



RF TEST REPORT

Report No.: 20260102G00519X-W2

Product Name: Unmanned Surface Vehicle

Model No. : HydroBoat1200

Applicant: Geosolution i Goteborg AB

Address: Stora Avagen 21, 436 34 ASKIM, Sweden

Dates of Testing: 01/08/2026 - 01/15/2026

Issued by: CCIC Southern Testing Co., Ltd.

Lab Location: Electronic Testing Building, No.43, Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China.

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Test Report

Product..... : Unmanned Surface Vehicle
Trade Name : SATLAB
Applicant..... : Geosolution i Goteborg AB
Applicant Address..... : Stora Avagen 21, 436 34 ASKIM, Sweden
Manufacturer..... : Geosolution i Goteborg AB
Manufacturer Address..... : Stora Avagen 21, 436 34 ASKIM, Sweden
Factory..... : Geosolution i Goteborg AB
Factory Address..... : Stora Avagen 21, 436 34 ASKIM, Sweden
Test Standards..... : Article 2 paragraph 1 item (19)
MIC Notice No.88 Appendix No.43
Test Result..... : Pass

Tested by : Chuiwang Zhang 2026.01.15

Chuiwang Zhang, Test Engineer

Reviewed by..... : Sun Jiaohui 2026.01.15

Sun Jiaohui, Senior Engineer

Approved by..... : Wang Shijie 2026.01.15

Wang Shijie, Manager

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Change History		
Issue	Date	Reason for change
1.0	2026.01.15	First edition

1. General Information

1.1. Description of EUT

Product Name	Unmanned Surface Vehicle
Hardware Version	V1.1.1
Software Version	PCB20220127F
Power Supply	3.63V DC, 4900mAh Battery
EUT supports Radios application	2.4G SRD 10MHz/20MHz
Modulation technology	GFSK
Frequency Range	10MHz: 2411-2466MHz 20MHz: 2411-2466MHz
Channel Number	10MHz: 6 20MHz: 6
Antenna Type	External antenna
Antenna Gain	5.72dBi

Note 1: The information of antenna gain and cable loss is provided by the manufacturer and our lab is not responsible for the accuracy of the antenna gain and cable loss information.

1.2. Test Standards and Results

The EUT has been tested according to MIC Notice No.88 Appendix No.43.

No.	Identity	Document Title
1	MIC Notice No.88 Appendix No.43	Radio Frequency Devices

Test detailed items/section required by MIC rules and results are as below:

Part	Section in MIC	Description	Result
2.1	3	Frequency Error	PASS
2.2	4	Occupied Bandwidth	PASS
2.3	6	Antenna Power and deviation Measurement	PASS
2.4	5	Unwanted Emission Intensity	PASS
2.5	7	Secondary Rmissions of Receiver	PASS
2.6	10	Transmitting antenna absolute gain	N/A
2.7	11	Main lobe width of transmitting antenna	N/A
2.8	12	Radio Interference Prevention Capability	PASS
2.9	8	Carrier Sense Capability	NA ^{Note 1}
2.10	Note 2	Construction Protection Confirmation	PASS

Note 1: Testing is only required OFDM system with occupied frequency bandwidth below 40 MHz and exceed 26 MHz.

Note 2: MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20.

Note 3: N/A means not applicable.

1.3. Description of test modes

6 channels are provided for 2.4G SRD 10MHz/20MHz.

Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2411	3	2433	5	2455
2	2422	4	2444	6	2466

Select test channel and data rate for 2.4G SRD.

For Frequency band 2412 ~ 2472 MHz				
Test Mode	Low Channel	Mid Channel	High Channel	Modulation
2.4G SRD 10MHz	1	4	6	GFSK
2.4G SRD 20MHz	1	4	6	GFSK
Note 1: After scanning all modulation types and data rates for all test patterns, the above list was found to be the worst case.				

1.4. Test environment

Operating Environment	
Temperature	23.5℃
Humidity	57 % RH
Atmospheric Pressure	1010 mbar

For extreme voltage test, we have tested the relationship between the external power supply and RF IC powersupply. Base on the test results, only the normal voltage was selected to perform all items. The details information as below:

External power supply	Test Point	Deviation from normal	Deviation
3.63 Vdc	3.3 Vdc	---	---
3.26 Vdc	3.3 Vdc	0.00 Vdc	0.00%
4.00 Vdc	3.3 Vdc	0.00 Vdc	0.00%

Note: The chip voltage regulation is 3.3 Vdc.

1.5. Measurement Uncertainty

Test Items	Uncertainty	Remark
Frequency Error / 99% & 90% Bandwidth	$\pm 1.75 \times 10^{-6}$	Confidence levels of 95%
Antenna Power	± 0.849 dB	Confidence levels of 95%
TX-RX Spurious Emissions	± 0.614 dB	Confidence levels of 95%
Transmission Antenna Gain	± 2.49 dB	Confidence levels of 95%
Temperature	± 0.8 ℃	Confidence levels of 95%
Humidity	± 4.1 %	Confidence levels of 95%
DC / AC Power Source	± 0.04 %	Confidence levels of 95%



1.6. Accreditation Certificate

☒ CCIC-SET Lab 1

Address: Electronic Testing Building, No.43, Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China

ISED Registration: 11185A, CAB number: CN0064

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

CNAS L1659

CCIC Southern Testing Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

☐ CCIC-SET Lab 4

Address: No.125, Hongmei Section, Wangsha Road, Hongmei Town, Dongguan City, Guangdong Province, China

CNAS L1659

CCIC Southern Testing Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659.

2. Transmitter Results

2.1. Frequency Error Measurement

2.1.1. Limits

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

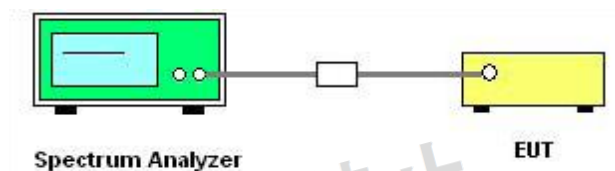
2.1.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.1.3. Test Procedures

- 1 Frequency accuracy of SA shall be less than 10% of limits tolerance (50 ppm).
- 2 Setting of SA is following as: RBW: 10 kHz / VBW: 10 kHz / Span: 40 MHz.
- 3 Center Frequency: The center frequency of testing for EUT.
- 4 Sweep time: Auto / Sweep mode: Continuous sweep.
- 5 Detect mode: Positive peak / Trace mode: Max hold.
- 6 The peak value of the power envelope shall be measured and noted. The span shall be reduced and the marker moved in a positive frequency increment until the upper, (relative to the centre frequency), -10 dBc point is reached. This value shall be noted as f1.
- 7 The marker shall then be moved in a negative frequency increment until the lower, (relative to the centre frequency), -10 dBc point is reached. This value shall be noted as f2.
- 8 The centre frequency is calculated as $f_c = (f_1 + f_2) / 2$. Then the frequency error formula is $(f - f_c) / f_c \times 10^6$ ppm and the limit is less than ± 50 ppm.

2.1.4. Test Setup Layout



2.1.5. Test Setup Deviation

There is no deviation with the original standard.



2.1.6. Test Setup Deviation

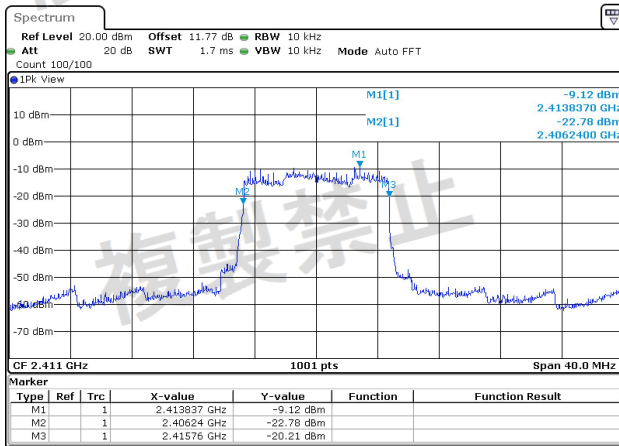
The EUT was placed on the test table and programmed in modulation function.

2.1.7. Test Results of Frequency Error

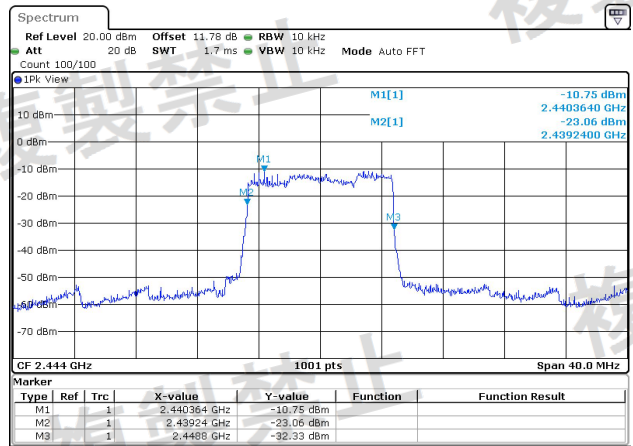
Test Mode	Antenna	Freq. [MHz]	Center Freq [MHz]	Result [ppm]	Limit [ppm]	Verdict
2.4G SRD-10M	Ant1	2411	2411	0.00000	±50	PASS
2.4G SRD-10M	Ant1	2444	2444.02	8.18331	±50	PASS
2.4G SRD-10M	Ant1	2466	2466	0.00000	±50	PASS
2.4G SRD-20M	Ant1	2411	2411	0.00000	±50	PASS
2.4G SRD-20M	Ant1	2444	2444	0.00000	±50	PASS
2.4G SRD-20M	Ant1	2466	2466	0.00000	±50	PASS

Test Graphs

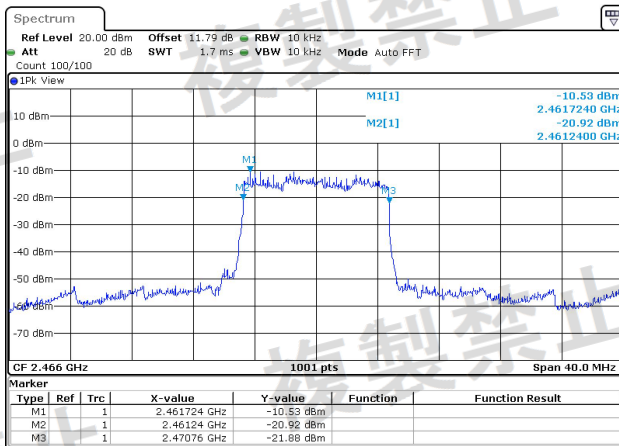
NTNV-2.4G SRD-20M-Ant1-2411-PASS



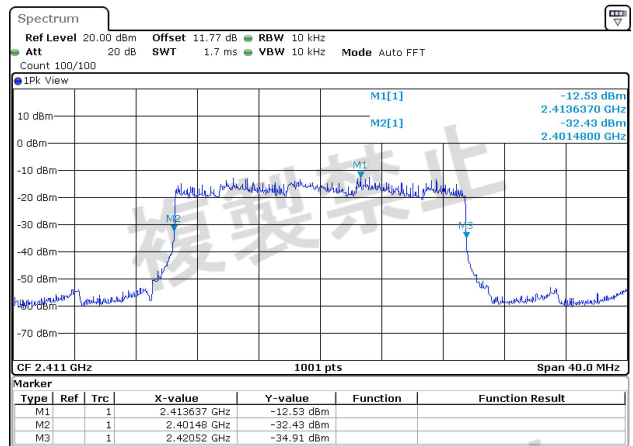
NTNV-2.4G SRD-20M-Ant1-2444-PASS



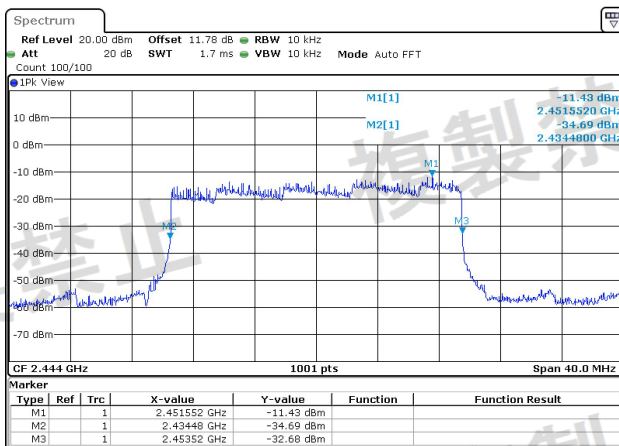
NTNV-2.4G SRD-20M-Ant1-2466-PASS



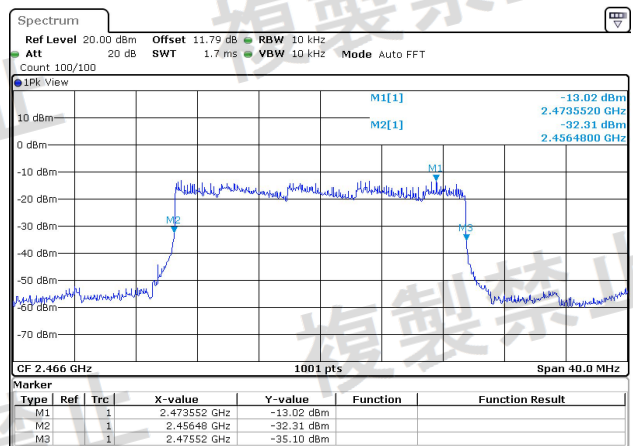
NTNV-2.4G SRD-20M-Ant1-2411-PASS



NTNV-2.4G SRD-20M-Ant1-2444-PASS



NTNV-2.4G SRD-20M-Ant1-2466-PASS



2.2. Occupied Bandwidth

2.2.1. Limits

Item	Limits
Occupied Bandwidth	OFDM, DS $\leq$ 26 MHz (Narrow Bandwidth); OFDM, DS $\geq$ 26 MHz, $\leq$ 40 MHz (Wide Bandwidth)

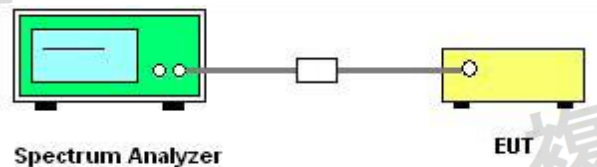
2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.2.3. Test Procedures

- Setting of SA is following as: RBW: 300kHz / VBW: 300kHz / SPAN: 52MHz or 80MHz / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
- EUT have transmitted the maximum modulation signal and fixed channelize (For DSSS or OFDM Device) or continuous maximum power of hopping mode (For FHSS Device). SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than 26 MHz (For DSSS or OFDM Device) or 83.5 MHz (For FHSS Device).

2.2.4. Test Setup Layout



2.2.5. Test Deviation

There is no deviation with the original standard.

2.2.6. EUT Operation during Test

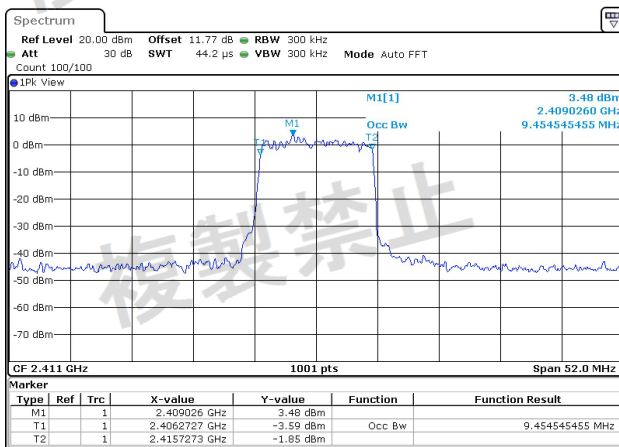
The EUT was programmed to be in continuously transmitting mode.

**2.2.7. Test Result of Occupied Bandwidth**

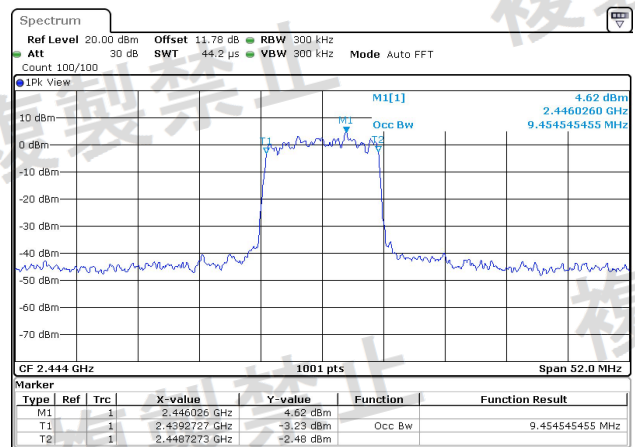
Test Mode	Antenna	Freq. [MHz]	Result [MHz]	Limit [MHz]	Verdict
2.4G SRD-10M	Ant1	2411	9.455	≤26	PASS
2.4G SRD-10M	Ant1	2444	9.455	≤26	PASS
2.4G SRD-10M	Ant1	2466	9.455	≤26	PASS
2.4G SRD-20M	Ant1	2411	18.753	≤26	PASS
2.4G SRD-20M	Ant1	2444	18.805	≤26	PASS
2.4G SRD-20M	Ant1	2466	18.753	≤26	PASS

Test Graphs

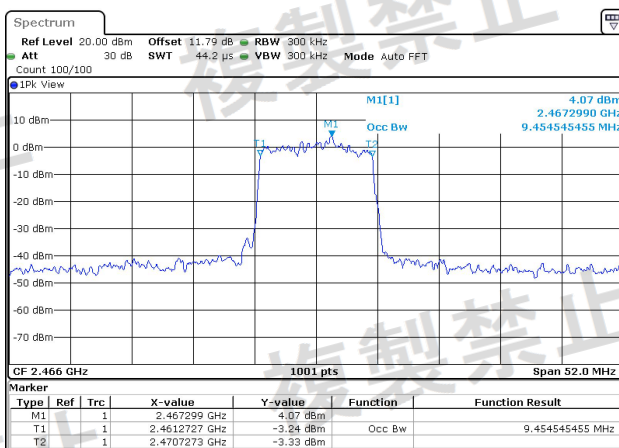
NTNV-2.4G SRD-20M-Ant1-2411-PASS



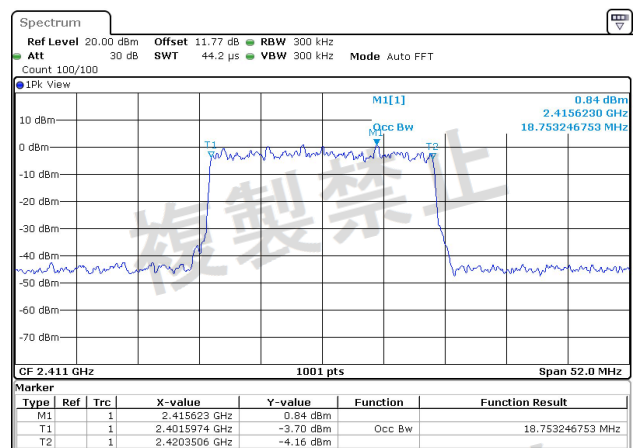
NTNV-2.4G SRD-20M-Ant1-2444-PASS



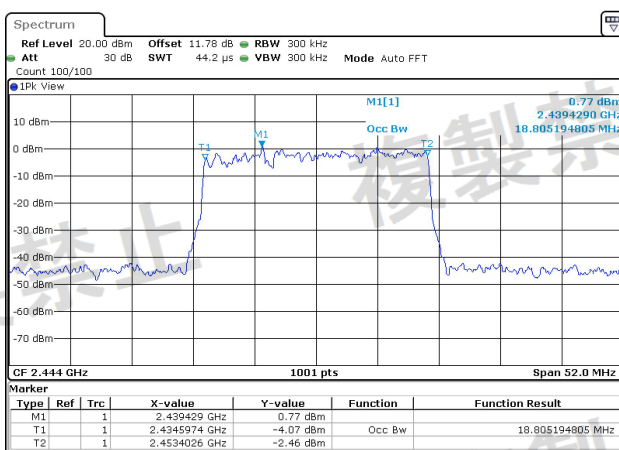
NTNV-2.4G SRD-20M-Ant1-2466-PASS



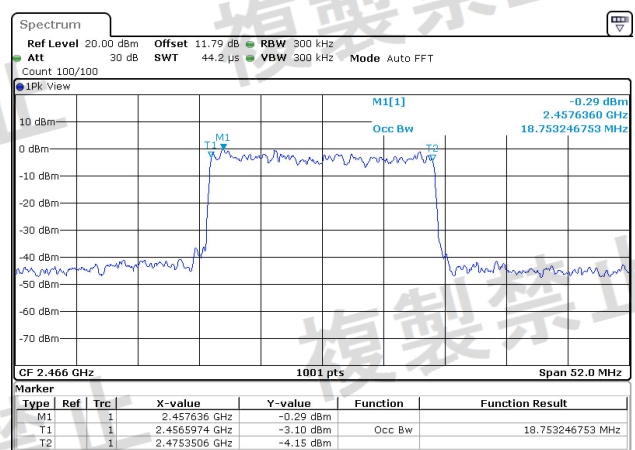
NTNV-2.4G SRD-20M-Ant1-2411-PASS



NTNV-2.4G SRD-20M-Ant1-2444-PASS



NTNV-2.4G SRD-20M-Ant1-2466-PASS



2.3. Antenna Power and Deviation Measurement

2.3.1. Limits

Item	Limits
Antenna Power	$\leq 10 \text{ mW/MHz}$ (OFDM, DS OBW less than 26 MHz) $\leq 5 \text{ mW/MHz}$ (OFDM for OBW between 26 MHz and 40 MHz)
Antenna Power deviation	+20%

2.3.2. Measuring Instruments

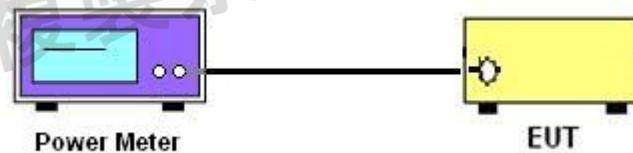
The measuring equipment is listed in the section 3 of this test report.

2.3.3. Test Procedure

- 1 Connect the EUT's RF output port to the power meter input port to measure the total power.
- 2 Calculated the Maximum deviation and recorded the results.

$$\text{Deviation} = (\text{Antenna Power} - \text{Rated Output Power}) / \text{Rated Output Power} * 100\%$$

2.3.4. Test Setup



2.3.5. Test Deviation

There is no deviation with the original standard.

2.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.3.7. Test Result of Antenna Power and Deviation

Antenna Power:

Test Mode	Antenna	Freq. [MHz]	Power [dBm]	Power [mW]	Limit [mW]	Verdict
2.4G SRD-10M	Ant1	2411	-0.59	0.8730	≤10	PASS
2.4G SRD-10M	Ant1	2444	-0.23	0.9484	≤10	PASS
2.4G SRD-10M	Ant1	2466	-1.56	0.6982	≤10	PASS
2.4G SRD-20M	Ant1	2411	-2.77	0.5284	≤10	PASS
2.4G SRD-20M	Ant1	2444	-1.87	0.6501	≤10	PASS
2.4G SRD-20M	Ant1	2466	-2.77	0.5284	≤10	PASS

Antenna Power Deviation:

Test Mode	Antenna	Freq. [MHz]	Power [mW]	Rated Power [mW]	Result [%]	Limit [%]	Verdict
2.4G SRD-10M	Ant1	2411	0.8730	1	-12.70	+20	PASS
2.4G SRD-10M	Ant1	2444	0.9484	1	-5.16	+20	PASS
2.4G SRD-10M	Ant1	2466	0.6982	1	-30.18	+20	PASS
2.4G SRD-20M	Ant1	2411	0.5284	1	-47.16	+20	PASS
2.4G SRD-20M	Ant1	2444	0.6501	1	-34.99	+20	PASS
2.4G SRD-20M	Ant1	2466	0.5284	1	-47.16	+20	PASS

Note: The rated power is declared by the manufacturer.

2.4. Unwanted Emission Intensity Measurement

2.4.1. Limits

Item	Limits
Unwanted Emission Intensity	$\leq 2.5 \mu\text{W}$ ($f < 2387 \text{ MHz}$; $f > 2496.5 \text{ MHz}$) $\leq 25 \mu\text{W}$ ($2387 \text{ MHz} \leq f < 2400 \text{ MHz}$) and ($2483.5 \text{ MHz} < f \leq 2496.5 \text{ MHz}$)

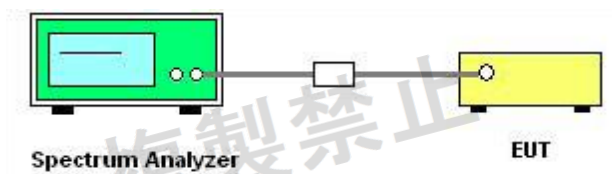
2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.4.3. Test Procedures

- 1 EUT have transmitted the maximum modulation signal and fixed channelize.
- 2 Setting of SA is following as: RBW:1 MHz / VBW:1 MHz / 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 .
- 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 .
- 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 .
- 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 .
- 7 SA adjusted to start frequency 2496.5 MHz and stop frequency 13000 MHz Then to mark peak reading value + cable loss shall be less than 2.5 μW .
- 8 If the Result Value is over the requirement, take total sum of 1 MHz band centered at the spur frequency like ACLP measurement as Result Value.

2.4.4. Test Setup Layout



2.4.5. Test Deviation

There is no deviation with the original standard.

2.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4.7. Test Result of Unwanted Emission Intensity

Step1:

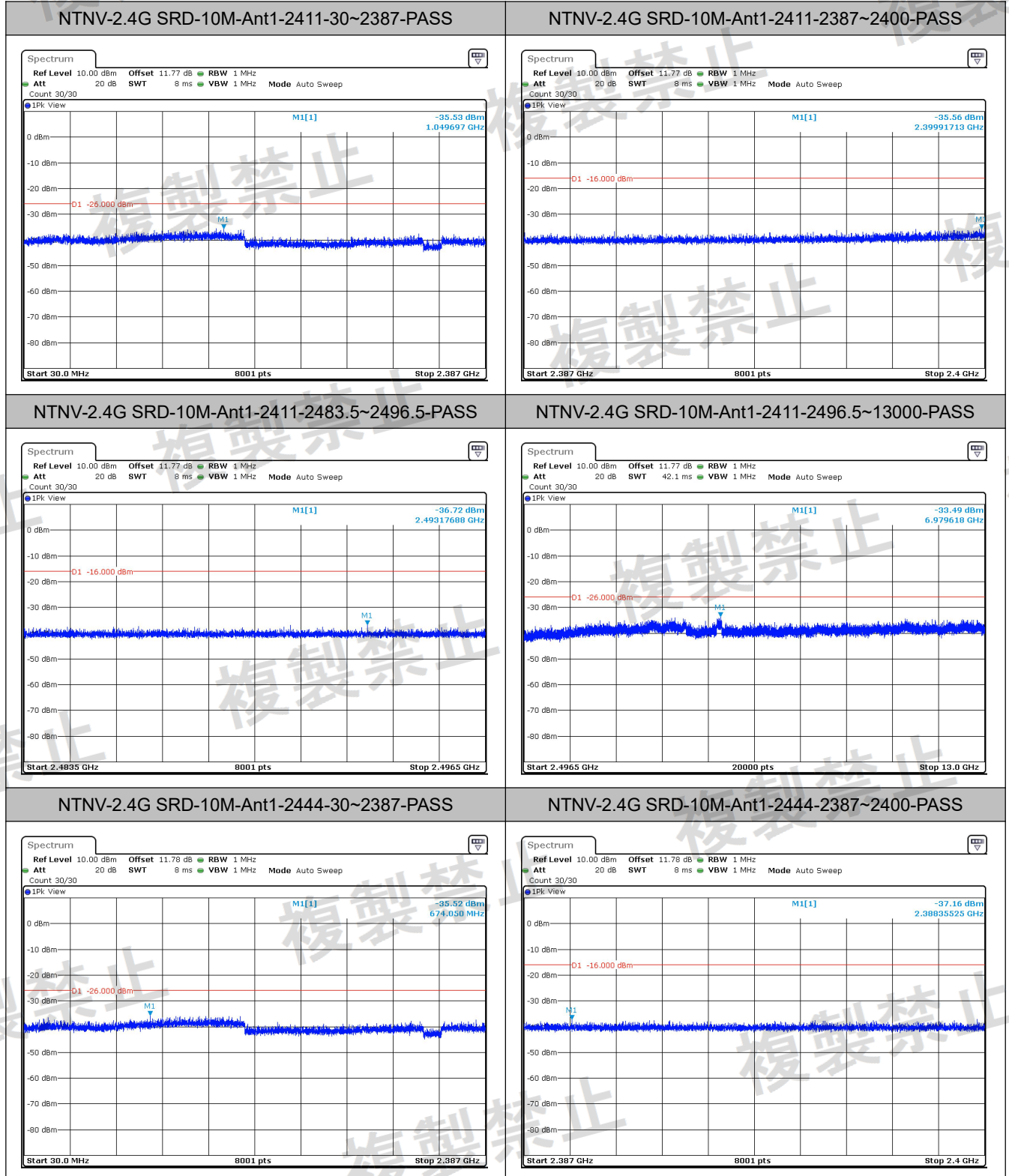
Test Mode	Antenna	Freq. [MHz]	Freq.Range [MHz]	Freq. [MHz]	Result [dBm/MHz]	Result [μW/MHz]	Limit [μW/MHz]	Verdict
2.4G SRD-10M	Ant1	2411	30~2387	1049.70	-35.53	0.27990	≤2.5	PASS
2.4G SRD-10M	Ant1	2411	2387~2400	2399.92	-35.56	0.27797	≤25	PASS
2.4G SRD-10M	Ant1	2411	2483.5~2496.5	2493.18	-36.72	0.21281	≤25	PASS
2.4G SRD-10M	Ant1	2411	2496.5~13000	6979.62	-33.49	0.44771	≤2.5	PASS
2.4G SRD-10M	Ant1	2444	30~2387	674.05	-35.52	0.28054	≤2.5	PASS
2.4G SRD-10M	Ant1	2444	2387~2400	2388.36	-37.16	0.19231	≤25	PASS
2.4G SRD-10M	Ant1	2444	2483.5~2496.5	2494.13	-36.87	0.20559	≤25	PASS
2.4G SRD-10M	Ant1	2444	2496.5~13000	6176.06	-33.98	0.39994	≤2.5	PASS
2.4G SRD-10M	Ant1	2466	30~2387	937.45	-35.67	0.27102	≤2.5	PASS
2.4G SRD-10M	Ant1	2466	2387~2400	2395.79	-37.24	0.18880	≤25	PASS
2.4G SRD-10M	Ant1	2466	2483.5~2496.5	2487.12	-37.24	0.18880	≤25	PASS
2.4G SRD-10M	Ant1	2466	2496.5~13000	6175.53	-33.58	0.43853	≤2.5	PASS
2.4G SRD-20M	Ant1	2411	30~2387	856.13	-35.32	0.29376	≤2.5	PASS
2.4G SRD-20M	Ant1	2411	2387~2400	2399.95	-20.78	8.35603	≤25	PASS
2.4G SRD-20M	Ant1	2411	2483.5~2496.5	2495.46	-36.92	0.20324	≤25	PASS
2.4G SRD-20M	Ant1	2411	2496.5~13000	11099.30	-33.97	0.40087	≤2.5	PASS
2.4G SRD-20M	Ant1	2444	30~2387	853.18	-35.45	0.28510	≤2.5	PASS
2.4G	Ant1	2444	2387~2400	2393.31	-36.79	0.20941	≤25	PASS



SRD-20M								
2.4G SRD-20M	Ant1	2444	2483.5~2496.5	2485.24	-37.24	0.18880	≤25	PASS
2.4G SRD-20M	Ant1	2444	2496.5~13000	5947.60	-33.66	0.43053	≤2.5	PASS
2.4G SRD-20M	Ant1	2466	30~2387	1086.82	-35.95	0.25410	≤2.5	PASS
2.4G SRD-20M	Ant1	2466	2387~2400	2397.88	-36.83	0.20749	≤25	PASS
2.4G SRD-20M	Ant1	2466	2483.5~2496.5	2488.58	-35.95	0.25410	≤25	PASS
2.4G SRD-20M	Ant1	2466	2496.5~13000	5533.21	-32.98	0.50350	≤2.5	PASS

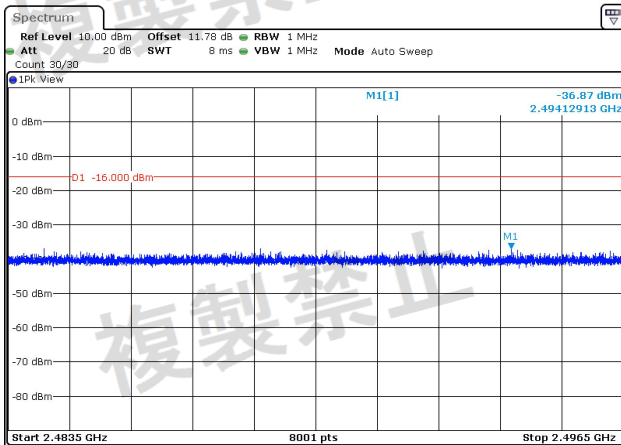
Test Graphs

Step1:

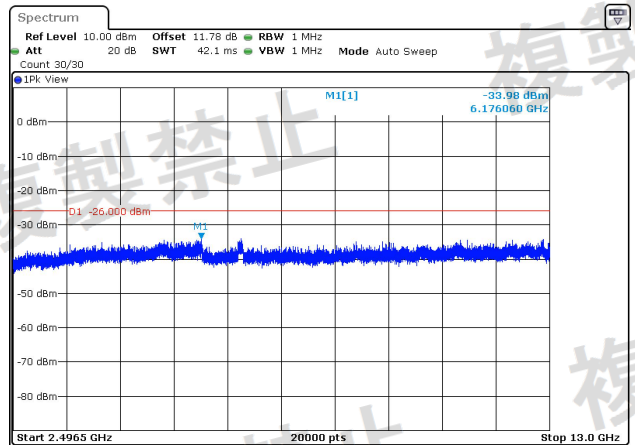




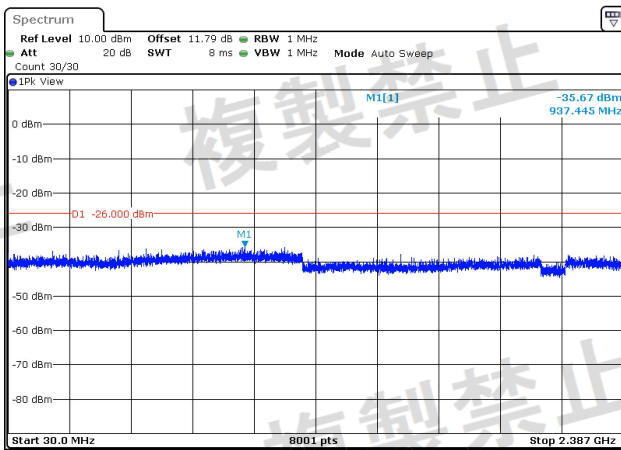
NTNV-2.4G SRD-10M-Ant1-2444-2483.5~2496.5-PASS



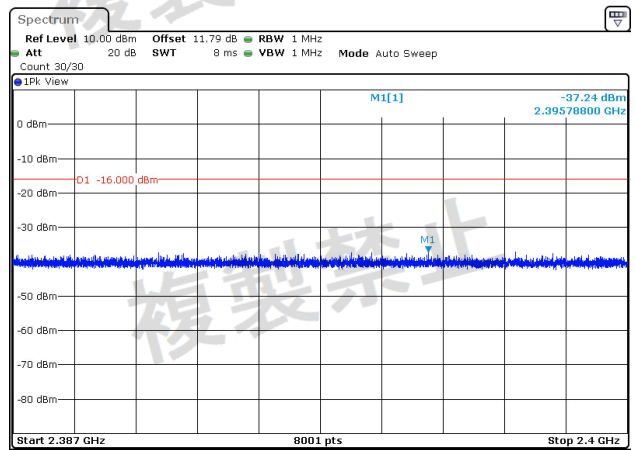
NTNV-2.4G SRD-10M-Ant1-2444-2496.5~13000-PASS



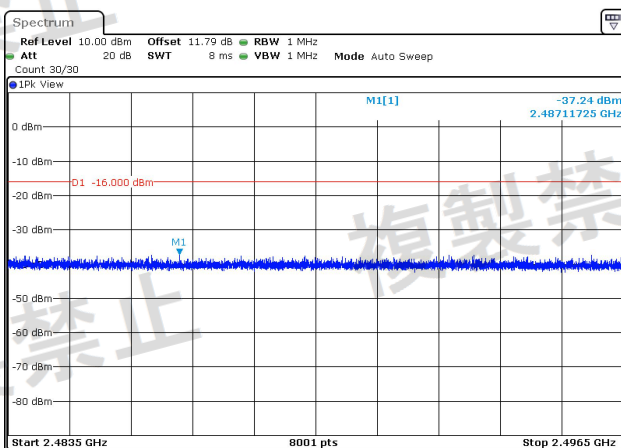
NTNV-2.4G SRD-10M-Ant1-2466-30~2387-PASS



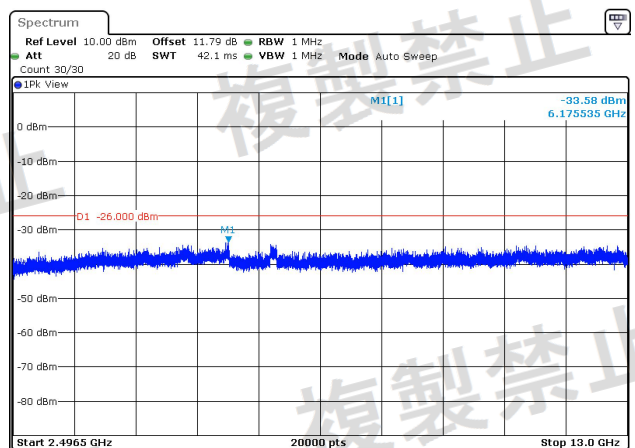
NTNV-2.4G SRD-10M-Ant1-2466-2387~2400-PASS



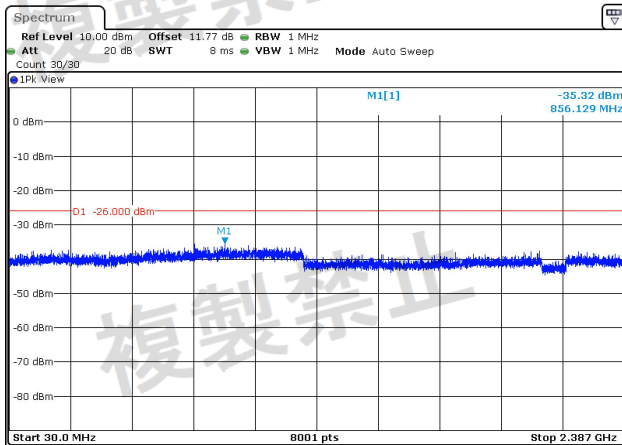
NTNV-2.4G SRD-10M-Ant1-2466-2483.5~2496.5-PASS



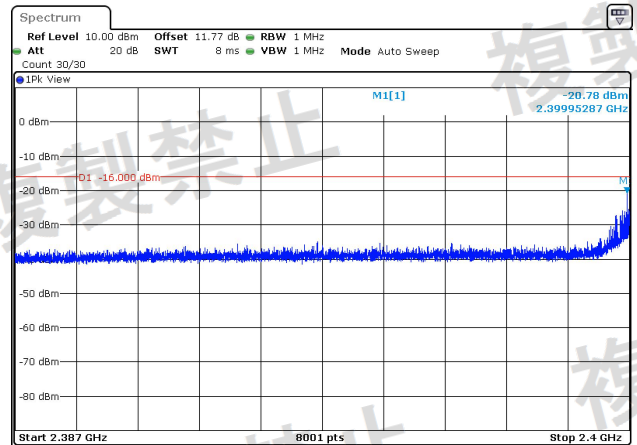
NTNV-2.4G SRD-10M-Ant1-2466-2496.5~13000-PASS



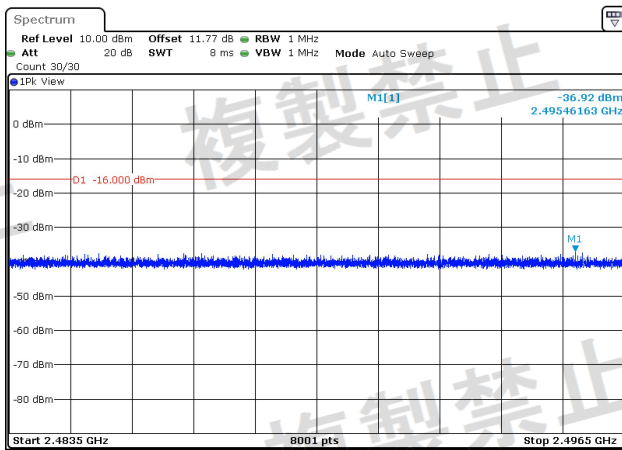
NTNV-2.4G SRD-20M-Ant1-2411-30~2387-PASS



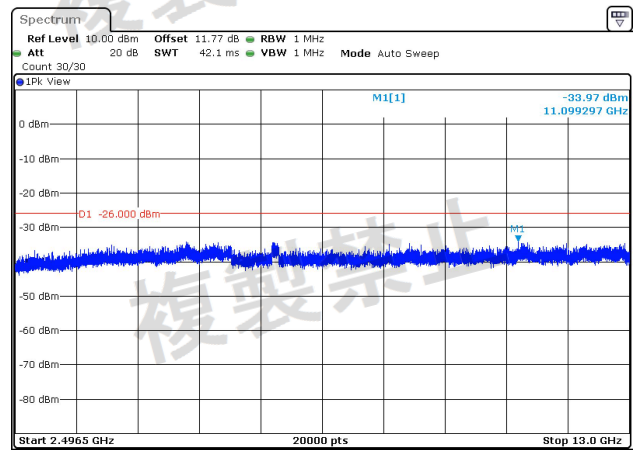
NTNV-2.4G SRD-20M-Ant1-2411-2387~2400-PASS



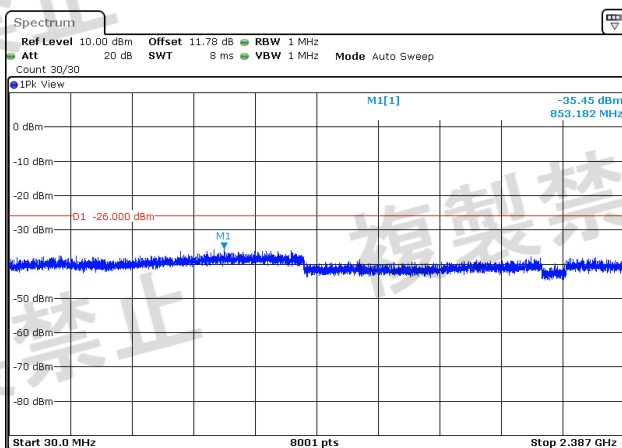
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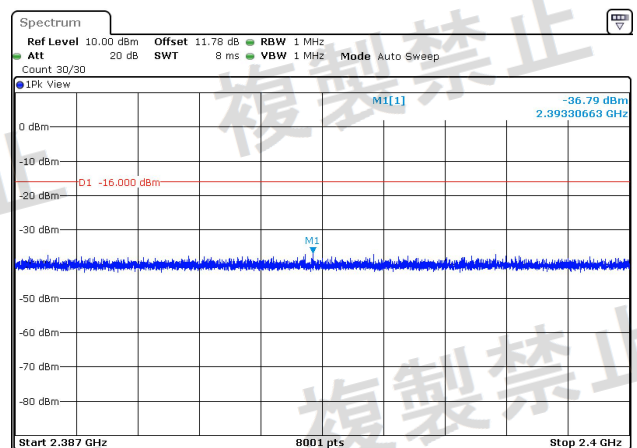
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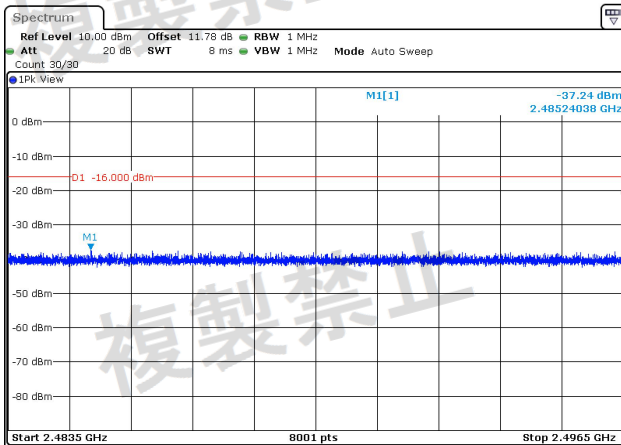
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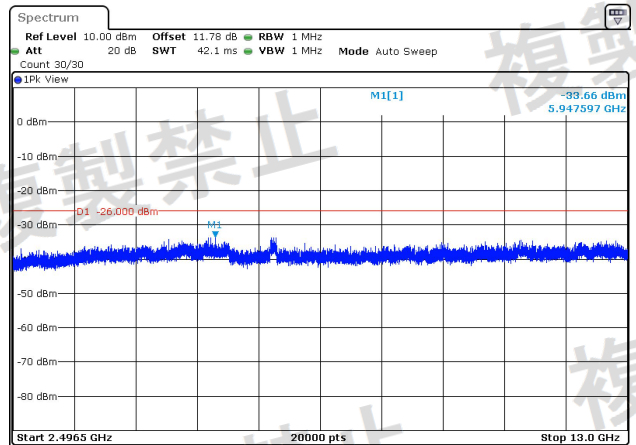
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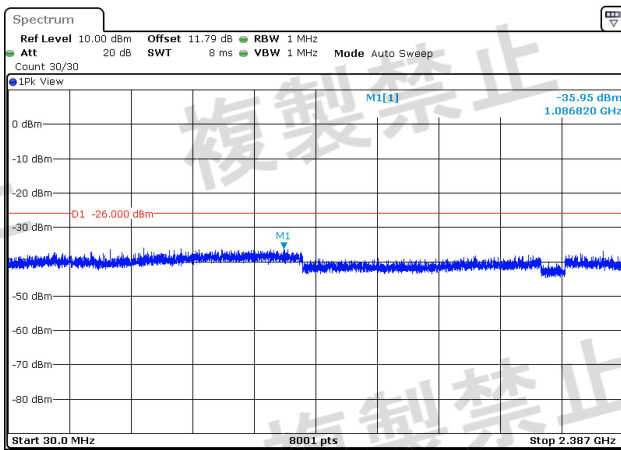
NTNV-2.4G SRD-20M-Ant1-2444-2483.5~2496.5-PASS



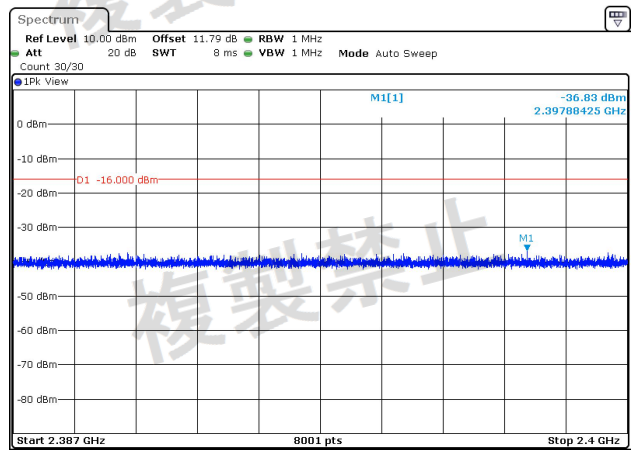
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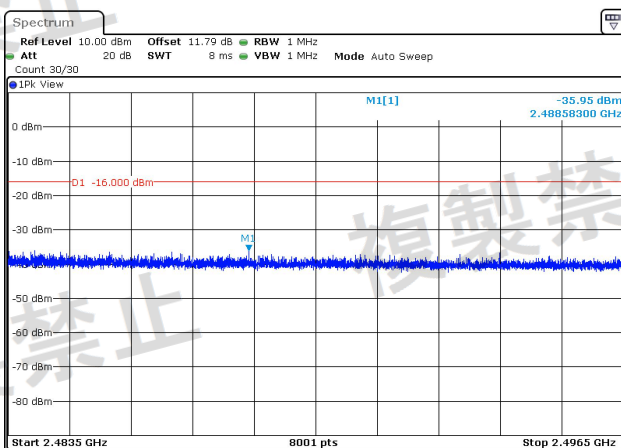
NTNV-2.4G SRD-20M-Ant1-2466-30~2387-PASS



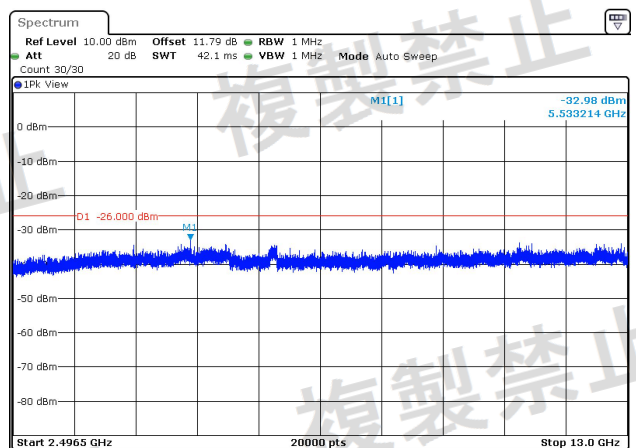
NTNV-2.4G SRD-20M-Ant1-2466-2387~2400-PASS



NTNV-2.4G SRD-20M-Ant1-2466-2483.5~2496.5-PASS



NTNV-2.4G SRD-20M-Ant1-2466-2496.5~13000-PASS



2.5. Secondary Emissions of Receiver Measurement

2.5.1. Limits

Item	Limits
RX Spurious Emission	$\leq 4 \text{ nW}$ ($f < 1 \text{ GHz}$); $\leq 20 \text{ nW}$ ($1 \text{ GHz} \leq f < 10 \text{ GHz}$); $\leq 20 \text{ nW}$ ($f > 10 \text{ GHz}$)

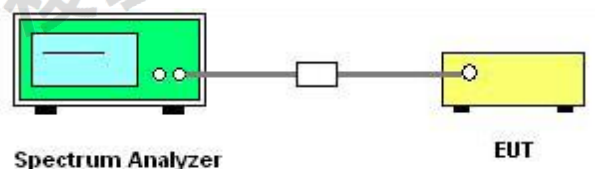
2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.5.3. Test Procedures

- 1 EUT has the continuous reception mode and fixed only one channelize.
- 2 Setting of SA is following as RBW / VBW: 100 kHz (below 1 GHz emissions) / 1 MHz (above 1 GHz emissions) / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
- 3 SA set RBW: 100 kHz and VBW: 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 RBW: 1 MHz and VBW: 1 MHz. Then adjust to start frequency 1000 MHz and stop frequency 10000 MHz. Search to mark peak reading value + cable loss shall be less than 20 nW.
- 5 SA set RBW: 1 MHz and VBW: 1 MHz. Then adjust to start frequency 10000 MHz and stop frequency 13000 MHz. Search to mark peak reading value + cable loss shall be less than 20 nW.
- 6 If power level of lower emissions are more than 1/10 of limit (0.4 nW for $f < 1 \text{ GHz}$, 2 nW for $f \geq 1 \text{ GHz}$), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

2.5.4. Test Setup Layout



2.5.5. Test Deviation

There is no deviation with the original standard.

2.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.5.7. Test Result of Secondary Rmissions of Receiver

Step1:

Test Mode	Antenna	Freq. [MHz]	Freq.Range [MHz]	Freq. [MHz]	Result [dBm/MHz]	Result [μW/MHz]	Limit [μW/MHz]	Verdict
2.4G SRD-10M	Ant1	2411	30~1000	909.98	-64.35	0.36728	≤4	PASS
2.4G SRD-10M	Ant1	2411	1000~13000	6936.1	-53.54	4.42588	≤20	See table below
2.4G SRD-10M	Ant1	2444	30~1000	879.80	-64.95	0.31989	≤4	PASS
2.4G SRD-10M	Ant1	2444	1000~13000	2440.07	-50.03	9.93116	≤20	See table below
2.4G SRD-10M	Ant1	2466	30~1000	844.27	-64.81	0.33037	≤4	PASS
2.4G SRD-10M	Ant1	2466	1000~13000	6900.7	-53.19	4.79733	≤20	See table below
2.4G SRD-20M	Ant1	2411	30~1000	966.11	-64.68	0.34041	≤4	PASS
2.4G SRD-20M	Ant1	2411	1000~13000	6909.1	-54.30	3.71535	≤20	See table below
2.4G SRD-20M	Ant1	2444	30~1000	755.89	-64.65	0.34277	≤4	PASS
2.4G SRD-20M	Ant1	2444	1000~13000	2410.07	-50.54	8.83080	≤20	See table below
2.4G SRD-20M	Ant1	2466	30~1000	851.43	-64.91	0.32285	≤4	PASS
2.4G SRD-20M	Ant1	2466	1000~13000	6988.3	-53.30	4.67735	≤20	See table below

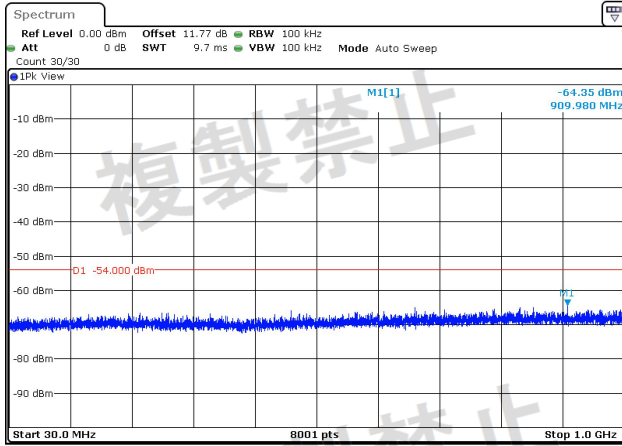
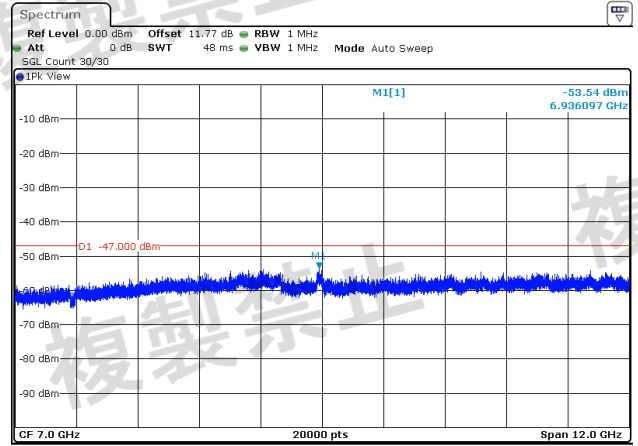
**Step2:**

Test Mode	Antenna	Freq. [MHz]	Freq. [MHz]	Result [dBm/MHz]	Result [μW/MHz]	Limit [μW/MHz]	Verdict
2.4G SRD-10M	Ant1	2411	6983.09	-63.63	0.43351	≤20	PASS
2.4G SRD-10M	Ant1	2444	2416.22	-58.30	1.47911	≤20	PASS
2.4G SRD-10M	Ant1	2466	6922.20	-63.52	0.44463	≤20	PASS
2.4G SRD-20M	Ant1	2411	6910.35	-63.71	0.42560	≤20	PASS
2.4G SRD-20M	Ant1	2444	2410.51	-58.57	1.38995	≤20	PASS
2.4G SRD-20M	Ant1	2466	6981.50	-63.83	0.41400	≤20	PASS

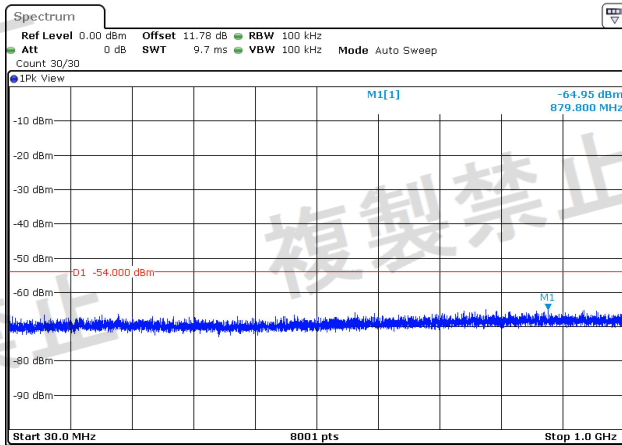
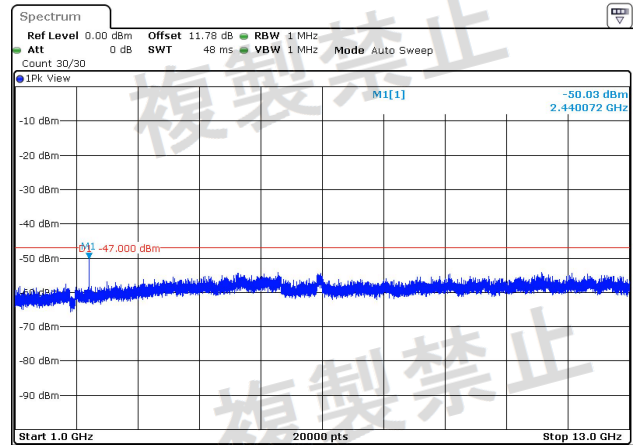
Test Graphs

Step1:

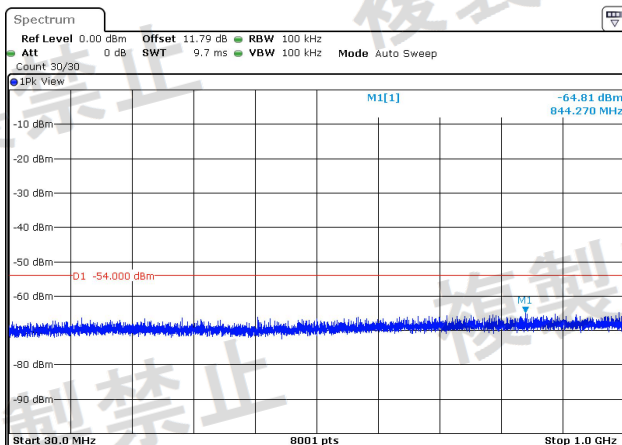
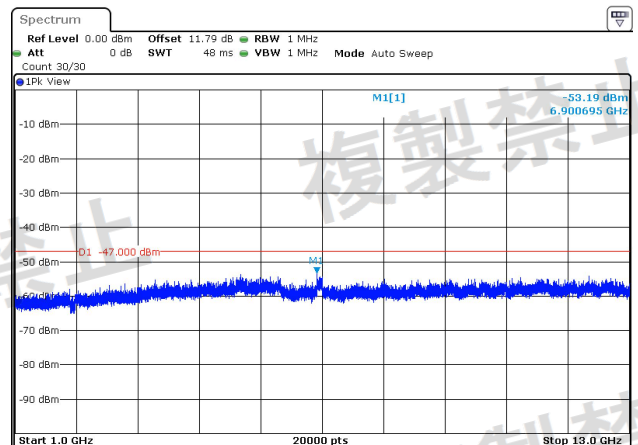
NTNV-2.4G SRD-10M-Ant1-2411-30~1000-PASS


NTNV-2.4G SRD-10M-Ant1-2411-1000~13000-See table
below


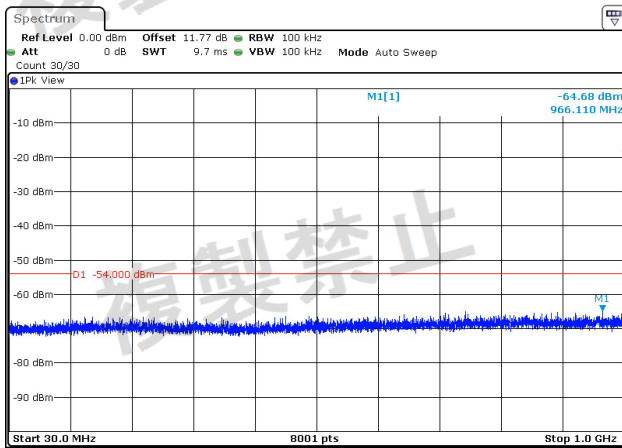
NTNV-2.4G SRD-10M-Ant1-2444-30~1000-PASS


NTNV-2.4G SRD-10M-Ant1-2444-1000~13000-See table
below


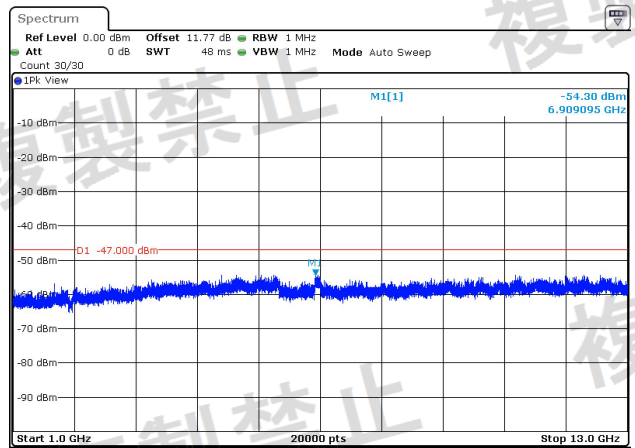
NTNV-2.4G SRD-10M-Ant1-2466-30~1000-PASS


NTNV-2.4G SRD-10M-Ant1-2466-1000~13000-See table
below


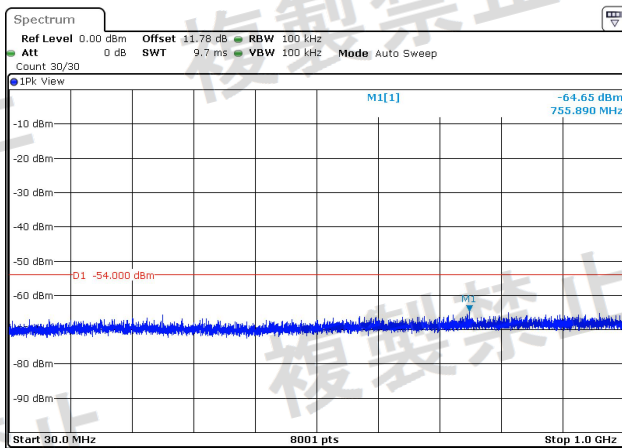
NTNV-2.4G SRD-20M-Ant1-2411-30~1000-PASS



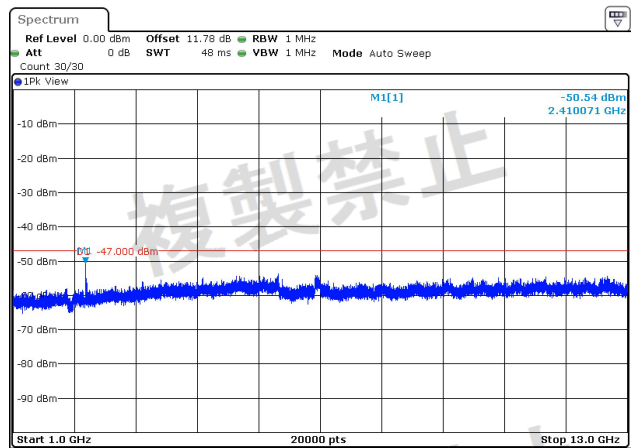
NTNV-2.4G SRD-20M-Ant1-2411-1000~13000-See table below



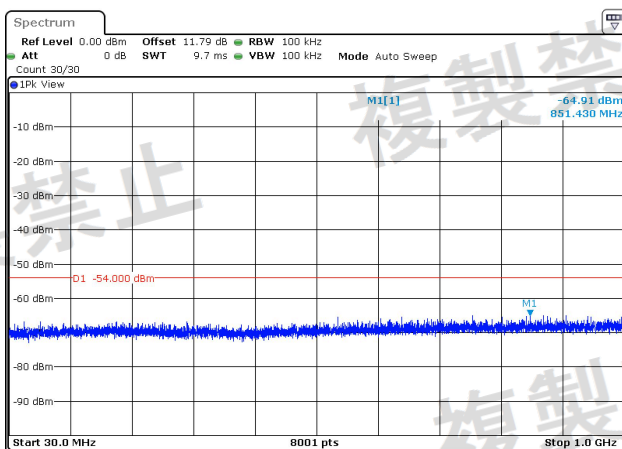
NTNV-2.4G SRD-20M-Ant1-2444-30~1000-PASS



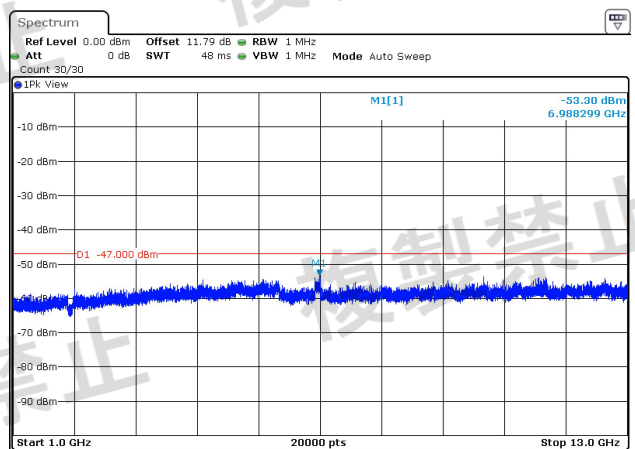
NTNV-2.4G SRD-20M-Ant1-2444-1000~13000-See table below



NTNV-2.4G SRD-20M-Ant1-2466-30~1000-PASS

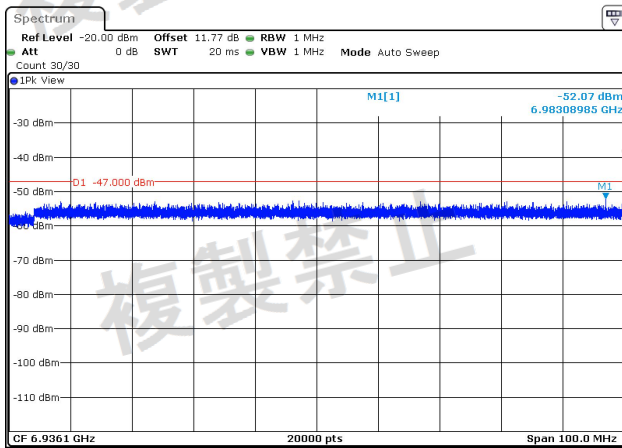


NTNV-2.4G SRD-20M-Ant1-2466-1000~13000-See table below

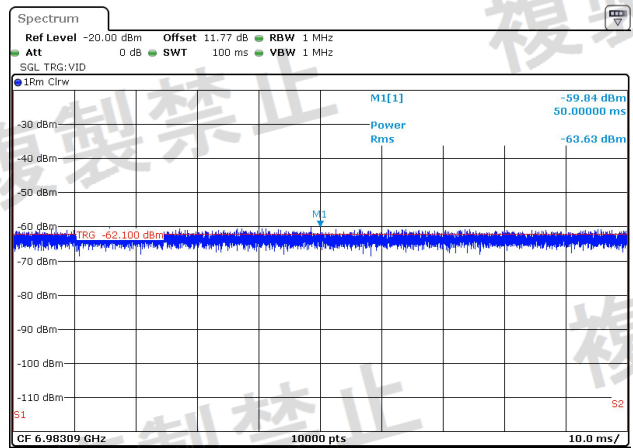


Step2:

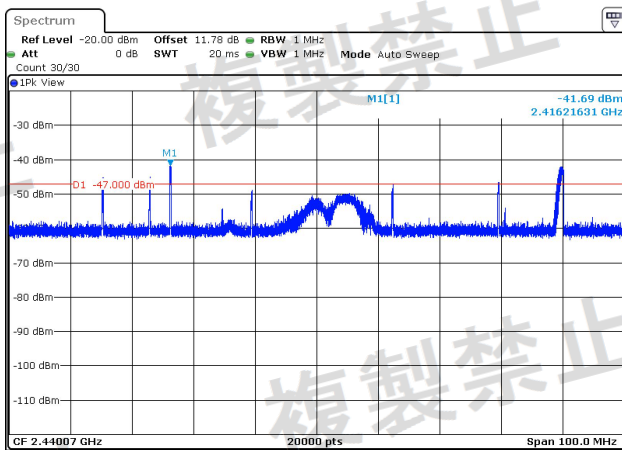
NTNV-2.4G SRD-10M-Ant1-2411-1000~13000-PASS



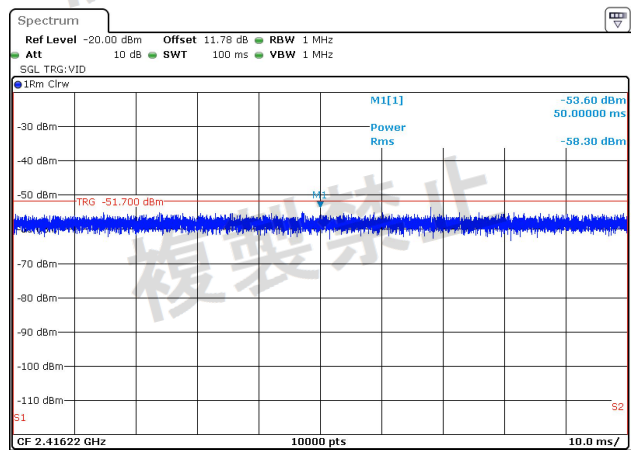
NTNV-2.4G SRD-10M-Ant1-2411-1000~13000-PASS



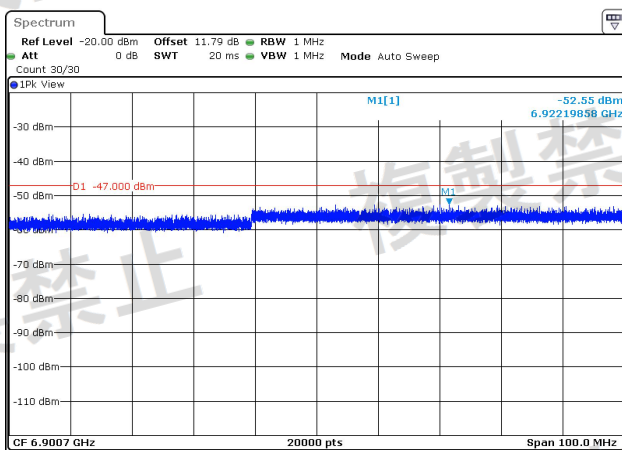
NTNV-2.4G SRD-10M-Ant1-2444-1000~13000-PASS



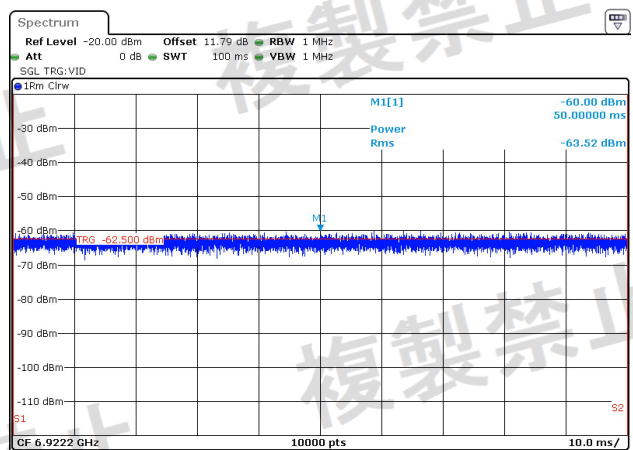
NTNV-2.4G SRD-10M-Ant1-2444-1000~13000-PASS



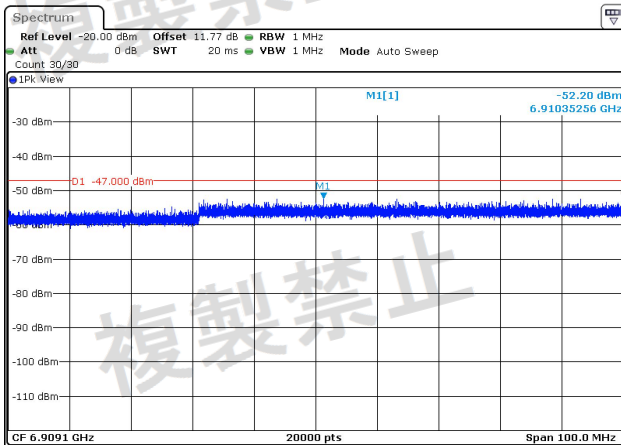
NTNV-2.4G SRD-10M-Ant1-2466-1000~13000-PASS



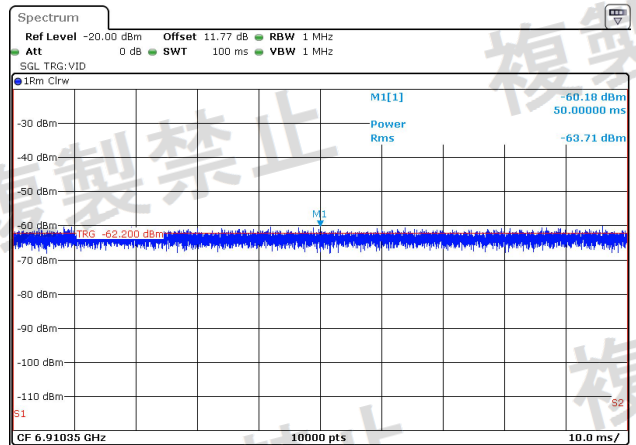
NTNV-2.4G SRD-10M-Ant1-2466-1000~13000-PASS



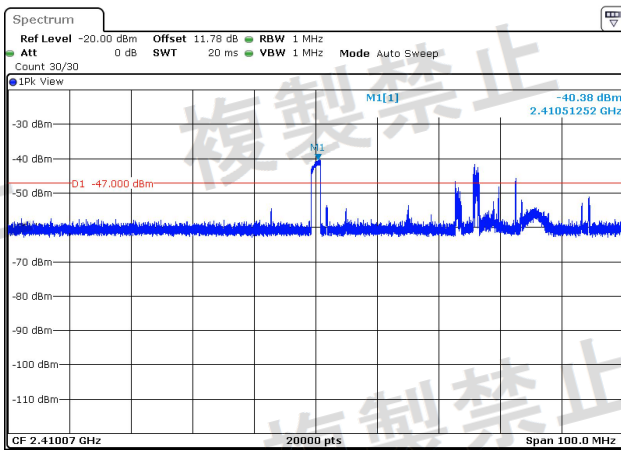
NTNV-2.4G SRD-20M-Ant1-2411-1000~13000-PASS



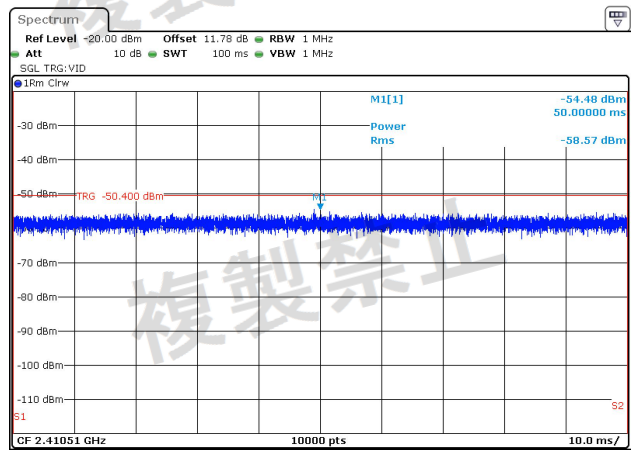
NTNV-2.4G SRD-20M-Ant1-2411-1000~13000-PASS



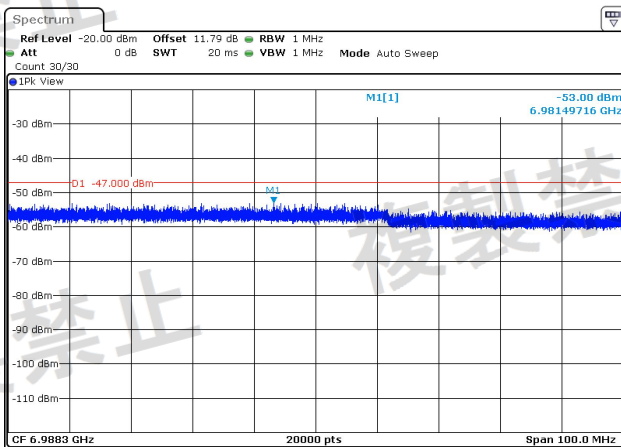
NTNV-2.4G SRD-20M-Ant1-2444-1000~13000-PASS



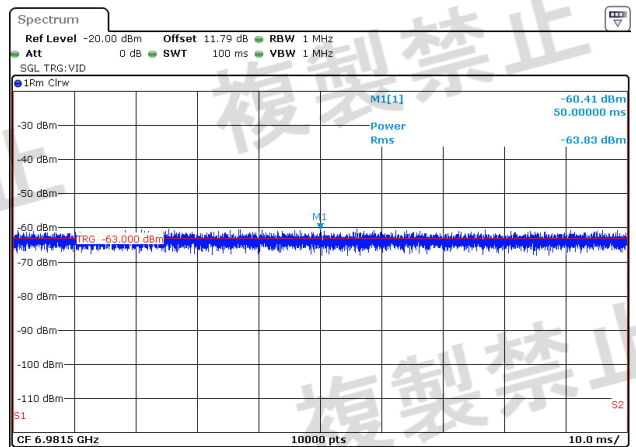
NTNV-2.4G SRD-20M-Ant1-2444-1000~13000-PASS



NTNV-2.4G SRD-20M-Ant1-2466-1000~13000-PASS



NTNV-2.4G SRD-20M-Ant1-2466-1000~13000-PASS



2.6. Transmitting antenna absolute gain Measurement

2.6.1. Limits

Item	Limits
Transmitting antenna absolute gain	Max. EIRP ≤ 12.14 dBm/MHz (Other from 2400 MHz~2483.5 MHz)

2.6.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

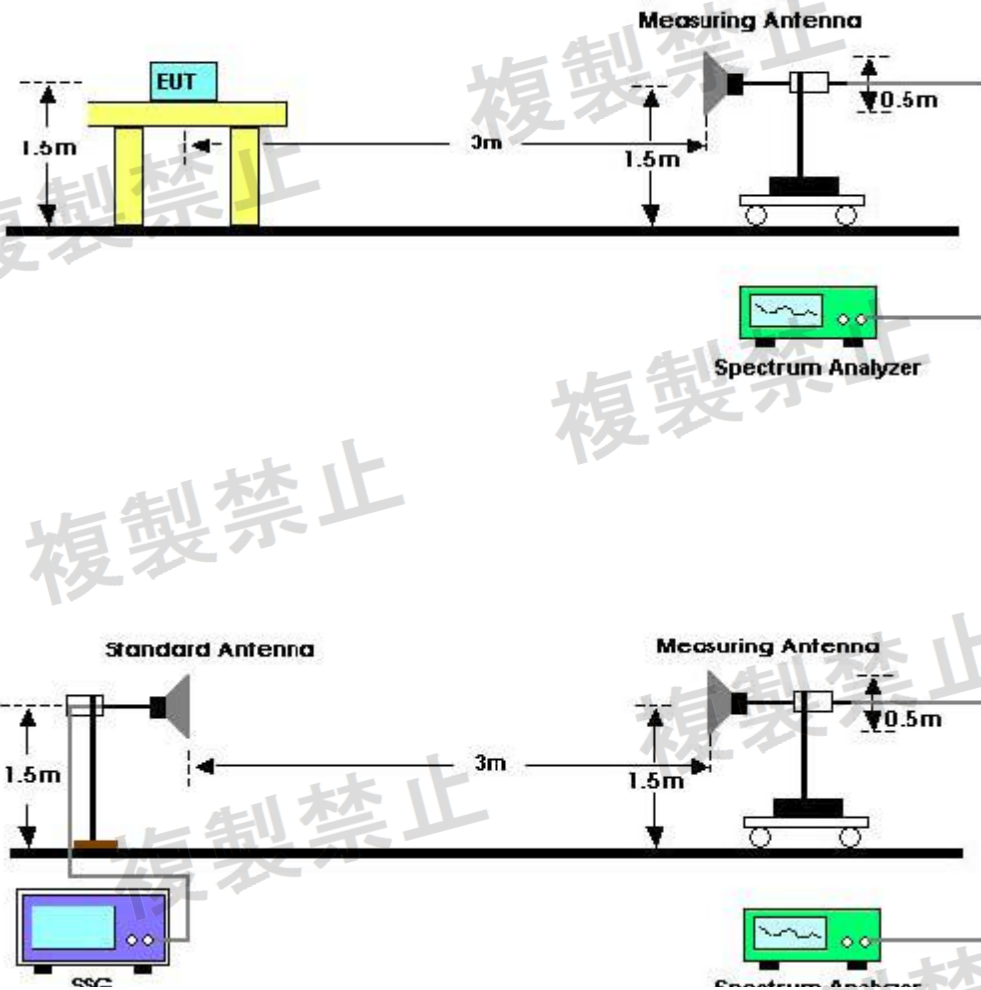
2.6.3. Test Procedures

The following are the settings for the spectrum analyzer:

Spectrum Parameter	Setting
RBW/VBW	1 MHz / 1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
Frequency range	2400 MHz~2483.5 MHz

- 1 Set EUT ad measuring antenna at the same height and roughly facing each other.
- 2 Move the measuring antenna height up and down within ± 50 cm of EUT height and swing it to find the maximum output of the measuring antenna. The output level at the spectrum analyzer is read sa “E”.
- 3 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.
- 4 Swing the replacing antenna give a maximum receiving level.
- 5 Move the measuring antenna height up and down within ± 50 cm of replacing antenna height and swing it to find the maximum receiving level.
- 6 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 (± 1 dB). Record the Pt.
- 7 Calculate EIRP by the formula below $EIRP = G_t - L + P_t$.
Gt: gain of replacing antenna (dBi)
L: feeder loss between SSG and replacing antenna
Pt: Output power of the SSG
- 8 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.

2.6.4. Test Setup Layout



2.6.5. Test Deviation

There is no deviation with the original standard.

2.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

**2.6.7. Test Results of Transmitting antenna absolute gain**

Test Mode	Antenna	Freq. [MHz]	Power[dBm]	EIRP[dBm]	Limit[dBm]	Verdict
2.4G SRD-10M	Ant1	2411	-0.59	5.13	≤ 12.14	PASS
2.4G SRD-10M	Ant1	2444	-0.23	5.49	≤ 12.14	PASS
2.4G SRD-10M	Ant1	2466	-1.56	4.16	≤ 12.14	PASS
2.4G SRD-20M	Ant1	2411	-2.77	2.95	≤ 12.14	PASS
2.4G SRD-20M	Ant1	2444	-1.87	3.85	≤ 12.14	PASS
2.4G SRD-20M	Ant1	2466	-2.77	2.95	≤ 12.14	PASS

Note: The maximum EIRP less than 12.14 dBm, so the test not requirement.

2.7. Main lobe width of transmitting antenna Measurement

2.7.1. Limits

Item	Limits
Main lobe width of transmitting antenna	Main lobe width of transmitting antenna: $\leq 360^\circ / A$ $A = \text{E.I.R.P.} / (2.14 \text{ dBi} + \text{"Antenna Power (Limit)" of each modulation method (*3 mW/MHz, 10 mW/MHz, etc.)})$ $1 \leq A \leq 10$ (Shall be 1 when A is lower than 1.)
Note: It is unnecessary to testing, when a E.I.R.P. is less than the variable E.I.R.P. limit of minimum (DSSS: 12.14 dBm/MHz or less, FHSS (2427 - 2470.75 MHz): 6.91 dBm/MHz or less, etc.)".	

2.7.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.7.3. Test Procedure

The following are the settings for the spectrum analyzer:

Spectrum Parameter	Setting
RBW	1 MHz
VBW	1 kHz
Span	0 Hz
Detector	Peak
Trace	Max Hold

- 1 Set EUT and measuring antenna at the same height and roughly facing each other.
- 2 Set the parameters of the spectrum analyzer according to the table, 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 ± 50 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 Using the equivalent isotropic radiation power (P_E) which was already measured, calculate the allowable main lobe width (Θ_0) concerning horizontal and vertical planes.

Allowable main lobe width (Θ_0) = $360/A$ here.

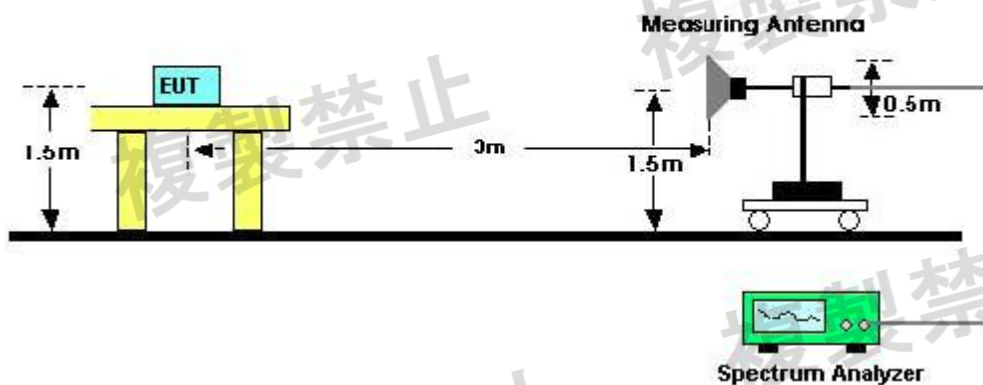
Θ_0 : Allowable main lobe width of the transmitting antenna of the radio equipment (half-width) ($^\circ$).

P_E : Equivalent isotropic radiation power of the radio equipment (dBm).

A : This is calculated as the equivalent isotropic radiation power divided by absolute gain 2.14 dBi of transmitting antenna being fed by average antenna power 10 mW (10 mW/MHz for the orthogonal frequency division multiplexing system, the direct diffusion system, the frequency hopping system, the compound system of direct diffusion and frequency hopping, and the compound system of orthogonal frequency division multiplexing and frequency hopping.

- 6 Rotating the radio equipment horizontally a round as possible, confirm that the receiving power at the side lobes except main lobe width (Θ_0) is lower than 3 dB or more of the maximum receiving power “E”.
- 7 Once put the radio equipment back to the state (3). Inclining the radio equipment vertically as far as possible (more than 90 degree; it may be possible to measure referring “6. Other conditions”), confirm that the receiving power at the side lobes except main lobe width (Θ_0) is lower than 3 dB or more of the maximum receiving power “E”.

2.7.4. Test Setup Layout



2.7.5. Test Deviation

There is no deviation with the original standard.

2.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.7.7. Test Results of Main lobe width of transmitting antenna

The EIRP of EUT is less than 12.14 dBm/MHz, so this test item is not applicable.

2.8. Radio Interference Prevention Capability Measurement

2.8.1. Limits

1. The demodulator shall be able to demodulate the transmitting signal from the radio equipment and to 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.

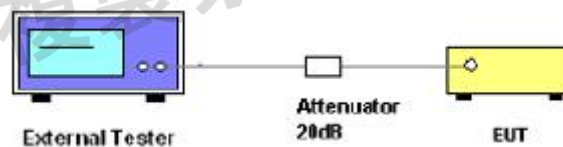
2.8.2. Measuring Instruments

N/A.

2.8.3. 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.

2.8.4. Test Setup Layout



2.8.5. Test Deviation

There is no deviation with the original standard.

2.8.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



2.8.7. Test Results of Radio Interference Prevention Capability

Please refer to below plot: $\geq 48\text{bits}$

Test Result : Good

2.9. Carrier Sense Capability Measurement

2.9.1. Limits

Item	Limits
Carrier Sense	Good – EUT stop RF transmission signal after carrier inject to EUT. Interference Signal ≥ 100 mV/m

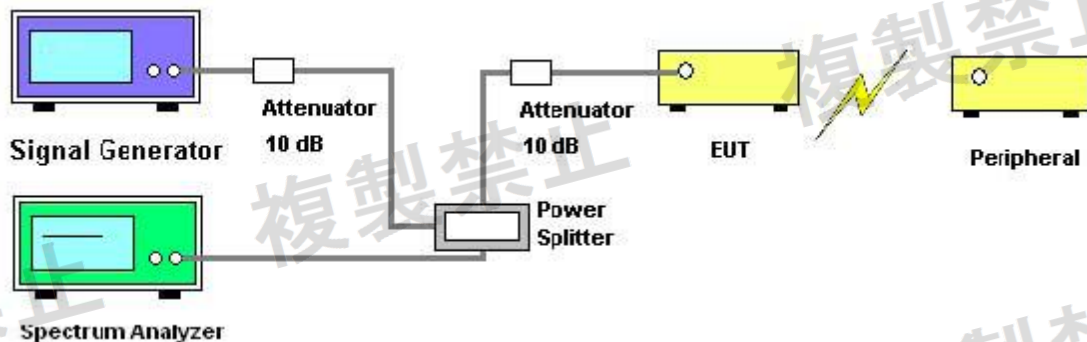
2.9.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.9.3. Test Procedure

- 1 Set the EUT link with a peripheral, access point 802.11n-HT40 and fixed on one channel.
- 2 Setting of SA is following as: RBW: 1 MHz / VBW: 1 MHz / Span: 0 Hz / Sweep time: 100s / Sweep mode: Single sweep / Detect mode: Positive peak.
- 3 Set a signal generator (simulate a radio device which co-exists with EUT) at same frequency channel with a proper signal level (100 mV/m above) output to act as interference signal.
- 5 Monitor the signal transmission between the EUT and peripheral, while the interference signal presents. The EUT would stop transmitting once it detects interference signal over, then record it pass, otherwise, the result is fail.

2.9.4. Test Setup Layout



2.9.5. Test Deviation

There is no deviation with the original standard.

2.9.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



2.9.7. Test Results of Carrier Sense Capability

Not applicable.



2.10. Construction Protection Confirmation Method

2.10.1. Limits

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

2.10.2. Confirmation Method

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

Protected Method	Description
Special RF Module case	RF and Modulation components are covered with shielding case and this shielding case is soldered.

3. Test Equipments list

Description	Manufacturer	Model	Serial No.	Cal. Date	Due Date	Cal. Infor.	
						Method	Body
Spectrum Analyzer	R&S	FSV-40	A140801886	2025.07.16	2026.07.15	C	GRG
EMI Test Receiver	R&S	ESW26	A180502935	2025.04.24	2026.04.23	C	GRG
Double Ridge Horn Antenna	ETC	MCTD-1209	A150402241	2025.05.10	2026.05.09	C	GRG
Anechoic Chamber	Albatross	SAC-5MAC(EM C12.8*6.8*6.4m)	A0304210	2025.04.21	2026.04.20	C	GRG

Note:

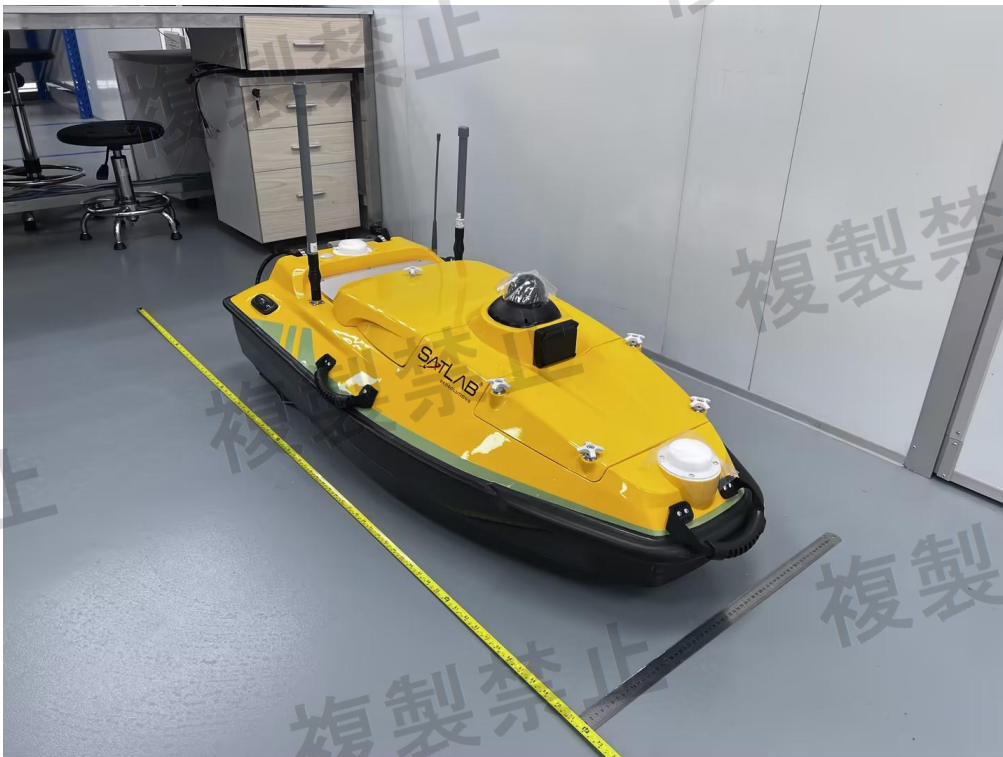
Calibration Method:

- Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1)
- Correction conducted ours ant to the provisions of Article 135 or Article 144 of the Measurement Act(Act No. 51 of 1992)
- Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph
- (d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to (c).

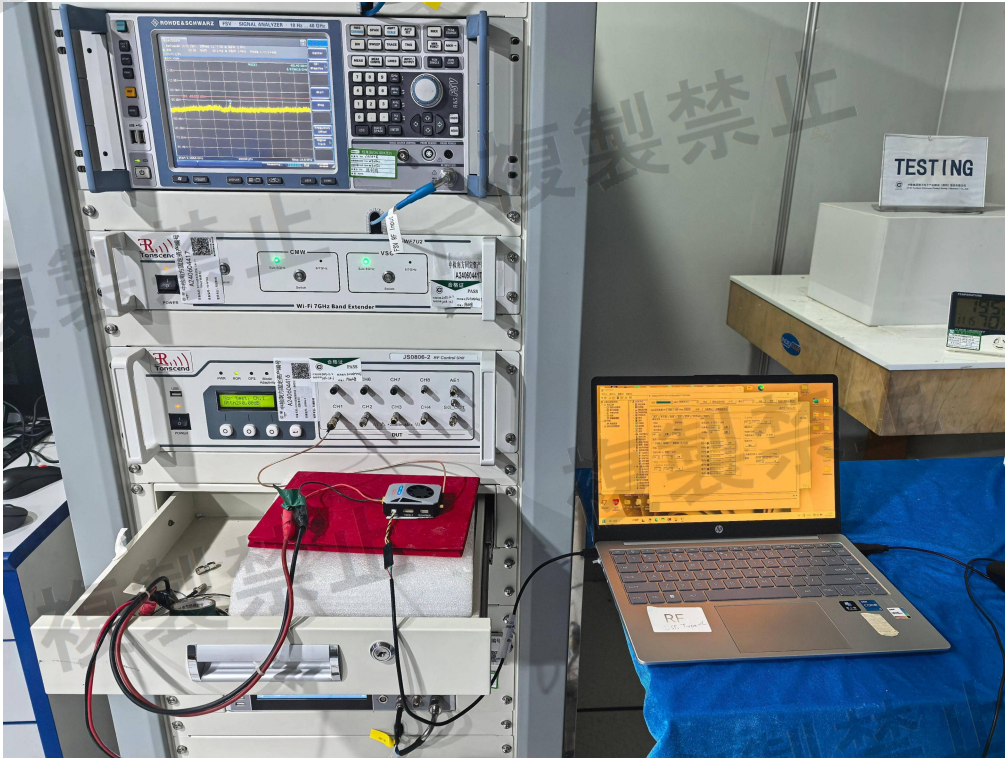
The calibration corresponds to c described above.

GRG is the short name of Guang Zhou GRG Metrology & Test Co.,Ltd

Annex A Photos of the EUT



Annex B Photos of Test Setup



****END OF REPORT****