

JAPAN RADIO TEST REPORT

Client Information:

Applicant: shenzhenshirichidianzishangwuyouxiangongsi
Applicant add.: Unit 702, Building 4667, Cui Gang Phase II, Huai De Community, Fuyong Subdistrict, Bao'an District, Shenzhen City, Guangdong Province, China

Product Information:

Product Name: Wireless Doorbell
Model No.: U2
Derivative model No.: U1,U3,U4,U5,U6,U7,U8,U9,U10,U11,U12
Brand Name: SingChi
Standards: Article 2 paragraph 1 item 8
ARIB STD-T93

Prepared By:

Dongguan Yaxu (AiT) Technology Limited

Add.: No. 22, Jinqianling Third Street, Jitigang, Huangjiang, Dongguan, Guangdong, China

Date of Receipt: Feb. 28, 2026 Date of Test: Feb. 28, 2026~Mar. 02, 2026
Date of Issue: Mar. 03, 2026 Test Result: Pass

This device has been tested and found to comply with the stated standard(s) which is compliance with the Article 2 Paragraph 1 Item 8 of the Certification and MIC Notice No.88 Appendix 9-1. And the report is applicable only to the tested sample.

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Reviewed by: Emiya Lin

Approved by: Gimba Huang

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2 General Information

2.1 General Description of EUT

Manufacturer:	shenzhenshirichidianzishangwuyouxiangongsi
Manufacturer Address:	Unit 702, Building 4667, Cui Gang Phase II, Huai De Community, Fuyong Subdistrict, Bao'an District, Shenzhen City, Guangdong Province, China
EUT Name:	Wireless Doorbell
Model No.:	U2
Brand Name:	SingChi
Derivative model No.:	U1,U3,U4,U5,U6,U7,U8,U9,U10,U11,U12
Model difference:	PCB board, structure and internal of these model(s) are the same, So no additional models were tested.
Operation frequency:	315MHz
Number of channel:	1 Channel
Modulation Type and Antenna Type:	OOK Spring Antenna
H/W No.:	PB-AS00U2-MB1-02
S/W No.:	N/A
Antenna Gain:	0dBi
Power Supply Range:	Doorbell: Plug-in AC 90~250V Push Button: DC 3.0V from CR2032 battery
Power Supply:	The same as above
Signal Cable:	N/A
Note:	
1.	For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.2 Test Location

All tests were performed at:

Dongguan Yaxu (AiT) Technology Limited

No. 22, Jinqianling Third Street, Jitigang, Huangjiang, Dongguan, Guangdong, China

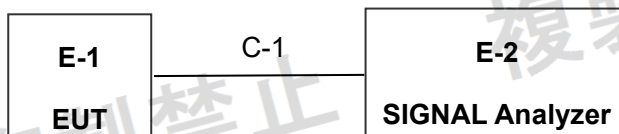
EUT channels and frequencies list:

Channel	Frequency (MHz)
1	315

2.3 Description of Test setup

EUT was tested in normal configuration (Please See following Block diagrams)

1. Block diagram of EUT configuration (TX Mode)



2.4 Description of Support Units(Conducted Mode)

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	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date	Cal. Institution
1	SIGNAL Analyzer	R&S	FSV40	101470	2025.09.26	2026.09.25	LISAI
2	EMI Measuring Receiver	R&S	ESPI	100773	2025.09.25	2026.09.24	LISAI
3	Mobile phone	Samsung	GALAXY S4	R33D20 SQYNW	N/A	N/A	LISAI
4	DC Power supply	Manson	HCS-3604	G521100 129	2025.09.25	2026.09.24	LISAI
5	Digital Phosphor Oscilloscope	Tektronix	TDS3012	B021220	2025.09.25	2026.09.24	LISAI
6	Signal Generator	Agilent	N5182A	MY50143 009	2025.09.26	2026.09.25	LISAI
7	RF Automatic Test system	MW	MW100-RF CB	21033016	2025.09.26	2026.09.25	LISAI
8	RF Software	MW	MTS 8310	2.0.0.0	N/A	N/A	N/A
Note: 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.

2.5 Measurement Uncertainty

No.	Item	Uncertainty
1	RF Frequency	8.5×10^{-7}
2	Antenna Power	0.8dB
3	TX-RX Spurious Emissions	0.5dB
4	Temperature	0.7°C
5	Humidity	3.2%
6	DC / AC Power Source	1.4%

2.6 Radio Technical Requirements Specification

Table 1: Radio Technical Requirements Specification for 315MHz band low-power data communication system.

Items	Technical standard
designated frequency	315MHz
Communication method	One-way communication
Tolerance of frequency ($\times 10^{-6}$)	± 4.0
Antenna power	250 μ W
Antenna gain	0dBi
Tolerance of spurious emission intensity	2.5 μ W
Spreading bandwidth	30kHz
Spreading rate of spectrum	
Limit of secondary radiated emissions	2.5 μ W
Interference prevention function	Shall have the function of automatic transmission and reception of identification sign.
Structure	a. The radio equipment shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to power supply equipment, controllers, and so forth announced separately by the minister. b. It shall have no feeder or grounding device. c. It shall be equipped with a transmission time restriction device which comply with the technical conditions announced separately by the minister.

2.7 Measurement Specification

Test Requirement	Description of Test	RESULT
Article 2 Paragraph 1 of Item 8, annex 22	Frequency Tolerance	PASS
Article 2 Paragraph 1 of Item 8, annex 22	Occupied Bandwidth (99%)	PASS
Article 2 Paragraph 1 of Item 8, annex 22	Antenna Power	PASS
Article 2 Paragraph 1 of Item 8, annex 22	The Duration Of Each Transmission	PASS
Article 2 Paragraph 1 of Item 8, annex 22	Spurious Emissions of Tx	PASS
Article 2 Paragraph 1 of Item 8, annex 22	Construction Protection Confirmation Method	PASS
Article 2 Paragraph 1 of Item 8, annex 22	Spurious Emission of Rx	N/A

Remark:

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radio Frequency.

2.8 E.U.T. test conditions

Power supply: TX: DC 3.0V from CR2032 battery

The measurement of the voltage at normal voltage and Extreme voltage as follow :

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
Input To EUT	DC 3.0V	DC 3.3V	DC 2.7V
Output To RF Module	DC 3.00V	DC 3.30V	DC 2.69V

During the input supply voltage to the EUT from the external power source is varied by $\pm 10\%$, the fluctuation of input voltage to the circuit of RF unit of test equipment is exceed $\pm 1\%$. So, all measurement has been conducted by normal and limit voltage.

Temperature: 26.0 °C

Humidity: 60.0 % RH

Atmospheric Pressure: 1000 -1010 mbar

Test frequencies: If the EUT can be set to 3 of more different (carrier) frequencies in 1 allocated band, testing shall be performed using the Lowest, Middle and the Highest frequency (L, M and H). If there are 2 or fewer frequencies, testing shall be performed with the available frequencies.

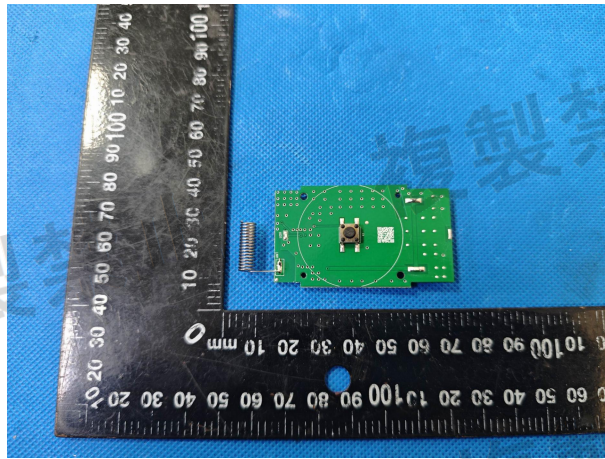
2.9 Antenna Requirement

Standard requirement

Antennas shall be designed without a feeder or grounding device.

EUT Antenna

The antenna is Spring Antenna and no consideration of replacement. The best case gain of the antenna is 0dBi.



Result: An antenna connector is available, all relevant tests will be carried out conducted

3 Test Result

3.1 Frequency Tolerance

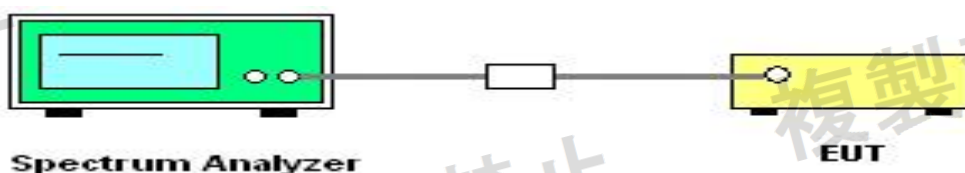
3.1.1 Limit

Item	Limits
Frequency Tolerance	312MHz-315.25MHz

3.1.2 Test procedure

1. Test Conditions:
Frequency Counter or Spectrum Analyzer is used for measurement.
2. EUT conditions:
Modulation/Spread/Hopping OFF, CW Tx
3. Spectrum Analyzer conditions:
Frequency: Test Frequency
Span 1MHz
RBW 10 kHz (Modulation ON),
VBW 30 kHz (Modulation ON),
Sweep Time Auto
Detector mode Positive peak
Indication mode Max hold

3.1.3 Test Setup



3.1.4 Test Deviation

There is no deviation with the original standard.

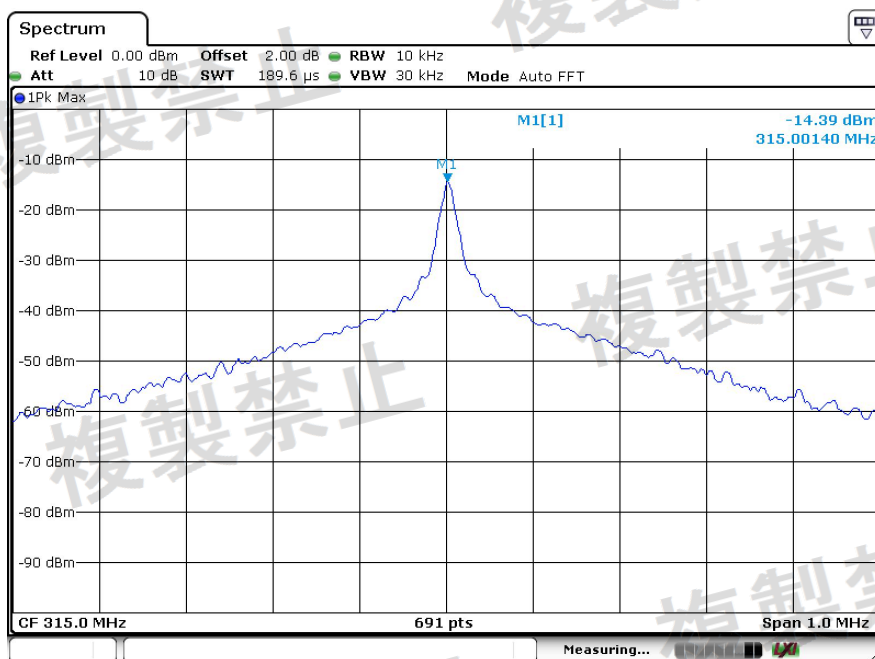
3.1.5 Test record

Test channel	Test Frequency (MHz)	Test Result			Limit
		Normal Voltage	High Voltage	Low Voltage	
		3.0V DC	3.3V DC	2.7V DC	
Channel 1	315	315.0014	315.0014	315.0014	312MHz-315.25MHz

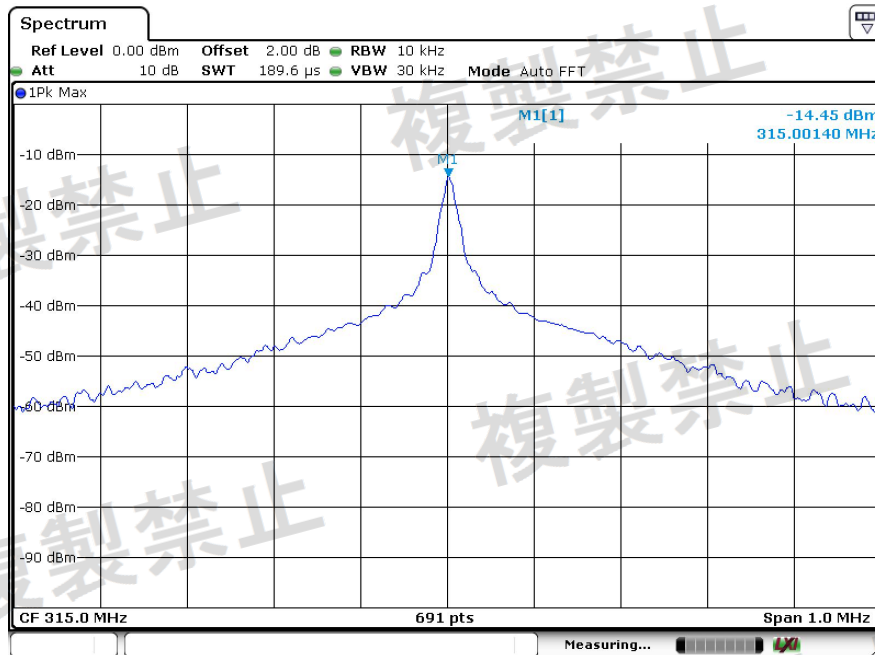
Note: The nominal frequency shall be confirmed by the applicant and test lab.

Result plot as follows:

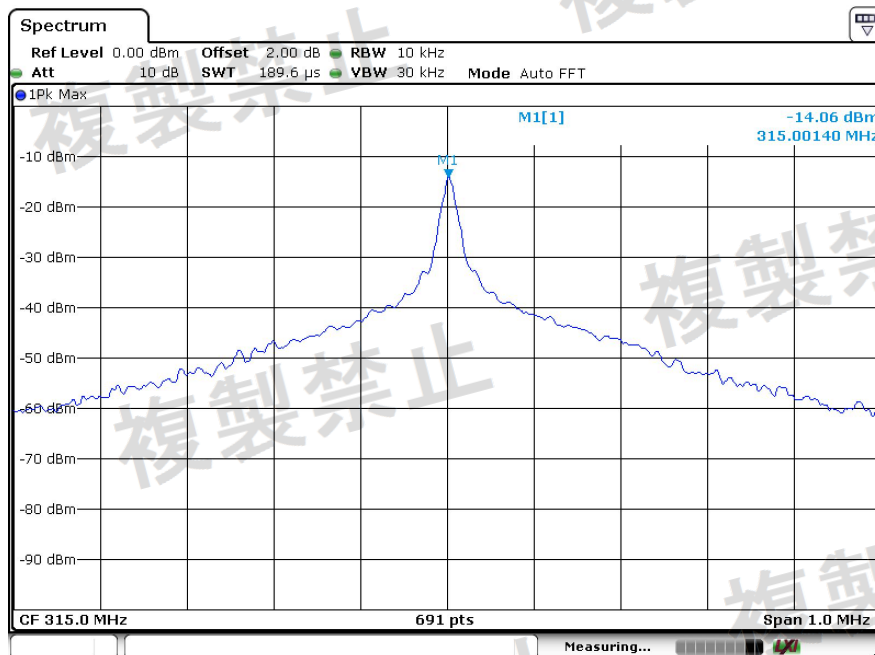
Normal voltage :3.0V



Extreme voltage :Normal voltage +10%



Extreme voltage :Normal voltage -10%



Test result: The unit does meet the requirements.

3.2 Occupied Bandwidth (99%)

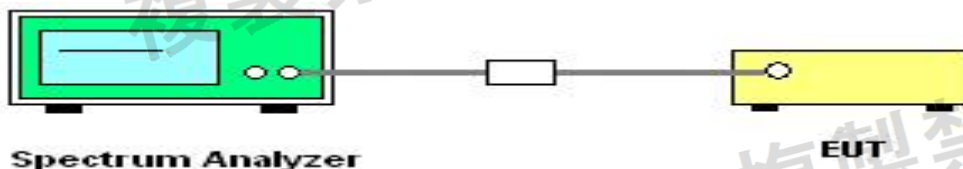
3.2.1 Limit

Item	Limits
Occupied Band Width:	1MHz or less

3.2.2 Test procedure

1. Test Conditions:
Spectrum Analyzer is used for measurement.
2. EUT conditions:
For equipment using modulate signal which standard coding test signal.
3. Spectrum Analyzer conditions:
Frequency: Test Frequency
Span 3MHz,
RBW 30 KHz
VBW 30 KHz
Sweep Time Auto
detector mode Positive peak
Indication mode Max hold
OBW 99%

3.2.3 Test Setup



3.2.4 Test Deviation

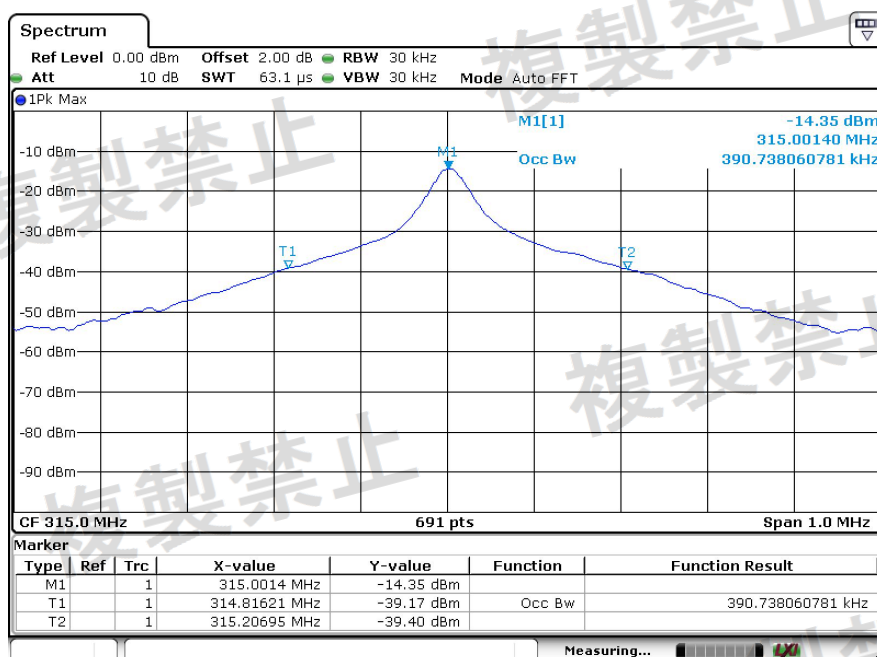
There is no deviation with the original standard.

3.2.5 Results of Occupied Bandwidth and Spread-spectrum Bandwidth / Spread Factor

Test channels	Test Result			Unit	Limit
	Normal Voltage	High Voltage	Low Voltage		
	3.0V DC	3.3V DC	2.7V DC		
Channel 1 (315MHz)	0.3391	0.3777	0.3878	MHz	1MHz or less

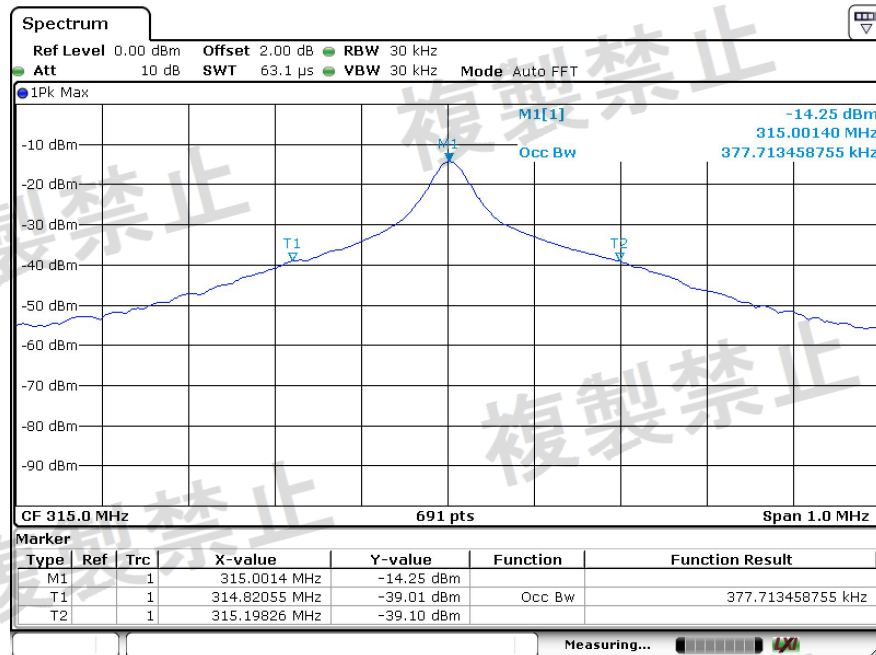
Result plot as follows:

Normal voltage :3.0V

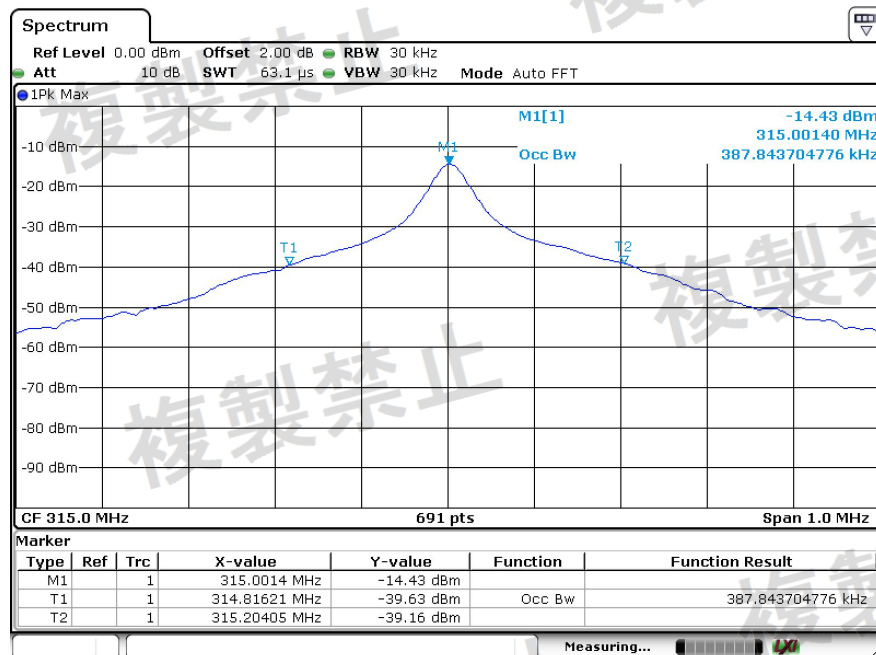


Result plot as follows:

Extreme voltage :Normal voltage +10%



Extreme voltage :Normal voltage -10%



Test result: The unit does meet the requirements.

3.3 Antenna Power

3.3.1 Limit

Item	Limits
Antenna Power (EIRP)	250 μ W (for 312 - 315.05MHz) 25 μ W(315.05 - 315.25 MHz)
Antenna Power Error	Permissible deviation from rated power: upper limit: +20%, lower limit: not specified

3.3.2 Test procedure

1. Test Conditions:

Power meter or Spectrum Analyzer is used for measurement.

2. EUT conditions:

For equipment using modulate signal which standard coding test signal.

3. Spectrum Analyzer conditions:

Frequency: Test Frequency

Span 20 MHz

RBW 1MHz

VBW 1MHz

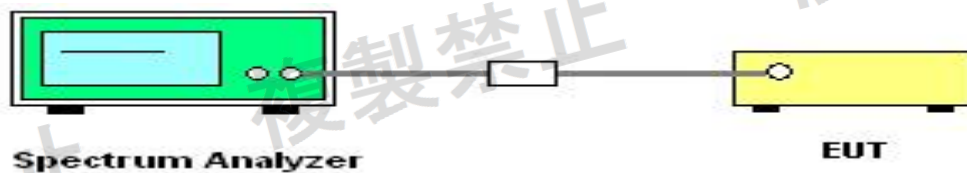
Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

4. Antenna Power Error is definition that actual measure antenna power tolerance between + 20% power range that base on manufacturer declare the EIRP.

3.3.3 Test Setup



3.3.4 Test Deviation

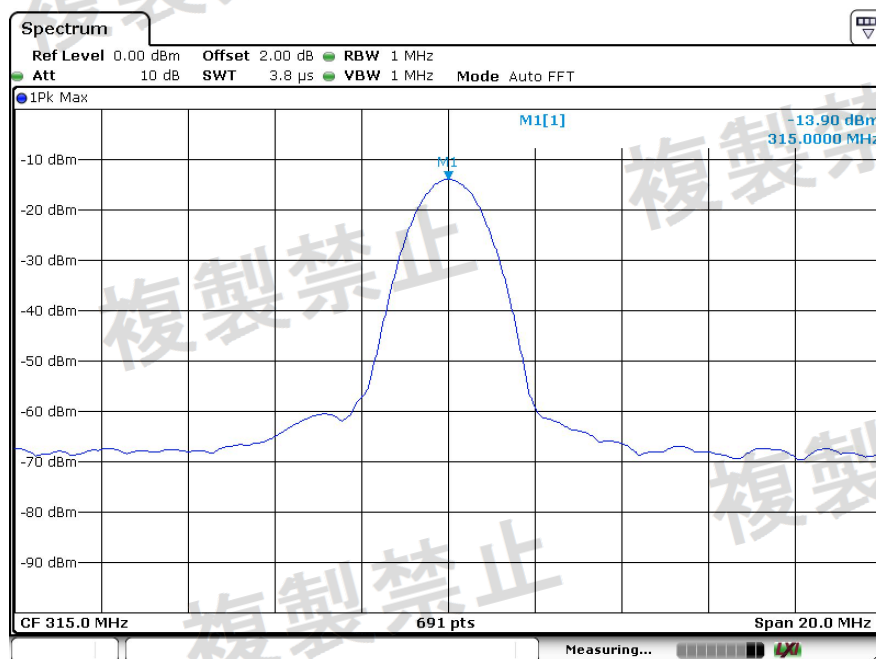
There is no deviation with the original standard.

3.3.5 Test Result of Unwanted Emission Intensity

Test channels	Test Result			Unit	Limit
	Normal Voltage	High Voltage	Low Voltage		
	3.0V DC	3.3V DC	2.7V DC		
Channel 1 (315MHz)	-13.90	-14.00	-13.75	dBm (EIRP)	250 μW (EIRP) or less Error + 20%
	0.041	0.040	0.042	mW (EIRP)	
	2.50	0	5.00	%	
Remark: Normal antenna power: 0.04 mW (EIRP) EIRP = P – Loss +G (Loss=0.5dB, G=0dBi)					

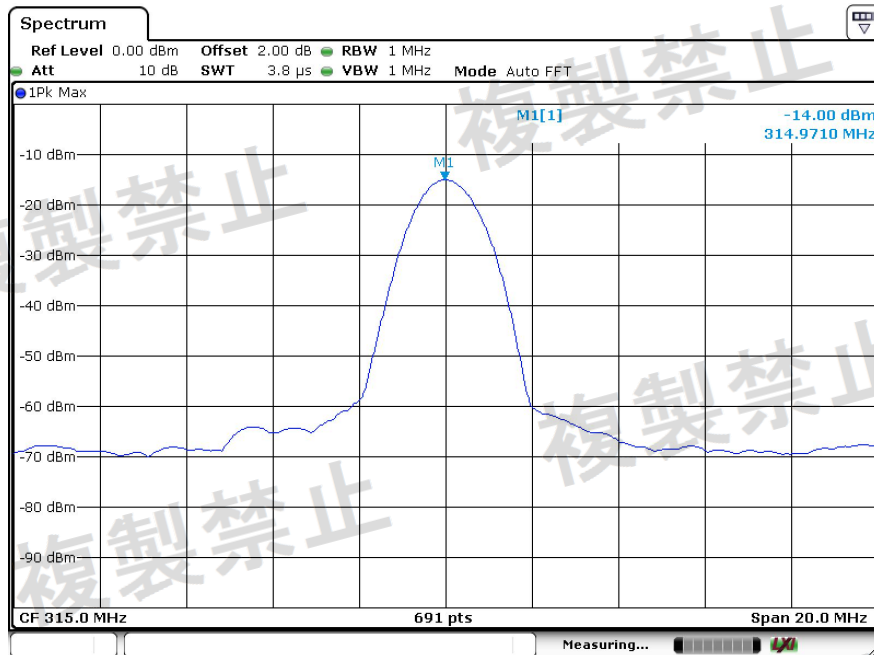
Result plot as follows:

Normal voltage :3.0V

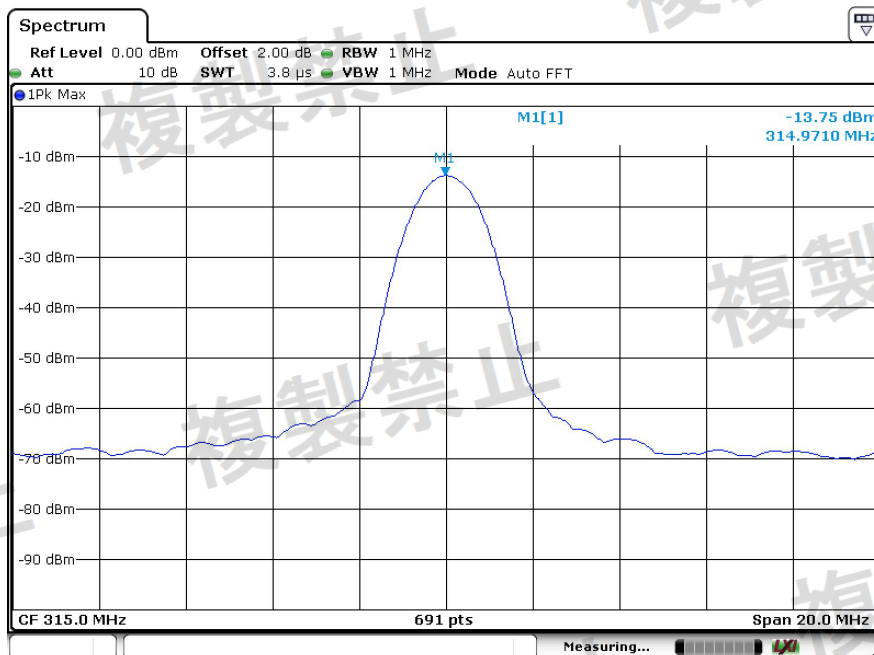


Result plot as follows:

Extreme voltage :Normal voltage +10%



Extreme voltage :Normal voltage -10%



3.4 The Duration Of Each Transmission

3.4.1 Limit

Transmission time control:

Transmission time/transmission suspension time

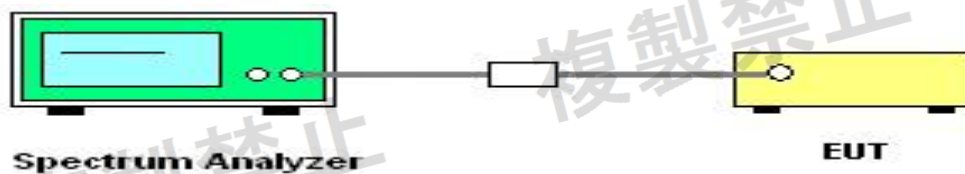
RF equipment with no cyclical transmission: Transmission time less than 5 s

Manual transmission: Transmission time less than 90 s

RF equipment with cyclical transmission: For each transmission time less than 1 s

Transmission suspension time is 30 times the transmission time AND higher than 10 s.

3.4.2 TEST SETUP



3.4.3 TEST DEVIATION

There is no deviation with the original standard.

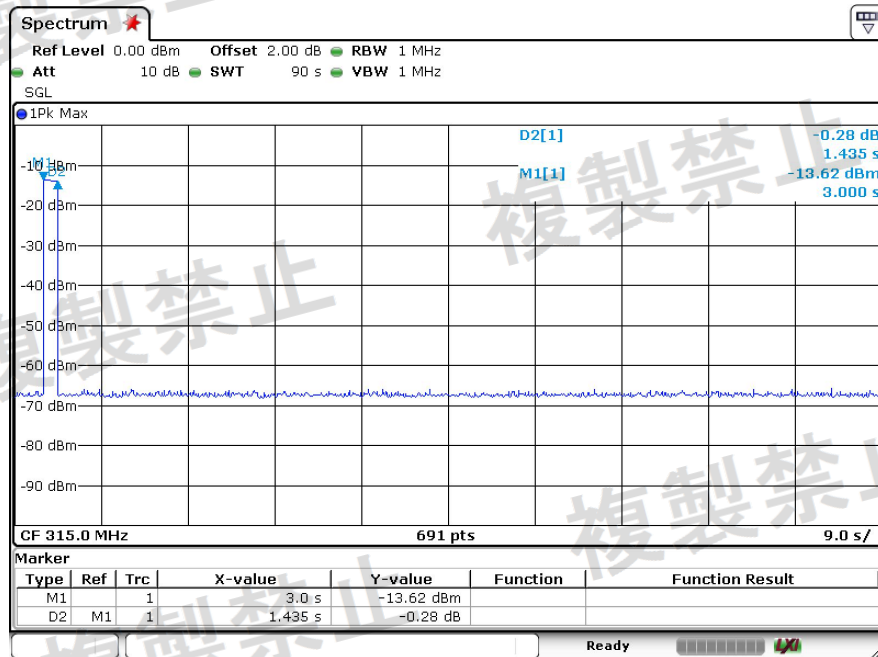
3.4.4 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

3.4.5 Measurement Result

Note: All the modes have been tested and the only shows the worst case mode.

EUT:	Wireless Doorbell	Model Name :	U2
Temperature:	26 °C	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	DC 3.0V from battery
Test Mode :	Transmitter Part (TX Channel 1: 315MHz)		



Item	Duration of each transmission (Td)	LIMIT	RESULT
Time	1.435s	<5s	PASS

3.5 Spurious Emissions of Tx

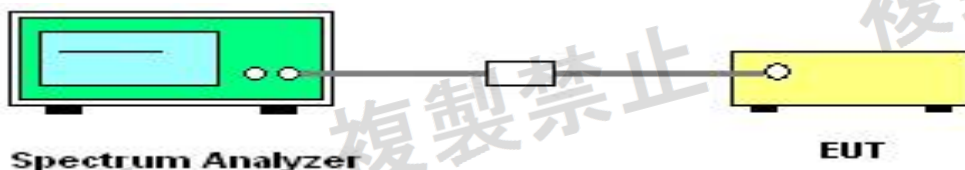
3.5.1 Limit

Item	Limits
TX Spurious Emission	$\leq 250 \text{ Nw}(-36\text{dBm})/100\text{KHz}$ ($30\text{MHz} \leq f \leq 311\text{MHz}$)
	$\leq 250 \text{ Nw}(-36\text{dBm})/100\text{KHz}$ ($311\text{MHz} < f \leq 312\text{MHz}$)
	$\leq 250 \text{ Nw}(-36\text{dBm})/100\text{KHz}$ ($315.25\text{MHz} < f \leq 316.25\text{MHz}$)
	$\leq 250 \text{ Nw}(-36\text{dBm})/100\text{KHz}$ ($316.25\text{MHz} \leq f < 1000\text{MHz}$)
	$\leq 1 \text{ Uw}(-30\text{dBm})/1\text{MHz}$ ($1000\text{MHz} \leq f < 3000\text{MHz}$)

3.5.2 Test procedure

- EUT have transmitted the maximum modulation signal and fixed channelize.
- Setting of SA is following as: Below 1GHz RB:100KHz / VB:100KHz
Above 1GHz RB:1MHz / VB:1MHz / AT: 10Db Ref: 0dBm / Sweep time: Auto
Sweep Mode: Continuous sweep / Detect mode: Positive peak
Trace mode: Max hold
- Setting of SA is following as 30MHz and stop frequency 311MHz Then to mark peak reading value + Factor shall be less than 250Nw.
- Setting of SA is following as 311MHz and stop frequency 312MHz Then to mark peak reading value + Factor shall be less than 250Nw.
- SA adjusted to start frequency 315.25MHz and stop frequency 316.25MHz. Then to mark peak reading value + Factor shall be less than 250Nw.
- SA adjusted to start frequency 316.25MHz and stop frequency 1000MHz Then to mark peak reading value + Factor shall be less than 250Nw
- SA adjusted to start frequency 1000MHz and stop frequency 3000MHz Then to mark peak reading value + Factor shall be less than 1Mw
RBW/VBW:100KHz(30MHz~1GHz)/1MHz(1GHz~3GHz)
Sweep Time Auto
detector mode Peak
Indication mode Max hold

3.5.3 Test Setup



3.5.4 Test Deviation

There is no deviation with the original standard.

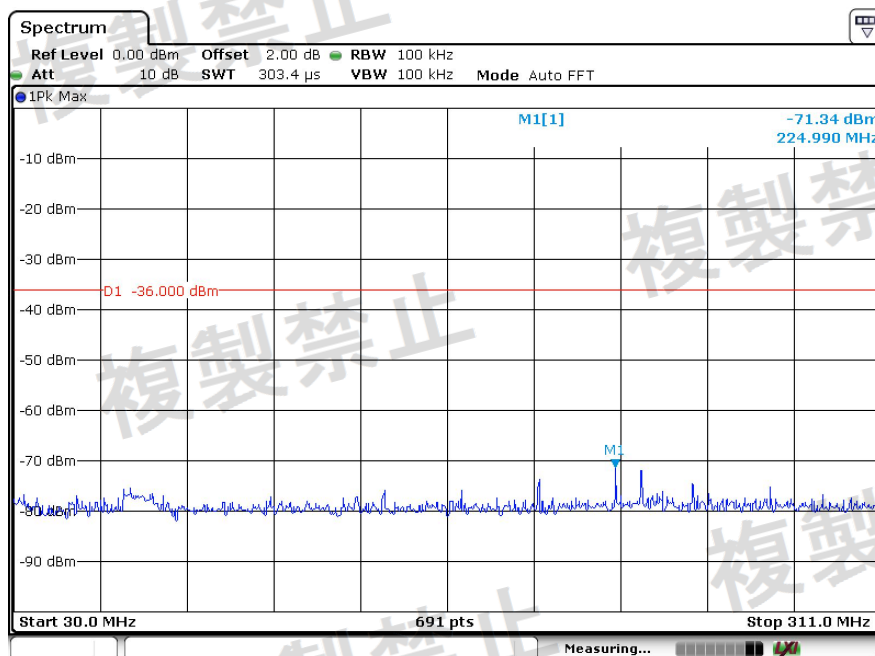
3.5.5 Test Result

Test channel	Test Frequency (MHz)	Test Result			Unit	Limit (dBm)
		Normal Voltage	Normal voltage +10%	Normal voltage -10%		
		3.0V DC	3.3V DC	2.7V DC		
Channel 1 (315MHz)	30-311	-71.34	-71.75	-70.67	dBm	-36.00
	311-312	-73.74	-73.86	-73.52		-36.00
	315.25-316.25	-39.47	-39.76	-39.64		-36.00
	316.25-1000	-41.10	-41.83	-41.24		-36.00
	1000-3000	-33.04	-33.07	-33.03		-30.00

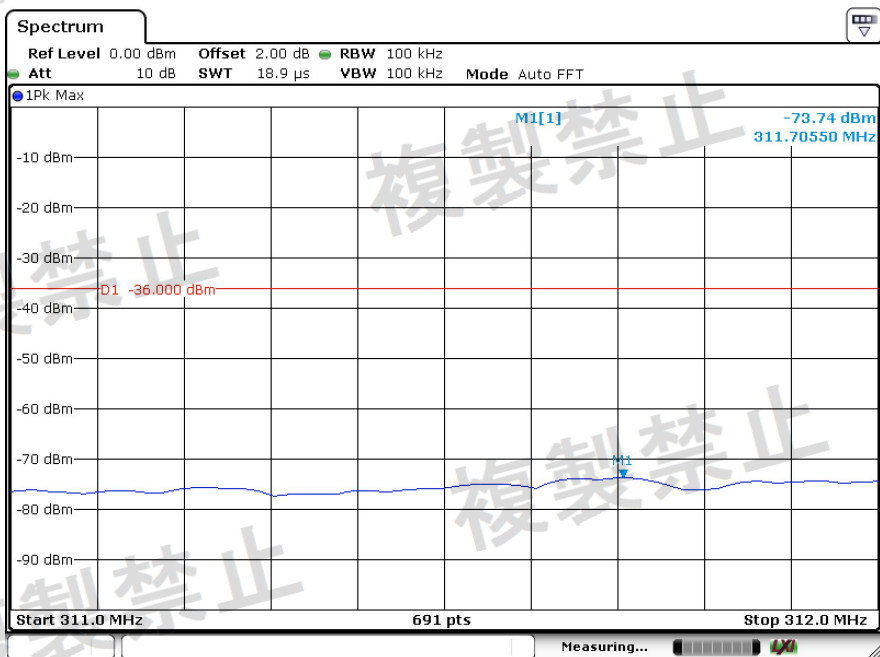
Result plot as follows:

Normal voltage :3.0V

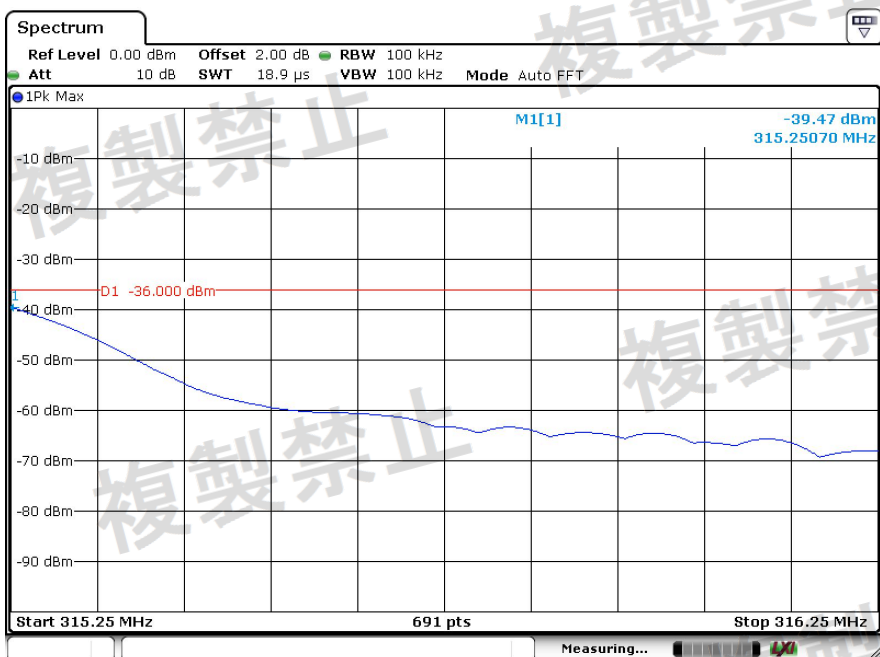
30 MHz to 311MHz:



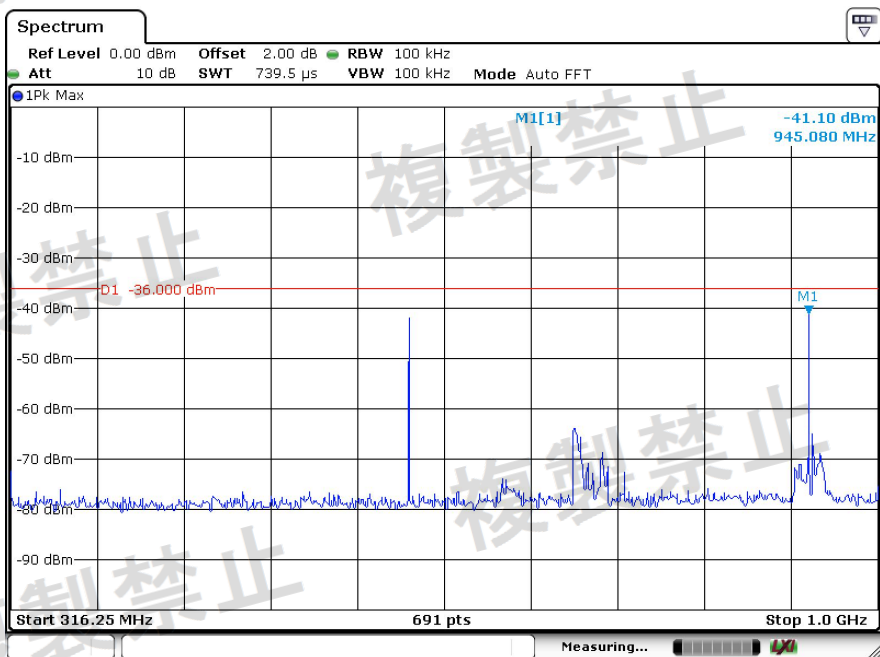
311MHz to 312MHz:



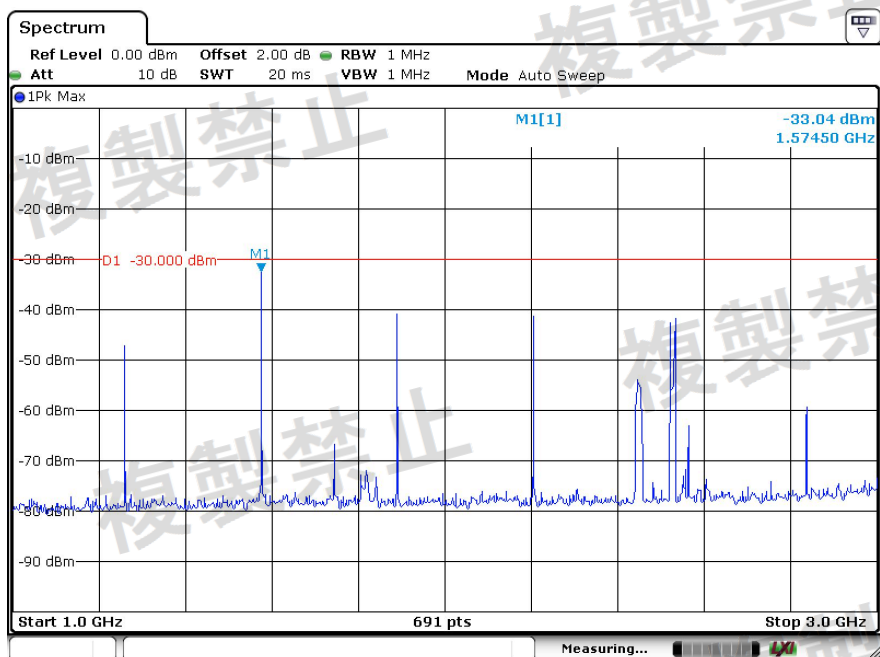
315.25MHz to 316.25MHz:



316.25MHz to 1GHz:

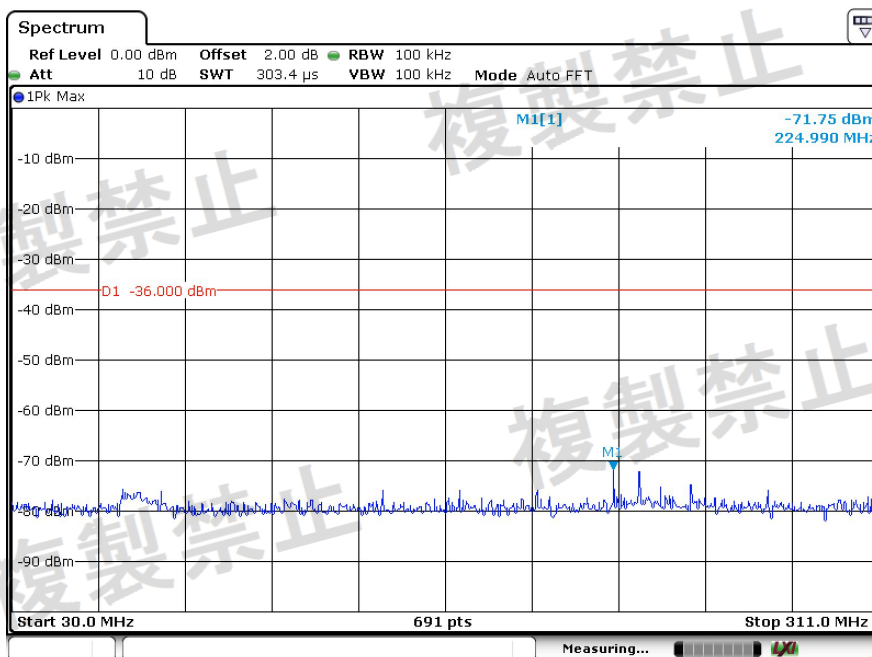


1GHz to 3GHz:

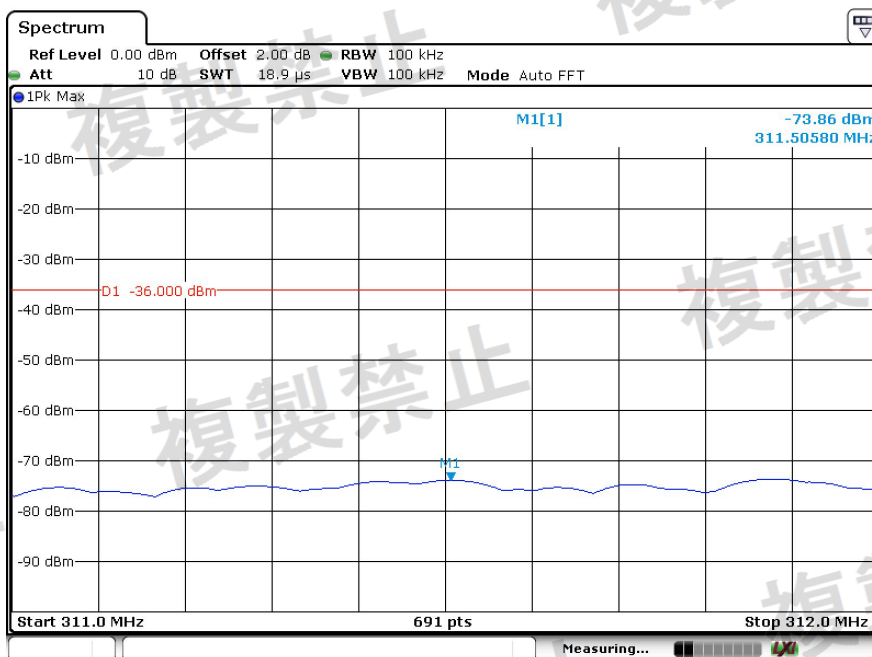


Extreme voltage :Normal voltage +10%

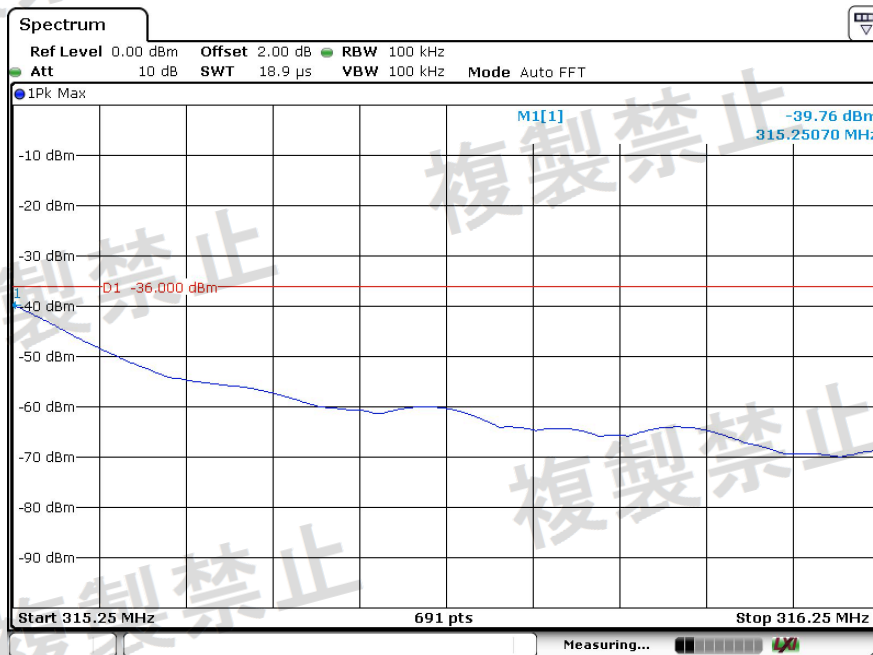
30 MHz to 311MHz:



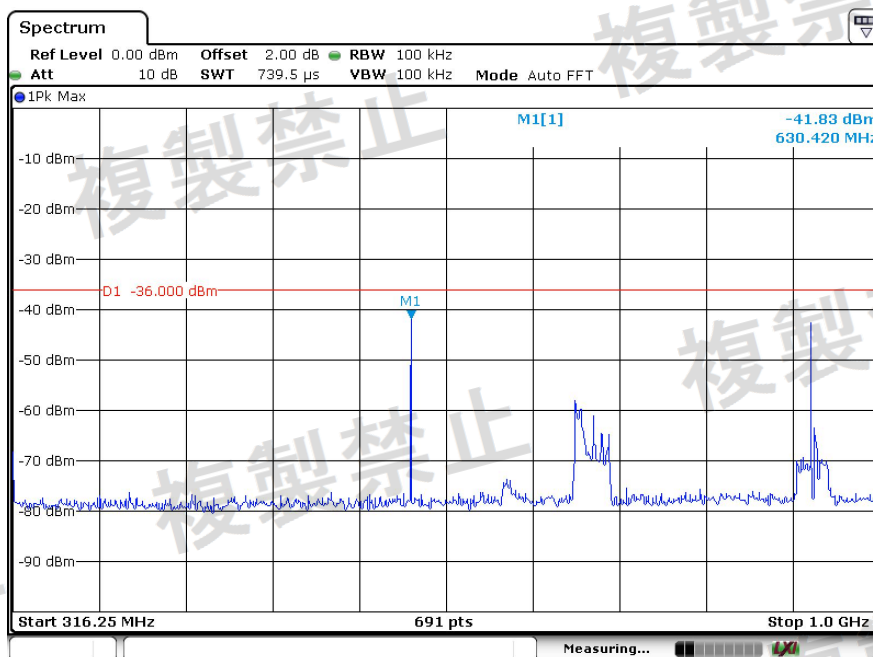
311MHz to 312MHz:



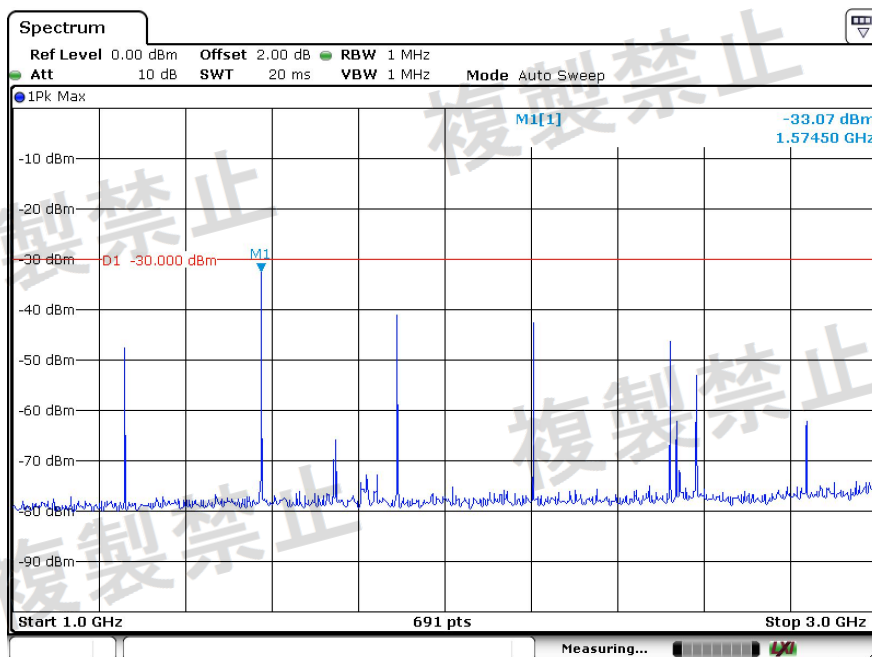
315.25MHz to 316.25MHz:



316.25 MHz to 1GHz:

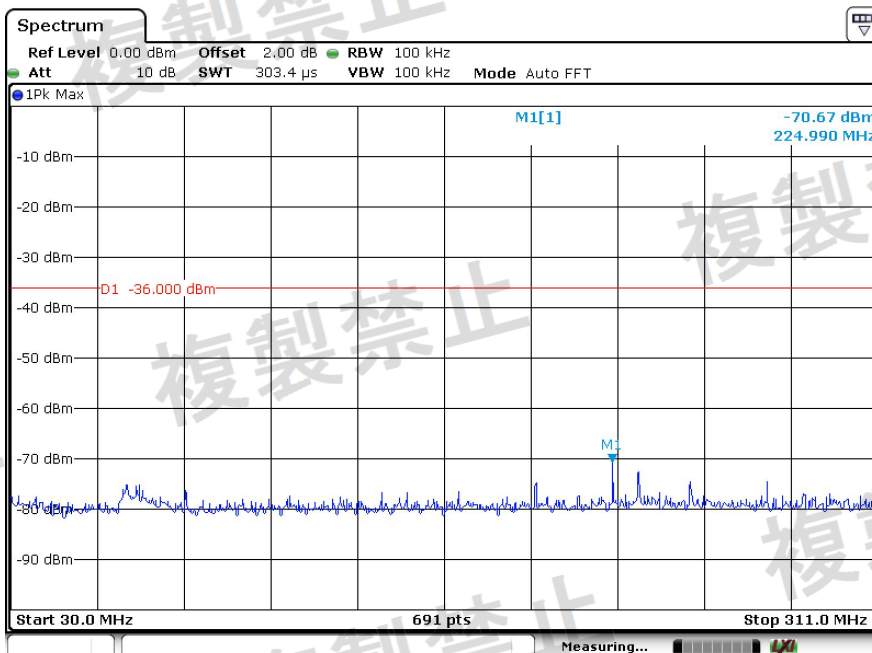


1GHz to 3GHz:

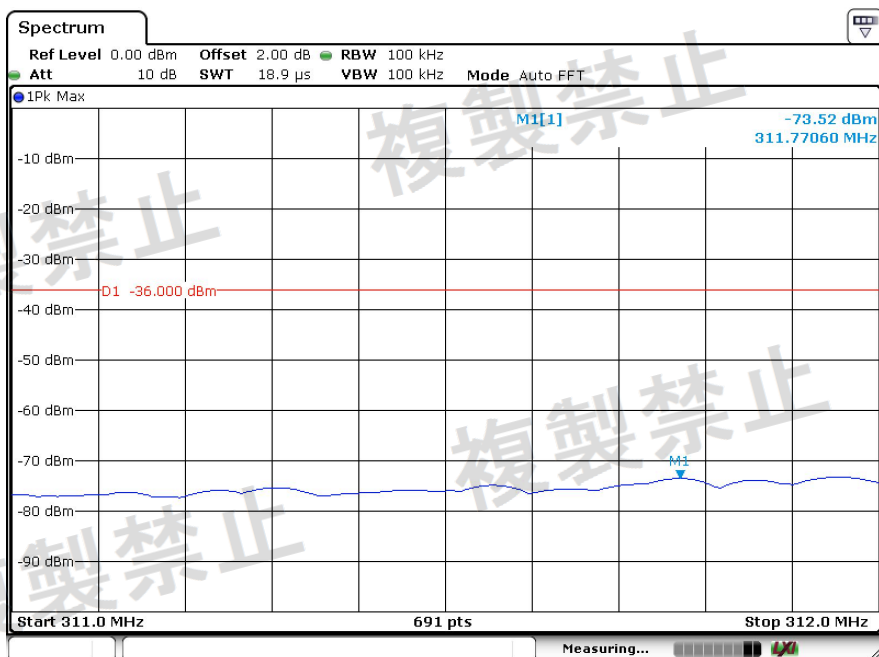


Extreme voltage :Normal voltage -10%

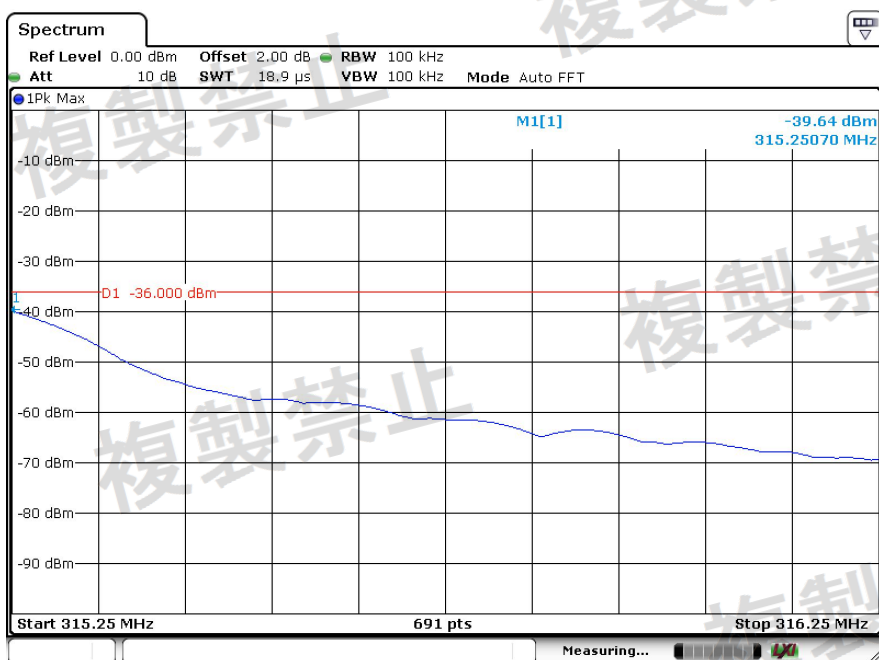
30MHz to 311MHz:



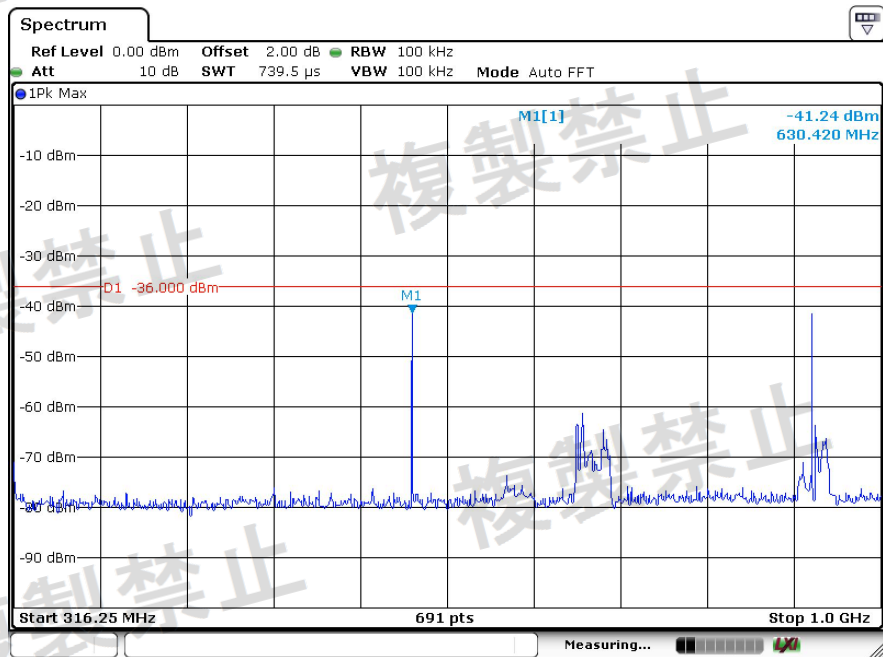
311MHz to 312MHz:



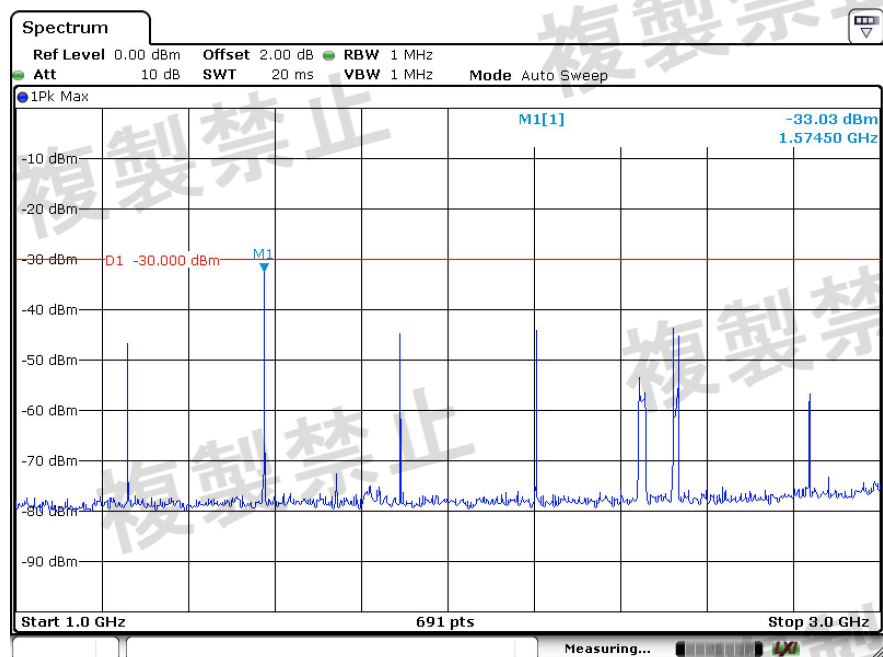
315.25MHz to 316.25MHz:



316.25MHz to 1GHz:



1GHz to 3GHz:

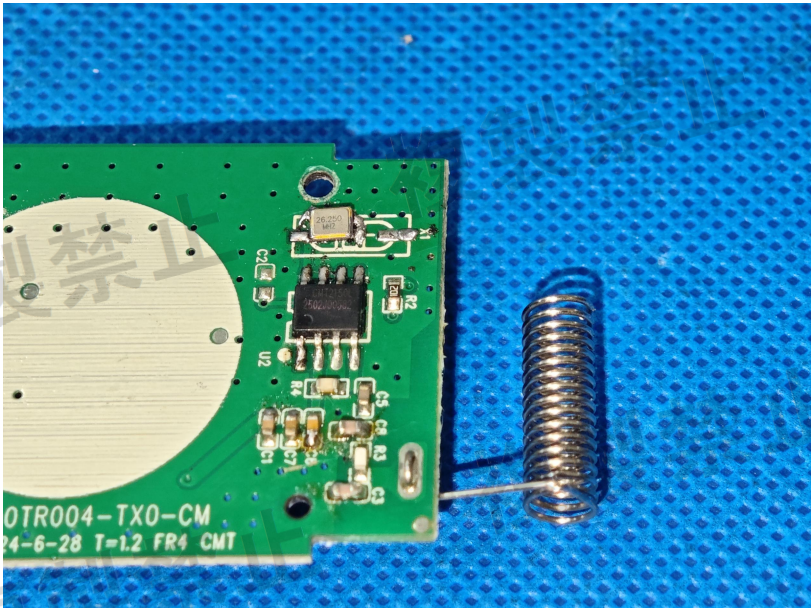


3.6 Construction Protection Confirmation Method

3.6.1 Limit

- The radio equipment shall be housed in a single cabinet, and the cabinet shall not be capable of being opened easily. However, this shall not apply to power supply equipment, controllers, and so forth announced separately by the minister.
- It shall have no feeder or grounding device.
- It shall be equipped with a transmission time restriction device which comply with the technical conditions announced separately by the minister.

3.6.2 Confirmation Method

Protected Method	Description
Ultrasonic bonding	The Product cannot be manipulated since it is a highly integrated design in IC and has no accessible adjustable components. It is not easily changed by users. Please refer to following for photo for details. 

3.7 Spurious Emission of Rx

Test Requirement:

- (1) Below 1 GHz : 4 Nw or less(-54dbm)/100KHz($30\text{MHz} \leq f < 1000\text{MHz}$)
 (2) 1 GHz and over : 4 Nw or less(-54dbm)/1000MHz($1000\text{MHz} \leq f < 3000\text{MHz}$)

Temperature: 23.0 °C

Humidity: 55 % RH

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

- Test Conditions: Spectrum Analyzer is used for measurement.
- EUT conditions:
 Modulation/Spread/Hopping ON
 For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.
- Spectrum Analyzer conditions:
 Step 1
 All spurious are measured from 30 MHz to 13 GHz by peak mode.
 Step 2
 IF the value measured by Step1 is 2 Db or less, measure in average mode.
 Test setup for Step 1:
 Frequency: 30 MHz – 1000 MHz , 1 GHz – 3 GHz
 RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)
 VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)
 Sweep Time Auto
 detector mode Positive peak
 Indication mode Max hold
 Test setup for Step 2:
 Frequency: Spurious Frequency
 Span 0 Hz
 RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)
 VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)
 Sweep Time Auto
 detector mode Sample
 Indication mode Max hold

3.7.1 Test Result

Note: The EUT does not have a receiving function.

4 Photographs of EUT

Please refer to AiTDG-260228001 EUT.

****End of the report****