

Appendix A.1 Test Result of Antenna Power

GFSK

Frequency (MHz)	Reading Value (dBm)	Antenna Power (mW/MHz)	Limit (mW/MHz)
Hopping	15.40	0.65	3

$\pi/4$ DQPSK

Frequency (MHz)	Reading Value (dBm)	Antenna Power (mW/MHz)	Limit (mW/MHz)
Hopping	12.66	0.34	3

8DPSK

Frequency (MHz)	Reading Value (dBm)	Antenna Power (mW/MHz)	Limit (mW/MHz)
Hopping	12.68	0.34	3

Note: Antenna Power = $10^{(\text{Reading value (dBm)}/10)}$ / Burst Ratio / Spread bandwidth (MHz).

GFSK-AFH

Frequency (MHz)	Reading Value (dBm)	Antenna Power (mW/MHz)	Limit (mW/MHz)
Hopping	14.84	2.21	3

$\pi/4$ DQPSK-AFH

Frequency (MHz)	Reading Value (dBm)	Antenna Power (mW/MHz)	Limit (mW/MHz)
Hopping	12.45	1.27	3

8DPSK-AFH

Frequency (MHz)	Reading Value (dBm)	Antenna Power (mW/MHz)	Limit (mW/MHz)
Hopping	12.46	1.27	3

Note: Antenna Power = $10^{(\text{Reading value (dBm)}/10)}$ / Burst Ratio / Spread bandwidth (MHz).

Appendix A.2 Test Result of Antenna Power Tolerance

GFSK

Frequency (MHz)	Declared Antenna Power (mW/MHz)	Antenna Power (mW/MHz)	Tolerance (%)	Limit (%)
Hopping	0.65	0.65	0.00	+20%

$\pi/4$ DQPSK

Frequency (MHz)	Declared Antenna Power (mW/MHz)	Antenna Power (mW/MHz)	Tolerance (%)	Limit (%)
Hopping	0.34	0.34	0.00	+20%

8DPSK

Frequency (MHz)	Declared Antenna Power (mW/MHz)	Antenna Power (mW/MHz)	Tolerance (%)	Limit (%)
Hopping	0.34	0.34	0.00	+20%

Note: Tolerance = (Antenna Power - Declared Antenna Power) / Declared Antenna Power * 100%.

GFSK-AFH

Frequency (MHz)	Declared Antenna Power (mW/MHz)	Antenna Power (mW/MHz)	Tolerance (%)	Limit (%)
Hopping	2.21	2.21	0.00	+20%

$\pi/4$ DQPSK-AFH

Frequency (MHz)	Declared Antenna Power (mW/MHz)	Antenna Power (mW/MHz)	Tolerance (%)	Limit (%)
Hopping	1.27	1.27	0.00	+20%

8DPSK-AFH

Frequency (MHz)	Declared Antenna Power (mW/MHz)	Antenna Power (mW/MHz)	Tolerance (%)	Limit (%)
Hopping	1.27	1.27	0.00	+20%

Note: Tolerance = (Antenna Power - Declared Antenna Power) / Declared Antenna Power * 100%.

Appendix A.3 Test Result of E.I.R.P

GFSK

Frequency (MHz)	Antenna Power (dBm/MHz)	E.I.R.P. (dBm/MHz)	E.I.R.P. Limit (dBm/MHz)
Hopping	-1.90	-1.47	6.91

$\pi/4$ DQPSK

Frequency (MHz)	Antenna Power (dBm/MHz)	E.I.R.P. (dBm/MHz)	E.I.R.P. Limit (dBm/MHz)
Hopping	-4.65	-1.28	6.91

8DPSK

Frequency (MHz)	Antenna Power (dBm/MHz)	E.I.R.P. (dBm/MHz)	E.I.R.P. Limit (dBm/MHz)
Hopping	-4.63	-1.26	6.91

Note: E.I.R.P.= Antenna Power + Maximum Antenna Gain (dBi).

GFSK-AFH

Frequency (MHz)	Antenna Power (dBm/MHz)	E.I.R.P. (dBm/MHz)	E.I.R.P. Limit (dBm/MHz)
Hopping	3.45	6.82	6.91

$\pi/4$ DQPSK-AFH

Frequency (MHz)	Antenna Power (dBm/MHz)	E.I.R.P. (dBm/MHz)	E.I.R.P. Limit (dBm/MHz)
Hopping	1.03	4.40	6.91

8DPSK-AFH

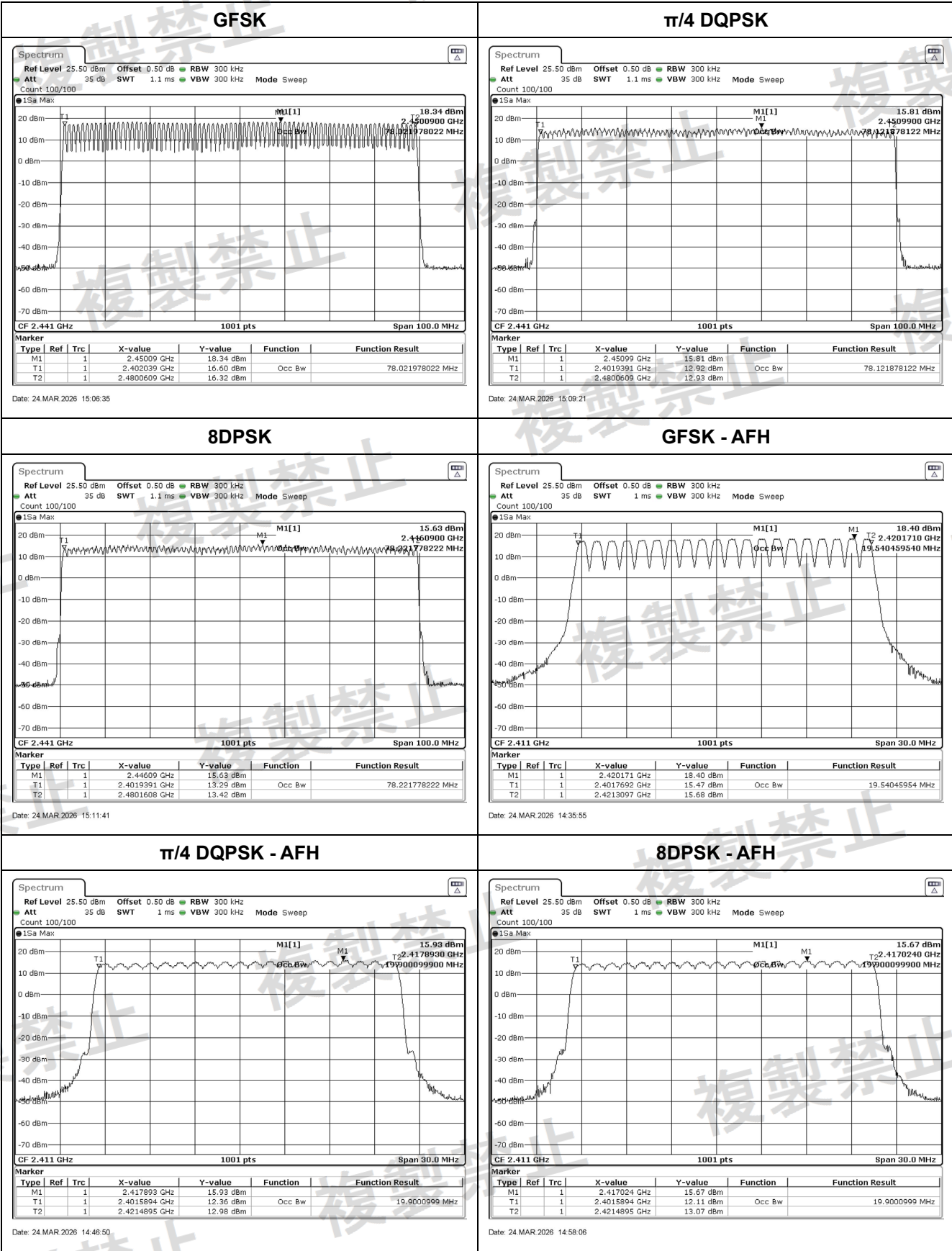
Frequency (MHz)	Antenna Power (dBm/MHz)	E.I.R.P. (dBm/MHz)	E.I.R.P. Limit (dBm/MHz)
Hopping	1.04	4.41	6.91

Note: E.I.R.P.= Antenna Power + Maximum Antenna Gain (dBi).

Appendix B. Test Result of Occupied Bandwidth

GFSK		
Frequency (MHz)	Reading Value (MHz)	Limit (MHz)
Hopping	78.02	≤ 83.5
$\pi/4$ DQPSK		
Frequency (MHz)	Reading Value (MHz)	Limit (MHz)
Hopping	78.12	≤ 83.5
8DPSK		
Frequency (MHz)	Reading Value (MHz)	Limit (MHz)
Hopping	78.22	≤ 83.5

GFSK - AFH		
Frequency (MHz)	Reading Value (MHz)	Limit (MHz)
Hopping	19.54	≤ 83.5
$\pi/4$ DQPSK - AFH		
Frequency (MHz)	Reading Value (MHz)	Limit (MHz)
Hopping	19.90	≤ 83.5
8DPSK - AFH		
Frequency (MHz)	Reading Value (MHz)	Limit (MHz)
Hopping	19.90	≤ 83.5



Appendix C. Test Result of Frequency Tolerance**GFSK**

Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)
2402	2402.0231	9.62	± 50
2441	2441.0200	9.63	± 50
2480	2480.0239	9.64	± 50

 $\pi/4$ DQPSK

Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)
2402	2402.0231	9.62	± 50
2441	2441.0200	9.63	± 50
2480	2480.0238	9.60	± 50

8DPSK

Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)
2402	2402.0229	9.53	± 50
2441	2441.0200	9.59	± 50
2480	2480.0237	9.56	± 50

GFSK-AFH

Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)
2402	2402.0231	9.62	± 50
2411	2411.0200	9.71	± 50
2421	2421.0235	9.71	± 50

 $\pi/4$ DQPSK-AFH

Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)
2402	2402.0233	9.70	± 50
2411	2411.0200	9.71	± 50
2421	2421.0235	9.71	± 50

8DPSK-AFH

Frequency (MHz)	Reading Value (MHz)	Tolerance (ppm)	Limit (ppm)
2402	2402.0232	9.66	± 50
2411	2411.0200	9.58	± 50
2421	2421.0233	9.62	± 50

Appendix D. Test Result of Dwell Time

GFSK

Frequency (MHz)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2441	0.7686	0.2721	0.4	Pass

Note: Dwell time = (spreading rate * 0.4) * (Duty cycle / 79)

Frequency (MHz)	ON Time (ms)	OFF Time (ms)	Burst Ratio
2441	2.8871	0.8691	0.7686

Note: Burst Ratio=(ON Time/ ON Time + OFF Time)

$\pi/4$ DQPSK

Frequency (MHz)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2441	0.7686	0.2725	0.4	Pass

Note: Dwell time = (spreading rate * 0.4) * (Duty cycle / 79)

Frequency (MHz)	ON Time (ms)	OFF Time (ms)	Burst Ratio
2441	2.8871	0.8691	0.7686

Note: Burst Ratio=(ON Time/ ON Time + OFF Time)

8DPSK

Frequency (MHz)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2441	0.7686	0.2725	0.4	Pass

Note: Dwell time = (spreading rate * 0.4) * (Duty cycle / 79)

Frequency (MHz)	ON Time (ms)	OFF Time (ms)	Burst Ratio
2441	2.8871	0.8691	0.7686

Note: Burst Ratio=(ON Time/ ON Time + OFF Time)

GFSK-AFH

Frequency (MHz)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2411	0.7686	0.2756	0.4	Pass

Note: Dwell time = (spreading rate * 0.4) * (Duty cycle / 20)

Frequency (MHz)	ON Time (ms)	OFF Time (ms)	Burst Ratio
2411	2.8871	0.8691	0.7686

Note: Burst Ratio=(ON Time/ ON Time + OFF Time)

 $\pi/4$ DQPSK-AFH

Frequency (MHz)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2411	0.7686	0.2772	0.4	Pass

Note: Dwell time = (spreading rate * 0.4) * (Duty cycle / 20)

Frequency (MHz)	ON Time (ms)	OFF Time (ms)	Burst Ratio
2411	2.8871	0.8691	0.7686

Note: Burst Ratio=(ON Time/ ON Time + OFF Time)

8DPSK-AFH

Frequency (MHz)	Duty cycle	Dwell Time (Sec)	Limit (Sec)	Result
2411	0.7707	0.2771	0.4	Pass

Note: Dwell time = (spreading rate * 0.4) * (Duty cycle / 20)

Frequency (MHz)	ON Time (ms)	OFF Time (ms)	Burst Ratio
2411	2.8871	0.8591	0.7707

Note: Burst Ratio=(ON Time/ ON Time + OFF Time)



Appendix E. Test Result of Transmitter Spurious Emissions

GFSK

Frequency Range (MHz)	Frequency (MHz)	Reading Value ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)
30 - 1000	991.95	0.001291	2.5
1000 - 2387	2385.98	0.001493	2.5
2387 - 2400	2397.39	0.004539	25
2483.5 - 2496.5	2485.32	0.002512	25
2496.5 - 8000	4881.93	0.048753	2.5
8000 - 12500	9764.02	0.004198	2.5

$\pi/4$ DQPSK

Frequency Range (MHz)	Frequency (MHz)	Reading Value ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)
30 - 1000	340.28	0.001148	2.5
1000 - 2387	1723.80	0.001112	2.5
2387 - 2400	2396.05	0.003622	25
2483.5 - 2496.5	2485.29	0.002291	25
2496.5 - 8000	4882.28	0.021232	2.5
8000 - 12500	11872.34	0.001754	2.5

8DPSK

Frequency Range (MHz)	Frequency (MHz)	Reading Value ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)
30 - 1000	960.16	0.001194	2.5
1000 - 2387	2271.51	0.001164	2.5
2387 - 2400	2399.23	0.003681	25
2483.5 - 2496.5	2483.84	0.002636	25
2496.5 - 8000	4882.28	0.020654	2.5
8000 - 12500	9764.44	0.001866	2.5

GFSK-AFH

Frequency Range (MHz)	Frequency (MHz)	Reading Value ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)
30 - 1000	854.88	0.001236	2.5
1000 - 2387	2386.63	0.001824	2.5
2387 - 2400	2399.59	0.015241	25
2483.5 - 2496.5	2487.88	0.003793	25
2496.5 - 8000	4822.26	0.060814	2.5
8000 - 12500	9644.07	0.003945	2.5

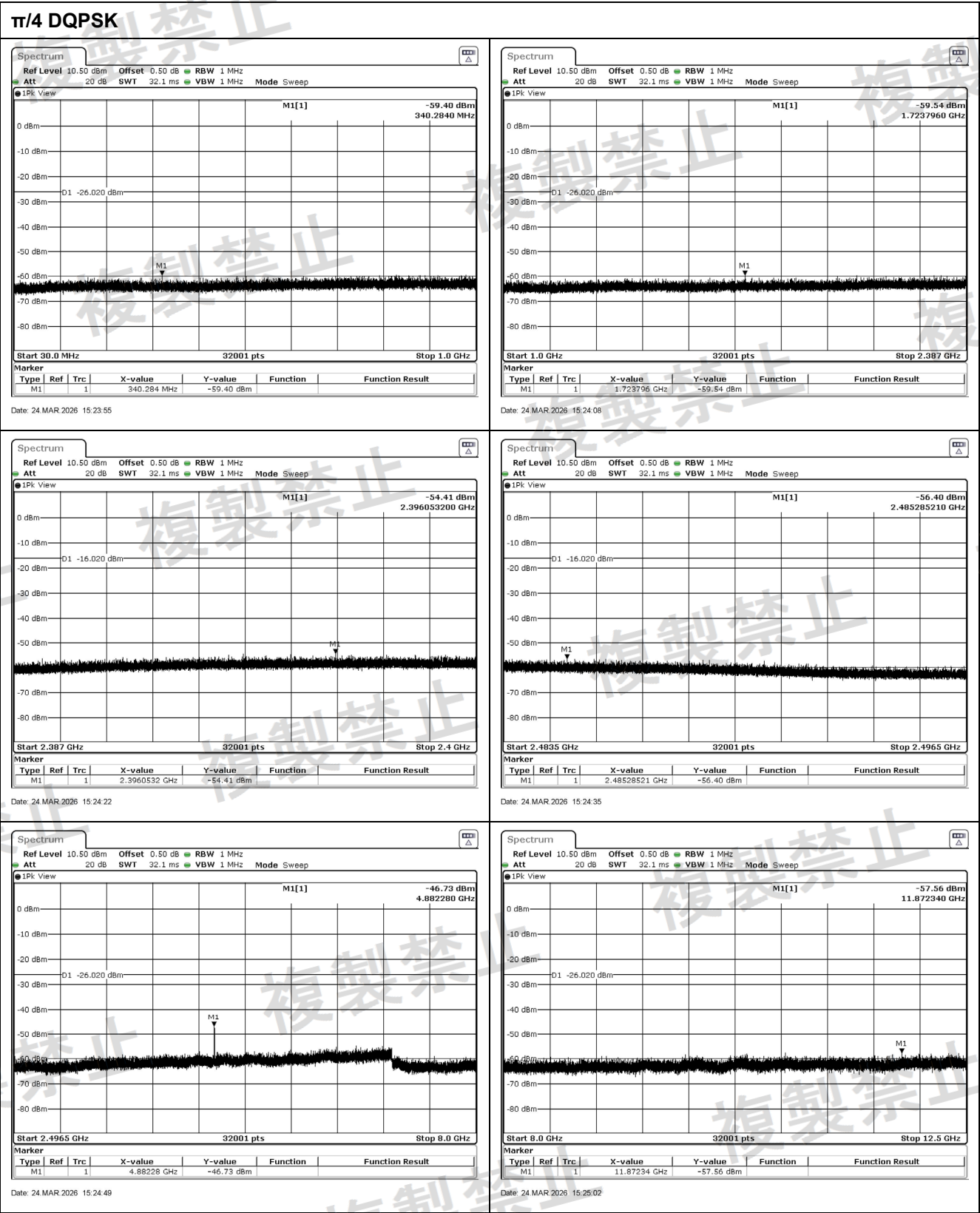
 $\pi/4$ DQPSK-AFH

Frequency Range (MHz)	Frequency (MHz)	Reading Value ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)
30 - 1000	765.68	0.001306	2.5
1000 - 2387	2386.33	0.001222	2.5
2387 - 2400	2399.72	0.010280	25
2483.5 - 2496.5	2487.41	0.003681	25
2496.5 - 8000	4821.74	0.025586	2.5
8000 - 12500	10314.26	0.002094	2.5

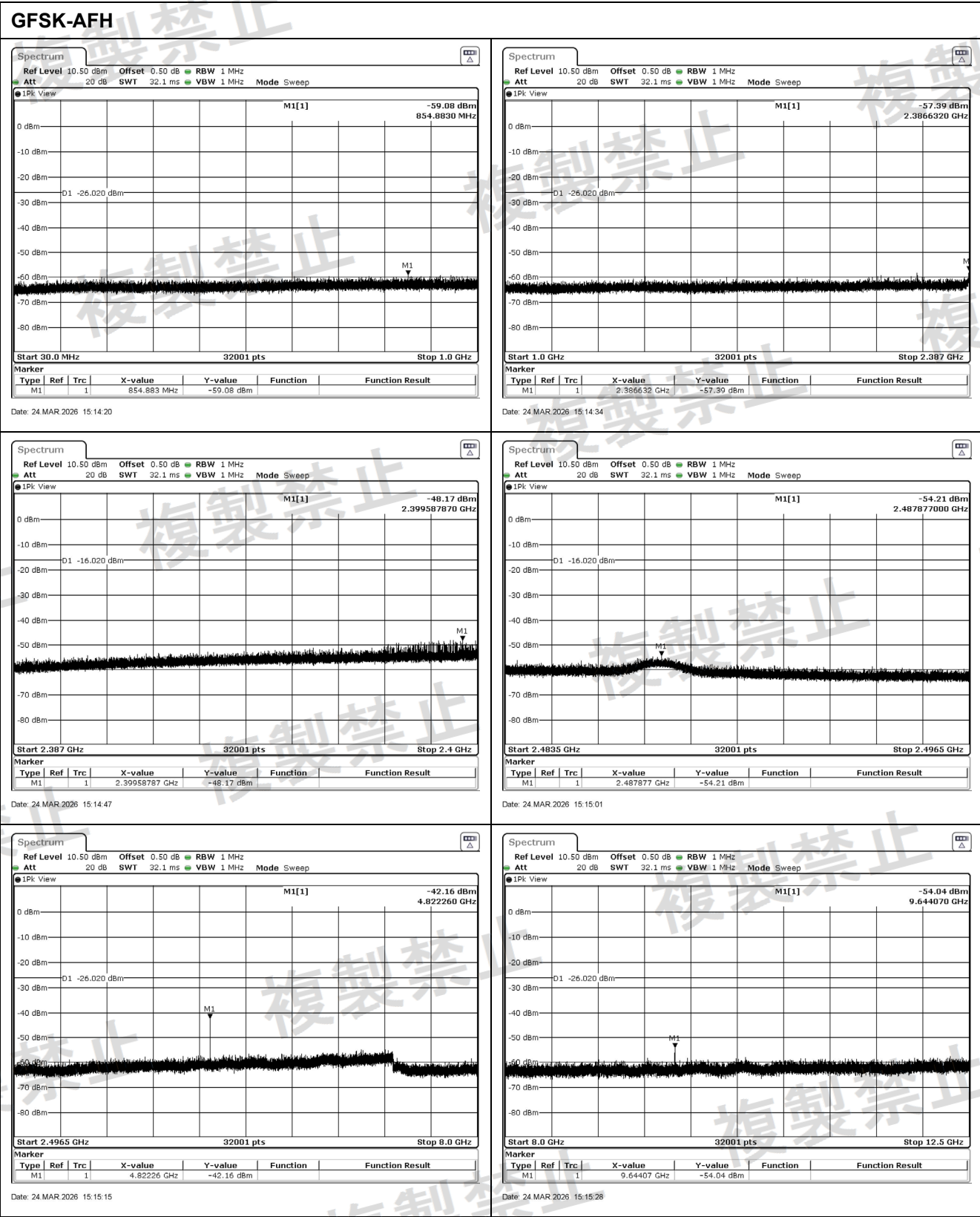
8DPSK-AFH

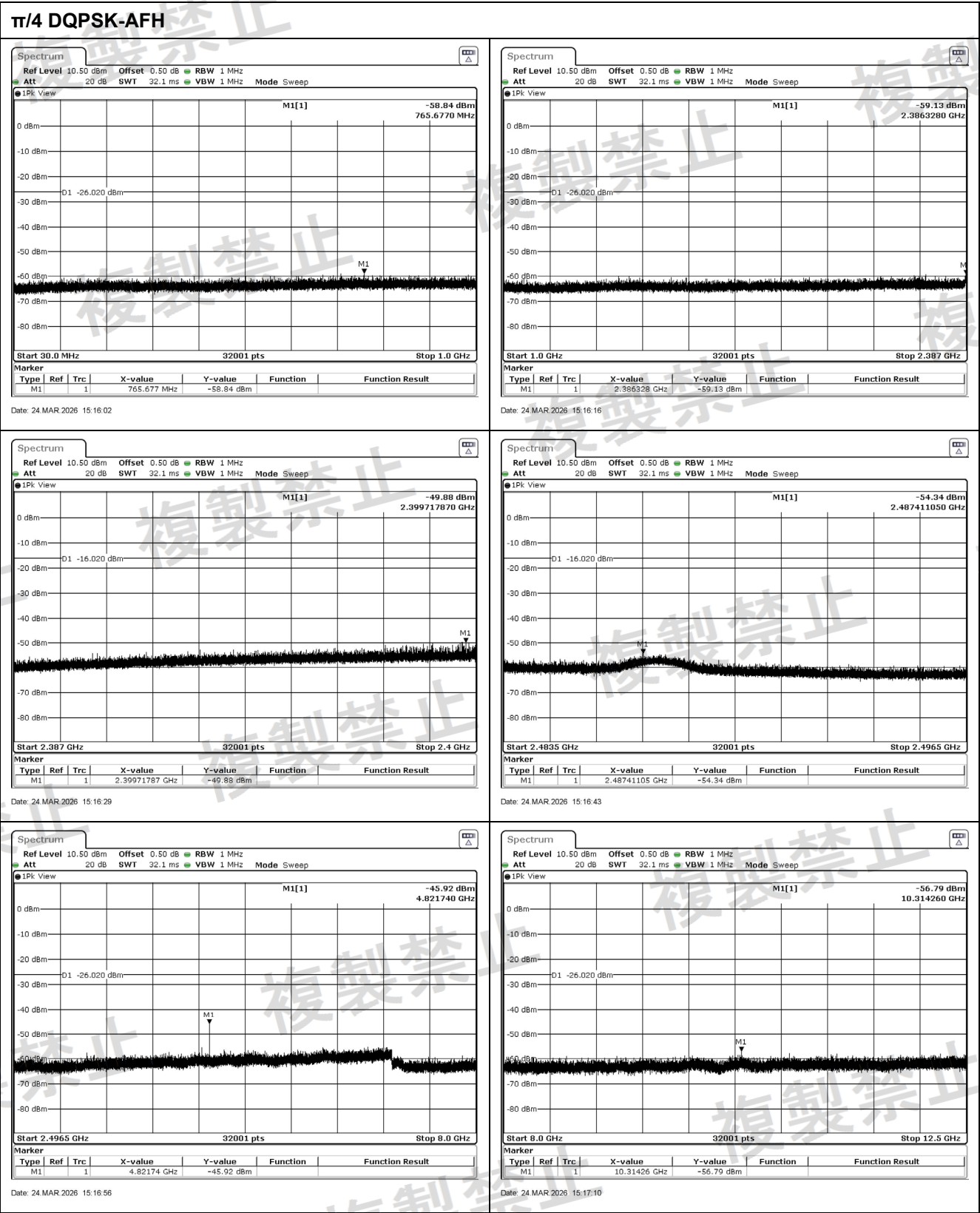
Frequency Range (MHz)	Frequency (MHz)	Reading Value ($\mu\text{W}/\text{MHz}$)	Limit ($\mu\text{W}/\text{MHz}$)
30 - 1000	608.27	0.001294	2.5
1000 - 2387	2385.38	0.001585	2.5
2387 - 2400	2399.75	0.006501	25
2483.5 - 2496.5	2488.07	0.003206	25
2496.5 - 8000	4822.09	0.026607	2.5
8000 - 12500	12349.18	0.001596	2.5

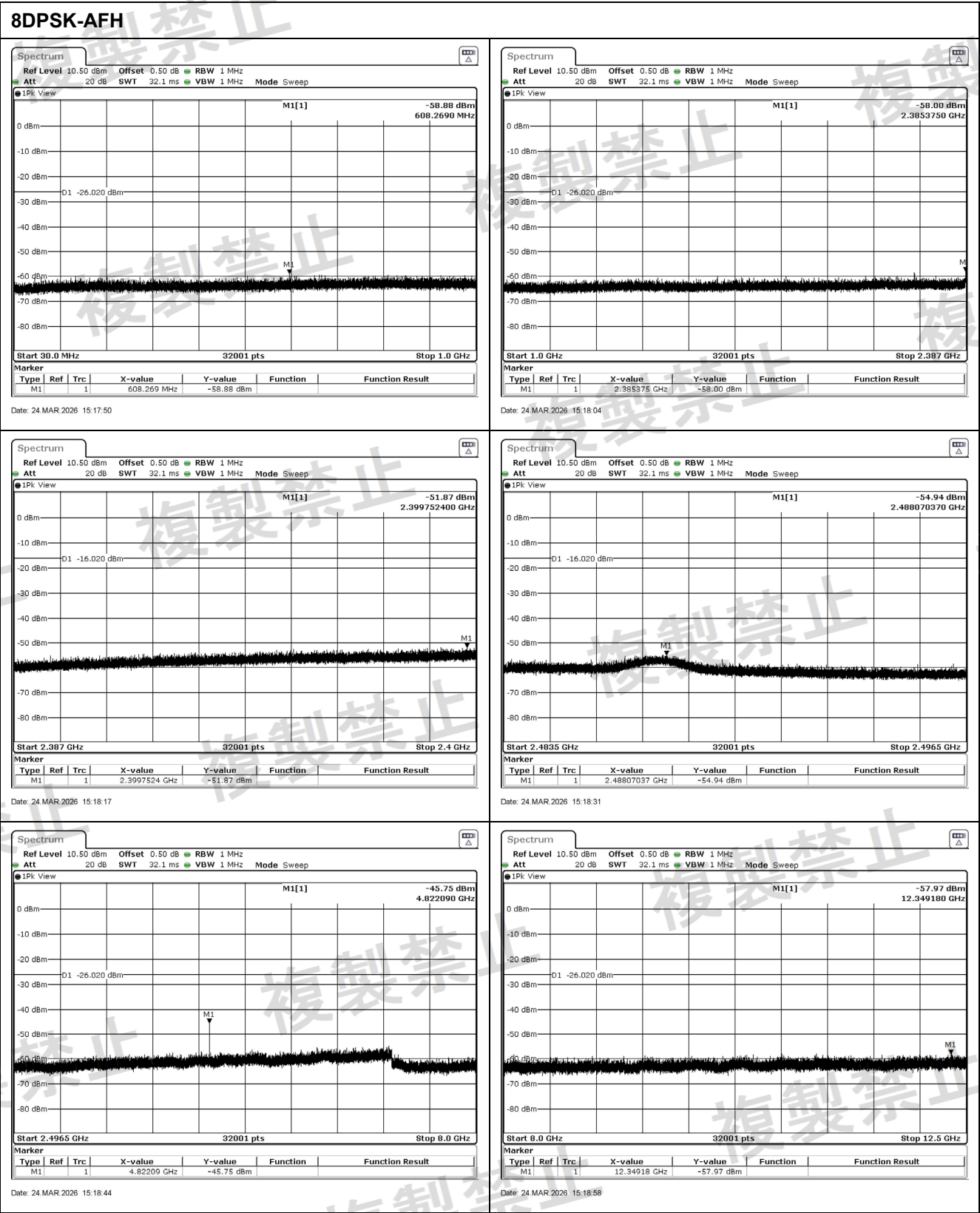












Appendix F. Test Result of Receiver Spurious Emissions

GFSK

Frequency Range (MHz)	Frequency (MHz)	Reading Value (nW)	Limit (nW)
30 - 1000	780.71	0.013183	4
1000 - 3000	2721.10	0.013614	20
3000 - 8000	6741.21	0.032137	20
8000 - 12500	10289.51	0.017219	20

$\pi/4$ DQPSK

Frequency Range (MHz)	Frequency (MHz)	Reading Value (nW)	Limit (nW)
30 - 1000	863.49	0.011885	4
1000 - 3000	2977.34	0.012417	20
3000 - 8000	6951.67	0.031550	20
8000 - 12500	12139.24	0.020045	20

8DPSK

Frequency Range (MHz)	Frequency (MHz)	Reading Value (nW)	Limit (nW)
30 - 1000	778.04	0.013614	4
1000 - 3000	2614.79	0.013804	20
3000 - 8000	6634.81	0.031842	20
8000 - 12500	12152.32	0.017742	20

GFSK-AFH

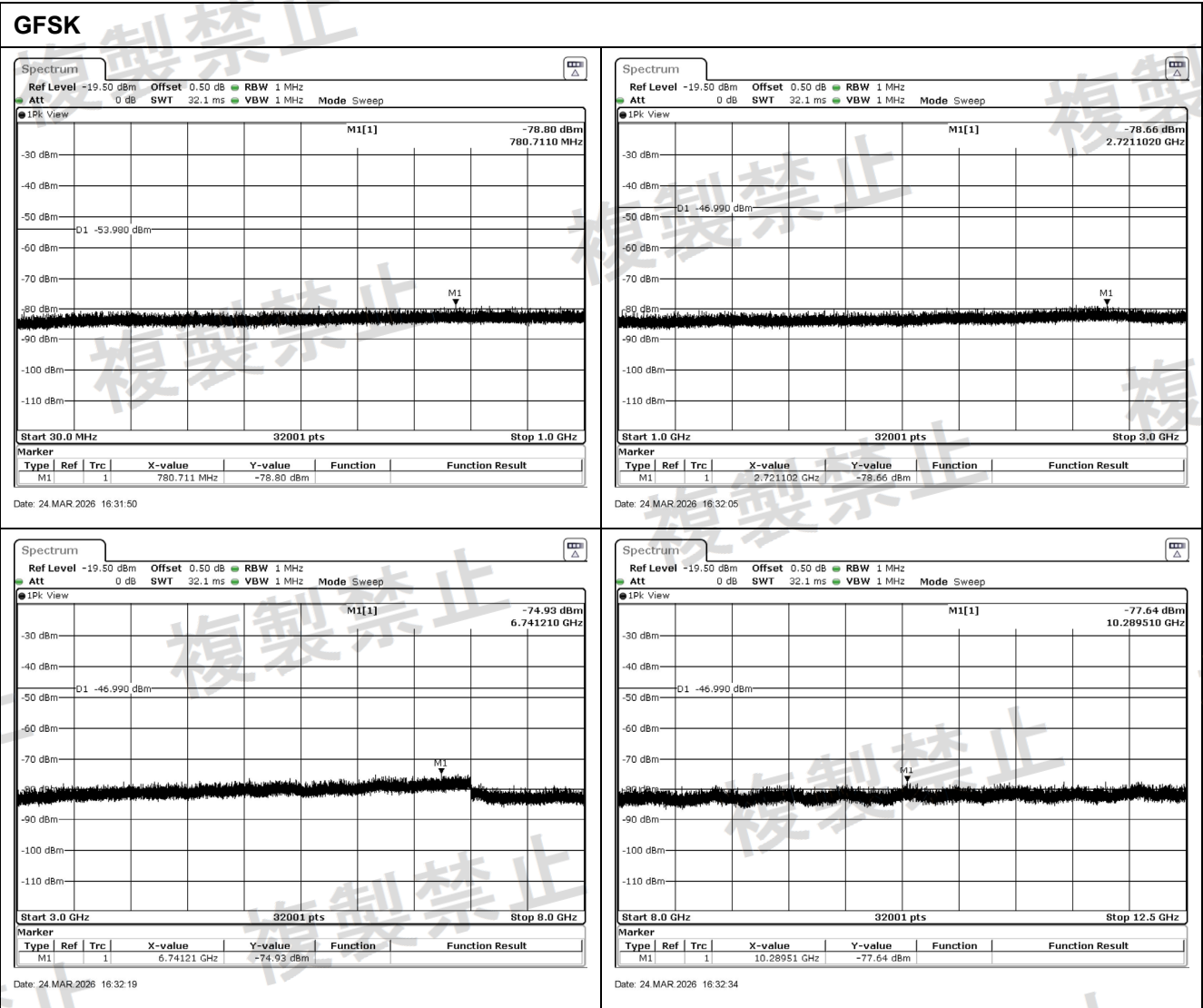
Frequency Range (MHz)	Frequency (MHz)	Reading Value (nW)	Limit (nW)
30 - 1000	713.94	0.011508	4
1000 - 3000	2626.29	0.012274	20
3000 - 8000	6871.05	0.037931	20
8000 - 12500	12125.18	0.017298	20

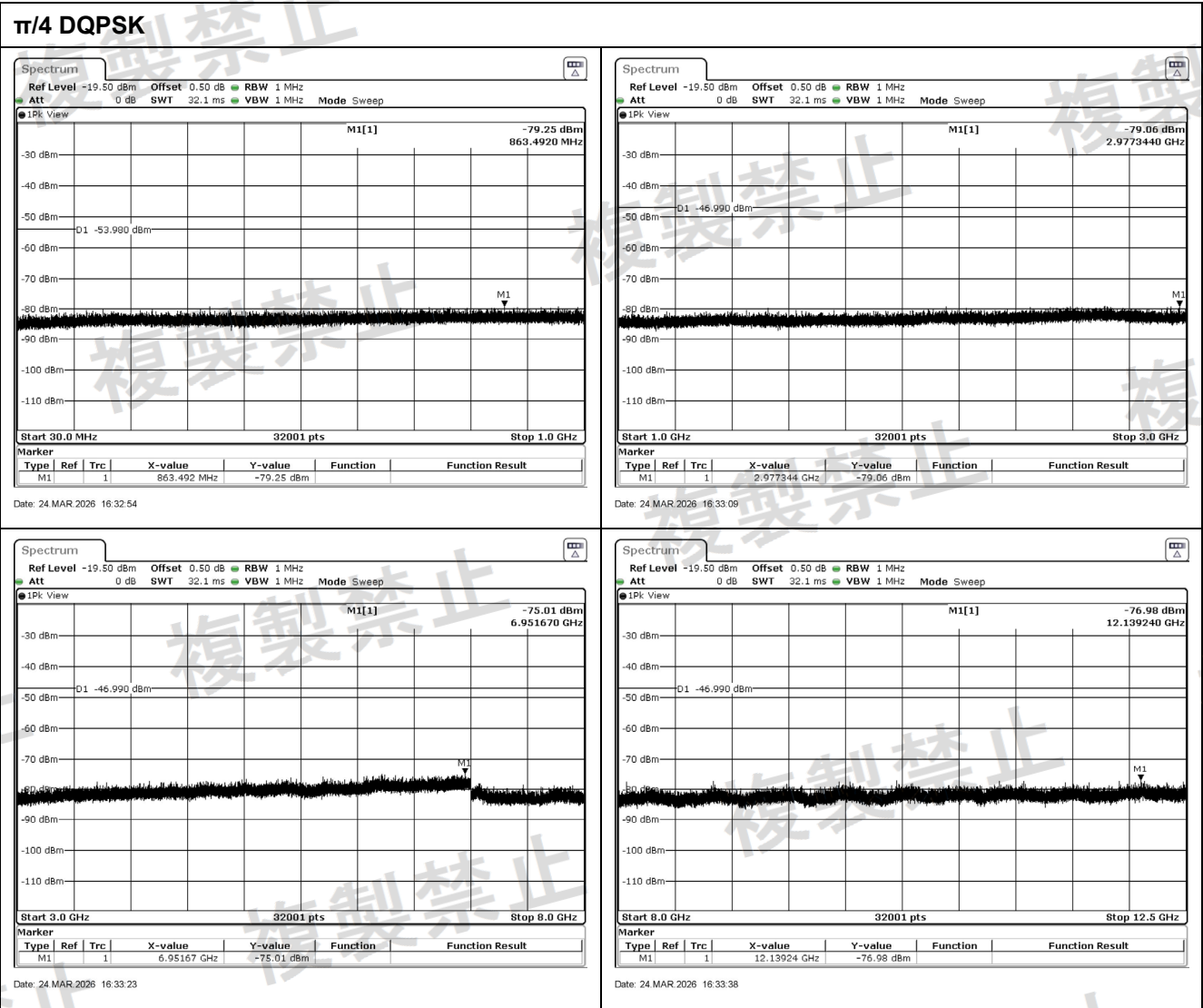
 $\pi/4$ DQPSK-AFH

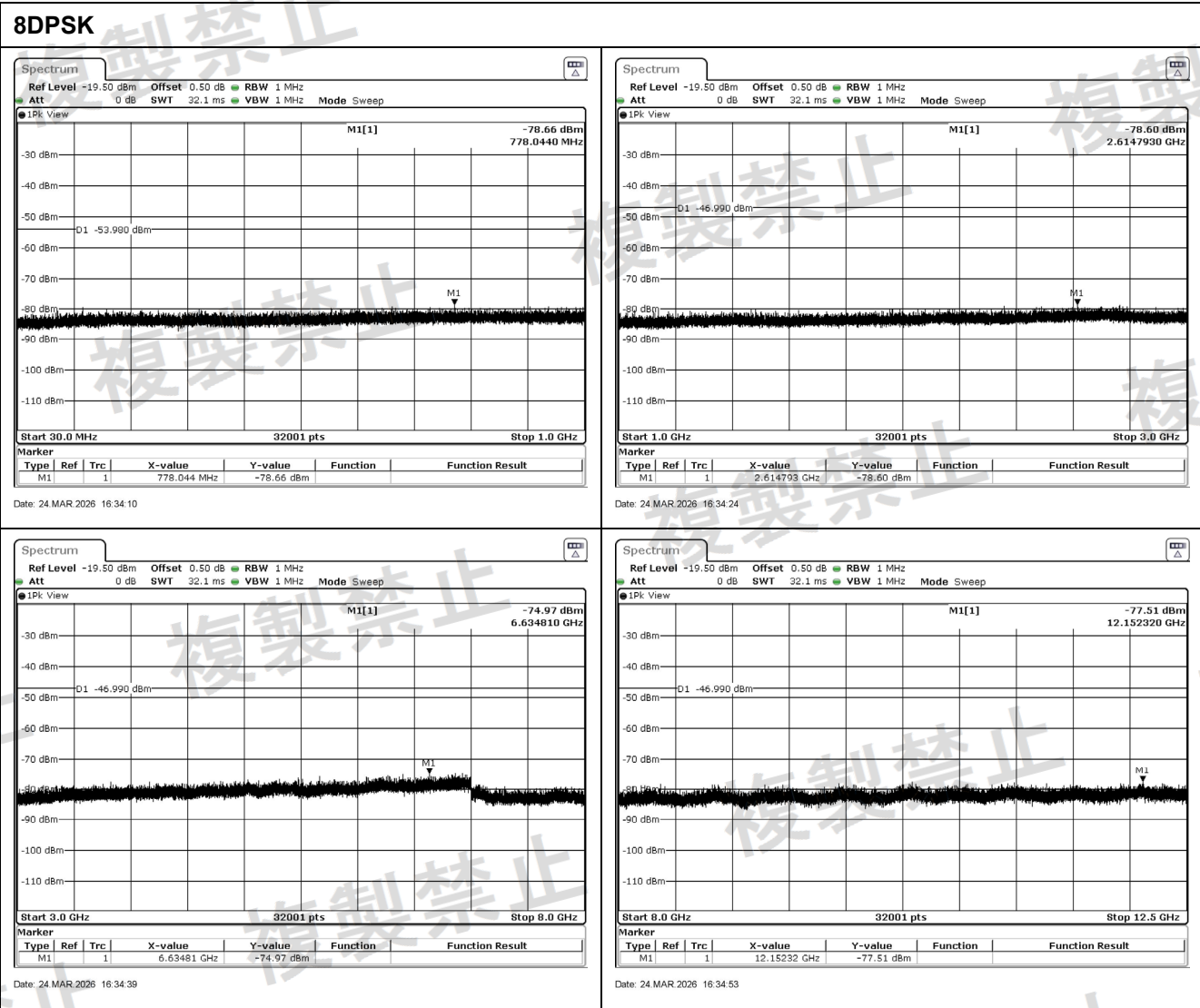
Frequency Range (MHz)	Frequency (MHz)	Reading Value (nW)	Limit (nW)
30 - 1000	727.88	0.015205	4
1000 - 3000	2649.42	0.014191	20
3000 - 8000	6887.30	0.031046	20
8000 - 12500	12040.10	0.018967	20

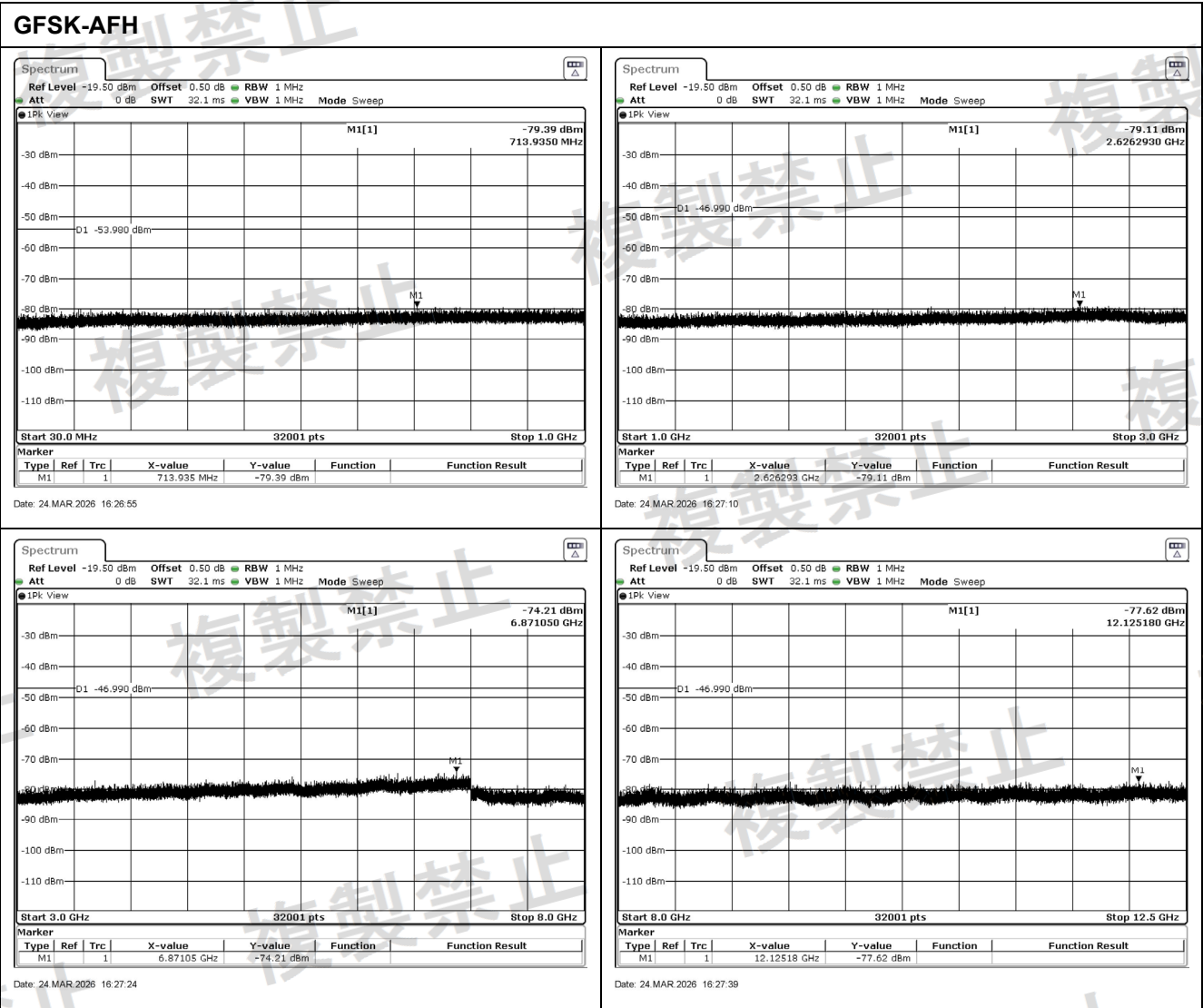
8DPSK-AFH

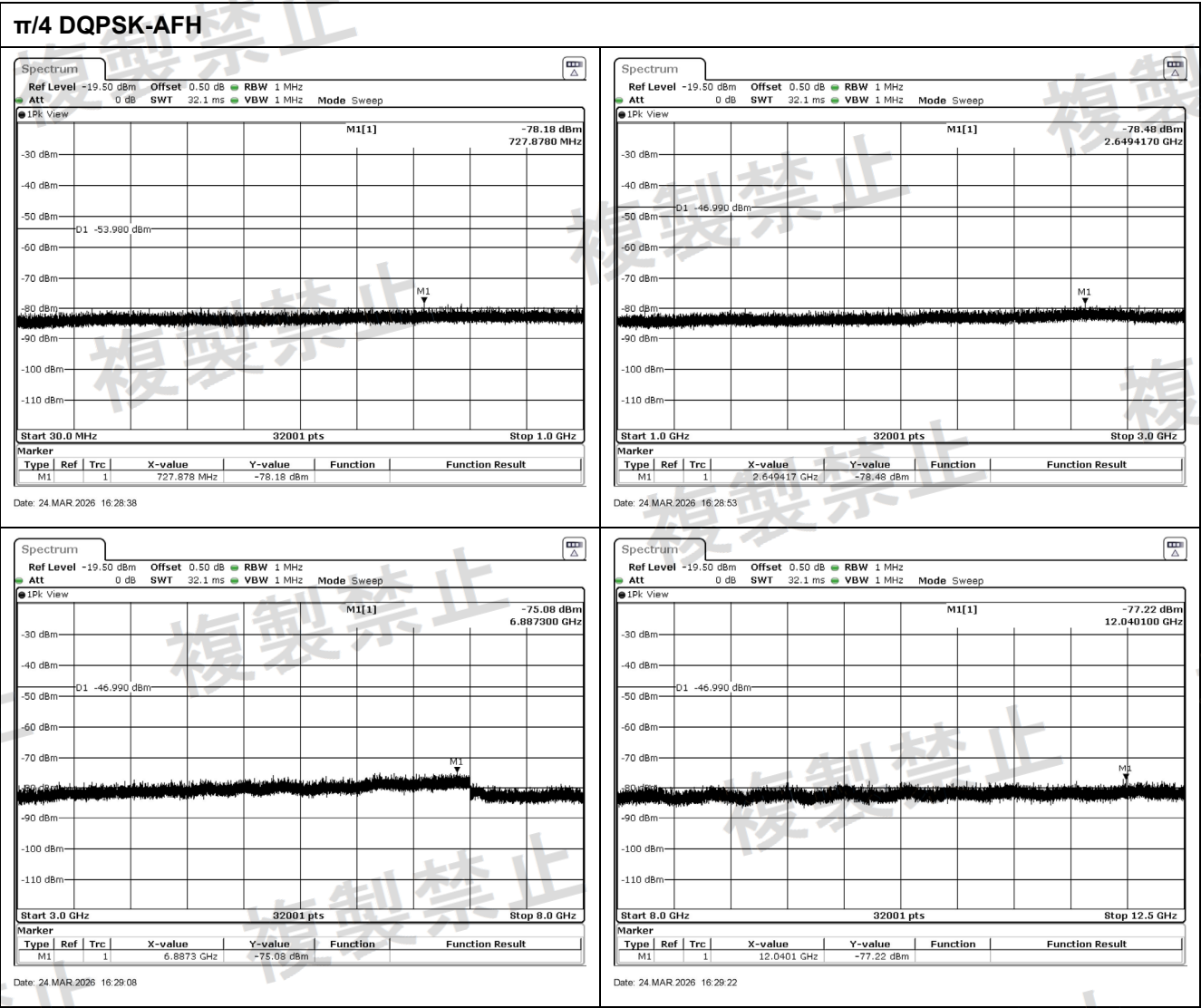
Frequency Range (MHz)	Frequency (MHz)	Reading Value (nW)	Limit (nW)
30 - 1000	968.79	0.013002	4
1000 - 3000	2685.23	0.012190	20
3000 - 8000	6589.34	0.032659	20
8000 - 12500	12288.30	0.021478	20

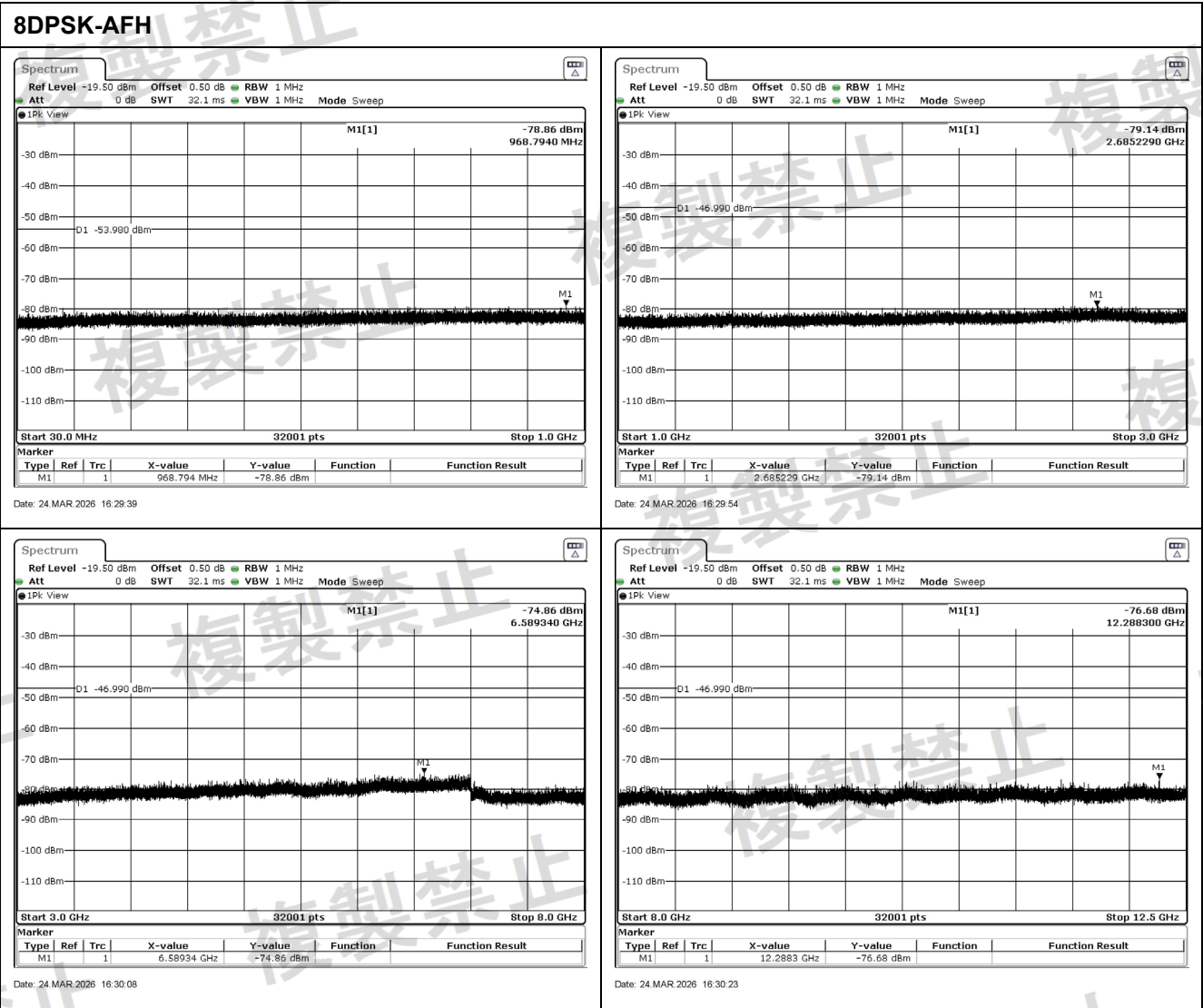










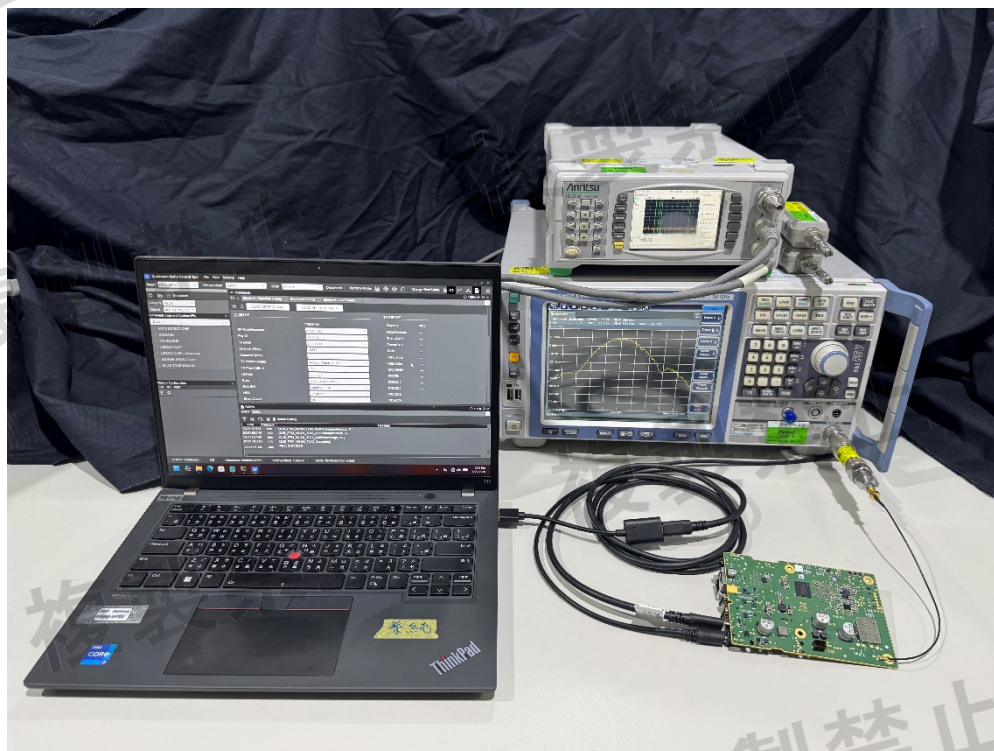


Appendix G. Test Result of Interference Prevention Function

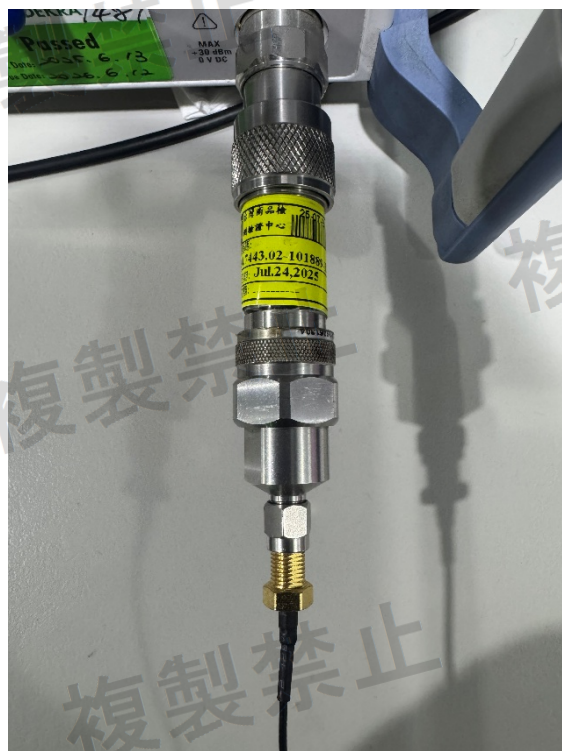
Test Mode	Test Result
Normal Link	Pass

Appendix I. Test Photograph

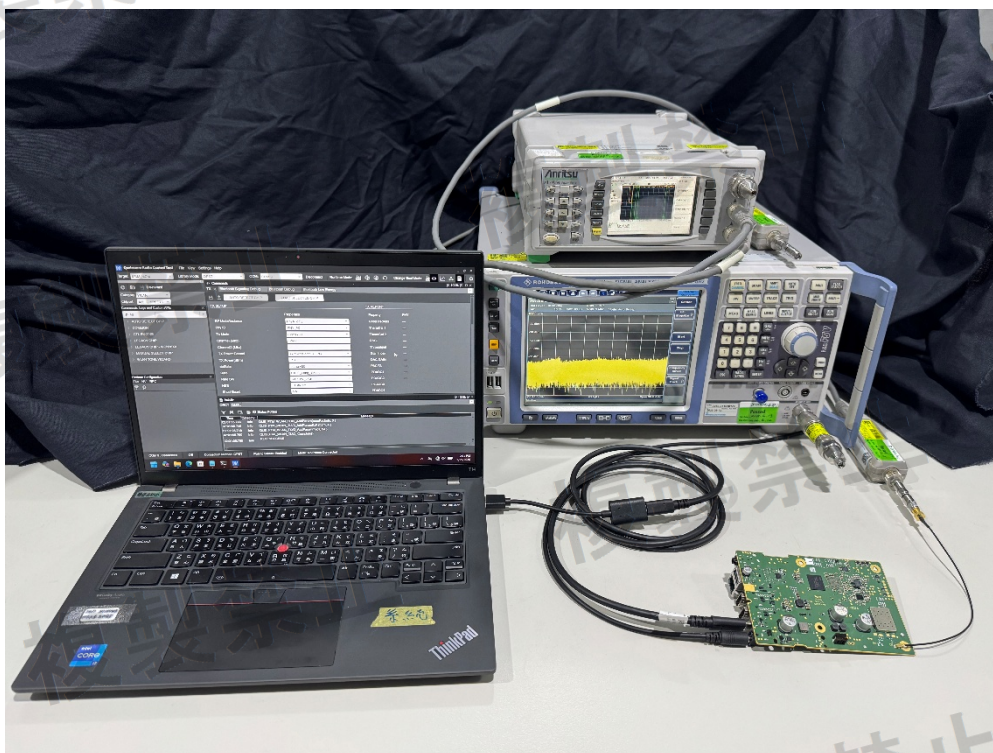
Description: Test Setup (Spectrum Analyzer)



Description: Test Setup (Spectrum Analyzer)



Description: Test Setup (Power Meter)



Description: Test Setup (Power Meter)

