

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: Certification Ordinance Article 2-1-19
Report No.: RJBBQZ-WTW-P22060198
Product: WiFi 6 AX4200 Dual Band Multi-Gig Access Point
Brand: NETGEAR
Model No.: WAX220
Received Date: 2022/6/14
Test Date: 2022/9/30 ~ 2022/11/16
Issued Date: 2022/12/01
Applicant: NETGEAR, INC.
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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Approved by: Jeremy Lin, **Date:** 2022/12/01
Jeremy Lin / Project Engineer

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Prepared by : Polly Chien / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RJBBQZ-WTW-P22060198	Original release.	2022/12/01

1 Certificate

Product: WiFi 6 AX4200 Dual Band Multi-Gig Access Point
Brand: NETGEAR
Test Model: WAX220
Sample Status: Engineering sample
Applicant: NETGEAR, INC.
Test Date: 2022/9/30 ~ 2022/11/16
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 (Refer to Note 3)
OR: Article 49-20	Communication Method	Pass (Refer to Note 3)
OR: Article 49-20	Modulation Mehtod	Pass (Refer to Note 3)
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	Pass
OR: Article 49-20	Spreading Bandwidth and Spreading Factor	Pass
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	Pass

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.
3. The relative information refer section 3.1 of this report

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	491.896 Hz
Spurious Emissions	2.208 dB
Output Power Density	2.889 dB
Out of Band Radiated Power	3.93 dB
Frequency Tolerance	6805.18 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	WiFi 6 AX4200 Dual Band Multi-Gig Access Point
Brand	NETGEAR
Test Model	WAX220
Test Software Version	QAUI (MT7986_0007) Version : 0.0.2.87
Status of EUT	Engineering sample
Power Supply Rating	12 Vdc (adapter) 55.5 Vdc (POE)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n: up to 300 Mbps VHT: up to 400 Mbps 802.11ax: up to 574 Mbps
Operating Frequency	2.412 GHz ~ 2.472 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20):13 802.11n (HT40), VHT40, 802.11ax (HE40):9
Assembly	Special screw

Note:

1. The EUT uses following accessories.

Adapter 1	
Brand	NETGEAR
Model	ADS-40FPA-12 12030EPCU-L /EPC-L
Part Number	332-11525-02
Input Power	100~120Vac ~60Mhz Max.1.0A
Output Power	12Vdc/2.5A
DC cable	1.8m DC cable without core

Adapter 2	
Brand	NETGEAR
Model	AD2067F10
Part Number	332-10797-02
Input Power	100~120Vac ~50/60Mhz Max.1.0A
Output Power	12Vdc/2.5A
DC cable	1.8m DC cable without core

POE (for support unit only)	
Brand	BUFFALO
Model	BIJ-POE-1P2GH
Input Power	100-240 Vac, 1.1 A, 50/60 Hz
Output Power	55.5 Vdc, 0.54 A

2. 2.4GHz & 5GHz technology can transmit at same time.

3. 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 Density (mW/MHz)	Conducted RF Output Power Density (mW/MHz)	Radiated RF Output Power Density (mW/MHz)
802.11b	7.1	7.082	15.818
802.11g	7.3	7.255	16.205
VHT20	7.3	6.975	15.579
VHT40	3.65	3.487	7.788
802.11ax (HE20)	7.3	7.273	16.245
802.11ax (HE40)	3.65	3.633	8.115

3.3 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Type	PIFA		
Antenna Connector	IPEX		
Antenna Gain (dBi)	DB1_modify	DB2_modify	5G_modify
2400~2483.5MHz	3.49	3.43	-
5150~5250MHz	4.46	4.37	4.43
5250~5350MHz	4.19	4.21	4.23
5470~5725MHz	4.42	4.24	4.38

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

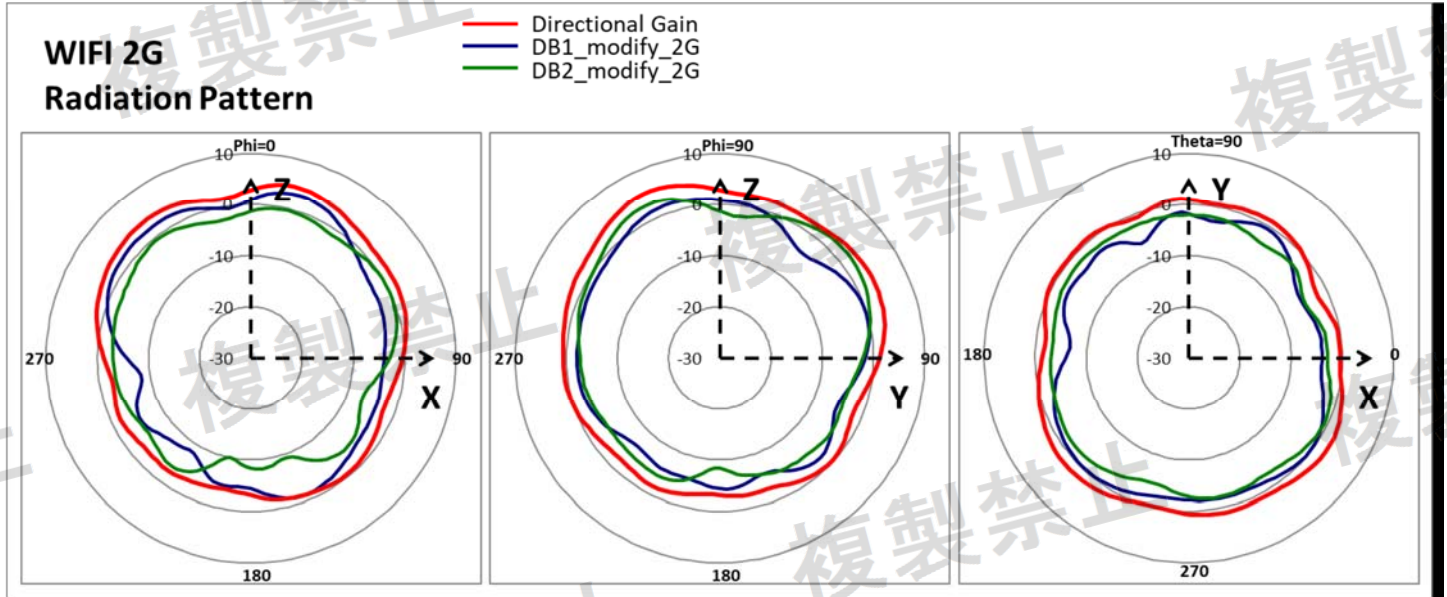
2. The EUT incorporates a MIMO function:

2.4 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
VHT20	2TX	2RX
VHT40	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX

Note:

1. All of modulation mode support beamforming function except 802.11b and 802.11g modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz) and VHT mode for 20 MHz (40 MHz), therefore the manufacturer will control the power for 802.11n/VHT mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report.
4. The EUT device modulation technique OFDMA does not support partial RUs (resource units).

3. Antenna Pattern:



3.4 Channel List

13 channels are provided for 802.11b, 802.11g, 802.11n (HT20), VHT20 and 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
1	2412 MHz	8	2447 MHz
2	2417 MHz	9	2452 MHz
3	2422 MHz	10	2457 MHz
4	2427 MHz	11	2462 MHz
5	2432 MHz	12	2467 MHz
6	2437 MHz	13	2472 MHz
7	2442 MHz		

9 channels are provided for 802.11n (HT40), VHT40 and 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
3	2422 MHz	8	2447 MHz
4	2427 MHz	9	2452 MHz
5	2432 MHz	10	2457 MHz
6	2437 MHz	11	2462 MHz
7	2442 MHz		

3.5 Power Setting

Power Setting									
Channel	802.11b	802.11g	VHT20	Channel	VHT40	Channel	802.11ax (HE20)	Channel	802.11ax (HE40)
1	11.5	15	15	3	14.5	1	15	3	14.5
7	11.5	15	15	7	14	7	15	7	14
13	11.5	15	15	11	15	13	15	11	15

3.6 Test Mode Applicability and Tested Channel Detail

Test Conditions	Voltage (Vac)
V_{normal}	100

Note: After checking the fluctuation of input voltage to the circuit of the radio part (excluding the power supply) of the equipment to be tested, the fluctuation less than $\pm 1\%$ when input voltage from an external supply into the equipment fluctuates $\pm 10\%$, therefore, the test is carried out only at the normal voltage.

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

Test Item	Test Conditions	Mode	Tested Channel	Modulation	Data Rate Parameter
Frequency Tolerance	Chain 0	20MHz System	1, 7, 13	-	-
		40MHz System	3, 7, 11	-	-
Occupied Bandwidth	Chain 0 Chain 1	802.11b	1, 7, 13	DBPSK	1Mb/s
		802.11g	1, 7, 13	BPSK	6Mb/s
		VHT20	1, 7, 13	BPSK	MCS0
		VHT40	3, 7, 11	BPSK	MCS0
		802.11ax (HE20)	1, 7, 13	BPSK	MCS0
		802.11ax (HE40)	3, 7, 11	BPSK	MCS0
Spreading Bandwidth and Spreading Factor	Chain 0 Chain 1	802.11b	1, 7, 13	DBPSK	1, 2, 5.5, 11Mb/s
Spurious Emissions	Chain 0 Chain 1 W	802.11b	1, 7, 13	DBPSK	1Mb/s
		802.11g	1, 7, 13	BPSK	6Mb/s
		VHT20	1, 7, 13	BPSK	MCS0
		VHT40	3, 7, 11	BPSK	MCS0
		802.11ax (HE20)	1, 7, 13	BPSK	MCS0
		802.11ax (HE40)	3, 7, 11	BPSK	MCS0
Spurious Emissions of Receiver	Chain 0 Chain 1 S	20MHz System	1, 7, 13	-	-
		40MHz System	3, 7, 11	-	-
Antenna Power	Chain 0 Chain 1 S	802.11b	1, 7, 13	DBPSK	1Mb/s
		802.11g	1, 7, 13	BPSK	6Mb/s
		802.11n (HT20)	1, 7, 13	BPSK	MCS0
		802.11n (HT40)	3, 7, 11	BPSK	MCS0
		VHT20	1, 7, 13	BPSK	MCS0
		VHT40	3, 7, 11	BPSK	MCS0
		802.11ax (HE20)	1, 7, 13	BPSK	MCS0
		802.11ax (HE40)	3, 7, 11	BPSK	MCS0
Number of Carriers within 1 MHz Bandwidth in OFDM	-	-	-	-	-
Interference Prevention Function	-	Normal Operation			
Carrier Sense Capability	-	802.11ax (HE40)	3, 7, 11	BPSK	MCS0
Note: S : Sum of each Chain, C : Use combiner, W : [Worst result] x [Number of antenna ports]					

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
AC Power Source ExTech	CFW-105	E000603	Note 2	Note 2	BV CPS E&E	(d)
N9030B - PXA Signal Analyzer KEYSIGHT	N9030B	MY57140938	2022/3/15	2023/3/14	ETC	(c)
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24	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.
- Tested Date: 2022/9/30

4.2 Occupied Bandwidth

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
AC Power Source ExTech	CFW-105	E000603	Note 2	Note 2	BV CPS E&E	(d)
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24	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.
- Tested Date: 2022/11/16

4.3 Spreading Bandwidth and Spreading Factor

Refer to section 4.2 to get information of the instruments.

4.4 Spurious Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
AC Power Source ExTech	CFW-105	E000603	Note 2	Note 2	BV CPS E&E	(d)
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24	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.
- Tested Date: 2022/9/30 ~ 2022/10/4

4.5 Spurious Emissions of Receiver

Refer to section 4.4 to get information of the instruments.

4.6 Antenna Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
AC Power Source ExTech	CFW-105	E000603	Note 2	Note 2	BV CPS E&E	(d)
MXG Agilent	N5182B	MY53050162	2022/1/14	2023/1/13	ETC	(c)
Peak Power Analyzer KEYSIGHT	8990B	MY51000485	2022/1/18	2023/1/17	ETC	(c)
Power sensor Keysight	U2021XA	MY55380009	2022/3/23	2023/3/22	ETC	(c)
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24	ETC	(c)
Wideband Power Sensor(N1923A) KEYSIGHT	N1923A	MY58020002	2022/1/17	2023/1/16	ETC	(c)

Notes:

1. Calibration method:
 - (a): Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1).
 - (b): 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.
 - (c): Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
 - (d): Calibration conducted by using other equipment that listed above from a) to c).
2. The power supply no evaluation calibrated, which used the digital multimeter to verify before each testing.
3. The test was performed in Oven room.
4. Tested Date: 2022/10/17

4.7 Number of Carriers within 1 MHz Bandwidth in OFDM

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
AC Power Source ExTech	CFW-105	E000603	Note 2	Note 2	BV CPS E&E	(d)
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24	ETC	(c)

Notes:

1. Calibration method:
 - (a): Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18 paragraph (1).
 - (b): 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.
 - (c): Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
 - (d): Calibration conducted by using other equipment that listed above from a) to c).
2. The power supply no evaluation calibrated, which used the digital multimeter to verify before each testing.
3. The test was performed in Oven room.
4. Tested Date: 2022/11/15

4.8 Interference Prevention Function

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
AC Power Source ExTech	CFW-105	E000603	Note 2	Note 2	BV CPS E&E	(d)
Radio Communication Analyzer Anritsu	MT8860C	1702001	2022/5/10	2023/5/9	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.
- Tested Date: 2022/11/15

4.9 Carrier Sense Capability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until	Calibration Authority	Calibration Method
AC Power Source ExTech	CFW-105	E000603	Note 2	Note 2	BV CPS E&E	(d)
MXG -X Vector Signal Generator KEYSIGHT	N5182B	MY57301272	2022/3/13	2023/3/12	ETC	(c)
Spectrum Analyzer R&S	FSV40	100980	2022/4/20	2023/4/19	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.
- Tested Date: 2022/11/15

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 Spreading Bandwidth and Spreading Factor

Item	Limit	Remark
Spreading Bandwidth	≥ 500 kHz	(For DSSS, FHSS)
Spreading Factor	≥ 5	Operating frequency 2400 to 2483.5 MHz

5.4 Spurious Emissions

Frequencies	Limit
Operating frequency 2400 to 2483.5 MHz	
30.0 MHz to 1000.0 MHz	≤ 0.25 μ W/100 kHz
1000.0 MHz to 2387 MHz	≤ 2.5 μ W/MHz
2387.0 MHz to 2400.0 MHz	≤ 25 μ W/MHz
2483.5 MHz to 2496.5 MHz	≤ 25 μ W/MHz
2496.5 MHz to 12500.0 MHz	≤ 2.5 μ W/MHz

5.5 Spurious Emissions of Receiver

Frequencies	Limit
Below 1 GHz	≤ 4 nW
Above 1 GHz	≤ 20 nW

5.6 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:

1. Occupied bandwidth is less than 26MHz
2. Occupied bandwidth is more than 26MHz and less than 40MHz
3. 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)).
4. Tolerance of antenna power shall be +20% (upper value) and -80% (lower value).

5.7 Number of Carriers within 1 MHz Bandwidth in OFDM

For each 1 MHz bandwidth in OFDM, there should be at least 1 carrier.

5.8 Interference Prevention Function

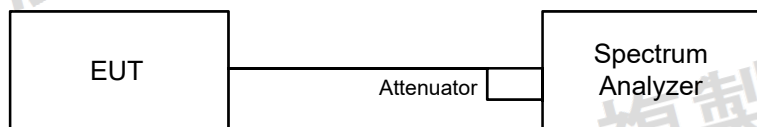
Radio equipment used mainly on the same premises and automatically transmits or receives identification code.

5.9 Carrier Sense Capability

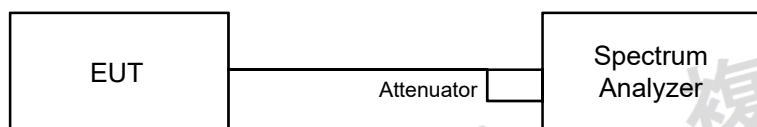
Radio equipment used carrier sensing mechanism that based detect and avoid capabilities.

6 Test Arrangements

6.1 Frequency Tolerance



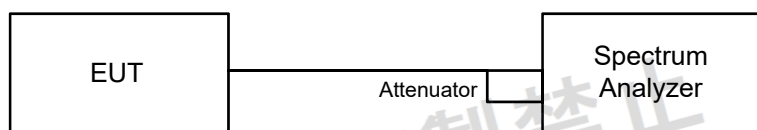
6.2 Occupied Bandwidth



6.3 Spreading Bandwidth and Spreading Factor



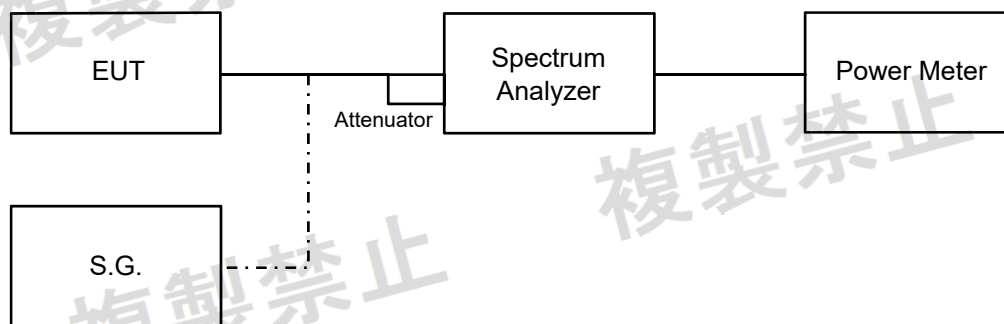
6.4 Spurious Emissions



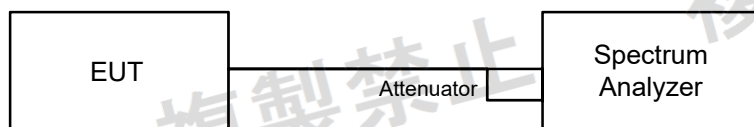
6.5 Spurious Emissions of Receiver



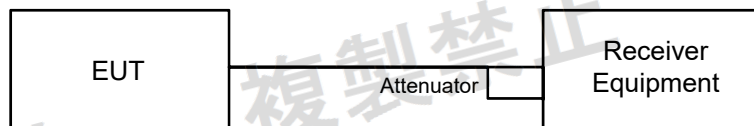
6.6 Antenna Power



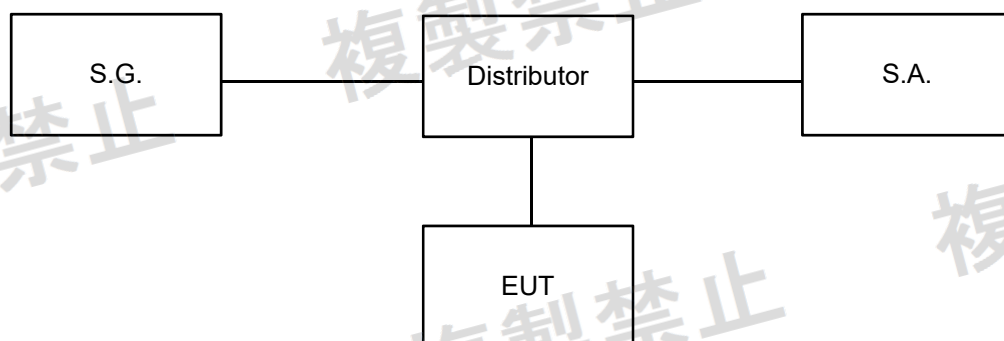
6.7 Number of Carriers within 1 MHz Bandwidth in OFDM



6.8 Interference Prevention Function



6.9 Carrier Sense Capability



7 Test Results of Test Item

7.1 Frequency Tolerance

Environmental Conditions:	25°C, 95% RH	Tested By:	Chris Lin
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20 MHz System: 802.11b / 802.11g / VHT20 / 802.11ax (HE20) Chain 0

Channel	Frequency (MHz)	V _{normal}	
		Carrier frequency (MHz)	Frequency tolerance (ppm)
1	2412	2411.962500	-15.547
7	2442	2441.961538	-15.750
13	2472	2471.961058	-15.753

40 MHz System: VHT40 / 802.11ax (HE40) Chain 0

Channel	Frequency (MHz)	V _{normal}	
		Carrier frequency (MHz)	Frequency tolerance (ppm)
3	2422	2421.961699	-15.813
7	2442	2441.961378	-15.815
11	2462	2461.960096	-16.207

7.2 Occupied Bandwidth

Environmental Conditions:	25°C, 65% RH	Tested By:	Chris Lin
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802.11b Chain 0

Channel	Frequency (MHz)	V _{normal}
		Occupied Bandwidth (MHz)
1	2412	12.58
7	2442	12.82
13	2472	12.66

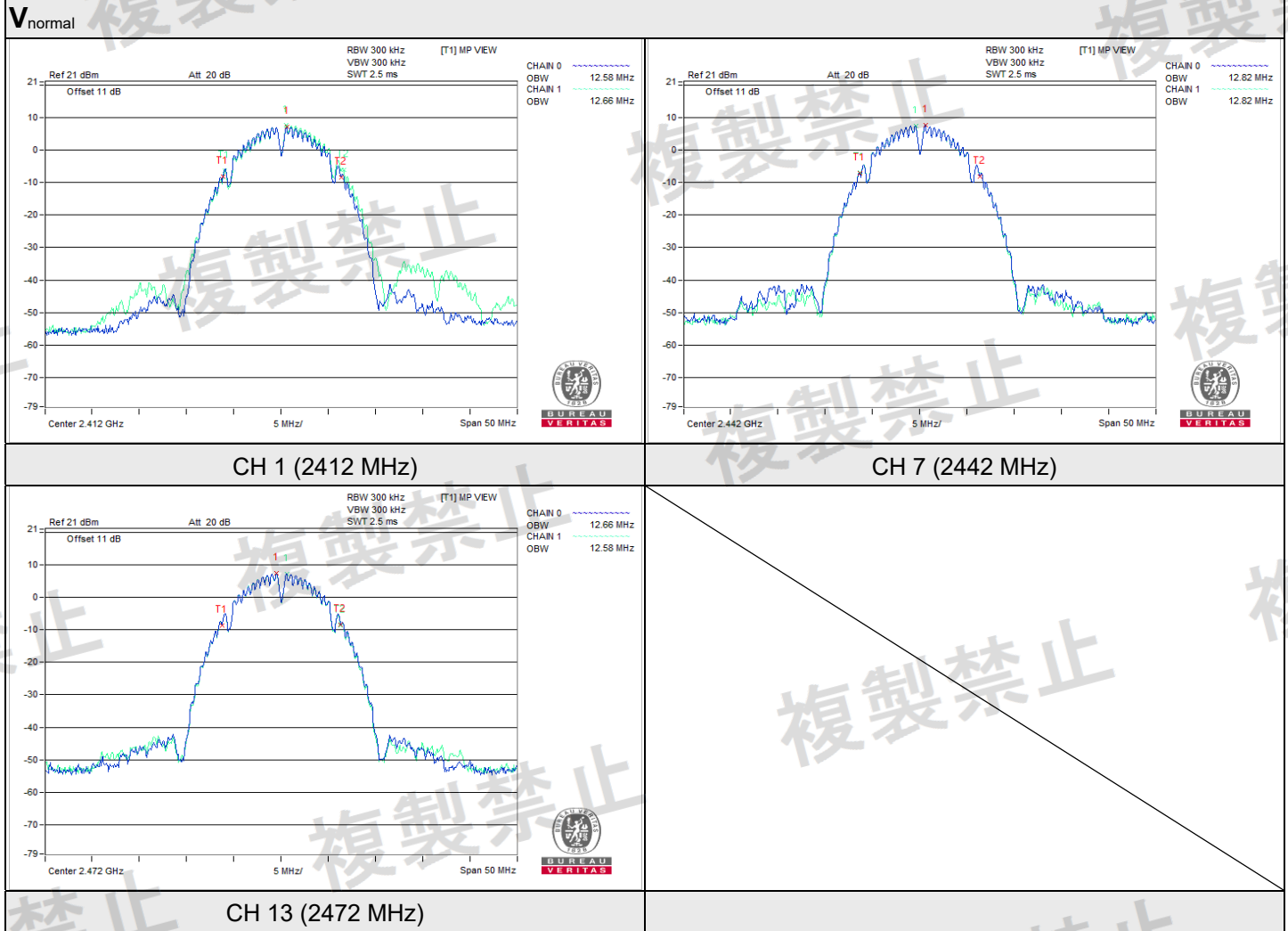
NOTE: For the test plots please refer to the below pages.

802.11b Chain 1

Channel	Frequency (MHz)	V _{normal}
		Occupied Bandwidth (MHz)
1	2412	12.66
7	2442	12.82
13	2472	12.58

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

802.11b Graph



802.11g Chain 0

Channel	Frequency (MHz)	V_{normal}
		Occupied Bandwidth (MHz)
1	2412	17.00
7	2442	17.00
13	2472	17.20

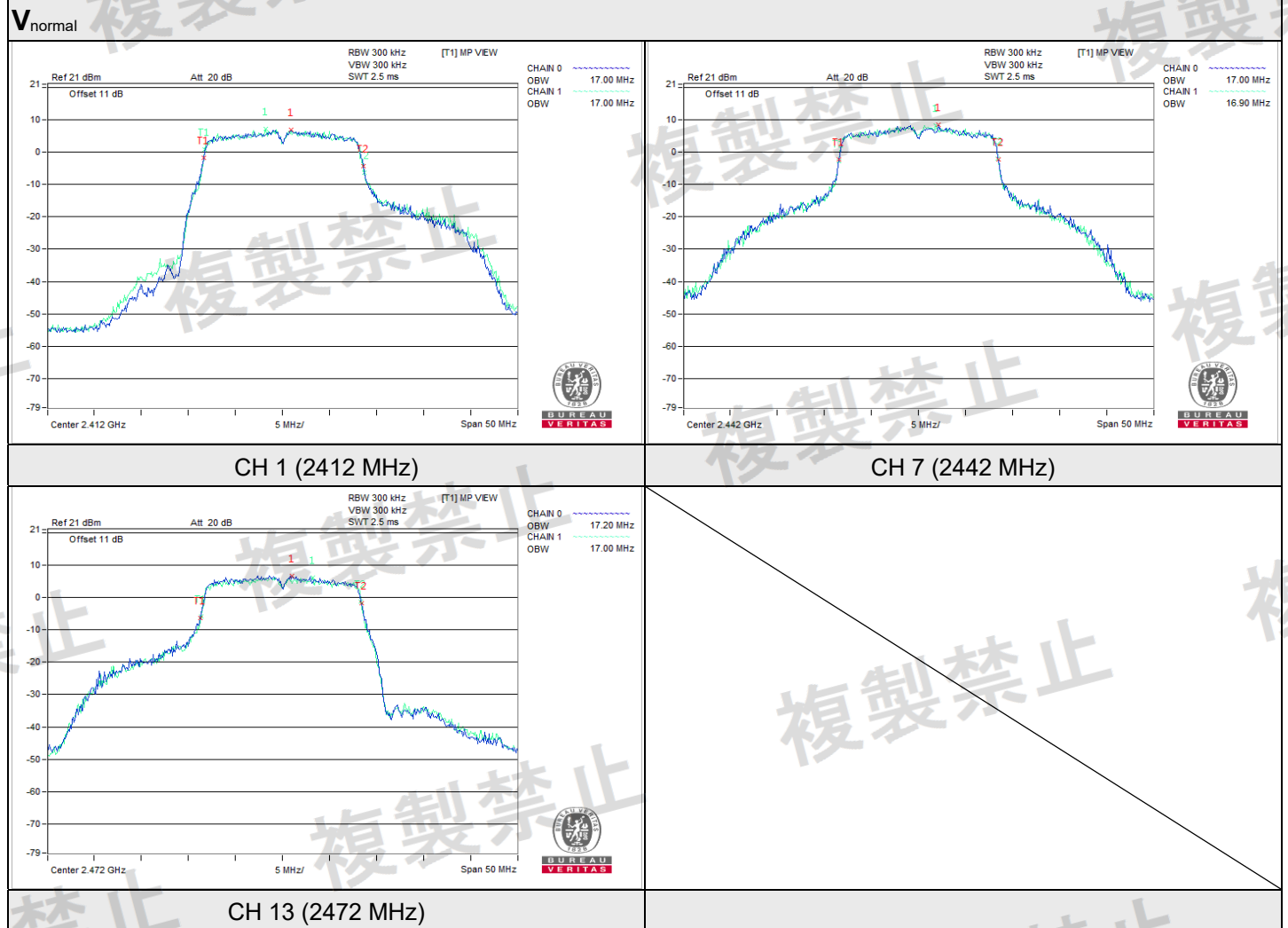
NOTE: For the test plots please refer to the below pages.

802.11g Chain 1

Channel	Frequency (MHz)	V_{normal}
		Occupied Bandwidth (MHz)
1	2412	17.00
7	2442	16.90
13	2472	17.00

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

802.11g Graph



VHT20 Chain 0

Channel	Frequency (MHz)	V _{normal}
		Occupied Bandwidth (MHz)
1	2412	18.02
7	2442	18.20
13	2472	18.20

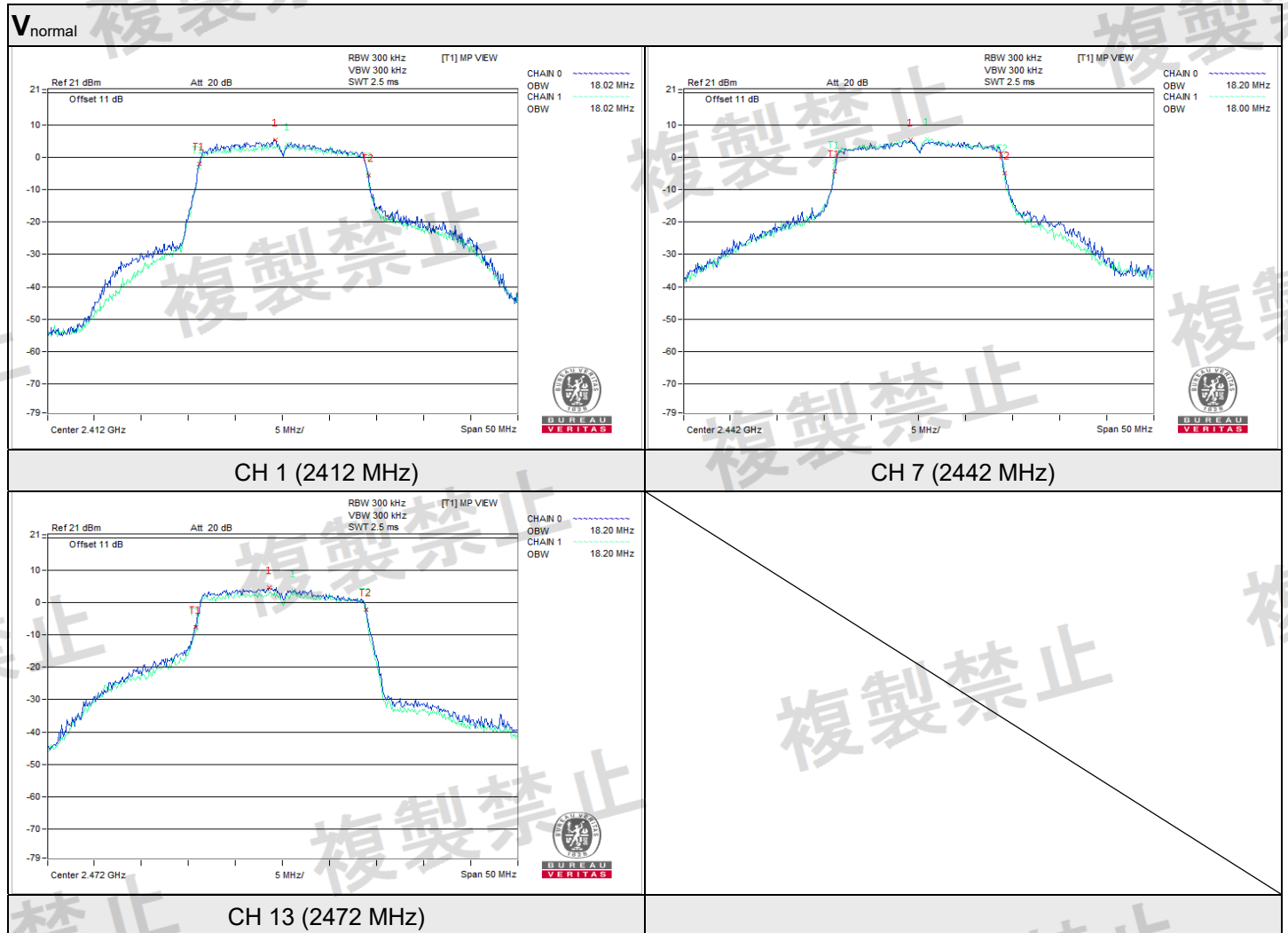
NOTE: For the test plots please refer to the below pages.

VHT20 Chain 1

Channel	Frequency (MHz)	V _{normal}
		Occupied Bandwidth (MHz)
1	2412	18.02
7	2442	18.00
13	2472	18.20

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

VHT20 Graph



VHT40 Chain 0

Channel	Frequency (MHz)	V_{normal}	
		Occupied bandwidth (MHz)	Spreading factor
3	2422	36.20	36.20
7	2442	36.20	36.20
11	2462	36.10	36.10

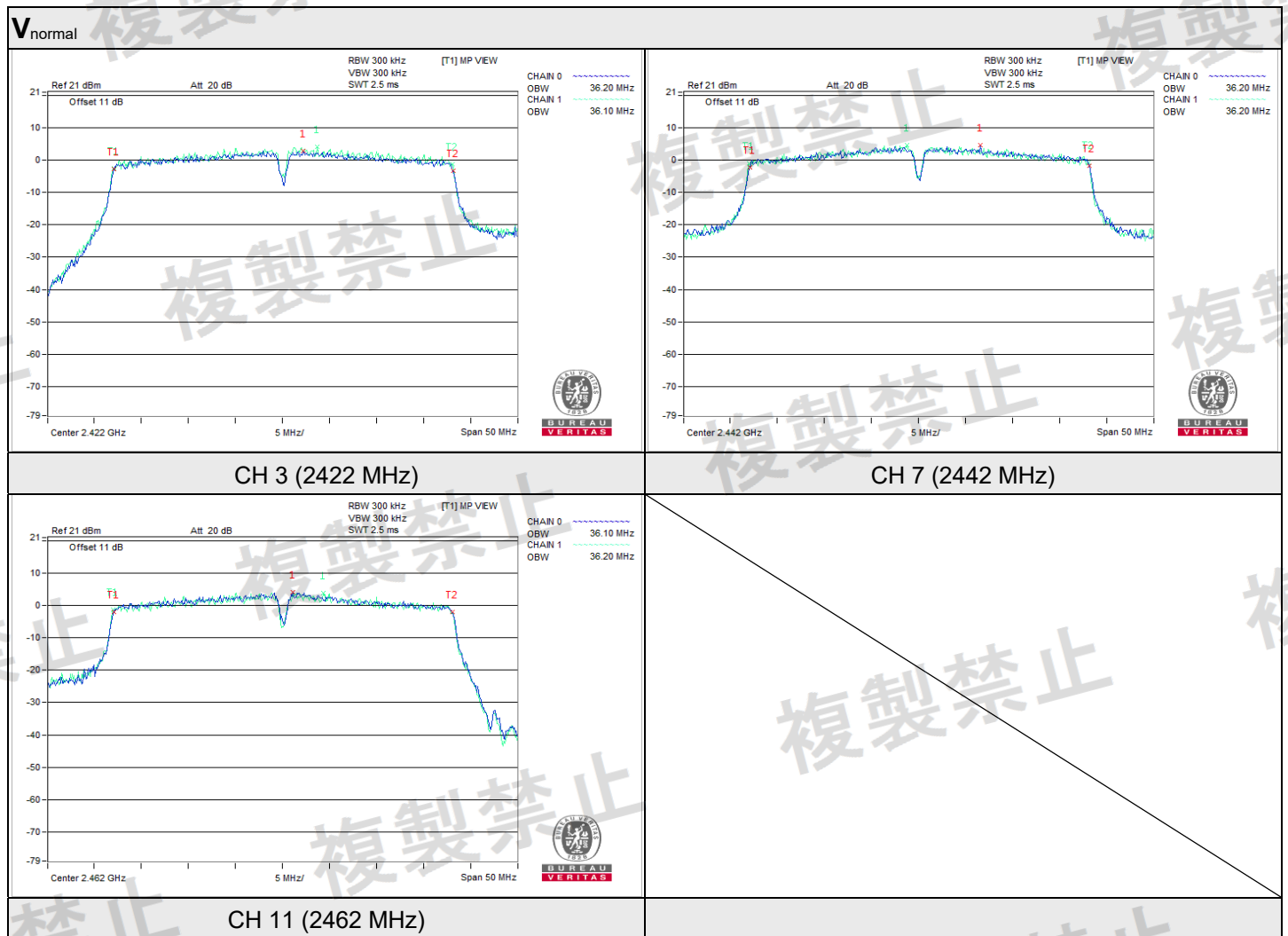
NOTE: For the test plots please refer to the below pages.
Spreading Factor: 90% channel power bandwidth / 1

VHT40 Chain 1

Channel	Frequency (MHz)	V_{normal}	
		Occupied bandwidth (MHz)	Spreading factor
3	2422	36.10	36.10
7	2442	36.20	36.20
11	2462	36.20	36.20

NOTE: For the test plots please refer to the below pages.
Spreading Factor: 90% channel power bandwidth / 1

VHT40 Graph



802.11ax (HE20) Chain 0

Channel	Frequency (MHz)	V_{normal}
		Occupied Bandwidth (MHz)
1	2412	19.00
7	2442	19.20
13	2472	19.10

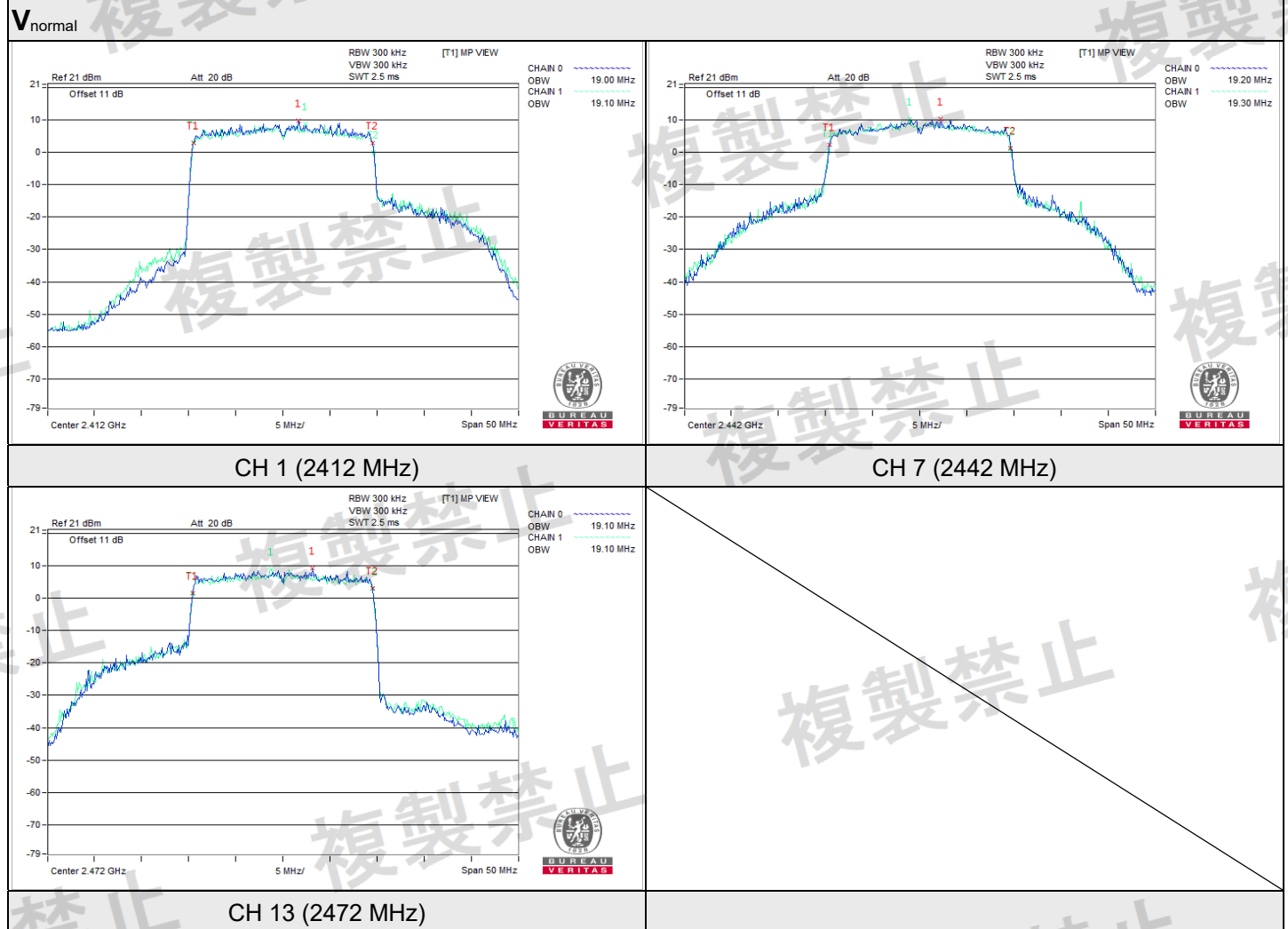
NOTE: For the test plots please refer to the below pages.

802.11ax (HE20) Chain 1

Channel	Frequency (MHz)	V_{normal}
		Occupied Bandwidth (MHz)
1	2412	19.10
7	2442	19.30
13	2472	19.10

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

802.11ax (HE20) Graph



802.11ax (HE40) Chain 0

Channel	Frequency (MHz)	V_{normal}
		Occupied Bandwidth (MHz)
3	2422	37.70
7	2442	37.80
11	2462	37.70

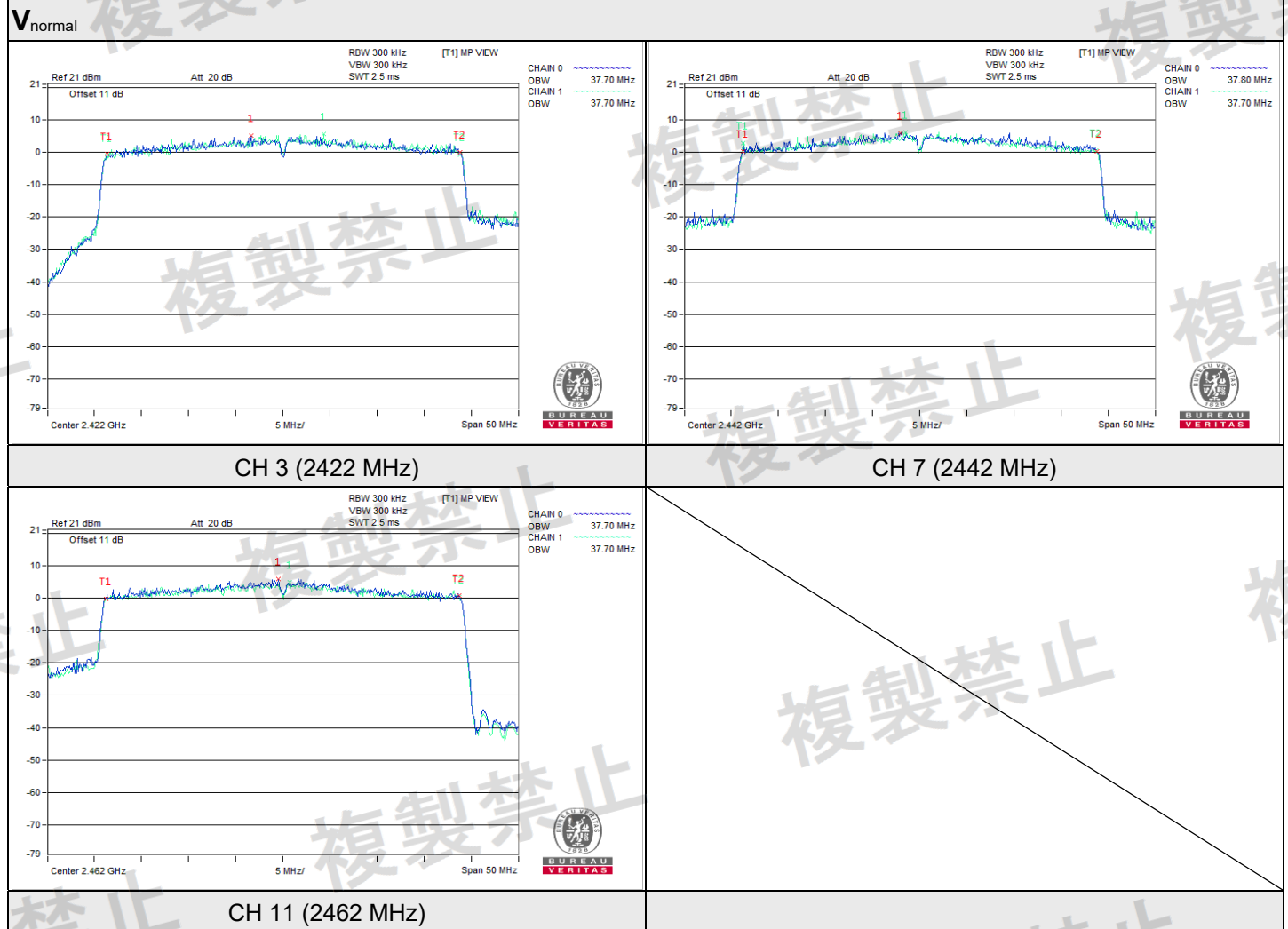
NOTE: For the test plots please refer to the below pages.

802.11ax (HE40) Chain 1

Channel	Frequency (MHz)	V_{normal}
		Occupied Bandwidth (MHz)
3	2422	37.70
7	2442	37.70
11	2462	37.70

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

802.11ax (HE40) Graph



7.3 Spreading Bandwidth and Spreading Factor

Environmental Conditions:	25°C, 65% RH	Tested By:	Chris Lin
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802.11b Chain 0 1 Mbps

Channel	Frequency (MHz)	V _{normal}	
		Occupied bandwidth (MHz)	Spreading factor
1	2412	8.18	8.18
7	2442	8.18	8.18
13	2472	8.18	8.18

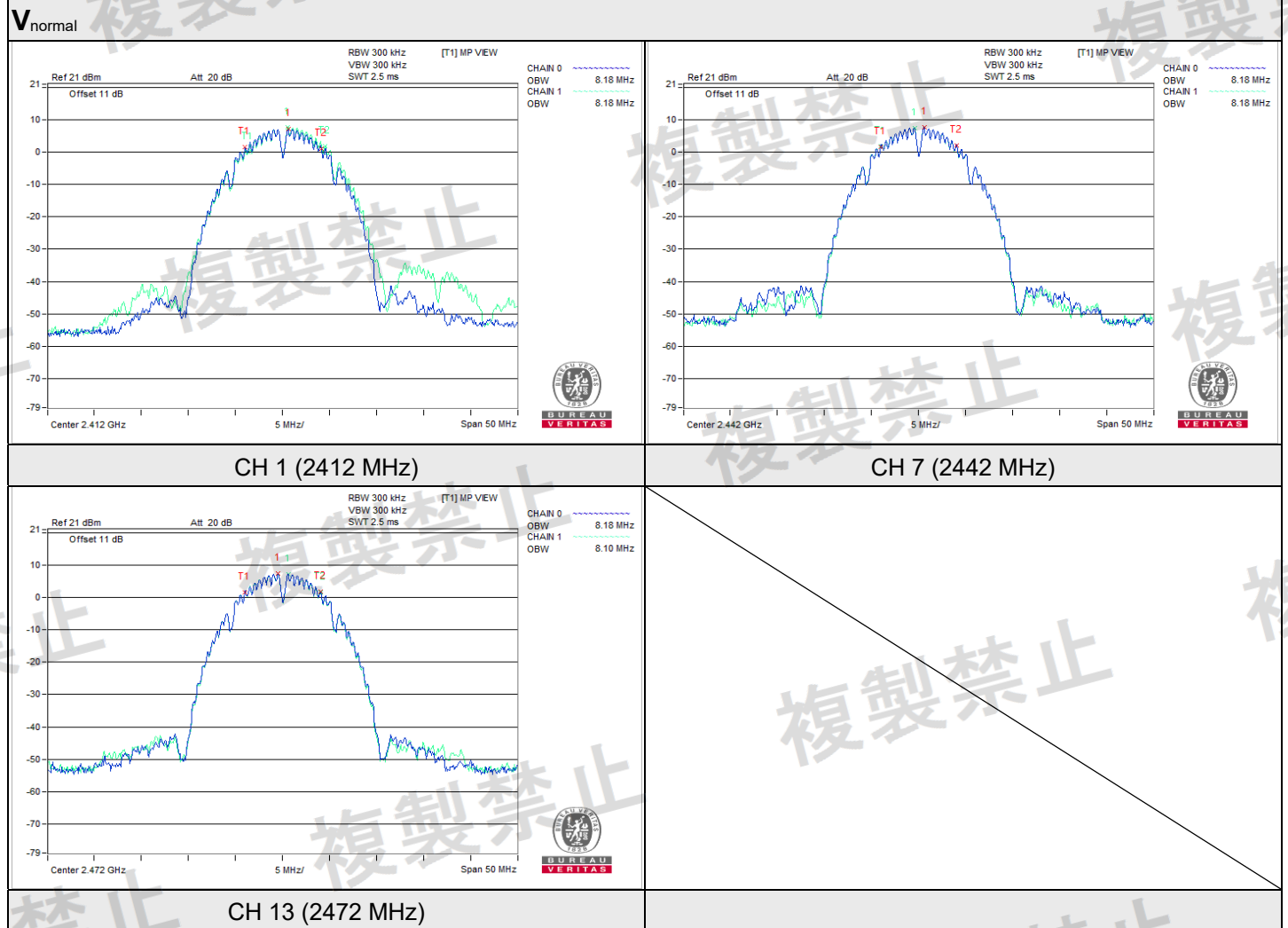
NOTE: For the test plots please refer to the below pages.
Spreading Factor: 90% channel power bandwidth / 1

802.11b Chain 1 1 Mbps

Channel	Frequency (MHz)	V _{normal}	
		Occupied bandwidth (MHz)	Spreading factor
1	2412	8.18	8.18
7	2442	8.18	8.18
13	2472	8.10	8.10

NOTE: For the test plots please refer to the below pages.
Spreading Factor: 90% channel power bandwidth / 1

802.11b Graph 1 Mbps



802.11b Chain 0 2 Mbps

Channel	Frequency (MHz)	V_{normal}	
		Occupied bandwidth (MHz)	Spreading factor
1	2412	8.10	8.10
7	2442	8.18	8.18
13	2472	8.18	8.18

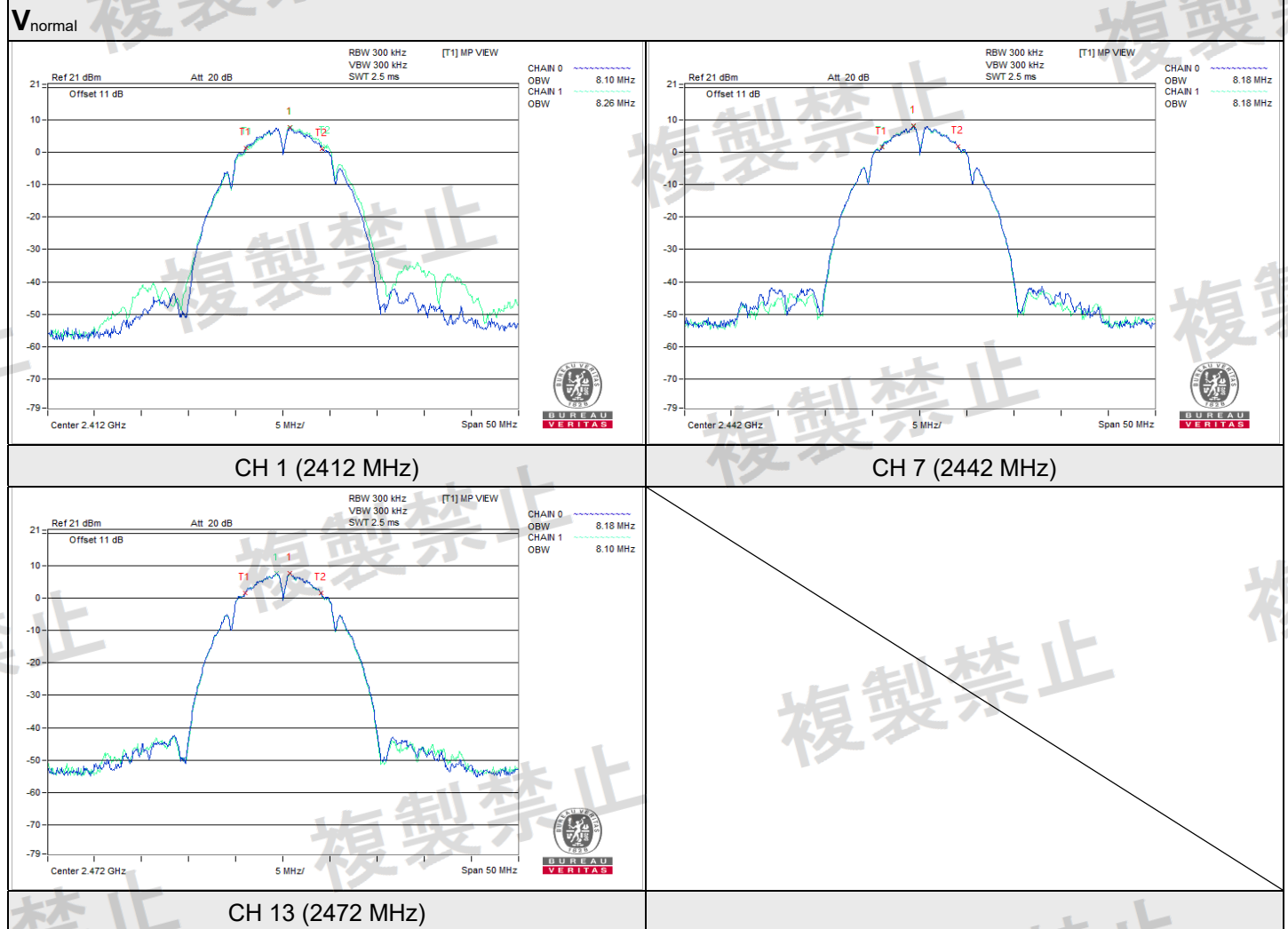
NOTE: For the test plots please refer to the below pages.
Spreading Factor: 90% channel power bandwidth / 1

802.11b Chain 1 2 Mbps

Channel	Frequency (MHz)	V_{normal}	
		Occupied bandwidth (MHz)	Spreading factor
1	2412	8.26	8.26
7	2442	8.18	8.18
13	2472	8.10	8.10

NOTE: For the test plots please refer to the below pages.
Spreading Factor: 90% channel power bandwidth / 1

802.11b Graph 2 Mbps



802.11b Chain 0 5.5 Mbps

Channel	Frequency (MHz)	V_{normal}	
		Occupied bandwidth (MHz)	Spreading factor
1	2412	8.26	6.00
7	2442	8.26	6.00
13	2472	8.26	6.00

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

Spreading Factor: 90% channel power bandwidth / 1.375

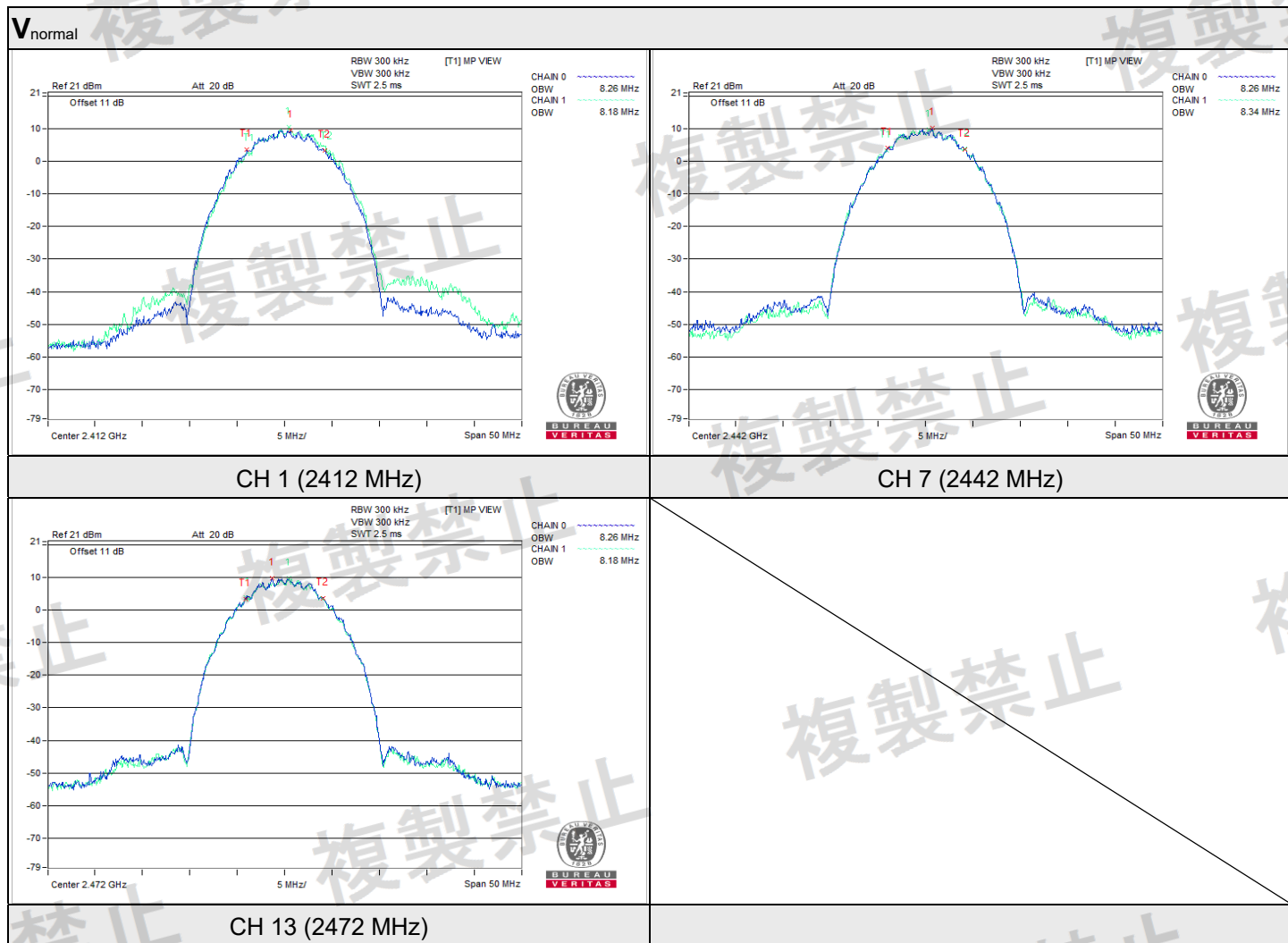
802.11b Chain 1 5.5 Mbps

Channel	Frequency (MHz)	V_{normal}	
		Occupied bandwidth (MHz)	Spreading factor
1	2412	8.18	5.94
7	2442	8.34	6.06
13	2472	8.18	5.94

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

Spreading Factor: 90% channel power bandwidth / 1.375

802.11b Graph 5.5 Mbps



802.11b Chain 0 11 Mbps

Channel	Frequency (MHz)	V_{normal}	
		Occupied bandwidth (MHz)	Spreading factor
1	2412	8.10	5.89
7	2442	8.26	6.00
13	2472	8.26	6.00

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

Spreading Factor: 90% channel power bandwidth / 1.375

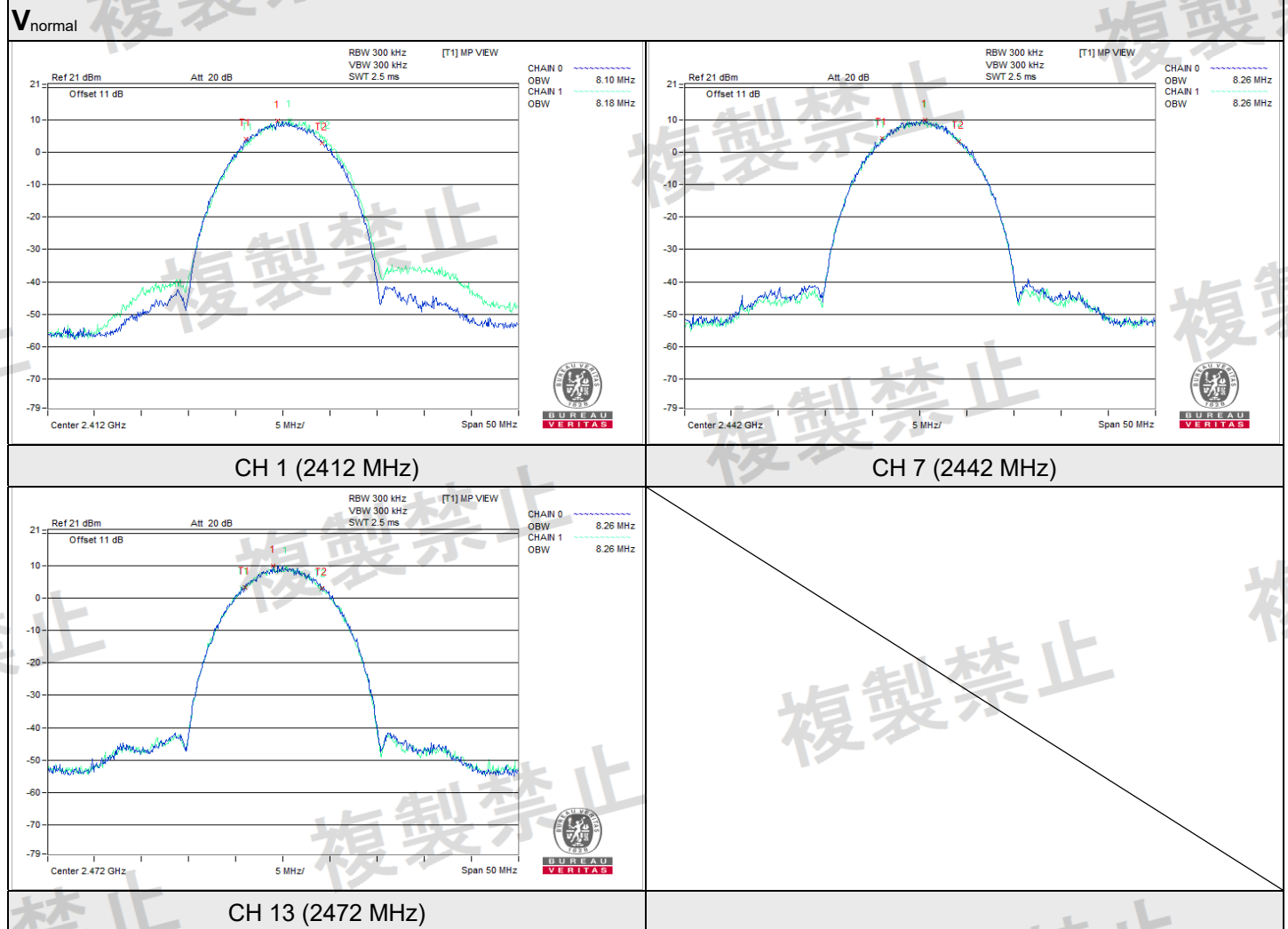
802.11b Chain 1 11 Mbps

Channel	Frequency (MHz)	V_{normal}	
		Occupied bandwidth (MHz)	Spreading factor
1	2412	8.18	5.94
7	2442	8.26	6.00
13	2472	8.26	6.00

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

Spreading Factor: 90% channel power bandwidth / 1.375

802.11b Graph 11 Mbps



7.4 Spurious Emissions

Environmental Conditions:	25°C, 95% RH	Tested By:	Chris Lin
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802.11b Chain 0

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V_{normal}	30.0 to 1000.0	867.837	0.000452	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2360.647	0.015136	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2398.440	0.074473	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2487.528	0.021777	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12318.686	0.02355	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V_{normal}	30.0 to 1000.0	621.821	0.000419	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2280.374	0.014791	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.267	0.02037	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2495.278	0.026792	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12376.206	0.023442	1.25 uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V_{normal}	30.0 to 1000.0	218.907	0.000506	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2338.455	0.013646	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2396.478	0.021677	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2488.674	0.066834	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12261.166	0.021577	1.25 uW/MHz	PASS

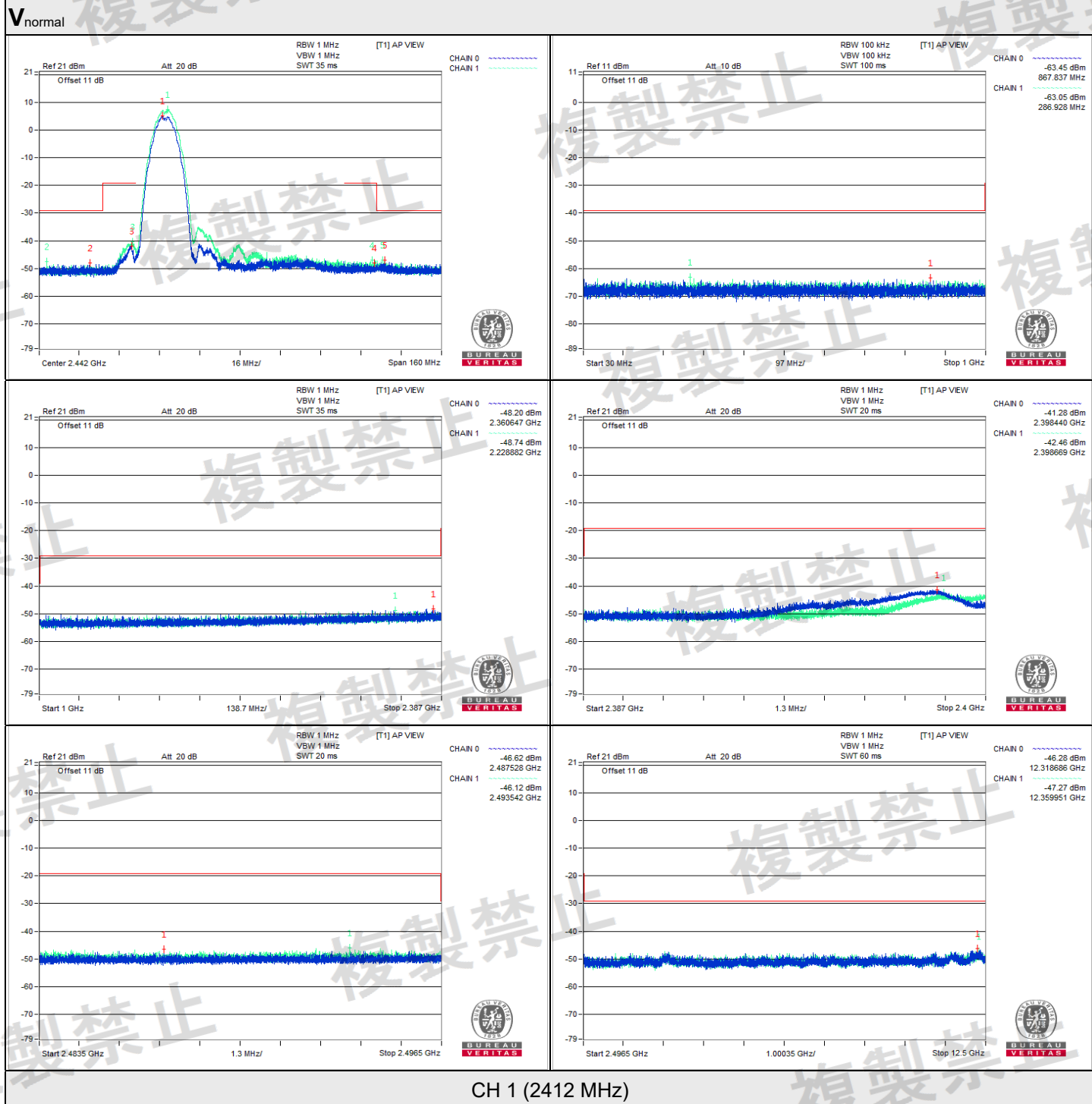
NOTE: 1. The spectrum plots are attached on the following pages.

802.11b Chain 1

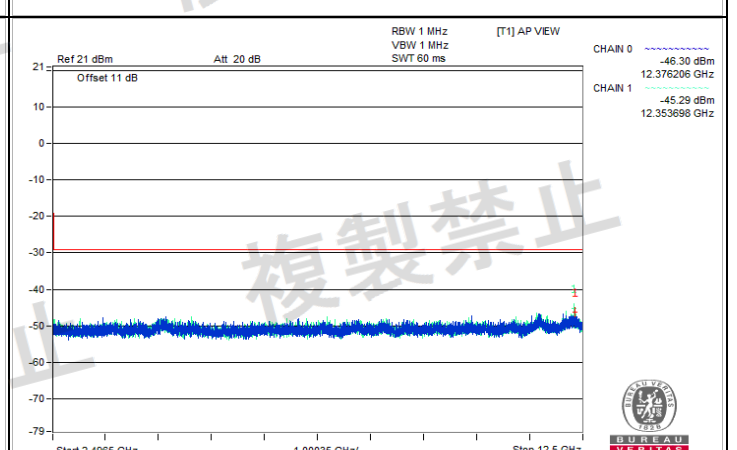
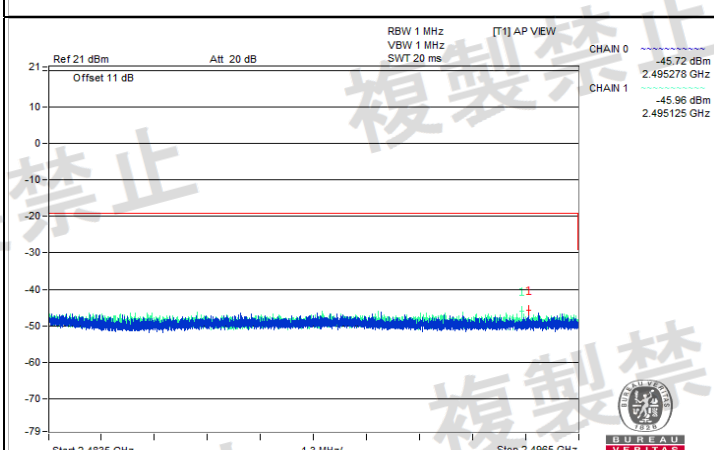
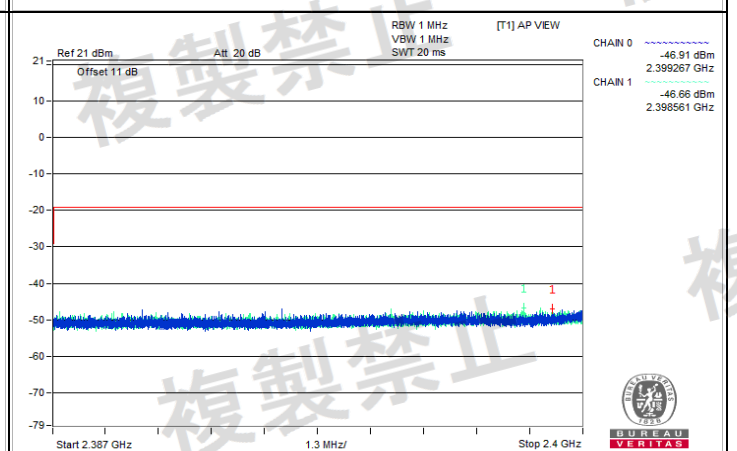
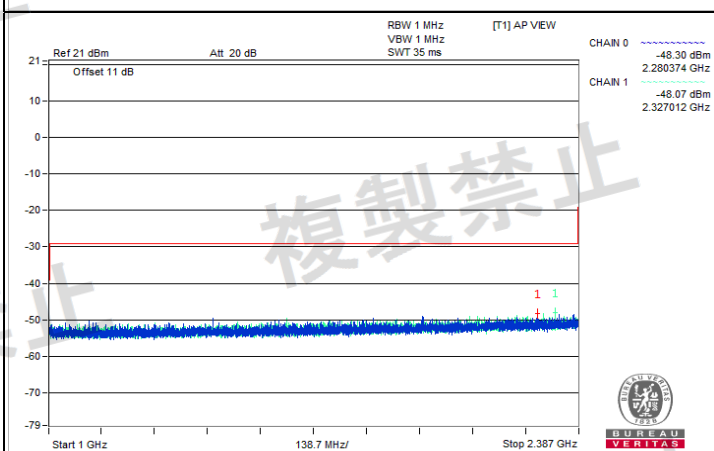
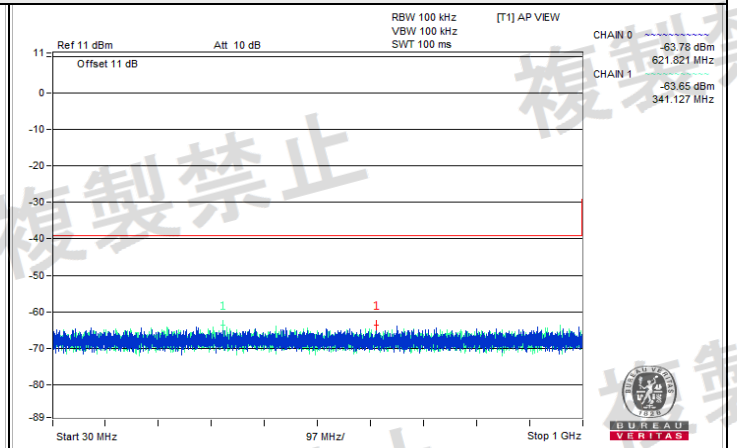
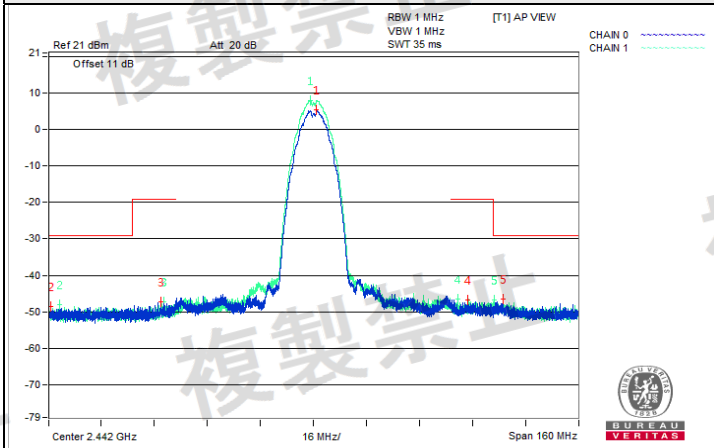
TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	286.928	0.000495	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2228.882	0.013366	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2398.669	0.056754	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2493.542	0.024434	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12359.951	0.01875	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	341.127	0.000432	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2327.012	0.015596	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2398.561	0.021577	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2495.125	0.025351	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12353.698	0.02958	1.25 uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	701.725	0.000429	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2151.556	0.014093	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.587	0.020417	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2485.071	0.184927	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12306.182	0.024946	1.25 uW/MHz	PASS

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

802.11b Graph



Vnormal

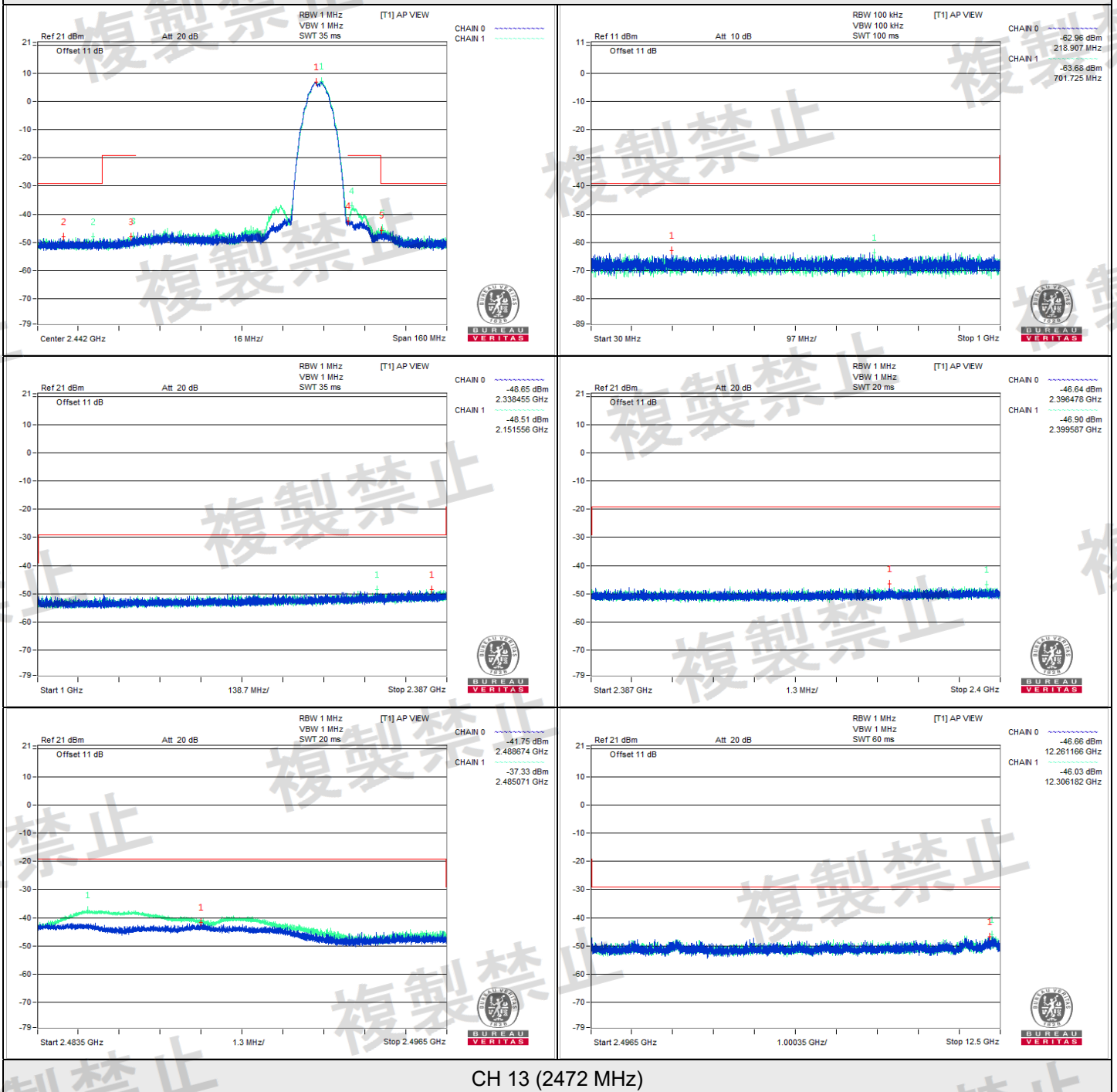


CH 7 (2442 MHz)



BUREAU
VERITAS

Vnormal



CH 13 (2472 MHz)

802.11b [Worst result] x [Number of antenna ports]

TEST CHANNEL		CH 1 (2412 MHz)		
TEST CONDITION	FREQUENCY RANGE(MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V_{normal}	30.0 to 1000.0	0.000990	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.030272	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.148946	25uW/MHz	PASS
	2483.5 to 2496.5	0.048868	25uW/MHz	PASS
	2496.5 to 12500.0	0.047100	2.5uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)		
V_{normal}	30.0 to 1000.0	0.000864	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.031192	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.043154	25uW/MHz	PASS
	2483.5 to 2496.5	0.053584	25uW/MHz	PASS
	2496.5 to 12500.0	0.059160	2.5uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)		
V_{normal}	30.0 to 1000.0	0.001012	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.028186	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.043354	25uW/MHz	PASS
	2483.5 to 2496.5	0.369854	25uW/MHz	PASS
	2496.5 to 12500.0	0.049892	2.5uW/MHz	PASS

802.11g Chain 0

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	291.657	0.000434	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2375.037	0.014655	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.683	1.86638	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2492.273	0.048417	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2496.500	0.027669	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	333.731	0.000419	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2252.461	0.014555	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2397.617	0.056364	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2490.534	0.07709	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2496.500	0.036559	1.25 uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	915.610	0.00064	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2270.838	0.013868	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.354	0.031046	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.511	3.672823	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2497.750	0.059156	1.25 uW/MHz	PASS

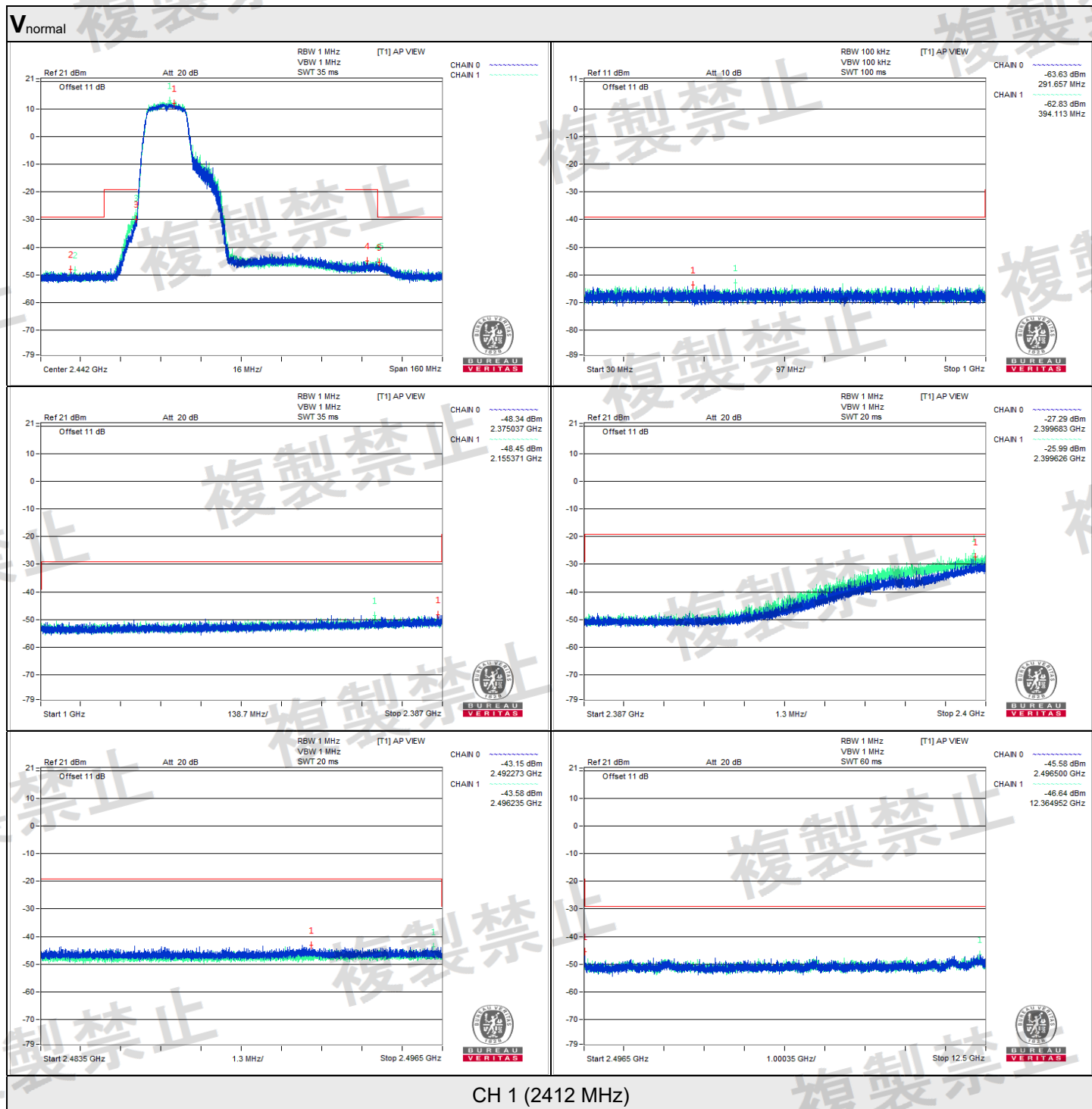
NOTE: 1. The spectrum plots are attached on the following pages.

802.11g Chain 1

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	394.113	0.000521	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2155.371	0.014289	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.626	2.517677	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2496.235	0.043853	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12364.952	0.021677	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	967.505	0.000483	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2304.300	0.013996	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2398.945	0.039628	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2484.231	0.068707	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2499.000	0.023388	1.25 uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	328.638	0.000457	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2368.102	0.016106	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.582	0.029107	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.578	2.754229	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2496.500	0.074989	1.25 uW/MHz	PASS

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

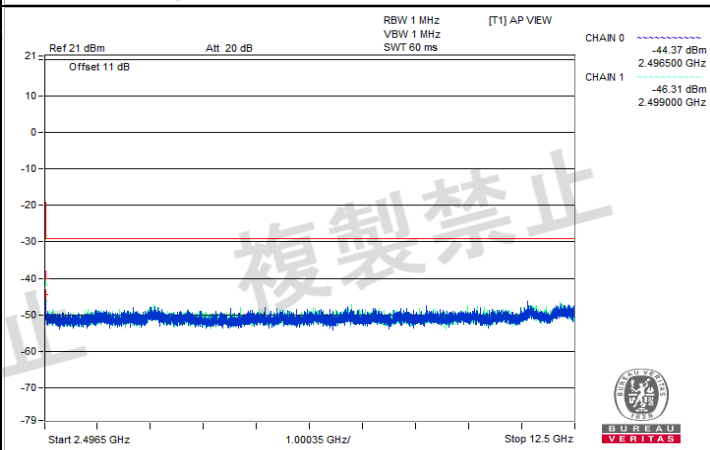
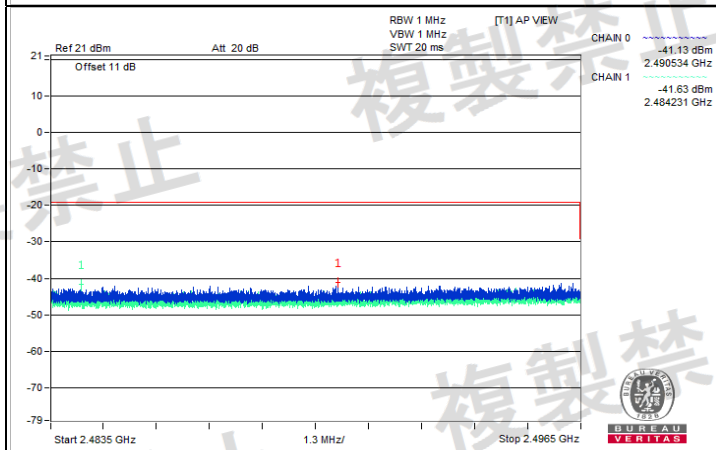
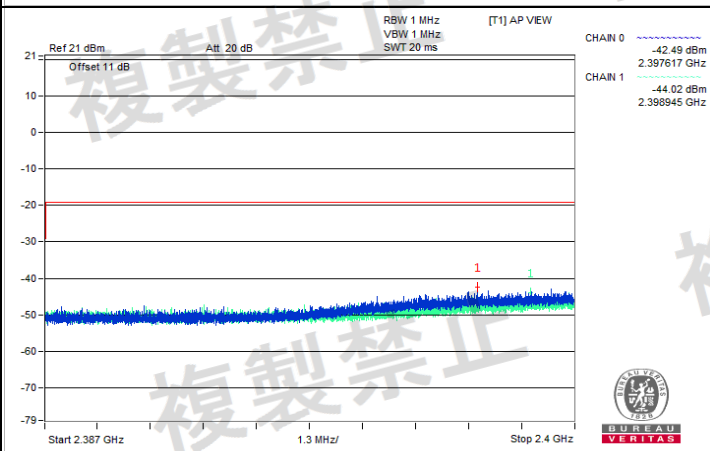
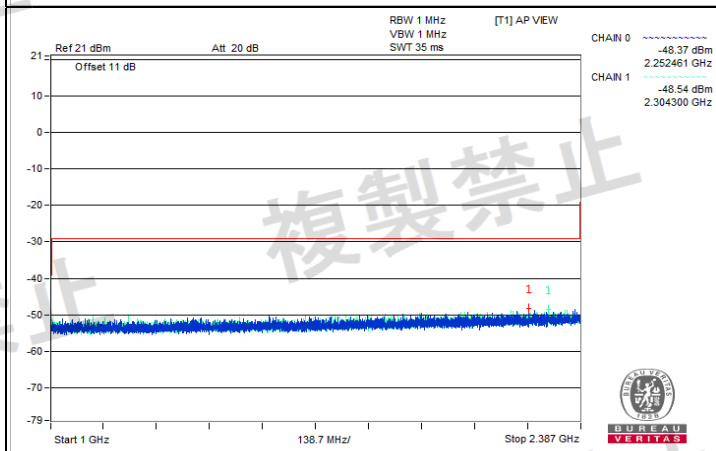
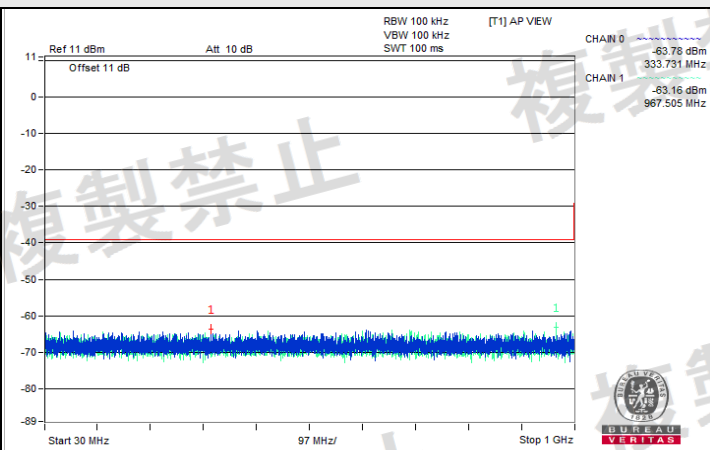
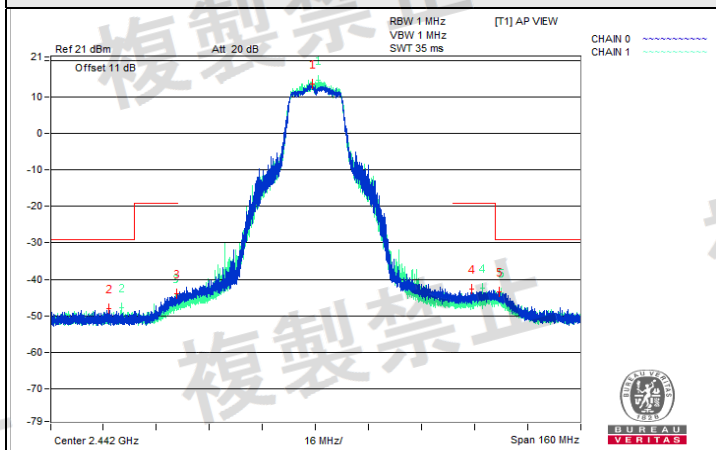
802.11g Graph





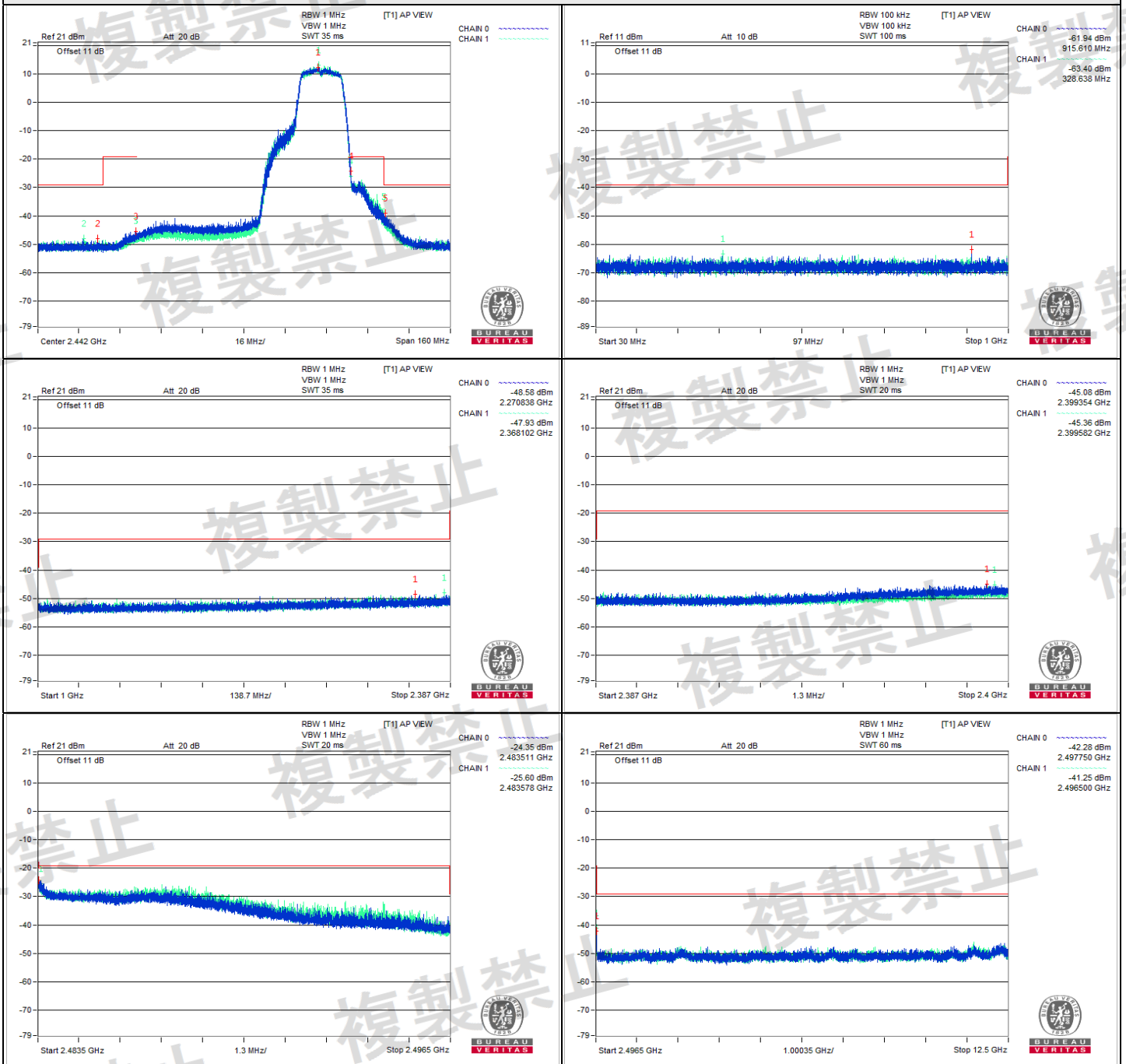
BUREAU
VERITAS

Vnormal



CH 7 (2442 MHz)

Vnormal



CH 13 (2472 MHz)

802.11g [Worst result] x [Number of antenna ports]

TEST CHANNEL		CH 1 (2412 MHz)		
TEST CONDITION	FREQUENCY RANGE(MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	0.001042	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.029310	2.5uW/MHz	PASS
	2387.0 to 2400.0	5.035354	25uW/MHz	PASS
	2483.5 to 2496.5	0.096834	25uW/MHz	PASS
	2496.5 to 12500.0	0.055338	2.5uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)		
V _{normal}	30.0 to 1000.0	0.000966	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.029110	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.112728	25uW/MHz	PASS
	2483.5 to 2496.5	0.154180	25uW/MHz	PASS
	2496.5 to 12500.0	0.073118	2.5uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)		
V _{normal}	30.0 to 1000.0	0.001280	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.032212	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.062092	25uW/MHz	PASS
	2483.5 to 2496.5	7.345646	25uW/MHz	PASS
	2496.5 to 12500.0	0.149978	2.5uW/MHz	PASS

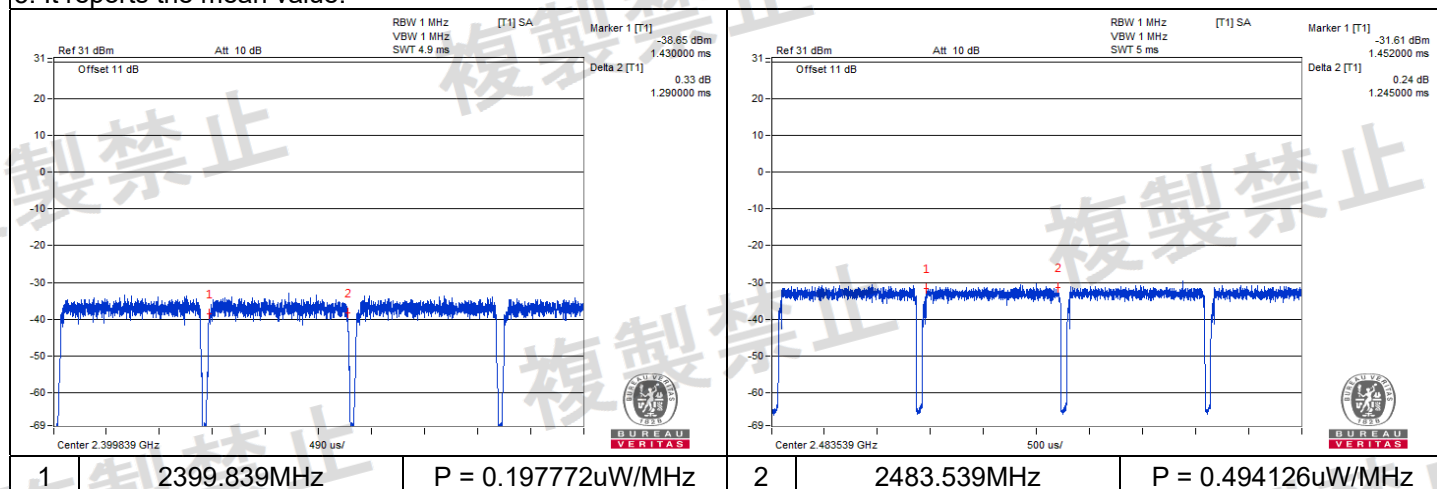
VHT20 Chain 0

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	140.580	0.00049	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2261.649	0.016444	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.839	0.197772	12.5 uW/MHz	PASS(1)
	2483.5 to 2496.5	2491.150	0.032734	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12247.411	0.021232	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	445.645	0.000533	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2228.535	0.014894	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.270	0.056105	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2485.290	0.142889	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2497.750	0.036644	1.25 uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	391.688	0.000474	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2316.783	0.017865	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2398.024	0.044978	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.539	0.494126	12.5 uW/MHz	PASS(2)
	2496.5 to 12500.0	2496.500	0.190108	1.25 uW/MHz	PASS

- NOTE:** 1. The spectrum plots are attached on the following pages.
2. (No.): The value was tested under Measuring Mode *Zero Span.

Measuring Mode *Zero Span

- Set the spectrum analyzer as below and it takes in a value of all data point.
- Regarding the all data value, it transforms the "dBm" value into "uW" value.
- It adds the all values and calculates a grand total. Define a grand total as "P".
- It divides "P" by sample data point (ex.501) and calculates the mean value.
- It reports the mean value.



VHT20 Chain 1

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	797.148	0.000467	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2320.424	0.015066	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.678	0.192565	12.5 uW/MHz	PASS(1)
	2483.5 to 2496.5	2495.068	0.031046	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12254.914	0.022803	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	266.558	0.000461	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2205.823	0.013305	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.777	0.046559	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2484.150	0.097051	12.5 uW/MHz	PASS
	2496.5 to 12500.0	11610.938	0.027479	1.25 uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	267.650	0.000445	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2258.702	0.013614	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.330	0.031623	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.547	0.469718	12.5 uW/MHz	PASS(2)
	2496.5 to 12500.0	2496.500	0.155597	1.25 uW/MHz	PASS

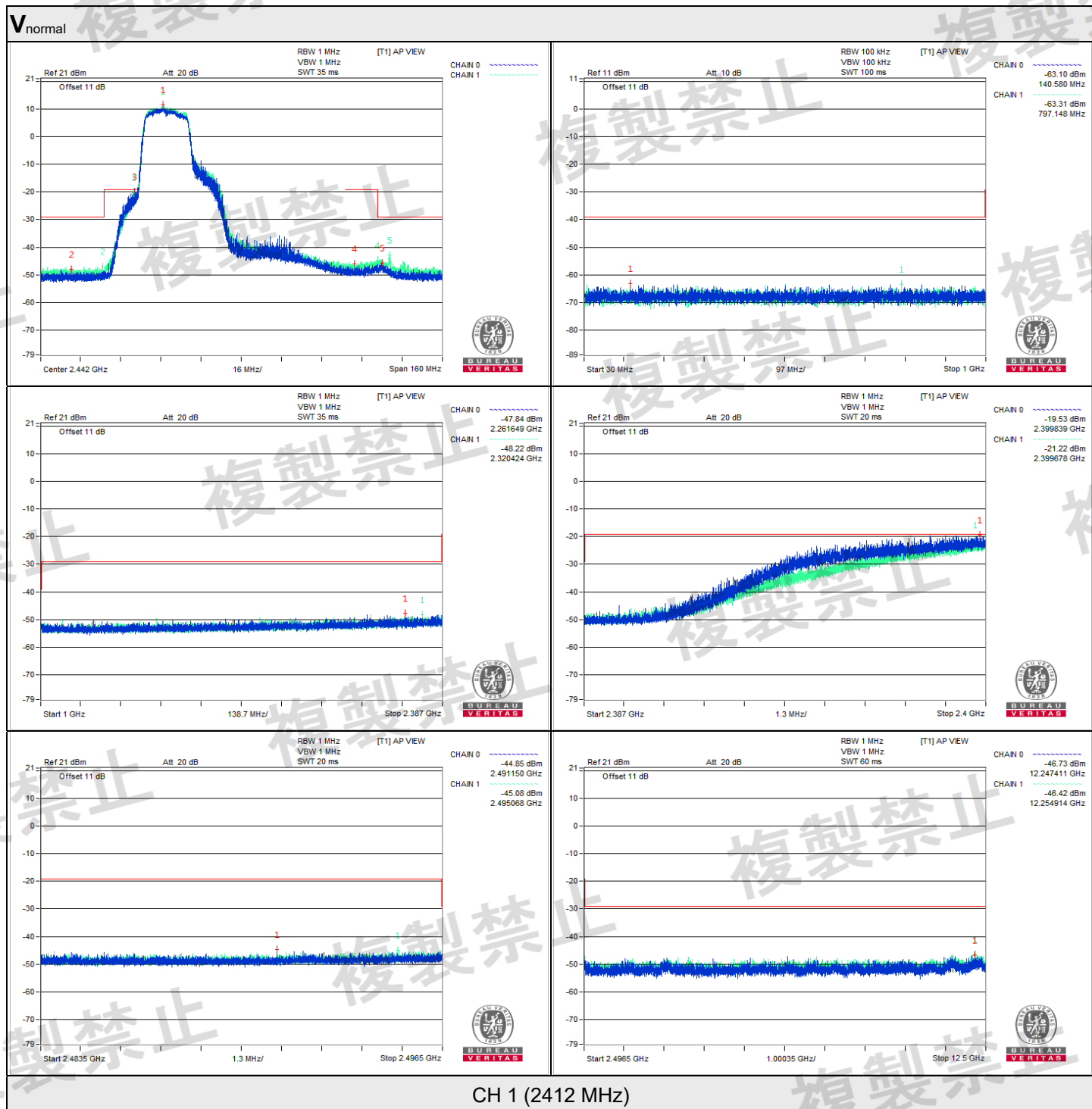
- NOTE:** 1. The spectrum plots are attached on the following pages.
2. (No.): The value was tested under Measuring Mode *Zero Span.

Measuring Mode *Zero Span

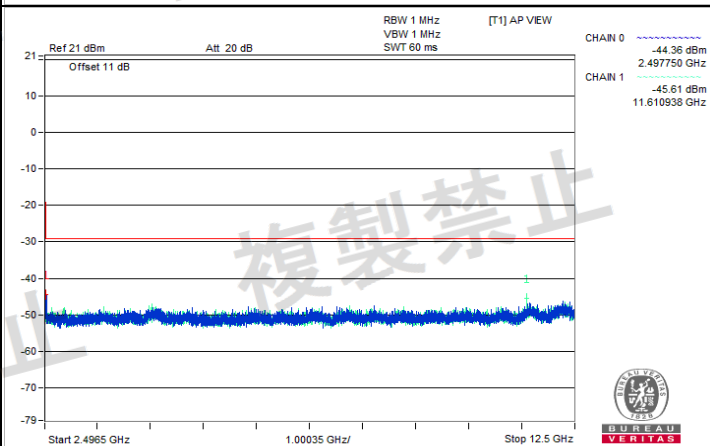
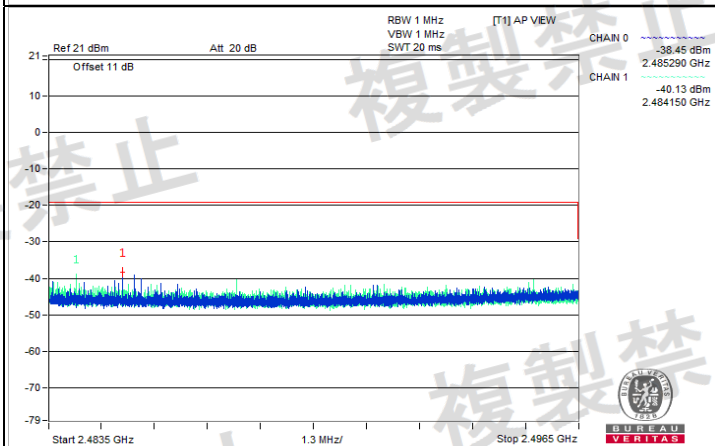
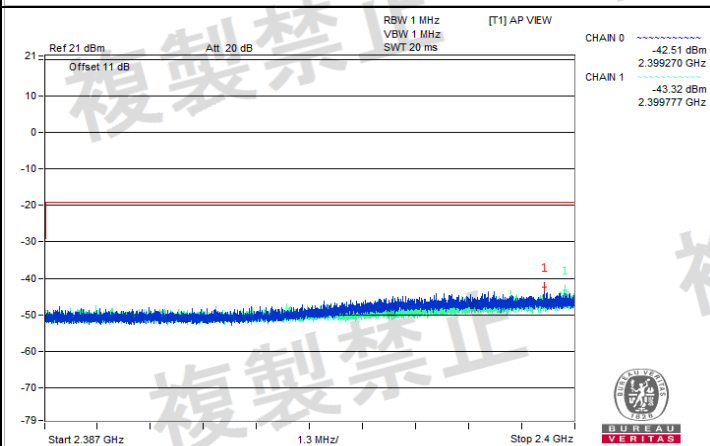
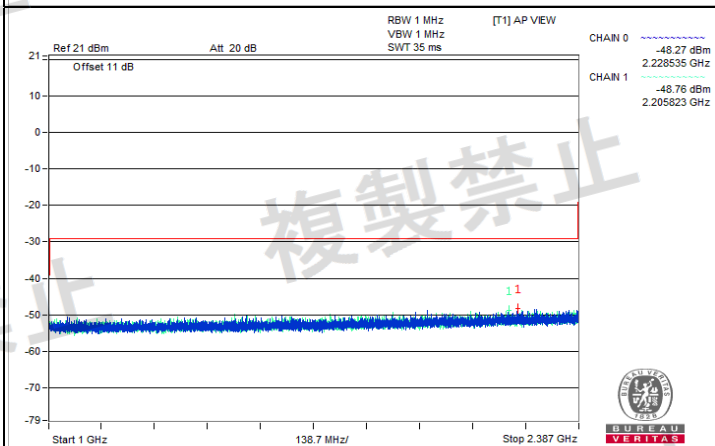
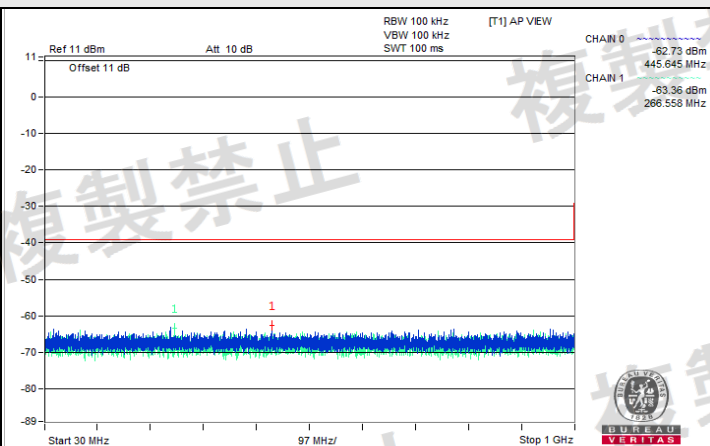
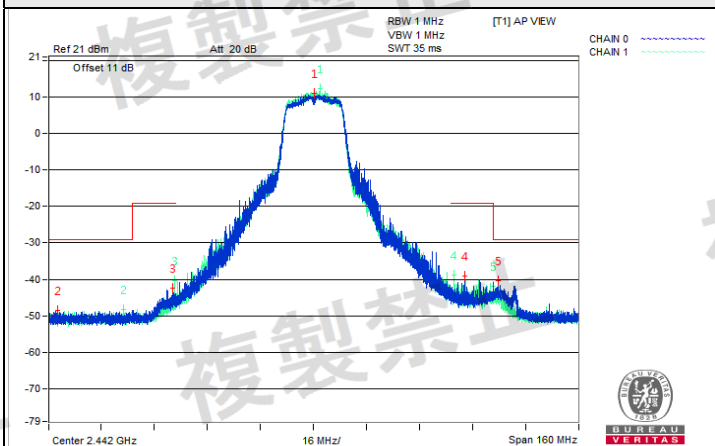
- Set the spectrum analyzer as below and it takes in a value of all data point.
- Regarding the all data value, it transforms the "dBm" value into "uW" value.
- It adds the all values and calculates a grand total. Define a grand total as "P".
- It divides "P" by sample data point (ex.501) and calculates the mean value.
- It reports the mean value.

Center 2.399678 GHz 940 us/ Ref 31 dBm Att 10 dB Offset 11 dB RBW 1 MHz VBW 1 MHz SWT 9.4 ms [T1] SA Marker 1 [T1] -48.49 dBm 2.637000 ms Delta 2 [T1] 11.67 dB 2.559000 ms BUREAU VERITAS		Center 2.483547 GHz 940 us/ Ref 31 dBm Att 10 dB Offset 11 dB RBW 1 MHz VBW 1 MHz SWT 9.4 ms [T1] SA Marker 1 [T1] -32.96 dBm 2.634000 ms Delta 2 [T1] 0.76 dB 2.559000 ms BUREAU VERITAS			
1	2399.678MHz	P = 0.192565uW/MHz	2	2483.547MHz	P = 0.469718uW/MHz

VHT20 Graph

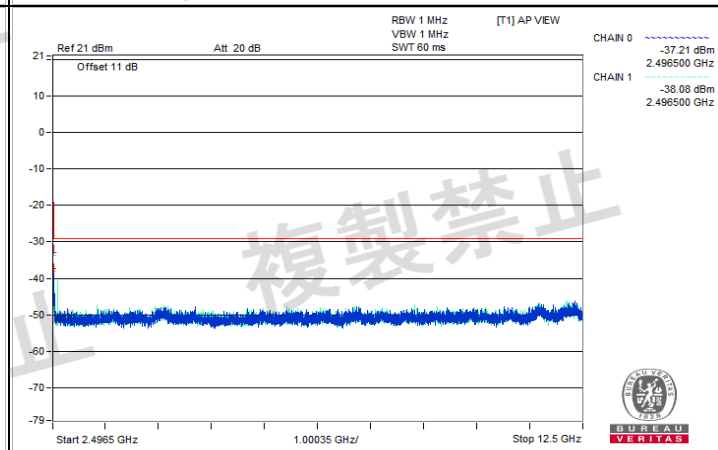
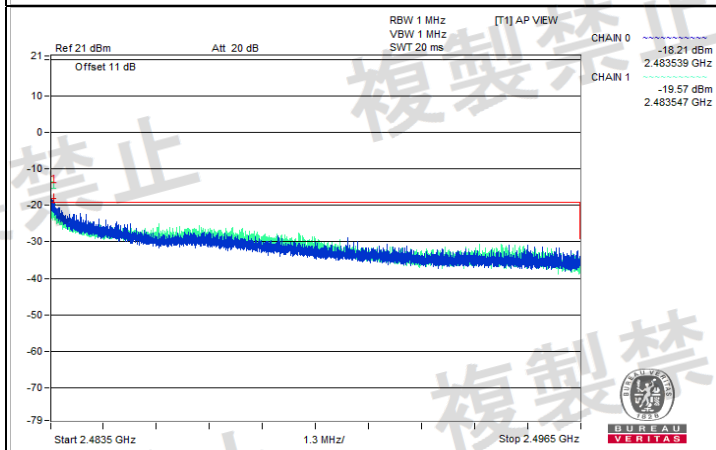
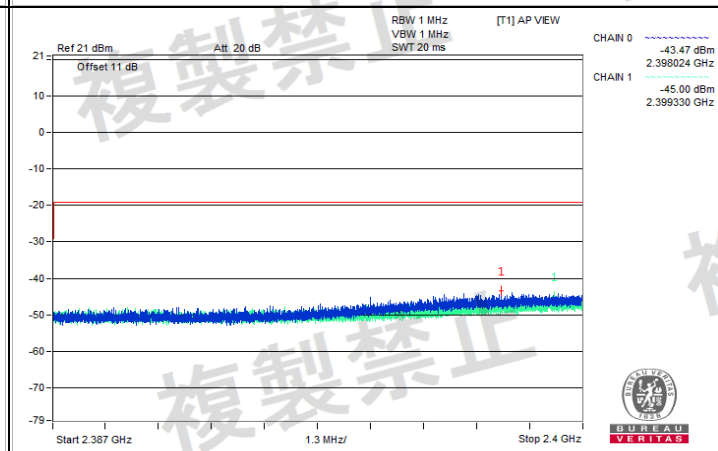
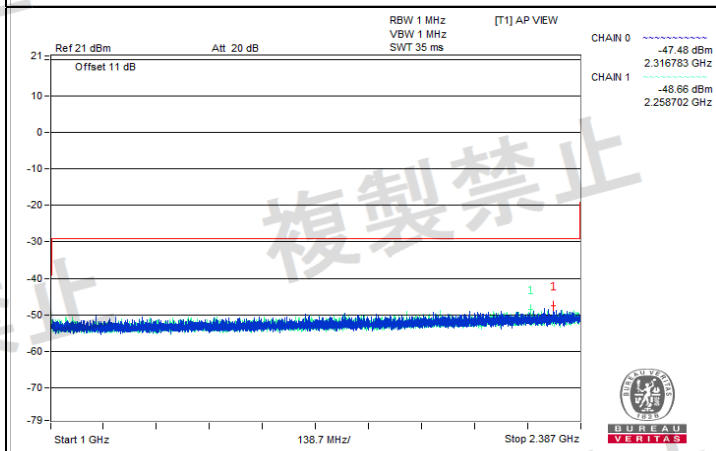
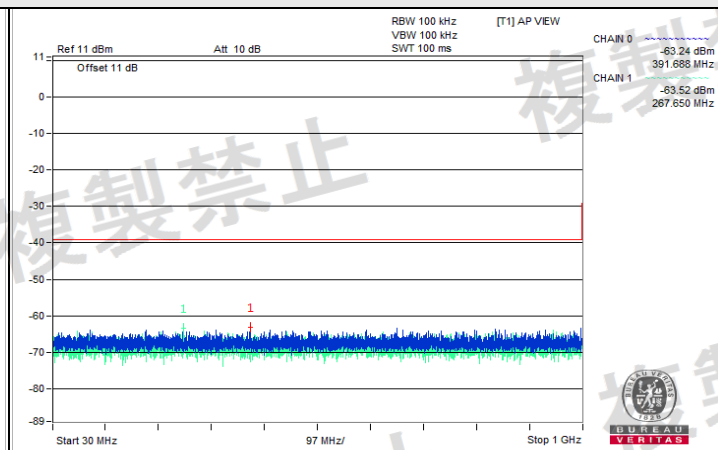
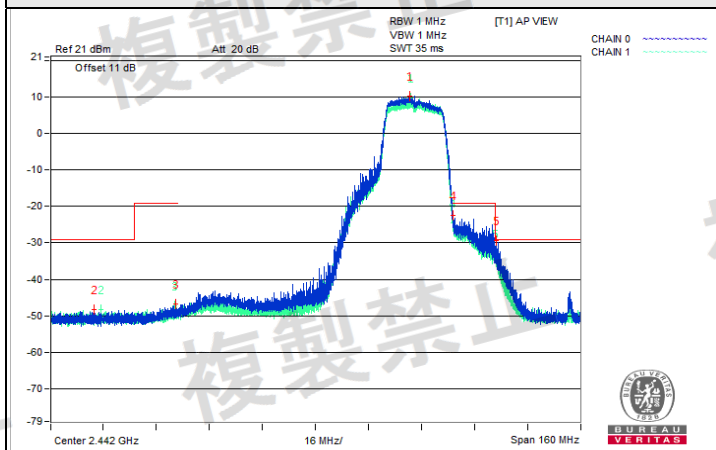


Vnormal



CH 7 (2442 MHz)

Vnormal



CH 13 (2472 MHz)

VHT20 [Worst result] x [Number of antenna ports]

TEST CHANNEL		CH 1 (2412 MHz)		
TEST CONDITION	FREQUENCY RANGE(MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	0.000980	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.032888	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.395544	25uW/MHz	PASS
	2483.5 to 2496.5	0.065468	25uW/MHz	PASS
	2496.5 to 12500.0	0.045606	2.5uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)		
V _{normal}	30.0 to 1000.0	0.001066	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.029788	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.112210	25uW/MHz	PASS
	2483.5 to 2496.5	0.285778	25uW/MHz	PASS
	2496.5 to 12500.0	0.073288	2.5uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)		
V _{normal}	30.0 to 1000.0	0.000948	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.035730	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.089956	25uW/MHz	PASS
	2483.5 to 2496.5	0.988252	25uW/MHz	PASS
	2496.5 to 12500.0	0.380216	2.5uW/MHz	PASS

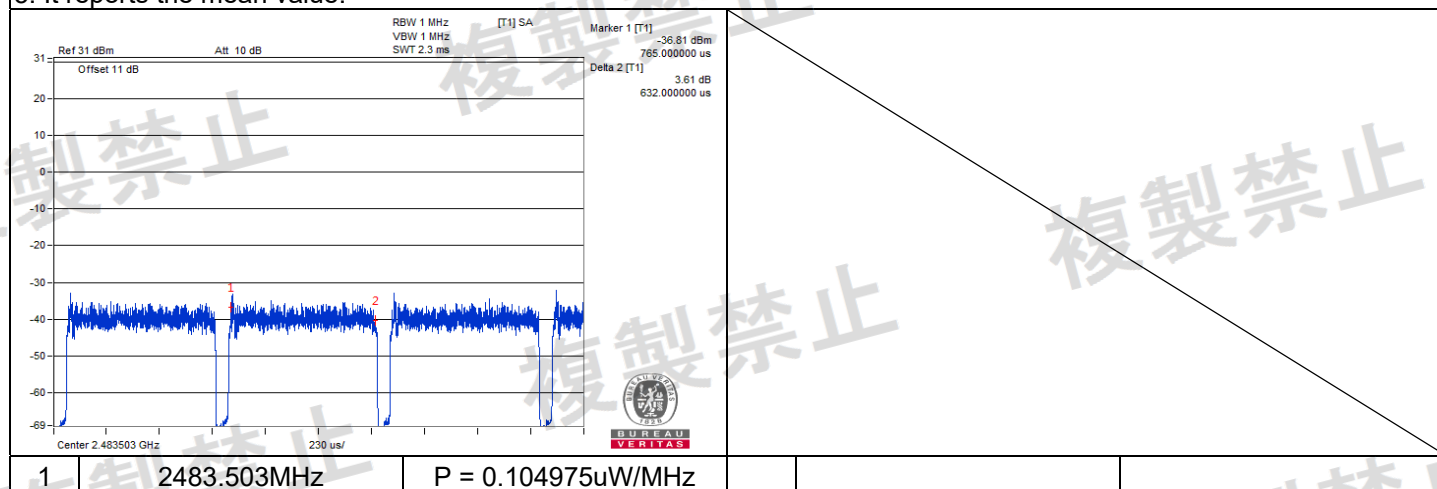
VHT40 Chain 0

TEST CHANNEL		CH 3 (2422 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	62.980	0.000433	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	1726.441	0.254683	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.926	6.251727	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2488.823	0.072277	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12329.940	0.028708	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	793.632	0.000442	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2216.919	0.01762	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.977	0.275423	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2484.921	0.309742	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2497.750	0.03155	1.25 uW/MHz	PASS
TEST CHANNEL		CH 11 (2462 MHz)			
V _{normal}	30.0 to 1000.0	638.311	0.000453	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	1730.255	0.016255	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.917	0.114025	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.503	0.104975	12.5 uW/MHz	PASS(1)
	2496.5 to 12500.0	2496.500	0.327341	1.25 uW/MHz	PASS

- NOTE:** 1. The spectrum plots are attached on the following pages.
2. (No.): The value was tested under Measuring Mode *Zero Span.

Measuring Mode *Zero Span

1. Set the spectrum analyzer as below and it takes in a value of all data point.
2. Regarding the all data value, it transforms the "dBm" value into "uW" value.
3. It adds the all values and calculates a grand total. Define a grand total as "P".
4. It divides "P" by sample data point (ex.501) and calculates the mean value.
5. It reports the mean value.



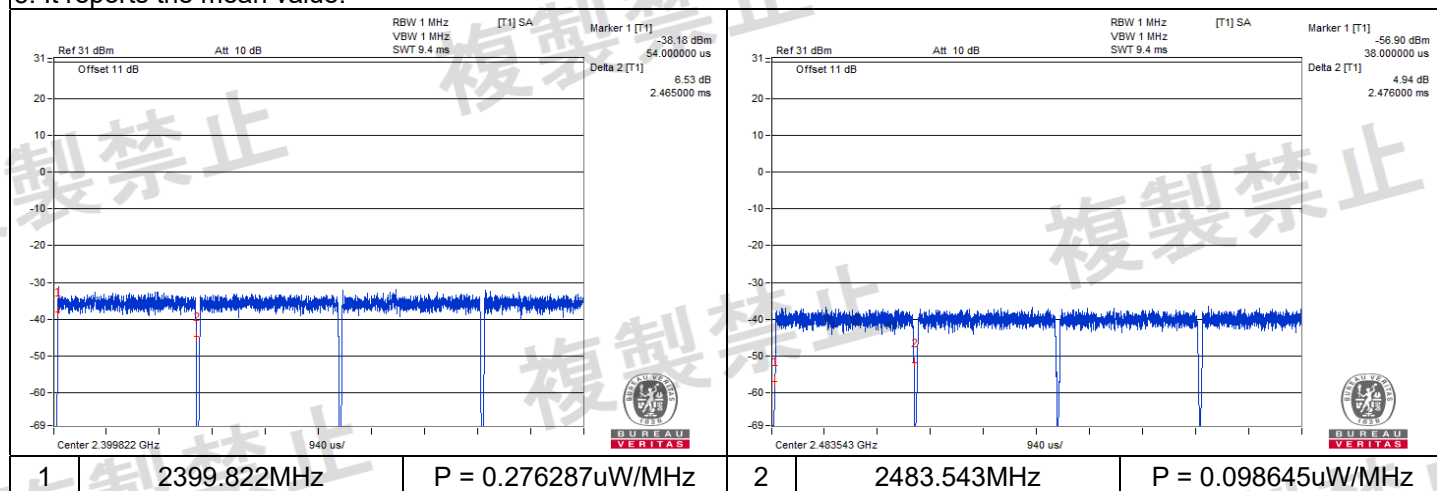
VHT40 Chain 1

TEST CHANNEL		CH 3 (2422 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(μW)	LIMIT (μW)	RESULT
V _{normal}	30.0 to 1000.0	791.207	0.000411	0.125 μW/100kHz	PASS
	1000.0 to 2387.0	2326.492	0.011015	1.25 μW/MHz	PASS
	2387.0 to 2400.0	2399.822	0.276287	12.5 μW/MHz	PASS(1)
	2483.5 to 2496.5	2492.617	0.075683	12.5 μW/MHz	PASS
	2496.5 to 12500.0	2496.500	0.026363	1.25 μW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	243.642	0.000446	0.125 μW/100kHz	PASS
	1000.0 to 2387.0	2245.005	0.012618	1.25 μW/MHz	PASS
	2387.0 to 2400.0	2399.996	0.428549	12.5 μW/MHz	PASS
	2483.5 to 2496.5	2485.524	0.341979	12.5 μW/MHz	PASS
	2496.5 to 12500.0	2496.500	0.035727	1.25 μW/MHz	PASS
TEST CHANNEL		CH 11 (2462 MHz)			
V _{normal}	30.0 to 1000.0	226.182	0.000404	0.125 μW/100kHz	PASS
	1000.0 to 2387.0	2264.250	0.012647	1.25 μW/MHz	PASS
	2387.0 to 2400.0	2399.614	0.135207	12.5 μW/MHz	PASS
	2483.5 to 2496.5	2483.543	0.098645	12.5 μW/MHz	PASS(2)
	2496.5 to 12500.0	2497.750	0.140605	1.25 μW/MHz	PASS

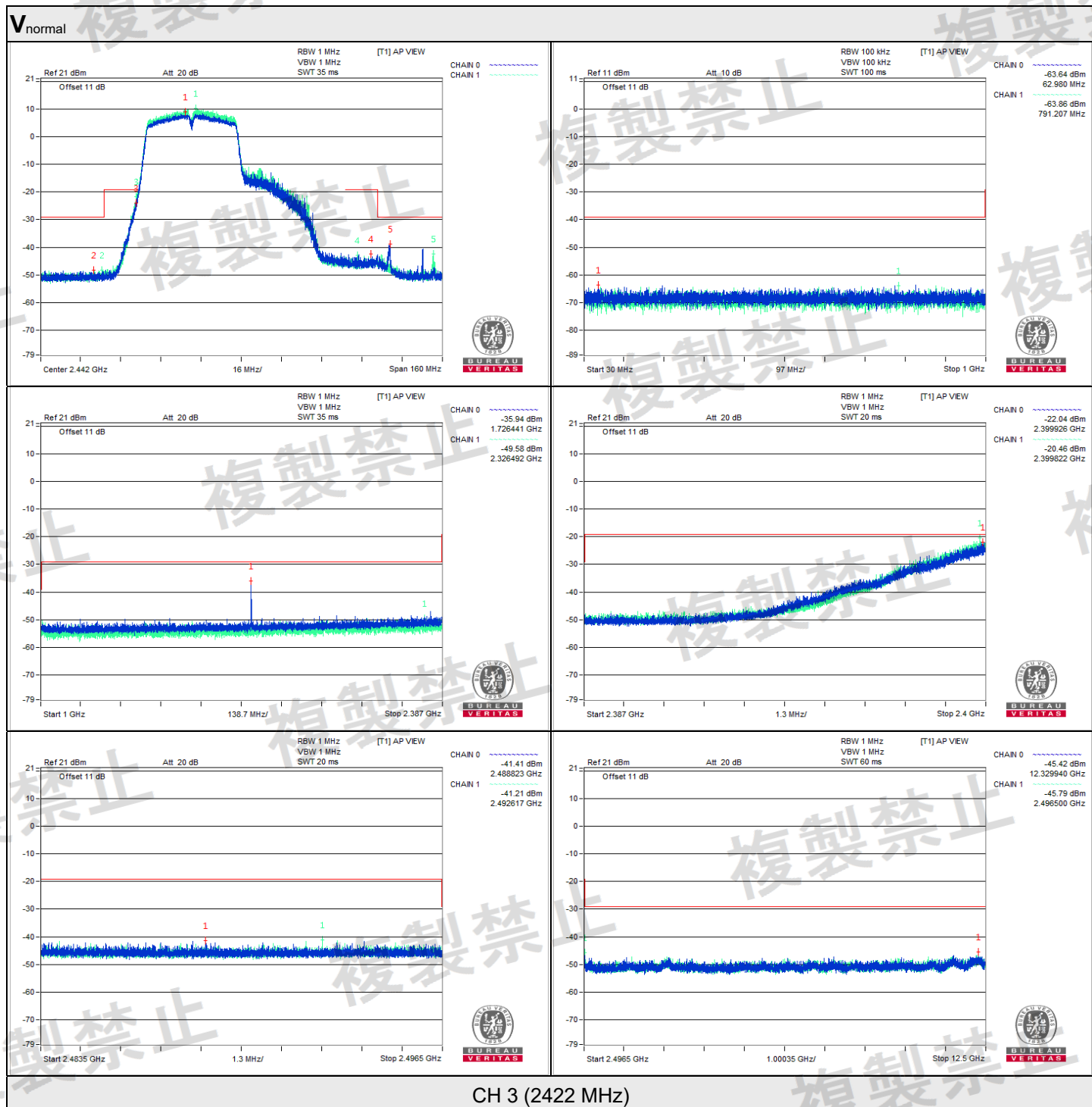
- NOTE:** 1. The spectrum plots are attached on the following pages.
2. (No.): The value was tested under Measuring Mode *Zero Span.

Measuring Mode *Zero Span

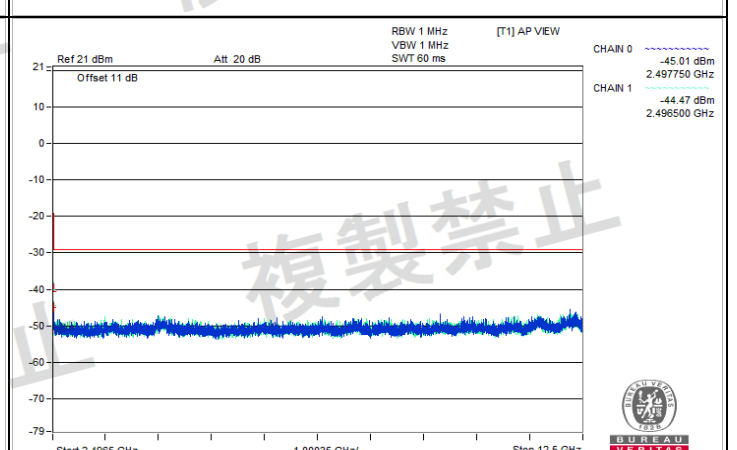
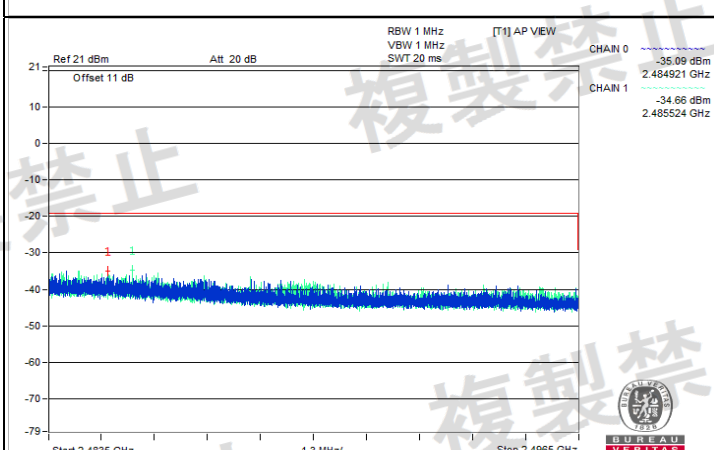
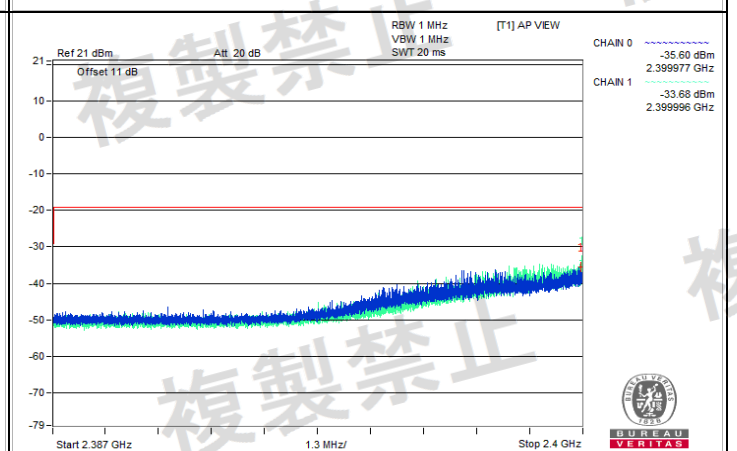
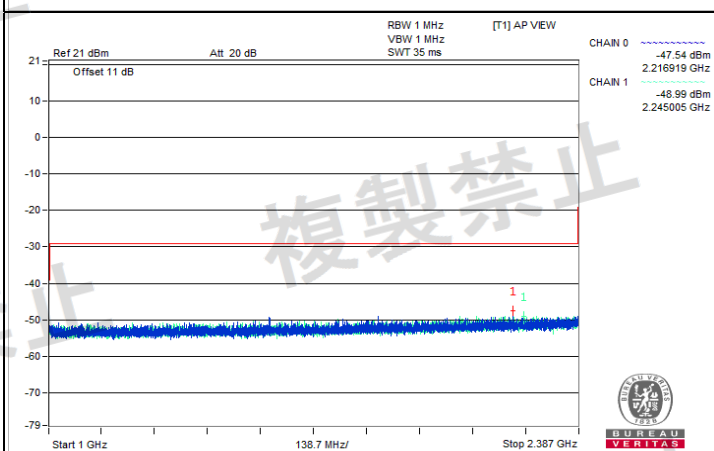
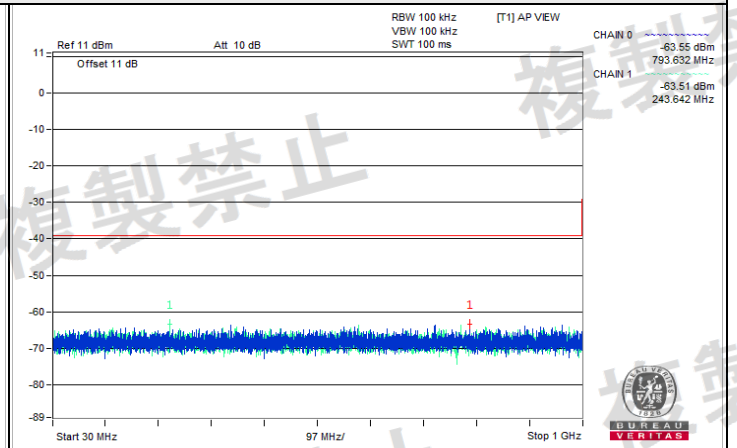
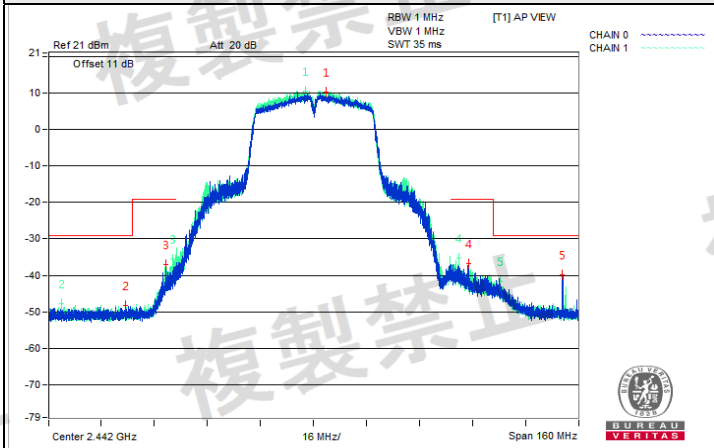
- Set the spectrum analyzer as below and it takes in a value of all data point.
- Regarding the all data value, it transforms the “dBm” value into “μW” value.
- It adds the all values and calculates a grand total. Define a grand total as “P”.
- It divides “P” by sample data point (ex.501) and calculates the mean value.
- It reports the mean value.



VHT40 Graph

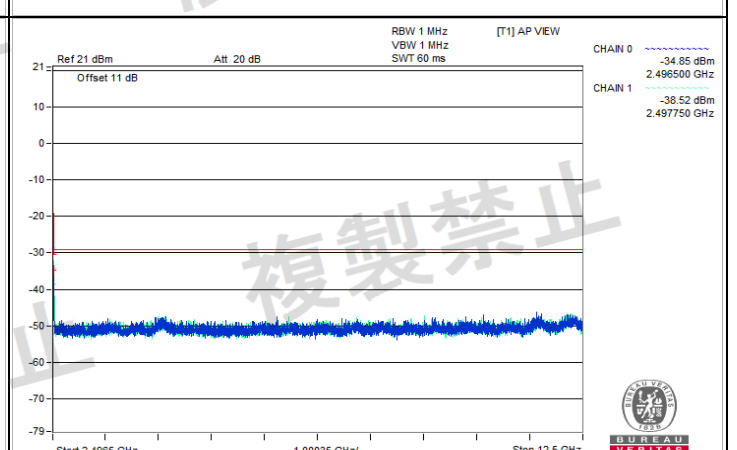
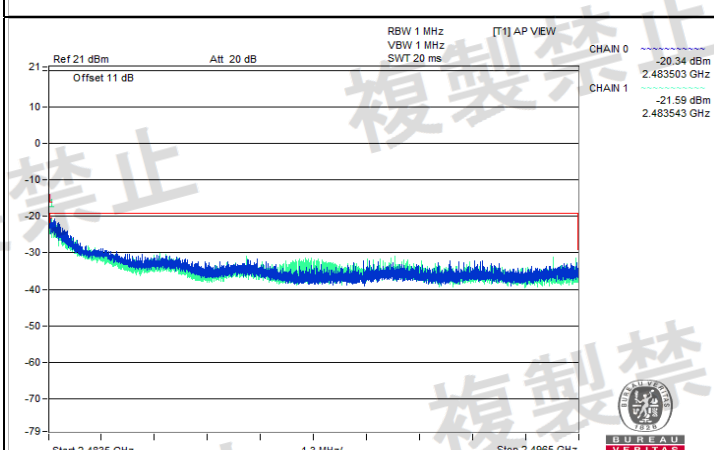
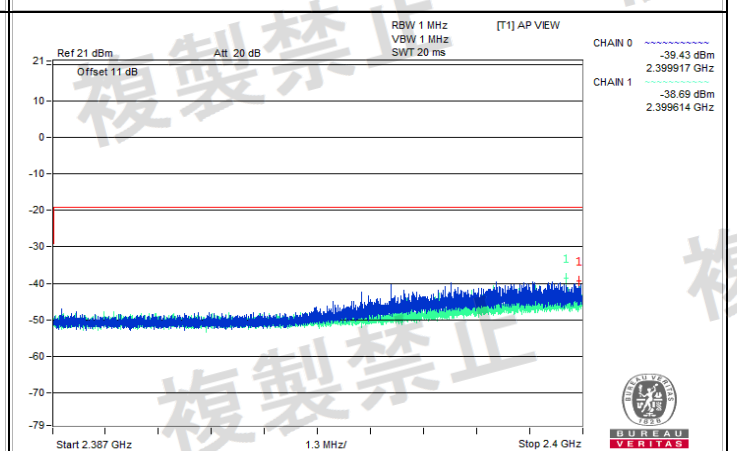
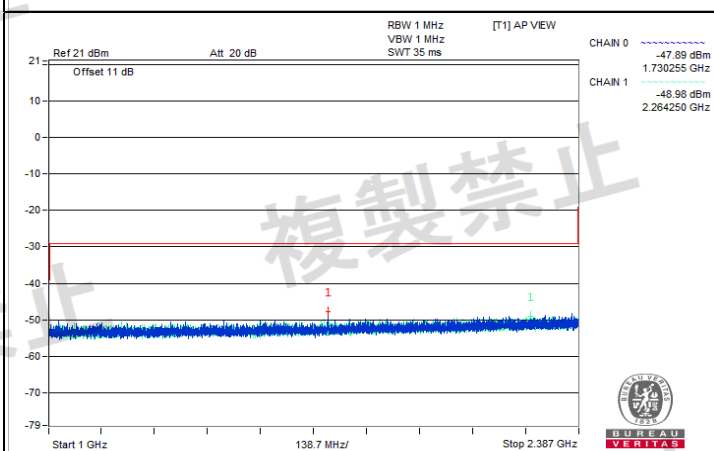
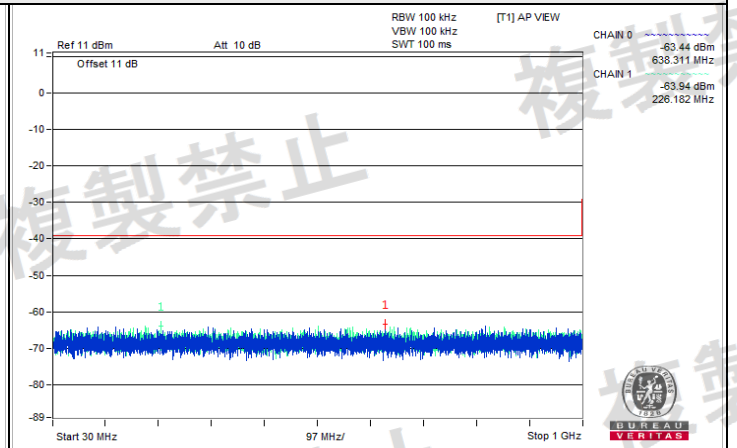
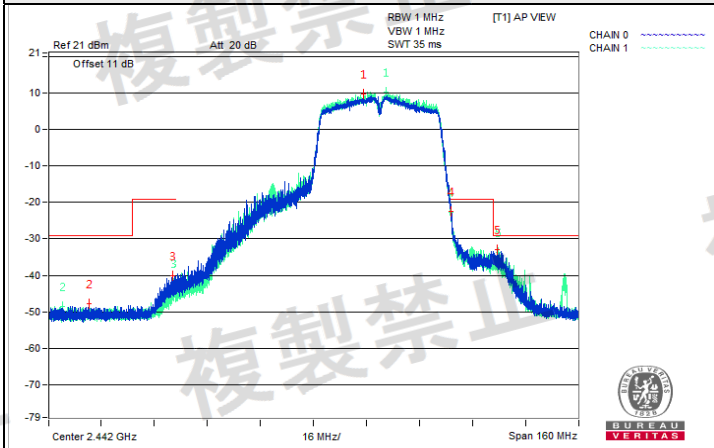


Vnormal



CH 7 (2442 MHz)

Vnormal



CH 11 (2462 MHz)

VHT40 [Worst result] x [Number of antenna ports]

TEST CHANNEL		CH 3 (2422 MHz)		
TEST CONDITION	FREQUENCY RANGE(MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	0.000866	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.509366	2.5uW/MHz	PASS
	2387.0 to 2400.0	12.503454	25uW/MHz	PASS
	2483.5 to 2496.5	0.151366	25uW/MHz	PASS
	2496.5 to 12500.0	0.057416	2.5uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)		
V _{normal}	30.0 to 1000.0	0.000892	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.035240	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.857098	25uW/MHz	PASS
	2483.5 to 2496.5	0.683958	25uW/MHz	PASS
	2496.5 to 12500.0	0.071454	2.5uW/MHz	PASS
TEST CHANNEL		CH 11 (2462 MHz)		
V _{normal}	30.0 to 1000.0	0.000906	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.032510	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.270414	25uW/MHz	PASS
	2483.5 to 2496.5	0.209950	25uW/MHz	PASS
	2496.5 to 12500.0	0.654682	2.5uW/MHz	PASS

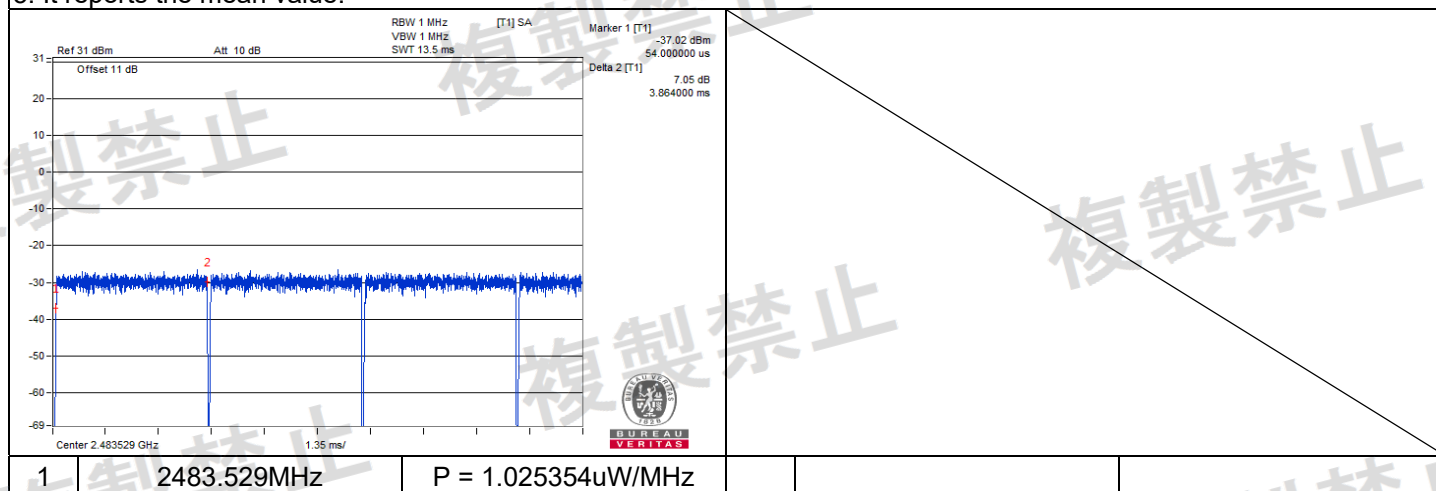
802.11ax (HE20) Chain 0

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	176.833	0.000436	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	1994.305	0.014825	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.863	4.677351	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2494.972	0.059841	12.5 uW/MHz	PASS
	2496.5 to 12500.0	12277.422	0.021727	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	41.882	0.00049	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2346.777	0.016943	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.489	0.055847	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.613	0.093111	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2496.500	0.040458	1.25 uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	260.860	0.000449	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2305.340	0.014521	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.842	0.040458	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.529	1.025354	12.5 uW/MHz	PASS(1)
	2496.5 to 12500.0	2496.500	0.234423	1.25 uW/MHz	PASS

- NOTE:** 1. The spectrum plots are attached on the following pages.
2. (No.): The value was tested under Measuring Mode *Zero Span.

Measuring Mode *Zero Span

- Set the spectrum analyzer as below and it takes in a value of all data point.
- Regarding the all data value, it transforms the "dBm" value into "uW" value.
- It adds the all values and calculates a grand total. Define a grand total as "P".
- It divides "P" by sample data point (ex.501) and calculates the mean value.
- It reports the mean value.



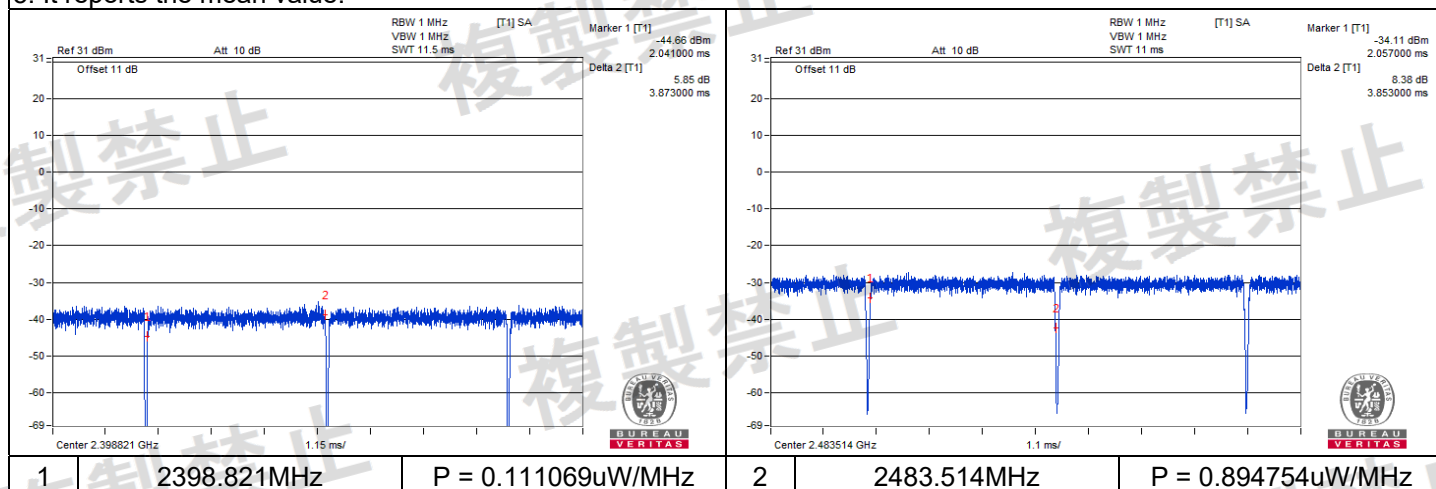
802.11ax (HE20) Chain 1

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	155.857	0.000451	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2231.309	0.014028	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2398.821	0.111069	12.5 uW/MHz	PASS(1)
	2483.5 to 2496.5	2492.307	0.046989	12.5 uW/MHz	PASS
	2496.5 to 12500.0	11685.965	0.025763	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	517.910	0.000456	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2180.683	0.014894	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2398.563	0.053827	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2484.312	0.165577	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2496.500	0.024547	1.25 uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	765.017	0.000424	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2305.167	0.0139	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.944	0.027606	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.514	0.894754	12.5 uW/MHz	PASS(2)
	2496.5 to 12500.0	2496.500	0.188365	1.25 uW/MHz	PASS

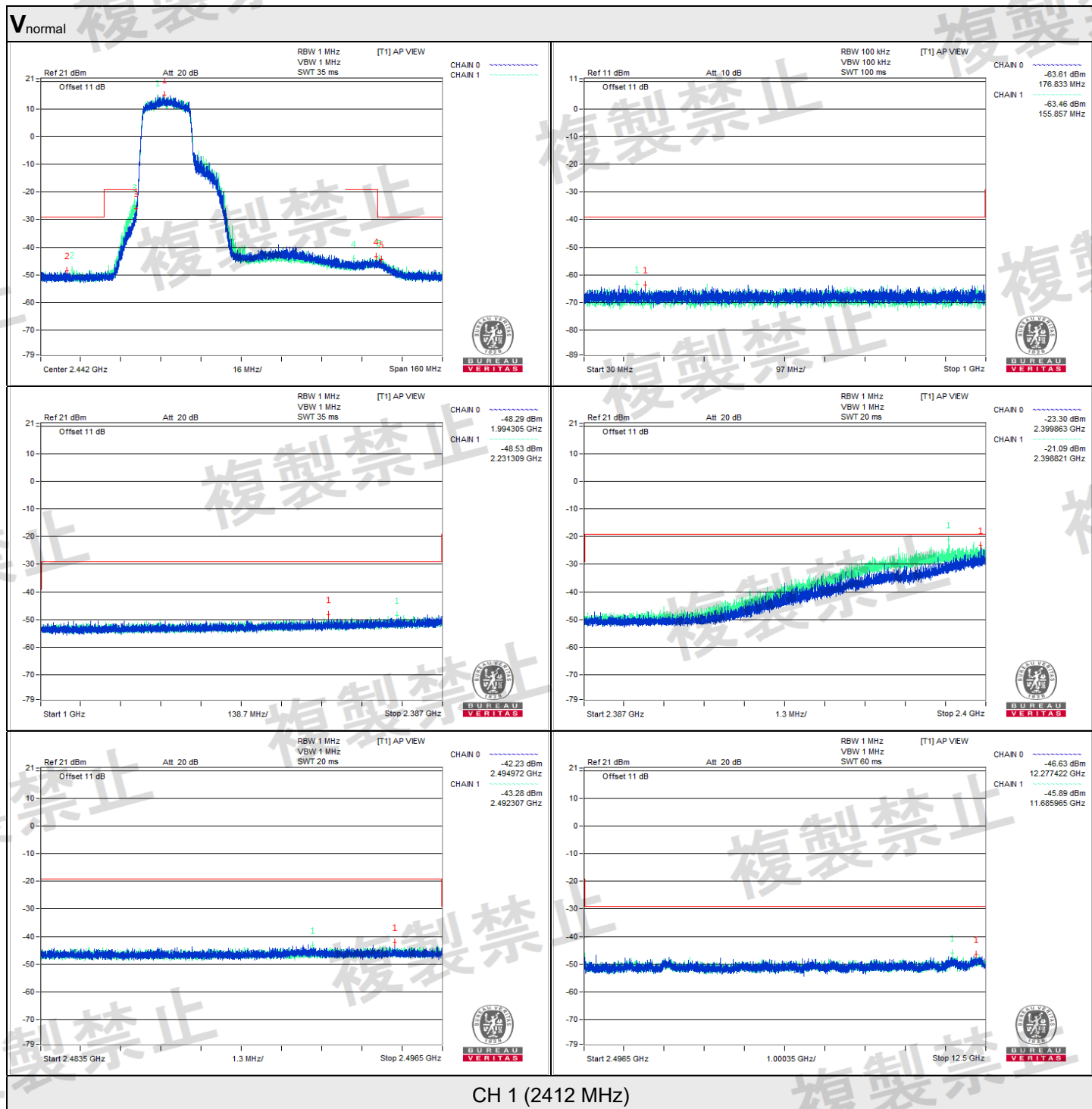
- NOTE:** 1. The spectrum plots are attached on the following pages.
2. (No.): The value was tested under Measuring Mode *Zero Span.

Measuring Mode *Zero Span

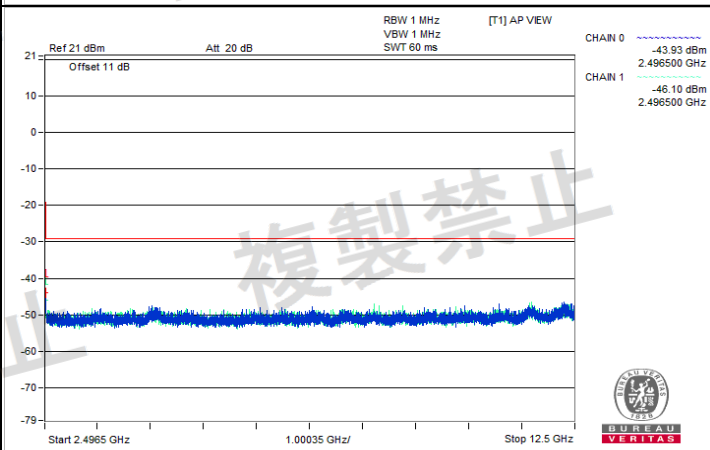
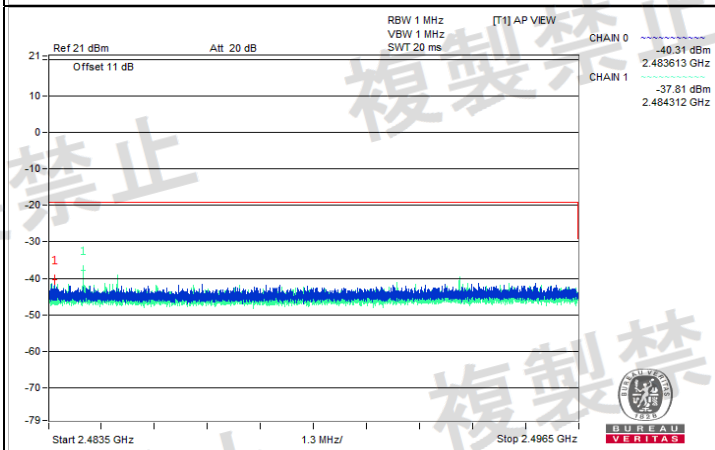
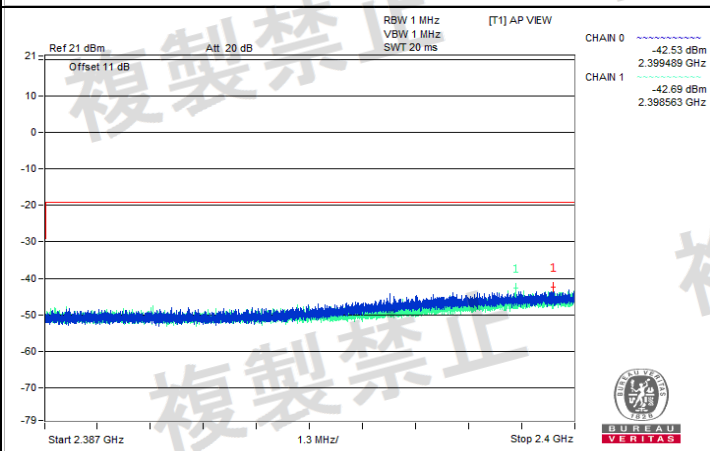
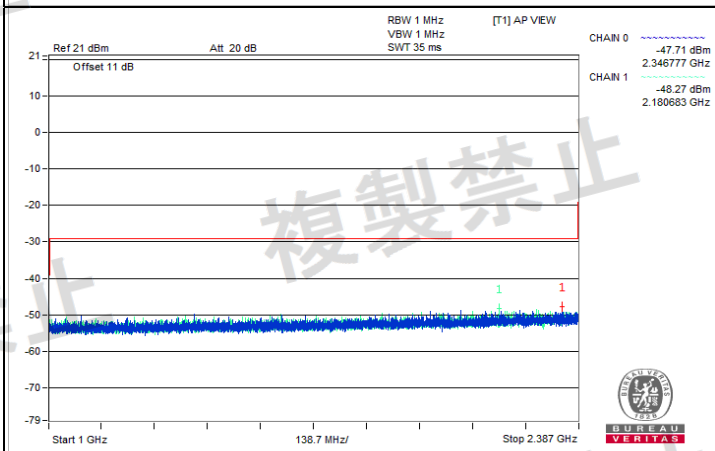
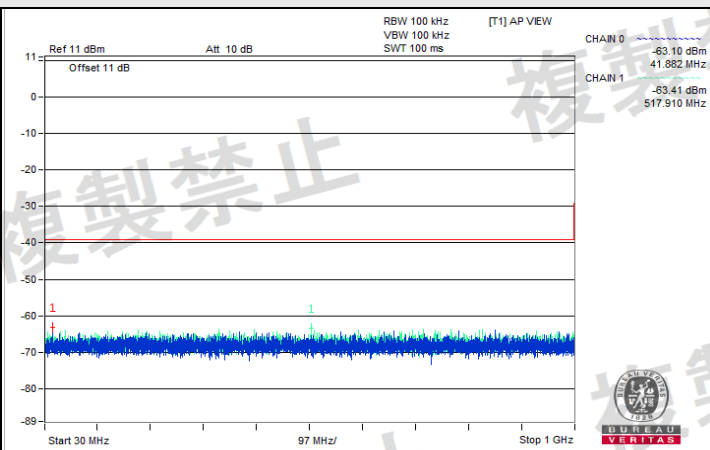
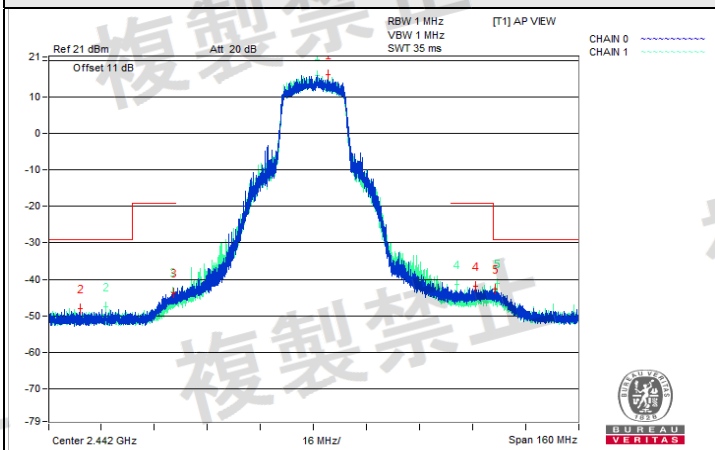
- Set the spectrum analyzer as below and it takes in a value of all data point.
- Regarding the all data value, it transforms the "dBm" value into "uW" value.
- It adds the all values and calculates a grand total. Define a grand total as "P".
- It divides "P" by sample data point (ex.501) and calculates the mean value.
- It reports the mean value.



802.11ax (HE20) Graph

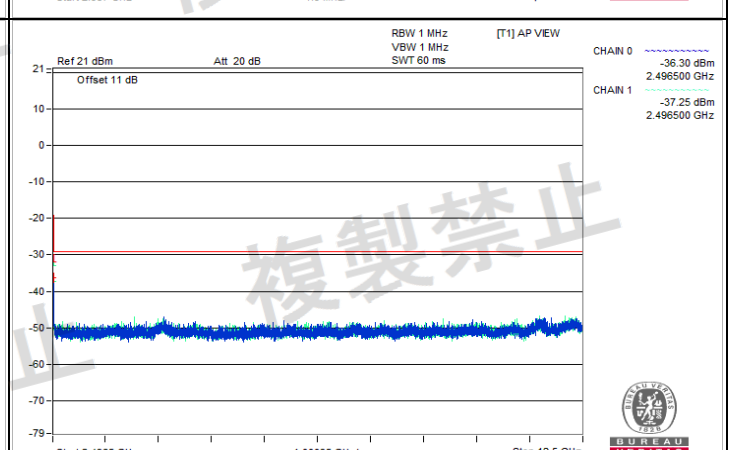
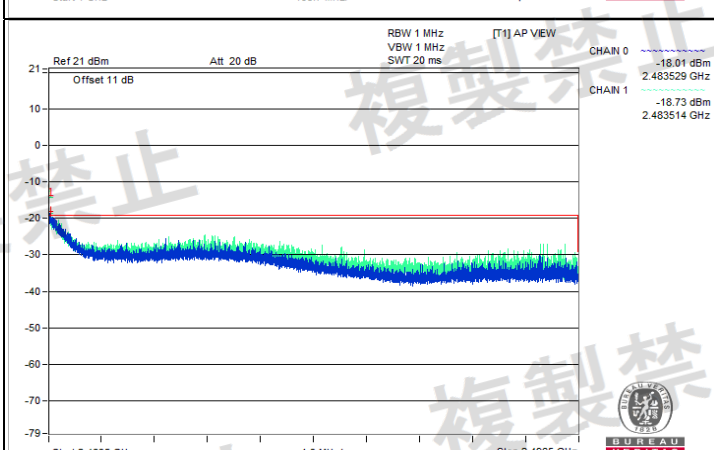
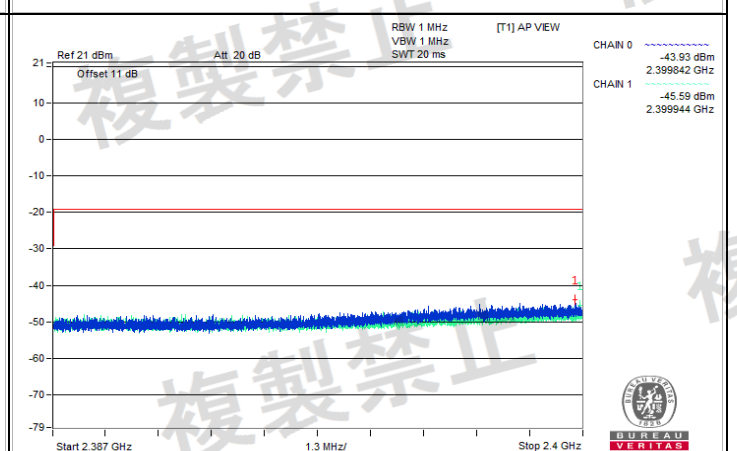
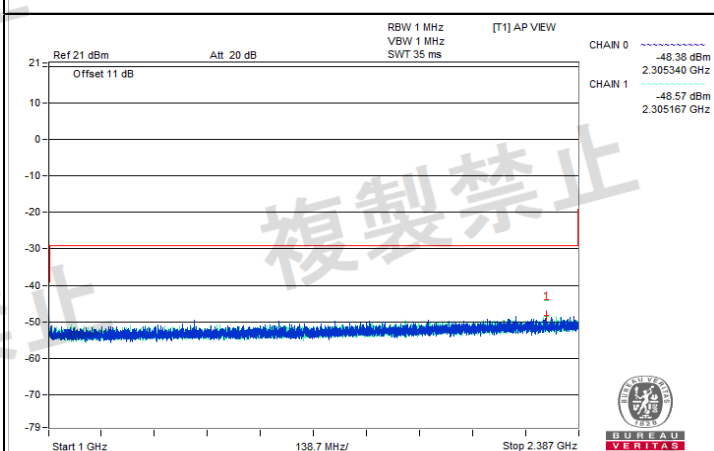
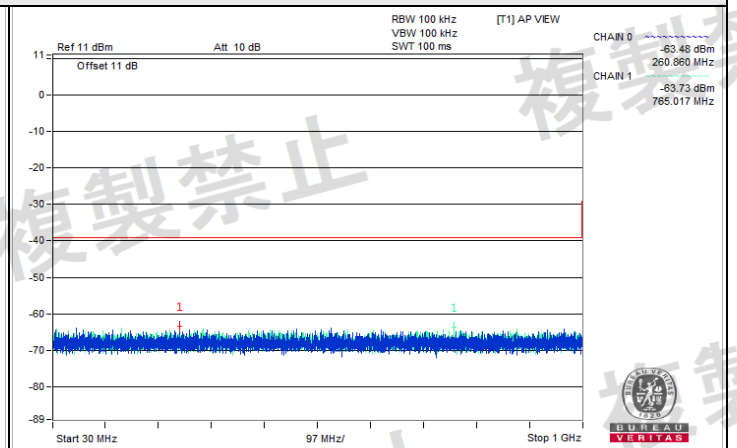
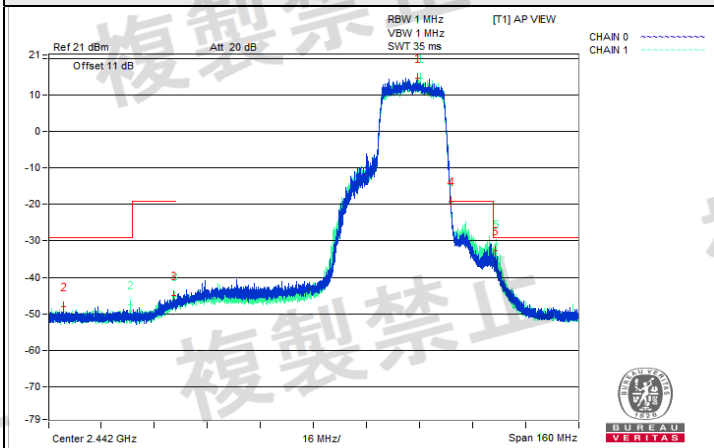


Vnormal



CH 7 (2442 MHz)

Vnormal



CH 13 (2472 MHz)

802.11ax (HE20) [Worst result] x [Number of antenna ports]

TEST CHANNEL		CH 1 (2412 MHz)		
TEST CONDITION	FREQUENCY RANGE(MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	0.000902	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.029650	2.5uW/MHz	PASS
	2387.0 to 2400.0	9.354702	25uW/MHz	PASS
	2483.5 to 2496.5	0.119682	25uW/MHz	PASS
	2496.5 to 12500.0	0.051526	2.5uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)		
V _{normal}	30.0 to 1000.0	0.000980	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.033886	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.111694	25uW/MHz	PASS
	2483.5 to 2496.5	0.331154	25uW/MHz	PASS
	2496.5 to 12500.0	0.080916	2.5uW/MHz	PASS
TEST CHANNEL		CH 13 (2472 MHz)		
V _{normal}	30.0 to 1000.0	0.000898	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.029042	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.080916	25uW/MHz	PASS
	2483.5 to 2496.5	2.050708	25uW/MHz	PASS
	2496.5 to 12500.0	0.468846	2.5uW/MHz	PASS

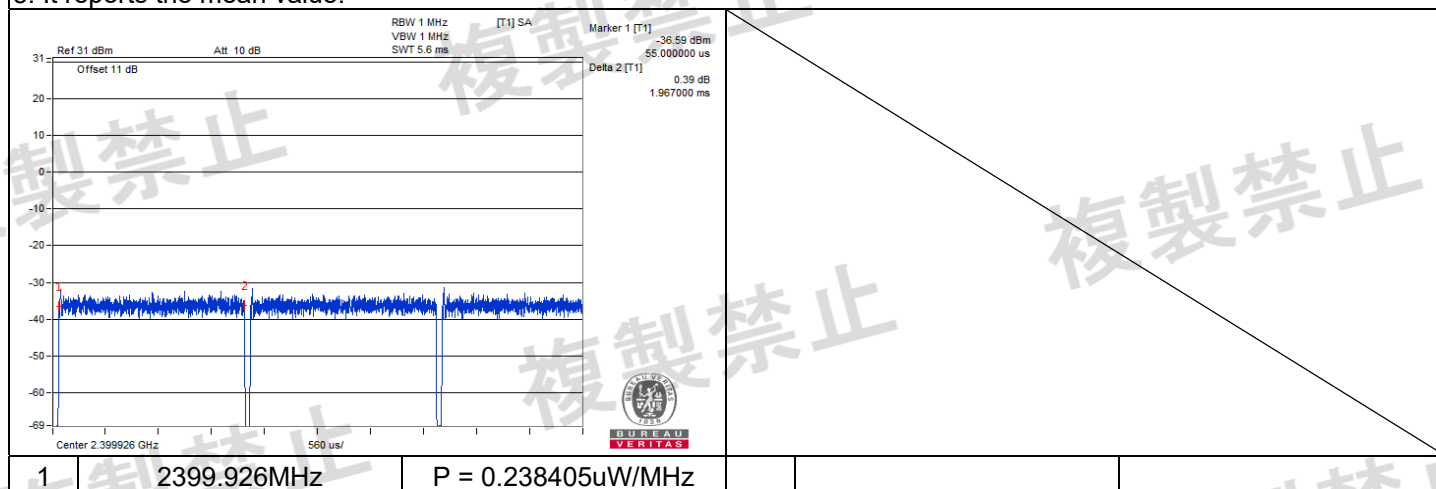
802.11ax (HE40) Chain 0

TEST CHANNEL		CH 3 (2422 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	533.793	0.000398	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2379.371	0.015417	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.926	0.238405	12.5 uW/MHz	PASS(1)
	2483.5 to 2496.5	2493.566	0.146893	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2497.750	0.023121	1.25 uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	466.015	0.000436	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2319.210	0.012764	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.634	0.293765	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2485.537	0.3155	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2496.500	0.031405	1.25 uW/MHz	PASS
TEST CHANNEL		CH 11 (2462 MHz)			
V _{normal}	30.0 to 1000.0	42.488	0.000476	0.125 uW/100kHz	PASS
	1000.0 to 2387.0	2383.532	0.013772	1.25 uW/MHz	PASS
	2387.0 to 2400.0	2399.844	0.175792	12.5 uW/MHz	PASS
	2483.5 to 2496.5	2483.509	1.524053	12.5 uW/MHz	PASS
	2496.5 to 12500.0	2499.000	0.184927	1.25 uW/MHz	PASS

- NOTE:** 1. The spectrum plots are attached on the following pages.
2. (No.): The value was tested under Measuring Mode *Zero Span.

Measuring Mode *Zero Span

- Set the spectrum analyzer as below and it takes in a value of all data point.
- Regarding the all data value, it transforms the “dBm” value into “uW” value.
- It adds the all values and calculates a grand total. Define a grand total as “P”.
- It divides “P” by sample data point (ex.501) and calculates the mean value.
- It reports the mean value.

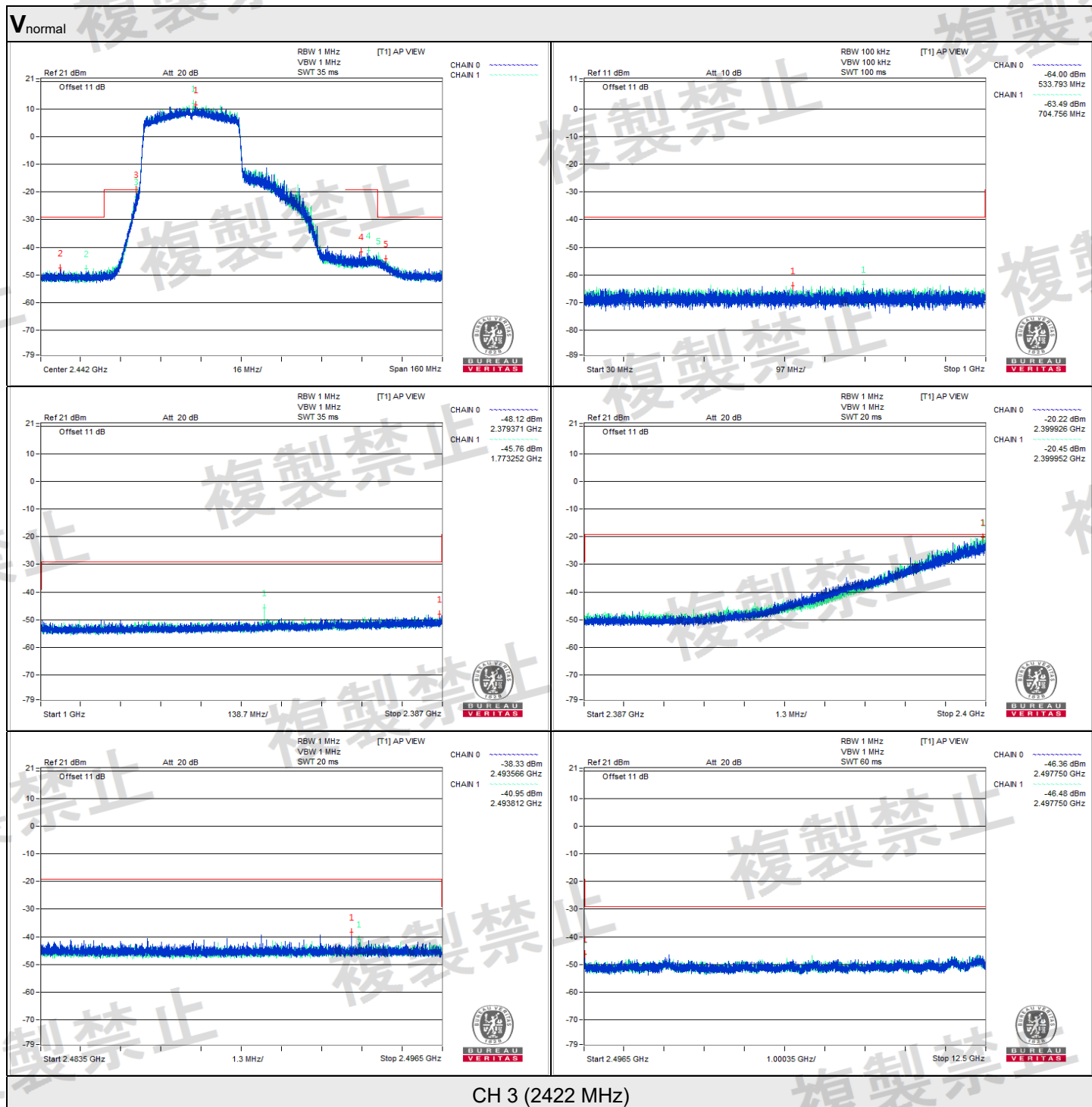


NOTE: 1. The spectrum plots are attached on the following pages.
2. (No.): The value was tested under Measuring Mode *Zero Span.

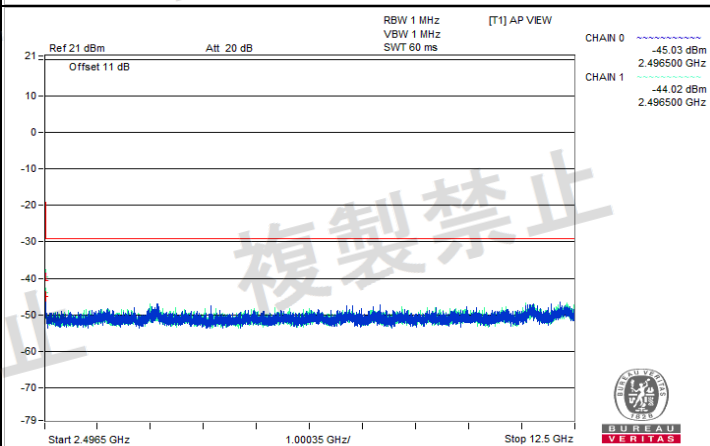
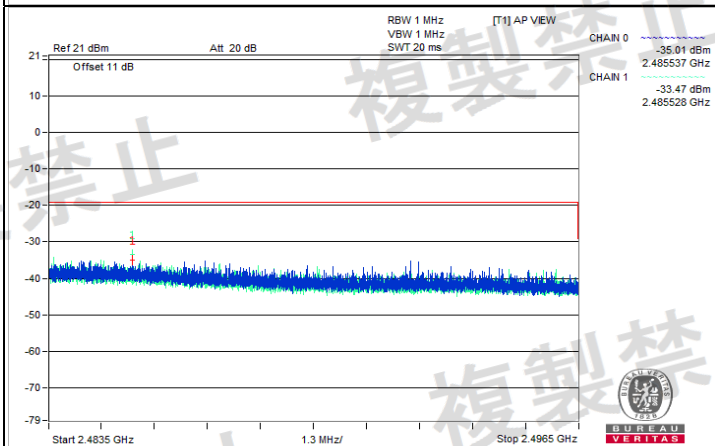
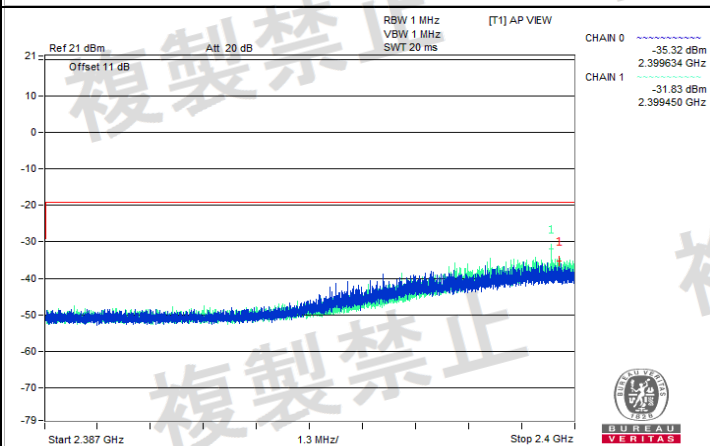
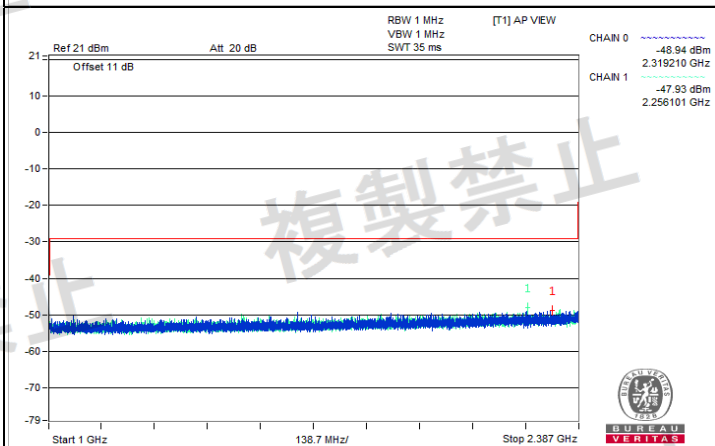
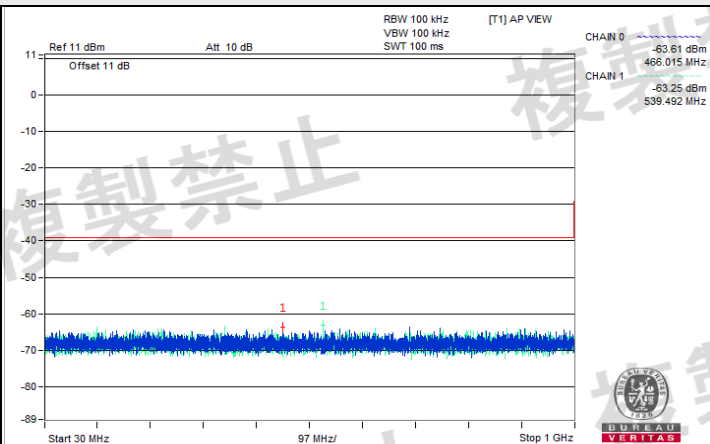
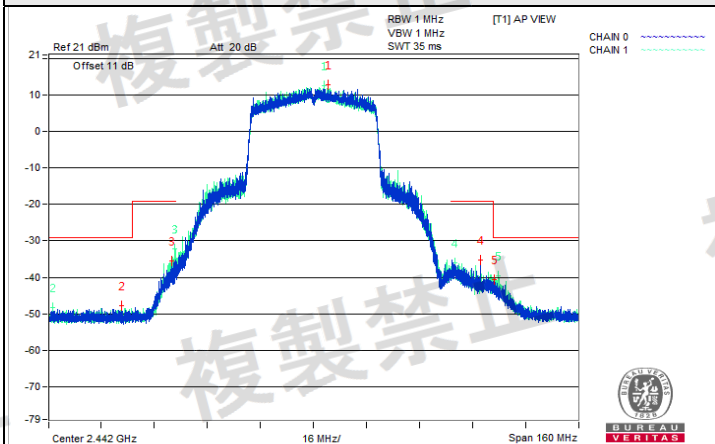
1. Set the spectrum analyzer as below and it takes in a value of all data point.
2. Regarding the all data value, it transforms the “dBm” value into “uW” value.
3. It adds the all values and calculates a grand total. Define a grand total as “P”.
4. It divides “P” by sample data point (ex.501) and calculates the mean value.
5. It reports the mean value.



802.11ax (HE40) Graph

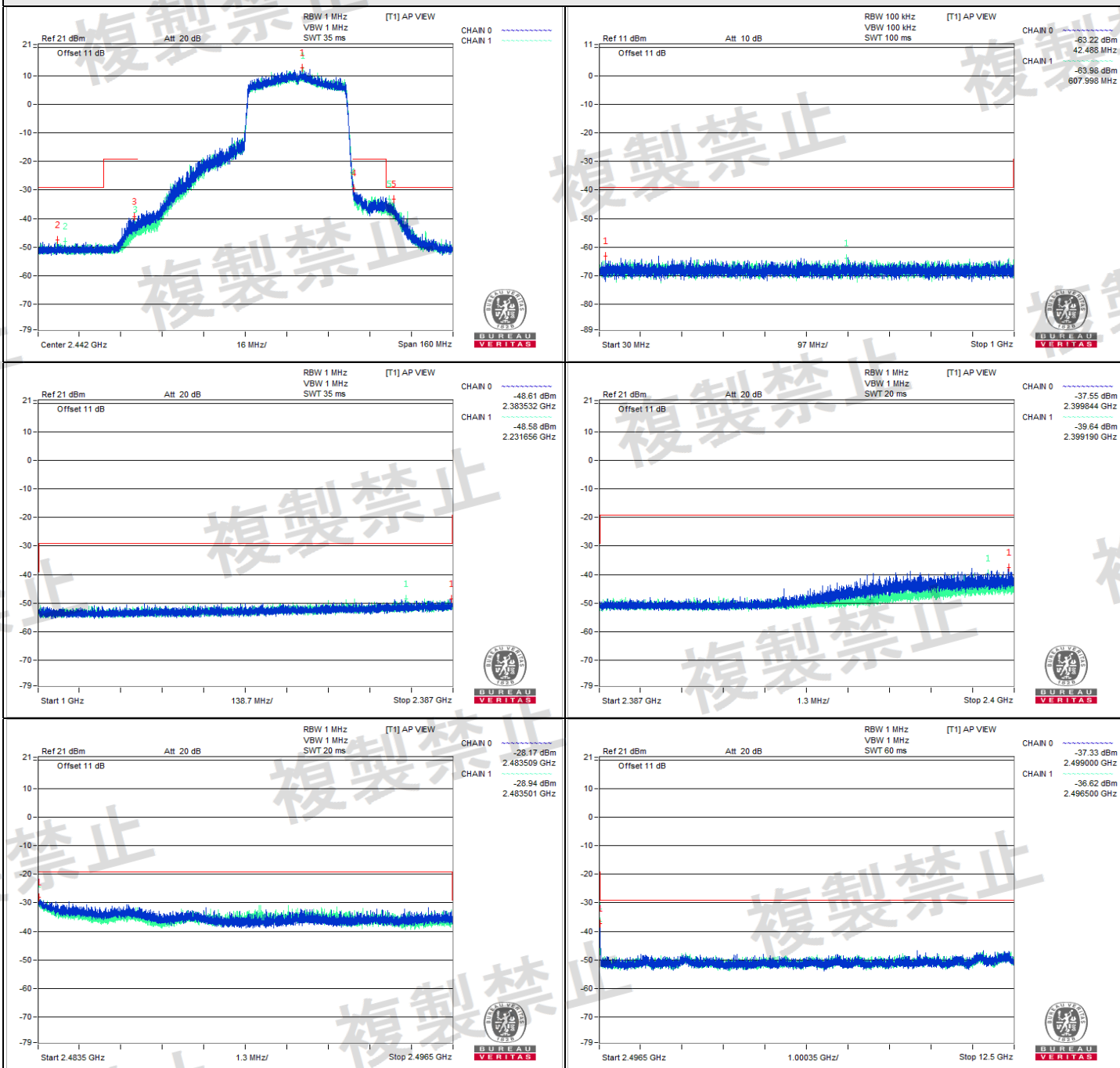


Vnormal



CH 7 (2442 MHz)

Vnormal



CH 11 (2462 MHz)

802.11ax (HE40) [Worst result] x [Number of antenna ports]

TEST CHANNEL		CH 3 (2422 MHz)		
TEST CONDITION	FREQUENCY RANGE(MHz)	MEASUREMENT VALUE(uW)	LIMIT (uW)	RESULT
V _{normal}	30.0 to 1000.0	0.000896	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.053092	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.574306	25uW/MHz	PASS
	2483.5 to 2496.5	0.293786	25uW/MHz	PASS
	2496.5 to 12500.0	0.046242	2.5uW/MHz	PASS
TEST CHANNEL		CH 7 (2442 MHz)		
V _{normal}	30.0 to 1000.0	0.000946	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.032212	2.5uW/MHz	PASS
	2387.0 to 2400.0	1.312290	25uW/MHz	PASS
	2483.5 to 2496.5	0.899560	25uW/MHz	PASS
	2496.5 to 12500.0	0.079256	2.5uW/MHz	PASS
TEST CHANNEL		CH 11 (2462 MHz)		
V _{normal}	30.0 to 1000.0	0.000952	0.25uW/100kHz	PASS
	1000.0 to 2387.0	0.027736	2.5uW/MHz	PASS
	2387.0 to 2400.0	0.351584	25uW/MHz	PASS
	2483.5 to 2496.5	3.048106	25uW/MHz	PASS
	2496.5 to 12500.0	0.435542	2.5uW/MHz	PASS

7.5 Spurious Emissions of Receiver

Environmental Conditions:	25°C, 95% RH	Tested By:	Chris Lin
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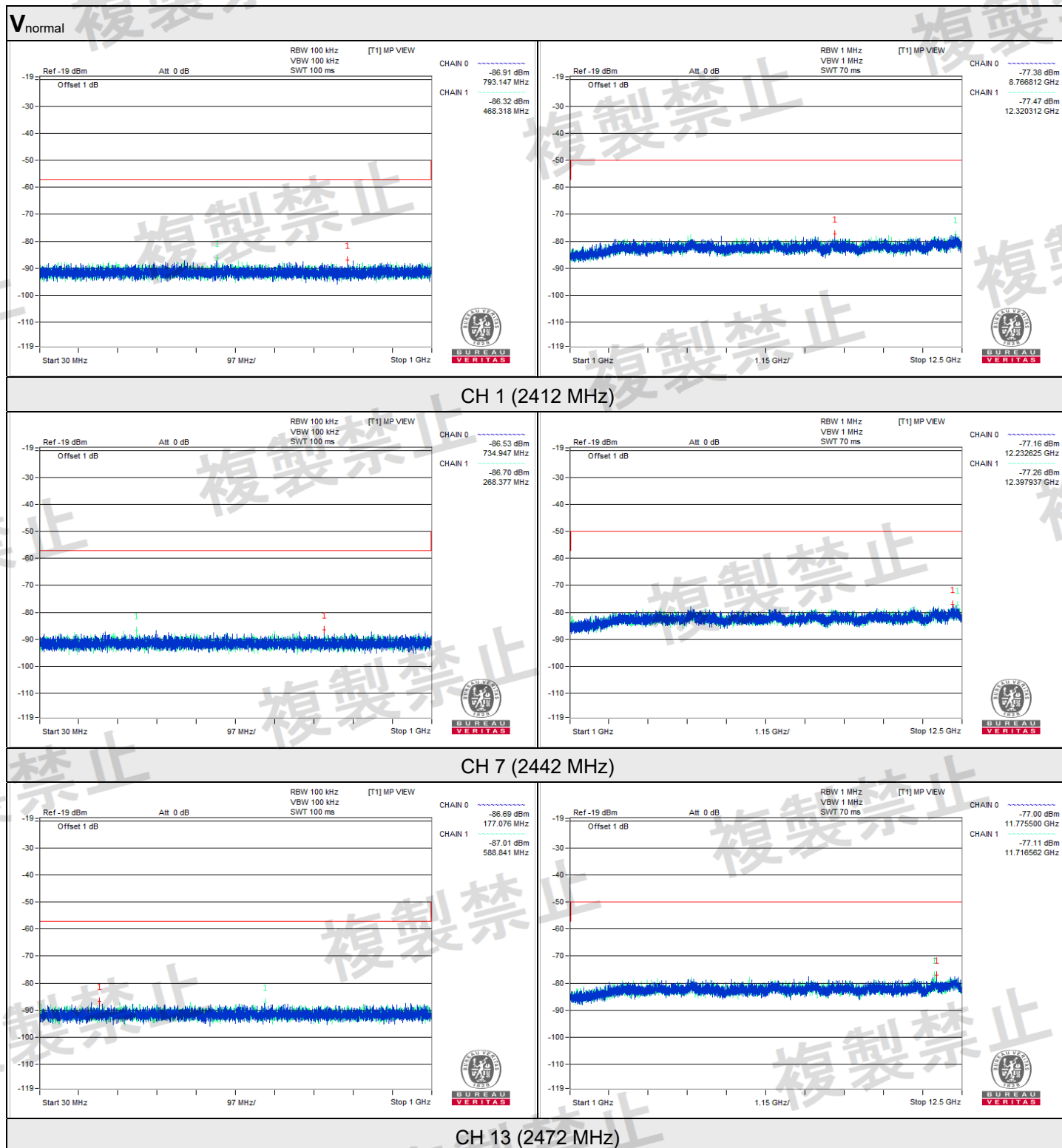
20 MHz System: 802.11b / 802.11g / VHT20 / 802.11ax (HE20) Chain 0

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(nW)	LIMIT (nW)	RESULT
V _{normal}	30.0 to 1000.0	793.147	0.002037	2	PASS
	1000.0 to 12500.0	8766.812	0.018281	10	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	734.947	0.002223	2	PASS
	1000.0 to 12500.0	12232.625	0.019231	10	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	177.076	0.002143	2	PASS
	1000.0 to 12500.0	11775.500	0.019953	10	PASS

20 MHz System: 802.11b / 802.11g / VHT20 / 802.11ax (HE20) Chain 1

TEST CHANNEL		CH 1 (2412 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(nW)	LIMIT (nW)	RESULT
V _{normal}	30.0 to 1000.0	468.318	0.002333	2	PASS
	1000.0 to 12500.0	12320.312	0.017906	10	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	268.377	0.002138	2	PASS
	1000.0 to 12500.0	12397.937	0.018793	10	PASS
TEST CHANNEL		CH 13 (2472 MHz)			
V _{normal}	30.0 to 1000.0	588.841	0.001991	2	PASS
	1000.0 to 12500.0	11716.562	0.019454	10	PASS

20 MHz System: 802.11b / 802.11g / VHT20 / 802.11ax (HE20) Graph



20 MHz System: 802.11b / 802.11g / VHT20 / 802.11ax (HE20) Sum of each Chain

TEST CHANNEL		CH 1 (2412 MHz)		
TEST CONDITION	FREQUENCY RANGE(MHz)	MEASUREMENT VALUE(nW)	LIMIT (nW)	RESULT
V _{normal}	30.0 to 1000.0	0.004370	4	PASS
	1000.0 to 12500.0	0.036187	20	PASS
TEST CHANNEL		CH 7 (2442 MHz)		
V _{normal}	30.0 to 1000.0	0.004361	4	PASS
	1000.0 to 12500.0	0.038024	20	PASS
TEST CHANNEL		CH 13 (2472 MHz)		
V _{normal}	30.0 to 1000.0	0.004134	4	PASS
	1000.0 to 12500.0	0.039407	20	PASS

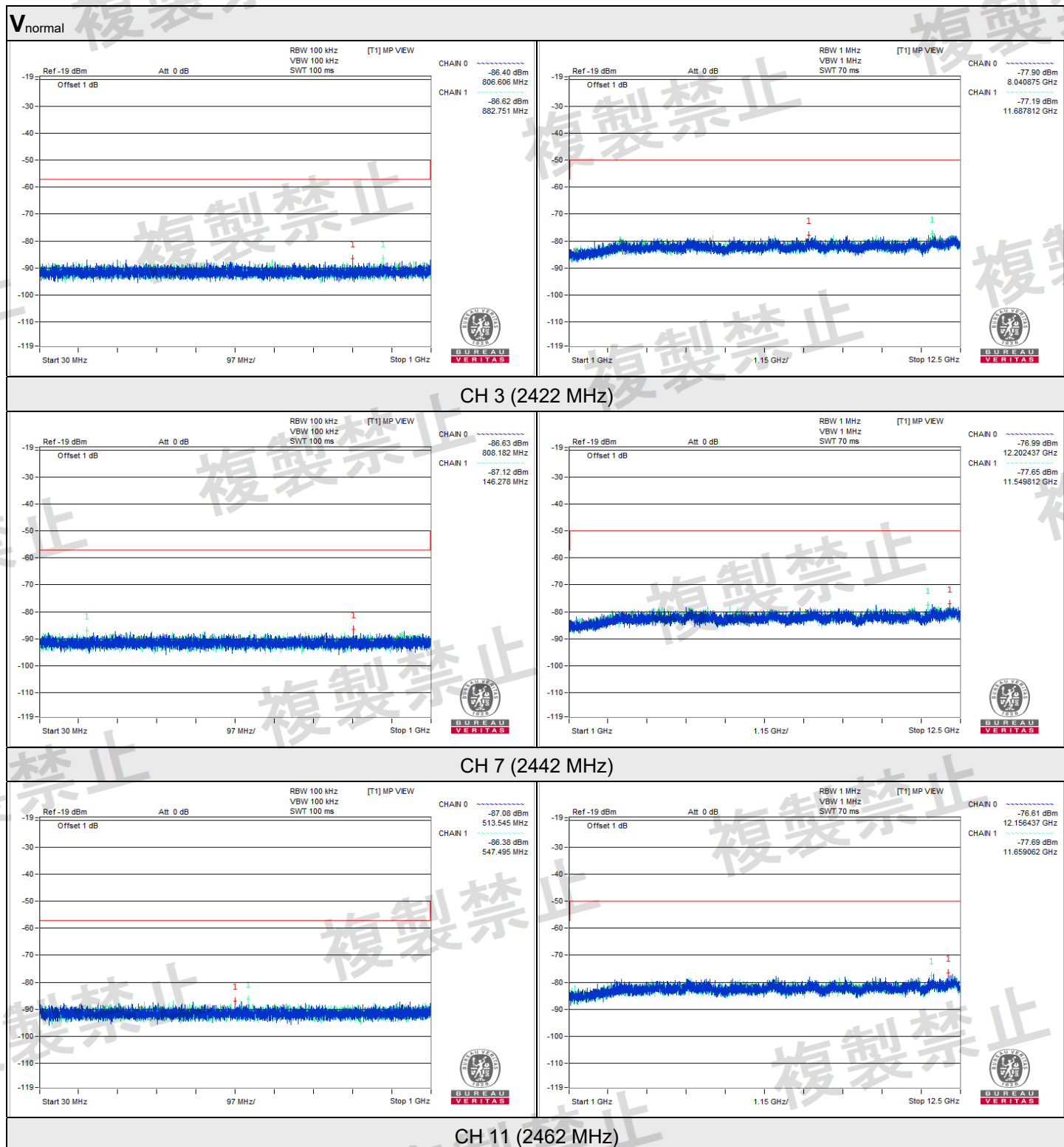
40 MHz System: VHT40 / 802.11ax (HE40) Chain 0

TEST CHANNEL		CH 3 (2422 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(nW)	LIMIT (nW)	RESULT
V _{normal}	30.0 to 1000.0	806.606	0.002291	2	PASS
	1000.0 to 12500.0	8040.875	0.016218	10	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	808.182	0.002173	2	PASS
	1000.0 to 12500.0	12202.437	0.019999	10	PASS
TEST CHANNEL		CH 11 (2462 MHz)			
V _{normal}	30.0 to 1000.0	513.545	0.001959	2	PASS
	1000.0 to 12500.0	12156.437	0.021827	10	PASS

40 MHz System: VHT40 / 802.11ax (HE40) Chain 1

TEST CHANNEL		CH 3 (2422 MHz)			
TEST CONDITION	FREQUENCY RANGE(MHz)	FREQUENCY (MHz)	MEASUREMENT VALUE(nW)	LIMIT (nW)	RESULT
V _{normal}	30.0 to 1000.0	882.751	0.002178	2	PASS
	1000.0 to 12500.0	11687.812	0.019099	10	PASS
TEST CHANNEL		CH 7 (2442 MHz)			
V _{normal}	30.0 to 1000.0	146.278	0.001941	2	PASS
	1000.0 to 12500.0	11549.812	0.017179	10	PASS
TEST CHANNEL		CH 11 (2462 MHz)			
V _{normal}	30.0 to 1000.0	547.495	0.002301	2	PASS
	1000.0 to 12500.0	11659.062	0.017022	10	PASS

40 MHz System: VHT40 / 802.11ax (HE40) Graph



40 MHz System: VHT40 / 802.11ax (HE40) Sum of each Chain

TEST CHANNEL		CH 3 (2422 MHz)		
TEST CONDITION	FREQUENCY RANGE(MHz)	MEASUREMENT VALUE(nW)	LIMIT (nW)	RESULT
V _{normal}	30.0 to 1000.0	0.004469	4	PASS
	1000.0 to 12500.0	0.035317	20	PASS
TEST CHANNEL		CH 7 (2442 MHz)		
V _{normal}	30.0 to 1000.0	0.004114	4	PASS
	1000.0 to 12500.0	0.037178	20	PASS
TEST CHANNEL		CH 11 (2462 MHz)		
V _{normal}	30.0 to 1000.0	0.004260	4	PASS
	1000.0 to 12500.0	0.038849	20	PASS

7.6 Antenna Power

Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin
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802.11b

Voltage (Vac)	Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)			Radiated RF Output Power Density (mW/MHz)
			Chain 0	Chain 1	Total Power Density	
100	1	2412	3.574	3.508	7.082	15.818
	7	2442	3.549	3.452	7.001	15.637
	13	2472	3.516	3.358	6.874	15.354
Maximum Limit (mW/MHz):					10	-
Rated Power (mW/MHz):					7.1	-
Tolerance of Antenna Power (mW/MHz):					1.42 ~ 8.52	-
Maximum EIRP Limit (mW/MHz):					-	16.368

Notes:

1. Antenna gain is 3.49 dBi.
2. The radiated RF output power density is a "calculated" value derived from the conducted value.
3. Formula: Radiated RF output power density = Conducted RF output power density + Antenna gain

802.11g

Voltage (Vac)	Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)			Radiated RF Output Power Density (mW/MHz)
			Chain 0	Chain 1	Total Power Density	
100	1	2412	3.327	3.847	7.174	16.024
	7	2442	3.444	3.811	7.255	16.205
	13	2472	3.533	3.691	7.224	16.135
Maximum Limit (mW/MHz):					10	-
Rated Power (mW/MHz):					7.3	-
Tolerance of Antenna Power (mW/MHz):					1.46 ~ 8.76	-
Maximum EIRP Limit (mW/MHz):					-	16.368

Notes:

1. Antenna gain is 3.49 dBi.
2. The radiated RF output power density is a "calculated" value derived from the conducted value.
3. Formula: Radiated RF output power density = Conducted RF output power density + Antenna gain

VHT20

Voltage (Vac)	Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)			Radiated RF Output Power Density (mW/MHz)
			Chain 0	Chain 1	Total Power Density	
100	1	2412	3.259	3.716	6.975	15.579
	7	2442	3.304	3.598	6.902	15.416
	13	2472	3.366	3.516	6.882	15.371
Maximum Limit (mW/MHz):					10	-
Rated Power (mW/MHz):					7.3	-
Tolerance of Antenna Power (mW/MHz):					1.46 ~ 8.76	-
Maximum EIRP Limit (mW/MHz):					-	16.368

Notes:

1. Antenna gain is 3.49 dBi.
2. The radiated RF output power density is a “calculated” value derived from the conducted value.
3. Formula: Radiated RF output power density = Conducted RF output power density + Antenna gain

VHT40

Voltage (Vac)	Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)			Radiated RF Output Power Density (mW/MHz)
			Chain 0	Chain 1	Total Power Density	
100	3	2422	1.633	1.775	3.408	7.612
	7	2442	1.637	1.850	3.487	7.788
	11	2462	1.660	1.808	3.468	7.746
Maximum Limit (mW/MHz):					5	-
Rated Power (mW/MHz):					3.65	-
Tolerance of Antenna Power (mW/MHz):					0.73 ~ 4.38	-
Maximum EIRP Limit (mW/MHz):					-	8.184

Notes:

1. Antenna gain is 3.49 dBi.
2. The radiated RF output power density is a “calculated” value derived from the conducted value.
3. Formula: Radiated RF output power density = Conducted RF output power density + Antenna gain

802.11ax (HE20)

Voltage (Vac)	Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)			Radiated RF Output Power Density (mW/MHz)
			Chain 0	Chain 1	Total Power Density	
100	1	2412	3.327	3.829	7.156	15.983
	7	2442	3.444	3.829	7.273	16.245
	13	2472	3.516	3.751	7.267	16.231
Maximum Limit (mW/MHz):					10	-
Rated Power (mW/MHz):					7.3	-
Tolerance of Antenna Power (mW/MHz):					1.46 ~ 8.76	-
Maximum EIRP Limit (mW/MHz):					-	16.368

Notes:

1. Antenna gain is 3.49 dBi.
2. The radiated RF output power density is a “calculated” value derived from the conducted value.
3. Formula: Radiated RF output power density = Conducted RF output power density + Antenna gain

802.11ax (HE40)

Voltage (Vac)	Channel Number	Frequency (MHz)	Conducted RF Output Power Density (mW/MHz)			Radiated RF Output Power Density (mW/MHz)
			Chain 0	Chain 1	Total Power Density	
100	3	2422	1.683	1.875	3.558	7.947
	7	2442	1.675	1.950	3.625	8.097
	11	2462	1.714	1.919	3.633	8.115
Maximum Limit (mW/MHz):					5	-
Rated Power (mW/MHz):					3.65	-
Tolerance of Antenna Power (mW/MHz):					0.73 ~ 4.38	-
Maximum EIRP Limit (mW/MHz):					-	8.184

Notes:

1. Antenna gain is 3.49 dBi.
2. The radiated RF output power density is a “calculated” value derived from the conducted value.
3. Formula: Radiated RF output power density = Conducted RF output power density + Antenna gain

7.7 Number of Carriers within 1 MHz Bandwidth in OFDM

Environmental Conditions:	25°C, 65% RH	Tested By:	Chris Lin
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About OFDM Technical, one OFDM Channel will have 52 sub-carriers. At present, we observe this product via the spectrum, and we know that there are 3 carriers in 1 MHz bandwidth in OFDM.

7.8 Interference Prevention Function

Environmental Conditions:	25°C, 65% RH	Tested By:	Chris Lin
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Link Mode	Test Result
WiFi 2.4G	Pass

7.9 Carrier Sense Capability

Environmental Conditions:	25°C, 65% RH	Tested By:	Chris Lin
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802.11ax (HE40)

Frequency (MHz)	Pcs (dBm)	C.F (dB)	S.G Level
2422	-41.46	10.22	-31.24
2442	-41.53	10.23	-31.3
2462	-41.61	10.24	-31.37

Note:

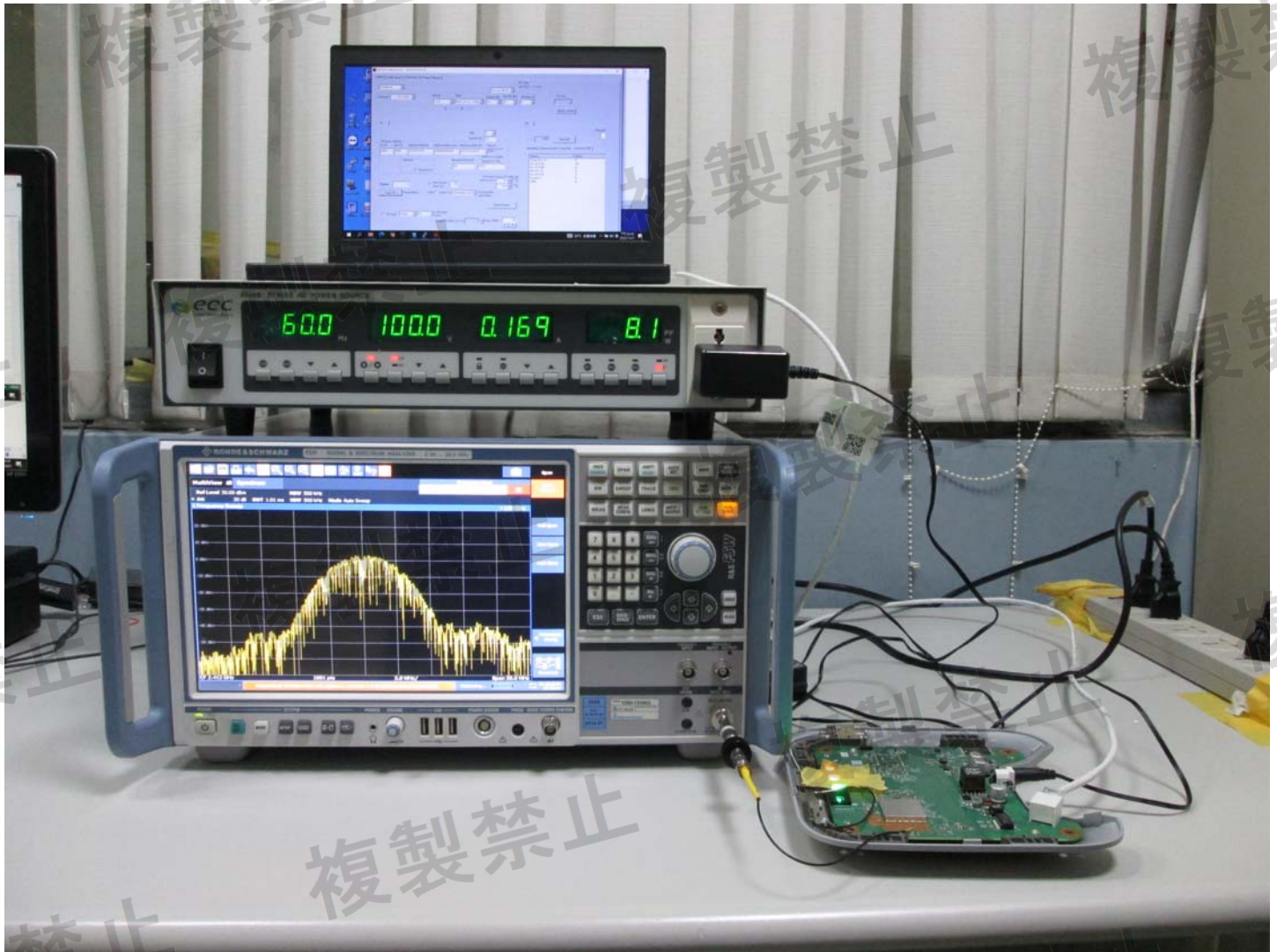
$Pcs (dBm) = 22.79 + Gr - 20\log(F)$.

Gr: Antenna gain (3.43dBi).

F: Transmission frequency (MHz).

C.F = Distributor loss + cable loss.

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.

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

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