

TEST REPORT

Reference No...... : WTH24H01007618R3W
Applicant..... : LOGITEC INA SOLUTIONS CO., LTD.
Address..... : 8268-1000 MISUZU, INA-CITY, NAGANO PREFECTURE 396-0111
JAPAN
Manufacturer..... : LOGITEC INA SOLUTIONS CO., LTD.
Address..... : 8268-1000 MISUZU, INA-CITY, NAGANO PREFECTURE 396-0111
JAPAN
Product Name..... : Logitec Smart Tracker Card
Model No...... : LGT-WCSTC01BK, LGT-WCST01BK, LGT-LWCSTCW01DB,
BS-3514AA
Test specification..... : Article 2 paragraph 1 item 19
Date of Receipt sample..... : 2024-01-15 & 2026-01-30
Date of Test..... : 2024-01-15 to 2024-01-15 & 2026-02-06 to 2026-04-09
Date of Issue..... : 2026-04-09
Test Report Form No...... : TRFITEM19-RF-001-V01
Test Result..... : Pass

Prepared By:

Waltek Testing Group HCT (Shenzhen) Co., Ltd.

Address: Building B, Tianji Industrial Park, 1/F. & 2/F. & 3/F., No.30-9, Laiyin Road, Yinsheng Community,
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1. Test standards and Report version

1.1. Test Standards

The tests were performed according to following standards:

[Appendix No.43 of MIC Notification No 88 and Article 2 paragraph 1 item 19](#): Low power data communications system in the 2.4GHz band.

1.2. Report version

Revision No.	Date of issue	Description
Rev.00	2024-04-03	Original
Rev.01	2026-04-09	WTH24H01007618R3W is produced on the basis of WTH24H01007618W. Only the charging port wiring of the product was changed. After evaluation, Antenna Power, Spurious emission intensity, Limit of secondary radiated emissions were tested

2. Test description

Test Item	Result
RF shielding method	PASS
Frequency Error	PASS
Antenna Power	PASS
99% Occupied bandwidth	PASS
Spread spectrum bandwidth	PASS
Spurious Emissions Intensity	PASS
Limit of secondary radiated emissions	PASS
Radio Interference Prevention Capability Measurement	PASS
Carrier Sense Capability Measurement	N/A
N/A:Not applicable	

3. Summary

3.1. Client Information

Applicant:	LOGITEC INA SOLUTIONS CO., LTD.
Address:	8268-1000 MISUZU, INA-CITY, NAGANO PREFECTURE 396-0111 JAPAN
Manufacturer:	LOGITEC INA SOLUTIONS CO., LTD.
Address:	8268-1000 MISUZU, INA-CITY, NAGANO PREFECTURE 396-0111 JAPAN

3.2. Product Description

Name of EUT:	Logitec Smart Tracker Card
Trade Mark:	Logitec
Model/Type reference:	LGT-WCSTC01BK
Listed Model(s):	LGT-WCST01BK, LGT-LWCSTCW01DB, BS-3514AA
Power supply:	DC 3V
Battery Capacity:	/
Adapter information:	/
Software Version:	/
Hardware Version:	/

Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model LGT-WCSTC01BK, but the circuit and the electronic construction do not change, declared by the manufacturer.

RF Specification

Version:	Supported BT 5.2+BLE
Frequency Range:	2402-2480MHz
Channel number:	40
Channel separation:	2MHz
Modulation type:	GFSK
Antenna Type:	PCB Antenna
Antenna Gain:	-0.21dBi
RF Rated output power:	BLE 1M: 1.5mW BLE 2M: 1mW

3.3. EUT operation mode

The EUT has been tested under typical operating condition. The Applicant provides software to control the EUT for staying in continuous transmitting and receiving mode for testing.

3.4. Test Frequency

Test Channel	Channel No.	Frequency (MHz)
CH _L	00	2402
-	01	2404
-	:	:
CH _M	20	2442
-	:	:
-	38	2478
CH _H	39	2480

3.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - supplied by the lab

○ Laptop	Manufacturer :	LENOVO
	Model No. :	G50-45
/	Manufacturer :	/
	Model No. :	/

3.6. Modifications

No modifications were implemented to meet testing criteria.

4. Test Environment

4.1. Address of the test laboratory

All measurement required was performed at Waltek Testing Group HCT (Shenzhen) Co., Ltd. at Building B, Tianji Industrial Park, 1/F. & 2/F. & 3/F., No.30-9, Laiyin Road, Xinsheng Community, Longgang Subdistrict, Longgang District, Shenzhen, Guangdong, China.

4.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

EUT supply power	RF module input power	Rated RF module power	Tolerance (%)
DC 3V	DC 3.3V	DC 3.3V	0
DC 2.7V	DC 3.3V	DC 3.3V	0
DC 3.3V	DC 3.3V	DC 3.3V	0
Conclusion: when the input voltage to EUT from the external source changes at 10%, the change of the input voltage to RF Module circuit of EUT is less 1%, another test item only need to test for normal condition.			
Other	Normal Temperature/Tnor:	24°C	
	Relative Humidity	58 %	
	Air Pressure	101 Kpa	

4.3. Statement of the measurement uncertainty

Parameter	Uncertainty
Frequency Error	70 Hz
Total RF power, conducted	0.51 dB
Spurious emissions, conducted	0.51 dB
DC and low frequency voltages	3%
Humidity	5%
Temperature	1°C

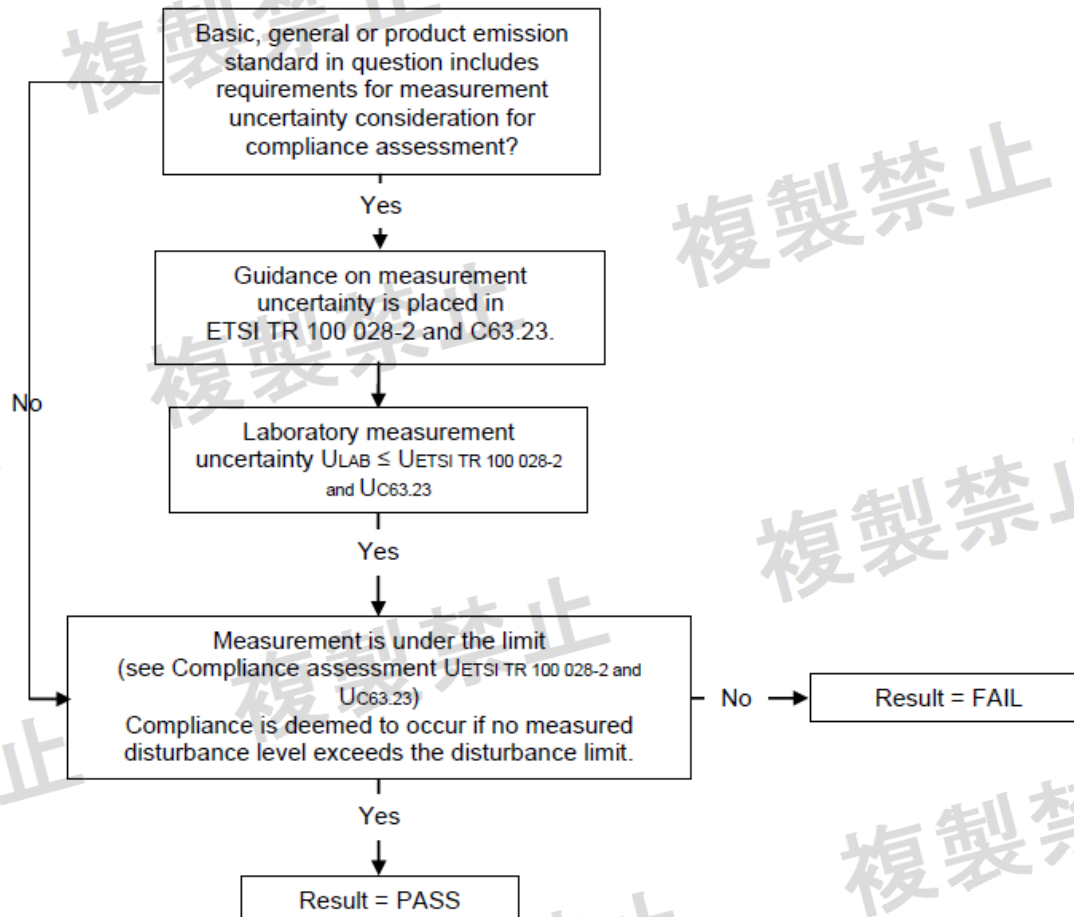
For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR100028-1 [2] and shall correspond to an expansion factor (coverage factor) $K=1.96$ or $K=2$ (which provide confidence levels of respectively 95% and 95.5% in the case where the distributions characterizing the actual measurement uncertainties are normal).

4.4. Application of decision rule

Application of decision rule and statement of conformity is defined in document CNAS-GL015 Decision rule and measurement uncertainty.

As a general rule Pass/Fail decisions are based on simple acceptance and acceptance limits chosen based on simple acceptance ($w = 0$, $AL = TL$) except if a decision rule is governed by particular standard or guidance document.

Decision rule:



4.5. Equipments Used during the Test

Original test data equipment:

Management number	Description	Manufacturer	Model	Serial Number	Cal Date	Due Date	Calibration Methods
WTHW1001A1-003	Spectrum Analyzer	Keysight	N9020A	/	2023-02-10	2024-02-09	JJF 1396-2013
WTHW1003A1-001	Power Meter	DARE!!	RPR3006W	/	2023-02-10	2024-02-09	JJF 1757-2019
Software List							
Description		Manufacturer		Model		Version	
Test Software		Pomis		PTS2450		2.0.0.1*	
*Remark: indicates software version used in the compliance certification testing Calibration lab: CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd Address: Minlida Industrial Park,Honghualing Industrial District, Taoyuan Street (Xili),Nanshan District,Shenzhen Calibrated by:Jiajia Zeng							

Updated test data equipment:

Management number	Description	Manufacturer	Model	Serial Number	Cal Date	Due Date	Calibration Methods
WTHW1001A1-003	Spectrum Analyzer	Keysight	N9020A	/	2025-12-10	2026-12-09	JJF 1396-2013
WTHW1003A1-001	Power Meter	DARE!!	RPR3006W	/	2025-12-10	2026-12-09	JJF 1757-2019
Software List							
Description		Manufacturer		Model		Version	
Test Software		Pomis		PTS2450		2.0.0.1 [#]	
#Remark: indicates software version used in the compliance certification testing Calibration laboratory: CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd Calibration laboratory address: ShengHui Hongxing Chuangzhi Square, Tongren Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen Calibrated by:Jinhui Liu Calibration Methods: Calibration conducted in foreign countries, which is equivalent to calibration conducted by the NICT or a designated calibration agency under Article 102-18-1 of the Radio Act							

5. Test conditions and Results

5.1. RF shielding method

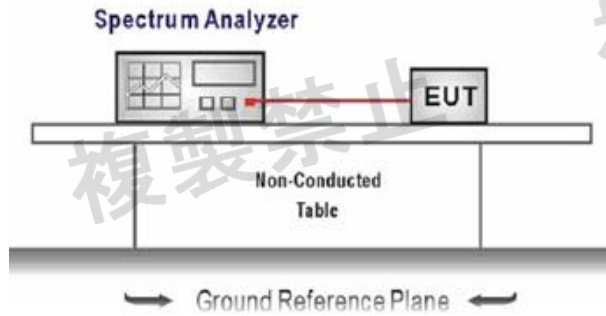
The enclosure is blocked by buckles and it cannot be opened easily. Otherwise, the device will be damaged.

5.2. Frequency Error

LIMIT

50ppm

TEST CONFIGURATION



TEST CONDITION

Without modulation, continuously transmitting

SPECTRUM SET:

Test Frequency= test channel,
 RBW=VBW=10KHz, Span=1MHz, Sweep time=Auto, Detector mode=Positive peak

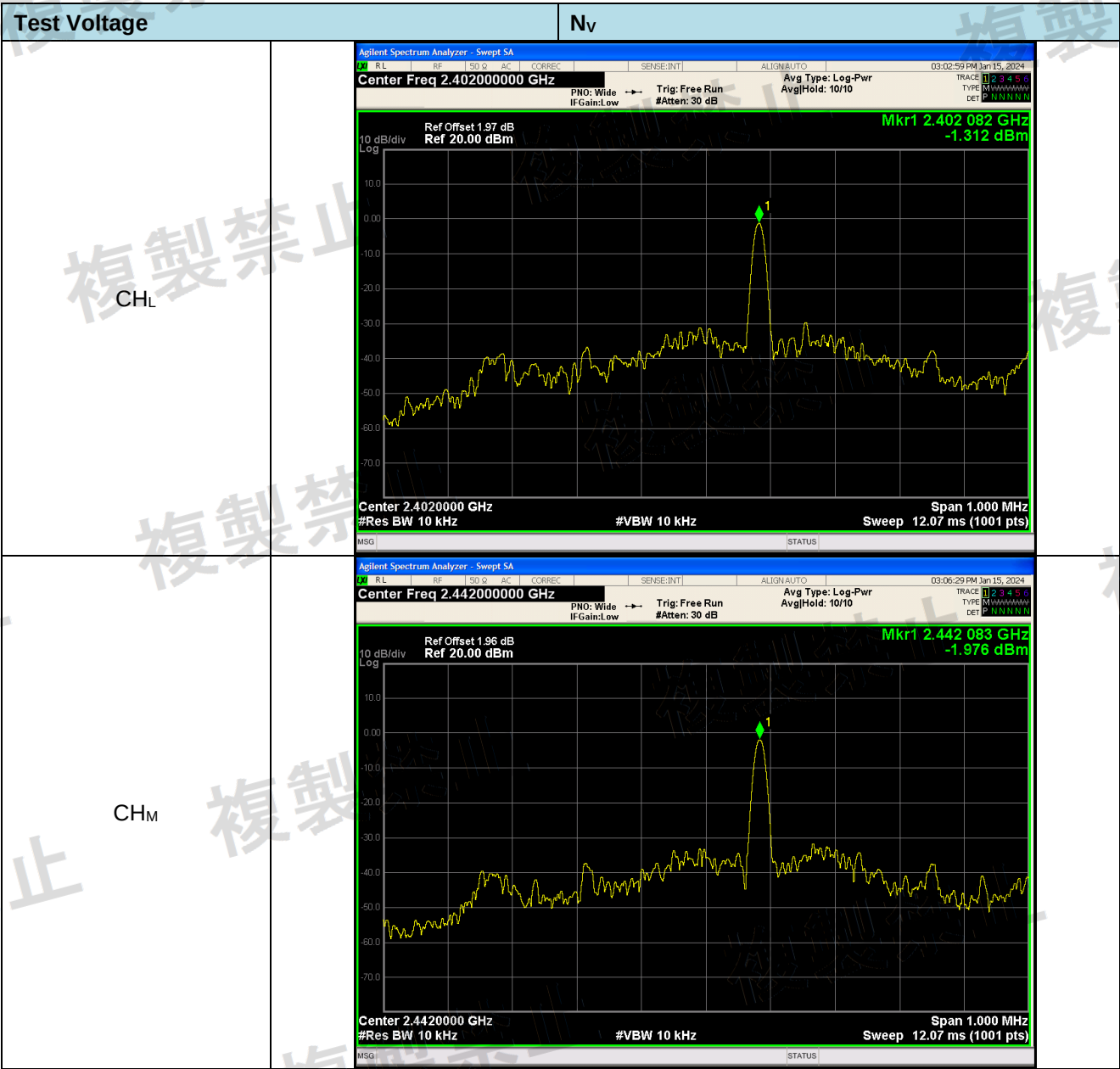
TEST RESULTS

☒ Passed ☐ Not Applicable

Please refer to the below test data:

Test voltage	Test Channel	Rating Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)	Result
N _v	CH _L	2402	2402.082	34.14	±50.00	Pass
	CH _M	2442	2442.083	33.99		
	CH _H	2480	2480.085	34.27		

Test plot as follows:



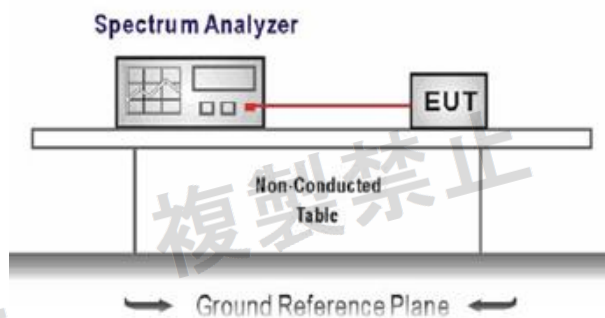


5.3. Antenna Power

LIMIT

No.	Moduation type	Limit
1	FH, FH+DS , FH+OFDM (2427 - 2470.75 MHz)	3mW/MHz
2	OFDM OBW<=26MHz DS, FH other than (1)	10mW/MHz
3	OFDM (OBW 26 – 38MHz)	5mW/MHz
4	Other than (1) & (2)&(3)	10mW

TEST CONFIGURATION



TEST CONDITION

Test diffusion code and modulate with standard coding test signal

SPECTRUM SET:

- 1) Search Frequency of Peak Power
Test Frequency: test channel,
RBW=VBW=1MHz, Span=4MHz, Sweep time=Auto, Detector mode =Positive peak
- 2) Measure of average burst power
Test Frequency: frequency of peak power
RBW=VBW≥99% Occupy Bandwidth , Span=0Hz, Sweep time=Auto, Detector mode=RMS
Reading Level = burst power

TEST RESULTS

☒ Passed ☐ Not Applicable

Please refer to the below test data:

BLE 1M

Test voltage	Test channel	Frequency (MHz)	Antenna power (mW)	E.I.R.P (dBm)	Declared Power (mW)	Tolerance (%)	Limit (%)	Result
Nv	CH _L	2402	0.497	-3.250	1.0	-50.3	-80~+20	Pass
	CH _M	2442	0.527	-2.995	1.0	-47.3		
	CH _H	2480	0.539	-2.894	1.0	-46.1		

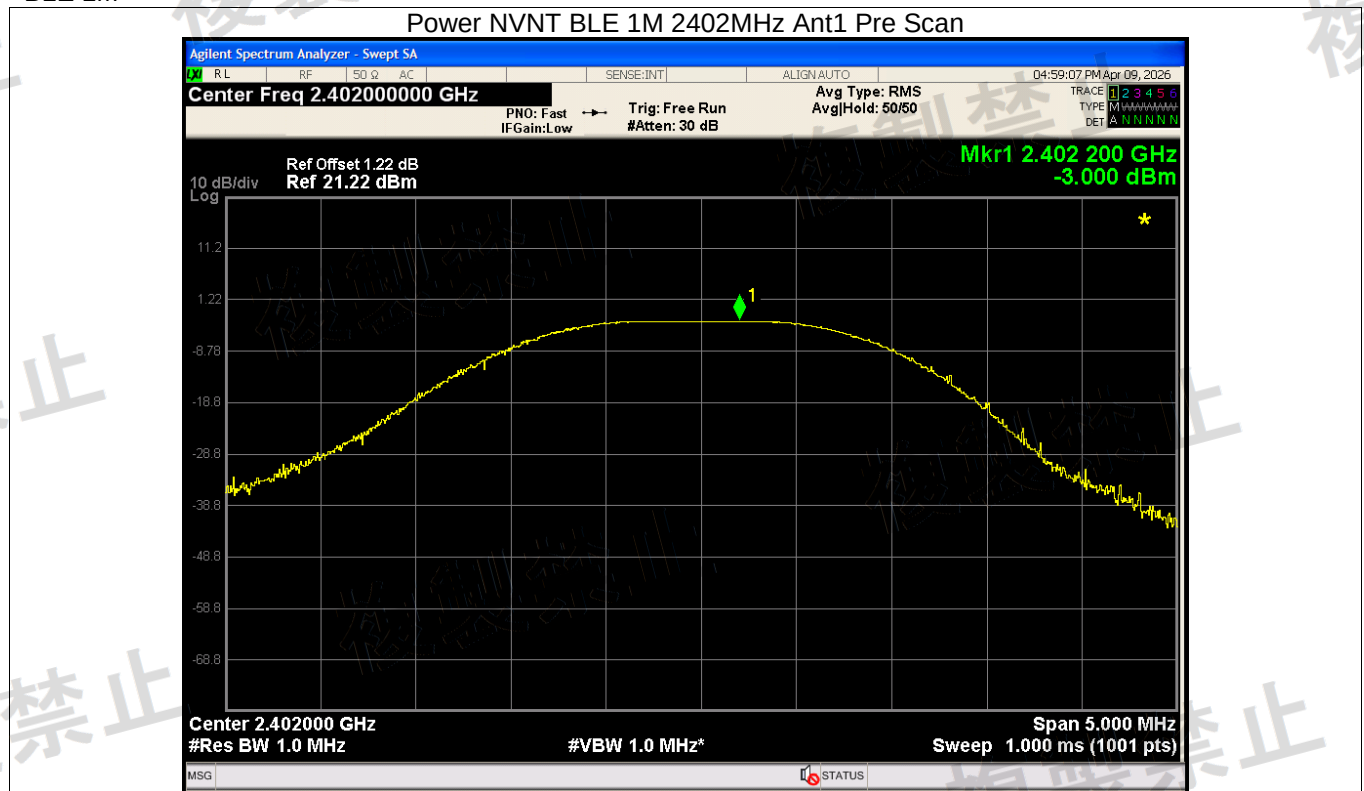
BLE 2M

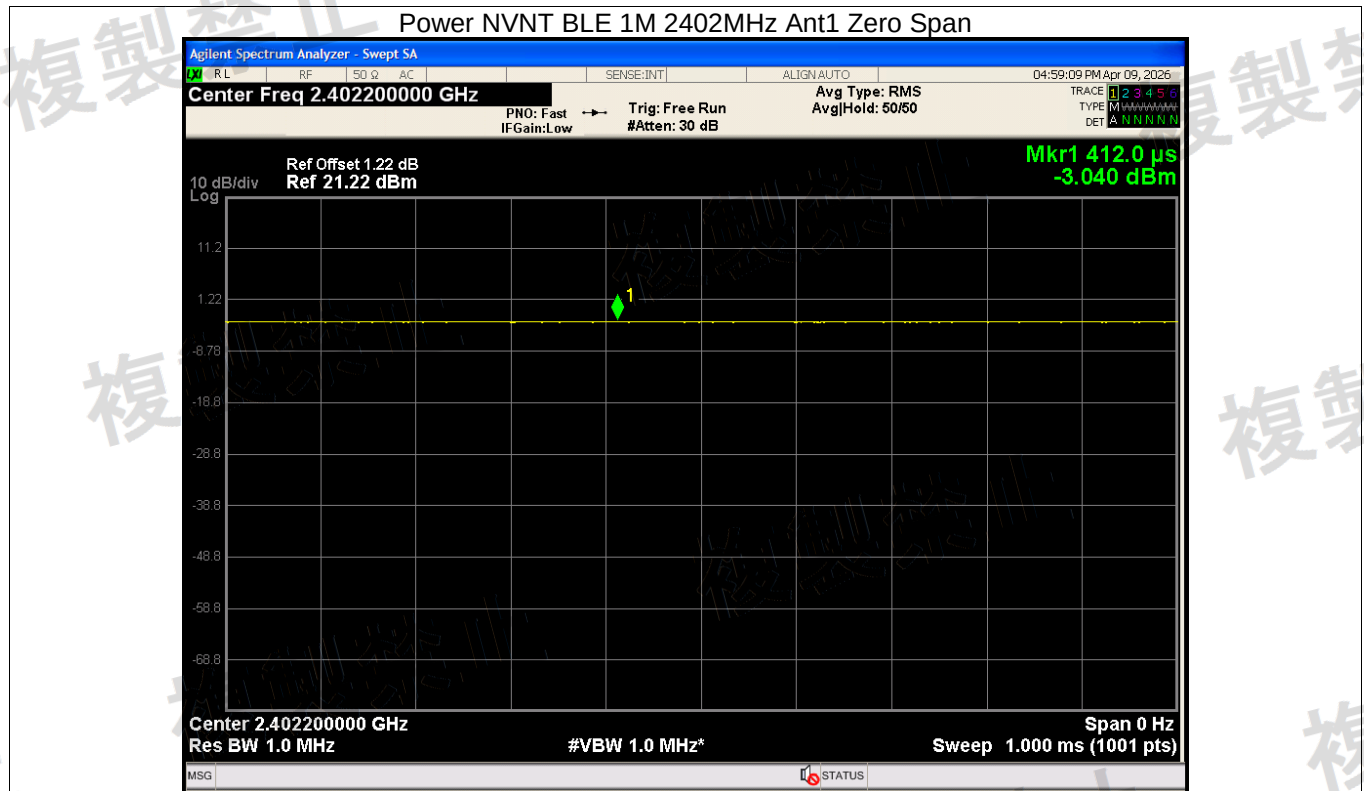
Test voltage	Test channel	Frequency (MHz)	Antenna power (mW)	E.I.R.P (dBm)	Declared Power (mW)	Tolerance (%)	Limit (%)	Result
Nv	CH _L	2402	0.197	-7.263	0.2	-1.5	-80~+20	Pass
	CH _M	2442	0.218	-6.835	0.2	9.0		
	CH _H	2480	0.213	-6.933	0.2	6.5		

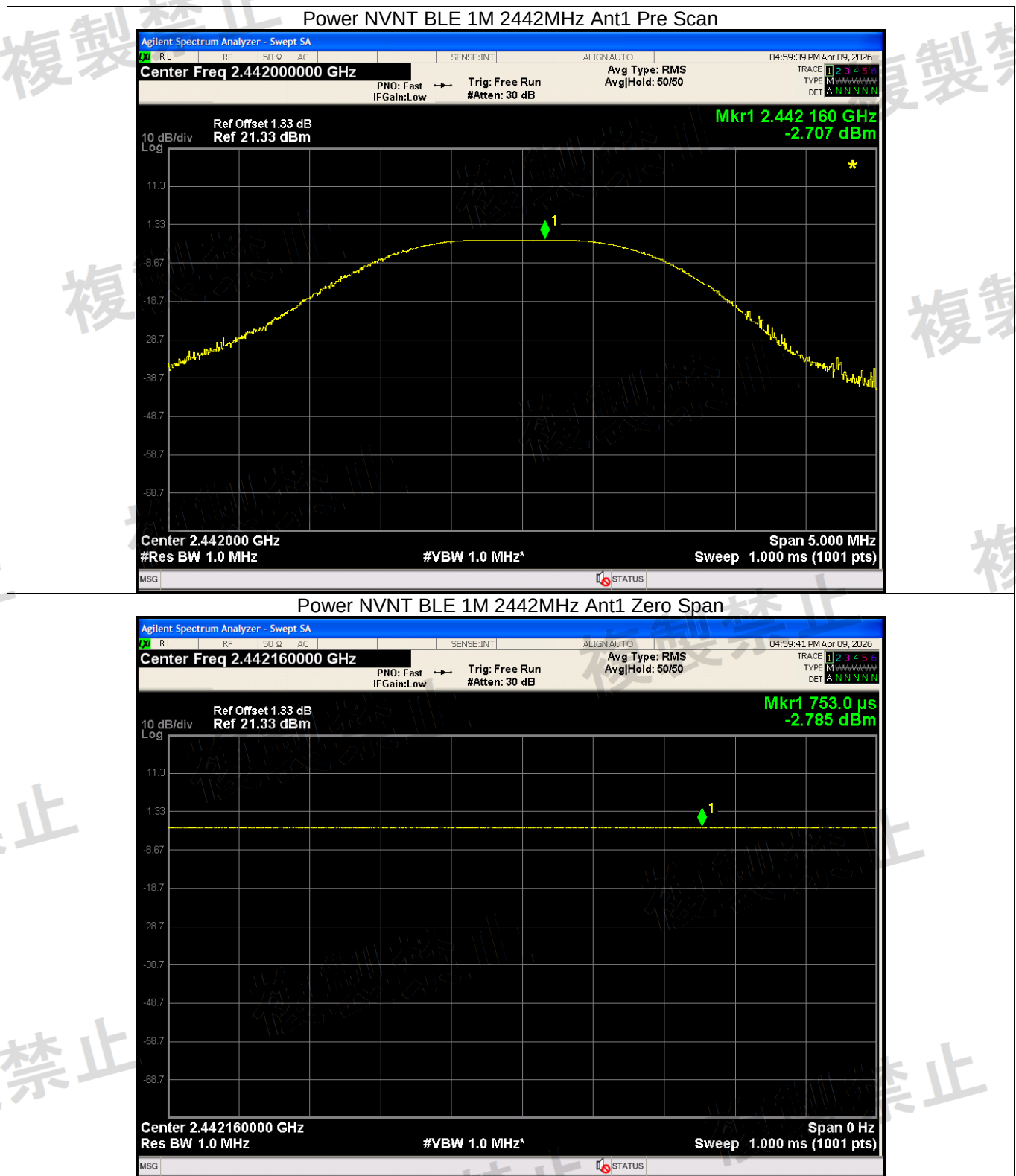
Note:

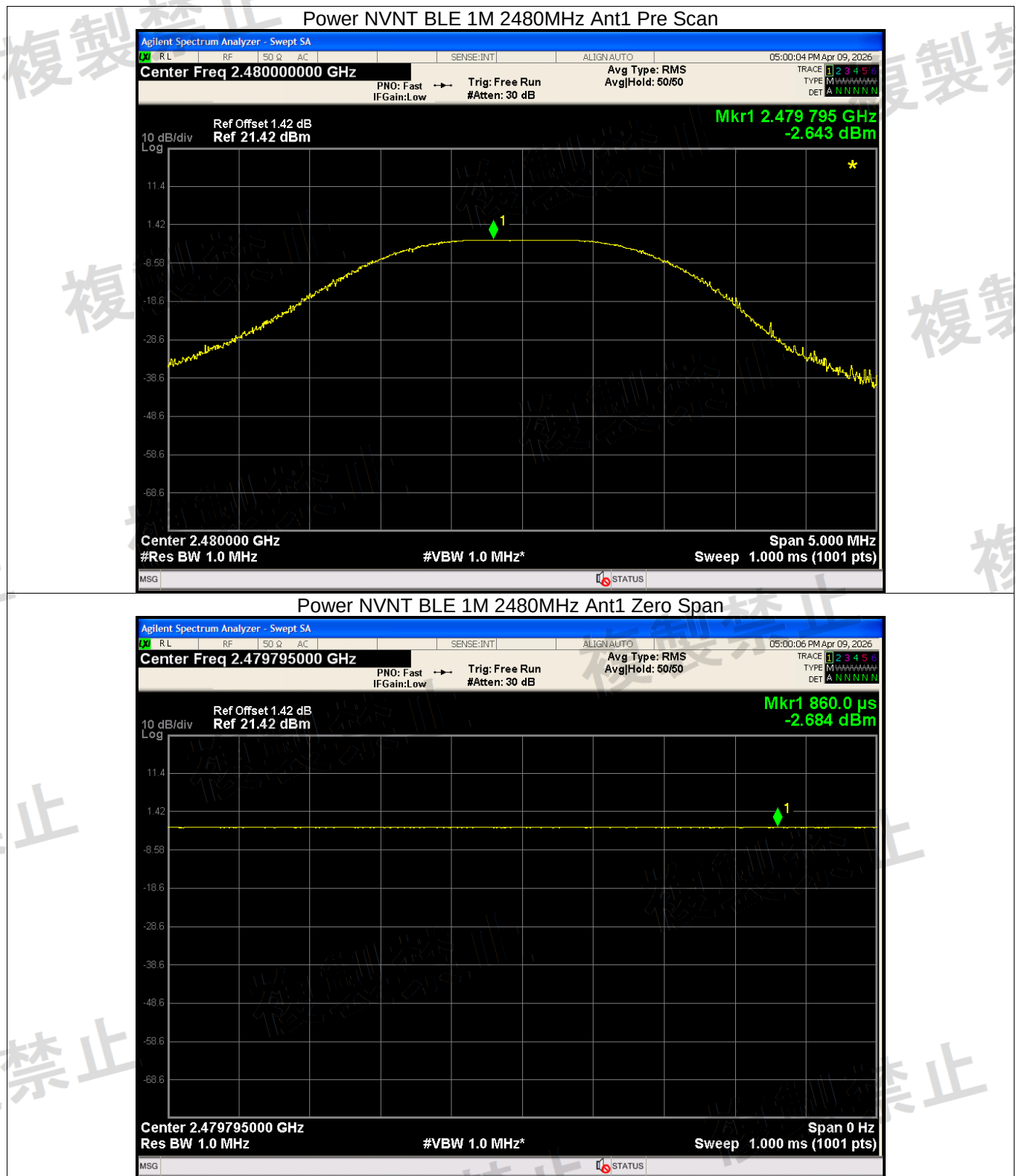
1) Tolerance = (Antenna power – Rated power) / Rated power *100%

BLE 1M



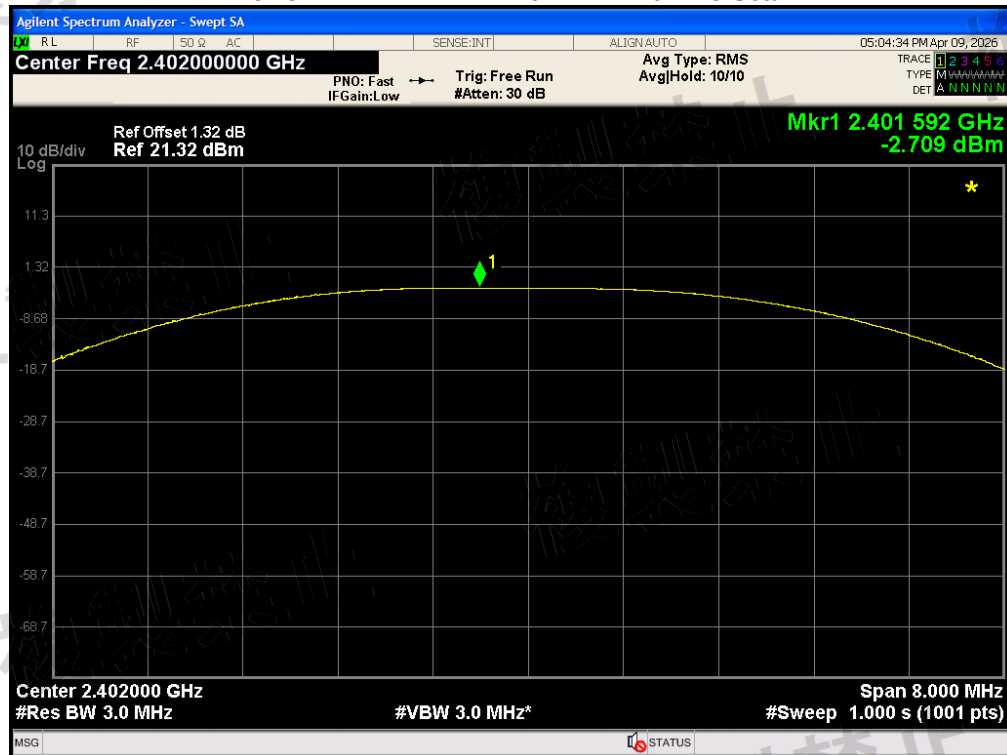




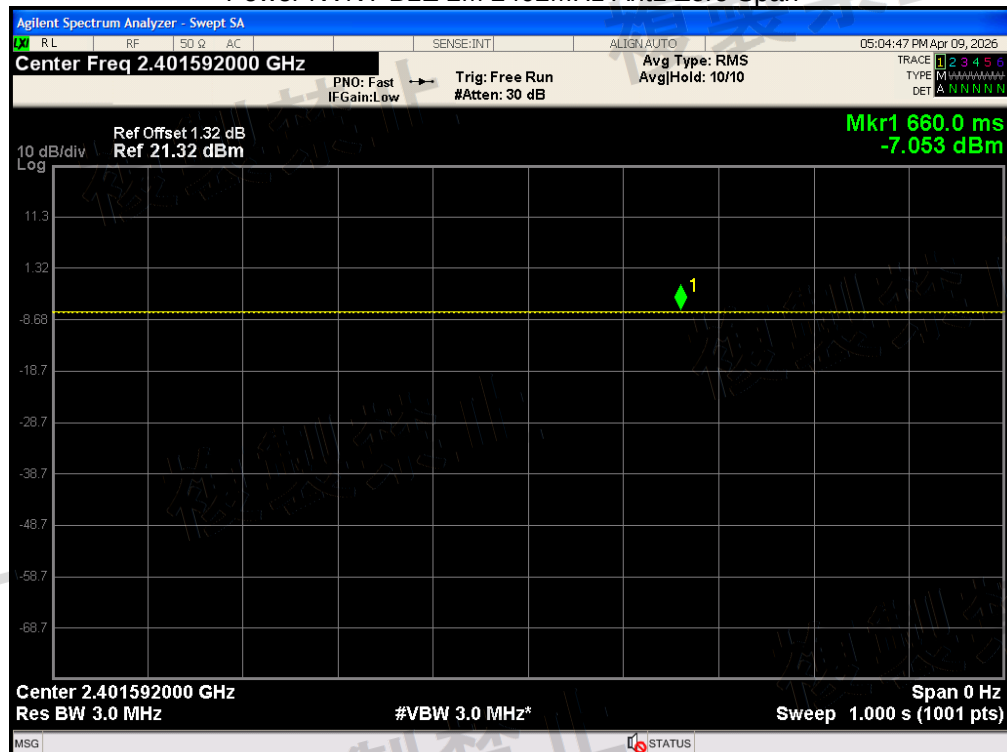


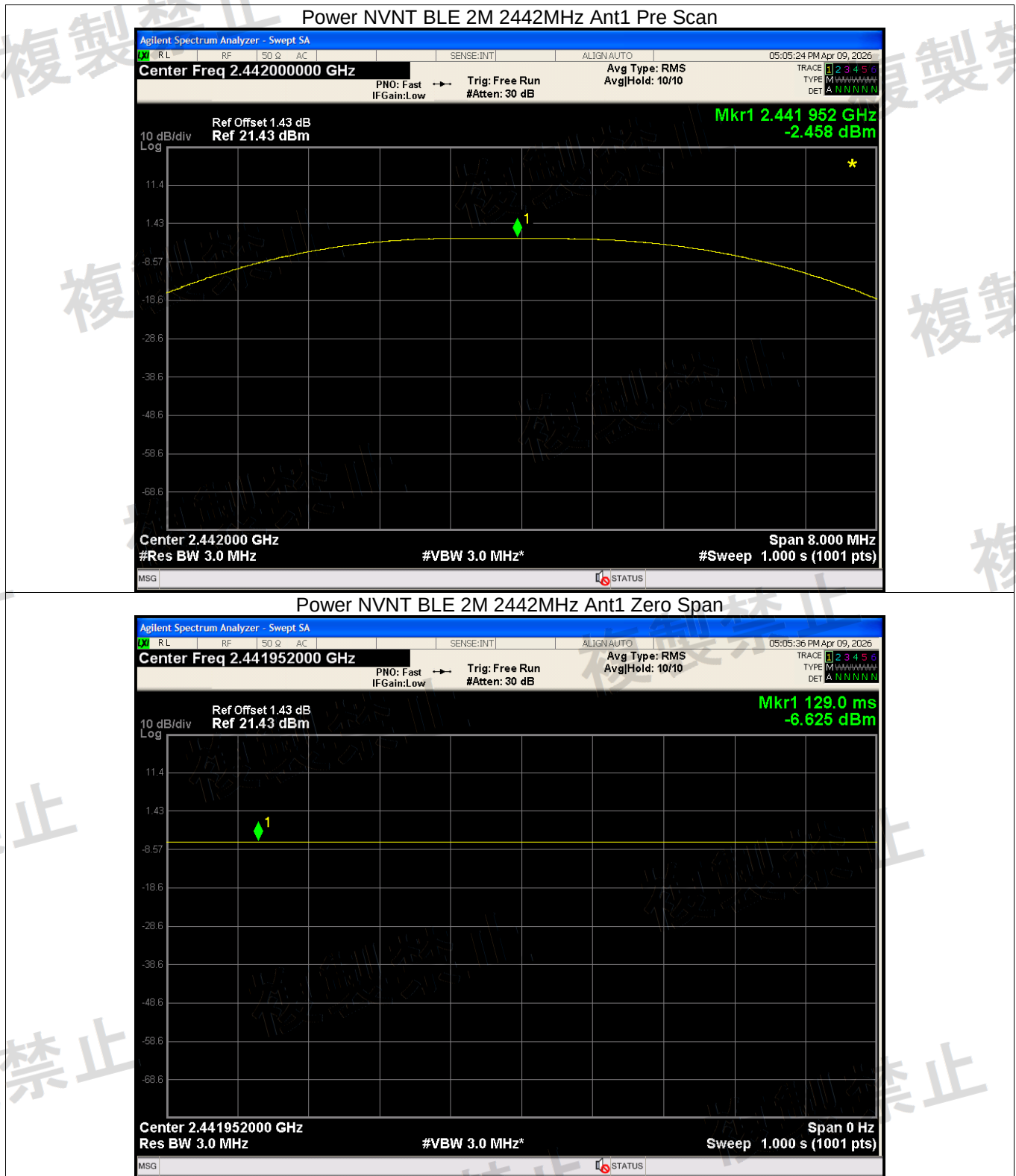
BLE 2M

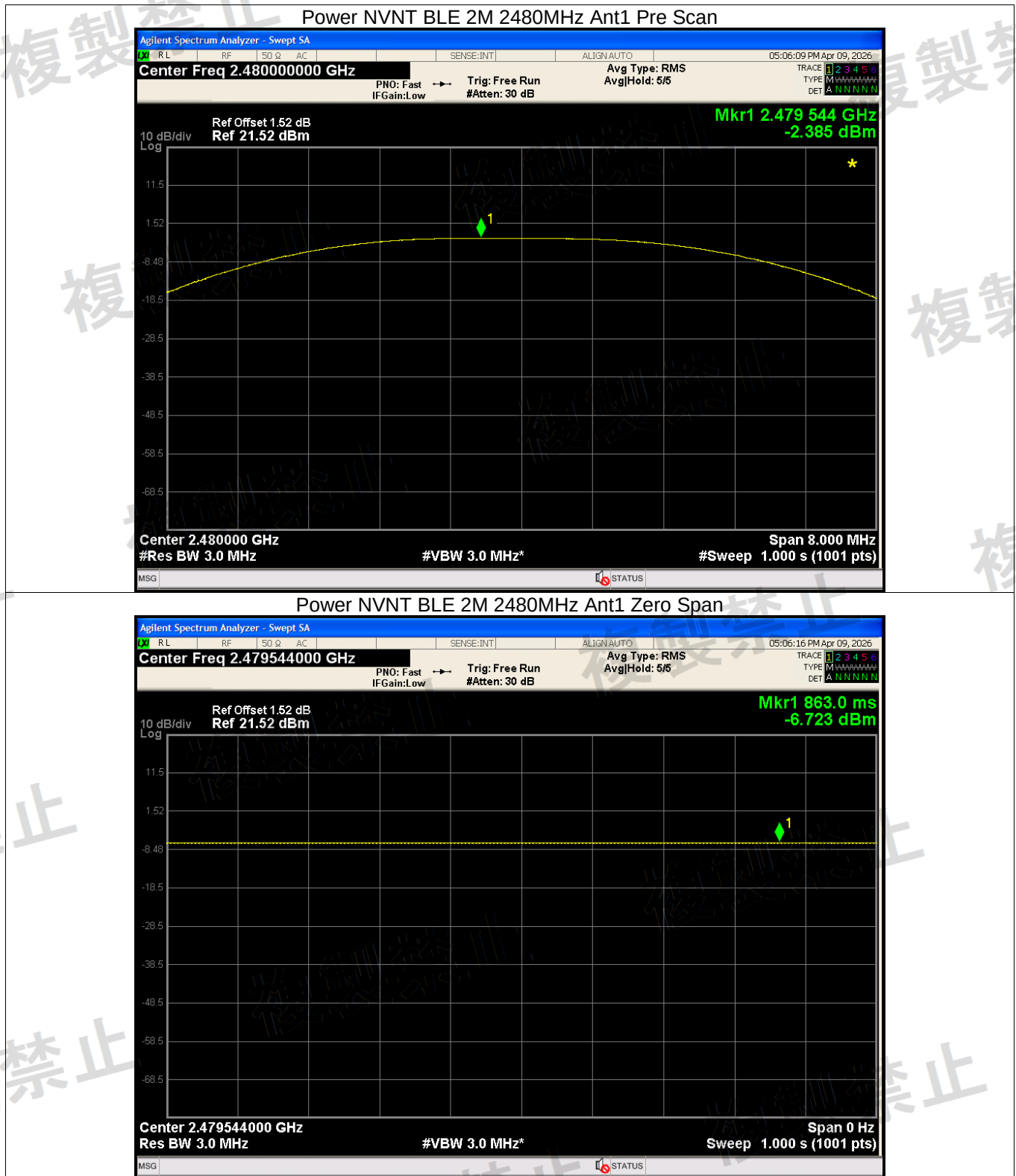
Power NVNT BLE 2M 2402MHz Ant1 Pre Scan



Power NVNT BLE 2M 2402MHz Ant1 Zero Span





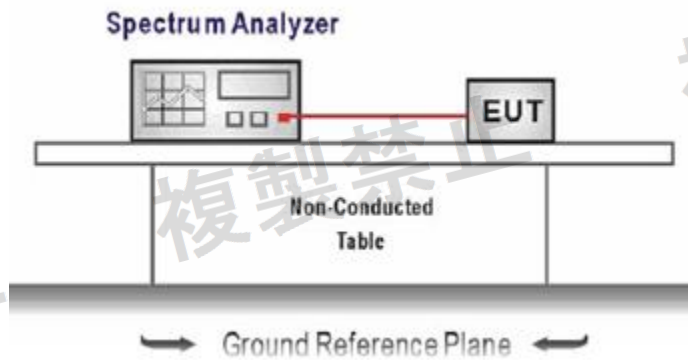


5.4. Occupy Bandwidth (99%)

LIMIT

Moduation type	Limit
FH	83.5MHz or less
FH + DS	83.5MHz or less
FH + OFDM	83.5MHz or less
OFDM	38MHz or less
Others	26MHz or less

TEST CONFIGURATION



TEST CONDITION

Test diffusion code and modulate with standard coding test signal

SPECTRUM SET:

Test Frequency: test channel,
RBW=VBW=300KHz, Span=5MHz, Sweep time=Auto, Detector mode=Positive peak

TEST RESULTS

☒ Passed ☐ Not Applicable

Please refer to the below test data:

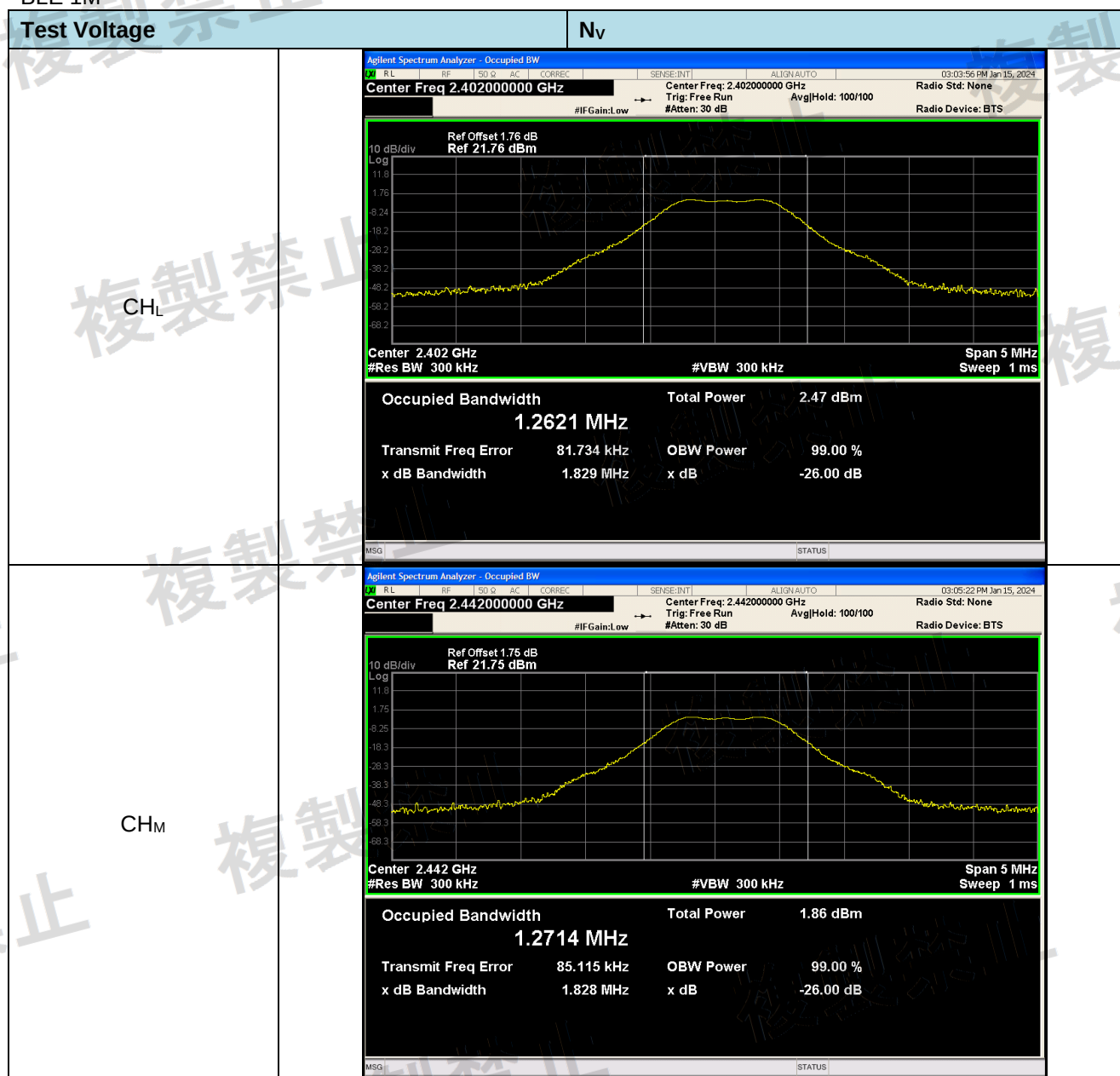
BLE 1M

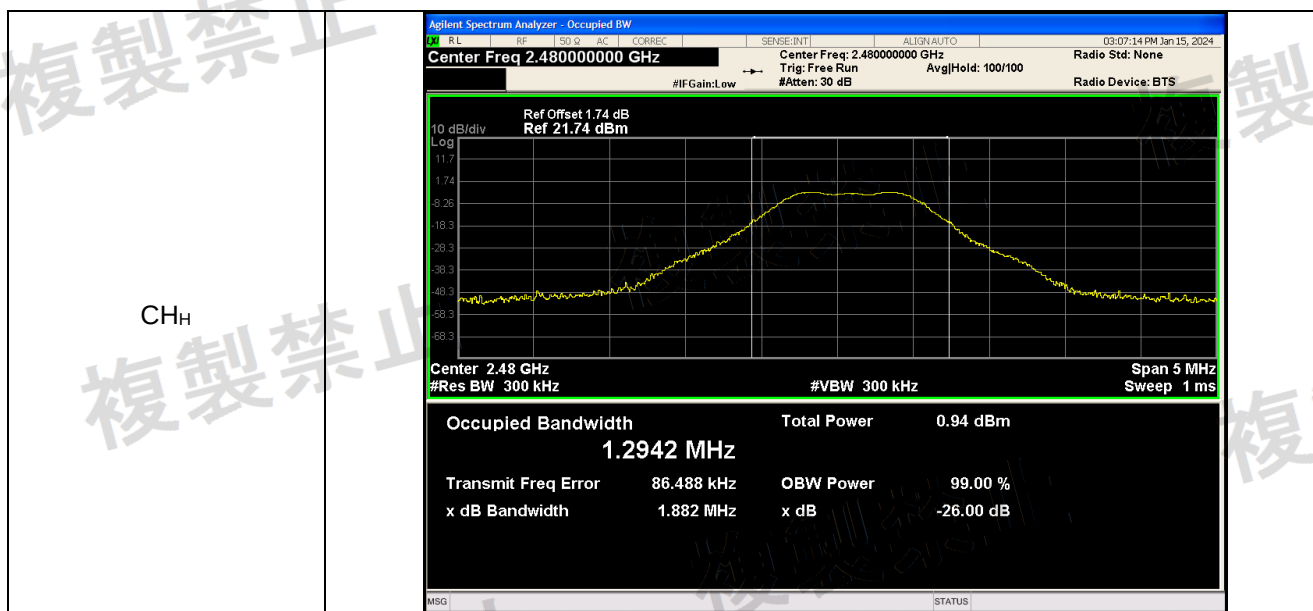
Test voltage	Test channel	99% occupy bandwidth (MHz)	Limit (MHz)	Result
Nv	CH _L	1.262	≤26	Pass
	CH _M	1.271		
	CH _H	1.294		

BLE 2M

Test voltage	Test channel	99% occupy bandwidth (MHz)	Limit (MHz)	Result
N _v	CH _L	2.137	≤26	Pass
	CH _M	2.142		
	CH _H	2.145		

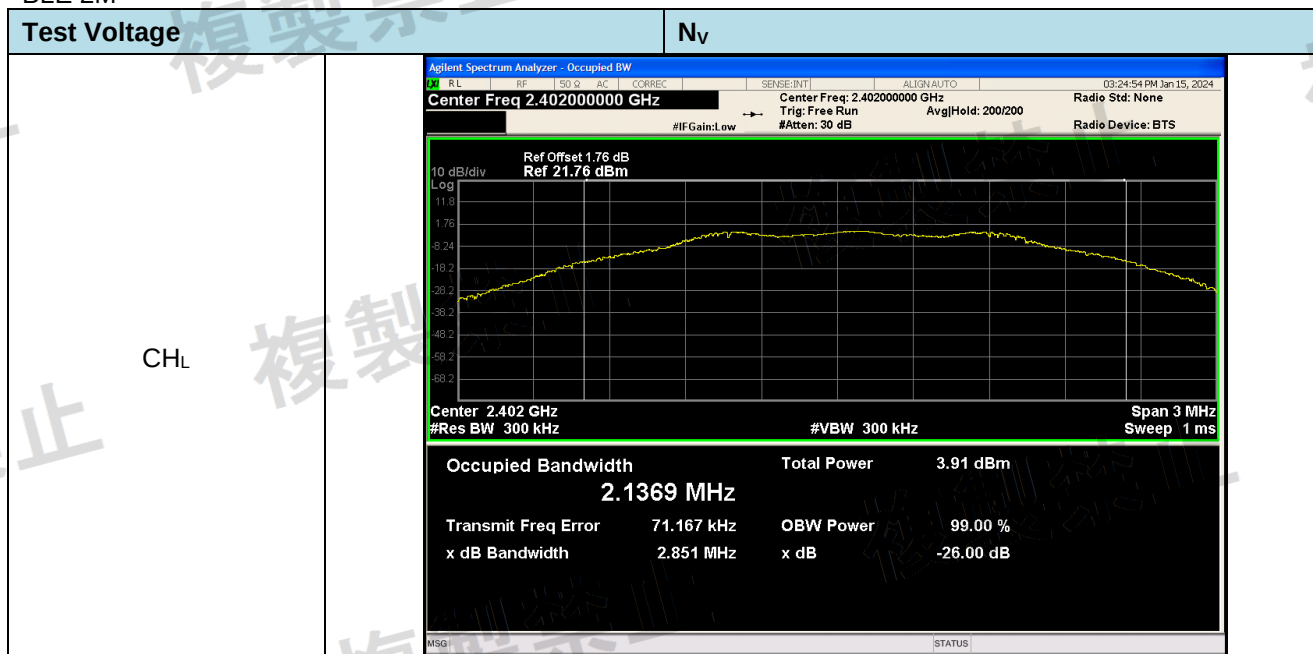
BLE 1M

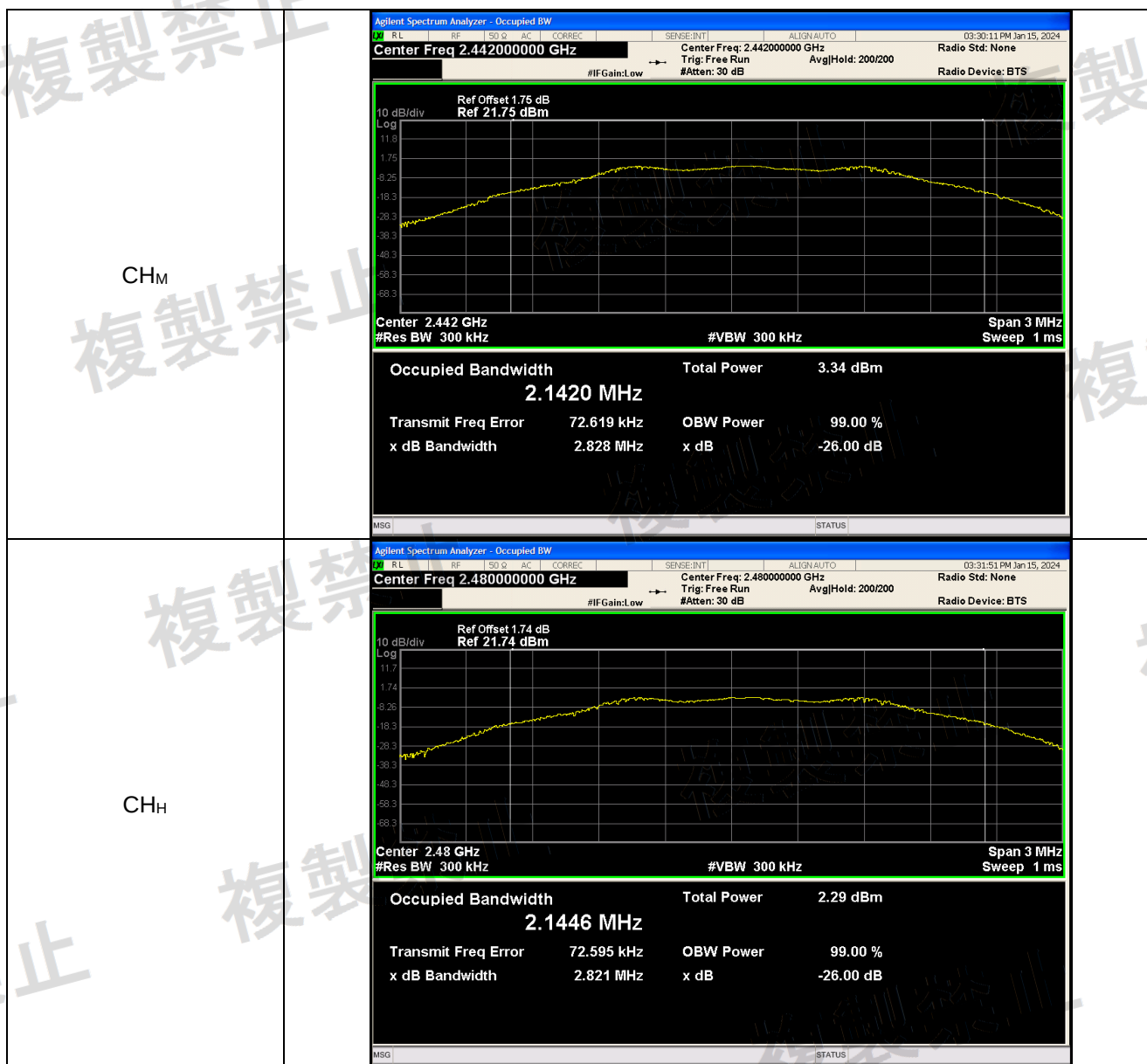




BLE 2M

Test Voltage

 N_v 

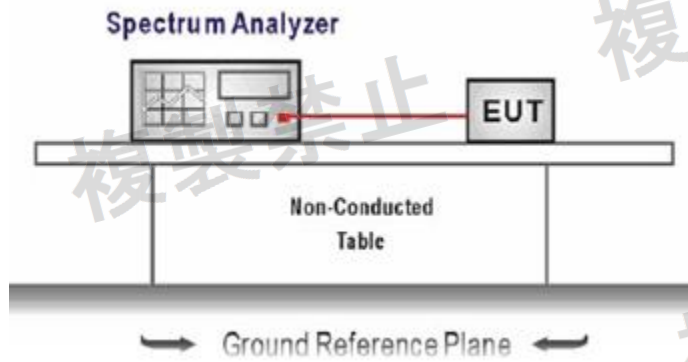


5.5. Spread spectrum bandwidth (90%)

LIMIT

500KHz or more

TEST CONFIGURATION



TEST CONDITION

Test diffusion code and modulate with standard coding test signal

SPECTRUM SET:

Test Frequency: test channel,

RBW=VBW=300KHz, Span=5MHz, Sweep time=Auto, Detector mode=Positive peak

TEST RESULTS

☒ Passed ☐ Not Applicable

Please refer to the below test data:

BLE 1M

Test voltage	Test channel	Spread spectrum bandwidth (MHz)	Limit (kHz)	Result
N _v	CH _L	0.855	≥500	Pass
	CH _M	0.858		
	CH _H	0.873		

BLE 2M

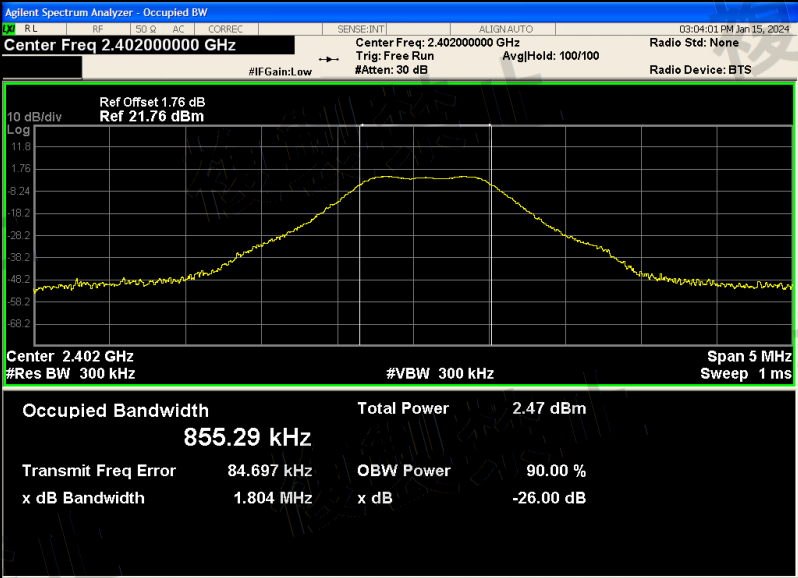
Test voltage	Test channel	Spread spectrum bandwidth (MHz)	Limit (kHz)	Result
N _v	CH _L	1.381	≥500	Pass
	CH _M	1.386		
	CH _H	1.387		

BLE 1M

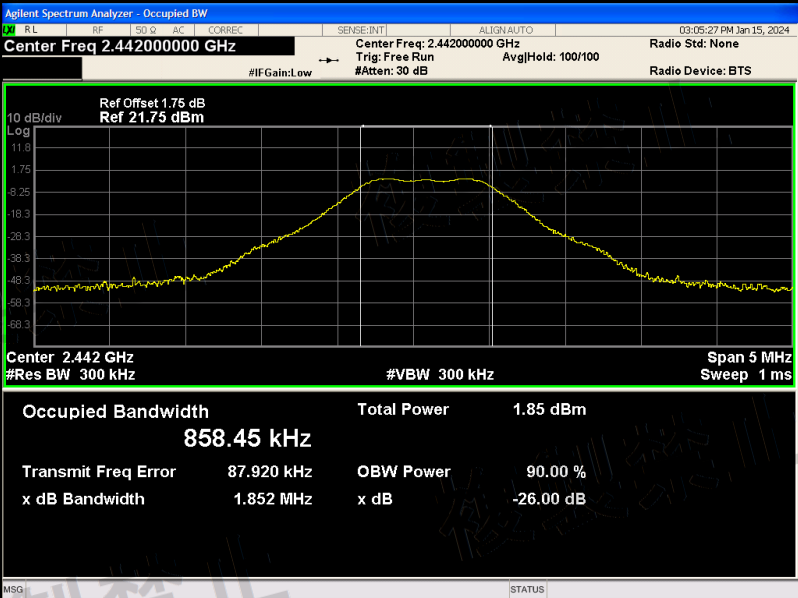
Test Voltage

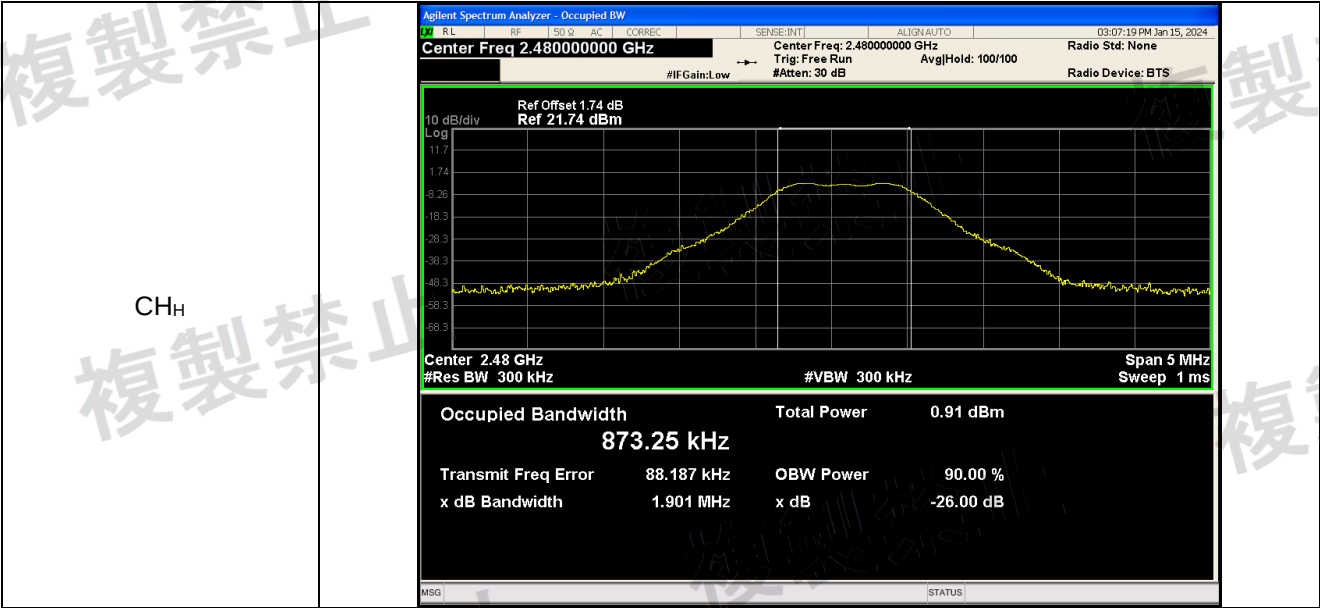
N_v

CH_L



CH_M





BLE 2M

Test Voltage

CH_L

Agilent Spectrum Analyzer - Occupied BW

Center Freq 2.40200000 GHz

Ref Offset 1.76 dB
Ref 21.76 dBm

10 dB/div

Log

11.8

1.76

8.24

18.2

28.2

38.2

48.2

58.2

68.2

Center 2.402 GHz

#Res BW 300 kHz

#VBW 300 kHz

Span 3 MHz

Sweep 1 ms

Occupied Bandwidth

1.3810 MHz

Total Power

3.97 dBm

Transmit Freq Error

85.890 kHz

OBW Power

90.00 %

x dB Bandwidth

2.827 MHz

x dB

-26.00 dB

CH_M

Agilent Spectrum Analyzer - Occupied BW

Center Freq 2.442000000 GHz

Ref Offset 1.75 dB
Ref 21.75 dBm

10 dB/div

Log

11.8

1.75

8.25

18.3

28.3

38.3

48.3

58.3

68.3

Center 2.442 GHz

#Res BW 300 kHz

#VBW 300 kHz

Span 3 MHz

Sweep 1 ms

Occupied Bandwidth

1.3863 MHz

Total Power

3.33 dBm

Transmit Freq Error

83.593 kHz

OBW Power

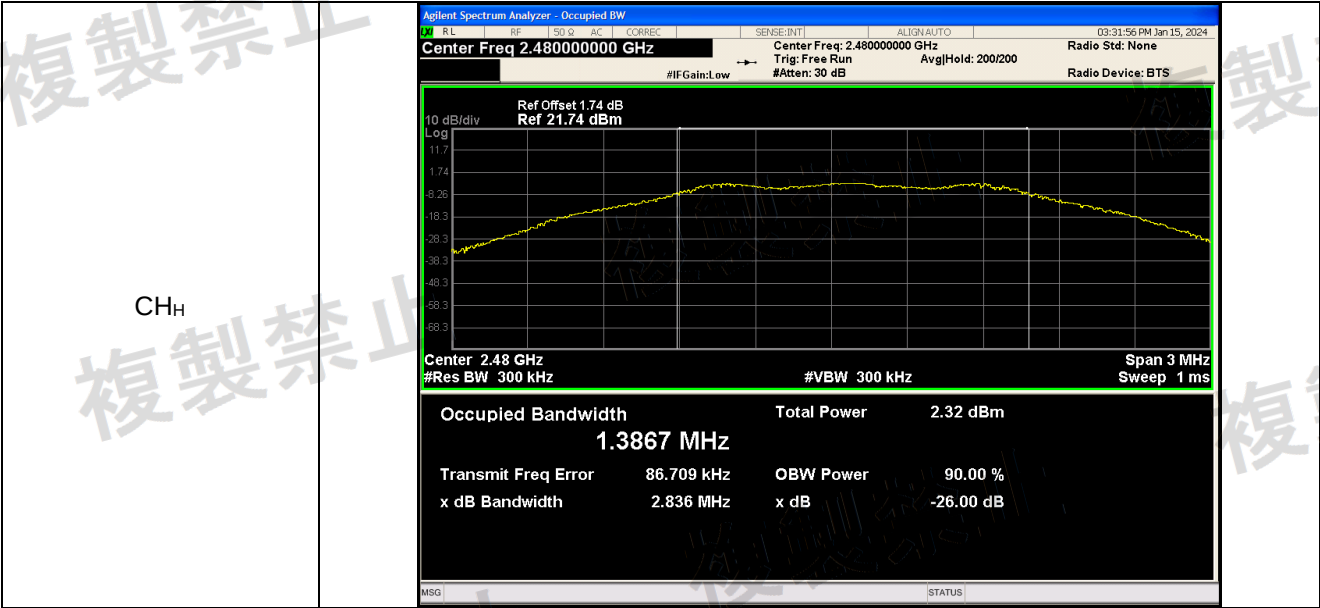
90.00 %

x dB Bandwidth

2.830 MHz

x dB

-26.00 dB

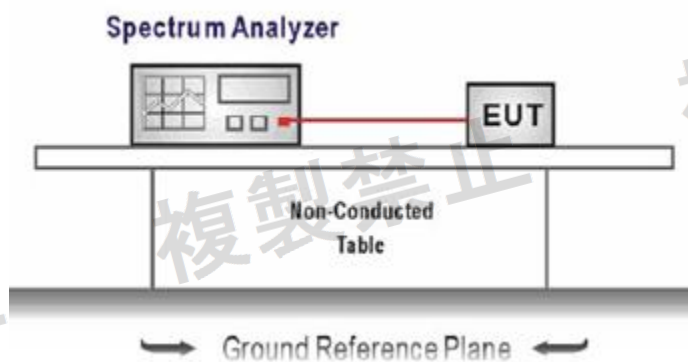


5.6. Spurious emission intensity

LIMIT

Frequency Range	Limit
30MHz -1000MHz	$\leq 2.5\mu\text{W/MHz}$ (-26dBm)
$\leq 2387\text{MHz}$	$\leq 2.5\mu\text{W/MHz}$ (-26dBm)
2387MHz to 2400MHz	$\leq 25\mu\text{W/MHz}$ (-16dBm)
2483.5MHz to 2496.5MHz	$\leq 25\mu\text{W/MHz}$ (-16dBm)
$\geq 2496.5\text{MHz}$	$\leq 2.5\mu\text{W/MHz}$ (-26dBm)

TEST CONFIGURATION



TEST CONDITION

Test diffusion code and modulate with standard coding test signal

SPECTRUM SET:

Step 1:

Test Frequency: test channel,

Below 1GHz, RBW=VBW=100KHz;

Above 1GHz, RBW=VBW=1MHz;

Sweep time=Auto, Detector mode=Positive peak

Step 2:

Test Frequency: spurious frequency

Below 1GHz, RBW=VBW=100KHz;

Above 1GHz, RBW=VBW=1MHz;

Sweep time=Auto, Detector mode=Sample, Span=0Hz

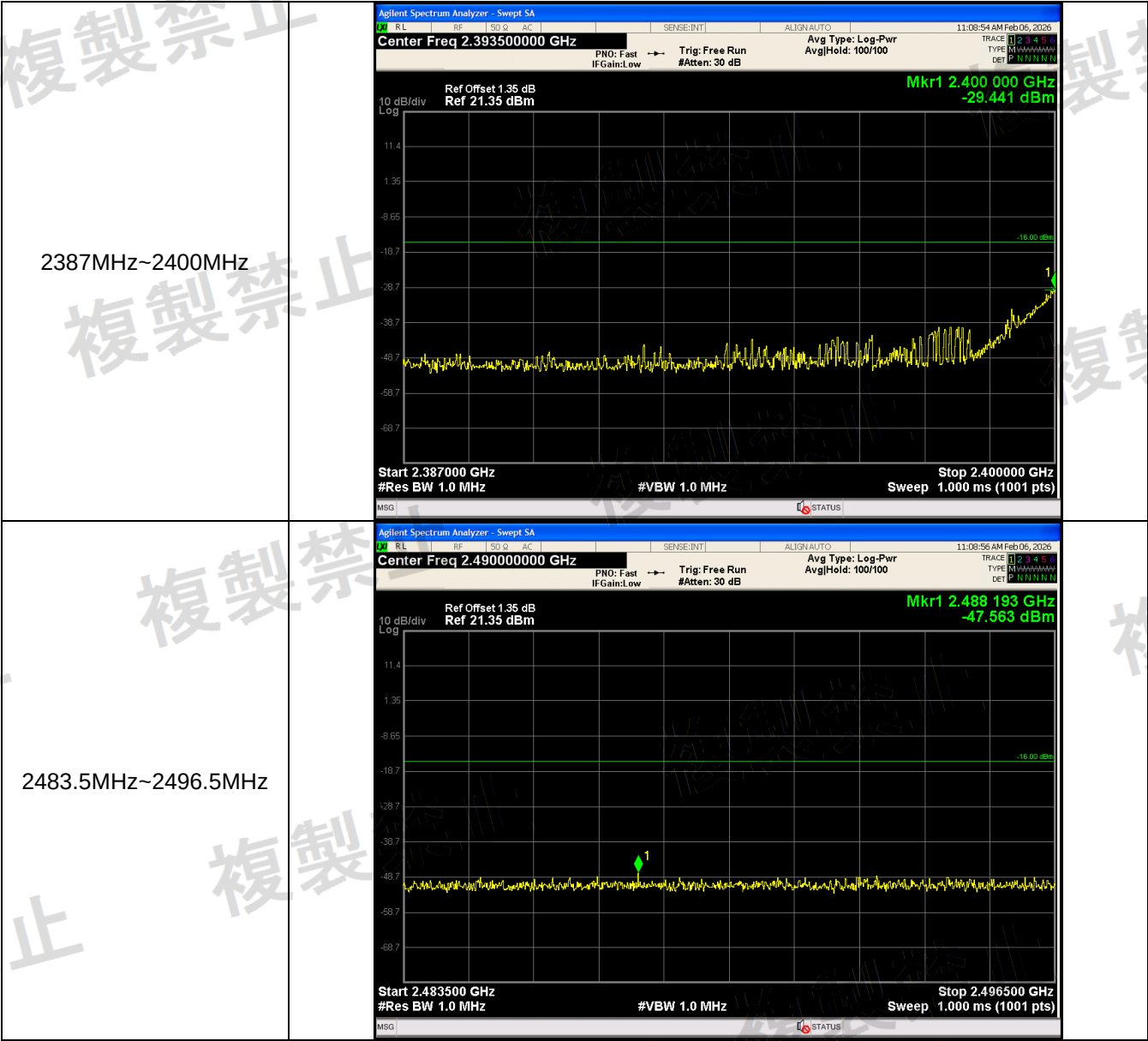
TEST RESULTS

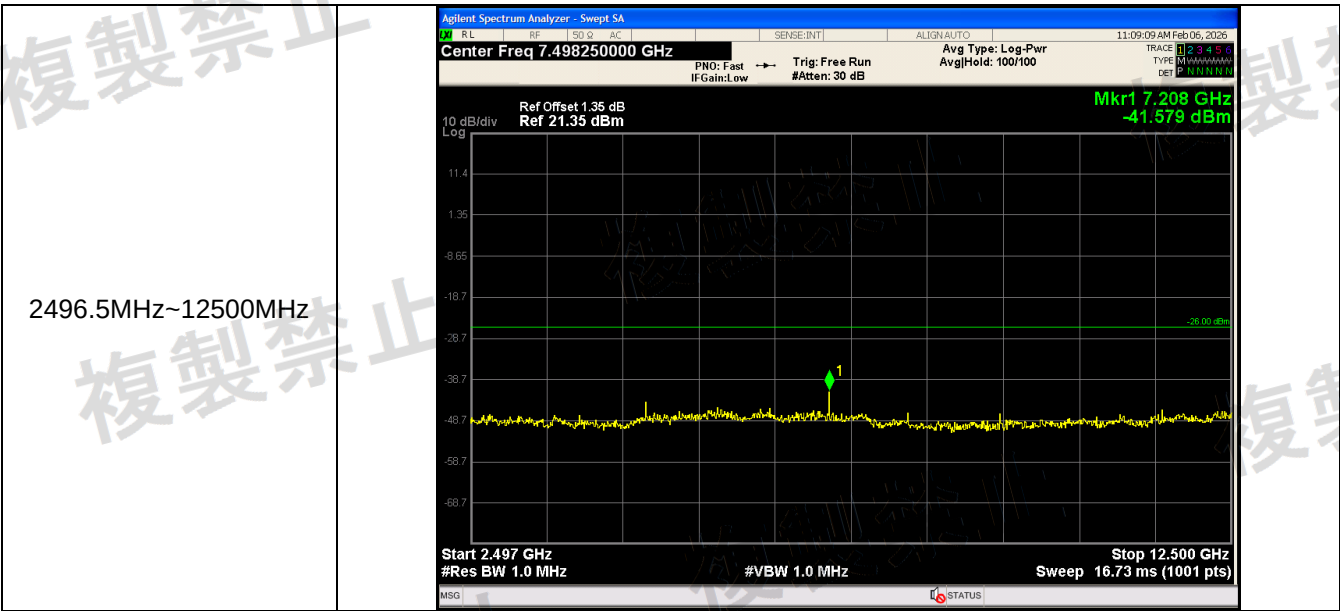
☒ Passed ☐ Not Applicable

BLE 1M

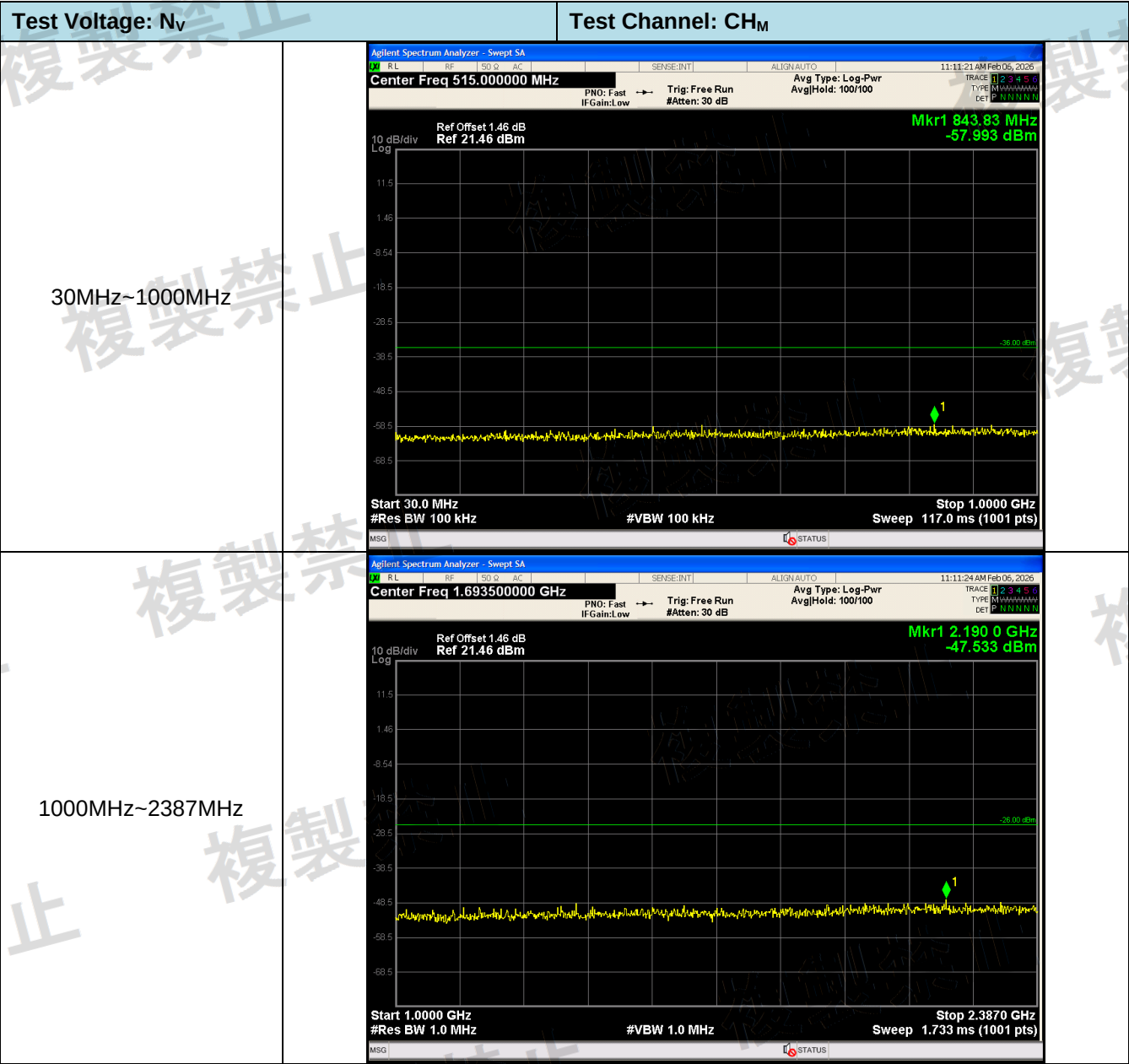
Please refer to the below test data:

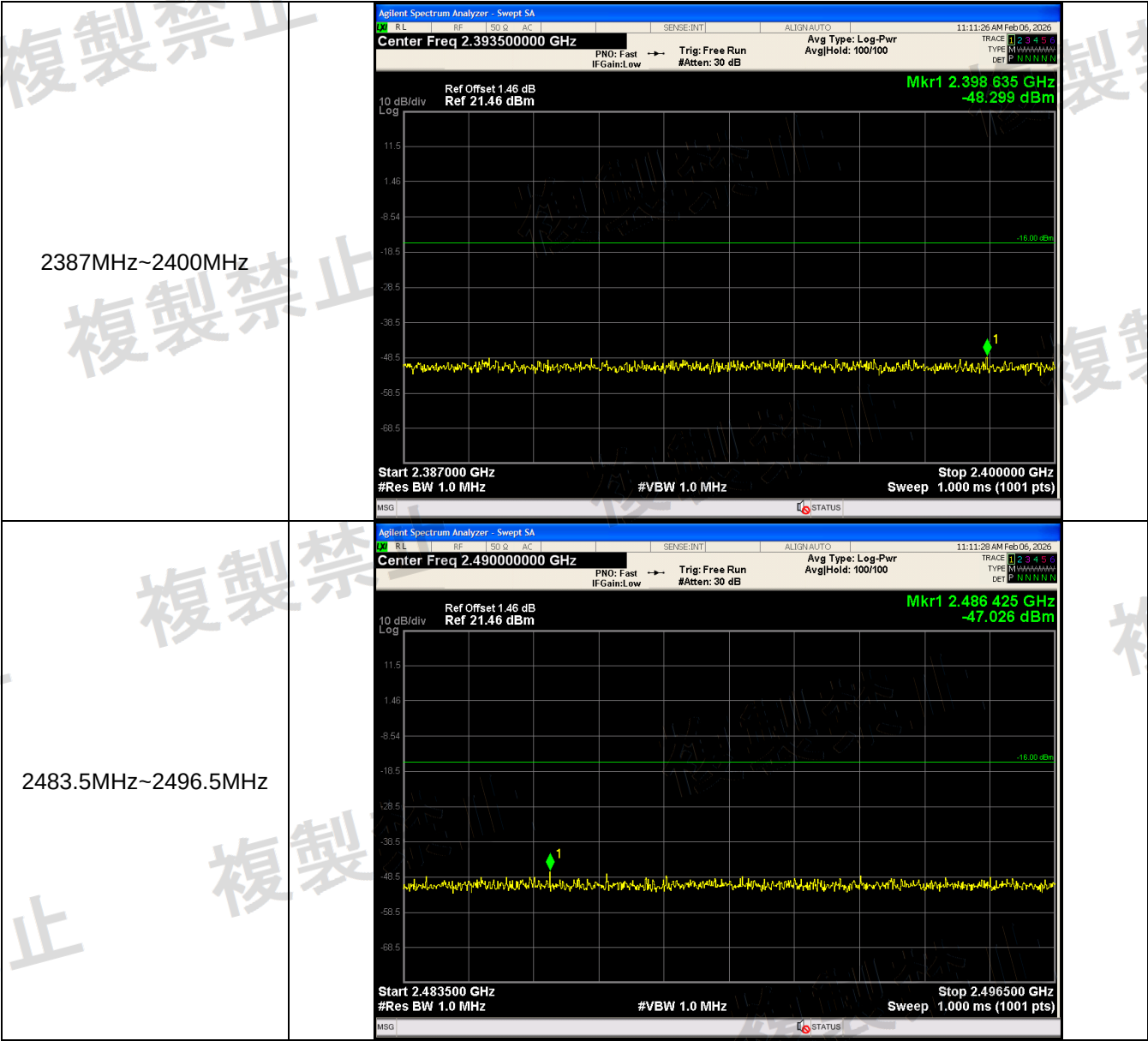
Test Voltage: N _v		Test Channel: CH _L	
30MHz~1000MHz	Agilent Spectrum Analyzer - Swept SA Center Freq 515.000000 MHz Ref Offset 1.35 dB Ref 21.35 dBm Mkr1 743.92 MHz -58.340 dBm Start 30.0 MHz #Res BW 100 kHz #VBW 100 kHz Stop 1.0000 GHz Sweep 117.0 ms (1001 pts)		
	Agilent Spectrum Analyzer - Swept SA Center Freq 1.69350000 GHz Ref Offset 1.35 dB Ref 21.35 dBm Mkr1 2.387 0 GHz -45.029 dBm Start 1.0000 GHz #Res BW 1.0 MHz #VBW 1.0 MHz Stop 2.3870 GHz Sweep 1.733 ms (1001 pts)		

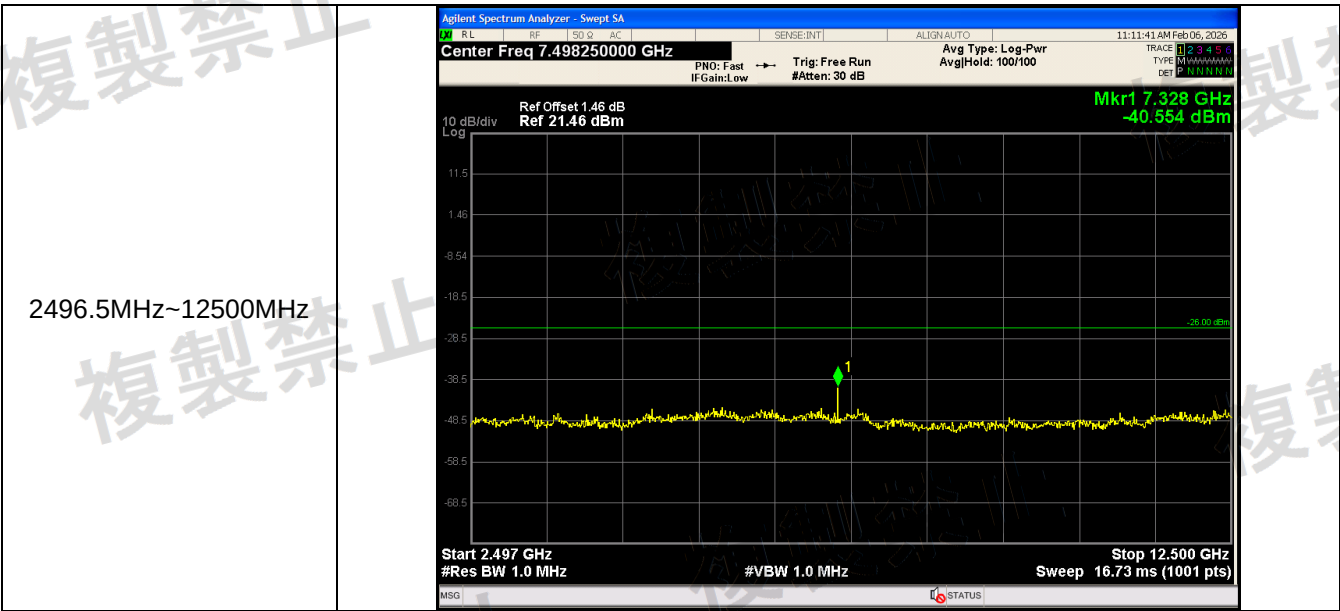




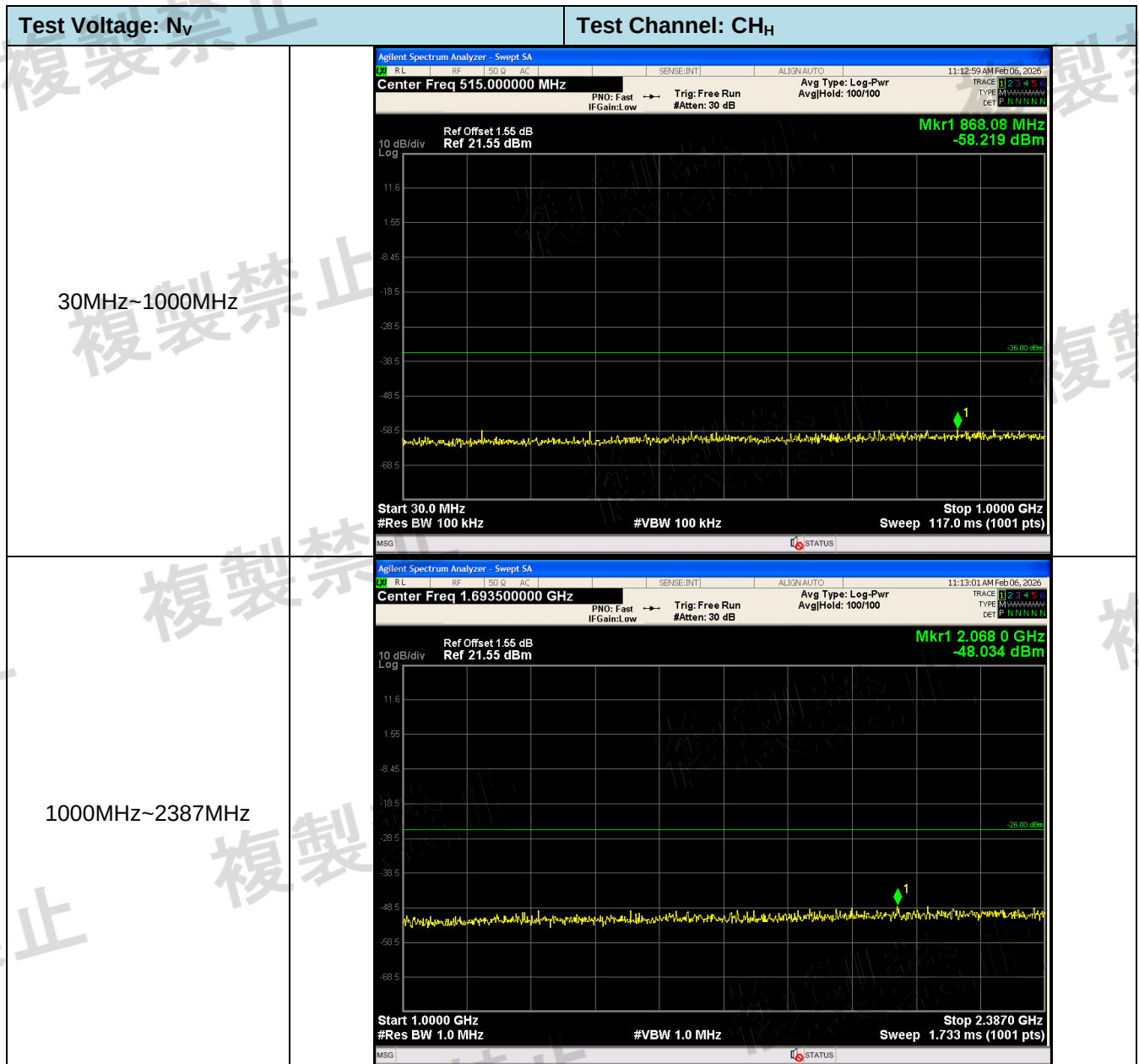
Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measure ment Level	Measurement Level (μW/MHz)	Limit	Result
Nv	CH _L	30MHz~1000MHz	743.92	-58.340 dBm/KHz	0.01	≤2.5μW/MHz	Pass
		1000MHz~2387MHz	2387	-45.029 dBm/MHz	0.031	≤2.5μW/MHz	
		2387MHz~2400MHz	2400	-29.441 dBm/MHz	1.137	≤25μW/MHz	
		2483.5MHz~2496.5MHz	2488.193	-47.563 dBm/MHz	0.018	≤25μW/MHz	
		2496.5MHz~12500MHz	7208.148	-41.579 dBm/MHz	0.070	≤2.5μW/MHz	

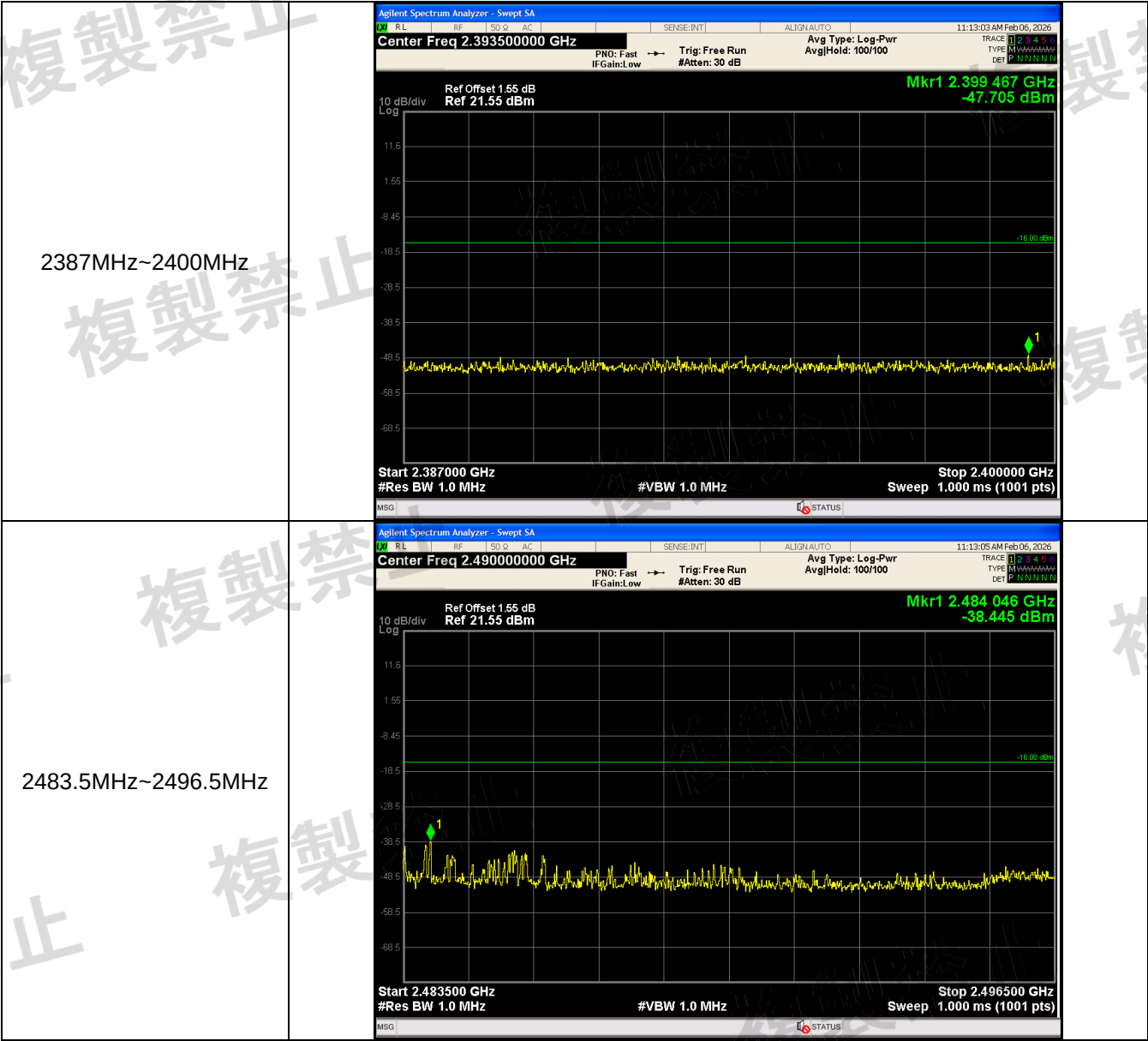


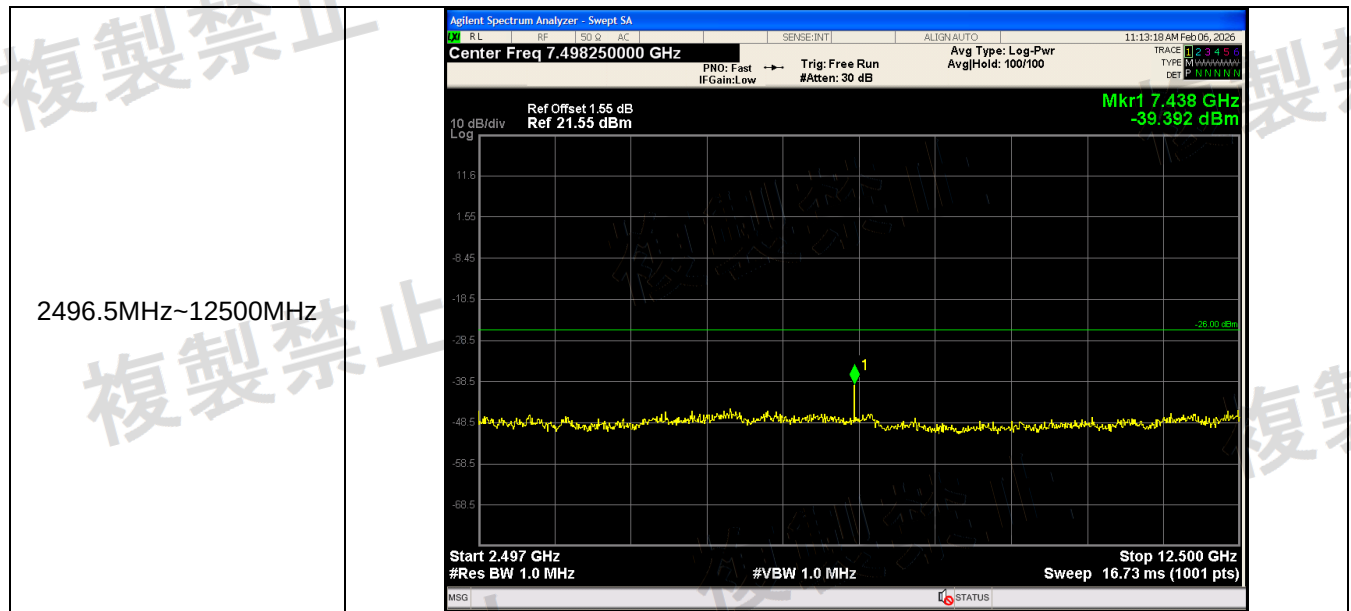




Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measure ment Level	Measurement Level (μW/MHz)	Limit	Result
Nv	CH _L	30MHz~1000MHz	843.83	-57.993 dBm/KHz	0.02	≤2.5μW/MHz	Pass
		1000MHz~2387MHz	2190.046	-47.533 dBm/MHz	0.018	≤2.5μW/MHz	
		2387MHz~2400MHz	2398.635	-48.299 dBm/MHz	0.015	≤25μW/MHz	
		2483.5MHz~2496.5MHz	2486.425	-47.026 dBm/MHz	0.020	≤25μW/MHz	
		2496.5MHz~12500MHz	7328.191	-40.554 dBm/MHz	0.088	≤2.5μW/MHz	





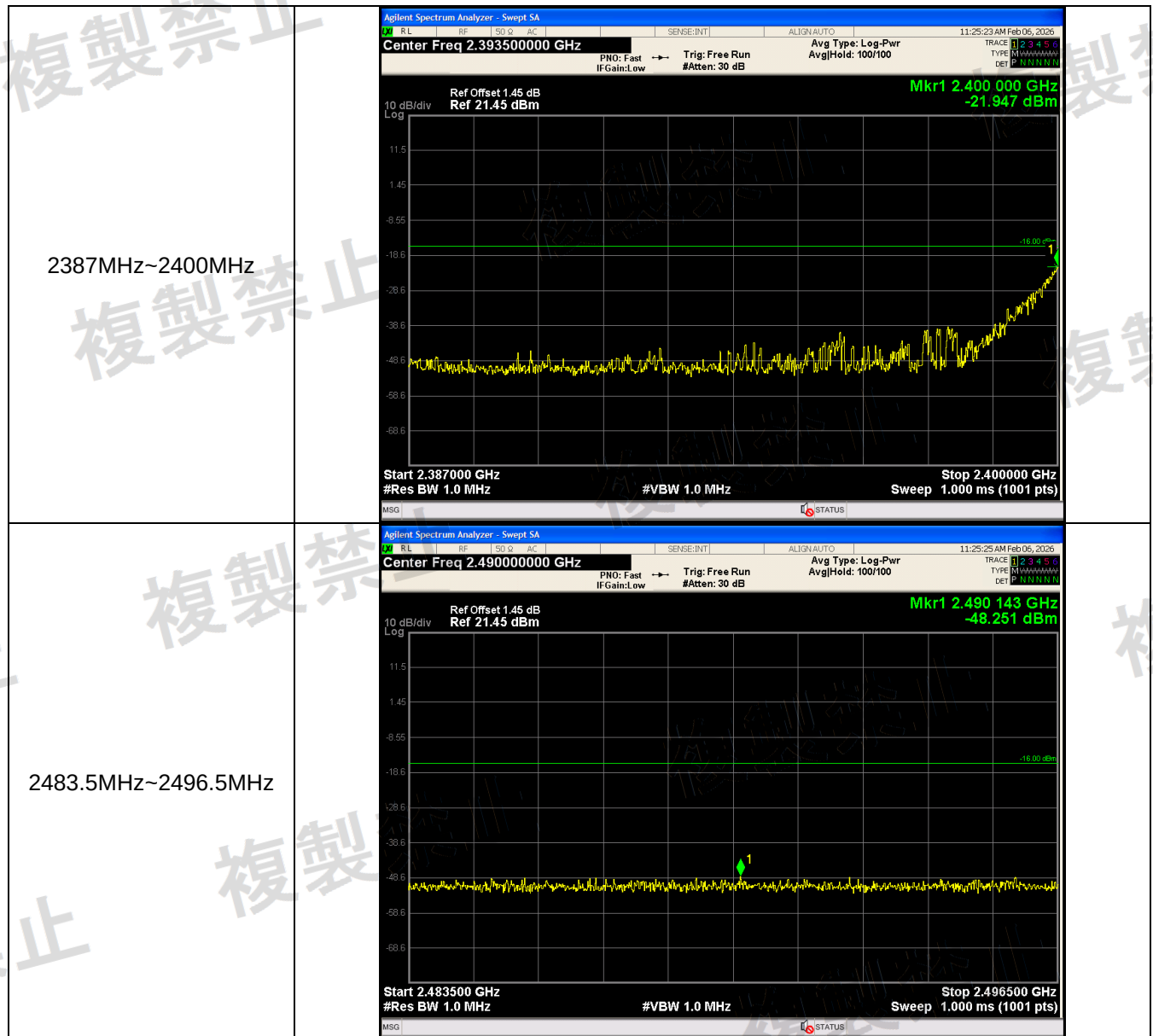


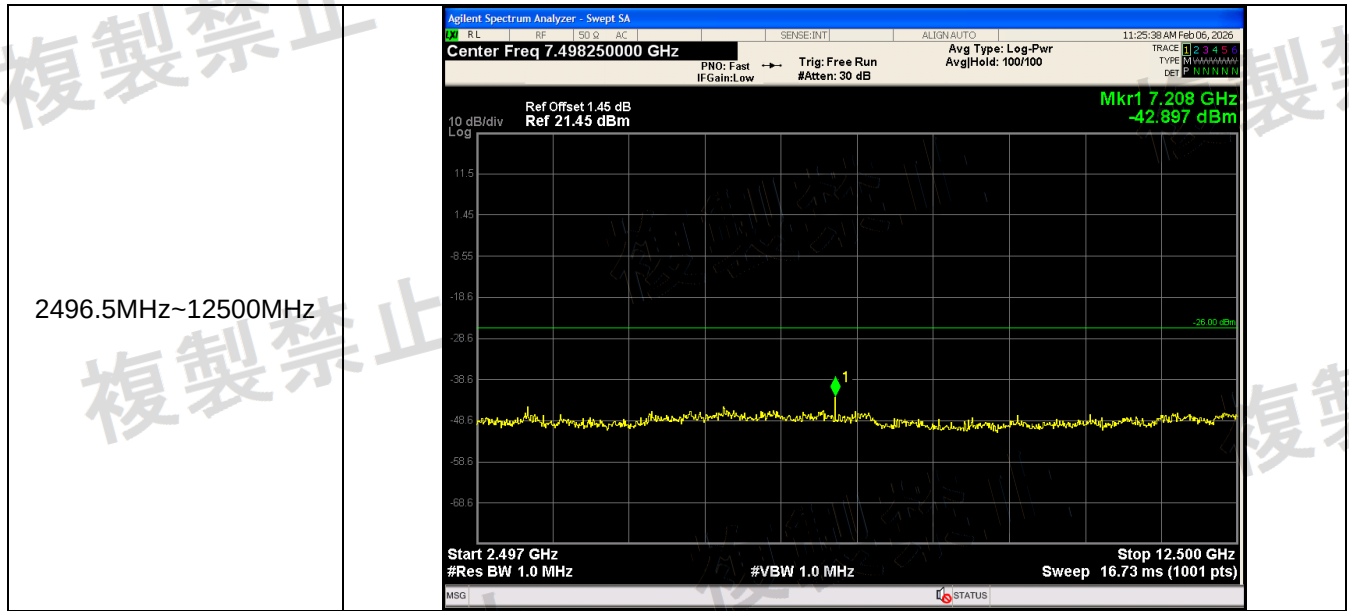
Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measurement Level	Measurement Level ($\mu\text{W}/\text{MHz}$)	Limit	Result
Nv	CH _L	30MHz~1000MHz	868.08	-58.219 dBm/KHz	0.02	$\leq 2.5\mu\text{W}/\text{MHz}$	Pass
		1000MHz~2387MHz	2067.99	-48.034 dBm/MHz	0.016	$\leq 2.5\mu\text{W}/\text{MHz}$	
		2387MHz~2400MHz	2399.467	-47.705 dBm/MHz	0.017	$\leq 25\mu\text{W}/\text{MHz}$	
		2483.5MHz~2496.5MHz	2484.046	-38.445 dBm/MHz	0.143	$\leq 25\mu\text{W}/\text{MHz}$	
		2496.5MHz~12500MHz	7438.229	-39.392 dBm/MHz	0.115	$\leq 2.5\mu\text{W}/\text{MHz}$	

BLE 2M

Please refer to the below test data:

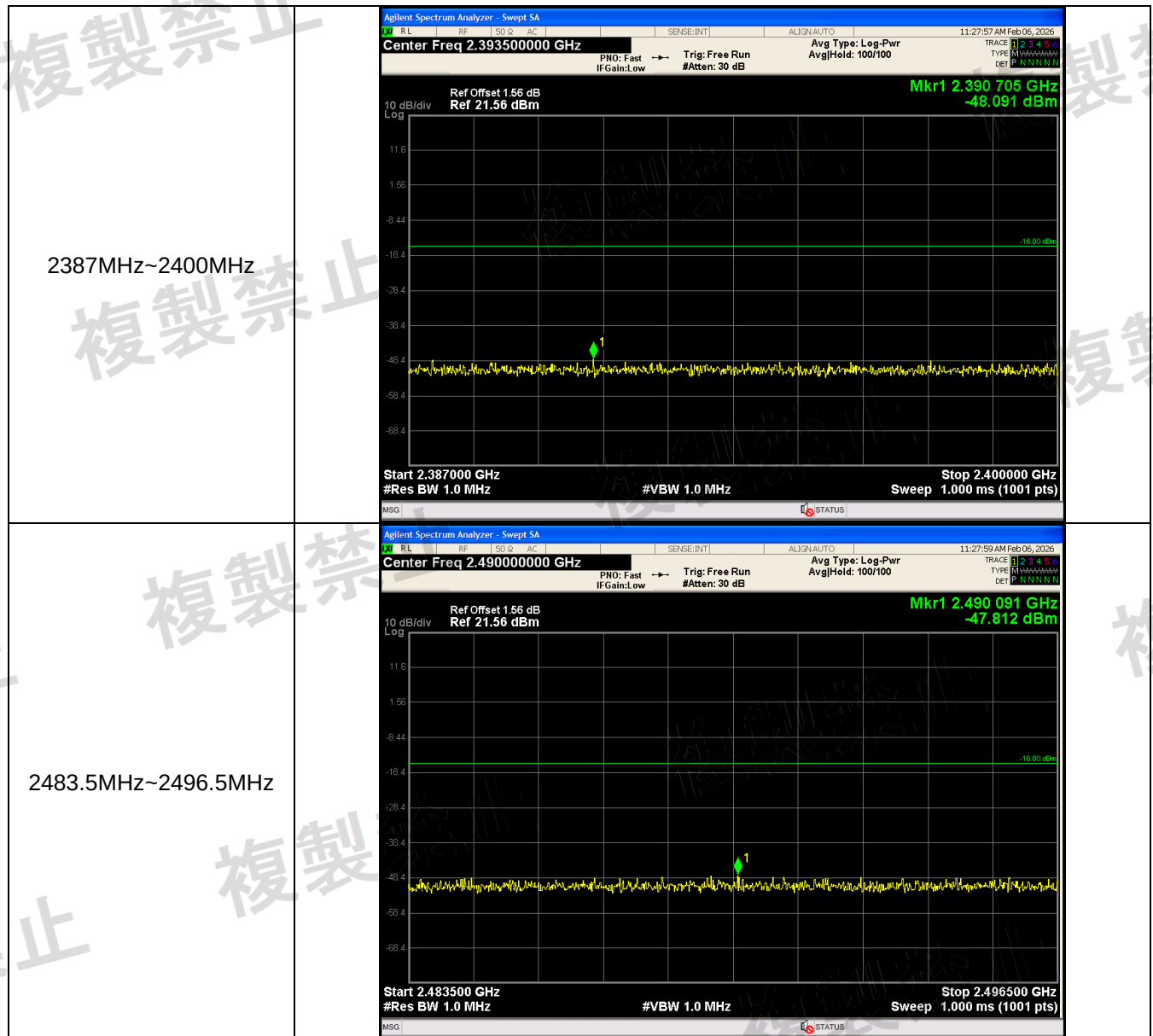
Test Voltage: N _v		Test Channel: CH _L	
30MHz~1000MHz	Agilent Spectrum Analyzer - Swept SA Center Freq 515.000000 MHz Ref Offset 1.45 dB Ref 21.45 dBm Mkr1 822.49 MHz -57.946 dBm Start 30.0 MHz #Res BW 100 kHz #VBW 100 kHz Stop 1.0000 GHz Sweep 117.0 ms (1001 pts)		
1000MHz~2387MHz	Agilent Spectrum Analyzer - Swept SA Center Freq 1.693500000 GHz Ref Offset 1.45 dB Ref 21.45 dBm Mkr1 2.385 6 GHz -44.835 dBm Start 1.0000 GHz #Res BW 1.0 MHz #VBW 1.0 MHz Stop 2.3870 GHz Sweep 1.733 ms (1001 pts)		

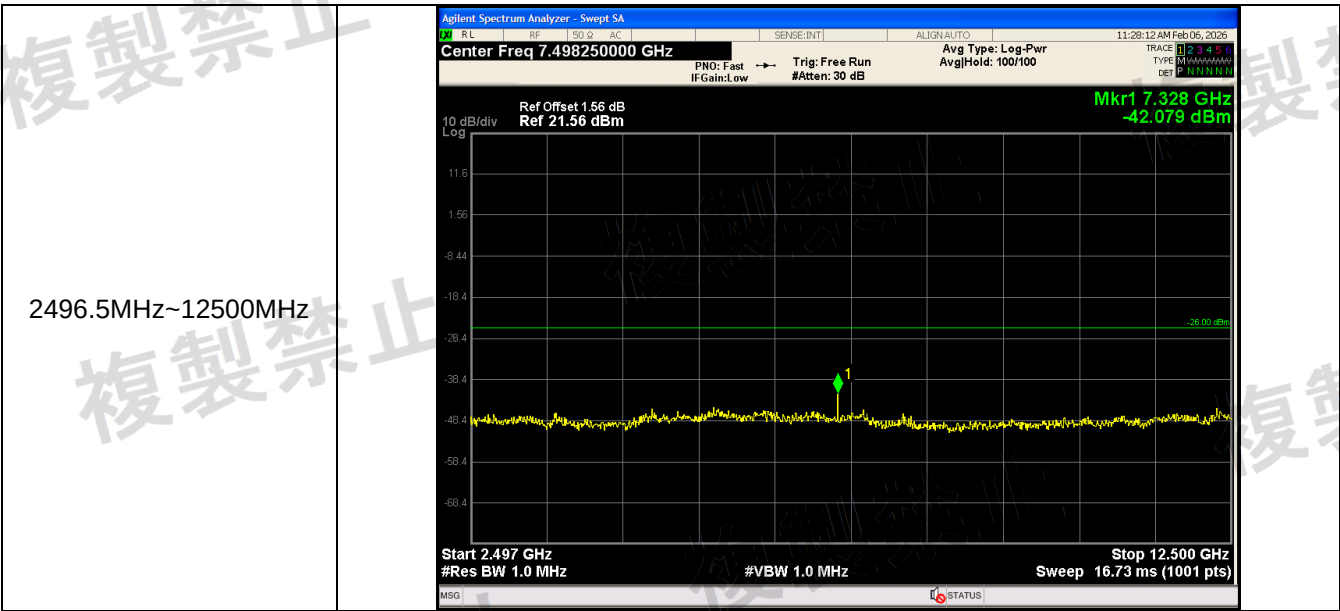




Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measurement Level	Measurement Level ($\mu\text{W}/\text{MHz}$)	Limit	Result
Nv	CH _L	30MHz~1000MHz	822.49	-57.946 dBm/KHz	0.02	$\leq 2.5\mu\text{W}/\text{MHz}$	Pass
		1000MHz~2387MHz	2385.613	-44.835 dBm/MHz	0.033	$\leq 2.5\mu\text{W}/\text{MHz}$	
		2387MHz~2400MHz	2400	-21.947 dBm/MHz	6.387	$\leq 25\mu\text{W}/\text{MHz}$	
		2483.5MHz~2496.5MHz	2490.143	-48.251 dBm/MHz	0.015	$\leq 25\mu\text{W}/\text{MHz}$	
		2496.5MHz~12500MHz	7208.148	-42.897 dBm/MHz	0.051	$\leq 2.5\mu\text{W}/\text{MHz}$	

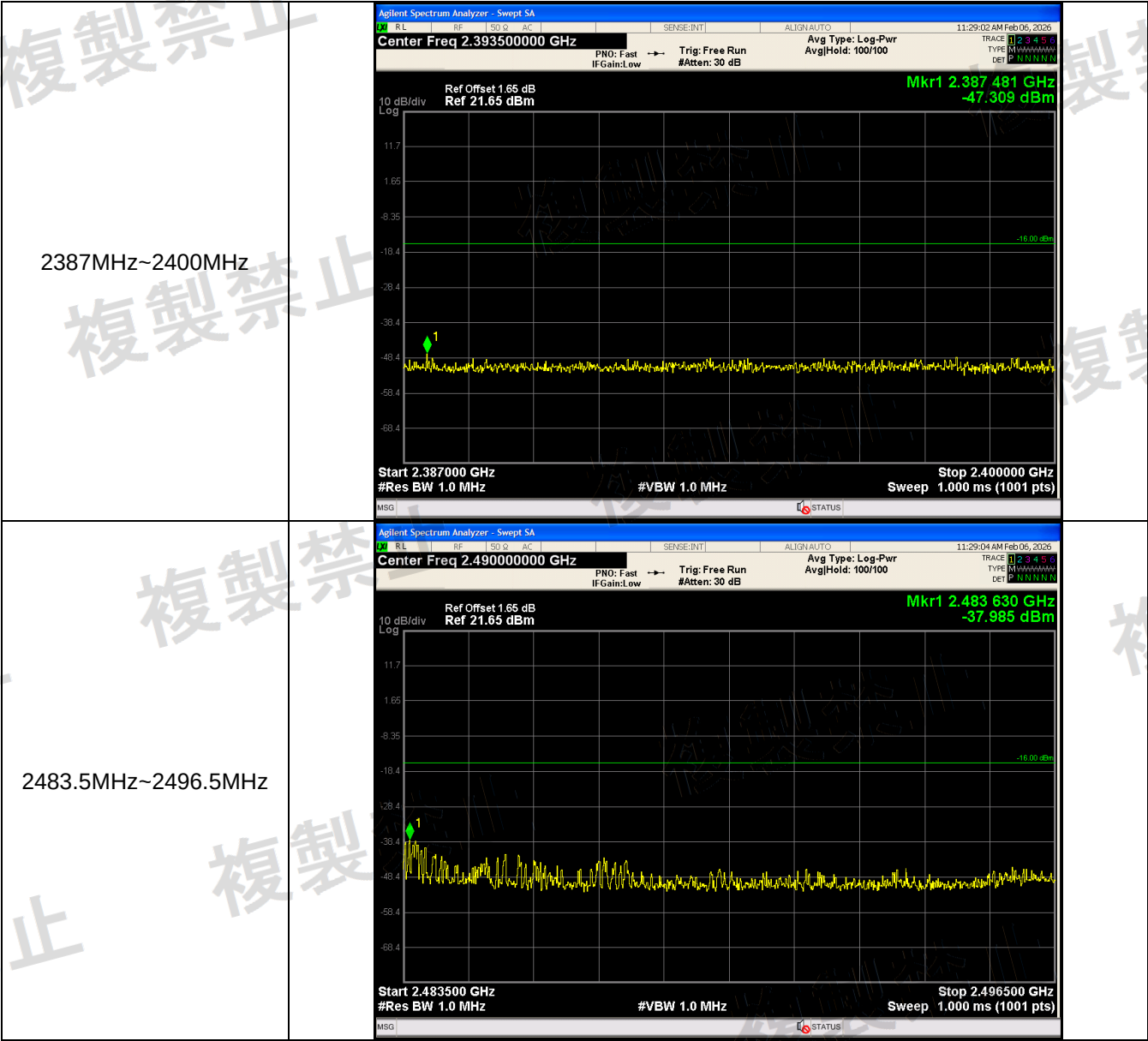






Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measure ment Level	Measurement Level (μW/MHz)	Limit	Result
Nv	CH _L	30MHz~1000MHz	924.34	-58.323 dBm/KHz	0.01	≤2.5μW/MHz	Pass
		1000MHz~2387MHz	2000.027	-46.665 dBm/MHz	0.022	≤2.5μW/MHz	
		2387MHz~2400MHz	2390.705	-48.091 dBm/MHz	0.016	≤25μW/MHz	
		2483.5MHz~2496.5MHz	2490.091	-47.812 dBm/MHz	0.017	≤25μW/MHz	
		2496.5MHz~12500MHz	7328.191	-42.079 dBm/MHz	0.062	≤2.5μW/MHz	







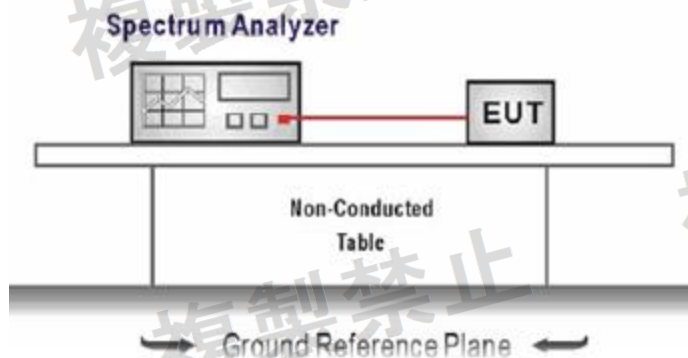
Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measure ment Level	Measurement Level (μW/MHz)	Limit	Result
Nv	CH _L	30MHz~1000MHz	931.13	-57.458 dBm/KHz	0.02	≤2.5μW/MHz	Pass
		1000MHz~2387MHz	2285.749	-47.859 dBm/MHz	0.016	≤2.5μW/MHz	
		2387MHz~2400MHz	2387.481	-47.309 dBm/MHz	0.019	≤25μW/MHz	
		2483.5MHz~2496.5MHz	2483.63	-37.985 dBm/MHz	0.159	≤25μW/MHz	
		2496.5MHz~12500MHz	7438.229	-40.149 dBm/MHz	0.097	≤2.5μW/MHz	

5.7. Limit of secondary radiated emissions

LIMIT

Frequency Range	Limit
≤1GHz	≤4.0nW (-54dBm)
>1GHz	≤20nW (-47dBm)

TEST CONFIGURATION



TEST CONDITION

Test diffusion code and modulate with standard coding test signal

SPECTRUM SET:

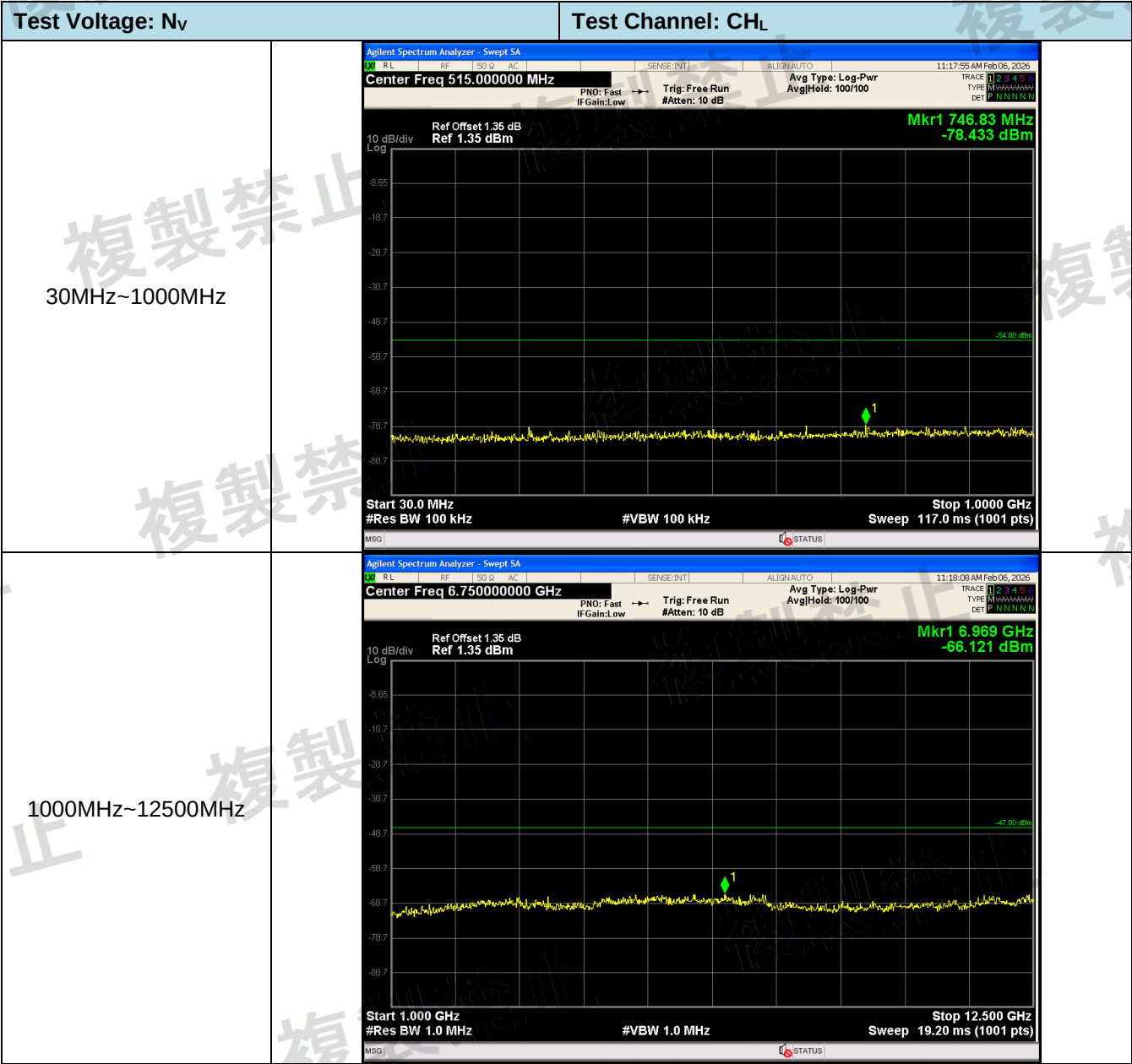
Test Frequency: test channel,
Below 1GHz, RBW=100KHz,VBW=100KHz;
Above 1GHz, RBW=VBW=1MHz,
Sweep time=Auto, Detector mode=Positive peak

TEST RESULTS

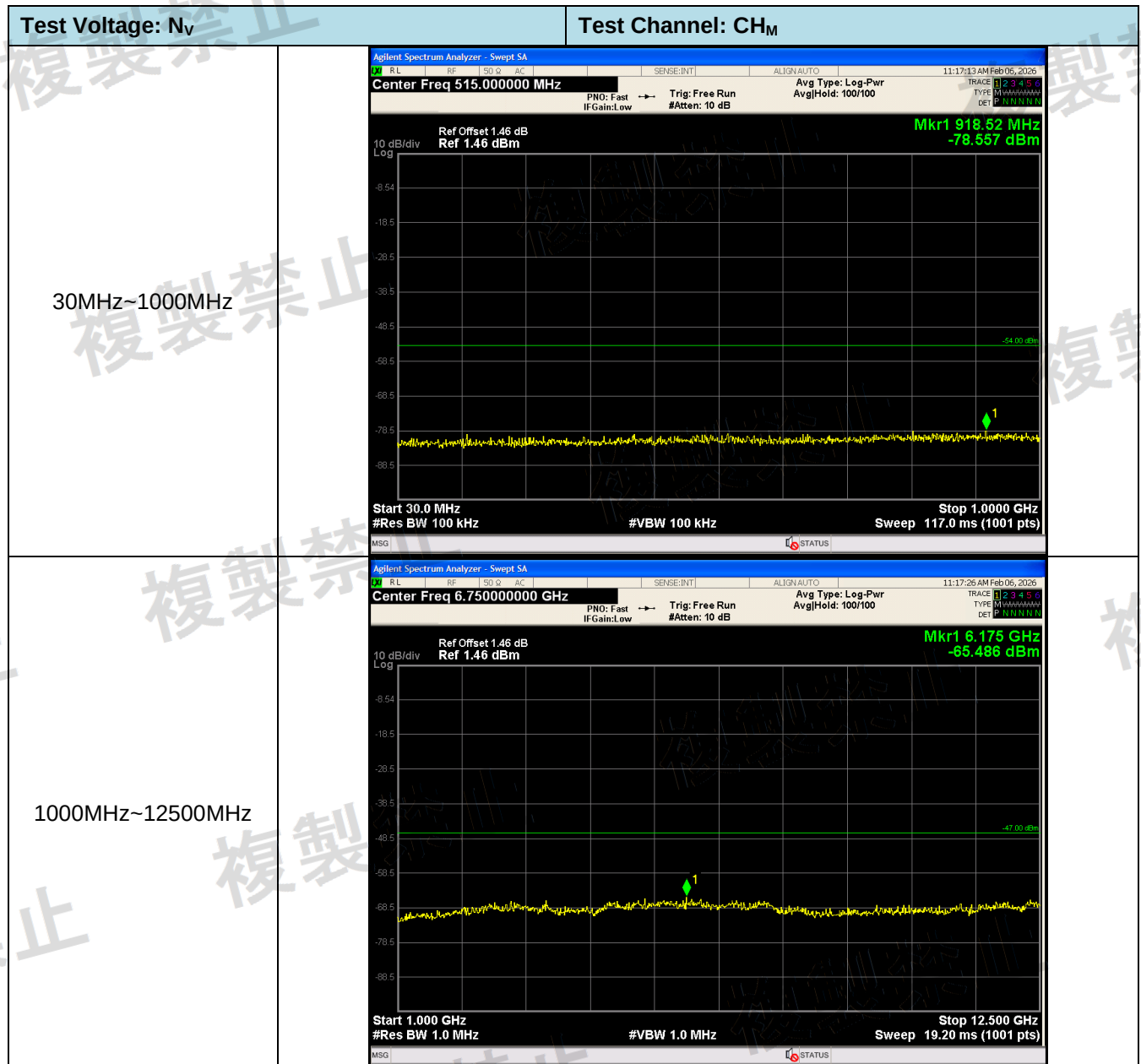
☒ Passed ☐ Not Applicable

BLE 1M

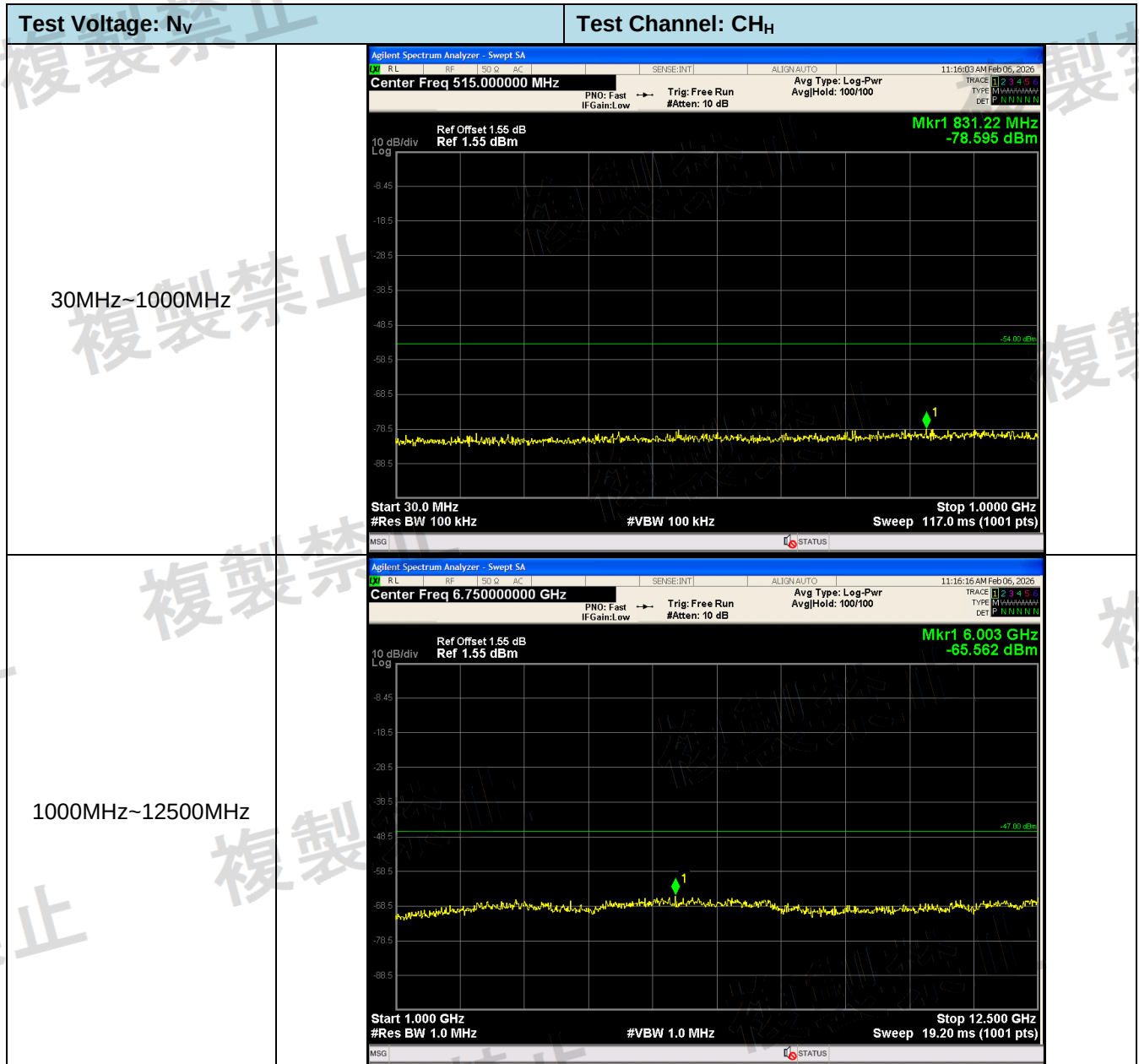
Please refer to the below test data:



Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measurement Level	Measurement Level (nW)	Limit	Result
N _v	CH _M	30MHz~1000MHz	746.83	-78.433 dBm/KHz	0.14	≤4.0nW	Pass
		1000MHz~12500MHz	6968.5	-66.121 dBm/MHz	0.244	≤20nW	



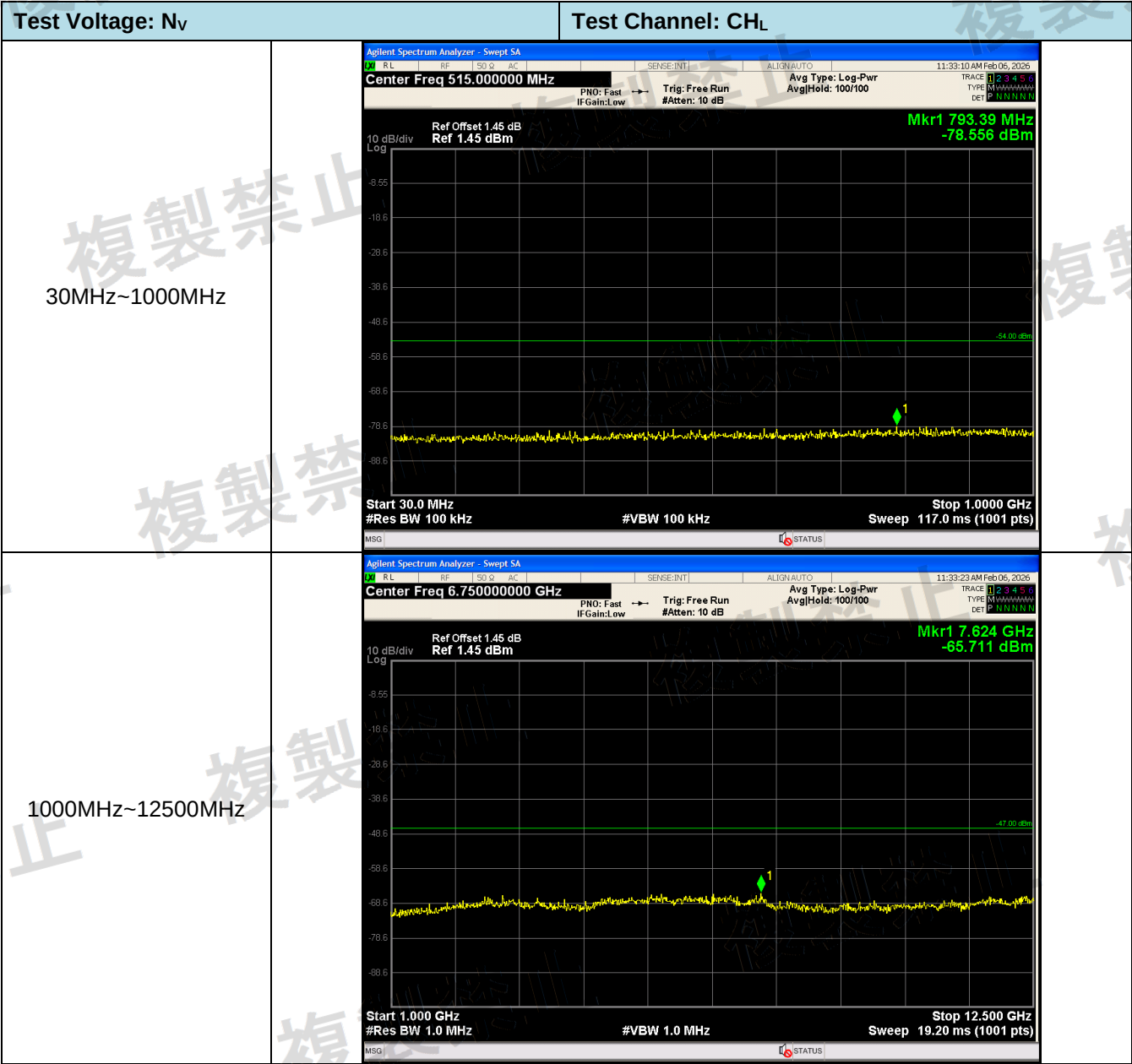
Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measurement Level	Measurement Level (nW)	Limit	Result
N _v	CH _M	30MHz~1000MHz	918.52	-78.557 dBm/KHz	0.14	≤4.0nW	Pass
		1000MHz~12500MHz	6175	-65.486 dBm/MHz	0.283	≤20nW	



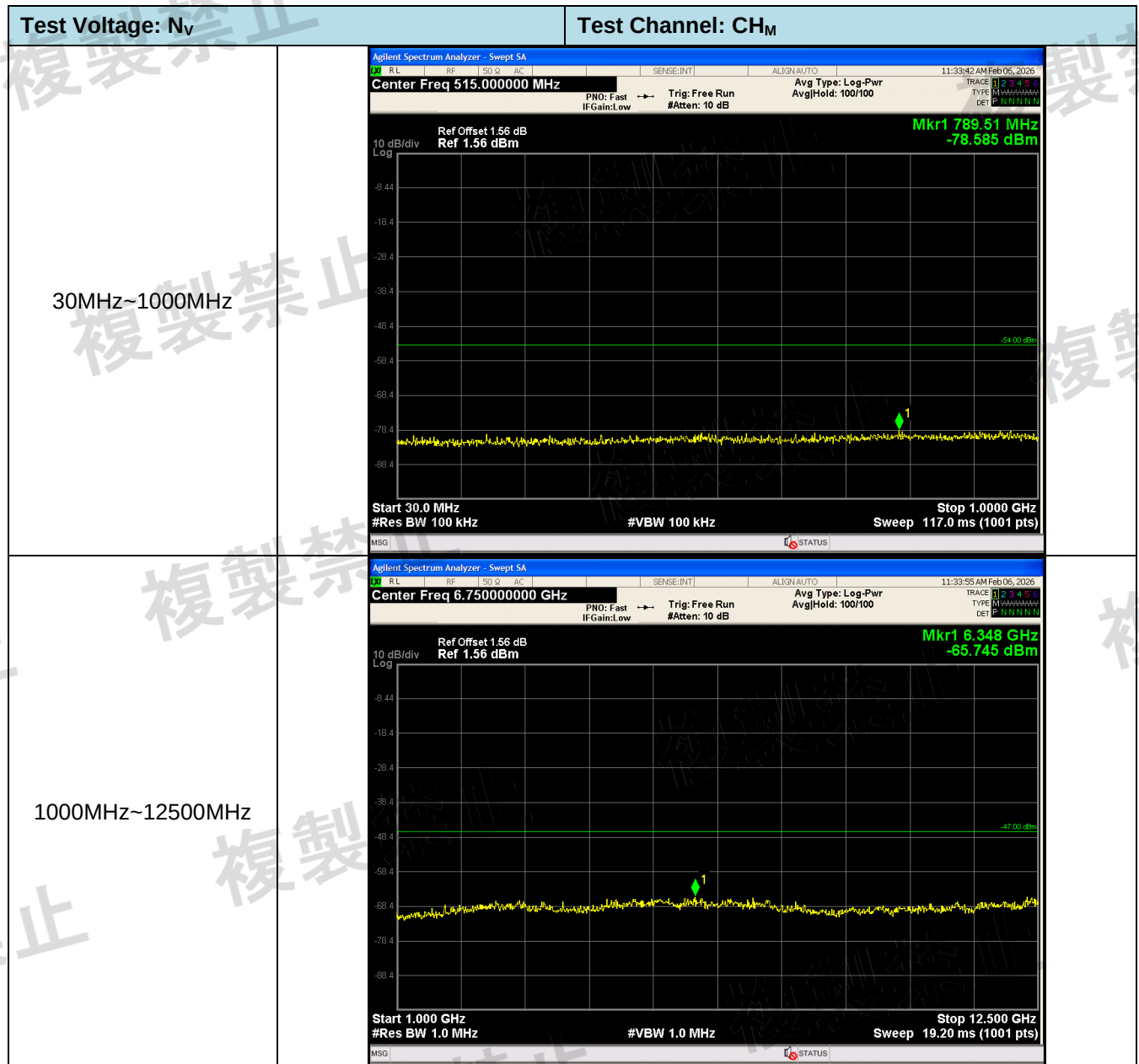
Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measurement Level	Measurement Level (nW)	Limit	Result
N _v	CH _M	30MHz~1000MHz	831.22	-78.595 dBm/KHz	0.14	≤4.0nW	Pass
		1000MHz~12500MHz	6002.5	-65.562 dBm/MHz	0.278	≤20nW	

BLE 2M

Please refer to the below test data:



Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measurement Level	Measurement Level (nW)	Limit	Result
N _v	CH _M	30MHz~1000MHz	793.39	-78.556 dBm/KHz	0.14	≤4.0nW	Pass
		1000MHz~12500MHz	7624	-65.711 dBm/MHz	0.268	≤20nW	



Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measurement Level	Measurement Level (nW)	Limit	Result
N _v	CH _M	30MHz~1000MHz	789.51	-78.585 dBm/KHz	0.14	≤4.0nW	Pass
		1000MHz~12500MHz	6347.5	-65.745 dBm/MHz	0.266	≤20nW	



Test voltage	Test Channel	Frequency Range	Maximum frequency (MHz)	Measurement Level	Measurement Level (nW)	Limit	Result
N _v	CH _M	30MHz~1000MHz	934.04	-78.050 dBm/KHz	0.16	≤4.0nW	Pass
		1000MHz~12500MHz	5519.5	-65.172 dBm/MHz	0.304	≤20nW	

5.8. Radio Interference Prevention Capability Measurement

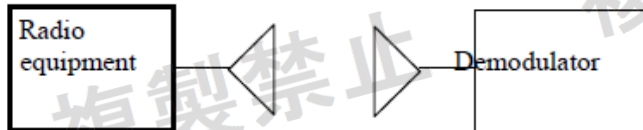
LIMIT

Identification code: 48bits or more

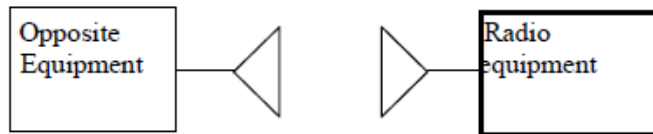
Mac IP Lits: MAC Scan

TEST CONFIGURATION

Transmission of identification code



Reception of identification code



TEST CONDITION

- 1) The demodulator shall be able to demodulate the transmitting signal from the radio equipment and display contents of the identification code.
- 2) The opposite equipment shall be able to transmit the identification code as same as the transmitting signal from the radio equipment
- 3) Set it in the usual operation condition

TEST PROCEDURE

- 1) The radio equipment with automatic transmitting function of identification code
 - A. Transmit the assigned identification code from the radio equipment.
 - B. Confirm the identification code received by the demodulator.
- 2) The radio equipment with automatic receiving function of identification code
 - A. Transmit the assigned identification code from the opposite equipment.
 - B. Confirm that the usual communication is available.
 - C. Transmit the identification code distinct from the assigned one from the opposite equipment.
 - D. Confirm that the radio equipment is stopped or an indication is displayed as the identification code is different.

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note: Radio interference prevention capability was conformed.

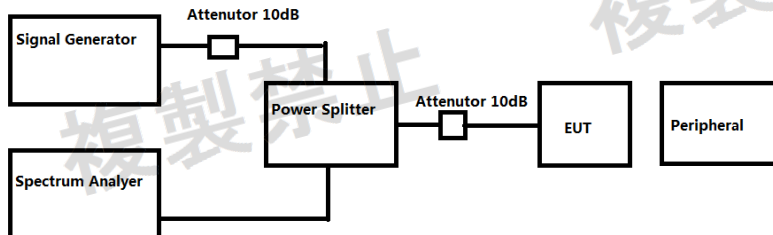
Bluetooth Device address: 41:42:AA:CA:0A:0E

5.9. Carrier Sense Capability Measurement

LIMIT

N/A

TEST CONFIGURATION



TEST CONDITION

Test diffusion code and modulate with standard coding test signal

SPECTRUM SET:

- 1) SSG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SSG and power level is (On $22.79 + Gr - 20 \cdot \log(f)$ [dBm] (Gr: dB; f: MHz). Then turn off the RF signal of SSG.
- 2) EUT have transmitted the maximum modulation signal and fixed channelize.
- 3) Setting of SA is following as: RB:1MHz / VB:1MHz / SPAN: 50MHz / AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak.
- 4) SSG RF Signal On.
- 5) EUT shall be stop the transmitted any signal and SSG RF Signal Off. Then EUT will be continuous transmitted signal.

TEST RESULTS

☐ Passed ☒ Not Applicable

5.10. Transmission Radiation Angle Width (3DB Beamwidth) Measurement

LIMIT

Item	Limits (See Article 49-20, Item1-f of the Ordinance Regulating Radio Equipment)
3dB antenna beam width	360/A (if $A < 1$; then $A = 1$) $A = \{EIRP \text{ Power [mW]} / 16.36 \text{ for DS, OFDM}\}$

MEASURING INSTRUMENTS AND SETTING

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

Spectrum Parameter	Setting
Attenuation	Auto
Span	0 MHz
RBW	1 MHz

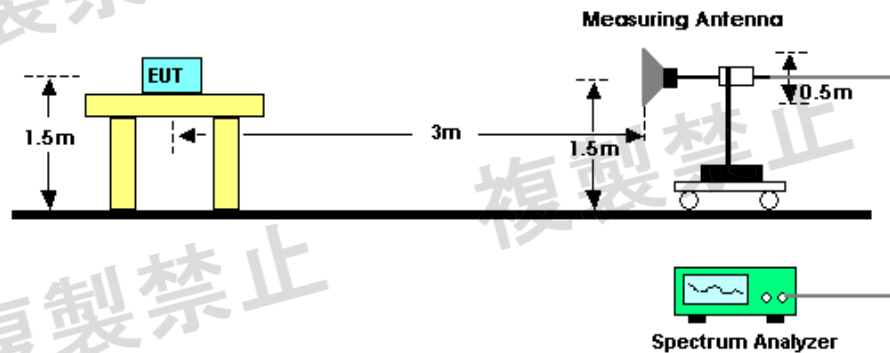
VBW	1 kHz
Y scale	5 dB
Detector	Peak
Trace	Max Hold

TEST PROCEDURES

Test method which surpass to Clause 22 of Annex No.43 of MIC Notification No.88.

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition 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
 $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$

TEST SETUP

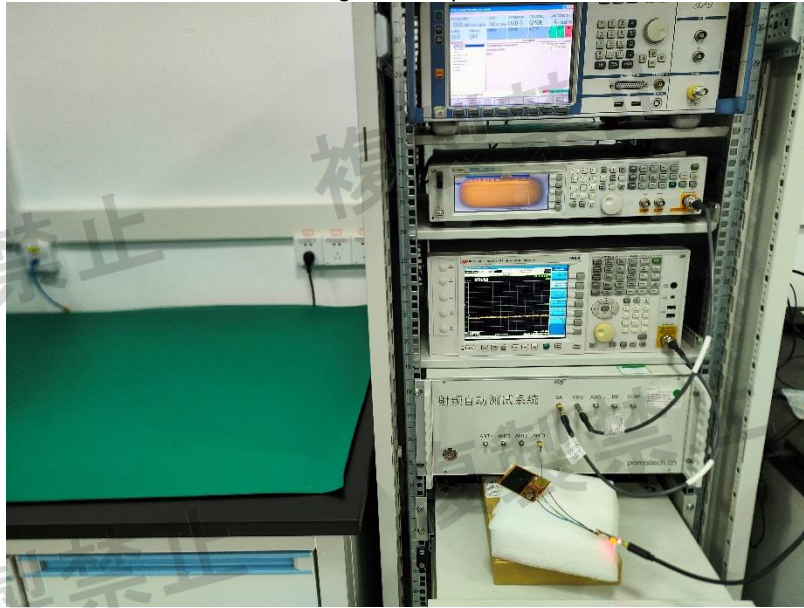


TEST RESULT OF TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH)

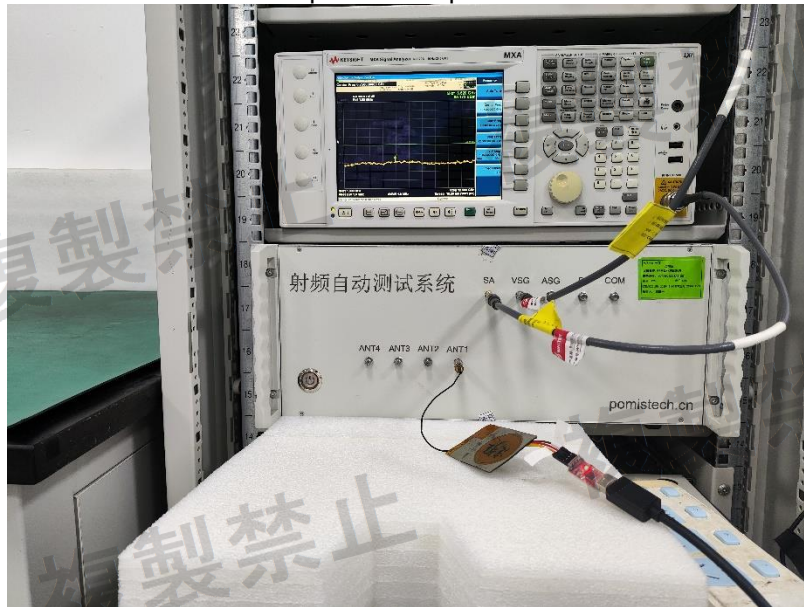
Method of measurement:	See MIC Notice No.88 Appendix No.43 Clause 22
Results:	Pass

6. Test Setup Photos of the EUT

Original test photo

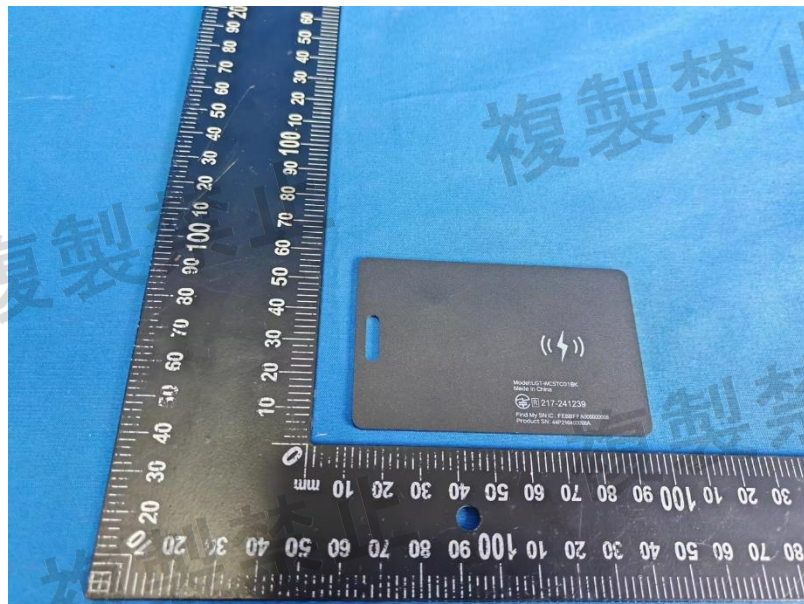
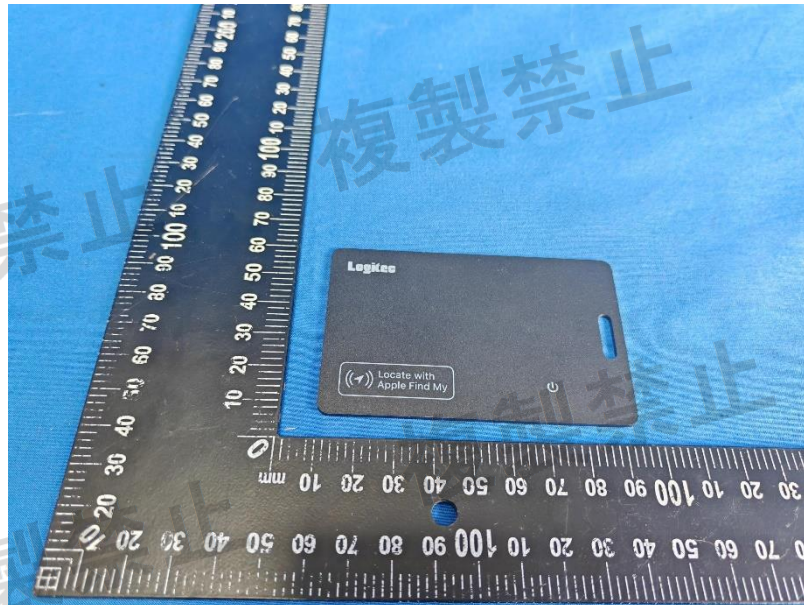


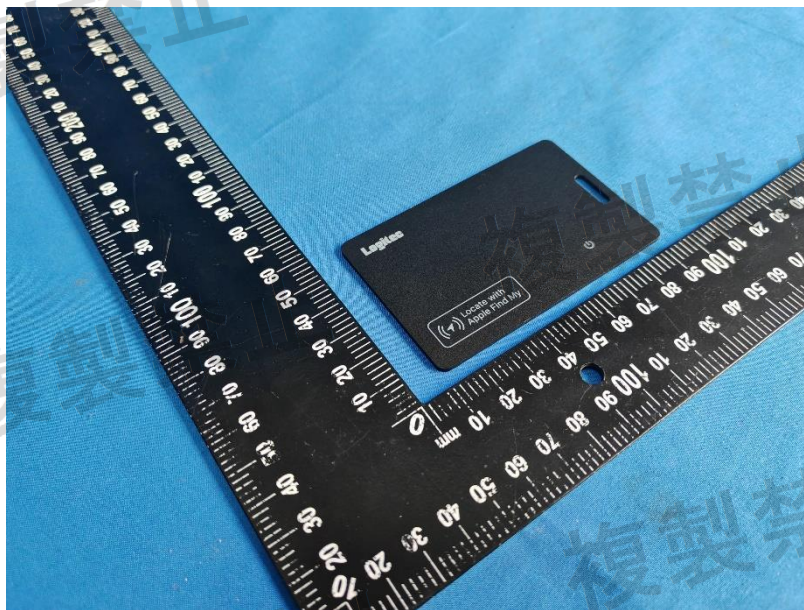
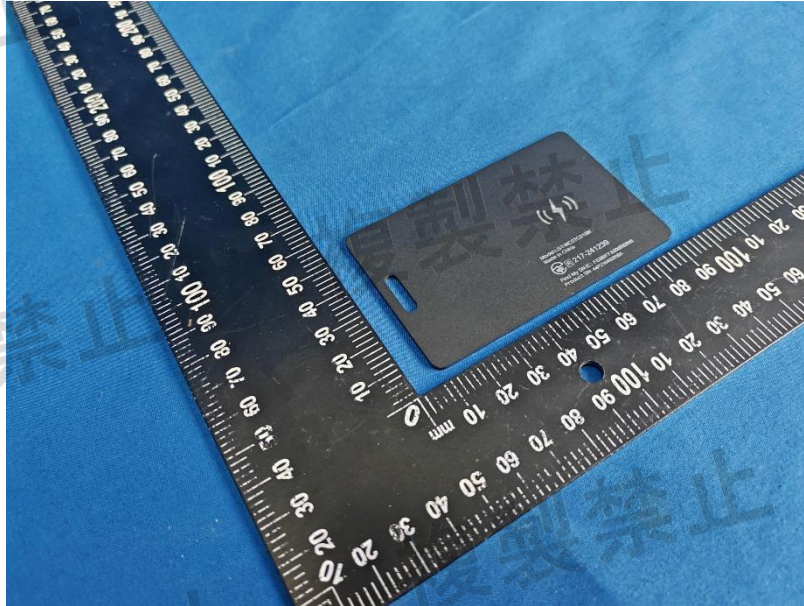
Updated test photos

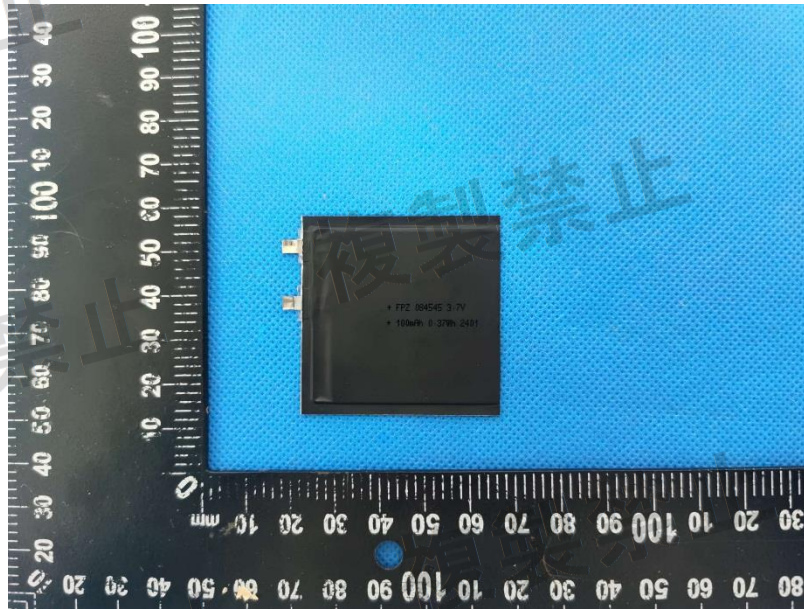


7. External and Internal Photos of the EUT

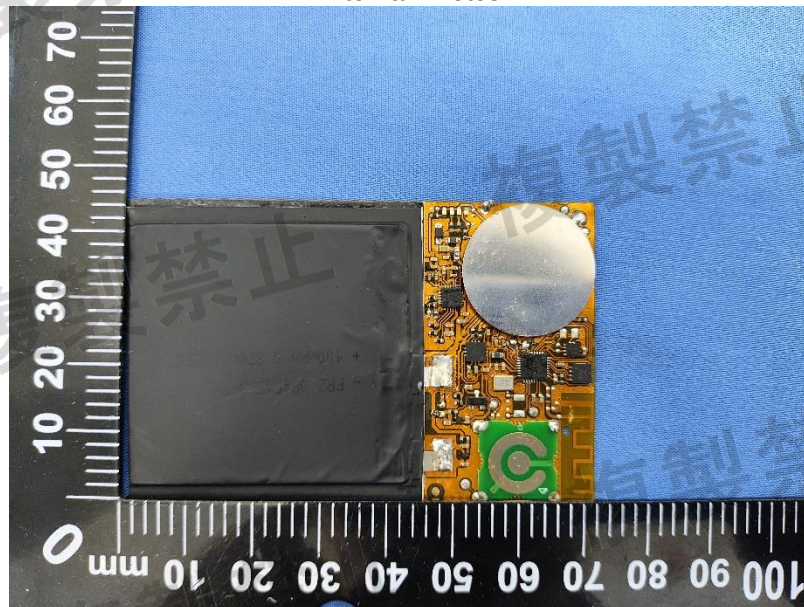
External Photos

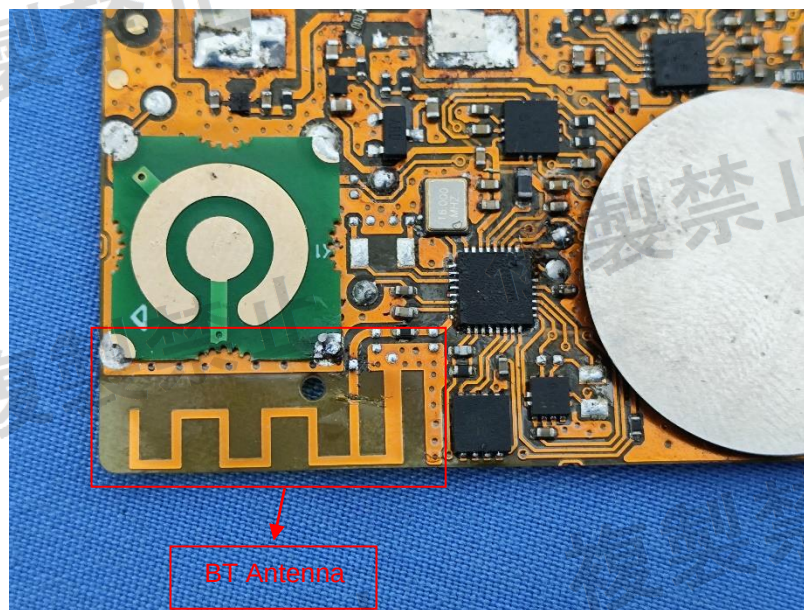
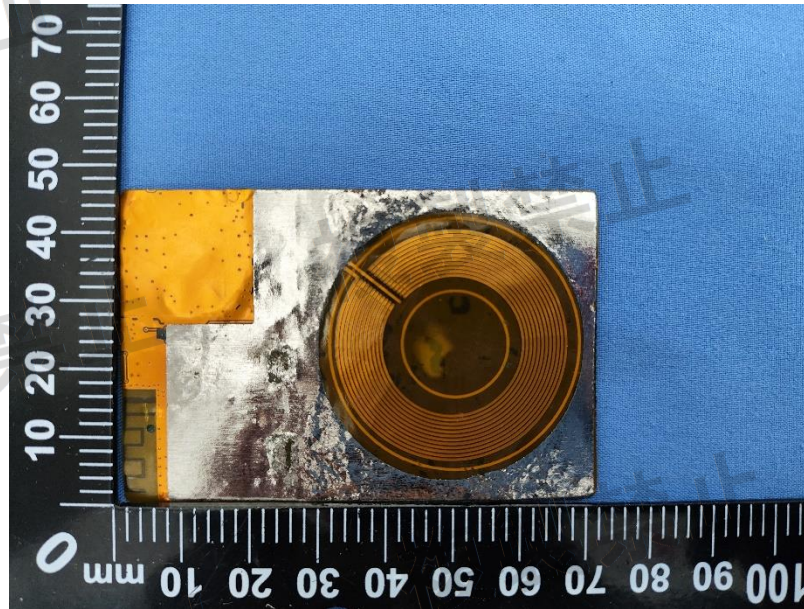


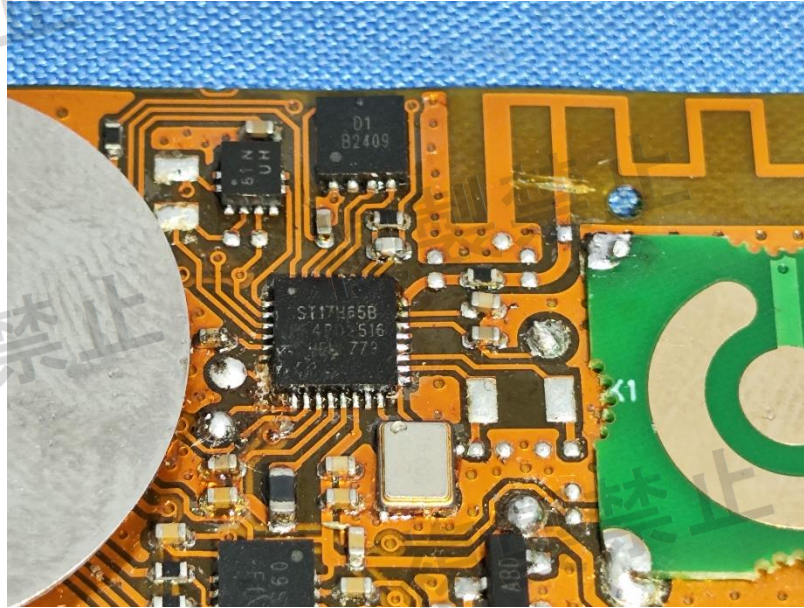




Internal Photos







Statement

1. This report is considered invalid without approved signature and special seal;
2. The Applicant name and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which HCT hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. The “*” in CNAS logo report means that the test item(s) was (were) currently not applying for CNAS accreditation
5. Without written approval of HCT, this report can't be reproduced except in full.
6. For any claim of the report, just refer to the testing unit in 15 days, in case it is not in the above limited time, the claim shall be dismissed.
7. If not explicitly stated otherwise in the standard, the test is passed if the measured value is equal to or below(above) the limit line, regardless of the measurement uncertainty. If the measured value is above(below) the limit line, the test is not passed.
8. Measurement uncertainties are calculated for all instruments and instrument set-ups given in this report. Calculations are based on the principles given in the standard EA-4/02(Dec.1999), IEC Guide 115:2007,CNAS-GL007:2020, CNAS-CL01-G003:2021and other relevant internal HCT-procedures. Further information about measurement uncertainties will be given on request.
9. All instruments used in the tests given in this test report are calibrated and traceable to national or international standards. Further information about traceability will be given on request.

-----End of Report-----