RF TEST REPORT

For

RichGo Technology(ShenZhen) Co., Ltd.
Product Name: True Wireless Earphones
Test Model(s): OP-TW100

Report Reference No.	:	**DACE260401001RF001**
Applicant's Name	:	RichGo Technology(ShenZhen) Co., Ltd.
Address	:	2102, Zhongliang Ziyun Building, District 22, Lingzhiyuan Community, Xin'an Street, Bao'an District, Shenzhen City, Guangdong Province, 518101, P.R, China.
Testing Laboratory	:	Shenzhen DACE Testing Technology Co., Ltd.
Address	:	102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Community, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Test Specification Standard	:	**Article 2-1, Item 19**
Date of Receipt	:	April 1, 2026
Date of Test	:	April 1, 2026 to April 3, 2026
Date of Issue	:	April 3, 2026
Result	:	**Pass**

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Apply for company information

Applicant's Name	:	RichGo Technology(ShenZhen) Co., Ltd.
Address	:	2102, Zhongliang Ziyun Building, District 22, Lingzhiyuan Community, Xin'an Street, Bao'an District, Shenzhen City, Guangdong Province, 518101, P.R, China.
Product Name	:	True Wireless Earphones
Test Model(s)	:	OP-TW100
Series Model(s)	:	N/A
Test Specification Standard(s)	:	Article 2-1, Item 19

NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

Compiled by:	Supervised by:	Approved by:
Lucy Mo	Ben Tang	Machael Mo
Lucy Mo / Test Engineer	Ben Tang / Project Engineer	Machael Mo / Manager
April 3, 2026	April 3, 2026	April 3, 2026

Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	DACE260401001RF001	April 3, 2026

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

Article 2-1, Item 19 : 2.4GHz for SRD/BT/WIFI

1.2 Summary of Test Result

Item	Method	Requirement	Result
Tolerance of Frequency	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
Occupied Bandwidth (99%)	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
Spread Bandwidth (90%)	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
Spread Factor	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
Antenna Power and Tolerance	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
Spurious Emission Intensity	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
Secondary Radiated Emissions	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
Dwell Time	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
Interference Prevention Function	Notification No.88 of MIC, 2004 & 別表第四十三	Article 2-1, Item 19	Pass
RF Accessibility		Article 49-20, paragraph 1(a)	Pass

Note:All conducted tests include line loss.

1.3 Test Environmental conditions

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

Temperature	Normal Temperature:	25°C
Voltage	Normal Voltage	DC5.0V
	Low Voltage	DC4.5V
	High Voltage	DC5.5V
Other	Relative Humidity	55 %
	Air Pressure	101 kPa

When the external power supply voltage is normal Voltage/ low Voltage/ high Voltage, in the RF circuit, monitor the BT chip power supply voltage, the voltage is as follows:

External power supply	module input power	RF chip voltage	Tolerance (%)
DC5.0V	DC 3.3V	DC 3.3V	0
DC4.5V	DC 3.3V	DC 3.3V	0
DC5.5V	DC 3.3V	DC 3.3V	0

Note: The power supply supplies the voltage rating and the voltage rating ±10%. However, when it can be confirmed that the change of the input voltage to the wireless part circuit of the testing machine is ±1% or less when the input voltage to the testing machine from the external source changes at ±10%, examines it only by the voltage rating..

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name : RichGo Technology(ShenZhen) Co., Ltd.

Address : 2102, Zhongliang Ziyun Building, District 22, Lingzhiyuan Community, Xin'an Street, Bao'an District, Shenzhen City, Guangdong Province, 518101, P.R, China.

Manufacturer : RichGo Technology(ShenZhen) Co., Ltd.

Address : 2102, Zhongliang Ziyun Building, District 22, Lingzhiyuan Community, Xin'an Street, Bao'an District, Shenzhen City, Guangdong Province, 518101, P.R, China.

2.2 Description of Device (EUT)

Product Name:	True Wireless Earphones
Model/Type reference:	OP-TW100
Series Model:	N/A
Trade Mark:	Nakamichi
Power Supply:	DC 5V/1A from adapter Battery:DC3.7V 35mAh
Operation Frequency:	2402-2480MHz
Number of Channels:	79
Modulation Type:	GFSK, Pi/4-DQPSK,8DPSK
Antenna Type:	Chip Antenna
Antenna Gain:	1.7dBi
Hardware Version:	V1.0
Software Version:	V1.0

Frequency List:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
3	2404MHz	23	2424MHz	43	2444MHz	63	2464MHz
4	2405MHz	24	2425MHz	44	2445MHz	64	2465MHz
5	2406MHz	25	2426MHz	45	2446MHz	65	2466MHz
6	2407MHz	26	2427MHz	46	2447MHz	66	2467MHz
7	2408MHz	27	2428MHz	47	2448MHz	67	2468MHz
8	2409MHz	28	2429MHz	48	2449MHz	68	2469MHz
9	2410MHz	29	2430MHz	49	2450MHz	69	2470MHz
10	2411MHz	30	2431MHz	50	2451MHz	70	2471MHz
11	2412MHz	31	2432MHz	51	2452MHz	71	2472MHz
12	2413MHz	32	2433MHz	52	2453MHz	72	2473MHz
13	2414MHz	33	2434MHz	53	2454MHz	73	2474MHz
14	2415MHz	34	2435MHz	54	2455MHz	74	2475MHz
15	2416MHz	35	2436MHz	55	2456MHz	75	2476MHz

16	2417MHz	36	2437MHz	56	2457MHz	76	2477MHz
17	2418MHz	37	2438MHz	57	2458MHz	77	2478MHz
18	2419MHz	38	2439MHz	58	2459MHz	78	2479MHz
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz	/	/

Select the lowest, middle, and highest frequencies of all channels for testing. The testing frequencies are as follows:

Test channel	Frequency (MHz)
Lowest channel	2402
Middle channel	2441
Highest channel	2480

2.3 Description of Test Modes

No	Title	Description
TM1	TX mode	Keep EUT in transmitting mode
TM2	RX mode	Keep EUT in receiving mode
Note: Bluetooth functionality has been tested under all modulation modes, including GFSK, (Pi/4) DQPSK, and 8DPSK, and all tests have been successful. This test sample consists of left and right Bluetooth earbuds. Both earbuds use identical hardware, Bluetooth modules, and firmware; only the component locations differ, resulting in different RF circuits. We have already tested both earbuds, and both passed. Therefore, this report only records the test results for the left earbud.		

2.4 Description of Support Units

The EUT was tested as an independent device.

2.5 Equipments Used During The Test

Secondary Radiated Emissions
Dwell Time
Tolerance of Frequency
Occupied Bandwidth (99%)
Spread Bandwidth (90%)
Spread Factor
Antenna Power and Tolerance
Spurious Emission Intensity

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Test Software	Tachoy Information Technology(shenzhen) Co.,Ltd.	RTS-01	V1.0.0	2025-04-25	2026-04-24
Power divider	MIDEWEST	PWD-2533	SMA-79	2025-04-18	2026-04-17
RF Sensor Unit	Tachoy Information Technology(shenzhen) Co.,Ltd.	TR1029-2	000001	2025-04-25	2026-04-24
Wideband radio communication tester	R&S	CMW500	113410	2025-04-25	2026-04-24
Vector Signal Generator	Keysight	N5181A	MY50143455	2025-12-02	2026-12-01
Signal Generator	Keysight	N5182A	MY48180415	2025-12-02	2026-12-01
Spectrum Analyzer	Keysight	N9020A	MY53420323	2025-12-02	2026-12-01
Power meter	Agilent	E4416	MY48200166	2025-12-06	2026-12-05

Remark.
(a) Calibration conducted by the National institute of information and communications Technolog(NICT) in Japan (hereinafter referred to as "NICT") or a designated calibration agency under Article102-18 paragraph in JRL.

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

(c) Calibration conducted in countries except japan, which shall be equivalent to the calibrationconducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).

(d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the rightcolumn of appended table No. 3, which shall have been given any type of calibration, etc. listedabove from (a) to (c).

The calibration corresponds to c described above.

Note: The test equipment is calibrated by GUANGZHOU NEM METROLOGY&TEST TECHNOLOGY CO., LTD., Add: 2/F Building 1,No.176, Hedong Road, Liwan District, Guangzhou, Guangdong, China

2.6 Statement Of The Measurement Uncertainty

Test Item	Measurement Uncertainty
Radio Frequency	$\pm 2\times 10^{-7}$
Occupied Bandwidth	±3.63%
RF conducted power	±0.733dB
Duty cycle	±3.1%
Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

2.7 Identification of Testing Laboratory

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Connunity, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

Identification of the Responsible Testing Location

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Connunity, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252
FCC Registration Number:	0032847402
Designation Number:	CN1342
Test Firm Registration Number:	778666
A2LA Certificate Number:	6270.01

2.8 Announcement

(1) The test report reference to the report template version v0.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) This document may not be altered or revised in any way unless done so by DACE and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

(6) We hereby declare that the laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant. the laboratory is not responsible for the accuracy of the information provided by the client(item 2.2). When the information provided by the customer may affect the effectiveness of the results, the responsibility lies with the customer, and the laboratory does not assume any responsibility.

3 Evaluation Results (Evaluation)

3.1 Interference Prevention Function

Test Requirement:	The EUT shall support one of the following functions: - Automatic identification transmission - Automatic identification reception
Test Method:	Notification No.88 of MIC, 2004
Procedure:	(1) For EUTs capable of automatically transmitting identification data a. Transmit identification data from EUT to Demodulator b. Confirm identification data is correctly received by Demodulator (2) For EUTs capable of automatically receiving identification data a. Transmit identification data from Link Partner to EUT b. Confirm communication link is established c. Link Partner shall respond by transmitting different identification data back to the EUT d. Confirm EUT stops transmitting, or confirm EUT recognizes that the two identification data are different

3.1.1 Conclusion:

The detected ID of the device is below: C9:3B:DB:3C:27:19 Test result: The device meet the requirements PASS

3.2 RF Accessibility

Test Requirement:	The EUT shall be constructed in such a way that sensitive RF parts, (like modulation and oscillator parts) cannot be reached easily by the user. These parts shall be covered by soldered metal caps or glue or by other mechanical covers. If the covers are fixed with screws, these shall be not the common type(s) like a Phillips, but special versions like Torx, so that the user cannot open the device with common tools.

3.2.1 Conclusion:

Tamper proof declaration:

□ Sealed with special screws.
□ Plastic chassis is being welded using ultrasonic waves.
□ Chassis is glued using a special adhesive
□ Metal covers are spot-fused.
□ Cover is specially interlocked.
□ RF and modulation components are covered with shielding case and this shielding case is soldered.
□ Shiled case is welded at RF and modulation parts, and ID-ROM is welded using the BGA method.
□ Shield case is welded at RF and modulation parts, and ID-ROM is glued at its lead with a special adhesive.
□ Shield case is welded at RF and modulation parts, and ID-ROM is glued with a non-transparent laminating agent.
☑ RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable parts on PCB or adjustable parts are not exposed.

4 Radio Spectrum Matter Test Results (RF)

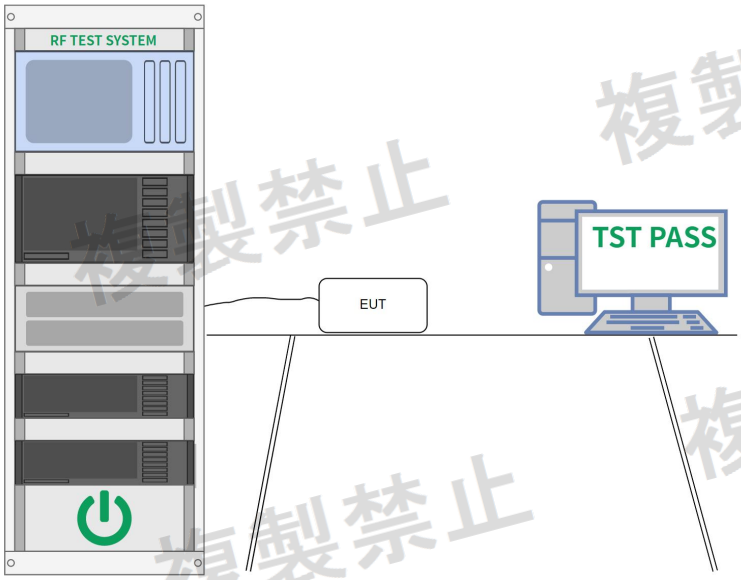
4.1 Tolerance of Frequency

Test Requirement:	Article 2-1, Item 19	
Test Limit:	±50ppm or less.	
Test Method:	Notification No.88 of MIC, 2004 & 別表第四十三	
Procedure:	Center frequency:	Test frequency
	Span:	2 times channel bandwidth
	RBW:	100 kHz (Modulation ON)
	VBW:	100 kHz (Modulation ON)
	Sweep data points:	1001 or greater
	Sweep time:	Auto
	Detector mode:	Positive peak
	Indication mode:	Max hold
	If the EUT cannot transmit in un-modulated mode then modulated mode measurements can be made, as follows: If the spectrum observed using the spectrum analyzer has a characteristic dip at the center, then the center frequency of the dip shall be regarded as the center frequency of the carrier.	

4.1.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.6 °C	Humidity:	55 %	Atmospheric Pressure:	101.1 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.1.2 Test Setup Diagram:



4.1.3 Test Data:

Please Refer to Appendix for Details.

4.2 Occupied Bandwidth (99%)

Test Requirement:	Article 2-1, Item 19
Test Limit:	For FHSS or FHSS and other modulation Hybird: 83.5 MHz or less: The measured bandwidth at the low and high channels shall meet the following requirements: - The lowest frequency of the measured bandwidth shall not be less than 2400 MHz - The highest frequency of the measured bandwidth shall not be greater than 2483.5 MHz [Occupied Bandwidth] 83.5 MHz or less
Test Method:	Notification No.88 of MIC, 2004 & 別表第四十三
Procedure:	

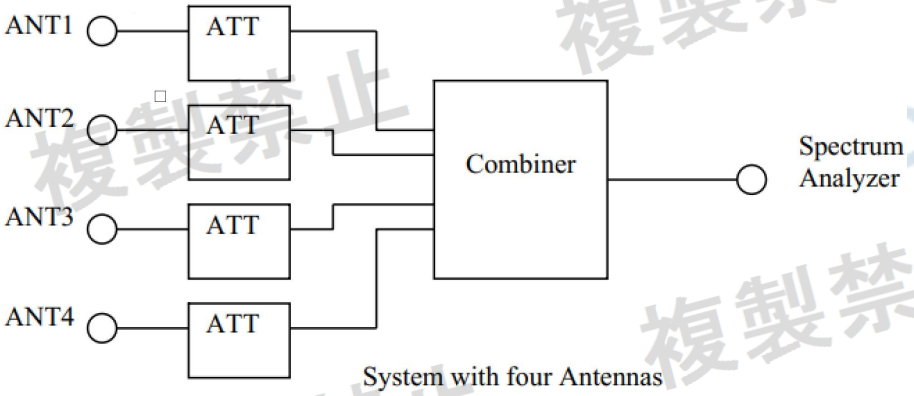
Center Frequency:	Test frequency
Span:	2 - 3.5 times the technical standard
RBW:	Within 3% of the technical standard
VBW:	Same as RBW
Sweep time:	Auto
Sweep data points:	1001 or greater
Detector mode:	Positive peak
Indication mode:	Max hold
BW setting:	99%

(1) Measure the signal bandwidth using a spectrum analyzer

(2) For multiple antenna systems:

a) Each antenna shall be individually measured

b) If the measured occupied bandwidth for any antenna exceeds [(Occupied Bandwidth Limit) – 100kHz] then, in addition, the occupied bandwidth shall be measured with all antennas combined – see diagram below:

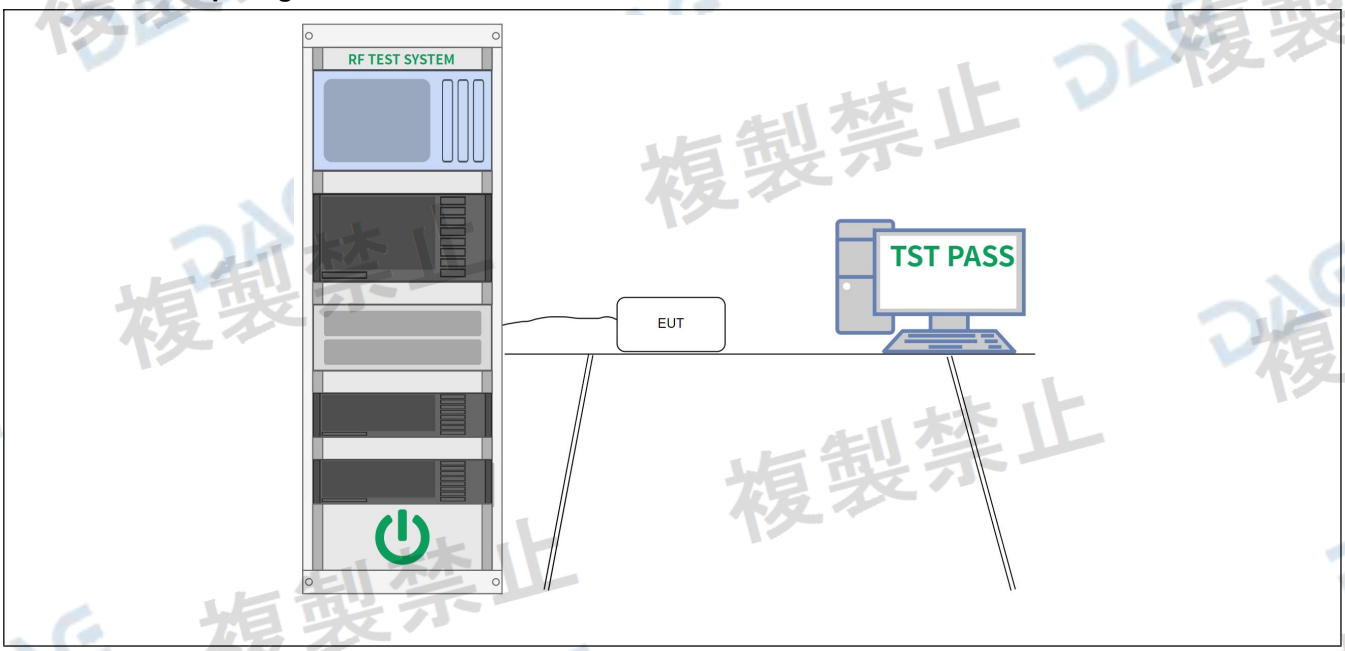


System with four Antennas

4.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.6 °C	Humidity:	47 %	Atmospheric Pressure:	101.1 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

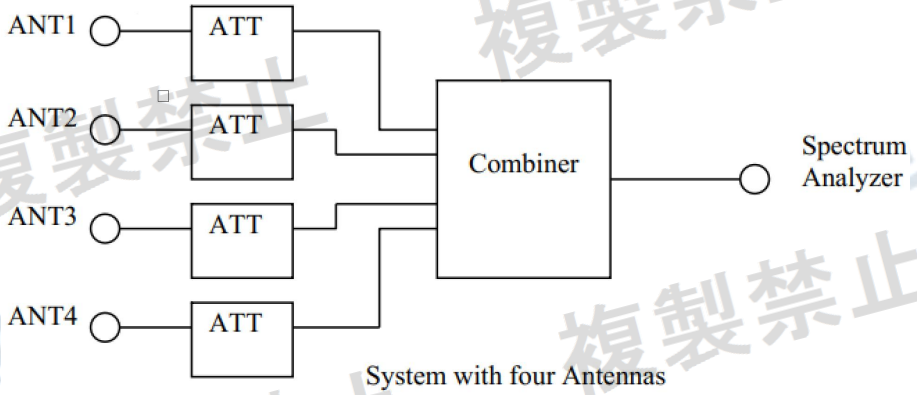
Please Refer to Appendix for Details.

4.3 Spread Bandwidth (90%)

Test Requirement:	Article 2-1, Item 19
Test Limit:	Only for report use.
Test Method:	Notification No.88 of MIC, 2004 & 別表第四十三
Procedure:	

Center Frequency:	Test frequency
Span:	2 - 3.5 times the technical standard
RBW:	Within 3% of the technical standard
VBW:	Same as RBW
Sweep time:	Auto
Sweep data points:	1001 or greater
Detector mode:	Positive peak
Indication mode:	Max hold
BW setting:	90%

(1) Measure the signal bandwidth using a spectrum analyzer
(2) For multiple antenna systems:
a) Each antenna shall be individually measured
b) If the measured occupied bandwidth for any antenna exceeds [(Occupied Bandwidth Limit) – 100kHz] then, in addition, the occupied bandwidth shall be measured with all antennas combined – see diagram below:

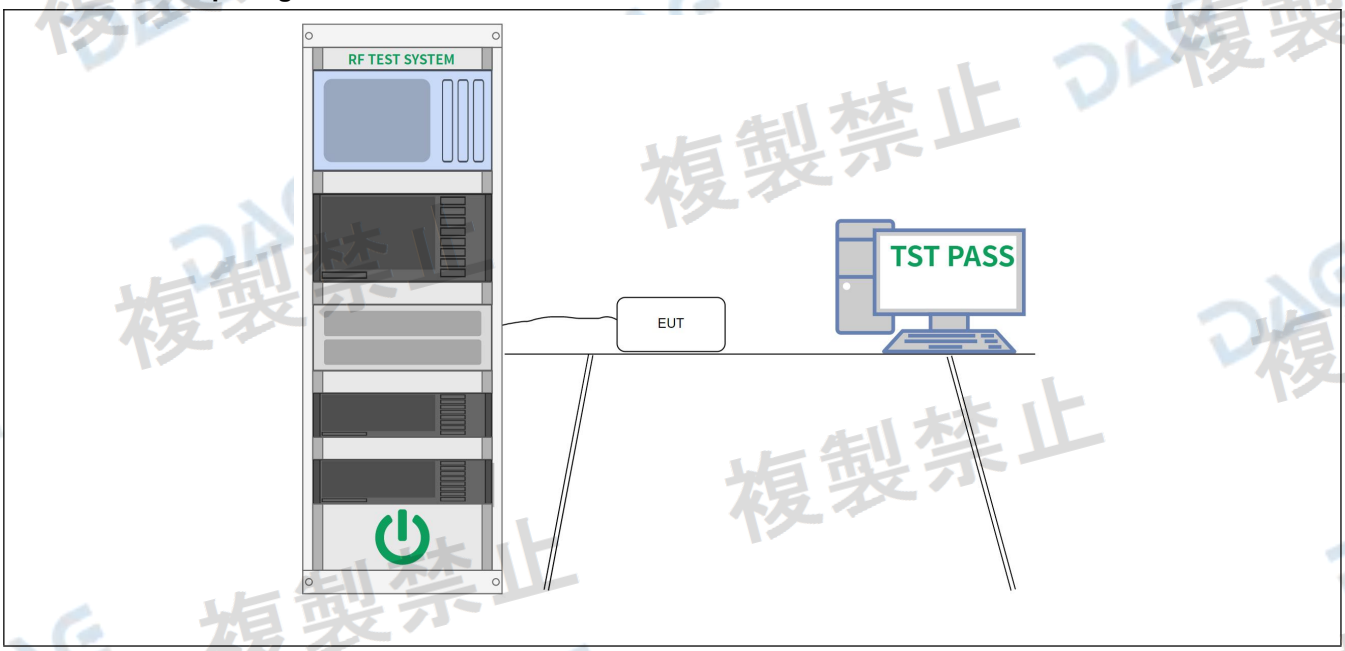


System with four Antennas

4.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.8 °C	Humidity:	55 %	Atmospheric Pressure:	101.1 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.3.2 Test Setup Diagram:



4.3.3 Test Data:

Please Refer to Appendix for Details.

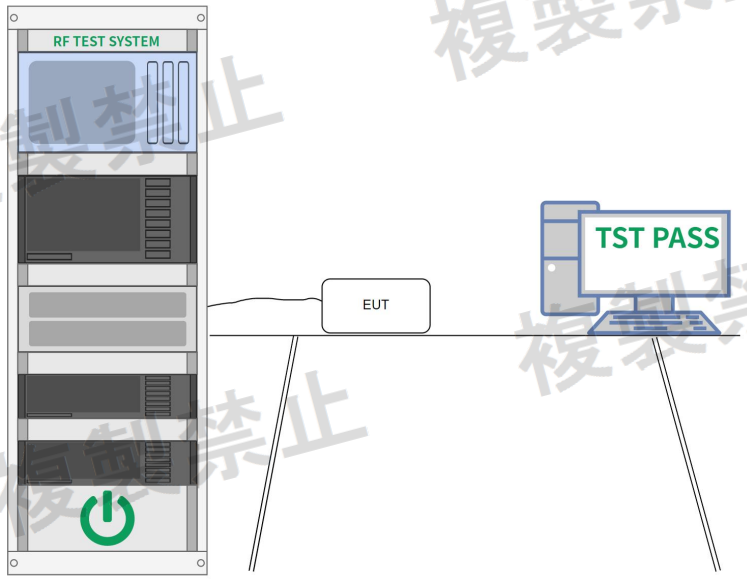
4.4 Spread Factor

Test Requirement:	Article 2-1, Item 19
Test Limit:	The spread factor should be more than 5.
Test Method:	The test method is the same as spread bandwidth.
Procedure:	The test procedure is the same as spread bandwidth.

4.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23 °C	Humidity:	50 %	Atmospheric Pressure:	101.1 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

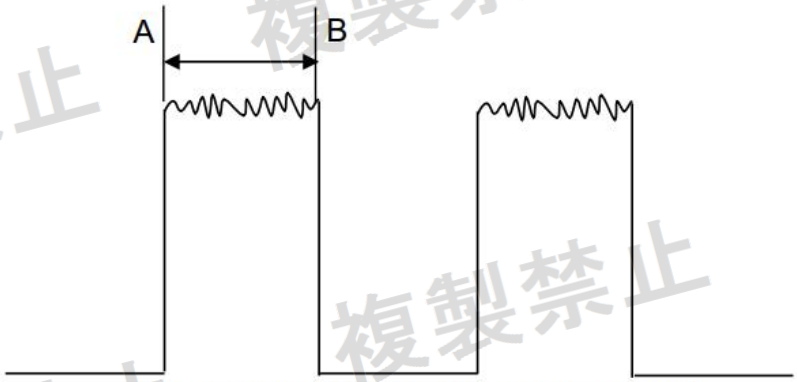
Please Refer to Appendix for Details.

4.5 Antenna Power and Tolerance

Test Requirement:	Article 2-1, Item 19
Test Limit:	Antenna Power: 3 mW/MHz or less Tolerance: +20% or less EIRP: 16.91dBm/MHz
Test Method:	Notification No.88 of MIC, 2004 & 別表第四十三
Procedure:	[Setting 1] – Search for peak power frequency

Center Frequency:	Test frequency
Span:	Approximately twice the occupied bandwidth
RBW:	1MHz
VBW:	Approximately three times the RBW
Sweep time:	Auto
Sweep data points:	1001 or greater
Detector mode:	Positive peak
Indication mode:	Max hold
[Setting 2] – Measurement of average antenna power for FHSS, DSSS, OFDM	
Frequency:	Frequency of peak power found using [Setting 1]
Span:	0 Hz
RBW:	3 MHz (FHSS-Channel Spacing ≤ 1MHz) 1MHz (DSSS, OFDM, FHSS-Channel Spacing > 1MHz)
Detector mode:	Sample
Sweep:	Minimum time required to make an accurate measurement.
	For burst type (intermittent) transmission sweep time shall be greater than one burst interval
Sweep data points:	1001 or greater
[Setting 3] – Measurement of average antenna power other than for FHSS, DSSS, OFDM	
Frequency:	Frequency of peak power found using [Setting 1]
Span:	0 Hz
RBW:	Bandwidth sufficient to cover that occupied by the carrier
VBW:	Bandwidth sufficient to cover that occupied by the carrier
Detector mode:	Sample
Sweep:	Minimum time required to make an accurate measurement.
	For burst type (intermittent) transmission sweep time shall be greater than one burst interval
Sweep data points:	1001 or greater

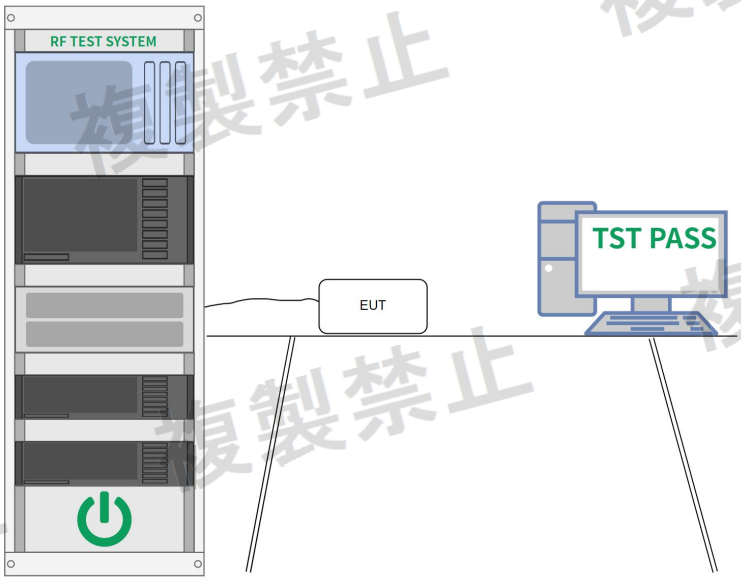
- A hopping transmission separation of 1MHz or less with a constant transmission interval
- The transmission probability is equal for all hopping frequencies Procedure:

	(1) After configuring the spectrum analyzer to [Setting 1], find the frequency of maximum transmitted power (2) After configuring the spectrum analyzer to [Setting 2], measure the Average Burst Power of the frequency found in (1) Note: Measure the period A-B in the figure below:  **Measurement of Average Burst Power (A to B)** (3) Calculate Antenna Power using the following formula: Antenna Power (W/MHz) = Average Burst Power (W) / Spread Bandwidth (MHz) [Note] Spread Bandwidth in the formula above is derived from the data collected in section 5 (Occupied Bandwidth (99%) and Spread Bandwidth (90%)) (4) If the EUT has multiple antennas then each antenna power output shall be measured individually – the sum of these individual measurements shall represent the power output value

4.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.5 °C	Humidity:	54 %	Atmospheric Pressure:	101.1 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.5.2 Test Setup Diagram:



4.5.3 Test Data:

Please Refer to Appendix for Details.

4.6 Spurious Emission Intensity

Test Requirement:	Article 2-1, Item 19	
Test Limit:	(1) Below 2387 MHz: 2.5 μW (-26 dBm)/MHz or less (2) 2387 to 2400 MHz: 25.0 μW (-16 dBm)/MHz or less (3) 2483.5 to 2496.5 MHz: 25.0 μW (-16 dBm)/MHz or less (4) Over 2496.5 MHz: 2.5 μW (-26 dBm)/MHz or less	
Test Method:	Notification No.88 of MIC, 2004 & 別表第四十三	
Procedure:	[Setting 1]	
	Frequency range:	(see Note 1)
	RBW:	1 MHz
	VBW:	1 MHz
	Sweep time:	Minimum time required to make an accurate measurement
	Sweep Data Points:	1001 or greater
	Detector mode:	Positive peak
	Indication mode:	Max hold (see Note 2)
	Note 1:	Measurement range shall be 30 MHz to 12.5 GHz, except for the following cases: -FHSS, FHSS+DSSS, FHSS+OFDM:2374 MHz to 2509.5 MHz -Other than FHSS, FHSS+DSSS, FHSS+OFDM: 2400 MHz to 2483.5 MHz
	Note 2:	Sweep shall be repeated until the max hold waveform is stable.
	[Setting 2]	
	Center frequency:	Frequency of spurious emission found using [Setting 1]
	Span:	0 Hz
	RBW:	1 MHz
	VBW:	1 MHz
	Sweep time:	Minimum time required to make an accurate measurement. For burst type (intermittent) spurious emissions, sweep time shall be greater than one burst interval
	Sweep Data Points:	1001 or greater
	Detector mode:	Sample
	[Setting 3]	
	Frequency range:	2374 MHz to 2400 MHz 2483.5 MHz to 2509.5 MHz
	RBW:	30 kHz
	VBW:	30 kHz
	Sweep time:	Minimum time required to make an accurate measurement.
	Sweep data points:	1001 or greater
	Detector mode:	Positive peak

Indication mode:	Max hold

(1) After configuring the spectrum analyzer to [Setting 1], search for spurious emissions from 30 MHz to 12.5 GHz. If the sweep range does not cover the required measurement frequency range then the measurement range will need to be divided into sufficient sections of size [RBW x Sweep Data Points]. If spurious emissions greater than [Limit - 3dB] are found, then more detailed measurements are required, go to step (2)
(2) Configure the spectrum analyzer using [Setting 2] and measure the average signal amplitude.
If the spurious emission is burst type (intermittent), then the average value shall not include signal OFF time.
If spurious emissions ranging from 30 MHz to 2374 MHz and from 2509.5MHz to 12.5GHz are over the limit, then the test result is Fail.
If spurious emissions ranging from 2374 MHz to 2400 MHz and from 2483.5 MHz to 2509.5 MHz are over the limit, then further detailed measurements are required, go to step (3)
(3) In the following cases, measure the spurious emissions using [Setting 3]
- Case1: FHSS, FHSS+DSSS, FHSS+OFDM
- Case2: Other than FHSS, FHSS+DSSS, FHSS+OFDM, and the spurious emissions in step (2) are over the limit
(4) Calculate the spurious emission value (Calculated Value) using following the formula below:
Calculated Value = (Measured Value using (3) + 15.2dB)
Note: 15.2dB adjustment is derived from the Conversion Factor of RBW
Conversion Factor of RBW = 10 x Log (Reference Bandwidth / RBW of measurement) = 15.2 [dB] Where: Reference Bandwidth = 1 MHz
RBW of measurement = 30 kHz
(5) If the calculated value using (4) is over the Limit (section 6.7), go to (6)
(6) Configure the spectrum analyzer to [Setting 3] then make the following changes:
Frequency: Frequency of spurious emission
Span: 1 MHz
(7) After sweep, send the span data set to the PC
(8) Convert measured data from dBm to Watts
(9) Sum all the data using the formula below. If the sum is within the limit, the test result is Pass, otherwise, Fail

$$P_s = \left(\sum_{i=1}^{n} E_i\right) \times \frac{S_w}{RBW \times k \times n}$$

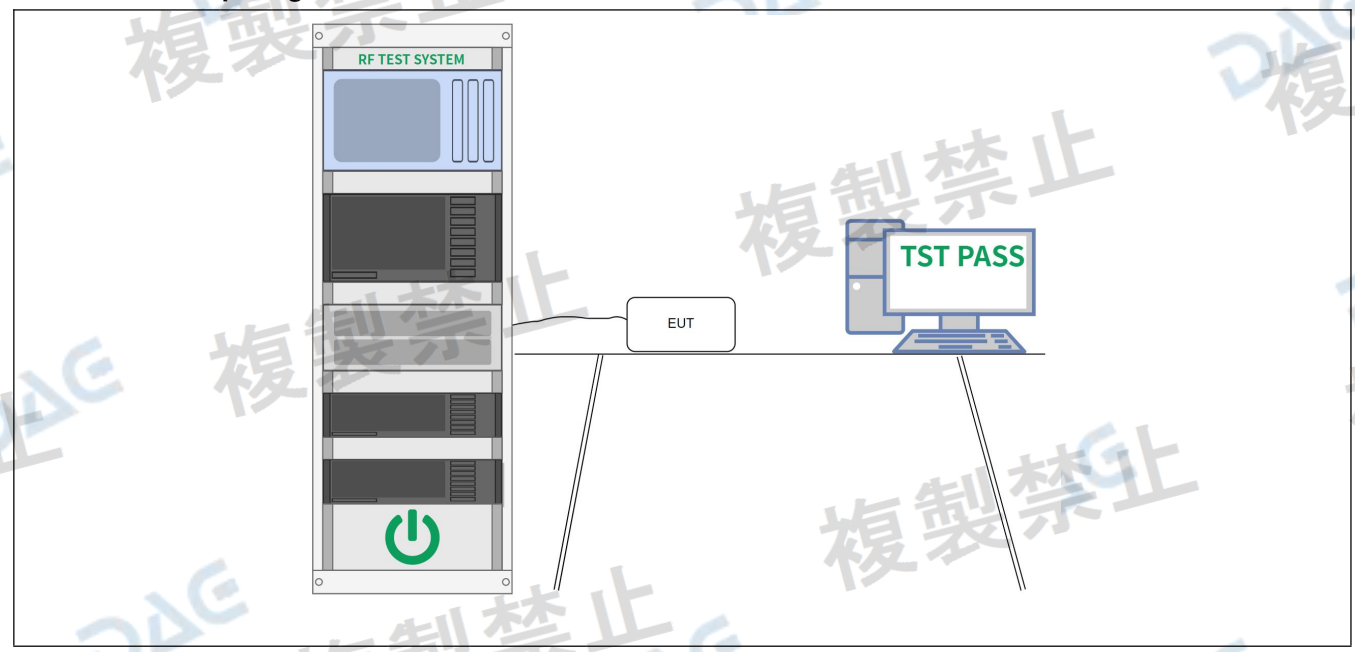
Ps: Sum (Watts)
Ei: Measured value at each point in the Span (Watts) Sw: Span (1MHz)
n: Number of measurement points in the Span
k: Correction factor for Equivalent Noise Bandwidth, specific to each spectrum analyzer, check the instrument user guide
RBW: Resolution Bandwidth (MHz).
(10) If the EUT has multiple antennas, measure the spurious emission form each individual antenna using steps (1) through (9)
(11) Convert the individual antenna spurious level measurements (step (10)) from dB to absolute values
(12) Combine (sum) the absolute values of the spurious measurements at each frequency for each antenna (to create a single composite spectrum of spurious emissions)
(13) Ensure that the composite spectrum does not exceed the Limit defined in 6.7 (Technical Standard)
(14) Configuring the spectrum analyzer using [Setting 3] and measure the spurious

	emissions with all the antennas electrically combined

4.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.5 °C	Humidity:	53 %	Atmospheric Pressure:	101.1 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.6.2 Test Setup Diagram:



4.6.3 Test Data:

Please Refer to Appendix for Details.

4.7 Secondary Radiated Emissions

Test Requirement:	Article 2-1, Item 19
Test Limit:	(1) Below 1 GHz: 4 nW (-54dBm) or less (2) Above 1 GHz: 20 nW (-47dBm) or less
Test Method:	Notification No.88 of MIC, 2004 & 別表第四十三
Procedure:	

[Setting 1]	
Frequency range:	30 MHz ~ 12.5 GHz
RBW:	Below 1 GHz:100 kHz
	Above 1 GHz:1 MHz
VBW:	Below 1 GHz:100 kHz
	Above 1 GHz:1 MHz
Sweep time:	Auto
Sweep data points:	1001 or greater
Detector mode:	Positive peak
Indication mode:	Max hold
[Setting 2]	
Center Frequency:	Frequency of spurious emission found using [Setting 1]
Span:	0 Hz
RBW:	Below 1 GHz:100 kHz
	Above 1 GHz:1 MHz
VBW:	Below 1 GHz:100 kHz
	Above 1 GHz:1 MHz
Sweep time:	Auto
Sweep data points:	1001 or greater
Detector mode:	Sample

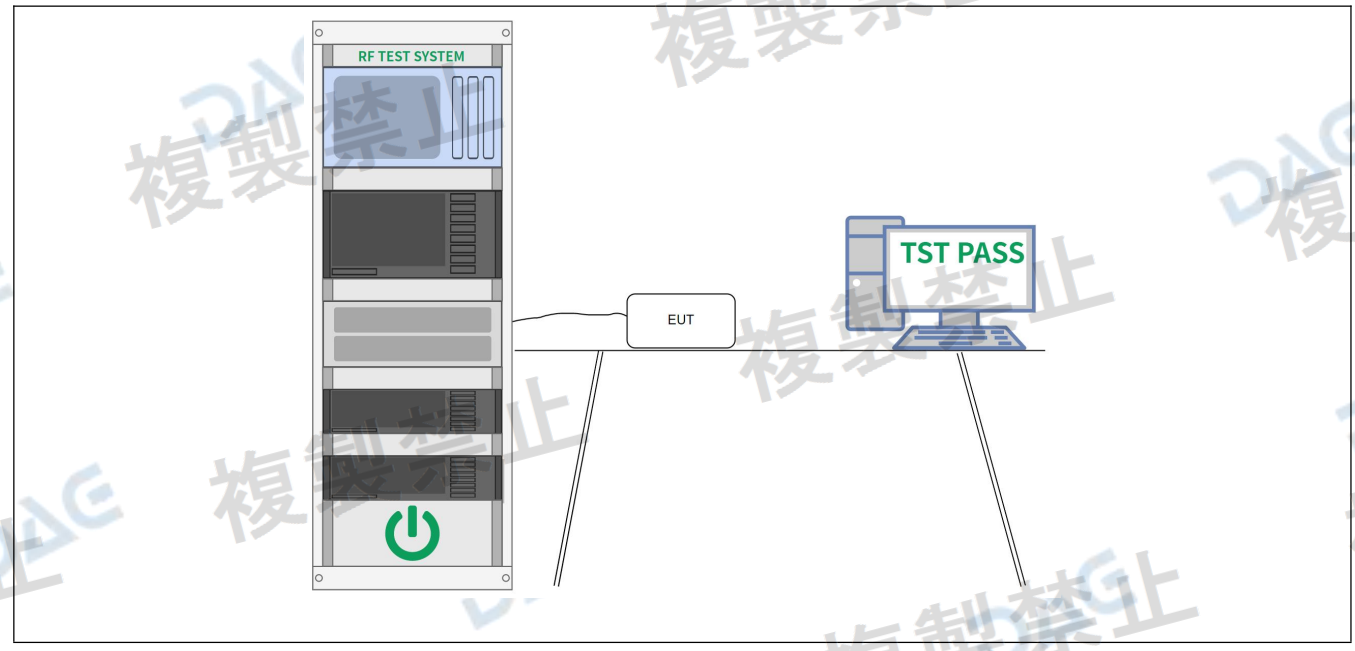
(1) Configure the spectrum analyzer to [Setting 1] and then search for spurious emissions in the range 30 MHz to 12.5GHz. If the sweep range does not cover the required measurement frequency range then the measurement range will need to be divided into sufficient sections of size [RBW x Sweep Data Points].
(2) If spurious emissions are found with an amplitude greater than [Limit - 10dB] then perform further detailed measurements as described in (3)
(3) Configure the spectrum analyzer using [Setting 2] and measure the average signal amplitude.
If the spurious emission is burst type (intermittent), then the average value shall not include signal OFF time Multiple Antenna Systems
If the EUT has multiple antennas then emissions from each antenna shall be measured individually, as described below
(4) For each antenna repeat steps (1) through (3). Convert all spurious level measurements from dB to absolute value
(5) Combine (sum) the absolute values of the spurious measurements at each frequency for each antenna (to create a single composite spectrum of spurious emissions)
(6) Ensure that the composite spectrum does not exceed the Limit

4.7.1 E.U.T. Operation:

Operating Environment:

Temperature:	22.5 °C	Humidity:	53 %	Atmospheric Pressure:	101.1 kPa
Pretest mode:	TM2				
Final test mode:	TM2				

4.7.2 Test Setup Diagram:



4.7.3 Test Data:

Please Refer to Appendix for Details.

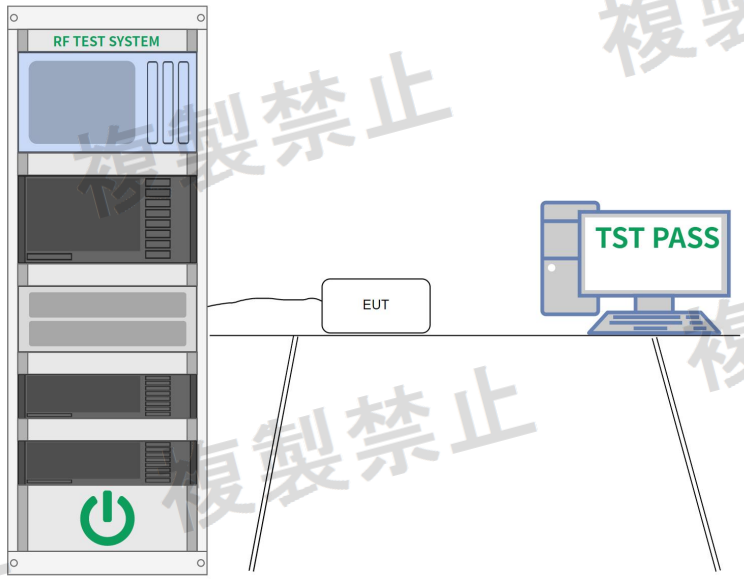
4.8 Dwell Time

Test Requirement:	Article 2-1, Item 19
Test Limit:	Transmit ON Time shall be less than 0.4 seconds Total Dwell Time shall be less than 0.4 seconds
Test Method:	Notification No.88 of MIC, 2004 & 別表第四十三
Procedure:	[Setting 1] Frequency: Test frequency Span: 0 Hz RBW: 1 MHz VBW: 1 MHz Sweep data points: 1001 or greater Trigger: Video trigger Detection mode: Positive peak (1) Configure the spectrum analyzer to [Setting 1] (2) Measure the Burst Cycle and Transmit ON Time (3) Total Dwell Time shall be calculated by the following formula: Total Dwell Time = (0.4 x Spreading Rate x Transmit ON Time) / (Burst Cycle x Number of Hopping Channels) [Notes] a. Spreading Rate = Spread Bandwidth (measured value) / Transmission Rate b. Transmit ON Time and Burst Cycle are both measured in Seconds c. Numerical Coefficient (0.4) is a dimensionless number defined in the technical standard

4.8.1 E.U.T. Operation:

Operating Environment:					
Temperature:	23.6 °C	Humidity:	46 %	Atmospheric Pressure:	101.1 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

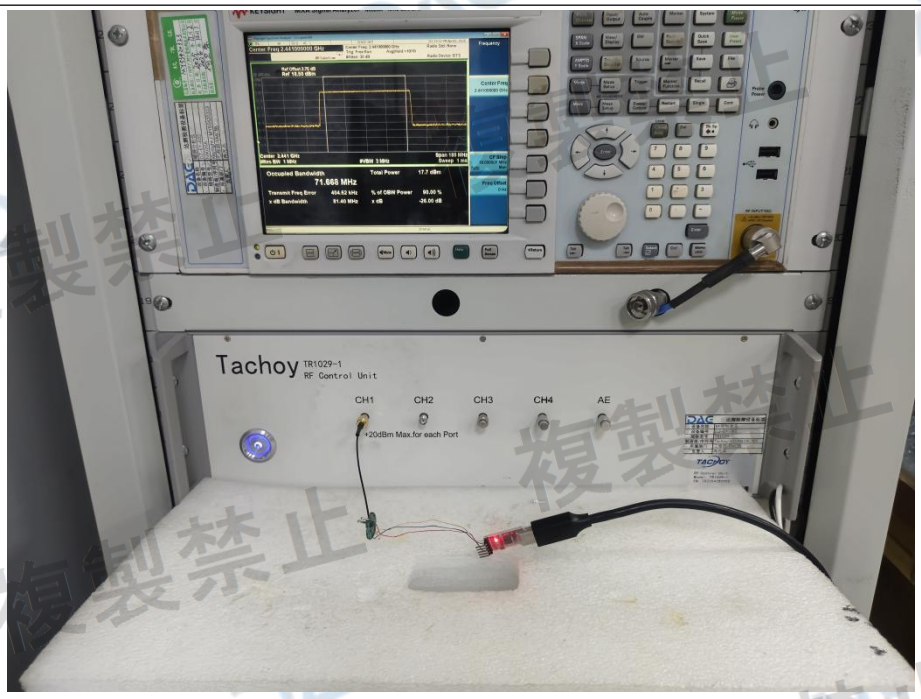
4.8.2 Test Setup Diagram:

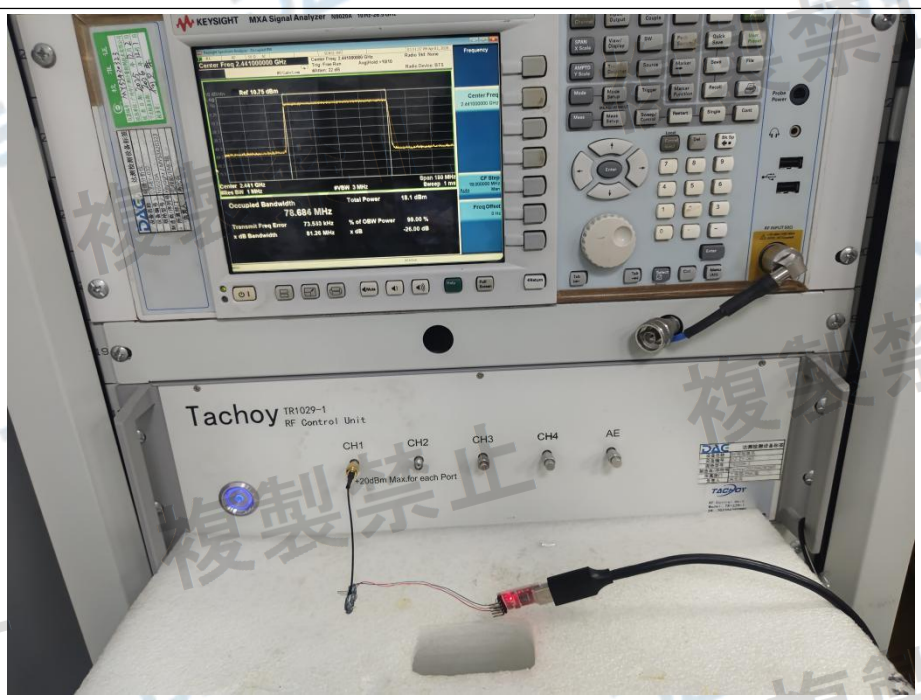


4.8.3 Test Data:

Please Refer to Appendix for Details

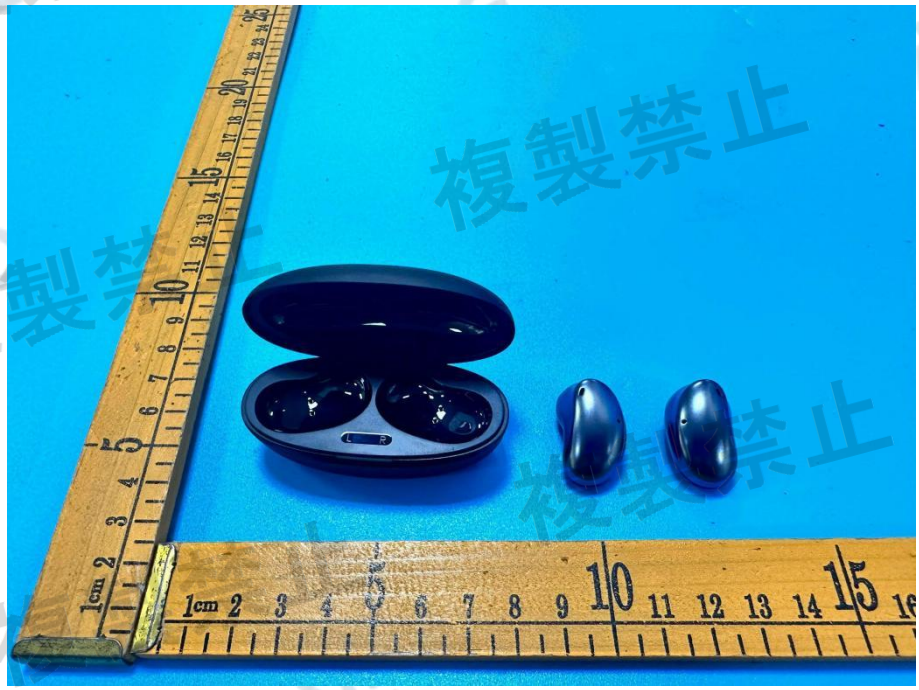
5 TEST SETUP PHOTOS



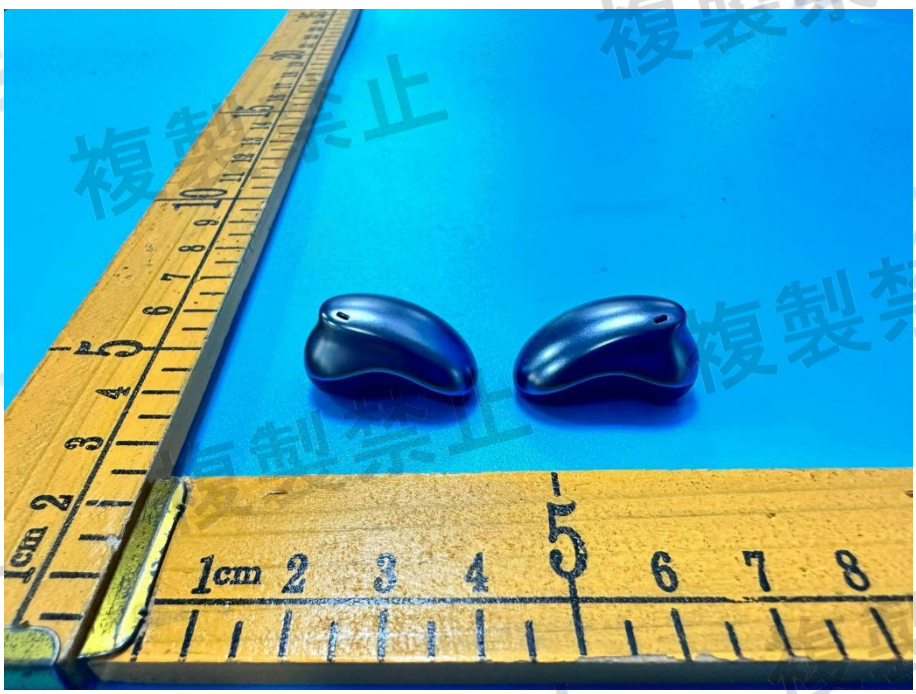


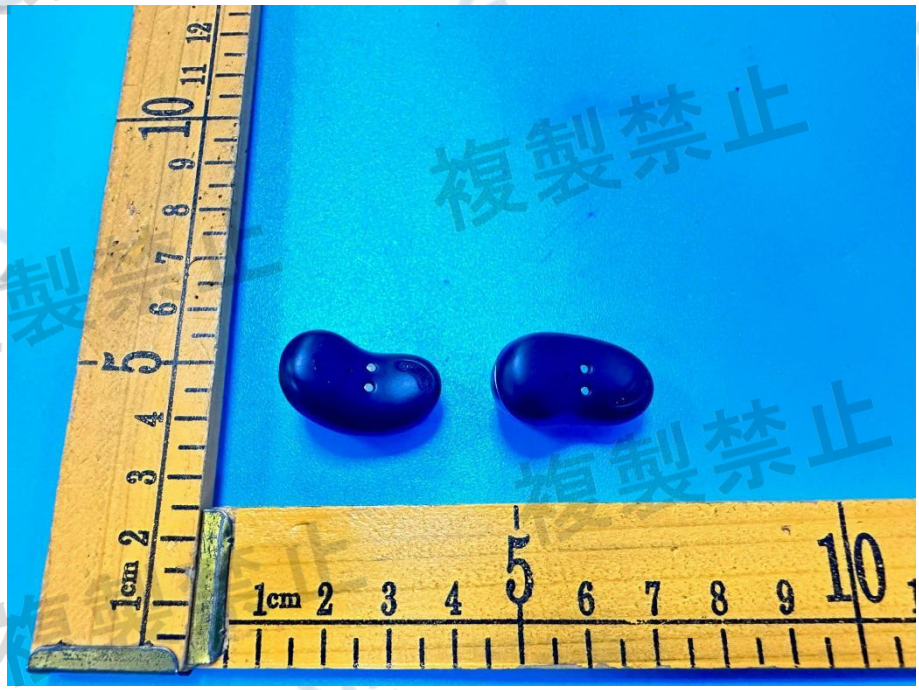
6 PHOTOS OF THE EUT

External

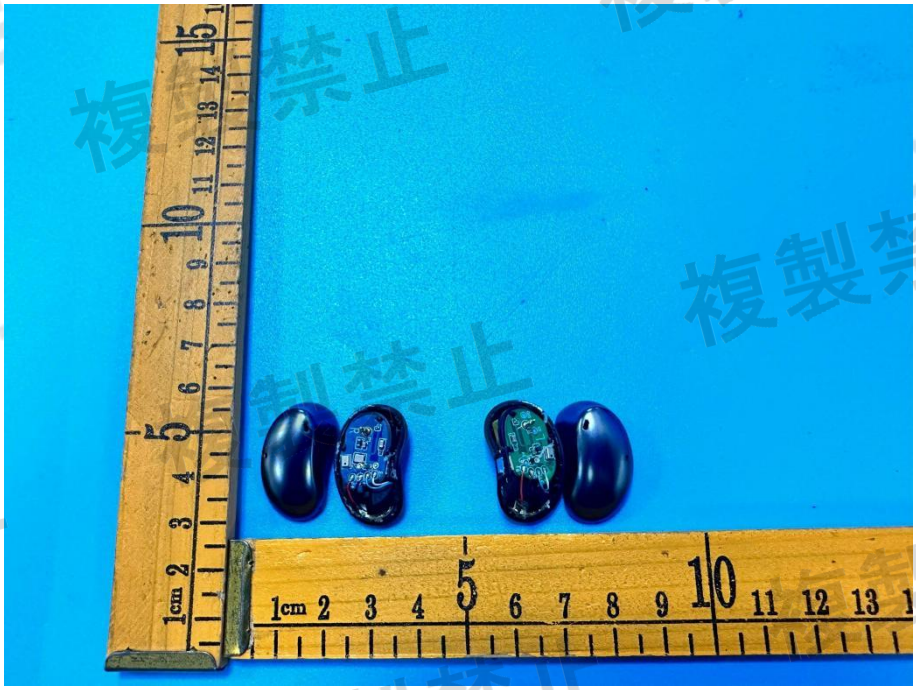


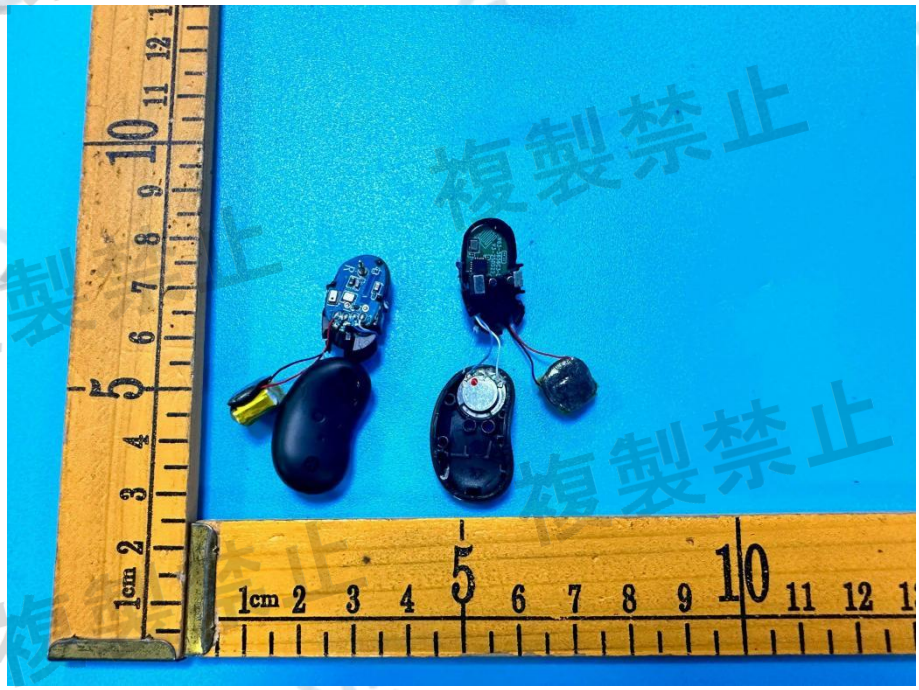
1cm 2 3 4 5 6 7 8

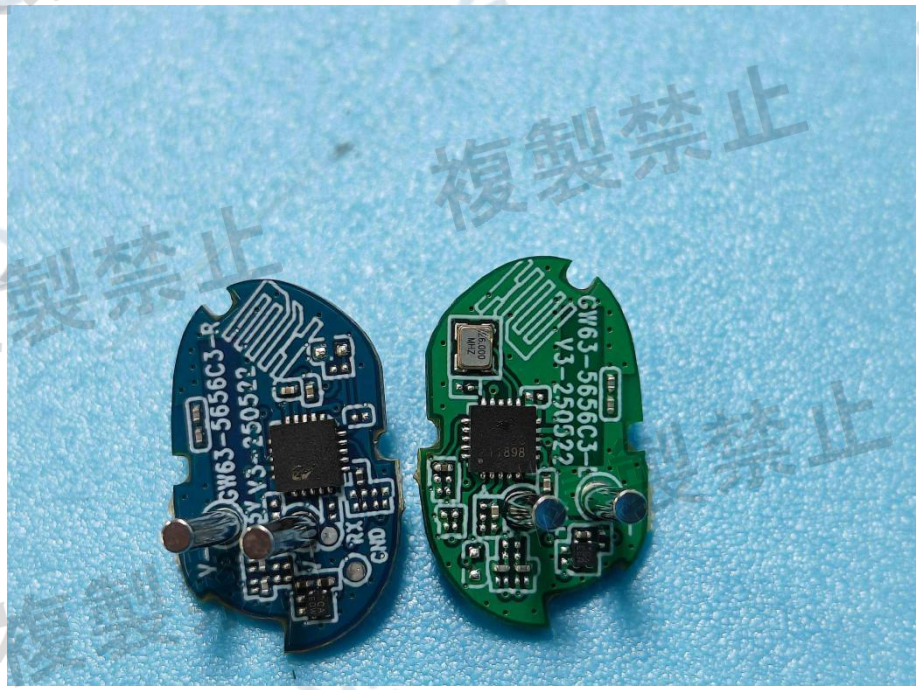

1cm 2 3 4 5 6 7 8



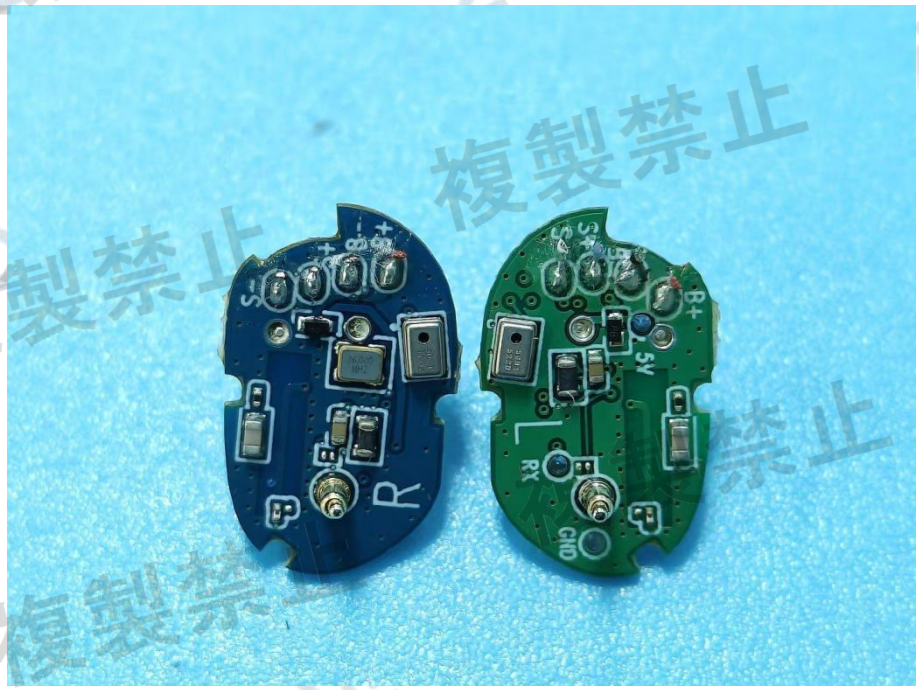
Internal



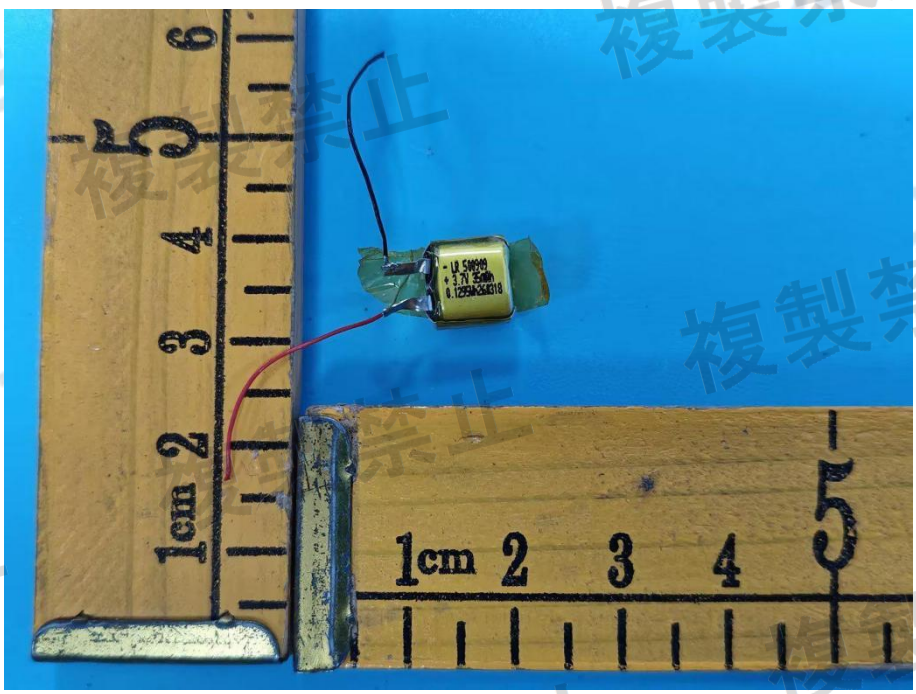



GW63-5656C3-R
V3-250522
5V
RX
GND
GW63-5656C3-L
V3-250522

1cm 2 3 4 5 6 7 8
1cm 2 3 4 5 6 7 8 9 10



ANT



Appendix

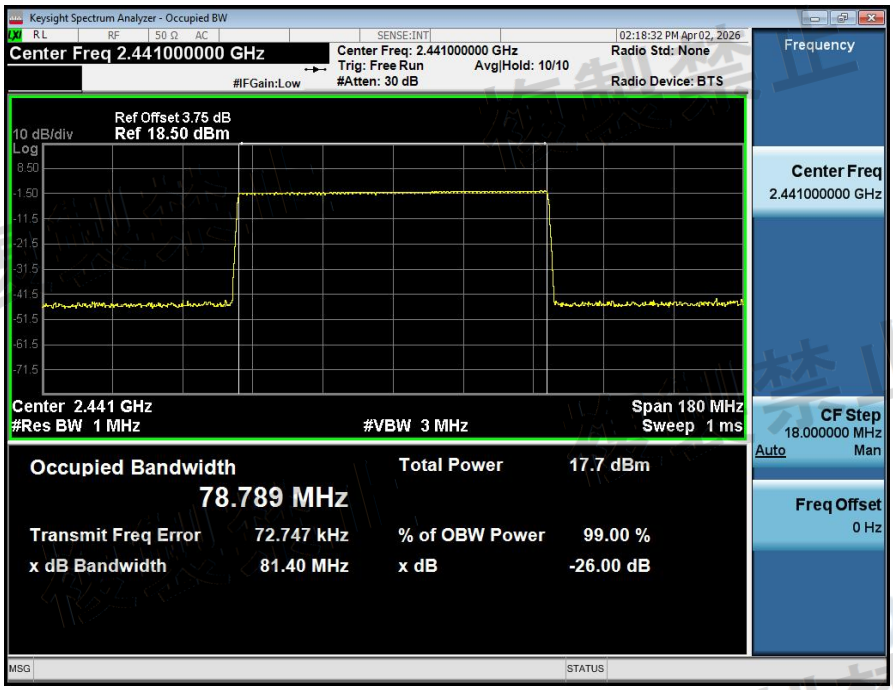
HT260401010-TW100-MIC-EDR-L

MIC_BT (Item_19) Test Data

1. 99% Occupied Bandwidth (Hopping)

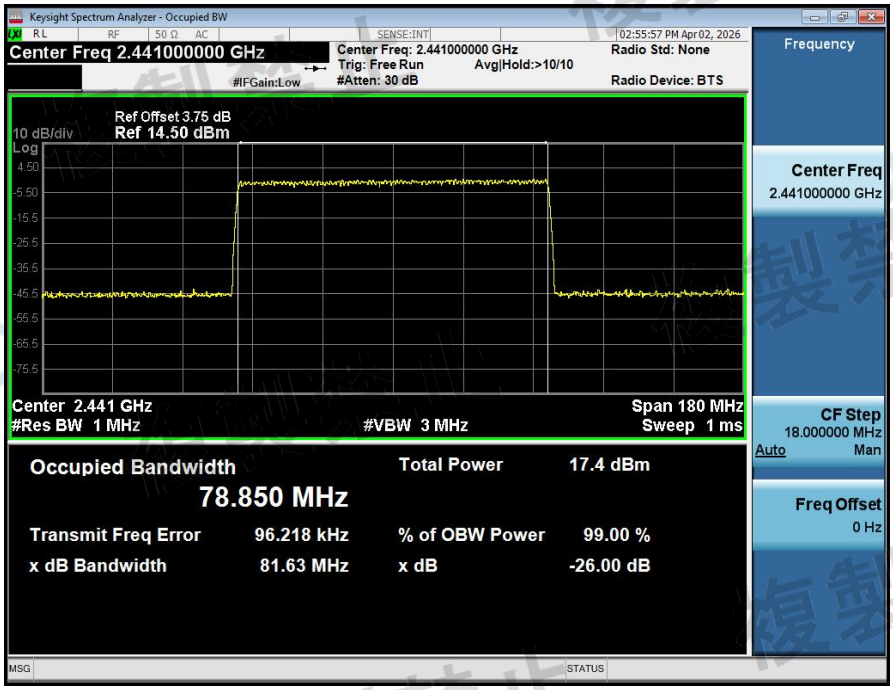
Condition	Antenna	Modulation	mode	Occupied Bandwidth(MHz)	Limit(MHz)	Result
NVNT	ANT1	1-DH5	Hopping	78.79	83.50	Pass
NVNT	ANT1	2-DH5	Hopping	78.82	83.50	Pass
NVNT	ANT1	3-DH5	Hopping	78.85	83.50	Pass

99%_Occupied_Bandwidth_(Hopping)_NVNT_ANT1_1-DH5_2402



99%_Occupied_Bandwidth_(Hopping)_NVNT_ANT1_2-DH5_2402

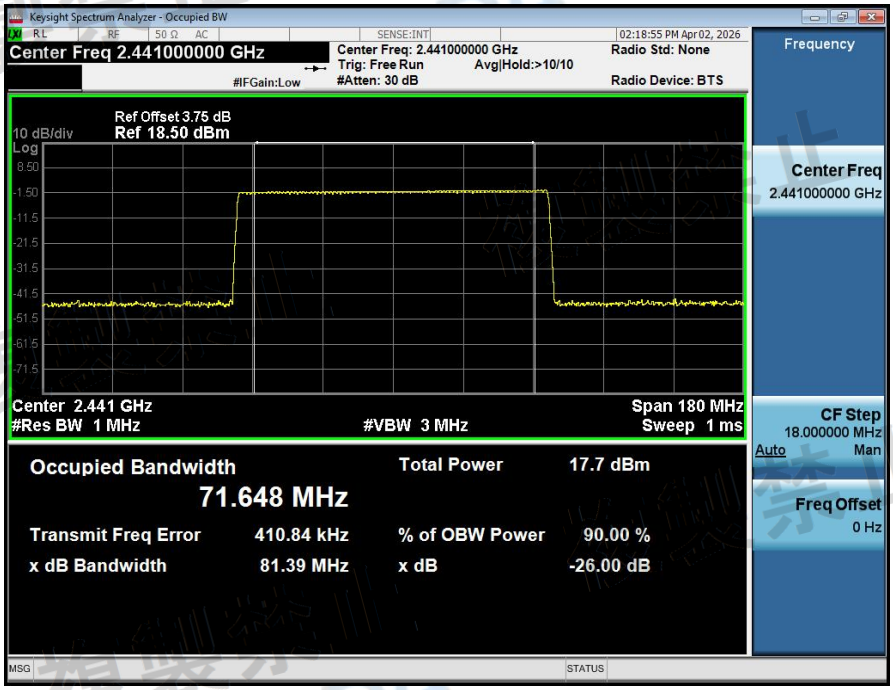
99%_Occupied_Bandwidth_(Hopping)_NVNT_ANT1_3-DH5_2402



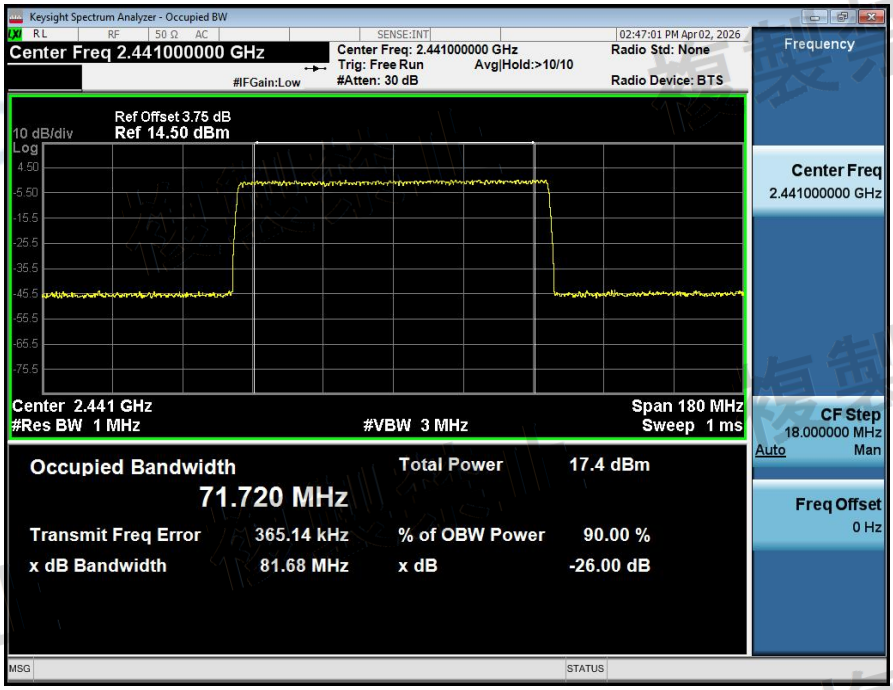
2. Spread Bandwidth (Hopping)

Condition	Antenna	Modulation	mode	Spread Bandwidth(MHz)	Spread Bandwidth Limit(kHz)	Rate(Msymbol/s)	Spread Factor
NVNT	ANT1	1-DH5	Hopping	71.65	500	1	71.65
NVNT	ANT1	2-DH5	Hopping	71.72	500	1	71.72
NVNT	ANT1	3-DH5	Hopping	71.74	500	1	71.74

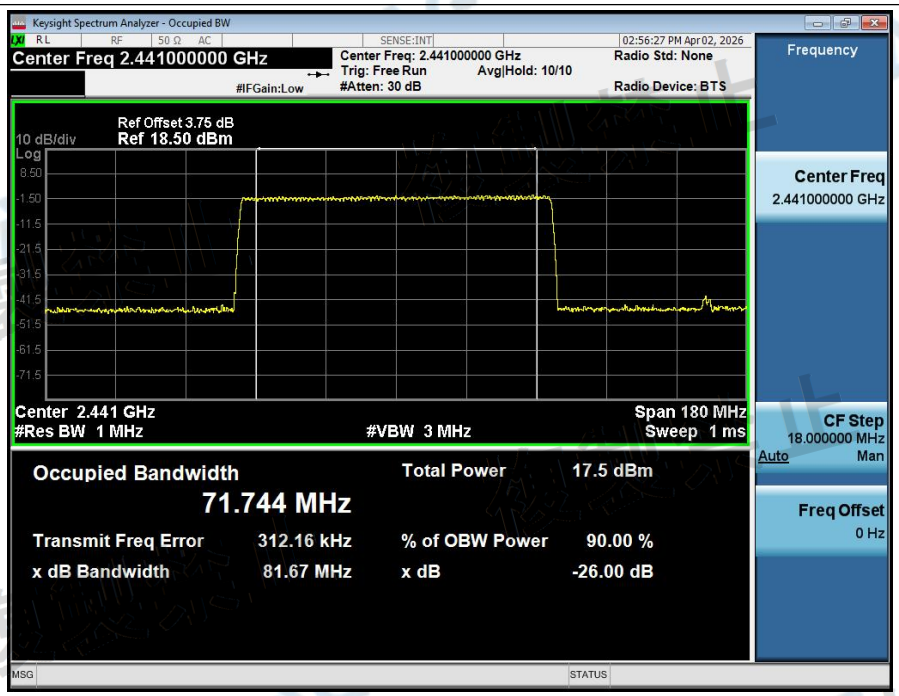
Spread_Bandwidth_(Hopping)_NVNT_ANT1_1-DH5_2402



Spread_Bandwidth_(Hopping)_NVNT_ANT1_2-DH5_2402



Spread_Bandwidth_(Hopping)_NVNT_ANT1_3-DH5_2402



3. Antena Power (Hopping)

Condition	Antenna	Mode	Frequency	Burst Power(dBm)	Burst Power(mW)	Spread BW(MHz)	Antenna Power(mW/MHz)
NVNT	ANT1	1-DH5	Hopping	-3.33	0.4645	71.65	0.0065
NVNT	ANT1	2-DH5	Hopping	-3.59	0.4375	71.72	0.0061
NVNT	ANT1	3-DH5	Hopping	-3.67	0.4295	71.74	0.0060

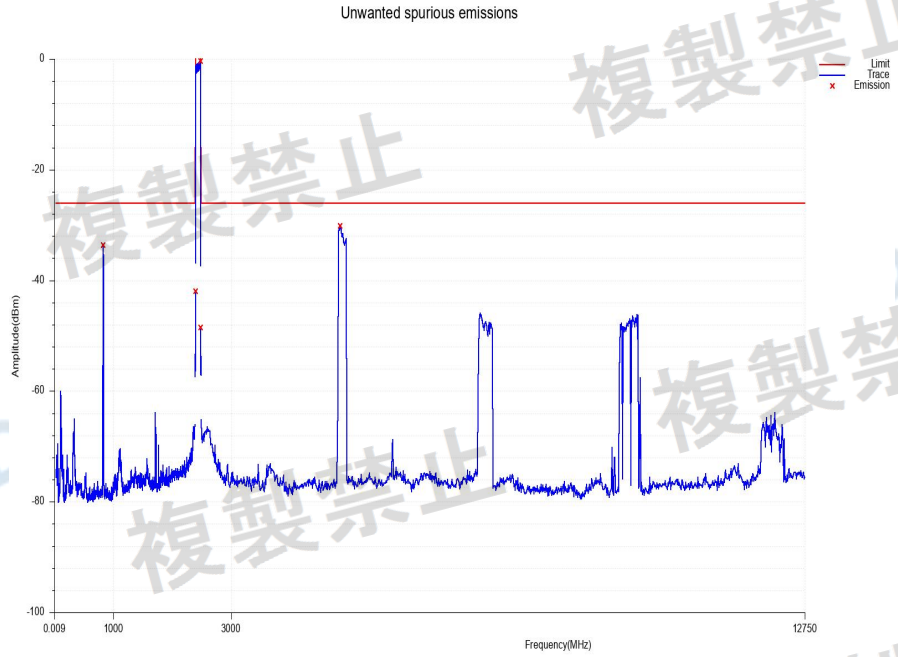
Condition	Antenna	Modulation	Mode	Antenna Power(mW/MHz)	Rated Power(mW/MHz)	Power Limit(mW/MHz)	Power Tolerance(%)	Tolerance Limit(%)	Result
NVNT	ANT1	1-DH5	Hopping	0.0065	0.006	3	8.33	+20	Pass
NVNT	ANT1	2-DH5	Hopping	0.0061	0.006	3	1.67	+20	Pass
NVNT	ANT1	3-DH5	Hopping	0.0060	0.006	3	0.00	+20	Pass

Condition	Antenna	Mode	Frequency	Measured Power(dBm/MHz)	Antenna Gain(dBi)	EIRP(dBm/MHz)	EIRP Limit(dBm/MHz)	Result
NVNT	ANT1	1-DH5	2402.00	-19.89	1.7	-18.19	6.91	Pass
NVNT	ANT1	2-DH5	2402.00	-22.15	1.7	-20.45	6.91	Pass
NVNT	ANT1	3-DH5	2402.00	-22.23	1.7	-20.53	6.91	Pass

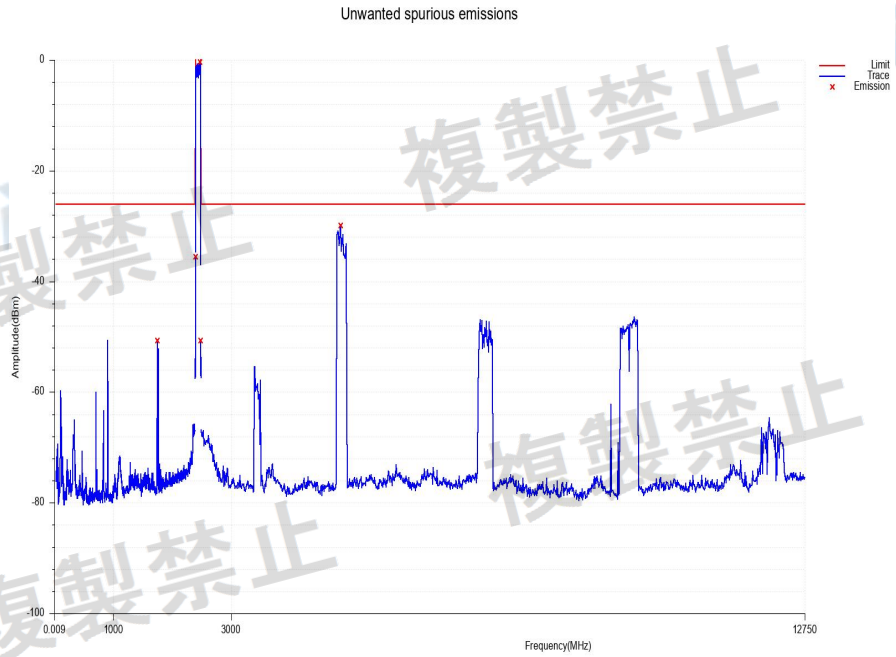
4. Spurious Emissions

Condition	Mode	Frequency (MHz)	Frequency Area (MHz)	RBW(kHz)	Spur. Fre. (MHz)	Spur. Level (dBm/MHz)	Limit (dBm/MHz)	Spur. Level	LImit	Result
NVNT	1-DH5	Hopping	30~2387	1000	829.02	-33.65	-26	0.4319μW/MHz	2.5μW/MHz	Pass
NVNT	1-DH5	Hopping	2387~2400	1000	2400.00	-41.92	-16	0.0642μW/MHz	25μW/MHz	Pass
NVNT	1-DH5	Hopping	2400~2483.5	/	/	/	/	/	/	/
NVNT	1-DH5	Hopping	2483.5~2496.5	1000	2484.38	-48.50	-16	0.0141μW/MHz	25μW/MHz	Pass
NVNT	1-DH5	Hopping	2496.5~12750	1000	4854.81	-30.21	-26	0.9537μW/MHz	2.5μW/MHz	Pass
NVNT	2-DH5	Hopping	30~2387	1000	1750.61	-50.71	-26	0.0084μW/MHz	2.5μW/MHz	Pass
NVNT	2-DH5	Hopping	2387~2400	1000	2400.00	-35.60	-16	0.2754μW/MHz	25μW/MHz	Pass
NVNT	2-DH5	Hopping	2400~2483.5	/	/	/	/	/	/	/
NVNT	2-DH5	Hopping	2483.5~2496.5	1000	2484.68	-50.73	-16	0.0084μW/MHz	25μW/MHz	Pass
NVNT	2-DH5	Hopping	2496.5~12750	1000	4865.06	-29.97	-26	1.0079μW/MHz	2.5μW/MHz	Pass
NVNT	3-DH5	Hopping	30~2387	1000	107.78	-59.89	-26	0.0010μW/MHz	2.5μW/MHz	Pass
NVNT	3-DH5	Hopping	2387~2400	1000	2400.00	-34.79	-16	0.3318μW/MHz	25μW/MHz	Pass
NVNT	3-DH5	Hopping	2400~2483.5	/	/	/	/	/	/	/
NVNT	3-DH5	Hopping	2483.5~2496.5	1000	2483.93	-50.59	-16	0.0087μW/MHz	25μW/MHz	Pass
NVNT	3-DH5	Hopping	2496.5~12750	1000	4854.81	-30.20	-26	0.9545μW/MHz	2.5μW/MHz	Pass

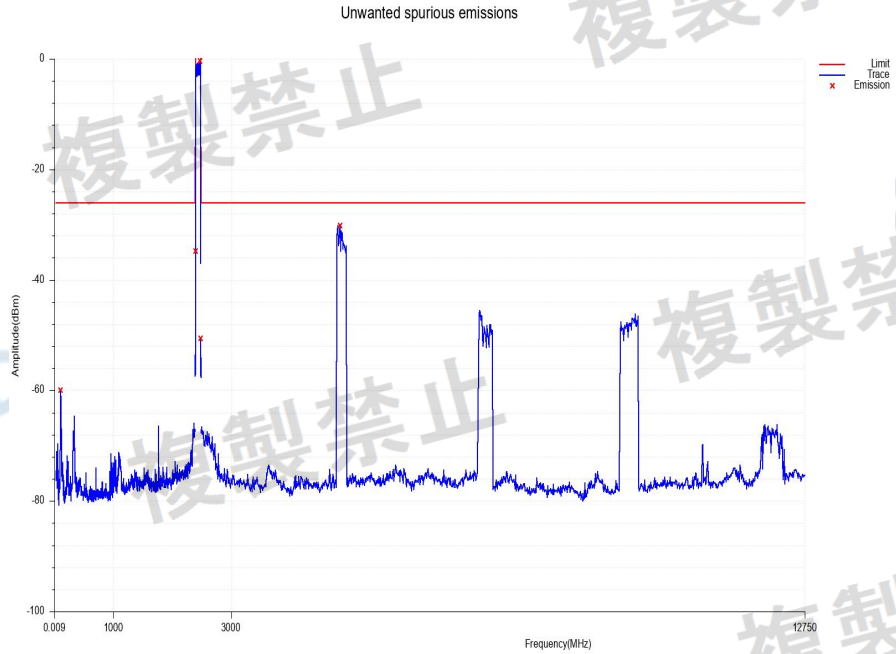
Spurious_Emissions_(Hopping)_NVNT_ANT1_1-DH5_Hopping



Spurious_Emissions_(Hopping)_NVNT_ANT1_2-DH5_Hopping



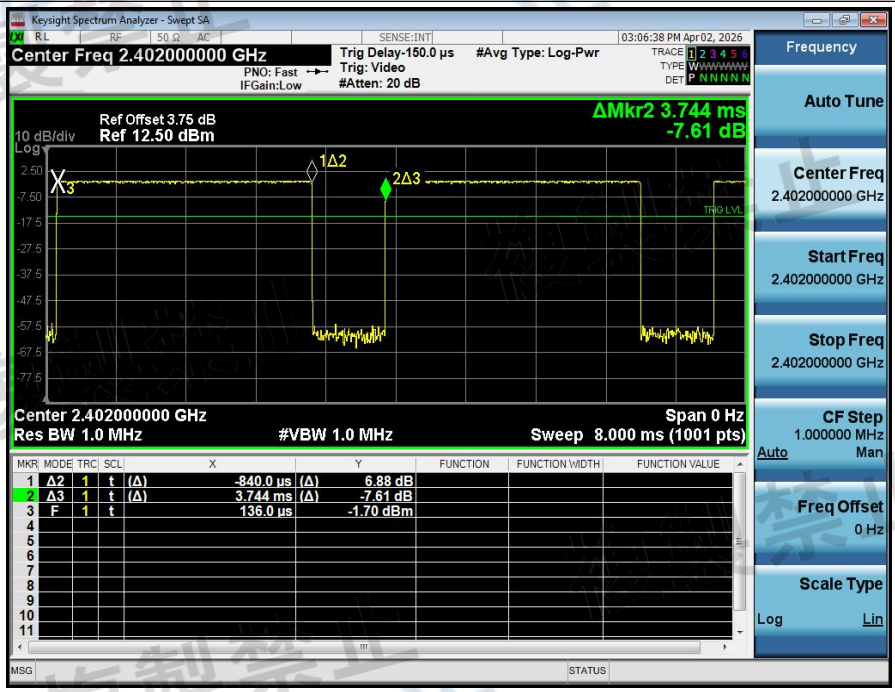
Spurious_Emissions_(Hopping)_NVNT_ANT1_3-DH5_Hopping



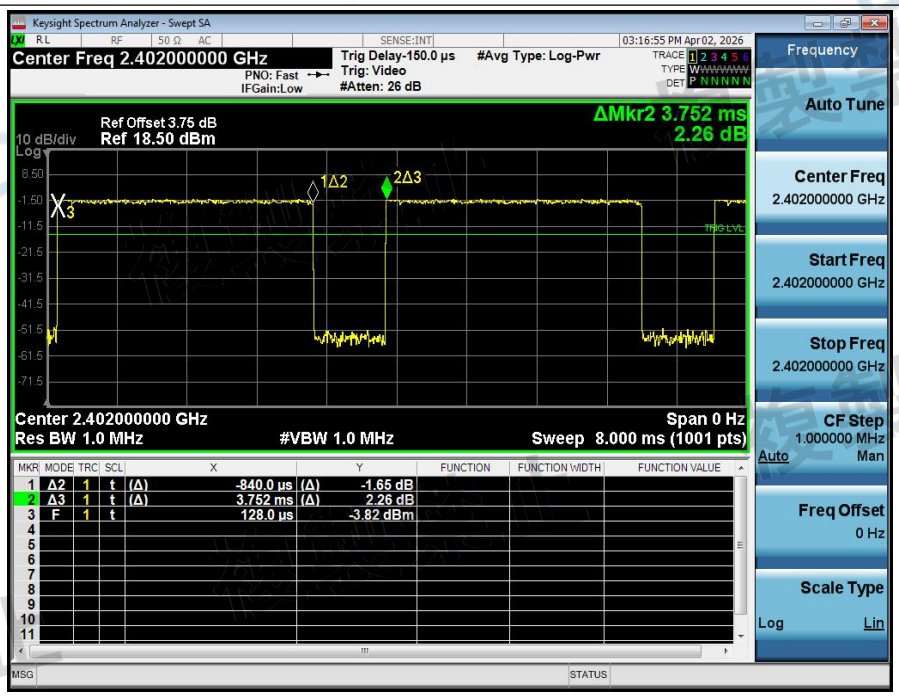
5. Dwell Time

Condition	Antenna	Modulation	mode	Burst Time(ms)	Burst Cycle(ms)	Dwell Time(s)	Limit(s)	Result
NVNT	ANT1	1-DH5	Hopping	2.904	3.744	0.281	0.4	Pass
NVNT	ANT1	2-DH5	Hopping	2.912	3.752	0.282	0.4	Pass
NVNT	ANT1	3-DH5	Hopping	2.912	3.744	0.283	0.4	Pass

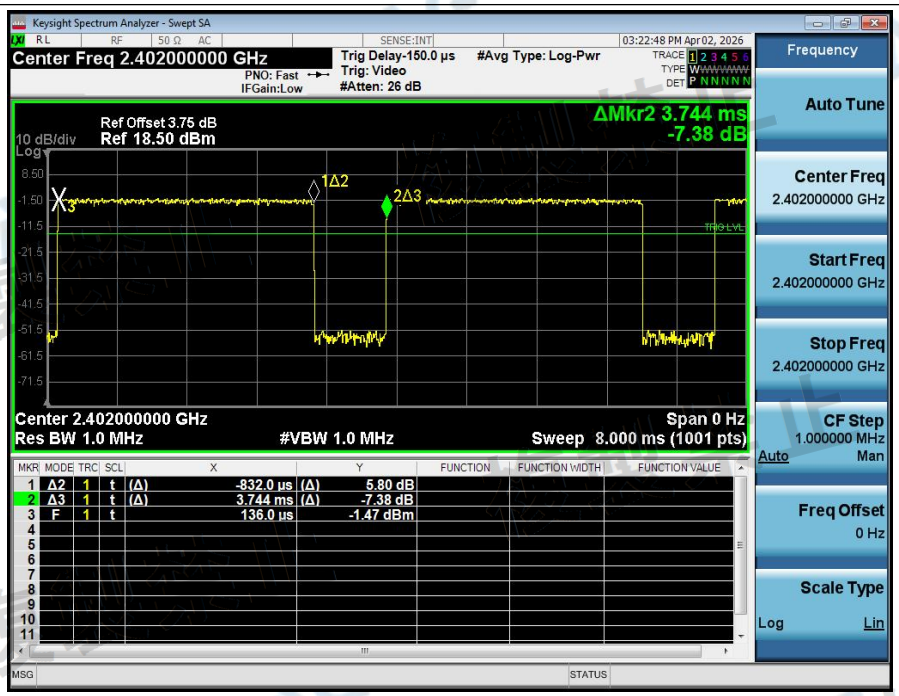
Dwell_Time_NVNT_ANT1_1-DH5_2402



Dwell_Time_NVNT_ANT1_2-DH5_2402



Dwell_Time_NVNT_ANT1_3-DH5_2402



6. Frequency Tolerance

Condition	Antenna	Modulation	Frequency (MHz)	Test Frequency(MHz)	Frequency Tolerance(ppm)	Limit(ppm)	Result
NTNV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTLV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTHV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTNV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTLV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTHV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTNV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass
NTLV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass
NTHV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass
NTNV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTLV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTHV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTNV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTLV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTHV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTNV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass
NTLV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass
NTHV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass
NTNV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTLV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTHV	ANT1	un-modulation	2402.00	2401.991	-3.747	±50	Pass
NTNV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTLV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTHV	ANT1	un-modulation	2441.00	2440.990	-4.097	±50	Pass
NTNV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass
NTLV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass
NTHV	ANT1	un-modulation	2480.00	2479.990	-4.032	±50	Pass

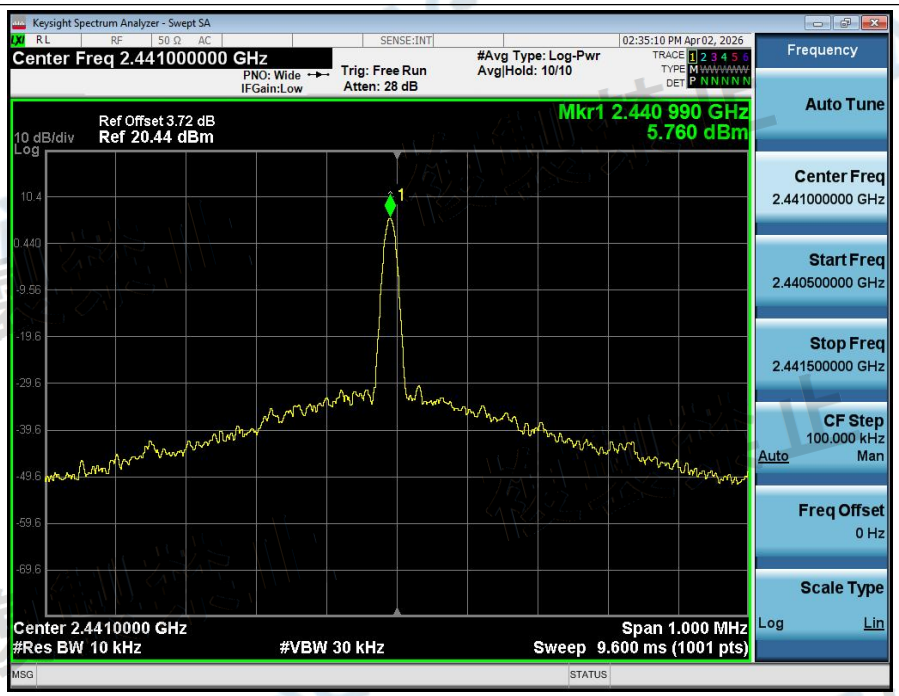
Frequency_Tolerance_NTNV_ANT1_1-DH5_2402

Frequency_Tolerance_NTLV_ANT1_1-DH5_2402

Frequency_Tolerance_NTHV_ANT1_1-DH5_2402

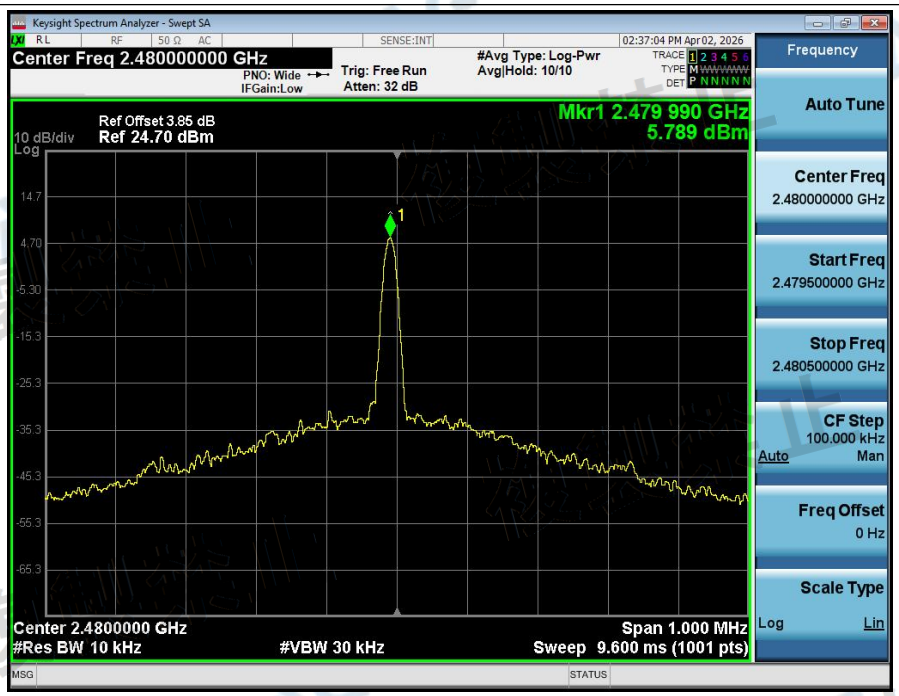
Frequency_Tolerance_NTNV_ANT1_1-DH5_2441

Frequency_Tolerance_NTLV_ANT1_1-DH5_2441

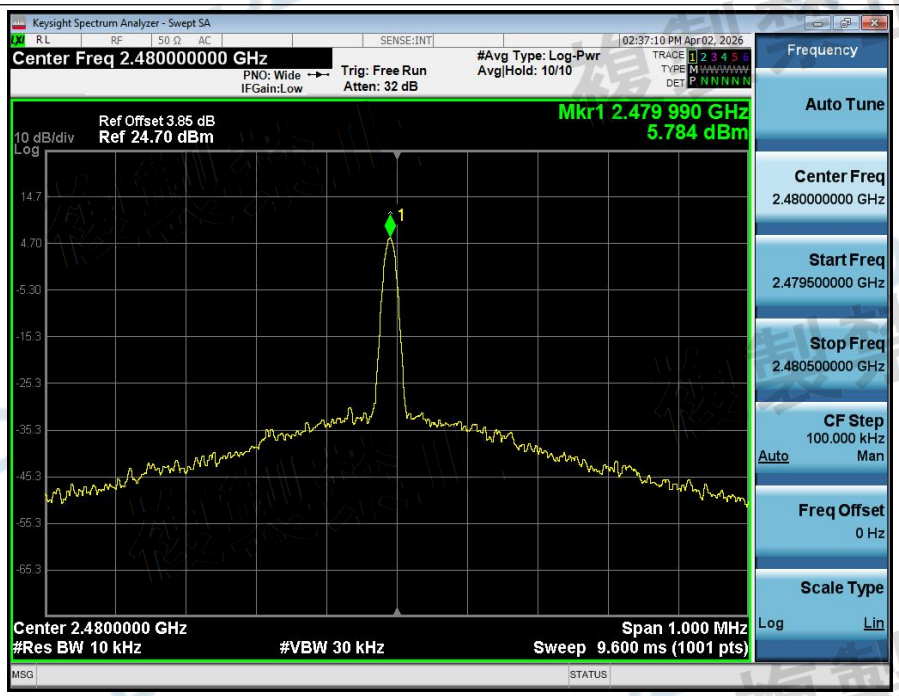


Frequency_Tolerance_NTHV_ANT1_1-DH5_2441

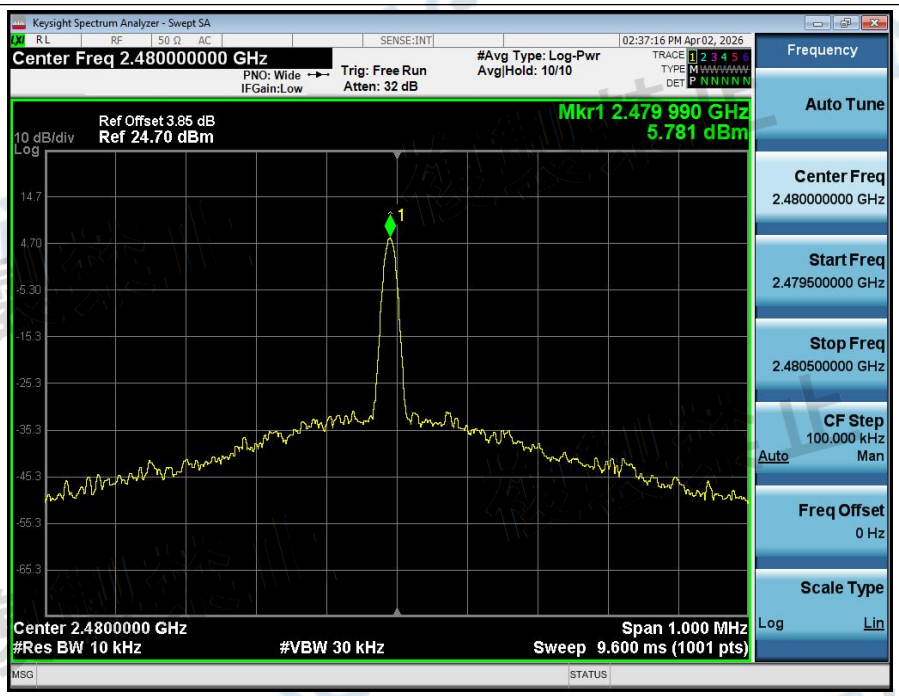
Frequency_Tolerance_NTNV_ANT1_1-DH5_2480



Frequency_Tolerance_NTLV_ANT1_1-DH5_2480

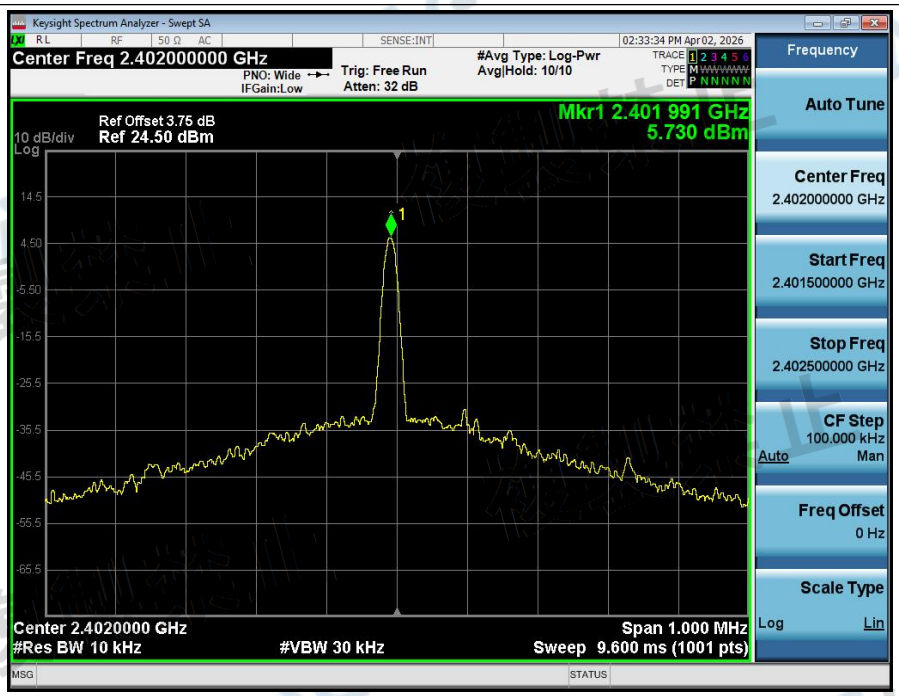


Frequency_Tolerance_NTHV_ANT1_1-DH5_2480



Frequency_Tolerance_NTNV_ANT1_2-DH5_2402

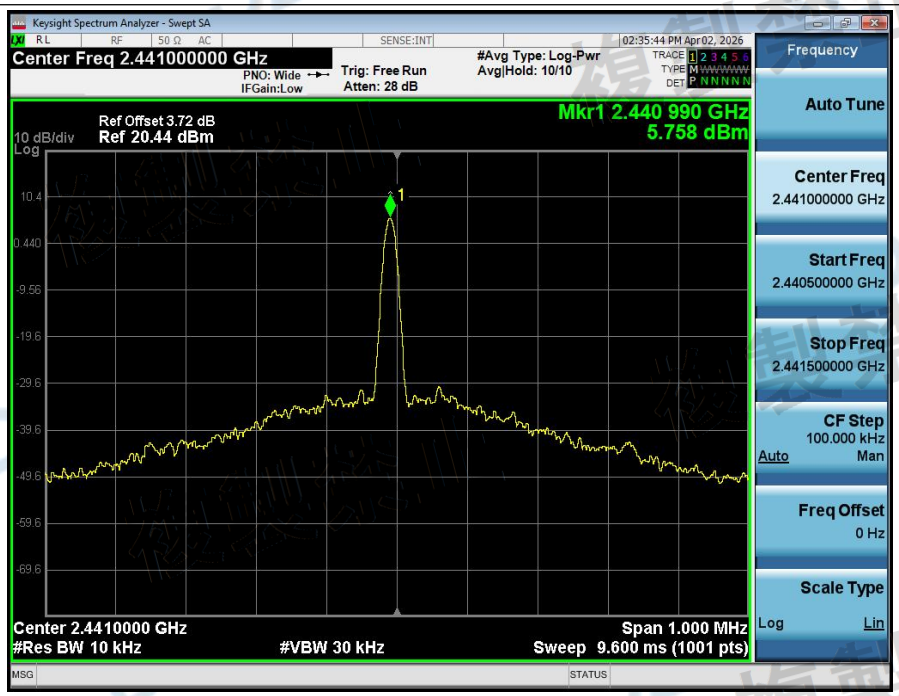
Frequency_Tolerance_NTLV_ANT1_2-DH5_2402



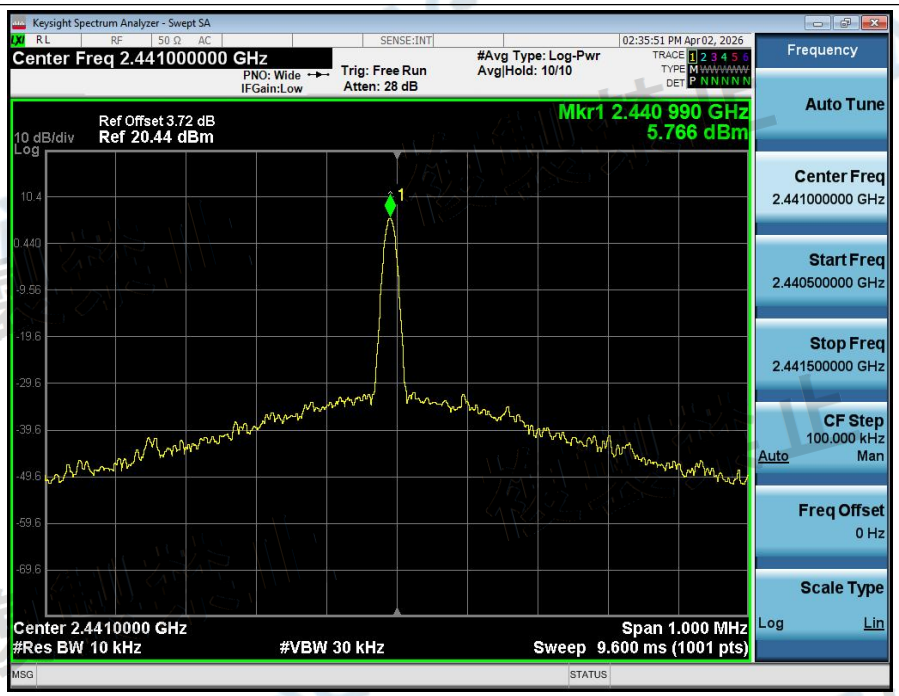
Frequency_Tolerance_NTHV_ANT1_2-DH5_2402

Frequency_Tolerance_NTNV_ANT1_2-DH5_2441

Frequency_Tolerance_NTLV_ANT1_2-DH5_2441

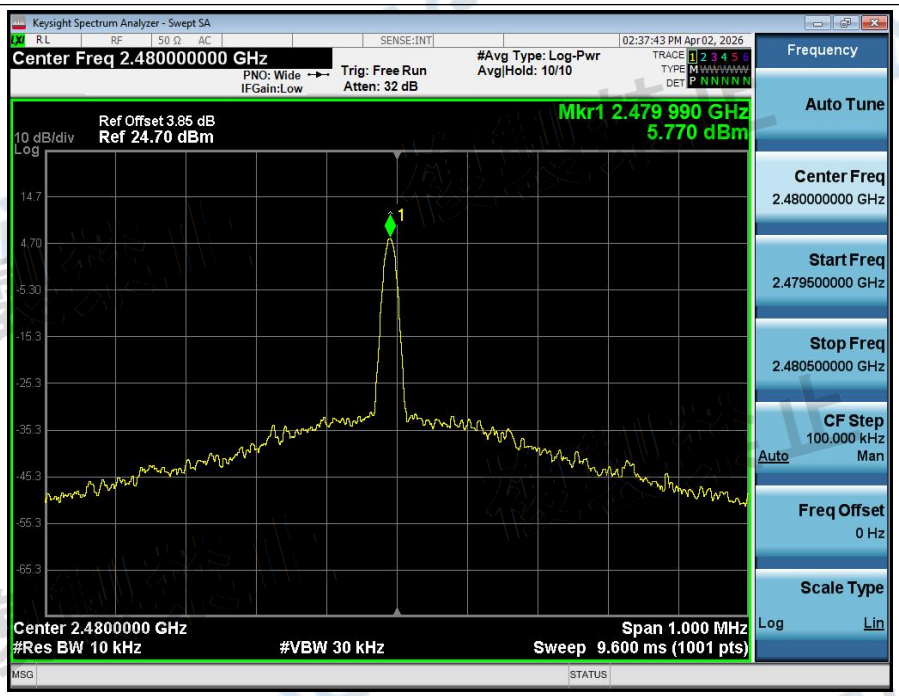


Frequency_Tolerance_NTHV_ANT1_2-DH5_2441

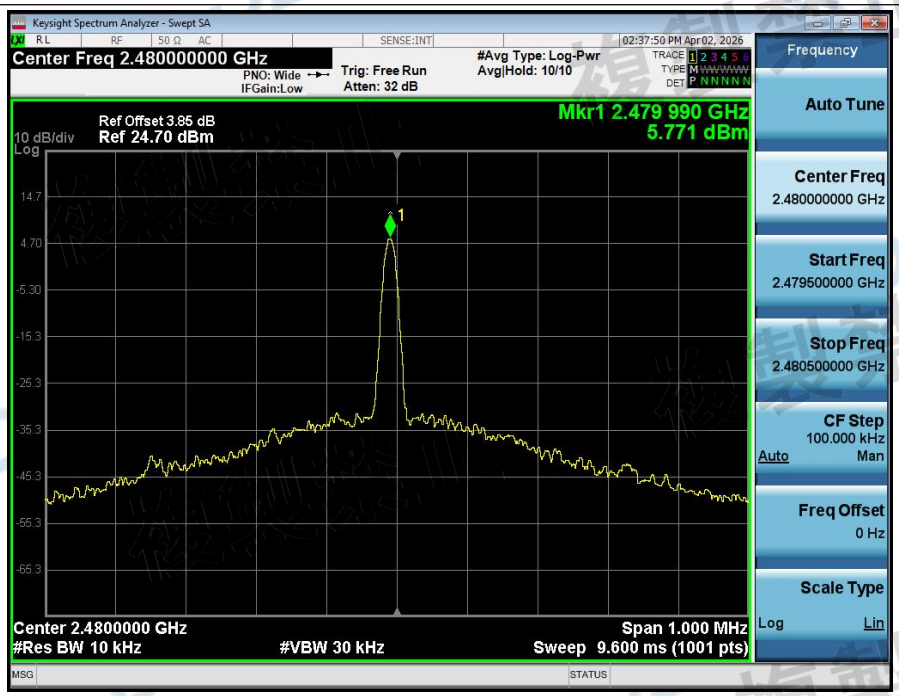


Frequency_Tolerance_NTNV_ANT1_2-DH5_2480

Frequency_Tolerance_NTLV_ANT1_2-DH5_2480



Frequency_Tolerance_NTHV_ANT1_2-DH5_2480

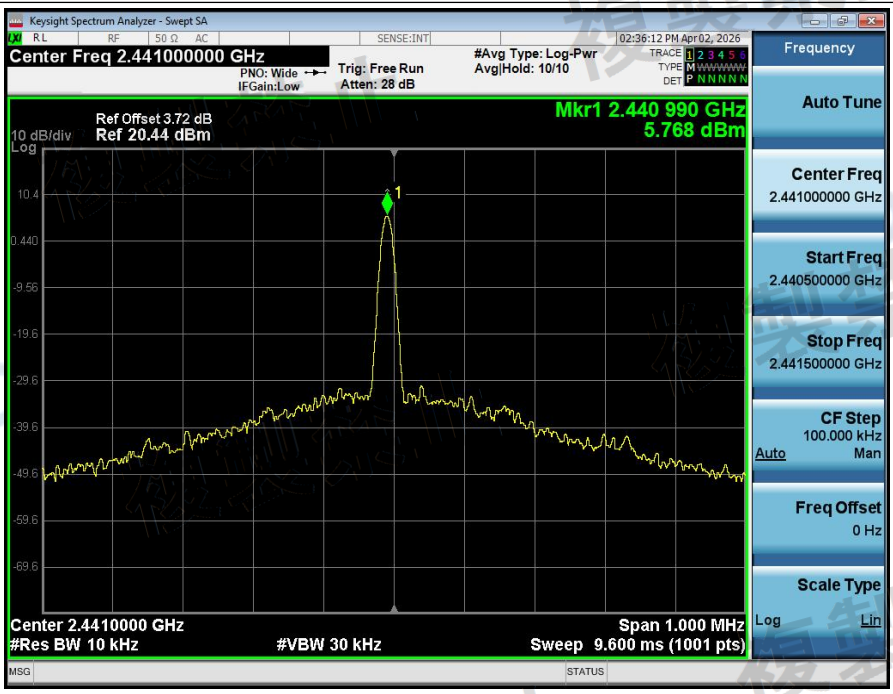


Frequency_Tolerance_NTNV_ANT1_3-DH5_2402

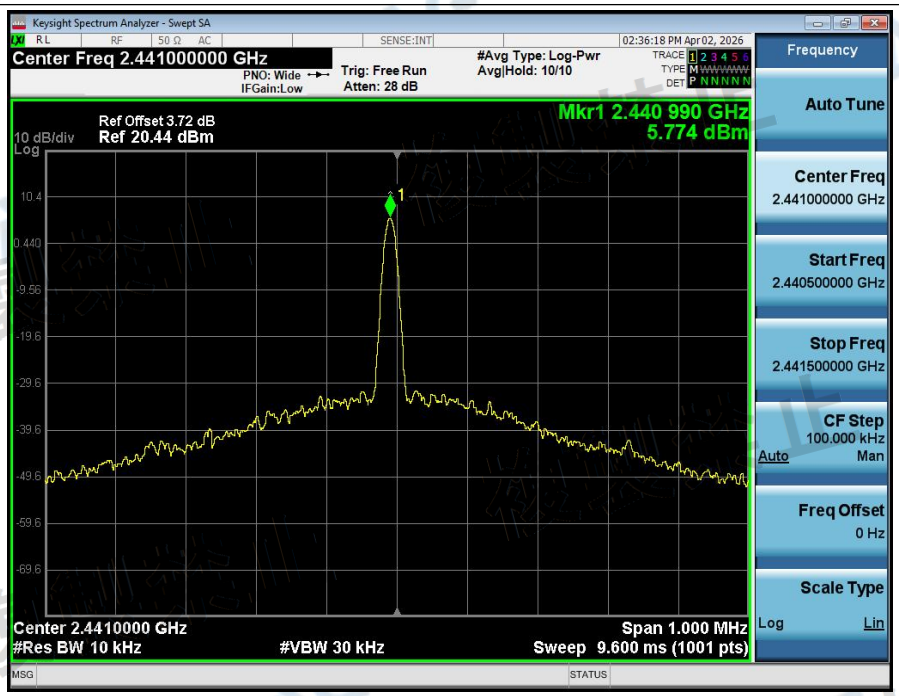
Frequency_Tolerance_NTLV_ANT1_3-DH5_2402

Frequency_Tolerance_NTHV_ANT1_3-DH5_2402

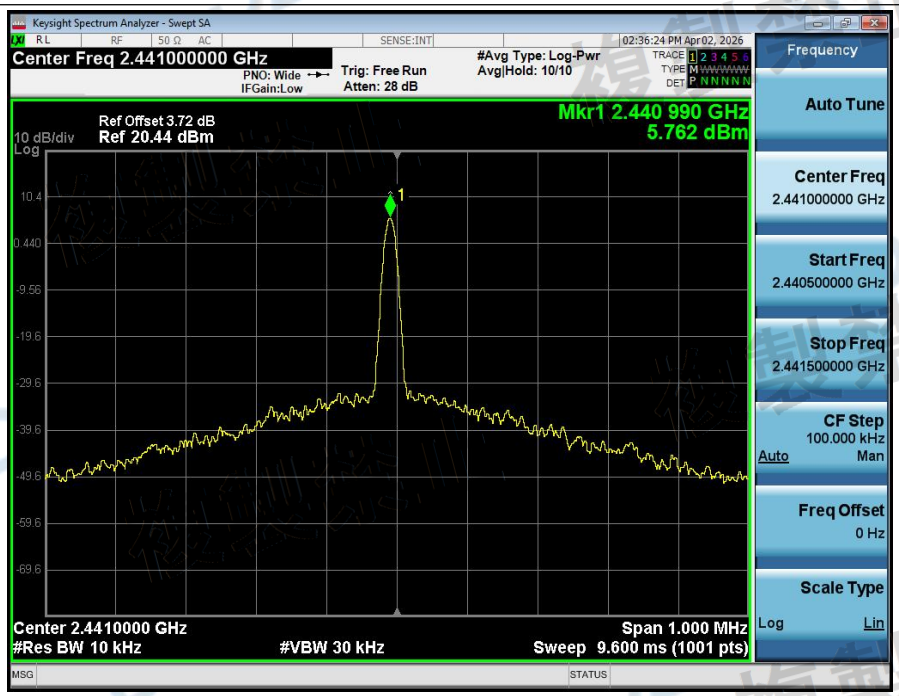
Frequency_Tolerance_NTNV_ANT1_3-DH5_2441



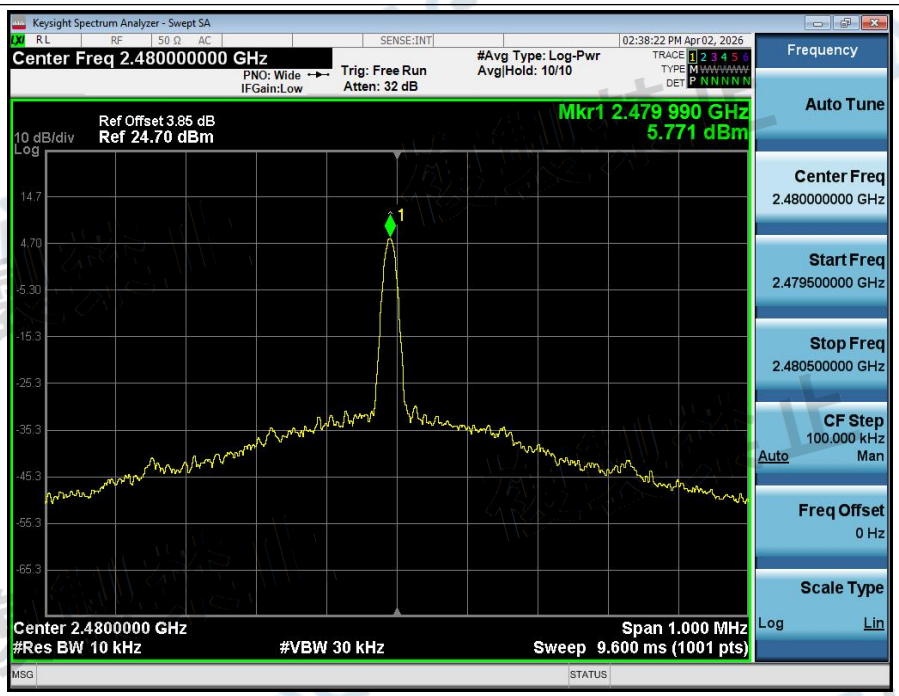
Frequency_Tolerance_NTLV_ANT1_3-DH5_2441



Frequency_Tolerance_NTHV_ANT1_3-DH5_2441

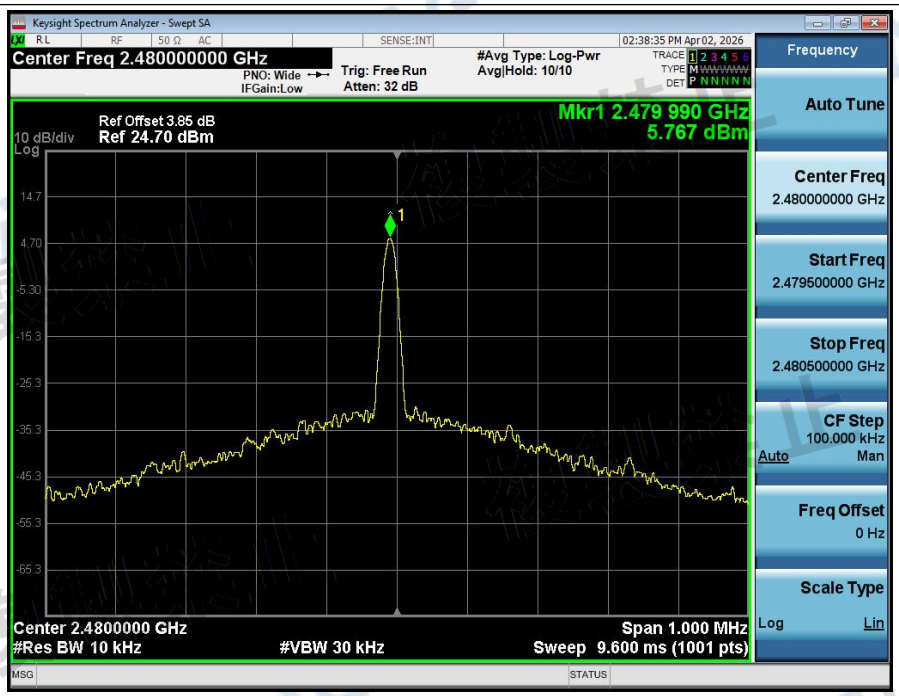


Frequency_Tolerance_NTNV_ANT1_3-DH5_2480



Frequency_Tolerance_NTLV_ANT1_3-DH5_2480

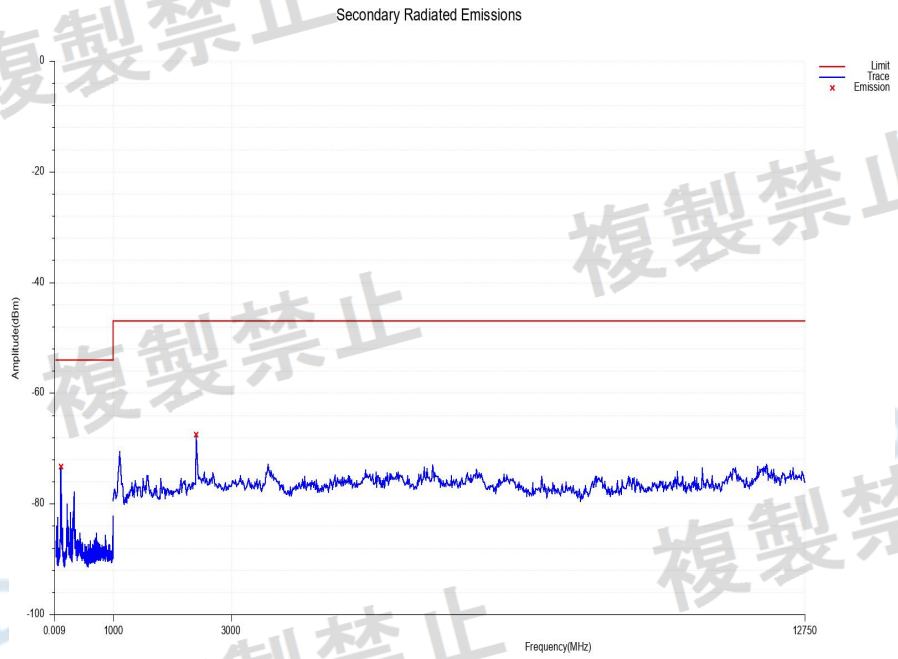
Frequency_Tolerance_NTHV_ANT1_3-DH5_2480



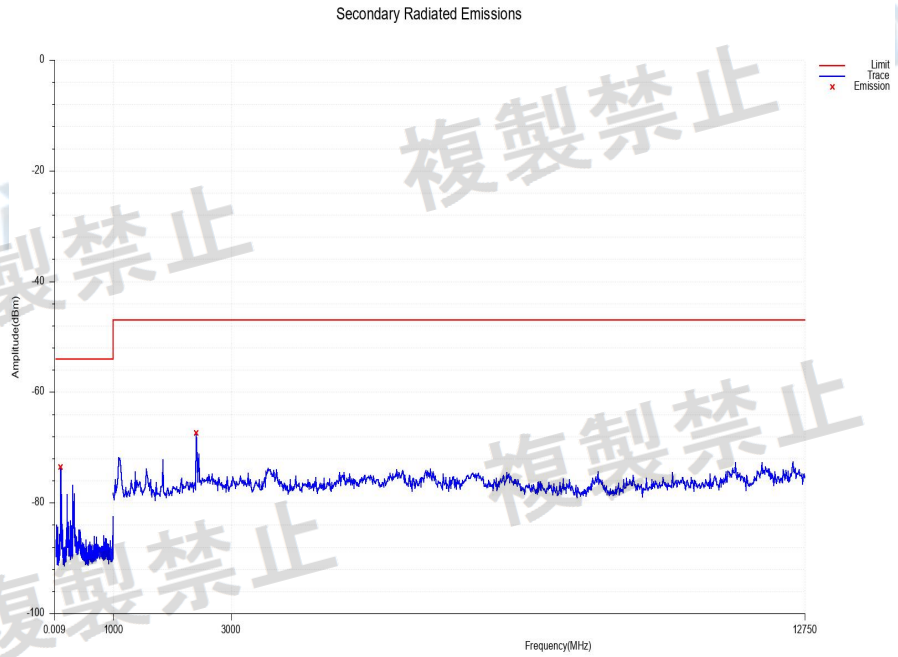
7. Secondary emission of radio wave (Hopping)

Condition	Mode	Channel	Range (MHz)	RBW (kHz)	Spur. Freq. (MHz)	Spur. Lev. (dBm)	Spur. Lev	Limit	Over 1/10 Limit	Read Lev. (dBm)	Read Lev.	Result
NVNT	1-DH5	Hopping	30~1000	100	108.57	-73.24	0.0474nW	4nW	NO	/	/	Pass
NVNT	1-DH5	Hopping	1000~12750	1000	2410.00	-67.51	0.1773nW	20nW	NO	/	/	Pass
NVNT	2-DH5	Hopping	30~1000	100	107.60	-73.57	0.0439nW	4nW	NO	/	/	Pass
NVNT	2-DH5	Hopping	1000~12750	1000	2410.00	-67.42	0.1810nW	20nW	NO	/	/	Pass
NVNT	3-DH5	Hopping	30~1000	100	108.57	-73.20	0.0478nW	4nW	NO	/	/	Pass
NVNT	3-DH5	Hopping	1000~12750	1000	2410.00	-67.68	0.1705nW	20nW	NO	/	/	Pass

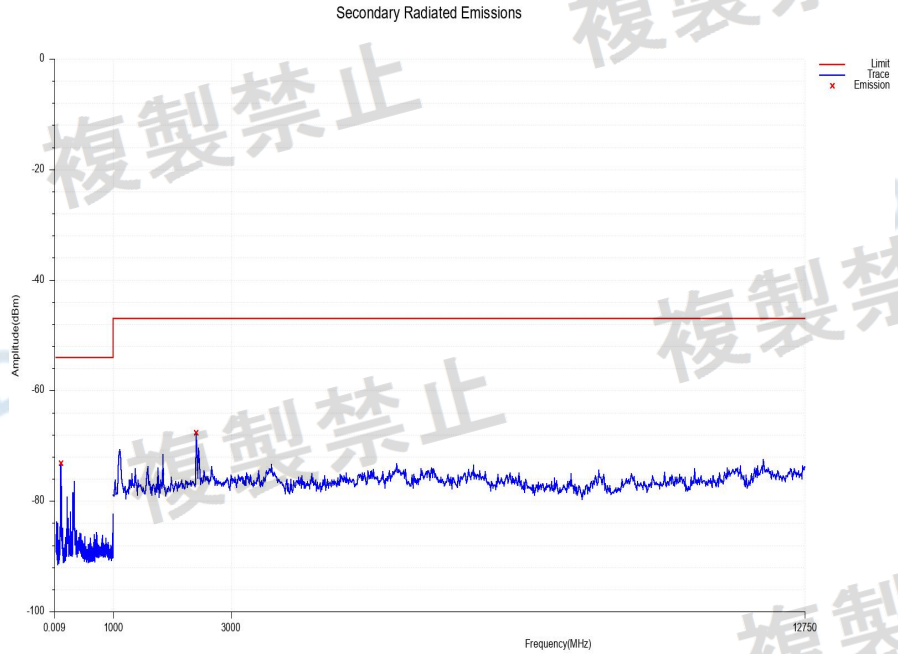
Secondary_emission_of_radio_wave_(Hopping)_NVNT_ANT1_1-DH5_Hopping



Secondary_emission_of_radio_wave_(Hopping)_NVNT_ANT1_2-DH5_Hopping



Secondary_emission_of_radio_wave_(Hopping)_NVNT_ANT1_3-DH5_Hopping



********** **End of Report** **********