.04	0.5	PASS
11AX40-CDD	Ant1	2437	38.00	2418.04	2456.04	0.5	PASS
11AX40-CDD	Ant2	2437	38.00	2418.04	2456.04	0.5	PASS
11AX40-CDD	Ant1	2452	38.00	2433.04	2471.04	0.5	PASS
11AX40-CDD	Ant2	2452	37.92	2433.04	2470.96	0.5	PASS

Note: RF Conducted test Offset= cable loss+ Attenuator(10dB).

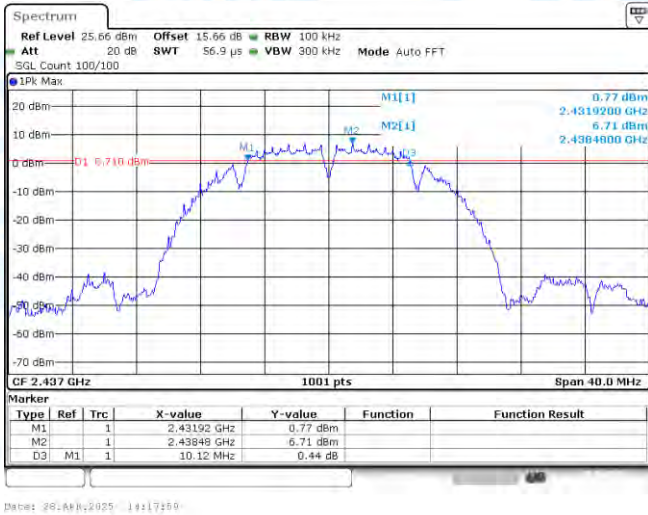
1.2 Test Graphs



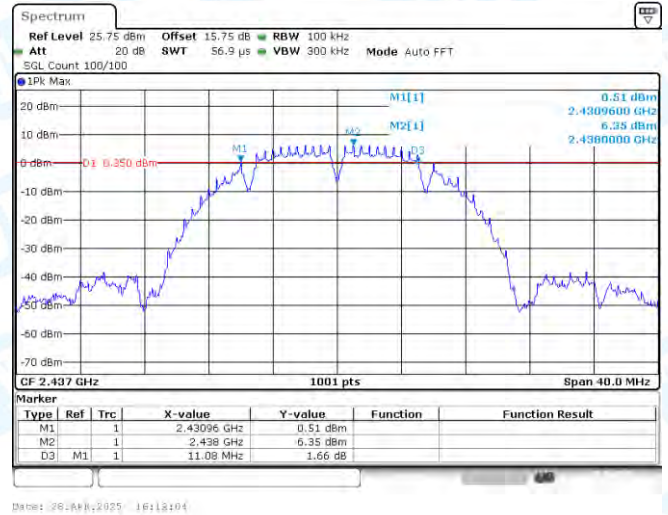
11B-Ant1-2412-PASS



11B-Ant2-2412-PASS



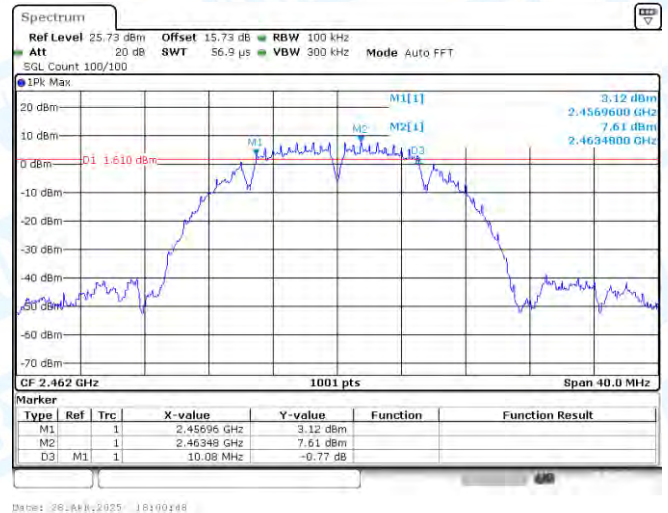
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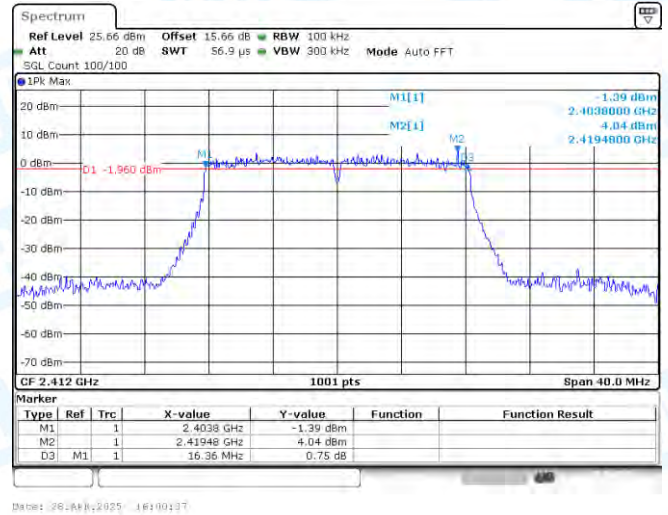
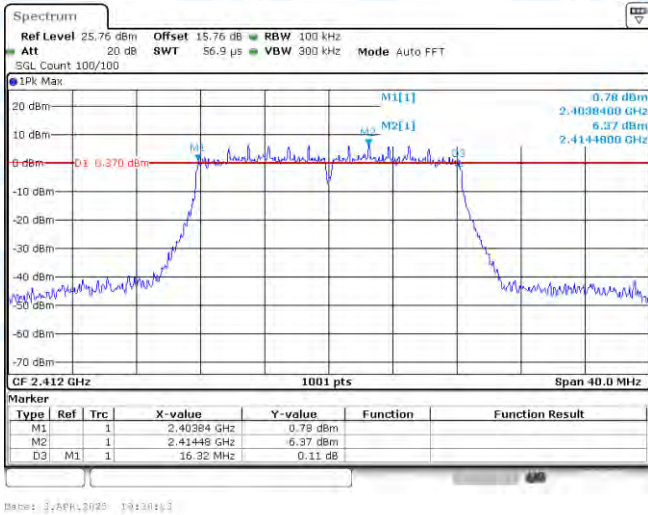
11B-Ant2-2437-PASS



11B-Ant1-2462-PASS

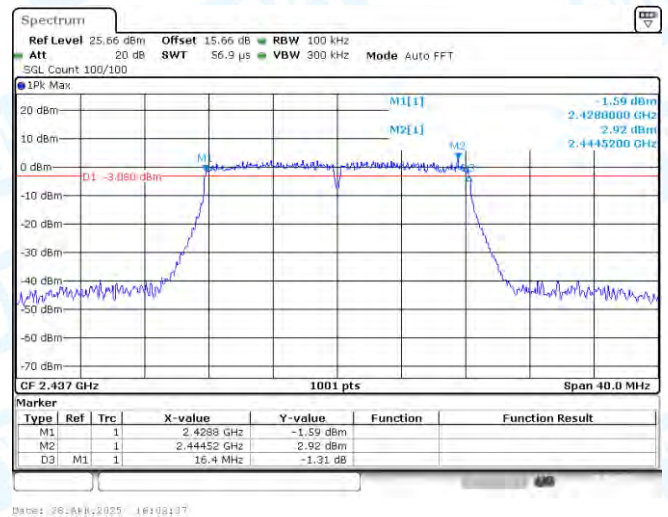
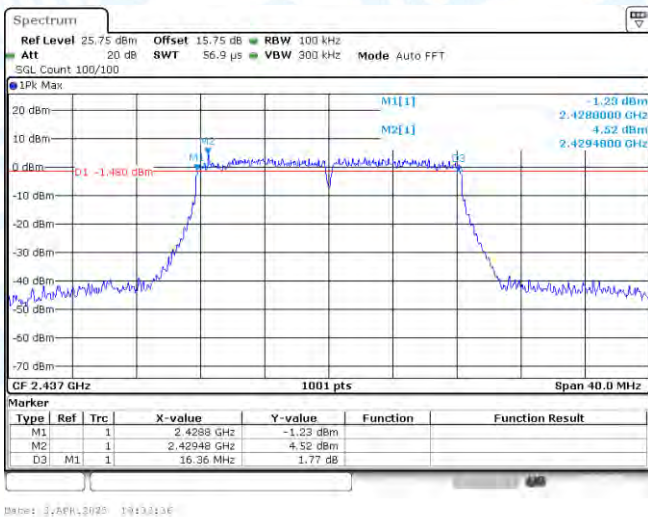


11B-Ant2-2462-PASS



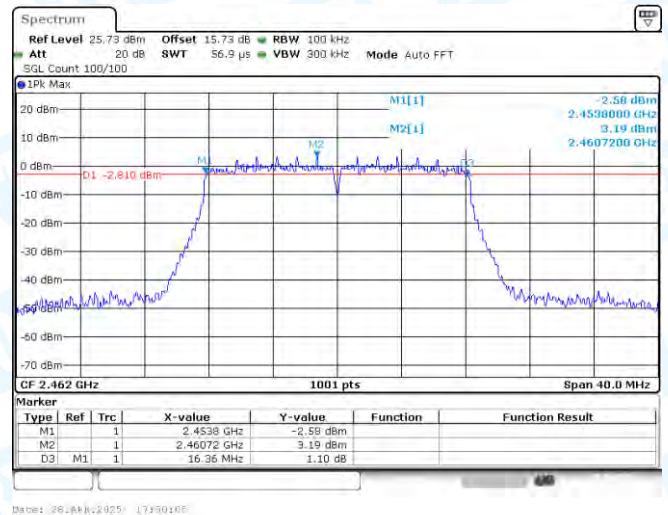
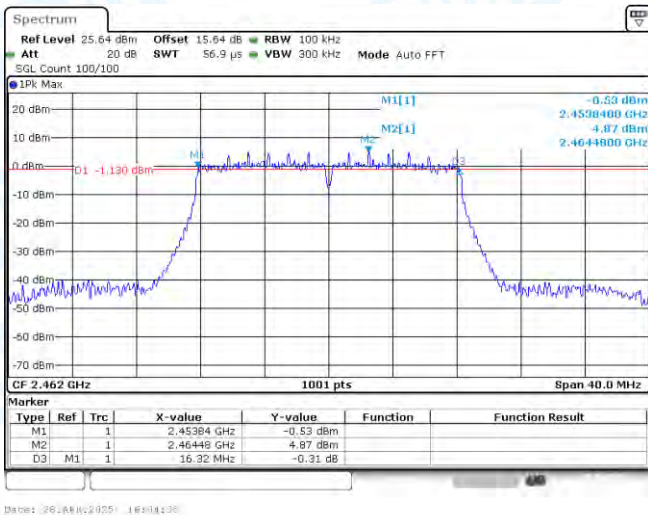
11G-Ant2-2412-PASS

11G-Ant1-2412-PASS



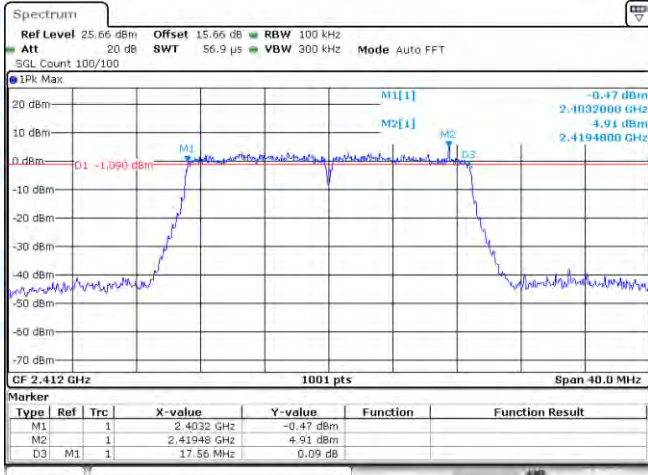
11G-Ant2-2437-PASS

11G-Ant1-2437-PASS

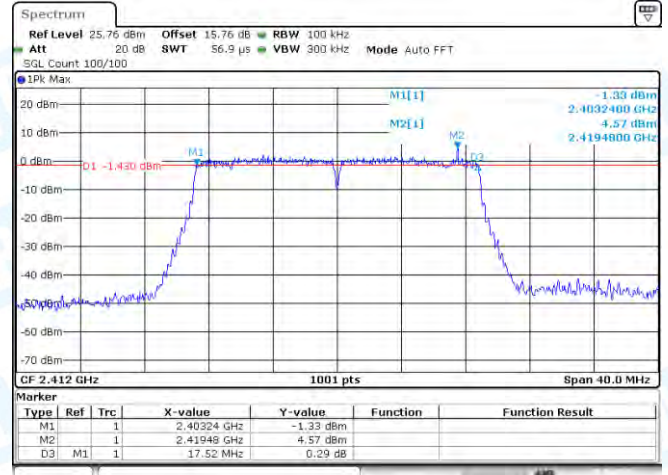


11G-Ant1-2462-PASS

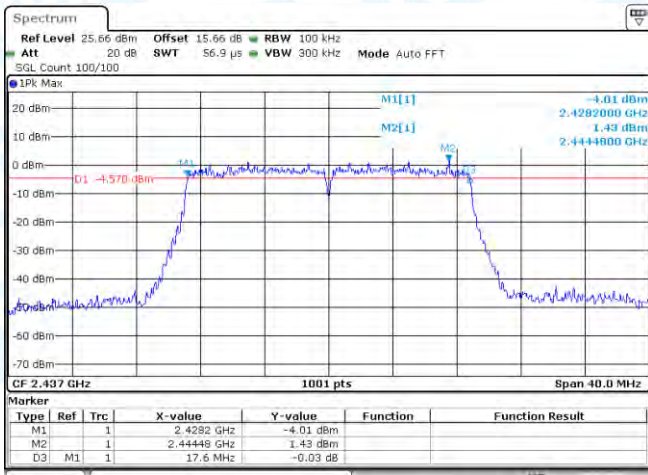
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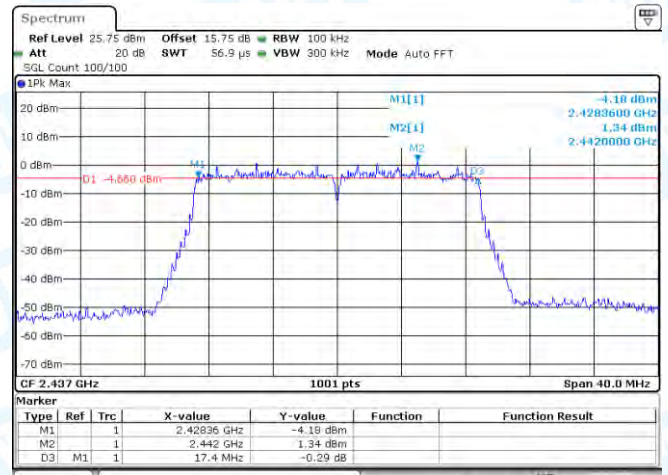
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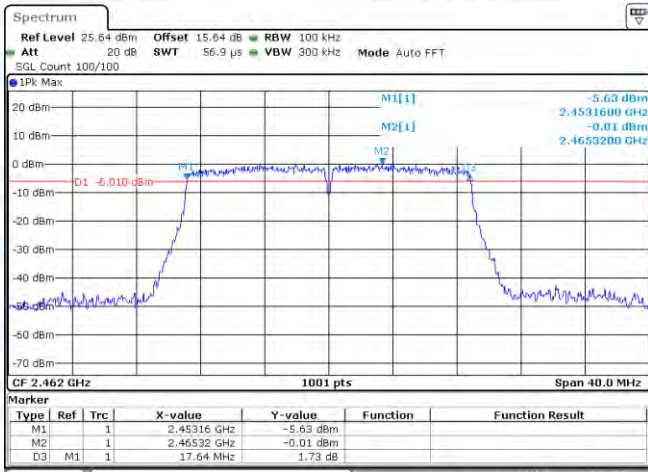
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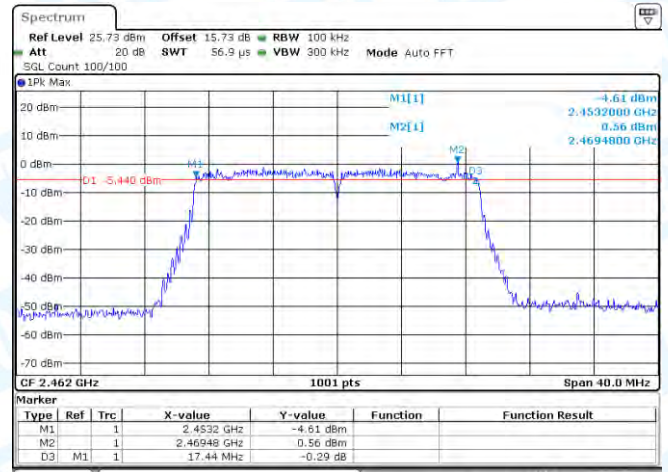
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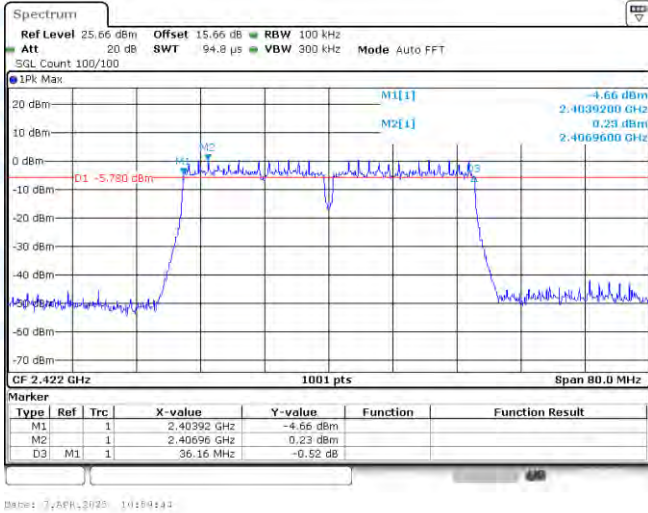
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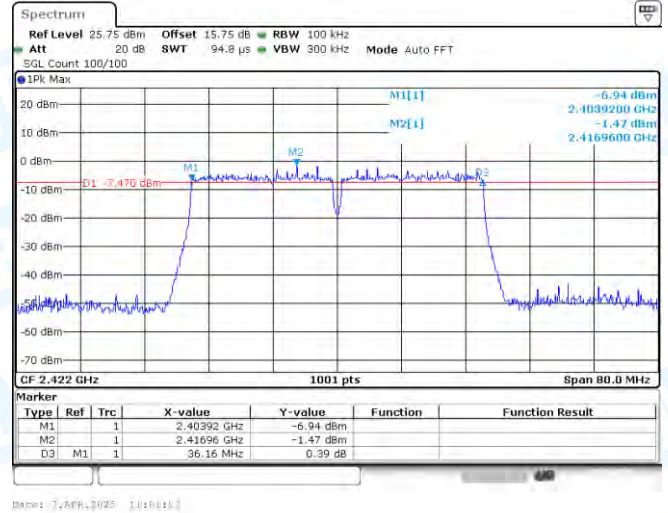
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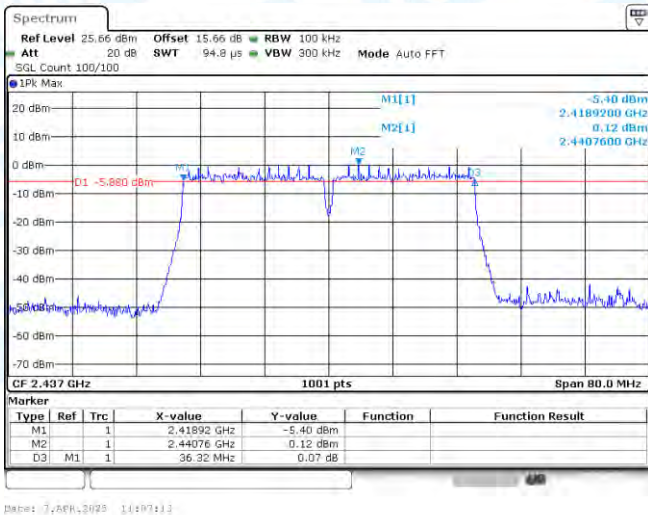
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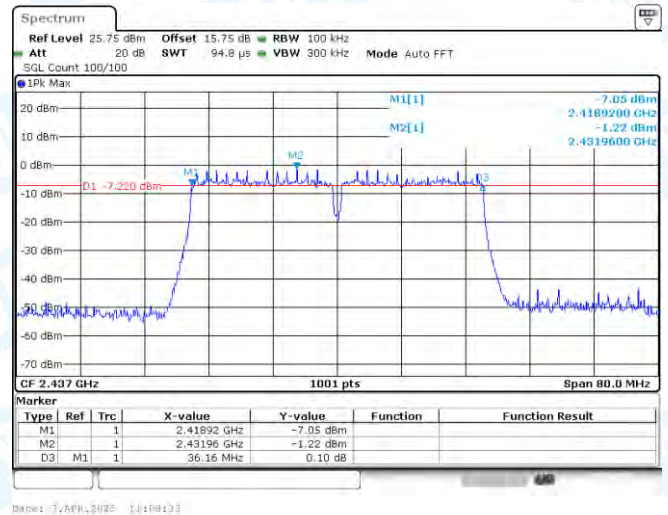
11N40-CDD-Ant1-2422-PASS



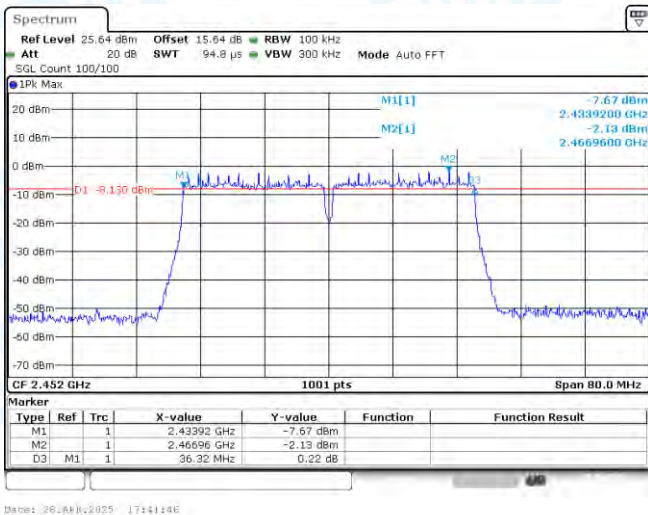
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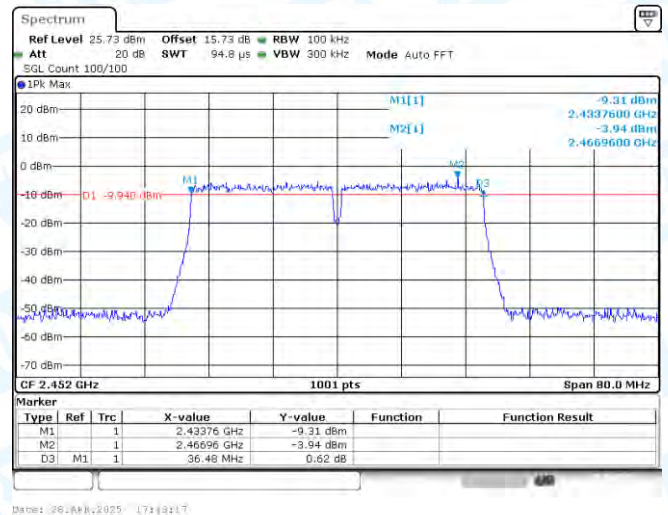
11N40-CDD-Ant1-2437-PASS



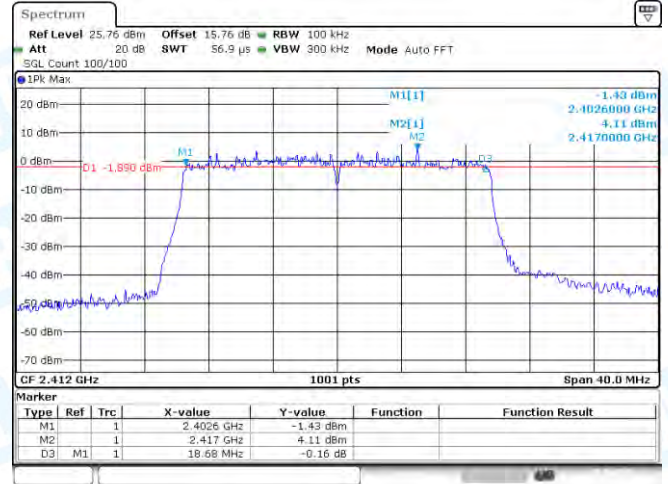
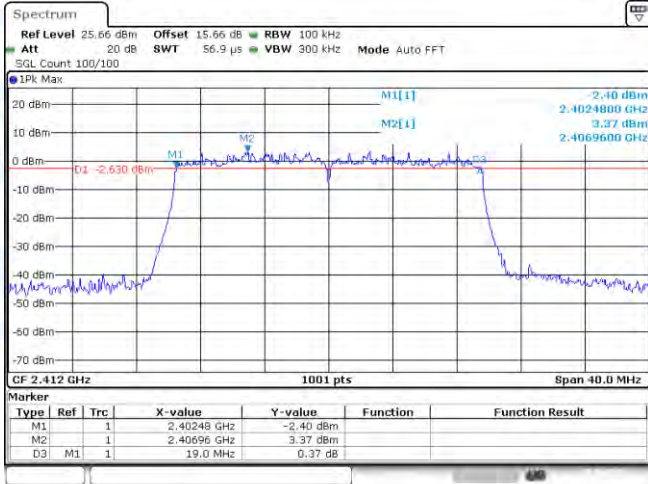
11N40-CDD-Ant2-2437-PASS



11N40-CDD-Ant1-2452-PASS

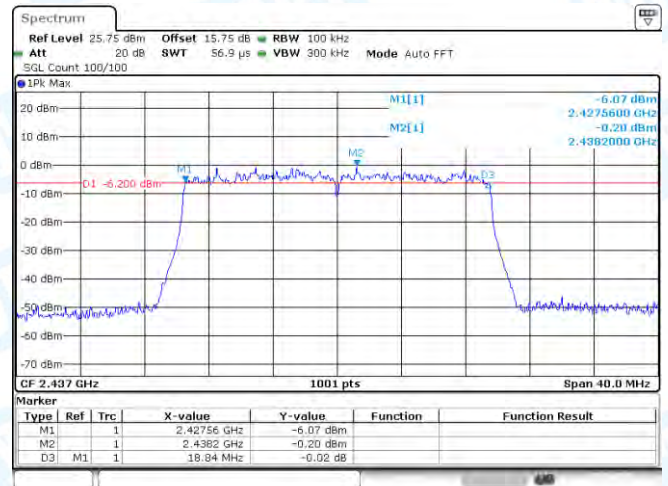
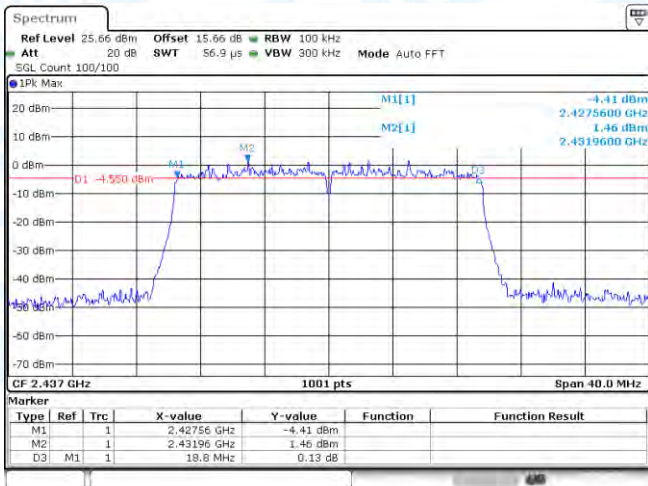


11N40-CDD-Ant2-2452-PASS



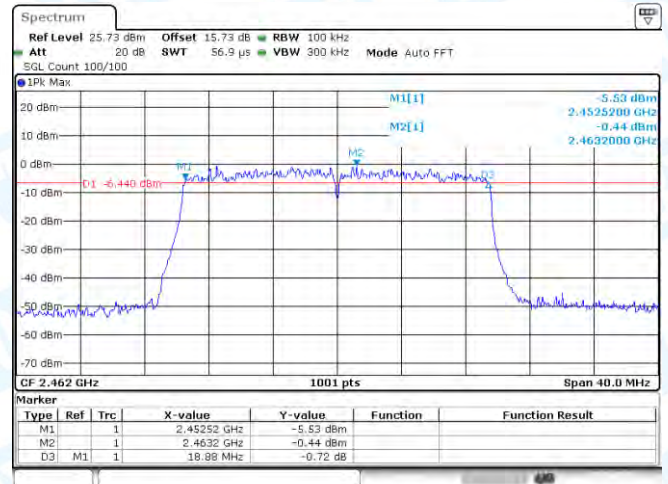
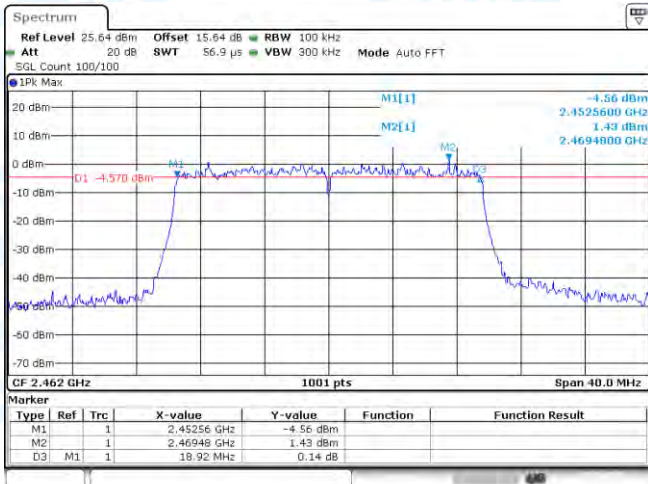
11AX20-CDD-Ant1-2412-PASS

11AX20-CDD-Ant2-2412-PASS



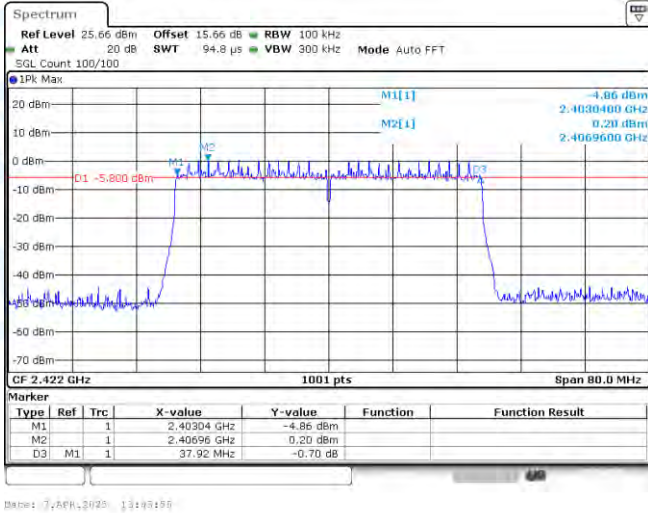
11AX20-CDD-Ant1-2437-PASS

11AX20-CDD-Ant2-2437-PASS

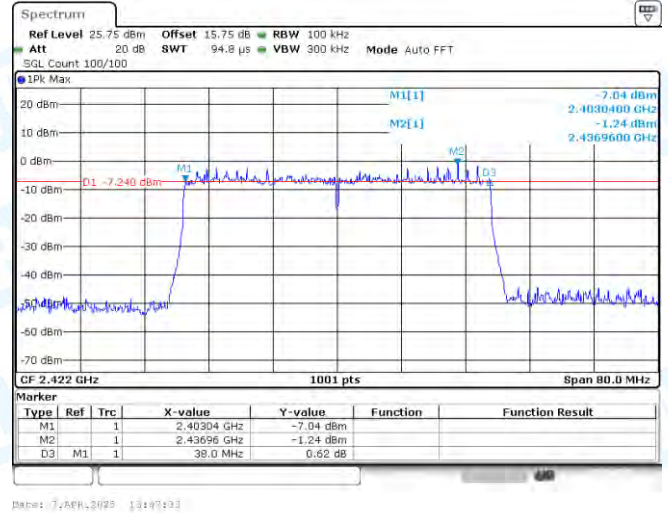


11AX20-CDD-Ant1-2462-PASS

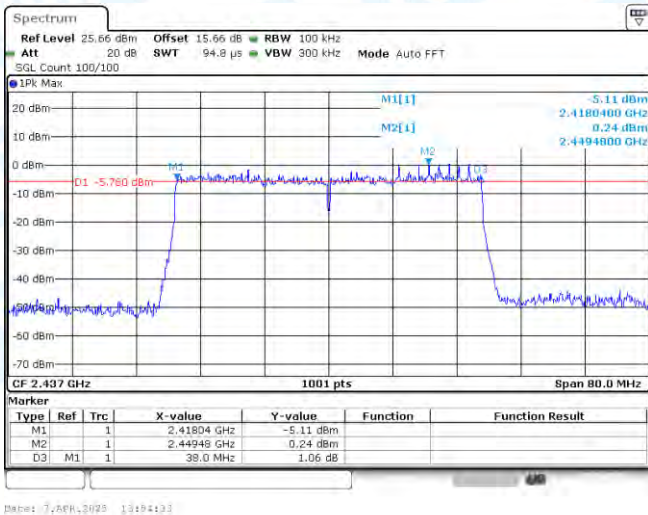
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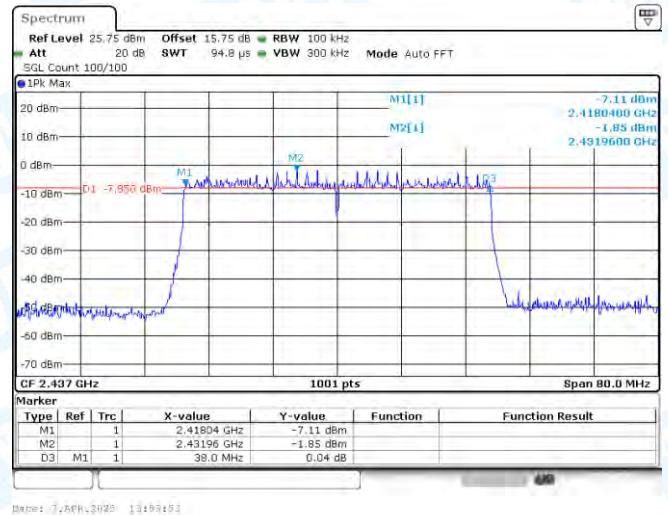
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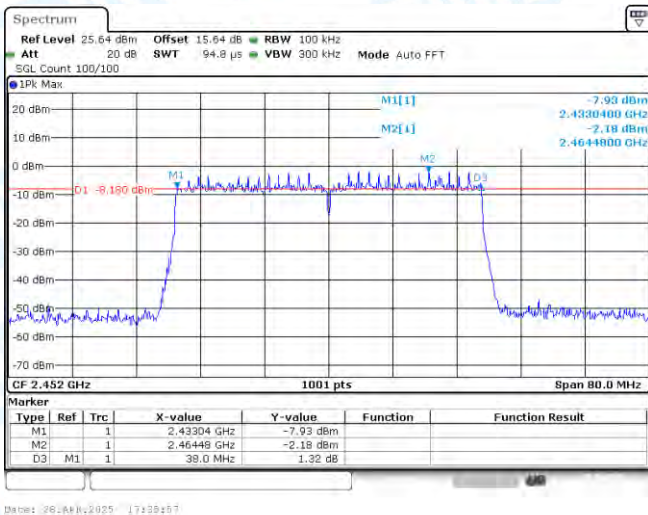
11AX40-CDD-Ant2-2422-PASS



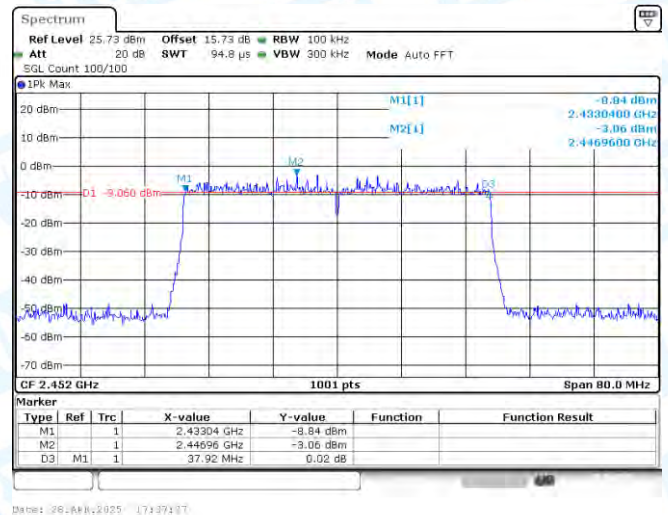
11AX40-CDD-Ant1-2437-PASS



11AX40-CDD-Ant2-2437-PASS



11AX40-CDD-Ant1-2452-PASS



11AX40-CDD-Ant2-2452-PASS

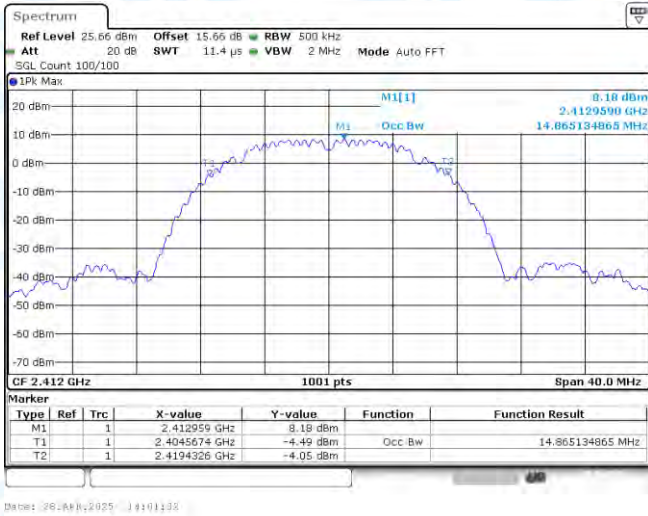
2: Occupied Channel Bandwidth

2.1 Test Result

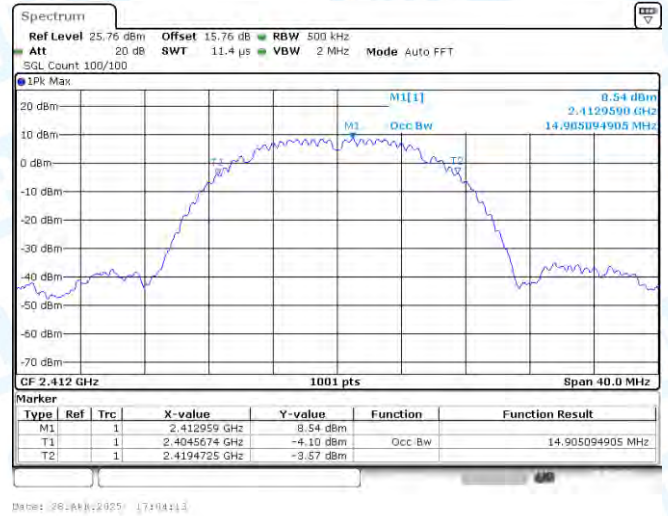
TestMode	Ant.	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	14.865	2404.5674	2419.4326	---	---
11B	Ant2	2412	14.905	2404.5674	2419.4725	---	---
11B	Ant1	2437	14.785	2429.6074	2444.3926	---	---
11B	Ant2	2437	14.945	2429.5275	2444.4725	---	---
11B	Ant1	2462	14.865	2454.5674	2469.4326	---	---
11B	Ant2	2462	14.945	2454.5275	2469.4725	---	---
11G	Ant1	2412	16.583	2403.7283	2420.3117	---	---
11G	Ant2	2412	16.583	2403.7283	2420.3117	---	---
11G	Ant1	2437	16.703	2428.6883	2445.3916	---	---
11G	Ant2	2437	16.503	2428.7682	2445.2717	---	---
11G	Ant1	2462	16.663	2453.7283	2470.3916	---	---
11G	Ant2	2462	16.623	2453.7682	2470.3916	---	---
11N20-CDD	Ant1	2412	17.542	2403.2088	2420.7512	---	---
11N20-CDD	Ant2	2412	17.622	2403.2088	2420.8312	---	---
11N20-CDD	Ant1	2437	17.622	2428.2088	2445.8312	---	---
11N20-CDD	Ant2	2437	17.662	2428.1688	2445.8312	---	---
11N20-CDD	Ant1	2462	17.782	2453.0490	2470.8312	---	---
11N20-CDD	Ant2	2462	17.702	2453.1289	2470.8312	---	---
11N40-CDD	Ant1	2422	36.364	2403.7782	2440.1419	---	---
11N40-CDD	Ant2	2422	36.364	2403.7782	2440.1419	---	---
11N40-CDD	Ant1	2437	36.284	2418.8581	2455.1419	---	---
11N40-CDD	Ant2	2437	36.444	2418.7782	2455.2218	---	---
11N40-CDD	Ant1	2452	36.284	2433.8581	2470.1419	---	---
11N40-CDD	Ant2	2452	36.364	2433.7782	2470.1419	---	---
11AX20-CDD	Ant1	2412	19.021	2402.4496	2421.4705	---	---
11AX20-CDD	Ant2	2412	19.061	2402.4096	2421.4705	---	---
11AX20-CDD	Ant1	2437	19.061	2427.4096	2446.4705	---	---
11AX20-CDD	Ant2	2437	19.061	2427.4496	2446.5105	---	---
11AX20-CDD	Ant1	2462	18.981	2452.5295	2471.5105	---	---
11AX20-CDD	Ant2	2462	19.061	2452.4496	2471.5105	---	---
11AX40-CDD	Ant1	2422	38.202	2402.8192	2441.0210	---	---
11AX40-CDD	Ant2	2422	37.962	2402.9790	2440.9411	---	---
11AX40-CDD	Ant1	2437	38.042	2417.9790	2456.0210	---	---
11AX40-CDD	Ant2	2437	37.962	2417.9790	2455.9411	---	---
11AX40-CDD	Ant1	2452	37.962	2432.9790	2470.9411	---	---
11AX40-CDD	Ant2	2452	38.042	2432.9790	2471.0210	---	---

Note: RF Conducted test Offset= cable loss+ Attenuator(10dB).

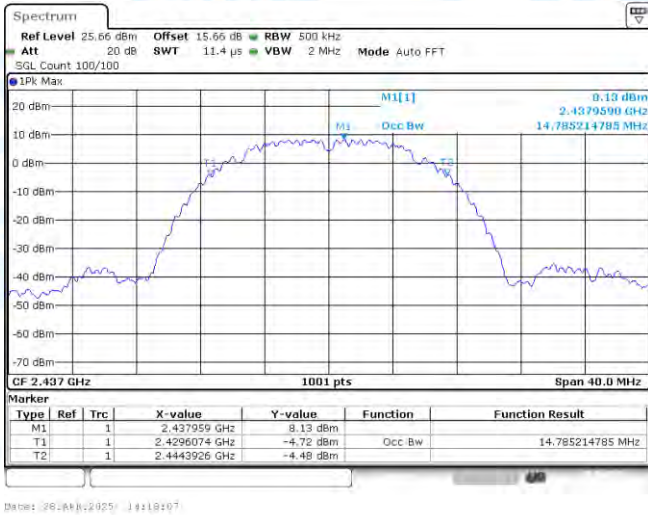
2.2 Test Graphs



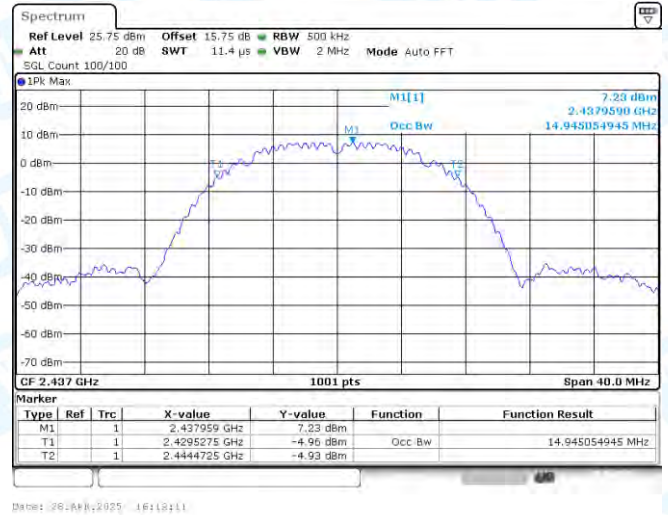
11B-Ant1-2412



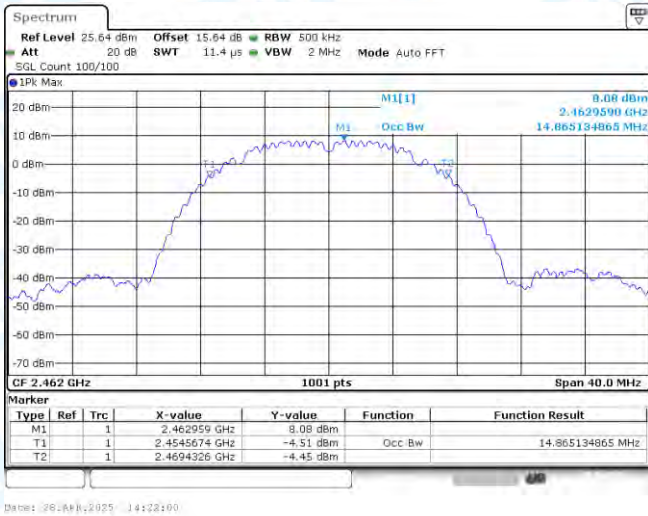
11B-Ant2-2412



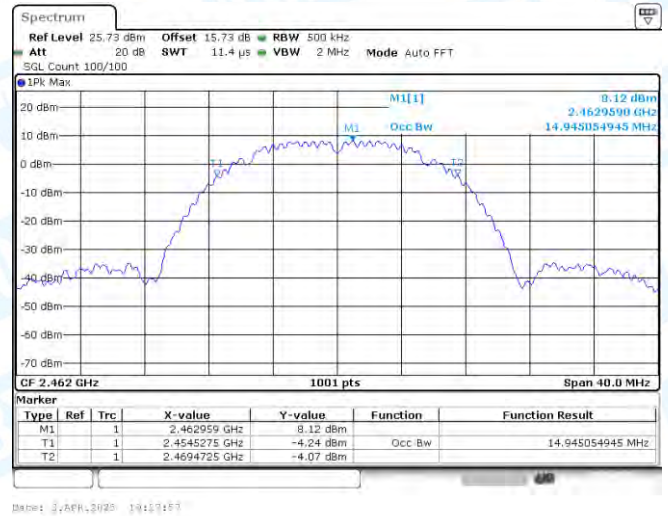
11B-Ant1-2437



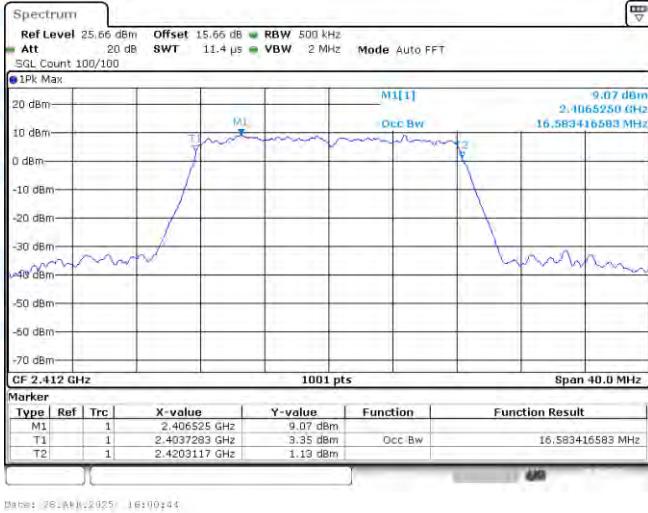
11B-Ant2-2437



11B-Ant1-2462



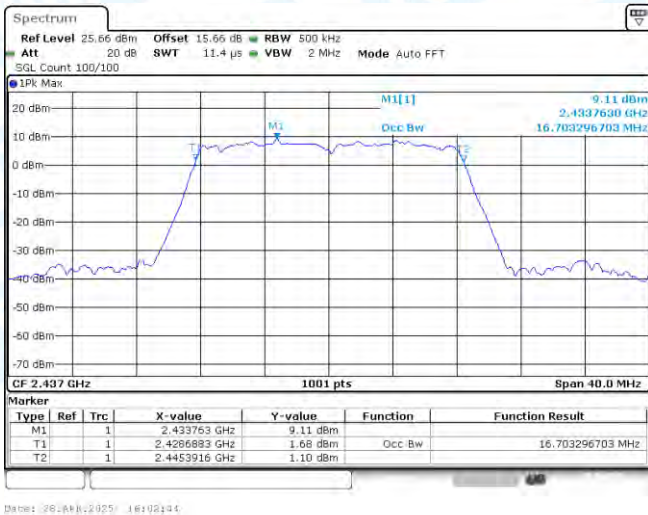
11B-Ant2-2462



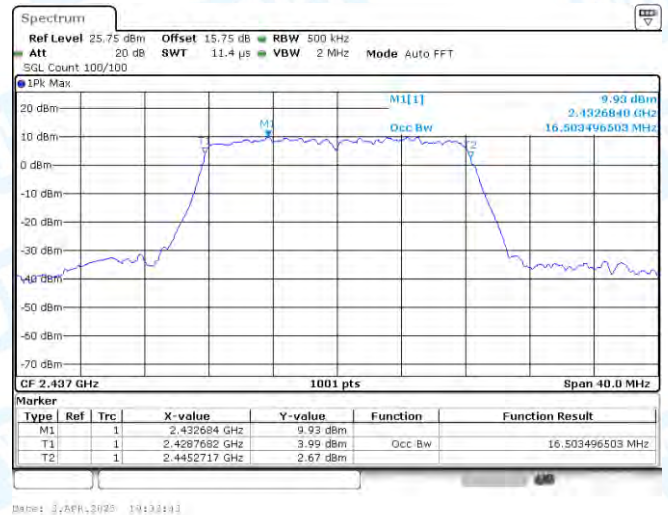
11G-Ant1-2412



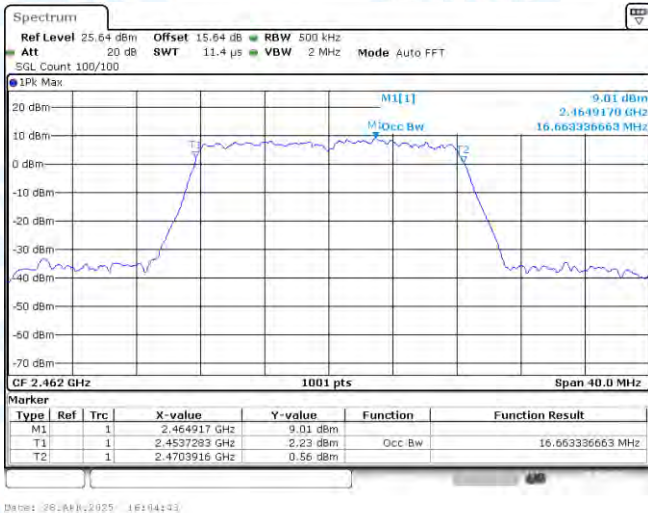
11G-Ant2-2412



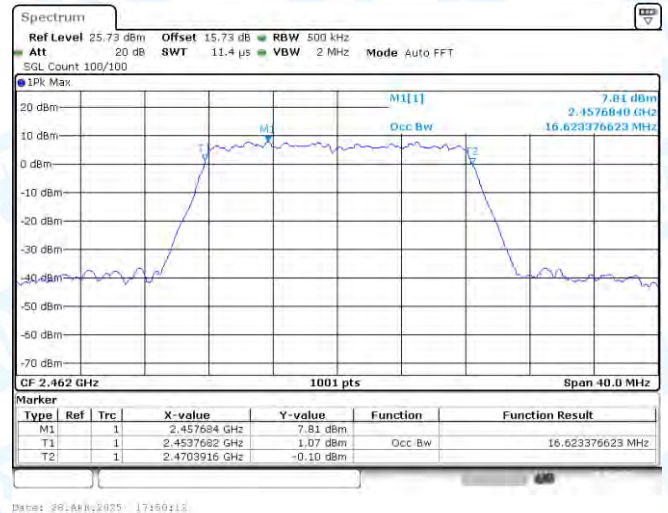
11G-Ant1-2437



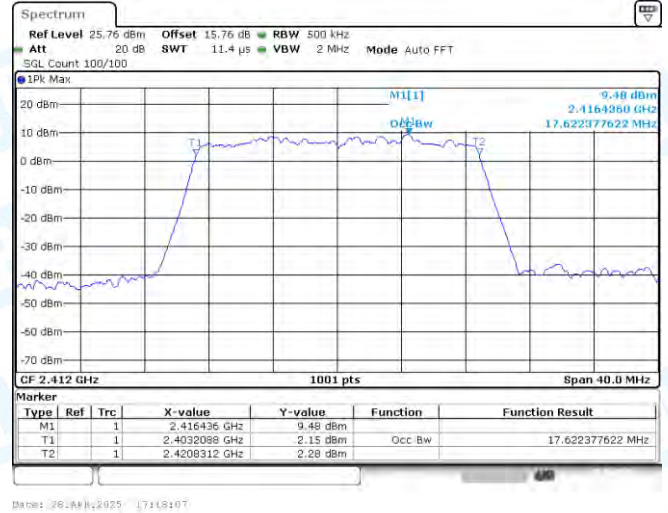
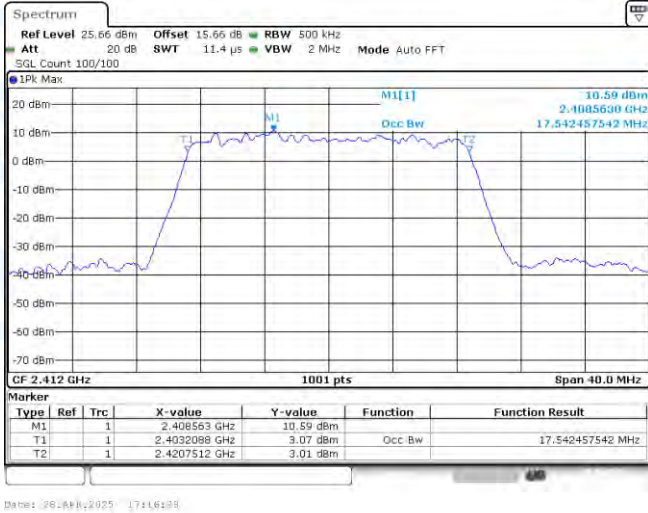
11G-Ant2-2437



11G-Ant1-2462

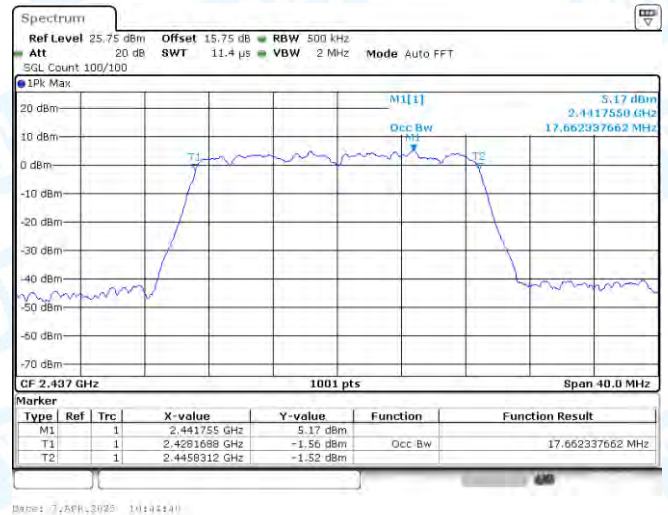
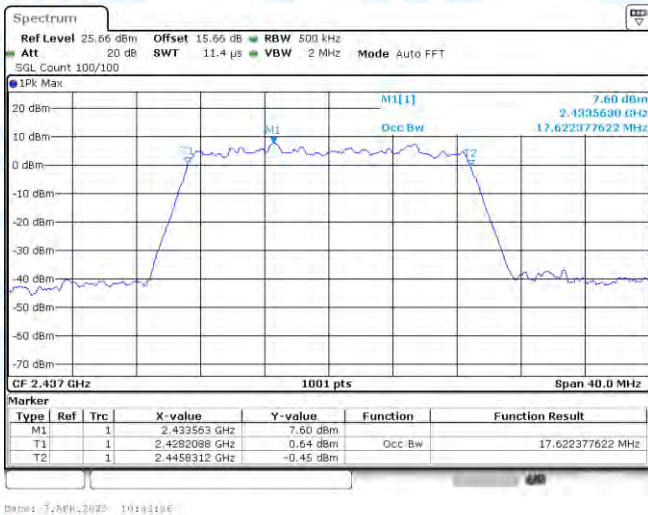


11G-Ant2-2462



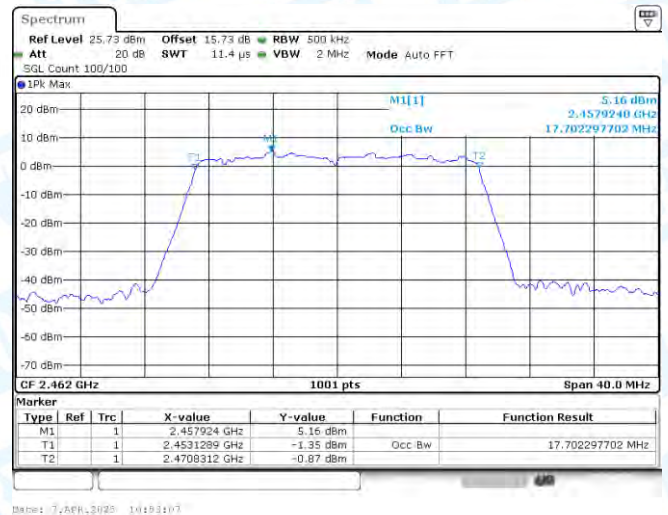
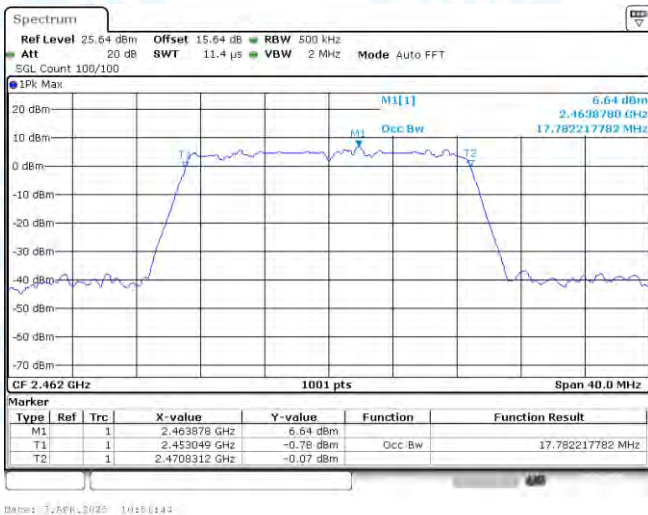
11N20-CDD-Ant1-2412

11N20-CDD-Ant2-2412



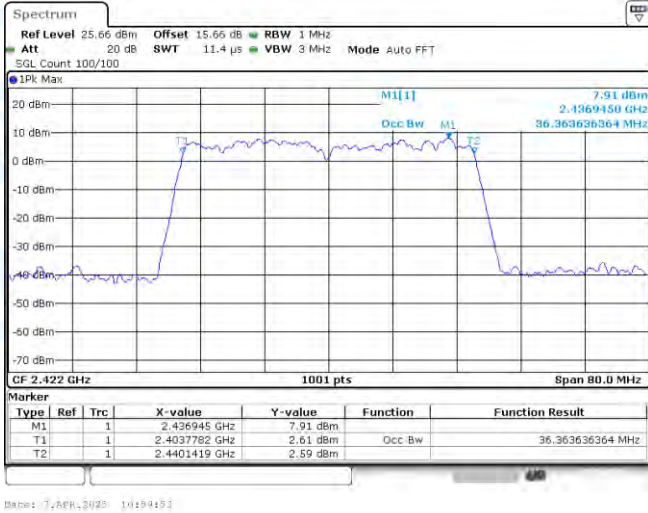
11N20-CDD-Ant1-2437

11N20-CDD-Ant2-2437

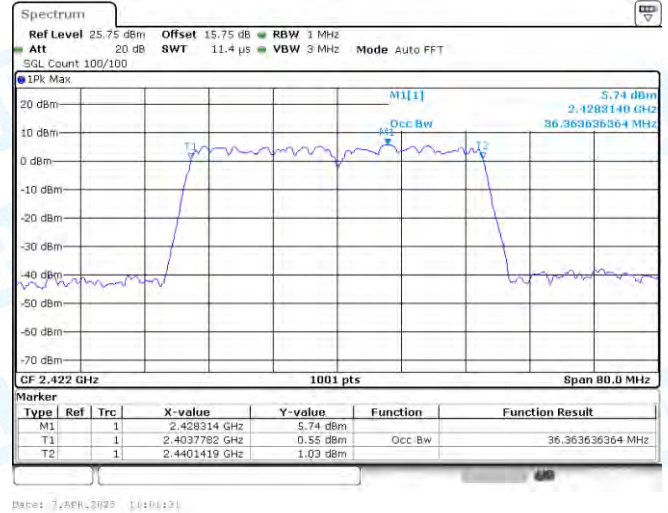


11N20-CDD-Ant1-2462

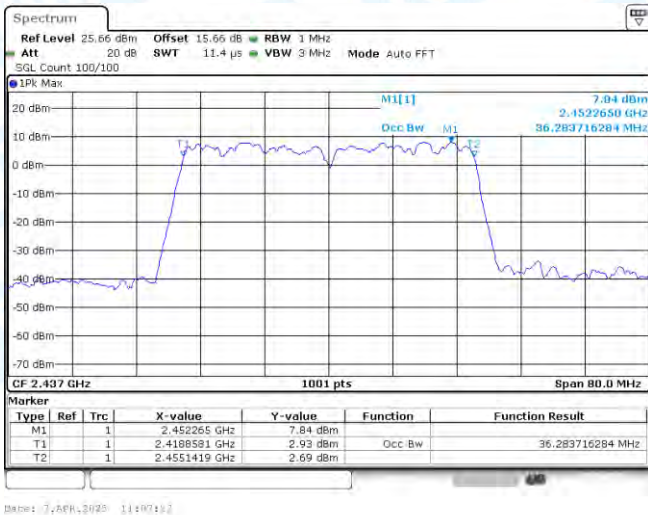
11N20-CDD-Ant2-2462



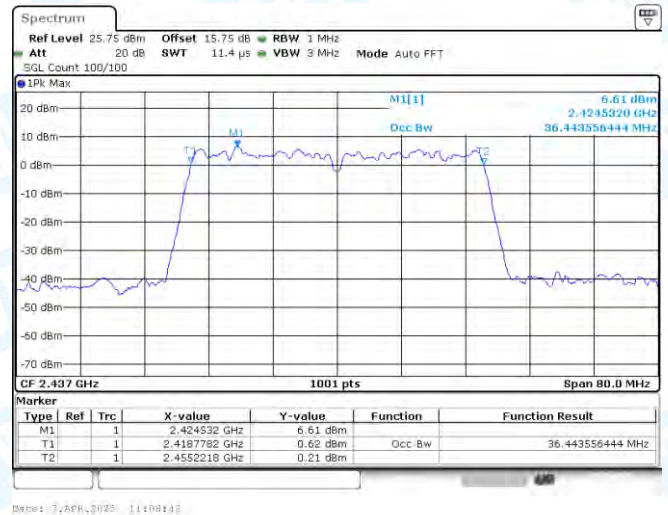
11N40-CDD-Ant1-2422



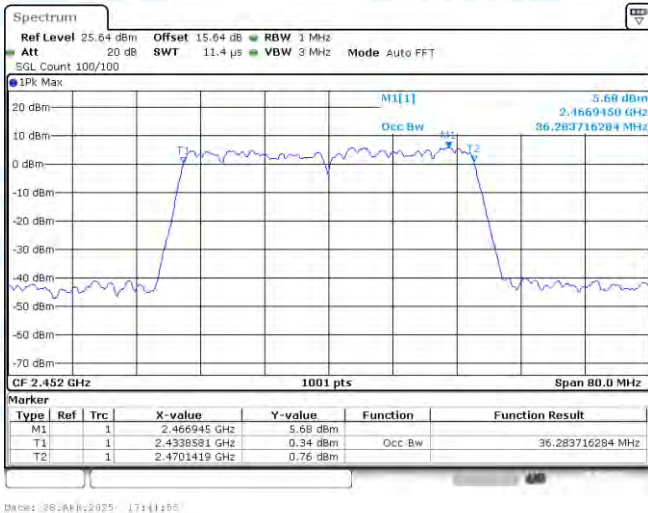
11N40-CDD-Ant2-2422



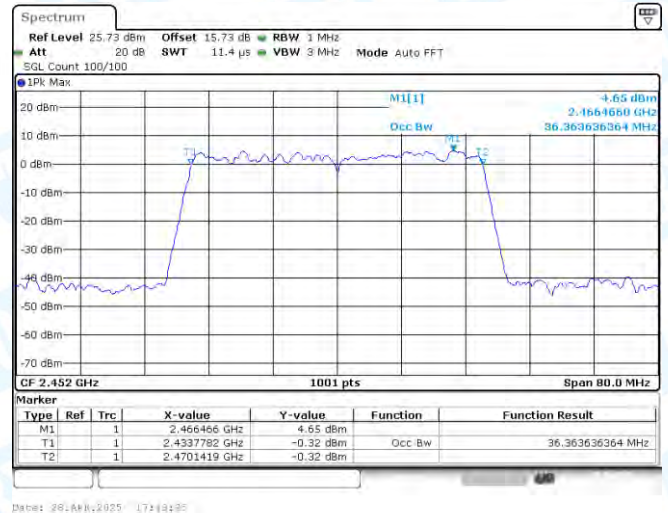
11N40-CDD-Ant1-2437



11N40-CDD-Ant2-2437



11N40-CDD-Ant1-2452



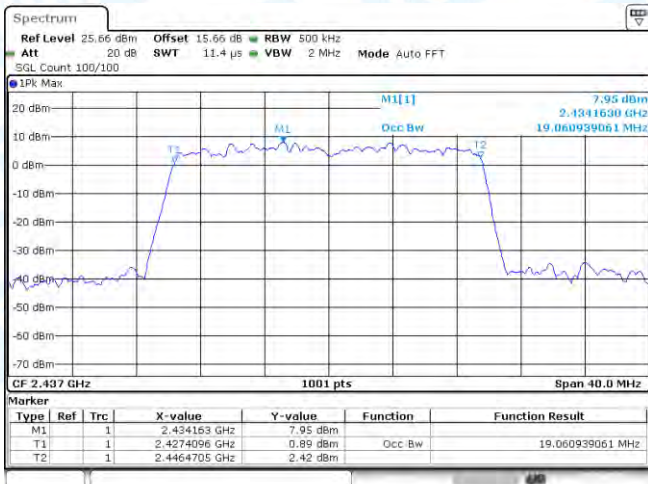
11N40-CDD-Ant2-2452



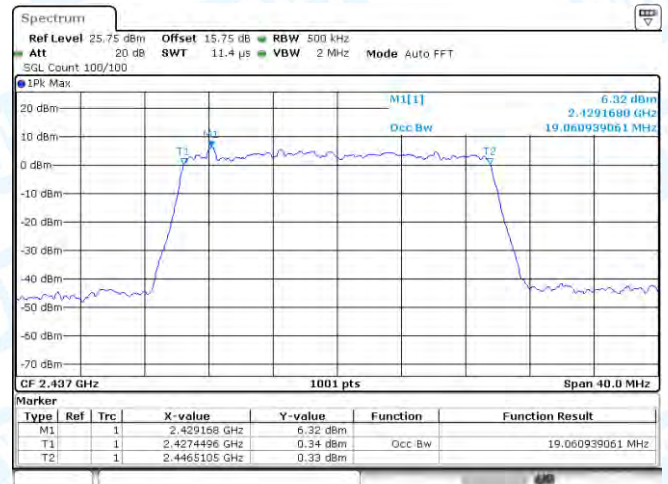
11AX20-CDD-Ant1-2412



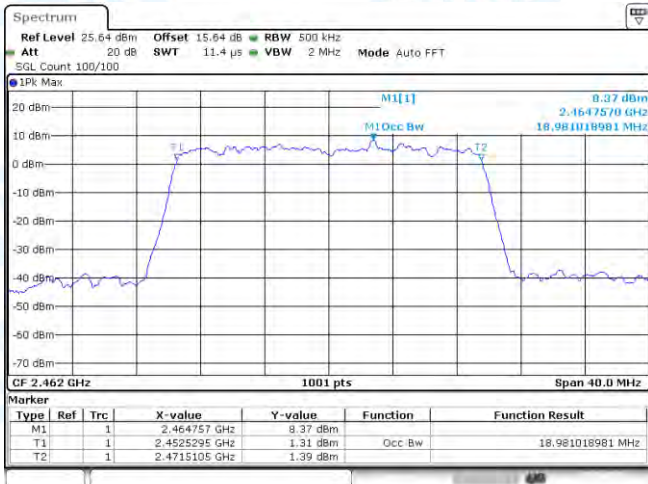
11AX20-CDD-Ant2-2412



11AX20-CDD-Ant1-2437



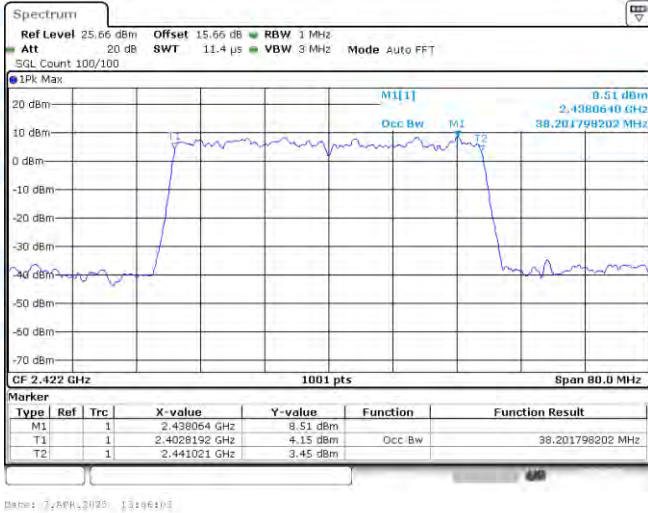
11AX20-CDD-Ant2-2437



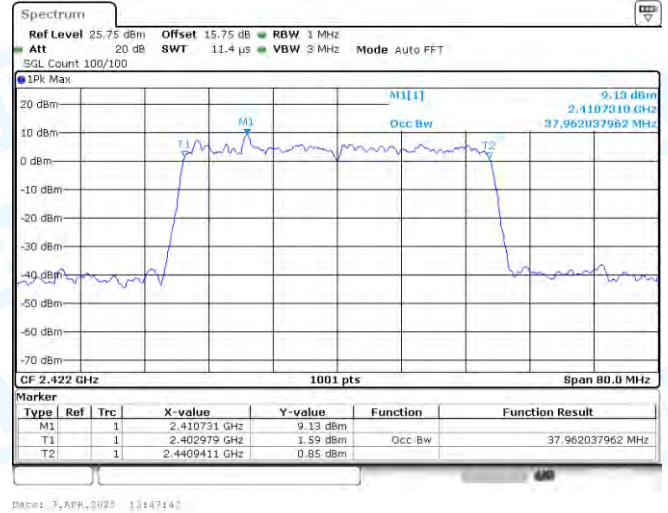
11AX20-CDD-Ant1-2462



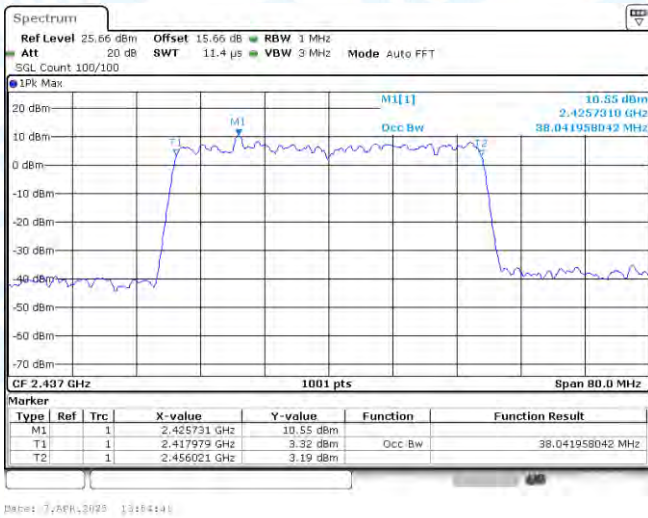
11AX20-CDD-Ant2-2462



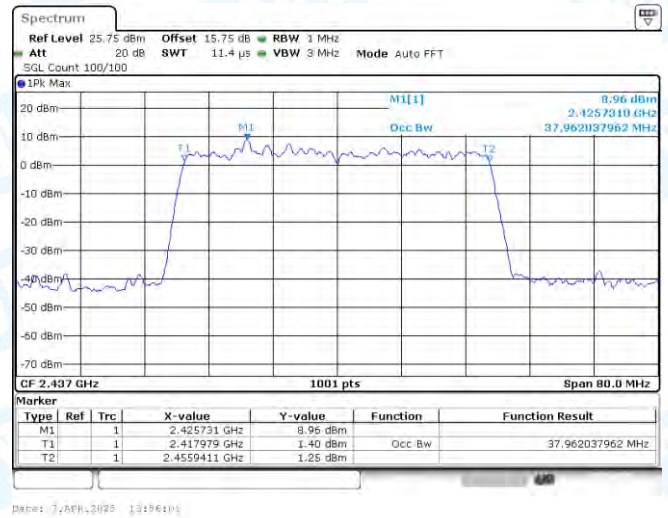
11AX40-CDD-Ant1-2422



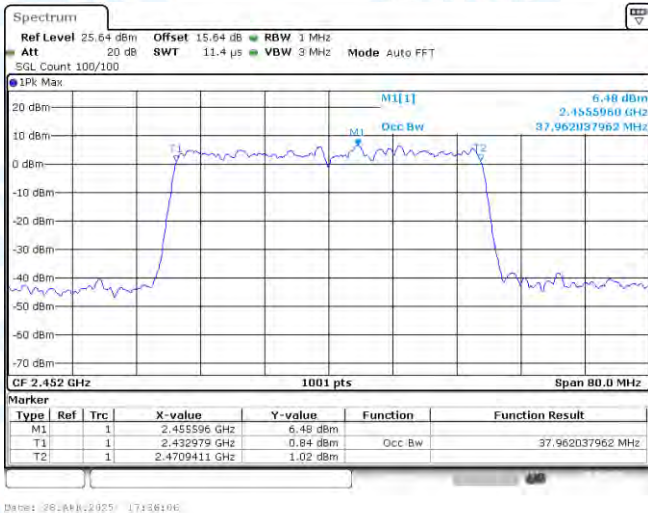
11AX40-CDD-Ant2-2422



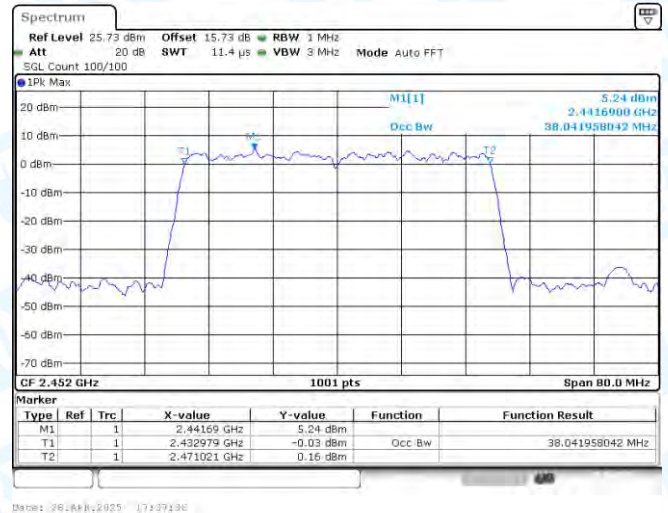
11AX40-CDD-Ant1-2437



11AX40-CDD-Ant2-2437



11AX40-CDD-Ant1-2452



11AX40-CDD-Ant2-2452

3: Maximum conducted output power

3.1 Test Result Average

Test Mode	Ant.	Frequency [MHz]	Result [dBm]	Limit [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11B	Ant1	2412	16.85	≤30.00	5.25	22.10	≤36.00	PASS
11B	Ant2	2412	17.15	≤30.00	3.29	20.44	≤36.00	PASS
11B	Ant1	2437	16.90	≤30.00	5.25	22.15	≤36.00	PASS
11B	Ant2	2437	15.99	≤30.00	3.29	19.28	≤36.00	PASS
11B	Ant2	2462	16.62	≤30.00	3.29	19.91	≤36.00	PASS
11B	Ant1	2462	16.92	≤30.00	5.25	22.17	≤36.00	PASS
11G	Ant2	2412	17.43	≤30.00	3.29	20.72	≤36.00	PASS
11G	Ant1	2412	16.79	≤30.00	5.25	22.04	≤36.00	PASS
11G	Ant2	2437	17.52	≤30.00	3.29	20.81	≤36.00	PASS
11G	Ant1	2437	16.69	≤30.00	5.25	21.94	≤36.00	PASS
11G	Ant1	2462	16.49	≤30.00	5.25	21.74	≤36.00	PASS
11G	Ant2	2462	15.83	≤30.00	3.29	19.12	≤36.00	PASS
11N20-CDD	Ant1	2412	16.88	≤30.00	5.25	22.13	≤36.00	PASS
11N20-CDD	Ant2	2412	16.08	≤30.00	3.29	19.37	≤36.00	PASS
11N20-CDD	total	2412	19.51	≤30.00	7.34	26.85	≤36.00	PASS
11N20-CDD	Ant1	2437	14.22	≤30.00	5.25	19.47	≤36.00	PASS
11N20-CDD	Ant2	2437	12.96	≤30.00	3.29	16.25	≤36.00	PASS
11N20-CDD	total	2437	16.65	≤30.00	7.34	23.99	≤36.00	PASS
11N20-CDD	Ant1	2462	14.39	≤30.00	5.25	19.64	≤36.00	PASS
11N20-CDD	Ant2	2462	13.16	≤30.00	3.29	16.45	≤36.00	PASS
11N20-CDD	total	2462	16.83	≤30.00	7.34	24.17	≤36.00	PASS
11N40-CDD	Ant1	2422	14.80	≤30.00	5.25	20.05	≤36.00	PASS
11N40-CDD	Ant2	2422	13.32	≤30.00	3.29	16.61	≤36.00	PASS
11N40-CDD	total	2422	17.13	≤30.00	7.34	24.47	≤36.00	PASS
11N40-CDD	Ant1	2437	14.81	≤30.00	5.25	20.06	≤36.00	PASS
11N40-CDD	Ant2	2437	13.25	≤30.00	3.29	16.54	≤36.00	PASS
11N40-CDD	total	2437	17.11	≤30.00	7.34	24.45	≤36.00	PASS
11N40-CDD	Ant1	2452	12.50	≤30.00	5.25	17.75	≤36.00	PASS
11N40-CDD	Ant2	2452	11.80	≤30.00	3.29	15.09	≤36.00	PASS
11N40-CDD	total	2452	15.17	≤30.00	7.34	22.51	≤36.00	PASS
11AX20-CDD	Ant1	2412	16.87	≤30.00	5.25	22.12	≤36.00	PASS
11AX20-CDD	Ant2	2412	16.15	≤30.00	3.29	19.44	≤36.00	PASS
11AX20-CDD	total	2412	19.54	≤30.00	7.34	26.88	≤36.00	PASS
11AX20-CDD	Ant1	2437	14.11	≤30.00	5.25	19.36	≤36.00	PASS
11AX20-CDD	Ant2	2437	12.84	≤30.00	3.29	16.13	≤36.00	PASS
11AX20-CDD	total	2437	16.53	≤30.00	7.34	23.87	≤36.00	PASS
11AX20-CDD	Ant1	2462	14.17	≤30.00	5.25	19.42	≤36.00	PASS
11AX20-CDD	Ant2	2462	13.04	≤30.00	3.29	16.33	≤36.00	PASS
11AX20-CDD	total	2462	16.65	≤30.00	7.34	23.99	≤36.00	PASS

11AX40-CDD	Ant1	2422	14.83	≤30.00	5.25	20.08	≤36.00	PASS
11AX40-CDD	Ant2	2422	13.20	≤30.00	3.29	16.49	≤36.00	PASS
11AX40-CDD	total	2422	17.10	≤30.00	7.34	24.44	≤36.00	PASS
11AX40-CDD	Ant1	2437	14.75	≤30.00	5.25	20.00	≤36.00	PASS
11AX40-CDD	Ant2	2437	13.10	≤30.00	3.29	16.39	≤36.00	PASS
11AX40-CDD	total	2437	17.01	≤30.00	7.34	24.35	≤36.00	PASS
11AX40-CDD	Ant1	2452	12.45	≤30.00	5.25	17.70	≤36.00	PASS
11AX40-CDD	Ant2	2452	11.80	≤30.00	3.29	15.09	≤36.00	PASS
11AX40-CDD	total	2452	15.15	≤30.00	7.34	22.49	≤36.00	PASS

Note: For CDD Mode, Directional gain = $G_{ANT} + \text{Array Gain}$, Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;
 $G_{ANT1}=5.25\text{dBi}$; $G_{ANT2}=3.29\text{dBi}$; **CDD Mode** use max. antenna Gain, So the Directional gain>6dBi, So the $P_{limit}=30\text{dBm}$

Note: RF Conducted test Offset= cable loss+ Attenuator(10dB).

4: Maximum power spectral density

4.1 Test Result

TestMode	Ant.	Frequency[MHz]	RawData [dBm/3kHz]	DC Factory	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant2	2412	-13.72	0.00	-13.72	≤8.00	PASS
11B	Ant1	2412	-14.38	0.00	-14.38	≤8.00	PASS
11B	Ant2	2437	-15.04	0.00	-15.04	≤8.00	PASS
11B	Ant1	2437	-13.79	0.00	-13.79	≤8.00	PASS
11B	Ant2	2462	-13.73	0.00	-13.73	≤8.00	PASS
11B	Ant1	2462	-13.98	0.00	-13.98	≤8.00	PASS
11G	Ant1	2412	-15.15	0.00	-15.15	≤8.00	PASS
11G	Ant2	2412	-14.52	0.00	-14.52	≤8.00	PASS
11G	Ant2	2437	-14.6	0.05	-14.55	≤8.00	PASS
11G	Ant1	2437	-15.63	0.05	-15.58	≤8.00	PASS
11G	Ant2	2462	-16.08	0.04	-16.04	≤8.00	PASS
11G	Ant1	2462	-15.24	0.05	-15.19	≤8.00	PASS
11N20-CDD	Ant1	2412	-14.28	0.01	-14.27	≤8.00	PASS
11N20-CDD	Ant2	2412	-15.15	0.00	-15.15	≤8.00	PASS
11N20-CDD	total	2412	---	---	-11.68	≤6.66	PASS
11N20-CDD	Ant1	2437	-17.26	0.06	-17.20	≤8.00	PASS
11N20-CDD	Ant2	2437	-18.47	0.06	-18.41	≤8.00	PASS
11N20-CDD	total	2437	---	---	-14.75	≤6.66	PASS
11N20-CDD	Ant1	2462	-17.04	0.06	-16.98	≤8.00	PASS
11N20-CDD	Ant2	2462	-18.43	0.06	-18.37	≤8.00	PASS
11N20-CDD	total	2462	---	---	-14.61	≤6.66	PASS
11N40-CDD	Ant1	2422	-16.99	0.00	-16.99	≤8.00	PASS
11N40-CDD	Ant2	2422	-19.19	0.08	-19.11	≤8.00	PASS
11N40-CDD	total	2422	---	---	-14.91	≤6.66	PASS
11N40-CDD	Ant1	2437	-17.2	0.09	-17.11	≤8.00	PASS
11N40-CDD	Ant2	2437	-19.02	0.11	-18.91	≤8.00	PASS
11N40-CDD	total	2437	---	---	-14.91	≤6.66	PASS
11N40-CDD	Ant1	2452	-19.8	0.11	-19.69	≤8.00	PASS
11N40-CDD	Ant2	2452	-20.6	0.09	-20.51	≤8.00	PASS
11N40-CDD	total	2452	---	---	-17.07	≤6.66	PASS
11AX20-CDD	Ant1	2412	-15.16	0.01	-15.15	≤8.00	PASS
11AX20-CDD	Ant2	2412	-15.81	0.01	-15.80	≤8.00	PASS
11AX20-CDD	total	2412	---	---	-12.45	≤6.66	PASS
11AX20-CDD	Ant1	2437	-17.89	0.07	-17.82	≤8.00	PASS
11AX20-CDD	Ant2	2437	-19.11	0.05	-19.06	≤8.00	PASS
11AX20-CDD	total	2437	---	---	-15.39	≤6.66	PASS
11AX20-CDD	Ant1	2462	-17.69	0.05	-17.64	≤8.00	PASS
11AX20-CDD	Ant2	2462	-18.84	0.07	-18.77	≤8.00	PASS
11AX20-CDD	total	2462	---	---	-15.16	≤6.66	PASS
11AX40-CDD	Ant1	2422	-17.83	0.00	-17.83	≤8.00	PASS

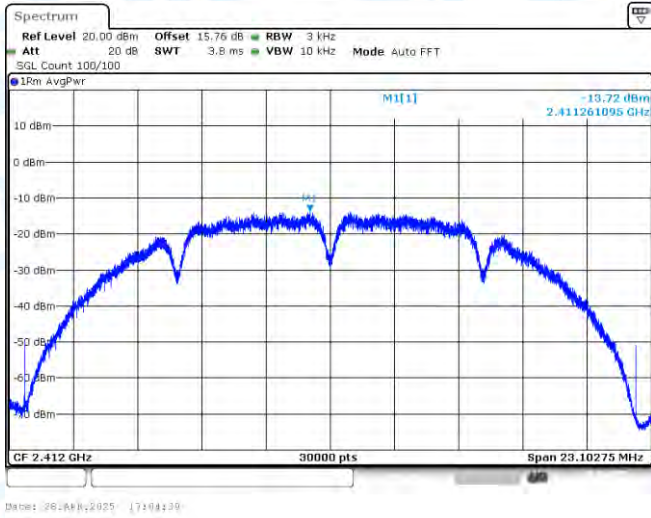
11AX40-CDD	Ant2	2422	-20.11	0.08	-20.03	≤8.00	PASS
11AX40-CDD	total	2422	---	---	-15.78	≤6.66	PASS
11AX40-CDD	Ant1	2437	-17.91	0.13	-17.78	≤8.00	PASS
11AX40-CDD	Ant2	2437	-20.13	0.13	-20.00	≤8.00	PASS
11AX40-CDD	total	2437	---	---	-15.74	≤6.66	PASS
11AX40-CDD	Ant1	2452	-21.53	0.13	-21.40	≤8.00	PASS
11AX40-CDD	Ant2	2452	-21.72	0.13	-21.59	≤8.00	PASS
11AX40-CDD	total	2452	---	---	-18.48	≤6.66	PASS

Note: The Duty Cycle Factor is compensated in the graph.

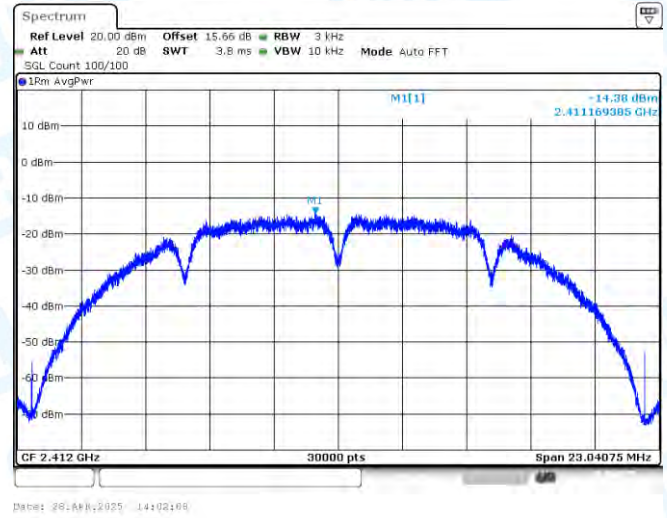
Note: For CDD Mode, Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 7.34\text{dBi}$; $G_{ANT1} = 5.25\text{dBi}$; $G_{ANT2} = 3.29\text{dBi}$;
and the Directional gain > 6dBi, So the $PSD_{limit} = PSD_{limit} - (7.34 - 6) = 6.66\text{dBm}/3\text{kHz}$.

RF Conducted test Offset = cable loss + Attenuator (10dB).

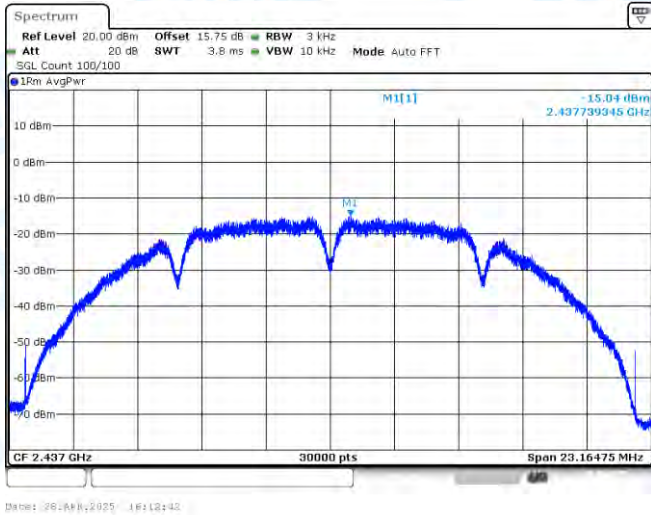
4.2 Test Graphs



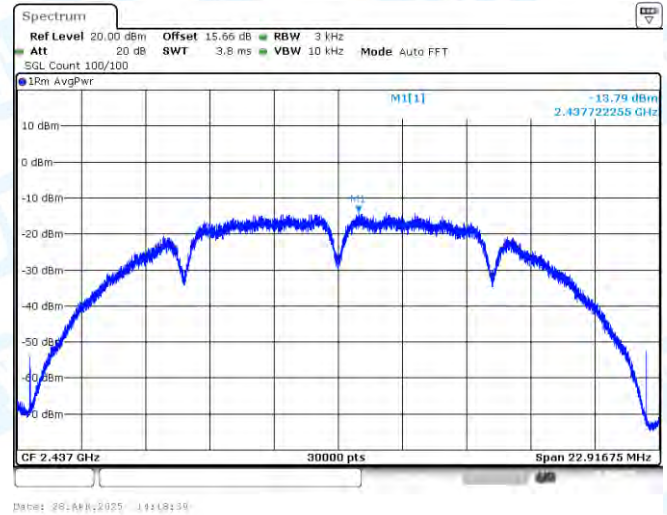
11B-Ant2-2412-PASS



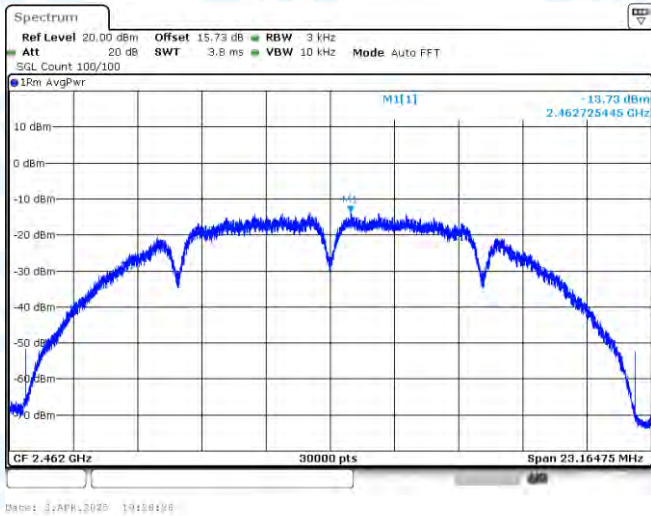
11B-Ant1-2412-PASS



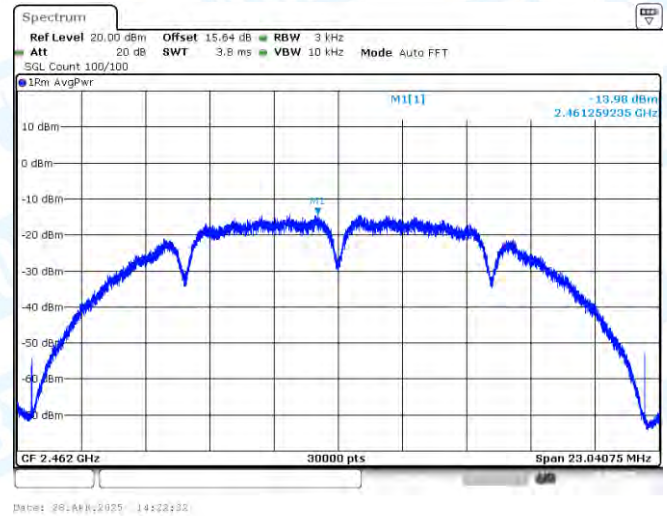
11B-Ant2-2437-PASS



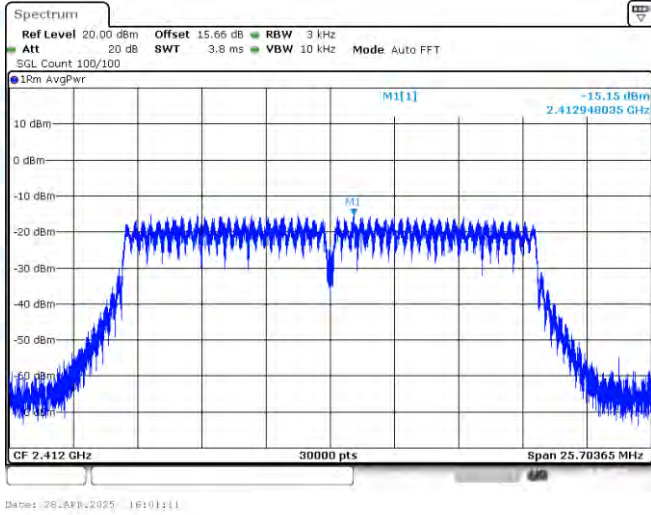
11B-Ant1-2437-PASS



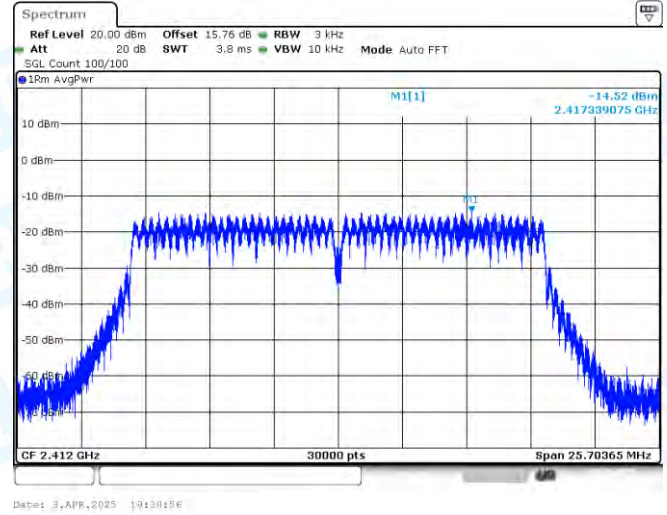
11B-Ant2-2462-PASS



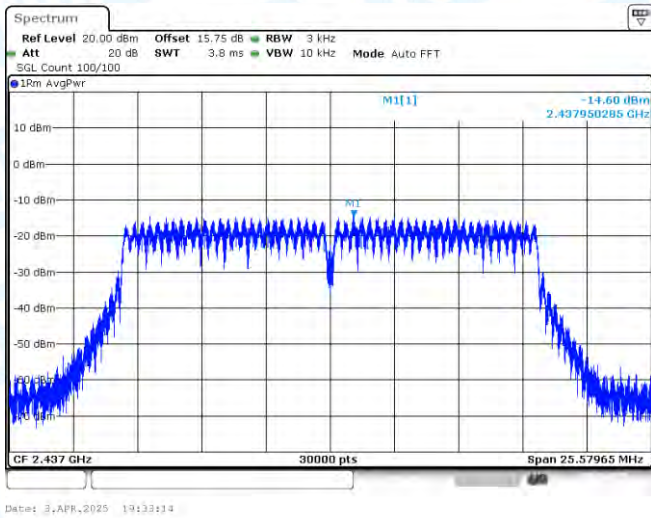
11B-Ant1-2462-PASS



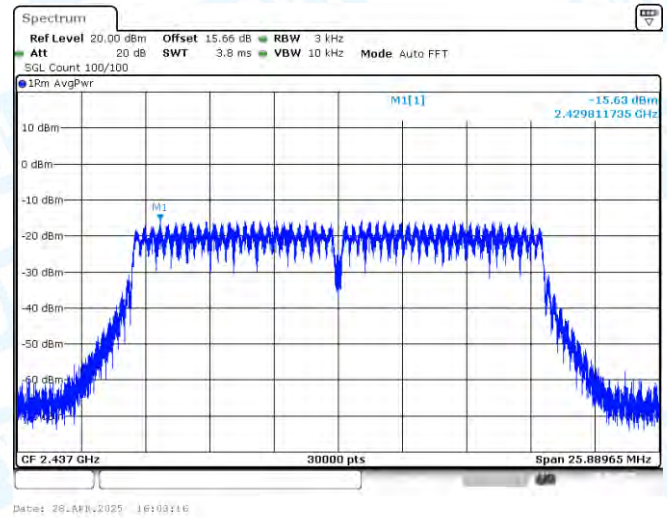
11G-Ant1-2412-PASS



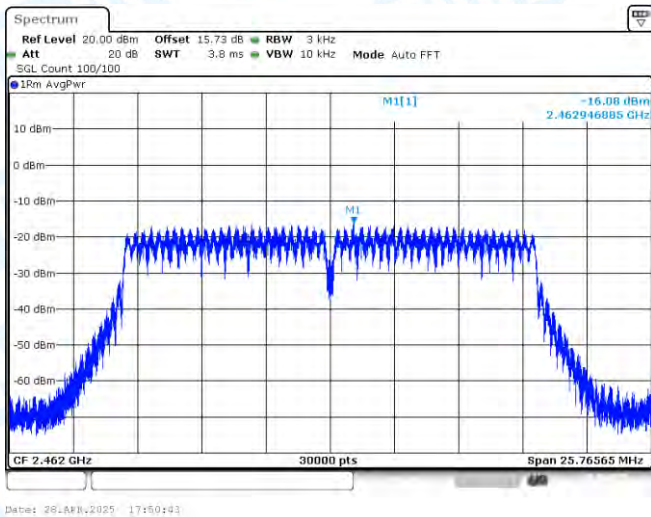
11G-Ant2-2412-PASS



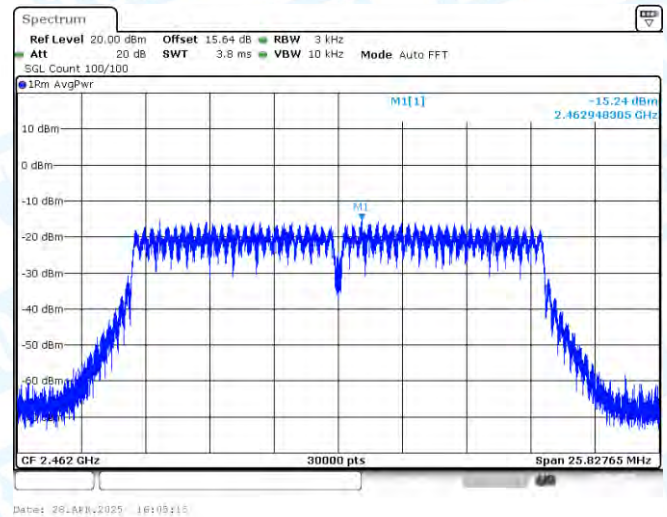
11G-Ant2-2437-PASS



11G-Ant1-2437-PASS



11G-Ant2-2462-PASS



11G-Ant1-2462-PASS