

Prüfbericht-Nr.: Test report no.:	CN23HAB3 (JRF-315MHz) 001	Auftrags-Nr.: Order no.:	48217640	Seite 1 von 18 Page 1 of 18
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2023-04-06	
Auftraggeber: Client:	Whetron Electronics CO.,LTD No. 18, Shangfa 6th Rd., Daliao Dist., Kaohsiung City 831 , Taiwan (R.O.C.)			
Prüfgegenstand: Test item:	SMART KEY Remote Host			
Bezeichnung / Typ-Nr.: Identification / Type no.:	S300073500T			
Auftrags-Inhalt: Order content:	Test Report for JP compliance (315MHz)			
Prüfgrundlage: Test specification:	ARIB STD-T93 (V1.1), MIC notice 88 Appendix 22-1 Article 2-1-8 of the Certification Ordinance			
Wareneingangsdatum: Date of sample receipt:	2023-03-31			
Prüfmuster-Nr.: Test sample no.:	A003447199-004			
Prüfzeitraum: Testing period:	2023-04-18			
Ort der Prüfung: Place of testing:	EMC/RF Taipei Testing Site			
Prüflaboratorium: Testing laboratory:	Taipei Testing Laboratories			
Prüfergebnis*: Test result*:	Pass			
zusammengestellt von: compiled by:	 Ryan Chen		genehmigt von: authorized by:	 Brenda Chen
Datum: Date:	2023-05-22	Ausstellungsdatum: Issue date:	2023-05-22	
Stellung / Position:	Senior Project Manager	Stellung / Position:	Senior Project Manager	
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende: 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	5 = mangelhaft N/T = nicht getestet
* Legend: 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	5 = poor N/T = not tested
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. <i>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.</i>				

V05

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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 (EIRP)	Pass
5.5	Spurious Emissions of Receiver	Not Applicable
5.6	Transmission Time Control	Pass
5.7	Interference Prevention Function	Pass

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. This device only supports TX function.

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APPENDIX A - TEST RESULT OF CONDUCTED

APPENDIX EP - PHOTOGRAPHS OF EUT

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複製禁止

HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN23HAB3 (JRF-315MHz) 001	Original Release	2023-05-22

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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-T93 (V1.1), MIC notice 88 Appendix 22-1 Article 2-1-8 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.

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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	$\pm 5 \%$
RF power, conducted	$\pm 1.5 \text{ dB}$
unwanted emissions, conducted	$\pm 3 \text{ dB}$
Temperature	$\pm 1 \text{ }^{\circ}\text{C}$
Humidity	$\pm 5 \%$
DC and low frequency voltages	$\pm 3 \%$

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a SMART KEY Remote Host. It contains a SRD 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	SMART KEY Remote Host
Type Identification	S300073500T
Operating Frequency	315 MHz
Operation Voltage	3 Vdc
Modulation	FSK
EIRP Rated RF Power (uW)	15.61
EIRP RF Output Power (uW)	11.02
Antenna Gain	-13.8 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
315	Default

4.2 Carrier Frequency and Channel

Channel	Freq. (MHz)
1	315

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4.3 Test Operation and Test Software

Setup for testing: Test samples is connected to the fixture and then the power of the EUT is on.

Test Software	None.
---------------	-------

The samples were used as follows:
A003447199-004

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Frequency Error	23.2 °C	66.8 %	Blake Wang
Occupied Bandwidth	23.2 °C	66.8 %	Blake Wang
Spurious Emissions of Transmitter	23.2 °C	66.8 %	Blake Wang
Antenna Power (EIRP)	23.2 °C	66.8 %	Blake Wang
Spurious Emissions of Receiver	23.2 °C	66.8 %	Blake Wang
Transmission Time Control	23.2 °C	66.8 %	Blake Wang
Interference Prevention Function	23.2 °C	66.8 %	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

5.1 Frequency Error

Limit Operating frequency should be between 312 ~ 315.25 MHz.

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	2022/5/11	2023/5/10	Industrial Technology Research Institute	C	2023/4/18	2023/4/18
Power Meter	Anritsu	ML2495A	1901008	2023/3/17	2024/3/16	Industrial Technology Research Institute	c	2023/4/18	2023/4/18
Power Sensor	Anritsu	MA2411B	1725269	2023/3/17	2024/3/16	Industrial Technology Research Institute	c	2023/4/18	2023/4/18
True RMS Multimeter	Pro, sKit	MT-1706	19007158	2022/12/01	2023/11/30	Industrial Technology Research Institute	c	2023/4/18	2023/4/18

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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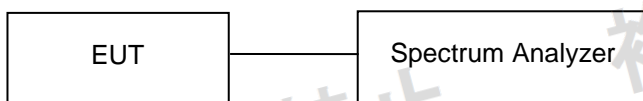
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5.2 Occupied Bandwidth Measurement (99% Power Bandwidth)

Limit Less than 1MHz

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

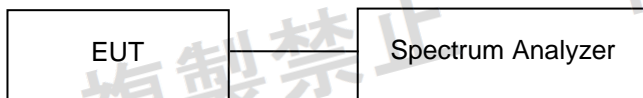
Limit

Below 1GHz: less than 250 nW/100kHz (EIRP)

Above 1GHz: less than 1 µW/1MHz (EIRP)

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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5.4 Antenna Power Measurement

Limit

Item	Limit
Antenna Power (EIRP)	312 MHz < f ≤ 315.05 MHz : ≤ 250 µW 315.05 MHz < f ≤ 315.25 MHz : ≤ 25 µW
Antenna Power Tolerance	+ 20%

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

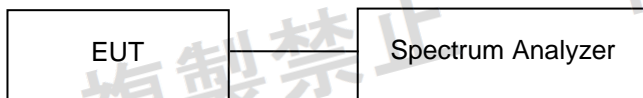
Limit

Below 1GHz: less than 4 nW/100kHz (EIRP)

Above 1GHz: less than 4 nW/MHz (EIRP)

Kind of Test Site Shielded room

Test Setup



Test Instruments

Refer to 5.1 Test Instruments

Test Result

Not Applicable.

5.6 Transmission Time Control Measurement

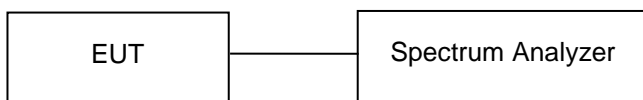
Limit

1. Not transmit cyclically: shall have the function to limit one transmission time within 5 seconds, although manually operated transmission allows one transmission time to be within 90 seconds.
2. Transmit cyclically: shall have the function to automatically limit the transmission time for one transmission time within 1 second, with one transmission halt time being more than 10 seconds and no less than 30 times for the transmission time. It is noted that if the radio equipment is used for safety operation of an auto vehicle or any other vehicles and in the unavoidable reason, the transmission halt time of the radio equipment does not require 10 seconds or more.

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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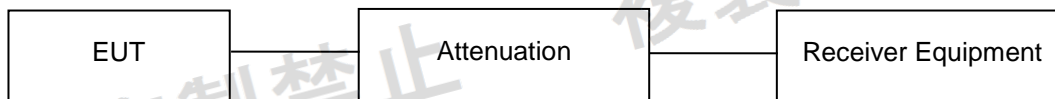
5.7 Interference Prevention Function

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

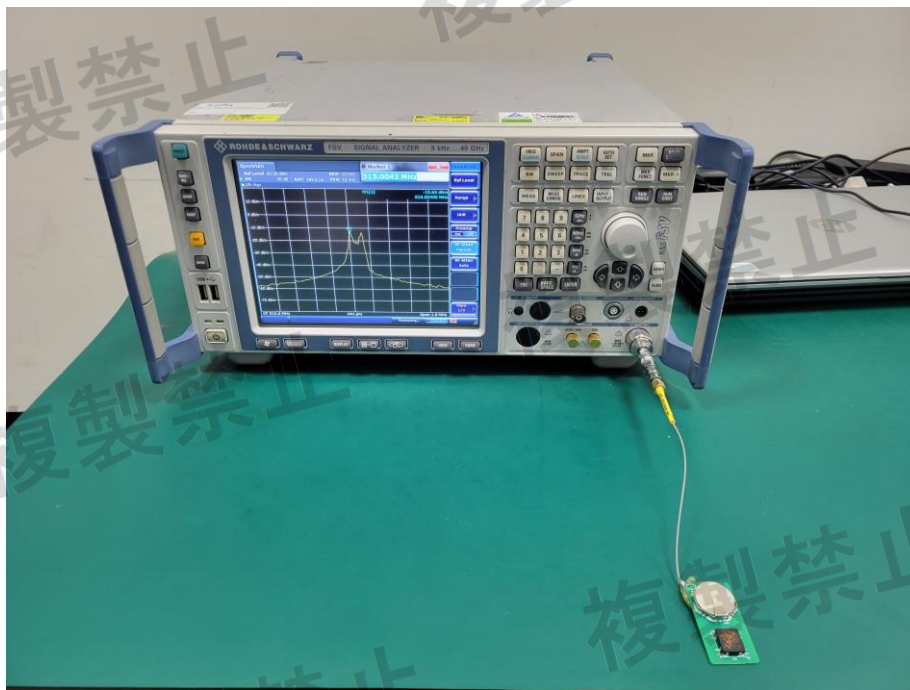
Test Result

SRD 315MHz	Test Result
	Pass

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6. Photographs of the Test Setup

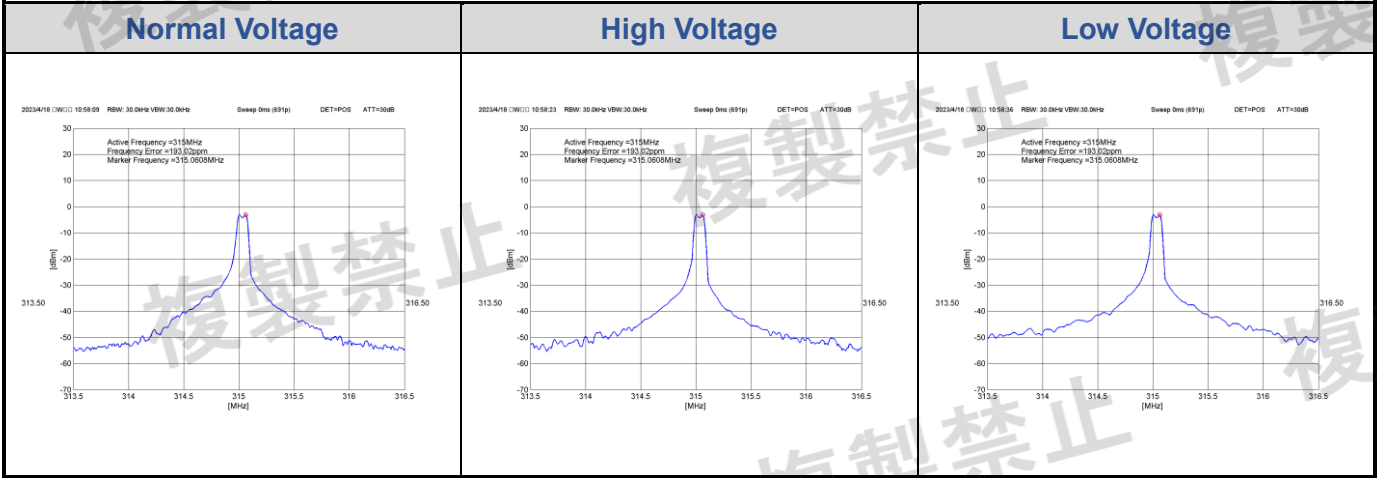


Appendix A: Test Results of Conducted Test

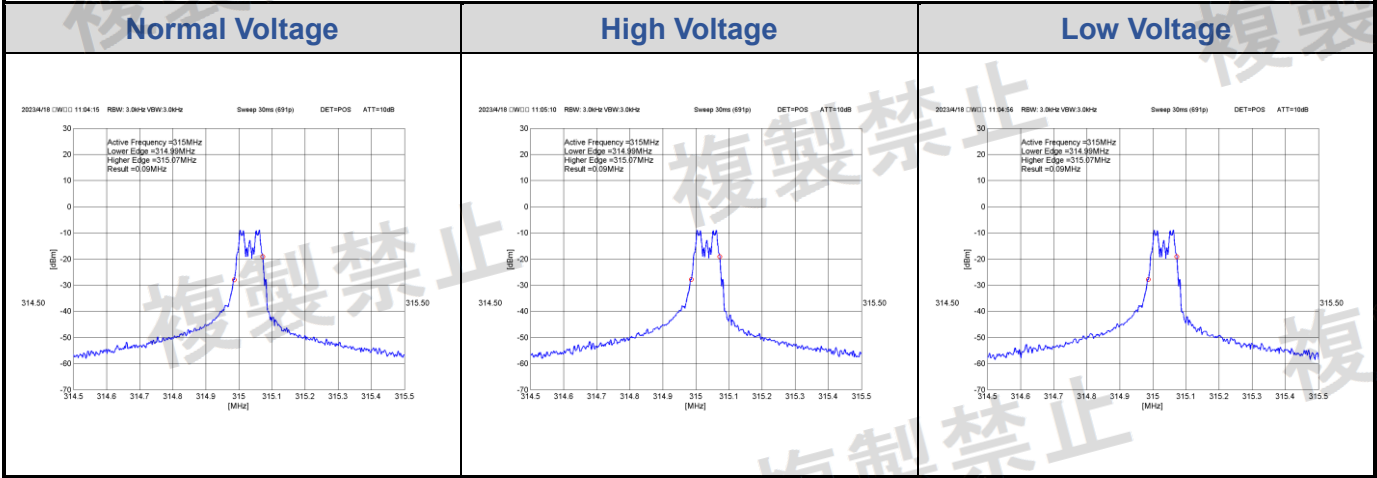
Test Result

[illegible]

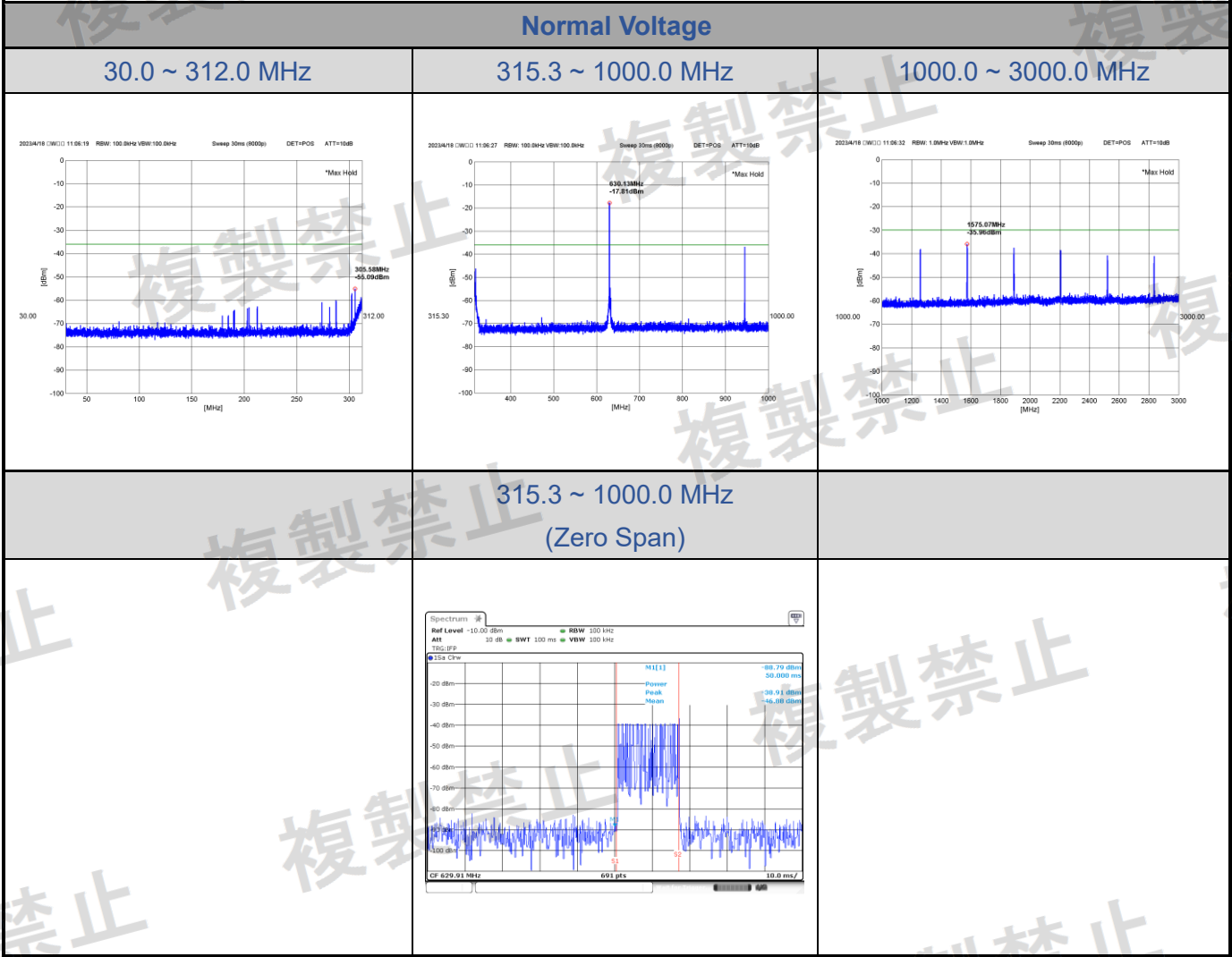
Test Plots of Frequency Error

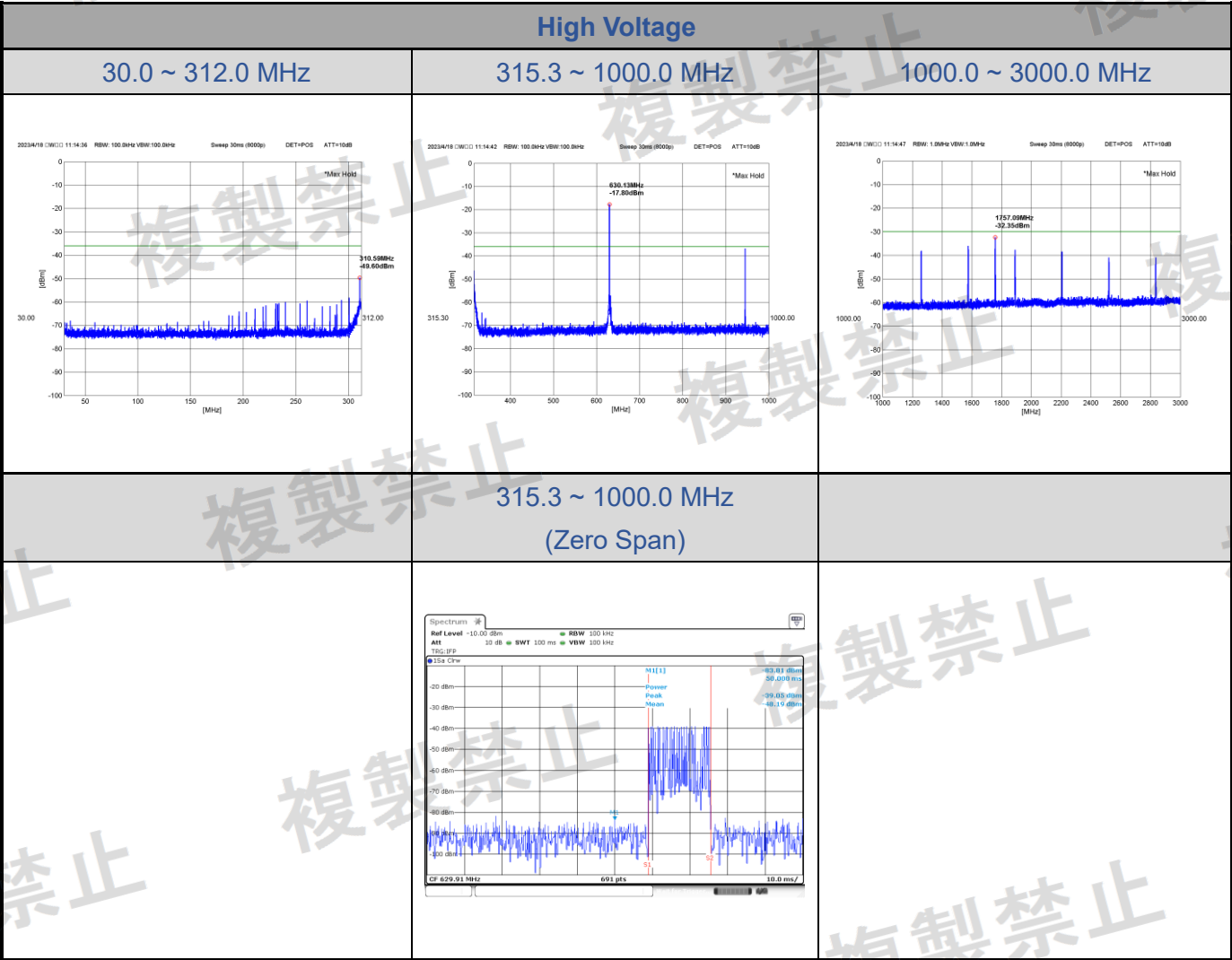


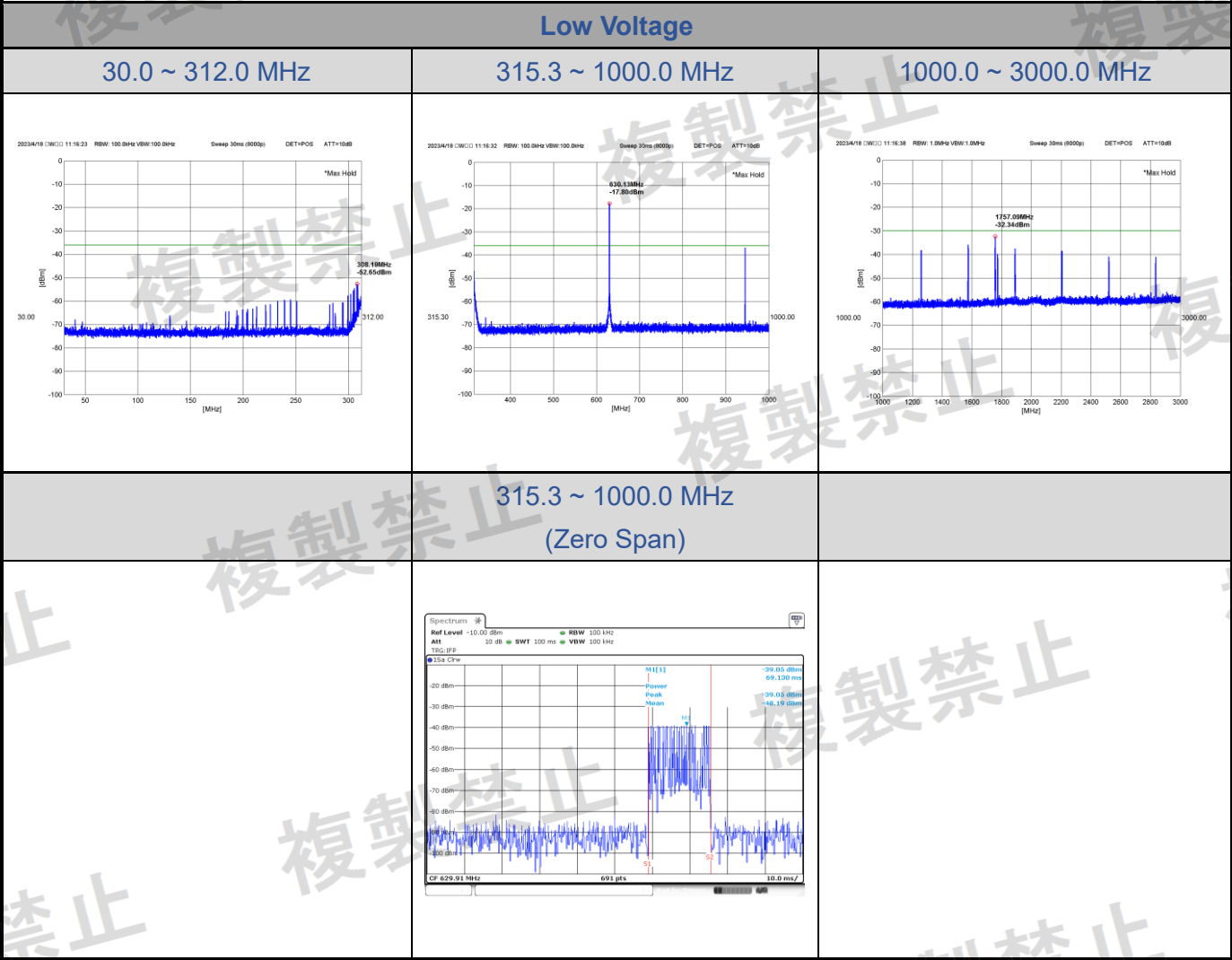
Test Plots of Occupied Bandwidth (99% Power Bandwidth)



Test Plots of Transmitter Spurious Emissions







Test Plots of Transmission Time Control Measurement
Transmit cyclically

