



TEST REPORT

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Date of issue.....	2024-12-26
Testing Laboratory Name	Shenzhen Tongzhou Testing Co., Ltd.
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Applicant's name	Xiamen Huoshiquan Import & Export CO., Ltd.
Address.....	Unit 1, Room 501, Hongxiang Building, No.258 Hubin Nan Road, Siming District, Xiamen, China
Manufacturer's name	Xiamen Huoshiquan Import & Export CO., Ltd.
Address.....	Unit 1, Room 501, Hongxiang Building, No.258 Hubin Nan Road, Siming District, Xiamen, China
Test specification.....	
Standard	MIC Notice No.88 Appendix No.43 Article 2, paragraph 1, item 19-2-2
TRF Originator	SZTZ
Master TRF.....	Dated 2024-08
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Test item description	RC helicopter
Trade Mark	N/A
Model/Type reference.....	DE28, DE23, DE52, SQN-022, Z62, Z56, FX651, D50, HT40
Ratings.....	DC 4.5V by battery
Result.....	PASS



Report No.: TZ0035241206TRF17

**** Report Revise Record ****

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2024-12-26	Valid	Initial release



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1. Test Standards and description

1.1. Test Standards

The tests were performed according to following standards:

Regulation: Item I of Article 49-20 and the relevant Articles of the ordinance of Regulatory Radio Equipment.

Test Method: (1)the test method suppressed on is equal to Appendix No.43 of MIC Notification No 88

1.2. Test description

Test Item	Test Method	Result
Antenna Power	Appendix No.43 of MIC Notification No 88 section 6	Pass
Frequency Error	Appendix No.43 of MIC Notification No 88 section 3	Pass
Interference prevention function	Appendix No.43 of MIC Notification No 88 section 12	Pass
99% Occupied bandwidth	Appendix No.43 of MIC Notification No 88 section 4	Pass
Spurious Emissions Intensity	Appendix No.43 of MIC Notification No 88 section 5	Pass
Limit of secondary radiated emissions	Appendix No.43 of MIC Notification No 88 section 7	Pass
Dwell Time	Appendix No.43 of MIC Notification No 88 section 13	Pass
Transmission Antenna Gain (EIRP antenna power)	Appendix No.43 of MIC Notification No 88 section 10	N/A
Transmission Radiation Angle Width (3db Beamwidth)	Appendix No.43 of MIC Notification No 88 section 11	N/A

N/A: means not applicable



2. Summary

2.1. General Remarks

Date of receipt of test sample : 2024-12-13

Testing commenced on : 2024-12-13

Testing concluded on : 2024-12-25

2.2. Product Description

Name of EUT	: RC helicopter
Trade Mark	: N/A
Model/Type reference	: DE28, DE23, DE52, SQN-022, Z62, Z56, FX651, D50, HT40
Test Model	: DE28
Hardware Version	: REV.02
Software Version	: REV.05
Power supply	: DC 4.5V by battery

2.3. Wireless Function Tested in this report

Modulation	: GFSK
Operation frequency	: 2440MHz~2479MHz
Channel number	: 15
Antenna type	: Internal antenna
Antenna gain	: 0dBi

Operation Frequency List:

Channel No.	Frequency (GHz)	Channel No.	Frequency (GHz)	Channel No.	Frequency (GHz)
00	2.440	05	2.454	10	2.468
01	2.443	06	2.455	11	2.471
02	2.445	07	2.457	12	2.475
03	2.447	08	2.461	13	2.477
04	2.451	09	2.465	14	2.479

2.4. 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.

2.5. Test Voltage

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
Input To EUT	DC 4.50V	DC 4.95V	DC 4.05V



2.6. EUT configuration

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

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

(2) Protective Structure

- ☒ The exterior cover was sealed by Special screws, it can not be easily open.
- ☐ The enclosure was sealed with strong adhesive glue, it can not be easily open.
- ☐ All high-frequency section and modulation section was packaged in one IC, and shield by metal shield, it can not be easily open.
- ☐ The top and the bottom is connected with strong Buckles, it can not be easily open.
- ☐ Others: The top and the bottom is connected with strong Buckles, So We can not open the it easily at the normal condition. The high-frequency section and modulation section can not be capable of being opened easily



2.7. Modifications

No modifications were implemented to meet testing criteria.



3. Test Environment

3.1. Address of the test laboratory

Shenzhen Tongzhou Testing Co.,Ltd

1st Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street, Longhua, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2014) and CISPR Publication 22.

3.2. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Tongzhou Testing Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Tongzhou Testing Co.,Ltd is reported:

Test Items	Measurement Uncertainty	Notes
Frequency stability	$U_c = \pm 25 \text{ Hz}$	(1)
Transmitter power conducted	$U_c = \pm 0.57 \text{ dB}$	(1)
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2 \%$	(1)
Uncertainty of RF Power Density, Conducted	$U_c = \pm 2.6 \text{ dB}$	(1)
Uncertainty of Spurious Emissions, Conducted (30MHz-1GHz)	$U_c = \pm 2.7 \text{ dB}$	(1)
Uncertainty of Spurious Emissions, Conducted (1GHz-26GHz)	$U_c = \pm 3.2 \text{ dB}$	(1)
Uncertainty of Dwell Time	$U_c = \pm 2\%$	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.



3.3. Equipments Used during the Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Latest Cal.	Next Cal.
1	MXA Signal Analyzer	Keysight	N9020A	MY52091623	2024/1/4	2025/1/3
2	EMI Test Receiver	R&S	ESCI	100849/003	2024/1/4	2025/1/3
3	DC power supply	Chroma	RXN-305D	62012PD02811	2024/1/4	2025/1/3
4	Power Meter	Agilent	NRVD	835843/014	2024/1/4	2025/1/3
5	Wideband Radio Communication Tester	R&S	CMW500	101855	2024/1/4	2025/1/3
6	Oscilloscope	Tektronix	TDS2024C	C044925	2024/1/4	2025/1/3
7	Horn Antenna	schwarzbeck	BBHA 9120D	01989	2022/11/13	2025/11/12
8	Controller	MF	MF7802	N/A	N/A	N/A
9	Horn Antenna	ETS	3117	00218874	2022/11/13	2025/11/12
10	Signal Generator	Keysight	N5182A	MY4620709	2024/1/4	2025/1/3

Full Name of calibration company: Guangzhou Lisai Metrology & Test co., Ltd.

Calibration by the calibration agencies listed in the table correspond to paragraph 4 (ii) (c) of Article 24-2 in the Radio Law.

☐ (a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18-1 of the Radio Act

☐ (b) Calibration conducted based on the regulations of Article 135 or 144 of the Measurement Act

☒ (c) 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

☐ (d) Calibration, etc. conducted by using measuring instruments and other facilities listed at the bottom of appended table 3 of the Radio Act, which is to have been calibrated as described in (a) through (c) above



4. Test conditions and Results

4.1. Antenna Power

TEST CONFIGURATION



TEST PROCEDURE

1. EUT have transmitted continuous maximum power..
2. Frequency hopping system or combined systems of direct spread and frequency hopping
 - i. Connect the high frequency Power Meter or Spectrum Analyzer to the output of the attenuator and measure the total power (without bandwidth limitation)
 - ii. Divide the total power by the spread bandwidth to find the “average” power per MHz.
The average power per MHz is equal to the power meter value dBm + cable loss dB.
 - iii. Set the antenna power as follows:
 - Continuous waves: value in ii.

LIMIT

Item	Limits
Antenna Power Density	$\leq 3\text{mW/MHz}$ (FHSS from 2427~2470.5MHz)
	$\leq 10\text{mW/MHz}$ (FHSS from 2400~2483.5MHz except 2427-2470.75MHz)
	$\leq 10\text{mW/MHz}$ (OFDM,DS from 2400~2483.5MHz)
	$\leq 10\text{mW}$ (Other from 2400~2483.5MHz)
Antenna Power Error	-80% to 20% (Base on manufacturer declare antenna power density)

**TEST RESULTS**

Antenna Power								
Test Condition	Test Mode	Antenna	Channel	Ave. Burst Power [mW]	Spread BW [MHz]	Result (mW/ MHz)	Limit (mW/ MHz)	Verdict
NTNV	GFSK	Ant1	Hop	0.2979	38.588	0.0077	≤10	PASS
NTLV	GFSK	Ant1	Hop	0.2911	38.608	0.0075	≤10	PASS
NTHV	GFSK	Ant1	Hop	0.2944	38.612	0.0076	≤10	PASS

Tolerance								
Test Condition	Test Mode	Antenna	Channel	Power (mW/ MHz)	Rated Power (mW/ MHz)	Result (%)	Limit (%)	Verdict
NTNV	GFSK	Ant1	Hop	0.0077	0.01	-22.80	-80% to 20%	PASS
NTLV	GFSK	Ant1	Hop	0.0075	0.01	-24.60	-80% to 20%	PASS
NTHV	GFSK	Ant1	Hop	0.0076	0.01	-23.75	-80% to 20%	PASS

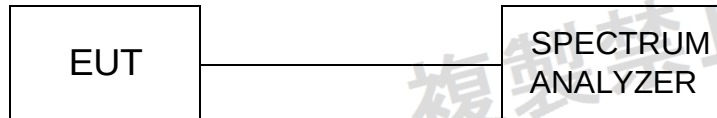
Remark:

- 1, The item was tested at 25℃ and 55% humidity condition;
- 2, Result = the power meter value + cable loss



4.2. Frequency Error

TEST CONFIGURATION



TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: non-modulation

Spectrum Condition:

Frequency: test frequency

Span:1MHz

Rbw:10KHz

Vbw:10KHz

Sweep time:Auto

Dectector mode: Positive peak

Indication mode: max hold

LIMIT

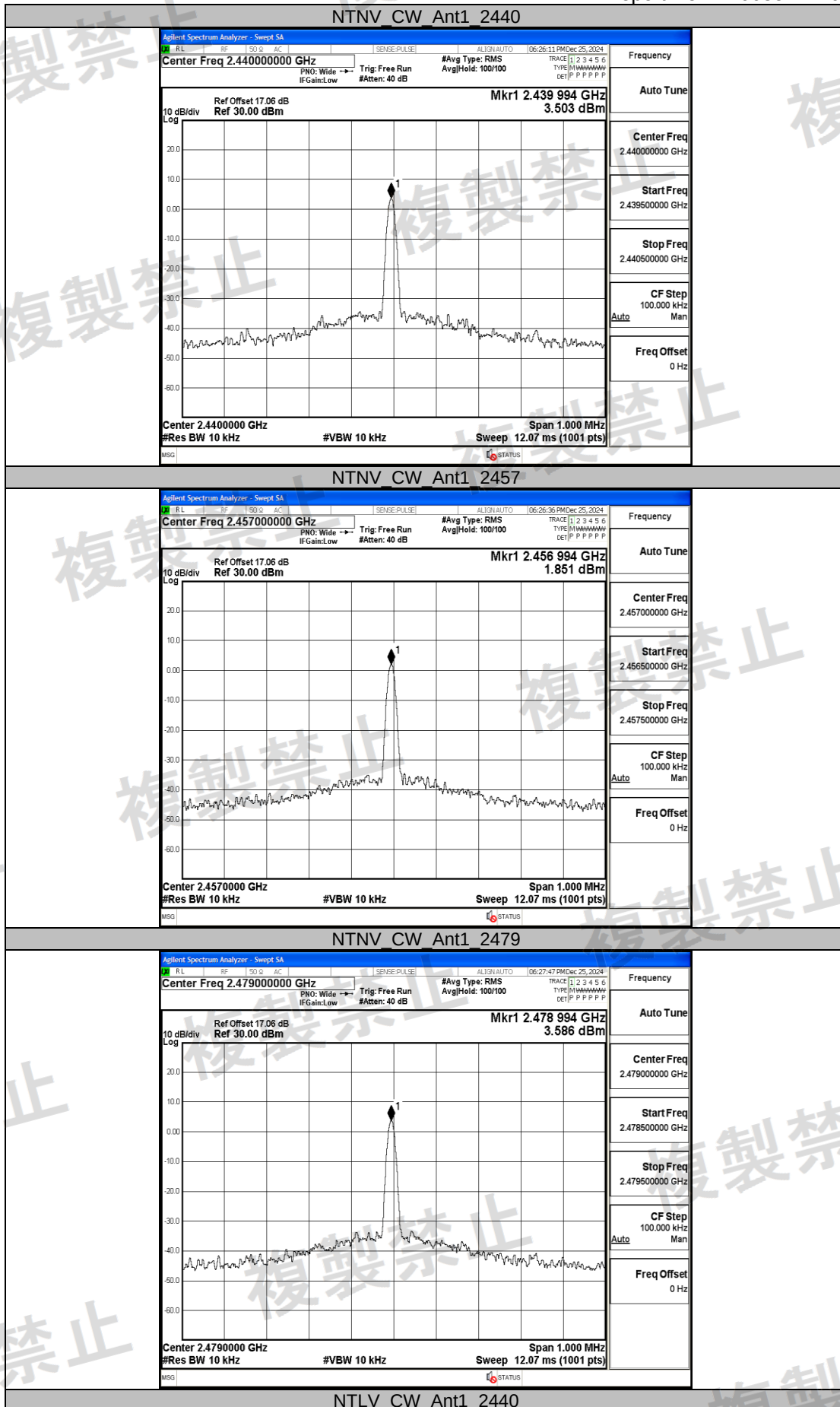
Tolerance of frequency shall be ± 50 ppm.

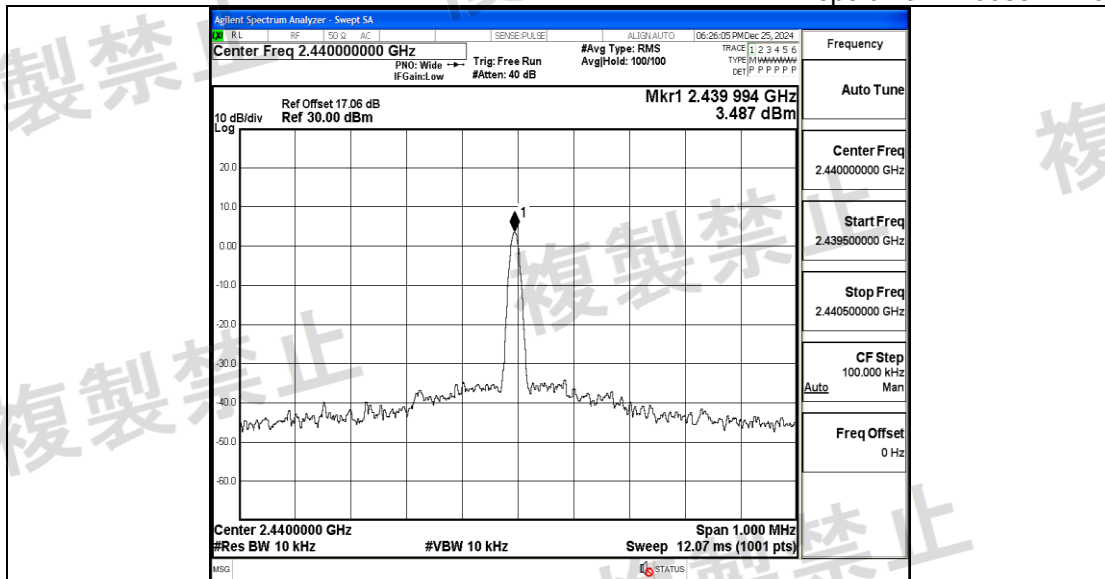
TEST RESULTS

Test Condition	Test Mode	Antenna	Freq (MHz)	Result [ppm]	Limit [ppm]	Verdict
NTNV	CW	Ant1	2440	-2.45902	± 50	PASS
			2457	-2.44200	± 50	PASS
			2479	-2.42033	± 50	PASS
NTLV	CW	Ant1	2440	-2.45902	± 50	PASS
			2457	-2.44200	± 50	PASS
			2479	-2.42033	± 50	PASS
NTHV	CW	Ant1	2440	-2.45902	± 50	PASS
			2457	-2.44200	± 50	PASS
			2479	-2.42033	± 50	PASS

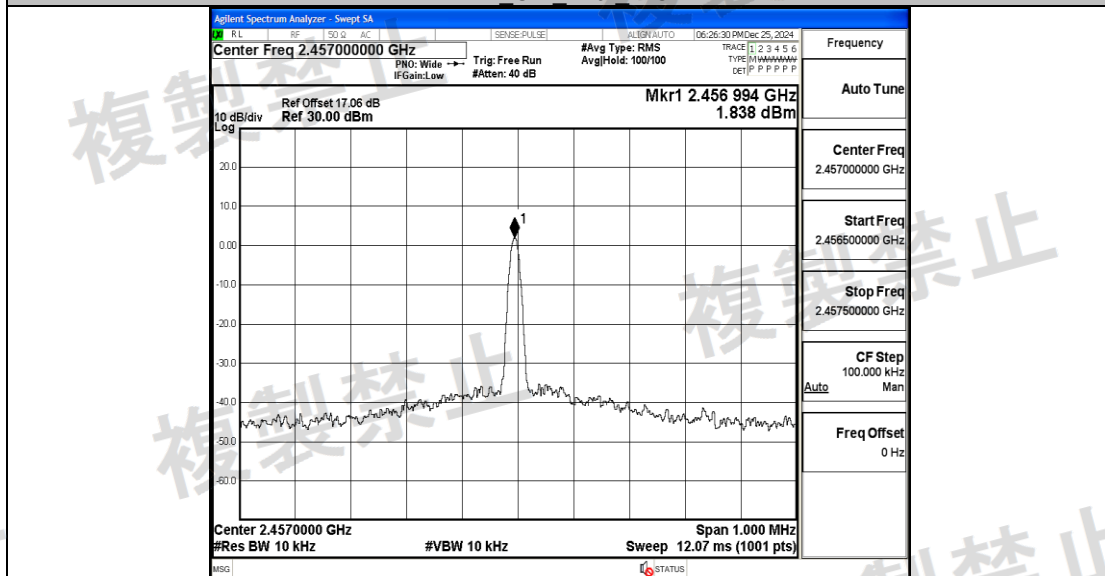
Note: 1. The test results including the cable lose.
2. The item was tested at 25 °C and 55% humidity condition;
3.All condition has been testd,list the worst case in this item

Test plot as follows:

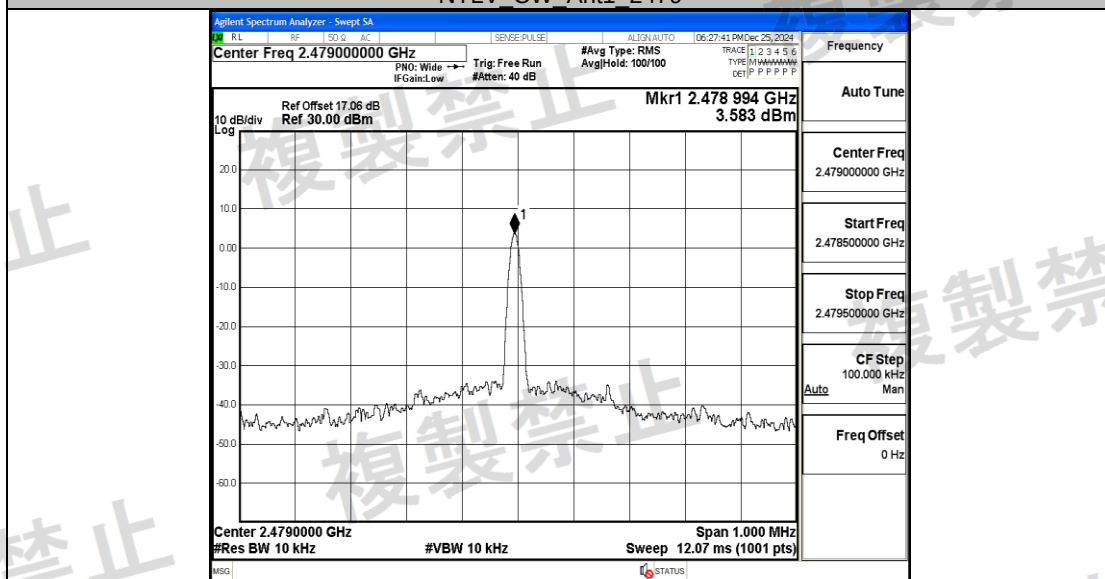




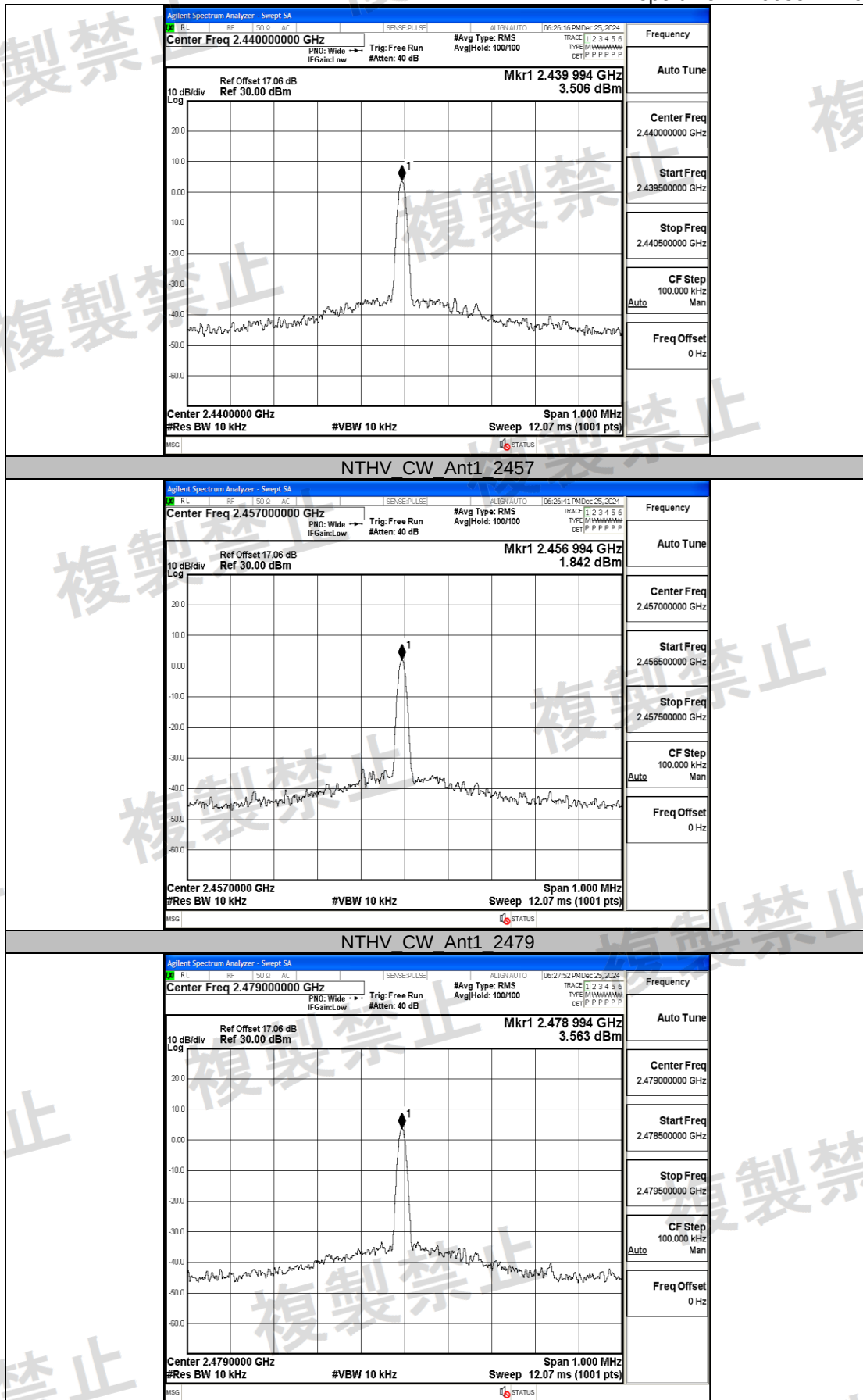
NTLV CW Ant1 2457



NTLV CW Ant1 2479



NTHV CW Ant1 2440





4.3. Interference Prevention Function

LIMIT

Radio equipment used mainly on the same premises and automatically transmits or receives identification code

TEST PROCEDURE

1. Open the software
2. Scan for EUT, and confirm the identification code.

TEST RESULTS

The unit does meet the requirements.

identification code for the test sample: A1455316D6AC



4.4. Occupied Bandwidth (99%)

TEST CONFIGURATION



TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: modulation

Spectrum Condition:

Frequency: Center frequency in the band to be used

Span:200MHz

RBW:1MHz

VBW:1MHz

Sweep time:Auto

Dectector mode: Positive peak

Indication mode: max hold

LIMIT

Permissible value for occupied bandwidth using the FH system, a hybrid system combining DS and FH systems, or a hybrid system combining FH and OFDM systems shall be 83.5 MHz or less, while necessary bandwidth (minimum occupied bandwidth sufficient to ensure information transmission of required quality at a required transmission rate for the system used under specified conditions for a given emission type) using a system other than any of the above shall be 26 MHz or less.

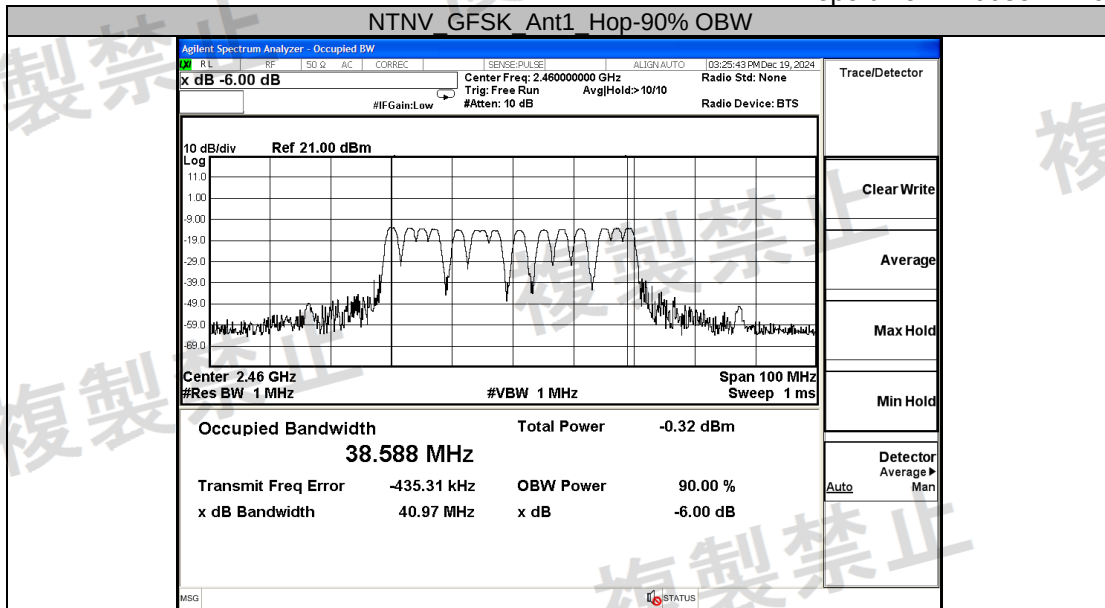
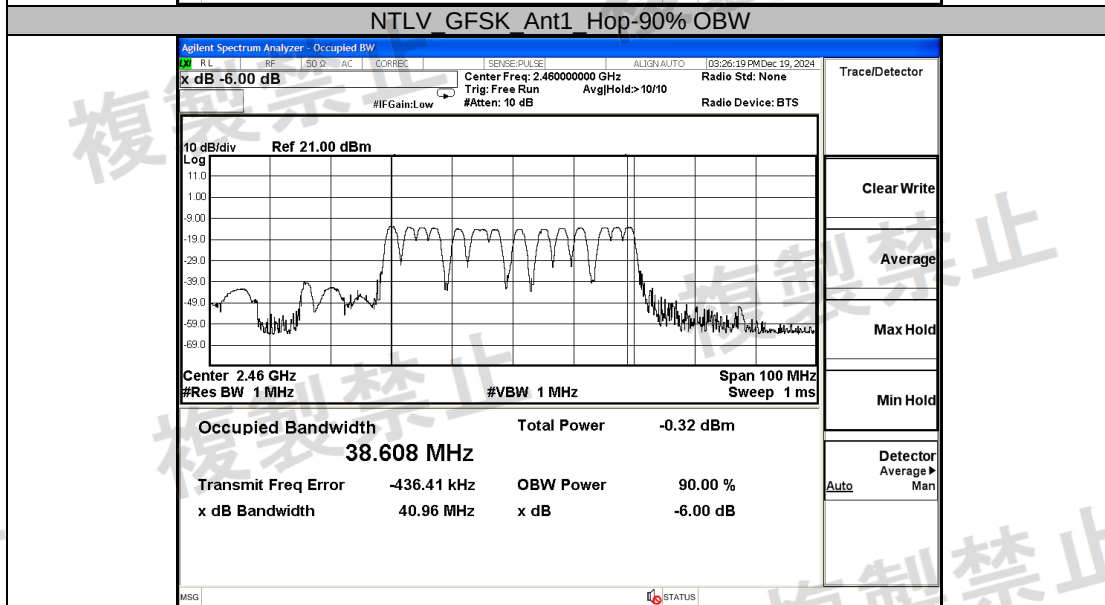
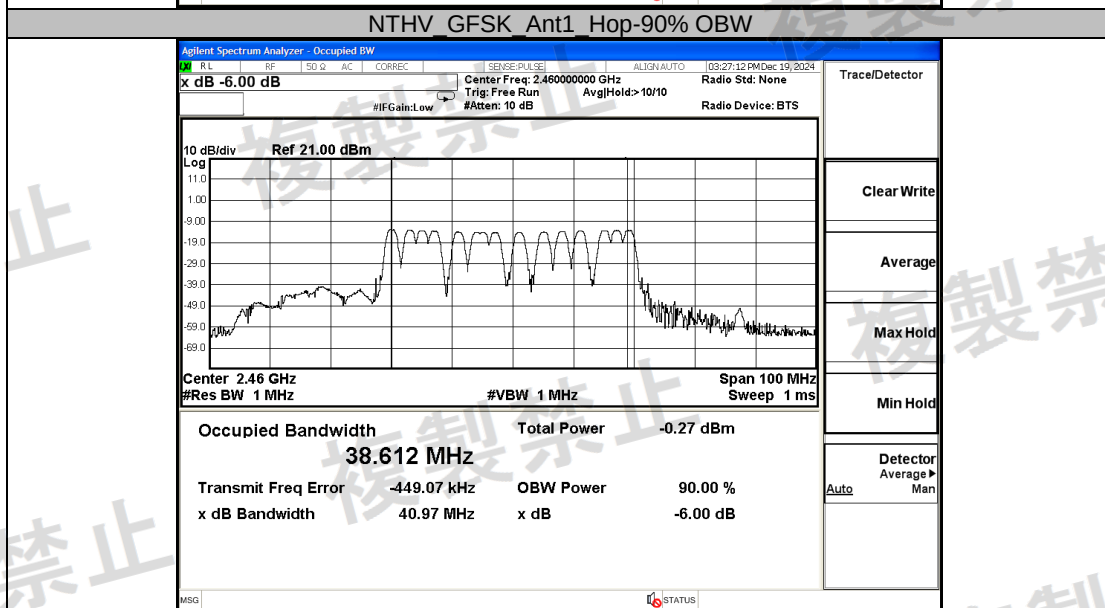
Spreading Bandwidth shall be 500kHz or more.

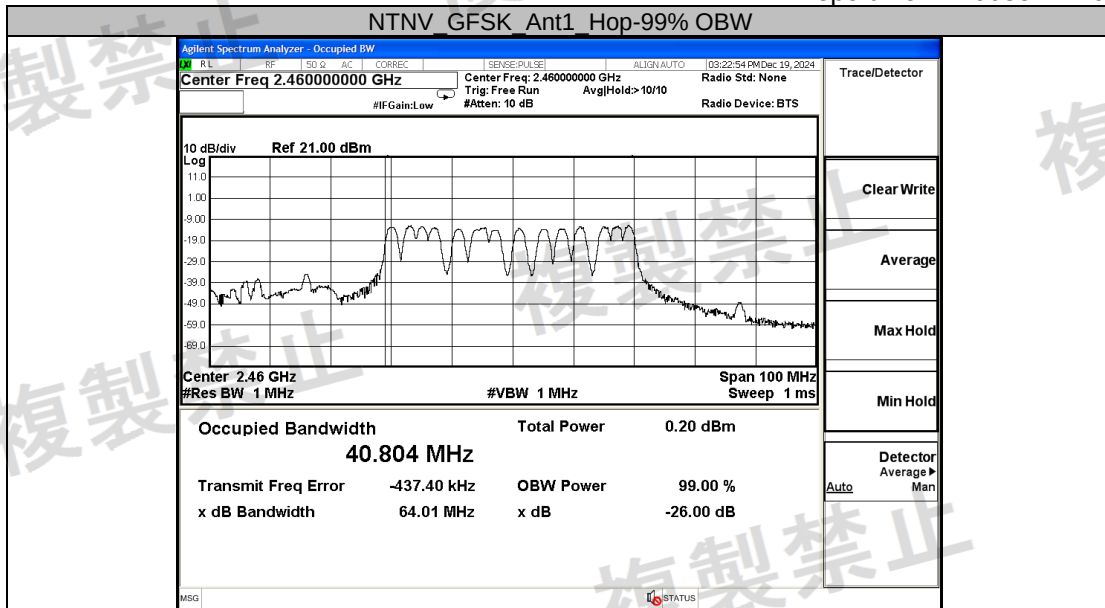
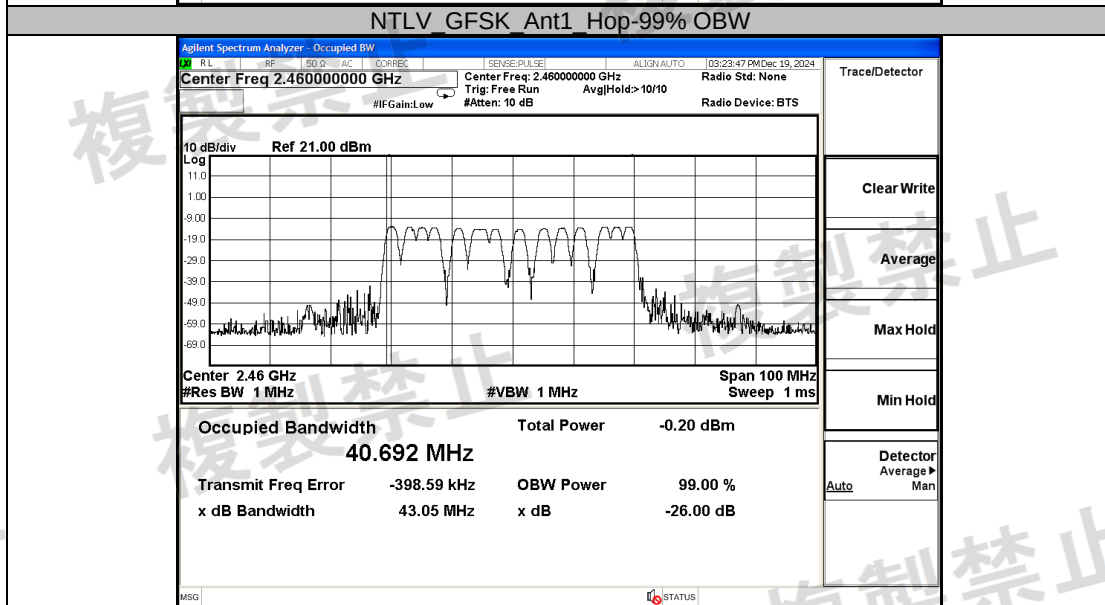
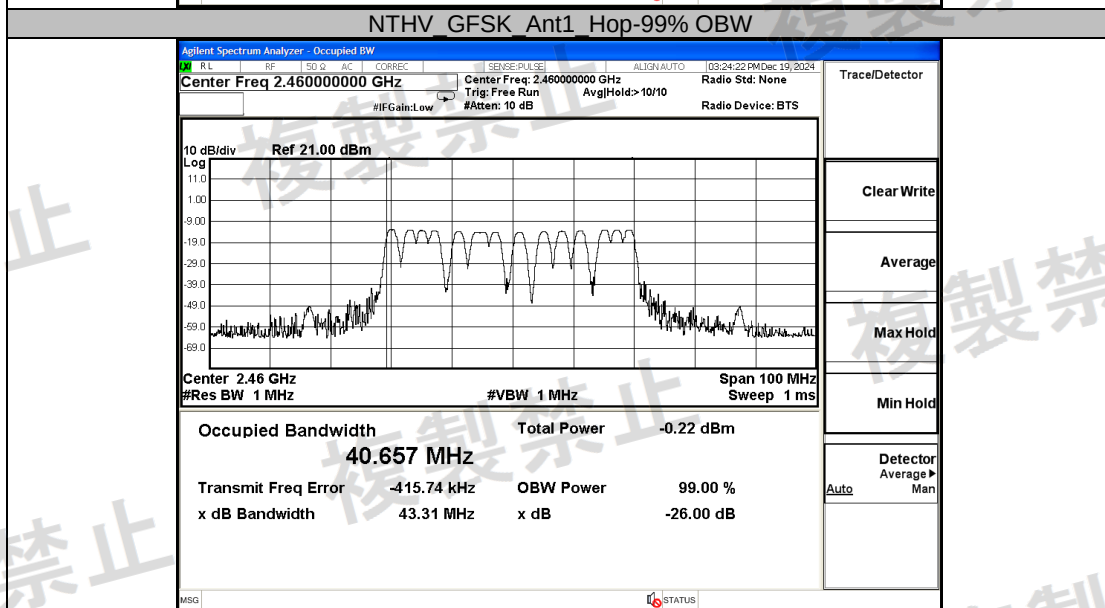
TEST RESULTS

Test Condition	Test Mode	Antenna	Channel	Result 90% OBW [MHz]	Limit 90% OBW [MHz]	Result 99% OBW [MHz]	Limit 99% OBW [MHz]	Verdict
NTNV	GFSK	Ant1	Hop	38.588	≥0.5	40.804	≤83.5	PASS
NTLV	GFSK	Ant1	Hop	38.608	≥0.5	40.692	≤83.5	PASS
NTHV	GFSK	Ant1	Hop	38.612	≥0.5	40.657	≤83.5	PASS

- Note:
1. The test results including the cable lose.
 2. The item was tested at 25 ℃ and 55% humidity condition;
 - 3.All condition has been testd,list the worst case in this item

Test plot as follows:

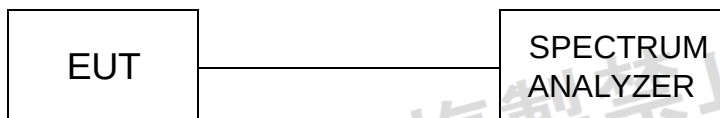






4.5. Spurious emission intensity

TEST CONFIGURATION



TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: modulation

Spectrum Condition:

Frequency: 30MHz-13GHz

RBW: 1MHz (30MHz-1GHz), 1MHz(1GHz-13GHz)

VBW: 1MHz (30MHz-1GHz), 1MHz(1GHz-13GHz)

Sweep time:Auto

Dectector mode: Positive peak

Indication mode: max hold

LIMIT

Permissible mean power of spurious emission of each frequency supplied to a feeder, that is, mean power of spurious emission in the 1 MHz bandwidth at frequency f other than frequency band used shall be as follows:

- a. $2,387 \text{ MHz} \leq f \leq 2,400 \text{ MHz}$ and $2,483.5 \text{ MHz} < f \leq 2,496.5 \text{ MHz}$ $25 \mu\text{W/MHz} (-16\text{dBm/MHz})$ or less
- b. $2,387 \text{ MHz} > f$ and $2,496.5 \text{ MHz} < f$ $2.5 \mu\text{W/MHz} (-26\text{dBm/MHz})$ or less

TEST RESULTS

Test Condition	Test Mode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm/MHz]	Limit [dBm/MHz]	Result [$\mu\text{W/MHz}$]	Limit [$\mu\text{W/MHz}$]	Verdict
NTNV	SRD	Ant1	2440	30~2387	2264.44	-50.56	≤ -26	0.00879	≤ 2.5	PASS
				2387~2400	2397.23	-41.75	≤ -16	0.06683	≤ 25	PASS
				2483.5~2496.5	2492.39	-41.49	≤ -16	0.07096	≤ 25	PASS
				2496.5~13000	7622.99	-47.28	≤ -26	0.01871	≤ 2.5	PASS
			2457	30~2387	2273.57	-49.24	≤ -26	0.01191	≤ 2.5	PASS
				2387~2400	2394.71	-42.16	≤ -16	0.06081	≤ 25	PASS
				2483.5~2496.5	2488.65	-41.93	≤ -16	0.06412	≤ 25	PASS
				2496.5~13000	12885.51	-47.04	≤ -26	0.01977	≤ 2.5	PASS
			2479	30~2387	2283.29	-48.06	≤ -26	0.01563	≤ 2.5	PASS
				2387~2400	2390.88	-41.58	≤ -16	0.06950	≤ 25	PASS
				2483.5~2496.5	2492.31	-41.05	≤ -16	0.07852	≤ 25	PASS
				2496.5~13000	11833.53	-47.21	≤ -26	0.01901	≤ 2.5	PASS
NTLV	SRD	Ant1	2440	30~2387	2263.26	-49.35	≤ -26	0.01161	≤ 2.5	PASS
				2387~2400	2393.84	-41.73	≤ -16	0.06714	≤ 25	PASS

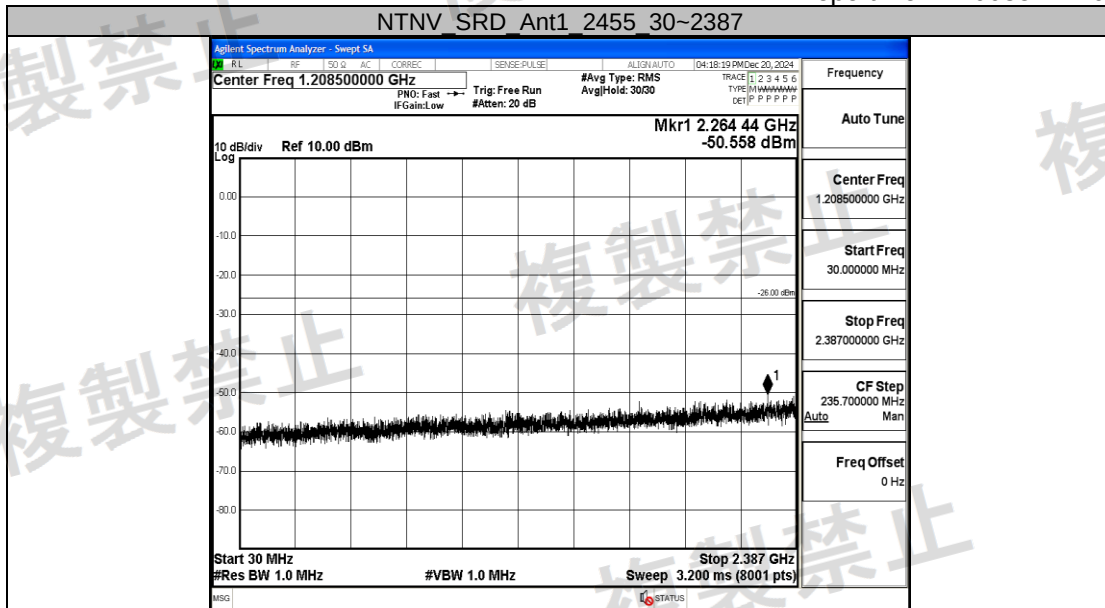
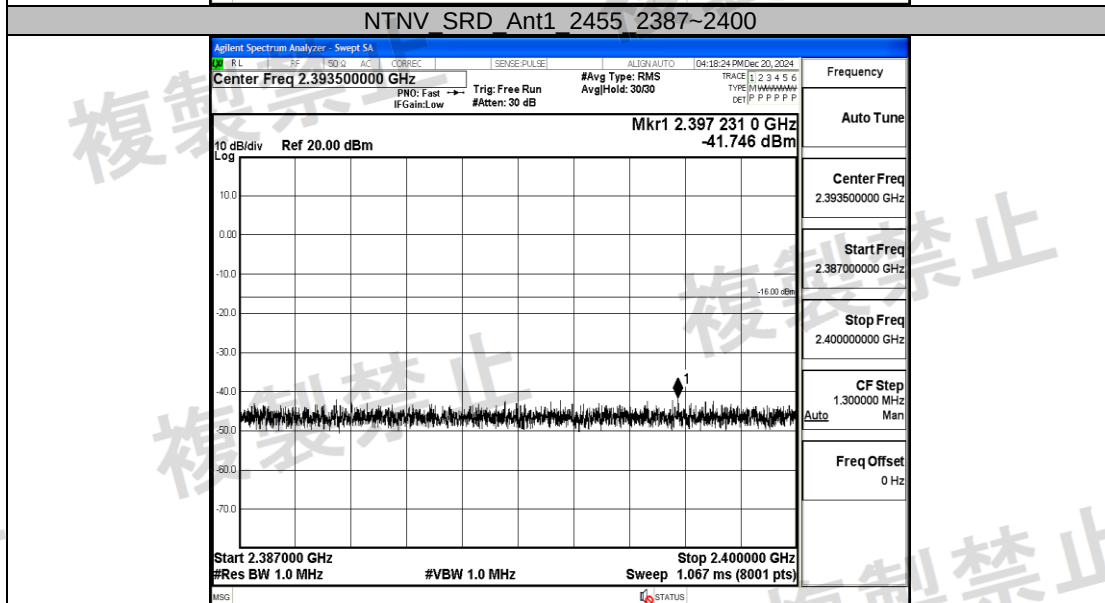
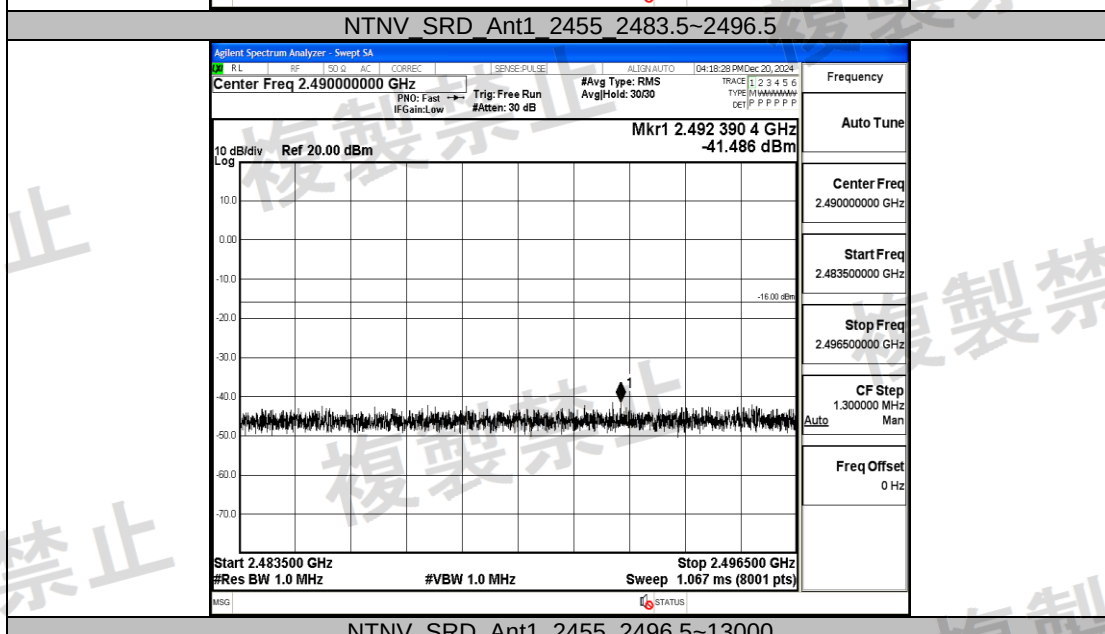


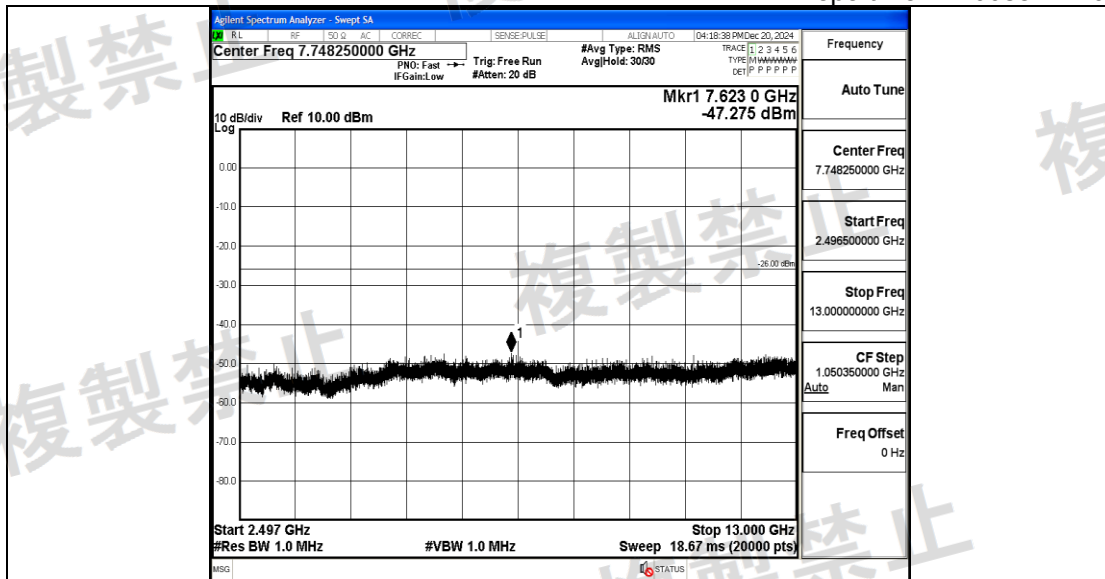
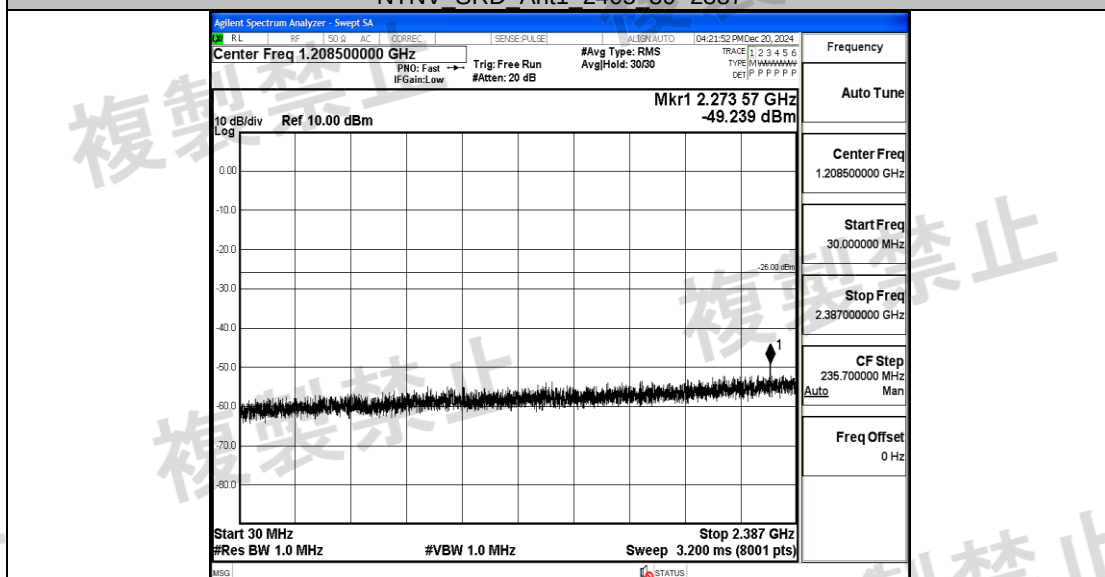
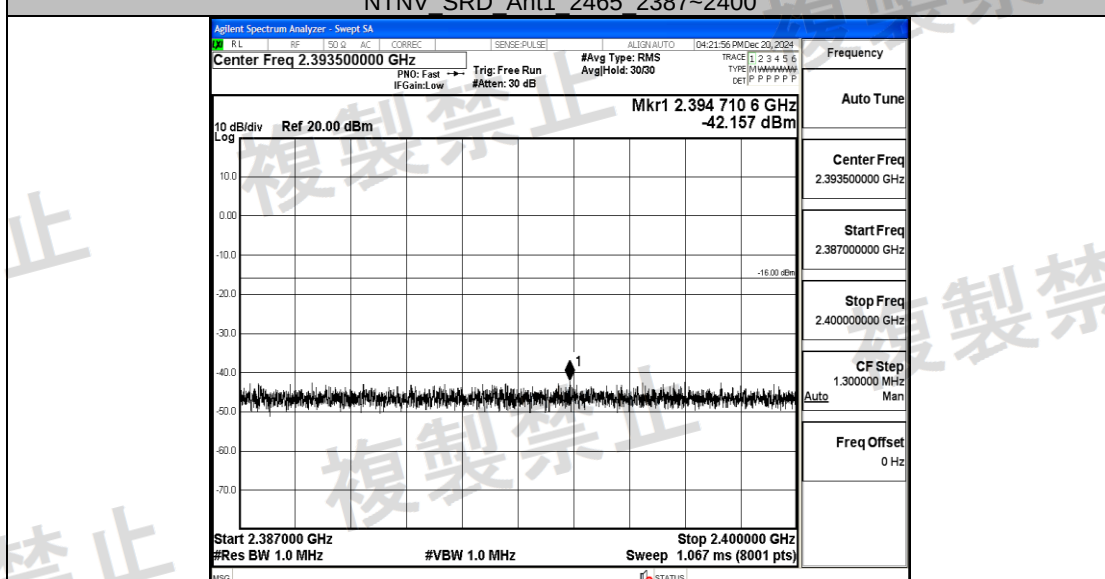
				2483.5~2496.5	2487.58	-41.61	≤-16	0.06902	≤25	PASS
				2496.5~13000	12403.37	-46.49	≤-26	0.02244	≤2.5	PASS
			2457	30~2387	2274.16	-48.31	≤-26	0.01476	≤2.5	PASS
				2387~2400	2395.65	-42.25	≤-16	0.05957	≤25	PASS
				2483.5~2496.5	2495.57	-41.07	≤-16	0.07816	≤25	PASS
				2496.5~13000	11896.55	-47.05	≤-26	0.01972	≤2.5	PASS
				30~2387	2283.59	-49.15	≤-26	0.01216	≤2.5	PASS
			2479	2387~2400	2387.68	-42.03	≤-16	0.06266	≤25	PASS
				2483.5~2496.5	2487.06	-41.33	≤-16	0.07362	≤25	PASS
				2496.5~13000	12325.12	-46.93	≤-26	0.02028	≤2.5	PASS
				30~2387	2264.14	-49.42	≤-26	0.01143	≤2.5	PASS
NTHV	SRD	Ant1	2440	2387~2400	2388.99	-41.16	≤-16	0.07656	≤25	PASS
				2483.5~2496.5	2488.72	-41.32	≤-16	0.07379	≤25	PASS
				2496.5~13000	6305.26	-47.02	≤-26	0.01986	≤2.5	PASS
				30~2387	2274.16	-49.33	≤-26	0.01167	≤2.5	PASS
			2457	2387~2400	2391.56	-40.74	≤-16	0.08433	≤25	PASS
				2483.5~2496.5	2492.04	-41.88	≤-16	0.06486	≤25	PASS
				2496.5~13000	12876.58	-46.63	≤-26	0.02173	≤2.5	PASS
				30~2387	2284.18	-48.54	≤-26	0.01400	≤2.5	PASS
			2479	2387~2400	2390.93	-42.29	≤-16	0.05902	≤25	PASS
				2483.5~2496.5	2484.64	-39.70	≤-16	0.10715	≤25	PASS
				2496.5~13000	12863.45	-46.52	≤-26	0.02228	≤2.5	PASS
				30~2387	2264.14	-49.42	≤-26	0.01143	≤2.5	PASS

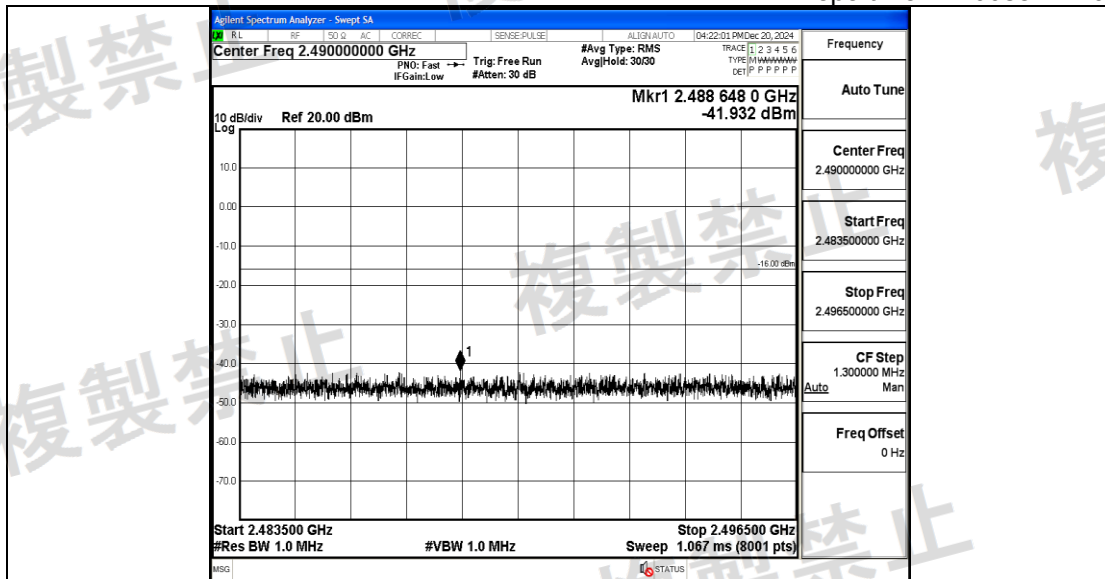
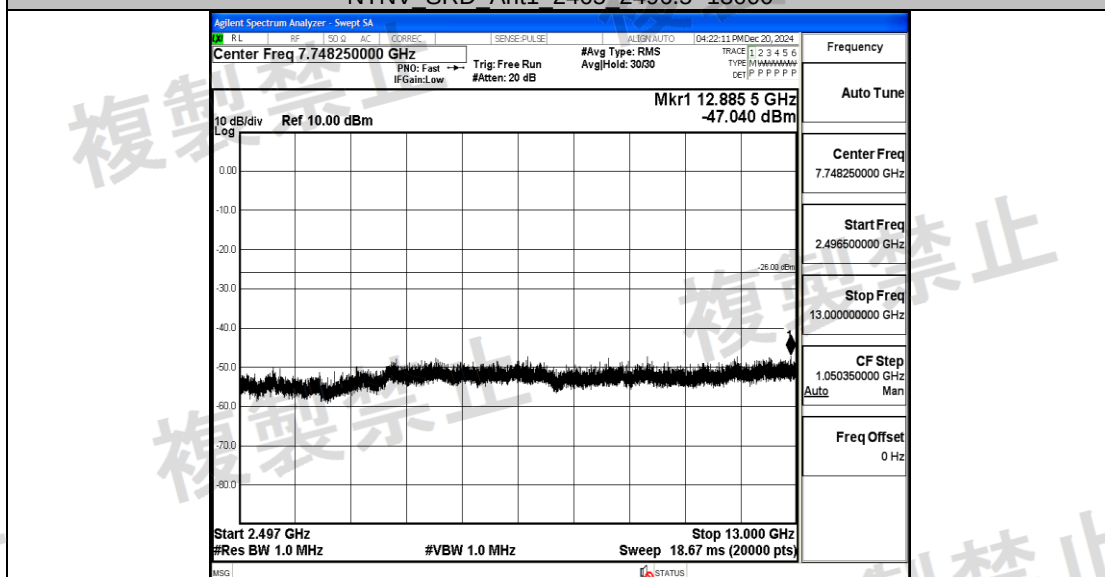
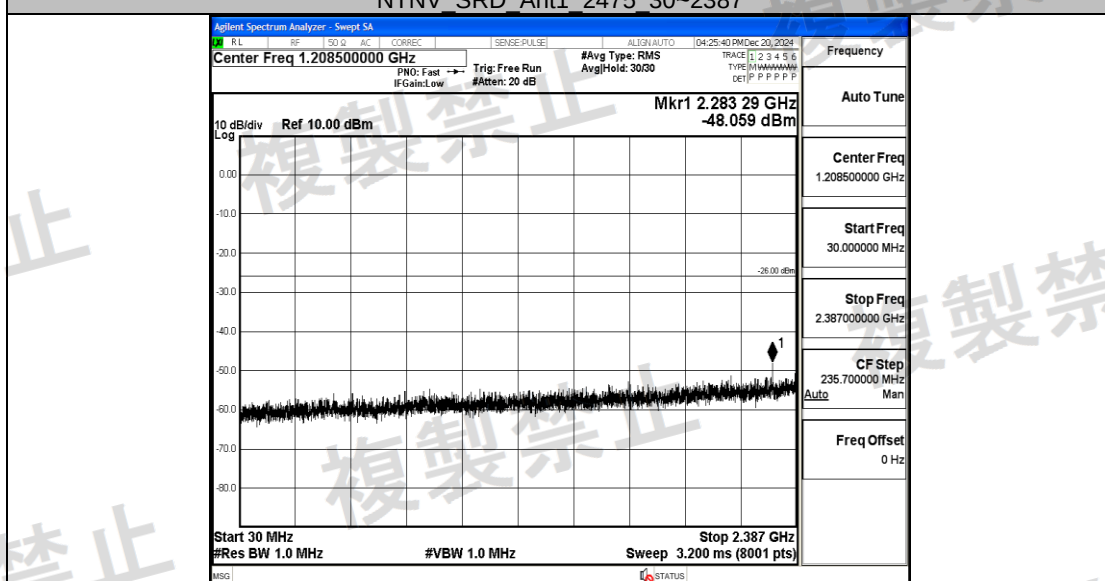
Note: 1. The product was tested at 25 °C and 55% humidity condition;

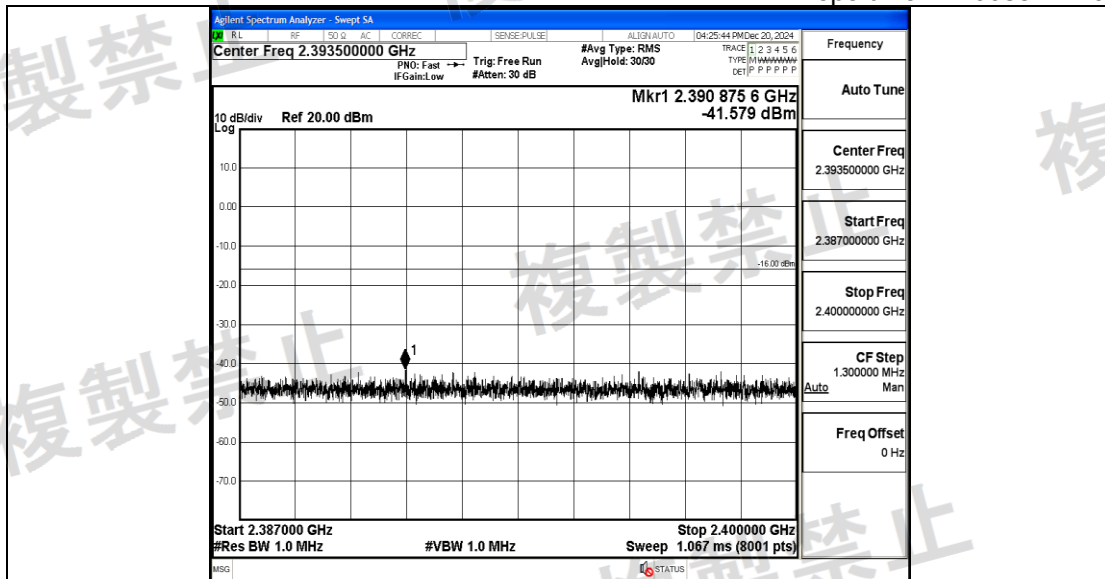
2. All condition has been tested, list the worst case in this item

3. SA set to from 2.4965GHz to 13GHz, plot shows from 2.497GHz to 13GHz as of SA's default format

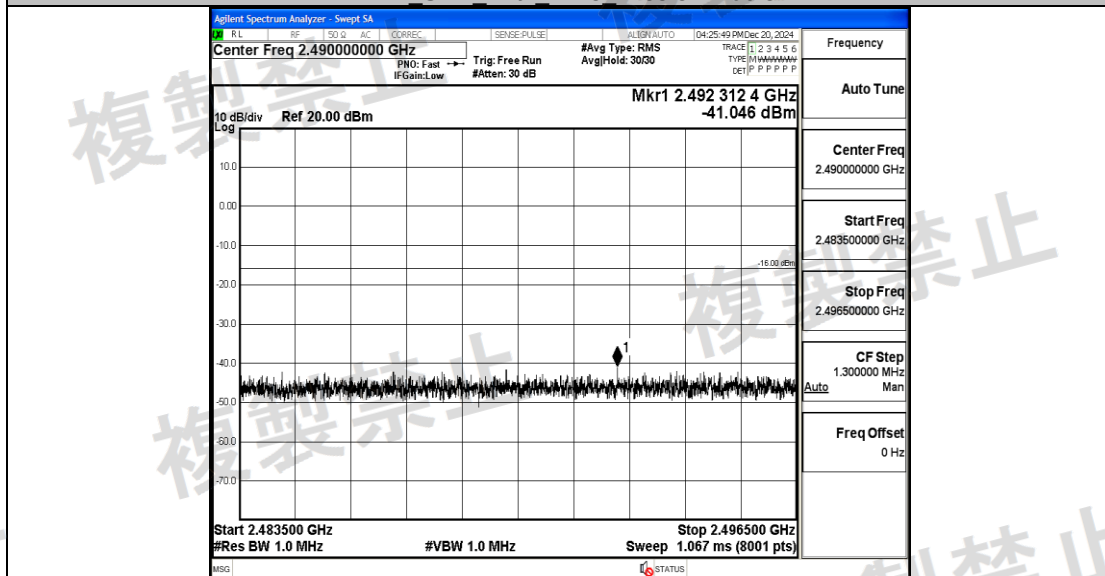




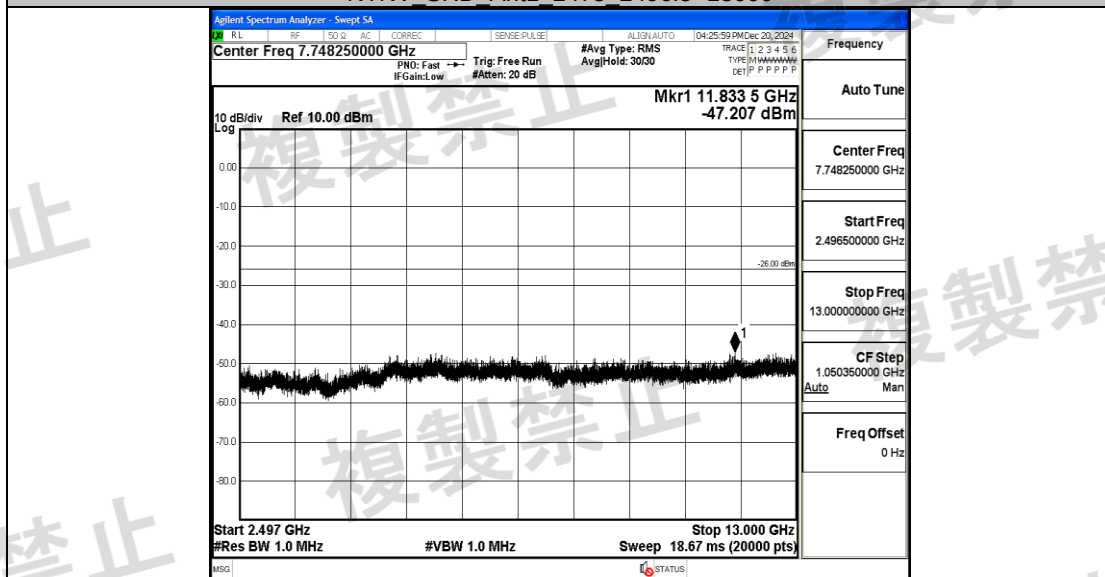




NTNV SRD Ant1 2475 2483.5~2496.5



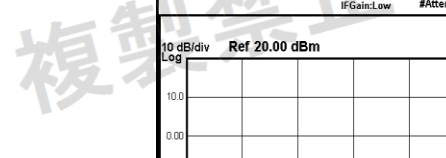
NTNV SRD Ant1 2475 2496.5~13000



NTLV SRD Ant1 2455 30~2387



複製禁



dBm

-16.00 0.00

GHz

2.35 2.45

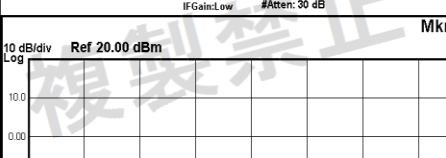
Stop Freq

2.400000000 GHz

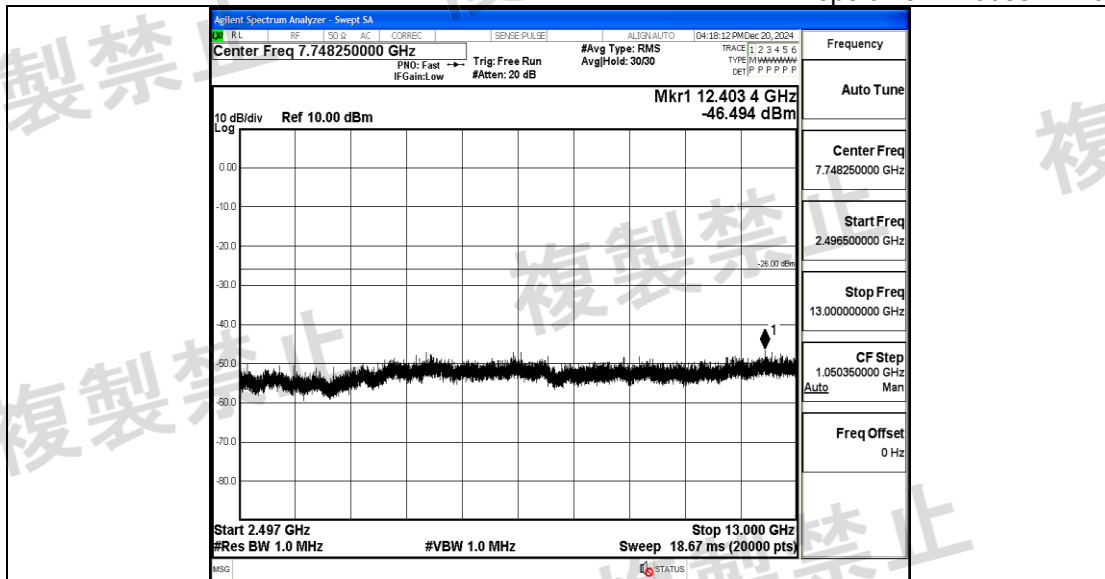
CF Step

1.300000 MHz

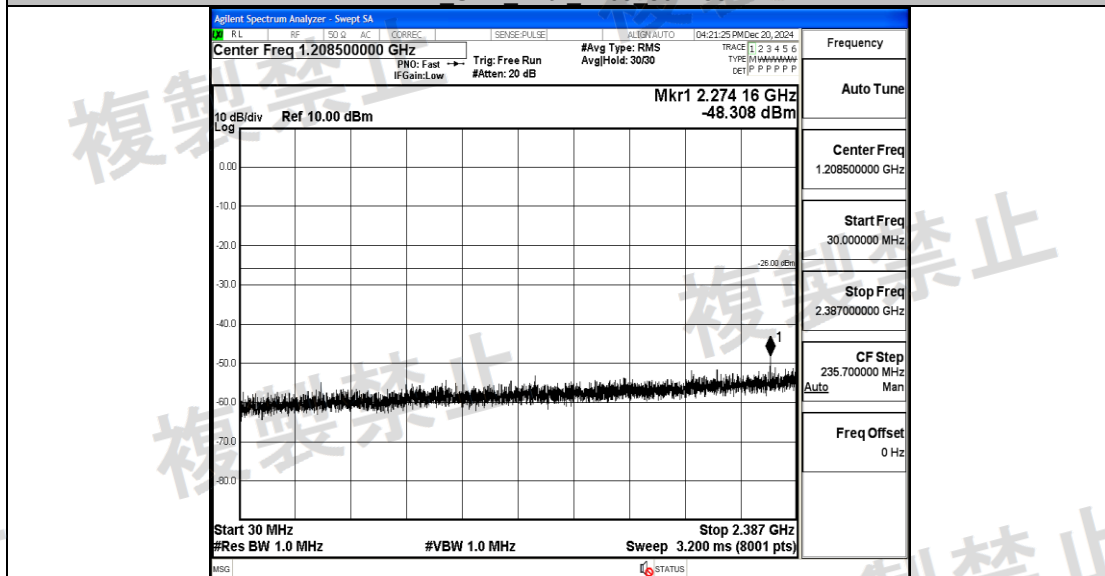
Auto Man



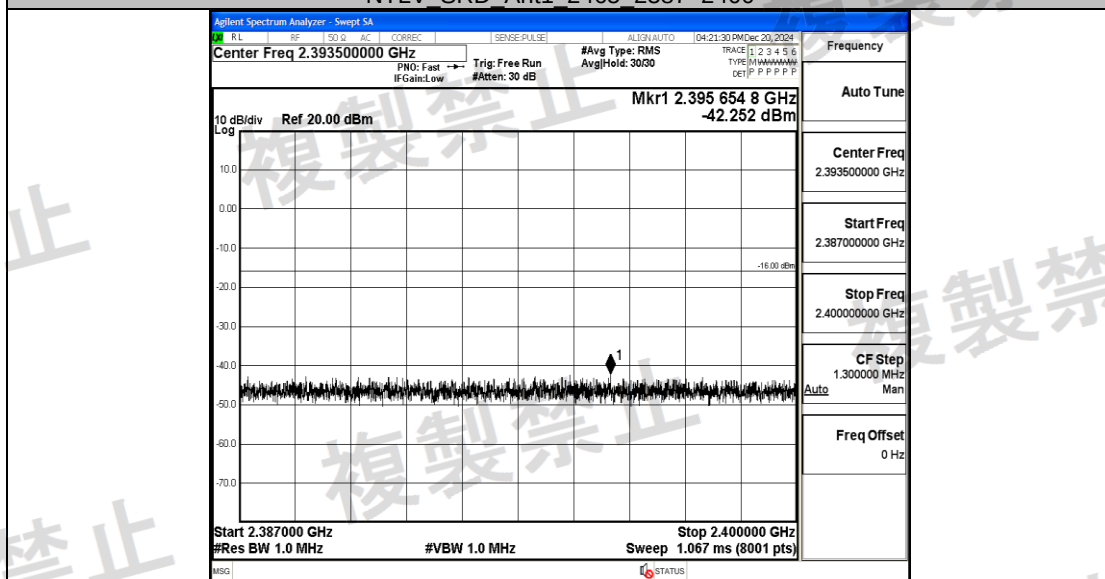
禁止複製



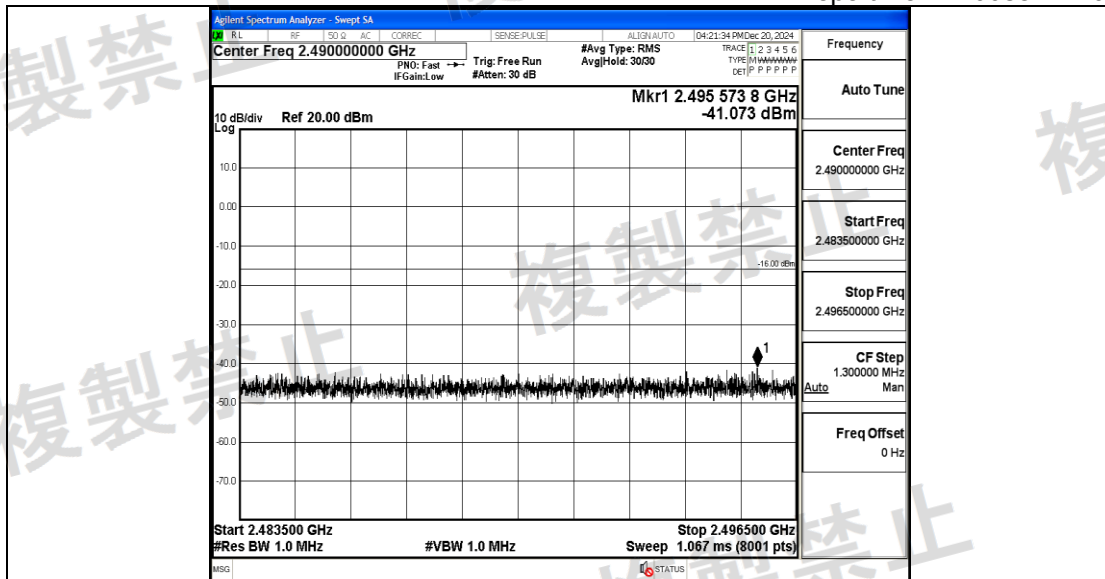
NTLV SRD Ant1 2465 30~2387



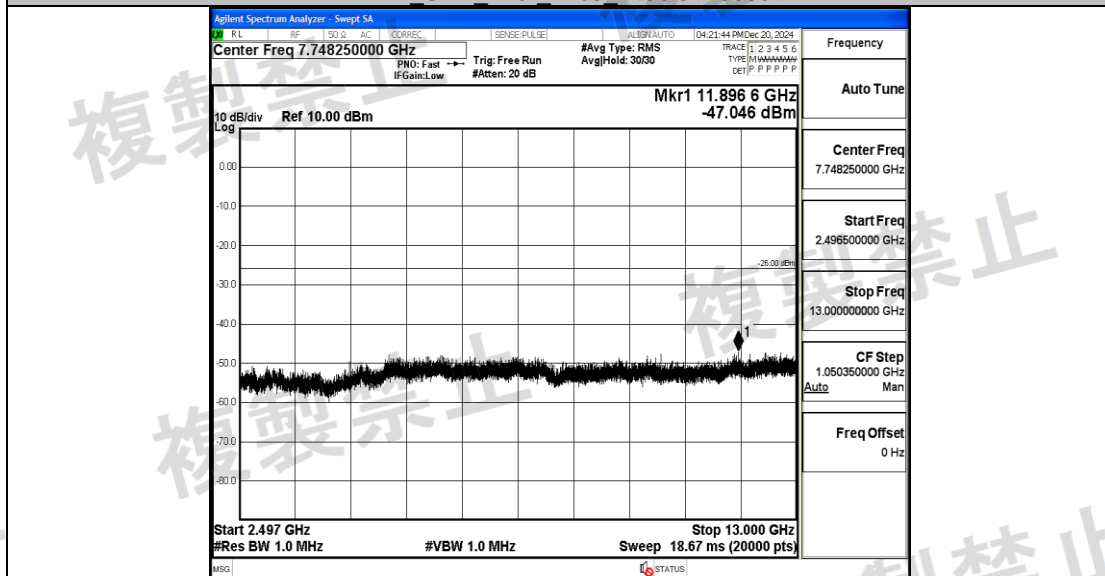
NTLV SRD Ant1 2465 2387~2400



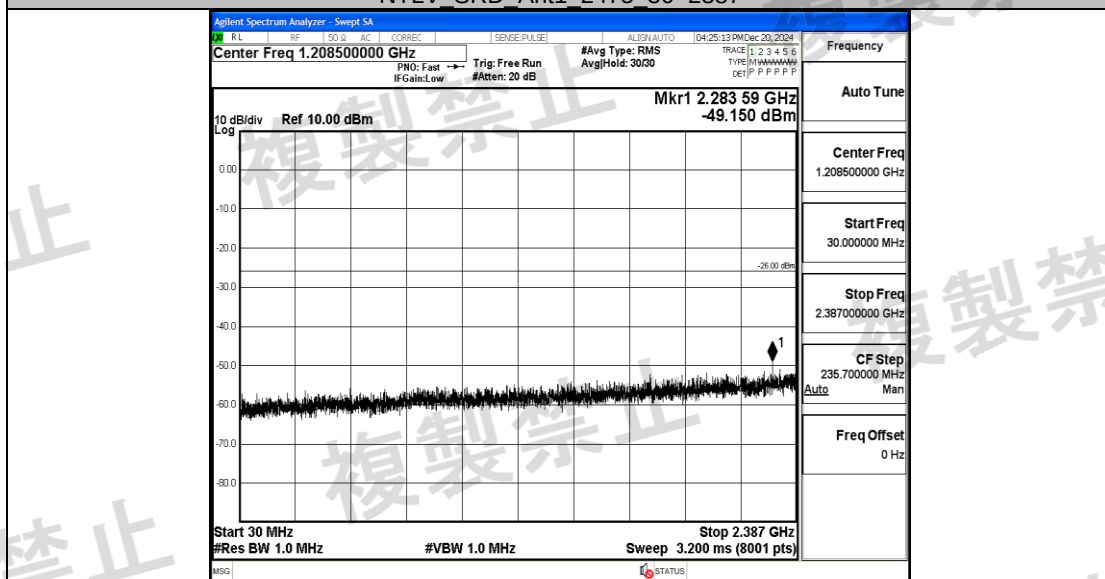
NTLV SRD Ant1 2465 2483.5~2496.5



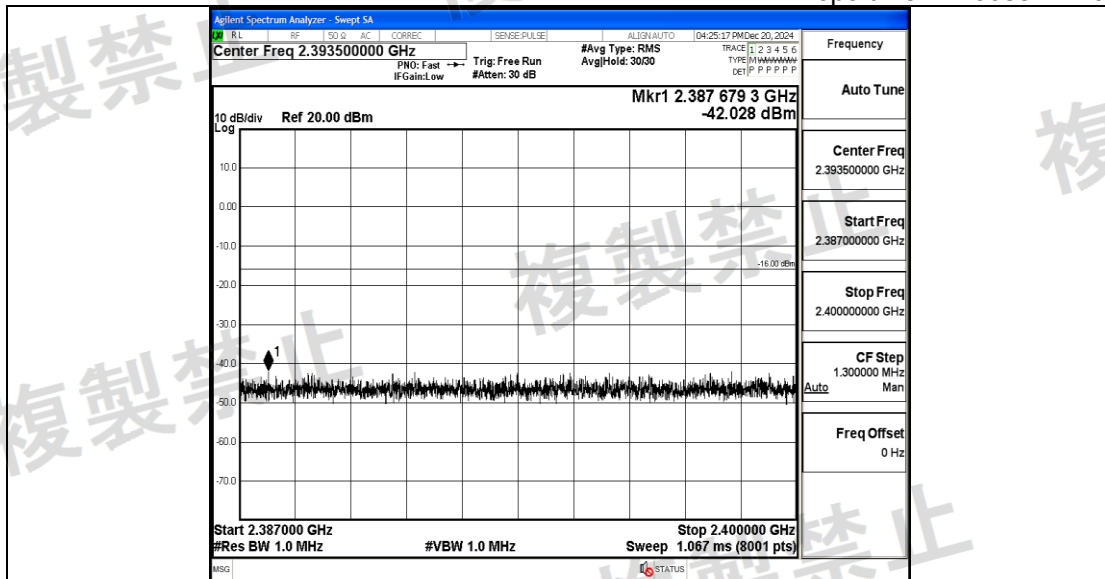
NTLV SRD Ant1 2465 2496.5~13000



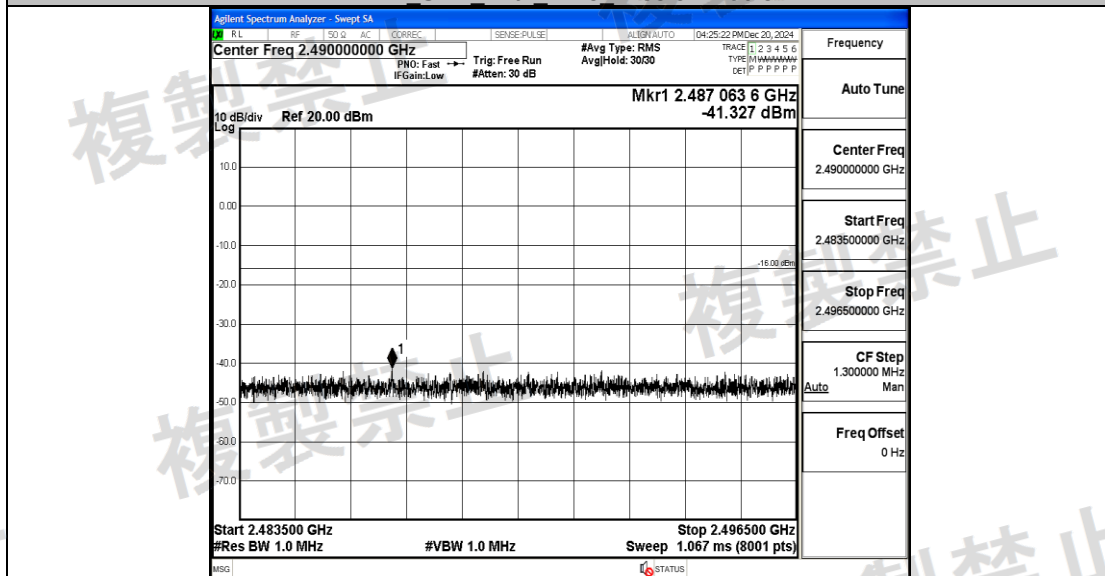
NTLV SRD Ant1 2475 30~2387



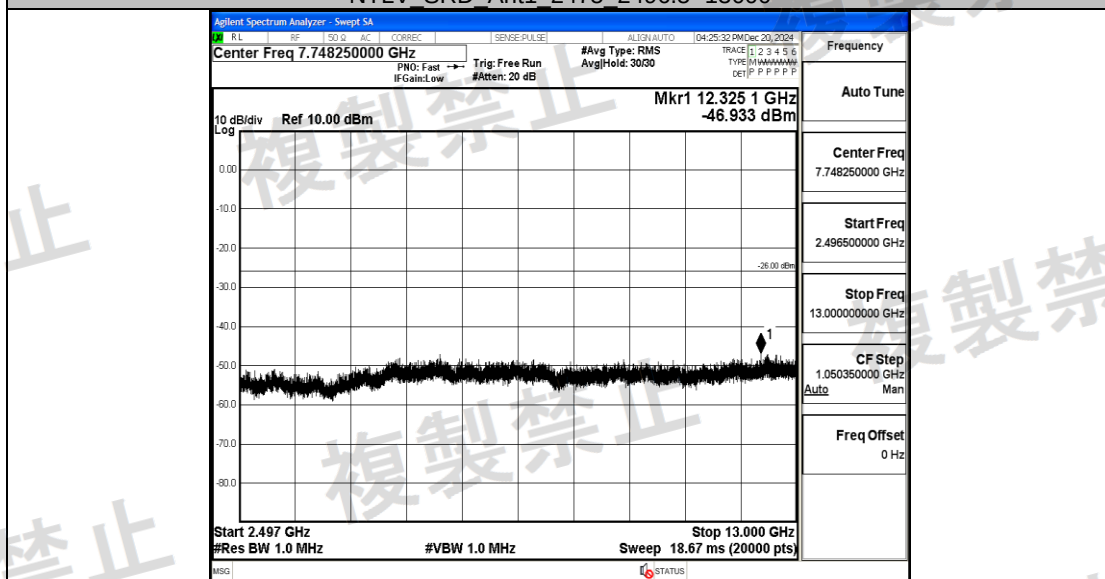
NTLV SRD Ant1 2475 2387~2400



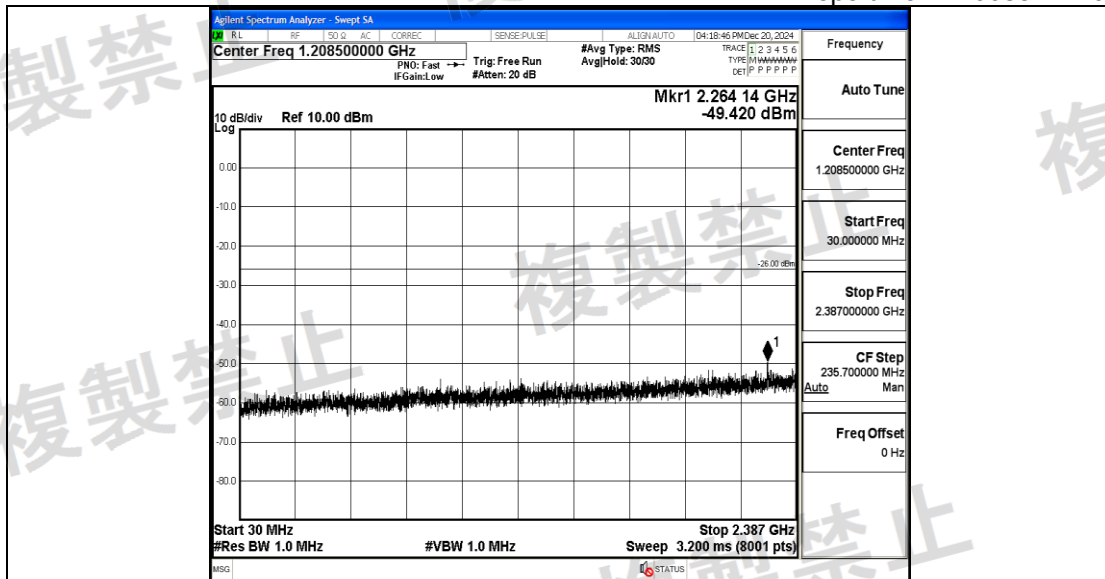
NTLV SRD Ant1 2475 2483.5~2496.5



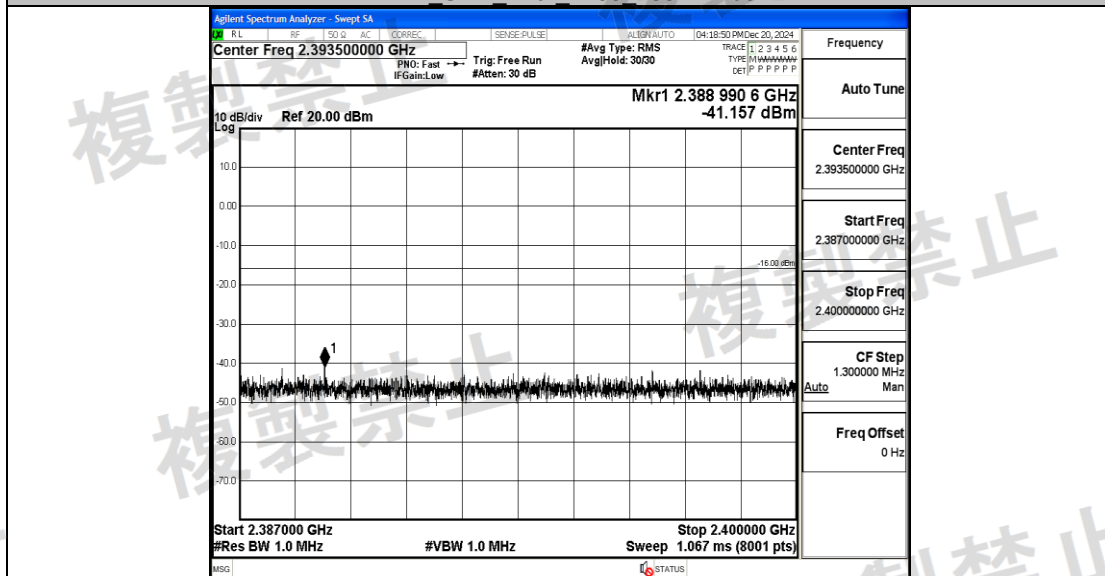
NTLV SRD Ant1 2475 2496.5~13000



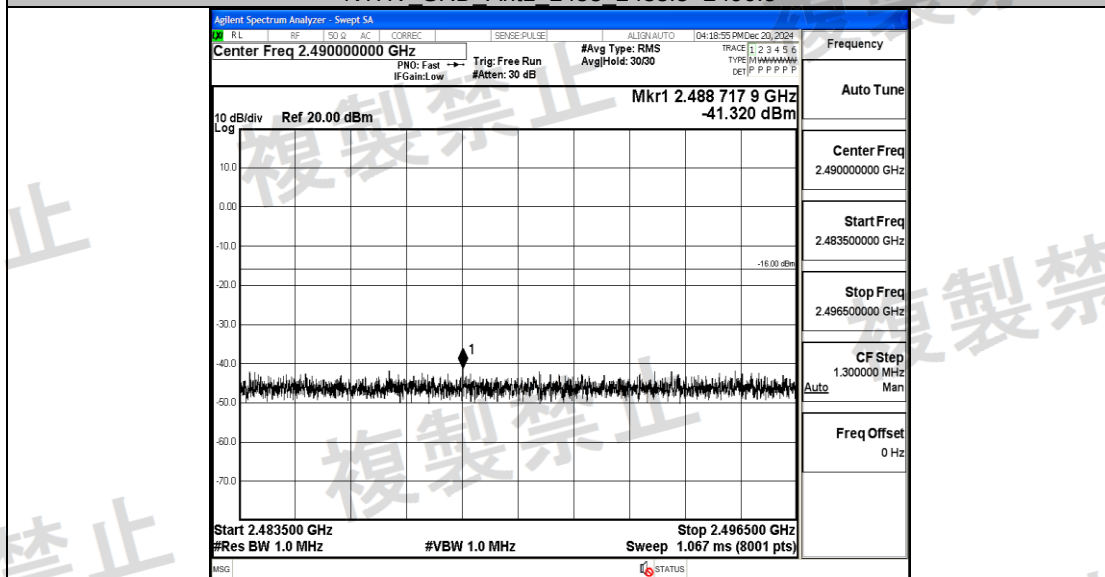
NTHV SRD Ant1 2455 30~2387



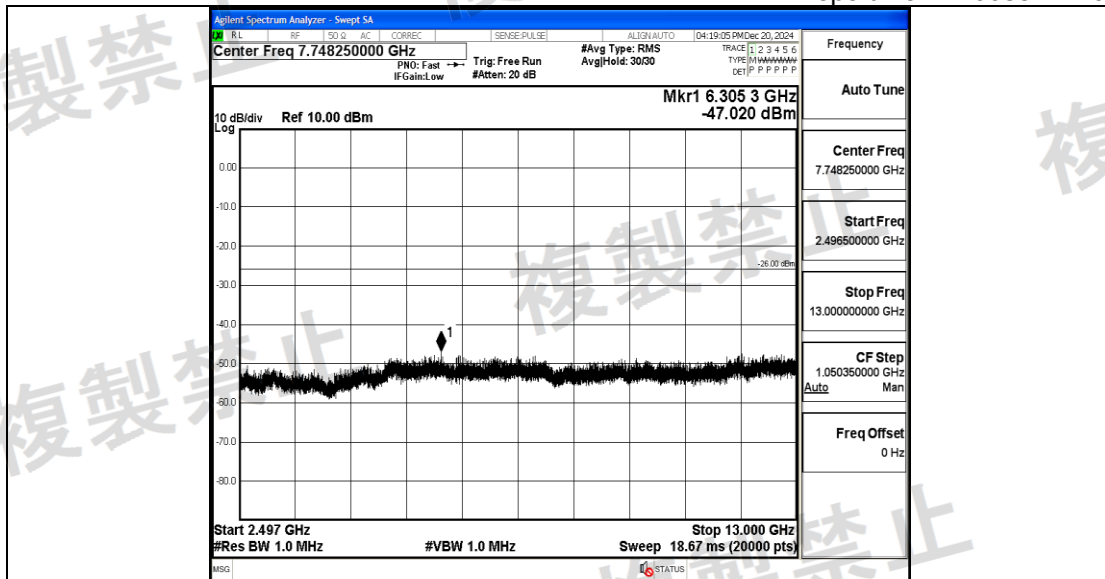
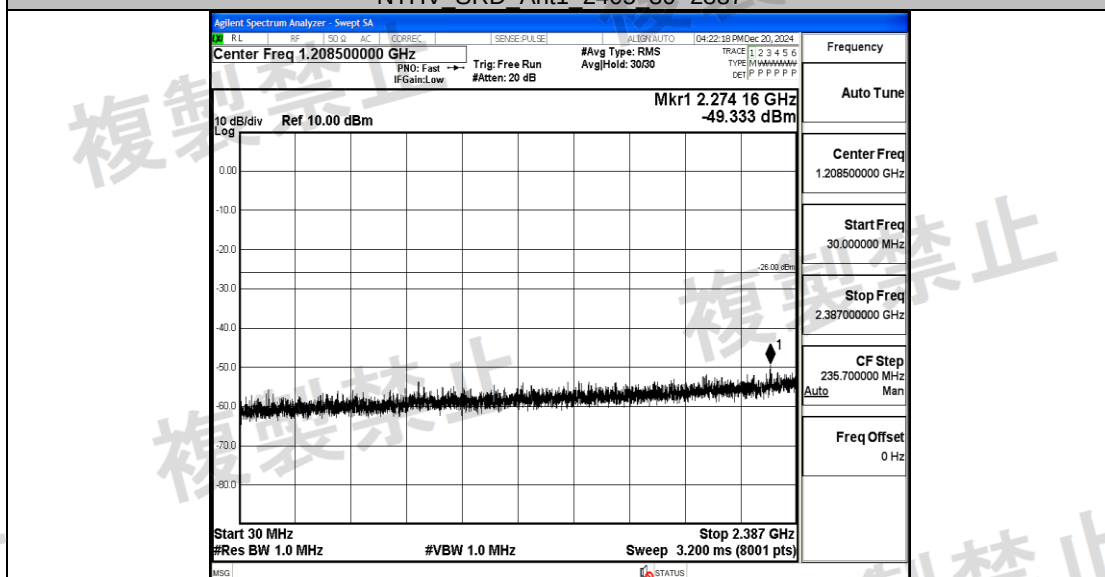
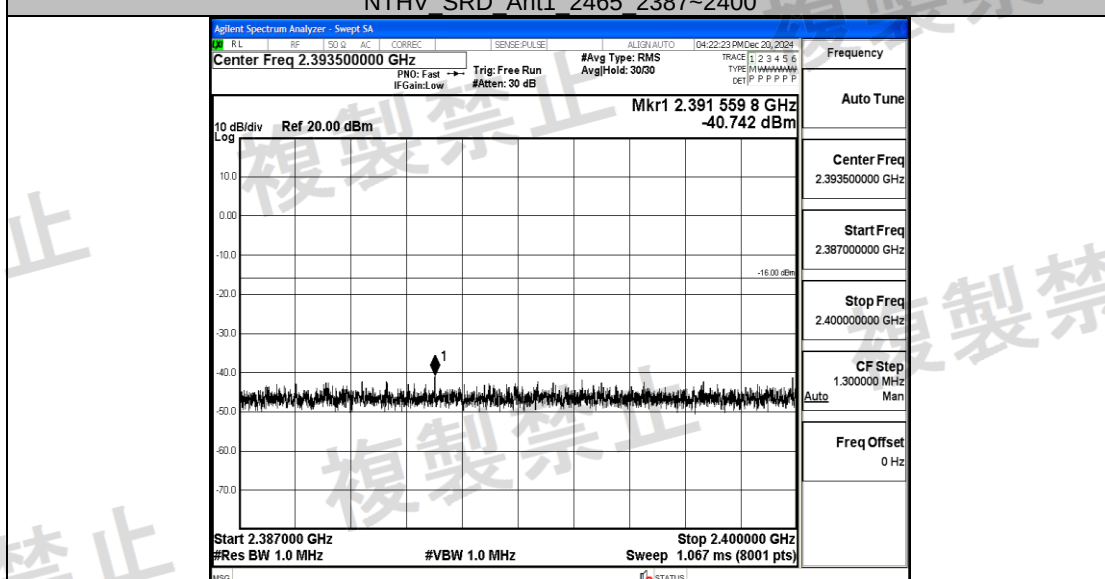
NTHV SRD Ant1 2455 2387~2400

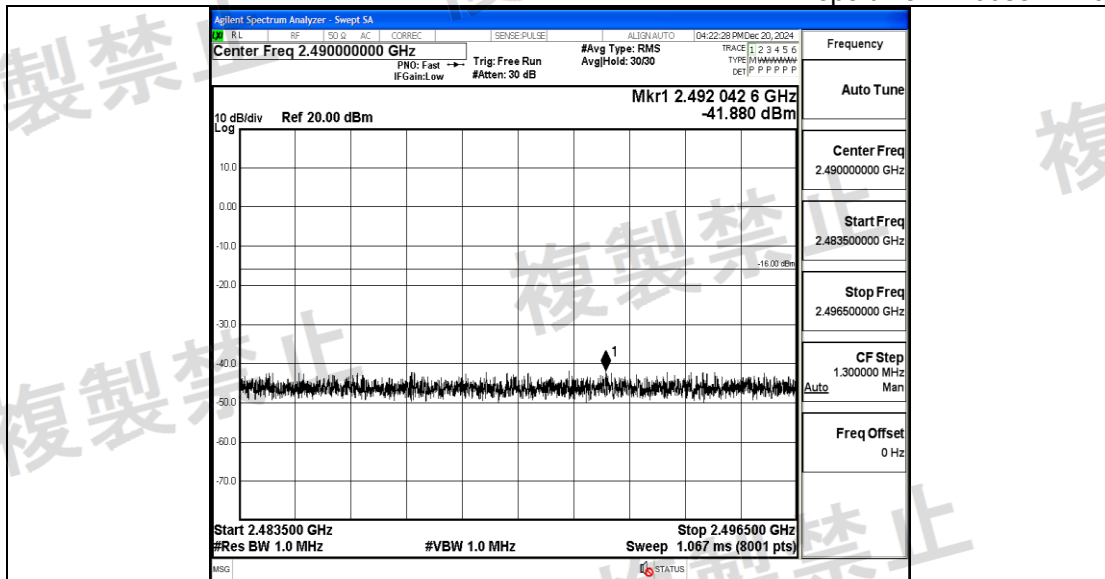


NTHV SRD Ant1 2455 2483.5~2496.5

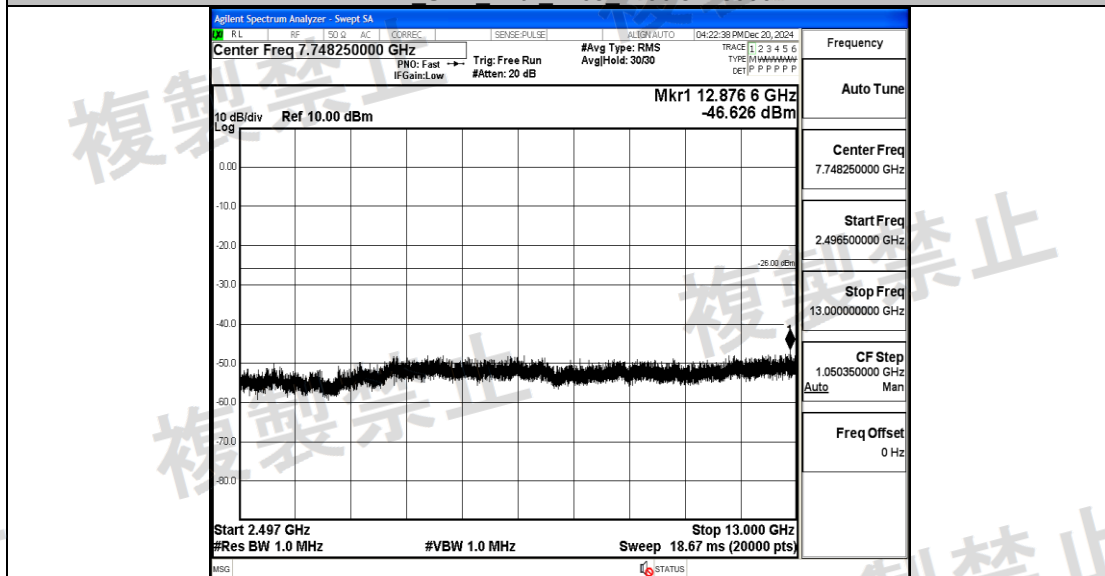


NTHV SRD Ant1 2455 2496.5~13000

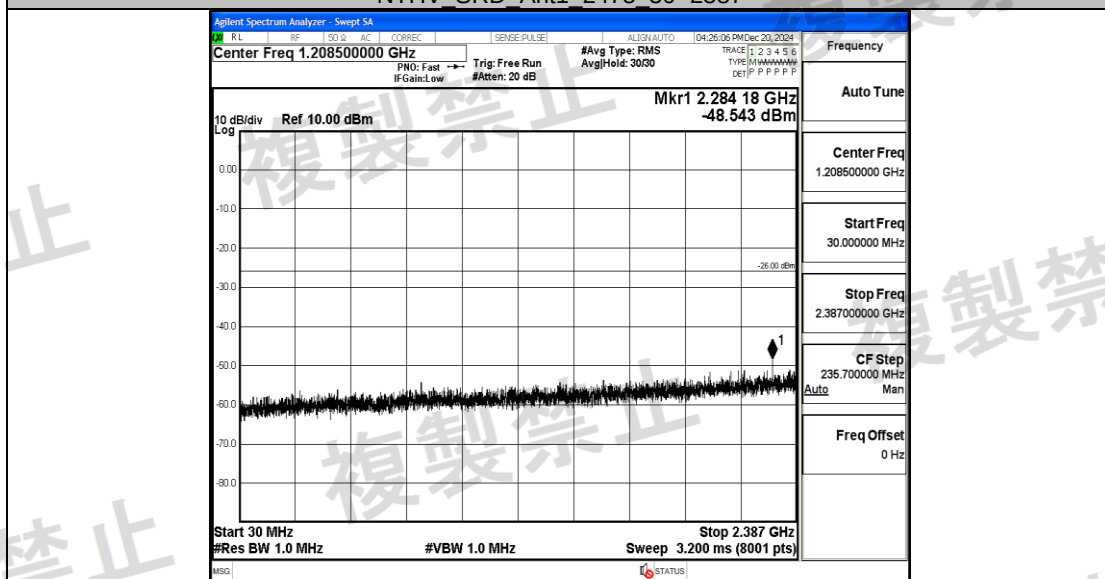




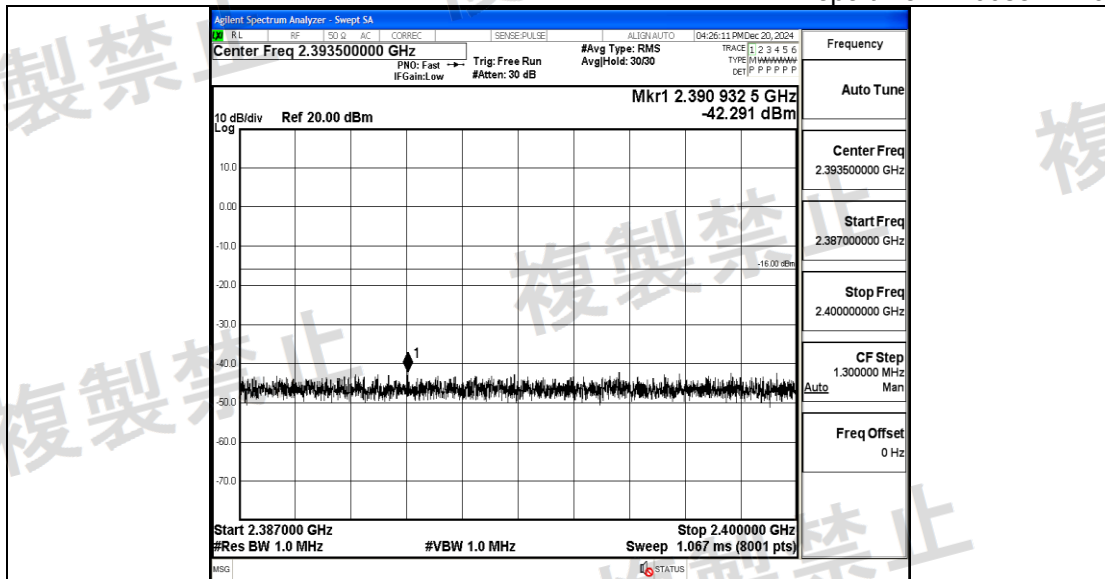
NTHV SRD Ant1 2465 2496.5~13000



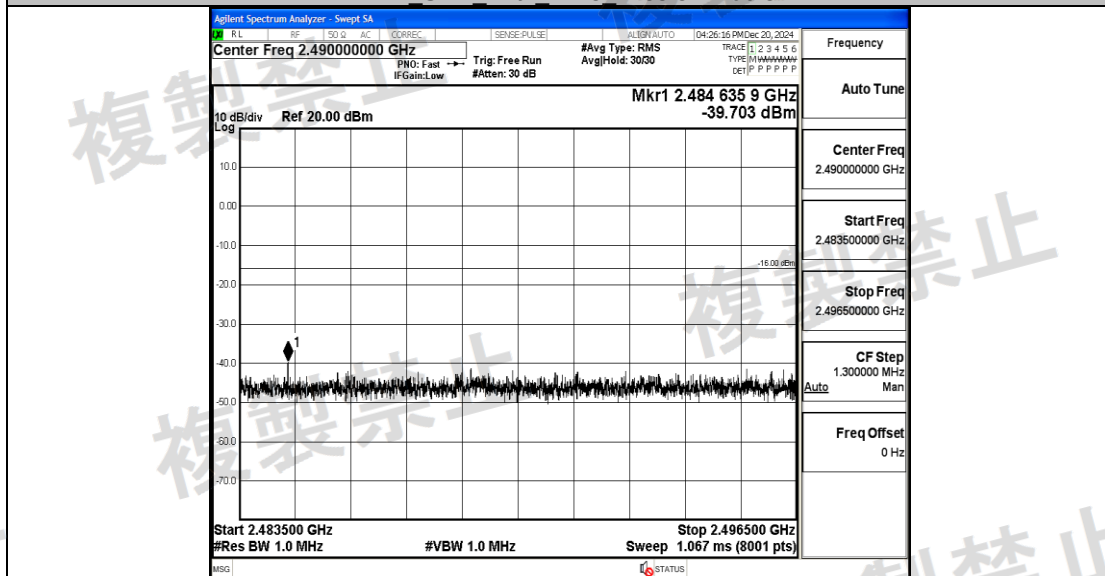
NTHV SRD Ant1 2475 30~2387



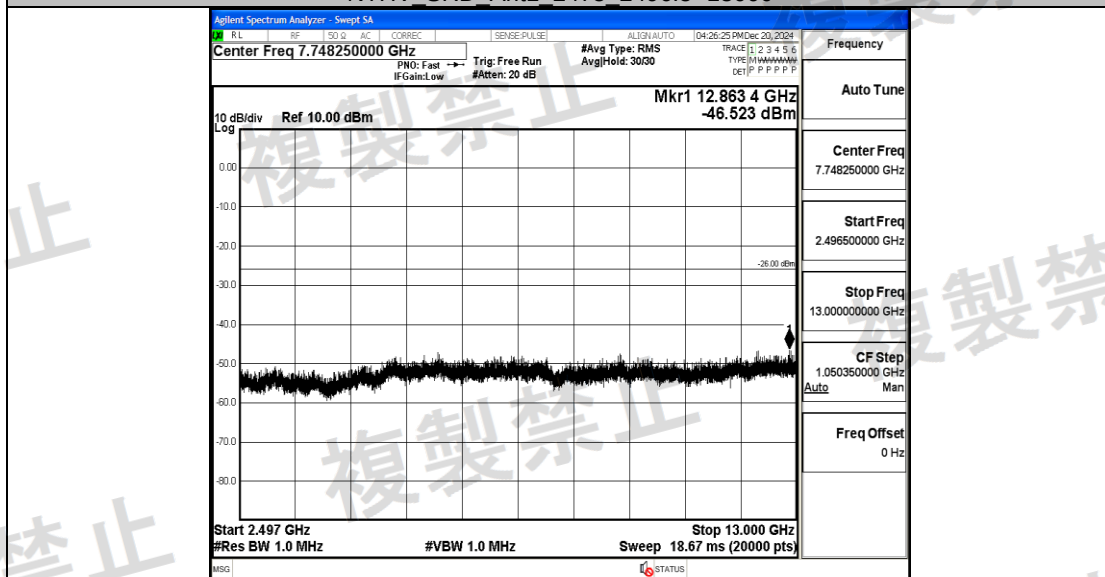
NTHV SRD Ant1 2475 2387~2400



NTHV SRD Ant1 2475 2483.5~2496.5



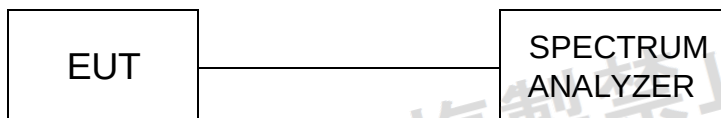
NTHV SRD Ant1 2475 2496.5~13000





4.6. Limit of secondary radiated emissions

TEST CONFIGURATION



TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: modulation

Spectrum Condition:

Frequency: 30MHz-13GHz

RBW:100KHz(30MHz-1GHz), 1MHz(1GHz-13GHz)

VBW:100KHz(30MHz-1GHz), 1MHz(1GHz-13GHz)

Sweep time:Auto

Dectector mode: Positive peak

Indication mode: max hold

LIMIT

The limit on secondary emissions radiated from the receiving equipment within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4 nW or less at a frequency below 1 GHz and 20 nW or less at a frequency of 1 GHz or higher as measured using the circuit

TEST RESULTS

Test Condition	Test Mode	Antenna	Freq (MHz)	Freq.Range [MHz]	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [nW]	Limit [nW]	Verdict
NTNV	SRD	Ant1	2440	30~1000	976.24	-73.92	≤-54	0.04055	≤4	PASS
				1000~13000	11994.35	-67.17	≤-47	0.19187	≤20	PASS
			2457	30~1000	933.80	-73.96	≤-54	0.04018	≤4	PASS
				1000~13000	10110.26	-68.09	≤-47	0.15524	≤20	PASS
			2479	30~1000	921.79	-73.34	≤-54	0.04634	≤4	PASS
				1000~13000	12521.78	-67.19	≤-47	0.19099	≤20	PASS
NTLV	SRD	Ant1	2440	30~1000	741.50	-73.80	≤-54	0.04169	≤4	PASS
				1000~13000	12558.38	-67.47	≤-47	0.17906	≤20	PASS
			2457	30~1000	835.71	-73.74	≤-54	0.04227	≤4	PASS
				1000~13000	12846.39	-67.89	≤-47	0.16255	≤20	PASS
			2479	30~1000	757.26	-73.21	≤-54	0.04775	≤4	PASS
				1000~13000	12390.97	-66.72	≤-47	0.21281	≤20	PASS
NTHV	SRD	Ant1	2440	30~1000	878.75	-74.17	≤-54	0.03828	≤4	PASS
				1000~13000	12686.78	-67.07	≤-47	0.19634	≤20	PASS
			2457	30~1000	964.96	-73.86	≤-54	0.04111	≤4	PASS



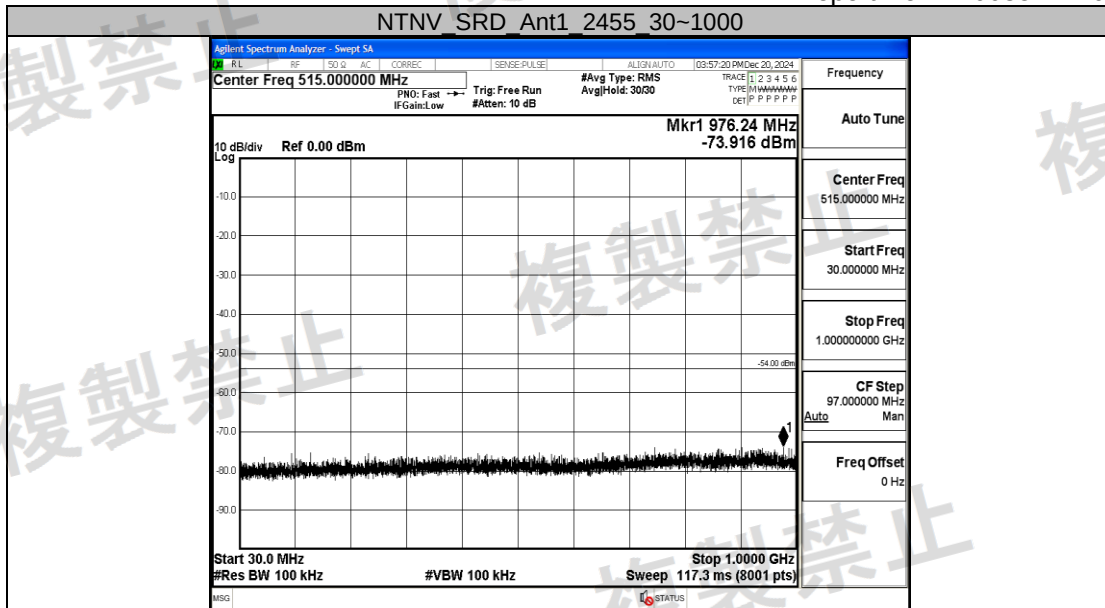
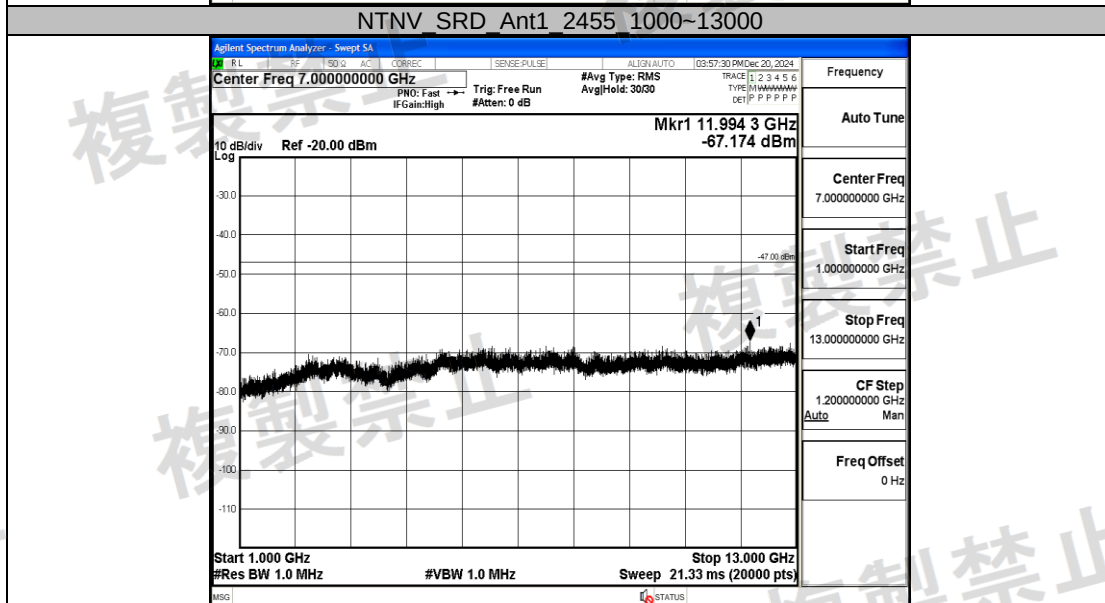
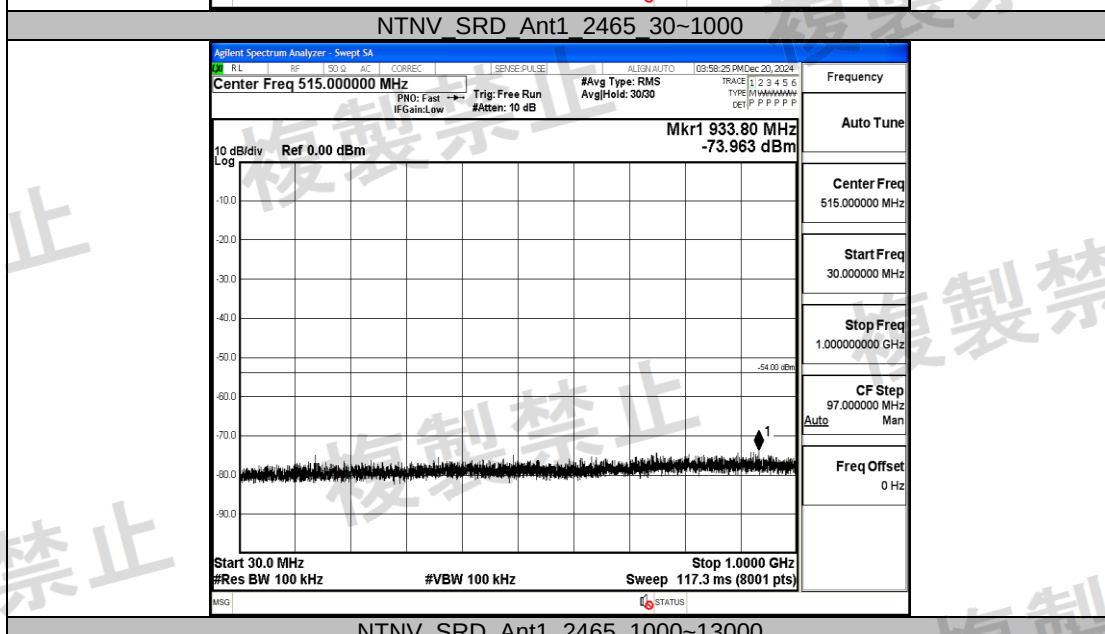
Report No.: TZ0035241206TRF17

			1000~1300 0	12393. 97	-67.19	≤-47	0.1909 9	≤20	PASS
		2479	30~1000	964.84	-73.98	≤-54	0.0399 9	≤4	PASS
			1000~1300 0	3419.3 2	-62.21	≤-47	0.6011 7	≤20	PASS

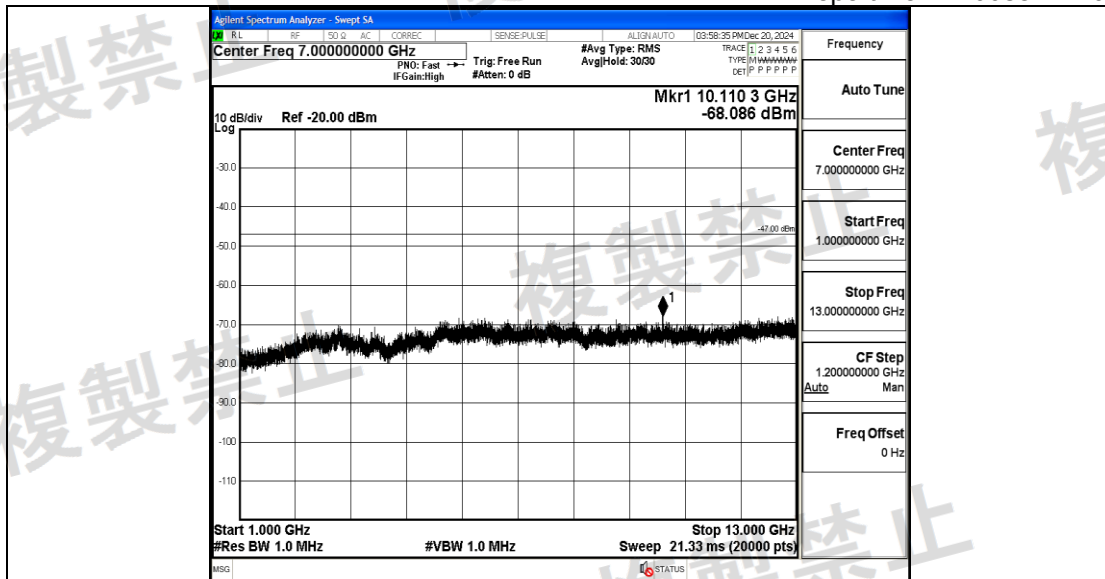
Note: 1. The product was tested at 25 °C and 55% humidity condition;

2. All condition has been testd, list the worst case in this item

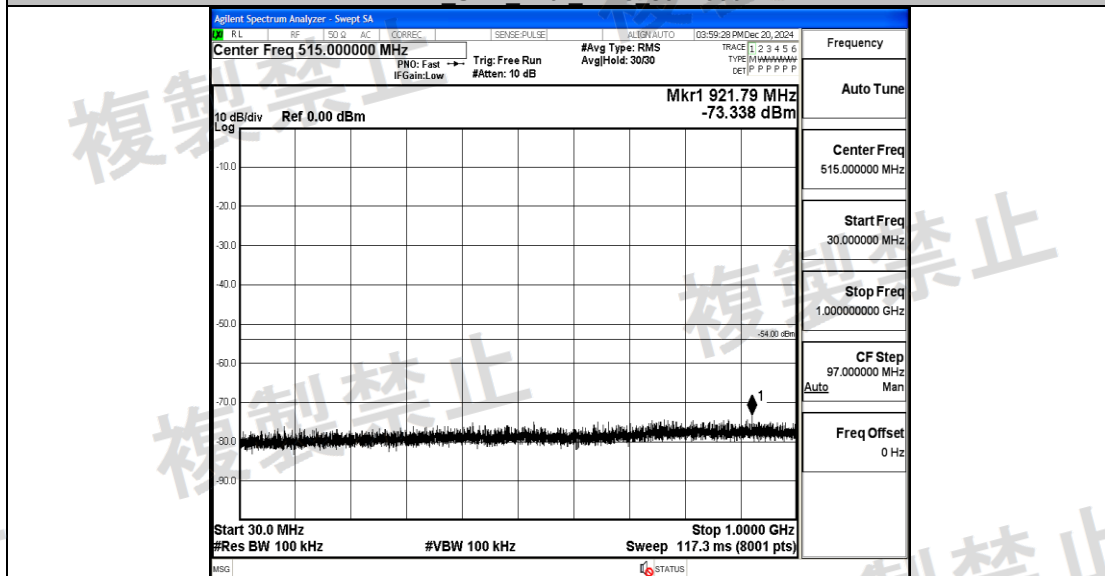
Test plot as follows:



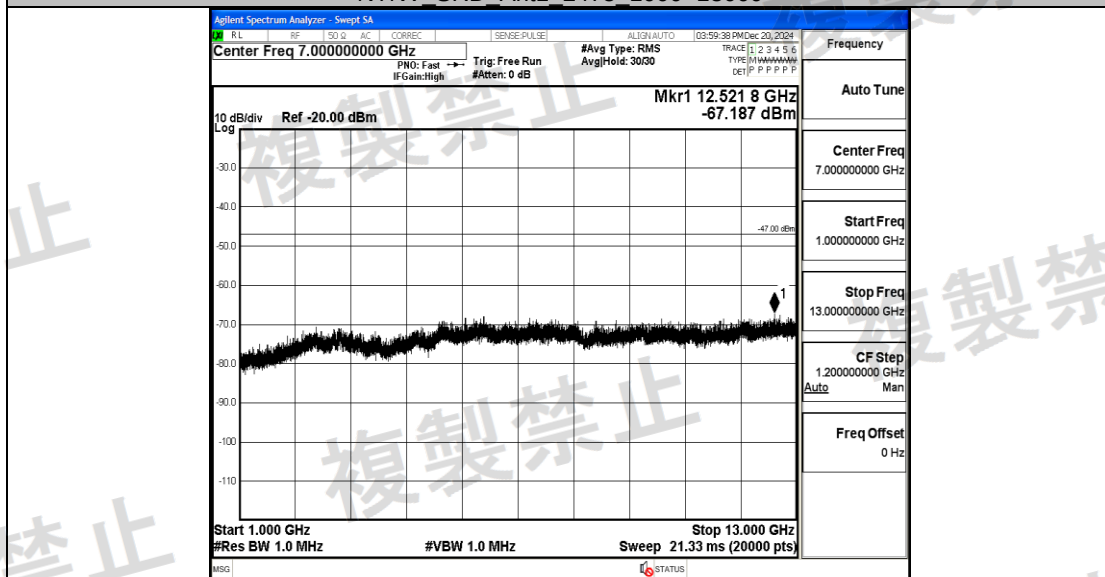
NTNV SRD Ant1 2465 1000~13000



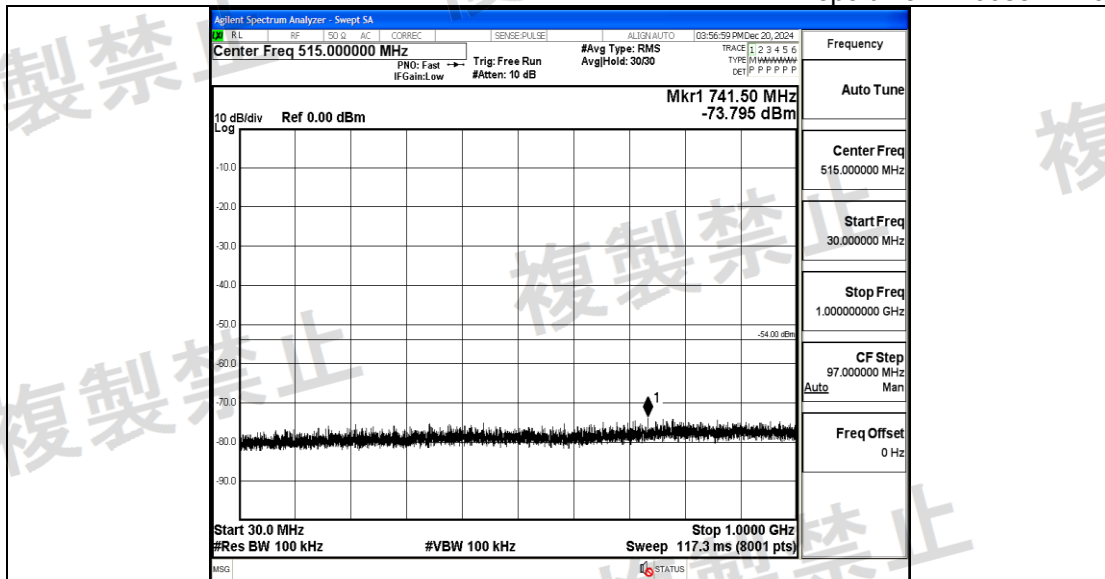
NTNV SRD Ant1 2475 30~1000



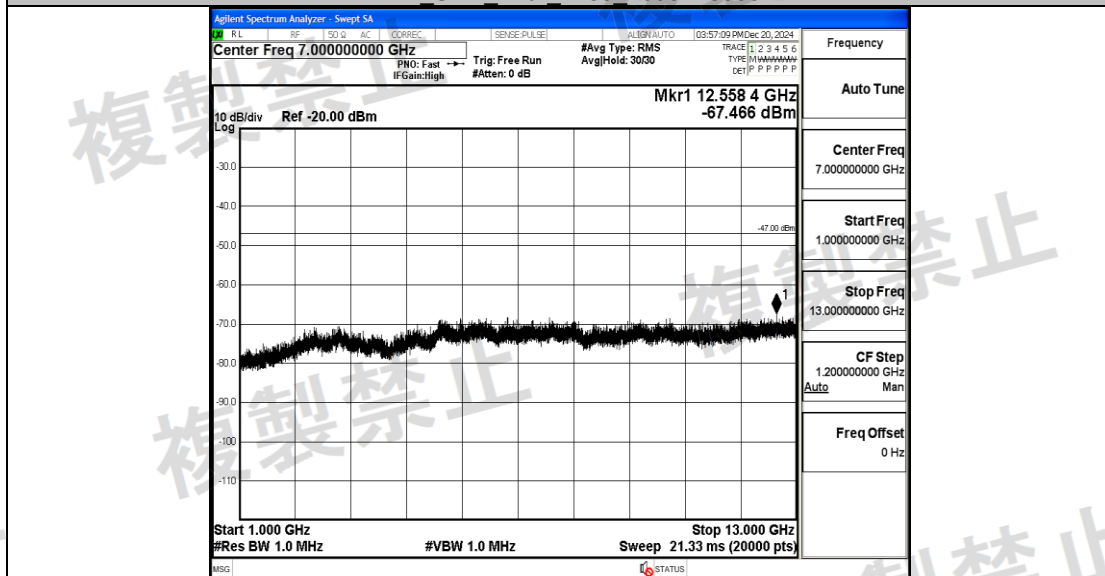
NTNV SRD Ant1 2475 1000~13000



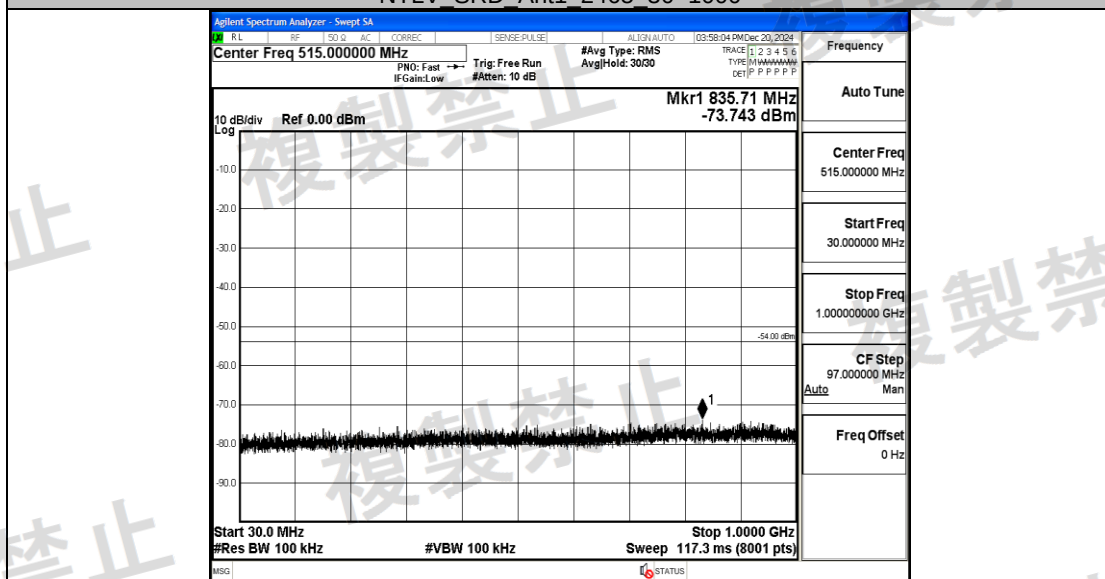
NTLV SRD Ant1 2455 30~1000



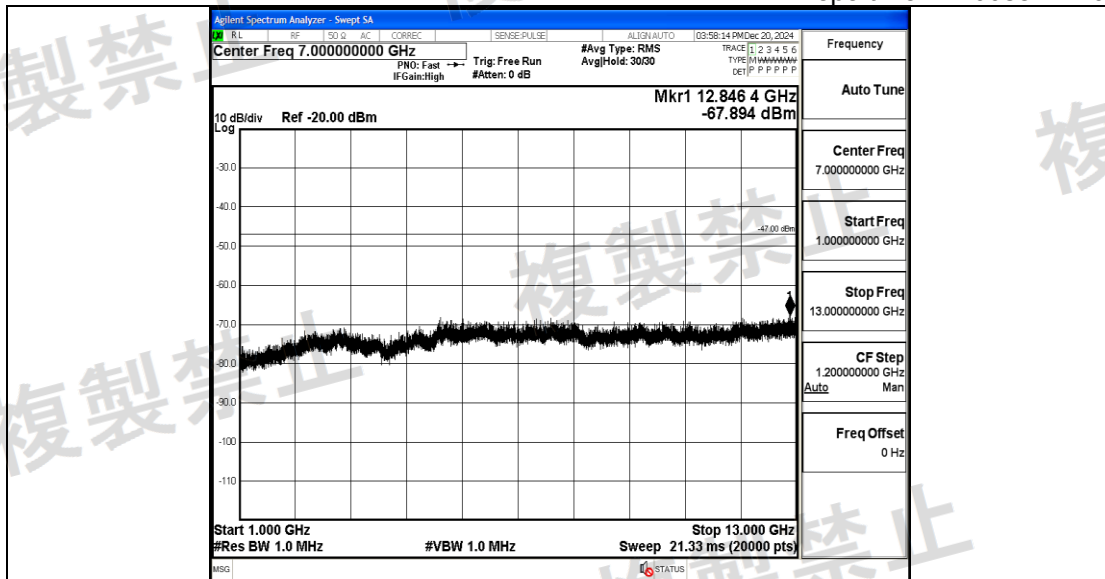
NTLV SRD Ant1 2455 1000~13000



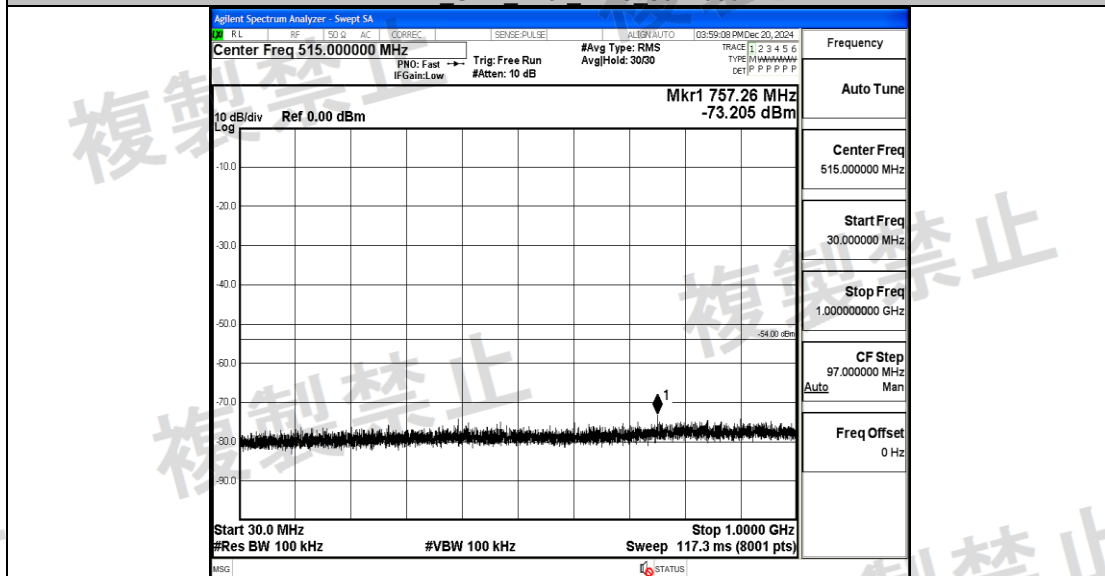
NTLV SRD Ant1 2465 30~1000



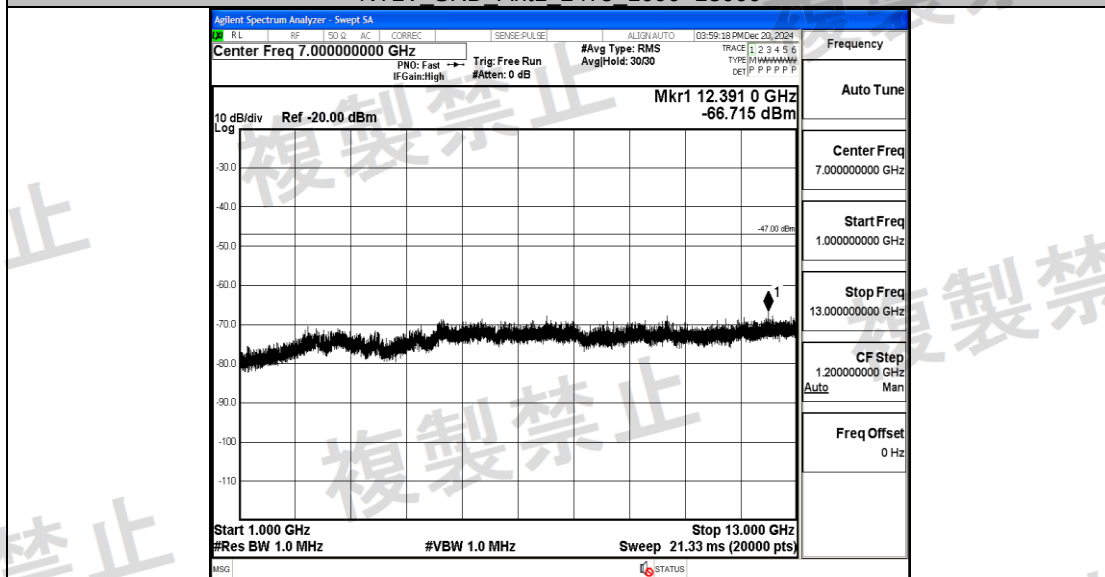
NTLV SRD Ant1 2465 1000~13000



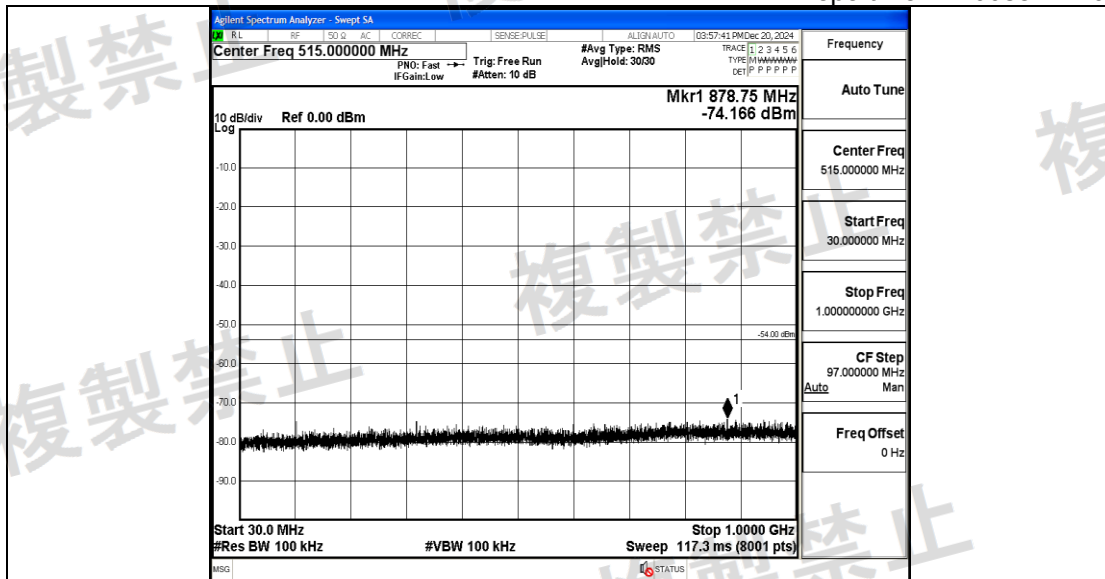
NTLV SRD Ant1 2475 30~1000



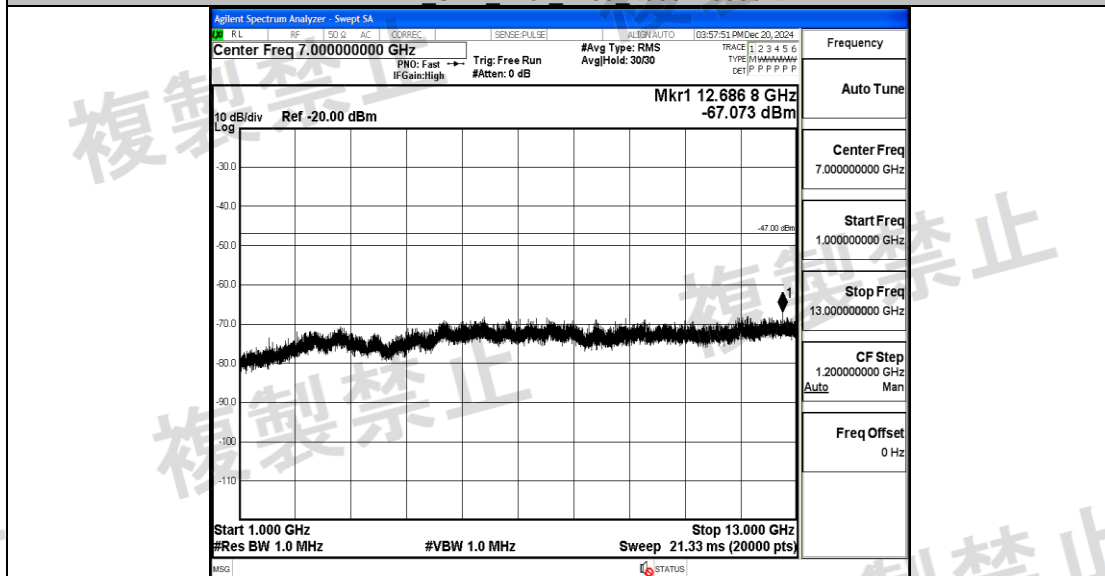
NTLV SRD Ant1 2475 1000~13000



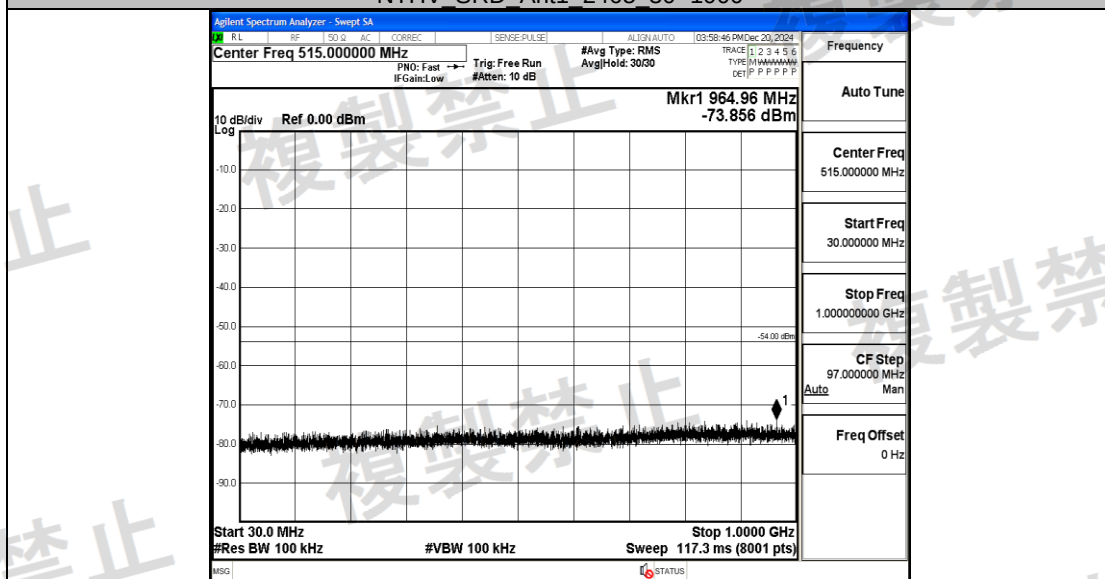
NTHV SRD Ant1 2455 30~1000



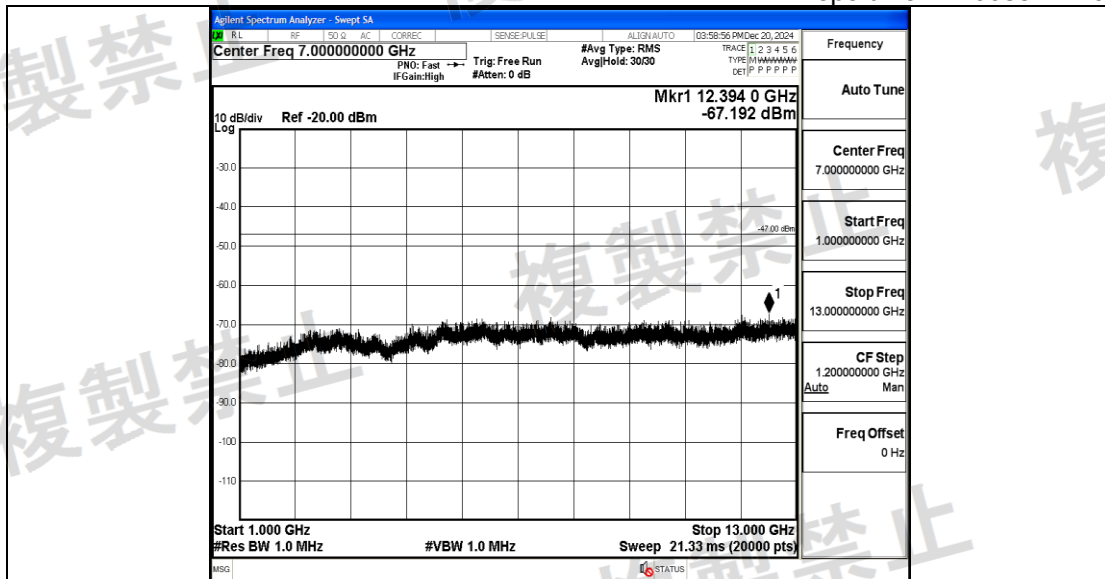
NTHV SRD Ant1 2455 1000~13000



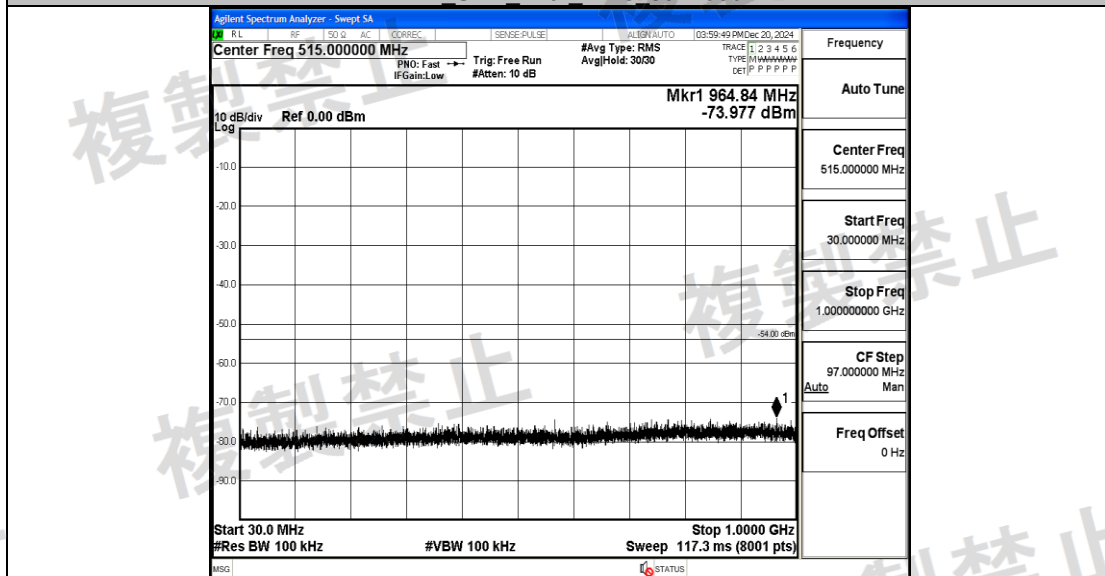
NTHV SRD Ant1 2465 30~1000



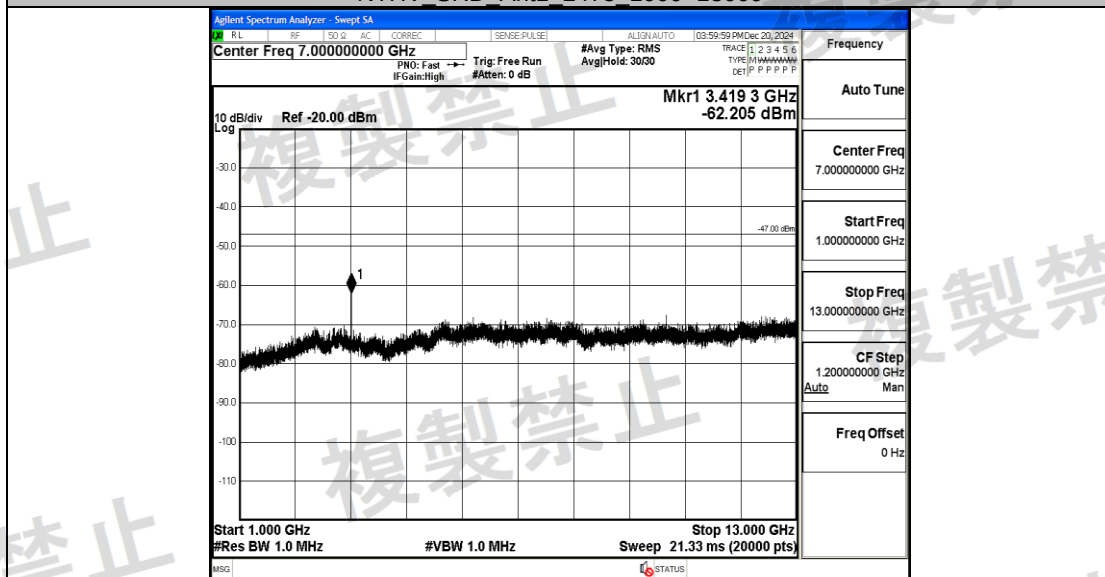
NTHV SRD Ant1 2465 1000~13000



NTHV SRD Ant1 2475 30~1000



NTHV SRD Ant1 2475 1000~13000

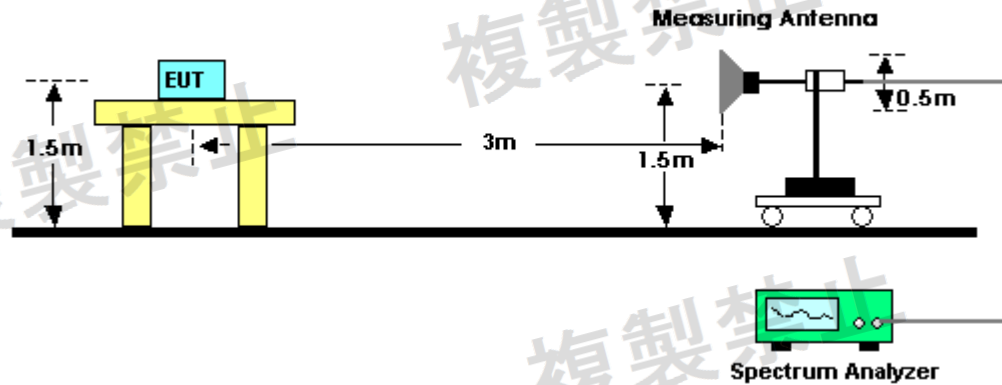




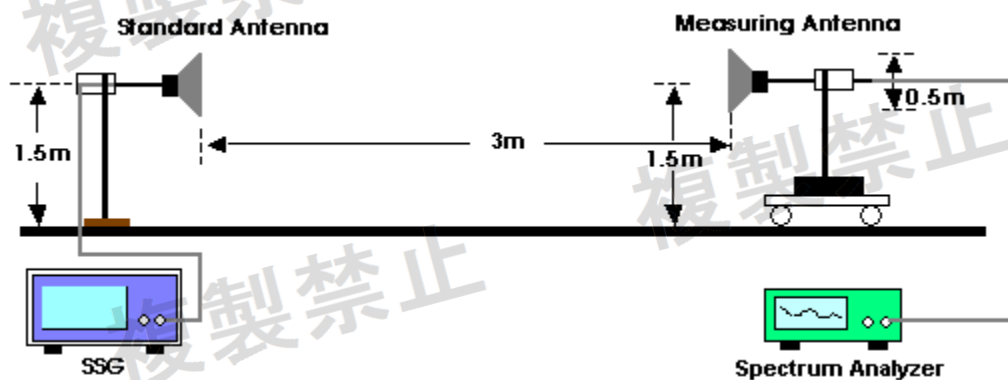
4.7. Transmission Antenna Gain (EIRP antenna power) Measurement

TEST CONFIGURATION

For EUT radiation measurement



For standard antenna measurement



TEST PROCEDURE

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of the measuring antenna. The output level at the spectrum analyzer is read as "E".
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 $\pm 50\text{cm}$ of replacing antenna height and swing it to find the maximum receiving level.
6. Set SSG output power at P_t to give the equivalent output level of "E" or calculate P_t with SSG output which gives the nearest of "E" and difference ($\pm 1\text{dB}$). Record the P_t .
7. Calculate EIRP by the formula below $\text{EIRP} = G_t - L + P_t$.
Gt: gain of replacing antenna (dBi)
L: feeder loss between SSG and replacing antenna
Pt: Output power of the SSG



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.

LIMIT

Modulation system	Frequency band used	Antenna power (max.)	EIRP (max.)	
			Omnidirectional case	Directional case
DS, OFDM	2,400 - 2,483.5 MHz	10 mW/MHz	12.14 dBm/MHz	22.14 dBm/MHz
	2,400 - 2,483.5 MHz	3 mW/MHz	6.91 dBm/MHz	16.91 dBm/MHz
FH, DS-FH FH-OFDM	Excluding 2,427 - 2,470.75 MHz	10 mW/MHz	12.14 dBm/MHz	22.14 dBm/MHz
Other than the above	2,400 - 2,483.5 MHz	10 mW	12.14 dBm	22.14 dBm

Note: it is not applicable when Antenna gain do not exceed 2.14 dBi.

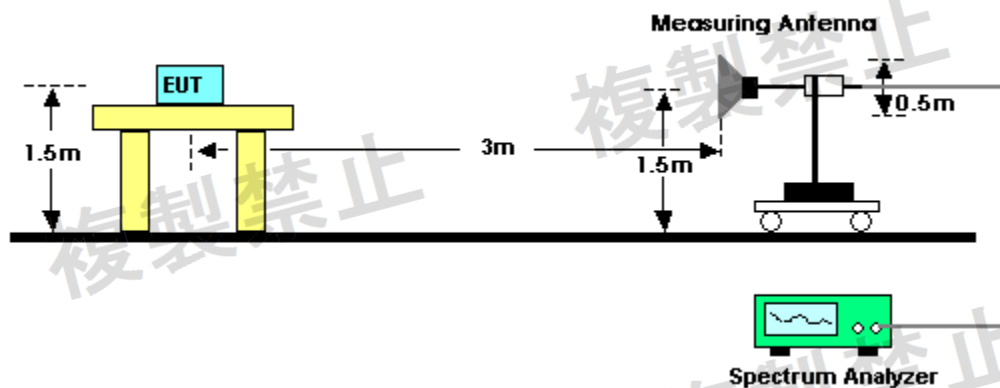
TEST RESULTS

It is not applicable when Antenna gain do not exceed 2.14 dBi.



4.8. Transmission Radiation Angle Width (3db Beamwidth) Measurement

TEST CONFIGURATION



TEST PROCEDURE

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition in section 4.8 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 $A = 1$).
 $A = \{ \text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM} \} = \{ \text{EIRP Power [dBm]} / 12.14 \text{ for DS, OFDM} \}$ or
 $A = \{ \text{EIRP Power [mW]} / 4.9 \text{ for FH} \} = \{ \text{EIRP Power [dBm]} / 6.91 \text{ for FH} \}$

LIMIT

Item	Upper Limits
3dB antenna beam width	$360/A$ (If $A < 1$; then $A = 1$) $A = \{ \text{EIRP [mW]} / 16.36 \text{ for DS, OFDM} \}$ or $A = \{ \text{EIRP [mW]} / 4.9 \text{ for FH} \}$
Note: it is not applicable when Antenna gain do not exceed 2.14 dBi or EIRP do not exceed the omnidirectional EIRP upper limit..	

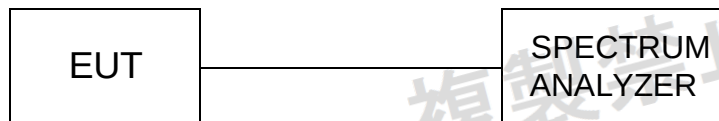
TEST RESULTS

It is not applicable when Antenna gain do not exceed 2.14 dBi.



4.9. Dwell Time

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set the spectrum analyzer as follows:
Center frequency: Measurement hopping frequency
Sweep frequency width: 0 Hz
Resolution bandwidth: About 3 MHz
Video bandwidth: Approximately the same as the resolution bandwidth
Sweep time: Hopping period
Trigger condition: Video trigger
Sweep mode: Single sweep
Detection mode: Positive peak
3. Set the EUT for GFSK packet transmitting.
4. Measure the maximum time duration of one single pulse.
5. Dwell time = [Spreading factor/15] x duty-cycle x 0.4 seconds
Duty-cycle = [on time/total time] x 100%
Spreading factor = Spreading bandwidth/symbol rate

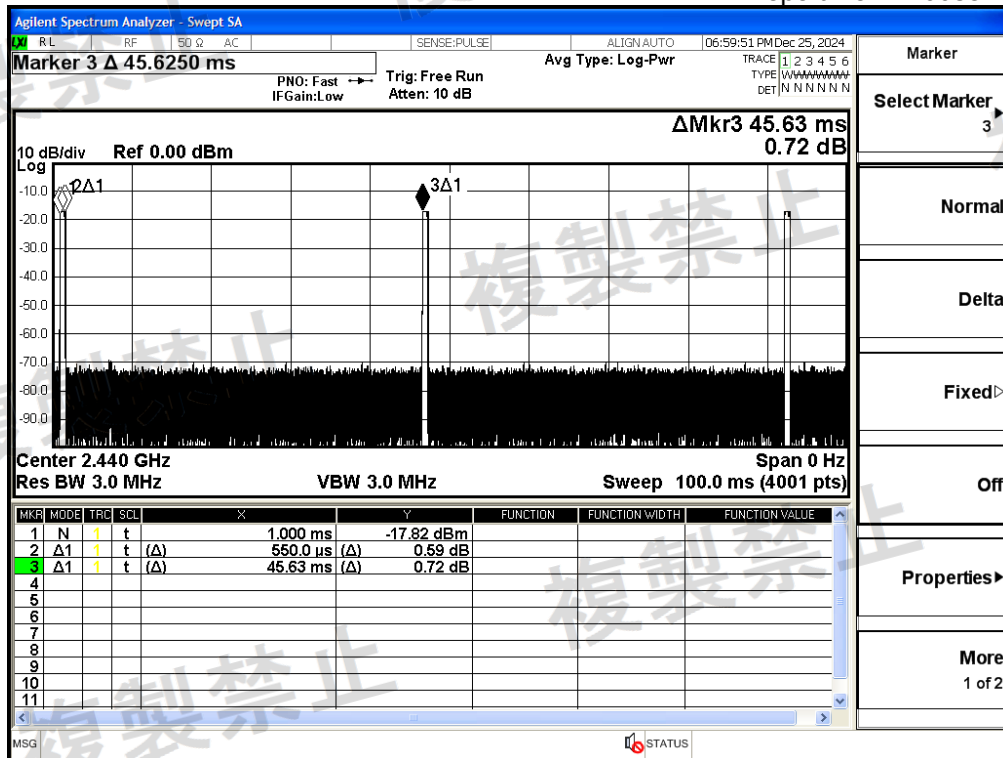
LIMIT

Item	Upper Limits
Dwell Time	≤ 0.05 sec

TEST RESULTS

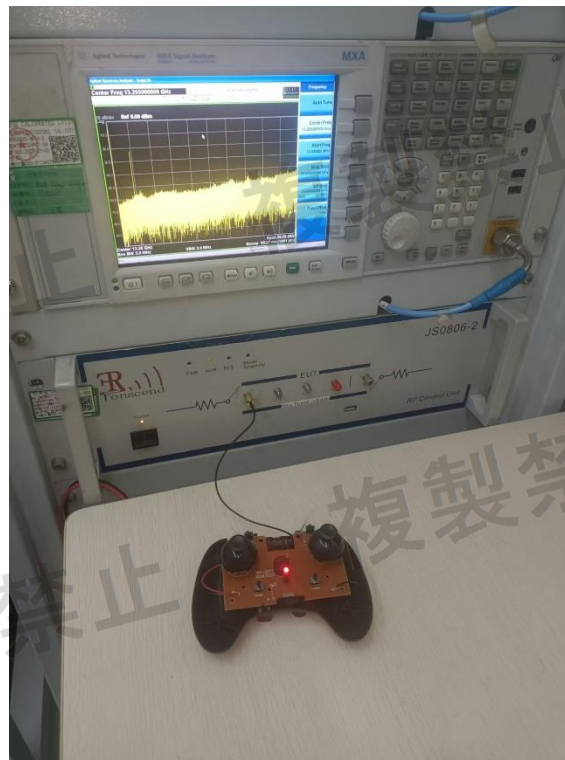
Test Mode	Spreading factor	Duty cycle	Dwell Time (s)	Limits (s)	P/F
GFSK	38.612	0.012	0.01236	0.05	Pass

Note: The symbol rate is 1 megasymbols per second, as claimed by the manufacturer.





5. Test Setup Photos of the EUT





6. External and Internal Photos of the EUT

External Photos











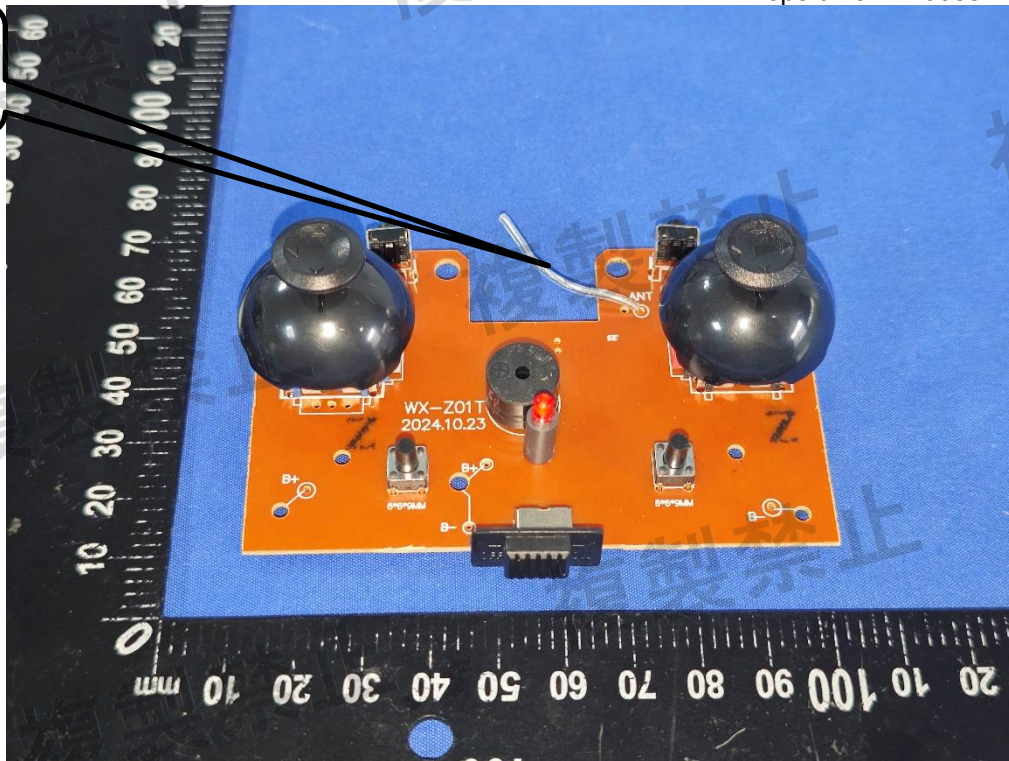
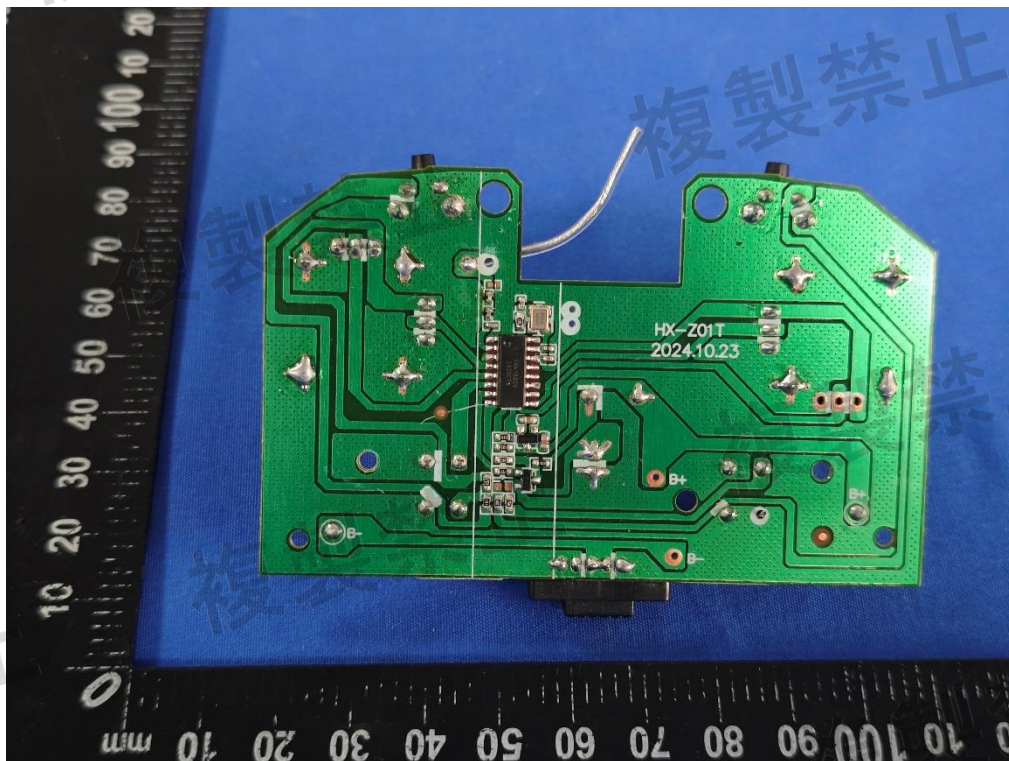
Internal Photos

Report No.: TZ0035241206TRF17





SRD
antenna



.....End of Report.....