

ARIB STD-T66

Test Report

Applicant: New Audio LLC

Address: 780 THIRD AVENUE, SUITE 4203, NEW YORK, NY10017, USA

Manufacturer: New Audio LLC

Address: 780 THIRD AVENUE, SUITE 4203, NEW YORK, NY10017, USA

Product(s): SMART EEG ACTIVE NOISE-CANCELLING WIRELESS
HEADPHONES

Brand(s): MASTER & DYNAMIC, NEURABLE



Test Model(s): MW75 NEURO

Series Model(s): N/A

Test Date: Feb. 28, 2025 ~ Mar. 13, 2025

Issued Date: Mar. 14, 2025

Issued By: Hwa-Hsing (Dongguan) Testing Co., Ltd.

Address: No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park,
HuangJiang Town, Dongguan City, People's Republic of ChinaStandards: ARIB STD-T66, Article 2 Paragraph 1, item 19, MIC notice 88
Appendix 43

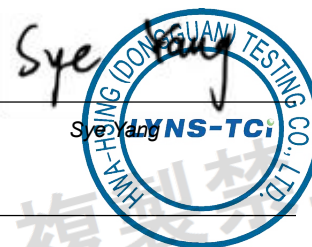
The above equipment has been tested by **Hwa-Hsing (Dongguan) Testing Co., Ltd.**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :



Wendy Lee

Reviewed by :



Sze Yang

Approved by :



Scott He

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Lab: [Hwa-Hsing \(Dongguan\) Testing Co., Ltd.](#)

Address: [No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang Town, Dongguan City, People's Republic of China](#)

Tel: [0769-85598986](tel:0769-85598986)

Web: www.lyns-tci.com

E-Mail: service-hs@lyns-tci.com

Release

[Ver. 1.5](#)

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Release Control Record

Issue No.	Description	Date Issued
2502120095-RF-JP-02	Original Release	Mar. 14, 2025

1 Summary of Test Results

The EUT has been tested according to the following specifications:

Article 2 Paragraph 1, item 19	ARIB STD-T66	Report reference	Parameter	Test Results (Note)
General provisions				
C	3.2(4)	3.1	Frequency tolerance	C
D	3.2(7)	3.2	Occupied bandwidth	C
E	3.2(6)	3.4	Spurious emissions	C
Transmitting equipment				
F	3.2(1)	3.5	Antenna power	C
---	--	--	SAR	NA
Transmitting antenna				
--	--	2.5	Type, configuration, etc. of transmitting antenna	C
--	--	2.5	Direction pattern of transmitting antenna	C
Receiving equipment				
G	3.3(1)	3.6	Spurious emissions of receiver	C
--	--	2.5	Refer to all articles for transmitting antenna	C
Operating frequency 2400 to 2483.5MHz				
--	3.7(1)	3.4	High Frequency /modulation section cannot be opened easily	C
--	3.1(1)	3.1	Communication method	C
--	3.2(1)a	3.1	Modulation method	C
--	3.2(1)a	3.1	Spread spectrum method	C
--	3.2(2)	3.5	Antenna power	C
--	3.6(2)	3.5	Absolute gain of transmitting antenna	C
--	3.6(2)	3.5	Angular width of principal radiation (AWPR)	C
--	3.2(8)	3.3	Diffusion bandwidth	C
--	3.2(9)	3.3	Spreading factor	C
--	3.4.1(1)	3.8	Interference Prevention Function	C
--	3.4.1(3)	3.7	Carrier Sense Capability	C
Note: C = Conform; NC = Not Conform; NT = Not Tested; NA = Not Applicable;				

1.1 Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.Date	Calibration Method
Spectrum	Keysight	N9020A	MY51240612	2025-07-25	C
Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101783	2025-07-25	C
Power Meter 10Hz~18GHz	Tonscend	JS0806-2	188060126	2025-07-25	C
Signal generator	Keysight	E4421B	GB40051020	2025-07-25	C
Signal generator	Keysight	E4421B	GB40051020	2025-07-25	C
Horn Antenna	Schwarzbeck	BBHA 9120 D	1959	2025-08-15*	C
Attenuator	Weinschael	54A-10	N/A	2025-07-25	C
Universal Switch Control Unit	Rohde&Schwarz	CMW500	12010002k50	2025-07-25	C
Test Software	Tonscend	JS0806-2	NA	NA	C
Humidity tester	Jingchuang	GSP-8A	CMA22B000592	2025-07-29	C

Note:

1. The test was witness in 966 Chamber and RF Oven room.
2. The calibration interval of the above test instruments is 12/24* months and the calibrations are traceable to LISAI/CHINA.
3. Calibration body's name: GUANGZHOU LISAI CALIBRATION AND TESTING CO.,LTD.
Address: No.8 South Street Shi Ji Institute Guangzhou.Guangdong.China.

Calibration Method:

- a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1)
- b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)
- c) Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1)
- d) Calibration conducted by using measuring instruments and other equipment listed in the right column of Table No. 3 attached hereto, which shall have been given any of calibration, etc. listed above from a) to c)

1.2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Parameter	Uncertainty
Occupied Bandwidth	206.50 Hz
Spurious emissions	$\pm 3.84\text{dB}$
Output power density	1.37dB
Out of band radiated power	2.52 dB
Frequency Tolerance	0.104 ppm

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.3 Modification Record

There were no modifications required for compliance.

2 General Information

2.1 General Description of EUT

Product Name	SMART EEG ACTIVE NOISE-CANCELLING WIRELESS HEADPHONES
Test Model Name	MW75 NEURO
Series Models Name	N/A
Power Supply Rating	DC 5V from USB or DC 3.7V from battery
Temperature Operating Range	0 ~ 45℃
Modulation Type	BT-LE(GFSK)
Modulation Technology	DTS
Transfer Rate	1 Mbps; 2Mbps
Operating Frequency	2402MHz ~ 2480MHz
Rated RF output power density	Please see Note 1
Conducted power density	Please see Note 1
EIRP power density	Please see Note 1
Antenna Type	FPC Antenna
Antenna Gain	1.67dBi
Antenna Connector	N/A
Accessory Device	USB-C Cable: Unshielded, 100cm Type-c to 3.5mm Cable: Unshielded, 100cm
Radio HW	V1.0.16
Radio FW	V1.1

Note:

1. The power table as below table:

Test condition for Modulation Technology	Rated output power density (mW)	Conducted power density (mW)	EIRP power density (mW)
GFSK (1 Mbps)	4.5	4.943	7.261
GFSK (2 Mbps)	4.5	4.529	6.653

2. The above EUT information was declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or user's manual.

Hwa-Hsing (Dongguan) Testing Co., Ltd. is not responsible for the accuracy of the information provided by the manufacturer.

3. Please refer to the EUT photo document (Reference No.:2502120095) for detailed product photo.

4. For the test results, the EUT had been tested with all conditions, and only the worst case was shown in the test report.

2.2 Description of test modes

2.2.1 Channel list of this EUT:

These are 40 channels are provided to this EUT:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Note:

- 1.The channels which were indicated in bold type of the above channel list were selected as presentative test channel. There fore, only the data of the test channels were recorded in this report.

2.2.2 Test mode applicability and tested channel detail

Test items		Test Conditions for voltage supply	Environmental Conditions
1	Frequency tolerance measurement	V _{normal} V _{max} V _{min}	21.5deg. C, 56%RH
2	Occupied bandwidth measurement (99% power bandwidth)		
3	Spreading bandwidth measurement (90% power bandwidth)		
4	Spurious emissions for transmitter measurement		
5	Antenna power measurement		
6	Spurious emissions for receiver		

EUT Configure mode No.	Test conditions for modulation technology
Mode A	GFSK 1Mbps
Mode B	GFSK 2Mbps
RF power setting value	
Channel	Power setting
Low	Default
Middle	Default
High	Default

Note:

- For the test results, the EUT had been tested with all conditions, and the worst-case mode of data will record in the report.
- By means of test software which provided by manufacture, the power levels during the tests were set according to the above table.

2.2.3 Assembly

The RF circuit was located inside of the EUT.

2.2.4 Antenna Specifications

Ant. Type	Connector Type	Highest Peak Gain (dBi) 2.4GHz ~ 2.5GHz
FPC Antenna	N/A	1.67dBi

Note: The Antenna pattern Please refer to the attached file (Antenna report).

2.3 Description of Support Units

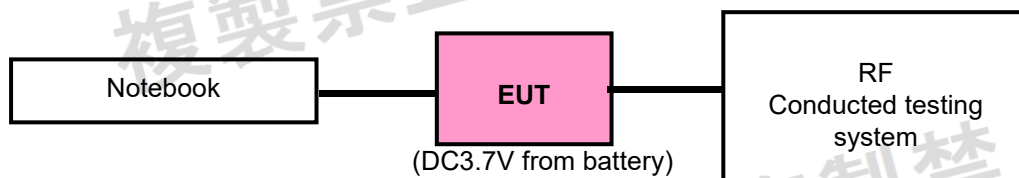
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	Notebook	HUAWEI	NbD-WFH9	EUEPM21725002655	N/A
2	Notebook	DELL	Inspiron 14R Aluminum Edition	6WPG9-63PV4-RBPF2-T6RHW-W9GBP	N/A

No.	Signal Cable Description of The Above Support Units
1	USB Cable: Unshielded, Detachable 1.2m;

2.3.1 Configuration of System under Test

Bluetooth TX/RX:



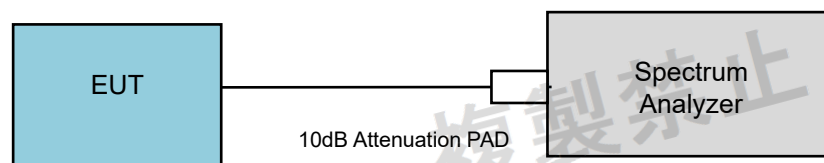
3 Test types and results

3.1 Frequency tolerance measurement

3.1.1 Limits of frequency tolerance measurement

Condition	Tolerance of frequency Limit (e.i.r.p)
Under all test conditions	Within +/- 50ppm

3.1.2 Test Setup



3.1.3 Deviation from Test Standard

No deviation.

3.1.4 Test Procedure

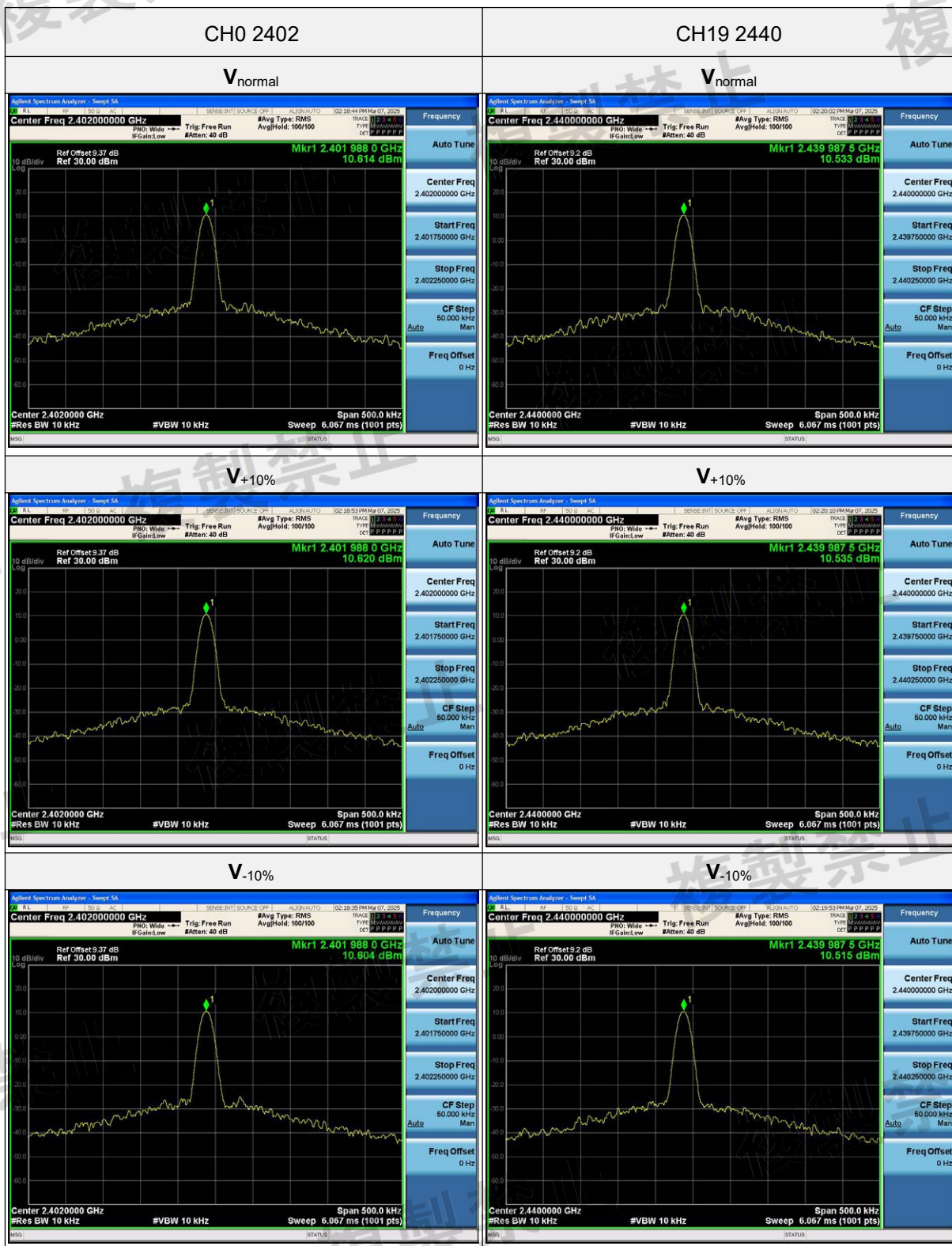
Test method according to Clause 3 of Annex No.43 of MIC Notification No.88.

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- The EUT was transmitted non-modulated frequencies.
- The supply voltage was then adjusted on the EUT from 90% to 110% and the frequency record.

3.1.5 Test Results

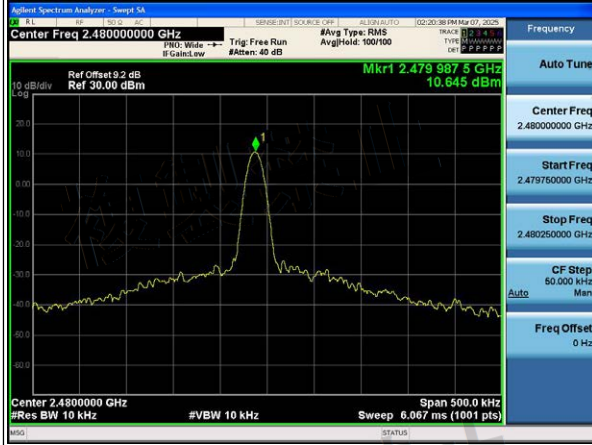
Channel	Frequency (MHz)	Voltage normal		Voltage +10%		Voltage -10%	
		Frequency (MHz)	Frequency tolerance (ppm)	Frequency (MHz)	Frequency tolerance (ppm)	Frequency (MHz)	Frequency tolerance (ppm)
0	2402	2401.9880	-4.99584	2401.9880	-4.99584	2401.9880	-4.99584
19	2440	2439.9875	-5.12295	2439.9875	-5.12295	2439.9875	-5.12295
39	2480	2479.9875	-5.04032	2479.9870	-5.24194	2479.9875	-5.04032

- The test plots listing in the below pages.



CH39 2480

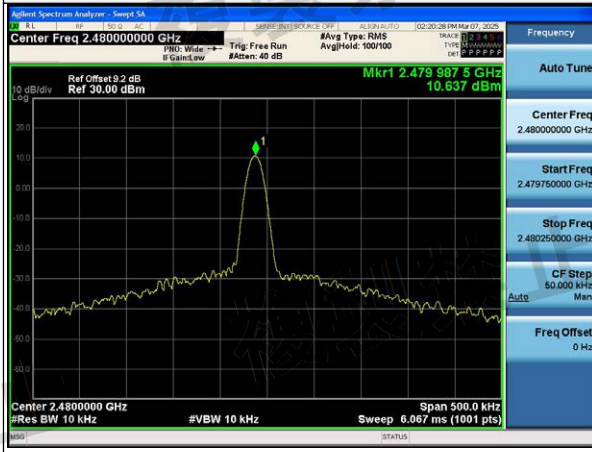
V_{normal}



V_{+10%}

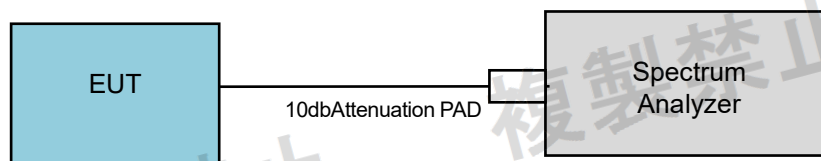


V_{-10%}



3.2 Occupied bandwidth measurement (99% power bandwidth)**3.2.1 Limits of occupied bandwidth measurement**

Condition	Occupiedbandwidth Limit	Remark
Occupied bandwidth	<26MHz	For 802.11b, g & 802.11n (HT20)
Occupied bandwidth	<26MHz	For BT-LE (GFSK)

3.2.2 Test Setup**3.2.3 Deviation of Test Standard**

No deviation.

3.2.4 Test Procedure

Test method according to Claus 4 of Annex No.43 of MIC Notification No.88.

The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission. The supply voltage was then adjusted on the EUT from 90% to 110% and the frequency record.

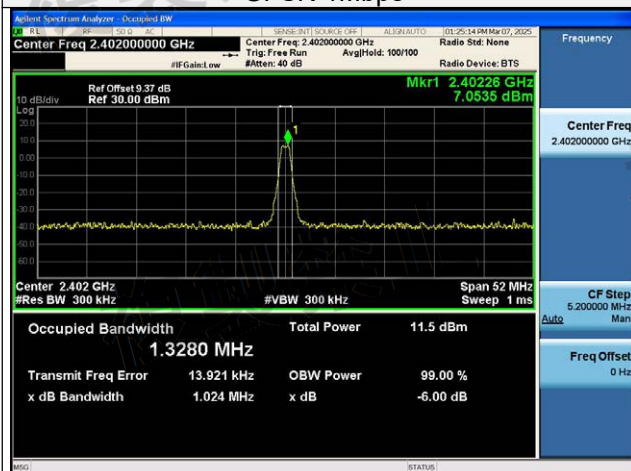
3.2.5 Test Results

Occupied bandwidth measurement (99% power bandwidth):

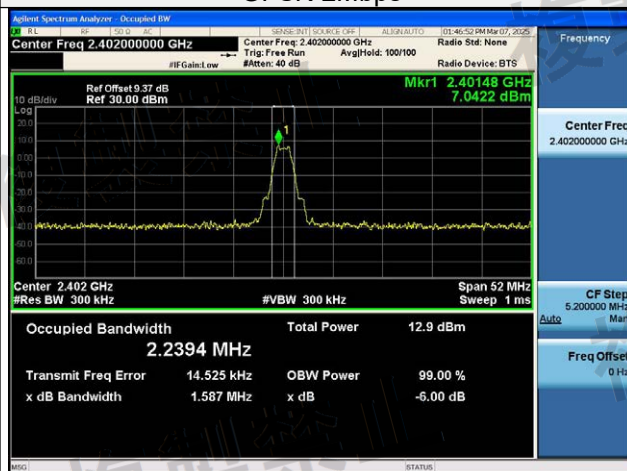
Test Condition	TestMode	Channel No.	Centre Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
Voltage normal	1Mbps	0	2402	1.328	<=26	Pass
		19	2440	1.327	<=26	Pass
		39	2480	1.319	<=26	Pass
	2Mbps	0	2402	2.239	<=26	Pass
		19	2440	2.268	<=26	Pass
		39	2480	2.238	<=26	Pass
Voltage +10%	1Mbps	0	2402	1.329	<=26	Pass
		19	2440	1.330	<=26	Pass
		39	2480	1.313	<=26	Pass
	2Mbps	0	2402	2.253	<=26	Pass
		19	2440	2.266	<=26	Pass
		39	2480	2.250	<=26	Pass
Voltage -10%	1Mbps	0	2402	1.331	<=26	Pass
		19	2440	1.318	<=26	Pass
		39	2480	1.316	<=26	Pass
	2Mbps	0	2402	2.261	<=26	Pass
		19	2440	2.241	<=26	Pass
		39	2480	2.239	<=26	Pass

Note: For the test plots please refer to the below.

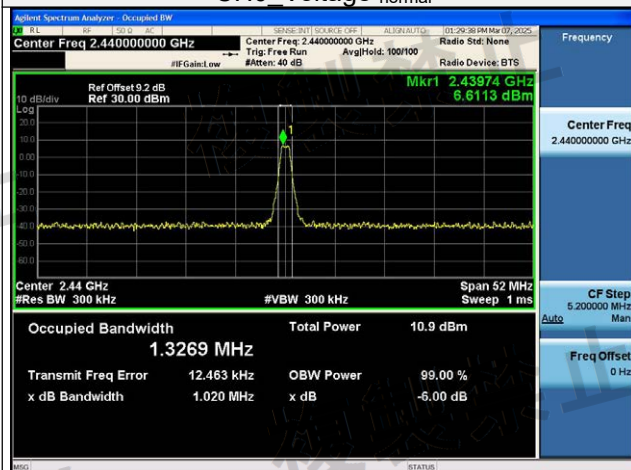
GFSK-1Mbps



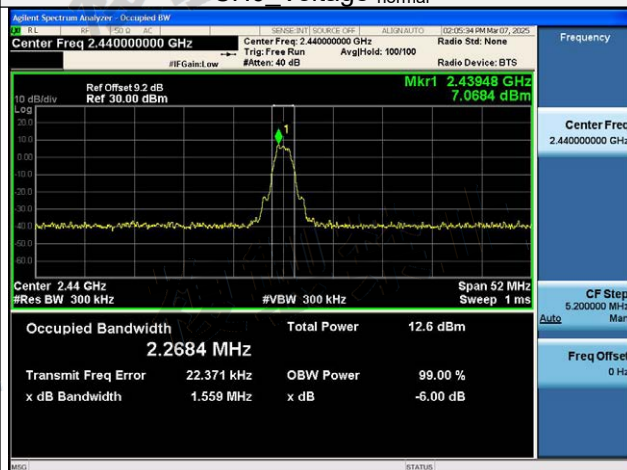
GFSK-2Mbps



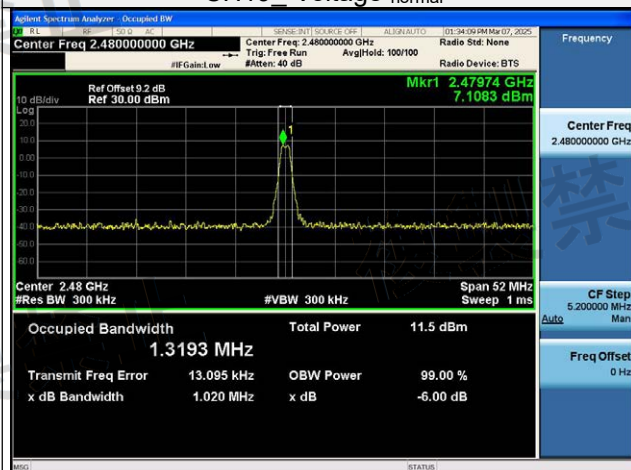
CH0 Voltage normal



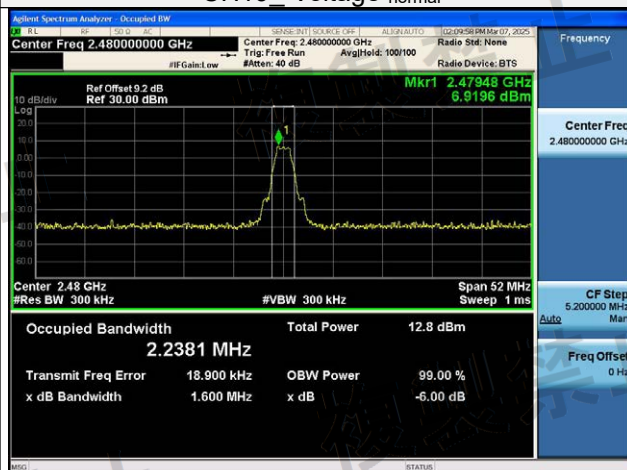
CH0 Voltage normal



CH19 Voltage normal



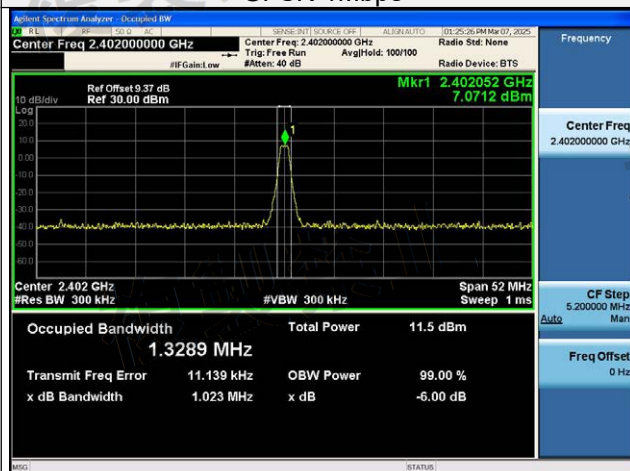
CH19 Voltage normal



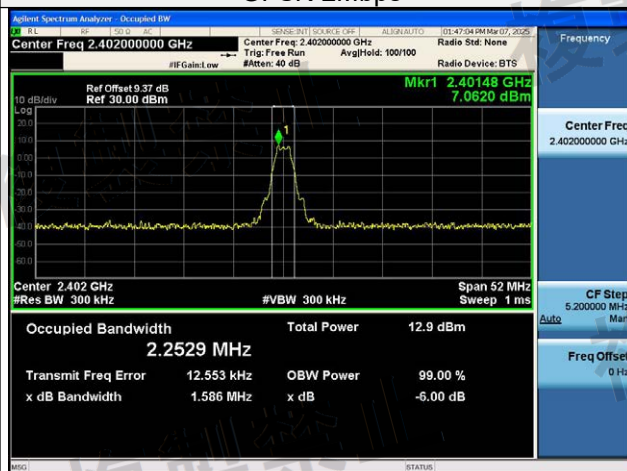
CH39 Voltage normal



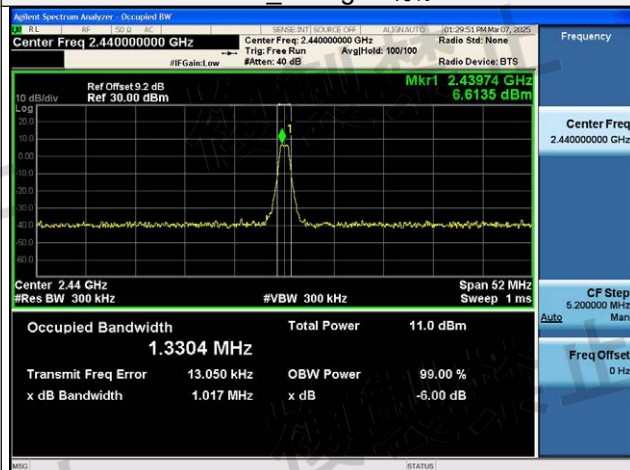
GFSK-1Mbps



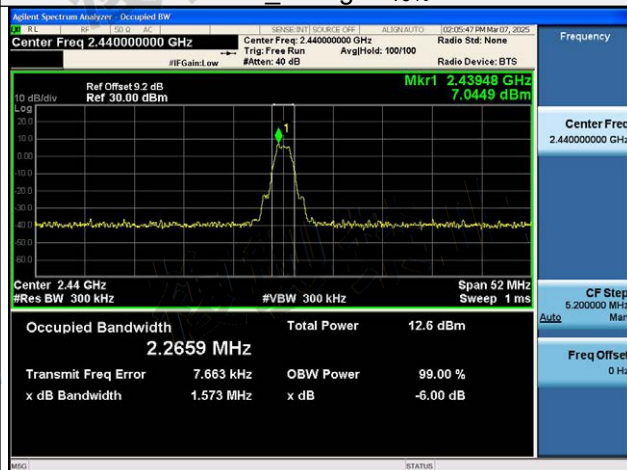
GFSK-2Mbps



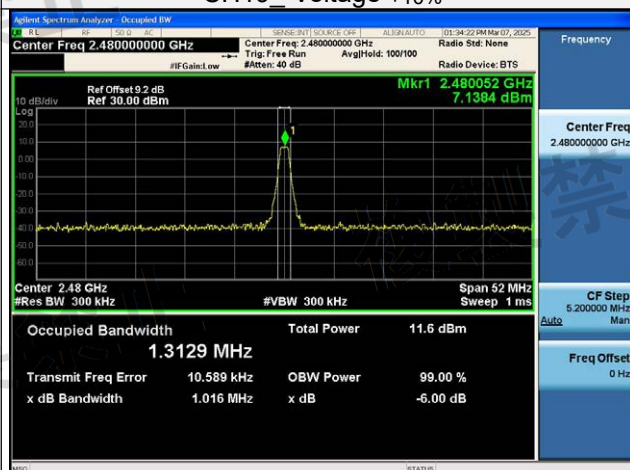
CH0_Voltage +10%



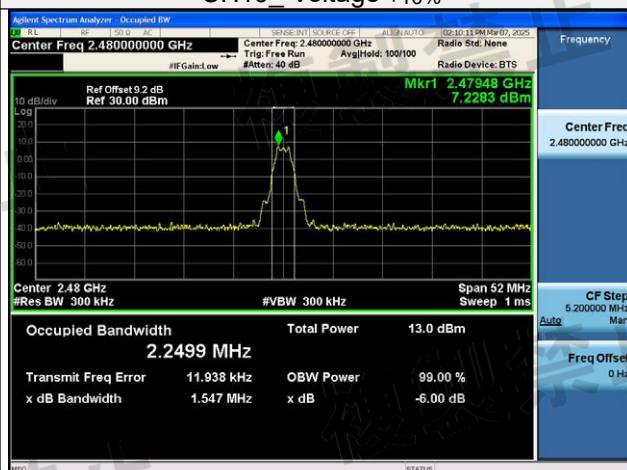
CH0_Voltage +10%



CH19_Voltage +10%



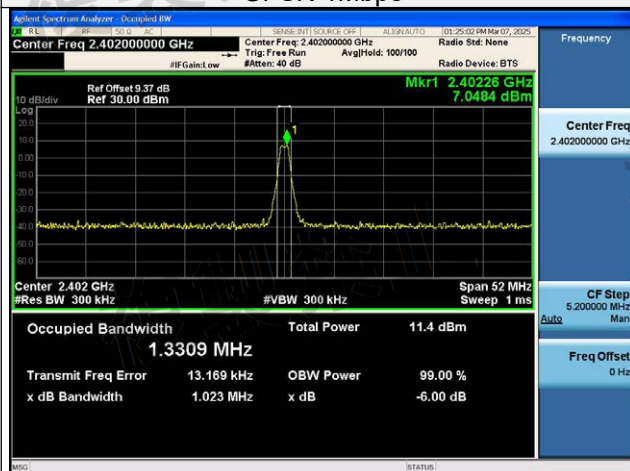
CH19_Voltage +10%



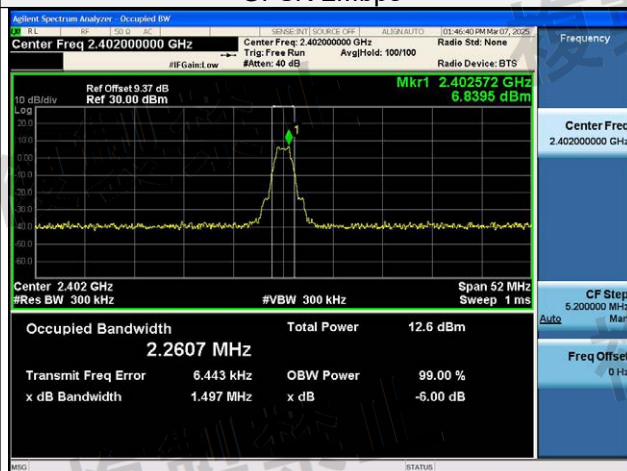
CH39_Voltage +10%

CH39_Voltage +10%

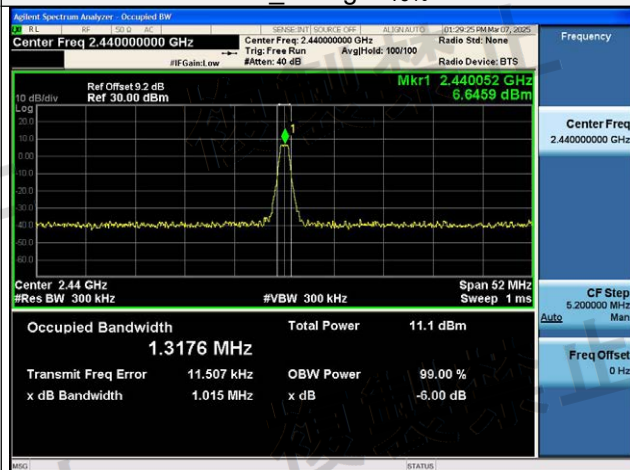
GFSK-1Mbps



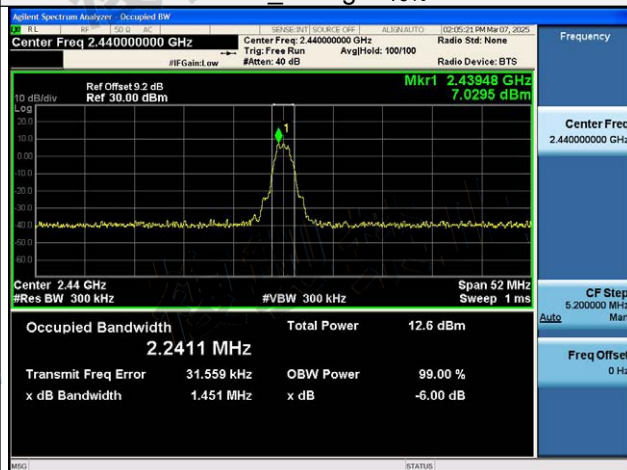
GFSK-2Mbps



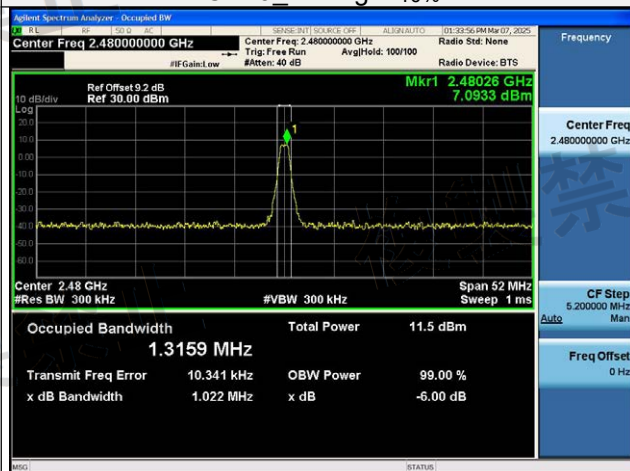
CH0_Voltage -10%



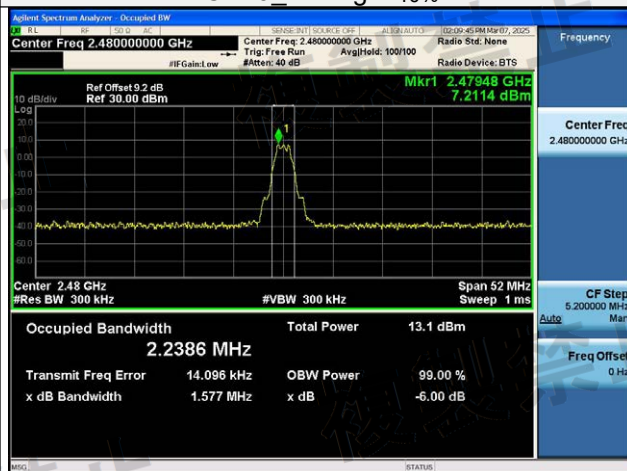
CH0_Voltage -10%



CH19_Voltage -10%



CH19_Voltage -10%



CH39_Voltage -10%

CH39_Voltage -10%

3.3 Spreading bandwidth measurement (90% power bandwidth)**3.3.1 Limits of spreading bandwidth and spreading factor**

Condition	Limit	Remark
Spreading Bandwidth	$\geq 500\text{kHz}$	N/A

3.3.2 Test Procedure**3.3.3 Deviation from Test Standard**

No deviation

3.3.4 Test Procedure

Test method according to Clause 4 of Annex No.43 of MIC Notification No.88.

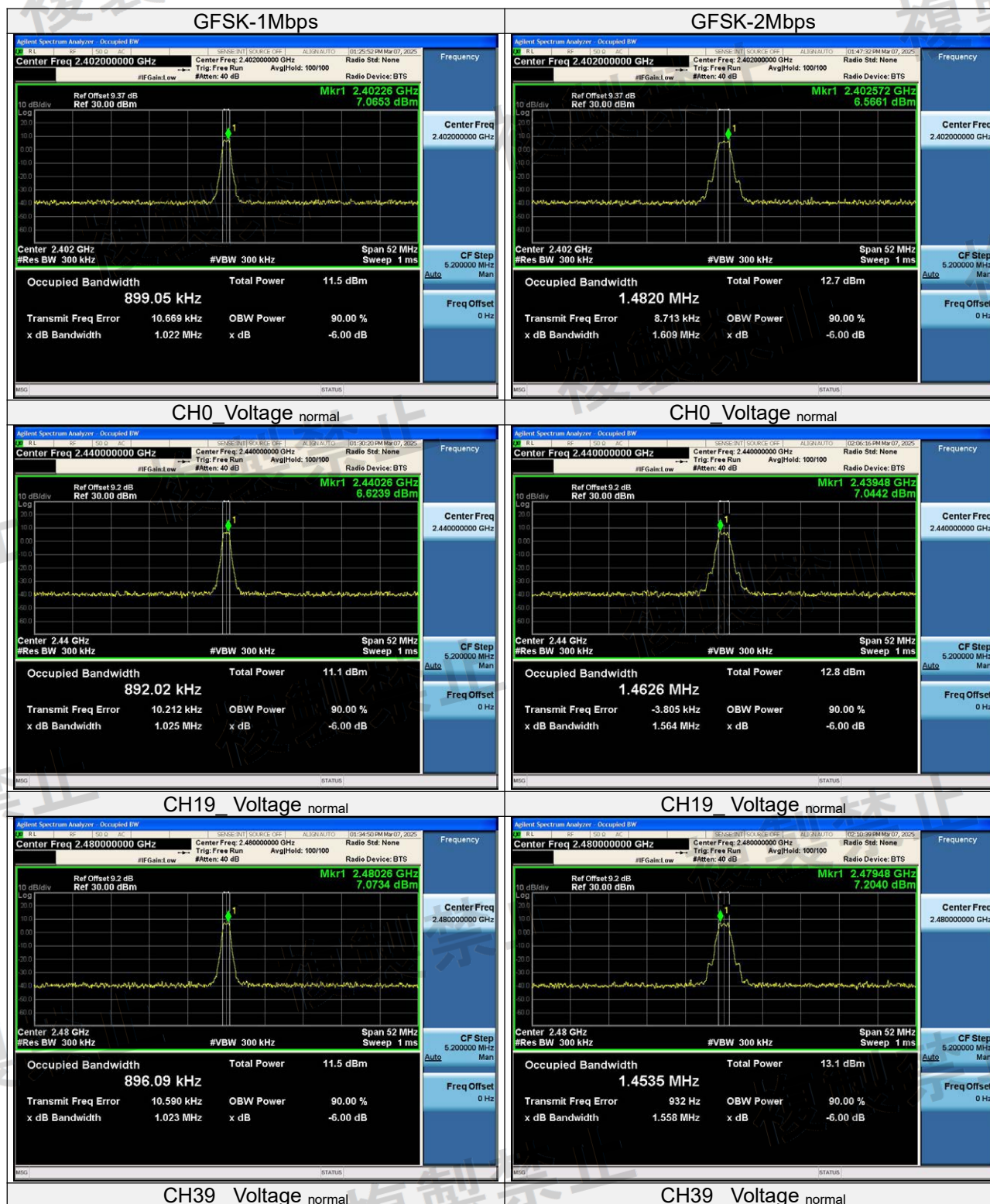
The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The bandwidth of the fundamental frequency was measured by spectrum analyzer. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 5 %of the total mean power of a given emission. The supply voltage was then adjusted on the EUT from 90% to 110% and the frequency record.

3.3.5 Test Results

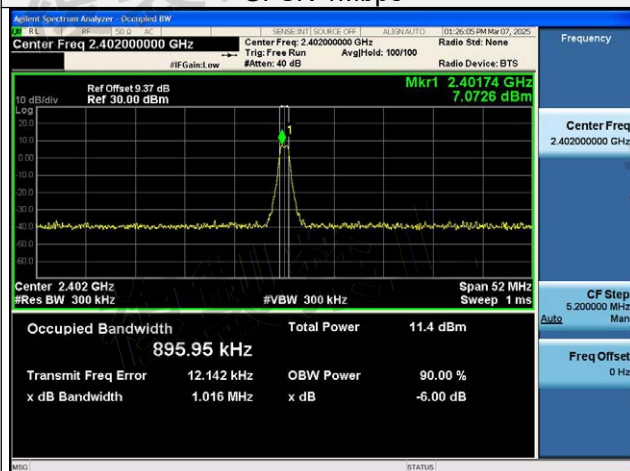
Spreading bandwidth measurement (90% power bandwidth):

Test Condition	TestMode	Channel No.	Centre Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
Voltage normal	1Mbps	0	2402	0.899	≥ 0.5	Pass
		19	2440	0.892	≥ 0.5	Pass
		39	2480	0.896	≥ 0.5	Pass
	2Mbps	0	2402	1.482	≥ 0.5	Pass
		19	2440	1.463	≥ 0.5	Pass
		39	2480	1.454	≥ 0.5	Pass
Voltage +10%	1Mbps	0	2402	0.896	≥ 0.5	Pass
		19	2440	0.898	≥ 0.5	Pass
		39	2480	0.895	≥ 0.5	Pass
	2Mbps	0	2402	1.472	≥ 0.5	Pass
		19	2440	1.486	≥ 0.5	Pass
		39	2480	1.453	≥ 0.5	Pass
Voltage -10%	1Mbps	0	2402	0.897	≥ 0.5	Pass
		19	2440	0.897	≥ 0.5	Pass
		39	2480	0.893	≥ 0.5	Pass
	2Mbps	0	2402	1.485	≥ 0.5	Pass
		19	2440	1.468	≥ 0.5	Pass
		39	2480	1.459	≥ 0.5	Pass

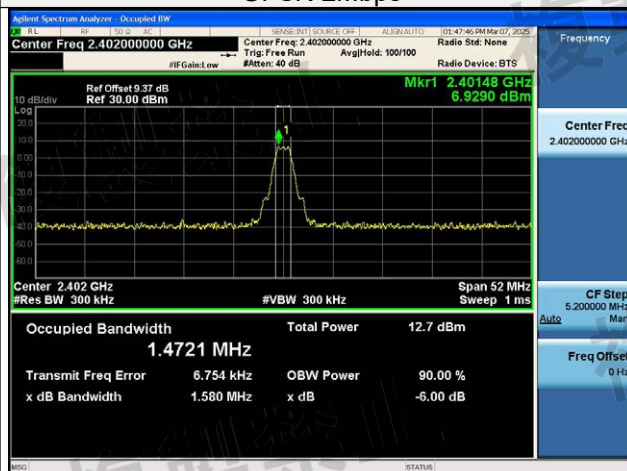
Note: For the test plots please refer to the below.



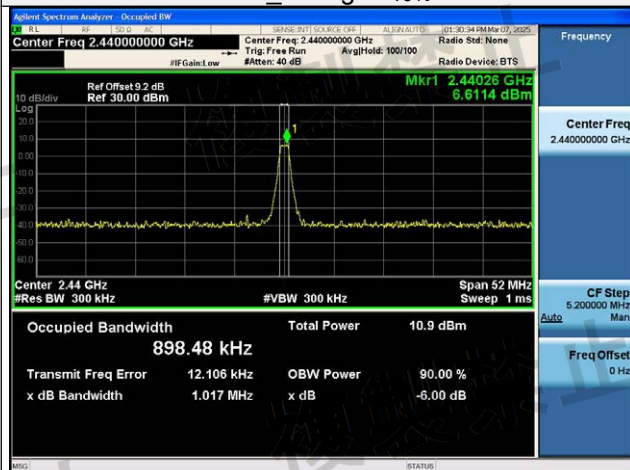
GFSK-1Mbps



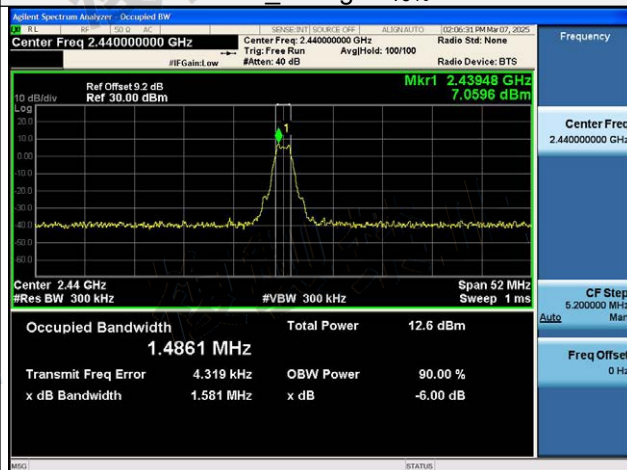
GFSK-2Mbps



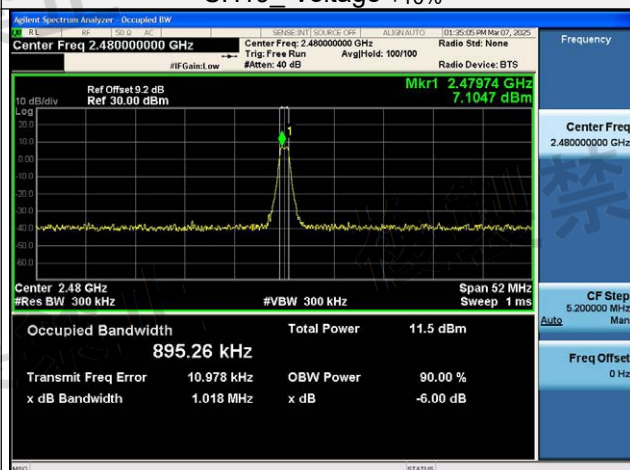
CH0_Voltage +10%



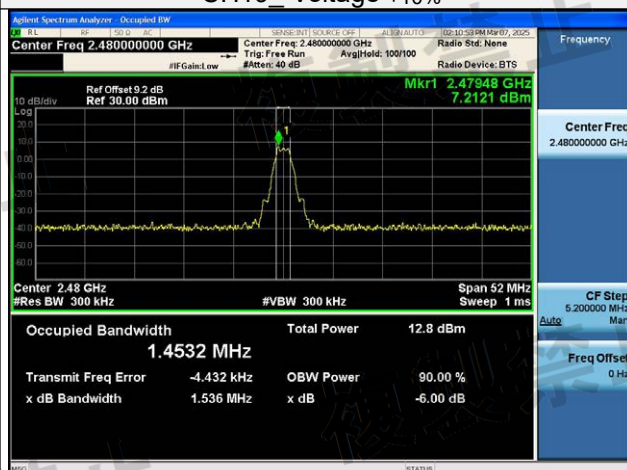
CH0_Voltage +10%



CH19_Voltage +10%



CH19_Voltage +10%



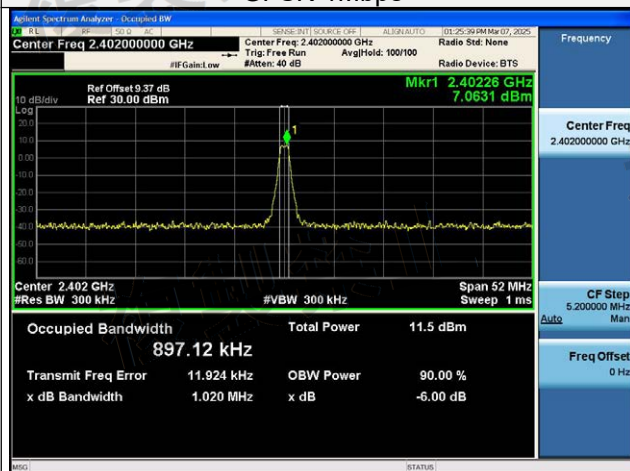
CH39_Voltage +10%



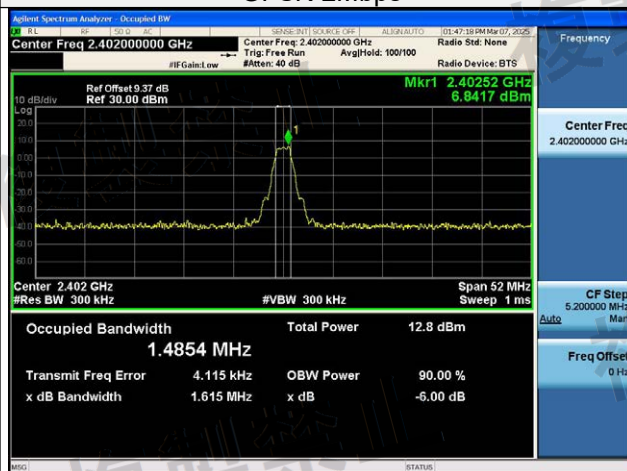
CH39_Voltage +10%



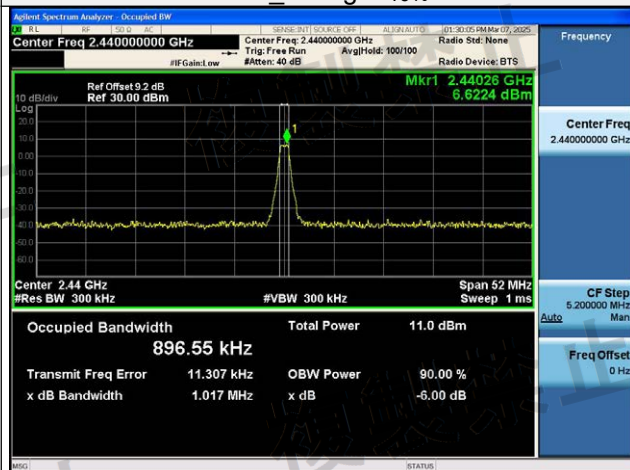
GFSK-1Mbps



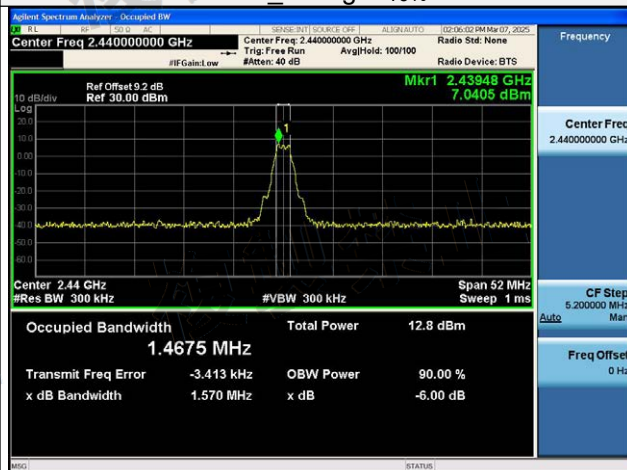
GFSK-2Mbps



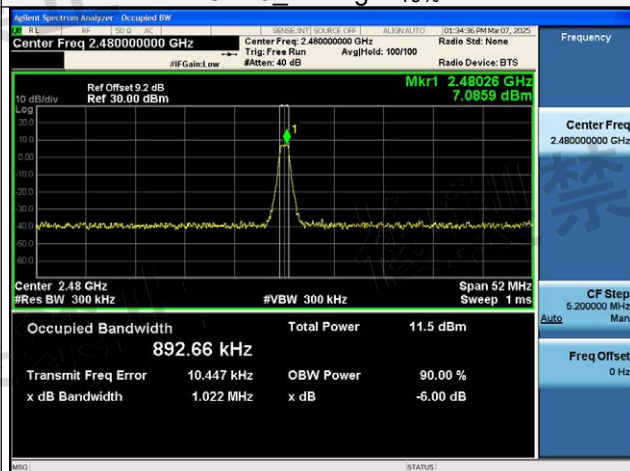
CH0_Voltage -10%



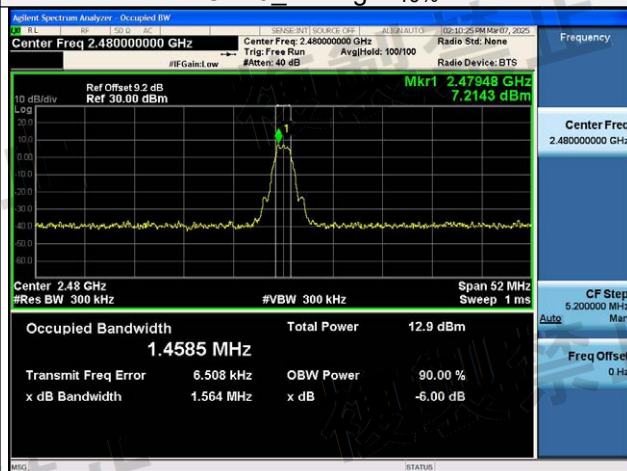
CH0_Voltage -10%



CH19_Voltage -10%



CH19_Voltage -10%



CH39_Voltage -10%

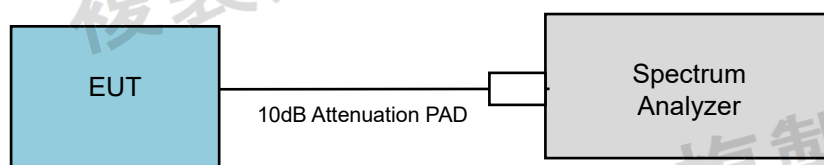
CH39_Voltage -10%

3.4 Spurious emissions for transmitter measurement

3.4.1 Limit of Spurious emissions for transmitter measurement

Frequencies (MHz)	Limit
Operating frequency 2400 to 2483.5MHz	
30.0MHz to 2387MHz	$\leq 2.5\mu\text{W}/\text{MHz}$
2387.0MHz to 2400.0MHz	$\leq 25\mu\text{W}/\text{MHz}$
2483.5MHz to 2496.5MHz	$\leq 25\mu\text{W}/\text{MHz}$
2496.5MHz to 12500.0MHz	$\leq 2.5\mu\text{W}/\text{MHz}$

3.4.2 Test Setup



3.4.3 Deviation from Test Standard

No deviation.

3.4.4 Test Procedure

Test method according to Clause 5 of Annex No.43 of MIC Notification No.88.

The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The spurious emissions for transmitter was measured by spectrum analyzer.

The settings of the spectrum analyzer during spurious searches are as follows:

- Sweep Bandwidth Starts spurious searches from the smallest possible frequencies to more than 5 times the carrier frequencies (for example from 30 MHz up to 12.5 GHz for a 2.4 GHz system).
- Resolution Bandwidth 1 MHz
- Video Bandwidth 1 MHz
- Y-Axis Scale 10 dB/Div
- Input Level: Maximum dynamic range value
- Sweep Time: Minimum amount of time to ensure measurement accuracy.
- Sweep Points: Over 400 points
- Detection Mode: Positive peak
- Display mode: Maximum hold

The supply voltage was then adjusted on the EUT from 90% to 110% and the frequency record.

3.4.5 Test Results

GFSK-1Mbps

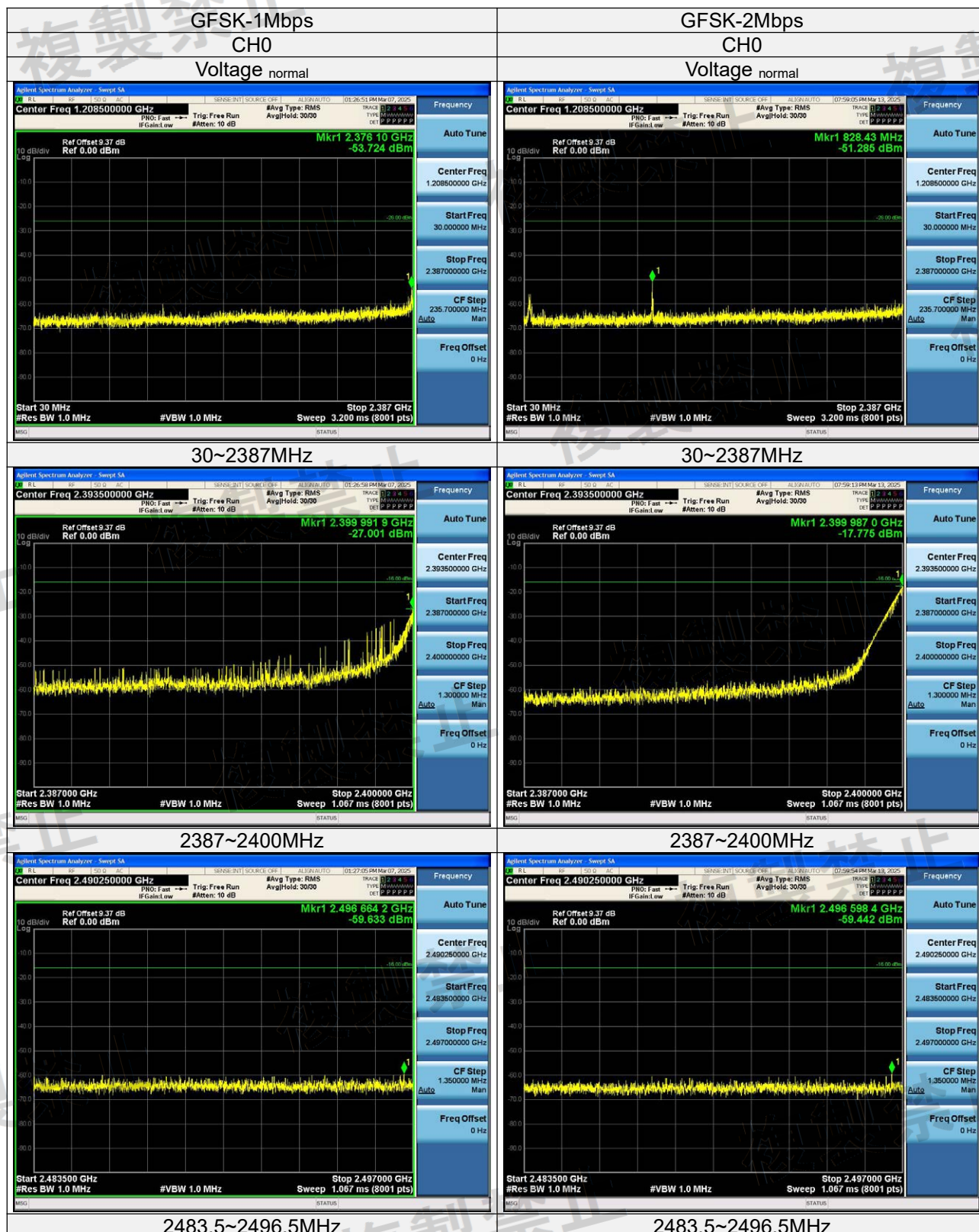
Test channel		CH 0 (2402MHz)		CH 19 (2440MHz)		CH 39 (2480MHz)		Limit (uW/MHz)	Result
Test Condition	Frequency Range (MHz)	Worst Frequency (MHz)	Worst Measure. Value(uW/MHz)	Worst Frequency (MHz)	Worst Measure. Value(uW/MHz)	Worst Frequency (MHz)	Worst Measure. Value(uW/MHz)		
V _{normal}	30~2387	2376.1000	0.00424	2321.5900	0.00176	2313.9300	0.00158	2.5	Pass
	2387~2400	2399.9919	1.99480	2399.1160	0.00156	2389.0703	0.00127	25	Pass
	2483.5~2496.5	2496.6642	0.00109	2485.0171	0.00135	2483.6941	0.19521	25	Pass
	2496.5~13000	5787.8000	0.00312	5763.1000	0.00955	2540.6000	0.16800	2.5	Pass
V _{+10%}	30~2387	2386.1200	0.00224	2356.6500	0.00152	2348.1100	0.01933	2.5	Pass
	2387~2400	2399.9350	2.39442	2392.2878	0.00139	2393.7940	0.00154	25	Pass
	2483.5~2496.5	2487.1467	0.00187	2483.6569	0.00133	2483.5338	0.21968	25	Pass
	2496.5~13000	5755.7000	0.00171	5801.4000	0.00772	2514.3000	0.00229	2.5	Pass
V _{-10%}	30~2387	2386.1200	0.00188	2370.8000	0.00149	2322.7700	0.00113	2.5	Pass
	2387~2400	2400.0000	2.43837	2399.4004	0.00155	2395.7848	0.00112	25	Pass
	2483.5~2496.5	2493.8326	0.00126	2491.7333	0.00135	2483.5894	0.21498	25	Pass
	2496.5~13000	12442.3000	0.00134	5749.4000	0.01905	5751.0000	0.00513	2.5	Pass

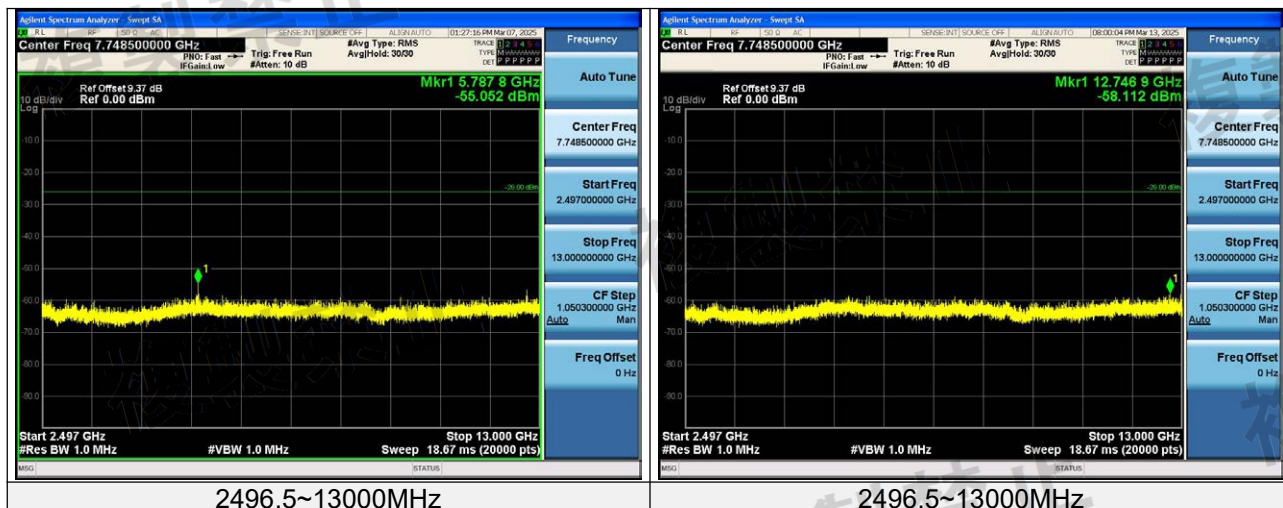
GFSK-2Mbps

Test channel		CH 1 (2402MHz)		CH 19 (2440MHz)		CH 38 (2480MHz)		Limit (uW/MHz)	Result
Test Condition	Frequency Range (MHz)	Worst Frequency (MHz)	Worst Measure. Value(uW/MHz)	Worst Frequency (MHz)	Worst Measure. Value(uW/MHz)	Worst Frequency (MHz)	Worst Measure. Value(uW/MHz)		
V _{normal}	30~2387	828.4300	0.00744	2381.9900	0.00170	2100.9200	0.00089	2.5	Pass
	2387~2400	2399.9870	16.69168	2395.7084	0.00165	2394.4978	0.00114	25	Pass
	2483.5~2496.5	2496.5984	0.00114	2495.1218	0.00137	2483.5017	0.27240	25	Pass
	2496.5~13000	12746.9000	0.00154	5757.3000	0.00208	2518.0000	0.30974	2.5	Pass
V _{+10%}	30~2387	71.2500	0.00257	2280.0500	0.00186	2381.0500	0.00131	2.5	Pass
	2387~2400	2399.9940	16.36817	2394.9349	0.00144	2396.6281	0.00946	25	Pass
	2483.5~2496.5	2492.1113	0.00074	2493.6807	0.00225	2483.5152	0.26736	25	Pass
	2496.5~13000	12775.2000	0.00163	2522.7000	0.00590	5807.2000	0.00462	2.5	Pass
V _{-10%}	30~2387	63.2900	0.00284	2380.2200	0.00112	2345.1600	0.00431	2.5	Pass
	2387~2400	2399.9968	20.07705	2396.1780	0.00150	2399.4280	0.00129	25	Pass
	2483.5~2496.5	2494.4418	0.00080	2484.5294	0.00175	2486.7261	0.20277	25	Pass
	2496.5~13000	2618.8000	0.00417	5746.3000	0.00284	2510.1000	0.00217	2.5	Pass

Note:

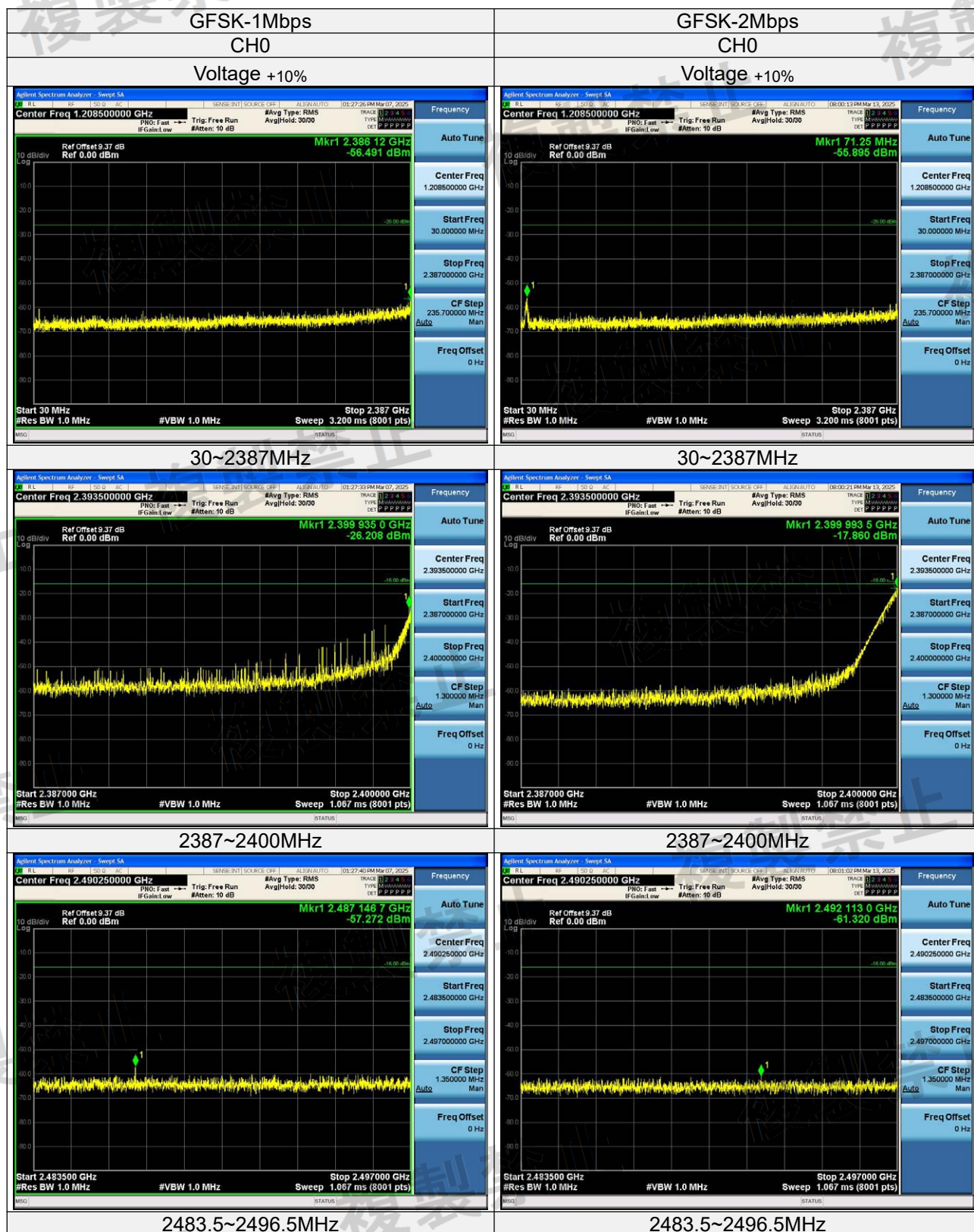
1. The worst value in each frequency range v.s. each channel has been marked by boldface.
2. The spectrum plots are attached on the following pages.

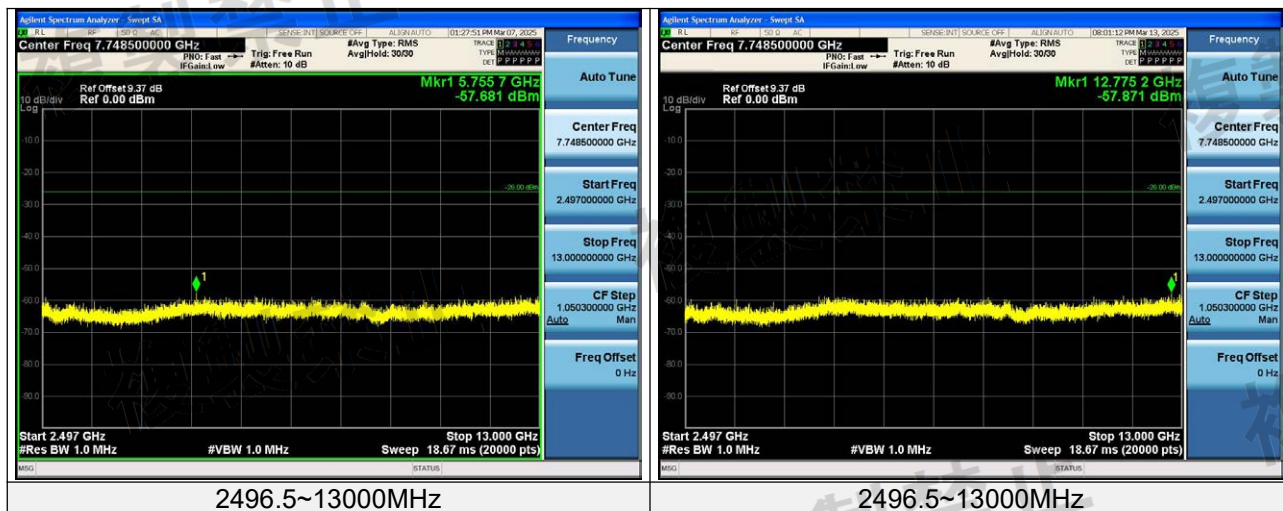


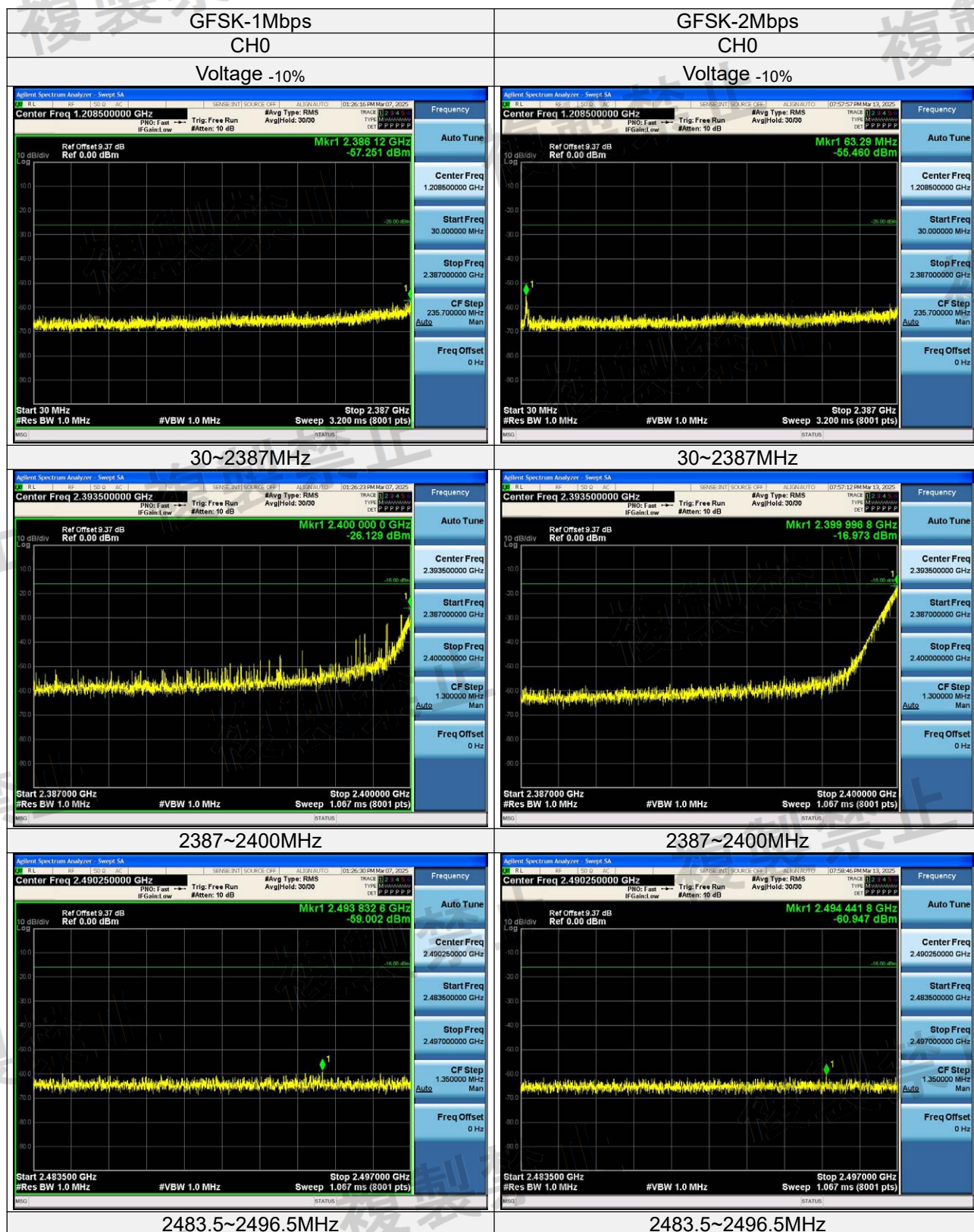


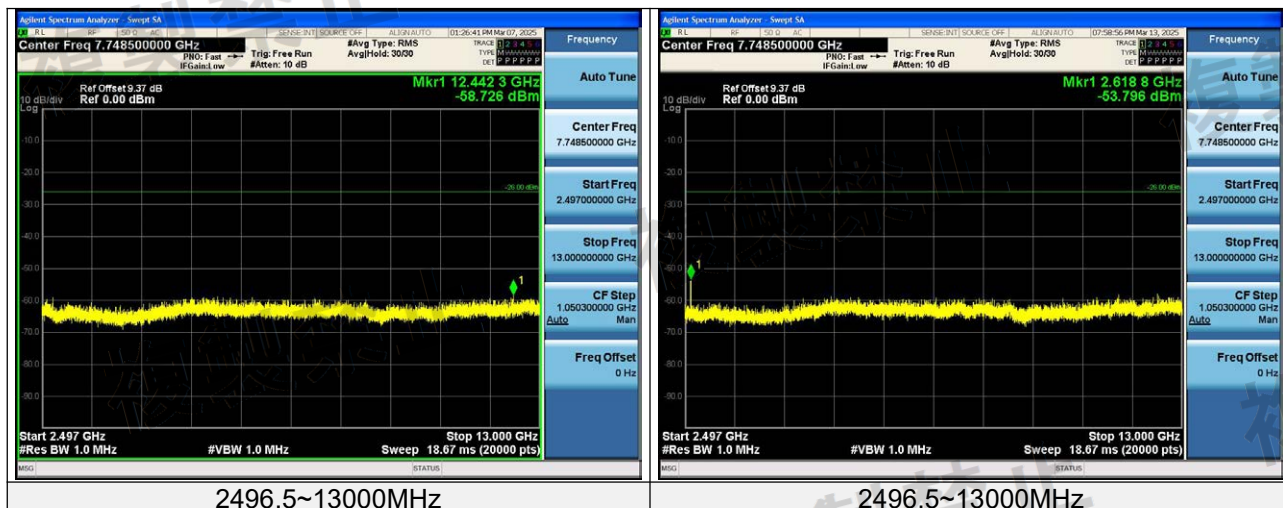
2496.5~13000MHz

2496.5~13000MHz









2496.5~13000MHz

2496.5~13000MHz

GFSK-1Mbps

CH19

Voltage normal



GFSK-2Mbps

CH19

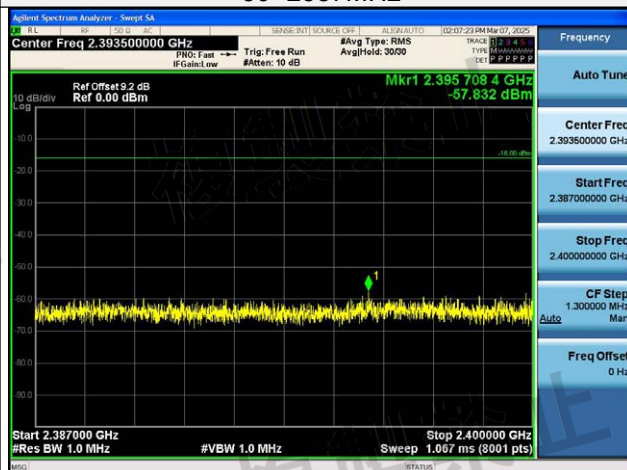
Voltage normal



30~2387MHz



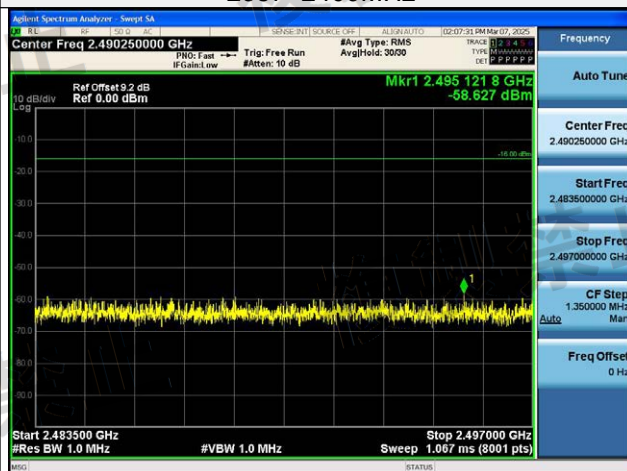
30~2387MHz



2387~2400MHz



2387~2400MHz

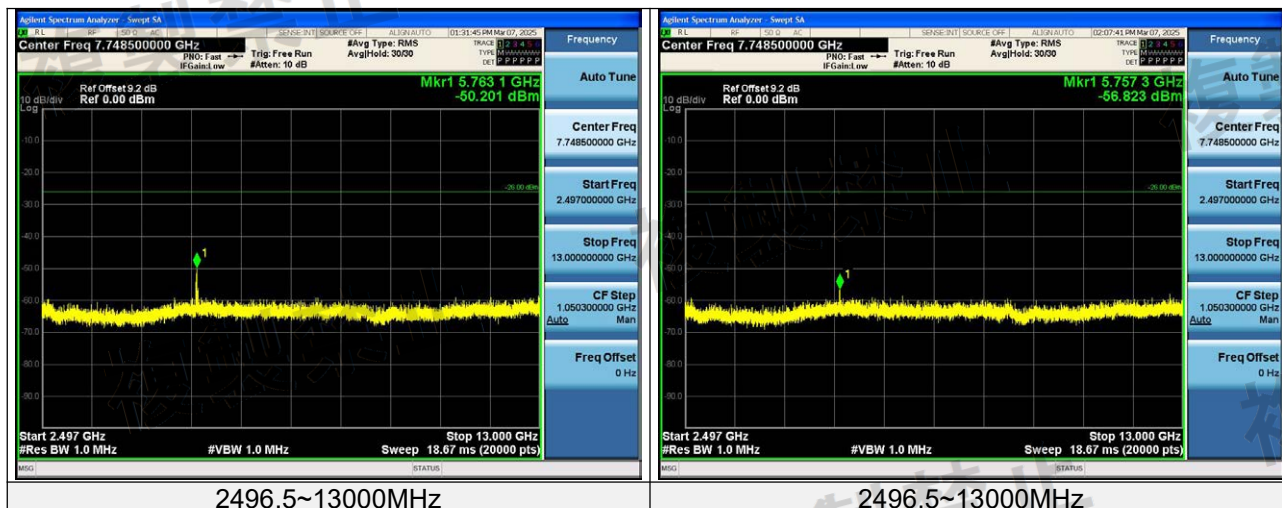


2483.5~2496.5MHz



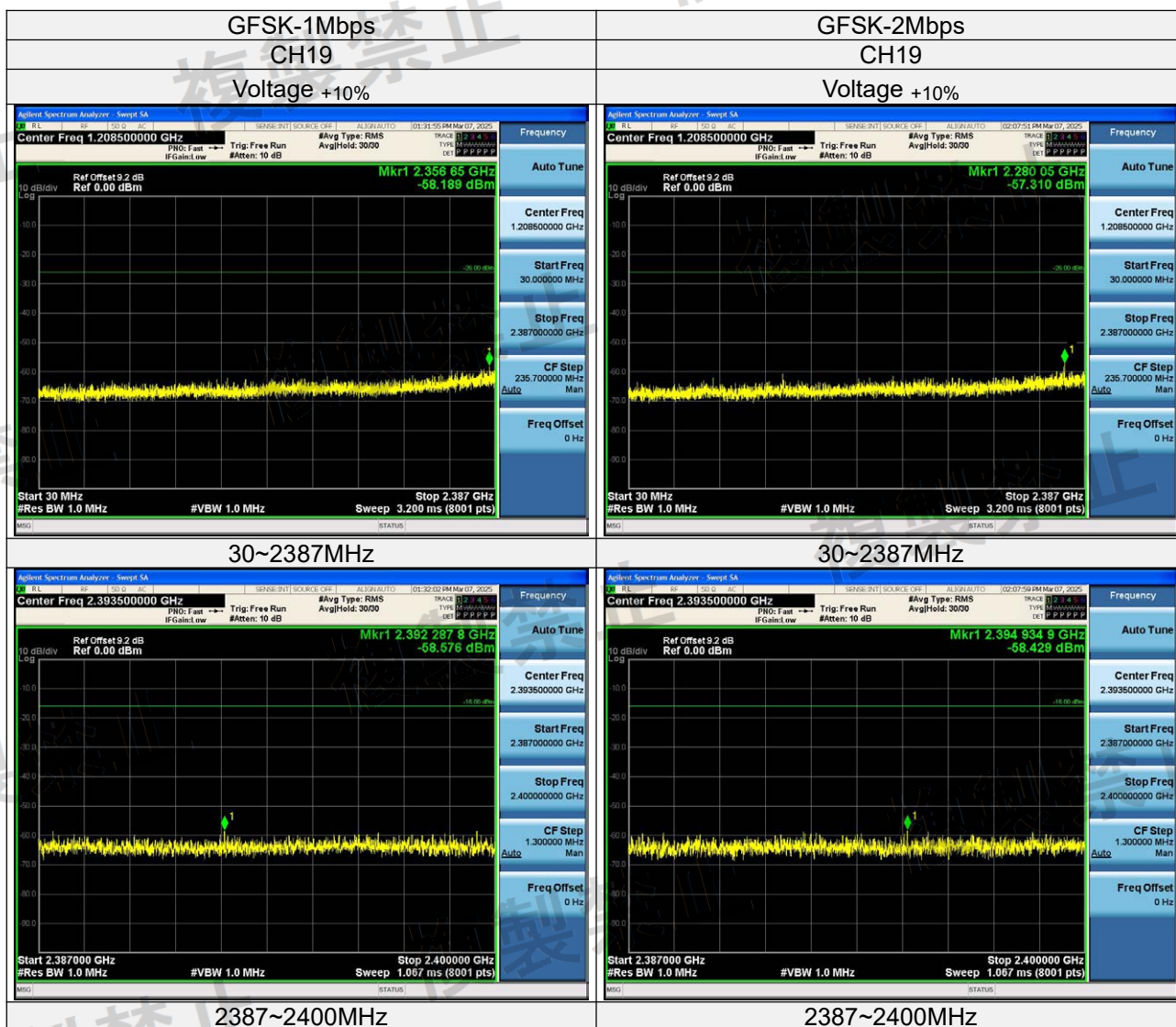
2483.5~2496.5MHz





2496.5~13000MHz

2496.5~13000MHz



GFSK-1Mbps

GFSK-2Mbps

CH19

CH19

Voltage +10%

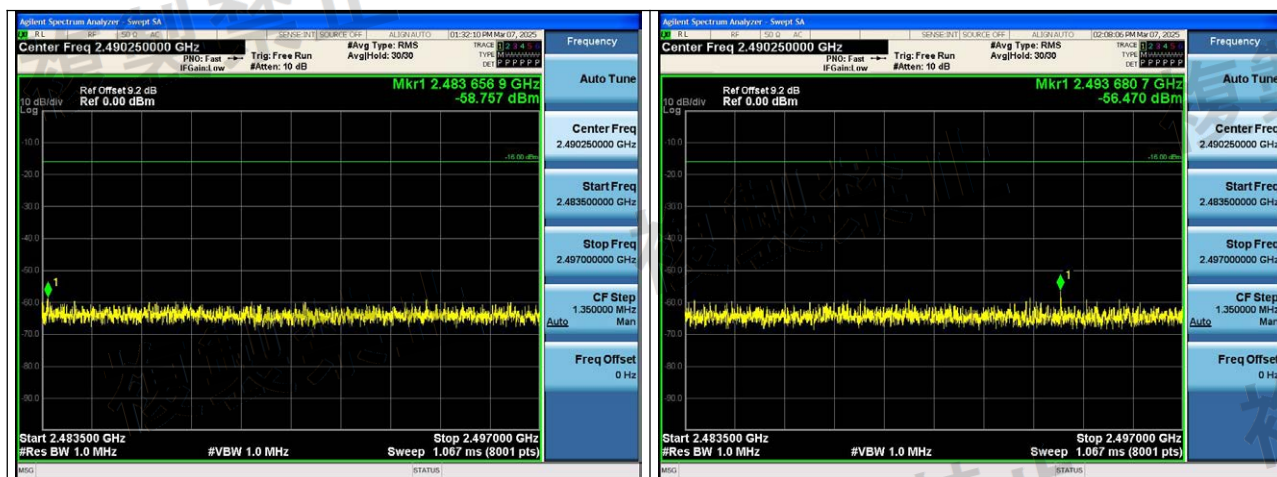
Voltage +10%

30~2387MHz

30~2387MHz

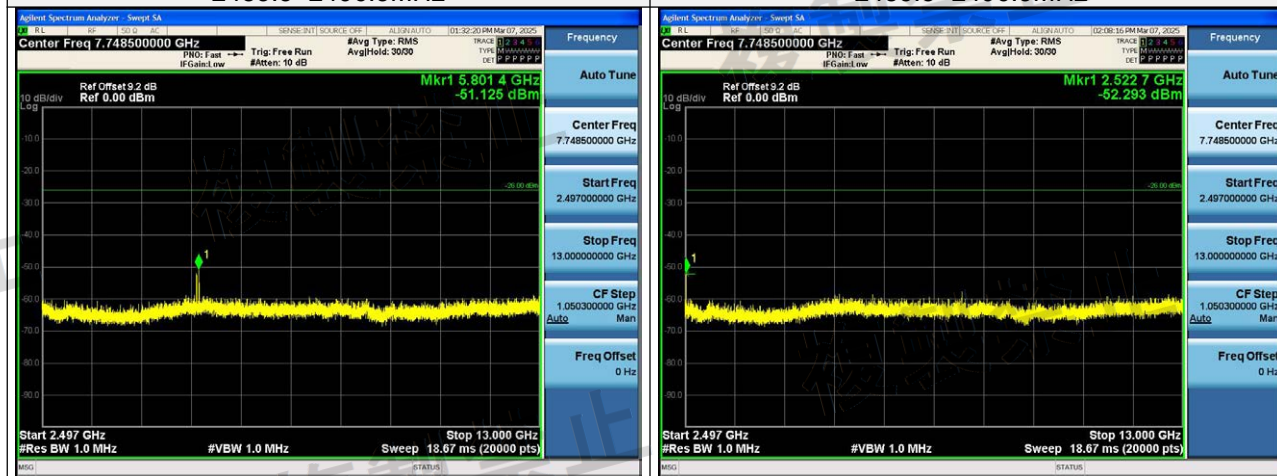
2387~2400MHz

2387~2400MHz



2483.5~2496.5MHz

2483.5~2496.5MHz



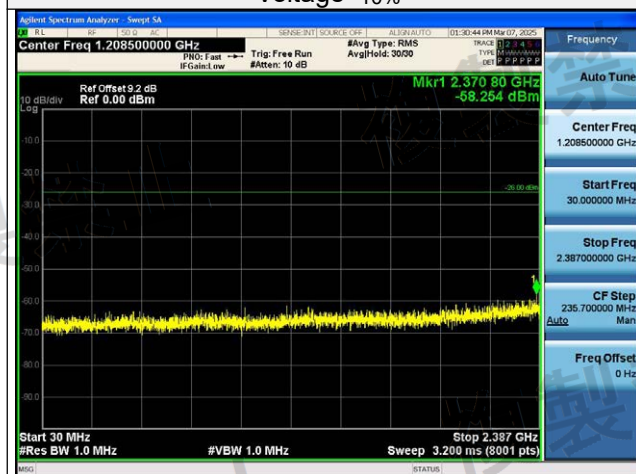
2496.5~13000MHz

2496.5~13000MHz

GFSK-1Mbps

CH19

Voltage -10%



30~2387MHz

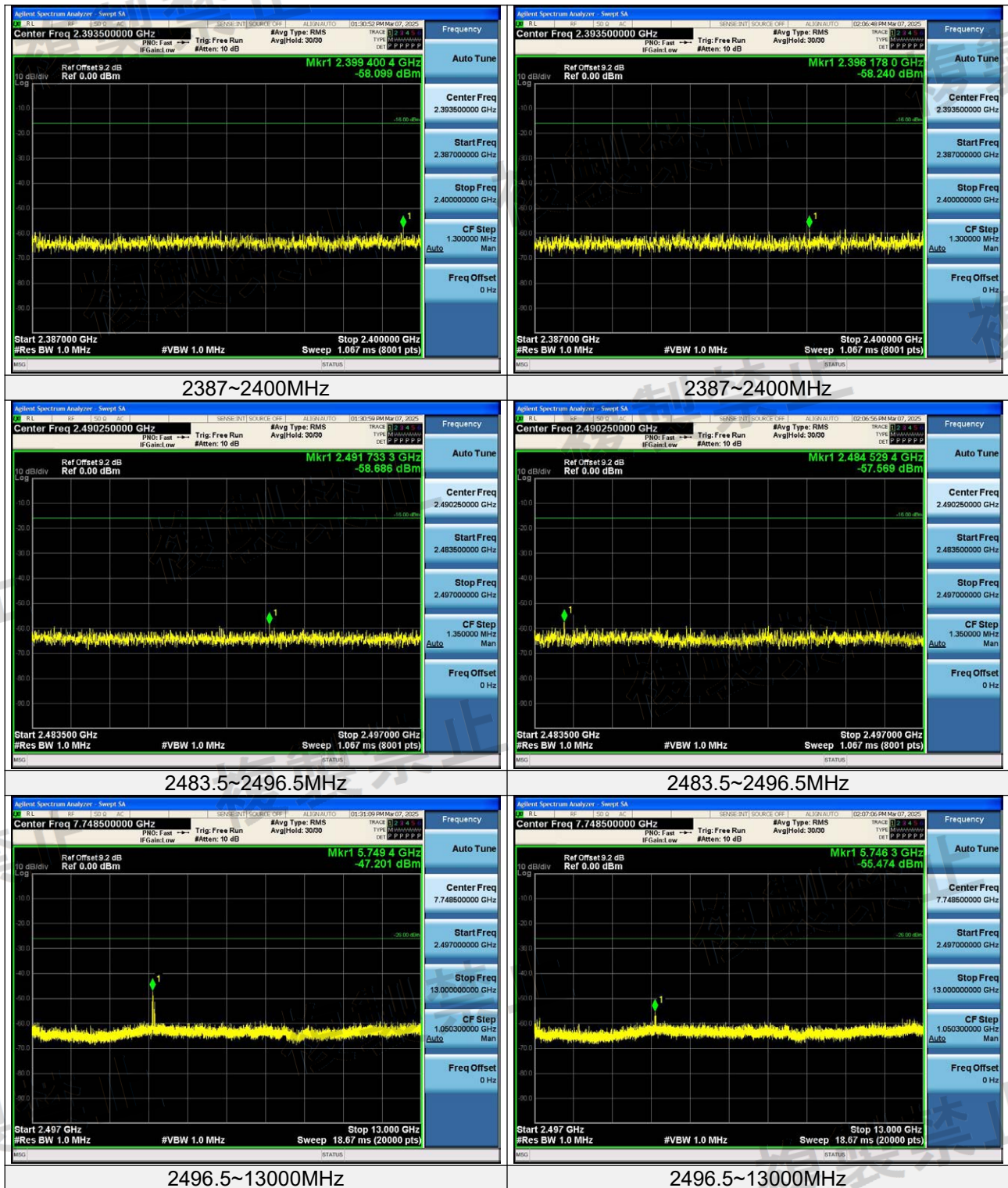
GFSK-2Mbps

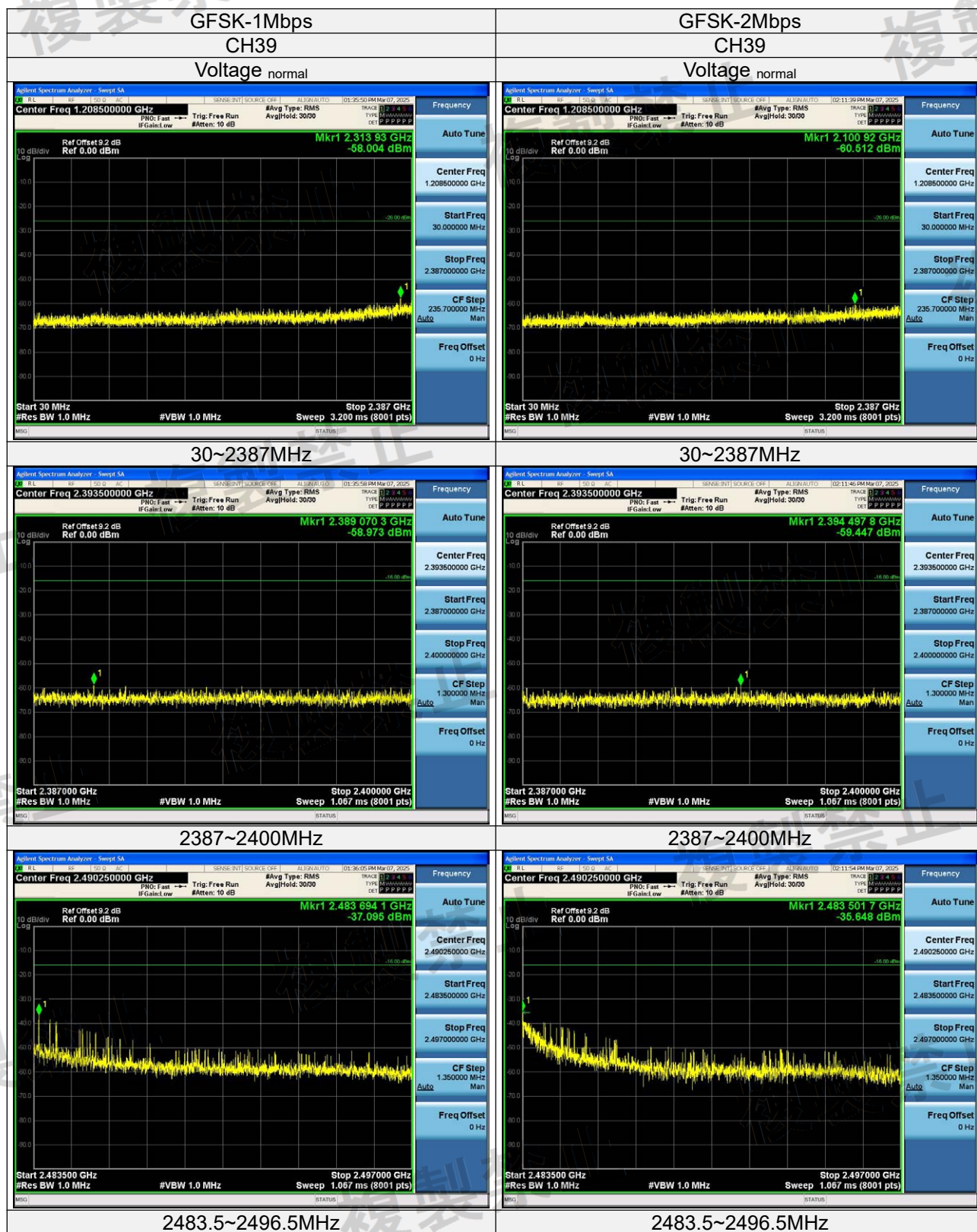
CH19

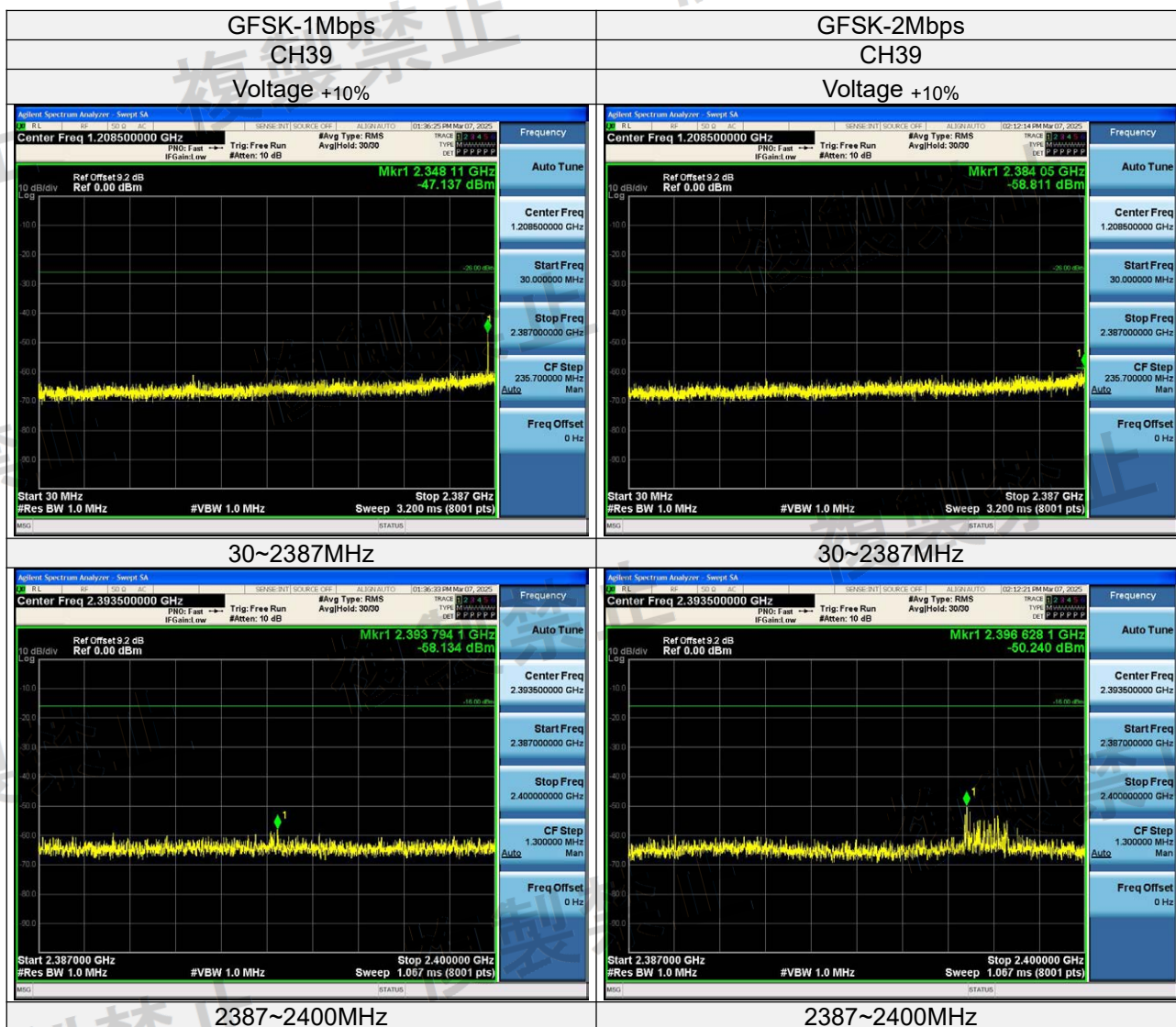
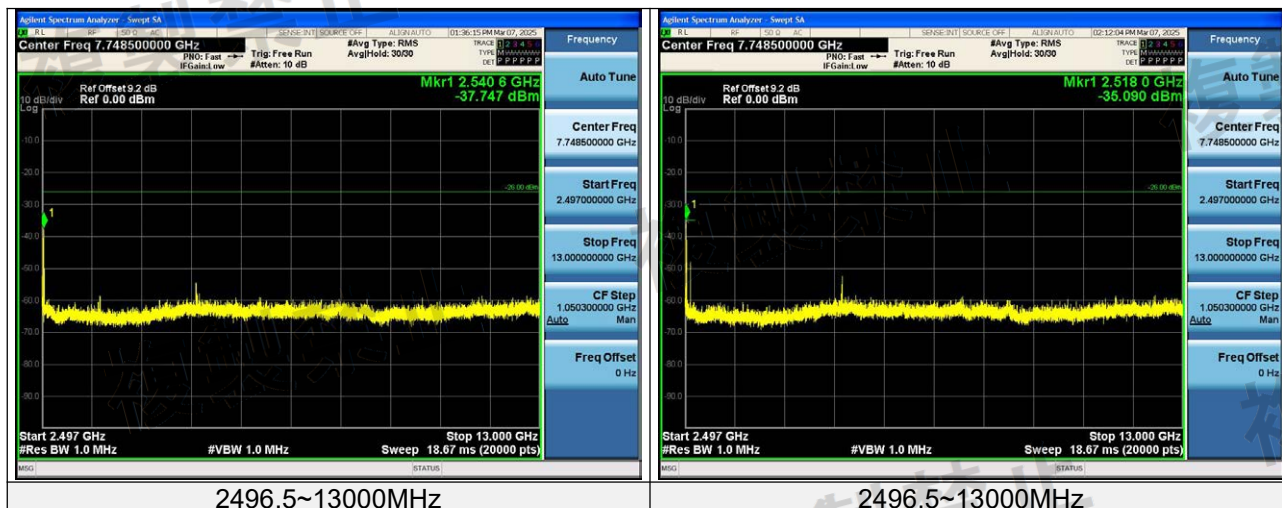
Voltage -10%

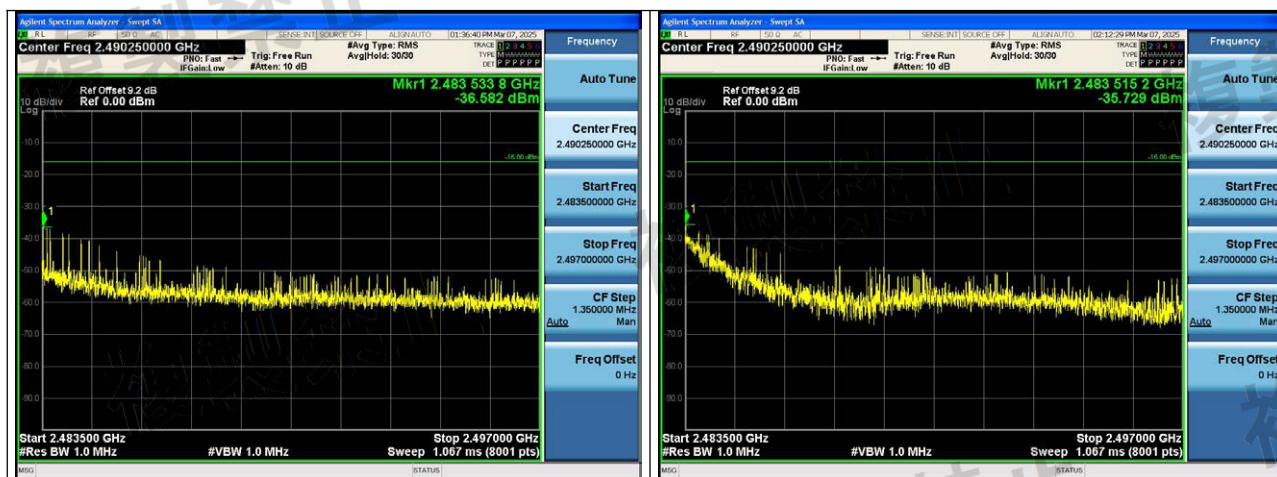


30~2387MHz



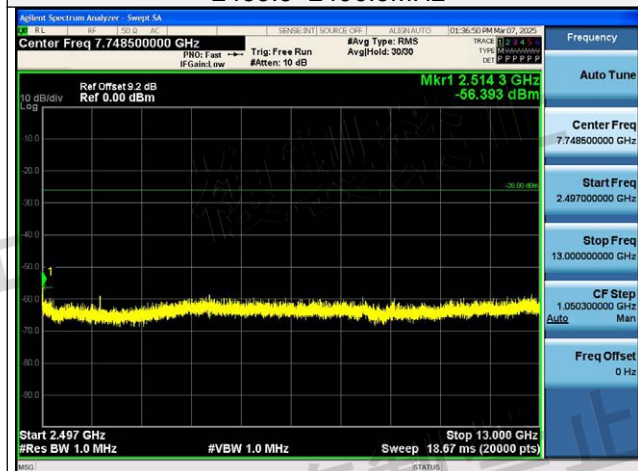




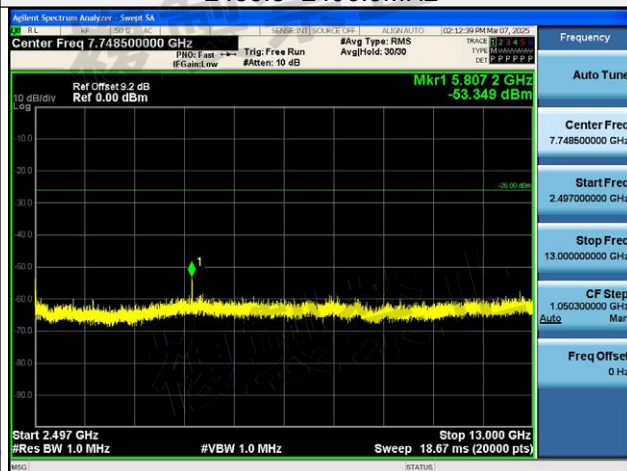


2483.5~2496.5MHz

2483.5~2496.5MHz



2496.5~13000MHz

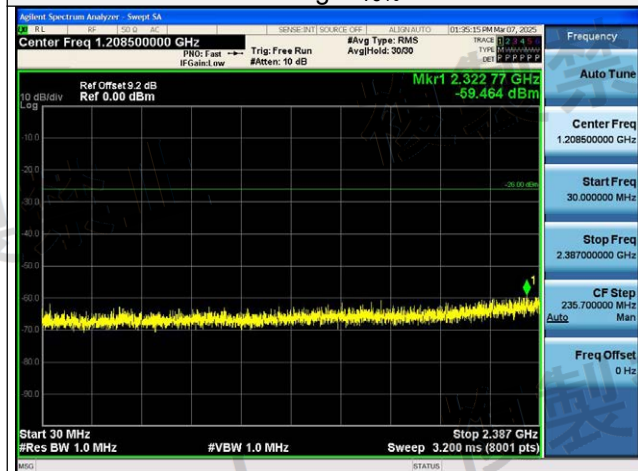


2496.5~13000MHz

GFSK-1Mbps

CH39

Voltage -10%



30~2387MHz

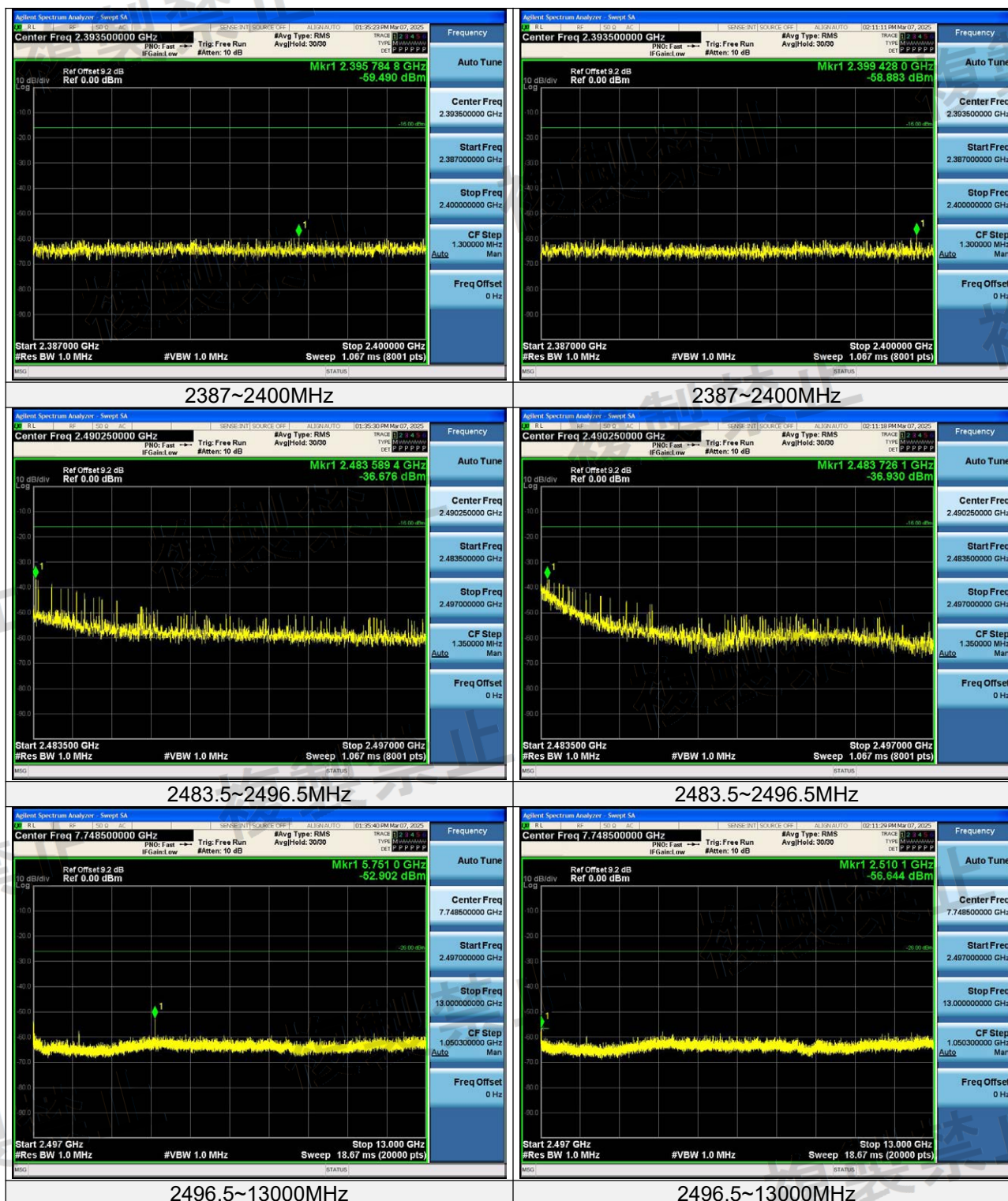
GFSK-2Mbps

CH39

Voltage -10%



30~2387MHz



3.5 Antenna power measurement

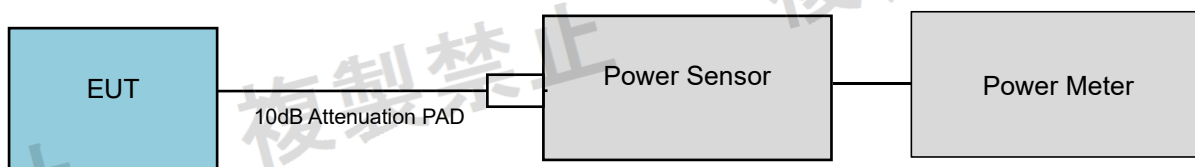
3.5.1 Limits of antenna power

Modulation system	Frequencyband used	Antennapower (max.)	EIRP (max)	
			Omni-directional case	Directionalcase
DS-SS-SSB(Narrow-Band)	2,400–2,4835MHz	10mW/MHz	12.14dBm/MHz (16.367mW/MHz)	22.14dBm/MHz (163.682mW/MHz)
OFDM(Wide-Band)	2,400–2,4835MHz	5mW/MHz	9.13dBm/MHz (8.185mW/MHz)	19.13dBm/MHz (81.846mW/MHz)
DSSS	2,400–2,4835MHz	10mW	12.14dBm (16.367mW)	22.14dBm (163.682mW)

Tolerance of antenna power shall be +20% (upper value).

According article 49.20 f (2), the angular width of the principal radiation in the horizontal and vertical planes of the transmitting antenna shall not exceed the value obtained by the following expression. $360/A$ degree
A represents the value determined by dividing an equivalent power by the value obtained by applying an antenna power with the mean power to the transmitting antenna with its absolute gain being 2.14 dB, and shall be 1 when it is lower than 1.

3.5.2 Test Setup



3.5.3 Test Procedure

Test method according to Clause 6 of Annex No.43 of MIC Notification No.88.

The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The Antenna power was measured by power meter.

- Connect the high frequency power meter to the IF output of the spectrum analysers.
- Recording the power level.
- The supply voltage was then adjusted on the EUT from 90% to 110% and the frequency record.

3.5.4 Test result of conducted output power

BT-LE (GFSK-1 Mbps)

Test condition	Conducted output power (mW)						
	CH 0 2402MHz		CH 19 2440MHz		CH 39 2480MHz		Max.Limit (mW)
	Power	Tolerance(%)	Power	Tolerance(%)	Power	Tolerance(%)	
Voltage normal	4.111	-8.64	4.385	-2.56	4.688	4.18	10
Voltage max	4.345	-3.44	4.325	-7.00	4.943	9.84	10
Voltage min	4.217	-6.29	4.406	-2.09	4.519	0.42	10
Rated Power	4.5						
Test condition	EIRP output power (mW)						
	CH 0 2402MHz		CH 19 2440MHz		CH 39 2480MHz		Max.Limit (mW)
Voltage normal	6.039		6.441		6.886		16.367
Voltage max	6.382		6.353		7.261		16.367
Voltage min	6.194		6.472		6.638		16.367

BT-LE (GFSK-2 Mbps)

Test condition	Conducted output power (mW)						
	CH 0 2402MHz		CH 19 2440MHz		CH 39 2480MHz		Max.Limit (mW)
	Power	Tolerance(%)	Power	Tolerance(%)	Power	Tolerance(%)	
Voltage normal	3.963	-11.93	4.046	-10.09	4.305	-4.33	10
Voltage max	4.111	-8.64	4.217	-11.32	4.529	0.64	10
Voltage min	3.784	-15.91	4.111	-8.64	4.159	-7.58	10
Rated Power	4.5						
Test condition	EIRP output power (mW)						
	CH 0 2402MHz		CH 19 2440MHz		CH 39 2480MHz		Max.Limit (mW)
Voltage normal	5.821		5.943		6.324		16.367
Voltage max	6.039		6.194		6.653		16.367
Voltage min	5.558		6.039		6.109		16.367

Note:

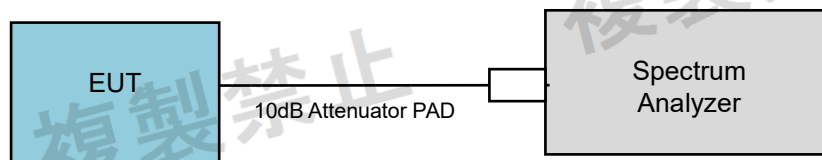
1. The value of EIRP densities are "calculated" values.
2. Formula: EIRP output power = Conducted RF output power + Antenna Gain.

3.6 Spurious emissions for receiver

3.6.1 Limits of spurious emissions for receiver

Frequencies(MHz)	Limit
Below 1GHz	$\leq 4\text{nW}$ (-54dBm)
Above 1GHz	$\leq 20\text{nW}$ (-47dBm)

3.6.2 Test Setup



3.6.3 Deviation from Test Standard

No deviation.

3.6.4 Test Procedure

Test method according to Clause 7 of Annex No.43 of MIC Notification No.88.

The EUT was placed inside the environmental test chamber and powered by nominal DC voltage. The spurious emissions for receiver was measured by spectrum analyzer.

The settings of the spectrum analyzer during spurious searches are as follows:

- Sweep Bandwidth Starts spurious searches from the smallest possible frequencies to more than 5 times the carrier frequencies (for example from 30 MHz up to 12.5 GHz for a 2.4 GHz system).
- Resolution Bandwidth 1 MHz
- Video Bandwidth 1 MHz
- Y-Axis Scale 10 dB/Div
- Input Level: Maximum dynamic range value
- Sweep Time: Minimum amount of time to ensure measurement accuracy.
- Sweep Points: Over 400 points
- Detection Mode: Positive peak
- Display mode: Maximum hold

The supply voltage was then adjusted on the EUT from 90% to 110% and the frequency record.

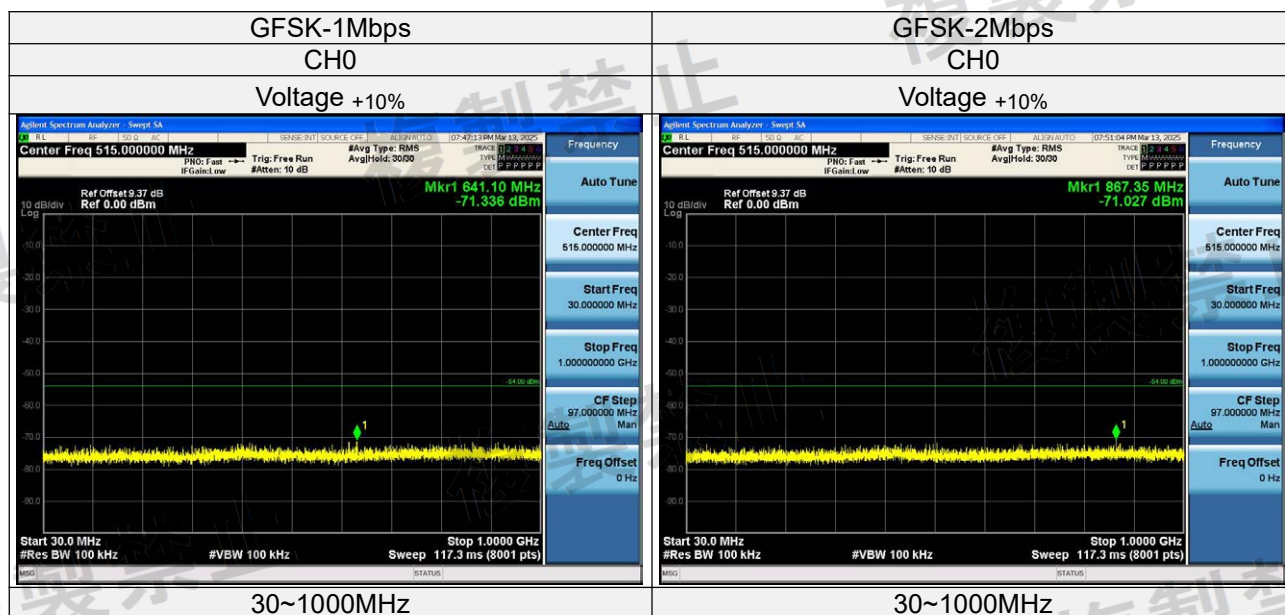
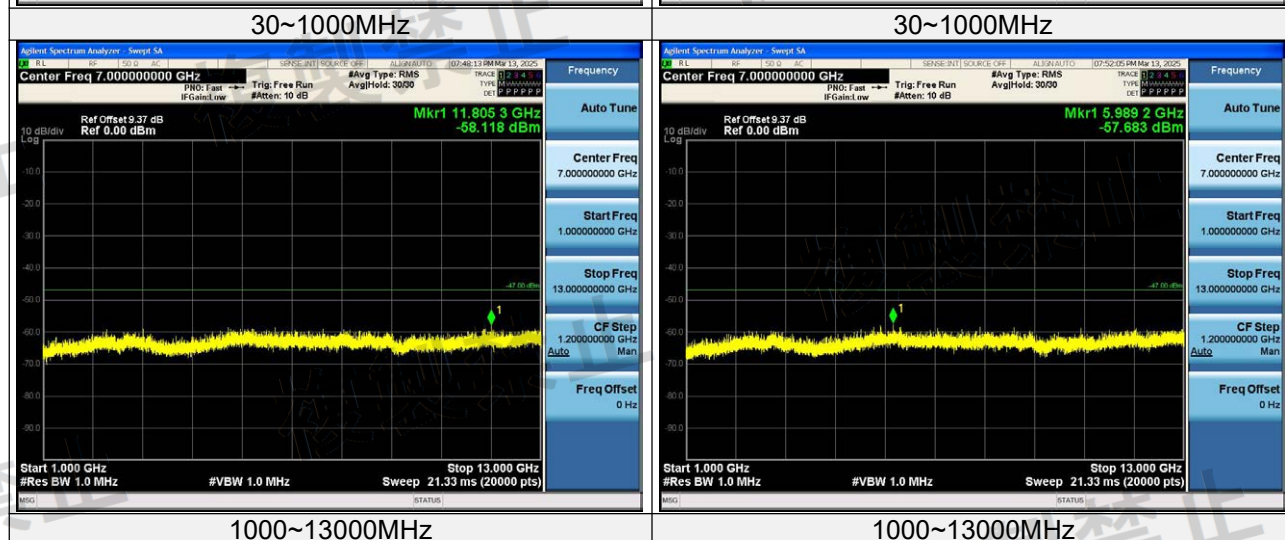
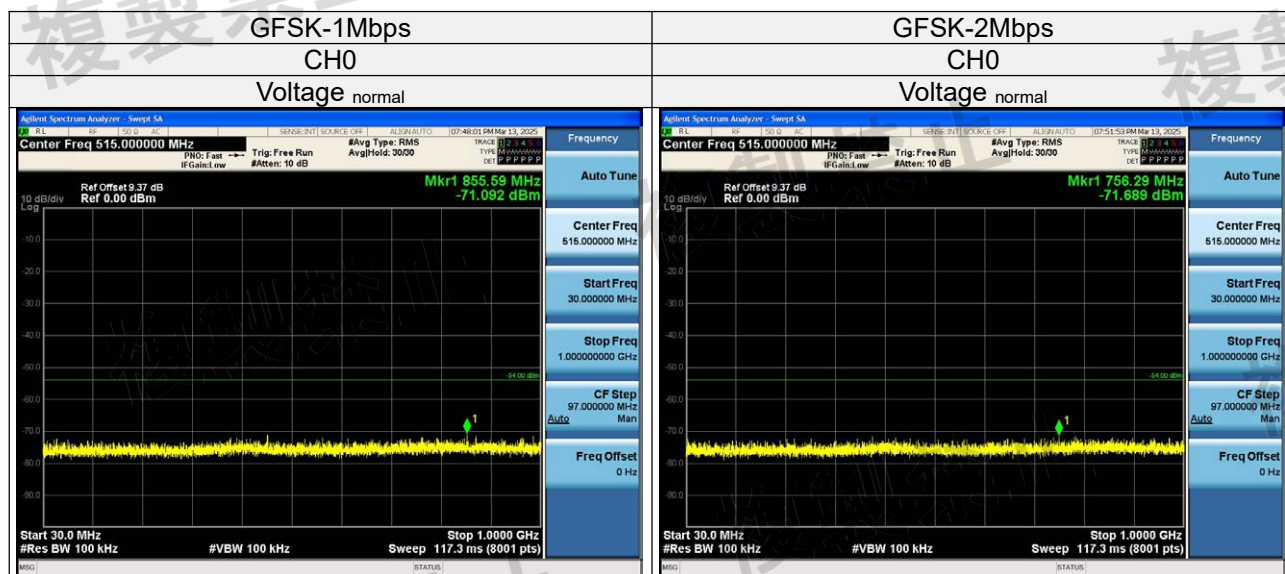
3.6.5 Test Results

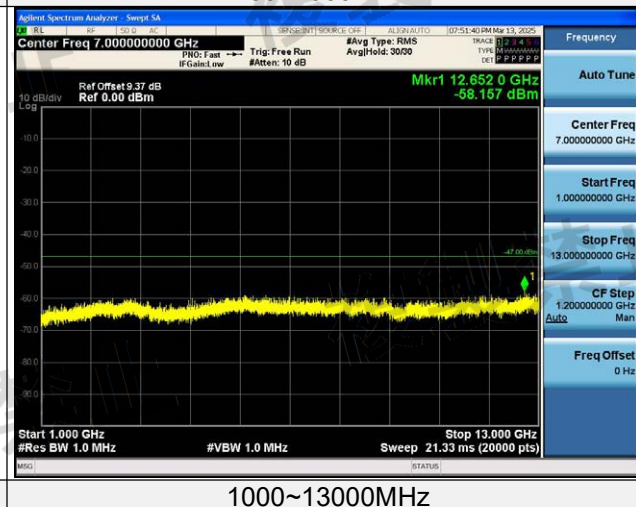
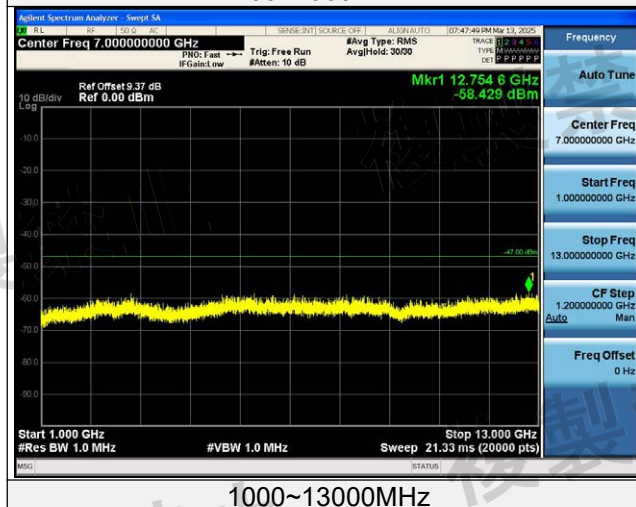
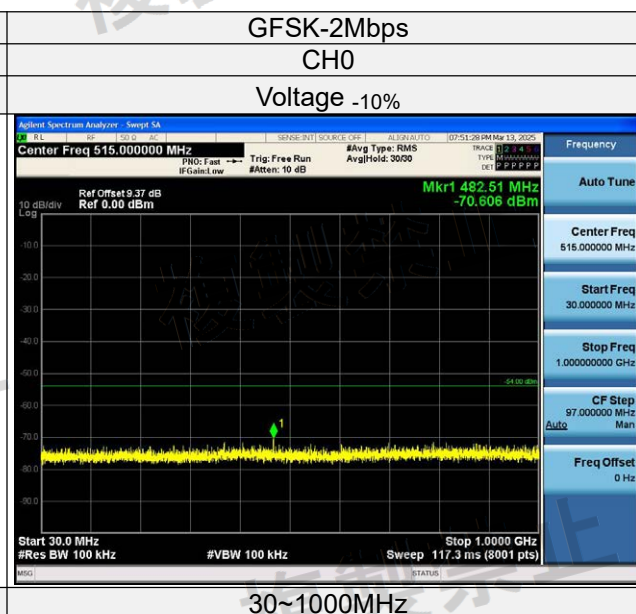
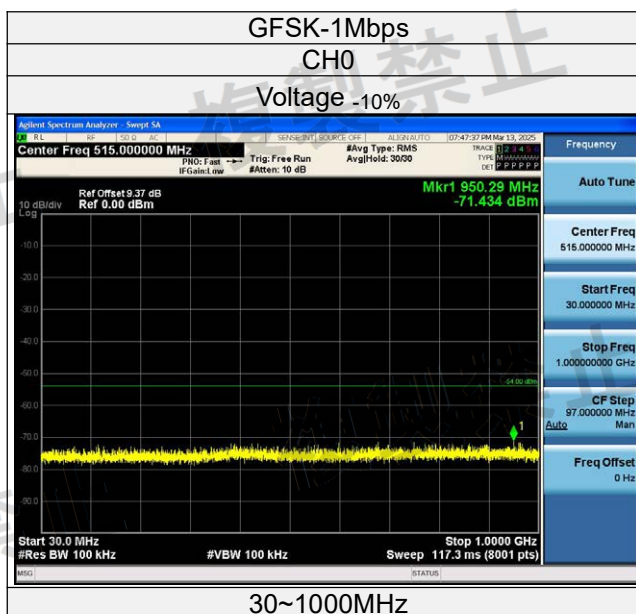
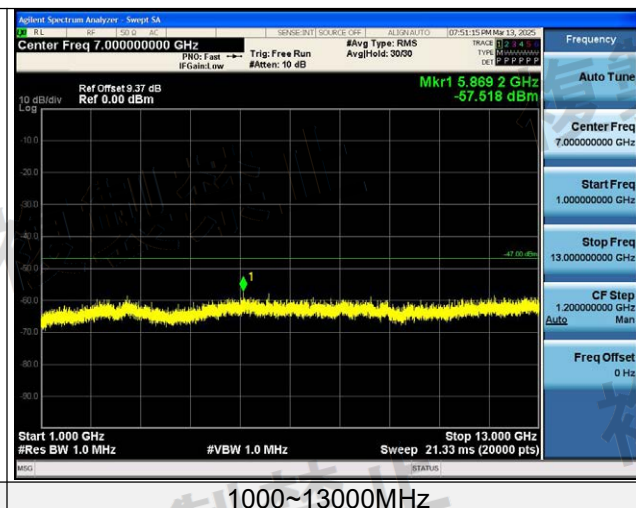
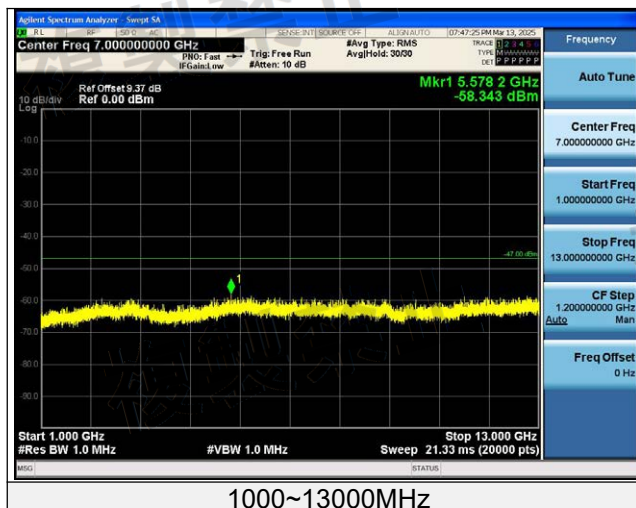
GFSK-1Mbps

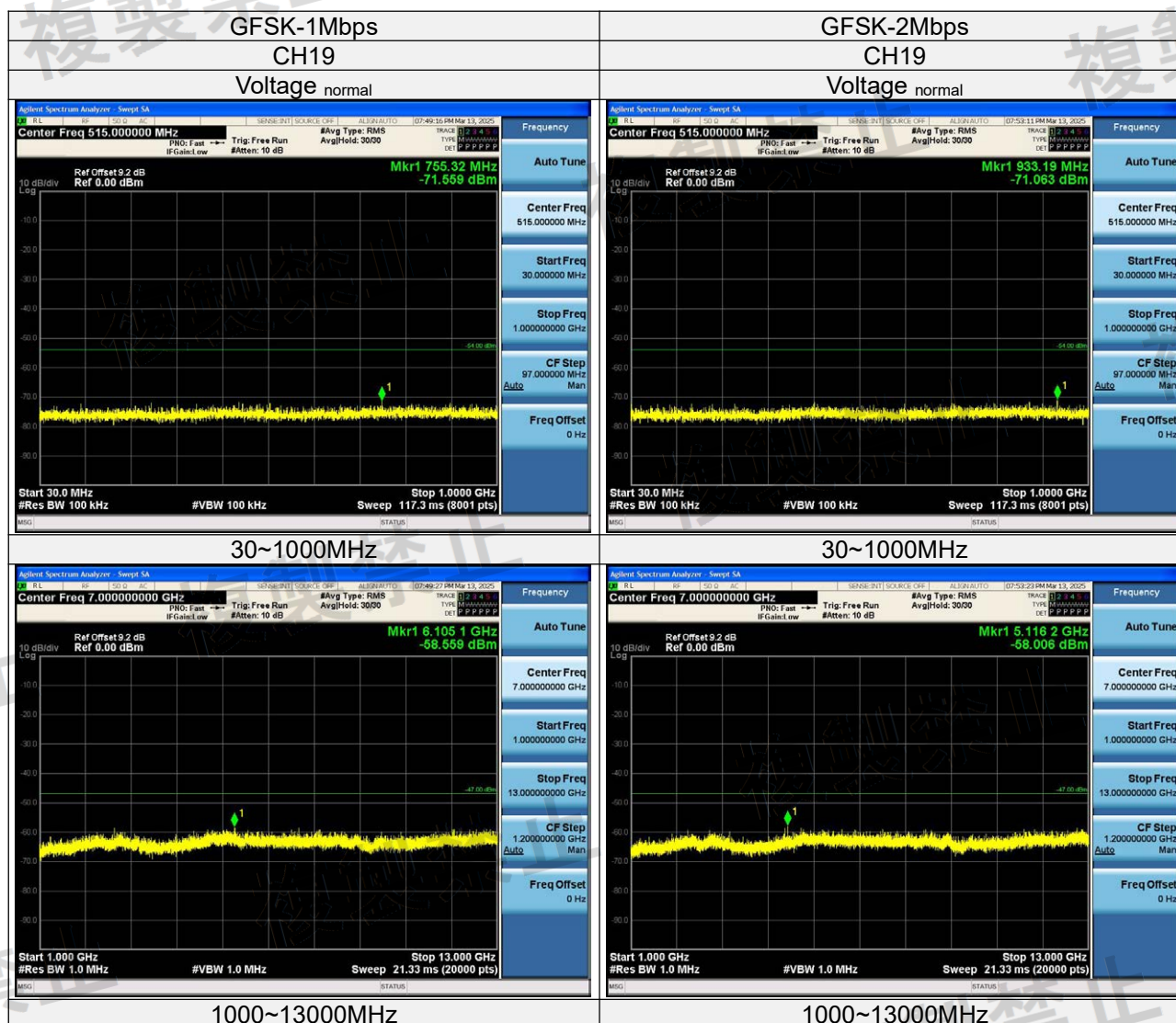
Test channel		CH 0 (2402MHz)		CH 19 (2440MHz)		CH 39 (2480MHz)		Limit	Result
Test condition	Frequency range	Frequency (MHz)	Measure. Value (nW)	Frequency (MHz)	Measure. Value (nW)	Frequency (MHz)	Measure. Value (nW)		
V_{normal}	30~1000	855.59	0.07777	755.32	0.06984	508.45	0.07002	4nW	Pass
	1000~13000	11805.30	1.54241	6105.10	1.39348	12485.80	1.52546	20nW	Pass
V_{max}	30~1000	641.10	0.04639	764.17	0.07575	417.15	0.06888	4nW	Pass
	1000~13000	5578.20	1.46454	5895.60	1.57797	11718.30	1.60842	20nW	Pass
V_{min}	30~1000	950.29	0.07188	953.68	0.07773	886.27	0.07347	4nW	Pass
	1000~13000	12754.60	1.43582	12896.80	1.78896	6088.30	1.64551	20nW	Pass

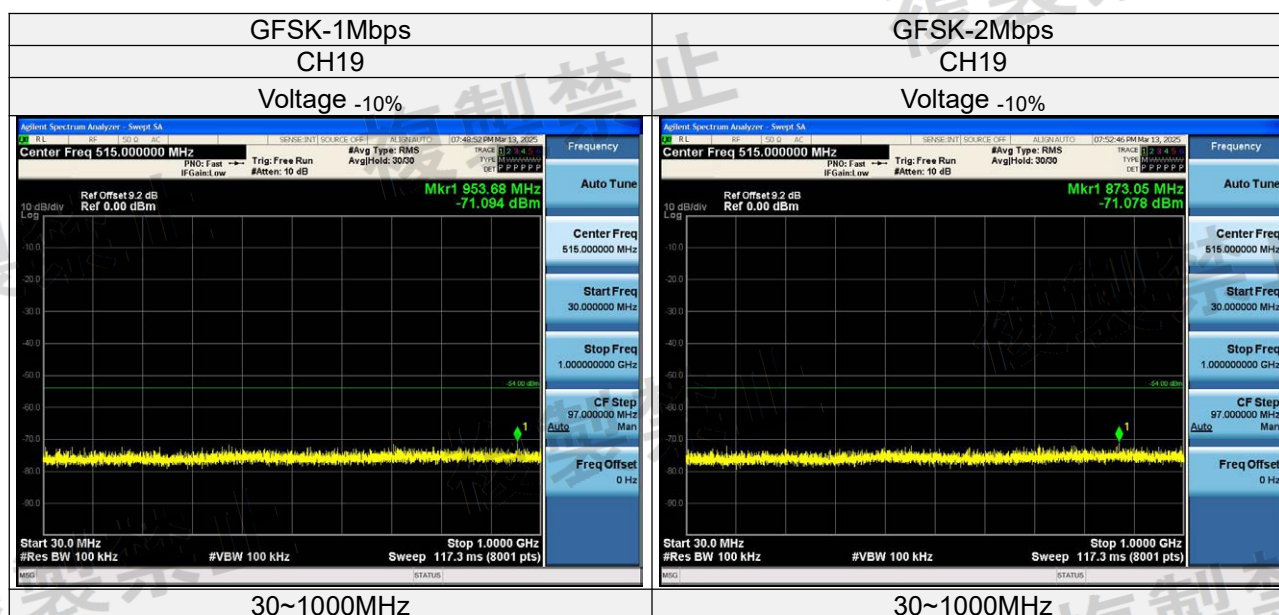
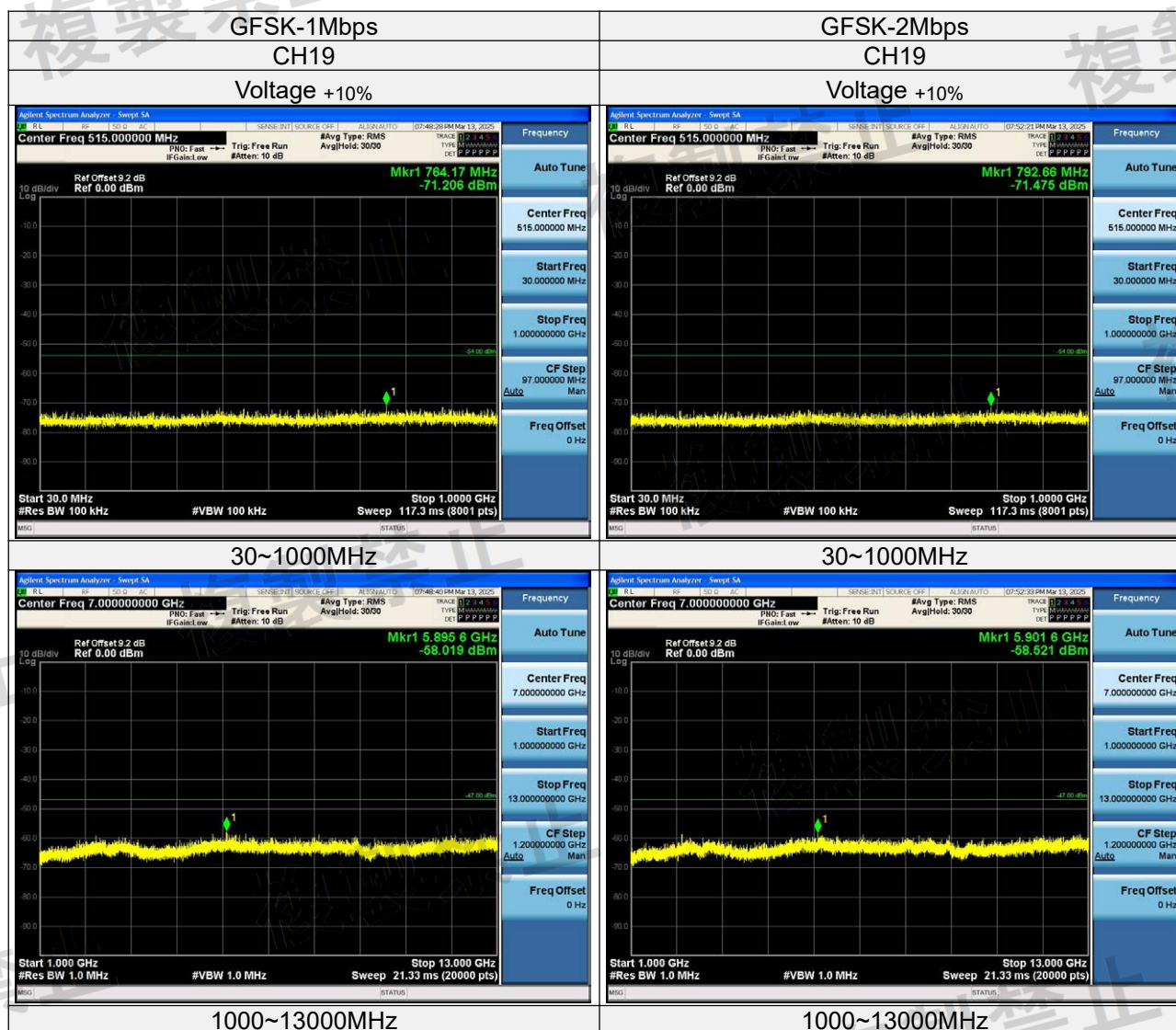
GFSK-2Mbps

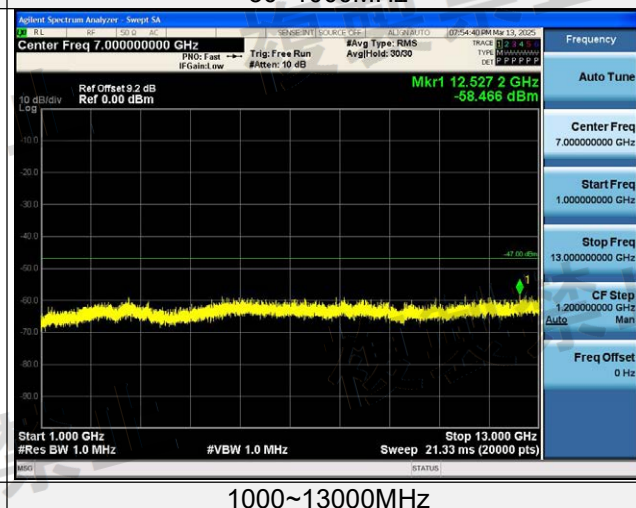
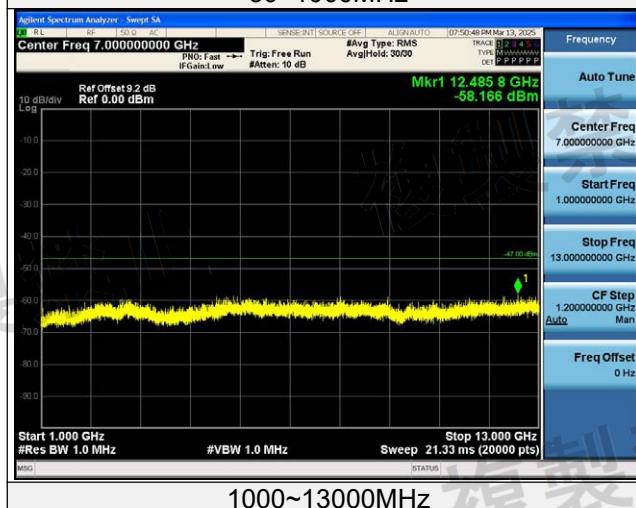
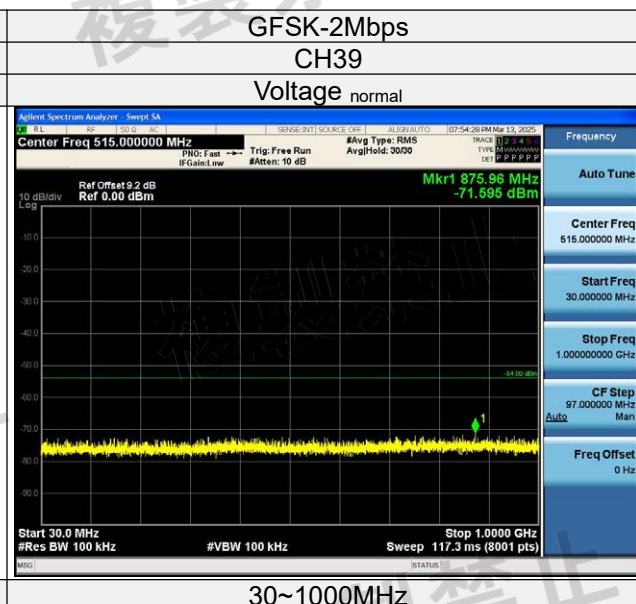
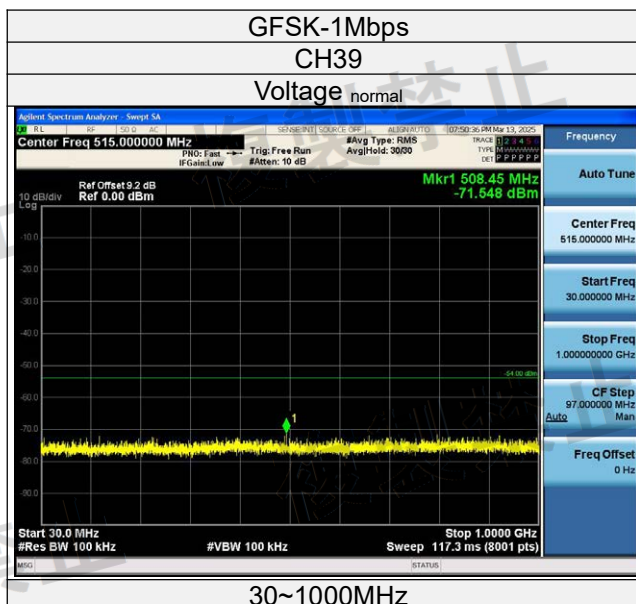
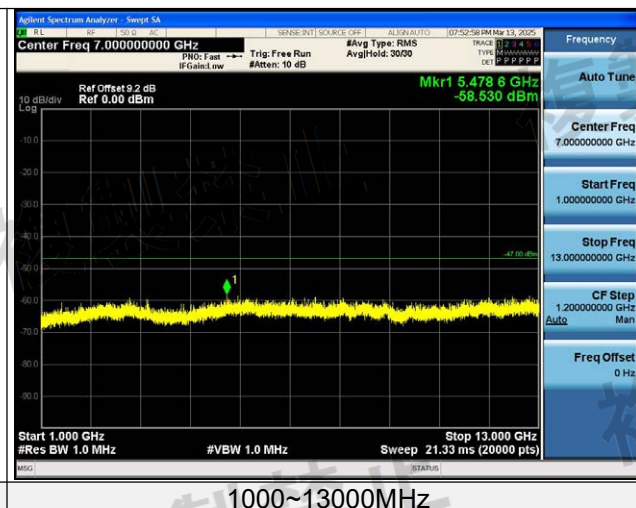
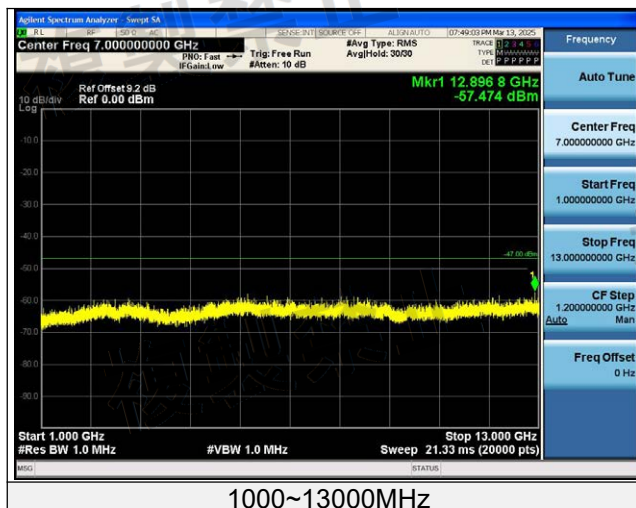
Test channel		CH 0 (2402MHz)		CH 19 (2440MHz)		CH 39 (2480MHz)		Limit	Result
Test condition	Frequency range	Frequency (MHz)	Measure. Value (nW)	Frequency (MHz)	Measure. Value (nW)	Frequency (MHz)	Measure. Value (nW)		
V_{normal}	30~1000	756.29	0.06778	933.19	0.07829	875.96	0.06926	4nW	Pass
	1000~13000	5989.20	1.70490	5116.20	1.58271	12527.20	1.42364	20nW	Pass
V_{max}	30~1000	867.35	0.07894	792.66	0.07120	806.85	0.06660	4nW	Pass
	1000~13000	5869.20	1.77092	5901.60	1.40572	8762.60	1.42561	20nW	Pass
V_{min}	30~1000	482.51	0.08698	874.05	0.07802	798.36	0.06177	4nW	Pass
	1000~13000	12652.00	1.52862	5478.60	1.40281	6288.70	1.43549	20nW	Pass

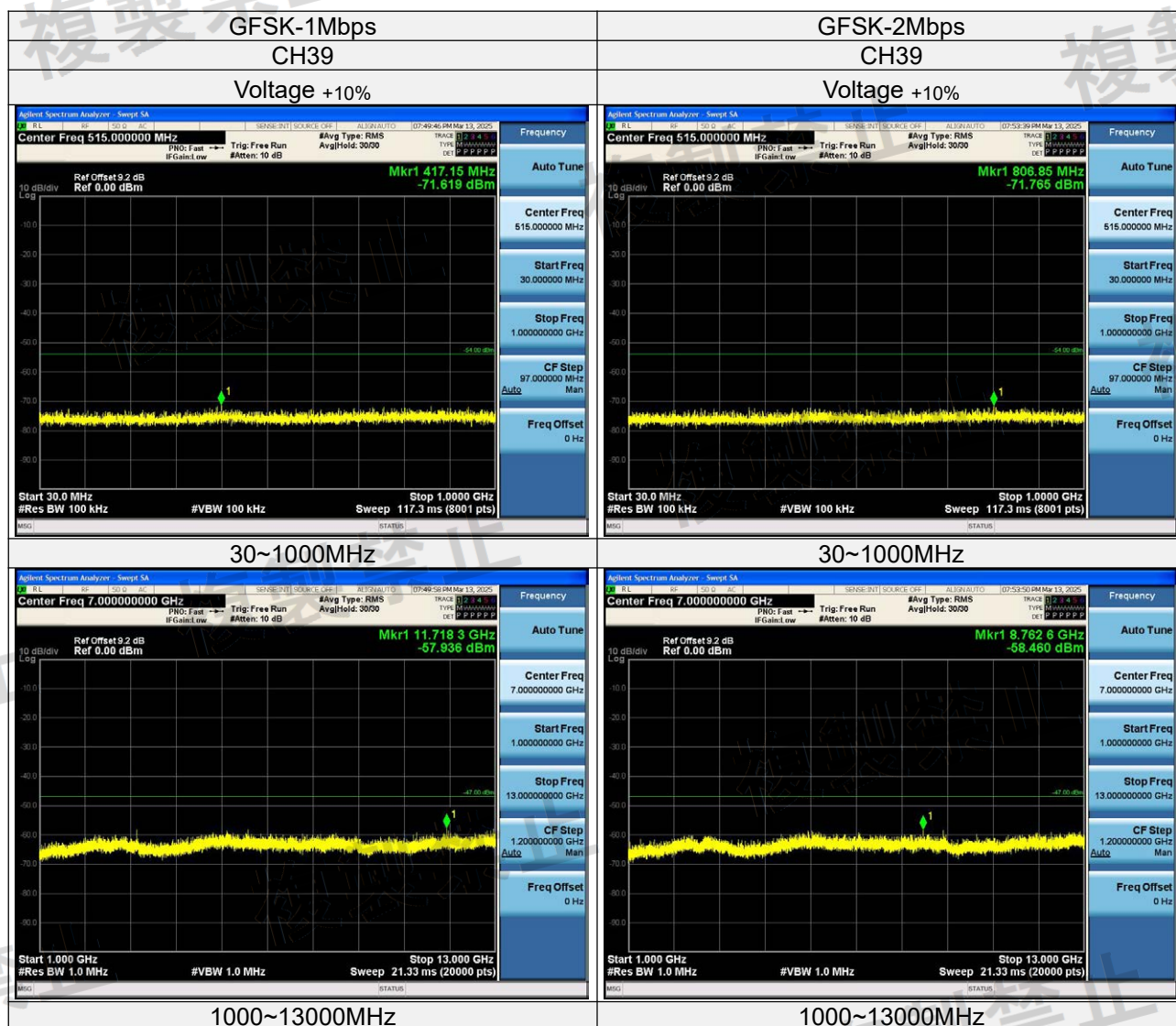


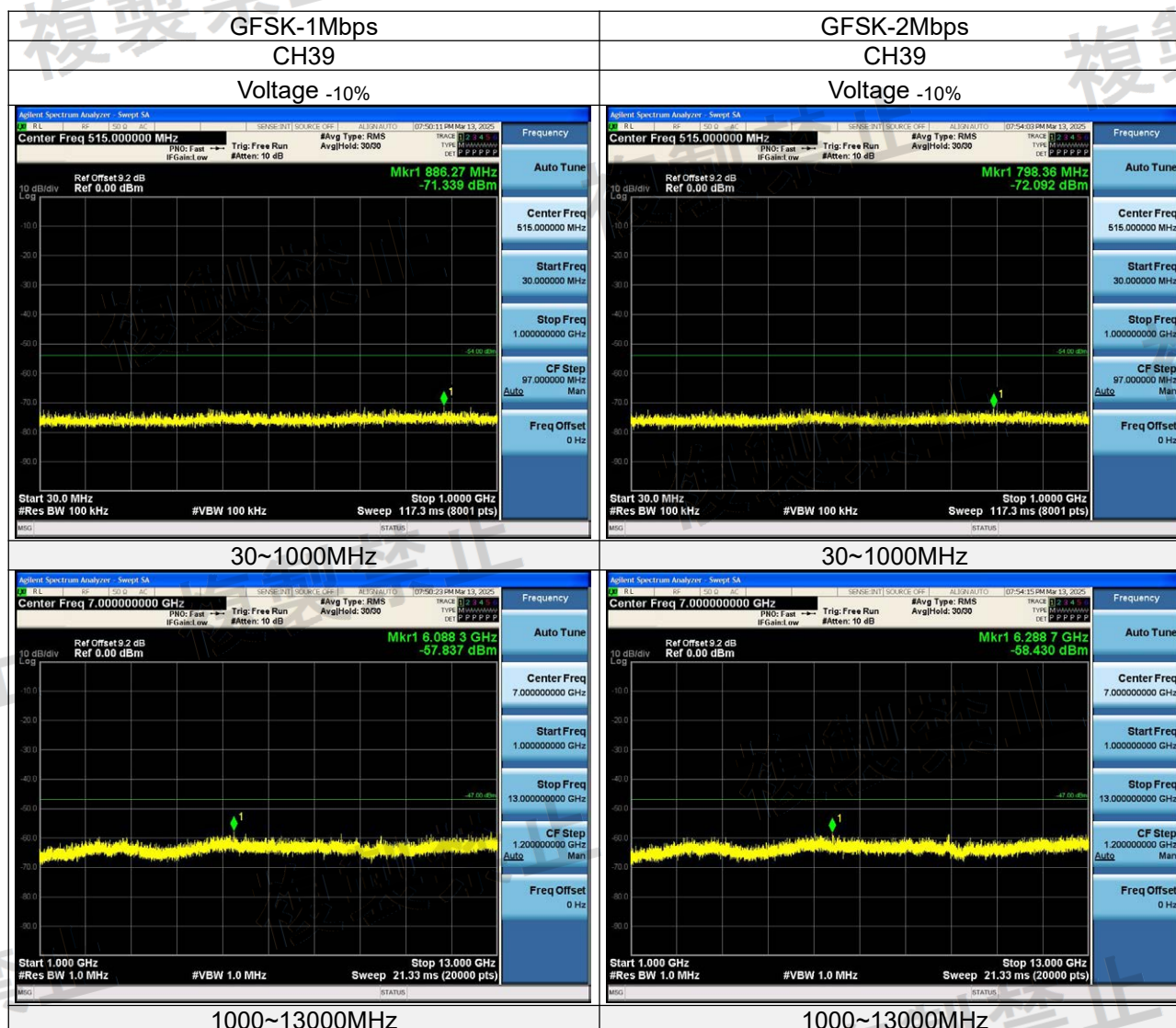












3.7 Interference prevention function

3.7.1 Limits of interference prevention function

No limit for use.

3.7.2 Test Procedure

The interference prevention requirement is a requirement that client devices should send an identification code to the master device in order to identify itself as a valid/authorized client.

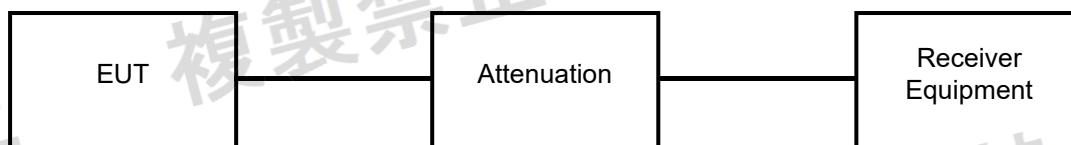
An acceptable result is to take a screenshot to demonstrate that the MAC address is 48 bits,

The intent of this requirement is that client devices which do not have a valid identification code cannot connect to the master device (such unauthorized client devices therefore cannot “interfere” with authorized client devices because unauthorized client devices will not be allowed to connect to the master).

This requirement applies to all 2.4 GHz devices (in fact, this requirement applies to most transmitters/transceivers when they are intended to be used in Japan). For 2.4 GHz devices, the identification code must consist of 48 bits. The majority of 2.4 GHz devices are still WLAN, Bluetooth or ZigBee devices. In such cases, one of the IEEE 802.xx protocols will be used. As it happens (and this is probably not a coincidence) the MAC address which is assigned to such devices consists of 48 bits.

As a result of said changes in the Japanese Radio Law, the test laboratory (now) needs to verify the operation/existence of the interference prevention function and needs to report the result(s) of this test in the test report.

3.7.3 Test Setup

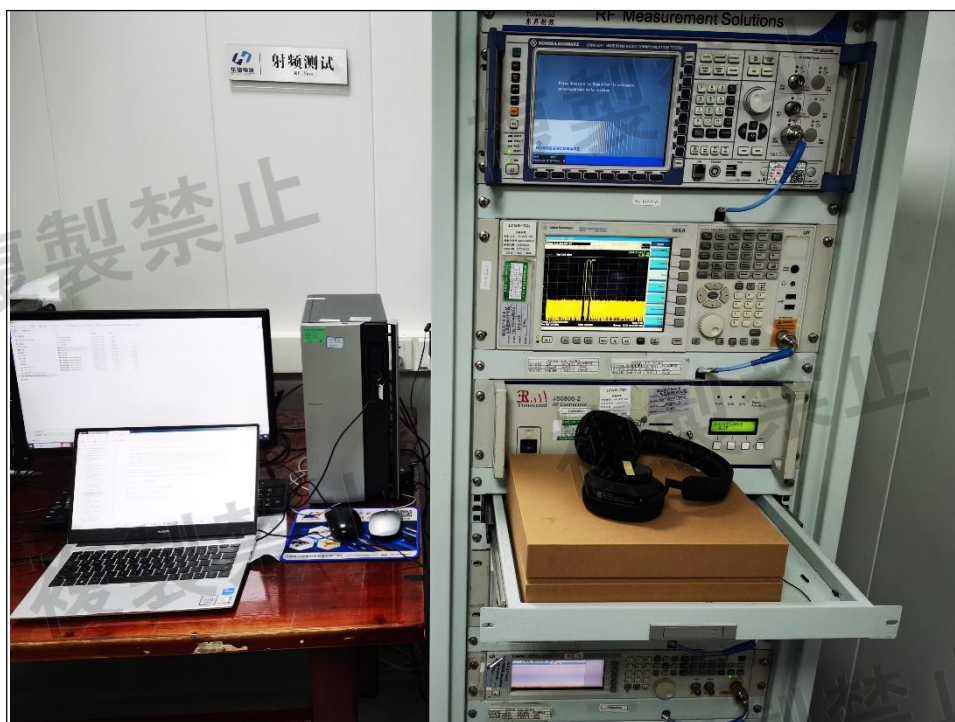


3.7.4 Test results

Link mode	Test result
BT-LE	Good
The MAC address of UUT:	500B91A8B9A1
MW75_Kanto 属性 常规 驱动程序 详细信息 事件  MW75_Kanto 属性(P) 蓝牙设备地址 值(V) 500B91A8B9A1	

Test Report No.:2502120095-RF-JP-02

4 Photographs of the test configuration



Appendix – Information on the Testing Laboratories

We, [Hwa-Hsing \(Dongguan\) Testing Co., Ltd.](#), A global provider of TESTING and CERTIFICATION services for consumer products, electronic products and wireless information technology products. Adhering to the core values “HONEST and TRUSTWORTHY, OBJECTIVE and IMPARTIALITY, RIGOROUS and AFFICIENT”, commitment to provide professional, perfect and efficient comprehensive ONE-STOP solution of TESTING and CERTIFICATION services for Manufacturers, Buyers, Traders, Brands, Retailers. Assist client to better manage risk, protect their brands, reduce costs and cut time to over 150 markets in global. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Lab Address: [No.101, Building N1, Yuyuan 2 Road, Yuyuan Industrial Park, HuangJiang Town, Dongguan City, People's Republic of China](#)

Contact Tel: [0769-85598986](#)

Email: service-hs@lyns-tci.com

Web Site: www.lyns-tci.com

The address and road map of all our labs can be found in our web site also.

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