TEST REPORT

Applicant:	REOLINK INNOVATION LIMITED
Address:	FLAT/RM 705 7/F FA YUEN COMMERCIAL BUILDING 75-77 FA YUEN STREET MONG KOK KL HONG KONG
Equipment Type:	WiFi module
Model Name:	WL1ZM1000
Brand Name:	N/A
Test Standard:	MIC Notice No.88 Appendix No.43 Ordinance of MPT No.37, 1981: Article 2 paragraph 1 item (19)
Sample Arrival Date:	Apr. 22, 2025
Test Date:	Jun. 15, 2025 - Jun. 16, 2025
Date of Issue:	Jul. 03, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

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(Technical Director)

Revision History

Version	Issue Date	Revisions
Rev. 01	Jul. 03, 2025	Initial Issue

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複製禁止

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	REOLINK INNOVATION LIMITED
Address	FLAT/RM 705 7/F FA YUEN COMMERCIAL BUILDING 75-77 FA YUEN STREET MONG KOK KL HONG KONG

2.2 Manufacturer Information

Manufacturer	REOLINK INNOVATION LIMITED
Address	FLAT/RM 705 7/F FA YUEN COMMERCIAL BUILDING 75-77 FA YUEN STREET MONG KOK KL HONG KONG

2.3 General Description for Equipment under Test (EUT)

EUT Name	WiFi module
Under Test Model Name	WL1ZM1000
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

2.4 Technical Information

Network and Wireless connectivity	WIFI 802.11b, 802.11g, 802.11n

The requirement for the following technical information of the EUT was tested in this report:

Frequency Range		802.11b/g/n(20 MHz): 2.412 GHz - 2.472 GHz f_c = 2412 MHz + (N-1)*5 MHz, where - f_c = “Operating Frequency” in MHz, - N = “Channel Number” with the range from 1 to 13. 802.11n(40 MHz): 2.422 GHz - 2.462 GHz f_c = 2412 MHz + (N-1)*5 MHz, where - f_c = “Operating Frequency” in MHz, - N = “Channel Number” with the range from 3 to 11.
Equipment Type (LBT / non- LBT)		Adaptive equipment LBT based Detect and Avoid
Antenna Type	Antenna 1	FPC Antenna
	Antenna 2	
Antenna Gain	Antenna 1	4.11 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)
	Antenna 2	3.2 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)
Declare Max rated power density		7.80 mW/MHz

Antenna Information:

Serial Number	Antenna Name	Antenna Manufacturer	Model	Antenna Type
Antenna 1	Argus 3E	Shenzhen Be-Comfortable Technology Co. Ltd	54.07.001.0054	FPC Antenna
Antenna 2	Reolink Argus Eco	SHENZHEN LINRONG TECHNOLOGY CO.LTD	03.09.03.001	FPC Antenna
Note: All antenna model are alternative antenna, the max gain antenna is chosen for all test.				

Modulation technology	Modulation Type	Transfer Rate (Mbps)
DSSS (802.11b)	DBPSK	1
	DQPSK	2
	CCK	5.5/11
OFDM (802.11g)	BPSK	6/9
	QPSK	12/18
	16QAM	24/36
	64QAM	48/54
OFDM (802.11n-20 MHz)	BPSK	6.5/7.2
	QPSK	13/19.5/14.4/21.7
	16QAM	26/39/28.9/43.3
	64QAM	52/58.5/65/57.8/65/72.2
OFDM (802.11n-40 MHz)	BPSK	13.5/15
	QPSK	27/40.5/30/45
	16QAM	54/81/60/90
	64QAM	108/121.5/135/120/150

3. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Part	Description	Channel		Test Mode	Data Rate	Verdict
5.1	Frequency Error	13/7/1	3/7/11	Un-modulation	/	Pass
5.2	Occupied Bandwidth	13/7/1	3/7/11	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	Pass
5.3	Unwanted Emission Intensity	13/7/1	3/7/11	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	Pass
5.4	Antenna Power Error	13/7/1	3/7/11	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	Pass
5.5	Limitation of Collateral Emission of Receiver	13/7/1	3/7/11	11b/11g/11n20/11n40	1/6/6.5/13.5 Mbps	Pass
5.6	Carrier sensing function (1)	--	3/7/11	11n40	13.5 Mbps	Pass
5.7	Carrier sensing function (2)	N/A	N/A	N/A	N/A	N/A
5.8	Transmission Antenna Gain (EIRP Antenna Power)	N/A	N/A	N/A	N/A	N/A[Note2]
5.9	Transmission Radiation Angle Width (3dB Beamwidth)	N/A	N/A	N/A	N/A	N/A[Note2]
5.10	Radio Interference Prevention Capability	--	--	--	--	Pass
--	Construction Protection Confirmation	--	--	--	--	Pass

Note 1: The tests were performed according to the method of measurements prescribed in MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20.
Note 2: When the EIRP is less than 12.14 dBm/MHz, it is not necessary.

The test channel corresponding to the frequency list

Mode	Channel	Channel Number	Frequency (MHz)
11b	HIGH/MIDDLE/LOW(H/M/L)	13/7/1	2472/2442/2412
11g	HIGH/MIDDLE/LOW(H/M/L)	13/7/1	2472/2442/2412
11n20	HIGH/MIDDLE/LOW(H/M/L)	13/7/1	2472/2442/2412
11n40	HIGH/MIDDLE/LOW(H/M/L)	11/7/3	2462/2442/2422

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 × f × 10^{-6}) Hz
Antenna Power	1.82 dB
TX-RX Spurious Emissions	1.84 dB
Transmission Antenna Gain	5.36 dB
Temperature	0.8℃
Humidity	4%
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 54%	
Atmospheric Pressure (kPa)	86 kPa to 106 kPa	
Temperature	+21.1℃ to +23.5℃	
Working Voltage of the EUT	NV (Normal Voltage)	5.0 V

Note: When the input voltage deviation from the external power supply is+/- 10%, and the voltage deviation provided to the radio part of the EUT (excluding the power circuit) is kept within+/- 1%, only the normal voltage is used for testing.

Voltage fluctuation results:

External power supply	Rated operating voltage of EUT	Actual measured voltage of EUT	± 1% voltage operating range
4.500 V	3.300 V	3.297 V	3.267 V~3.333 V
5.000 V	3.300 V	3.306 V	3.267 V~3.333 V
5.500 V	3.300 V	3.314 V	3.267 V~3.333 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Calibration Company	Calibration Address	Calibration By	Cal. Date	Cal. Due	Calibration Method
Spectrum Analyzer	KEYSIGHT	N9020A	MY46471071	Ti Testing & Certification Group Co., Ltd. Shenzhen Branch	103, Building B, Ganghongji High tech Intelligent Industrial Park, No. 1008 Songbai Road, Nanshan District, Shenzhen	zhangsuting	2024.07.04	2025.07.03	c)
Power Sensor	KEYSIGHT	U2063XA	MY58000251	Ti Testing & Certification Group Co., Ltd. Shenzhen Branch	103, Building B, Ganghongji High tech Intelligent Industrial Park, No. 1008 Songbai Road, Nanshan District, Shenzhen	zhangsuting	2024.07.04	2025.07.03	c)
multimeter	Fluke	289	44860089	Ti Testing & Certification Group Co., Ltd. Shenzhen Branch	103, Building B, Ganghongji High tech Intelligent Industrial Park, No. 1008 Songbai Road, Nanshan District, Shenzhen	Huangguoliang	2024.08.07	2025.08.06	c)
DC power supply	ITECH	IT6720	600103010717610007	Ti Testing & Certification Group Co., Ltd. Shenzhen Branch	103, Building B, Ganghongji High tech Intelligent Industrial Park, No. 1008 Songbai Road, Nanshan District, Shenzhen	zhangsuting	2024.07.04	2025.07.03	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)

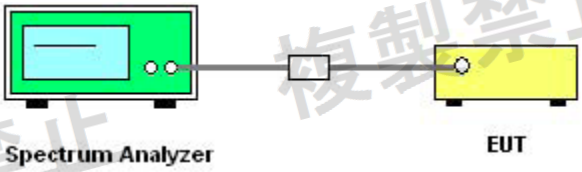
b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)

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)

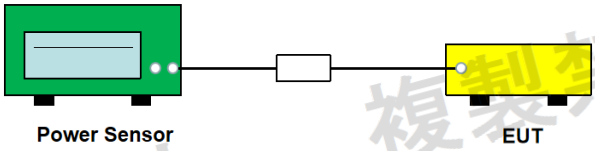
d) Calibration conducted by using measuring instruments and other equipment listed in the right column of Table No. 3 attached hereto, which shall have been given any of calibration, etc. listed above from a) to c)

4.3 Description of Test Setup

4.3.1 For Antenna Port Test

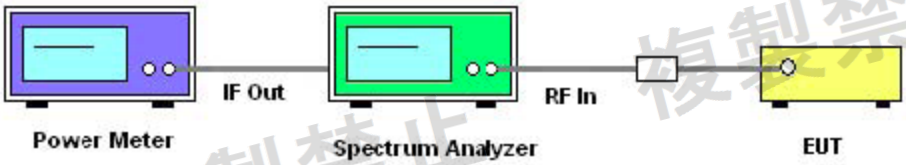


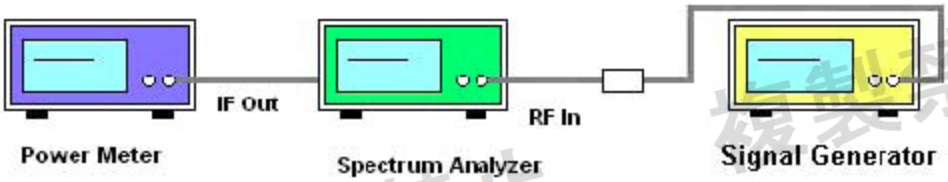
(Diagram 1)



(Diagram 2)

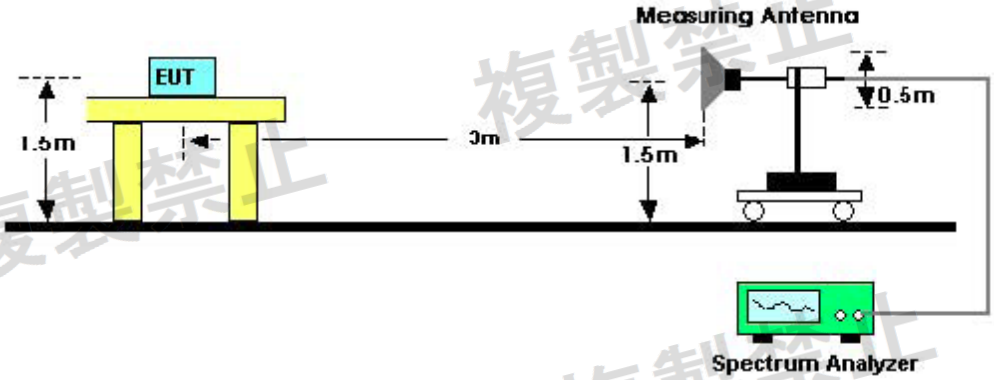
4.3.2 For Antenna Power Error Test



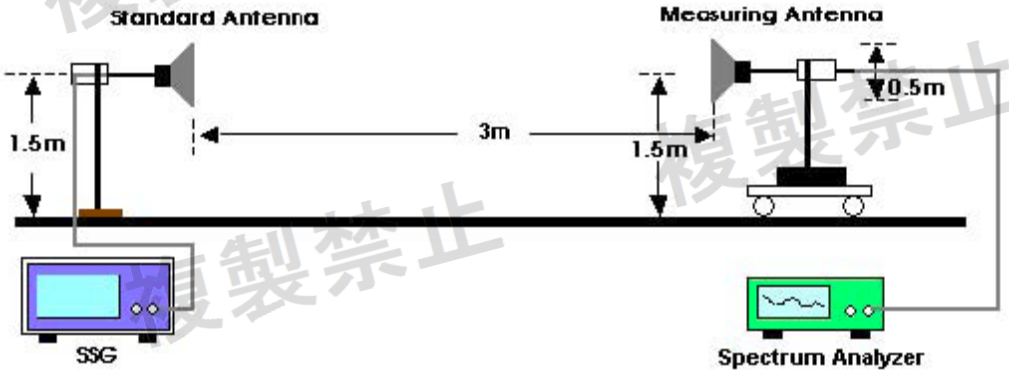


(Diagram 3)

4.3.3 For EIRP Antenna Power Test

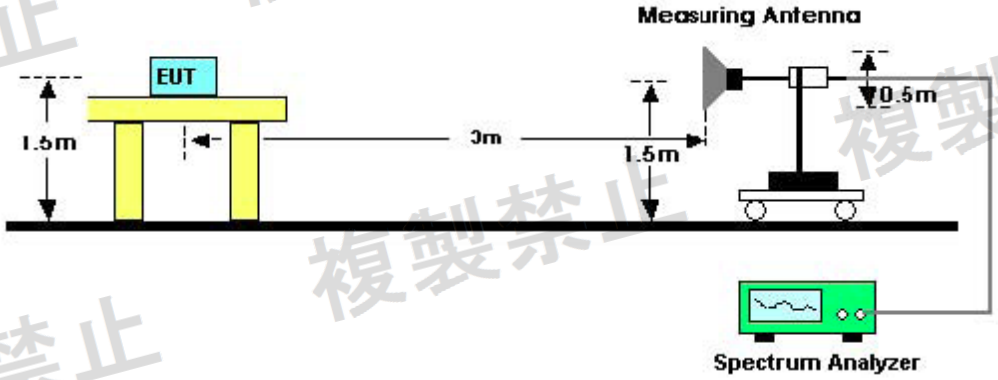


(Diagram 4)



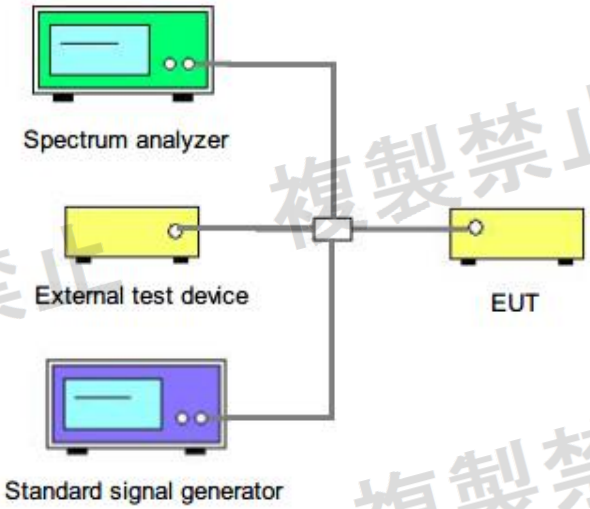
(Diagram 5)

4.3.4 For 3dB Beamwidth Test

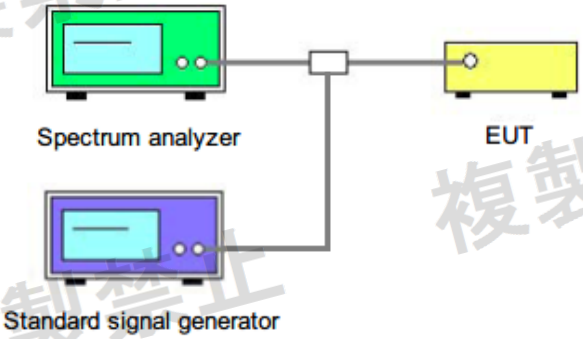


(Diagram 6)

4.3.5 For Carrier sensing function Test



(Diagram 7)



(Diagram 8)

5. TEST ITEMS

5.1 Frequency Error Measurement

5.1.1 Limit

Item	Limits
Frequency Tolerance	≤±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: 50 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 $(fc-f)/fc\times10^6$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

5.2.1 Limit

Item	Limits
Occupied Band Width	FHSS≦83.5MHz; OFDM(20M)≦26MHz; 26MH≦OFDM(40M) ≦40MHz; DSSS≦26MHz; Others≦26MHz

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 resolution 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 form 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”.

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 continuously transmitting mode.

5.2.6 Test Result

Please refer to ANNEX A.2.

5.3 Unwanted Emission Intensity Measurement

5.3.1 Limit

Item	Limits
TX Spurious Emission	≤2.5 μW/MHz (30≤f≤1000 MHz) , ≤2.5 μW/MHz (1000 MHz≤f<2387 MHz ; 2496.5 MHz<f)
	≤25 μW/MHz (2387 MHz≤f<2400 MHz) and (2483.5 MHz<f≤2496.5 MHz)

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 Test Procedure

1 EUT have transmitted the maximum modulation signal and fixed channelize.

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 1000 MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW/MHz.

4 Setting of SA is following as 1000 MHz and stop frequency 2387 MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW/MHz.

5 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/MHz.

6 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/MHz.

7 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/MHz.

8 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 = Meaured_Value + 15.2 [dBm].

9 If the Result_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result_Value.

5.3.4 Test Deviation

There is no deviation with the original standard.

5.3.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.3.6 Test Result

Please refer to ANNEX A.3.

5.4 Antenna Power Error Measurement

5.4.1 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% (Base on manufacturer declare antenna power density)

5.4.2 Test Setup

See section 4.3.2 for test setup description for the antenna power error measurement. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Span Frequency	0MHz
RB/VB	1MHz
Detector	Positive Peak
Trace	Max hold
Sweep Time	Auto

Power Meter Parameter	Setting
Filter No.	Auto
Measurement time	0.135 s ~ 26 s

1 Measure equivalent noise bandwidth at 1 MHz resolution bandwidth of the spectrum analyzer and obtain a correction value used for correcting the resolution bandwidth into 1 MHz equivalent bandwidth. However, in case that the spreading bandwidth is 1 MHz or less, correction using the measured equivalent noise bandwidth is not required.

2 The attenuator shall be adjusted to supply an optimum input level to the spectrum analyzer.

3 Set the spectrum analyzer as follows to search for frequency giving the maximum antenna power:

Centre Frequency: Test frequency

Frequency sweep width: Approximately twice the occupied bandwidth

Resolution bandwidth: 1MHz

Video bandwidth: Approximately 3 times the resolution bandwidth (e.g. 3 MHz)

Y-axis scale: 10 dB / div

Sweep time: Minimum time to ensure the measuring accuracy (In case of burst wave, one burst shall be included in one sample at least.)

Trigger condition: Free-run

Number of data points: 1001 points or more

Sweep mode: Continuous sweep

Detection mode: Positive peak

Indication mode: Maximum hold

4 Set the spectrum analyzer as follows to measure antenna power. Prior to the measurement, calibrate indication of the power meter for the indication at EUT output in the condition that the power meter is connected to IF output of the spectrum analyzer.

Center frequency: A frequency giving the maximum power (searched frequency);

Frequency sweep width: 0 Hz;

Resolution bandwidth: 1 MHz;

Sweep mode: Continuous sweep.

5 When using the calculation function of the spectrum analyzer to measure antenna power , the settings of the spectrum analyzer are as follows :

Centre Frequency: Equal to the frequency recorded in step 2.

Frequency sweep width:10MHz

Operation bandwidth:1MHz

Resolution bandwidth: 30kHz to 300kHz

Video bandwidth: Approximately 3 times the resolution bandwidth

Y-axis scale: 10 dB / div

Sweep time: Integer multiple of burst period per sample

Trigger condition: Free-run

Number of data points: 1001 points or more

Sweep mode: Continuous sweep

Detection mode: RMS

Indication mode: RMS power,about 10 on average.

Measuring procedures (Antenna power)

a. For orthogonal frequency division multiplexing system or spread spectrum system using direct sequence spreading:

(1) Set the spectrum analyzer according to 3.

(2) After repeating sweeps until spectrum fluctuation is not observed, measure the frequency giving the maximum power per 1 MHz.

(3) Set the spectrum analyzer according to 5.

(4) Antenna power shall be obtained as follows.

(a) For continuous wave; Values obtained from the operation of the spectrum analyzer.

(b) For burst wave; Mean power in burst that is calculated from the transmission time ratio and the values obtained from the operation in the same way as that for continuous wave:

Mean power in burst = values obtained from the operation of the spectrum analyzer / transmission time

ratio
where
Transmission time ratio = burst transmission time / burst repetition period
(5) When the EUT has plural modulation methods for sub-carriers in orthogonal frequency division multiplexing system, measure antenna power for each modulation method and use the maximum value as the measured value.
(6) When EUT has plural antenna terminals, conduct above measurement at each terminal.
b. For other systems
(1) Connect the power meter to the attenuator output and measure the total power (mW).
(2) Antenna power shall be obtained as follows.
(a) For continuous wave; Value obtained in (1)
(b) For burst wave; Mean power in burst that is calculated from the transmission time ratio and the value obtained in (1)
Mean power in burst = indicated value of power meter / transmission time ratio
(3) Measure antenna power per 1 MHz bandwidth (m W / MHz) in the same way as that in Measuring procedures a above.
(4) When EUT has plural antenna terminals, conduct above measurement at each terminal.

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 Limitation of Collateral Emission of Receiver Measurement

5.5.1 Limit

Item	Limits
RX Spurious Emission	≦4nW (f<1GHz)
	≦20nW (1GHz≦f)

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

1 EUT has the continuous reception mode and fixed only one channelize.

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 GHz, 2 nW for f≥ 1GHz), 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

5.5.4 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 receiving mode.

5.5.6 Test Result

Please refer to ANNEX A.5.

5.6 Carrier sensing function (1)

5.6.1 Limit

Radio equipment using OFDM method shall provide a carrier sensing function when the occupied bandwidth of its transmitting device is over 26 MHz and 40 MHz or less.

5.6.2 Test Setup

See section 4.3.1 Diagram 6 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

1 Set the spectrum analyzer as follows:
Center frequency: Center of frequency of test channel
Frequency sweep width: 50MHz
RBW: Approximately 1MHz
VBW: Approximately same as RBW
Y-axis scale: 10dB / div
Detection mode: Positive peak

2 Turn off the output of the standard signal generator. Set the standard signal generator as follows:
Carrier frequency: Center of reception frequency band of EUT
Modulation: No modulation
Output level: Specified level at antenna input of EUT

3 Make a line connection between the EUT and the external test device and confirm using the spectrum analyzer that the EUT is transmitting a test frequency signal of OFDM method which occupied bandwidth is over 26 MHz.

4 EUT is set to a test frequency and a test spreading code and put to reception state first. when using an external test device, a communication link between the EUT and the external test device is established.

5 Turn on the output of the standard signal generator, set the EUT to transmission state and confirm using the spectrum analyzer that the EUT does not transmit radio wave of OFDM method which occupied bandwidth is over 26 MHz.

5.6.4 Test Deviation

There is no deviation with the original standard.

5.6.5 EUT Operation during Test

EUT is set to a test frequency and a test spreading code and put to reception state first.

5.6.6 Test Result

Please refer to ANNEX A.6.

5.7 Carrier sensing function (2)

5.7.1 Limit

Transmission device used for radio control of outdoor-use model-airplane (except frequency hopping system) shall provide a carrier sensing function that works at the start of the transmission.

5.7.2 Test Setup

See section 4.3.1 Diagram 7 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

1 Set the output level of standard signal generator to the specified level at antenna input of EUT, Set the standard signal generator as follows:
Carrier frequency: Center of reception frequency band of EUT
Modulation: No modulation
Output level: Specified level at antenna input of EUT
2 Set the EUT to reception state
3 Turn on the output of the standard signal generator.
4 Set the EUT to transmission state and confirm using the spectrum analyzer that the EUT does not transmit radio wave. Set the spectrum analyzer as follows:
Center frequency: Center of frequency of test channel
Frequency sweep width: 50MHz
RBW: Approximately 1MHz
VBW: Approximately same as RBW
Y-axis scale: 10dB / div
Detection mode: Positive peak
5 Set the EUT to reception state
6 Turn off the output of the standard signal generator.
7 Set the EUT to transmission state and confirm using the spectrum analyzer that the EUT is transmitting radio wave.

5.7.4 Test Deviation

There is no deviation with the original standard.

5.7.5 EUT Operation during Test

EUT is set to a test frequency.

5.7.6 Test Result

Please refer to ANNEX A.7.

5.8 Transmission Antenna Gain (EIRP Antenna Power) Measurement

5.8.1 Limit

Item	Non-directional antennal limits	Directional antennal limits
EIRP Power Density	a) FH,FH+DS, or FH+OFDM form 2427 - 2470.75 MHz: ≦6.91 dBm/MHz b) DS but other than a) from 2400~2483.5 MHz: ≦12.14 dBm/MHz c) OFDM, but other than a): For OCB of 26MHz or less: ≦ 12.14 dBm/MHz For OCB of over 26 MHz to 40 MHz: ≦9.14 dBm/MHz d) Other than a), b) and c): ≦ 12.14 dBm	a) FH,FH+DS, or FH+OFDM form 2427 - 2470.75 MHz: ≦16.91 dBm/MHz b) DS but other than a) from 2400~2483.5 MHz: ≦22.14 dBm/MHz z c) OFDM, but other than a): For OCB of 26MHz or less: ≦ 22.14 dBm/MHz For OCB of over 26 MHz to 40 MHz: ≦19.14 dBm/MHz d) Other than a), b) and c): ≦ 22.14 dBm
Note: This test item is not applied to EUT with EIRP Antenna power lower than 12.14 dBm/MHz.		

5.8.2 Test Setup

See section 4.3.4 for test setup description for the antenna port.

5.8.3 Test Procedure

1 Set EUT ad measuring antenna at the same height and roughly facing each other.

2 Set spectrum analyzer with RBW=1MHz, VBW=1MHz, Detector=Peak, Trace mode=Max Hold, and tune reference level to observe receiving signal position.

3 Move the measuring antenna height up and down within ± 50cm of EUT height and swing it to find the maximum output of the measuring antenna. The output level at the spectrum analyzer is read sa “E“.

4 Remove the EUT from the turn table and put the replacing antenna facing to measuring antenna at same height. Set the standard signal generator (SSG) at same frequency and transmit on then receive the signal

5 Swing the replacing antenna give a maximum receiving level.

6 Move the measuring antenna height up and down within ± 50cm of replacing antenna height and swing it to find the maximum receiving level.

7 Set SSG output power at Pt to give the equivalent output level of “E” or caluate Pt with SSG output which gives the nearest of “E” and difference (± 1dB). Record the Pt.

8 Calculate EIRP by the formula below EIRP = Gt – L + Pt.

Gt: gain of replacing antenna (dBi)

L: feeder loss between SSG and replacing antenna

Pt: Output power of the SSG

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

5.8.4 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 Transmission Radiation Angle Width (3dB Beamwidth) Measurement

5.9.1 Limit

Item	Limits
3dB antenna beam width	360/A (If A<1; then A=1) A = {EIRP Power [mW] / 16.36 for DS, OFDM} or A = {EIRP Power [mW] / 4.9 for FH}
This test item is not applied to EUT with EIRP Antenna power lower than 12.14 dBm/MHz.	

5.9.2 Test Setup

See section 4.3.4 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.9.3 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 receving signal position.

3 Rotate directions of the EUT horizontally and ertically to find the maximum receiving power.

4 Move the measuring antenna height up and down within ± 50cm of EUT height and swing it to find the maximum output of measuing antenna. The output level at the spectrum analyzer is read as “E”

5 Caluate 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 = {EIRP Power [mW] / 16.36 for DS, OFDM} or A = {EIRP Power [mW] / 4.9 for FH}

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.

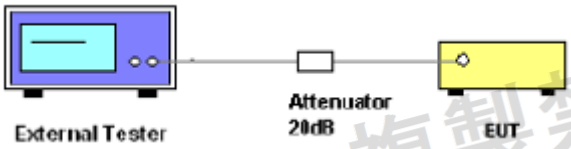
5.10 Radio Interference Prevention Capability Measurement

5.10.1 Limit

Item	Limits
Identification	≥ 48 bits

5.10.2 Test Setup

The photo of test setup please refer to ANNEX B.



5.10.3 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.

5.10.4 Test Deviation

There is no deviation with the original standard.

5.10.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.10.6 Test Result

Please refer to ANNEX A.10.

ANNEX A TEST RESULT

A.1 Frequency Error

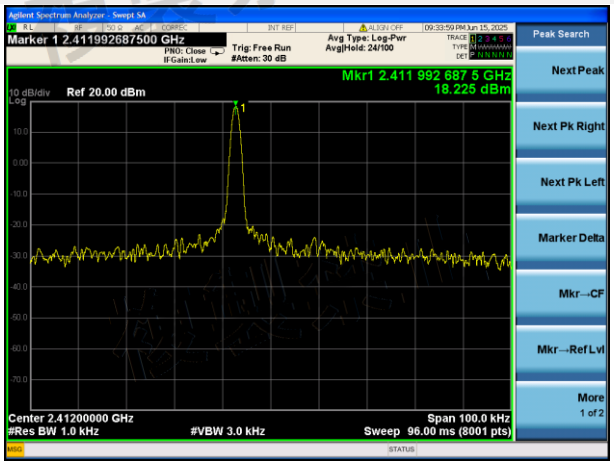
Antenna 1

Test Data

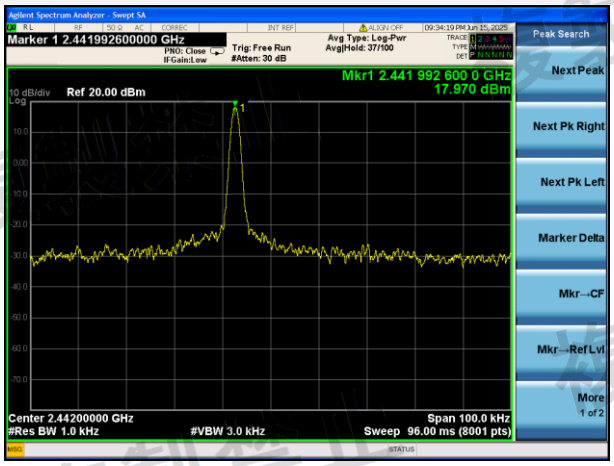
Mode	Test Voltage	Channel	Frequency fc (MHz)	Test Frequency (MHz)	Frequency Error ppm	Limit (ppm)	Refer to Plot	Verdict
20 MHz	NV	Low	2412	2411.992688	-3.03	±50	A.1.1	Pass
		Middle	2442	2441.992600	-3.03	±50	A.1.2	Pass
		High	2472	2471.992438	-3.06	±50	A.1.3	Pass
40 MHz	NV	Low	2422	2421.992650	-3.03	±50	A.1.4	Pass
		Middle	2442	2441.992563	-3.05	±50	A.1.5	Pass
		High	2462	2461.992463	-3.06	±50	A.1.6	Pass

Test Plots

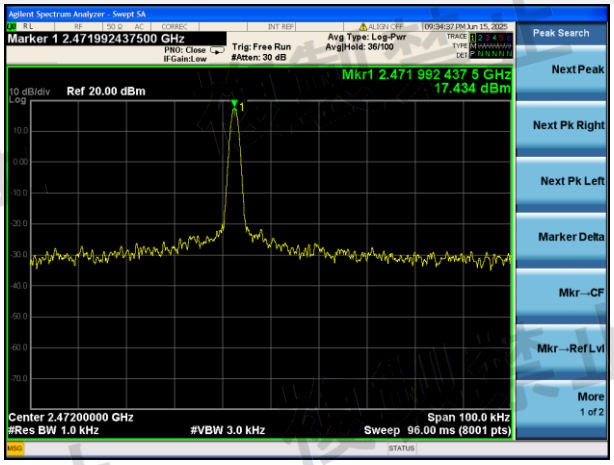
A.1.1 20 MHz NV Low Channel



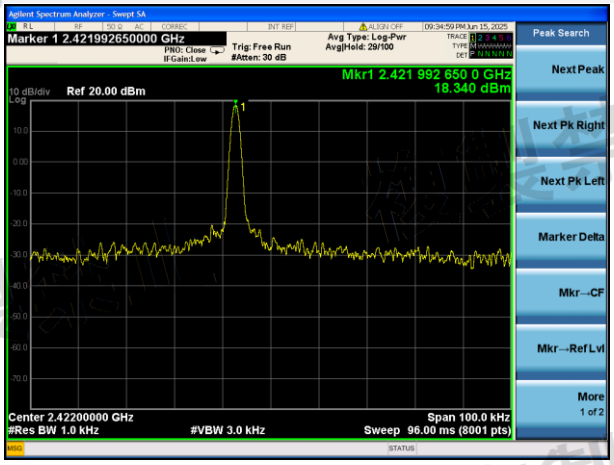
A.1.2 20 MHz NV Middle Channel



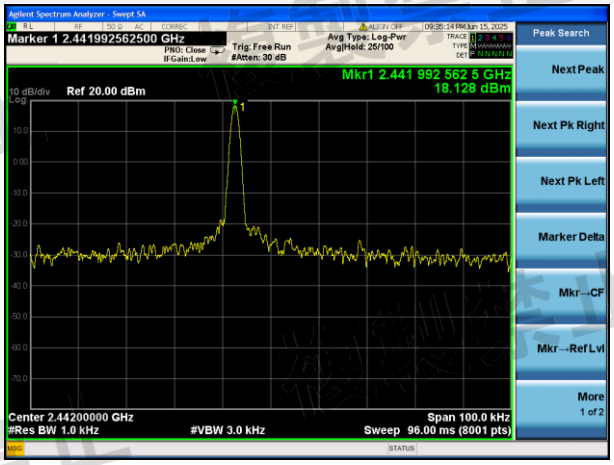
A.1.3 20 MHz NV High Channel



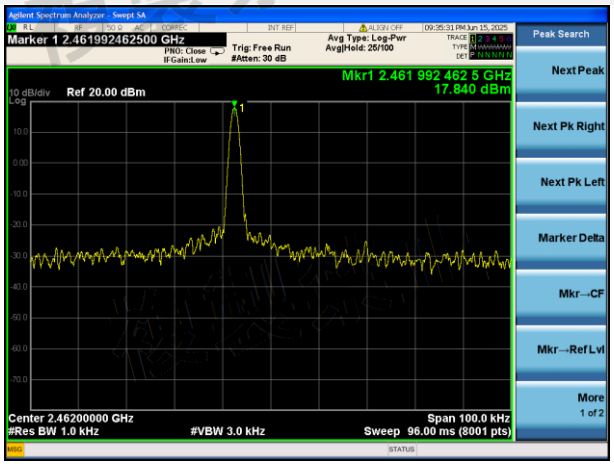
A.1.4 40 MHz NV Low Channel



A.1.5 40 MHz NV Middle Channel



A.1.6 40 MHz NV High Channel



A.2 Occupied Bandwidth

Antenna 1

Test Data

802.11b

Results of Occupied Bandwidth	Channel	Test Voltage	Measured 99% Occupied Bandwidth (MHz)	Occupied Bandwidth Limit (MHz)	Refer to Plot	Verdict
	Low	NV	14.38	≤ 26	A.2.1	Pass
	Middle		14.37	≤ 26	A.2.2	Pass
	High		14.38	≤ 26	A.2.3	Pass

802.11g

Results of Occupied Bandwidth	Channel	Test Voltage	Measured 99% Occupied Bandwidth (MHz)	Occupied Bandwidth Limit (MHz)	Refer to Plot	Verdict
	Low	NV	16.33	≤ 26	A.2.4	Pass
	Middle		16.35	≤ 26	A.2.5	Pass
	High		16.35	≤ 26	A.2.6	Pass

802.11n-20 MHz

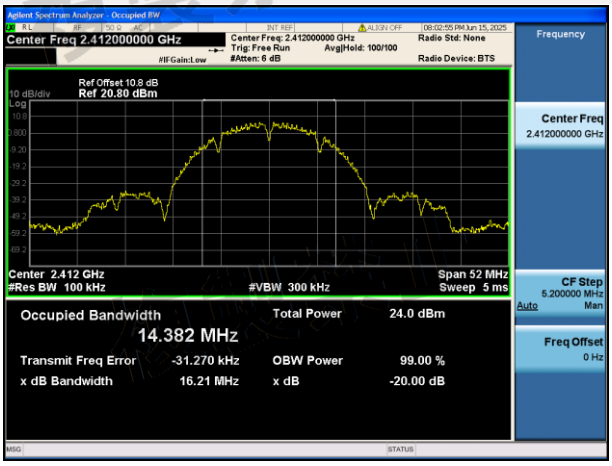
Results of Occupied Bandwidth	Channel	Test Voltage	Measured 99% Occupied Bandwidth (MHz)	Occupied Bandwidth Limit (MHz)	Refer to Plot	Verdict
	Low	NV	17.54	≤ 26	A.2.7	Pass
	Middle		17.54	≤ 26	A.2.8	Pass
	High		17.53	≤ 26	A.2.9	Pass

802.11n-40 MHz

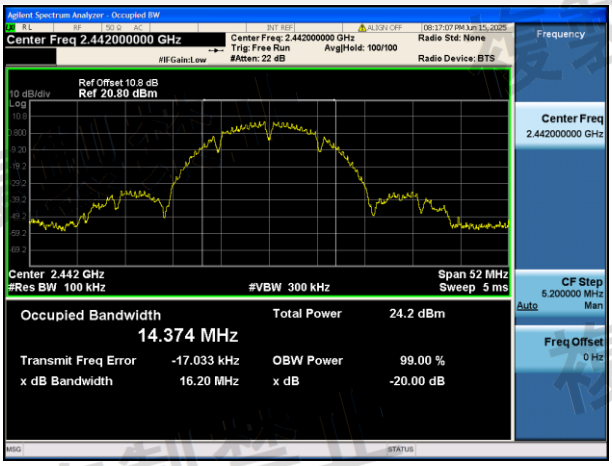
Results of Occupied Bandwidth	Channel	Test Voltage	Measured 99% Occupied Bandwidth (MHz)	Occupied Bandwidth Limit (MHz)	Refer to Plot	Verdict
	Low	NV	35.97	26~40	A.2.10	Pass
	Middle		35.97	26~40	A.2.11	Pass
	High		35.96	26~40	A.2.12	Pass

Test Plots

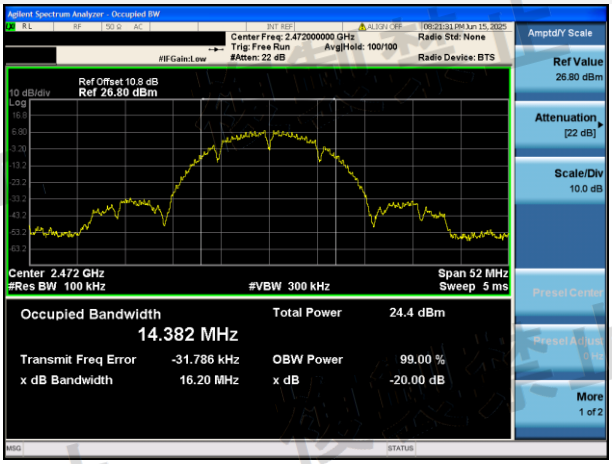
A.2.1 802.11b Low Channel NV



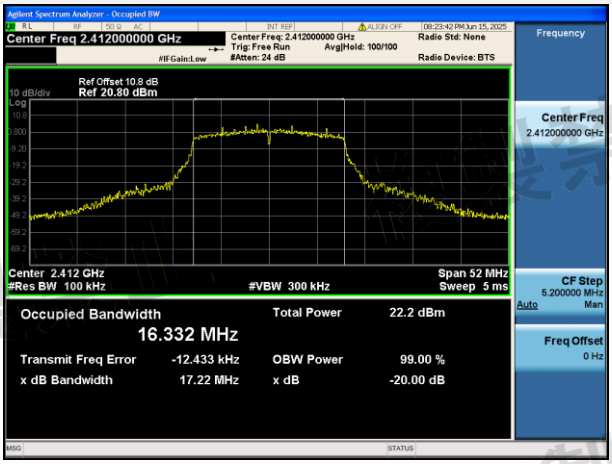
A.2.2 802.11b Middle Channel NV



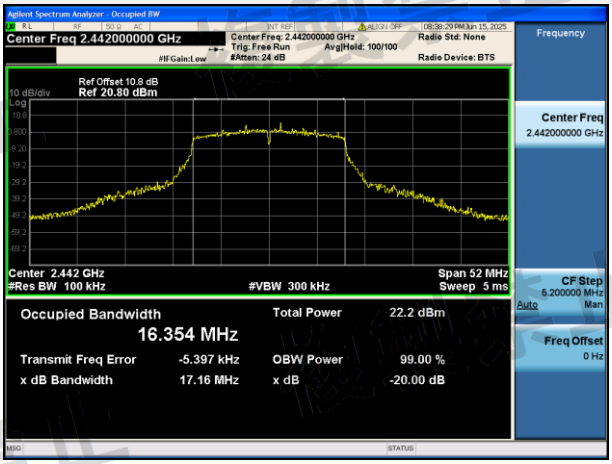
A.2.3 802.11b High Channel NV



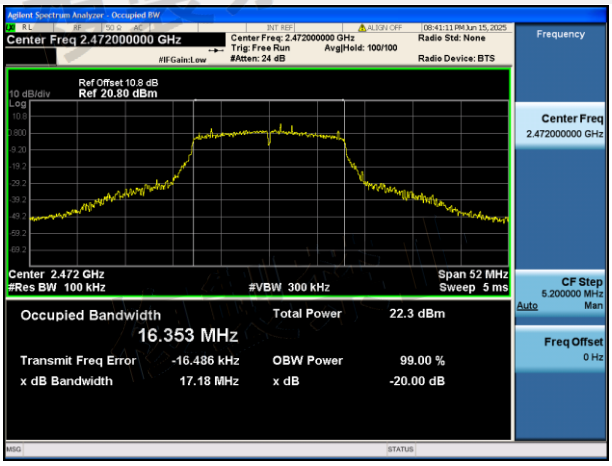
A.2.4 802.11g Low Channel NV



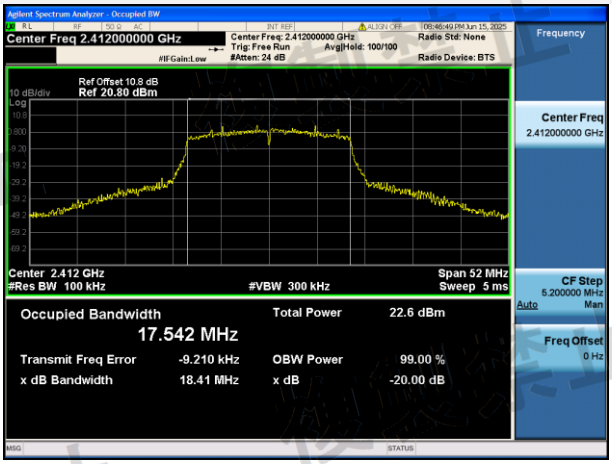
A.2.5 802.11g Middle Channel NV



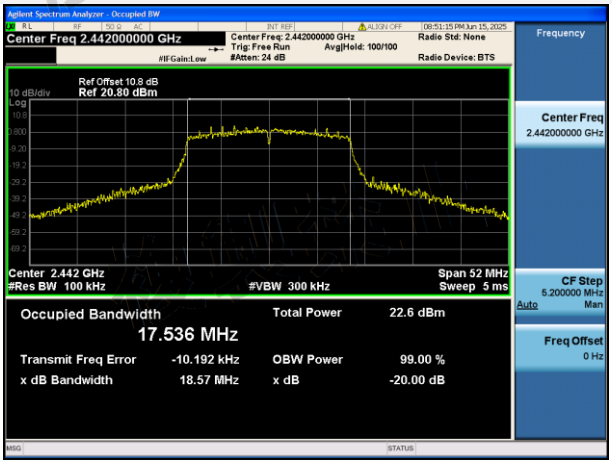
A.2.6 802.11g High Channel NV



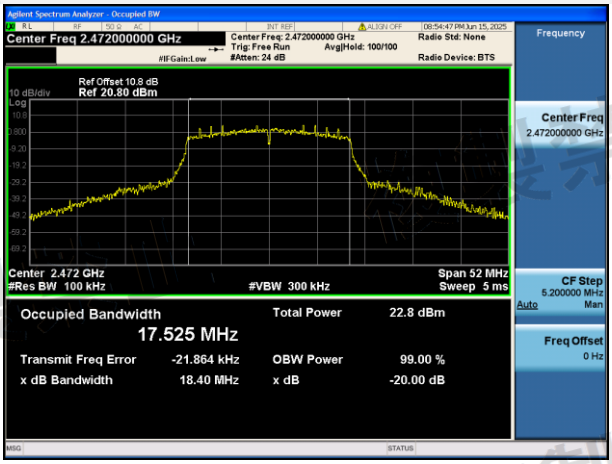
A.2.7 802.11n-20 MHz Low Channel NV



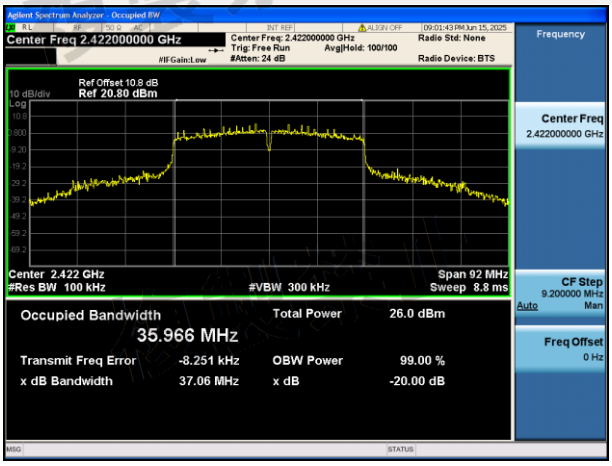
A.2.8 802.11n-20 MHz Middle Channel NV



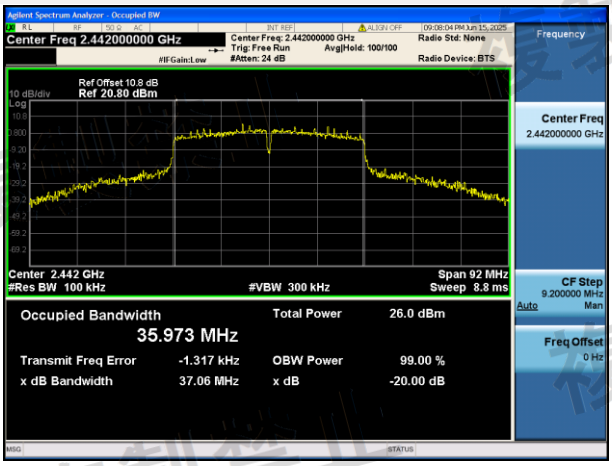
A.2.9 802.11n-20 MHz High Channel NV



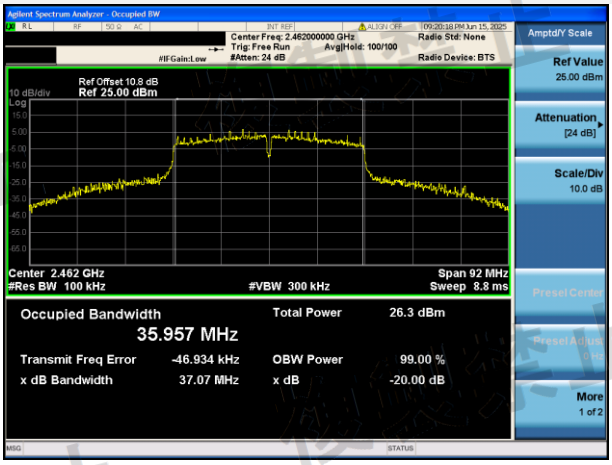
A.2.10 802.11n-40 MHz Low Channel NV



A.2.11 802.11n-40 MHz Middle Channel NV



A.2.12 802.11n-40 MHz High Channel NV



A.3 Unwanted Emission Intensity Measurement

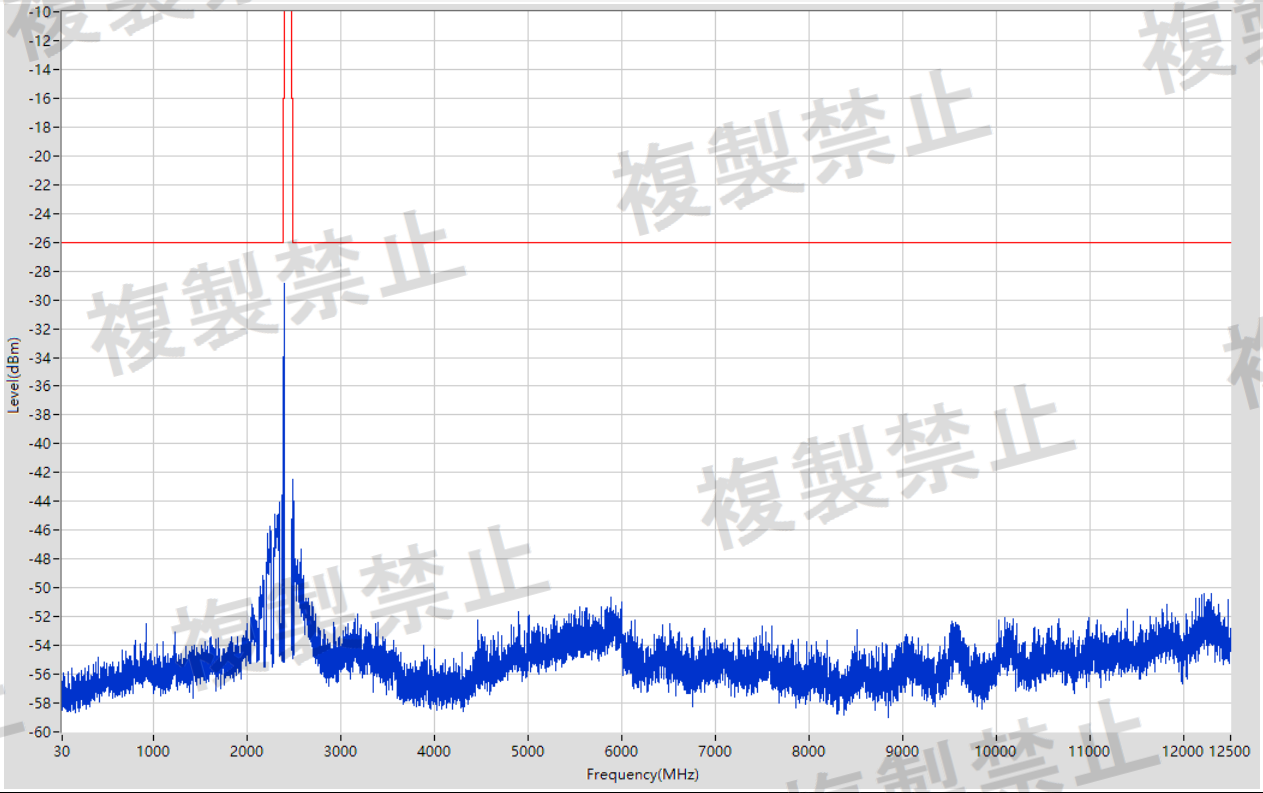
Antenna 1

Test Data

Mode	Test Voltage	Channel	Refer to Plot	Verdict
802.11b	NV	Low	A.3.1	Pass
		Middle	A.3.2	Pass
		High	A.3.3	Pass
802.11g	NV	Low	A.3.4	Pass
		Middle	A.3.5	Pass
		High	A.3.6	Pass
802.11n-20 MHz	NV	Low	A.3.7	Pass
		Middle	A.3.8	Pass
		High	A.3.9	Pass
802.11n-40 MHz	NV	Low	A.3.10	Pass
		Middle	A.3.11	Pass
		High	A.3.12	Pass

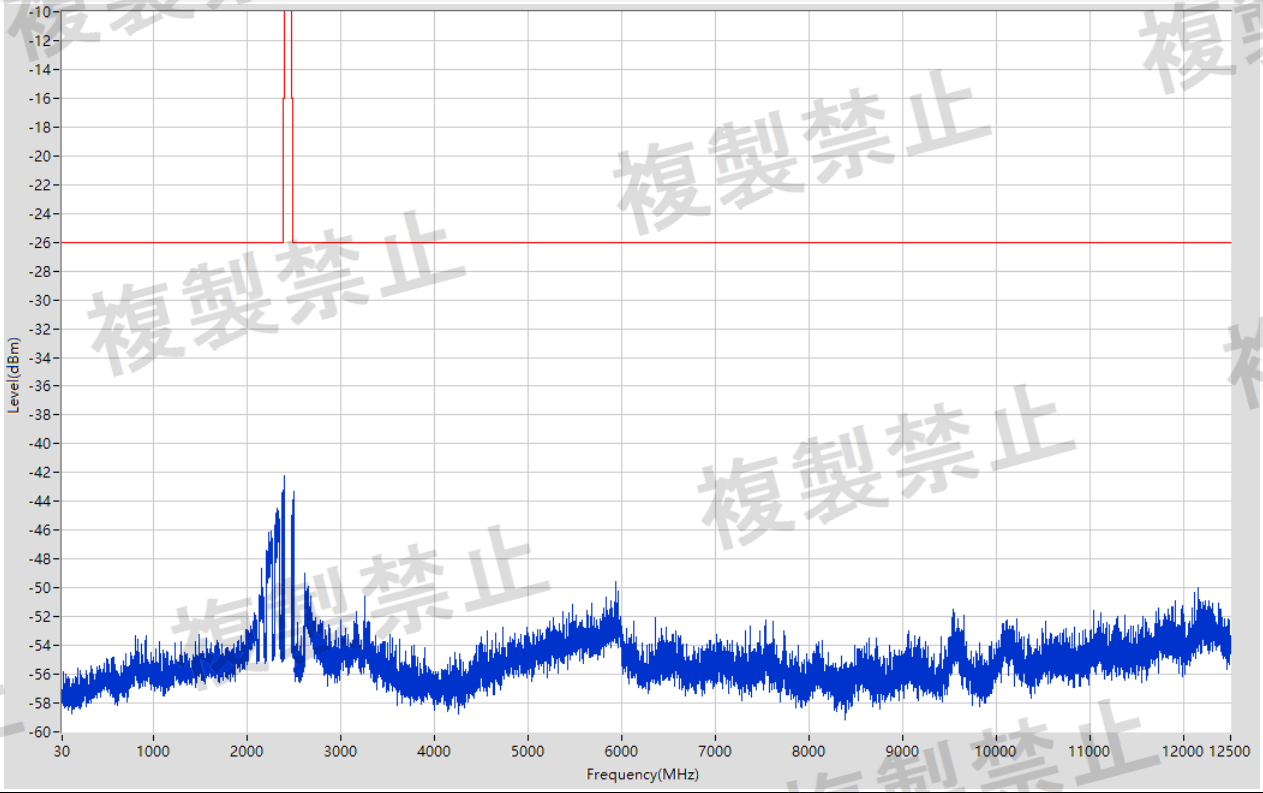
Test Plots

A.3.1 802.11b NV Low Channel



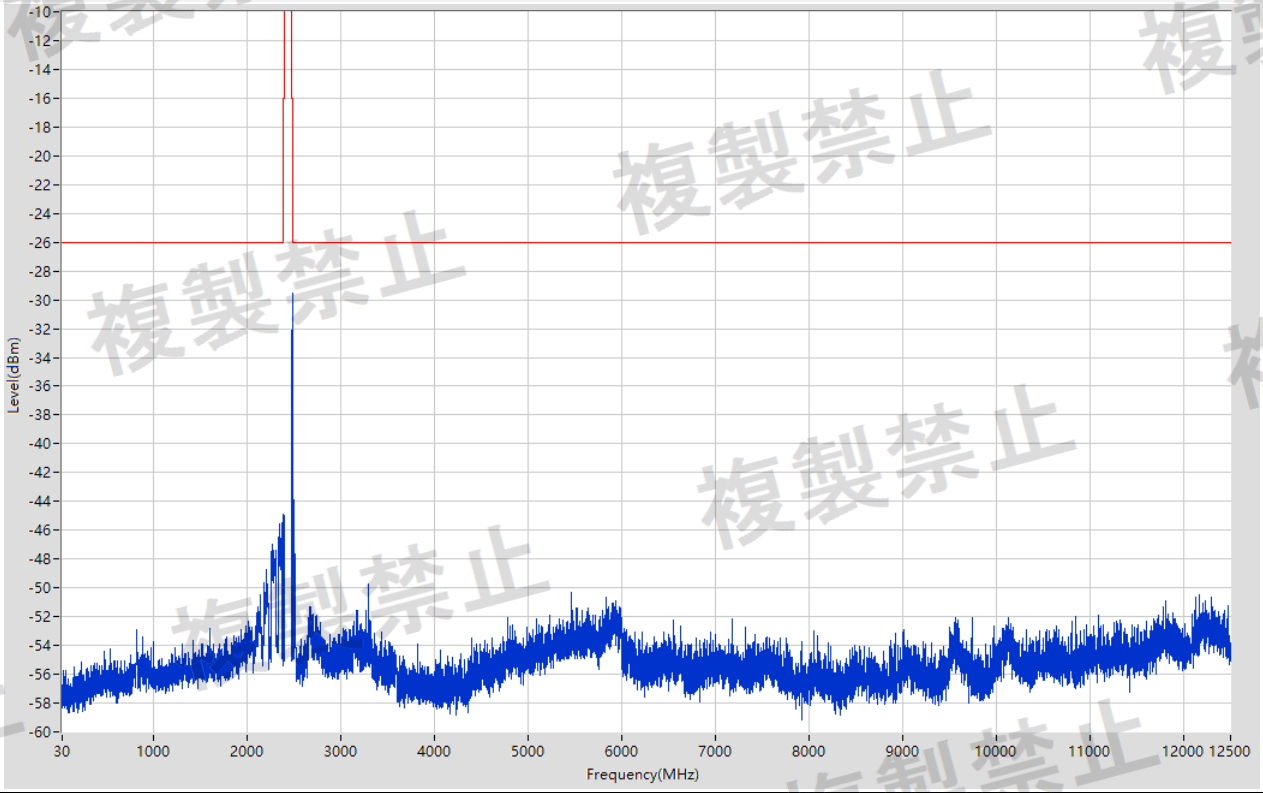
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	926	-52.47	0.006	2.5	Pass
1000	2374	1	Peak	2349	-44.03	0.039	2.5	Pass
2374	2387	1	Peak	2385.798	-41.38	0.073	2.5	Pass
2387	2400	1	Peak	2396.75	-28.84	1.305	25	Pass
2483.5	2496.5	1	Peak	2491.625	-42.5	0.056	25	Pass
2496.5	2509.5	1	Peak	2500.4	-44.01	0.040	2.5	Pass
2509.5	6000	1	Peak	2575.509	-47.34	0.018	2.5	Pass
6000	12500	1	Peak	12215	-50.37	0.009	2.5	Pass

A.3.2 802.11b NV Middle Channel



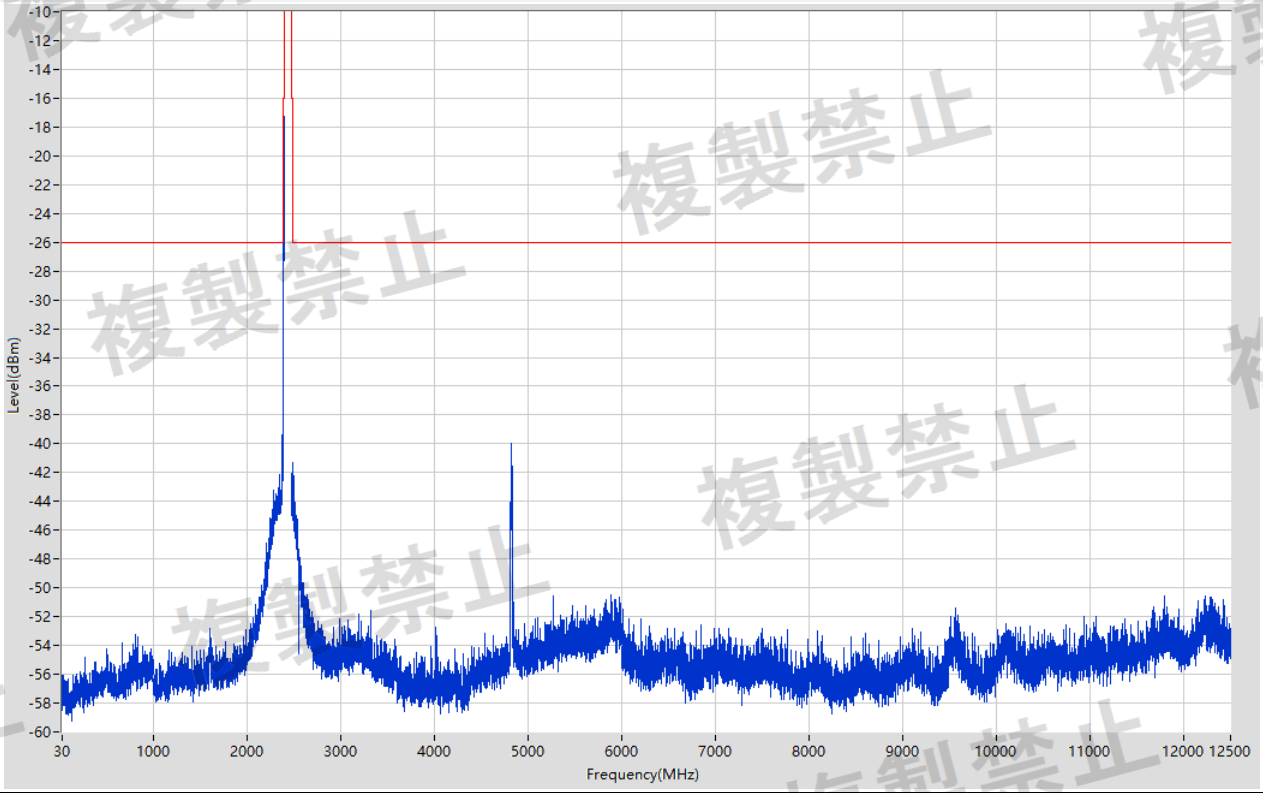
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	925	-53.33	0.005	2.5	Pass
1000	2374	1	Peak	2328	-44.46	0.036	2.5	Pass
2374	2387	1	Peak	2380.663	-43.43	0.045	2.5	Pass
2387	2400	1	Peak	2395.775	-42.22	0.060	25	Pass
2483.5	2496.5	1	Peak	2493.998	-43.88	0.041	25	Pass
2496.5	2509.5	1	Peak	2498.873	-43.34	0.046	2.5	Pass
2509.5	6000	1	Peak	2623.516	-48.97	0.013	2.5	Pass
6000	12500	1	Peak	12160	-49.97	0.010	2.5	Pass

A.3.3 802.11b NV High Channel



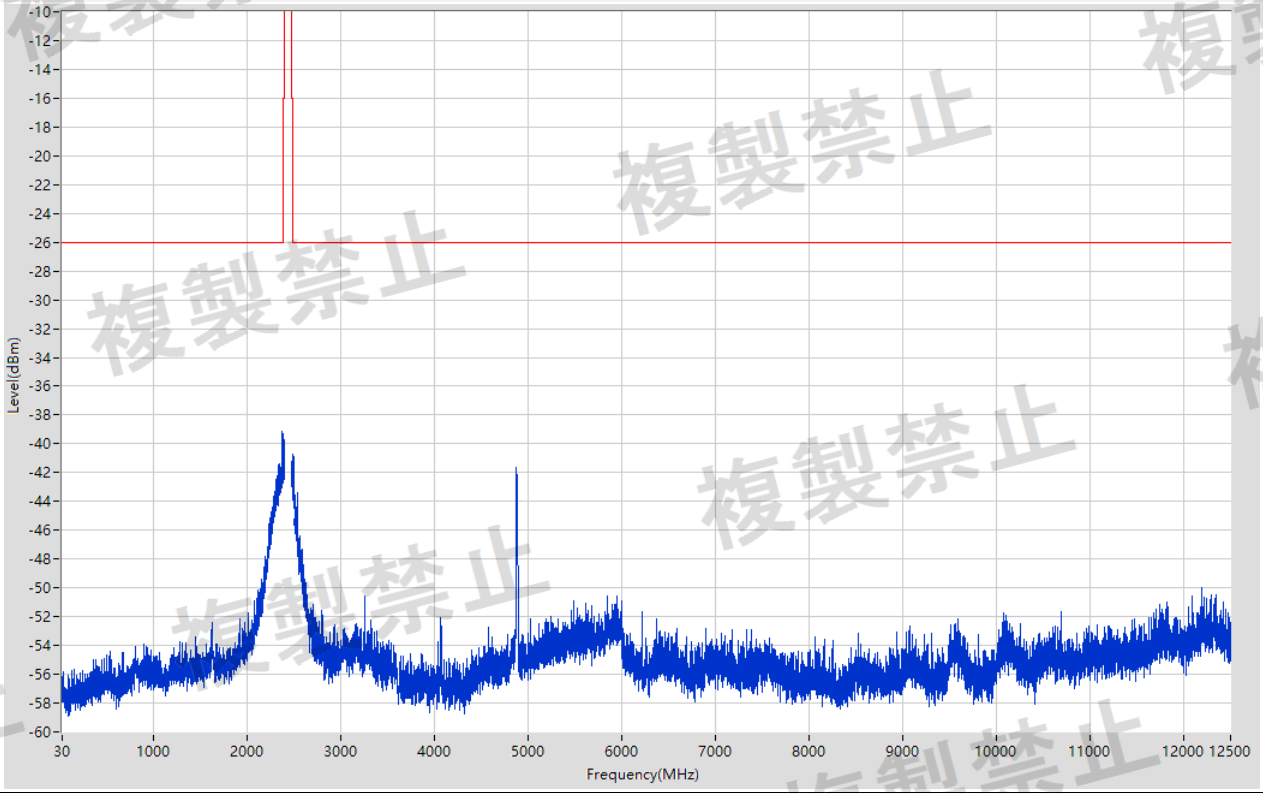
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	827	-52.93	0.005	2.5	Pass
1000	2374	1	Peak	2355	-45.52	0.028	2.5	Pass
2374	2387	1	Peak	2386.025	-45.04	0.031	2.5	Pass
2387	2400	1	Peak	2391.81	-44.89	0.032	25	Pass
2483.5	2496.5	1	Peak	2486.848	-29.51	1.118	25	Pass
2496.5	2509.5	1	Peak	2498.223	-43.89	0.041	2.5	Pass
2509.5	6000	1	Peak	2509.5	-47.01	0.020	2.5	Pass
6000	12500	1	Peak	12170	-50.5	0.009	2.5	Pass

A.3.4 802.11g NV Low Channel



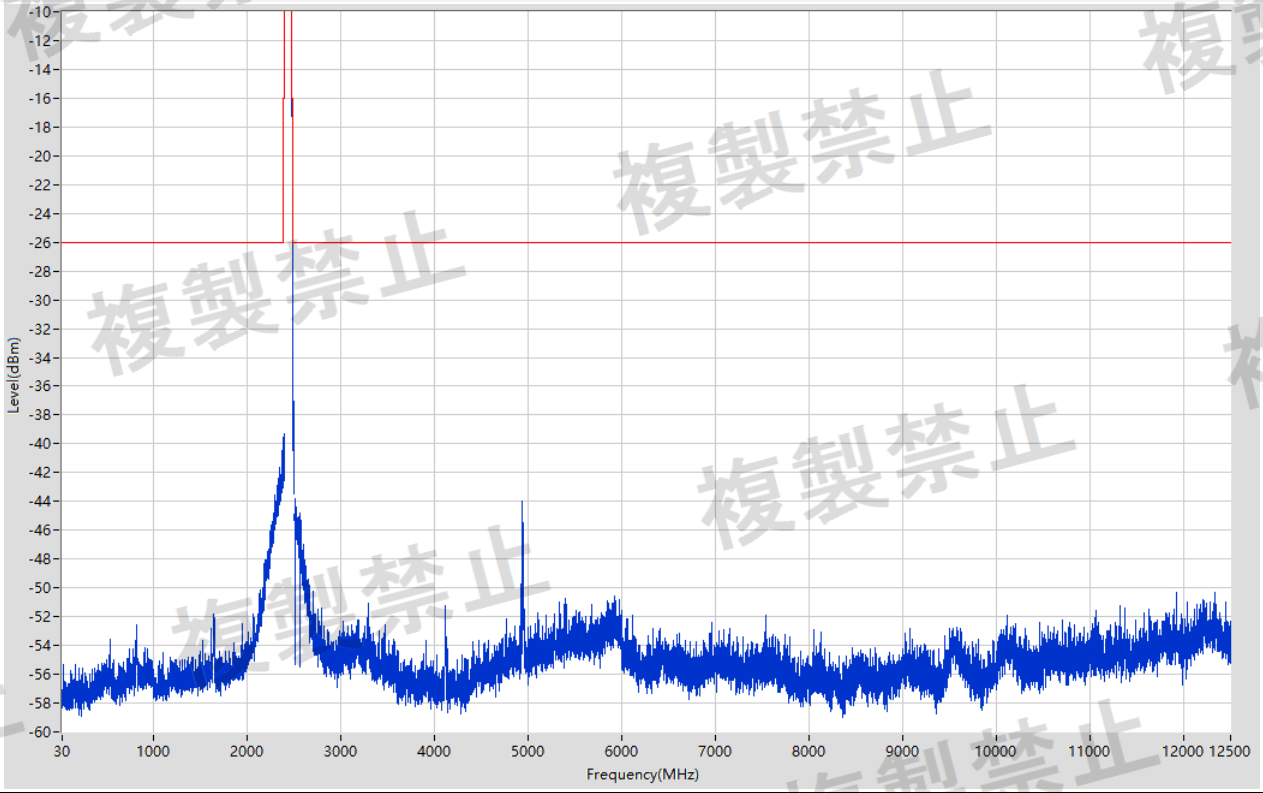
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	809	-53.2	0.005	2.5	Pass
1000	2374	1	Peak	2349	-42.16	0.061	2.5	Pass
2374	2387	1	Peak	2386.513	-37.07	0.196	2.5	Pass
2387	2400	1	Peak	2399.773	-17.28	18.716	25	N/A
			Sample		-35.629	0.274		Pass
2483.5	2496.5	1	Peak	2487.693	-41.28	0.074	25	Pass
2496.5	2509.5	1	Peak	2508.655	-42.24	0.060	2.5	Pass
2509.5	6000	1	Peak	4820.831	-39.97	0.101	2.5	Pass
6000	12500	1	Peak	11798	-50.61	0.009	2.5	Pass

A.3.5 802.11g NV Middle Channel



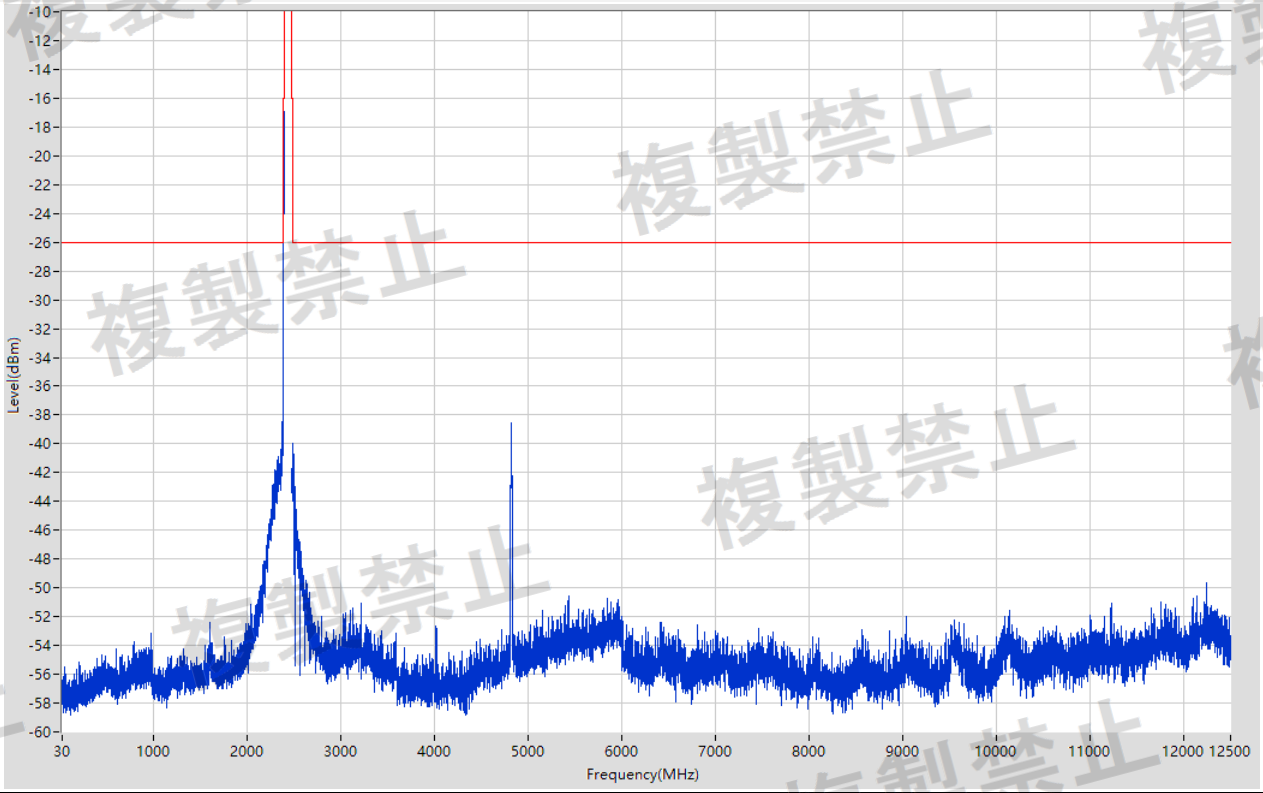
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	896	-53.94	0.004	2.5	Pass
1000	2374	1	Peak	2352	-41.4	0.072	2.5	Pass
2374	2387	1	Peak	2376.568	-39.12	0.123	2.5	Pass
2387	2400	1	Peak	2388.073	-39.3	0.117	25	Pass
2483.5	2496.5	1	Peak	2490.098	-40.74	0.084	25	Pass
2496.5	2509.5	1	Peak	2499.198	-40.85	0.082	2.5	Pass
2509.5	6000	1	Peak	4880.84	-41.67	0.068	2.5	Pass
6000	12500	1	Peak	12187	-49.98	0.010	2.5	Pass

A.3.6 802.11g NV High Channel



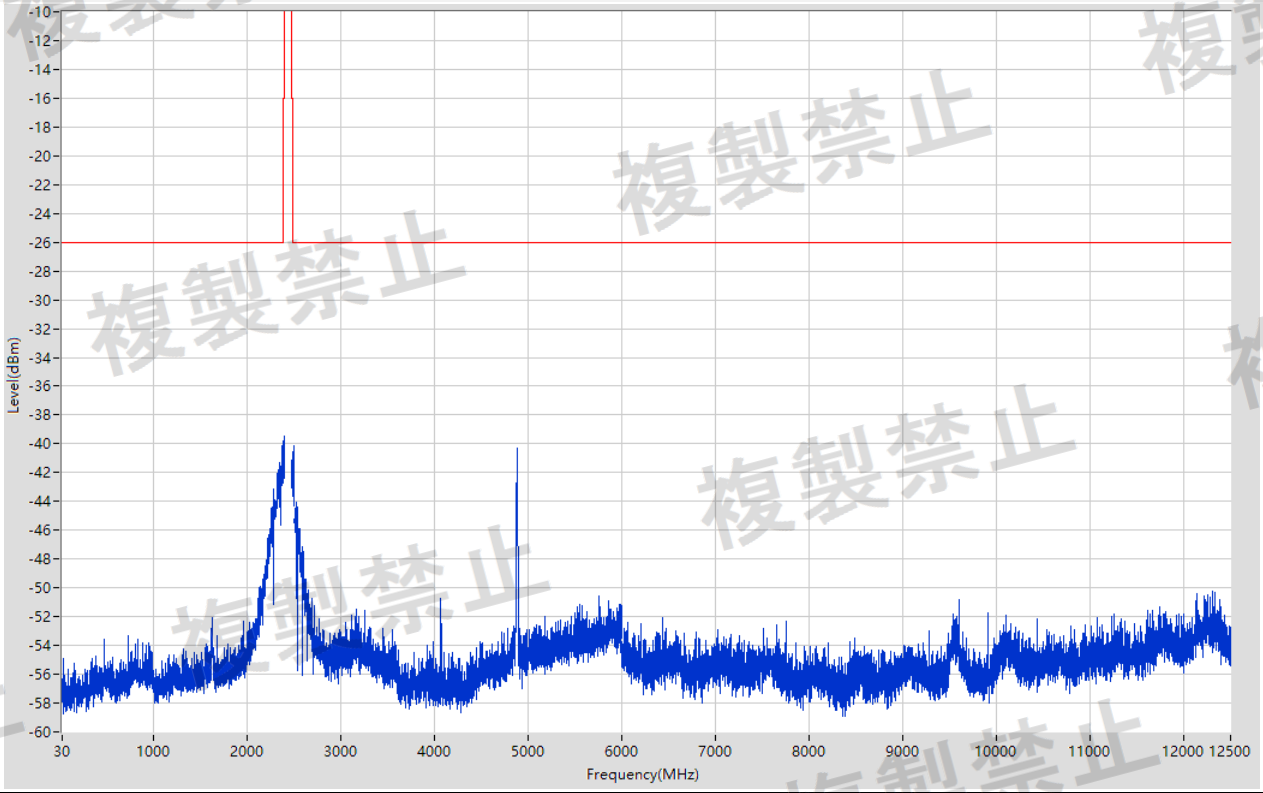
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	821	-52.55	0.006	2.5	Pass
1000	2374	1	Peak	2373	-41.58	0.070	2.5	Pass
2374	2387	1	Peak	2385.96	-39.56	0.111	2.5	Pass
2387	2400	1	Peak	2394.67	-39.34	0.116	25	Pass
2483.5	2496.5	1	Peak	2483.565	-15.73	26.712	25	N/A
			Sample		-34.769	0.334		Pass
2496.5	2509.5	1	Peak	2499.035	-37.07	0.196	2.5	Pass
2509.5	6000	1	Peak	2512.5	-43.81	0.042	2.5	Pass
6000	12500	1	Peak	11923	-50.3	0.009	2.5	Pass

A.3.7 802.11n-20MHz NV Low Channel



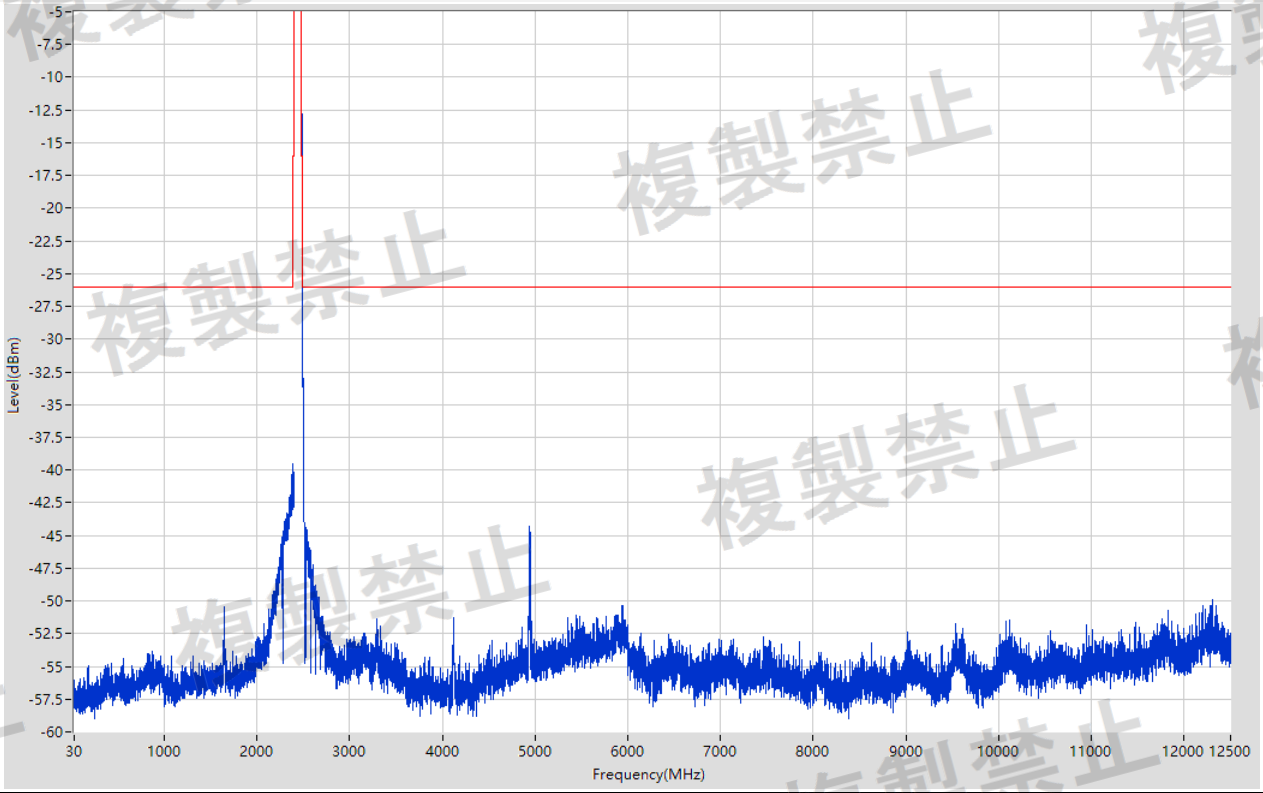
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	977	-53.17	0.005	2.5	Pass
1000	2374	1	Peak	2364	-40.42	0.091	2.5	Pass
2374	2387	1	Peak	2386.935	-36.6	0.219	2.5	Pass
2387	2400	1	Peak	2399.87	-16.97	20.113	25	N/A
			Sample		-34.7	0.339		Pass
2483.5	2496.5	1	Peak	2490.423	-39.95	0.101	25	Pass
2496.5	2509.5	1	Peak	2498.06	-40.72	0.085	2.5	Pass
2509.5	6000	1	Peak	4824.832	-38.58	0.139	2.5	Pass
6000	12500	1	Peak	12250	-49.66	0.011	2.5	Pass

A.3.8 802.11n-20MHz NV Middle Channel



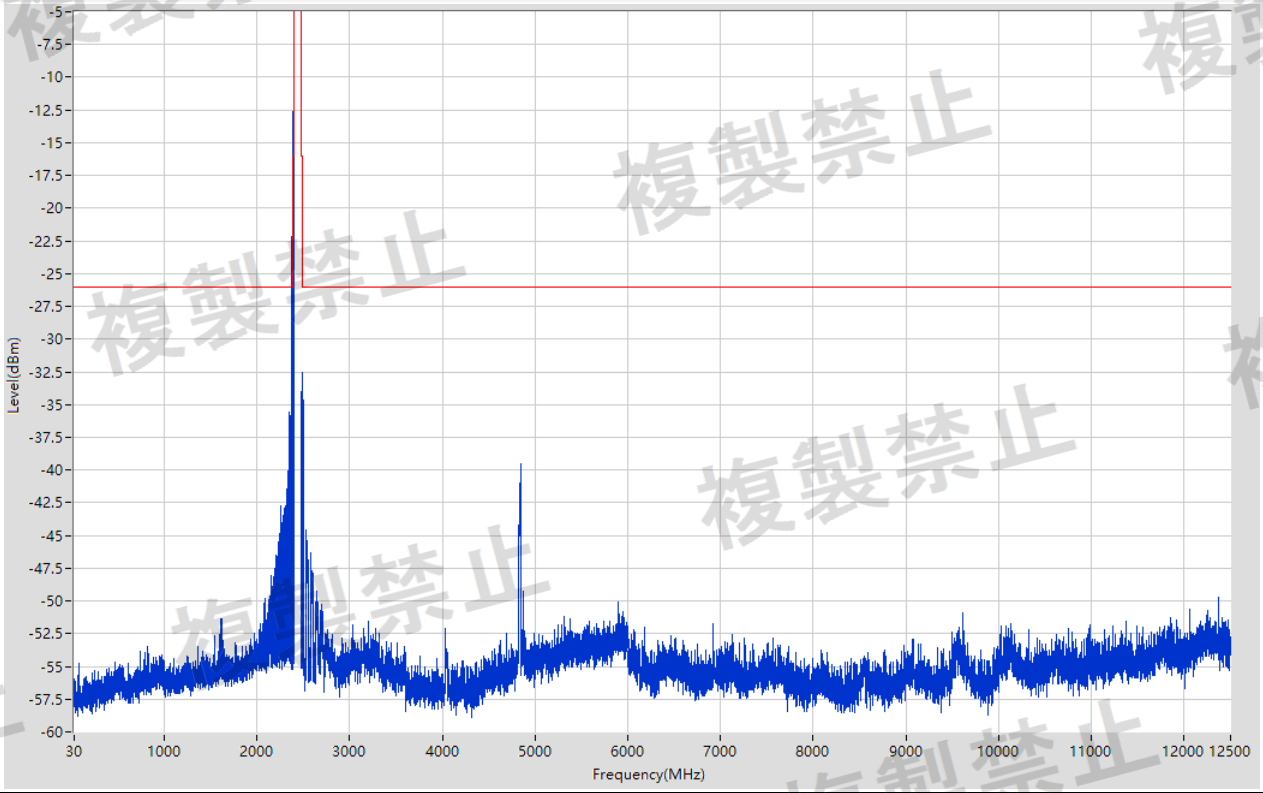
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	736	-53.28	0.005	2.5	Pass
1000	2374	1	Peak	2355	-41.34	0.073	2.5	Pass
2374	2387	1	Peak	2382.775	-39.98	0.100	2.5	Pass
2387	2400	1	Peak	2397.27	-39.43	0.114	25	Pass
2483.5	2496.5	1	Peak	2487.628	-40.55	0.088	25	Pass
2496.5	2509.5	1	Peak	2499.945	-40.11	0.097	2.5	Pass
2509.5	6000	1	Peak	4885.84	-40.29	0.094	2.5	Pass
6000	12500	1	Peak	12307	-50.21	0.010	2.5	Pass

A.3.9 802.11n-20MHz NV High Channel



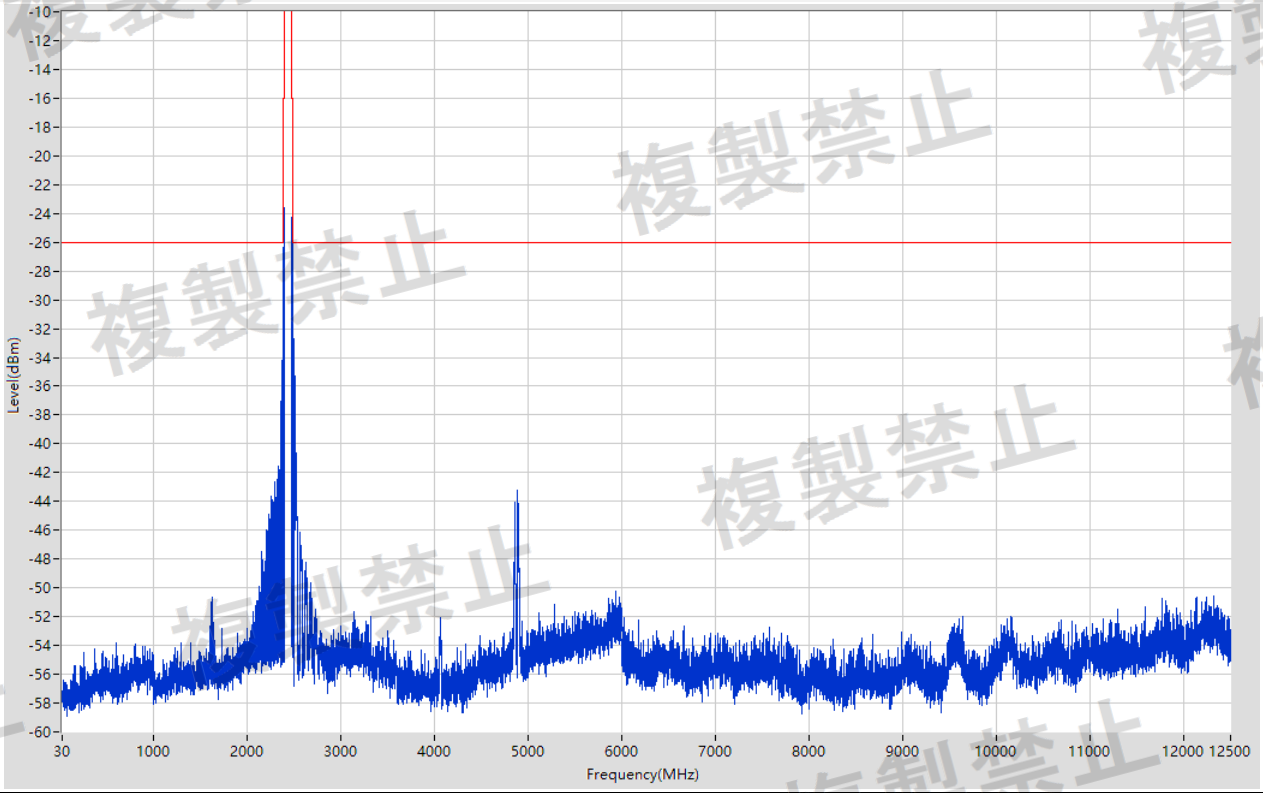
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	869	-53.83	0.004	2.5	Pass
1000	2374	1	Peak	2367	-41.92	0.064	2.5	Pass
2374	2387	1	Peak	2383.263	-39.54	0.111	2.5	Pass
2387	2400	1	Peak	2391.453	-39.79	0.105	25	Pass
2483.5	2496.5	1	Peak	2483.89	-12.85	51.894	25	N/A
			Sample		-34.378	0.365		Pass
2496.5	2509.5	1	Peak	2496.5	-32.1	0.616	2.5	Pass
2509.5	6000	1	Peak	2509.5	-43.83	0.041	2.5	Pass
6000	12500	1	Peak	12309	-49.93	0.010	2.5	Pass

A.3.10 802.11n-40MHz NV Low Channel



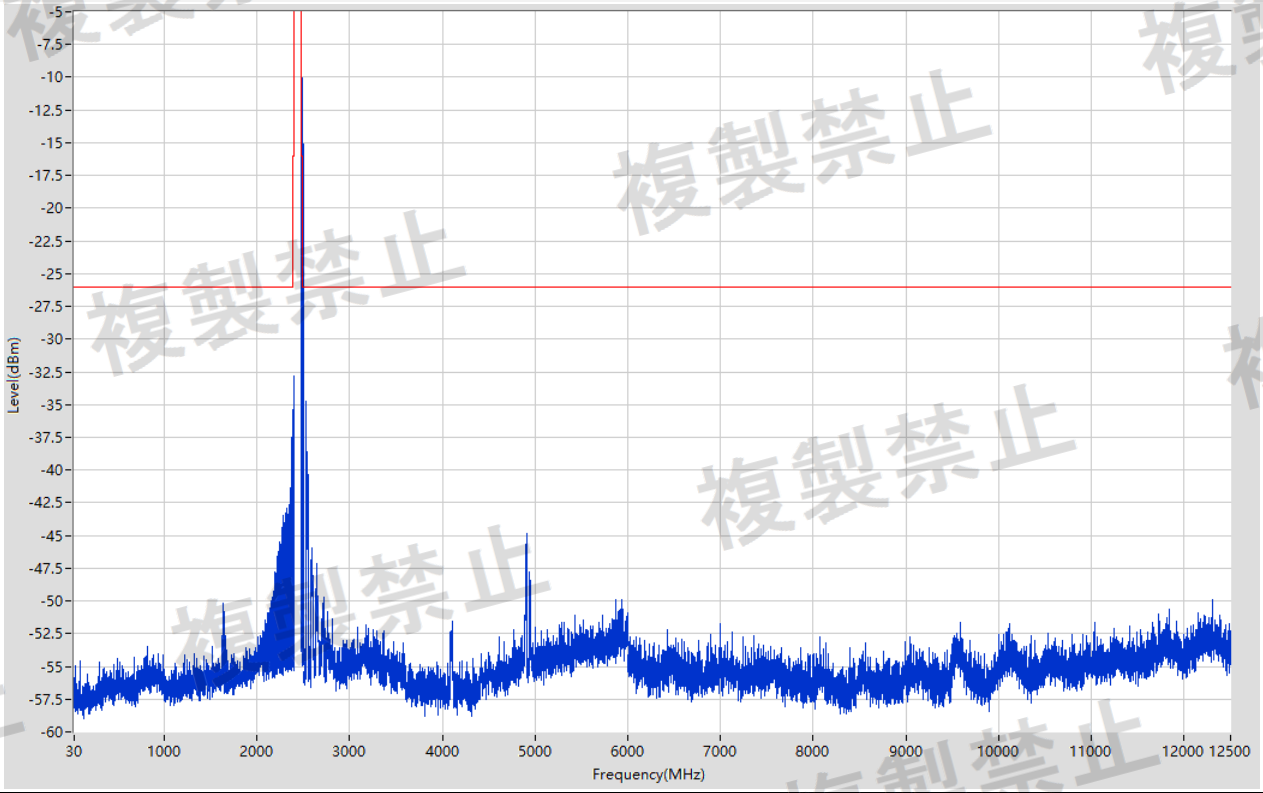
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	817	-53.51	0.004	2.5	Pass
1000	2374	1	Peak	2374	-31.43	0.719	2.5	Pass
2374	2387	1	Peak	2386.935	-15.59	27.591	2.5	N/A
			Sample		-43.046	0.050		Pass
2387	2400	1	Peak	2397.92	-11.18	76.168	25	N/A
			Sample		-37.014	0.199		Pass
2483.5	2496.5	1	Peak	2488.245	-32.57	0.553	25	Pass
2496.5	2509.5	1	Peak	2498.125	-34.7	0.339	2.5	Pass
2509.5	6000	1	Peak	4842.834	-39.52	0.112	2.5	Pass
6000	12500	1	Peak	12373	-49.72	0.011	2.5	Pass

A.3.11 802.11n-40MHz NV Middle Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	607	-53.82	0.004	2.5	Pass
1000	2374	1	Peak	2366	-37.07	0.196	2.5	Pass
2374	2387	1	Peak	2378.063	-34.23	0.377	2.5	Pass
2387	2400	1	Peak	2399.935	-23.64	4.323	25	Pass
2483.5	2496.5	1	Peak	2485.288	-22	6.309	25	Pass
2496.5	2509.5	1	Peak	2504.43	-32.74	0.532	2.5	Pass
2509.5	6000	1	Peak	2510.5	-35.27	0.297	2.5	Pass
6000	12500	1	Peak	12317	-50.58	0.009	2.5	Pass

A.3.12 802.11n-40MHz NV High Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm/MHz)	Power (μW/MHz)	Limit (μW/MHz)	Verdict
30	1000	1	Peak	817	-53.49	0.004	2.5	Pass
1000	2374	1	Peak	2367	-41.39	0.073	2.5	Pass
2374	2387	1	Peak	2386.513	-35.43	0.286	2.5	Pass
2387	2400	1	Peak	2398.245	-32.81	0.524	25	Pass
2483.5	2496.5	1	Peak	2485.873	-10.09	97.942	25	N/A
			Sample		-44.609	0.035		Pass
2496.5	2509.5	1	Peak	2498.418	-15.08	31.050	2.5	N/A
			Sample		-48.187	0.015		Pass
2509.5	6000	1	Peak	2527.503	-34.74	0.336	2.5	Pass
6000	12500	1	Peak	12306	-49.9	0.010	2.5	Pass

A.4 Antenna Power Error Measurement

Antenna 1

802.11b Test Result

Duty cycle = 0.984

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

Manufacturer declares the rated power density = 7.80 mW/MHz

Test Channel	Test Voltage	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Upper Limit (%)	Verdict
Low	NV	7.300	7.37	5.46	-30.03%	20	Pass
Middle		7.487	7.56	5.70	-26.90%	20	Pass
High		7.545	7.62	5.78	-25.89%	20	Pass

EIRP Antenna Power

Test Channel	Test Voltage	Measured EIRP (dBm/ MHz)	Limit (dBm/MHz)	Verdict
Low	NV	11.48	12.14	Pass
Middle		11.67		Pass
High		11.73		Pass

802.11g Test Result

Duty cycle = 0.908

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

Manufacturer declares the rated power density = 4.26 mW/MHz

Test Channel	Test Voltage	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Upper Limit (%)	Verdict
Low	NV	4.823	5.24	3.34	-21.55%	20	Pass
Middle		4.319	4.74	2.98	-30.08%	20	Pass
High		4.435	4.86	3.06	-28.12%	20	Pass

EIRP Antenna Power

Test Channel	Test Voltage	Measured EIRP (dBm/ MHz)	Limit (dBm/MHz)	Verdict
Low	NV	9.35	12.14	Pass
Middle		8.85		Pass
High		8.97		Pass

802.11n-20 MHz Test Result

Duty cycle = 1.114

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

Manufacturer declares the rated power density = 3.30 mW/MHz

Test Channel	Test Voltage	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Upper Limit (%)	Verdict
Low	NV	4.531	4.06	2.55	-22.82%	20	Pass
Middle		4.680	4.21	2.64	-20.11%	20	Pass
High		4.099	3.63	2.31	-30.10%	20	Pass

EIRP Antenna Power

Test Channel	Test Voltage	Measured EIRP (dBm/ MHz)	Limit (dBm/MHz)	Verdict
Low	NV	8.17	12.14	Pass
Middle		8.32		Pass
High		7.74		Pass

802.11n-40 MHz Test Result

Duty cycle = 0.853

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

Manufacturer declares the rated power density = 1.77 mW/MHz

Test Channel	Test Voltage	power value (dBm)	Antenna Power Density PD (dBm/ MHz)	Antenna Power Density PD (mW / MHz)	Antenna Power Error	Upper Limit (%)	Verdict
Low	NV	0.652	1.34	1.36	-23.24%	20	Pass
Middle		0.099	0.79	1.20	-32.37%	20	Pass
High		0.211	0.90	1.23	-30.63%	20	Pass

EIRP Antenna Power

Test Channel	Test Voltage	Measured EIRP (dBm/ MHz)	Limit (dBm/MHz)	Verdict
Low	NV	5.45	9.13	Pass
Middle		4.90		Pass
High		5.01		Pass

A.5 Limitation of Collateral Emission of Receiver Measurement

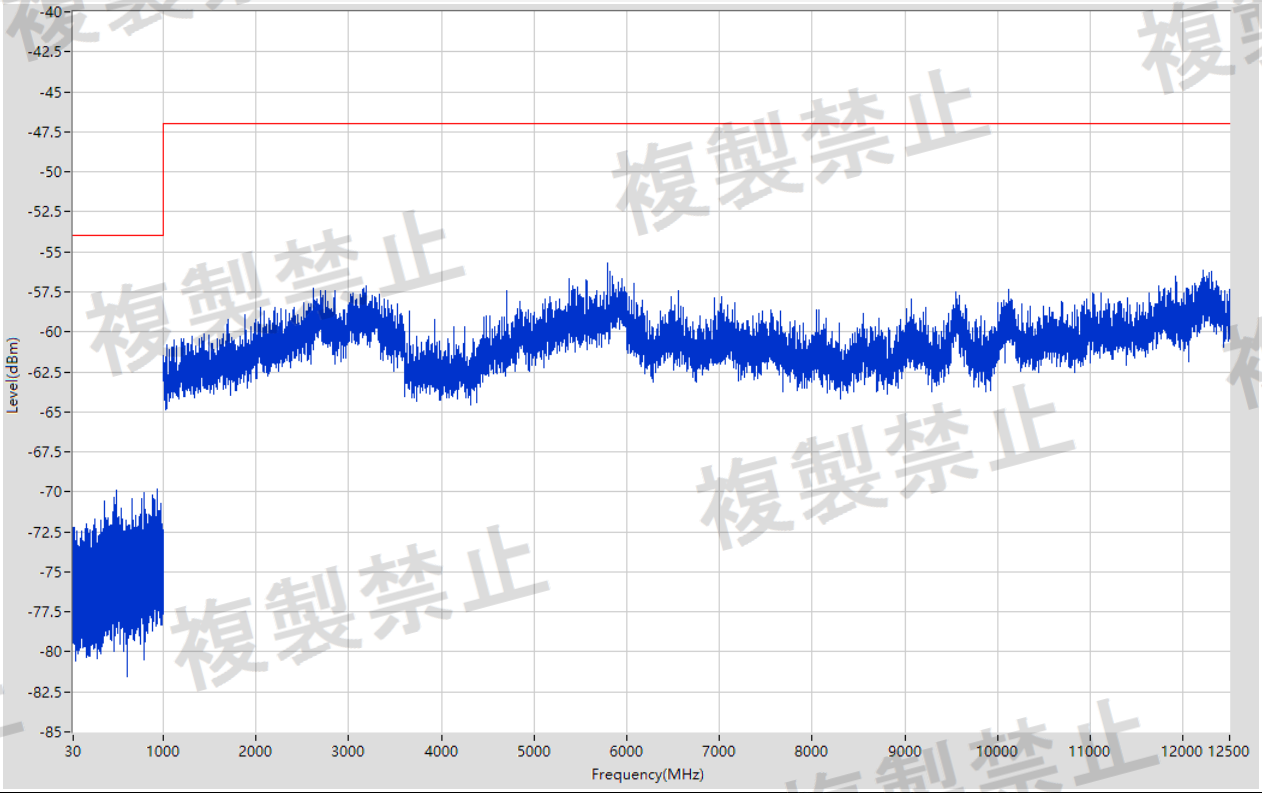
Antenna 1

Test Data

Mode	Test Voltage	Channel	Refer to Plot	Verdict
802.11b	NV	Low	A.5.1	Pass
		Middle	A.5.2	Pass
		High	A.5.3	Pass
802.11g	NV	Low	A.5.4	Pass
		Middle	A.5.5	Pass
		High	A.5.6	Pass
802.11n-20 MHz	NV	Low	A.5.7	Pass
		Middle	A.5.8	Pass
		High	A.5.9	Pass
802.11n-40 MHz	NV	Low	A.5.10	Pass
		Middle	A.5.11	Pass
		High	A.5.12	Pass

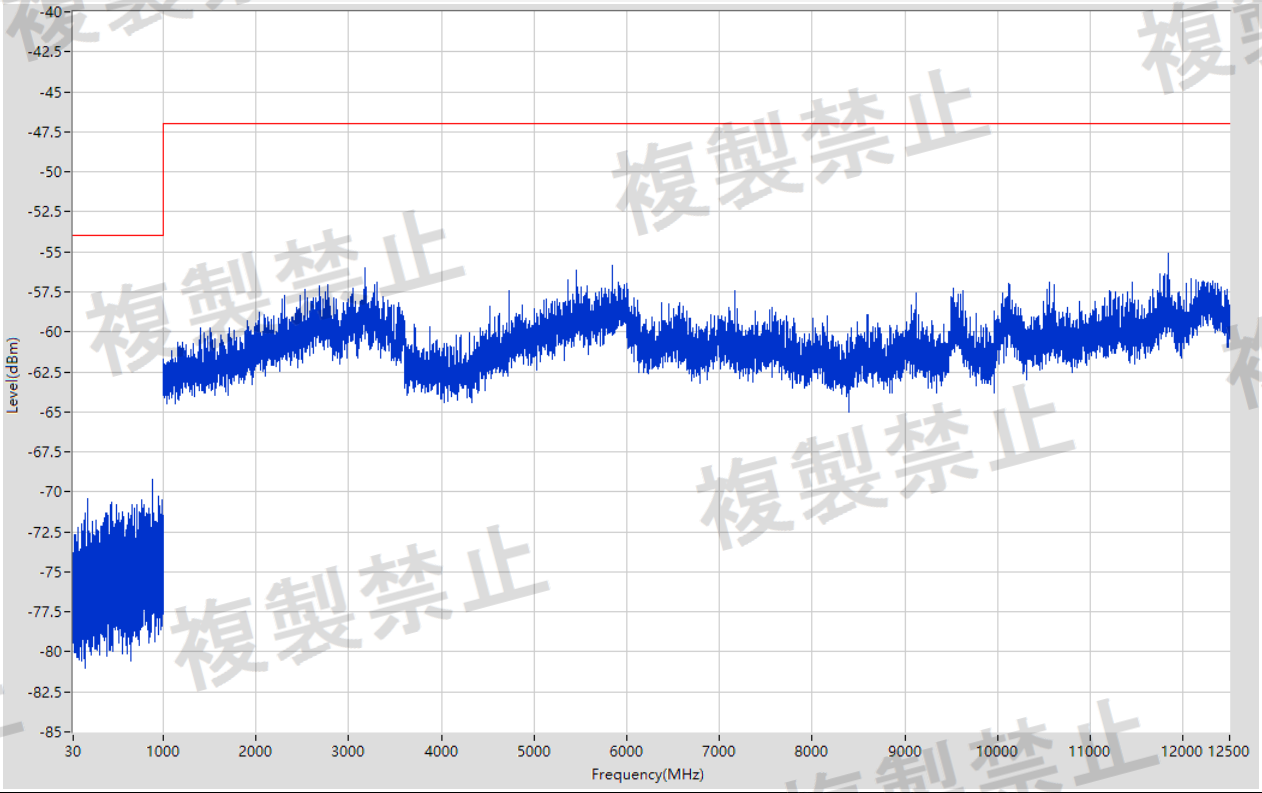
Test Plots

A.5.1 802.11b NV Low Channel



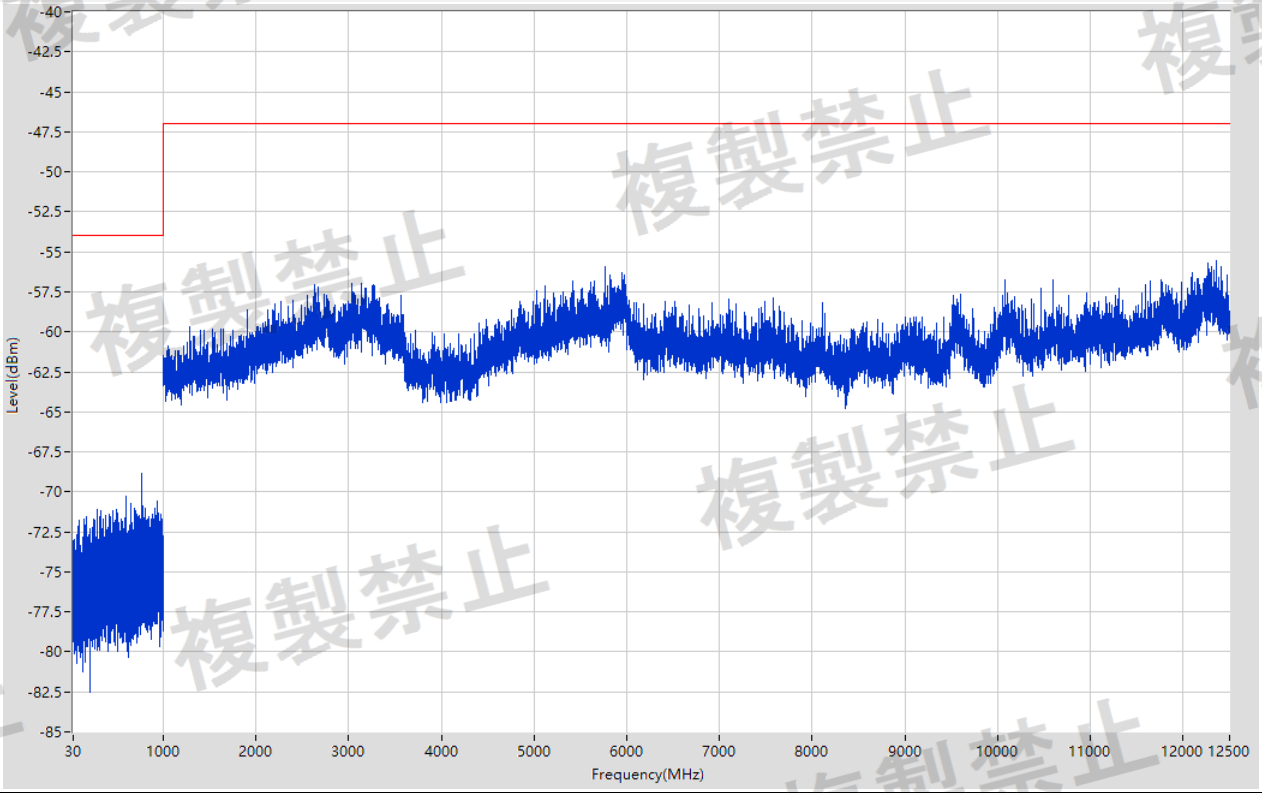
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	931.5	-69.83	0.1	-54	4.0	15.83	Pass
1000	6000	1	Peak	5788	-55.73	2.67	-47	20.0	8.73	Pass
6000	12500	1	Peak	12219	-56.18	2.41	-47	20.0	9.18	Pass

A.5.2 802.11b NV Middle Channel



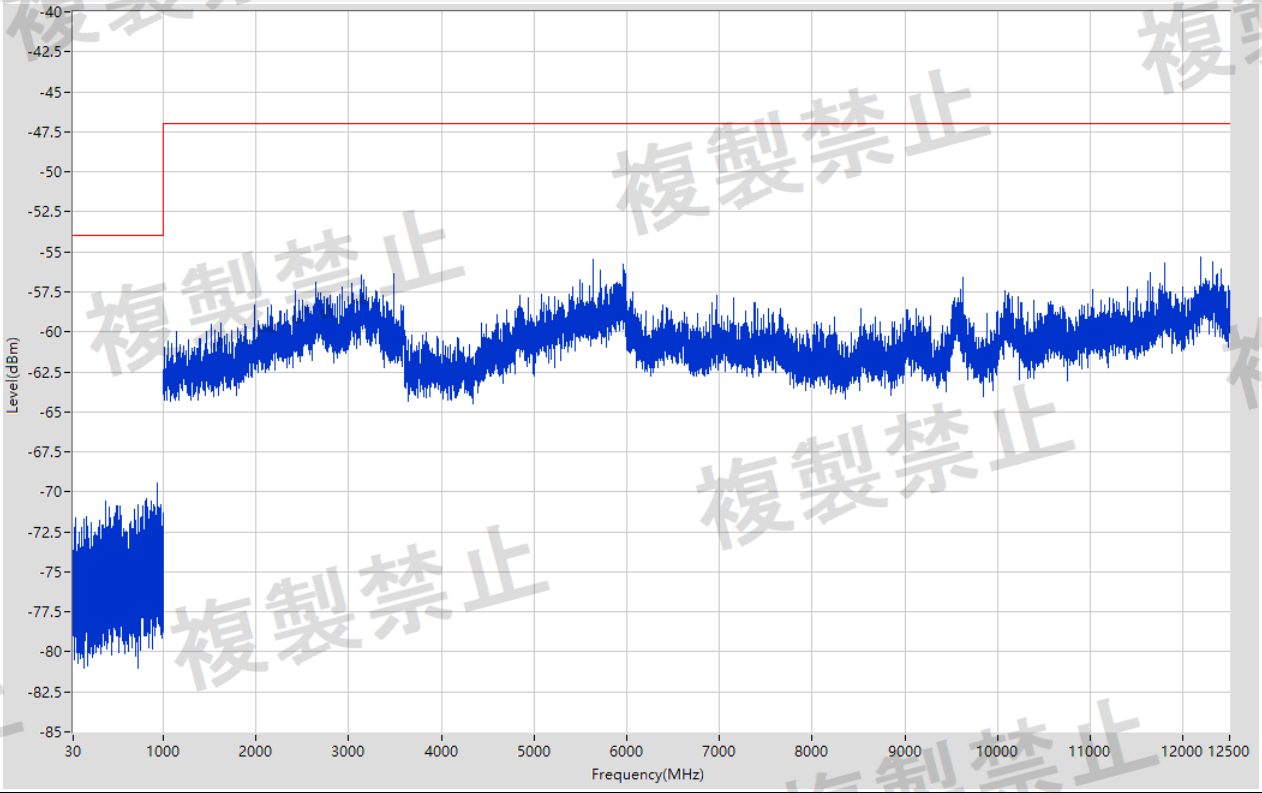
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	887.6	-69.2	0.12	-54	4.0	15.2	Pass
1000	6000	1	Peak	5848	-55.87	2.59	-47	20.0	8.87	Pass
6000	12500	1	Peak	11837	-55.11	3.09	-47	20.0	8.11	Pass

A.5.3 802.11b NV High Channel



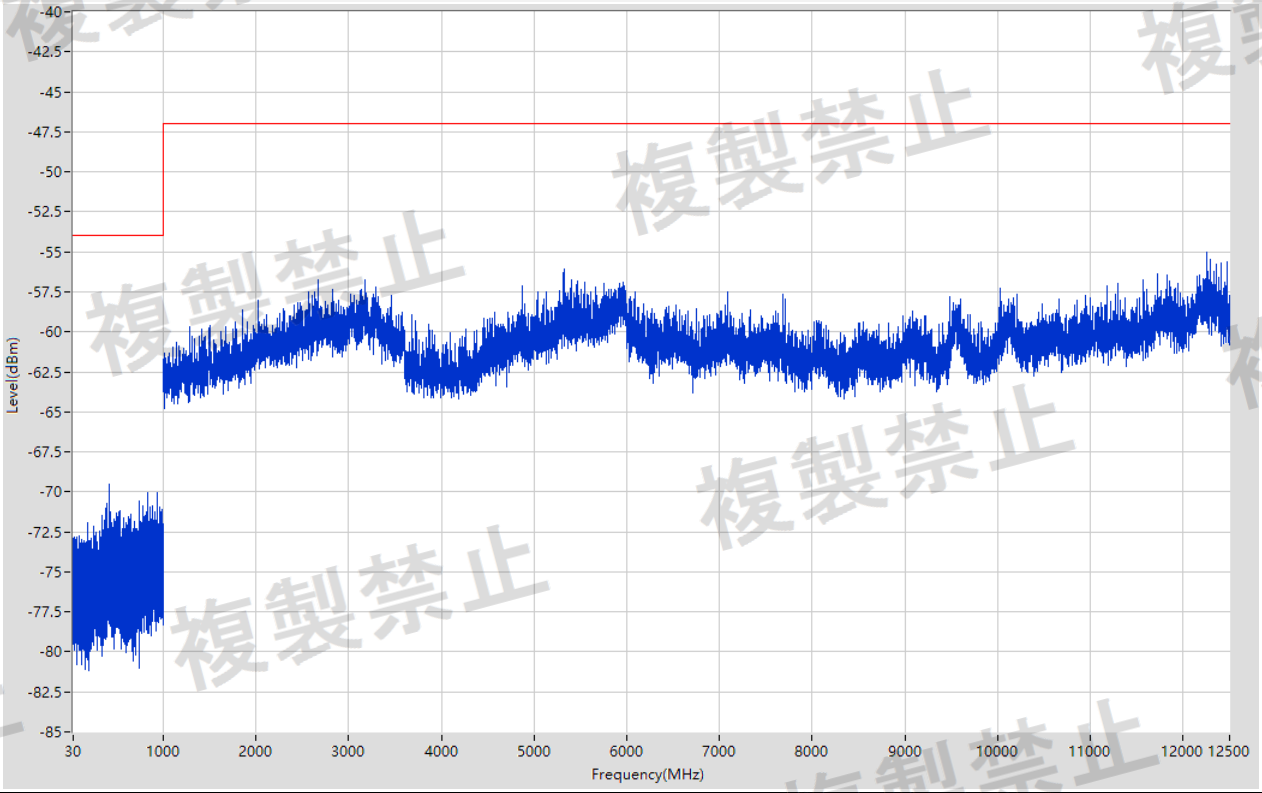
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	773.6	-68.84	0.13	-54	4.0	14.84	Pass
1000	6000	1	Peak	5769	-55.93	2.55	-47	20.0	8.93	Pass
6000	12500	1	Peak	12356	-55.59	2.76	-47	20.0	8.59	Pass

A.5.4 802.11g NV Low Channel



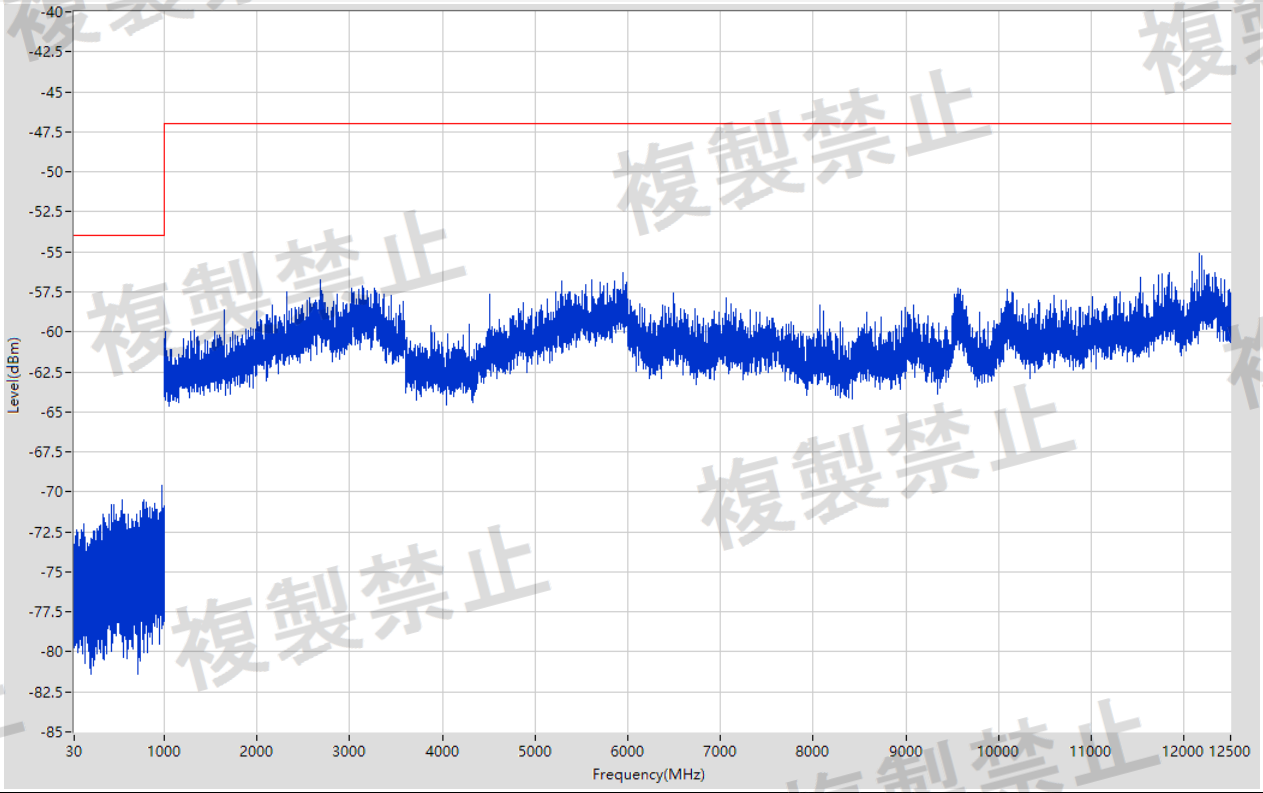
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	934.1	-69.45	0.11	-54	4.0	15.45	Pass
1000	6000	1	Peak	5636	-55.49	2.82	-47	20.0	8.49	Pass
6000	12500	1	Peak	12185	-55.34	2.93	-47	20.0	8.34	Pass

A.5.5 802.11g NV Middle Channel



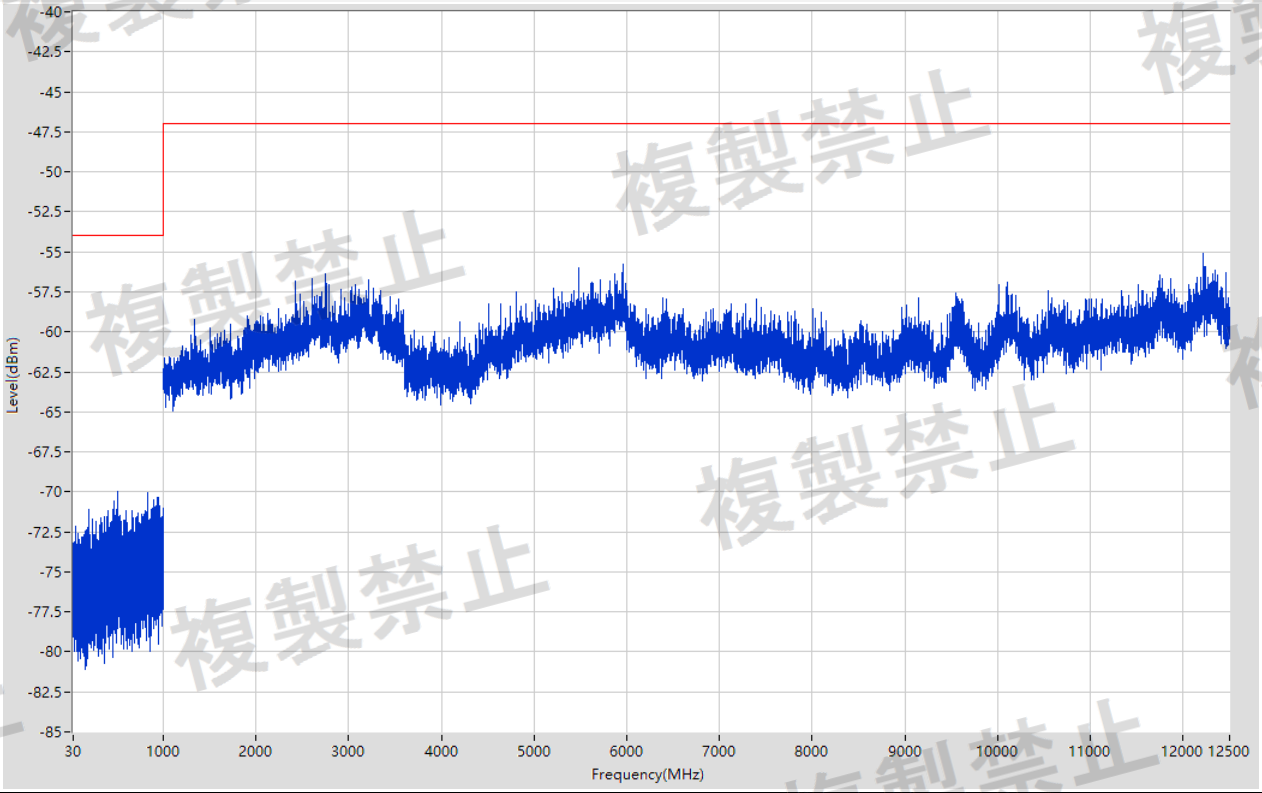
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	420.8	-69.5	0.11	-54	4.0	15.5	Pass
1000	6000	1	Peak	5321	-56.11	2.45	-47	20.0	9.11	Pass
6000	12500	1	Peak	12248	-55.02	3.15	-47	20.0	8.02	Pass

A.5.6 802.11g NV High Channel



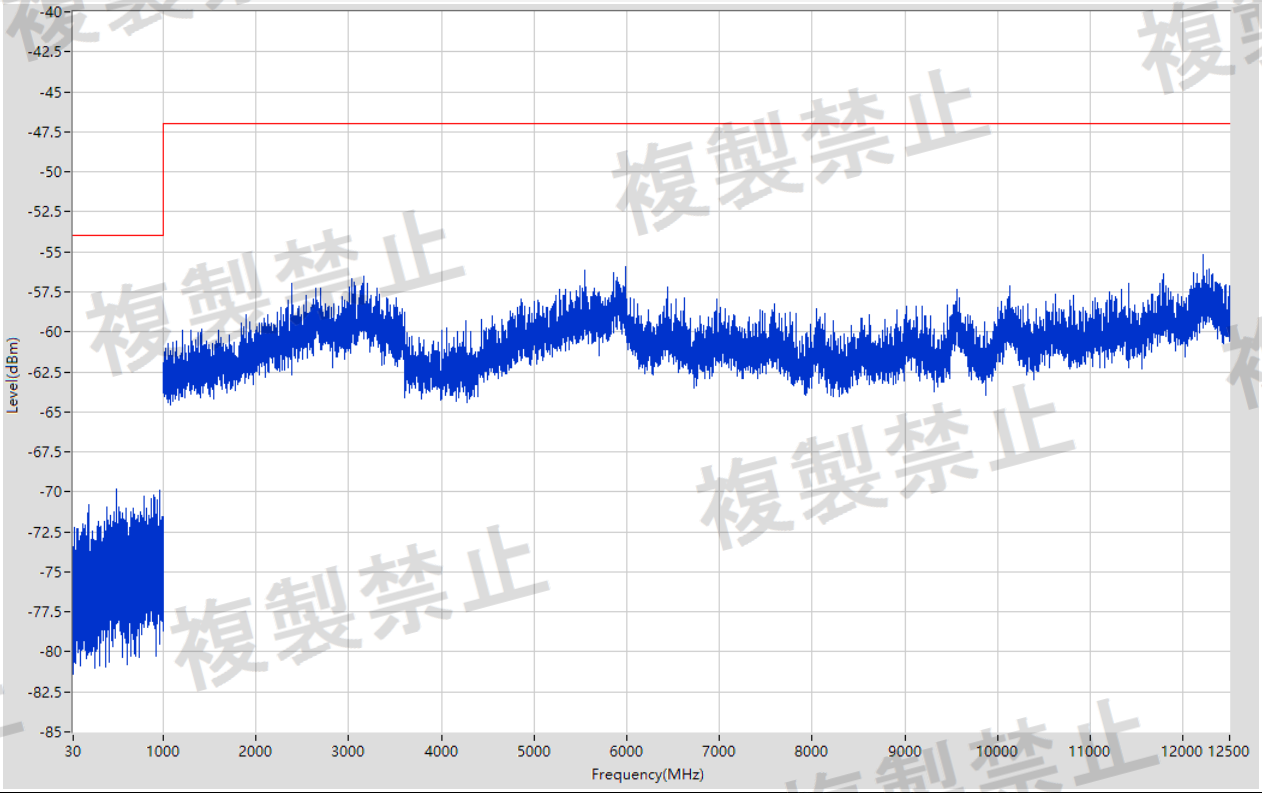
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	976.2	-69.57	0.11	-54	4.0	15.57	Pass
1000	6000	1	Peak	5946	-56.27	2.36	-47	20.0	9.27	Pass
6000	12500	1	Peak	12164	-55.09	3.1	-47	20.0	8.09	Pass

A.5.7 802.11n-20MHz NV Low Channel



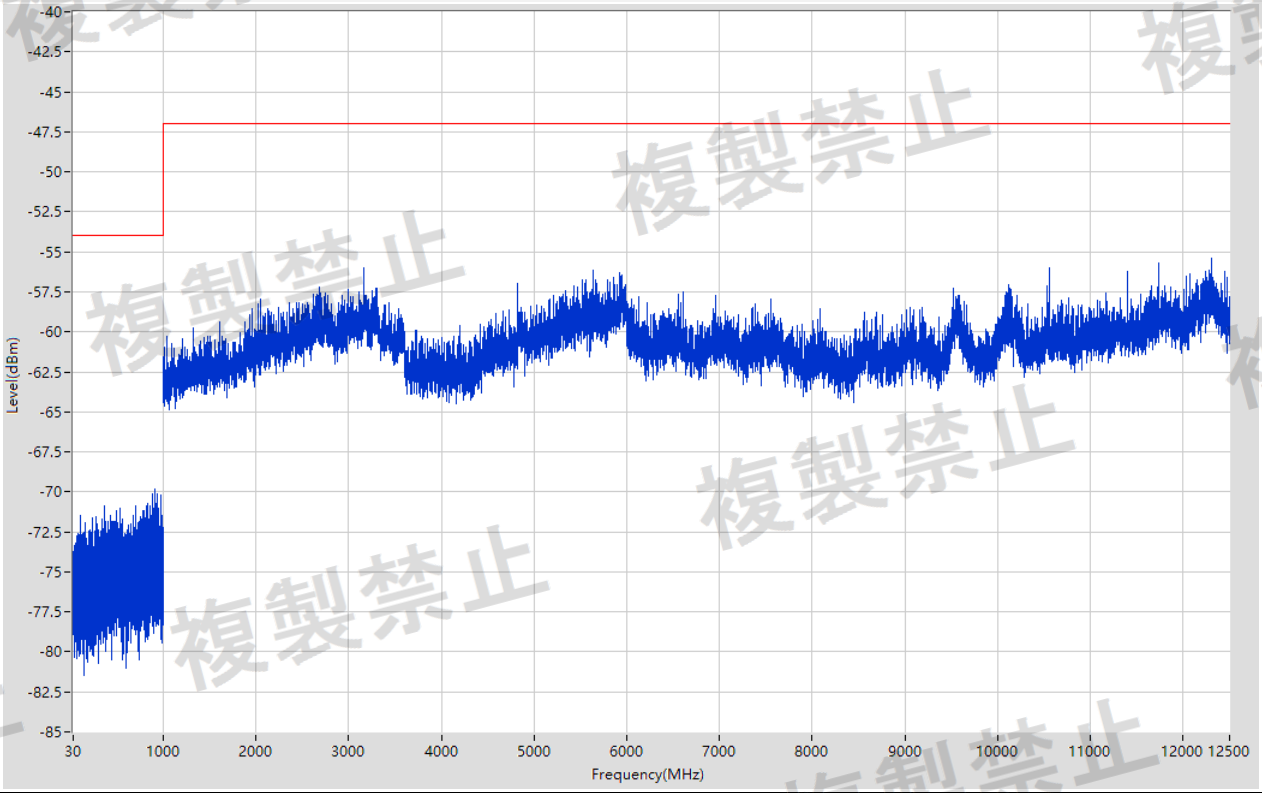
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	507.6	-69.98	0.1	-54	4.0	15.98	Pass
1000	6000	1	Peak	5958	-55.75	2.66	-47	20.0	8.75	Pass
6000	12500	1	Peak	12216	-55.1	3.09	-47	20.0	8.1	Pass

A.5.8 802.11n-20MHz NV Middle Channel



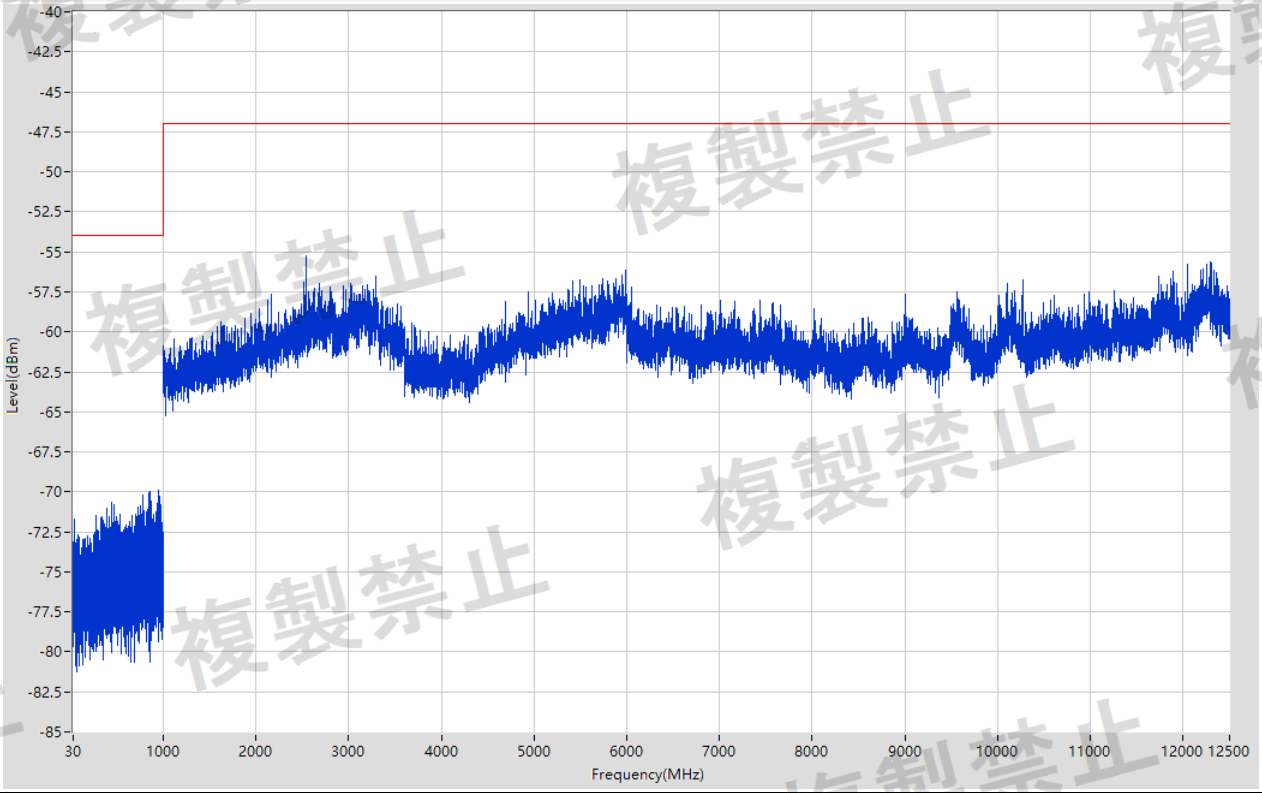
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	495.5	-69.86	0.1	-54	4.0	15.86	Pass
1000	6000	1	Peak	5989	-55.96	2.53	-47	20.0	8.96	Pass
6000	12500	1	Peak	12219	-55.2	3.02	-47	20.0	8.2	Pass

A.5.9 802.11n-20MHz NV High Channel



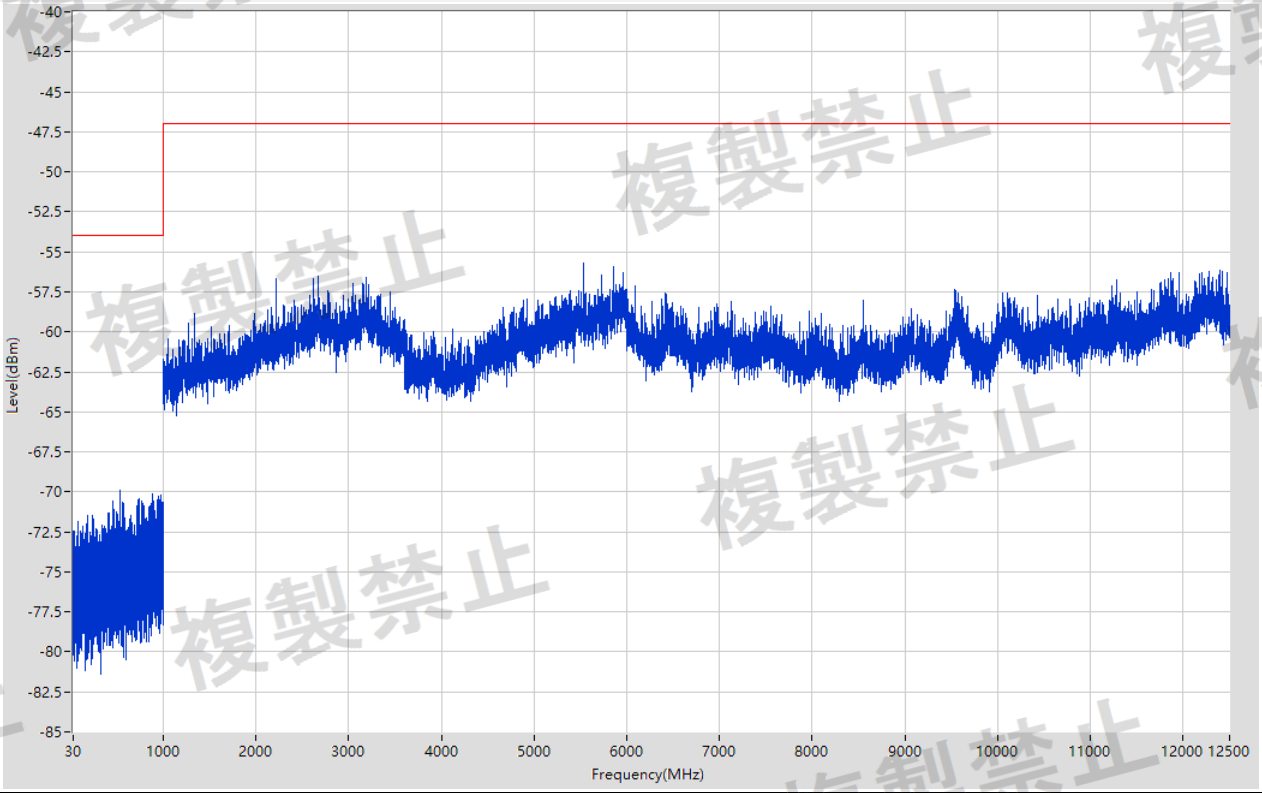
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	910.1	-69.81	0.1	-54	4.0	15.81	Pass
1000	6000	1	Peak	3166	-55.99	2.52	-47	20.0	8.99	Pass
6000	12500	1	Peak	12306	-55.41	2.88	-47	20.0	8.41	Pass

A.5.10 802.11n-40MHz NV Low Channel



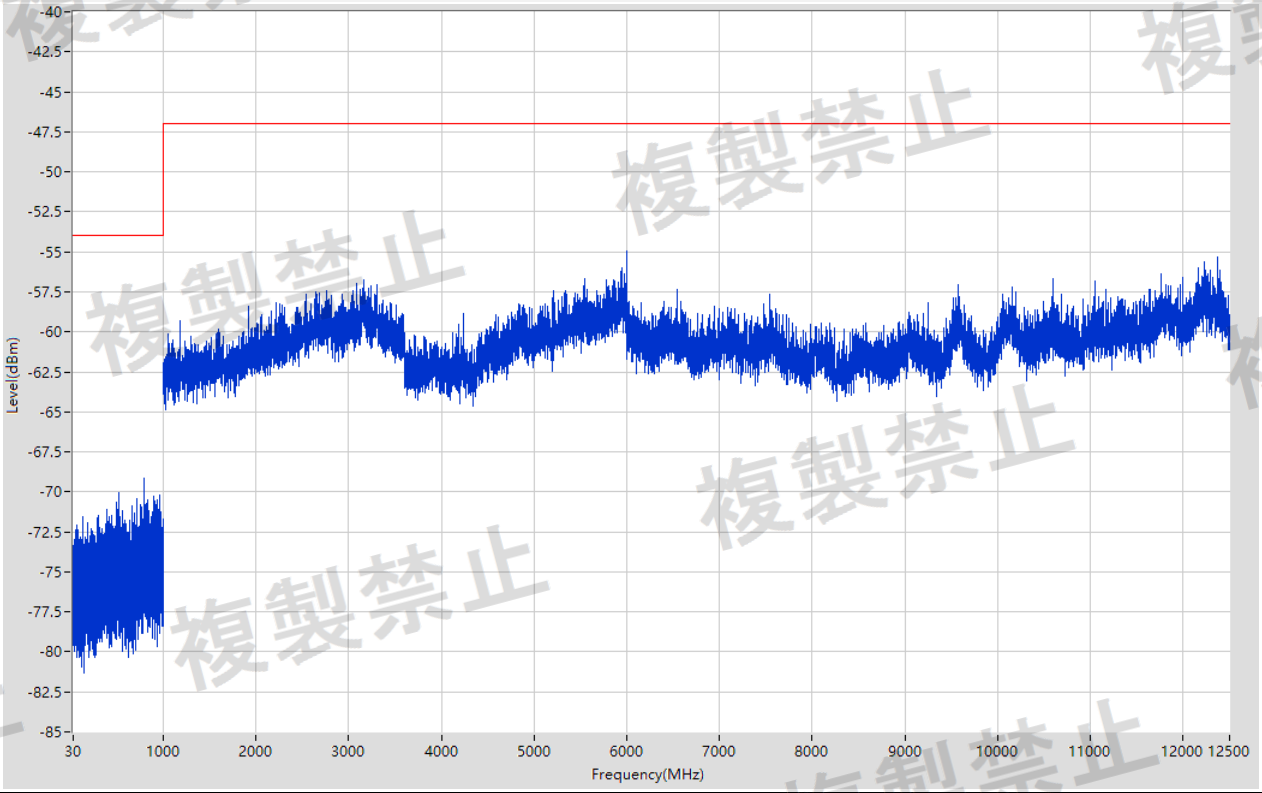
Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	949.7	-69.89	0.1	-54	4.0	15.89	Pass
1000	6000	1	Peak	2547	-55.29	2.96	-47	20.0	8.29	Pass
6000	12500	1	Peak	12294	-55.61	2.75	-47	20.0	8.61	Pass

A.5.11 802.11n-40MHz NV Middle Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	531.9	-69.91	0.1	-54	4.0	15.91	Pass
1000	6000	1	Peak	5528	-55.71	2.69	-47	20.0	8.71	Pass
6000	12500	1	Peak	12398	-56.13	2.44	-47	20.0	9.13	Pass

A.5.12 802.11n-40MHz NV High Channel



Start Frequency (MHz)	Stop Frequency (MHz)	RBW (MHz)	Detector	Frequency (MHz)	Power (dBm)	Power (nW)	Limit (dBm)	Limit (nW)	Margin (dB)	Verdict
30	1000	0.1	Peak	793.7	-69.14	0.12	-54	4.0	15.14	Pass
1000	6000	1	Peak	5994	-54.96	3.19	-47	20.0	7.96	Pass
6000	12500	1	Peak	12373	-55.32	2.94	-47	20.0	8.32	Pass

A.6 Carrier sensing function (1)

Note: Only for orthogonal frequency division multiplexing (OFDM) system which occupied bandwidth is over 26MHz.

802.11n (40M)

Test Voltage	Channel	Test Result	Verdict
NV	Low	GOOD	Pass
	Middle	GOOD	Pass
	High	GOOD	Pass

A.7 Carrier sensing function (2)

Note: Because of the EUT is not a radio control of outdoor-use model-airplane, so this test item will not be applied.

A.8 Transmission Antenna Gain (EIRP Antenna Power) Measurement

Note: Not applicable.

A.9 Transmission Radiation Angle Width (3dB Bandwidth) Measurement

Note: Not applicable.

A.10 Radio Interference Prevention Capability Measurement

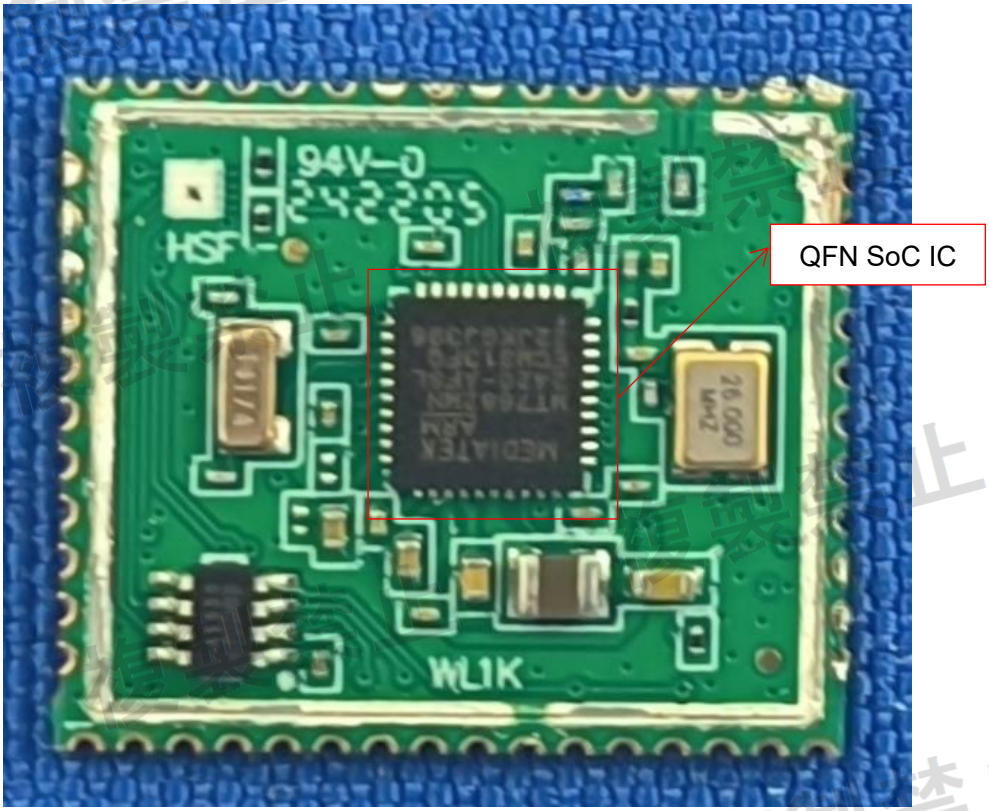
ID Code：2C1B3A02D6E6

Test Voltage	Test Result (ID Code)	Verdict
NV	GOOD	Pass

A.11 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 QFN SoC IC, and RF part is mounted on PCB with surface mount technology, can't be easily modified
Reference Photo	



ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2560328-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2560328-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2560328-AI.PDF”.

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