

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Report No.: RFBAPP-WTW-P22110606

FCC ID: PD5-NWA1050

Product: Outdoor Wireless AP

Brand: Nile Global

Model No.: NWA 1050

Received Date: 2022/11/22

Test Date: 2022/12/6 ~ 2023/1/17

Issued Date: 2023/2/17

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 788550 / TW0003

Designation Number:

Approved by:

Jeremy Lin

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, Date:

2023/2/17

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Prepared by : Polly Chien / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBAPP-WTW-P22110606	Original release.	2023/2/17

1 Certificate

Product: Outdoor Wireless AP
Brand: Nile Global
Test Model: NWA 1050
Sample Status: Engineering Sample
Applicant: Delta Electronics, Inc.
Test Date: 2022/12/6 ~ 2023/1/17
Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Measurement procedure: ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01

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

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -5.25 dB at 21.27800 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -5.4 dB at 70.74 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.2 dB at 2390.00, 2483.50 MHz
15.203	Antenna Requirement	Pass	Antenna connector is Ipex(MHF) not a standard connector.

Note: 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 CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.79 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.64 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 dB

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	Outdoor Wireless AP
Brand	Nile Global
Test Model	NWA 1050
Status of EUT	Engineering Sample
Power Supply Rating	56Vdc (From POE)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT mode 1024QAM for OFDMA in 11ax mode only
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/40): up to 600Mbps VHT20/40: up to 800Mbps 802.11ax: up to 1147.1Mbps
Operating Frequency	2.412 GHz ~ 2.462 GHz
Number of Channel	For QCN-5124 Module: 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7 For QCA-9889 Module: 802.11b, 802.11g, 802.11n (HT20), VHT20: 11 802.11n (HT40), VHT40: 7
Output Power	For QCN-5124 Module: CDD Mode: 494.96 mW (26.95 dBm) Beamforming Mode: 194.12 mW (22.88 dBm) For QCA-9889 Module: CDD Mode: 49.659 mW (16.96 dBm)

Note:

1. The EUT uses following accessories.

POE (Support unit)		
Brand	Model	Specification
CISCO	DPSN-35FB A	AC Input : 100-240Vac, 50/60Hz, 0.8A DC Output : 56Vdc, 0.55A

2. There are four modules for the EUT.

Module	Function	Radio
QCN-5124	WLAN 2.4G (TX/RX)	1
QCN-5154	WLAN 5G (TX/RX)	2
QCA-9889	WLAN 2.4G & 5G (TX/RX)	3
CSR8811	BT LE	4

3. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (Radio 1+2)	Bluetooth (Radio 4)
2	WLAN 2.4 GHz (Radio 3)	Bluetooth (Radio 4)
3	WLAN 5 GHz (Radio 3)	Bluetooth (Radio 4)

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

4. The EUT doesn't support TONE RU function.

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 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Type	PIFA		
Antenna Connector	Iplex(MHF)		
Antenna No.	Gain (dBi)		
	2.4~2.4835GHz	5.15~5.25GHz	5.725~5.85GHz
2G1	6.6	-	-
2G2	7.2	-	-
2G3	7	-	-
2G4	7.1	-	-
5G1	-	6.1	7.2
5G2	-	7.1	7.4
5G3	-	6.4	6
5G4	-	6.5	6.7
Dual Band (DB)	6.8	5.9	6.9
BLE	6.1	-	-

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

2. The EUT incorporates a MIMO function:

QCN-5124 Module

2.4 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11b	4TX	4RX
802.11g	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
VHT20	4TX	4RX
VHT40	4TX	4RX
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX

QCA-9889 Module

2.4 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11b	1TX	1RX
802.11g	1TX	1RX
802.11n (HT20)	1TX	1RX
802.11n (HT40)	1TX	1RX
VHT20	1TX	1RX
VHT40	1TX	1RX

Note:

1. All of modulation mode support beamforming function except 802.11b/g 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.

3.3 Channel List

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

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

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

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

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	The EUT's antenna (PIFA) had been pre-tested on the positioned of each 3 axis (X-axis/ Y-axis/ Z-axis). Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	Worst Condition: The worst case was Y-axis.

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

Test Item	EUT Configure Mode	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD & Beamforming	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD & Beamforming	3, 6, 9	BPSK	MCS0
	B	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		VHT20	CDD	1, 6, 11	BPSK	MCS0
		VHT40	CDD	3, 6, 9	BPSK	MCS0
6 dB Bandwidth / Conducted Out of Band Emissions/ Power Spectral Density	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0
	B	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		VHT20	CDD	1, 6, 11	BPSK	MCS0
		VHT40	CDD	3, 6, 9	BPSK	MCS0
AC Power Conducted Emissions	A	802.11g	CDD	6	DBPSK	6Mb/s
	B	802.11g	CDD	6	DBPSK	6Mb/s
Unwanted Emissions below 1 GHz	A	802.11g	CDD	6	DBPSK	6Mb/s
	B	802.11g	CDD	6	DBPSK	6Mb/s
Unwanted Emissions above 1 GHz	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0
	B	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		VHT20	CDD	1, 6, 11	BPSK	MCS0
		VHT40	CDD	3, 6, 9	BPSK	MCS0
EUT Configure Mode:	A	2.4GHz Radio 1: QCN-5124 Module				
	B	Scan Radio 3: QCA-9889 Module				

3.5 Duty Cycle of Test Signal

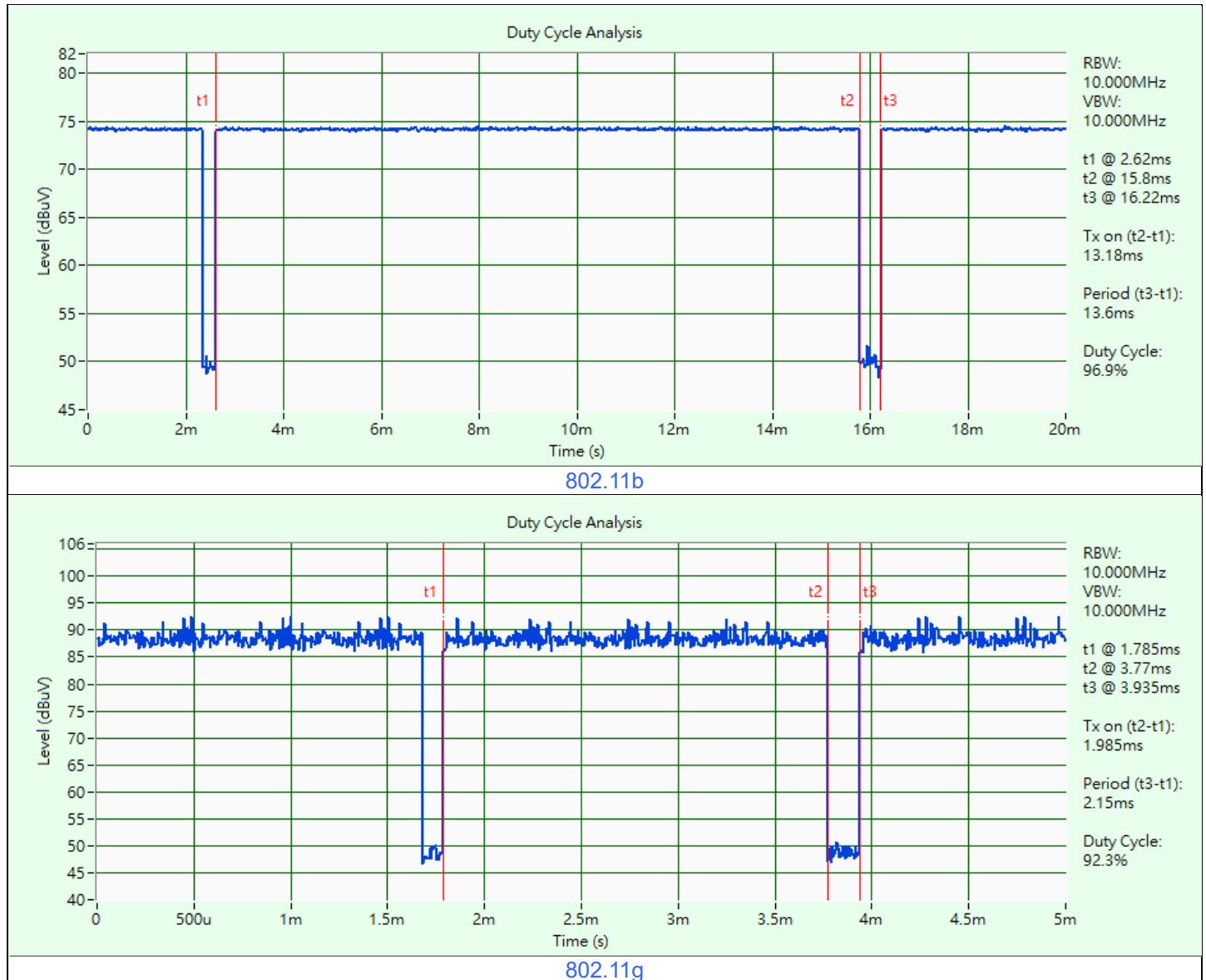
2.4GHz Radio 1: QCN-5124 Module

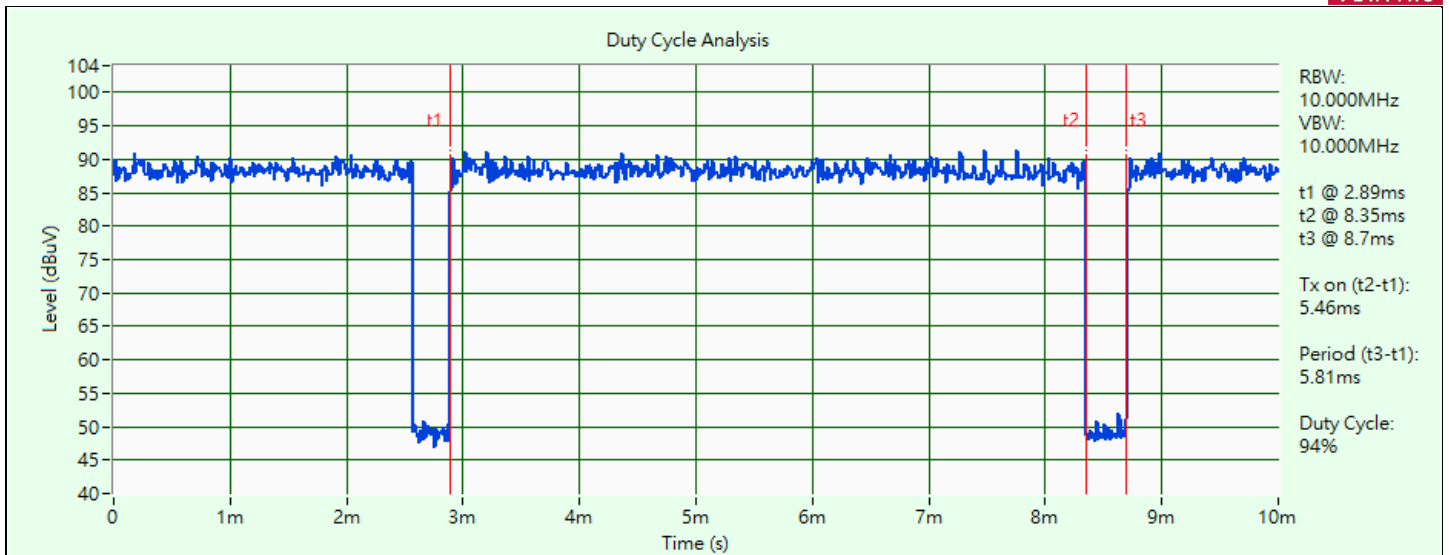
802.11b: Duty cycle = $13.18 \text{ ms} / 13.6 \text{ ms} \times 100\% = 96.9\%$, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.14 \text{ dB}$

802.11g: Duty cycle = $1.985 \text{ ms} / 2.15 \text{ ms} \times 100\% = 92.3\%$, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.35 \text{ dB}$

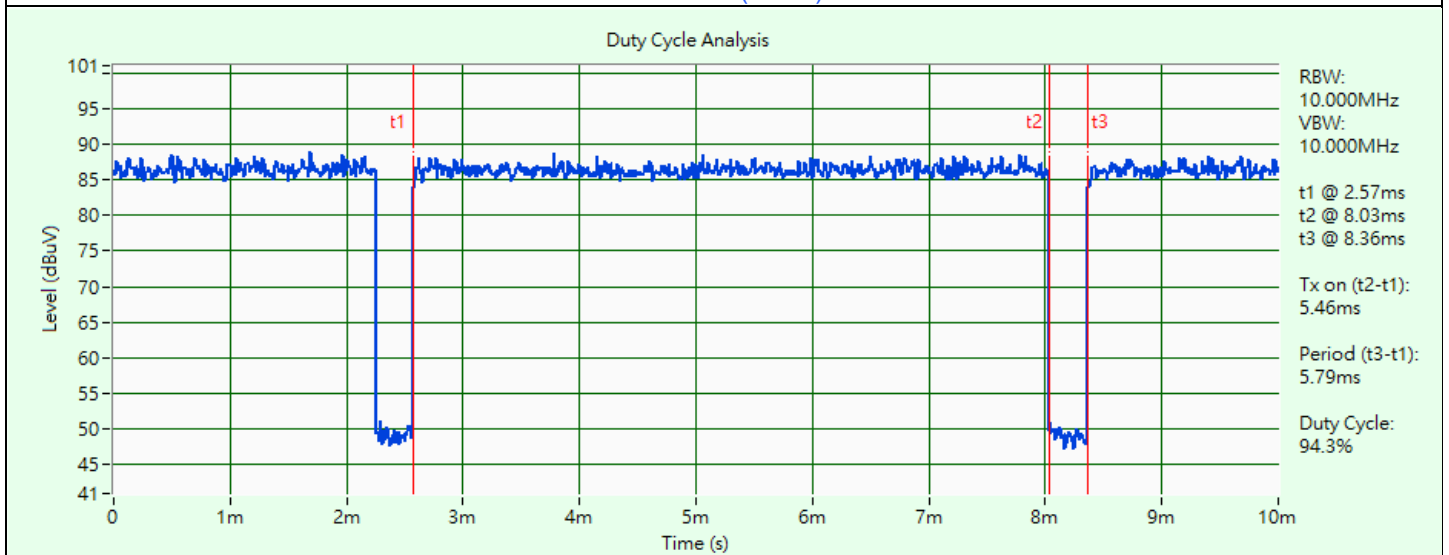
802.11ax (HE20): Duty cycle = $5.46 \text{ ms} / 5.81 \text{ ms} \times 100\% = 94.0\%$, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.27 \text{ dB}$

802.11ax (HE40): Duty cycle = $5.46 \text{ ms} / 5.79 \text{ ms} \times 100\% = 94.3\%$, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.25 \text{ dB}$





802.11ax (HE20)



802.11ax (HE40)

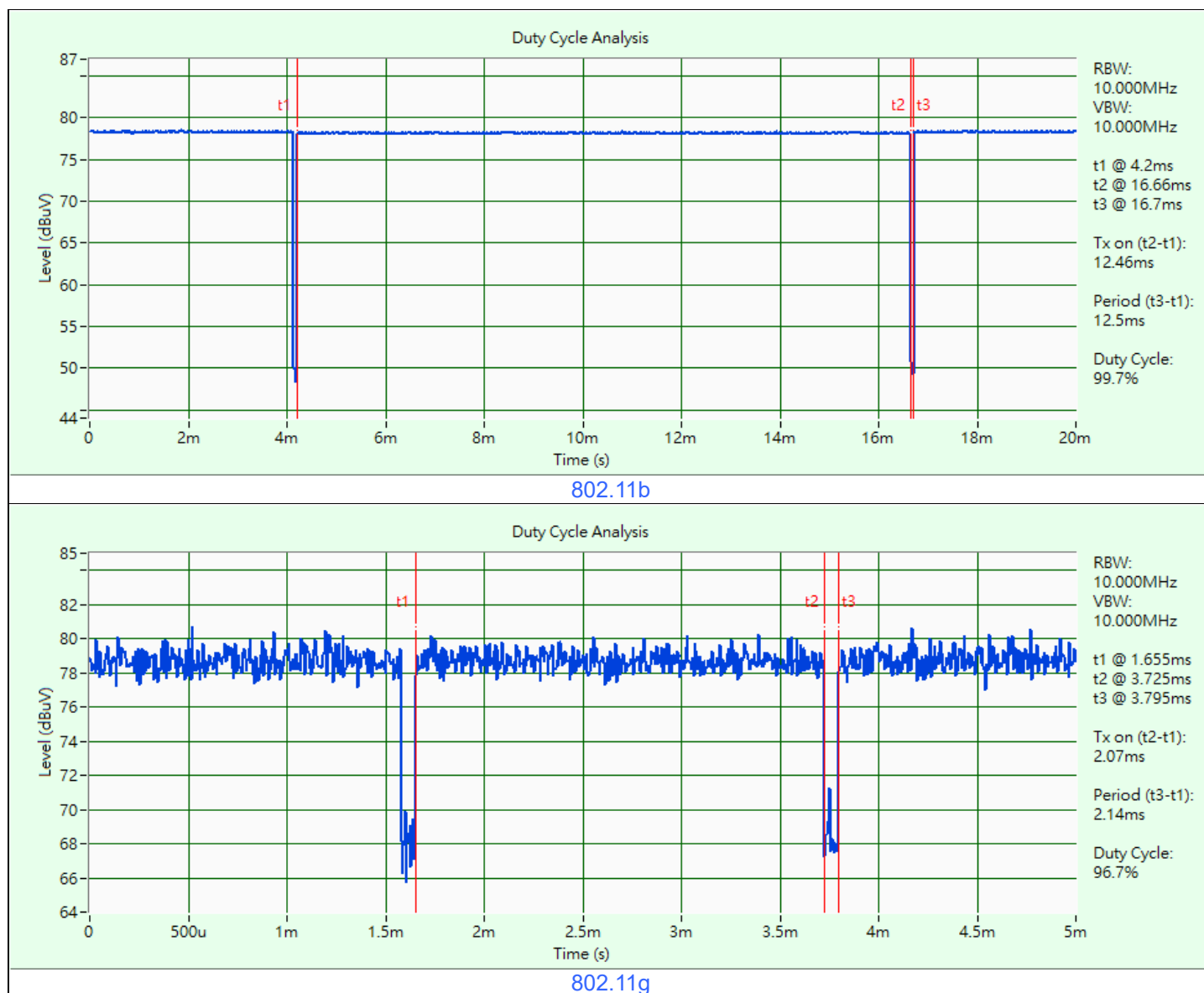
Scan Radio 3: QCA-9889 Module

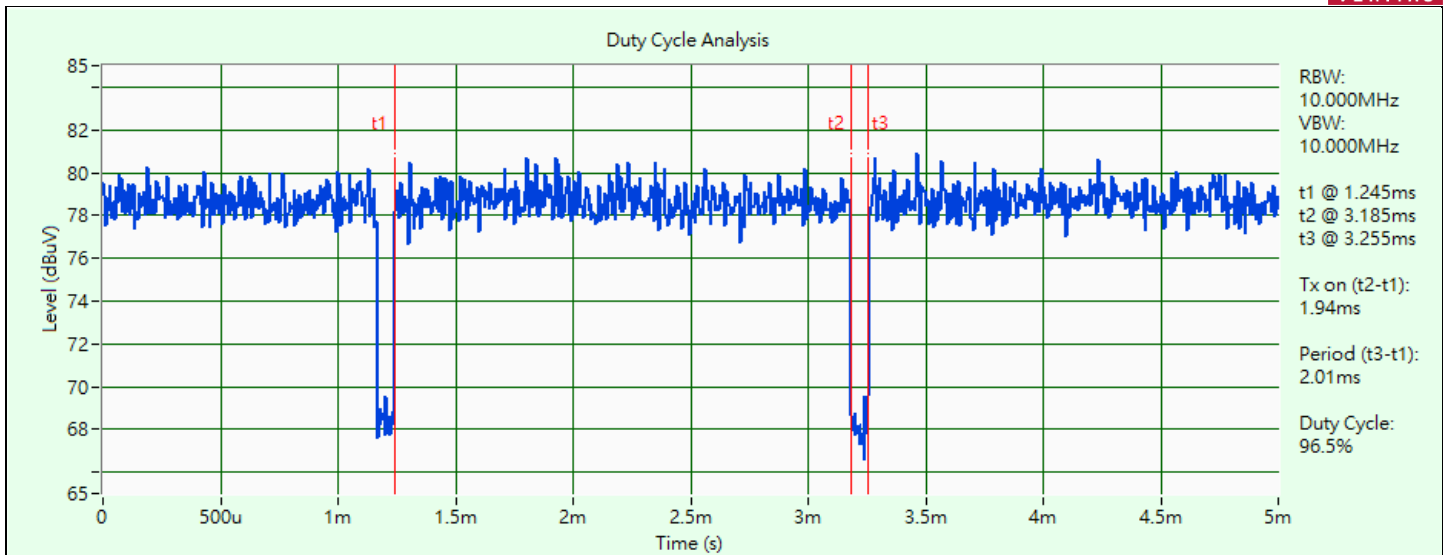
802.11b: Duty cycle = 12.46 ms / 12.5 ms x 100% = 99.7%

802.11g: Duty cycle = 2.07 ms / 2.14 ms x 100% = 96.7%, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.14 \text{ dB}$

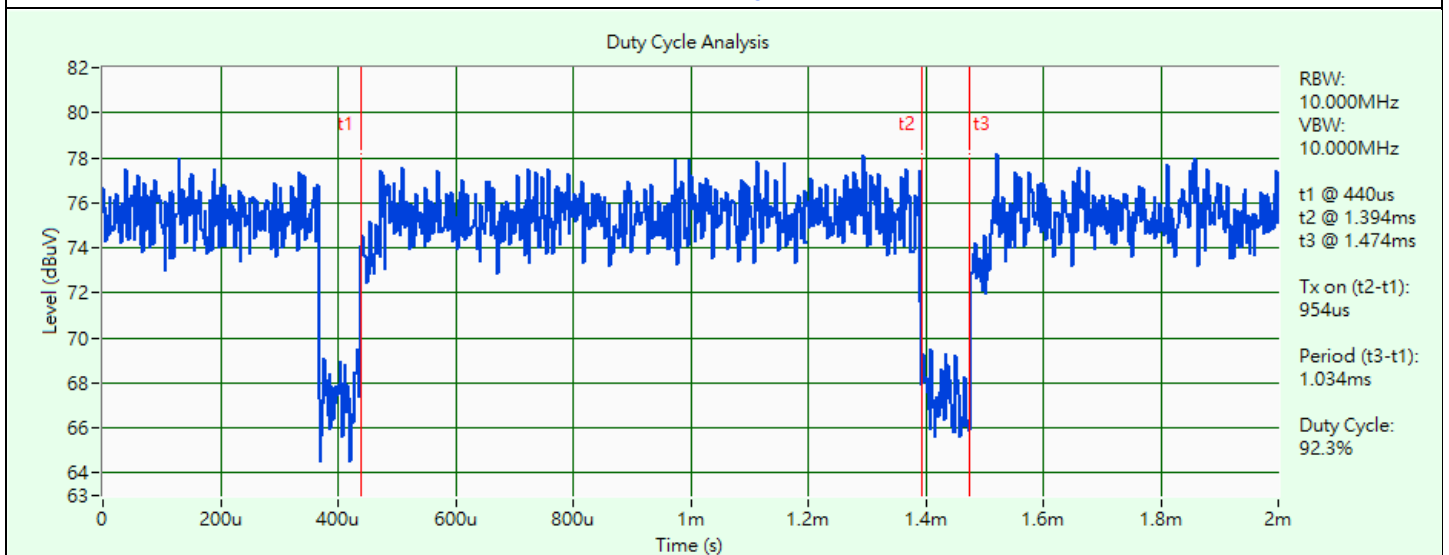
VHT20: Duty cycle = 1.94 ms / 2.01 ms x 100% = 96.5%, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.15 \text{ dB}$

VHT40: Duty cycle = 0.954 ms / 1.034 ms x 100% = 92.3%, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.35 \text{ dB}$





VHT20

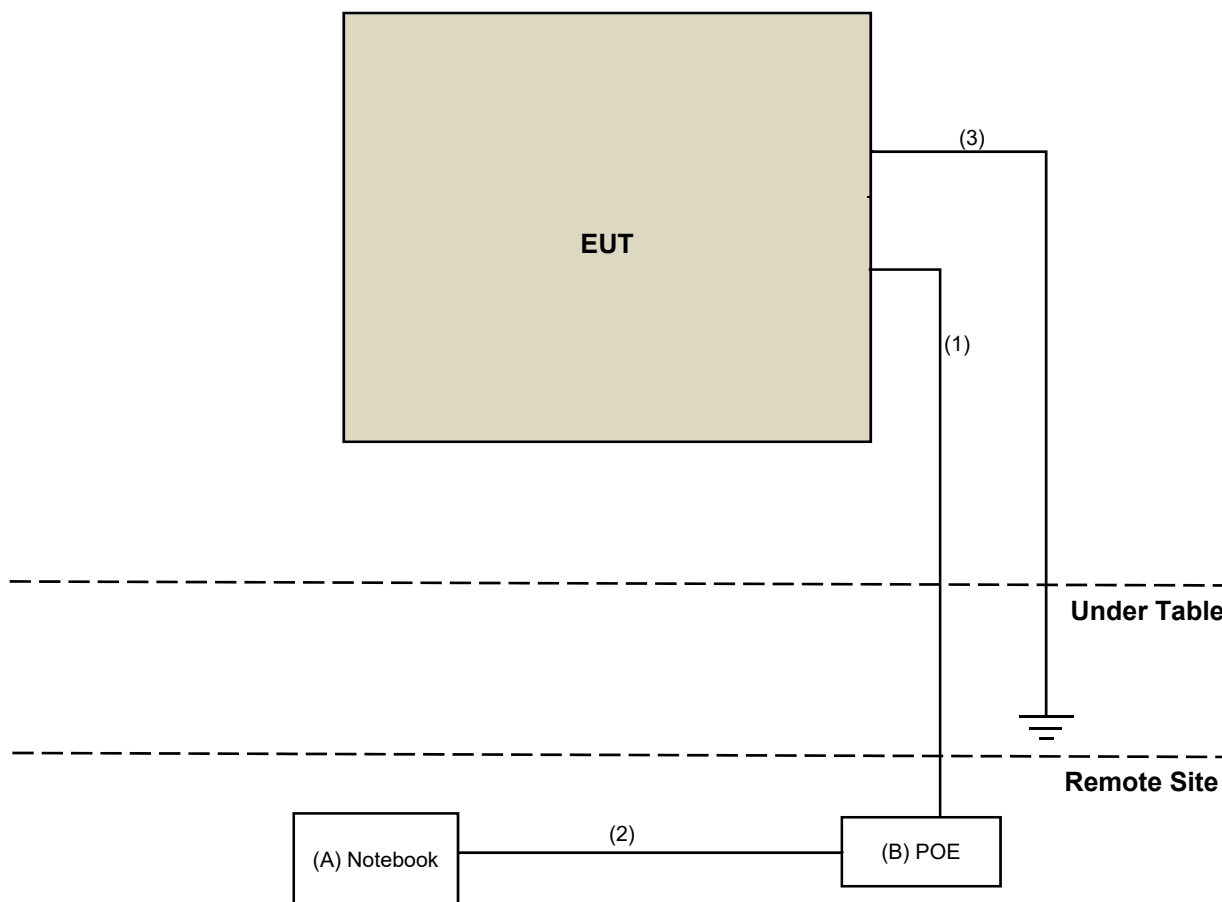


VHT40

3.6 Test Program Used and Operation Descriptions

Controlling software (QSPR V5.0-00196) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Notebook	CISCO	DPSN-35FB A	2RL3YW1	FCC DoC Approved	Provided by Lab
B	POE	YAMAHA	YPS-PoE-AT	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	1.5	No	0	Provided by Lab
2	RJ-45 Cable	1	1.5	No	0	Provided by Lab
3	GND Cable	1	1.2	No	0	Provided by Lab

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 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	2022/7/13	2023/7/12

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/1/17

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/1/17

4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get information of the instruments.

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
LISN R&S	ESH3-Z5	100311	2022/9/12	2023/9/11
LISN ROHDE & SCHWARZ	ENV216	101826	2022/3/14	2023/3/13
Receiver R&S	ESCI	100412	2022/8/22	2023/8/21
RF Coaxial Cable WOKEN	5D-FB	Cable-cond1-01	2022/1/15	2023/1/14
Software BVADT	BVADT_Conf_ V7.3.7.4	N/A	N/A	N/A
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2022/8/31	2023/8/30

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2022/12/12

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower inn-co GmbH	MA 4000	010303	N/A	N/A
Bi_Log Antenna Schwarbeck	VULB9168	9168-155	2022/10/21	2023/10/20
Loop Antenna EMCI	EM-6879	269	2022/9/19	2023/9/18
Loop Antenna TESEQ	HLA 6121	45745	2022/7/27	2023/7/26
Pre-amplifier EMCI	EMC001340	980201	2022/9/23	2023/9/22
Pre_Amplifier Agilent	8447D	2944A10631	2022/5/14	2023/5/13
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2022/1/15	2023/1/14
RF Coaxial Cable WOKEN	8D-FB	Cable-CH4-01	2022/7/9	2023/7/8
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101582	2022/4/13	2023/4/12
Test Receiver R&S	ESCI	100424	2021/12/30	2022/12/29
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 3.
2. Tested Date: 2022/12/12

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower inn-co GmbH	MA 4000	010303	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	9120D	9120D-408	2022/11/13	2023/11/12
	BBHA 9170	9170-480	2022/11/13	2023/11/12
		BBHA9170241	2022/10/20	2023/10/19
		BBHA9170243	2022/11/13	2023/11/12
Pre-Amplifier EMCI	EMC 184045	980116	2022/10/1	2023/9/30
Pre_Amplifier KEYSIGHT	83017A	MY53270295	2022/5/14	2023/5/13
RF cable HUBER+SUHNER	Sucoflex 104	MY 13380+295012/04	2022/5/14	2023/5/13
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2022/7/9	2023/7/8
	EMC102-KM-KM-3000	150929	2022/7/9	2023/7/8
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03(250724)	2022/5/14	2023/5/13
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101582	2022/4/13	2023/4/12
Test Receiver R&S	ESCI	100424	2021/12/30	2022/12/29
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 3.
2. Tested Date: 2022/12/6 ~ 2022/12/8

5 Limits of Test Items

5.1 RF Output Power

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

5.2 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

Below 30 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

5.5 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.6 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.7 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

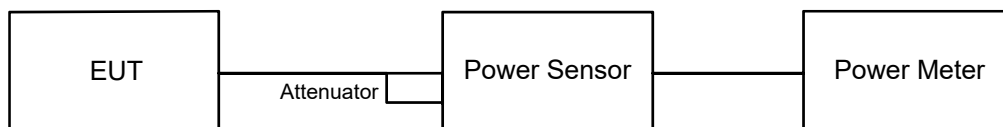
Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



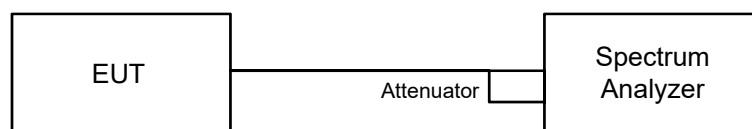
6.1.2 Test Procedure

Average Power:

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

6.2 Power Spectral Density

6.2.1 Test Setup



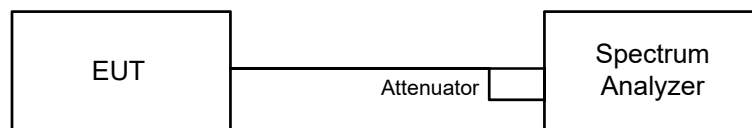
6.2.2 Test Procedure

- Measure the duty cycle (x).
- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: 3 kHz.
- Set VBW $\geq 3 \times$ RBW.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
- Sweep time = auto couple.
- Do not use sweep triggering. Allow sweep to "free run".
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.

Note: If Duty cycle < 98%, Add $10 \log (1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

6.3 6 dB Bandwidth

6.3.1 Test Setup

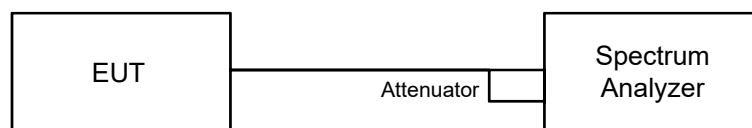


6.3.2 Test Procedure

- Set resolution bandwidth (RBW) = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

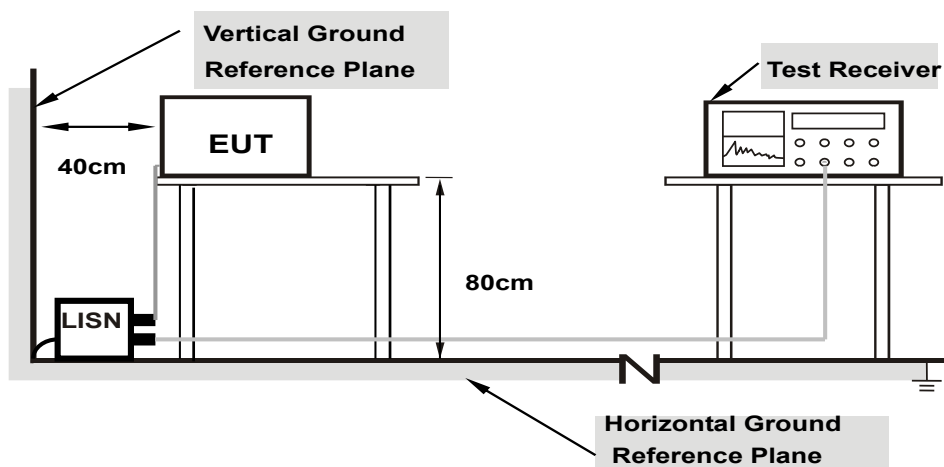
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

- Set RBW = 100 kHz.
- Set VBW ≥ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

6.5 AC Power Conducted Emissions

6.5.1 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.5.2 Test Procedure

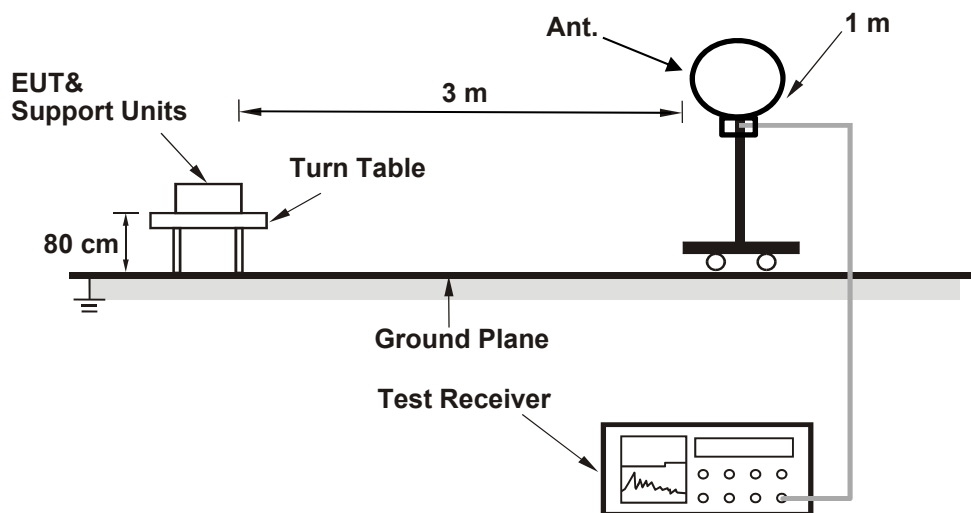
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

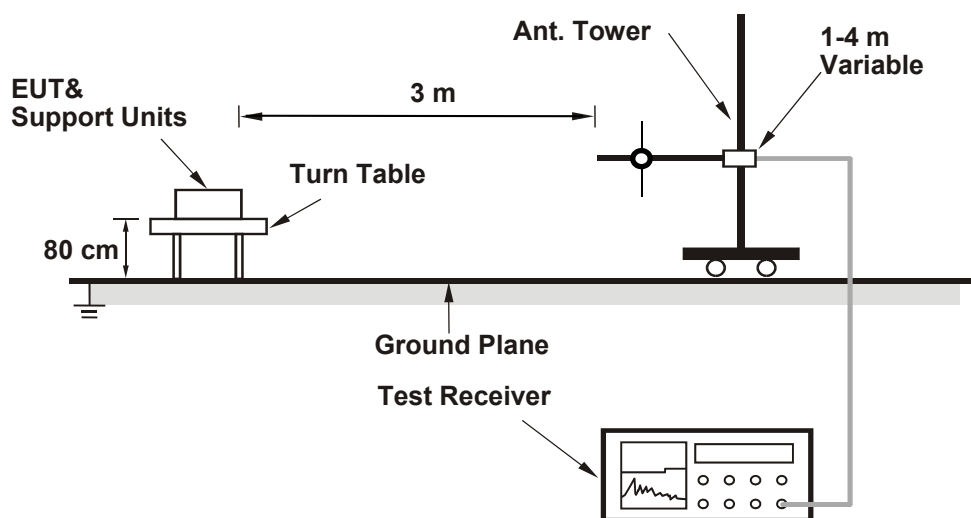
6.6 Unwanted Emissions below 1 GHz

6.6.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.6.2 Test Procedure

For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

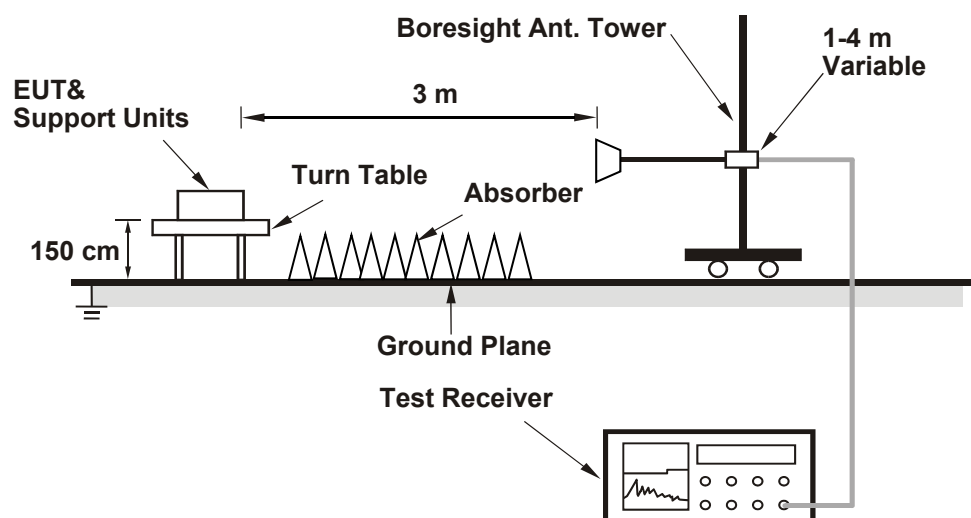
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

6.7 Unwanted Emissions above 1 GHz

6.7.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.7.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyoung Wang
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Mode A: 2.4GHz Radio 1: QCN-5124 Module

CDD Mode

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	20.71	20.81	20.76	20.83	478.448	26.80	28.8	Pass
6	2437	20.98	20.94	20.88	20.69	489.161	26.89	28.8	Pass
11	2462	20.93	20.91	20.82	20.69	485.191	26.86	28.8	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 7.2 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (7.2 - 6) = 28.8$ dBm.

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	20.66	20.81	20.85	20.65	474.68	26.76	28.8	Pass
6	2437	20.89	20.93	20.91	20.97	494.96	26.95	28.8	Pass
11	2462	20.97	20.87	20.92	20.85	492.419	26.92	28.8	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 7.2 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (7.2 - 6) = 28.8$ dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	20.85	20.67	20.71	20.76	475.184	26.77	28.8	Pass
6	2437	20.85	20.87	20.93	20.86	489.577	26.90	28.8	Pass
11	2462	20.73	20.63	20.61	20.65	465.14	26.68	28.8	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 7.2 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (7.2 - 6) = 28.8$ dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	19.53	19.58	19.72	19.77	369.123	25.67	28.8	Pass
6	2437	20.79	20.77	20.85	20.74	479.544	26.81	28.8	Pass
9	2452	19.05	18.96	19.01	19.02	318.473	25.03	28.8	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 7.2 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (7.2 - 6) = 28.8$ dBm.

Beamforming Mode

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	16.86	16.64	16.68	16.73	188.317	22.75	23	Pass
6	2437	16.84	16.85	16.91	16.84	194.12	22.88	23	Pass
11	2462	16.71	16.62	16.58	16.64	184.432	22.66	23	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
2. The directional gain is 13 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (13 - 6) = 23$ dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	16.52	16.56	16.71	16.74	184.252	22.65	23	Pass
6	2437	16.76	16.73	16.84	16.72	189.817	22.78	23	Pass
9	2452	16.64	16.58	16.53	16.59	182.212	22.61	23	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
2. The directional gain is 13 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (13 - 6) = 23$ dBm.

Mode B: Scan Radio 3: QCA-9889 Module

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
1	2412	49.317	16.93	29.2	Pass
6	2437	48.641	16.87	29.2	Pass
11	2462	46.026	16.63	29.2	Pass

Note: The antenna gain is 6.8 dBi > 6 dBi, so the output power limit shall be reduced to $30-(6.8-6) = 29.2$ dBm.

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
1	2412	49.659	16.96	29.2	Pass
6	2437	49.317	16.93	29.2	Pass
11	2462	36.392	15.61	29.2	Pass

Note: The antenna gain is 6.8 dBi > 6 dBi, so the output power limit shall be reduced to $30-(6.8-6) = 29.2$ dBm.

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
1	2412	39.994	16.02	29.2	Pass
6	2437	47.098	16.73	29.2	Pass
11	2462	30.832	14.89	29.2	Pass

Note: The antenna gain is 6.8 dBi > 6 dBi, so the output power limit shall be reduced to $30-(6.8-6) = 29.2$ dBm.

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
3	2422	23.335	13.68	29.2	Pass
6	2437	44.875	16.52	29.2	Pass
9	2452	10.209	10.09	29.2	Pass

Note: The antenna gain is 6.8 dBi > 6 dBi, so the output power limit shall be reduced to $30-(6.8-6) = 29.2$ dBm.

7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyoung Wang
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Mode A: 2.4GHz Radio 1: QCN-5124 Module

802.11b

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	-10.29	-10.17	-10.25	-10.11	0.14	-4.05	1	Pass
6	2437	-9.92	-10.01	-10.11	-10.31	0.14	-3.93	1	Pass
11	2462	-9.99	-10.14	-10.25	-10.38	0.14	-4.03	1	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
- The directional gain is 13 dBi > 6 dBi, so the power density limit shall be reduced to $8-(13-6) = 1$ dBm/3kHz.

802.11g

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	-11.10	-10.94	-10.85	-11.12	0.35	-4.63	1	Pass
6	2437	-10.87	-10.74	-10.80	-10.90	0.35	-4.46	1	Pass
11	2462	-10.72	-10.95	-10.91	-10.96	0.35	-4.52	1	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
- The directional gain is 13 dBi > 6 dBi, so the power density limit shall be reduced to $8-(13-6) = 1$ dBm/3kHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	-13.18	-13.37	-13.27	-13.20	0.27	-6.96	1	Pass
6	2437	-13.13	-13.10	-13.00	-13.08	0.27	-6.79	1	Pass
11	2462	-13.29	-13.33	-13.36	-13.29	0.27	-7.03	1	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
- The directional gain is 13 dBi > 6 dBi, so the power density limit shall be reduced to $8-(13-6) = 1$ dBm/3kHz.

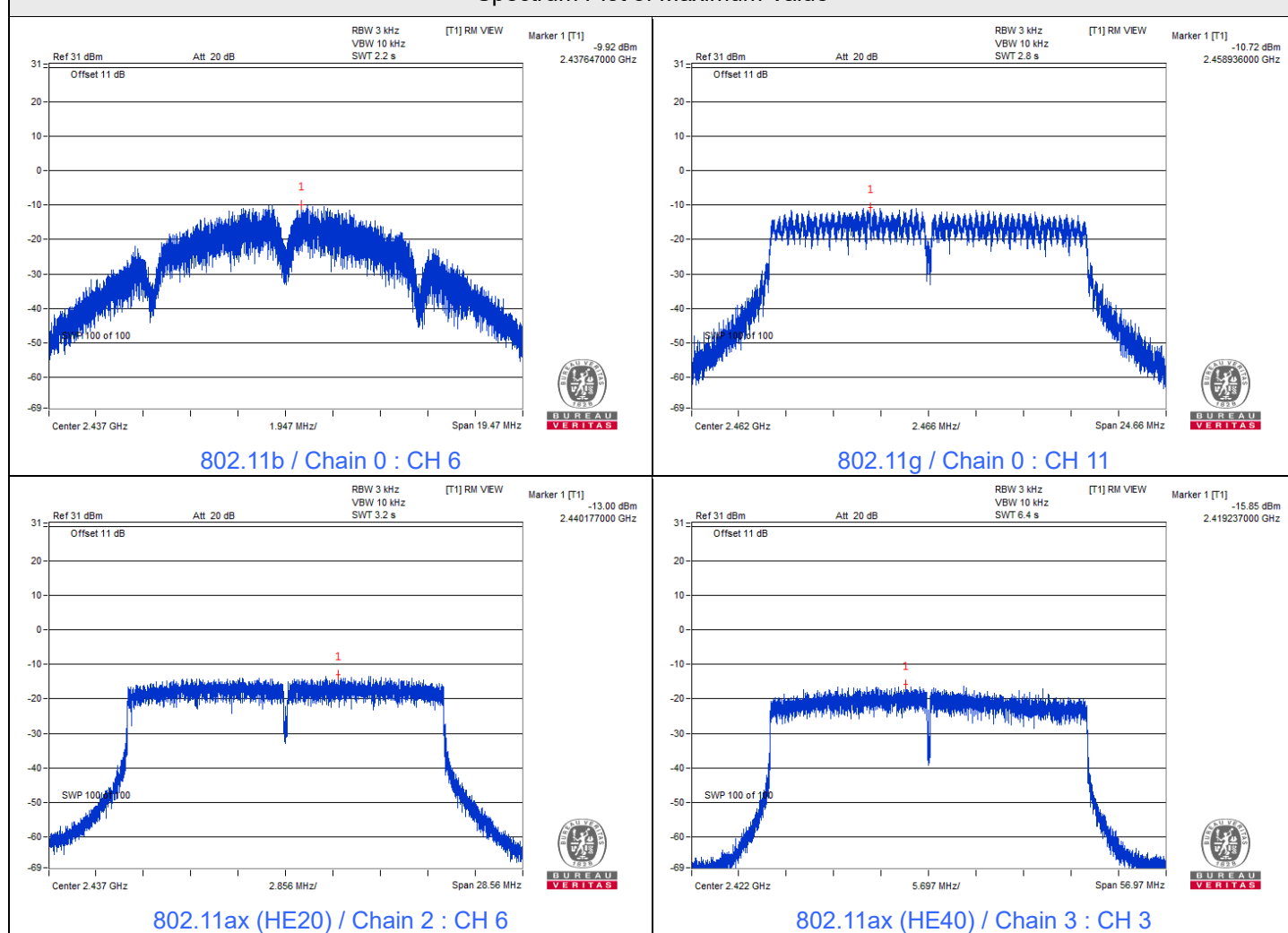
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	-16.24	-16.13	-15.91	-15.85	0.25	-9.75	1	Pass
6	2437	-16.00	-16.03	-15.89	-16.07	0.25	-9.72	1	Pass
9	2452	-16.70	-16.75	-16.63	-16.59	0.25	-10.39	1	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
3. The directional gain is 13 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (13 - 6) = 1 \text{ dBm/3kHz}$.

Spectrum Plot of Maximum Value



Mode B: Scan Radio 3: QCA-9889 Module

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-11.24	7.2	Pass
6	2437	-11.31	7.2	Pass
11	2462	-11.52	7.2	Pass

Note: The antenna gain is 6.8 dBi > 6 dBi, so the power density limit shall be reduced to $8-(6.8-6) = 7.2$ dBm/3kHz.

802.11g

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)	Duty Factor (dB)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-15.55	0.14	-15.41	7.2	Pass
6	2437	-15.65	0.14	-15.51	7.2	Pass
11	2462	-17.06	0.14	-16.92	7.2	Pass

Note: The antenna gain is 6.8 dBi > 6 dBi, so the power density limit shall be reduced to $8-(6.8-6) = 7.2$ dBm/3kHz.

VHT20

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)	Duty Factor (dB)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-16.81	0.15	-16.66	7.2	Pass
6	2437	-16.05	0.15	-15.90	7.2	Pass
11	2462	-17.96	0.15	-17.81	7.2	Pass

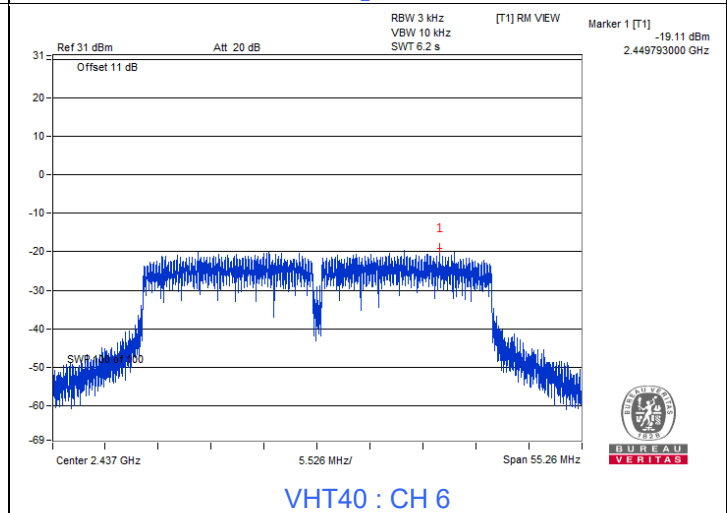
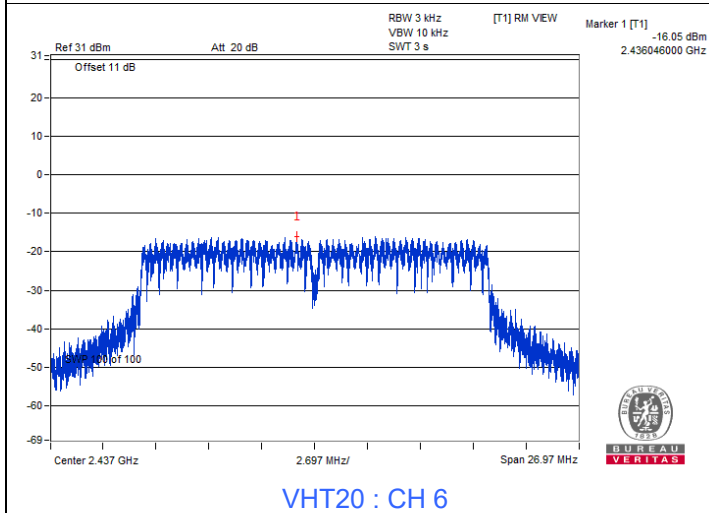
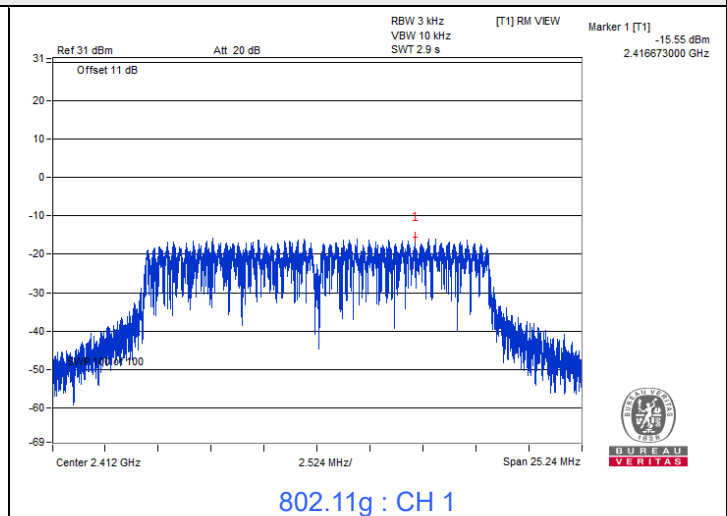
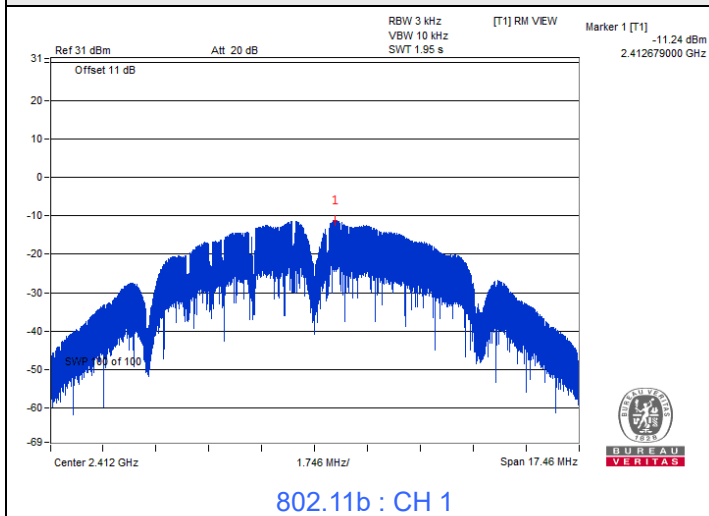
Note: The antenna gain is 6.8 dBi > 6 dBi, so the power density limit shall be reduced to $8-(6.8-6) = 7.2$ dBm/3kHz.

VHT40

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)	Duty Factor (dB)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
3	2422	-21.97	0.35	-21.62	7.2	Pass
6	2437	-19.11	0.35	-18.76	7.2	Pass
9	2452	-25.49	0.35	-25.14	7.2	Pass

Note: The antenna gain is 6.8 dBi > 6 dBi, so the power density limit shall be reduced to $8-(6.8-6) = 7.2$ dBm/3kHz.

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang
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Mode A: 2.4GHz Radio 1: QCN-5124 Module

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	7.06	8.04	7.13	7.10	0.5	Pass
6	2437	8.06	7.62	8.03	8.10	0.5	Pass
11	2462	7.55	8.07	8.06	8.06	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	15.96	15.76	15.98	16.33	0.5	Pass
6	2437	16.36	16.34	16.38	16.40	0.5	Pass
11	2462	16.08	16.36	16.09	16.10	0.5	Pass

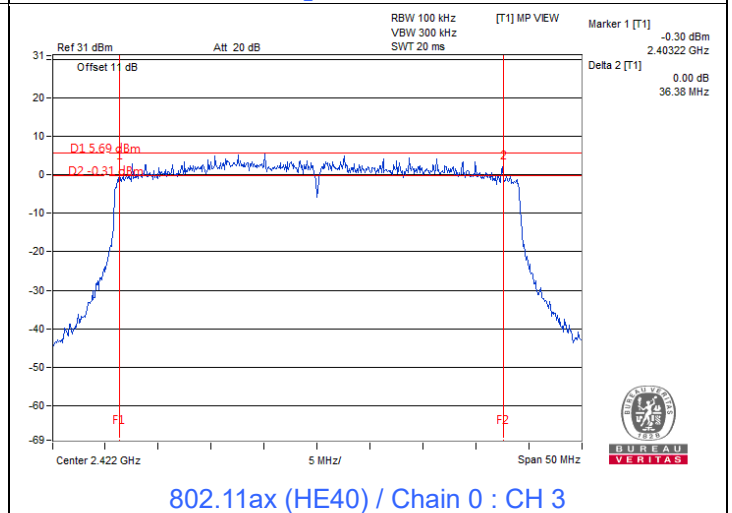
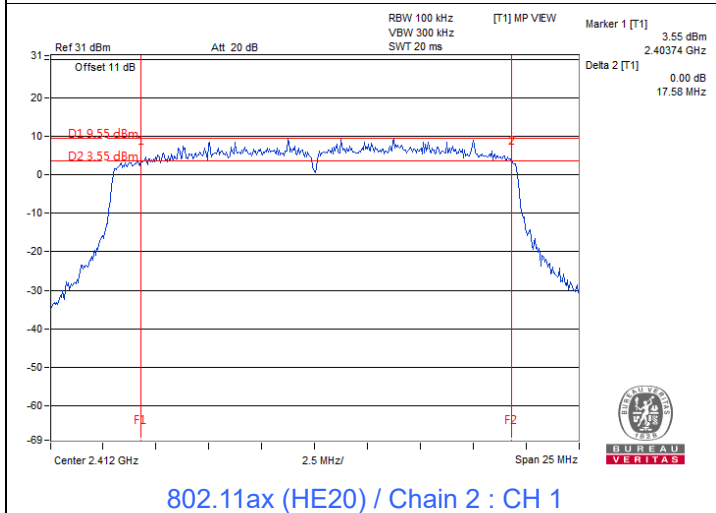
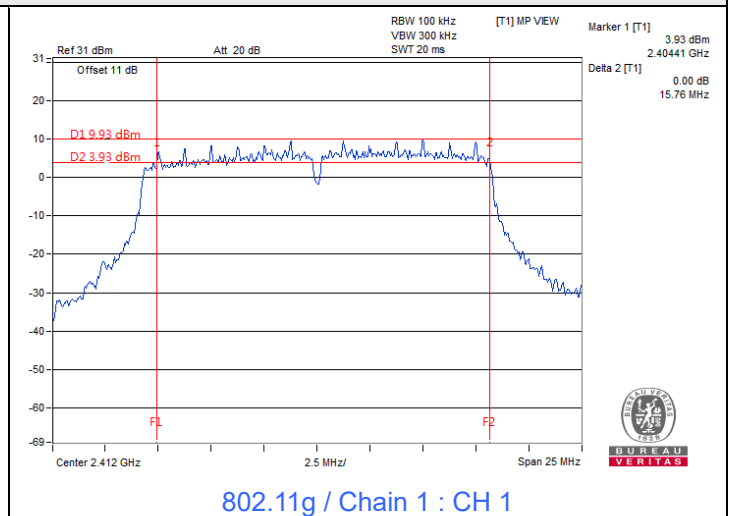
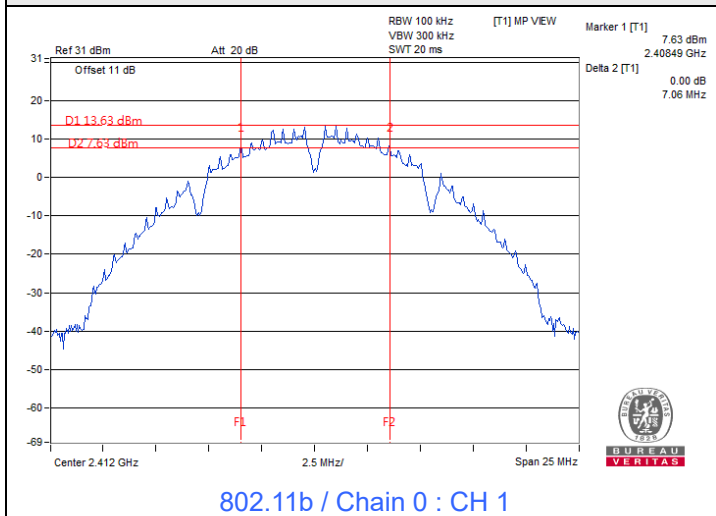
802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	18.91	18.27	17.58	18.25	0.5	Pass
6	2437	19.04	18.99	18.97	19.01	0.5	Pass
11	2462	18.70	18.65	18.55	18.60	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
3	2422	36.38	37.54	36.41	37.27	0.5	Pass
6	2437	38.11	38.28	38.14	38.22	0.5	Pass
9	2452	37.46	36.91	37.86	37.24	0.5	Pass

Spectrum Plot of Minimum Value



Mode B: Scan Radio 3: QCA-9889 Module

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2412	6.17	0.5	Pass
6	2437	6.17	0.5	Pass
11	2462	7.62	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2412	16.31	0.5	Pass
6	2437	16.33	0.5	Pass
11	2462	16.1	0.5	Pass

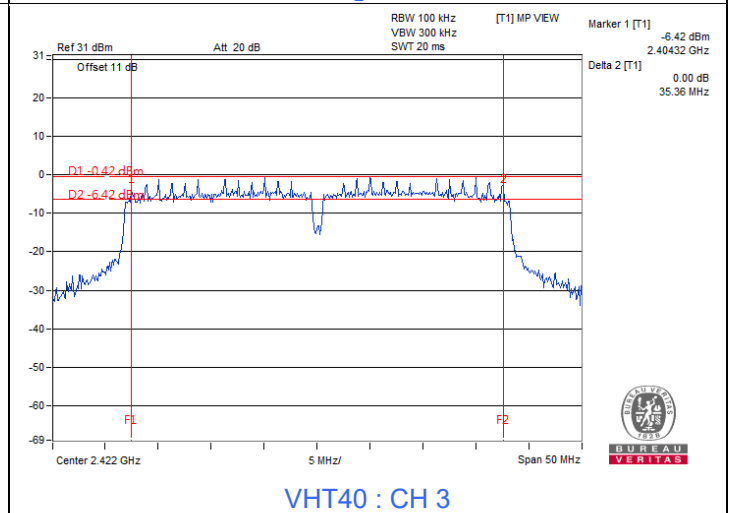
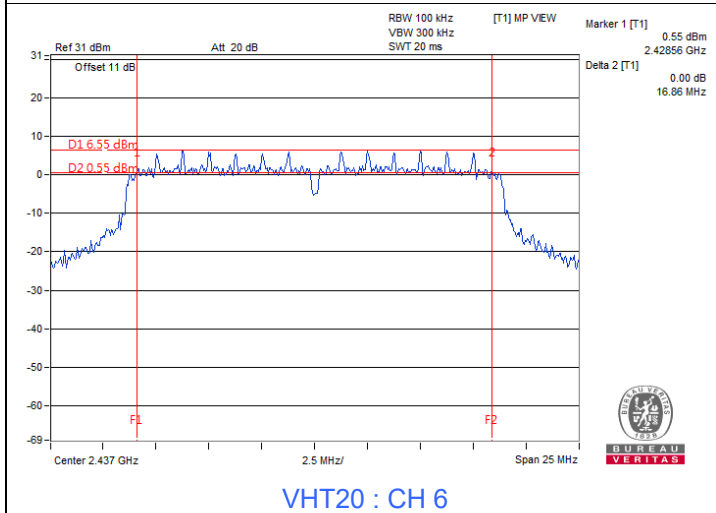
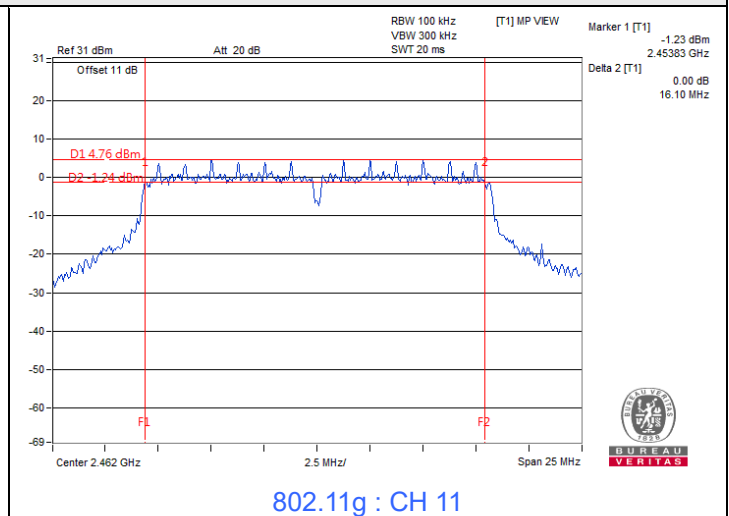
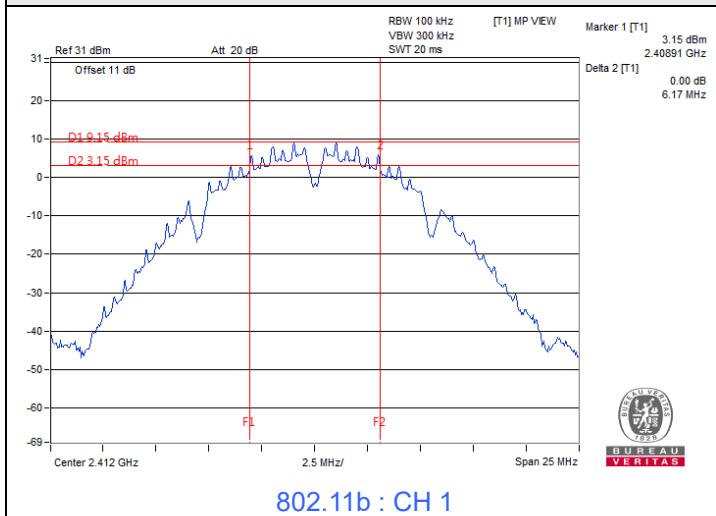
VHT20

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2412	17.01	0.5	Pass
6	2437	16.86	0.5	Pass
11	2462	16.86	0.5	Pass

VHT40

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
3	2422	35.36	0.5	Pass
6	2437	35.87	0.5	Pass
9	2452	36.41	0.5	Pass

Spectrum Plot of Minimum Value

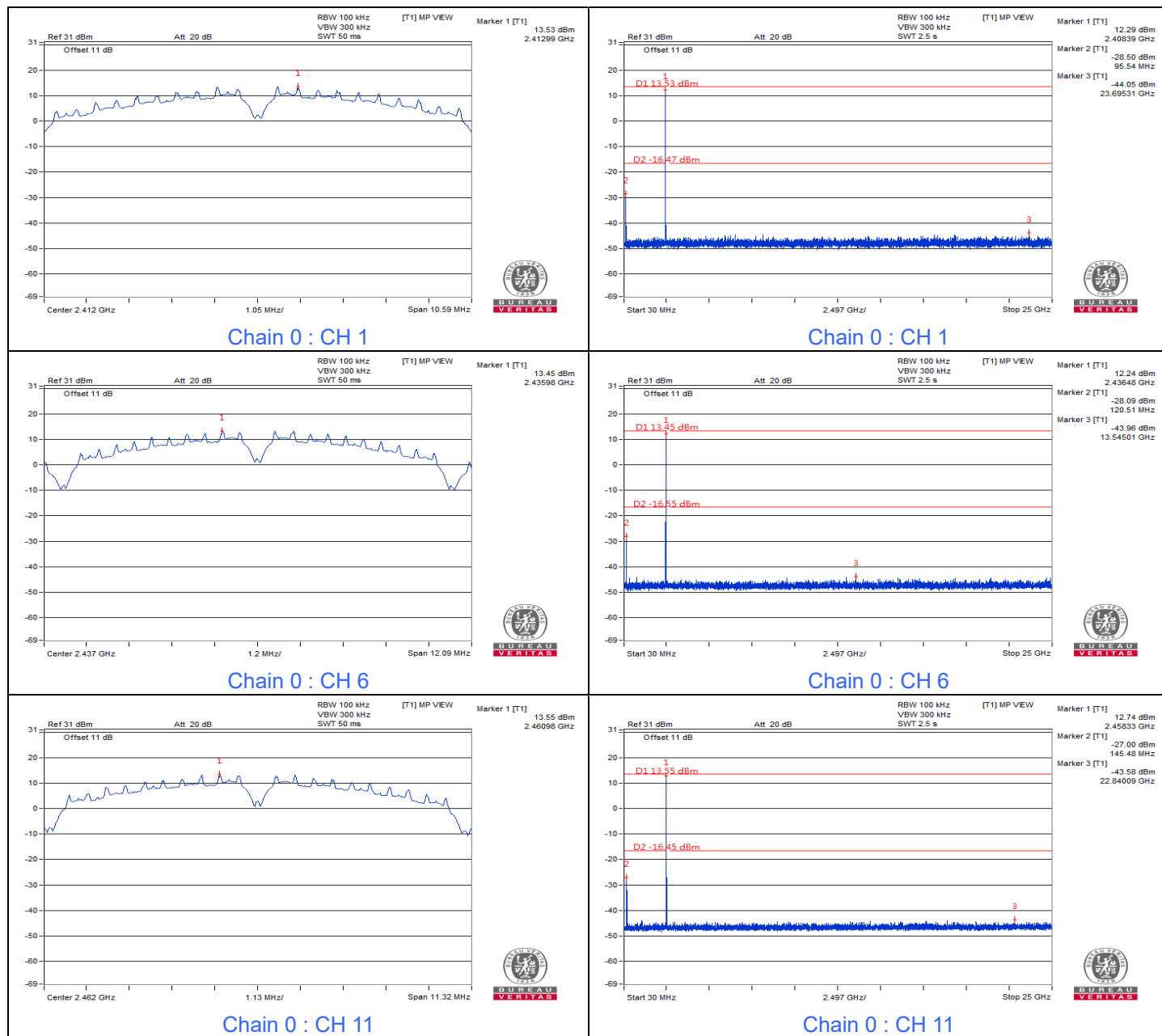


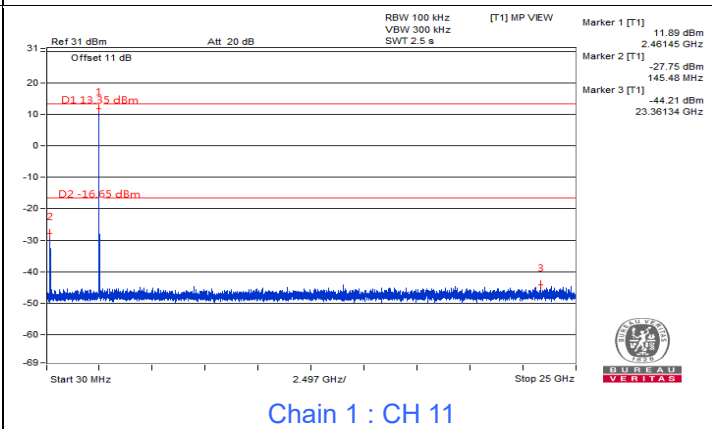
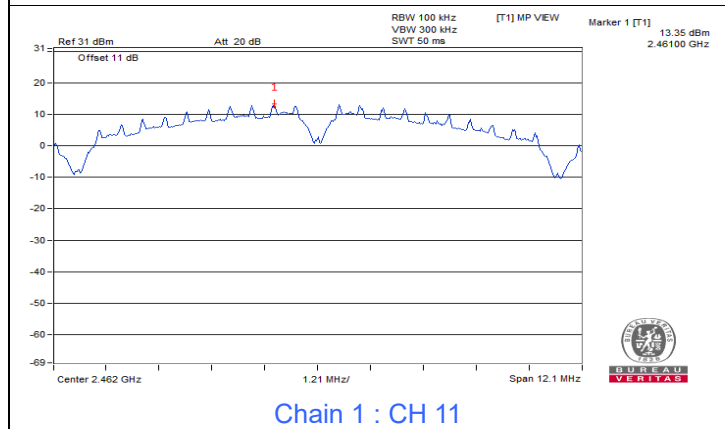
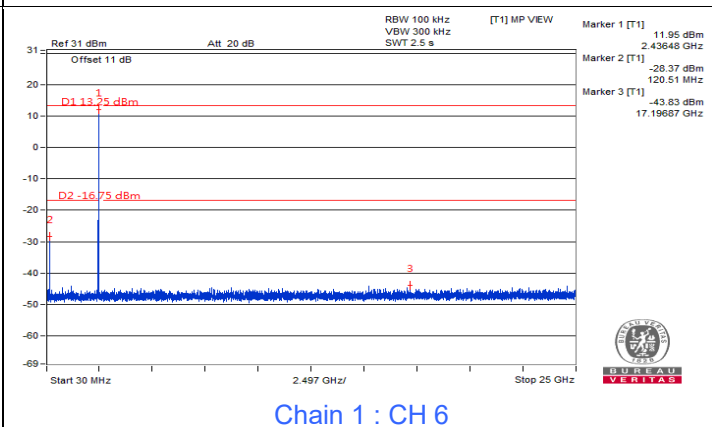
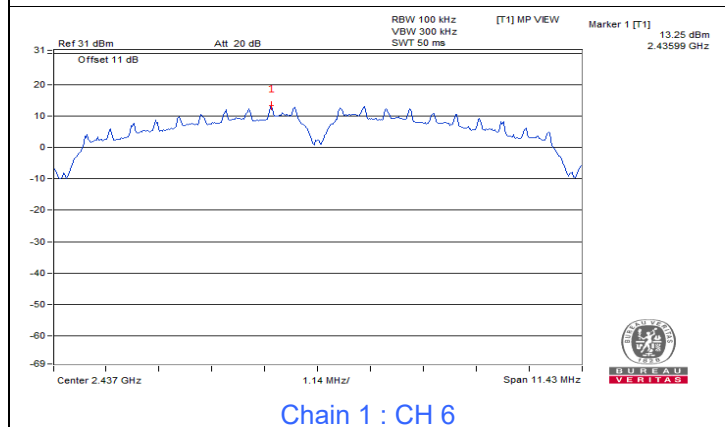
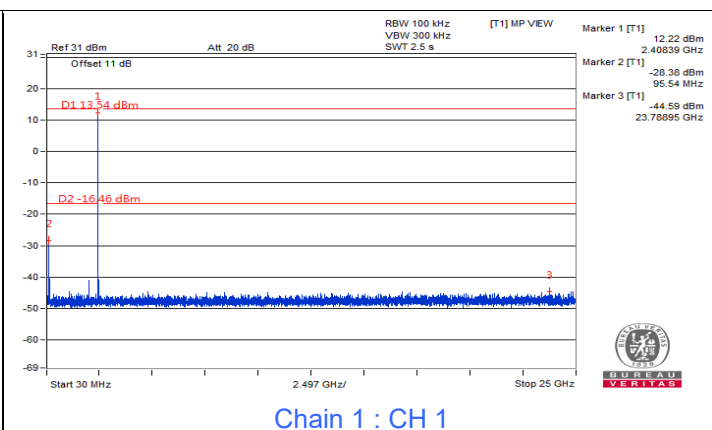
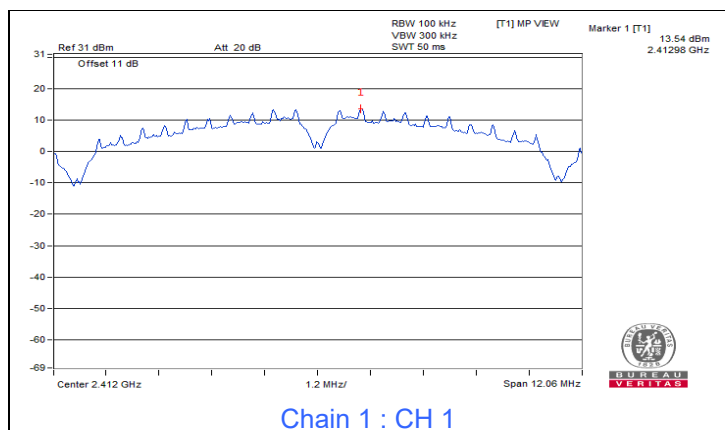
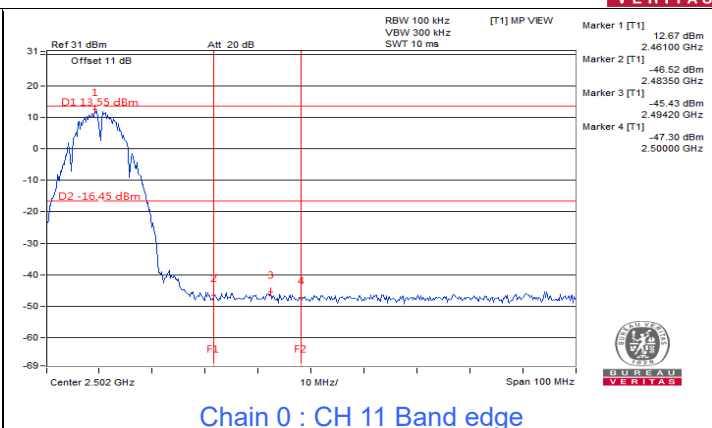
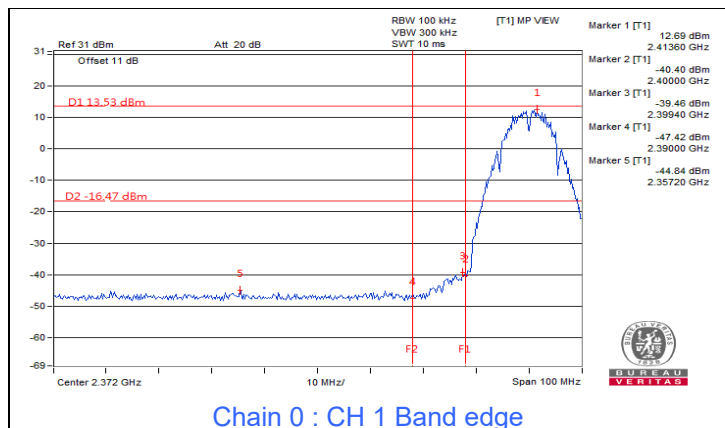
7.4 Conducted Out of Band Emissions

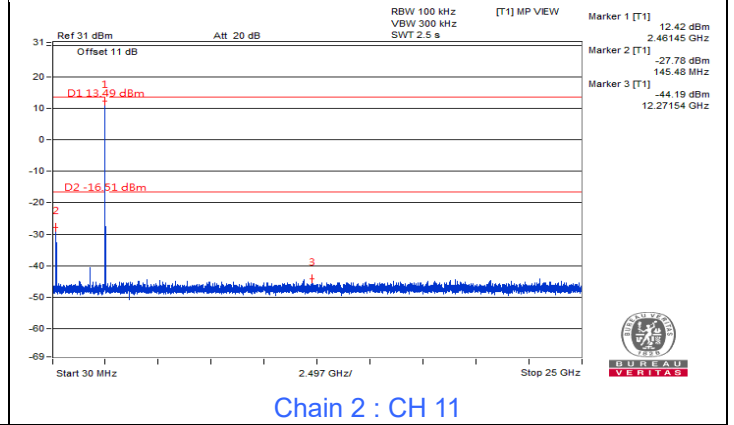
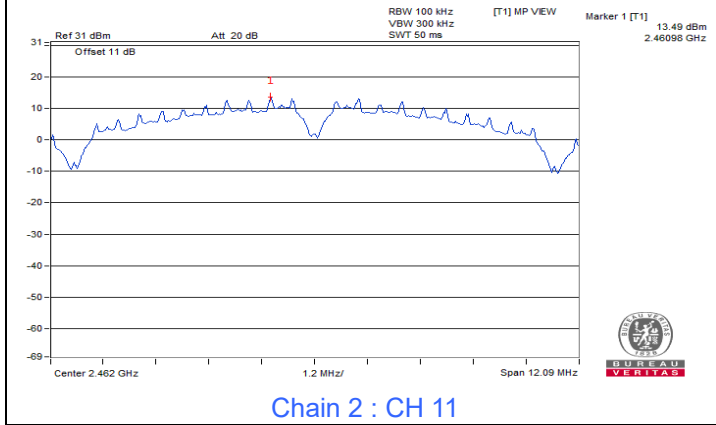
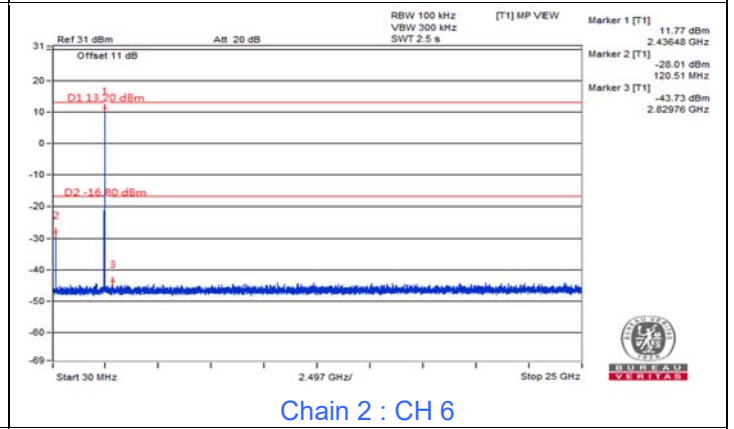
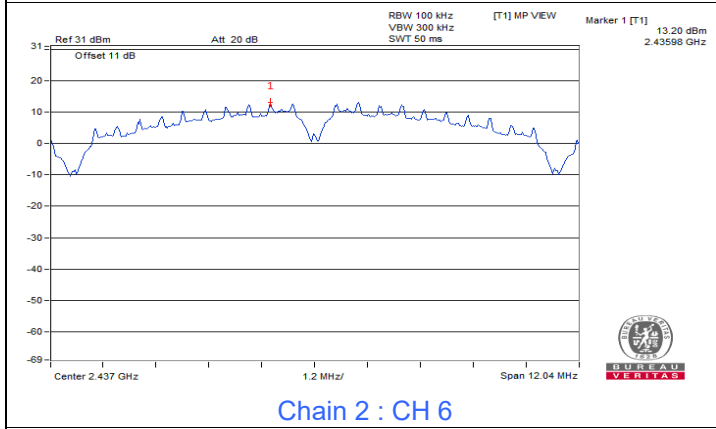
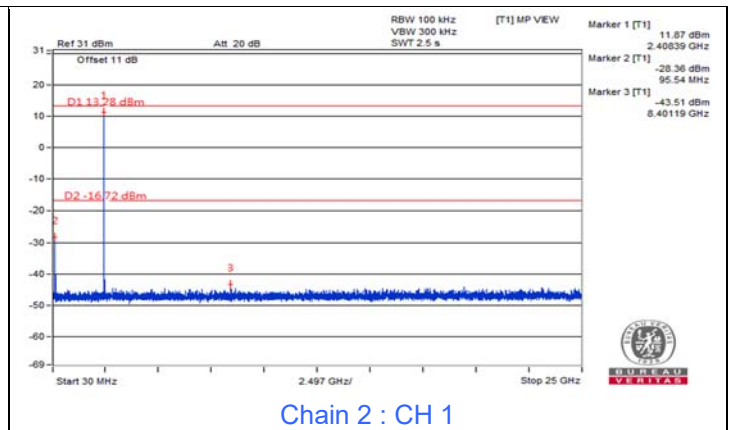
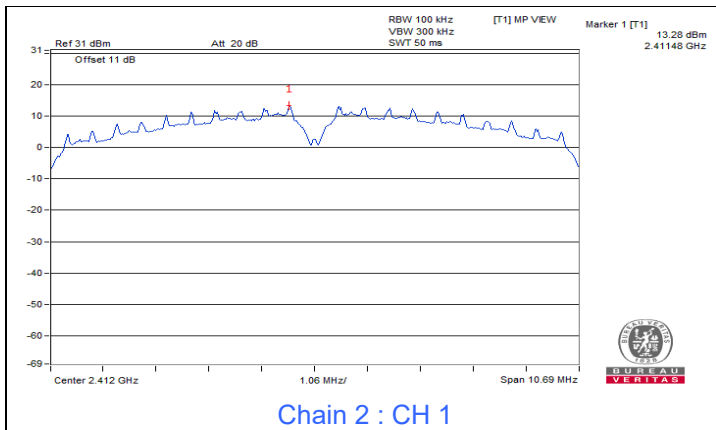
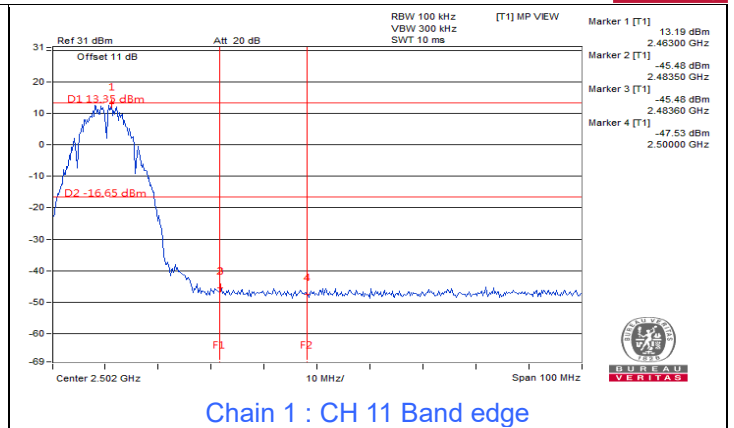
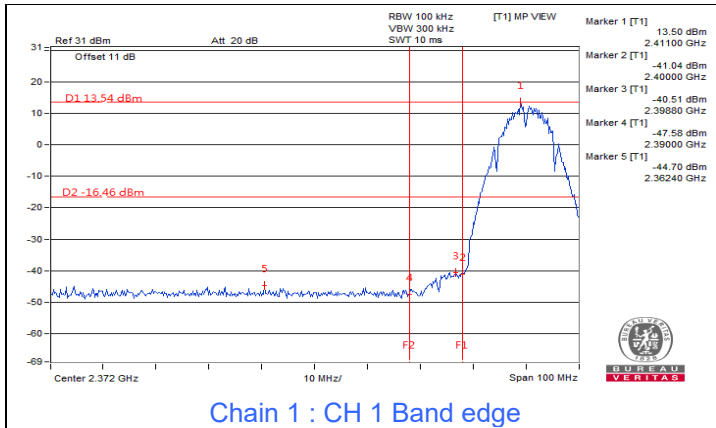
Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyoung Wang
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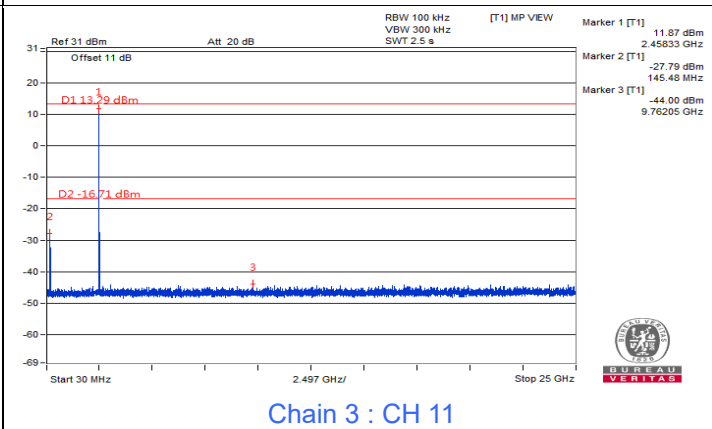
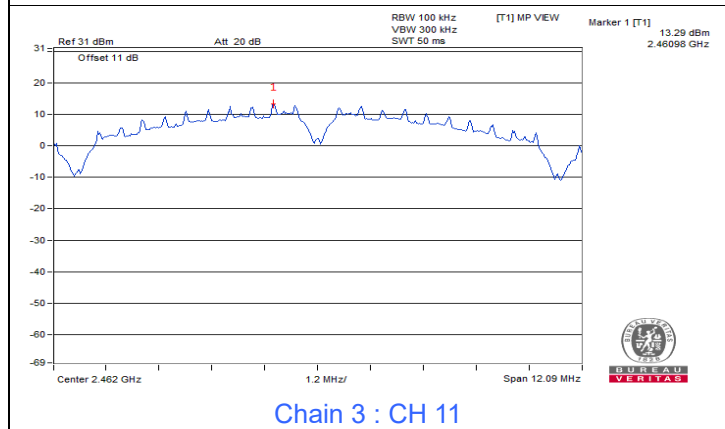
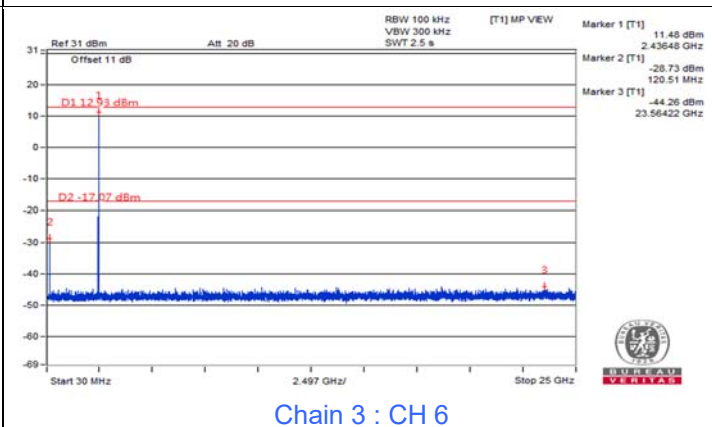
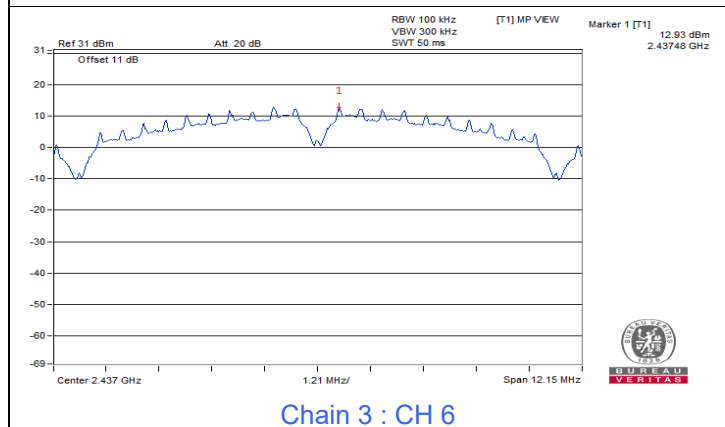
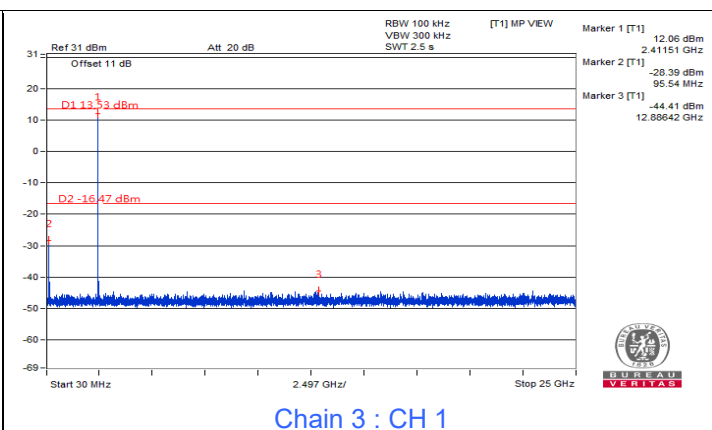
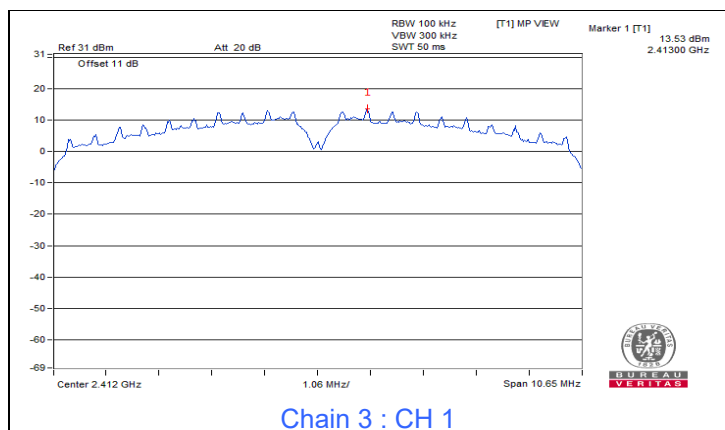
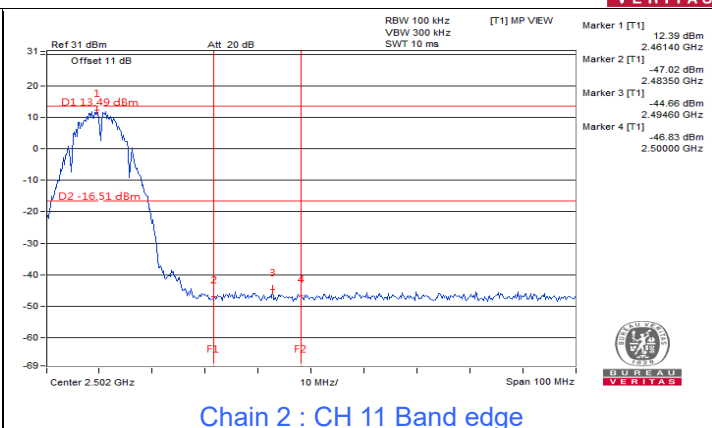
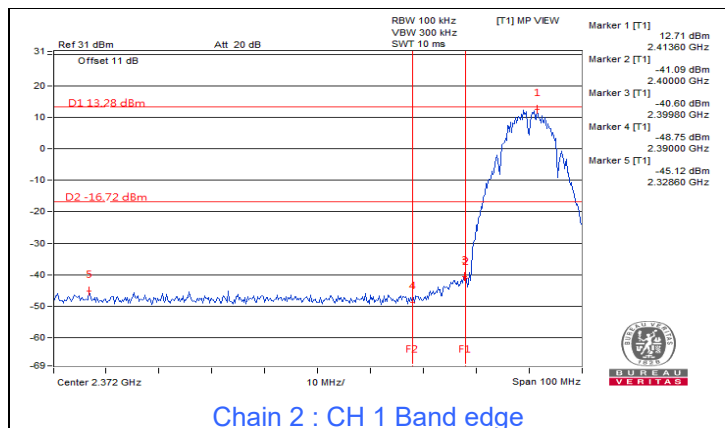
Mode A: 2.4GHz Radio 1: QCN-5124 Module

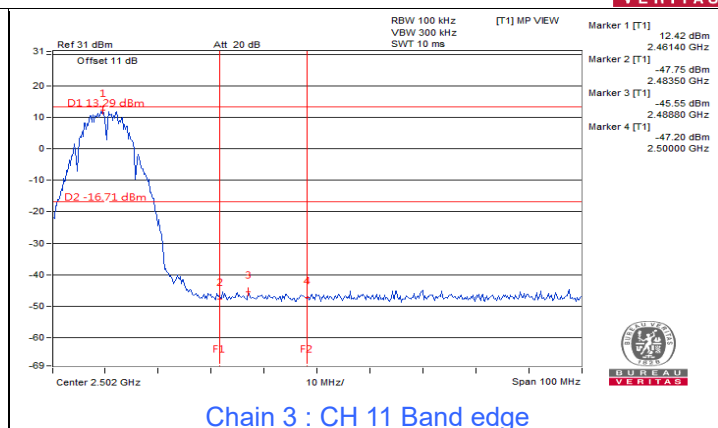
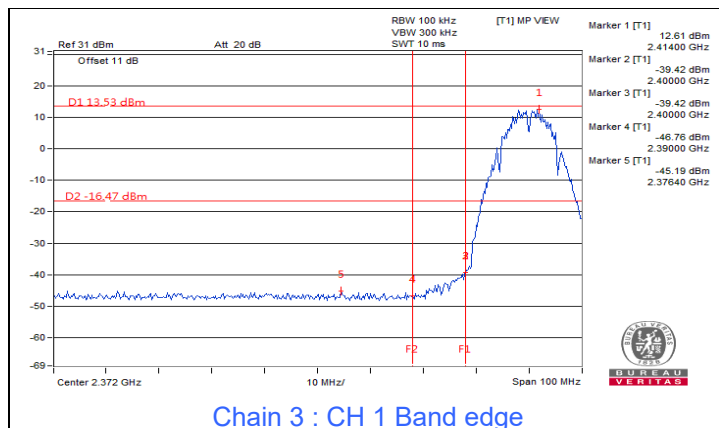
802.11b





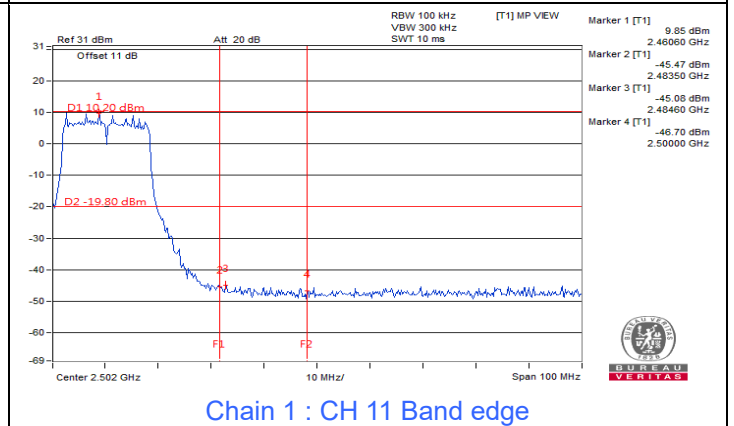
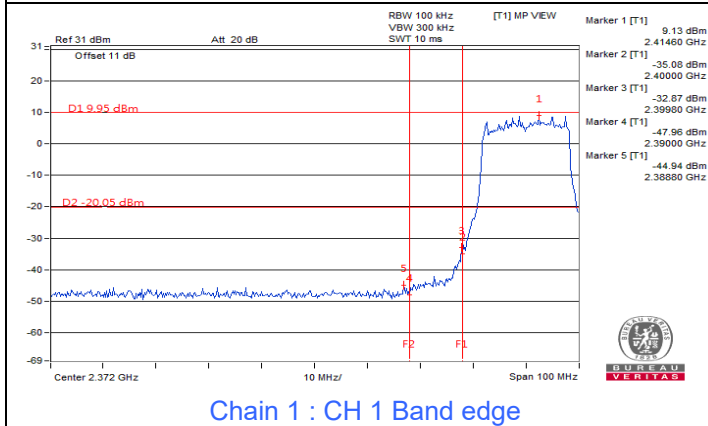
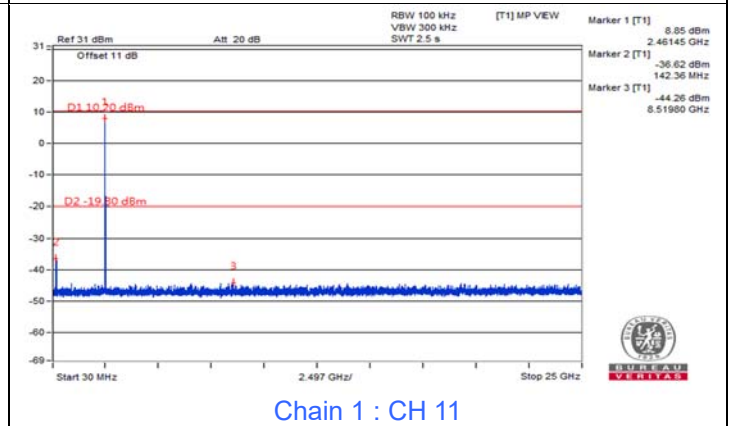
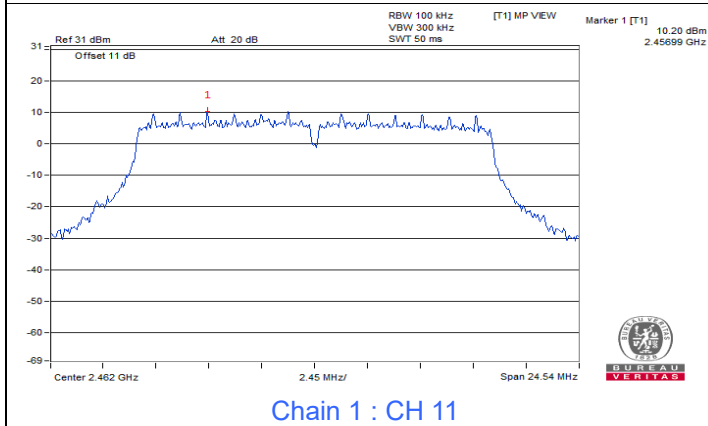
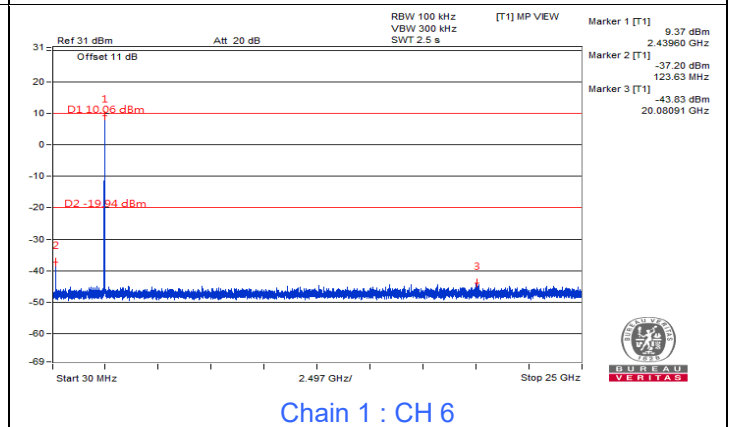
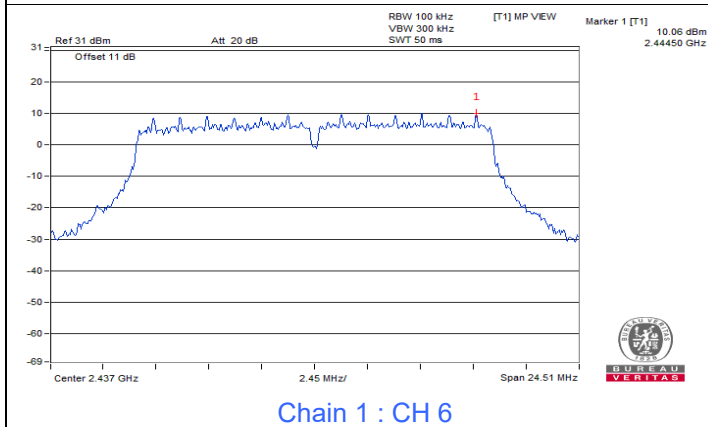
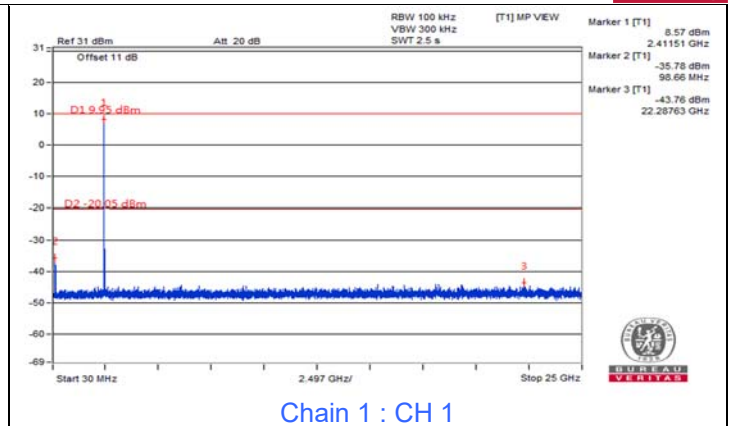
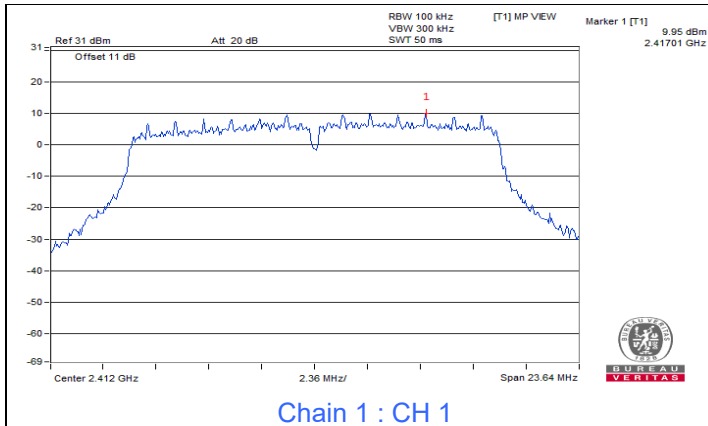


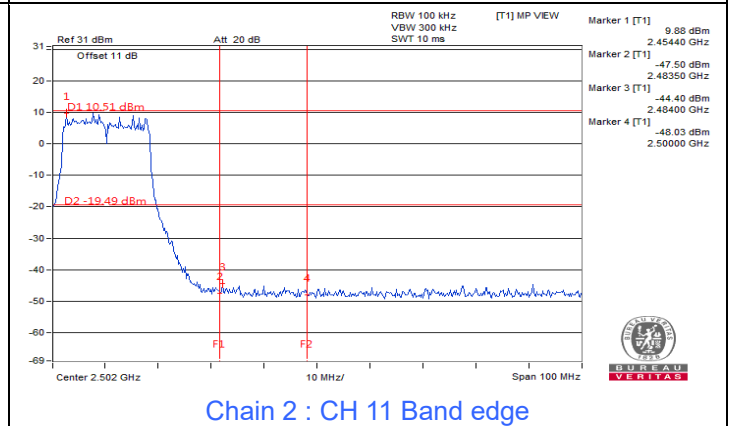
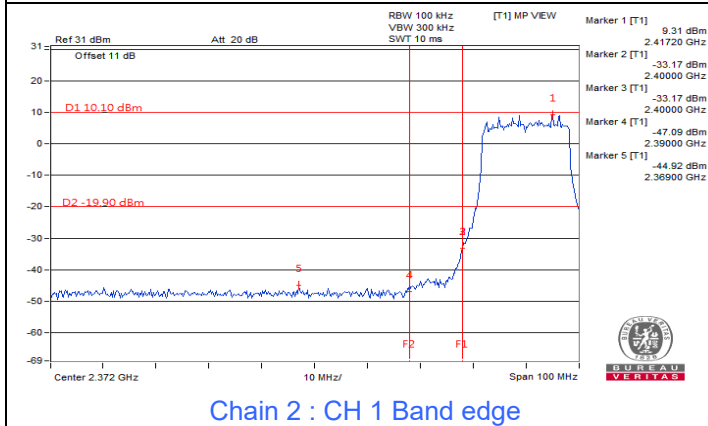
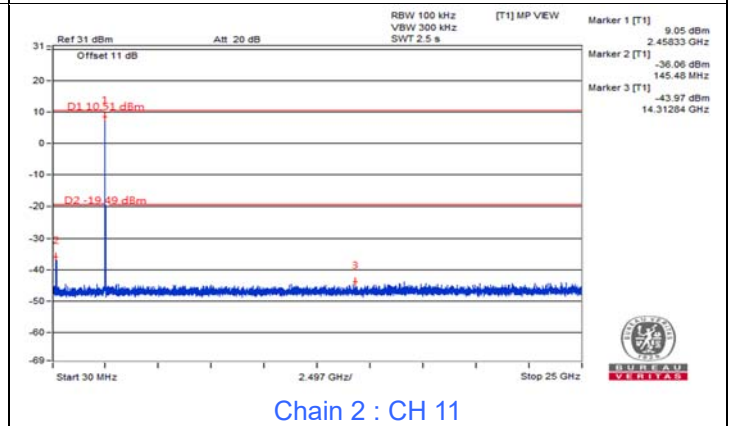
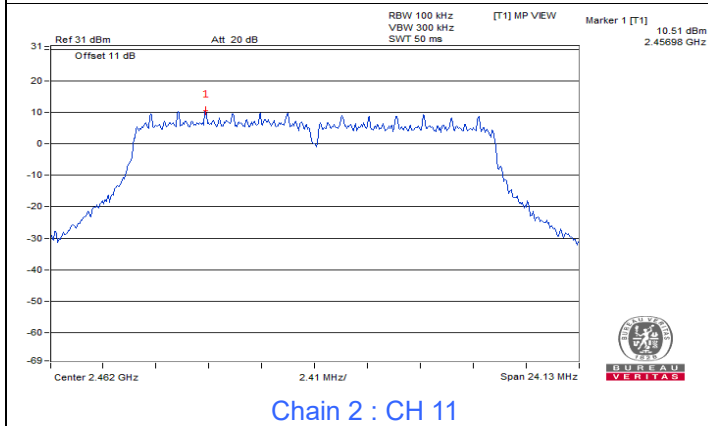
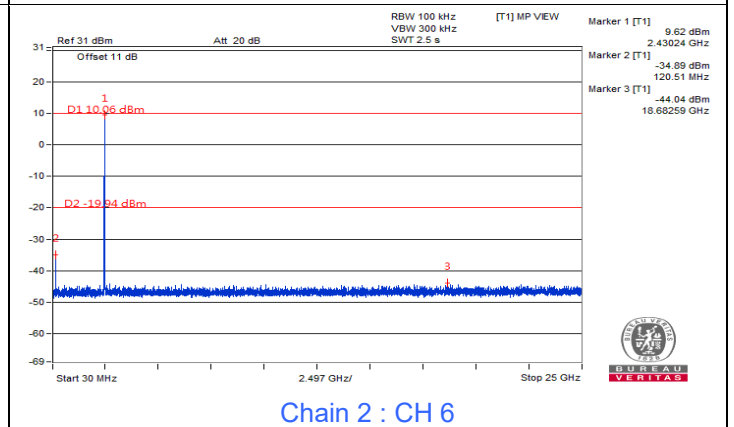
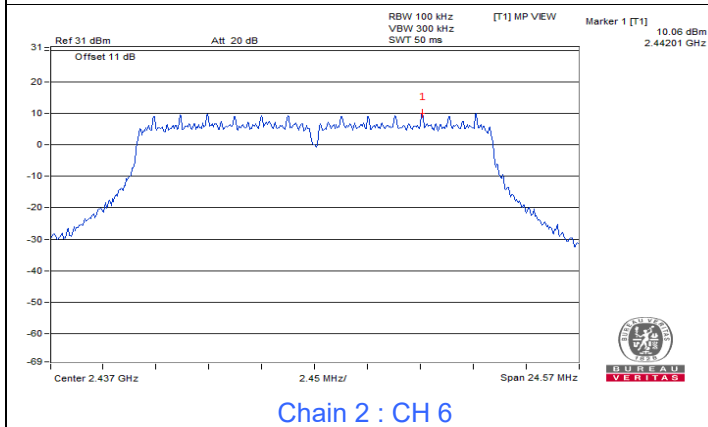
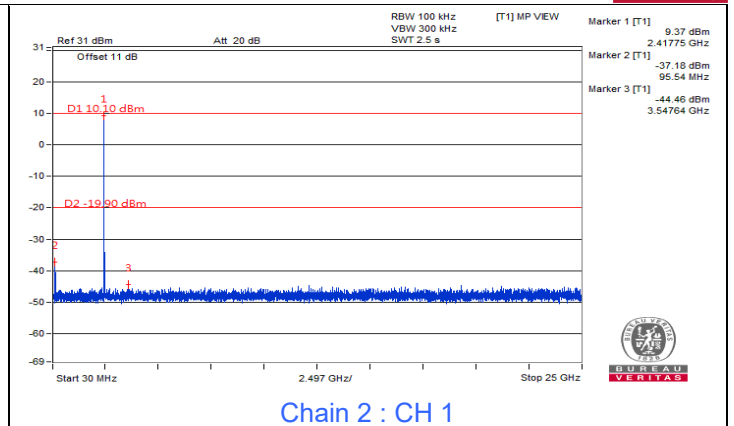
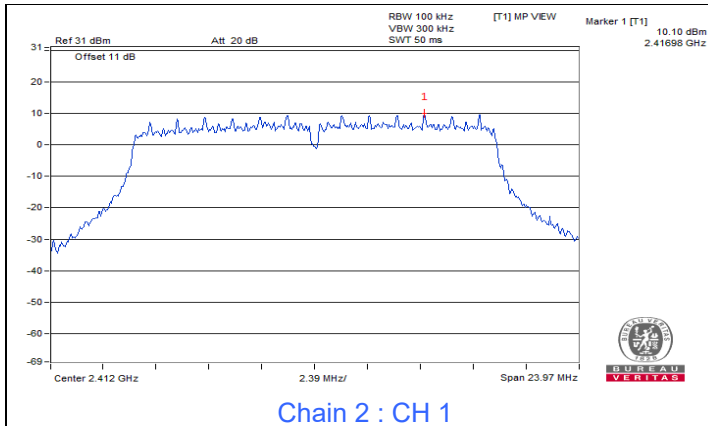


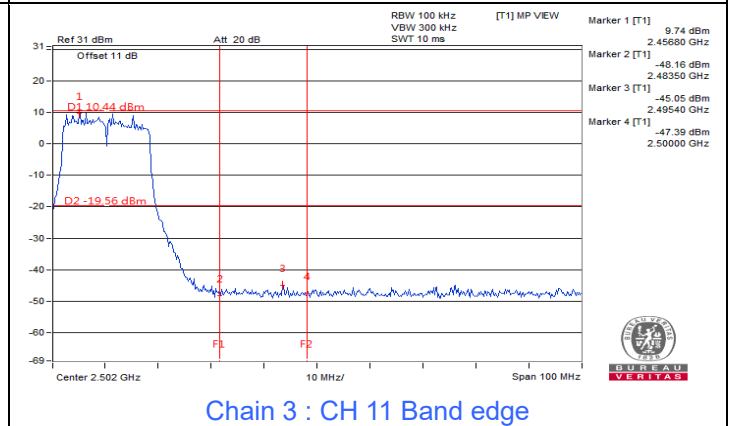
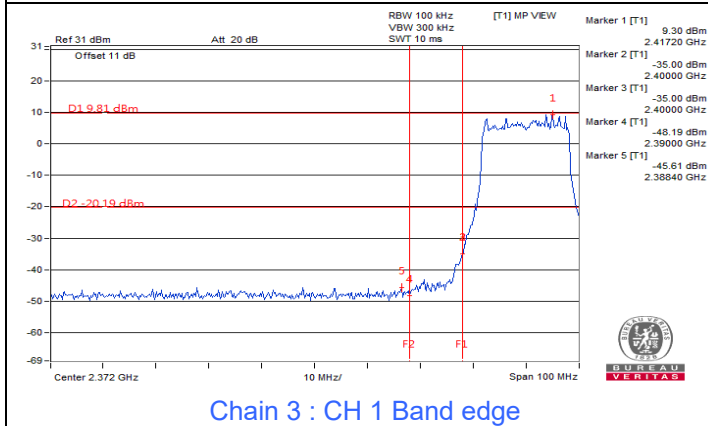
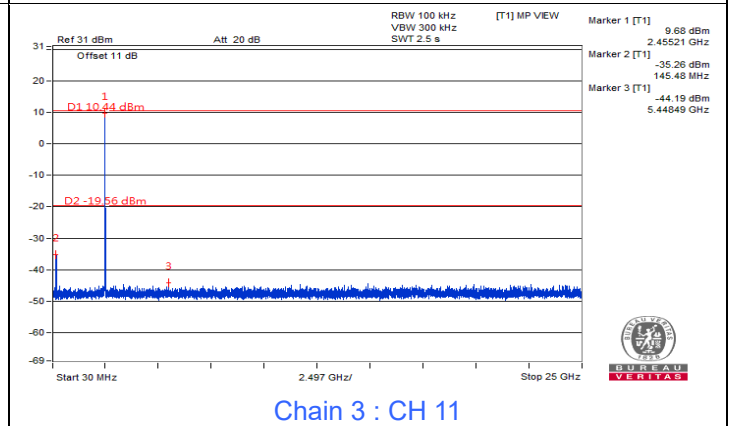
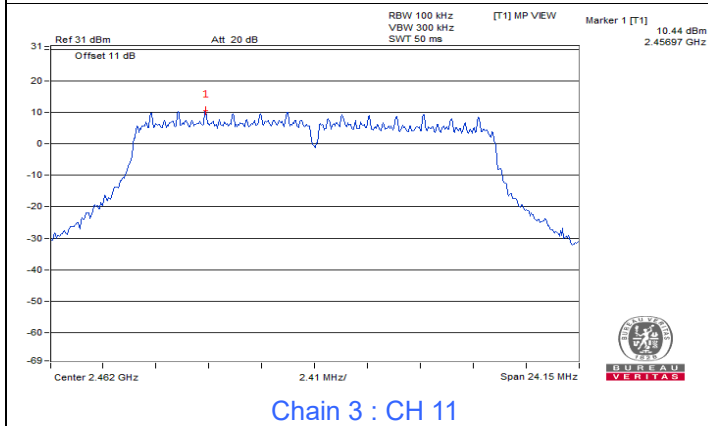
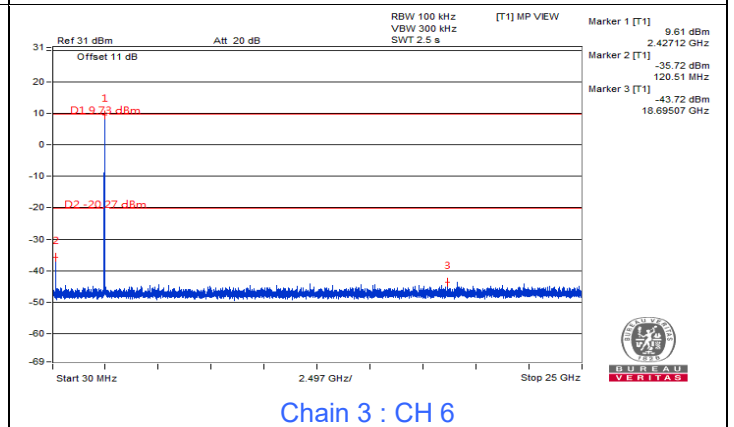
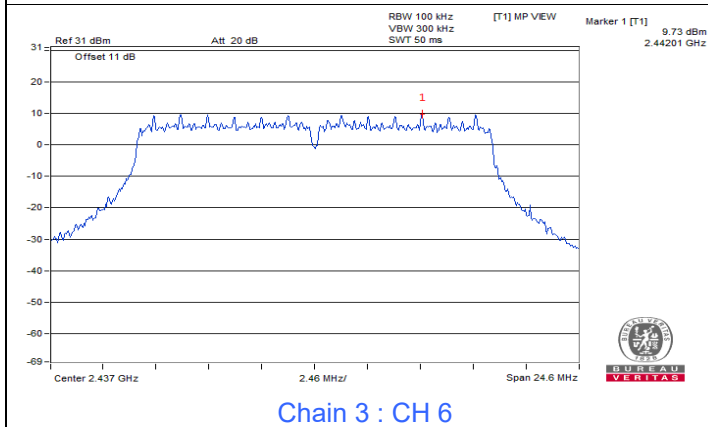
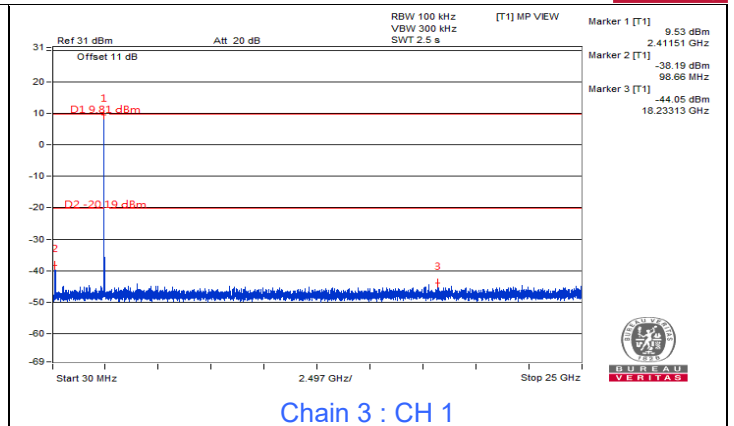
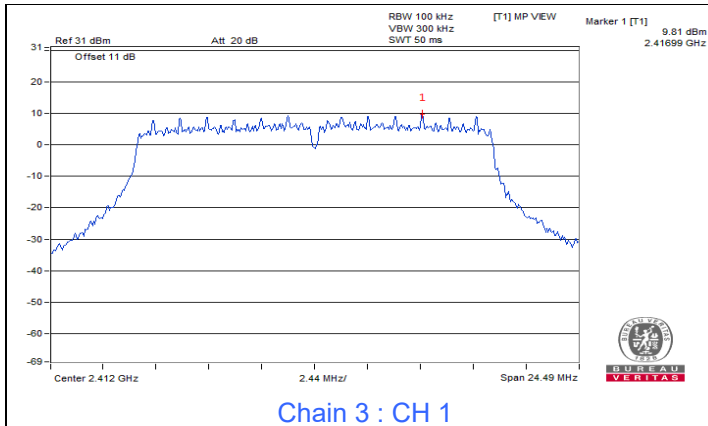


802.11g

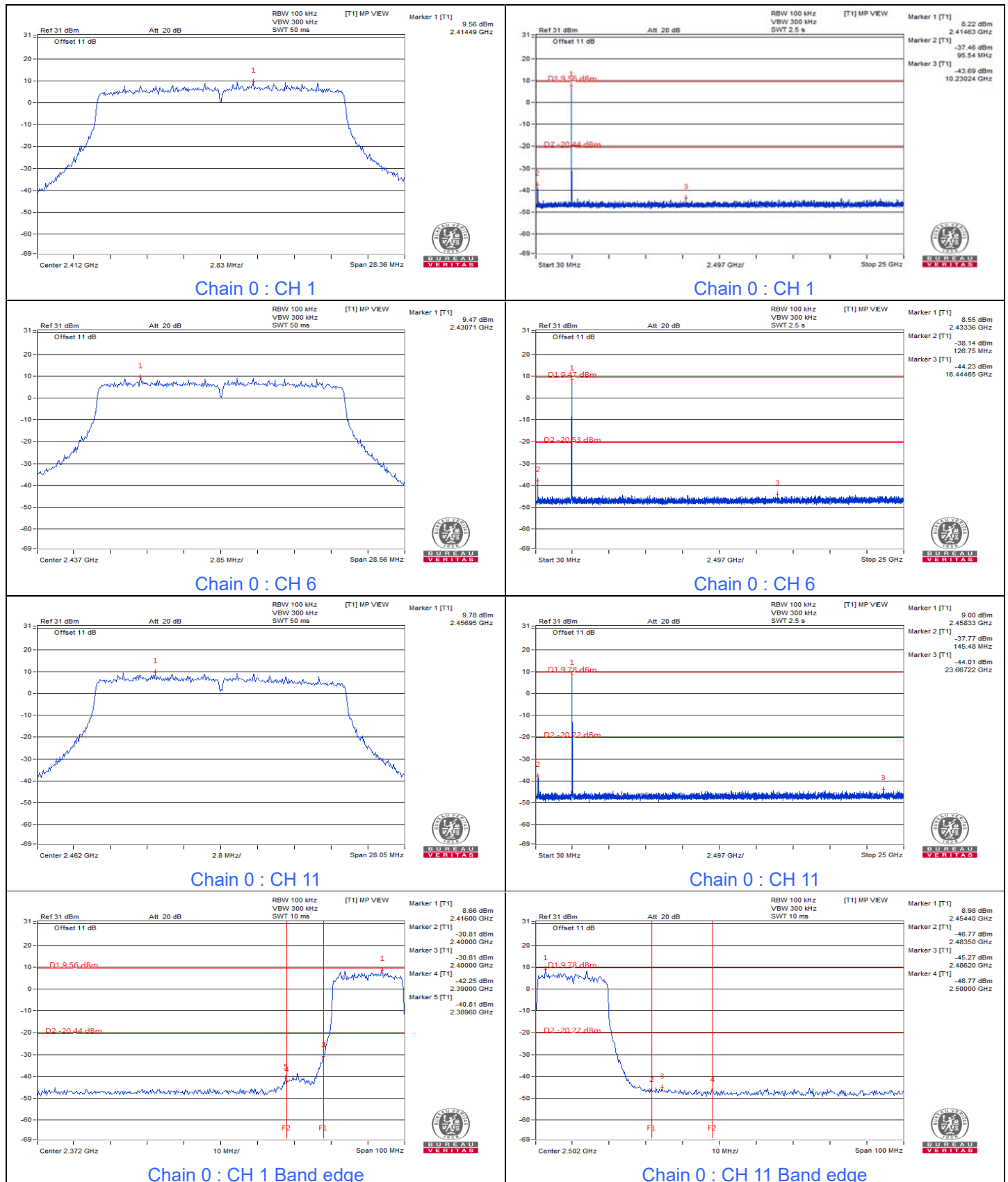


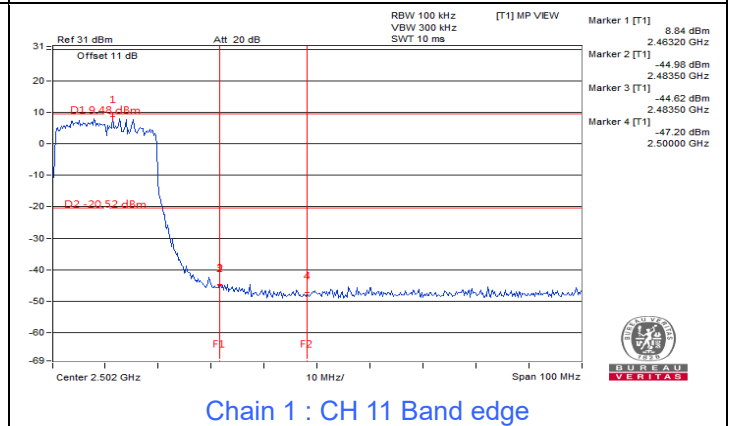
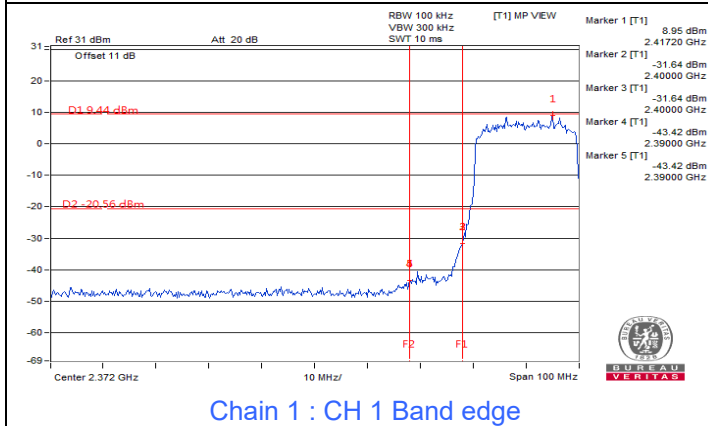
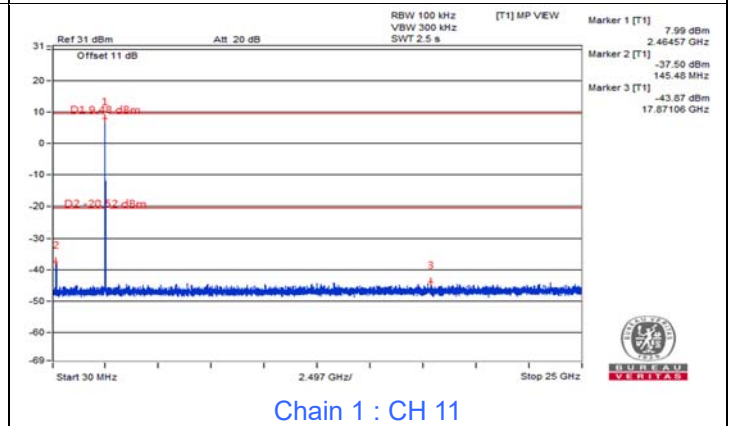
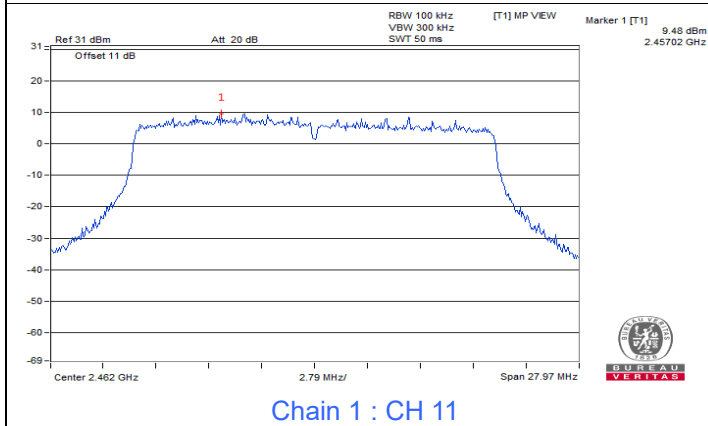
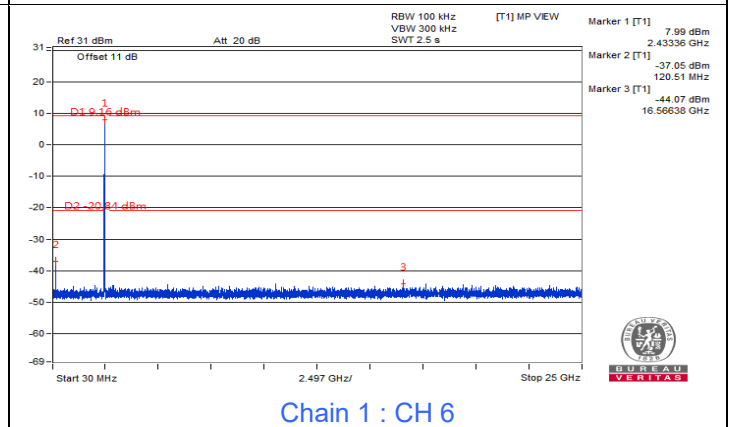
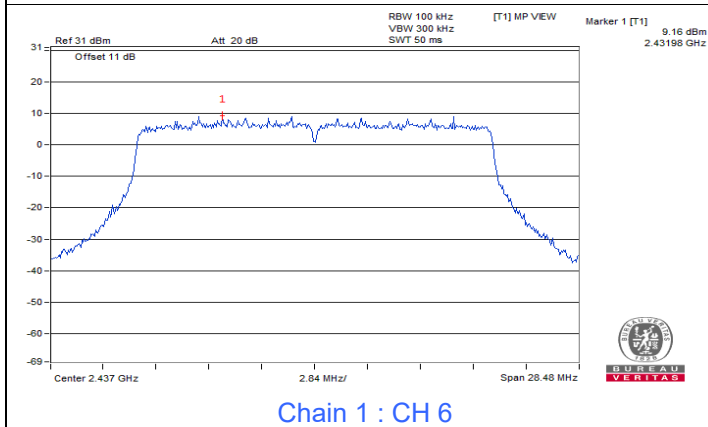
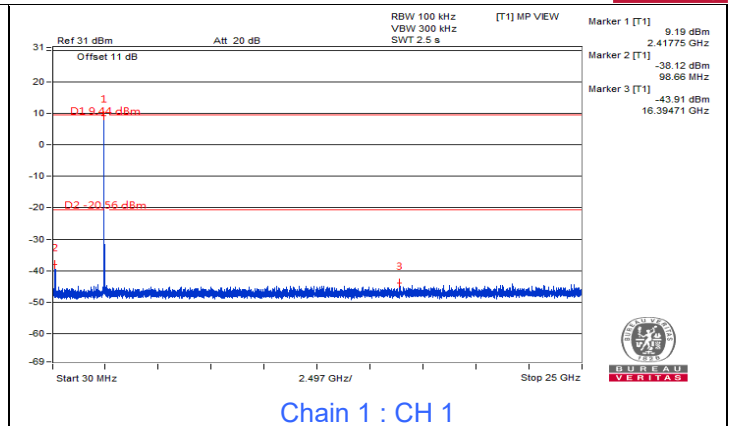
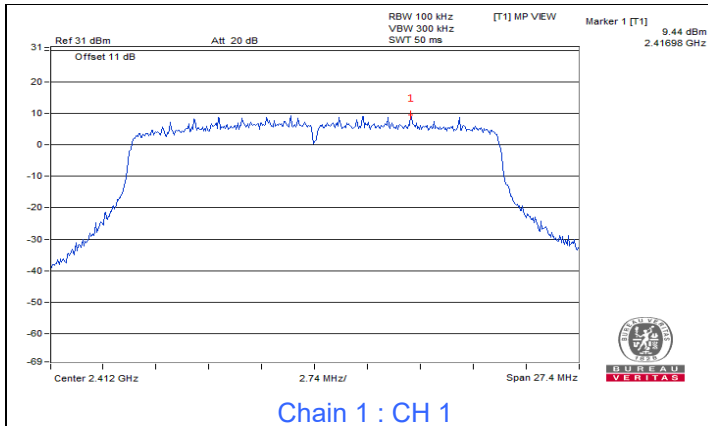


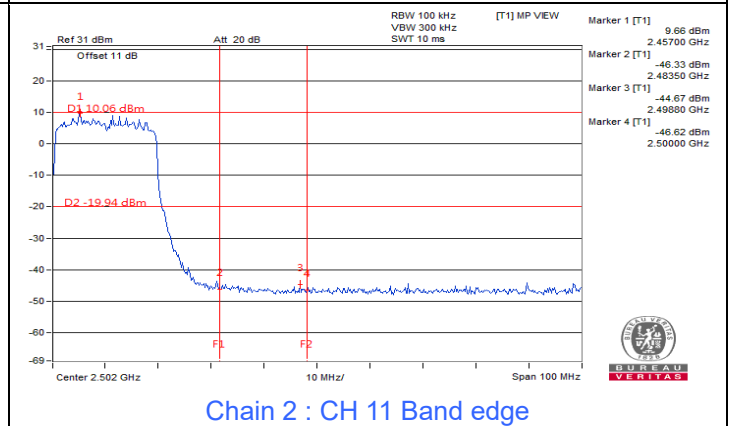
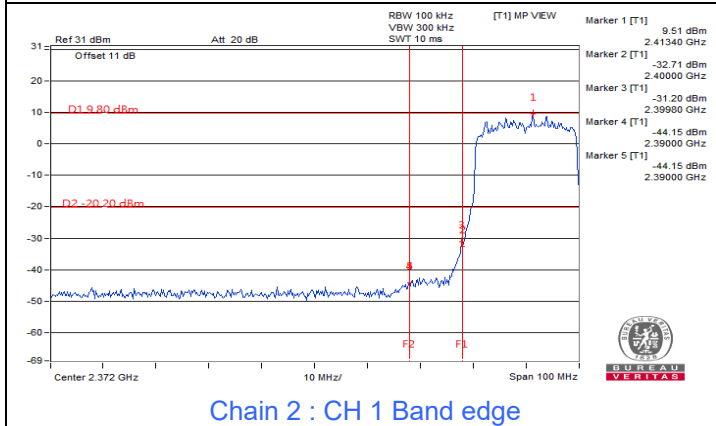
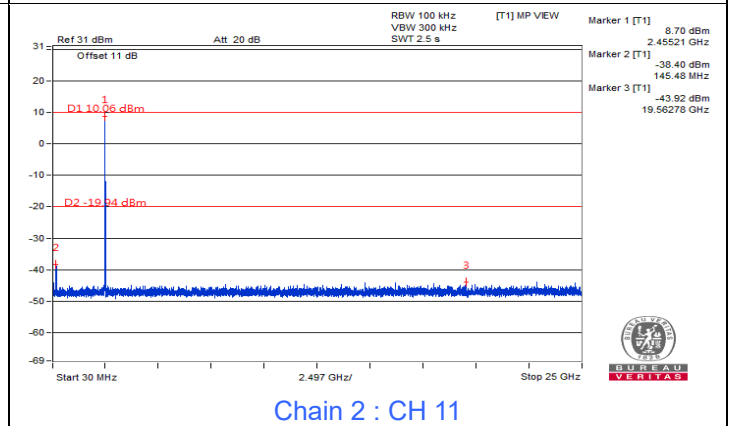
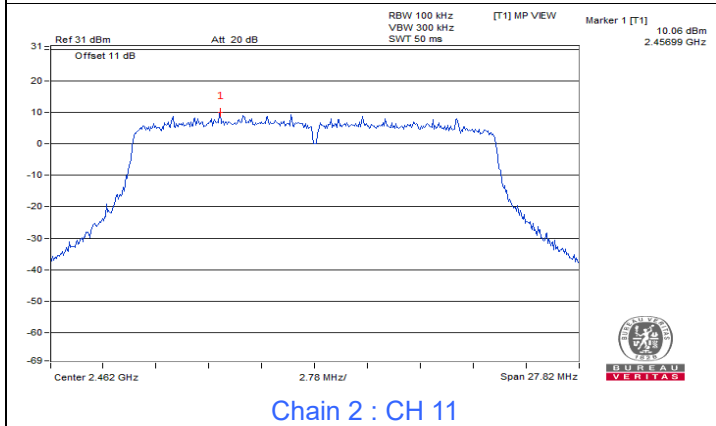
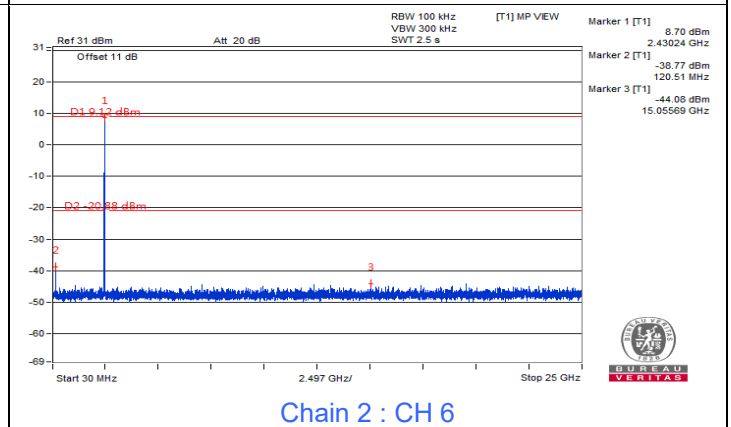
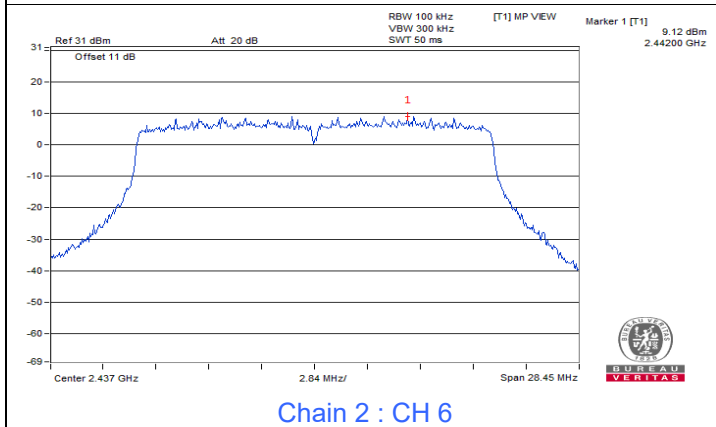
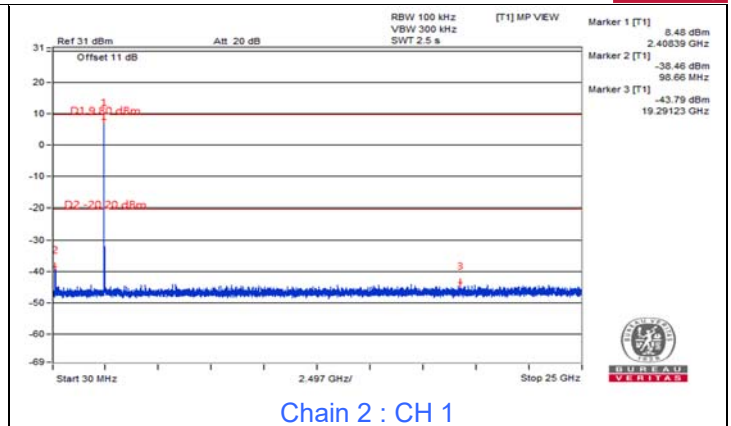
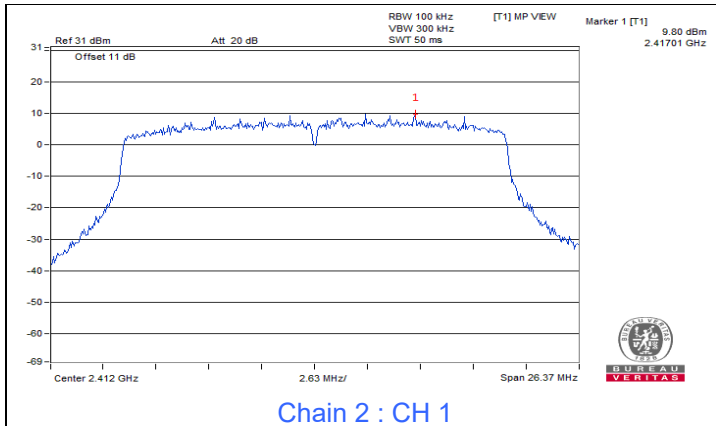


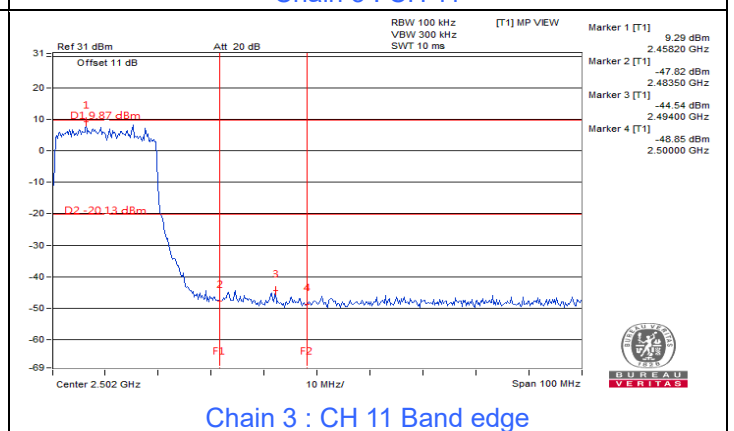
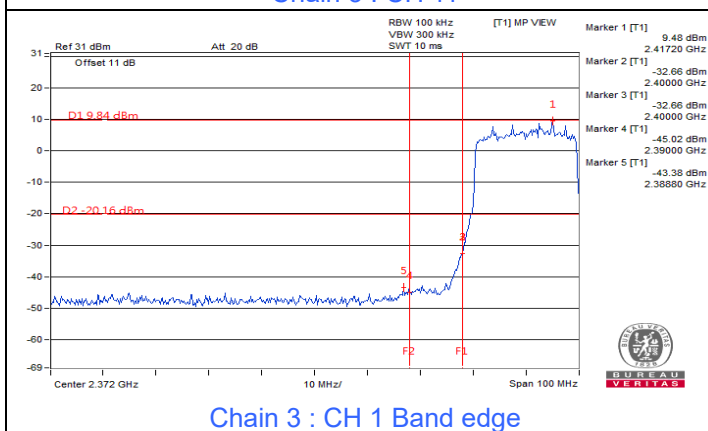
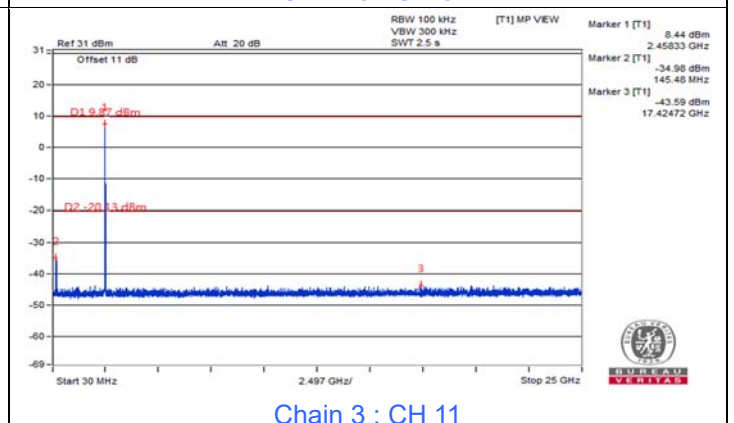
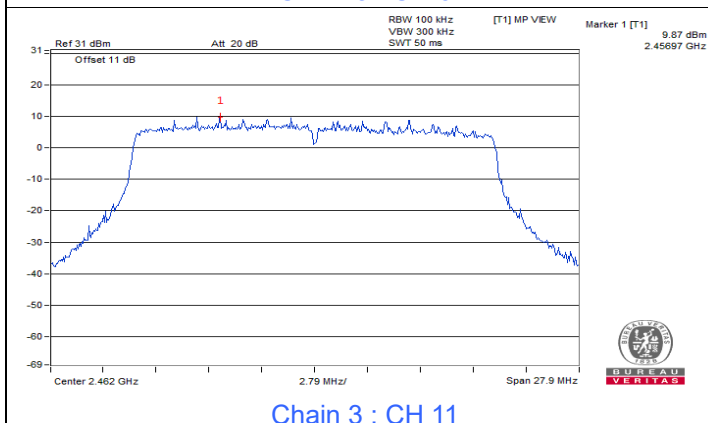
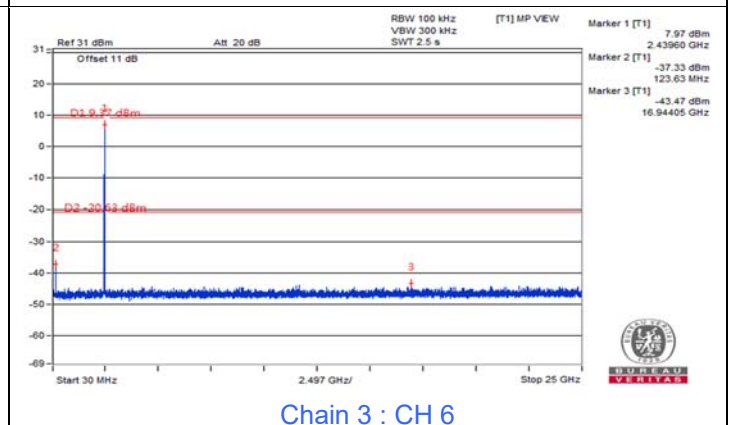
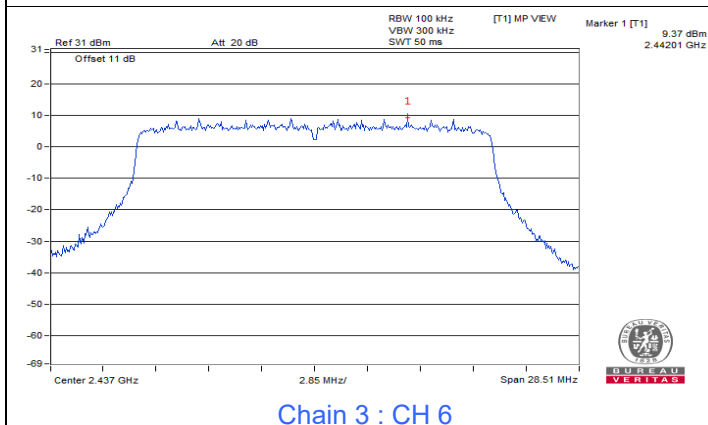
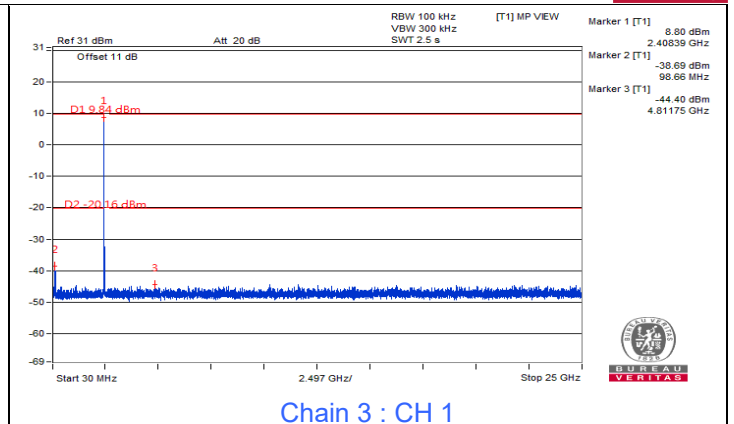
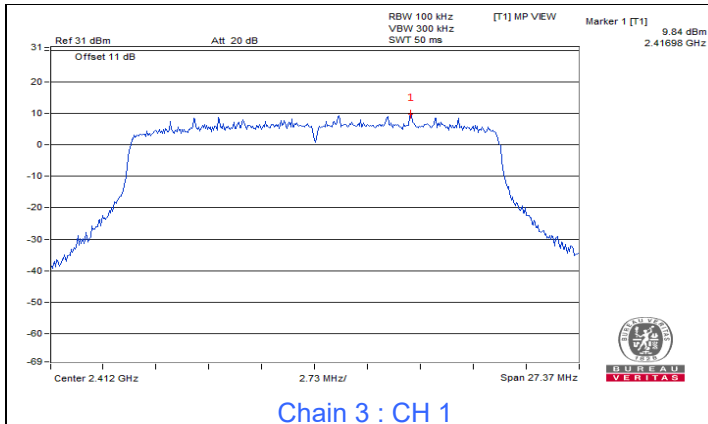


802.11ax (HE20)

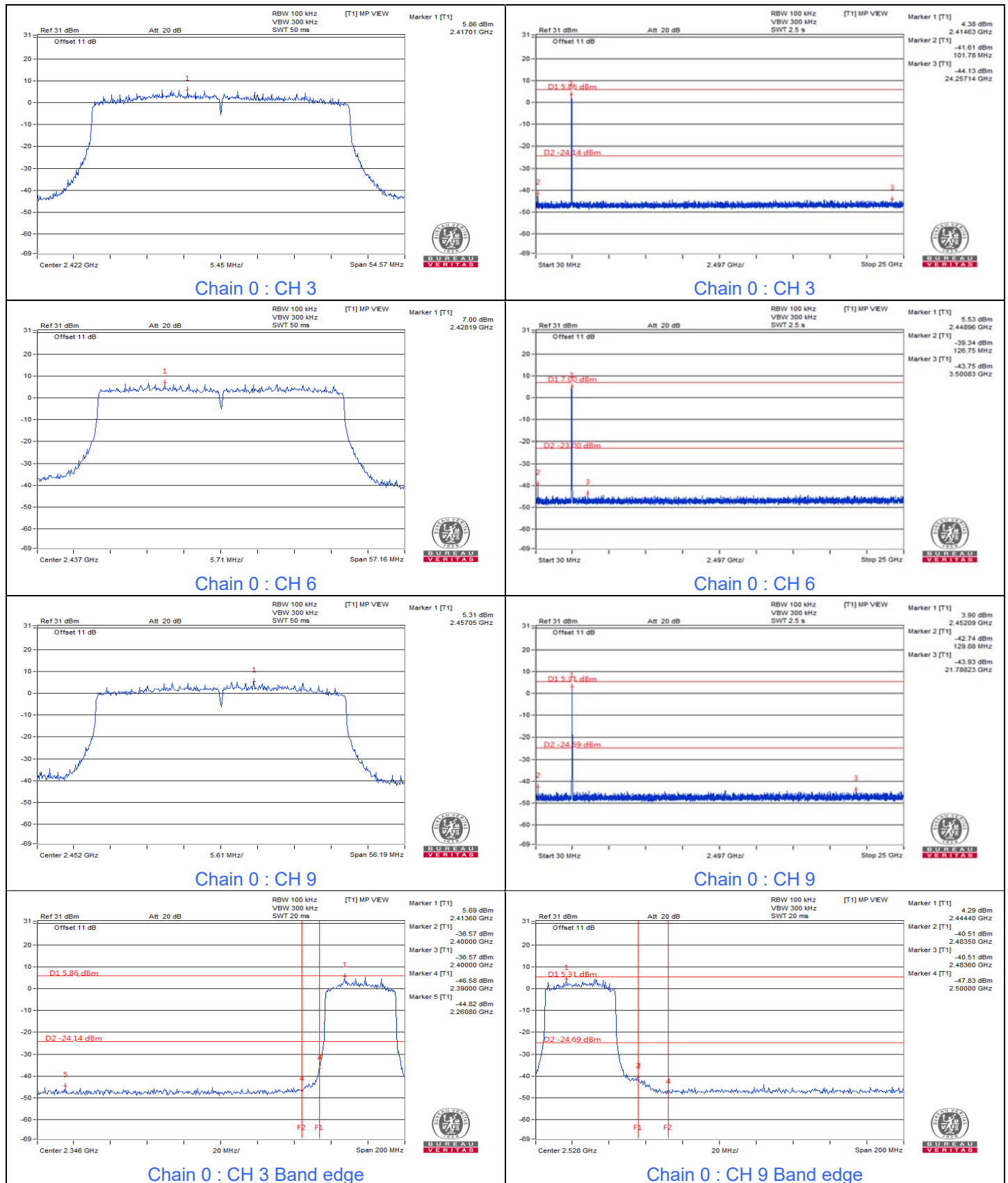


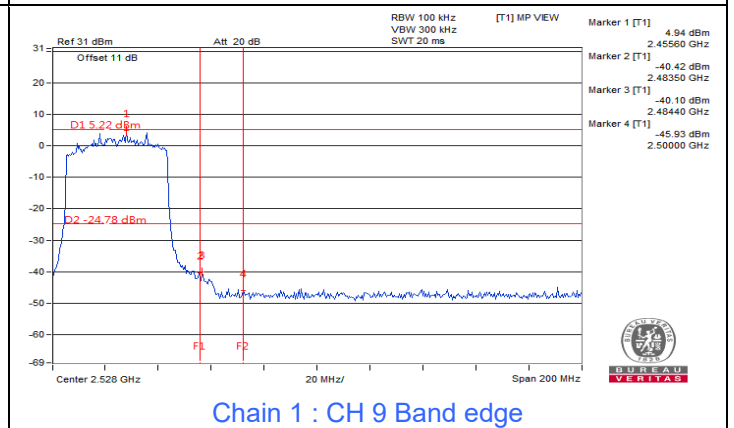
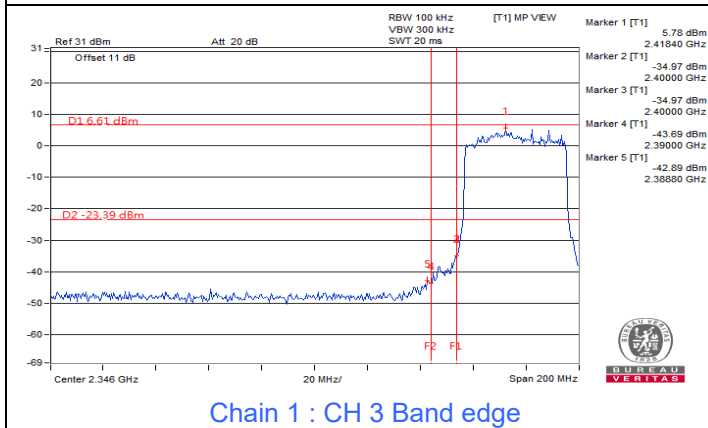
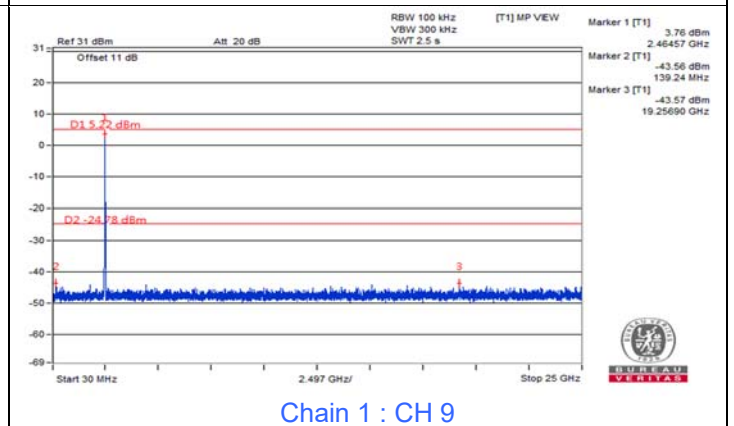
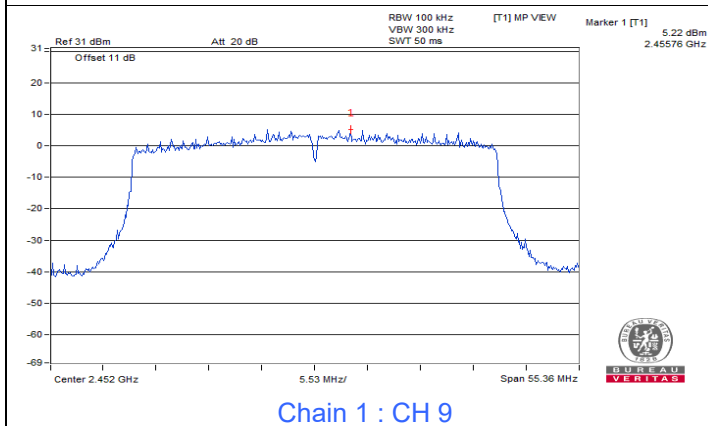
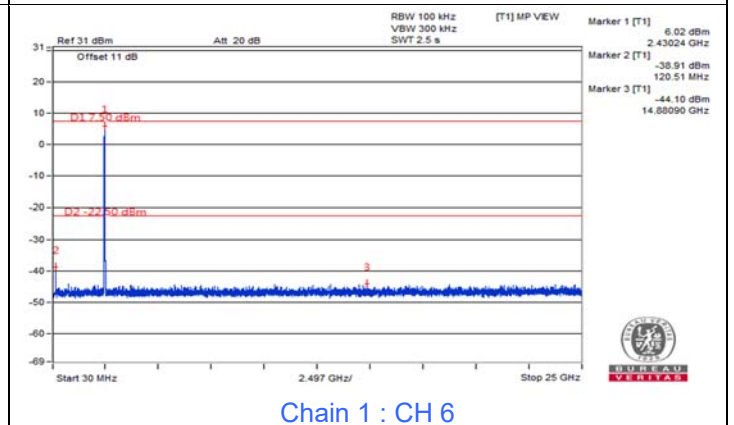
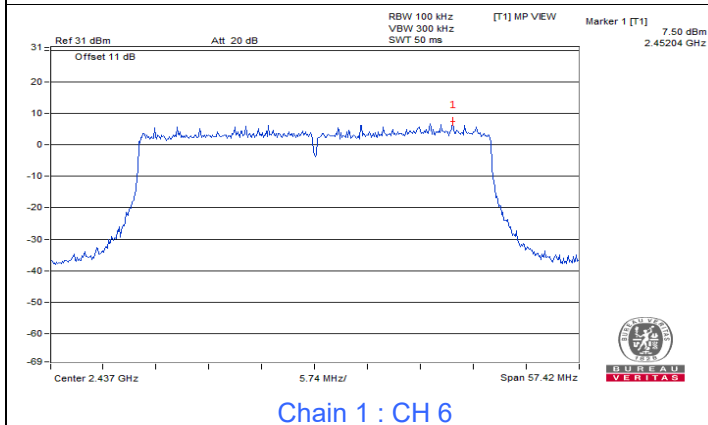
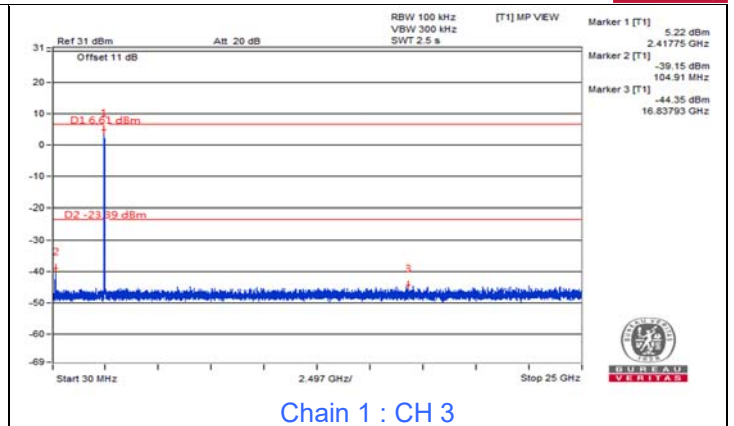
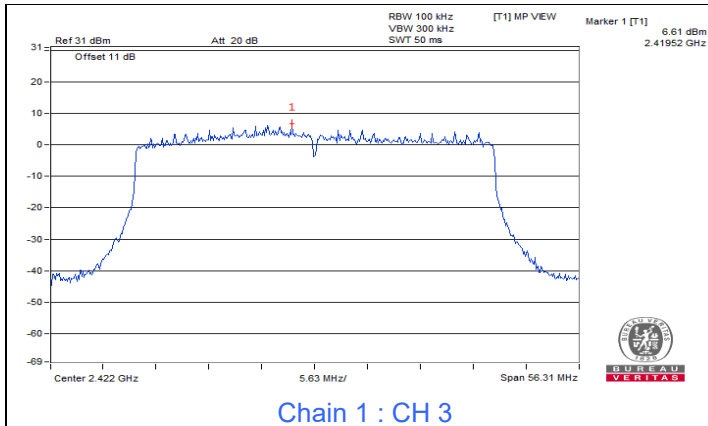


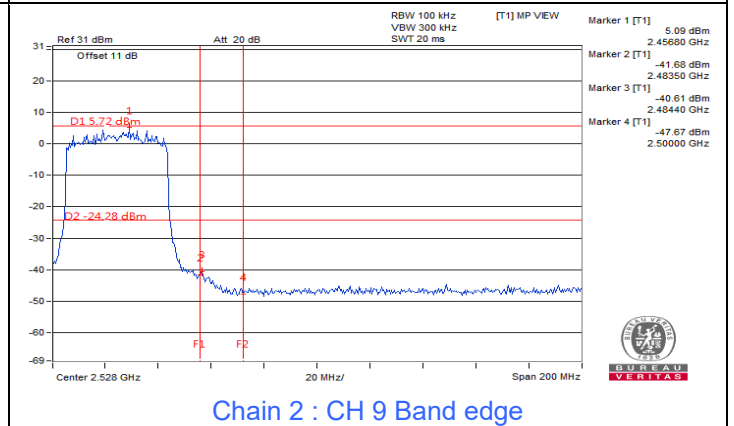
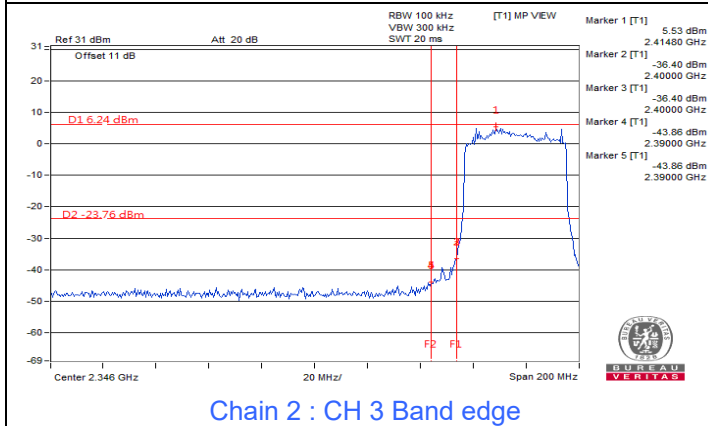
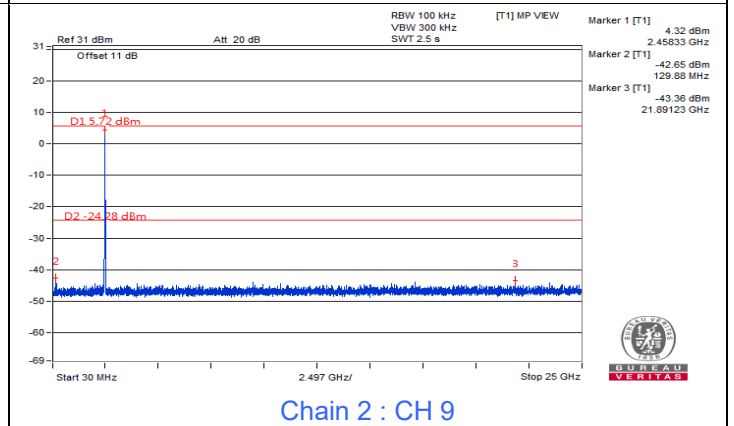
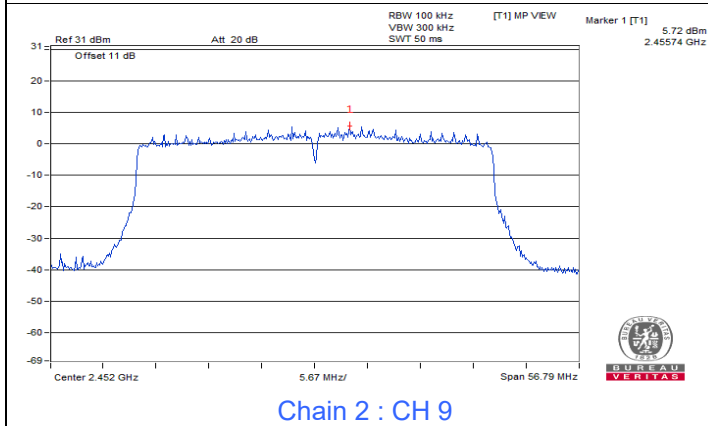
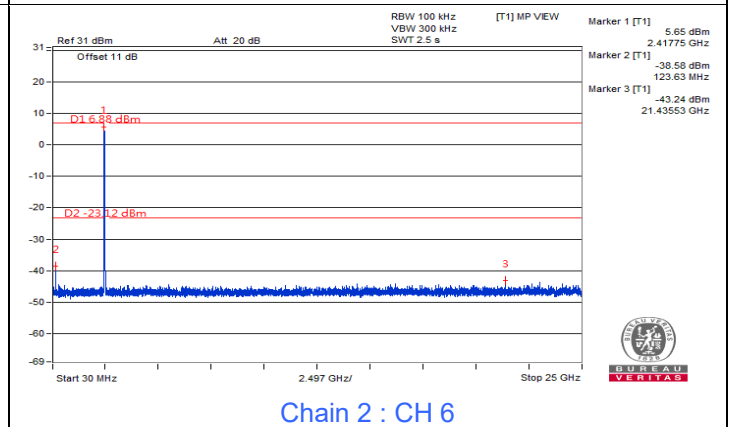
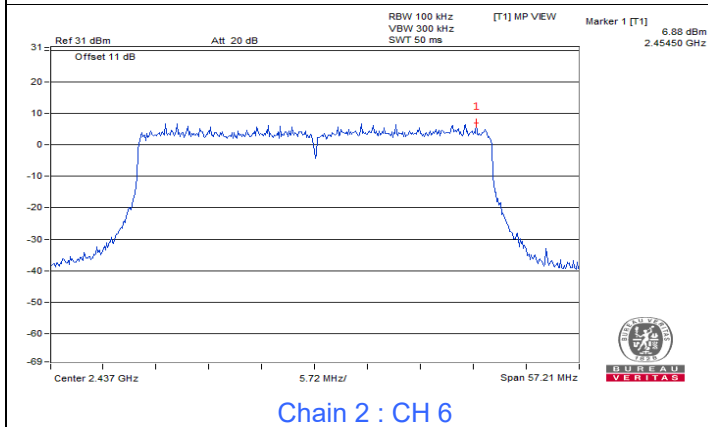
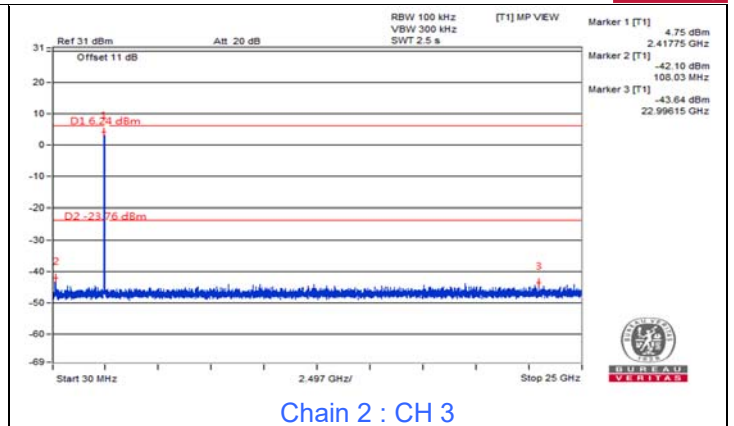
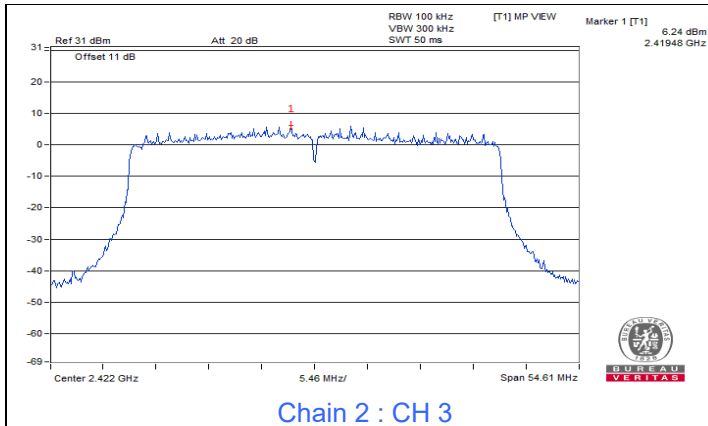


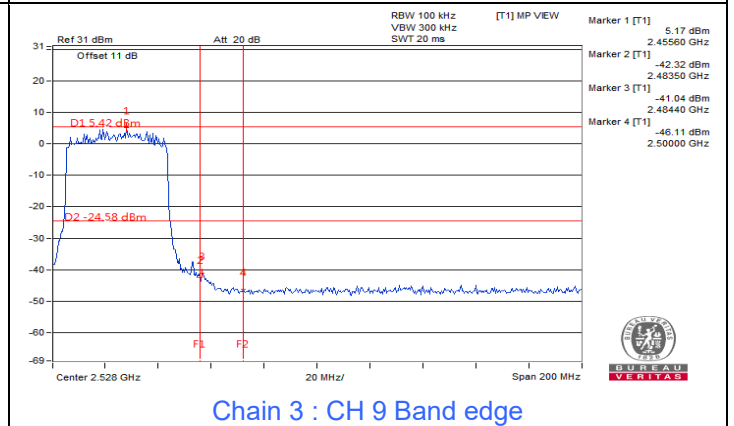
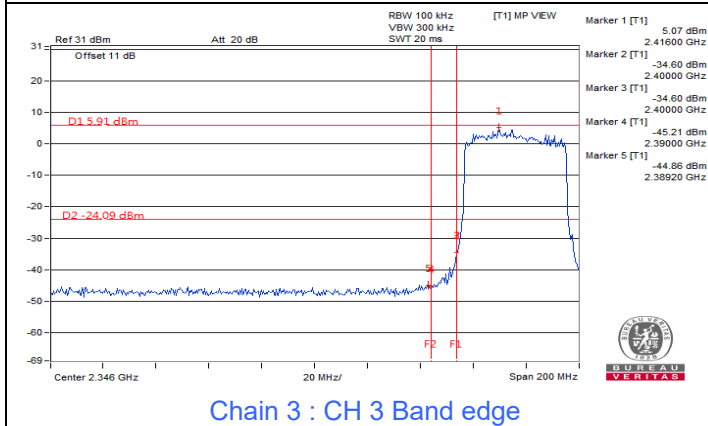
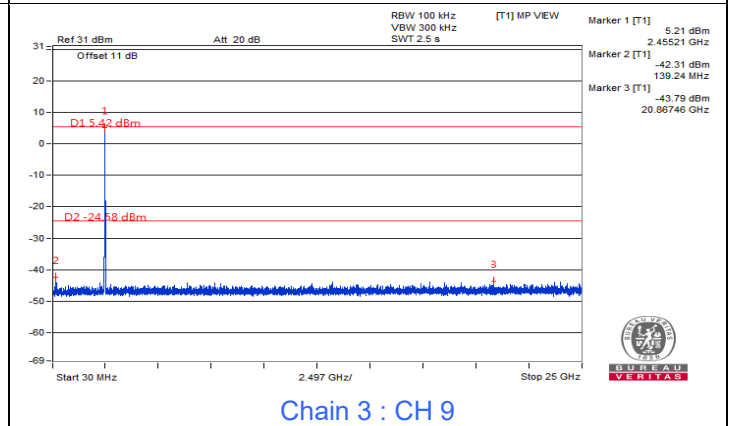
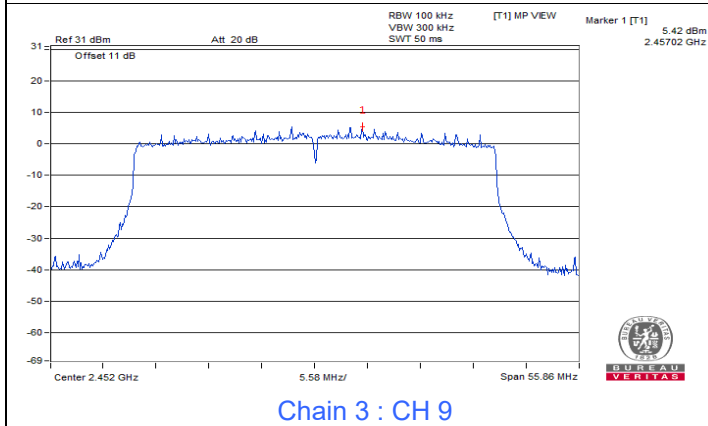
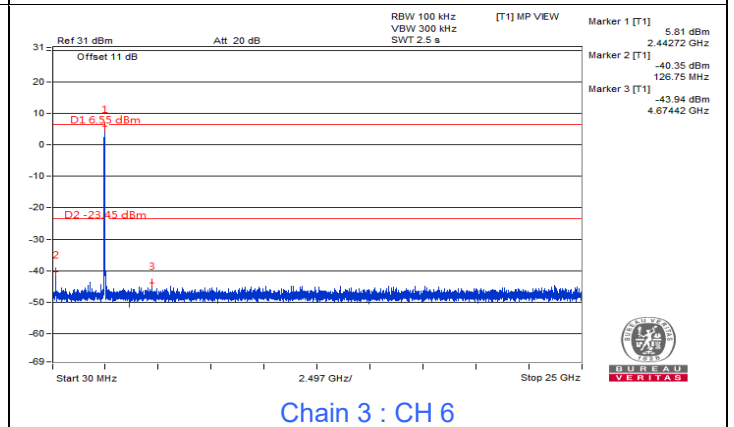
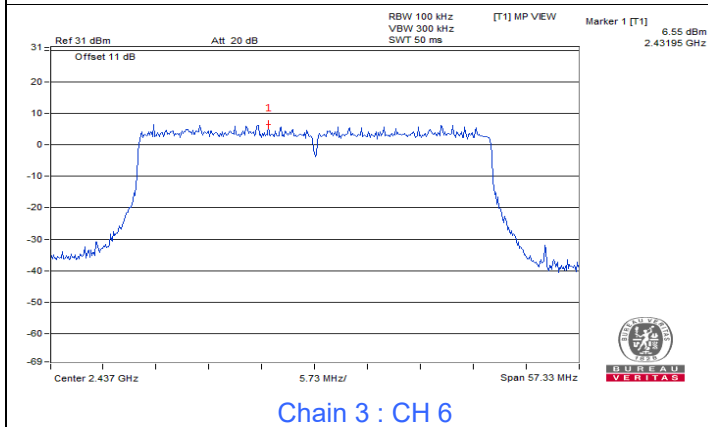
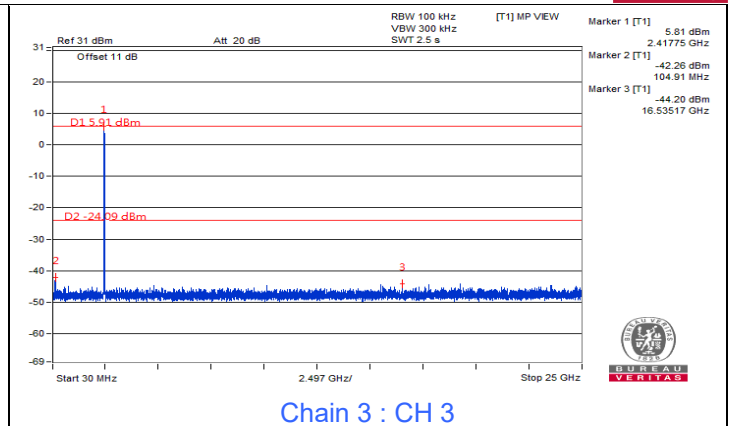
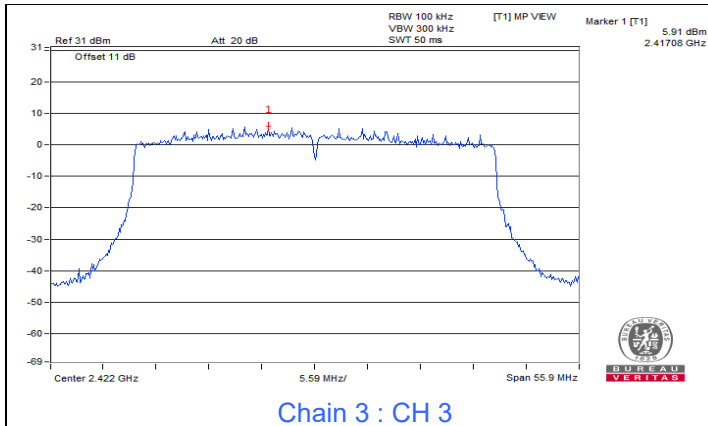


802.11ax (HE40)



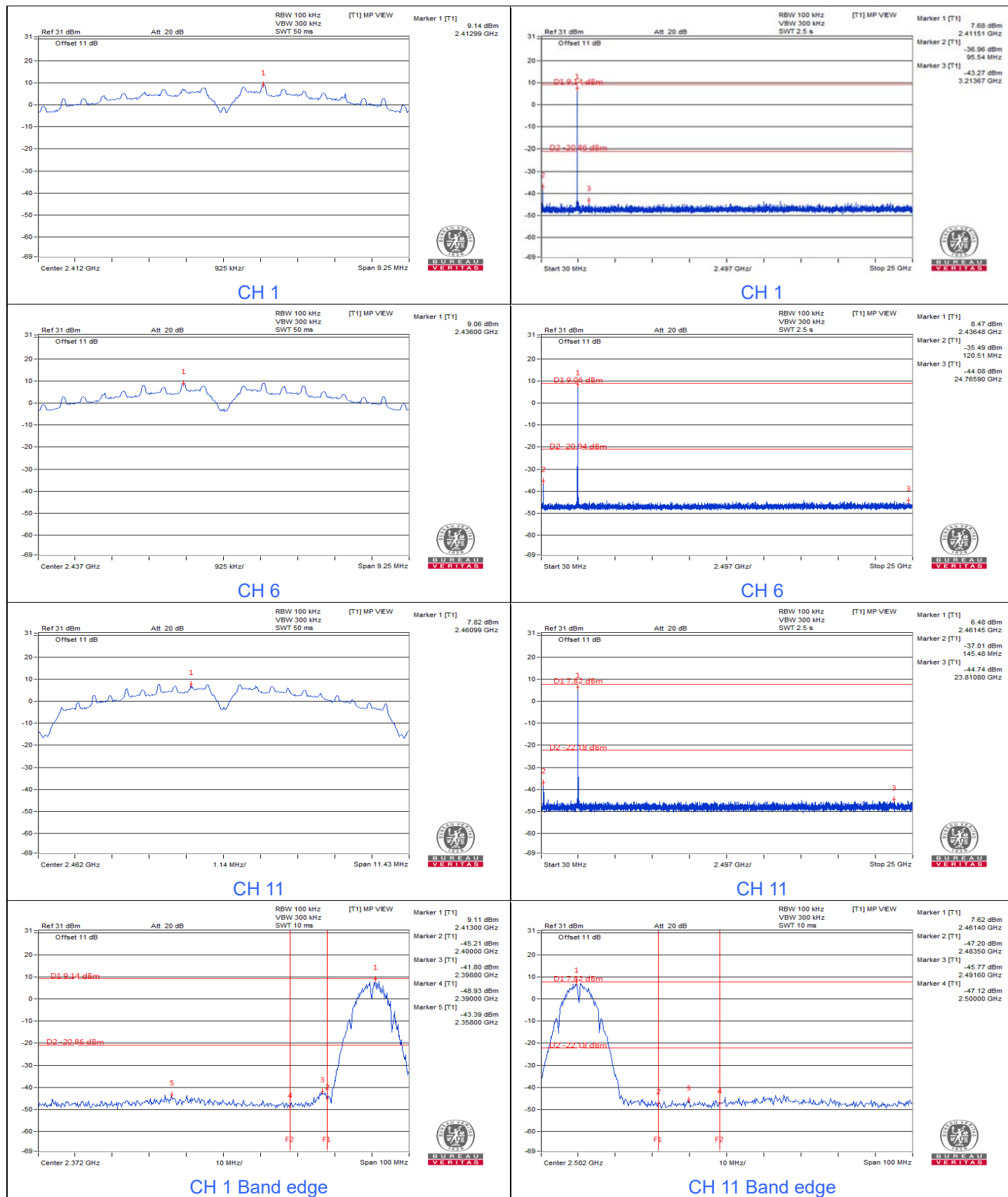




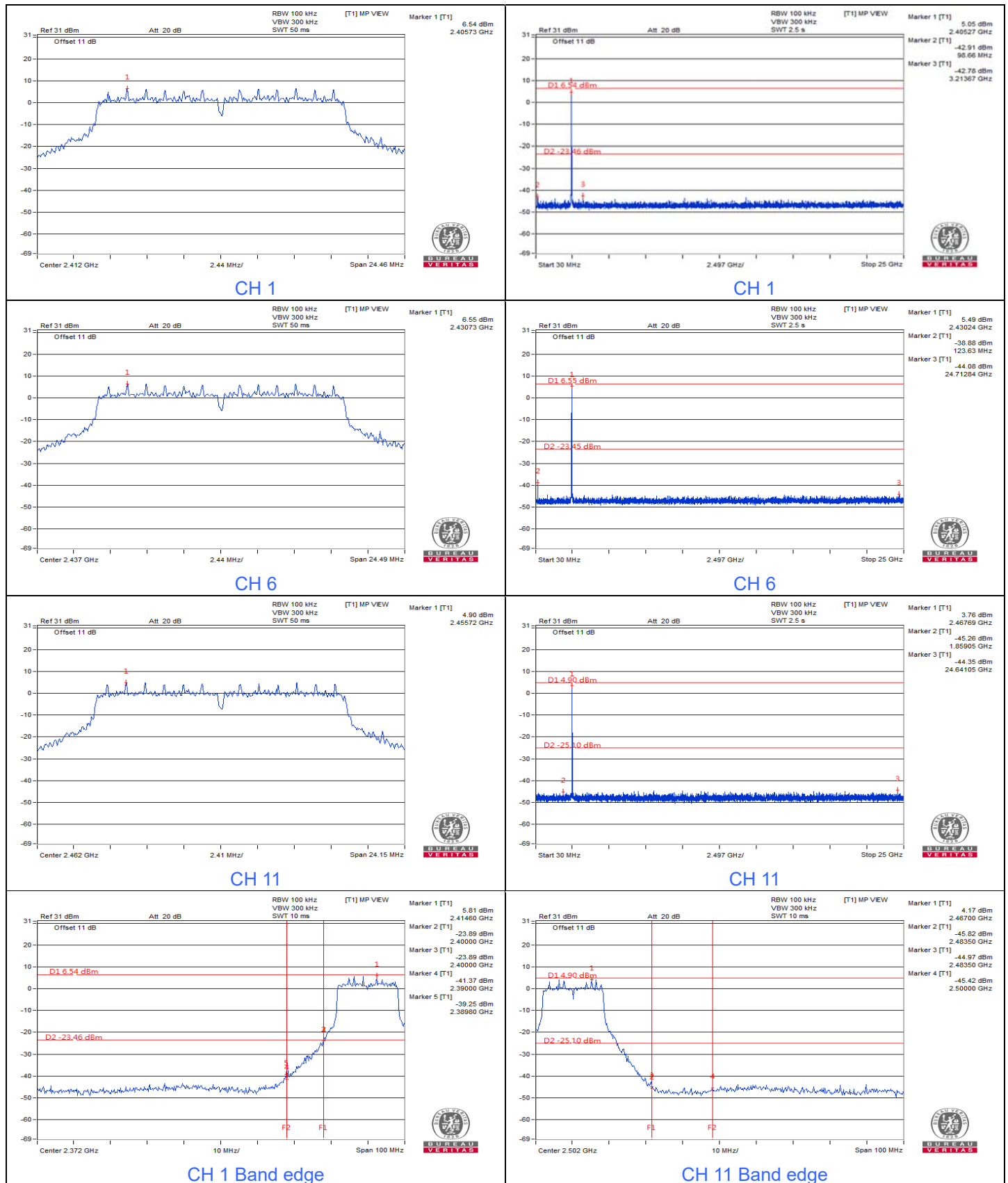


Mode B: Scan Radio 3: QCA-9889 Module

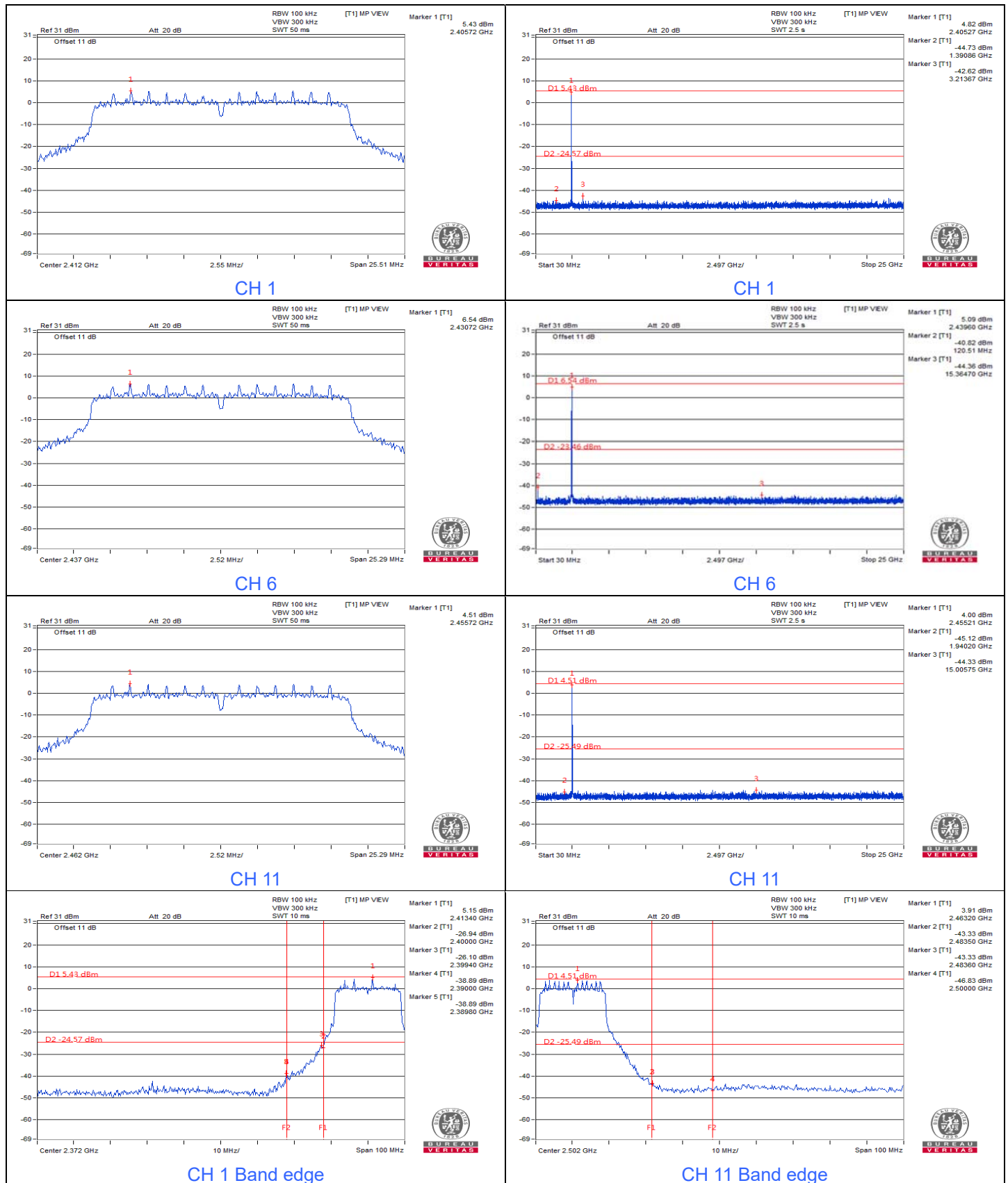
802.11b



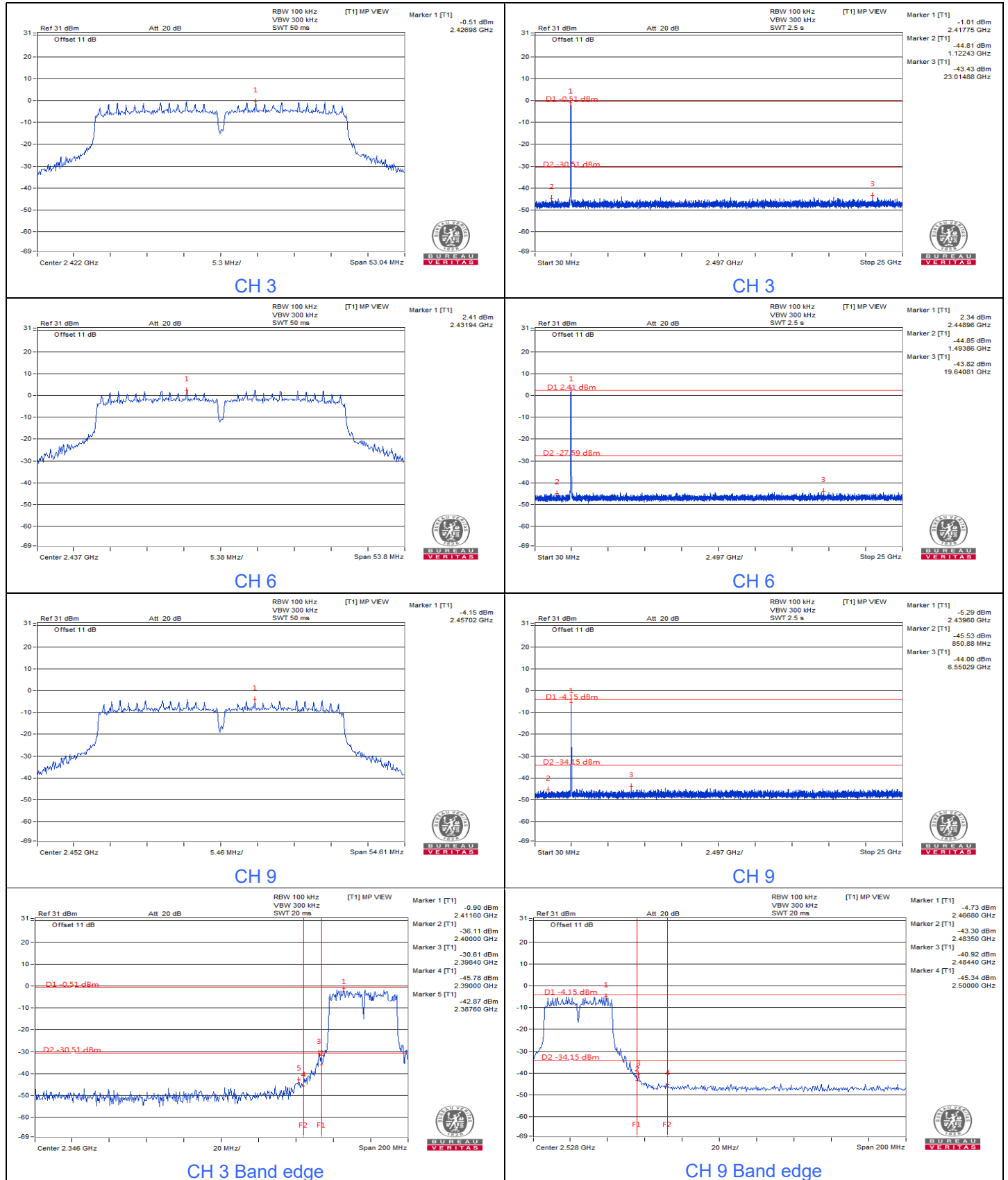
802.11g



VHT20



VHT40



7.5 AC Power Conducted Emissions

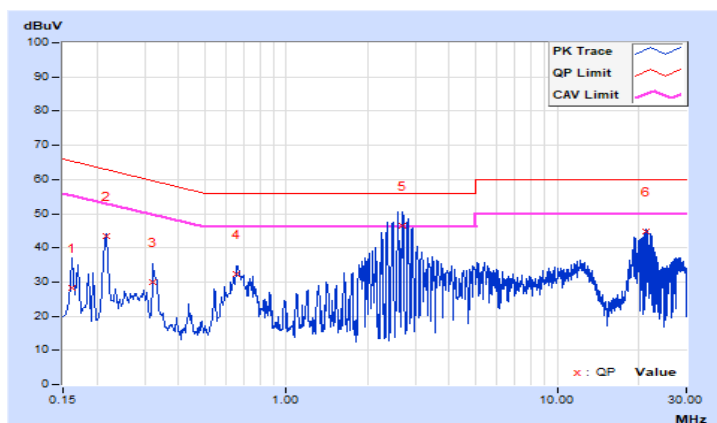
Mode A: 2.4GHz Radio 1: QCN-5124 Module

RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan Hsu		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16200	9.62	18.73	1.59	28.35	11.21	65.36	55.36	-37.01	-44.15
2	0.21800	9.64	33.95	22.33	43.59	31.97	62.89	52.89	-19.30	-20.92
3	0.32200	9.67	20.27	12.60	29.94	22.27	59.66	49.66	-29.72	-27.39
4	0.65763	9.69	22.60	16.75	32.29	26.44	56.00	46.00	-23.71	-19.56
5	2.69400	9.73	36.73	22.61	46.46	32.34	56.00	46.00	-9.54	-13.66
6	21.27800	9.87	34.95	34.88	44.82	44.75	60.00	50.00	-15.18	-5.25

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

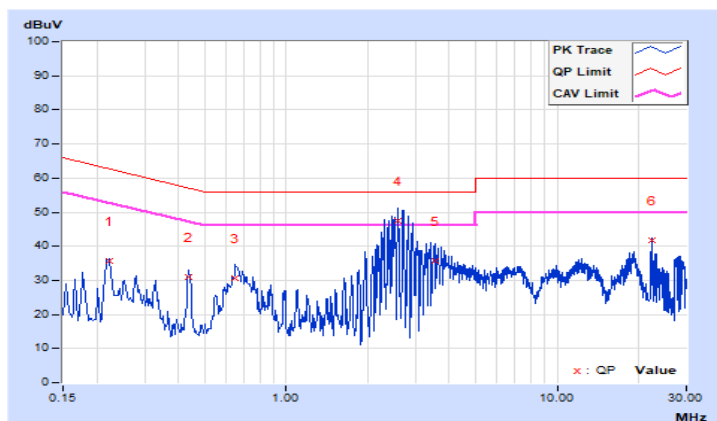


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan Hsu		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22152	9.65	26.02	24.47	35.67	34.12	62.76	52.76	-27.09	-18.64
2	0.43800	9.69	21.18	19.56	30.87	29.25	57.10	47.10	-26.23	-17.85
3	0.65000	9.69	20.81	16.28	30.50	25.97	56.00	46.00	-25.50	-20.03
4	2.59800	9.74	37.58	22.61	47.32	32.35	56.00	46.00	-8.68	-13.65
5	3.53000	9.75	25.79	8.97	35.54	18.72	56.00	46.00	-20.46	-27.28
6	22.27800	9.89	31.98	30.10	41.87	39.99	60.00	50.00	-18.13	-10.01

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



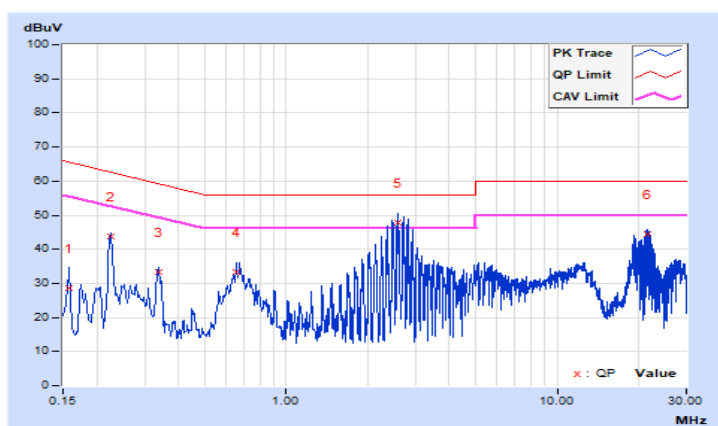
Mode B: Scan Radio 3: QCA-9889 Module

RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan Hsu		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	9.62	18.87	3.47	28.49	13.09	65.57	55.57	-37.08	-42.48
2	0.22565	9.65	34.03	22.70	43.68	32.35	62.61	52.61	-18.93	-20.26
3	0.33767	9.67	23.57	20.73	33.24	30.40	59.26	49.26	-26.02	-18.86
4	0.65400	9.69	23.54	16.09	33.23	25.78	56.00	46.00	-22.77	-20.22
5	2.57800	9.73	38.24	24.11	47.97	33.84	56.00	46.00	-8.03	-12.16
6	21.47800	9.87	34.68	33.54	44.55	43.41	60.00	50.00	-15.45	-6.59

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

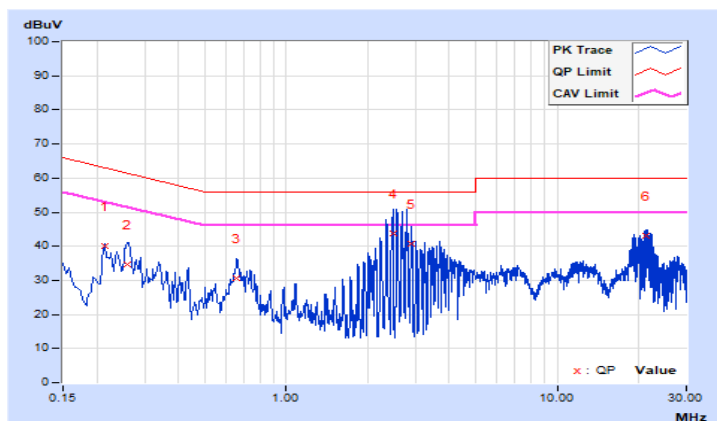


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan Hsu		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21400	9.64	30.39	24.51	40.03	34.15	63.05	53.05	-23.02	-18.90
2	0.25946	9.65	24.90	18.80	34.55	28.45	61.45	51.45	-26.90	-23.00
3	0.65400	9.69	20.99	16.75	30.68	26.44	56.00	46.00	-25.32	-19.56
4	2.47400	9.73	34.02	19.83	43.75	29.56	56.00	46.00	-12.25	-16.44
5	2.89800	9.74	31.03	17.53	40.77	27.27	56.00	46.00	-15.23	-18.73
6	21.18200	9.89	33.34	31.70	43.23	41.59	60.00	50.00	-16.77	-8.41

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



7.6 Unwanted Emissions below 1 GHz

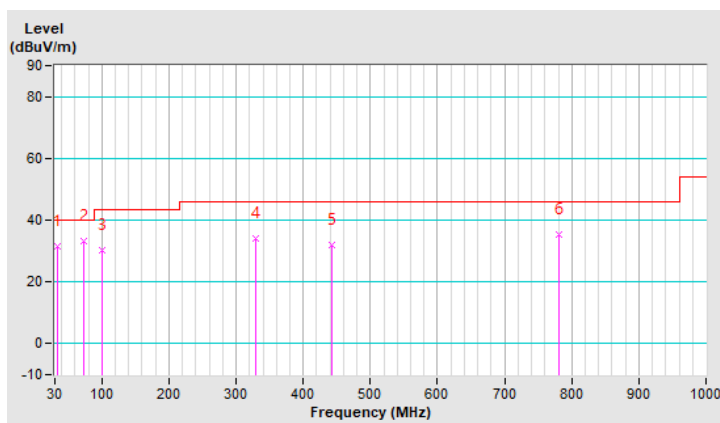
Mode A: 2.4GHz Radio 1: QCN-5124 Module

RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	33.88	31.5 QP	40.0	-8.5	1.00 H	50	41.6	-10.1
2	73.65	33.3 QP	40.0	-6.7	1.00 H	167	44.7	-11.4
3	100.81	30.1 QP	43.5	-13.4	1.00 H	242	43.3	-13.2
4	328.76	34.0 QP	46.0	-12.0	1.00 H	20	40.7	-6.7
5	442.25	32.0 QP	46.0	-14.0	1.00 H	50	37.0	-5.0
6	780.78	35.3 QP	46.0	-10.7	1.00 H	230	32.9	2.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

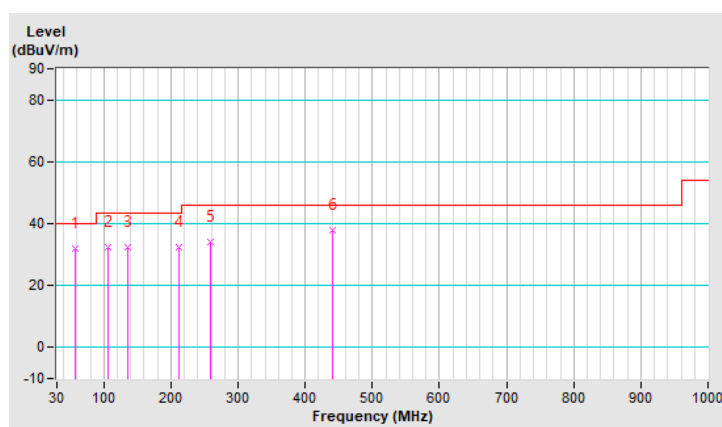


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	57.16	32.1 QP	40.0	-7.9	1.00 V	58	41.3	-9.2
2	106.63	32.3 QP	43.5	-11.2	1.00 V	111	44.4	-12.1
3	134.76	32.4 QP	43.5	-11.1	1.00 V	166	41.9	-9.5
4	211.39	32.4 QP	43.5	-11.1	1.00 V	111	43.6	-11.2
5	258.92	33.9 QP	46.0	-12.1	1.99 V	166	42.8	-8.9
6	441.28	38.0 QP	46.0	-8.0	1.00 V	56	43.0	-5.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



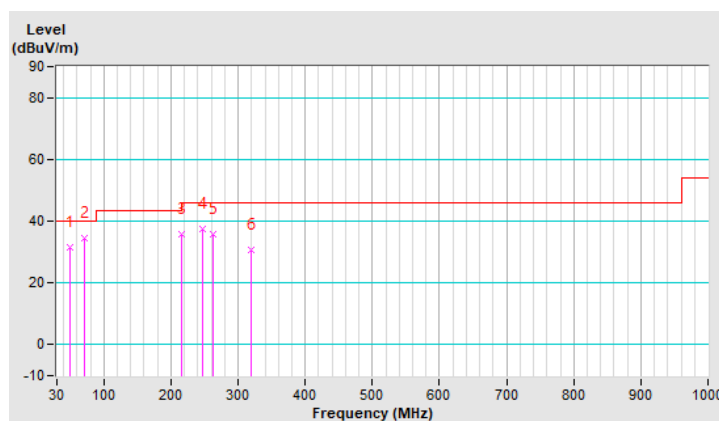
Mode B: Scan Radio 3: QCA-9889 Module

RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	49.40	31.4 QP	40.0	-8.6	1.01 H	168	40.2	-8.8
2	70.74	34.6 QP	40.0	-5.4	1.01 H	172	45.5	-10.9
3	216.24	35.9 QP	46.0	-10.1	1.01 H	109	47.1	-11.2
4	246.31	37.6 QP	46.0	-8.4	1.01 H	6	46.9	-9.3
5	261.83	35.6 QP	46.0	-10.4	1.01 H	6	44.3	-8.7
6	319.06	30.7 QP	46.0	-15.3	1.01 H	56	37.7	-7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

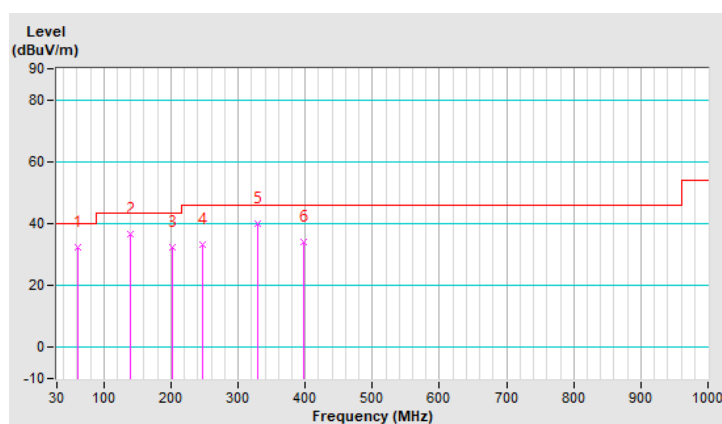


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	61.04	32.4 QP	40.0	-7.6	1.00 V	68	42.1	-9.7
2	139.61	36.5 QP	43.5	-7.0	1.49 V	16	45.7	-9.2
3	201.69	32.5 QP	43.5	-11.0	1.00 V	167	43.9	-11.4
4	246.31	33.2 QP	46.0	-12.8	1.00 V	70	42.5	-9.3
5	329.73	39.9 QP	46.0	-6.1	1.00 V	52	46.6	-6.7
6	398.60	34.2 QP	46.0	-11.8	1.00 V	68	40.1	-5.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



7.7 Unwanted Emissions above 1 GHz

Mode A: 2.4GHz Radio 1: QCN-5124 Module

RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.6 PK	74.0	-14.4	1.97 H	50	24.7	34.9
2	2390.00	46.8 AV	54.0	-7.2	1.97 H	50	11.9	34.9
3	*2412.00	119.7 PK			1.97 H	50	84.8	34.9
4	*2412.00	117.2 AV			1.97 H	50	82.3	34.9
5	4824.00	51.9 PK	74.0	-22.1	2.50 H	305	38.4	13.5
6	4824.00	40.3 AV	54.0	-13.7	2.50 H	305	26.8	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.7 PK	74.0	-14.3	1.38 V	31	24.8	34.9
2	2390.00	46.1 AV	54.0	-7.9	1.38 V	31	11.2	34.9
3	*2412.00	115.4 PK			1.38 V	31	80.5	34.9
4	*2412.00	112.8 AV			1.38 V	31	77.9	34.9
5	4824.00	51.4 PK	74.0	-22.6	1.67 V	213	37.9	13.5
6	4824.00	39.3 AV	54.0	-14.7	1.67 V	213	25.8	13.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	120.0 PK			1.97 H	50	85.3	34.7
2	*2437.00	117.5 AV			1.97 H	50	82.8	34.7
3	4874.00	52.4 PK	74.0	-21.6	2.49 H	308	39.1	13.3
4	4874.00	40.6 AV	54.0	-13.4	2.49 H	308	27.3	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	115.7 PK			1.39 V	32	81.0	34.7
2	*2437.00	113.2 AV			1.39 V	32	78.5	34.7
3	4874.00	51.8 PK	74.0	-22.2	1.72 V	216	38.5	13.3
4	4874.00	39.6 AV	54.0	-14.4	1.72 V	216	26.3	13.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	121.8 PK			1.89 H	48	87.1	34.7
2	*2462.00	119.3 AV			1.89 H	48	84.6	34.7
3	2483.50	60.1 PK	74.0	-13.9	1.89 H	48	25.4	34.7
4	2483.50	48.8 AV	54.0	-5.2	1.89 H	48	14.1	34.7
5	4924.00	51.9 PK	74.0	-22.1	2.47 H	302	38.8	13.1
6	4924.00	40.3 AV	54.0	-13.7	2.47 H	302	27.2	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	117.5 PK			1.39 V	30	82.8	34.7
2	*2462.00	115.0 AV			1.39 V	30	80.3	34.7
3	2483.50	59.8 PK	74.0	-14.2	1.39 V	30	25.1	34.7
4	2483.50	48.5 AV	54.0	-5.5	1.39 V	30	13.8	34.7
5	4924.00	51.3 PK	74.0	-22.7	1.69 V	225	38.2	13.1
6	4924.00	39.8 AV	54.0	-14.2	1.69 V	225	26.7	13.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.8 PK	74.0	-11.2	2.00 H	40	27.9	34.9
2	2390.00	49.5 AV	54.0	-4.5	2.00 H	40	14.6	34.9
3	*2412.00	122.1 PK			2.00 H	40	87.2	34.9
4	*2412.00	112.2 AV			2.00 H	40	77.3	34.9
5	4824.00	52.0 PK	74.0	-22.0	2.41 H	336	38.5	13.5
6	4824.00	38.8 AV	54.0	-15.2	2.41 H	336	25.3	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.2 PK	74.0	-13.8	2.06 V	22	25.3	34.9
2	2390.00	47.7 AV	54.0	-6.3	2.06 V	22	12.8	34.9
3	*2412.00	118.6 PK			2.06 V	22	83.7	34.9
4	*2412.00	109.5 AV			2.06 V	22	74.6	34.9
5	4824.00	51.8 PK	74.0	-22.2	1.63 V	223	38.3	13.5
6	4824.00	38.6 AV	54.0	-15.4	1.63 V	223	25.1	13.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	121.8 PK			1.57 H	42	87.1	34.7
2	*2437.00	111.9 AV			1.57 H	42	77.2	34.7
3	4874.00	51.9 PK	74.0	-22.1	2.46 H	330	38.6	13.3
4	4874.00	38.8 AV	54.0	-15.2	2.46 H	330	25.5	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	117.7 PK			2.09 V	36	83.0	34.7
2	*2437.00	107.6 AV			2.09 V	36	72.9	34.7
3	4874.00	51.6 PK	74.0	-22.4	1.69 V	215	38.3	13.3
4	4874.00	38.3 AV	54.0	-15.7	1.69 V	215	25.0	13.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	123.4 PK			1.53 H	41	88.7	34.7
2	*2462.00	113.3 AV			1.53 H	41	78.6	34.7
3	2483.50	70.2 PK	74.0	-3.8	1.53 H	41	35.5	34.7
4	2483.50	53.8 AV	54.0	-0.2	1.53 H	41	19.1	34.7
5	4924.00	51.9 PK	74.0	-22.1	2.31 H	334	38.8	13.1
6	4924.00	38.7 AV	54.0	-15.3	2.31 H	334	25.6	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	121.2 PK			3.09 V	8	86.5	34.7
2	*2462.00	111.6 AV			3.09 V	8	76.9	34.7
3	2483.50	59.6 PK	74.0	-14.4	3.09 V	8	24.9	34.7
4	2483.50	48.5 AV	54.0	-5.5	3.09 V	8	13.8	34.7
5	4924.00	51.6 PK	74.0	-22.4	1.69 V	225	38.5	13.1
6	4924.00	38.5 AV	54.0	-15.5	1.69 V	225	25.4	13.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	2.00 H	40	32.3	34.9
2	2390.00	53.4 AV	54.0	-0.6	2.00 H	40	18.5	34.9
3	*2412.00	124.9 PK			2.00 H	40	90.0	34.9
4	*2412.00	111.9 AV			2.00 H	40	77.0	34.9
5	4824.00	52.1 PK	74.0	-21.9	2.29 H	337	38.6	13.5
6	4824.00	38.9 AV	54.0	-15.1	2.29 H	337	25.4	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.8 PK	74.0	-10.2	3.11 V	11	28.9	34.9
2	2390.00	48.5 AV	54.0	-5.5	3.11 V	11	13.6	34.9
3	*2412.00	123.7 PK			3.11 V	11	88.8	34.9
4	*2412.00	110.7 AV			3.11 V	11	75.8	34.9
5	4824.00	51.8 PK	74.0	-22.2	1.69 V	221	38.3	13.5
6	4824.00	38.5 AV	54.0	-15.5	1.69 V	221	25.0	13.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	125.0 PK			2.01 H	40	90.3	34.7
2	*2437.00	112.0 AV			2.01 H	40	77.3	34.7
3	4874.00	51.9 PK	74.0	-22.1	2.31 H	332	38.6	13.3
4	4874.00	38.8 AV	54.0	-15.2	2.31 H	332	25.5	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	123.8 PK			2.09 V	24	89.1	34.7
2	*2437.00	110.7 AV			2.09 V	24	76.0	34.7
3	4874.00	51.5 PK	74.0	-22.5	1.61 V	224	38.2	13.3
4	4874.00	38.5 AV	54.0	-15.5	1.61 V	224	25.2	13.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	125.1 PK			1.98 H	37	90.4	34.7
2	*2462.00	112.2 AV			1.98 H	37	77.5	34.7
3	2483.50	64.8 PK	74.0	-9.2	1.98 H	37	30.1	34.7
4	2483.50	52.3 AV	54.0	-1.7	1.98 H	37	17.6	34.7
5	4924.00	51.9 PK	74.0	-22.1	2.27 H	336	38.8	13.1
6	4924.00	38.7 AV	54.0	-15.3	2.27 H	336	25.6	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	123.2 PK			3.31 V	8	88.5	34.7
2	*2462.00	111.0 AV			3.31 V	8	76.3	34.7
3	2486.30	66.6 PK	74.0	-7.4	3.31 V	8	31.9	34.7
4	2486.30	52.0 AV	54.0	-2.0	3.31 V	8	17.3	34.7
5	4924.00	51.6 PK	74.0	-22.4	1.68 V	224	38.5	13.1
6	4924.00	38.4 AV	54.0	-15.6	1.68 V	224	25.3	13.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2385.16	64.9 PK	74.0	-9.1	2.39 H	38	30.0	34.9
2	2385.16	50.6 AV	54.0	-3.4	2.39 H	38	15.7	34.9
3	*2422.00	120.2 PK			2.39 H	38	85.3	34.9
4	*2422.00	107.3 AV			2.39 H	38	72.4	34.9
5	4844.00	52.0 PK	74.0	-22.0	2.24 H	331	38.6	13.4
6	4844.00	39.2 AV	54.0	-14.8	2.24 H	331	25.8	13.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.0 PK	74.0	-6.0	3.23 V	12	33.1	34.9
2	2390.00	53.8 AV	54.0	-0.2	3.23 V	12	18.9	34.9
3	*2422.00	119.3 PK			3.23 V	12	84.4	34.9
4	*2422.00	107.1 AV			3.23 V	12	72.2	34.9
5	4844.00	51.9 PK	74.0	-22.1	1.69 V	225	38.5	13.4
6	4844.00	38.8 AV	54.0	-15.2	1.69 V	225	25.4	13.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	64.1 PK	74.0	-9.9	1.00 H	32	29.2	34.9
2	2390.00	52.0 AV	54.0	-2.0	1.00 H	32	17.1	34.9
3	*2437.00	123.1 PK			1.00 H	32	88.4	34.7
4	*2437.00	110.8 AV			1.00 H	32	76.1	34.7
5	2483.50	65.5 PK	74.0	-8.5	1.00 H	32	30.8	34.7
6	2483.50	53.7 AV	54.0	-0.3	1.00 H	32	19.0	34.7
7	4874.00	51.8 PK	74.0	-22.2	2.20 H	329	38.5	13.3
8	4874.00	39.2 AV	54.0	-14.8	2.20 H	329	25.9	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.9 PK	74.0	-11.1	2.03 V	17	28.0	34.9
2	2390.00	50.4 AV	54.0	-3.6	2.03 V	17	15.5	34.9
3	*2437.00	119.1 PK			2.03 V	17	84.4	34.7
4	*2437.00	107.4 AV			2.03 V	17	72.7	34.7
5	2483.50	60.1 PK	74.0	-13.9	2.03 V	17	25.4	34.7
6	2483.50	48.8 AV	54.0	-5.2	2.03 V	17	14.1	34.7
7	4874.00	51.5 PK	74.0	-22.5	1.63 V	217	38.2	13.3
8	4874.00	38.9 AV	54.0	-15.1	1.63 V	217	25.6	13.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

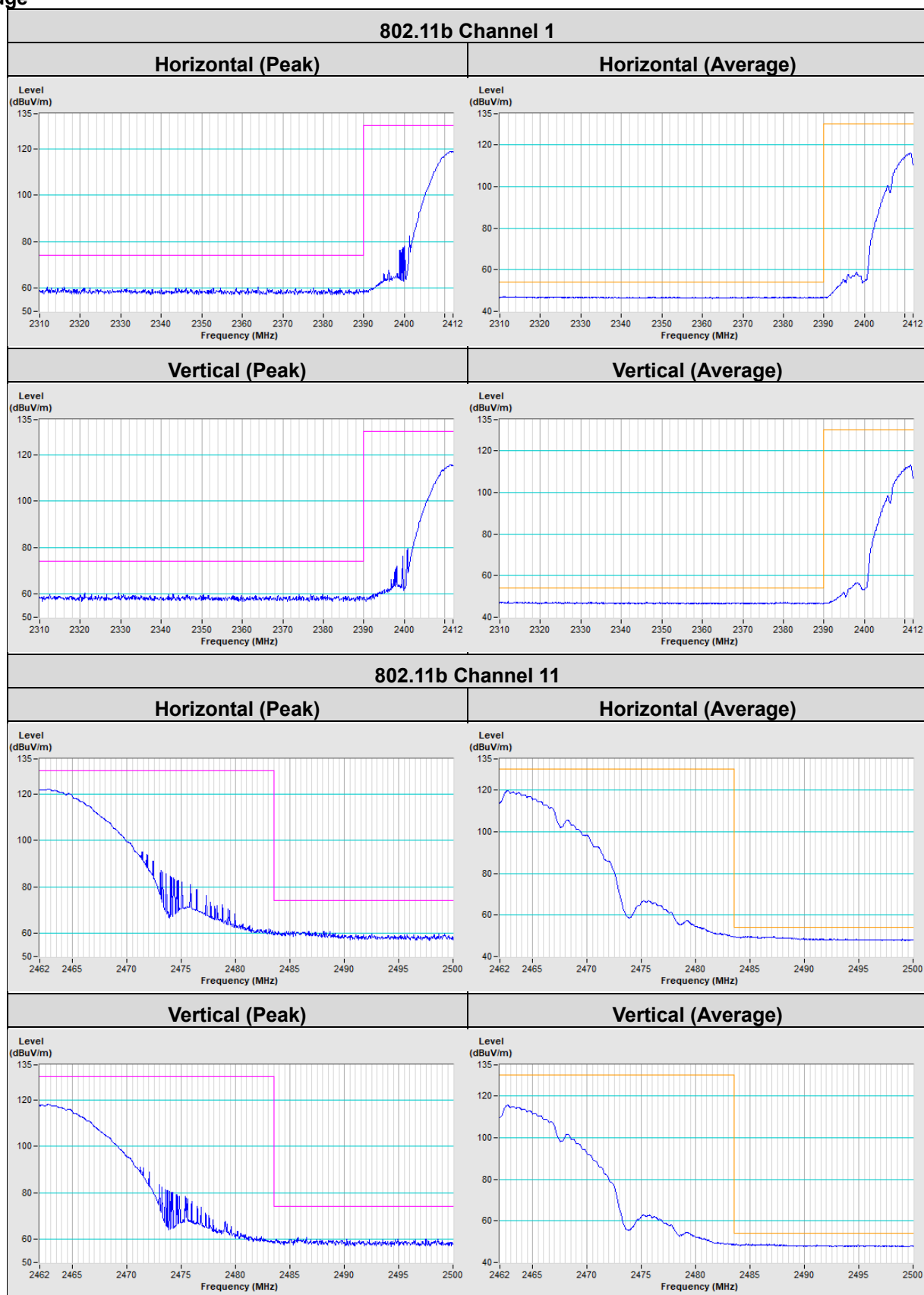
RF Mode	802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

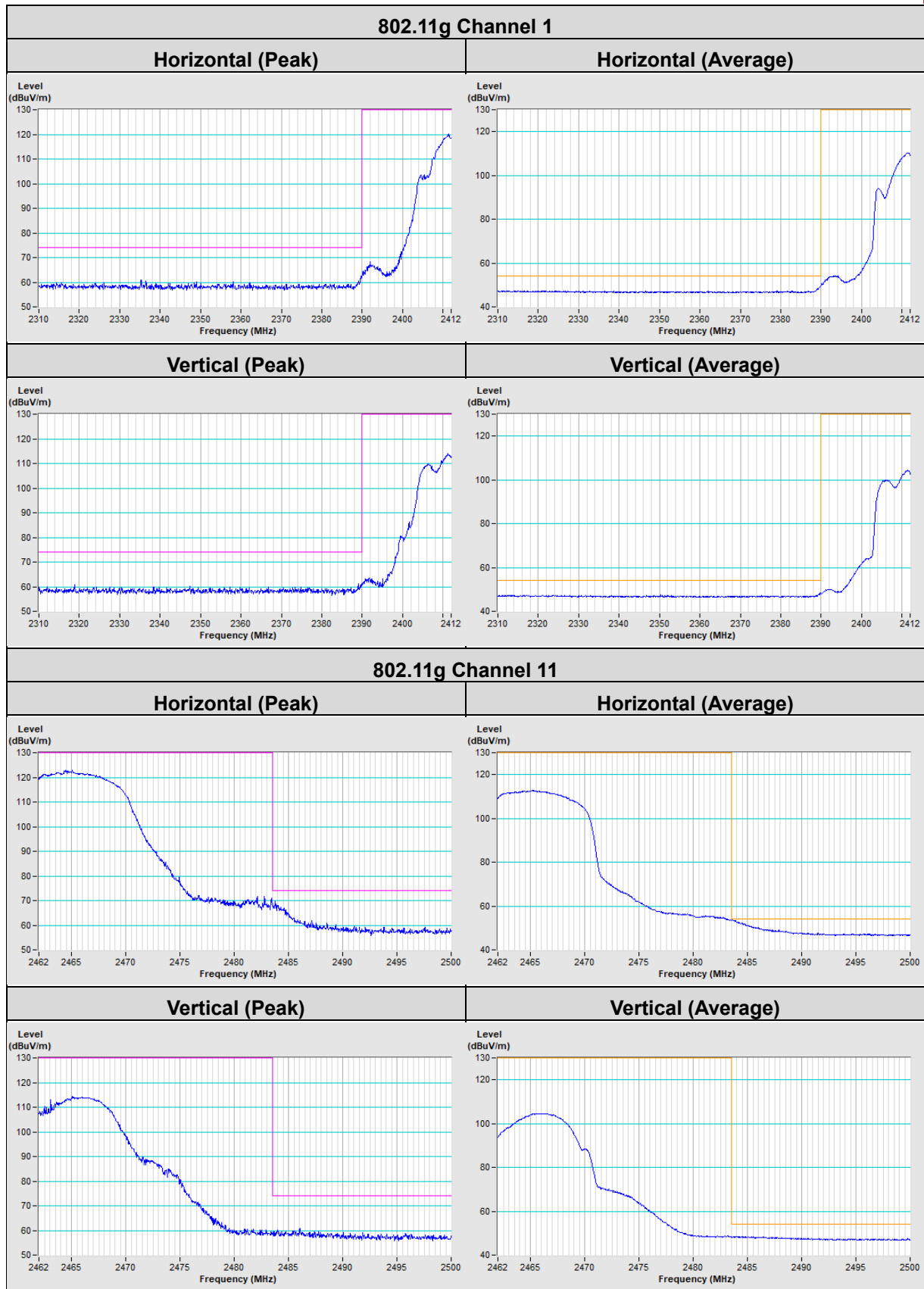
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	121.4 PK			2.13 H	36	86.7	34.7
2	*2452.00	109.0 AV			2.13 H	36	74.3	34.7
3	2487.90	66.5 PK	74.0	-7.5	2.13 H	36	31.8	34.7
4	2487.90	53.5 AV	54.0	-0.5	2.13 H	36	18.8	34.7
5	4904.00	51.8 PK	74.0	-22.2	2.34 H	325	38.5	13.3
6	4904.00	39.1 AV	54.0	-14.9	2.34 H	325	25.8	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	120.3 PK			3.54 V	2	85.6	34.7
2	*2452.00	107.6 AV			3.54 V	2	72.9	34.7
3	2488.10	68.1 PK	74.0	-5.9	3.54 V	2	33.4	34.7
4	2488.10	52.4 AV	54.0	-1.6	3.54 V	2	17.7	34.7
5	4904.00	51.5 PK	74.0	-22.5	1.74 V	224	38.2	13.3
6	4904.00	38.6 AV	54.0	-15.4	1.74 V	224	25.3	13.3

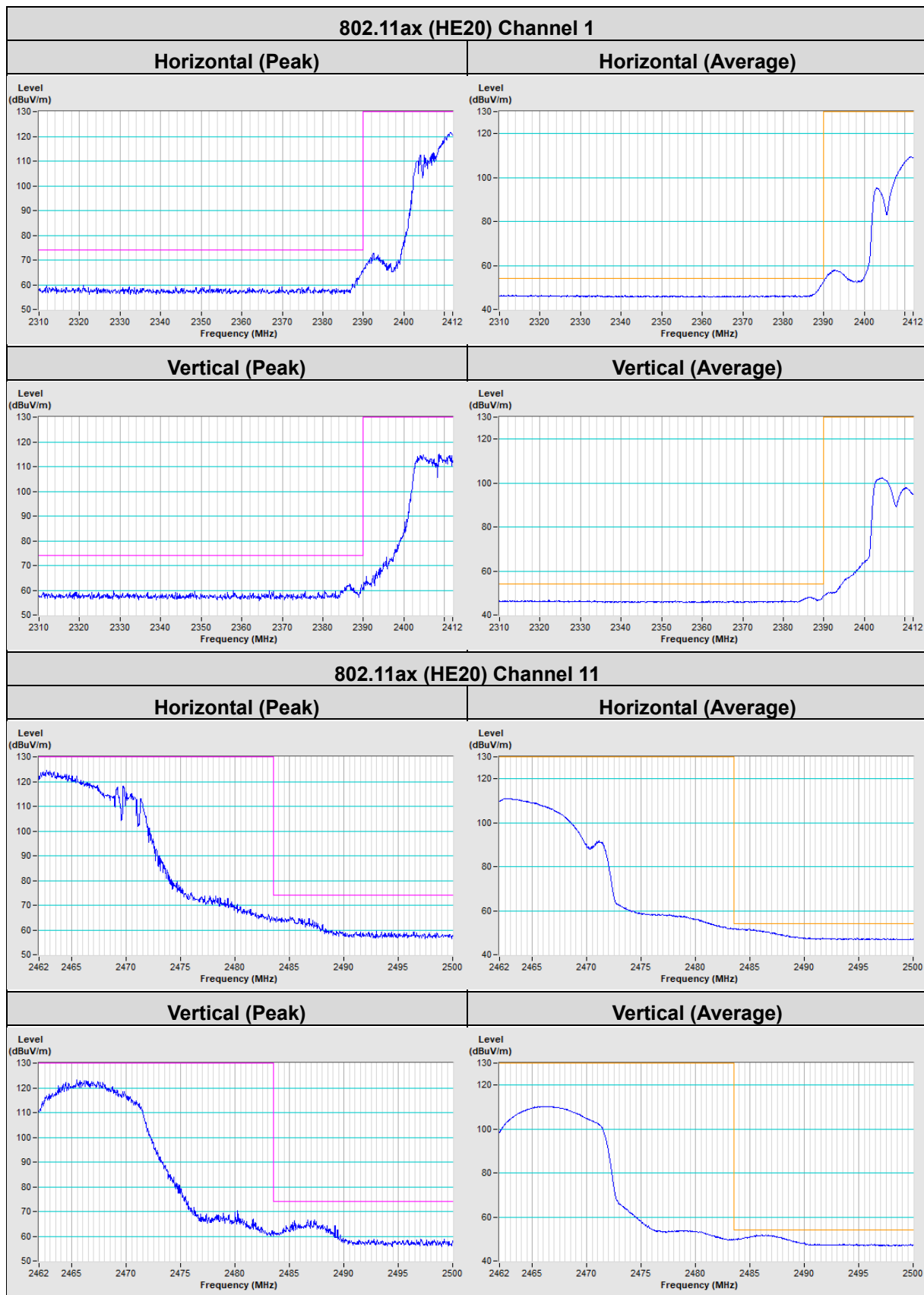
Remarks:

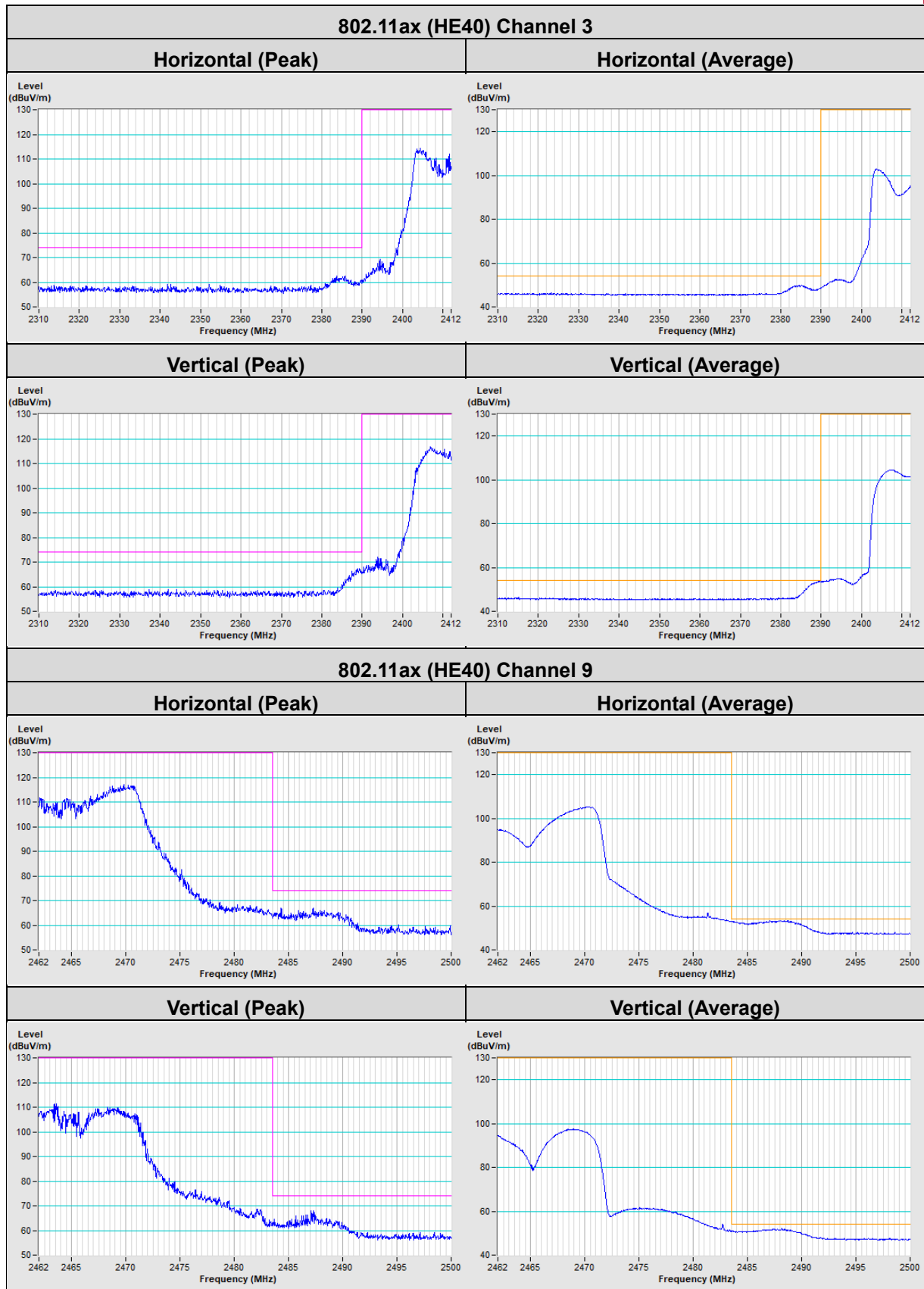
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

Band Edge









Mode B: Scan Radio 3: QCA-9889 Module

RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.8 PK	74.0	-14.2	1.49 H	318	24.9	34.9
2	2390.00	47.1 AV	54.0	-6.9	1.49 H	318	12.2	34.9
3	*2412.00	108.8 PK			1.49 H	318	73.9	34.9
4	*2412.00	106.0 AV			1.49 H	318	71.1	34.9
5	2483.50	60.5 PK	74.0	-13.5	1.49 H	318	25.8	34.7
6	2483.50	50.7 AV	54.0	-3.3	1.49 H	318	16.0	34.7
7	4824.00	57.5 PK	74.0	-16.5	1.52 H	12	44.0	13.5
8	4824.00	53.5 AV	54.0	-0.5	1.52 H	12	40.0	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.6 PK	74.0	-14.4	3.89 V	19	24.7	34.9
2	2390.00	46.9 AV	54.0	-7.1	3.89 V	19	12.0	34.9
3	*2412.00	105.1 PK			3.89 V	19	70.2	34.9
4	*2412.00	102.4 AV			3.89 V	19	67.5	34.9
5	2483.50	59.2 PK	74.0	-14.8	3.89 V	19	24.5	34.7
6	2483.50	48.3 AV	54.0	-5.7	3.89 V	19	13.6	34.7
7	4824.00	55.3 PK	74.0	-18.7	1.26 V	15	41.8	13.5
8	4824.00	50.5 AV	54.0	-3.5	1.26 V	15	37.0	13.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.3 PK			1.29 H	314	75.6	34.7
2	*2437.00	107.6 AV			1.29 H	314	72.9	34.7
3	2483.50	62.0 PK	74.0	-12.0	1.29 H	314	27.3	34.7
4	2483.50	52.2 AV	54.0	-1.8	1.29 H	314	17.5	34.7
5	4874.00	55.7 PK	74.0	-18.3	1.55 H	10	42.4	13.3
6	4874.00	52.3 AV	54.0	-1.7	1.55 H	10	39.0	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	108.8 PK			3.82 V	38	74.1	34.7
2	*2437.00	106.4 AV			3.82 V	38	71.7	34.7
3	2483.50	60.5 PK	74.0	-13.5	3.82 V	38	25.8	34.7
4	2483.50	48.0 AV	54.0	-6.0	3.82 V	38	13.3	34.7
5	4874.00	53.5 PK	74.0	-20.5	1.22 V	25	40.2	13.3
6	4874.00	49.5 AV	54.0	-4.5	1.22 V	25	36.2	13.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.7 PK			1.28 H	311	76.0	34.7
2	*2462.00	107.9 AV			1.28 H	311	73.2	34.7
3	2483.50	62.1 PK	74.0	-11.9	1.28 H	311	27.4	34.7
4	2483.50	53.1 AV	54.0	-0.9	1.28 H	311	18.4	34.7
5	4924.00	52.3 PK	74.0	-21.7	1.57 H	9	39.2	13.1
6	4924.00	46.1 AV	54.0	-7.9	1.57 H	9	33.0	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	107.5 PK			3.71 V	16	72.8	34.7
2	*2462.00	105.0 AV			3.71 V	16	70.3	34.7
3	2483.50	60.8 PK	74.0	-13.2	3.71 V	16	26.1	34.7
4	2483.50	50.1 AV	54.0	-3.9	3.71 V	16	15.4	34.7
5	4924.00	52.1 PK	74.0	-21.9	1.26 V	19	39.0	13.1
6	4924.00	43.7 AV	54.0	-10.3	1.26 V	19	30.6	13.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.6 PK	74.0	-7.4	1.35 H	310	31.7	34.9
2	2390.00	53.7 AV	54.0	-0.3	1.35 H	310	18.8	34.9
3	*2412.00	108.9 PK			1.35 H	310	74.0	34.9
4	*2412.00	98.9 AV			1.35 H	310	64.0	34.9
5	4824.00	54.0 PK	74.0	-20.0	1.46 H	8	40.5	13.5
6	4824.00	41.4 AV	54.0	-12.6	1.46 H	8	27.9	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	65.6 PK	74.0	-8.4	2.80 V	24	30.7	34.9
2	2390.00	51.6 AV	54.0	-2.4	2.80 V	24	16.7	34.9
3	*2412.00	104.9 PK			2.80 V	24	70.0	34.9
4	*2412.00	95.4 AV			2.80 V	24	60.5	34.9
5	4824.00	53.3 PK	74.0	-20.7	1.16 V	19	39.8	13.5
6	4824.00	40.2 AV	54.0	-13.8	1.16 V	19	26.7	13.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	112.0 PK			1.52 H	318	77.3	34.7
2	*2437.00	101.9 AV			1.52 H	318	67.2	34.7
3	4874.00	53.3 PK	74.0	-20.7	1.48 H	10	40.0	13.3
4	4874.00	40.6 AV	54.0	-13.4	1.48 H	10	27.3	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.2 PK			3.02 V	39	74.5	34.7
2	*2437.00	99.2 AV			3.02 V	39	64.5	34.7
3	4874.00	52.9 PK	74.0	-21.1	1.19 V	18	39.6	13.3
4	4874.00	40.1 AV	54.0	-13.9	1.19 V	18	26.8	13.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	108.4 PK			1.47 H	315	73.7	34.7
2	*2462.00	98.6 AV			1.47 H	315	63.9	34.7
3	2483.50	66.4 PK	74.0	-7.6	1.47 H	315	31.7	34.7
4	2483.50	53.1 AV	54.0	-0.9	1.47 H	315	18.4	34.7
5	4924.00	52.3 PK	74.0	-21.7	1.45 H	12	39.2	13.1
6	4924.00	39.3 AV	54.0	-14.7	1.45 H	12	26.2	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	104.0 PK			3.79 V	40	69.3	34.7
2	*2462.00	94.1 AV			3.79 V	40	59.4	34.7
3	2483.50	59.8 PK	74.0	-14.2	3.79 V	40	25.1	34.7
4	2483.50	48.7 AV	54.0	-5.3	3.79 V	40	14.0	34.7
5	4924.00	52.1 PK	74.0	-21.9	1.15 V	20	39.0	13.1
6	4924.00	39.0 AV	54.0	-15.0	1.15 V	20	25.9	13.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	VHT20	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	1.48 H	302	32.3	34.9
2	2390.00	53.3 AV	54.0	-0.7	1.48 H	302	18.4	34.9
3	*2412.00	107.5 PK			1.48 H	302	72.6	34.9
4	*2412.00	97.9 AV			1.48 H	302	63.0	34.9
5	4824.00	53.1 PK	74.0	-20.9	1.48 H	9	39.6	13.5
6	4824.00	40.0 AV	54.0	-14.0	1.48 H	9	26.5	13.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.2 PK	74.0	-10.8	3.86 V	18	28.3	34.9
2	2390.00	49.9 AV	54.0	-4.1	3.86 V	18	15.0	34.9
3	*2412.00	103.3 PK			3.86 V	18	68.4	34.9
4	*2412.00	93.4 AV			3.86 V	18	58.5	34.9
5	4824.00	52.7 PK	74.0	-21.3	1.19 V	21	39.2	13.5
6	4824.00	39.4 AV	54.0	-14.6	1.19 V	21	25.9	13.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	VHT20	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	112.7 PK			1.76 H	318	78.0	34.7
2	*2437.00	102.7 AV			1.76 H	318	68.0	34.7
3	4874.00	53.1 PK	74.0	-20.9	1.52 H	12	39.8	13.3
4	4874.00	40.5 AV	54.0	-13.5	1.52 H	12	27.2	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.0 PK			3.13 V	27	75.3	34.7
2	*2437.00	100.1 AV			3.13 V	27	65.4	34.7
3	4874.00	52.8 PK	74.0	-21.2	1.25 V	26	39.5	13.3
4	4874.00	40.0 AV	54.0	-14.0	1.25 V	26	26.7	13.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	VHT20	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	107.9 PK			1.52 H	312	73.2	34.7
2	*2462.00	98.2 AV			1.52 H	312	63.5	34.7
3	2483.50	66.8 PK	74.0	-7.2	1.52 H	312	32.1	34.7
4	2483.50	53.5 AV	54.0	-0.5	1.52 H	312	18.8	34.7
5	4924.00	52.3 PK	74.0	-21.7	1.46 H	10	39.2	13.1
6	4924.00	39.1 AV	54.0	-14.9	1.46 H	10	26.0	13.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	103.8 PK			3.70 V	16	69.1	34.7
2	*2462.00	94.0 AV			3.70 V	16	59.3	34.7
3	2483.50	64.0 PK	74.0	-10.0	3.70 V	16	29.3	34.7
4	2483.50	50.0 AV	54.0	-4.0	3.70 V	16	15.3	34.7
5	4924.00	52.1 PK	74.0	-21.9	1.19 V	18	39.0	13.1
6	4924.00	38.7 AV	54.0	-15.3	1.19 V	18	25.6	13.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	VHT40	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 2 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.3 PK	74.0	-7.7	1.48 H	311	31.4	34.9
2	2390.00	53.4 AV	54.0	-0.6	1.48 H	311	18.5	34.9
3	*2422.00	102.2 PK			1.48 H	311	67.3	34.9
4	*2422.00	93.1 AV			1.48 H	311	58.2	34.9
5	4844.00	52.6 PK	74.0	-21.4	1.51 H	13	39.2	13.4
6	4844.00	39.2 AV	54.0	-14.8	1.51 H	13	25.8	13.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.5 PK	74.0	-11.5	3.13 V	28	27.6	34.9
2	2390.00	52.0 AV	54.0	-2.0	3.13 V	28	17.1	34.9
3	*2422.00	99.0 PK			3.13 V	28	64.1	34.9
4	*2422.00	89.3 AV			3.13 V	28	54.4	34.9
5	4844.00	52.4 PK	74.0	-21.6	1.22 V	25	39.0	13.4
6	4844.00	38.9 AV	54.0	-15.1	1.22 V	25	25.5	13.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	VHT40	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 2 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	106.1 PK			1.70 H	318	71.4	34.7
2	*2437.00	96.5 AV			1.70 H	318	61.8	34.7
3	2483.50	65.6 PK	74.0	-8.4	1.70 H	318	30.9	34.7
4	2483.50	53.7 AV	54.0	-0.3	1.70 H	318	19.0	34.7
5	4874.00	52.8 PK	74.0	-21.2	1.55 H	10	39.5	13.3
6	4874.00	39.8 AV	54.0	-14.2	1.55 H	10	26.5	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	102.2 PK			3.10 V	26	67.5	34.7
2	*2437.00	93.0 AV			3.10 V	26	58.3	34.7
3	2483.50	60.7 PK	74.0	-13.3	3.10 V	26	26.0	34.7
4	2483.50	48.9 AV	54.0	-5.1	3.10 V	26	14.2	34.7
5	4874.00	52.5 PK	74.0	-21.5	1.22 V	22	39.2	13.3
6	4874.00	39.1 AV	54.0	-14.9	1.22 V	22	25.8	13.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

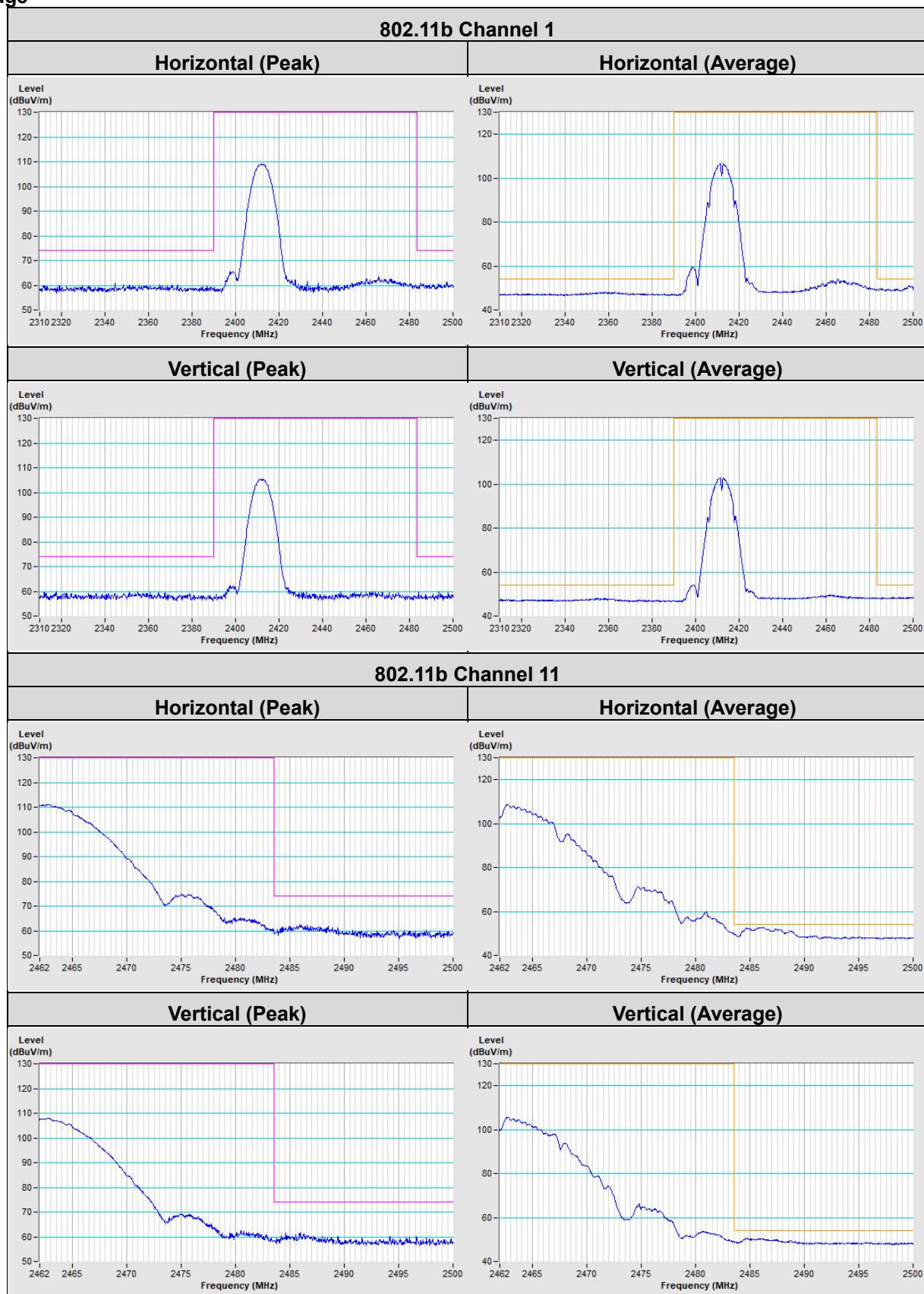
RF Mode	VHT40	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 2 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24°C, 68% RH
Tested By	Titan Hsu		

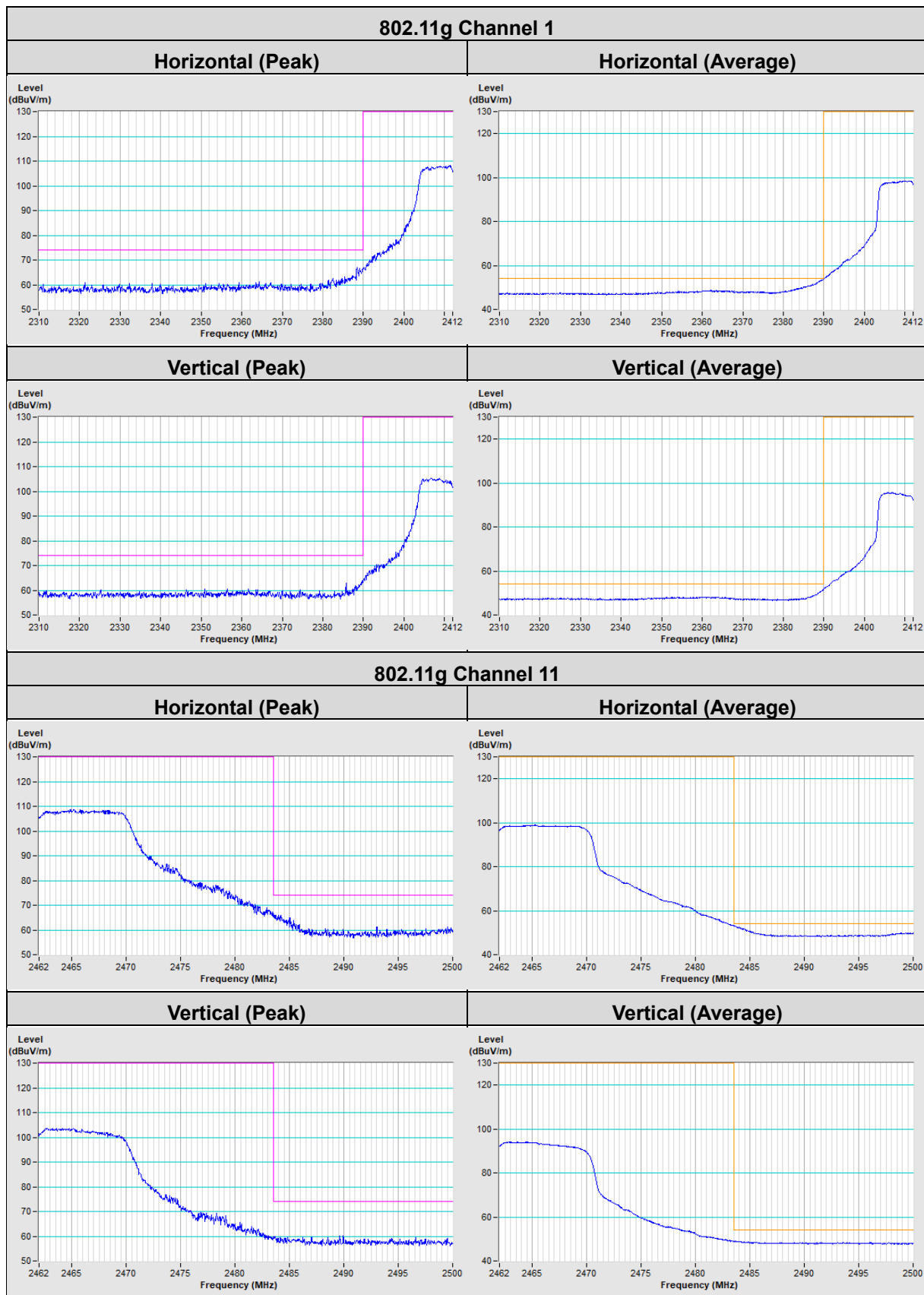
Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	100.2 PK			1.49 H	314	65.5	34.7
2	*2452.00	90.9 AV			1.49 H	314	56.2	34.7
3	2483.50	66.8 PK	74.0	-7.2	1.49 H	314	32.1	34.7
4	2483.50	53.7 AV	54.0	-0.3	1.49 H	314	19.0	34.7
5	4904.00	52.3 PK	74.0	-21.7	1.48 H	13	39.0	13.3
6	4904.00	39.0 AV	54.0	-15.0	1.48 H	13	25.7	13.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	95.8 PK			3.05 V	25	61.1	34.7
2	*2452.00	86.5 AV			3.05 V	25	51.8	34.7
3	2483.50	61.4 PK	74.0	-12.6	3.05 V	25	26.7	34.7
4	2483.50	49.1 AV	54.0	-4.9	3.05 V	25	14.4	34.7
5	4904.00	51.8 PK	74.0	-22.2	1.22 V	19	38.5	13.3
6	4904.00	38.5 AV	54.0	-15.5	1.22 V	19	25.2	13.3

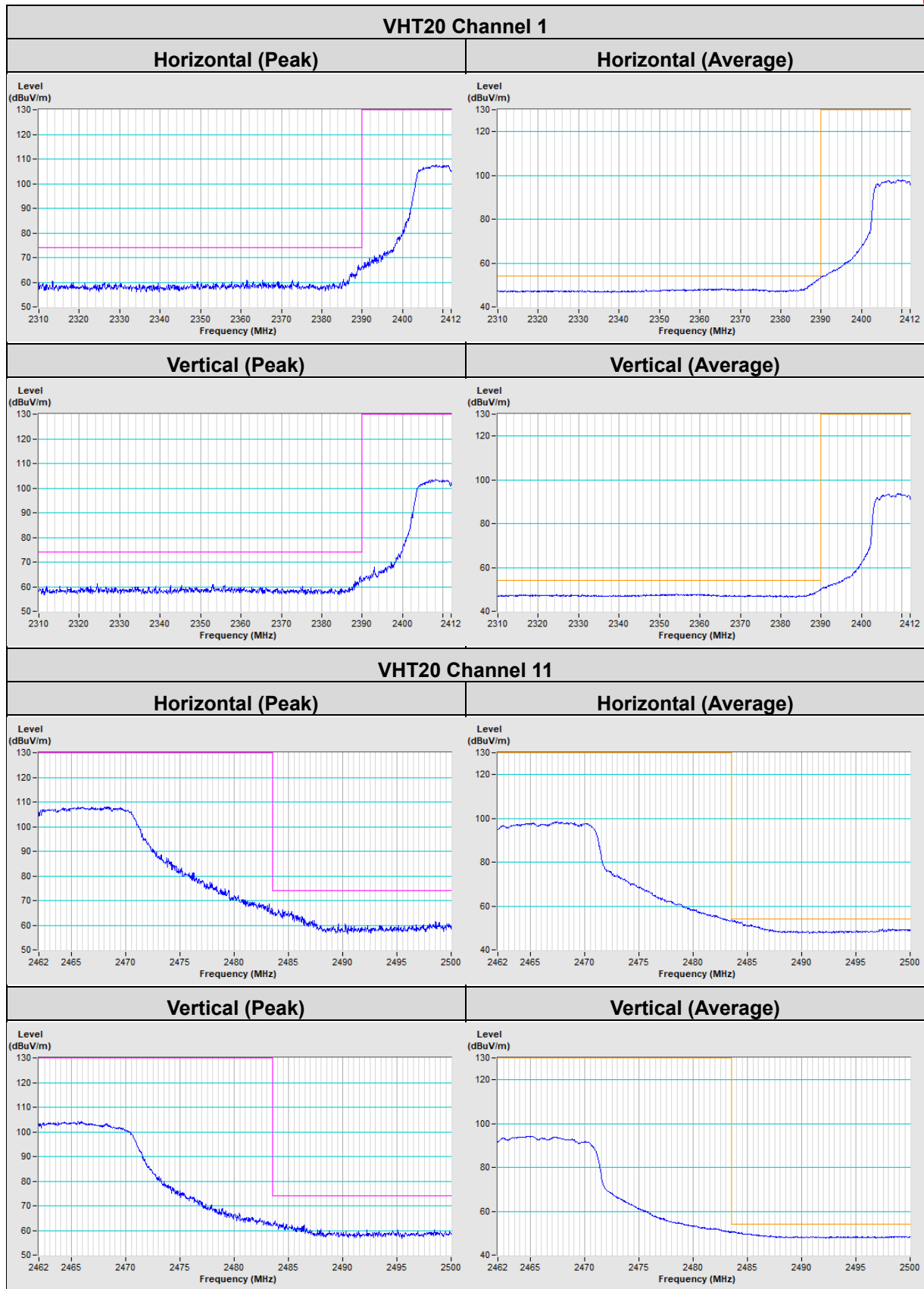
Remarks:

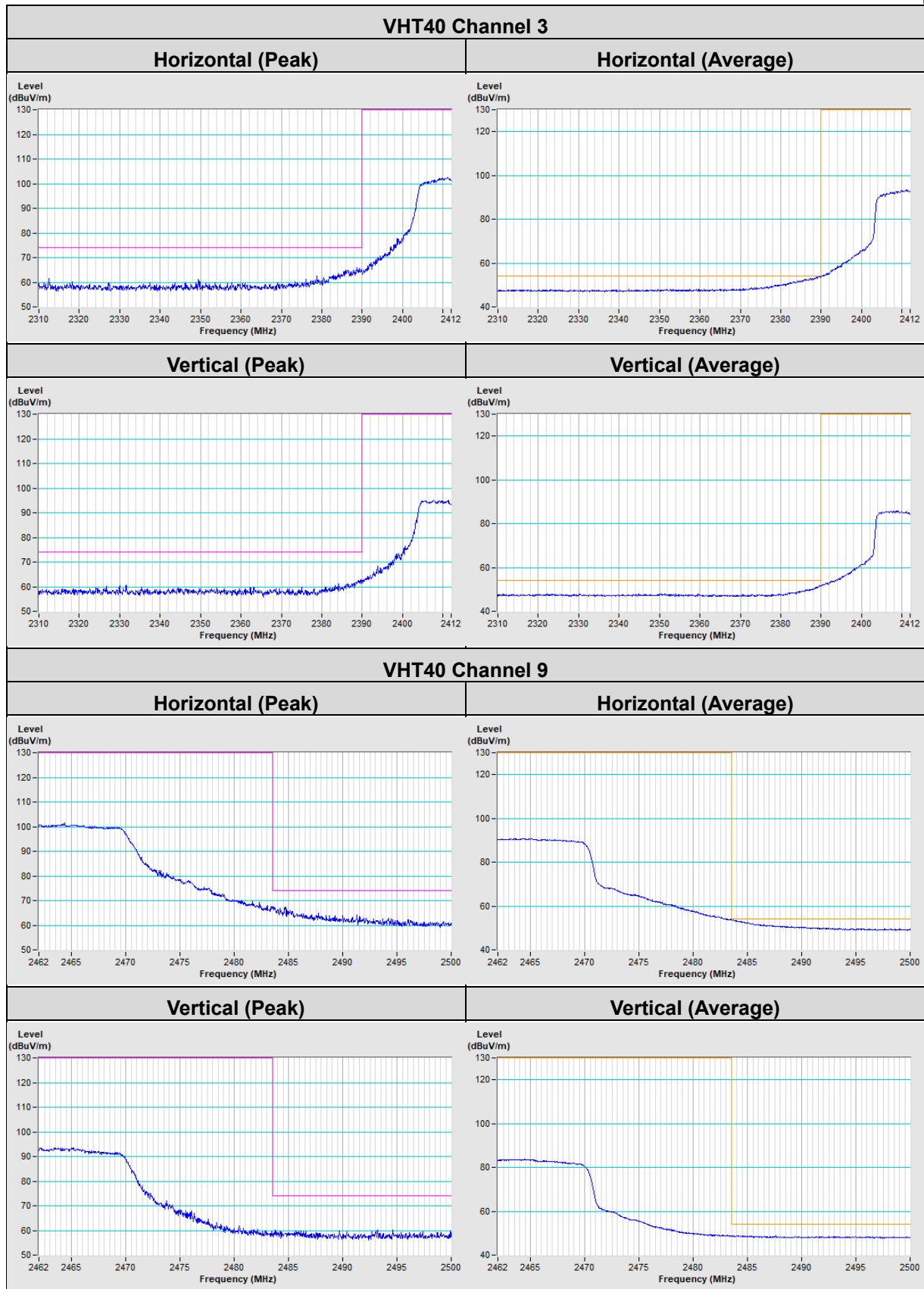
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

Band Edge









8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

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:

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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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