



## RF Test Report

Applicant : InnoComm Mobile Technology Corp.

Product Type : wifi module

Trade Name : StreamUnlimited

Model Number : Stream810

Test Specification : MIC notification. No.88 of 2004, Annex 43  
2.4 GHz band wide-band low-power data communication system  
(Item 19 of Article 2 Paragraph 1)

Receive Date : Nov. 20, 2018

Test Period : Nov. 28, 2018 ~ Jan. 18, 2019

Issue Date : Jan. 25, 2019

### Issue by

A Test Lab Techno Corp.

No. 140-1, Changan Street, Bade District,

Taoyuan City 33465, Taiwan (R.O.C)

Tel : +886-3-2710188 / Fax : +886-3-2710190

**Note:** This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp. This document may be altered or revised by A Test Lab Techno Corp. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by TAF, or any government agencies. The test results in the report only apply to the tested sample.



### Revision History

Rev.	Issue Date	Revisions	Revised By
00	Jan. 21, 2019	Initial Issue	Janet Chao
01	Jan. 25, 2019	Revised Report Information	Janet Chao



## Verification of Compliance

Issued Date: Jan. 25, 2019

Applicant : InnoComm Mobile Technology Corp.

Product Type : wifi module

Trade Name : StreamUnlimited

Model Number : Stream810

EUT Rated Voltage : DC 5V

Test Voltage : DC 5V

Applicable Standard : MIC notification. No.88 of 2004, Annex 43  
2.4 GHz band wide-band low-power data communication system (Item 19 of Article 2 Paragraph 1)

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.  
No. 140-1, Changan Street, Bade District,  
Taoyuan City 33465, Taiwan (R.O.C)  
Tel : +886-3-2710188 / Fax : +886-3-2710190  
<http://www.atl-lab.com.tw/e-index.htm>

The above equipment has been tested by A Test Lab Techno Corp., and found compliance with the requirements set forth in the 2.4 GHz band wide-band low-power data communication system (Item 19 of Article 2 Paragraph 1) and technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved By : Fly Lu Reviewed By : Eric Ou Yang  
(Manager) (Fly Lu) (Testing Engineer) (Eric Ou Yang)

## TABLE OF CONTENTS

1	General Information	5
1.1	EUT Description	5
1.2	Summary of Test Result	6
2	Test Methodology	7
2.1	Mode of Operation	7
2.2	EUT Test Step	8
2.3	Configuration of Test System Details	8
2.4	Test Instruments	9
2.5	Uncertainty of Measured Value	9
2.6	Test Site Environment	9
3	Measurement Procedure	10
3.1	Frequency Error Measurement	10
3.2	Occupied Bandwidth Measurement	11
3.3	Spread Bandwidth and Spread Factor Measurement	12
3.4	Antenna Power (Conducted) Measurement	13
3.5	Unwanted Emission Strength Measurement	15
3.6	Secondarily Emitted Radio Wave Strength Measurement	17
3.7	Carrier Sense Measurement	19
3.8	Radio Interference Prevention Capability Measurement	21
3.9	Construction Protection Confirmation Method	21
4	Test Results	22
4.1	Frequency Error Measurement	22
4.2	Occupied Bandwidth Measurement	32
4.3	Spread Bandwidth and Spread Factor Measurement	41
4.4	Antenna Power (Conducted) Measurement	50
4.5	Unwanted Emission Strength Measurement	68
4.6	Secondarily Emitted Radio Wave Strength Measurement	128
4.7	Carrier Sense Measurement	146
4.8	Radio Interference Prevention Capability Measurement	148
4.9	Antenna List	149
4.10	Construction Protection Confirmation Method	149



## 1 General Information

### 1.1. EUT Description

Applicant	InnoComm Mobile Technology Corp. 3F, No. 6, Hsin Ann Rd., Hsinchu Science Park, Hsinchu 30078, Taiwan
Manufacturer	Domex Technology Corporation
Product Type	No. 6, Hsin Ann Rd., Hsinchu Science Park, Hsinchu, Taiwan, R.O.C wifi module
Trade Name	StreamUnlimited
Model Number	Stream810
Hardware Version	V1.6
Software Version	V4.4EW
Antenna Information	ANT-0 Trade Name: WALSIN TECHNOLOGY CORPORATION Model Number: RFPCA400772IMLB301 Antenna Type: PCB Antenna Max. Gain: 2.20 dBi  ANT-1 Trade Name: WALSIN TECHNOLOGY CORPORATION Model Number: RFPCA400761IMLB301 Antenna Type: PCB Antenna Max. Gain: 2.28 dBi
Radio Equipment	2.4 GHz Band Wide-Band Low-Power Data Communication System
Classification of Specified Radio Equipment	Article 2 Clause 1 Item 19
Modulation Type	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n 20 MHz : OFDM IEEE 802.11n 40 MHz : OFDM IEEE 802.11b: G1D 2412 MHz-2472 MHz (Interval of 5 MHz 13ch) IEEE 802.11g: D1D, G1D 2412 MHz-2472 MHz (Interval of 5 MHz 13ch) IEEE 802.11n 20 MHz : D1D, G1D 2412 MHz-2472 MHz IEEE 802.11n 40 MHz : D1D, G1D 2422 MHz-2462 MHz
Type of Emissions	IEEE 802.11b 9.28 mW/MHz 9.68 dBm/MHz IEEE 802.11g 8.53 mW/ MHz 9.31 dBm/MHz IEEE 802.11n 20 MHz 8.13 mW/MHz 9.10 dBm/MHz IEEE 802.11n 40 MHz 3.86 mW/MHz 5.87 dBm/MHz IEEE 802.11b 11.96 dBm/MHz IEEE 802.11g 11.59 dBm/MHz IEEE 802.11n 20 MHz 11.38 dBm/MHz IEEE 802.11n 40 MHz 8.15 dBm/MHz
Declared Rated Power	
E.I.R.P	
Tested Circuit Insertion Loss	11 dB
Frequency equal to the transmission rate of the modulation signal	IEEE 802.11b: 1.375 MHz
Operate Temp. Range	0 ~ +65 °C



### 1.2. Summary of Test Result

Item	Result	Remark
Frequency Error	PASS	
Occupied Bandwidth	PASS	
Spread Bandwidth	PASS	
Spread factor	PASS	
Antenna Power Error	PASS	
Unwanted Emission Strength	PASS	
Secondarily Emitted Radio Wave Strength	PASS	
Carrier Sense	PASS	
Radio Interference Prevention Capability Measurement	PASS	

The test results of this report relate only to the tested sample(s) identified in this report.



## 2 Test Methodology

### 2.1. Mode of Operation

#### Test Category

2.4 GHz Band Wideband Low-Power Data Communication System

Test Mode
Mode 1: IEEE 802.11b Continuous TX Mode
Mode 2: IEEE 802.11g Continuous TX Mode
Mode 3: IEEE 802.11n 20 MHz Continuous TX Mode
Mode 4: IEEE 802.11n 40 MHz Continuous TX Mode

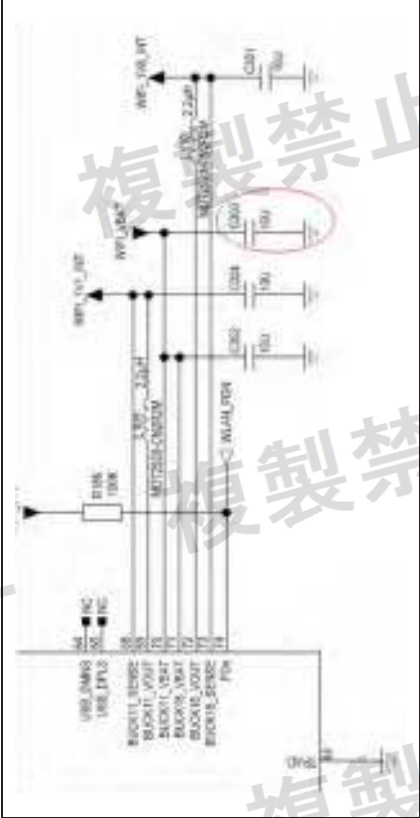
#### Comprehensive operation test

The normal voltage settings are respectively adopted during the test. Because the voltage error are less than 1 %.

#### Constant voltage check

EUT and Module Power tables				
EUT Setup Value (Vdc)	Normal		High(+10 %)	
	12	13.2	10.8	10.8
Module Vdd Power Measurement Value (Vdc)	Normal		High(+10 %)	
	3.3	3.296	3.297	3.297
Voltage error (%)	Ref. level		0.1212	
	---	---	± 1	0.0909
Judgment		---	PASS	PASS

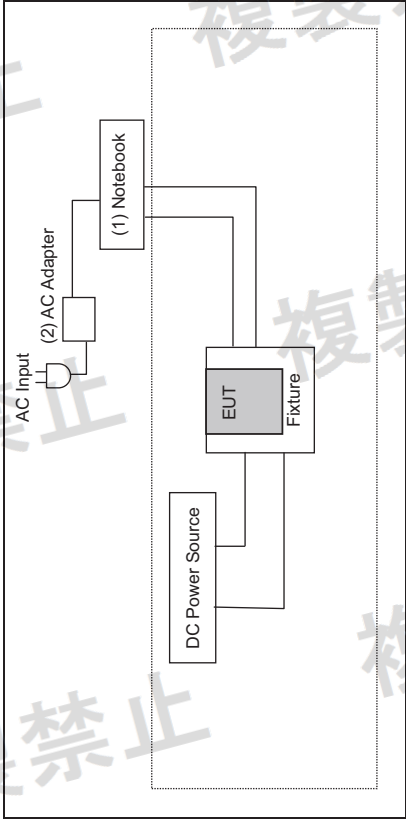
#### Actual Measuring point



### 2.2. EUT Test Step

1.	Setup the EUT shown on "Configuration of Test System Details."
2.	Turn on Wi-Fi function.
3.	EUT run test program.

### 2.3. Configuration of Test System Details



Devices Description				
Product	Manufacturer	Model Number	Serial Number	Power Cord
(1) Notebook	ASUS	BU400A	D1NXAS148534020	Non-Shielded, 0.8 m
(2) AC Adapter	ASUS	EXA1203YH	---	Non-Shielded, 1.7 m





## 2.4. Test Instruments

Test Period: Nov. 28, 2018 ~ Jan. 18, 2019

Describe	Manufacturer	Model Number	Serial Number	Calibration Authority	Cal. Date	Cal. Period
Power Sensor	Anritsu	MA2411B	1126022	ETC	08/29/2018	1 year
Power Meter	Anritsu	ML2495A	1135009	ETC	08/29/2018	1 year
Spectrum Analyzer (20 Hz~26.5 GHz)	Agilent	N9020A	US47520902	ETC	09/25/2018	1 year
Signal Generator	Agilent	N5182A	MY47420962	ETC	05/17/2018	1 year
Power Supply	KEITHLEY	2303	4045290	OCL	02/08/2018	1 year

Note 1: N.C.R. = No Calibration Request.

Note 2: Each calibration by the calibration agency listed on the table corresponds to item (ii) (c) of Article 24-2 paragraph 4 of the Radio Law.

## 2.5. Uncertainty of Measured Value

Test Item	Uncertainty
Frequency Error	$\pm 2.21 \times 10^{-7}$
Occupied Bandwidth	$\pm 4.96 \%$
Spread Bandwidth	$\pm 4.96 \%$
Antenna Power Error	$\pm 1.31 \text{ dB}$
Unwanted Emission Strength	$\pm 1.43 \text{ dB}$
Secondarily Emitted Radio Wave Strength	$\pm 1.13 \text{ dB}$
Carrier Sense	$\pm 2.21 \text{ dB}$

## 2.6. Test Site Environment

Items	Test Item	Required	Actual
Temperature ( $^{\circ}\text{C}$ )	---	5~35	26
Humidity (%RH)		45~85	60
Barometric pressure (mbar)		---	990

Site Name: A Test Lab Techno Corp.

Site Address: No. 140-1, Chang'an Street, Bade District,

Taoyuan City 33465, Taiwan (R.O.C)

TEL : 886-3-271-0188 / FAX : 886-3-271-0190

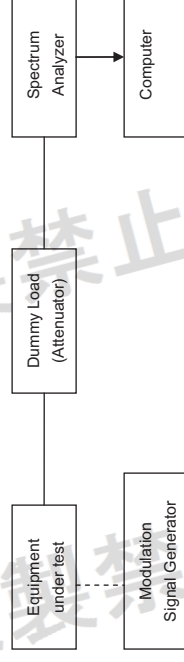
<http://www.atl-lab.com.tw/e-index.htm>

## 3 Measurement Procedure

### 3.1. Frequency Error Measurement

- Limit  
Frequency Tolerances 50 ppm.

- Test Setup



- Measuring Equipment Conditions

Spectrum Analyzer Setting

SPAN : 300 kHz

RBW : 1 KH

VBW : 30 kHz

Sweep Time : AUTO (Minimum time to ensure measurement accuracy)

Data Points : 401 points or more

Sweep Mode : Single Sweep

Detection Mode : Positive Peak

Storage Mode : Normal

Y-axis Scale : 10 dB/Div.

Reference Level : Enough level for maximum dynamic range

- Conditions of Equipment under Test

(1) Set the EUT to the test frequency and transmit RF signal.

(2) The modulation state is "continuous wave without modulation" by stopping spread spectrum in principle. But, if it is not possible, it shall be "continuous burst wave without modulation".

- Measuring Operation Procedures

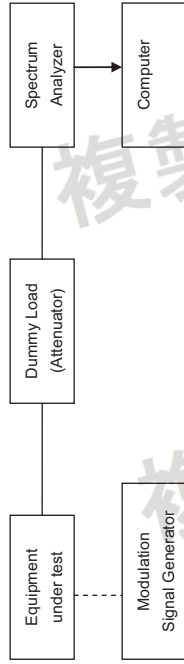
In case of burst waves, the measurement shall be done for enough time (e.g. covering 20 or more of burst waves) in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.



### 3.2. Occupied Bandwidth Measurement

- **Limit**  
Others: Occupied Bandwidth  $\leq 26$  MHz.  
OFDM: Occupied Bandwidth  $\leq 38$  MHz.

- **Test Setup**



- **Measuring Equipment Conditions**

Spectrum Analyzer Setting  
SPAN : 40 MHz(BW=20) or 80 MHz(BW=40) or 160 MHz(BW=80) or 320 MHz(BW=160)  
RBW : 300 kHz  
VBW : 300 kHz  
Sweep Time : AUTO (Minimum time to ensure measurement accuracy)  
Data Points : 401 points or more  
Indication mode : Max hold  
Detection Mode : Positive Peak  
Storage Mode : Normal  
Y-axis Scale : 10 dB/Div  
Reference Level : Enough level for maximum dynamic range

- **Conditions of Equipment under Test**

Set to testing frequency and modulate using standard encoding test signals.

- **Measuring Operation Procedures**

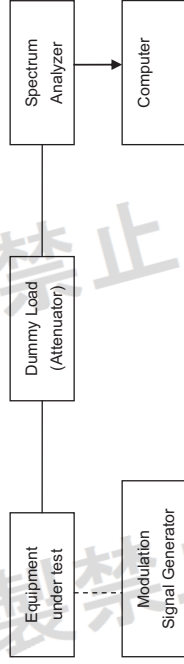
The 99 % Occupied Bandwidth of Total Power.



### 3.3. Spread Bandwidth and Spread Factor Measurement

- **Limit**  
Spread Bandwidth  $\geq 0.5$  MHz  
Spread Factor  $\geq 5$

- **Test Setup**



- **Measuring Equipment Conditions**

Spectrum Analyzer Setting  
SPAN : 40 MHz(BW=20) or 80 MHz(BW=40) or 160 MHz(BW=80) or 320 MHz(BW=160)  
RBW : 300 kHz  
VBW : 300 kHz  
Sweep Time : AUTO (Minimum time to ensure measurement accuracy)  
Data Points : 401 points or more  
Indication mode : Max hold  
Detection Mode : Positive Peak  
Storage Mode : Normal  
Y-axis Scale : 10 dB/Div  
Reference Level : Enough level for maximum dynamic range

- **Conditions of Equipment under Test**

Set to testing frequency and modulate using standard encoding test signals.

- **Measuring Operation Procedures**

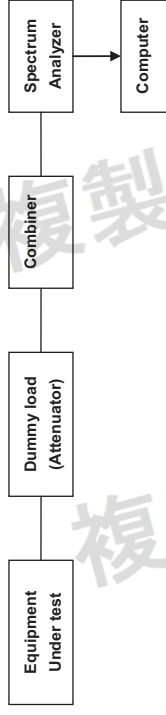
The 90 % Occupied Bandwidth of Total Power.



### 3.4. Antenna Power (Conducted) Measurement

- **Limit**
  - (1) OFDM BW=26 MHz:RF Output Power  $\leq 10$  mW/MHz
  - (2) OFDM BW=26 MHz~38 MHz:RF Output Power  $\leq 5$  mW/MHz
  - (3) Other than (1) & (2) : RF Output Power  $\leq 10$  mW RF Output Power Tolerance  $\leq 20\%$  ~  $-80\%$

#### ■ Test Setup



#### ■ Measuring Equipment Conditions

Spectrum Analyzer Setting  
Mode : Channel power  
SPAN : 40 MHz(BW=20) or 40 MHz(BW=80) or 80 MHz(BW=160) or 80 MHz(BW=160)  
RBW : 30 kHz  
VBW : 300 kHz  
Sweep Time : AUTO (Minimum time to ensure measurement accuracy)  
Data Points : 401 points or more  
Indication mode : Max hold  
Detection Mode : Positive Peak  
Storage Mode : Normal  
Y-axis Scale : 10 dB/Div.  
Reference Level : Enough level for maximum dynamic range

#### ■ Conditions of Equipment under Test

Set to the test frequency and spread-spectrum code. Modulate it with standard coded test signal.



#### ■ Measuring Operation Procedures

- I- In case of direct sequence spread-spectrum system, operate the EUT as follows:
  - (1) Setting the spectrum analyzer according to 6.3.
  - (2) Find the frequency of maximum power and then point to the center frequency
  - (3) Detection Mode change to Avg.
  - (4) Channel Power change to 1 MHz and record the result.
- II- In the case of the frequency hopping system or the combination of the system and the direct sequence spread-spectrum system, operate the EUT as follows:
  - (1) Connect the power meter to the output of the attenuator and measure the total power.
  - (2) Divide the total power with the spread-spectrum bandwidth and determine the mean power pre 1 MHz.
  - (3) Check and see if the hopping frequencies are uniformly distributed according to the submitted document.
  - (4) Antenna power shall be as follows:
    - a. In case of continuous waves: Value in step (2).
    - b. In case of burst waves: Calculated value from the value in step (2) and ratio of transmission time.
- III- In the case of other modulation mode, operate the equipment under the test as follows:
  - (1) Connect the power meter to the output of the attenuator and measure the total power.
  - (2) Antenna power shall be as follows:
    - a. In case of continuous waves: Value in step (1).
    - b. In case of burst waves: Calculated value from the value in step (2) and the transmission time ratio.

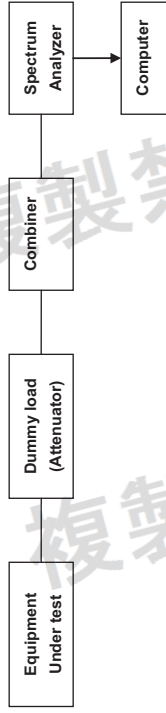
Sections where data is not transmitted shall be treated as same as in case direct sequence spread-spectrum system



### 3.5. Unwanted Emission Strength Measurement

Limit	Frequency (MHz)	Limit (µW/MHz)
	Under 2387 MHz	≤ 2.5
	2387-2400 MHz	≤ 25
	2483.5-2496.5 MHz	≤ 25
	2496.5-12.5 GHz	≤ 2.5

#### ■ Test Setup



#### ■ Measuring Equipment Conditions

##### Step-1 (Search Mode)

Spectrum Analyzer Setting

SPAN : Measuring Frequency Range (Refer to the 4.7 of the page 18)

RBW : 1 MHz

VBW : Same as RBW

Sweep Time : AUTO (Minimum time to ensure measurement accuracy.

\*In case of burst wave, one burst shall be included per data point)

Data Points : 401 points or more

Sweep Mode : Single Sweep

Detection Mode : Positive Peak

Y-axis Scale : 10 dB/Div.

Reference Level : Enough level for maximum dynamic range



##### Step-2 (Measuring Mode \*Normal)

Spectrum Analyzer Setting

Center Frequency : Searched Frequency

SPAN : 1 MHz ~ 10 MHz (The SPAN that keeps accuracy of the frequency.)

RBW : 1 MHz

VBW : Same as RBW

Sweep Time : AUTO (Minimum time to ensure measurement accuracy.

\*In case of burst wave, one burst shall be included per data point)

Data Points : 401 points or more

Sweep Mode : Single Sweep

Detection Mode : Positive Peak

Y-axis Scale : 10 dB/Div.

Reference Level : Enough level for maximum dynamic range

##### Step-3 (Measuring Mode \*Zero Span)

Spectrum Analyzer Setting

Center Frequency : Searched Frequency

SPAN : 0 Hz (ZERO SPAN)

RBW : 1 MHz

VBW : Same as RBW

Sweep Time : AUTO (Minimum time to ensure measurement accuracy.

\*In case of burst wave, one burst shall be included per data point)

Data Points : 401 points or more

Sweep Mode : Single Sweep

Detection Mode : Sample

Y-axis Scale : 10 dB/Div.

Reference Level : Enough level for maximum dynamic range

#### ■ Conditions of Equipment under Test

Set the test frequency and test spread-spectrum code, and modulate it with a standard code test signal.

#### ■ Measuring Operation Procedures

Set the spectrum analyzer according to (Step 1) and search for spurious emissions. If searched value is under the technical standard value, do not need to measure by (Step 2). In this case, it reports the searched value and measured frequency. We measure by (Step 2) to keep the accuracy, and then it reports the more detail value.

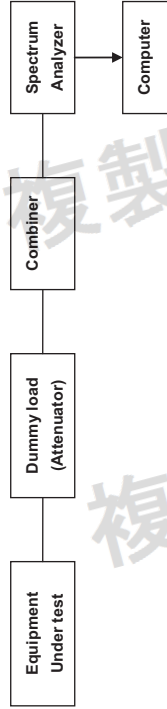




### 3.6. Secondarily Emitted Radio Wave Strength Measurement

Limit	Frequency (MHz)	Limit (mW)
	Under 1 GHz	≤ 4
	1 ~ 12.5 GHz	≤ 20

#### ■ Test Setup



#### ■ Measuring Equipment Conditions

##### Step-1 (Search Mode)

Spectrum Analyzer Setting

SPAN : Measuring Frequency Range (Refer to the 4.7 of the page 18)

RBW : 1 MHz (frequency range: 1 GHz over), 100 kHz (frequency range: 30 MHz to 1 GHz)

VBW : Same as RBW (1 MHz or 100 kHz)

Sweep Time : AUTO (Minimum time to ensure measurement accuracy.

\*In case of burst wave, one burst shall be included per data point)

Data Points : 401 points or more

Sweep Mode : Single Sweep

Detection Mode : Positive Peak

Y-axis Scale : 10 dB/Div.

Reference Level : Enough level for maximum dynamic range



##### Step-2 (Measuring Mode \*Normal)

Spectrum Analyzer Setting

Center Frequency : Searched Frequency

SPAN : 1 MHz — 10 MHz (The SPAN that keeps accuracy of the frequency.)

RBW : 1 MHz (frequency range: 1 GHz over), 100 kHz (frequency range: 30 MHz to 1 GHz)

VBW : Same as RBW (1 MHz or 100 kHz)

Sweep Time : AUTO (Minimum time to ensure measurement accuracy.

\*In case of burst wave, one burst shall be included per data point)

Data Points : 401 points or more

Sweep Mode : Single Sweep

Detection Mode : Positive Peak

Y-axis Scale : 10 dB/Div.

Reference Level : Enough level for maximum dynamic range

##### Step-3 (Measuring Mode \*Zero Span)

Spectrum Analyzer Setting

Center Frequency : Searched Frequency

SPAN : 0 Hz (ZERO SPAN)

RBW : 1 MHz (frequency range: 1 GHz over), 100 kHz (frequency range: 30 MHz to 1 GHz)

VBW : Same as RBW (1 MHz or 100 kHz)

Sweep Time : AUTO (Minimum time to ensure measurement accuracy.

\*In case of burst wave, one burst shall be included per data point)

Data Points : 401 points or more

Sweep Mode : Single Sweep

Detection Mode : Sample

Y-axis Scale : 10 dB/Div.

Reference Level : Enough level for maximum dynamic range

#### ■ Conditions of Equipment under Test

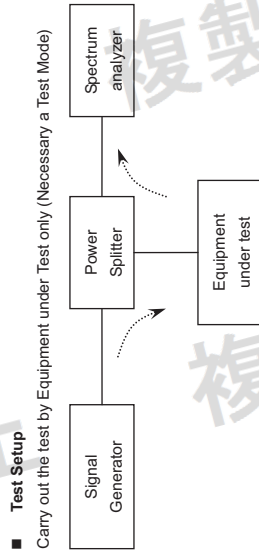
Set the EUT to receiver the test frequency with forced continuous receiving control.

#### ■ Measuring Operation Procedures

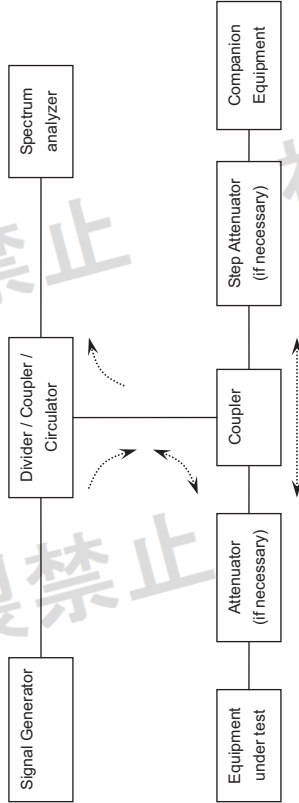
Set the spectrum analyzer according to (Step 1) and search for spurious emissions. If searched value is under the technical standard value, do not need to measure by (Step 2). In this case, it reports the searched value and measured frequency. We measure by (Step 2) to keep the accuracy, and then it reports the more detail value.

### 3.7. Carrier Sense Measurement

- **Limit**  
During outputting Carrier Wave by Signal Generator, check the EUT does not transmit any waves (include the Beacon).



Carry out the test by using a companion equipment (Necessary actual communication)

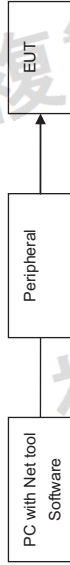




### 3.8. Radio Interference Prevention Capability Measurement

- **Limit**  
Identification code  $\geq 48$  bits
- **Measuring Id Code Software**  
MAC IP List: MAC Scan

■ **Test Setup**



■ **Measuring Operation Procedures**

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes from the counterpart. d. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

### 3.9. Construction Protection Confirmation Method

■ **Limit**

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.



## 4 Test Results

### 4.1. Frequency Error Measurement

Test Mode		Mode 1		5 Vdc		Normal Voltage			Notes
Test Voltage		Measurement Frequency		MHz	Ch.	2412	2442	2472	
Channel Number						1	7	13	Result
TX0		Reading Frequency		MHz		2411.9754	2441.9745	2471.9742	
		Frequency Tolerance		ppm		-10.20	-10.44	-10.44	PASS
TX1		Reading Frequency		MHz		2411.9751	2441.9748	2471.9745	
		Frequency Tolerance		ppm		-10.32	-10.32	-10.32	PASS
Limit				ppm		$\leq 50$			

Test Mode		Mode 2		5 Vdc		Normal Voltage			Notes
Test Voltage		Measurement Frequency		MHz	Ch.	2412	2442	2472	
Channel Number						1	7	13	Result
TX0		Reading Frequency		MHz		2411.9751	2441.9748	2471.9745	
		Frequency Tolerance		ppm		-10.32	-10.32	-10.32	PASS
TX1		Reading Frequency		MHz		2411.9751	2441.9751	2471.9745	
		Frequency Tolerance		ppm		-10.32	-10.20	-10.32	PASS
Limit				ppm		$\leq 50$			



Test Mode	Mode 3					
Test Voltage	5 Vdc	Normal Voltage				
Measurement Frequency	MHz	2412	2442	2472		
Channel Number	Ch.	1	7	13	Result	Notes
TX0	Reading Frequency	2411.9751	2441.9748	2471.9745		
	Frequency Tolerance	-10.32	-10.32	-10.32	PASS	
TX1	Reading Frequency	2411.9751	2441.9748	2471.9745		
	Frequency Tolerance	-10.32	-10.32	-10.32	PASS	
Limit	ppm	≤ 50				

Test Mode	Mode 4					
Test Voltage	5 Vdc	Normal Voltage				
Measurement Frequency	MHz	2422	2442	2462		
Channel Number	Ch.	3	7	11	Result	Notes
TX0	Reading Frequency	2421.9751	2441.9748	2461.9745		
	Frequency Tolerance	-10.28	-10.32	-10.36	PASS	
TX1	Reading Frequency	2421.9751	2441.9748	2461.9748		
	Frequency Tolerance	-10.28	-10.32	-10.24	PASS	
Limit	ppm	≤ 50				

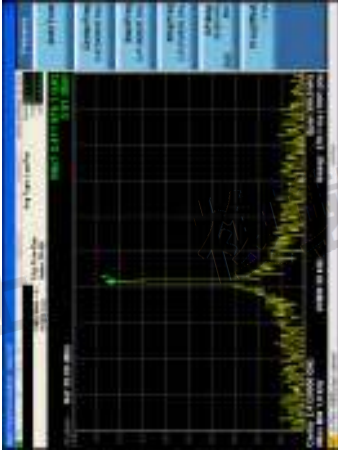
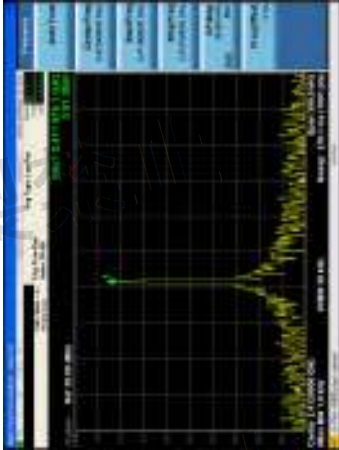
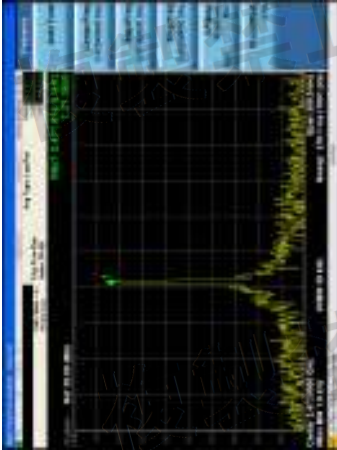


■ Test Graphs

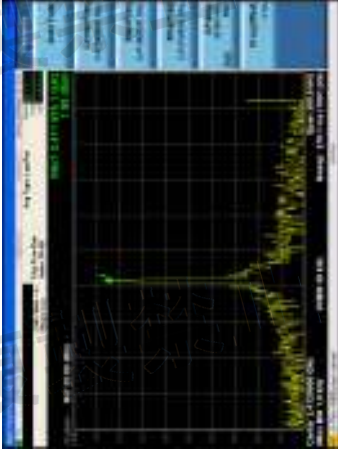
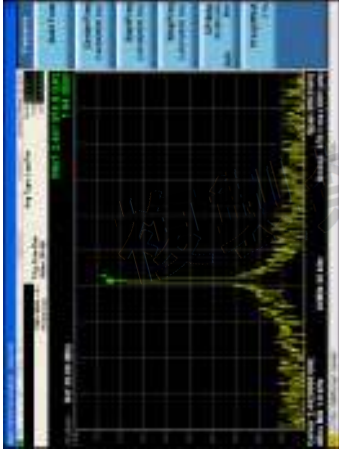
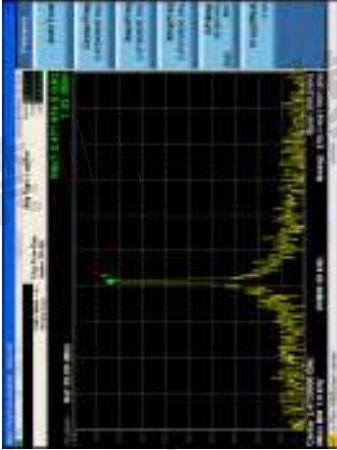
Mode 1 _ Normal Voltage _ TX0	
2412 MHz	
2442 MHz	
2472 MHz	



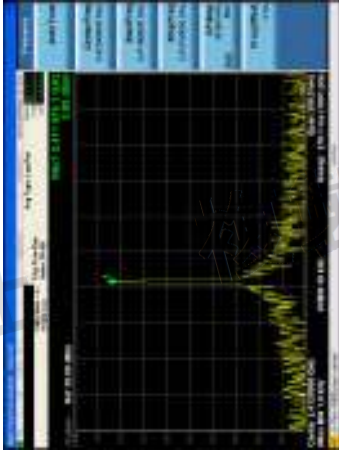
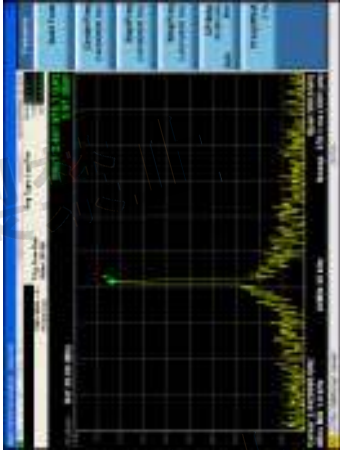
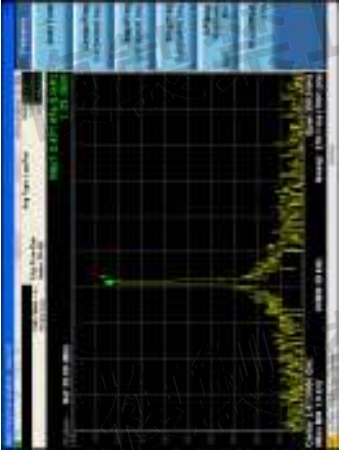


Mode 1_ Normal Voltage_ TX1	
2412 MHz	
2442 MHz	
2472 MHz	

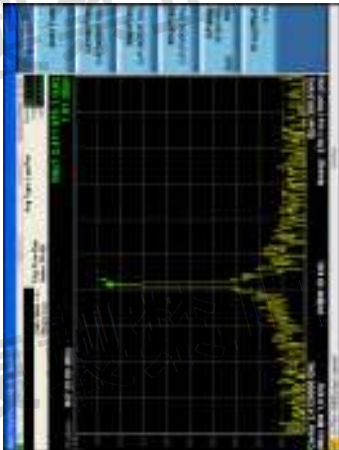
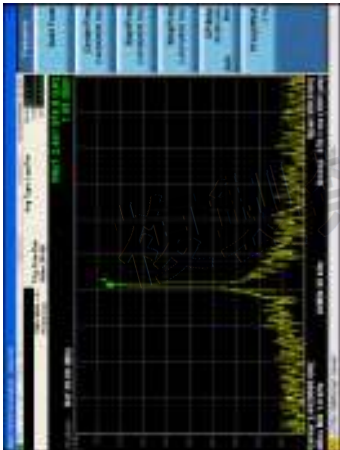
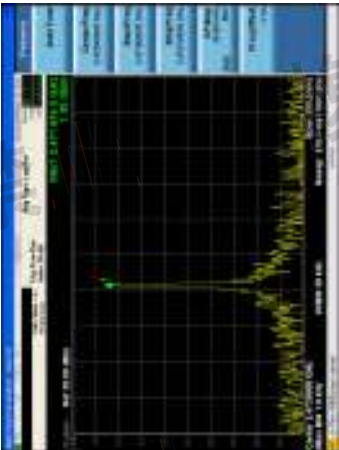


Mode 2_ Normal Voltage_ TX0	
2412 MHz	
2442 MHz	
2472 MHz	

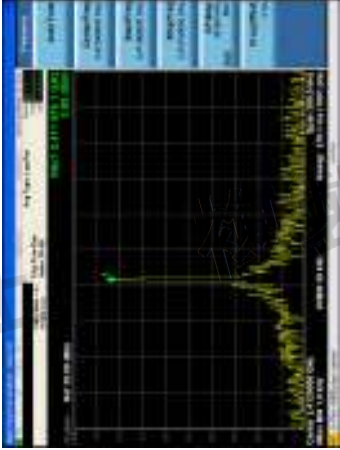
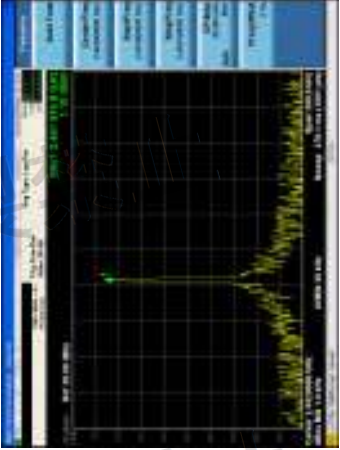
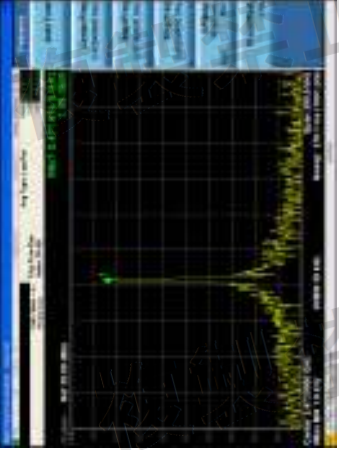


Mode 2 _ Normal Voltage _ TX1	
2412 MHz	
2442 MHz	
2472 MHz	

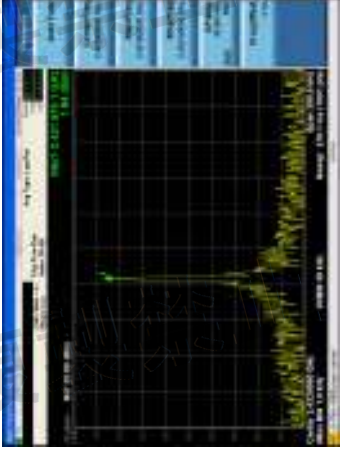
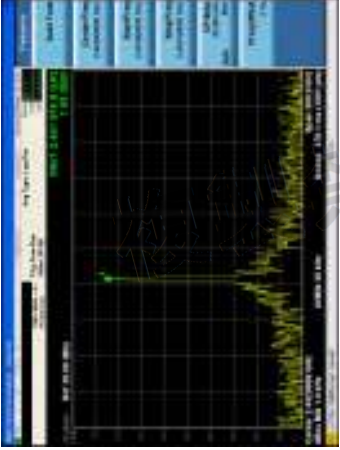
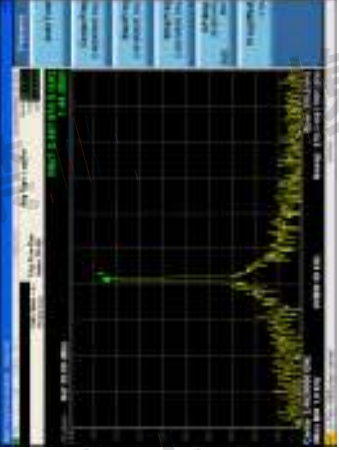


Mode 3 _ Normal Voltage _ TX0	
2412 MHz	
2442 MHz	
2472 MHz	



Mode 3 _ Normal Voltage _ TX1	
2412 MHz	
2442 MHz	
2472 MHz	



Mode 4 _ Normal Voltage _ TX0	
2422 MHz	
2442 MHz	
2462 MHz	





4.2. Occupied Bandwidth Measurement

Mode 4 _ Normal Voltage _ TX1	
2422 MHz	
2442 MHz	
2462 MHz	

Test Mode		Mode 1	
Test Voltage		Normal Voltage	
Measurement Frequency	5 Vdc	2412	2472
Channel Number	Ch.	7	13
TX0	Occupied Bandwidth	13.1900	13.1780
TX1	Occupied Bandwidth	13.1600	13.1740
Limit		≤ 26	

Test Mode		Mode 2	
Test Voltage		Normal Voltage	
Measurement Frequency	5 Vdc	2412	2472
Channel Number	Ch.	7	13
TX0	Occupied Bandwidth	16.8630	16.9000
TX1	Occupied Bandwidth	16.6810	16.7150
Limit		≤ 38	

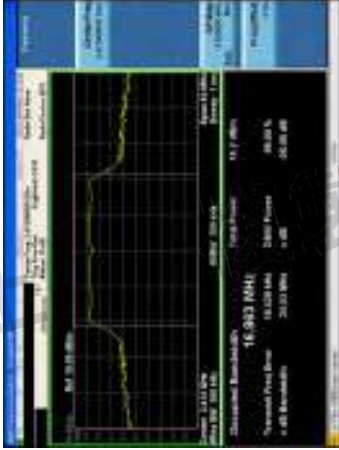
Test Mode		Mode 3	
Test Voltage		Normal Voltage	
Measurement Frequency	5 Vdc	2412	2472
Channel Number	Ch.	7	13
TX0	Occupied Bandwidth	17.9440	18.1330
TX1	Occupied Bandwidth	17.7140	17.7240
Limit		≤ 38	

Test Mode		Mode 4	
Test Voltage		Normal Voltage	
Measurement Frequency	5 Vdc	2422	2462
Channel Number	Ch.	3	11
TX0	Occupied Bandwidth	36.2130	36.1350
TX1	Occupied Bandwidth	36.1370	36.1500
Limit		≤ 38	









Mode 2_ Normal Voltage_ TX0	
2412 MHz	
2442 MHz	
2472 MHz	




Mode 2_ Normal Voltage_ TX1	
2412 MHz	
2442 MHz	
2472 MHz	



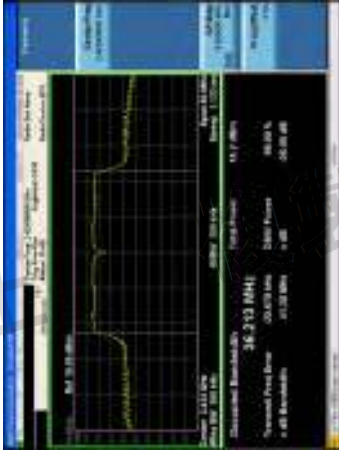

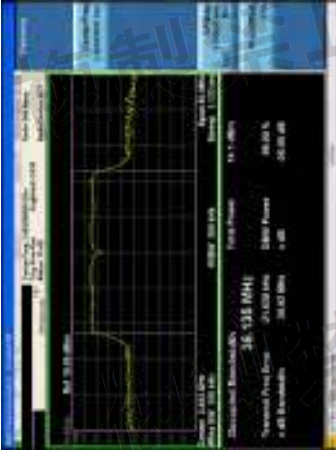
Mode 3 _ Normal Voltage _ TX0	
2412 MHz	
2442 MHz	
2472 MHz	



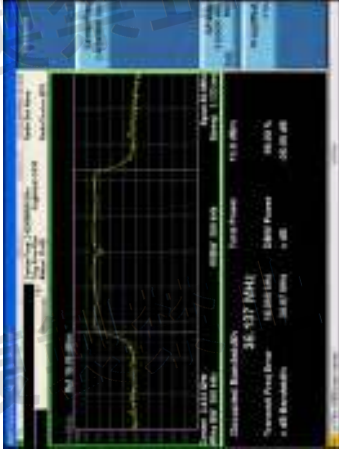
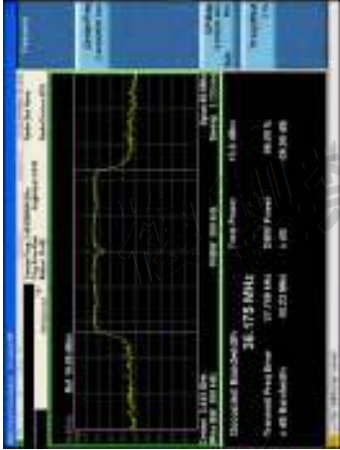
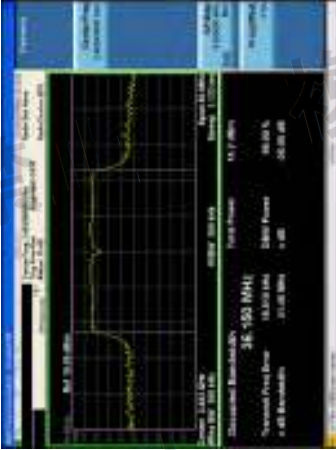
Mode 3 _ Normal Voltage _ TX1	
2412 MHz	
2442 MHz	
2472 MHz	





Mode 4 _ Normal Voltage _ TX0	
2422 MHz	
2442 MHz	
2462 MHz	



Mode 4 _ Normal Voltage _ TX1	
2422 MHz	
2442 MHz	
2462 MHz	





4.3. Spread Bandwidth and Spread Factor Measurement

Test Mode	Mode 1					
Test Voltage		5 Vdc		Normal Voltage		
Measurement Frequency		MHz		2412	2442	2472
Channel Number		Ch.		1	7	13
TX0	Spread Bandwidth	MHz		9.2130	9.2133	9.2071
TX1	Spread Bandwidth	MHz		9.2148	9.2099	9.2145
Spread Factor		---		6.70	6.70	6.70
Limit	Spread Bandwidth		MHz		≥0.5	
	Spread Factor		---		≥5	

Note: Spread Factor = Spread Bandwidth / transmission rate of the modulation signal


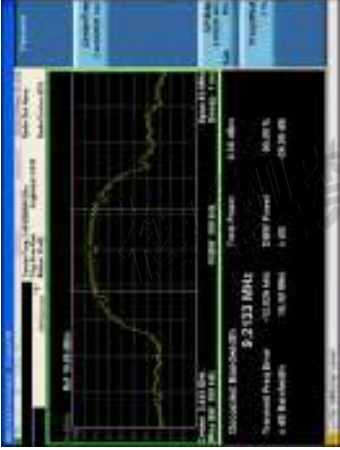
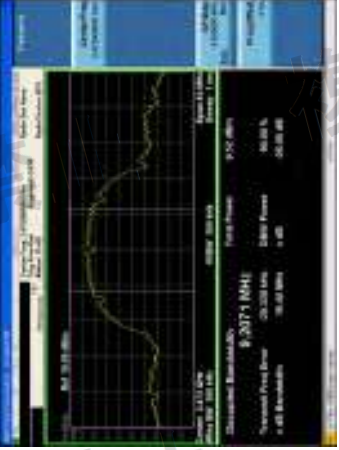
Test Mode	Mode 2							
Test Voltage	5 Vdc		Normal Voltage					
Measurement Frequency	MHz		2412	2442	2472	Result	Notes	
Channel Number	Ch.		1	7	13			
TX0 Spread Bandwidth	MHz		14.8660	14.8310	14.8210	PASS	Notes	
TX1 Spread Bandwidth	MHz		14.8870	14.9070	14.8640	PASS		
Limit	MHz		≥0.5					

Test Mode	Mode 3						
Test Voltage		5 Vdc					
Measurement Frequency	MHz					2472	
Channel Number	Ch.					13	
TX0 Spread Bandwidth	15.7760	15.7500	15.7790			Notes	
TX1 Spread Bandwidth	15.7960	15.8070	15.8690				
Limit	MHz					≥0.5	

Test Mode	Mode 4								
Test Voltage	5 Vdc					Normal Voltage			
Measurement Frequency	MHz					2422	2442	2462	Notes
Channel Number	Ch.					3	7	11	
TX0 Spread Bandwidth	MHz					32.4090	32.3660	32.3520	PASS
TX1 Spread Bandwidth	MHz					32.4130	32.4320	32.3340	
Limit	MHz					≥0.5			PASS



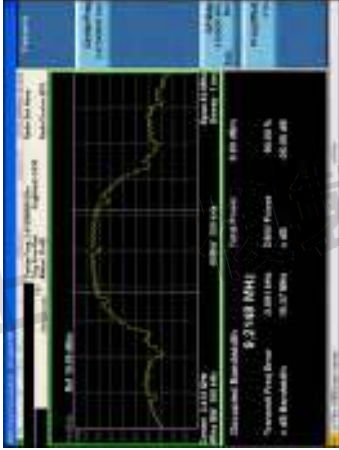
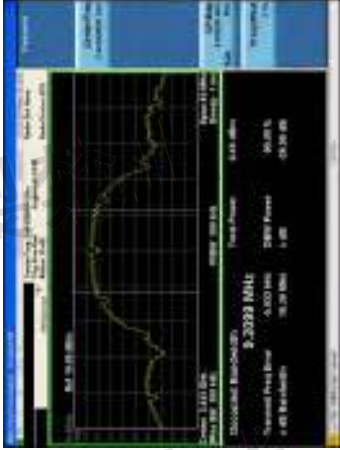
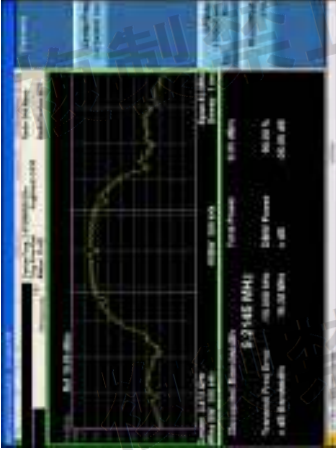
Test Graphs

Mode 1 _ Normal Voltage _ TX0		
2412 MHz		
2442 MHz		
2472 MHz		




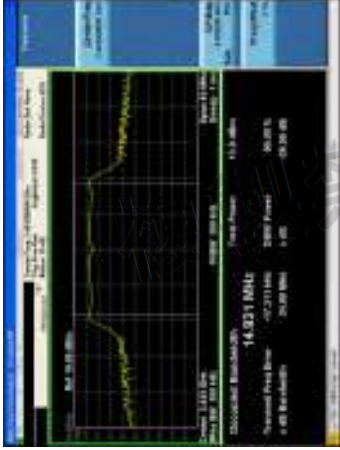
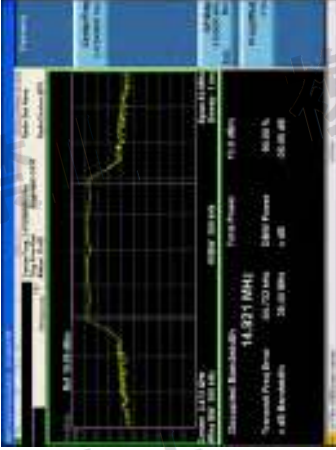
複製禁止

複製禁止

Mode 1_ Normal Voltage _ TX1	
2412 MHz	
2442 MHz	
2472 MHz	



複製禁止

Mode 2_ Normal Voltage _ TX0	
2412 MHz	
2442 MHz	
2472 MHz	

複製禁止

複製禁止

複製禁止

複製禁止

複製禁止

複製禁止

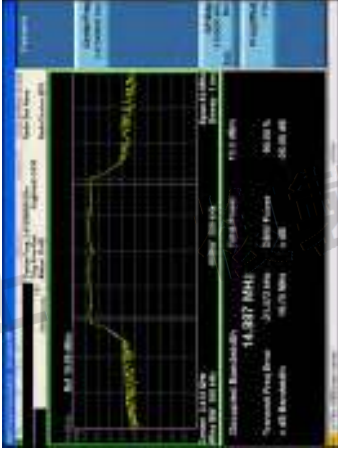
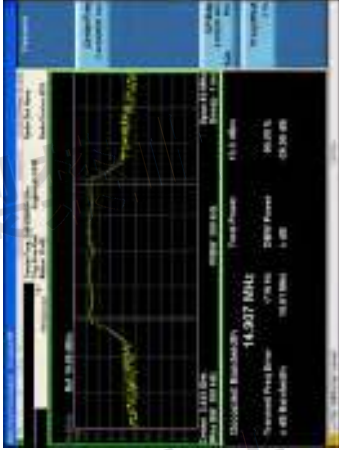
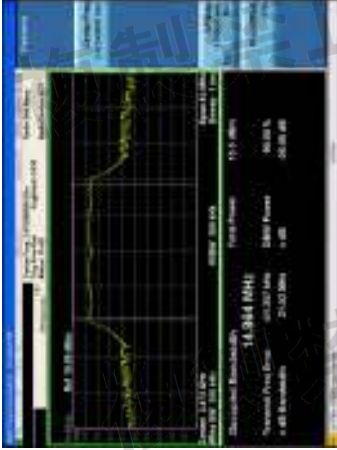
複製禁止


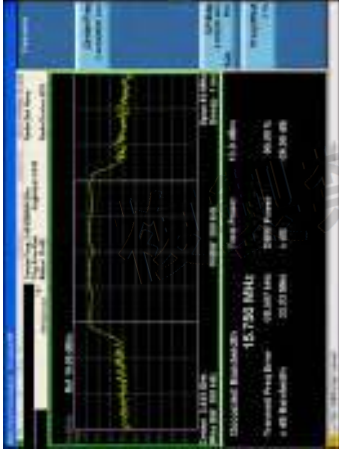
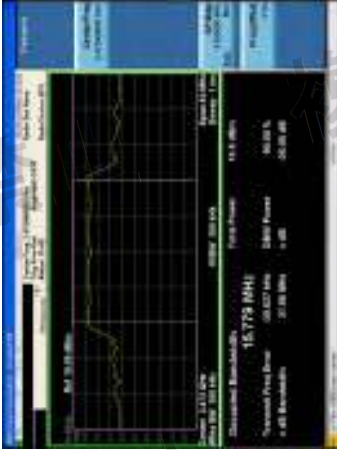
複製禁止

複製禁止


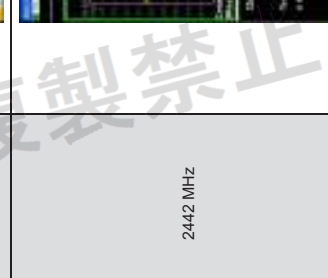

複製禁止



Mode 2 _ Normal Voltage _ TX1	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

Mode 3 _ Normal Voltage _ TX0	
2412 MHz	
	
2442 MHz	
	
2472 MHz	


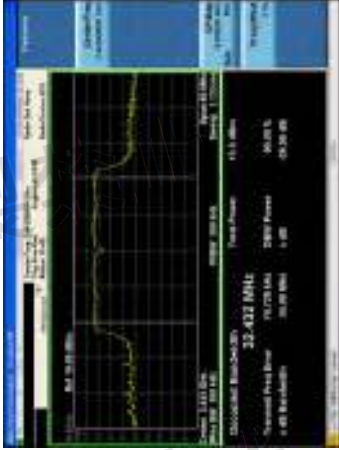
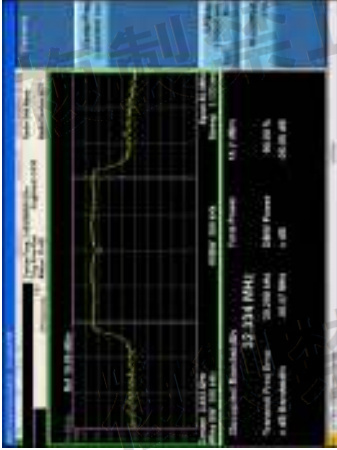


<p>Mode 3 _ Normal Voltage _ TX1</p>	<p>2412 MHz</p>	
	<p>2442 MHz</p>	
	<p>2472 MHz</p>	





## 4.4. Antenna Power (Conducted) Measurement

Mode 4_Normal Voltage_TX1	
2422 MHz	
2442 MHz	
2462 MHz	



## 4.4. Antenna Power (Conducted) Measurement

Test Mode		Mode 1	
Declared Rated Power		9.28 mW/MHz	
Test Voltage		5 Vdc	
Measurement Frequency		MHz	
Channel Number		Ch.	
TX0	Antenna Power	2412	2442
TX1	Antenna Power	2472	13
TX0+1	Antenna Power	7	4.65
	Antenna Power Tolerance	4.55	4.63
	Antenna Power	4.37	4.11
	Antenna Power Tolerance	8.92	8.63
	Antenna Power	0.00	-7.00
	Antenna Power Tolerance	11.78	11.64
TX0	Real Total Output Power	15.65	15.43
TX1	Real Total Output Power	15.38	15.29
TX0+1	Real Total Output Power	18.53	18.37
	Antenna Power	≤ 10	
	Antenna Power Tolerance	-80 ≤ s ≤ +20	
Limit	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	
	Antenna Power	≤ 12.14	
	Antenna Power Tolerance	≤ 12.14	

複製禁止

TX1	Real Total Output Power	dBm	17.24
TX0+1	Real Total Output Power	dBm	20.23
Limit	Antenna Power	mW/MHz	
	Antenna Power Tolerance	%	
	EIRP	dBm/MHz	

複製禁止



Mode 1_ Normal Voltage_ TX1	
2412 MHz	
2442 MHz	
2472 MHz	

Mode 2_ Normal Voltage_ TX0	
2412 MHz	
2442 MHz	
2472 MHz	











Mode 2 _ Normal Voltage _ TX1	
2412 MHz	
2442 MHz	
2472 MHz	

Mode 3 _ Normal Voltage _ TX0	
2412 MHz	
2442 MHz	
2472 MHz	








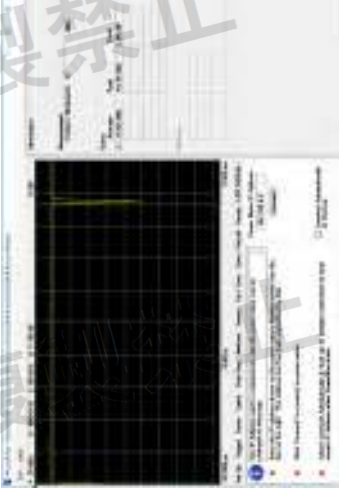
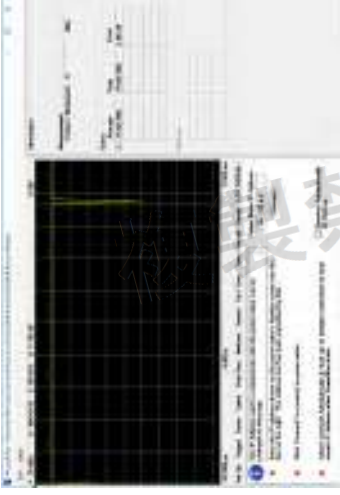
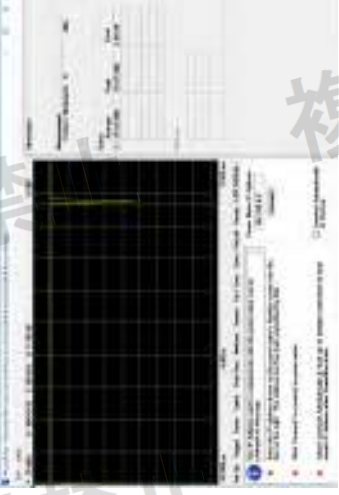
Mode 3 _ Normal Voltage _ TX1	
2412 MHz	
2442 MHz	
2472 MHz	

Mode 4 _ Normal Voltage _ TX0	
2422 MHz	
2442 MHz	
2462 MHz	

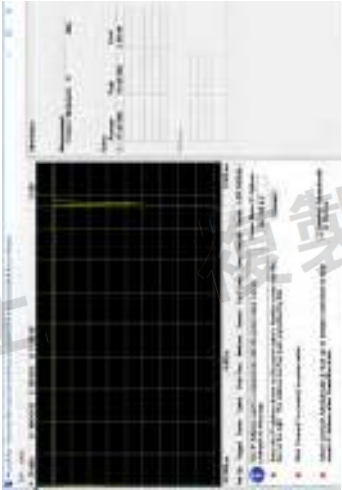
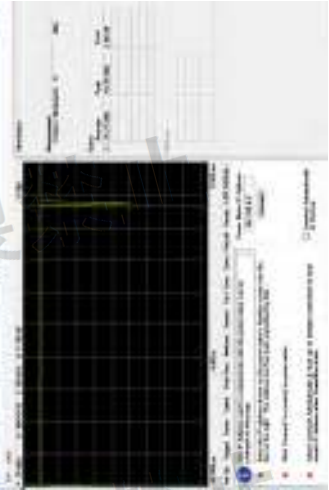
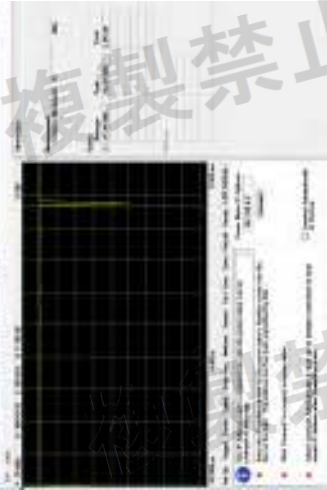


Mode 4 _ Normal Voltage _ TX1	
2422 MHz	
2442 MHz	
2462 MHz	

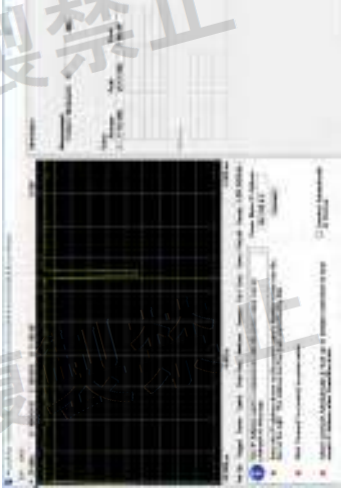
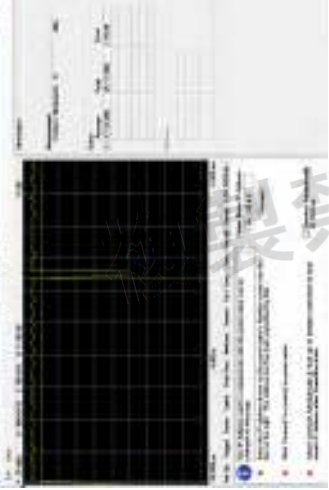
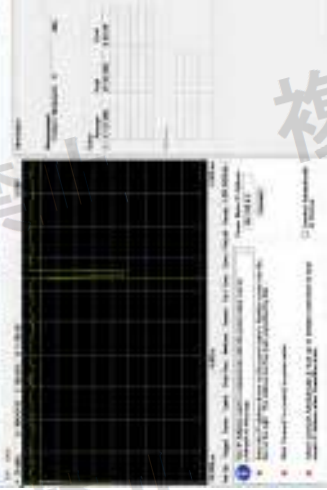


Real Total Output Power	
Test Graphs	
Mode 1 _ Normal Voltage _ TX0	
2412 MHz	
2442 MHz	
2472 MHz	



Mode 1_ Normal Voltage_ TX1	
2412 MHz	
2442 MHz	
2472 MHz	



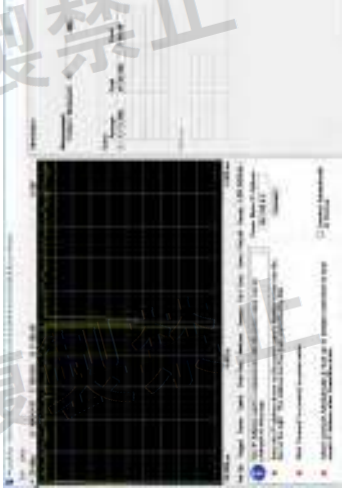
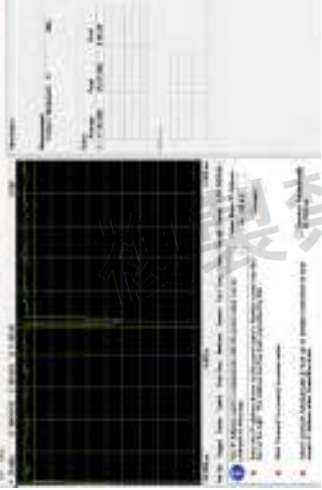
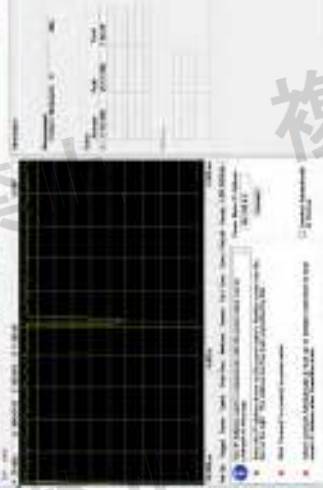
Mode 2_ Normal Voltage_ TX0	
2412 MHz	
2442 MHz	
2472 MHz	





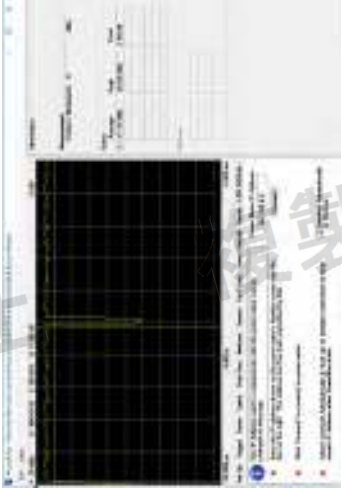
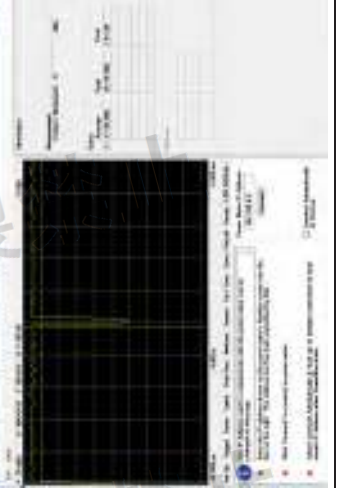
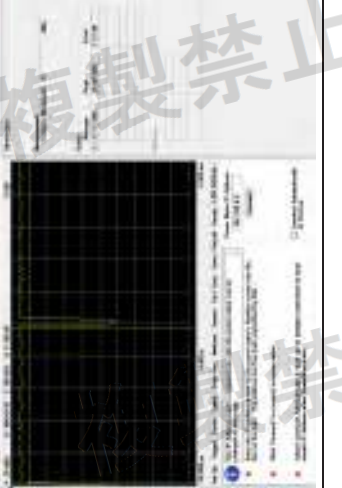
Mode 2 _ Normal Voltage _ TX1	
	2412 MHz
	2442 MHz
	2472 MHz



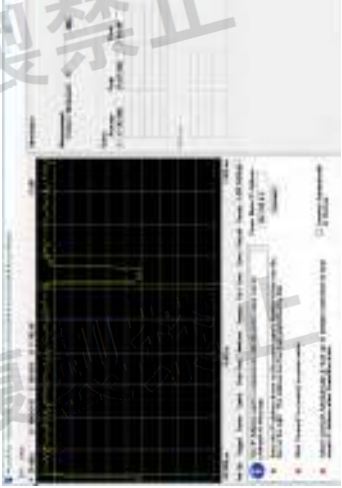
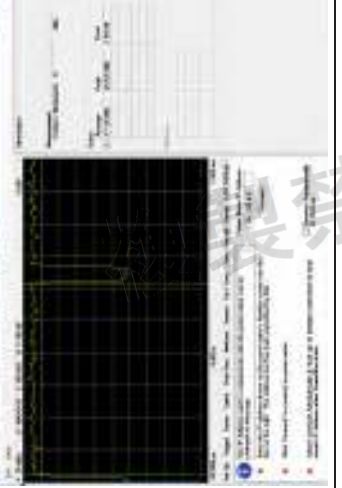

Mode 3 _ Normal Voltage _ TX0	
	2412 MHz
	2442 MHz
	2472 MHz





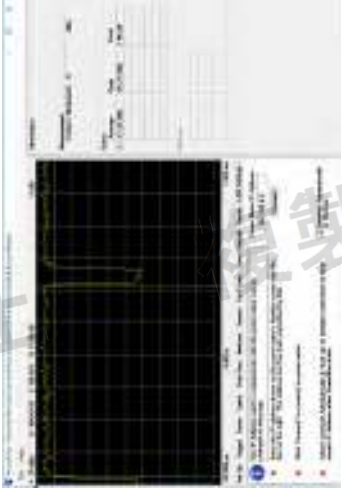
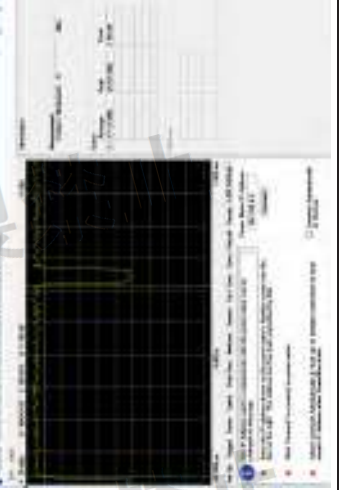
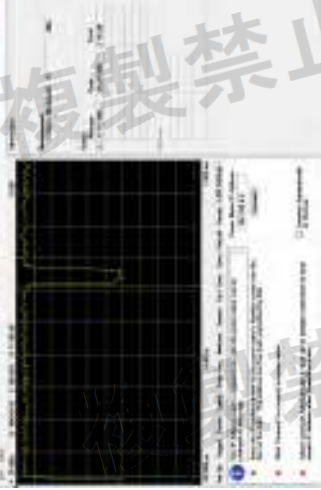
Mode 3 _ Normal Voltage _ TX1	
	2412 MHz
	2442 MHz
	2472 MHz



Mode 4 _ Normal Voltage _ TX0	
	2422 MHz
	2442 MHz
	2462 MHz



4.5. Unwanted Emission Strength Measurement

Mode 4 _ Normal Voltage _ TX1	
2422 MHz	
2442 MHz	
2462 MHz	

Test Mode	Mode 1		Normal Voltage					Notes
Test Voltage	5 Vdc		2412	2442	2472		Result	Notes
Measurement Frequency	MHz		1	7	13			
Channel Number	Ch.							
TX0	Under 2387 MHz	μ W/MHz	0.04	0.01	0.01		PASS	μ W/MHz
		MHz	2386.50	2359.40	2364.70			μ W/MHz
	2387-2400 MHz	μ W/MHz	0.08	0.01	0.01		PASS	μ W/MHz
		MHz	2396.61	2396.14	2393.16			μ W/MHz
	2483.5-2496.5 MHz	μ W/MHz	0.01	0.01	0.18		PASS	μ W/MHz
		MHz	2491.00	2490.05	2486.94			μ W/MHz
TX1	2496.5 - 12.5 GHz	μ W/MHz	0.01	0.01	0.02		PASS	μ W/MHz
		MHz	5677.90	4885.40	4943.90			μ W/MHz
	Under 2387 MHz	μ W/MHz	1.31	0.62	0.21		PASS	μ W/MHz
		MHz	730.80	746.20	746.20			μ W/MHz
	2387-2400 MHz	μ W/MHz	0.42	0.01	0.01		PASS	μ W/MHz
		MHz	2396.93	2397.50	2396.93			μ W/MHz
TX0+1	2483.5-2496.5 MHz	μ W/MHz	0.01	0.01	0.48		PASS	μ W/MHz
		MHz	2490.24	2484.66	2486.94			μ W/MHz
	2496.5 - 12.5 GHz	μ W/MHz	0.02	0.11	0.33		PASS	μ W/MHz
		MHz	4824.60	4883.10	4943.90			μ W/MHz
	Under 2387 MHz	μ W/MHz	1.36	0.63	0.22		PASS	μ W/MHz
	2387-2400 MHz	μ W/MHz	0.49	0.02	0.01		PASS	μ W/MHz
TX0+1	2483.5-2496.5 MHz	μ W/MHz	0.01	0.01	0.67		PASS	μ W/MHz
	2496.5 - 12.5 GHz	μ W/MHz	0.03	0.13	0.35		PASS	μ W/MHz
Limit	μ W/MHz		Under 2387 MHz and 2496.5 - 12.5 GHz ≤ 2.5					
			2387-2400 MHz and 2483.5-2496.5 MHz ≤ 25					



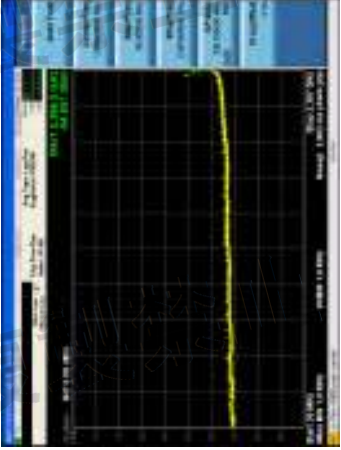
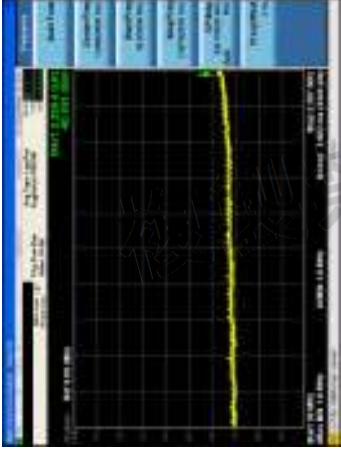
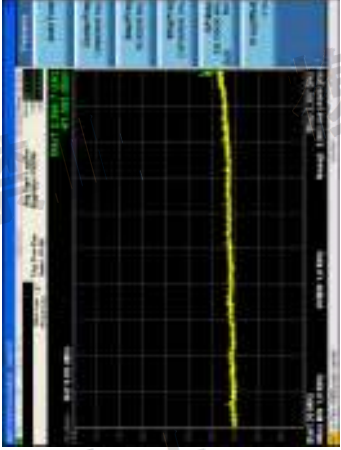
Test Mode		Mode 2										
Test Voltage		5 Vdc		Normal Voltage								
Measurement Frequency		MHz		2412	2442	2472	Result				Notes	
Channel Number		Ch.		1	7	13						
TX0	Under 2387 MHz	$\mu$ W/MHz		0.09	0.07	0.02	PASS				See Table 1	
	2387-2400 MHz	MHz		2385.90	2374.80	2349.30					See Table 1	
		$\mu$ W/MHz		0.59	0.43	0.03	PASS				See Table 1	
		MHz		2399.98	2398.74	2399.22					See Table 1	
	2483.5-2496.5 MHz	$\mu$ W/MHz		0.04	0.45	0.73	PASS				See Table 1	
TX1		MHz		2493.18	2483.59	2483.57					See Table 1	
	2496.5 - 12.5 GHz	$\mu$ W/MHz		0.32	0.22	0.02	PASS				See Table 1	
		MHz		7233.70	7321.50	2505.50					See Table 1	
	Under 2387 MHz	$\mu$ W/MHz		0.03	0.14	0.14	PASS				See Table 1	
		MHz		2387.00	79.90	77.70					See Table 1	
TX0+1	2387-2400 MHz	$\mu$ W/MHz		0.28	0.35	0.04	PASS				See Table 1	
		MHz		2399.71	2399.78	2399.40					See Table 1	
	2483.5-2496.5 MHz	$\mu$ W/MHz		0.03	0.19	0.66	PASS				See Table 1	
		MHz		2484.71	2483.85	2483.74					See Table 1	
	2496.5 - 12.5 GHz	$\mu$ W/MHz		0.18	0.50	0.03	PASS				See Table 1	
TX0+1		MHz		4820.10	4880.90	2498.80					See Table 1	
	Under 2387 MHz	$\mu$ W/MHz		0.12	0.21	0.16	PASS				See Table 1	
	2387-2400 MHz	$\mu$ W/MHz		0.87	0.78	0.07	PASS				See Table 1	
	2483.5-2496.5 MHz	$\mu$ W/MHz		0.07	0.64	1.39	PASS				See Table 1	
	2496.5 - 12.5 GHz	$\mu$ W/MHz		0.50	0.72	0.05	PASS				See Table 1	
Limit		$\mu$ W/MHz		Under 2387 MHz and 2496.5 - 12.5 GHz $\leq$ 2.5								2387-2400 MHz and 2483.5-2496.5 MHz $\leq$ 25

Test Mode		Mode 3									
Test Voltage		5 Vdc		Normal Voltage							
Measurement Frequency		MHz		2412	2442	2472	Result		Notes		
Channel Number		Ch.		1	7	13					
TX0	Under 2387 MHz	$\mu$ W/MHz	0.05	0.05	0.26	0.02	PASS		PASS		
	2387-2400 MHz	MHz	2383.80	2385.90	2373.20						
		$\mu$ W/MHz	0.33	0.62	0.07	PASS		PASS			
		MHz	2399.24	2390.63	2399.37						
	2483.5-2496.5 MHz	$\mu$ W/MHz	0.17	0.97	0.66	PASS		PASS			
TX1		MHz	2483.56	2484.76	2483.81						
	2496.5 - 12.5 GHz	$\mu$ W/MHz	0.23	0.26	0.08	PASS		PASS			
		MHz	7245.00	2496.50	2496.50						
	Under 2387 MHz	$\mu$ W/MHz	0.05	0.14	0.14	PASS		PASS			
		MHz	2387.00	78.30	79.30						
TX0+1	2387-2400 MHz	$\mu$ W/MHz	0.28	0.32	0.03	PASS		PASS			
		MHz	2399.72	2399.68	2399.30						
	2483.5-2496.5 MHz	$\mu$ W/MHz	0.05	0.76	0.53	PASS		PASS			
		MHz	2483.92	2485.04	2484.84						
	2496.5 - 12.5 GHz	$\mu$ W/MHz	0.29	0.44	0.11	PASS		PASS			
TX0+1		MHz	7238.20	7330.50	2496.50						
	Under 2387 MHz	$\mu$ W/MHz	0.10	0.40	0.16	PASS		PASS			
	2387-2400 MHz	$\mu$ W/MHz	0.61	0.94	0.10	PASS		PASS			
	2483.5-2496.5 MHz	$\mu$ W/MHz	0.22	1.74	1.19	PASS		PASS			
	2496.5 - 12.5 GHz	$\mu$ W/MHz	0.51	0.70	0.19	PASS		PASS			
Limit		Under 2387 MHz and 2496.5 - 12.5 GHz $\leq$ 2.5									
		2387-2400 MHz and 2483.5-2496.5 MHz $\leq$ 25									



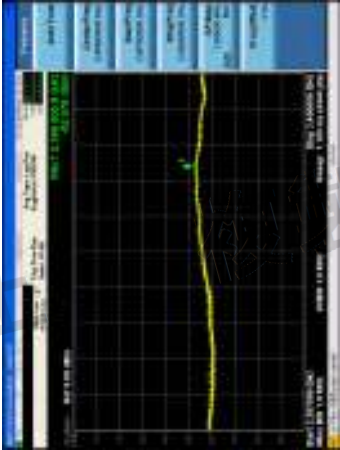
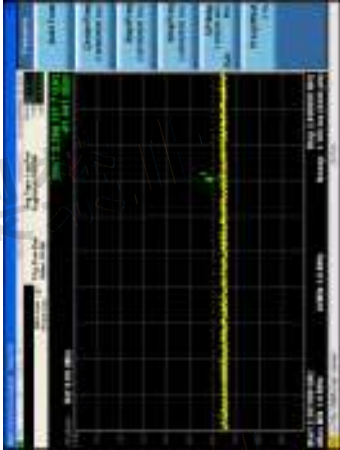
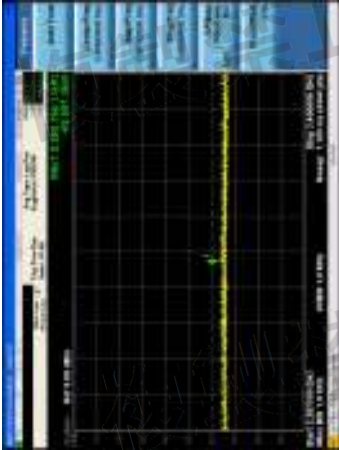
Test Mode		Mode 4	
Test Voltage		5 Vdc	
Measurement Frequency		Normal Voltage	
Channel Number		2422	2442
		3	7
TX0	Under 2387 MHz	0.23	0.89
		2387.00	2369.50
	2387-2400 MHz	0.31	0.15
		2398.02	2398.74
	2483.5-2496.5 MHz	1.40	9.19
		2496.35	2483.66
TX1	2496.5 - 12.5 GHz	0.09	1.02
		2510.00	2496.50
	Under 2387 MHz	0.31	0.70
		2387.00	2382.20
	2387-2400 MHz	0.53	0.14
		2398.99	2399.50
TX0+1	2483.5-2496.5 MHz	1.08	9.68
		2488.45	2489.57
	2496.5 - 12.5 GHz	0.18	0.65
		2498.80	2496.50
	Under 2387 MHz	0.54	1.59
		2387.00	2397.72
TX0+1	2387-2400 MHz	0.83	0.29
	2483.5-2496.5 MHz	2.48	18.87
	2496.5 - 12.5 GHz	0.27	1.67
		Under 2387 MHz and 2496.5 - 12.5 GHz ≤ 2.5	2387-2400 MHz and 2483.5-2496.5 MHz ≤ 2.5

Test Graphs

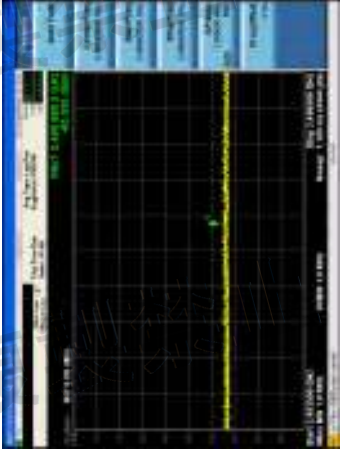
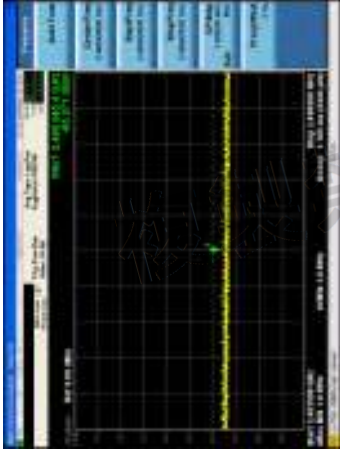
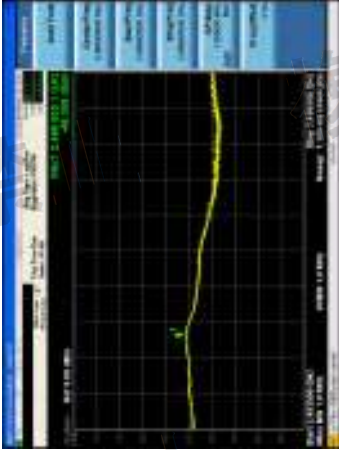
Mode 1 _ Normal Voltage _ TX0 _ Under 2387 MHz	
	2412 MHz
	2442 MHz
	2472 MHz

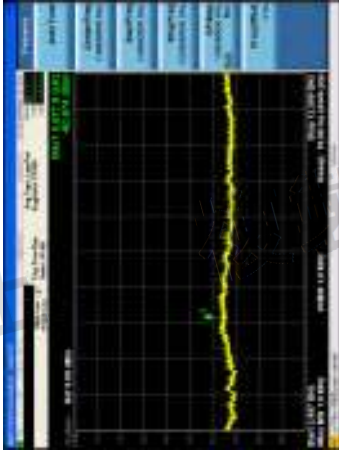


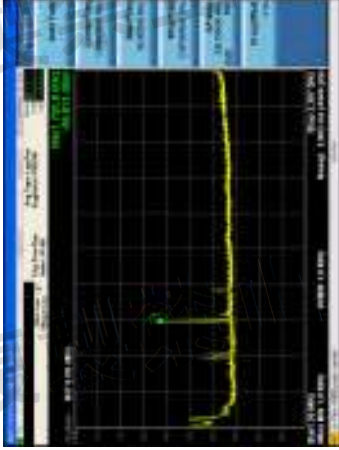


Mode 1 _ Normal Voltage _ TX0 _ 2387-2400 MHz	
2412 MHz	
2442 MHz	
2472 MHz	

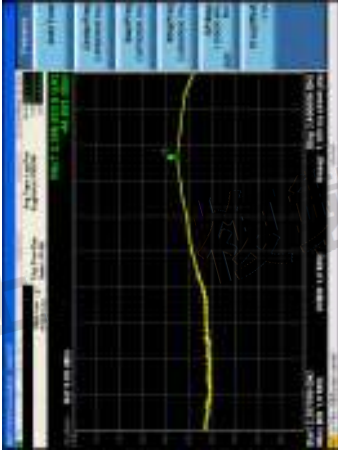
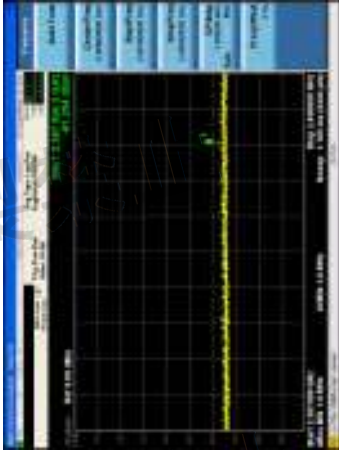
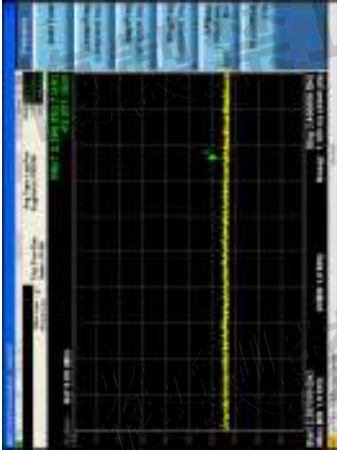


Mode 1 _ Normal Voltage _ TX0 _ 2483.5-2496.5 MHz	
2412 MHz	
2442 MHz	
2472 MHz	

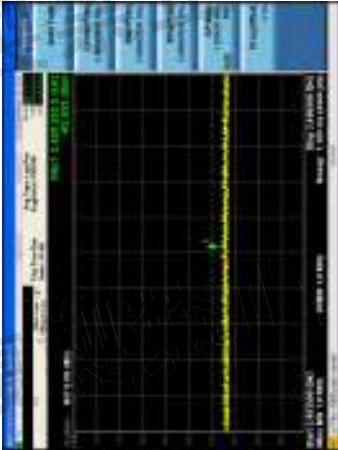
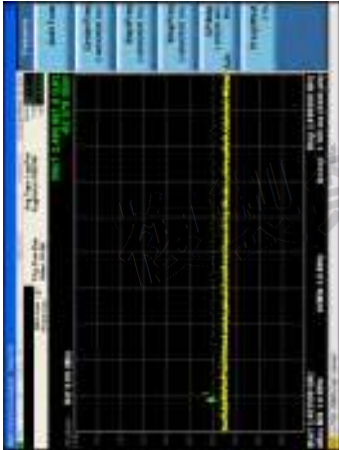
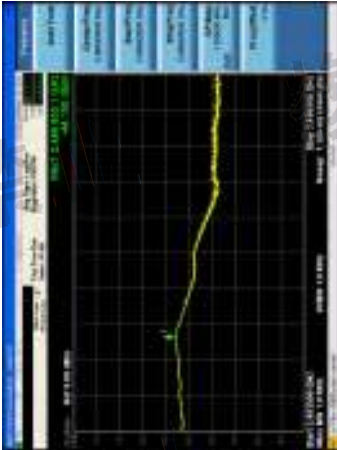
<p>Mode 1 _ Normal Voltage _ TX0_ 2496.5 - 12.5 GHz</p>	
<p>2412 MHz</p>	
<p>2442 MHz</p>	
<p>2472 MHz</p>	

<p>Mode 1 _ Normal Voltage _ TX1_ Under 2387 MHz</p>	
<p>2412 MHz</p>	
<p>2442 MHz</p>	
<p>2472 MHz</p>	

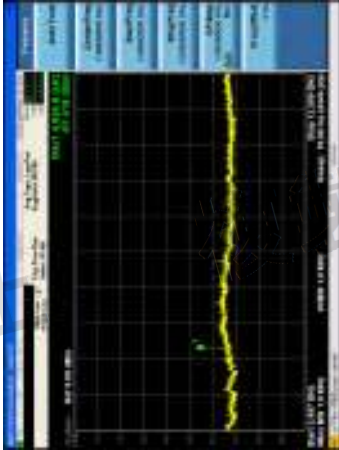
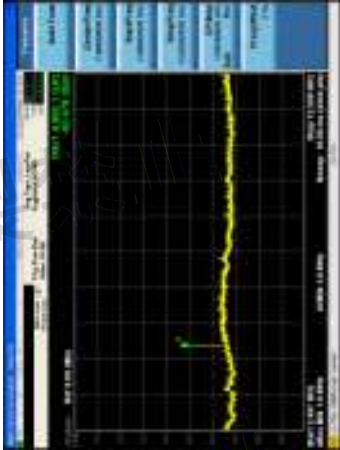
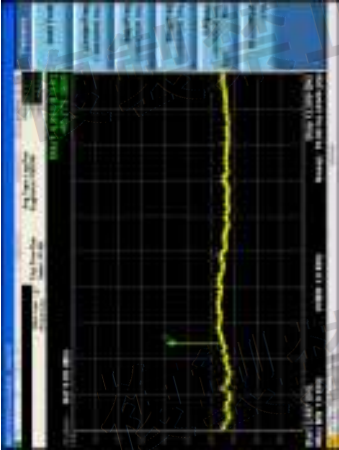


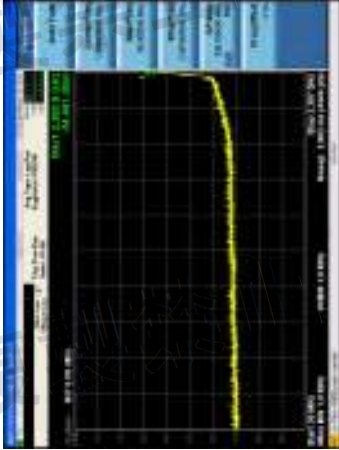
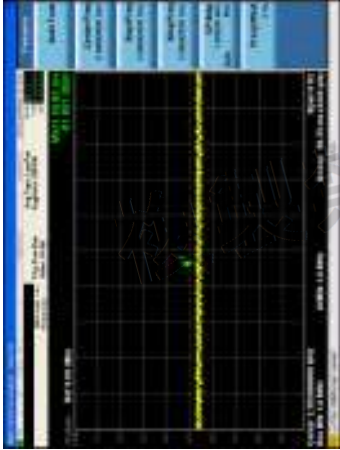
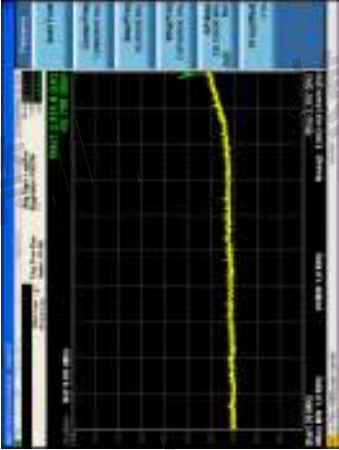
Mode 1 _ Normal Voltage _ TX1 _ 2387-2400 MHz		
	2412 MHz	
		
	2442 MHz	
		
	2472 MHz	



Mode 1 _ Normal Voltage _ TX1 _ 2483.5-2496.5 MHz		
	2412 MHz	
		
	2442 MHz	
		
	2472 MHz	

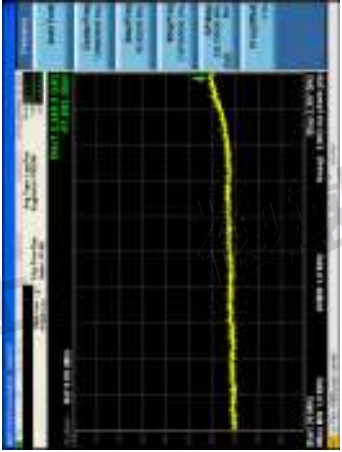


Mode 1_ Normal Voltage_ TX1_ 2496.5 - 12.5 GHz		
	2412 MHz	
		
	2442 MHz	
		
	2472 MHz	

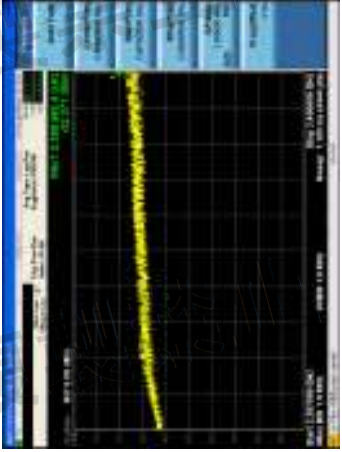
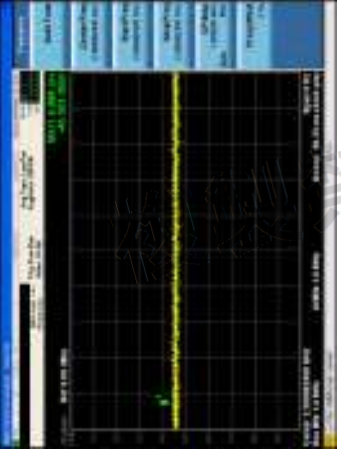
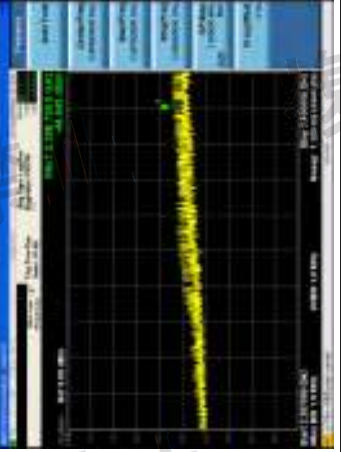
Mode 2_ Normal Voltage_ TX0_ Under 2387 MHz		
	2412 MHz	
		
	2412 MHz	
		
	2442 MHz	





Mode 2_ Normal Voltage_ TX0_ Under 2387 MHz	
2472 MHz	



Mode 2_ Normal Voltage_ TX0_ 2387-2400 MHz	
2412 MHz	
	
2412 MHz	
	
2442 MHz	

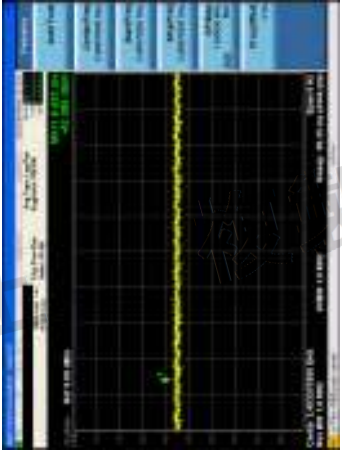


Mode 2_ Normal Voltage_ TX0_ 2387-2400 MHz	
2472 MHz	

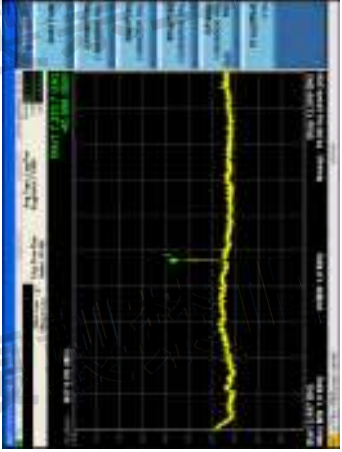
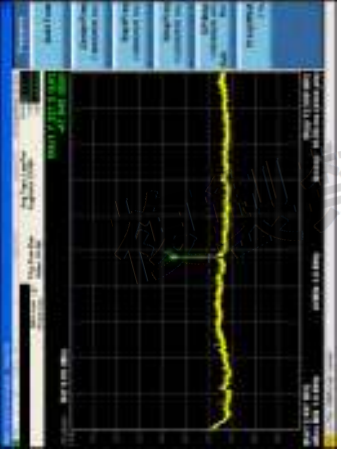
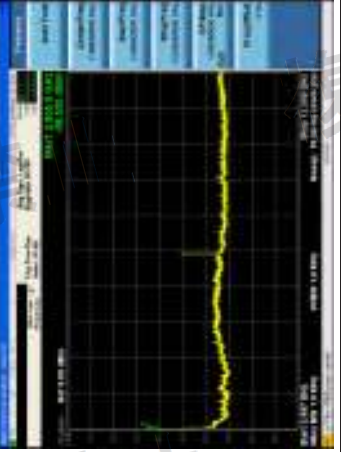


Mode 2_ Normal Voltage_ TX0_ 2483.5-2496.5 MHz	
2412 MHz	
2442 MHz	
2472 MHz	

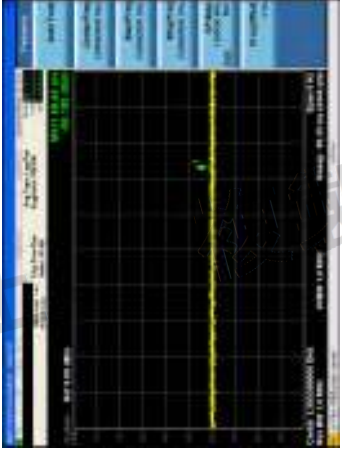


Mode 2_ Normal Voltage_ TX0_ 2483.5-2496.5 MHz	
2472 MHz	

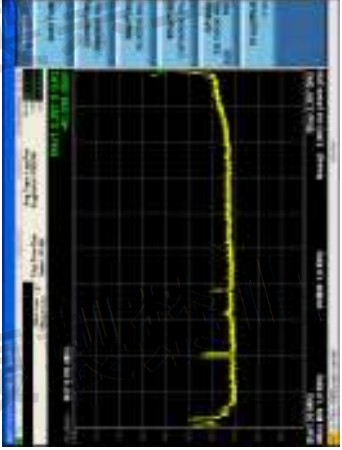
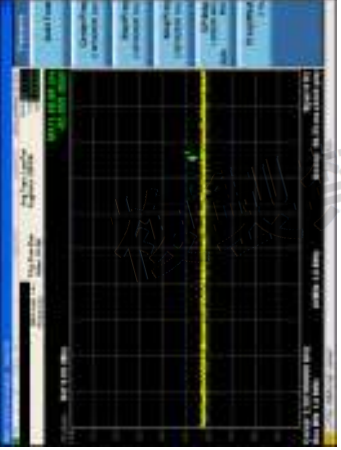
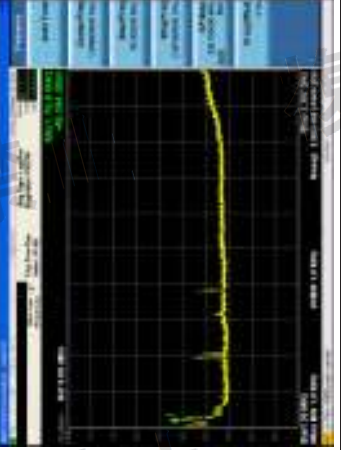


Mode 2_ Normal Voltage_ TX0_ 2496.5 - 12.5 GHz			
2412 MHz	2442 MHz	2472 MHz	

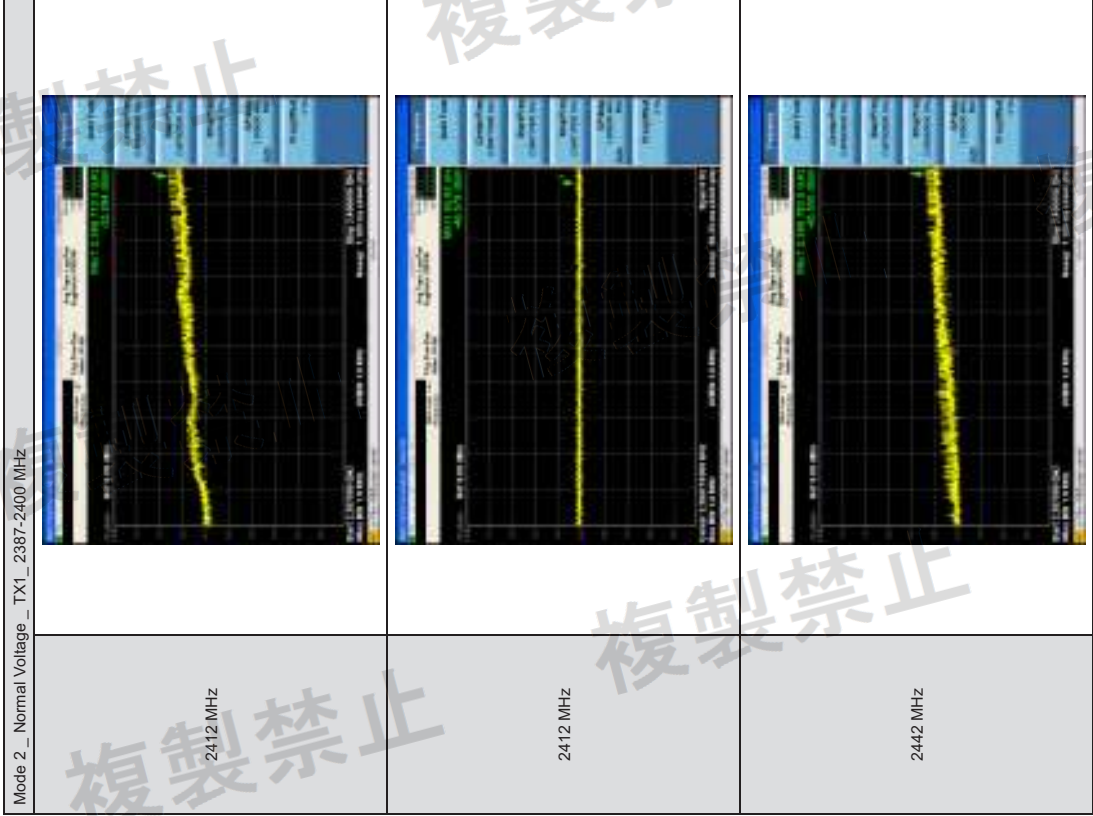
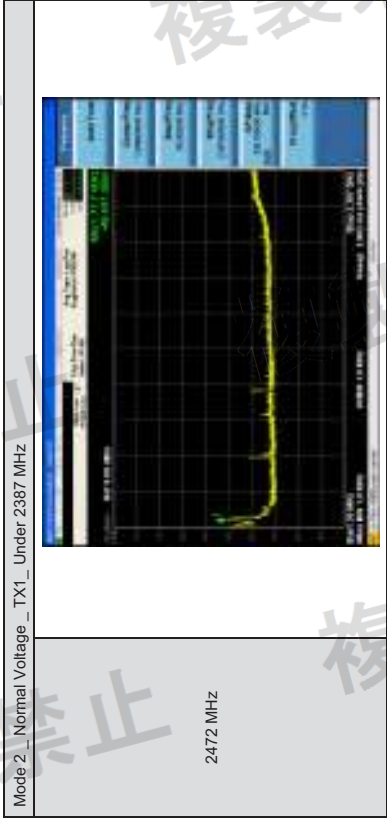


Mode 2_ Normal Voltage_ TX0_ 2496.5 - 12.5 GHz	
2472 MHz	

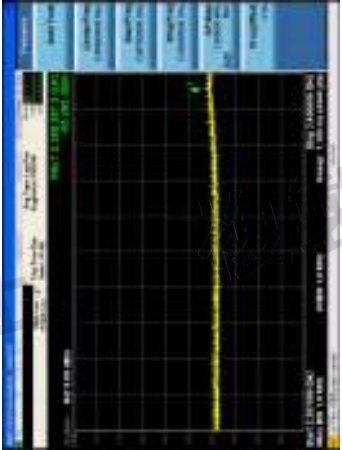


Mode 2_ Normal Voltage_ TX1_ Under 2387 MHz	
2412 MHz	
	
2412 MHz	
	
2442 MHz	

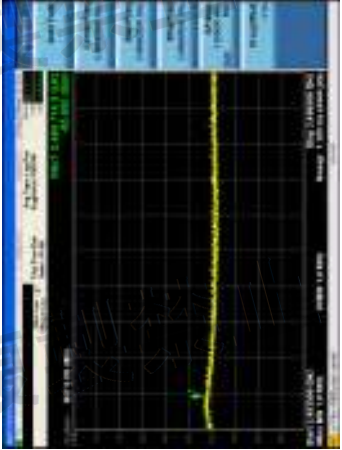
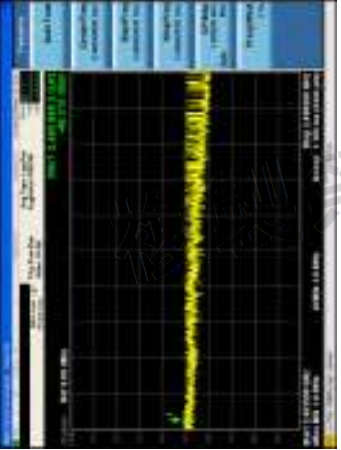
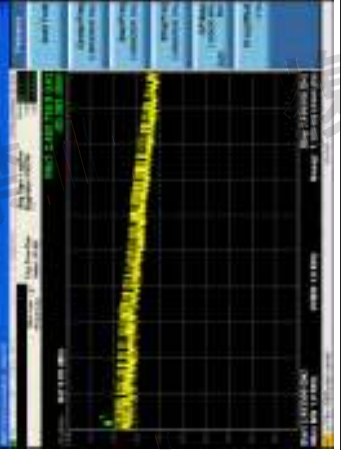




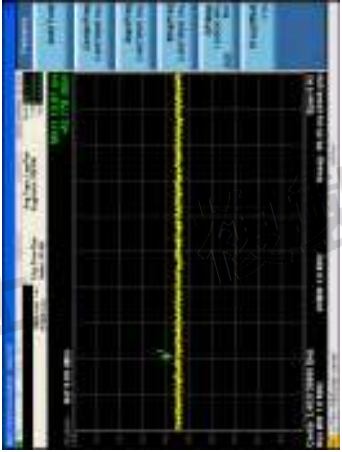


Mode 2_ Normal Voltage_ TX1_ 2387-2400 MHz	
2472 MHz	

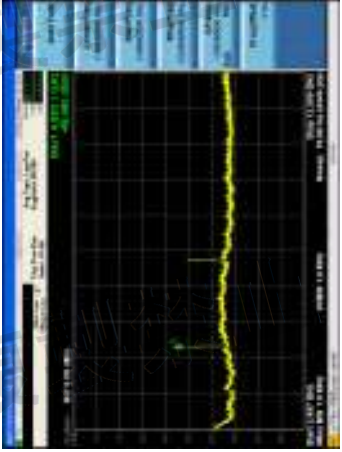
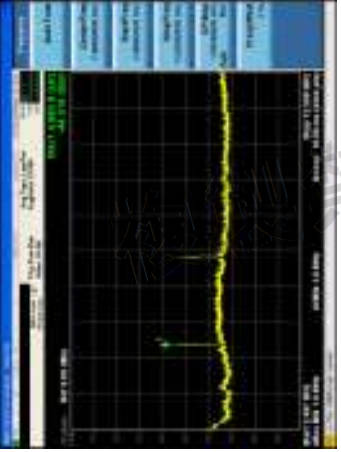
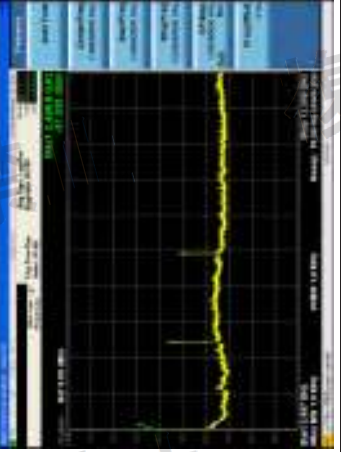


Mode 2_ Normal Voltage_ TX1_ 2483.5-2496.5 MHz			
2412 MHz	2442 MHz	2472 MHz	

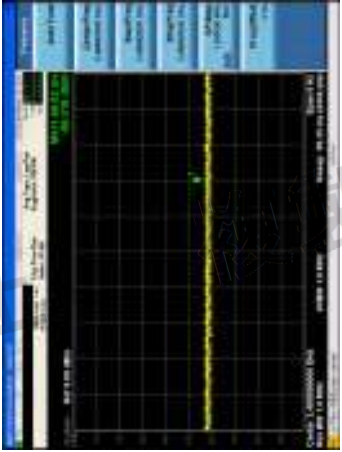


Mode 2_ Normal Voltage_ TX1_ 2483.5-2496.5 MHz	
2472 MHz	

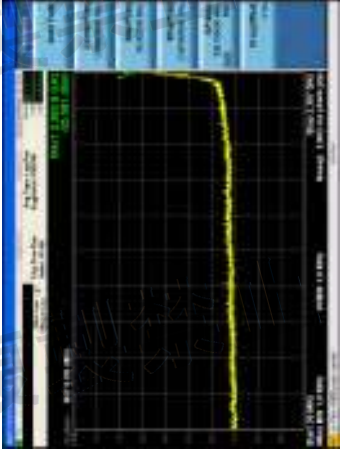
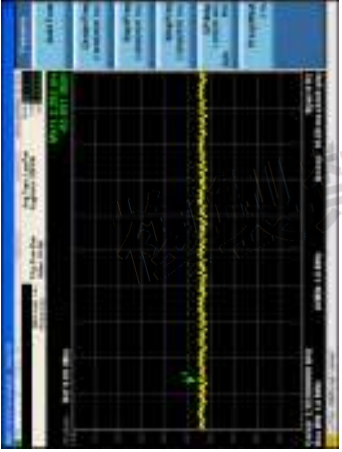
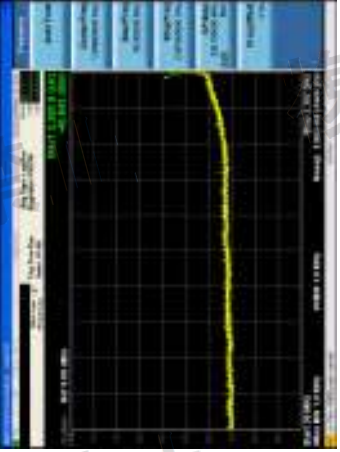


Mode 2_ Normal Voltage_ TX1_ 2496.5 - 12.5 GHz			
2412 MHz	2442 MHz	2472 MHz	



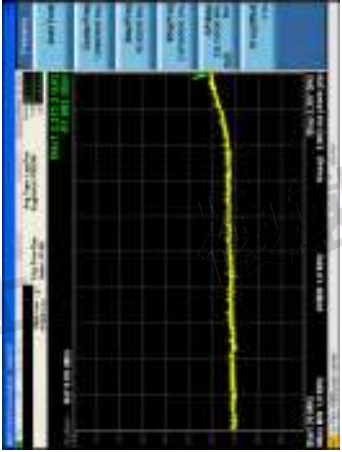
Mode 2 _ Normal Voltage _ TX1_ 2496.5 - 12.5 GHz	
2472 MHz	



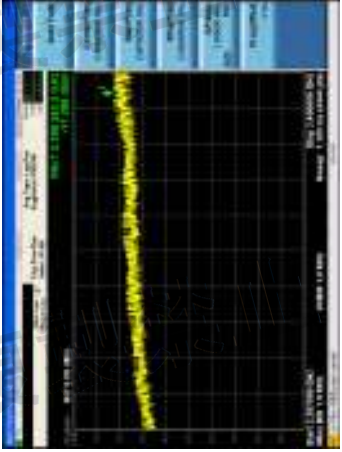
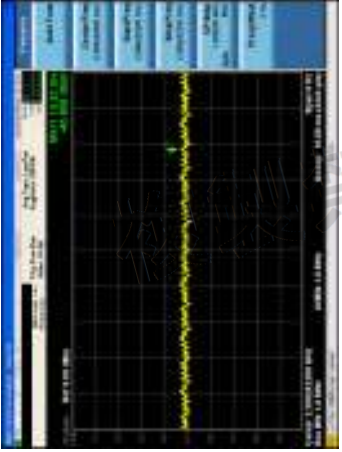
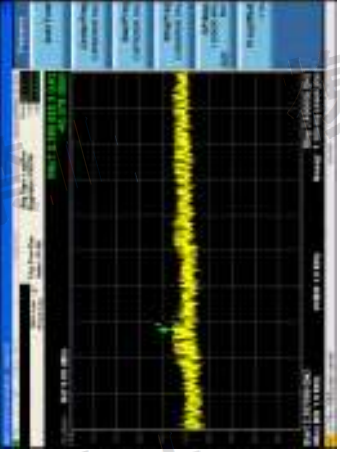
Mode 3 _ Normal Voltage _ TX0_ Under 2387 MHz	
2412 MHz	
	
2442 MHz	

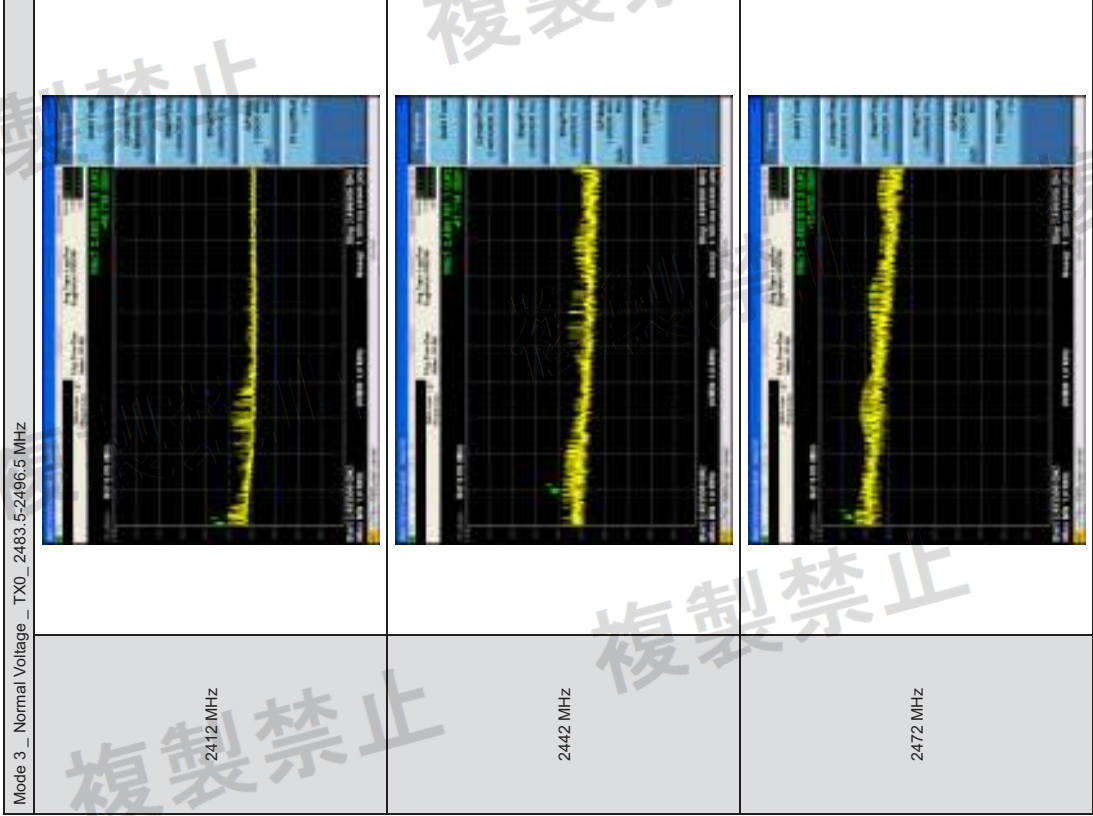
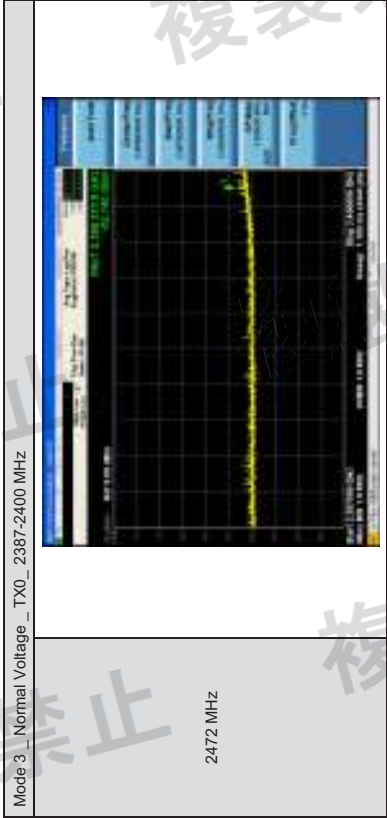




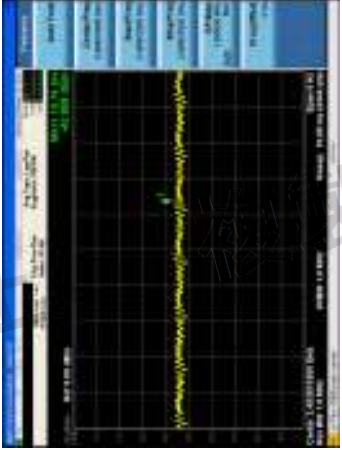
Mode 3 _ Normal Voltage _ TX0_ Under 2387 MHz	
2472 MHz	



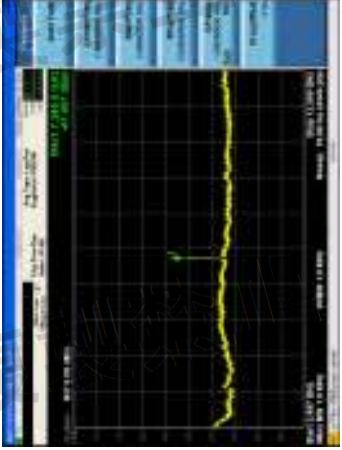
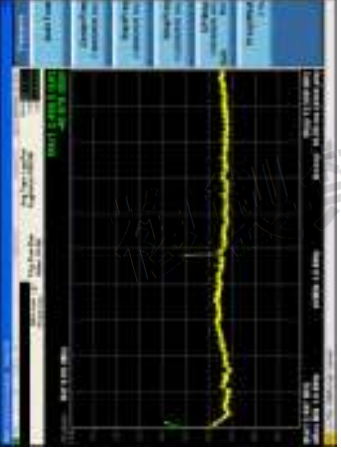
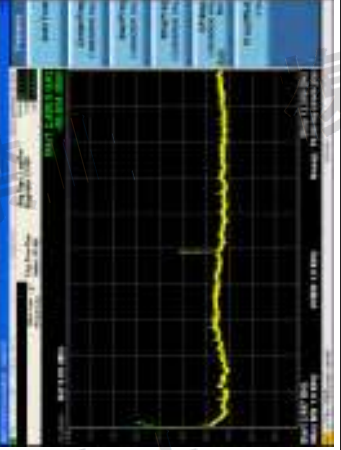
Mode 3 _ Normal Voltage _ TX0_ 2387-2400 MHz	
2412 MHz	
	
2442 MHz	



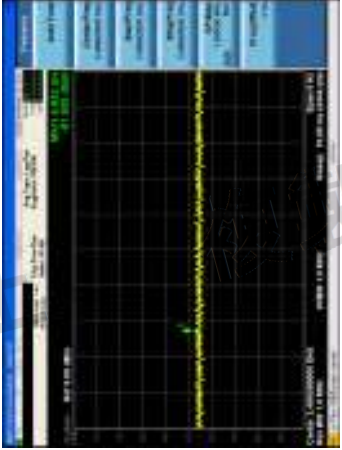


Mode 3 _ Normal Voltage _ TX0_ 2483.5-2496.5 MHz	
2472 MHz	

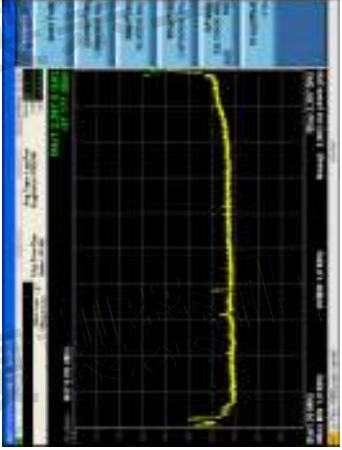
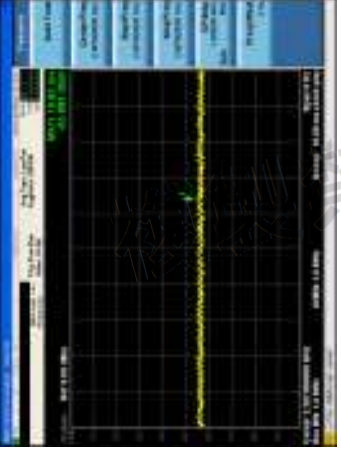
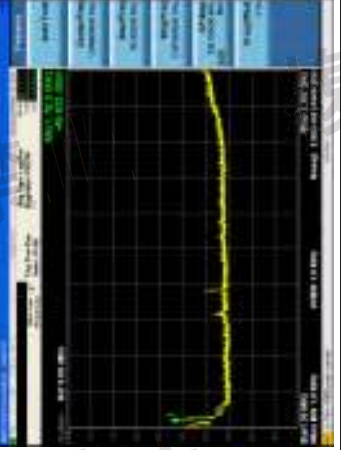


Mode 3 _ Normal Voltage _ TX0_ 2496.5 - 12.5 GHz			
2412 MHz	2442 MHz	2472 MHz	

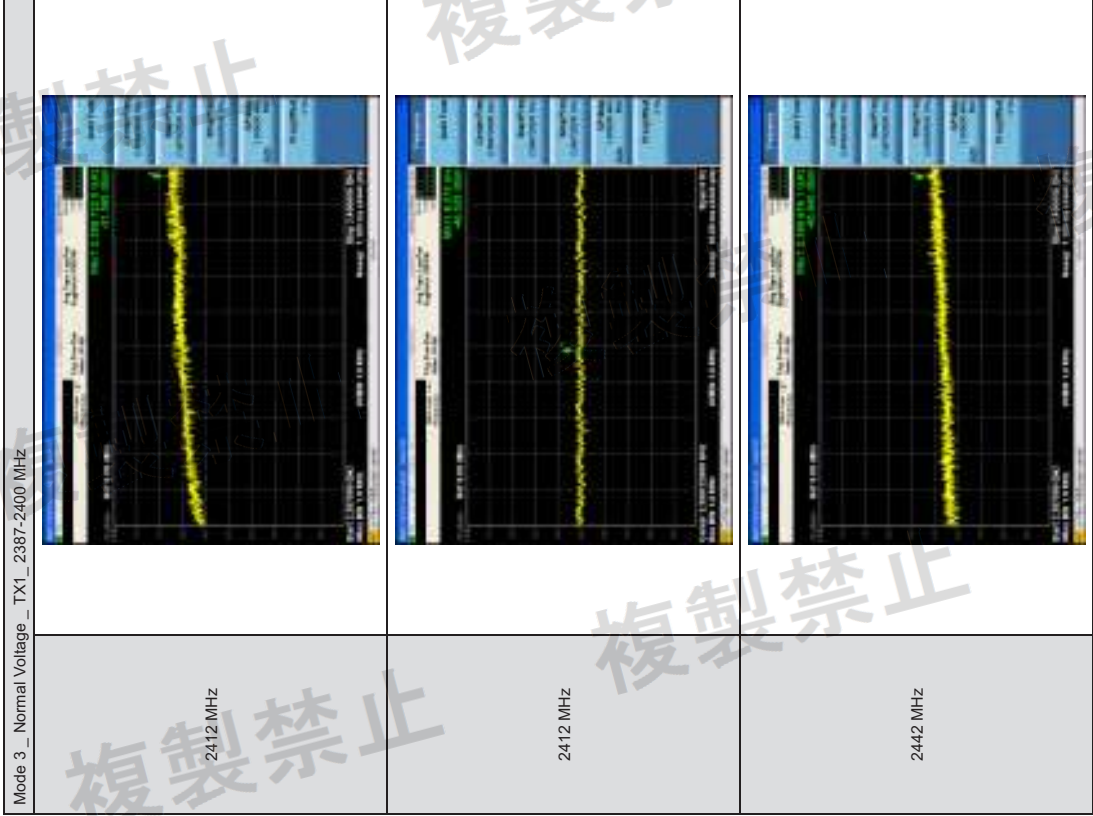
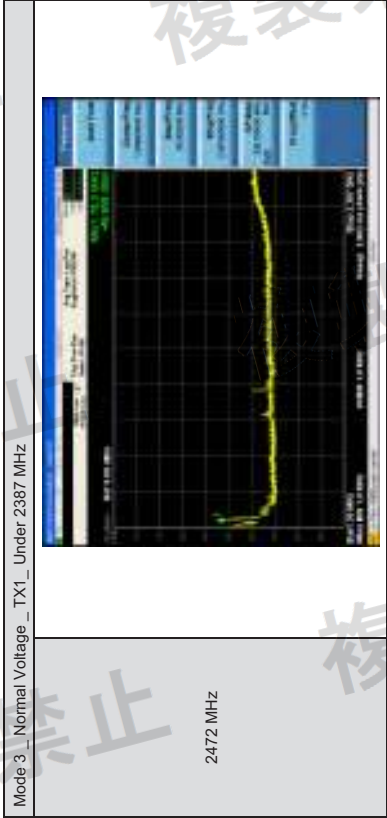


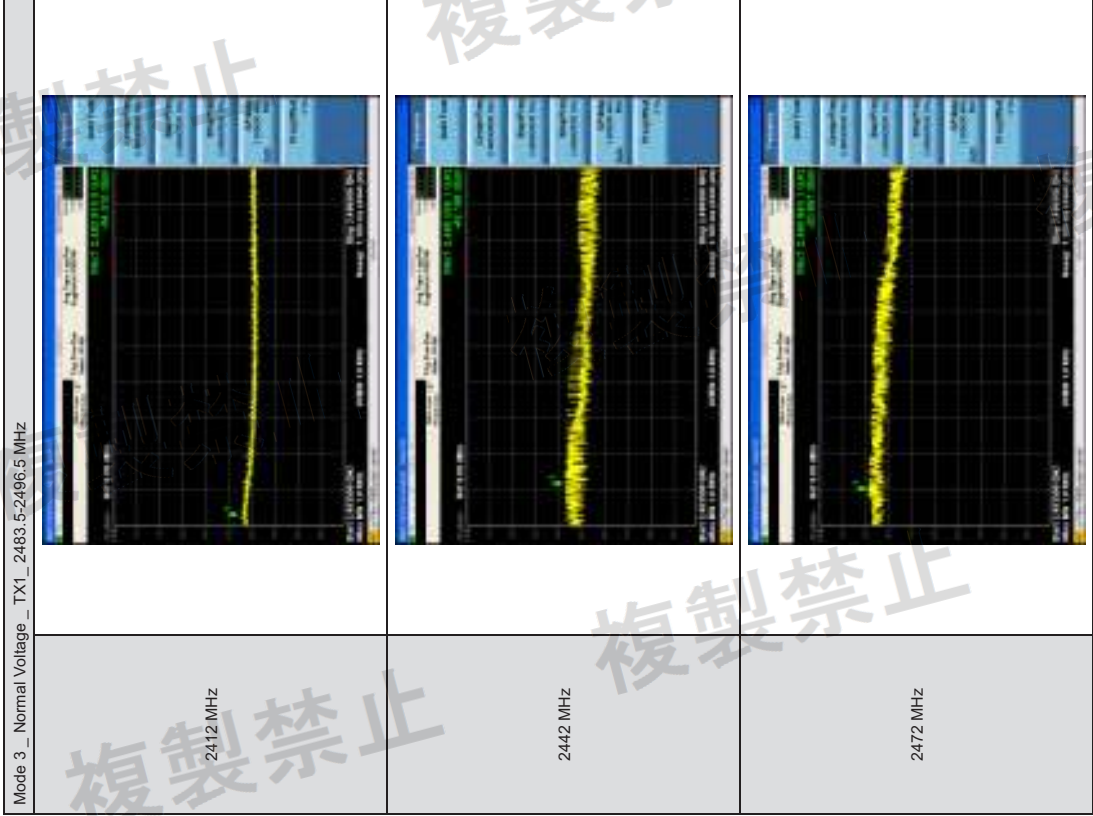
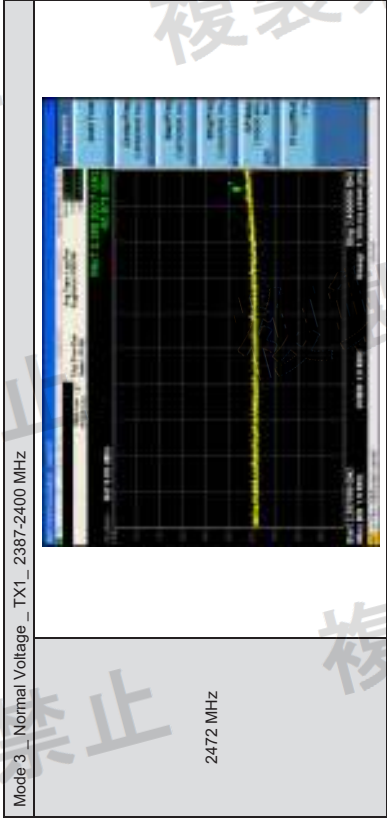
Mode 3 _ Normal Voltage _ TX0_ 2496.5 - 12.5 GHz	
2472 MHz	



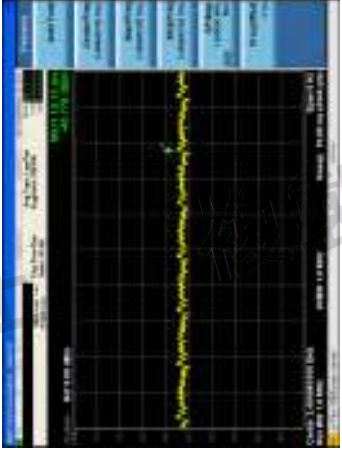
Mode 3 _ Normal Voltage _ TX1_ Under 2387 MHz	
2412 MHz	
	
2412 MHz	
	
2442 MHz	



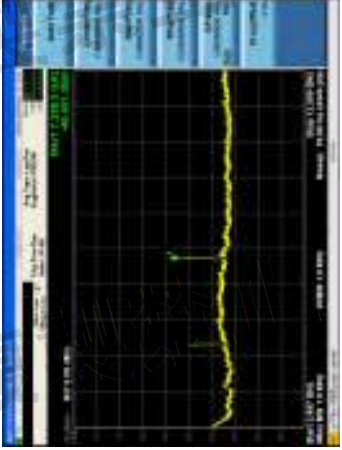
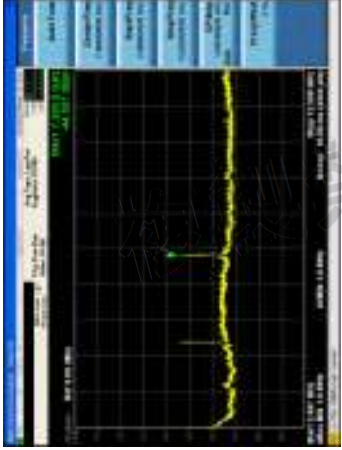
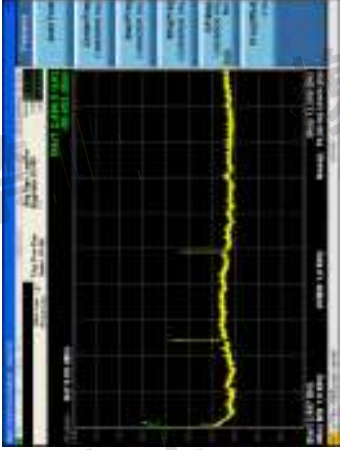




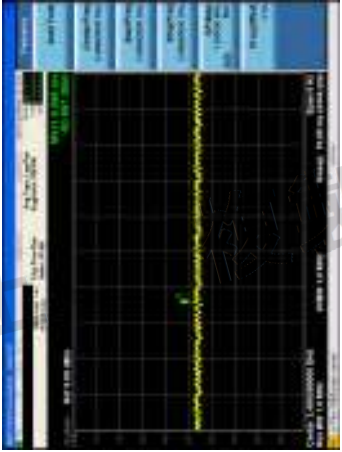


Mode 3 _ Normal Voltage _ TX1_ 2483.5-2496.5 MHz	
2472 MHz	

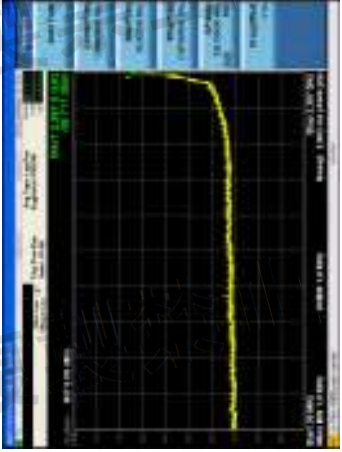
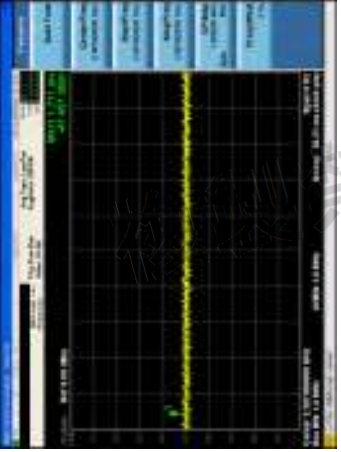
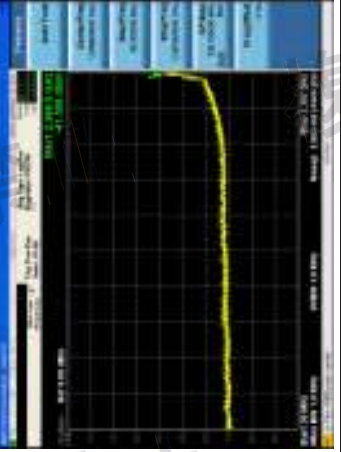


Mode 3 _ Normal Voltage _ TX1_ 2496.5 - 12.5 GHz	
2412 MHz	
2442 MHz	
2472 MHz	

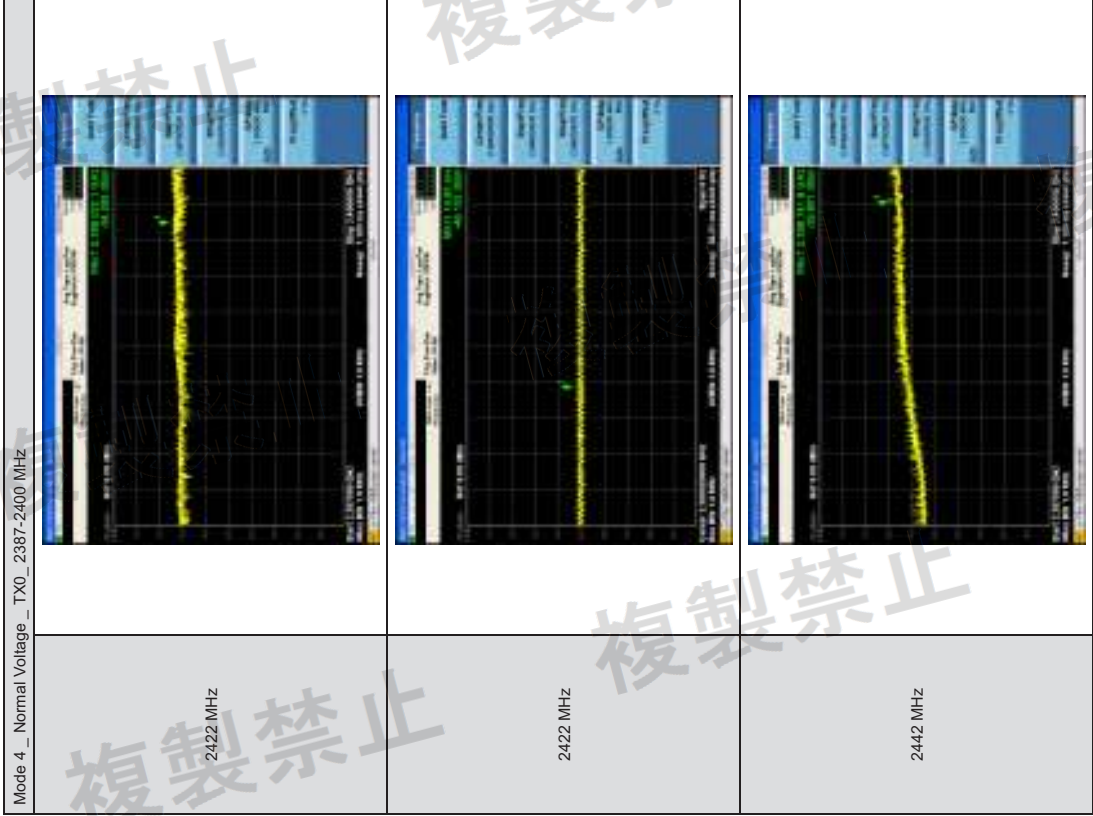
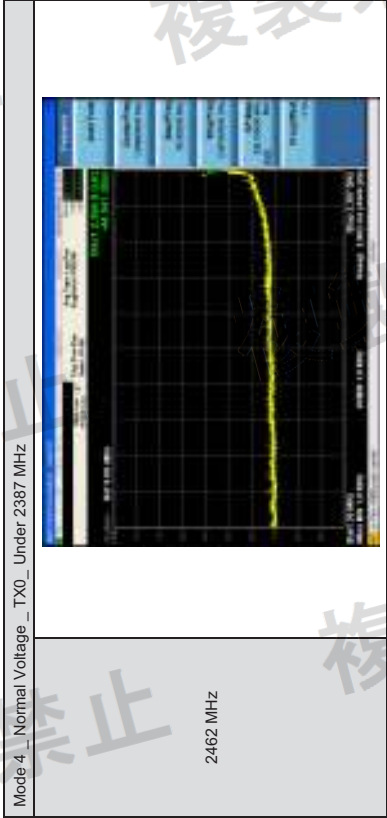


Mode 3 _ Normal Voltage _ TX1_ 2496.5 - 12.5 GHz	
2472 MHz	

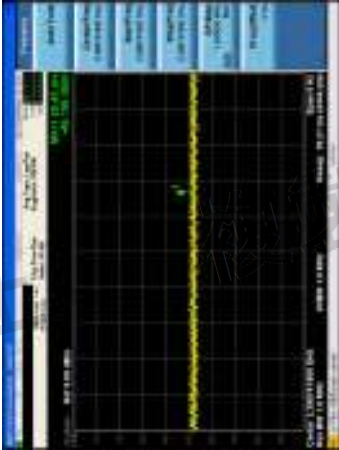
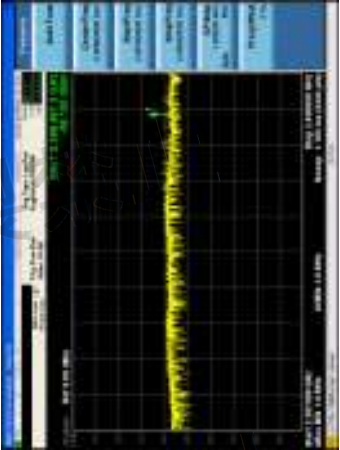


Mode 4 _ Normal Voltage _ TX0_ Under 2387 MHz	
2422 MHz	
	
2422 MHz	
	
2442 MHz	

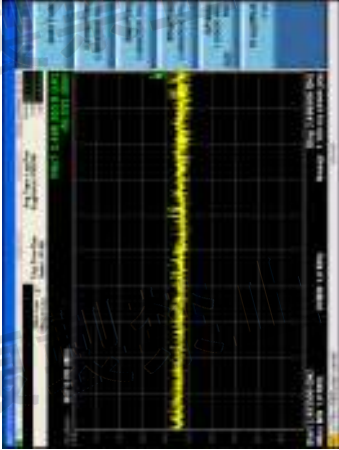
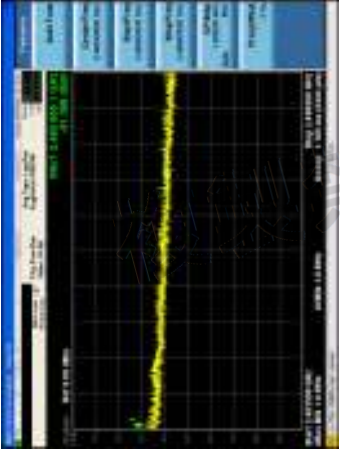
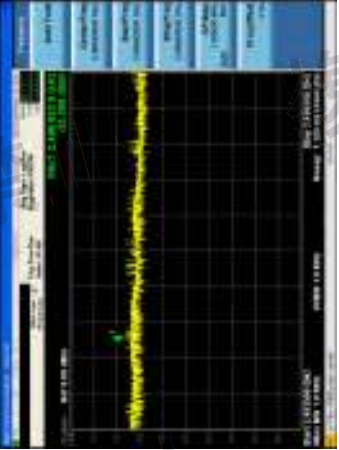




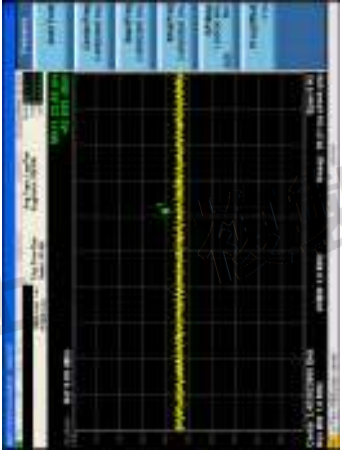


Mode 4 _ Normal Voltage _ TX0_ 2387-2400 MHz	
2442 MHz	
2462 MHz	

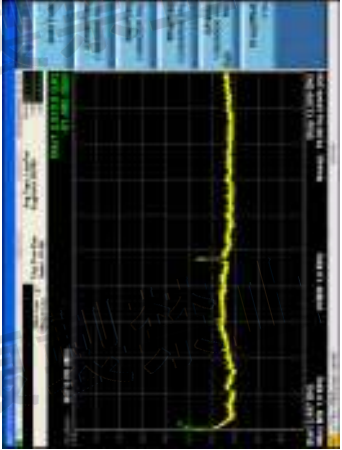
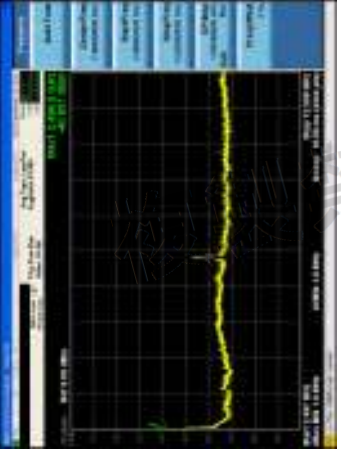
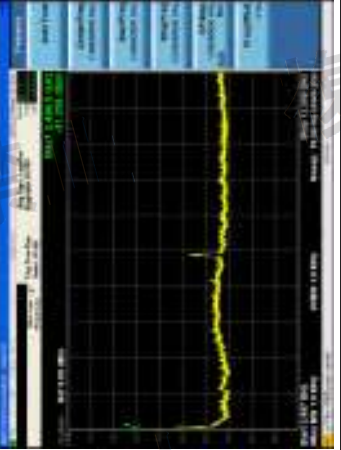


Mode 4 _ Normal Voltage _ TX0_ 2483.5-2496.5 MHz	
2422 MHz	
2442 MHz	
2462 MHz	

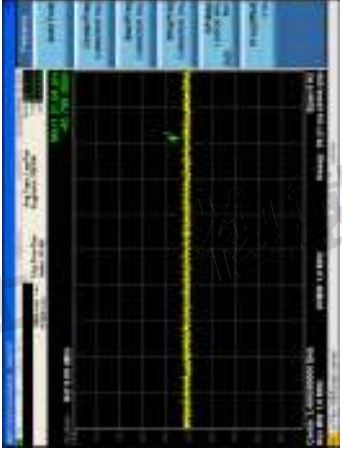


Mode 4 _ Normal Voltage _ TX0_ 2483.5-2496.5 MHz	
2462 MHz	

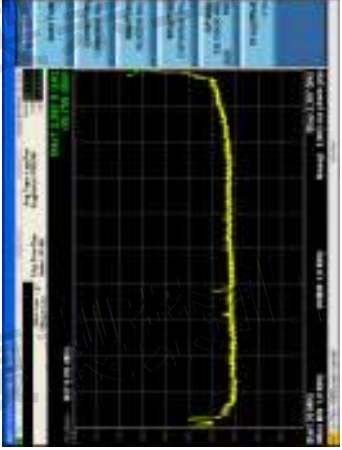
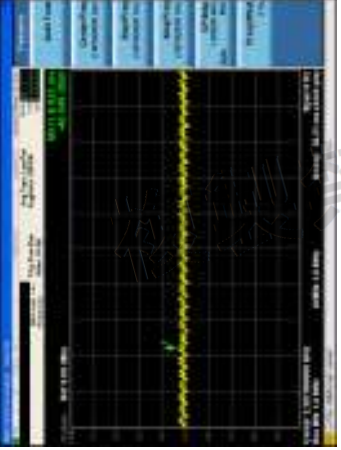
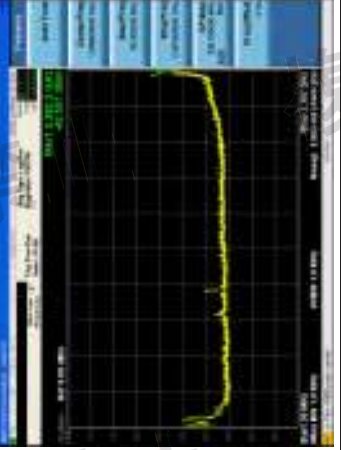


Mode 4 _ Normal Voltage _ TX0_ 2496.5 - 12.5 GHz			
2422 MHz	2442 MHz	2462 MHz	

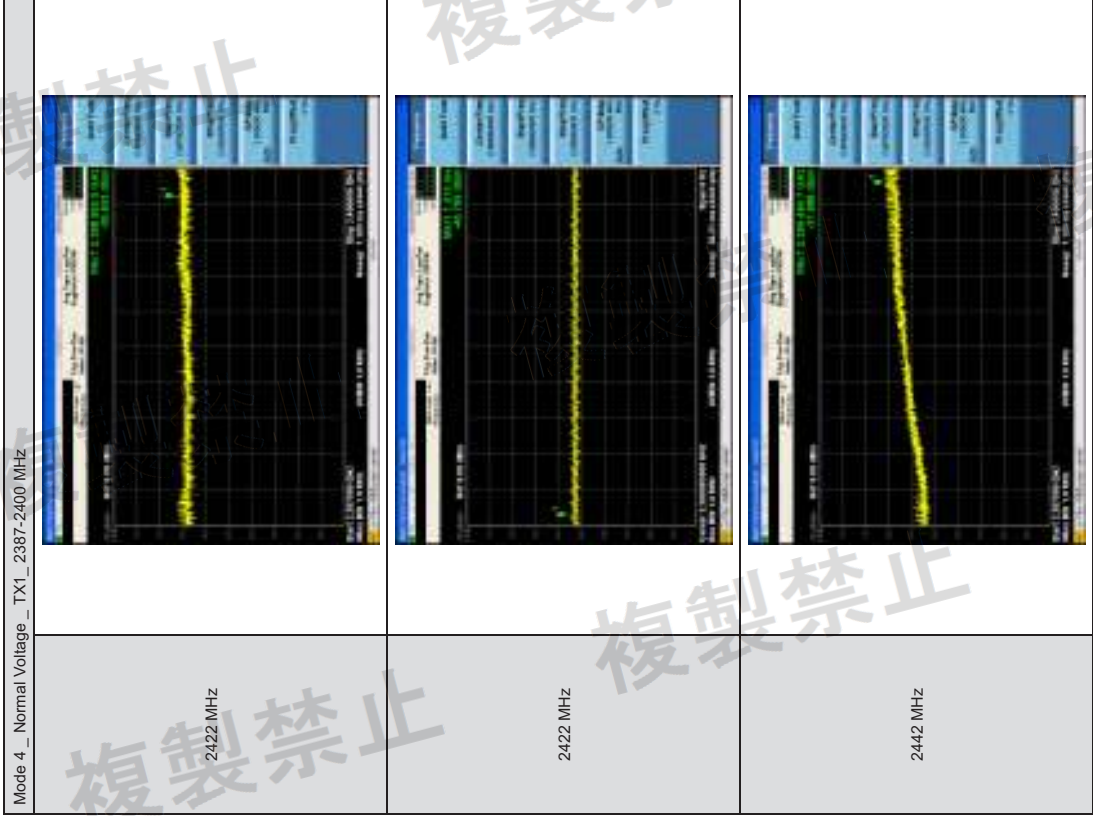
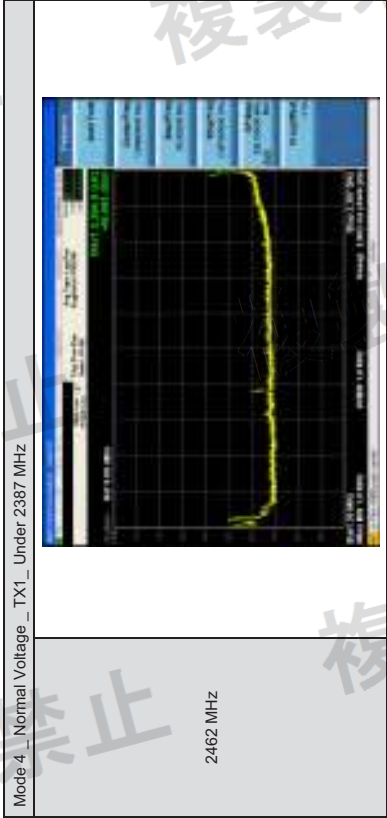


Mode 4 _ Normal Voltage _ TX0_ 2496.5 - 12.5 GHz	
2462 MHz	

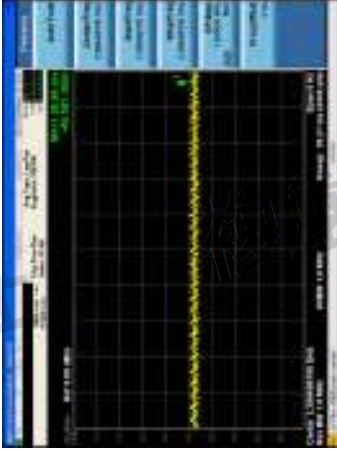
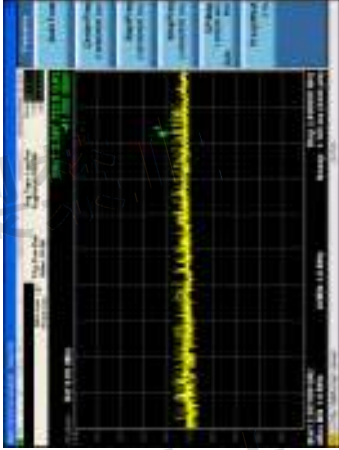


Mode 4 _ Normal Voltage _ TX1_ Under 2387 MHz	
2422 MHz	
	
2442 MHz	
	
2442 MHz	

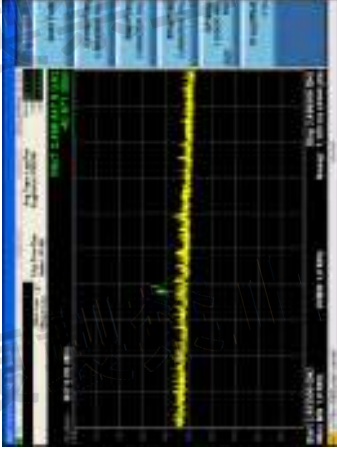
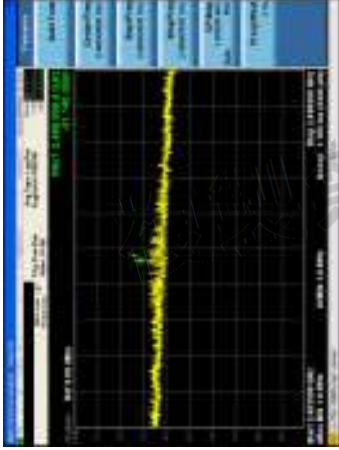
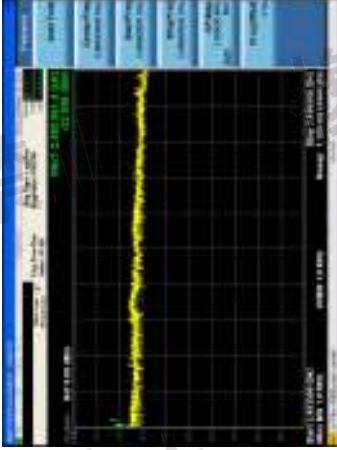


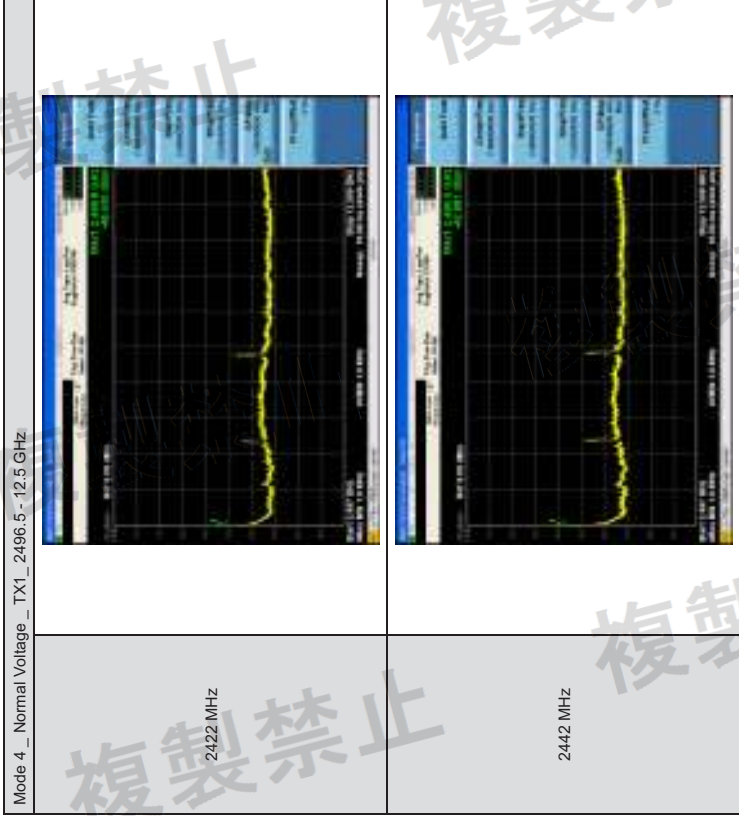
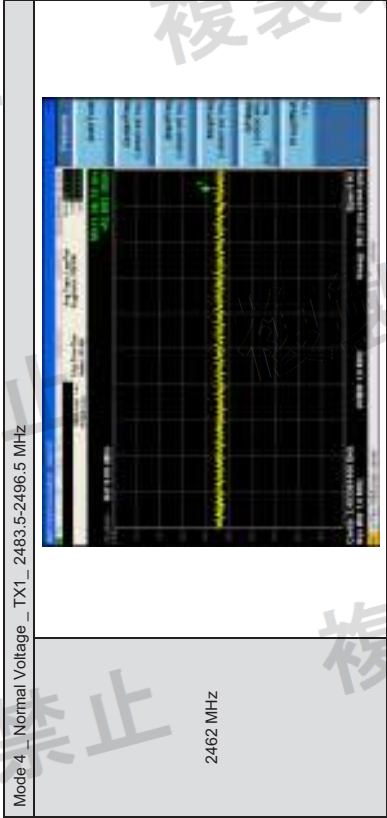




Mode 4 _ Normal Voltage _ TX1_ 2387-2400 MHz	
2442 MHz	
	
2462 MHz	



Mode 4 _ Normal Voltage _ TX1_ 2483.5-2496.5 MHz	
2422 MHz	
	
2442 MHz	
	
2462 MHz	





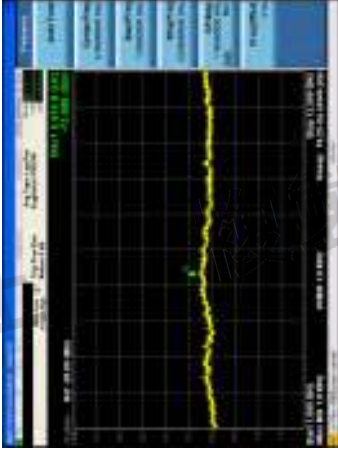
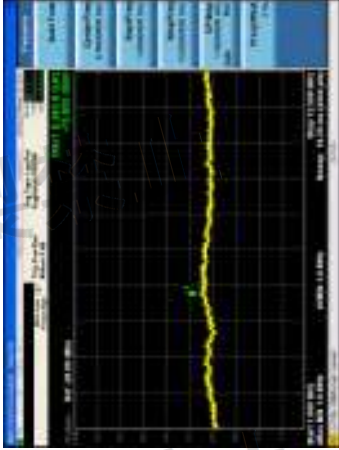
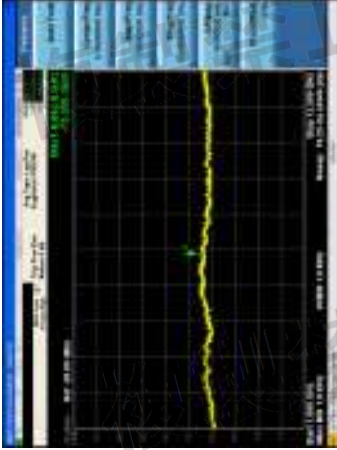




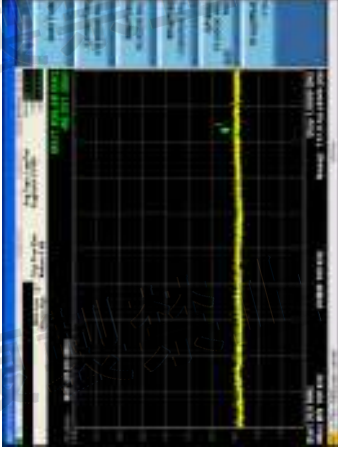
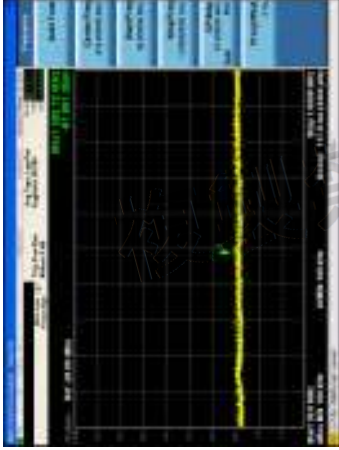
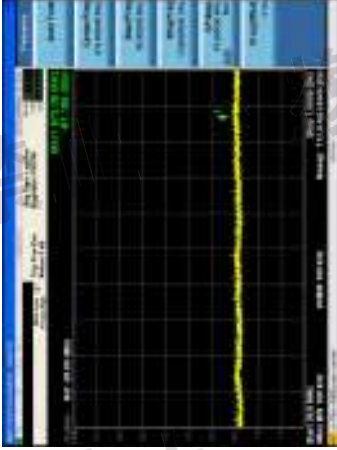
Test Mode	Mode 3									
Test Voltage	5 Vdc					Normal Voltage				
Measurement Frequency	MHz					2412 2442 2472				
Channel Number	Ch.					1 7 13				
RX0	Under 1 GHz	nW	0.019	0.020	0.020	0.020	0.020	0.020	PASS	Notes
		MHz	850.890	776.880	867.700	867.700	867.700	867.700	PASS	Notes
		nW	0.659	0.544	0.567	0.567	0.567	0.567	PASS	Notes
		MHz	6787.500	5296.600	6016.200	6016.200	6016.200	6016.200	PASS	Notes
RX1	Under 1 GHz	nW	0.021	0.019	0.019	0.019	0.019	0.019	PASS	Notes
		MHz	931.670	950.880	939.530	939.530	939.530	939.530	PASS	Notes
		nW	0.483	0.528	0.471	0.471	0.471	0.471	PASS	Notes
		MHz	5436.400	5335.500	5203.500	5203.500	5203.500	5203.500	PASS	Notes
RX0+1	Under 1 GHz	nW	0.040	0.038	0.039	0.039	0.039	0.039	PASS	Notes
	1 - 12.5 GHz	nW	1.142	1.072	1.038	1.038	1.038	1.038	PASS	Notes
Limit						Under 1 GHz ≤ 4				
						1 - 12.5 GHz ≤ 20				

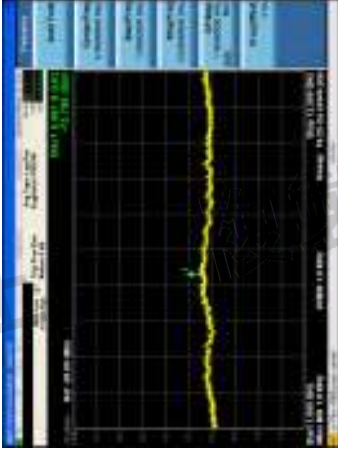
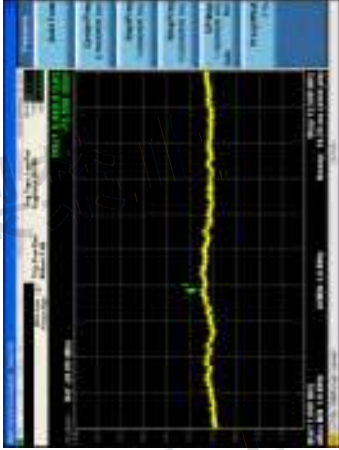
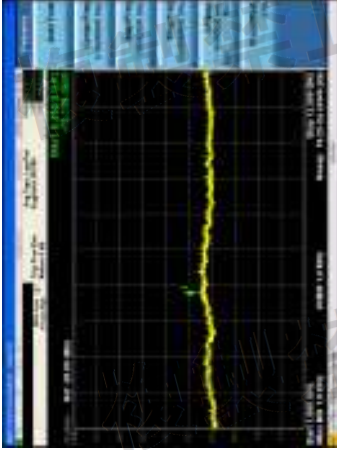
Test Mode	Mode 4									
Test Voltage	5 Vdc					Normal Voltage				
Measurement Frequency	MHz					2422 2442 2462				
Channel Number	Ch.					3 7 11				
RX0+1	Under 1 GHz	nW	0.024	0.021	0.022	0.021	0.022	0.022	PASS	Notes
		MHz	765.090	912.020	903.720	903.720	903.720	903.720	PASS	Notes
		nW	0.635	0.604	0.592	0.592	0.592	0.592	PASS	Notes
		MHz	5439.000	6249.200	5340.600	5340.600	5340.600	5340.600	PASS	Notes
RX0+1	Under 1 GHz	nW	0.021	0.027	0.019	0.019	0.019	0.019	PASS	Notes
		MHz	875.780	861.370	956.120	956.120	956.120	956.120	PASS	Notes
		nW	0.538	0.506	0.585	0.585	0.585	0.585	PASS	Notes
		MHz	5941.100	6011.000	6156.000	6156.000	6156.000	6156.000	PASS	Notes
RX0+1	Under 1 GHz	nW	0.045	0.049	0.041	0.041	0.041	0.041	PASS	Notes
	1 - 12.5 GHz	nW	1.172	1.109	1.177	1.177	1.177	1.177	PASS	Notes
Limit						Under 1 GHz ≤ 4				
						1 - 12.5 GHz ≤ 20				

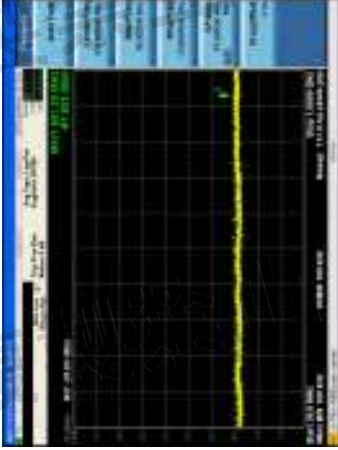
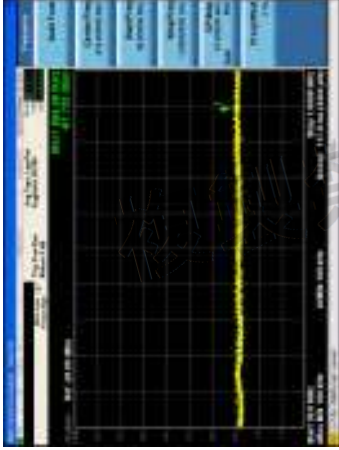
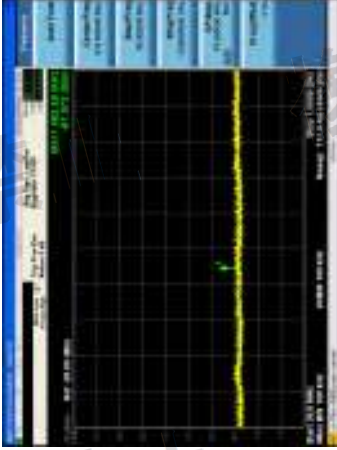


Mode 1 _ Normal Voltage _ RX0_ 1 - 12.5 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

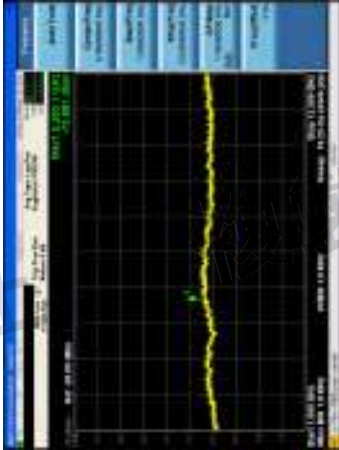
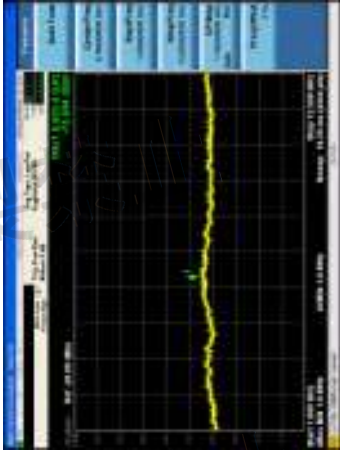
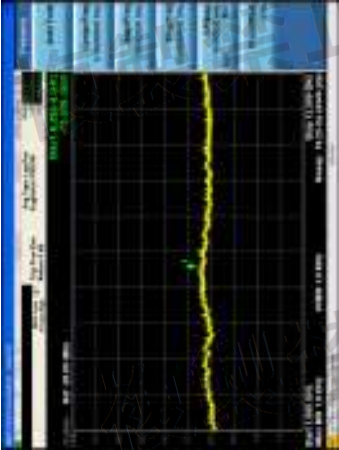


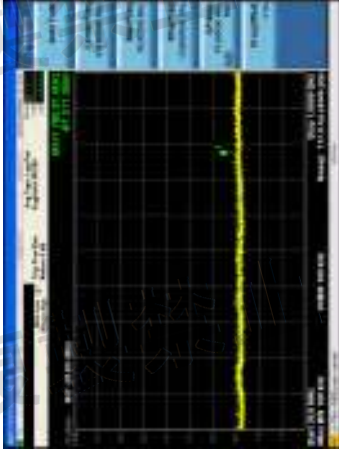
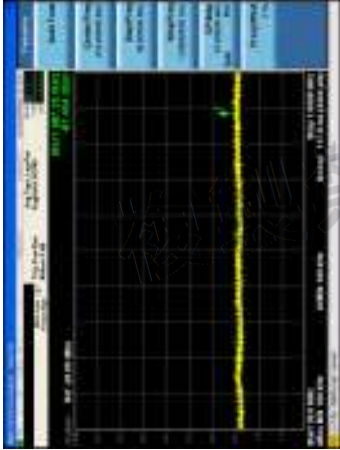
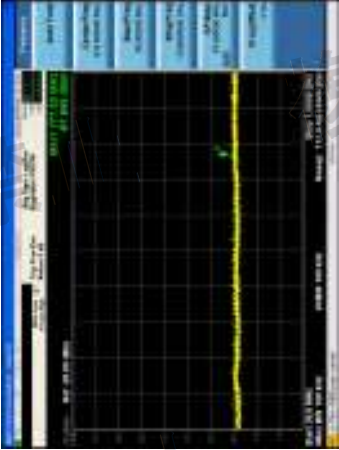
Mode 1 _ Normal Voltage _ RX1_ Under 1 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

Mode 1_Normal Voltage_RX1_1 - 12.5 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

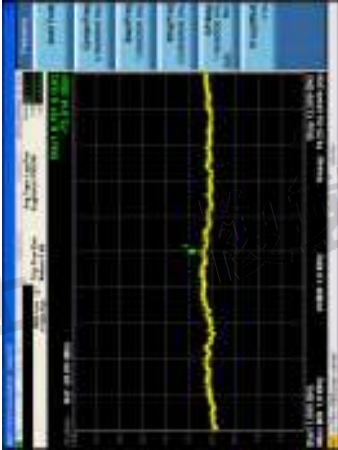
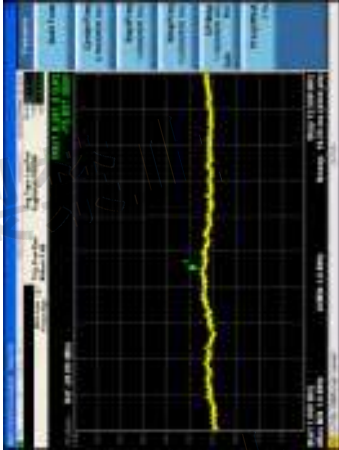
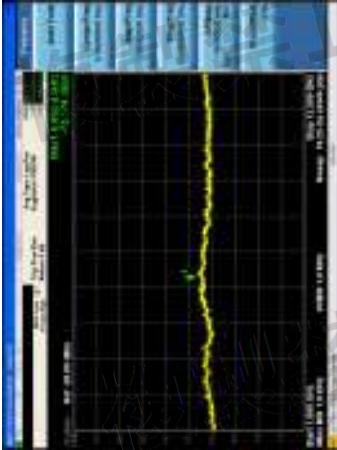
Mode 2_Normal Voltage_RX0_Under 1 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

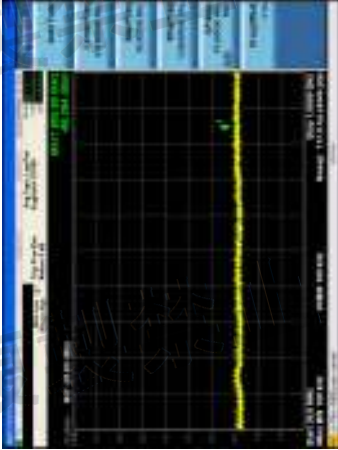
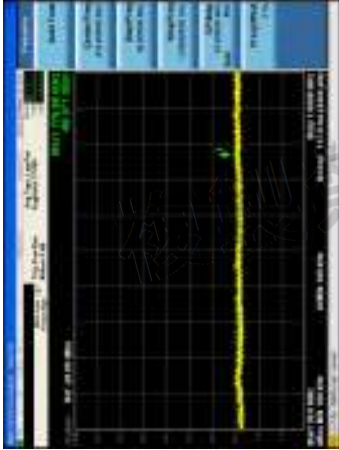
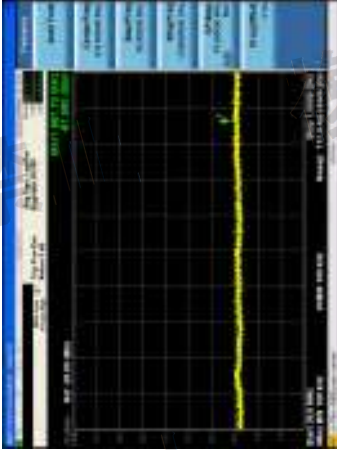


Mode 2_ Normal Voltage_ RX0_ 1 - 12.5 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

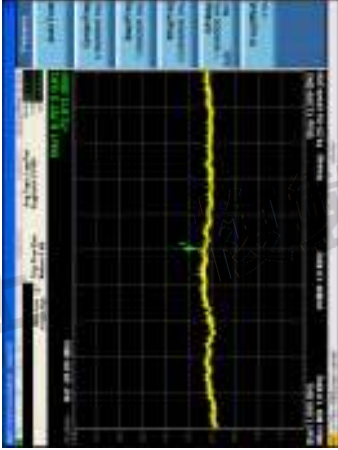
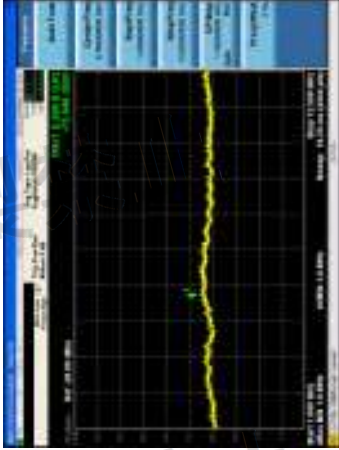
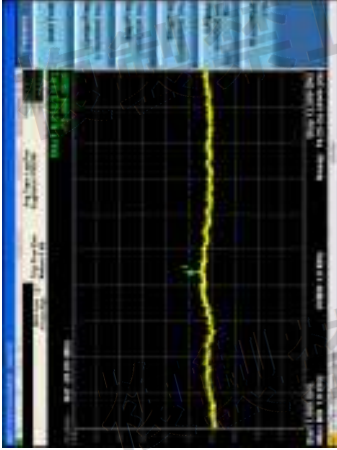
Mode 2_ Normal Voltage_ RX1_ Under 1 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	



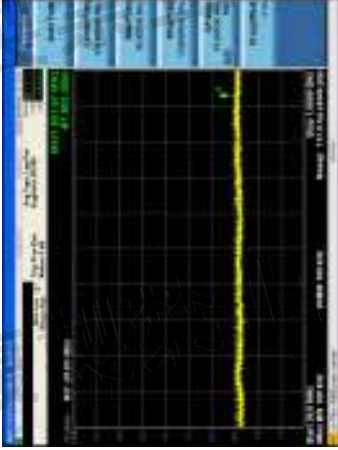
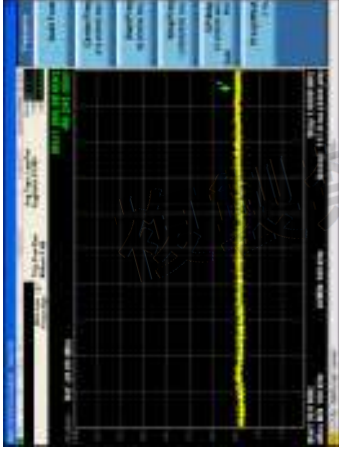
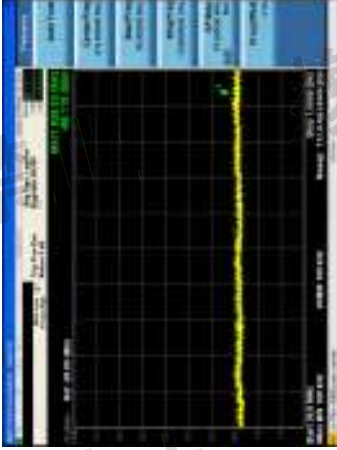
Mode 2_ Normal Voltage_ RX1_ 1 - 12.5 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

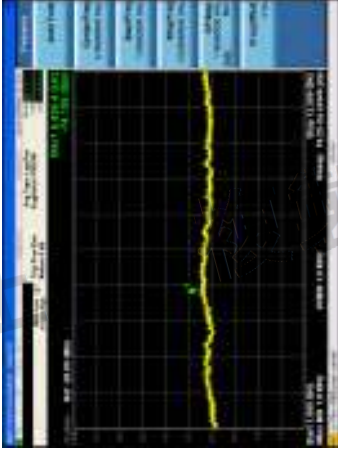
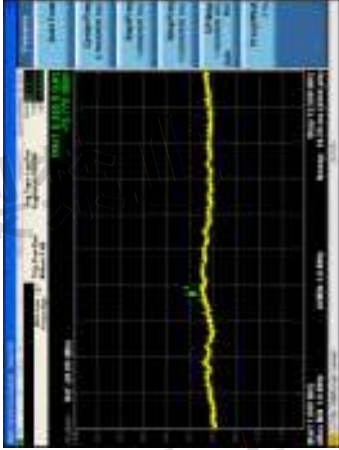
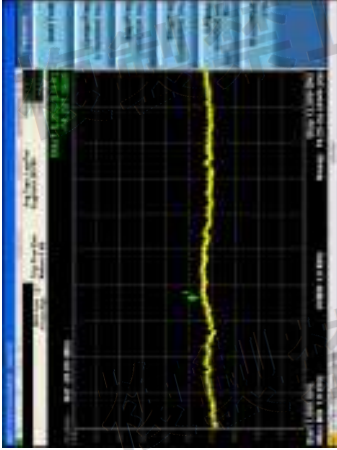
Mode 3_ Normal Voltage_ RX0_ Under 1 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

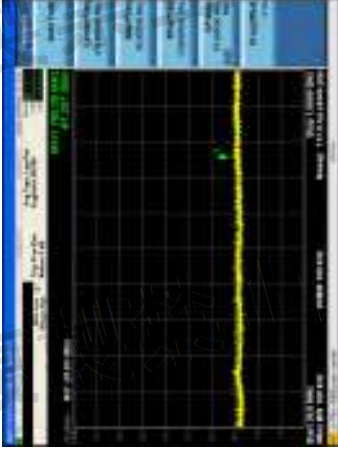
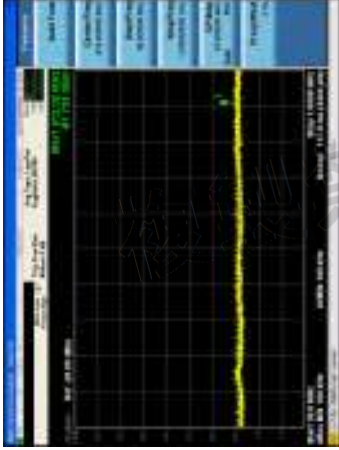
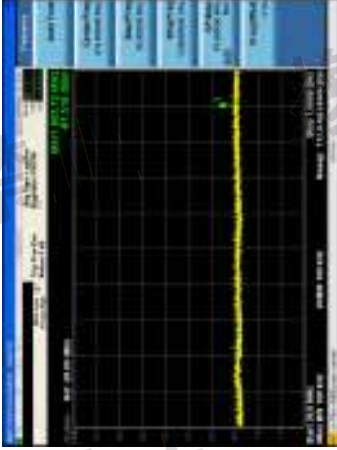


Mode 3 _ Normal Voltage _ RX0_ 1 - 12.5 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	



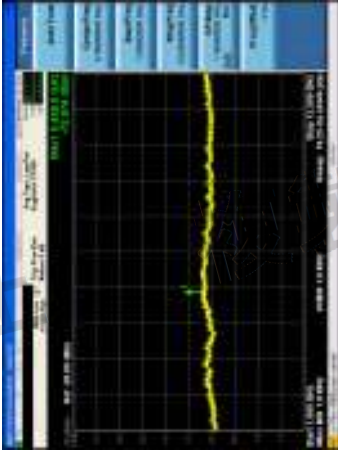
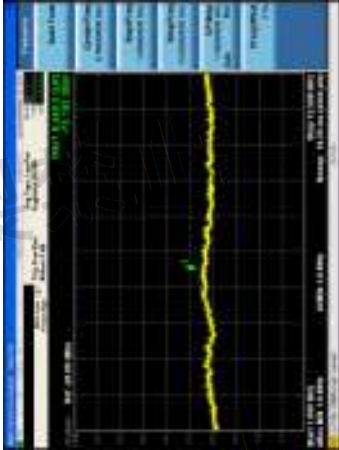
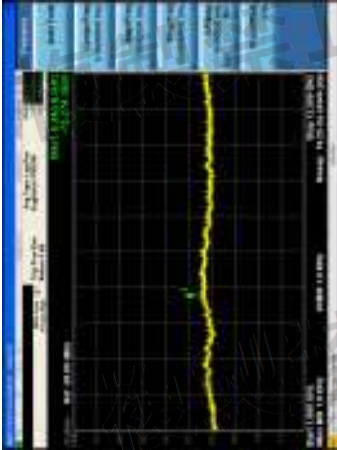
Mode 3 _ Normal Voltage _ RX1_ Under 1 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

Mode 3 _ Normal Voltage _ RX1_ 1 - 12.5 GHz	
2412 MHz	
	
2442 MHz	
	
2472 MHz	

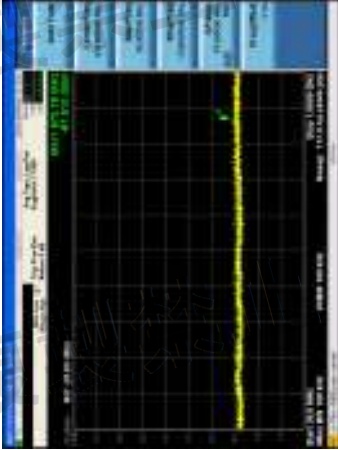
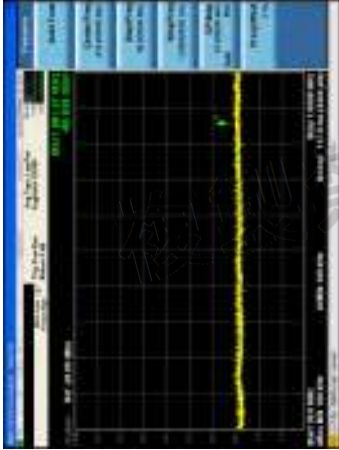
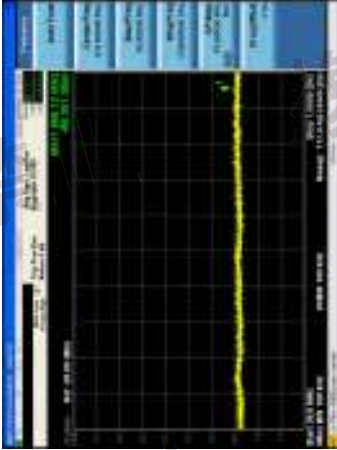
Mode 4 _ Normal Voltage _ RX0_ Under 1 GHz	
2422 MHz	
	
2442 MHz	
	
2462 MHz	





Mode 4 _ Normal Voltage _ RX0_ 1 - 12.5 GHz	
2422 MHz	
	
2442 MHz	
	
2462 MHz	



Mode 4 _ Normal Voltage _ RX1_ Under 1 GHz	
2422 MHz	
	
2442 MHz	
	
2462 MHz	





4.7. Carrier Sense Measurement

Mode 4 _ Normal Voltage _ RX1_ 1 - 12.5 GHz	
2422 MHz	
2442 MHz	
2462 MHz	

Test Mode	Mode 4				
Test Voltage	5 Vdc				
Measurement Frequency	MHz				
Channel Number	Ch.				
	2422	2442	2462	Result	Notes
	3	7	11		
	GOOD	GOOD	GOOD		

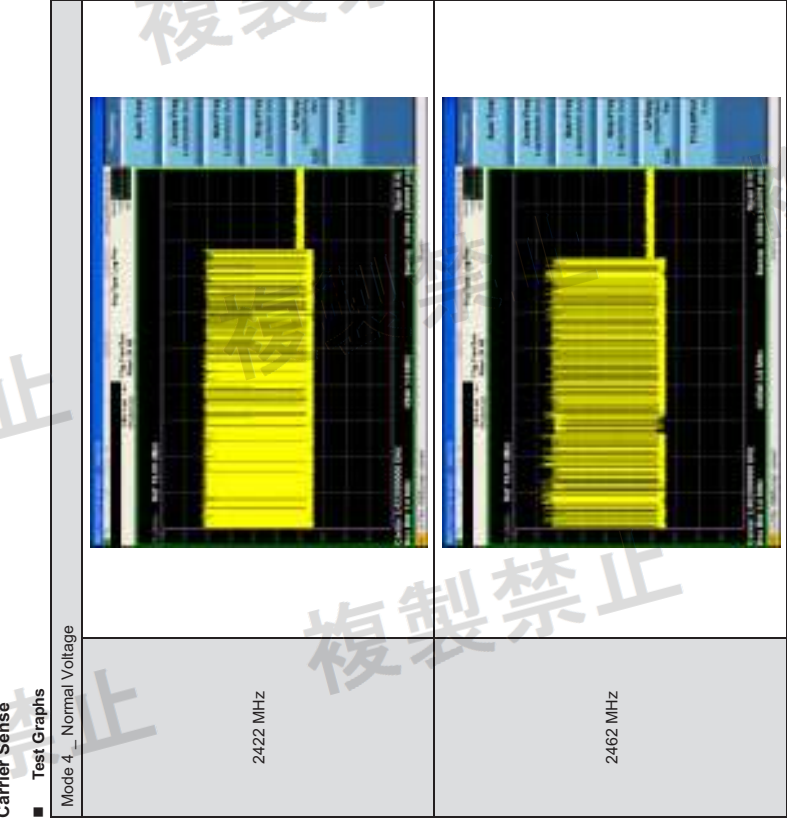
SG Power

■ Test Graphs

Mode 4 _ Normal Voltage	
2422 MHz	
2462 MHz	



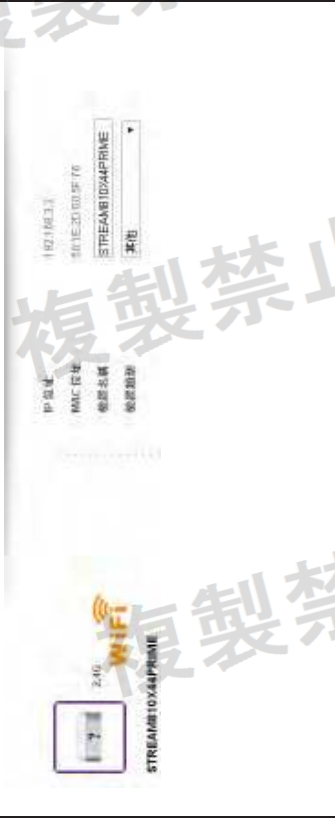
4.8. Radio Interference Prevention Capability Measurement



Test Mode	Mode 1					
Test Voltage	5 Vdc	Normal Voltage				
Measurement Frequency	MHz	2412	2442	2472		
Channel Number	Ch.	1	7	13	Result	Notes
Identification code	bits	48	48	48	PASS	
Limit	bits	≥ 48				

■ Test Graphs

Description: MAC Address





4.9. Antenna List

Antenna		Gain Specification			Notes ( Cable or Others )
No	Type	Model Name	Max Gain (dBi)	Attenuation (dB)	
ANT0	PCB antenna	RFPCA400772IMLB301	2.20	0	Horizontal + Vertical
ANT1	PCB antenna	RFPCA400761IMLB301	2.28	0	Horizontal + Vertical

4.10. Construction Protection Confirmation Method

Confirmation Method	
Protected Method	RF chip is sealed
Description	This RF chip is sealed with a metal shield that is soldered down. If end user intends to open it, this product will be damaged and no longer be used
Photo	
	