

TEST REPORT

Applicant: DEVIALET
Address: 10 Plave Vendome 75001 Paris FRANCE
Equipment Type: DEVIALET GEMINI II
Model Name: CL928(for Earbuds Left)
CR928(for Earbuds Right)
(refer section 2.4)
Brand Name: DEVIALET
Test Standard: MIC Notice No.88 Appendix No.43
Ordinance of MPT No.37, 1981:
Article 2 paragraph 1 item (19)
Sample Arrival Date: Sep. 21, 2022
Test Date: Sep. 28, 2022 - Oct. 11, 2022
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ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Yu Yingyuan*Yu Ying Yuan***Checked by:** Ye Hongji*Ye Hongji***Approved by:** Liao Jianming
(Technical Director)*Liao Jianming*

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Dec. 29, 2022</u>	<u>Initial Issue</u>
<u>Rev. 02</u>	<u>Dec. 30, 2022</u>	<u>1. Section 4.2 added calibration mechanism and calibration methods.</u>
		<u>2. Section 5.5 updated the testing procedures and methods.</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	DEVIALET
Address	10 Plave Vendome 75001 Paris FRANCE

2.2 Manufacturer Information

Manufacturer	Tiinlab Corporation
Address	No. 3333, Liuxian Avenue, Tower A, 35th Floor, Tanglang City, Nanshan District, Shenzhen, China

2.3 Factory Information

Factory	Tiinlab Acoustic (Hunan) Technology Limited
Address	3F, Building A4, Building 1, 2 and 3, Phase II, Mangrove R&D Innovation Area, Hengshan Science City, Group 12, Donghu Village, Yueping Town, Yanfeng District, Hengyang City, Hunan province, P.R. China 421001

2.4 General Description for Equipment under Test (EUT)

EUT Name	DEVIALET GEMINI II
Model Name Under Test	CL928(for Earbuds Left) CR928(for Earbuds Right)
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A
Charging case Model No.	CC928

2.5 Technical Information

Network and Wireless connectivity	Bluetooth (BR+EDR+BLE)
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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	Earbuds Left	7CC4EFD0C01D
	Earbuds Right	
Antenna Type		LDS Antenna
Antenna Gain	Earbuds Left	-2.6 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)
	Earbuds Right	
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	Earbuds Left	Bluetooth (For Classic): 1.3372 mW/MHz; Bluetooth Low Energy: 2.2881 mW
	Earbuds Right	Bluetooth (For Classic): 1.4458 mW/MHz; Bluetooth Low Energy: 1.9281 mW
About the Product		Only the Bluetooth was tested in this report.

BD Address:

New Workspace

Device Search
Click the search button to discover the devices in range or enter the Bluetooth Device Address of the device you will be testing.

Address	Device Class	Name
56A8DA947817	Unknown	Unknown LE device
CF2F465F908B	Unknown	Unknown LE device
72B97C0CEAA8	Unknown	Unknown LE device
E7B096AE23C1	Unknown	Unknown LE device
6EF05A28FA43	Unknown	Unknown LE device
490D9A9D2BCA	Unknown	Unknown LE device
FCE766EC81E5	Unknown	Unknown LE device
73DCCE48AD5D	Unknown	Unknown LE device
0B16AB443B9D	Unknown	Unknown LE device
E60EA747241E	Unknown	Unknown LE device
64DDE929D770	Phone	Xiaomi 12 Pro
7CC4EFD0C01D	Audio/Video	DVLT Saphir
7B6EA55713FA	Unknown	Unknown LE device
C6049892EB1A	Unknown	Unknown LE device
5778DAB90045	Unknown	Unknown LE device
F4B1FCDA2F8C	Unknown	Unknown LE device
659D8CE01387	Unknown	Unknown LE device
38A5C337007E	Unknown	Unknown LE device
710DD90CEEFC	Unknown	Unknown LE device

IUT Device Address

Device Search
Major Device Class:

Service Class:



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
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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 (%)	47% to 65%	
Atmospheric Pressure (kPa)	86 kPa to 106 kPa	
Temperature	+19.6°C to +24.6°C	
Working Voltage of the EUT	NV (Normal Voltage)	3.7 V
	LV (Low Voltage)	3.3 V
	HV (High Voltage)	4.1 V

4.2 Test Equipment List

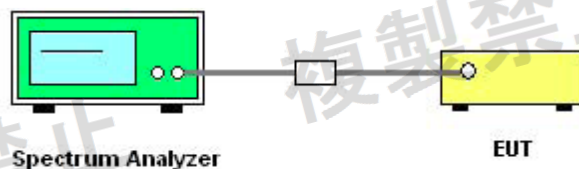
Description	Manufacturer	Model	Serial No.	Calibration Company	Calibration By	Cal. Date	Cal. Due	Calibration Method
Spectrum Analyzer	KEYSIGHT	N9020A	MY464 71071	SMQ	Liu Mingxia	2022.07.26	2023.07.25	c)
Signaling Unit	ROHDE&SCH WARZ	CMW500	142028	SMQ	Liu Mingxia	2022.05.19	2023.05.18	c)
DC power supply	ITECH	IT6863A	800014 020757 810006	CCIC	Luo Qirun	2021.11.19	2022.11.18	c)

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)

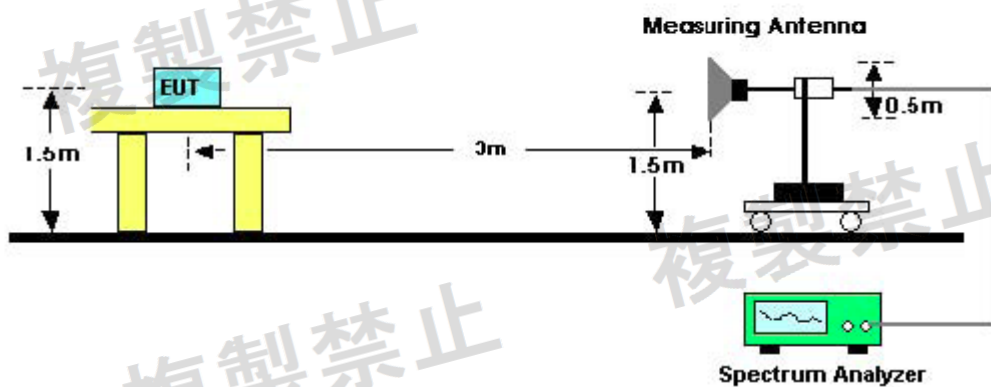
4.3 Description of Test Setup

4.3.1 For Antenna Port Test

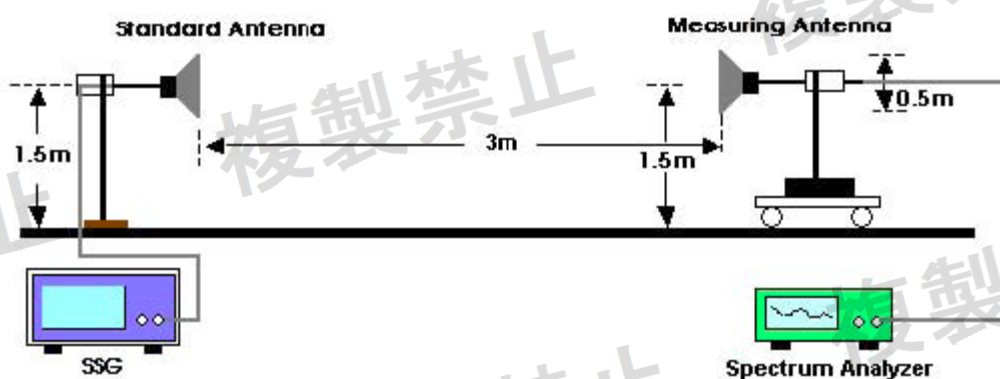


(Diagram 1)

4.3.2 For EIRP Antenna Power Test

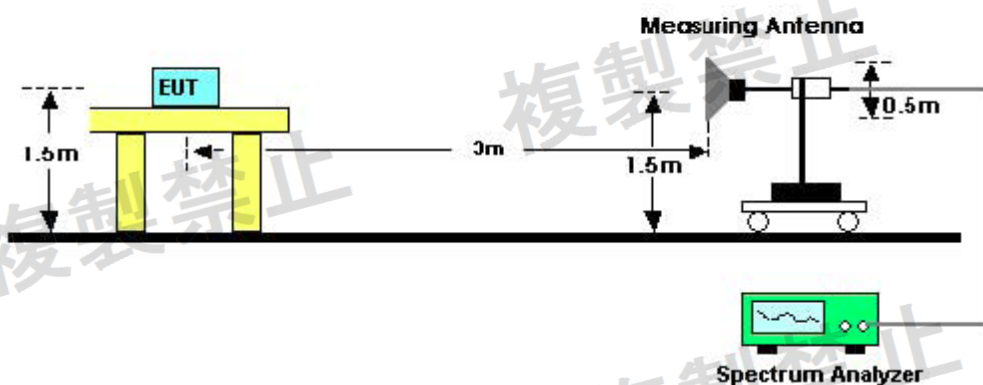


(Diagram 2)



(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 $(f-f_c)/f_c \times 10^6$ 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	$FHSS \leq 83.5\text{MHz}$; $OFDM \leq 40\text{MHz}$, $DSSS \leq 26\text{MHz}$; Others $\leq 26\text{MHz}$
Spread-spectrum Bandwidth	$\geq 500\text{ kHz}$ (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

- 1 The EUT is placed in transmit mode at maximum power/modulation at a fixed channel.
- 2 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
- 3 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
- 4 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 .
- 5 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
- 6 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
- 7 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]
- 8 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 and 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 as "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 calculate 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 $\text{EIRP} = G_t - L + P_t$.

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.

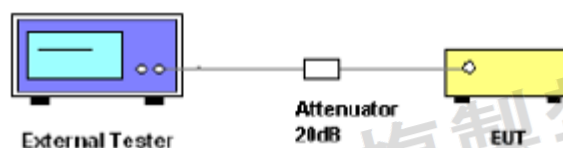
5.9 Radio Interference Prevention Capability Measurement

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

Earbuds Left:

Test Mode	Test Voltage	Channel	Frequency (MHz)	Test Frequency (MHz)	Frequency Error (ppm)	Refer to Plot	Verdict
Unmodulated	LV	Low	2402	2402.000763	0.32	A.1.1	Pass
		Middle	2441	2440.999738	-0.11	A.1.2	Pass
		High	2480	2479.999900	-0.04	A.1.3	Pass
	NV	Low	2402	2402.000013	0.01	A.1.4	Pass
		Middle	2441	2440.999588	-0.17	A.1.5	Pass
		High	2480	2479.999763	-0.10	A.1.6	Pass
	HV	Low	2402	2401.999750	-0.10	A.1.7	Pass
		Middle	2441	2440.999900	-0.04	A.1.8	Pass
		High	2480	2479.999750	-0.10	A.1.9	Pass

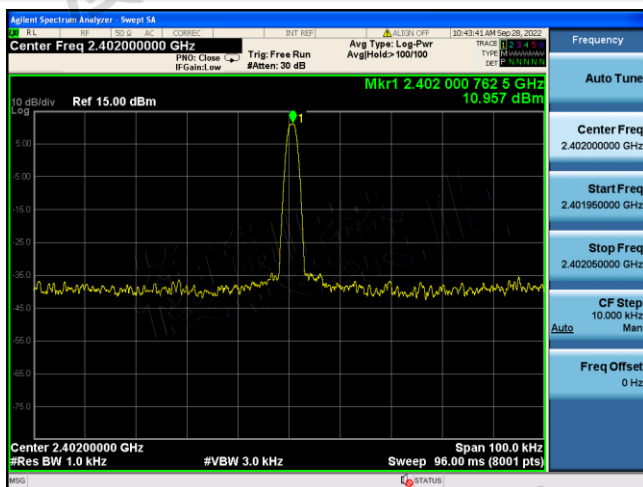
Earbuds Right:

Test Mode	Test Voltage	Channel	Frequency (MHz)	Test Frequency (MHz)	Frequency Error (ppm)	Refer to Plot	Verdict
Unmodulated	LV	Low	2402	2401.994513	-2.28	A.1.10	Pass
		Middle	2441	2440.993500	-2.66	A.1.11	Pass
		High	2480	2479.993475	-2.63	A.1.12	Pass
	NV	Low	2402	2401.993963	-2.51	A.1.13	Pass
		Middle	2441	2440.993500	-2.66	A.1.14	Pass
		High	2480	2479.993563	-2.60	A.1.15	Pass
	HV	Low	2402	2401.993700	-2.62	A.1.16	Pass
		Middle	2441	2440.993513	-2.66	A.1.17	Pass
		High	2480	2479.993600	-2.58	A.1.18	Pass

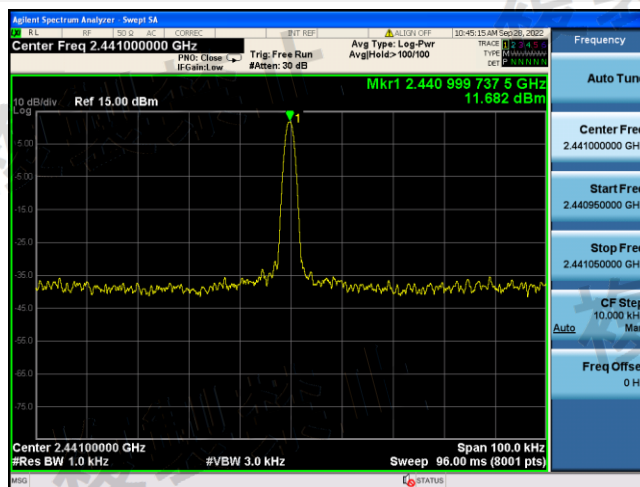
Test Plots

Earbuds Left:

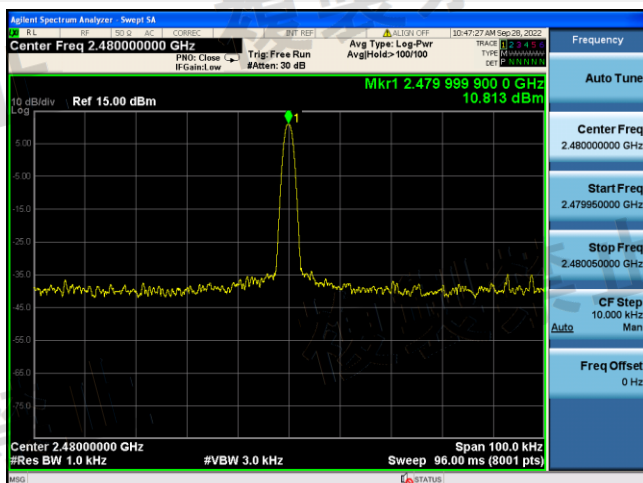
A.1.1 LV Low Channel



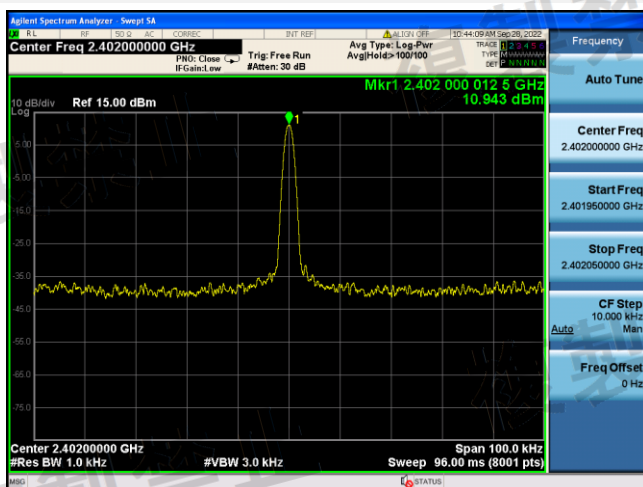
A.1.2 LV Middle Channel



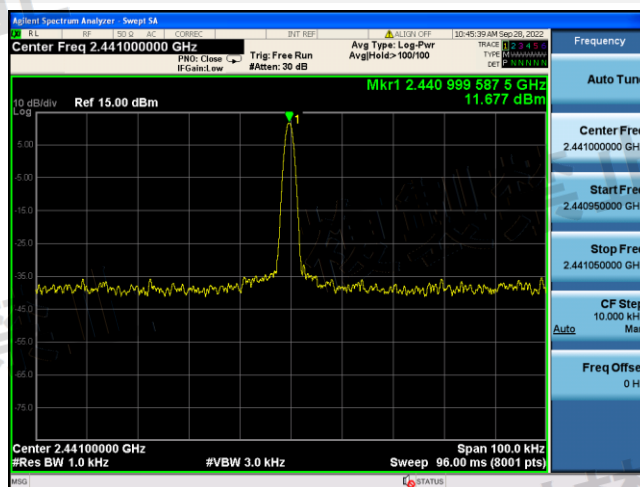
A.1.3 LV High Channel



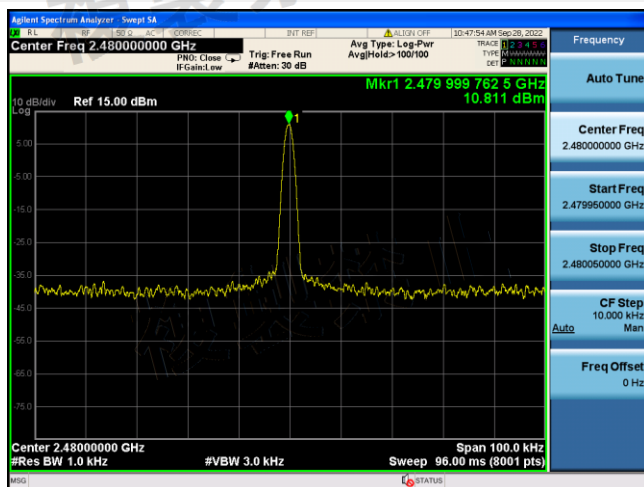
A.1.4 NV Low Channel



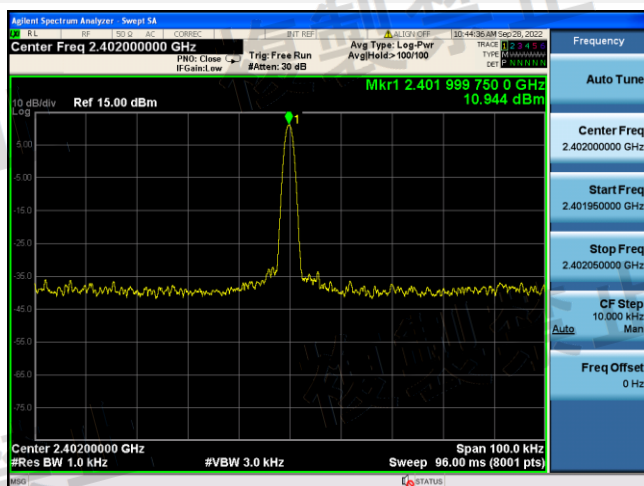
A.1.5 NV Middle Channel



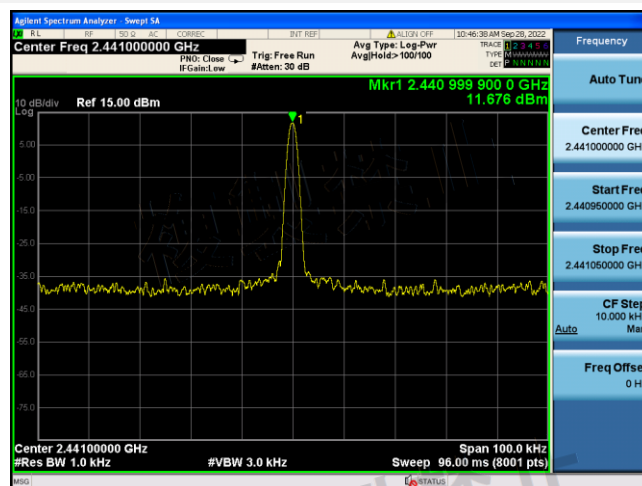
A.1.6 NV High Channel



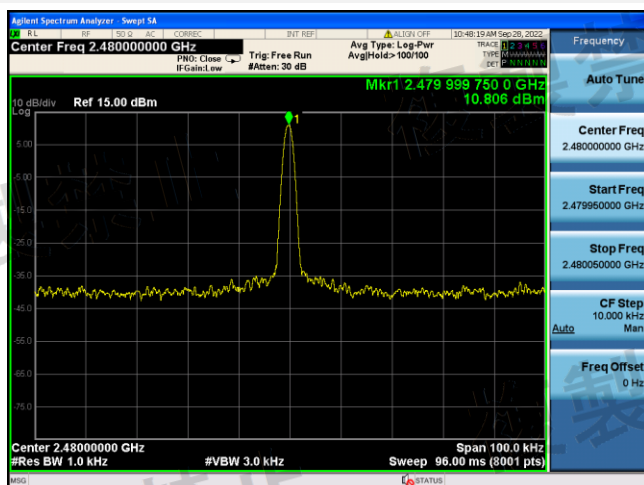
A.1.7 HV Low Channel



A.1.8 HV Middle Channel

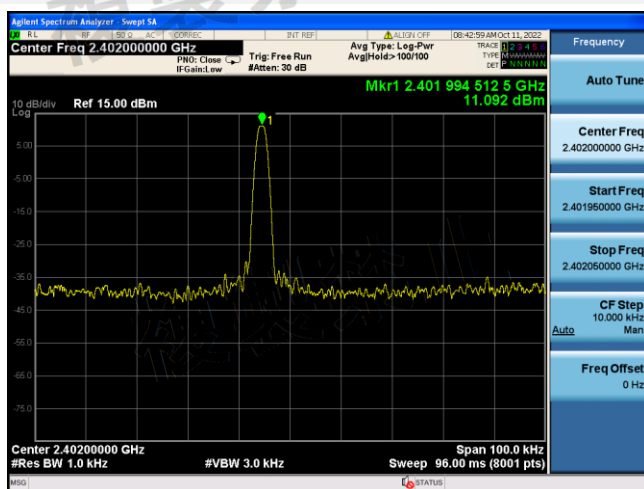


A.1.9 HV High Channel

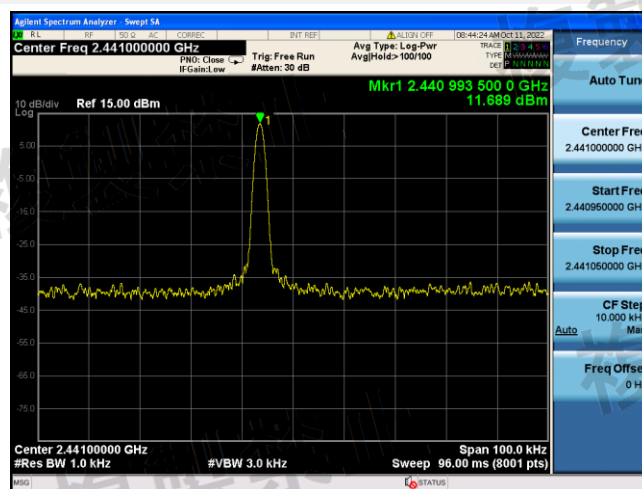


Earbuds Right:

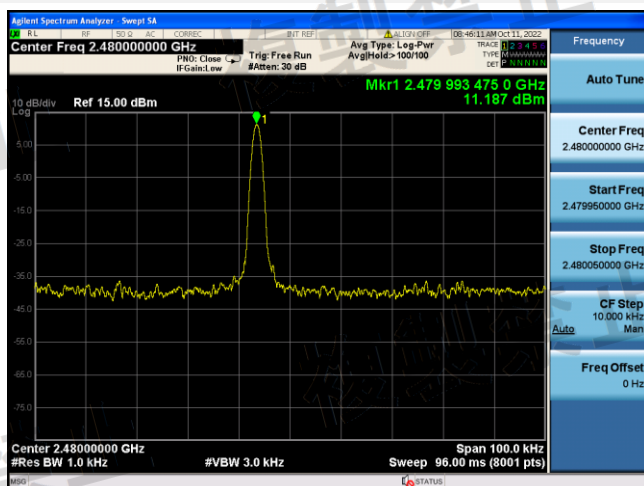
A.1.10 LV Low Channel



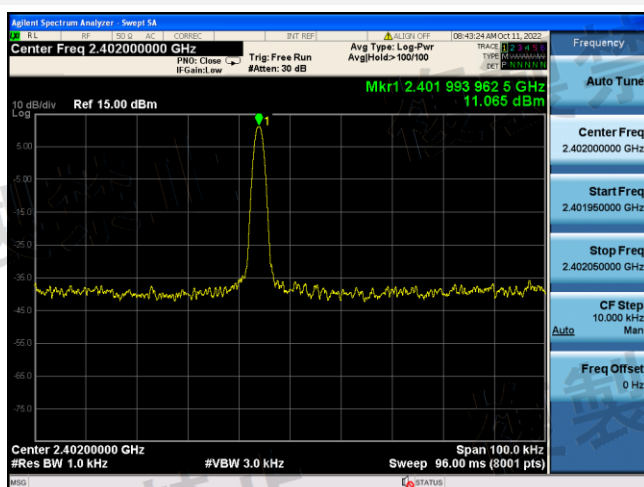
A.1.11 LV Middle Channel



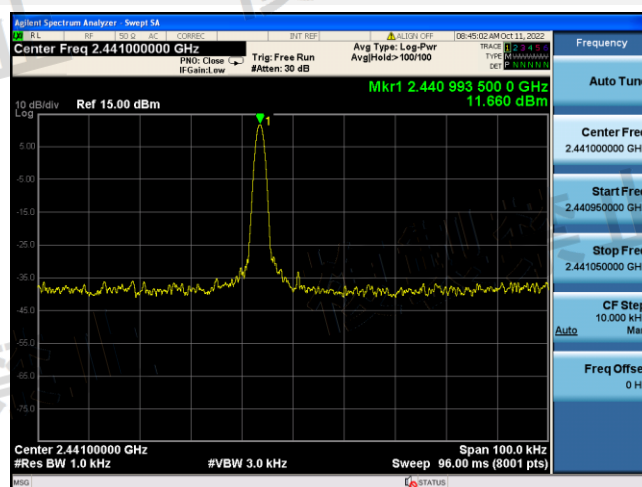
A.1.12 LV High Channel



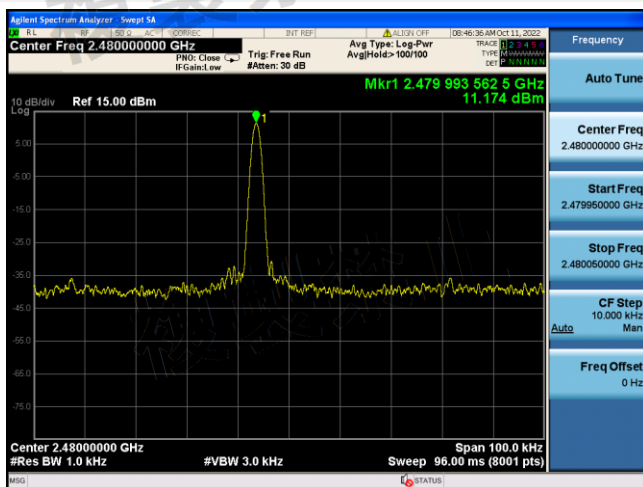
A.1.13 NV Low Channel



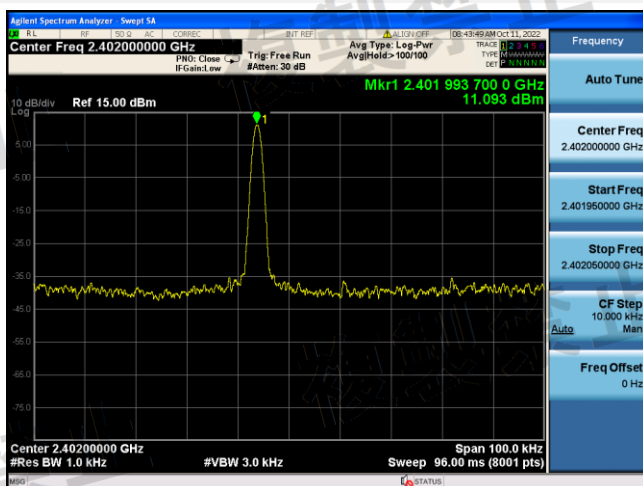
A.1.14 NV Middle Channel



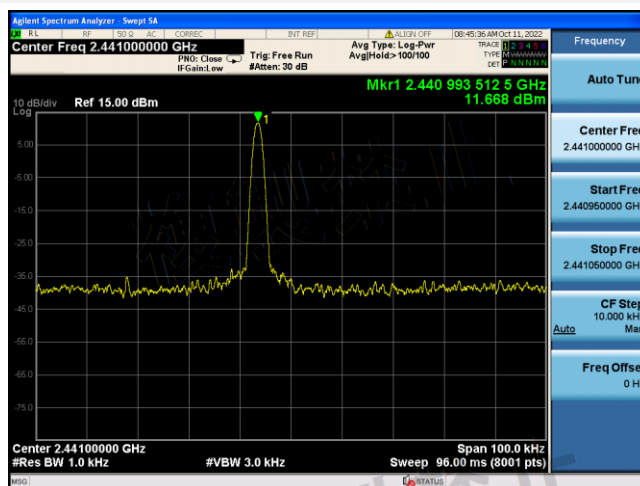
A.1.15 NV High Channel



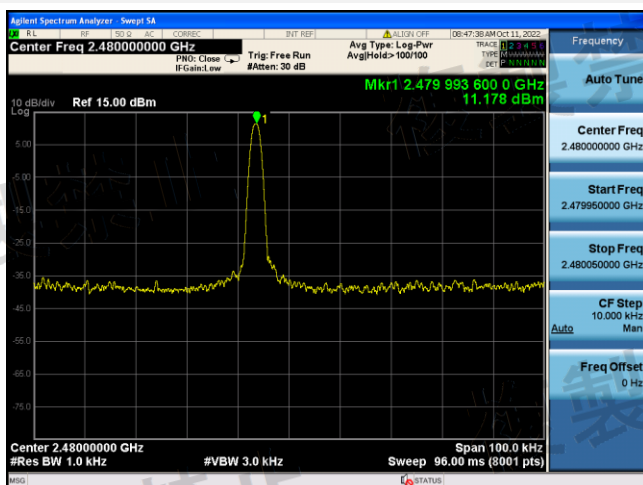
A.1.16 HV Low Channel



A.1.17 HV Middle Channel



A.1.18 HV High Channel



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

Test Data for Bluetooth (Classic)

Earbuds Left:

Results of Occupied Bandwidth	MODE	Test Voltage	Measured 99% Occupied Bandwidth (MHz)		Refer to Plot	Verdict
	GFSK	LV	78.60		A.2.1	Pass
		NV	78.60		A.2.2	Pass
		HV	78.60		A.2.3	Pass
	$\pi/4$ -DQPSK	LV	78.67		A.2.4	Pass
		NV	78.70		A.2.5	Pass
		HV	78.70		A.2.6	Pass
	8-DPSK	LV	78.68		A.2.7	Pass
		NV	78.64		A.2.8	Pass
		HV	78.66		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	70.21	70.21	A.2.10	Pass
		NV	70.21	70.21	A.2.11	Pass
		HV	70.21	70.21	A.2.12	Pass
	$\pi/4$ -DQPSK	LV	70.21	70.21	A.2.13	Pass
		NV	70.26	70.26	A.2.14	Pass
		HV	70.23	70.23	A.2.15	Pass
	8-DPSK	LV	70.25	70.25	A.2.16	Pass
		NV	70.20	70.20	A.2.17	Pass
		HV	70.24	70.24	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	20.53		A.2.19	Pass
		NV	20.54		A.2.20	Pass
		HV	20.54		A.2.21	Pass
	$\pi/4$ -DQPSK	LV	20.78		A.2.22	Pass
		NV	20.76		A.2.23	Pass
		HV	20.77		A.2.24	Pass
	8-DPSK	LV	20.73		A.2.25	Pass
		NV	20.72		A.2.26	Pass
		HV	20.73		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	18.62	18.62	A.2.28	Pass
		NV	18.62	18.62	A.2.29	Pass
		HV	18.62	18.62	A.2.30	Pass
	$\pi/4$ -DQPSK	LV	18.68	18.68	A.2.31	Pass
		NV	18.73	18.73	A.2.32	Pass
		HV	18.74	18.74	A.2.33	Pass
	8-DPSK	LV	18.71	18.71	A.2.34	Pass
		NV	18.71	18.71	A.2.35	Pass
		HV	18.68	18.68	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	1.05	A.2.37	Pass
		NV	1.05	A.2.38	Pass
		HV	1.06	A.2.39	Pass
	Middle	LV	1.05	A.2.40	Pass
		NV	1.05	A.2.41	Pass
		HV	1.05	A.2.42	Pass
	High	LV	1.05	A.2.43	Pass
		NV	1.05	A.2.44	Pass
		HV	1.04	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	2.06	A.2.49	Pass
		NV	2.06	A.2.50	Pass
		HV	2.06	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

Earbuds Right:

Results of Occupied Bandwidth	MODE	Test Voltage	Measured 99% Occupied Bandwidth (MHz)		Refer to Plot	Verdict
	GFSK	LV	78.62		A.2.55	Pass
		NV	78.62		A.2.56	Pass
		HV	78.62		A.2.57	Pass
	$\pi/4$ -DQPSK	LV	78.70		A.2.58	Pass
		NV	78.71		A.2.59	Pass
		HV	78.70		A.2.60	Pass
	8-DPSK	LV	78.69		A.2.61	Pass
		NV	78.68		A.2.62	Pass
		HV	78.68		A.2.63	Pass
Results of Spread-spectrum Bandwidth	MODE	Test Voltage	Measured 90% Spread-spectrum Bandwidth (MHz)	Spread Spectrum Factor	Refer to Plot	Verdict
	GFSK	LV	70.49	70.49	A.2.64	Pass
		NV	70.49	70.49	A.2.65	Pass
		HV	70.49	70.49	A.2.66	Pass
	$\pi/4$ -DQPSK	LV	70.50	70.50	A.2.67	Pass
		NV	70.59	70.59	A.2.68	Pass
		HV	70.56	70.56	A.2.69	Pass
	8-DPSK	LV	70.44	70.44	A.2.70	Pass
		NV	70.59	70.59	A.2.71	Pass
		HV	70.49	70.49	A.2.72	Pass

Test Data for AFH Mode

Results of Occupied Bandwidth	MODE	Test Voltage	Measured 99% Occupied Bandwidth (MHz)		Refer to Plot	Verdict
	GFSK	LV	20.52		A.2.73	Pass
		NV	20.52		A.2.74	Pass
		HV	20.52		A.2.75	Pass
	$\pi/4$ -DQPSK	LV	20.72		A.2.76	Pass
		NV	20.72		A.2.77	Pass
		HV	20.74		A.2.78	Pass
	8-DPSK	LV	20.70		A.2.79	Pass
		NV	20.69		A.2.80	Pass
		HV	20.69		A.2.81	Pass
Results of Spread-spectrum Bandwidth	MODE	Test Voltage	Measured 90% Spread-spectrum Bandwidth (MHz)	Spread Spectrum Factor	Refer to Plot	Verdict
	GFSK	LV	18.54	18.54	A.2.82	Pass
		NV	18.53	18.53	A.2.83	Pass
		HV	18.54	18.54	A.2.84	Pass
	$\pi/4$ -DQPSK	LV	18.64	18.64	A.2.85	Pass
		NV	18.65	18.65	A.2.86	Pass
		HV	18.64	18.64	A.2.87	Pass
	8-DPSK	LV	18.63	18.63	A.2.88	Pass
		NV	18.64	18.64	A.2.89	Pass
		HV	18.62	18.62	A.2.90	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	1.05	A.2.91	Pass
		NV	1.05	A.2.92	Pass
		HV	1.05	A.2.93	Pass
	Middle	LV	1.05	A.2.94	Pass
		NV	1.05	A.2.95	Pass
		HV	1.05	A.2.96	Pass
	High	LV	1.04	A.2.97	Pass
		NV	1.04	A.2.98	Pass
		HV	1.04	A.2.99	Pass

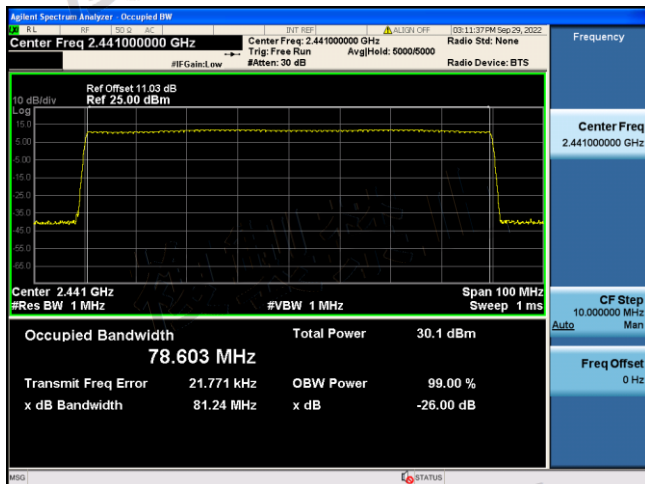
Test Data for GSFK (BLE 2Mbps)

Results of Occupied Bandwidth	Channel	Test Voltage	Measured 99% Occupied Bandwidth (MHz)	Refer to Plot	Verdict
	Low	LV	2.05	A.2.100	Pass
		NV	2.05	A.2.101	Pass
		HV	2.05	A.2.102	Pass
	Middle	LV	2.05	A.2.103	Pass
		NV	2.05	A.2.104	Pass
		HV	2.05	A.2.105	Pass
	High	LV	2.05	A.2.106	Pass
		NV	2.05	A.2.107	Pass
		HV	2.05	A.2.108	Pass

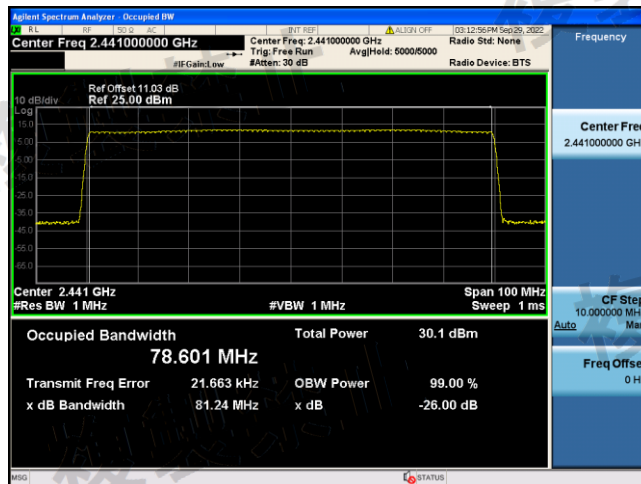
Earbuds Left:

Test plots (Occupied Bandwidth)

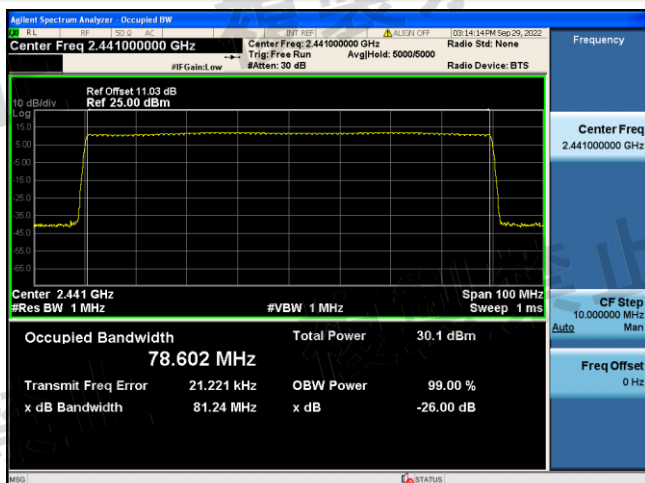
A.2.1 GFSK LV



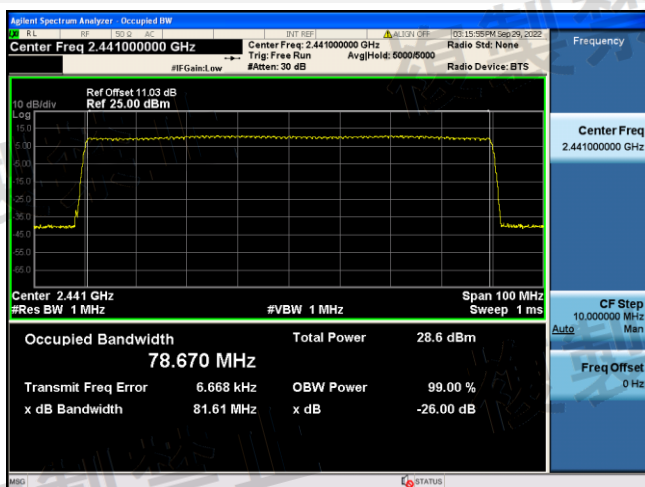
A.2.2 GFSK NV



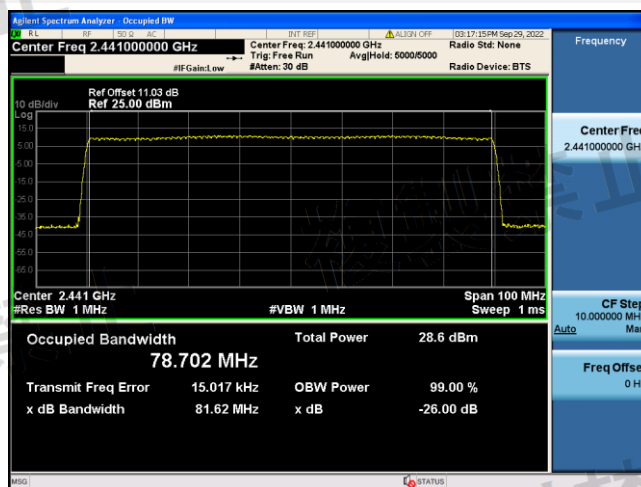
A.2.3 GFSK HV

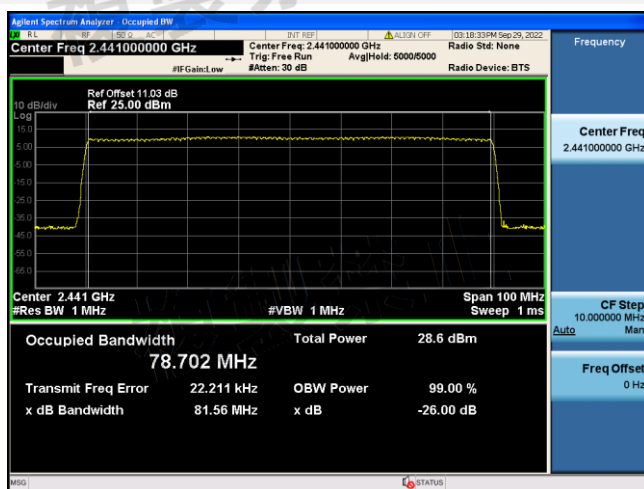


A.2.4 $\pi/4$ -DQPSK LV

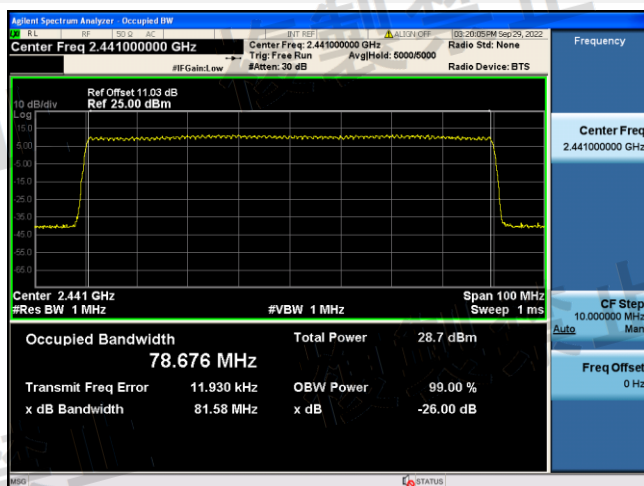


A.2.5 $\pi/4$ -DQPSK NV

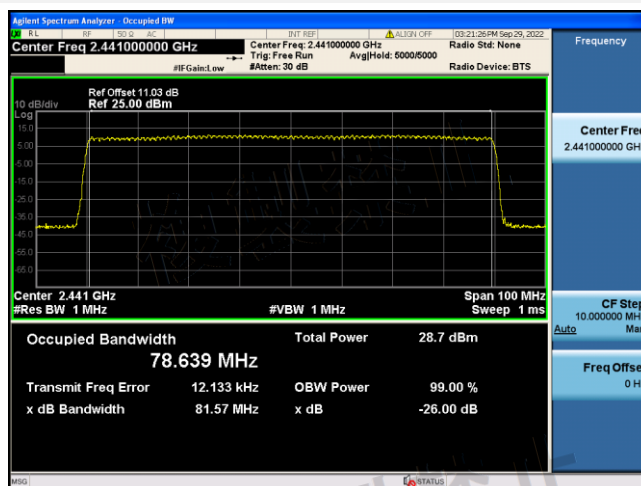


A.2.6 $\pi/4$ -DQPSK HV

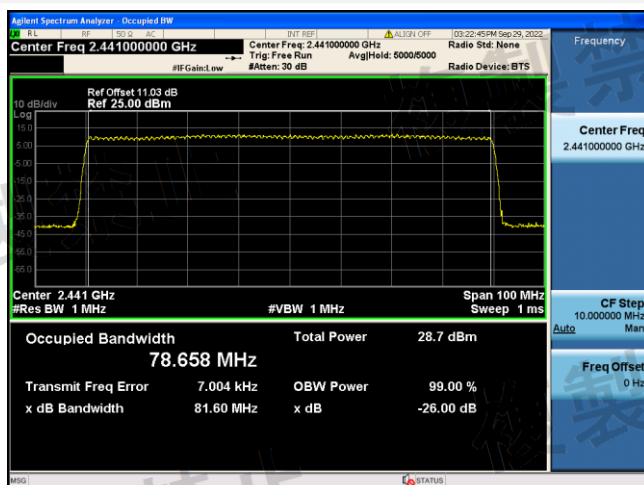
A.2.7 8-DPSK LV



A.2.8 8-DPSK NV

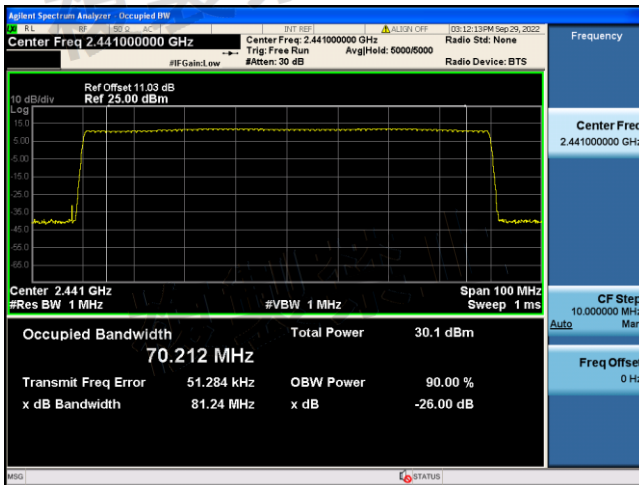


A.2.9 8-DPSK HV

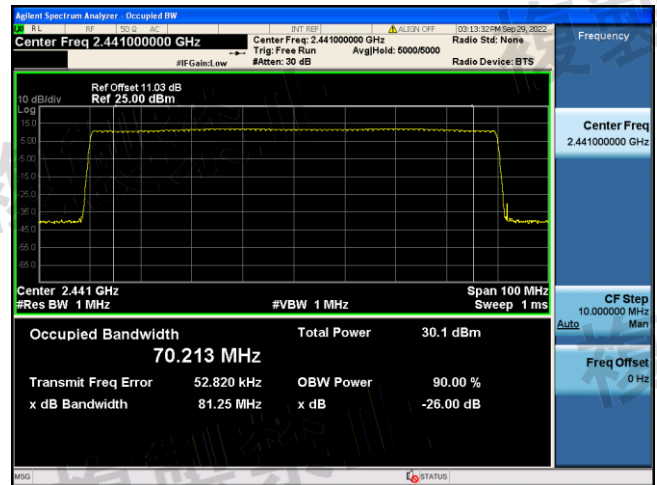


Test Plots (Spread-spectrum Bandwidth)

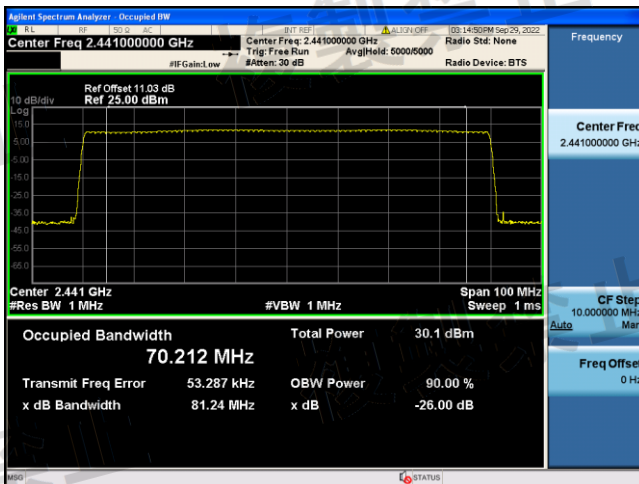
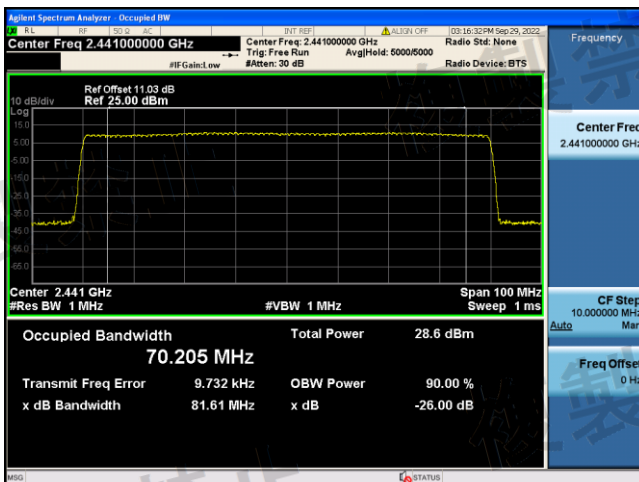
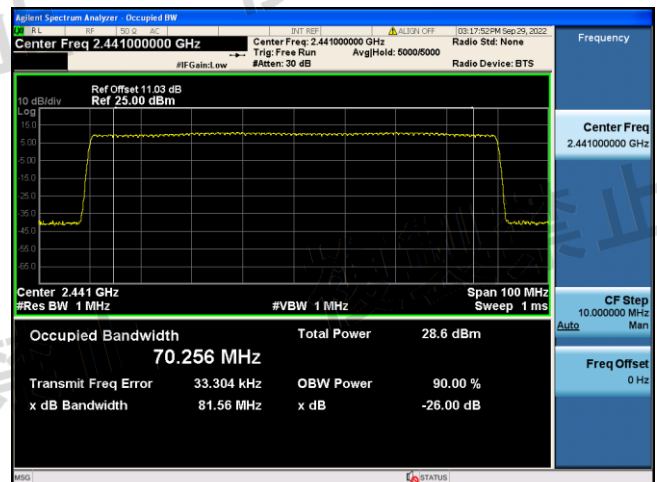
A.2.10 GFSK LV

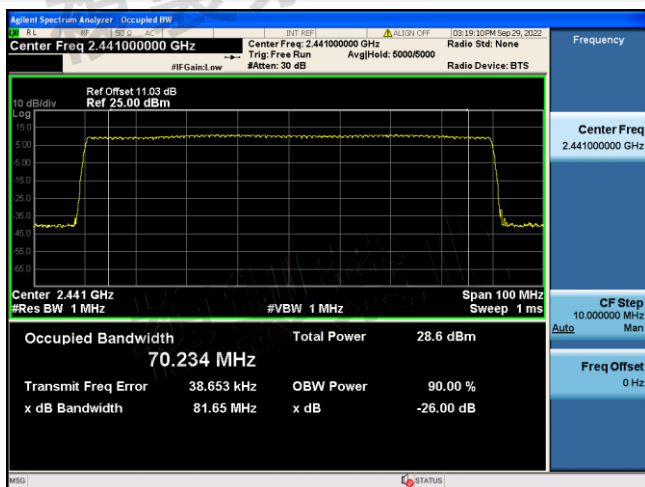


A.2.11 GFSK NV

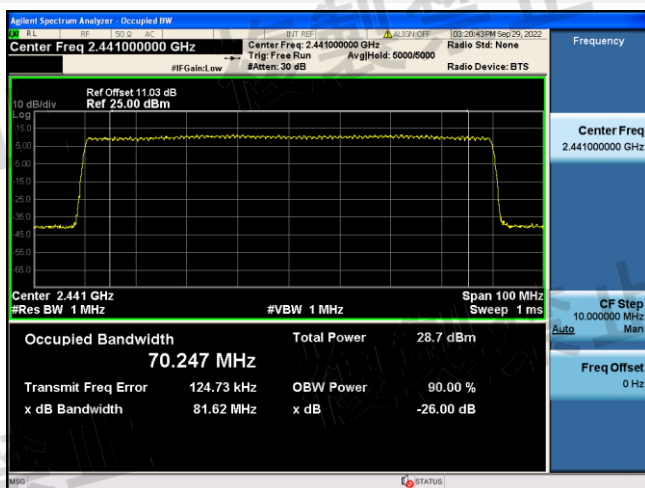


A.2.12 GFSK HV

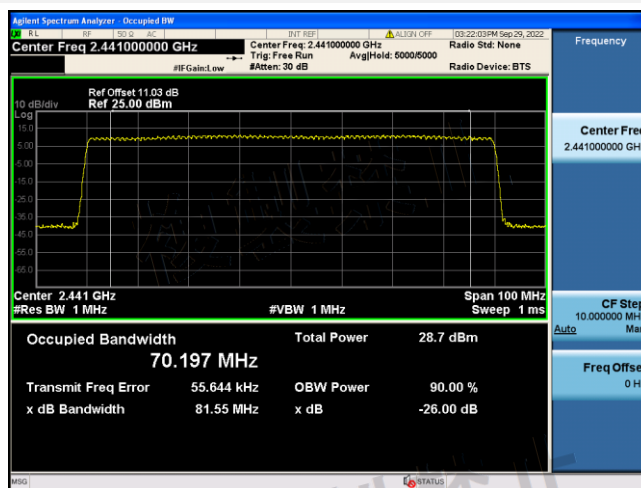
A.2.13 $\pi/4$ -DQPSK LVA.2.14 $\pi/4$ -DQPSK NV

A.2.15 $\pi/4$ -DQPSK HV

A.2.16 8-DPSK LV



A.2.17 8-DPSK NV

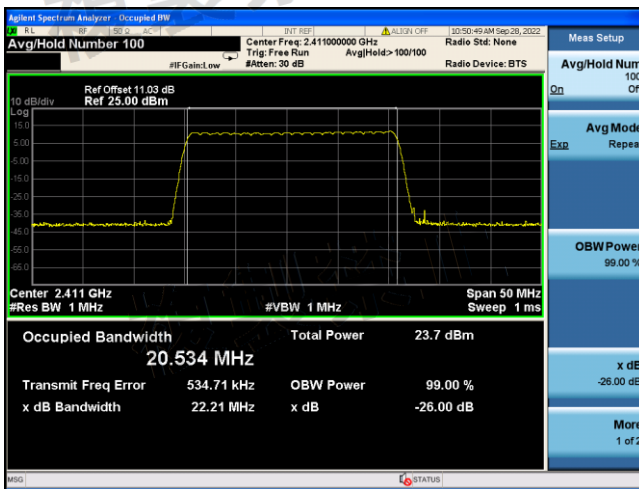


A.2.18 8-DPSK HV

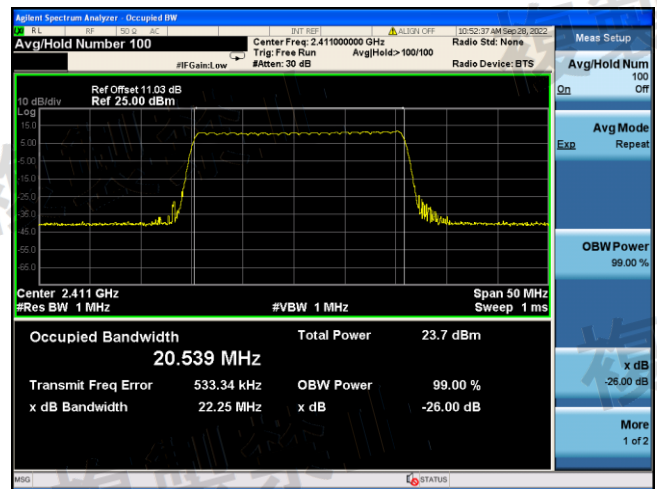


Test plots (Occupied Bandwidth)-AFH Mode

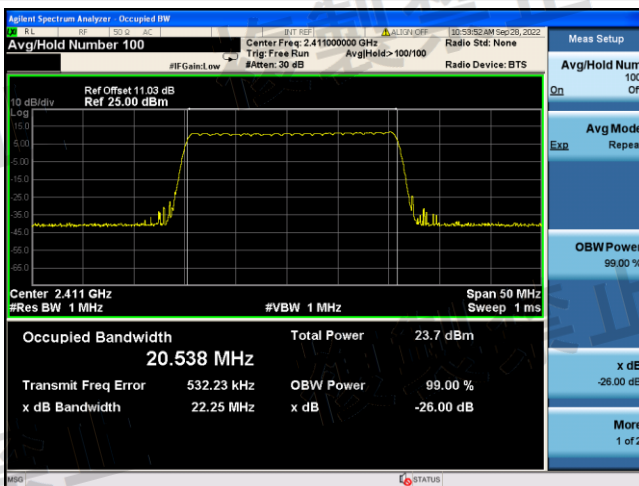
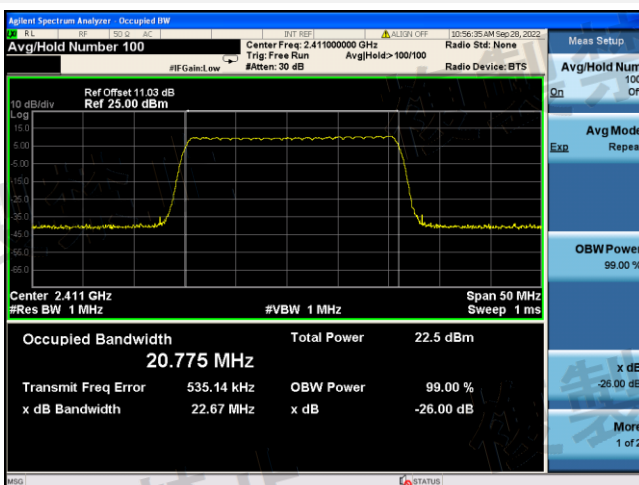
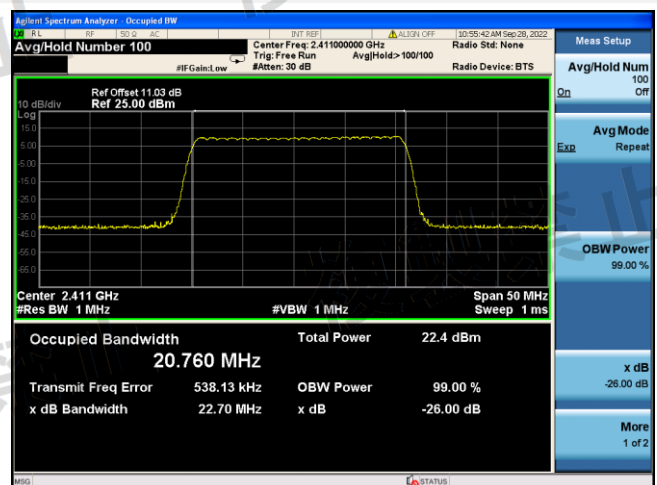
A.2.19 GFSK LV

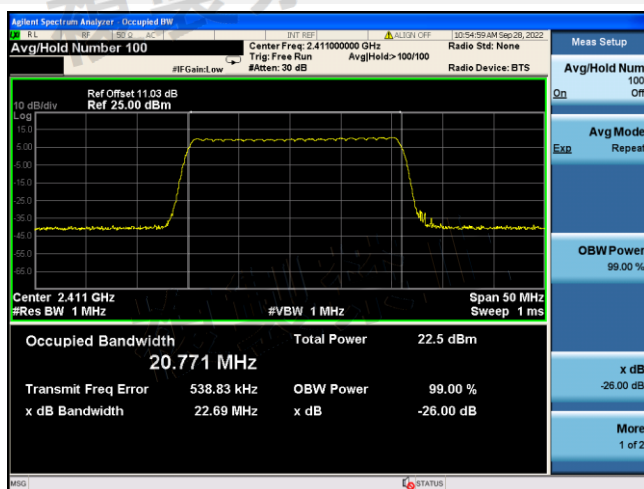


A.2.20 GFSK NV

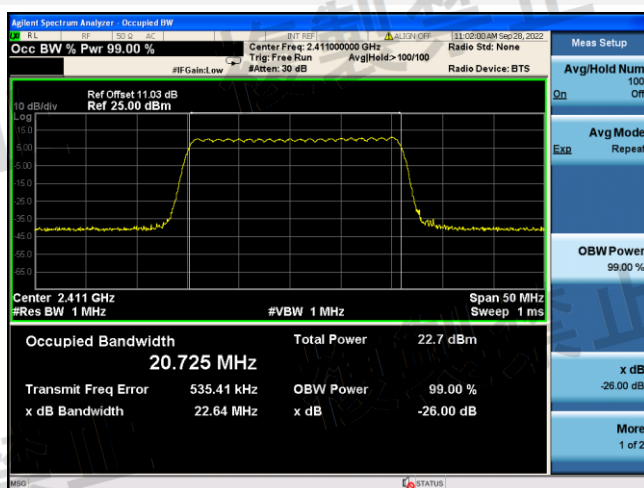


A.2.21 GFSK HV

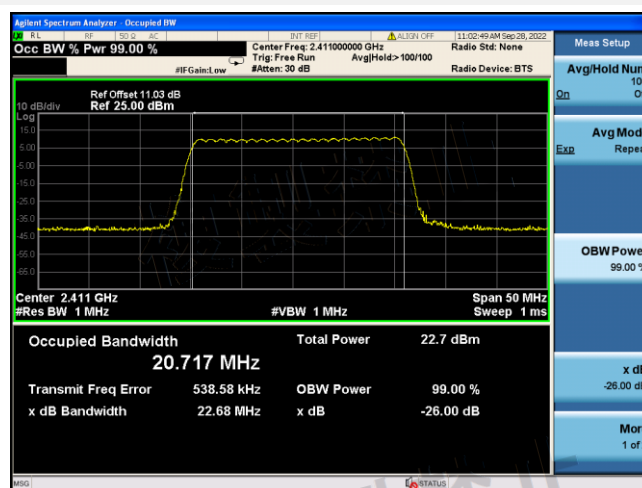
A.2.22 $\pi/4$ -DQPSK LVA.2.23 $\pi/4$ -DQPSK NV

A.2.24 $\pi/4$ -DQPSK HV

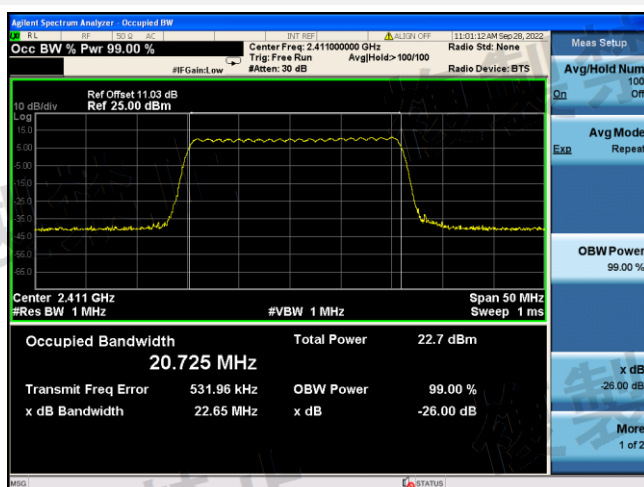
A.2.25 8-DPSK LV



A.2.26 8-DPSK NV

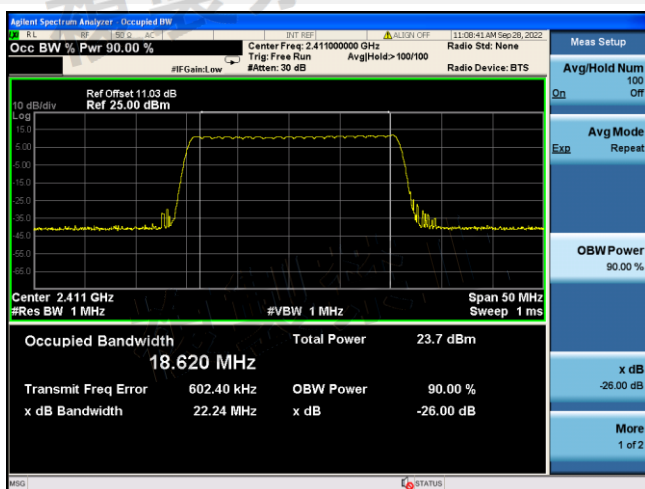


A.2.27 8-DPSK HV

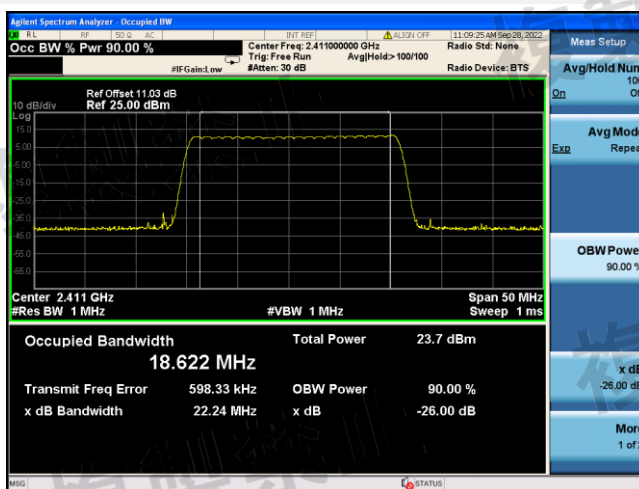


Test Plots (Spread-spectrum Bandwidth)-AFH Mode

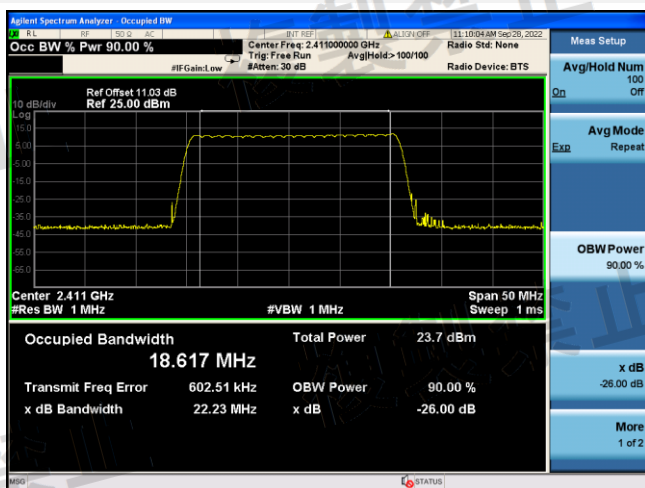
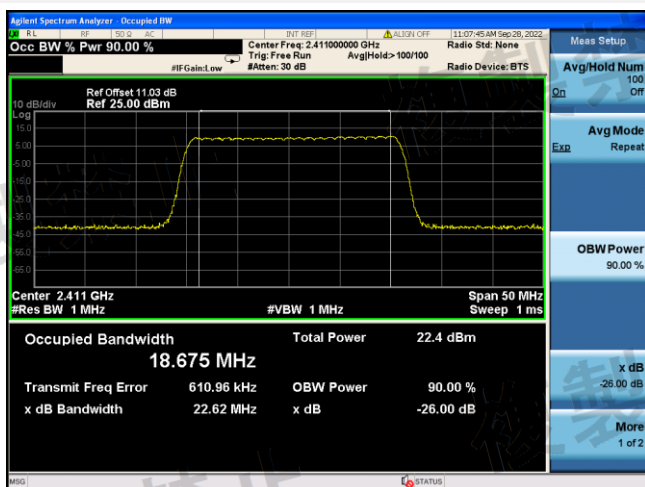
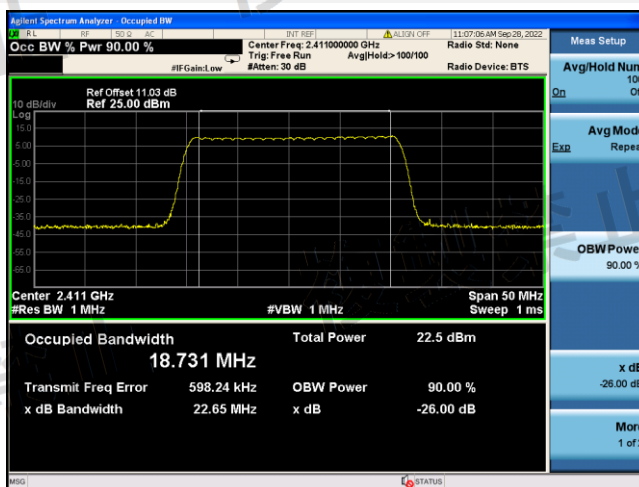
A.2.28 GFSK LV

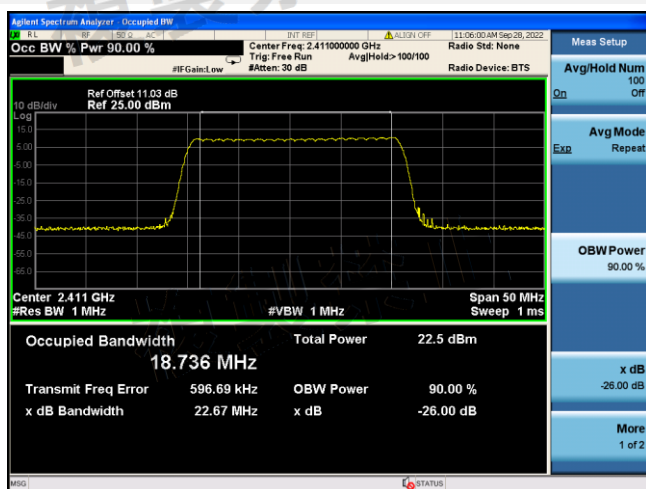


A.2.29 GFSK NV

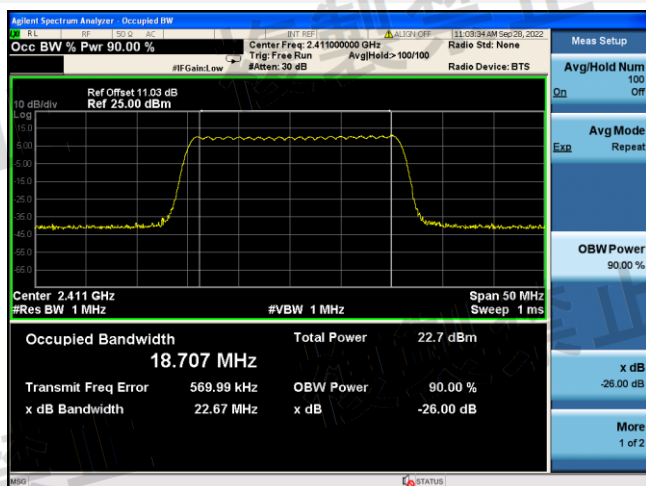


A.2.30 GFSK HV

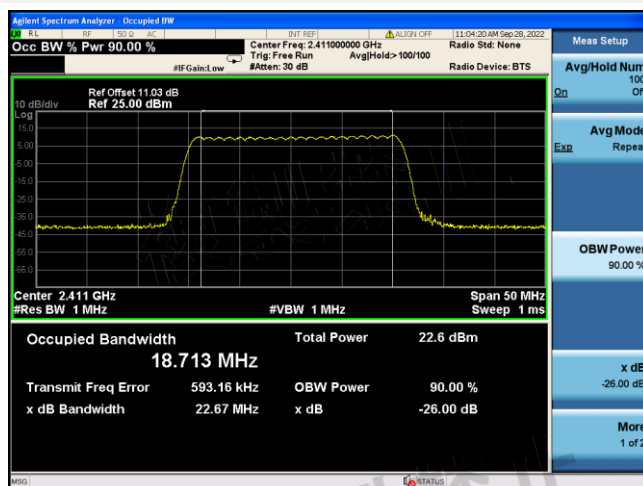
A.2.31 $\pi/4$ -DQPSK LVA.2.32 $\pi/4$ -DQPSK NV

A.2.33 $\pi/4$ -DQPSK HV

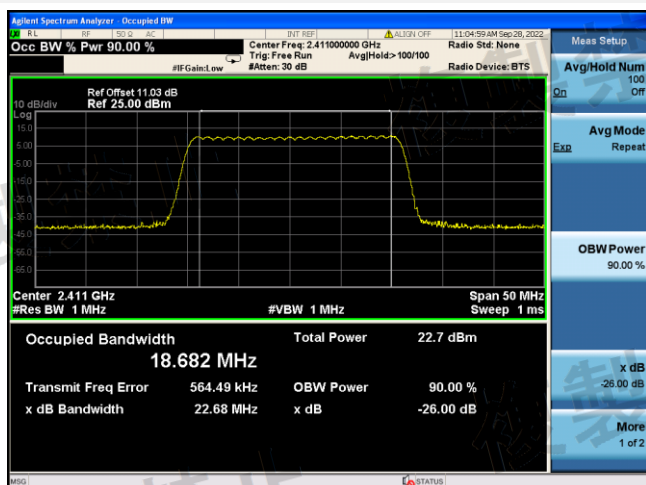
A.2.34 8-DPSK LV



A.2.35 8-DPSK NV

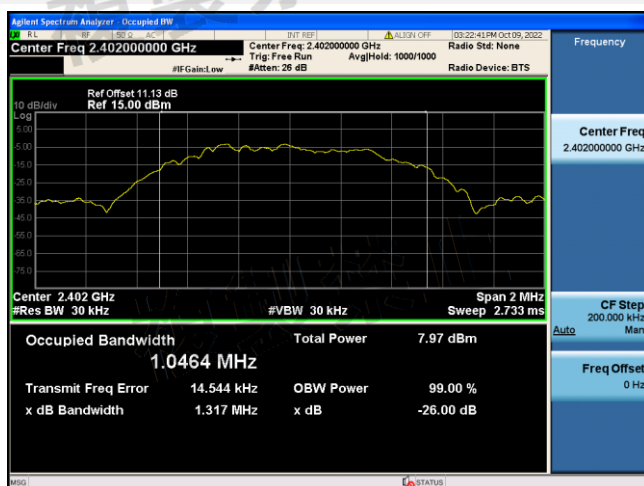


A.2.36 8-DPSK HV

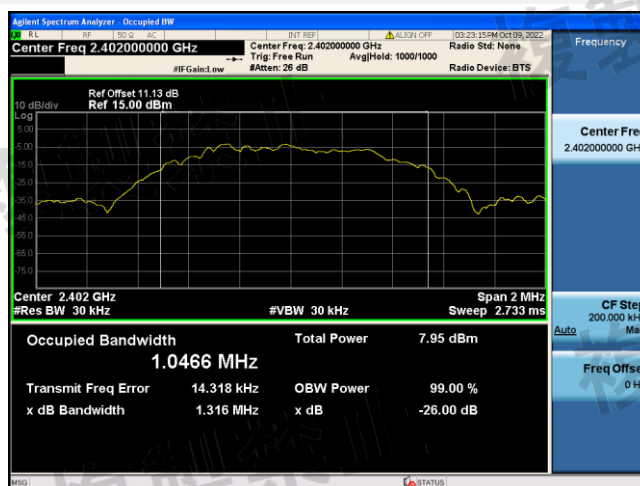


Test Data for GSKF (BLE 1Mbps)

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



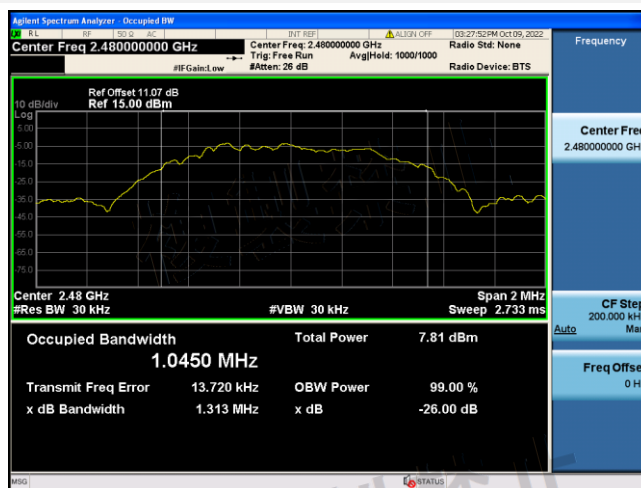
A.2.42 Middle Channel HV



A.2.43 High Channel LV



A.2.44 High Channel NV



A.2.45 High Channel HV



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



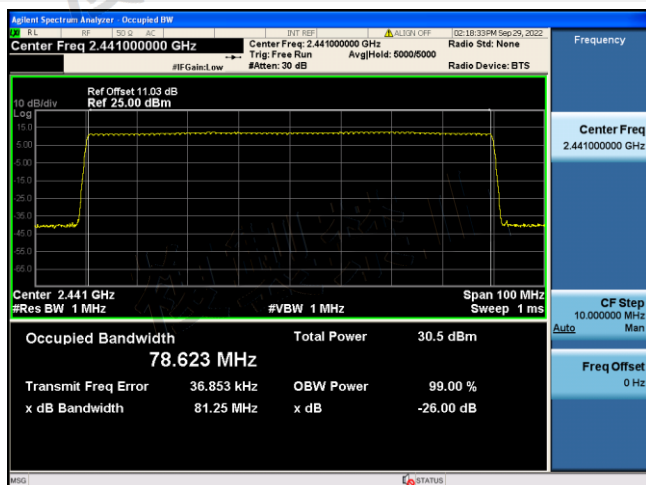
A.2.54 High Channel HV



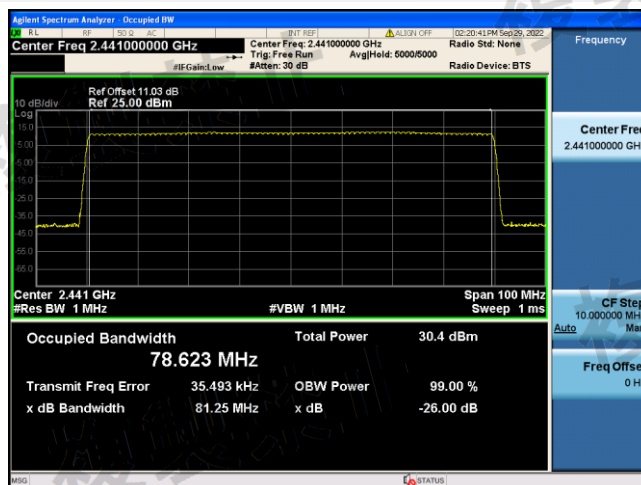
Earbuds Right:

Test plots (Occupied Bandwidth)

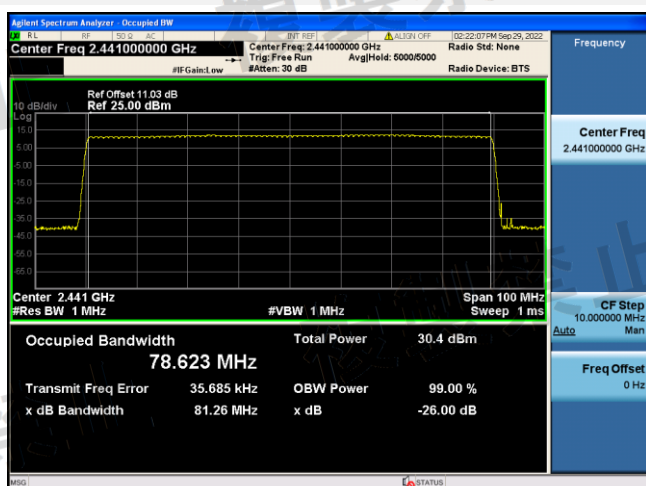
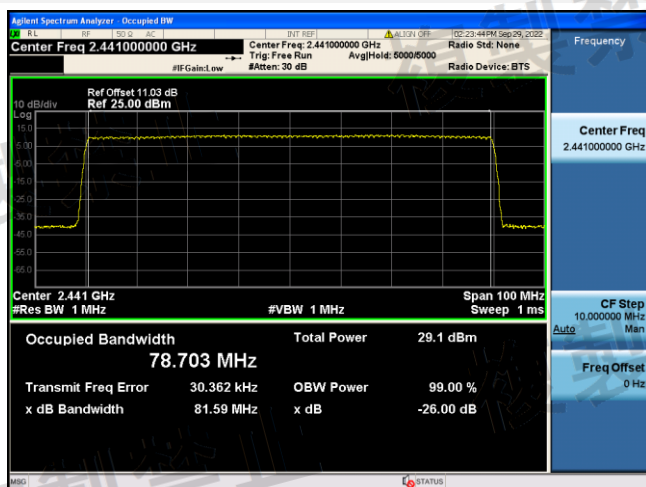
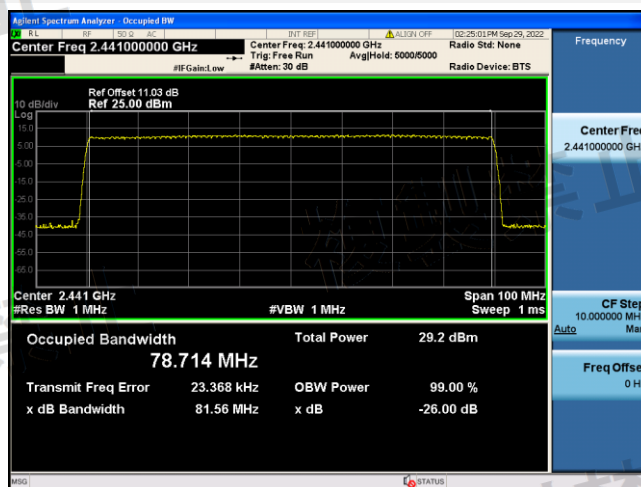
A.2.55 GFSK LV

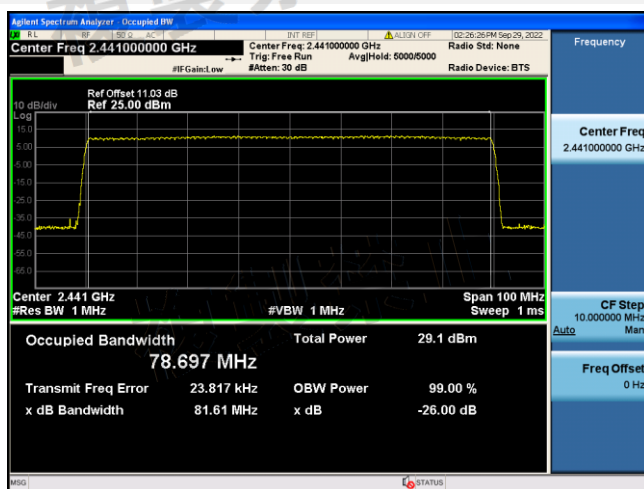


A.2.56 GFSK NV

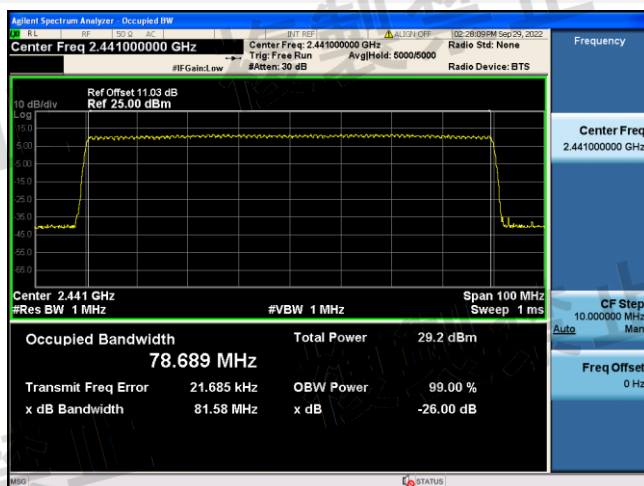


A.2.57 GFSK HV

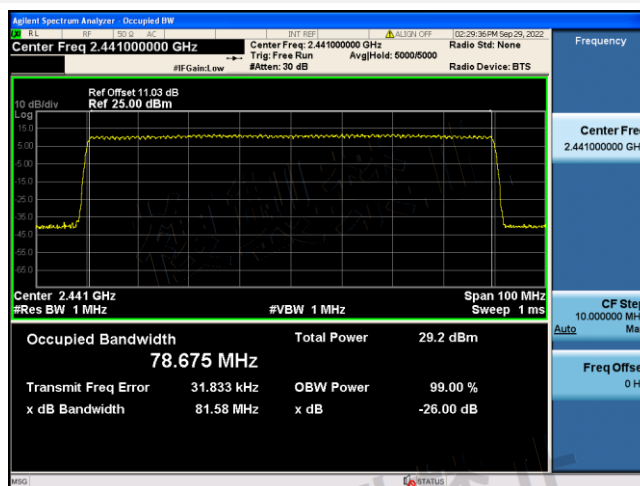
A.2.58 $\pi/4$ -DQPSK LVA.2.59 $\pi/4$ -DQPSK NV

A.2.60 $\pi/4$ -DQPSK HV

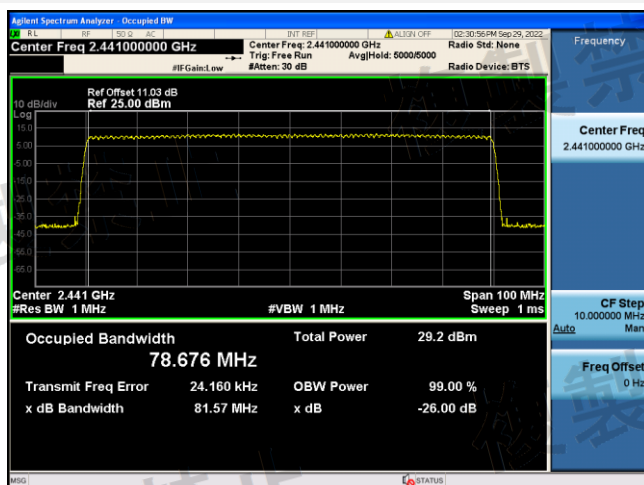
A.2.61 8-DPSK LV



A.2.62 8-DPSK NV

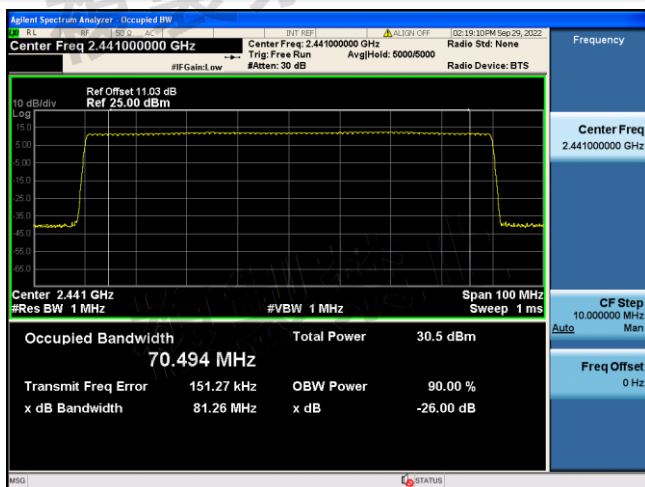


A.2.63 8-DPSK HV

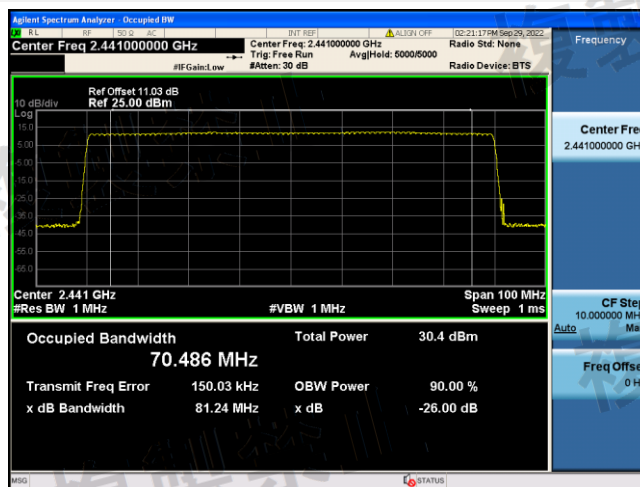


Test Plots (Spread-spectrum Bandwidth)

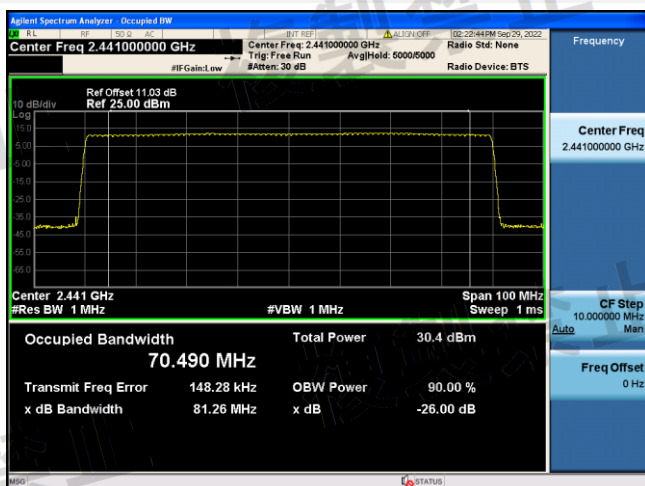
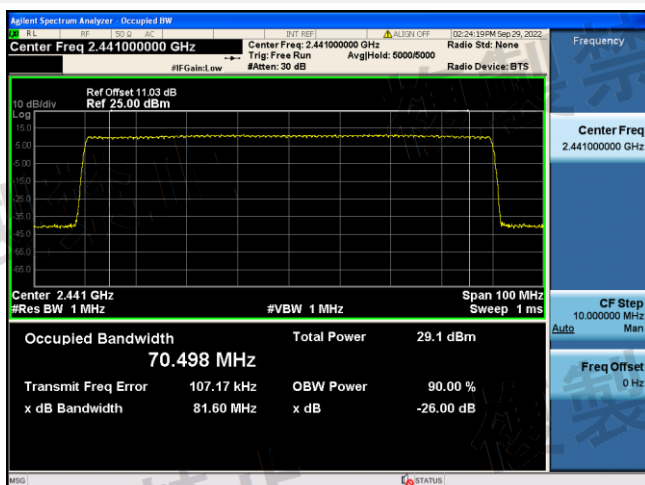
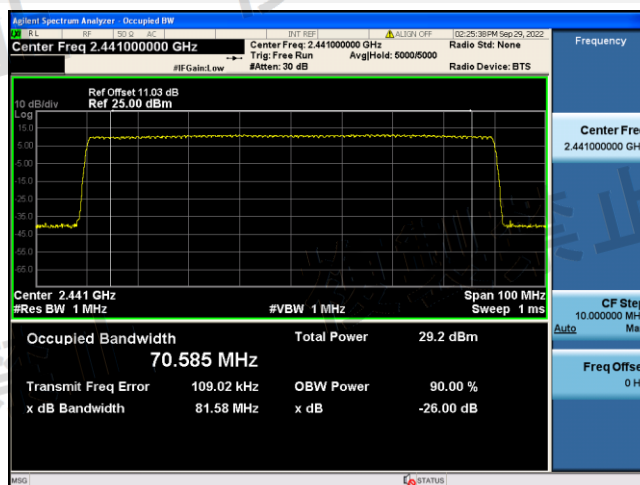
A.2.64 GFSK LV

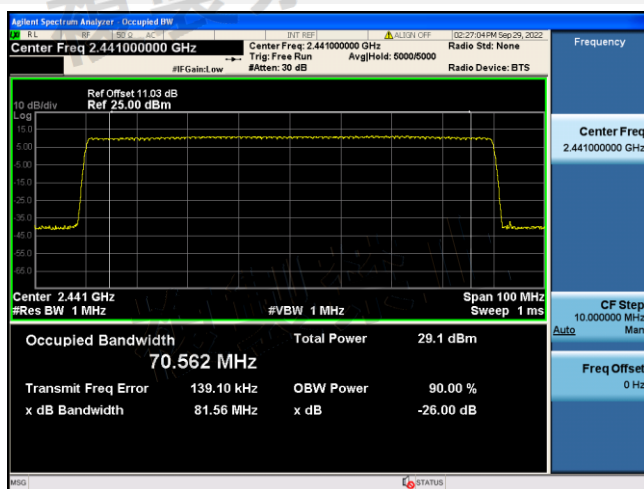


A.2.65 GFSK NV

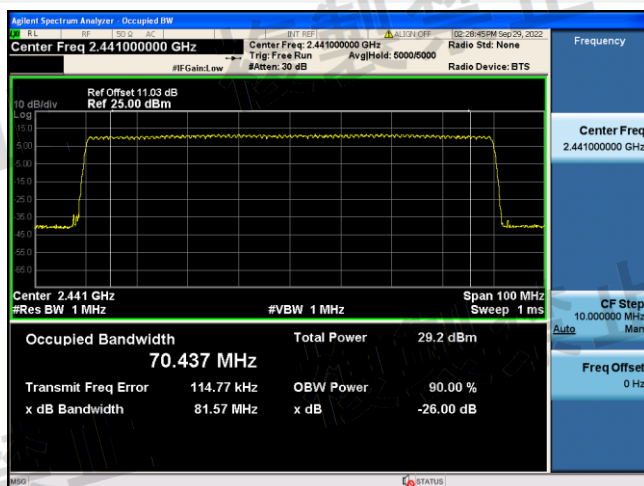


A.2.66 GFSK HV

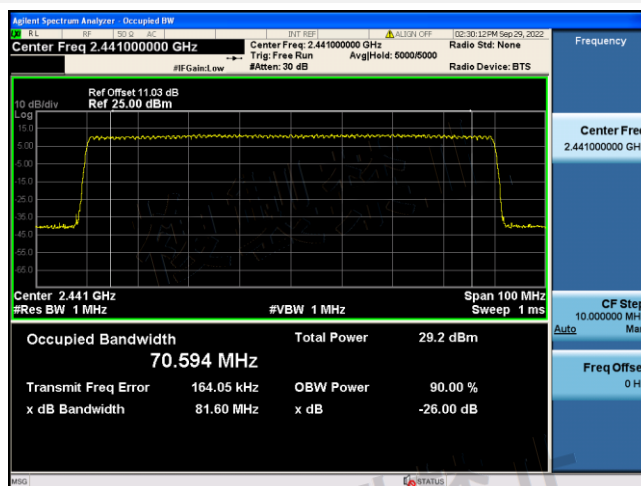
A.2.67 $\pi/4$ -DQPSK LVA.2.68 $\pi/4$ -DQPSK NV

A.2.69 $\pi/4$ -DQPSK HV

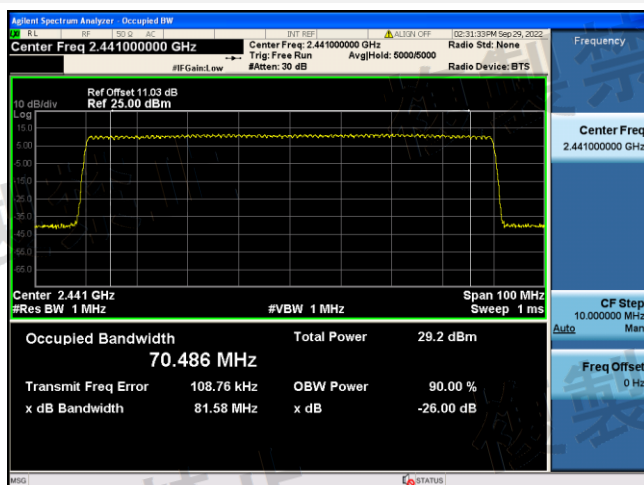
A.2.70 8-DPSK LV



A.2.71 8-DPSK NV

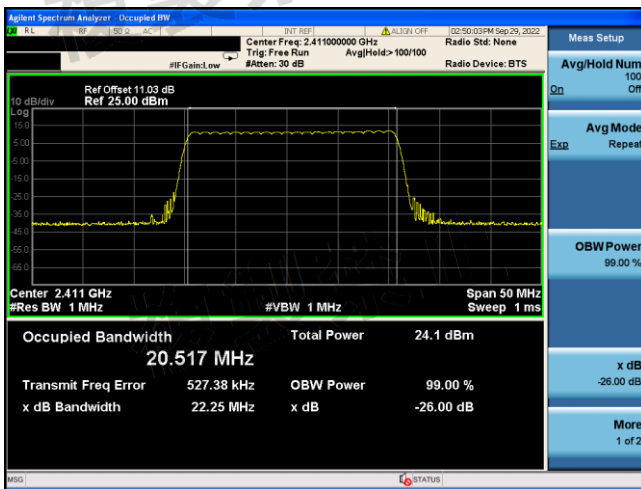


A.2.72 8-DPSK HV

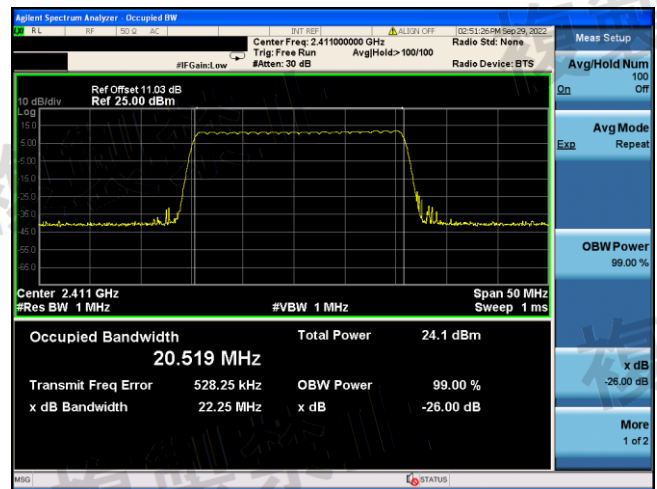


Test plots (Occupied Bandwidth)-AFH Mode

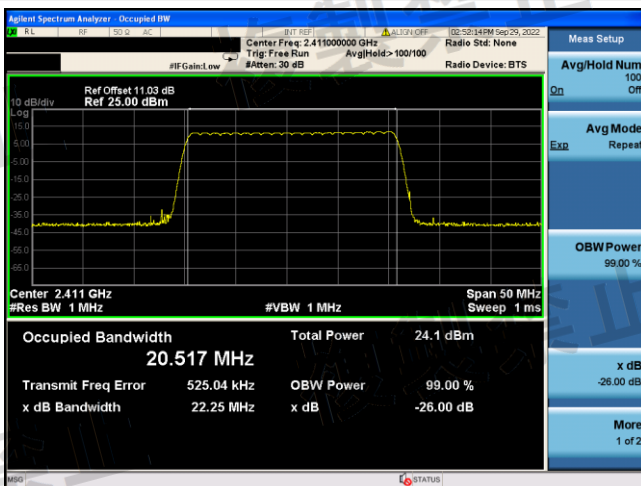
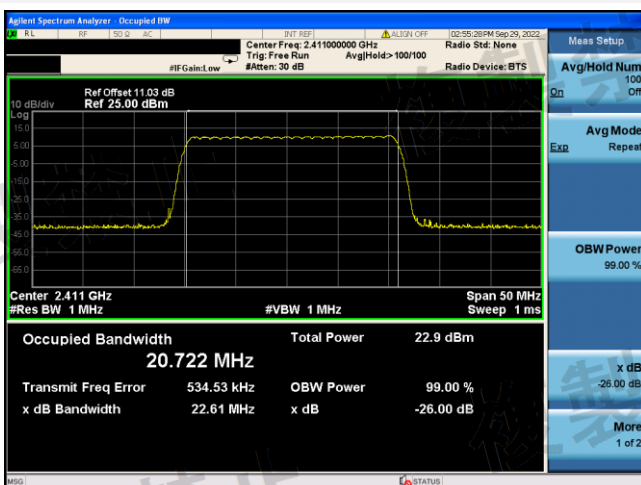
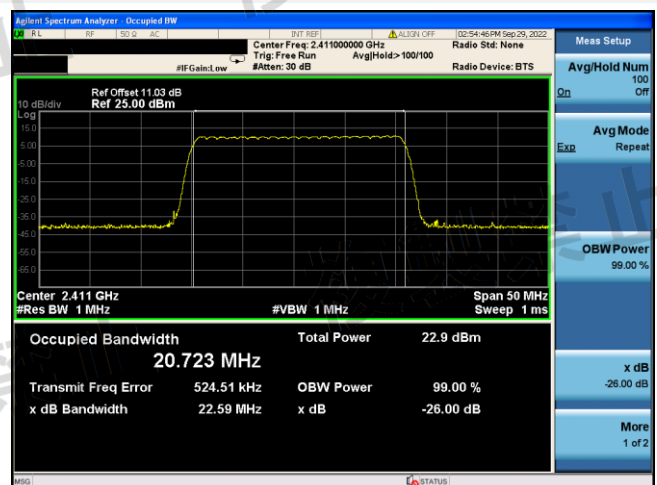
A.2.73 GFSK LV

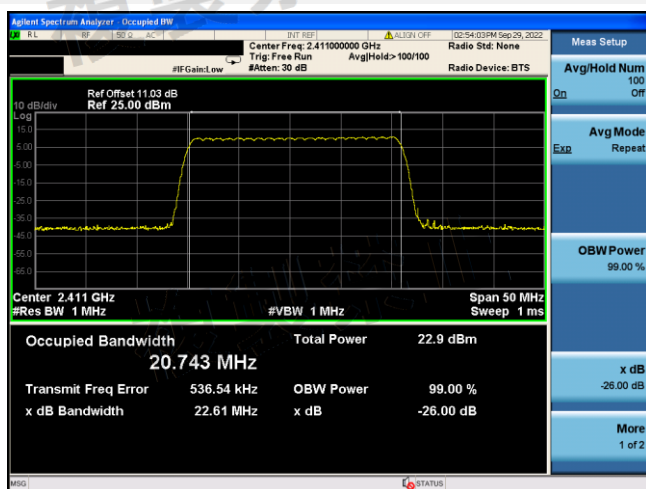


A.2.74 GFSK NV

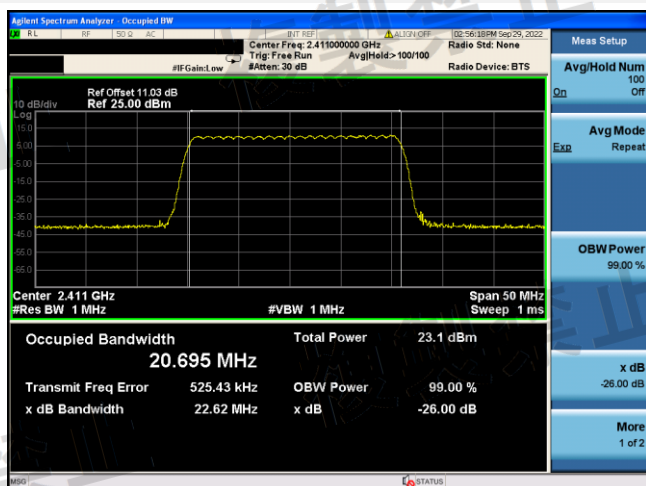


A.2.75 GFSK HV

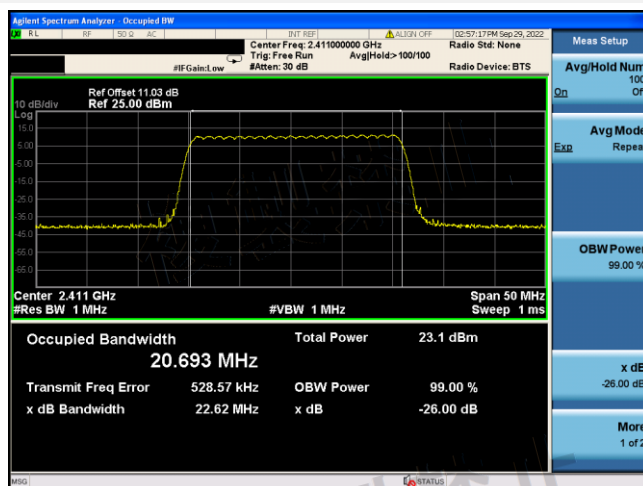
A.2.76 $\pi/4$ -DQPSK LVA.2.77 $\pi/4$ -DQPSK NV

A.2.78 $\pi/4$ -DQPSK HV

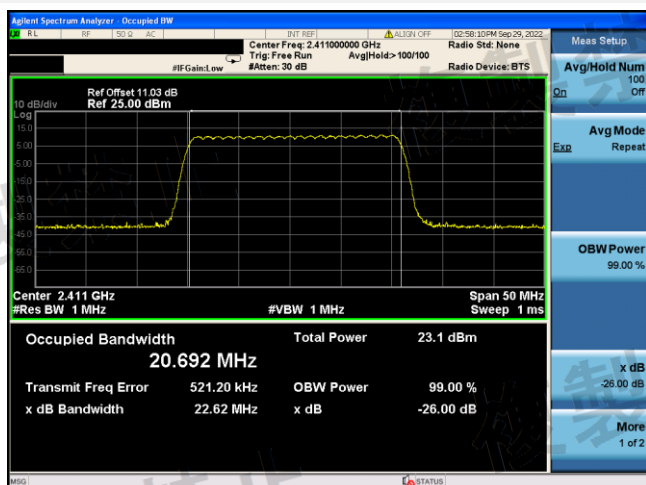
A.2.79 8-DPSK LV



A.2.80 8-DPSK NV

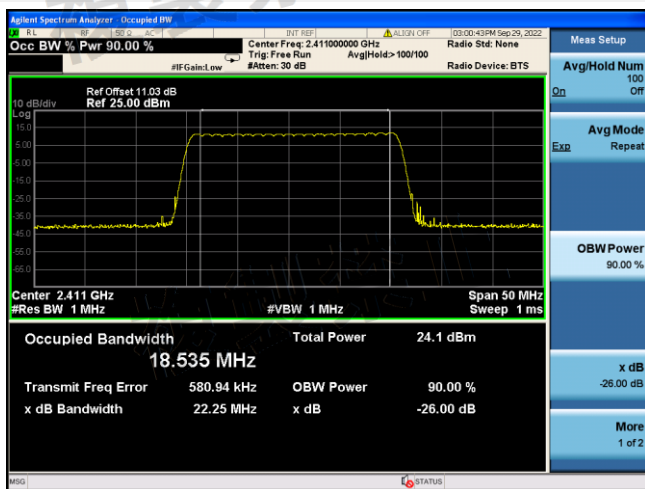


A.2.81 8-DPSK HV

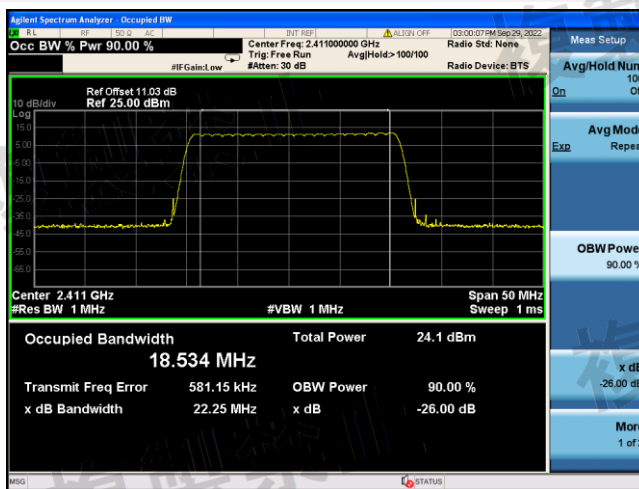


Test Plots (Spread-spectrum Bandwidth)-AFH Mode

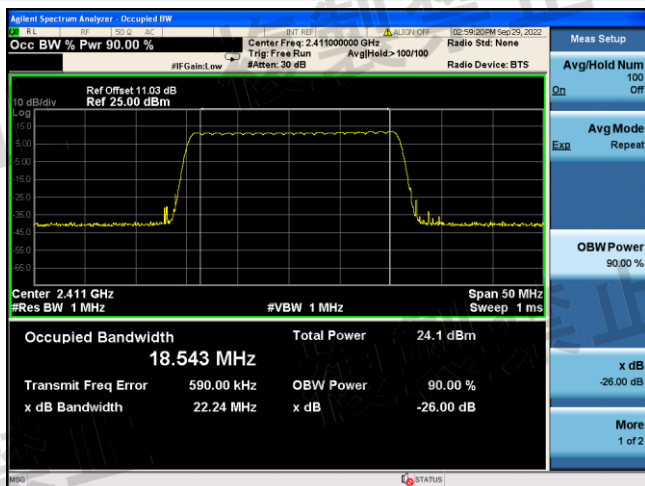
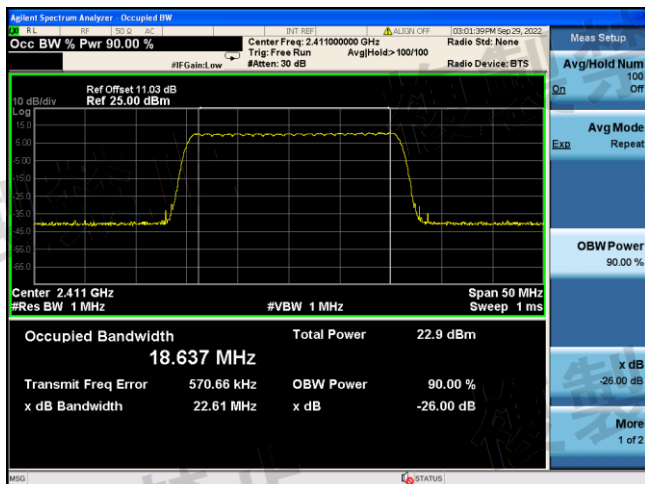
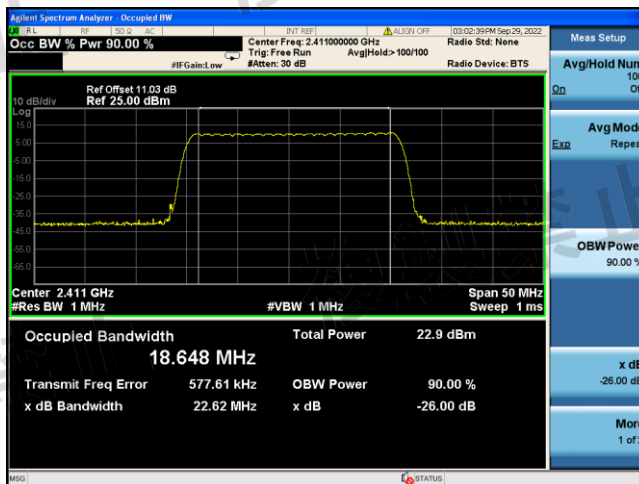
A.2.82 GFSK LV

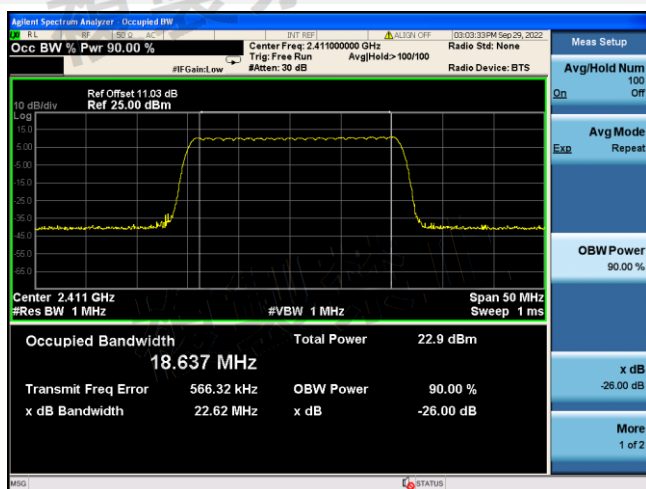


A.2.83 GFSK NV

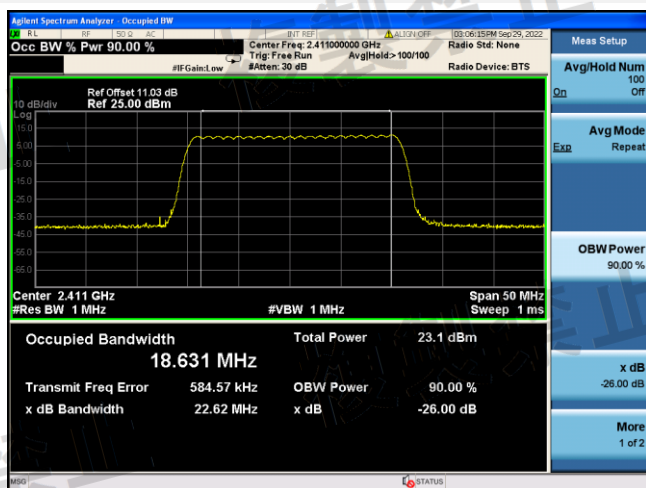


A.2.84 GFSK HV

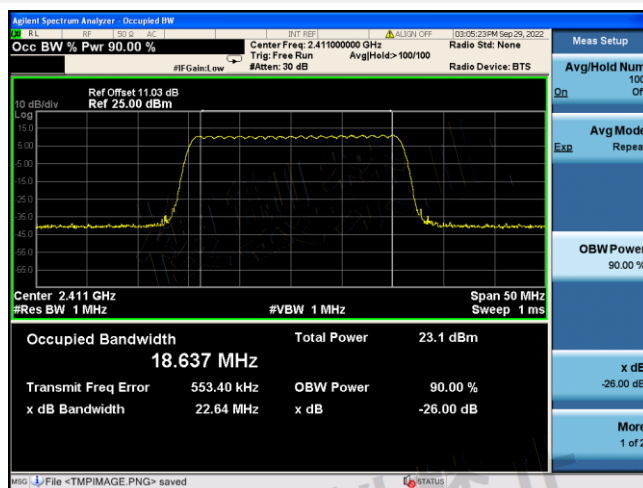
A.2.85 $\pi/4$ -DQPSK LVA.2.86 $\pi/4$ -DQPSK NV

A.2.87 $\pi/4$ -DQPSK HV

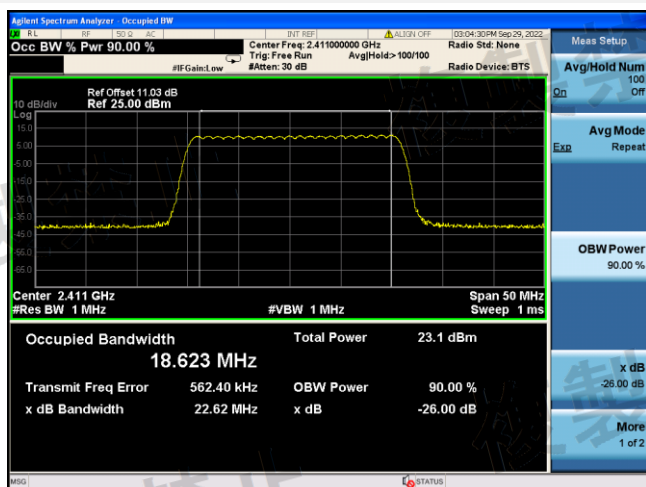
A.2.88 8-DPSK LV



A.2.89 8-DPSK NV



A.2.90 8-DPSK HV

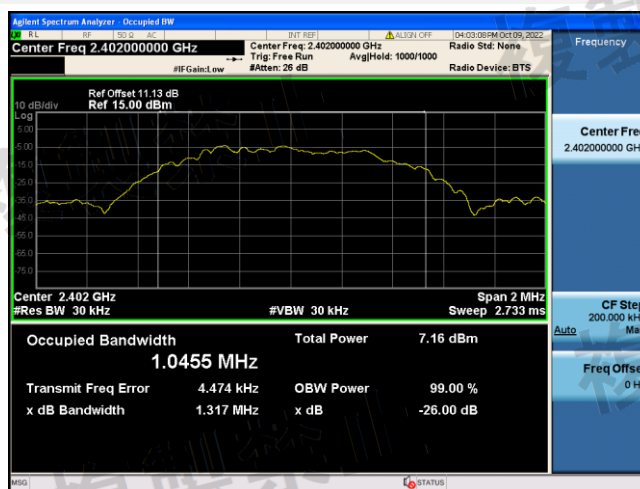


Test Data for GSKF (BLE 1Mbps)

A.2.91 Low Channel LV



A.2.92 Low Channel NV



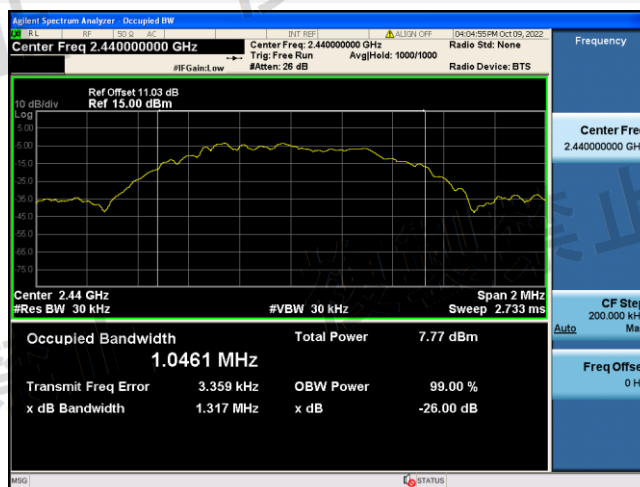
A.2.93 Low Channel HV



A.2.94 Middle Channel LV



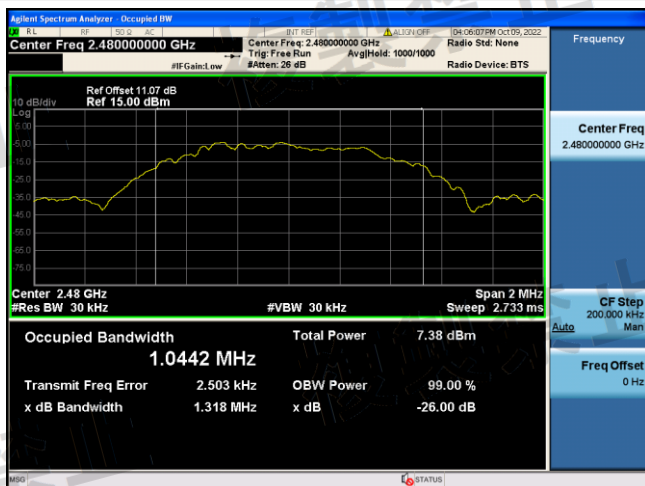
A.2.95 Middle Channel NV



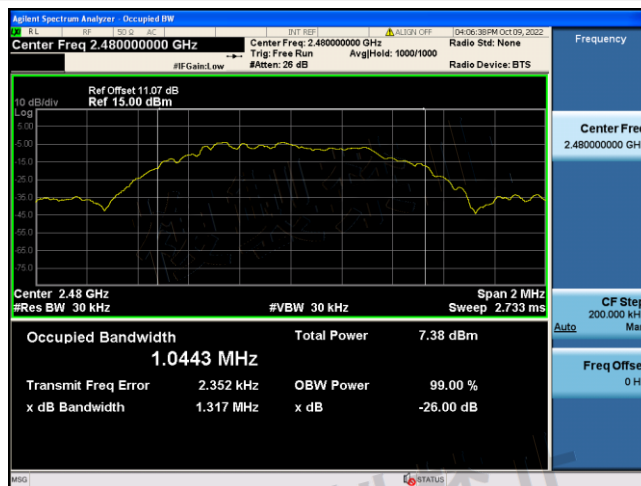
A.2.96 Middle Channel HV



A.2.97 High Channel LV



A.2.98 High Channel NV



A.2.99 High Channel HV



Test Data for GSKF (BLE 2Mbps)

A.2.100 Low Channel LV



A.2.101 Low Channel NV



A.2.102 Low Channel HV



A.2.103 Middle Channel LV



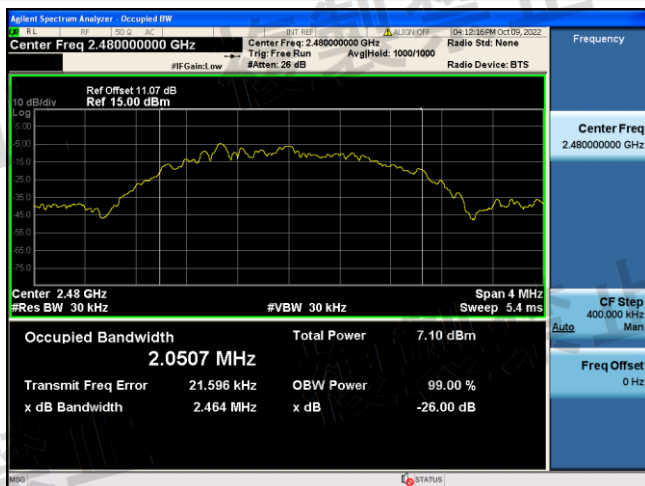
A.2.104 Middle Channel NV



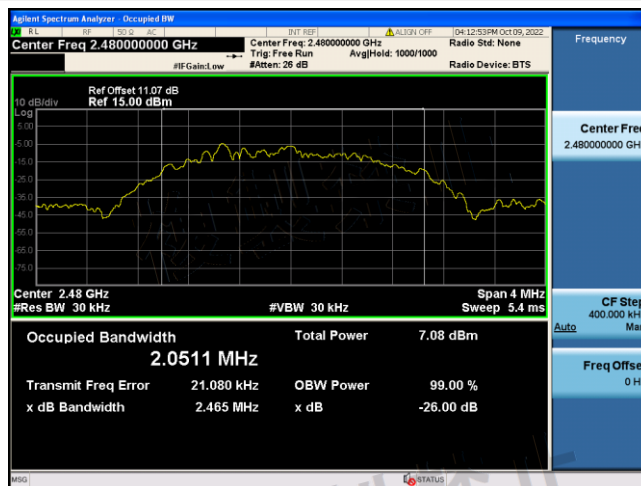
A.2.105 Middle Channel HV



A.2.106 High Channel LV



A.2.107 High Channel NV



A.2.108 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

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

$$\{\text{Period}\} = 0.4s * \{\text{Number of Hopping Frequency}\}$$

For DH3 package type

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

$$\{\text{Period}\} = 0.4s * \{\text{Number of Hopping Frequency}\}$$

For DH5 package type

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

$$\{\text{Period}\} = 0.4s * \{\text{Number of Hopping Frequency}\}$$

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.

Earbuds Left:

GFSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
DH1	0.38080	121.860	400	Pass
DH3	1.64100	262.568		Pass
DH5	2.88800	308.063		Pass

$\pi/4$ -DQPSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
2-DH1	0.38400	122.884	400	Pass
2-DH3	1.63400	261.448		Pass
2-DH5	2.88800	308.063		Pass

8-DPSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
3-DH1	0.38240	122.372	400	Pass
3-DH3	1.63400	261.448		Pass
3-DH5	2.88800	308.063		Pass

Earbuds Right:

GFSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
DH1	0.37920	121.348	400	Pass
DH3	1.63400	261.448		Pass
DH5	2.87600	306.783		Pass

 $\pi/4$ -DQPSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
2-DH1	0.38400	122.884	400	Pass
2-DH3	1.63400	261.448		Pass
2-DH5	2.87600	306.783		Pass

8-DPSK Mode:

Package Mode	Pulse Time (ms)	Total of Dwell (ms)	Limit (ms)	Verdict
3-DH1	0.38240	122.372	400	Pass
3-DH3	1.63400	261.448		Pass
3-DH5	2.88800	308.063		Pass

A.4 Unwanted Emission Intensity Measurement

Test Data

Note: All configurations have been tested, only the worst configuration (Test Voltage NV) shown here.

Earbuds Left:

Mode	Test Voltage	Channel	Refer to Plot	Verdict
GFSK	NV	Low	A.4.1	Pass
		Middle	A.4.2	Pass
		High	A.4.3	Pass
$\pi/4$ -DQPSK	NV	Low	A.4.4	Pass
		Middle	A.4.5	Pass
		High	A.4.6	Pass
8-DPSK	NV	Low	A.4.7	Pass
		Middle	A.4.8	Pass
		High	A.4.9	Pass
GFSK (BLE 1Mbps)	NV	Low	A.4.10	Pass
		Middle	A.4.11	Pass
		High	A.4.12	Pass
GFSK (BLE 2Mbps)	NV	Low	A.4.13	Pass
		Middle	A.4.14	Pass
		High	A.4.15	Pass

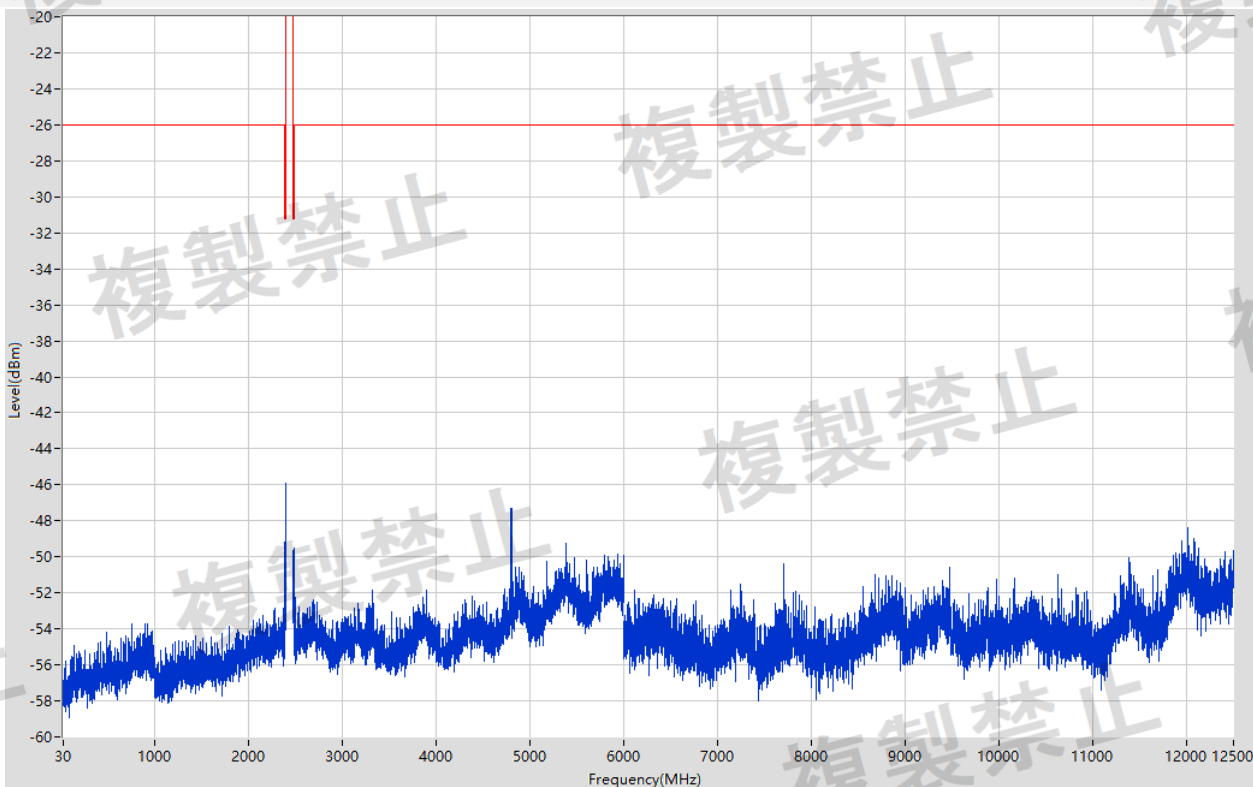
Earbuds Right:

Mode	Test Voltage	Channel	Refer to Plot	Verdict
GFSK	NV	Low	A.4.16	Pass
		Middle	A.4.17	Pass
		High	A.4.18	Pass
$\pi/4$ -DQPSK	NV	Low	A.4.19	Pass
		Middle	A.4.20	Pass
		High	A.4.21	Pass
8-DPSK	NV	Low	A.4.22	Pass
		Middle	A.4.23	Pass
		High	A.4.24	Pass
GFSK (BLE 1Mbps)	NV	Low	A.4.25	Pass
		Middle	A.4.26	Pass
		High	A.4.27	Pass
GFSK (BLE 2Mbps)	NV	Low	A.4.28	Pass
		Middle	A.4.29	Pass
		High	A.4.30	Pass

Test plots

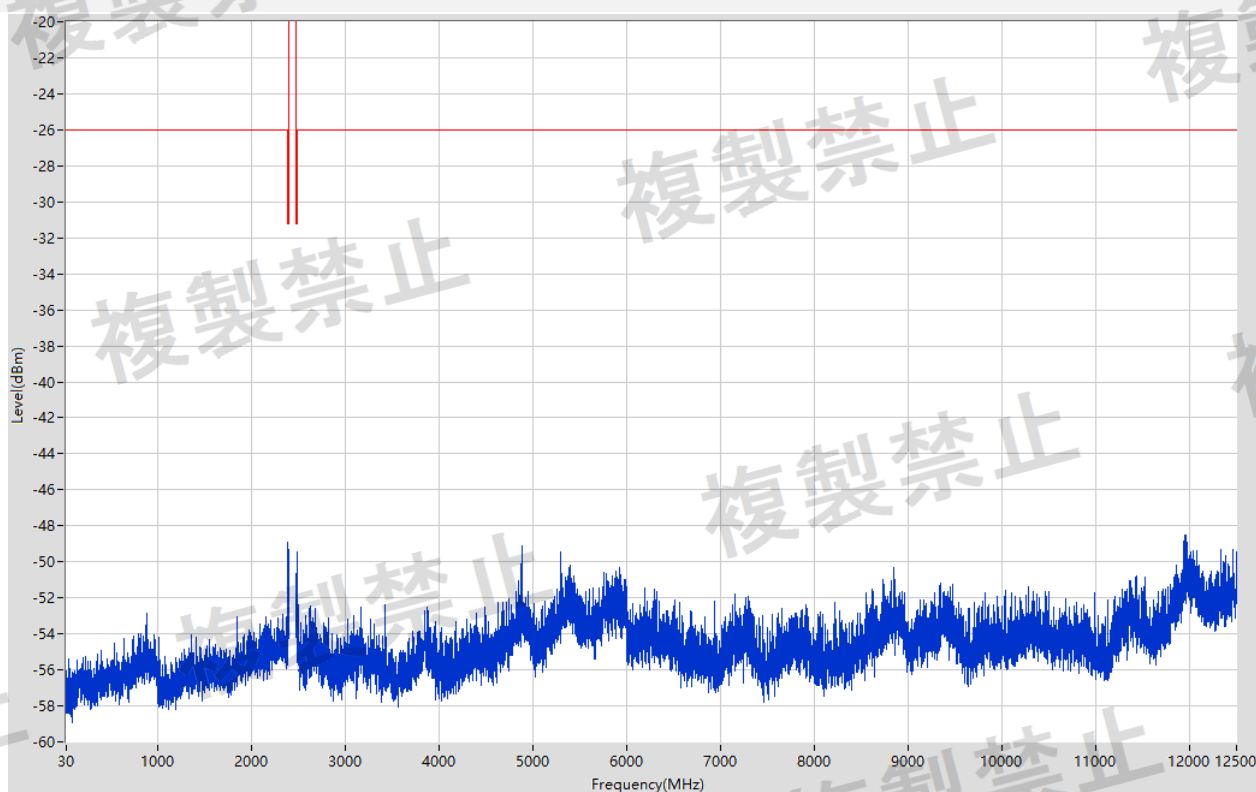
Earbuds Left:

A.4.1 GFSK NV Low Channel



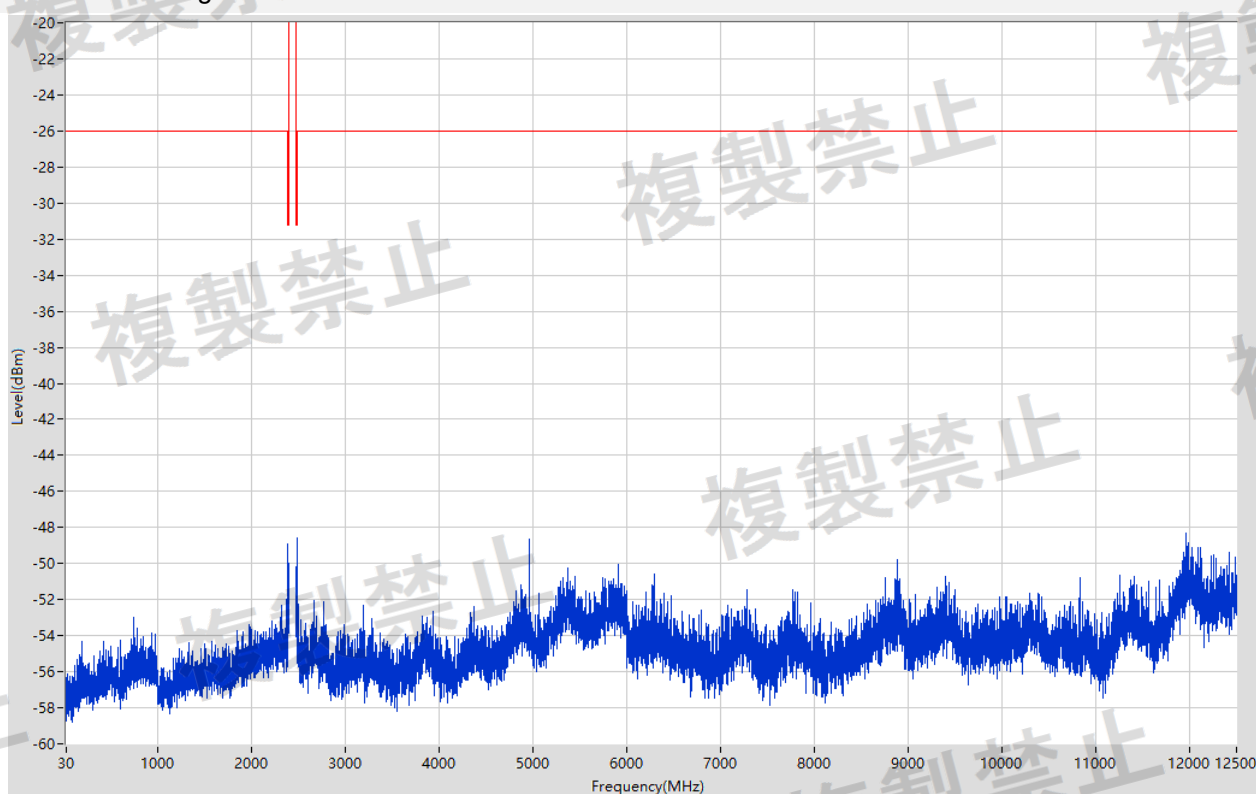
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	756	-53.7	-26	Pass	971
1000	2374	1	Peak	2280	-52.86	-26	Pass	1375
2374	2387	1	Peak	2386.458	-51.4	-26	Pass	601
2387	2400	0.03	Peak	2400	-45.93	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2493.792	-49.5	-31.2	Pass	601
2496.5	2509.5	1	Peak	2506.553	-52.25	-26	Pass	601
2509.5	6000	1	Peak	4803.829	-47.32	-26	Pass	3491
6000	12500	1	Peak	12012	-48.37	-26	Pass	6501

A.4.2 GFSK NV Middle Channel

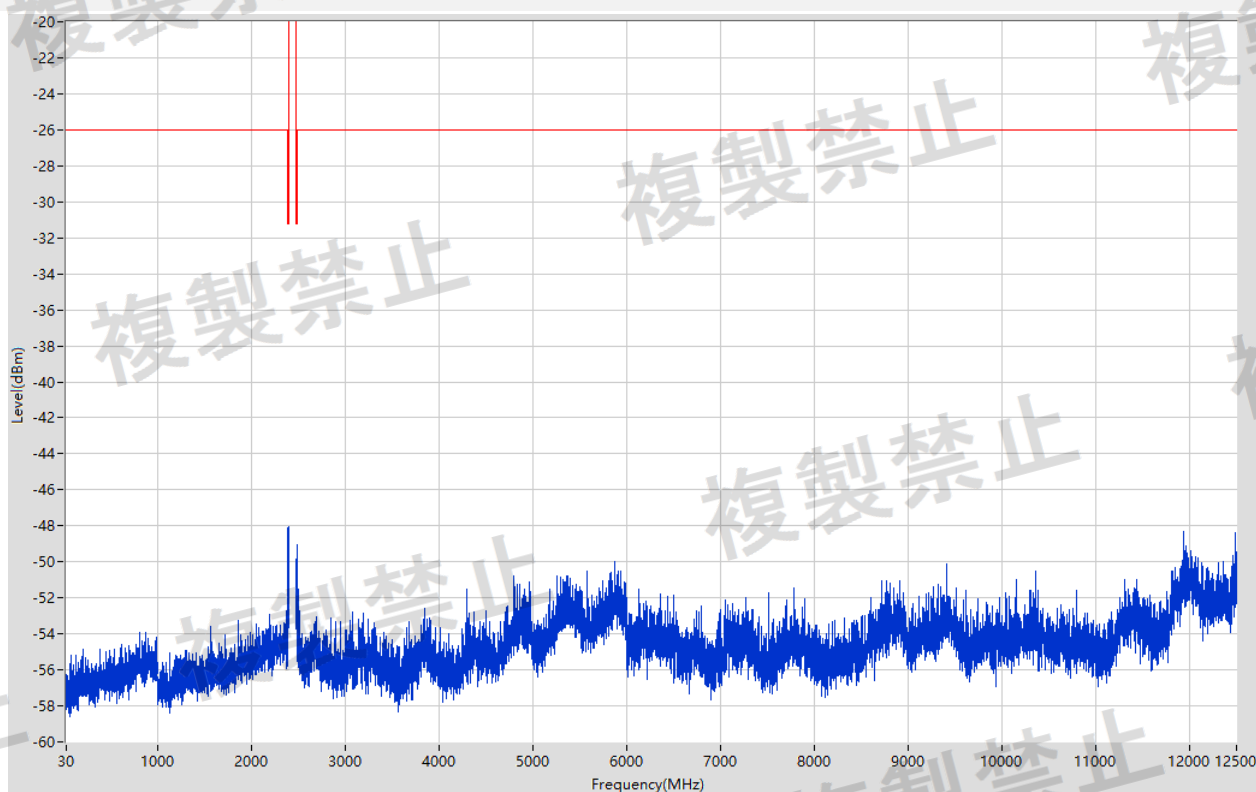


Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	895	-52.84	-26	Pass	971
1000	2374	1	Peak	2342	-52.93	-26	Pass	1375
2374	2387	1	Peak	2383.858	-52.87	-26	Pass	601
2387	2400	0.03	Peak	2393.608	-48.92	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2494.225	-49.48	-31.2	Pass	601
2496.5	2509.5	1	Peak	2503.91	-52.39	-26	Pass	601
2509.5	6000	1	Peak	4881.84	-49.12	-26	Pass	3491
6000	12500	1	Peak	11957	-48.48	-26	Pass	6501

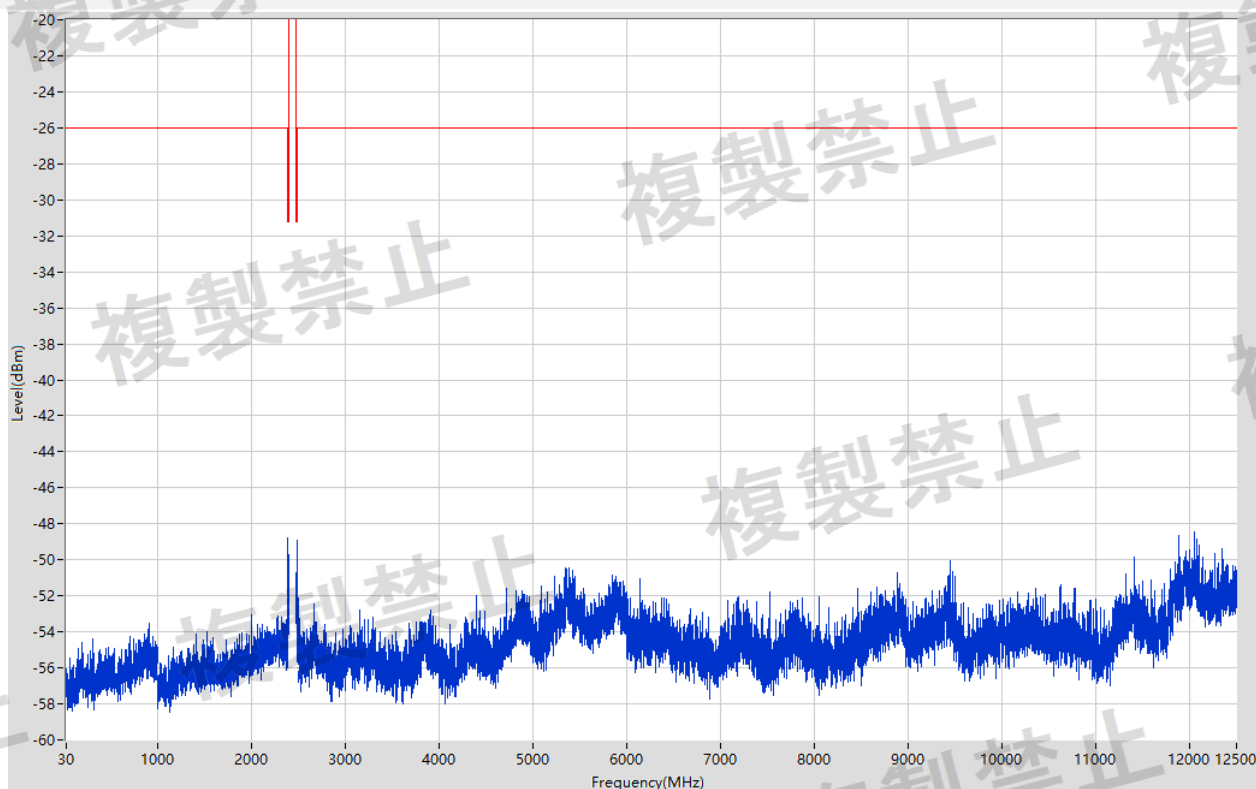
A.4.3 GFSK NV High Channel



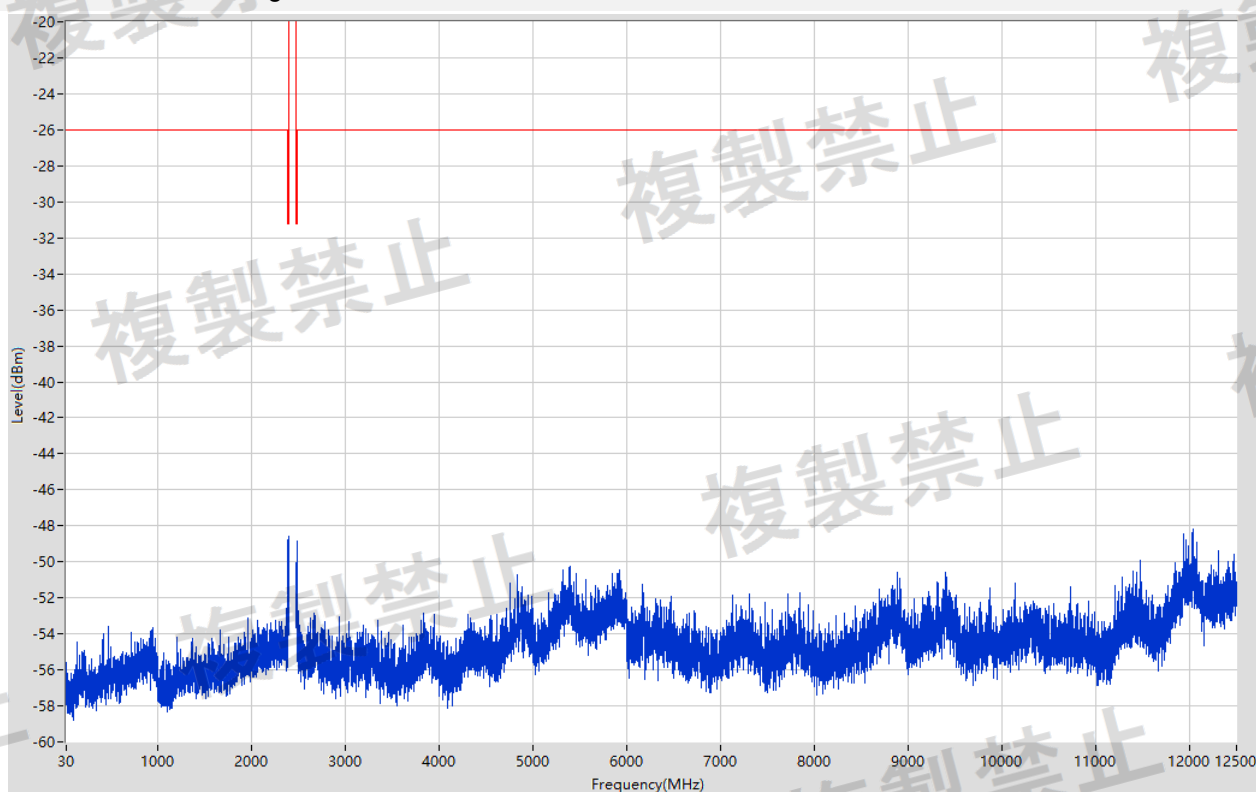
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	742	-52.98	-26	Pass	971
1000	2374	1	Peak	2330	-52.34	-26	Pass	1375
2374	2387	1	Peak	2380.868	-51.99	-26	Pass	601
2387	2400	0.03	Peak	2393.717	-48.94	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2495.828	-48.59	-31.2	Pass	601
2496.5	2509.5	1	Peak	2499.902	-52.27	-26	Pass	601
2509.5	6000	1	Peak	4959.851	-48.66	-26	Pass	3491
6000	12500	1	Peak	11962	-48.34	-26	Pass	6501

A.4.4 $\pi/4$ -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	816	-53.9	-26	Pass	971
1000	2374	1	Peak	2190	-52.94	-26	Pass	1375
2374	2387	1	Peak	2385.808	-50.82	-26	Pass	601
2387	2400	0.03	Peak	2399.523	-48.02	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2494.572	-49.07	-31.2	Pass	601
2496.5	2509.5	1	Peak	2509.435	-51.53	-26	Pass	601
2509.5	6000	1	Peak	5870.982	-50	-26	Pass	3491
6000	12500	1	Peak	11939	-48.31	-26	Pass	6501

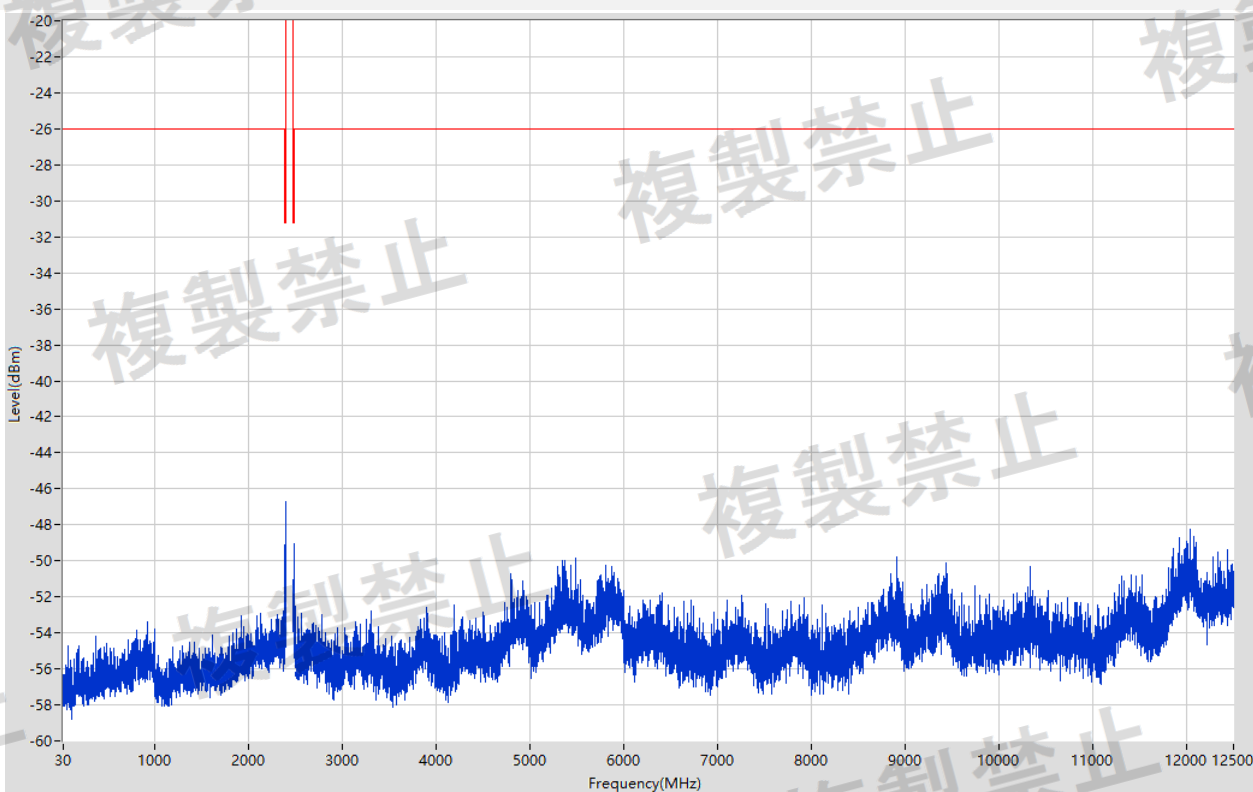
A.4.5 $\pi/4$ -DQPSK NV Middle Channel

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	909	-53.54	-26	Pass	971
1000	2374	1	Peak	2005	-53.08	-26	Pass	1375
2374	2387	1	Peak	2382.905	-52.29	-26	Pass	601
2387	2400	0.03	Peak	2390.488	-48.79	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2486.252	-48.88	-31.2	Pass	601
2496.5	2509.5	1	Peak	2505.405	-52.09	-26	Pass	601
2509.5	6000	1	Peak	5390.913	-50.45	-26	Pass	3491
6000	12500	1	Peak	12051	-48.45	-26	Pass	6501

A.4.6 $\pi/4$ -DQPSK NV High Channel

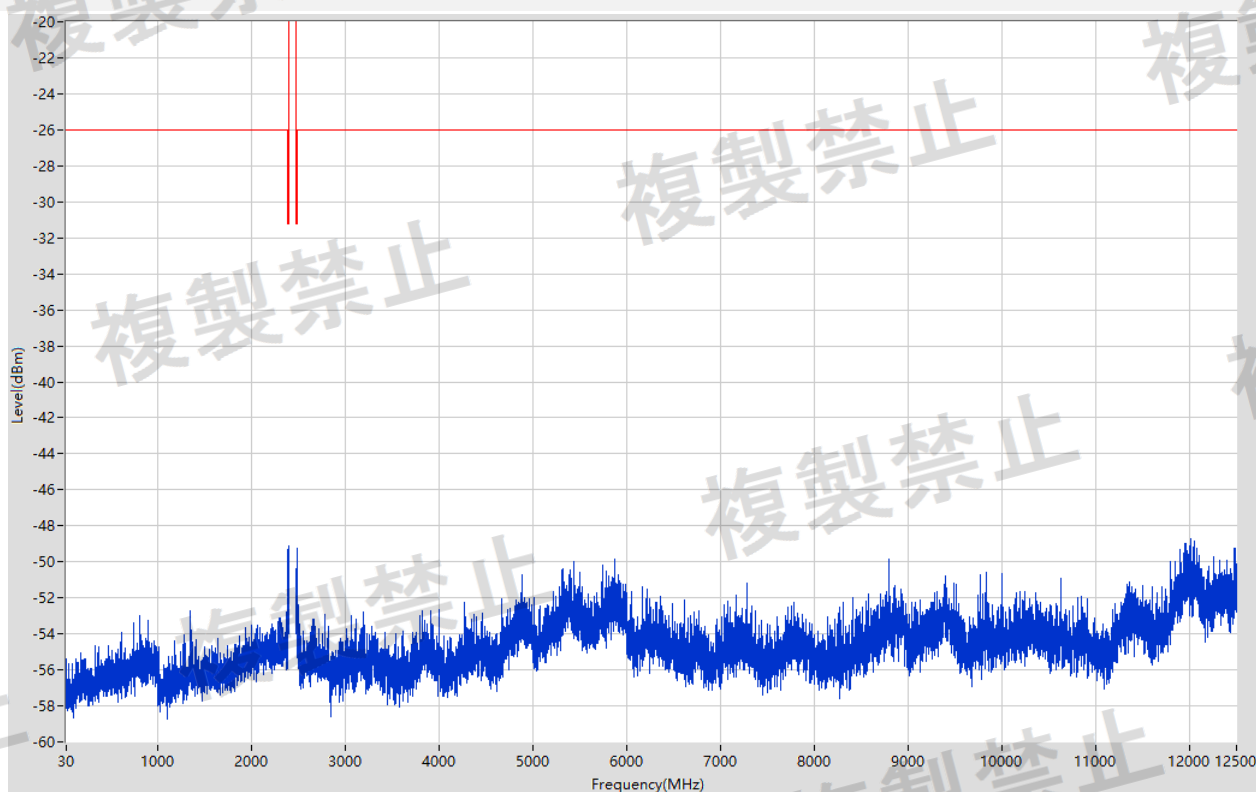
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	483	-53.58	-26	Pass	971
1000	2374	1	Peak	1968	-53.09	-26	Pass	1375
2374	2387	1	Peak	2381.28	-52.62	-26	Pass	601
2387	2400	0.03	Peak	2400	-48.56	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2490.13	-48.86	-31.2	Pass	601
2496.5	2509.5	1	Peak	2509.283	-52.74	-26	Pass	601
2509.5	6000	1	Peak	5395.913	-50.23	-26	Pass	3491
6000	12500	1	Peak	12035	-48.19	-26	Pass	6501

A.4.7 8-DPSK NV Low Channel



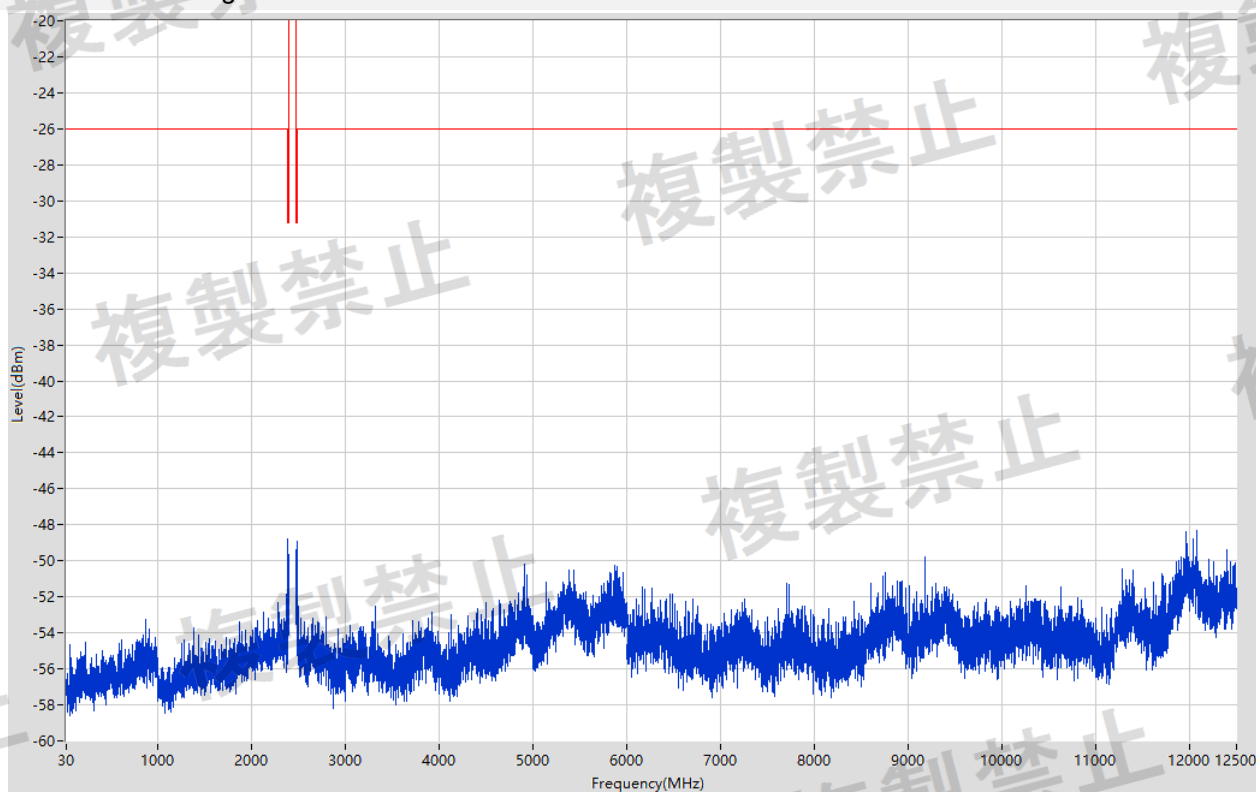
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	929	-53.37	-26	Pass	971
1000	2374	1	Peak	2138	-52.91	-26	Pass	1375
2374	2387	1	Peak	2386.458	-50.85	-26	Pass	601
2387	2400	0.03	Peak	2399.718	-46.74	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2485.06	-49.07	-31.2	Pass	601
2496.5	2509.5	1	Peak	2503.737	-52.49	-26	Pass	601
2509.5	6000	1	Peak	5491.927	-49.83	-26	Pass	3491
6000	12500	1	Peak	12044	-48.24	-26	Pass	6501

A.4.8 8-DPSK NV Middle Channel



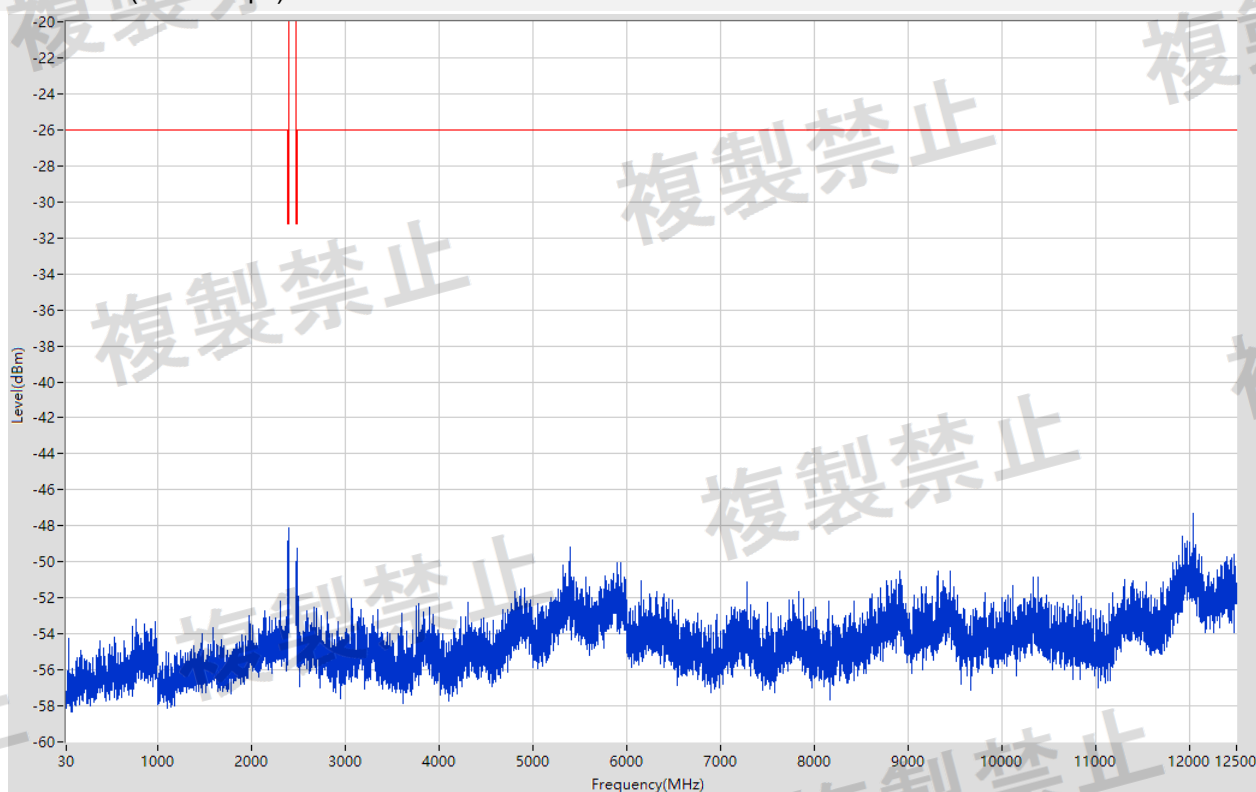
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	809	-52.99	-26	Pass	971
1000	2374	1	Peak	1353	-52.72	-26	Pass	1375
2374	2387	1	Peak	2384.227	-52.61	-26	Pass	601
2387	2400	0.03	Peak	2395.818	-49.1	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2486.793	-49.26	-31.2	Pass	601
2496.5	2509.5	1	Peak	2499.273	-52.38	-26	Pass	601
2509.5	6000	1	Peak	5869.981	-49.87	-26	Pass	3491
6000	12500	1	Peak	12015	-48.71	-26	Pass	6501

A.4.9 8-DPSK NV High Channel



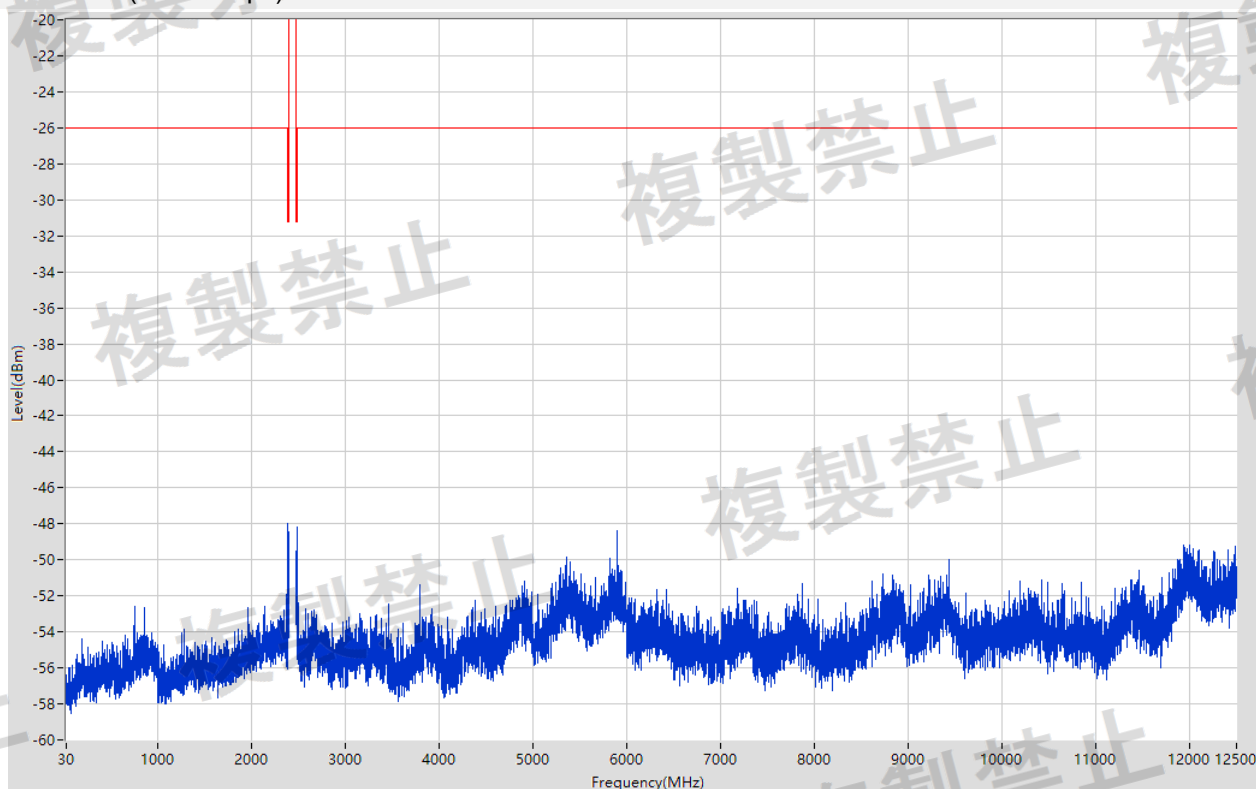
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	874	-53.27	-26	Pass	971
1000	2374	1	Peak	2280	-52.34	-26	Pass	1375
2374	2387	1	Peak	2381.172	-51.88	-26	Pass	601
2387	2400	0.03	Peak	2390.488	-48.75	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2489.372	-48.91	-31.2	Pass	601
2496.5	2509.5	1	Peak	2501.245	-52.52	-26	Pass	601
2509.5	6000	1	Peak	4914.845	-50.17	-26	Pass	3491
6000	12500	1	Peak	12076	-48.33	-26	Pass	6501

A.4.10 GFSK (BLE 1Mbps) NV Low Channel



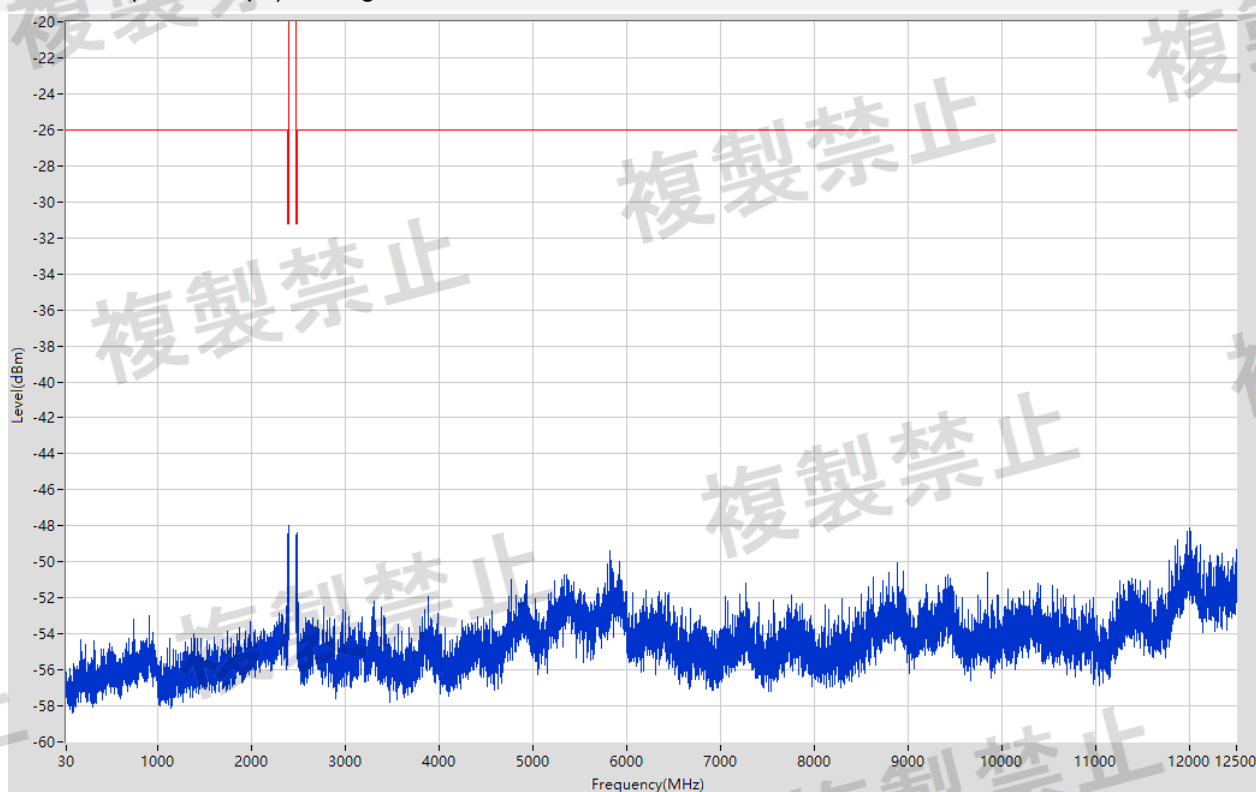
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	779	-53.19	-26	Pass	971
1000	2374	1	Peak	2314	-52.18	-26	Pass	1375
2374	2387	1	Peak	2386.502	-52.68	-26	Pass	601
2387	2400	0.03	Peak	2395.082	-48.1	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2492.448	-49.27	-31.2	Pass	601
2496.5	2509.5	1	Peak	2499.208	-51.94	-26	Pass	601
2509.5	6000	1	Peak	5394.913	-49.19	-26	Pass	3491
6000	12500	1	Peak	12041	-47.31	-26	Pass	6501

A.4.11 GFSK (BLE 1Mbps) NV Middle Channel



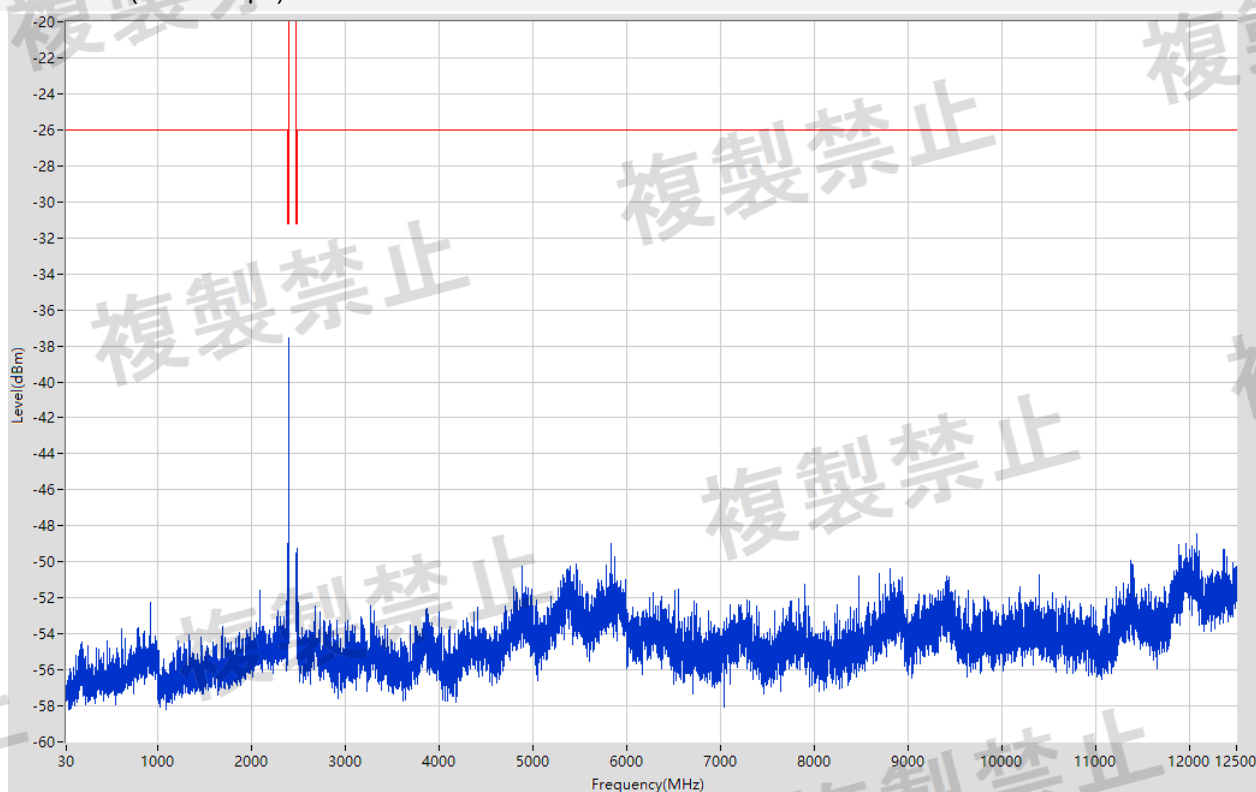
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	762	-52.57	-26	Pass	971
1000	2374	1	Peak	2139	-52.62	-26	Pass	1375
2374	2387	1	Peak	2379.785	-51.91	-26	Pass	601
2387	2400	0.03	Peak	2388.148	-47.99	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2489.523	-48.19	-31.2	Pass	601
2496.5	2509.5	1	Peak	2506.293	-52.38	-26	Pass	601
2509.5	6000	1	Peak	5898.986	-48.38	-26	Pass	3491
6000	12500	1	Peak	11935	-49.15	-26	Pass	6501

A.4.12 GFSK (BLE 1Mbps) NV High Channel



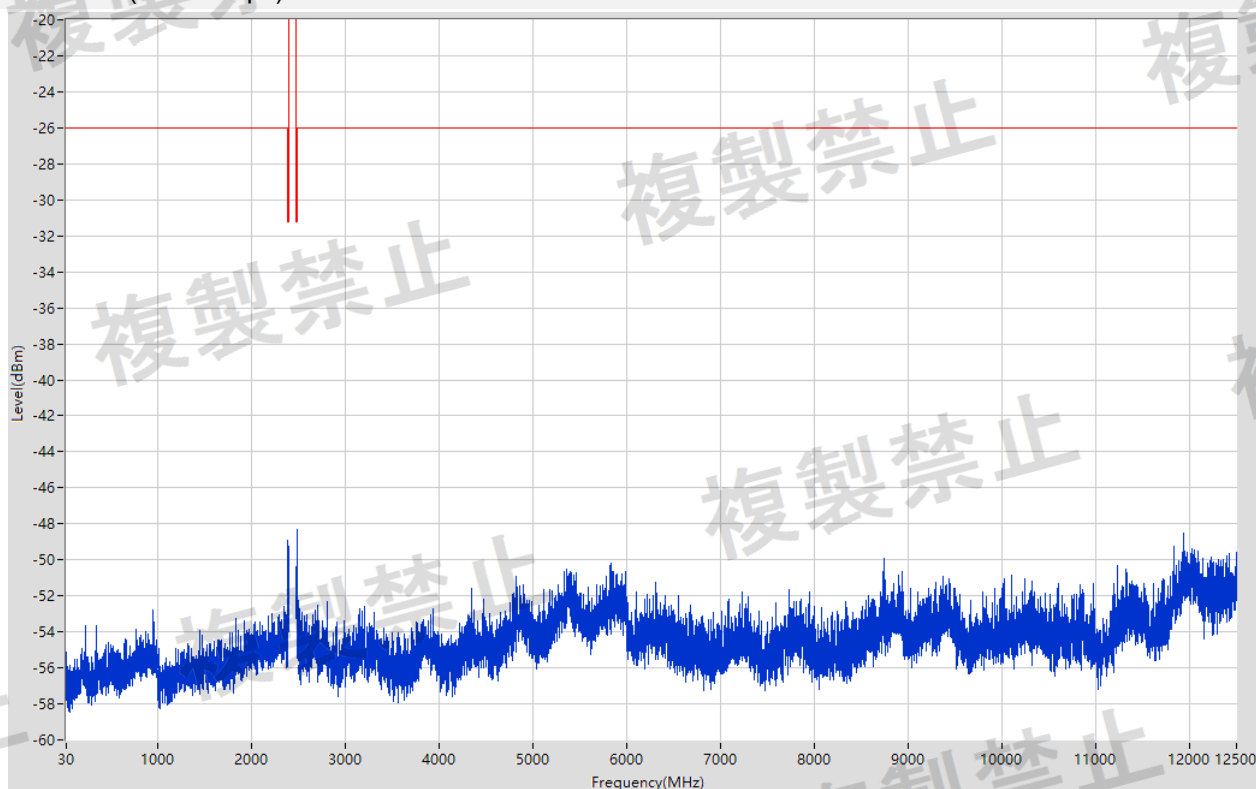
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	912	-53	-26	Pass	971
1000	2374	1	Peak	2294	-52.82	-26	Pass	1375
2374	2387	1	Peak	2375.668	-52.48	-26	Pass	601
2387	2400	0.03	Peak	2398.505	-48.01	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2490.823	-48.38	-31.2	Pass	601
2496.5	2509.5	1	Peak	2500.378	-52.24	-26	Pass	601
2509.5	6000	1	Peak	5826.975	-49.4	-26	Pass	3491
6000	12500	1	Peak	11995	-48.09	-26	Pass	6501

A.4.13 GFSK (BLE 2Mbps) NV Low Channel



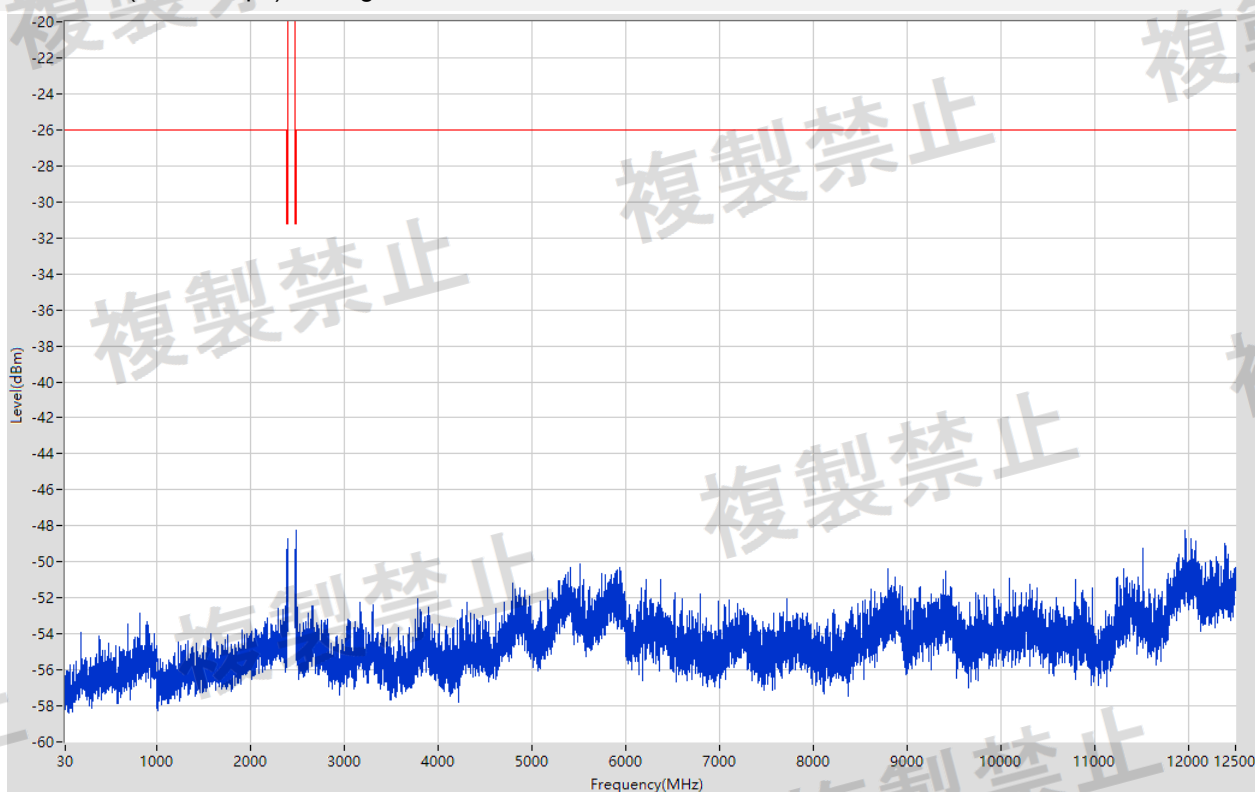
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	921	-52.28	-26	Pass	971
1000	2374	1	Peak	2087	-51.61	-26	Pass	1375
2374	2387	1	Peak	2386.935	-51.24	-26	Pass	601
2387	2400	0.03	Peak	2399.978	-37.59	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2491.69	-49.27	-31.2	Pass	601
2496.5	2509.5	1	Peak	2503.043	-52.26	-26	Pass	601
2509.5	6000	1	Peak	5833.976	-48.99	-26	Pass	3491
6000	12500	1	Peak	12081	-48.44	-26	Pass	6501

A.4.14 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	951	-52.81	-26	Pass	971
1000	2374	1	Peak	2352	-52.61	-26	Pass	1375
2374	2387	1	Peak	2386.047	-52.85	-26	Pass	601
2387	2400	0.03	Peak	2387.607	-48.92	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2494.268	-48.33	-31.2	Pass	601
2496.5	2509.5	1	Peak	2508.763	-52.24	-26	Pass	601
2509.5	6000	1	Peak	5835.977	-50.21	-26	Pass	3491
6000	12500	1	Peak	11930	-48.54	-26	Pass	6501

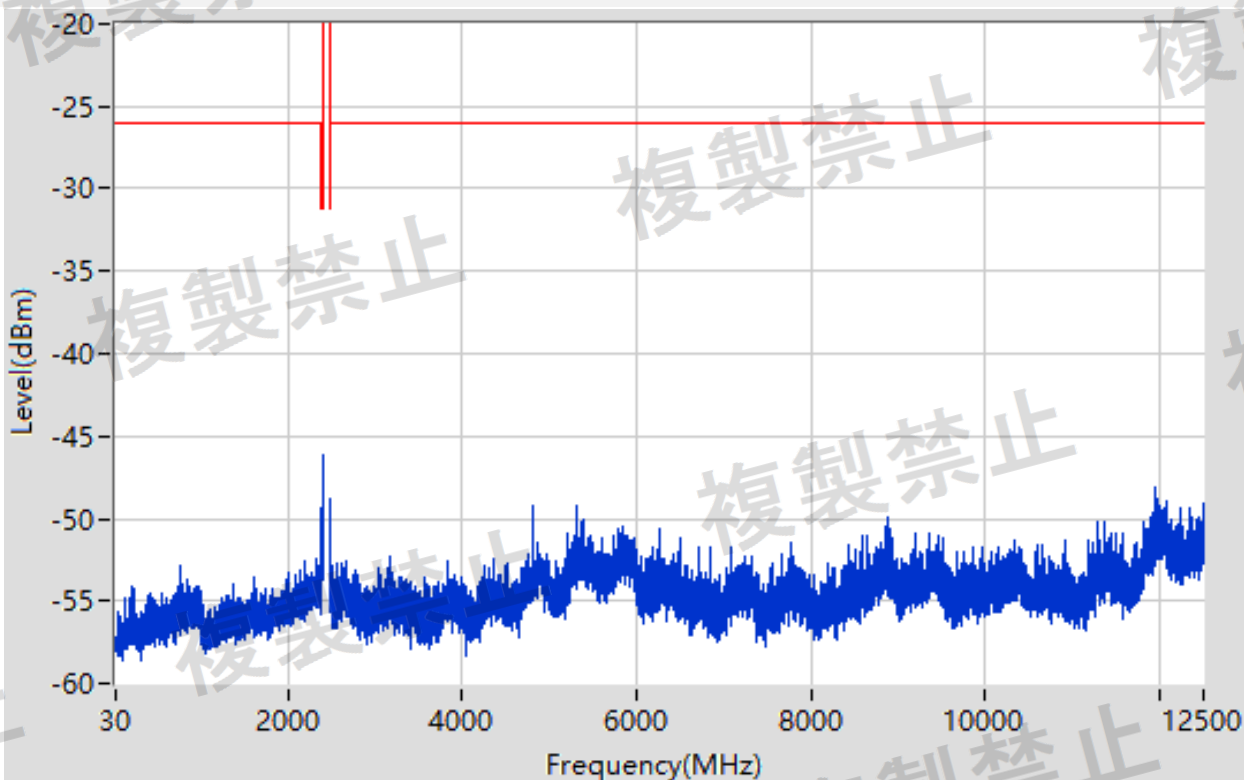
A.4.15 GFSK (BLE 2Mbps) NV High Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	821	-52.87	-26	Pass	971
1000	2374	1	Peak	2304	-52.6	-26	Pass	1375
2374	2387	1	Peak	2386.155	-52.02	-26	Pass	601
2387	2400	0.03	Peak	2398.592	-48.75	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2494.117	-48.28	-31.2	Pass	601
2496.5	2509.5	1	Peak	2507.962	-52.53	-26	Pass	601
2509.5	6000	1	Peak	5513.93	-50.12	-26	Pass	3491
6000	12500	1	Peak	11960	-48.27	-26	Pass	6501

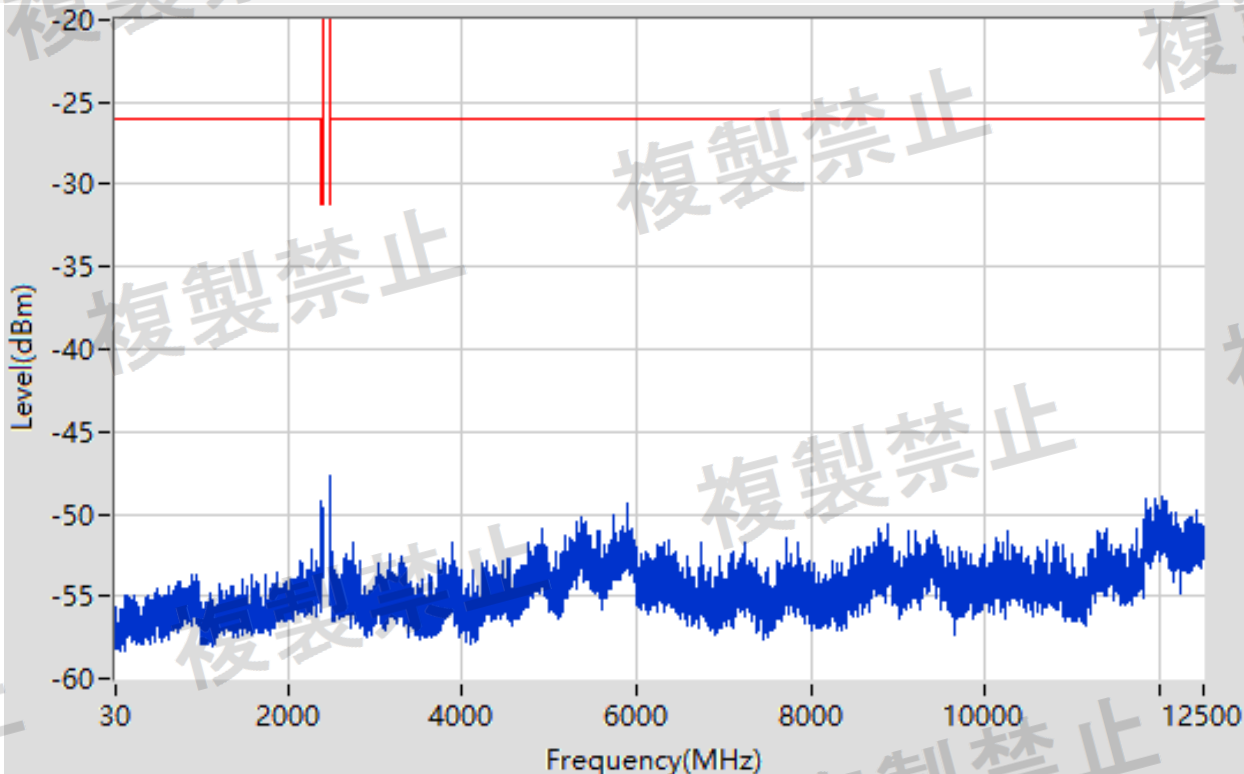
Earbuds Right:

A.4.16 GFSK NV Low Channel



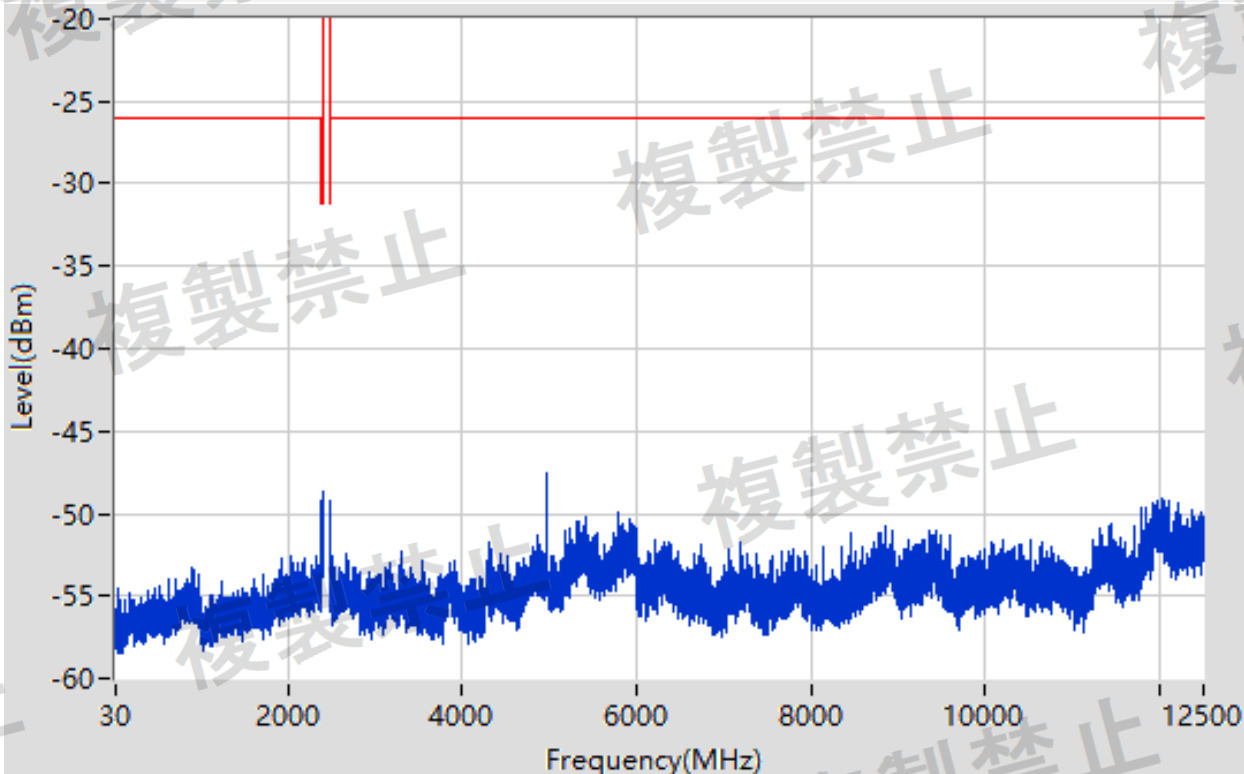
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	772	-52.85	-26	Pass	971
1000	2374	1	Peak	2323	-52.44	-26	Pass	1375
2374	2387	1	Peak	2386.957	-51.36	-26	Pass	601
2387	2400	0.03	Peak	2400	-46.18	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2494.658	-48.77	-31.2	Pass	601
2496.5	2509.5	1	Peak	2503.022	-52.83	-26	Pass	601
2509.5	6000	1	Peak	4803.829	-49.21	-26	Pass	3491
6000	12500	1	Peak	11944	-48.11	-26	Pass	6501

A.4.17 GFSK NV Middle Channel

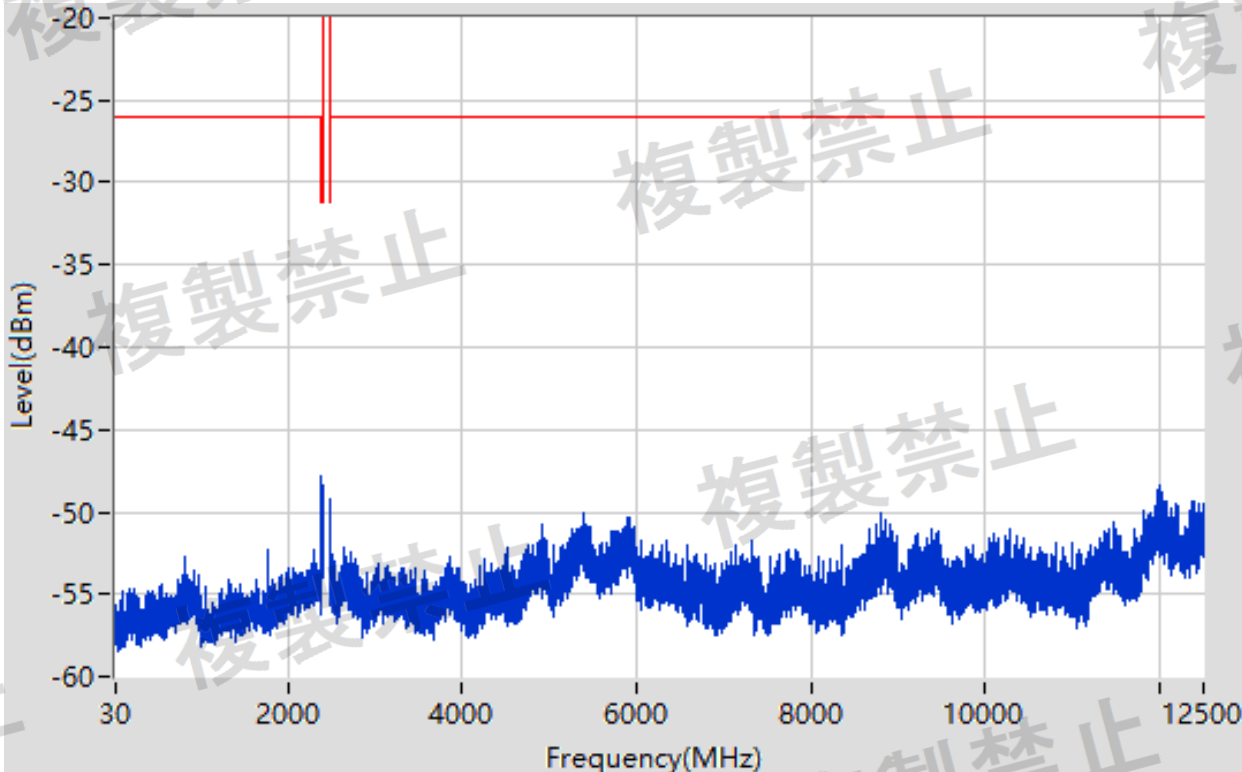


Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	893	-53.66	-26	Pass	971
1000	2374	1	Peak	2271	-52.2	-26	Pass	1375
2374	2387	1	Peak	2376.687	-52.64	-26	Pass	601
2387	2400	0.03	Peak	2387.455	-49.3	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2484.887	-47.75	-31.2	Pass	601
2496.5	2509.5	1	Peak	2502.783	-52.26	-26	Pass	601
2509.5	6000	1	Peak	5899.986	-49.37	-26	Pass	3491
6000	12500	1	Peak	12030	-48.96	-26	Pass	6501

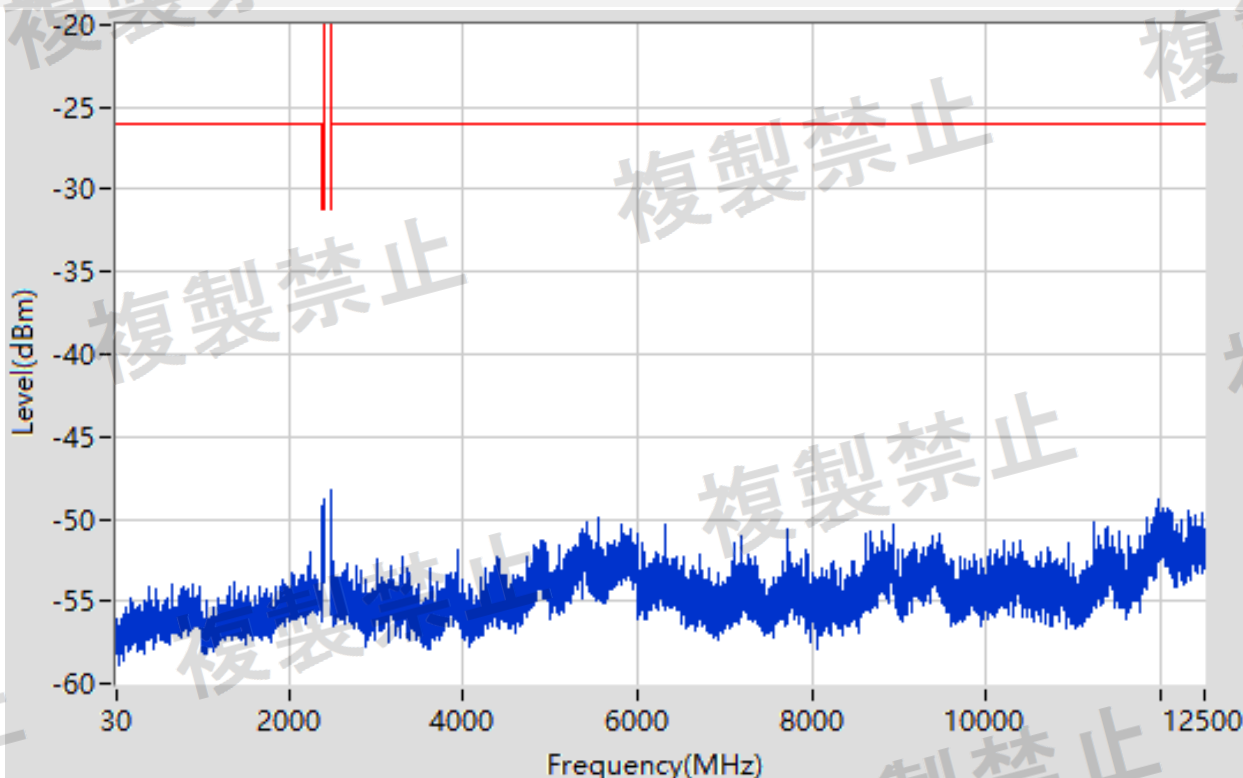
A.4.18 GFSK NV High Channel



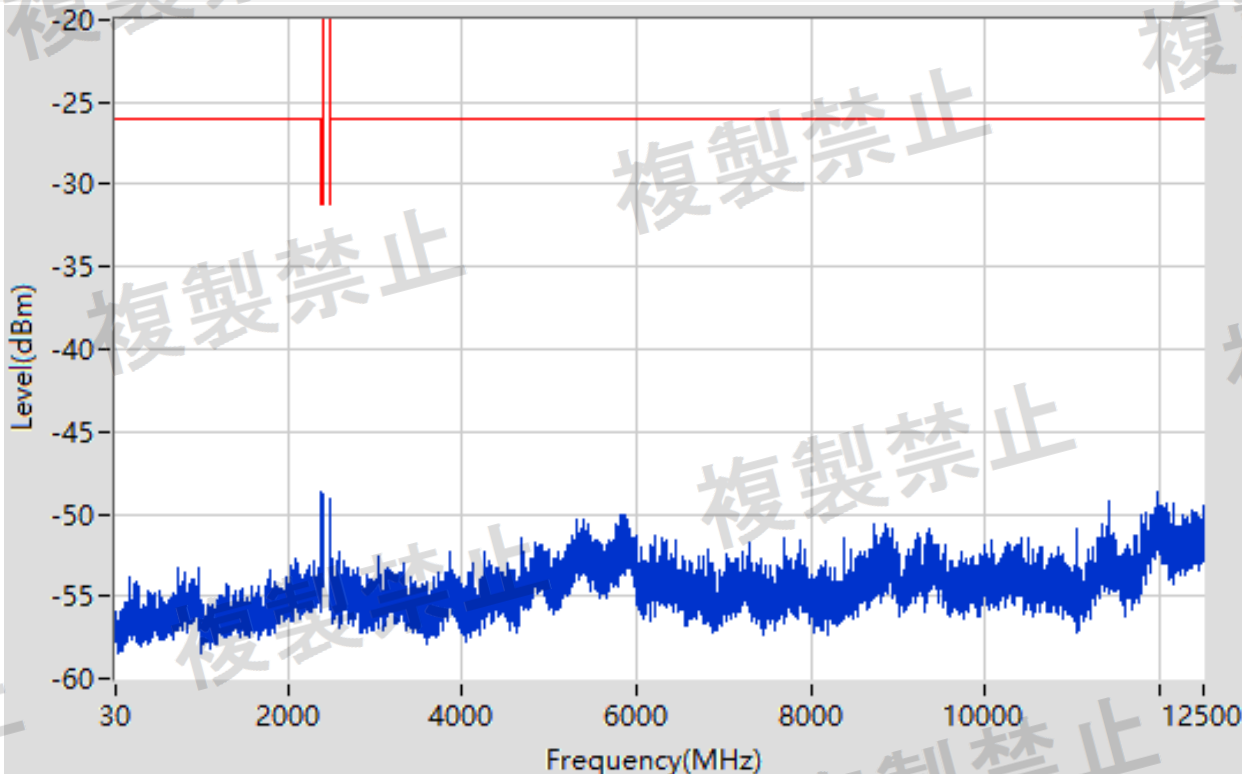
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	889	-53.3	-26	Pass	971
1000	2374	1	Peak	2371	-52.17	-26	Pass	1375
2374	2387	1	Peak	2375.495	-52.39	-26	Pass	601
2387	2400	0.03	Peak	2398.765	-48.63	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2495.027	-49.21	-31.2	Pass	601
2496.5	2509.5	1	Peak	2507.918	-52.58	-26	Pass	601
2509.5	6000	1	Peak	4959.851	-47.53	-26	Pass	3491
6000	12500	1	Peak	12024	-49.09	-26	Pass	6501

A.4.19 $\pi/4$ -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	825	-52.66	-26	Pass	971
1000	2374	1	Peak	1780	-52.36	-26	Pass	1375
2374	2387	1	Peak	2385.505	-51.35	-26	Pass	601
2387	2400	0.03	Peak	2391.377	-47.79	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2492.903	-49.23	-31.2	Pass	601
2496.5	2509.5	1	Peak	2504.863	-52.59	-26	Pass	601
2509.5	6000	1	Peak	5393.913	-50.08	-26	Pass	3491
6000	12500	1	Peak	12009	-48.46	-26	Pass	6501

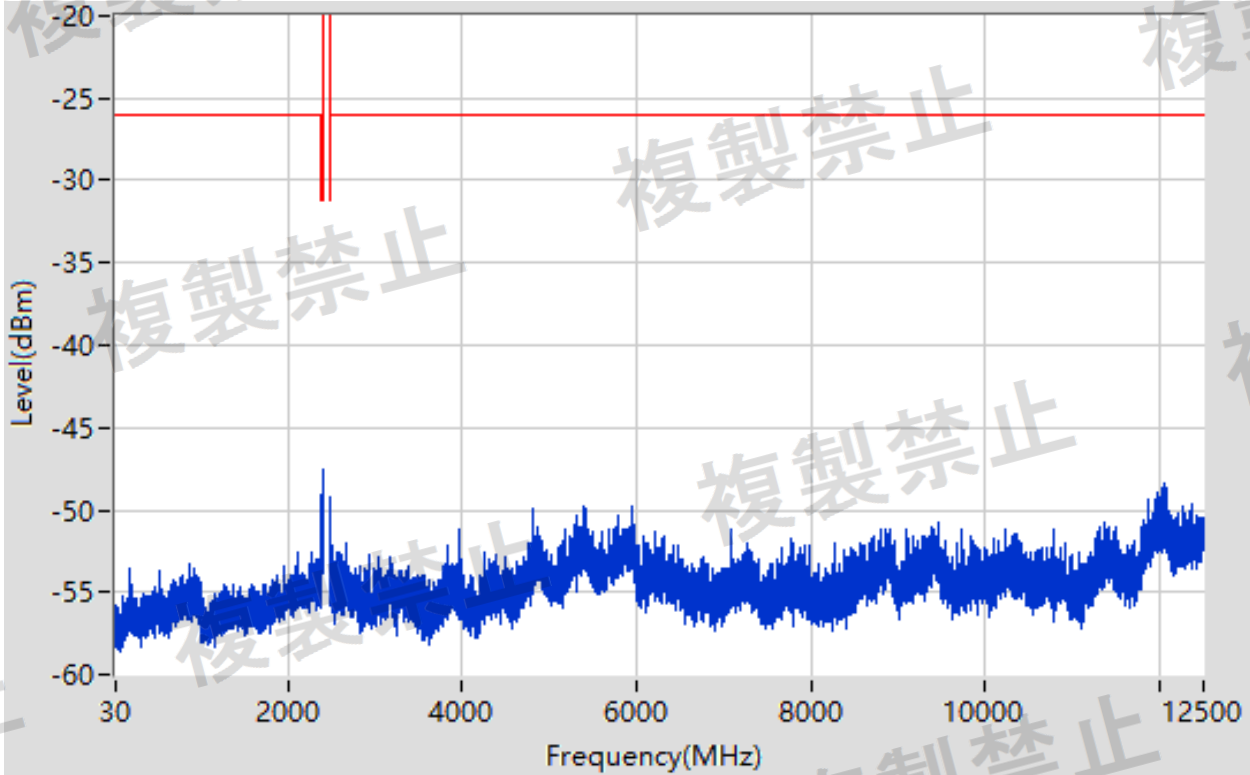
A.4.20 $\pi/4$ -DQPSK NV Middle Channel

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	912	-53.97	-26	Pass	971
1000	2374	1	Peak	2252	-52.01	-26	Pass	1375
2374	2387	1	Peak	2380.565	-52.72	-26	Pass	601
2387	2400	0.03	Peak	2395.883	-48.81	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2484.042	-48.19	-31.2	Pass	601
2496.5	2509.5	1	Peak	2498.017	-52.52	-26	Pass	601
2509.5	6000	1	Peak	5539.934	-49.97	-26	Pass	3491
6000	12500	1	Peak	11974	-48.8	-26	Pass	6501

A.4.21 $\pi/4$ -DQPSK NV High Channel

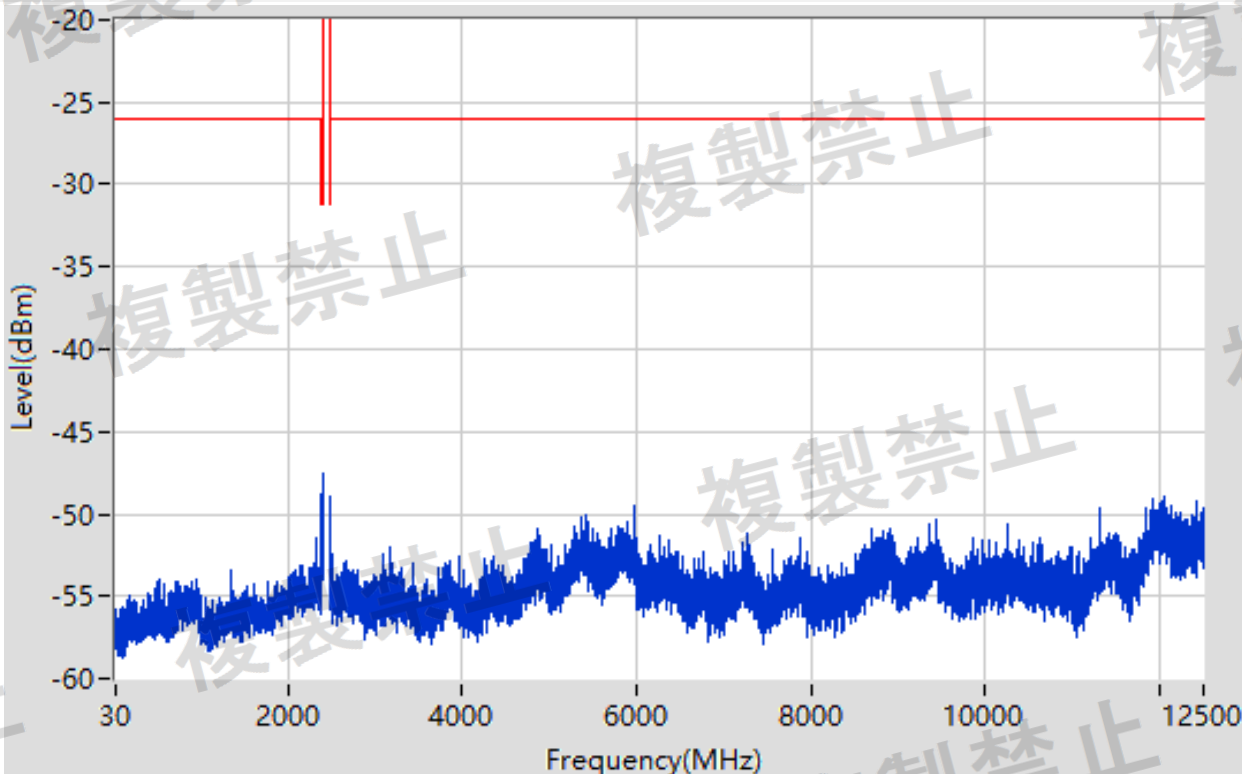
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	736	-53.24	-26	Pass	971
1000	2374	1	Peak	2084	-52.78	-26	Pass	1375
2374	2387	1	Peak	2381.518	-52.02	-26	Pass	601
2387	2400	0.03	Peak	2389.08	-48.62	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2486.728	-49.11	-31.2	Pass	601
2496.5	2509.5	1	Peak	2496.825	-52.29	-26	Pass	601
2509.5	6000	1	Peak	5828.976	-50.09	-26	Pass	3491
6000	12500	1	Peak	11968	-48.65	-26	Pass	6501

A.4.22 8-DPSK NV Low Channel



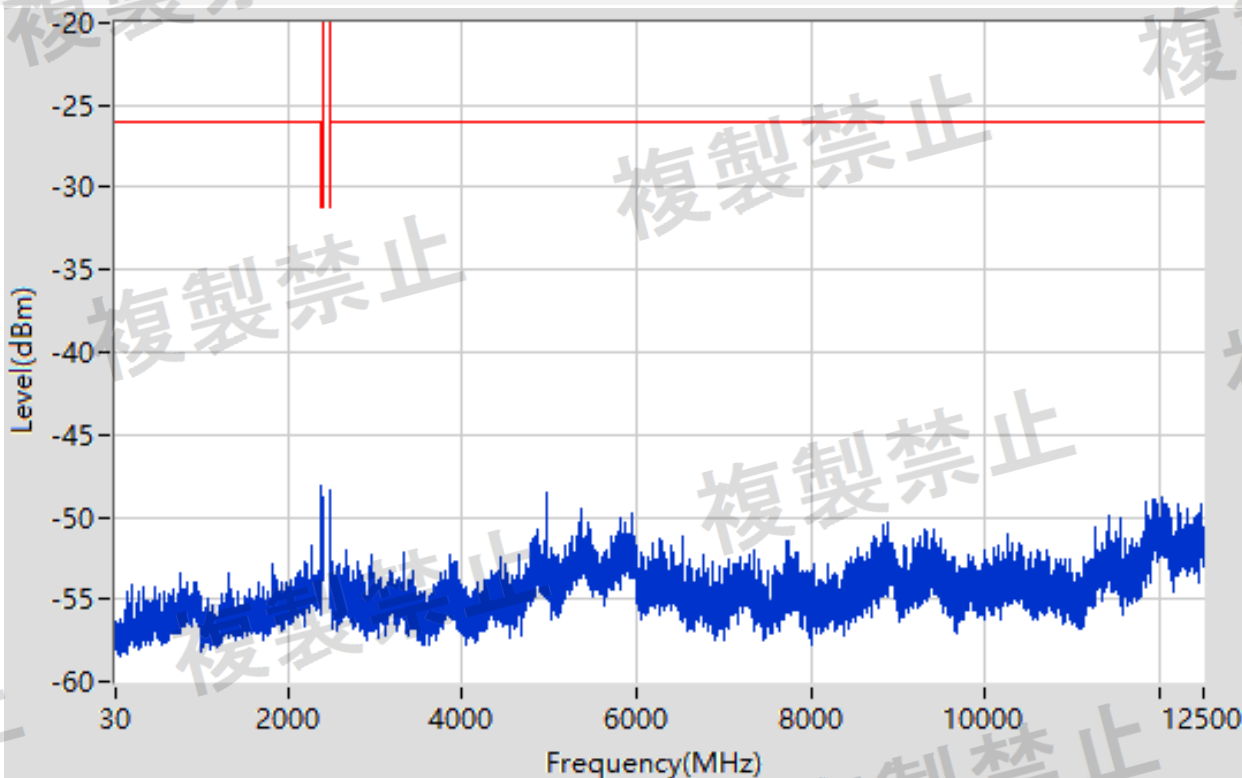
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	888	-53.32	-26	Pass	971
1000	2374	1	Peak	2278	-52.54	-26	Pass	1375
2374	2387	1	Peak	2386.762	-51.35	-26	Pass	601
2387	2400	0.03	Peak	2399.697	-47.51	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2491.842	-49.18	-31.2	Pass	601
2496.5	2509.5	1	Peak	2508.525	-52.14	-26	Pass	601
2509.5	6000	1	Peak	5402.914	-49.82	-26	Pass	3491
6000	12500	1	Peak	12049	-48.38	-26	Pass	6501

A.4.23 8-DPSK NV Middle Channel



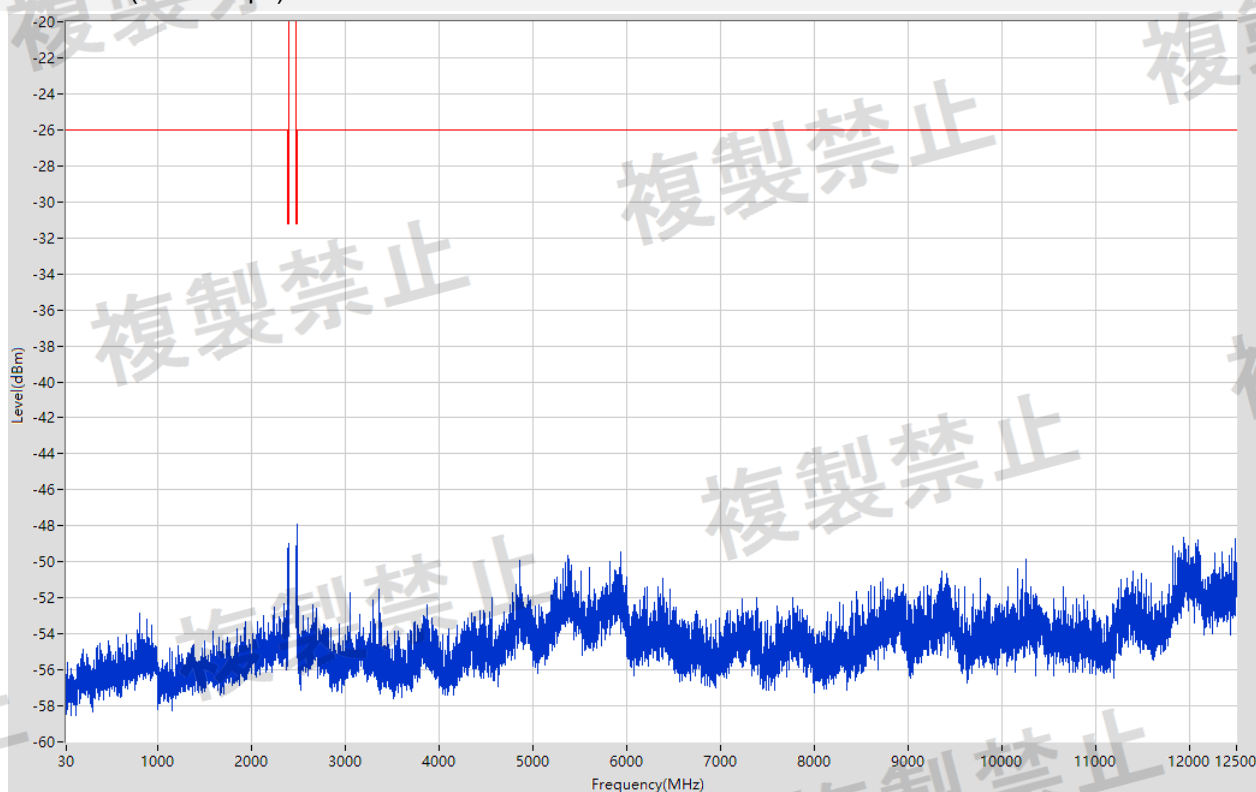
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	523	-53.93	-26	Pass	971
1000	2374	1	Peak	2329	-51.47	-26	Pass	1375
2374	2387	1	Peak	2375.192	-51.63	-26	Pass	601
2387	2400	0.03	Peak	2399.978	-47.51	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2486.338	-48.97	-31.2	Pass	601
2496.5	2509.5	1	Peak	2498.147	-52.21	-26	Pass	601
2509.5	6000	1	Peak	5965.995	-49.48	-26	Pass	3491
6000	12500	1	Peak	12050	-48.96	-26	Pass	6501

A.4.24 8-DPSK NV High Channel



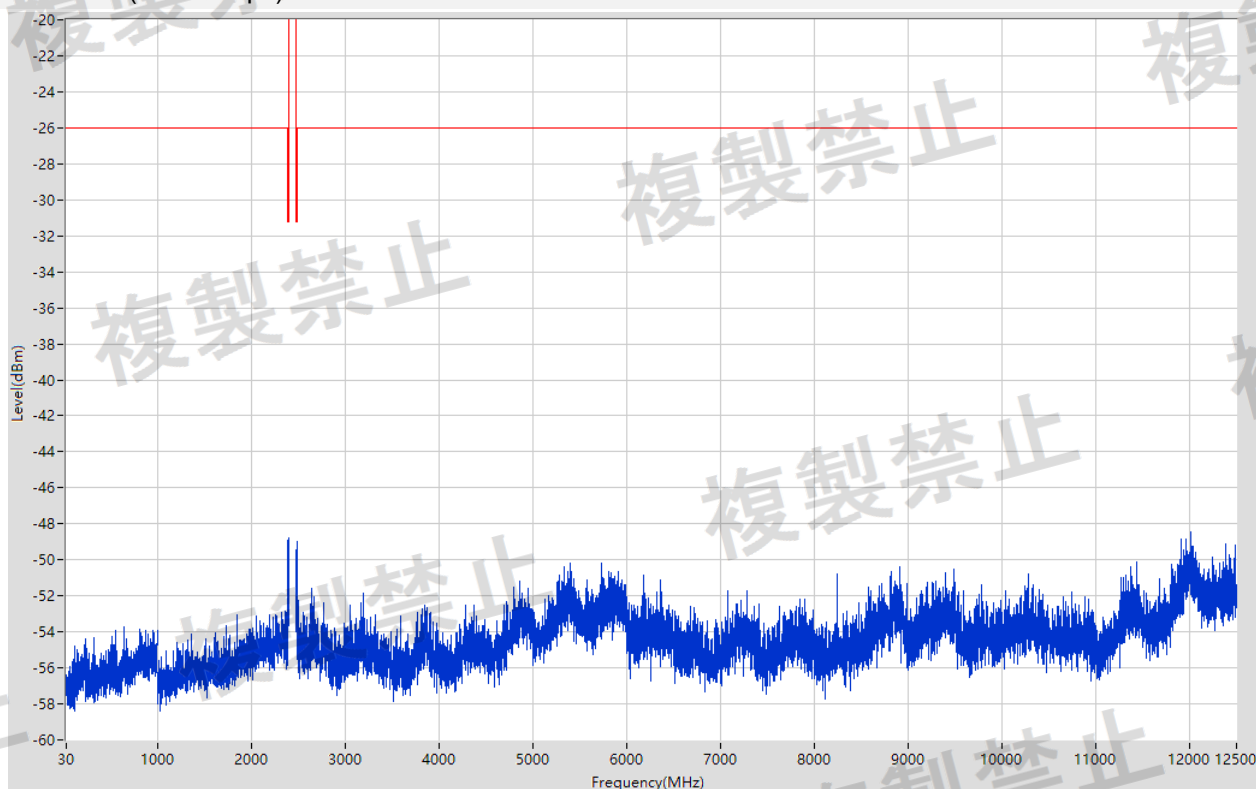
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	778	-53.37	-26	Pass	971
1000	2374	1	Peak	2279	-51.7	-26	Pass	1375
2374	2387	1	Peak	2377.228	-52.24	-26	Pass	601
2387	2400	0.03	Peak	2394.367	-48.08	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2483.825	-48.33	-31.2	Pass	601
2496.5	2509.5	1	Peak	2508.135	-52.67	-26	Pass	601
2509.5	6000	1	Peak	4959.851	-48.54	-26	Pass	3491
6000	12500	1	Peak	12024	-48.8	-26	Pass	6501

A.4.25 GFSK (BLE 1Mbps) NV Low Channel



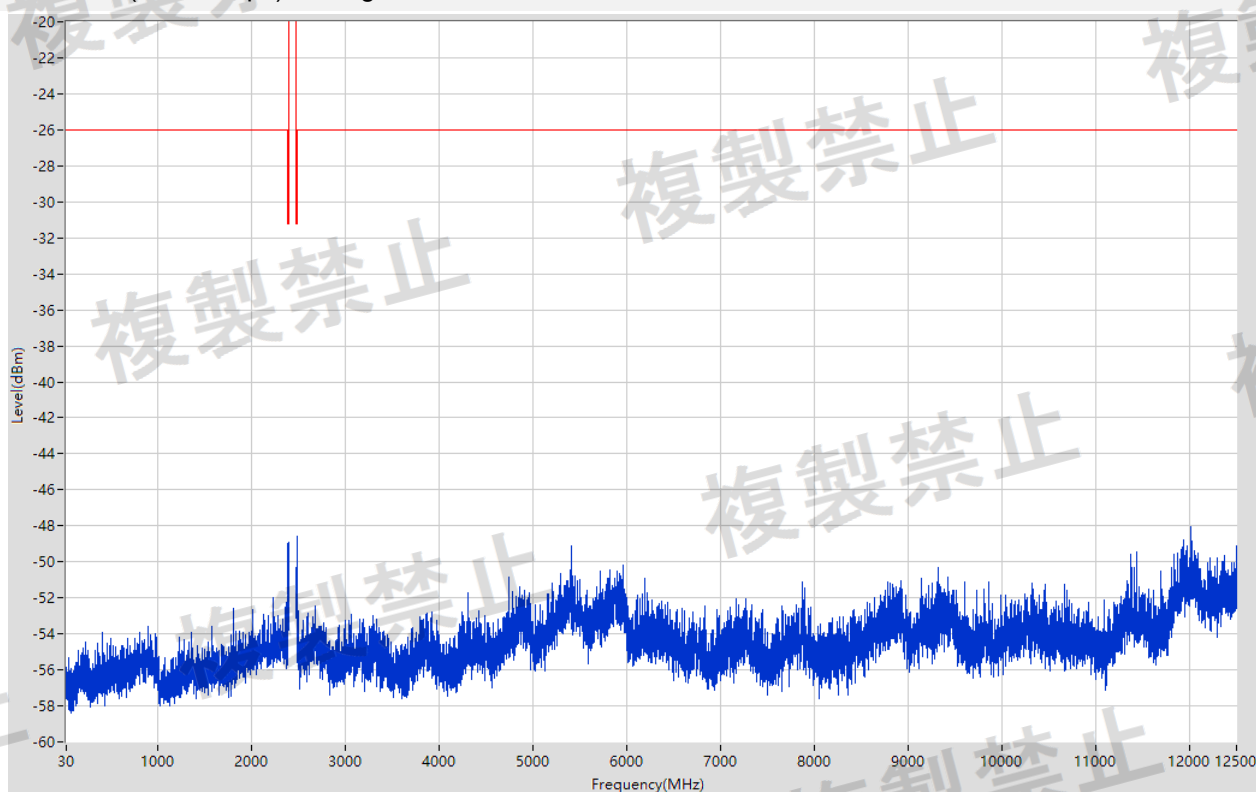
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	812	-52.83	-26	Pass	971
1000	2374	1	Peak	2350	-52.31	-26	Pass	1375
2374	2387	1	Peak	2385.96	-51.82	-26	Pass	601
2387	2400	0.03	Peak	2400	-49	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2484.822	-47.92	-31.2	Pass	601
2496.5	2509.5	1	Peak	2505.21	-52.46	-26	Pass	601
2509.5	6000	1	Peak	5942.992	-49.44	-26	Pass	3491
6000	12500	1	Peak	11940	-48.62	-26	Pass	6501

A.4.26 GFSK (BLE 1Mbps) NV Middle Channel



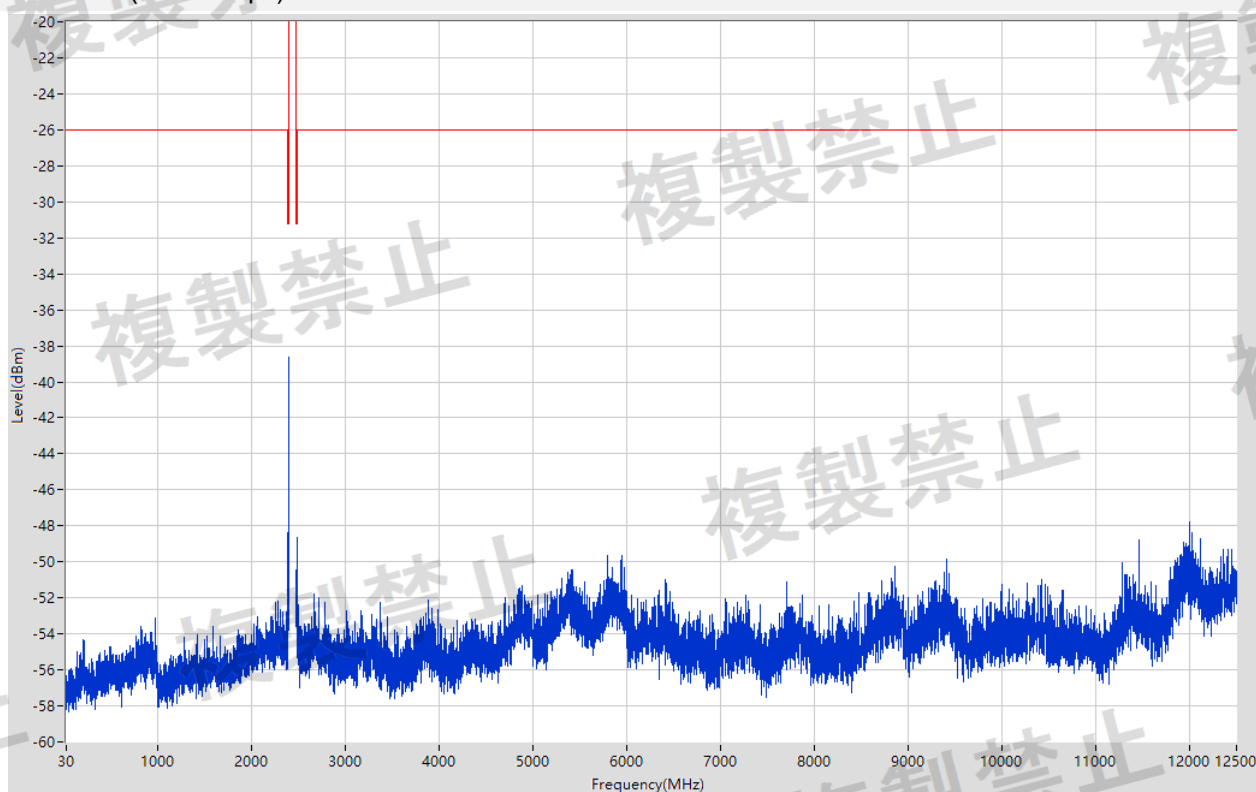
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	648	-53.71	-26	Pass	971
1000	2374	1	Peak	2364	-52.84	-26	Pass	1375
2374	2387	1	Peak	2385.028	-52.27	-26	Pass	601
2387	2400	0.03	Peak	2396.382	-48.8	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2496.218	-48.97	-31.2	Pass	601
2496.5	2509.5	1	Peak	2507.94	-52.24	-26	Pass	601
2509.5	6000	1	Peak	5394.913	-50.19	-26	Pass	3491
6000	12500	1	Peak	12019	-48.44	-26	Pass	6501

A.4.27 GFSK (BLE 1Mbps) NV High Channel



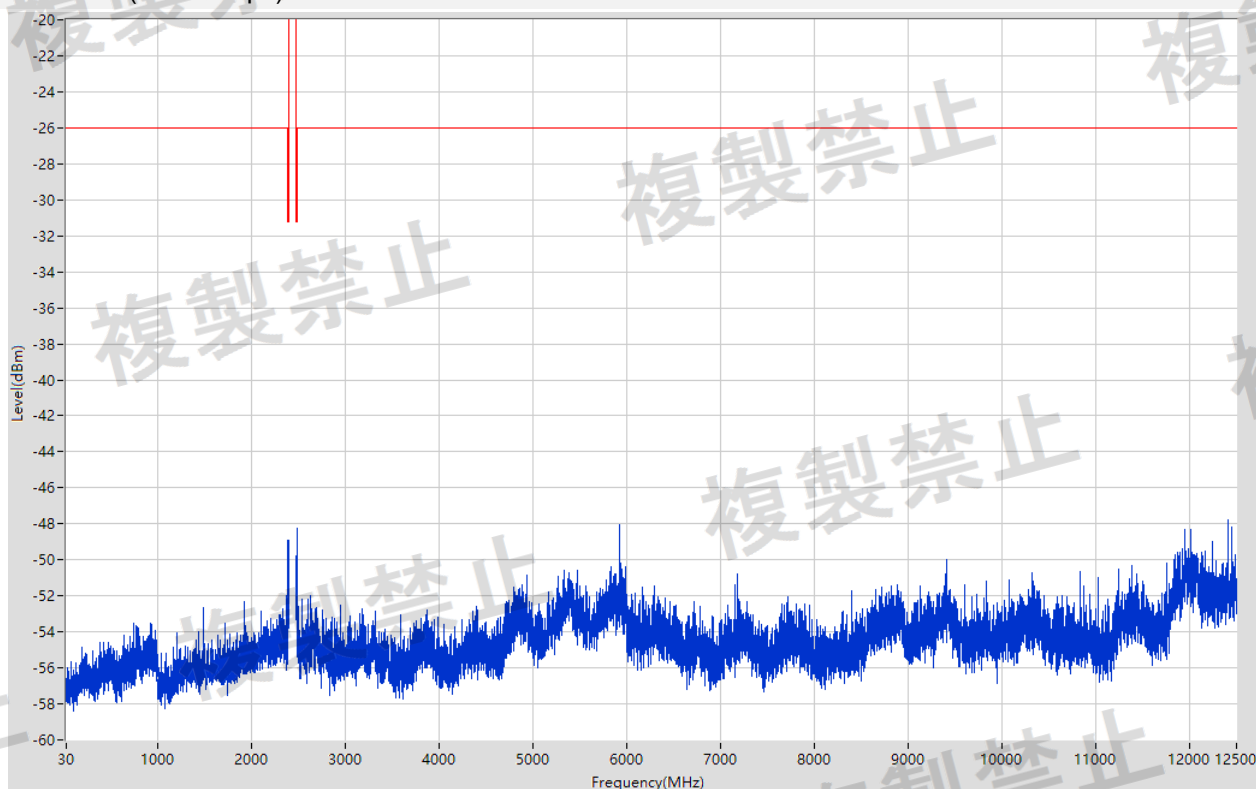
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	899	-53.56	-26	Pass	971
1000	2374	1	Peak	2233	-52.02	-26	Pass	1375
2374	2387	1	Peak	2386.458	-51.8	-26	Pass	601
2387	2400	0.03	Peak	2396.078	-48.93	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2490.477	-48.58	-31.2	Pass	601
2496.5	2509.5	1	Peak	2506.272	-52.71	-26	Pass	601
2509.5	6000	1	Peak	5414.916	-49.11	-26	Pass	3491
6000	12500	1	Peak	12019	-48.02	-26	Pass	6501

A.4.28 GFSK (BLE 2Mbps) NV Low Channel



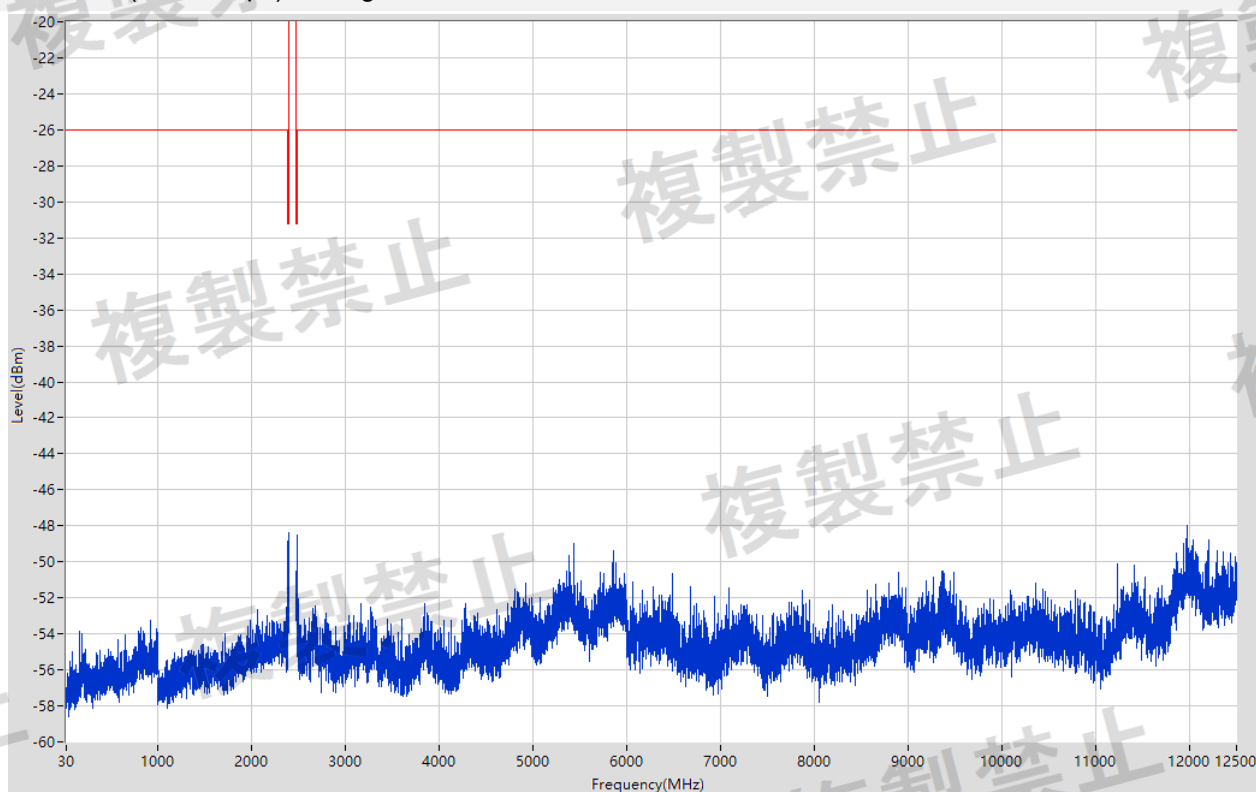
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	1	Peak	979	-53.15	-26	Pass	971
1000	2374	1	Peak	2281	-52.16	-26	Pass	1375
2374	2387	1	Peak	2385.288	-51.26	-26	Pass	601
2387	2400	0.03	Peak	2399.935	-38.61	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2492.102	-48.68	-31.2	Pass	601
2496.5	2509.5	1	Peak	2505.253	-52.38	-26	Pass	601
2509.5	6000	1	Peak	5801.972	-49.62	-26	Pass	3491
6000	12500	1	Peak	12001	-47.78	-26	Pass	6501

A.4.29 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	750	-53.53	-26	Pass	971
1000	2374	1	Peak	1933	-52.35	-26	Pass	1375
2374	2387	1	Peak	2380.023	-51.98	-26	Pass	601
2387	2400	0.03	Peak	2400	-48.89	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2494.442	-48.24	-31.2	Pass	601
2496.5	2509.5	1	Peak	2505.427	-52.61	-26	Pass	601
2509.5	6000	1	Peak	5930.99	-48.02	-26	Pass	3491
6000	12500	1	Peak	12407	-47.78	-26	Pass	6501

A.4.30 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	926	-53.25	-26	Pass	971
1000	2374	1	Peak	2074	-52.68	-26	Pass	1375
2374	2387	1	Peak	2384.053	-52.39	-26	Pass	601
2387	2400	0.03	Peak	2396.707	-48.36	-31.2	Pass	601
2483.5	2496.5	0.03	Peak	2486.858	-48.49	-31.2	Pass	601
2496.5	2509.5	1	Peak	2508.07	-52.08	-26	Pass	601
2509.5	6000	1	Peak	5440.92	-48.97	-26	Pass	3491
6000	12500	1	Peak	11974	-47.96	-26	Pass	6501

A.5 Antenna Power Error Measurement

Note: All configurations have been tested, only the worst configuration (Test Voltage NV) shown here.

Earbuds Left:

GFSK Test Result

Duty cycle =0.766

Antenna Power Density PD = power value dBm (contains cable loss dB) +10 log₁₀(1/ Duty cycle) dB + 10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.3342mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	10.76	-6.54	0.2217	-33.67%	Pass
Middle	2441	11.55	-5.75	0.2658	-20.46%	Pass
High	2480	10.70	-6.61	0.2185	-34.63%	Pass

π/4-DQPSK Test Result

Duty cycle =0.767

Antenna Power Density PD = power value dBm (contains cable loss dB) +10 log₁₀(1/ Duty cycle) dB + 10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.1894mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	8.48	-8.83	0.1308	-30.92%	Pass
Middle	2441	9.09	-8.22	0.1507	-20.43%	Pass
High	2480	8.24	-9.07	0.1238	-34.65%	Pass

8-DPSK Test Result

Duty cycle = 0.766

Antenna Power Density PD = power value dBm (contains cable loss dB) + 10 log₁₀(1/ Duty cycle) dB + 10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.1911mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	8.50	-8.80	0.1317	-31.11%	Pass
Middle	2441	9.16	-8.14	0.1534	-19.75%	Pass
High	2480	8.24	-9.07	0.1239	-35.20%	Pass

GFSK (AFH Mode) Test Result

Duty cycle = 0.766

Antenna Power Density PD = power value dBm (contains cable loss dB) + 10 log₁₀(1/ Duty cycle) dB + 10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 1.3372mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	10.60	-0.94	0.8054	-39.77%	Pass
Middle	2441	11.35	-0.20	0.9550	-28.59%	Pass
High	2480	10.48	-1.06	0.7834	-41.41%	Pass

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

Duty cycle = 0.767

Antenna Power Density PD = power value dBm (contains cable loss dB) + 10 log₁₀(1/ Duty cycle) dB +
10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.7537mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	8.28	-3.29	0.4688	-37.80%	Pass
Middle	2441	8.88	-2.69	0.5383	-28.59%	Pass
High	2480	8.02	-3.55	0.4416	-41.41%	Pass

8-DPSK (AFH Mode) Test Result

Duty cycle = 0.766

Antenna Power Density PD = power value dBm (contains cable loss dB) + 10 log₁₀(1/ Duty cycle) dB +
10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.7576mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	8.28	-3.29	0.4688	-38.11%	Pass
Middle	2441	8.91	-2.65	0.5433	-28.29%	Pass
High	2480	8.02	-3.55	0.4416	-41.71%	Pass

GFSK (BLE 1Mbps) Test Result

Duty cycle =0.623

Manufacturer declares the Antenna Power = 2.2815mW

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Error	Verdict
Low	2402	1.90	1.90	1.5488	-32.11%	Pass
Middle	2440	2.58	2.58	1.8101	-20.66%	Pass
High	2480	1.75	1.75	1.4952	-34.46%	Pass

GFSK (BLE 2Mbps) Test Result

Duty cycle =0.313

Manufacturer declares the Antenna Power = 2.2881mW

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Error	Verdict
Low	2402	1.91	1.91	1.5506	-32.23%	Pass
Middle	2440	1.77	1.77	1.5014	-34.38%	Pass
High	2480	2.58	2.58	1.8130	-20.76%	Pass

Earbuds Right:GFSK Test Result

Duty cycle =0.767

Antenna Power Density PD = power value dBm (contains cable loss dB) +10 log₁₀(1/ Duty cycle) dB +
10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.3670mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	11.24	-6.08	0.2464	-32.86%	Pass
Middle	2441	11.86	-5.47	0.2840	-22.63%	Pass
High	2480	11.34	-5.99	0.2520	-31.35%	Pass

π/4-DQPSK Test Result

Duty cycle =0.767

Antenna Power Density PD = power value dBm (contains cable loss dB) +10 log₁₀(1/ Duty cycle) dB +
10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.2222mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	9.05	-8.28	0.1484	-33.19%	Pass
Middle	2441	9.72	-7.61	0.1732	-22.03%	Pass
High	2480	9.04	-8.29	0.1481	-33.35%	Pass

8-DPSK Test Result

Duty cycle = 0.767

Antenna Power Density PD = power value dBm (contains cable loss dB) + 10 log₁₀(1/ Duty cycle) dB + 10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.2185mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	8.99	-8.34	0.1466	-32.94%	Pass
Middle	2441	9.67	-7.66	0.1714	-21.59%	Pass
High	2480	8.94	-8.39	0.1449	-33.71%	Pass

GFSK (AFH Mode) Test Result

Duty cycle = 0.767

Antenna Power Density PD = power value dBm (contains cable loss dB) + 10 log₁₀(1/ Duty cycle) dB + 10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 1.4458mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	10.95	-0.58	0.8750	-39.48%	Pass
Middle	2441	11.55	0.02	1.0046	-30.52%	Pass
High	2480	11.05	-0.48	0.8954	-38.07%	Pass

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

Duty cycle = 0.767

Antenna Power Density PD = power value dBm (contains cable loss dB) + 10 log₁₀(1/ Duty cycle) dB +
10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.8700mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	8.75	-2.81	0.5236	-39.81%	Pass
Middle	2441	9.42	-2.14	0.6109	-29.77%	Pass
High	2480	8.71	-2.84	0.5200	-40.23%	Pass

8-DPSK (AFH Mode) Test Result

Duty cycle = 0.767

Antenna Power Density PD = power value dBm (contains cable loss dB) + 10 log₁₀(1/ Duty cycle) dB +
10 log₁₀ (1/ Spread Spectrum Bandwidth) dB

Manufacturer declares the conducted power density = 0.8638mW/MHz

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Verdict
Low	2402	8.72	-2.83	0.5212	-39.66%	Pass
Middle	2441	9.37	-2.18	0.6053	-29.92%	Pass
High	2480	8.69	-2.86	0.5176	-40.08%	Pass

GFSK (BLE 1Mbps) Test Result

Duty cycle =0.625

Manufacturer declares the Antenna Power = 1.9164mW

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Error	Verdict
Low	2402	1.12	1.12	1.2942	-32.47%	Pass
Middle	2440	1.68	1.68	1.4733	-23.12%	Pass
High	2480	1.29	1.29	1.3446	-29.83%	Pass

GFSK (BLE 2Mbps) Test Result

Duty cycle =0.313

Manufacturer declares the Antenna Power = 0.9281mW

Test Channel	Frequency (MHz)	power value (dBm)	Antenna Power (dBm)	Antenna Power (mW)	Antenna Power Error	Verdict
Low	2402	1.15	1.15	1.3017	-32.49%	Pass
Middle	2440	1.71	1.71	1.4829	-23.09%	Pass
High	2480	1.32	1.32	1.3549	-29.73%	Pass

A.6 Limitation of Collateral Emission of Receiver Measurement

Test Data

Note: All configurations have been tested, only the worst configuration (Test Voltage NV) shown here.

Earbuds Left:

Mode	Test Voltage	Channel	Refer to Plot	Verdict
GFSK	NV	Low	A.6.1	Pass
		Middle	A.6.2	Pass
		High	A.6.3	Pass
$\pi/4$ -DQPSK	NV	Low	A.6.4	Pass
		Middle	A.6.5	Pass
		High	A.6.6	Pass
8-DPSK	NV	Low	A.6.7	Pass
		Middle	A.6.8	Pass
		High	A.6.9	Pass
GFSK (BLE 1Mbps)	NV	Low	A.6.10	Pass
		Middle	A.6.11	Pass
		High	A.6.12	Pass
GFSK (BLE 2Mbps)	NV	Low	A.6.13	Pass
		Middle	A.6.14	Pass
		High	A.6.15	Pass

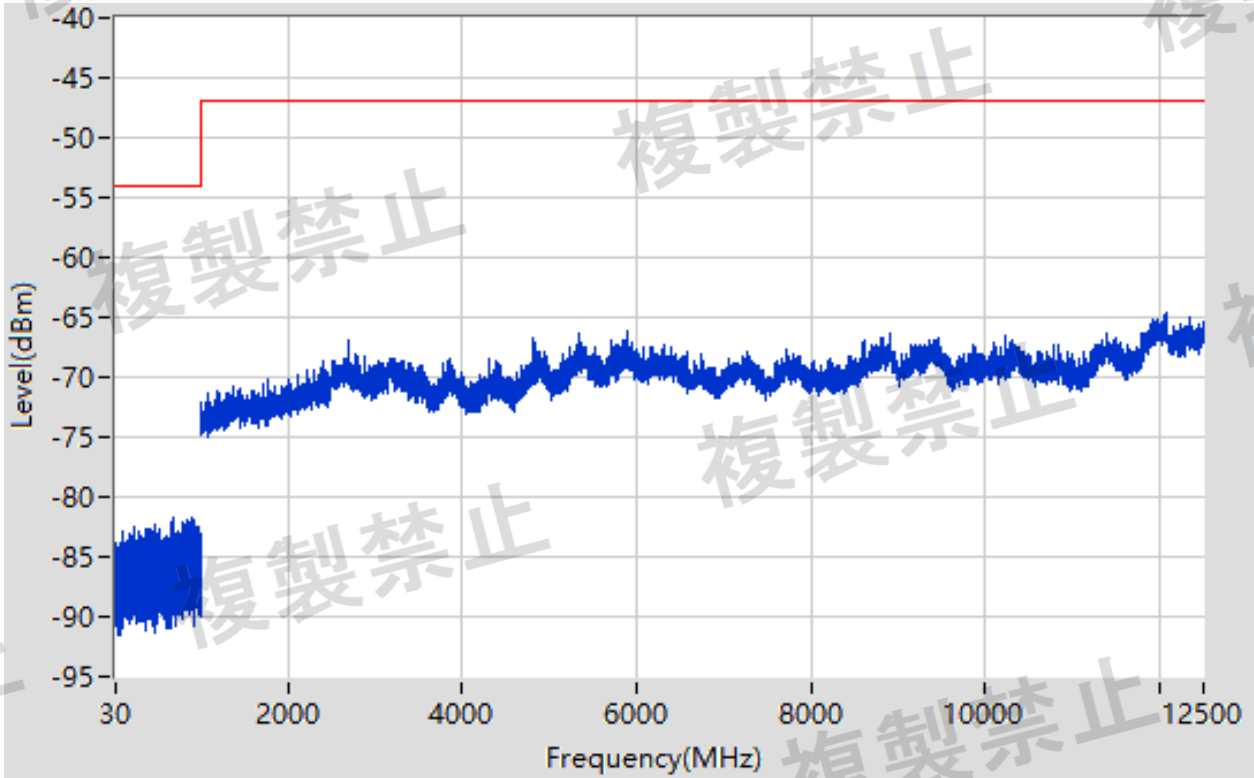
Earbuds Right:

Mode	Test Voltage	Channel	Refer to Plot	Verdict
GFSK	NV	Low	A.6.16	Pass
		Middle	A.6.17	Pass
		High	A.6.18	Pass
$\pi/4$ -DQPSK	NV	Low	A.6.19	Pass
		Middle	A.6.20	Pass
		High	A.6.21	Pass
8-DPSK	NV	Low	A.6.22	Pass
		Middle	A.6.23	Pass
		High	A.6.24	Pass
GFSK (BLE 1Mbps)	NV	Low	A.6.25	Pass
		Middle	A.6.26	Pass
		High	A.6.27	Pass
GFSK (BLE 2Mbps)	NV	Low	A.6.28	Pass
		Middle	A.6.29	Pass
		High	A.6.30	Pass

Test Plots

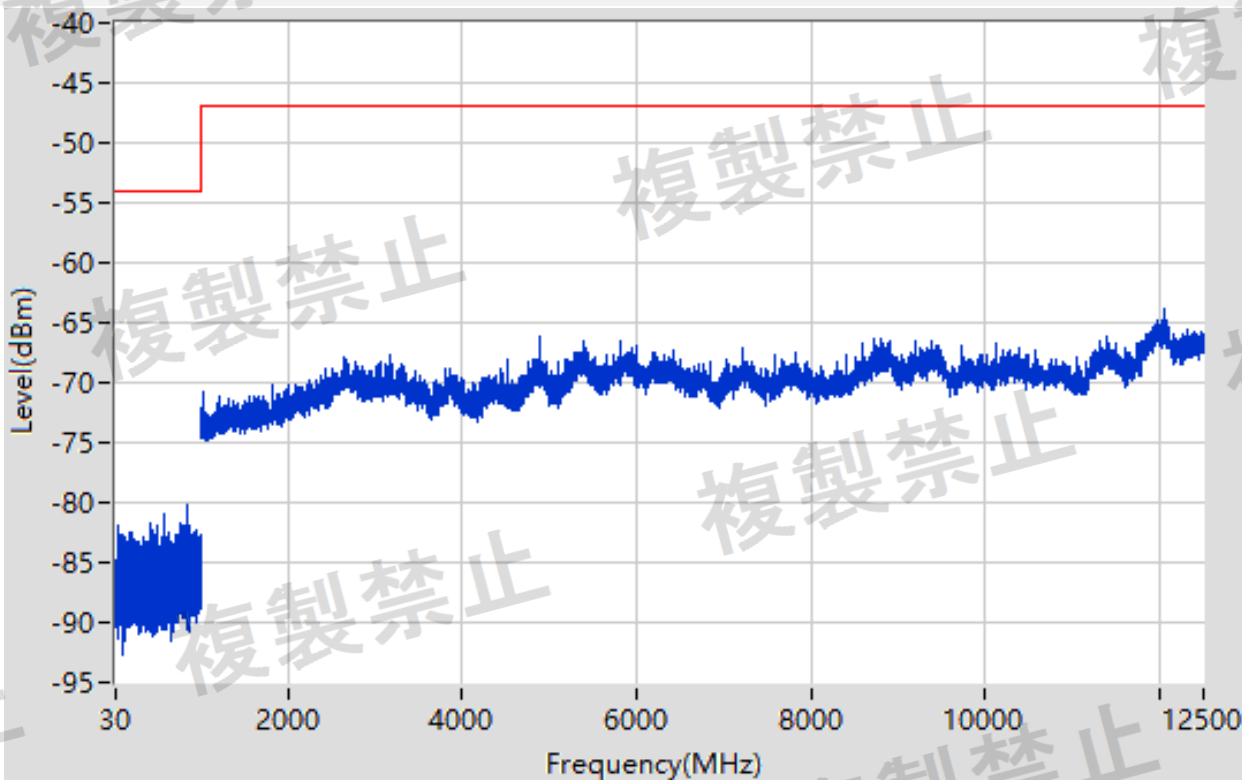
Earbuds Left:

A.6.1 GFSK NV Low Channel



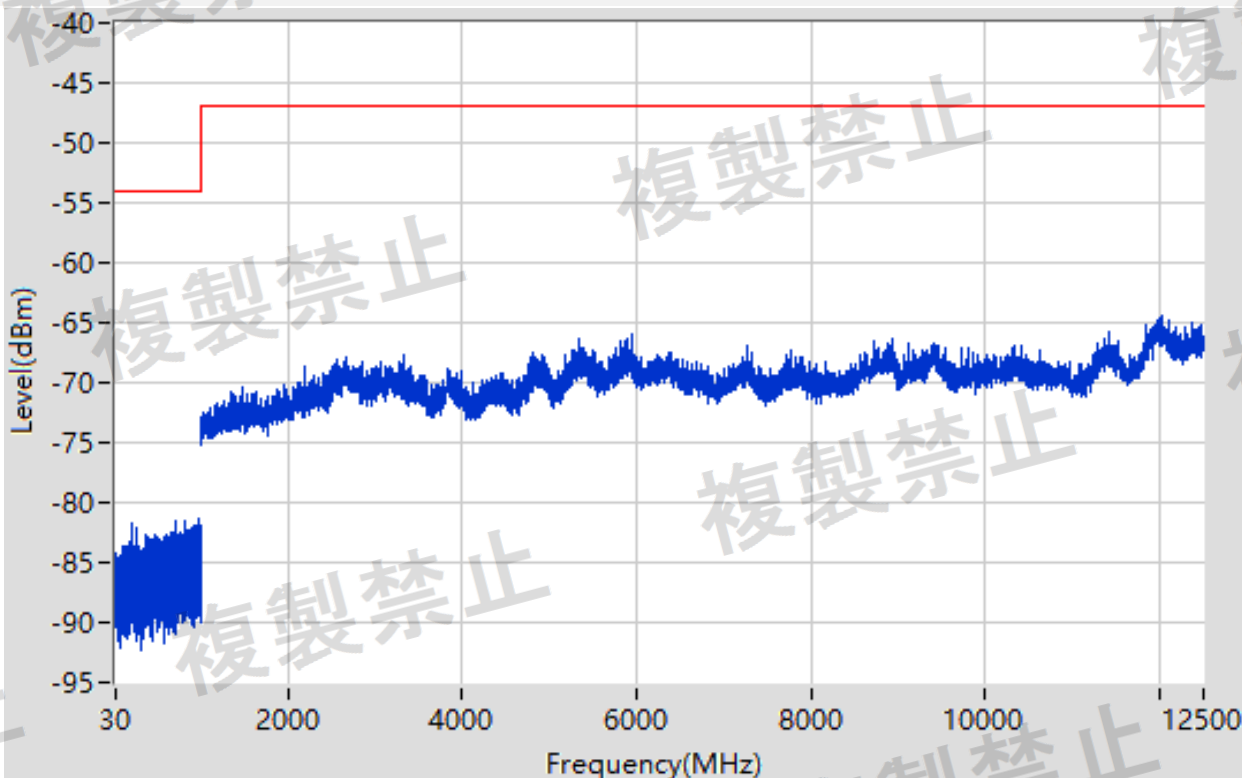
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	912.458	-81.78	-54	Pass	8001
1000	6000	1	Peak	5886.25	-66.24	-47	Pass	4001
6000	12500	1	Peak	12072.625	-64.57	-47	Pass	4001

A.6.2 GFSK NV Middle Channel

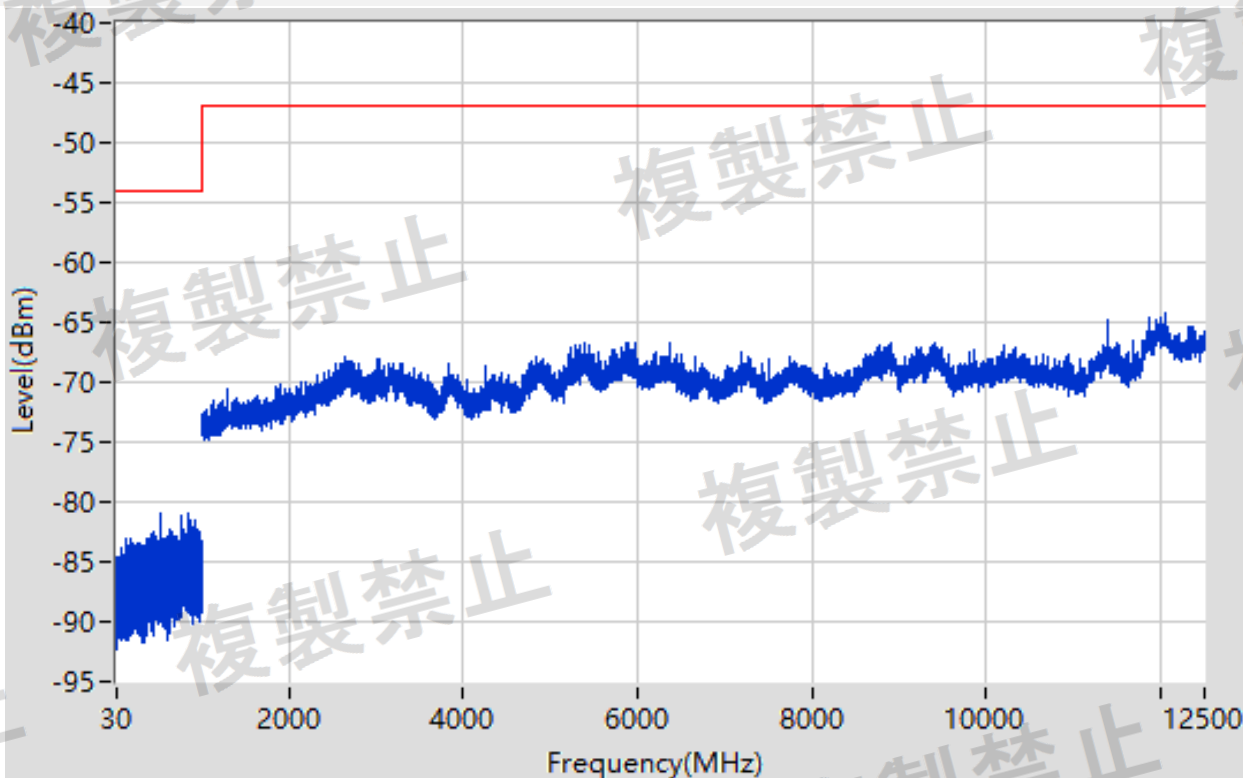


Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	859.593	-80.25	-54	Pass	8001
1000	6000	1	Peak	4893.75	-66.07	-47	Pass	4001
6000	12500	1	Peak	12045	-63.84	-47	Pass	4001

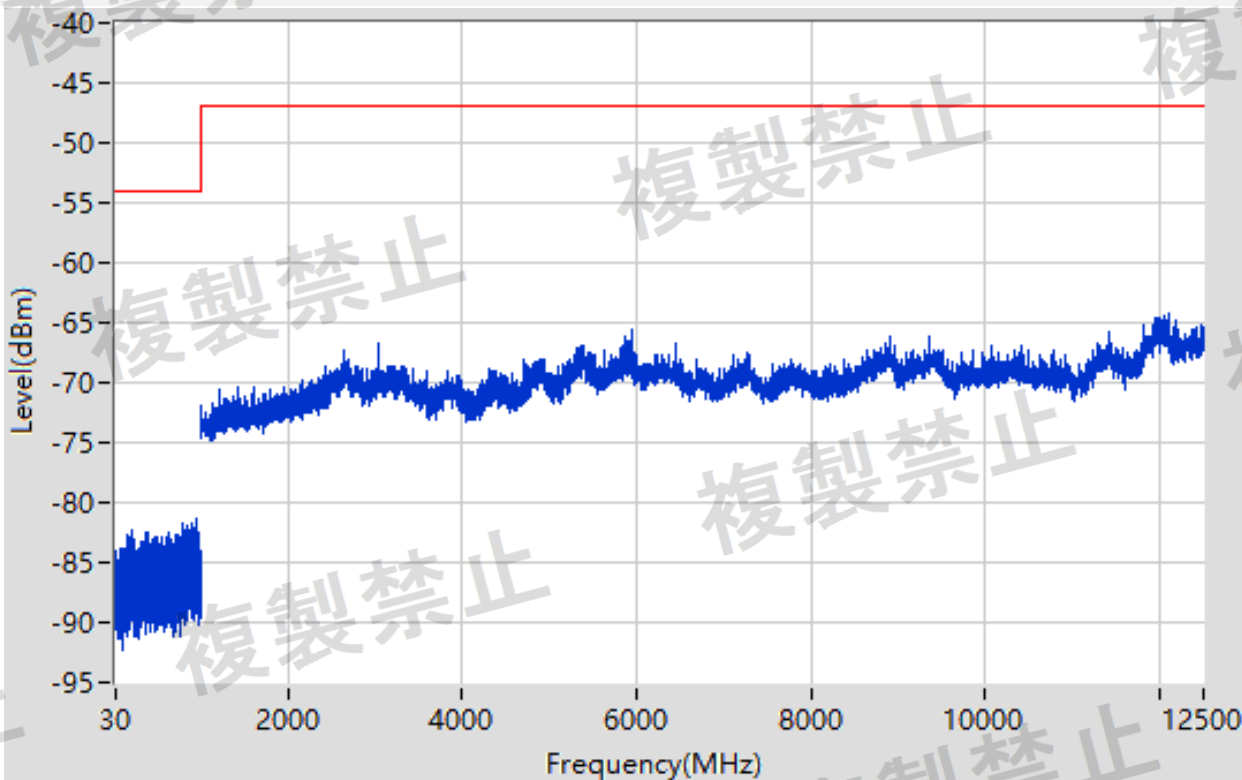
A.6.3 GFSK NV High Channel



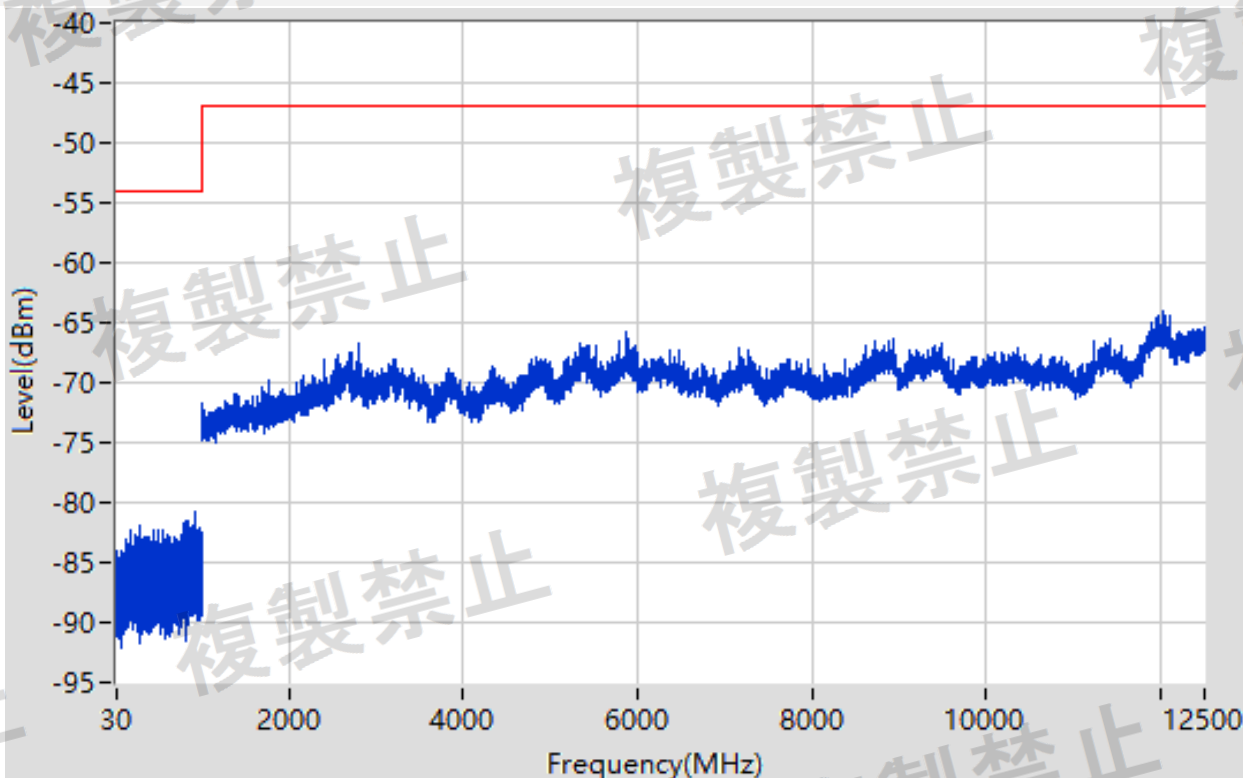
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	970.536	-81.38	-54	Pass	8001
1000	6000	1	Peak	5956.25	-66	-47	Pass	4001
6000	12500	1	Peak	12012.5	-64.5	-47	Pass	4001

A.6.4 $\pi/4$ -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	521.426	-80.94	-54	Pass	8001
1000	6000	1	Peak	5888.75	-66.65	-47	Pass	4001
6000	12500	1	Peak	12058	-64.29	-47	Pass	4001

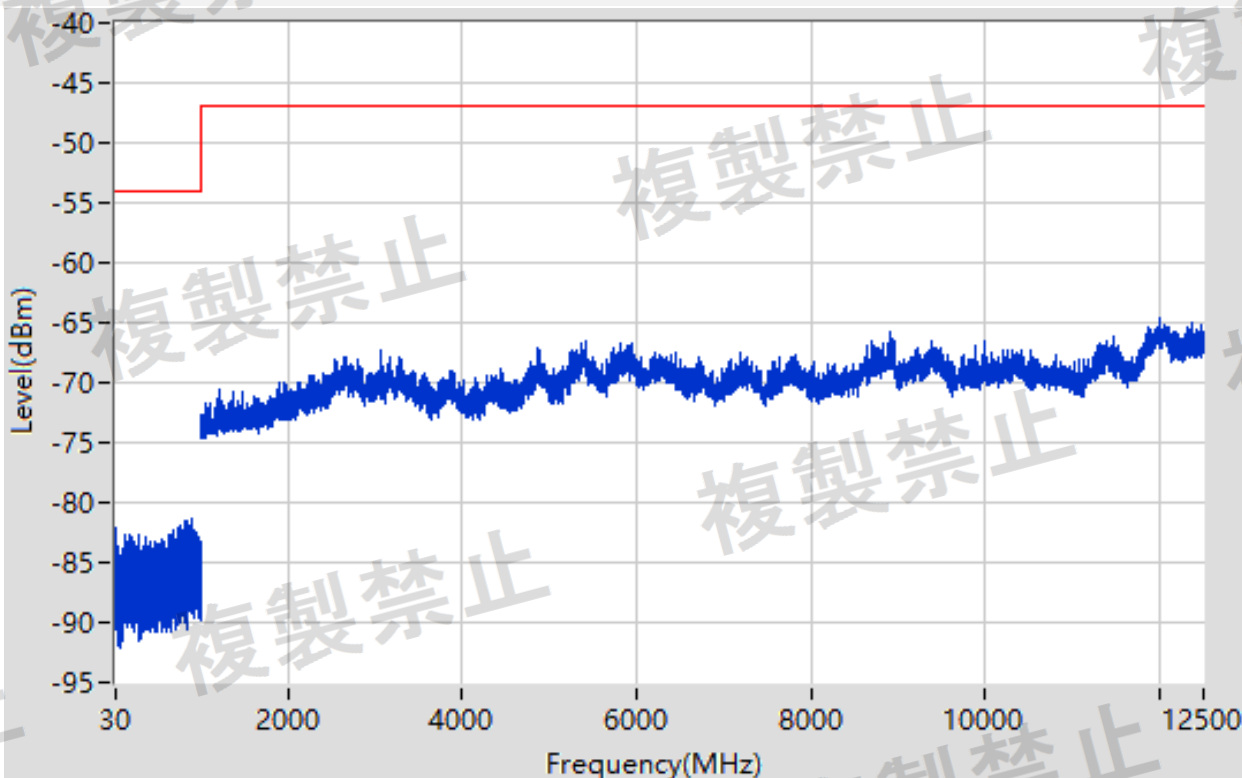
A.6.5 $\pi/4$ -DQPSK NV Middle Channel

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	961.321	-81.43	-54	Pass	8001
1000	6000	1	Peak	5935	-65.6	-47	Pass	4001
6000	12500	1	Peak	12093.75	-64.18	-47	Pass	4001

A.6.6 $\pi/4$ -DQPSK NV High Channel

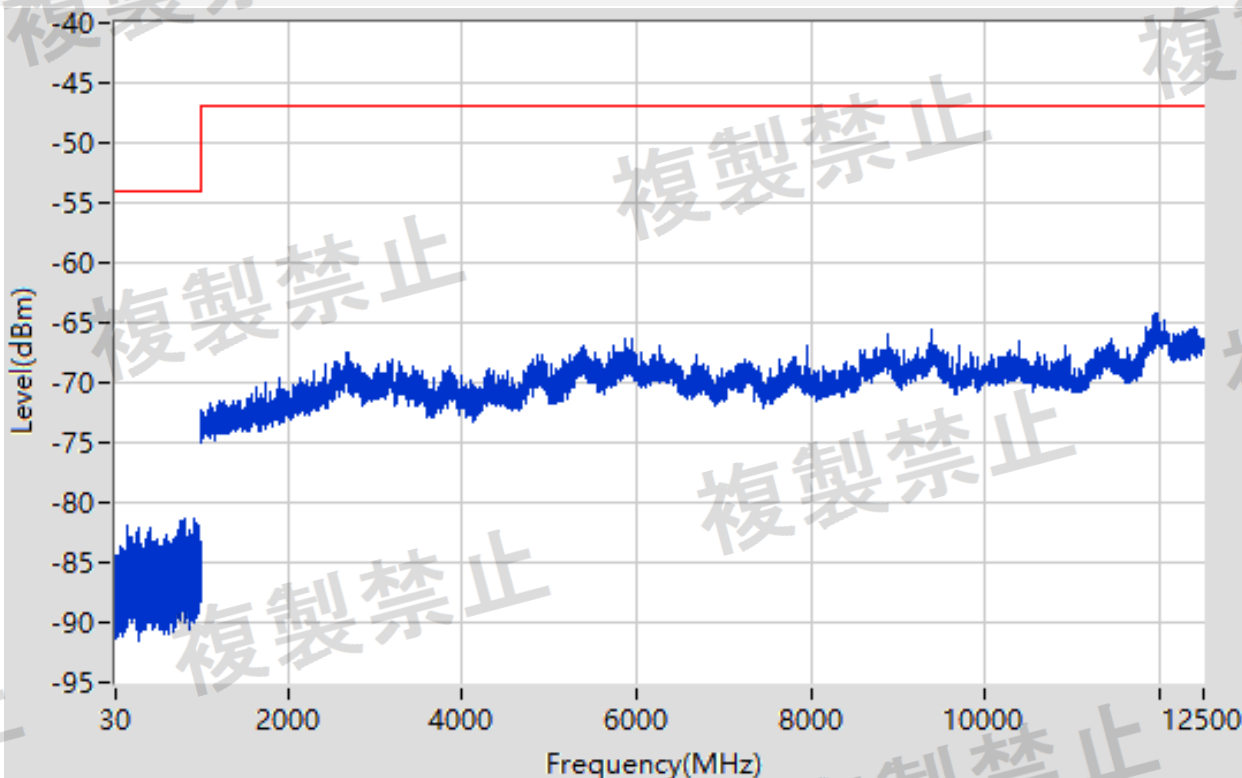
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	931.736	-80.81	-54	Pass	8001
1000	6000	1	Peak	5880	-65.77	-47	Pass	4001
6000	12500	1	Peak	12032	-63.96	-47	Pass	4001

A.6.7 8-DPSK NV Low Channel



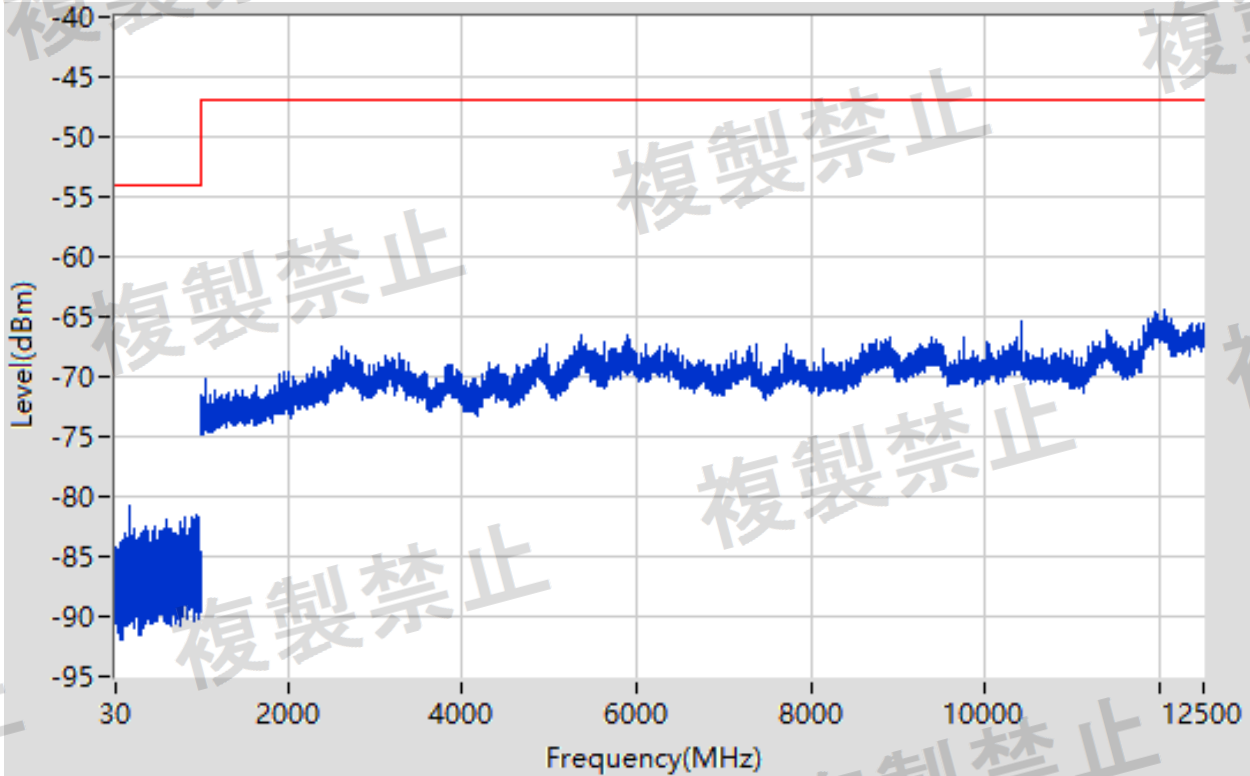
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	889.056	-81.36	-54	Pass	8001
1000	6000	1	Peak	5407.5	-66.59	-47	Pass	4001
6000	12500	1	Peak	12009.25	-64.68	-47	Pass	4001

A.6.8 8-DPSK NV Middle Channel



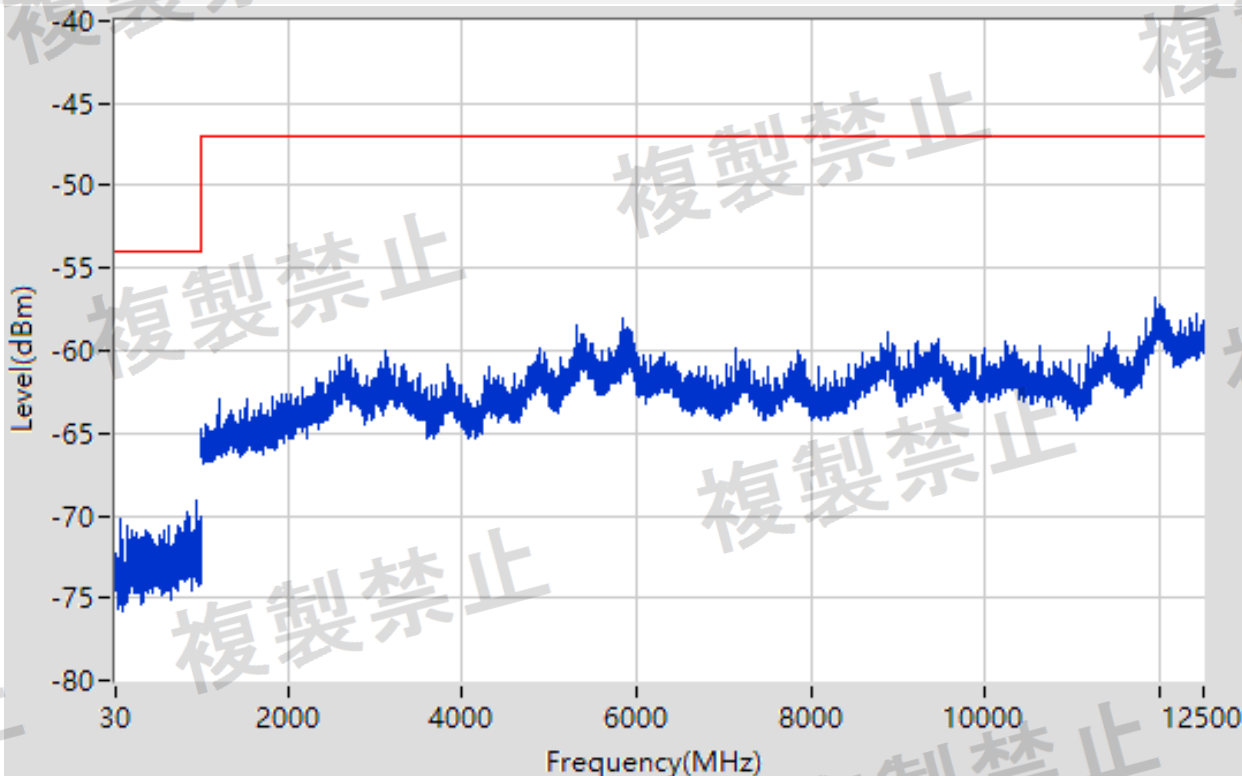
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	821.035	-81.3	-54	Pass	8001
1000	6000	1	Peak	5938.75	-66.35	-47	Pass	4001
6000	12500	1	Peak	11942.625	-64.23	-47	Pass	4001

A.6.9 8-DPSK NV High Channel



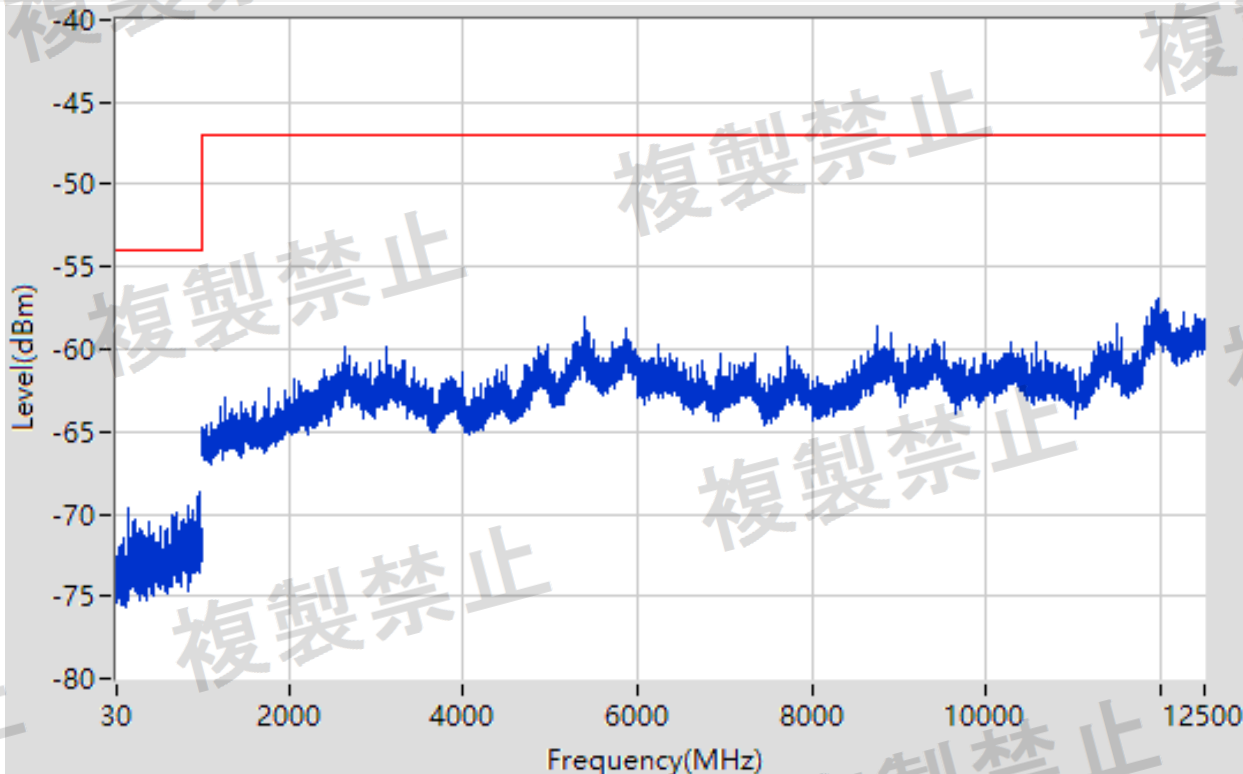
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	178.653	-80.69	-54	Pass	8001
1000	6000	1	Peak	5360	-66.49	-47	Pass	4001
6000	12500	1	Peak	12061.25	-64.41	-47	Pass	4001

A.6.10 GFSK (BLE 1Mbps) NV Low Channel



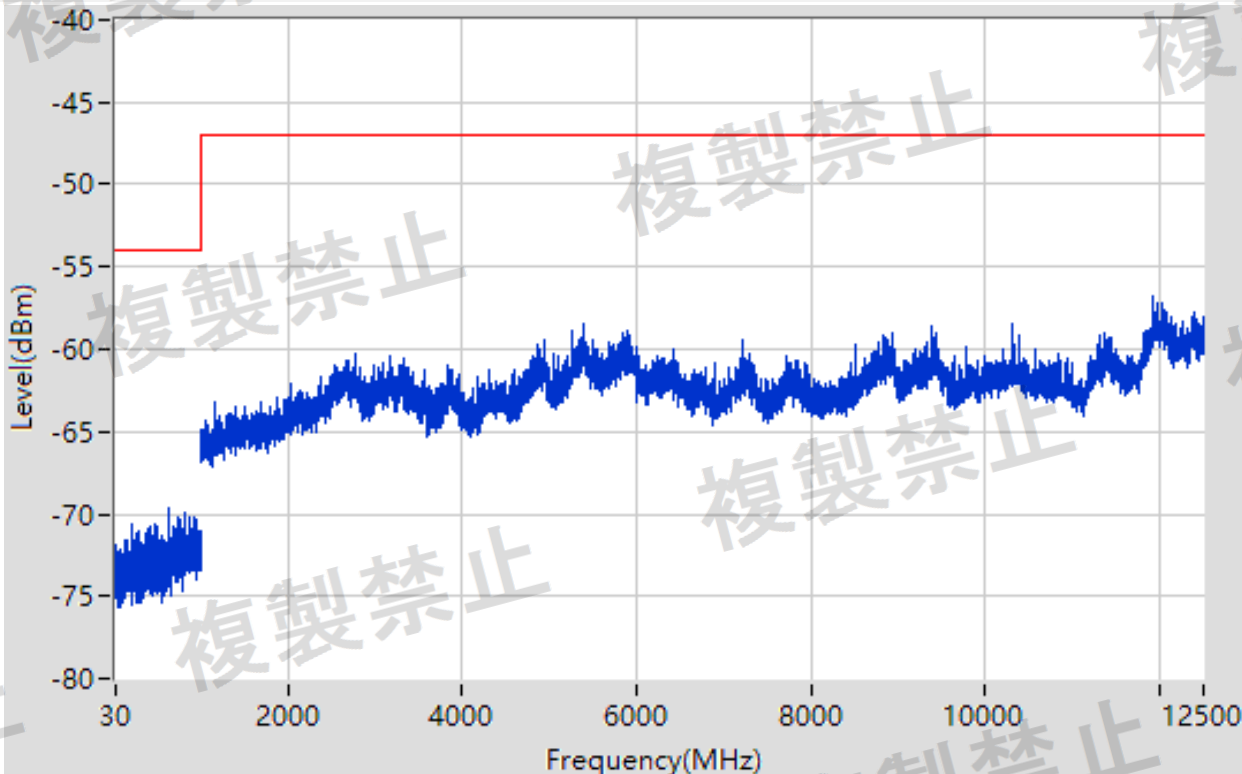
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	942.77	-69.13	-54	Pass	1001
1000	6000	1	Peak	5840	-58.07	-47	Pass	4001
6000	12500	1	Peak	11955.625	-56.84	-47	Pass	4001

A.6.11 GFSK (BLE 1Mbps) NV Middle Channel



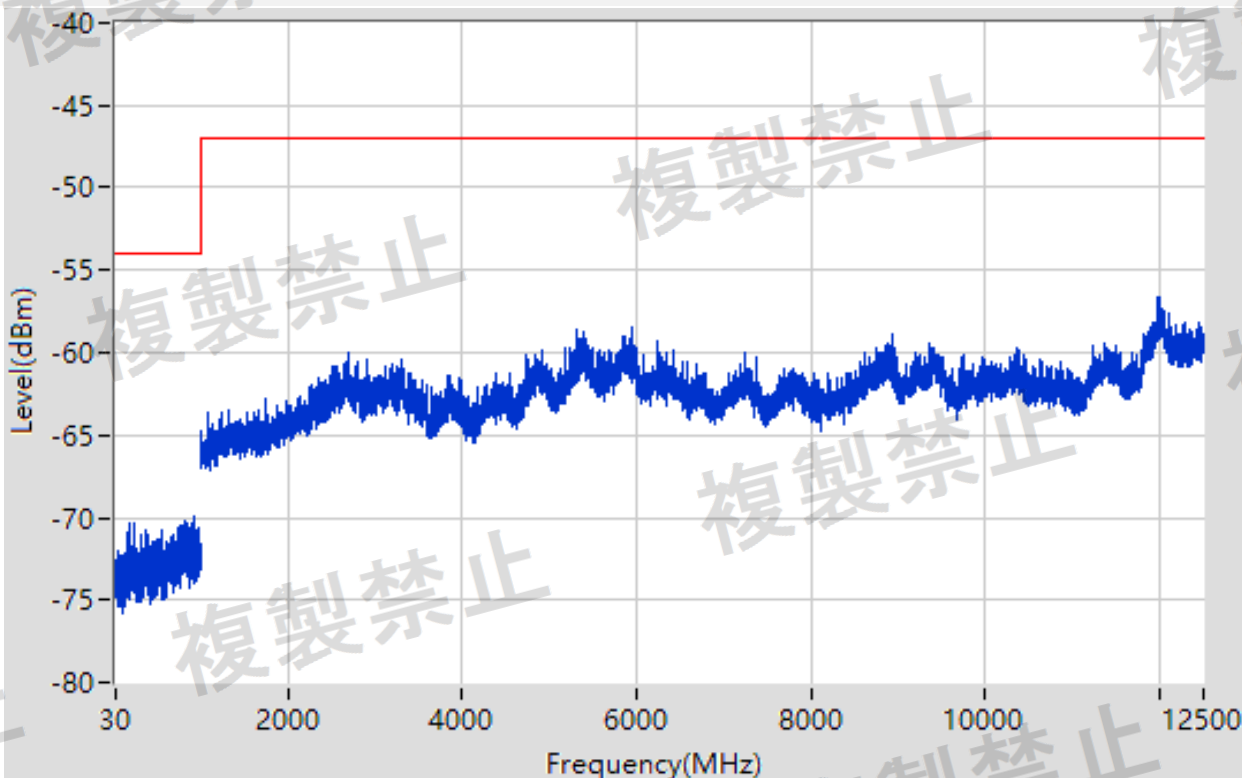
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	992.24	-68.62	-54	Pass	1001
1000	6000	1	Peak	5401.25	-58.11	-47	Pass	4001
6000	12500	1	Peak	11971.875	-56.88	-47	Pass	4001

A.6.12 GFSK (BLE 1Mbps) NV High Channel



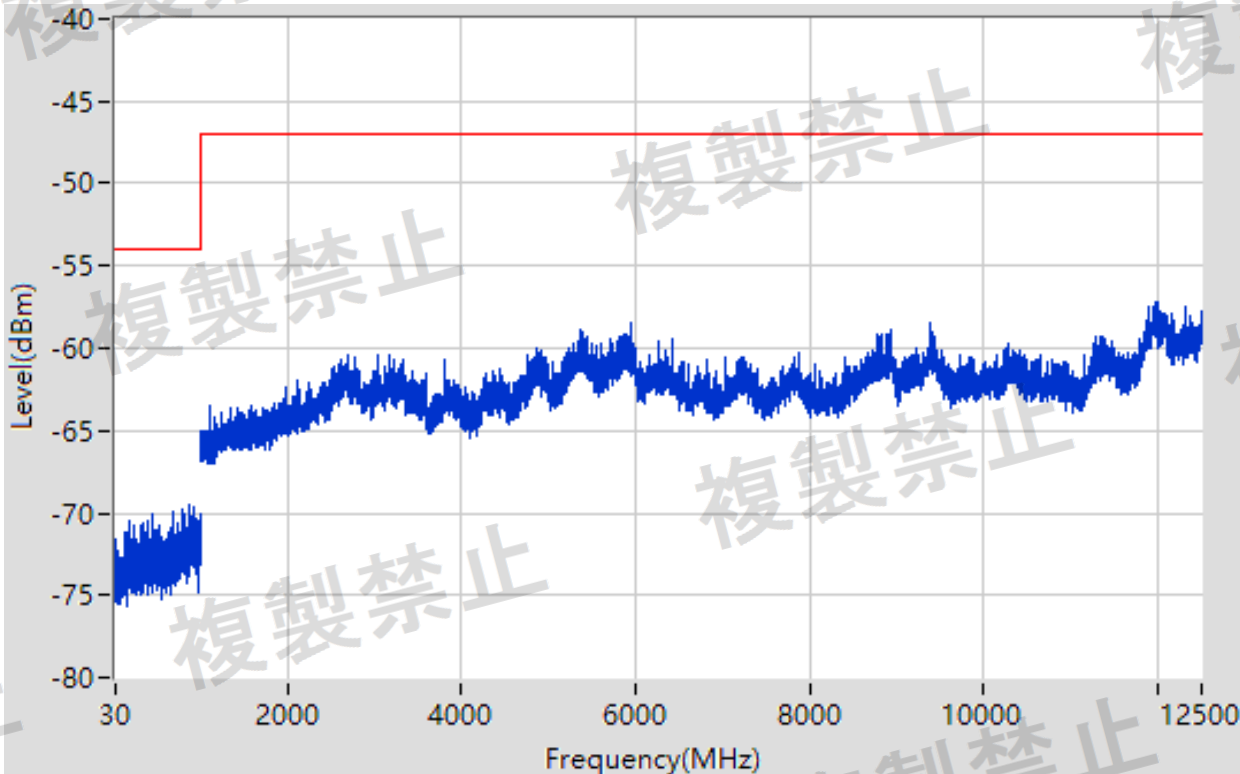
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	648.86	-69.63	-54	Pass	1001
1000	6000	1	Peak	5391.25	-58.47	-47	Pass	4001
6000	12500	1	Peak	11929.625	-56.73	-47	Pass	4001

A.6.13 GFSK (BLE 2Mbps) NV Low Channel



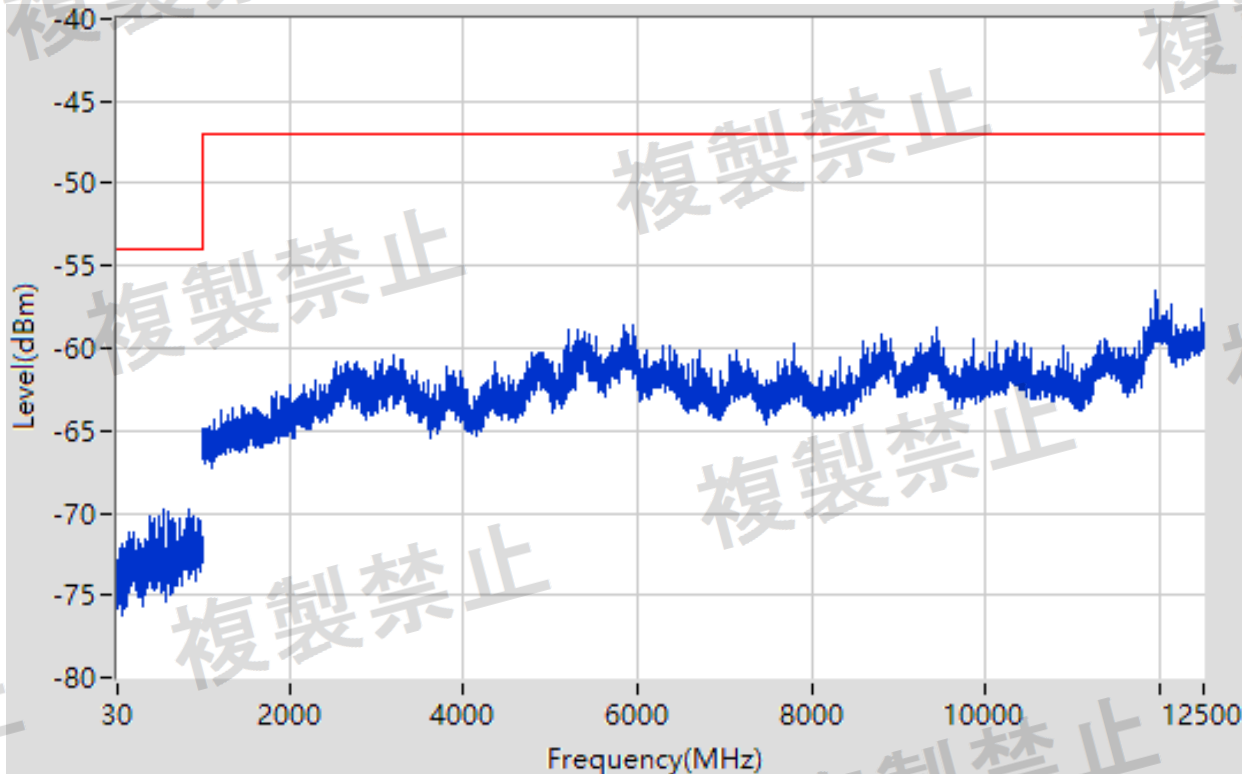
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	918.52	-69.96	-54	Pass	1001
1000	6000	1	Peak	5958.75	-58.44	-47	Pass	4001
6000	12500	1	Peak	11967	-56.68	-47	Pass	4001

A.6.14 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	877.78	-69.5	-54	Pass	1001
1000	6000	1	Peak	5950	-58.39	-47	Pass	4001
6000	12500	1	Peak	11994.625	-57.13	-47	Pass	4001

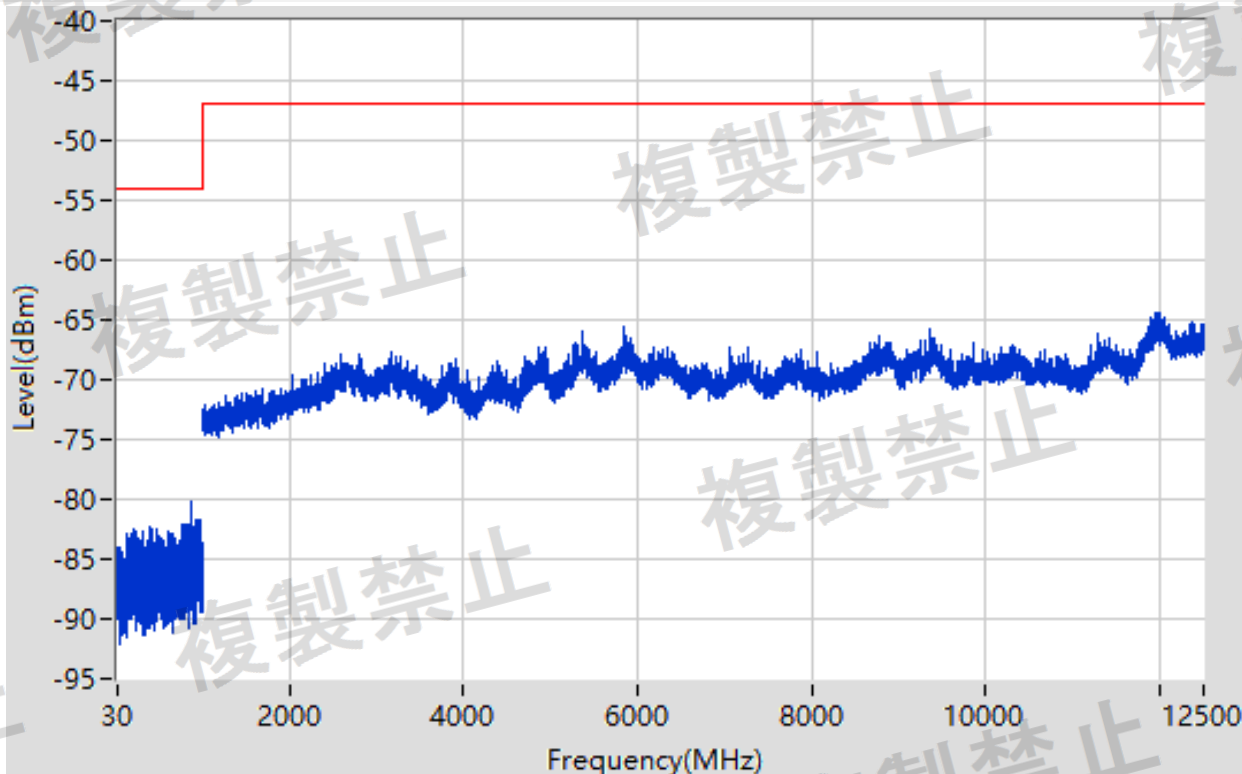
A.6.15 GFSK (BLE 2Mbps) NV High Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	852.56	-69.81	-54	Pass	1001
1000	6000	1	Peak	5948.75	-58.63	-47	Pass	4001
6000	12500	1	Peak	11955.625	-56.54	-47	Pass	4001

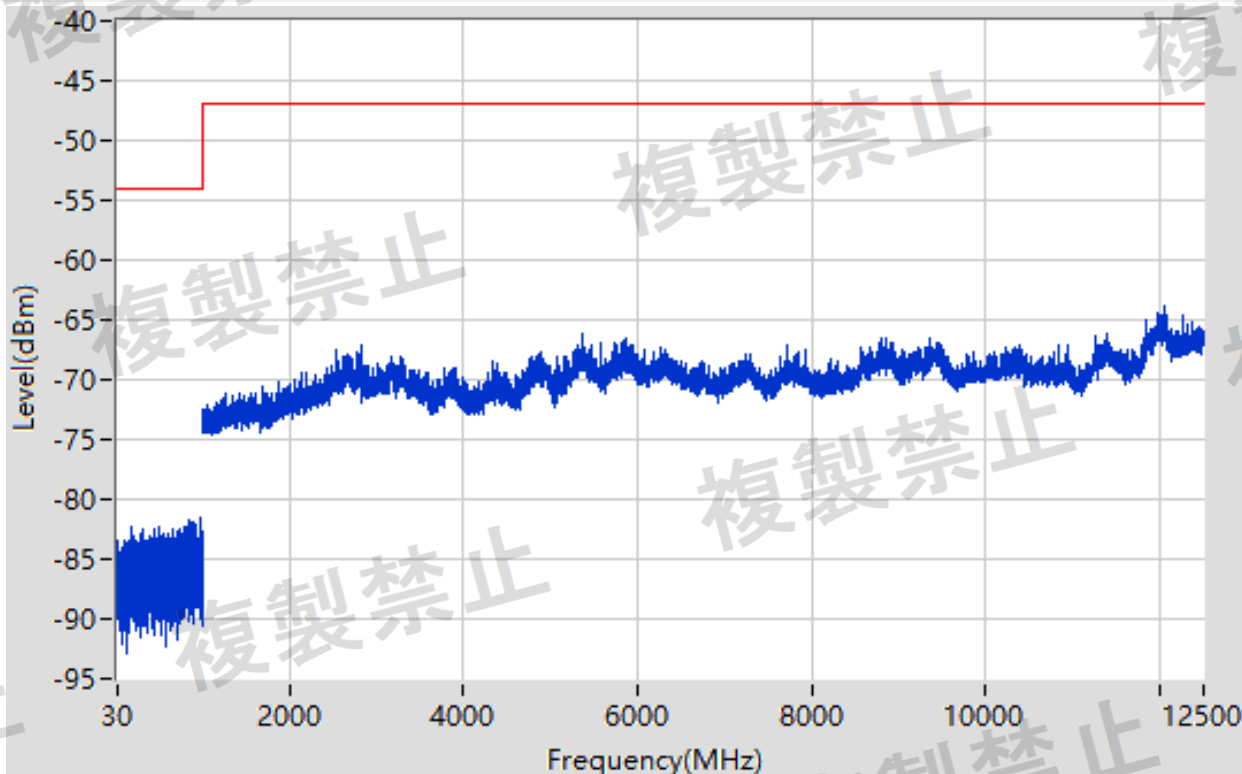
Earbuds Right:

A.6.16 GFSK NV Low Channel



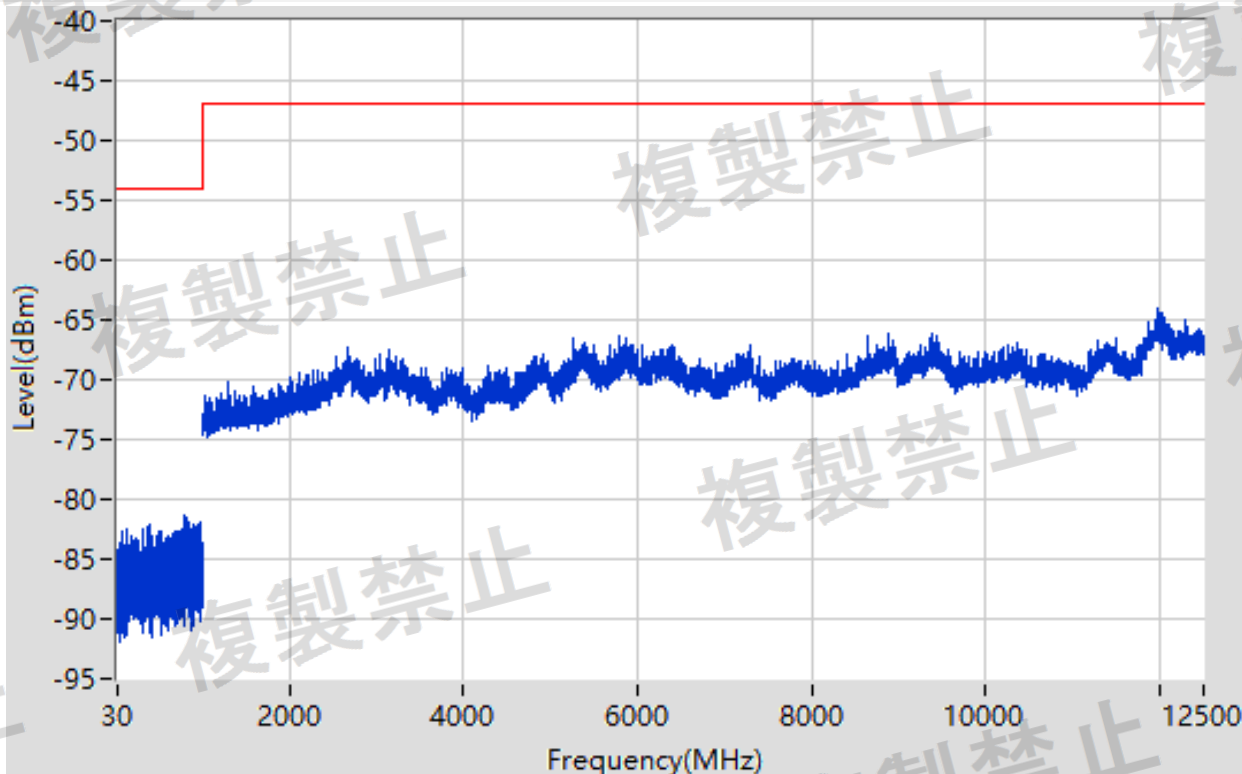
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	887.116	-80.22	-54	Pass	8001
1000	6000	1	Peak	5855	-65.57	-47	Pass	4001
6000	12500	1	Peak	11973.5	-64.41	-47	Pass	4001

A.6.17 GFSK NV Middle Channel

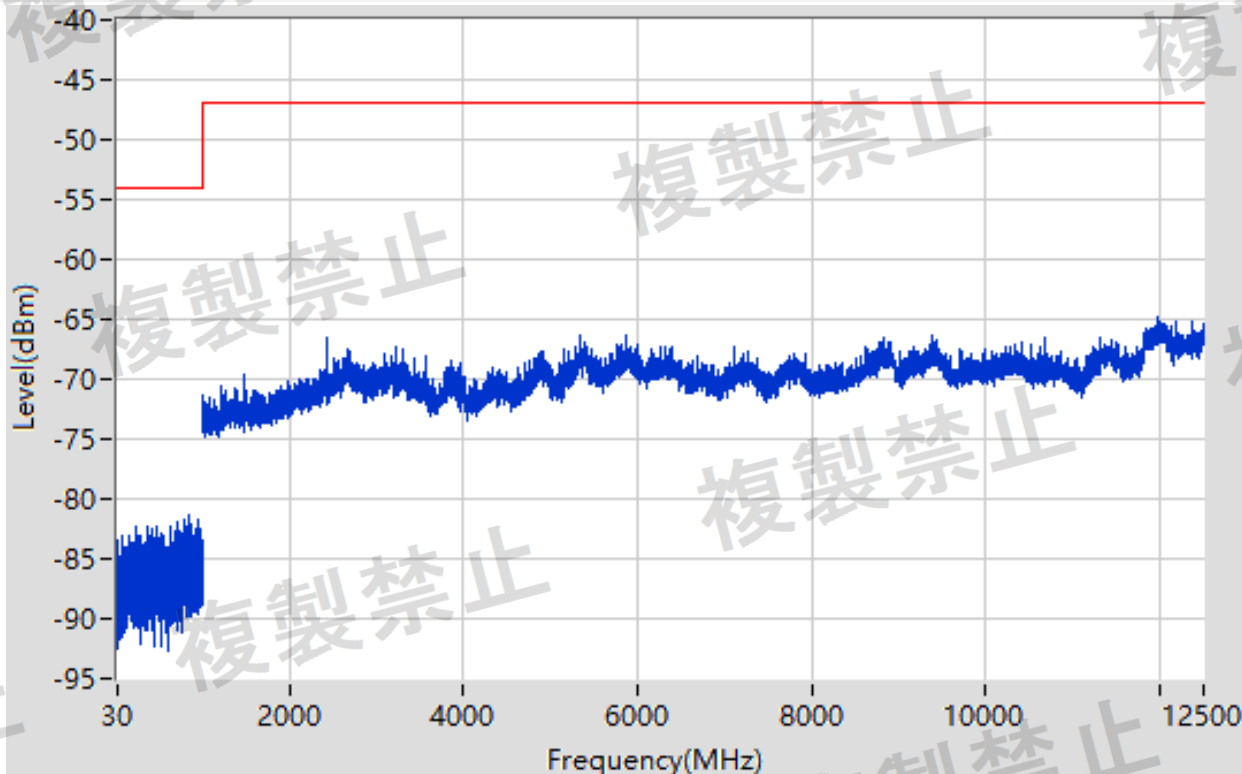


Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	983.631	-81.6	-54	Pass	8001
1000	6000	1	Peak	5361.25	-66.13	-47	Pass	4001
6000	12500	1	Peak	12049.875	-63.86	-47	Pass	4001

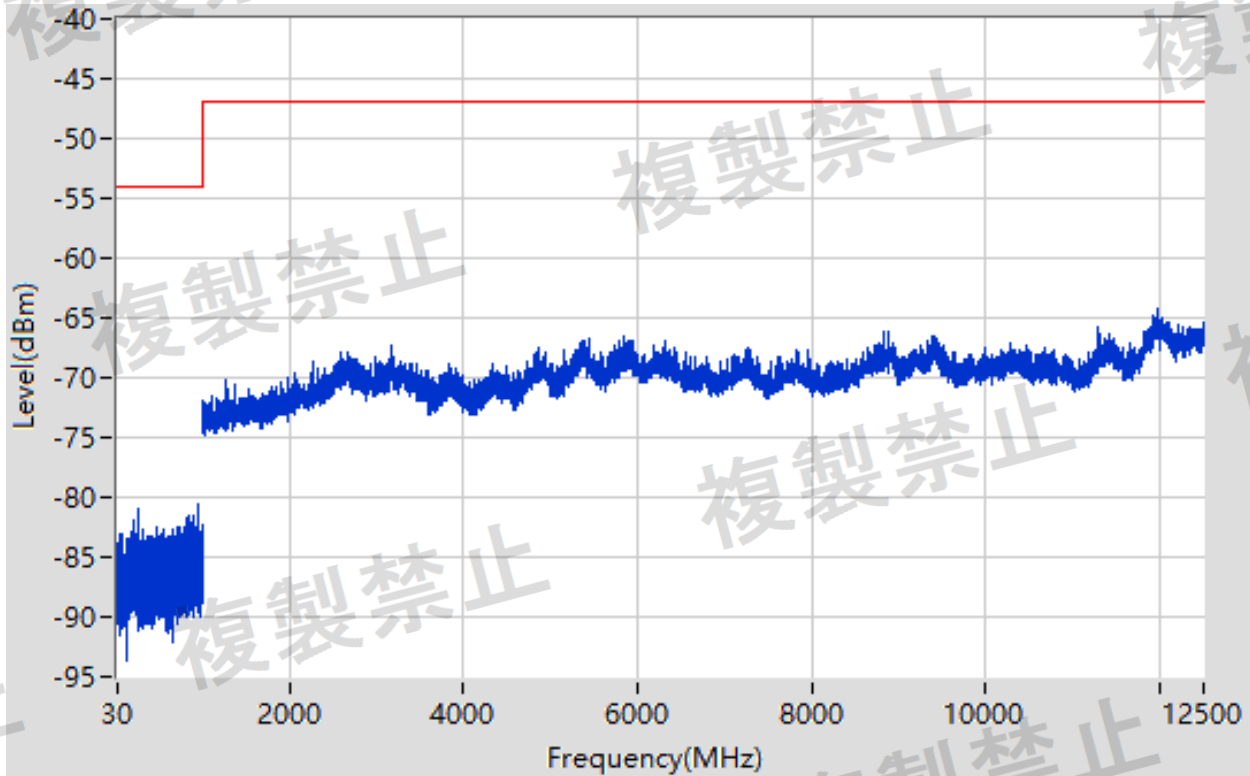
A.6.18 GFSK NV High Channel



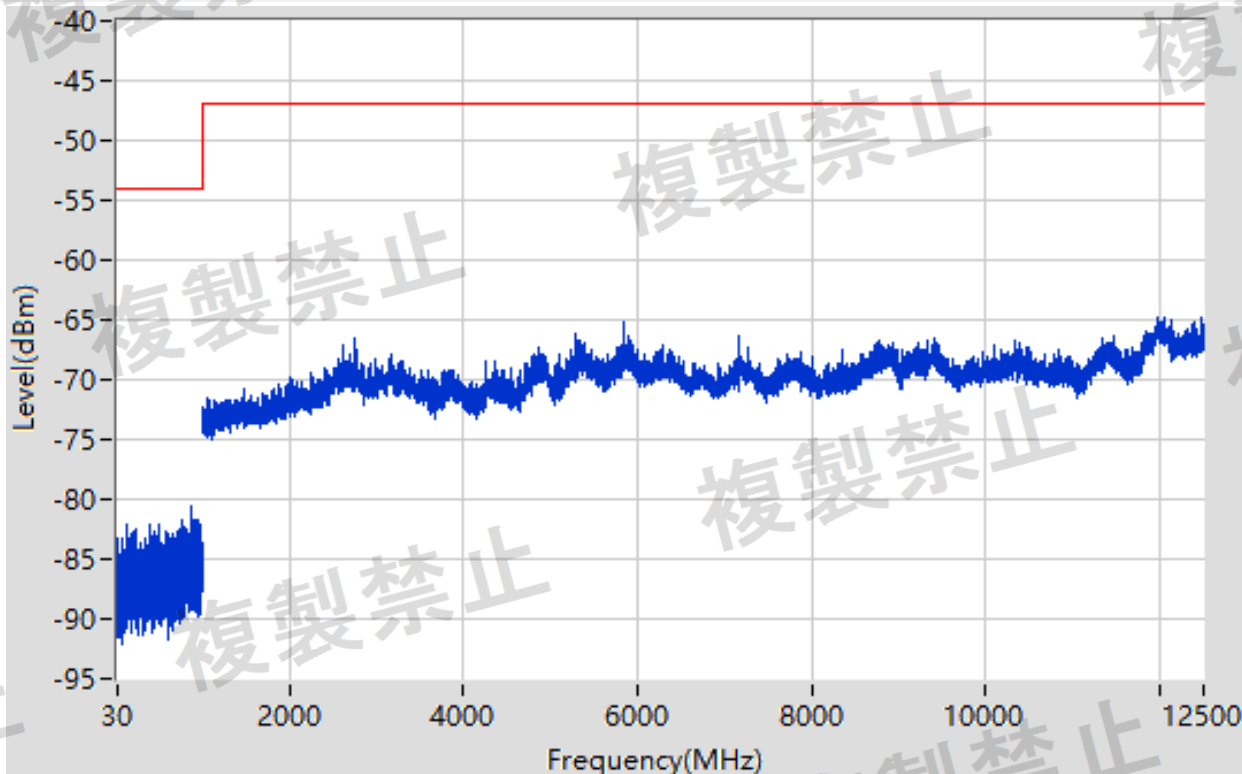
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	801.393	-81.27	-54	Pass	8001
1000	6000	1	Peak	5785	-66.28	-47	Pass	4001
6000	12500	1	Peak	11962.125	-64.11	-47	Pass	4001

A.6.19 $\pi/4$ -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	860.684	-81.43	-54	Pass	8001
1000	6000	1	Peak	5867.5	-66.43	-47	Pass	4001
6000	12500	1	Peak	11967	-64.85	-47	Pass	4001

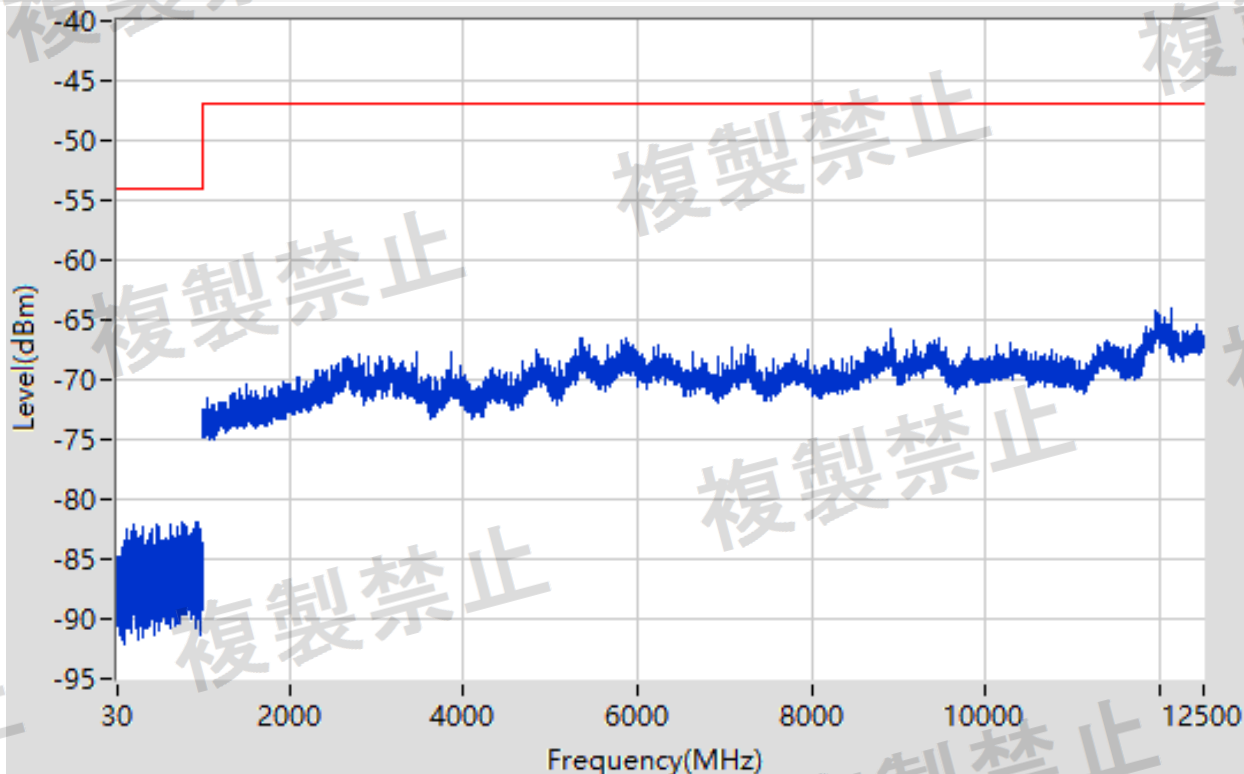
A.6.20 $\pi/4$ -DQPSK NV Middle Channel

Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	966.414	-80.62	-54	Pass	8001
1000	6000	1	Peak	5833.75	-66.46	-47	Pass	4001
6000	12500	1	Peak	11971.875	-64.29	-47	Pass	4001

A.6.21 $\pi/4$ -DQPSK NV High Channel

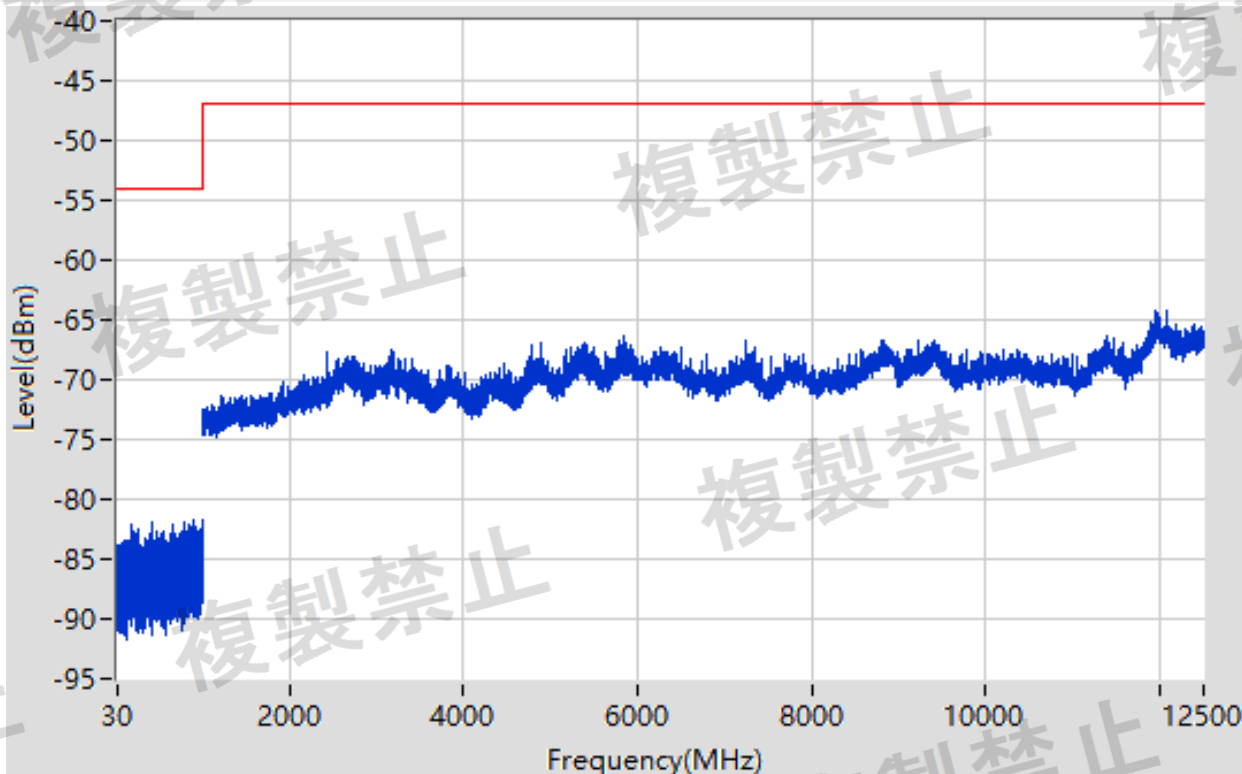
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	887.844	-80.62	-54	Pass	8001
1000	6000	1	Peak	5830	-65.15	-47	Pass	4001
6000	12500	1	Peak	11968.625	-64.76	-47	Pass	4001

A.6.22 8-DPSK NV Low Channel



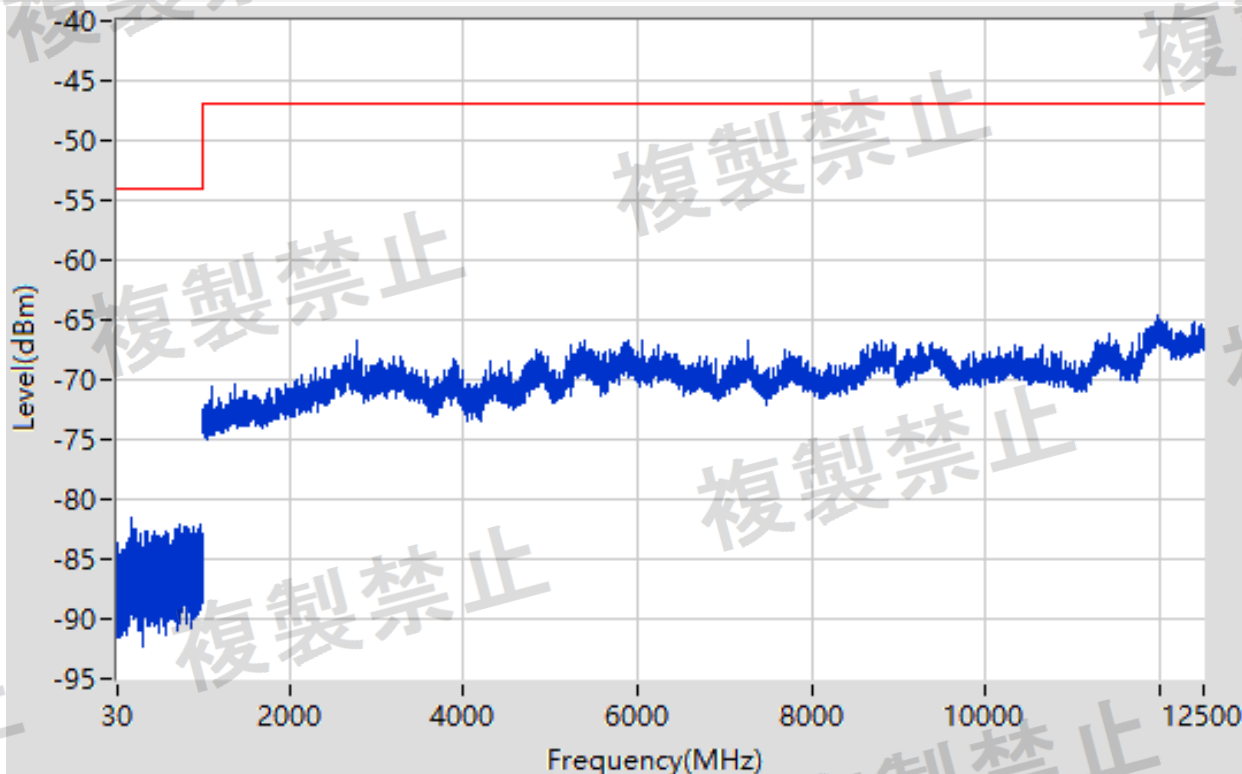
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	777.143	-81.89	-54	Pass	8001
1000	6000	1	Peak	5860	-66.52	-47	Pass	4001
6000	12500	1	Peak	12124.625	-64.07	-47	Pass	4001

A.6.23 8-DPSK NV Middle Channel



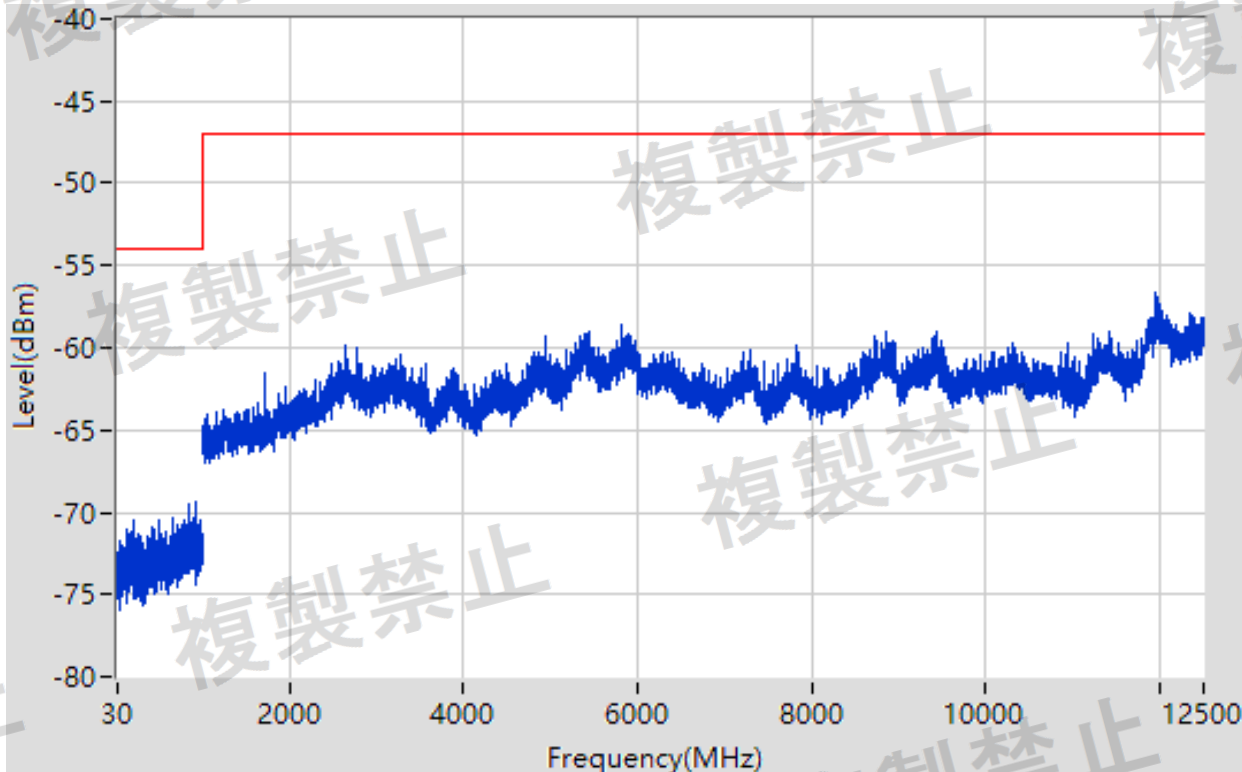
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	890.754	-81.73	-54	Pass	8001
1000	6000	1	Peak	5852.5	-66.26	-47	Pass	4001
6000	12500	1	Peak	11949.125	-64.22	-47	Pass	4001

A.6.24 8-DPSK NV High Channel



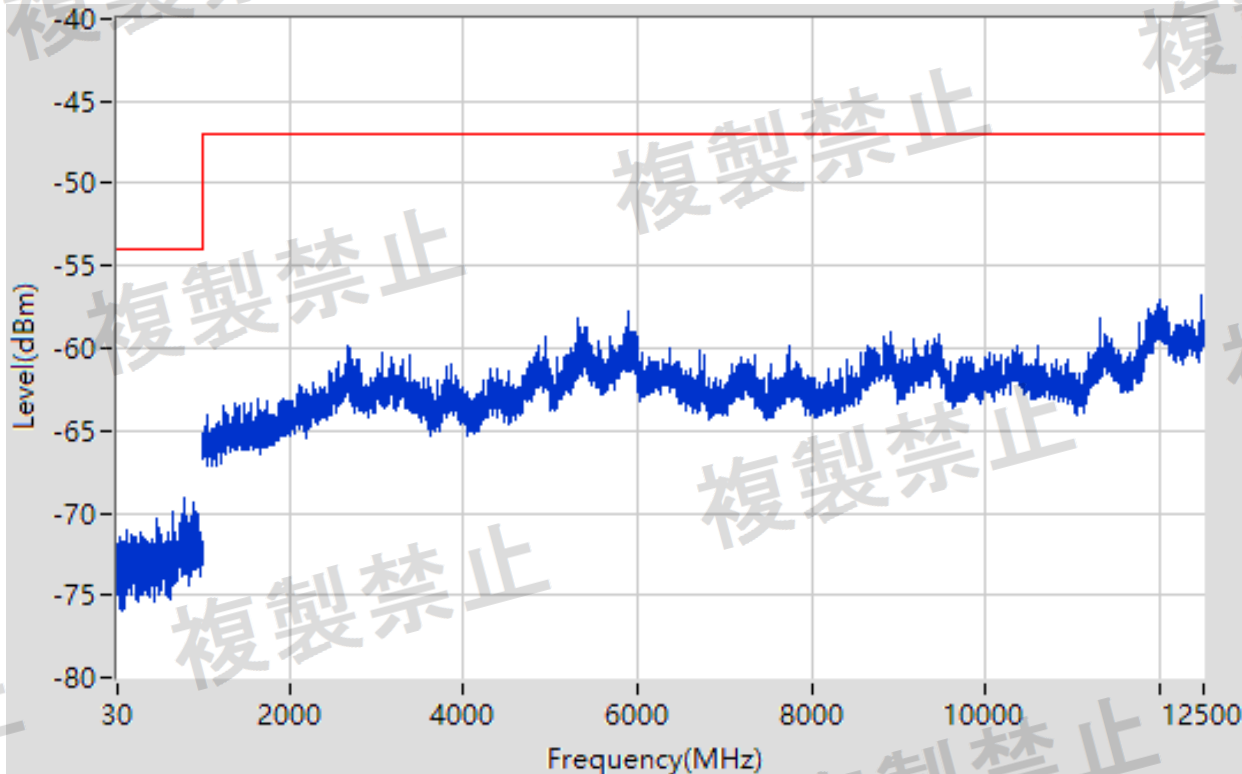
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	196.476	-81.56	-54	Pass	8001
1000	6000	1	Peak	2765	-66.7	-47	Pass	4001
6000	12500	1	Peak	11980	-64.63	-47	Pass	4001

A.6.25 GFSK (BLE 1Mbps) NV Low Channel



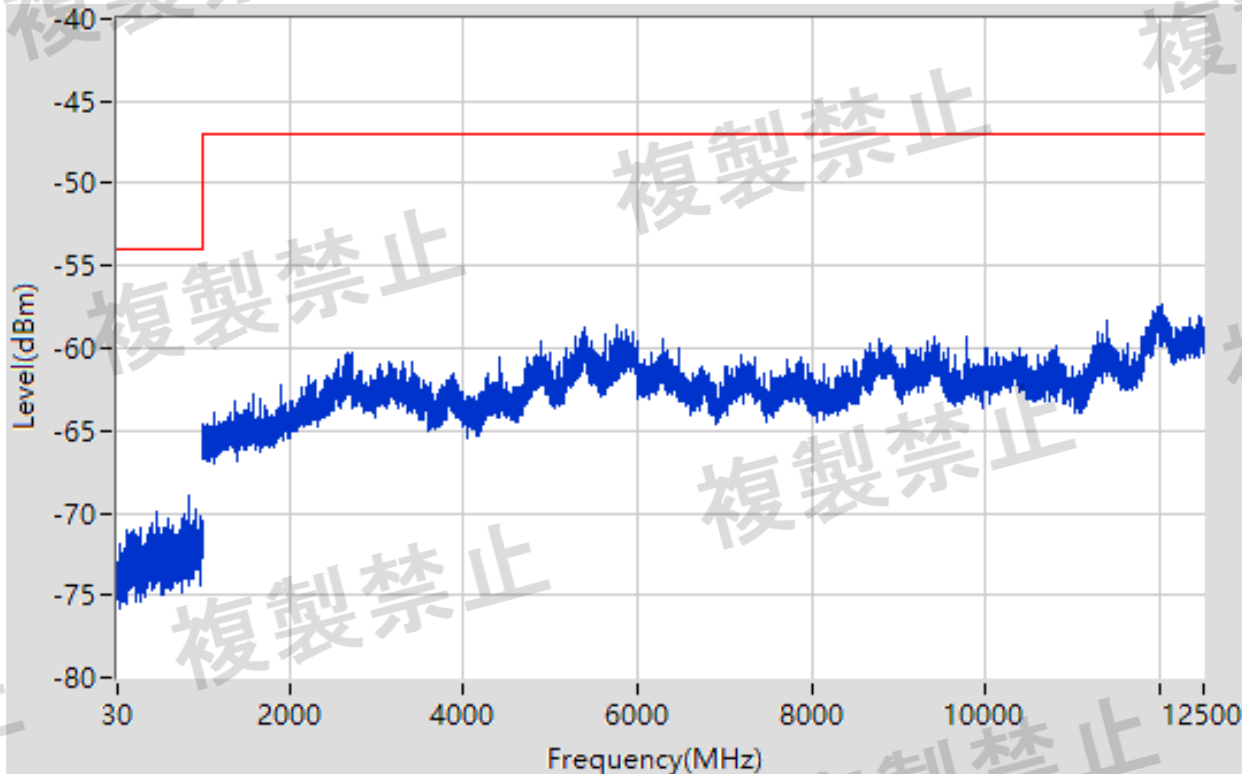
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	921.43	-69.34	-54	Pass	1001
1000	6000	1	Peak	5816.25	-58.63	-47	Pass	4001
6000	12500	1	Peak	11957.25	-56.66	-47	Pass	4001

A.6.26 GFSK (BLE 1Mbps) NV Middle Channel



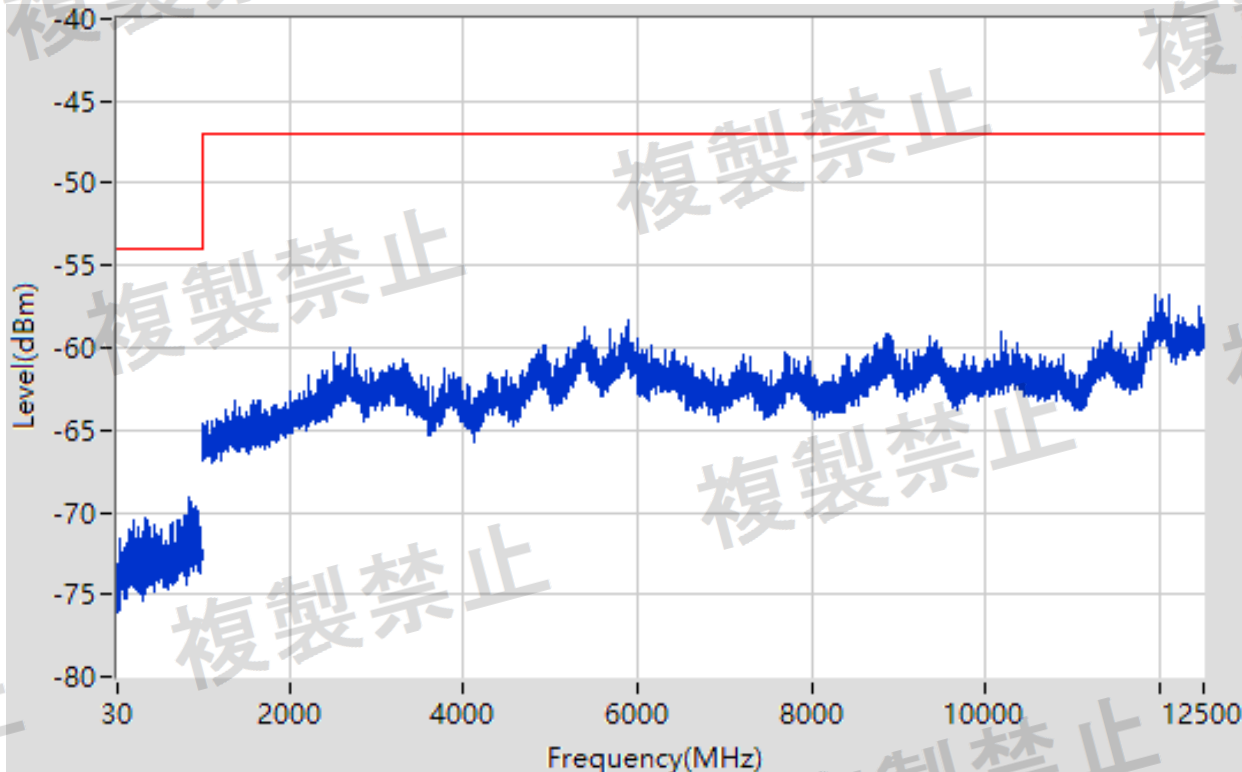
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	807.94	-69.07	-54	Pass	1001
1000	6000	1	Peak	5882.5	-57.77	-47	Pass	4001
6000	12500	1	Peak	12478.875	-56.83	-47	Pass	4001

A.6.27 GFSK (BLE 1Mbps) NV High Channel



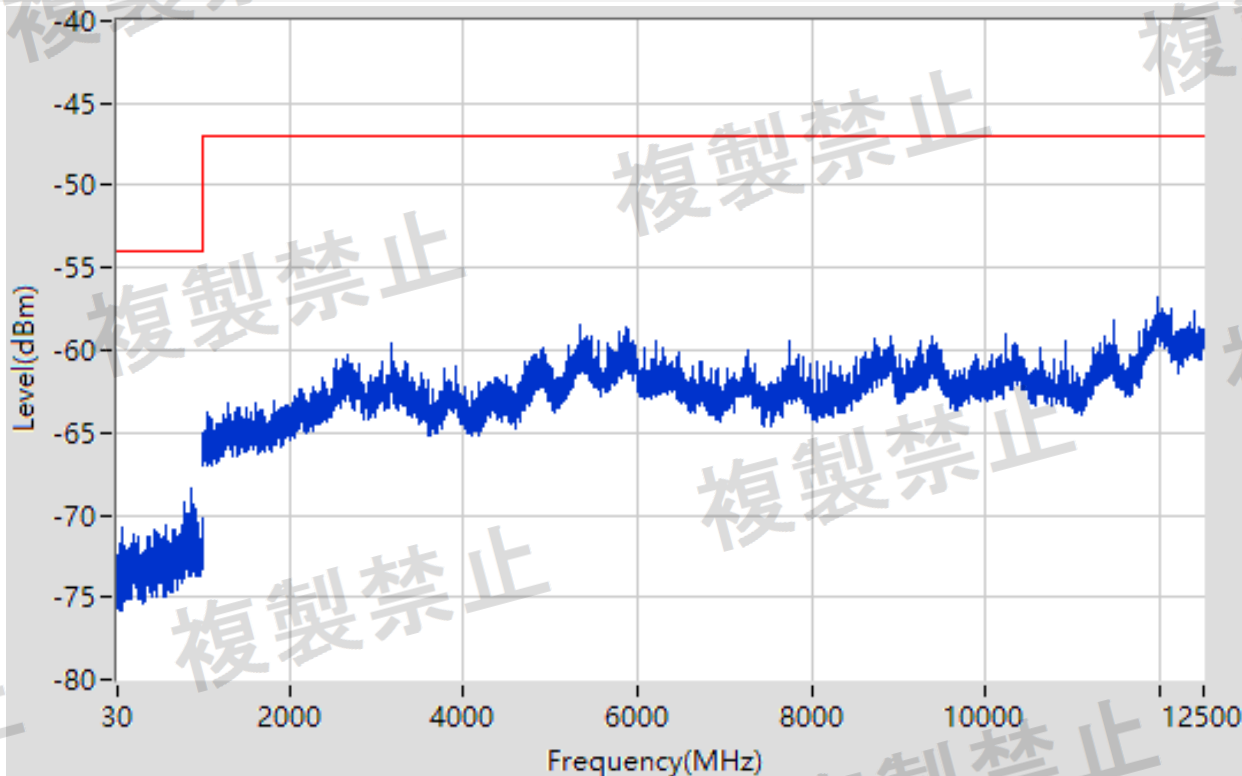
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	853.53	-68.91	-54	Pass	1001
1000	6000	1	Peak	5775	-58.57	-47	Pass	4001
6000	12500	1	Peak	12027.125	-57.31	-47	Pass	4001

A.6.28 GFSK (BLE 2Mbps) NV Low Channel



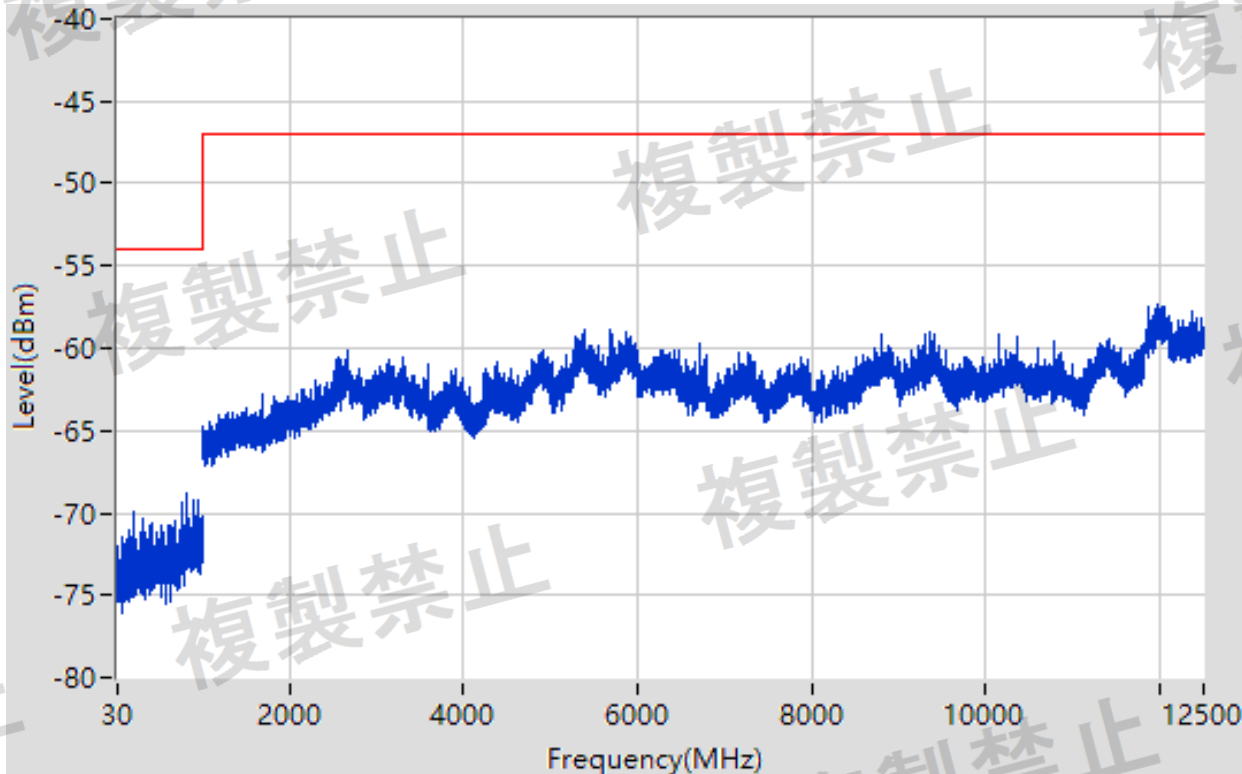
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Limit (dBm)	Verdict	Sweep Point
30	1000	0.1	Peak	852.56	-69.06	-54	Pass	1001
1000	6000	1	Peak	5896.25	-58.34	-47	Pass	4001
6000	12500	1	Peak	12092.125	-56.79	-47	Pass	4001

A.6.29 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	878.75	-68.42	-54	Pass	1001
1000	6000	1	Peak	5350	-58.49	-47	Pass	4001
6000	12500	1	Peak	11973.5	-56.78	-47	Pass	4001

A.6.30 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	835.1	-68.8	-54	Pass	1001
1000	6000	1	Peak	5397.5	-58.9	-47	Pass	4001
6000	12500	1	Peak	11973.5	-57.31	-47	Pass	4001

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

Note: Not applicable.

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

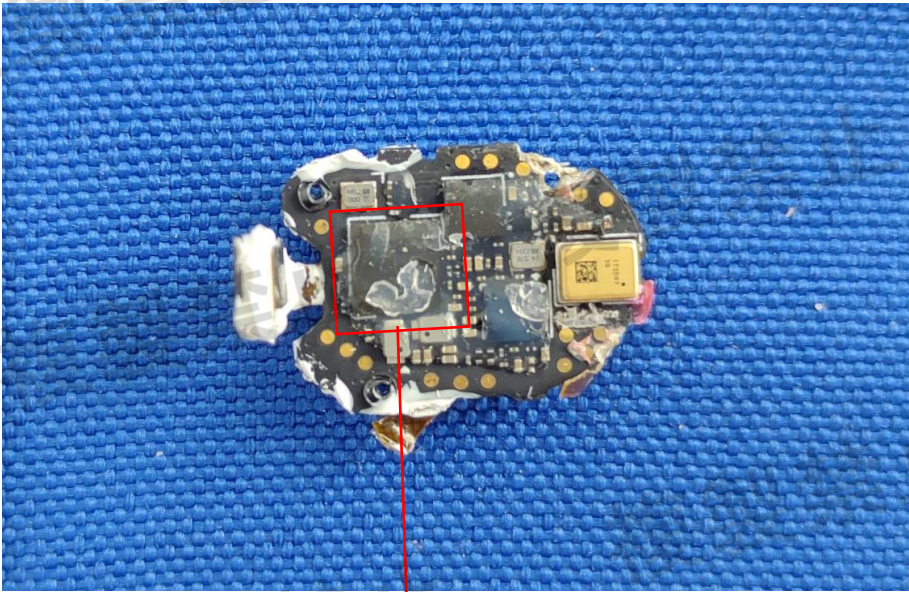
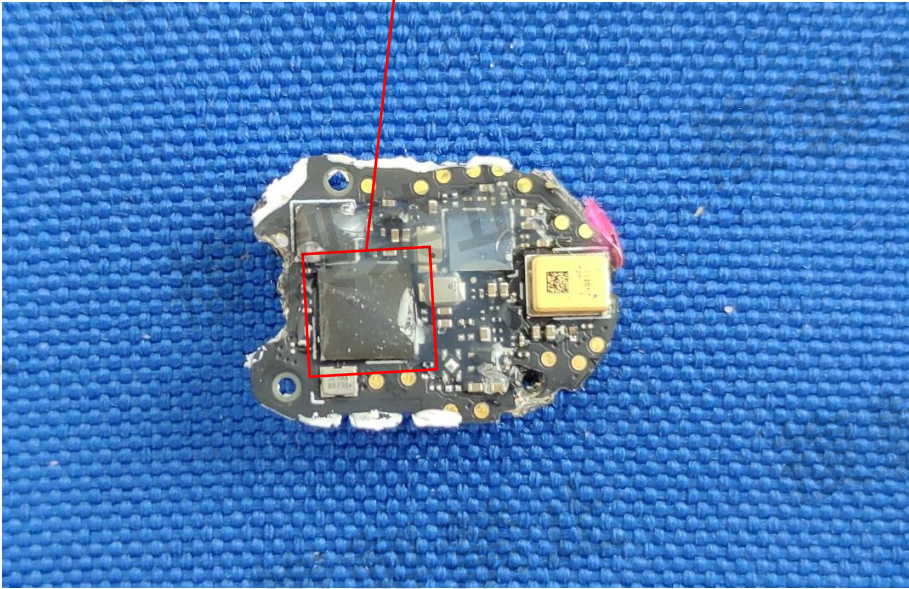
Note: Not applicable.

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	
Earbuds Left:	
	
Earbuds Right:	
	

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2291008-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2291008-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2291008-AI.PDF”.

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--END OF REPORT--