

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: Certification Ordinance Article 2-1-19
Report No.: RJBDBG-WTW-P22090959-1
Product: Wireless Headset
Brand: logicool G
Model No.: A00178
Received Date: 2022/9/21
Test Date: 2022/10/6 ~ 2022/10/7
Issued Date: 2022/11/16
Applicant: LOGITECH FAR EAST LTD.
Address: #2 Creation Rd. 4, Science-Based Ind. Park Hsinchu Taiwan, R.O.C.
Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory
Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

Approved by: _____

May Chen / Manager

, Date: _____

2022/11/16

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Prepared by : Vito Lung / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RJBKDG-WTW-P22090959-1	Original release.	2022/11/16

1 Certificate

Product: Wireless Headset

Brand: logicool G

Test Model: A00178

Sample Status: Engineering sample

Applicant: LOGITECH FAR EAST LTD.

Test Date: 2022/10/6 ~ 2022/10/7

Standard: Certification Ordinance Article 2-1-19

Measurement procedure: MIC notice 88 Appendix 43

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

Certification Ordinance Article 2-1-19		
Clause	Test Item	Result
OR: Article 5 OR: Annex 1 table 7-8 Notice 88 -Appendix 43 - 3	Frequency Tolerance	Pass
OR: Article 6 Annex 2.30 Notice 88 -Appendix 43 - 4	Occupied Bandwidth	Pass
OR: Article 7. Annex 3.26 Notice 88 -Appendix 43 - 5	Spurious Emissions	Pass
OR: Article 49-20	Antenna Specifications	Pass
OR: Article 24.2 Notice 88 -Appendix 43 - 7	Spurious Emissions of Receiver	Pass
OR: Article 49-20	Housing Requirements	Pass
OR: Article 49-20	Communication Method	Pass
OR: Article 49-20	Modulation Method	Pass
OR: Article 49-20 Notice 88 -Appendix 43 - 6	Antenna Power	Pass
OR: Article 49-20 Notice 88 -Appendix 43 - 10	Absolute Gain of Transmitting Antenna	Pass
OR: Article 49-20 Notice 88 -Appendix 43 - 11	Angular Width of Principal Radiation (AWPR)	N/A
OR: Article 49-20	Number of Carriers within 1 MHz Bandwidth in OFDM	N/A
OR: Article 49-20	Spreading Bandwidth	N/A
OR: Article 49-20 Notice 88 -Appendix 43 - 13	Dwell Time (FH employed)	N/A
OR: Article 9-4.8 Notice 88 -Appendix 43 - 12	Interference Prevention Function	Pass
OR: Article 49-20 Notice 88 -Appendix 43 - 8	Carrier Sense Capability	N/A

Notes:

1. OR:Ordinance Regulating Radio Equipment
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in ETSI TR 100 028-1:

Parameter	Uncertainty (±)
Occupied Bandwidth	960 Hz
Spurious Emissions	2.5 dB
Output Power Density	1.2 dB
Out of Band Radiated Power	2.5 dB
Frequency Tolerance	960 Hz

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	Wireless Headset
Brand	logicool G
Test Model	A00178
Test Software Version	Airoha.Tool.(AB1565/68 Lab Test tool-2.11.4.707)
Status of EUT	Engineering sample
Power Supply Rating	3.7 Vdc from battery or 5 Vdc from USB interface
Modulation Type	GFSK
Modulation Technology	DTS
Transfer Rate	Up to 2 Mbps (*Note 1)
Operating Frequency	2.402 GHz ~ 2.48 GHz (*Note 1)
Number of Channel	40 (*Note 1)
Assembly	The EUT is constructed as a Wireless Headset. The housing consists of parts, the parts were fixed together by 2 pcs by special screws. Separating the parts was only possible by special tools.
Accessory	USB to Type C cable x1 (Shielded, 1.8m with one core) Detachable Mic x1 (Shielded, 0.12m)

Note:

1. BT-LE technique supports 1Mbps and 2Mbps data rates, both have been evaluated in this test report. Refer to “**section 3.2 Description of Test Modes**” for more detail specification.
2. The EUT may have a lot of colors for marketing requirement.
3. The EUT of LIGHTSPEED and Bluetooth technology can't transmit simultaneously, and BT-EDR and BT-LE of Bluetooth technology also can't transmit simultaneously, which uses timely shared coexistence technology.
4. The EUT must be supplied with a battery as the following table:

Battery		
Brand	Model	Specification
Springpower Technology (Shenzhen)Co.,Ltd.	604050 1ICP6/40/50 or 533-000181	Power Rating : 3.7Vdc, 5.55Wh, 1500mAh

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 Output Power Description of EUT

Operation Mode	Rated Output Power (mW)	Conducted RF Output Power (mW)	Radiated RF Output Power (mW)
BT-LE 1M	8	7.278	12.942
BT-LE 2M	8	6.966	12.387

3.3 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Gain (dBi)	Frequency range (GHz)	Antenna Type	Connector Type
2.5	2.4~2.4835	Loop Antenna	Welding

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. Antenna Pattern:

Please refer to the attached file (Antenna pattern).

3.4 Channel List

BT-LE channels:

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

3.5 Power Setting

Power Setting	
Channel	BT-LE 1M
0	61
19	61
39	63

Power Setting	
Channel	BT-LE 2M
1	60
19	61
38	62

3.6 Test Mode Applicability and Tested Channel Detail

Test Conditions	Voltage (Vdc)
V_{normal}	5
$V_{max. (+10\%)}$	5.5
$V_{min. (-10\%)}$	4.5

Pre-Scan:	1. For input voltage of EUT: 3.7 Vdc / 5 Vdc. Pre-scan these modes and find the worst case as a representative test condition.
Worst Case:	1. For input voltage of EUT, Worst condition: 5 Vdc 2. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below:

Test Item	Mode	Tested Channel	Modulation	Data Rate Parameter
Frequency Tolerance	-	0, 19, 39	un-modulation	-
Occupied Bandwidth / Spurious Emissions	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	1, 19, 38	GFSK	2Mb/s
Spurious Emissions of Receiver	-	0, 19, 39	-	-
Antenna Power	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	1, 19, 38	GFSK	2Mb/s
Interference Prevention Function	Normal Operation			

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 Frequency Tolerance

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4	BV CPS E&E	(d)
DC POWER SUPPLY Topward	6603D	795558	Note 2	Note 2	BV CPS E&E	(d)
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6	ETC	(c)
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8	ETC	(c)

Notes:

- Calibration method:
 - Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1).
 - Calibration conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) Japan Calibration Service System.
 - Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
 - Calibration conducted by using other equipment that listed above from a) to c).
- The power supply no evaluation calibrated, which used the digital multimeter to verify before each testing.
- The test was performed in Oven room 2.
- Tested Date: 2022/10/6

4.2 Occupied Bandwidth

Refer to section 4.1 to get information of the instruments.

4.3 Spurious Emissions

Refer to section 4.1 to get information of the instruments.

4.4 Spurious Emissions of Receiver

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4	BV CPS E&E	(d)
DC POWER SUPPLY Topward	6603D	795558	Note 2	Note 2	BV CPS E&E	(d)
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6	ETC	(c)
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8	ETC	(c)

Notes:

- Calibration method:
 - Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1).
 - Calibration conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) Japan Calibration Service System.
 - Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
 - Calibration conducted by using other equipment that listed above from a) to c).
- The power supply no evaluation calibrated, which used the digital multimeter to verify before each testing.
- The test was performed in Oven room 2.
- Tested Date: 2022/10/6 ~ 2022/10/7

4.5 Antenna Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
DC POWER SUPPLY Topward	6603D	795558	Note 2	Note 2	BV CPS E&E	(d)
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21	ETC	(c)
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21	ETC	(c)
True RMS Clamp Meter Fluke	325	31130711WS	2022/6/9	2023/6/8	ETC	(c)

Notes:

- Calibration method:
 - Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1).
 - Calibration conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) Japan Calibration Service System.
 - Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
 - Calibration conducted by using other equipment that listed above from a) to c).
- The power supply no evaluation calibrated, which used the digital multimeter to verify before each testing.
- The test was performed in Oven room 2.
- Tested Date: 2022/10/7

4.6 Interference Prevention Function

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4	BV CPS E&E	(d)
Bluetooth Simulator (up to Version 4.0) Anritsu	MT8852B	1218002	2022/5/24	2023/5/23	ETC	(c)

Notes:

- Calibration method:
 - Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1).
 - Calibration conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992) Japan Calibration Service System.
 - Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
 - Calibration conducted by using other equipment that listed above from a) to c).
- The test was performed in Oven room 2.
- Tested Date: 2022/10/6

5 Limits of Test Items

5.1 Frequency Tolerance

Tolerance of frequency shall be +/- 50ppm.

5.2 Occupied Bandwidth

Modulation Method	Limit	Remark
DSSS	<26 MHz	
OFDM	<26 MHz	Antenna power limitation is 10 mW/MHz
	26 – 40 MHz	Antenna power limitation is 5 mW/MHz
FHSS	<83.5 MHz	
Other Digital	<26 MHz	

5.3 Spurious Emissions

Frequencies (MHz)	Limit
Operating frequency 2400 to 2483.5 MHz	
30.0 MHz to 1000.0 MHz	$\leq 0.25 \mu\text{W}/100 \text{ kHz}$
1000.0 MHz to 2387 MHz	$\leq 2.5 \mu\text{W}/\text{MHz}$
2387.0 MHz to 2400.0 MHz	$\leq 25 \mu\text{W}/\text{MHz}$
2483.5 MHz to 2496.5 MHz	$\leq 25 \mu\text{W}/\text{MHz}$
2496.5 MHz to 12500.0 MHz	$\leq 2.5 \mu\text{W}/\text{MHz}$

5.4 Spurious Emissions of Receiver

Frequencies (GHz)	Limit
Below 1 GHz	$\leq 4 \text{ nW}/100 \text{ kHz}$ (-54 dBm)
Above 1 GHz	$\leq 20 \text{ nW}/\text{MHz}$ (-47 dBm)

5.5 Antenna Power

Modulation System	Frequency Band Used	Antenna Power (Max.)	EIRP Limit (Note 3)
DSSS	2400 – 2483.5 MHz	10 mW/MHz	12.14 dBm/MHz ~ 22.14 dBm/MHz (16.368 mW/MHz ~ 163.68 mW/MHz)
OFDM (Note 1)	2400 – 2483.5 MHz	10 mW/MHz	12.14 dBm/MHz ~ 22.14 dBm/MHz (16.368 mW/MHz ~ 163.68 mW/MHz)
OFDM (Note 2)	2400 – 2483.5 MHz	5 mW/MHz	9.13 dBm/MHz ~ 19.13 dBm/MHz (8.184 mW/MHz ~ 81.84 mW/MHz)
FHSS	2400 – 2483.5 MHz	3 mW/MHz	6.91 dBm/MHz ~ 16.91 dBm/MHz (4.91 mW/MHz ~ 49.10 mW/MHz)
Other Digital	2400 – 2483.5 MHz	10 mW	12.14 dBm ~ 22.14 dBm (16.368 mW ~ 163.68 mW)

Notes:

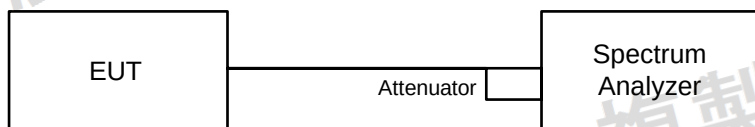
- Occupied bandwidth is less than 26MHz
- Occupied bandwidth is more that 26MHz and less than 40MHz
- EIRP limit is variable by the HPBA, the HPBA (half-power beam width) of the antenna shall be 360/A degrees or less, where A = EIRP/(2.14 dBi + "Antenna Power (limit)).
- Tolerance of antenna power shall be +20% (upper value) and -80% (lower value).

5.6 Interference Prevention Function

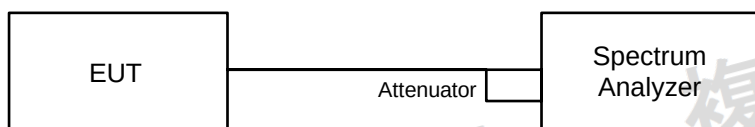
Radio equipment used mainly on the same premises and automatically transmits or receives identification code.

6 Test Arrangements

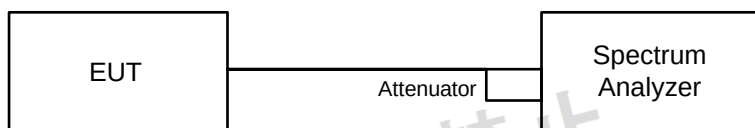
6.1 Frequency Tolerance



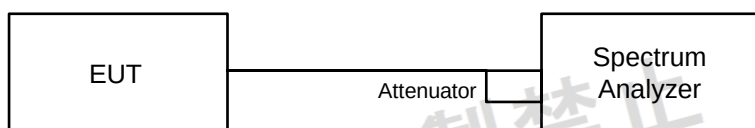
6.2 Occupied Bandwidth



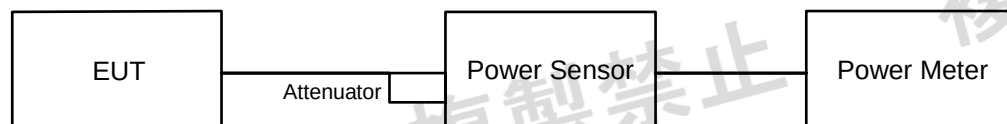
6.3 Spurious Emissions



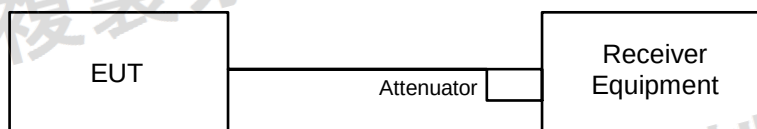
6.4 Spurious Emissions of Receiver



6.5 Antenna Power



6.6 Interference Prevention Function



7 Test Results of Test Item

7.1 Frequency Tolerance

Environmental Conditions:	24°C, 63% RH	Tested By:	Eric Peng
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Channel	Frequency (MHz)	V _{normal}		V _{max.}		V _{min.}	
		Carrier frequency (MHz)	Frequency tolerance (ppm)	Carrier frequency (MHz)	Frequency tolerance (ppm)	Carrier frequency (MHz)	Frequency tolerance (ppm)
0	2402	2401.997200	-1.165	2401.996980	-1.257	2401.996800	-1.332
19	2440	2439.996640	-1.377	2439.996560	-1.409	2439.996460	-1.450
39	2480	2479.996380	-1.459	2479.996280	-1.500	2479.996260	-1.508

7.2 Occupied Bandwidth

Environmental Conditions:	24°C, 63% RH	Tested By:	Eric Peng
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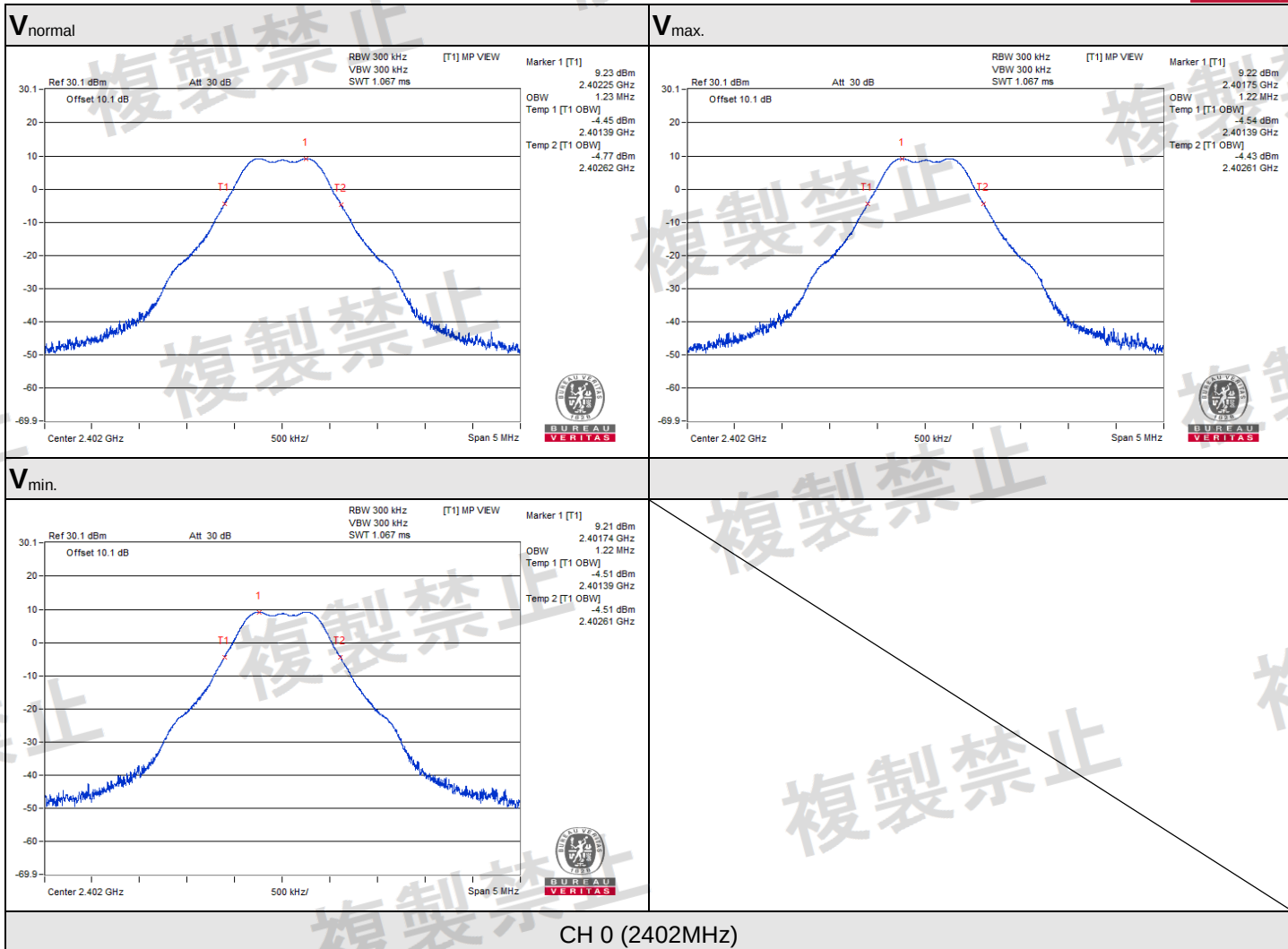
BT-LE 1M

Channel	Frequency (MHz)	V_{normal}	$V_{\text{max.}}$	$V_{\text{min.}}$
		Occupied bandwidth (MHz)	Occupied bandwidth (MHz)	Occupied bandwidth (MHz)
0	2402	1.23	1.22	1.22
19	2440	1.22	1.22	1.23
39	2480	1.22	1.23	1.22

NOTE: For the test plots please refer to the below pages.

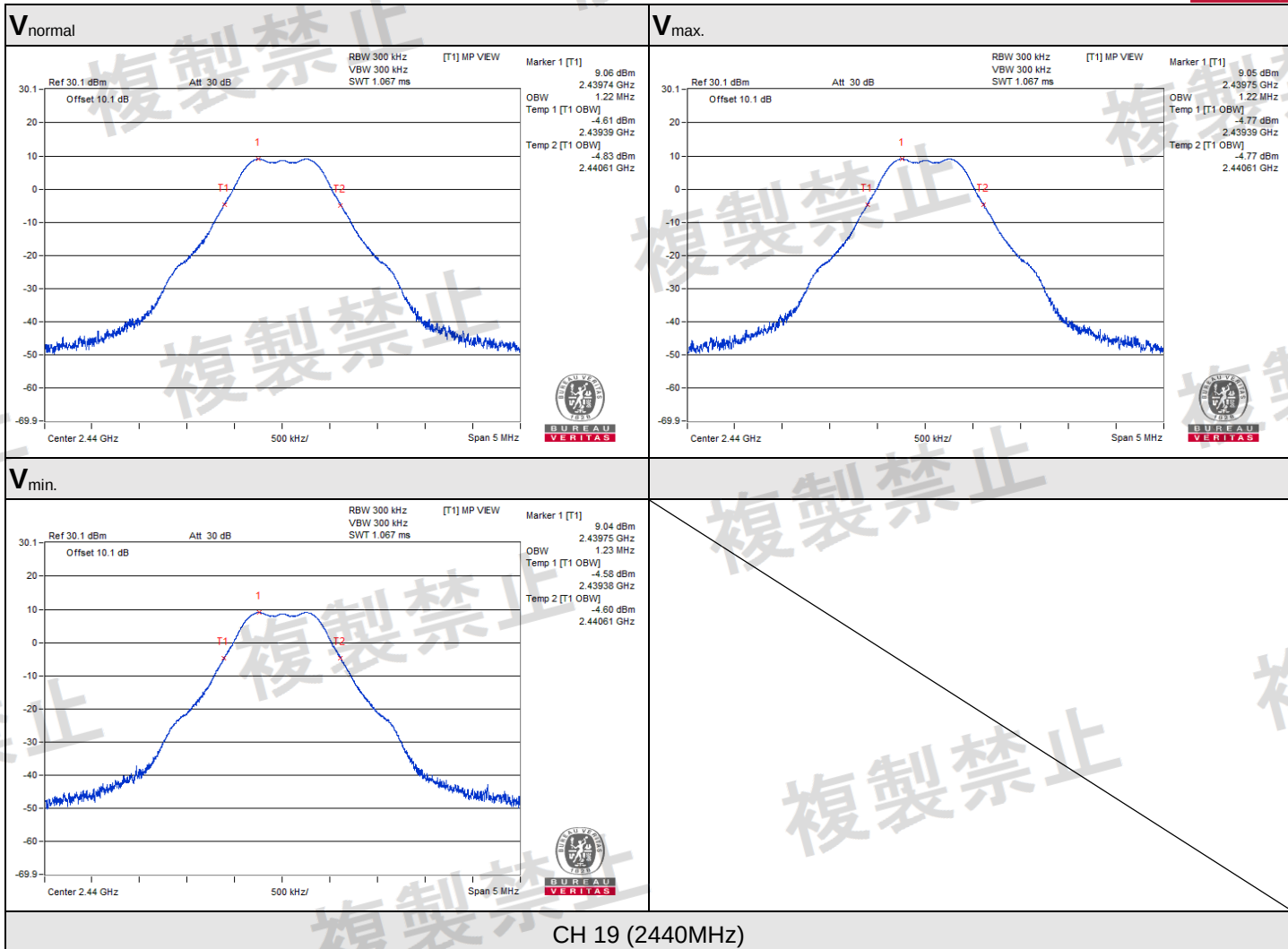


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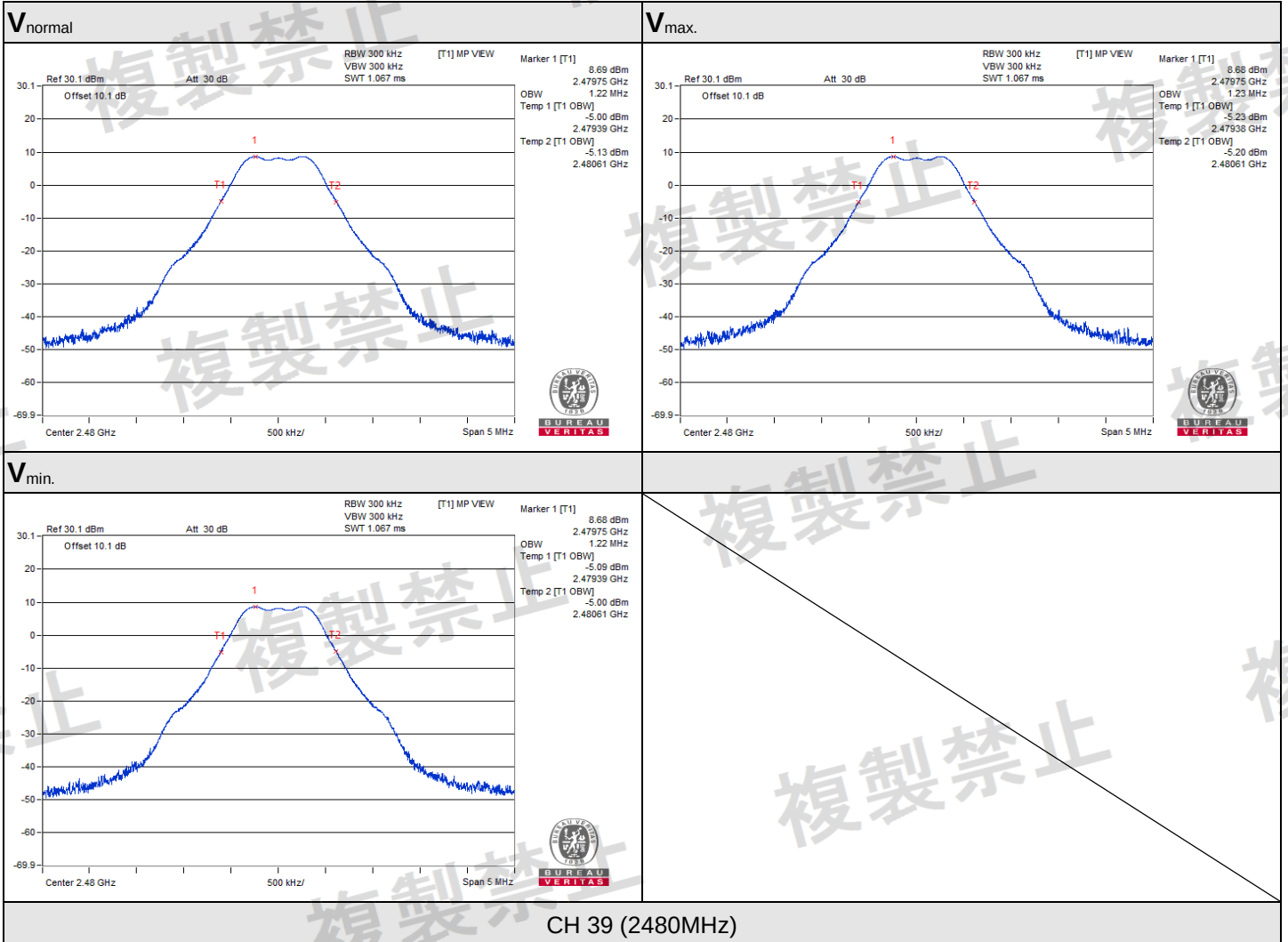


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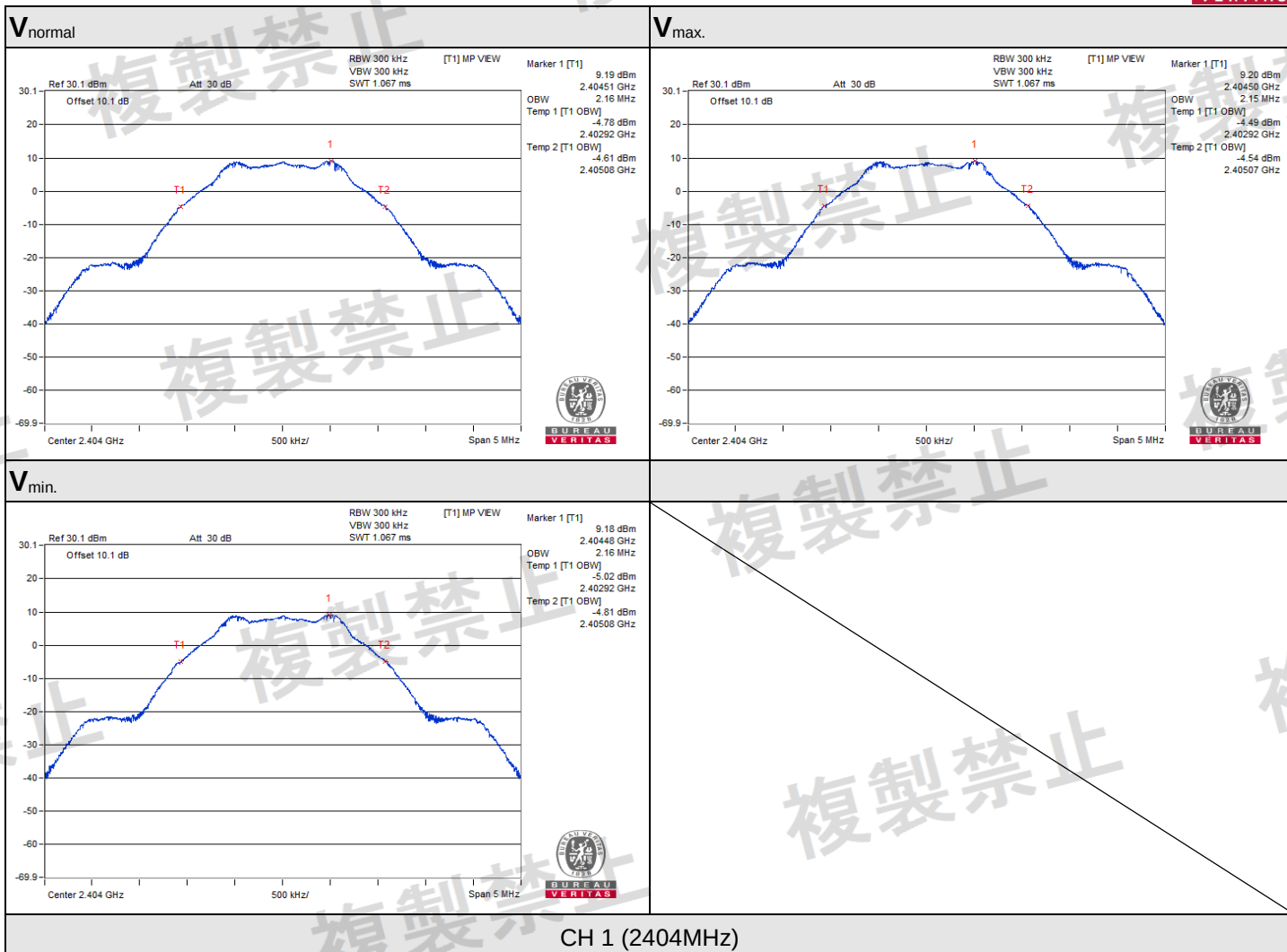
BT-LE 2M

Channel	Frequency (MHz)	V_{normal}	$V_{\text{max.}}$	$V_{\text{min.}}$
		Occupied bandwidth (MHz)	Occupied bandwidth (MHz)	Occupied bandwidth (MHz)
1	2404	2.16	2.15	2.16
19	2440	2.16	2.16	2.16
38	2478	2.16	2.16	2.16

NOTE: For the test plots please refer to the below pages.

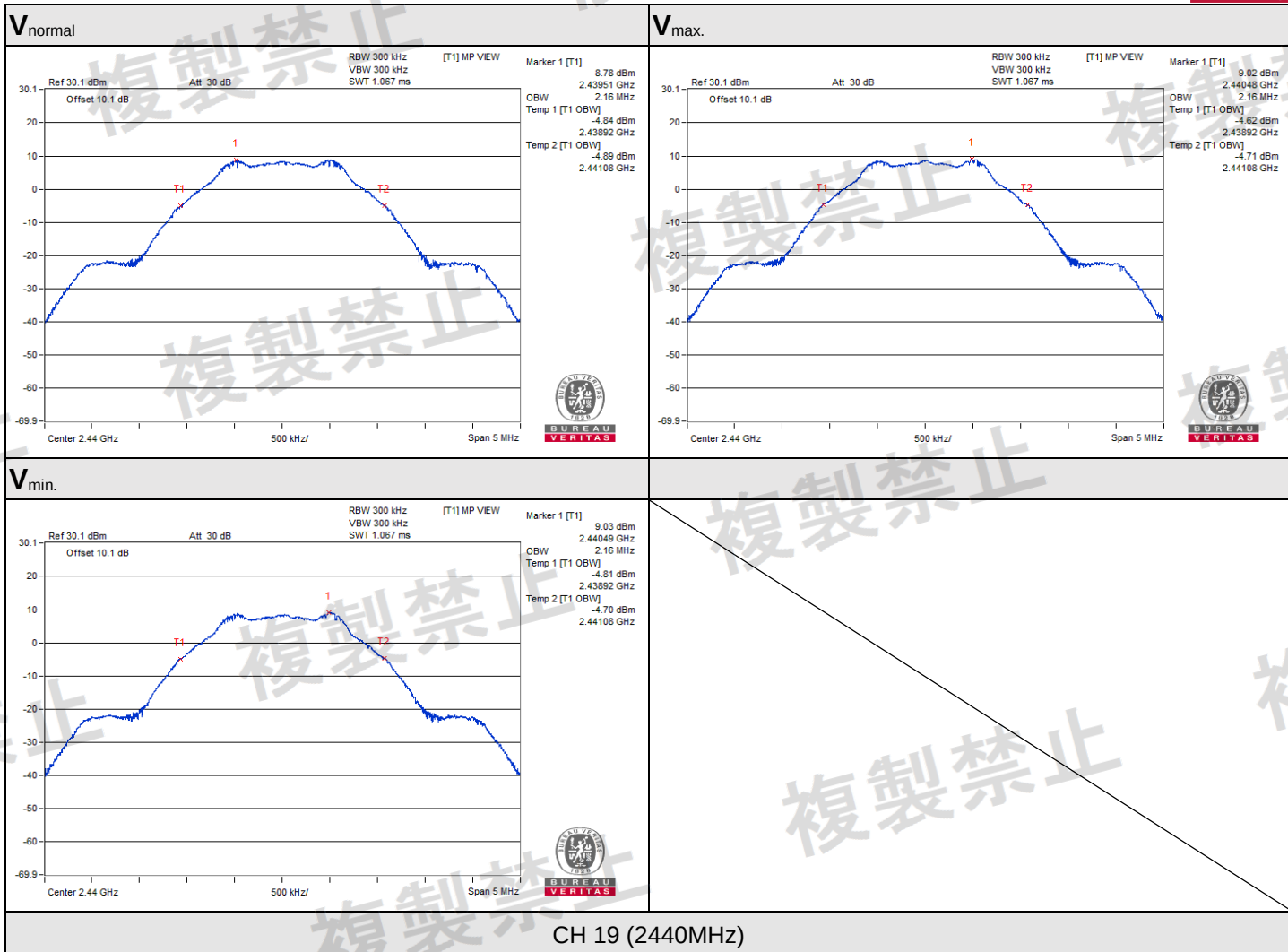


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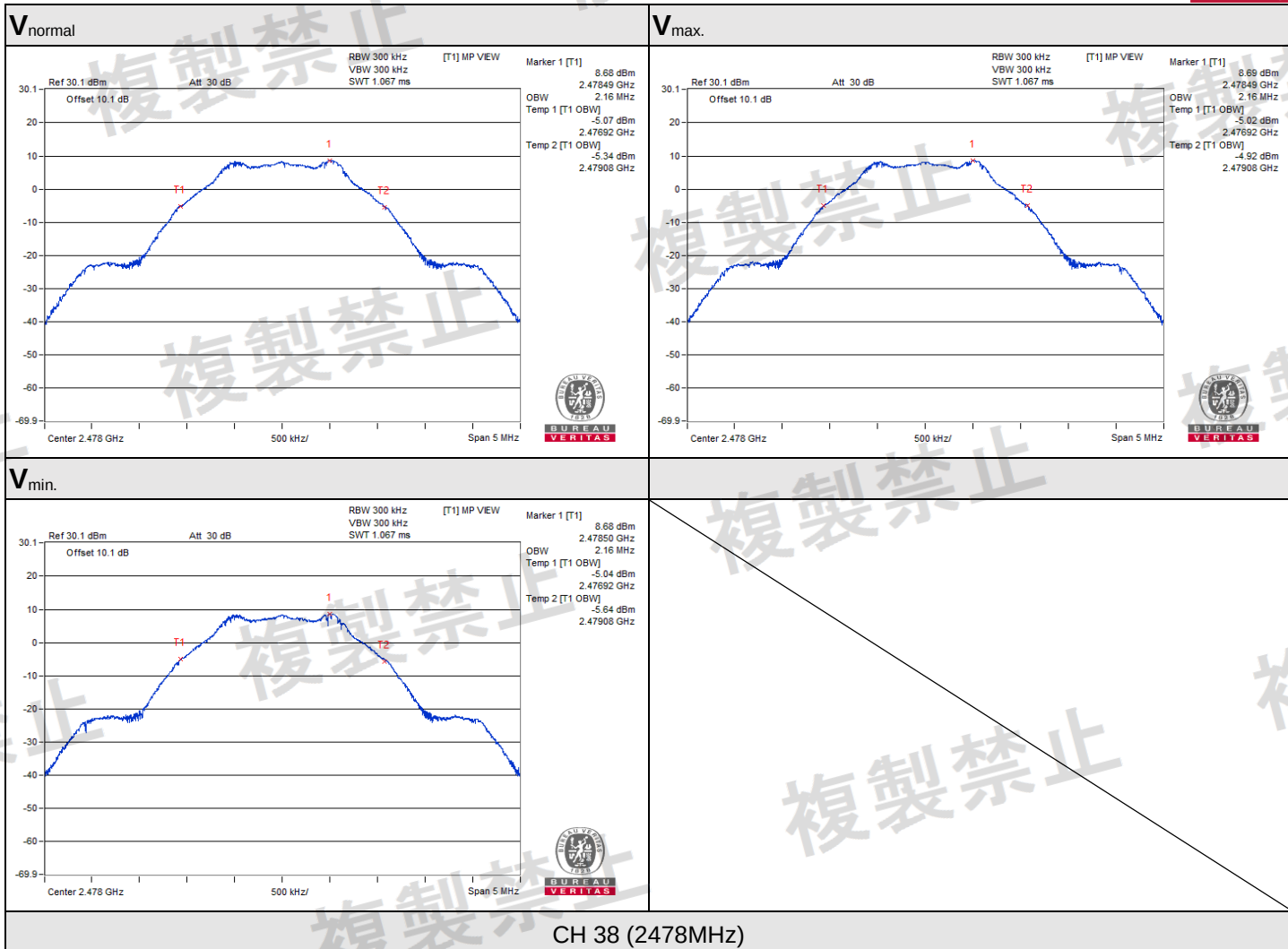


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7.3 Spurious Emissions

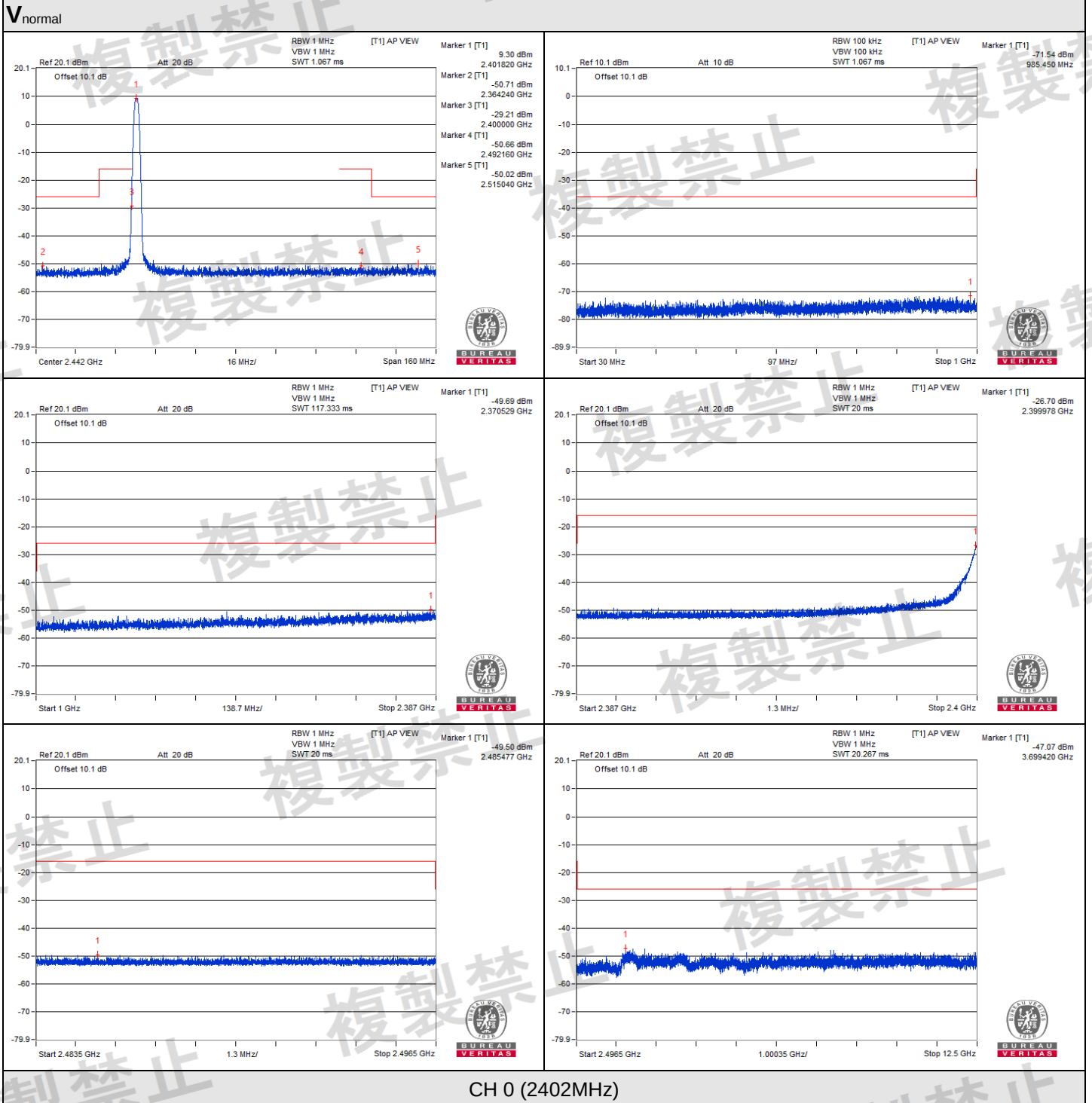
Environmental Conditions:	24°C, 63% RH	Tested By:	Eric Peng
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BT-LE 1M

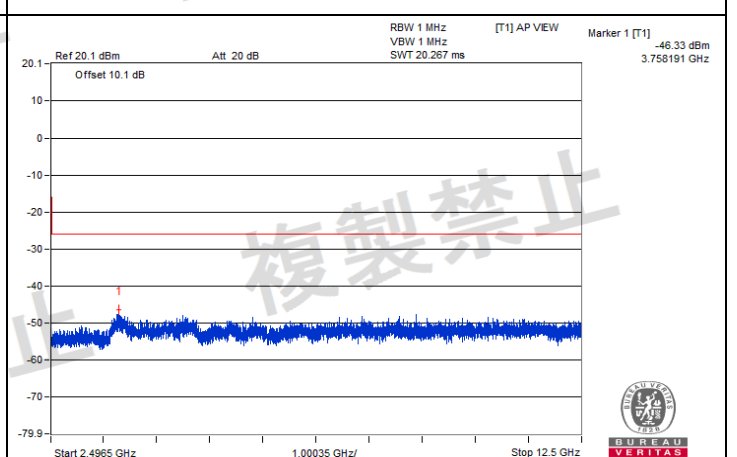
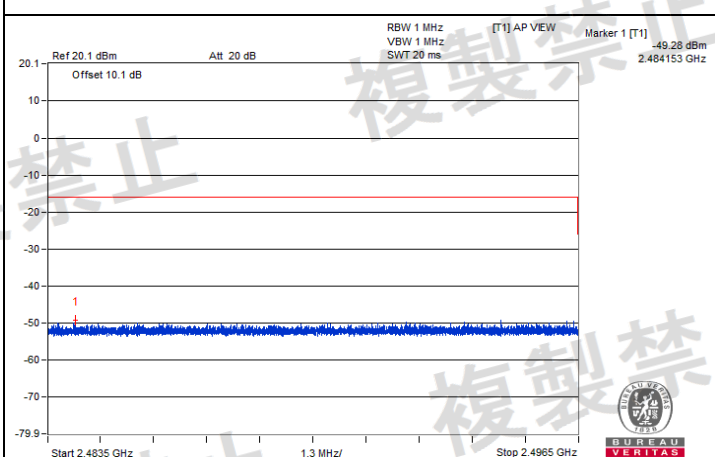
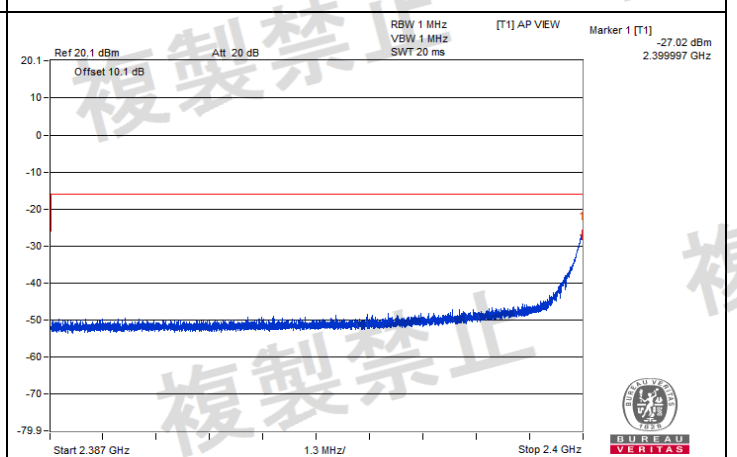
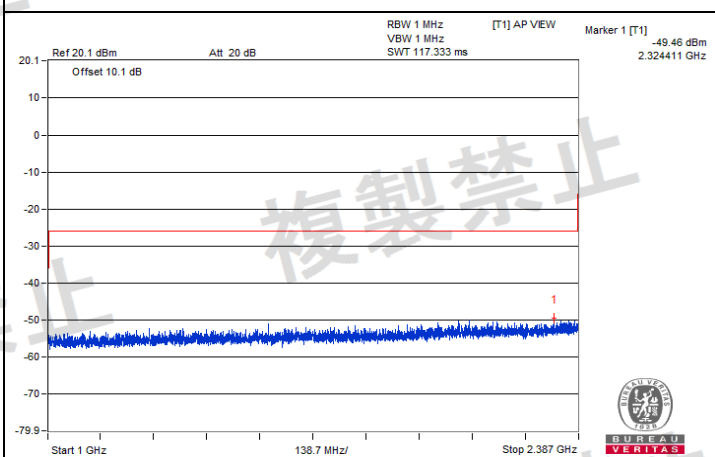
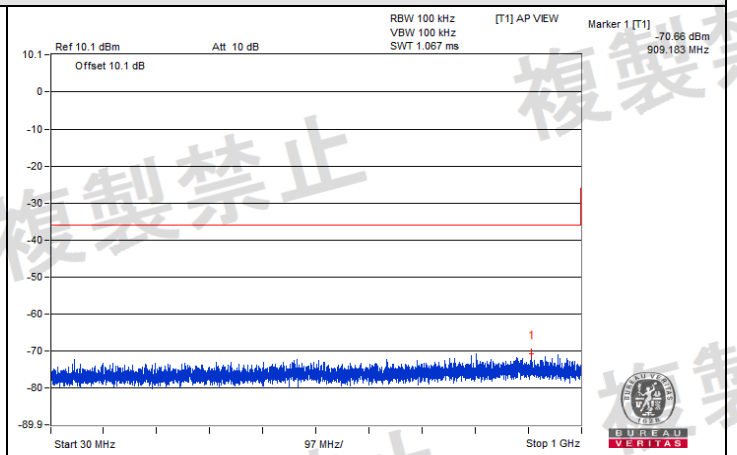
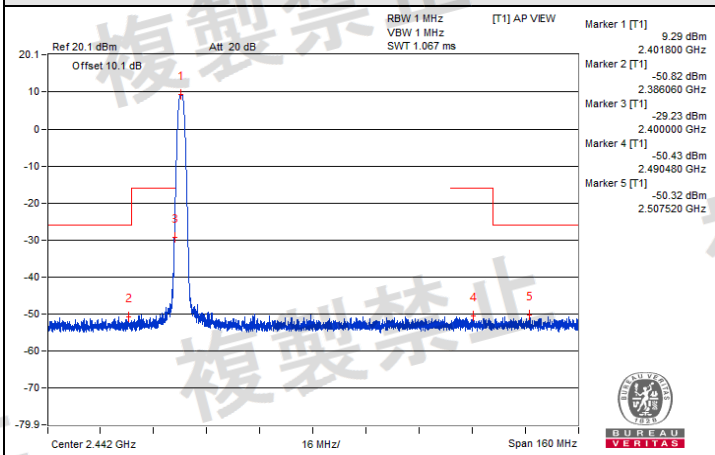
TEST CHANNEL		CH 0 (2402MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASURE. VALUE(μW)	LIMIT (μW)	RESULT
V_{normal}	30MHz to 1000MHz	985.450	0.000070	0.25	PASS
	1000MHz to 2387MHz	2370.529	0.010740	2.5	PASS
	2387MHz to 2400MHz	2399.978	2.137962	25	PASS
	2483.5MHz to 2496.5MHz	2485.477	0.011220	25	PASS
	2496.5MHz to 12500MHz	3699.420	0.019634	2.5	PASS
V_{max.}	30MHz to 1000MHz	909.183	0.000086	0.25	PASS
	1000MHz to 2387MHz	2324.411	0.011324	2.5	PASS
	2387MHz to 2400MHz	2399.997	1.986095	25	PASS
	2483.5MHz to 2496.5MHz	2484.153	0.011803	25	PASS
	2496.5MHz to 12500MHz	3758.191	0.023281	2.5	PASS
V_{min.}	30MHz to 1000MHz	777.748	0.000066	0.25	PASS
	1000MHz to 2387MHz	2341.749	0.011220	2.5	PASS
	2387MHz to 2400MHz	2399.987	2.118361	25	PASS
	2483.5MHz to 2496.5MHz	2494.062	0.012246	25	PASS
	2496.5MHz to 12500MHz	3843.221	0.020654	2.5	PASS
TEST CHANNEL		CH 19 (2440MHz)			
V_{normal}	30MHz to 1000MHz	940.830	0.000069	0.25	PASS
	1000MHz to 2387MHz	2185.711	0.010765	2.5	PASS
	2387MHz to 2400MHz	2390.217	0.011455	25	PASS
	2483.5MHz to 2496.5MHz	2496.040	0.012190	25	PASS
	2496.5MHz to 12500MHz	3813.210	0.019861	2.5	PASS
V_{max.}	30MHz to 1000MHz	865.776	0.000076	0.25	PASS
	1000MHz to 2387MHz	2325.278	0.011668	2.5	PASS
	2387MHz to 2400MHz	2387.921	0.011967	25	PASS
	2483.5MHz to 2496.5MHz	2491.573	0.012078	25	PASS
	2496.5MHz to 12500MHz	11964.812	0.020417	2.5	PASS
V_{min.}	30MHz to 1000MHz	823.945	0.000074	0.25	PASS
	1000MHz to 2387MHz	2346.603	0.010257	2.5	PASS
	2387MHz to 2400MHz	2393.925	0.013032	25	PASS
	2483.5MHz to 2496.5MHz	2489.974	0.012474	25	PASS
	2496.5MHz to 12500MHz	3861.977	0.022182	2.5	PASS

TEST CHANNEL		CH 39 (2480MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASURE. VALUE(uW)	LIMIT (uW)	RESULT
V_{normal}	30MHz to 1000MHz	853.772	0.000073	0.25	PASS
	1000MHz to 2387MHz	2385.613	0.009528	2.5	PASS
	2387MHz to 2400MHz	2395.997	0.010990	25	PASS
	2483.5MHz to 2496.5MHz	2484.072	0.023659	25	PASS
	2496.5MHz to 12500MHz	3791.953	0.021086	2.5	PASS
V_{max.}	30MHz to 1000MHz	879.962	0.000071	0.25	PASS
	1000MHz to 2387MHz	2182.937	0.010617	2.5	PASS
	2387MHz to 2400MHz	2395.567	0.011298	25	PASS
	2483.5MHz to 2496.5MHz	2483.646	0.029107	25	PASS
	2496.5MHz to 12500MHz	3821.963	0.019320	2.5	PASS
V_{min.}	30MHz to 1000MHz	900.817	0.000075	0.25	PASS
	1000MHz to 2387MHz	2240.844	0.011614	2.5	PASS
	2387MHz to 2400MHz	2396.832	0.010814	25	PASS
	2483.5MHz to 2496.5MHz	2483.649	0.022182	25	PASS
	2496.5MHz to 12500MHz	3838.219	0.028907	2.5	PASS

NOTE: 1. The spectrum plots are attached on the following pages.

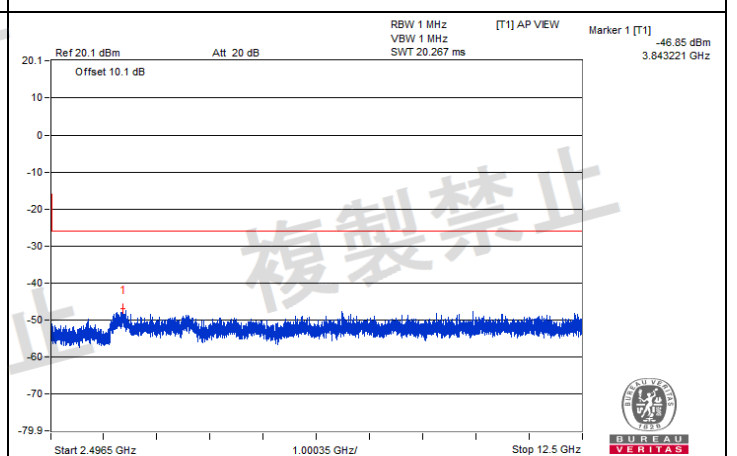
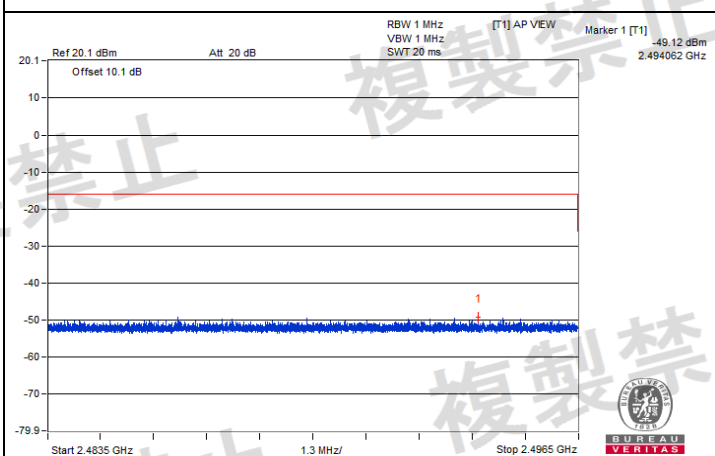
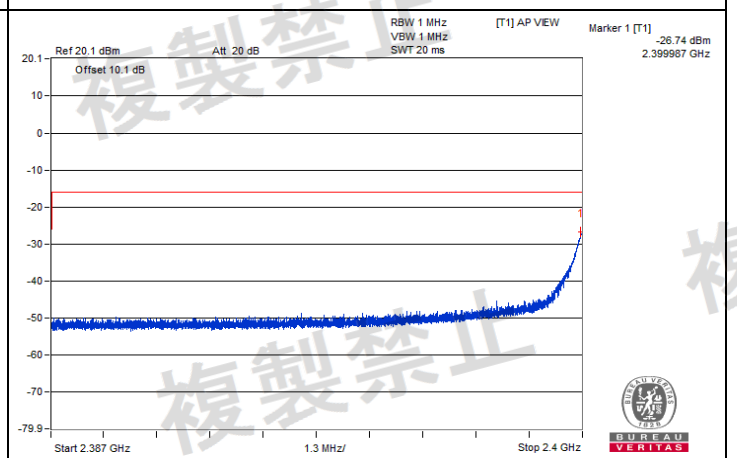
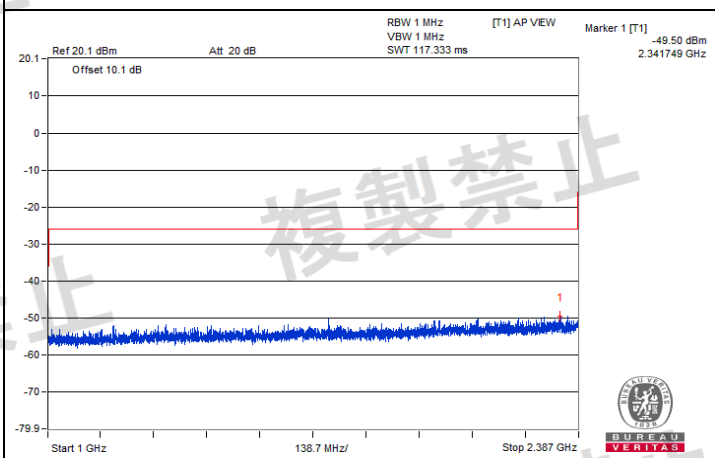
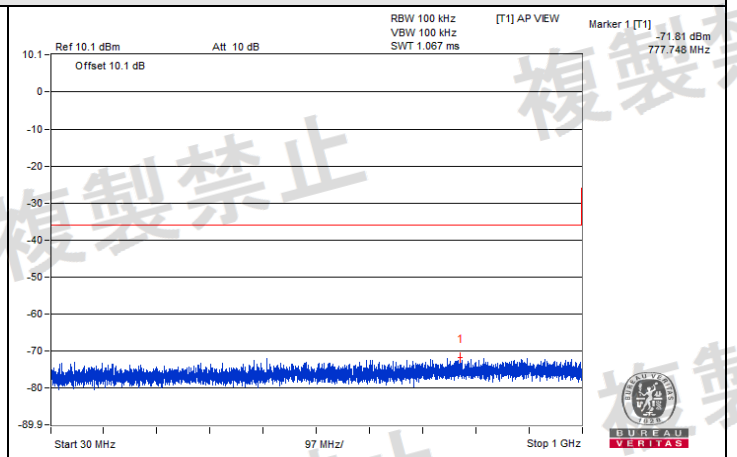
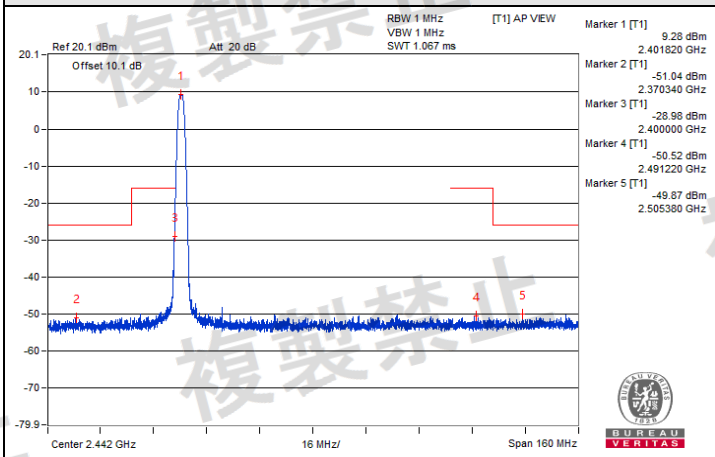


V max.

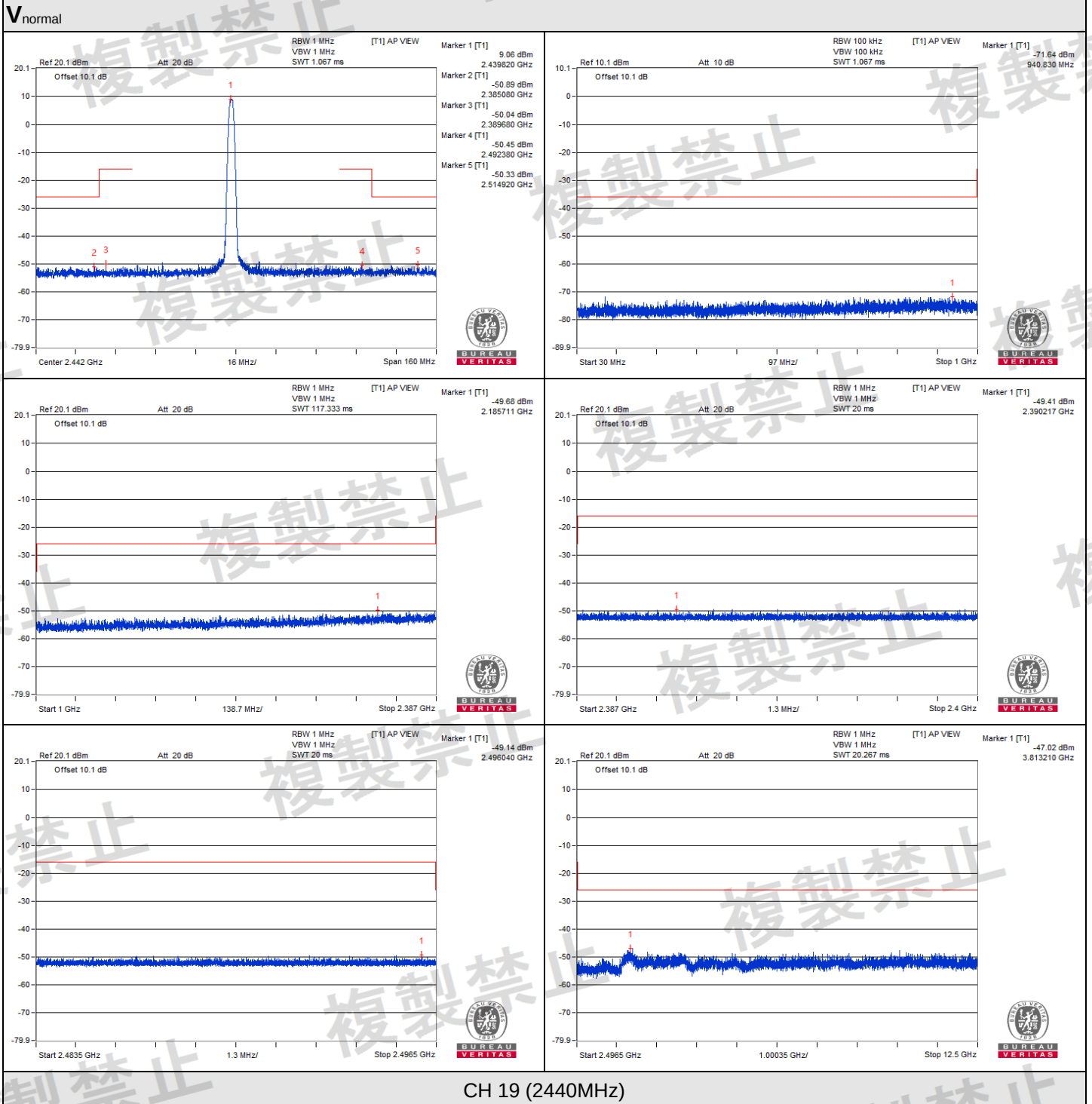


CH 0 (2402MHz)

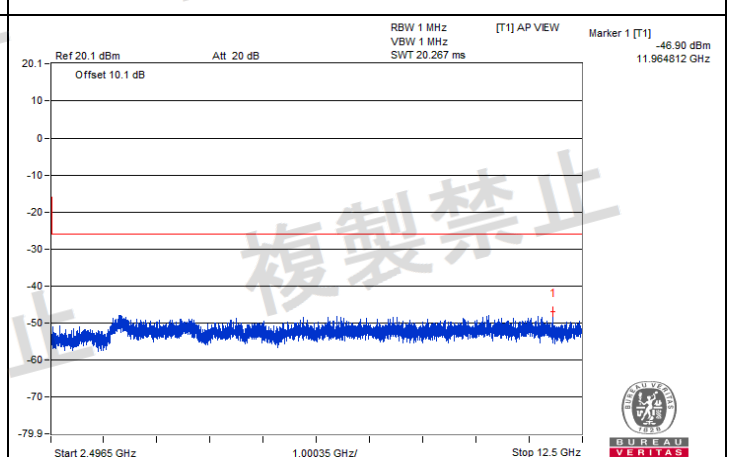
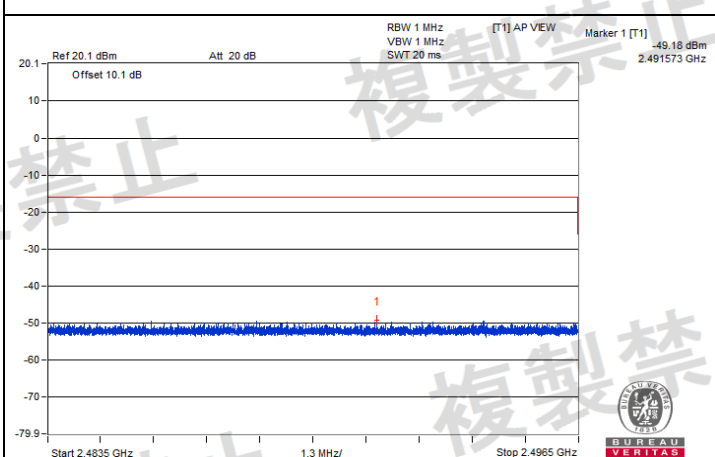
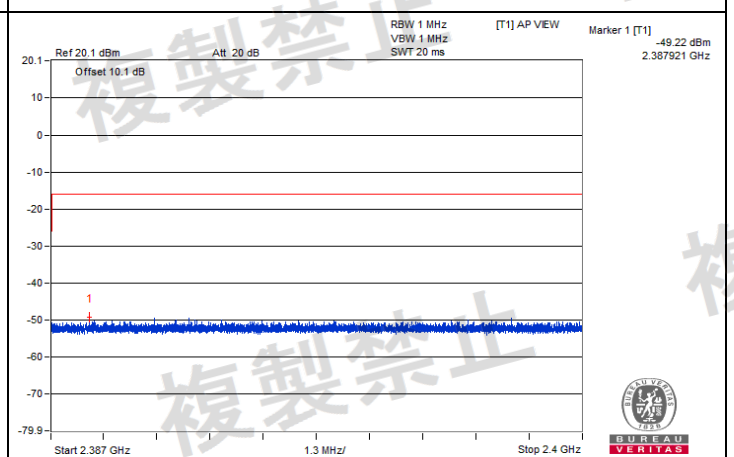
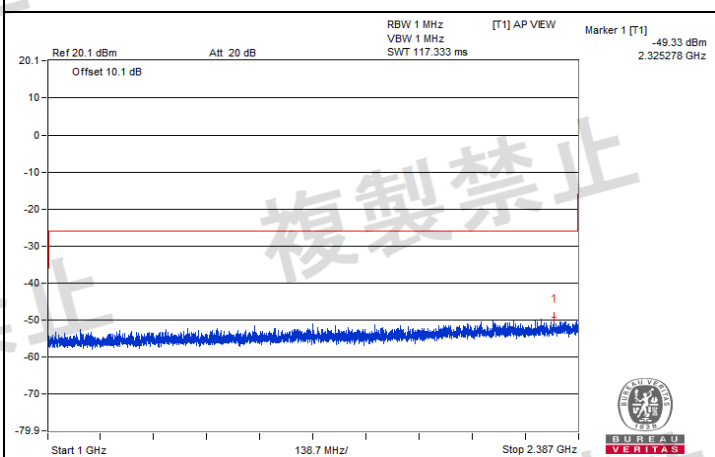
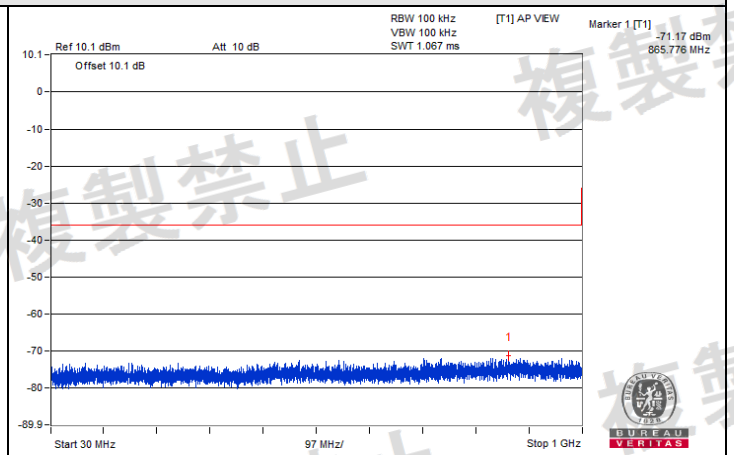
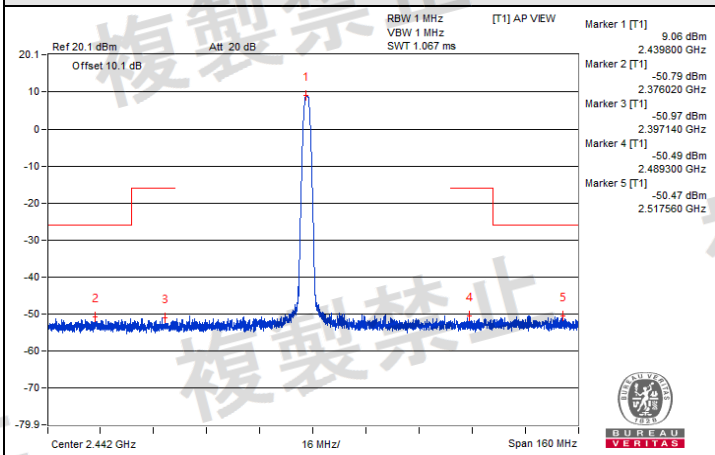
V min.



CH 0 (2402MHz)

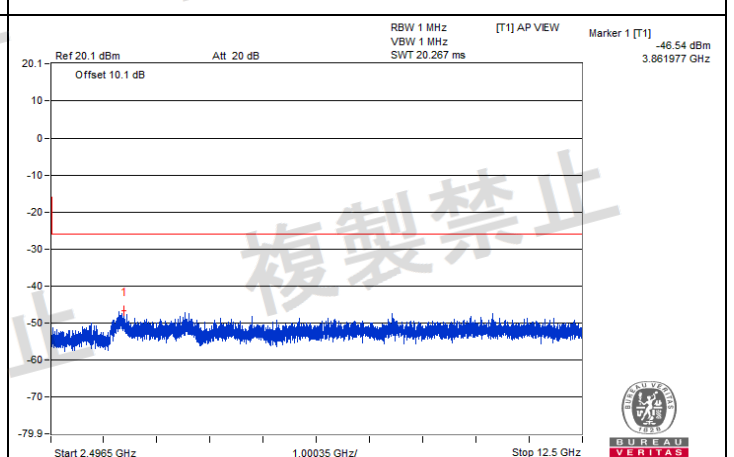
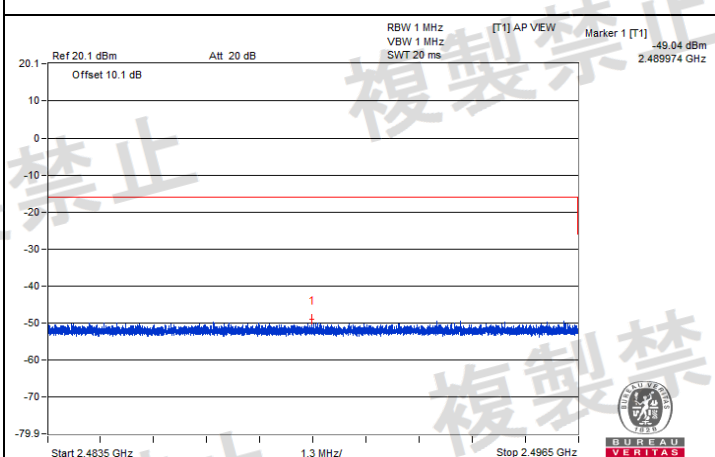
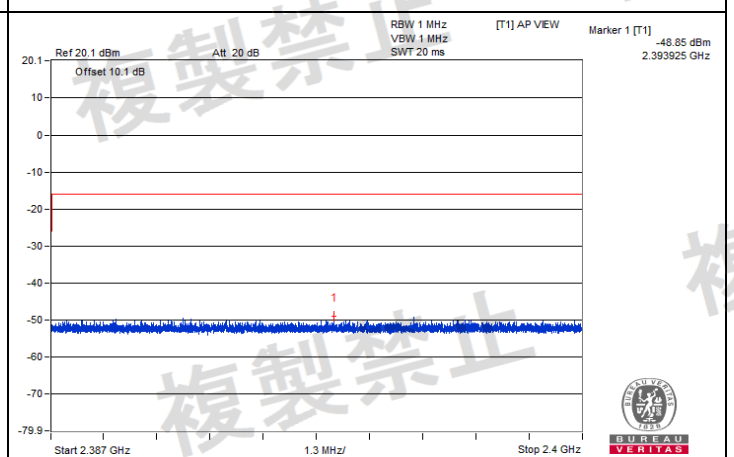
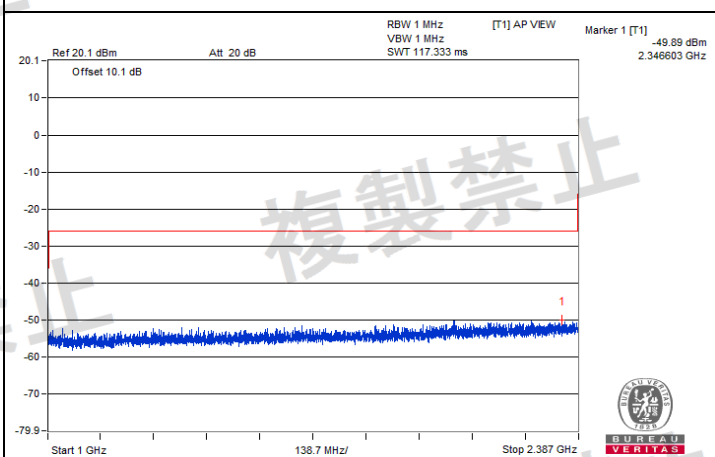
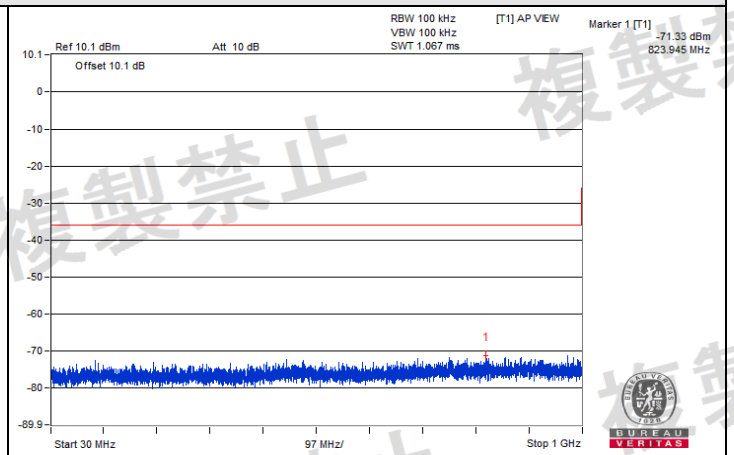
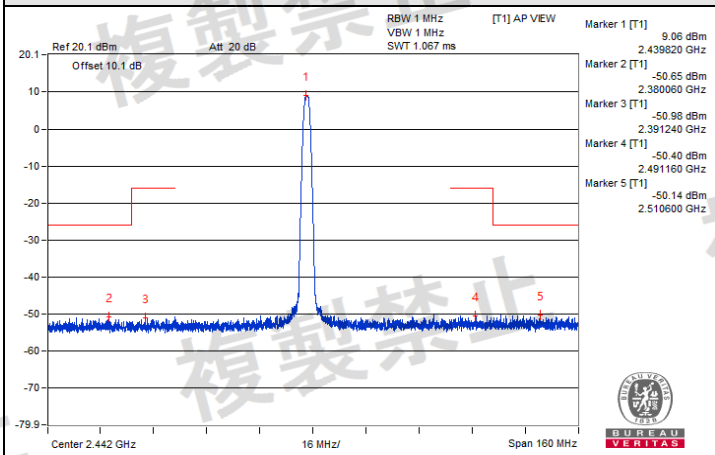


Vmax.



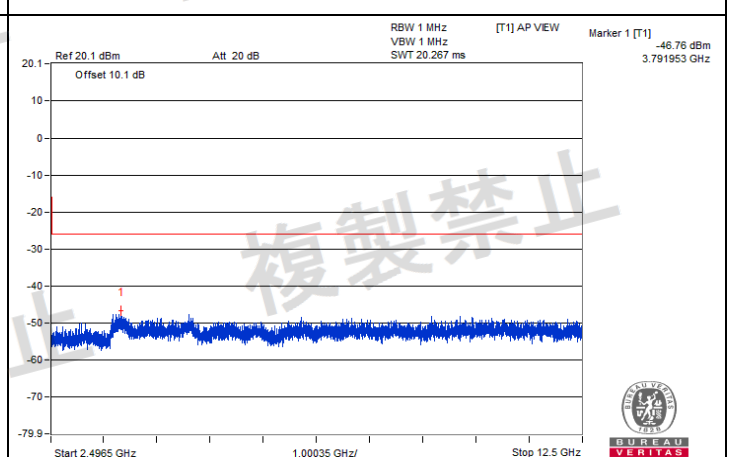
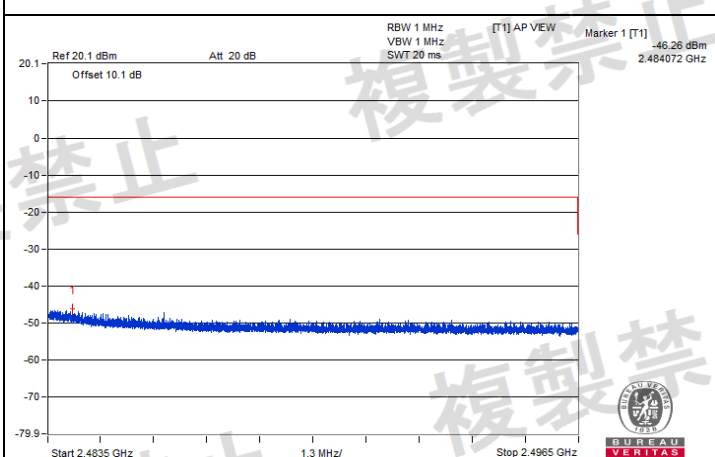
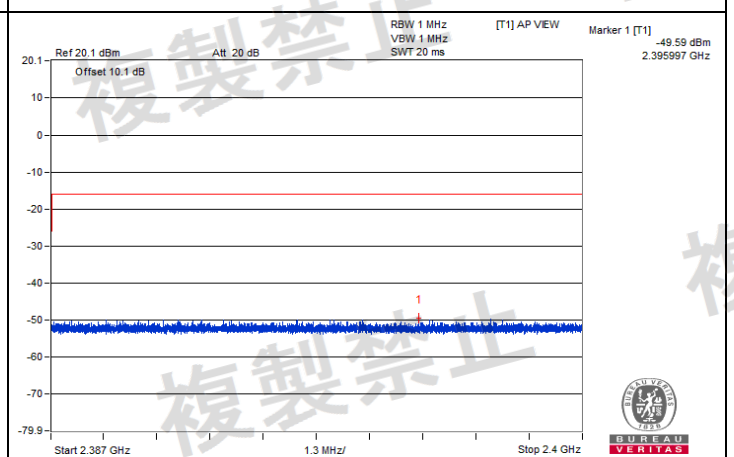
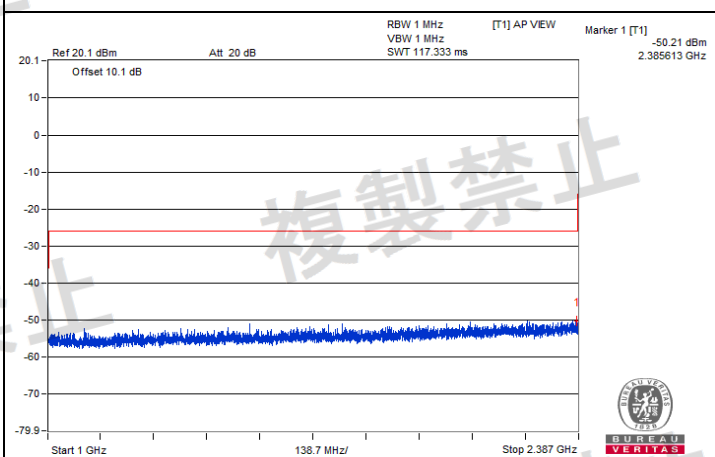
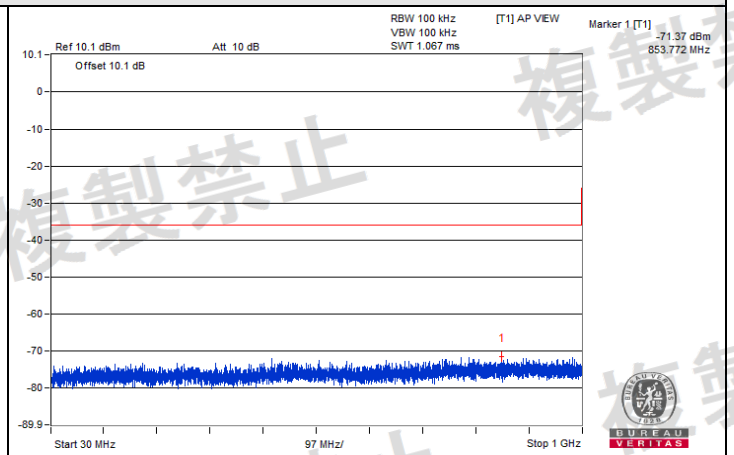
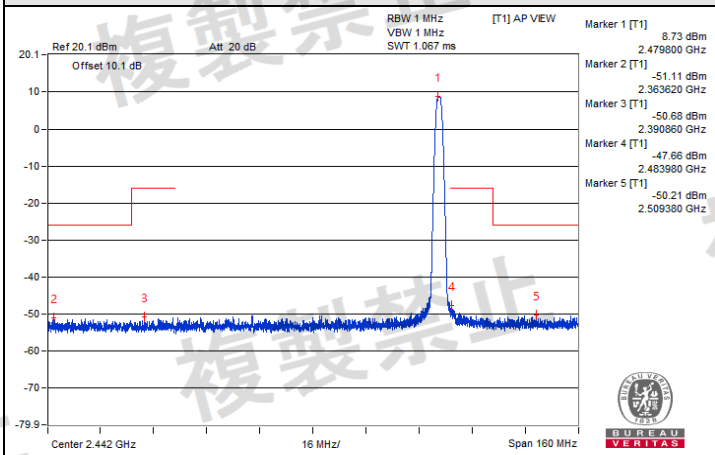
CH 19 (2440MHz)

V min.



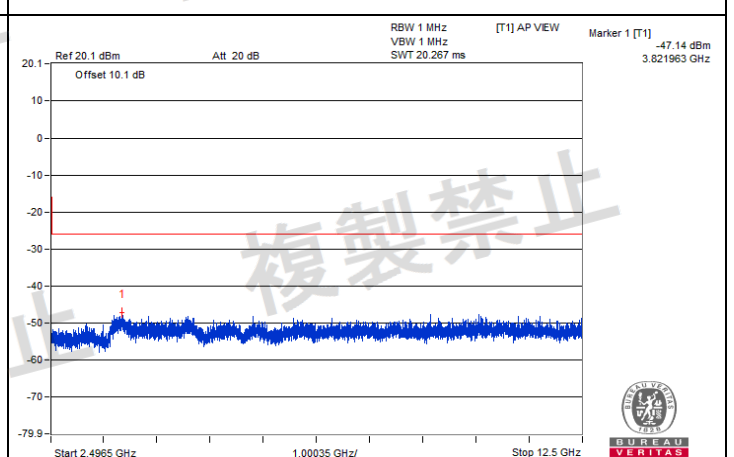
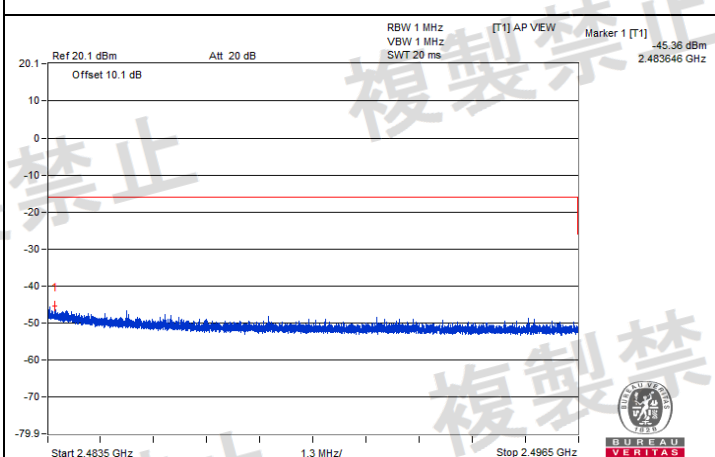
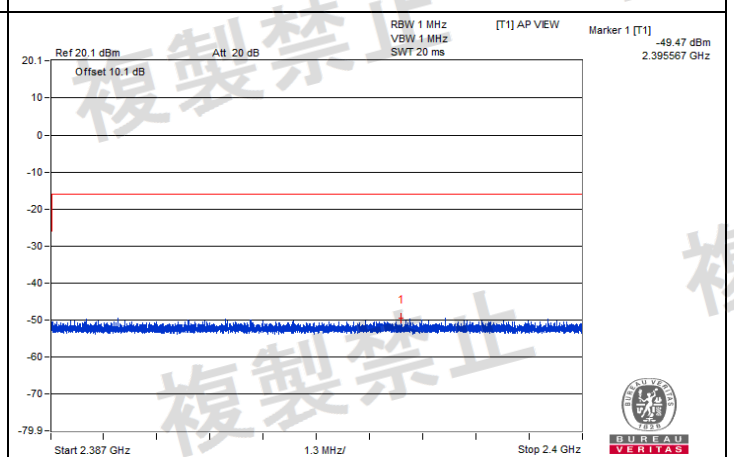
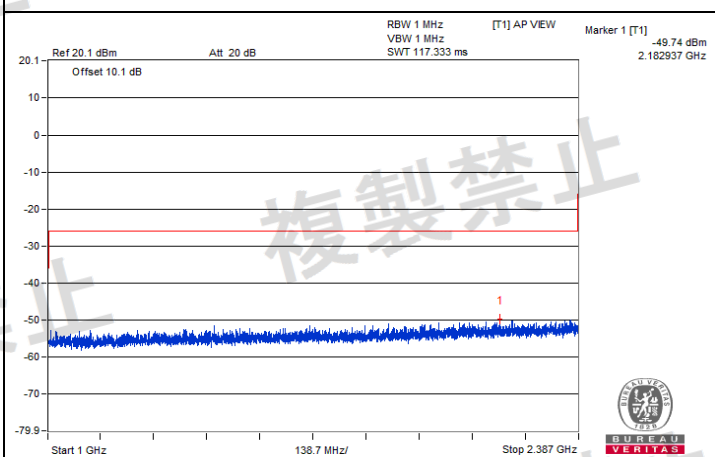
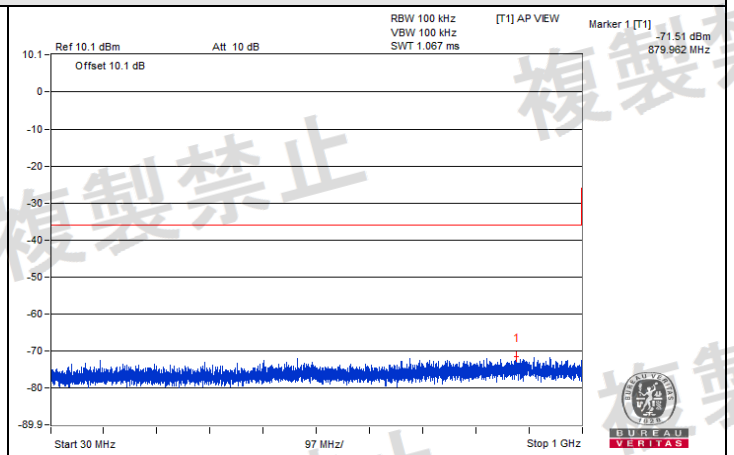
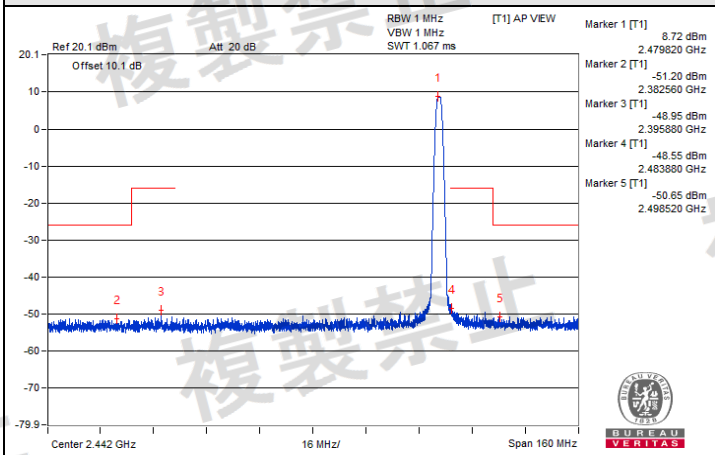
CH 19 (2440MHz)

Vnormal



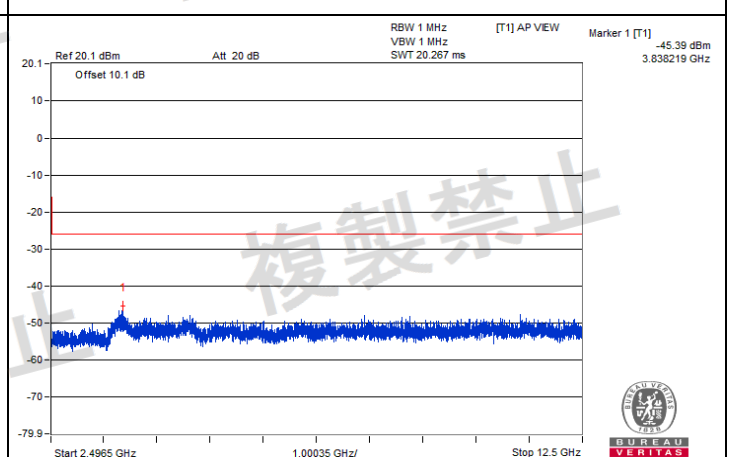
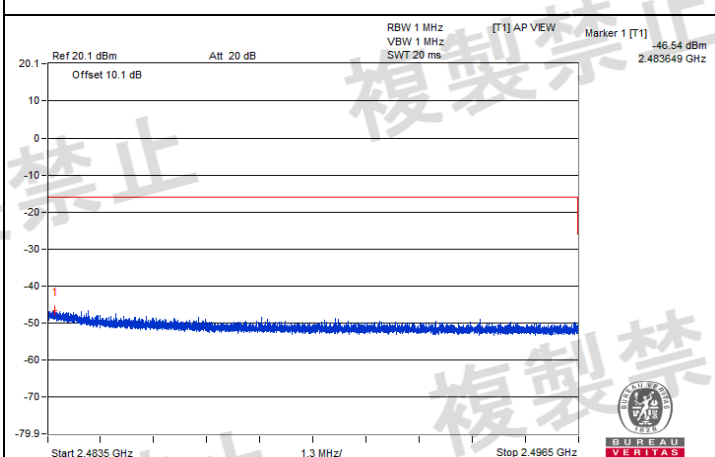
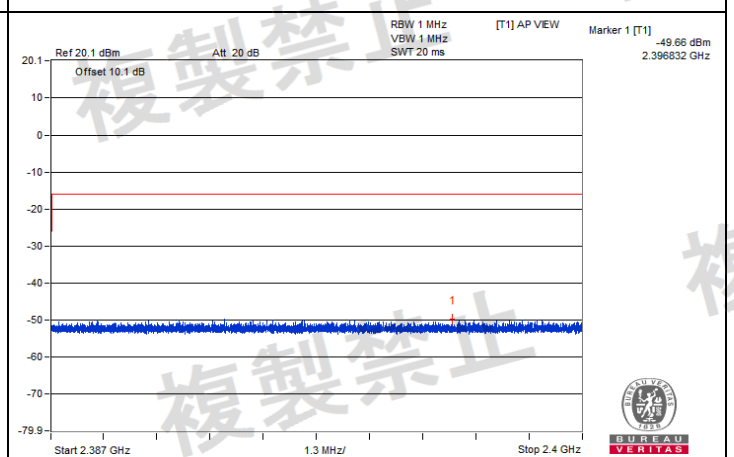
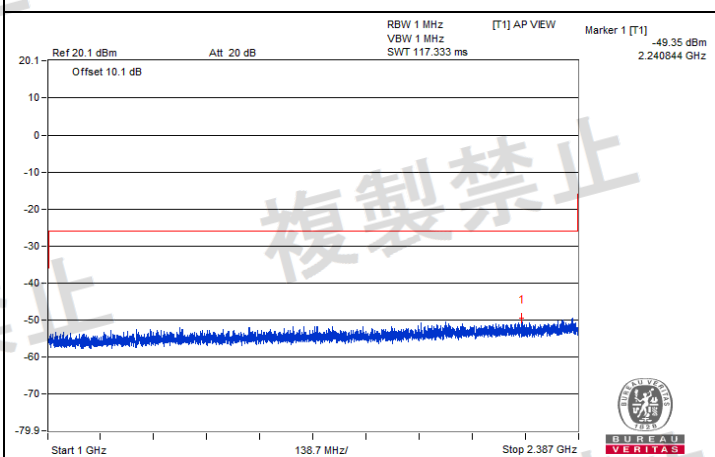
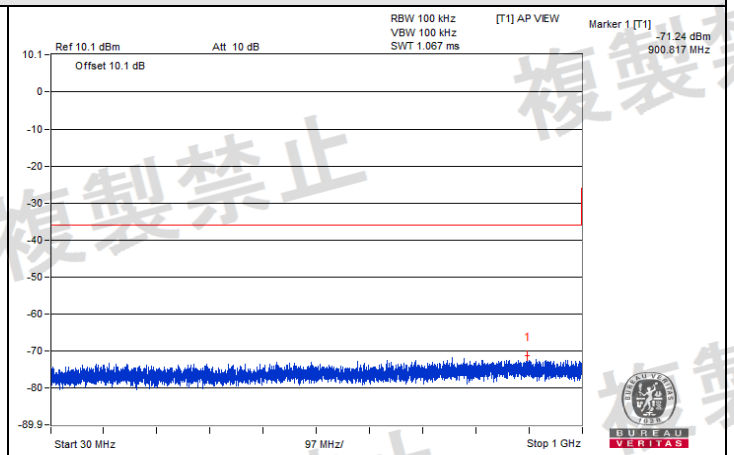
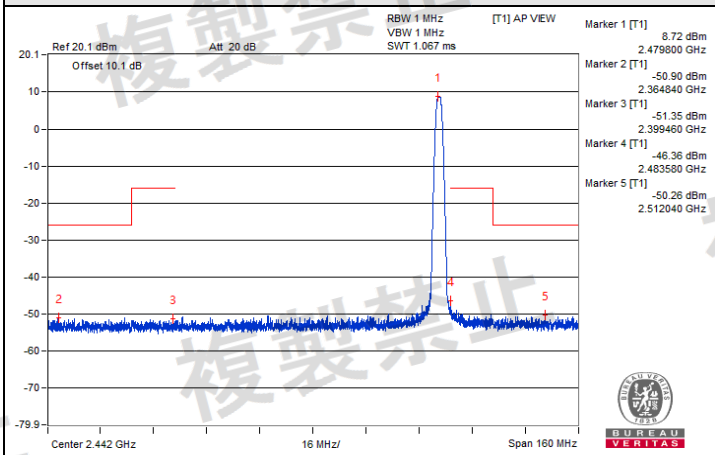
CH 39 (2480MHz)

Vmax.



CH 39 (2480MHz)

V min.



CH 39 (2480MHz)

BT-LE 2M

TEST CHANNEL		CH 1 (2404MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASURE. VALUE(μ W)	LIMIT (μ W)	RESULT
V_{normal}	30MHz to 1000MHz	859.228	0.000073	0.25	PASS
	1000MHz to 2387MHz	2361.687	0.011015	2.5	PASS
	2387MHz to 2400MHz	2399.990	0.049431	25	PASS
	2483.5MHz to 2496.5MHz	2489.239	0.011588	25	PASS
	2496.5MHz to 12500MHz	5089.907	0.018621	2.5	PASS
$V_{max.}$	30MHz to 1000MHz	953.561	0.000072	0.25	PASS
	1000MHz to 2387MHz	2356.659	0.012589	2.5	PASS
	2387MHz to 2400MHz	2399.920	0.041976	25	PASS
	2483.5MHz to 2496.5MHz	2494.272	0.013152	25	PASS
	2496.5MHz to 12500MHz	3755.690	0.019231	2.5	PASS
$V_{min.}$	30MHz to 1000MHz	891.602	0.000084	0.25	PASS
	1000MHz to 2387MHz	2352.325	0.009863	2.5	PASS
	2387MHz to 2400MHz	2399.961	0.043451	25	PASS
	2483.5MHz to 2496.5MHz	2483.885	0.010864	25	PASS
	2496.5MHz to 12500MHz	8319.787	0.017620	2.5	PASS
TEST CHANNEL		CH 19 (2440MHz)			
V_{normal}	30MHz to 1000MHz	893.785	0.000077	0.25	PASS
	1000MHz to 2387MHz	2148.089	0.009750	2.5	PASS
	2387MHz to 2400MHz	2399.709	0.010641	25	PASS
	2483.5MHz to 2496.5MHz	2494.693	0.014093	25	PASS
	2496.5MHz to 12500MHz	3859.476	0.024604	2.5	PASS
$V_{max.}$	30MHz to 1000MHz	500.086	0.000076	0.25	PASS
	1000MHz to 2387MHz	2374.517	0.009931	2.5	PASS
	2387MHz to 2400MHz	2393.147	0.012474	25	PASS
	2483.5MHz to 2496.5MHz	2489.683	0.011482	25	PASS
	2496.5MHz to 12500MHz	5084.905	0.024099	2.5	PASS
$V_{min.}$	30MHz to 1000MHz	992.603	0.000084	0.25	PASS
	1000MHz to 2387MHz	2317.823	0.011092	2.5	PASS
	2387MHz to 2400MHz	2394.163	0.010839	25	PASS
	2483.5MHz to 2496.5MHz	2486.631	0.011535	25	PASS
	2496.5MHz to 12500MHz	3711.925	0.017179	2.5	PASS

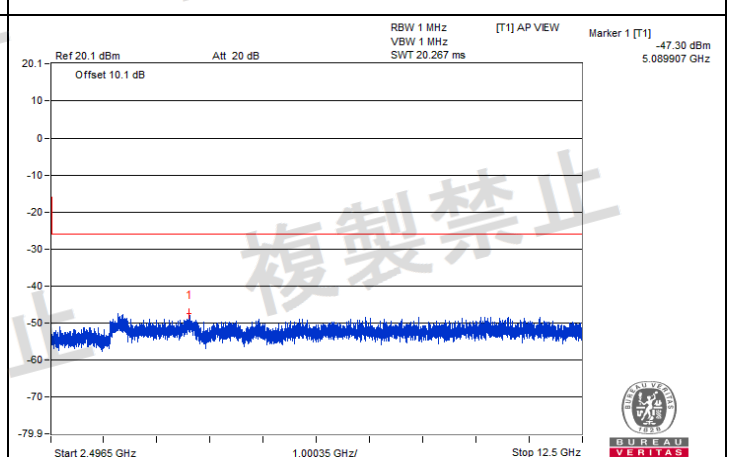
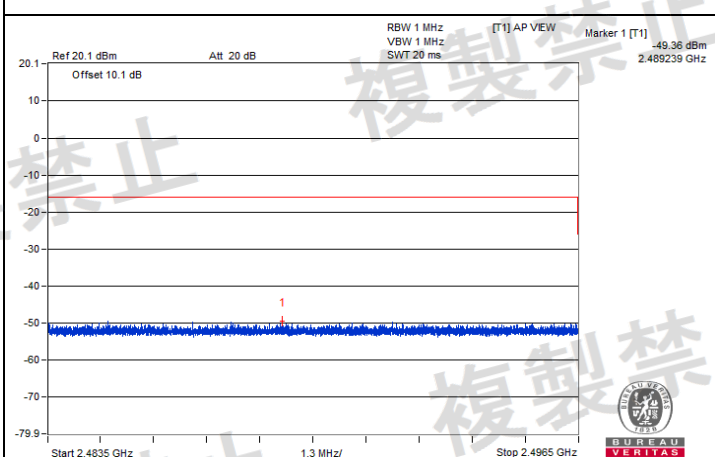
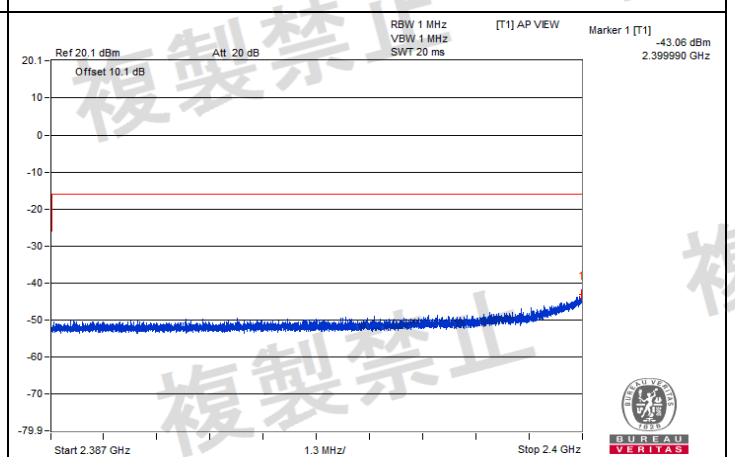
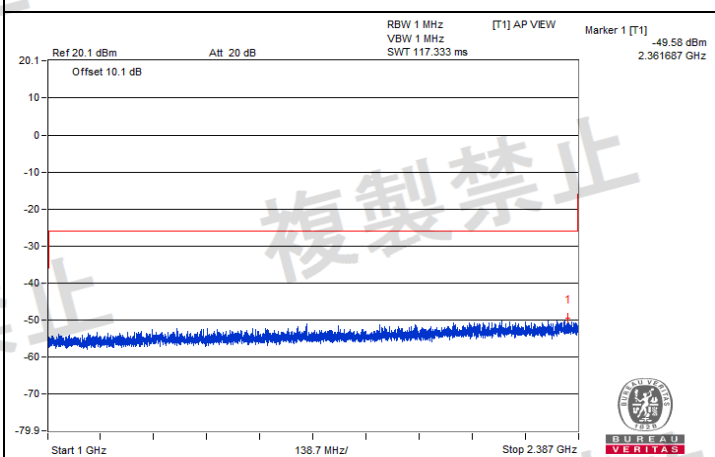
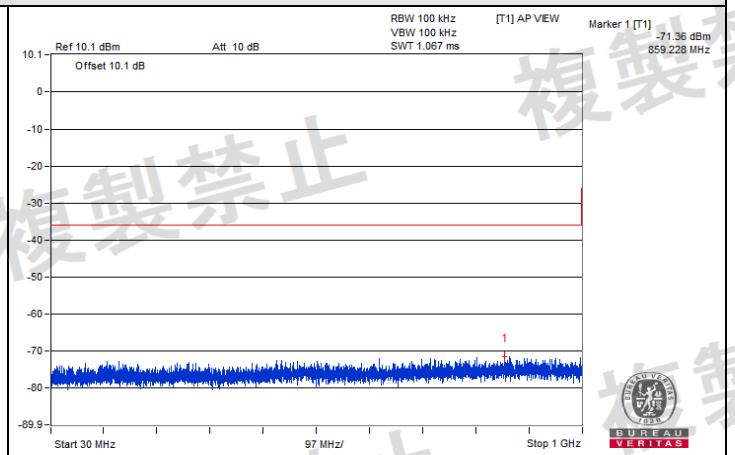
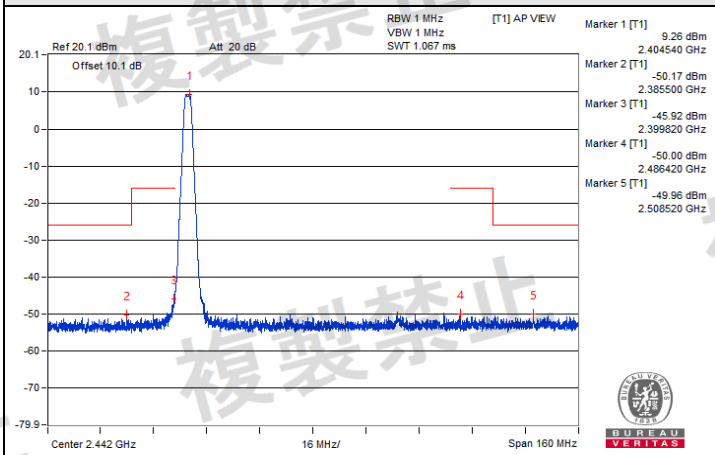
TEST CHANNEL		CH 38 (2478MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASURE. VALUE(uW)	LIMIT (uW)	RESULT
V_{normal}	30MHz to 1000MHz	774.353	0.000067	0.25	PASS
	1000MHz to 2387MHz	2359.260	0.013002	2.5	PASS
	2387MHz to 2400MHz	2394.816	0.010666	25	PASS
	2483.5MHz to 2496.5MHz	2483.638	0.015776	25	PASS
	2496.5MHz to 12500MHz	3836.969	0.023014	2.5	PASS
V_{max.}	30MHz to 1000MHz	930.645	0.000079	0.25	PASS
	1000MHz to 2387MHz	2160.052	0.010765	2.5	PASS
	2387MHz to 2400MHz	2387.888	0.011429	25	PASS
	2483.5MHz to 2496.5MHz	2483.573	0.017660	25	PASS
	2496.5MHz to 12500MHz	12042.339	0.017620	2.5	PASS
V_{min.}	30MHz to 1000MHz	873.415	0.000072	0.25	PASS
	1000MHz to 2387MHz	2239.111	0.010495	2.5	PASS
	2387MHz to 2400MHz	2393.971	0.012331	25	PASS
	2483.5MHz to 2496.5MHz	2483.773	0.017947	25	PASS
	2496.5MHz to 12500MHz	7667.059	0.017579	2.5	PASS

NOTE: 1. The spectrum plots are attached on the following pages.



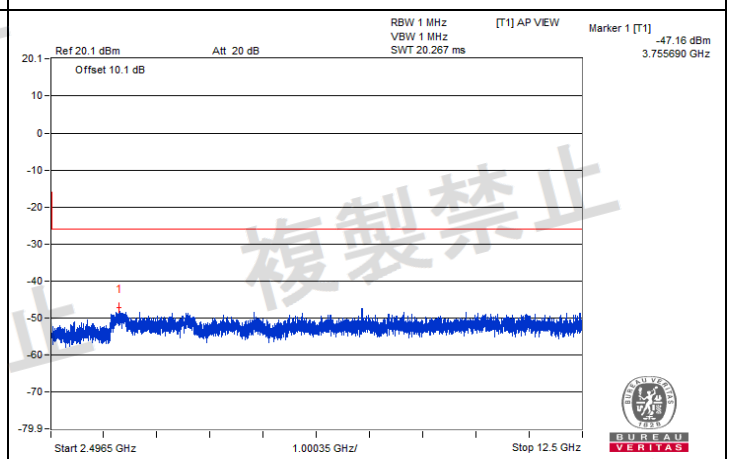
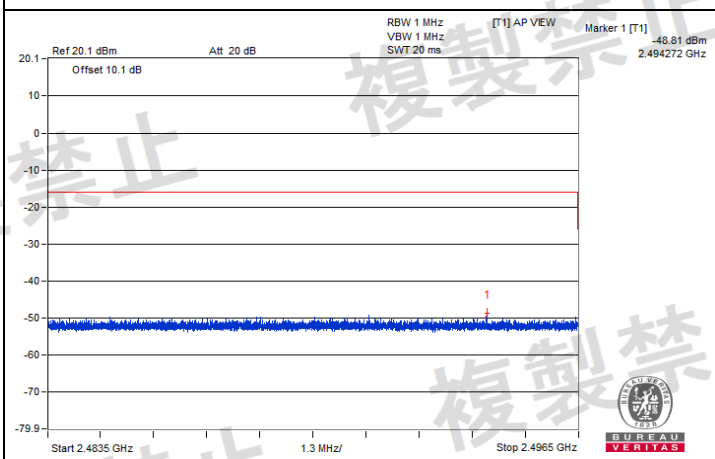
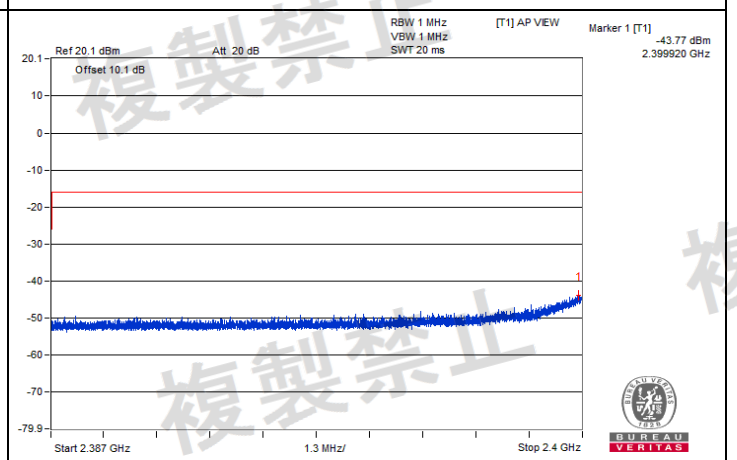
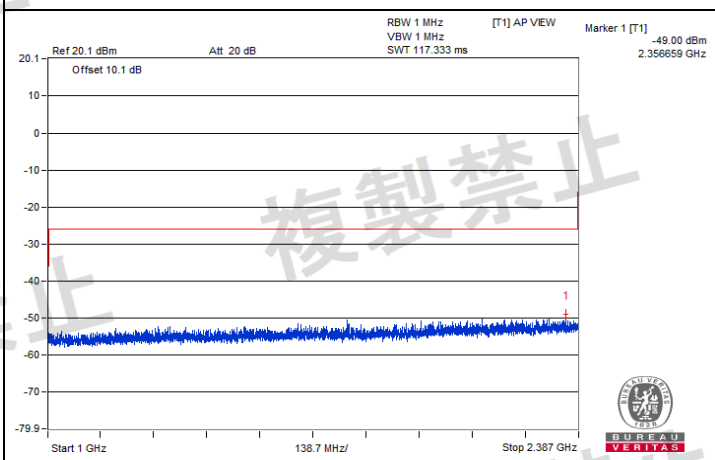
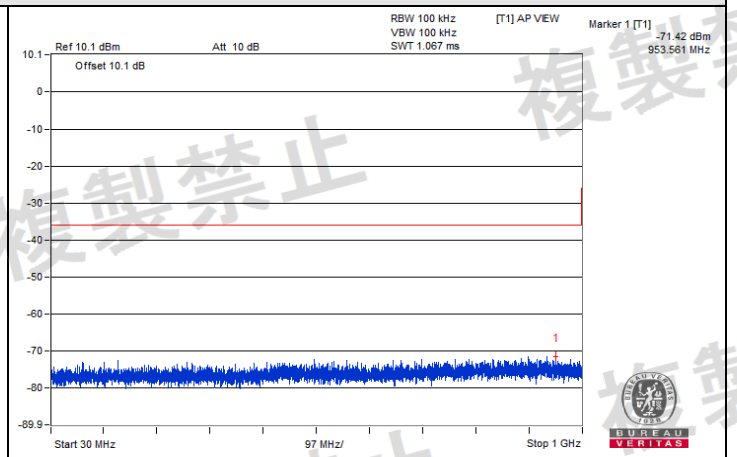
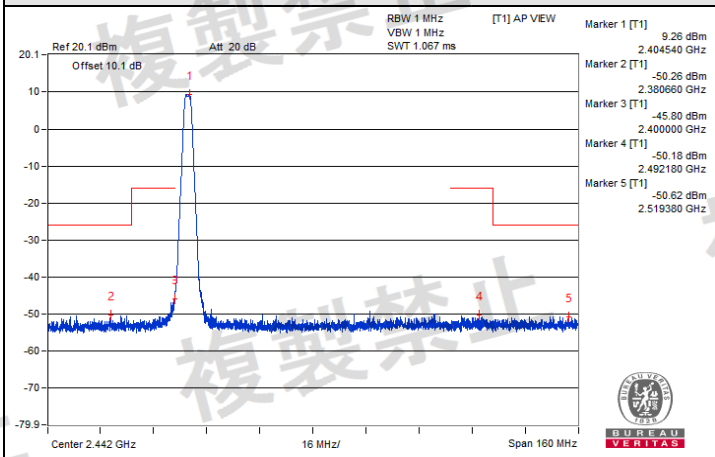
BUREAU
VERITAS

Vnormal



CH 1 (2404MHz)

V max.

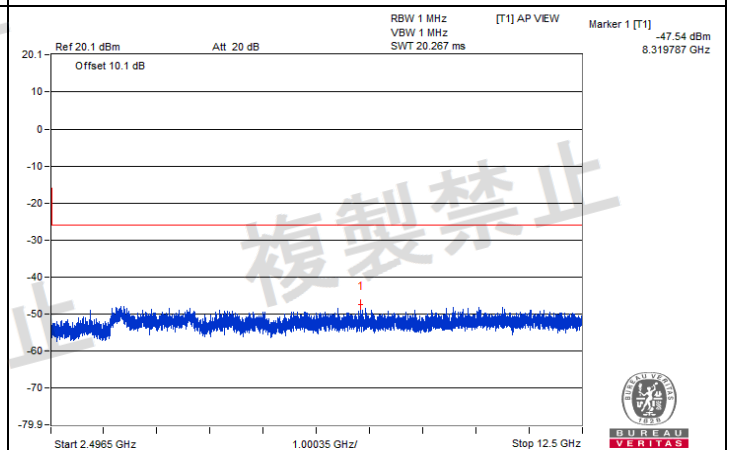
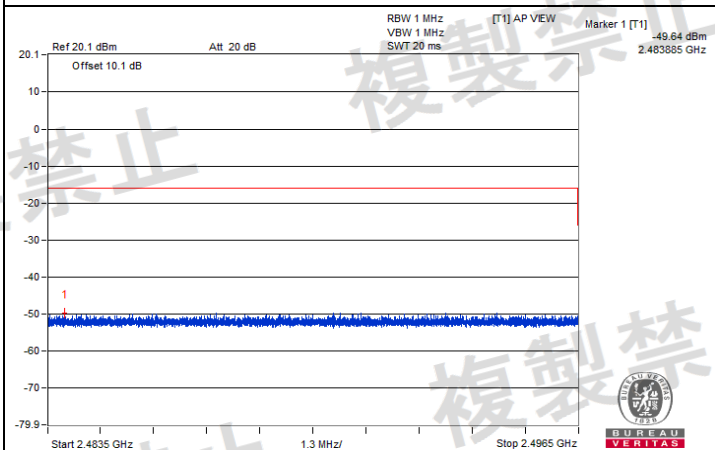
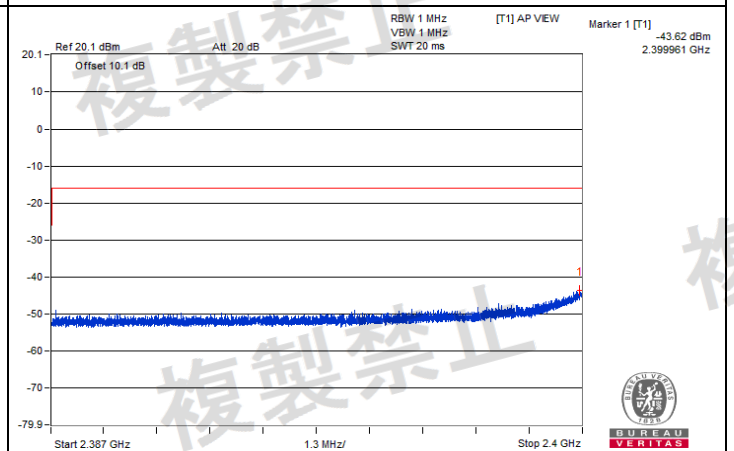
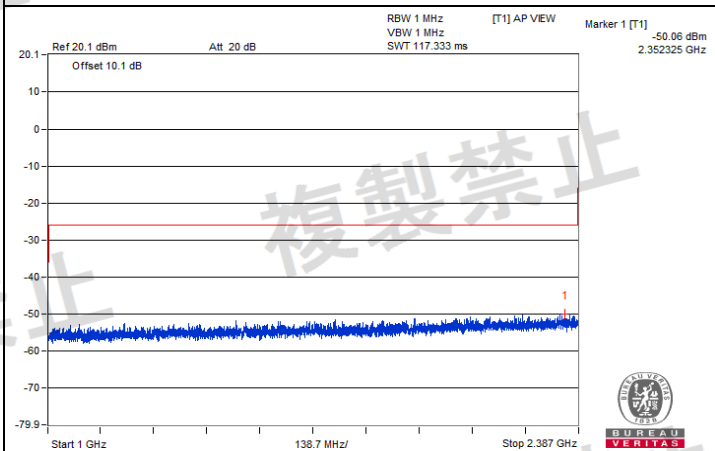
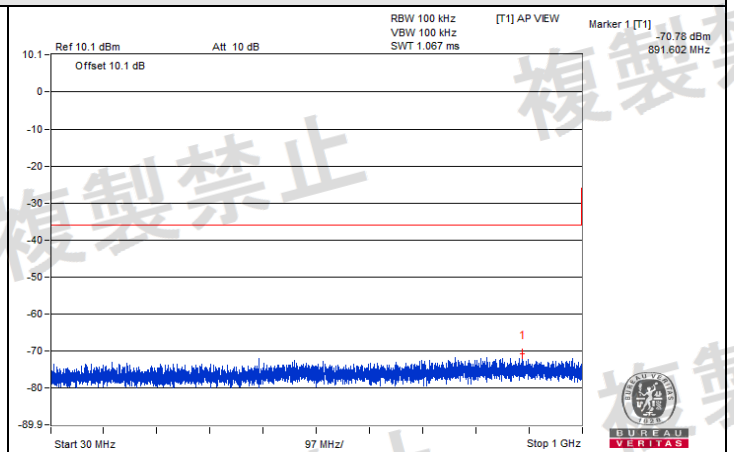
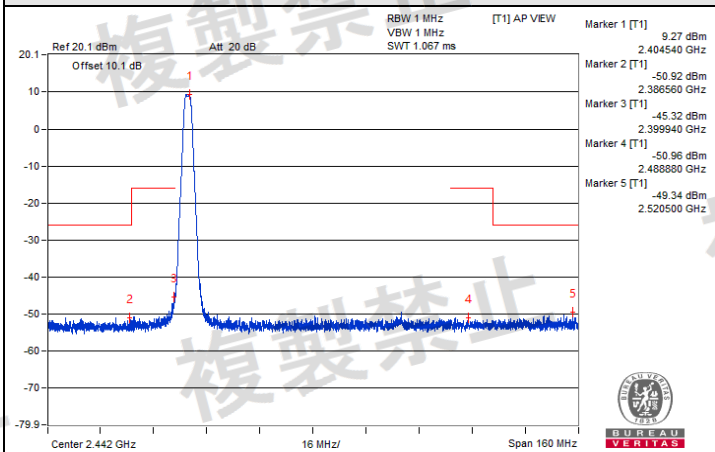


CH 1 (2404MHz)



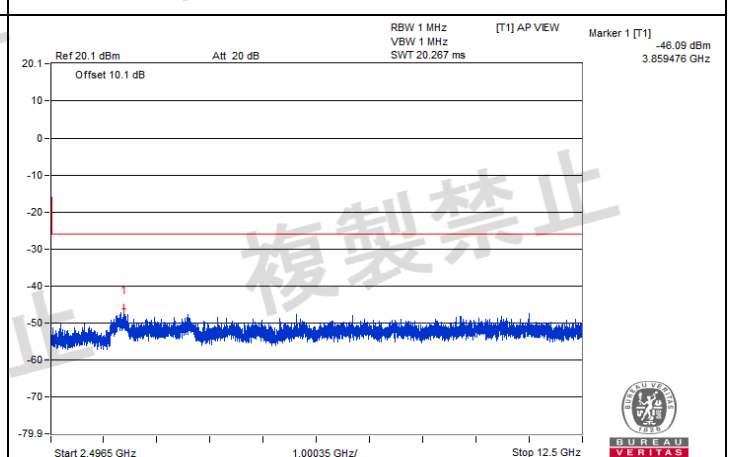
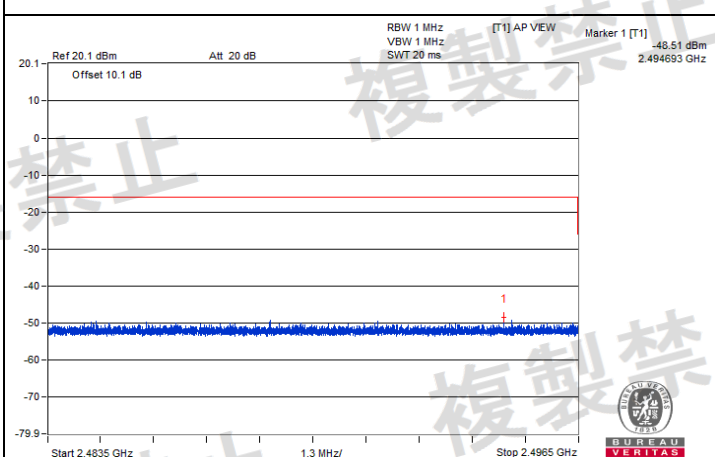
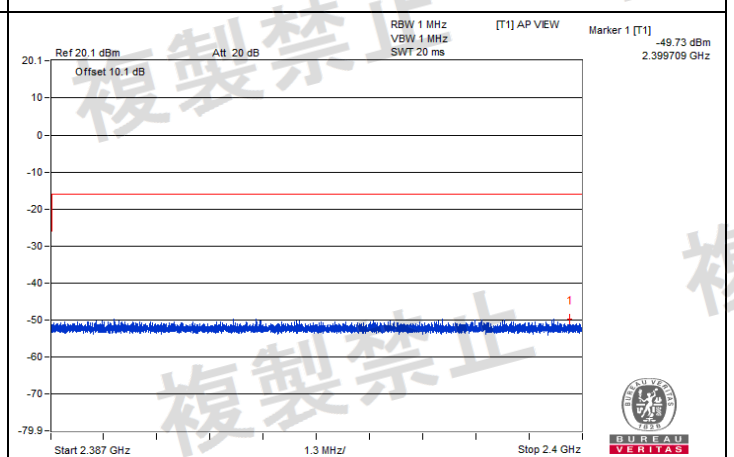
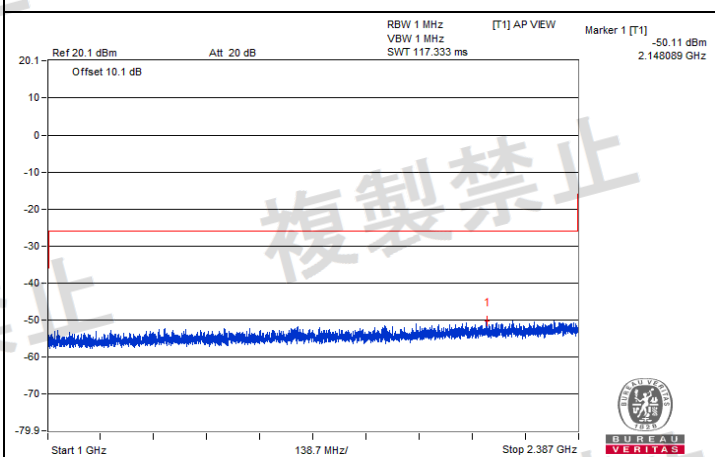
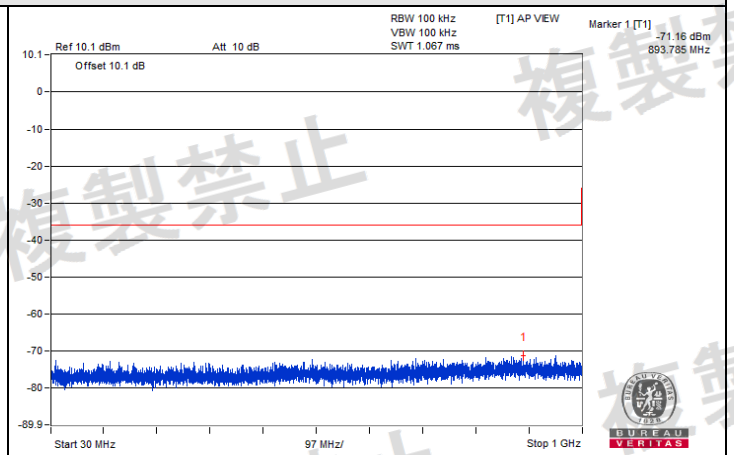
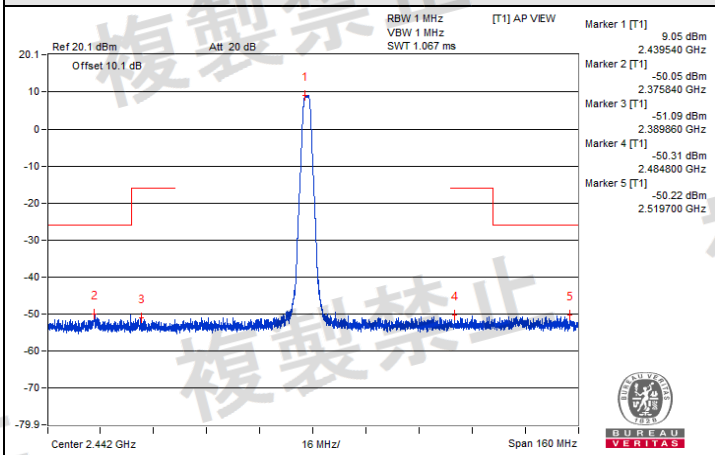
BUREAU
VERITAS

V min.



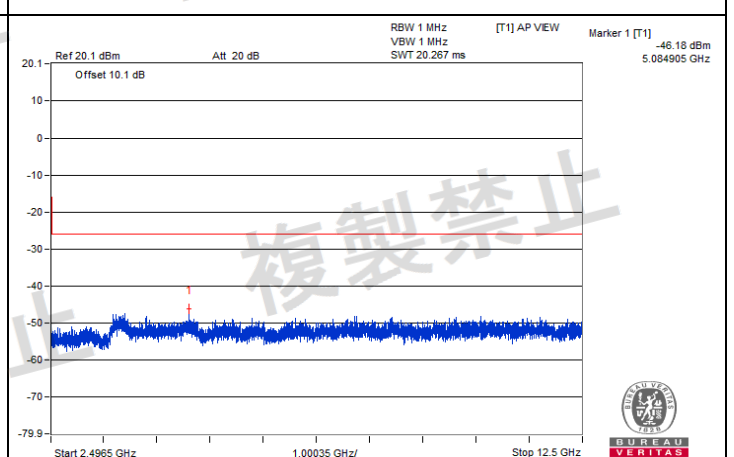
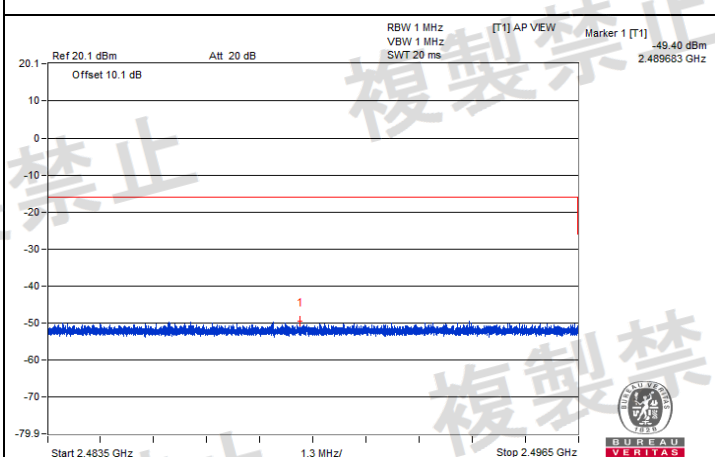
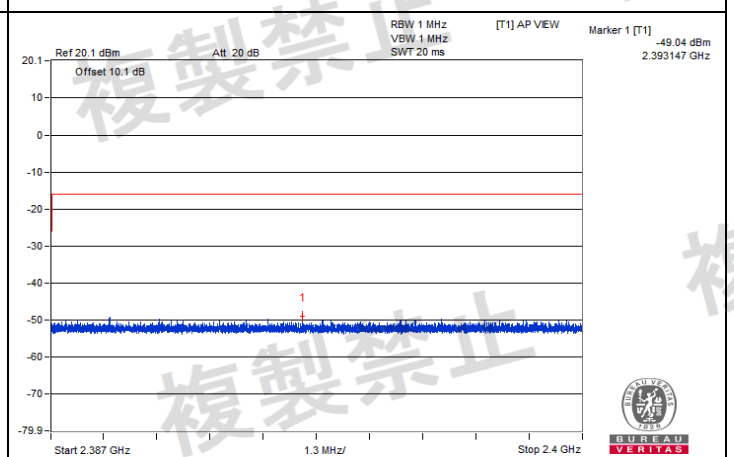
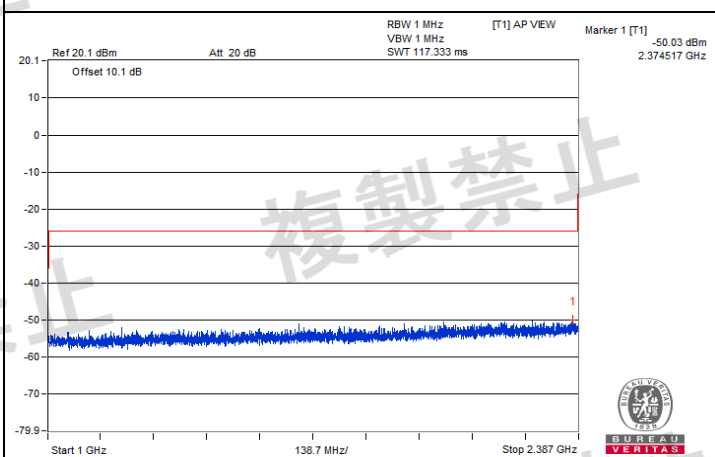
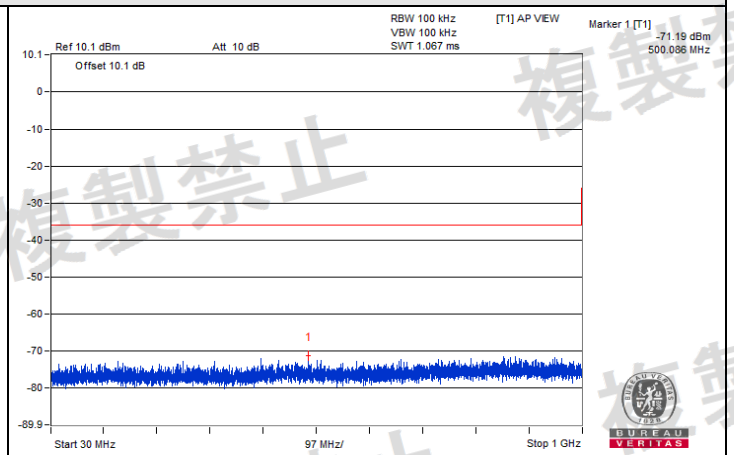
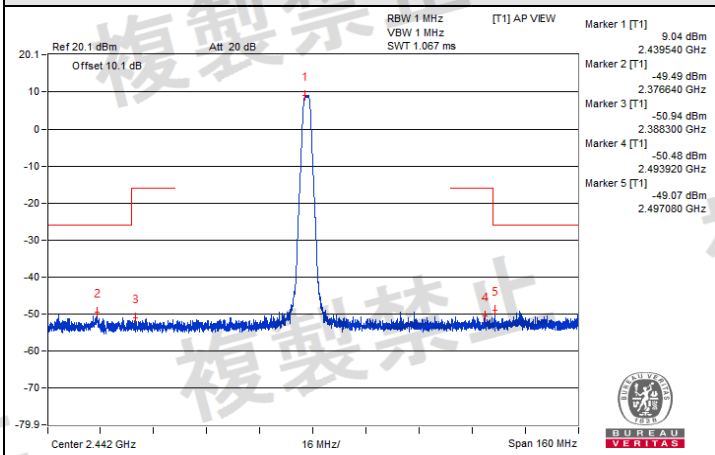
CH 1 (2404MHz)

Vnormal



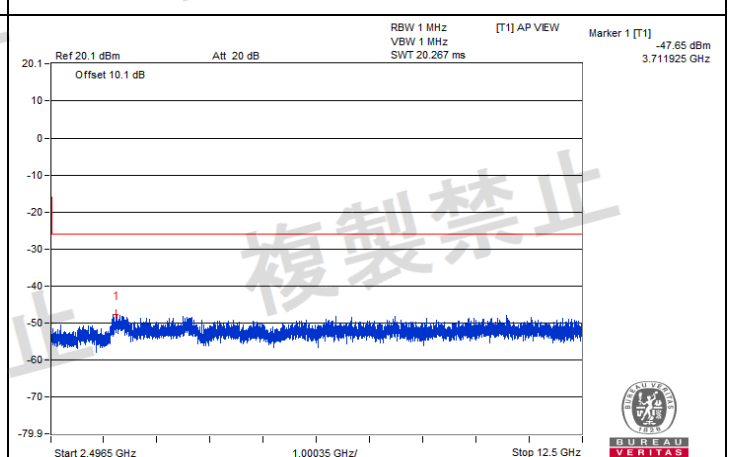
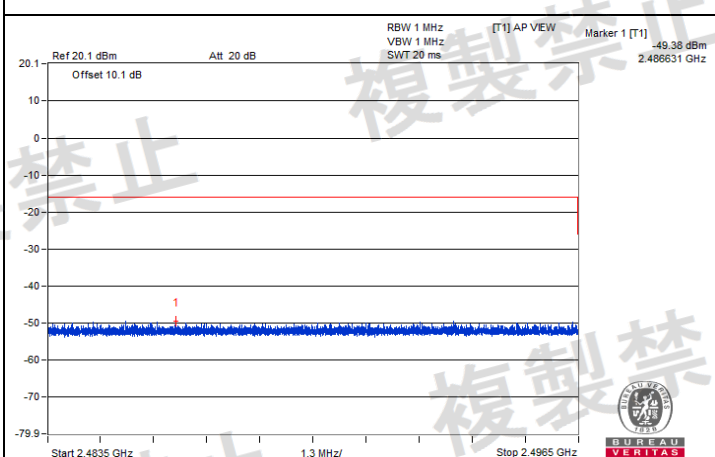
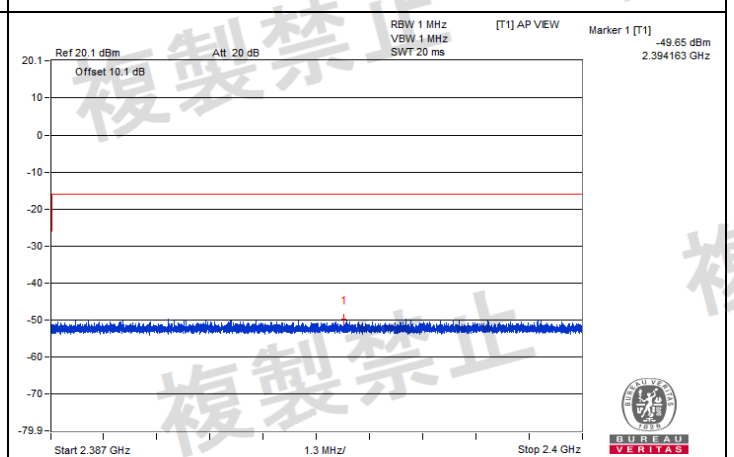
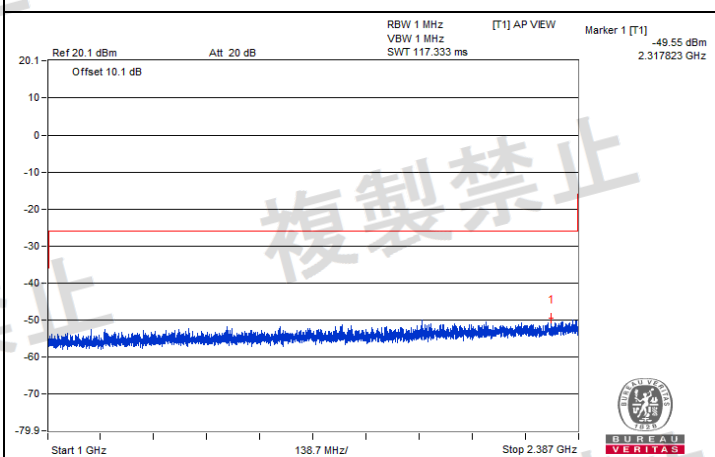
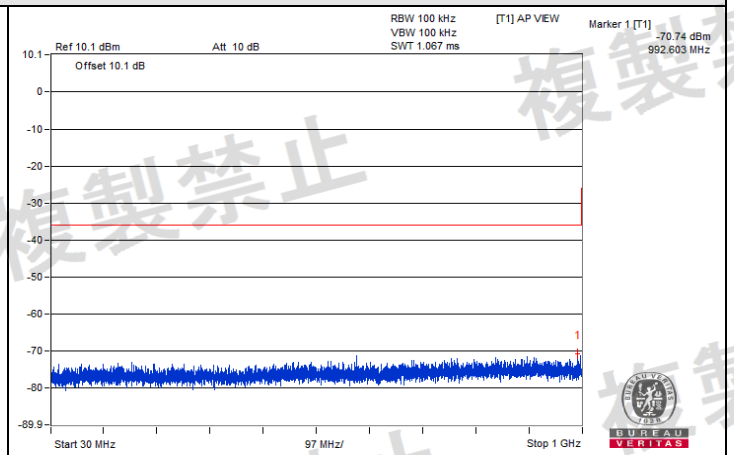
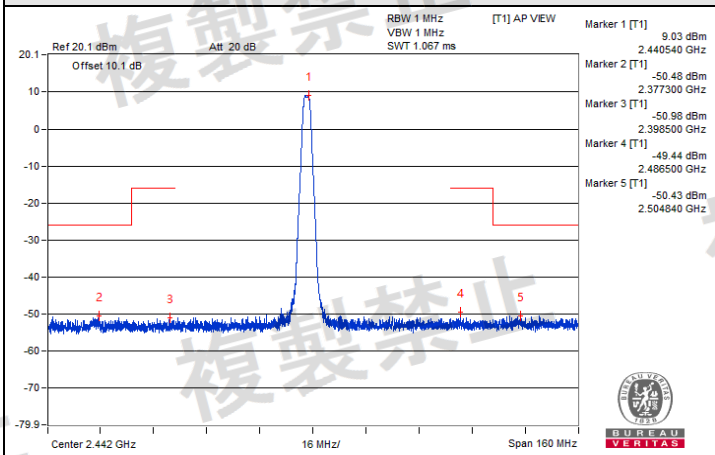
CH 19 (2440MHz)

Vmax.



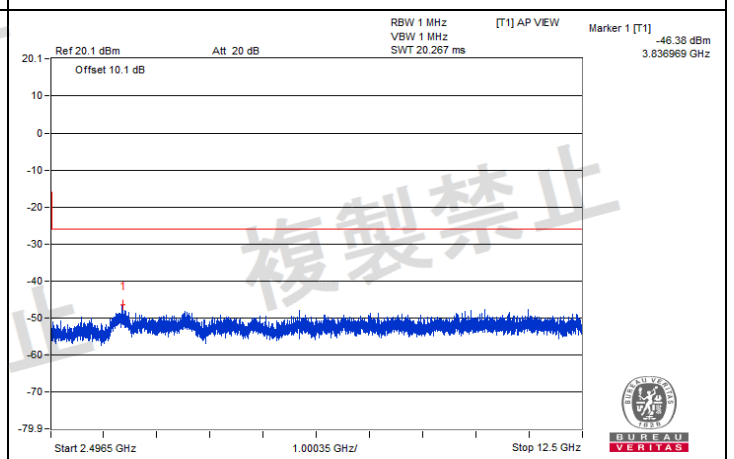
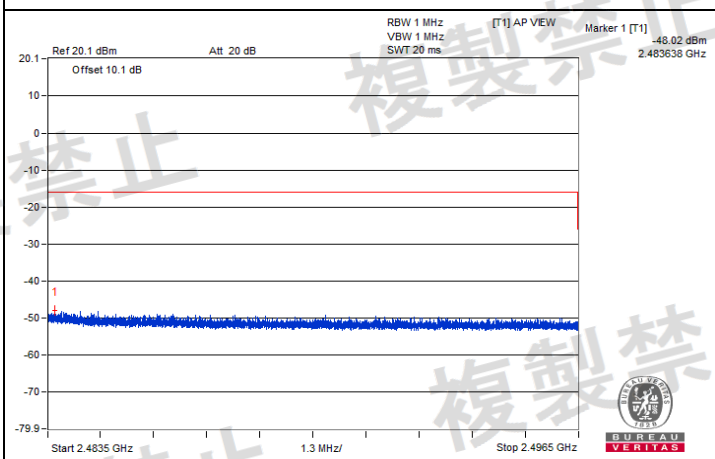
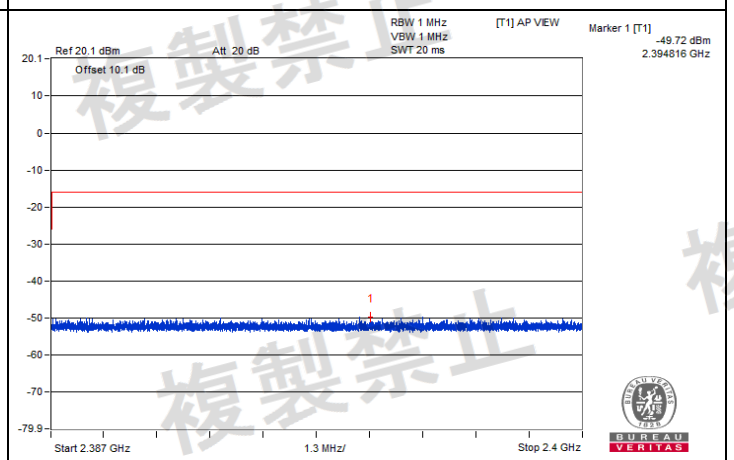
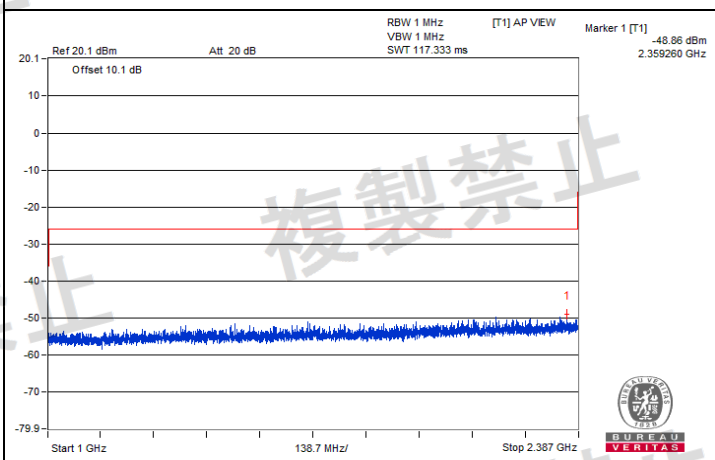
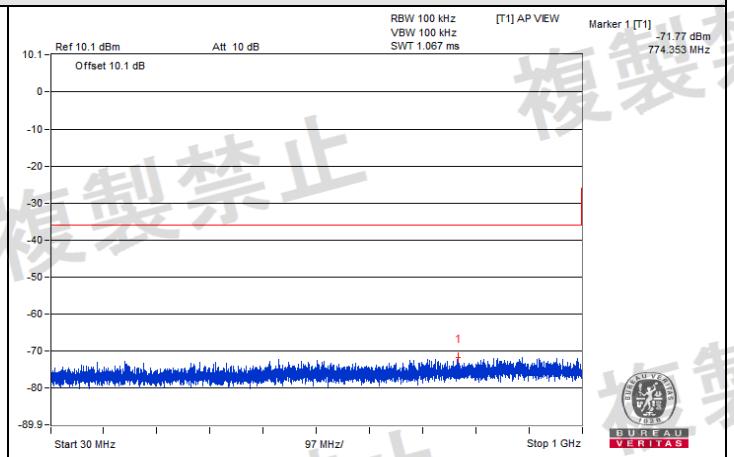
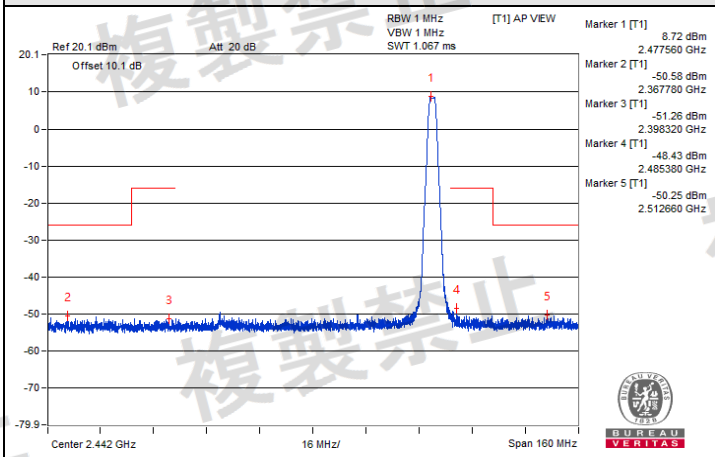
CH 19 (2440MHz)

V min.



CH 19 (2440MHz)

Vnormal

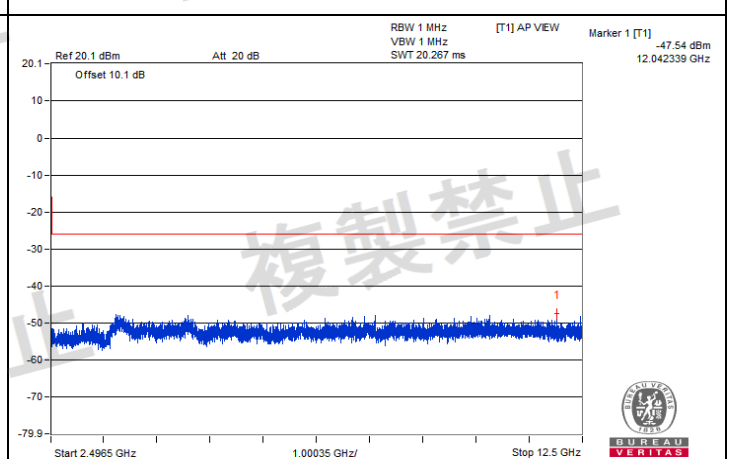
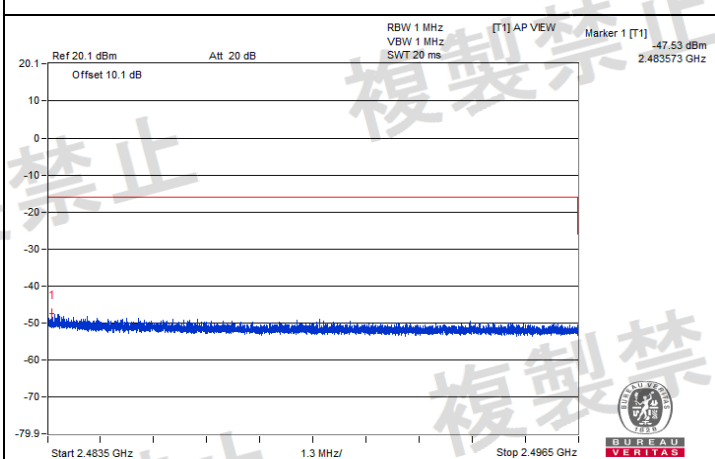
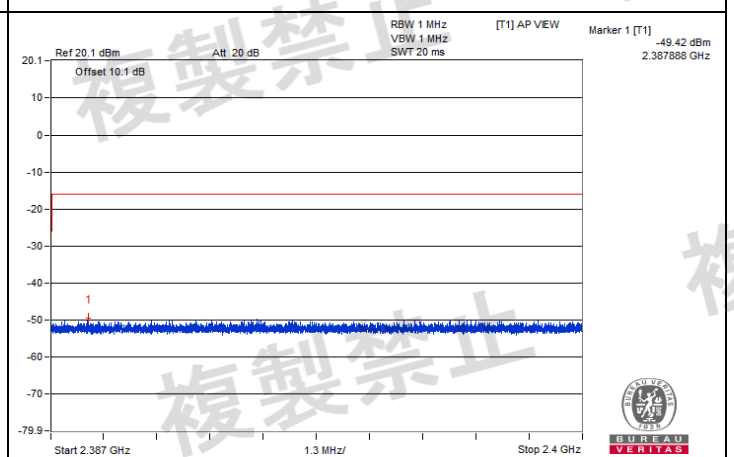
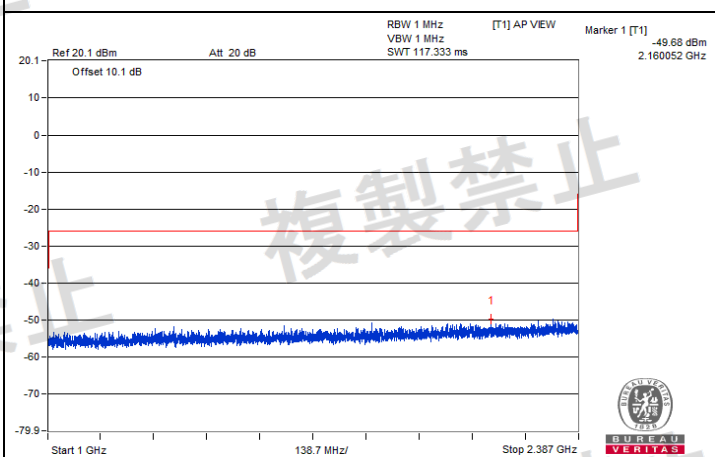
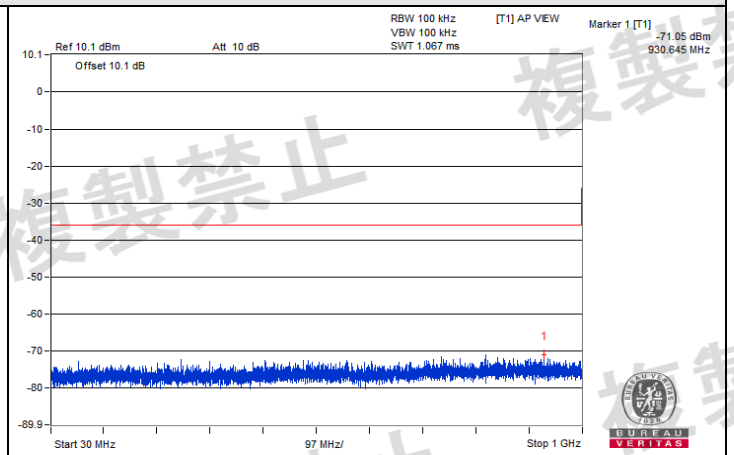
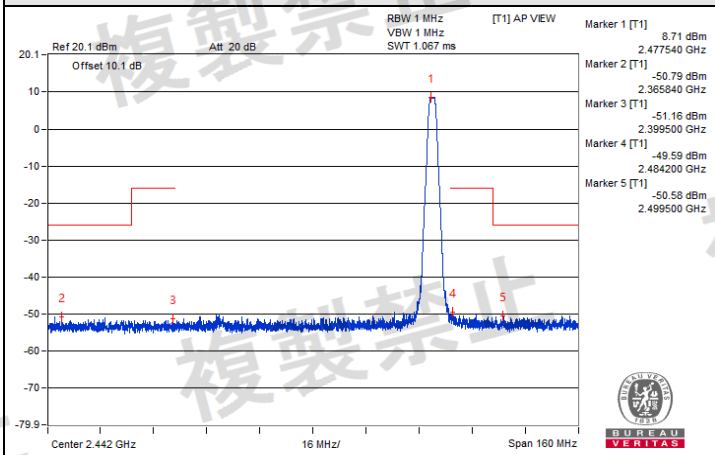


CH 38 (2478MHz)



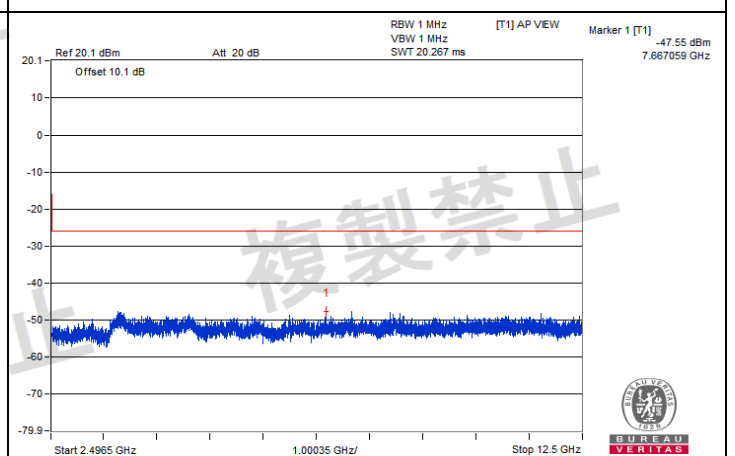
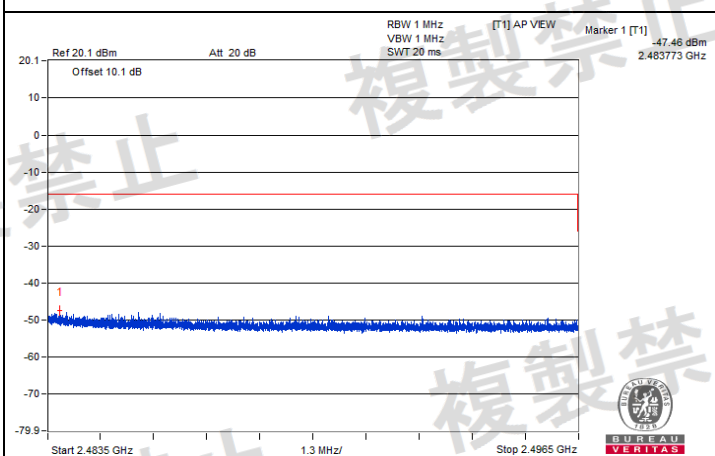
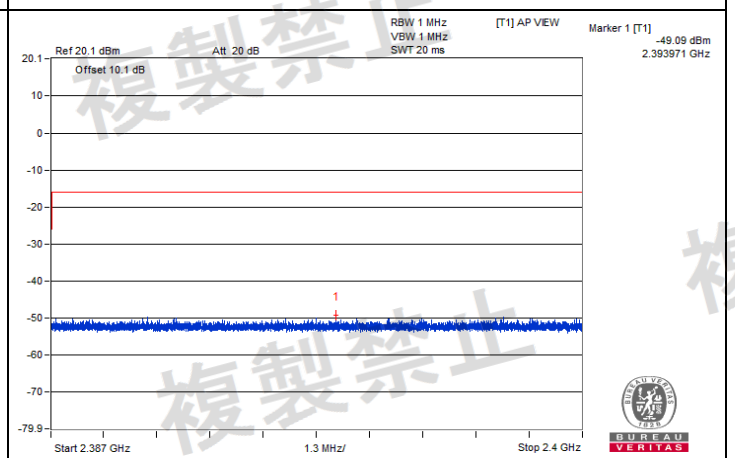
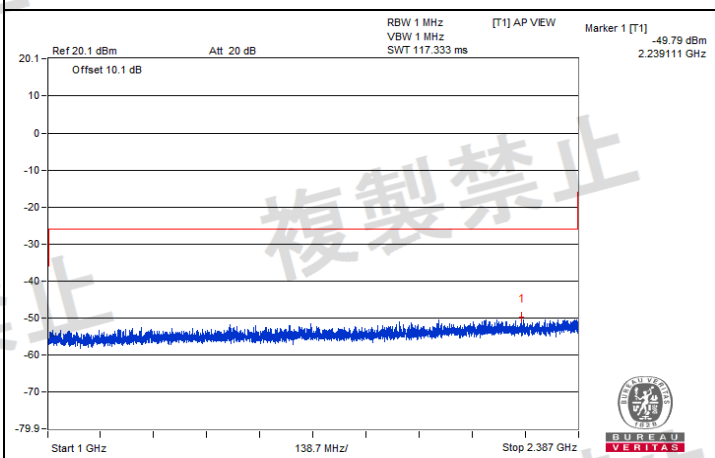
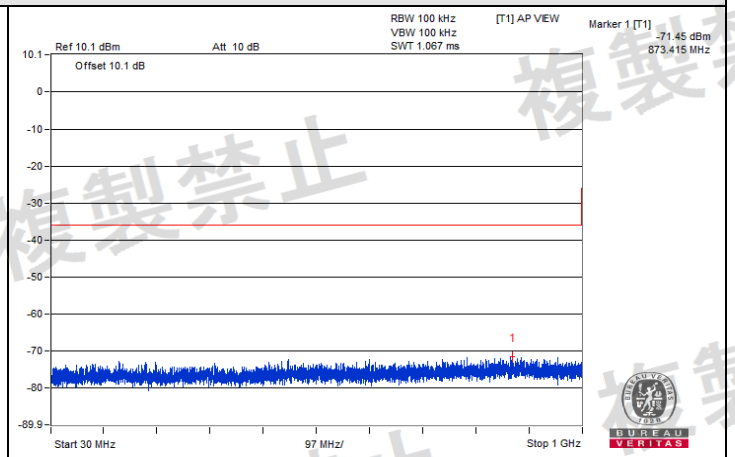
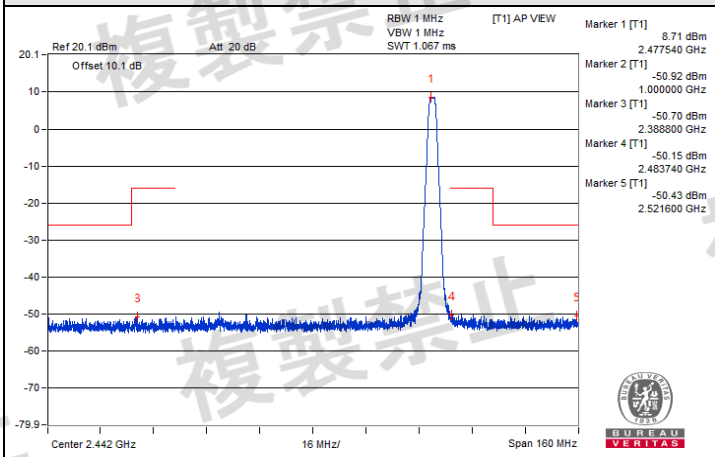
BUREAU
VERITAS

V max.



CH 38 (2478MHz)

V min.



CH 38 (2478MHz)

7.4 Spurious Emissions of Receiver

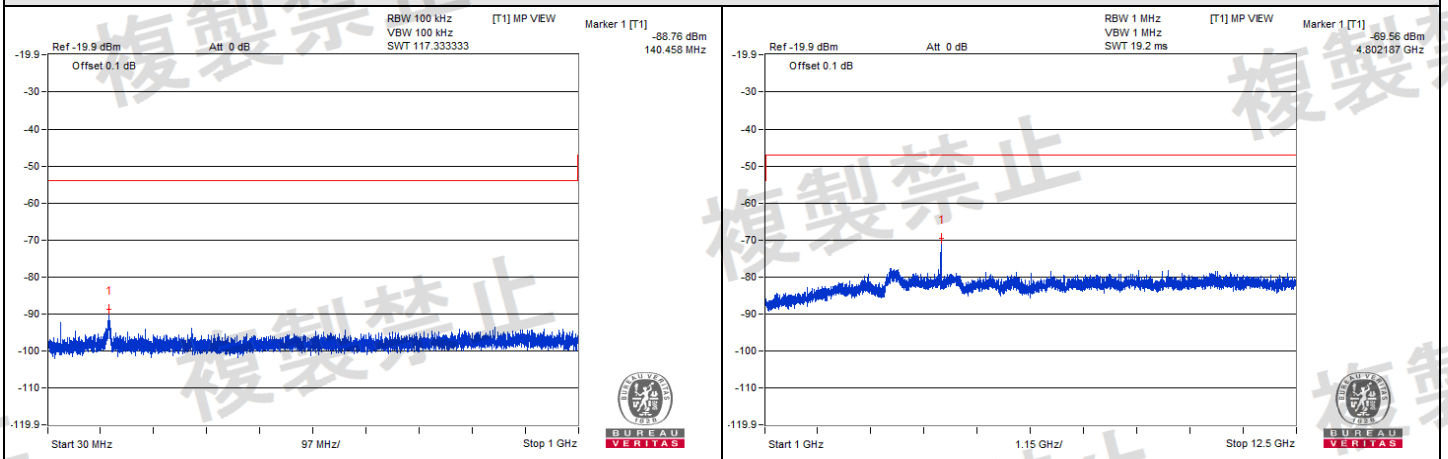
Environmental Conditions:	25°C, 61% RH	Tested By:	Eric Peng
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TEST CHANNEL		CH 0 (2402MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASURE. VALUE(nW)	LIMIT (nW)	RESULT
V_{normal}	30MHz to 1000MHz	140.458	0.001330	4.0	PASS
	1000MHz to 12500MHz	4802.187	0.110662	20.0	PASS
$V_{max.}$	30MHz to 1000MHz	140.458	0.000782	4.0	PASS
	1000MHz to 12500MHz	4802.187	0.104954	20.0	PASS
$V_{min.}$	30MHz to 1000MHz	138.640	0.000774	4.0	PASS
	1000MHz to 12500MHz	4802.187	0.104472	20.0	PASS
TEST CHANNEL		CH 19 (2440MHz)			
V_{normal}	30MHz to 1000MHz	141.671	0.001300	4.0	PASS
	1000MHz to 12500MHz	4878.375	0.104232	20.0	PASS
$V_{max.}$	30MHz to 1000MHz	140.216	0.000908	4.0	PASS
	1000MHz to 12500MHz	4878.375	0.107152	20.0	PASS
$V_{min.}$	30MHz to 1000MHz	141.428	0.000902	4.0	PASS
	1000MHz to 12500MHz	4878.375	0.110154	20.0	PASS
TEST CHANNEL		CH 39 (2480MHz)			
V_{normal}	30MHz to 1000MHz	139.367	0.001189	4.0	PASS
	1000MHz to 12500MHz	4958.875	0.149279	20.0	PASS
$V_{max.}$	30MHz to 1000MHz	139.973	0.000853	4.0	PASS
	1000MHz to 12500MHz	4958.875	0.165196	20.0	PASS
$V_{min.}$	30MHz to 1000MHz	139.367	0.000855	4.0	PASS
	1000MHz to 12500MHz	4958.875	0.155597	20.0	PASS

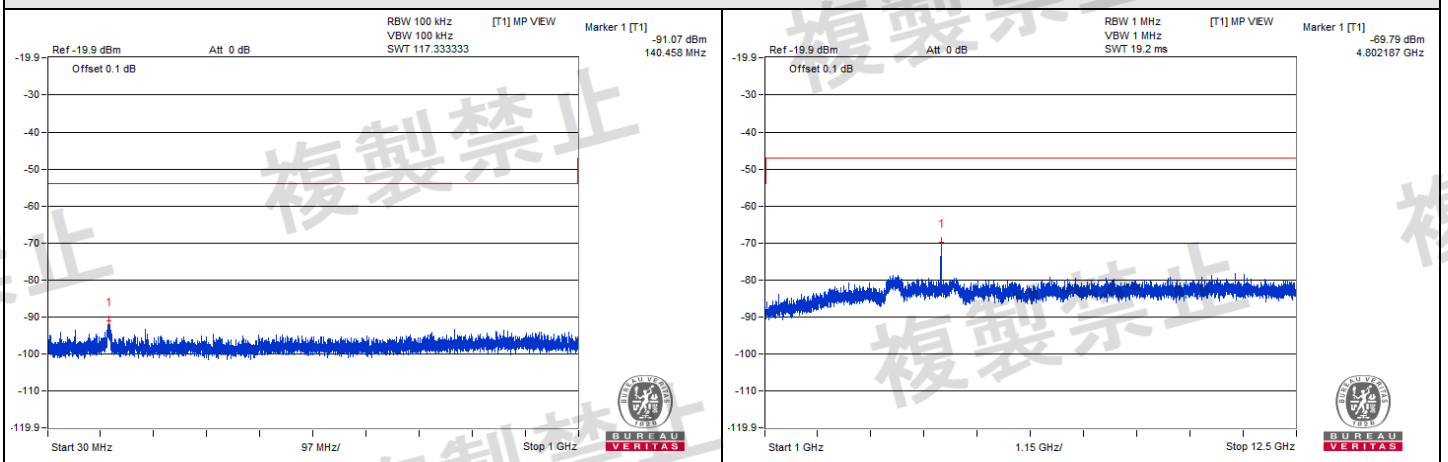


BUREAU
VERITAS

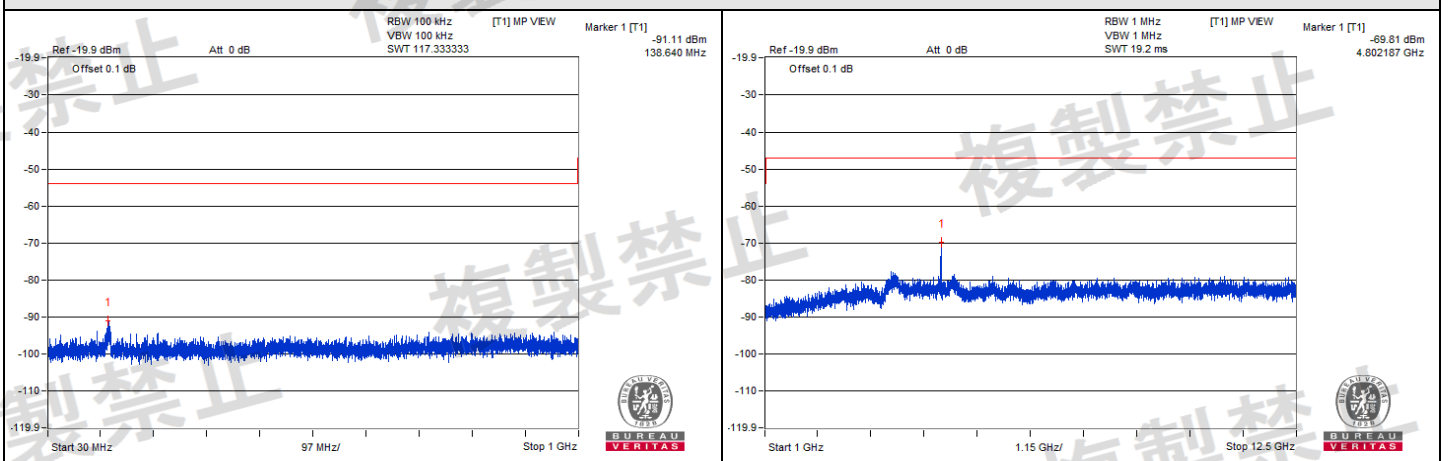
V_{normal}



V_{max}



V_{min}

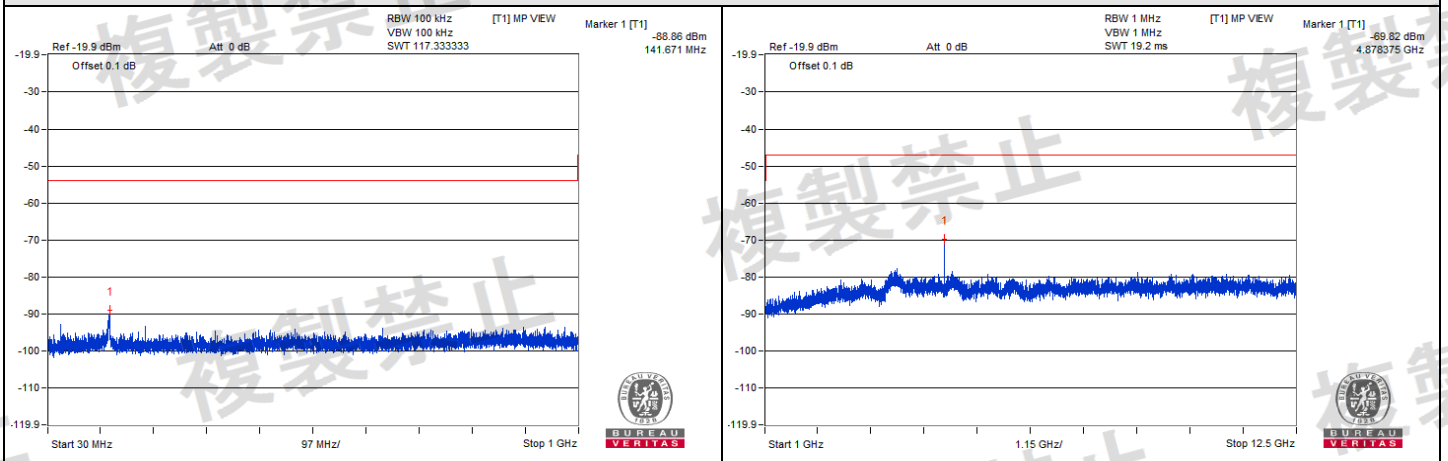


CH 0 (2402MHz)

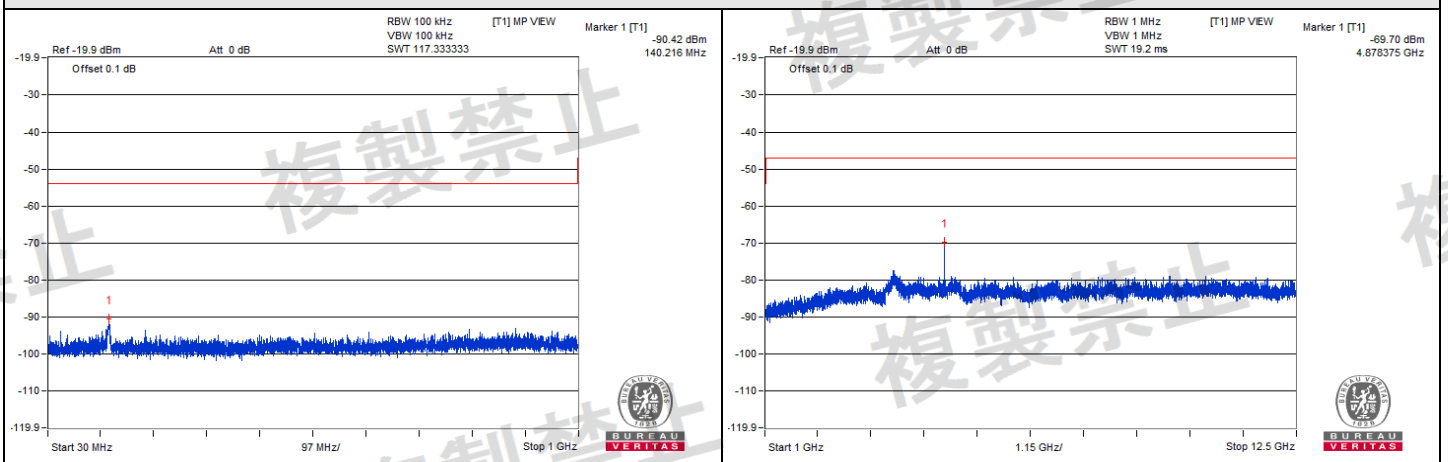


BUREAU
VERITAS

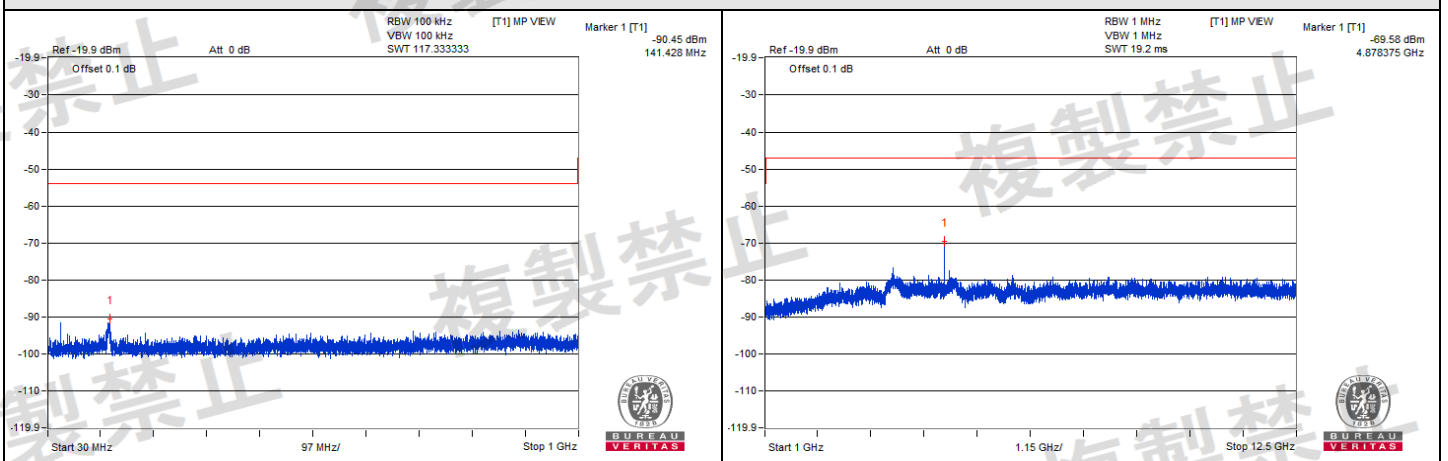
V_{normal}



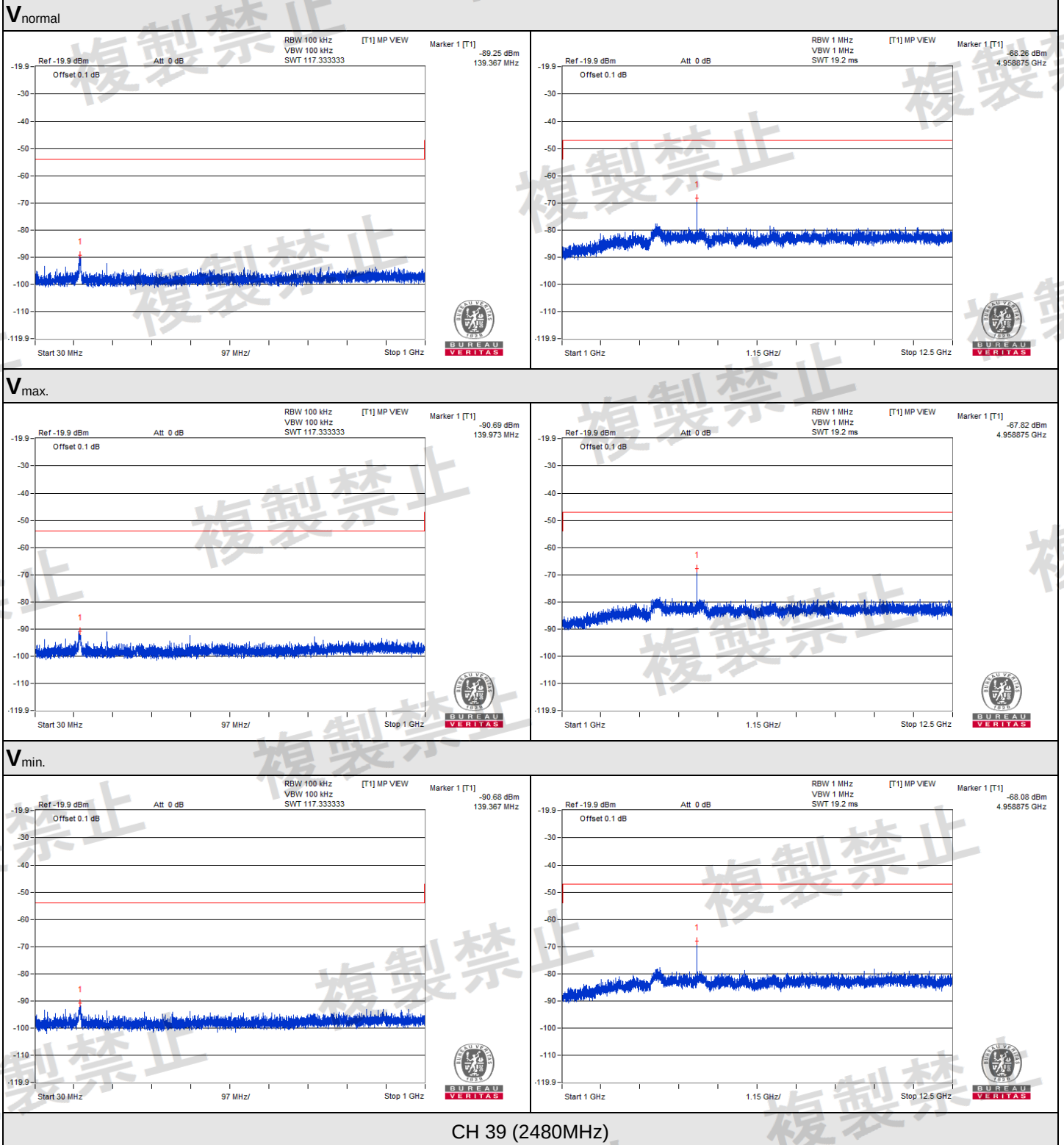
V_{max}



V_{min}

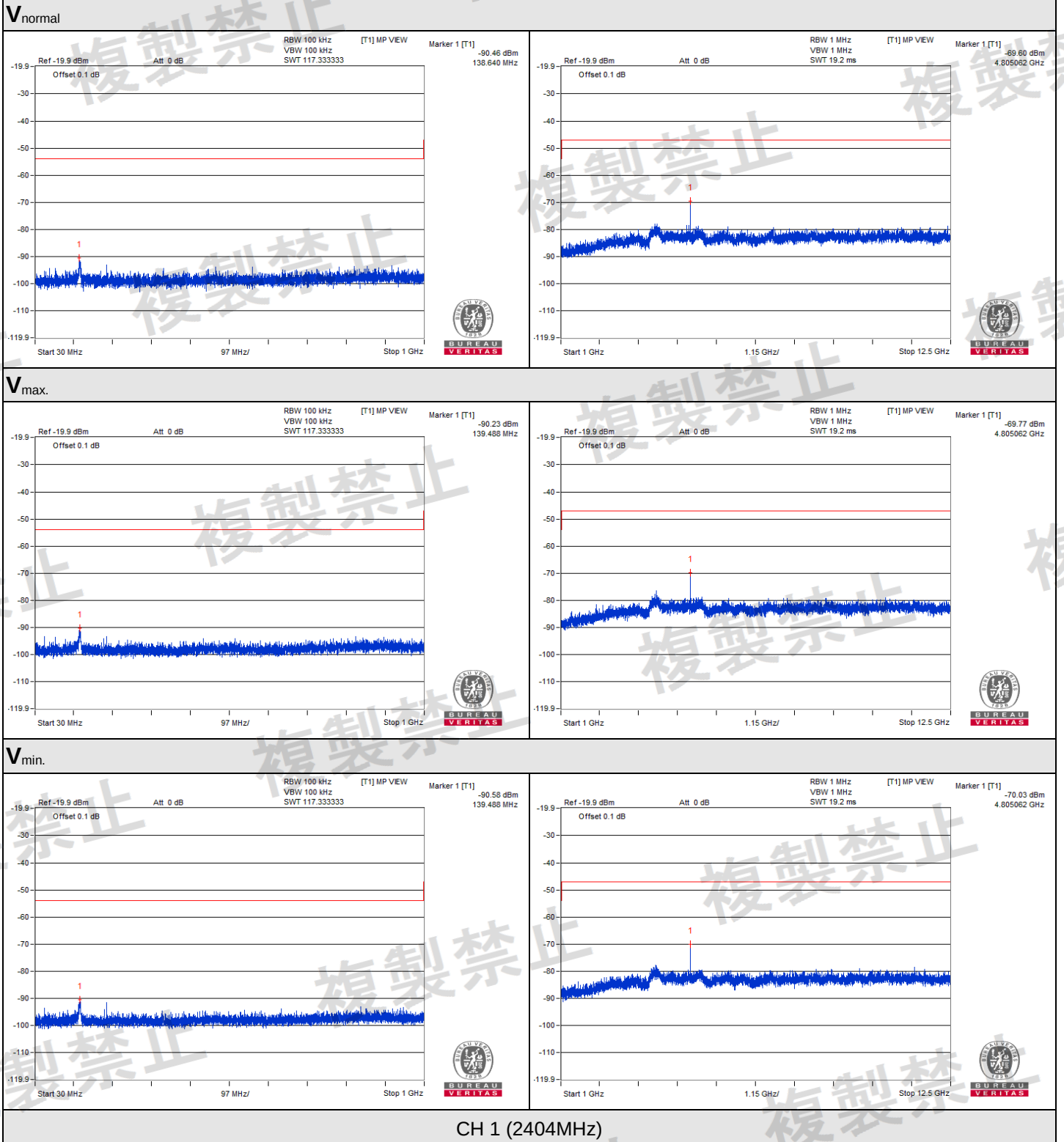


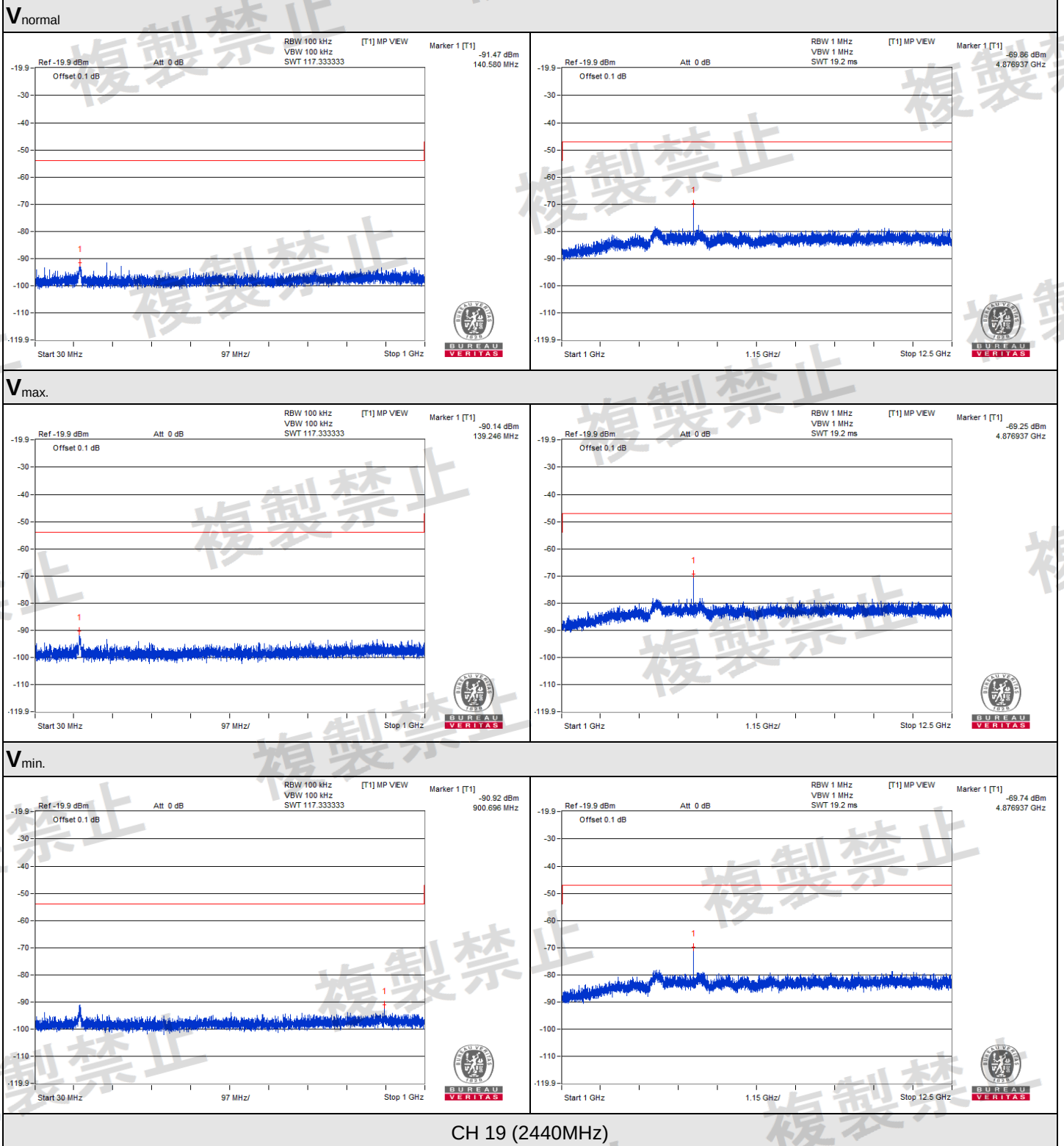
CH 19 (2440MHz)

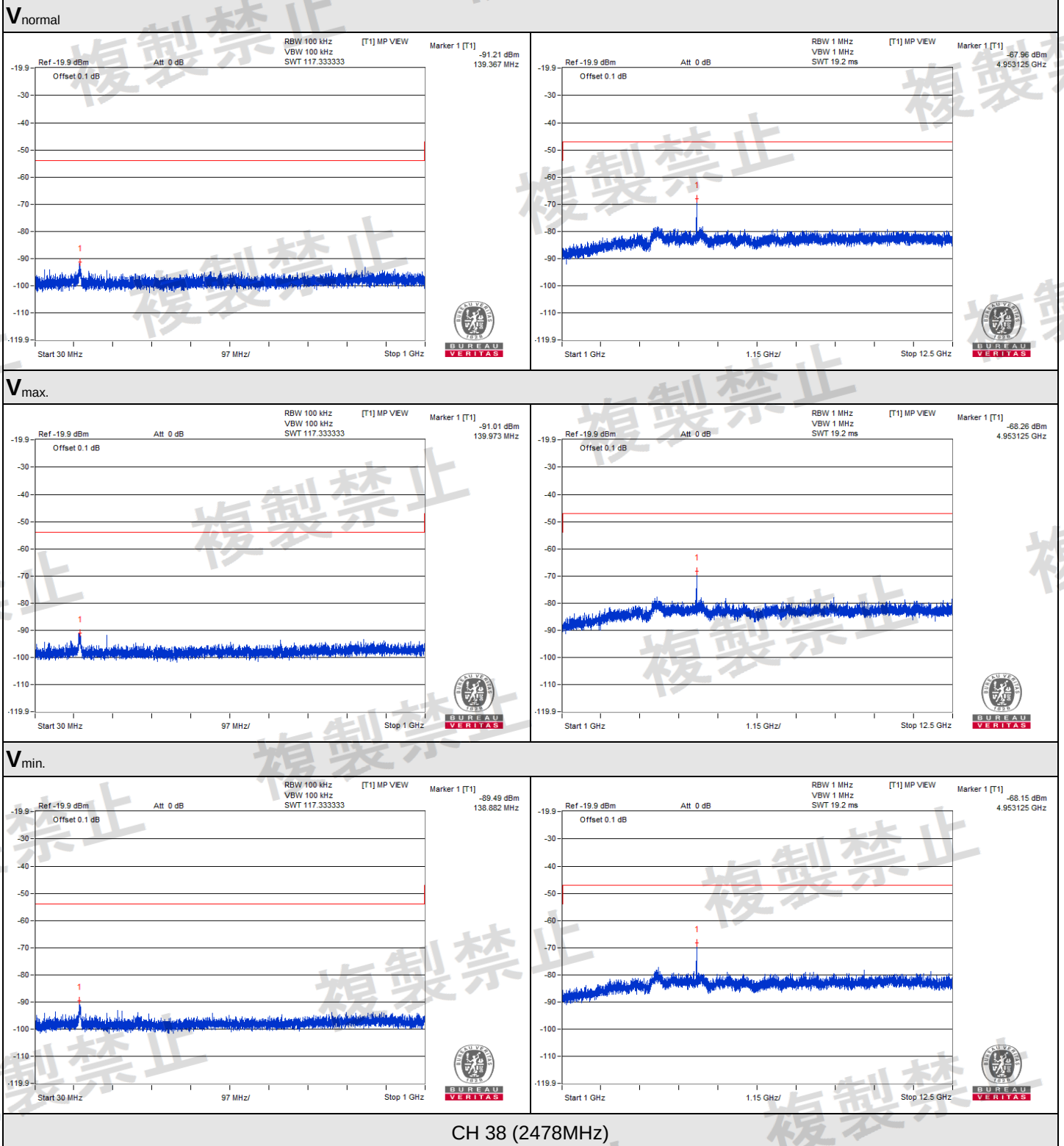


BT-LE 2M

TEST CHANNEL		CH 1 (2404MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASURE. VALUE(nW)	LIMIT (nW)	RESULT
V_{normal}	30MHz to 1000MHz	138.640	0.000899	4.0	PASS
	1000MHz to 12500MHz	4805.062	0.109648	20.0	PASS
V_{max.}	30MHz to 1000MHz	139.488	0.000948	4.0	PASS
	1000MHz to 12500MHz	4805.062	0.105439	20.0	PASS
V_{min.}	30MHz to 1000MHz	139.488	0.000875	4.0	PASS
	1000MHz to 12500MHz	4805.062	0.099312	20.0	PASS
TEST CHANNEL		CH 19 (2440MHz)			
V_{normal}	30MHz to 1000MHz	140.580	0.000713	4.0	PASS
	1000MHz to 12500MHz	4876.937	0.103276	20.0	PASS
V_{max.}	30MHz to 1000MHz	139.246	0.000968	4.0	PASS
	1000MHz to 12500MHz	4876.937	0.118850	20.0	PASS
V_{min.}	30MHz to 1000MHz	900.696	0.000809	4.0	PASS
	1000MHz to 12500MHz	4876.937	0.106170	20.0	PASS
TEST CHANNEL		CH 38 (2478MHz)			
V_{normal}	30MHz to 1000MHz	139.367	0.000757	4.0	PASS
	1000MHz to 12500MHz	4953.125	0.159956	20.0	PASS
V_{max.}	30MHz to 1000MHz	139.973	0.000793	4.0	PASS
	1000MHz to 12500MHz	4953.125	0.149279	20.0	PASS
V_{min.}	30MHz to 1000MHz	138.882	0.001125	4.0	PASS
	1000MHz to 12500MHz	4953.125	0.153109	20.0	PASS







7.5 Antenna Power

Environmental Conditions:	25°C, 64% RH	Tested By:	Eric Peng
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For BT LE-1M

Voltage (Vdc)	Channel Number	Frequency (MHz)	Conducted RF Output Power (mW)	Radiated RF Output Power (mW)
5	0	2402	7.278	12.942
	19	2440	6.73	11.968
	39	2480	7.211	12.823
5.5	0	2402	7.047	12.532
	19	2440	6.457	11.482
	39	2480	7.047	12.532
4.5	0	2402	7.015	12.475
	19	2440	6.839	12.162
	39	2480	7.244	12.882
Maximum Limit (mW):			10	-
Rated Power (mW):			8	-
Tolerance of Antenna Power (mW):			1.6 ~ 9.6	-
Maximum EIRP Limit (mW):			-	16.368

Notes:

1. Antenna gain is 2.5 dBi.
2. The radiated RF output power is a "calculated" value derived from the conducted value.
3. Formula: Radiated RF output power = Conducted RF output power + Antenna gain

For BT LE-2M

Voltage (Vdc)	Channel Number	Frequency (MHz)	Conducted RF Output Power (mW)	Radiated RF Output Power (mW)
5	1	2402	6.714	11.939
	19	2440	6.73	11.968
	38	2480	6.808	12.107
5.5	1	2402	6.776	12.05
	19	2440	6.577	11.696
	38	2480	6.966	12.387
4.5	1	2402	6.934	12.331
	19	2440	6.823	12.133
	38	2480	6.73	11.968
Maximum Limit (mW):			10	-
Rated Power (mW):			8	-
Tolerance of Antenna Power (mW):			1.6 ~ 9.6	-
Maximum EIRP Limit (mW):			-	16.368

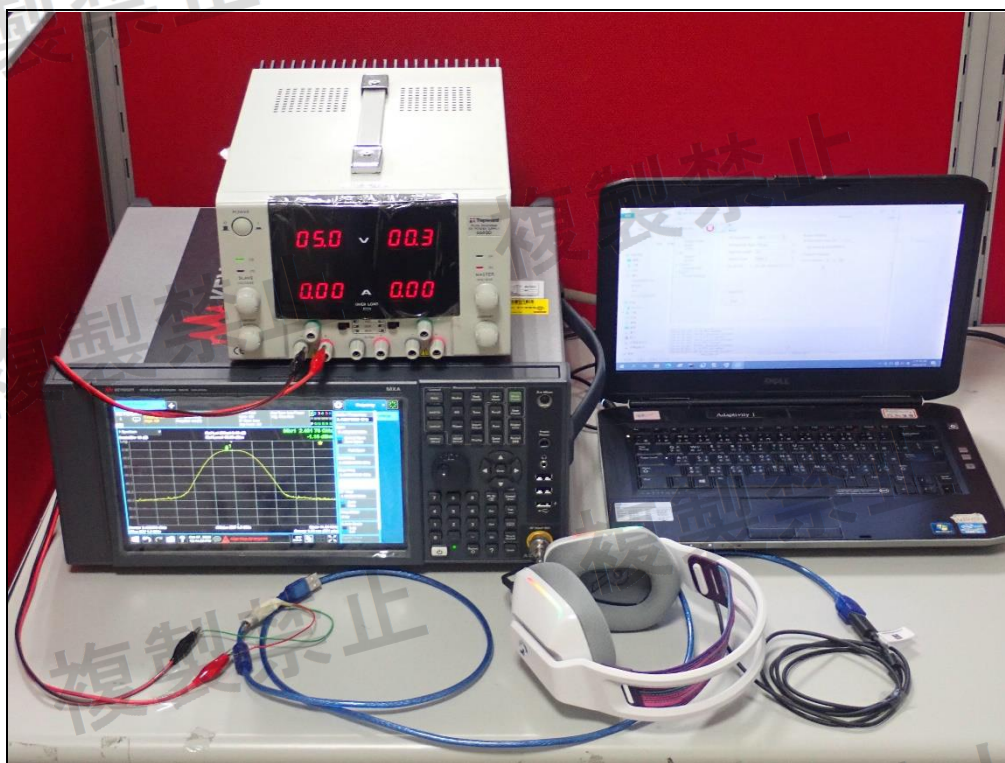
Notes:

1. Antenna gain is 2.5 dBi.
2. The radiated RF output power is a "calculated" value derived from the conducted value.
3. Formula: Radiated RF output power = Conducted RF output power + Antenna gain

7.6 Interference Prevention Function

Environmental Conditions:	24°C, 63% RH	Tested By:	Eric Peng
Link Mode		Test Result	
BT-LE		Pass	

8 Pictures of Test Arrangements



9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@bureauveritas.com

Web Site: <http://ee.bureauveritas.com.tw>

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

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