

TEST REPORT

Applicant: Hanvon Ugee Technology Co., Ltd.
2/F, West of 3/F, 4/F, No.4 Building, Fulongte Industrial Park, Huaxing Road, Langkou Community, Dalang Street, Longhua District, Shenzhen

Address:

Equipment Type: ugee Drawing Pad

Model Name: 9494G

Brand Name: ugee

Test Standard: MIC Notice No.88 Appendix No.43
Ordinance of MPT No.37, 1981:
Article 2 paragraph 1 item (19)

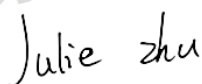
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ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Julie Zhu**Checked by:** Ye Hongji**Approved by:** Liao Jianming
(Technical Director)

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Jun. 15, 2023</u>	<u>Initial Issue</u>

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1. GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☒ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China

2. PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Hanvon Ugee Technology Co., Ltd.
Address	2/F, West of 3/F, 4/F, No.4 Building, Fulongte Industrial Park, Huaxing Road, Langkou Community, Dalang Street, Longhua District, Shenzhen

2.2 Manufacturer Information

Manufacturer	Hanvon Ugee Technology Co., Ltd.
Address	2/F, West of 3/F, 4/F, No.4 Building, Fulongte Industrial Park, Huaxing Road, Langkou Community, Dalang Street, Longhua District, Shenzhen

2.3 Factory Information

Factory	Hanvon Ugee Technology Co., Ltd.
Address	2/F, West of 3/F, 4/F, No.4 Building, Fulongte Industrial Park, Huaxing Road, Langkou Community, Dalang Street, Longhua District, Shenzhen

2.4 General Description for Equipment under Test (EUT)

EUT Name	ugee Drawing Pad
Model Name Under Test	9494G
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	03
Software Version	vFLG0
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

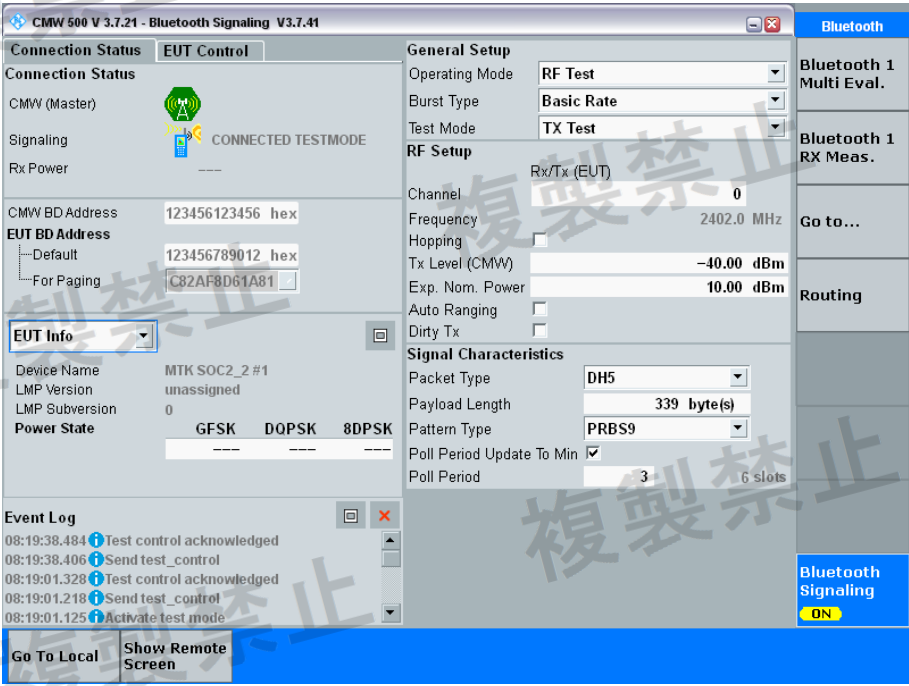
2.5 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n and 802.11ac Band 1/2/3 GPS, GLONASS
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The requirement for the following technical information of the EUT was tested in this report:

Modulation Technology	Bluetooth (For Classic): FHSS Bluetooth Low Energy: Digital modulation method other than orthogonal frequency division multiplexing (OFDM) or spread spectrum method
Modulation Type	Bluetooth (For Classic): GFSK, $\pi/4$ -DQPSK, 8-DPSK Bluetooth Low Energy: GFSK
Transfer Rate	DH5: 1 Mbps 2DH5: 2 Mbps 3DH5: 3 Mbps BLE: 1 Mbps BLE: 2 Mbps
Frequency Range	The frequency range used is 2402MHz - 2480MHz; The frequency block is 2400MHz to 2483.5MHz.
Number of Channel	Bluetooth (For Classic): 79 (at intervals of 1 MHz) Bluetooth Low Energy: 40 (at intervals of 2 MHz)
Tested Channel	Bluetooth (For Classic): 0 (2402 MHz), 39 (2441 MHz), 78 (2480 MHz) Bluetooth Low Energy: 0 (2402 MHz), 19 (2440 MHz), 39 (2480 MHz)
BD Address	C82AF8D61A81
Antenna Type	Metal Antenna
Antenna Gain	0.6 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)
Whether to support AFH mode in Classic Bluetooth	The EUT does need to measure AFH occupied bandwidth, spread bandwidth and output power density (total power divided by spread bandwidth)
Declare Max Antenna Power Density	Bluetooth (For Classic): 0.8124 mW/MHz; Bluetooth Low Energy: 1.750 mW
About the Product	Only the Bluetooth was tested in this report.

BD Address:



CMW 500 V 3.7.21 - Bluetooth Signaling V3.7.41

Connection Status **EUT Control**

Connection Status
CMW (Master)
Signaling
Rx Power

CMW BD Address: 123456123456 hex
EUT BD Address: 123456789012 hex
Default: 123456789012 hex
For Paging: C82AF8D61A81

EUT Info
Device Name: MTK SOC2_2 #1
LMP Version: unassigned
LMP Subversion: 0
Power State: GFSK DQPSK 8DPSK

General Setup
Operating Mode: RF Test
Burst Type: Basic Rate
Test Mode: TX Test

RF Setup
Channel: 0
Frequency: 2402.0 MHz
Hopping: ☐
Tx Level (CMW): -40.00 dBm
Exp. Nom. Power: 10.00 dBm
Auto Ranging: ☐
Dirty Tx: ☐

Signal Characteristics
Packet Type: DH5
Payload Length: 339 byte(s)
Pattern Type: PRBS9
Poll Period Update To Min: ☒
Poll Period: 3 6 slots

Event Log
08:19:38.484 Test control acknowledged
08:19:38.406 Send test_control
08:19:01.328 Test control acknowledged
08:19:01.218 Send test_control
08:19:01.125 Activate test mode

Bluetooth
Bluetooth 1 Multi Eval.
Bluetooth 1 RX Meas.
Go to...
Routing
Bluetooth Signaling: ON

Go To Local Show Remote Screen

3. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Part	Description	Channel (BT for Classic)	Channel (BLE)	Test Mode	Data Rate (Mbps)	Verdict
5.1	Frequency Error	Low/Middle/High	Low/Middle/High	un-modulation	/	Pass
5.2	Occupied Bandwidth and Spread-spectrum Bandwidth / Factor	Hopping Mode AFH Mode	Low/Middle/High	GFSK, $\pi/4$ -DQPSK, 8DPSK, GFSK(BLE)	1/2/3; 1/2 (BLE)	Pass
5.3	The frequency retention time	Hopping Mode	N/A	GFSK, $\pi/4$ -DQPSK, 8DPSK,	1/2/3	Pass
5.4	Unwanted Emission Intensity	Low/Middle/High	Low/Middle/High	GFSK, $\pi/4$ -DQPSK, 8DPSK, GFSK(BLE)	1/2/3; 1/2 (BLE)	Pass
5.5	Antenna Power Error	Low/Middle/High AFH Mode	Low/Middle/High	GFSK, $\pi/4$ -DQPSK, 8DPSK, GFSK(BLE)	1/2/3; 1/2 (BLE)	Pass
5.6	Limitation of Collateral Emission of Receiver	Low/Middle/High	Low/Middle/High	GFSK, $\pi/4$ -DQPSK, 8DPSK, GFSK(BLE)	1/2/3; 1/2 (BLE)	Pass
5.7	Transmission Antenna Gain (EIRP Antenna Power)	Low/Middle/High	Low/Middle/High	GFSK, $\pi/4$ -DQPSK, 8DPSK, GFSK(BLE)	1/2/3; 1/2 (BLE)	N/A ^{Note2}
5.8	Transmission Radiation Angle Width (3dB Beamwidth)	Low/Middle/High	Low/Middle/High	GFSK, $\pi/4$ -DQPSK, 8DPSK, GFSK(BLE)	1/2/3; 1/2 (BLE)	N/A ^{Note2}
5.9	Radio Interference Prevention Capability	Low/Middle/High	Low/Middle/High	GFSK, $\pi/4$ -DQPSK, 8DPSK, GFSK(BLE)	1/2/3; 1/2 (BLE)	Pass
5.10	Construction Protection Confirmation	Low/Middle/High	Low/Middle/High	GFSK, $\pi/4$ -DQPSK, 8DPSK, GFSK(BLE)	1/2/3; 1/2 (BLE)	Pass

Note 1: The tests were performed according to the method of measurements prescribed in MIC Notice

No.88 Appendix No.43.

Note 2: The test items are only applicable to devices that use directional antennas and have a gain greater than 2.14dBi.

3.1 MEASUREMENT UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Parameters	Uncertainty
Frequency Error / 99% & 90% Bandwidth	$(3.2 \times f \times 10^{-6})$ Hz
Antenna Power	1.82 dB
TX-RX Spurious Emissions	1.84 dB
Transmission Antenna Gain	5.36 dB
Temperature	0.82°C
Humidity	4.1%
DC / AC Power Source	0.04%

Note: “ f ” is the nominal signal frequency in Hz.

4. GENERAL TEST CONFIGURATIONS

4.1 Test Environment Conditions

During the measurement, the normal environment conditions were within the listed ranges:

Relative Humidity (%)	54% to 68%	
Atmospheric Pressure (kPa)	86 kPa to 106 kPa	
Temperature	+21.1°C to +23.9°C	
Working Voltage of the EUT	NV (Normal Voltage)	3.85 V
	LV (Low Voltage)	3.47 V
	HV (High Voltage)	4.24 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Calibration Company	Calibration address	Calibration By	Cal. Date	Cal. Due	Calibration Method
Spectrum Analyzer	KEYSIGHT	N9020A	MY50330200	Shenzhen Academy of Metrology & Quality Inspection	92 Longzhu Avenue, Nanshan District, Shenzhen, Guangdong, China	HuanJun	2023.05.16	2024.05.15	c)
Signaling Unit	ROHDE & SCHWARZ	CMW500	142028	Shenzhen Academy of Metrology & Quality Inspection	92 Longzhu Avenue, Nanshan District, Shenzhen, Guangdong, China	HuanJun	2022.05.19	2023.05.18	c)
Power Sensor	KEYSIGHT	U2063XA	MY58000251	Shenzhen Academy of Metrology & Quality Inspection	92 Longzhu Avenue, Nanshan District, Shenzhen, Guangdong, China	HuanJun	2022.07.28	2023.07.27	c)
multimeter	CEM	DT-9915	12104971	GUANGZHOU NEM METROLOGY & TEST TECHNOLOGY CO., LTD.	2/F., Building 1, No. 176, Hedong Road, Liwan District, Guangzhou, Guangdong, China	LiXiang	2022.12.28	2023.12.27	c)
DC power supply	ITECH	IT6863A	800014020757810006	GUANGZHOU NEM METROLOGY	2/F., Building 1, No. 176, Hedong	LiXiang	2022.09.25	2023.09.24	c)

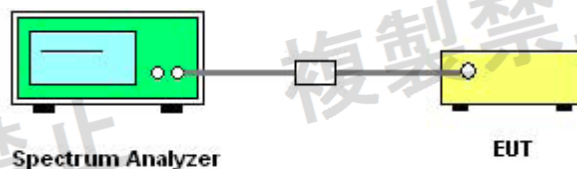
Description	Manufacturer	Model	Serial No.	Calibration Company	Calibration address	Calibration By	Cal. Date	Cal. Due	Calibration Method
				&TEST TECHNOLOG Y CO., LTD.	Road,Liwan District,Guang zhou,Guangdo ng,China				

Note:

- a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1)
- b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)
- c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1)
- d) Calibration conducted by using measuring instruments and other equipment listed in the right column of Table No. 3 attached hereto, which shall have been given any of calibration, etc. listed above from a) to c)

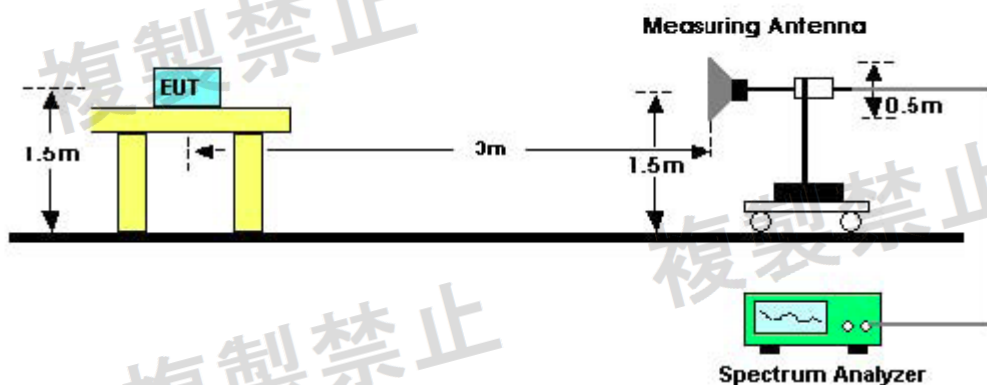
4.3 Description of Test Setup

4.3.1 For Antenna Port Test

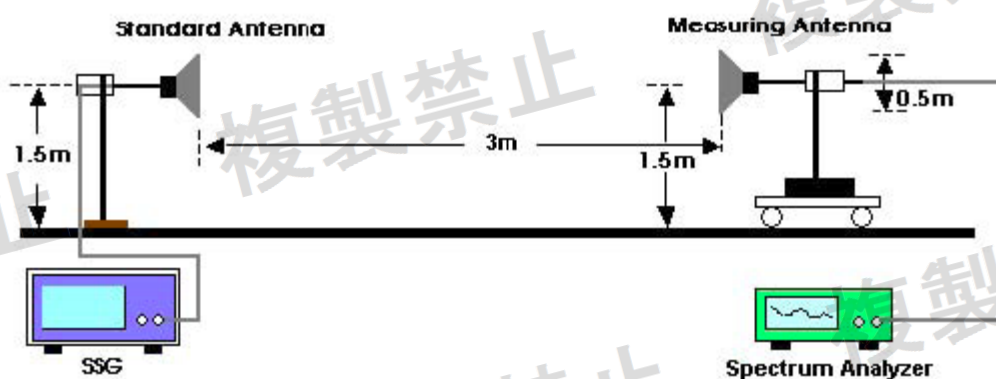


(Diagram 1)

4.3.2 For EIRP Antenna Power Test

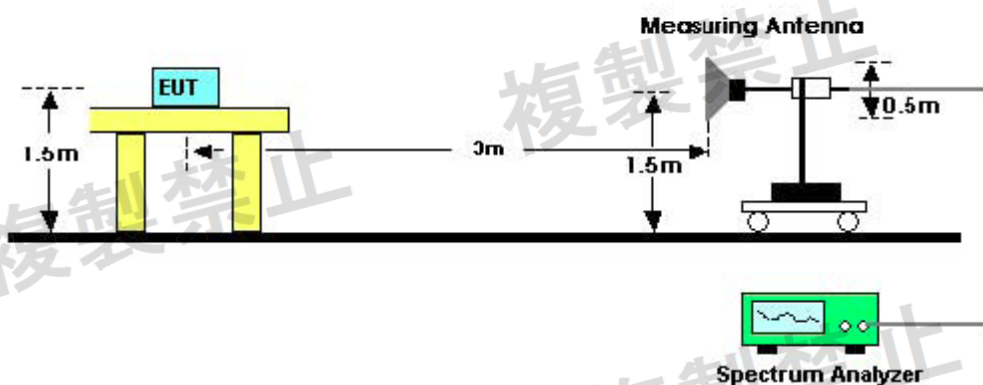


(Diagram 2)



(Diagram 3)

4.3.3 For 3dB Beamwidth Test



(Diagram 4)

5. TEST ITEMS

5.1 Frequency Error Measurement

5.1.1 Limit

Item	Limits
Frequency Tolerance	$\leq \pm 50$ ppm

5.1.2 Test Setup

See section 4.3.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.1.3 Test Procedure

- 1 Frequency accuracy of SA shall be less than 10% of limits tolerance (5 ppm)
- 2 Setting of SA is following as: RB:1 kHz / VB:3 kHz / SPAN: 100 kHz
- 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 100 Hz)
- 8 EUT have transmitted absence of modulation signal and fixed channelize. f is using the mark cursor to mark the peak frequency value, fc 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 ± 50 ppm

5.1.4 Test Deviation

There is no deviation with the original standard.

5.1.5 EUT Operation during Test

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

5.1.6 Test Result

Please refer to ANNEX A.1.

5.2 Occupied Bandwidth and Spread-spectrum Bandwidth/Factor

5.2.1 Limit

Item	Limits
Occupied Band Width	FHSS $\leq$ 83.5MHz; OFDM $\leq$ 40MHz, DSSS $\leq$ 26MHz; Others $\leq$ 26MHz
Spread-spectrum Bandwidth	$\geq$ 500 kHz (FHSS, DSSS)

5.2.2 Test Setup

See section 4.3.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

- 1 Set the spectrum analyzer as follows:

Center frequency: Test frequency

Span: Approximately 2 to 3.5 times nominal bandwidth

Resolution bandwidth: Approximately 3% or less nominal bandwidth

Video bandwidth: equivalent to resolvable bandwidth

Sweep time: auto

Sweep mode: Continuous sweep

Detection: Positive peak

Trace mode: Maximum hold

- 2 After repeating sweeps until the display shows steady data, store the values at all data points into the computer array variables.
- 3 Convert the dB values at all data points to antilogarithm on the power dimension.
- 4 Obtain sum total of the power at all data points, and store it as "total power".
- 5 Accumulate the power at each data point sequentially upward from the lowest frequency and obtain the limit data point where the accumulated power becomes 0.5% (5% for spreading bandwidth) of the "total power". Then convert the limit data point into frequency and store it as "lower limit frequency".
- 6 Accumulate the power at each data point sequentially downward from the highest frequency and obtain the limit data point where the accumulated power becomes 0.5% (5% for spreading bandwidth) of the "total power". Then convert the limit data point into frequency and store it as "upper limit frequency".
- 7 Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.

5.2.4 Test Deviation

There is no deviation with the original standard.

5.2.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-hopping mode.

5.2.6 Test Result

Please refer to ANNEX A.2.

5.3 The frequency retention time

5.3.1 Limit

Item	Limits
retention time	For the radio equipment that uses the frequency hopping method excluding a combination of the spread spectrum method and OFDM, the total sum of the frequency retention time in any frequency within the time obtained by multiplying the diffusion rate by 0.4 second shall be 0.4 second or shorter

5.3.2 Test Setup

See section 4.3.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Measuring Instruments and setting

Spectrum analyzer setting up is as follows.

Center frequency Hopping test frequency

Sweep bandwidth 0 Hz

Resolvable bandwidth 1 MHz

Video bandwidth equivalent to resolvable bandwidth

Y-axis scale 10 dB/Div.

Sweep time hopping cycle

Sweep mode Single sweep

Trigger condition Video trigger

Detection mode Positive peak

5.3.4 Test procedure

- (1) Set the spectrum analyzer according to the above 2 and wait the hopping signal with the hopping frequency.
- (2) Read the maximum level of the residence time of the hopping frequency at hopping cycle using marker etc. from the trace on the display and confirm that it is shorter than 0.4sec.
- (3) By means of the method same to the above (2), read the sum of the residence time of the hopping frequency at hopping cycle.
- (4) Calculate the total of frequency residence time of the hopping frequency as follows.
 1. Total = (0.4s x diffusion rate / hopping cycle) x sum of the residence time of (3)
 2. There, "diffusion rate" is a value of the diffusion bandwidth divided by a frequency equal to transmitting velocity of modulation signal.

5.3.5 Test Result

Please refer to ANNEX A.3.

5.4 Unwanted Emission Intensity Measurement

5.4.1 Limit

Item	Limits
TX Spurious Emission	$\leq 2.5\mu\text{W}$ ($2387\text{MHz} < f < 2496.5\text{MHz}$)
	$\leq 25\mu\text{W}$ ($2387\text{MHz} \leq f < 2400\text{MHz}$) and ($2483.5\text{MHz} < f \leq 2496.5\text{MHz}$)

5.4.2 Test Setup

See section 4.3.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

- The EUT is placed in transmit mode at maximum power/modulation at a fixed channel.
- Setting of SA is following as: RBW/VBW = 1MHz; / AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
- Setting of SA is following as 30 MHz and stop frequency 2387 MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW
- SA adjusted to start frequency 2387 MHz and stop frequency 2400 MHz. Then to mark peak reading value + cable loss shall be less than 25 μW .
- SA adjusted to start frequency 2483.5 MHz and stop frequency 2496.5 MHz Then to mark peak reading value + cable loss shall be less than 25 μW
- SA adjusted to start frequency 2496.5 MHz and stop frequency 12500 MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW
- Measure side band spurious as follows: For 2.4 GHz band: 2374 MHz~2400 MHz and 2483.5 MHz~2509.5 MHz RBW = VBW = 30 kHz, Result_Value = Measured_Value + 15.2 [dBm]
- 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.

5.4.4 Test Deviation

There is no deviation with the original standard.

5.4.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.4.6 Test Result

Please refer to ANNEX A.4.

5.5 Antenna Power Error Measurement

5.5.1 Limit

Item	Limits
Antenna Power Density	a) FH, FH+DS, or FH+OFDM form 2427 - 2470.75 MHz: ≤ 3 mW/MHz b) DS but other than a) from 2400~2483.5 MHz: ≤ 10 mW/MHz c) OFDM, but other than a): For OCB of 26MHz or less: ≤ 10 mW/MHz For OCB of over 26 MHz to 40 MHz: ≤ 5 mw/MHz d) Other than a), b) and c): ≤ 10 mW
Antenna Power Error	+20%, -80% (Base on manufacturer declare antenna power density)

5.5.2 Test Setup

See section 4.3.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

- Setting of SA is following as: RB:1 MHz / VB: 3 MHz / SPAN: About twice the occupied frequency bandwidth / AT: 10 dB Ref: 10 dBm / Sweep time: Minimum time for guaranteed measurement accuracy/Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold/Trigger condition: Free run.
- Setting of SA is following as: RB:1 MHz / VB: 1 MHz / SPAN: 0 Hz/ AT: 10 dB Ref: 10 dBm / Sweep Mode: Continuous sweep
- Those using frequency hopping method (including DSSS or composite method with OFDM):
 - Confirming in the submitted document that the frequency hopping intervals in the frequency distribution of frequency hopping are equal intervals of 1 MHz or less, and that the probability of occurrence at each hopping frequency is uniform, and that the probability of occurrence at each hopping frequency is uniform. If it is, it is implemented by the following method.
 - Connect a high frequency power meter to the output of the dummy load (attenuator) and measure the total power.
 - Divide the total power by the spreading bandwidth to calculate the average power per 1 MHz.
 - Antenna power shall be as follows:
 - Value of b for continuous wave
 - For burst wave Average power in burst is calculated from the value of b and the transmission time rate.
 - If the frequency distribution of frequency hopping or the probability of occurrence at each hopping frequency is not uniform, set the spectrum analyzer as in 1 to search for the frequency that gives the maximum antenna power, and then perform spectrum analysis. Set the device as in 2, and measure the antenna power at the frequency that gives the maximum power.

4 In the case of those using OFDM or DSSS

- (1) Set the spectrum analyzer as in according to the above 1
- (2) After repeating the sweep until no change is observed in the display, measure the frequency at which the power per 1 MHz gives the maximum value.
- (3) Set the spectrum analyzer as in according to the above 2
- (4) Connect the high frequency power meter to the IF output terminal of the spectrum analyzer.
- (5) Antenna power shall be as follows:
 - a. For continuous wave
 - b. Burst wave Calculated average power in a burst from values corrected in the same way as for continuous waves and the transmission time rate

(6) In the case of using the orthogonal frequency division multiplexing system, when there are multiple subcarrier modulation systems, measure the antenna power at each time and take the largest value as the measured value.

5 In the case of items using other methods

- (1) Connect a high-frequency power meter to the output of the dummy load (attenuator) and measure the total power.
- (2) Antenna power shall be as follows:
 - a. Value of a for continuous wave
 - b. Burst wave The average power in the burst is calculated from the value of (a) and the transmission time rate.

6 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.

5.5.4 Test Deviation

There is no deviation with the original standard.

5.5.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.5.6 Test Result

Please refer to ANNEX A.5.

5.6 Limitation of Collateral Emission of Receiver Measurement

5.6.1 Limit

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

5.6.2 Test Setup

See section 4.3.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

- 1 The EUT is placed in Rx mode and set to a fixed channel.
- 2 Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) / AT:10 dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
- 3 SA set RB: 100 kHz and VB: 100 kHz. Then adjust to start frequency 30 MHz and stop frequency 1000 MHz. Search to mark peak reading value + cable loss shall be less than 4 nW
- 4 SA set RB: 1 MHz and VB: 1 MHz. Then adjust to start frequency 1000 MHz and stop frequency 12500 MHz. Search to mark peak reading value + cable loss shall be less than 20 nW
- 5 If power level of lower emissions are more than 1/10 of limit (0.4nW for $f < 1\text{GHz}$, 2 nW 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

5.6.4 Test Deviation

There is no deviation with the original standard.

5.6.5 EUT Operation during Test

The EUT was programmed to be in continuously receiving mode.

5.6.6 Test Result

Please refer to ANNEX A.6.

5.7 Transmission Antenna Gain (EIRP Antenna Power) Measurement

5.7.1 Limit

Item	Non-directional antennal limits	Directional antennal limits
EIRP Power Density	a) FH,FH+DS, or FH+OFDM form 2427 - 2470.75 MHz: $\leq 6.91 \text{ dBm/MHz}$ b) DS but other than a) from 2400~2483.5 MHz: $\leq 12.14 \text{ dBm/MHz}$ c) OFDM, but other than a): For OCB of 26MHz or less: $\leq 12.14 \text{ dBm/MHz}$ For OCB of over 26 MHz to 40 MHz: $\leq 9.14 \text{ dBm/MHz}$ d) Other than a), b) and c): $\leq 12.14 \text{ dBm}$	a) FH,FH+DS, or FH+OFDM form 2427 - 2470.75 MHz: $\leq 16.91 \text{ dBm/MHz}$ b) DS but other than a) from 2400~2483.5 MHz: $\leq 22.14 \text{ dBm/MHz}$ c) OFDM, but other than a): For OCB of 26MHz or less: $\leq 22.14 \text{ dBm/MHz}$ For OCB of over 26 MHz to 40 MHz: $\leq 19.14 \text{ dBm/MHz}$ d) Other than a), b) and c): $\leq 22.14 \text{ dBm}$
Note: This test item will not be applied to the transmission antenna which has a gain of 2.14dBi or less		

5.7.2 Test Setup

See section 4.3.3 for test setup description for the antenna port.

5.7.3 Test Procedure

- 1 Set EUT ad measuring antenna at the same height and roughly facing each other.
- 2 Set spectrum analyzer with RBW=1MHz, VBW=1MHz, Detector=Peak, Trace mode=Max Hold, and tune reference level to observe receiving signal position.
- 3 Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of the measuring antenna. The output level at the spectrum analyzer is read sa “E”.
- 4 Remove the EUT from the turn table and put the replacing antenna facing to measuring antenna at same height. Set the standard signal generator (SSG) at same frequency and transmit on then receive the signal
- 5 Swing the replacing antenna give a maximum receiving level.
- 6 Move the measuring antenna height up and down within $\pm 50\text{cm}$ of replacing antenna height and swing it to find the maximum receiving level.
- 7 Set SSG output power at Pt to give the equivalent output level of “E” or caluate Pt with SSG output which gives the nearest of “E” and difference ($\pm 1\text{dB}$). Record the Pt.
- 8 Calculate EIRP by the formula below $\text{EIRP} = \text{Gt} - \text{L} + \text{Pt}$.

Gt: gain of replacing antenna (dBi)

L: feeder loss between SSG and replacing antenna

Pt: Output power of the SSG

- 9 If the antenna for the EUT has circular polarization, sum of V-field and H-field will be result if measuring antenna is linear polarization.

5.7.4 Test Deviation

There is no deviation with the original standard.

5.7.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.7.6 Test Result

Please refer to ANNEX A.7.

5.8 Transmission Radiation Angle Width (3dB Beamwidth) Measurement

5.8.1 Limit

Item	Limits
3dB antenna beam width	$360/A$ (If $A < 1$; then $A = 1$) $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$
Note: This test item will not be applied to the transmission antenna which has a gain of 2.14dBi or less.	

5.8.2 Test Setup

See section 4.3.3 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.8.3 Test Procedure

- 1 Set EUT and measuring antenna at the same height and roughly facing each other.
- 2 Set spectrum analyzer with RBW=1 MHz, VBW=1 KHz, Y scale=5 dB, Detector=Peak, Trace mode=Max Hold, and tune reference level to observe receiving signal position.
- 3 Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
- 4 Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E"
- 5 Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
- 6 Calculate 3dB antenna beam width by the formula below $360/A$ (If $A < 1$; then $A = 1$). $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$

5.8.4 Test Deviation

There is no deviation with the original standard.

5.8.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.8.6 Test Result

Please refer to ANNEX A.8.

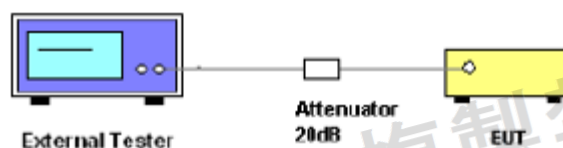
5.9 Radio Interference Prevention Capability Measurement

5.9.1 Limit

Item	Limits
Identification	≥ 48 bits

5.9.2 Test Setup

The photo of test setup please refer to ANNEX B.



5.9.3 Test Procedure

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

5.9.4 Test Deviation

There is no deviation with the original standard.

5.9.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.9.6 Test Result

Please refer to ANNEX A.9.

ANNEX A TEST RESULT

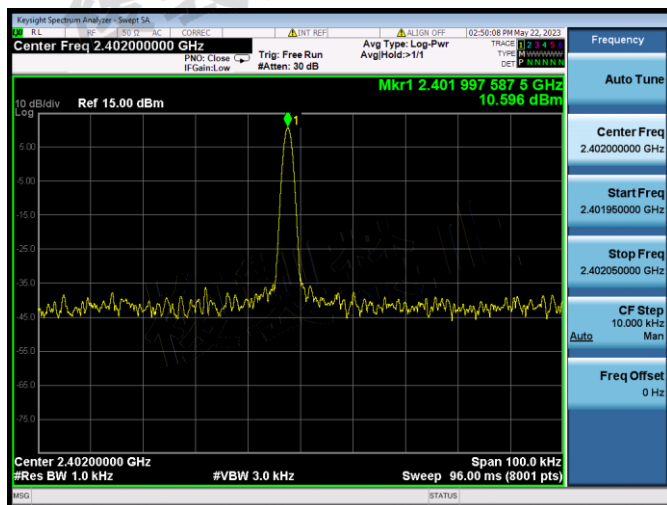
A.1 Frequency Error

Test Data

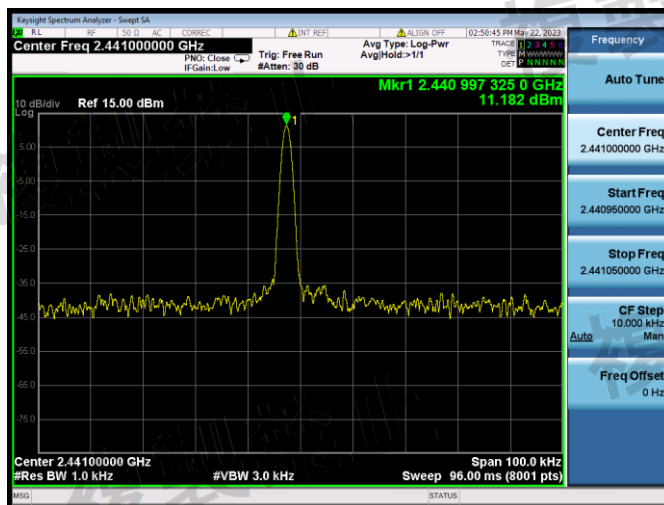
Test Mode	Test Voltage	Channel	Frequency (MHz)	Test Frequency (MHz)	Frequency Error (ppm)	Refer to Plot	Verdict
Unmodulated	LV	Low	2402	2401.99759	-1.00	A.1.1	Pass
		Middle	2441	2440.99733	-1.10	A.1.2	Pass
		High	2480	2479.99720	-1.13	A.1.3	Pass
	NV	Low	2402	2401.99750	-1.04	A.1.4	Pass
		Middle	2441	2440.99730	-1.11	A.1.5	Pass
		High	2480	2479.99719	-1.13	A.1.6	Pass
	HV	Low	2402	2401.99746	-1.06	A.1.7	Pass
		Middle	2441	2440.99729	-1.11	A.1.8	Pass
		High	2480	2479.99718	-1.14	A.1.9	Pass

Test Plots

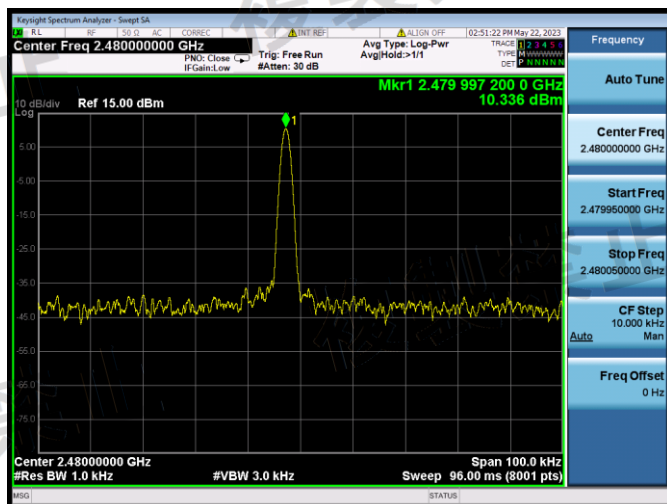
A.1.1 LV Low Channel



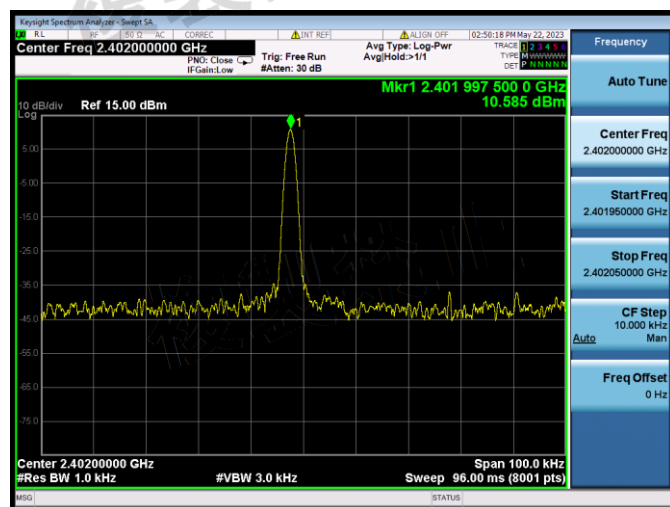
A.1.2 LV Middle Channel



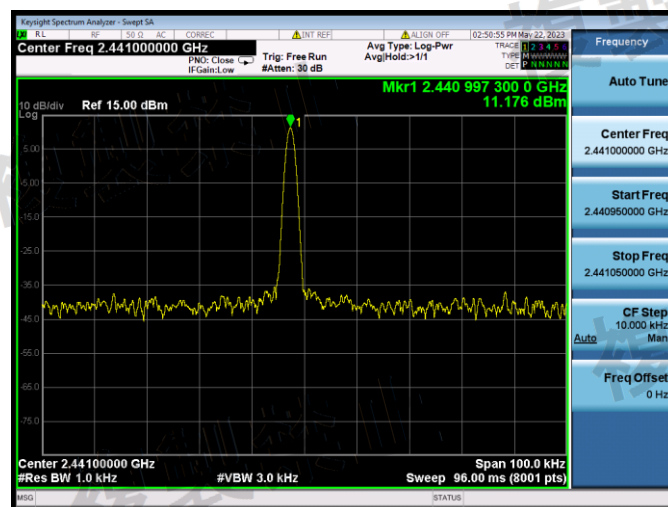
A.1.3 LV High Channel



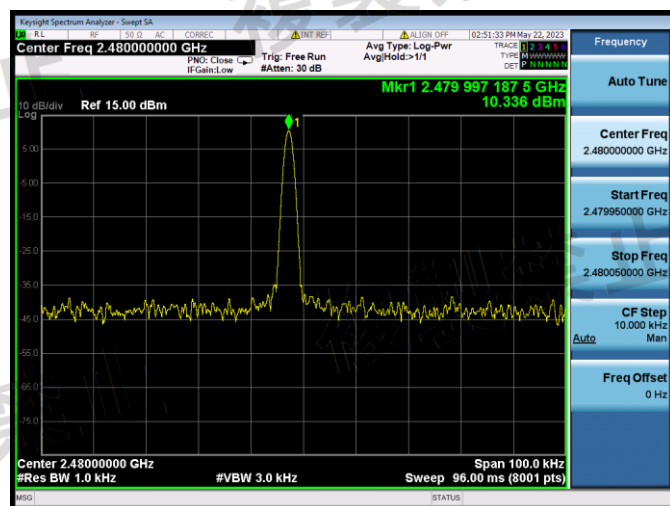
A.1.4 NV Low Channel



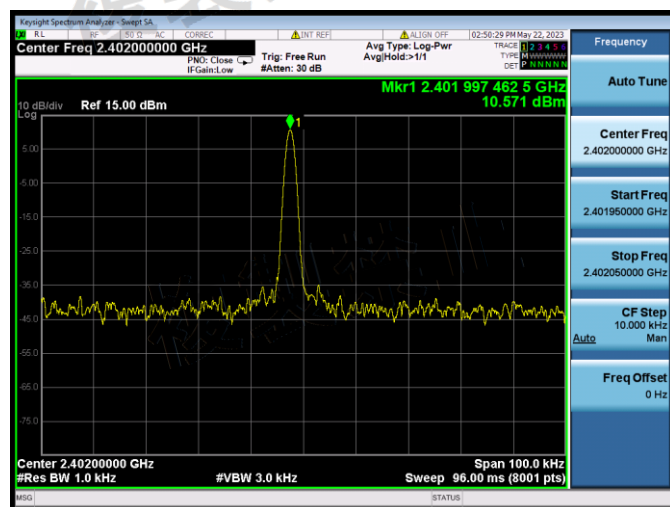
A.1.5 NV Middle Channel



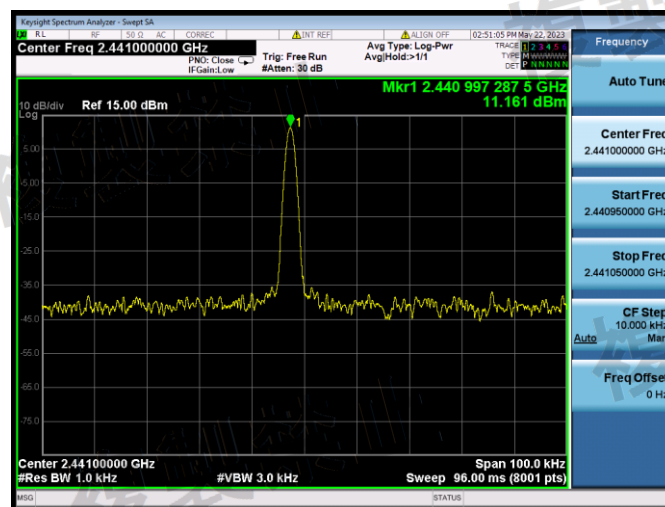
A.1.6 NV High Channel



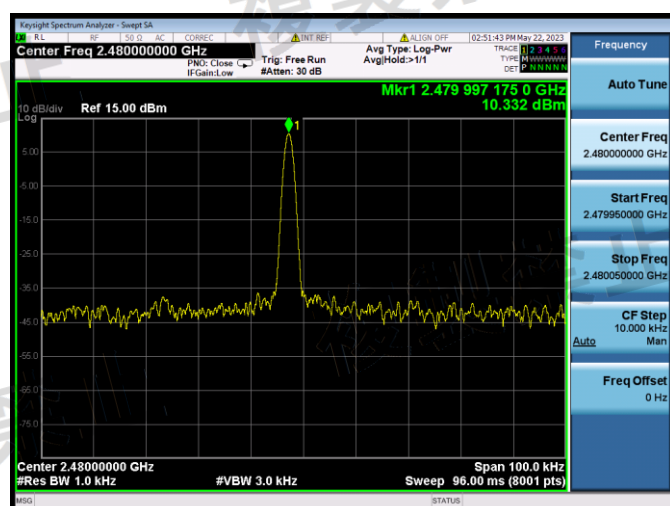
A.1.7 HV Low Channel



A.1.8 HV Middle Channel



A.1.9 HV High Channel



A.2 Occupied Bandwidth and Spread-spectrum Bandwidth/Factor

Test Data for Bluetooth (Classic)

Results of Occupied Bandwidth	MODE	Test Voltage	Measured 99% Occupied Bandwidth (MHz)		Refer to Plot	Verdict
	GFSK	LV	78.61		A.2.1	Pass
		NV	78.61		A.2.2	Pass
		HV	78.60		A.2.3	Pass
	$\pi/4$ -DQPSK	LV	78.80		A.2.4	Pass
		NV	78.71		A.2.5	Pass
		HV	78.74		A.2.6	Pass
	8-DPSK	LV	78.69		A.2.7	Pass
		NV	78.79		A.2.8	Pass
		HV	78.68		A.2.9	Pass
Results of Spread-spectrum Bandwidth	MODE	Test Voltage	Measured 90% Spread-spectrum Bandwidth (MHz)	Spread Spectrum Factor	Refer to Plot	Verdict
	GFSK	LV	70.42	70.42	A.2.10	Pass
		NV	70.41	70.41	A.2.11	Pass
		HV	70.40	70.40	A.2.12	Pass
	$\pi/4$ -DQPSK	LV	71.52	71.52	A.2.13	Pass
		NV	70.88	70.88	A.2.14	Pass
		HV	71.39	71.39	A.2.15	Pass
	8-DPSK	LV	71.48	71.48	A.2.16	Pass
		NV	71.61	71.61	A.2.17	Pass
		HV	71.59	71.59	A.2.18	Pass

Test Data for AFH Mode

Results of Occupied Bandwidth	MODE	Test Voltage	Measured 99% Occupied Bandwidth (MHz)		Refer to Plot	Verdict
	GFSK	LV	20.50		A.2.19	Pass
		NV	20.50		A.2.20	Pass
		HV	20.50		A.2.21	Pass
	$\pi/4$ -DQPSK	LV	20.64		A.2.22	Pass
		NV	20.66		A.2.23	Pass
		HV	20.65		A.2.24	Pass
	8-DPSK	LV	20.62		A.2.25	Pass
		NV	20.64		A.2.26	Pass
		HV	20.63		A.2.27	Pass
Results of Spread-spectrum Bandwidth	MODE	Test Voltage	Measured 90% Spread-spectrum Bandwidth (MHz)	Spread Spectrum Factor	Refer to Plot	Verdict
	GFSK	LV	18.58	18.58	A.2.28	Pass
		NV	18.58	18.58	A.2.29	Pass
		HV	18.58	18.58	A.2.30	Pass
	$\pi/4$ -DQPSK	LV	18.65	18.65	A.2.31	Pass
		NV	18.68	18.68	A.2.32	Pass
		HV	18.67	18.67	A.2.33	Pass
	8-DPSK	LV	18.71	18.71	A.2.34	Pass
		NV	18.62	18.62	A.2.35	Pass
		HV	18.63	18.63	A.2.36	Pass

Test Data for GSFK (BLE 1Mbps)

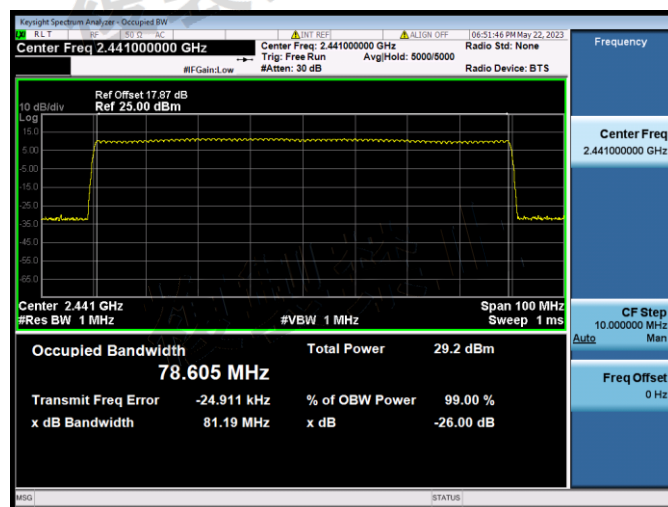
Results of Occupied Bandwidth	Channel	Test Voltage	Measured 99% Occupied Bandwidth (MHz)	Refer to Plot	Verdict
	Low	LV	1.03	A.2.37	Pass
		NV	1.03	A.2.38	Pass
		HV	1.03	A.2.39	Pass
	Middle	LV	1.03	A.2.40	Pass
		NV	1.03	A.2.41	Pass
		HV	1.03	A.2.42	Pass
	High	LV	1.03	A.2.43	Pass
		NV	1.03	A.2.44	Pass
		HV	1.03	A.2.45	Pass

Test Data for GSFK (BLE 2Mbps)

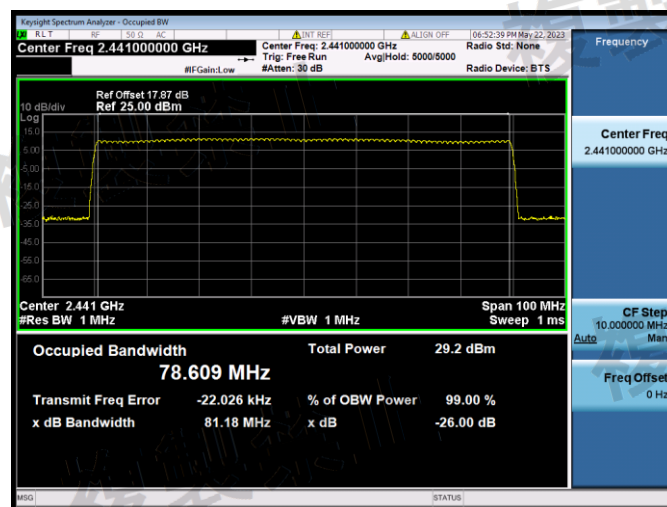
Results of Occupied Bandwidth	Channel	Test Voltage	Measured 99% Occupied Bandwidth (MHz)	Refer to Plot	Verdict
	Low	LV	2.05	A.2.46	Pass
		NV	2.05	A.2.47	Pass
		HV	2.05	A.2.48	Pass
	Middle	LV	2.05	A.2.49	Pass
		NV	2.05	A.2.50	Pass
		HV	2.05	A.2.51	Pass
	High	LV	2.05	A.2.52	Pass
		NV	2.05	A.2.53	Pass
		HV	2.05	A.2.54	Pass

Test plots (Occupied Bandwidth)

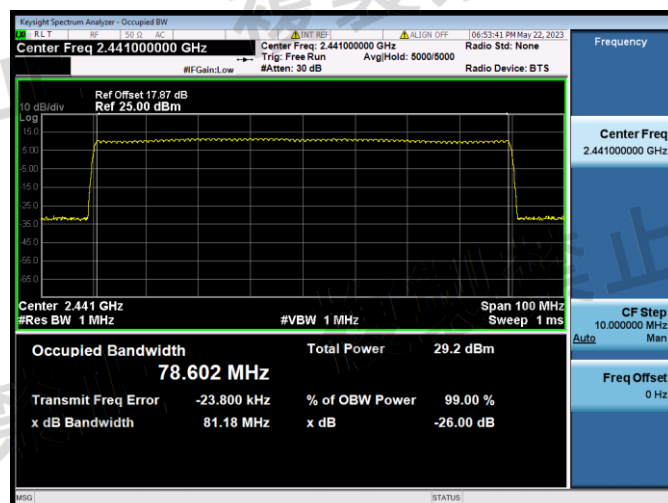
A.2.1 GFSK LV

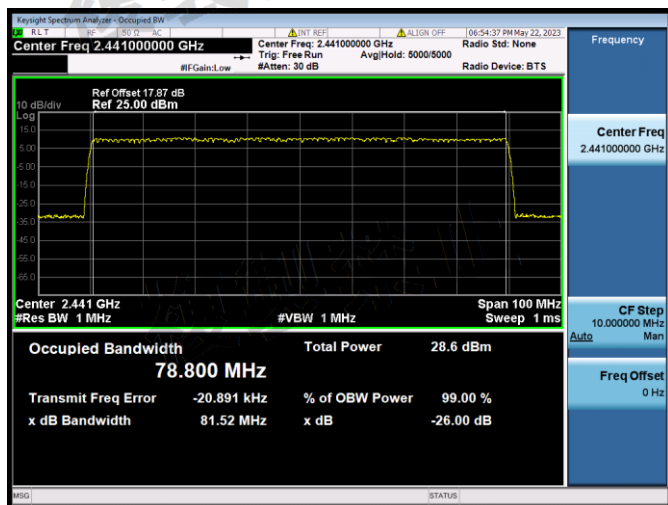
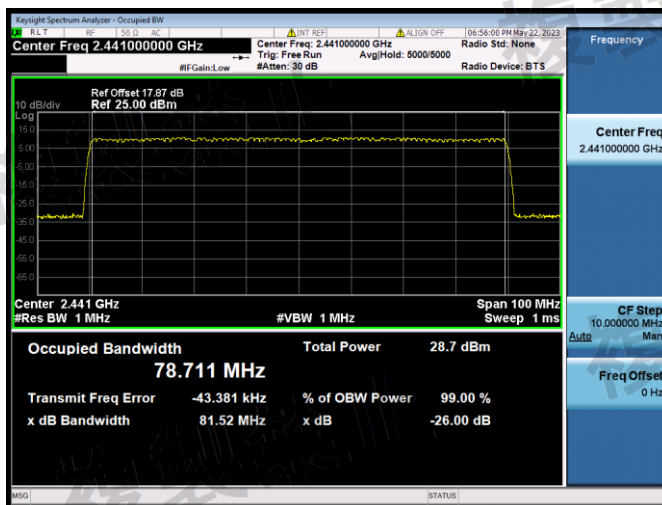
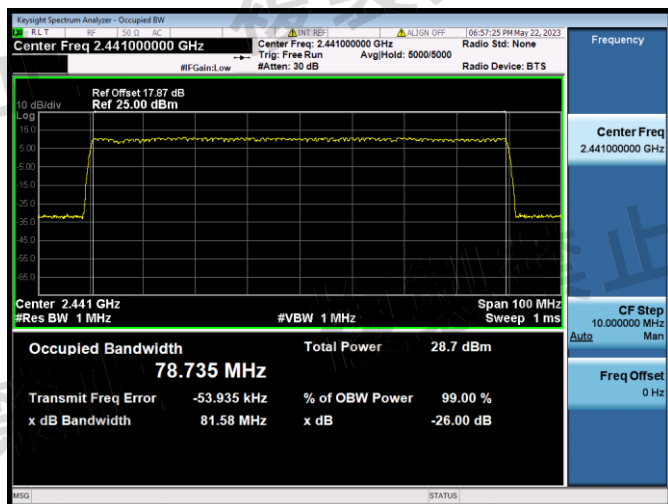


A.2.2 GFSK NV

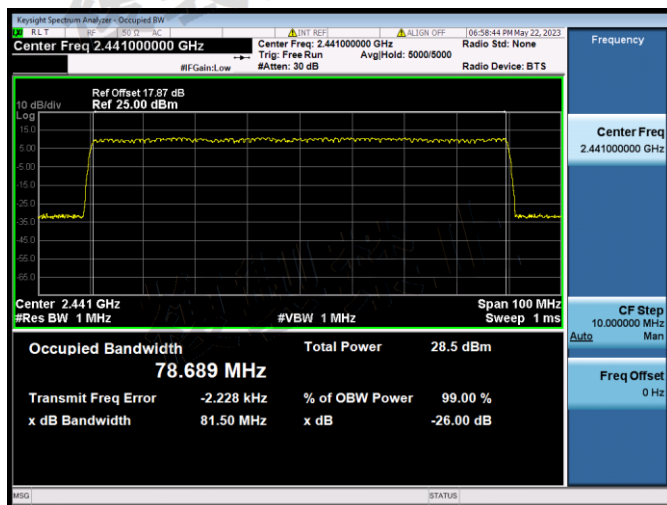


A.2.3 GFSK HV

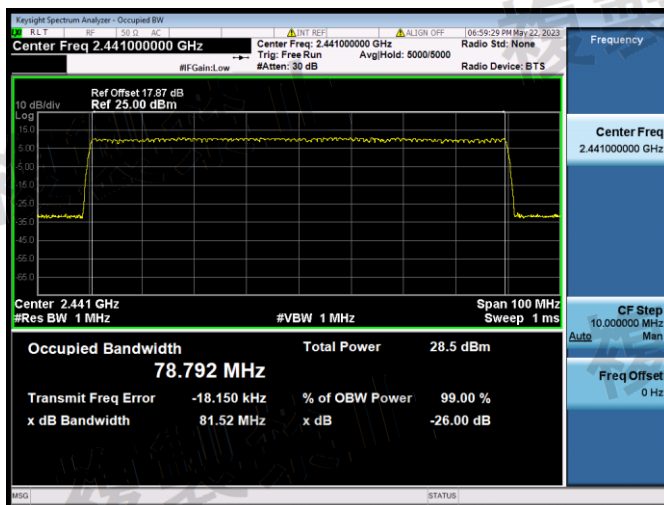


A.2.4 $\pi/4$ -DQPSK LVA.2.5 $\pi/4$ -DQPSK NVA.2.6 $\pi/4$ -DQPSK HV

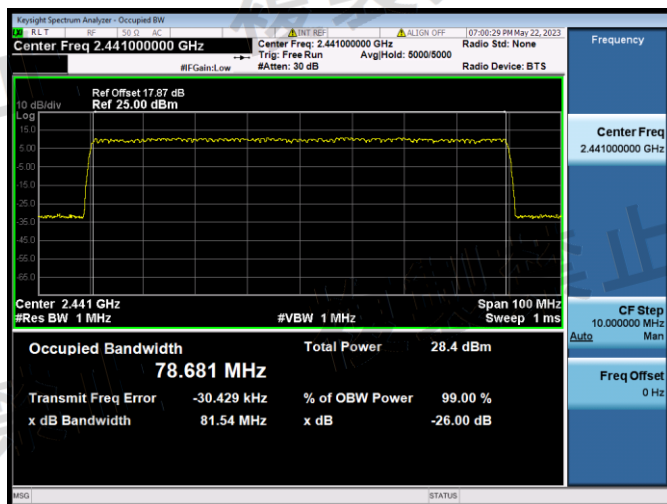
A.2.7 8-DPSK LV



A.2.8 8-DPSK NV

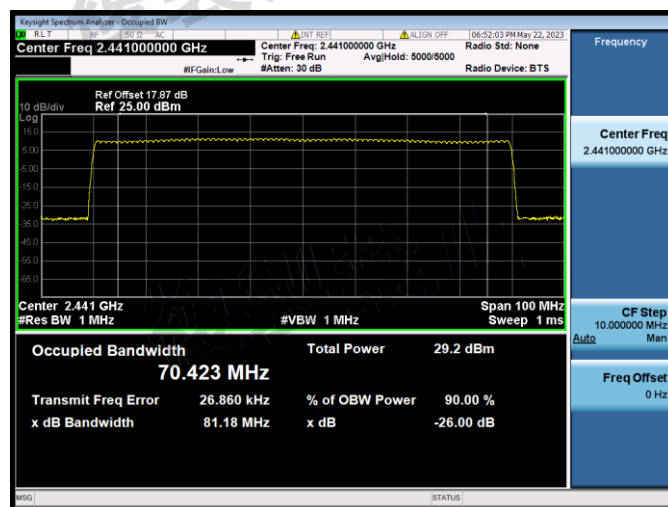


A.2.9 8-DPSK HV

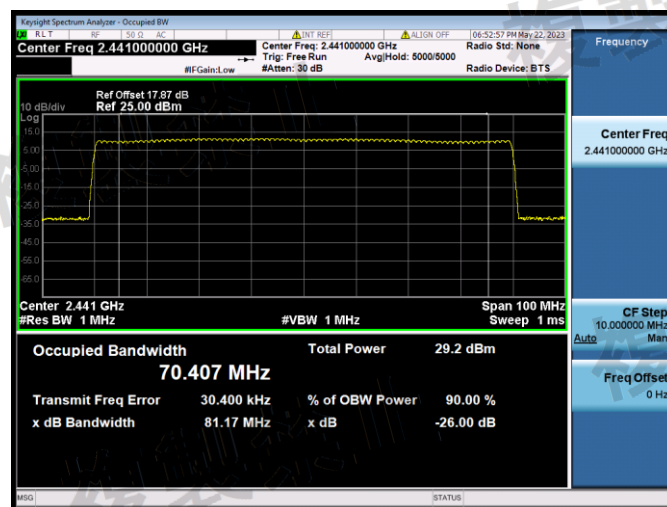


Test Plots (Spread-spectrum Bandwidth)

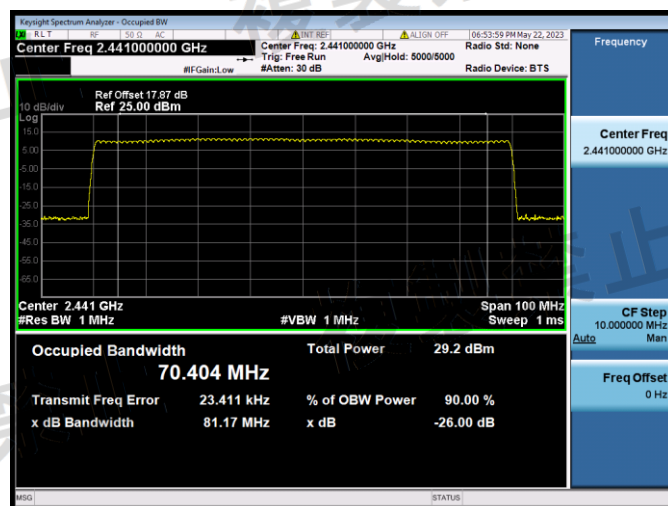
A.2.10 GFSK LV

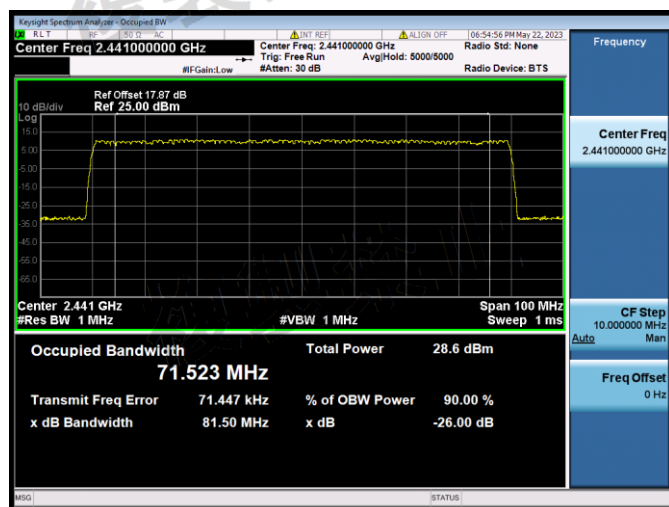
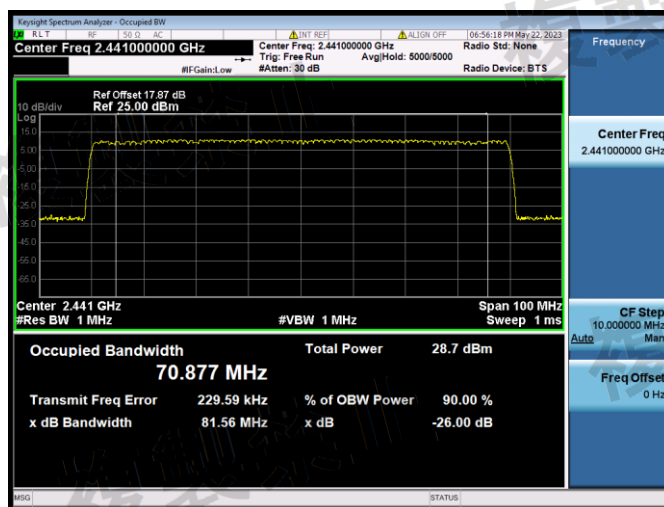
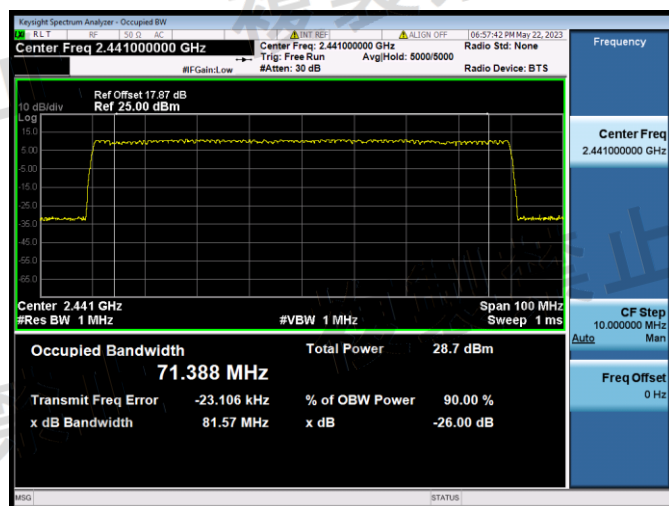


A.2.11 GFSK NV

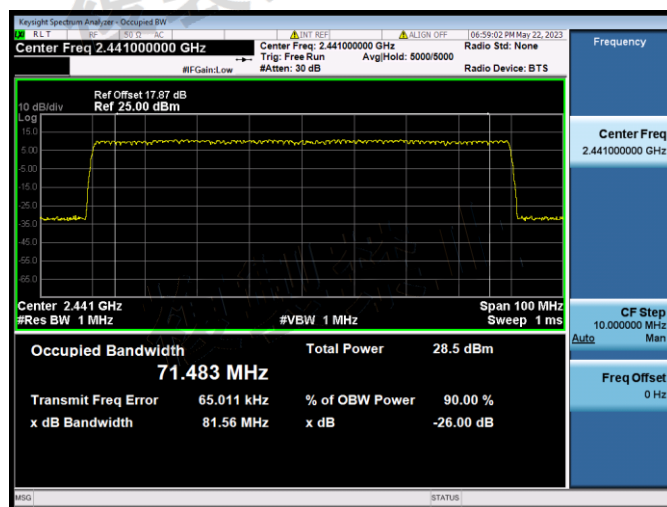


A.2.12 GFSK HV

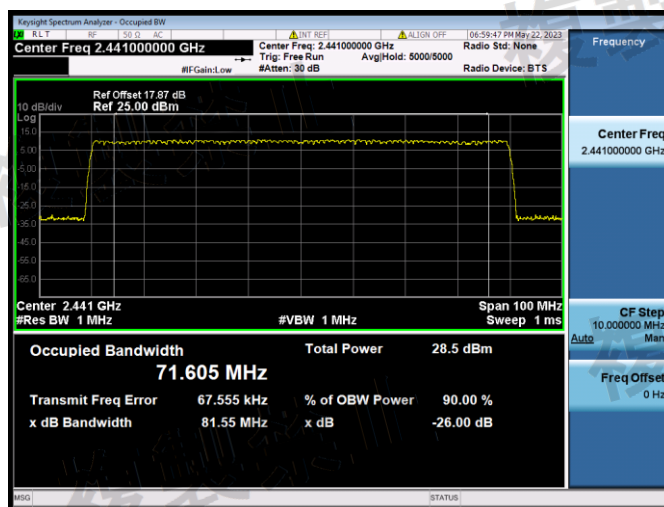


A.2.13 $\pi/4$ -DQPSK LVA.2.14 $\pi/4$ -DQPSK NVA.2.15 $\pi/4$ -DQPSK HV

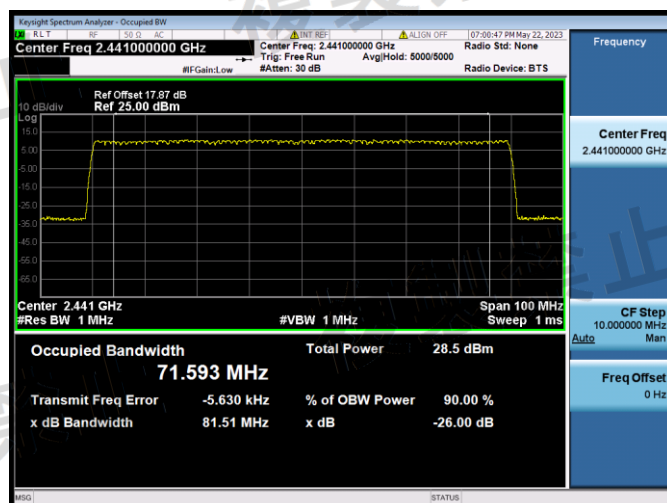
A.2.16 8-DPSK LV



A.2.17 8-DPSK NV

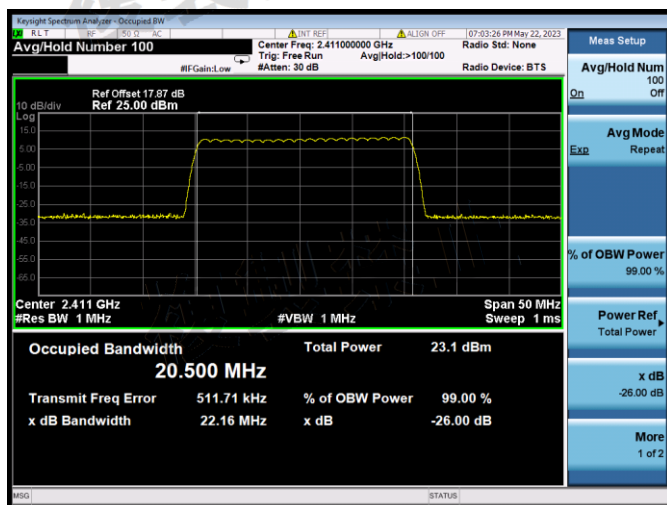


A.2.18 8-DPSK HV

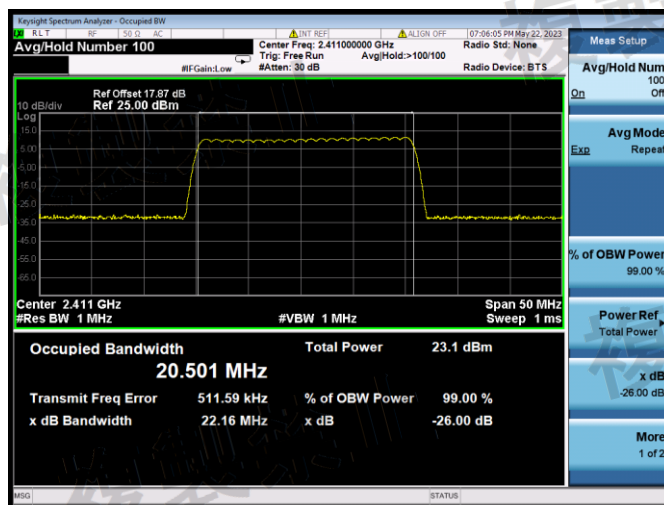


Test plots (Occupied Bandwidth)-AFH Mode

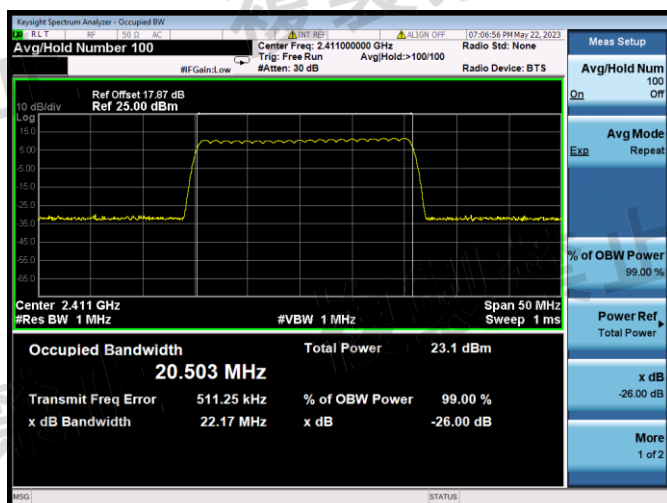
A.2.19 GFSK LV

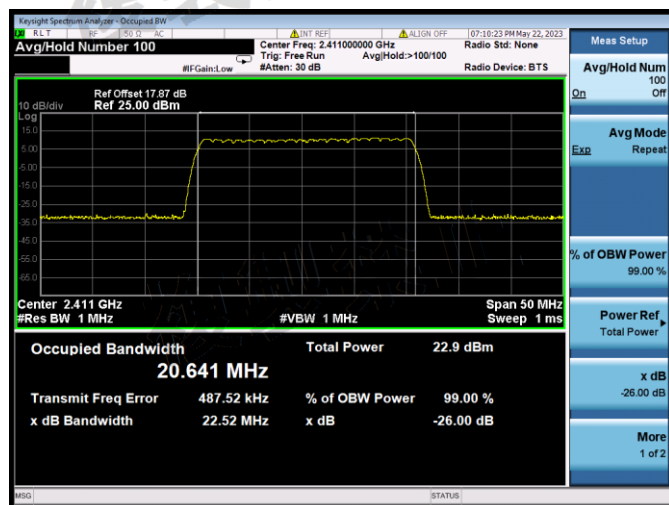
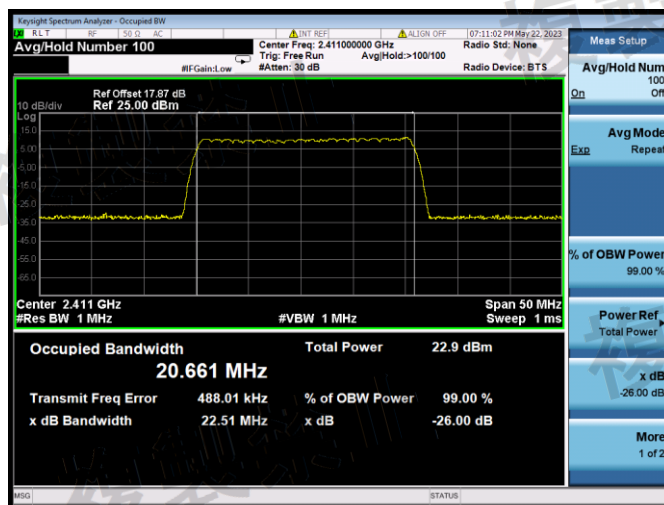
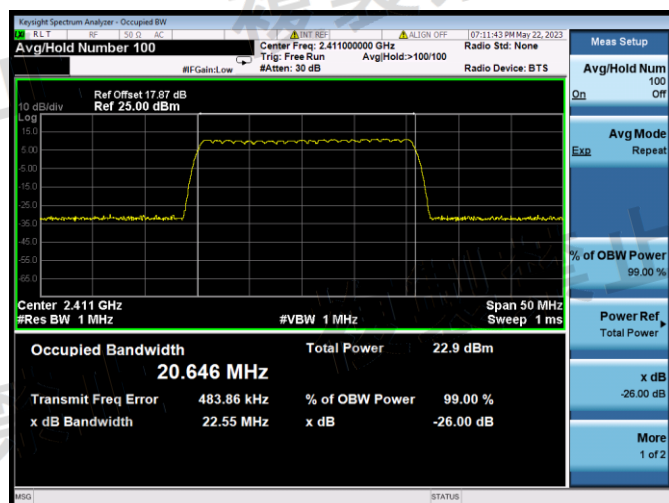


A.2.20 GFSK NV

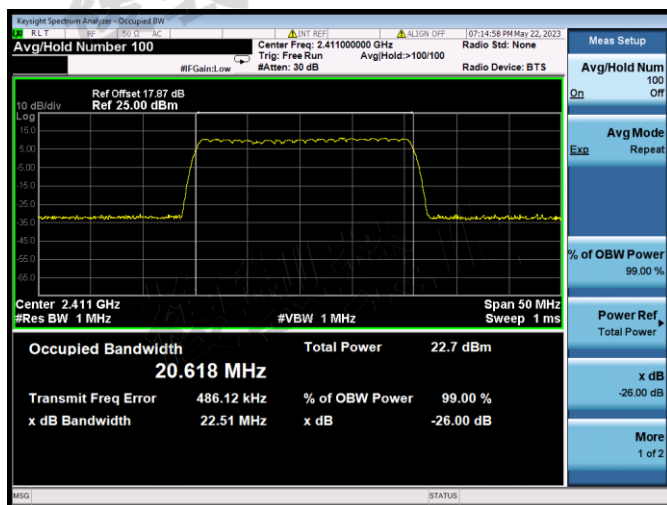


A.2.21 GFSK HV

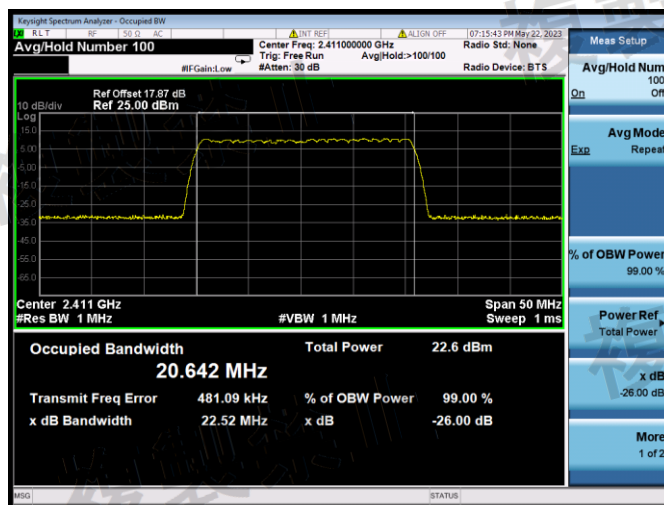


A.2.22 $\pi/4$ -DQPSK LVA.2.23 $\pi/4$ -DQPSK NVA.2.24 $\pi/4$ -DQPSK HV

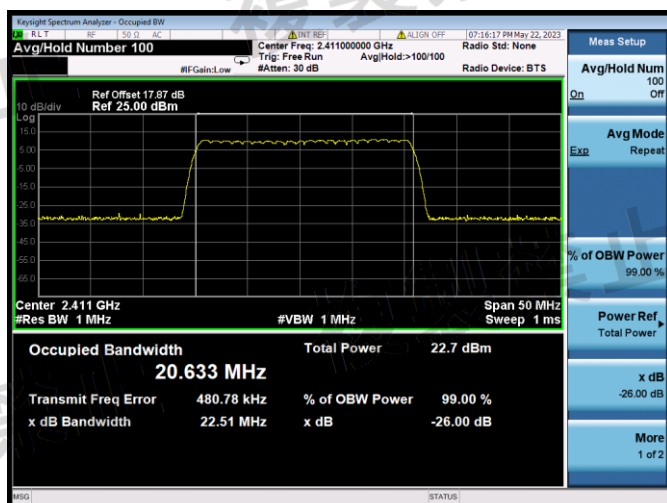
A.2.25 8-DPSK LV



A.2.26 8-DPSK NV

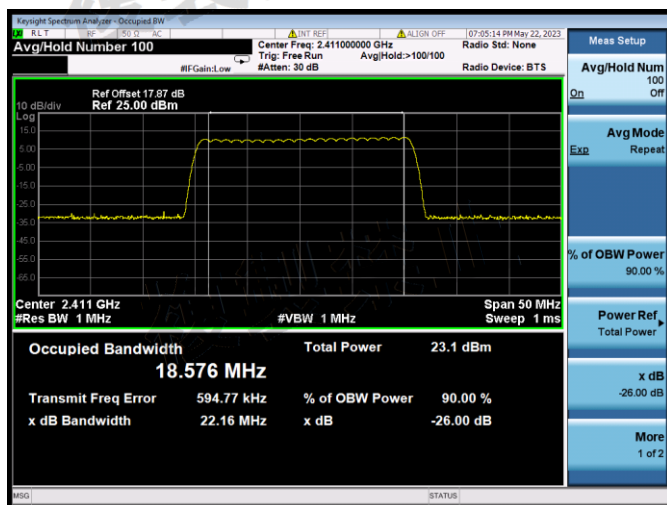


A.2.27 8-DPSK HV

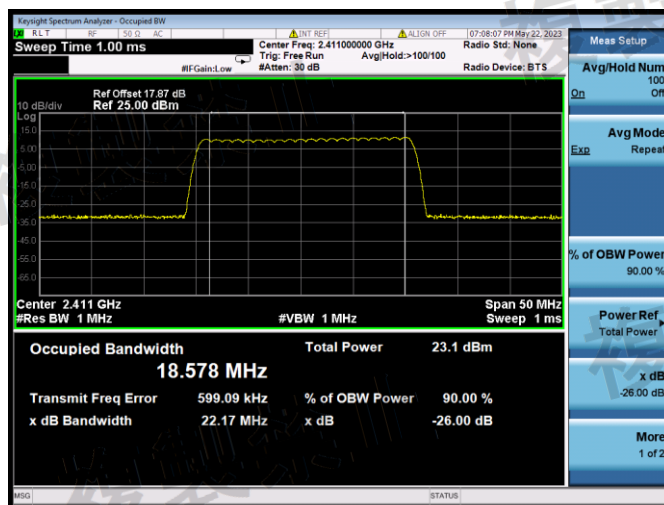


Test Plots (Spread-spectrum Bandwidth)-AFH Mode

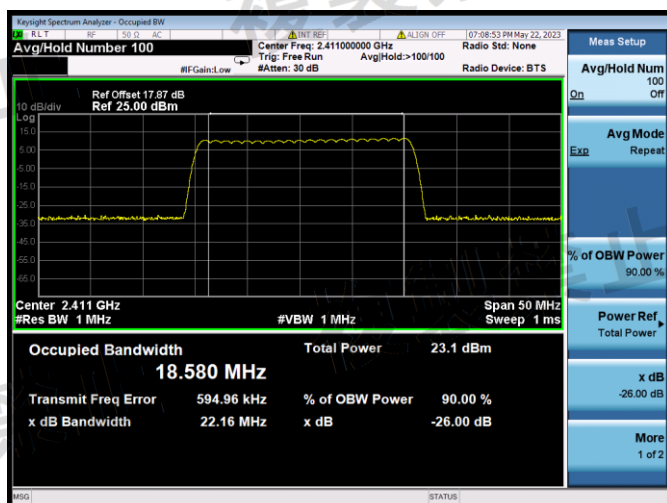
A.2.28 GFSK LV

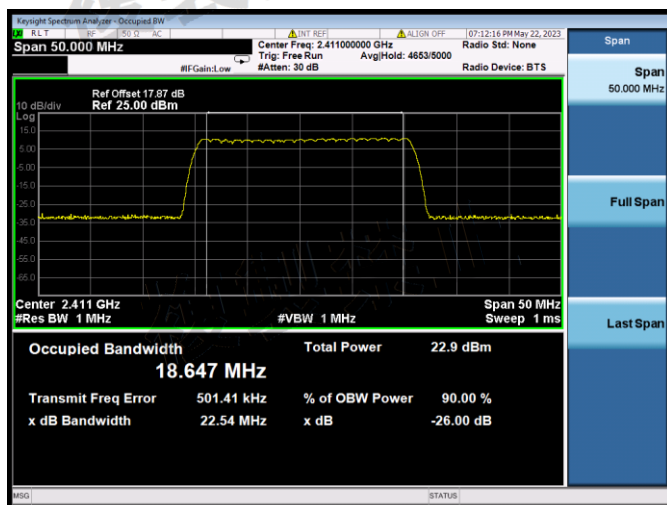
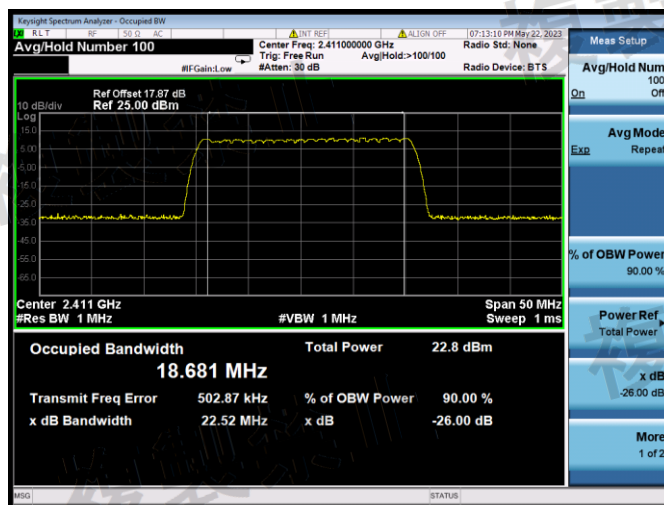
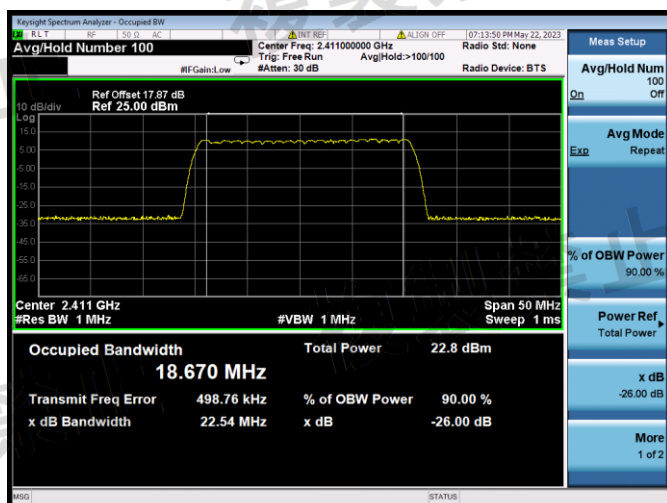


A.2.29 GFSK NV

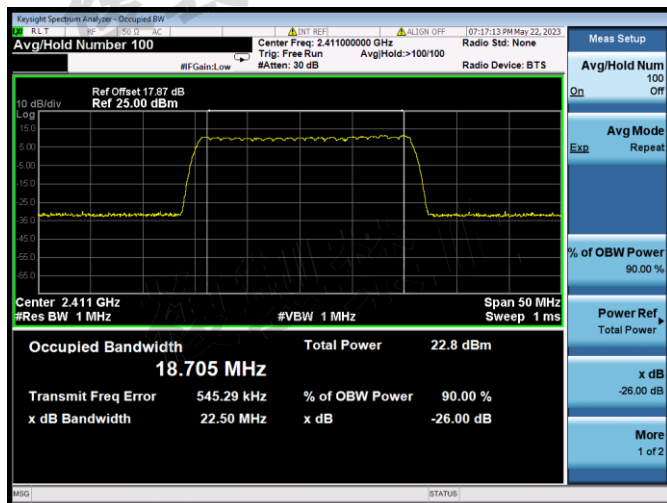


A.2.30 GFSK HV

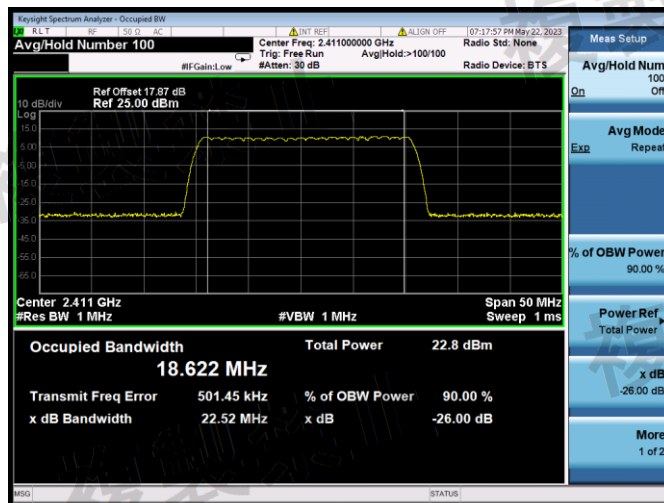


A.2.31 $\pi/4$ -DQPSK LVA.2.32 $\pi/4$ -DQPSK NVA.2.33 $\pi/4$ -DQPSK HV

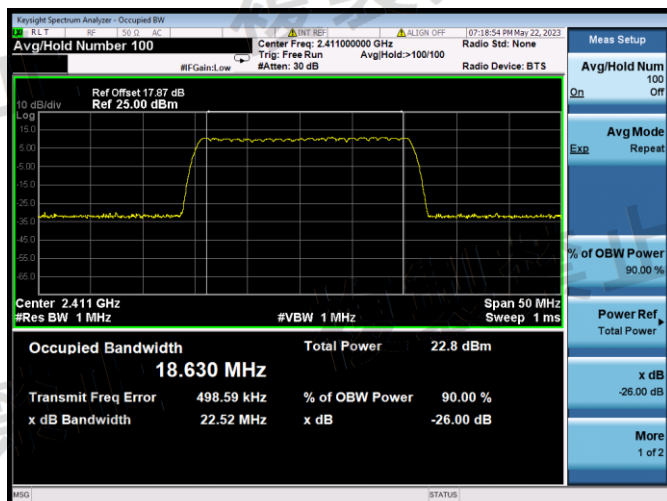
A.2.34 8-DPSK LV



A.2.35 8-DPSK NV

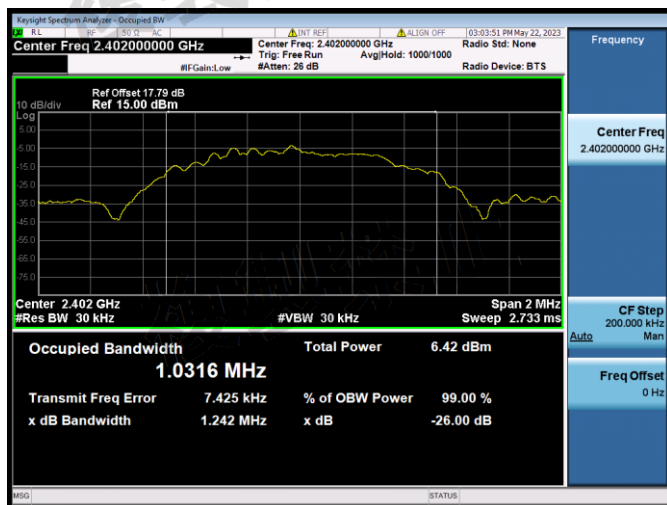


A.2.36 8-DPSK HV

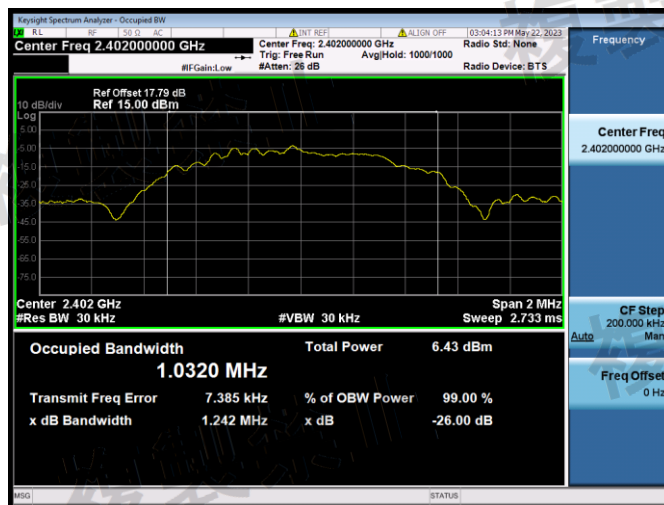


Test Data for GSKF (BLE 1Mbps)

A.2.37 Low Channel LV



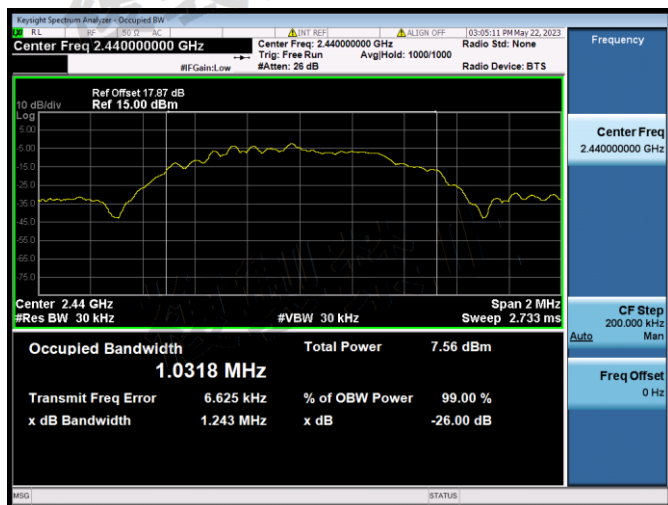
A.2.38 Low Channel NV



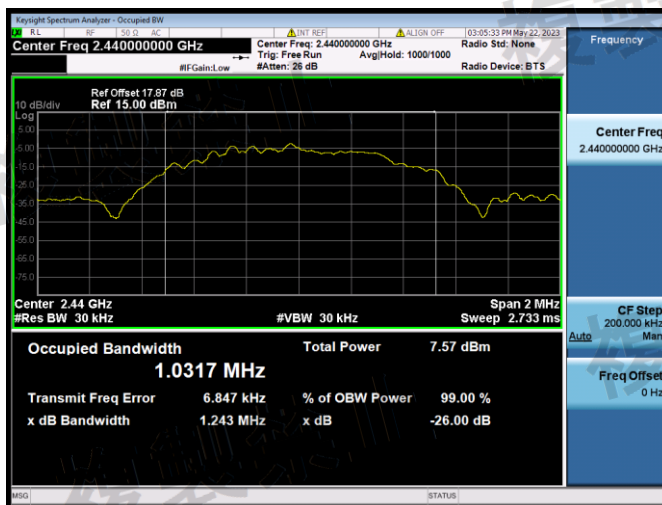
A.2.39 Low Channel HV



A.2.40 Middle Channel LV



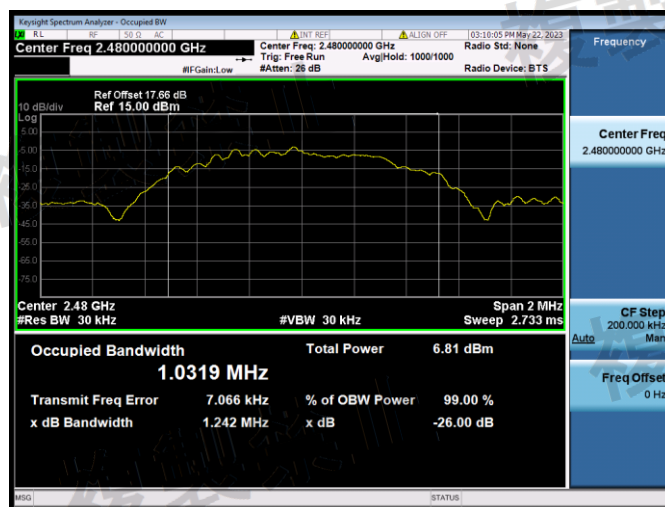
A.2.41 Middle Channel NV



A.2.42 Middle Channel HV



A.2.44 High Channel NV



KeySight Spectrum Analyzer - Occupied BW

RL K1 100.00 dB AC 1

Center Freq 2.480000000 GHz

Radio Std: None

#F Gain1.cw

#Atten: 26 dB

Radio Device: BTS

Center Freq: 2.480000000 GHz

Trig: Free Run

Avg/Hold: 1000/1000

Frequency

Center Freq
2.480000000 GHz

Log

Ref Offset 17.66 dB

Ref 15.00 dBm

Occupied Bandwidth

10 dB/div

5.00

0.00

-5.00

-10.00

-15.00

-20.00

-25.00

-30.00

-35.00

-40.00

-45.00

-50.00

-55.00

-60.00

-65.00

-70.00

Center 2.48 GHz

#Res BW 30 kHz

#VBW 30 kHz

Span 2 MHz

Sweep 2.733 ms

Occupied Bandwidth

1.0320 MHz

Total Power

6.82 dBm

Transmit Freq Error

7.047 kHz

% of OBW Power

99.00 %

x dB Bandwidth

1.240 MHz

x dB

-26.00 dB

Auto

Freq Offset

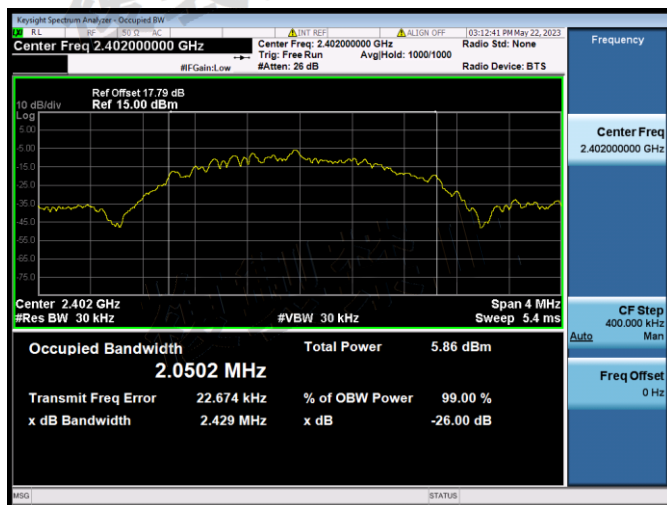
0 Hz

MSG

STATUS

Test Data for GSKF (BLE 2Mbps)

A.2.46 Low Channel LV



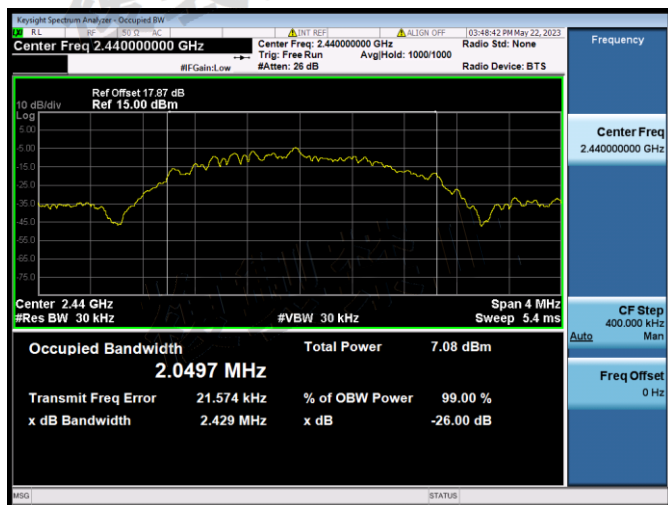
A.2.47 Low Channel NV



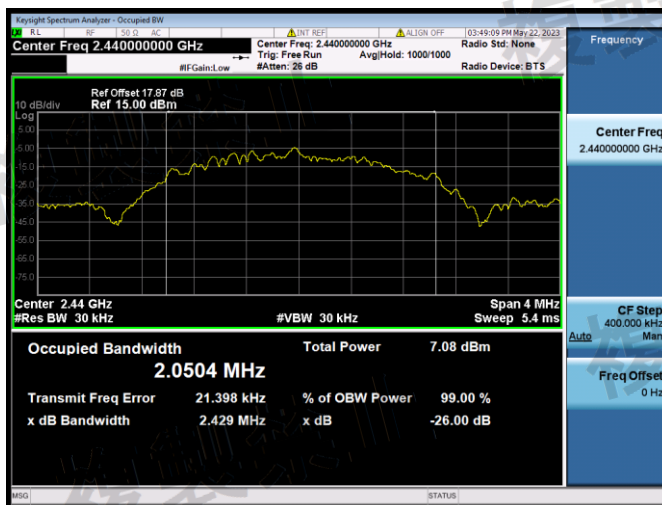
A.2.48 Low Channel HV



A.2.49 Middle Channel LV



A.2.50 Middle Channel NV



A.2.51 Middle Channel HV



A.2.52 High Channel LV



A.2.53 High Channel NV



A.2.54 High Channel HV



A.3 The frequency retention time (Dwell time)

The average time of occupancy on any channel within the Period can be calculated with formulas:

For DH1 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (1600 / 2) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4s * \{\text{Spread Spectrum Factor}\}$$

For DH3 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (1600 / 4) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4s * \{\text{Spread Spectrum Factor}\}$$

For DH5 package type

$$\{\text{Total of Dwell}\} = \{\text{Pulse Time}\} * (1600 / 6) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\}$$

$$\{\text{Period}\} = 0.4s * \{\text{Spread Spectrum Factor}\}$$

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

GFSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
DH1	0.37280	106.320	400	Pass
DH3	1.62700	232.004		Pass
DH5	2.87600	273.405		Pass

$\pi/4$ -DQPSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
2-DH1	0.38240	109.786	400	Pass
2-DH3	1.63400	234.558		Pass
2-DH5	2.88800	276.378		Pass

8-DPSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
3-DH1	0.38080	110.449	400	Pass
3-DH3	1.63400	236.967		Pass
3-DH5	2.87600	278.057		Pass

A.4 Unwanted Emission Intensity Measurement

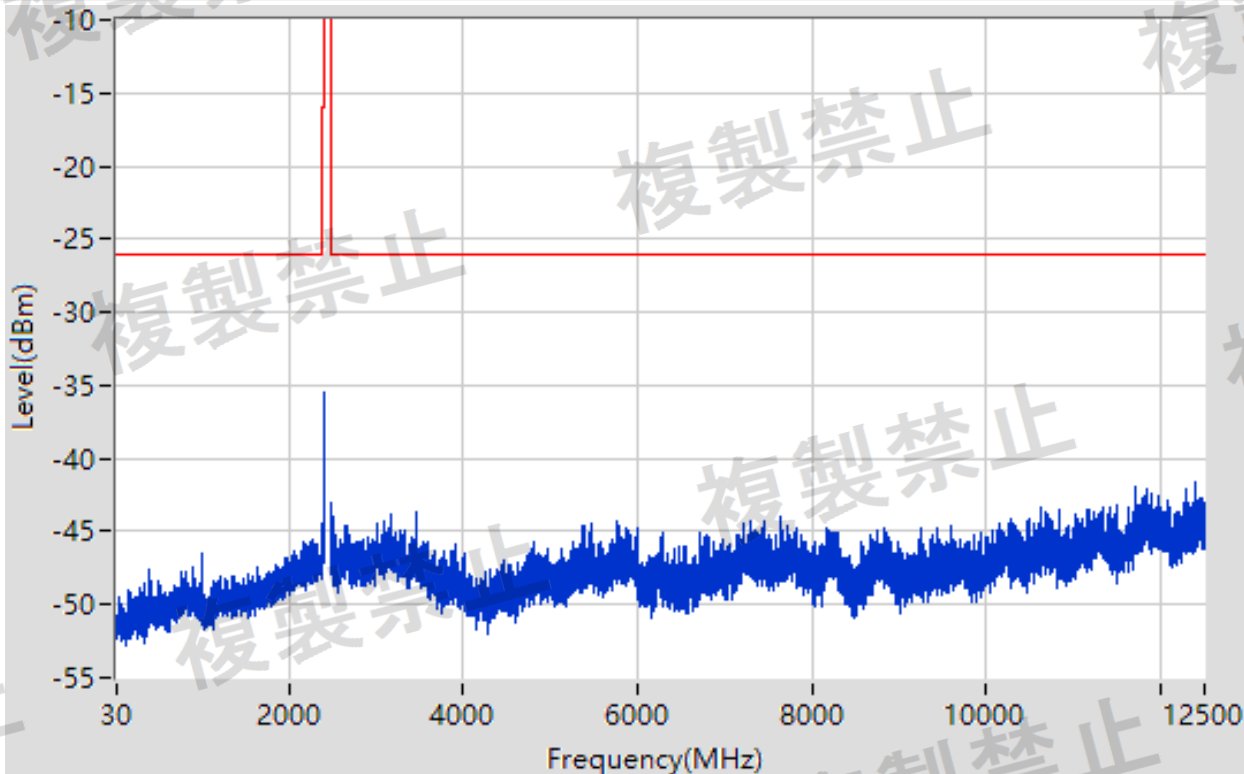
Test Data

Mode	Channel	Test Voltage	Refer to Plot	Verdict
GFSK	Low	LV	A.4.1	Pass
		NV	A.4.2	Pass
		HV	A.4.3	Pass
	Middle	LV	A.4.4	Pass
		NV	A.4.5	Pass
		HV	A.4.6	Pass
	High	LV	A.4.7	Pass
		NV	A.4.8	Pass
		HV	A.4.9	Pass
$\pi/4$ -DQPSK	Low	LV	A.4.10	Pass
		NV	A.4.11	Pass
		HV	A.4.12	Pass
	Middle	LV	A.4.13	Pass
		NV	A.4.14	Pass
		HV	A.4.15	Pass
	High	LV	A.4.16	Pass
		NV	A.4.17	Pass
		HV	A.4.18	Pass
8-DPSK	Low	LV	A.4.19	Pass
		NV	A.4.20	Pass
		HV	A.4.21	Pass
	Middle	LV	A.4.22	Pass
		NV	A.4.23	Pass
		HV	A.4.24	Pass
	High	LV	A.4.25	Pass
		NV	A.4.26	Pass
		HV	A.4.27	Pass
GFSK (BLE 1Mbps)	Low	LV	A.4.28	Pass
		NV	A.4.29	Pass
		HV	A.4.30	Pass
	Middle	LV	A.4.31	Pass
		NV	A.4.32	Pass
		HV	A.4.33	Pass
	High	LV	A.4.34	Pass
		NV	A.4.35	Pass
		HV	A.4.36	Pass
GFSK	Low	LV	A.4.37	Pass

(BLE 2Mbps)		NV	A.4.38	Pass
		HV	A.4.39	Pass
		LV	A.4.40	Pass
	Middle	NV	A.4.41	Pass
		HV	A.4.42	Pass
		LV	A.4.43	Pass
	High	NV	A.4.44	Pass
		HV	A.4.45	Pass
		LV	A.4.46	Pass

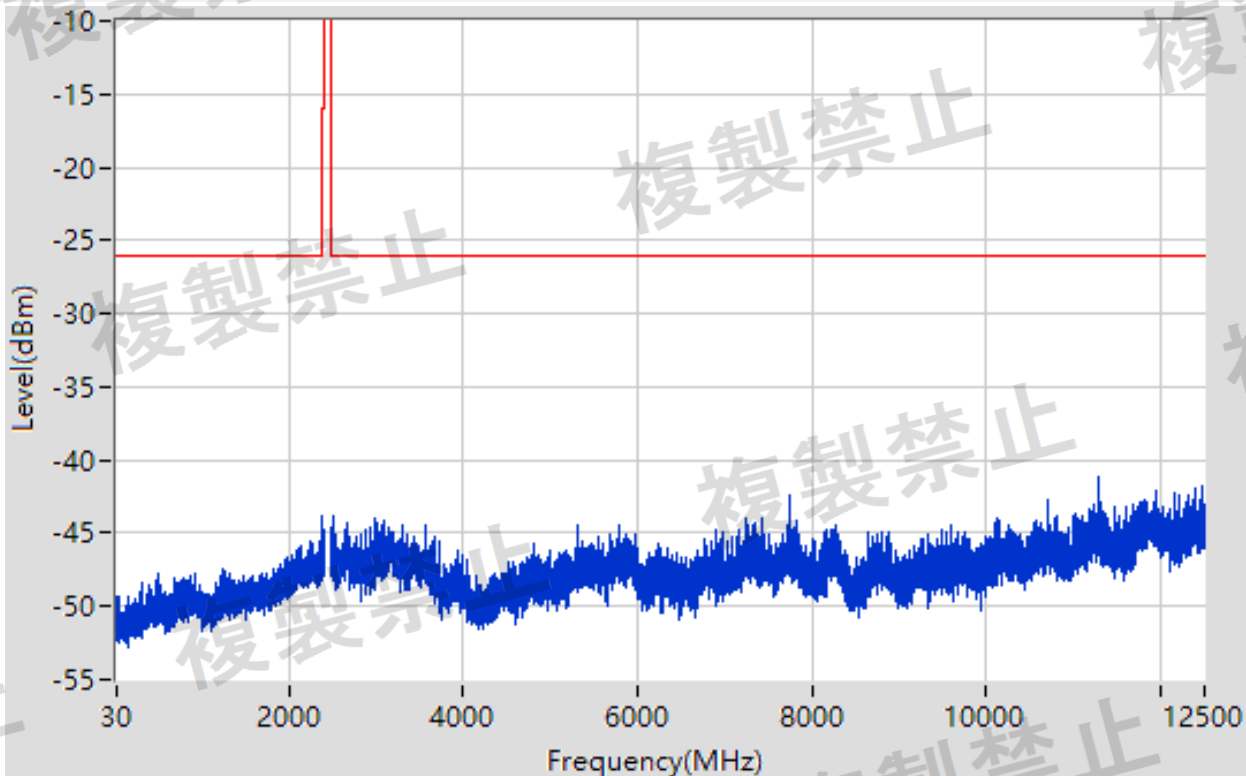
Test plots

A.4.1 GFSK LV Low Channel



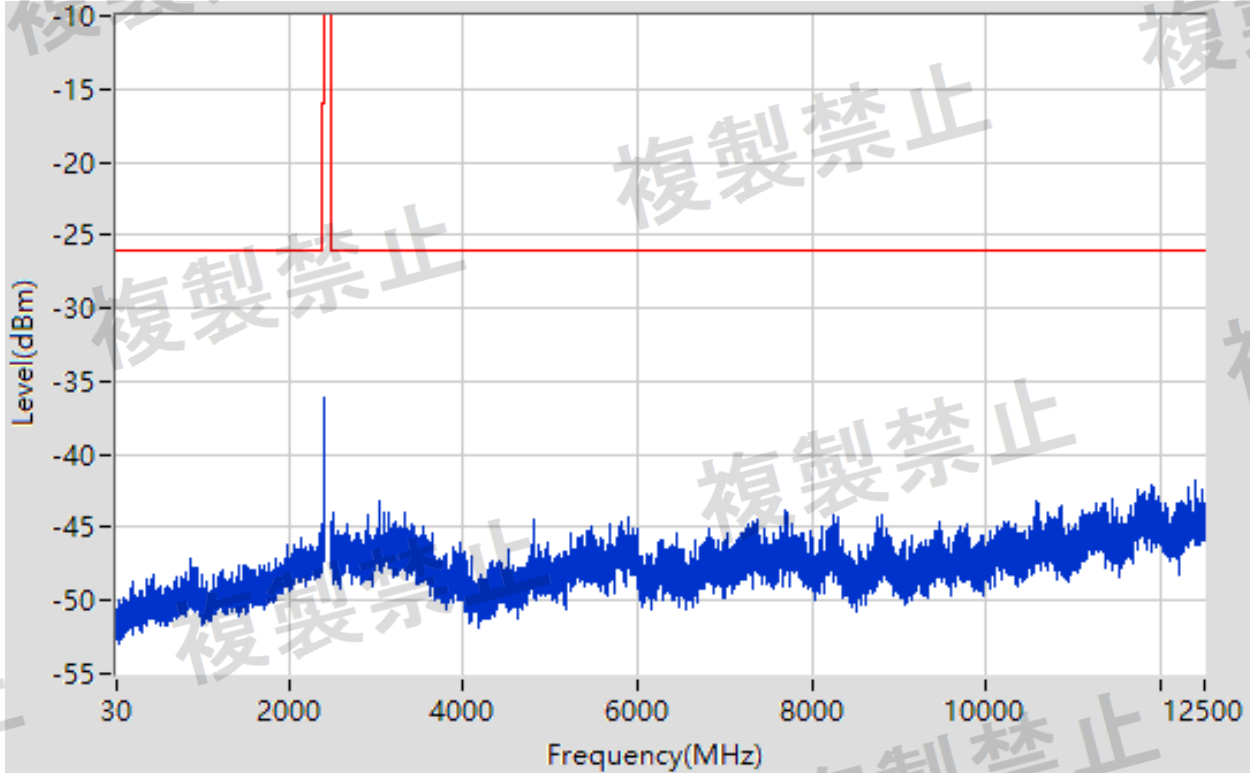
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	999	-46.5	-26	Pass	971
1000	2374	1	Peak	2273	-45.58	-26	Pass	1375
2374	2387	1	Peak	2374.238	-44.45	-26	Pass	601
2387	2400	1	Peak	2400	-35.43	-16	Pass	601
2483.5	2496.5	1	Peak	2488.787	-44.02	-16	Pass	601
2496.5	2509.5	1	Peak	2499.36	-43.12	-26	Pass	601
2509.5	6000	1	Peak	3455.636	-43.61	-26	Pass	3491
6000	12500	1	Peak	12396	-41.65	-26	Pass	6501

A.4.2 GFSK NV Low Channel



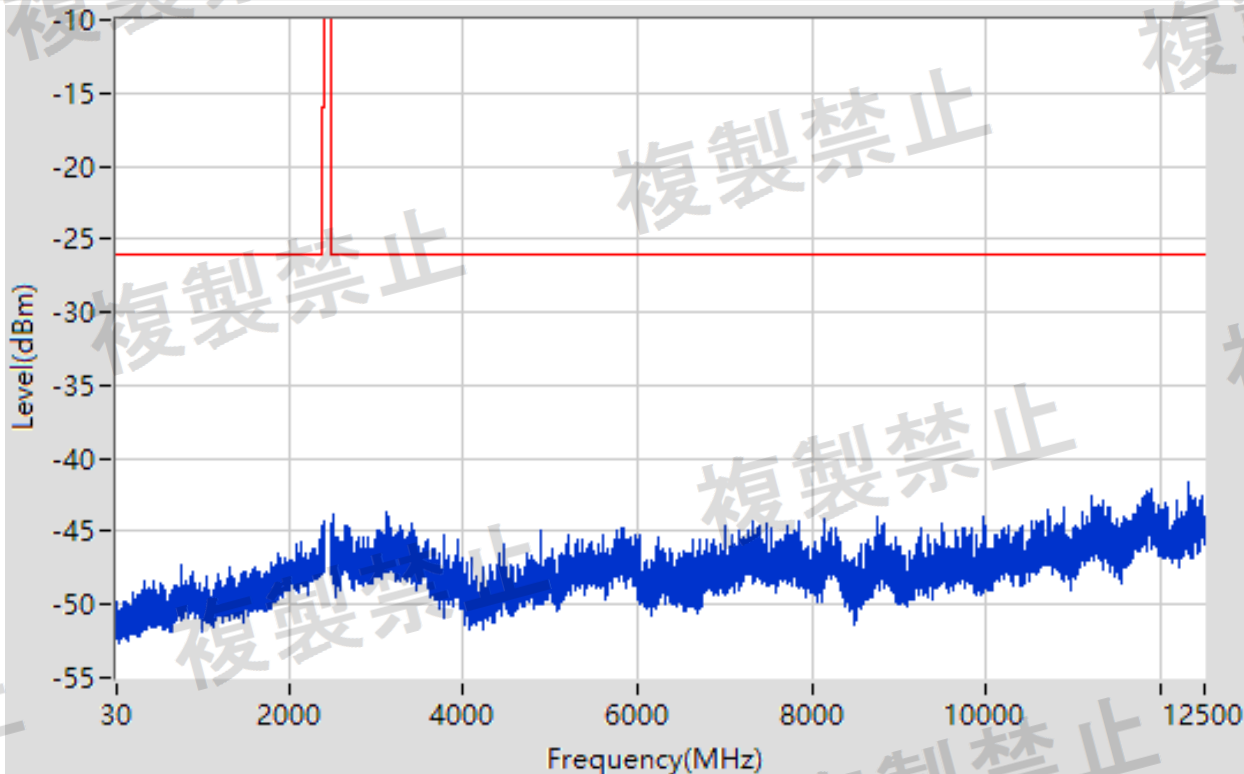
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	506	-47.75	-26	Pass	971
1000	2374	1	Peak	2372	-45.36	-26	Pass	1375
2374	2387	1	Peak	2375.04	-43.89	-26	Pass	601
2387	2400	1	Peak	2396.252	-44.7	-16	Pass	601
2483.5	2496.5	1	Peak	2495.807	-44.69	-16	Pass	601
2496.5	2509.5	1	Peak	2504.018	-43.81	-26	Pass	601
2509.5	6000	1	Peak	2981.568	-43.94	-26	Pass	3491
6000	12500	1	Peak	11291	-41.13	-26	Pass	6501

A.4.3 GFSK HV Low Channel



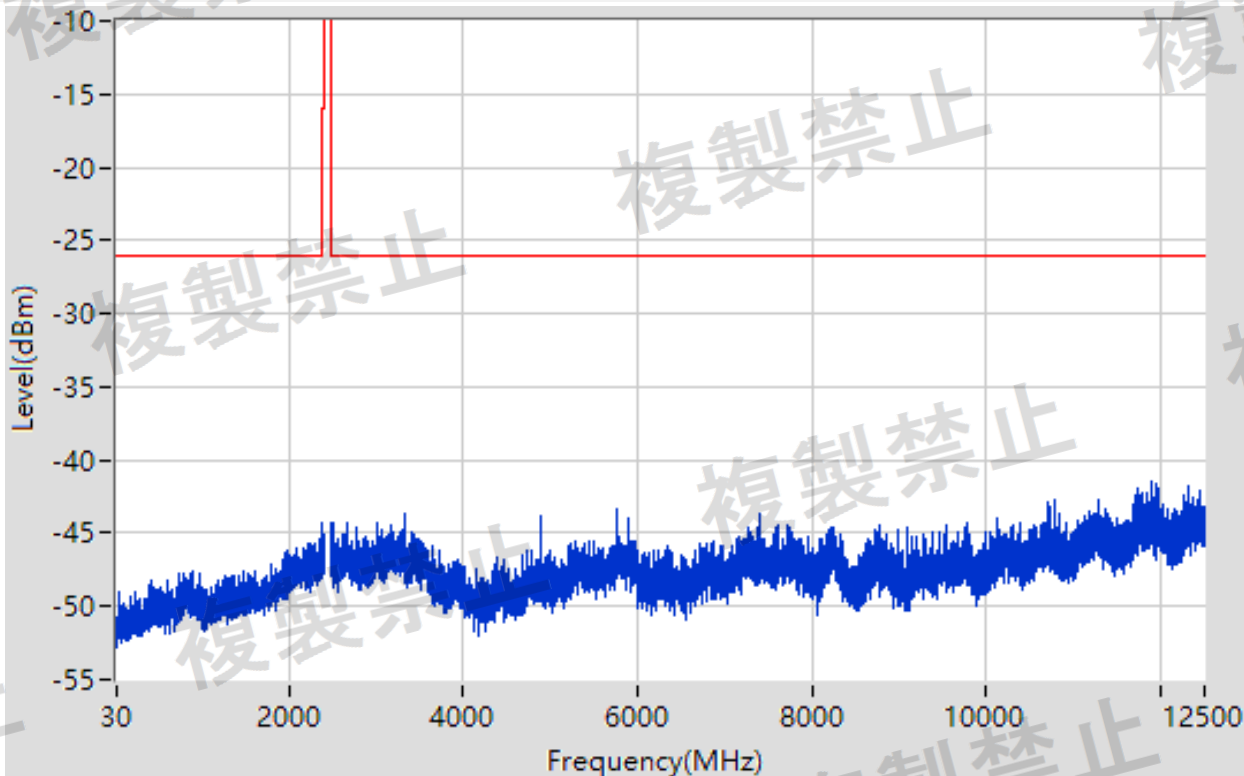
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	867	-47.18	-26	Pass	971
1000	2374	1	Peak	2360	-45.42	-26	Pass	1375
2374	2387	1	Peak	2386.718	-44.77	-26	Pass	601
2387	2400	1	Peak	2400	-36.19	-16	Pass	601
2483.5	2496.5	1	Peak	2496.457	-44.61	-16	Pass	601
2496.5	2509.5	1	Peak	2503.932	-44.03	-26	Pass	601
2509.5	6000	1	Peak	3032.575	-43.25	-26	Pass	3491
6000	12500	1	Peak	12383	-41.86	-26	Pass	6501

A.4.4 GFSK LV Middle Channel



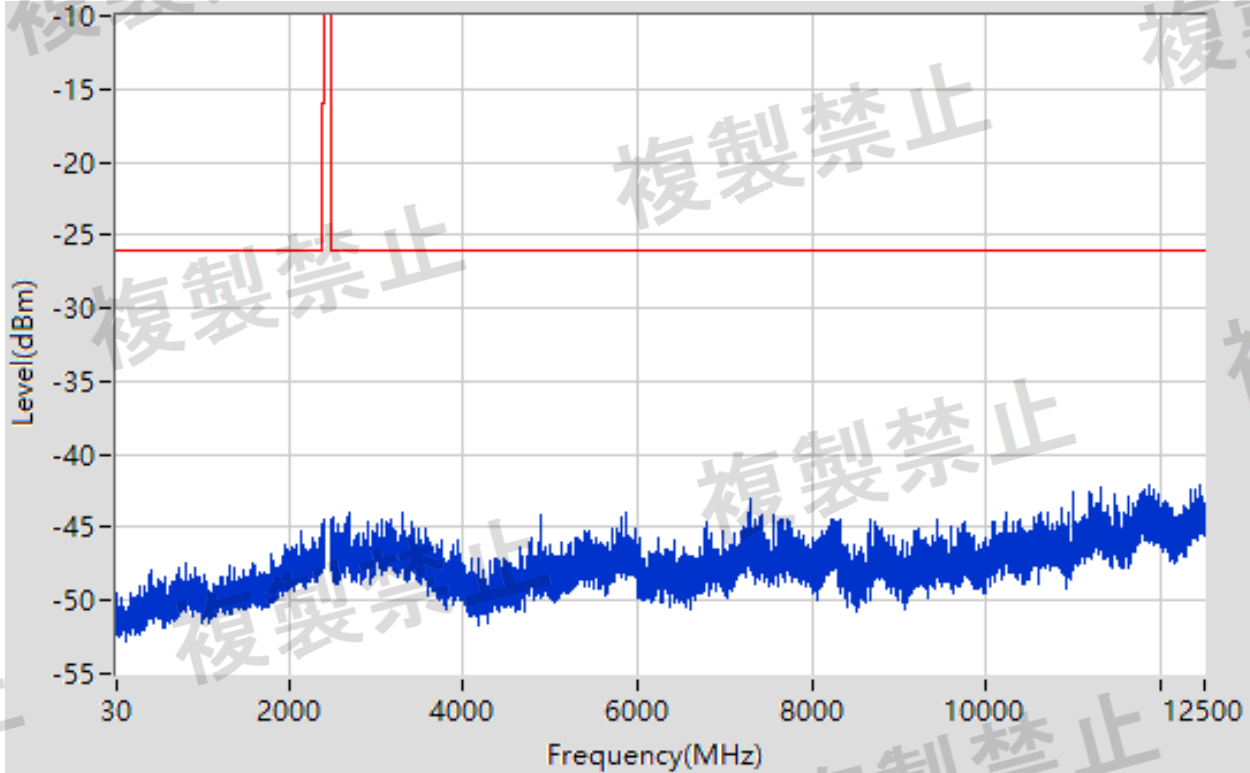
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	765	-47.24	-26	Pass	971
1000	2374	1	Peak	2359	-45.6	-26	Pass	1375
2374	2387	1	Peak	2381.085	-44.67	-26	Pass	601
2387	2400	1	Peak	2396.923	-44.31	-16	Pass	601
2483.5	2496.5	1	Peak	2489.198	-44.47	-16	Pass	601
2496.5	2509.5	1	Peak	2506.142	-43.91	-26	Pass	601
2509.5	6000	1	Peak	3114.587	-43.74	-26	Pass	3491
6000	12500	1	Peak	12315	-41.58	-26	Pass	6501

A.4.5 GFSK NV Middle Channel



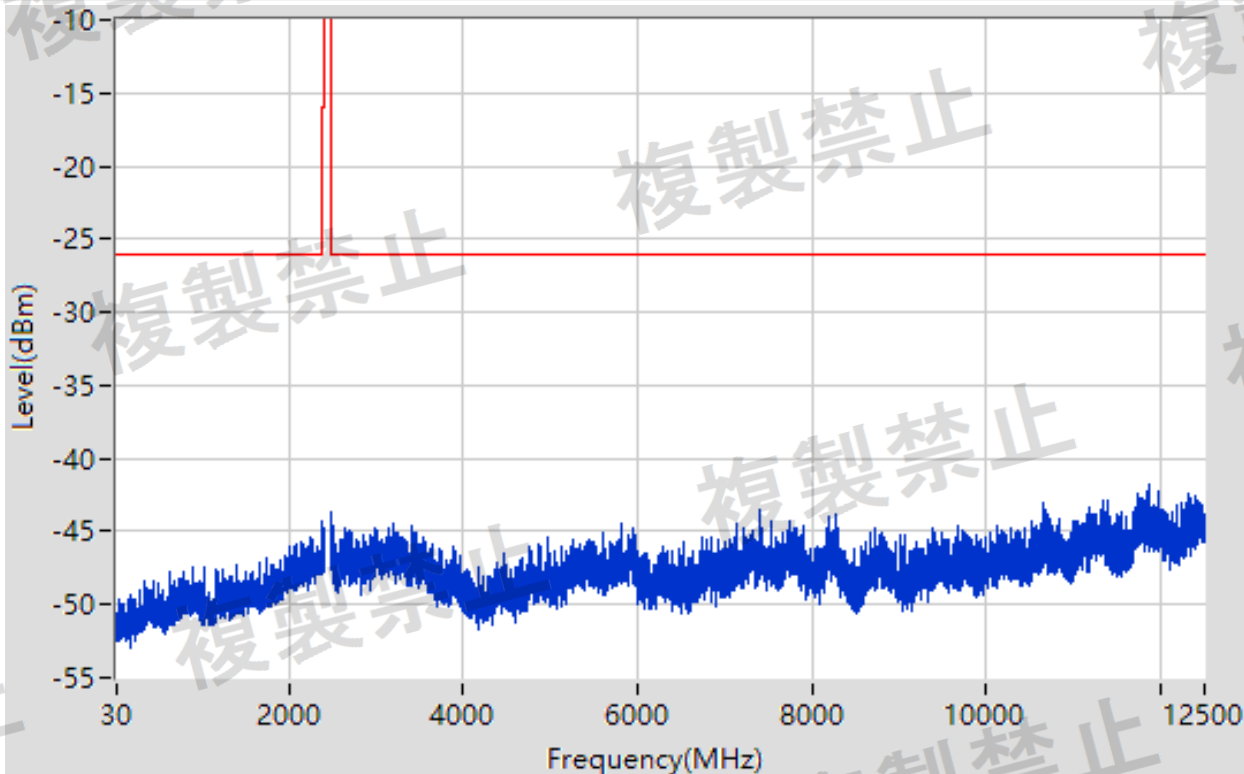
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	901	-47.54	-26	Pass	971
1000	2374	1	Peak	2352	-45.41	-26	Pass	1375
2374	2387	1	Peak	2379.633	-44.31	-26	Pass	601
2387	2400	1	Peak	2394.258	-44.9	-16	Pass	601
2483.5	2496.5	1	Peak	2489.003	-44.22	-16	Pass	601
2496.5	2509.5	1	Peak	2500.227	-44.3	-26	Pass	601
2509.5	6000	1	Peak	5772.967	-43.36	-26	Pass	3491
6000	12500	1	Peak	11886	-41.54	-26	Pass	6501

A.4.6 GFSK HV Middle Channel



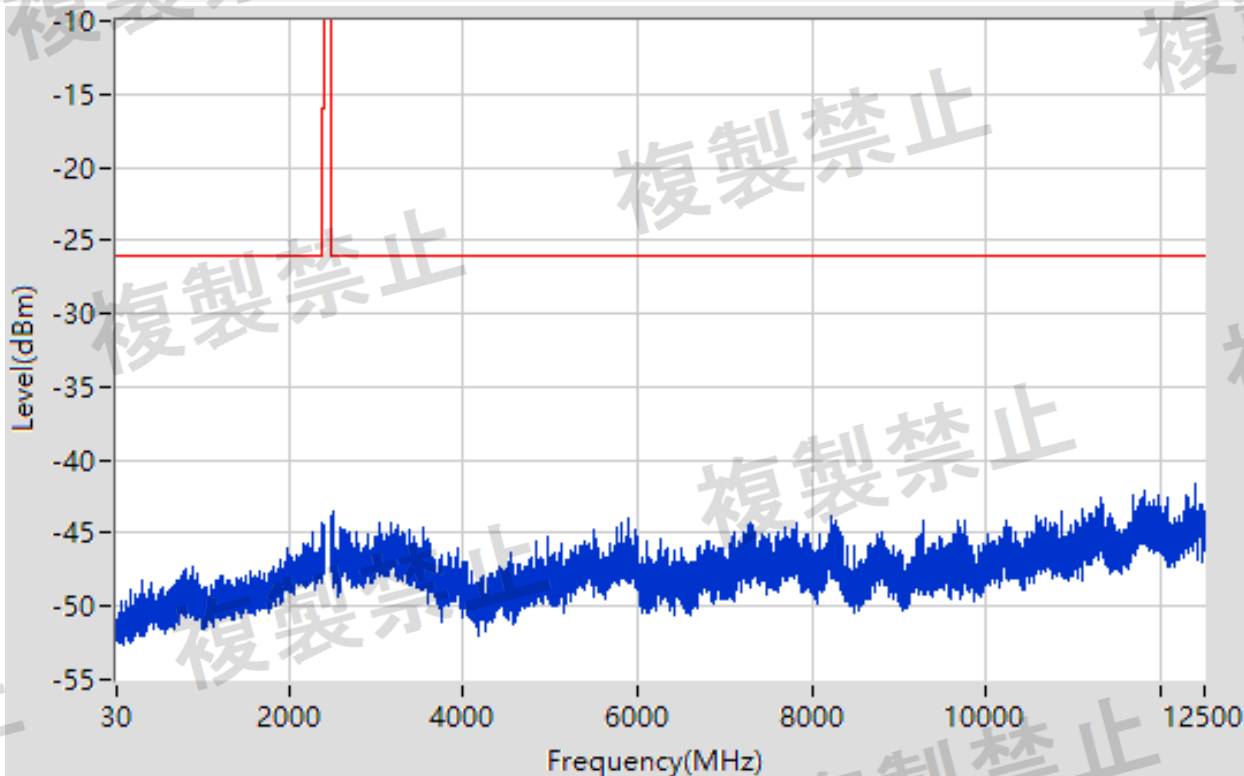
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	812	-47.51	-26	Pass	971
1000	2374	1	Peak	2134	-45.25	-26	Pass	1375
2374	2387	1	Peak	2379.135	-44.86	-26	Pass	601
2387	2400	1	Peak	2395.255	-44.42	-16	Pass	601
2483.5	2496.5	1	Peak	2486.598	-44.42	-16	Pass	601
2496.5	2509.5	1	Peak	2504.17	-44.34	-26	Pass	601
2509.5	6000	1	Peak	3298.613	-44.03	-26	Pass	3491
6000	12500	1	Peak	12459	-42.07	-26	Pass	6501

A.4.7 GFSK LV High Channel



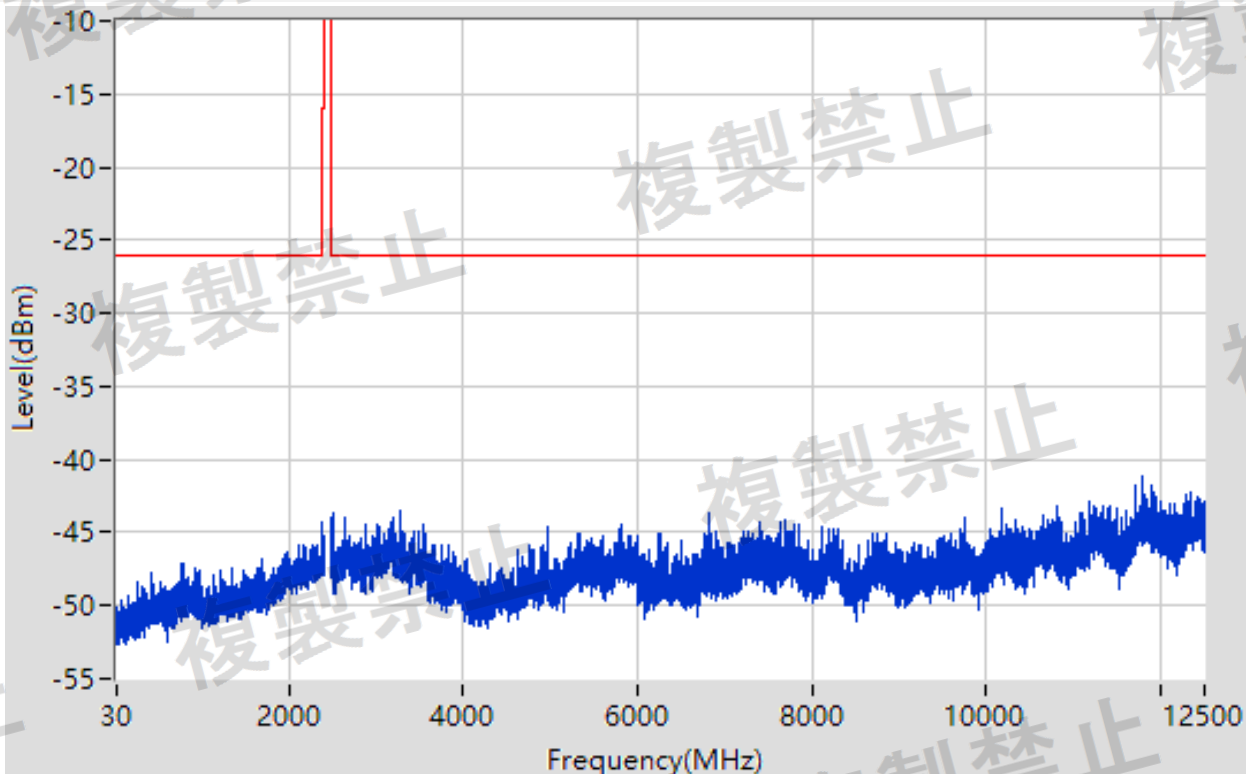
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	914	-47.51	-26	Pass	971
1000	2374	1	Peak	2246	-45.42	-26	Pass	1375
2374	2387	1	Peak	2375.343	-44.24	-26	Pass	601
2387	2400	1	Peak	2398.18	-44.78	-16	Pass	601
2483.5	2496.5	1	Peak	2489.697	-43.62	-16	Pass	601
2496.5	2509.5	1	Peak	2500.508	-44.58	-26	Pass	601
2509.5	6000	1	Peak	5802.972	-44.41	-26	Pass	3491
6000	12500	1	Peak	11876	-41.72	-26	Pass	6501

A.4.8 GFSK NV High Channel

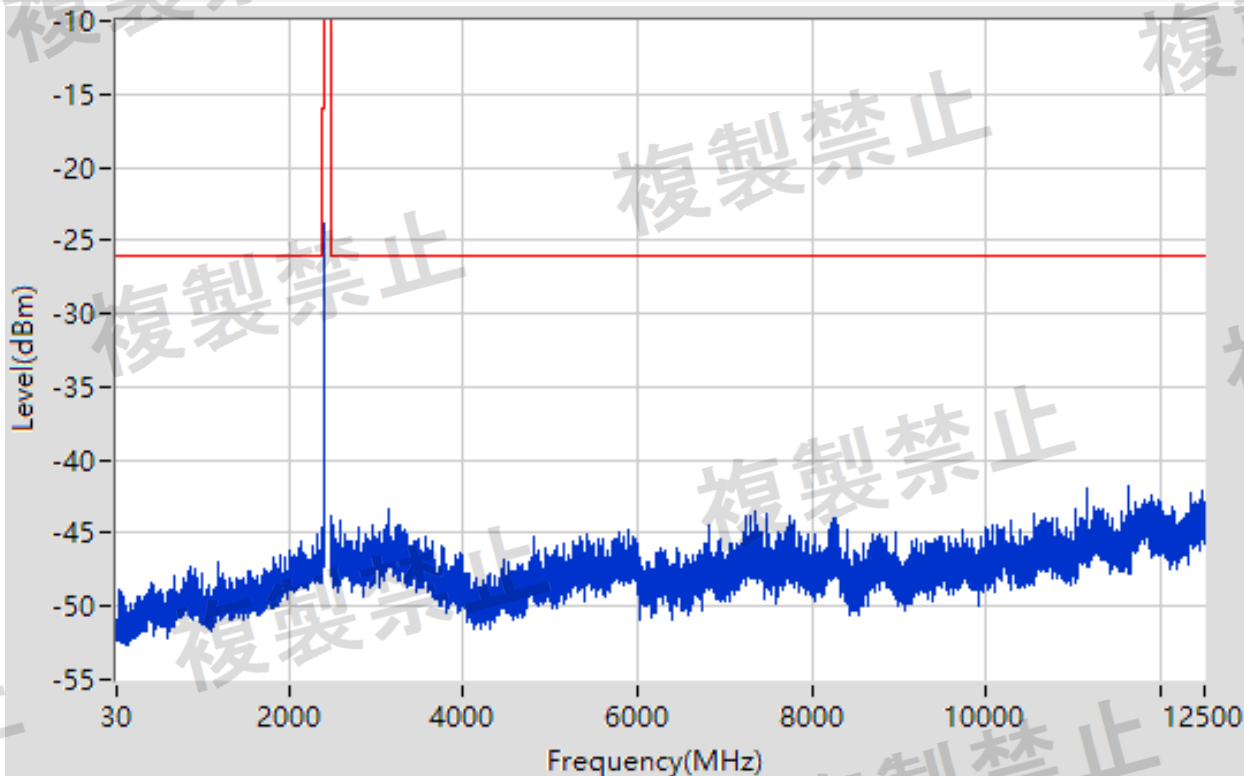


Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	915	-47.27	-26	Pass	971
1000	2374	1	Peak	2269	-44.95	-26	Pass	1375
2374	2387	1	Peak	2381.453	-44.38	-26	Pass	601
2387	2400	1	Peak	2394.973	-44.41	-16	Pass	601
2483.5	2496.5	1	Peak	2485.407	-43.83	-16	Pass	601
2496.5	2509.5	1	Peak	2502.437	-43.56	-26	Pass	601
2509.5	6000	1	Peak	5897.985	-44.06	-26	Pass	3491
6000	12500	1	Peak	12400	-41.6	-26	Pass	6501

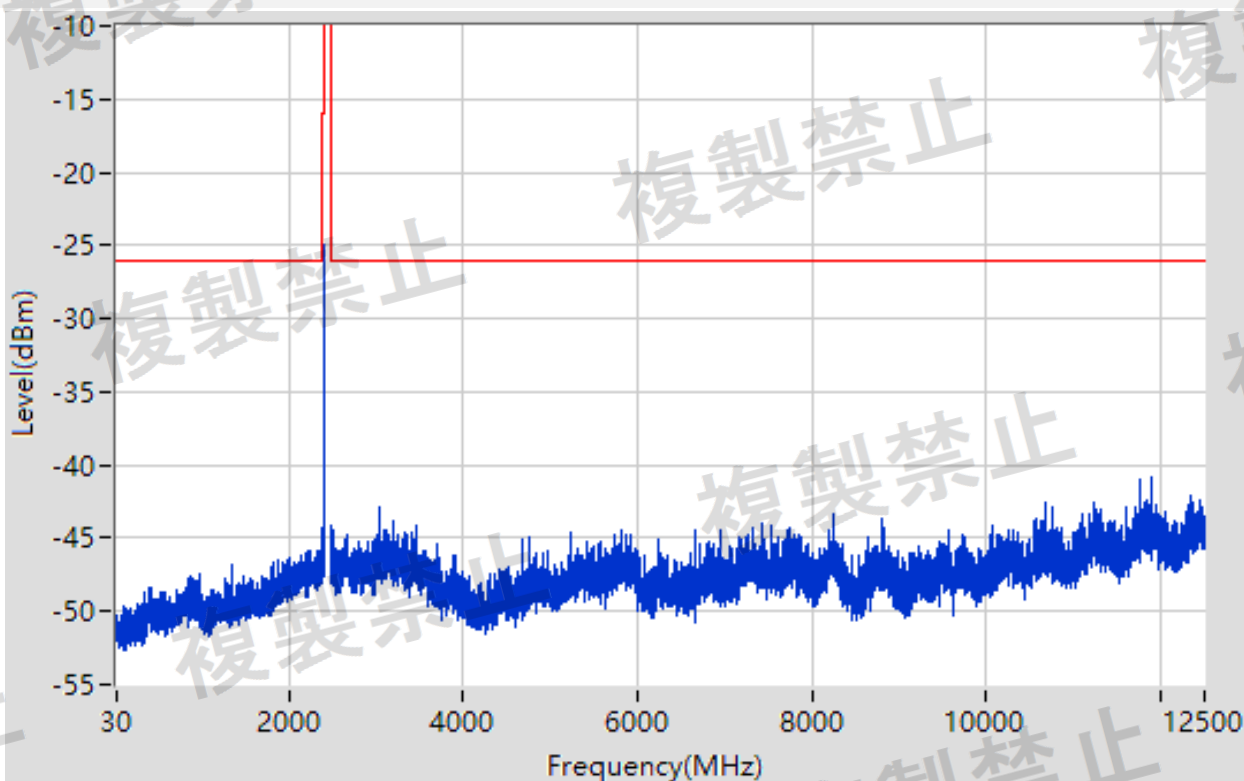
A.4.9 GFSK HV High Channel



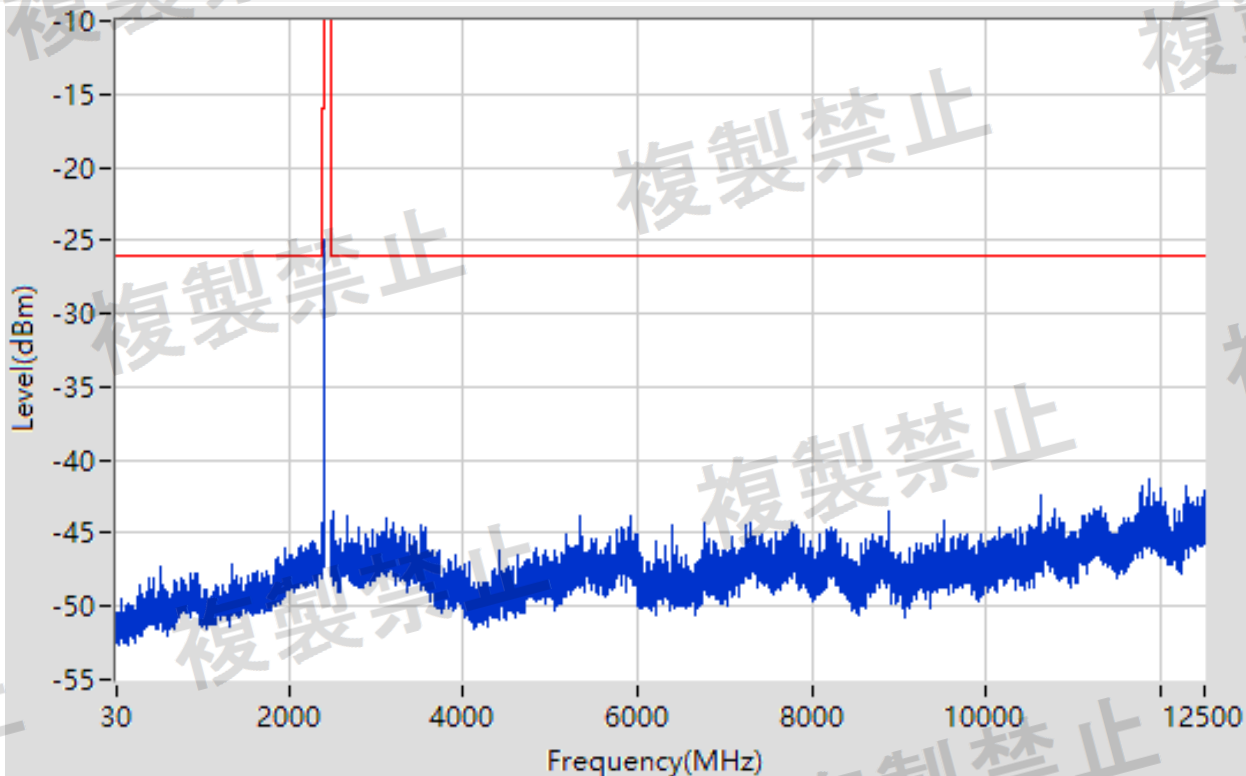
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	800	-47.08	-26	Pass	971
1000	2374	1	Peak	2106	-45.8	-26	Pass	1375
2374	2387	1	Peak	2374.065	-44.73	-26	Pass	601
2387	2400	1	Peak	2391.788	-44.28	-16	Pass	601
2483.5	2496.5	1	Peak	2495.503	-43.97	-16	Pass	601
2496.5	2509.5	1	Peak	2504.387	-43.75	-26	Pass	601
2509.5	6000	1	Peak	3288.612	-43.47	-26	Pass	3491
6000	12500	1	Peak	11793	-41.21	-26	Pass	6501

A.4.10 $\pi/4$ -DQPSK LV Low Channel

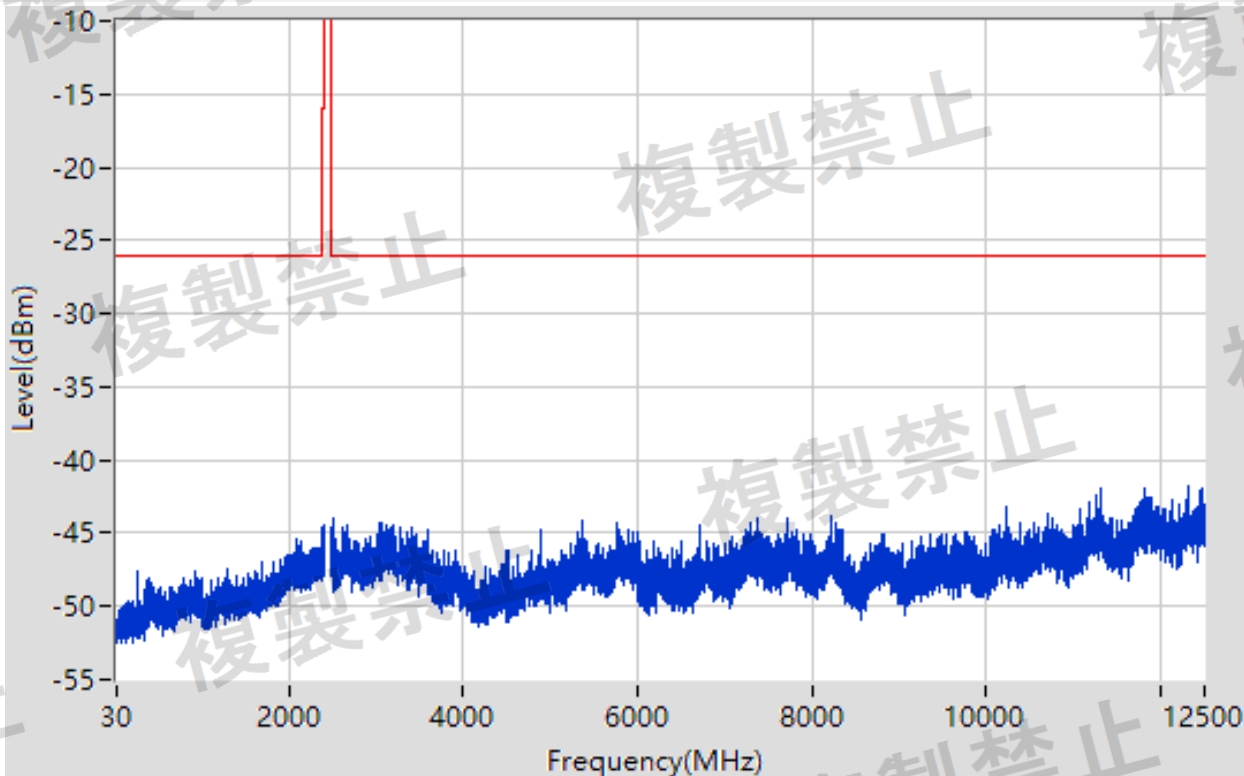
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	881	-47.34	-26	Pass	971
1000	2374	1	Peak	2322	-45.15	-26	Pass	1375
2374	2387	1	Peak	2382.038	-44.96	-26	Pass	601
2387	2400	1	Peak	2400	-23.92	-16	Pass	601
2483.5	2496.5	1	Peak	2490.173	-44.78	-16	Pass	601
2496.5	2509.5	1	Peak	2499.013	-43.8	-26	Pass	601
2509.5	6000	1	Peak	3152.592	-43.29	-26	Pass	3491
6000	12500	1	Peak	11632	-41.83	-26	Pass	6501

A.4.11 $\pi/4$ -DQPSK NV Low Channel

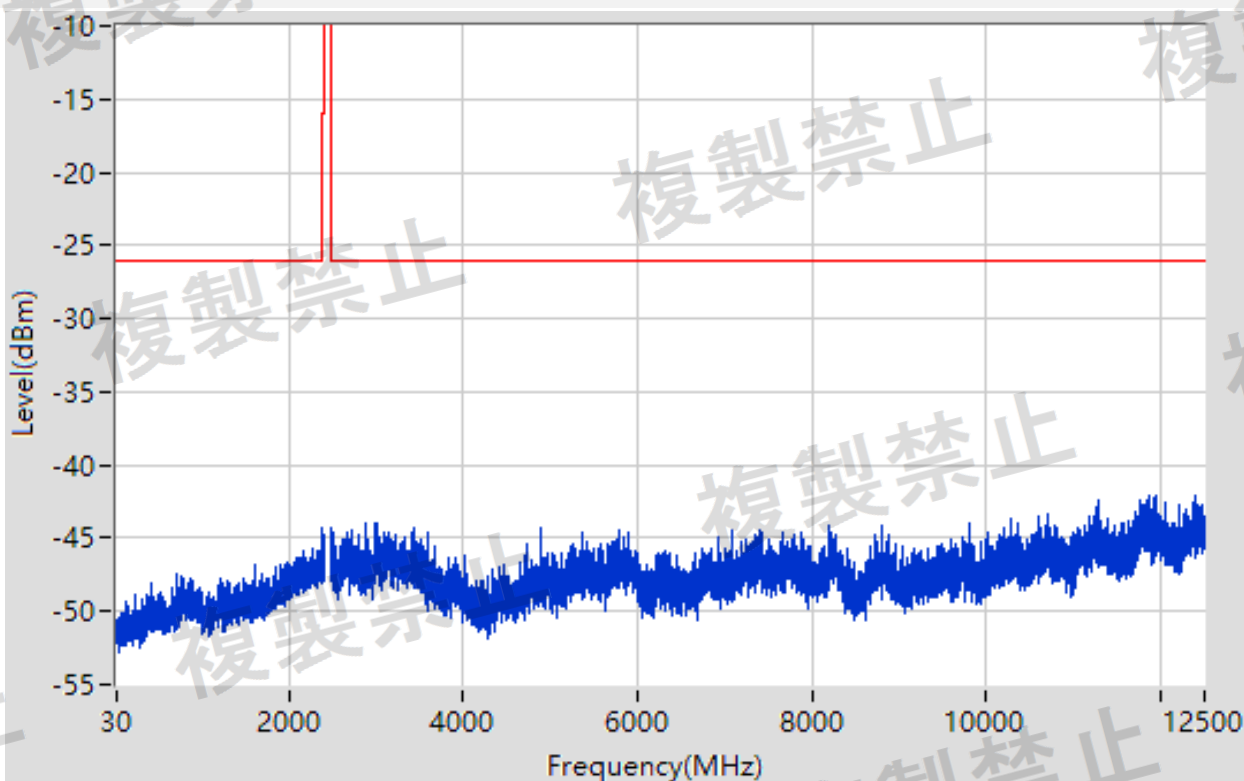
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	994	-47.44	-26	Pass	971
1000	2374	1	Peak	2365	-45.81	-26	Pass	1375
2374	2387	1	Peak	2381.692	-44.92	-26	Pass	601
2387	2400	1	Peak	2400	-25	-16	Pass	601
2483.5	2496.5	1	Peak	2493.033	-44.13	-16	Pass	601
2496.5	2509.5	1	Peak	2501.895	-44.45	-26	Pass	601
2509.5	6000	1	Peak	3030.575	-42.96	-26	Pass	3491
6000	12500	1	Peak	11892	-40.78	-26	Pass	6501

A.4.12 $\pi/4$ -DQPSK HV Low Channel

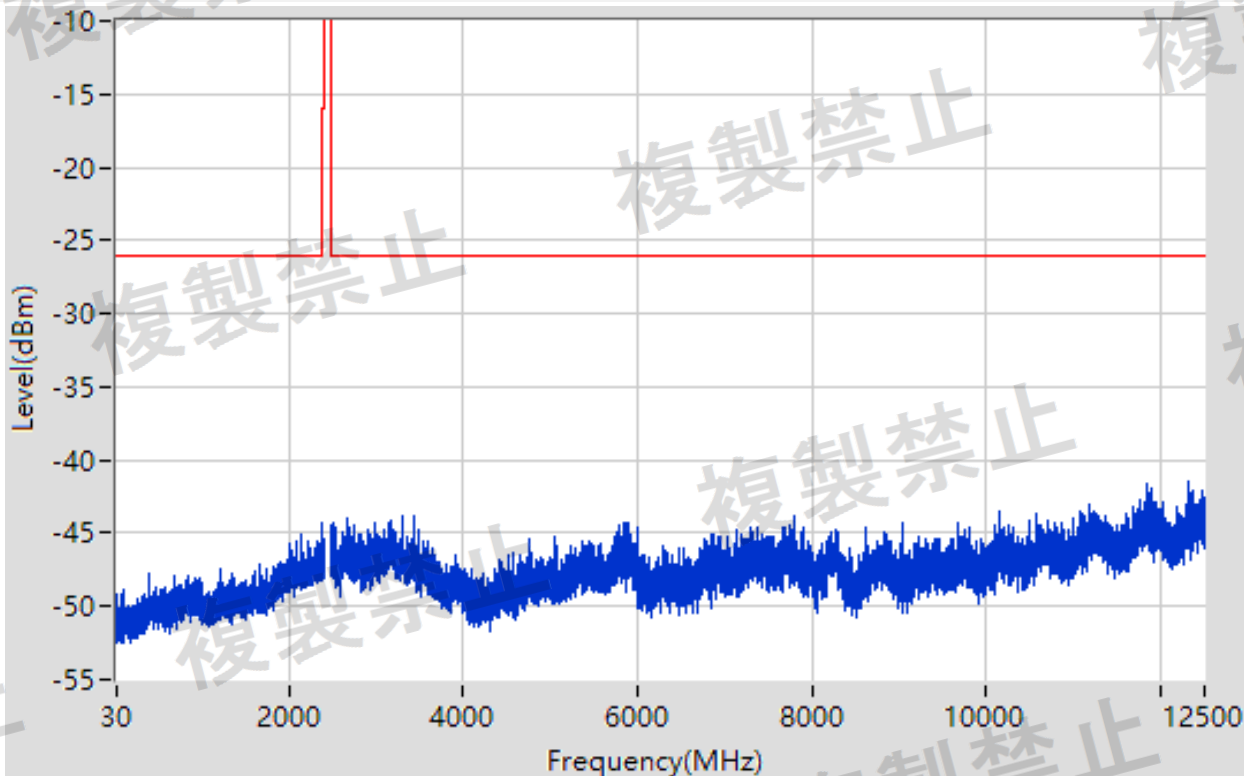
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	528	-47.24	-26	Pass	971
1000	2374	1	Peak	2274	-45.61	-26	Pass	1375
2374	2387	1	Peak	2386.177	-44.85	-26	Pass	601
2387	2400	1	Peak	2400	-24.94	-16	Pass	601
2483.5	2496.5	1	Peak	2487.032	-44.15	-16	Pass	601
2496.5	2509.5	1	Peak	2507.94	-43.54	-26	Pass	601
2509.5	6000	1	Peak	2675.524	-43.76	-26	Pass	3491
6000	12500	1	Peak	11866	-41.38	-26	Pass	6501

A.4.13 $\pi/4$ -DQPSK LV Middle Channel

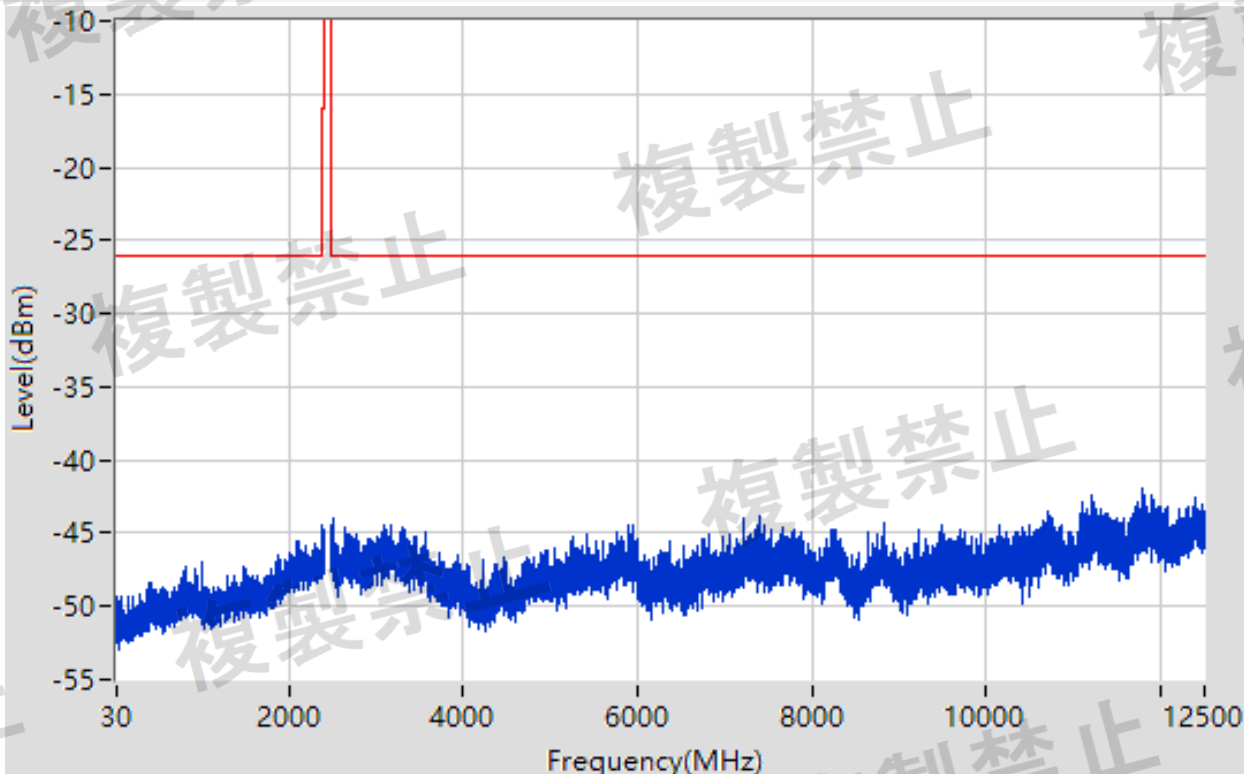
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	934	-47.53	-26	Pass	971
1000	2374	1	Peak	2103	-45.47	-26	Pass	1375
2374	2387	1	Peak	2384.205	-44.69	-26	Pass	601
2387	2400	1	Peak	2397.335	-44.47	-16	Pass	601
2483.5	2496.5	1	Peak	2490.802	-44.65	-16	Pass	601
2496.5	2509.5	1	Peak	2508.937	-43.92	-26	Pass	601
2509.5	6000	1	Peak	5370.91	-44.08	-26	Pass	3491
6000	12500	1	Peak	12317	-41.75	-26	Pass	6501

A.4.14 $\pi/4$ -DQPSK NV Middle Channel

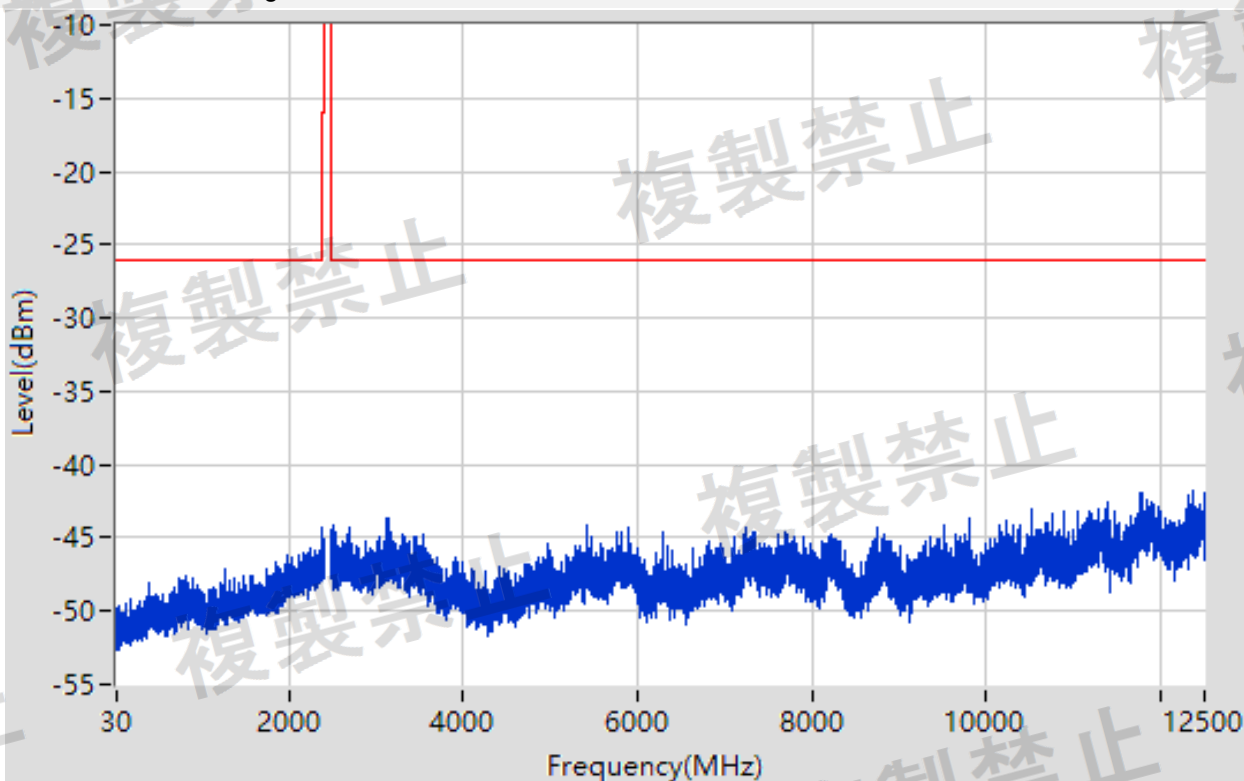
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	709	-47.46	-26	Pass	971
1000	2374	1	Peak	2267	-45.73	-26	Pass	1375
2374	2387	1	Peak	2376.773	-44.26	-26	Pass	601
2387	2400	1	Peak	2389.297	-44.74	-16	Pass	601
2483.5	2496.5	1	Peak	2488.527	-44.32	-16	Pass	601
2496.5	2509.5	1	Peak	2508.503	-44.64	-26	Pass	601
2509.5	6000	1	Peak	2884.554	-43.91	-26	Pass	3491
6000	12500	1	Peak	11866	-42.03	-26	Pass	6501

A.4.15 $\pi/4$ -DQPSK HV Middle Channel

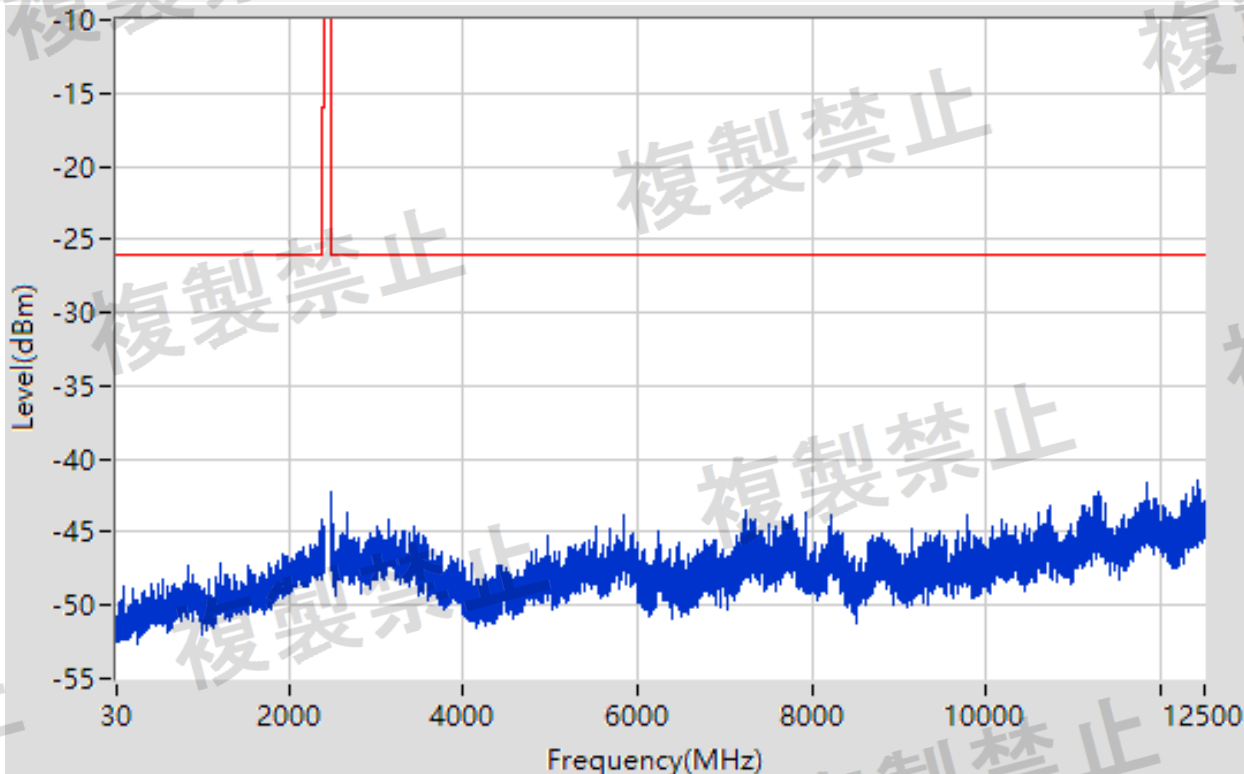
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	407	-47.69	-26	Pass	971
1000	2374	1	Peak	2139	-45.09	-26	Pass	1375
2374	2387	1	Peak	2374.585	-44.29	-26	Pass	601
2387	2400	1	Peak	2389.34	-44.86	-16	Pass	601
2483.5	2496.5	1	Peak	2494.333	-44.53	-16	Pass	601
2496.5	2509.5	1	Peak	2503.888	-44.23	-26	Pass	601
2509.5	6000	1	Peak	3296.613	-43.78	-26	Pass	3491
6000	12500	1	Peak	12314	-41.54	-26	Pass	6501

A.4.16 $\pi/4$ -DQPSKLV High Channel

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	999	-46.99	-26	Pass	971
1000	2374	1	Peak	2093	-45.6	-26	Pass	1375
2374	2387	1	Peak	2374.737	-44.42	-26	Pass	601
2387	2400	1	Peak	2388.083	-44.77	-16	Pass	601
2483.5	2496.5	1	Peak	2483.608	-44.39	-16	Pass	601
2496.5	2509.5	1	Peak	2504.322	-44.05	-26	Pass	601
2509.5	6000	1	Peak	5947.993	-44.39	-26	Pass	3491
6000	12500	1	Peak	11796	-42.02	-26	Pass	6501

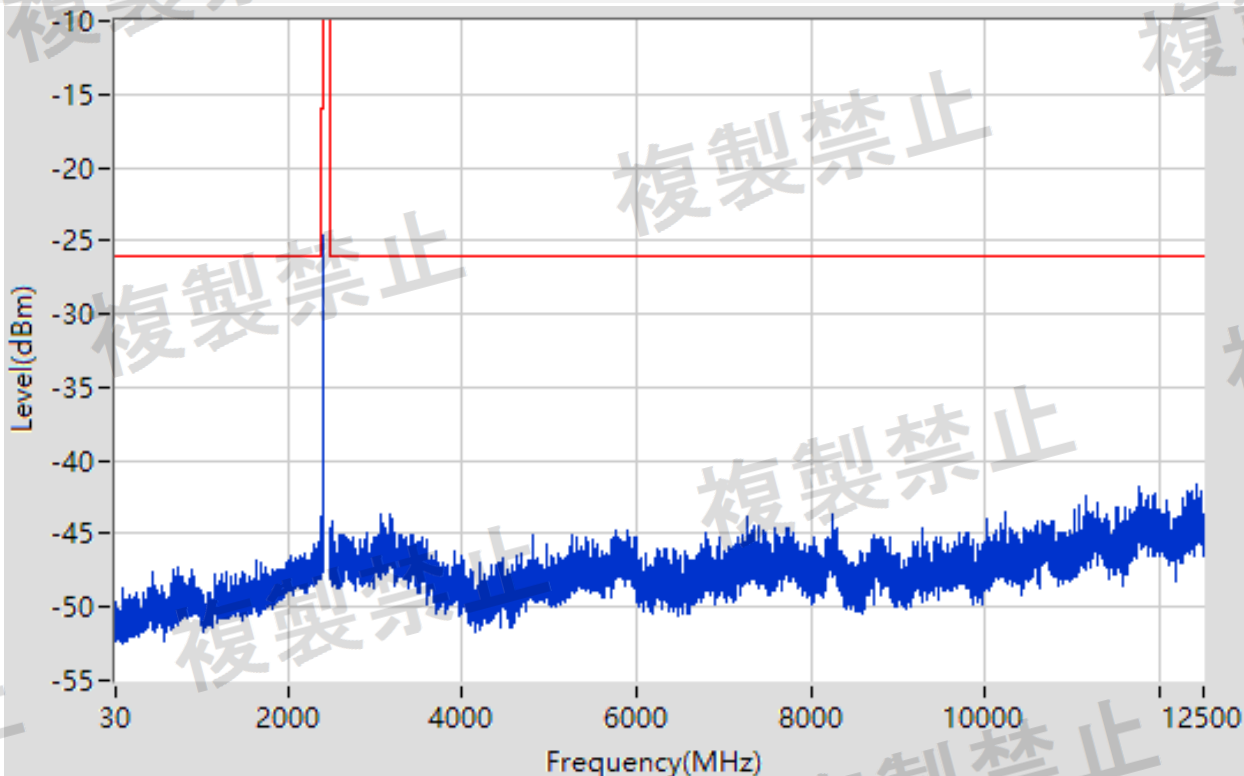
A.4.17 $\pi/4$ -DQPSK NV High Channel

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	828	-47.56	-26	Pass	971
1000	2374	1	Peak	2241	-45.69	-26	Pass	1375
2374	2387	1	Peak	2377.293	-44.82	-26	Pass	601
2387	2400	1	Peak	2390.683	-44.32	-16	Pass	601
2483.5	2496.5	1	Peak	2485.948	-44.45	-16	Pass	601
2496.5	2509.5	1	Peak	2506.965	-44.18	-26	Pass	601
2509.5	6000	1	Peak	3132.589	-43.64	-26	Pass	3491
6000	12500	1	Peak	12356	-41.86	-26	Pass	6501

A.4.18 $\pi/4$ -DQPSK HV High Channel

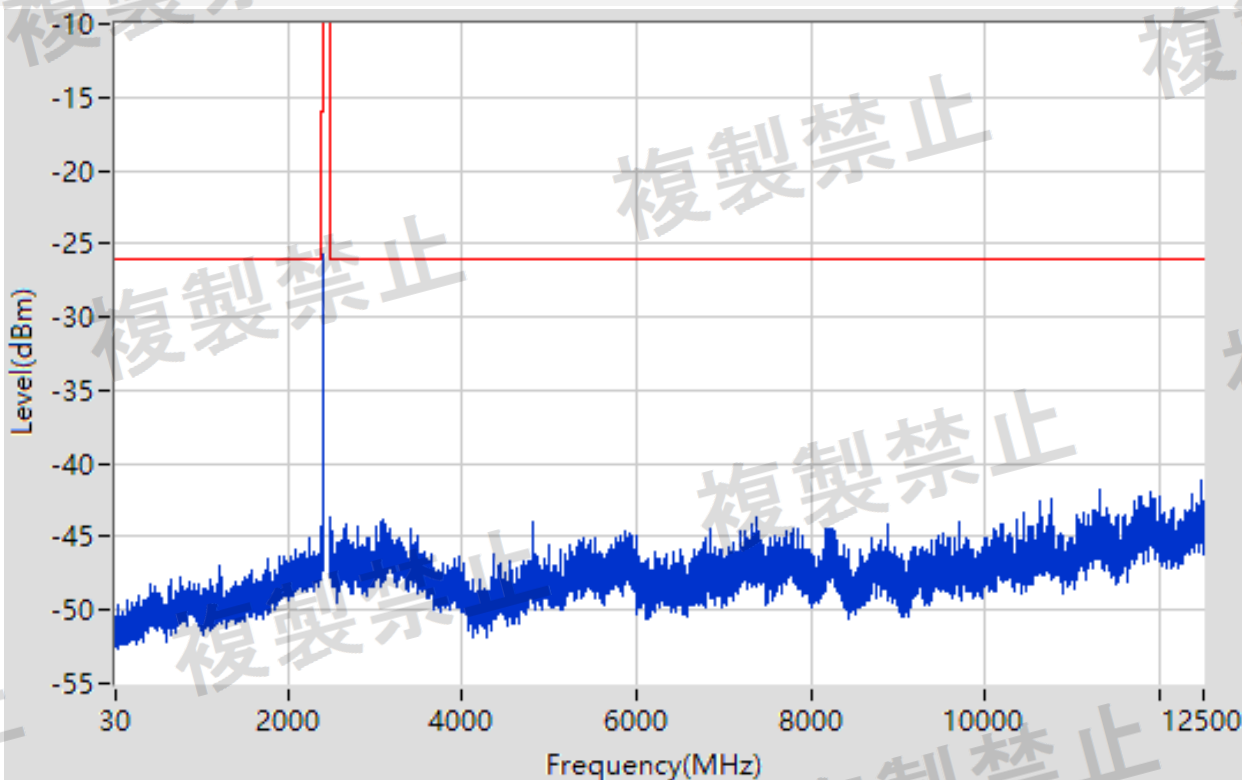
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	837	-47.25	-26	Pass	971
1000	2374	1	Peak	2357	-44.97	-26	Pass	1375
2374	2387	1	Peak	2376.34	-44.3	-26	Pass	601
2387	2400	1	Peak	2388.3	-44.17	-16	Pass	601
2483.5	2496.5	1	Peak	2483.587	-42.21	-16	Pass	601
2496.5	2509.5	1	Peak	2497.258	-44.37	-26	Pass	601
2509.5	6000	1	Peak	2670.523	-43.72	-26	Pass	3491
6000	12500	1	Peak	12424	-41.5	-26	Pass	6501

A.4.19 8-DPSK LV Low Channel



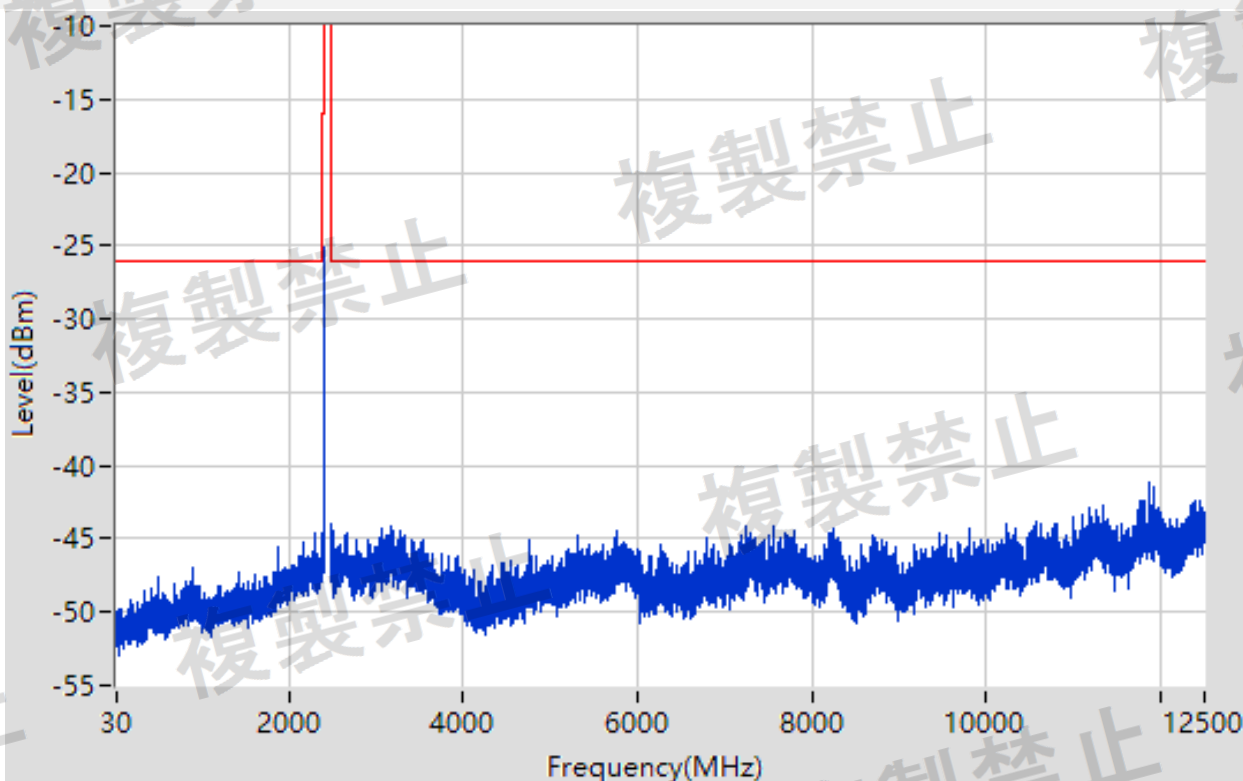
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	743	-47.24	-26	Pass	971
1000	2374	1	Peak	2364	-45.57	-26	Pass	1375
2374	2387	1	Peak	2378.268	-44.6	-26	Pass	601
2387	2400	1	Peak	2400	-24.59	-16	Pass	601
2483.5	2496.5	1	Peak	2487.595	-44.68	-16	Pass	601
2496.5	2509.5	1	Peak	2505.167	-44.08	-26	Pass	601
2509.5	6000	1	Peak	3169.595	-43.6	-26	Pass	3491
6000	12500	1	Peak	12432	-41.61	-26	Pass	6501

A.4.20 8-DPSK NV Low Channel



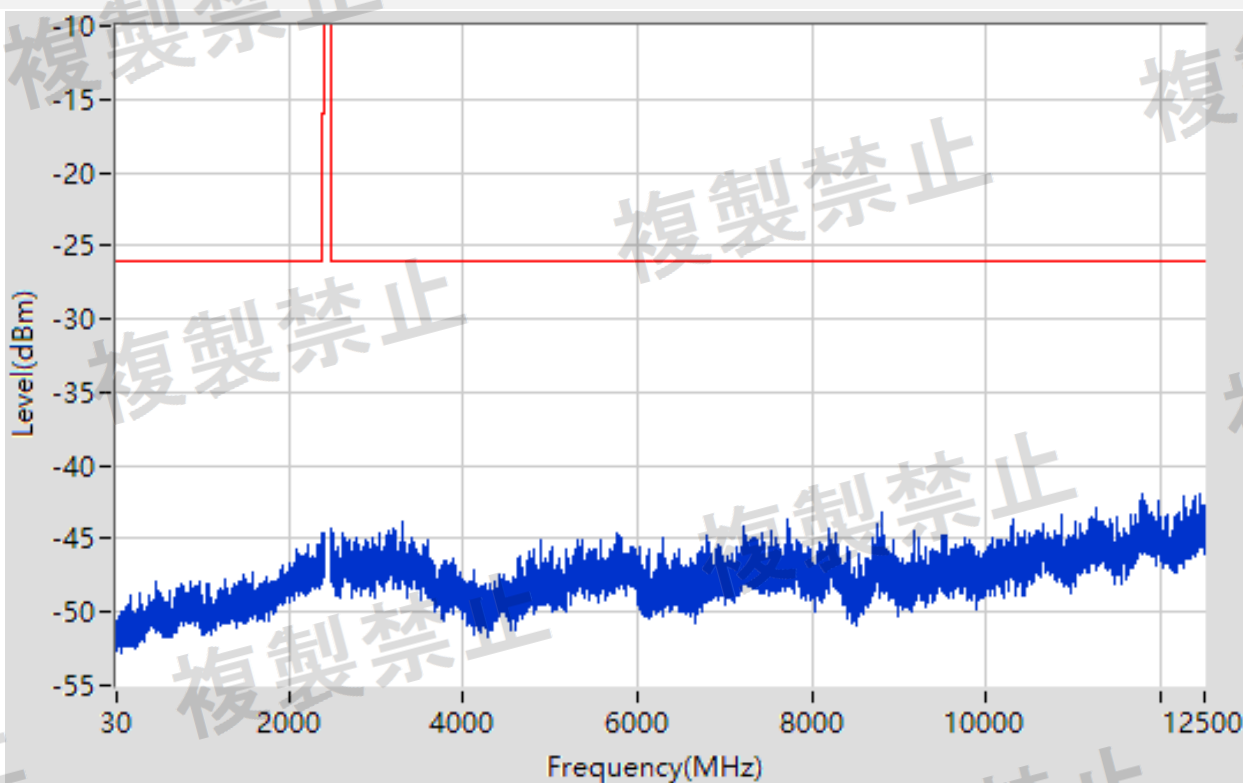
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	767	-47.83	-26	Pass	971
1000	2374	1	Peak	2239	-45.03	-26	Pass	1375
2374	2387	1	Peak	2378.702	-44.33	-26	Pass	601
2387	2400	1	Peak	2400	-25.74	-16	Pass	601
2483.5	2496.5	1	Peak	2490.477	-43.73	-16	Pass	601
2496.5	2509.5	1	Peak	2508.027	-44.68	-26	Pass	601
2509.5	6000	1	Peak	3104.585	-43.86	-26	Pass	3491
6000	12500	1	Peak	12476	-41.13	-26	Pass	6501

A.4.21 8-DPSK HV Low Channel



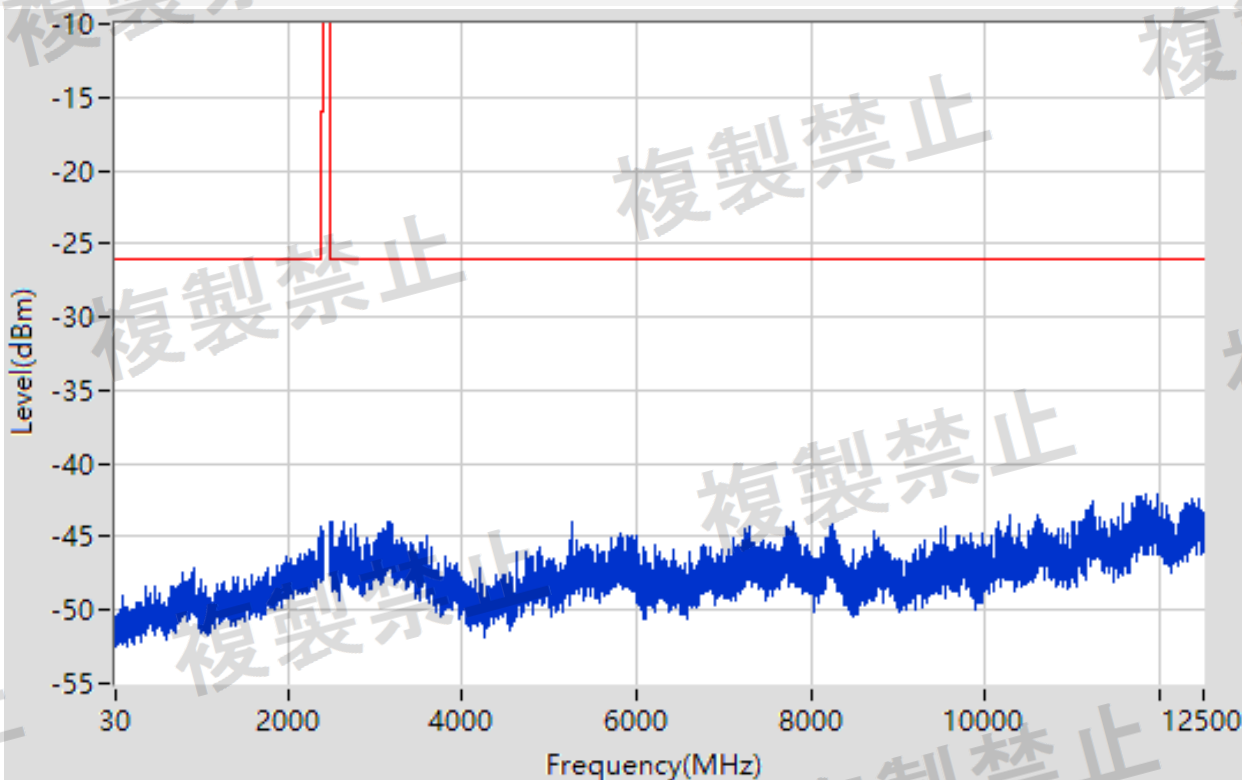
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	889	-46.96	-26	Pass	971
1000	2374	1	Peak	2290	-44.69	-26	Pass	1375
2374	2387	1	Peak	2386.068	-44.64	-26	Pass	601
2387	2400	1	Peak	2400	-25.08	-16	Pass	601
2483.5	2496.5	1	Peak	2493.207	-44.02	-16	Pass	601
2496.5	2509.5	1	Peak	2508.417	-44.39	-26	Pass	601
2509.5	6000	1	Peak	3165.594	-44.12	-26	Pass	3491
6000	12500	1	Peak	11872	-41.17	-26	Pass	6501

A.4.22 8-DPSK LV Middle Channel



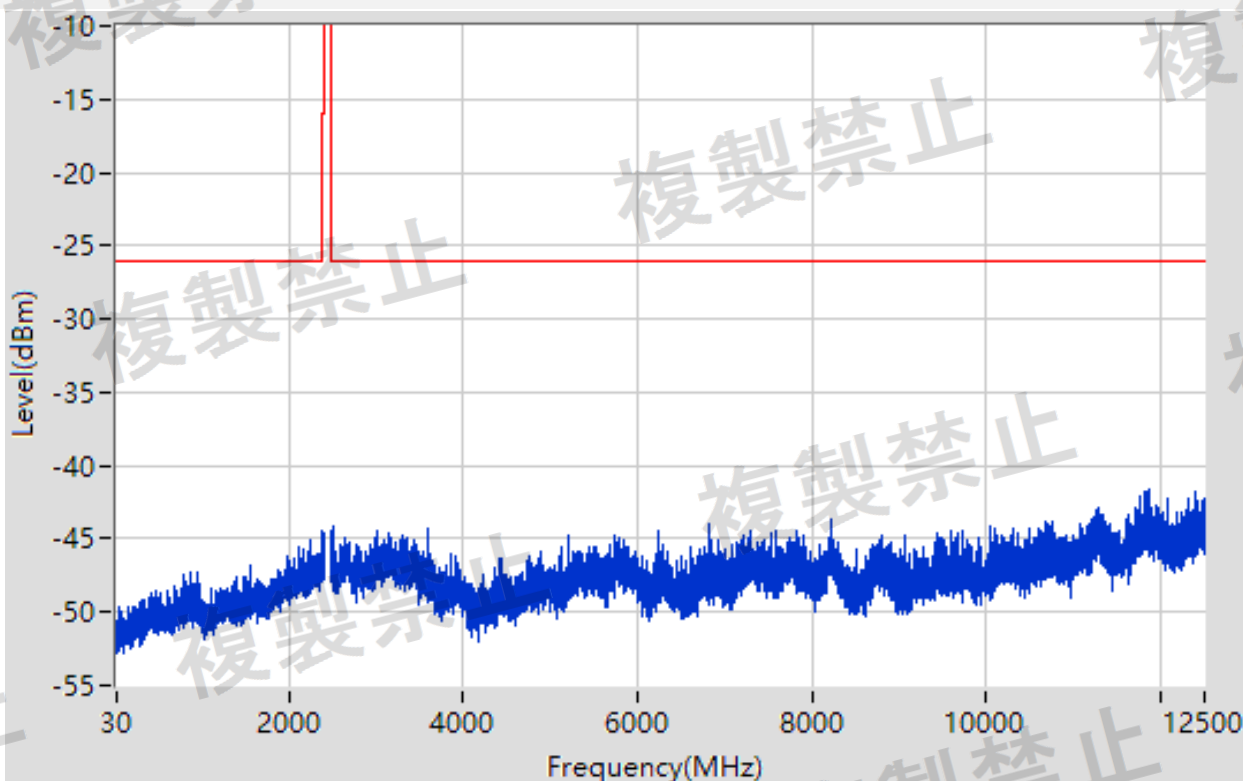
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	994	-47.84	-26	Pass	971
1000	2374	1	Peak	2215	-45.34	-26	Pass	1375
2374	2387	1	Peak	2379.352	-44.64	-26	Pass	601
2387	2400	1	Peak	2398.332	-44.55	-16	Pass	601
2483.5	2496.5	1	Peak	2488.007	-44.45	-16	Pass	601
2496.5	2509.5	1	Peak	2497.562	-44.26	-26	Pass	601
2509.5	6000	1	Peak	3303.614	-43.83	-26	Pass	3491
6000	12500	1	Peak	11789	-41.93	-26	Pass	6501

A.4.23 8-DPSK NV Middle Channel



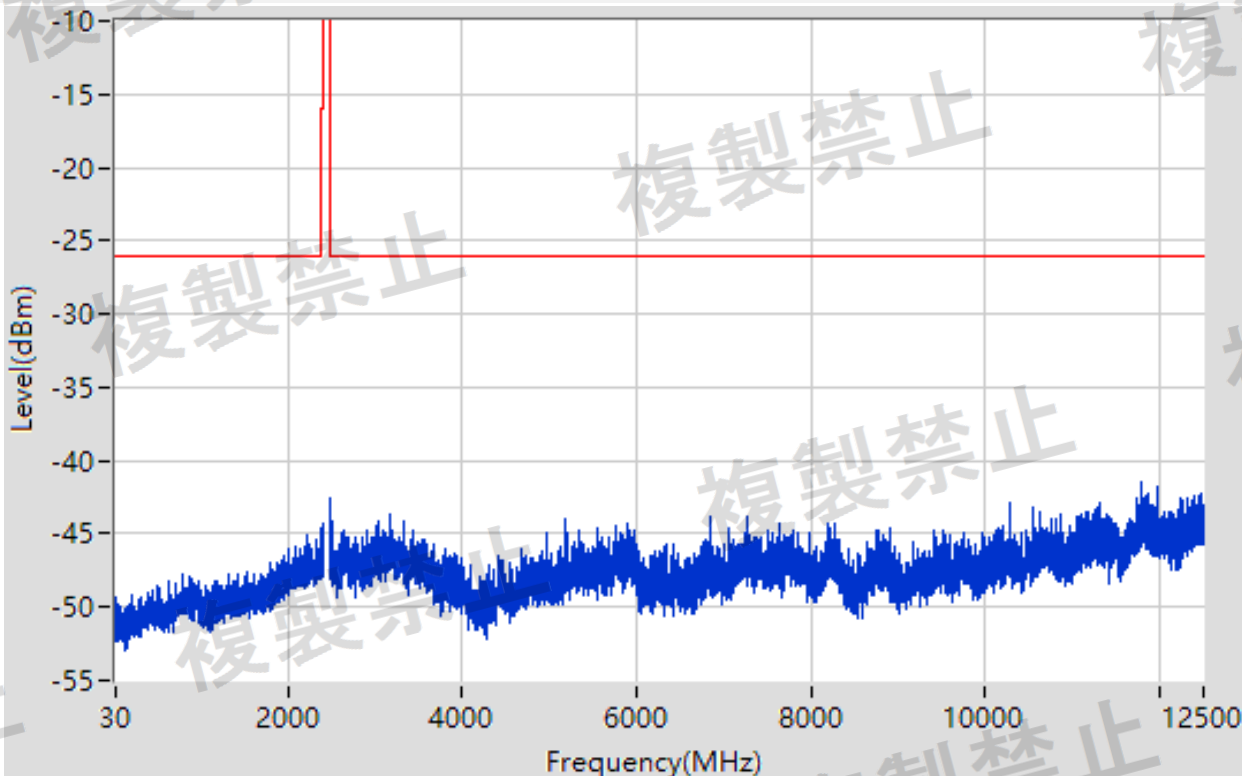
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	926	-47.19	-26	Pass	971
1000	2374	1	Peak	2362	-45.1	-26	Pass	1375
2374	2387	1	Peak	2378.355	-44.7	-26	Pass	601
2387	2400	1	Peak	2391.377	-44.3	-16	Pass	601
2483.5	2496.5	1	Peak	2488.267	-43.96	-16	Pass	601
2496.5	2509.5	1	Peak	2504.863	-43.99	-26	Pass	601
2509.5	6000	1	Peak	2640.519	-43.94	-26	Pass	3491
6000	12500	1	Peak	11971	-42.02	-26	Pass	6501

A.4.24 8-DPSK HV Middle Channel



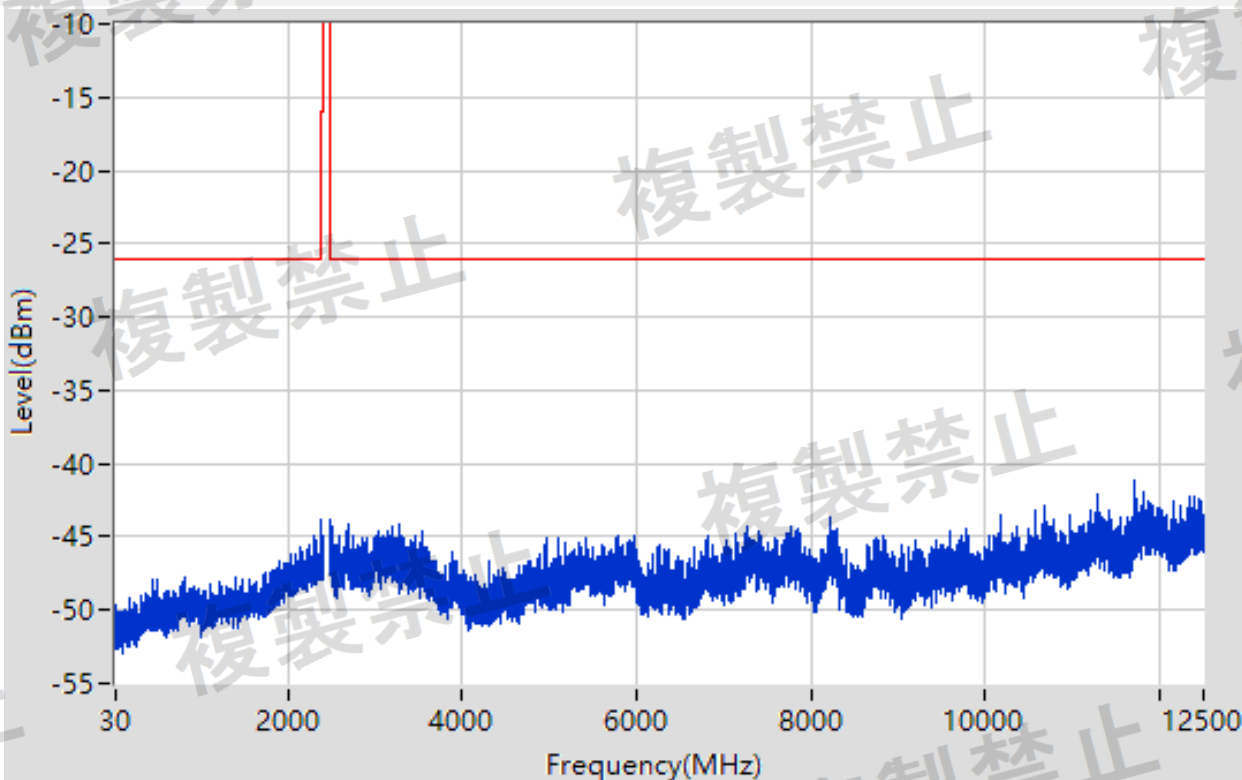
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	871	-47.25	-26	Pass	971
1000	2374	1	Peak	2239	-45.08	-26	Pass	1375
2374	2387	1	Peak	2376.513	-44.62	-26	Pass	601
2387	2400	1	Peak	2391.983	-44.48	-16	Pass	601
2483.5	2496.5	1	Peak	2484.15	-44.42	-16	Pass	601
2496.5	2509.5	1	Peak	2504.17	-44.18	-26	Pass	601
2509.5	6000	1	Peak	3586.654	-44.25	-26	Pass	3491
6000	12500	1	Peak	11855	-41.61	-26	Pass	6501

A.4.25 8-DPSK LV High Channel



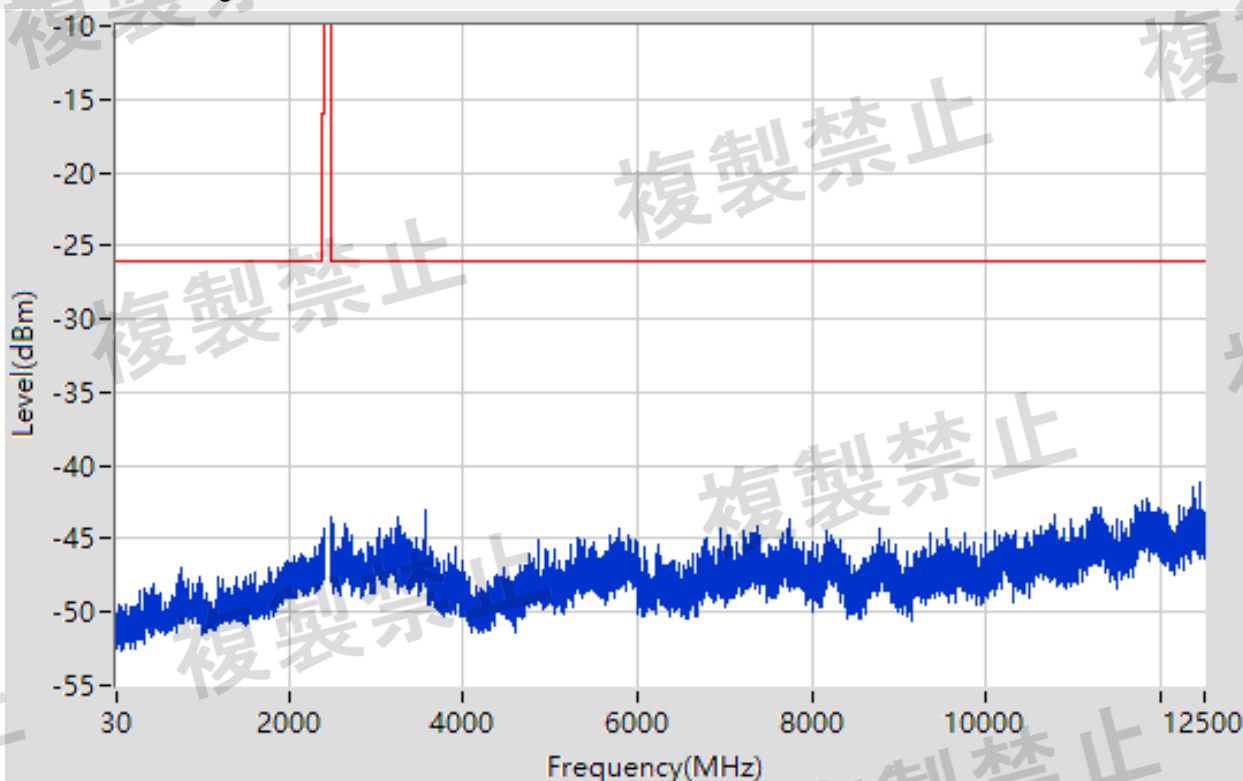
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	792	-47.74	-26	Pass	971
1000	2374	1	Peak	2226	-45.14	-26	Pass	1375
2374	2387	1	Peak	2374.715	-44.56	-26	Pass	601
2387	2400	1	Peak	2397.552	-44.26	-16	Pass	601
2483.5	2496.5	1	Peak	2483.608	-42.64	-16	Pass	601
2496.5	2509.5	1	Peak	2508.547	-44.17	-26	Pass	601
2509.5	6000	1	Peak	3164.594	-43.63	-26	Pass	3491
6000	12500	1	Peak	11796	-41.41	-26	Pass	6501

A.4.26 8-DPSK NV High Channel



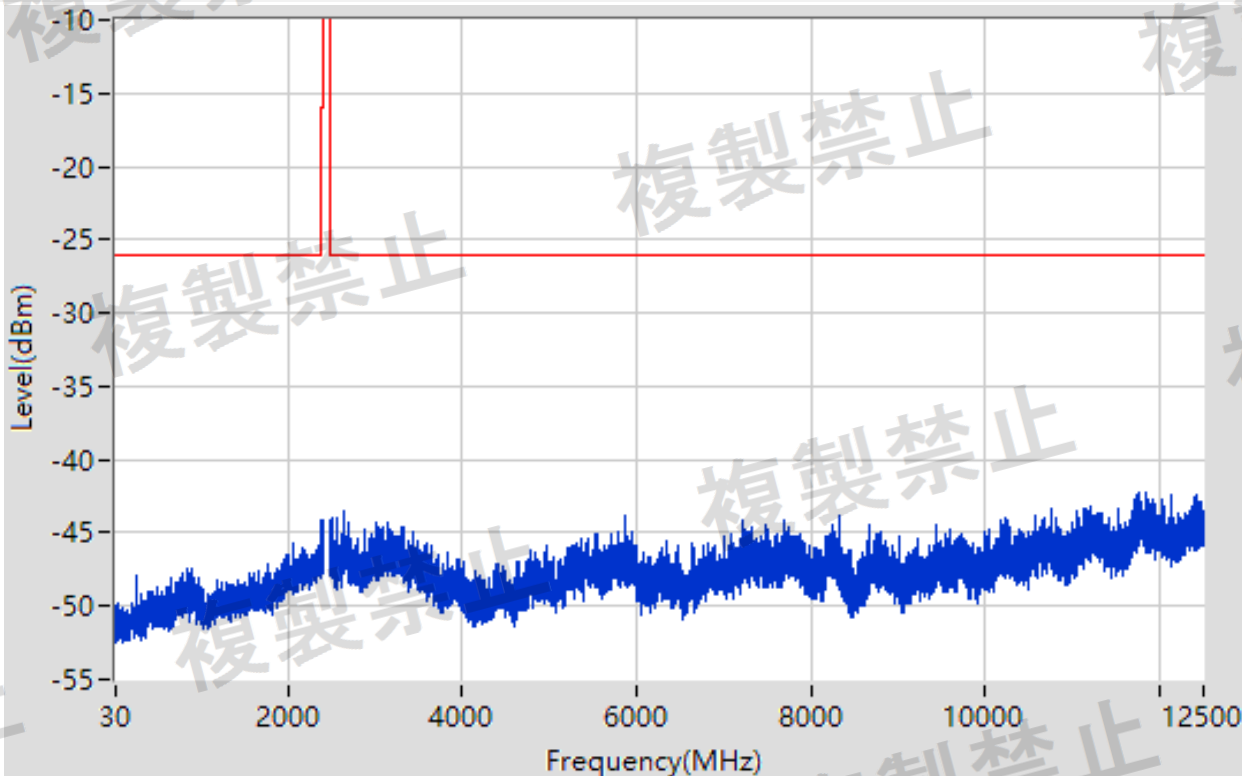
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	827	-47.69	-26	Pass	971
1000	2374	1	Peak	2315	-44.98	-26	Pass	1375
2374	2387	1	Peak	2386.155	-45.01	-26	Pass	601
2387	2400	1	Peak	2389.6	-43.9	-16	Pass	601
2483.5	2496.5	1	Peak	2483.565	-43.78	-16	Pass	601
2496.5	2509.5	1	Peak	2507.442	-44.31	-26	Pass	601
2509.5	6000	1	Peak	2704.528	-44.12	-26	Pass	3491
6000	12500	1	Peak	11708	-41.09	-26	Pass	6501

A.4.27 8-DPSK HV High Channel



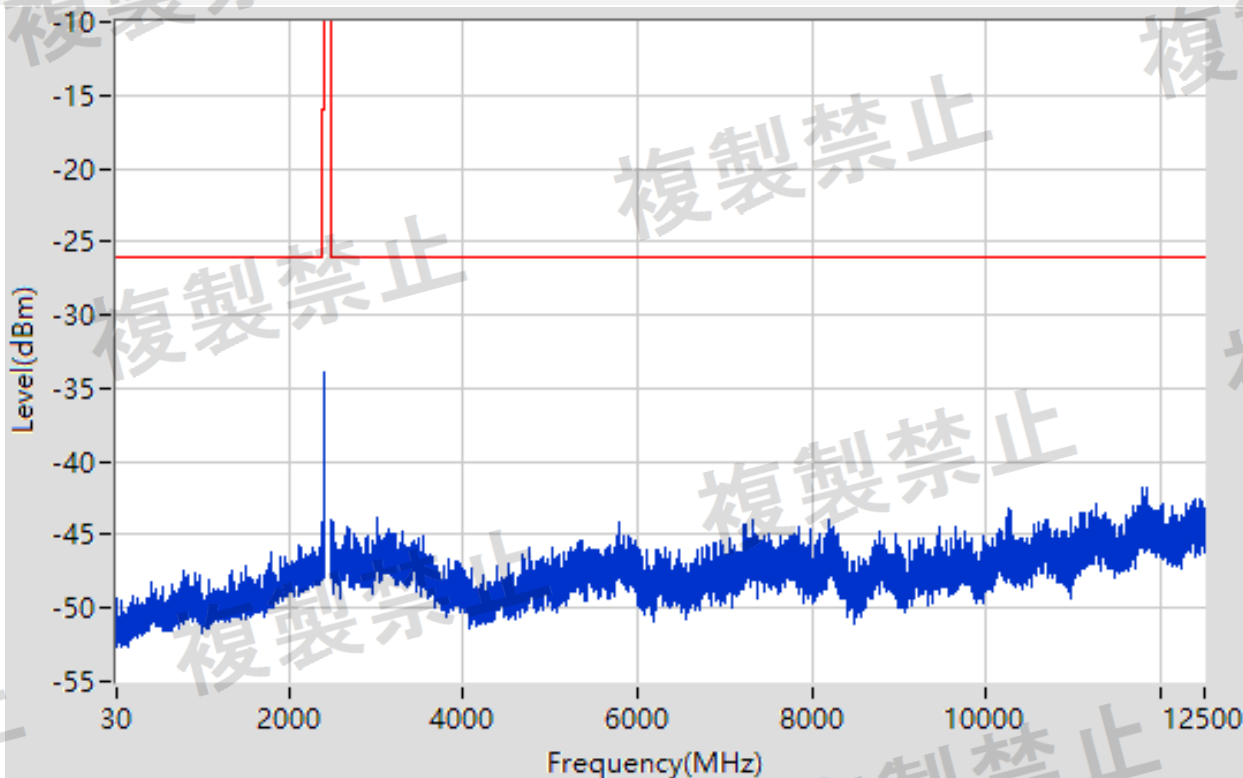
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	777	-46.92	-26	Pass	971
1000	2374	1	Peak	2353	-45.33	-26	Pass	1375
2374	2387	1	Peak	2374.433	-45.01	-26	Pass	601
2387	2400	1	Peak	2398.7	-44.26	-16	Pass	601
2483.5	2496.5	1	Peak	2483.5	-43.56	-16	Pass	601
2496.5	2509.5	1	Peak	2504.062	-43.96	-26	Pass	601
2509.5	6000	1	Peak	3557.65	-43.1	-26	Pass	3491
6000	12500	1	Peak	12442	-41.12	-26	Pass	6501

A.4.28 GFSK (BLE 1Mbps) LV Low Channel



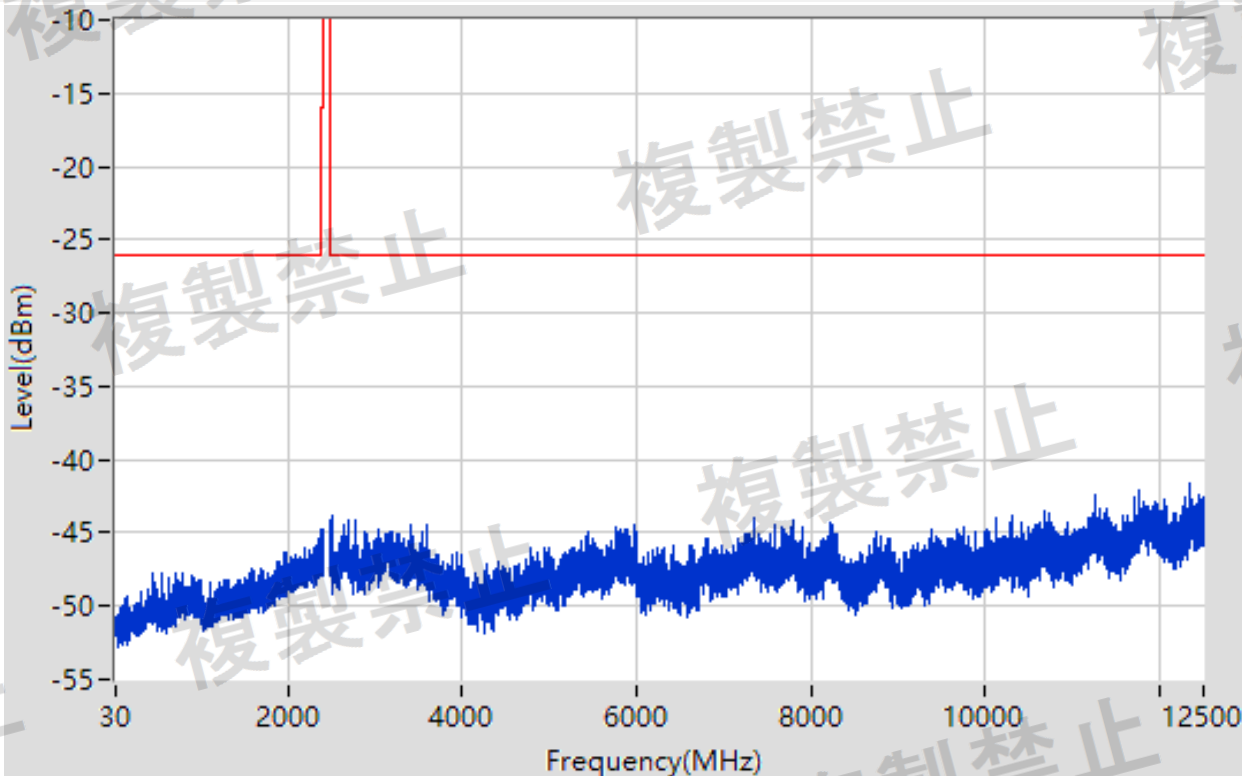
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	906	-47.37	-26	Pass	971
1000	2374	1	Peak	2070	-45.67	-26	Pass	1375
2374	2387	1	Peak	2379.222	-44.68	-26	Pass	601
2387	2400	1	Peak	2394.648	-44.12	-16	Pass	601
2483.5	2496.5	1	Peak	2494.637	-44.17	-16	Pass	601
2496.5	2509.5	1	Peak	2501.938	-43.91	-26	Pass	601
2509.5	6000	1	Peak	2633.518	-43.5	-26	Pass	3491
6000	12500	1	Peak	11852	-42.23	-26	Pass	6501

A.4.29 GFSK (BLE 1Mbps) NV Low Channel



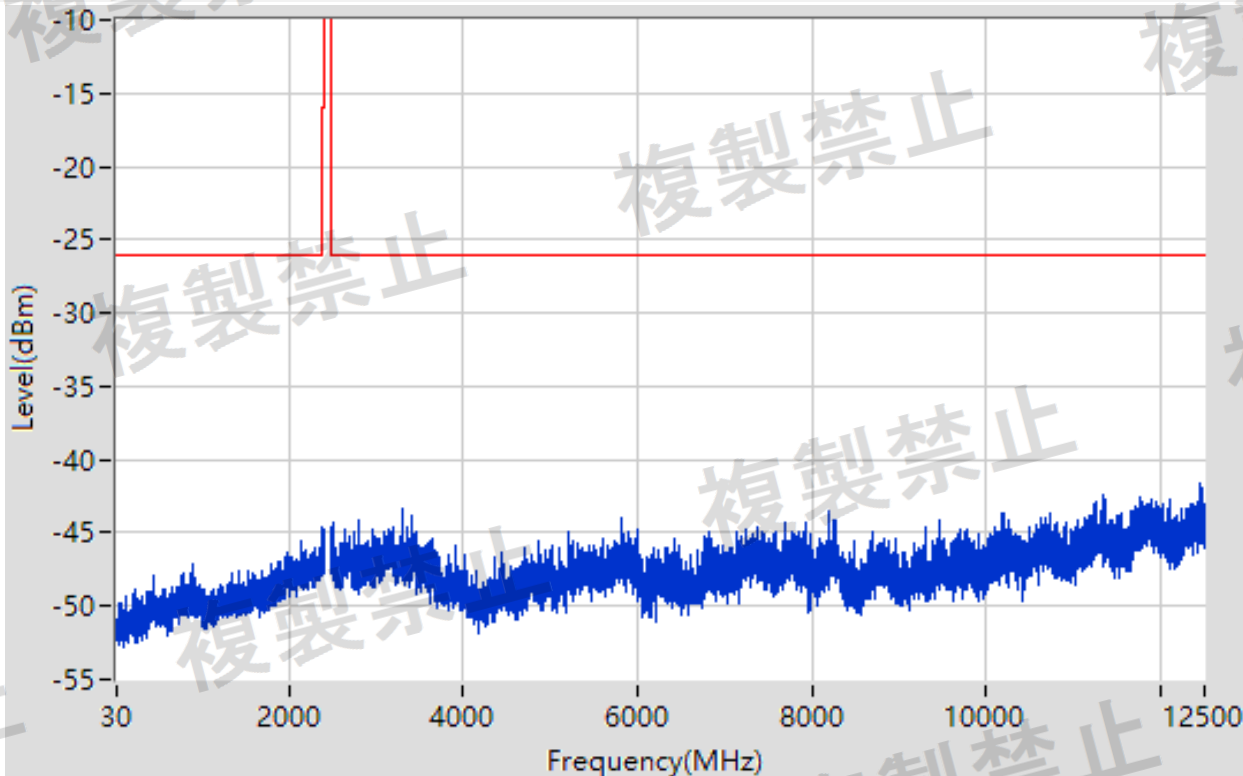
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	791	-47.46	-26	Pass	971
1000	2374	1	Peak	2120	-45.69	-26	Pass	1375
2374	2387	1	Peak	2381.54	-44.35	-26	Pass	601
2387	2400	1	Peak	2400	-33.95	-16	Pass	601
2483.5	2496.5	1	Peak	2489.415	-44.64	-16	Pass	601
2496.5	2509.5	1	Peak	2499.208	-43.92	-26	Pass	601
2509.5	6000	1	Peak	3017.573	-43.89	-26	Pass	3491
6000	12500	1	Peak	11831	-41.82	-26	Pass	6501

A.4.30 GFSK (BLE 1Mbps) HV Low Channel



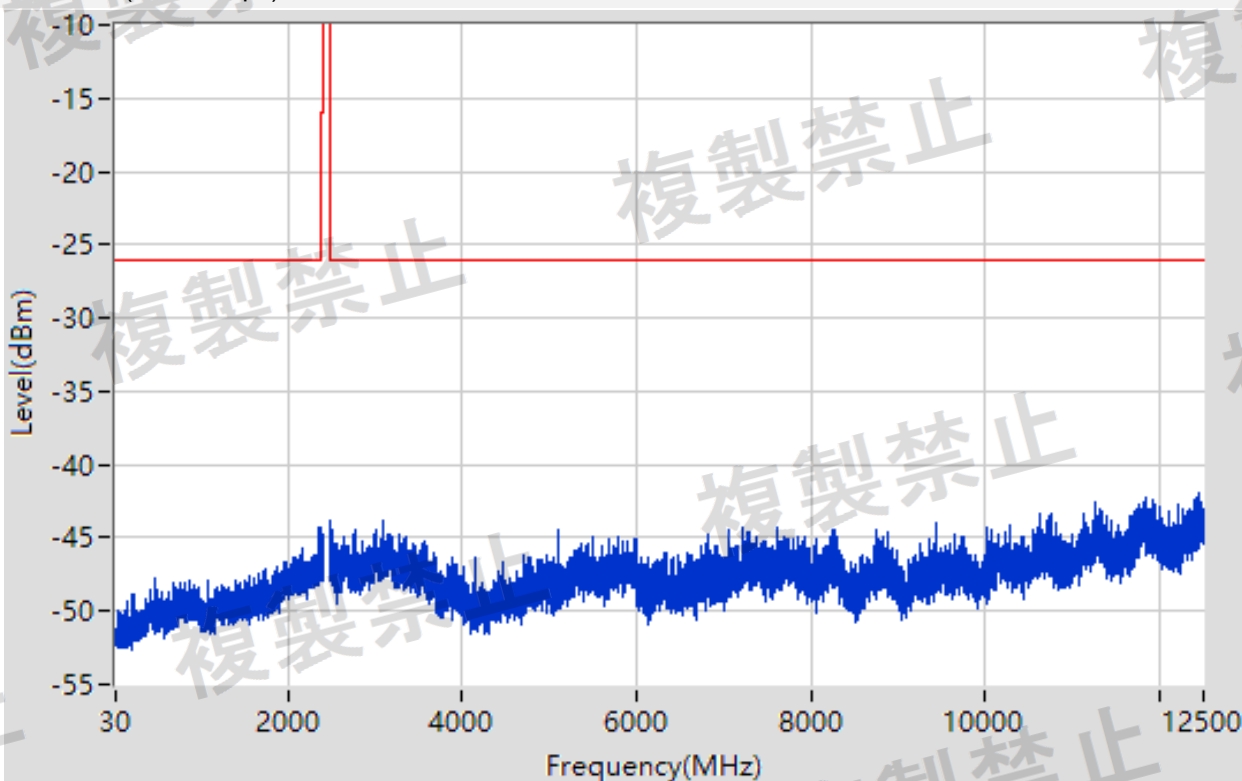
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	555	-47.76	-26	Pass	971
1000	2374	1	Peak	2355	-45.43	-26	Pass	1375
2374	2387	1	Peak	2377.987	-44.82	-26	Pass	601
2387	2400	1	Peak	2400	-44.83	-16	Pass	601
2483.5	2496.5	1	Peak	2485.688	-44.14	-16	Pass	601
2496.5	2509.5	1	Peak	2506.228	-43.76	-26	Pass	601
2509.5	6000	1	Peak	2764.537	-44.11	-26	Pass	3491
6000	12500	1	Peak	12331	-41.66	-26	Pass	6501

A.4.31 GFSK (BLE 1Mbps) LV Middle Channel



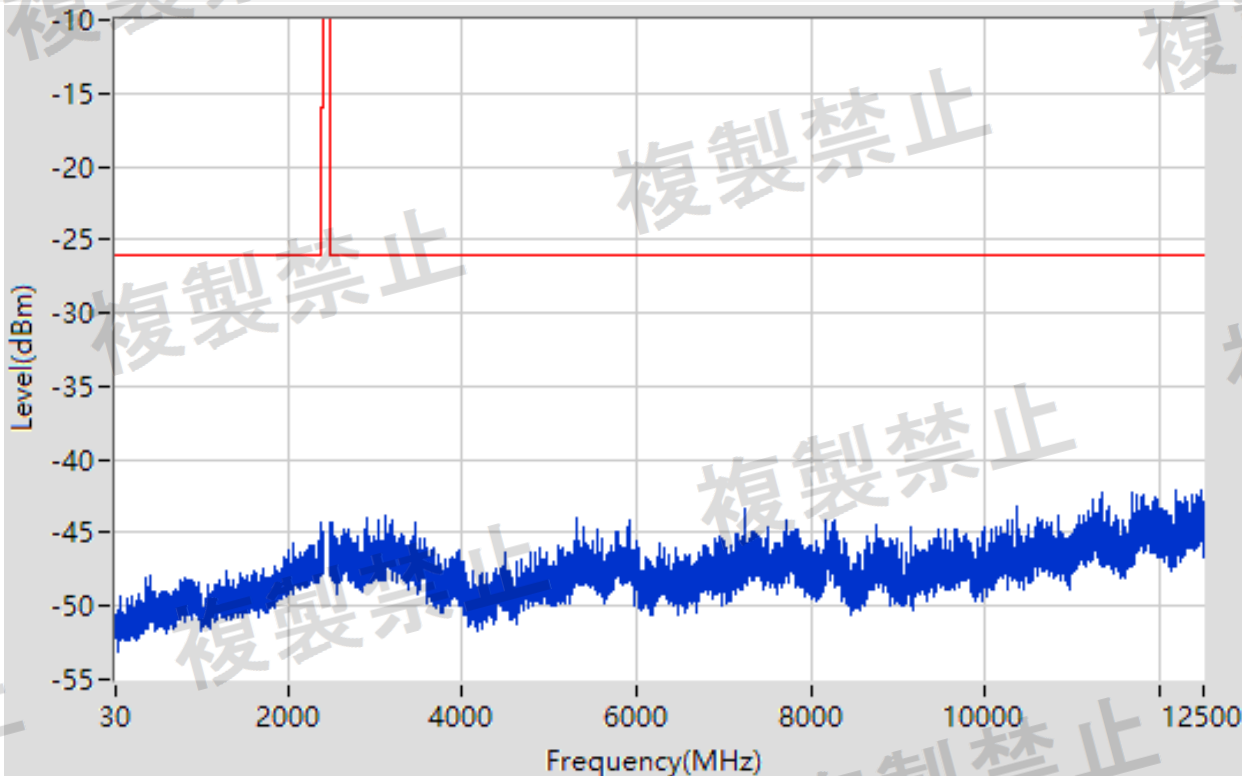
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	896	-47.12	-26	Pass	971
1000	2374	1	Peak	2135	-45.55	-26	Pass	1375
2374	2387	1	Peak	2384.855	-44.55	-26	Pass	601
2387	2400	1	Peak	2397.313	-44.77	-16	Pass	601
2483.5	2496.5	1	Peak	2493.51	-44.75	-16	Pass	601
2496.5	2509.5	1	Peak	2504.755	-44.31	-26	Pass	601
2509.5	6000	1	Peak	3314.615	-43.41	-26	Pass	3491
6000	12500	1	Peak	12445	-41.67	-26	Pass	6501

A.4.32 GFSK (BLE 1Mbps) NV Middle Channel



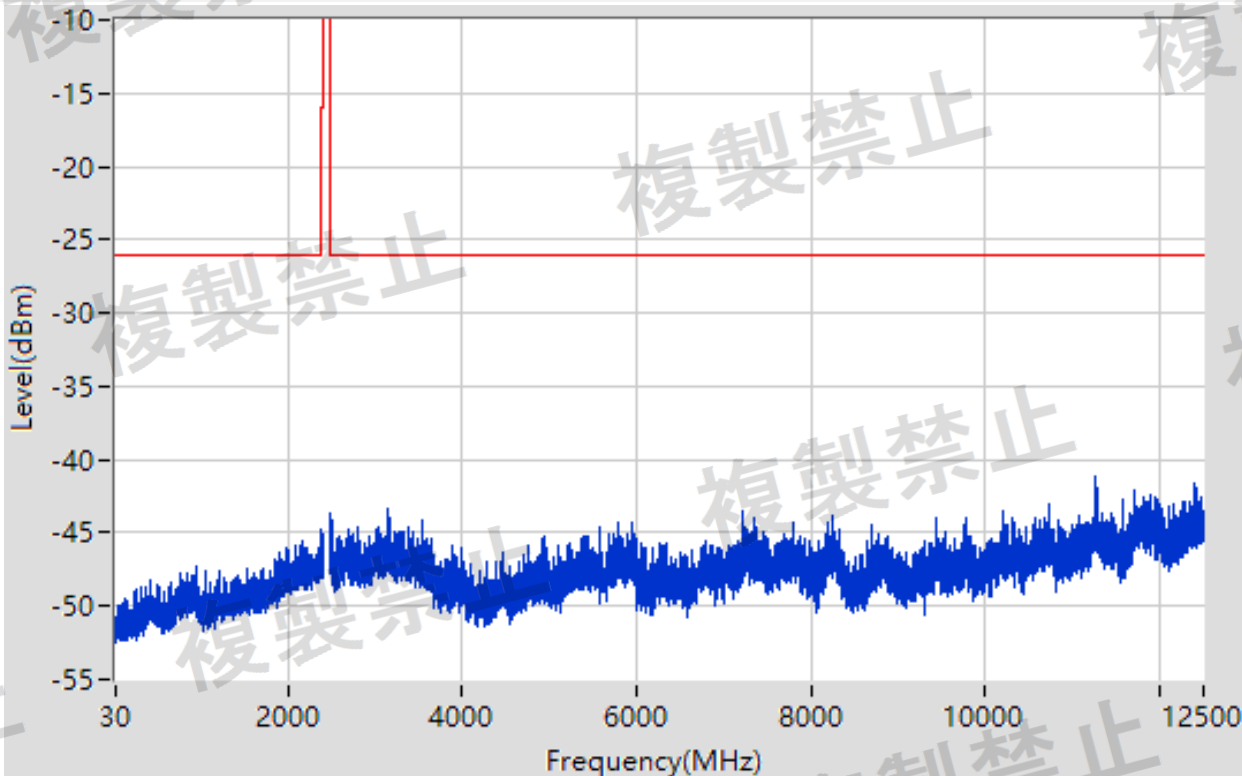
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	469	-47.74	-26	Pass	971
1000	2374	1	Peak	2347	-44.35	-26	Pass	1375
2374	2387	1	Peak	2374.022	-44.32	-26	Pass	601
2387	2400	1	Peak	2389.903	-44.42	-16	Pass	601
2483.5	2496.5	1	Peak	2492.232	-44.64	-16	Pass	601
2496.5	2509.5	1	Peak	2498.277	-43.81	-26	Pass	601
2509.5	6000	1	Peak	3092.584	-43.86	-26	Pass	3491
6000	12500	1	Peak	12436	-41.92	-26	Pass	6501

A.4.33 GFSK (BLE 1Mbps) HV Middle Channel



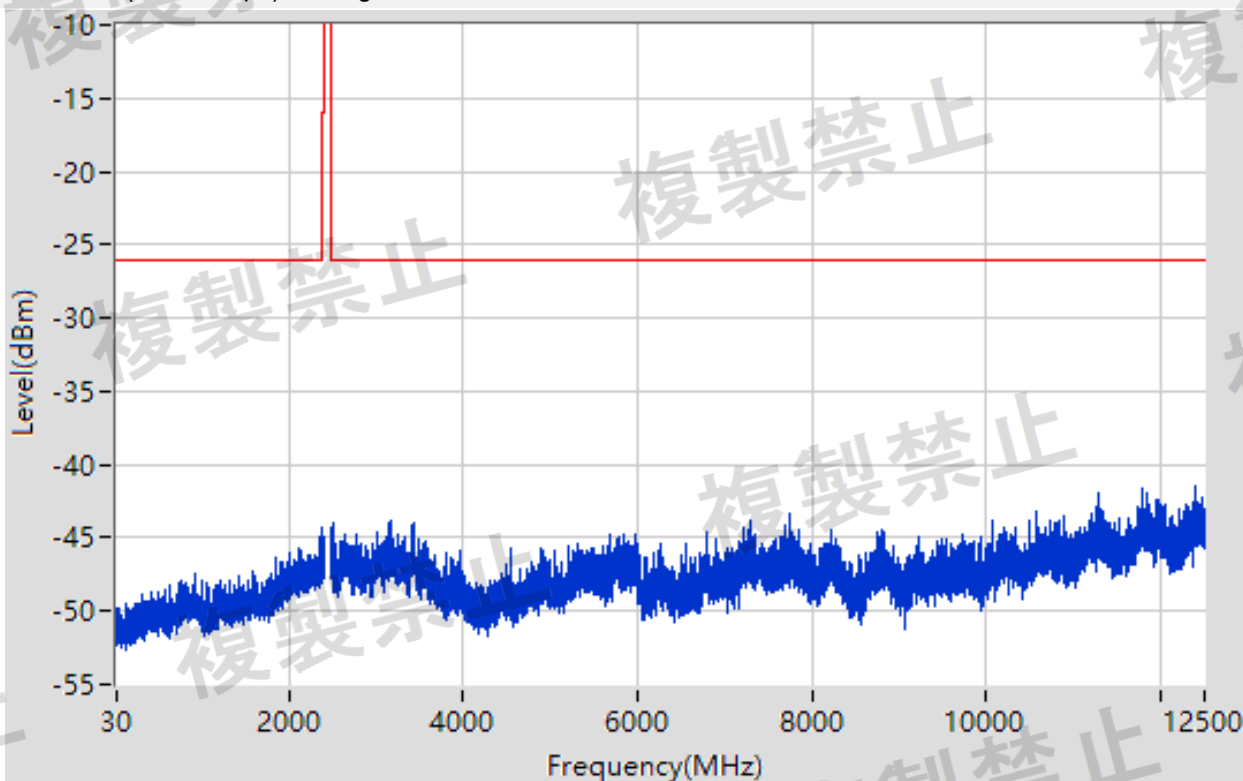
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	432	-47.93	-26	Pass	971
1000	2374	1	Peak	2370	-45.28	-26	Pass	1375
2374	2387	1	Peak	2384.595	-44.79	-26	Pass	601
2387	2400	1	Peak	2391.16	-44.36	-16	Pass	601
2483.5	2496.5	1	Peak	2492.015	-44.25	-16	Pass	601
2496.5	2509.5	1	Peak	2507.983	-44.28	-26	Pass	601
2509.5	6000	1	Peak	3126.588	-43.81	-26	Pass	3491
6000	12500	1	Peak	12171	-42.11	-26	Pass	6501

A.4.34 GFSK (BLE 1Mbps) LV High Channel



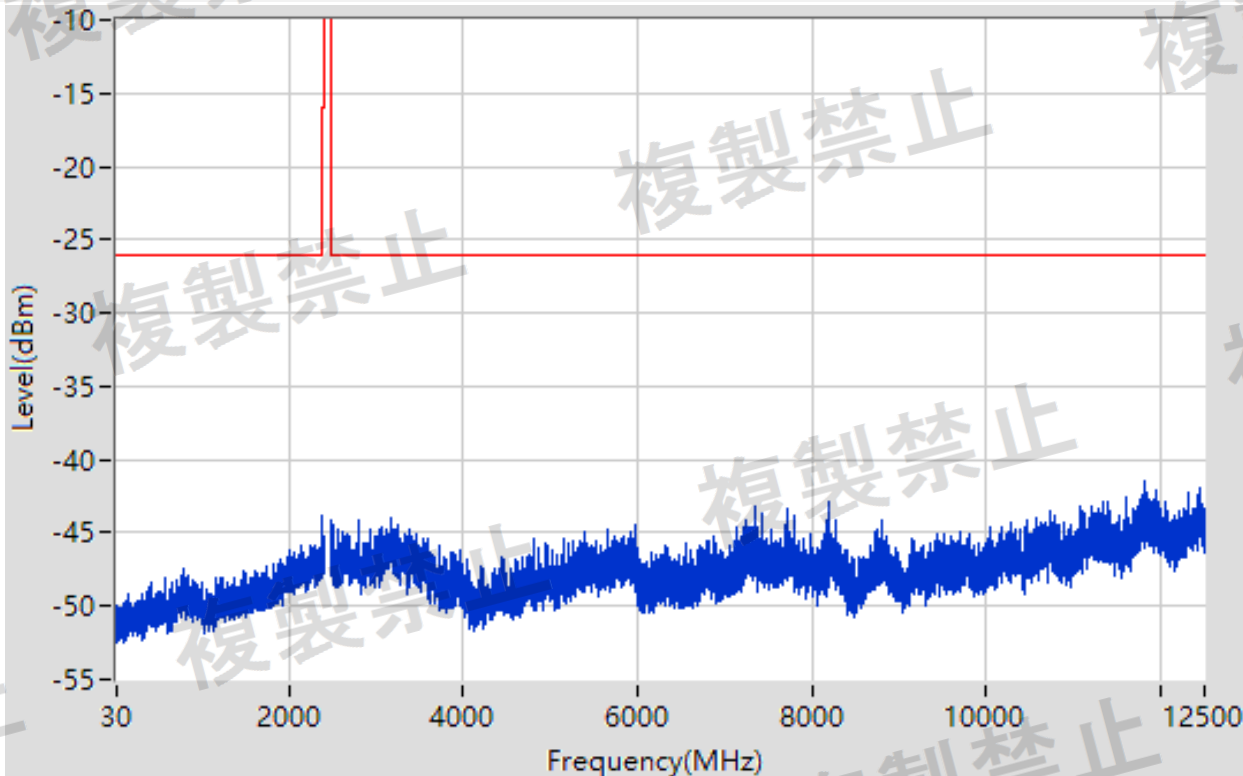
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	964	-47.25	-26	Pass	971
1000	2374	1	Peak	2172	-45.57	-26	Pass	1375
2374	2387	1	Peak	2378.29	-44.87	-26	Pass	601
2387	2400	1	Peak	2388.04	-44.77	-16	Pass	601
2483.5	2496.5	1	Peak	2489.415	-44.56	-16	Pass	601
2496.5	2509.5	1	Peak	2498.103	-43.72	-26	Pass	601
2509.5	6000	1	Peak	3144.591	-43.28	-26	Pass	3491
6000	12500	1	Peak	11251	-41.12	-26	Pass	6501

A.4.35 GFSK (BLE 1Mbps) NV High Channel



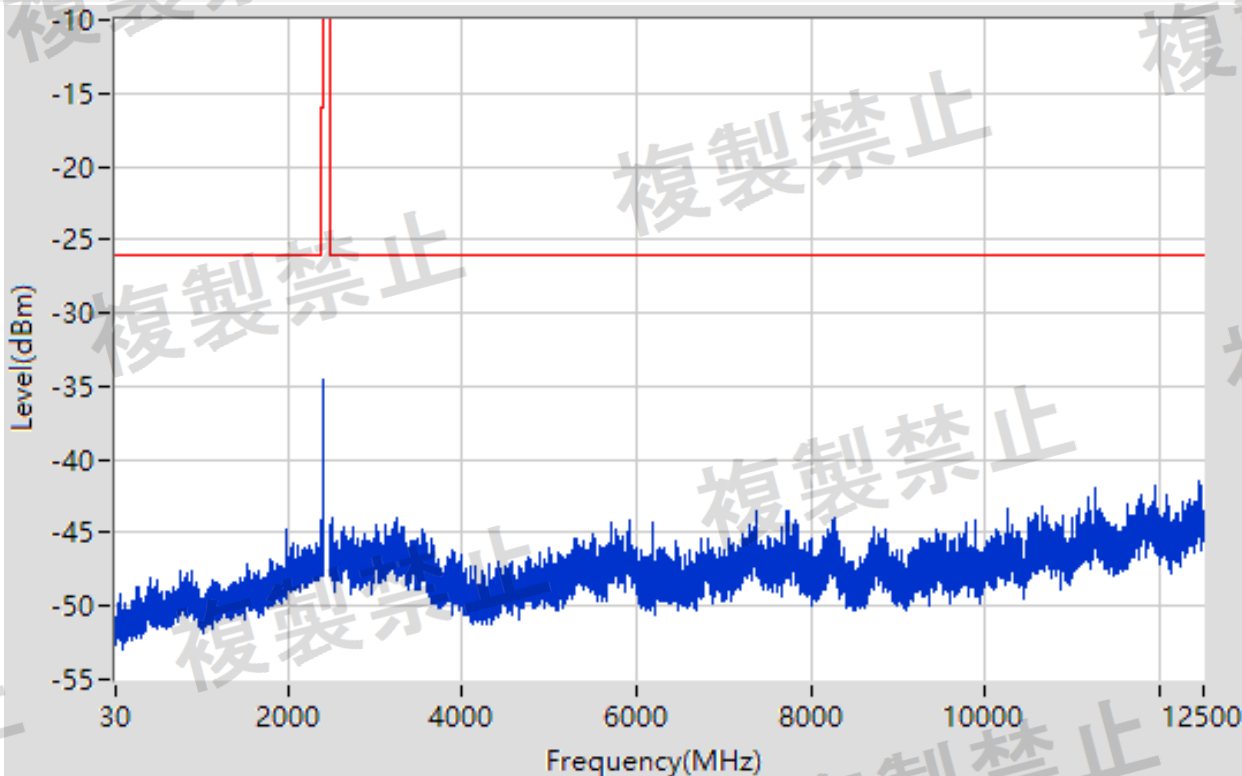
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	919	-47.51	-26	Pass	971
1000	2374	1	Peak	2367	-44.87	-26	Pass	1375
2374	2387	1	Peak	2384.725	-44.31	-26	Pass	601
2387	2400	1	Peak	2389.73	-44.8	-16	Pass	601
2483.5	2496.5	1	Peak	2487.79	-44.23	-16	Pass	601
2496.5	2509.5	1	Peak	2507.268	-44	-26	Pass	601
2509.5	6000	1	Peak	3170.595	-43.84	-26	Pass	3491
6000	12500	1	Peak	12394	-41.5	-26	Pass	6501

A.4.36 GFSK (BLE 1Mbps) HV High Channel



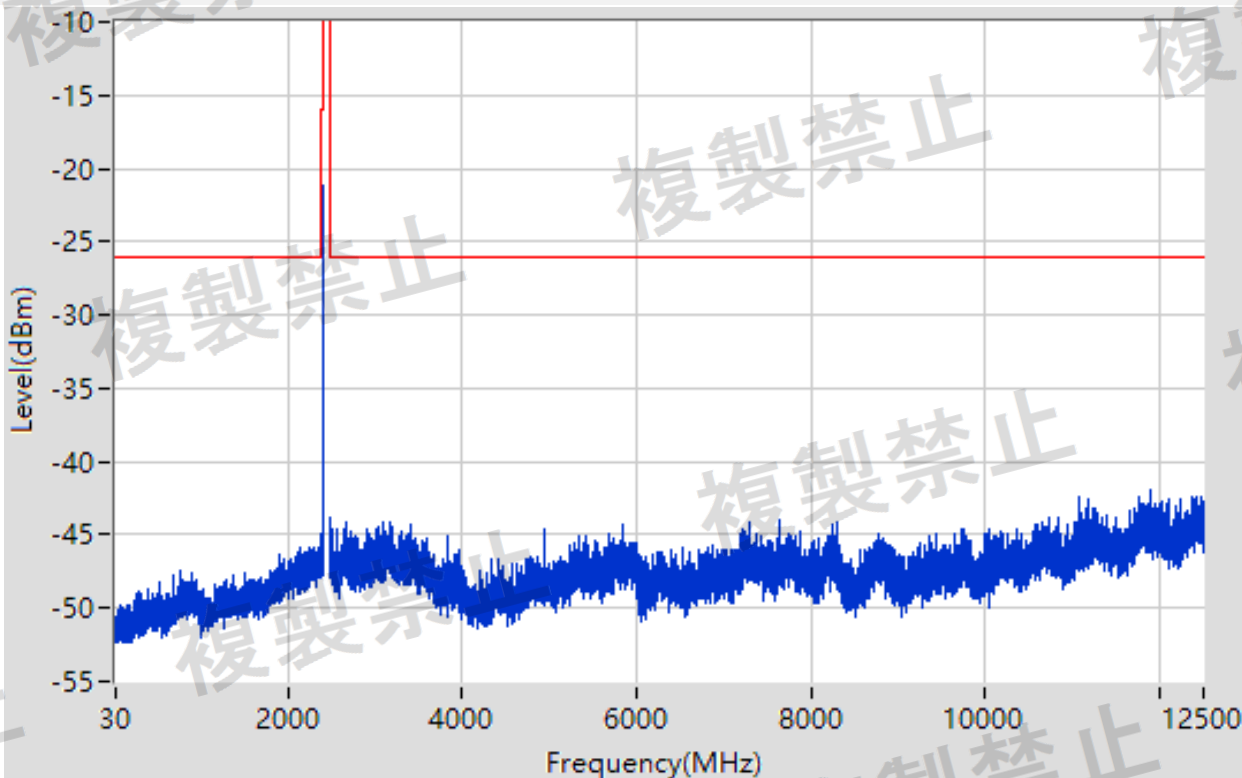
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	802	-47.51	-26	Pass	971
1000	2374	1	Peak	2297	-45.8	-26	Pass	1375
2374	2387	1	Peak	2378.052	-43.9	-26	Pass	601
2387	2400	1	Peak	2392.243	-44.44	-16	Pass	601
2483.5	2496.5	1	Peak	2493.597	-44.17	-16	Pass	601
2496.5	2509.5	1	Peak	2501.895	-44.46	-26	Pass	601
2509.5	6000	1	Peak	3181.596	-44	-26	Pass	3491
6000	12500	1	Peak	11810	-41.52	-26	Pass	6501

A.4.37 GFSK (BLE 2Mbps) LV Low Channel



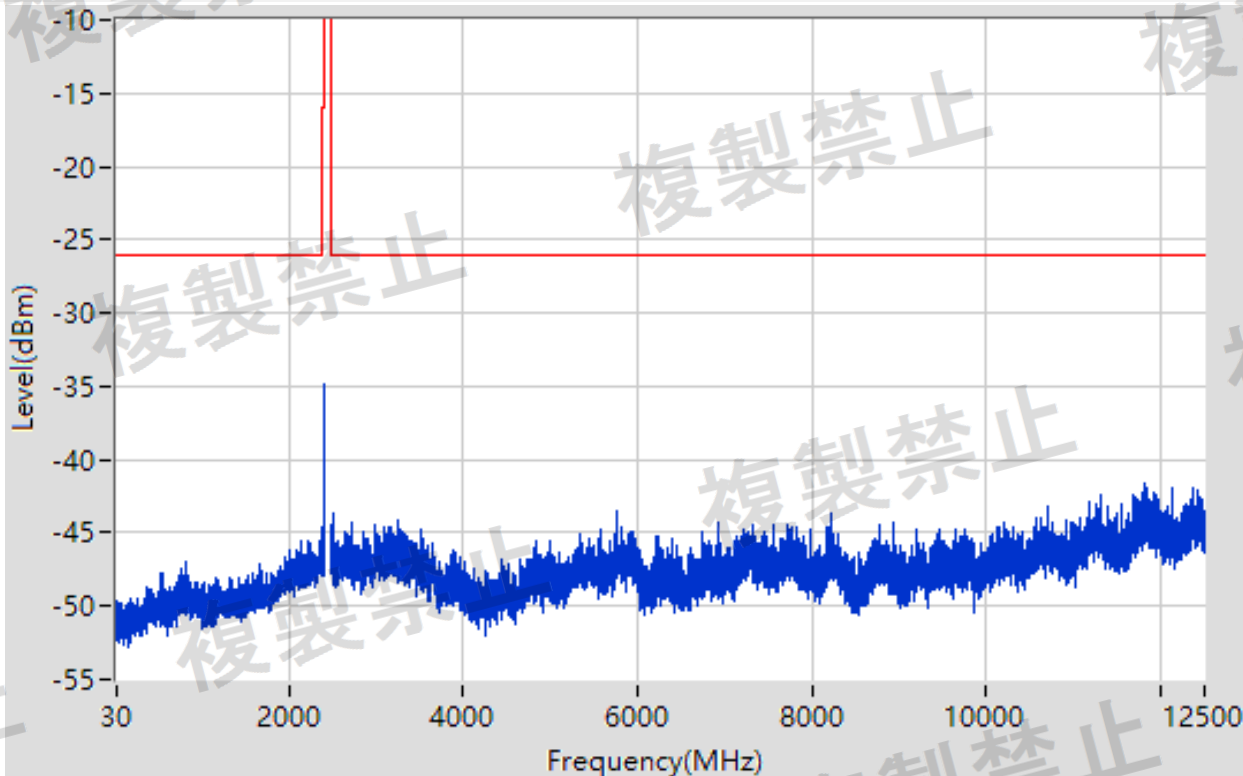
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	899	-47.55	-26	Pass	971
1000	2374	1	Peak	1997	-44.72	-26	Pass	1375
2374	2387	1	Peak	2377.662	-44.13	-26	Pass	601
2387	2400	1	Peak	2400	-34.61	-16	Pass	601
2483.5	2496.5	1	Peak	2492.08	-44.86	-16	Pass	601
2496.5	2509.5	1	Peak	2505.145	-43.97	-26	Pass	601
2509.5	6000	1	Peak	3263.608	-43.98	-26	Pass	3491
6000	12500	1	Peak	12450	-41.52	-26	Pass	6501

A.4.38 GFSK (BLE 2Mbps) NV Low Channel



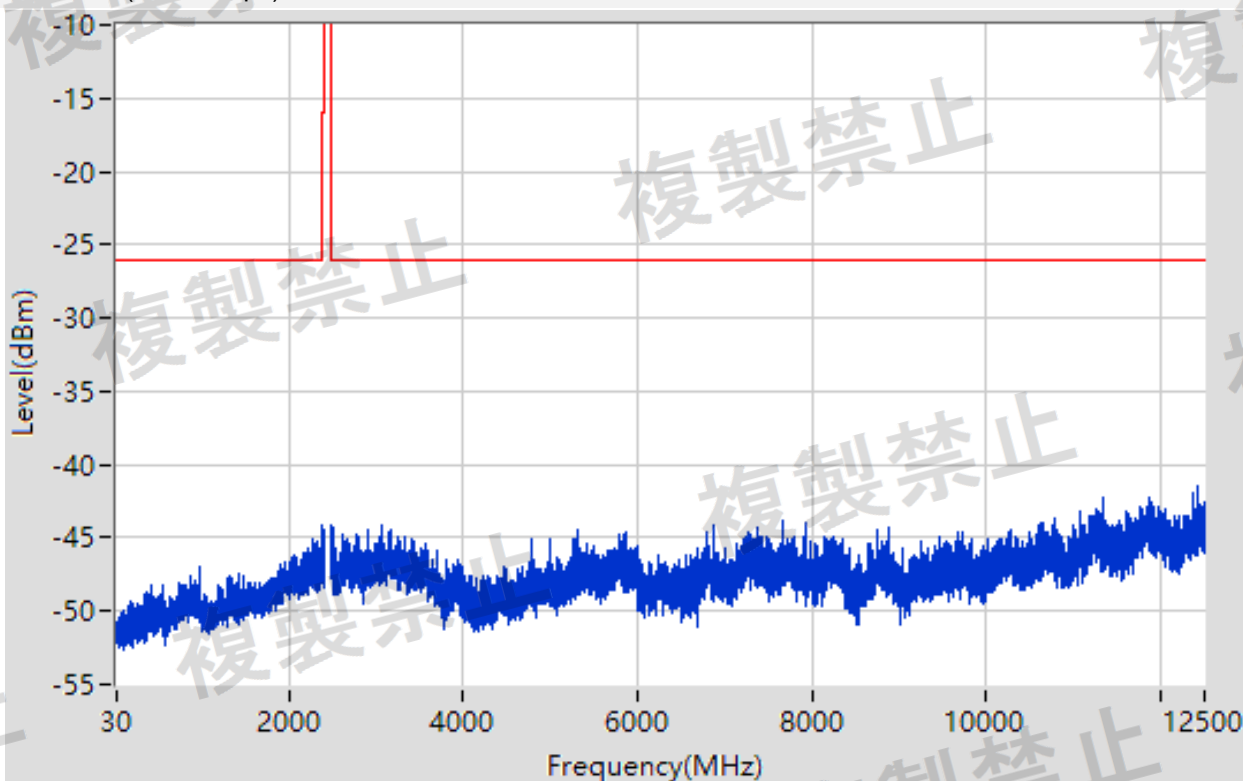
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	777	-47.52	-26	Pass	971
1000	2374	1	Peak	2154	-45.86	-26	Pass	1375
2374	2387	1	Peak	2385.592	-44.95	-26	Pass	601
2387	2400	1	Peak	2400	-21.12	-16	Pass	601
2483.5	2496.5	1	Peak	2492.99	-44.87	-16	Pass	601
2496.5	2509.5	1	Peak	2499.36	-43.81	-26	Pass	601
2509.5	6000	1	Peak	2670.523	-44.08	-26	Pass	3491
6000	12500	1	Peak	11903	-41.98	-26	Pass	6501

A.4.39 GFSK (BLE 2Mbps) HV Low Channel



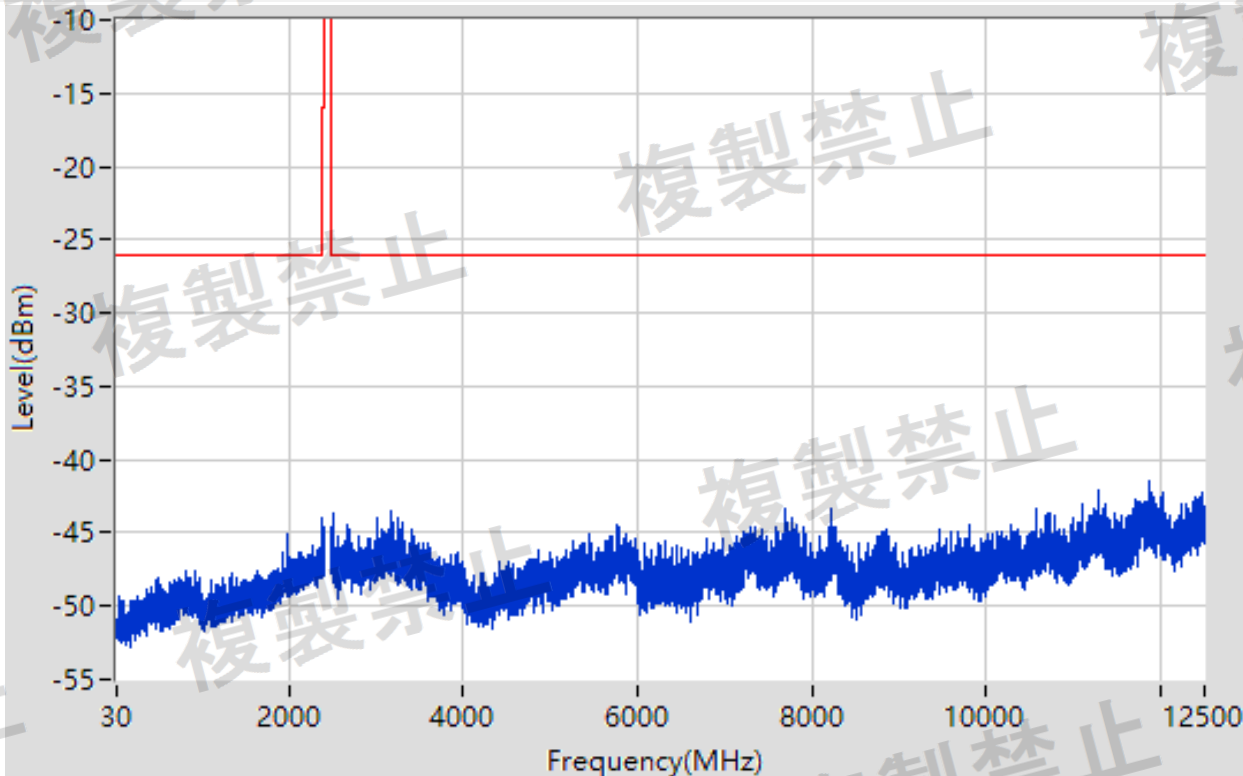
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	818	-46.94	-26	Pass	971
1000	2374	1	Peak	2374	-44.57	-26	Pass	1375
2374	2387	1	Peak	2382.905	-44.69	-26	Pass	601
2387	2400	1	Peak	2400	-34.79	-16	Pass	601
2483.5	2496.5	1	Peak	2492.665	-44.42	-16	Pass	601
2496.5	2509.5	1	Peak	2509.327	-43.72	-26	Pass	601
2509.5	6000	1	Peak	5767.967	-43.56	-26	Pass	3491
6000	12500	1	Peak	11815	-41.57	-26	Pass	6501

A.4.40 GFSK (BLE 2Mbps) LV Middle Channel



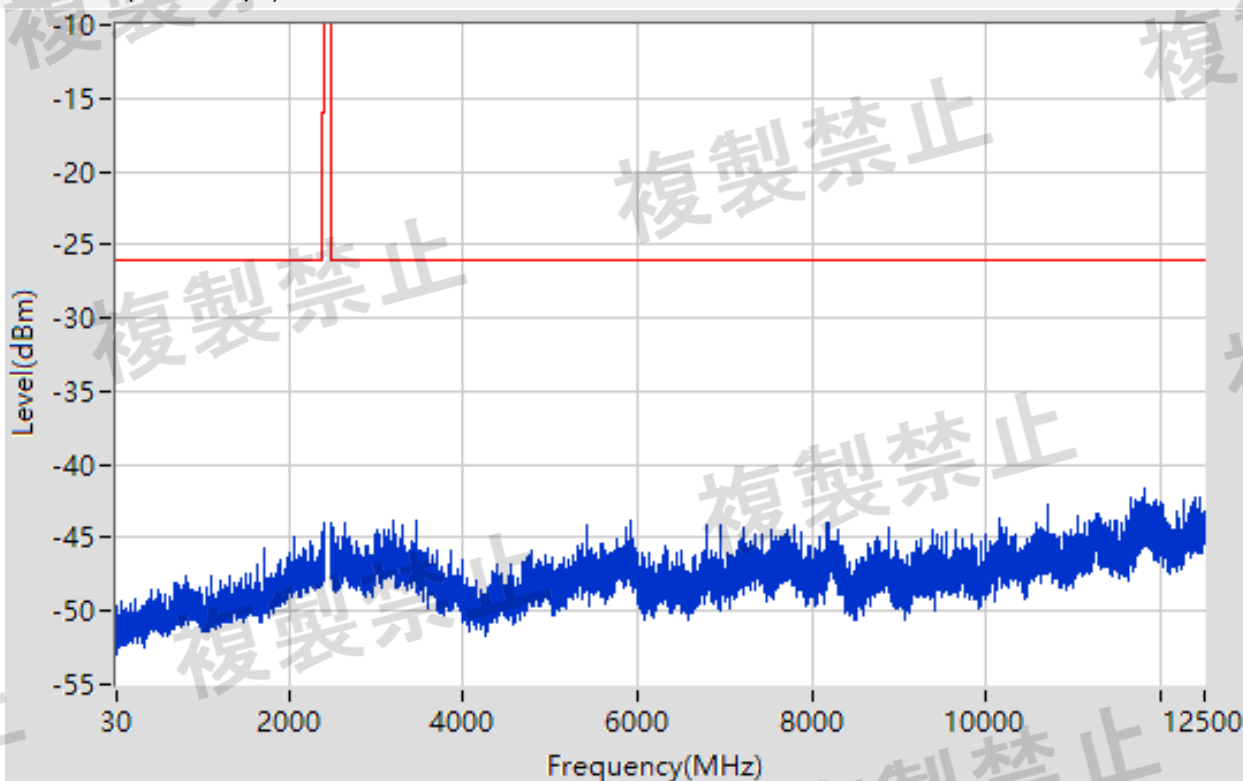
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	987	-47.05	-26	Pass	971
1000	2374	1	Peak	2288	-45.07	-26	Pass	1375
2374	2387	1	Peak	2381.952	-44.2	-26	Pass	601
2387	2400	1	Peak	2399.783	-44.39	-16	Pass	601
2483.5	2496.5	1	Peak	2490.39	-44.2	-16	Pass	601
2496.5	2509.5	1	Peak	2500.227	-44.34	-26	Pass	601
2509.5	6000	1	Peak	3062.579	-44.13	-26	Pass	3491
6000	12500	1	Peak	12408	-41.53	-26	Pass	6501

A.4.41 GFSK (BLE 2Mbps) NV Middle Channel



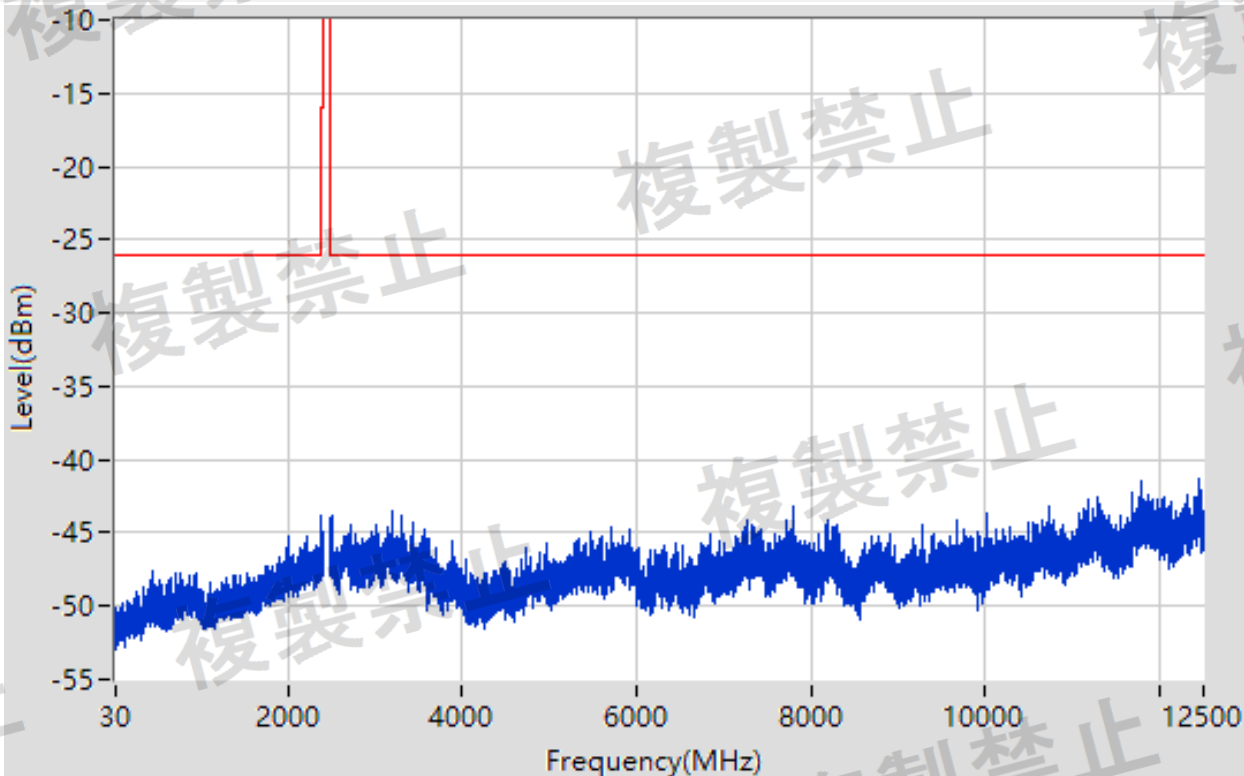
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	826	-47.61	-26	Pass	971
1000	2374	1	Peak	1998	-45.16	-26	Pass	1375
2374	2387	1	Peak	2375.56	-43.93	-26	Pass	601
2387	2400	1	Peak	2388.755	-44.18	-16	Pass	601
2483.5	2496.5	1	Peak	2496.262	-45.02	-16	Pass	601
2496.5	2509.5	1	Peak	2507.918	-43.67	-26	Pass	601
2509.5	6000	1	Peak	3174.595	-43.53	-26	Pass	3491
6000	12500	1	Peak	11863	-41.5	-26	Pass	6501

A.4.42 GFSK (BLE 2Mbps) HV Middle Channel



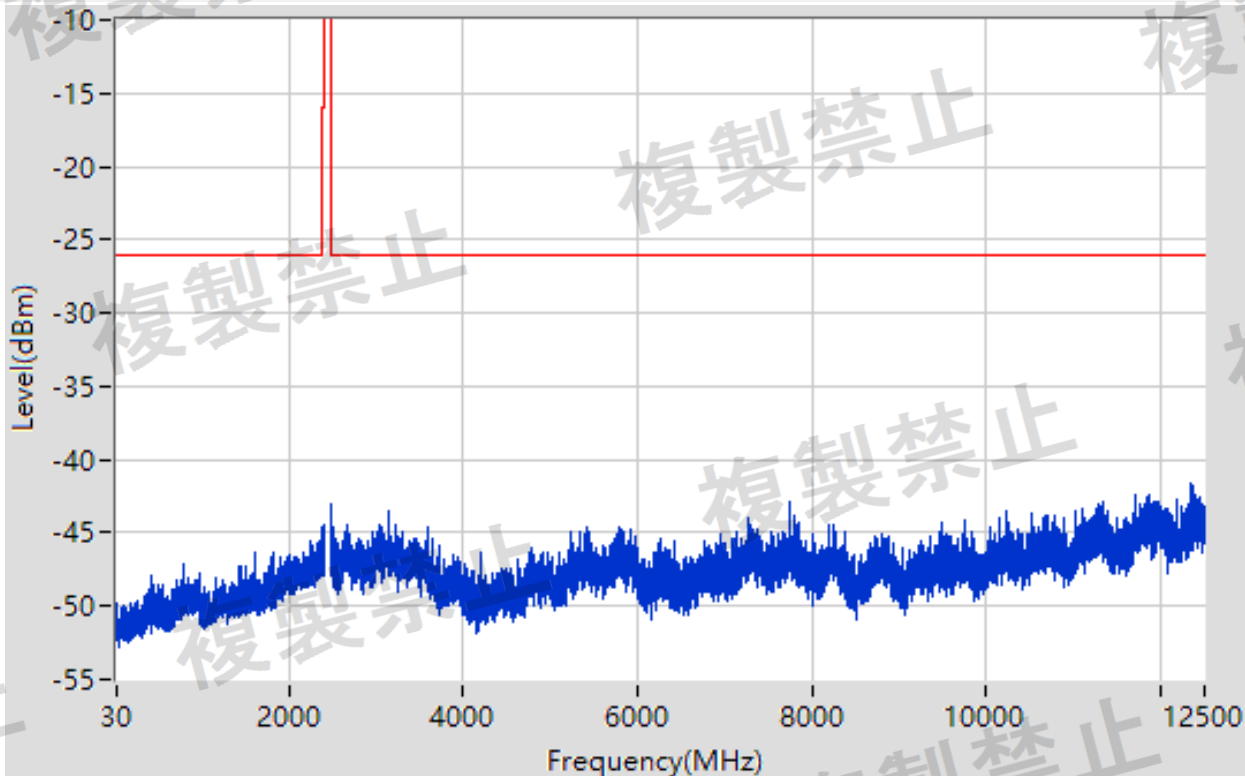
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	815	-47.67	-26	Pass	971
1000	2374	1	Peak	2065	-44.95	-26	Pass	1375
2374	2387	1	Peak	2386.957	-44.65	-26	Pass	601
2387	2400	1	Peak	2398.028	-44	-16	Pass	601
2483.5	2496.5	1	Peak	2492.167	-44.13	-16	Pass	601
2496.5	2509.5	1	Peak	2499.902	-44.02	-26	Pass	601
2509.5	6000	1	Peak	5910.987	-43.8	-26	Pass	3491
6000	12500	1	Peak	11814	-41.63	-26	Pass	6501

A.4.43 GFSK (BLE 2Mbps) LV High Channel



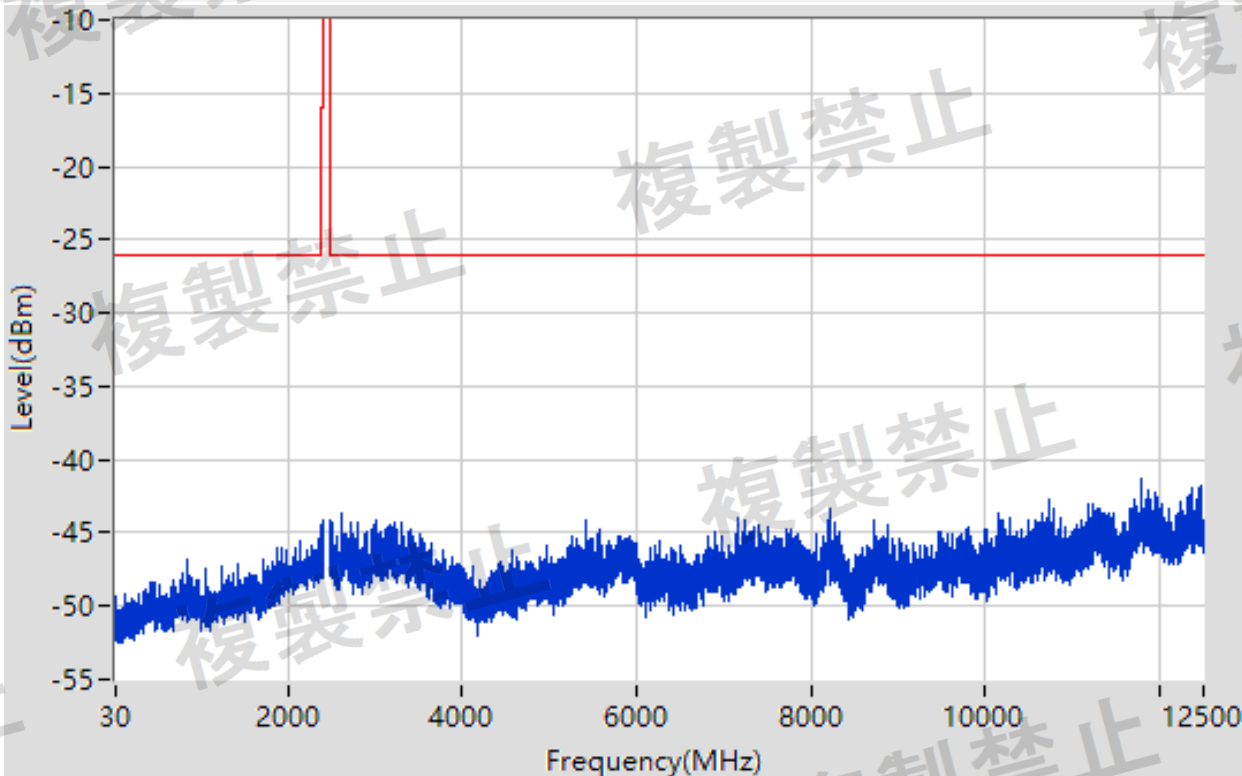
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	460	-47.62	-26	Pass	971
1000	2374	1	Peak	2227	-45.17	-26	Pass	1375
2374	2387	1	Peak	2381.237	-43.81	-26	Pass	601
2387	2400	1	Peak	2392.915	-44.56	-16	Pass	601
2483.5	2496.5	1	Peak	2486.468	-43.92	-16	Pass	601
2496.5	2509.5	1	Peak	2504.712	-43.77	-26	Pass	601
2509.5	6000	1	Peak	3188.597	-43.56	-26	Pass	3491
6000	12500	1	Peak	12437	-41.26	-26	Pass	6501

A.4.44 GFSK (BLE 2Mbps) NV High Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	809	-47.18	-26	Pass	971
1000	2374	1	Peak	2364	-45.52	-26	Pass	1375
2374	2387	1	Peak	2386.892	-44.62	-26	Pass	601
2387	2400	1	Peak	2397.465	-44.47	-16	Pass	601
2483.5	2496.5	1	Peak	2484.497	-43.09	-16	Pass	601
2496.5	2509.5	1	Peak	2504.82	-44.54	-26	Pass	601
2509.5	6000	1	Peak	3137.59	-43.44	-26	Pass	3491
6000	12500	1	Peak	12339	-41.67	-26	Pass	6501

A.4.45 GFSK (BLE 2Mbps) HV High Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	837	-46.9	-26	Pass	971
1000	2374	1	Peak	2355	-45.45	-26	Pass	1375
2374	2387	1	Peak	2380.305	-44.81	-26	Pass	601
2387	2400	1	Peak	2396.533	-44.21	-16	Pass	601
2483.5	2496.5	1	Peak	2488.137	-44.19	-16	Pass	601
2496.5	2509.5	1	Peak	2508.503	-44.27	-26	Pass	601
2509.5	6000	1	Peak	2629.517	-43.72	-26	Pass	3491
6000	12500	1	Peak	11798	-41.34	-26	Pass	6501

A.5 Antenna Power Error Measurement

GFSK Test Result

Duty cycle = 0.763

Antenna Power=power value (dBm)+10*LOG10(1/Duty Cycle)) dBm+Cable Loss dBm

Antenna Power Density PD = Antenna Power mW / Spread Spectrum Bandwidth MHz

Manufacturer declares the conducted power density = 0.2500 mW/MHz

Test Mode	Test Voltage	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
GFSK	LV	10.38	11.55	14.2968	0.2030	-18.79%	Pass
	NV	10.46	11.63	14.5626	0.2068	-17.27%	Pass
	HV	10.44	11.61	14.4956	0.2059	-17.64%	Pass

π/4-DQPSK Test Result

Duty cycle = 0.769

Antenna Power=power value (dBm)+10*LOG10(1/Duty Cycle)) dBm+Cable Loss dBm

Antenna Power Density PD = Antenna Power mW / Spread Spectrum Bandwidth MHz

Manufacturer declares the conducted power density = 0.1466 mW/MHz

Test Mode	Test Voltage	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
π/4-DQPSK	LV	7.55	8.69	7.4010	0.1035	-29.39%	Pass
	NV	7.60	8.74	7.4867	0.1056	-27.92%	Pass
	HV	7.61	8.75	7.5040	0.1051	-28.28%	Pass

8-DPSK Test Result

Duty cycle = 0.769

Antenna Power=power value (dBm)+10*LOG10(1/Duty Cycle)) dBm+Cable Loss dBm

Antenna Power Density PD = Antenna Power mW / Spread Spectrum Bandwidth MHz

Manufacturer declares the conducted power density = 0.1324 mW/MHz

Test Mode	Test Voltage	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
8-DPSK	LV	7.21	8.35	6.8437	0.0957	-27.67%	Pass
	NV	7.20	8.34	6.8280	0.0954	-27.96%	Pass
	HV	7.18	8.32	6.7966	0.0949	-28.28%	Pass

GFSK (AFH Mode) Test Result

Duty cycle = 0.763

Antenna Power=power value (dBm)+10*LOG10(1/Duty Cycle)) dBm+Cable Loss dBm

Antenna Power Density PD = Antenna Power mW / Spread Spectrum Bandwidth MHz

Manufacturer declares the conducted power density = 0.8124 mW/MHz

Test Mode	Test Voltage	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
GFSK	LV	10.08	11.25	13.3425	0.7183	-11.59%	Pass
	NV	10.12	11.29	13.4660	0.7248	-10.78%	Pass
	HV	10.04	11.21	13.2202	0.7115	-12.42%	Pass

$\pi/4$ -DQPSK (AFH Mode) Test Result

Duty cycle = 0.769

Antenna Power=power value (dBm)+10*LOG10(1/Duty Cycle)) dBm+Cable Loss dBm

Antenna Power Density PD = Antenna Power mW / Spread Spectrum Bandwidth MHz

Manufacturer declares the conducted power density = 0.5639 mW/MHz

Test Mode	Test Voltage	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
$\pi/4$ -DQPSK	LV	7.15	8.29	6.7498	0.3620	-35.81%	Pass
	NV	7.32	8.46	7.0193	0.3757	-33.37%	Pass
	HV	7.21	8.35	6.8437	0.3666	-35.00%	Pass

8-DPSK (AFH Mode) Test Result

Duty cycle = 0.769

Antenna Power=power value (dBm)+10*LOG10(1/Duty Cycle)) dBm+Cable Loss dBm

Antenna Power Density PD = Antenna Power mW / Spread Spectrum Bandwidth MHz

Manufacturer declares the conducted power density = 0.5166 mW/MHz

Test Mode	Test Voltage	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
8-DPSK	LV	6.85	7.99	6.2993	0.3368	-34.81%	Pass
	NV	6.96	8.10	6.4609	0.3469	-32.84%	Pass
	HV	6.82	7.96	6.2559	0.3358	-35.00%	Pass

GFSK (BLE 1Mbps) Test Result

Duty cycle = 0.610

Manufacturer declares the Antenna Power = 1.7500 mW

Test Channel	Test Voltage	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Error	Verdict
Low	LV	0.67	0.67	1.1665	-33.34%	Pass
	NV	0.62	0.62	1.1535	-34.09%	Pass
	HV	0.65	0.65	1.1614	-33.63%	Pass
Middle	LV	1.82	1.82	1.5205	-13.11%	Pass
	NV	1.81	1.81	1.5160	-13.37%	Pass
	HV	1.78	1.78	1.5066	-13.91%	Pass
High	LV	1.08	1.08	1.2823	-26.72%	Pass
	NV	1.04	1.04	1.2706	-27.40%	Pass
	HV	1.11	1.11	1.2909	-26.23%	Pass

GFSK (BLE 2Mbps) Test Result

Duty cycle = 0.314

Manufacturer declares the Antenna Power = 1.6500 mW

Test Channel	Test Voltage	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Error	Verdict
Low	LV	0.50	0.50	1.1223	-31.98%	Pass
	NV	0.53	0.53	1.1298	-31.53%	Pass
	HV	0.45	0.45	1.1092	-32.78%	Pass
Middle	LV	1.54	1.54	1.4256	-13.60%	Pass
	NV	1.63	1.63	1.4555	-11.79%	Pass
	HV	1.61	1.61	1.4488	-12.20%	Pass
High	LV	1.02	1.02	1.2647	-23.35%	Pass
	NV	1.04	1.04	1.2706	-23.00%	Pass
	HV	0.99	0.99	1.2560	-23.88%	Pass

A.6 Limitation of Collateral Emission of Receiver Measurement

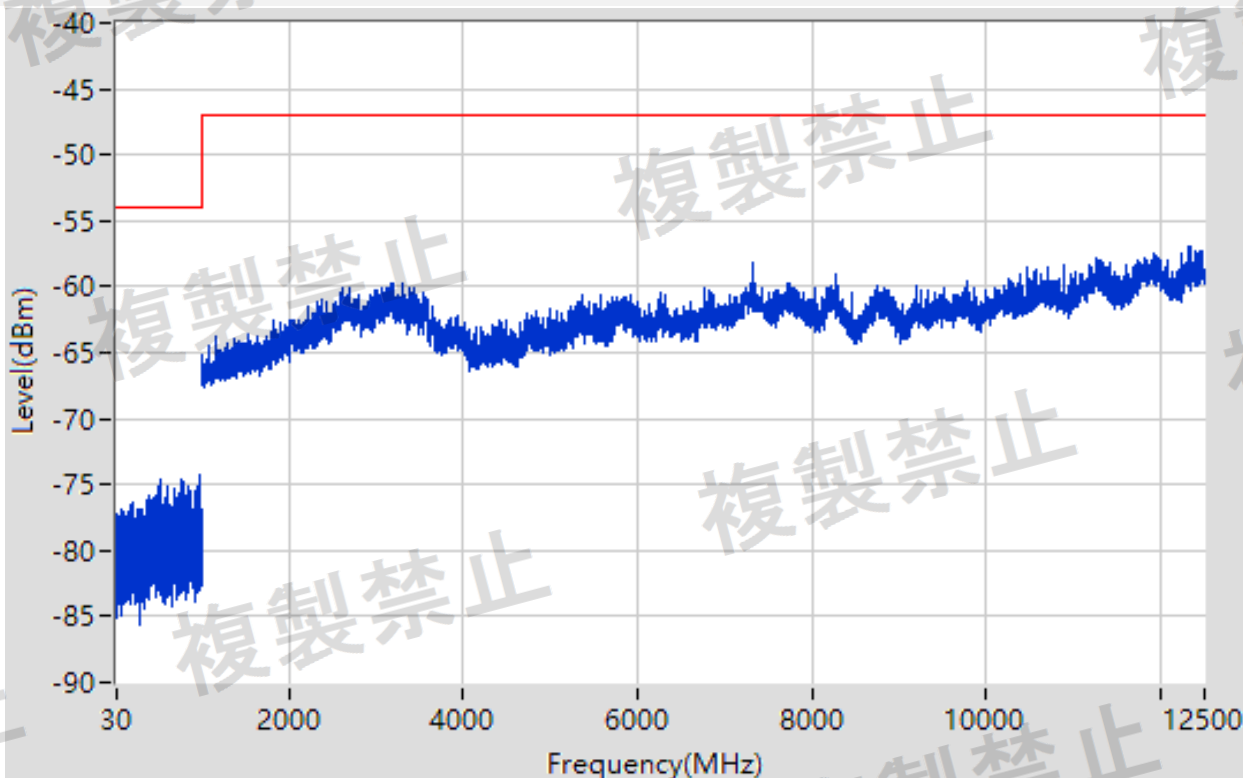
Test Data

Mode	Test Voltage	Channel	Refer to Plot	Verdict
GFSK	Low	LV	A.6.1	Pass
		NV	A.6.2	Pass
		HV	A.6.3	Pass
	Middle	LV	A.6.4	Pass
		NV	A.6.5	Pass
		HV	A.6.6	Pass
	High	LV	A.6.7	Pass
		NV	A.6.8	Pass
		HV	A.6.9	Pass
$\pi/4$ -DQPSK	Low	LV	A.6.10	Pass
		NV	A.6.11	Pass
		HV	A.6.12	Pass
	Middle	LV	A.6.13	Pass
		NV	A.6.14	Pass
		HV	A.6.15	Pass
	High	LV	A.6.16	Pass
		NV	A.6.17	Pass
		HV	A.6.18	Pass
8-DPSK	Low	LV	A.6.19	Pass
		NV	A.6.20	Pass
		HV	A.6.21	Pass
	Middle	LV	A.6.22	Pass
		NV	A.6.23	Pass
		HV	A.6.24	Pass
	High	LV	A.6.25	Pass
		NV	A.6.26	Pass
		HV	A.6.27	Pass
GFSK (BLE 1Mbps)	Low	LV	A.6.28	Pass
		NV	A.6.29	Pass
		HV	A.6.30	Pass
	Middle	LV	A.6.31	Pass
		NV	A.6.32	Pass
		HV	A.6.33	Pass
	High	LV	A.6.34	Pass
		NV	A.6.35	Pass
		HV	A.6.36	Pass
GFSK (BLE 2Mbps)	Low	LV	A.6.37	Pass
		NV	A.6.38	Pass

	Middle	HV	A.6.39	Pass
		LV	A.6.40	Pass
		NV	A.6.41	Pass
		HV	A.6.42	Pass
	High	LV	A.6.43	Pass
		NV	A.6.44	Pass
		HV	A.6.45	Pass

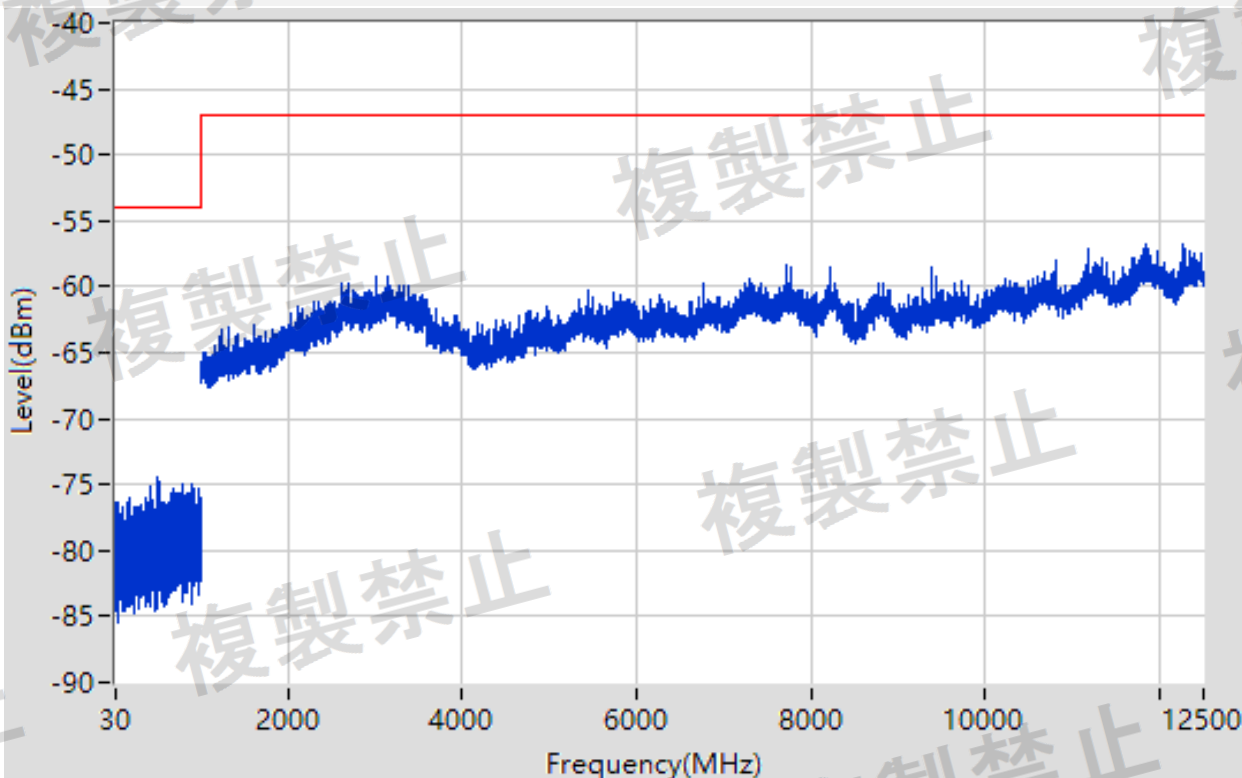
Test Plots

A.6.1 GFSK LV Low Channel



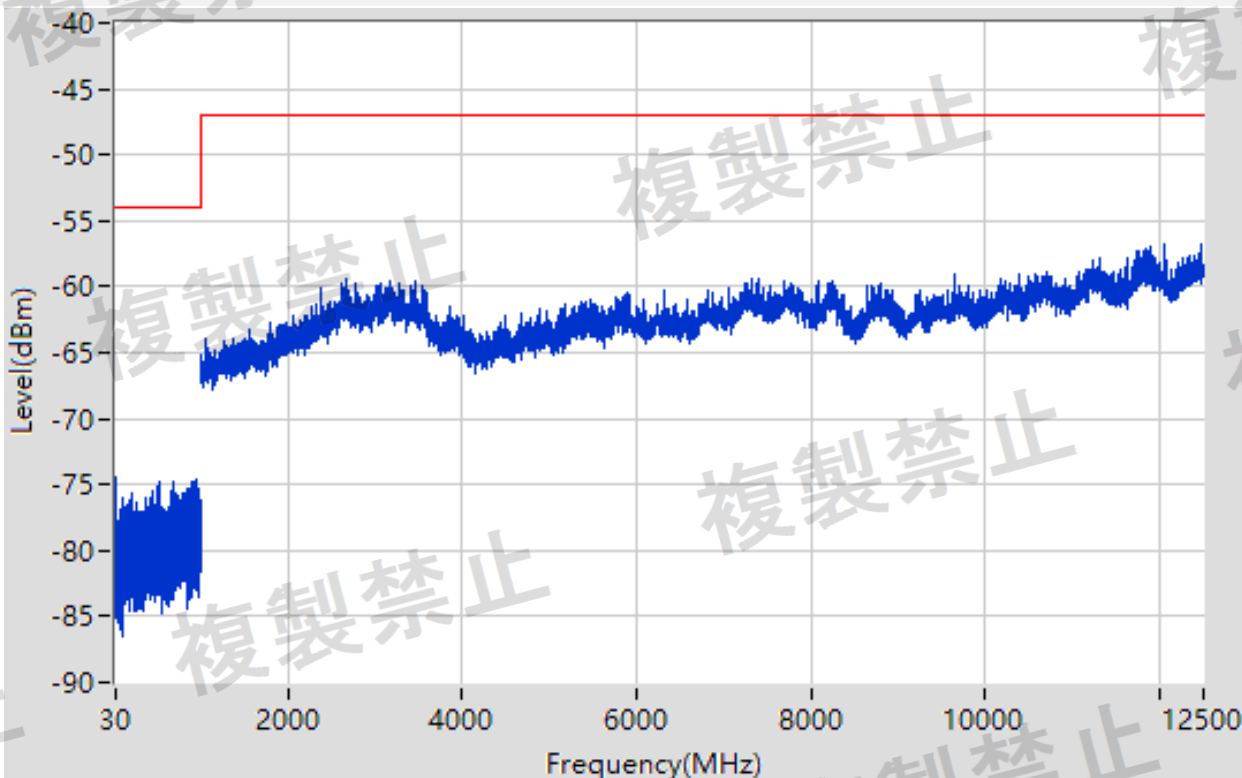
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	972.719	-74.3	-54	Pass	8001
1000	6000	1	Peak	3300	-59.7	-47	Pass	4001
6000	12500	1	Peak	12342.375	-57.01	-47	Pass	4001

A.6.2 GFSK NV Low Channel



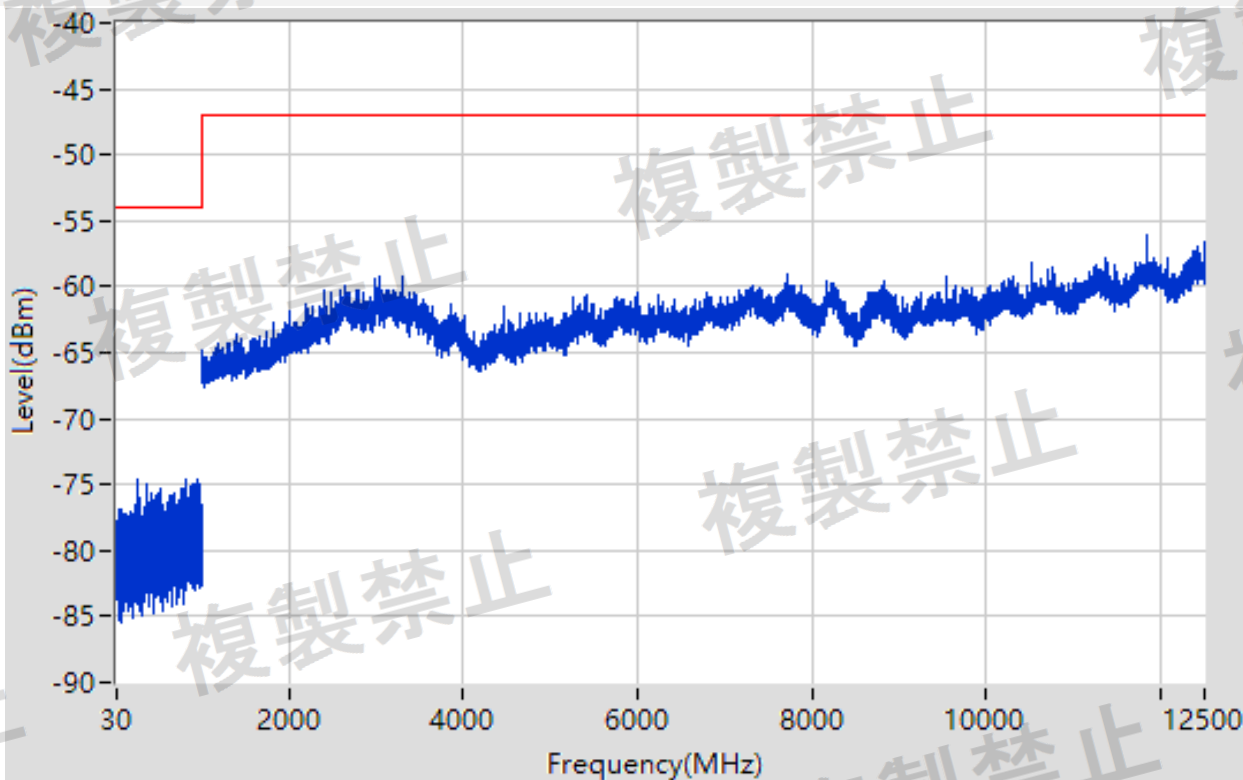
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	494.994	-74.51	-54	Pass	8001
1000	6000	1	Peak	3007.5	-59.26	-47	Pass	4001
6000	12500	1	Peak	11827.25	-56.77	-47	Pass	4001

A.6.3 GFSK HV Low Channel



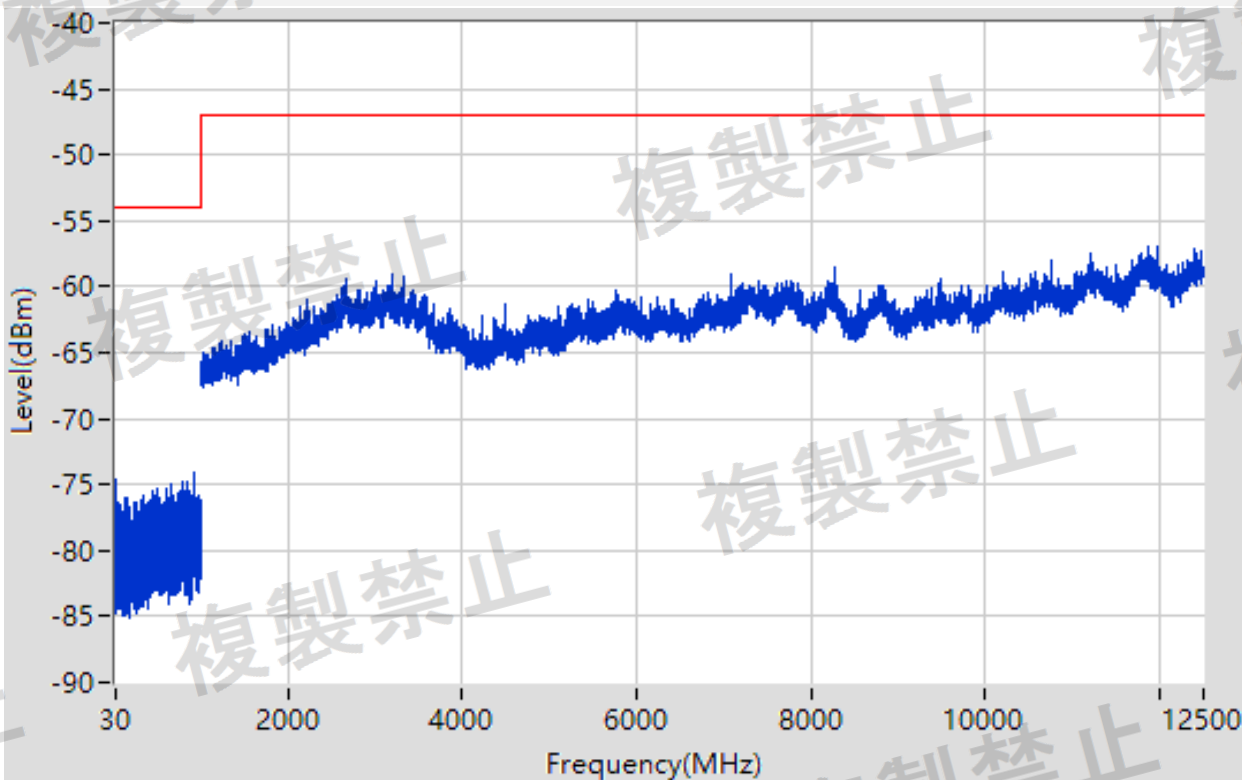
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	30	-74.42	-54	Pass	8001
1000	6000	1	Peak	2670	-59.35	-47	Pass	4001
6000	12500	1	Peak	12048.25	-56.72	-47	Pass	4001

A.6.4 GFSK LV Middle Channel



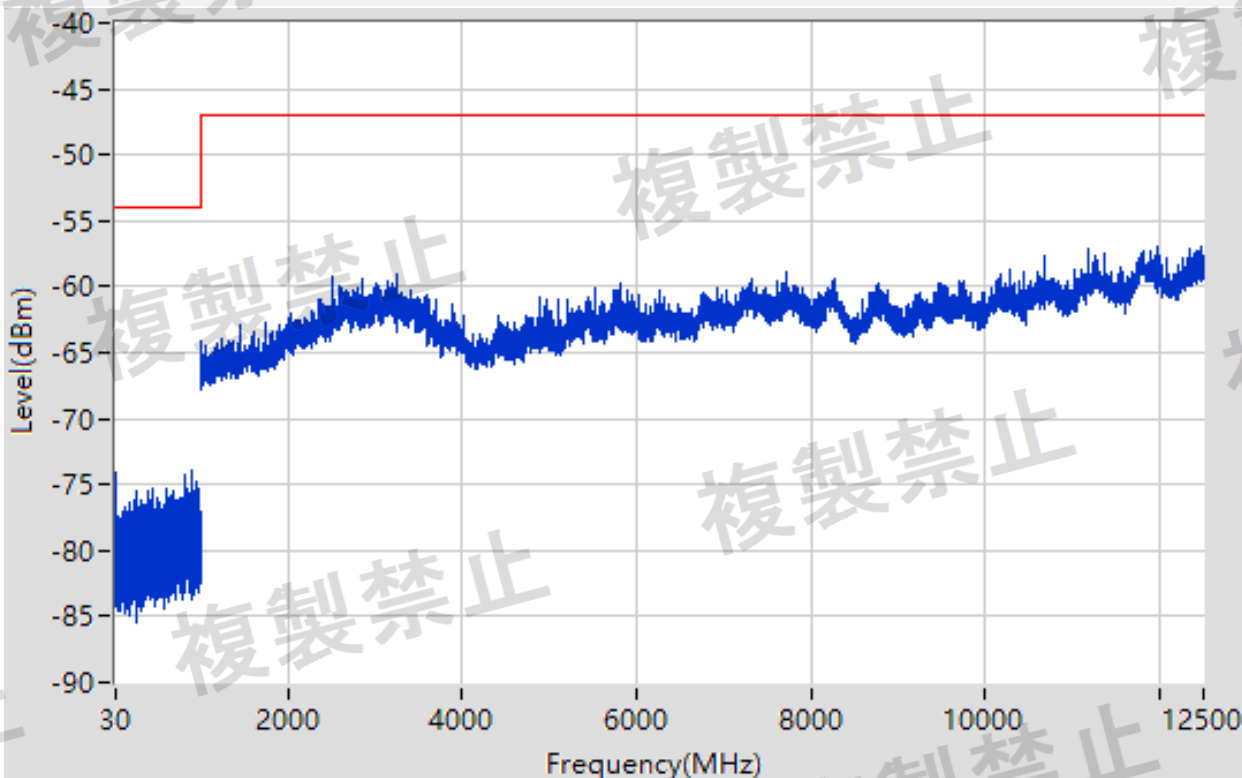
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	959.26	-74.55	-54	Pass	8001
1000	6000	1	Peak	3048.75	-59.19	-47	Pass	4001
6000	12500	1	Peak	11846.75	-56.04	-47	Pass	4001

A.6.5 GFSK NV Middle Channel



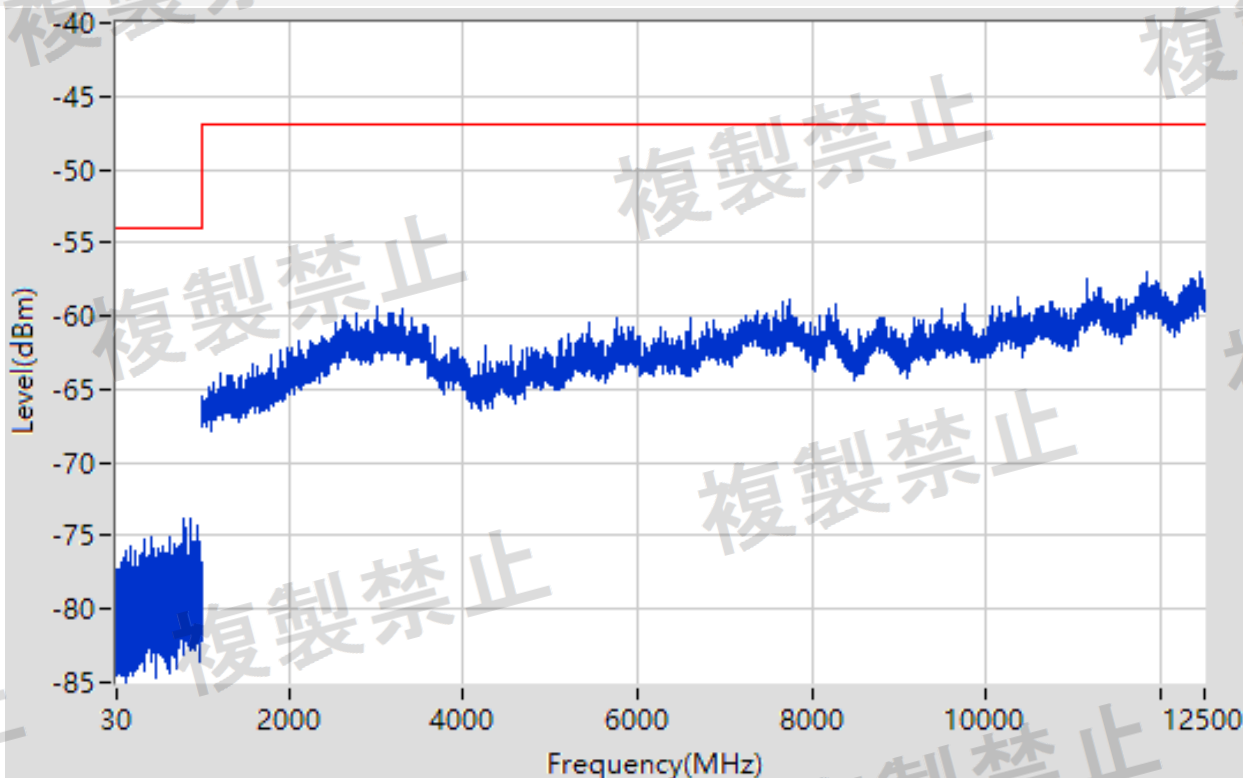
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	926.644	-74.04	-54	Pass	8001
1000	6000	1	Peak	3193.75	-59.04	-47	Pass	4001
6000	12500	1	Peak	11867.875	-57	-47	Pass	4001

A.6.6 GFSK HV Middle Channel



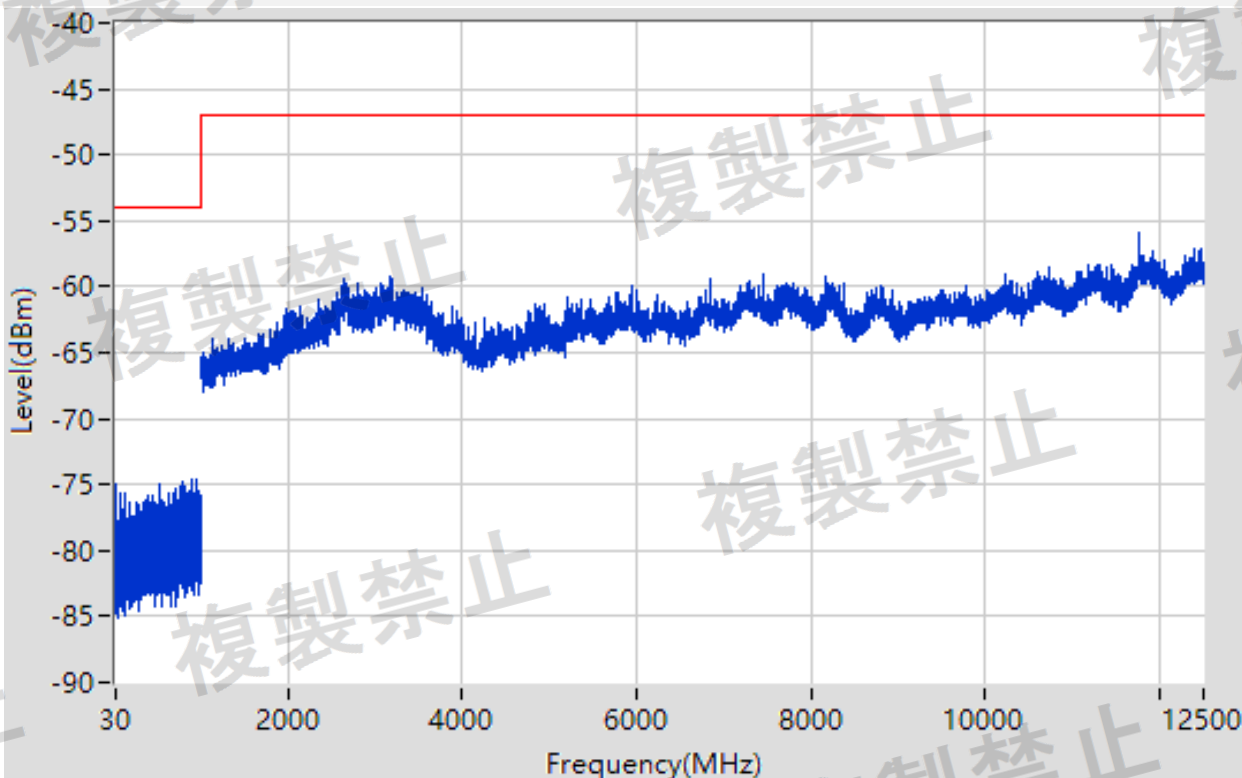
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	905.668	-73.85	-54	Pass	8001
1000	6000	1	Peak	3263.75	-58.98	-47	Pass	4001
6000	12500	1	Peak	12469.125	-56.87	-47	Pass	4001

A.6.7 GFSK LV High Channel



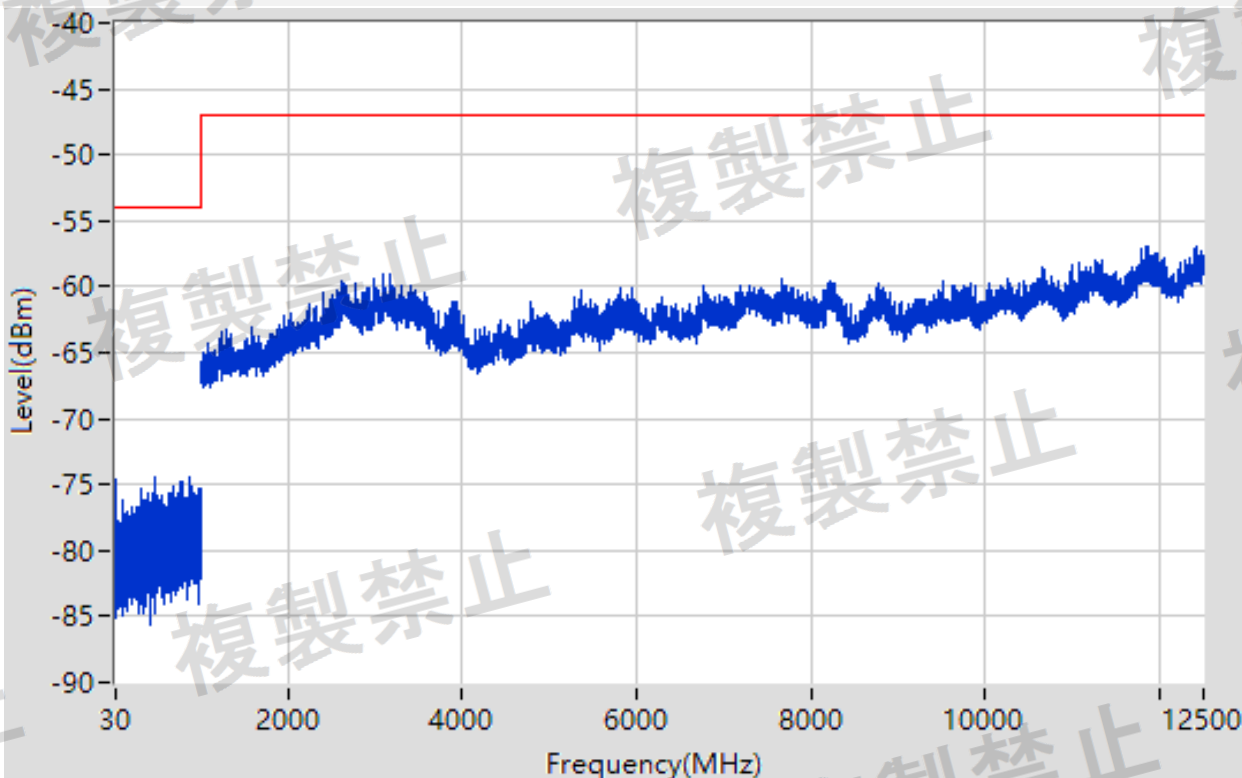
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	873.658	-73.78	-54	Pass	8001
1000	6000	1	Peak	3005	-59.32	-47	Pass	4001
6000	12500	1	Peak	11837	-57	-47	Pass	4001

A.6.8 GFSK NV High Channel

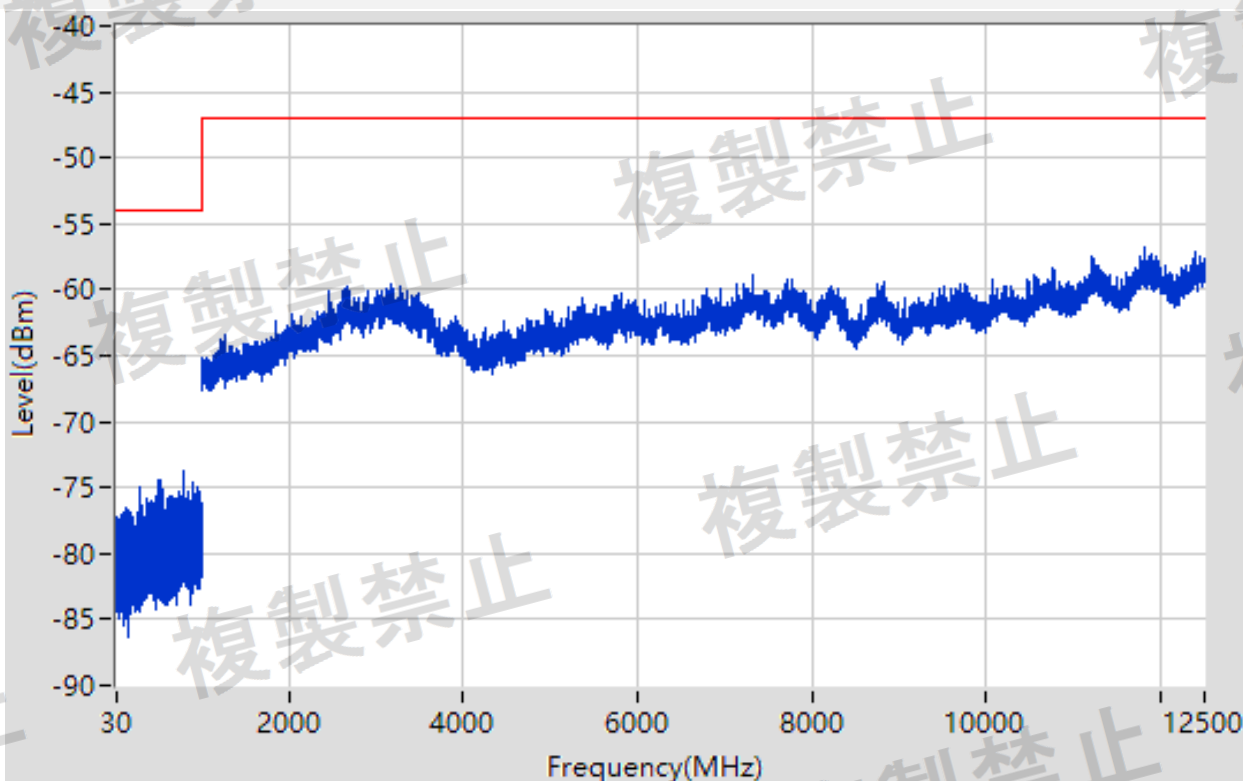


Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	899.848	-74.65	-54	Pass	8001
1000	6000	1	Peak	3183.75	-59.19	-47	Pass	4001
6000	12500	1	Peak	11770.375	-55.89	-47	Pass	4001

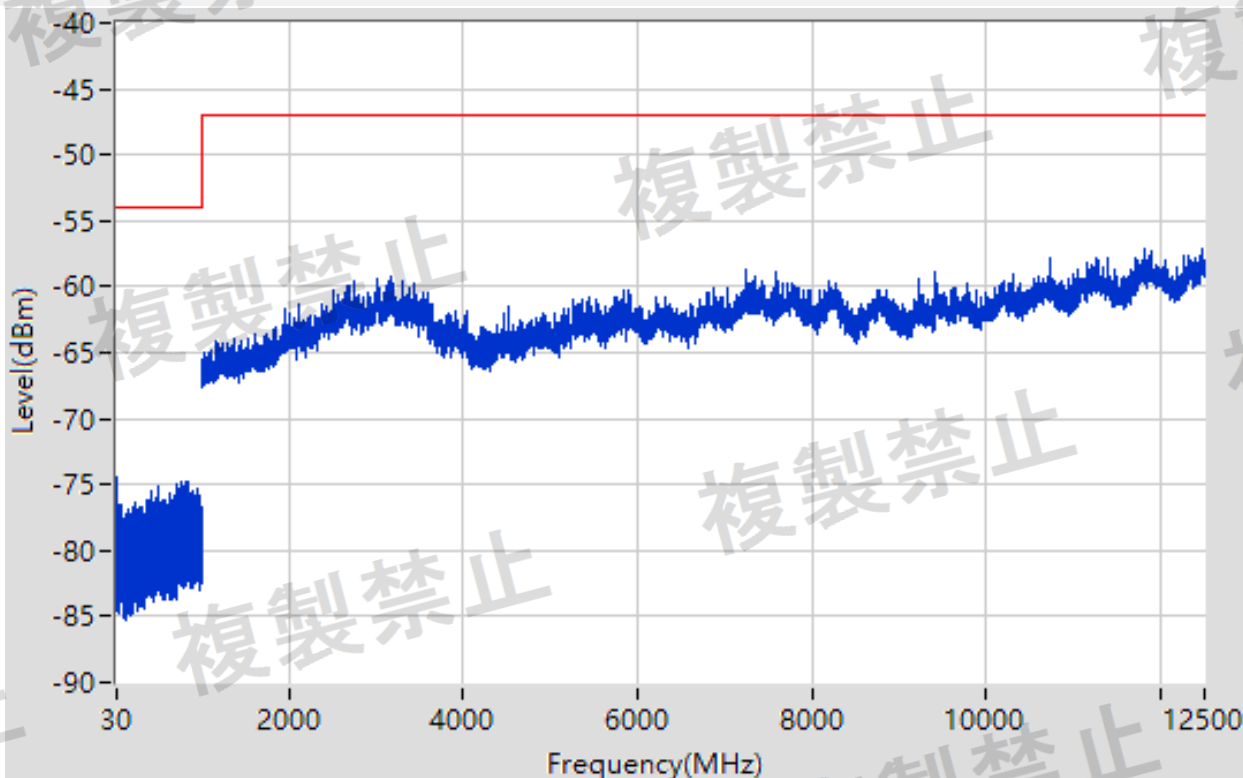
A.6.9 GFSK HV High Channel



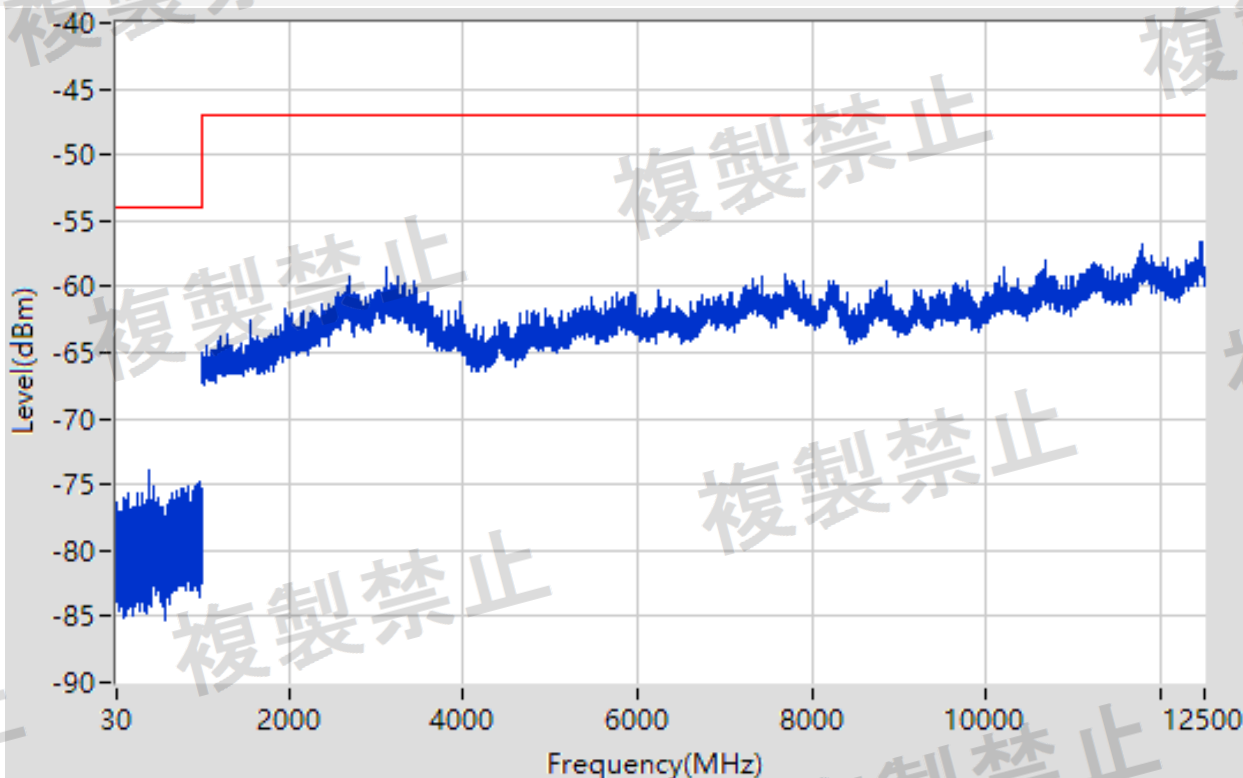
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	470.016	-74.41	-54	Pass	8001
1000	6000	1	Peak	3086.25	-58.99	-47	Pass	4001
6000	12500	1	Peak	11853.25	-56.98	-47	Pass	4001

A.6.10 $\pi/4$ -DQPSK LV Low Channel

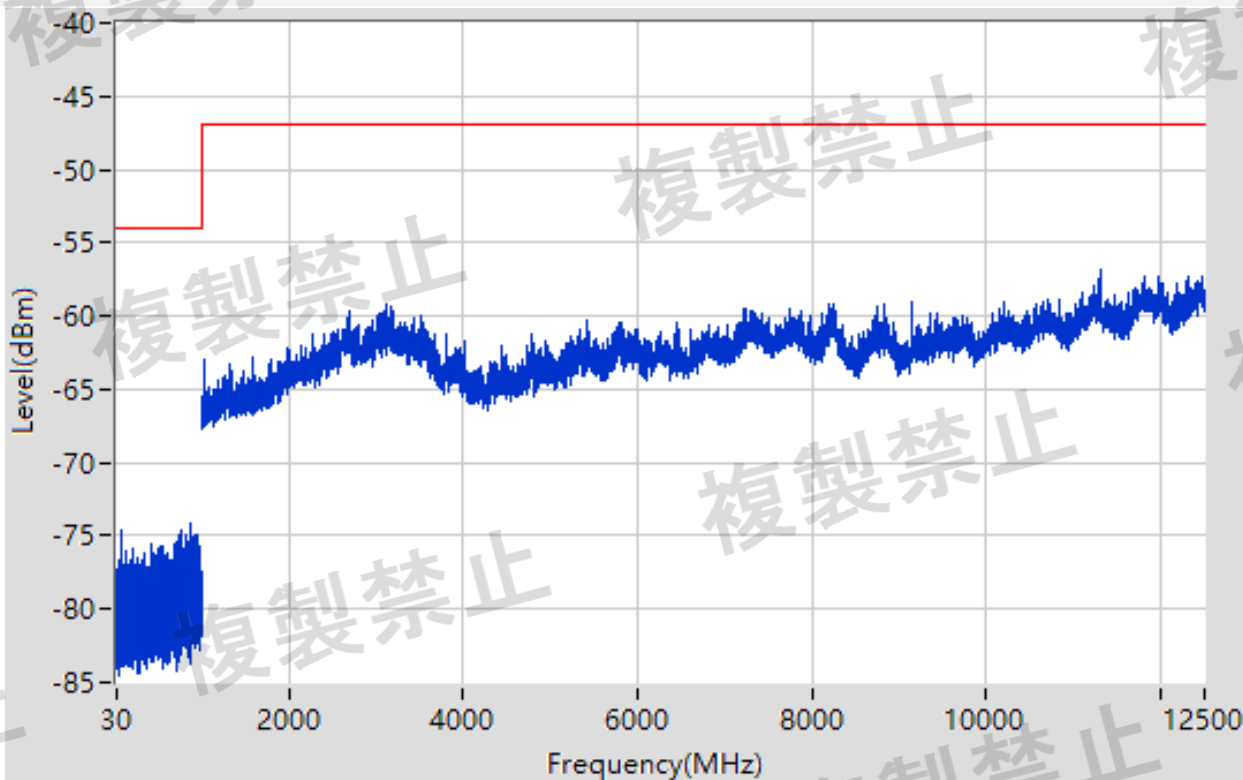
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	805.151	-73.71	-54	Pass	8001
1000	6000	1	Peak	3186.25	-59.61	-47	Pass	4001
6000	12500	1	Peak	11804.5	-56.75	-47	Pass	4001

A.6.11 $\pi/4$ -DQPSK NV Low Channel

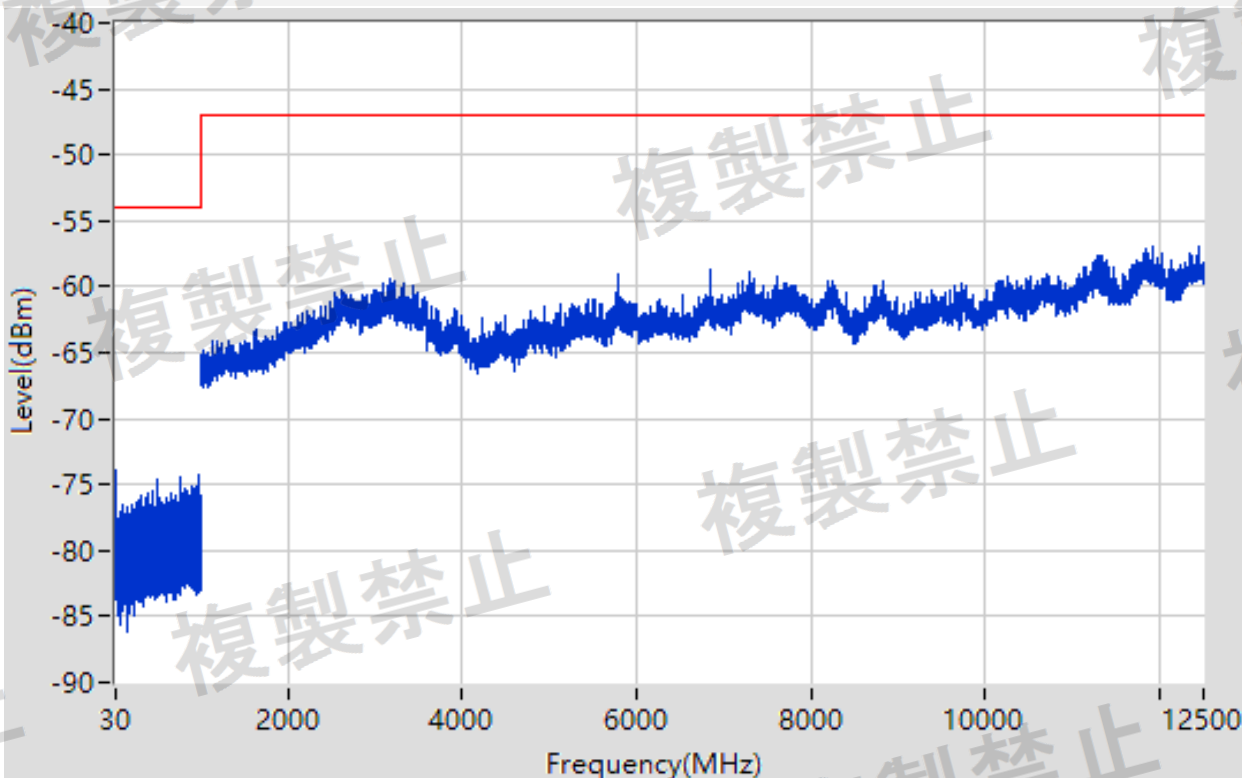
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	30	-74.39	-54	Pass	8001
1000	6000	1	Peak	3177.5	-59.19	-47	Pass	4001
6000	12500	1	Peak	11817.5	-57.1	-47	Pass	4001

A.6.12 $\pi/4$ -DQPSK HV Low Channel

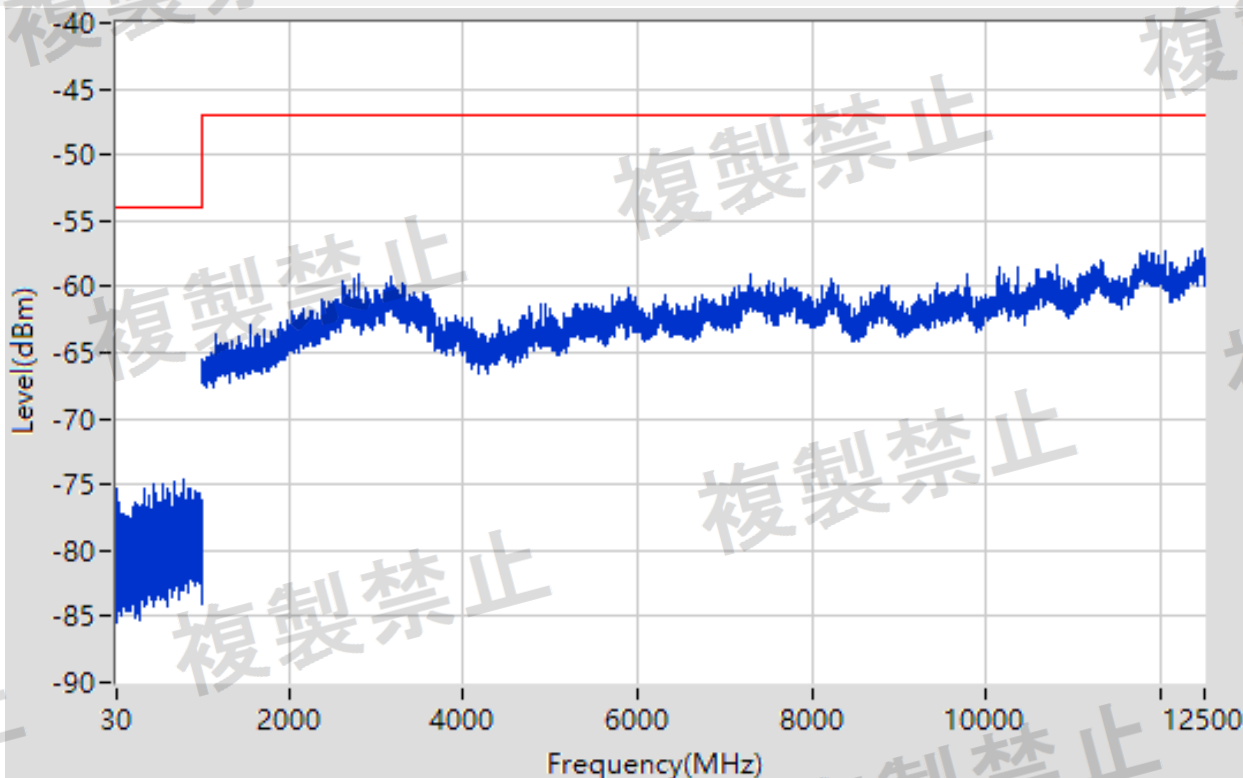
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	394.599	-73.84	-54	Pass	8001
1000	6000	1	Peak	3115	-58.51	-47	Pass	4001
6000	12500	1	Peak	12452.875	-56.56	-47	Pass	4001

A.6.13 $\pi/4$ -DQPSK LV Middle Channel

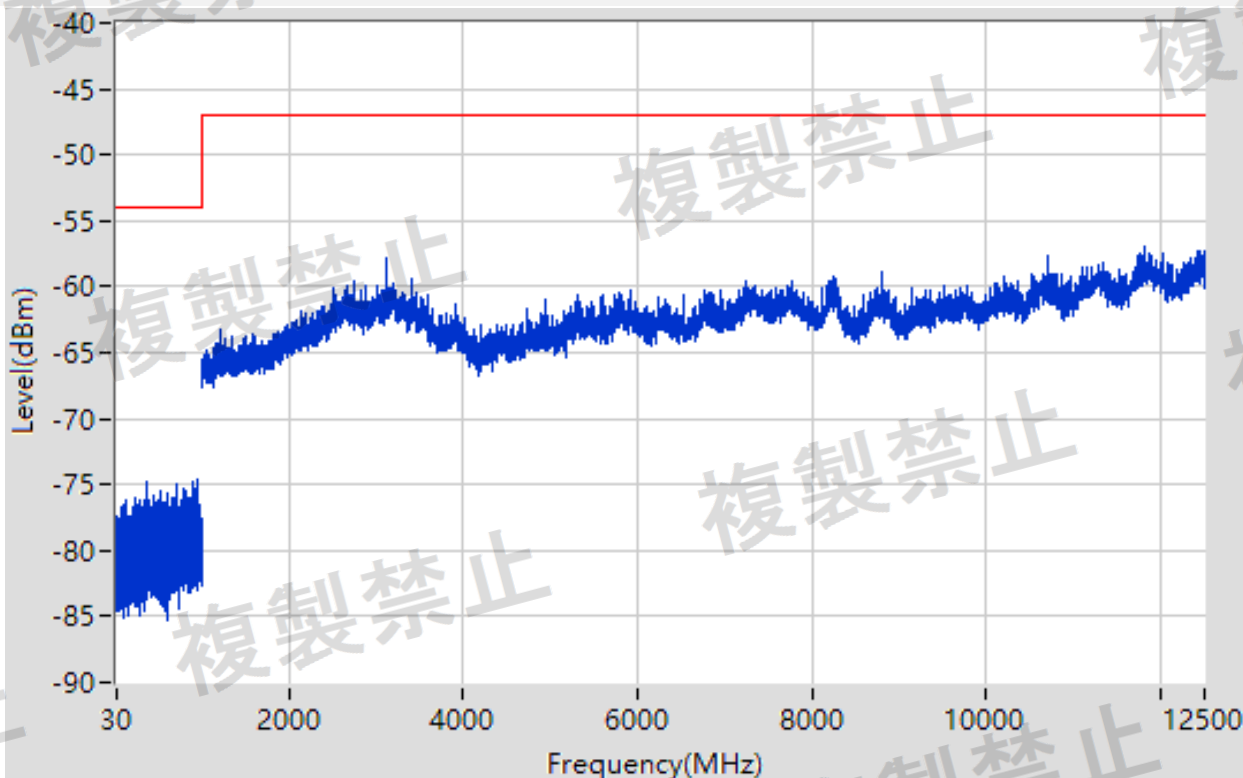
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	871.718	-74.07	-54	Pass	8001
1000	6000	1	Peak	3108.75	-59.18	-47	Pass	4001
6000	12500	1	Peak	11300.75	-56.85	-47	Pass	4001

A.6.14 $\pi/4$ -DQPSK NV Middle Channel

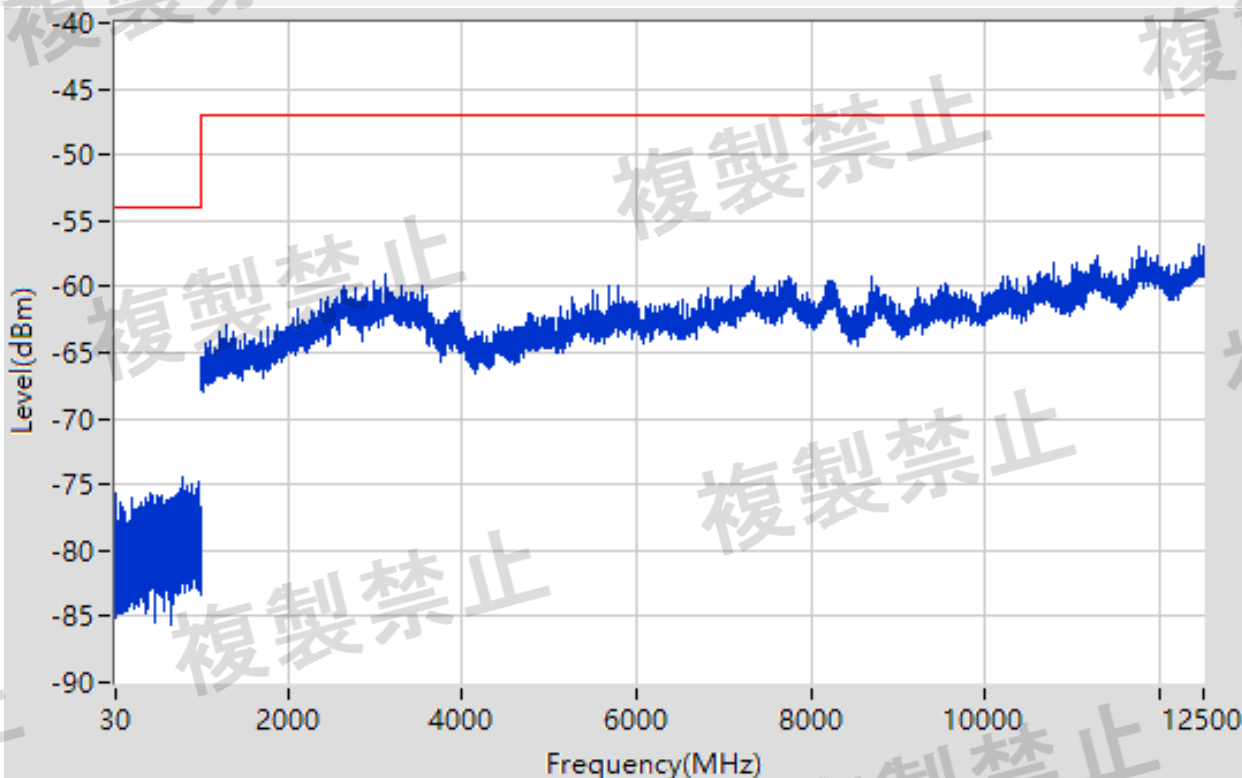
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	30	-73.97	-54	Pass	8001
1000	6000	1	Peak	5781.25	-59.01	-47	Pass	4001
6000	12500	1	Peak	11913.375	-56.87	-47	Pass	4001

A.6.15 $\pi/4$ -DQPSK HV Middle Channel

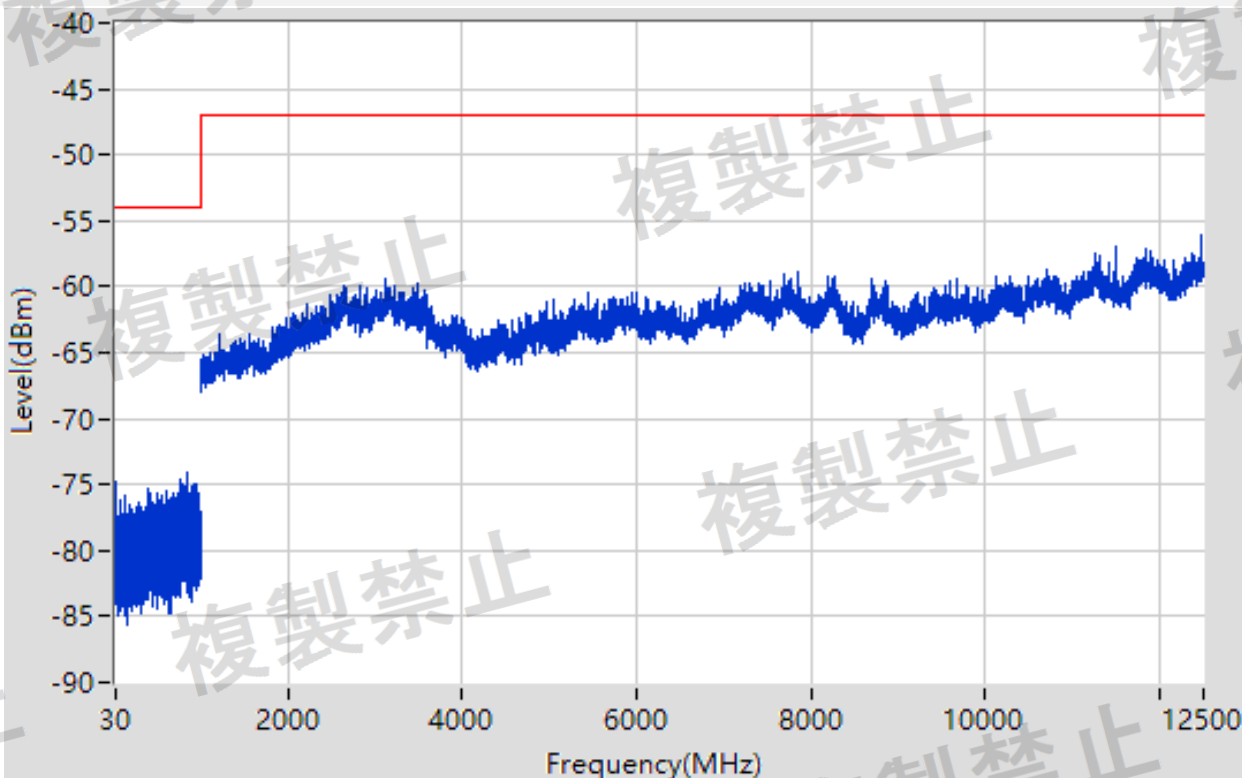
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	799.331	-74.59	-54	Pass	8001
1000	6000	1	Peak	2798.75	-59.06	-47	Pass	4001
6000	12500	1	Peak	12480.5	-57.11	-47	Pass	4001

A.6.16 $\pi/4$ -DQPSK LV High Channel

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	941.679	-74.61	-54	Pass	8001
1000	6000	1	Peak	3123.75	-57.87	-47	Pass	4001
6000	12500	1	Peak	11817.5	-56.99	-47	Pass	4001

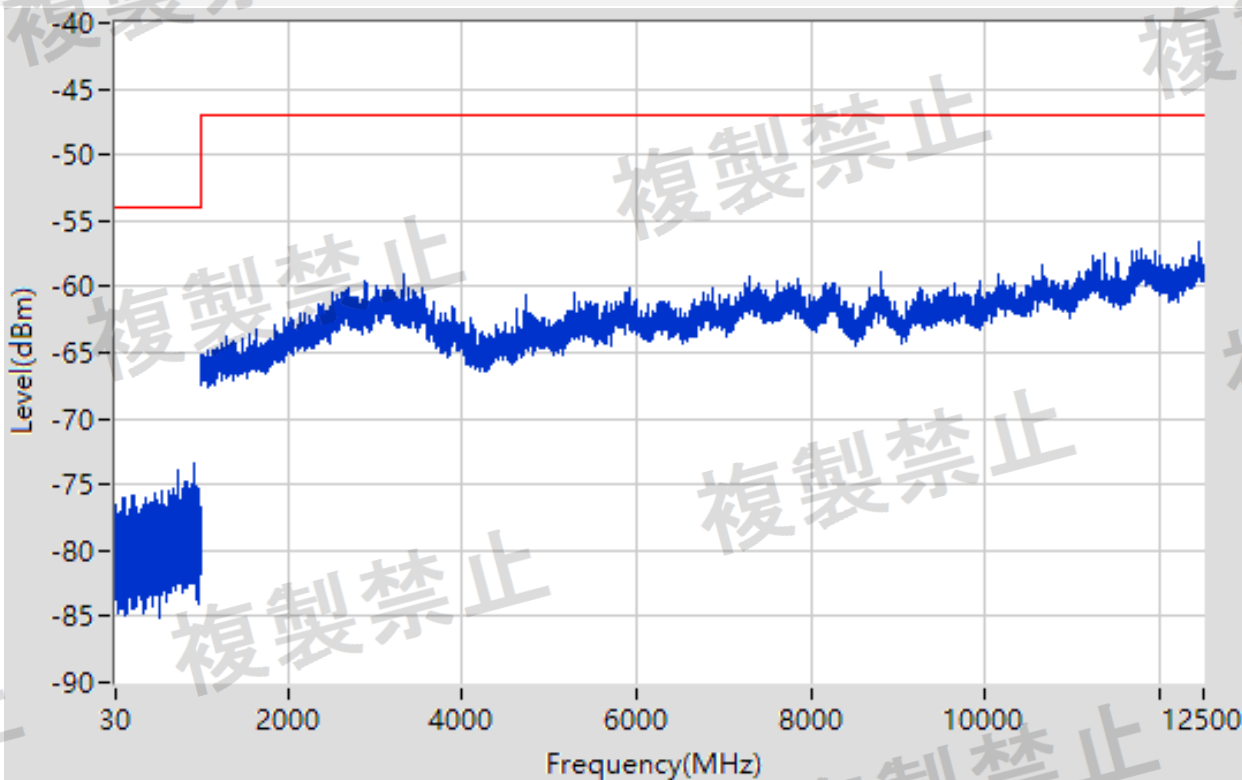
A.6.17 $\pi/4$ -DQPSK NV High Channel

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	788.783	-74.51	-54	Pass	8001
1000	6000	1	Peak	3126.25	-59.05	-47	Pass	4001
6000	12500	1	Peak	12452.875	-56.82	-47	Pass	4001

A.6.18 $\pi/4$ -DQPSK HV High Channel

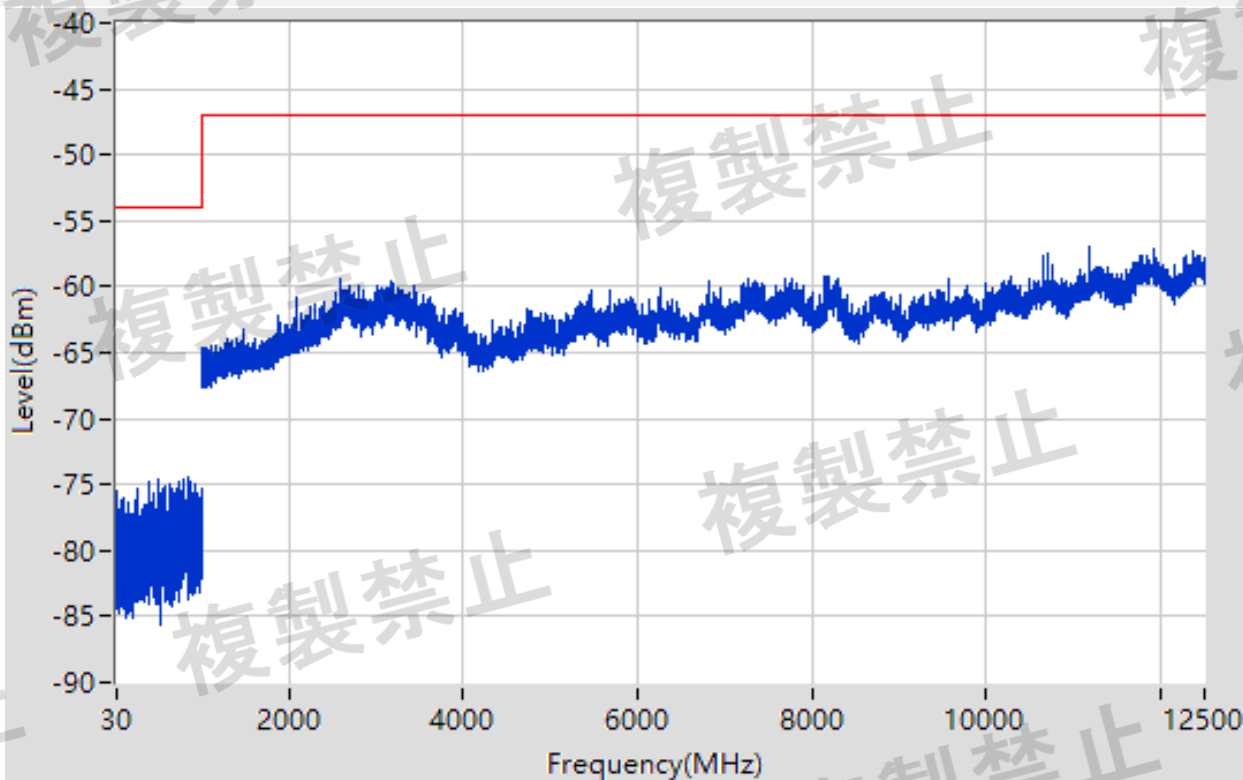
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	841.769	-74.15	-54	Pass	8001
1000	6000	1	Peak	3132.5	-59.48	-47	Pass	4001
6000	12500	1	Peak	12477.25	-56.03	-47	Pass	4001

A.6.19 8-DPSK LV Low Channel



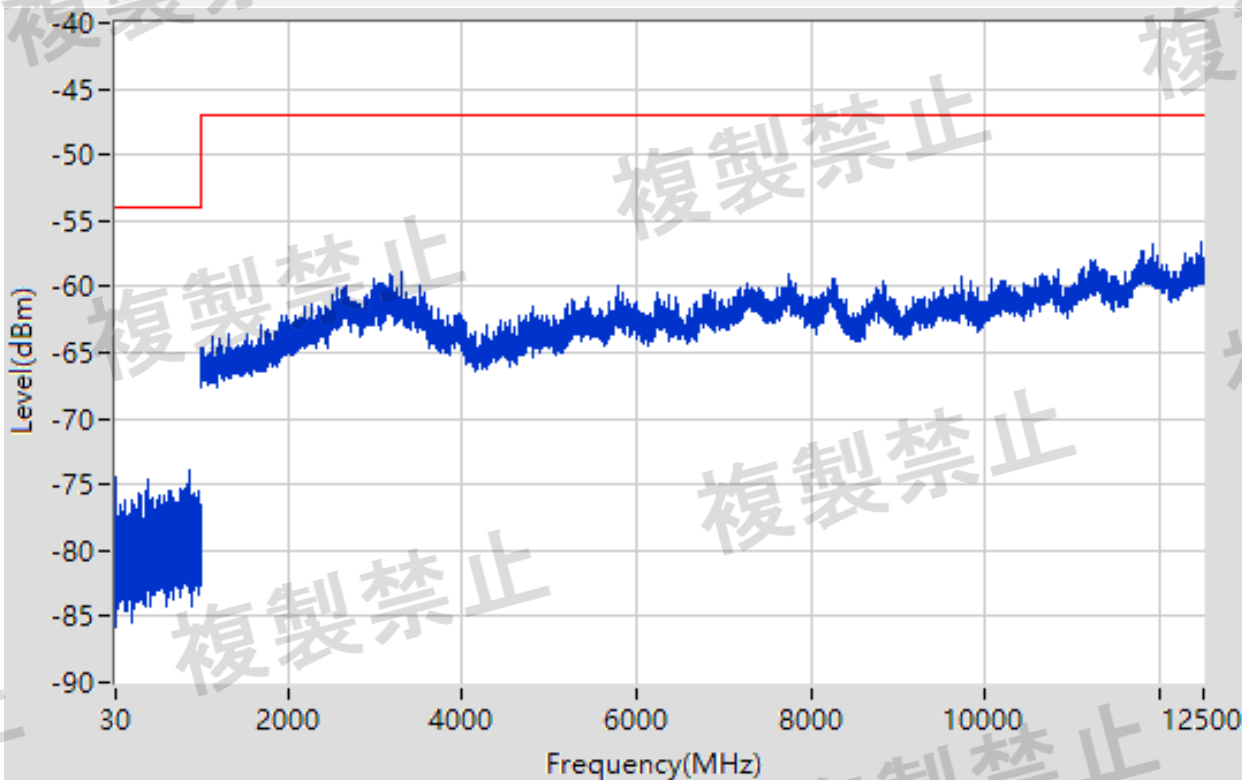
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	919.611	-73.31	-54	Pass	8001
1000	6000	1	Peak	3320	-59.06	-47	Pass	4001
6000	12500	1	Peak	12459.375	-56.61	-47	Pass	4001

A.6.20 8-DPSK NV Low Channel



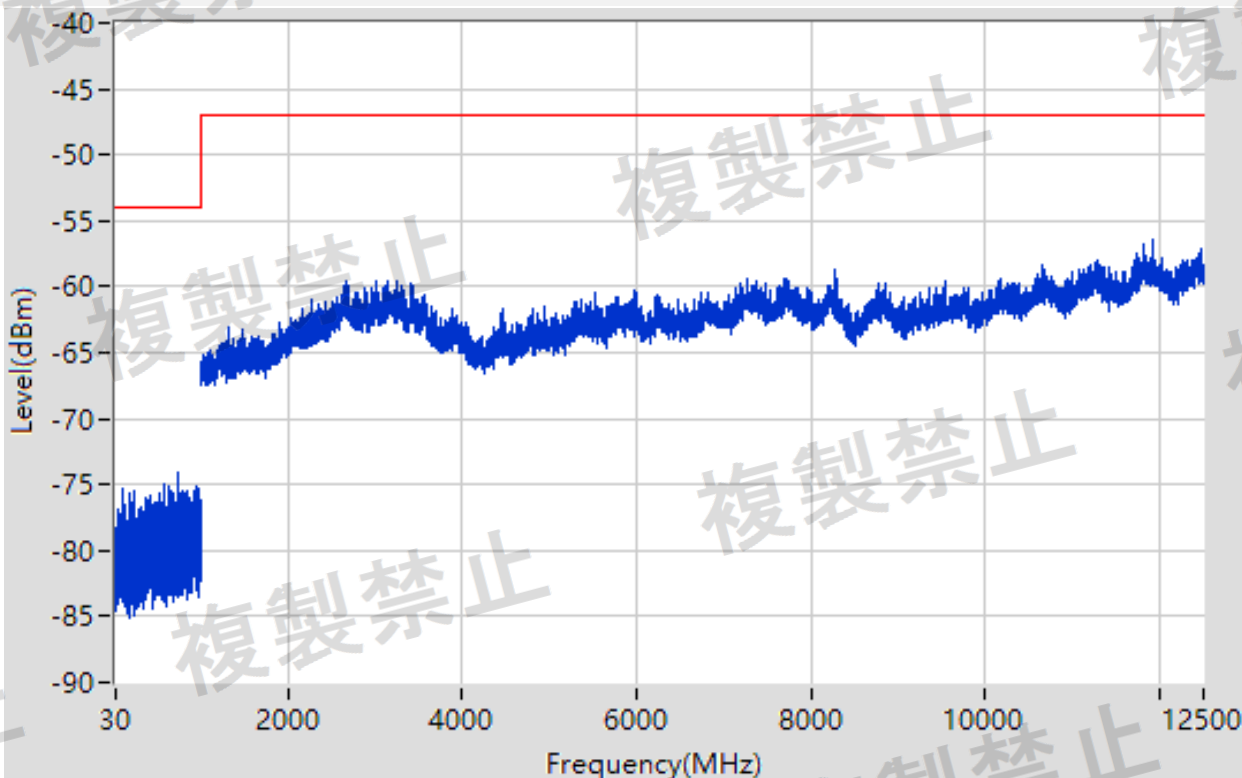
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	838.01	-74.41	-54	Pass	8001
1000	6000	1	Peak	2593.75	-59.36	-47	Pass	4001
6000	12500	1	Peak	11188.625	-56.98	-47	Pass	4001

A.6.21 8-DPSK HV Low Channel



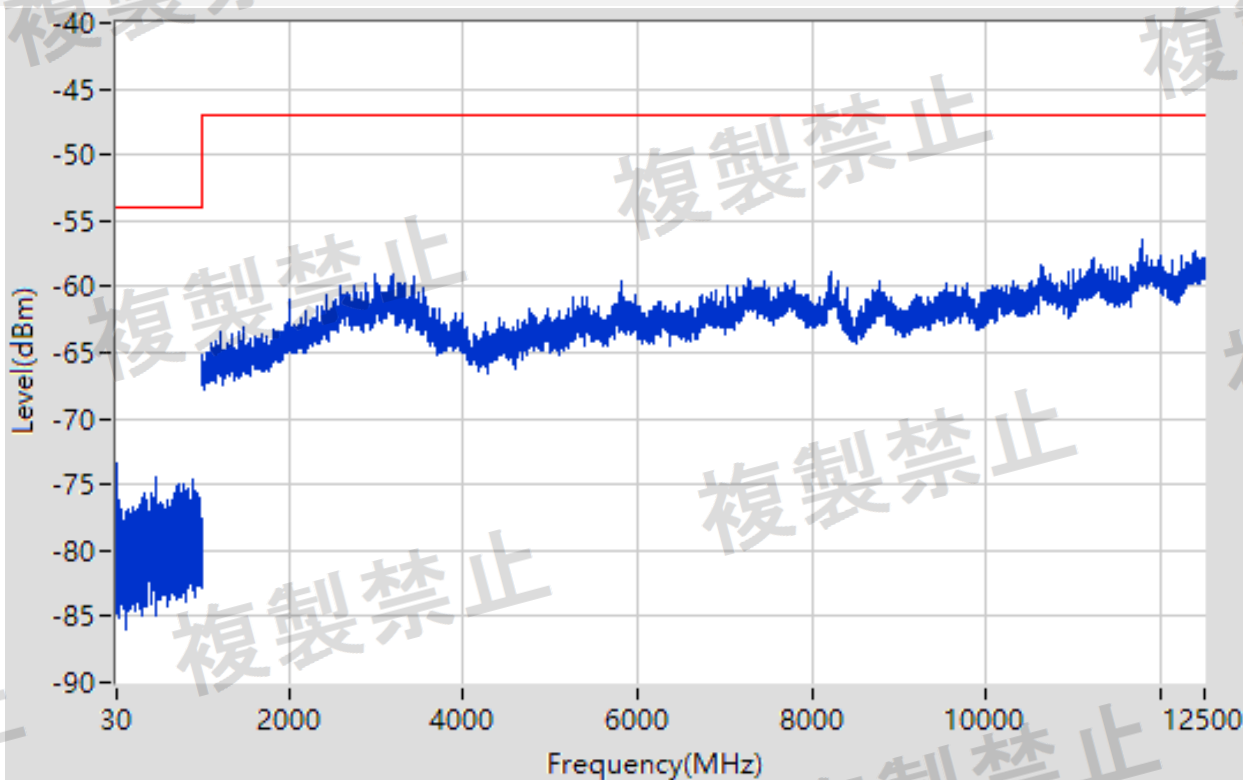
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	870.02	-73.96	-54	Pass	8001
1000	6000	1	Peak	3315	-58.84	-47	Pass	4001
6000	12500	1	Peak	12480.5	-56.67	-47	Pass	4001

A.6.22 8-DPSK LV Middle Channel



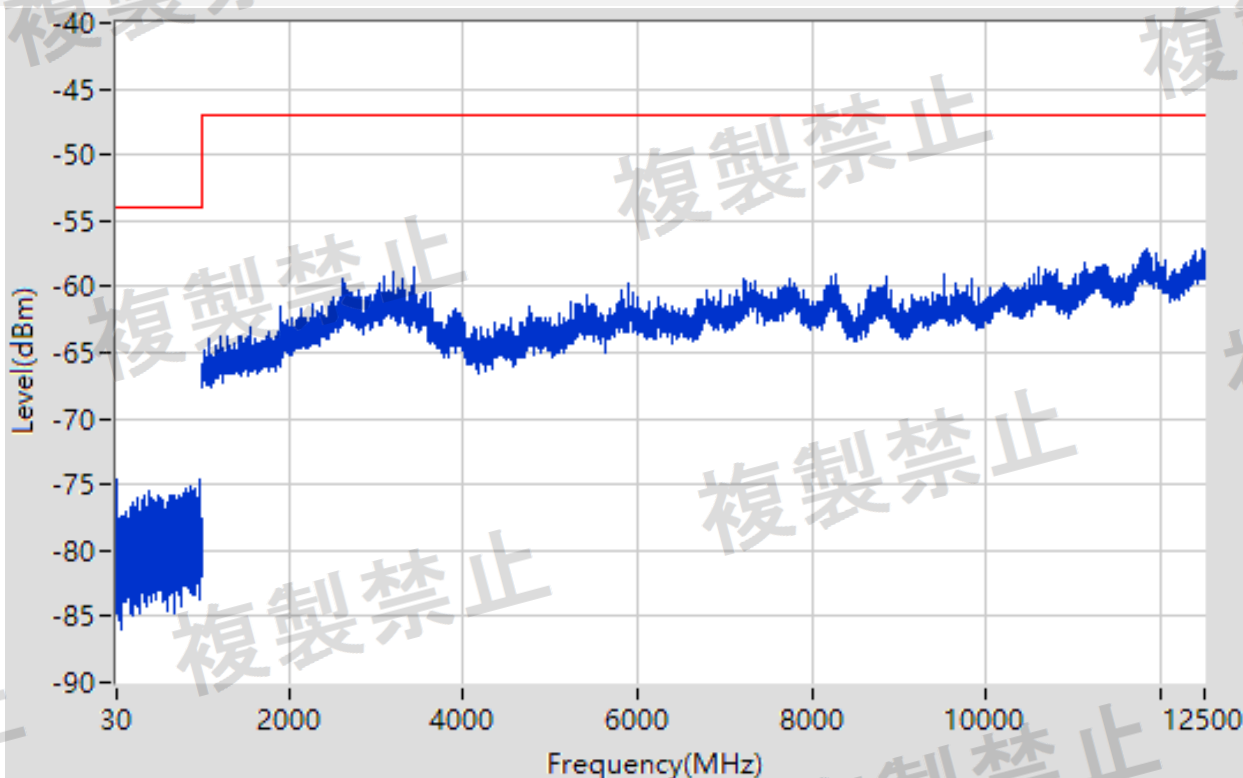
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	756.53	-74.14	-54	Pass	8001
1000	6000	1	Peak	3140	-59.56	-47	Pass	4001
6000	12500	1	Peak	11929.625	-56.49	-47	Pass	4001

A.6.23 8-DPSK NV Middle Channel



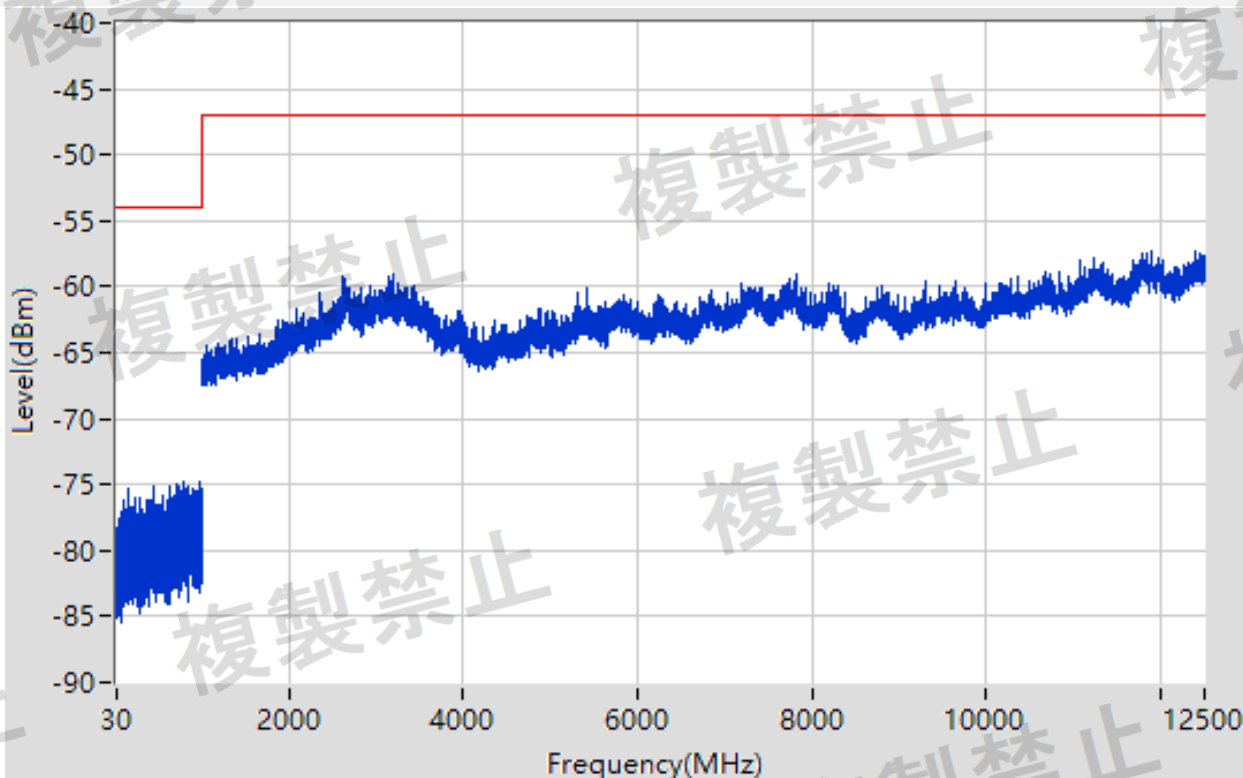
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	30	-73.46	-54	Pass	8001
1000	6000	1	Peak	3001.25	-59.02	-47	Pass	4001
6000	12500	1	Peak	11780.125	-56.41	-47	Pass	4001

A.6.24 8-DPSK HV Middle Channel



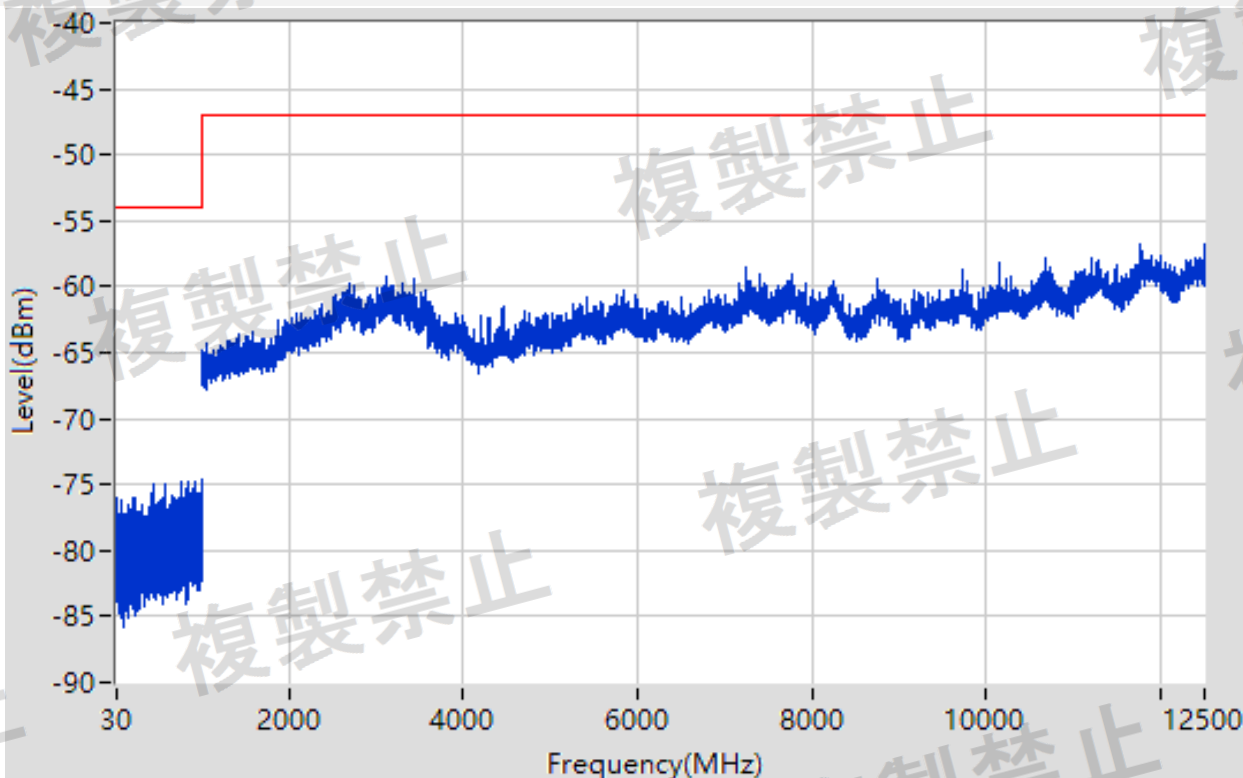
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	30	-74.54	-54	Pass	8001
1000	6000	1	Peak	3426.25	-58.56	-47	Pass	4001
6000	12500	1	Peak	12474	-57.08	-47	Pass	4001

A.6.25 8-DPSK LV High Channel



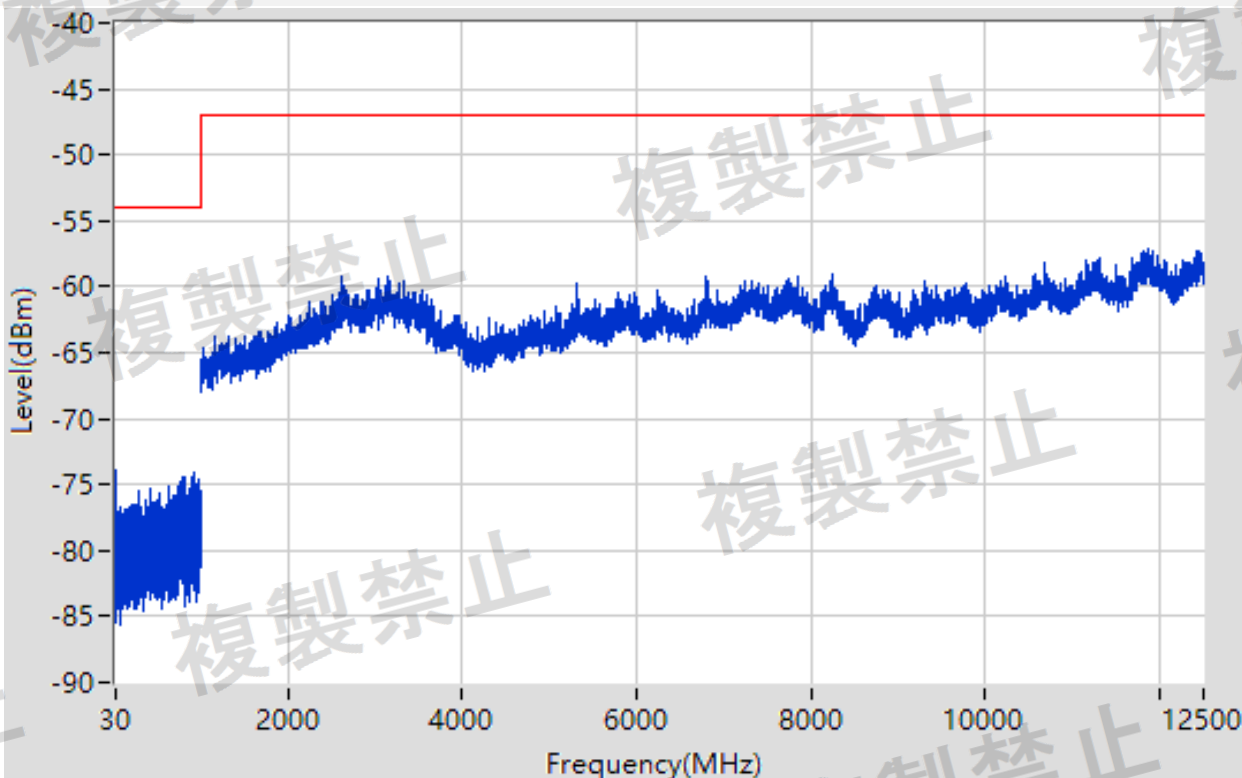
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	989.694	-74.76	-54	Pass	8001
1000	6000	1	Peak	3190	-59.1	-47	Pass	4001
6000	12500	1	Peak	12386.25	-57.27	-47	Pass	4001

A.6.26 8-DPSK NV High Channel



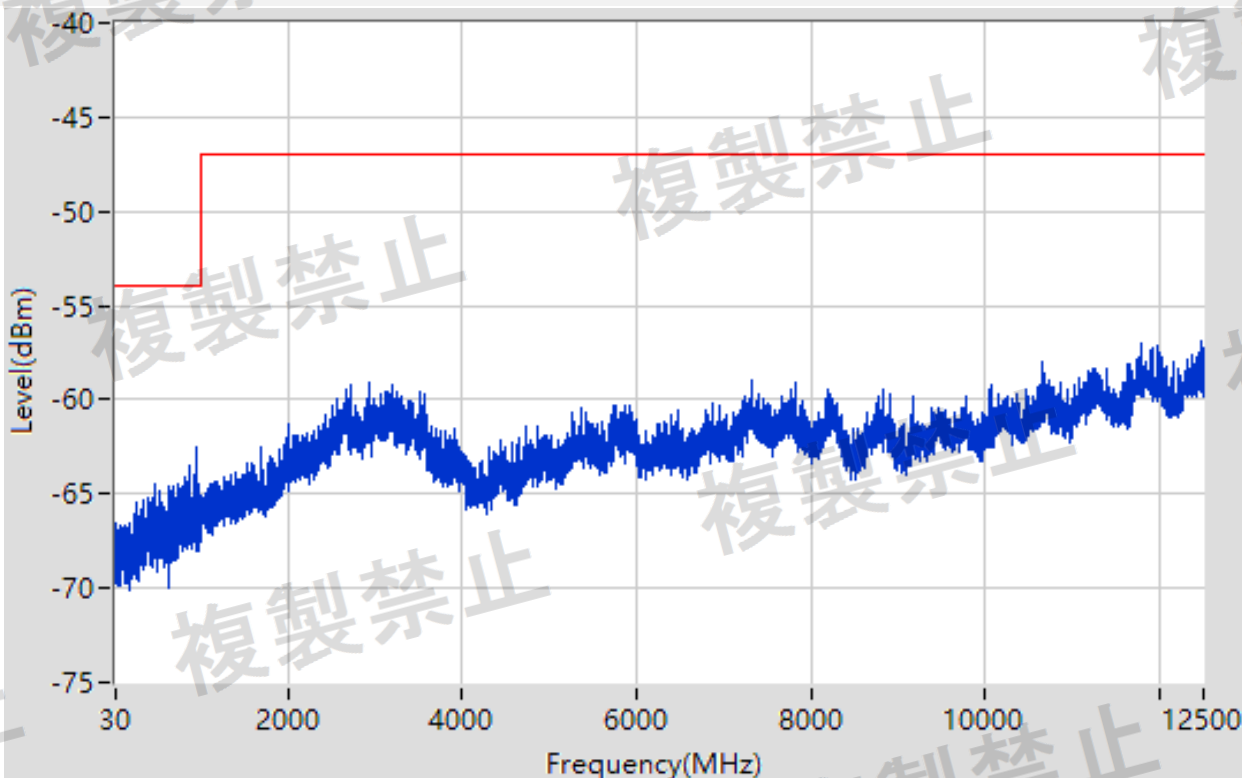
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	995.756	-74.67	-54	Pass	8001
1000	6000	1	Peak	3122.5	-59.21	-47	Pass	4001
6000	12500	1	Peak	12493.5	-56.73	-47	Pass	4001

A.6.27 8-DPSK HV High Channel



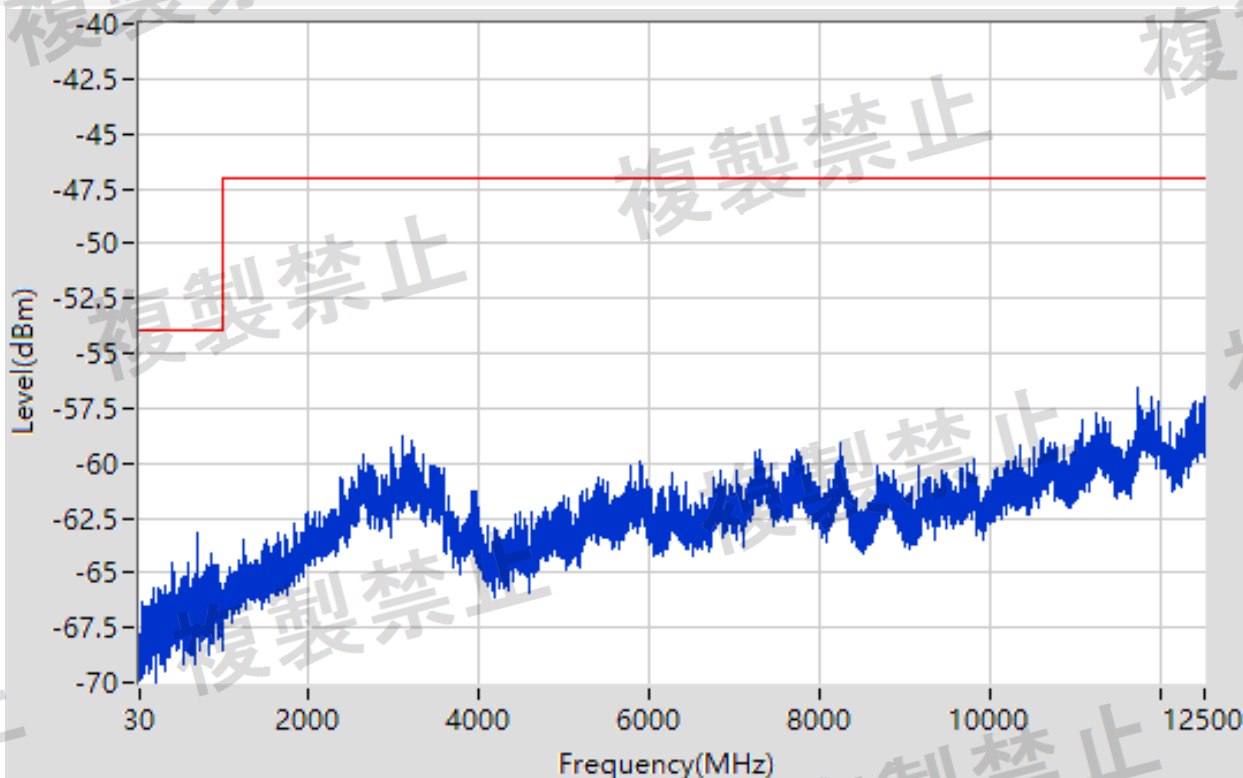
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	30	-73.86	-54	Pass	8001
1000	6000	1	Peak	2620	-59.18	-47	Pass	4001
6000	12500	1	Peak	11863	-57.13	-47	Pass	4001

A.6.28 GFSK (BLE 1Mbps) LV Low Channel



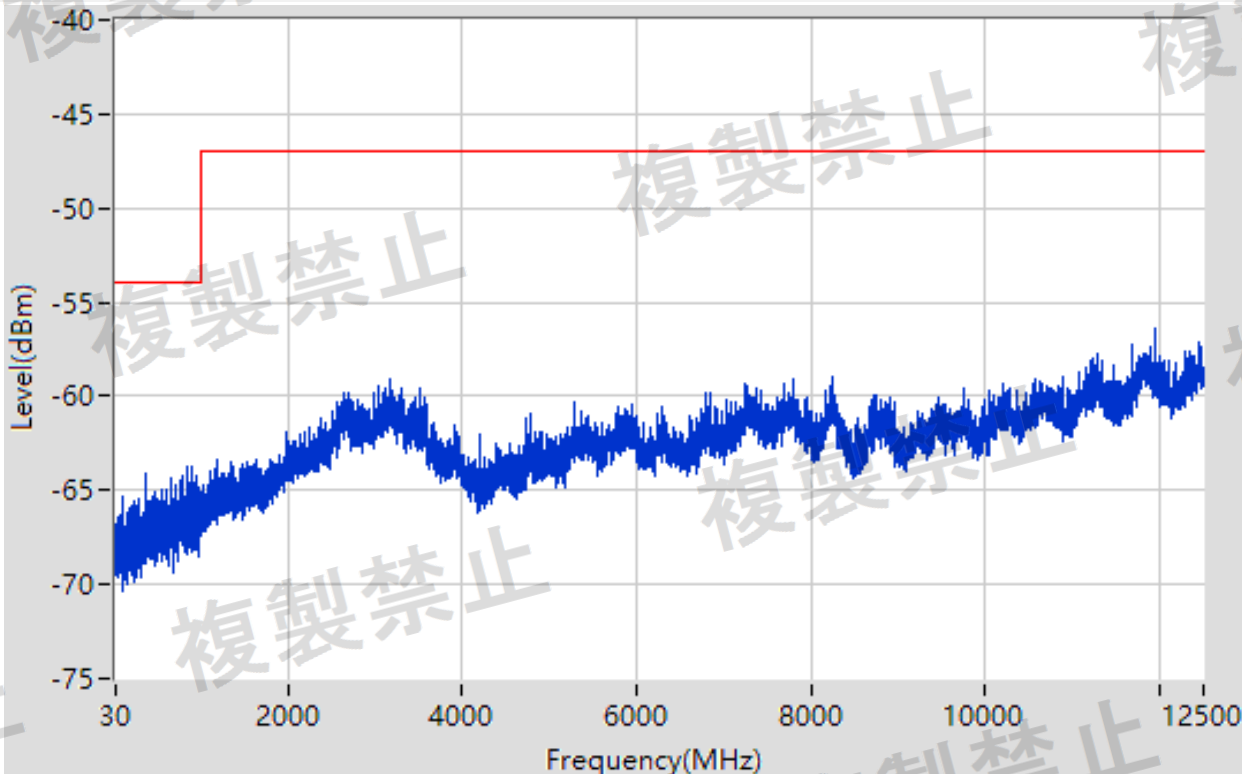
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	945.68	-62.57	-54	Pass	1001
1000	6000	1	Peak	2942.5	-59.08	-47	Pass	4001
6000	12500	1	Peak	12480.5	-56.87	-47	Pass	4001

A.6.29 GFSK (BLE 1Mbps) NV Low Channel



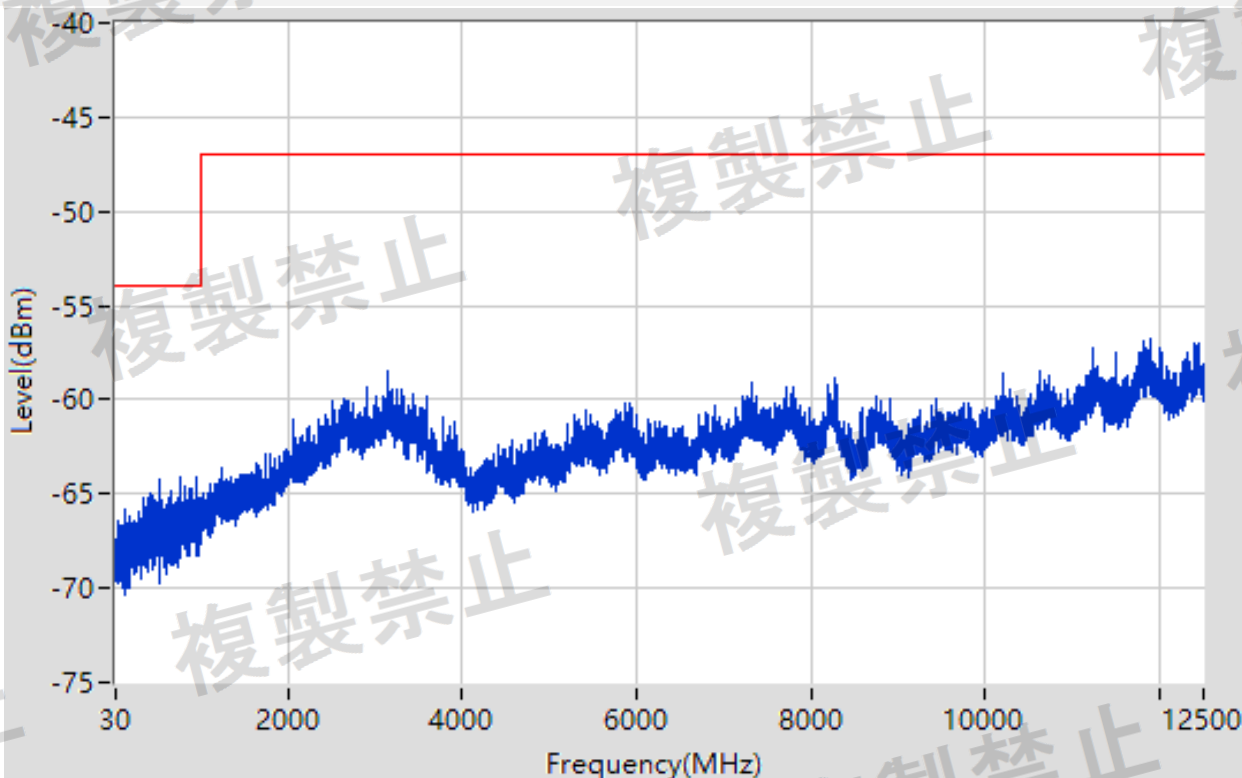
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	692.51	-63.18	-54	Pass	1001
1000	6000	1	Peak	3116.25	-58.82	-47	Pass	4001
6000	12500	1	Peak	11726.5	-56.6	-47	Pass	4001

A.6.30 GFSK (BLE 1Mbps) HV Low Channel



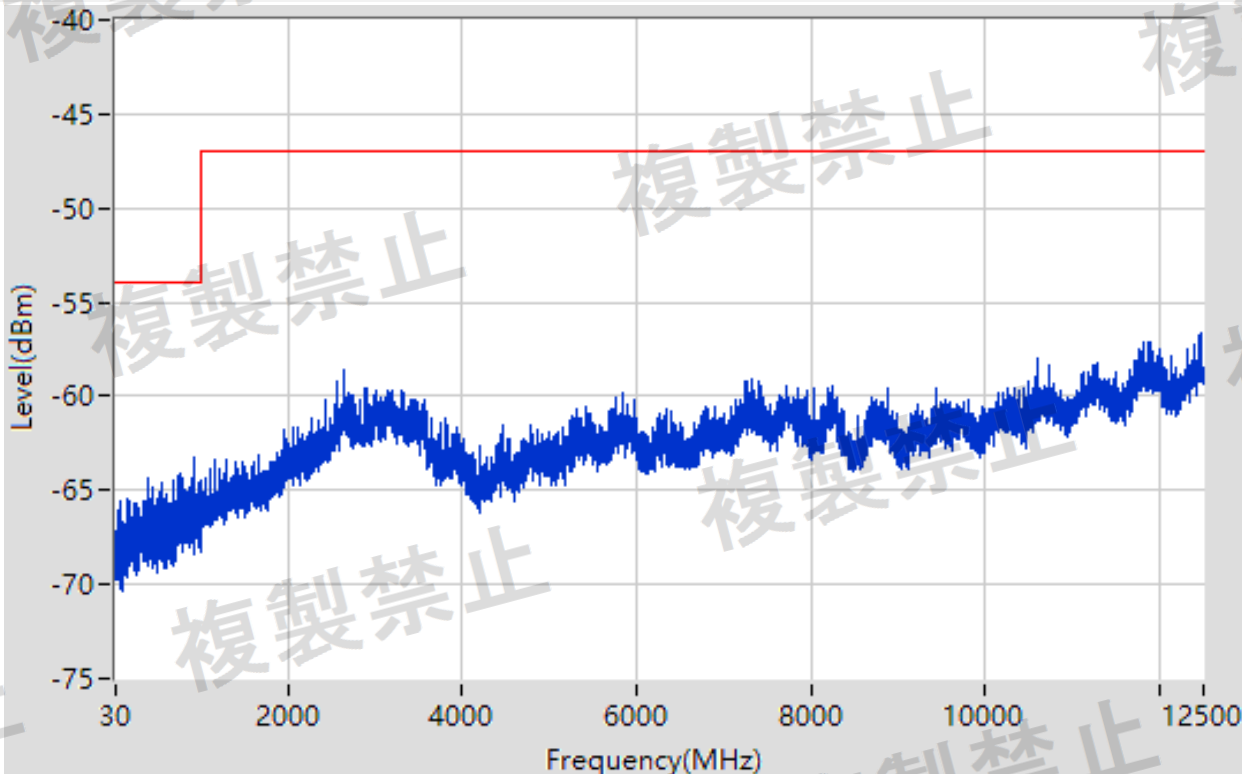
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	890.39	-63.71	-54	Pass	1001
1000	6000	1	Peak	3170	-59.05	-47	Pass	4001
6000	12500	1	Peak	11954	-56.43	-47	Pass	4001

A.6.31 GFSK (BLE 1Mbps) LV Middle Channel



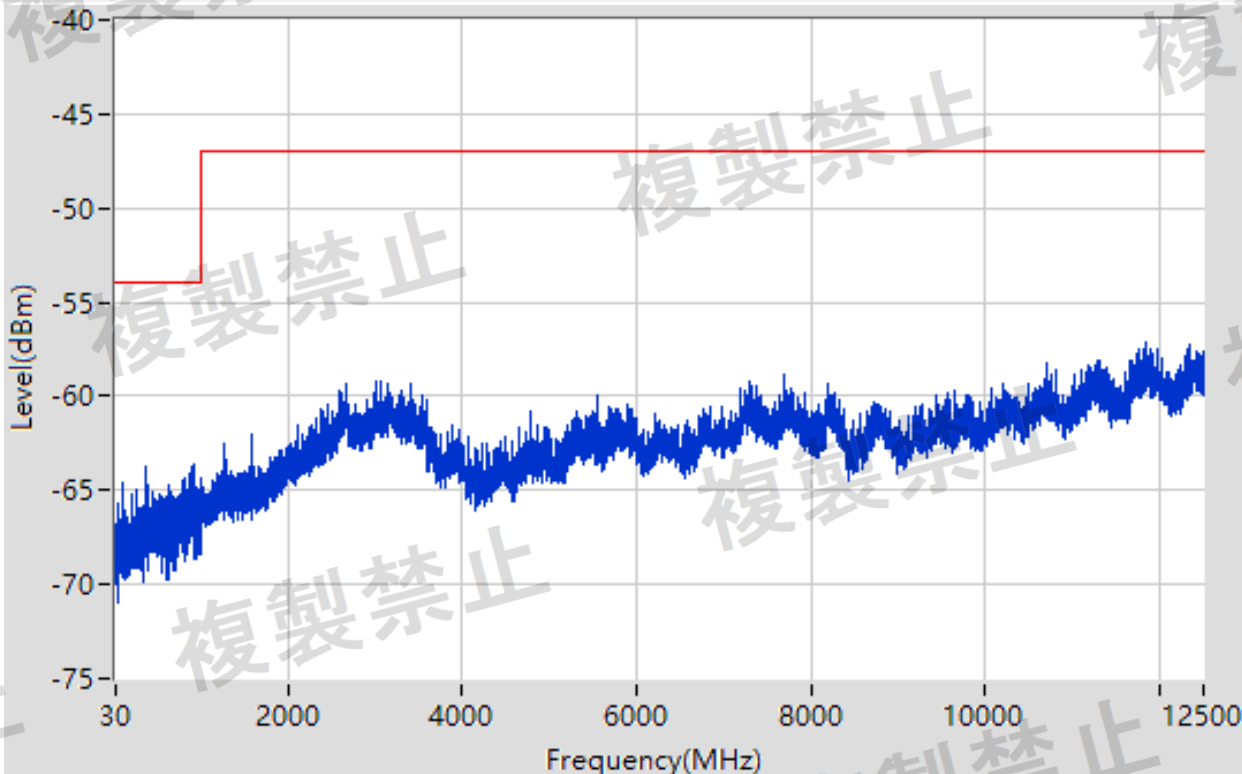
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	761.38	-64.08	-54	Pass	1001
1000	6000	1	Peak	3150	-58.48	-47	Pass	4001
6000	12500	1	Peak	11887.375	-56.76	-47	Pass	4001

A.6.32 GFSK (BLE 1Mbps) NV Middle Channel



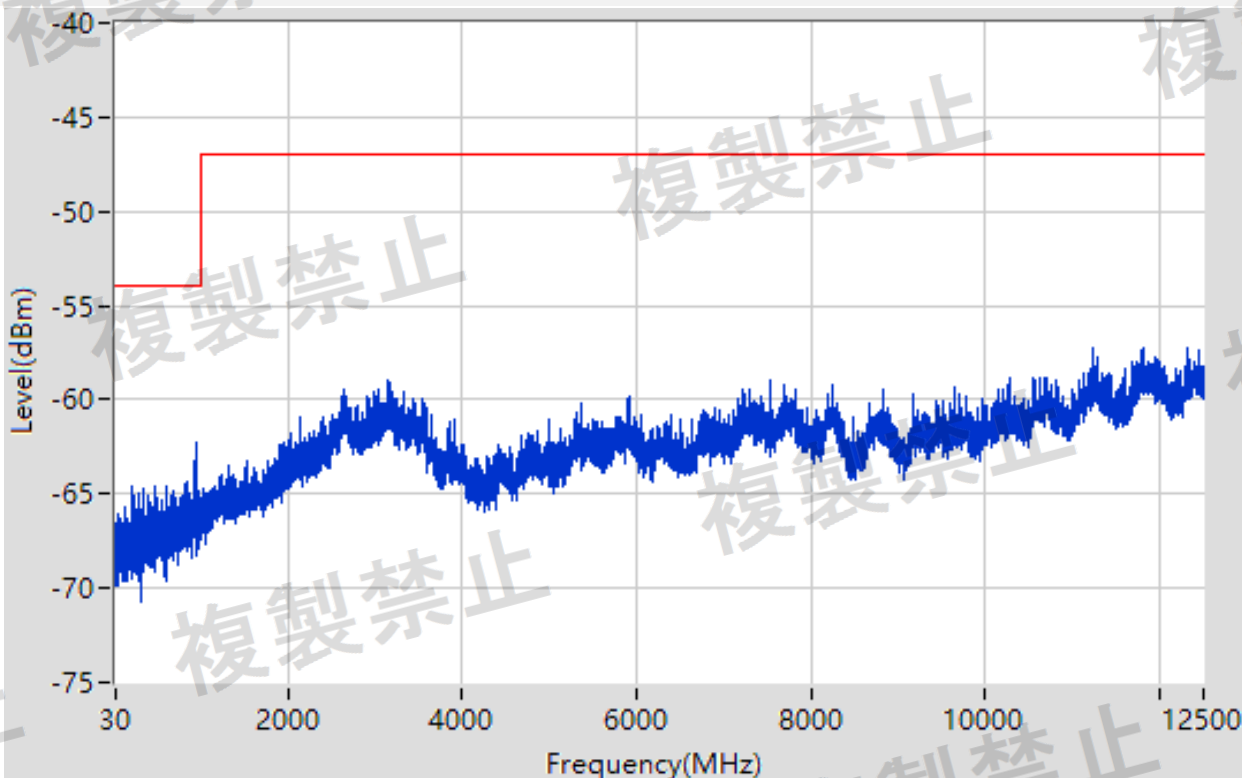
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	917.55	-63.3	-54	Pass	1001
1000	6000	1	Peak	2640	-58.61	-47	Pass	4001
6000	12500	1	Peak	12474	-56.59	-47	Pass	4001

A.6.33 GFSK (BLE 1Mbps) HV Middle Channel



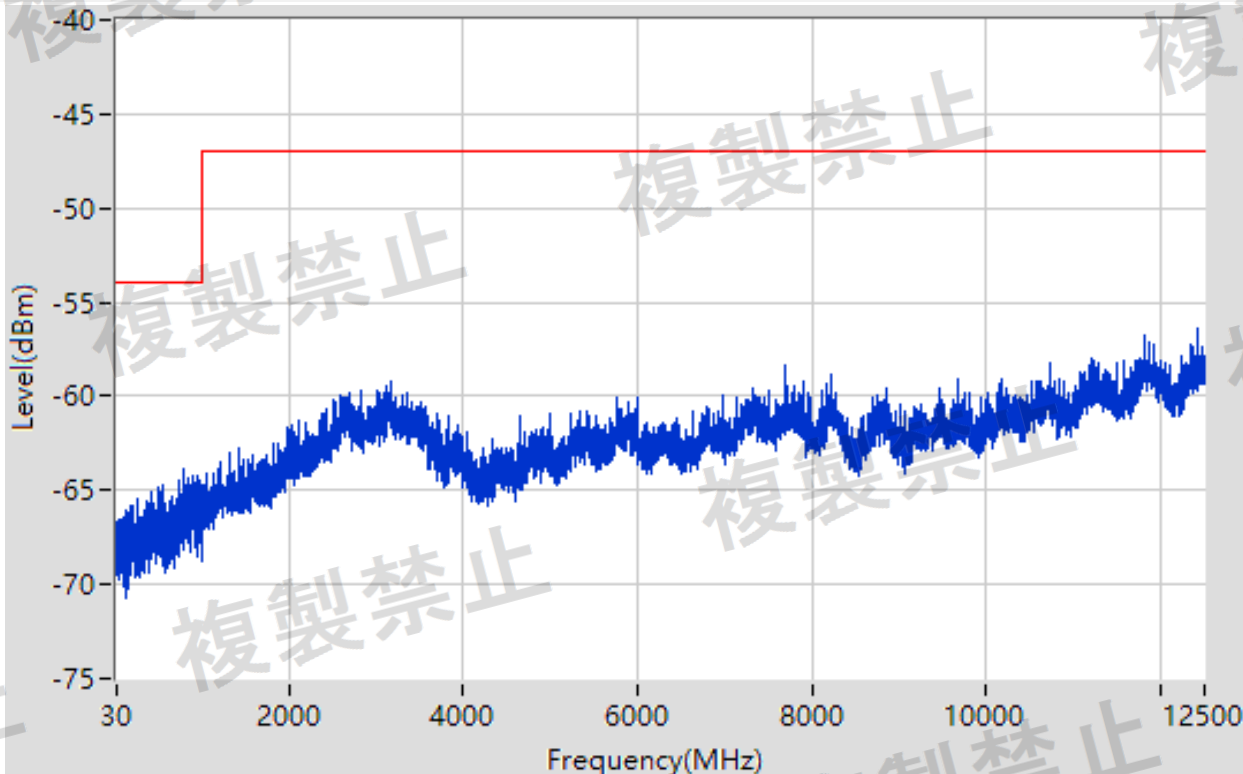
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	923.37	-63.56	-54	Pass	1001
1000	6000	1	Peak	3081.25	-59.18	-47	Pass	4001
6000	12500	1	Peak	11846.75	-57.13	-47	Pass	4001

A.6.34 GFSK (BLE 1Mbps) LV High Channel



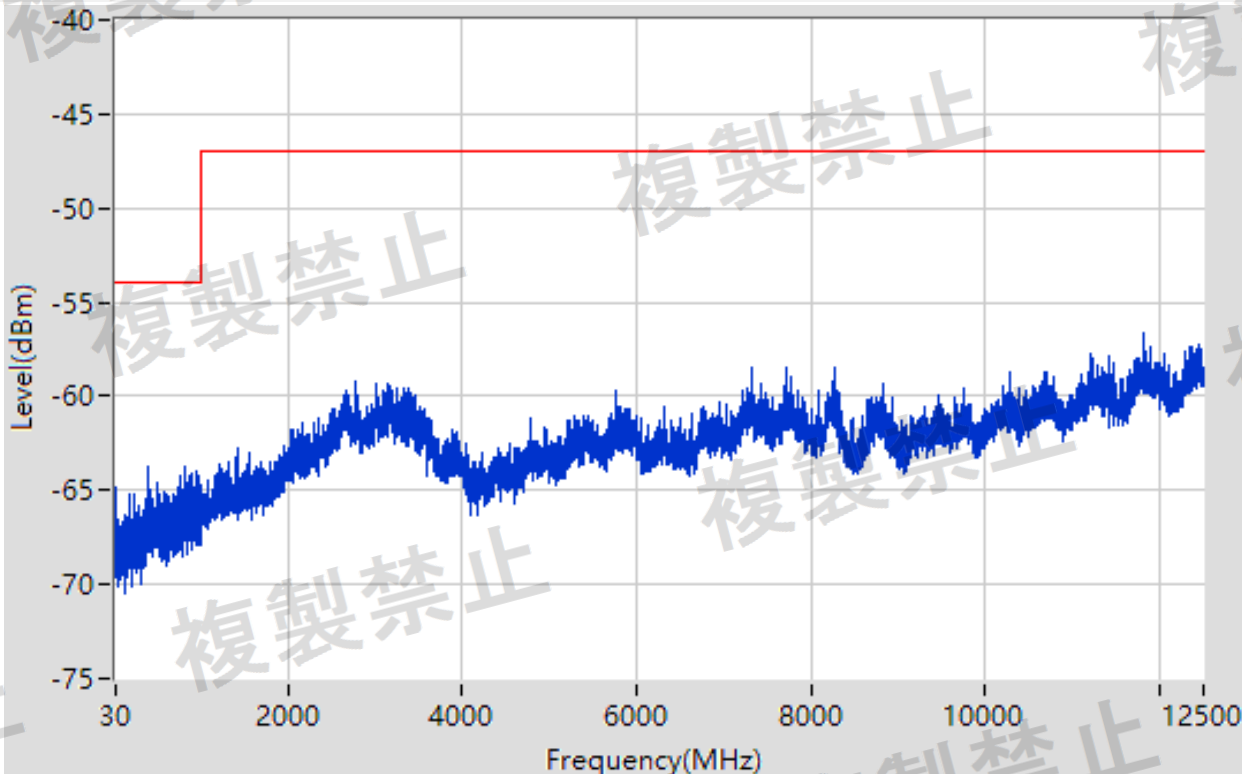
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	942.77	-62.25	-54	Pass	1001
1000	6000	1	Peak	3136.25	-58.98	-47	Pass	4001
6000	12500	1	Peak	12305	-57.26	-47	Pass	4001

A.6.35 GFSK (BLE 1Mbps) NV High Channel



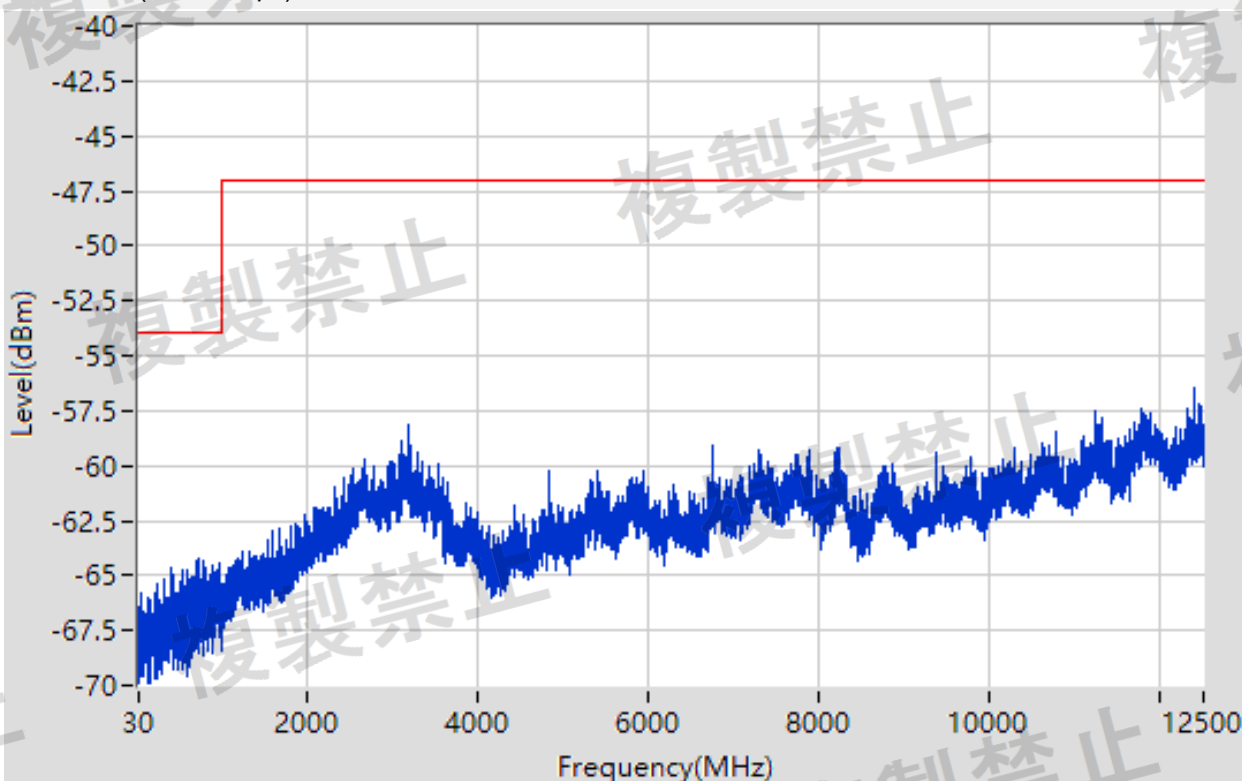
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	783.69	-63.91	-54	Pass	1001
1000	6000	1	Peak	3178.75	-59.26	-47	Pass	4001
6000	12500	1	Peak	12431.75	-56.35	-47	Pass	4001

A.6.36 GFSK (BLE 1Mbps) HV High Channel



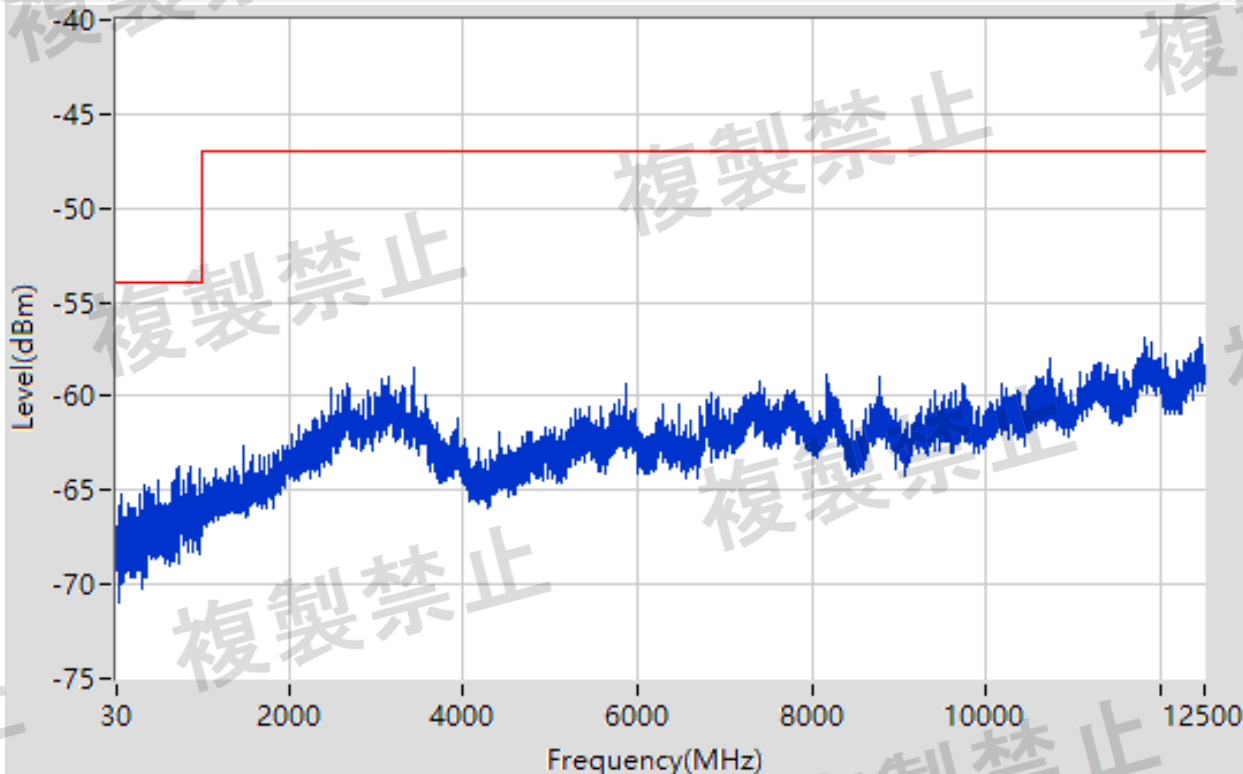
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	394.72	-63.7	-54	Pass	1001
1000	6000	1	Peak	2768.75	-59.27	-47	Pass	4001
6000	12500	1	Peak	11809.375	-56.62	-47	Pass	4001

A.6.37 GFSK (BLE 2Mbps) LV Low Channel



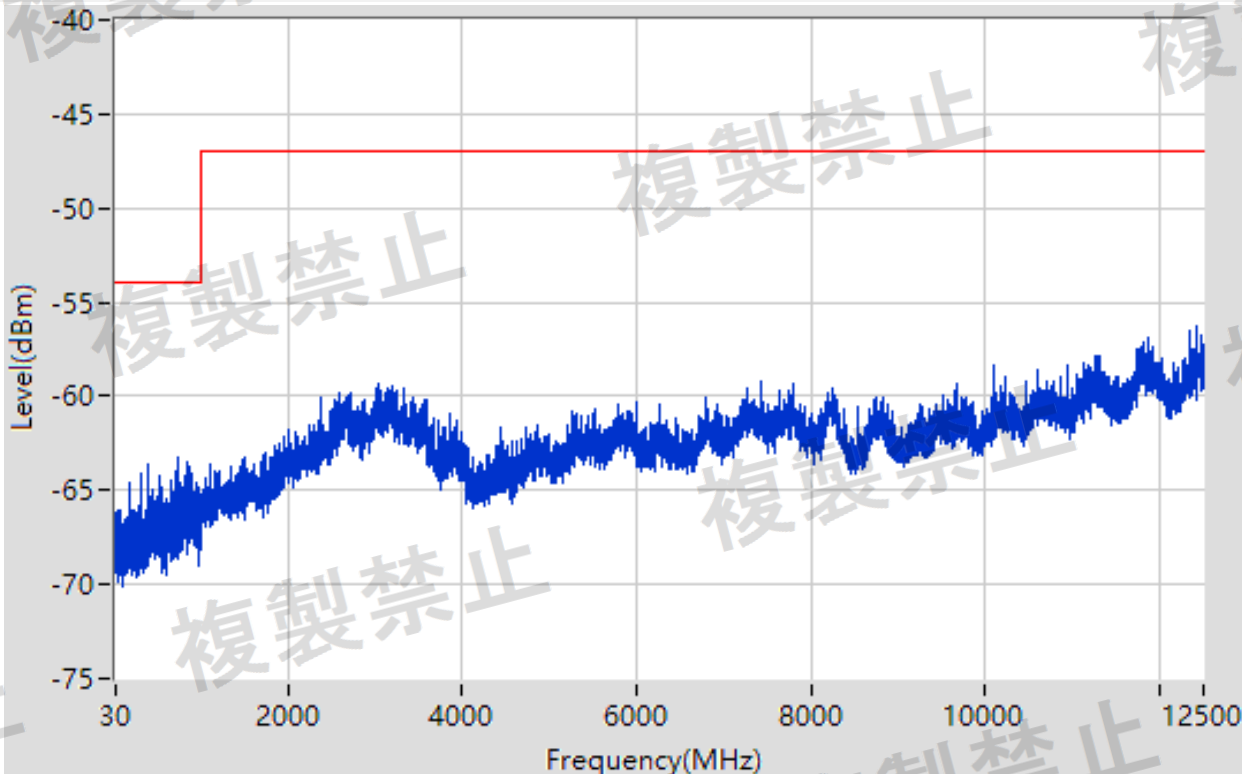
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	738.1	-64.26	-54	Pass	1001
1000	6000	1	Peak	3201.25	-58.17	-47	Pass	4001
6000	12500	1	Peak	12381.375	-56.43	-47	Pass	4001

A.6.38 GFSK (BLE 2Mbps) NV Low Channel



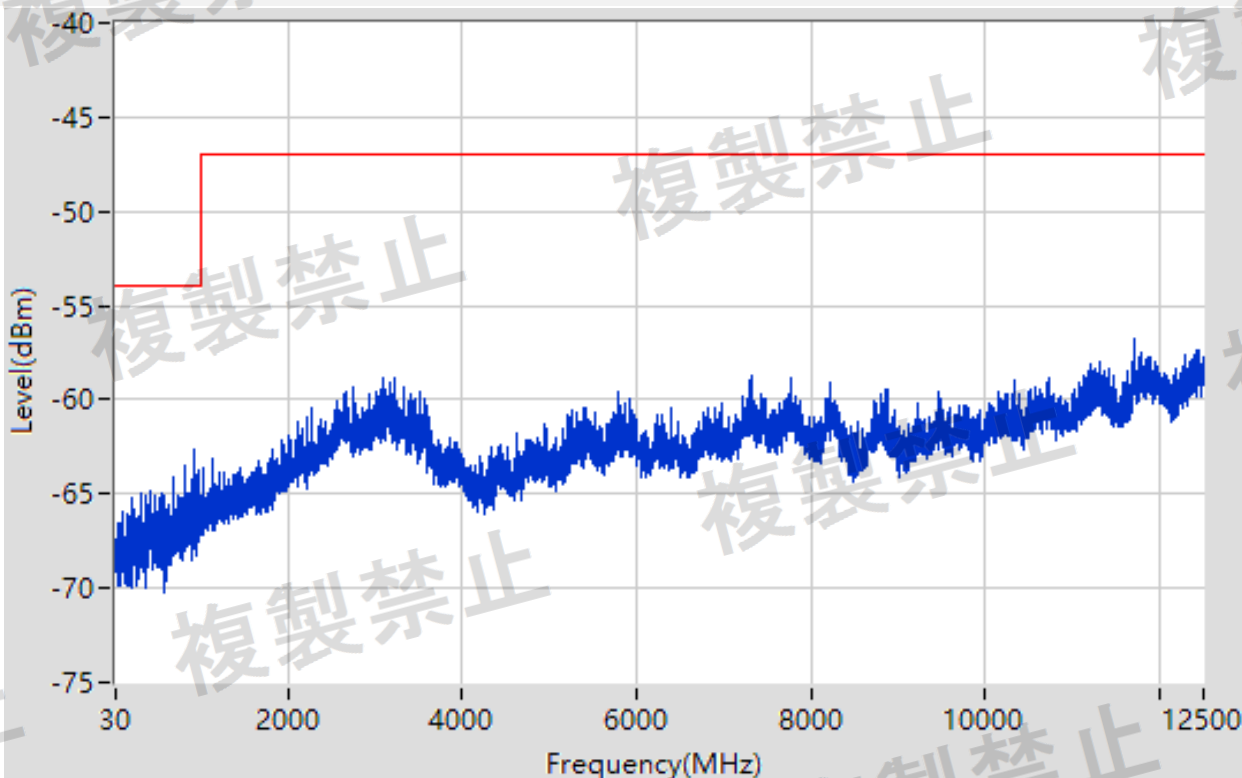
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	867.11	-63.68	-54	Pass	1001
1000	6000	1	Peak	3450	-58.42	-47	Pass	4001
6000	12500	1	Peak	12449.625	-56.88	-47	Pass	4001

A.6.39 GFSK (BLE 2Mbps) HV Low Channel



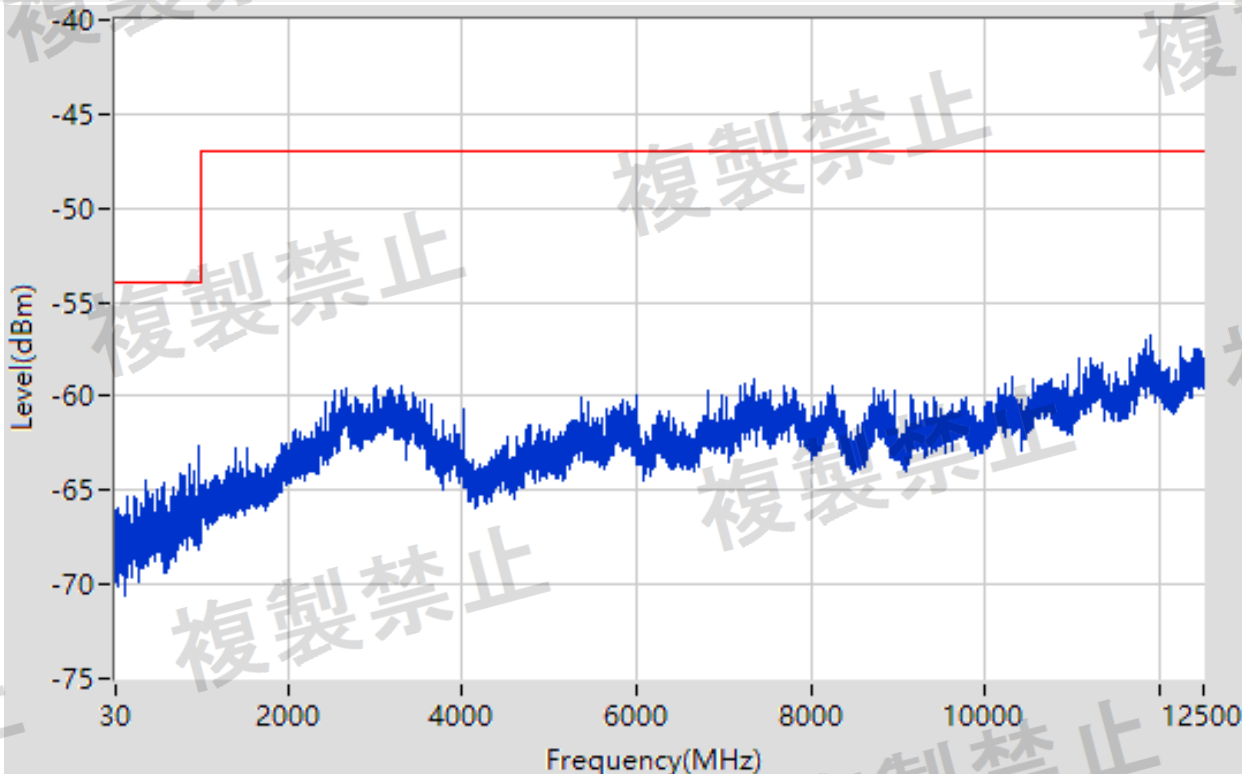
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	733.25	-63.27	-54	Pass	1001
1000	6000	1	Peak	3050	-59.31	-47	Pass	4001
6000	12500	1	Peak	12410.625	-56.22	-47	Pass	4001

A.6.40 GFSK (BLE 2Mbps) LV Middle Channel



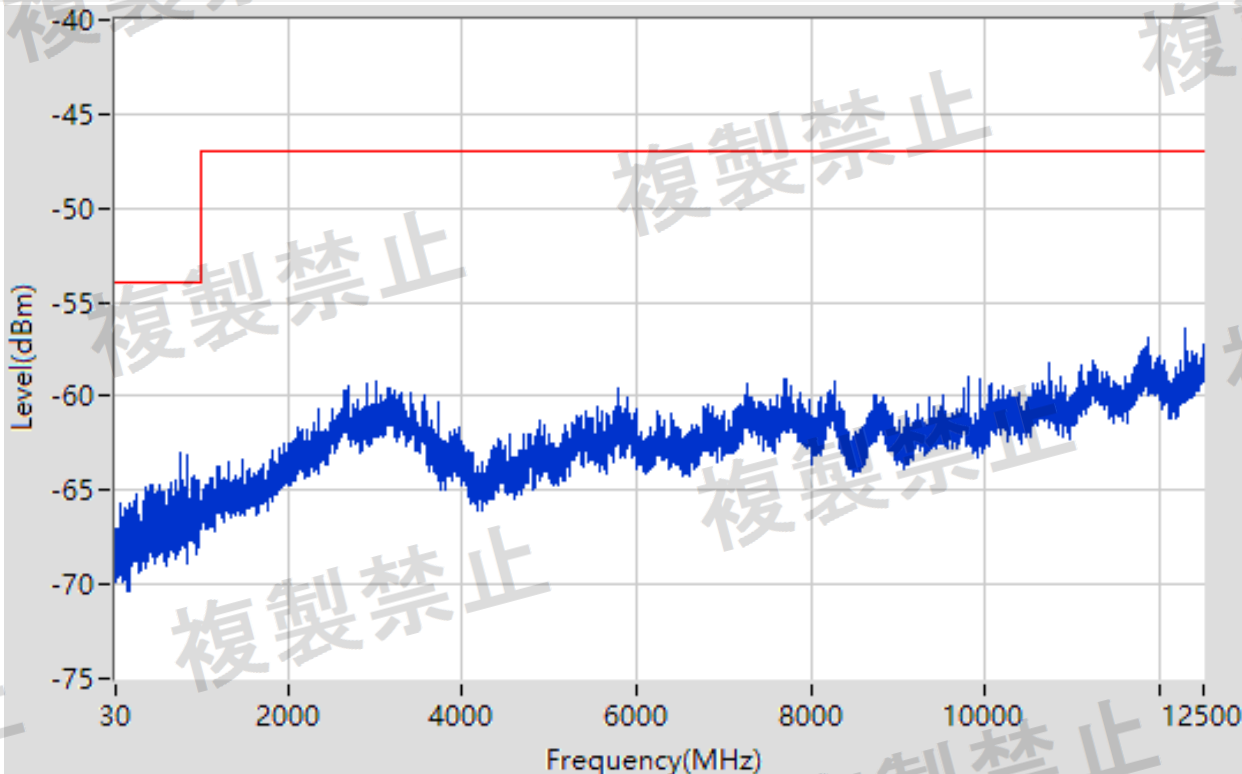
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	930.16	-62.68	-54	Pass	1001
1000	6000	1	Peak	3101.25	-58.9	-47	Pass	4001
6000	12500	1	Peak	11707	-56.72	-47	Pass	4001

A.6.41 GFSK (BLE 2Mbps) NV Middle Channel



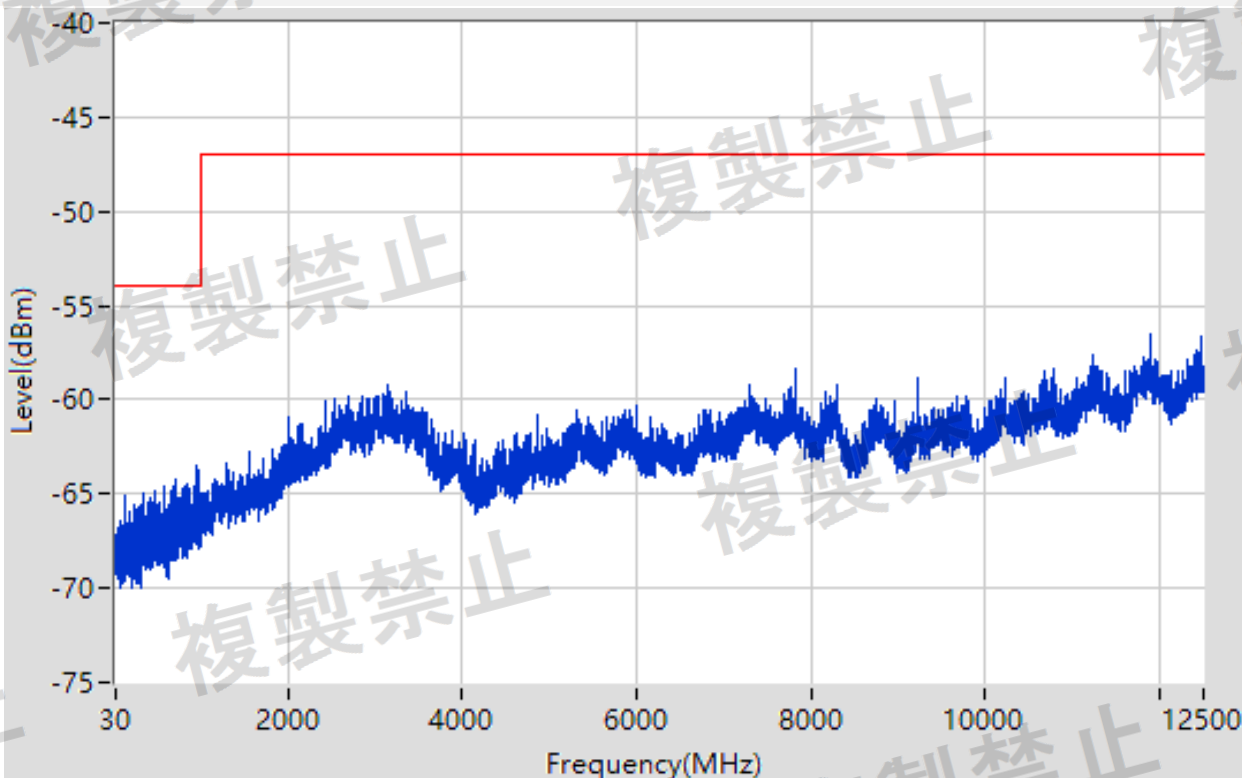
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	986.42	-62.65	-54	Pass	1001
1000	6000	1	Peak	3297.5	-59.42	-47	Pass	4001
6000	12500	1	Peak	11884.125	-56.81	-47	Pass	4001

A.6.42 GFSK (BLE 2Mbps) HV Middle Channel



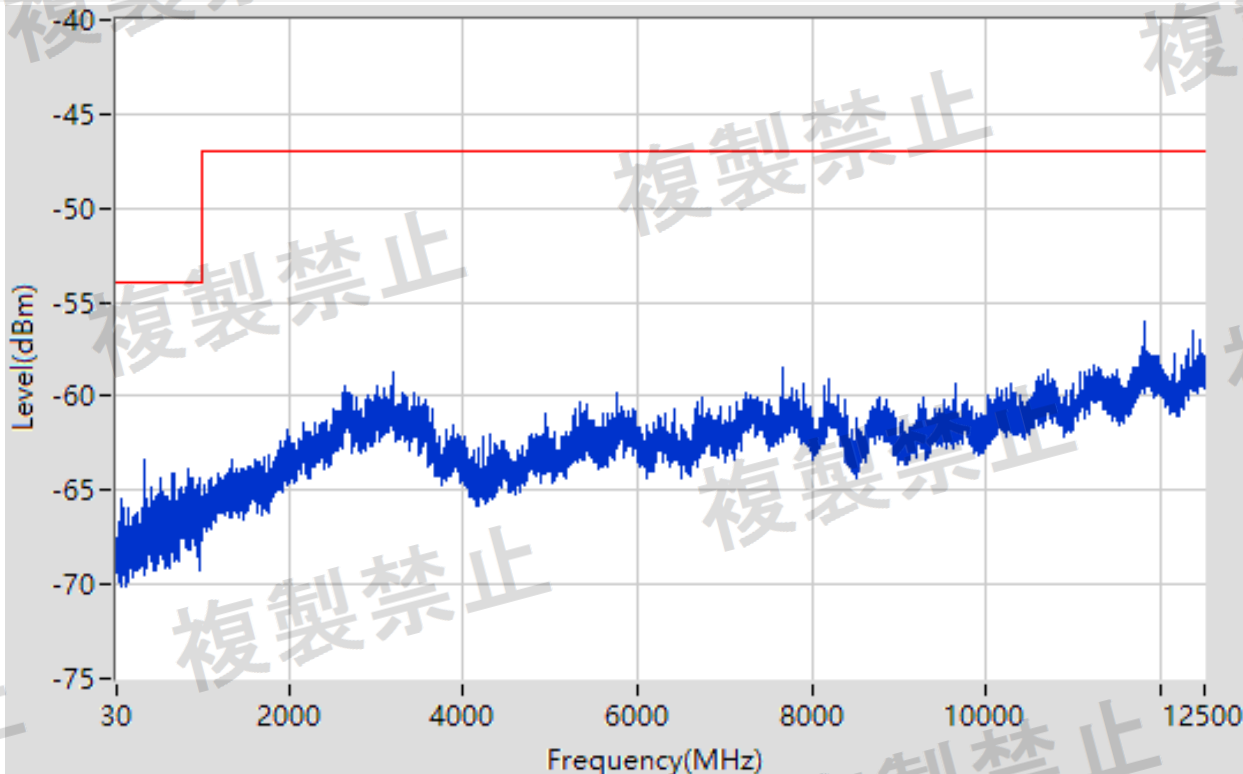
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	780.78	-63.01	-54	Pass	1001
1000	6000	1	Peak	3023.75	-59.21	-47	Pass	4001
6000	12500	1	Peak	12295.25	-56.37	-47	Pass	4001

A.6.43 GFSK (BLE 2Mbps) LV High Channel



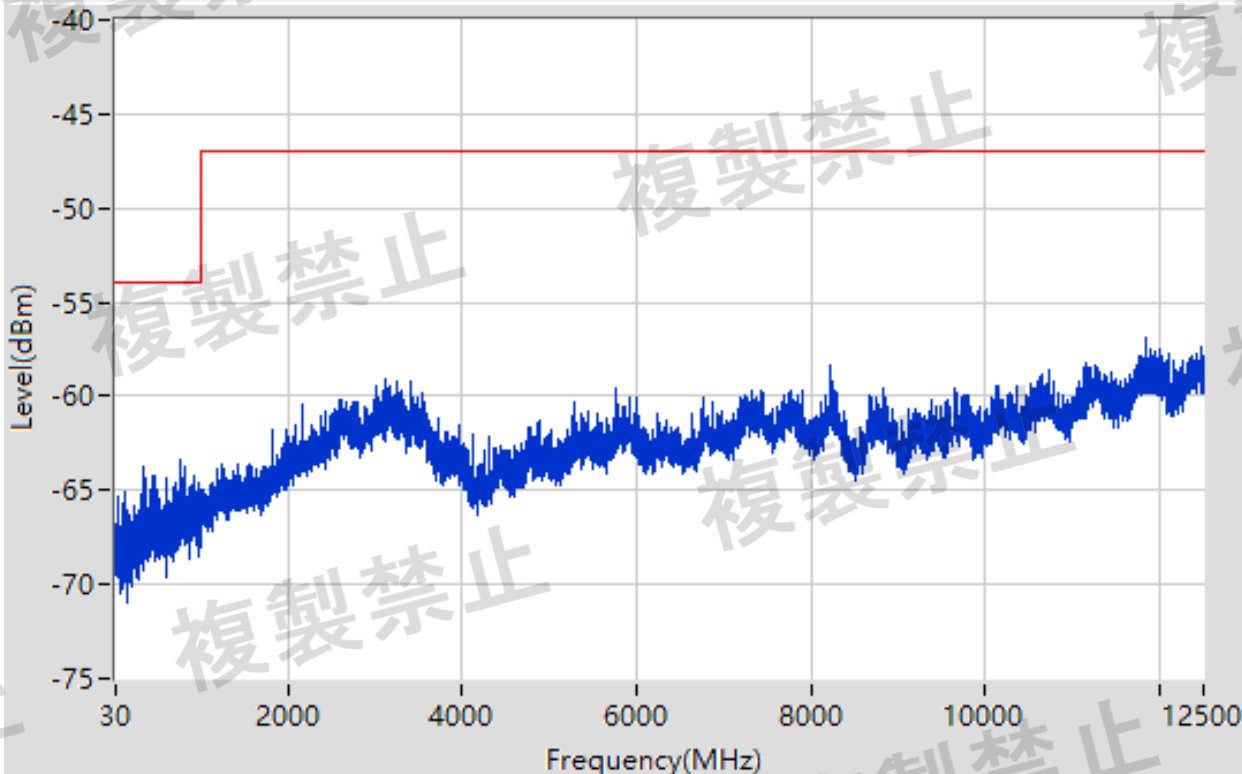
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	954.41	-63.55	-54	Pass	1001
1000	6000	1	Peak	3150	-59.24	-47	Pass	4001
6000	12500	1	Peak	11890.625	-56.47	-47	Pass	4001

A.6.44 GFSK (BLE 2Mbps) NV High Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	345.25	-63.4	-54	Pass	1001
1000	6000	1	Peak	3195	-58.69	-47	Pass	4001
6000	12500	1	Peak	11817.5	-56.03	-47	Pass	4001

A.6.45 GFSK (BLE 2Mbps) HV High Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	782.72	-63.33	-54	Pass	1001
1000	6000	1	Peak	3132.5	-59.15	-47	Pass	4001
6000	12500	1	Peak	11830.5	-56.9	-47	Pass	4001

A.7 Transmission Antenna Gain (EIRP Antenna Power) Measurement

Note: Not applicable.

A.8 Transmission Radiation Angle Width (3dB Bandwidth) Measurement

Note: Not applicable.

A.9 Radio Interference Prevention Capability Measurement

Test Voltage	Channel	Test Result (ID Code)	Verdict
LV	Low	GOOD	Pass
	Middle	GOOD	Pass
	High	GOOD	Pass
NV	Low	GOOD	Pass
	Middle	GOOD	Pass
	High	GOOD	Pass
HV	Low	GOOD	Pass
	Middle	GOOD	Pass
	High	GOOD	Pass

A.10 Construction Protection Confirmation Method

The RF and modulation portions are protected against illegal modification as following method:

Protected Method	Description
Structure protection	The RF Module is BGA SoC IC, can't be easily modified
Reference Photo	
BGA SoC IC	

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2350587-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2350587-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2350587-AI.PDF”.

Statement

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