



JAPAN RADIO TEST REPORT

Client Information:

Applicant: MiraArc Co., Ltd.

Applicant add.: 539-11 Sone, Itoshima, Fukuoka 819-1561, Japan

Manufacturer: MiraArc Co., Ltd.

Manufacturer add.: 539-11 Sone, Itoshima, Fukuoka 819-1561, Japan

Brand Name: N/A

Product Information:

Product Name: CINEMAGE nano

Model No.: nano

Derivative model No.: N/A

Test Date: Dec. 25 2025 to Jan. 12, 2026

Issue Date: Jan. 12, 2026

Test Standard: Article 2 paragraph 1 of item 19

Test Result: PASS

Shenzhen ITC Product Testing Co., Ltd.

Issued by: Add. : 103, Building 1 South, Dayang Industrial Zone, Lougang Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China

This device described above has been tested by ITC, and the test results show that the equipment under test (EUT) is in compliance with the ARIB STD T-66 requirements. And it is applicable only to the tested sample identified in the report.

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Tested by Max Zhuang

Reviewed by Apple Huang

Approved by John Liu



This test report may be reproduced in full only
Test result presented in this test report is applicable to the tested sample only



Report Revision History

Report No.	Report Version	Description	Issue Date
26ITC0106057W01	NONE	Original	Jan. 12, 2026

Test site information

Lab performing tests:	Shenzhen iTC Product Testing Co., Ltd.
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1. TECHNICAL INFORMATION

Note: the following data is based on the information by the applicant.

1.1 EUT DESCRIPTION

Product Designation	CINEMAGE nano
Model Name	nano
Model Different.	N/A
Bit Rate of Transmitter	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n: Up to 150Mbps
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n(20/40): DSSS (CCK, DQPSK,DBPSK)+OFDM (QPSK, BPSK, 16-QAM, 64-QAM)
Operation Frequency	2412~2472 MHz for 802.11b/g/nHT20 2422~2462 MHz for 802.11nHT40
Antenna Designation	FPCB Antenna (Antenna Gain: 3.21dBi)
Channel No.	13 Channels for 802.11b/g/n(HT20) 9 channels for 802.11nHT40
channel space	5MHz
Rated RF Output Power Density	802.11b:9mW/MHz, 802.11g:3mW/MHz 802.11nHT20:3mW/MHz, 802.11nHT40:3mW/MHz
Conducted Power Density	802.11b: 8.604mW/MHz 802.11g: 2.963mW/MHz 802.11nHT20: 2.847mW/MHz 802.11nHT40: 2.726mW/MHz
Power Source	DC12V from adapter AC100V/60Hz or DC3.7V from battery
Test Mode	B Mode(802.11b) G Mode(802.11g) N Mode(802.11n HT20) N Mode(802.11n HT40)
Test Channel	For 802.11b/g/nHT20:2.412GHz (CH01)/2.442GHz (CH07)/2.472GHz (CH13) For 802.11b/g/nHT40:2.422GHz (CH03)/2.442GHz (CH07)/2.462GHz (CH11)
Adapter information:	Model: SK-PD20B-08CZ Input: 100-240V~ 50/60Hz 0.5A Max Output: 5.0V---3.0A;9.0V---2.22A;12.0V---1.67A 20.0W max
Battery:	DC3.7V 4800mAh
Hardware Version	HV01
Software Version	SV01

Note:

- Only the WIFI was tested according the standard requirement.
- CH01~CH13 are Operating within 2412~2472MHz.
- Please refer to Appendix I for the photographs of the EUT. For more details, please refer to the User's manual of the EUT.

1.2 CHANNEL LIST(802.11B/G/N20)

Channel	Frequency (GHz)	Channel	Frequency (GHz)
01	2.412	08	2.447
02	2.417	09	2.452
03	2.422	10	2.457
04	2.427	11	2.462
05	2.432	12	2.467
06	2.437	13	2.472
07	2.442	/	/

Channel List (802.11n40)

Channel	Frequency (GHz)	Channel	Frequency (GHz)
03	2.422	08	2.447
04	2.427	09	2.452
05	2.432	10	2.457
06	2.437	11	2.462
07	2.442	/	/

1.3 DESCRIPTION OF TEST MODES

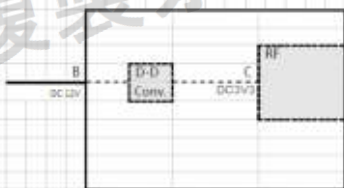
Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all Modes to determine worst case levels. test software ESP_tool used for controlling the EUT.

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of DSSS and OFDM.

1.4 TEST CONDITIONS

Power Supply Voltage Fluctuation Test

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
Input DC power	12.0V	13.2V	10.85V
Voltage Variation (%)	3.3V	3.3V	3.3V
 Test below: 1: The fluctuation of C point is under ±1%, when input voltage from B point to the test equipment is fluctuated by ±10%. 2: The fluctuation of C point is under ±1%, when input voltage from A point to the test equipment is fluctuated by ±10%.	The EUT has the input voltage to the circuit of RF unit complies with output voltage limitation (±1%) against input voltage fluctuation (±10%). So, all measurements were conducted at only rated voltage DC 3.3V		
Note: Voltage Variation (%) = (Output High Or Low Voltage - Output Normal Voltage)/ Output Normal Voltage* 100.			
Others			
Temperature (°C)	20-25		
Relative humidity	51 %		
ATM Pressure:	1019 mbar		

2.TEST ITEMS AND THE RESULTS

Part	Rule Section	Description of Test	Result
4.1	3	Frequency Error	Complies
4.2	4	Occupied Bandwidth (99%) and Spread-spectrum Bandwidth (90%)	Complies
4.3	5	Unwanted Emission Intensity	Complies
4.4	6	Antenna Power Error	Complies
4.5	7	Limitation of Collateral Emission of Receiver	Complies
4.6	8	Transmission Antenna Gain (EIRP Antenna Power)	Complies
4.7	9	Transmission Radiation Angle Width (3dB Bandwidth)	Complies
4.8	10	Radio Interference Prevention Capability	Complies
4.9	Note1	Carrier Sense Capability	Complies
4.10	Note 2	Construction Protection Confirmation	Complies

Note 1: MIC Notice No.88 Appendix No.43

Note 2: MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20



3. DETAILS OF TEST

3.1 IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

Shenzhen iTC Product Testing Co., Ltd.

Add. : 103, Building 1 South, Dayang Industrial Zone, Lougang Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China

3.2 LIST OF TEST EQUIPMENTS

Equipment	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due
Spectrum analyzer	Keysight	N9020A	MY54101721	2025/10/23	2026/10/22
Power Meter	R&S	NRVS	100696	2025/10/23	2026/10/22
DC Power Supply	LongWei(HK)	LW6010KD	011089883	2025/10/23	2026/10/22
Calibration by the calibration agencies listed in the table correspond to paragraph 4 (i) (c) of Article 24-2 in the Radio Law". Guangzhou Lisai Metrology & Test co.,Ltd.					
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).					

4. TEST RESULTS

4.1 FREQUENCY ERROR MEASUREMENT

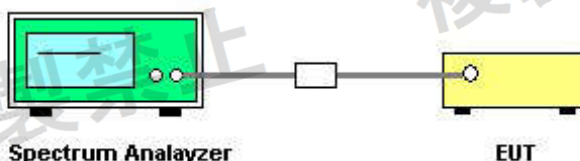
4.1.1. LIMIT

Item	Limits
Frequency Tolerance (2402~2483.5MHz)	$\pm 50\text{ppm}$

4.1.2. TEST PROCEDURES

1. Frequency accuracy of SA shall be less than 10% of limits tolerance (5ppm)
2. Setting of SA is following as: RB:10kHz / VB:30kHz / SPAN: 5MHz / AT: 30dB / Ref: 20dBm
3. Center Frequency: The center frequency of testing for EUT
4. Sweep time: Auto
5. Sweep mode: Continuous sweep
6. Detect mode: Positive peak
7. Mark function: Frequency Counter (Resolution 100Hz)
8. EUT have transmitted absence of modulation signal and fixed channelize. f is using the mark cursor to mark the peak frequency value, f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f) / f_c \times 10^6$ ppm and the limit is less than $\pm 50\text{ppm}$

4.1.3. TEST SETUP LAYOUT



4.1.4. TEST DEVIATION

There is no deviation with the original standard.

4.1.5. EUT OPERATION DURING TEST

The EUT was placed on the test table and programmed in un-modulation function.

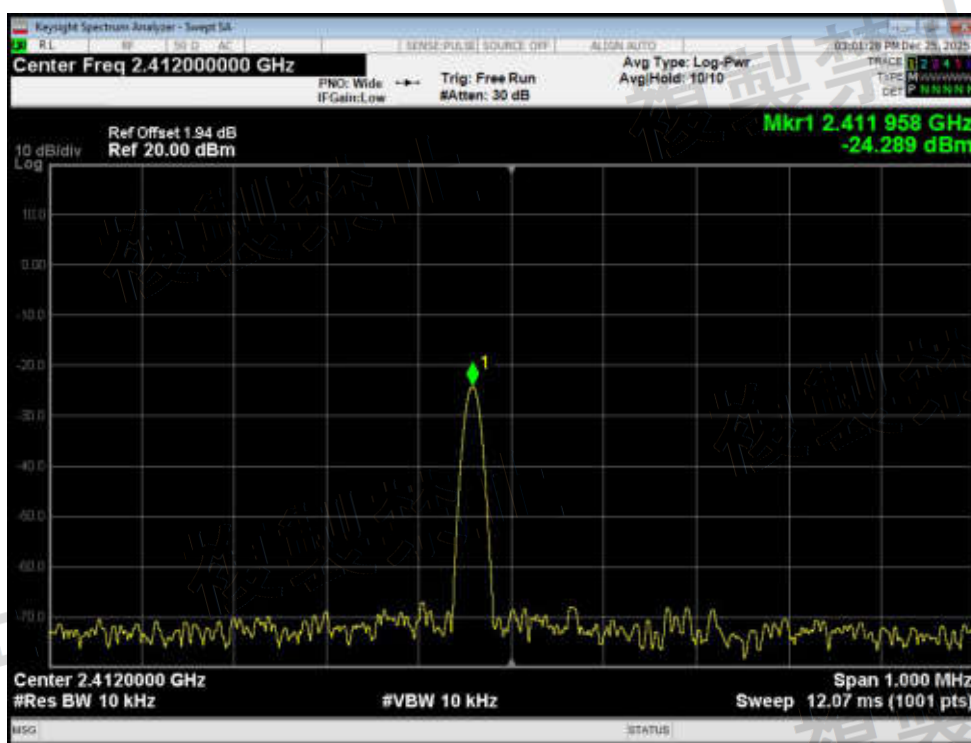
4.1.6. RESULTS OF FREQUENCY ERROR

Operation Mode:	Normal Voltage
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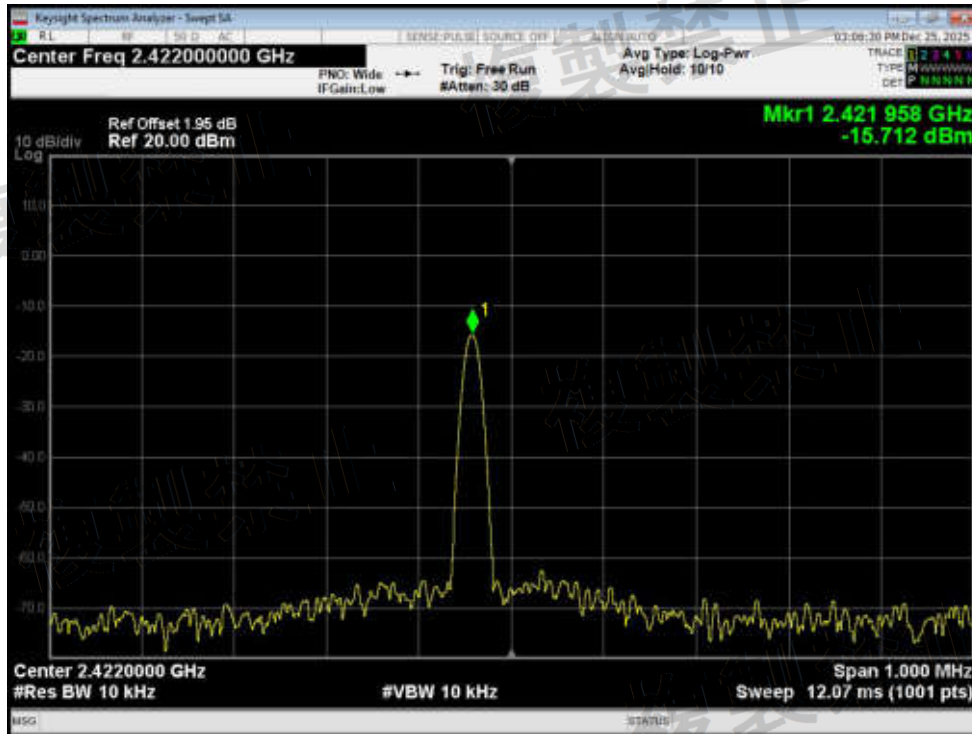
Test Voltage	Test Frequency (MHz)	Measured Frequency (MHz)	Frequency Error(ppm)	Limit (ppm)	P/F
Normal Voltage	2412	2411.958	-17.41	±50	PASS
	2422	2421.958	-17.34	±50	PASS
	2442	2441.958	-17.20	±50	PASS
	2462	2461.956	-17.87	±50	PASS
	2472	2471.957	-17.39	±50	PASS

Normal Voltage

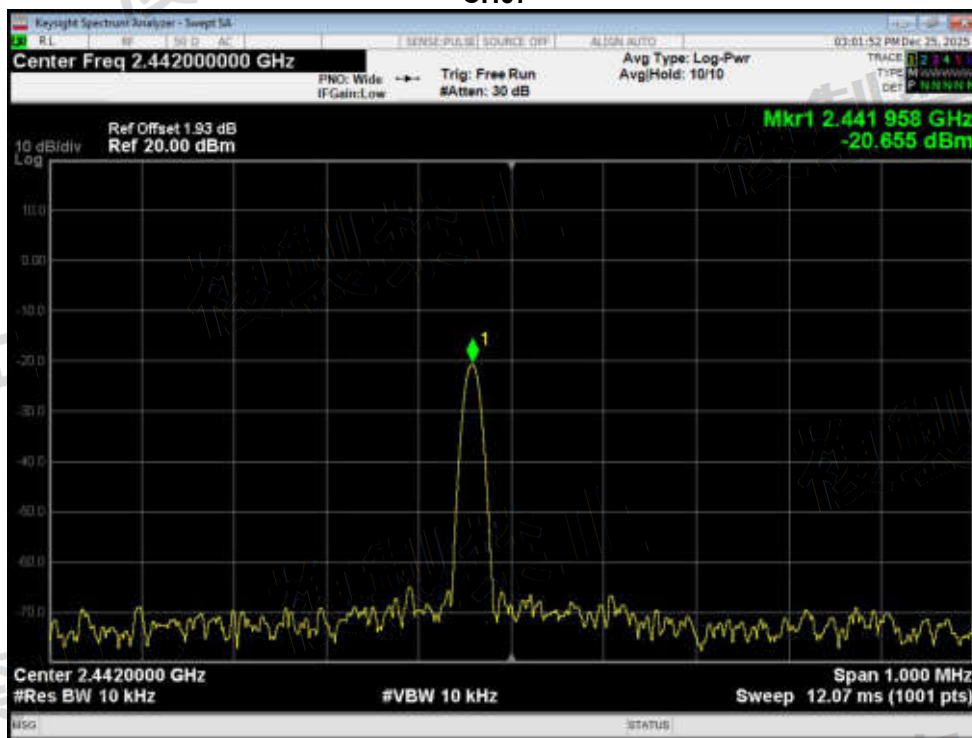
CH01



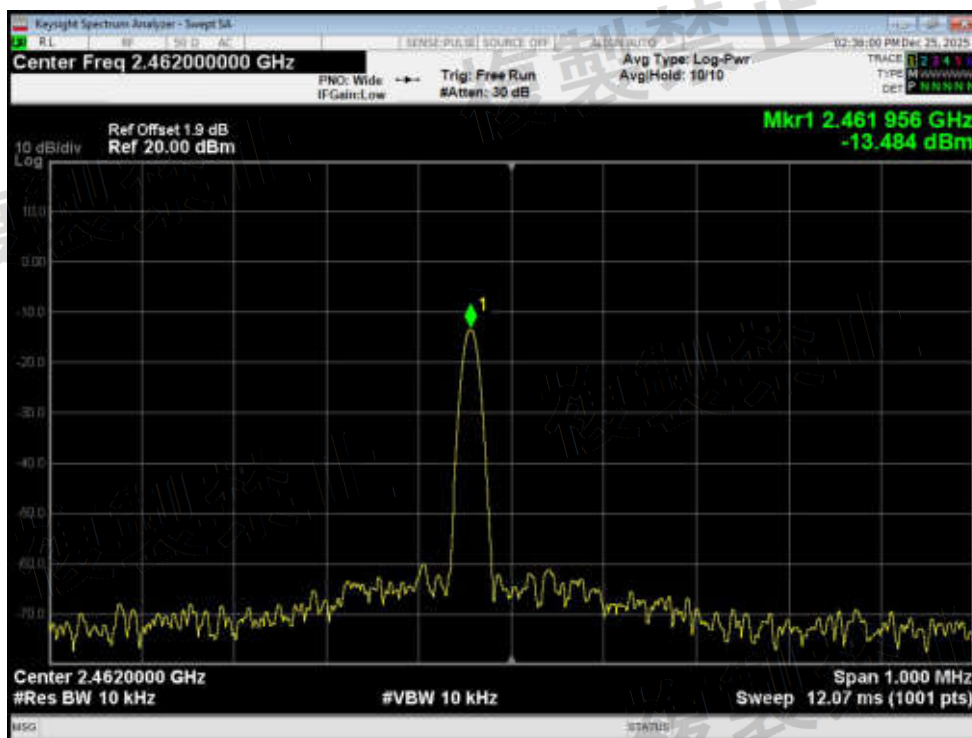
CH03



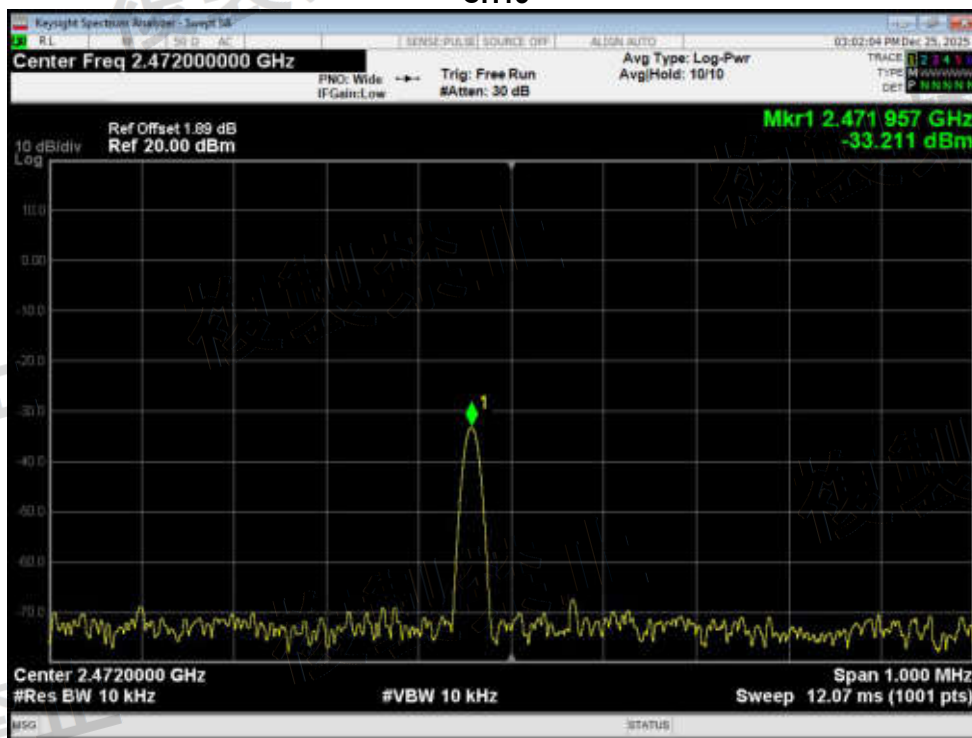
CH07



CH11



CH13



4.2. OCCUPIED BANDWIDTH AND SPREAD-SPECTRUM BANDWIDTH MEASUREMENT

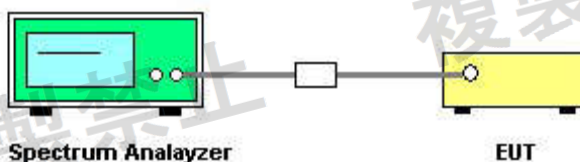
4.2.1. LIMIT

Item	Limits
Occupied Band Width:	802.11b,g,n(HT20): 26MHz or less 802.11n(HT40): 38 MHz or less
Spreading Bandwidth:	≥ 500 kHz (FH, DS)

4.2.2. TEST PROCEDURES

- Setting of SA is following as: RB: 300kHz / VB:300kHz / SPAN: 20MHz/40MHz / AT: 30dB Ref:20dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
- EUT have transmitted the maximum modulation signal and fixed channelize (For DSSS or OFDM Device) or continuous maximum power of hopping mode(For FHSS Device). SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than 26MHz(For DSSS or OFDM Device) or 83.5MHz(For FHSS Device).
- SA set to 90% of occupied bandwidth to measure Spread Spectrum Bandwidth and must greater than 500kHz.
- Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.
- Spread Spectrum Factor limit is greater than 5

4.2.3. TEST SETUP LAYOUT



4.2.4. TEST DEVIATION

There is no deviation with the original standard.

4.2.5. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

4.2.7. RESULTS OF OCCUPIED BANDWIDTH AND SPREAD-SPECTRUM BANDWIDTH

Operation Mode:	Normal Voltage-B mode
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Test Voltage	Test Frequency (MHz)	Occupied Bandwidth (MHz)	90% occupy bandwidth (MHz)
Normal Voltage	2412	12.068	7.659
	2442	12.778	8.374
	2472	11.846	7.691

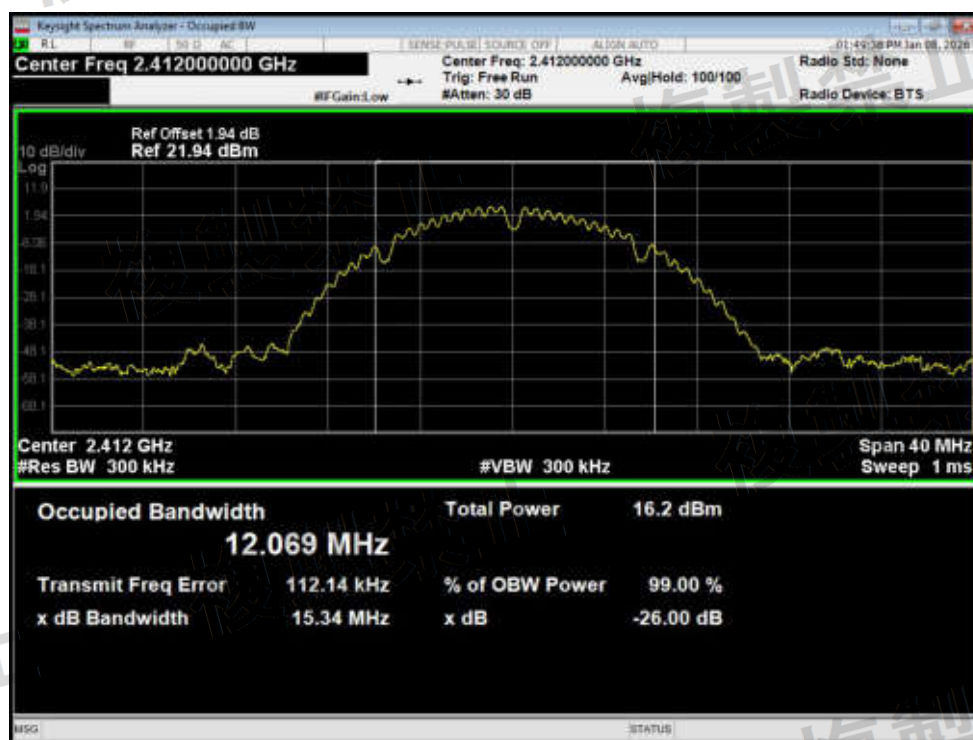
Note: The plot only show the worst data.

Spread Factor= 90% occupy bandwidth / modulation rate of EUT

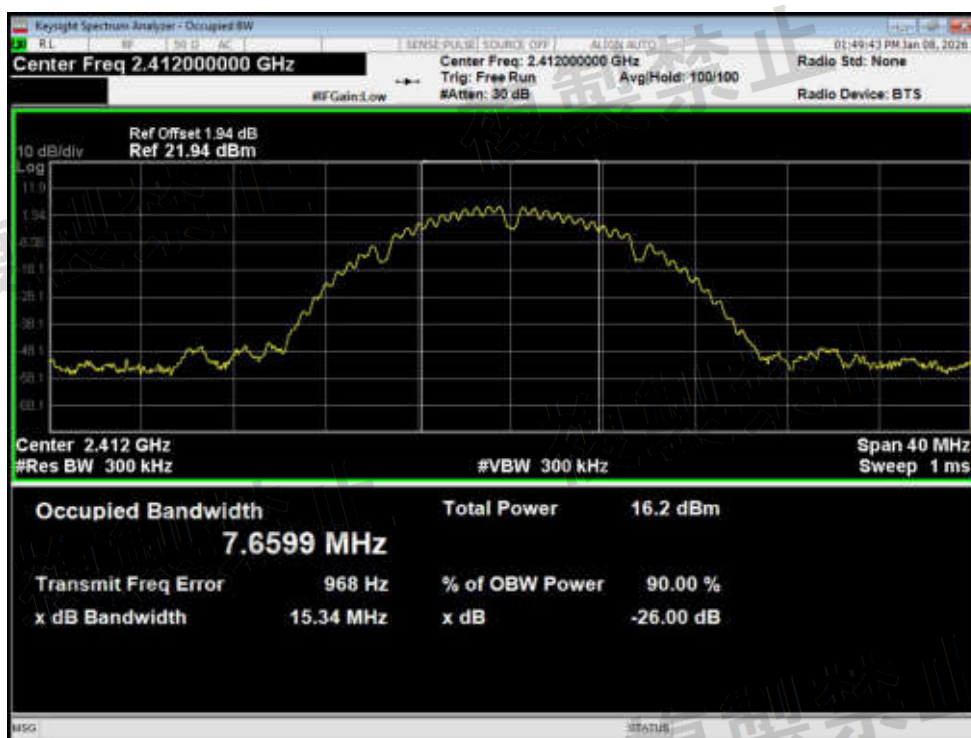
Spread Spectrum Factor limit is greater than 5.

Normal Voltage

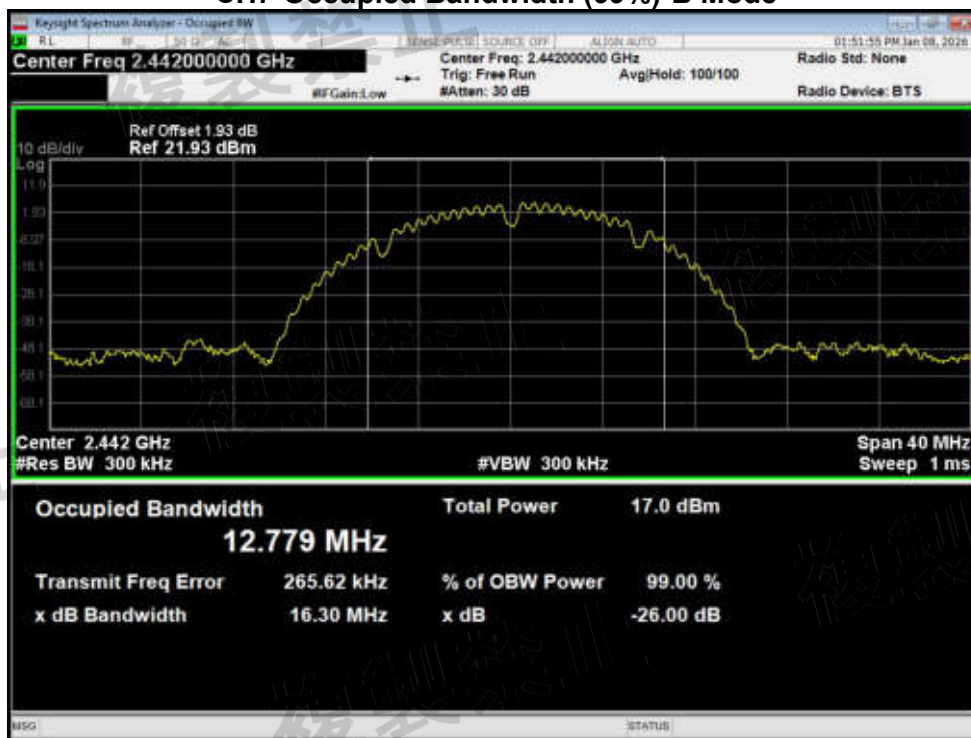
CH1-Occupied Bandwidth (99%)-B Mode



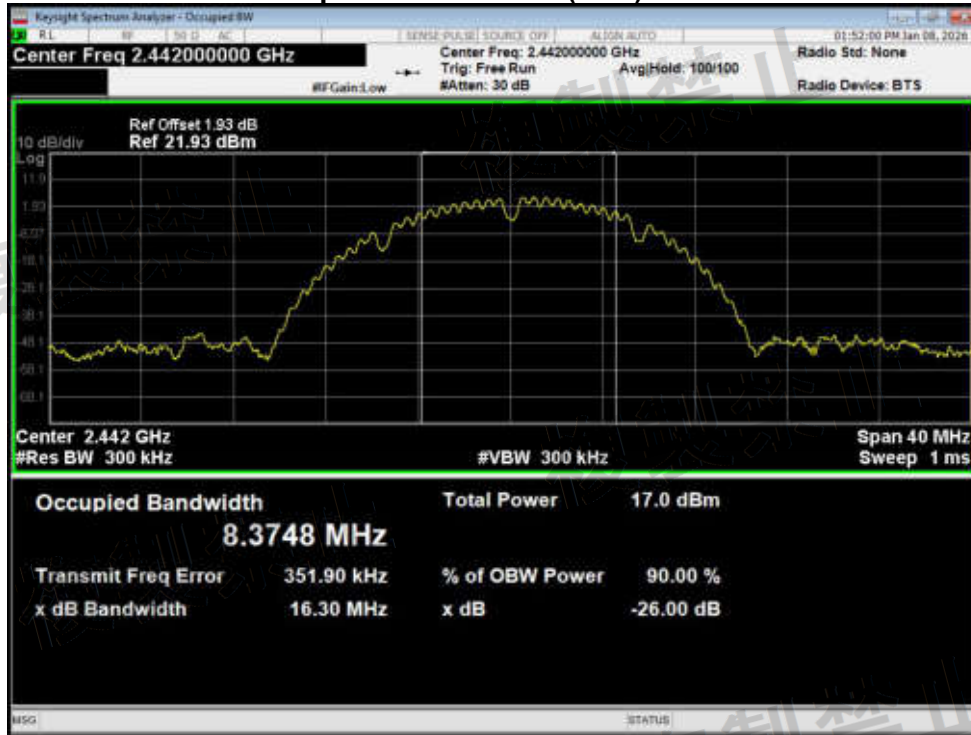
CH1-Spread Bandwidth (90%)-B Mode



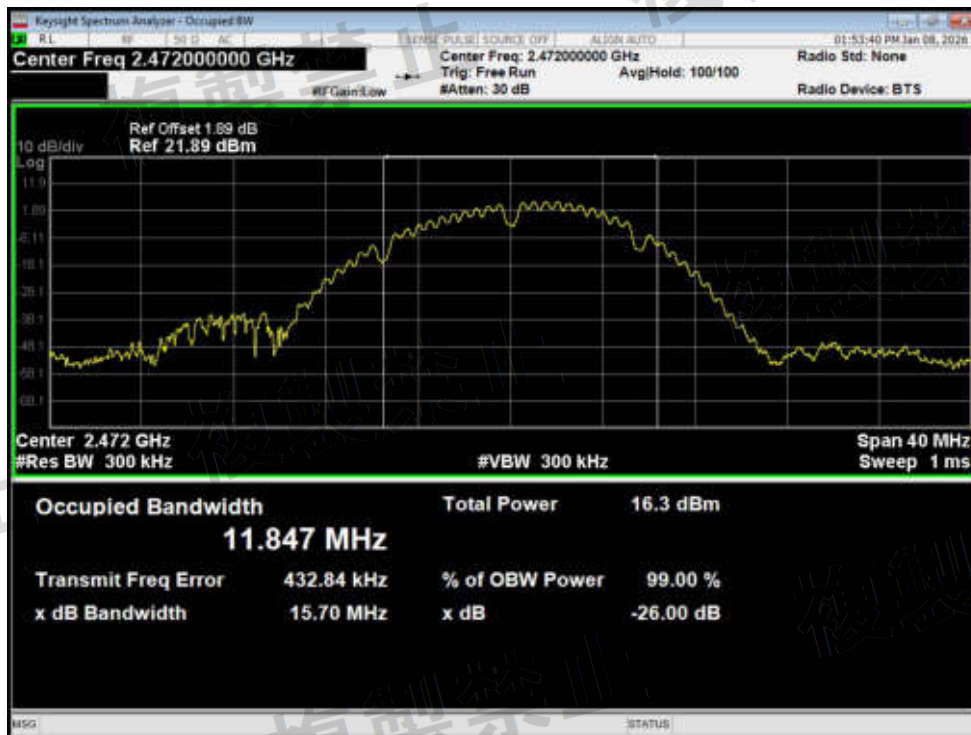
CH7-Occupied Bandwidth (99%)-B Mode



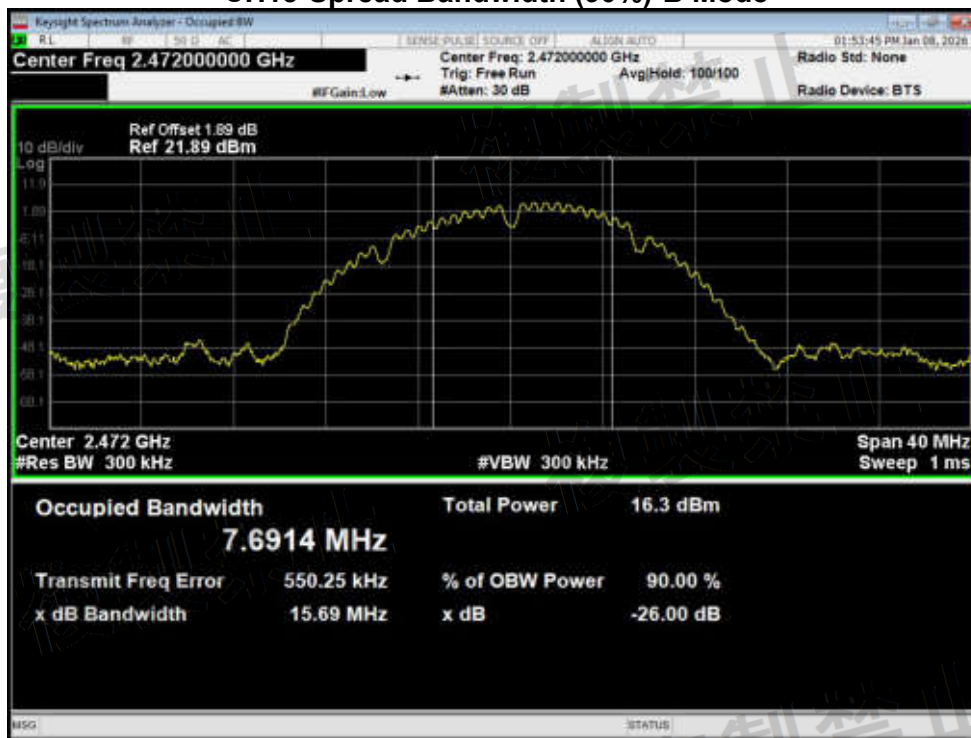
CH7-Spread Bandwidth (90%)-B Mode



CH13-Occupied Bandwidth (99%)-B Mode



CH13-Spread Bandwidth (90%)-B Mode

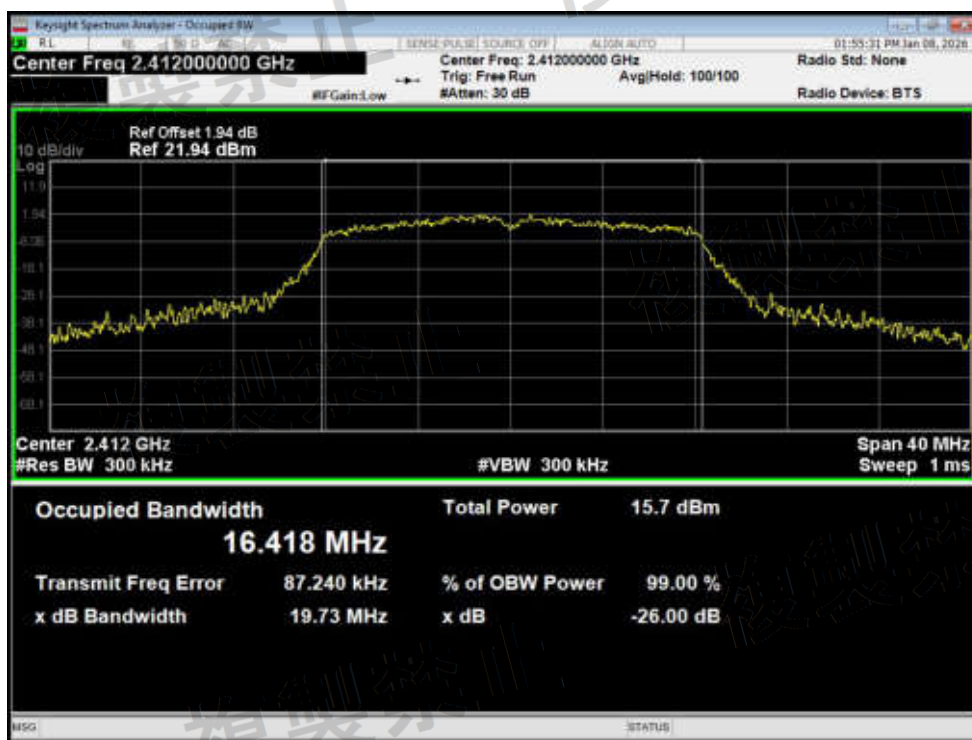


Operation Mode:	Normal Voltage-G mode
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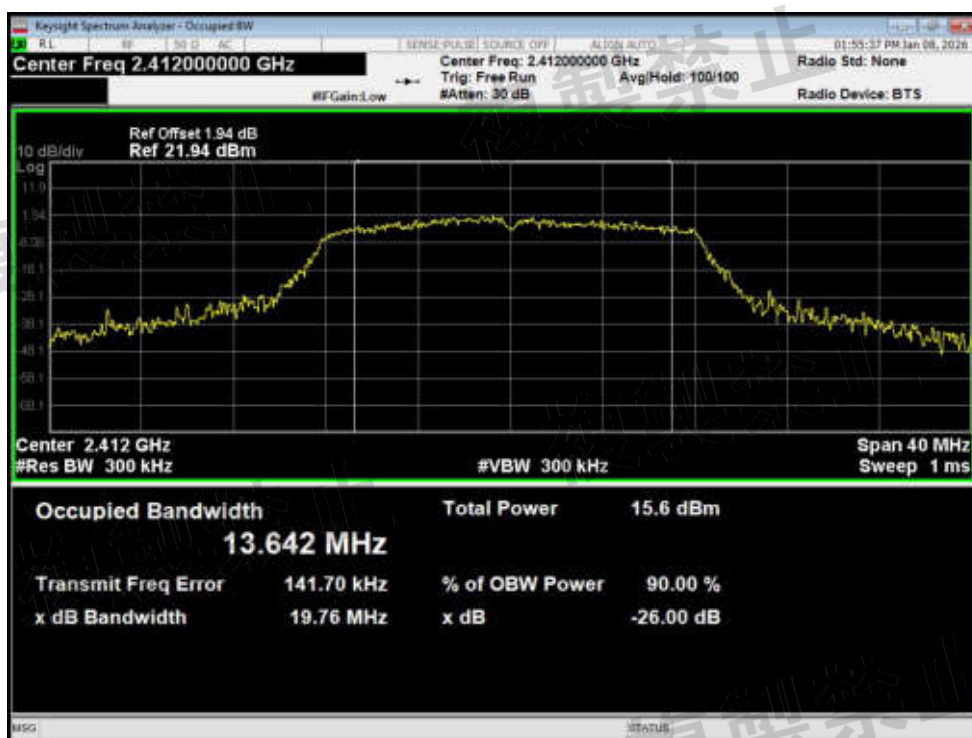
Test Voltage	Test Frequency (MHz)	Occupied Bandwidth (MHz)	90% occupy bandwidth (MHz)
Normal Voltage	2412	16.418	13.642
	2442	16.555	14.201
	2472	16.148	12.459

Note: The plot only show the worst data.

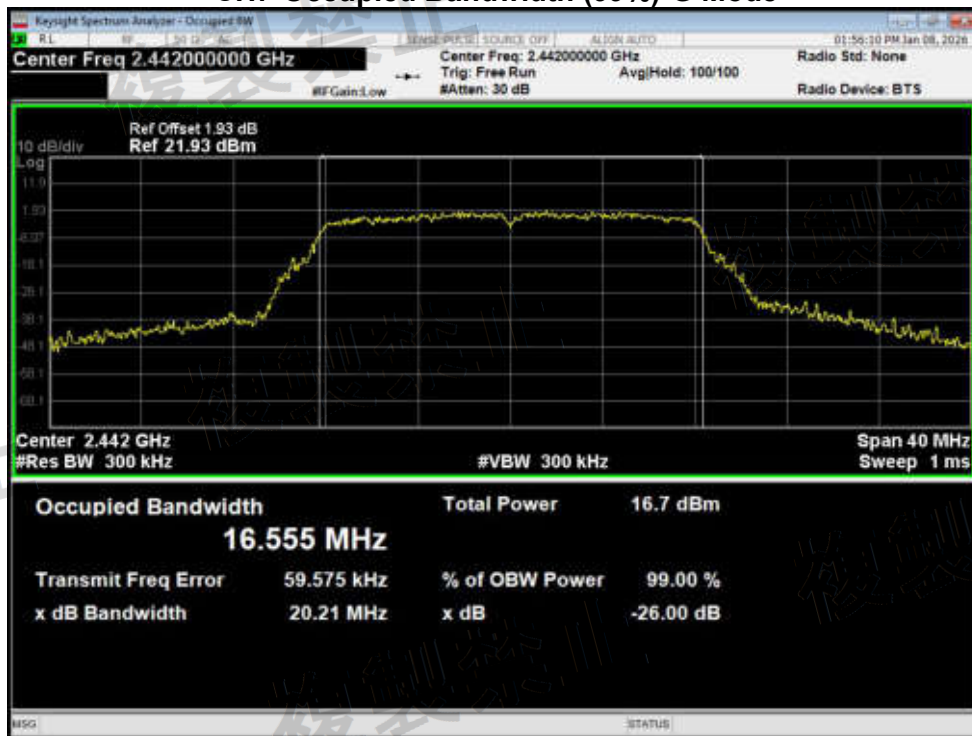
CH1-Occupied Bandwidth (99%)-G Mode



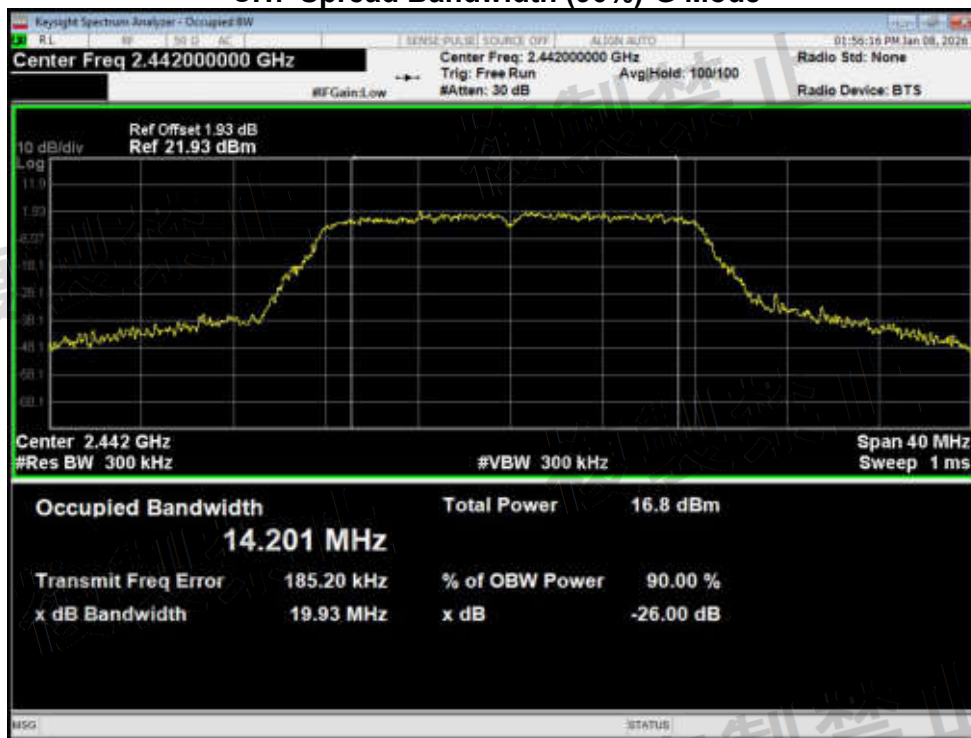
CH1-Spread Bandwidth (90%)-G Mode



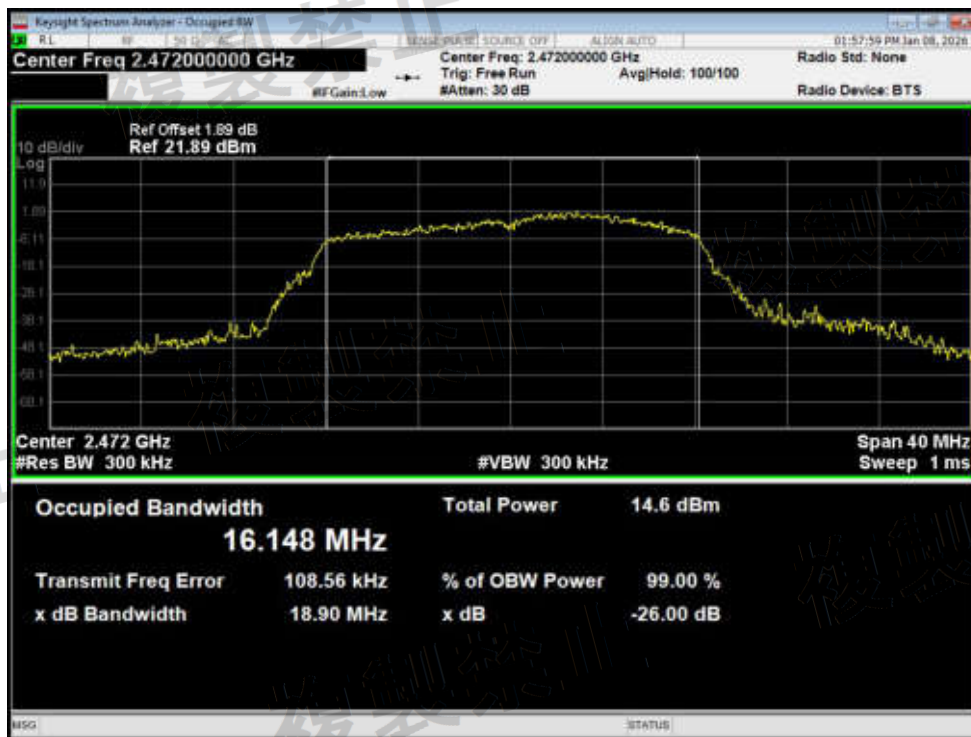
CH7-Occupied Bandwidth (99%)-G Mode



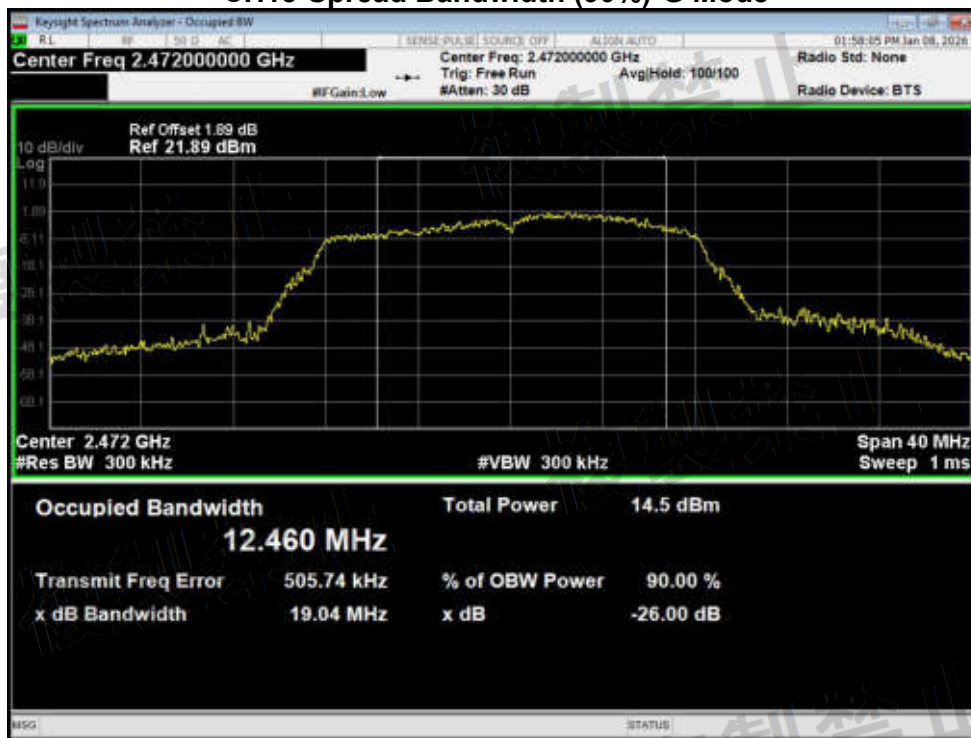
CH7-Spread Bandwidth (90%)-G Mode



CH13-Occupied Bandwidth (99%)-G Mode



CH13-Spread Bandwidth (90%)-G Mode

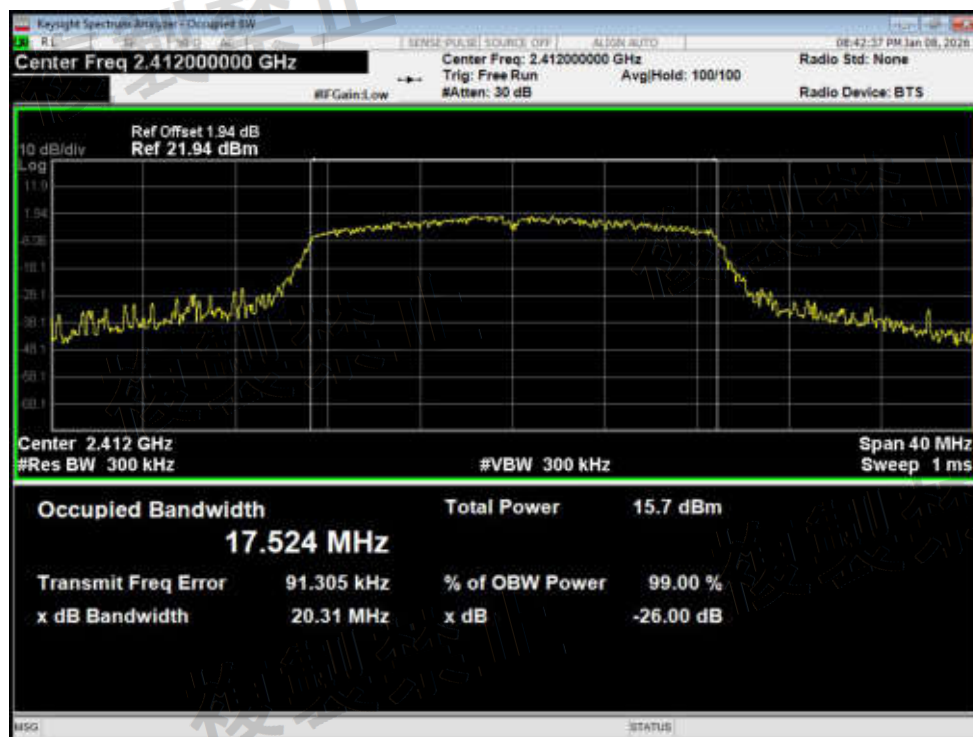


Operation Mode:	Normal Voltage-N20 mode
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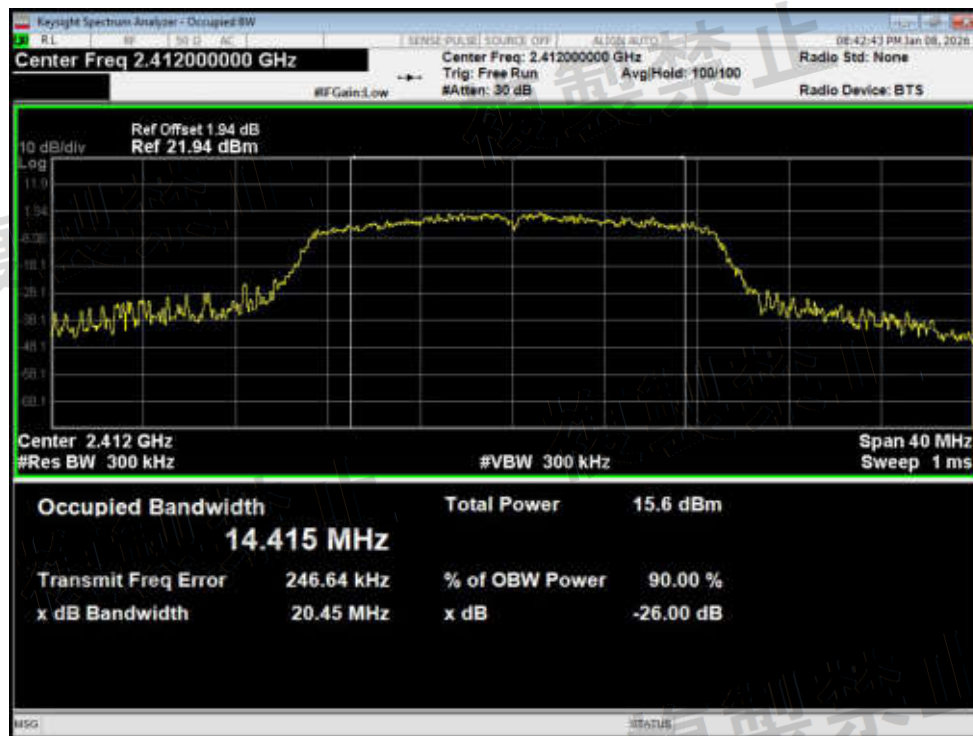
Test Voltage	Test Frequency (MHz)	Occupied Bandwidth (MHz)	90% occupy bandwidth (MHz)
Normal Voltage	2412	17.523	14.415
	2442	17.666	15.079
	2472	17.268	13.101

Note: The plot only show the worst data

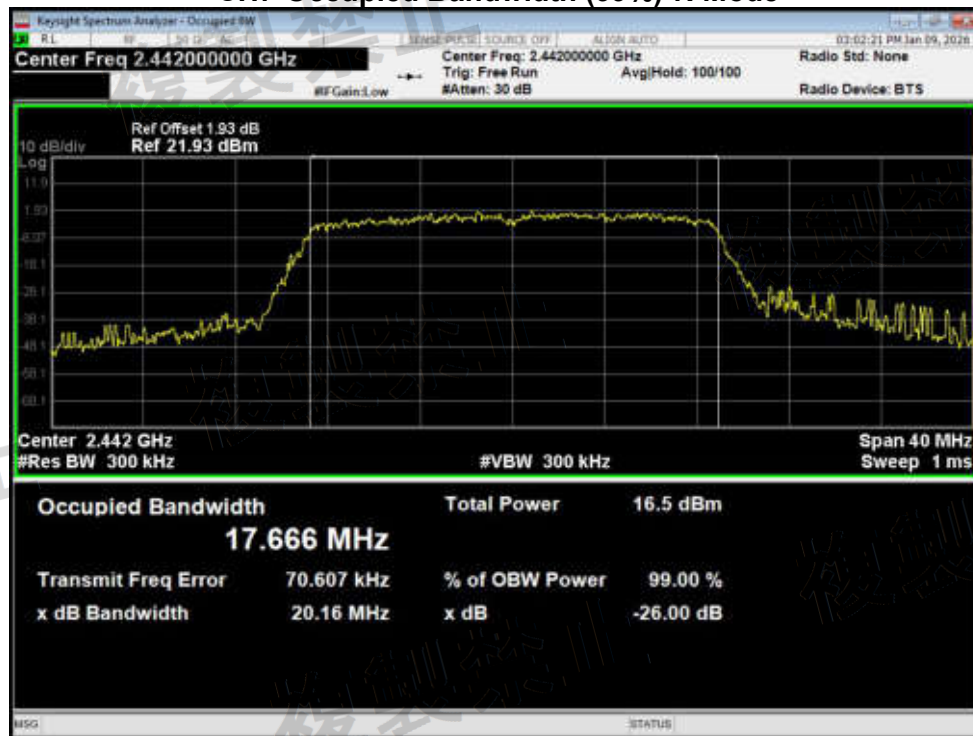
CH1-Occupied Bandwidth (99%)-N Mode



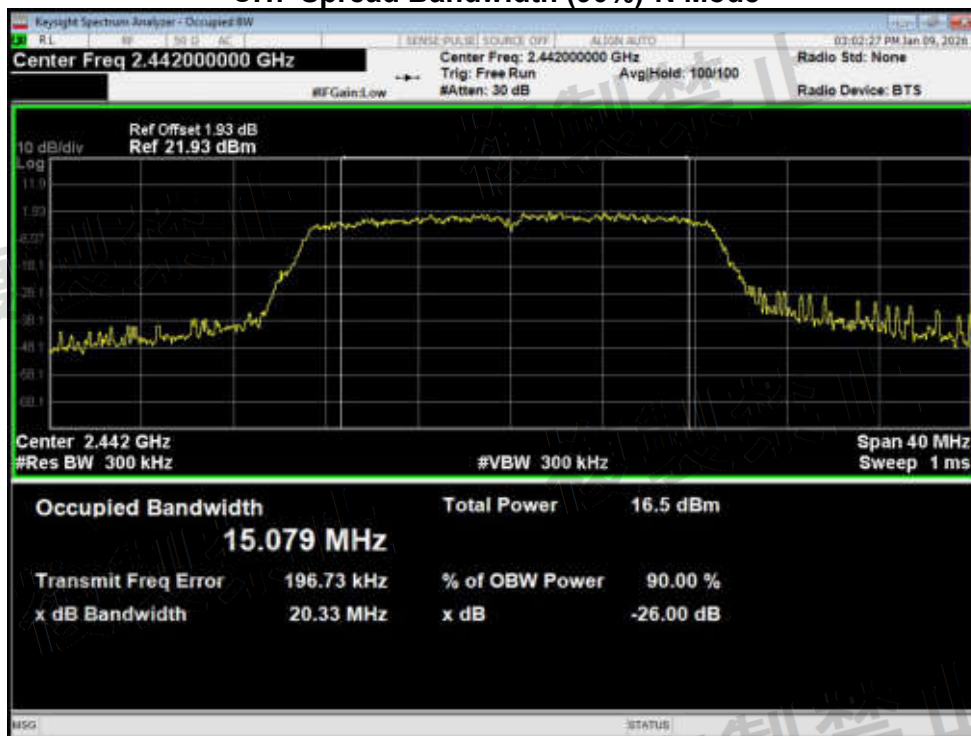
CH1-Spread Bandwidth (90%)-N Mode



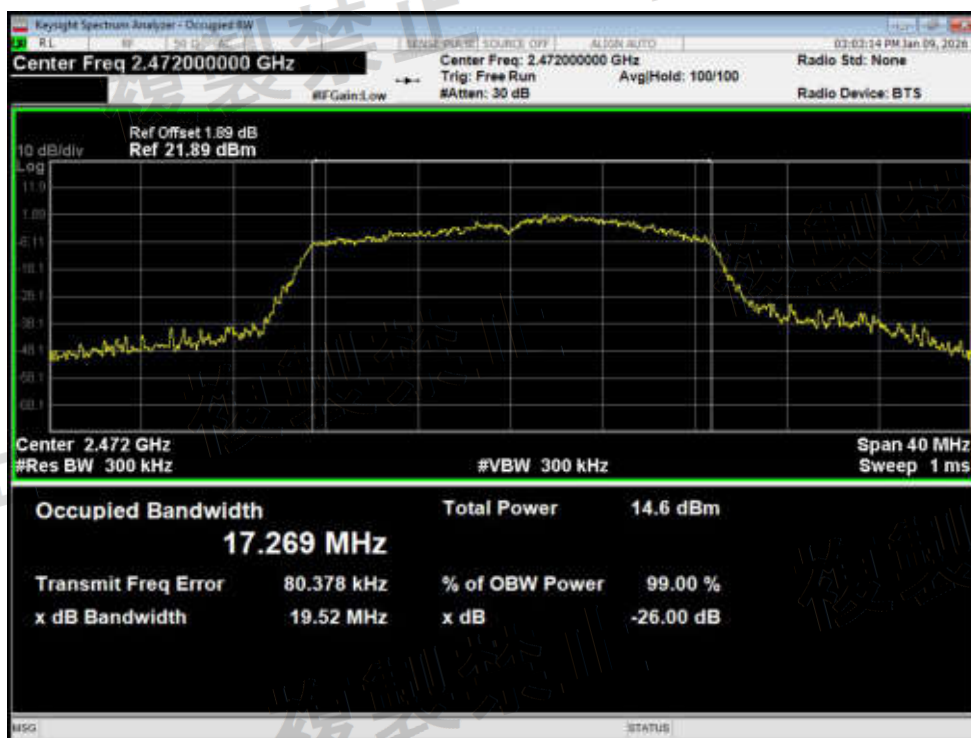
CH7-Occupied Bandwidth (99%)-N Mode



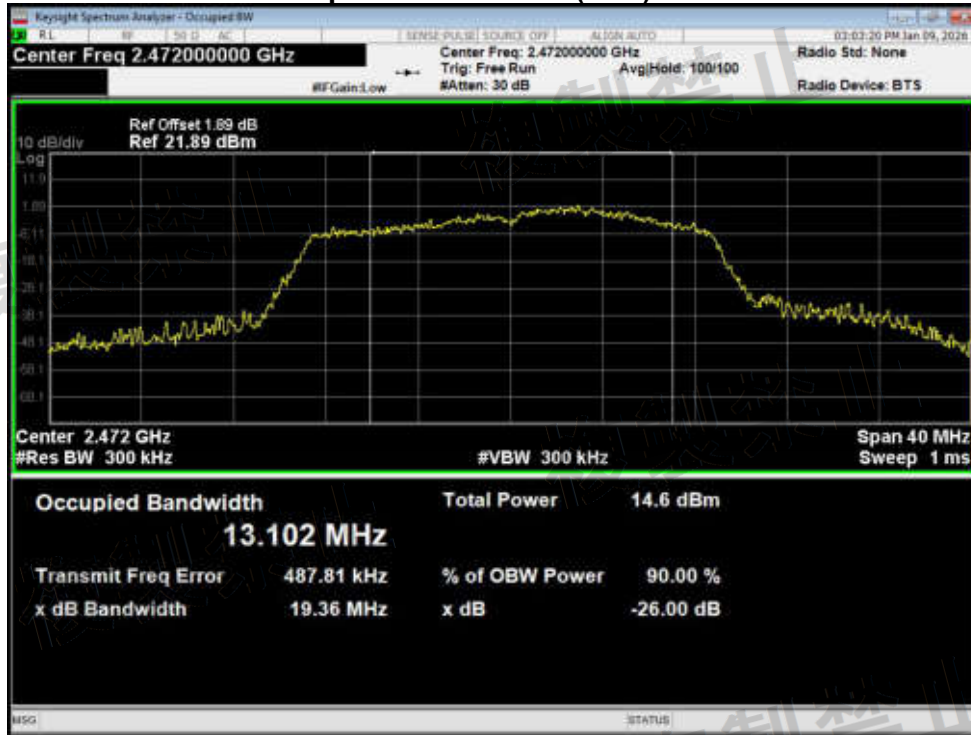
CH7-Spread Bandwidth (90%)-N Mode



CH13-Occupied Bandwidth (99%)-N Mode



CH13-Spread Bandwidth (90%)-N Mode

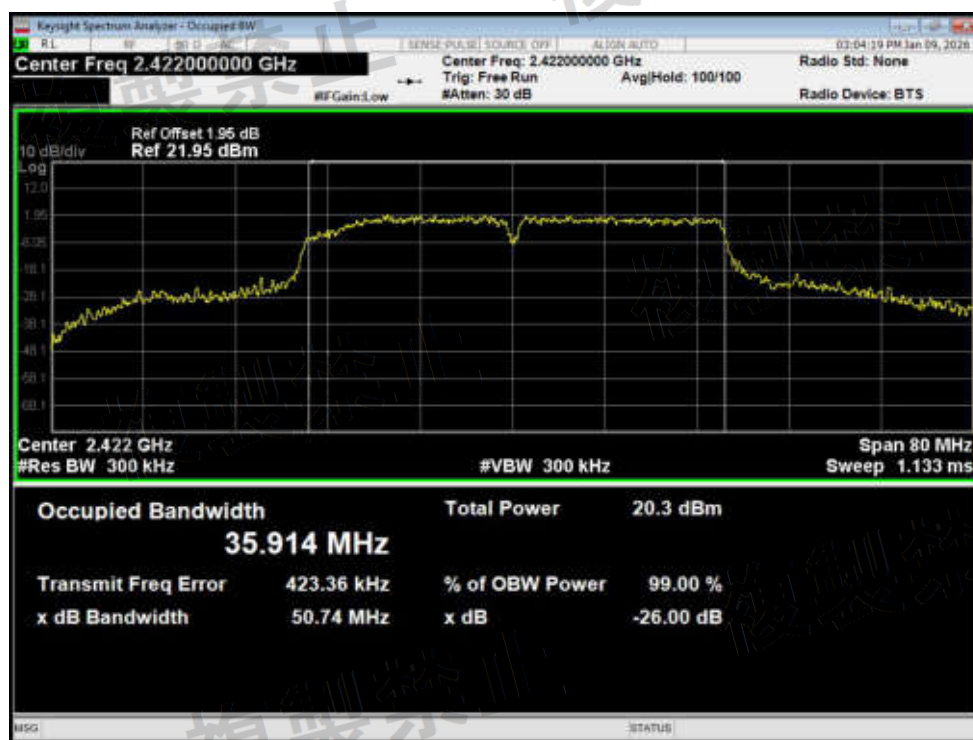


Operation Mode:	Normal Voltage-N40 mode
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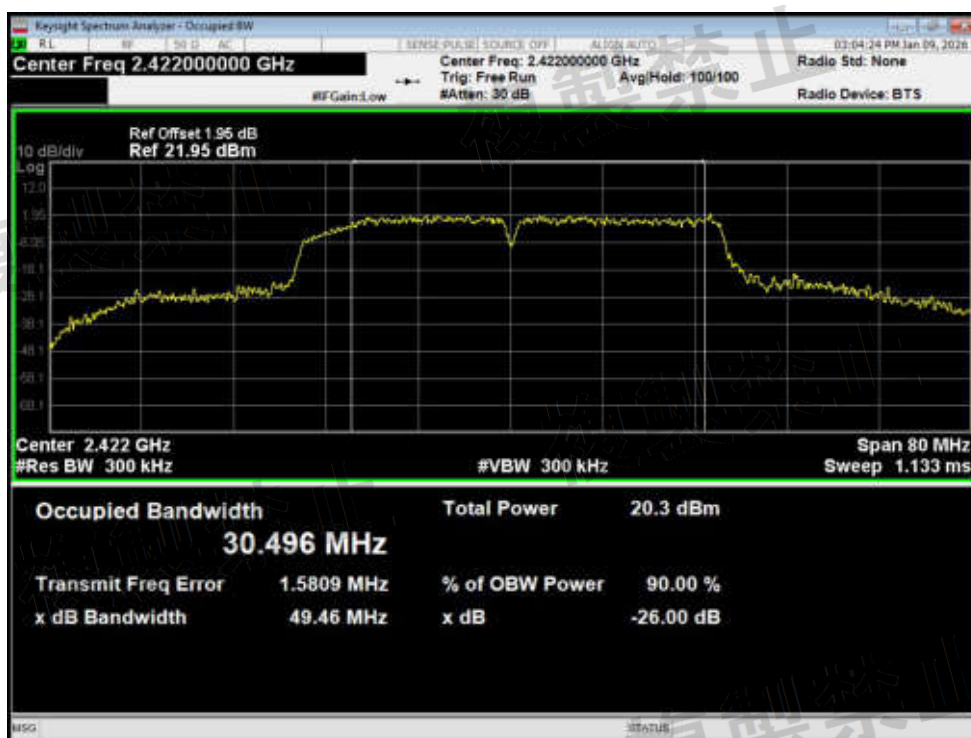
Test Voltage	Test Frequency (MHz)	Occupied Bandwidth (MHz)	90% occupy bandwidth (MHz)
Normal Voltage	2422	35.913	30.496
	2442	35.559	28.836
	2462	35.586	29.798

Note: The plot only show the worst data

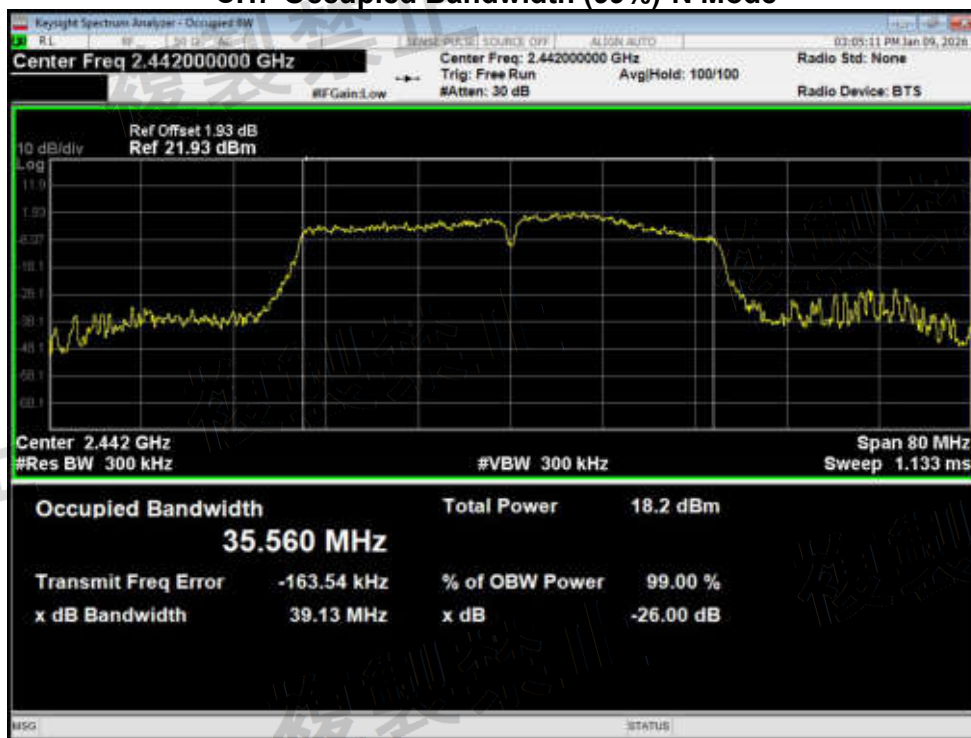
CH3-Occupied Bandwidth (99%)-N Mode



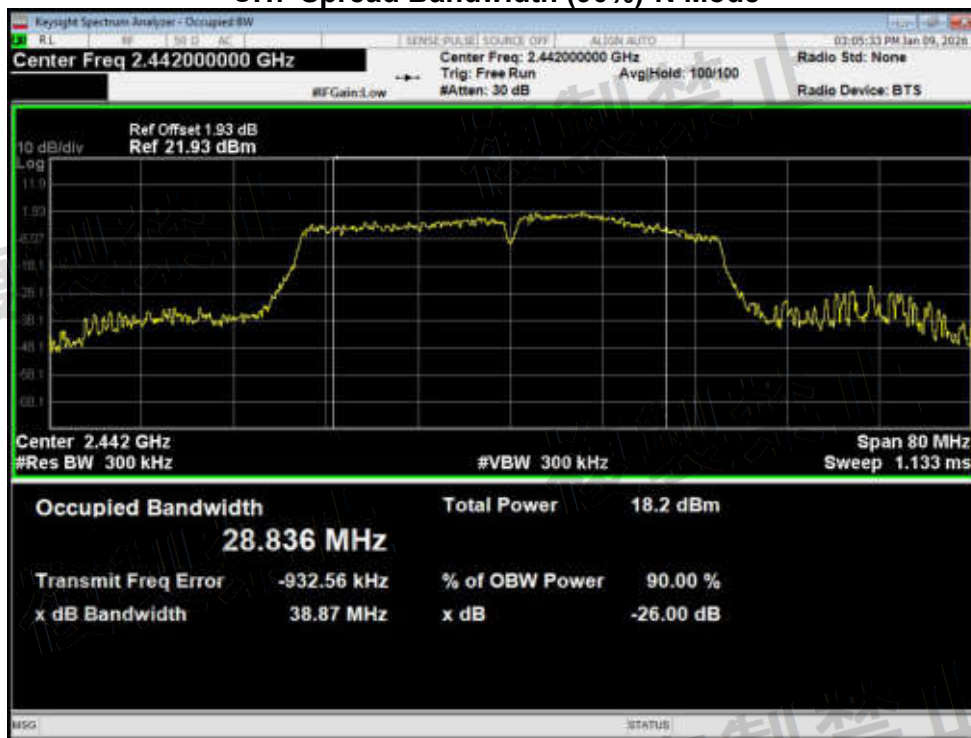
CH3-Spread Bandwidth (90%)-N Mode



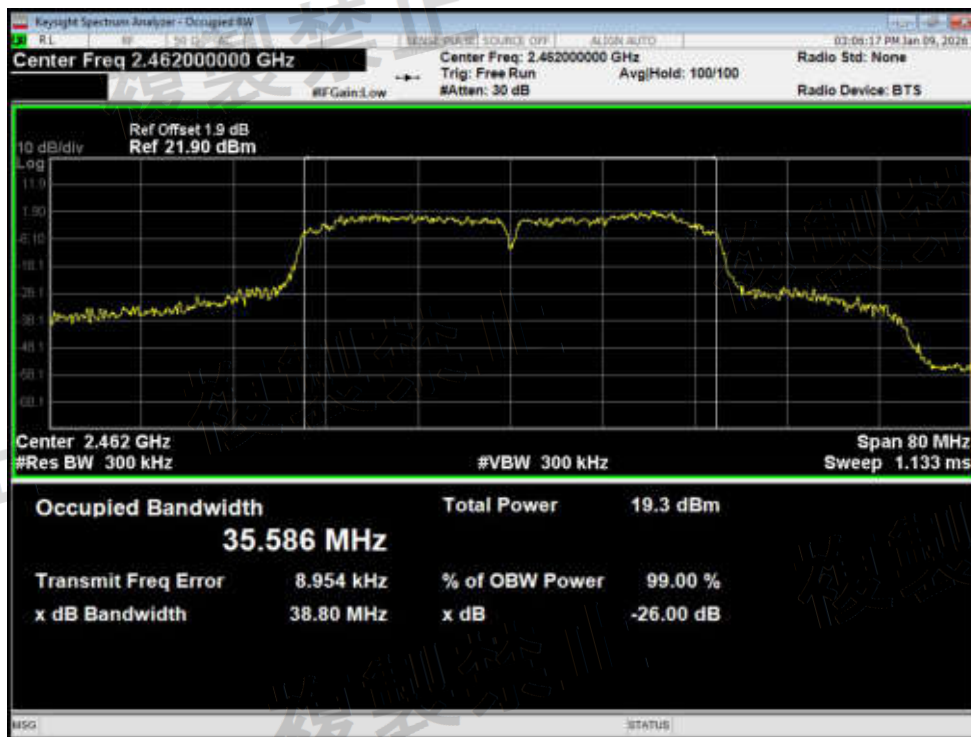
CH7-Occupied Bandwidth (99%)-N Mode



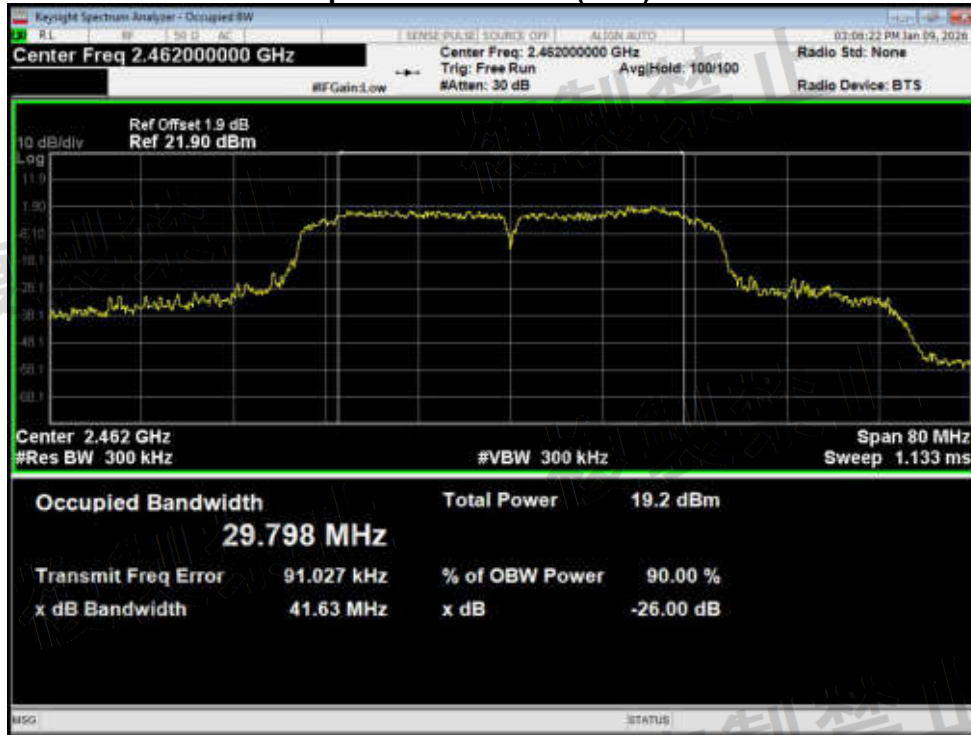
CH7-Spread Bandwidth (90%)-N Mode



CH11-Occupied Bandwidth (99%)-N Mode



CH11-Spread Bandwidth (90%)-N Mode



4.3. UNWANTED EMISSION INTENSITY MEASUREMENT

4.3.1 LIMIT

Item	Limits
TX Spurious Emission(30~12500MHz)	$\leq 0.25 \mu\text{W}/\text{MHz}$ ($30\text{MHz} \leq f \leq 1000\text{MHz}$)
	$\leq 2.5 \mu\text{W}/\text{MHz}$ ($1000\text{MHz} < f \leq 2387\text{MHz}$)
	$\leq 25 \mu\text{W}/\text{MHz}$ ($2387\text{MHz} < f \leq 2400\text{MHz}$)
	$\leq 25 \mu\text{W}/\text{MHz}$ ($2483.5\text{MHz} \leq f < 2496.5\text{MHz}$)
	$\leq 2.5 \mu\text{W}/\text{MHz}$ ($2496.5\text{MHz} \leq f < 12500\text{MHz}$)

4.3.2. MEASURING INSTRUMENTS AND SETTING

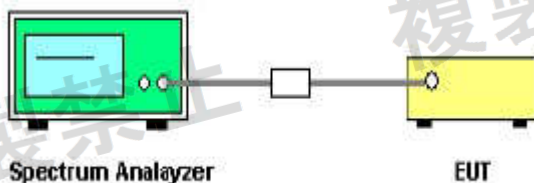
Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. TEST PROCEDURES

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: Below 1GHz RB:100KHz / VB:100KHz
Above 1GHz RB:1MHz / VB:1MHz / AT: 10dB Ref: 0dBm / Sweep time: Auto
Sweep Mode: Continuous sweep / Detect mode: Positive peak
Trace mode: Max hold
3. Setting of SA is following as 30MHz and stop frequency 1000MHz Then to mark peak reading value + cable loss shall be less than 0.25 μ W.
4. Setting of SA is following as 1000MHz and stop frequency 2387MHz Then to mark peak reading value + cable loss shall be less than 2.5 μ W.
5. SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading value + cable loss shall be less than 25 μ W.
6. SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz Then to mark peak reading value + cable loss shall be less than 25 μ W.
7. SA adjusted to start frequency 2496.5MHz and stop frequency 12500MHz Then to mark peak reading value + cable loss shall be less than 2.5 μ W.
8. Measure side band spurious as follows: For 2.4GHz band: 2374MHz~2400MHz and 2483.5MHz~2509.5MHz RBW = VBW = 30kHz, Result_Value = Measured_Value + 15.2 [dBm]
9. If the Result_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result_Value.

4.3.4. TEST SETUP LAYOUT



4.3.5. TEST DEVIATION

There is no deviation with the original standard.

4.3.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

4.3.7. TEST RESULT OF UNWANTED EMISSION INTENSITY

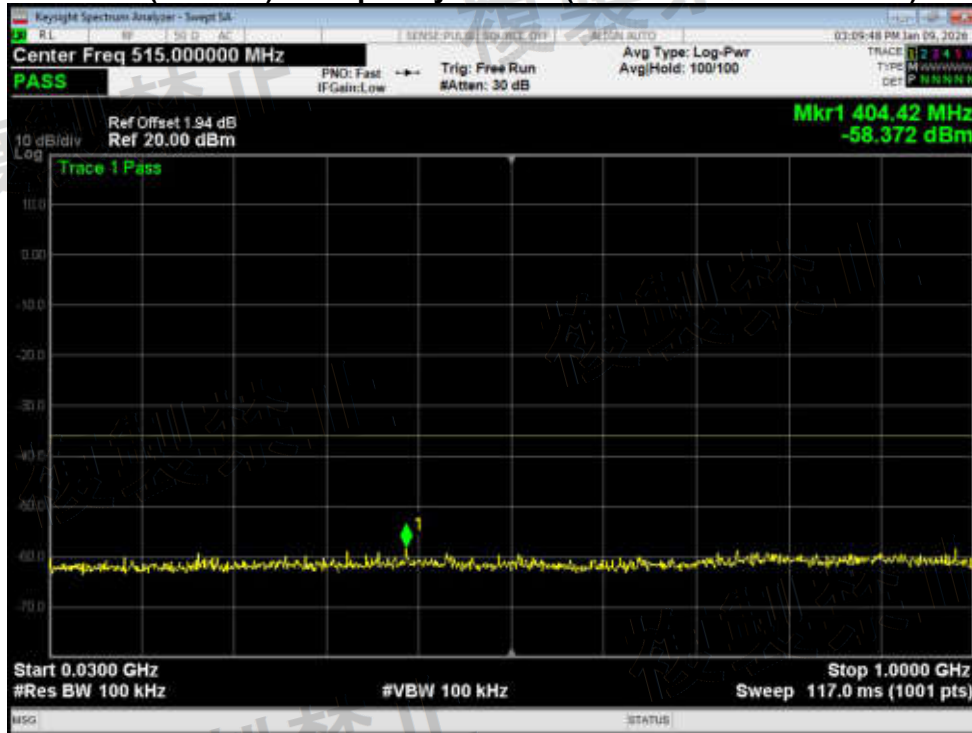
Test Result

Mode	Frequency (MHz)	Range (MHz)	Emission Frequency (MHz)	Max Value (dBm)	Limit Start(dBm)	Limit Stop (dBm)	Verdict
b	2412	30-1000	404.42	-58.372	-36	-36	Pass
b	2412	1000-2387	2295.458	-46.977	-26	-26	Pass
b	2412	2387-2400	2389.977	-45.866	-16	-16	Pass
b	2412	2483.5-2496.5	2495.382	-46.133	-16	-16	Pass
b	2412	2496.5-13000	2643.549	-45.958	-26	-26	Pass
b	2442	30-1000	752.65	-58.035	-36	-36	Pass
b	2442	1000-2387	2349.551	-47.122	-26	-26	Pass
b	2442	2387-2400	2397.062	-47.425	-16	-16	Pass
b	2442	2483.5-2496.5	2490.026	-47.332	-16	-16	Pass
b	2442	2496.5-13000	12779.427	-45.91	-26	-26	Pass
b	2472	30-1000	917.55	-67.176	-36	-36	Pass
b	2472	1000-2387	2241.365	-55.934	-26	-26	Pass
b	2472	2387-2400	2393.279	-55.011	-16	-16	Pass
b	2472	2483.5-2496.5	2490.286	-55.092	-16	-16	Pass
b	2472	2496.5-13000	5595.032	-54.468	-26	-26	Pass
g	2412	30-1000	988.36	-58.415	-36	-36	Pass
g	2412	1000-2387	2377.291	-47.18	-26	-26	Pass
g	2412	2387-2400	2399.74	-39.334	-16	-16	Pass
g	2412	2483.5-2496.5	2486.113	-46.642	-16	-16	Pass
g	2412	2496.5-13000	2717.074	-46.545	-26	-26	Pass
g	2442	30-1000	790.48	-57.059	-36	-36	Pass
g	2442	1000-2387	2137.34	-46.864	-26	-26	Pass
g	2442	2387-2400	2398.037	-46.791	-16	-16	Pass
g	2442	2483.5-2496.5	2492.743	-45.318	-16	-16	Pass
g	2442	2496.5-13000	2633.045	-45.779	-26	-26	Pass
g	2472	30-1000	792.42	-58.452	-36	-36	Pass
g	2472	1000-2387	2282.975	-47.644	-26	-26	Pass
g	2472	2387-2400	2389.899	-46.978	-16	-16	Pass
g	2472	2483.5-2496.5	2484.631	-39.495	-16	-16	Pass
g	2472	2496.5-13000	12485.329	-46.08	-26	-26	Pass
n20	2412	30-1000	765.26	-58.205	-36	-36	Pass
n20	2412	1000-2387	2374.517	-47.478	-26	-26	Pass
n20	2412	2387-2400	2399.883	-39.206	-16	-16	Pass
n20	2412	2483.5-2496.5	2493.172	-46.725	-16	-16	Pass
n20	2412	2496.5-13000	3147.717	-46.292	-26	-26	Pass
n20	2442	30-1000	771.08	-57.715	-36	-36	Pass
n20	2442	1000-2387	2262.17	-46.437	-26	-26	Pass
n20	2442	2387-2400	2390.939	-46.951	-16	-16	Pass
n20	2442	2483.5-2496.5	2483.825	-46.302	-16	-16	Pass
n20	2442	2496.5-13000	2654.053	-46.13	-26	-26	Pass
n20	2472	30-1000	840.92	-58.663	-36	-36	Pass
n20	2472	1000-2387	2357.873	-46.827	-26	-26	Pass
n20	2472	2387-2400	2393.903	-47.149	-16	-16	Pass
n20	2472	2483.5-2496.5	2483.526	-33.627	-16	-16	Pass
n20	2472	2496.5-13000	2496.5	-46.392	-26	-26	Pass
n40	2422	30-1000	394.72	-57.556	-36	-36	Pass
n40	2422	1000-2387	2339.842	-47.186	-26	-26	Pass
n40	2422	2387-2400	2399.961	-35.594	-16	-16	Pass
n40	2422	2483.5-2496.5	2485.983	-44.793	-16	-16	Pass
n40	2422	2496.5-13000	12348.783	-45.481	-26	-26	Pass
n40	2442	30-1000	422.85	-58.602	-36	-36	Pass
n40	2442	1000-2387	2281.588	-47.283	-26	-26	Pass
n40	2442	2387-2400	2399.207	-42.998	-16	-16	Pass
n40	2442	2483.5-2496.5	2484.384	-40.45	-16	-16	Pass
n40	2442	2496.5-13000	2496.5	-45.604	-26	-26	Pass
n40	2462	30-1000	932.1	-58.465	-36	-36	Pass
n40	2462	1000-2387	2328.746	-46.892	-26	-26	Pass
n40	2462	2387-2400	2392.46	-46.187	-16	-16	Pass
n40	2462	2483.5-2496.5	2483.539	-29.414	-16	-16	Pass
n40	2462	2496.5-13000	2496.5	-40.81	-26	-26	Pass

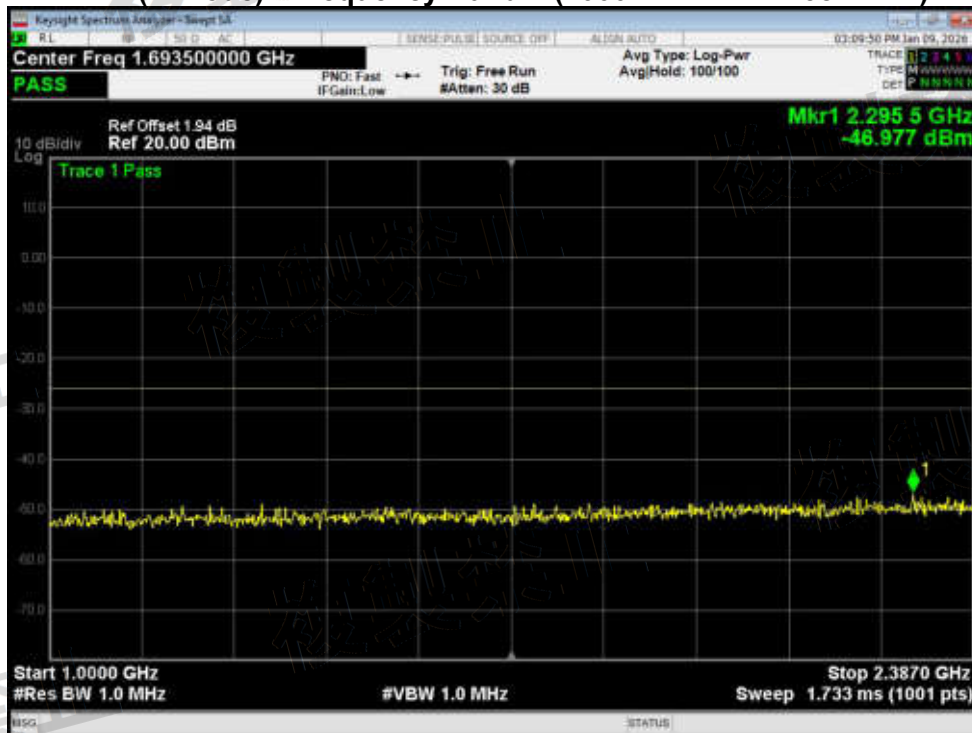
Test Graphs

Operation Mode:	Normal Voltage-B mode(CH1, CH7,CH13)
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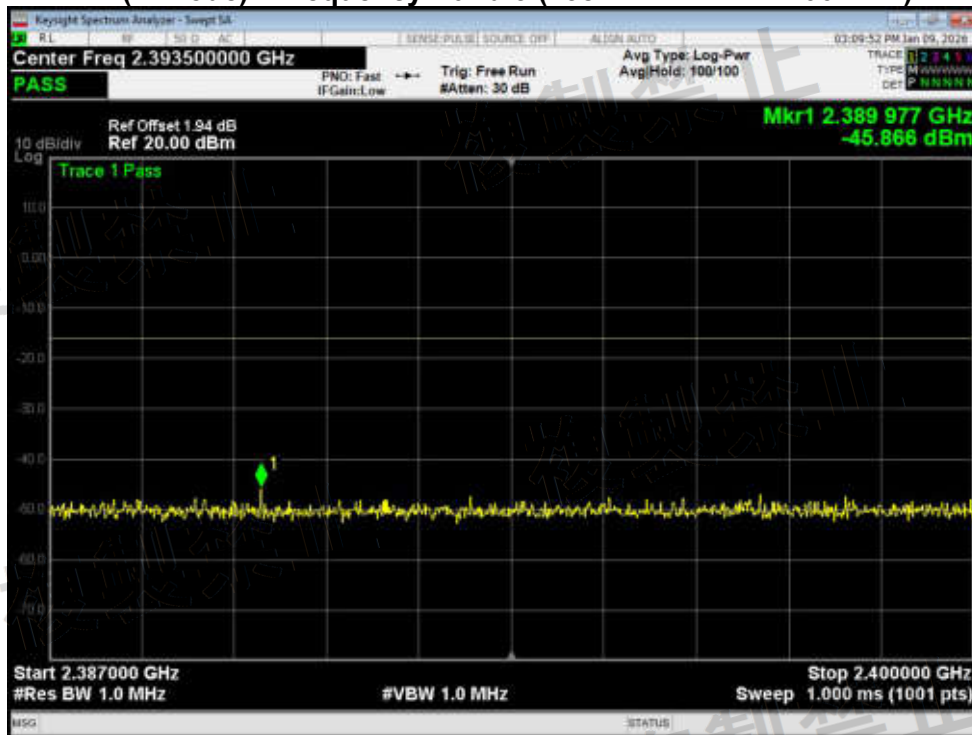
CH 1 (B mode) - Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



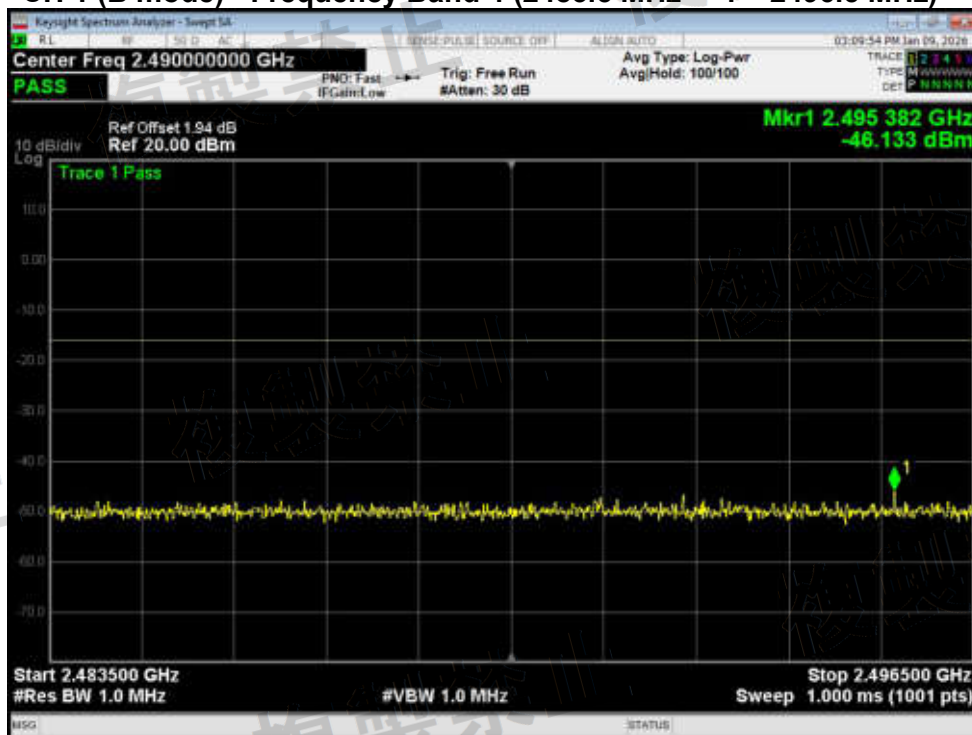
CH 1 (B mode) - Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



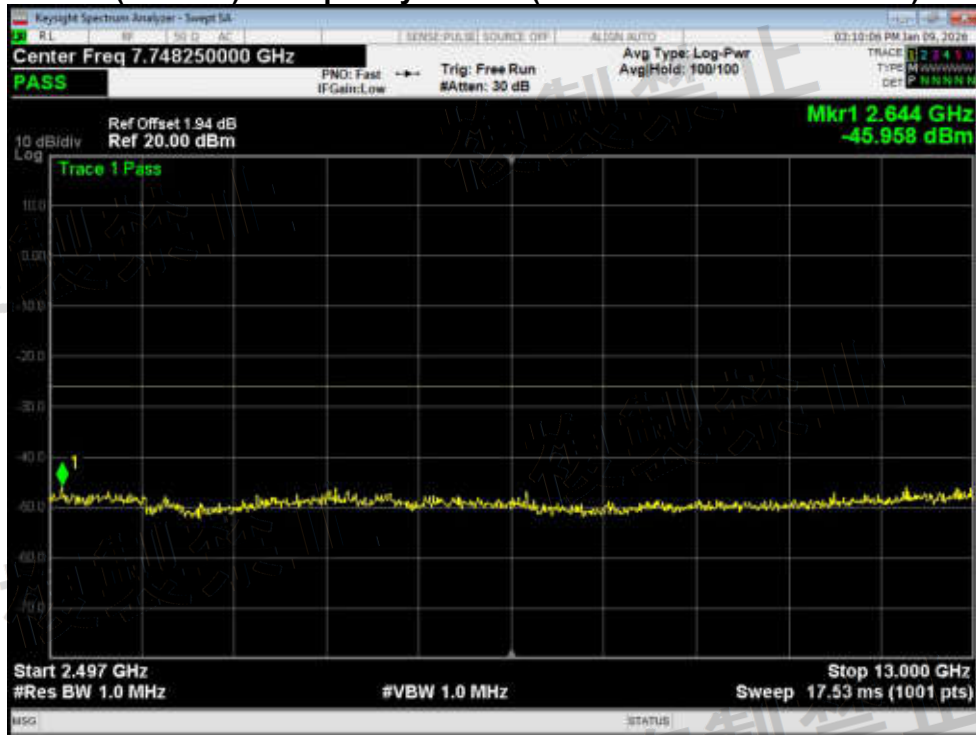
CH 1 (B mode) - Frequency Band 3 (2387 MHz < f ≤ 2400 MHz)



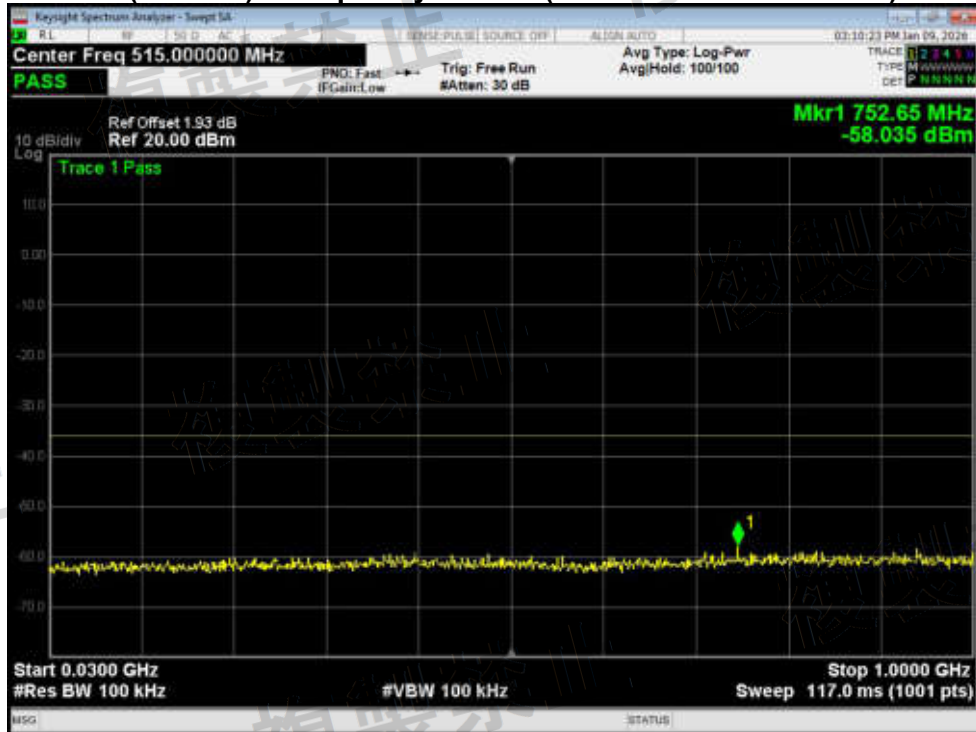
CH 1 (B mode) - Frequency Band 4 (2483.5 MHz ≤ f < 2496.5 MHz)



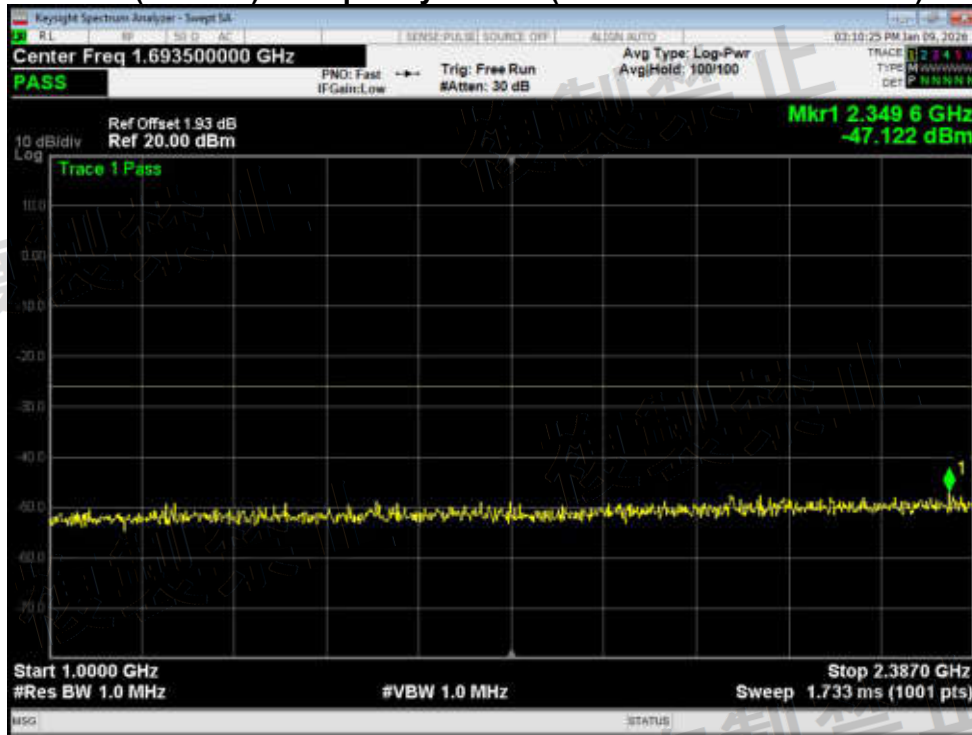
CH 1 (B mode) - Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)



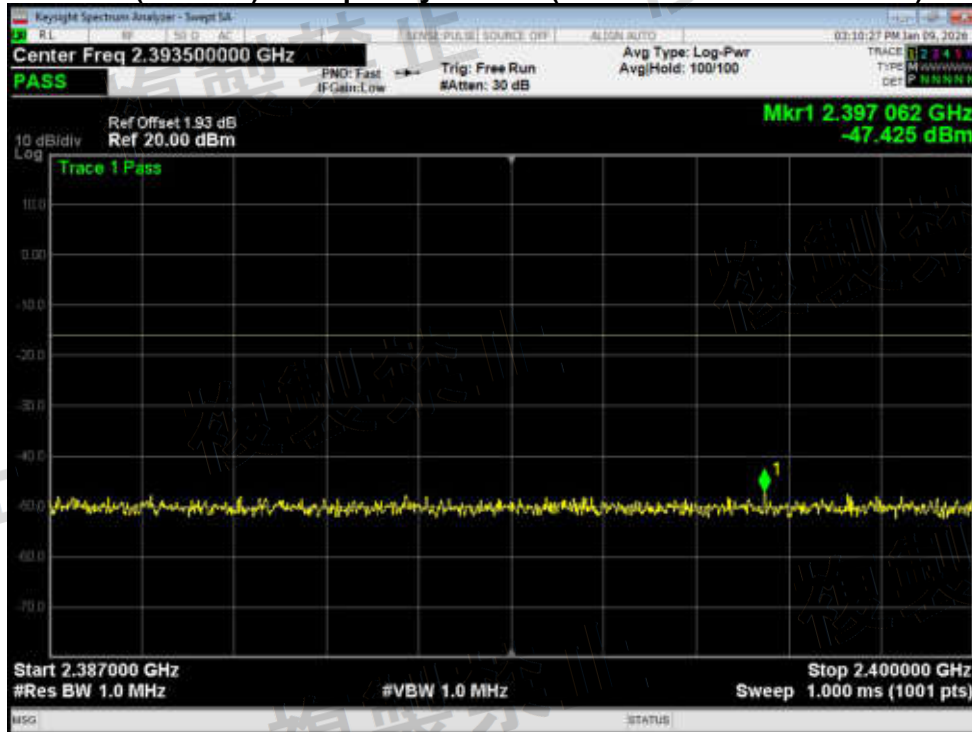
CH 7(B mode) - Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



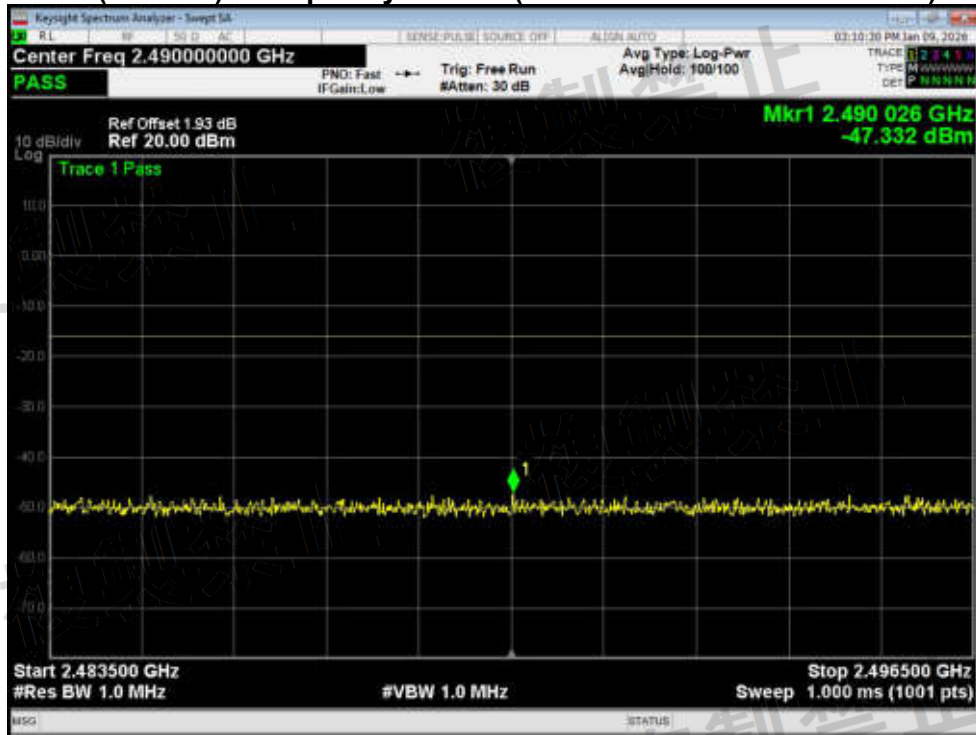
CH 7(B mode) - Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



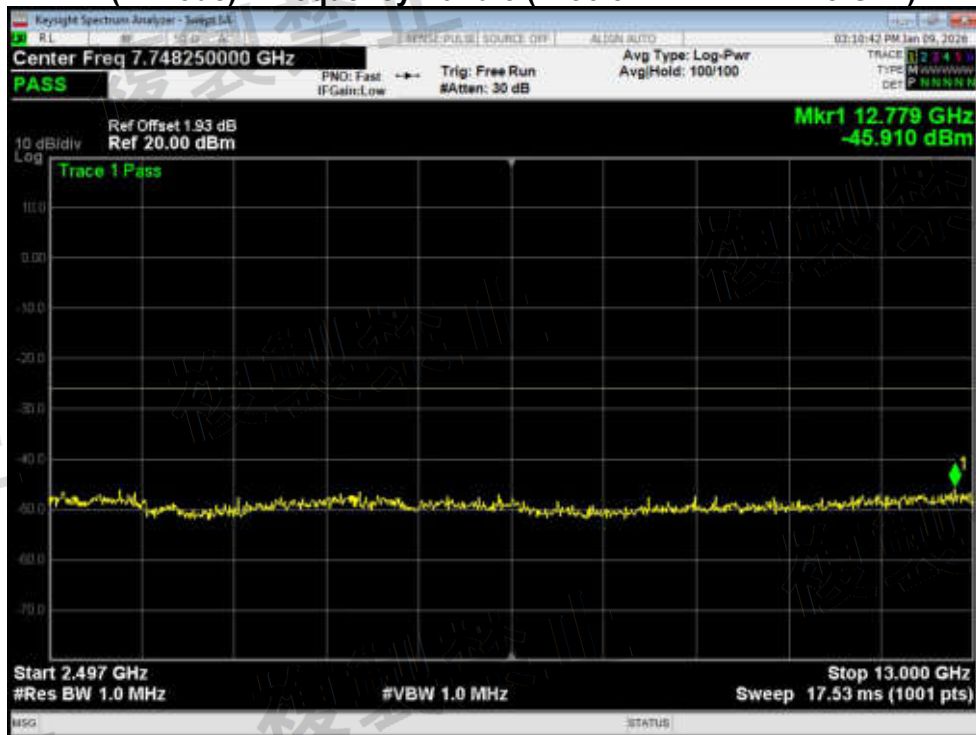
CH 7(B mode) - Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)



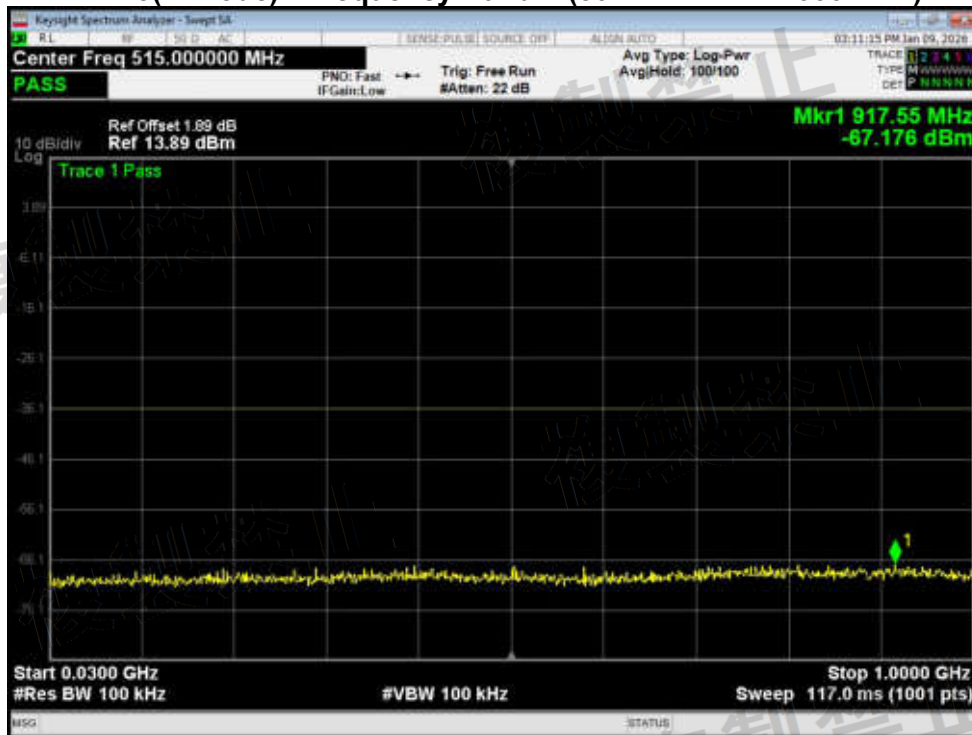
CH 7 (B mode) - Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



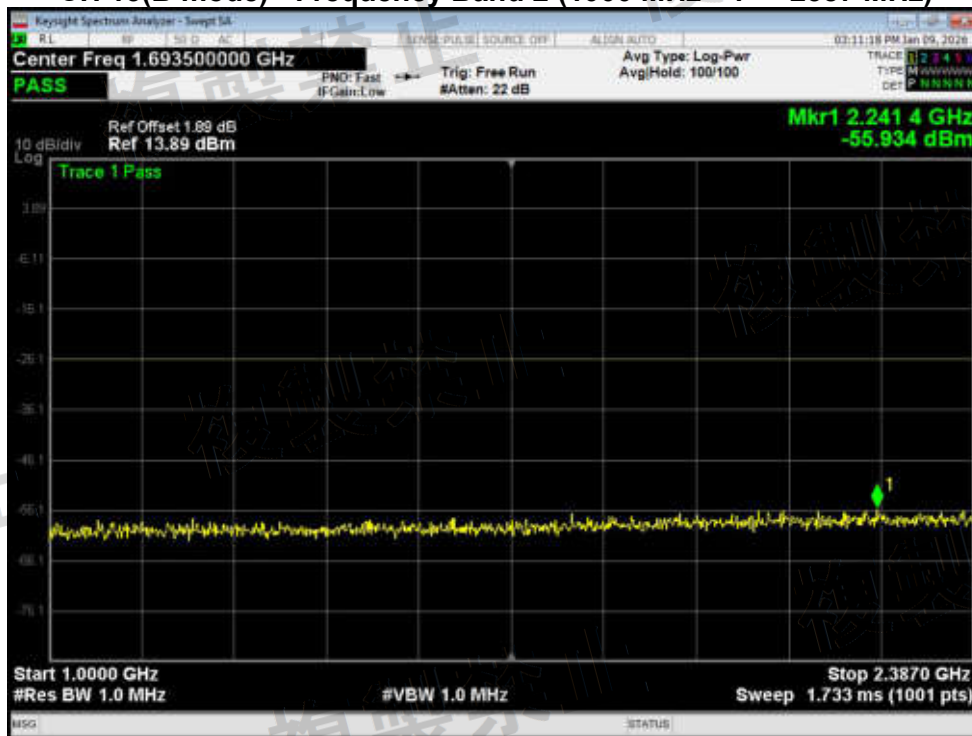
CH 7(B mode) - Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)



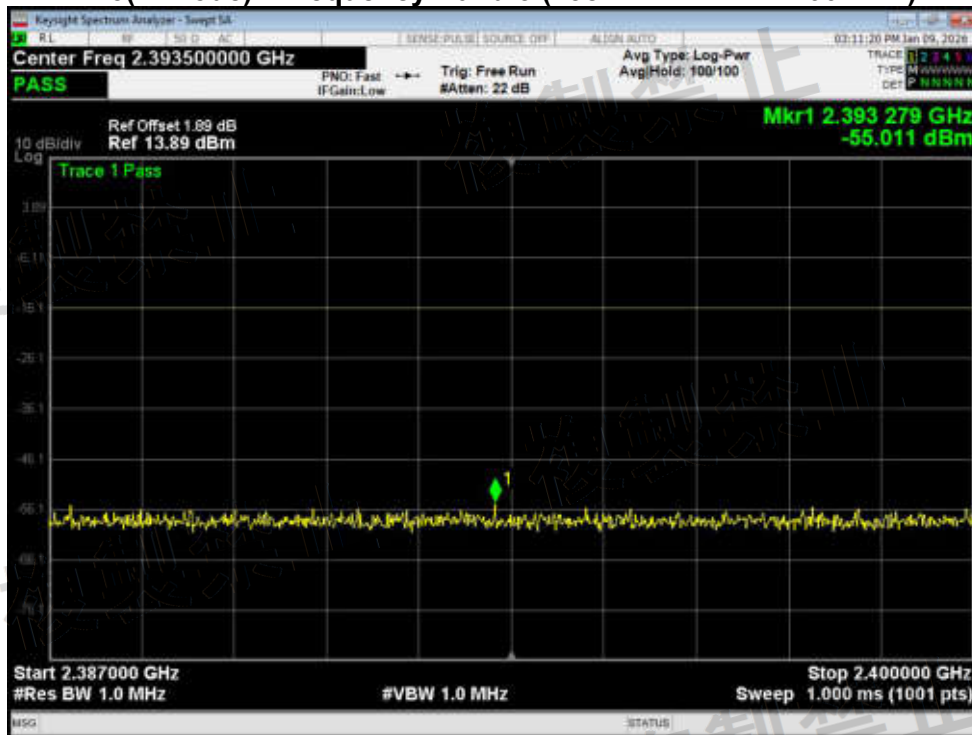
CH 13(B mode) - Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



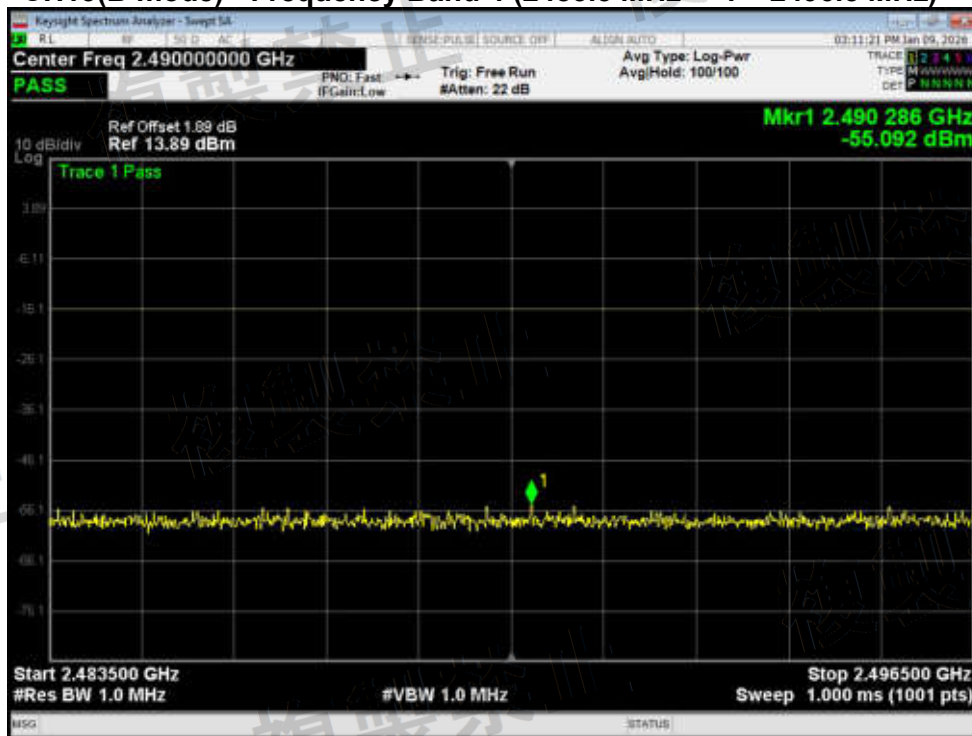
CH 13(B mode) - Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



CH 13(B mode) - Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)

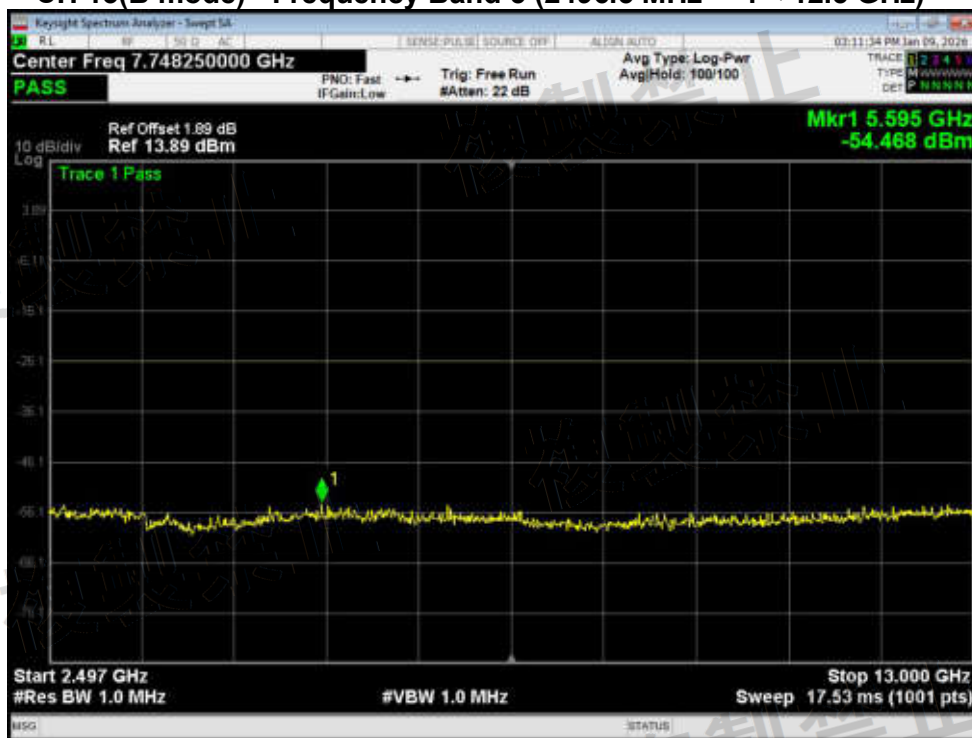


CH13(B mode) - Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



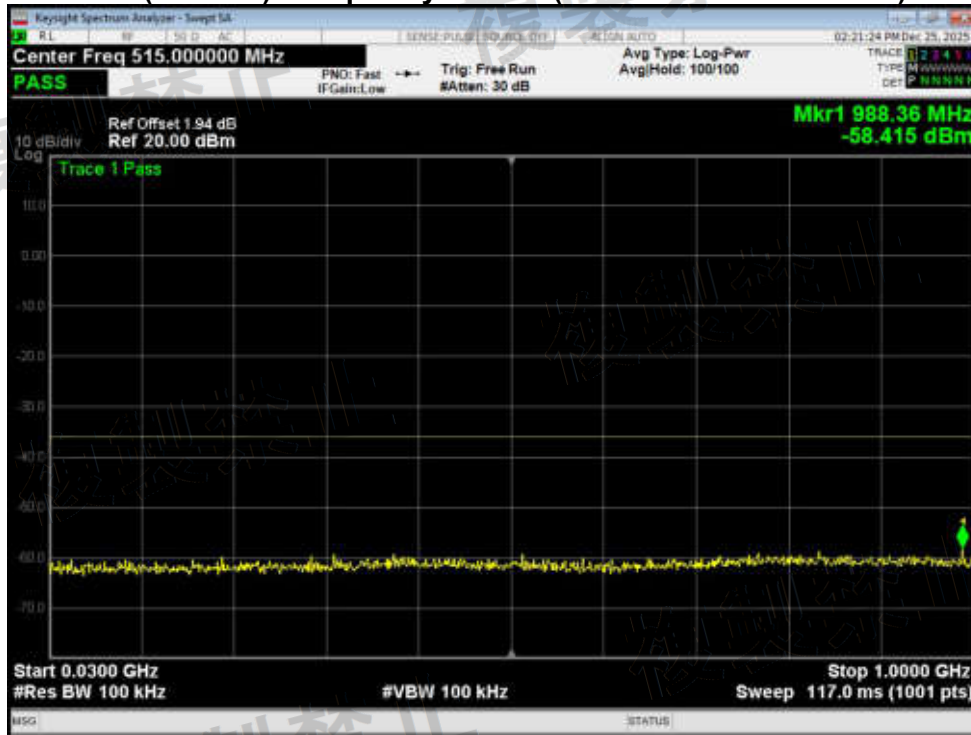


CH 13(B mode) - Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)

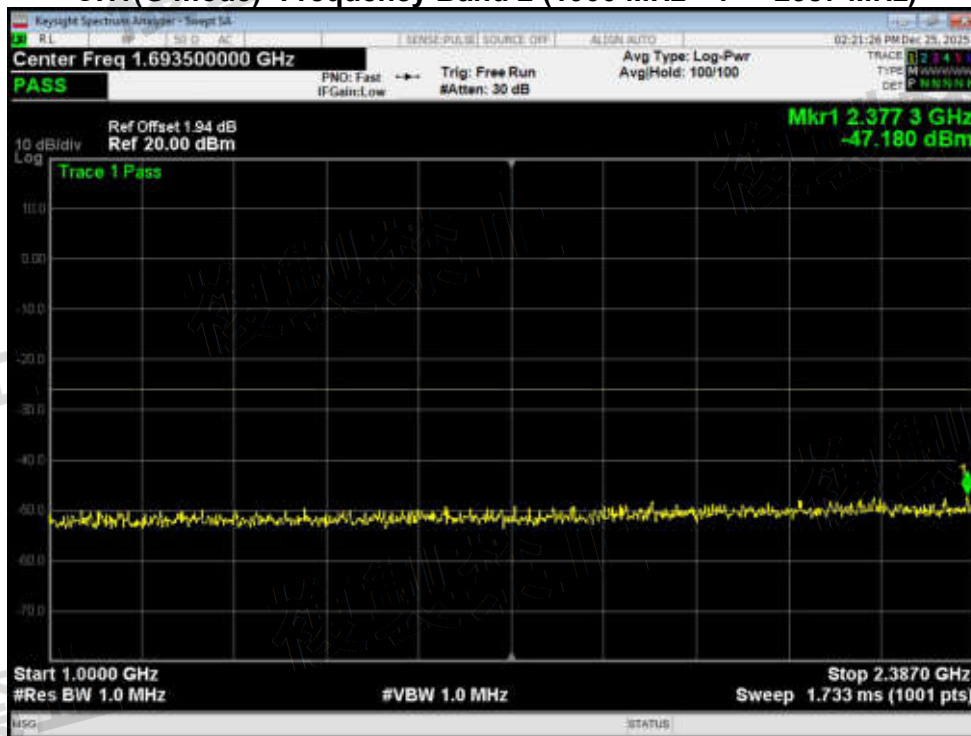


Operation Mode:	Normal Voltage-G mode(CH1,CH7,CH13)
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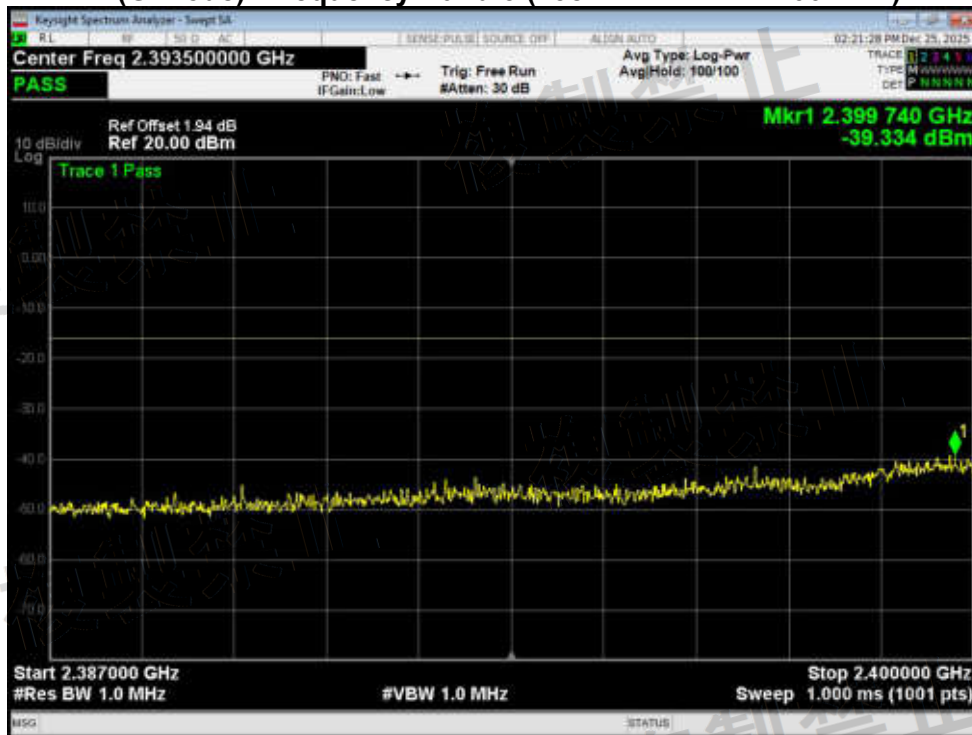
CH1(G mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



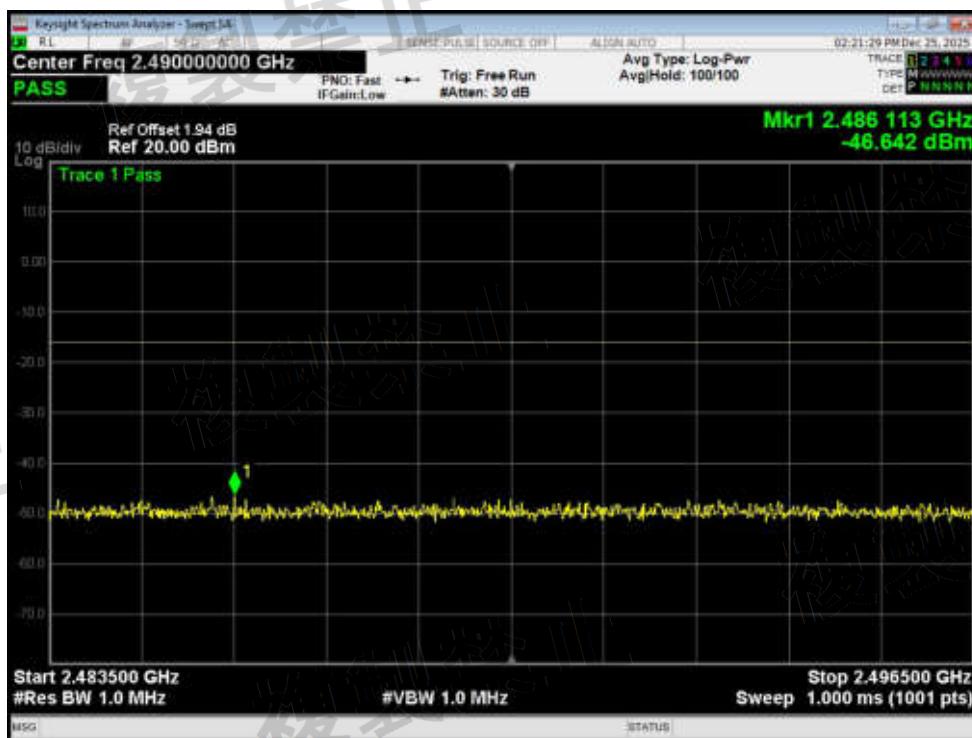
CH1(G mode)- Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



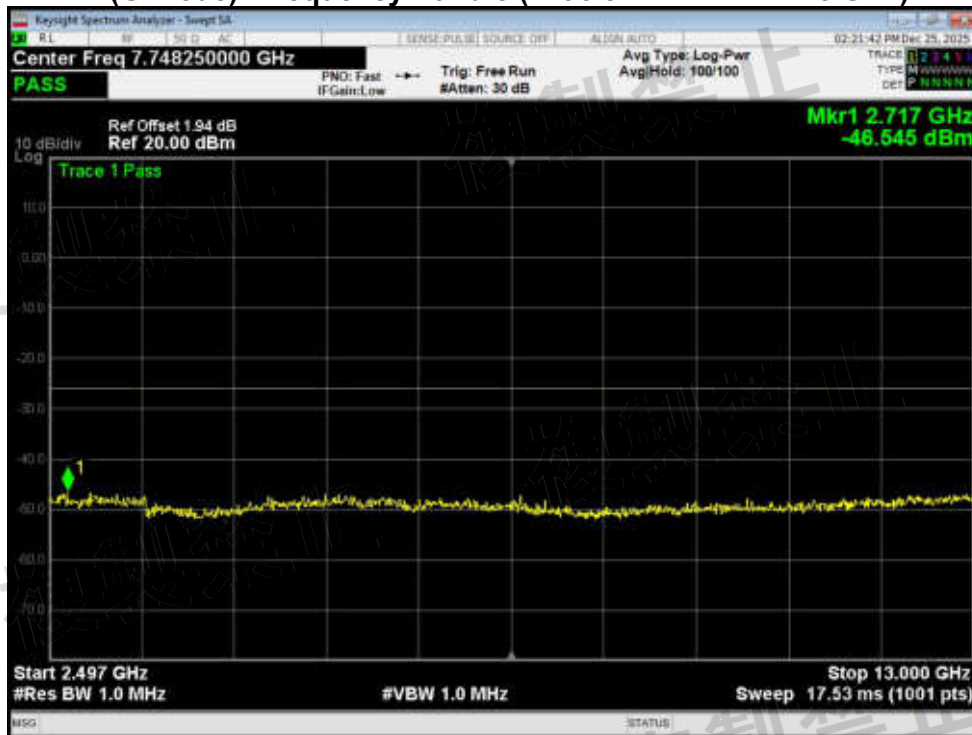
CH1(G mode)- Frequency Band 3 (2387 MHz < f ≤ 2400 MHz)



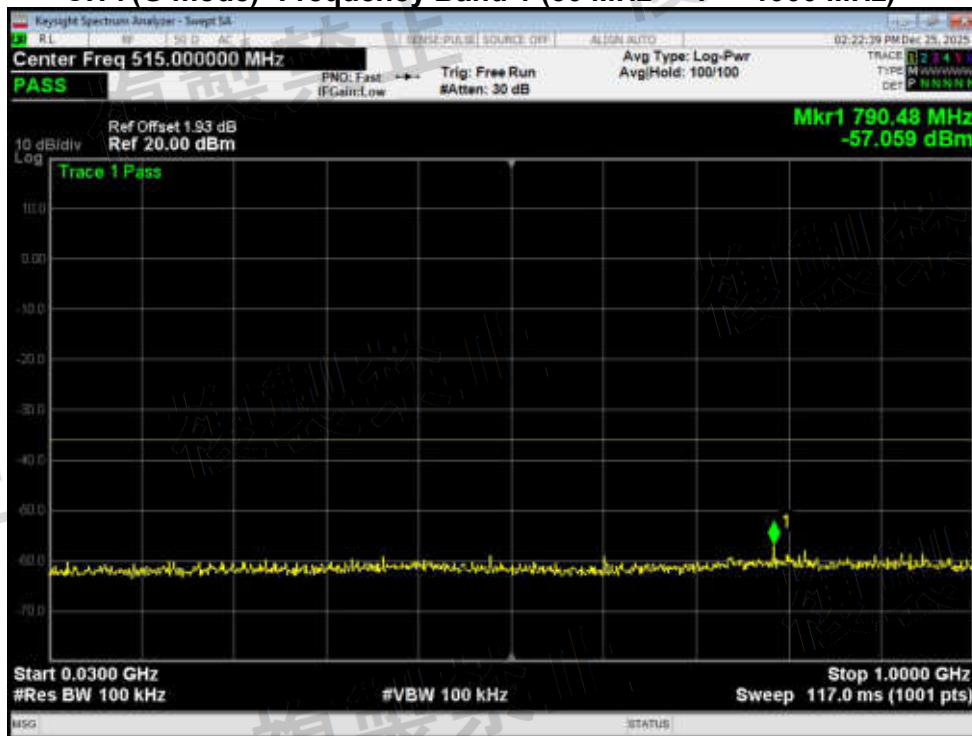
CH1(G mode)- Frequency Band 4 (2483.5 MHz ≤ f < 2496.5 MHz)



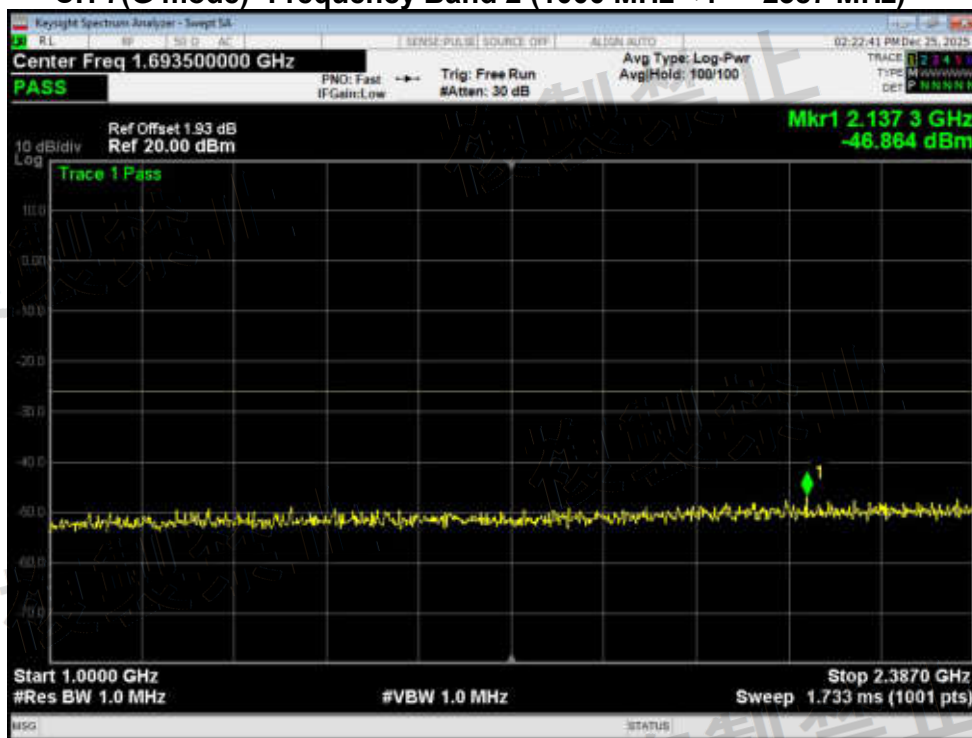
CH1(G mode)- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)



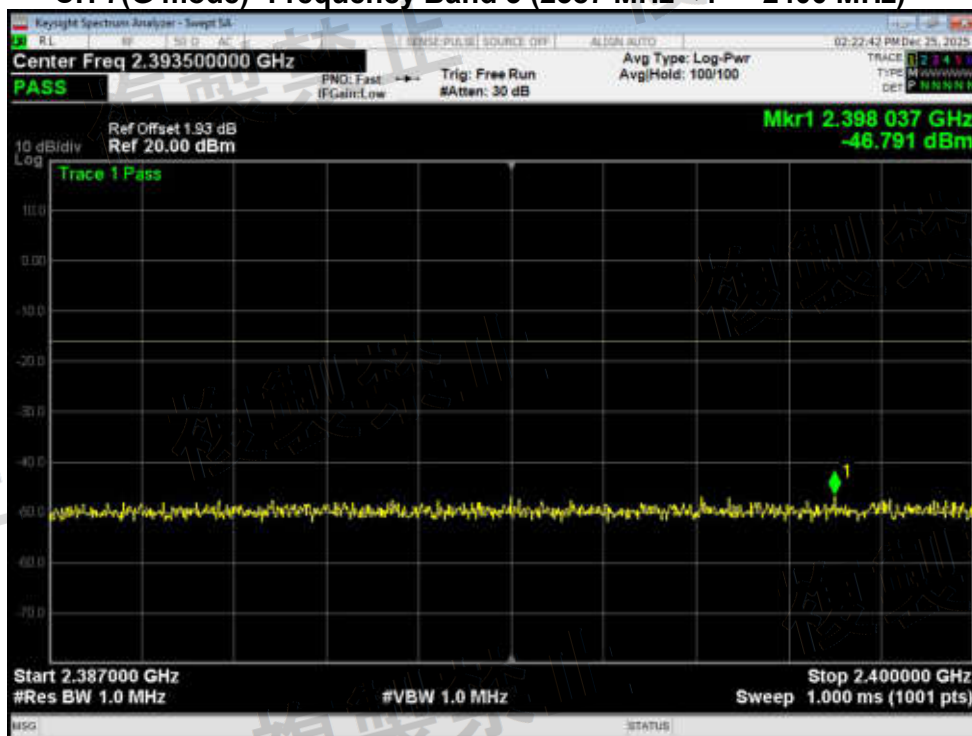
CH 7(G mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



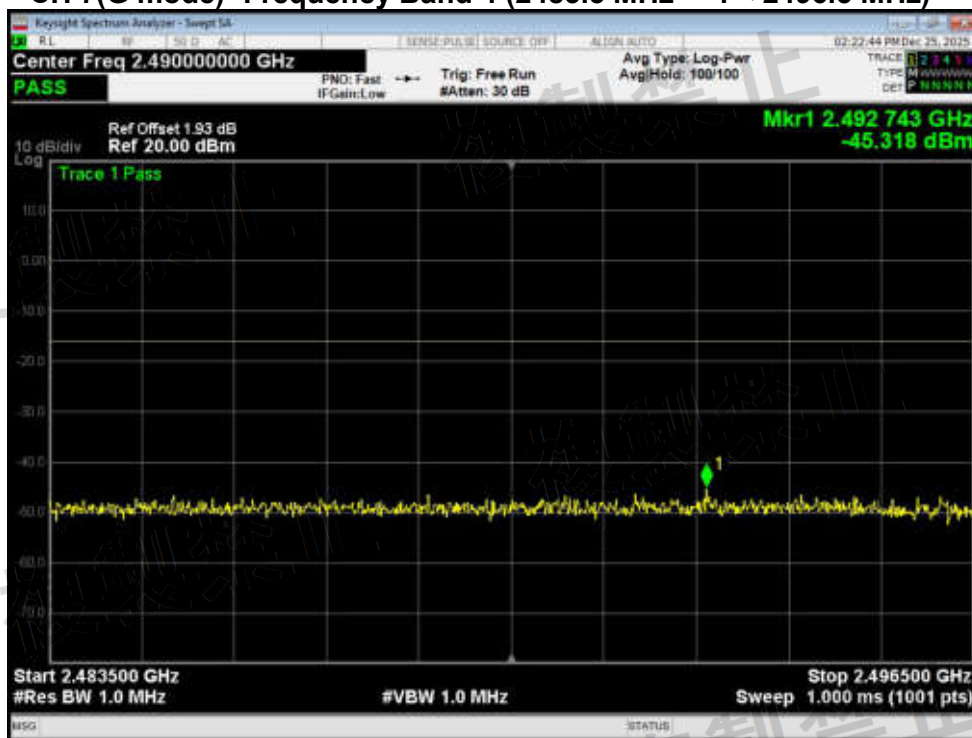
CH 7(G mode)- Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



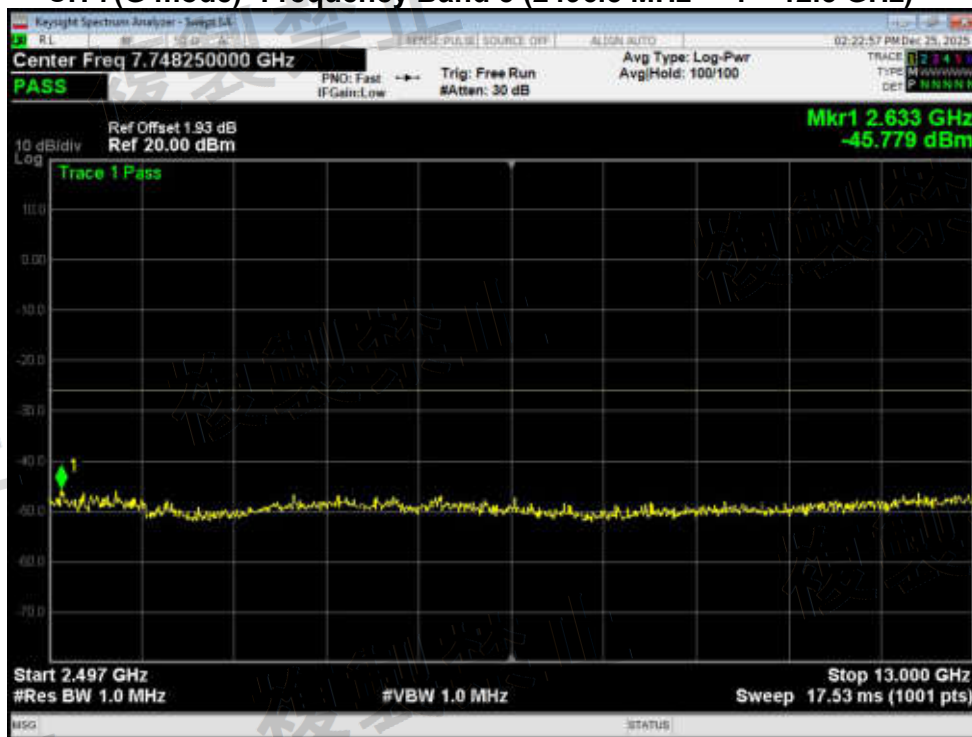
CH 7(G mode)- Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)



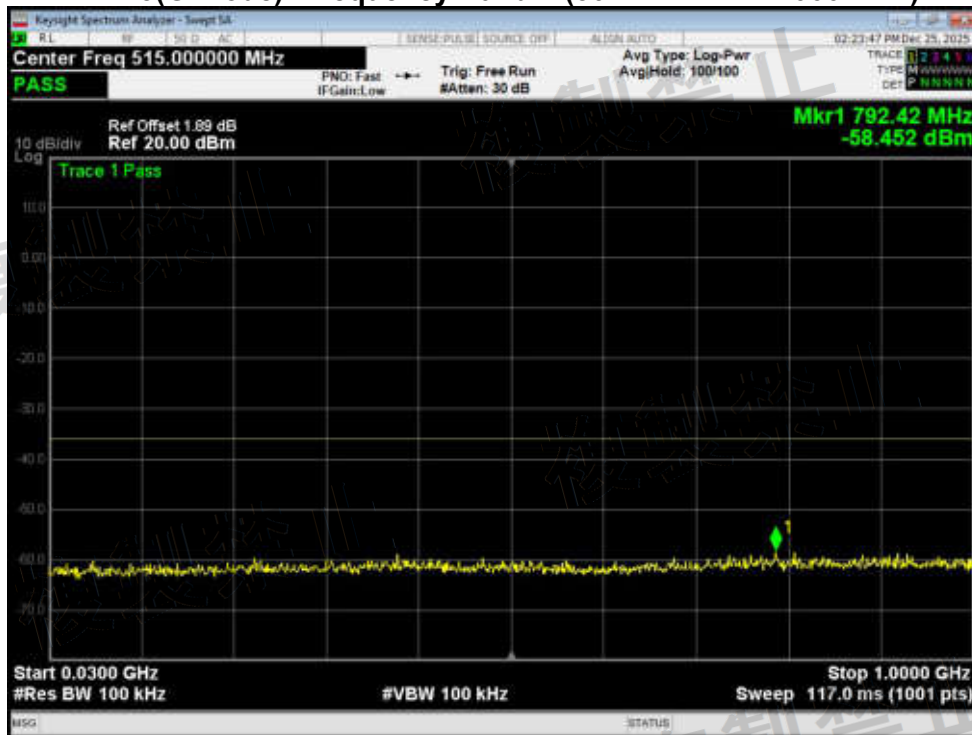
CH 7(G mode)- Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



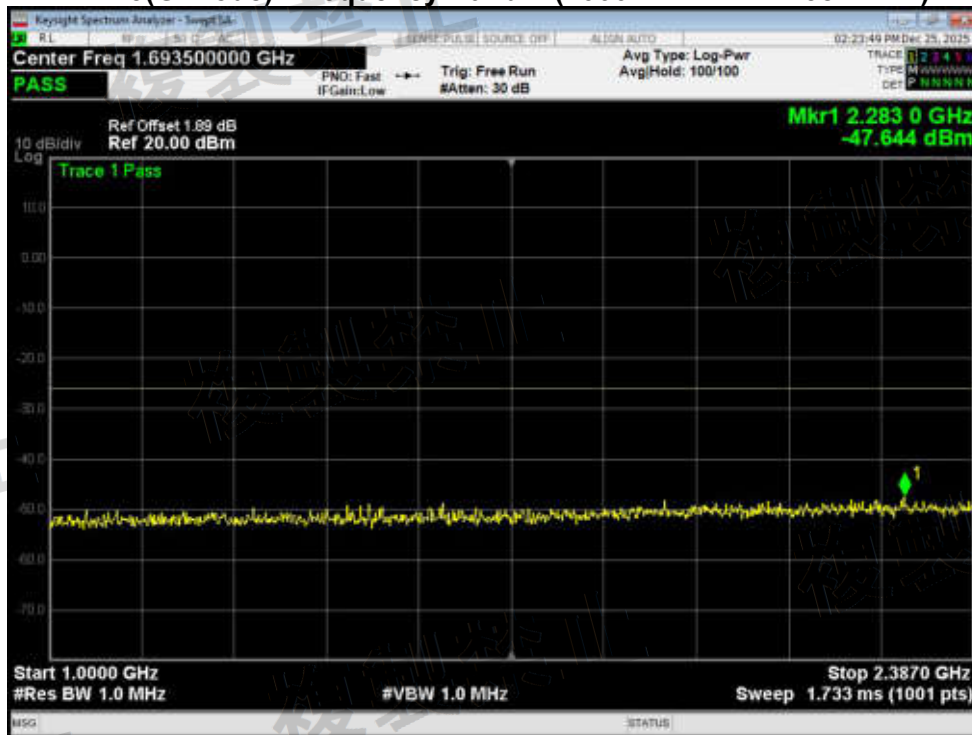
CH 7(G mode)- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)



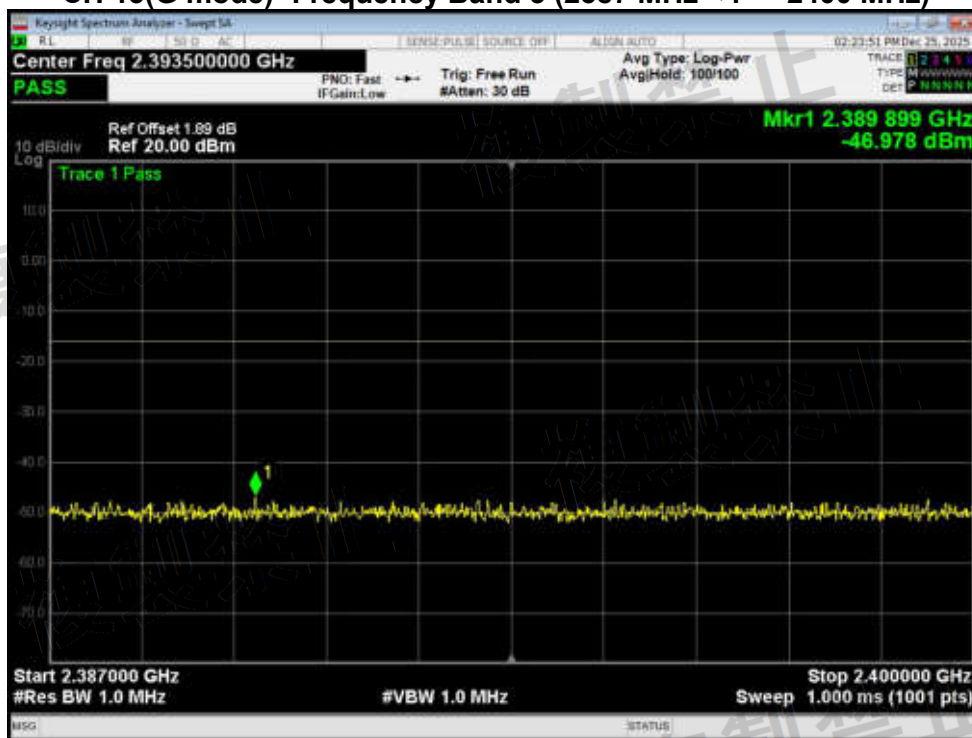
CH 13(G mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



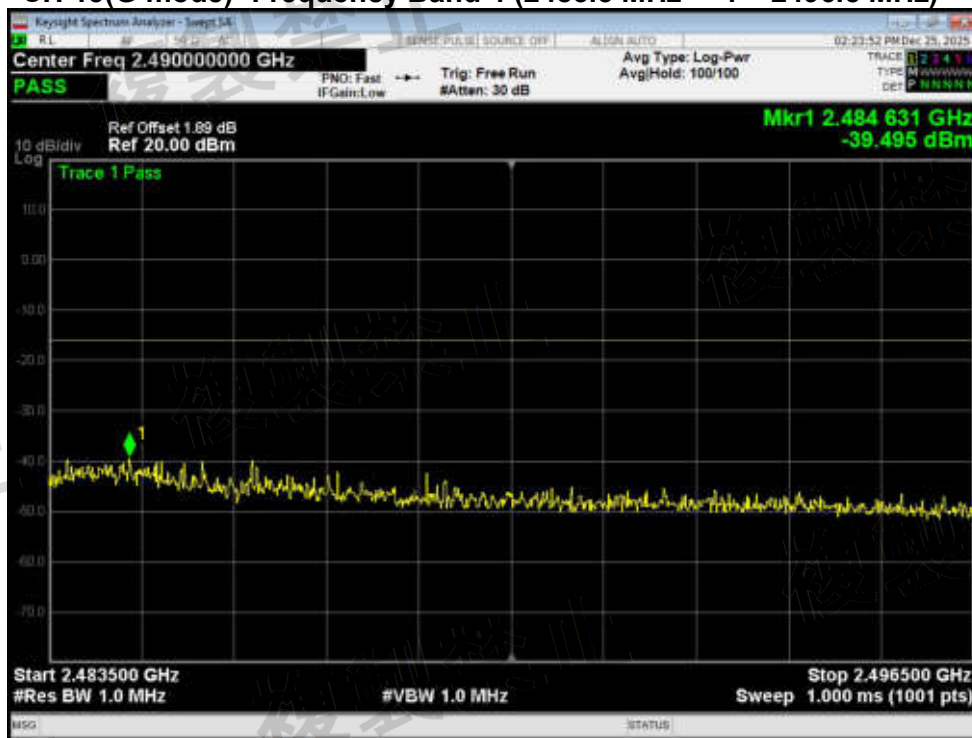
CH 13(G mode)- Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



CH 13(G mode)- Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)

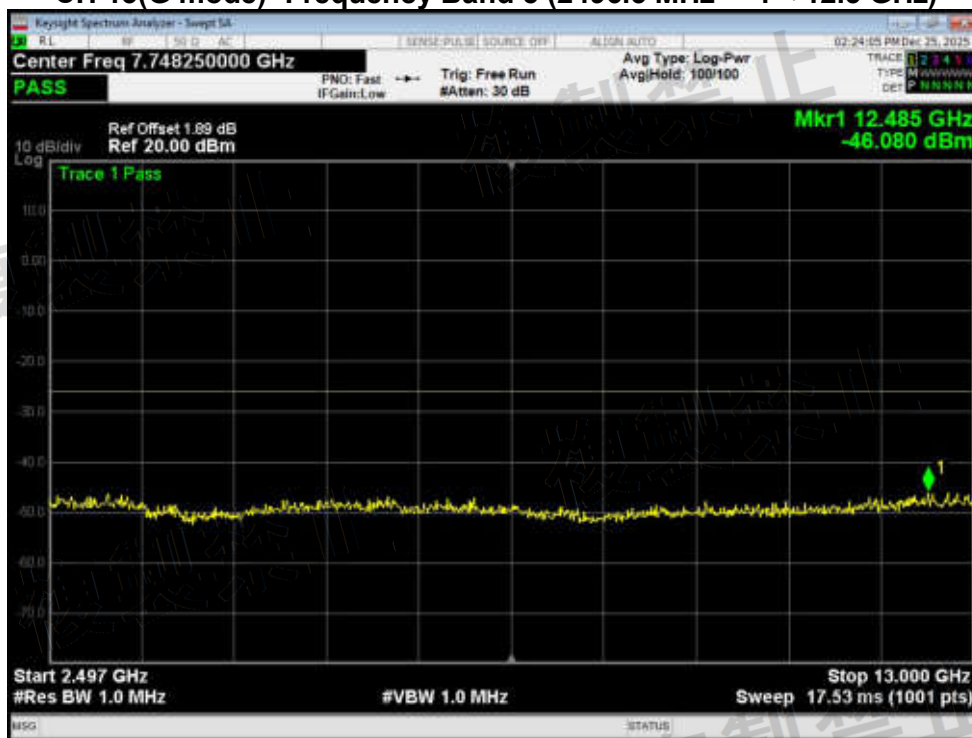


CH 13(G mode)- Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



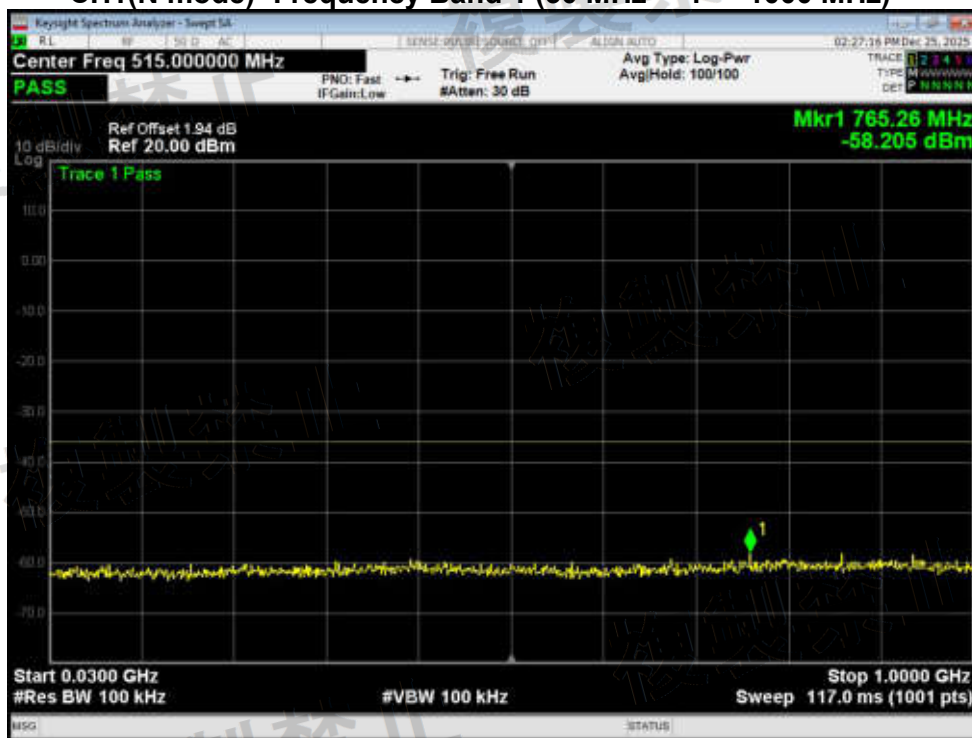


CH 13(G mode)- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)

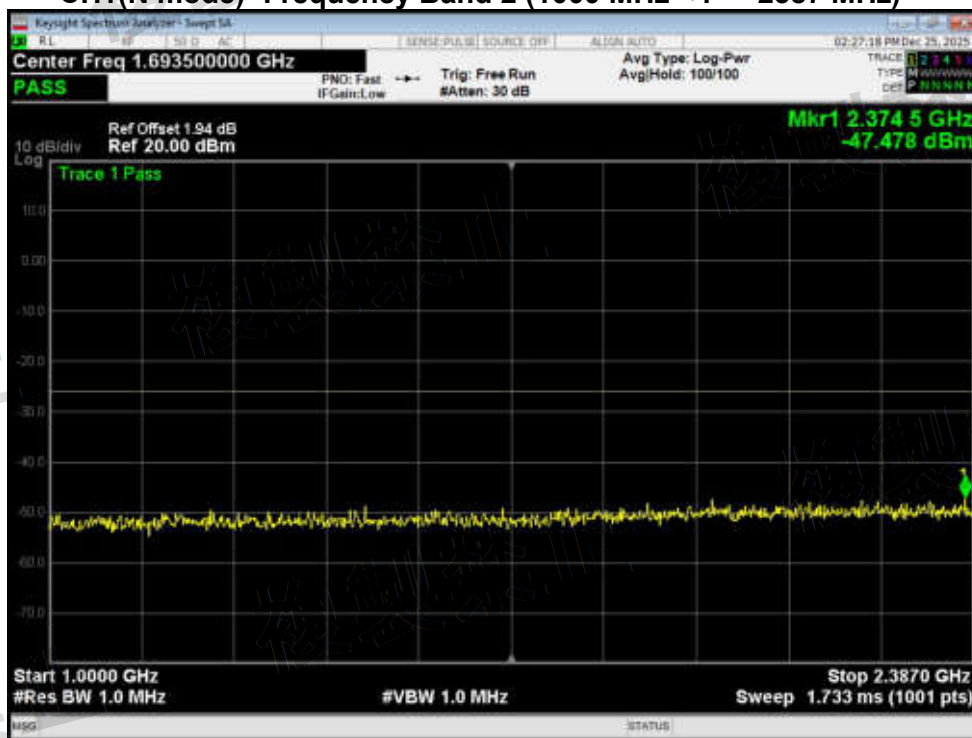


Operation Mode:	Normal Voltage-N20 mode(CH1,CH7,CH13)
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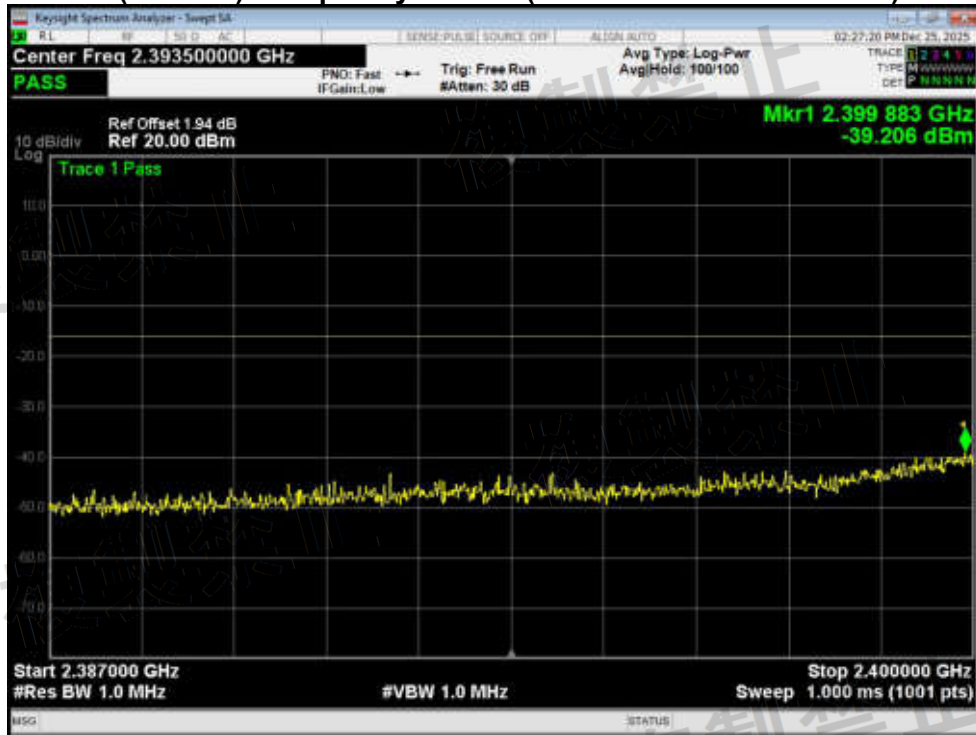
CH1(N mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



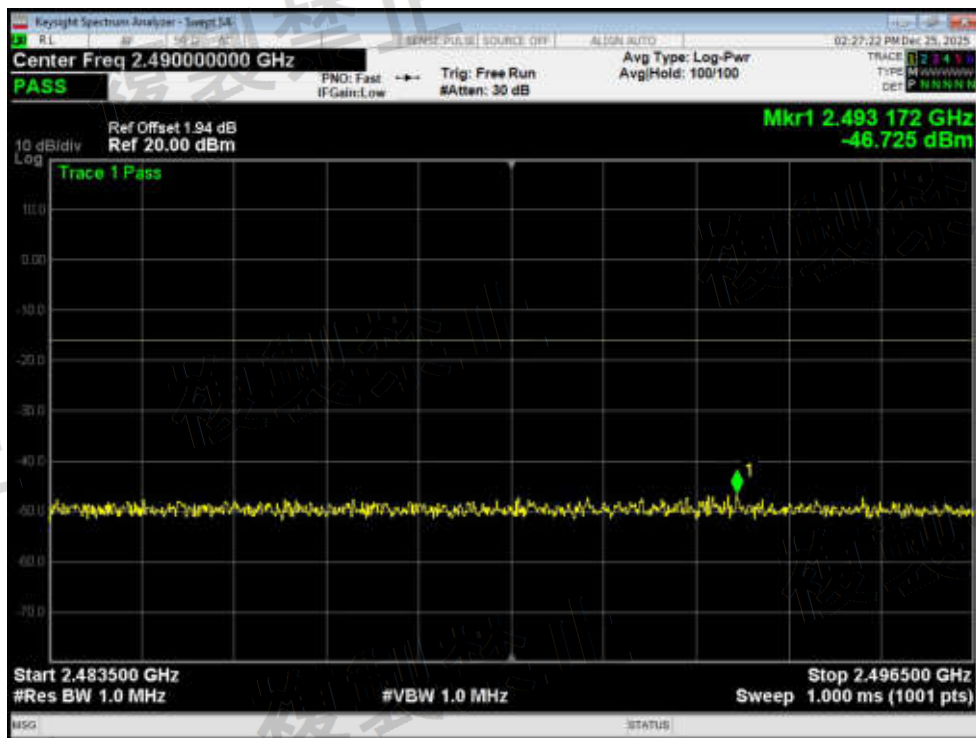
CH1(N mode)- Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



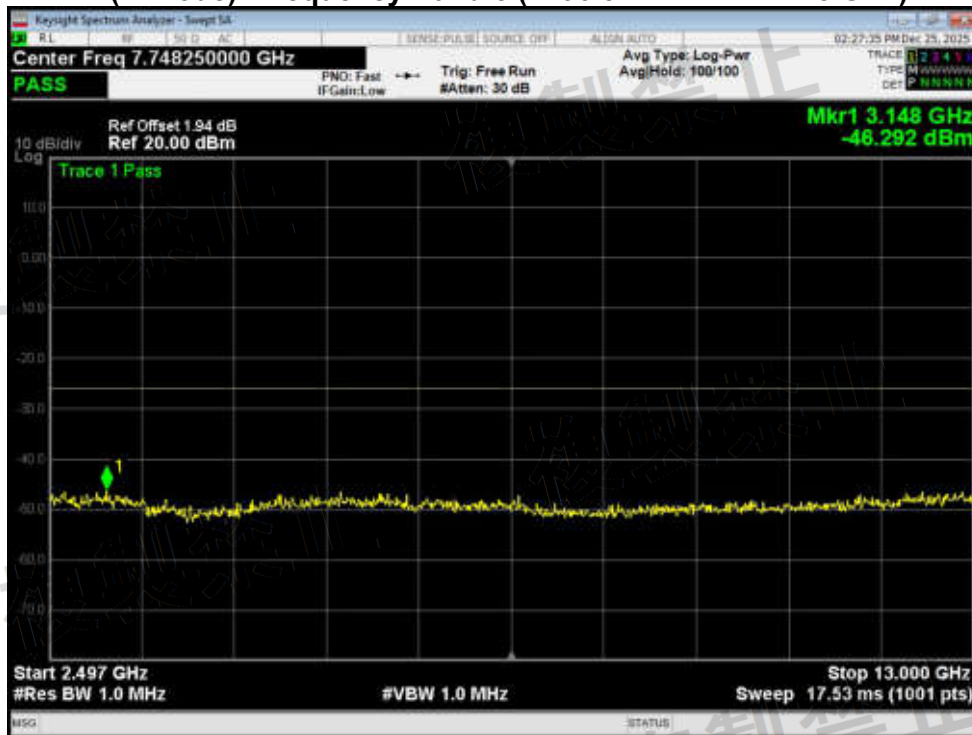
CH1(N mode)- Frequency Band 3 (2387 MHz < f ≤ 2400 MHz)



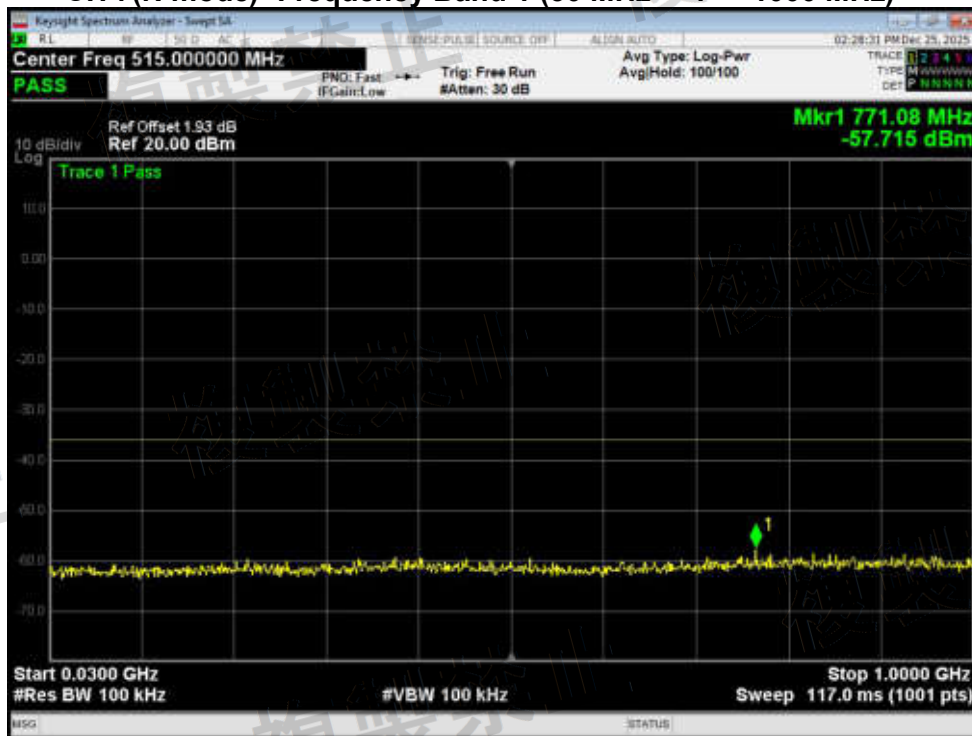
CH1(N mode)- Frequency Band 4 (2483.5 MHz ≤ f < 2496.5 MHz)



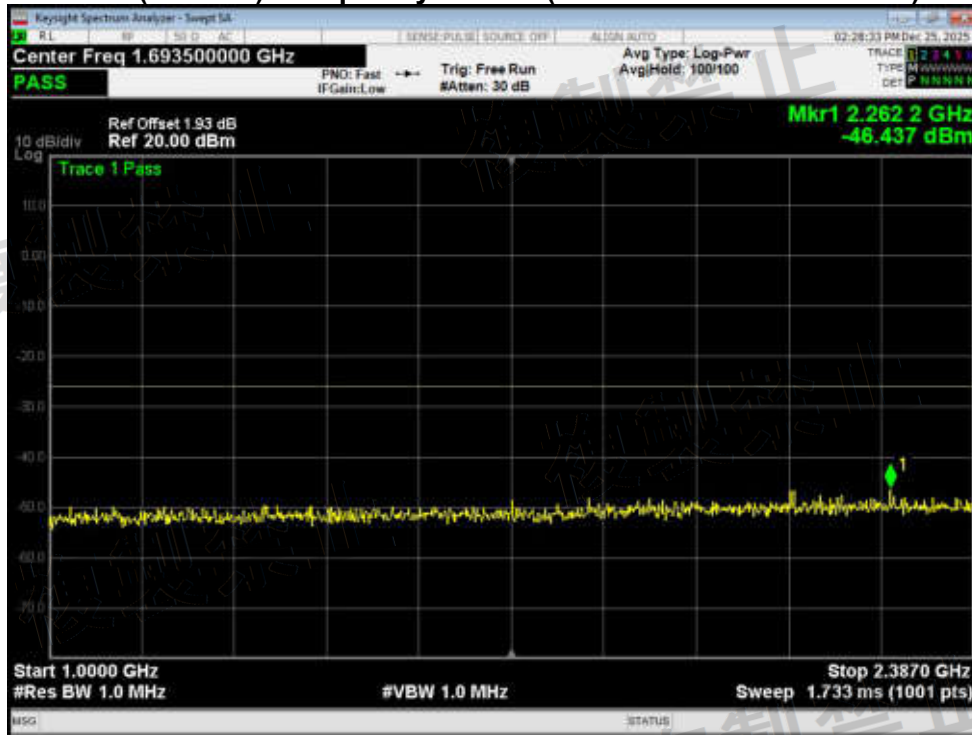
CH1(N mode)- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)



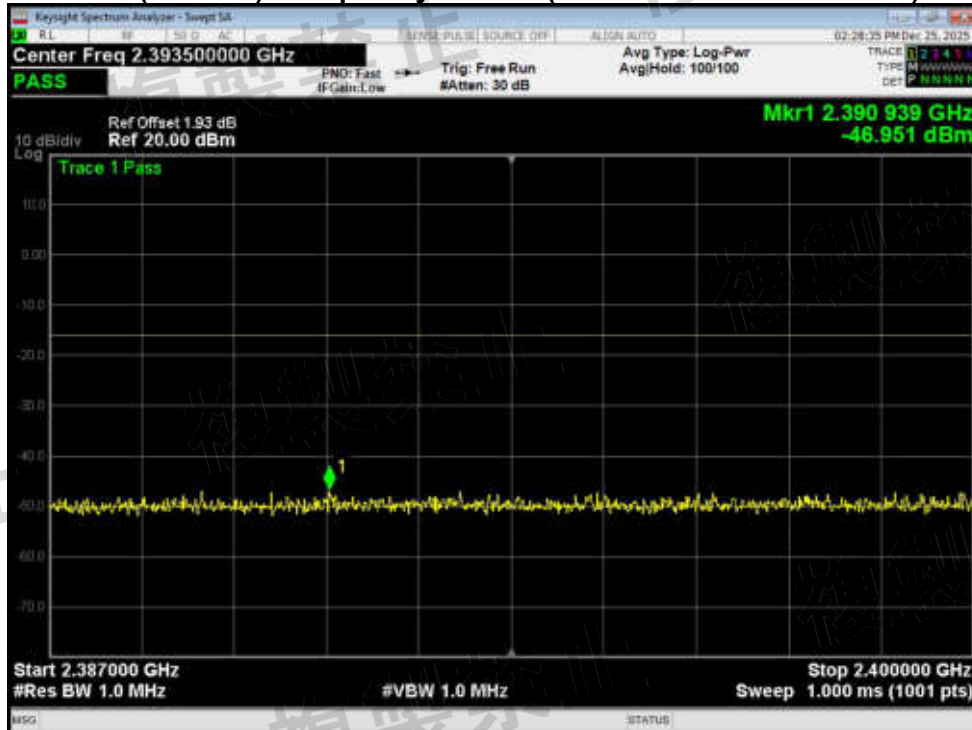
CH 7(N mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



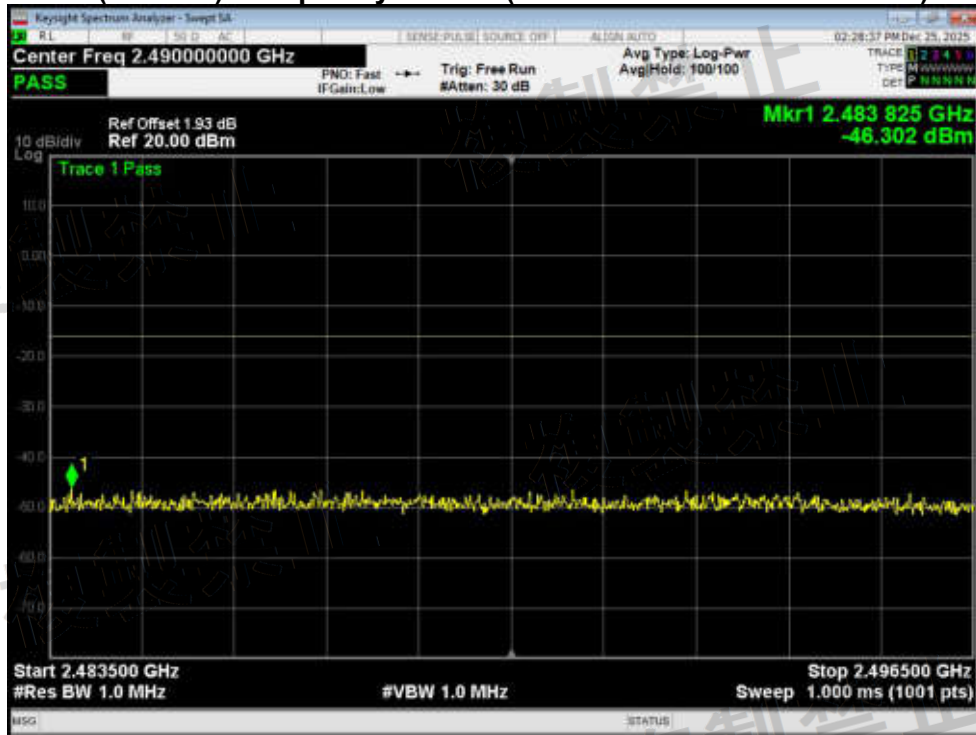
CH 7(N mode)- Frequency Band 2 (1000 MHz < f ≤ 2387 MHz)



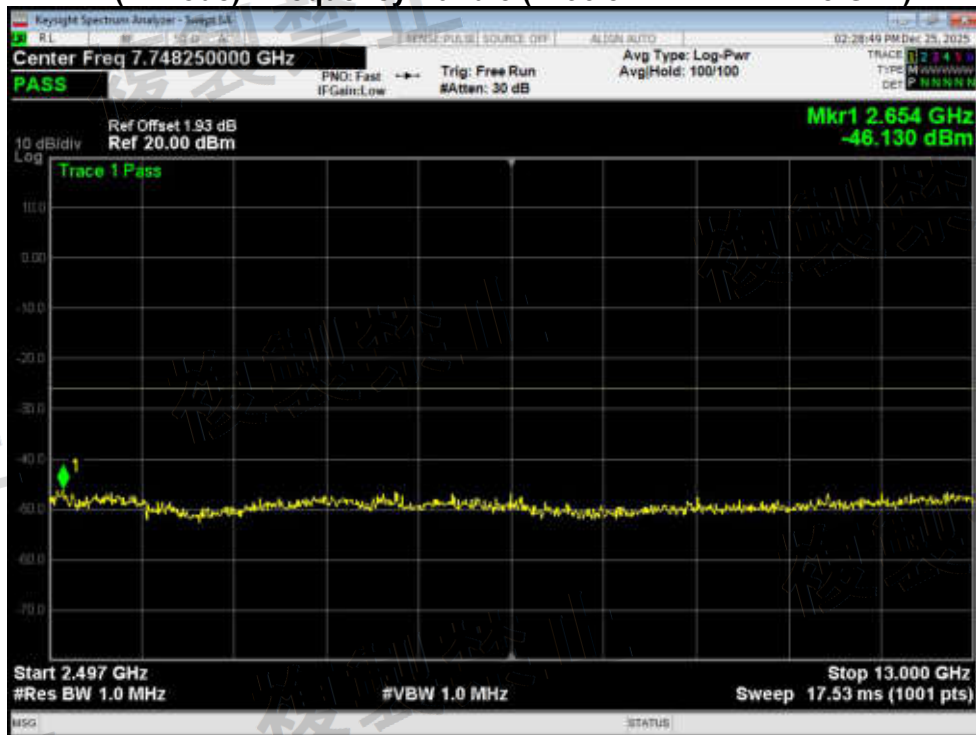
CH 7(N mode)- Frequency Band 3 (2387 MHz < f ≤ 2400 MHz)



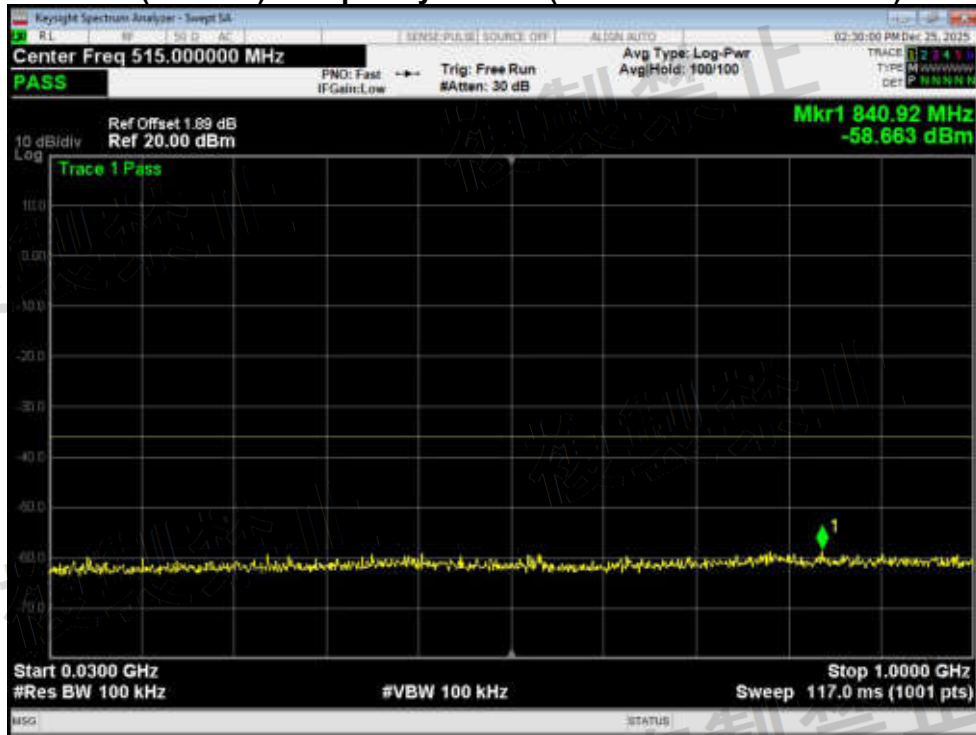
CH 7(N mode)- Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



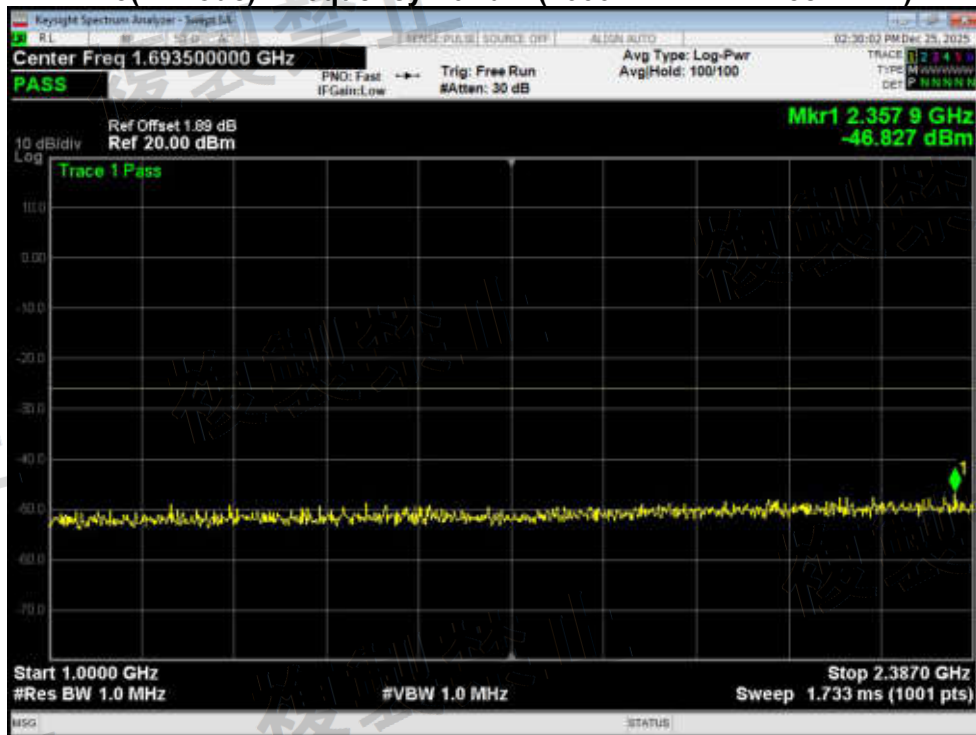
CH 7(N mode)- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)



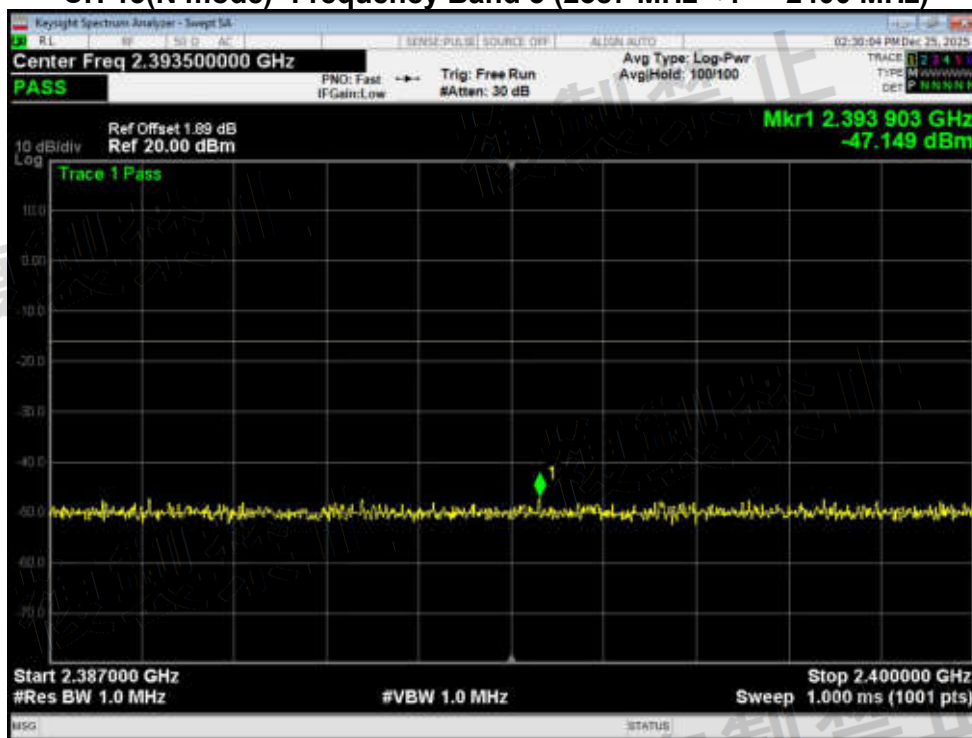
CH 13(N mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



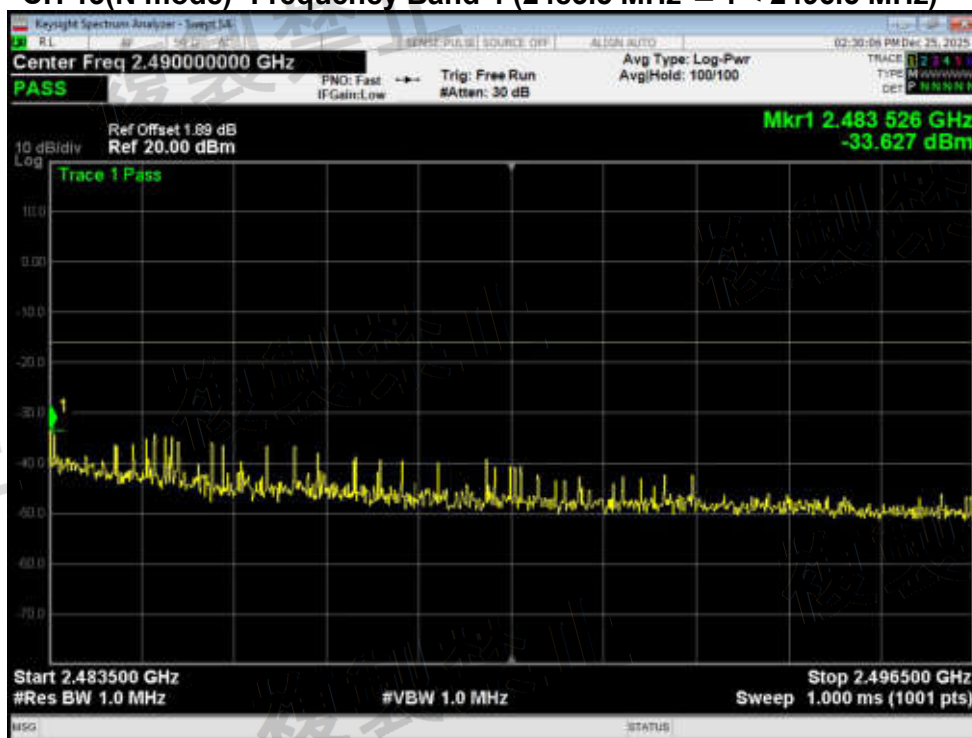
CH 13(N mode)- Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



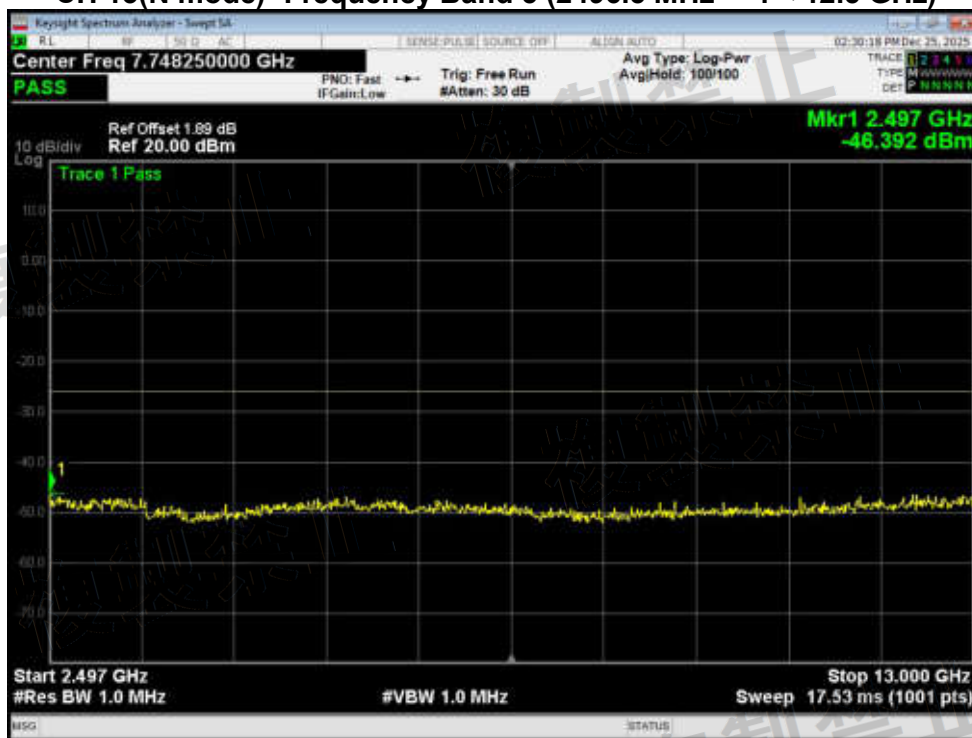
CH 13(N mode)- Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)



CH 13(N mode)- Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)

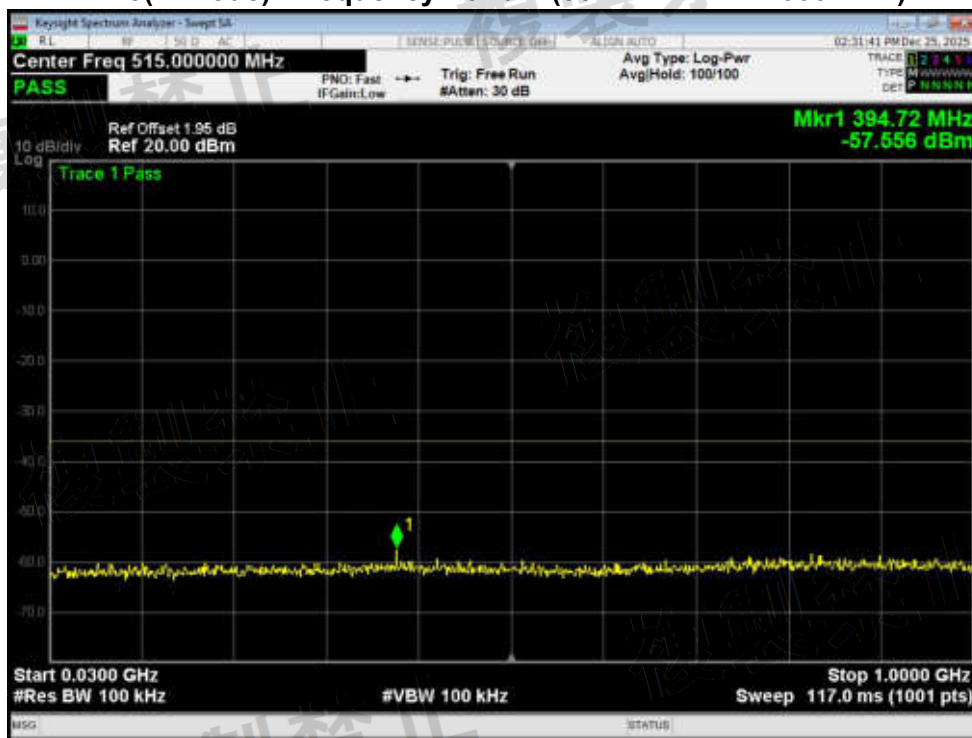


CH 13(N mode)- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)

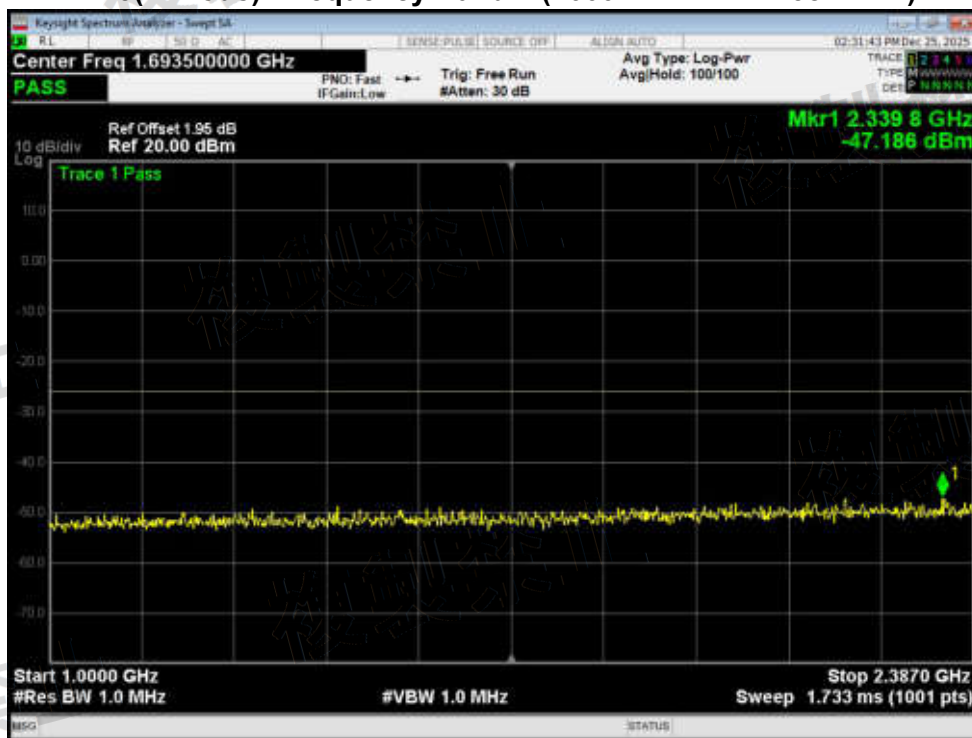


Operation Mode:	Normal Voltage-N40 mode(CH1,CH7,CH13)
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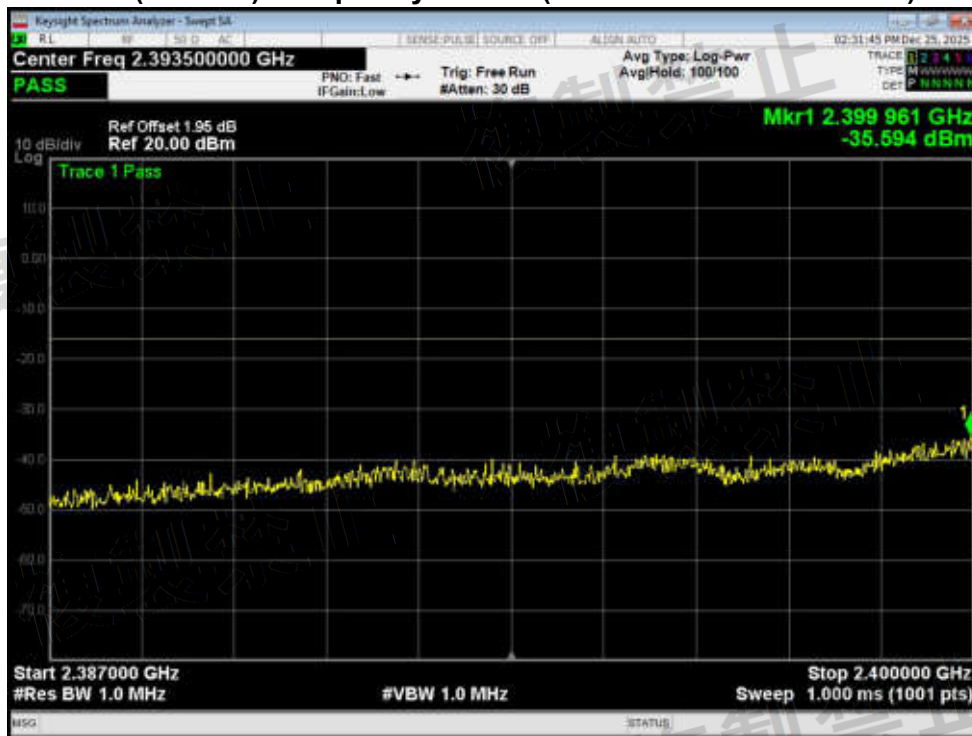
CH3(N mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



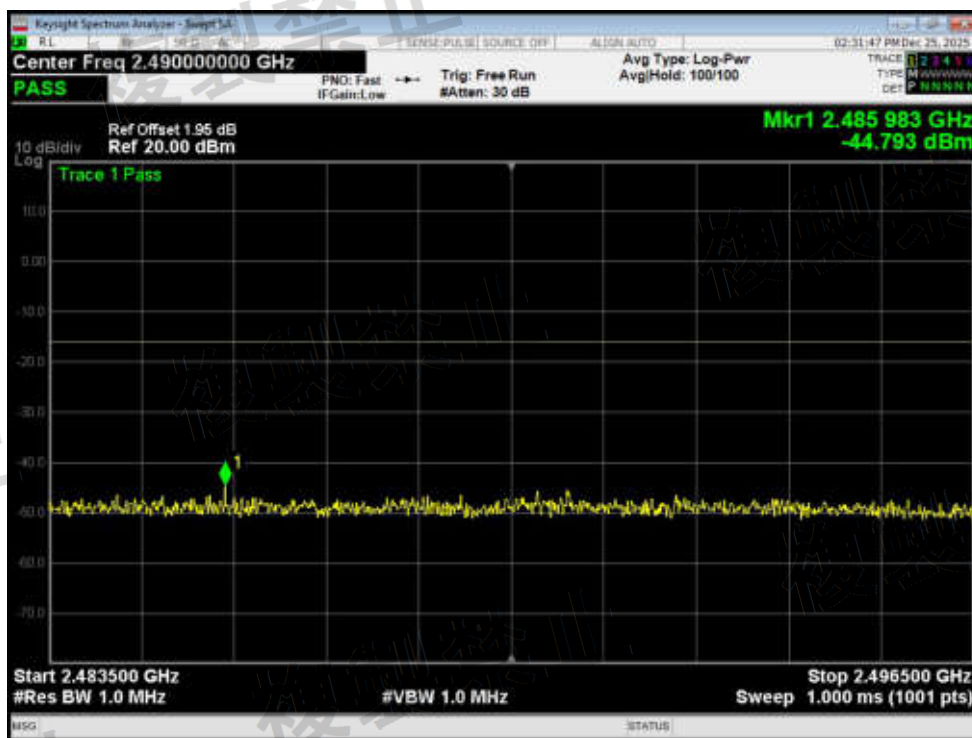
CH3(N mode)- Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



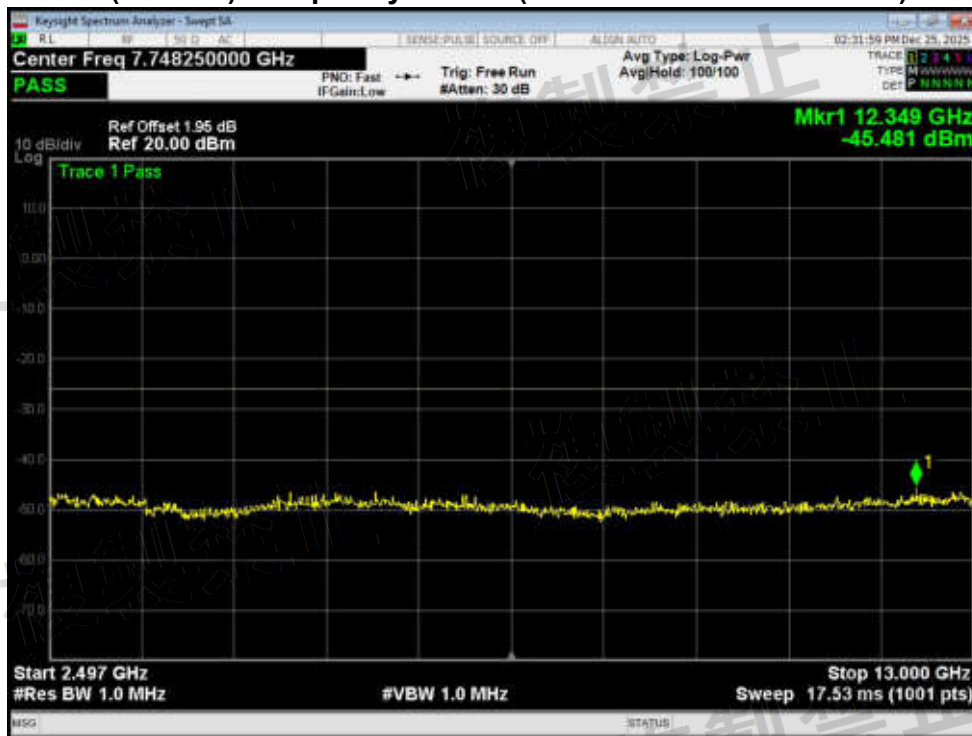
CH3(N mode)- Frequency Band 3 (2387 MHz < f ≤ 2400 MHz)



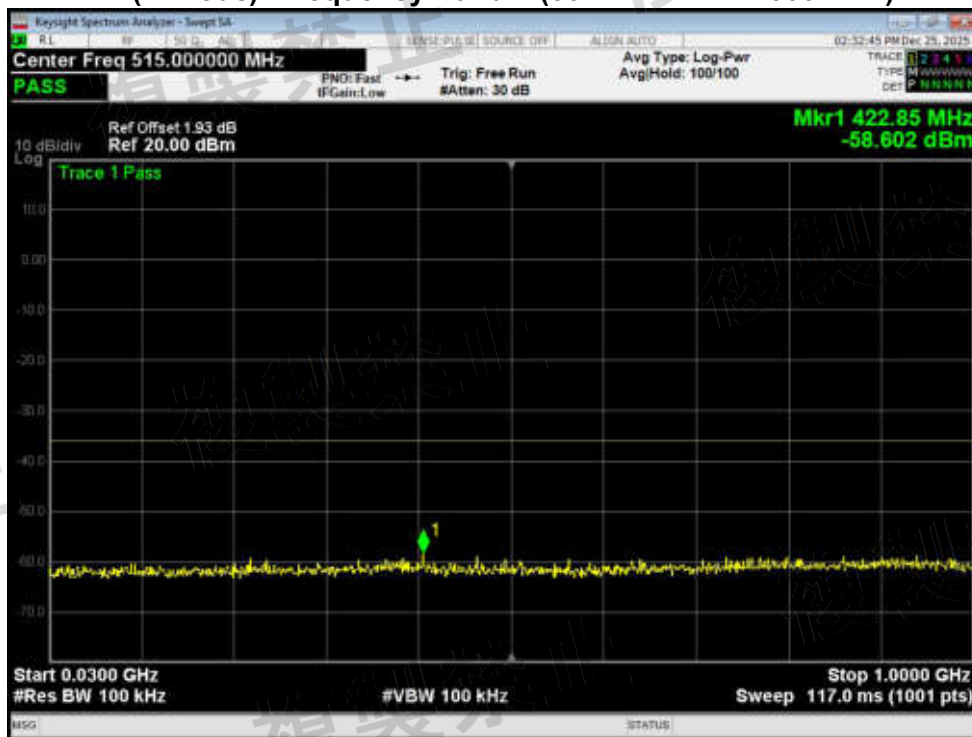
CH3(N mode)- Frequency Band 4 (2483.5 MHz ≤ f < 2496.5 MHz)



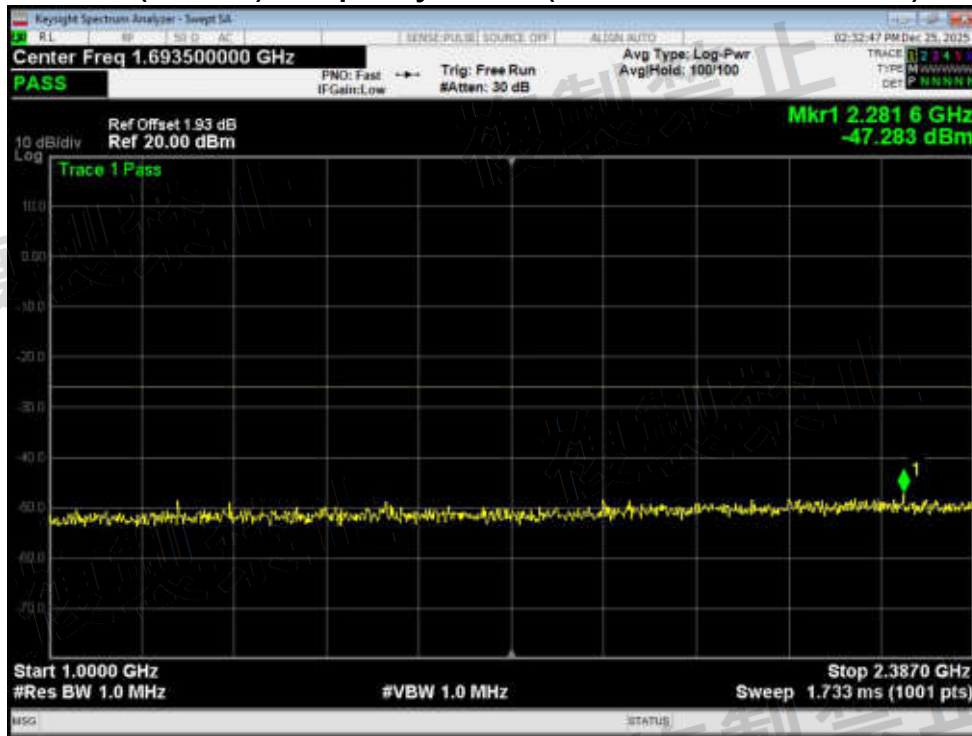
CH3(N mode)- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)



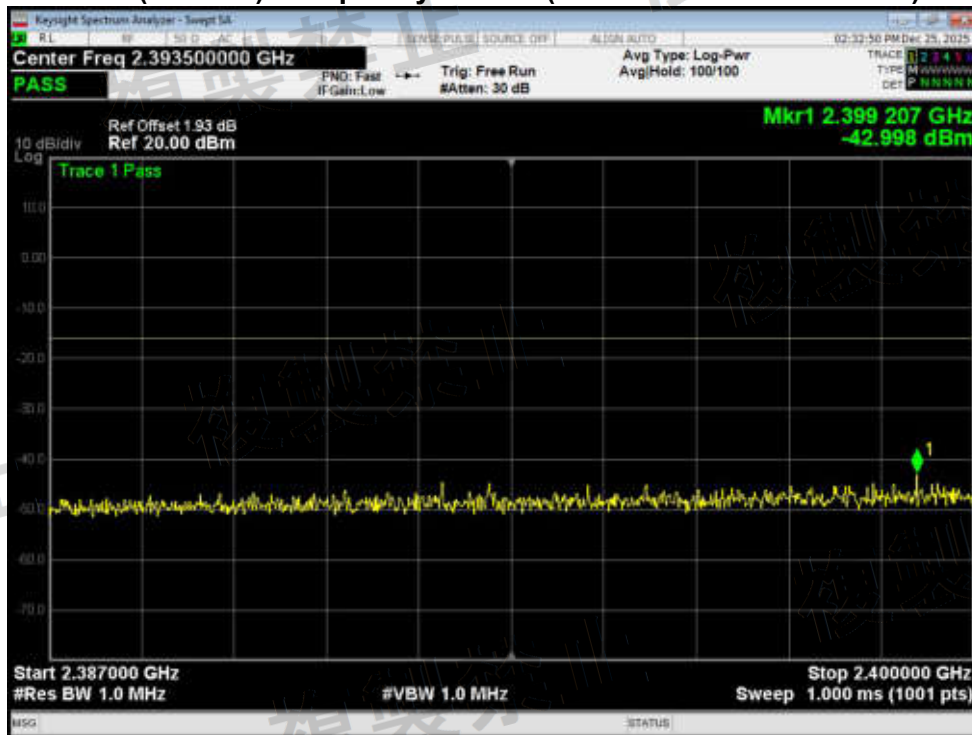
CH 7(N mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



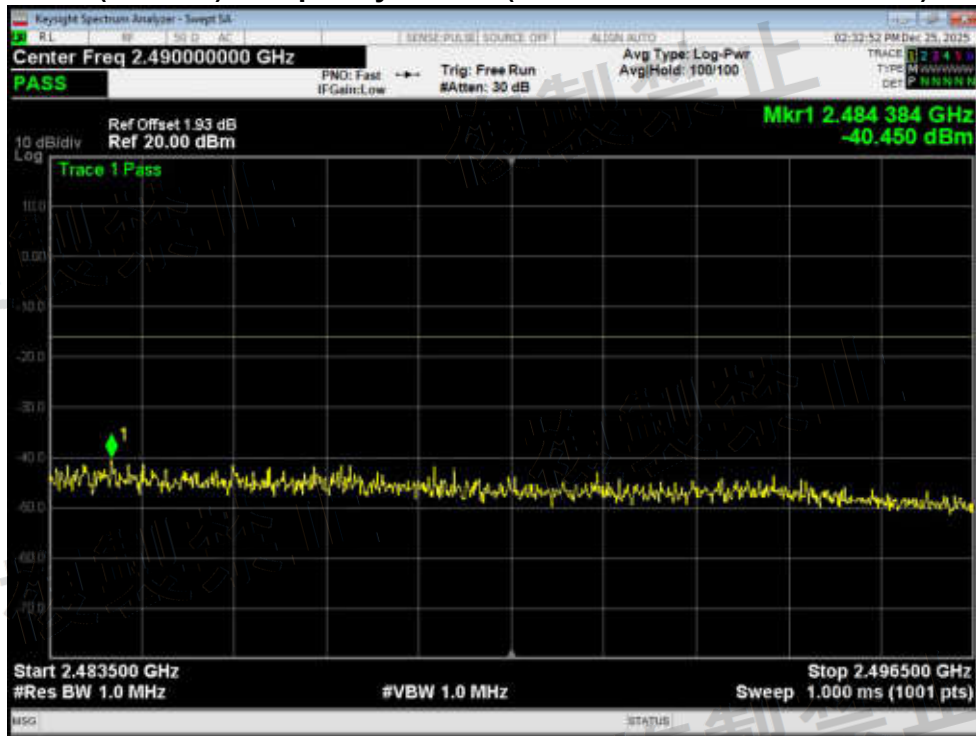
CH 7(N mode)- Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



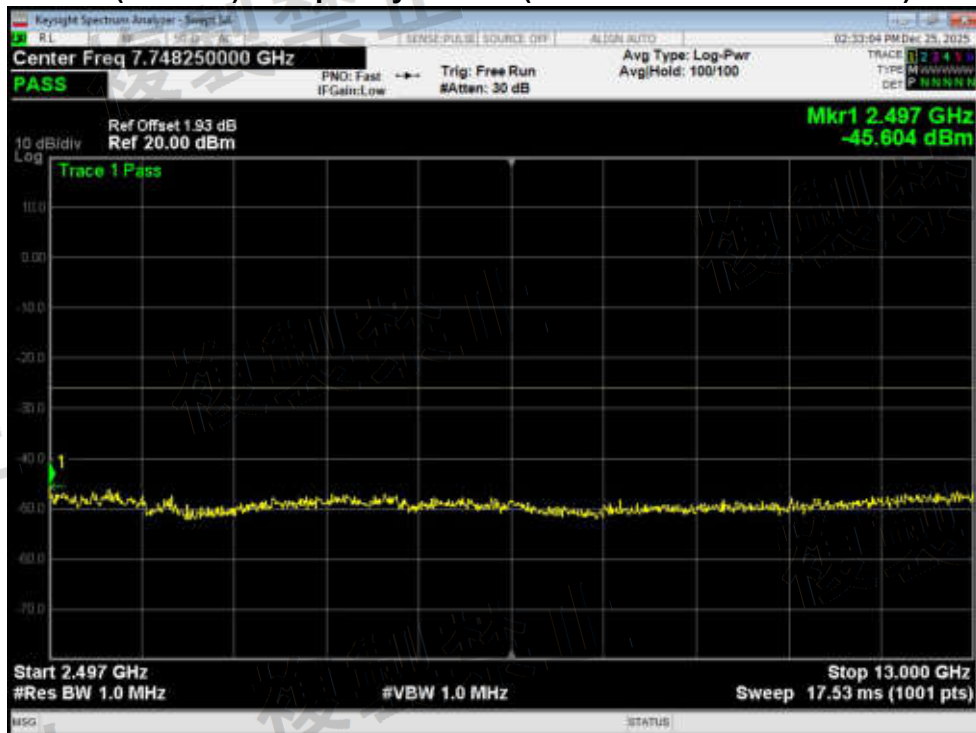
CH 7(N mode)- Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)



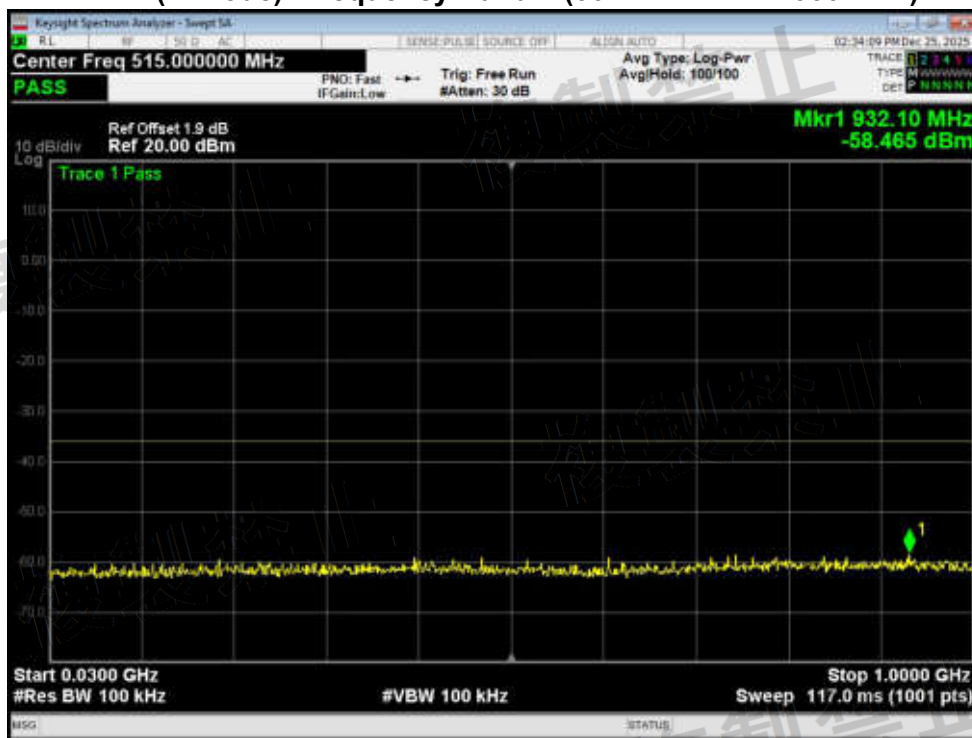
CH 7(N mode)- Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



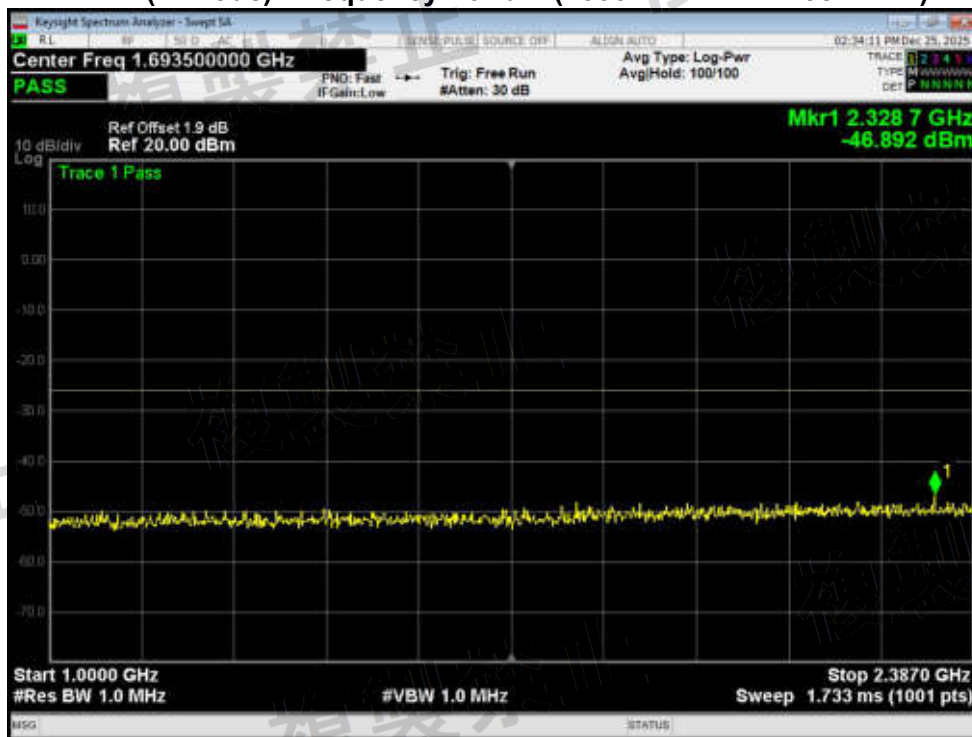
CH 7(N mode)- Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)



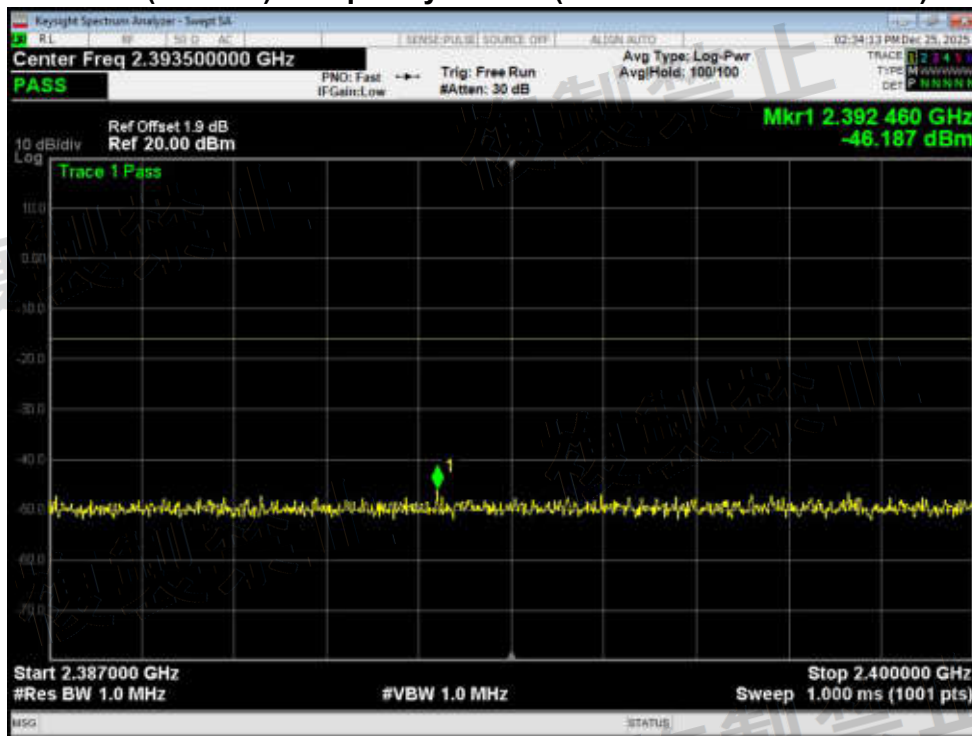
CH 11(N mode)- Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



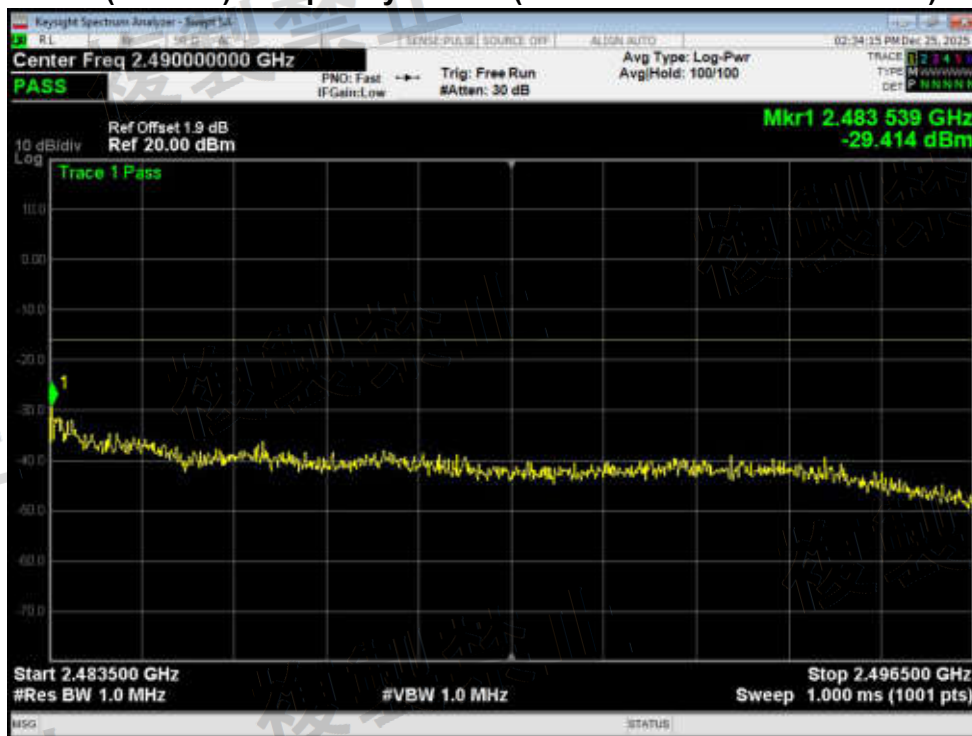
CH 11(N mode)- Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



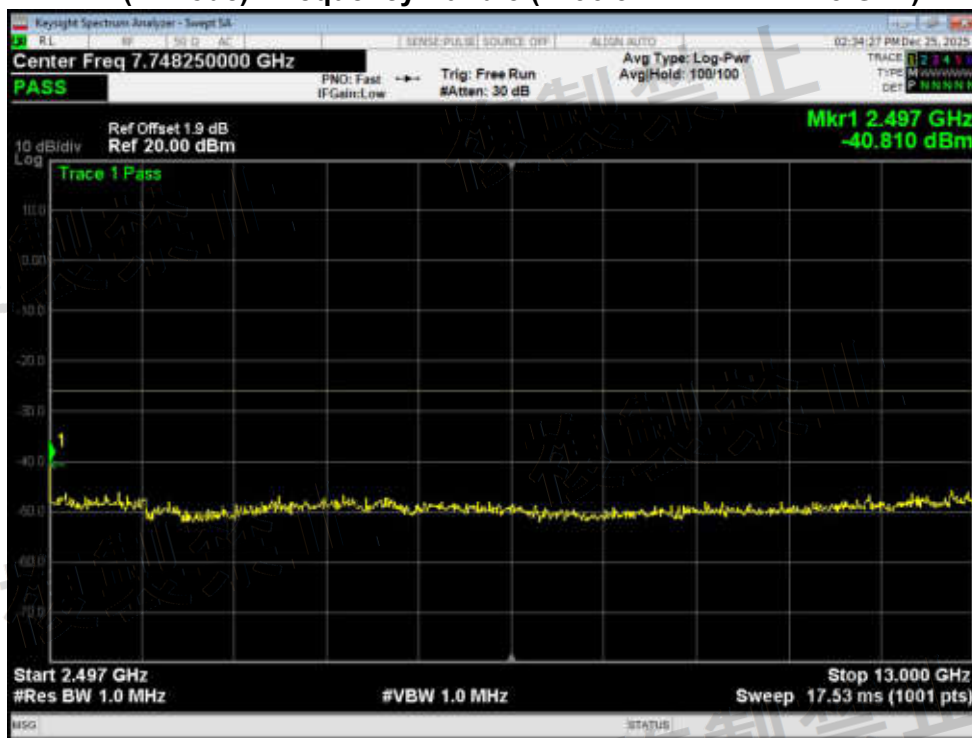
CH 11(N mode)- Frequency Band 3 (2387 MHz < f ≤ 2400 MHz)



CH 11(N mode)- Frequency Band 4 (2483.5 MHz ≤ f < 2496.5 MHz)



CH 11(N mode)- Frequency Band 5 (2496.5 MHz $\cong$ f < 12.5 GHz)



4.4. ANTENNA POWER ERROR MEASUREMENT

4.4.1. LIMIT

Item	Limits
Antenna Power Density	802.11b,g,n(HT20):10mW/MHz 802.11n(HT40): 5mW/MHz
Antenna Power Error	+20%, -80% (Base on manufacturer declare antenna power density)

4.4.2. TEST PROCEDURES

1. A power meter is connected on the EUT
2. The power meter indicates the measured power density "E".
3. Calculate antenna power density by the formula below $PD = Pt + 10 \cdot \log(1/x)$.
x: The duty cycle of the EUT in continuously transmitting mode(there the is duty cycle is 100%)
Pt: Output power of the SSG
4. Antenna Power Error is definition that actual measure antenna power tolerance between + 20% to - 80% power range that base on manufacturer declare the conducted power density.

4.4.3. TEST SETUP LAYOUT



4.4.4. EST DEVIATION

There is no deviation with the original standard.

4.4.5. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

4.4.6. TEST RESULT OF ANTENNA POWER ERROR

Test voltage (V)	Mode	Channel (MHz)	Antenna Power (mW/MHz)	Rated output power (mW/MHz)	Tolerance (%)	Limit
DC 12V	802.11b	2412	7.757	9	-13.81	-80%~+20%
		2442	8.604	9	-4.40	
		2472	8.161	9	-9.32	
	802.11g	2412	2.756	3	-8.13	
		2442	2.963	3	-1.23	
		2472	2.735	3	-8.83	
	802.11n(HT20)	2412	2.609	3	-13.03	
		2442	2.504	3	-16.53	
		2472	2.847	3	-5.10	
	802.11n(HT40)	2422	2.726	3	-9.13	
		2442	1.808	3	-39.73	
		2462	2.351	3	-21.63	

Test voltage (V)	Mode	Channel (MHz)	Output Power (mW)	Output Power (dBm/MHz)	Antenna gain (dBi)	EIRP (dBm/MHz)
DC 12V	802.11b	2412	7.757	8.897	3.21	12.107
		2442	8.604	9.347	3.21	12.557
		2472	8.161	9.117	3.21	12.327
	802.11g	2412	2.756	4.403	3.21	7.613
		2442	2.963	4.718	3.21	7.928
		2472	2.735	4.369	3.21	7.579
	802.11n(HT20)	2412	2.609	4.165	3.21	7.375
		2442	2.504	3.987	3.21	7.197
		2472	2.847	4.544	3.21	7.754
	802.11n(HT40)	2422	2.726	4.356	3.21	7.566
		2442	1.808	2.573	3.21	5.783
		2462	2.351	3.712	3.21	6.922

4.5. IMITATION OF COLLATERAL EMISSION OF RECEIVER MEASUREMENT

4.5.1. LIMIT

Item	Limits
RX Spurious Emission:	$\leq 4\text{nW}$ ($f < 1\text{GHz}$)
	$\leq 20\text{nW}$ ($1\text{GHz} \leq f$)

4.5.2. MEASURING INSTRUMENTS AND SETTING

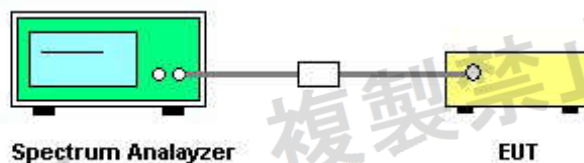
Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
VB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.5.3. TEST PROCEDURES

- EUT have the continuous reception mode and fixed only one channelize.
- Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) /
AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
- SA set RB: 100kHz and VB: 100kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW
- SA set RB: 1MHz and VB: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12500MHz. Search to mark peak reading value + cable loss shall be less than 20nW
- If power level of lower emissions are more than 1/10 of limit (.0.4nW for $f < 1\text{GHz}$, 2nW for $f \geq 1\text{GHz}$), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

4.5.4. TEST SETUP LAYOUT



4.5.6. TEST DEVIATION

There is no deviation with the original standard.

4.5.7. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously reception mode.

4.5.8. TEST RESULT OF LIMITATION OF COLLATERAL EMISSION OF RECEIVER



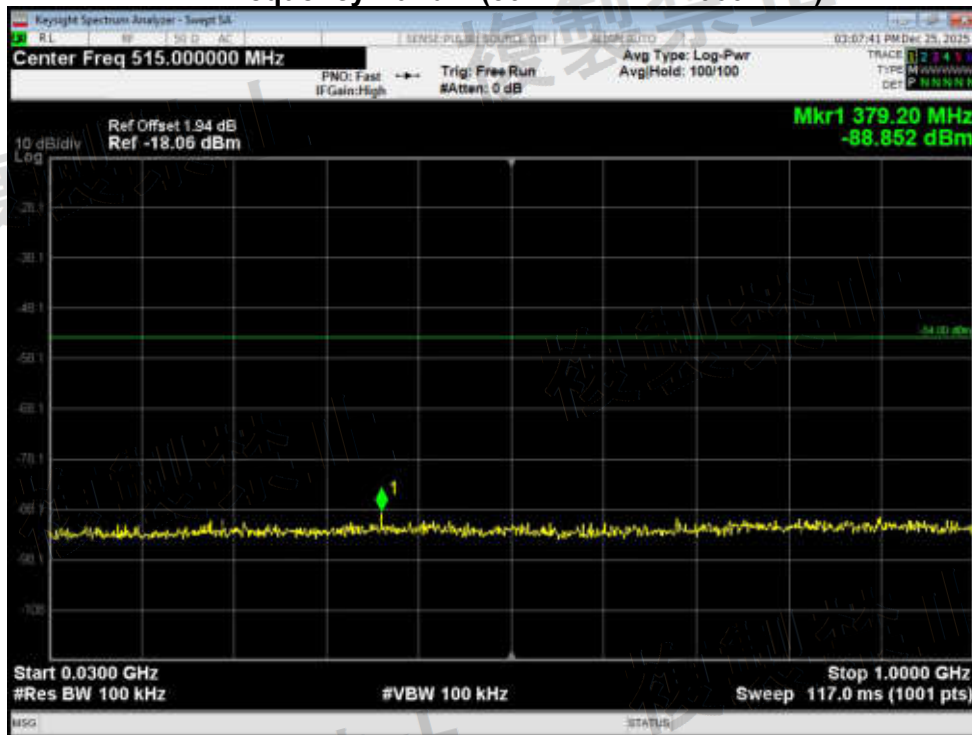
Test Result

Mode	Frequency (MHz)	Range (MHz)	Emission Frequency (MHz)	Max Value (dBm)	Limit (dBm)	Verdict
b	2412	30-1000	379.2	-88.852	-54	Pass
b	2412	1000-12500	12856	-76.455	-47	Pass
b	2442	30-1000	957.32	-89.312	-54	Pass
b	2442	1000-12500	12556	-77.157	-47	Pass
b	2472	30-1000	947.62	-89.68	-54	Pass
b	2472	1000-12500	3556	-77.373	-47	Pass
g	2412	30-1000	971.87	-89.434	-54	Pass
g	2412	1000-12500	2608	-76.836	-47	Pass
g	2442	30-1000	927.25	-89.251	-54	Pass
g	2442	1000-12500	5248	-74.93	-47	Pass
g	2472	30-1000	750.71	-89.558	-54	Pass
g	2472	1000-12500	12832	-76.259	-47	Pass
n20	2412	30-1000	767.2	-89.507	-54	Pass
n20	2412	1000-12500	5728	-76.799	-47	Pass
n20	2442	30-1000	810.85	-89.242	-54	Pass
n20	2442	1000-12500	2548	-73.378	-47	Pass
n20	2472	30-1000	799.21	-89.332	-54	Pass
n20	2472	1000-12500	12844	-76.624	-47	Pass
n40	2422	30-1000	879.72	-88.513	-54	Pass
n40	2422	1000-12500	5788	-72.223	-47	Pass
n40	2442	30-1000	787.57	-89.269	-54	Pass
n40	2442	1000-12500	2572	-70.406	-47	Pass
n40	2462	30-1000	890.39	-88.712	-54	Pass
n40	2462	1000-12500	2572	-71.352	-47	Pass

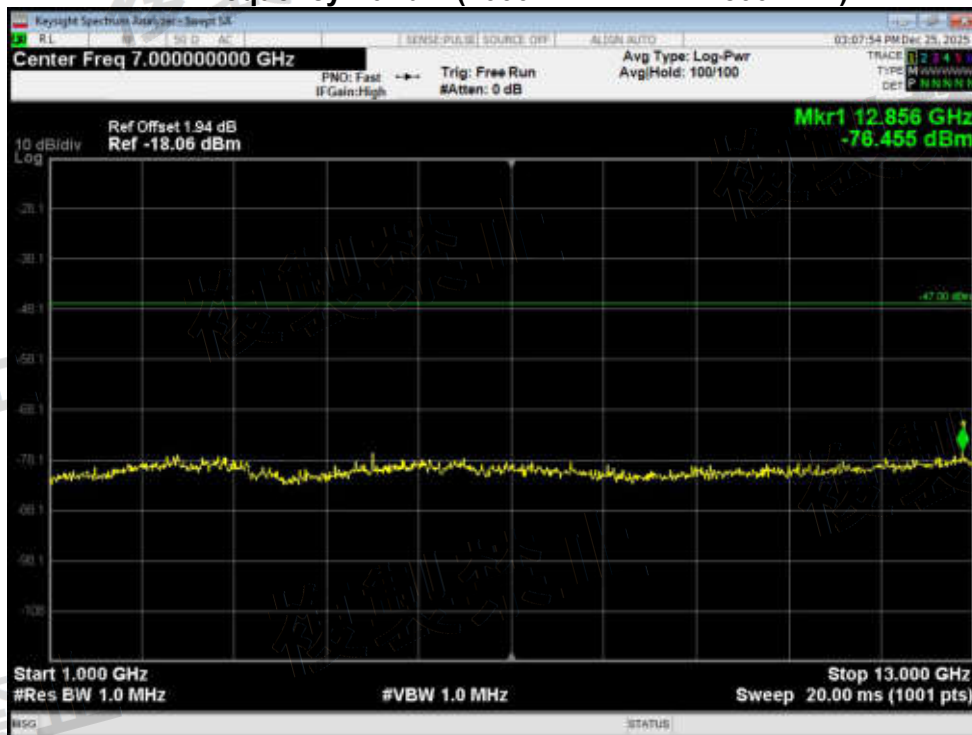
Test Graphs

Operation Mode:	Normal Voltage-B mode (CH1)
-----------------	-----------------------------

RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

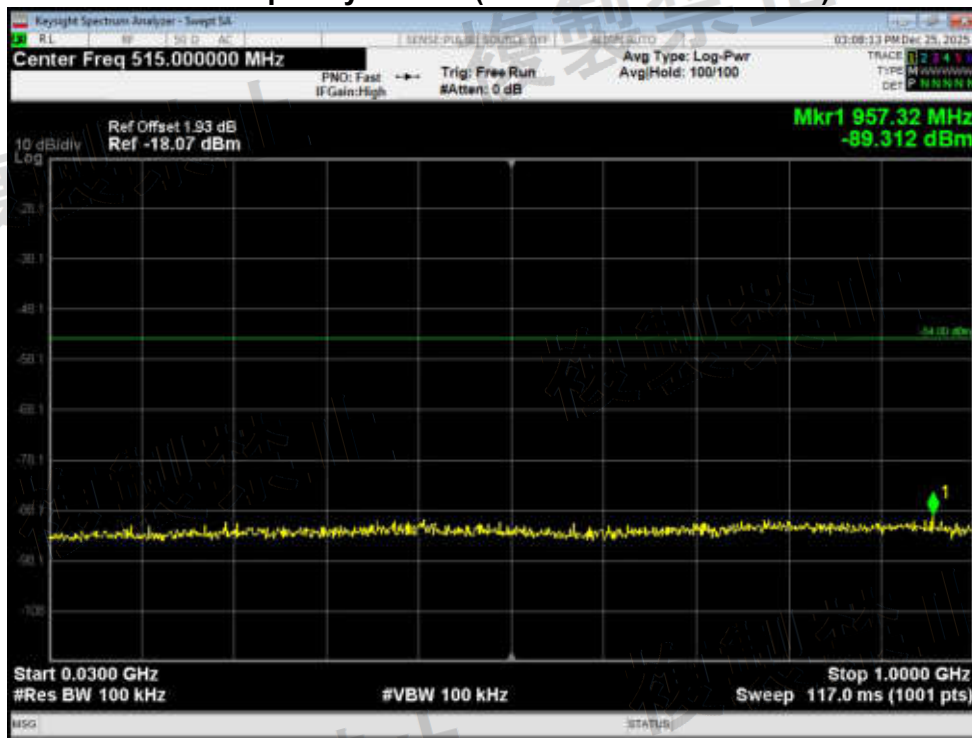


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

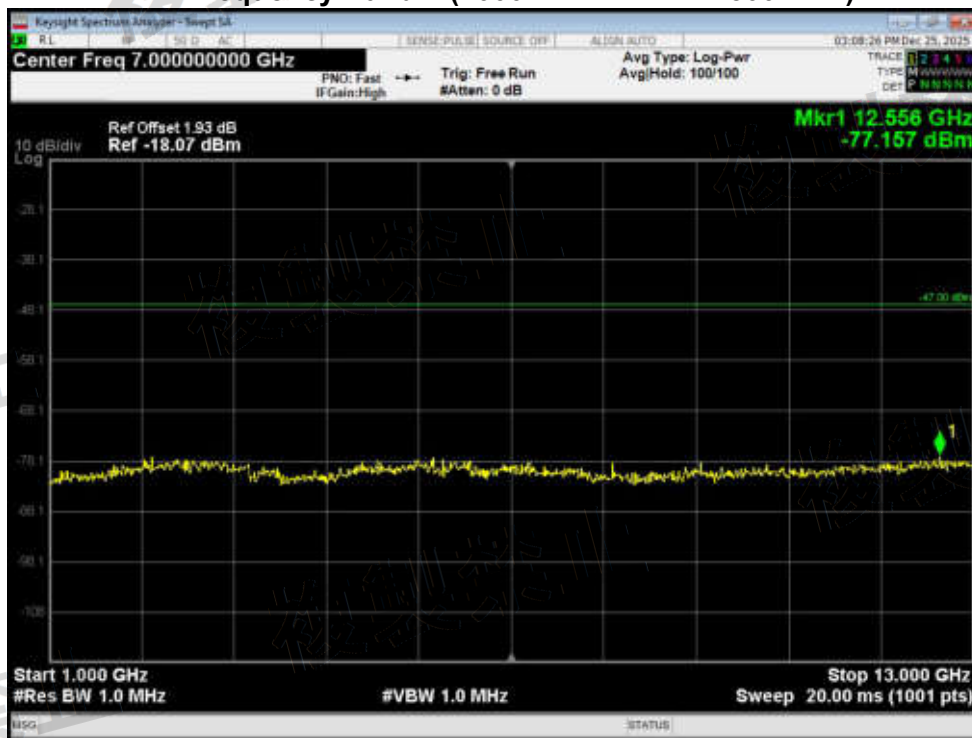


Operation Mode:	Normal Voltage-B mode (CH7)
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RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

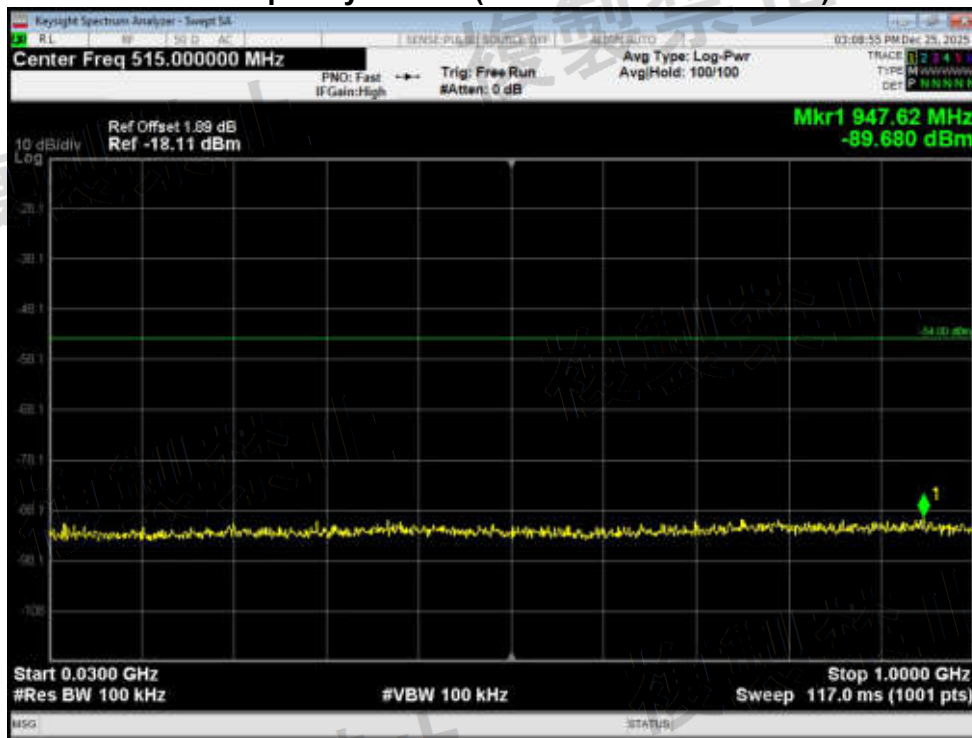


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

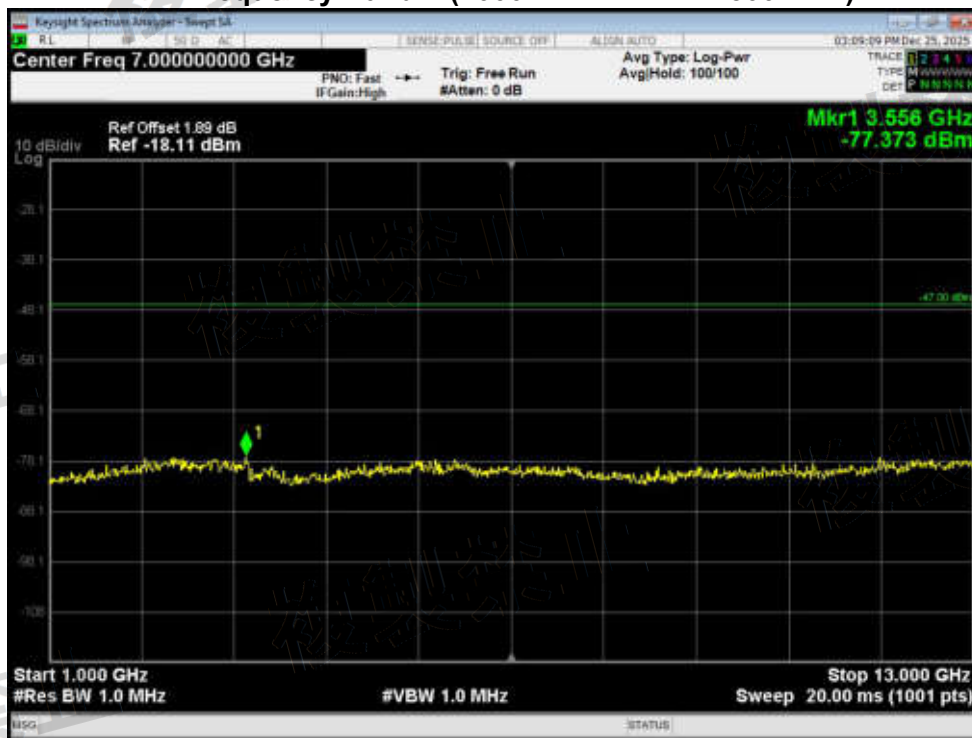


Operation Mode:	Normal Voltage-B mode (CH13)
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RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

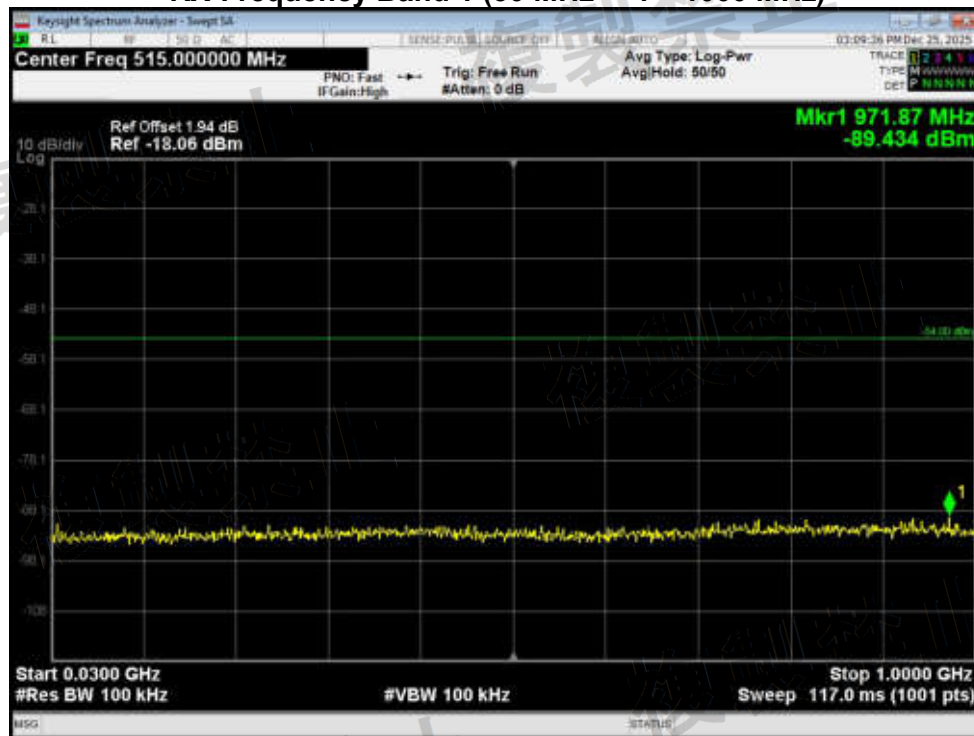


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

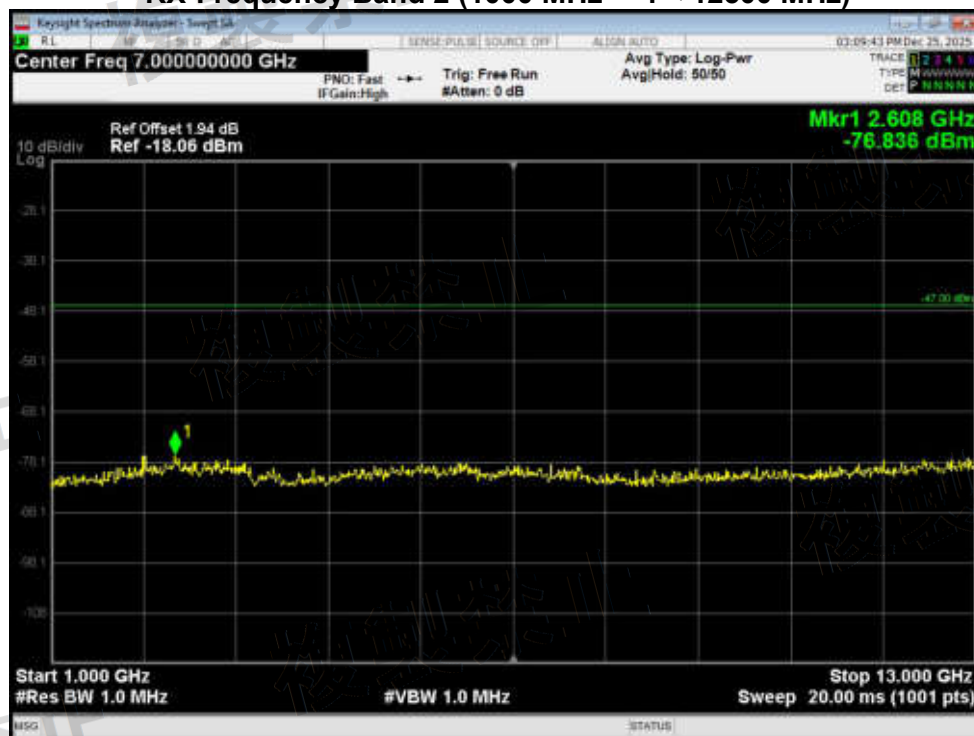


Operation Mode:	Normal Voltage-G mode (CH1)
-----------------	-----------------------------

RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

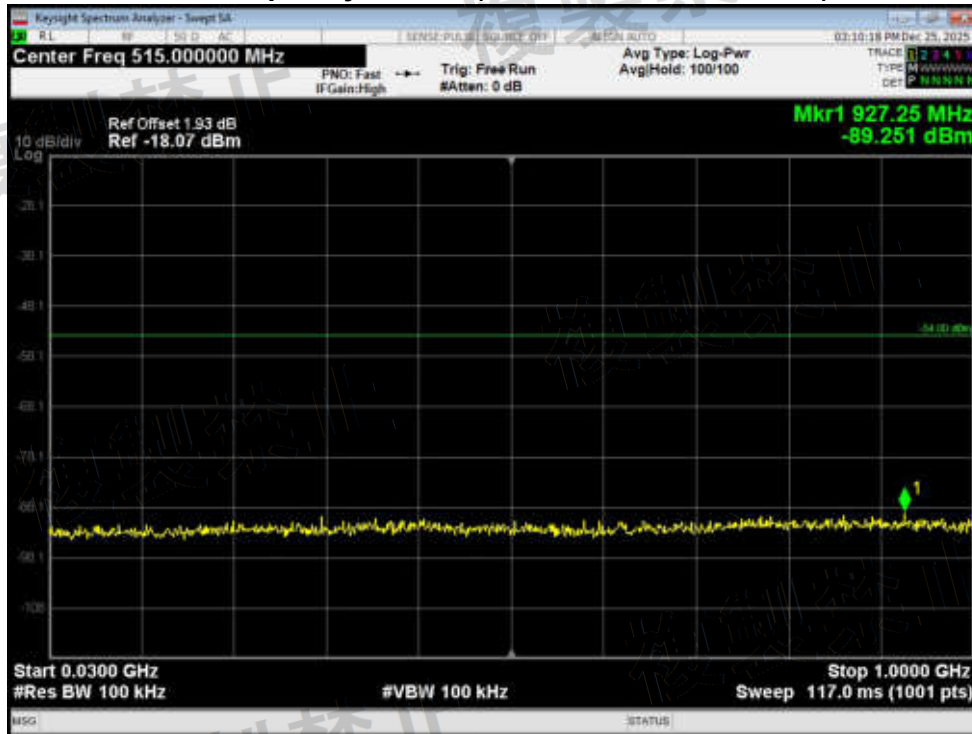


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

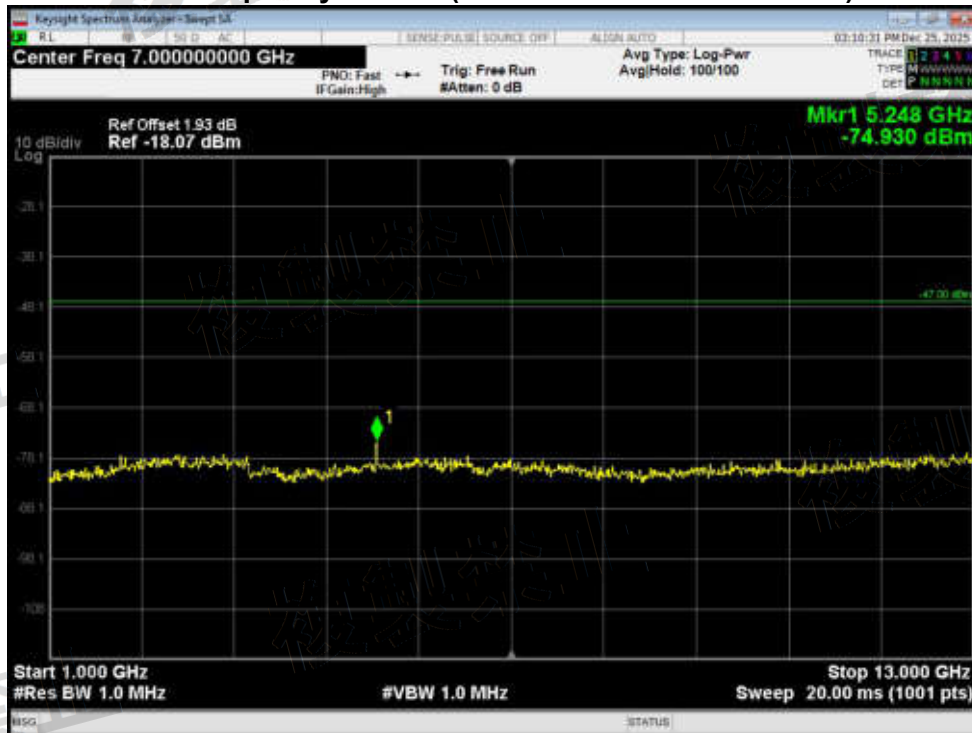


Operation Mode:	Normal Voltage-G mode (CH7)
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RX-Frequency Band 1 (30 MHz $\leq$ f < 1000 MHz)

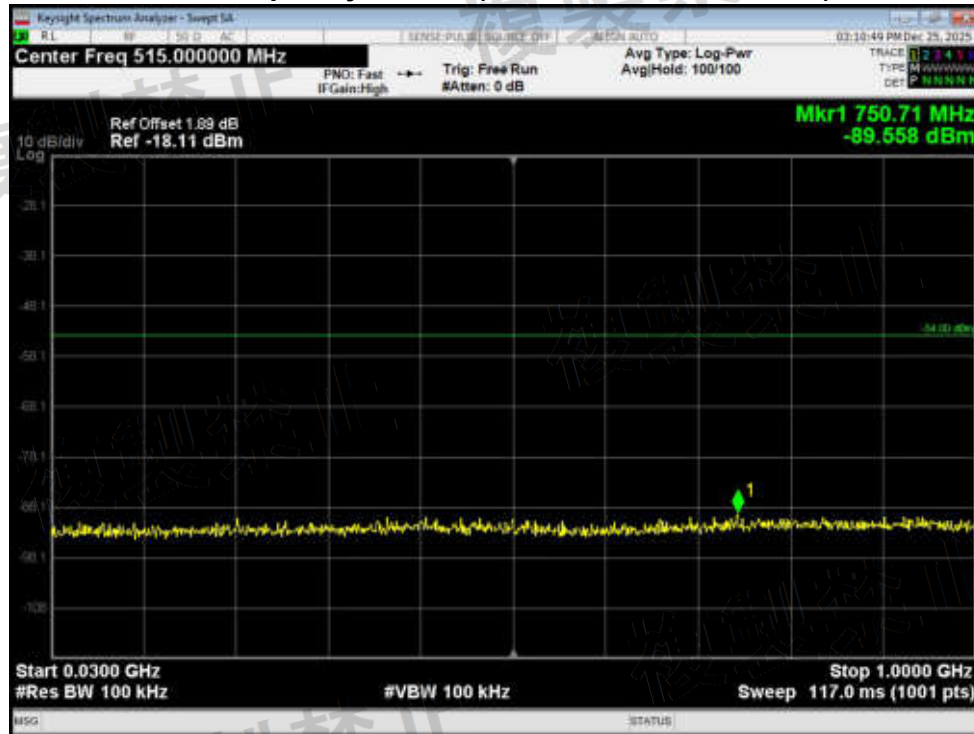


RX-Frequency Band 2 (1000 MHz $\leq$ f < 12500 MHz)

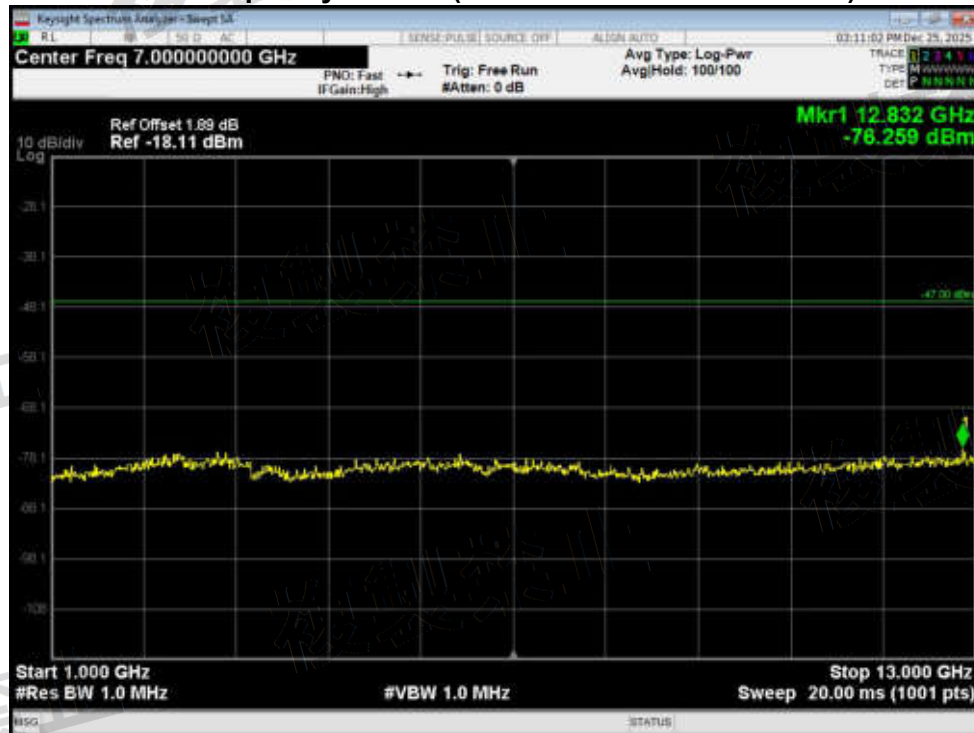


Operation Mode:	Normal Voltage-G mode (CH13)
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RX-Frequency Band 1 (30 MHz $\leq$ f < 1000 MHz)

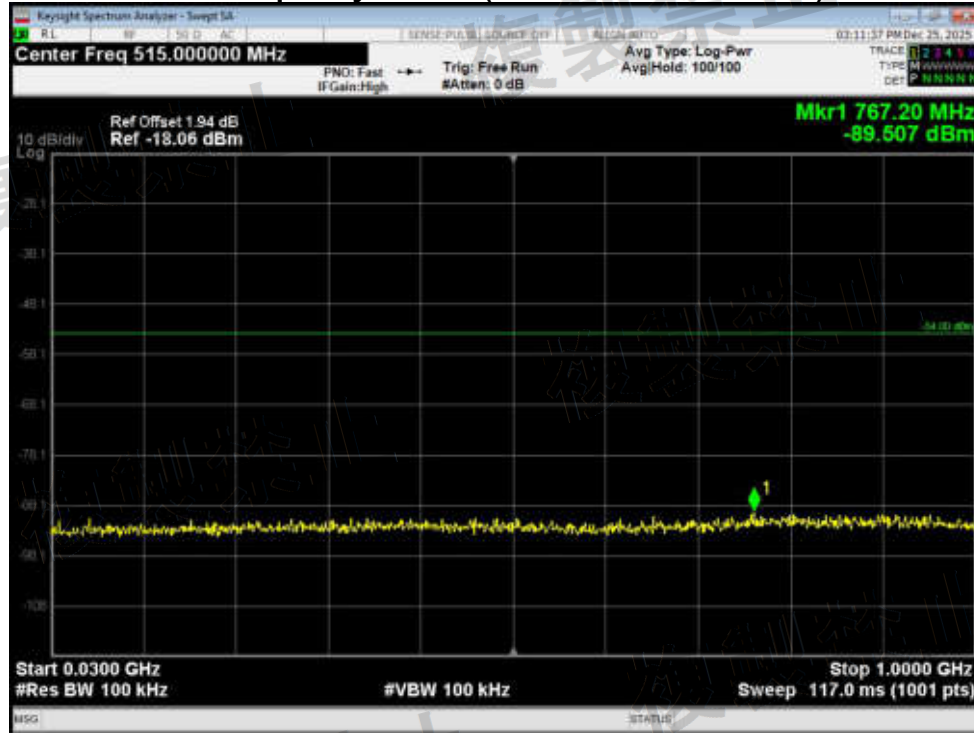


RX-Frequency Band 2 (1000 MHz $\leq$ f < 12500 MHz)

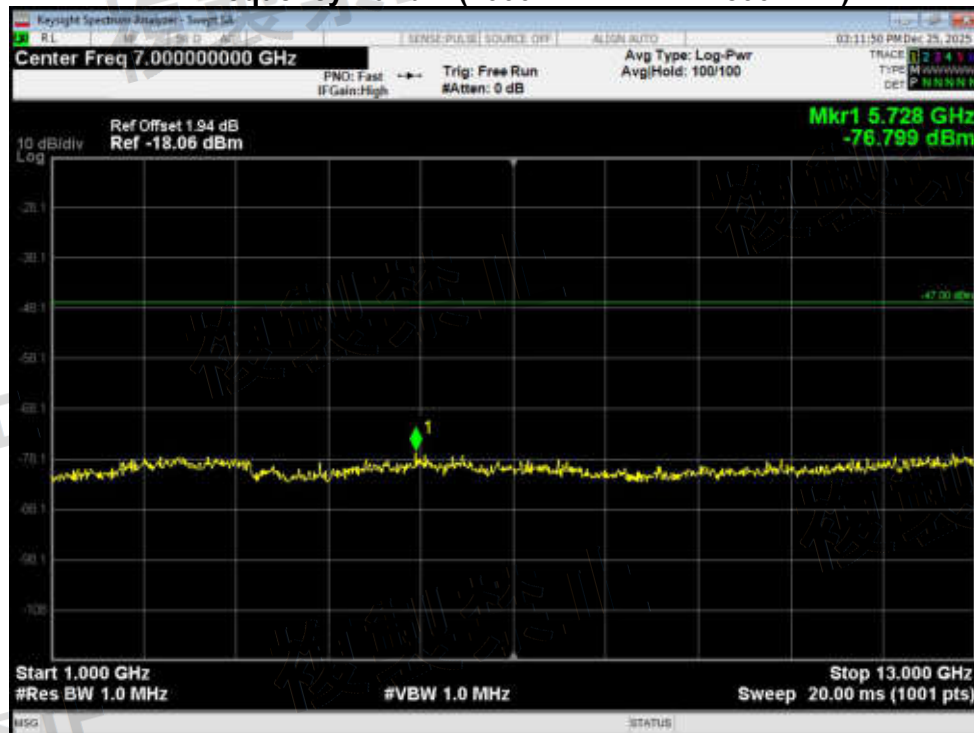


Operation Mode:	Normal Voltage-N20 mode (CH1)
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RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

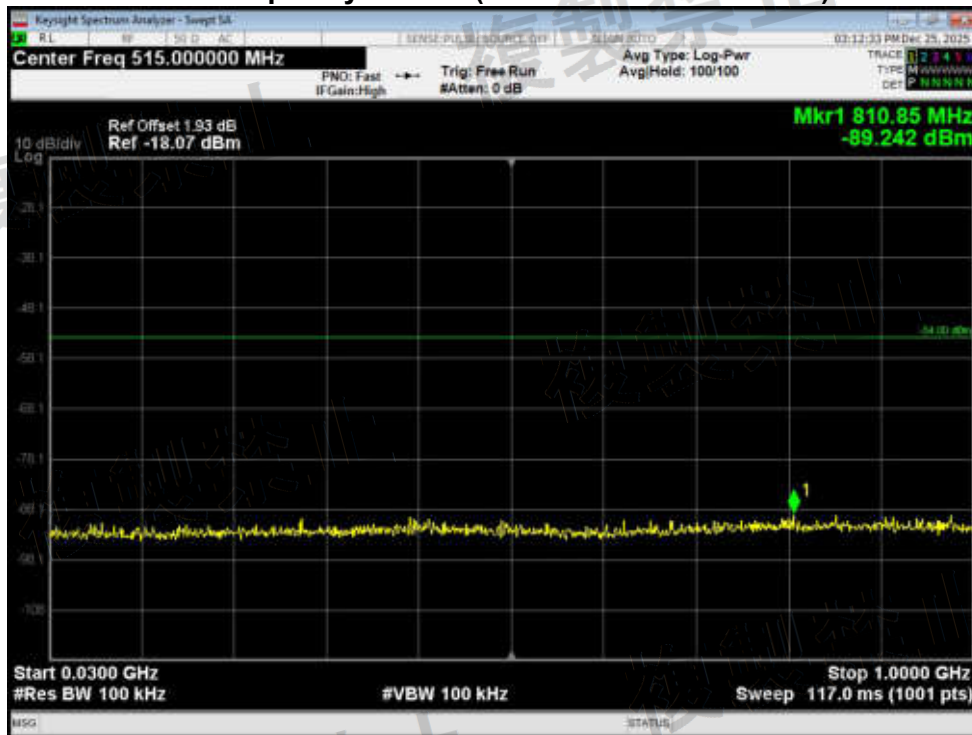


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

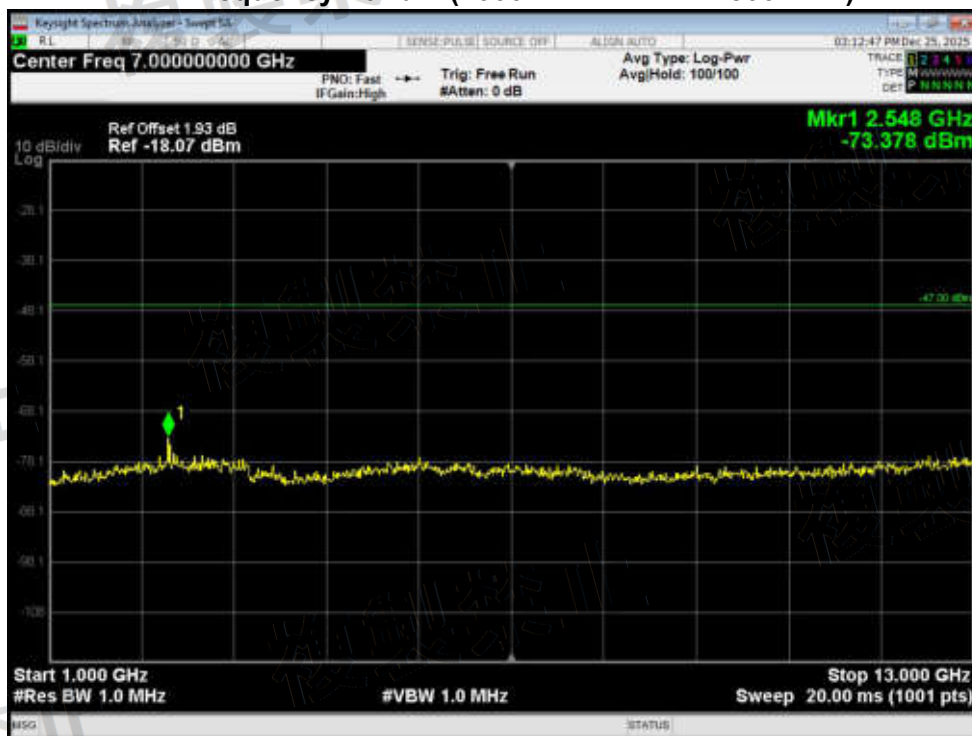


Operation Mode:	Normal Voltage-N20 mode (CH7)
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RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

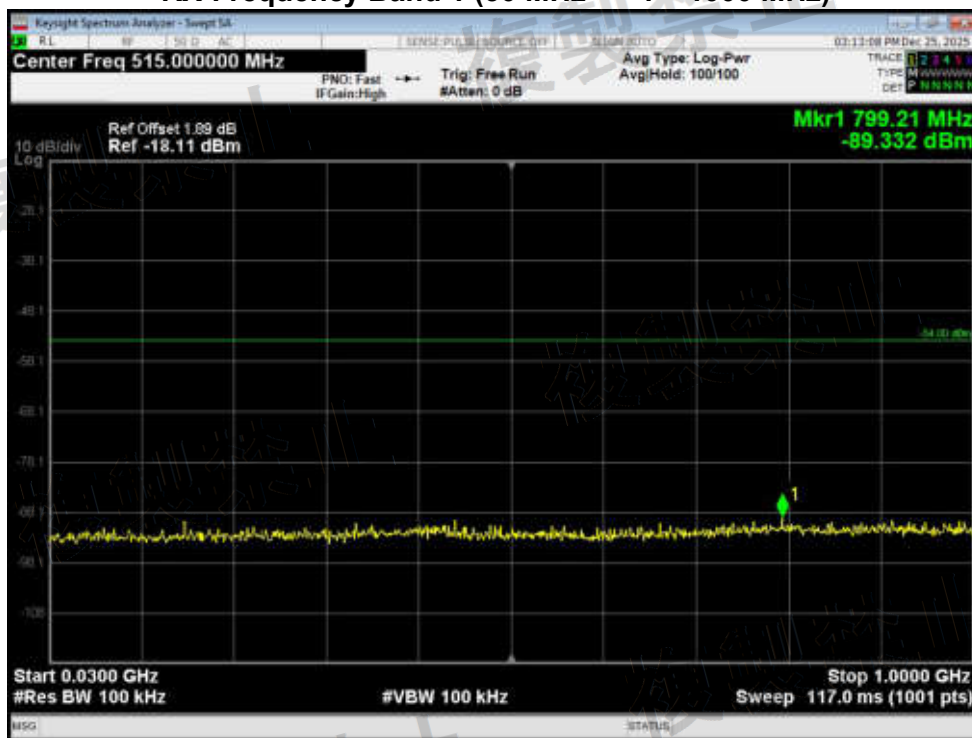


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

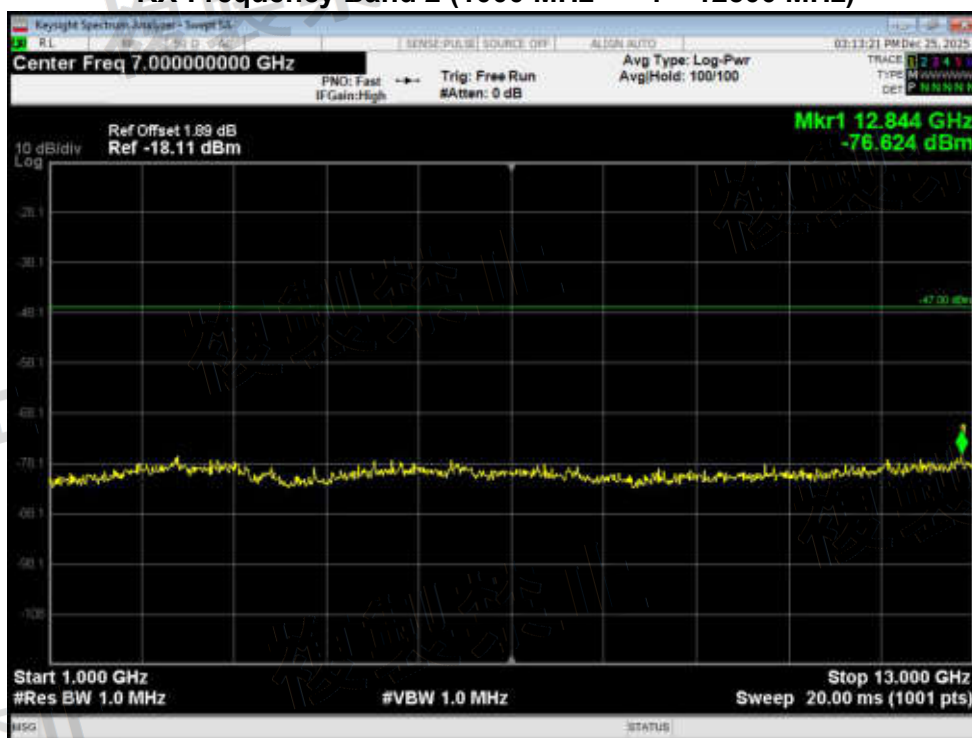


Operation Mode:	Normal Voltage-N20 mode (CH13)
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RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

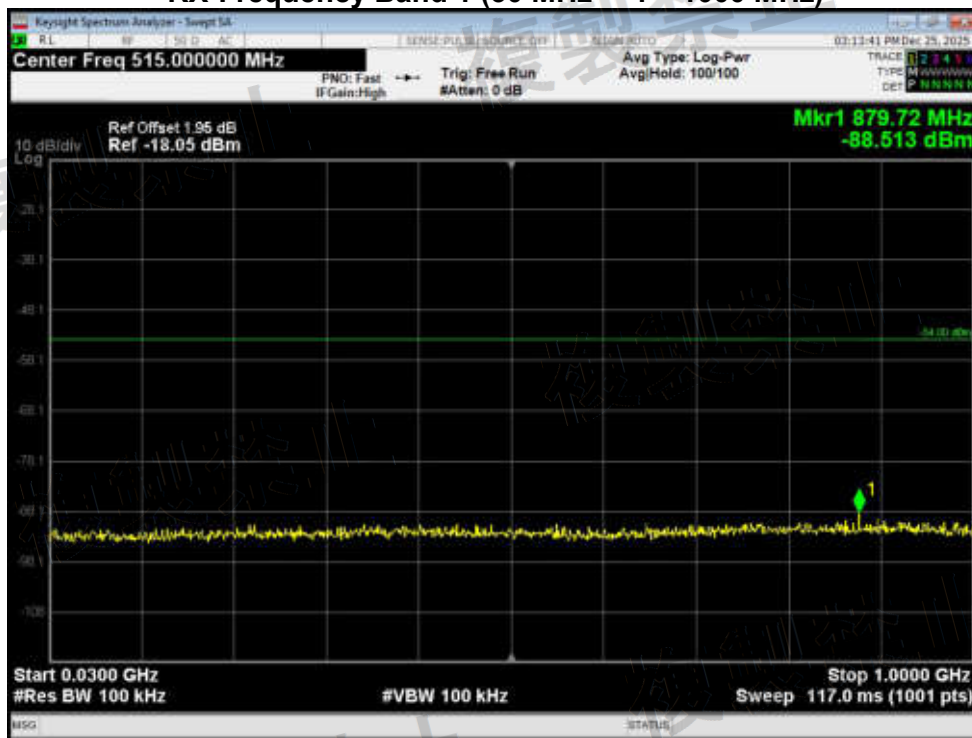


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

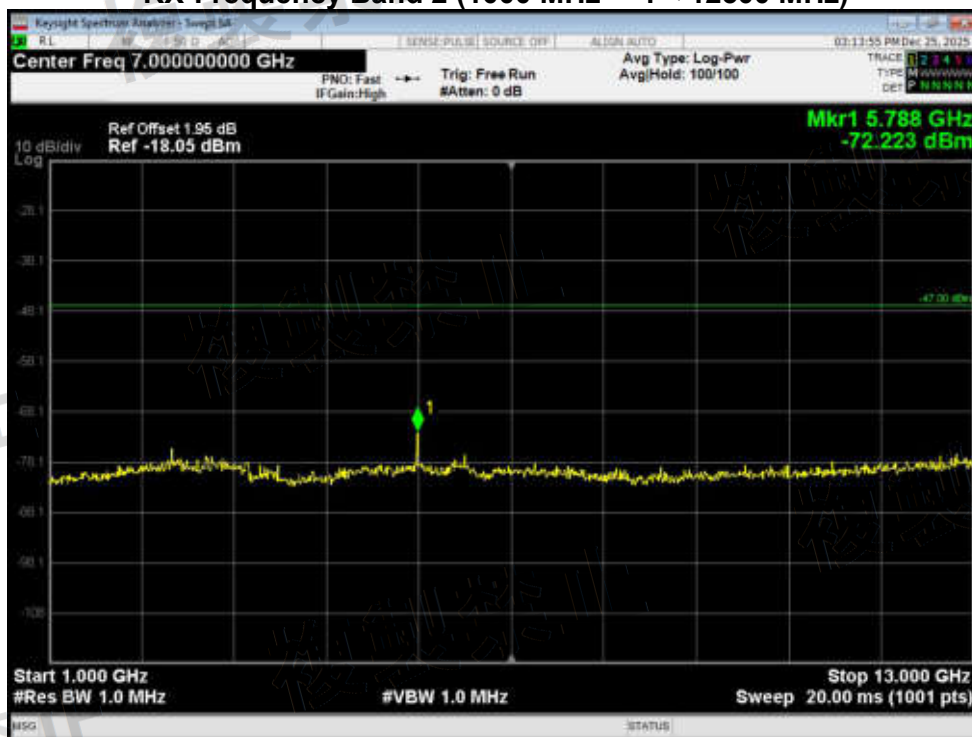


Operation Mode:	Normal Voltage-N40 mode (CH3)
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RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

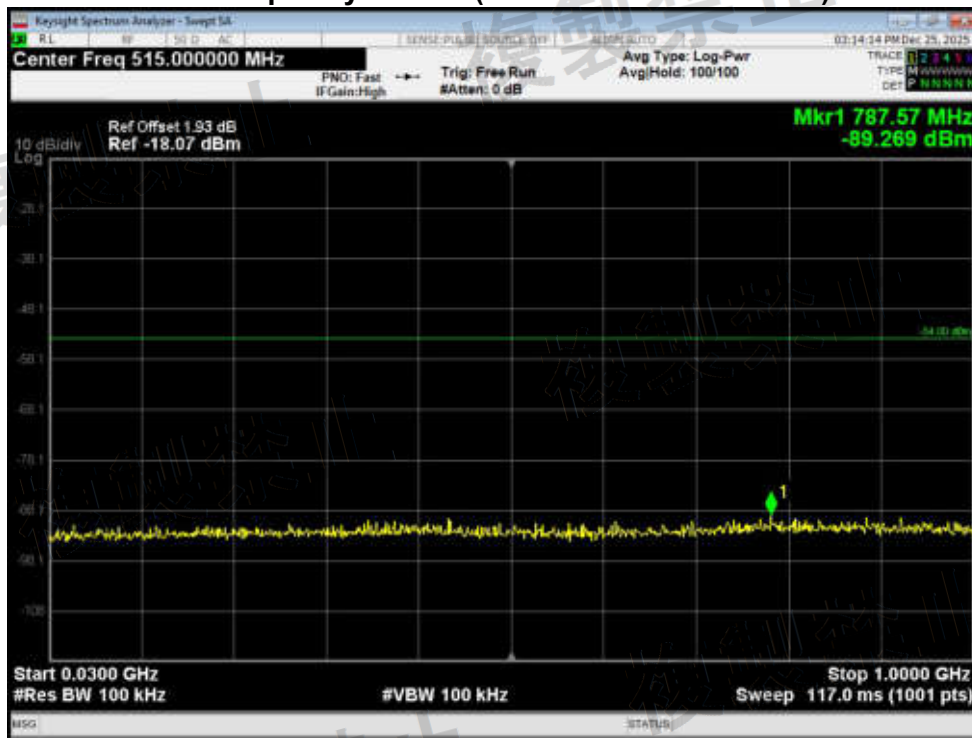


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

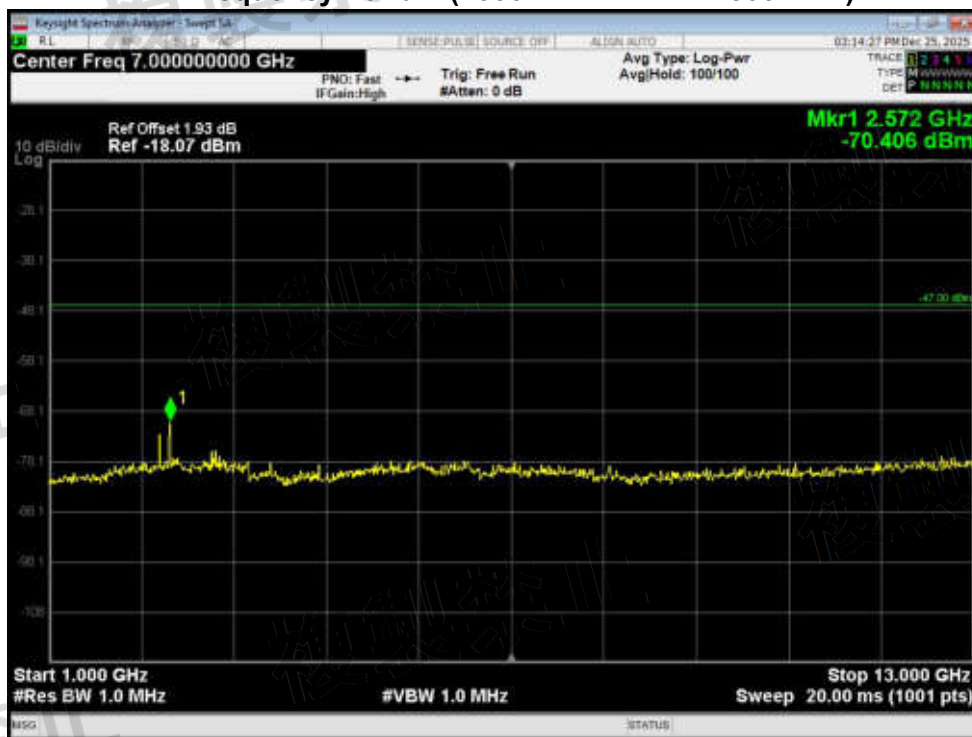


Operation Mode:	Normal Voltage-N40 mode (CH7)
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RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

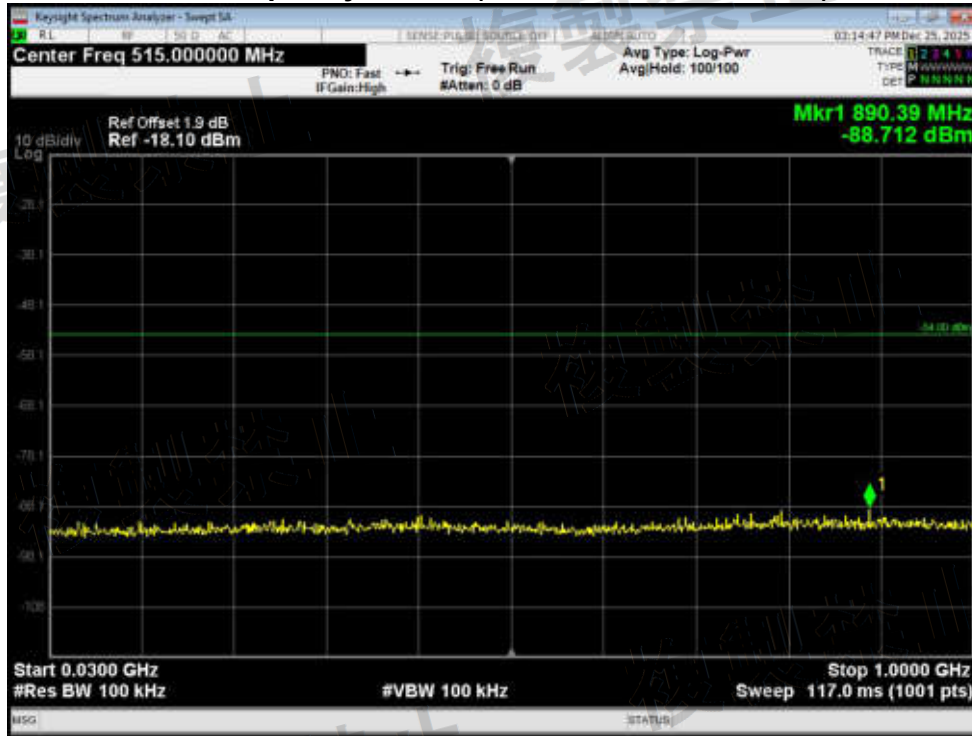


RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

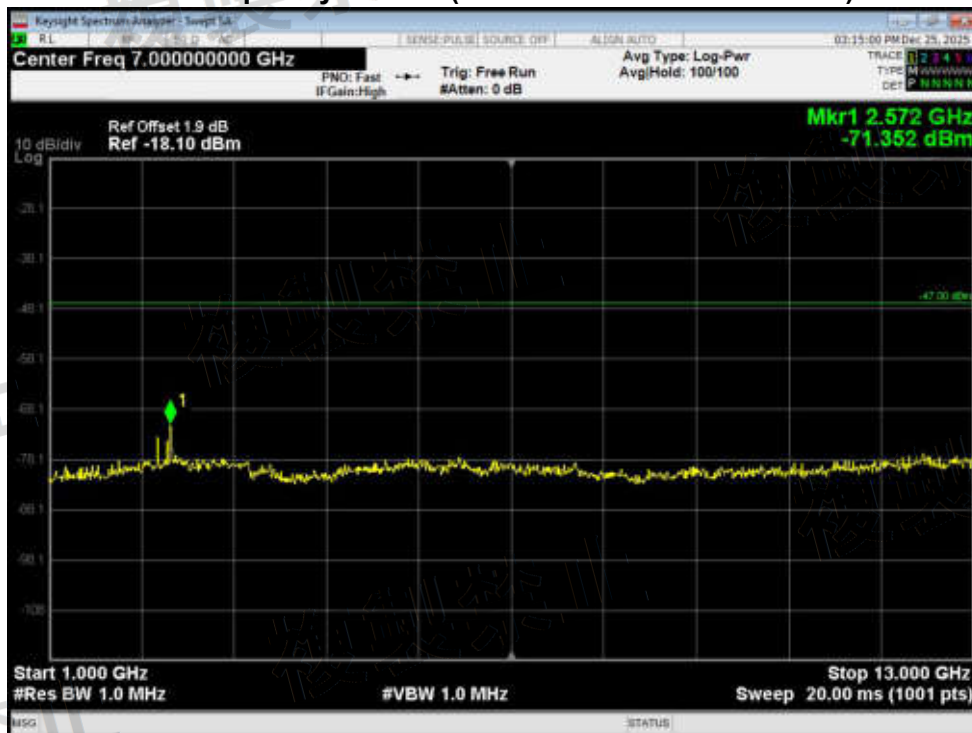


Operation Mode:	Normal Voltage-N40 mode (CH11)
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RX-Frequency Band 1 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)



RX-Frequency Band 2 ($1000 \text{ MHz} \leq f < 12500 \text{ MHz}$)

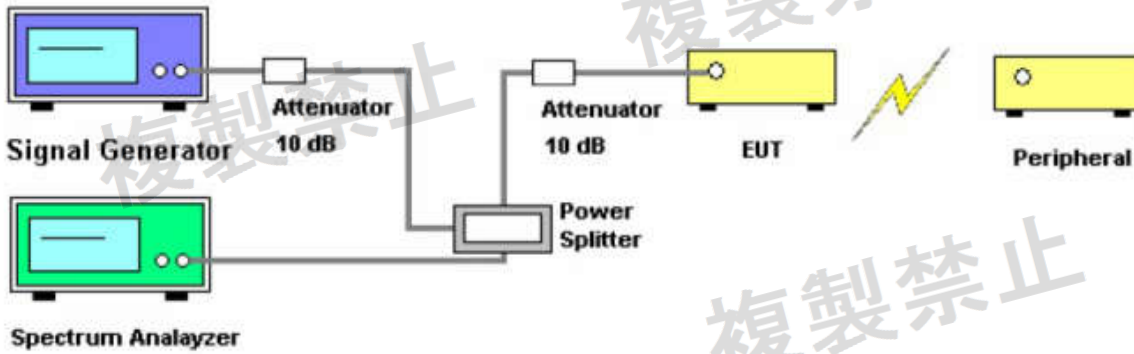


4.6. CARRIER SENSE CAPABILITY

4.6.1. LIMIT

EUT stop RF transmission signal after carrier inject to EUT

4.6.3. TEST PROCEDURES



1. SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is $(on\ 22.79+G-20*\log(f)\text{dBm})$ (G is the antenna gain, f is the test frequency).
2. turn off the RF signal of the SG.
3. EUT have transmitted the maximum modulation signal and fixed channelize.
4. Setting of SA :RBW/VBW=1MHz/1MHz, Span=50MHz, Sweep time=auto, Sweep mode=continuous, Detect mode=positive peak
5. SG RF signal on.
6. EUT shall be stop the transmitted any signal and SG RF signal off, the EUT will be continuous transmitted signal.

4.6.5. TEST RESULT

Temperature:	26℃	Relative Humidity:	50%
Pressure:	101kPa		
Test Result:	CONFORM for 802.11n(HT20)		
Note: The EUT cannot transmit radio when the field strength at maximal gain direction of receiving antenna power is over 100mV/m; and The Camera can start to transmit after carrier sensing.			

4.8. RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

4.8.1. LIMIT

Item	Limits
Identification code	≥ 48 bits

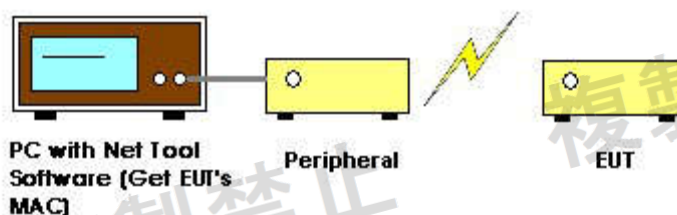
4.8.2. MEASURING ID CODE SOFTWARE

Item	Limits
MAC IP List	MAC Scan

4.8.3. TEST PROCEDURES

- In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.
- In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes from the counterpart. d. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

4.8.4. TEST SETUP LAYOUT



4.8.5. TEST DEVIATION

There is no deviation with the original standard.

4.8.6. EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

4.8.7. TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILITY

Test result:	CONFORM
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4.9. CONSTRUCTION PROTECTION CONFIRMATION METHOD

4.9.1. LIMIT

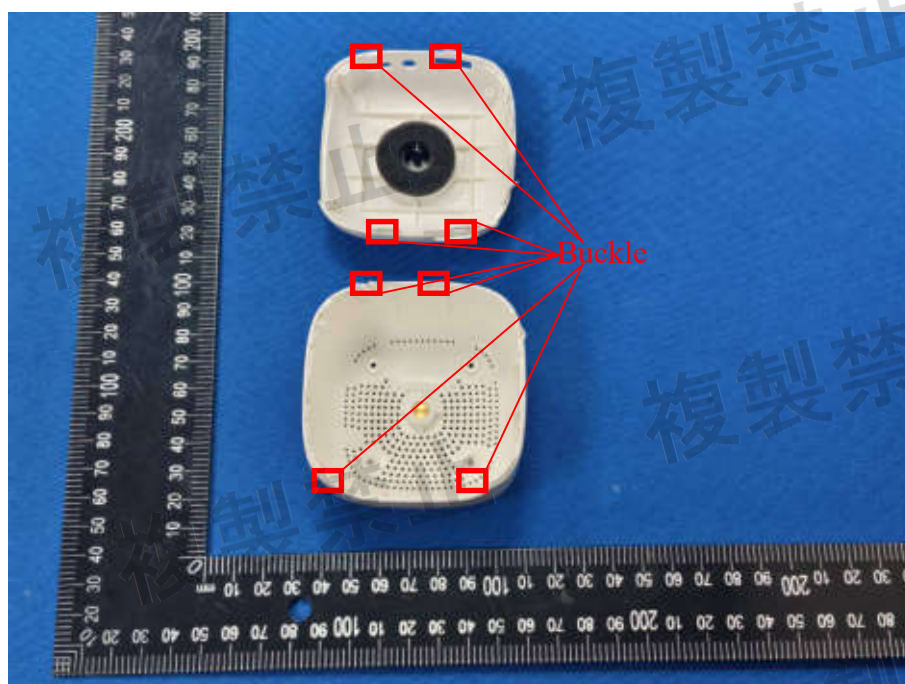
The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

4.9.2. CONFIRMATION METHOD

Enclosure:

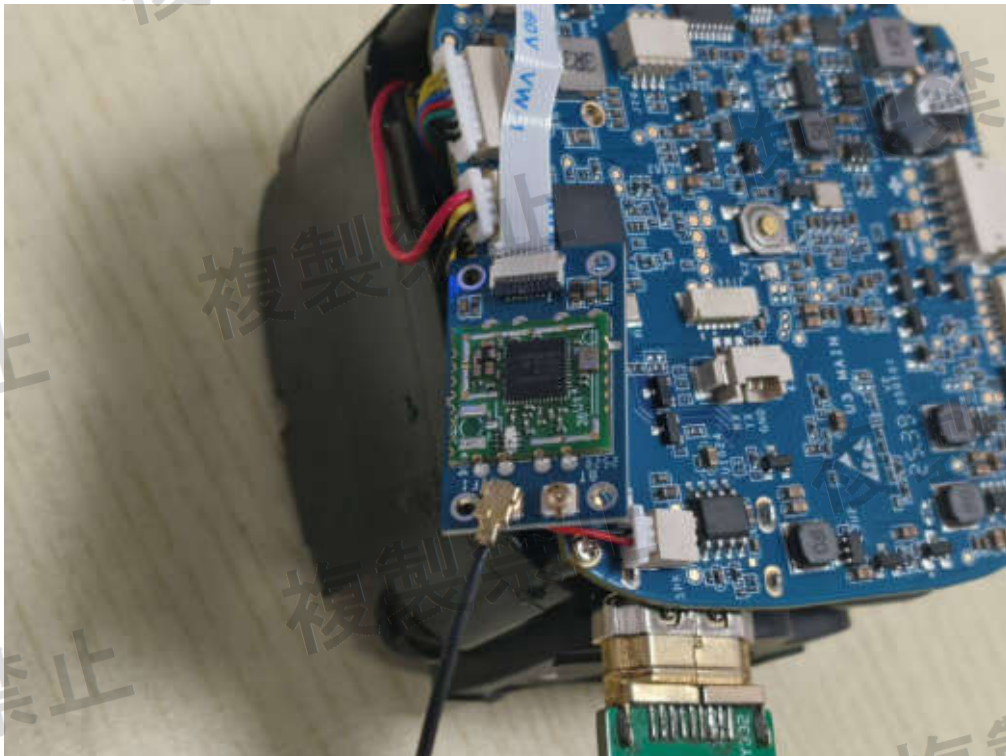
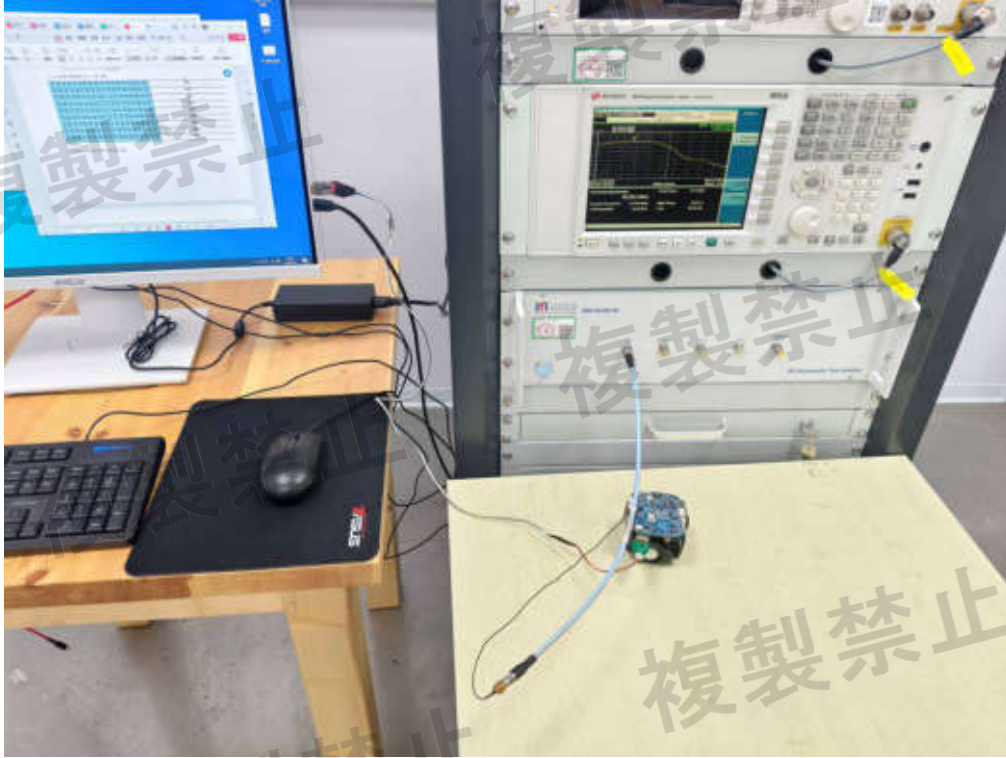
RF section, ROM, LO crystal covered with Special structure, It does not open easily.

See below the structure:



APPENDIX A

PHOTOGRAPHS OF THE TEST SETUP





APPENDIX A

Reference to the **appendix II_External photos** and **appendix II_Internal photos** for details.

※※※※※ **END OF REPORT** ※※※※※