

<b>Prüfbericht-Nr.:</b> Test report no.:	CN23IYFN (JRF-2.4GHz) 001	<b>Auftrags-Nr.:</b> Order no.:	48221899	Seite 1 von 18 Page 1 of 18
<b>Kunden-Referenz-Nr.:</b> Client reference no.:	N/A	<b>Auftragsdatum:</b> Order date:	2023-07-24	
<b>Auftraggeber:</b> Client:	Acrox Technologies Co., Ltd. 4F., No.89, Minshan St., Neihu Dist., Taipei City, Taiwan, R.O.C.			
<b>Prüfgegenstand:</b> Test item:	wireless mouse			
<b>Bezeichnung / Typ-Nr.:</b> Identification / Type no.:	HSA-A018M			
<b>Auftrags-Inhalt:</b> Order content:	Test Report for JP compliance (SRD 2.4GHz)			
<b>Prüfgrundlage:</b> Test specification:	ARIB STD-T66 (V3.7), MIC notice 88 Appendix 43 Article 2-1-19 of the Certification Ordinance			
<b>Wareneingangsdatum:</b> Date of sample receipt:	2023-07-20			
<b>Prüfmuster-Nr.:</b> Test sample no.:	A003522059-002			
<b>Prüfzeitraum:</b> Testing period:	2023-07-27			
<b>Ort der Prüfung:</b> Place of testing:	EMC/RF Taipei Testing Site			
<b>Prüflaboratorium:</b> Testing laboratory:	Taipei Testing Laboratories			
<b>Prüfergebnis*:</b> Test result*:	Pass			
<b>zusammengestellt von:</b> compiled by:	<b>genehmigt von:</b> authorized by:			
<b>Datum:</b> Date:	2023-08-07	<b>Ausstellungsdatum:</b> Issue date:	2023-08-07	
<b>Stellung / Position:</b>	Senior Project Manager	<b>Stellung / Position:</b>	Senior Project Manager	
<b>Sonstiges / Other:</b>				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
<b>* Legende:</b>	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar N/T = nicht getestet
<b>* Legend:</b>	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable N/T = not tested
<b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b> This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

TEST SUMMARY

Report Section	Test Item	Result
5.1	Frequency Error	Pass
5.2	Occupied Bandwidth	Pass
5.3	Spurious Emissions of Transmitter	Pass
5.4	Antenna Power	Pass
5.5	Spurious Emissions of Receiver	Pass
5.6	Interference Prevention Function	Pass

**Note:** Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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APPENDIX A - TEST RESULT OF CONDUCTED

APPENDIX EP - PHOTOGRAPHS OF EUT

複製禁止

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HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN23IYFN (JRF-2.4GHz) 001	Original Release	2023-08-07

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## 1. General Remarks

### 1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

**Appendix A - Test Result of Conducted**

**Appendix EP - Photographs of EUT**

#### Applied Standard and Test Levels

Radio
ARIB STD-T66 (V3.7), MIC notice 88 Appendix 43 Article 2-1-19 of the Certification Ordinance

### 1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.



## 2. Test Sites

### 2.1 Test Laboratory

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.  
Taipei City 105  
Taiwan (R.O.C.)

### 2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,  
New Taipei City 244  
Taiwan (R.O.C.)  
FCC Registration No.: 180491  
ISED Registration No.: 25563

## 2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of k=2 to indicate a 95% level of confidence.

### Emission Measurement Uncertainty

Parameter	Uncertainty
Occupied Bandwidth	± 5 %
RF power, conducted	± 1.5 dB
unwanted emissions, conducted	± 3 dB
Temperature	± 1 °C
Humidity	± 5 %
DC and low frequency voltages	± 3 %



### 3. General Product Information

#### 3.1 Product Function and Intended Use

The EUT is a wireless mouse. It contains a 2.4GHz compatible module enabling the user to communicate data through a Wireless interface.

For details refer to the User Guide, Data Sheet and Circuit Diagram.

#### 3.2 System Details and Ratings

##### Technical Specification of EUT

Item	EUT information
Kind of Equipment/Test Item	wireless mouse
Type Identification	HSA-A018M
Operating Frequency	2402 MHz ~ 2480 MHz
Channel Number	40
Data Rate	1Mbps
Operation Voltage	1.5 Vdc
Modulation	GFSK
Rated RF Power	0.00004W
Conducted RF Output Power	0.03mW
Antenna Gain	3.22 dBi
Accessory Device	Refer to 4.4

#### 3.3 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

## 4. Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible conducted level. The test modes were adapted accordingly in reference to the instructions for use.

**Table for Parameters of Test Software Setting**

Frequency (MHz)	Power Setting
2402	Default
2440	Default
2480	Default

### 4.2 Carrier Frequency and Channel

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (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

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### 4.3 Test Operation and Test Software

Setup for testing: Test samples are linked with notebook computer through the fixture.

The samples were used as follows:  
A003522059-002

#### Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Frequency Error	23.7-24.2 °C	55.9-61.2 %	Blake Wang
Occupied Bandwidth	23.7-24.2 °C	55.9-61.2 %	Blake Wang
Spurious Emissions of Transmitter	23.7-24.2 °C	55.9-61.2 %	Blake Wang
Antenna Power	23.7-24.2 °C	55.9-61.2 %	Blake Wang
Receiver Spurious Emissions	23.7-24.2 °C	55.9-61.2 %	Blake Wang

### 4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

#### Accessory of EUT

None

## 5. Test Results (SRD 2.4GHz)

### 5.1 Frequency Error

**Limit** Tolerance of frequency shall be +/- 50 ppm

**Kind of Test Site** Shielded room

**Test Setup**



#### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Calibration Authority	Calibration Method	Test Date	
								From	Until
Spectrum Analyzer	Rohde & Schwarz	FSV40	101513	2023/5/10	2024/5/9	Industrial Technology Research Institute	c	2023/7/27	2023/7/27
Power Meter	Anritsu	ML2495A	1901008	2023/3/17	2024/3/16	Industrial Technology Research Institute	c	2023/7/27	2023/7/27
Power Sensor	Anritsu	MA2411B	1725269	2023/3/17	2024/3/16	Industrial Technology Research Institute	c	2023/7/27	2023/7/27
True RMS Multimeter	Pro, sKit	MT-1706	19007158	2022/12/1	2023/11/30	Taiwan Testing and Certification Center	c	2023/7/27	2023/7/27

Note:

#### 1. Calibration Method

a): Calibration conducted by the National Institute of Information and Communications Technology~NICT~ or a designated calibration agency under Article 102-18 paragraph (1)~ TELEC Engineering Center, Intertek Japan K.K, Keysight Technologies, Inc~.

b): Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992)~ Japan Calibration Service System~

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)~ TELEC Engineering Center, Intertek Japan K.K, Keysight Technologies, Inc~.

d): Calibration conducted by using other equipment that listed above from a) to c)

#### 2. The Calibration interval of the above test instruments is 12 months and calibrations are traceable to NML/ROC and NIST/USA.

#### Test Result

Please refer to Appendix A.

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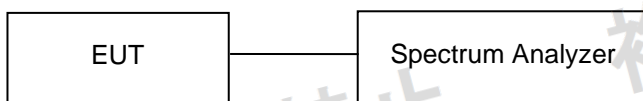
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## 5.2 Occupied Bandwidth Measurement (99% Power Bandwidth)

Limit < 26 MHz

Kind of Test Site Shielded room

Test Setup



### Test Instruments

Refer to 5.1 Test Instruments

### Test Result

Please refer to Appendix A.



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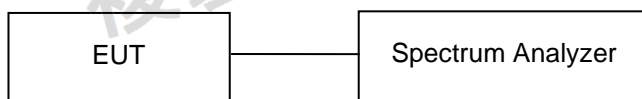
### 5.3 Spurious Emissions for Transmitter Measurement

#### Limit

Frequencies (MHz)	Limit
Operating Frequency 2400 to 2483.5 MHz	
30.0 to 2387.0 MHz	$\leq 2.5 \text{ uW/MHz}$
2387.0 to 2400.0 MHz	$\leq 25 \text{ uW/MHz}$
2483.5 to 2496.5 MHz	$\leq 25 \text{ uW/MHz}$
2496.5 to 12500.0 MHz	$\leq 2.5 \text{ uW/MHz}$

Kind of Test Site                      Shielded room

#### Test Setup



#### Test Instruments

Refer to 5.1 Test Instruments

#### Test Result

Please refer to Appendix A.



## 5.4 Antenna Power Measurement

### Limit

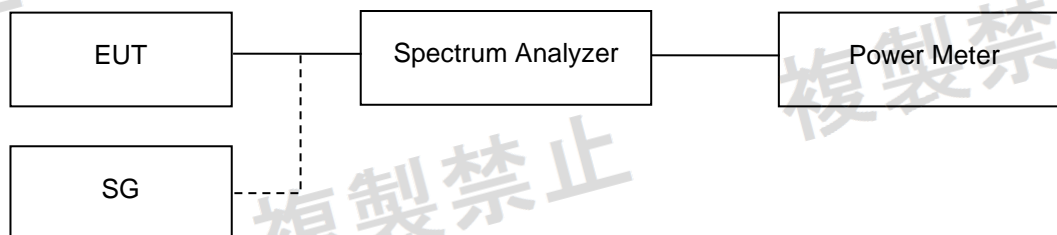
No.	Modulation System	Frequency Band Used	Antenna Power (Max.)	EIRP (Max.)	
				Omni-Directional Case	Directional Case
(1)	FH, FH+DS, FH+OFDM	2400 – 2483.5 MHz	3 mW/MHz	6.91 dBm/MHz (4.91 mW/MHz)	16.91 dBm/MHz (49.09 mW/MHz)
(2)	OFDM, DS (Note 1)	2400 – 2483.5 MHz	10 mW/MHz	12.14 dBm/MHz (16.37 mW/MHz)	22.14 dBm/MHz (163.68 mW/MHz)
(3)	OFDM (Note 2)	2400 – 2483.5 MHz	5 mW/MHz	9.13 dBm/MHz (8.18mW/MHz)	19.13 dBm/MHz (81.85 mW/MHz)
(4)	Other than (1) & (2) & (3)	2400 – 2483.5 MHz	10 mW	12.14 dBm (16.37 mW)	22.14 dBm (163.68 mW)

### Note:

1. Occupied bandwidth is less than 26 MHz.
2. Occupied bandwidth is more than 26 MHz and less than 38 MHz.
3. The half-power beam width for directional antenna shall be  $360/A$  degrees or less, where A is a ratio which causes the EIRP concerned to exceed the omni-directional EIRP upper limit.
4. Tolerance of antenna power shall be +20% (upper value) and -80% (lower value).

Kind of Test Site                      Shielded room

### Test Setup



### Test Instruments

Refer to 5.1 Test Instruments

### Test Result

Please refer to Appendix A.

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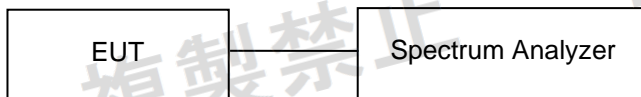
## 5.5 Spurious Emissions for Receiver Measurement

### Limit

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

**Kind of Test Site** Shielded room

### Test Setup



### Test Instruments

Refer to 5.1 Test Instruments

### Test Result

Please refer to Appendix A.

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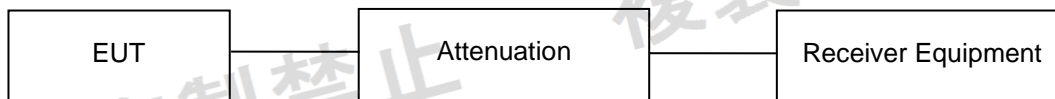
## 5.6 Interference Prevention Function

### Limit

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

Kind of Test Site Shielded room

### Test Setup



### Test Instruments

Refer to 5.1 Test Instruments

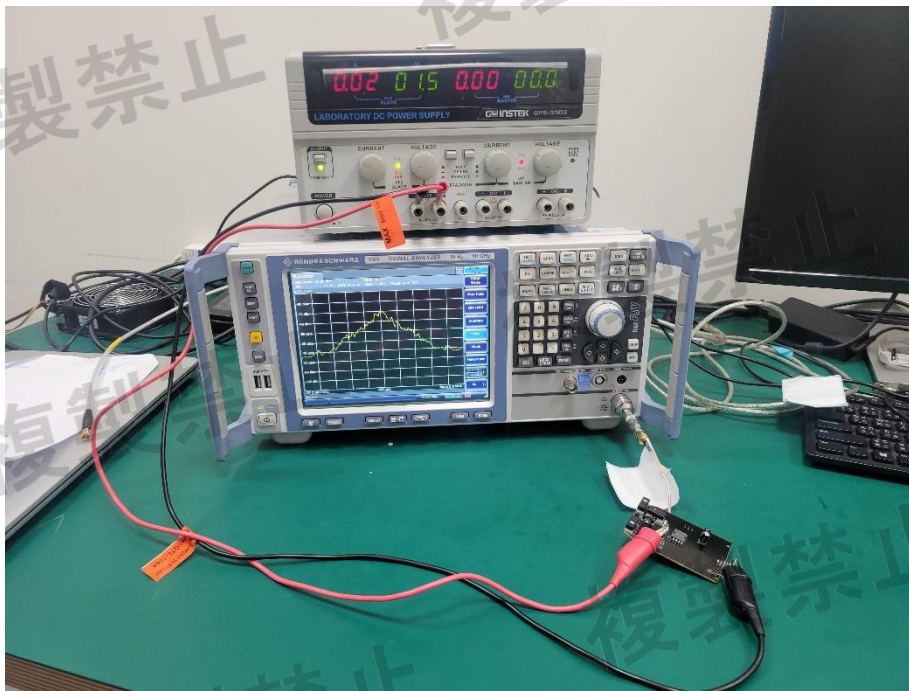
### Test Result

SRD 2.4GHz	Test Result
	Pass

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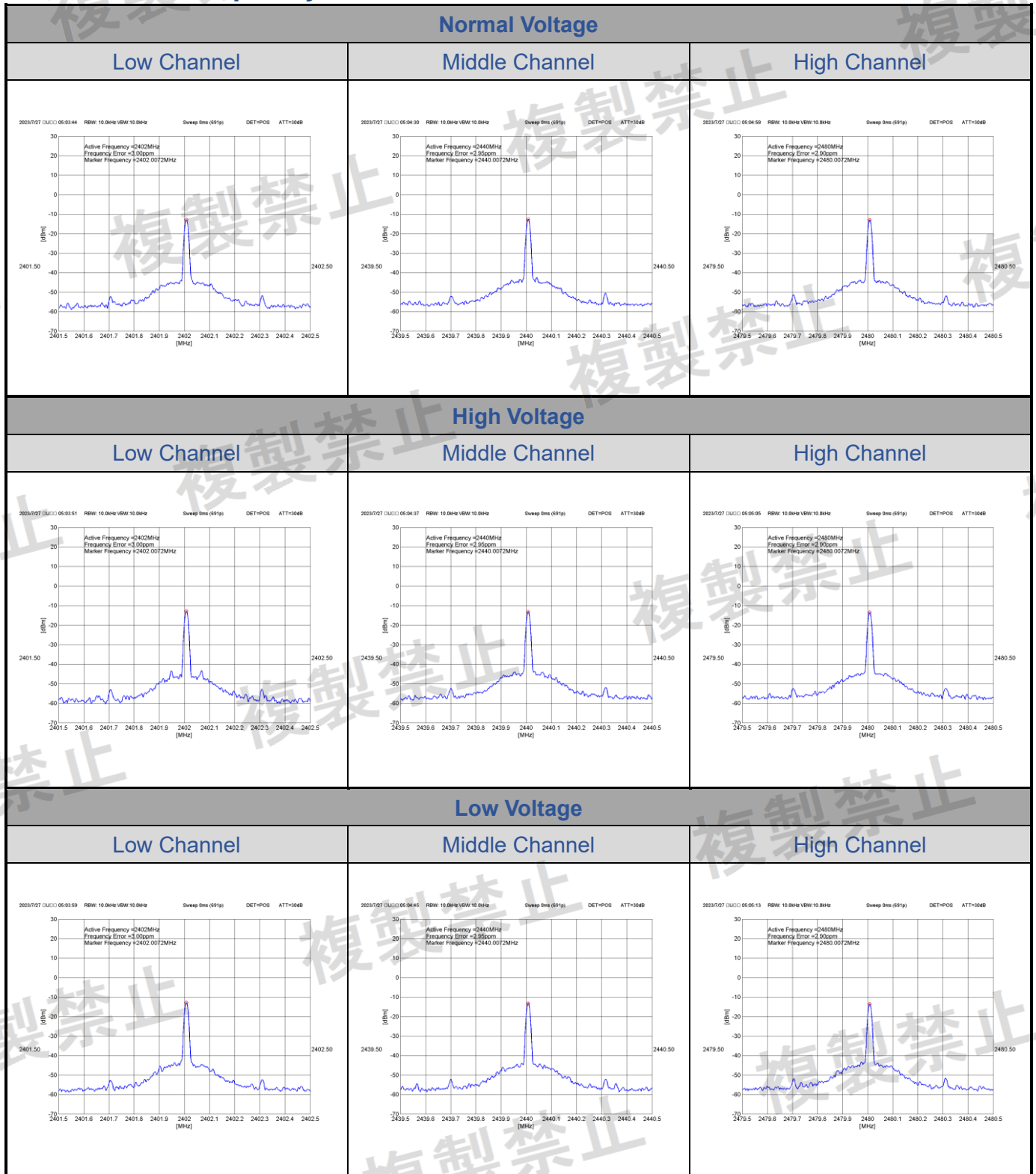
## 6. Photographs of the Test Setup



Test Result	Unit		Limit																	Notes		
	Test Voltage	V	DC			1.5 V			(normal)			DC			1.5 V			(low)				
			MHz			MHz			MHz			MHz			MHz			MHz				
Frequency Error	Test Frequency	MHz	2402	2440	2480	2402	2440	2480	2402	2440	2480	2402	2440	2480	2402	2440	2480	2402	2440	2480	Antenna Gain = 322dBi	
Occupied Bandwidth		MHz	26.0	232	252	26.0	232	252	26.0	232	252	26.0	232	252	26.0	232	252	26.0	232	252	Number of Stream = 1	
Spurious Emissions	30.0 ~ 2387.0 MHz	μW/MHz	2.5	0.175	0.003	0.003	0.003	0.003	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	ok	
		MHz	—	1758.78	2310.68	2367.26	—	2356.84	1757.31	1757.60	—	1757.60	1757.01	1756.72	—	1757.60	1757.01	1756.72	—	1756.72	ok	
		2387.0 ~ 2400.0 MHz	μW/MHz	25.0	0.471	0.004	0.003	0.003	0.481	0.004	0.003	0.003	0.497	0.004	0.003	0.003	0.004	0.003	0.003	0.003	ok	
		MHz	—	2400.00	2399.96	2390.64	—	2400.00	2398.20	2394.57	—	2400.00	2399.79	2393.42	—	2400.00	2399.79	2393.42	—	2393.42	ok	
		2483.5 ~ 2496.5 MHz	μW/MHz	25.0	0.004	0.004	0.157	0.003	0.004	0.181	0.003	0.004	0.181	0.004	0.004	0.179	0.004	0.004	0.179	0.004	0.179	ok
		MHz	—	2491.65	2485.51	2483.60	—	2492.49	2486.83	2483.55	—	2491.91	2485.65	2483.51	—	2491.91	2485.65	2483.51	—	2483.51	ok	
		2496.5 ~ 12500.0 MHz	μW/MHz	25.0	0.040	0.038	0.032	0.015	0.048	0.025	0.025	0.037	0.050	0.033	0.033	0.037	0.050	0.033	0.033	0.033	ok	
		MHz	—	4803.85	4880.13	4958.92	—	4803.85	4878.88	4960.17	—	4803.85	4878.88	4960.17	—	4803.85	4878.88	4960.17	—	4960.17	ok	
Antenna Power		mW	10.0	0.03	0.03	0.02	0.03	0.03	0.02	0.03	0.03	0.02	0.02	0.03	0.03	0.02	0.03	0.03	0.02	ok		
		μW	—	-80	-27.23	-32.40	-41.93	—	-26.73	-32.25	-41.66	—	-27.57	-32.40	-42.20	—	-27.57	-32.40	-42.20	—	-42.20	ok
		dBm	—	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	ok
Collateral Emissions	30.0 ~ 1000.0 MHz	nW	4.0	0.003	0.003	0.005	0.003	0.003	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	ok	
		MHz	—	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	200.01	ok	
		1000.0 ~ 12500.0 MHz	nW	20.0	0.091	0.085	0.089	0.099	0.098	0.093	0.099	0.098	0.093	0.090	0.082	0.088	0.090	0.082	0.088	0.088	ok	
		MHz	—	6924.88	5990.19	6671.65	6759.34	6806.79	6861.42	6858.71	6805.35	6998.08	6858.71	6805.35	6998.08	6858.71	6805.35	6998.08	6858.71	6805.35	ok	
Interference Protection	Allowed Antenna Gain	dB	yes	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	Complies	ok	

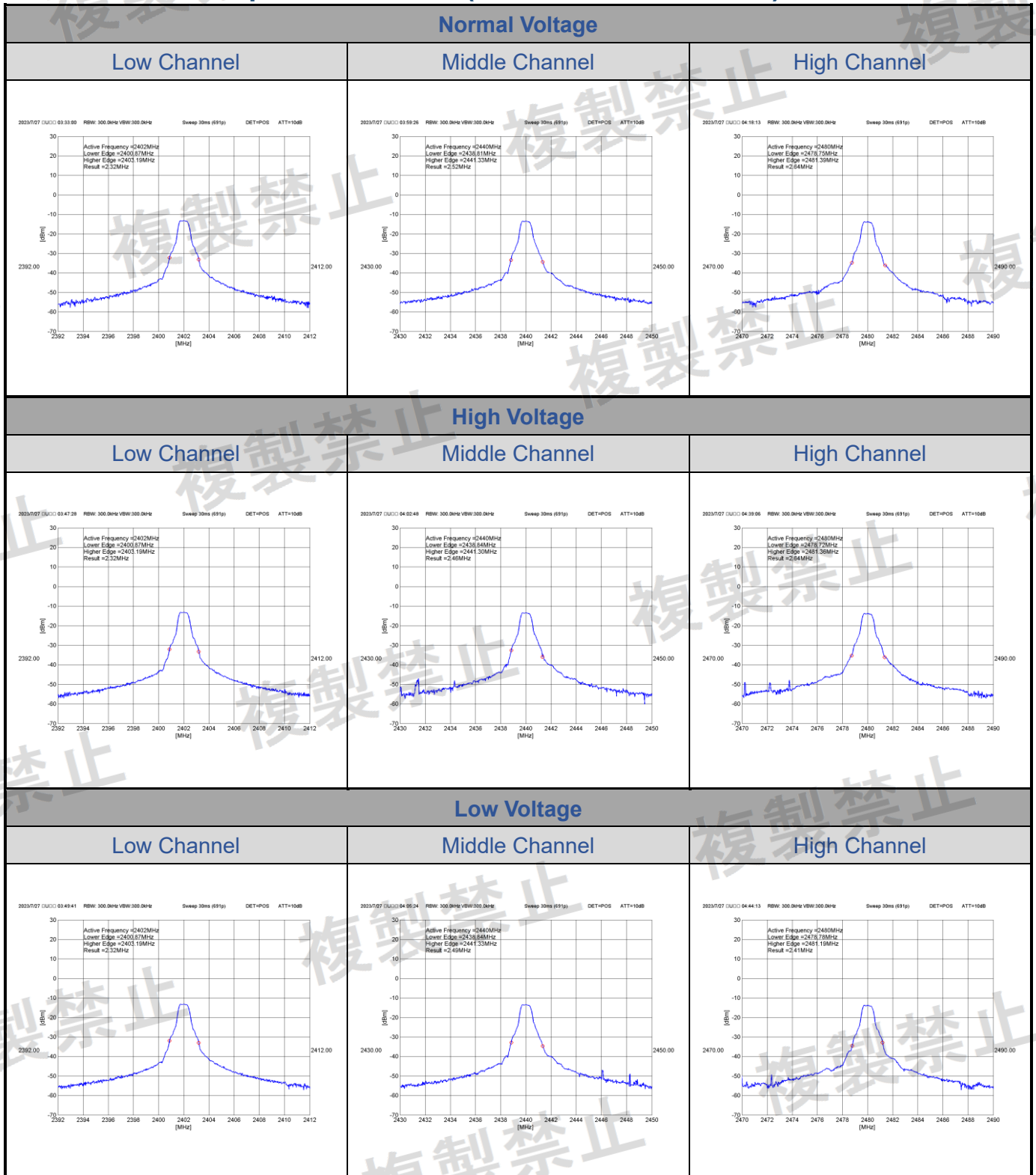


# Test Plots of Frequency Error

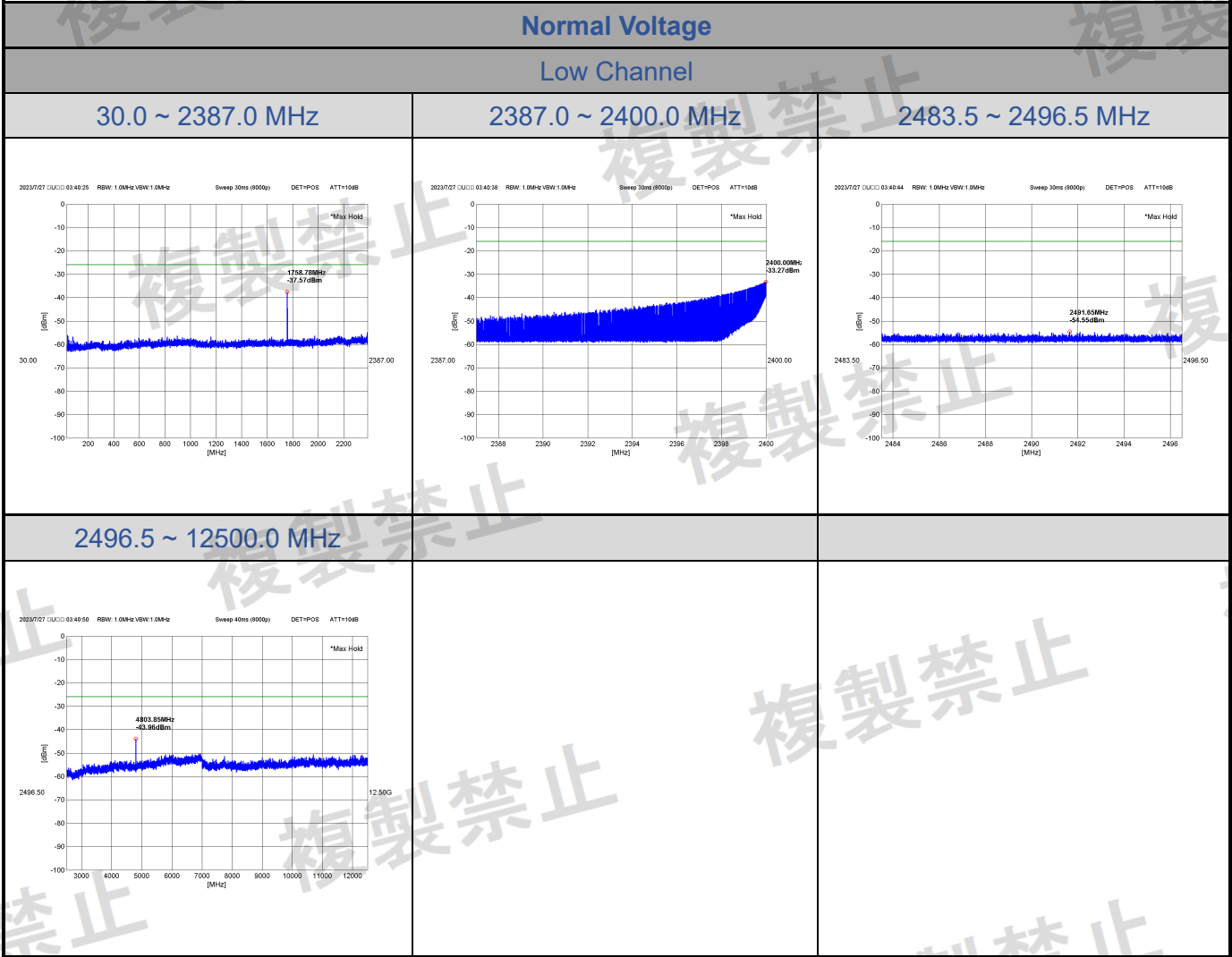


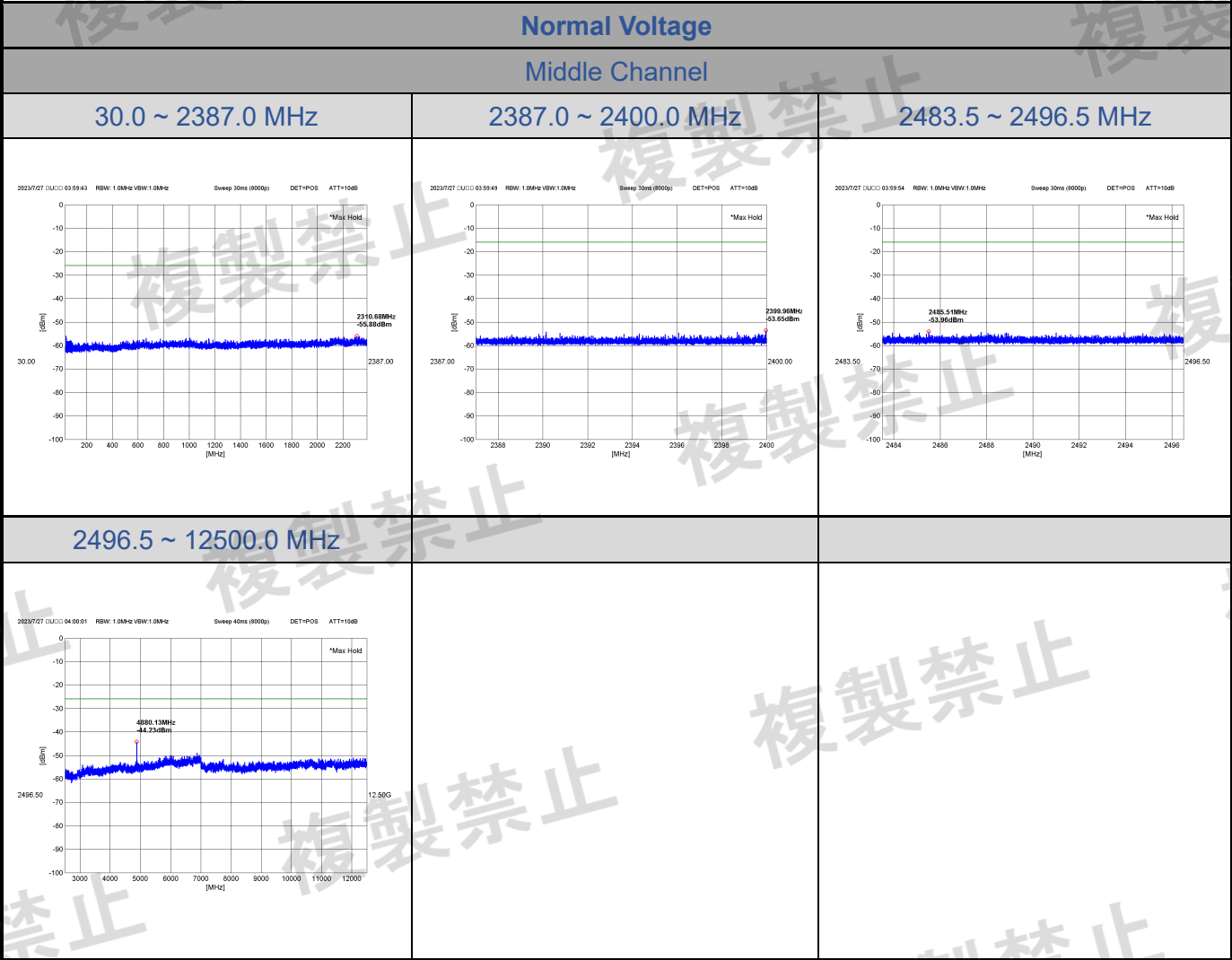


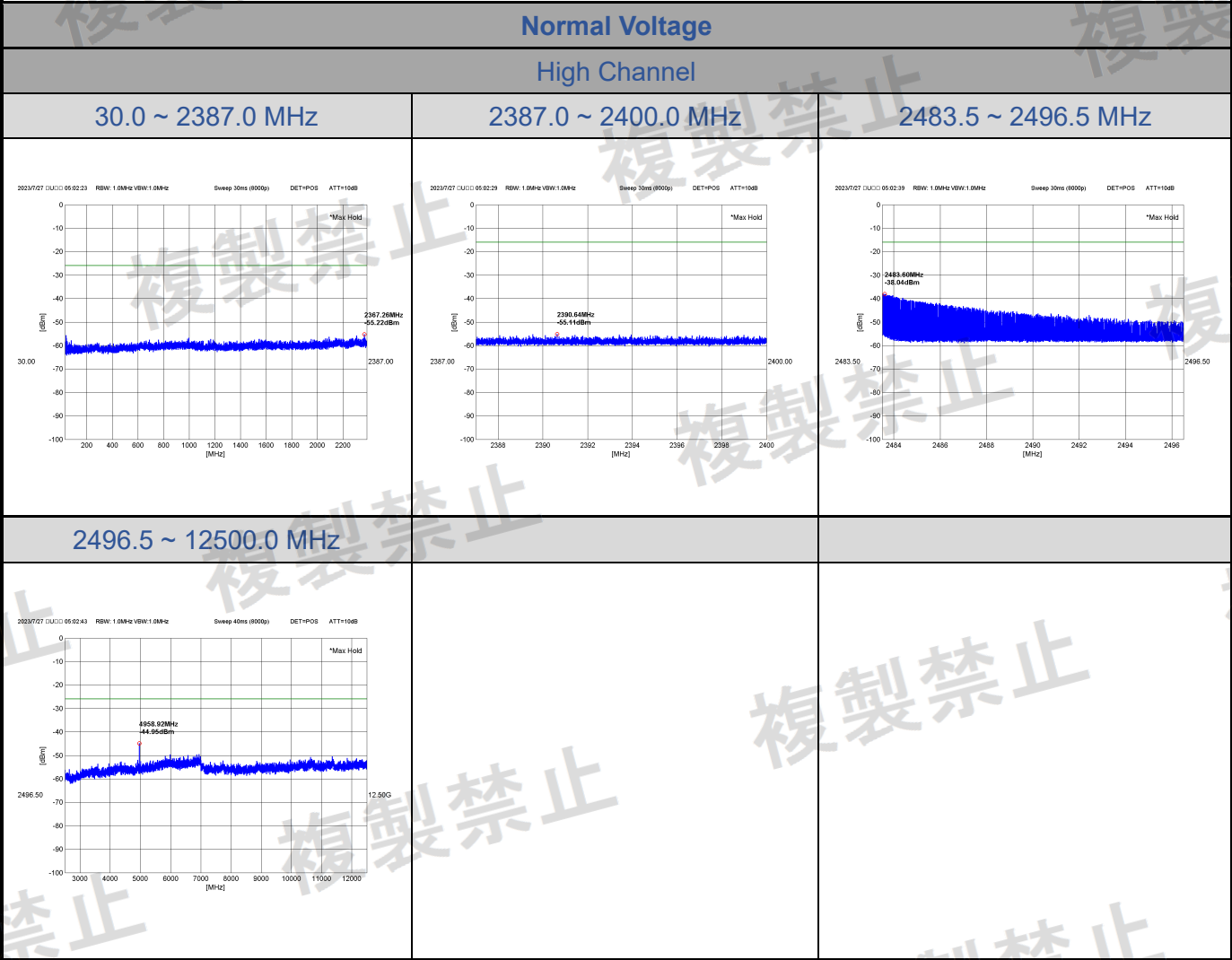
# Test Plots of Occupied Bandwidth (99% Power Bandwidth)

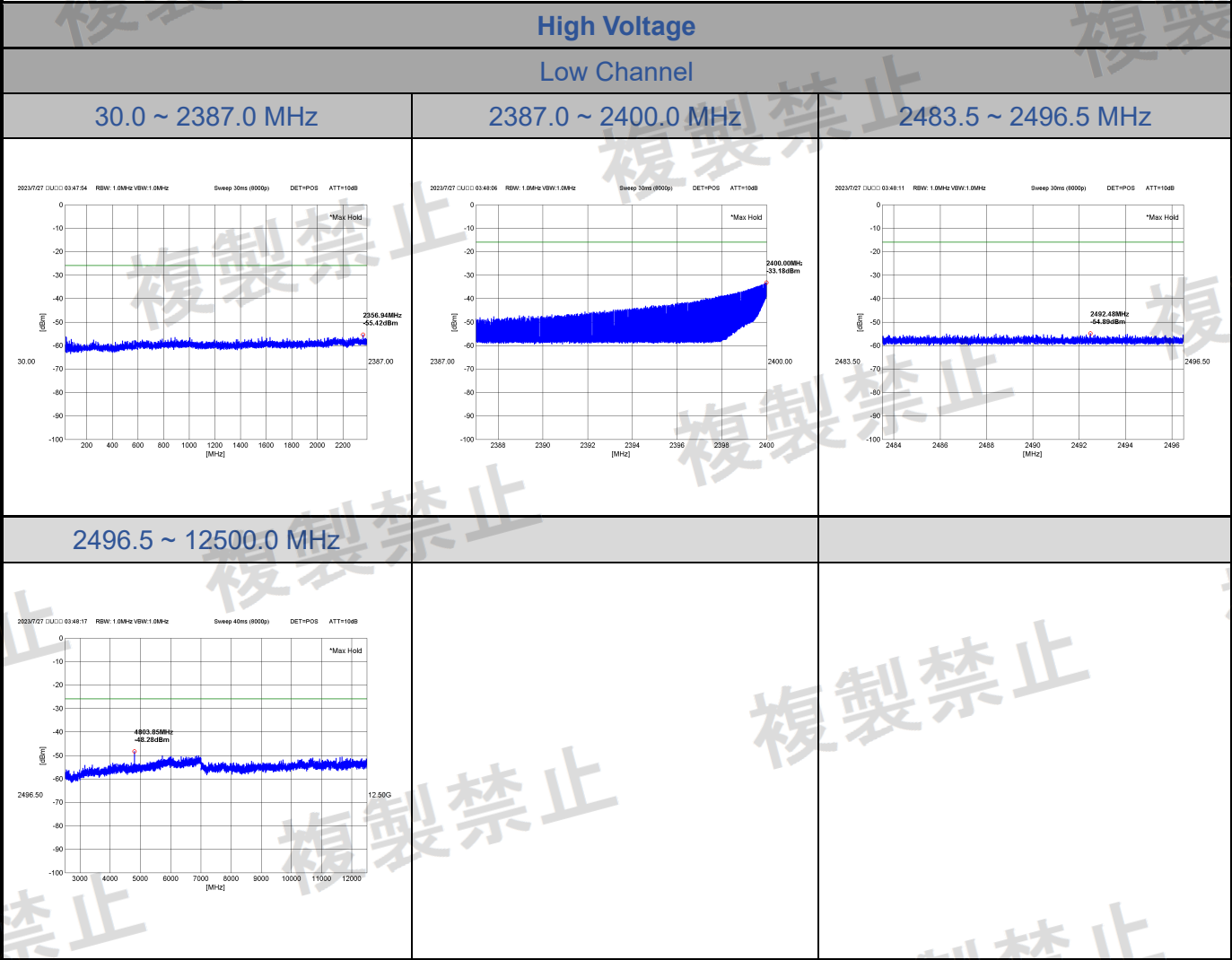


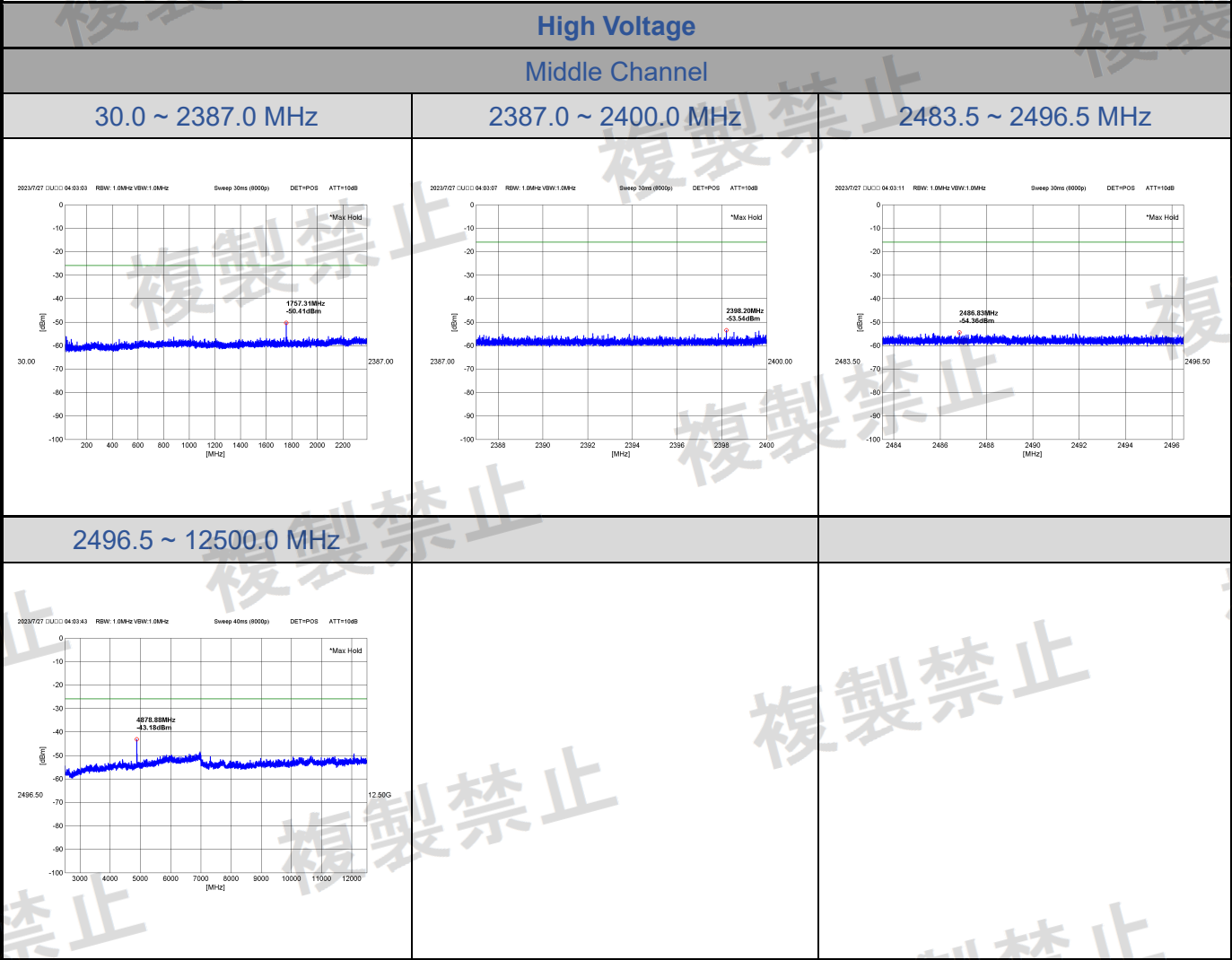
Test Plots of Transmitter Spurious Emissions



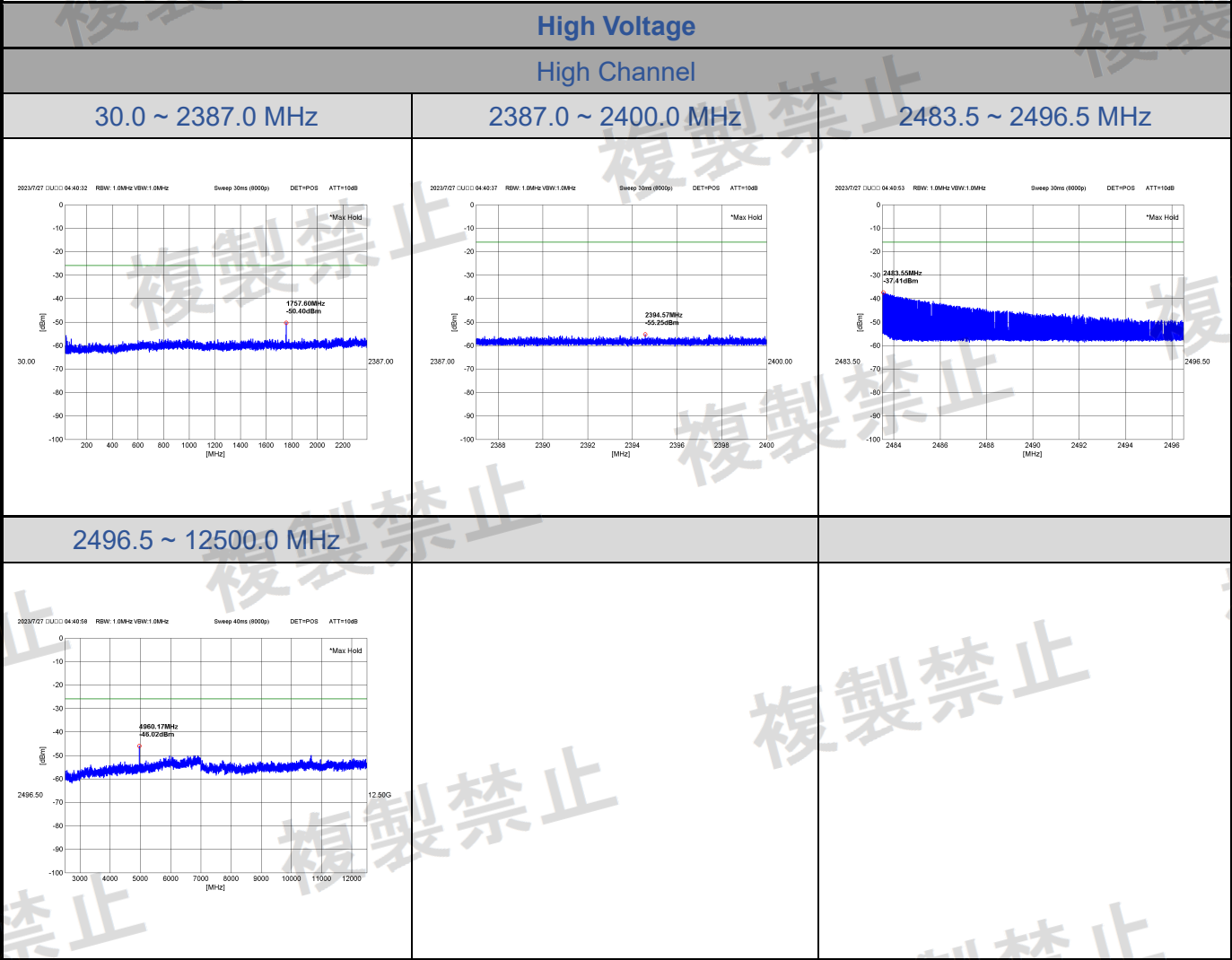


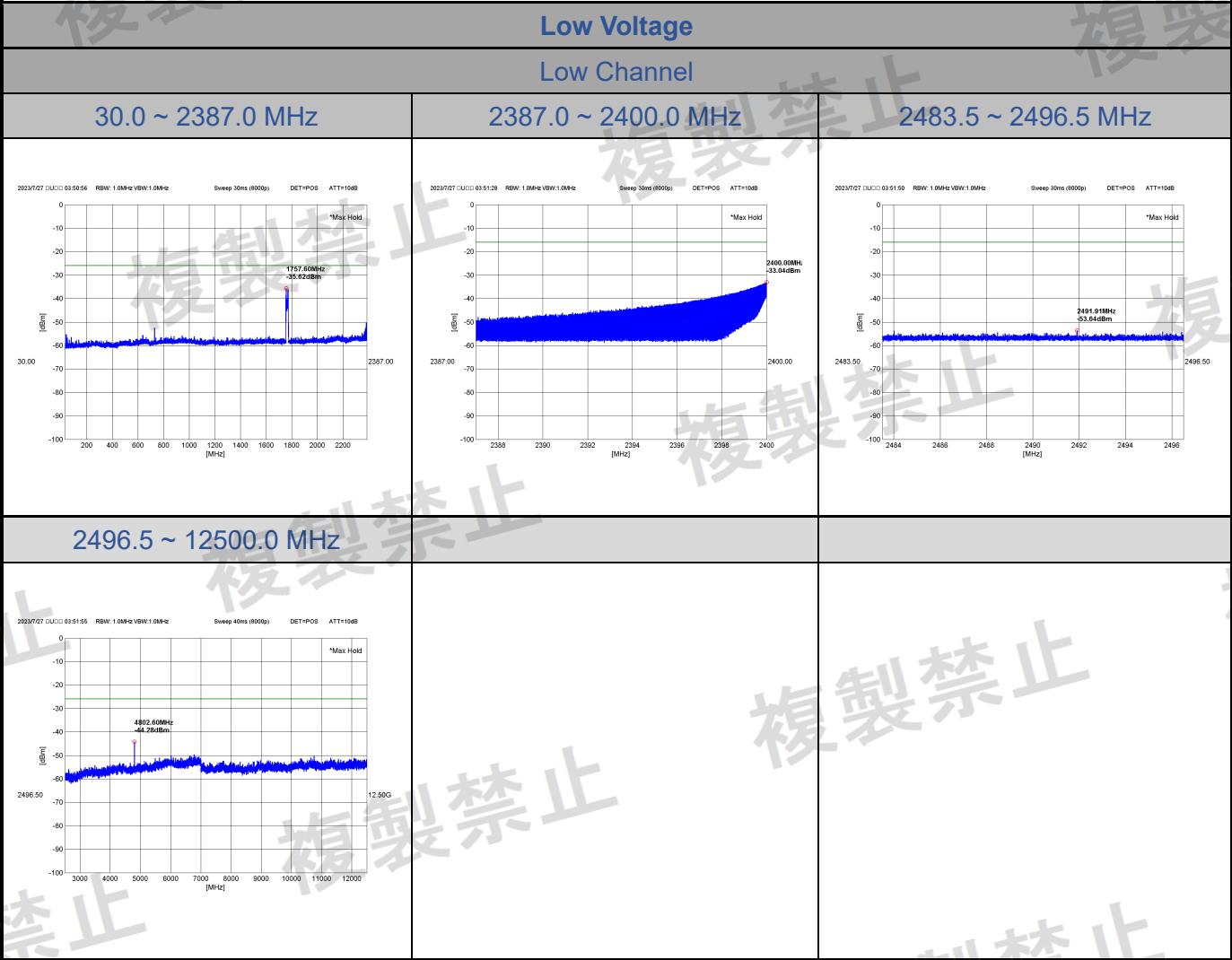


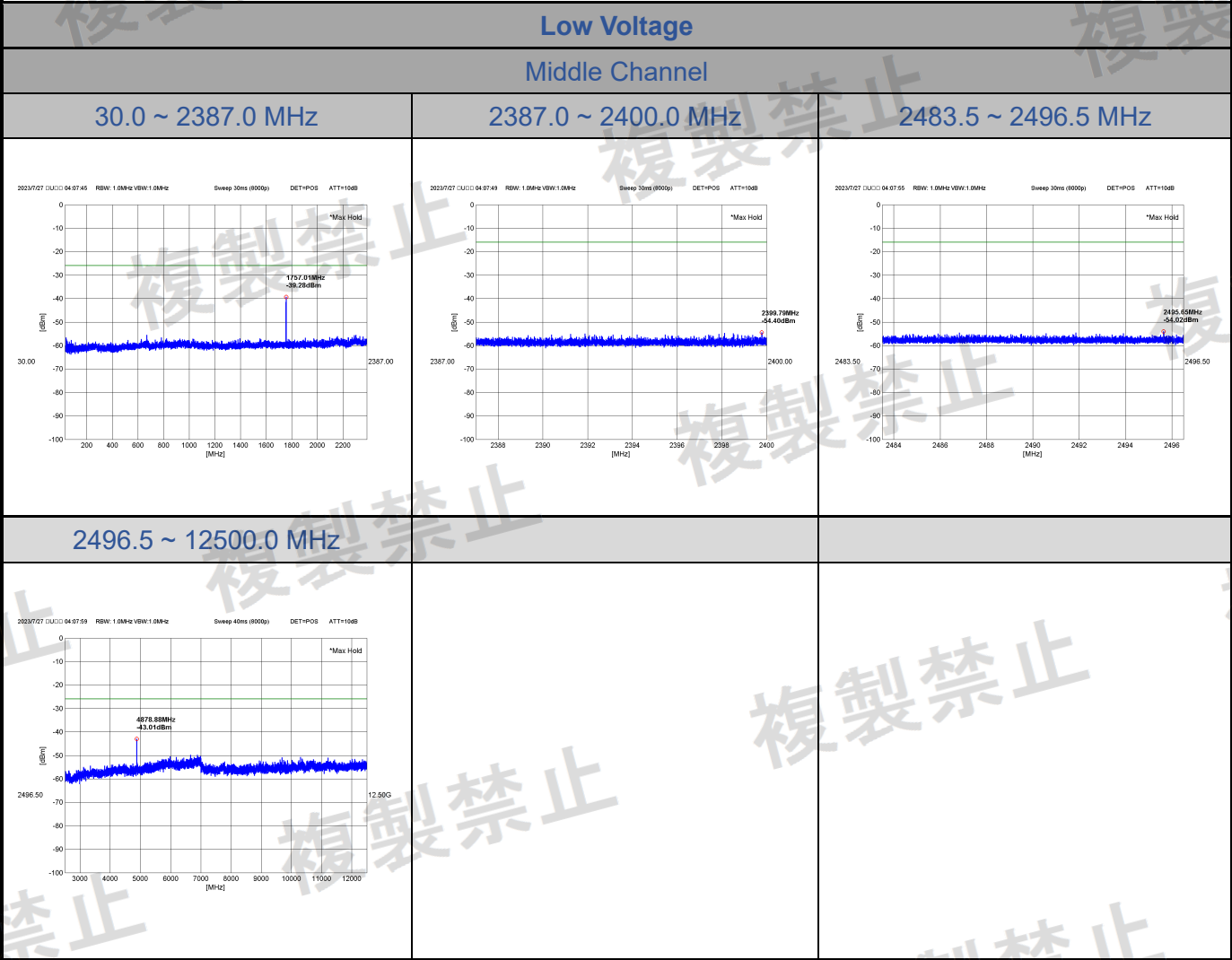


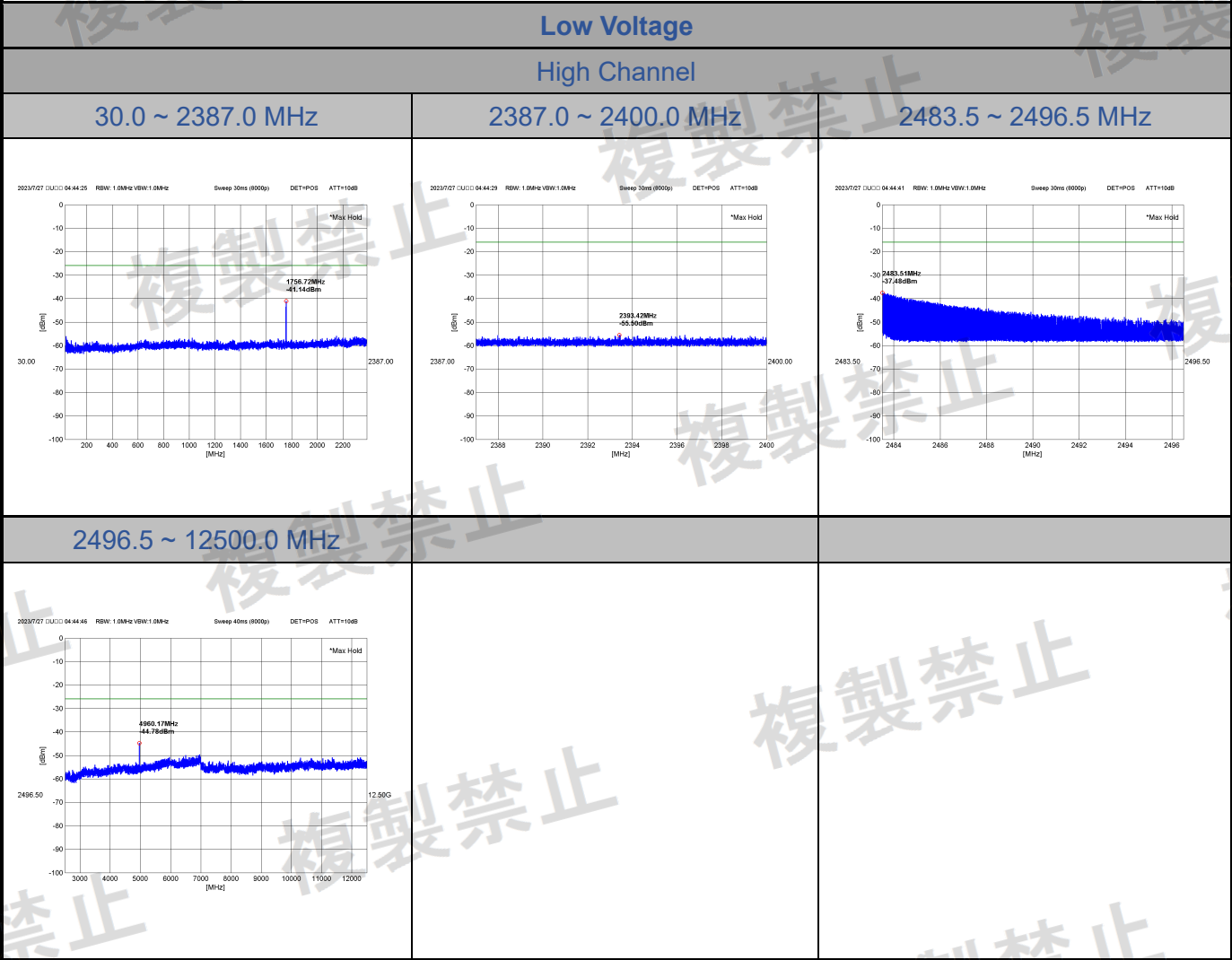




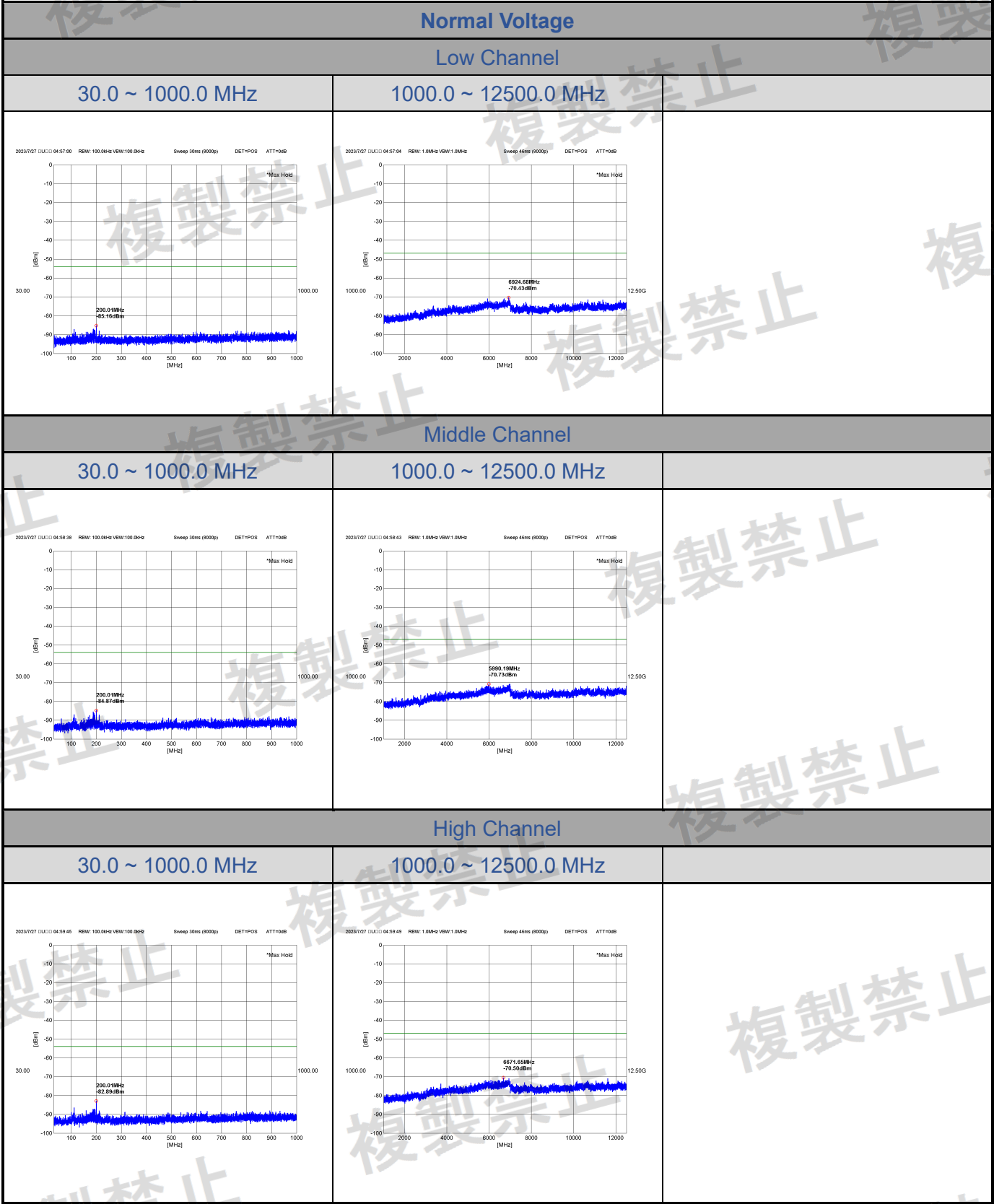


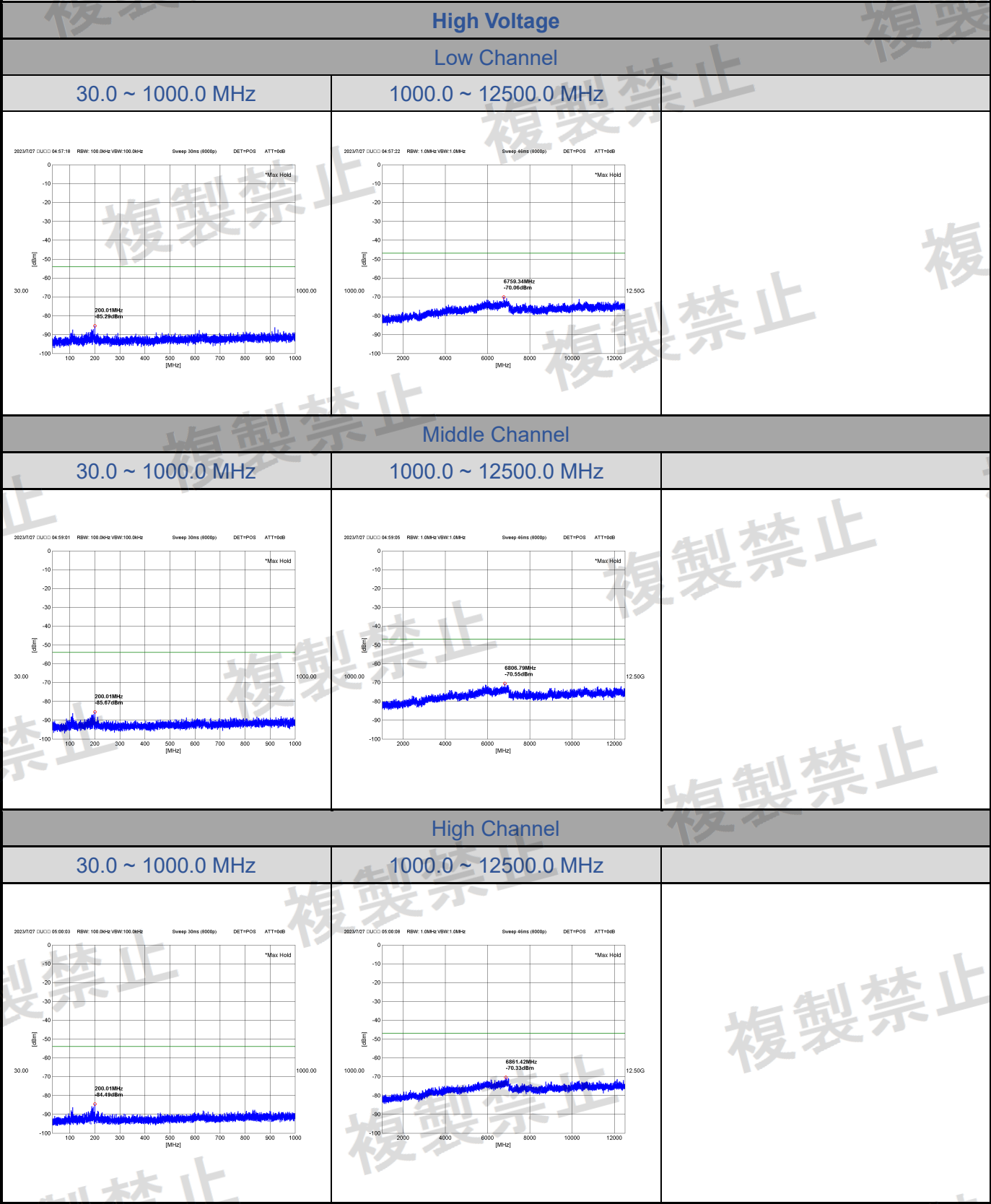






Test Plots of Receiver Spurious Emissions







Low Voltage		
Low Channel		
30.0 ~ 1000.0 MHz	1000.0 ~ 12500.0 MHz	
<div>2023/7/27 04:58:15 RBW: 100.0kHz VBW: 100.0kHz Sweep: 30ms (8000p) DET: POS ATT: 90dB</div>	<div>2023/7/27 04:58:18 RBW: 1.0MHz VBW: 1.0MHz Sweep: 48ms (8000p) DET: POS ATT: 90dB</div>	
Middle Channel		
30.0 ~ 1000.0 MHz	1000.0 ~ 12500.0 MHz	
<div>2023/7/27 04:59:21 RBW: 100.0kHz VBW: 100.0kHz Sweep: 30ms (8000p) DET: POS ATT: 90dB</div>	<div>2023/7/27 04:59:25 RBW: 1.0MHz VBW: 1.0MHz Sweep: 48ms (8000p) DET: POS ATT: 90dB</div>	
High Channel		
30.0 ~ 1000.0 MHz	1000.0 ~ 12500.0 MHz	
<div>2023/7/27 05:00:24 RBW: 100.0kHz VBW: 100.0kHz Sweep: 30ms (8000p) DET: POS ATT: 90dB</div>	<div>2023/7/27 05:00:28 RBW: 1.0MHz VBW: 1.0MHz Sweep: 48ms (8000p) DET: POS ATT: 90dB</div>	