

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Report No.: RFBAOZ-WTW-P22061108
FCC ID: W59AP3025
Product: AC1300 Dual-Band Outdoor Wireless Access Point
Brand: LUXUL
Model No.: AP-3025
Received Date: 2022/7/27
Test Date: 2022/9/22 ~ 2022/11/11
Issued Date: 2022/12/14
Applicant: Legrand AV Inc.
Address: 6436 City West Pkwy, Eden Prairie, MN 55344 USA
Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory
Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / 723255 / TW2022
Designation Number:

Approved by:  , **Date:** 2022/12/14
May Chen / Manager

This test report consists of 74 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.

Prepared by : Vivian Huang / Specialist



This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

Table of Contents

Release Control Record	4
1 Certificate.....	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Supplementary Information	6
3 General Information	7
3.1 General Description.....	7
3.2 Antenna Description of EUT	8
3.3 Channel List.....	9
3.4 Test Mode Applicability and Tested Channel Detail.....	10
3.5 Duty Cycle of Test Signal.....	11
3.6 Test Program Used and Operation Descriptions	13
3.7 Connection Diagram of EUT and Peripheral Devices	13
3.8 Configuration of Peripheral Devices and Cable Connections	15
4 Test Instruments	16
4.1 RF Output Power.....	16
4.2 Power Spectral Density	16
4.3 6 dB Bandwidth	16
4.4 Conducted Out of Band Emissions	16
4.5 AC Power Conducted Emissions	17
4.6 Unwanted Emissions below 1 GHz	17
4.7 Unwanted Emissions above 1 GHz.....	18
5 Limits of Test Items.....	19
5.1 RF Output Power.....	19
5.2 Power Spectral Density	19
5.3 6 dB Bandwidth	19
5.4 Conducted Out of Band Emissions	19
5.5 AC Power Conducted Emissions	19
5.6 Unwanted Emissions below 1 GHz	20
5.7 Unwanted Emissions above 1 GHz.....	20
6 Test Arrangements.....	21
6.1 RF Output Power.....	21
6.1.1 Test Setup	21
6.1.2 Test Procedure.....	21
6.2 Power Spectral Density	21
6.2.1 Test Setup	21
6.2.2 Test Procedure.....	21
6.3 6 dB Bandwidth	22
6.3.1 Test Setup	22
6.3.2 Test Procedure.....	22
6.4 Conducted Out of Band Emissions	22
6.4.1 Test Setup	22
6.4.2 Test Procedure.....	22
6.5 AC Power Conducted Emissions	23
6.5.1 Test Setup	23
6.5.2 Test Procedure.....	23
6.6 Unwanted Emissions below 1 GHz	24
6.6.1 Test Setup	24
6.6.2 Test Procedure.....	25
6.7 Unwanted Emissions above 1 GHz.....	26
6.7.1 Test Setup	26
6.7.2 Test Procedure.....	26
7 Test Results of Test Item	27

7.1	RF Output Power.....	27
7.2	Power Spectral Density	29
7.3	6 dB Bandwidth	31
7.4	Conducted Out of Band Emissions	33
7.5	AC Power Conducted Emissions	41
7.6	Unwanted Emissions below 1 GHz	43
7.7	Unwanted Emissions above 1 GHz.....	45
8	Pictures of Test Arrangements	73
9	Information of the Testing Laboratories	74

Release Control Record

Issue No.	Description	Date Issued
RFBAOZ-WTW-P22061108	Original release.	2022/12/14

1 Certificate

Product: AC1300 Dual-Band Outdoor Wireless Access Point

Brand: LUXUL

Test Model: AP-3025

Sample Status: Engineering sample

Applicant: Legrand AV Inc.

Test Date: 2022/9/22 ~ 2022/11/11

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

Measurement ANSI C63.10-2013

procedure: 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 -4.18 dB at 0.38828 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -6.2 dB at 46.05 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.5 dB at 2390.00 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) (±)
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.5 dB
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.1 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.1 dB
	18 GHz ~ 40 GHz	5.3 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	AC1300 Dual-Band Outdoor Wireless Access Point
Brand	LUXUL
Test Model	AP-3025
Status of EUT	Engineering sample
Power Supply Rating	56 Vdc from POE adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT mode
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to 300 Mbps VHT: up to 400 Mbps
Operating Frequency	2.412 GHz ~ 2.462 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), VHT20:11 802.11n (HT40), VHT40: 7
Output Power	CDD Mode: 729.742 mW (28.63 dBm) Beamforming Mode: 440.184 mW (26.44 dBm)

Note:

1. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	WLAN 5GHz

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

2. The EUT uses following accessories.

Ethernet Cable		
Brand	Model	Specification
Nien-Yi	NYS1389	Signal Line : 1m, un-shielded
Ground wire		
Brand	Model	Specification
Dong Wei (Shen Zhen) Lead Enterprise Co., Ltd	DWE-MT-070	Signal Line : 106cm

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Ant. No.	RF Chain No.	Brand	Model No.	Ant. Net Gain (dBi)	Freq. Range (GHz)	Ant. Type	Connector Type	Cable Length (mm)
1	Chain 0	Nienyi Industrial Corp	NYS5390	6.5	2400~2500	Dipole	ipex(MHF)	30
2	Chain 1	Nienyi Industrial Corp	NYS5390	6.5	2400~2500	Dipole	ipex(MHF)	30
3	Chain 0	Nienyi Industrial Corp	NYS5390	5	5150~5850	Dipole	ipex(MHF)	30
4	Chain 1	Nienyi Industrial Corp	NYS5390	5	5150~5850	Dipole	ipex(MHF)	30

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

2. The EUT incorporates a MIMO function:

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

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 mode is the same as the VHT mode 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:

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:

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:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
-----------	---

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

Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
	802.11g	CDD	1, 6, 11	BPSK	6Mb/s
	VHT20	CDD & Beamforming	1, 6, 11	BPSK	MCS0
	VHT40	CDD & Beamforming	3, 6, 9	BPSK	MCS0
Power Spectral Density / 6 dB Bandwidth / Conducted Out of Band Emissions	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	VHT20	CDD	6	BPSK	MCS0
Unwanted Emissions below 1 GHz	VHT20	CDD	6	BPSK	MCS0
Unwanted Emissions above 1 GHz	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

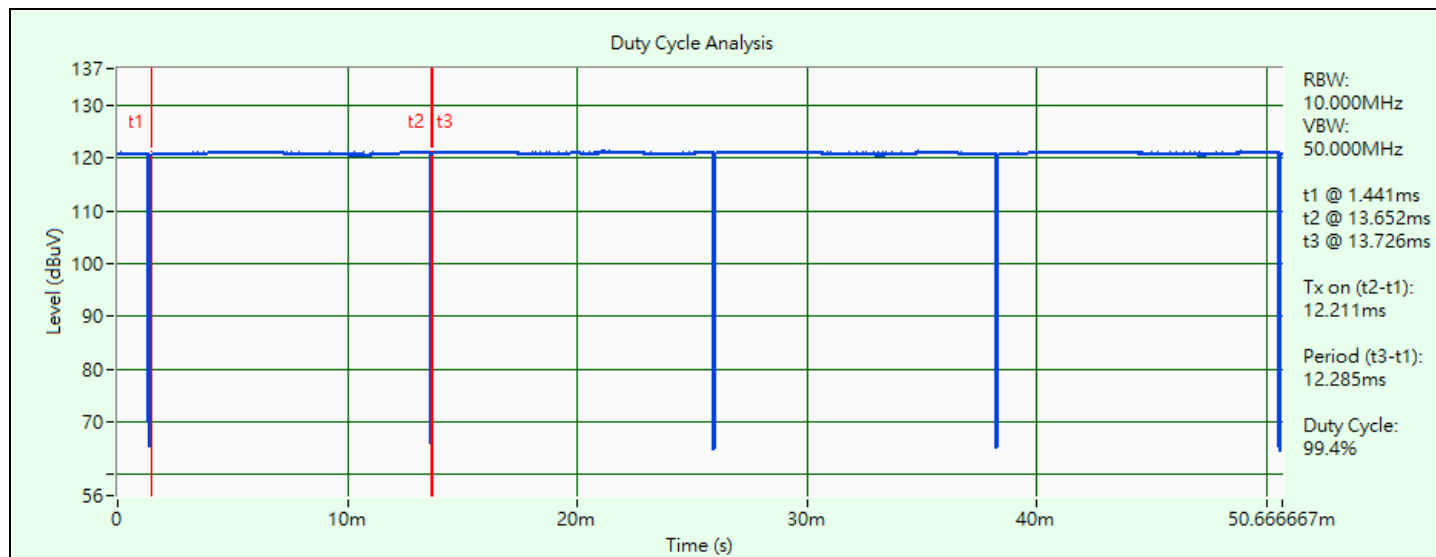
3.5 Duty Cycle of Test Signal

802.11b: Duty cycle = 12.211 ms / 12.285 ms x 100% = 99.4%

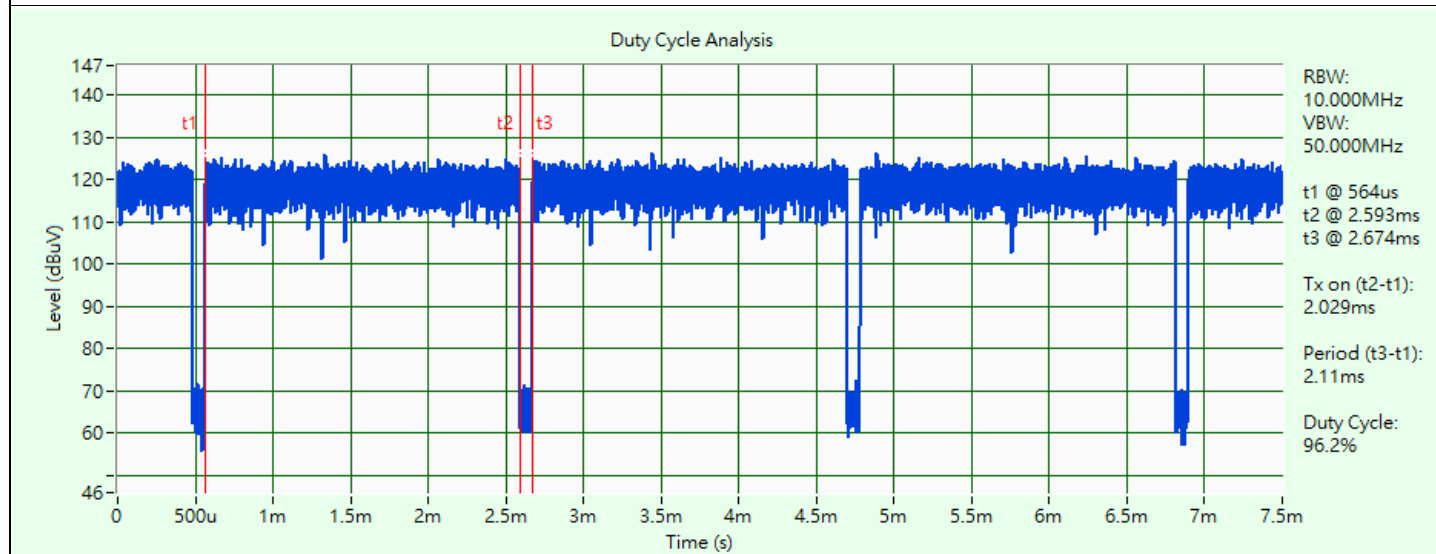
802.11g: Duty cycle = 2.029 ms / 2.11 ms x 100% = 96.2%, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.17 \text{ dB}$

VHT20: Duty cycle = 4.973 ms / 5.053 ms x 100% = 98.4%

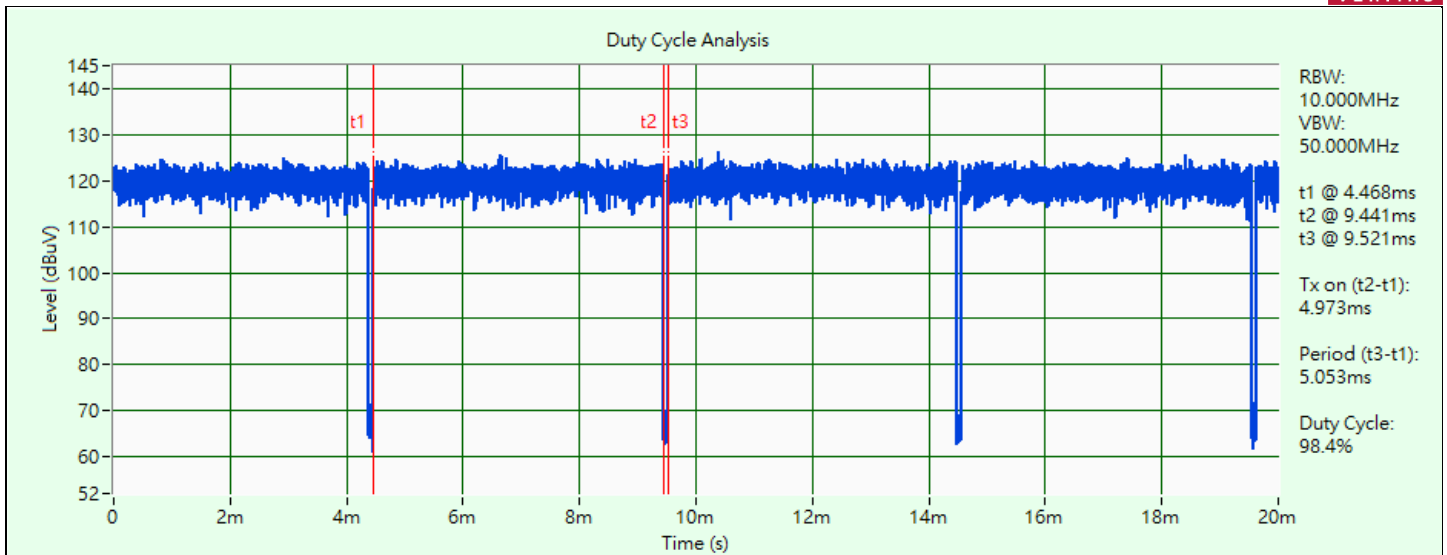
VHT40: Duty cycle = 2.417 ms / 2.498 ms x 100% = 96.8%, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 0.14 \text{ dB}$



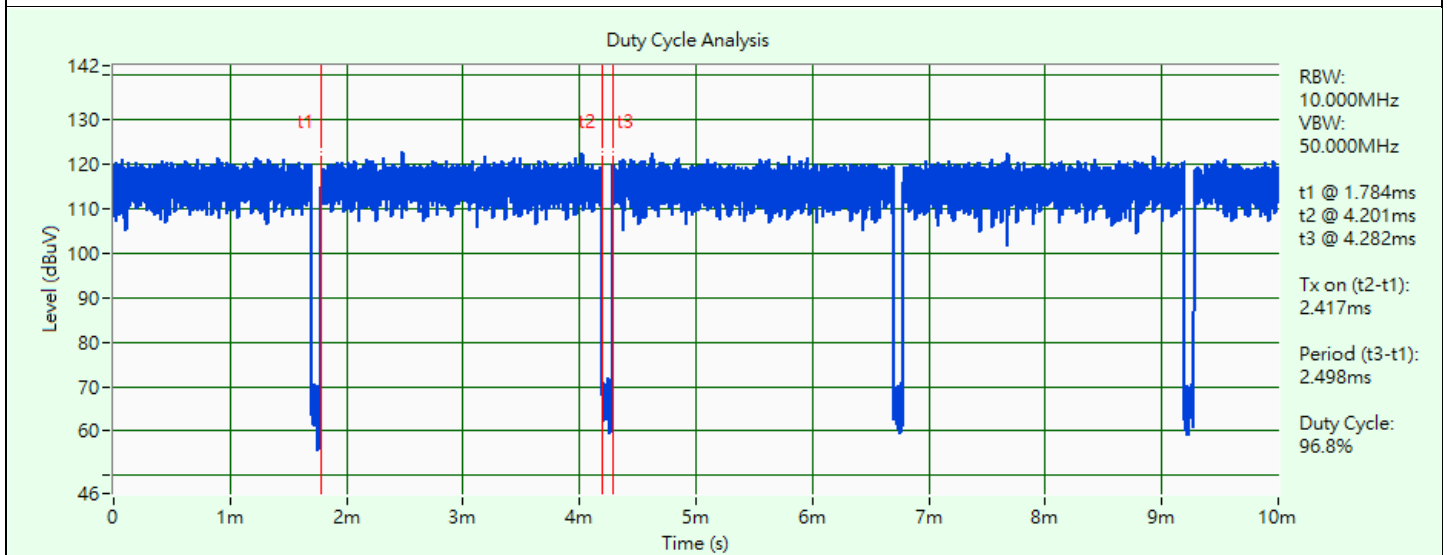
802.11b



802.11g



VHT20



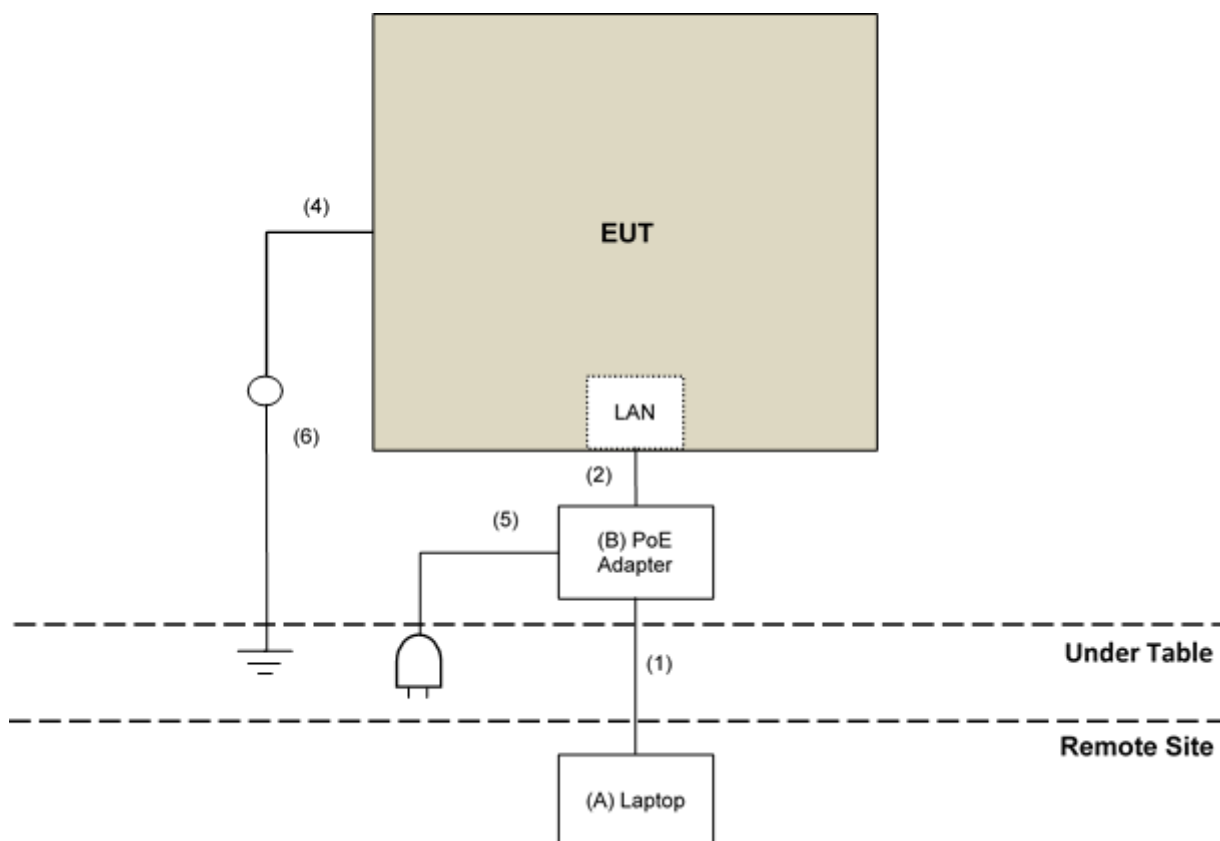
VHT40

3.6 Test Program Used and Operation Descriptions

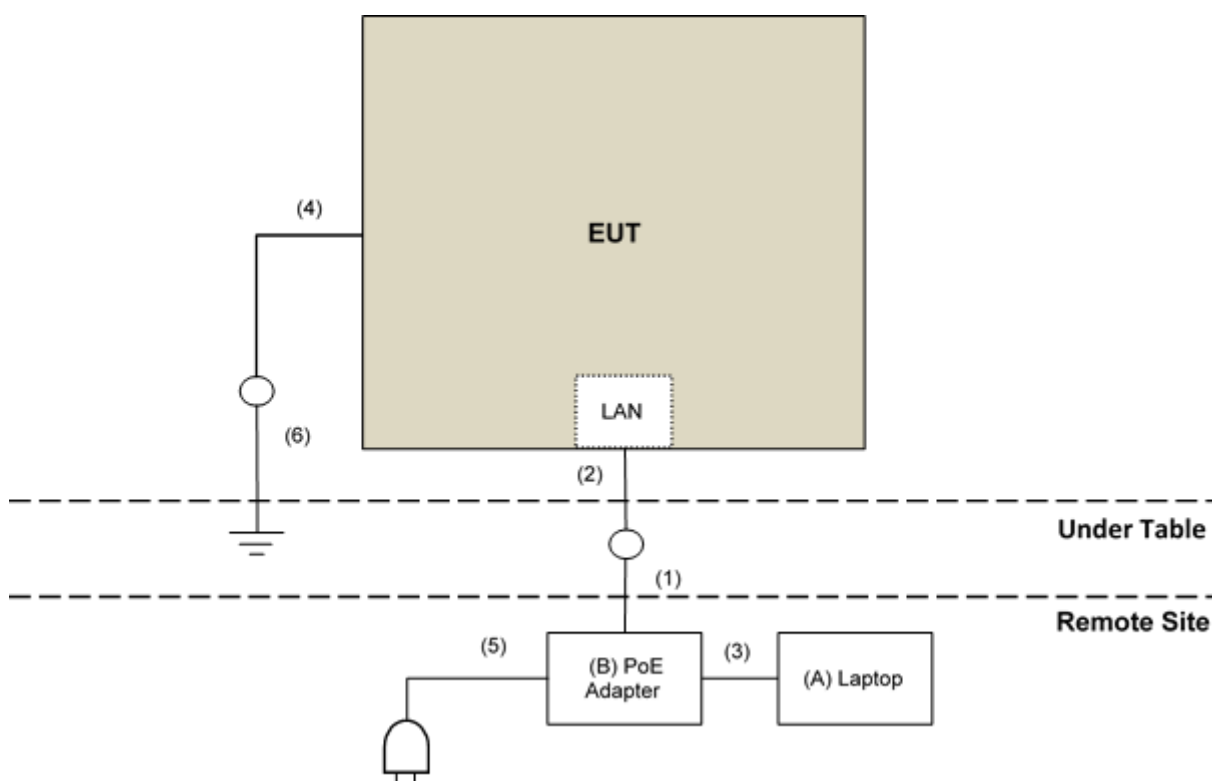
Controlling software (qdart_conn.win.1.0_installer_00084.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For AC Power Conducted Emission test



For Unwanted Emission test



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Provided by Lab
B	POE Adapter	PHIHONG	POE29U-560	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	10	No	0	Provided by Lab
2	RJ-45 Cable	1	1	No	0	Supplied by applicant
3	RJ-45 Cable	1	10	No	0	Provided by Lab
4	GND Cable	1	1.6	No	0	Supplied by applicant
5	AC Cable	1	1.8	No	0	Provided by Lab
6	GND Cable	1	2.5	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
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/11/3

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/11/3

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
50 ohm terminal resistance	N/A	EMC-01	2022/9/27	2023/9/26
Fixed attenuator STI	STI02-2200-10	005	2022/8/24	2023/8/23
LISN R&S	ESH3-Z5	848773/004	2022/10/18	2023/10/17
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2022/8/24	2023/8/23
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2022/10/14	2023/10/13

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2022/11/11

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bilog Antenna Schwarzbeck	VULB 9168	9168-0842	2021/10/26	2022/10/25
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2022/1/10	2023/1/9
LOOP ANTENNA Electro-Metrics	EM-6879	264	2022/3/18	2023/3/17
Pre_Amplifier Agilent	8447D	2944A10636	2022/3/19	2023/3/18
Pre_Amplifier EMCI	EMC330N	980538	2022/4/25	2023/4/24
RF Coaxial Cable COMMATE/PEWC	8D	966-5-1	2022/4/25	2023/4/24
		966-5-2	2022/4/25	2023/4/24
		966-5-3	2022/4/25	2023/4/24
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/1/6	2023/1/5
		LOOPCAB-002	2022/1/6	2023/1/5
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Test Receiver R&S	ESR3	102528	2022/2/25	2023/2/24

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2022/10/4

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2021/11/14	2022/11/13
	BBHA 9170	9170-739	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC12630SE	980509	2022/4/25	2023/4/24
	EMC184045SE	980387	2022/1/10	2023/1/9
RF Cable-Frequency range: 1- 40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10	2023/1/9
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
	EMC104-SM-SM-1500	180503	2022/4/25	2023/4/24
	EMC104-SM-SM-2000	180501	2022/4/25	2023/4/24
	EMC104-SM-SM-6000	180506	2022/4/25	2023/4/24
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Test Receiver R&S	ESR3	102528	2022/2/25	2023/2/24

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2022/9/22 ~ 2022/10/4

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.

For transmitting antennas with a directional gain greater than 6 dBi, as long as the antenna's directional gain exceeds 6 dBi every 3 dB, the maximum conducted output power of the deliberate radiator is reduced by 1 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

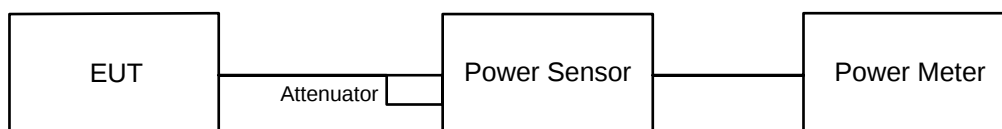
Notes:

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



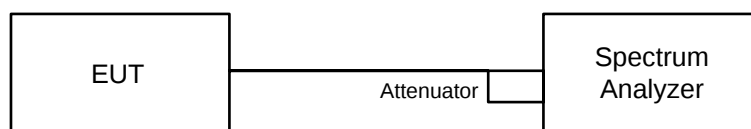
6.1.2 Test Procedure

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

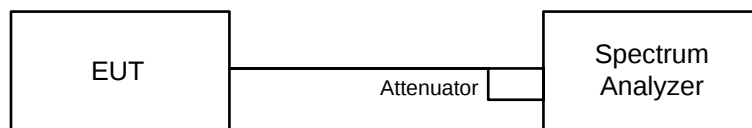


6.2.2 Test Procedure

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

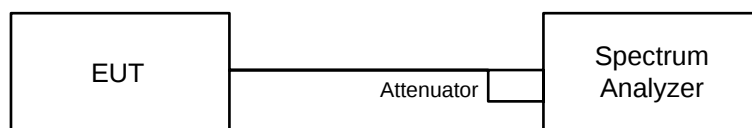


6.3.2 Test Procedure

- 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

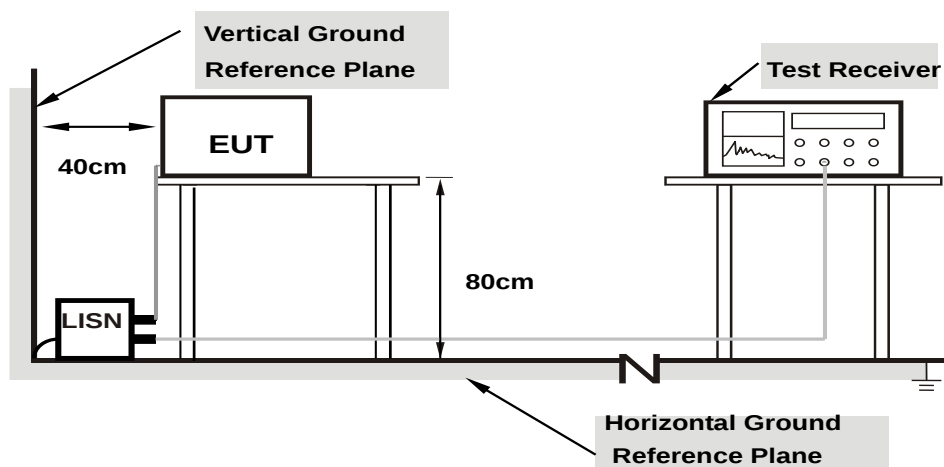
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

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

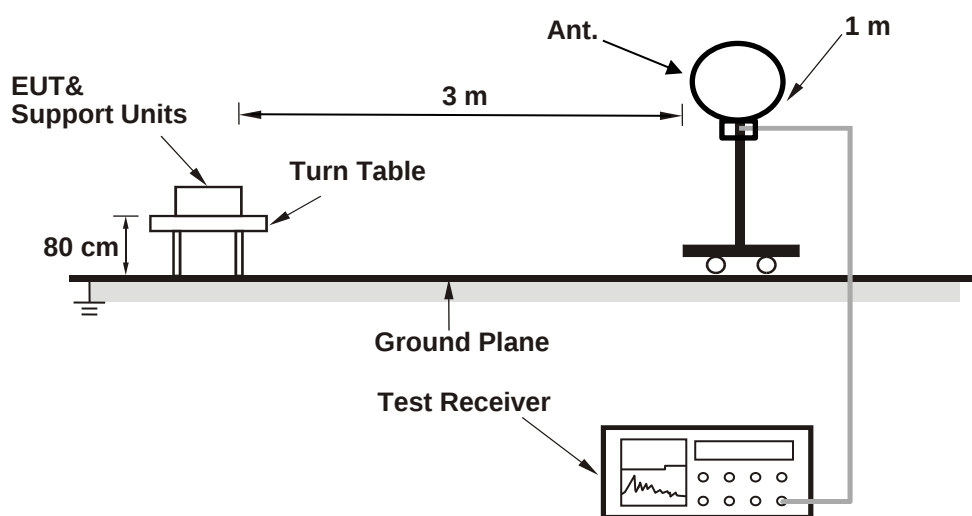
- h. The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- i. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- j. 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.

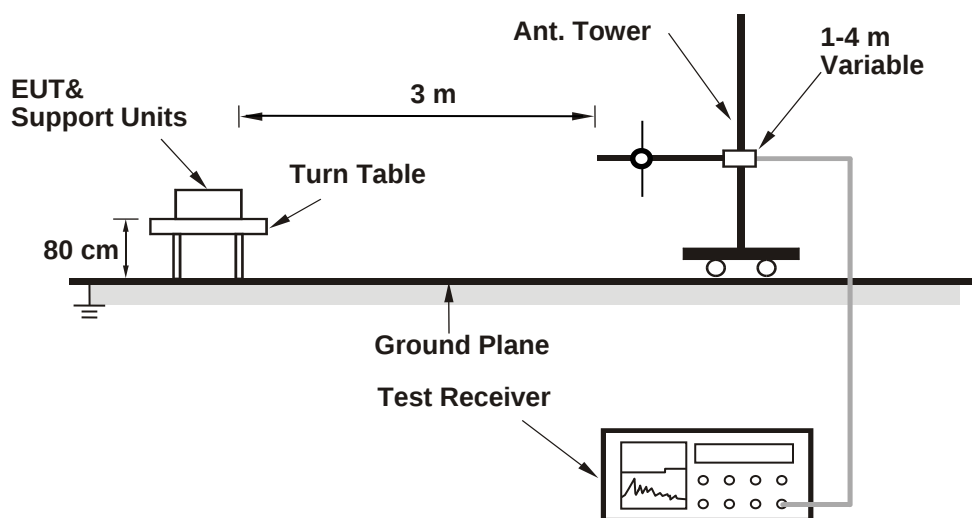
6.6 Unwanted Emissions below 1 GHz

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

- k. 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.
- l. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- m. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- n. 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.
- o. 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:

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

For Radiated emission above 30 MHz

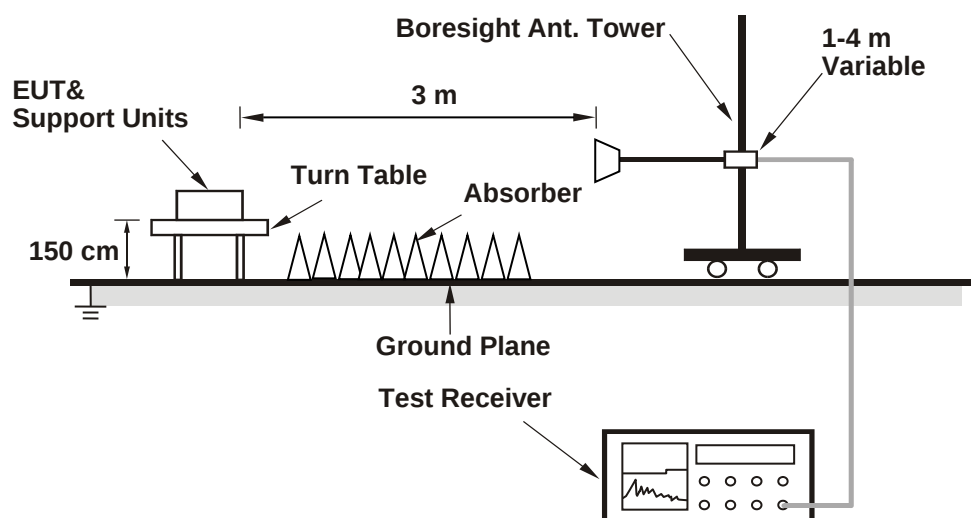
- p. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- q. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- r. 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.
- s. 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.
- t. 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:

- 7. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
- 8. 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

- u. 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.
- v. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- w. 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.
- x. 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.
- y. 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:

9. 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.
10. 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.
11. 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:	56 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
--------------	--------	---------------------------	--------------	------------	----------

802.11b CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	23.79	23.99	489.943	26.90	29.5	Pass
6	2437	23.76	23.88	482.027	26.83	29.5	Pass
11	2462	24.87	25.13	632.739	28.01	29.5	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 6.5 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.5 - 6) = 29.5$ dBm.

802.11g CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	20.38	20.48	220.83	23.44	29.5	Pass
6	2437	25.51	25.73	729.742	28.63	29.5	Pass
11	2462	20.71	20.91	241.071	23.82	29.5	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 6.5 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.5 - 6) = 29.5$ dBm.

VHT20 CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	19.84	19.86	193.211	22.86	29.5	Pass
6	2437	25.33	25.52	697.644	28.44	29.5	Pass
11	2462	20.19	20.36	213.115	23.29	29.5	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 6.5 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.5 - 6) = 29.5$ dBm.

VHT40 CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	16.48	16.53	89.441	19.52	29.5	Pass
6	2437	21.49	21.45	280.566	24.48	29.5	Pass
9	2452	18.48	18.46	140.615	21.48	29.5	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 6.5 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.5 - 6) = 29.5$ dBm.

VHT20 Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	19.84	19.86	193.211	22.86	26.49	Pass
6	2437	23.33	23.52	440.184	26.44	26.49	Pass
11	2462	20.19	20.36	213.115	23.29	26.49	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 9.51 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (9.51 - 6) = 26.49$ dBm.

VHT40 Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	16.48	16.53	89.441	19.52	26.49	Pass
6	2437	21.49	21.45	280.566	24.48	26.49	Pass
9	2452	18.48	18.46	140.615	21.48	26.49	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 9.51 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (9.51 - 6) = 26.49$ dBm.

7.2 Power Spectral Density

Input Power:	56 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
--------------	--------	---------------------------	--------------	------------	----------

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-7.61	-7.54	-4.56	4.49	Pass
6	2437	-7.55	-7.56	-4.54	4.49	Pass
11	2462	-6.44	-6.49	-3.45	4.49	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 = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 9.51 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (9.51 - 6) = 4.49$ 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				
1	2412	-14.36	-13.96	0.17	-10.98	4.49	Pass
6	2437	-10.55	-10.14	0.17	-7.16	4.49	Pass
11	2462	-14.26	-13.84	0.17	-10.86	4.49	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 = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 9.51 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (9.51 - 6) = 4.49$ dBm/3kHz.

VHT20

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-14.98	-15.12	-12.04	4.49	Pass
6	2437	-10.41	-10.54	-7.46	4.49	Pass
11	2462	-14.75	-14.67	-11.70	4.49	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 = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 9.51 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (9.51 - 6) = 4.49$ dBm/3kHz.

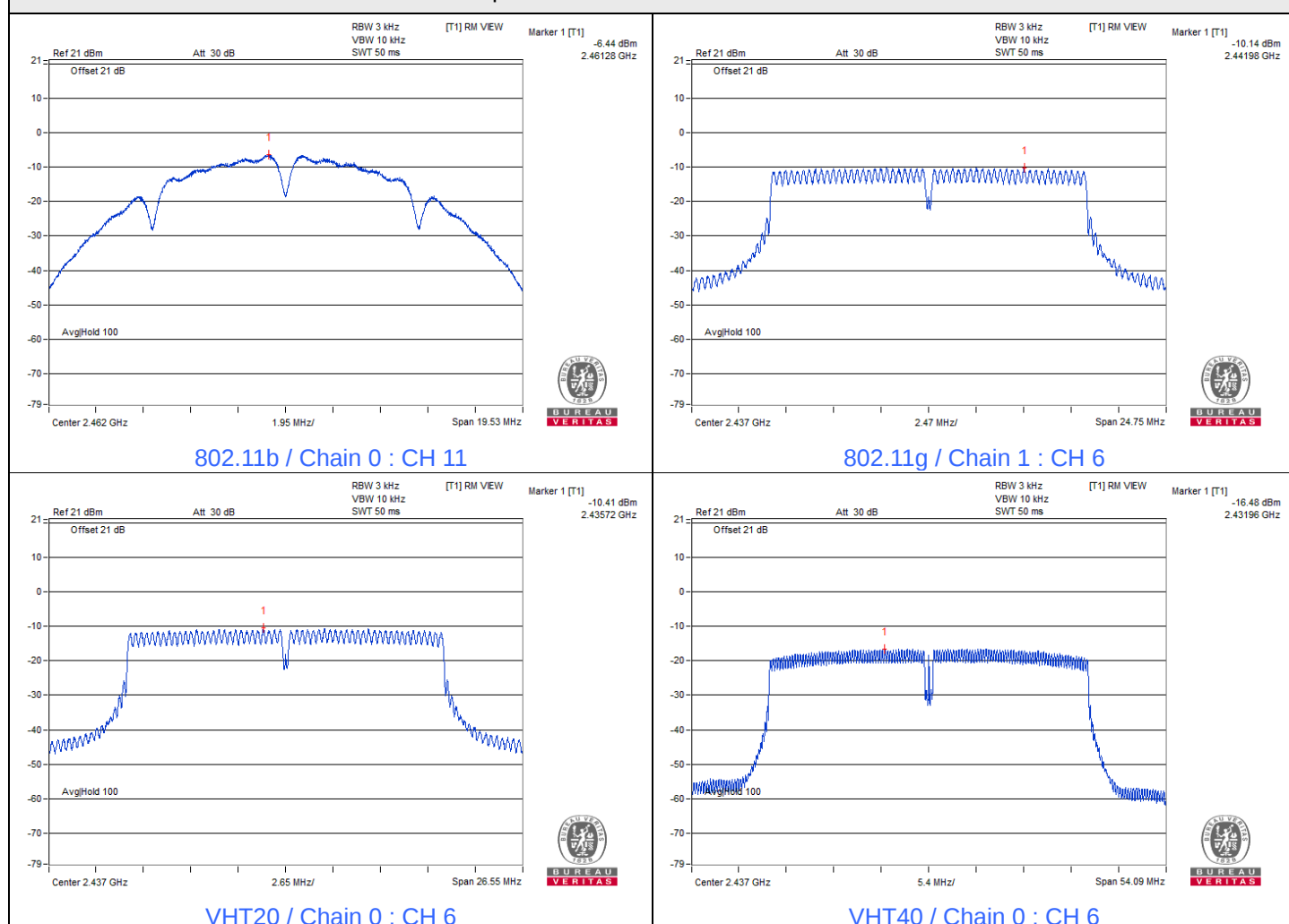
VHT40

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				
3	2422	-19.15	-21.47	0.14	-17.00	4.49	Pass
6	2437	-16.48	-16.50	0.14	-13.34	4.49	Pass
9	2452	-19.26	-19.59	0.14	-16.27	4.49	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 = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 9.51 dBi > 6 dBi, so the power density limit shall be reduced to 8-(9.51-6) = 4.49 dBm/3kHz.

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Input Power:	56 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
--------------	--------	---------------------------	--------------	------------	----------

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	8.09	8.05	0.5	Pass
6	2437	8.53	8.08	0.5	Pass
11	2462	8.09	8.55	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	16.37	16.39	0.5	Pass
6	2437	16.35	16.37	0.5	Pass
11	2462	16.37	16.40	0.5	Pass

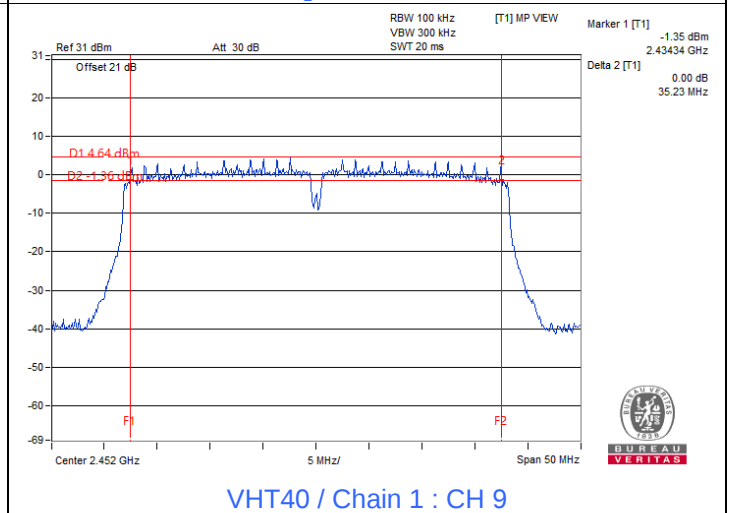
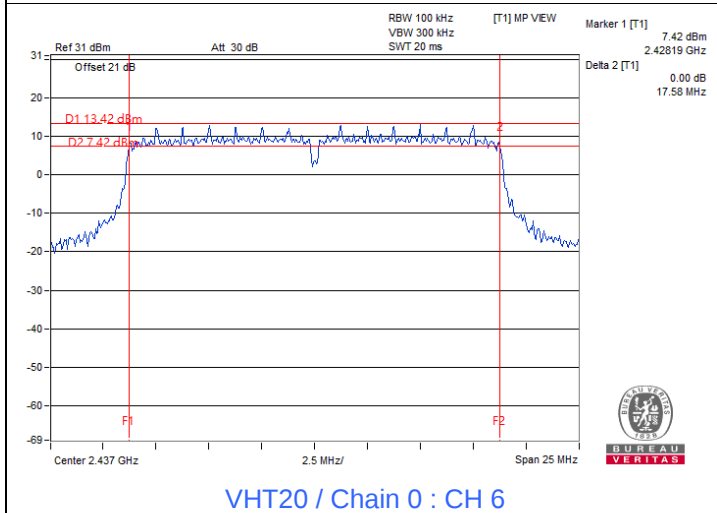
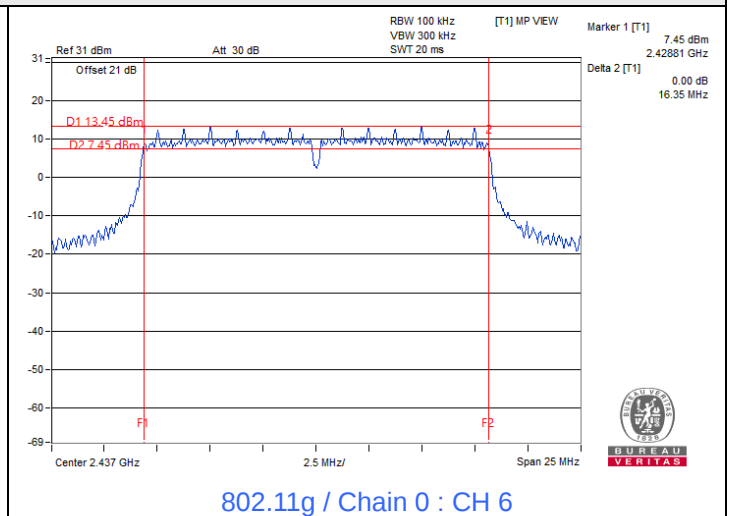
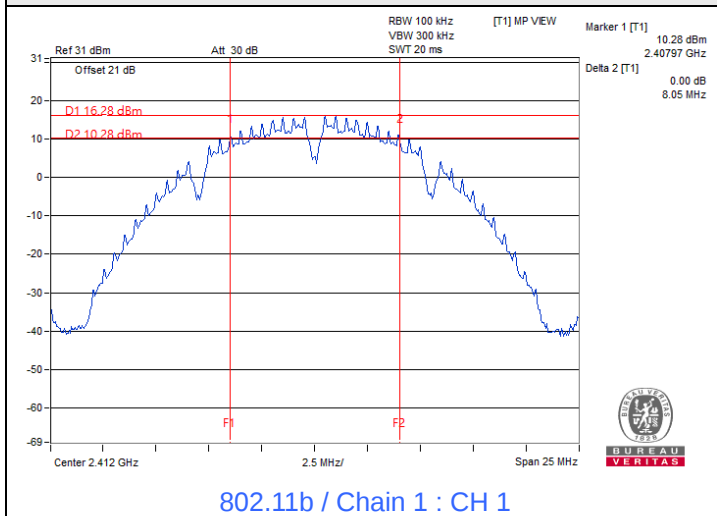
VHT20

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	17.60	17.60	0.5	Pass
6	2437	17.58	17.61	0.5	Pass
11	2462	17.60	17.60	0.5	Pass

VHT40

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	2422	35.47	35.27	0.5	Pass
6	2437	35.37	35.36	0.5	Pass
9	2452	35.31	35.23	0.5	Pass

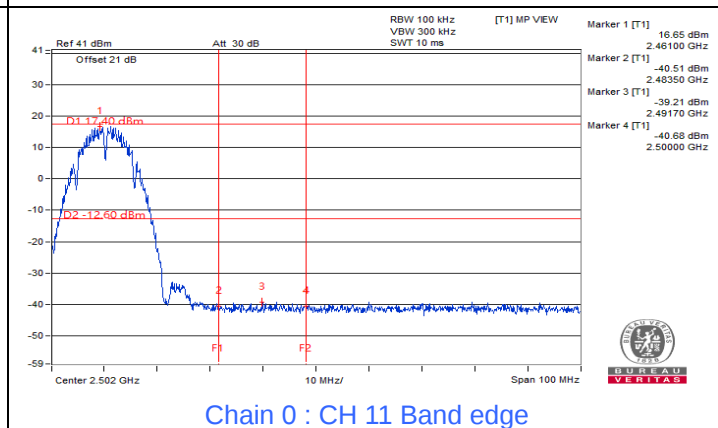
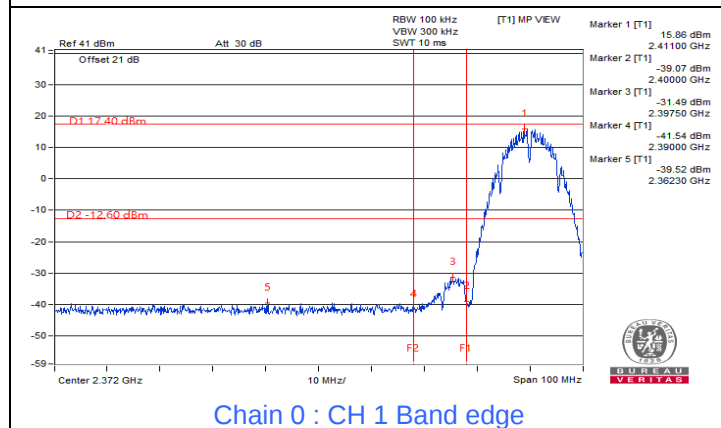
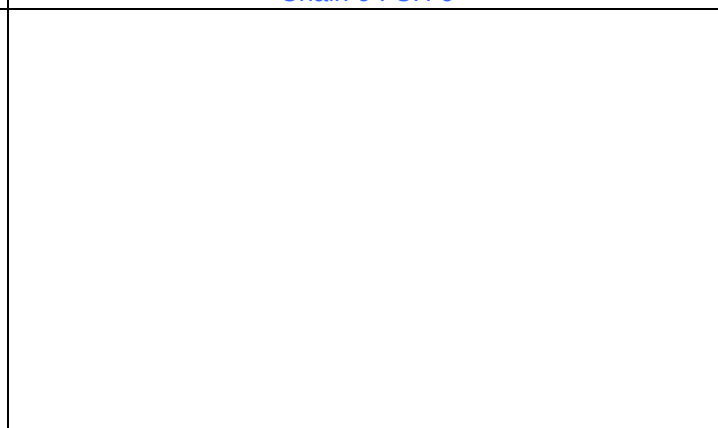
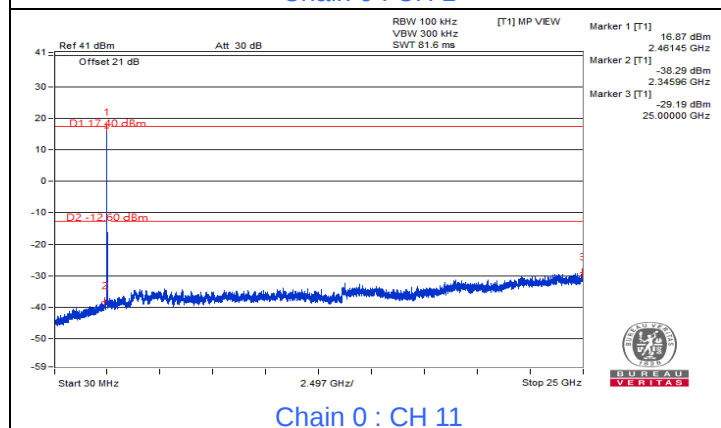
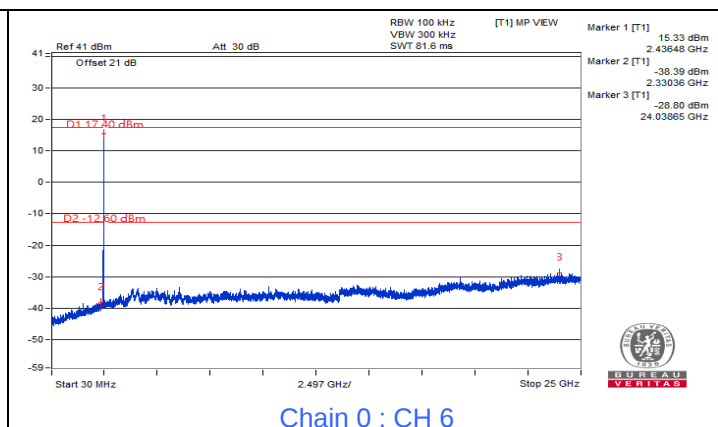
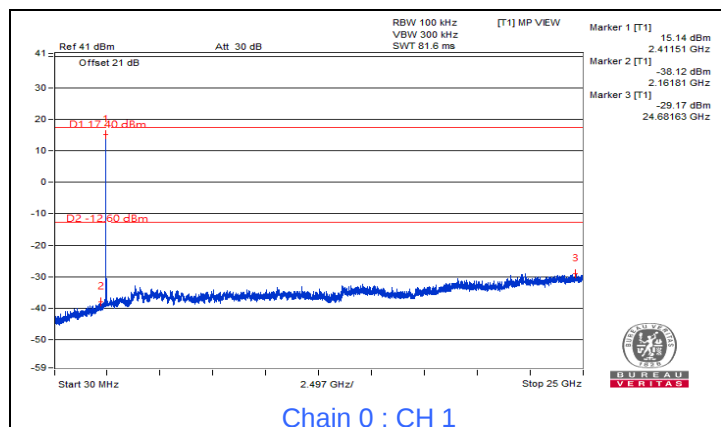
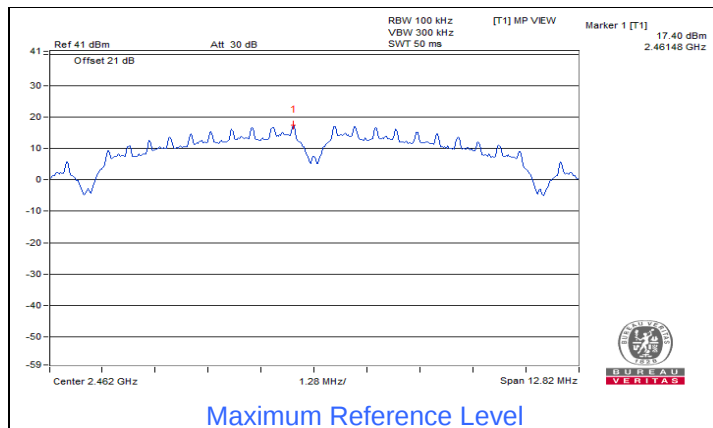
Spectrum Plot of Minimum Value

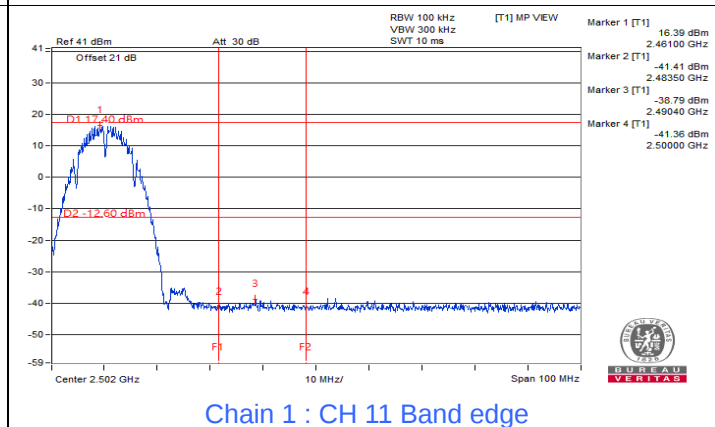
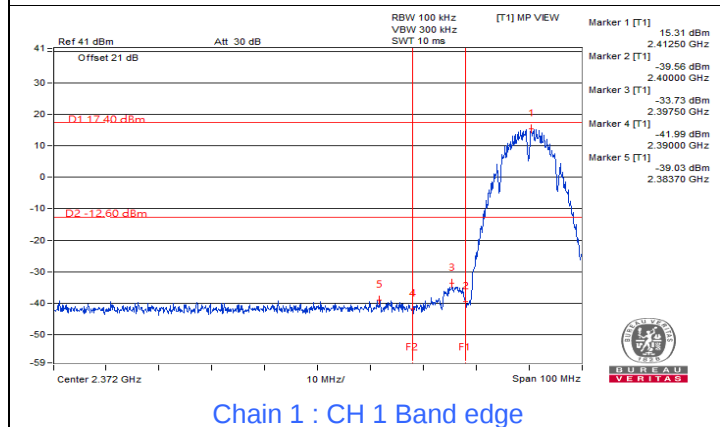
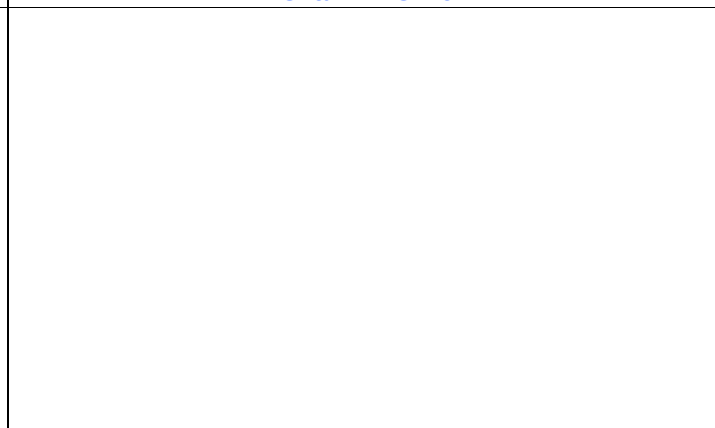
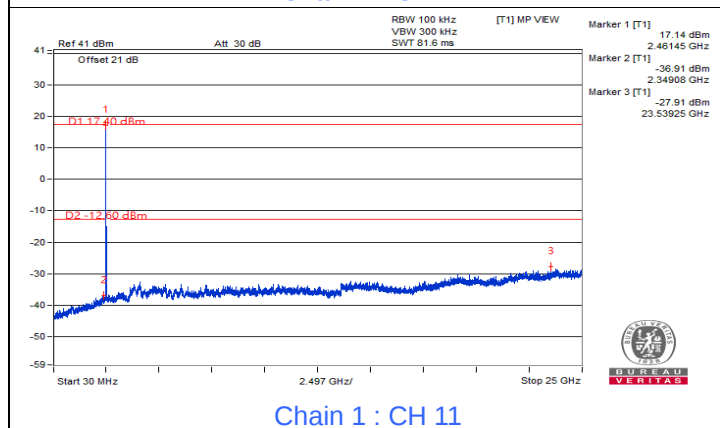
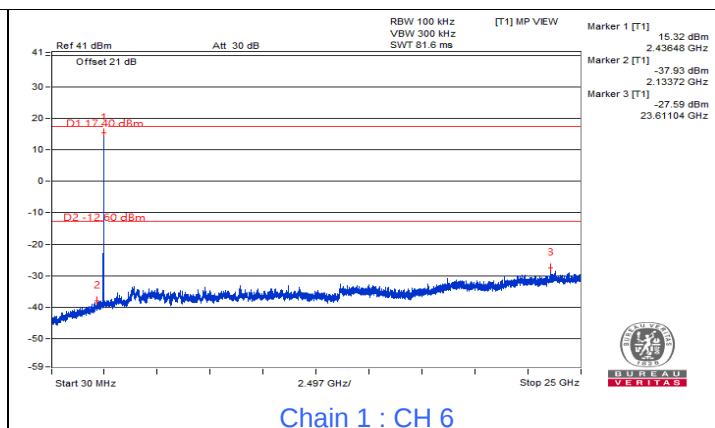
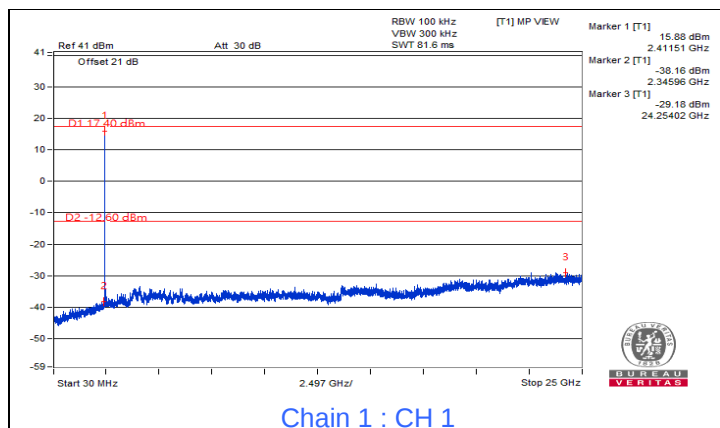


7.4 Conducted Out of Band Emissions

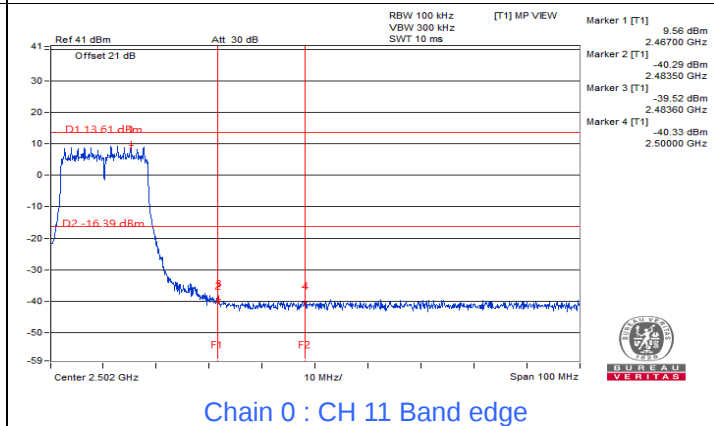
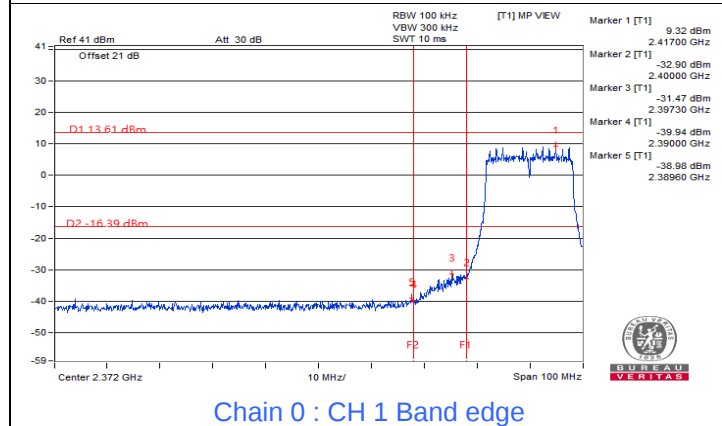
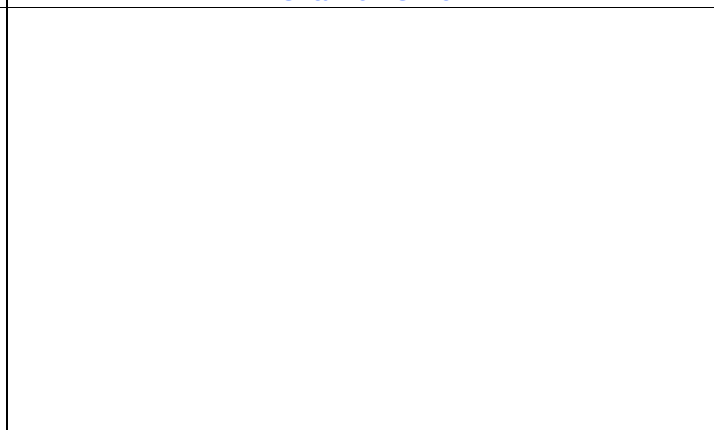
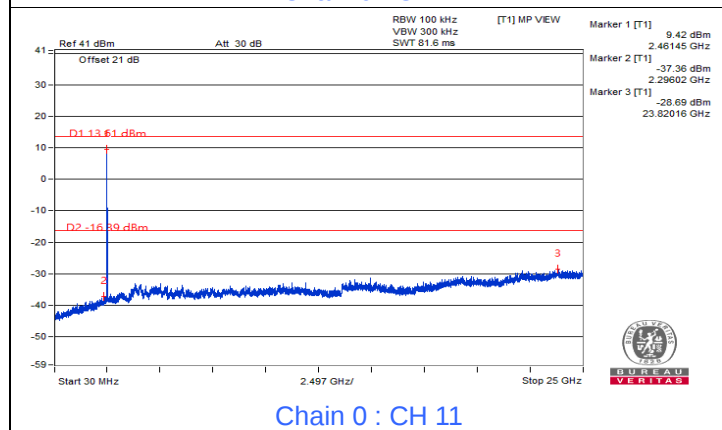
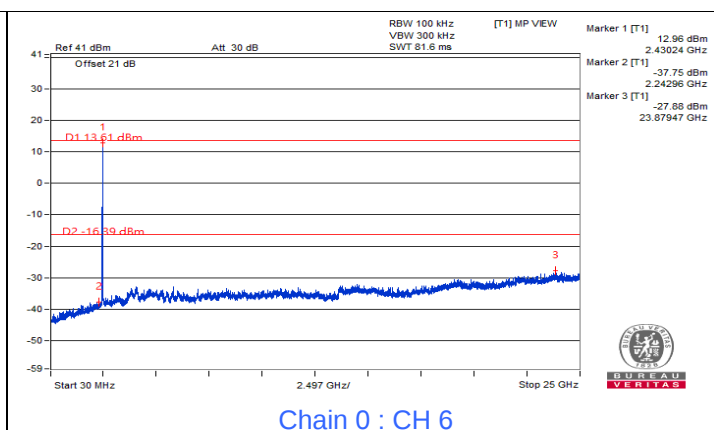
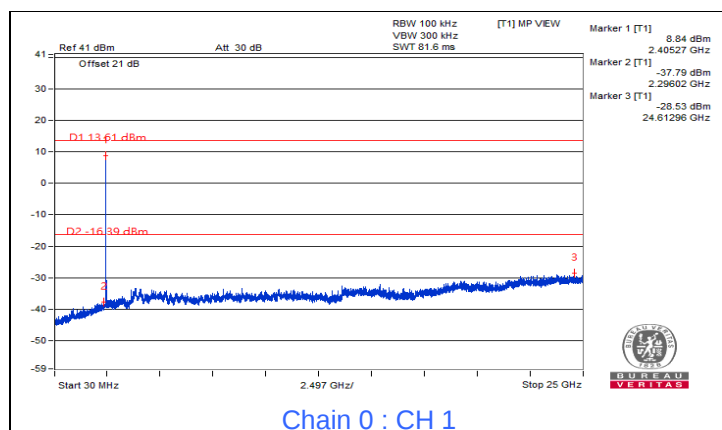
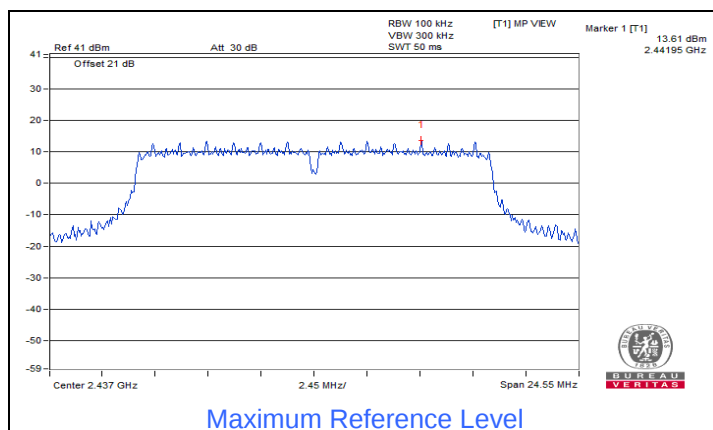
Input Power:	56 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
--------------	--------	---------------------------	--------------	------------	----------

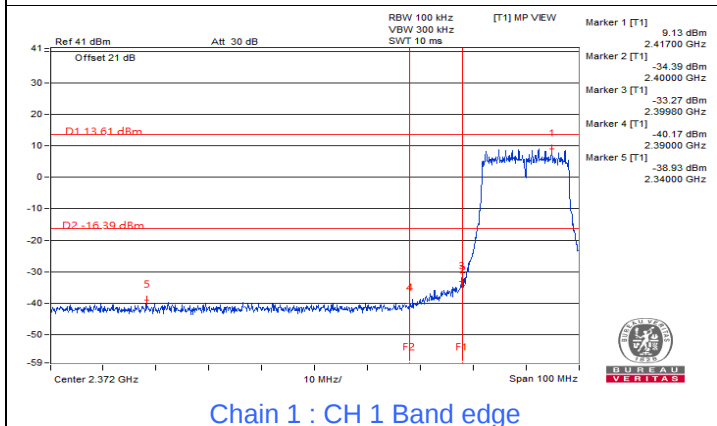
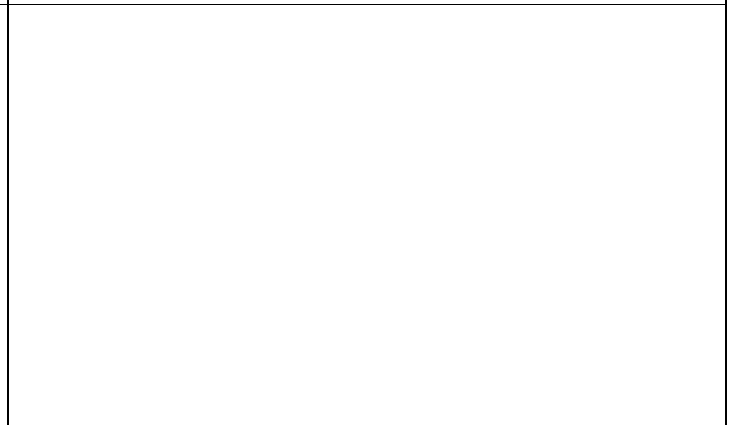
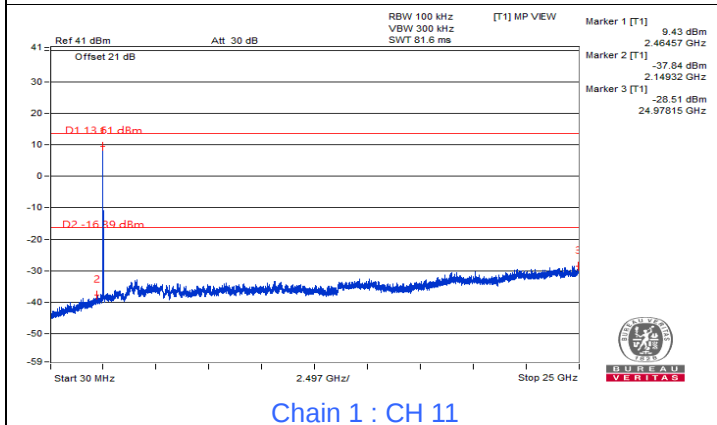
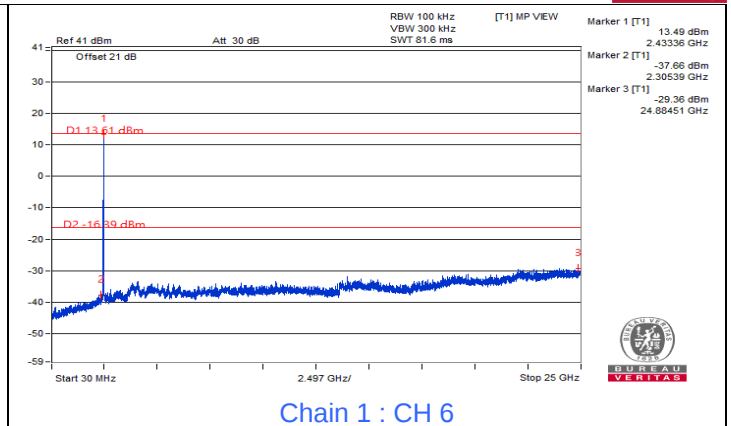
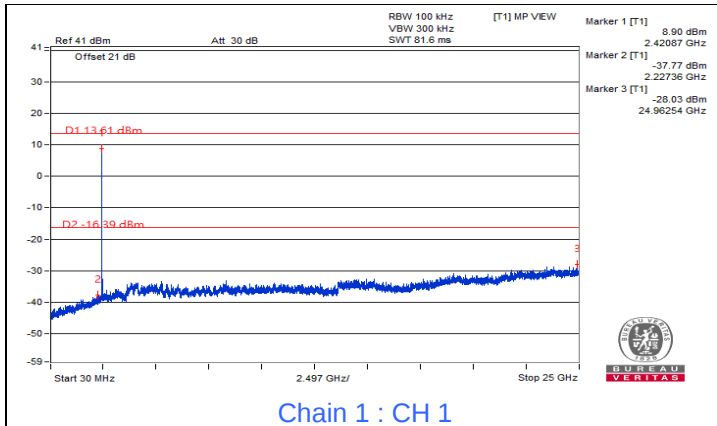
802.11b

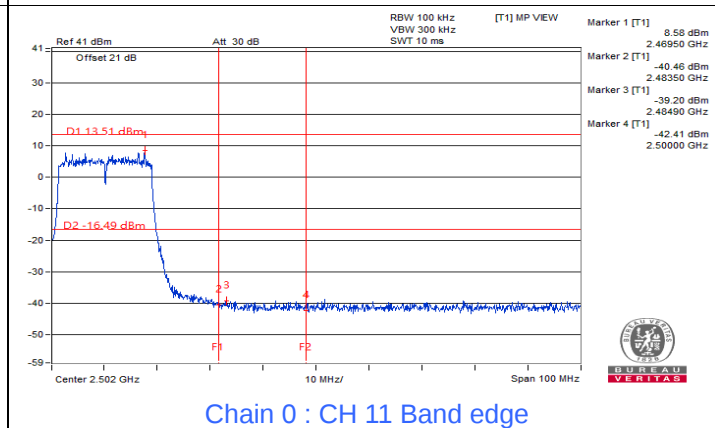
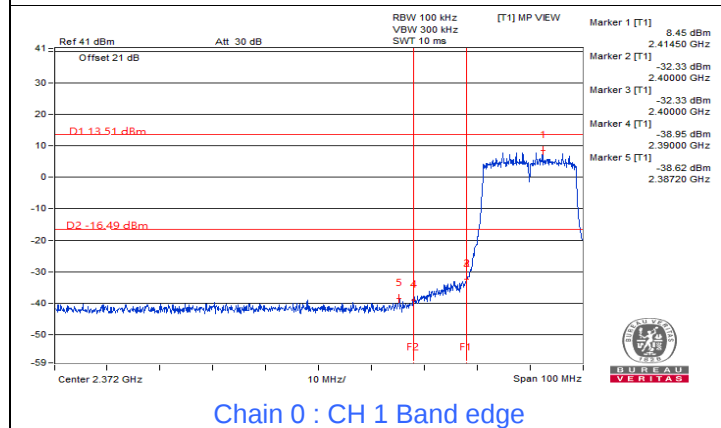
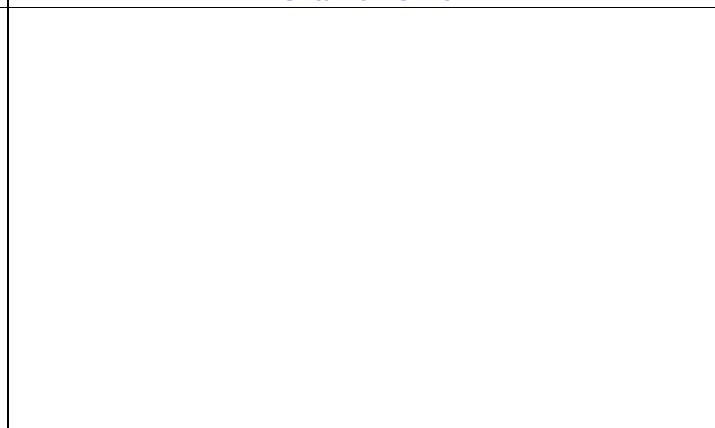
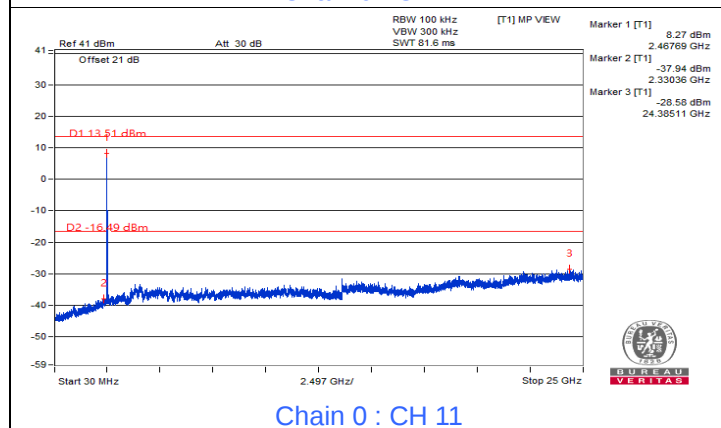
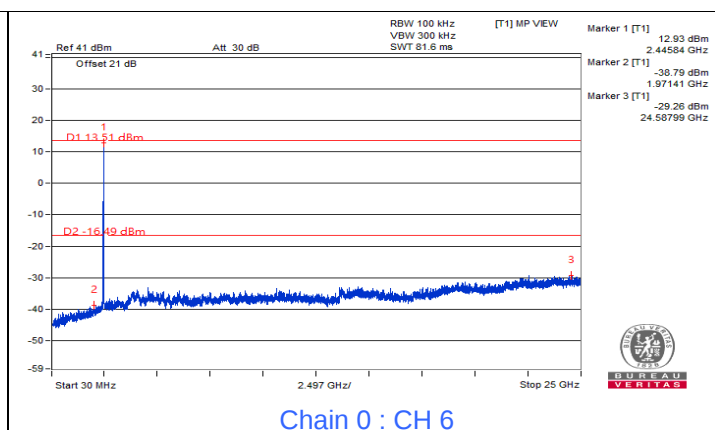
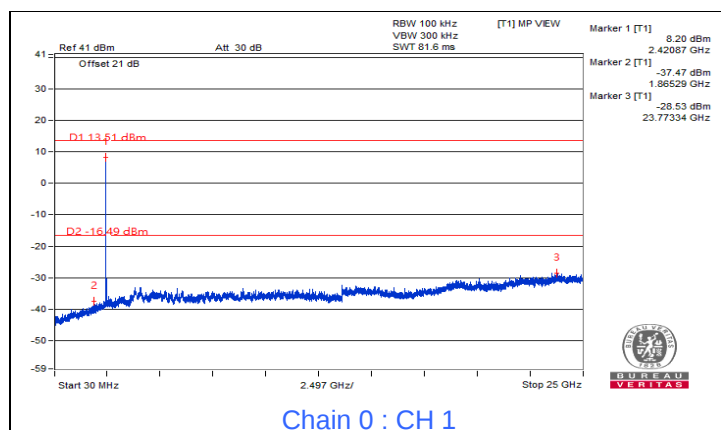
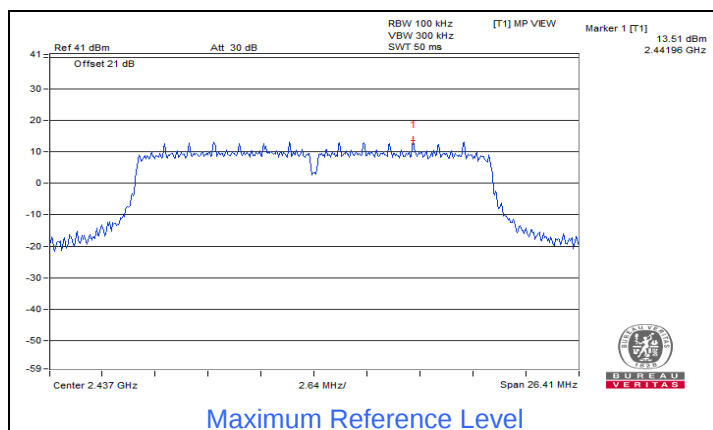


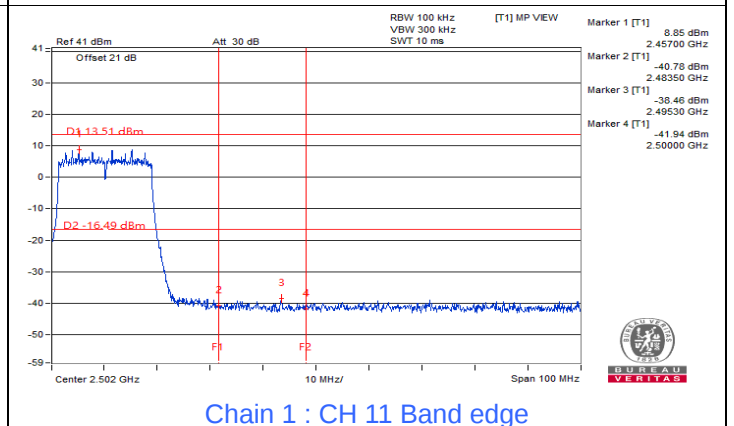
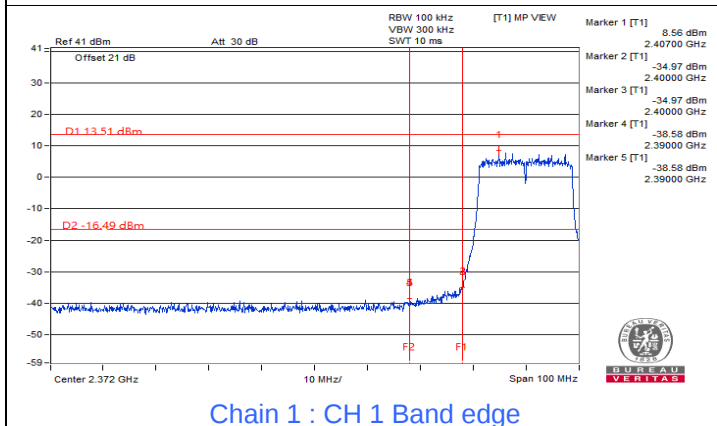
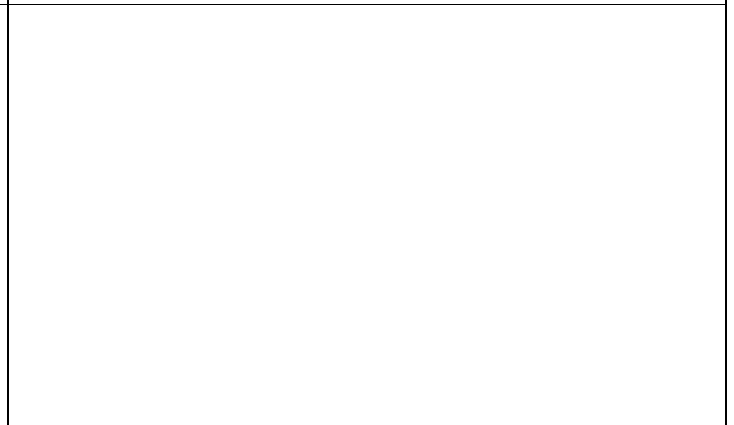
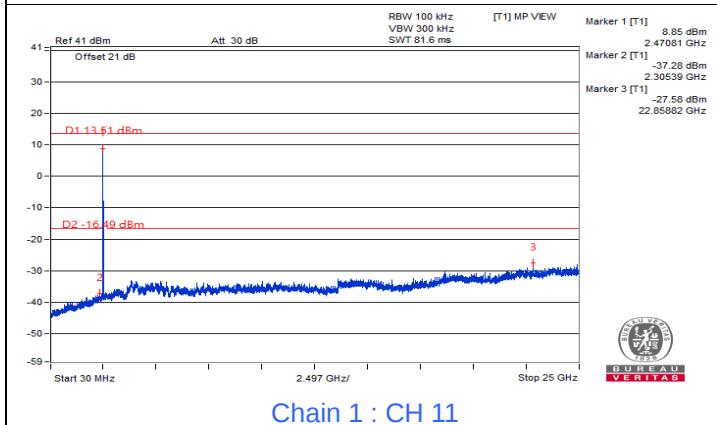
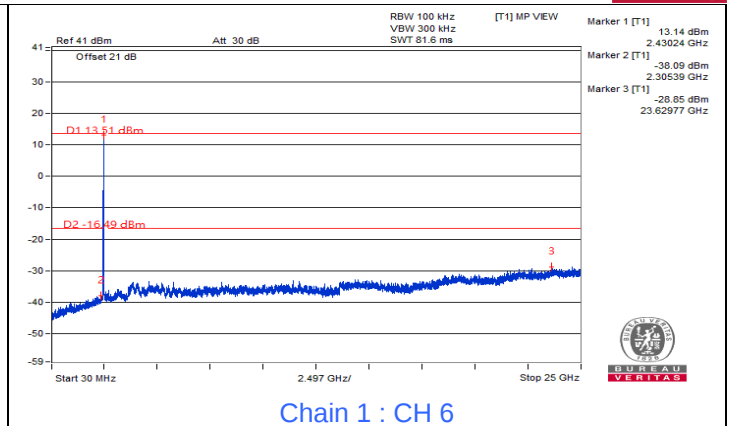
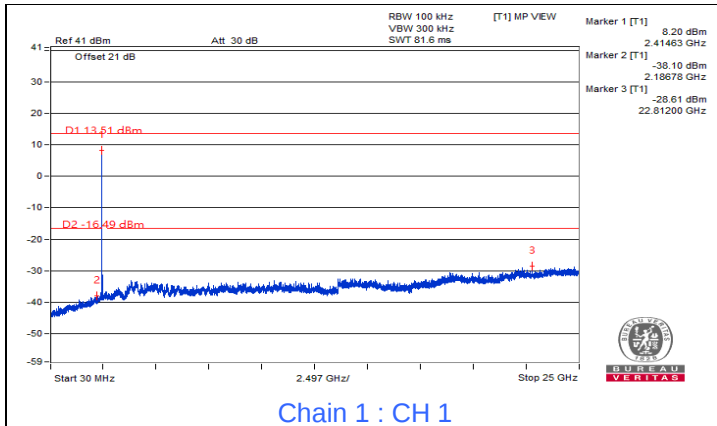


802.11g

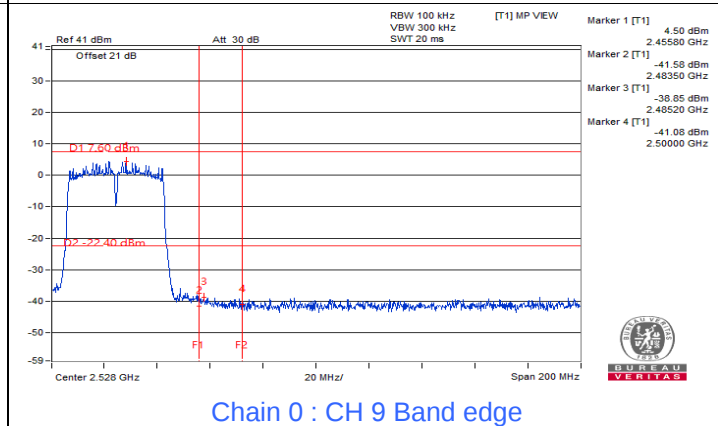
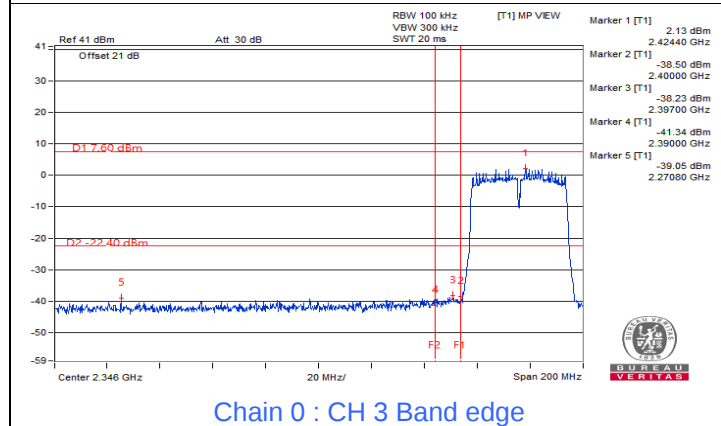
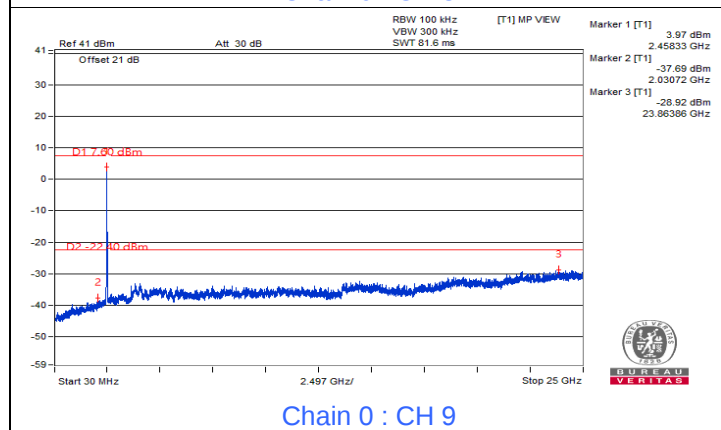
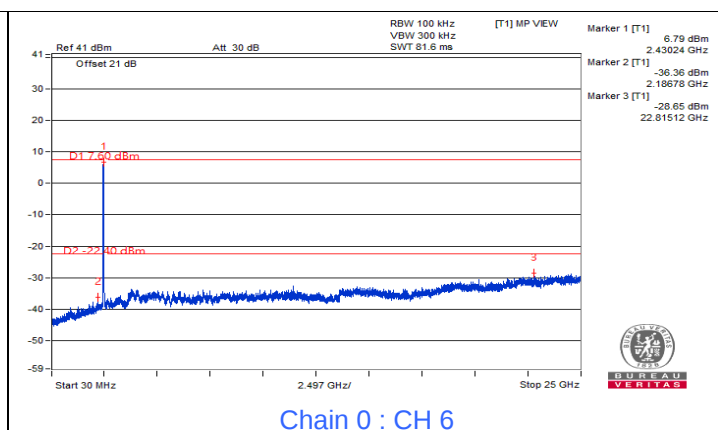
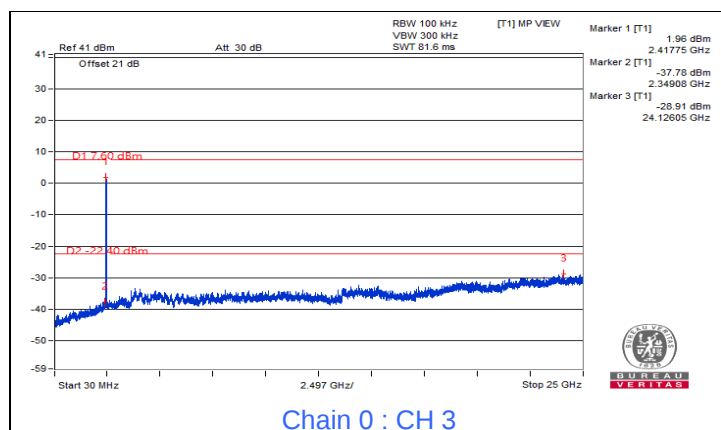
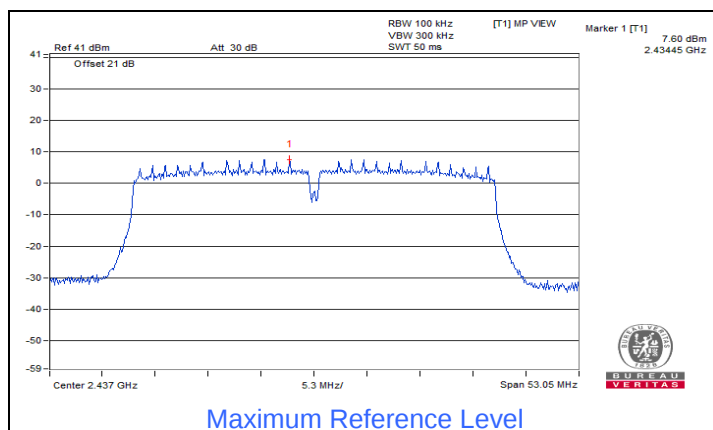


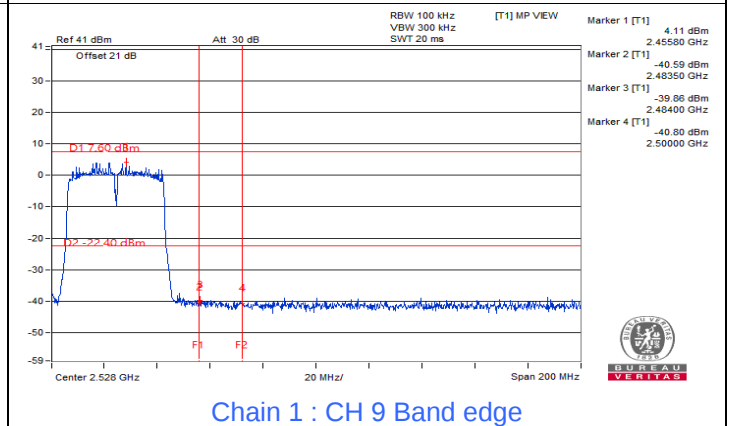
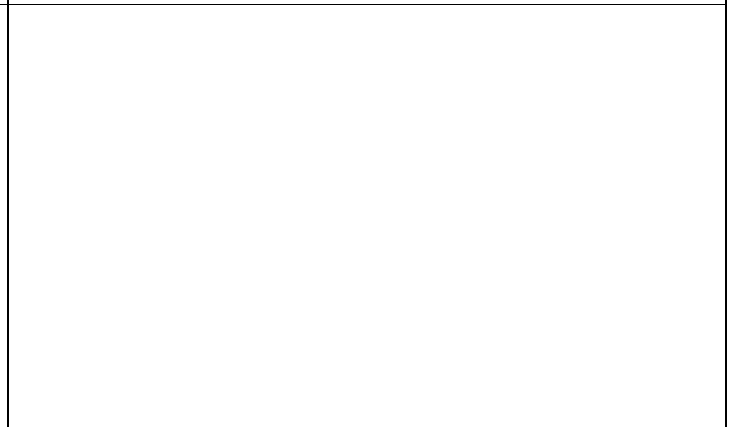
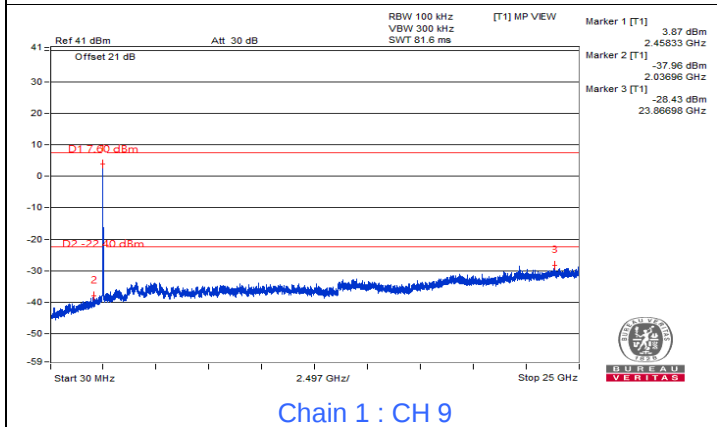
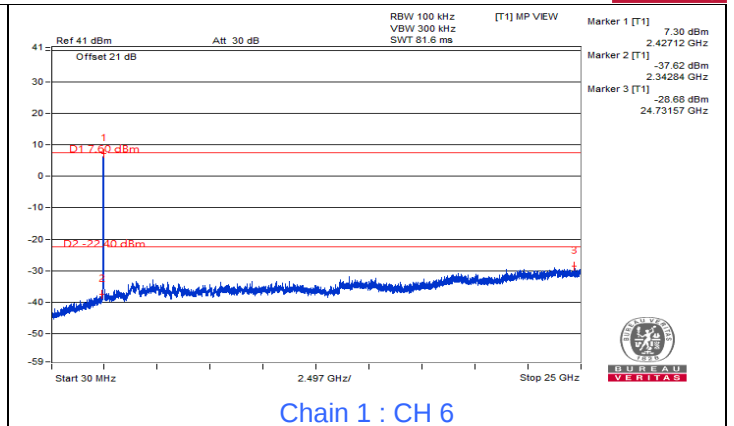
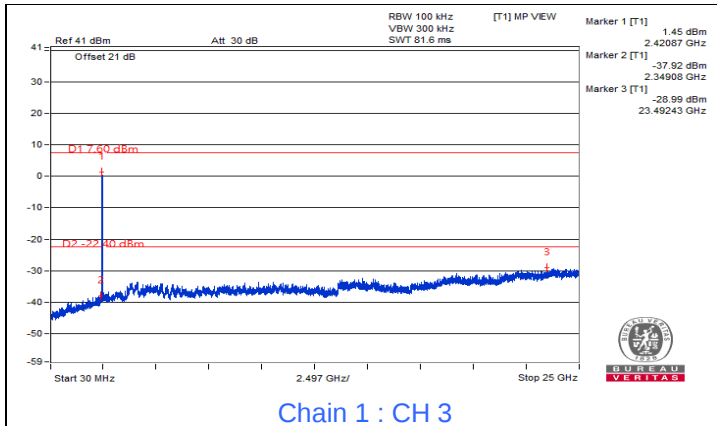






VHT40





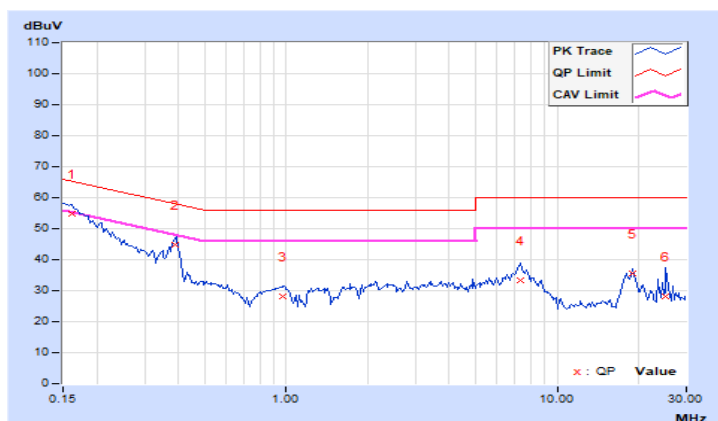
7.5 AC Power Conducted Emissions

RF Mode	VHT20	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Carter Lin		

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	0.16172	9.96	44.92	28.36	54.88	38.32	65.38	55.38	-10.50	-17.06
2	0.38828	9.97	34.92	32.27	44.89	42.24	58.10	48.10	-13.21	-5.86
3	0.96641	10.00	18.08	13.41	28.08	23.41	56.00	46.00	-27.92	-22.59
4	7.28906	10.34	23.04	18.08	33.38	28.42	60.00	50.00	-26.62	-21.58
5	19.08594	11.05	24.48	24.10	35.53	35.15	60.00	50.00	-24.47	-14.85
6	24.97656	11.18	16.90	12.88	28.08	24.06	60.00	50.00	-31.92	-25.94

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

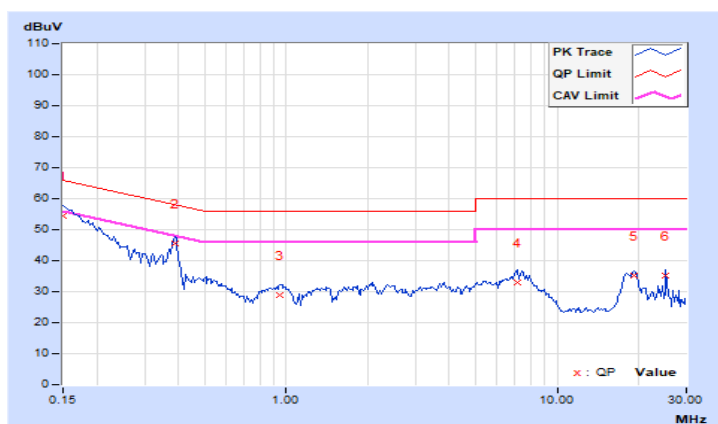


RF Mode	VHT20	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Carter Lin		

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	0.15000	9.93	44.38	26.69	54.31	36.62	66.00	56.00	-11.69	-19.38
2	0.38828	9.94	35.77	33.98	45.71	43.92	58.10	48.10	-12.39	-4.18
3	0.95078	9.97	18.77	14.57	28.74	24.54	56.00	46.00	-27.26	-21.46
4	7.16016	10.24	22.64	17.57	32.88	27.81	60.00	50.00	-27.12	-22.19
5	19.34766	10.80	24.33	22.68	35.13	33.48	60.00	50.00	-24.87	-16.52
6	25.15106	10.86	24.23	19.31	35.09	30.17	60.00	50.00	-24.91	-19.83

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



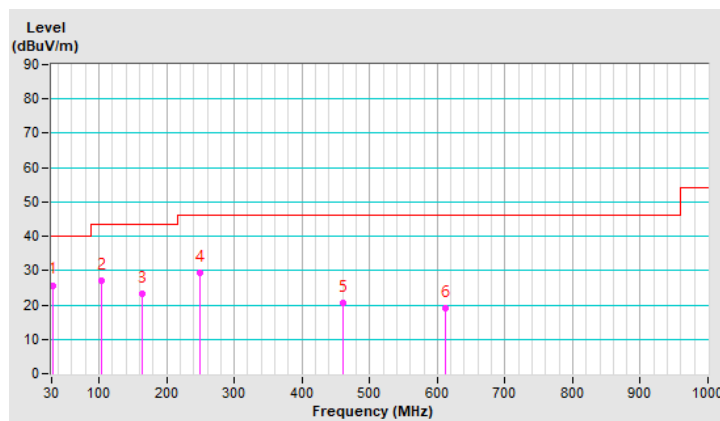
7.6 Unwanted Emissions below 1 GHz

RF Mode	VHT20	Channel	CH 6 : 2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	31°C, 76% RH
Tested By	Louis Yang		

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	32.28	25.7 QP	40.0	-14.3	1.00 H	274	44.5	-18.8
2	103.92	27.0 QP	43.5	-16.5	2.00 H	274	48.7	-21.7
3	163.33	23.2 QP	43.5	-20.3	2.00 H	91	41.0	-17.8
4	250.01	29.3 QP	46.0	-16.7	1.00 H	319	48.3	-19.0
5	460.80	20.5 QP	46.0	-25.5	2.00 H	71	33.7	-13.2
6	611.06	19.1 QP	46.0	-26.9	1.50 H	360	29.1	-10.0

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.

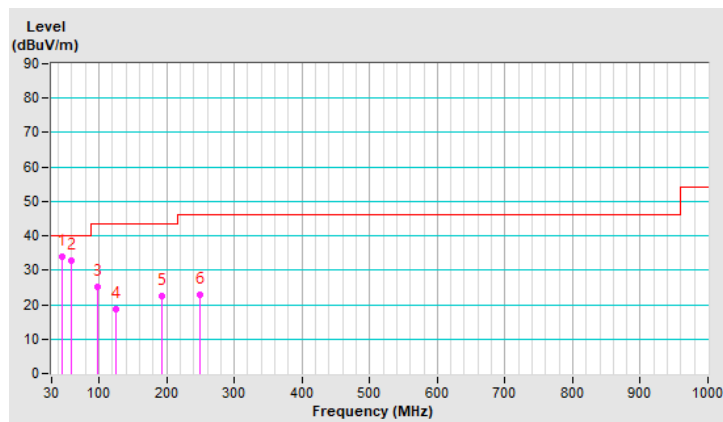


RF Mode	VHT20	Channel	CH 6 : 2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	31°C, 76% RH
Tested By	Louis Yang		

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	46.05	33.8 QP	40.0	-6.2	1.50 V	0	51.5	-17.7
2	59.78	32.8 QP	40.0	-7.2	1.00 V	359	51.2	-18.4
3	98.68	25.0 QP	43.5	-18.5	1.50 V	322	47.6	-22.6
4	124.97	18.5 QP	43.5	-25.0	1.00 V	7	38.0	-19.5
5	192.34	22.4 QP	43.5	-21.1	1.00 V	360	43.3	-20.9
6	250.01	22.8 QP	46.0	-23.2	1.00 V	228	41.8	-19.0

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.



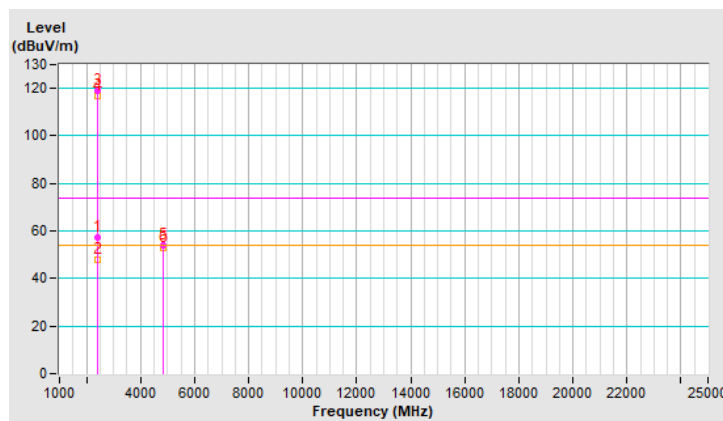
7.7 Unwanted Emissions above 1 GHz

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 (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	57.5 PK	74.0	-16.5	3.48 H	196	60.2	-2.7
2	2390.00	47.7 AV	54.0	-6.3	3.48 H	196	50.4	-2.7
3	*2412.00	119.2 PK			1.96 H	360	121.9	-2.7
4	*2412.00	117.0 AV			1.96 H	360	119.7	-2.7
5	4824.00	54.1 PK	74.0	-19.9	2.37 H	60	52.6	1.5
6	4824.00	52.9 AV	54.0	-1.1	2.37 H	60	51.4	1.5

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.

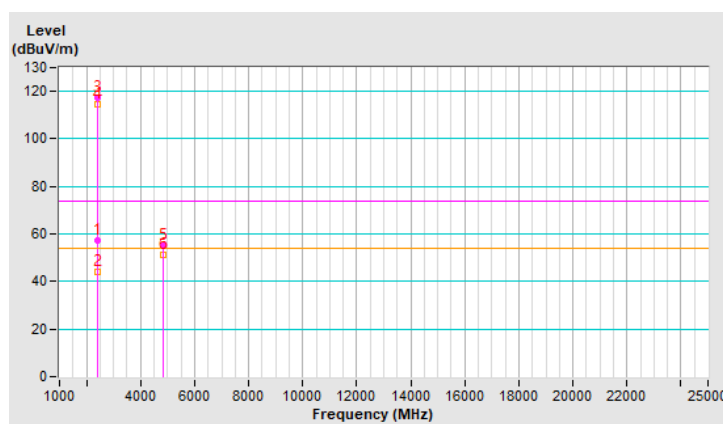


RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	57.3 PK	74.0	-16.7	3.97 V	1	60.0	-2.7
2	2390.00	44.1 AV	54.0	-9.9	3.97 V	1	46.8	-2.7
3	*2412.00	117.1 PK			3.97 V	1	119.8	-2.7
4	*2412.00	114.7 AV			3.97 V	1	117.4	-2.7
5	4824.00	54.9 PK	74.0	-19.1	1.58 V	70	53.4	1.5
6	4824.00	51.4 AV	54.0	-2.6	1.58 V	70	49.9	1.5

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.

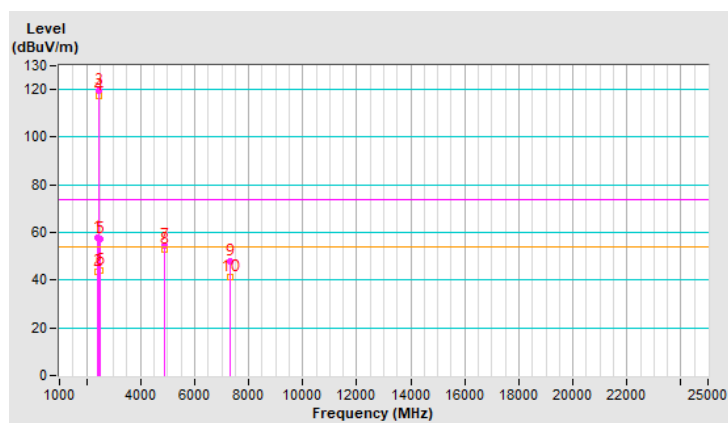


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	57.6 PK	74.0	-16.4	2.21 H	360	60.3	-2.7
2	2390.00	43.3 AV	54.0	-10.7	2.21 H	360	46.0	-2.7
3	*2437.00	119.7 PK			2.21 H	360	122.5	-2.8
4	*2437.00	117.5 AV			2.21 H	360	120.3	-2.8
5	2483.50	57.1 PK	74.0	-16.9	2.21 H	360	60.0	-2.9
6	2483.50	43.9 AV	54.0	-10.1	2.21 H	360	46.8	-2.9
7	4874.00	54.6 PK	74.0	-19.4	2.36 H	52	53.1	1.5
8	4874.00	52.8 AV	54.0	-1.2	2.36 H	52	51.3	1.5
9	7311.00	47.8 PK	74.0	-26.2	1.04 H	187	40.6	7.2
10	7311.00	41.1 AV	54.0	-12.9	1.04 H	187	33.9	7.2

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.

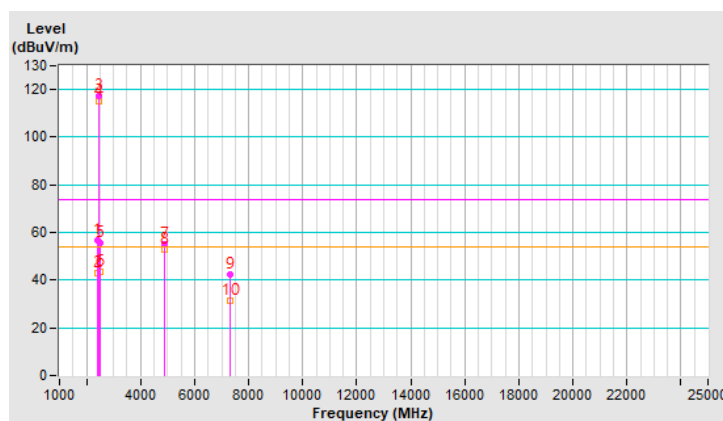


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	56.6 PK	74.0	-17.4	3.89 V	1	59.3	-2.7
2	2390.00	43.0 AV	54.0	-11.0	3.89 V	1	45.7	-2.7
3	*2437.00	117.4 PK			3.89 V	1	120.2	-2.8
4	*2437.00	115.0 AV			3.89 V	1	117.8	-2.8
5	2483.50	55.4 PK	74.0	-18.6	3.89 V	1	58.3	-2.9
6	2483.50	43.5 AV	54.0	-10.5	3.89 V	1	46.4	-2.9
7	4874.00	55.1 PK	74.0	-18.9	1.49 V	67	53.6	1.5
8	4874.00	52.8 AV	54.0	-1.2	1.49 V	67	51.3	1.5
9	7311.00	42.6 PK	74.0	-31.4	2.37 V	360	35.4	7.2
10	7311.00	31.2 AV	54.0	-22.8	2.37 V	360	24.0	7.2

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.

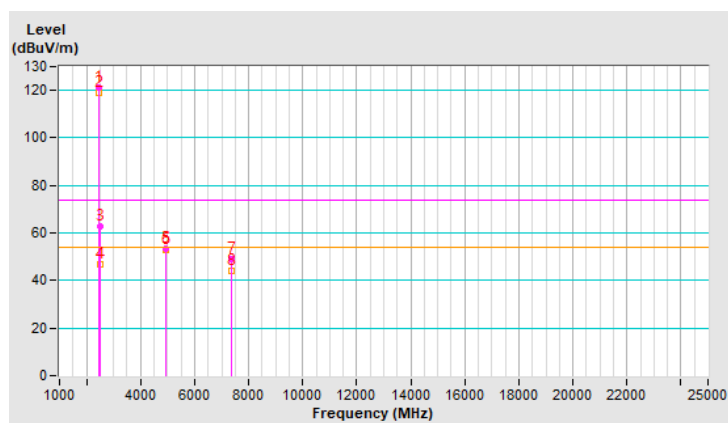


RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	121.2 PK			1.92 H	360	124.0	-2.8
2	*2462.00	118.9 AV			1.92 H	360	121.7	-2.8
3	2483.50	62.8 PK	74.0	-11.2	1.92 H	360	65.7	-2.9
4	2483.50	46.9 AV	54.0	-7.1	1.92 H	360	49.8	-2.9
5	4924.00	53.3 PK	74.0	-20.7	2.54 H	46	51.8	1.5
6	4924.00	52.9 AV	54.0	-1.1	2.54 H	46	51.4	1.5
7	7386.00	49.1 PK	74.0	-24.9	1.00 H	185	41.9	7.2
8	7386.00	44.1 AV	54.0	-9.9	1.00 H	185	36.9	7.2

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.

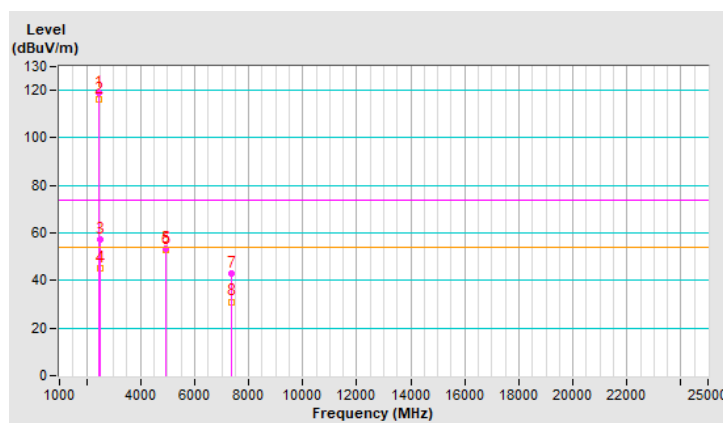


RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	118.8 PK			3.82 V	1	121.6	-2.8
2	*2462.00	116.4 AV			3.82 V	1	119.2	-2.8
3	2483.50	57.4 PK	74.0	-16.6	3.82 V	1	60.3	-2.9
4	2483.50	45.3 AV	54.0	-8.7	3.82 V	1	48.2	-2.9
5	4924.00	53.6 PK	74.0	-20.4	1.51 V	69	52.1	1.5
6	4924.00	53.0 AV	54.0	-1.0	1.51 V	69	51.5	1.5
7	7386.00	42.7 PK	74.0	-31.3	2.34 V	360	35.5	7.2
8	7386.00	31.1 AV	54.0	-22.9	2.34 V	360	23.9	7.2

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.

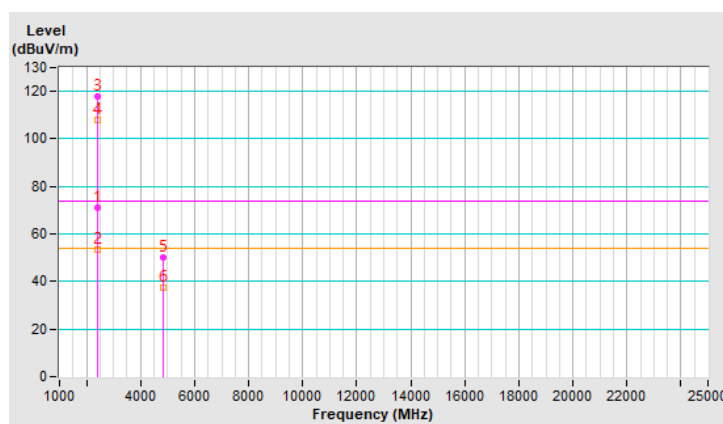


RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	70.9 PK	74.0	-3.1	1.84 H	360	73.6	-2.7
2	2390.00	53.2 AV	54.0	-0.8	1.84 H	360	55.9	-2.7
3	*2412.00	118.1 PK			1.84 H	360	120.8	-2.7
4	*2412.00	107.9 AV			1.84 H	360	110.6	-2.7
5	4824.00	50.0 PK	74.0	-24.0	2.37 H	67	48.5	1.5
6	4824.00	37.6 AV	54.0	-16.4	2.37 H	67	36.1	1.5

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.

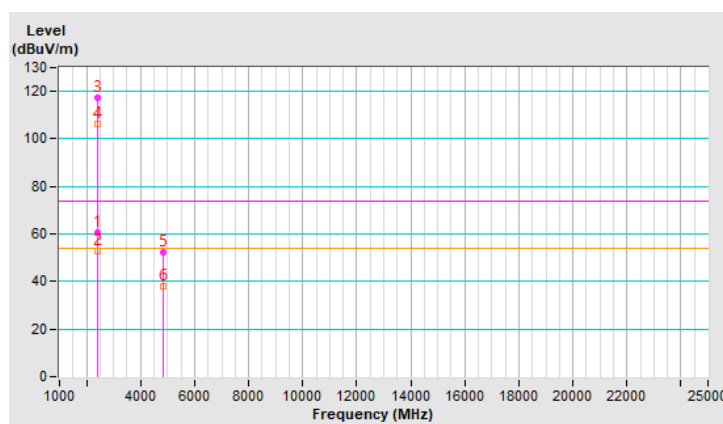


RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	60.4 PK	74.0	-13.6	3.99 V	4	63.1	-2.7
2	2390.00	52.7 AV	54.0	-1.3	3.99 V	4	55.4	-2.7
3	*2412.00	117.3 PK			3.99 V	4	120.0	-2.7
4	*2412.00	106.3 AV			3.99 V	4	109.0	-2.7
5	4824.00	52.2 PK	74.0	-21.8	1.43 V	72	50.7	1.5
6	4824.00	38.1 AV	54.0	-15.9	1.43 V	72	36.6	1.5

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.

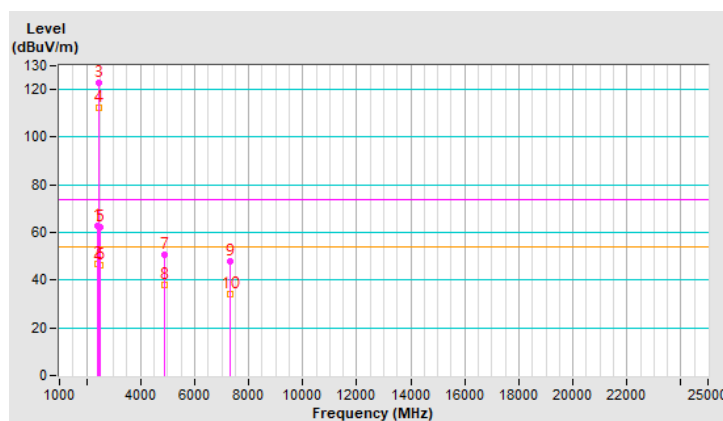


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	62.9 PK	74.0	-11.1	1.72 H	360	65.6	-2.7
2	2390.00	46.6 AV	54.0	-7.4	1.72 H	360	49.3	-2.7
3	*2437.00	122.6 PK			1.72 H	360	125.4	-2.8
4	*2437.00	112.2 AV			1.72 H	360	115.0	-2.8
5	2483.50	62.3 PK	74.0	-11.7	1.72 H	360	65.2	-2.9
6	2483.50	46.0 AV	54.0	-8.0	1.72 H	360	48.9	-2.9
7	4874.00	50.6 PK	74.0	-23.4	2.42 H	52	49.1	1.5
8	4874.00	38.1 AV	54.0	-15.9	2.42 H	52	36.6	1.5
9	7311.00	47.9 PK	74.0	-26.1	1.02 H	195	40.7	7.2
10	7311.00	34.2 AV	54.0	-19.8	1.02 H	195	27.0	7.2

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.

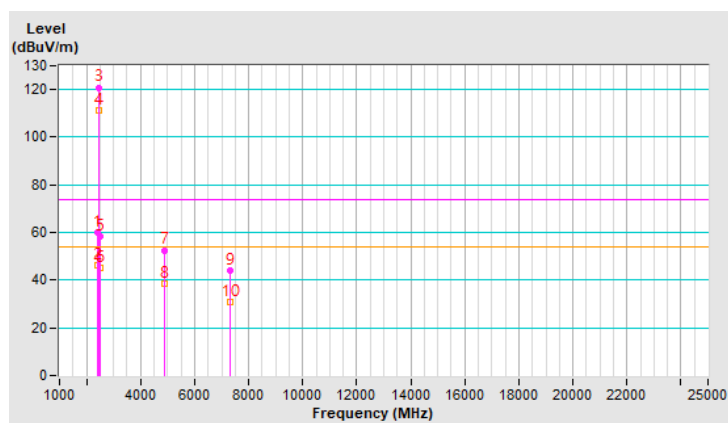


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	59.9 PK	74.0	-14.1	1.78 V	4	62.6	-2.7
2	2390.00	46.0 AV	54.0	-8.0	1.78 V	4	48.7	-2.7
3	*2437.00	120.9 PK			1.78 V	4	123.7	-2.8
4	*2437.00	111.5 AV			1.78 V	4	114.3	-2.8
5	2483.50	58.5 PK	74.0	-15.5	1.78 V	4	61.4	-2.9
6	2483.50	45.2 AV	54.0	-8.8	1.78 V	4	48.1	-2.9
7	4874.00	52.6 PK	74.0	-21.4	1.40 V	66	51.1	1.5
8	4874.00	38.5 AV	54.0	-15.5	1.40 V	66	37.0	1.5
9	7311.00	43.8 PK	74.0	-30.2	2.35 V	360	36.6	7.2
10	7311.00	30.6 AV	54.0	-23.4	2.35 V	360	23.4	7.2

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.

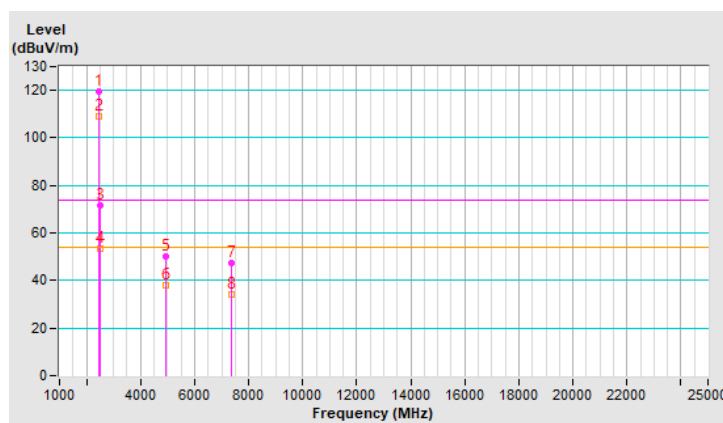


RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	119.5 PK			2.52 H	180	122.3	-2.8
2	*2462.00	109.2 AV			2.52 H	180	112.0	-2.8
3	2483.50	71.6 PK	74.0	-2.4	2.52 H	180	74.5	-2.9
4	2483.50	53.3 AV	54.0	-0.7	2.52 H	180	56.2	-2.9
5	4924.00	50.3 PK	74.0	-23.7	2.43 H	56	48.8	1.5
6	4924.00	38.0 AV	54.0	-16.0	2.43 H	56	36.5	1.5
7	7386.00	47.6 PK	74.0	-26.4	1.00 H	210	40.4	7.2
8	7386.00	34.0 AV	54.0	-20.0	1.00 H	210	26.8	7.2

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.

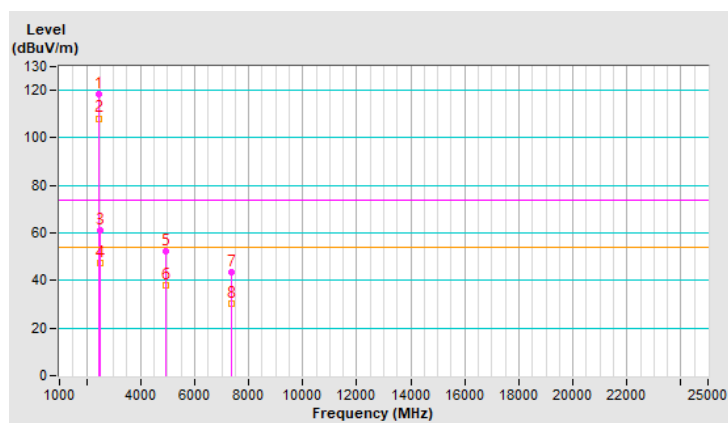


RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	118.4 PK			1.64 V	4	121.2	-2.8
2	*2462.00	108.2 AV			1.64 V	4	111.0	-2.8
3	2483.50	61.2 PK	74.0	-12.8	1.64 V	4	64.1	-2.9
4	2483.50	47.3 AV	54.0	-6.7	1.64 V	4	50.2	-2.9
5	4924.00	52.1 PK	74.0	-21.9	1.39 V	75	50.6	1.5
6	4924.00	38.1 AV	54.0	-15.9	1.39 V	75	36.6	1.5
7	7386.00	43.6 PK	74.0	-30.4	2.34 V	360	36.4	7.2
8	7386.00	30.4 AV	54.0	-23.6	2.34 V	360	23.2	7.2

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.

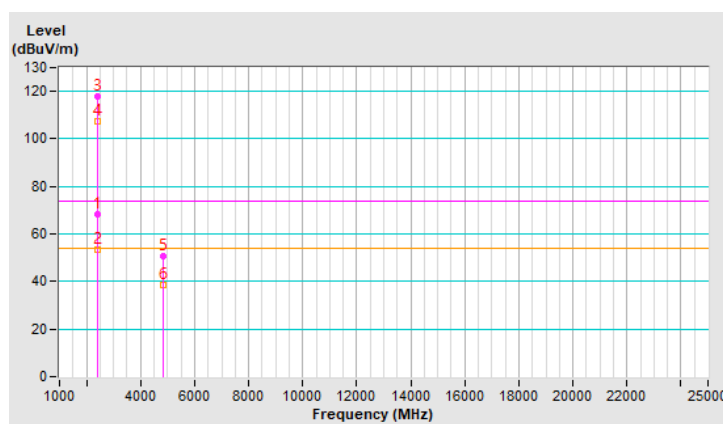


RF Mode	VHT20	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	68.2 PK	74.0	-5.8	1.03 H	176	70.9	-2.7
2	2390.00	53.5 AV	54.0	-0.5	1.03 H	176	56.2	-2.7
3	*2412.00	117.8 PK			1.03 H	176	120.5	-2.7
4	*2412.00	107.5 AV			1.03 H	176	110.2	-2.7
5	4824.00	50.8 PK	74.0	-23.2	2.23 H	71	49.3	1.5
6	4824.00	38.5 AV	54.0	-15.5	2.23 H	71	37.0	1.5

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.

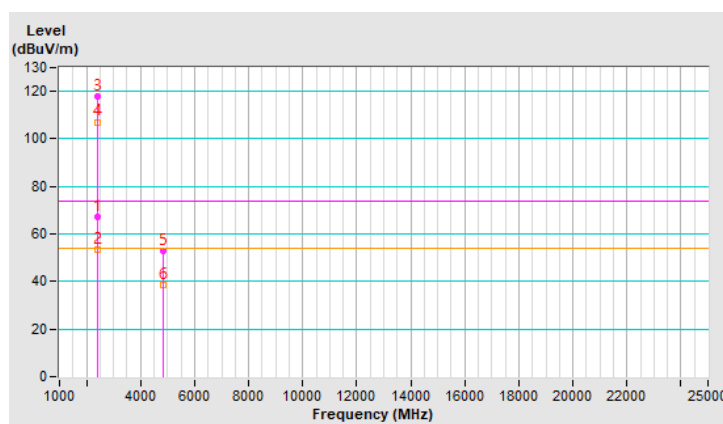


RF Mode	VHT20	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	67.4 PK	74.0	-6.6	1.72 V	5	70.1	-2.7
2	2390.00	53.2 AV	54.0	-0.8	1.72 V	5	55.9	-2.7
3	*2412.00	117.7 PK			1.72 V	5	120.4	-2.7
4	*2412.00	107.1 AV			1.72 V	5	109.8	-2.7
5	4824.00	52.7 PK	74.0	-21.3	1.37 V	48	51.2	1.5
6	4824.00	38.4 AV	54.0	-15.6	1.37 V	48	36.9	1.5

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.

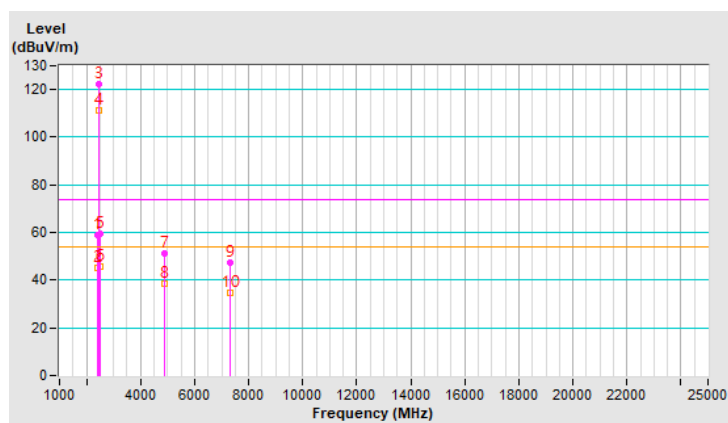


RF Mode	VHT20	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	58.9 PK	74.0	-15.1	2.63 H	360	61.6	-2.7
2	2390.00	45.0 AV	54.0	-9.0	2.63 H	360	47.7	-2.7
3	*2437.00	122.3 PK			2.63 H	360	125.1	-2.8
4	*2437.00	111.5 AV			2.63 H	360	114.3	-2.8
5	2483.50	59.5 PK	74.0	-14.5	2.63 H	360	62.4	-2.9
6	2483.50	45.7 AV	54.0	-8.3	2.63 H	360	48.6	-2.9
7	4874.00	51.0 PK	74.0	-23.0	2.23 H	60	49.5	1.5
8	4874.00	38.5 AV	54.0	-15.5	2.23 H	60	37.0	1.5
9	7311.00	47.3 PK	74.0	-26.7	1.07 H	188	40.1	7.2
10	7311.00	34.5 AV	54.0	-19.5	1.07 H	188	27.3	7.2

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.

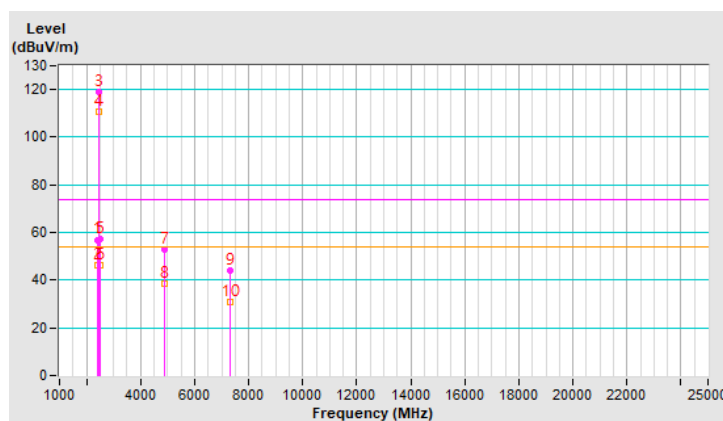


RF Mode	VHT20	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	57.0 PK	74.0	-17.0	3.83 V	0	59.7	-2.7
2	2390.00	46.0 AV	54.0	-8.0	3.83 V	0	48.7	-2.7
3	*2437.00	119.0 PK			3.83 V	0	121.8	-2.8
4	*2437.00	110.6 AV			3.83 V	0	113.4	-2.8
5	2483.50	57.1 PK	74.0	-16.9	3.83 V	0	60.0	-2.9
6	2483.50	46.2 AV	54.0	-7.8	3.83 V	0	49.1	-2.9
7	4874.00	53.1 PK	74.0	-20.9	1.39 V	53	51.6	1.5
8	4874.00	38.7 AV	54.0	-15.3	1.39 V	53	37.2	1.5
9	7311.00	43.9 PK	74.0	-30.1	2.32 V	360	36.7	7.2
10	7311.00	30.9 AV	54.0	-23.1	2.32 V	360	23.7	7.2

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.

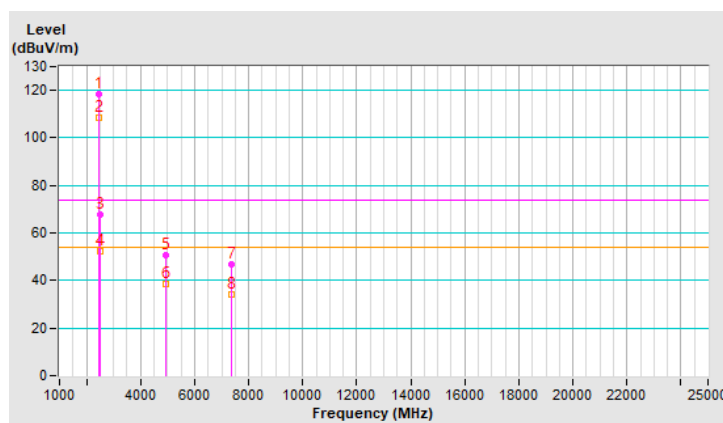


RF Mode	VHT20	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	118.3 PK			2.51 H	184	121.1	-2.8
2	*2462.00	108.5 AV			2.51 H	184	111.3	-2.8
3	2483.50	67.6 PK	74.0	-6.4	2.51 H	184	70.5	-2.9
4	2483.50	52.4 AV	54.0	-1.6	2.51 H	184	55.3	-2.9
5	4924.00	50.8 PK	74.0	-23.2	2.18 H	65	49.3	1.5
6	4924.00	38.4 AV	54.0	-15.6	2.18 H	65	36.9	1.5
7	7386.00	47.0 PK	74.0	-27.0	1.10 H	203	39.8	7.2
8	7386.00	34.2 AV	54.0	-19.8	1.10 H	203	27.0	7.2

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.

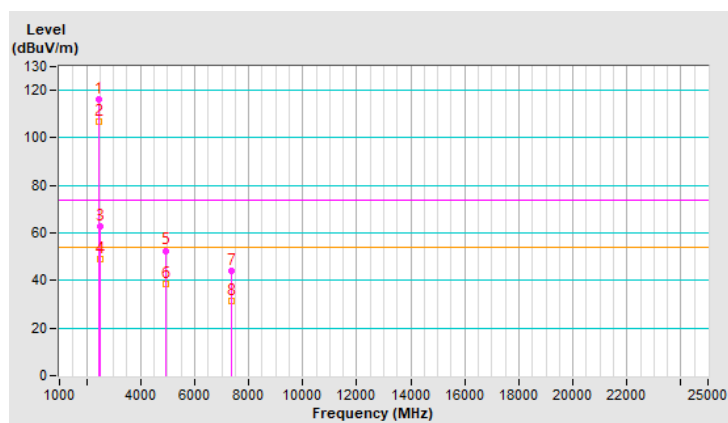


RF Mode	VHT20	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	116.0 PK			1.84 V	1	118.8	-2.8
2	*2462.00	106.7 AV			1.84 V	1	109.5	-2.8
3	2483.50	62.8 PK	74.0	-11.2	1.84 V	1	65.7	-2.9
4	2483.50	48.9 AV	54.0	-5.1	1.84 V	1	51.8	-2.9
5	4924.00	52.6 PK	74.0	-21.4	1.34 V	49	51.1	1.5
6	4924.00	38.3 AV	54.0	-15.7	1.34 V	49	36.8	1.5
7	7386.00	44.2 PK	74.0	-29.8	2.31 V	360	37.0	7.2
8	7386.00	31.3 AV	54.0	-22.7	2.31 V	360	24.1	7.2

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.

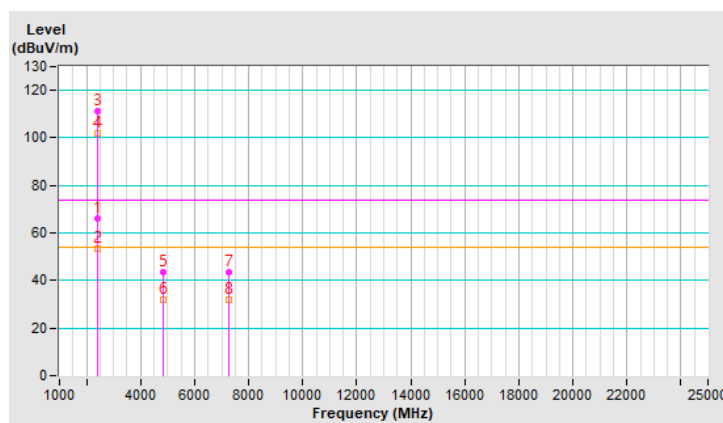


RF Mode	VHT40	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	66.1 PK	74.0	-7.9	2.07 H	196	68.8	-2.7
2	2390.00	53.2 AV	54.0	-0.8	2.07 H	196	55.9	-2.7
3	*2422.00	111.3 PK			2.07 H	196	114.1	-2.8
4	*2422.00	102.1 AV			2.07 H	196	104.9	-2.8
5	4844.00	43.5 PK	74.0	-30.5	2.57 H	60	42.0	1.5
6	4844.00	31.7 AV	54.0	-22.3	2.57 H	60	30.2	1.5
7	7266.00	43.7 PK	74.0	-30.3	1.04 H	182	36.5	7.2
8	7266.00	31.9 AV	54.0	-22.1	1.04 H	182	24.7	7.2

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.

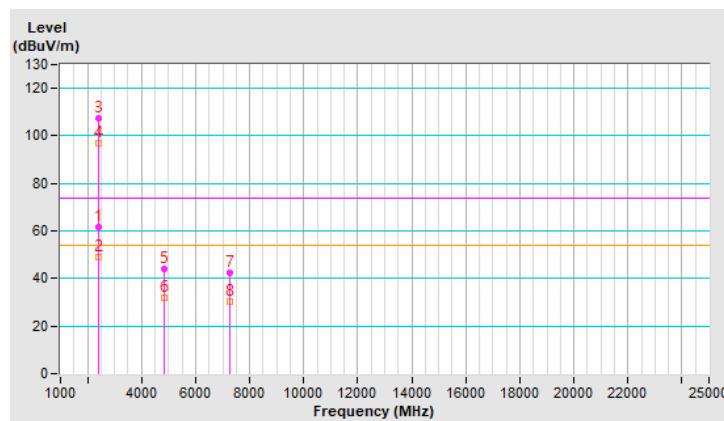


RF Mode	VHT40	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	61.9 PK	74.0	-12.1	1.48 V	2	64.6	-2.7
2	2390.00	49.0 AV	54.0	-5.0	1.48 V	2	51.7	-2.7
3	*2422.00	107.3 PK			1.48 V	2	110.1	-2.8
4	*2422.00	96.9 AV			1.48 V	2	99.7	-2.8
5	4844.00	44.3 PK	74.0	-29.7	1.41 V	51	42.8	1.5
6	4844.00	31.9 AV	54.0	-22.1	1.41 V	51	30.4	1.5
7	7266.00	42.6 PK	74.0	-31.4	2.30 V	360	35.4	7.2
8	7266.00	30.5 AV	54.0	-23.5	2.30 V	360	23.3	7.2

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.

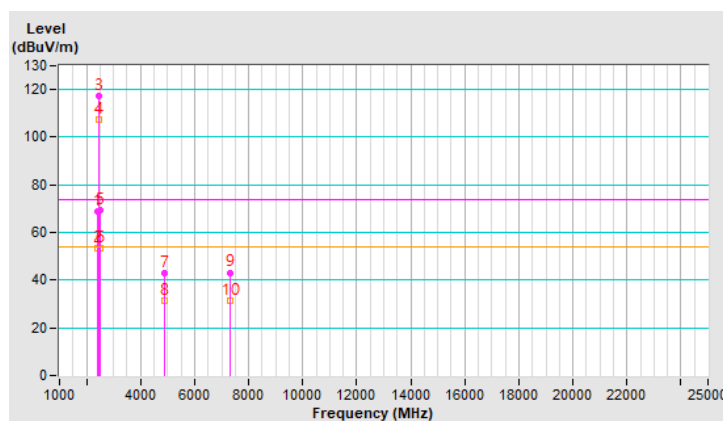


RF Mode	VHT40	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	68.8 PK	74.0	-5.2	2.32 H	190	71.5	-2.7
2	2390.00	53.2 AV	54.0	-0.8	2.32 H	190	55.9	-2.7
3	*2437.00	117.1 PK			2.32 H	190	119.9	-2.8
4	*2437.00	107.5 AV			2.32 H	190	110.3	-2.8
5	2483.50	69.6 PK	74.0	-4.4	2.32 H	190	72.5	-2.9
6	2483.50	53.2 AV	54.0	-0.8	2.32 H	190	56.1	-2.9
7	4874.00	43.1 PK	74.0	-30.9	2.59 H	45	41.6	1.5
8	4874.00	31.4 AV	54.0	-22.6	2.59 H	45	29.9	1.5
9	7311.00	43.2 PK	74.0	-30.8	1.02 H	197	36.0	7.2
10	7311.00	31.4 AV	54.0	-22.6	1.02 H	197	24.2	7.2

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.

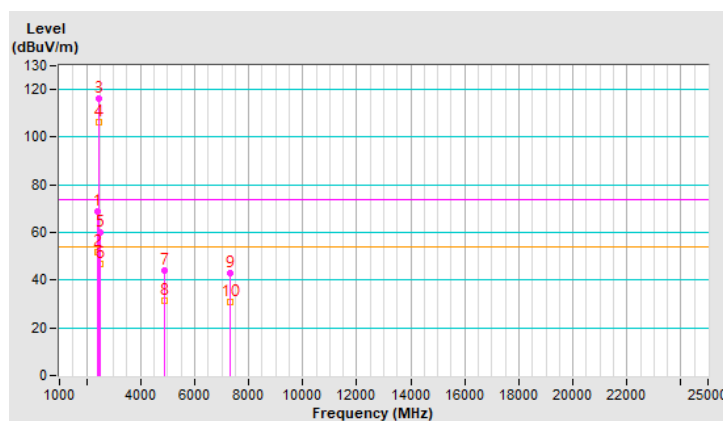


RF Mode	VHT40	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	68.8 PK	74.0	-5.2	1.88 V	3	71.5	-2.7
2	2390.00	51.8 AV	54.0	-2.2	1.88 V	3	54.5	-2.7
3	*2437.00	116.1 PK			1.88 V	3	118.9	-2.8
4	*2437.00	106.3 AV			1.88 V	3	109.1	-2.8
5	2483.50	60.1 PK	74.0	-13.9	1.88 V	3	63.0	-2.9
6	2483.50	46.9 AV	54.0	-7.1	1.88 V	3	49.8	-2.9
7	4874.00	44.1 PK	74.0	-29.9	1.45 V	62	42.6	1.5
8	4874.00	31.5 AV	54.0	-22.5	1.45 V	62	30.0	1.5
9	7311.00	42.8 PK	74.0	-31.2	2.31 V	360	35.6	7.2
10	7311.00	31.0 AV	54.0	-23.0	2.31 V	360	23.8	7.2

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.

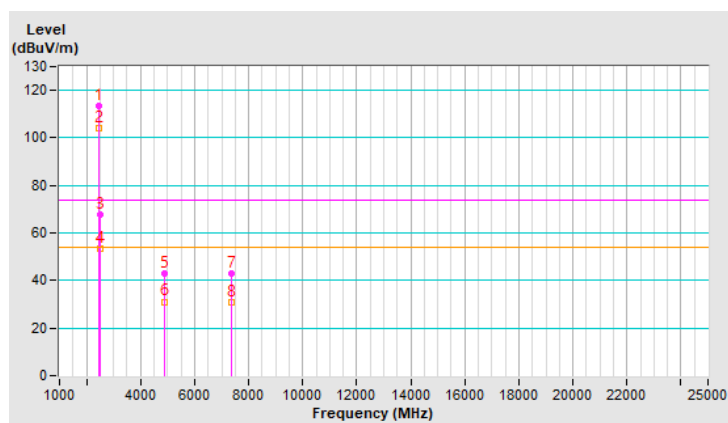


RF Mode	VHT40	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

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	113.7 PK			4.00 H	181	116.5	-2.8
2	*2452.00	103.9 AV			4.00 H	181	106.7	-2.8
3	2483.50	67.9 PK	74.0	-6.1	4.00 H	181	70.8	-2.9
4	2483.50	53.4 AV	54.0	-0.6	4.00 H	181	56.3	-2.9
5	4904.00	42.7 PK	74.0	-31.3	2.63 H	51	41.2	1.5
6	4904.00	31.1 AV	54.0	-22.9	2.63 H	51	29.6	1.5
7	7356.00	42.9 PK	74.0	-31.1	1.04 H	191	35.8	7.1
8	7356.00	31.0 AV	54.0	-23.0	1.04 H	191	23.9	7.1

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.

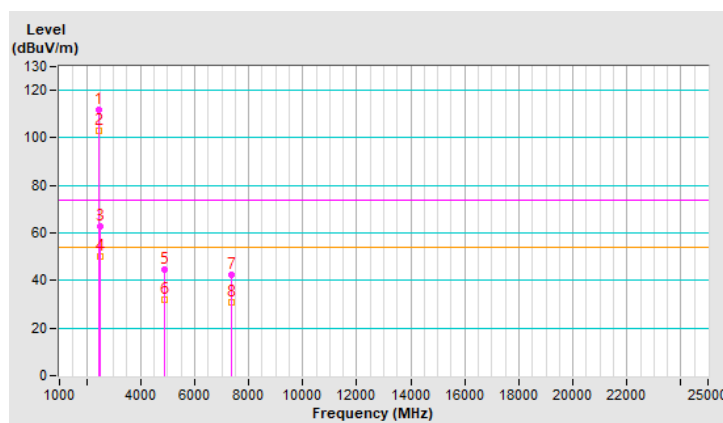


RF Mode	VHT40	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	29°C, 75% RH
Tested By	Louis Yang		

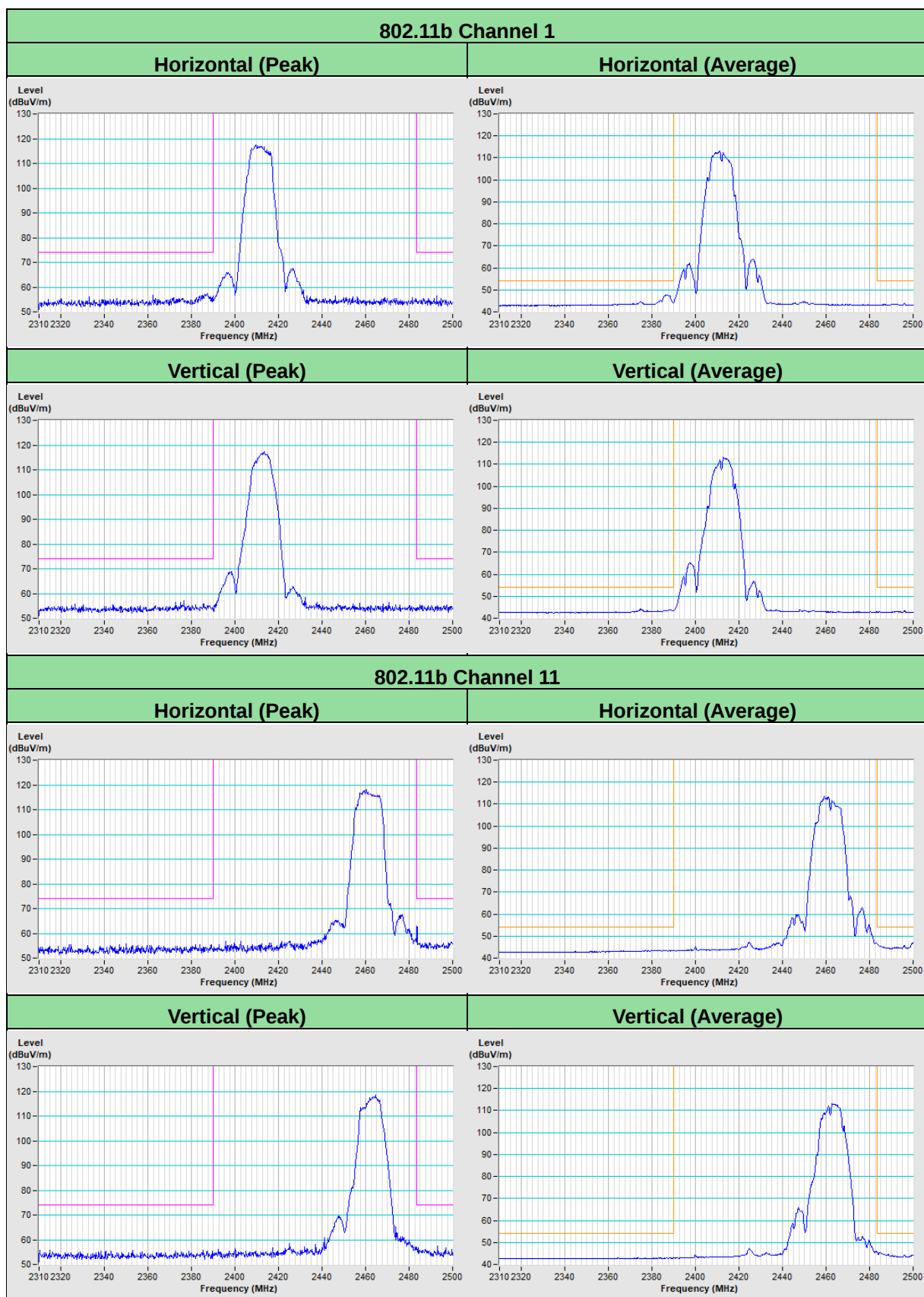
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	111.7 PK			1.46 V	1	114.5	-2.8
2	*2452.00	102.8 AV			1.46 V	1	105.6	-2.8
3	2483.50	62.7 PK	74.0	-11.3	1.46 V	1	65.6	-2.9
4	2483.50	50.2 AV	54.0	-3.8	1.46 V	1	53.1	-2.9
5	4904.00	44.6 PK	74.0	-29.4	1.49 V	55	43.1	1.5
6	4904.00	32.0 AV	54.0	-22.0	1.49 V	55	30.5	1.5
7	7356.00	42.6 PK	74.0	-31.4	2.35 V	360	35.5	7.1
8	7356.00	30.7 AV	54.0	-23.3	2.35 V	360	23.6	7.1

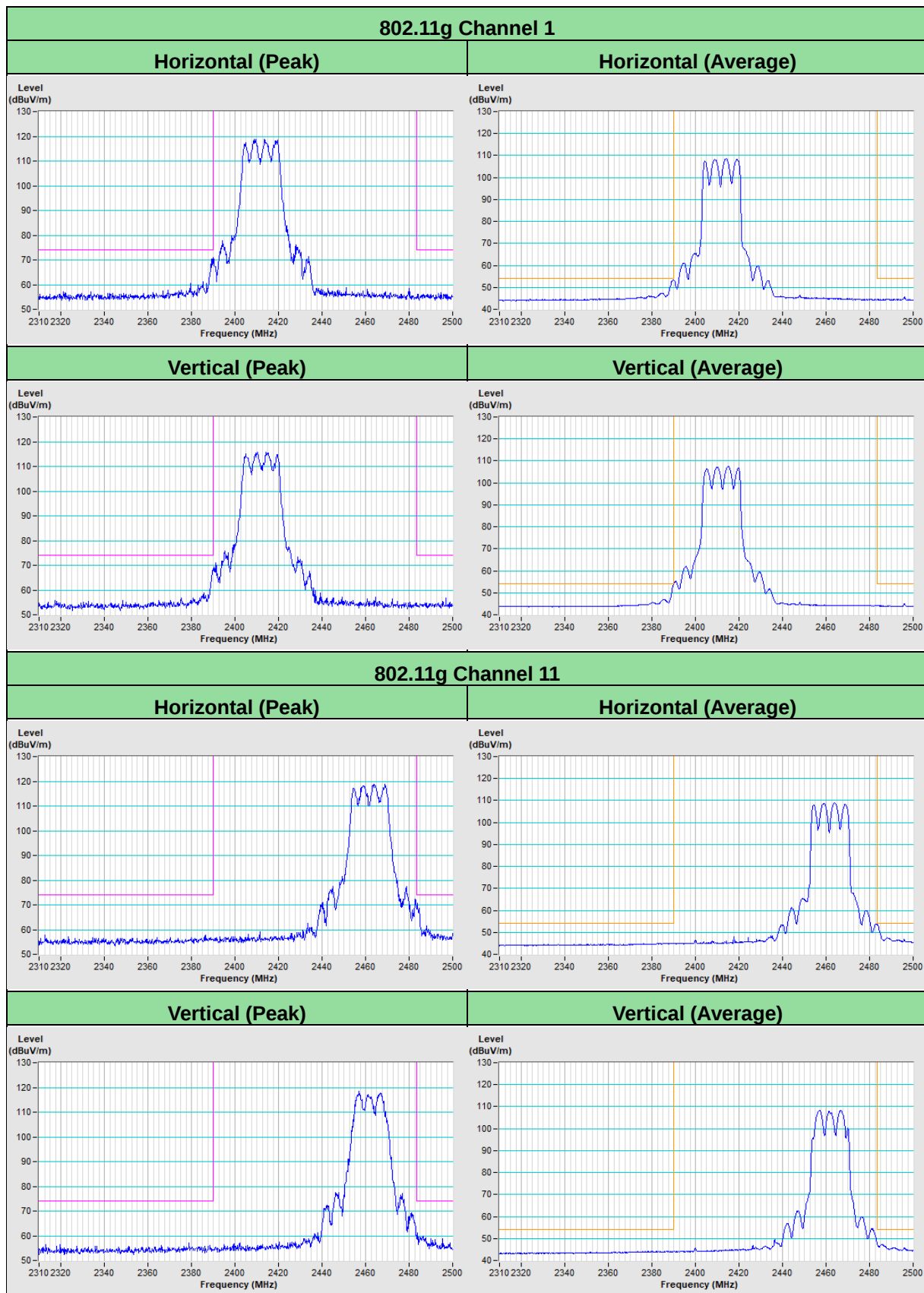
Remarks:

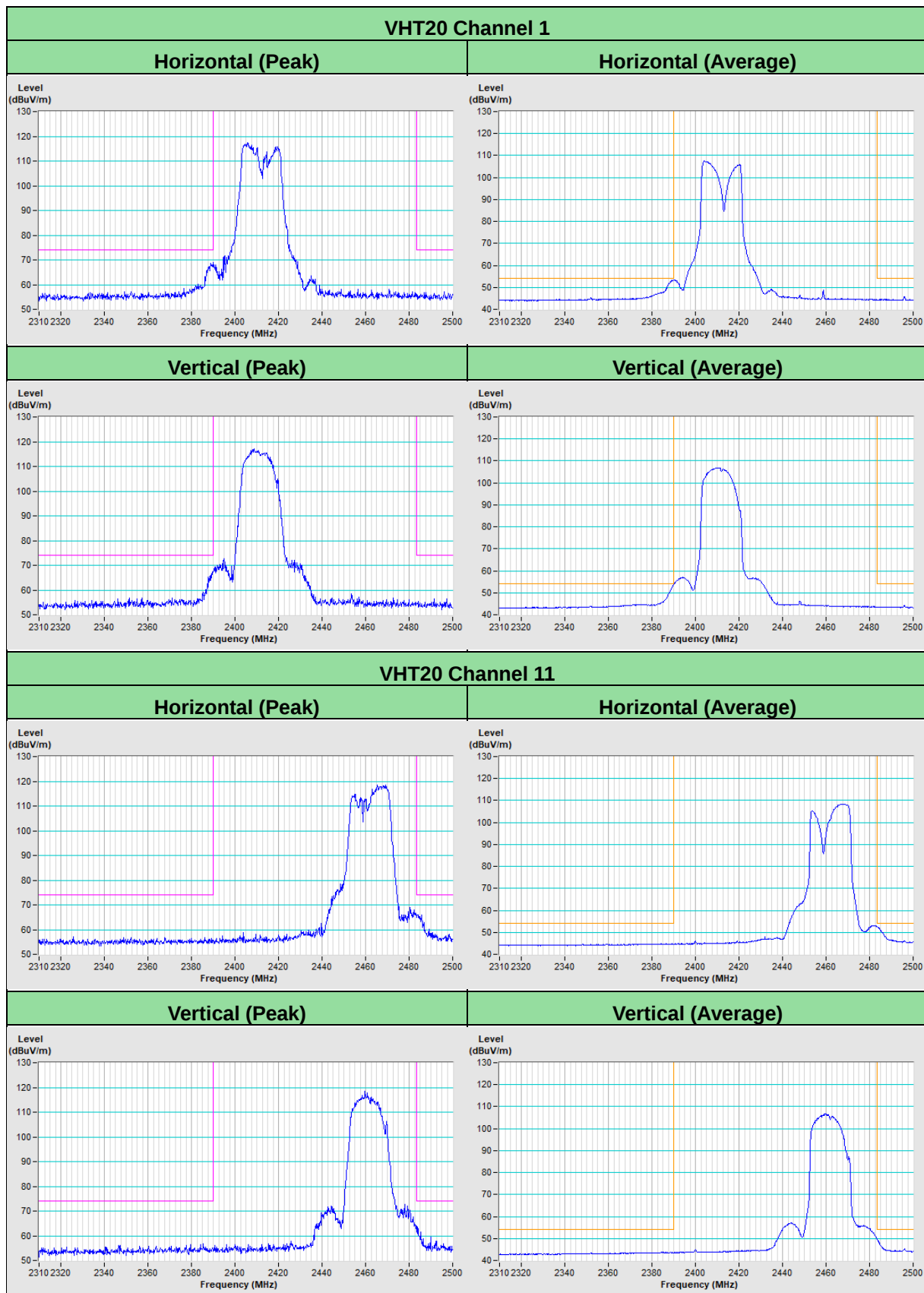
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency,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

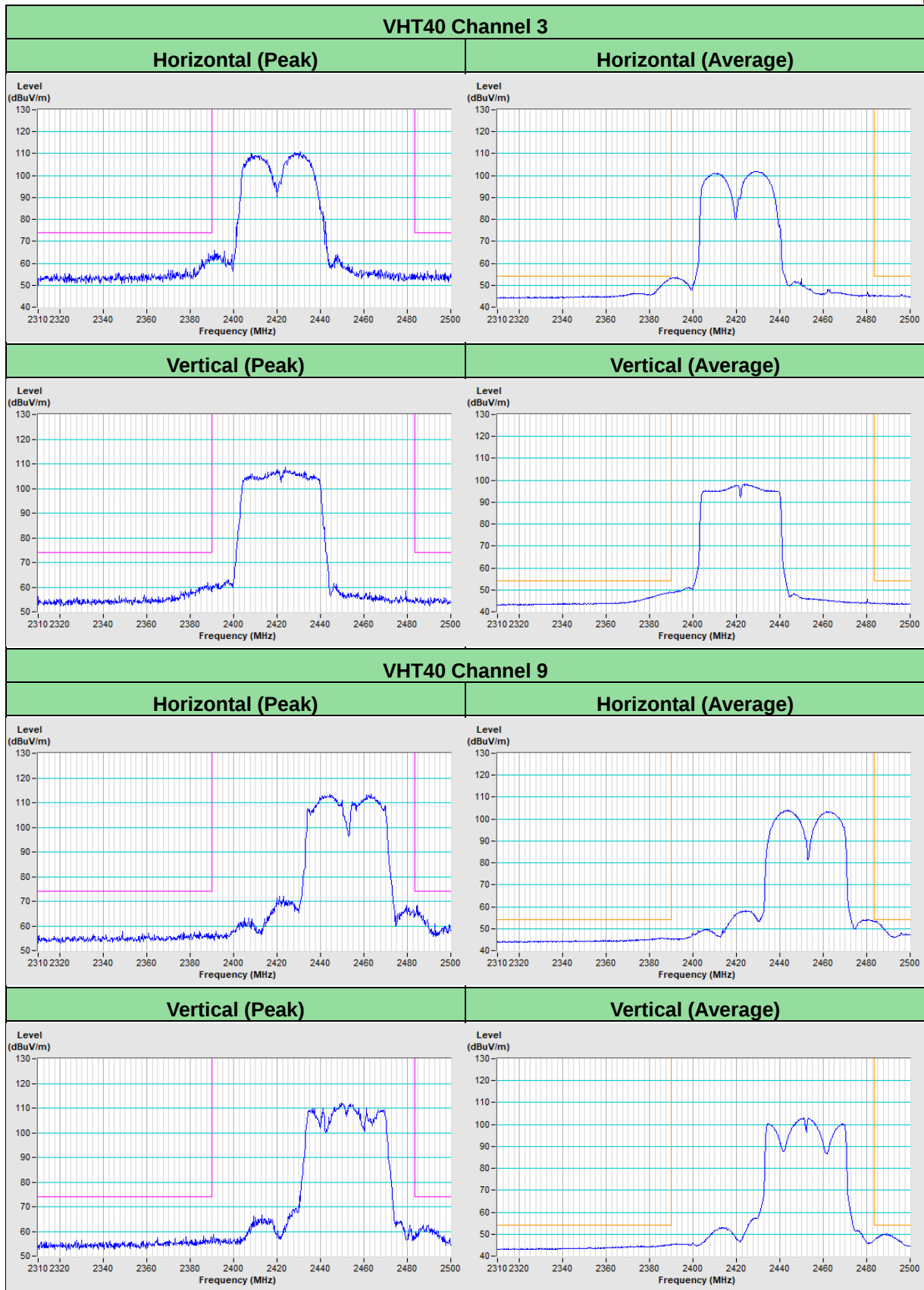


Plot of Band Edge









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:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@bureauveritas.com

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

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

--- END ---