

Appendix A. Test Result of Antenna Power, Antenna Power Tolerance and E.I.R.P

Antenna Power

Test Conditions	Modulation	Frequency (MHz)	Reading Value (dBm)	Antenna Power (mW/MHz)	Limit (mW/MHz)	Result
V _{nom}	GFSK-ULL2M	Hopping	9.98	0.25	3.0000	Pass
	GFSK-ULL2M-AFH		9.99	1.89	3.0000	Pass

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

Antenna Power Tolerance

Test Conditions	Modulation	Frequency (MHz)	Declared Antenna Power (mW/MHz)	Antenna Power (mW/MHz)	Antenna Power Tolerance (%)	Limit (%)	Result
V _{nom}	GFSK-ULL2M	Hopping	0.25	0.25	0.00	+20	Pass
	GFSK-ULL2M-AFH		1.89	1.89	0.00	+20	Pass

Note: Antenna Power Tolerance (%) = $(\text{Antenna Power (mW/MHz)} - \text{Declared Antenna Power (mW/MHz)}) / \text{Declared Antenna Power (mW/MHz)} * 100\%$.

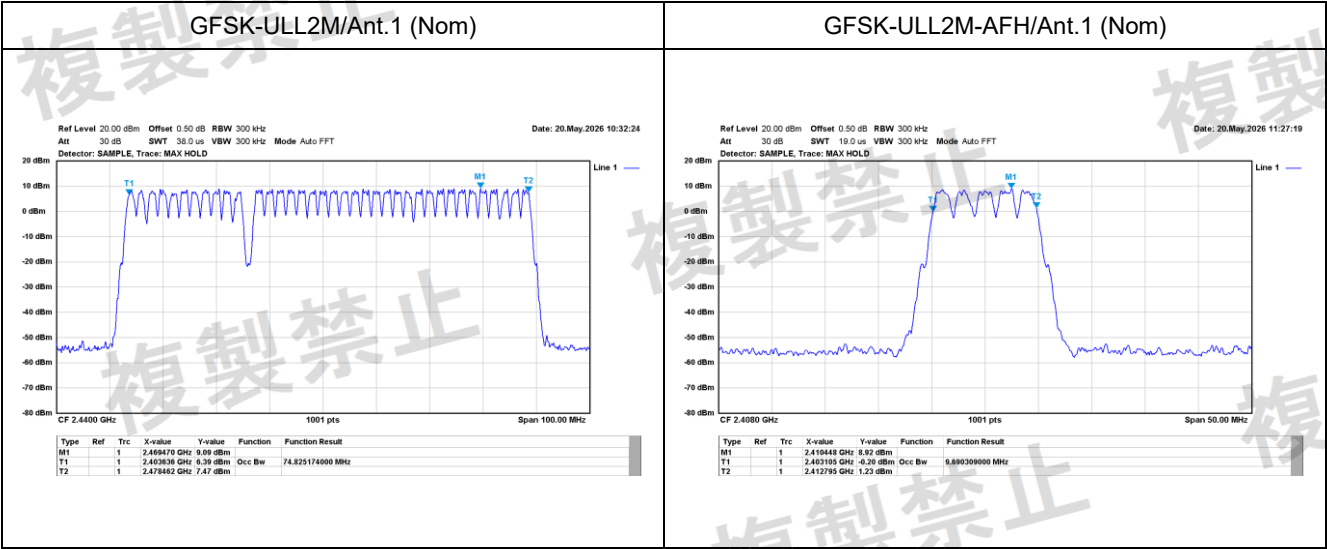
E.I.R.P.

Test Conditions	Modulation	Frequency (MHz)	Antenna Power (dBm/MHz)	Maximum Antenna Gain (dBi)	E.I.R.P. (dBm/MHz)	Limit (dBm/MHz)	Result
V _{nom}	GFSK-ULL2M	Hopping	-6.08	-0.46	-6.54	6.91	Pass
	GFSK-ULL2M-AFH		2.76	-0.46	2.3	6.91	Pass

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

Appendix B. Test Result of Occupied Bandwidth

Test Conditions	Modulation	Frequency (MHz)	Occupied Bandwidth (MHz)	Limit (MHz)	Result
V _{nom}	GFSK-ULL2M	Hopping	74.83	≤ 83.50	Pass
	GFSK-ULL2M-AFH		9.69	≤ 83.50	Pass



Appendix C. Test Result of Frequency Tolerance

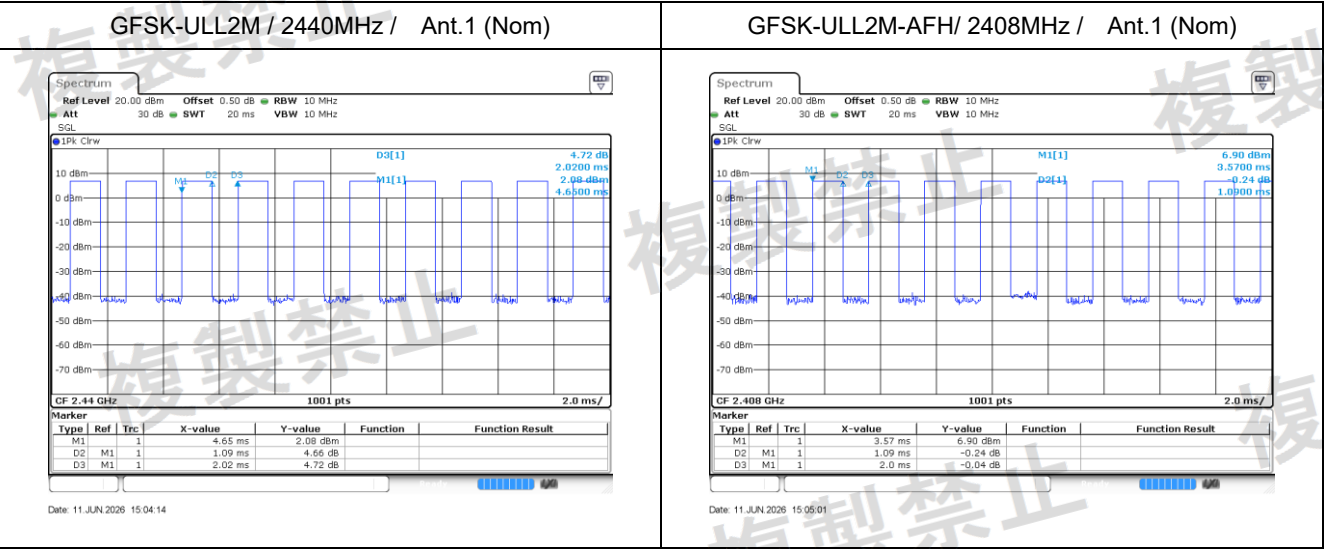
Test Conditions	Modulation	Frequency (MHz)	Reading Value (MHz)	Frequency Tolerance (ppm)	Limit (ppm)	Result
V _{nom}	GFSK-ULL2M	2404	2403.9937	-2.62	± 50	Pass
		2440	2439.9931	-2.83	± 50	Pass
		2478	2477.9925	-3.03	± 50	Pass
	GFSK-ULL2M-AFH	2404	2403.9931	-2.87	± 50	Pass
		2408	2407.9928	-2.99	± 50	Pass
		2412	2411.9928	-2.99	± 50	Pass

Appendix D. Test Result of Dwell Time

Test Conditions	Modulation	Frequency (MHz)	ON Time (ms)	OFF Time (ms)	Burst Ratio	Dwell Time (sec)	Limit (sec)	Result
V _{nom}	GFSK-ULL2M	2440	1.09	0.93	0.53	0.21	0.40	Pass
	GFSK-ULL2M-AFH	2408	1.09	0.91	0.54	0.21	0.40	Pass

Note:

1. Burst Ratio = ON Time (ms) / (ON Time (ms) + OFF Time (ms))
2. Dwell Time = (spreading rate * 0.4) * (Burst Ratio / Channel Number)

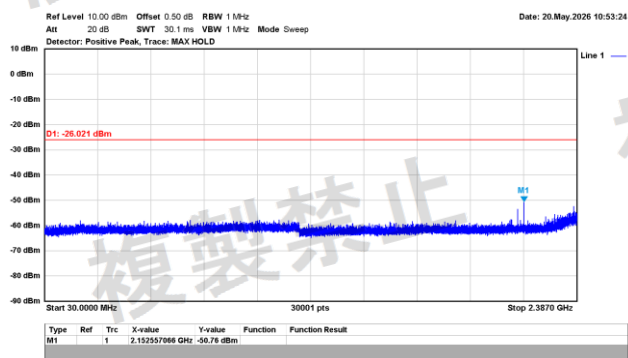


Appendix E. Test Result of Unwanted Emission Strength

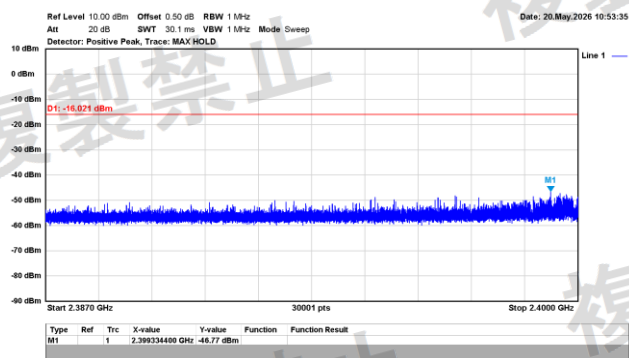
Test Conditions	Modulation	Frequency Range (MHz)	Measurement Value (μW/MHz)	Limit (μW/MHz)	Result
V _{nom}	GFSK-ULL2M	30 ~ 2387	0.00839	2.50000	Pass
		2387 ~ 2400	0.02104	25.00000	Pass
		2483.5 ~ 2496.5	0.01687	25.00000	Pass
		2496.5 ~ 12500	0.01377	2.50000	Pass
	GFSK-ULL2M-AFH	30 ~ 2387	0.00785	2.50000	Pass
		2387 ~ 2400	0.03119	25.00000	Pass
		2483.5 ~ 2496.5	0.00507	25.00000	Pass
		2496.5 ~ 12500	0.01199	2.50000	Pass

Measurement Value = (Worst value) x (Number of antenna ports).

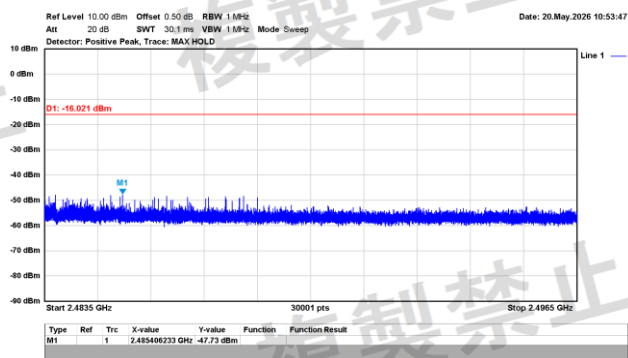
GFSK-ULL2M/Ant.1/1-4 (Nom)



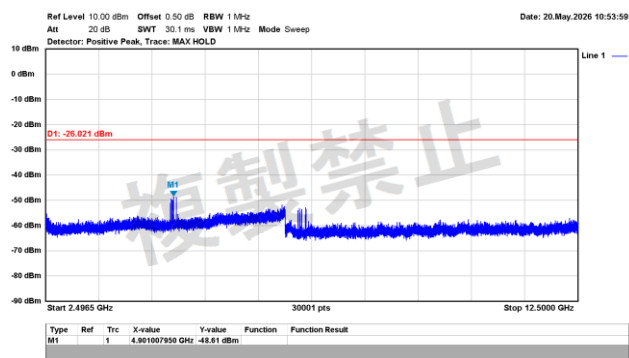
GFSK-ULL2M/Ant.1/2-4 (Nom)



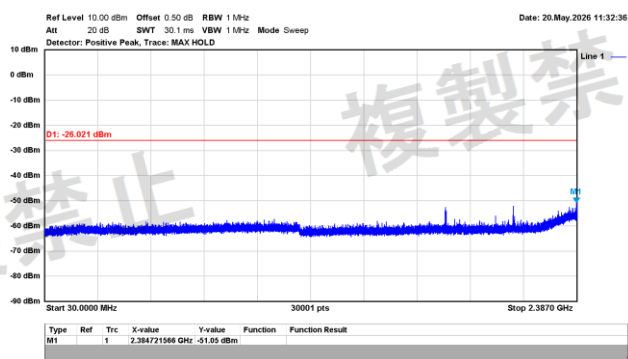
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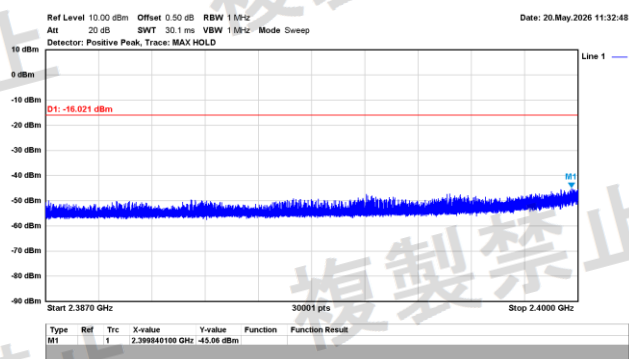
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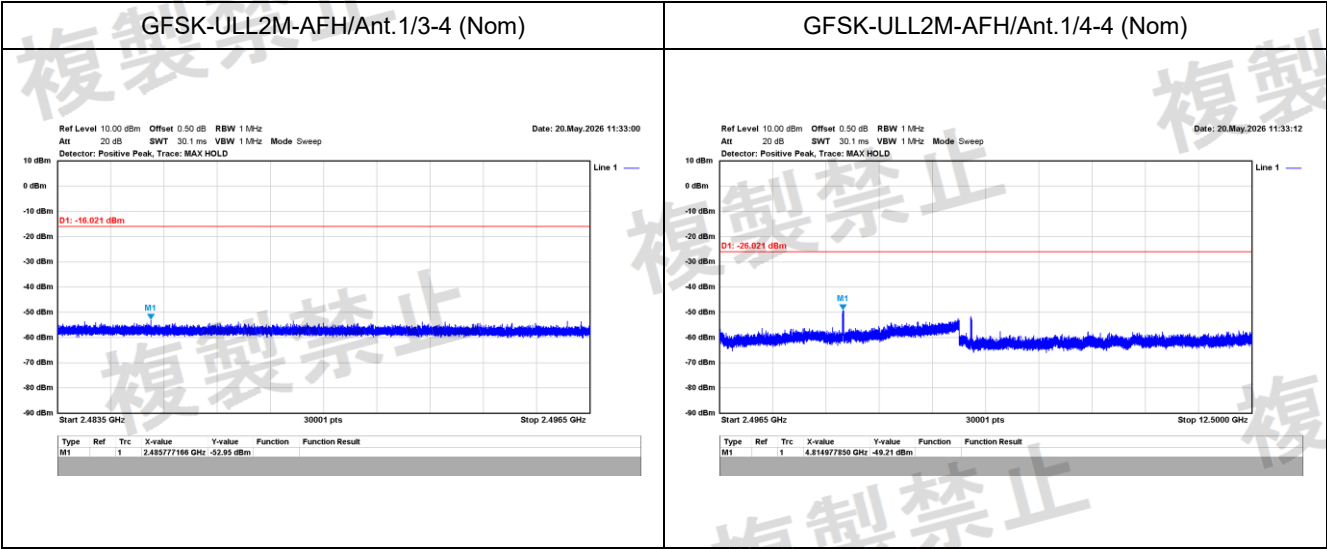


GFSK-ULL2M-AFH/Ant.1/1-4 (Nom)



GFSK-ULL2M-AFH/Ant.1/2-4 (Nom)

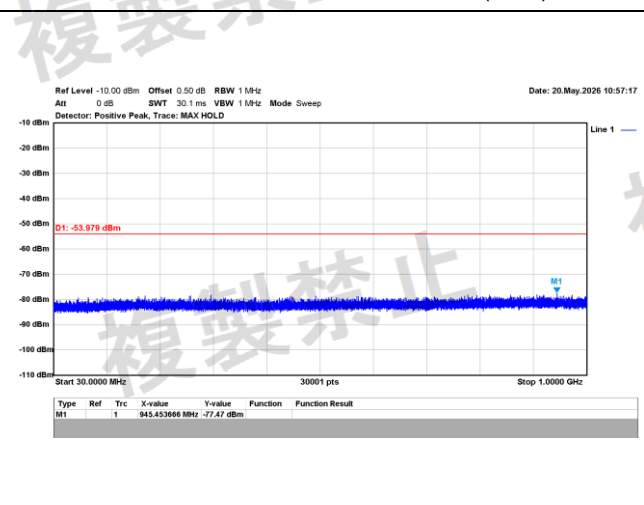




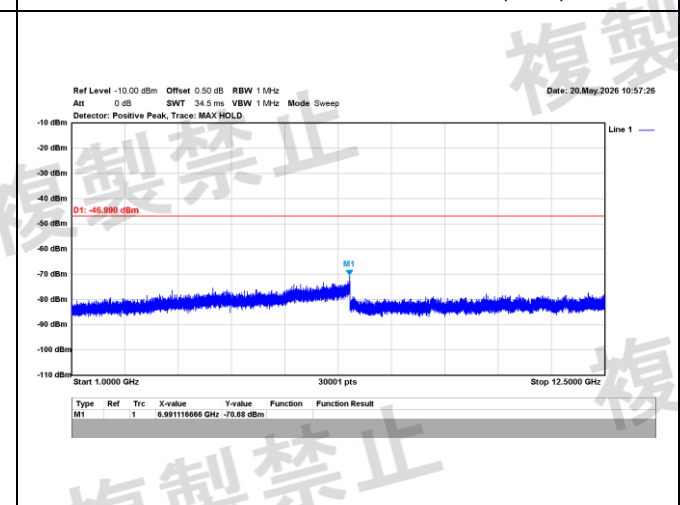
Appendix F. Test Result of Secondary Radiated Emission Strength

Test Conditions	Modulation	Frequency (MHz)	Frequency Range (MHz)	Measurement Value (nW)	Limit (nW)	Result
V _{nom}	GFSK-ULL2M	2404	30 ~ 1000	0.01791	4.00000	Pass
			1000 ~ 12500	0.08551	20.00000	Pass
		2440	30 ~ 1000	0.01581	4.00000	Pass
			1000 ~ 12500	0.06180	20.00000	Pass
		2478	30 ~ 1000	0.01730	4.00000	Pass
			1000 ~ 12500	0.05458	20.00000	Pass
	GFSK-ULL2M-AFH	2404	30 ~ 1000	0.02143	4.00000	Pass
			1000 ~ 12500	0.08072	20.00000	Pass
		2408	30 ~ 1000	0.01837	4.00000	Pass
			1000 ~ 12500	0.06516	20.00000	Pass
		2412	30 ~ 1000	0.01770	4.00000	Pass
			1000 ~ 12500	0.05260	20.00000	Pass

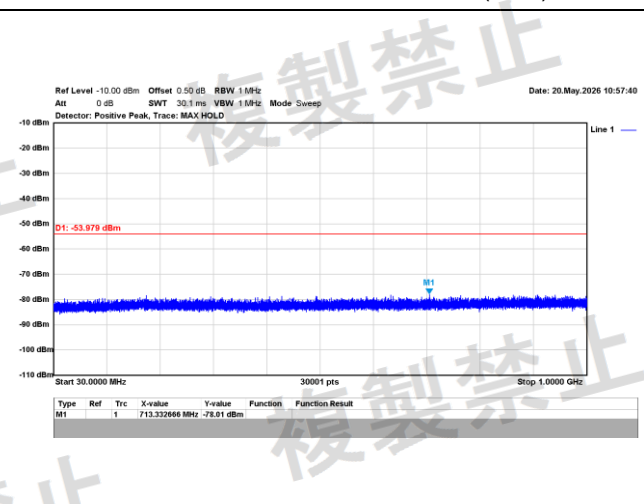
GFSK-ULL2M/2404MHz/Ant. 1/1-2 (Nom)



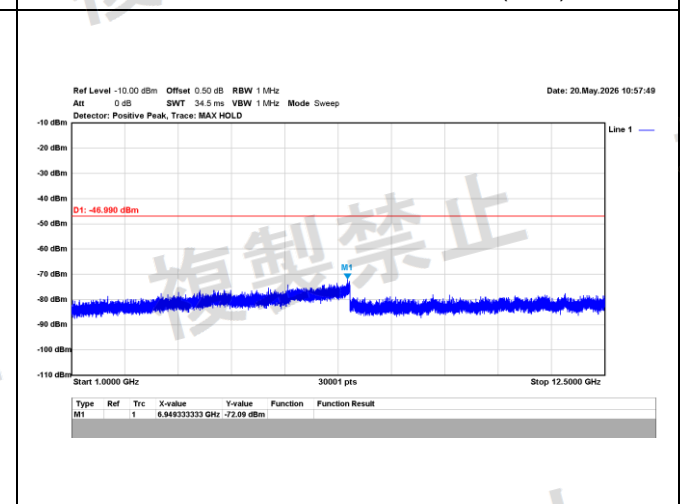
GFSK-ULL2M/2404MHz/Ant. 1/2-2 (Nom)



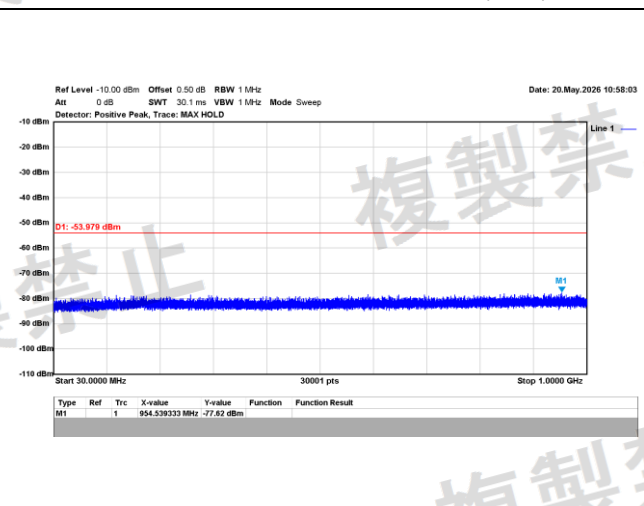
GFSK-ULL2M/2440MHz/Ant. 1/1-2 (Nom)



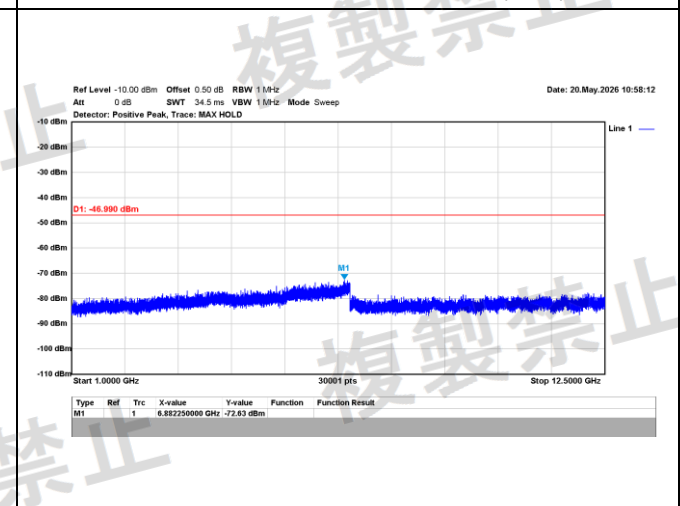
GFSK-ULL2M/2440MHz/Ant. 1/2-2 (Nom)



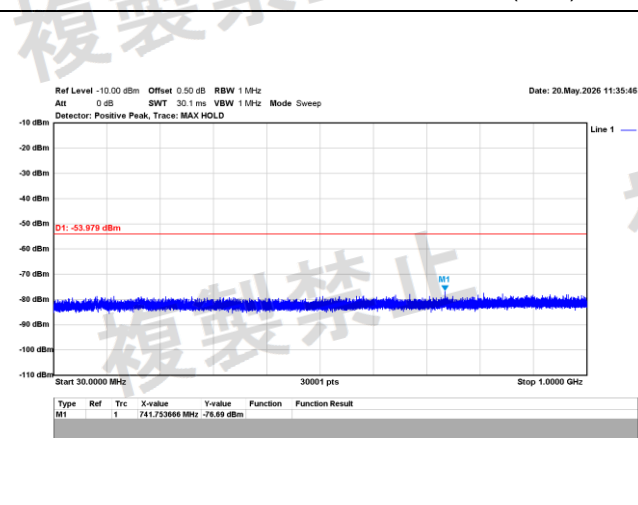
GFSK-ULL2M/2478MHz/Ant. 1/1-2 (Nom)



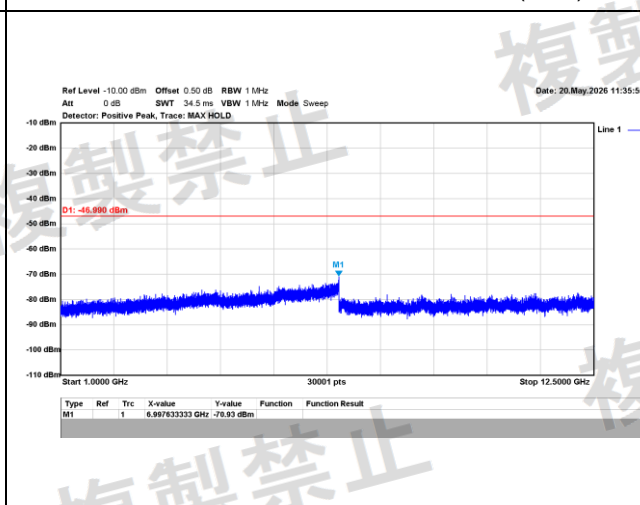
GFSK-ULL2M/2478MHz/Ant. 1/2-2 (Nom)



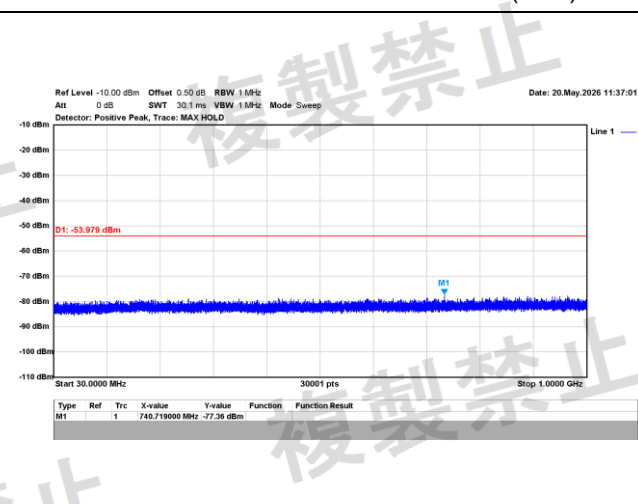
GFSK-ULL2M-AFH/2404MHz/Ant. 1/1-2 (Nom)



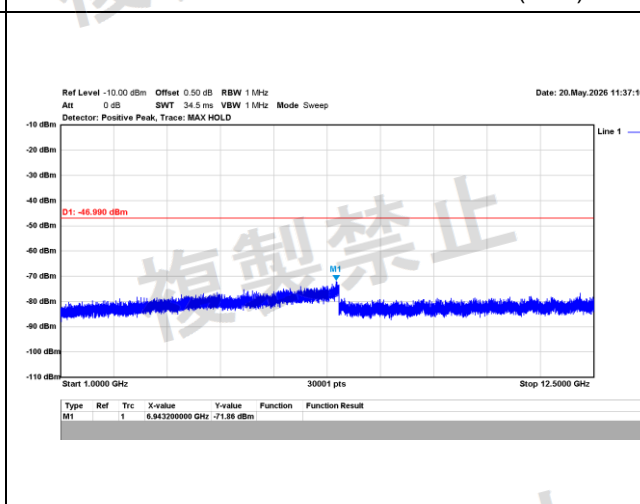
GFSK-ULL2M-AFH/2404MHz/Ant. 1/2-2 (Nom)



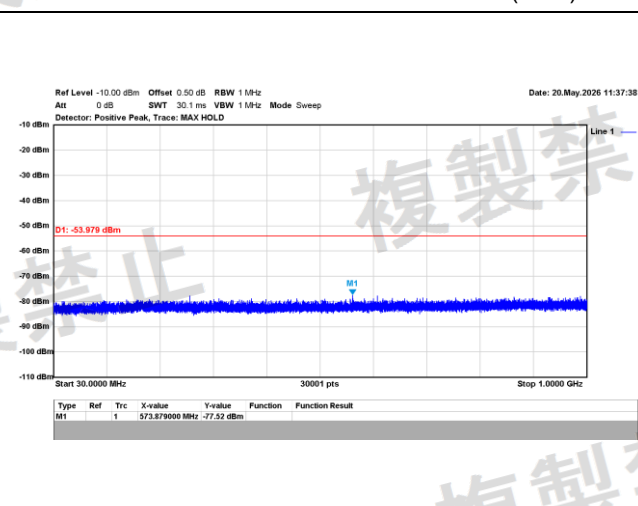
GFSK-ULL2M-AFH/2408MHz/Ant. 1/1-2 (Nom)



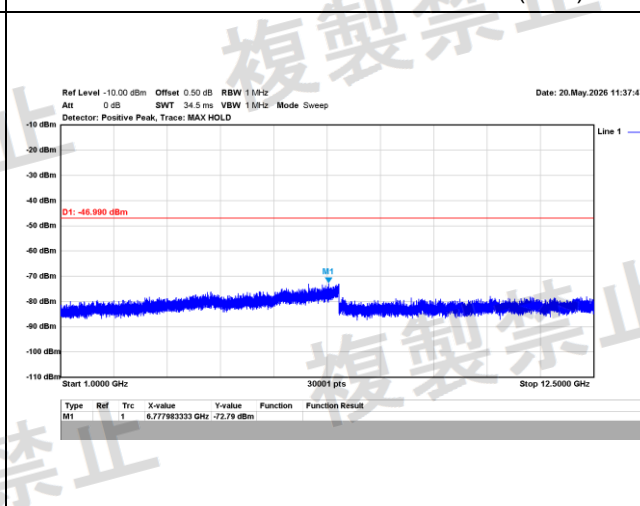
GFSK-ULL2M-AFH/2408MHz/Ant. 1/2-2 (Nom)



GFSK-ULL2M-AFH/2412MHz/Ant. 1/1-2 (Nom)



GFSK-ULL2M-AFH/2412MHz/Ant. 1/2-2 (Nom)



Appendix G. Test Result of Interference Prevention Function

Test Mode	Test Result
Normal Link	Pass

Appendix H. Test Result of Test Setup Photograph

Description: Test Setup (Spectrum Analyzer)



Description: Test Setup (Spectrum Analyzer)



Description: Test Setup (Power Meter)



Description: Test Setup (Power Meter)

