

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFBDMW-WTW-P22090030

FCC ID: M4Y-AS240

Product: 802.11ax Access Point

Brand: ZCOM

Model No.: AS240

Received Date: 2022/9/5

Test Date: 2022/10/12 ~ 2022/11/3

Issued Date: 2022/11/16

Applicant: Z-COM, INC.

Address: 5F, No.8, HSIN ANN RD., HSINCH SCIENCE PARK, HSINCHU, 300 TAIWAN

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

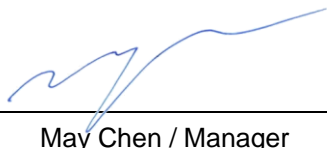
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FCC Registration / 723255 / TW2022

Designation Number:

Approved by: _____



May Chen / Manager

, Date: _____

2022/11/16

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Prepared by : Vivian Huang / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBDMW-WTW-P22090030	Original release.	2022/11/16

1 Certificate

Product: 802.11ax Access Point

Brand: ZCOM

Test Model: AS240

Sample Status: Engineering sample

Applicant: Z-COM, INC.

Test Date: 2022/10/12 ~ 2022/11/3

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 -3.05 dB at 21.00391 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.6 dB at 39.61 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -3.1 dB at 4874.00 MHz
15.203	Antenna Requirement	Pass	No antenna connector is used.

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	802.11ax Access Point
Brand	ZCOM
Test Model	AS240
Status of EUT	Engineering sample
Power Supply Rating	48Vdc 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
Modulation Technology	DSSS, OFDM, OFDMA
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 802.11ax: up to 573.5 Mbps
Operating Frequency	2.412 GHz ~ 2.462 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7
Output Power	480.067 mW (26.81 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 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 No.	RF Chain No.	Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
1	Chain 0	2.85	2.4~2.4835	PIFA PCB	none
		4.48	5.15~5.85		
2	Chain 1	3.97	2.4~2.4835	PIFA PCB	none
		3.65	5.15~5.85		

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

2. The EUT incorporates a MIMO function:

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

Note:

- 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:	1. EUT can be used in the following ways: Laying/ Wall Mount. Pre-scan these ways and find the worst case as a representative test condition. 2. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
Worst Case:	1. Laying/ Wall Mount Worst Condition: Laying

Note: Partial RU (resource unit) configurations not supported.

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

Test Item	Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	802.11b	1, 6, 11	DBPSK	1Mb/s
	802.11g	1, 6, 11	BPSK	6Mb/s
	VHT20	1, 6, 11	BPSK	MCS0
	VHT40	3, 6, 9	BPSK	MCS0
	802.11ax (HE20)	1, 6, 11	BPSK	MCS0
	802.11ax (HE40)	3, 6, 9	BPSK	MCS0
Power Spectral Density / 6 dB Bandwidth / Conducted Out of Band Emissions	802.11b	1, 6, 11	DBPSK	1Mb/s
	802.11g	1, 6, 11	BPSK	6Mb/s
	802.11ax (HE20)	1, 6, 11	BPSK	MCS0
	802.11ax (HE40)	3, 6, 9	BPSK	MCS0
AC Power Conducted Emissions	802.11ax (HE20)	6	BPSK	MCS0
Unwanted Emissions below 1 GHz	802.11ax (HE20)	6	BPSK	MCS0
Unwanted Emissions above 1 GHz	802.11b	1, 6, 11	DBPSK	1Mb/s
	802.11g	1, 6, 11	BPSK	6Mb/s
	802.11ax (HE20)	1, 6, 11	BPSK	MCS0
	802.11ax (HE40)	3, 6, 9	BPSK	MCS0

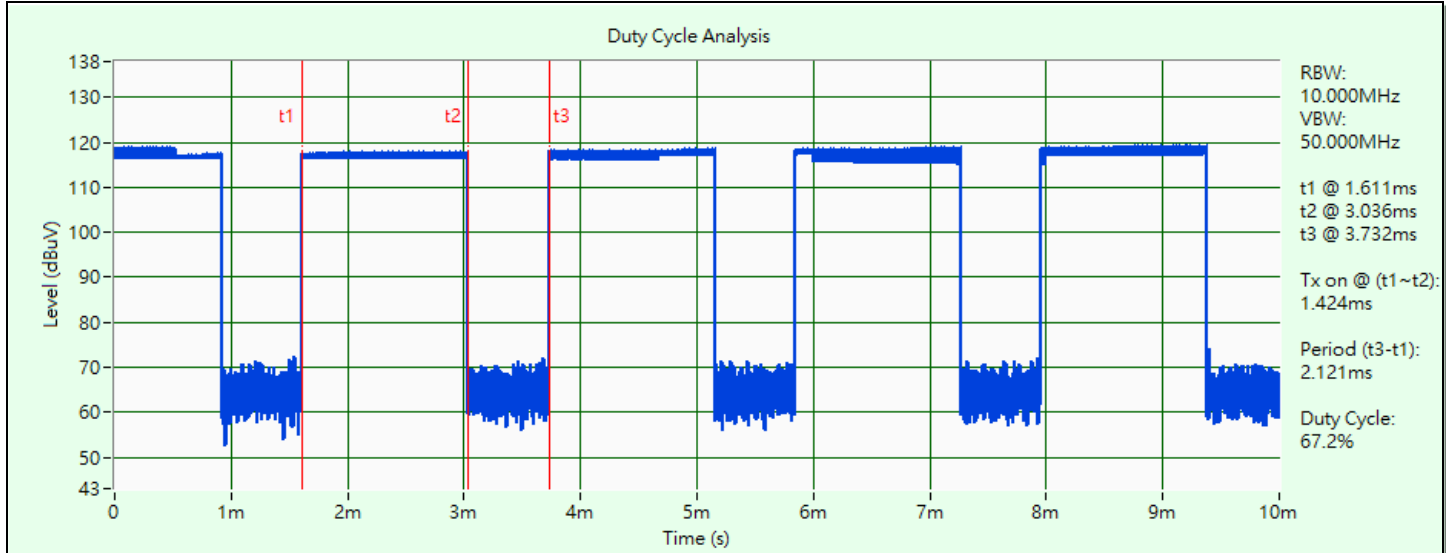
3.5 Duty Cycle of Test Signal

802.11b: Duty cycle = 1.424 ms / 2.121 ms x 100% = 67.1%, duty factor = 10 * log (1/Duty cycle) = 1.73 dB

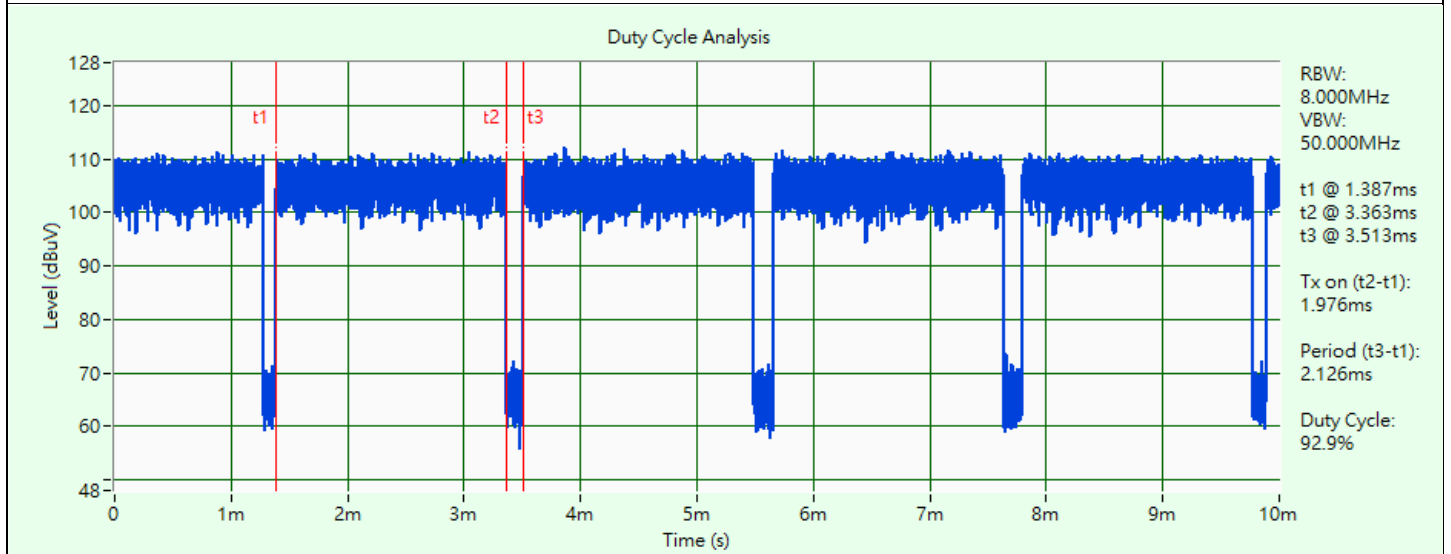
802.11g: Duty cycle = 1.976 ms / 2.126 ms x 100% = 92.9%, duty factor = 10 * log (1/Duty cycle) = 0.32 dB

802.11ax (HE20): Duty cycle = 5.446 ms / 5.711 ms x 100% = 95.4%, duty factor = 10 * log (1/Duty cycle) = 0.21 dB

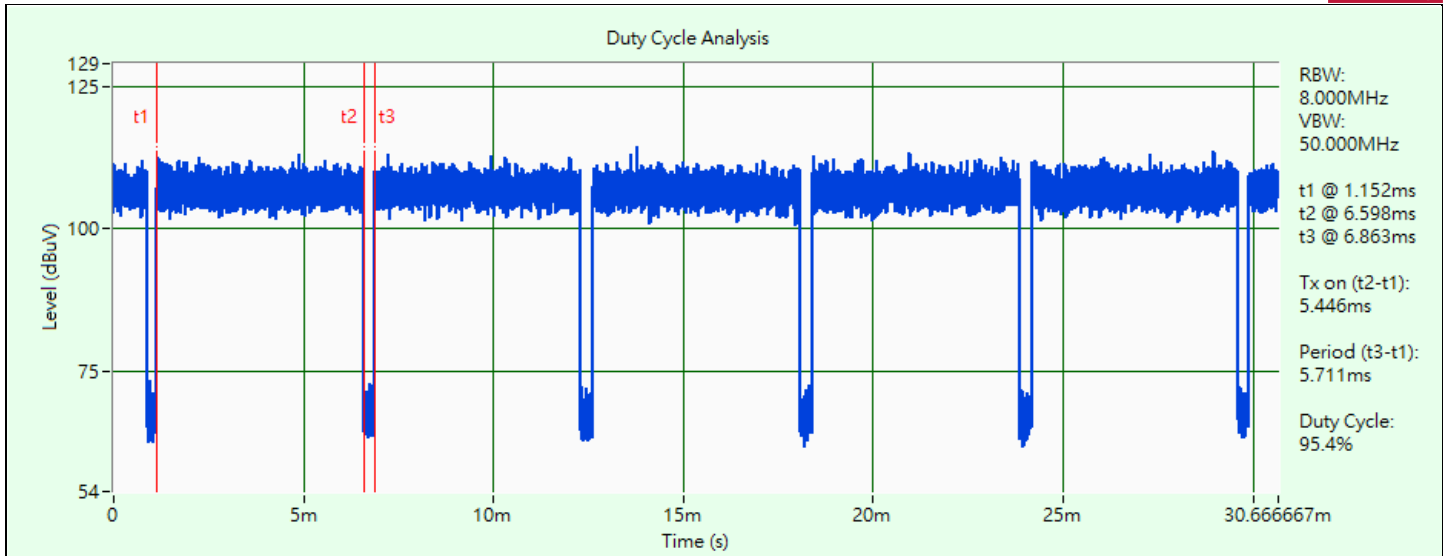
802.11ax (HE40): Duty cycle = 5.447 ms / 5.765 ms x 100% = 94.5%, duty factor = 10 * log (1/Duty cycle) = 0.25 dB



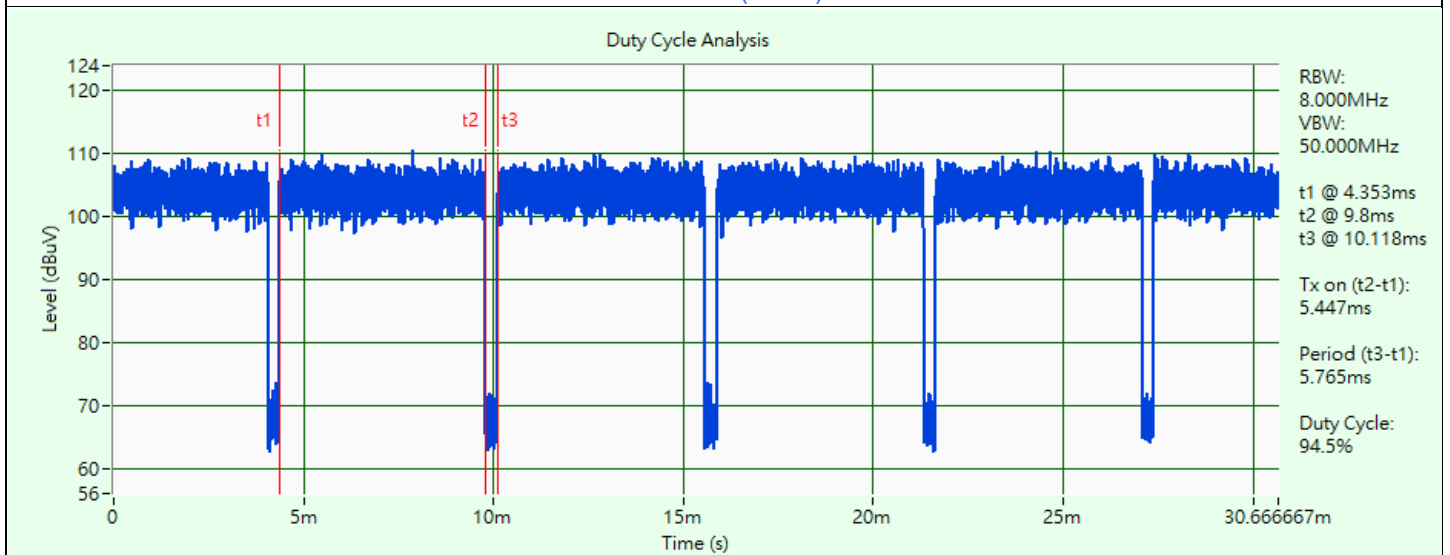
802.11b



802.11g



802.11ax (HE20)



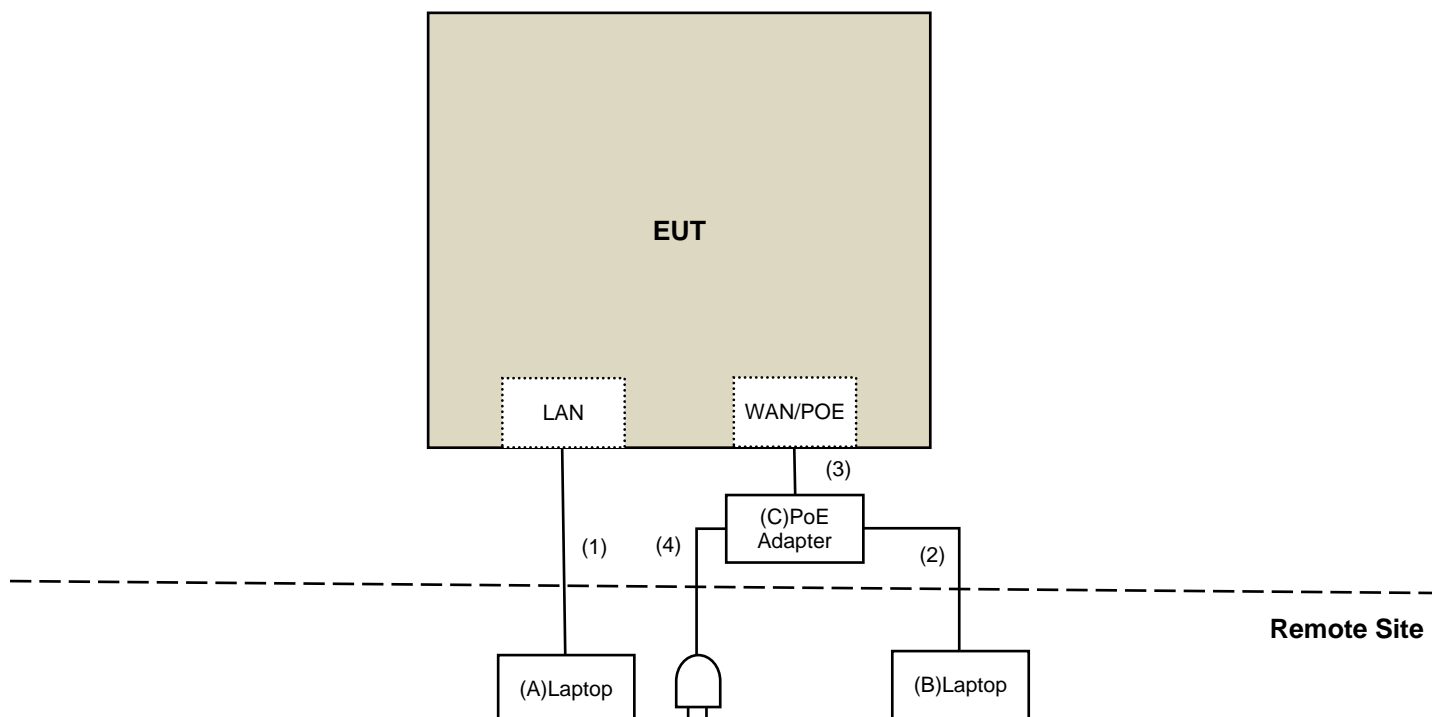
802.11ax (HE40)

3.6 Test Program Used and Operation Descriptions

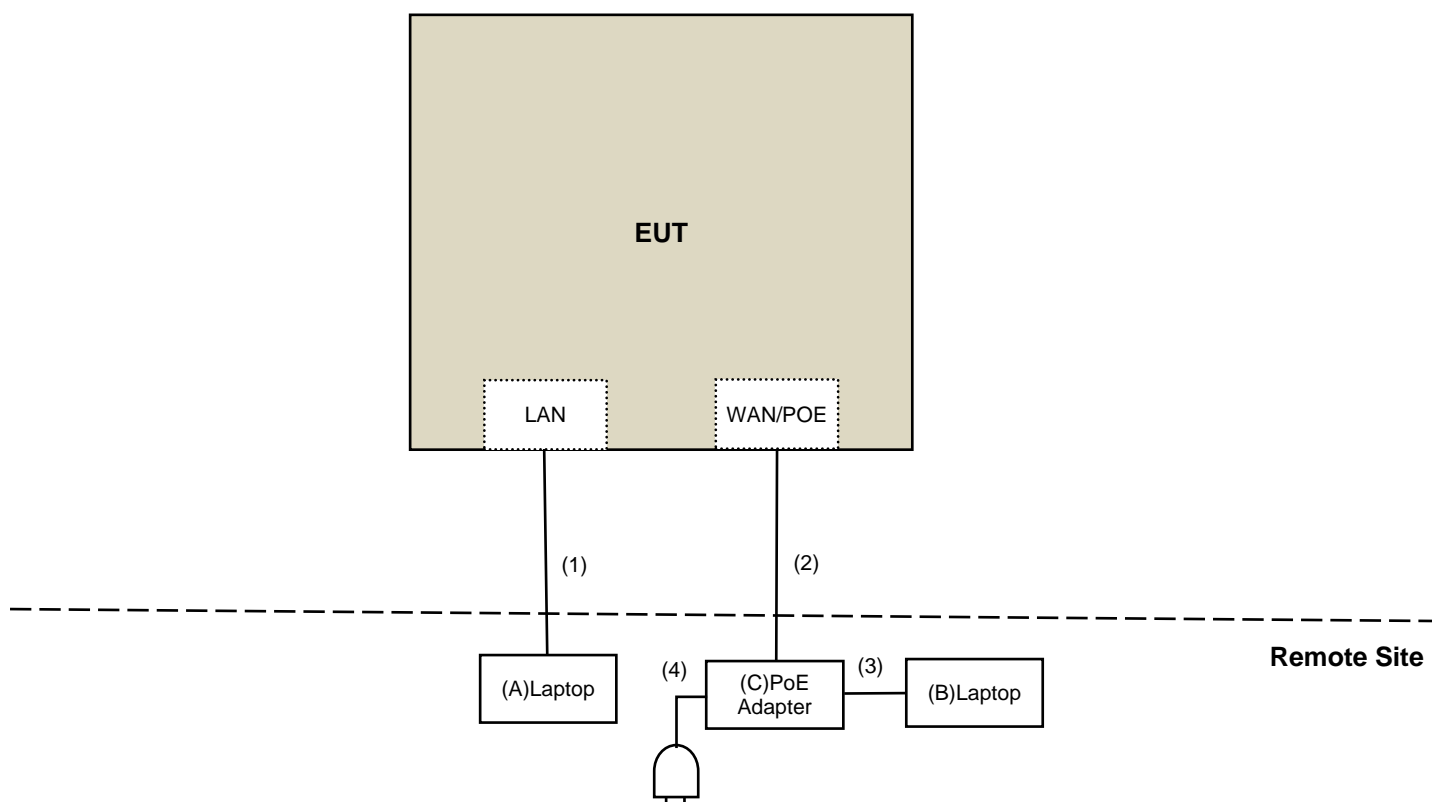
Controlling software (qdart_conn.win.1.0_installer_00077.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

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-1ANPYA	N/A	Provided by Lab
B	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Provided by Lab
C	PoE Adapter	Gigabit	PSE301G	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	10	No	0	Provided by Lab
3	RJ-45 Cable	1	3	No	0	Provided by Lab
4	AC Power Cable	1	1.8	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: 2022/10/25

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: 2022/10/25

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: 2022/11/3

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: 2022/10/13

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: 2022/10/12 ~ 2022/11/3

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 20 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 20 dB below the highest level of the desired power:

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

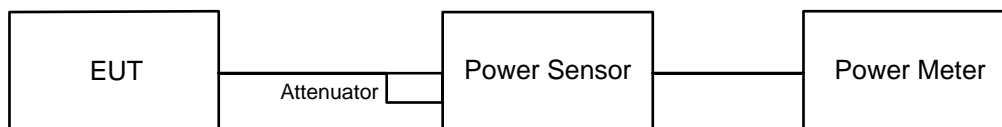
Notes:

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

Peak Power:

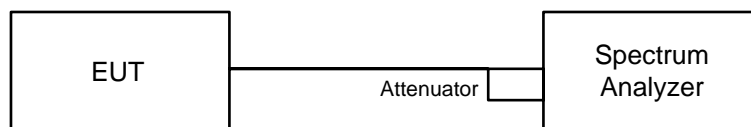
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

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

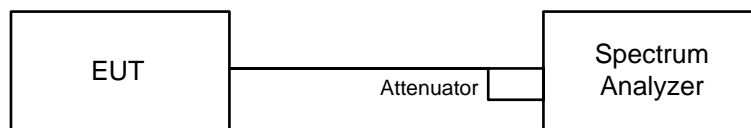


6.2.2 Test Procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to: 3 kHz.
- d. Set the VBW $\geq 3 \times$ RBW.
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

6.3 6 dB Bandwidth

6.3.1 Test Setup

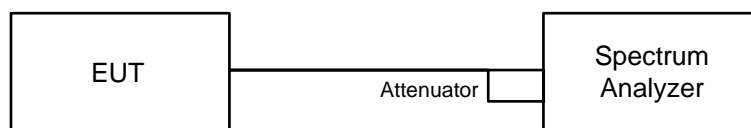


6.3.2 Test Procedure

- 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

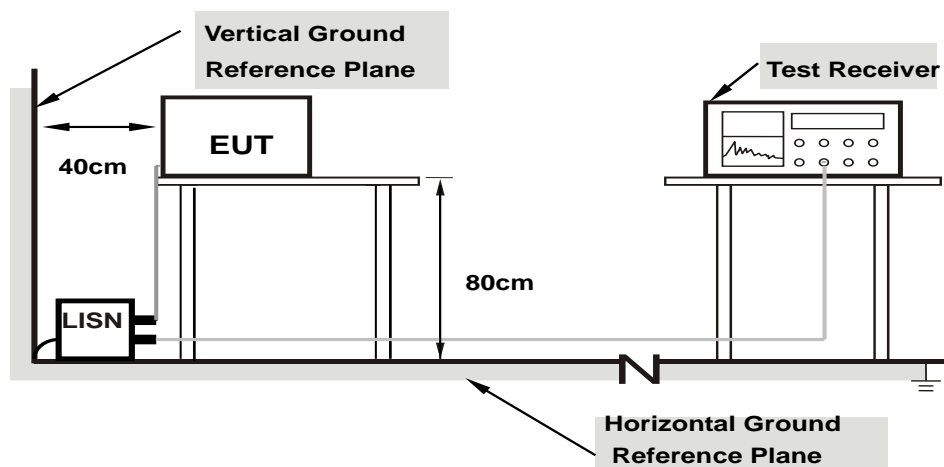
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- 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

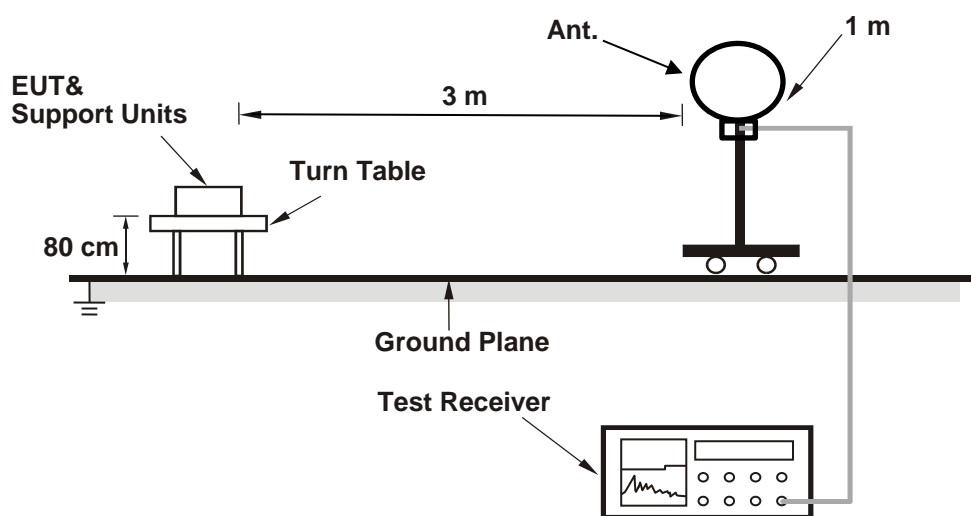
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The 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.

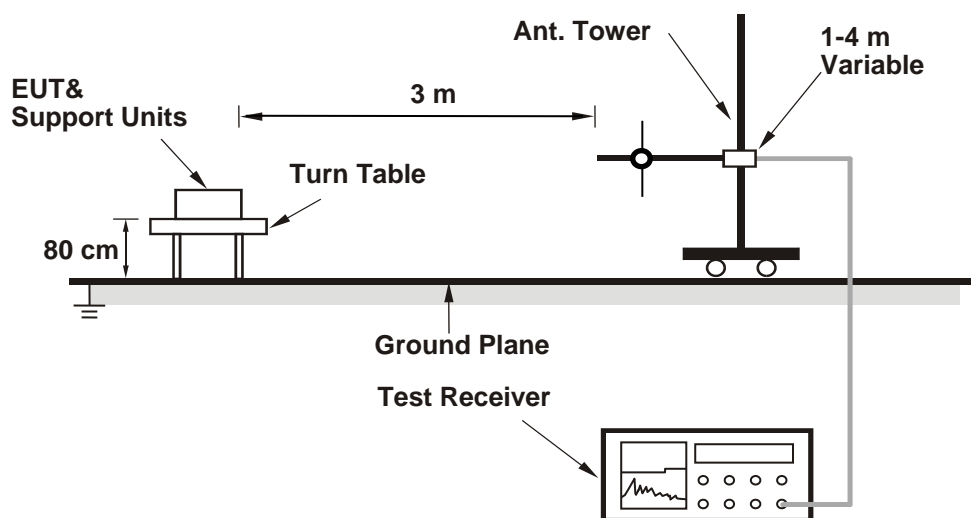
6.6 Unwanted Emissions below 1 GHz

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

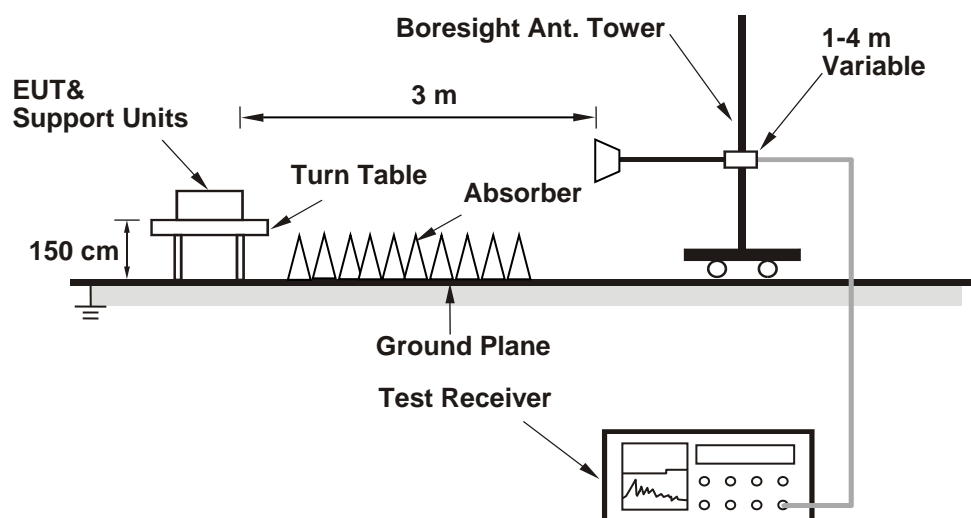
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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:	48 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
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For Peak Power

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	18.23	19.30	151.641	21.81	30	Pass
6	2437	18.83	20.30	183.536	22.64	30	Pass
11	2462	18.44	19.83	165.984	22.20	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.97 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	21.53	21.67	289.126	24.61	30	Pass
6	2437	22.73	24.12	445.725	26.49	30	Pass
11	2462	19.23	20.50	195.955	22.92	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.97 dBi < 6 dBi, so the output power limit shall not be reduced.

VHT20

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	21.96	22.38	330.018	25.19	30	Pass
6	2437	22.90	24.18	456.803	26.60	30	Pass
11	2462	19.01	20.28	186.276	22.70	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.97 dBi < 6 dBi, so the output power limit shall not be reduced.

VHT40

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	18.09	18.45	134.401	21.28	30	Pass
6	2437	18.88	19.38	163.964	22.15	30	Pass
9	2452	18.42	19.55	159.66	22.03	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.97 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	22.16	22.58	345.571	25.39	30	Pass
6	2437	23.11	24.40	480.067	26.81	30	Pass
11	2462	19.20	20.48	194.863	22.90	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.97 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	18.29	18.69	141.413	21.50	30	Pass
6	2437	18.82	19.34	162.109	22.10	30	Pass
9	2452	18.45	19.52	159.521	22.03	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.97 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	15.50	17.35	89.806	19.53
6	2437	16.14	17.91	102.917	20.12
11	2462	15.86	17.34	92.748	19.67

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	13.11	14.52	48.778	16.88
6	2437	16.29	17.72	101.716	20.07
11	2462	11.89	12.68	33.988	15.31

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	14.76	15.70	67.076	18.27
6	2437	17.43	19.03	135.318	21.31
11	2462	11.02	12.75	31.484	14.98

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
3	2422	9.65	10.95	21.671	13.36
6	2437	10.25	11.75	25.555	14.07
9	2452	10.48	11.70	25.96	14.14

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	14.96	15.90	70.237	18.47
6	2437	17.63	19.21	141.311	21.50
11	2462	11.23	12.95	32.998	15.18

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
3	2422	9.88	11.15	22.759	13.57
6	2437	10.26	11.77	25.648	14.09
9	2452	10.47	11.73	26.037	14.16

7.2 Power Spectral Density

Input Power:	48 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
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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	-7.34	-2.39	-1.18	7.56	Pass
6	2437	-2.27	-0.26	1.86	7.56	Pass
11	2462	-2.64	-0.82	1.37	7.56	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 = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 6.44 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.44 - 6) = 7.56$ dBm/3kHz.

802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-12.87	-9.98	-8.18	7.56	Pass
6	2437	-9.76	-7.24	-5.31	7.56	Pass
11	2462	-14.64	-12.51	-10.44	7.56	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 = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 6.44 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.44 - 6) = 7.56$ dBm/3kHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-13.25	-11.93	-9.53	7.56	Pass
6	2437	-8.22	-6.21	-4.09	7.56	Pass
11	2462	-14.95	-13.64	-11.24	7.56	Pass

Notes:

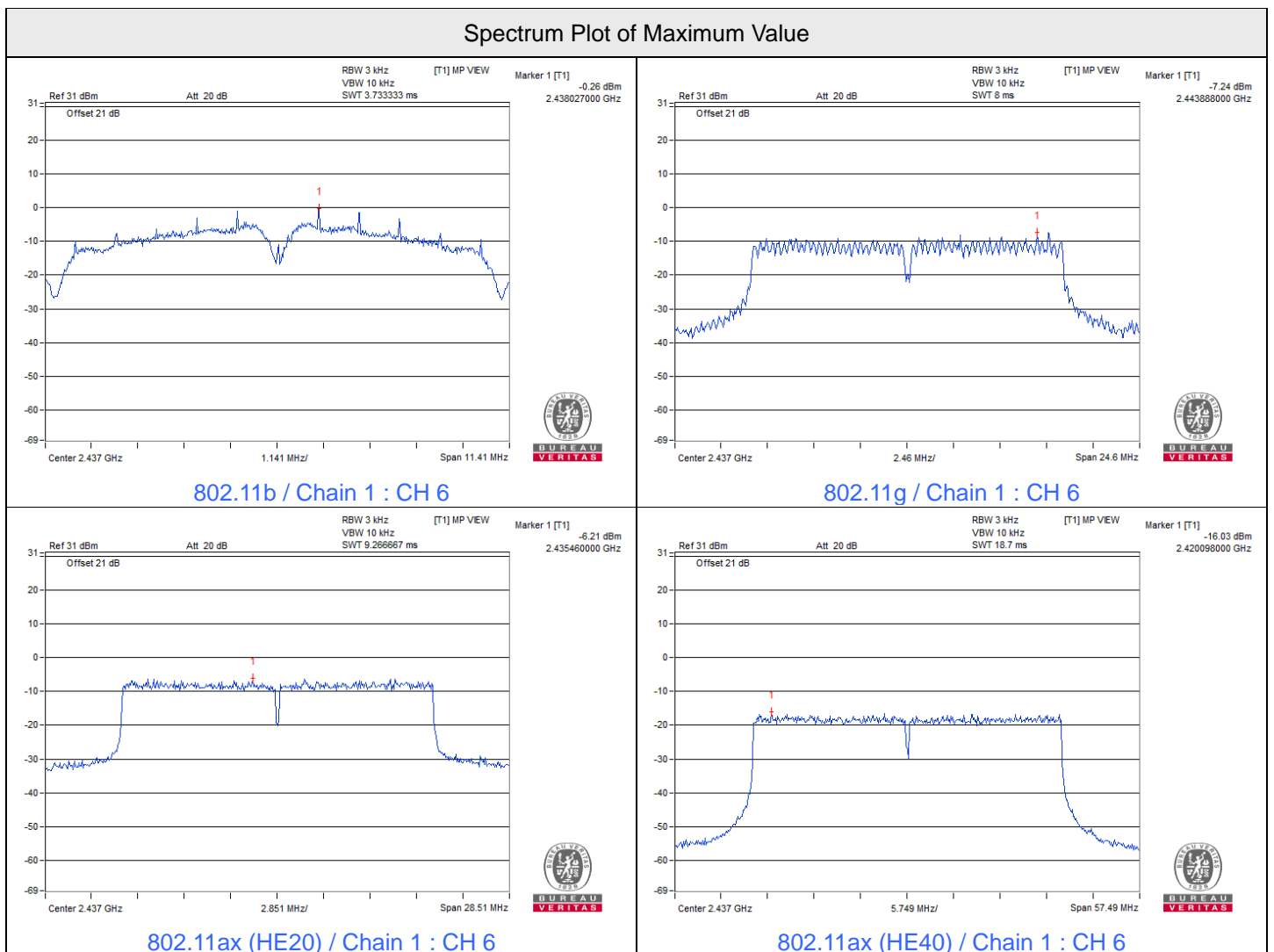
- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
- The directional gain is 6.44 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.44 - 6) = 7.56$ dBm/3kHz.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
3	2422	-17.24	-16.76	-13.98	7.56	Pass
6	2437	-17.62	-16.03	-13.74	7.56	Pass
9	2452	-17.48	-16.26	-13.82	7.56	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 = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
3. The directional gain is 6.44 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.44 - 6) = 7.56$ dBm/3kHz.



7.3 6 dB Bandwidth

Input Power:	48 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
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802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	7.16	7.56	0.5	Pass
6	2437	7.59	7.61	0.5	Pass
11	2462	8.10	8.10	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	16.42	16.40	0.5	Pass
6	2437	16.39	16.40	0.5	Pass
11	2462	16.40	16.42	0.5	Pass

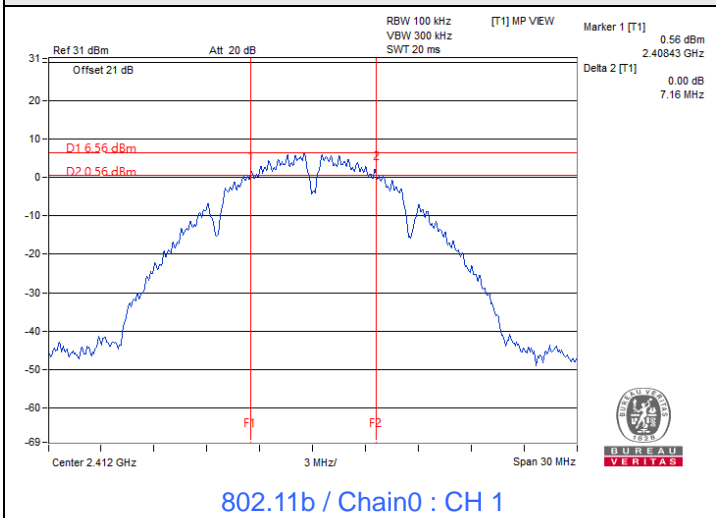
802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	19.06	19.01	0.5	Pass
6	2437	19.06	19.01	0.5	Pass
11	2462	19.06	19.09	0.5	Pass

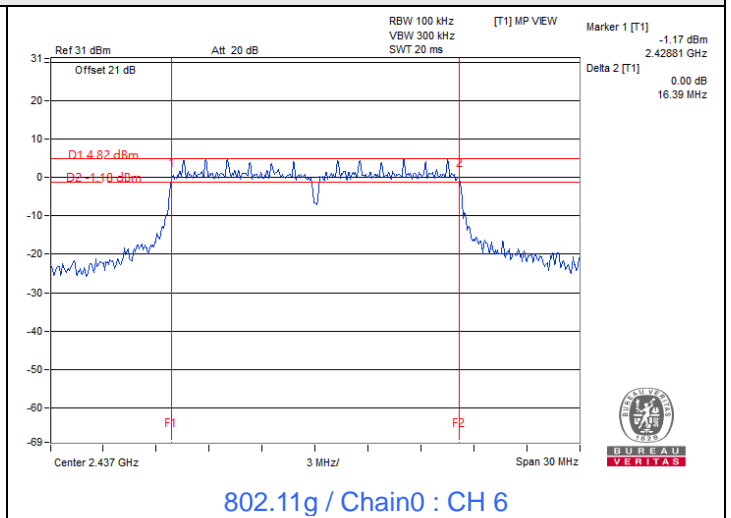
802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	2422	38.25	38.26	0.5	Pass
6	2437	38.38	38.33	0.5	Pass
9	2452	38.17	38.23	0.5	Pass

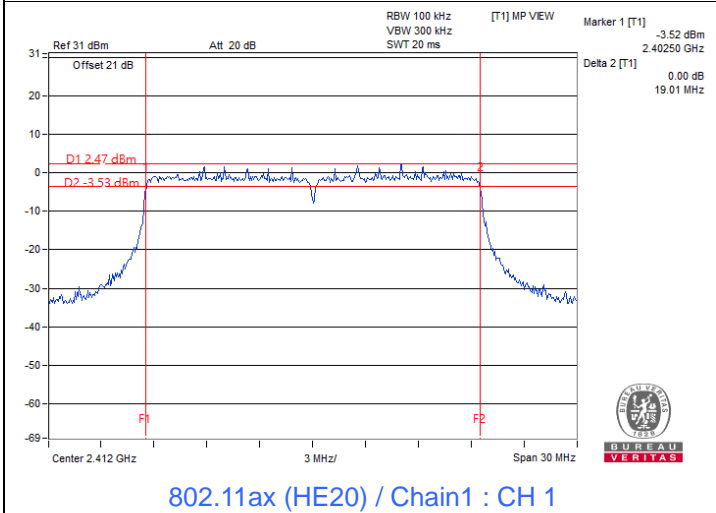
Spectrum Plot of Minimum Value



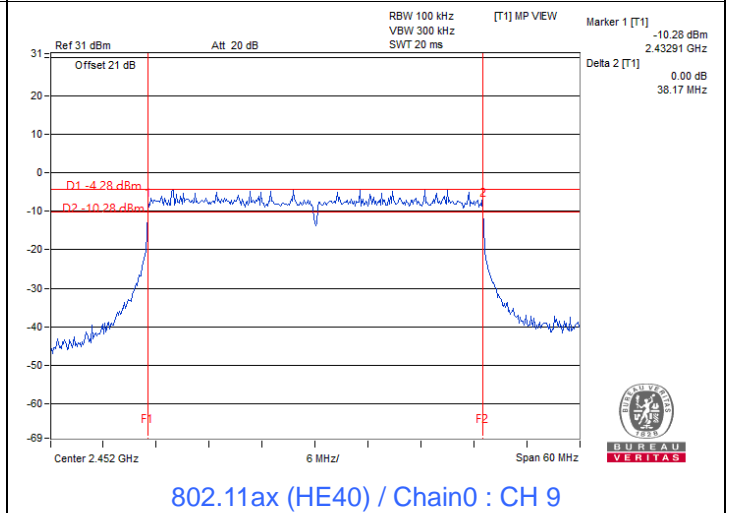
802.11b / Chain0 : CH 1



802.11g / Chain0 : CH 6



802.11ax (HE20) / Chain1 : CH 1



802.11ax (HE40) / Chain0 : CH 9

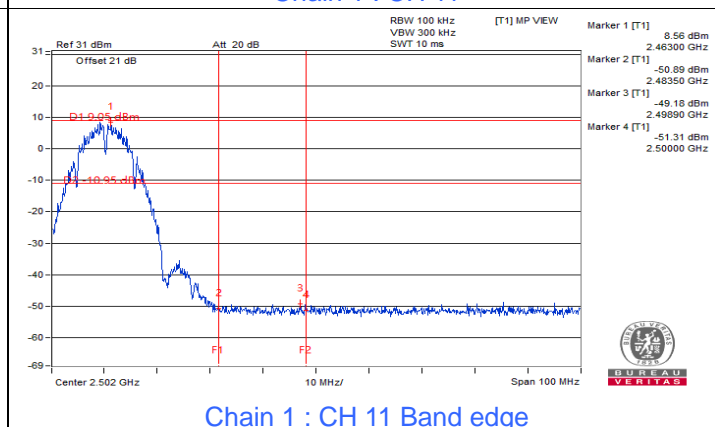
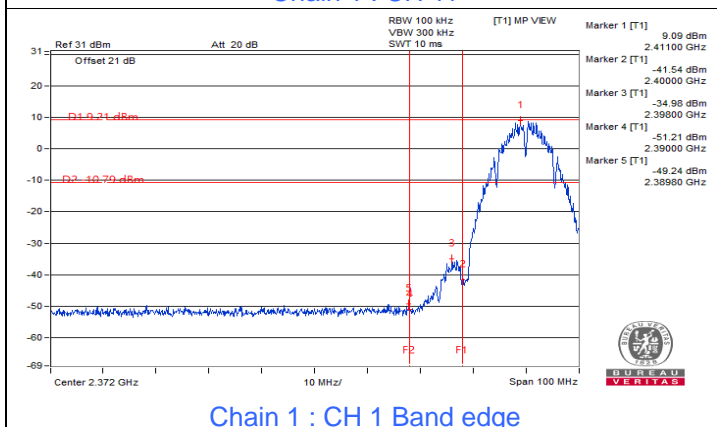
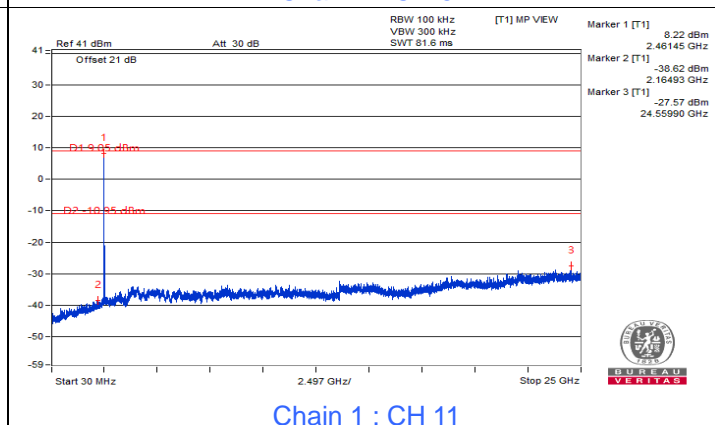
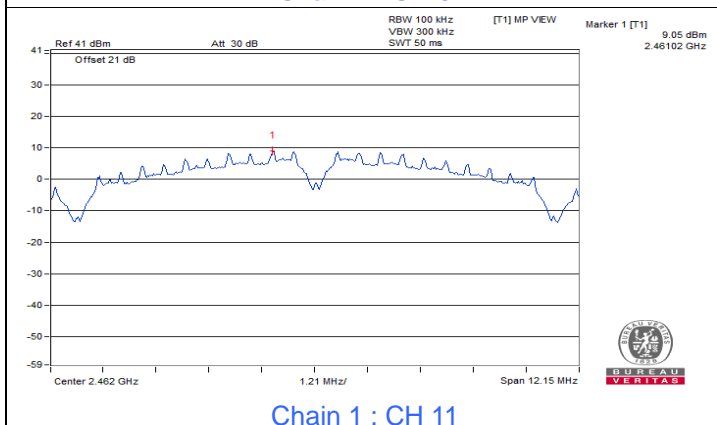
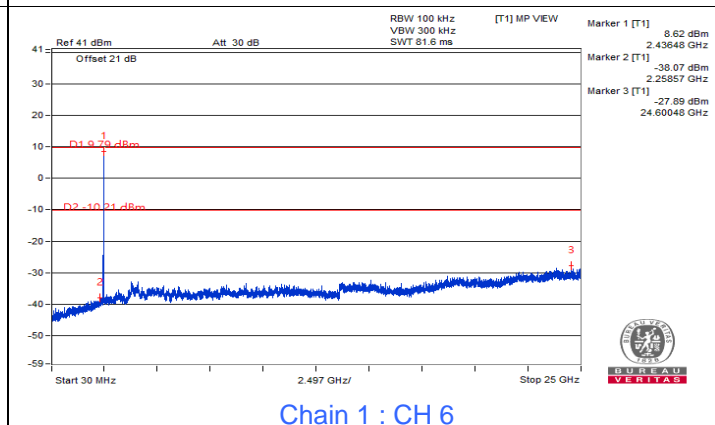
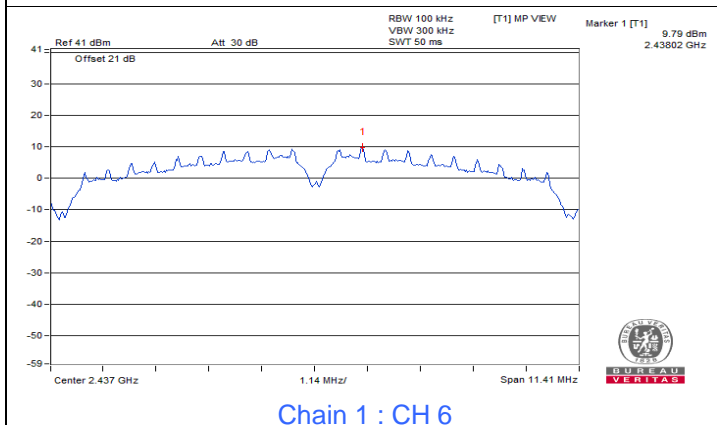
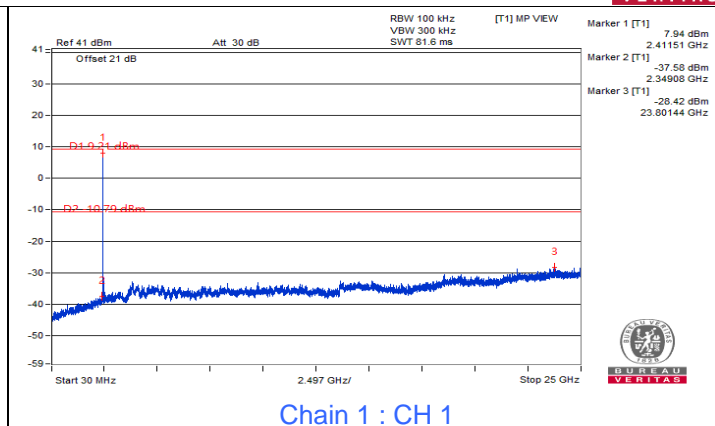
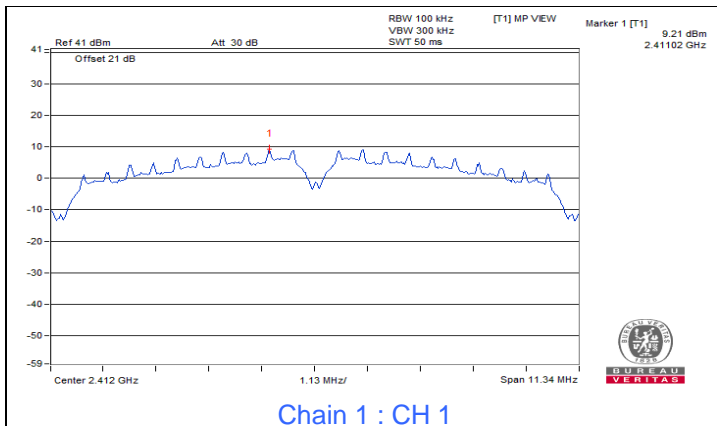


7.4 Conducted Out of Band Emissions

Input Power:	48 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
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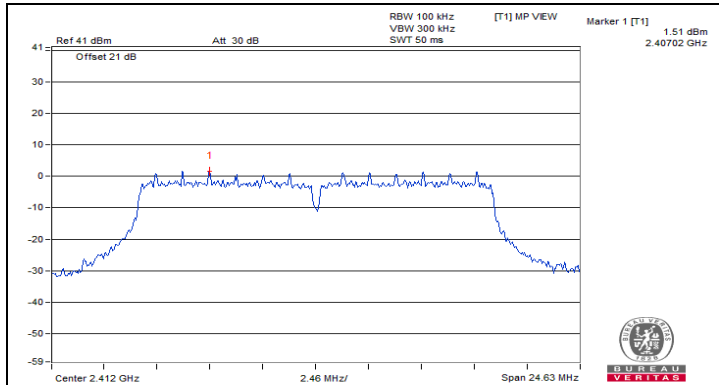
802.11b



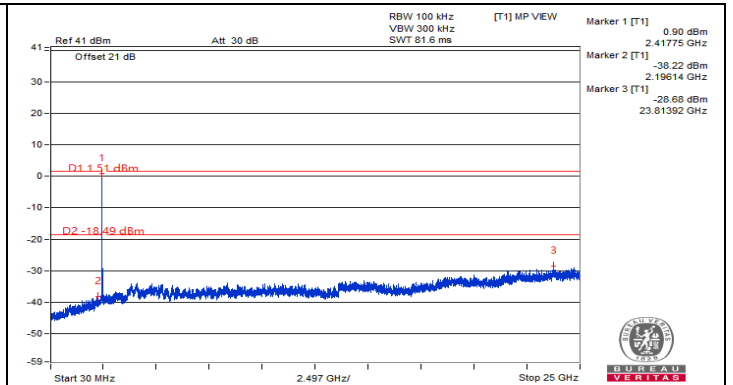




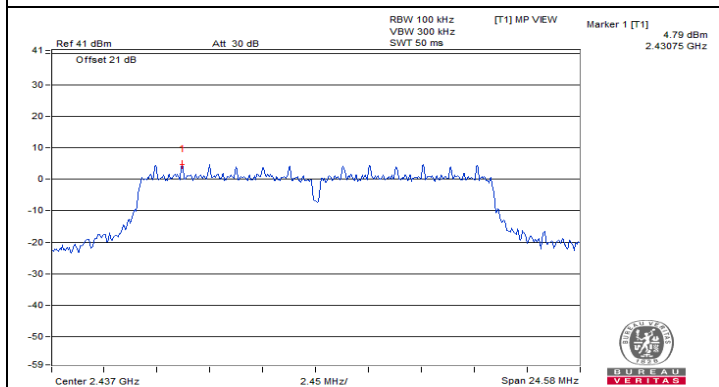
802.11g



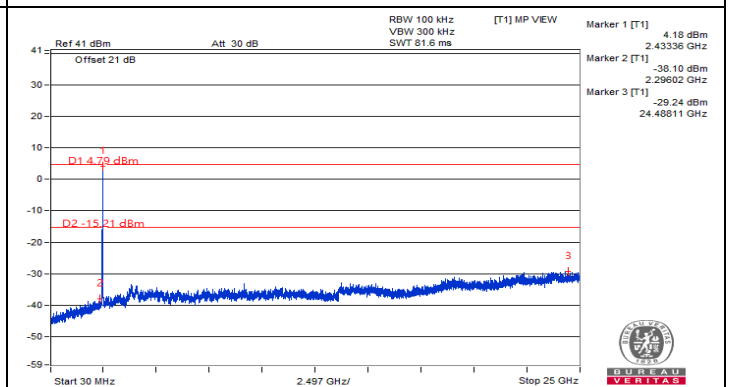
Chain 0 : CH 1



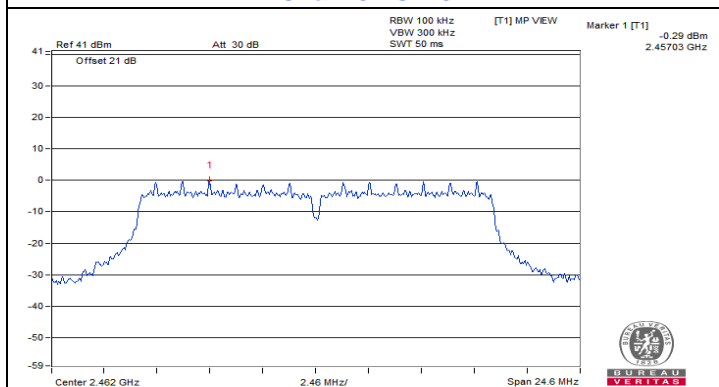
Chain 0 : CH 1



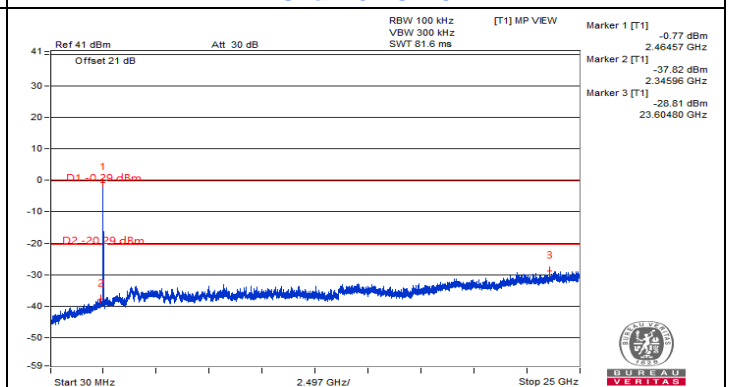
Chain 0 : CH 6



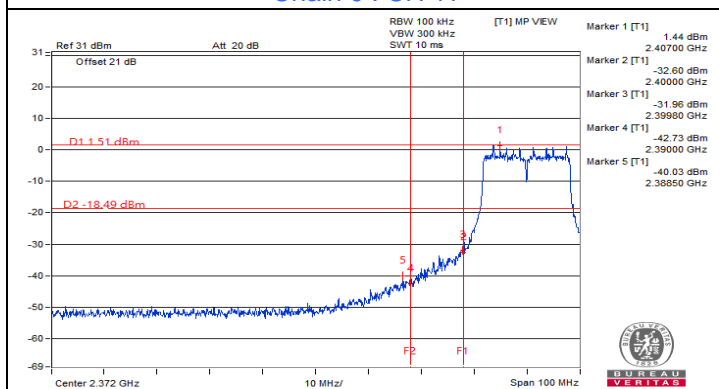
Chain 0 : CH 6



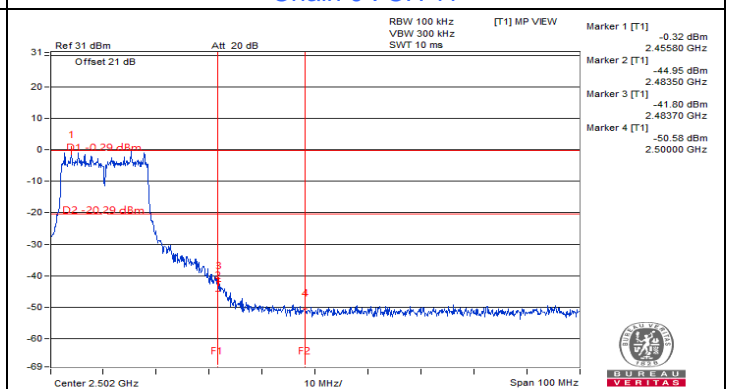
Chain 0 : CH 11



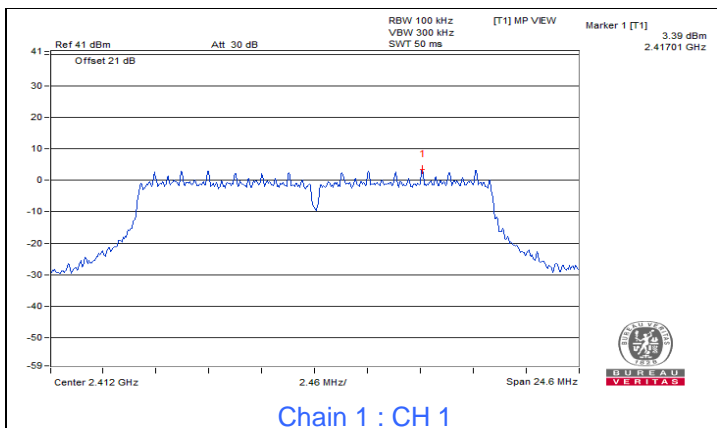
Chain 0 : CH 11



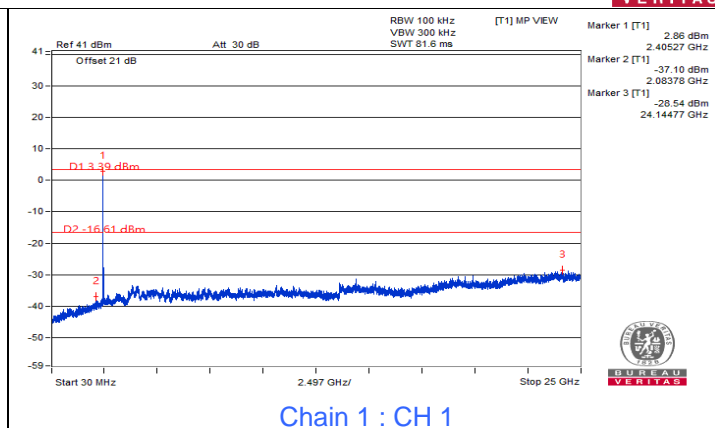
Chain 0 : CH 1 Band edge



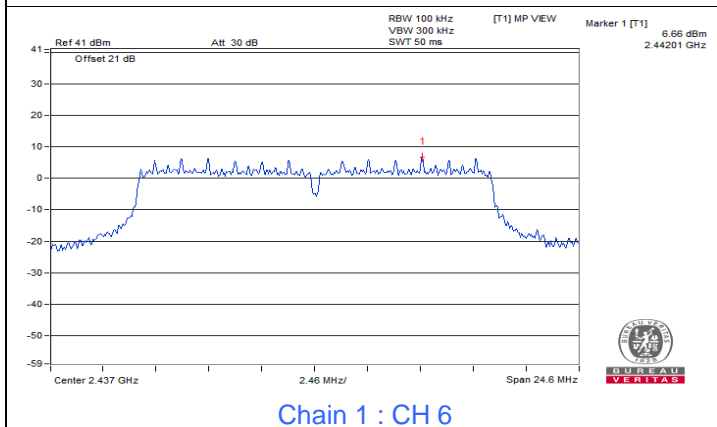
Chain 0 : CH 11 Band edge



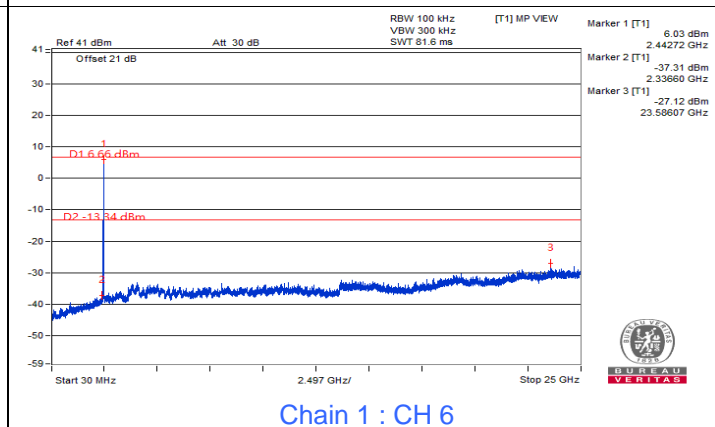
Chain 1 : CH 1



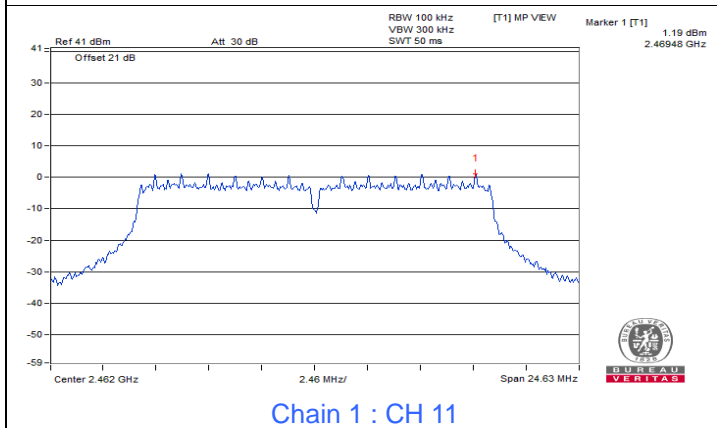
Chain 1 : CH 1



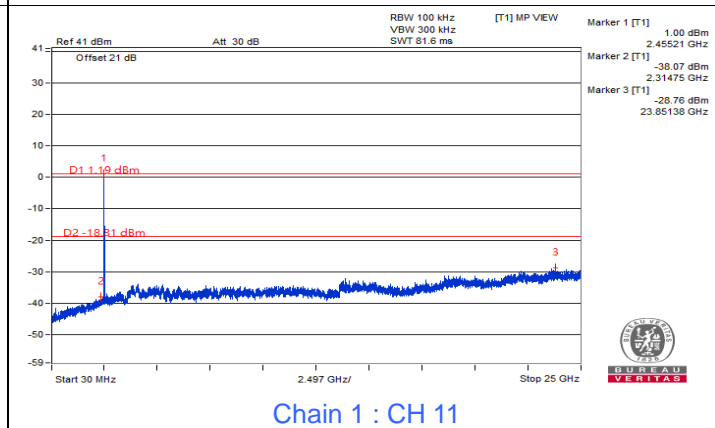
Chain 1 : CH 6



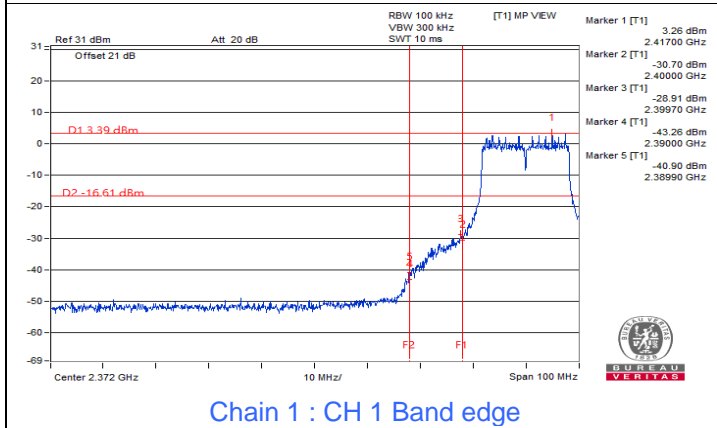
Chain 1 : CH 6



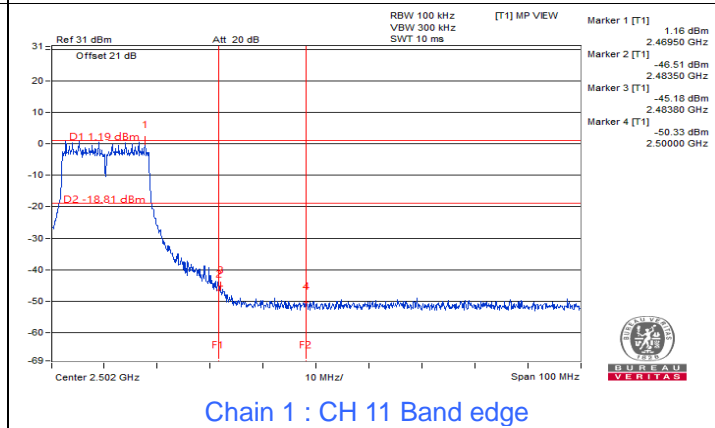
Chain 1 : CH 11



Chain 1 : CH 11



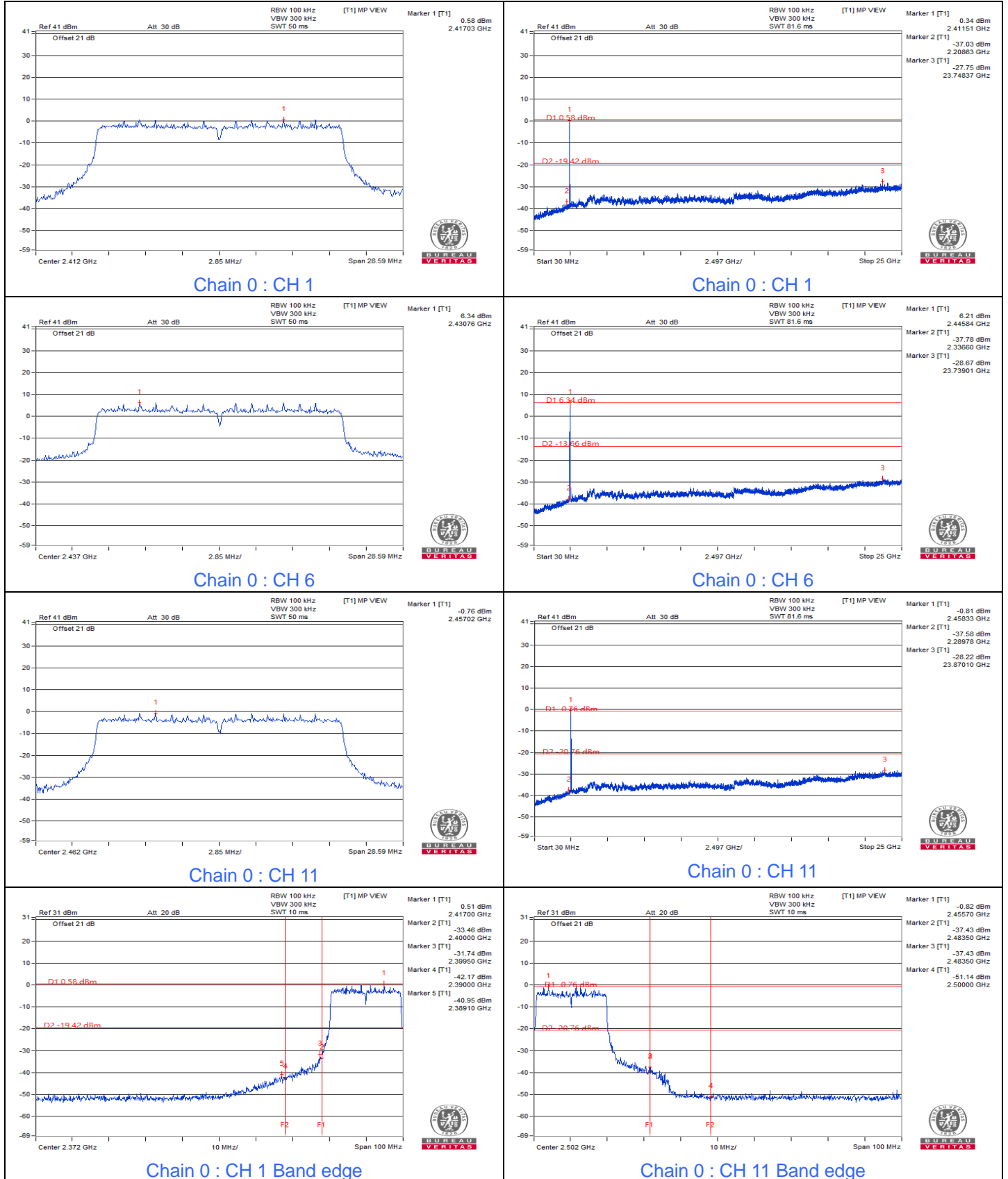
Chain 1 : CH 1 Band edge

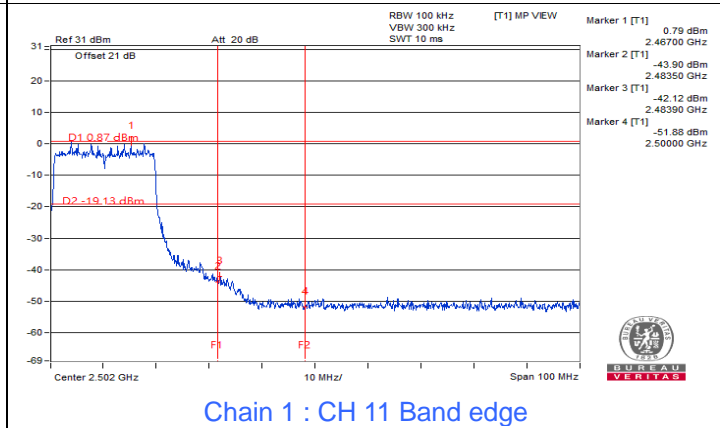
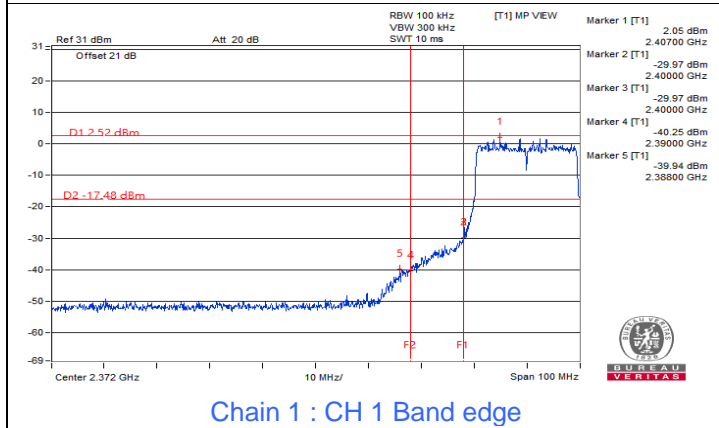
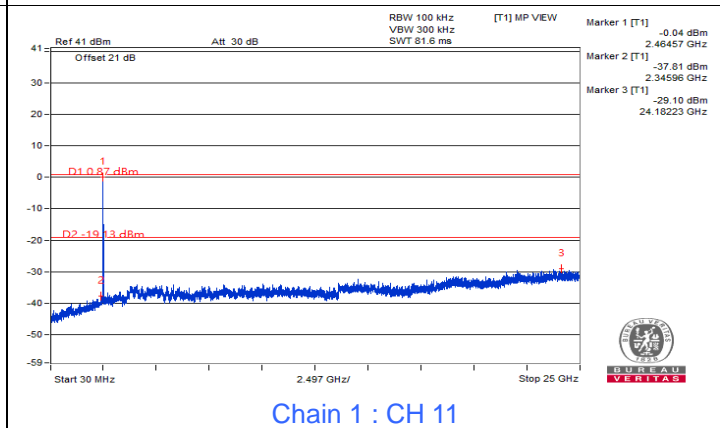
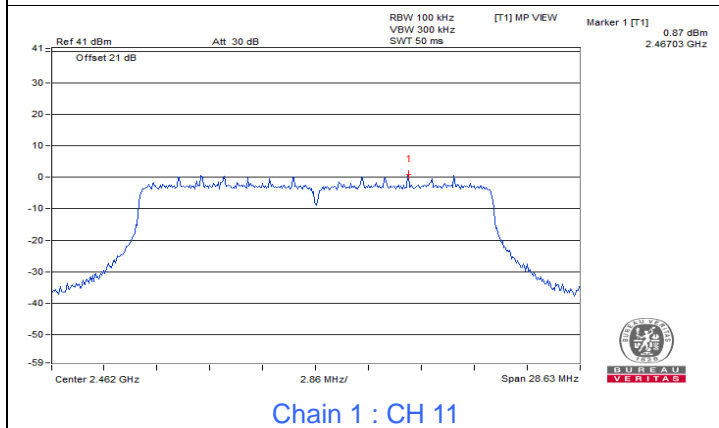
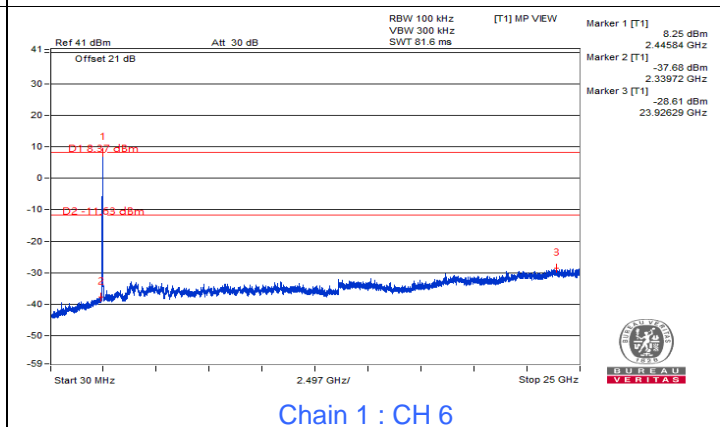
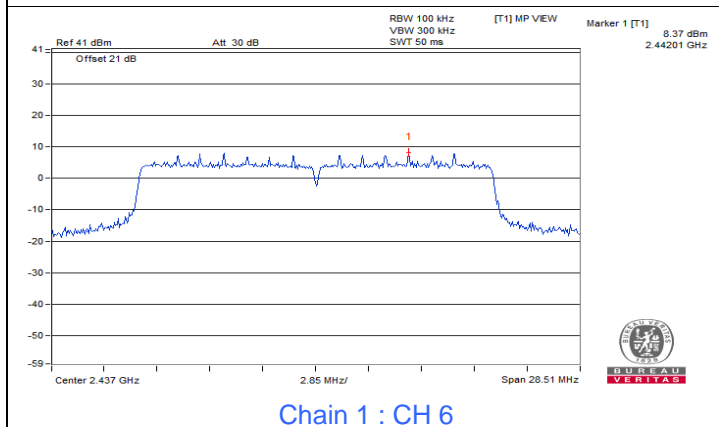
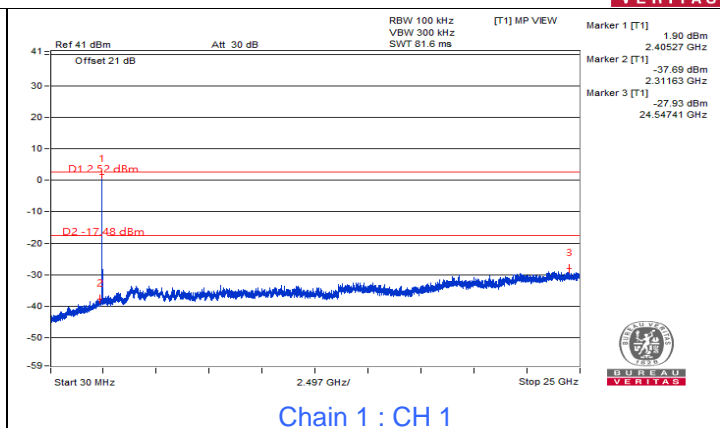
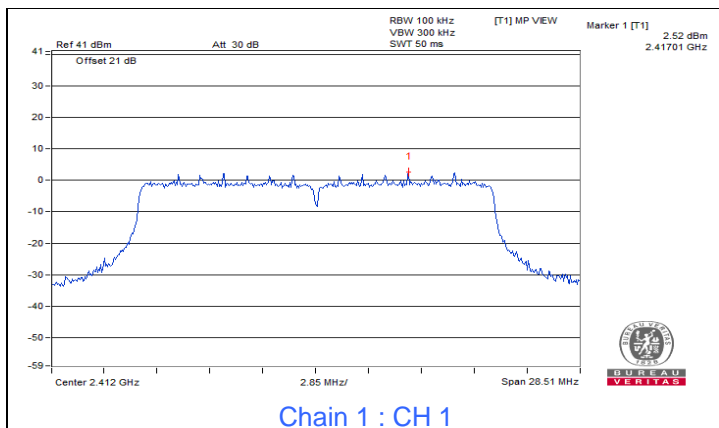


Chain 1 : CH 11 Band edge



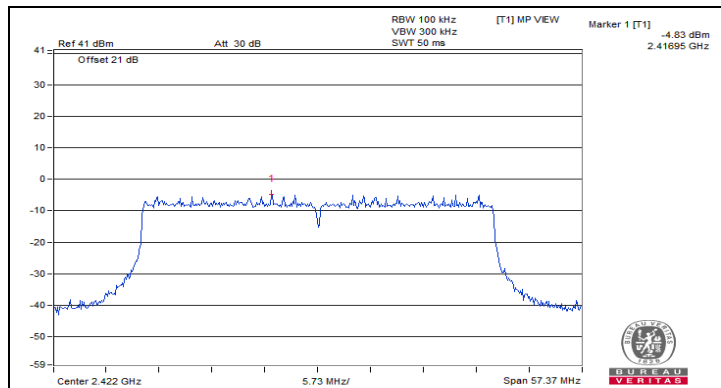
802.11ax (HE20)



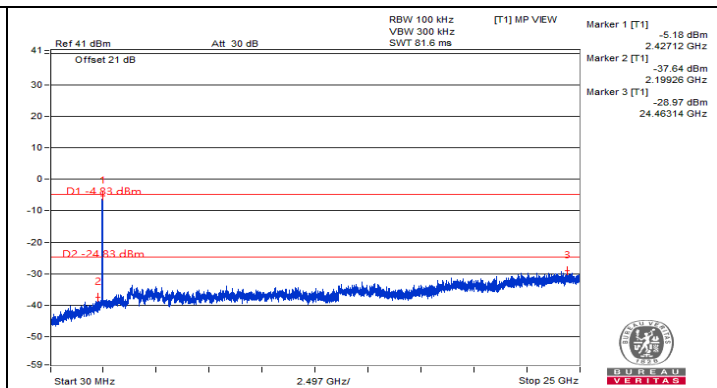




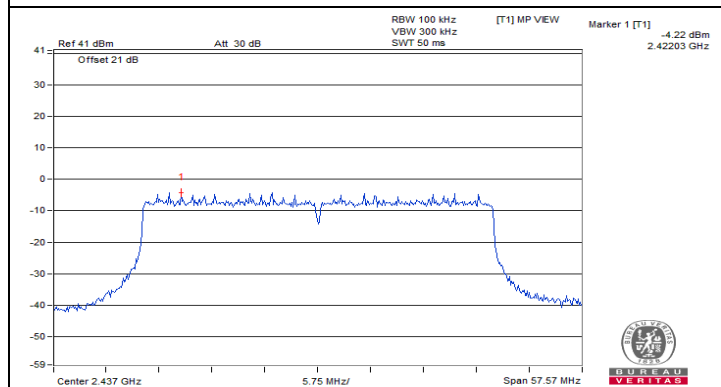
802.11ax (HE40)



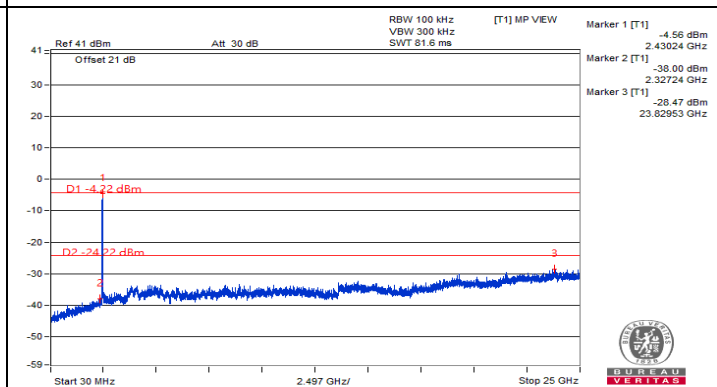
Chain 0 : CH 3



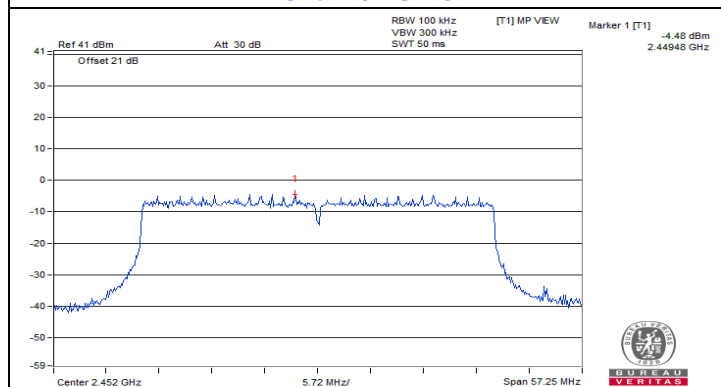
Chain 0 : CH 3



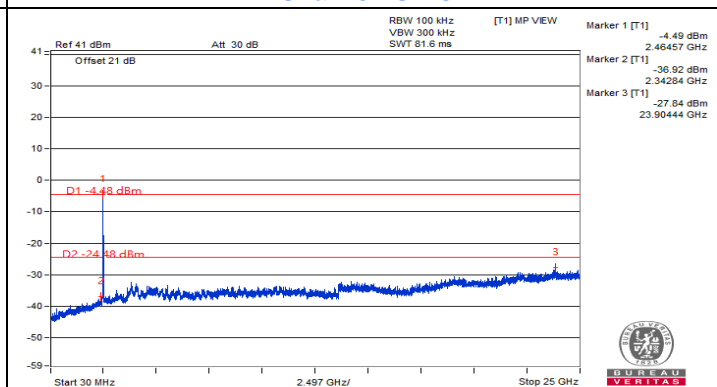
Chain 0 : CH 6



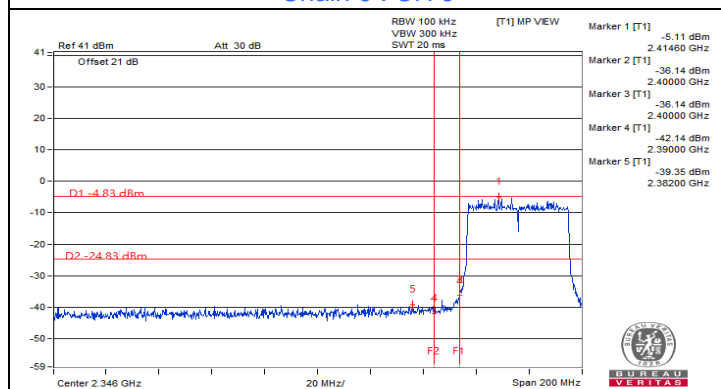
Chain 0 : CH 6



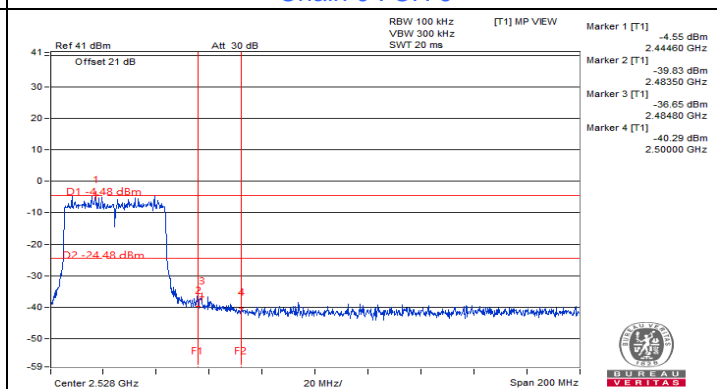
Chain 0 : CH 9



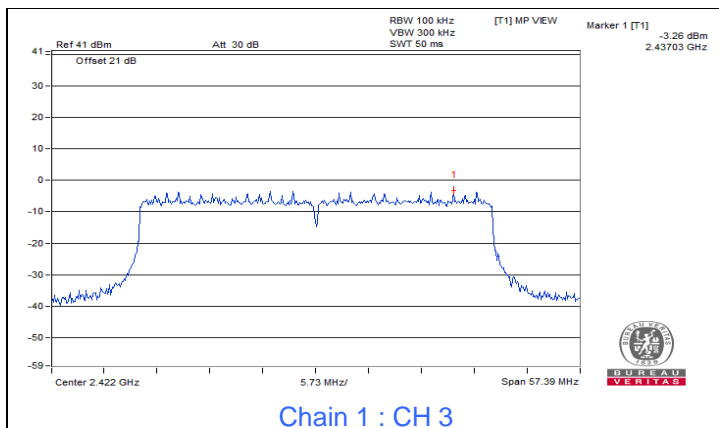
Chain 0 : CH 9



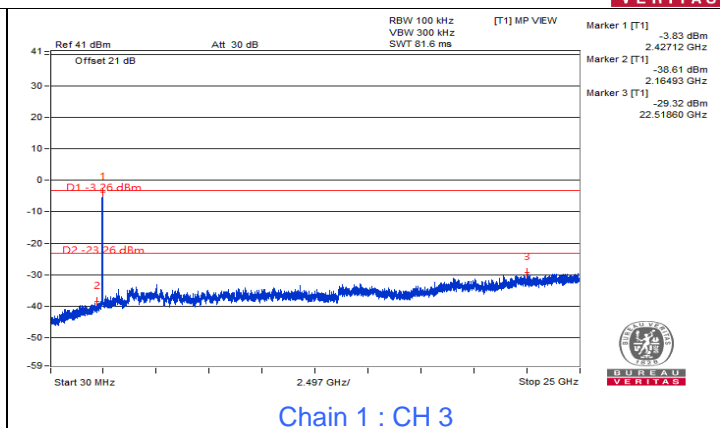
Chain 0 : CH 3 Band edge



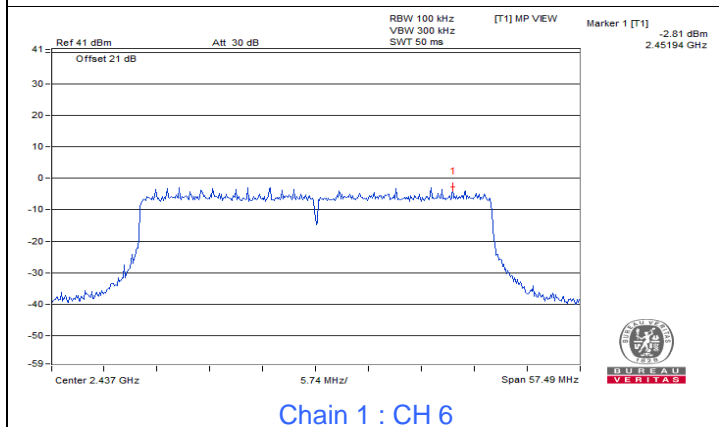
Chain 0 : CH 9 Band edge



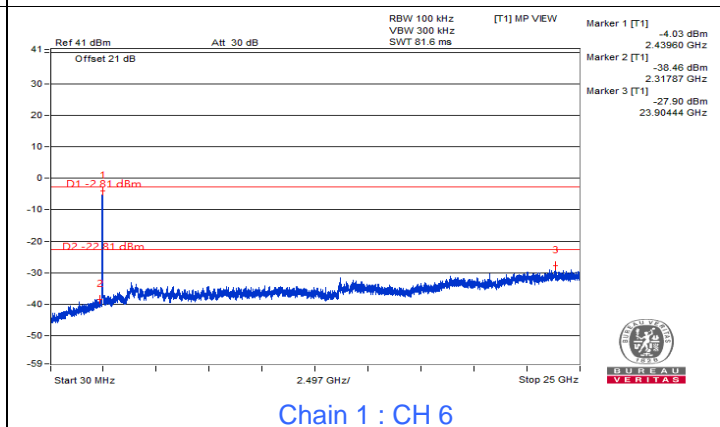
Chain 1 : CH 3



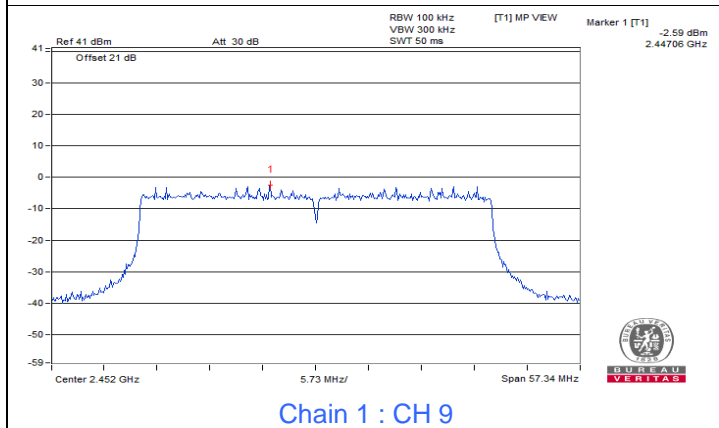
Chain 1 : CH 3



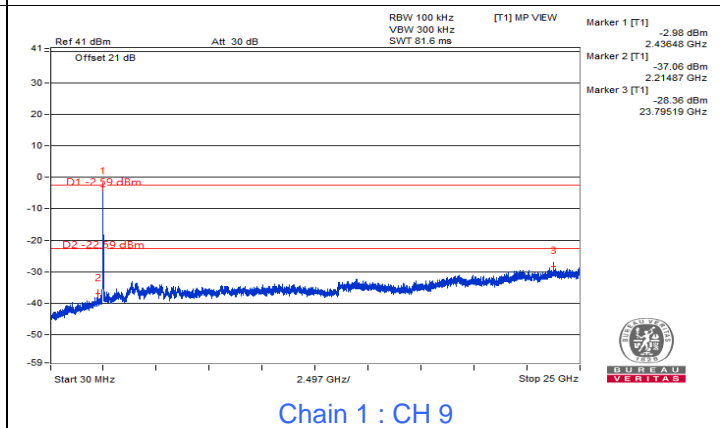
Chain 1 : CH 6



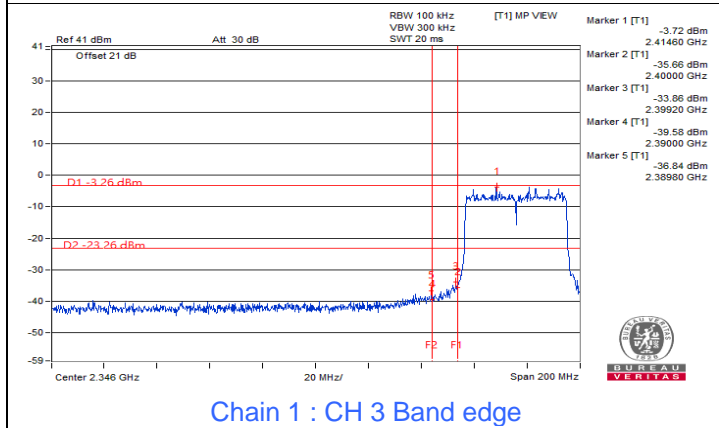
Chain 1 : CH 6



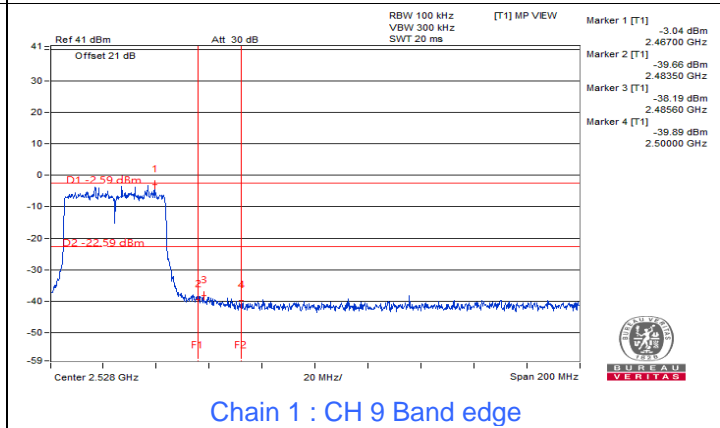
Chain 1 : CH 9



Chain 1 : CH 9



Chain 1 : CH 3 Band edge



Chain 1 : CH 9 Band edge

7.5 AC Power Conducted Emissions

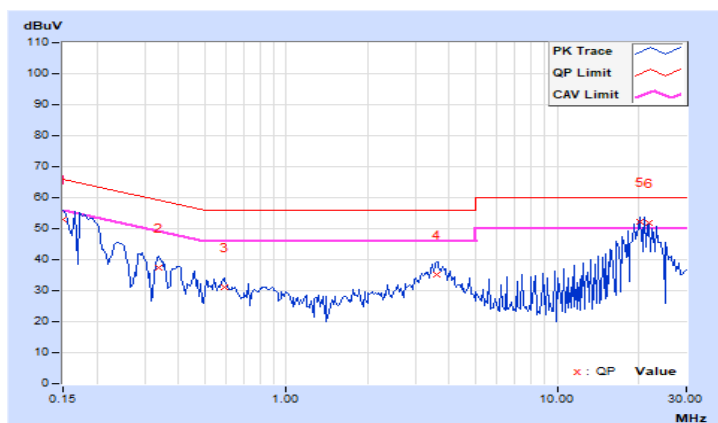
RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Tom Yang		

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	0.15000	9.96	43.08	31.97	53.04	41.93	66.00	56.00	-12.96	-14.07
2	0.33750	9.97	27.42	18.49	37.39	28.46	59.26	49.26	-21.87	-20.80
3	0.59141	9.98	21.12	14.67	31.10	24.65	56.00	46.00	-24.90	-21.35
4	3.58203	10.13	25.03	16.21	35.16	26.34	56.00	46.00	-20.84	-19.66
5	20.10547	11.10	41.26	35.57	52.36	46.67	60.00	50.00	-7.64	-3.33
6	21.88672	11.13	40.76	35.27	51.89	46.40	60.00	50.00	-8.11	-3.60

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

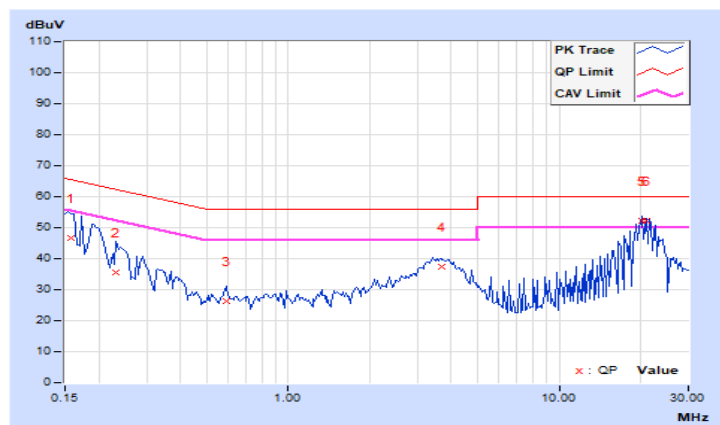


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Tom Yang		

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	0.15781	9.93	36.87	19.29	46.80	29.22	65.58	55.58	-18.78	-26.36
2	0.23203	9.94	25.66	6.68	35.60	16.62	62.38	52.38	-26.78	-35.76
3	0.59141	9.95	16.52	12.13	26.47	22.08	56.00	46.00	-29.53	-23.92
4	3.67578	10.09	27.28	19.59	37.37	29.68	56.00	46.00	-18.63	-16.32
5	20.11719	10.83	41.45	35.82	52.28	46.65	60.00	50.00	-7.72	-3.35
6	21.00391	10.84	41.25	36.11	52.09	46.95	60.00	50.00	-7.91	-3.05

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

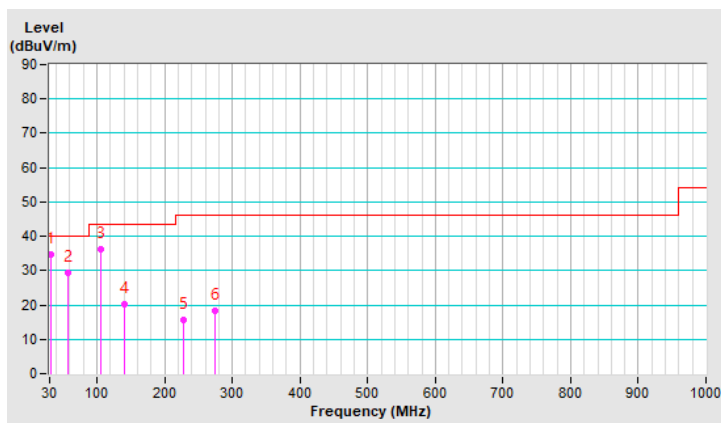
RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	31°C, 76% RH
Tested By	Louis Yang		

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	32.61	34.8 QP	40.0	-5.2	1.00 H	151	48.7	-13.9
2	57.15	29.2 QP	40.0	-10.8	3.00 H	262	42.4	-13.2
3	106.30	36.2 QP	43.5	-7.3	2.00 H	256	52.5	-16.3
4	140.20	20.2 QP	43.5	-23.3	2.00 H	248	33.3	-13.1
5	227.21	15.6 QP	46.0	-30.4	1.00 H	72	31.3	-15.7
6	274.30	18.3 QP	46.0	-27.7	1.00 H	148	31.3	-13.0

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.

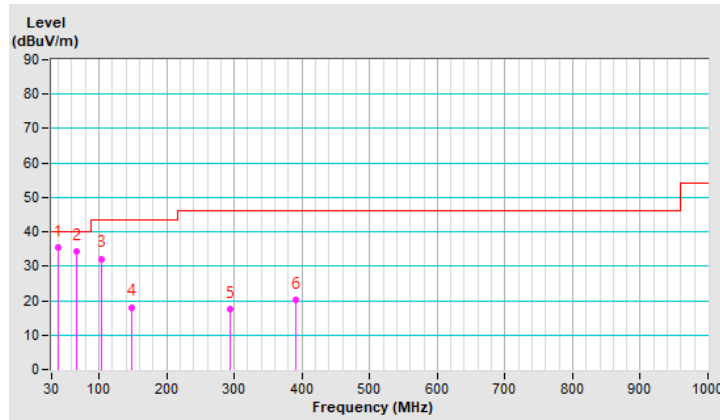


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	31°C, 76% RH
Tested By	Louis Yang		

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	39.61	35.4 QP	40.0	-4.6	1.00 V	152	48.7	-13.3
2	66.12	34.2 QP	40.0	-5.8	1.00 V	351	48.5	-14.3
3	103.44	32.2 QP	43.5	-11.3	2.00 V	172	49.0	-16.8
4	148.60	18.1 QP	43.5	-25.4	1.00 V	206	30.8	-12.7
5	294.30	17.6 QP	46.0	-28.4	3.00 V	0	30.0	-12.4
6	390.40	20.1 QP	46.0	-25.9	3.00 V	360	30.1	-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.



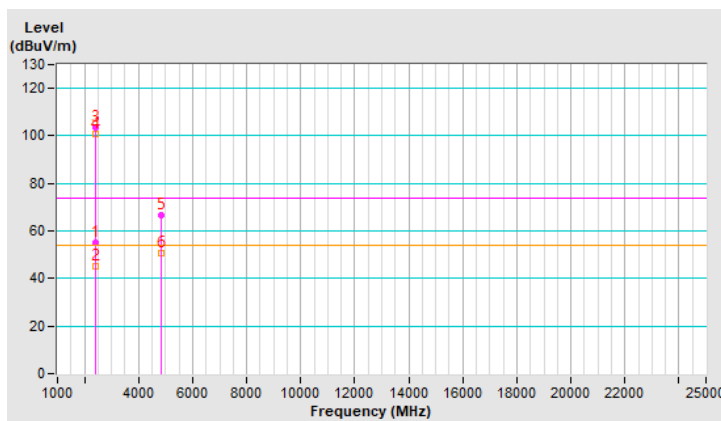
7.7 Unwanted Emissions above 1 GHz

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 = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% 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	55.1 PK	74.0	-18.9	1.11 H	97	57.8	-2.7
2	2390.00	45.1 AV	54.0	-8.9	1.11 H	97	47.8	-2.7
3	*2412.00	103.4 PK			1.11 H	97	106.1	-2.7
4	*2412.00	100.9 AV			1.11 H	97	103.6	-2.7
5	4824.00	66.4 PK	74.0	-7.6	2.26 H	206	64.9	1.5
6	4824.00	50.7 AV	54.0	-3.3	2.26 H	206	49.2	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.

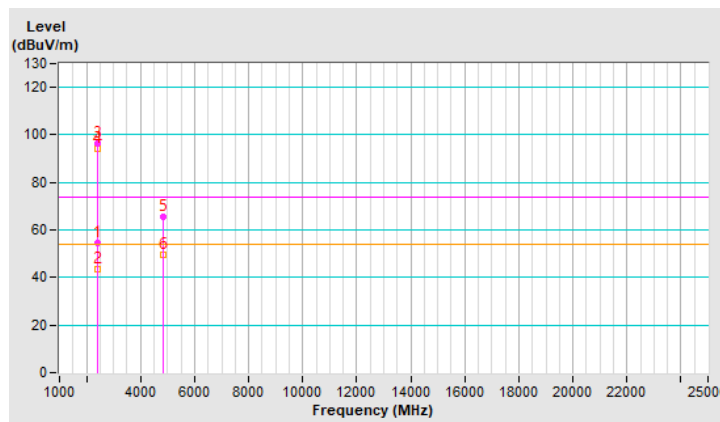


RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	54.6 PK	74.0	-19.4	1.10 V	124	57.3	-2.7
2	2390.00	43.7 AV	54.0	-10.3	1.10 V	124	46.4	-2.7
3	*2412.00	96.6 PK			1.10 V	124	99.3	-2.7
4	*2412.00	94.2 AV			1.10 V	124	96.9	-2.7
5	4824.00	65.4 PK	74.0	-8.6	1.44 V	176	63.9	1.5
6	4824.00	49.6 AV	54.0	-4.4	1.44 V	176	48.1	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.

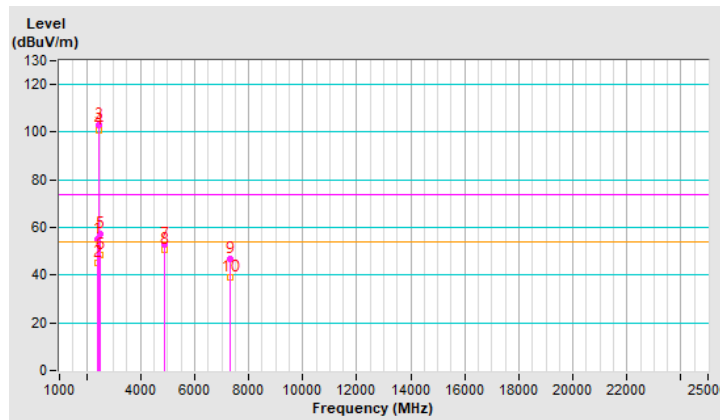


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	55.1 PK	74.0	-18.9	1.07 H	105	57.8	-2.7
2	2390.00	45.1 AV	54.0	-8.9	1.07 H	105	47.8	-2.7
3	*2437.00	103.1 PK			1.07 H	105	105.9	-2.8
4	*2437.00	100.9 AV			1.07 H	105	103.7	-2.8
5	2483.50	57.2 PK	74.0	-16.8	1.07 H	105	60.1	-2.9
6	2483.50	48.5 AV	54.0	-5.5	1.07 H	105	51.4	-2.9
7	4874.00	52.8 PK	74.0	-21.2	2.52 H	286	51.3	1.5
8	4874.00	50.9 AV	54.0	-3.1	2.52 H	286	49.4	1.5
9	7311.00	46.8 PK	74.0	-27.2	2.42 H	243	39.6	7.2
10	7311.00	38.9 AV	54.0	-15.1	2.42 H	243	31.7	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.

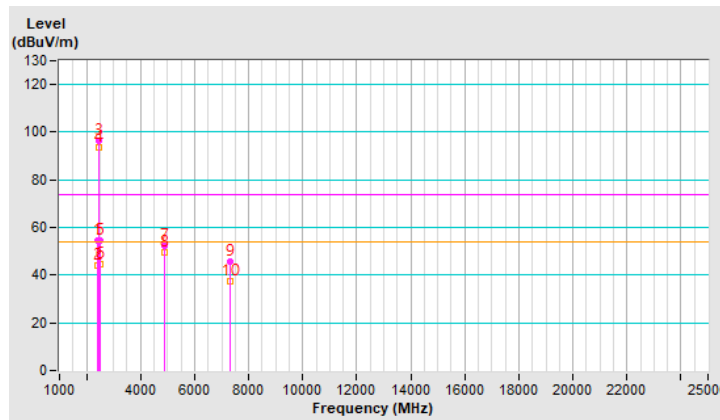


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	54.7 PK	74.0	-19.3	1.11 V	117	57.4	-2.7
2	2390.00	44.0 AV	54.0	-10.0	1.11 V	117	46.7	-2.7
3	*2437.00	96.4 PK			1.11 V	117	99.2	-2.8
4	*2437.00	93.8 AV			1.11 V	117	96.6	-2.8
5	2483.50	54.5 PK	74.0	-19.5	1.11 V	117	57.4	-2.9
6	2483.50	44.8 AV	54.0	-9.2	1.11 V	117	47.7	-2.9
7	4874.00	52.4 PK	74.0	-21.6	1.49 V	165	50.9	1.5
8	4874.00	49.4 AV	54.0	-4.6	1.49 V	165	47.9	1.5
9	7311.00	45.7 PK	74.0	-28.3	1.20 V	360	38.5	7.2
10	7311.00	37.4 AV	54.0	-16.6	1.20 V	360	30.2	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.

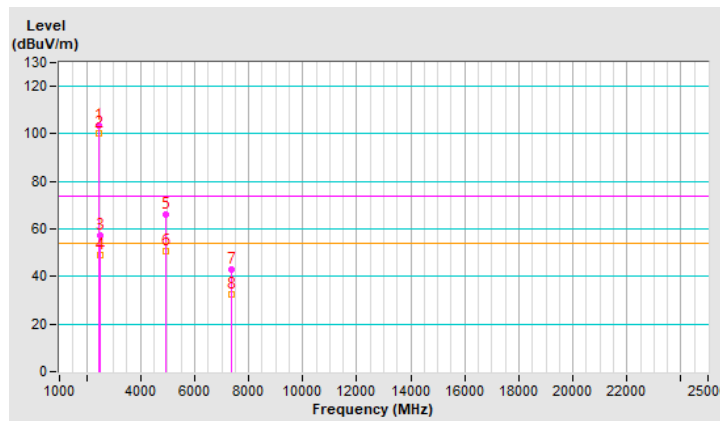


RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	103.3 PK			1.08 H	109	106.1	-2.8
2	*2462.00	100.4 AV			1.08 H	109	103.2	-2.8
3	2483.50	57.3 PK	74.0	-16.7	1.08 H	109	60.2	-2.9
4	2483.50	48.9 AV	54.0	-5.1	1.08 H	109	51.8	-2.9
5	4924.00	66.1 PK	74.0	-7.9	2.19 H	197	64.6	1.5
6	4924.00	50.5 AV	54.0	-3.5	2.19 H	197	49.0	1.5
7	7386.00	42.8 PK	74.0	-31.2	1.43 H	275	35.6	7.2
8	7386.00	32.3 AV	54.0	-21.7	1.43 H	275	25.1	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.

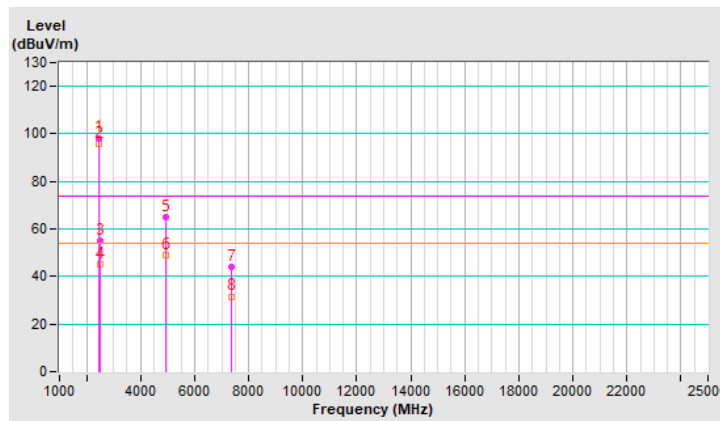


RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	98.3 PK			1.09 V	116	101.1	-2.8
2	*2462.00	95.6 AV			1.09 V	116	98.4	-2.8
3	2483.50	55.3 PK	74.0	-18.7	1.09 V	116	58.2	-2.9
4	2483.50	45.3 AV	54.0	-8.7	1.09 V	116	48.2	-2.9
5	4924.00	65.2 PK	74.0	-8.8	1.45 V	171	63.7	1.5
6	4924.00	49.2 AV	54.0	-4.8	1.45 V	171	47.7	1.5
7	7386.00	43.9 PK	74.0	-30.1	1.19 V	360	36.7	7.2
8	7386.00	31.7 AV	54.0	-22.3	1.19 V	360	24.5	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.

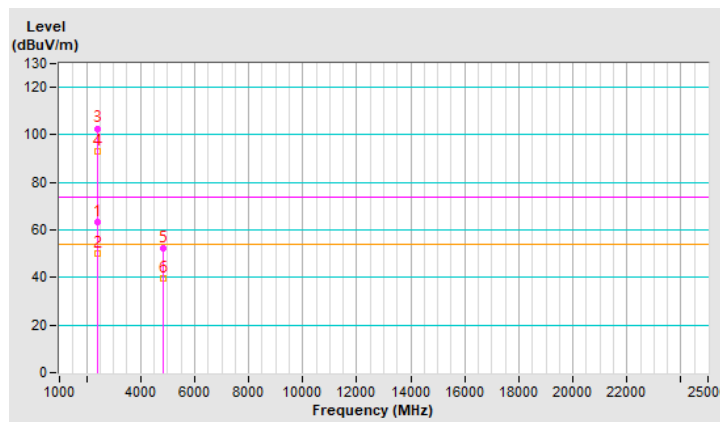


RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	63.1 PK	74.0	-10.9	1.12 H	105	65.8	-2.7
2	2390.00	50.3 AV	54.0	-3.7	1.12 H	105	53.0	-2.7
3	*2412.00	102.7 PK			1.12 H	105	105.4	-2.7
4	*2412.00	93.3 AV			1.12 H	105	96.0	-2.7
5	4824.00	52.3 PK	74.0	-21.7	2.21 H	215	50.8	1.5
6	4824.00	39.6 AV	54.0	-14.4	2.21 H	215	38.1	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.

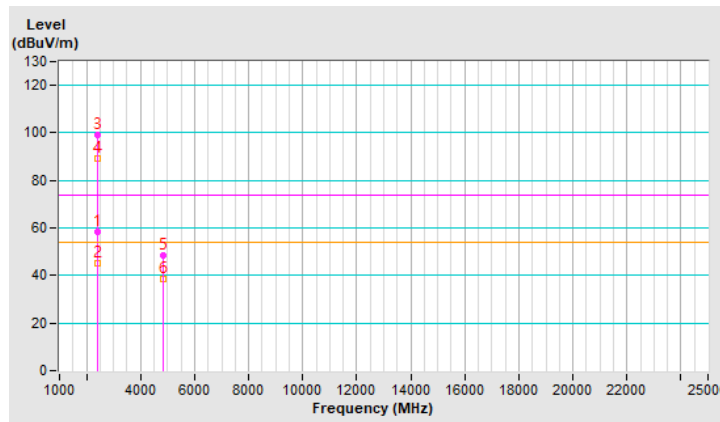


RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	58.3 PK	74.0	-15.7	1.13 V	128	61.0	-2.7
2	2390.00	45.3 AV	54.0	-8.7	1.13 V	128	48.0	-2.7
3	*2412.00	99.0 PK			1.13 V	128	101.7	-2.7
4	*2412.00	89.0 AV			1.13 V	128	91.7	-2.7
5	4824.00	48.4 PK	74.0	-25.6	1.40 V	180	46.9	1.5
6	4824.00	38.4 AV	54.0	-15.6	1.40 V	180	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.

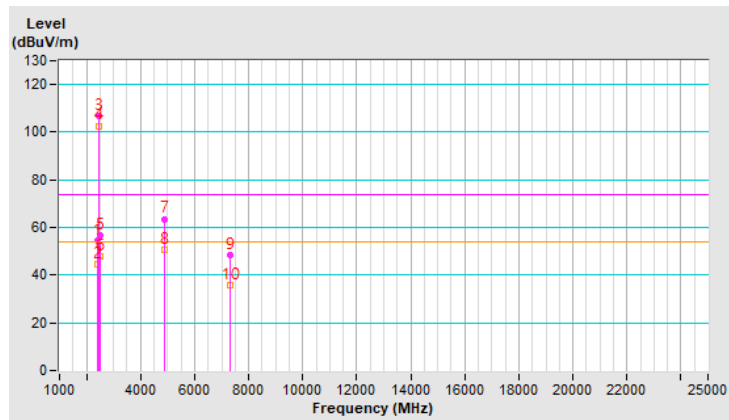


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	54.6 PK	74.0	-19.4	1.03 H	119	57.3	-2.7
2	2390.00	44.8 AV	54.0	-9.2	1.03 H	119	47.5	-2.7
3	*2437.00	106.7 PK			1.03 H	119	109.5	-2.8
4	*2437.00	102.7 AV			1.03 H	119	105.5	-2.8
5	2483.50	56.7 PK	74.0	-17.3	1.03 H	119	59.6	-2.9
6	2483.50	48.0 AV	54.0	-6.0	1.03 H	119	50.9	-2.9
7	4874.00	63.6 PK	74.0	-10.4	1.31 H	256	62.1	1.5
8	4874.00	50.7 AV	54.0	-3.3	1.31 H	256	49.2	1.5
9	7311.00	48.2 PK	74.0	-25.8	1.44 H	324	41.0	7.2
10	7311.00	35.8 AV	54.0	-18.2	1.44 H	324	28.6	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.

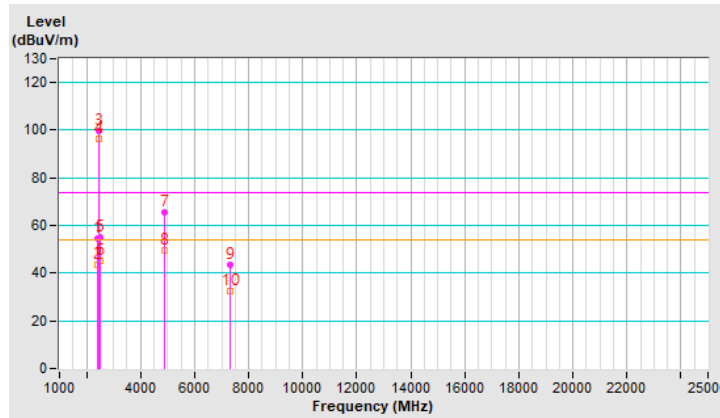


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	54.3 PK	74.0	-19.7	1.06 V	132	57.0	-2.7
2	2390.00	43.6 AV	54.0	-10.4	1.06 V	132	46.3	-2.7
3	*2437.00	99.7 PK			1.06 V	132	102.5	-2.8
4	*2437.00	96.2 AV			1.06 V	132	99.0	-2.8
5	2483.50	54.9 PK	74.0	-19.1	1.06 V	132	57.8	-2.9
6	2483.50	45.0 AV	54.0	-9.0	1.06 V	132	47.9	-2.9
7	4874.00	65.6 PK	74.0	-8.4	1.46 V	167	64.1	1.5
8	4874.00	49.6 AV	54.0	-4.4	1.46 V	167	48.1	1.5
9	7311.00	43.6 PK	74.0	-30.4	1.25 V	360	36.4	7.2
10	7311.00	32.6 AV	54.0	-21.4	1.25 V	360	25.4	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.

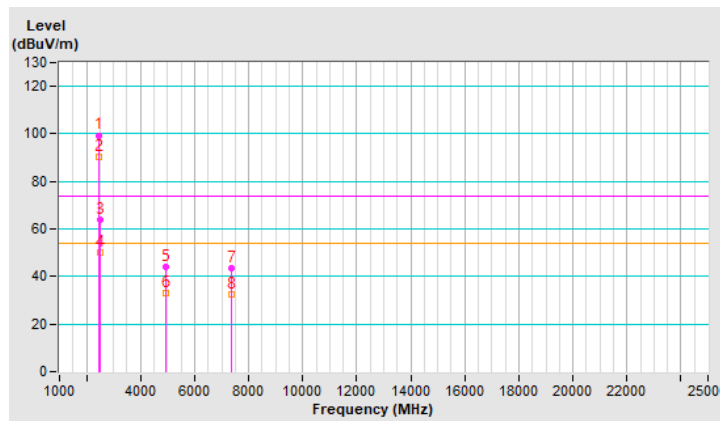


RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	99.4 PK			1.05 H	134	102.2	-2.8
2	*2462.00	90.5 AV			1.05 H	134	93.3	-2.8
3	2483.50	63.9 PK	74.0	-10.1	1.05 H	134	66.8	-2.9
4	2483.50	50.2 AV	54.0	-3.8	1.05 H	134	53.1	-2.9
5	4924.00	43.8 PK	74.0	-30.2	2.22 H	216	42.3	1.5
6	4924.00	33.1 AV	54.0	-20.9	2.22 H	216	31.6	1.5
7	7386.00	43.4 PK	74.0	-30.6	1.47 H	283	36.2	7.2
8	7386.00	32.7 AV	54.0	-21.3	1.47 H	283	25.5	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.

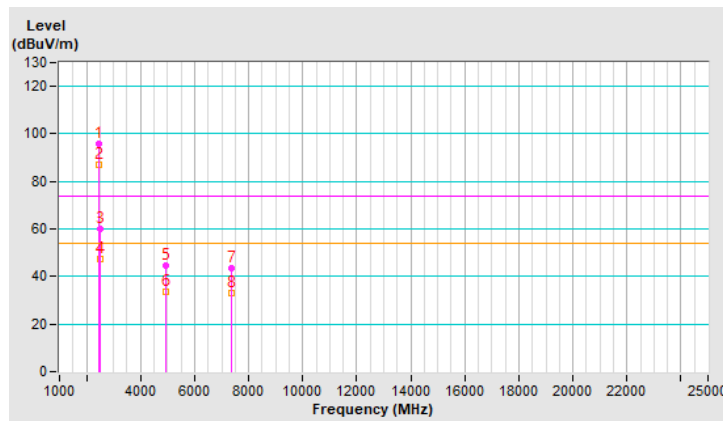


RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	95.9 PK			1.18 V	131	98.7	-2.8
2	*2462.00	87.1 AV			1.18 V	131	89.9	-2.8
3	2483.50	59.9 PK	74.0	-14.1	1.18 V	131	62.8	-2.9
4	2483.50	47.4 AV	54.0	-6.6	1.18 V	131	50.3	-2.9
5	4924.00	44.5 PK	74.0	-29.5	1.43 V	182	43.0	1.5
6	4924.00	33.6 AV	54.0	-20.4	1.43 V	182	32.1	1.5
7	7386.00	43.6 PK	74.0	-30.4	1.25 V	360	36.4	7.2
8	7386.00	33.0 AV	54.0	-21.0	1.25 V	360	25.8	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.

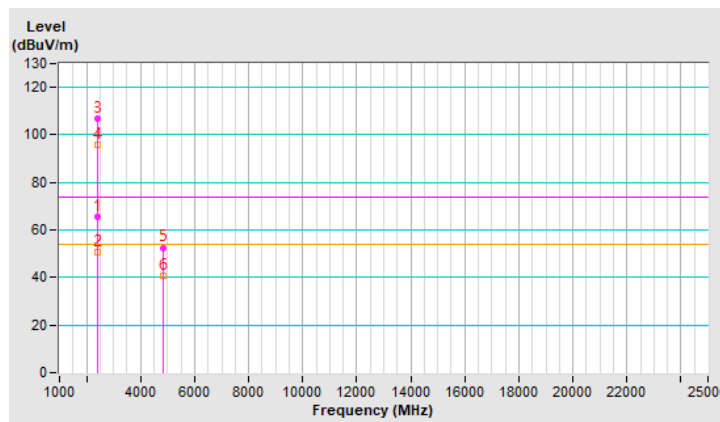


RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	65.3 PK	74.0	-8.7	1.01 H	138	68.0	-2.7
2	2390.00	50.6 AV	54.0	-3.4	1.01 H	138	53.3	-2.7
3	*2412.00	106.6 PK			1.01 H	138	109.3	-2.7
4	*2412.00	95.7 AV			1.01 H	138	98.4	-2.7
5	4824.00	52.6 PK	74.0	-21.4	2.21 H	193	51.1	1.5
6	4824.00	40.6 AV	54.0	-13.4	2.21 H	193	39.1	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.

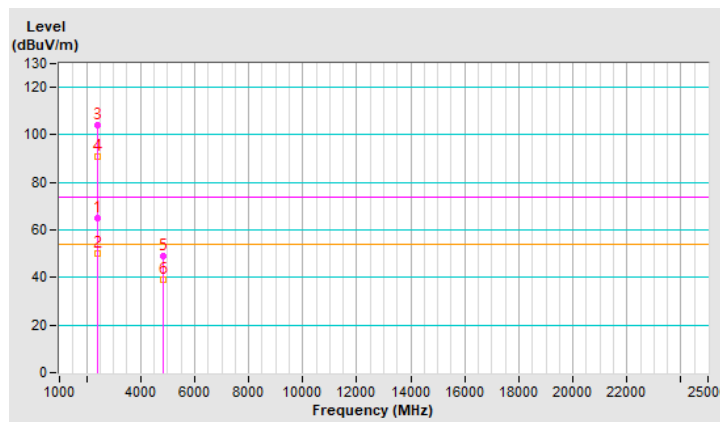


RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	65.2 PK	74.0	-8.8	1.18 V	108	67.9	-2.7
2	2390.00	50.1 AV	54.0	-3.9	1.18 V	108	52.8	-2.7
3	*2412.00	103.9 PK			1.18 V	108	106.6	-2.7
4	*2412.00	90.9 AV			1.18 V	108	93.6	-2.7
5	4824.00	49.0 PK	74.0	-25.0	1.45 V	183	47.5	1.5
6	4824.00	38.9 AV	54.0	-15.1	1.45 V	183	37.4	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.

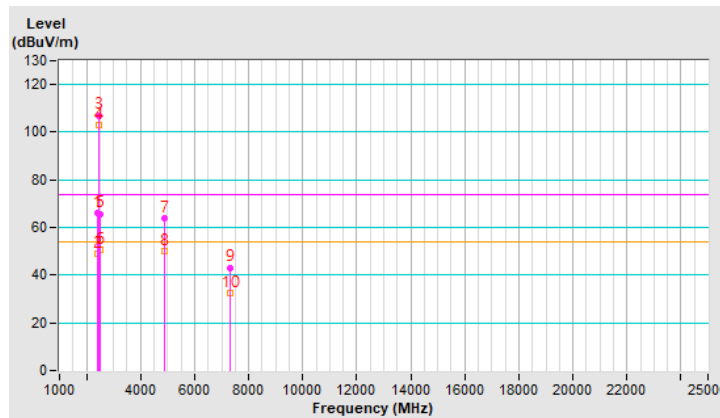


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	65.9 PK	74.0	-8.1	1.01 H	135	68.6	-2.7
2	2390.00	48.9 AV	54.0	-5.1	1.01 H	135	51.6	-2.7
3	*2437.00	107.1 PK			1.01 H	135	109.9	-2.8
4	*2437.00	103.1 AV			1.01 H	135	105.9	-2.8
5	2483.50	65.8 PK	74.0	-8.2	1.01 H	135	68.7	-2.9
6	2483.50	50.6 AV	54.0	-3.4	1.01 H	135	53.5	-2.9
7	4874.00	64.0 PK	74.0	-10.0	2.23 H	201	62.5	1.5
8	4874.00	50.1 AV	54.0	-3.9	2.23 H	201	48.6	1.5
9	7311.00	43.2 PK	74.0	-30.8	1.43 H	284	36.0	7.2
10	7311.00	32.4 AV	54.0	-21.6	1.43 H	284	25.2	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.

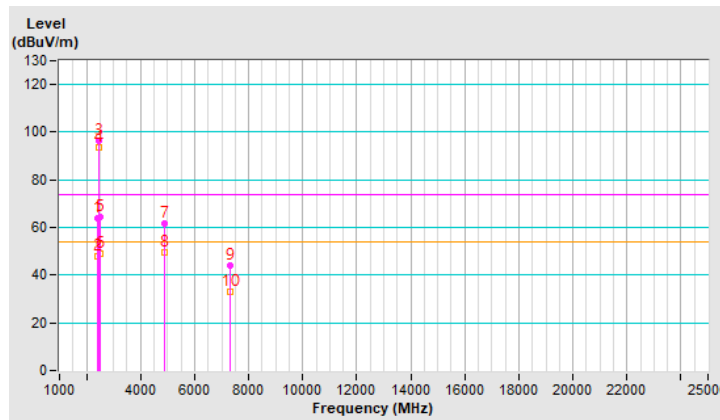


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	64.0 PK	74.0	-10.0	1.14 V	109	66.7	-2.7
2	2390.00	47.7 AV	54.0	-6.3	1.14 V	109	50.4	-2.7
3	*2437.00	96.3 PK			1.14 V	109	99.1	-2.8
4	*2437.00	93.7 AV			1.14 V	109	96.5	-2.8
5	2483.50	64.3 PK	74.0	-9.7	1.14 V	109	67.2	-2.9
6	2483.50	49.2 AV	54.0	-4.8	1.14 V	109	52.1	-2.9
7	4874.00	61.5 PK	74.0	-12.5	1.41 V	165	60.0	1.5
8	4874.00	49.6 AV	54.0	-4.4	1.41 V	165	48.1	1.5
9	7311.00	43.8 PK	74.0	-30.2	1.22 V	360	36.6	7.2
10	7311.00	33.2 AV	54.0	-20.8	1.22 V	360	26.0	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.

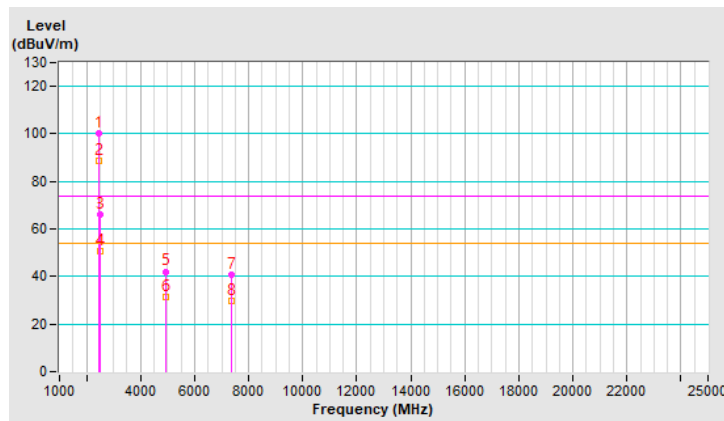


RF Mode	802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	100.3 PK			1.03 H	131	103.1	-2.8
2	*2462.00	88.5 AV			1.03 H	131	91.3	-2.8
3	2483.50	66.2 PK	74.0	-7.8	1.03 H	131	69.1	-2.9
4	2483.50	50.5 AV	54.0	-3.5	1.03 H	131	53.4	-2.9
5	4924.00	42.1 PK	74.0	-31.9	2.23 H	210	40.6	1.5
6	4924.00	31.4 AV	54.0	-22.6	2.23 H	210	29.9	1.5
7	7386.00	40.6 PK	74.0	-33.4	1.39 H	287	33.4	7.2
8	7386.00	29.6 AV	54.0	-24.4	1.39 H	287	22.4	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.

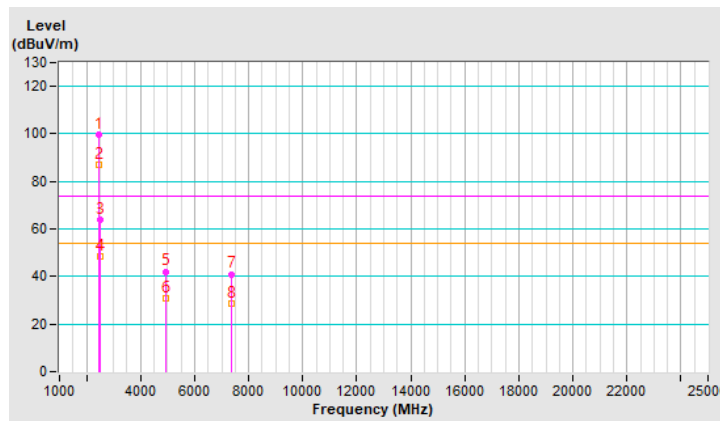


RF Mode	802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	99.7 PK			1.12 V	114	102.5	-2.8
2	*2462.00	86.8 AV			1.12 V	114	89.6	-2.8
3	2483.50	64.0 PK	74.0	-10.0	1.12 V	114	66.9	-2.9
4	2483.50	48.5 AV	54.0	-5.5	1.12 V	114	51.4	-2.9
5	4924.00	42.1 PK	74.0	-31.9	1.45 V	177	40.6	1.5
6	4924.00	30.8 AV	54.0	-23.2	1.45 V	177	29.3	1.5
7	7386.00	41.0 PK	74.0	-33.0	1.25 V	360	33.8	7.2
8	7386.00	28.8 AV	54.0	-25.2	1.25 V	360	21.6	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.

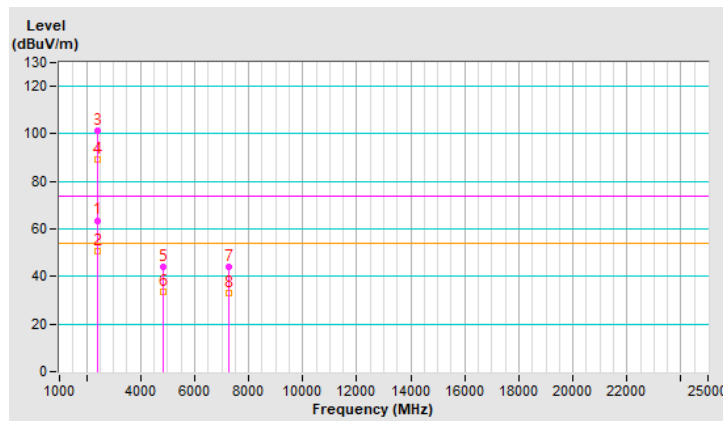


RF Mode	802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	63.6 PK	74.0	-10.4	1.12 H	131	66.3	-2.7
2	2390.00	50.7 AV	54.0	-3.3	1.12 H	131	53.4	-2.7
3	*2422.00	101.1 PK			1.12 H	131	103.9	-2.8
4	*2422.00	89.3 AV			1.12 H	131	92.1	-2.8
5	4844.00	43.8 PK	74.0	-30.2	2.23 H	225	42.3	1.5
6	4844.00	33.4 AV	54.0	-20.6	2.23 H	225	31.9	1.5
7	7266.00	43.8 PK	74.0	-30.2	1.42 H	280	36.6	7.2
8	7266.00	32.8 AV	54.0	-21.2	1.42 H	280	25.6	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.

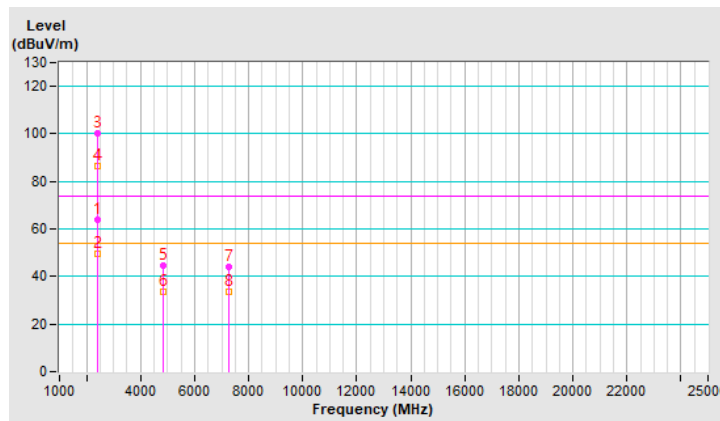


RF Mode	802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	63.7 PK	74.0	-10.3	1.22 V	106	66.4	-2.7
2	2390.00	49.5 AV	54.0	-4.5	1.22 V	106	52.2	-2.7
3	*2422.00	100.1 PK			1.22 V	106	102.9	-2.8
4	*2422.00	86.6 AV			1.22 V	106	89.4	-2.8
5	4844.00	44.4 PK	74.0	-29.6	1.43 V	170	42.9	1.5
6	4844.00	33.4 AV	54.0	-20.6	1.43 V	170	31.9	1.5
7	7266.00	44.0 PK	74.0	-30.0	1.24 V	360	36.8	7.2
8	7266.00	33.4 AV	54.0	-20.6	1.24 V	360	26.2	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.

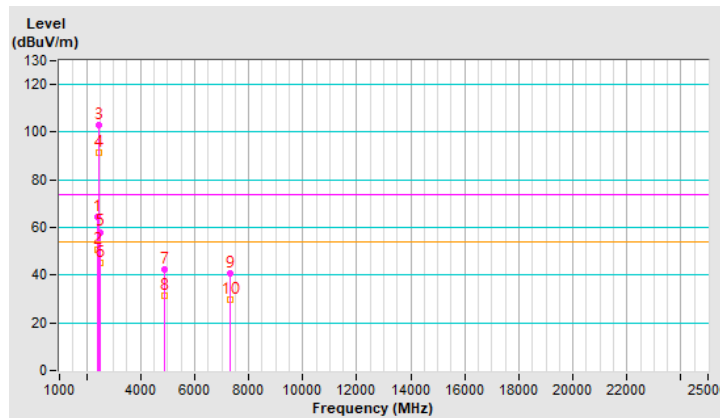


RF Mode	802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	64.6 PK	74.0	-9.4	1.46 H	191	67.3	-2.7
2	2390.00	50.6 AV	54.0	-3.4	1.46 H	191	53.3	-2.7
3	*2437.00	103.1 PK			1.46 H	191	105.9	-2.8
4	*2437.00	91.2 AV			1.46 H	191	94.0	-2.8
5	2483.50	58.1 PK	74.0	-15.9	1.46 H	191	61.0	-2.9
6	2483.50	45.0 AV	54.0	-9.0	1.46 H	191	47.9	-2.9
7	4874.00	42.5 PK	74.0	-31.5	2.20 H	197	41.0	1.5
8	4874.00	31.6 AV	54.0	-22.4	2.20 H	197	30.1	1.5
9	7311.00	40.8 PK	74.0	-33.2	1.33 H	274	33.6	7.2
10	7311.00	29.6 AV	54.0	-24.4	1.33 H	274	22.4	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.

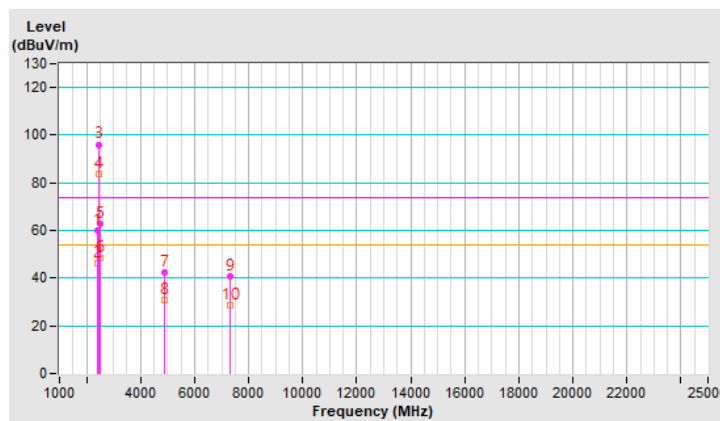


RF Mode	802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	60.0 PK	74.0	-14.0	2.50 V	202	62.7	-2.7
2	2390.00	46.5 AV	54.0	-7.5	2.50 V	202	49.2	-2.7
3	*2437.00	96.1 PK			2.50 V	202	98.9	-2.8
4	*2437.00	83.9 AV			2.50 V	202	86.7	-2.8
5	2483.50	63.0 PK	74.0	-11.0	2.50 V	202	65.9	-2.9
6	2483.50	48.5 AV	54.0	-5.5	2.50 V	202	51.4	-2.9
7	4874.00	42.5 PK	74.0	-31.5	1.44 V	170	41.0	1.5
8	4874.00	31.0 AV	54.0	-23.0	1.44 V	170	29.5	1.5
9	7311.00	40.5 PK	74.0	-33.5	1.26 V	360	33.3	7.2
10	7311.00	28.4 AV	54.0	-25.6	1.26 V	360	21.2	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.

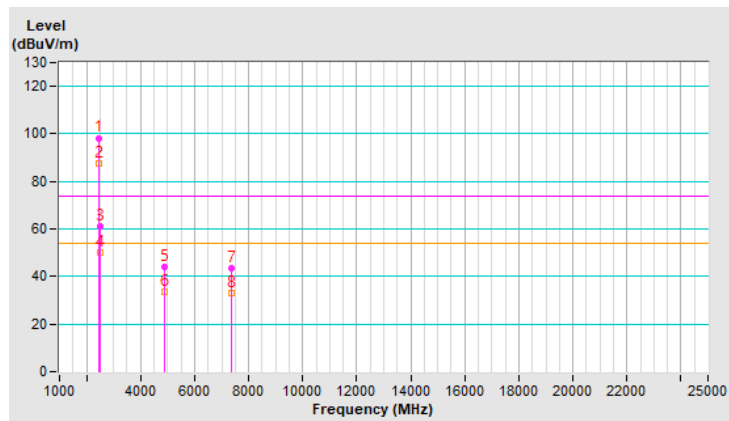


RF Mode	802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

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	98.3 PK			1.16 H	125	101.1	-2.8
2	*2452.00	87.6 AV			1.16 H	125	90.4	-2.8
3	2483.50	61.3 PK	74.0	-12.7	1.16 H	125	64.2	-2.9
4	2483.50	50.1 AV	54.0	-3.9	1.16 H	125	53.0	-2.9
5	4904.00	44.2 PK	74.0	-29.8	2.28 H	221	42.7	1.5
6	4904.00	33.8 AV	54.0	-20.2	2.28 H	221	32.3	1.5
7	7356.00	43.6 PK	74.0	-30.4	1.41 H	284	36.5	7.1
8	7356.00	32.8 AV	54.0	-21.2	1.41 H	284	25.7	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.

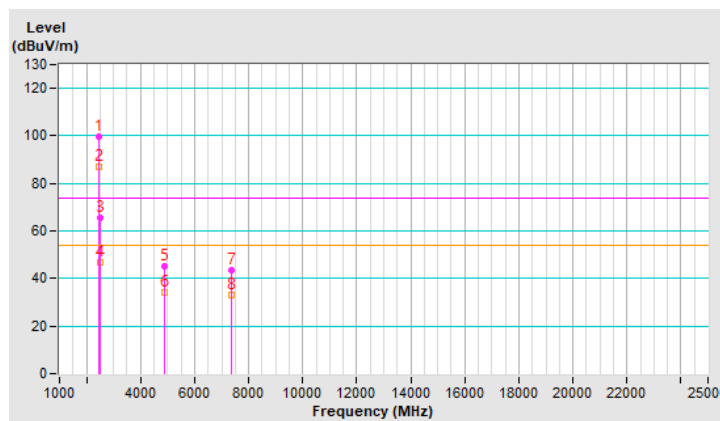


RF Mode	802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 66% RH
Tested By	Louis Yang		

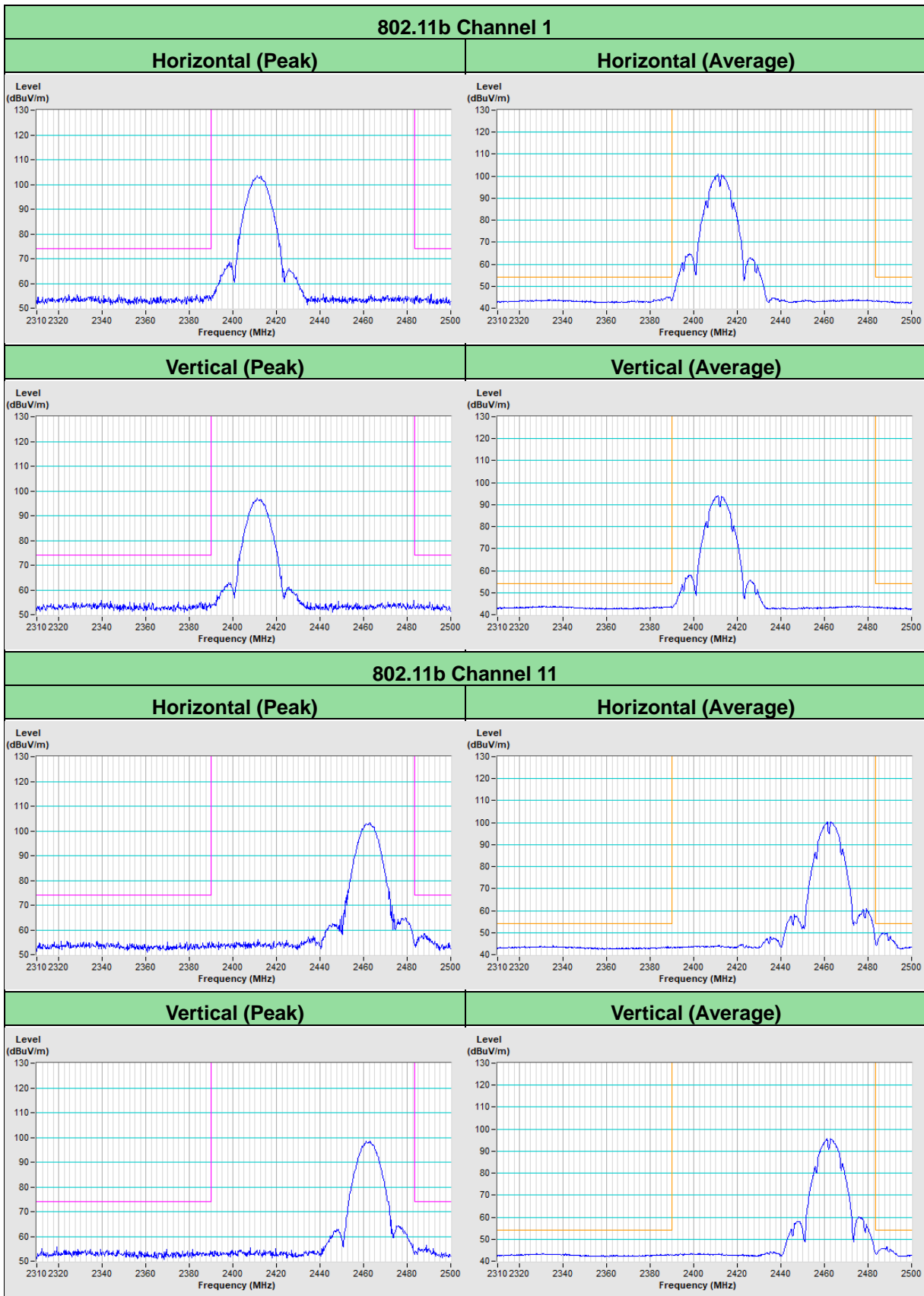
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	99.9 PK			1.18 V	122	102.7	-2.8
2	*2452.00	87.1 AV			1.18 V	122	89.9	-2.8
3	2483.50	65.4 PK	74.0	-8.6	1.18 V	122	68.3	-2.9
4	2483.50	47.0 AV	54.0	-7.0	1.18 V	122	49.9	-2.9
5	4904.00	44.9 PK	74.0	-29.1	1.43 V	167	43.4	1.5
6	4904.00	33.9 AV	54.0	-20.1	1.43 V	167	32.4	1.5
7	7356.00	43.6 PK	74.0	-30.4	1.22 V	360	36.5	7.1
8	7356.00	33.1 AV	54.0	-20.9	1.22 V	360	26.0	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.

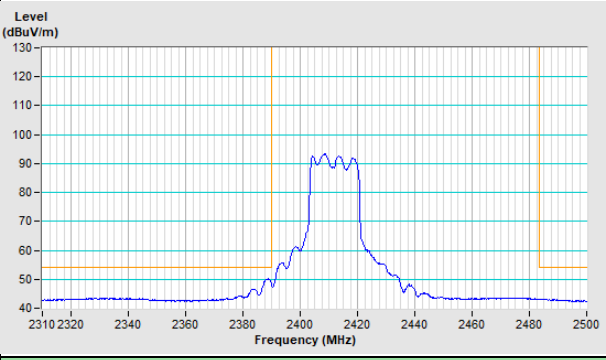
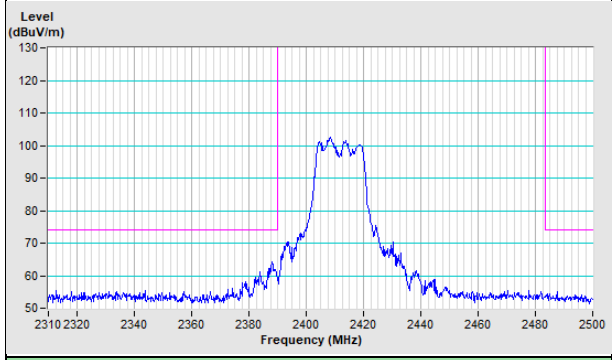


Plot of Band Edge

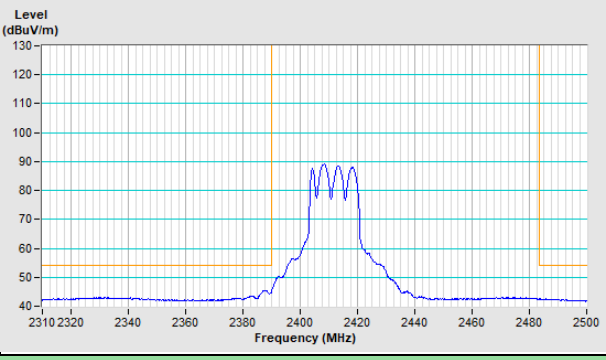
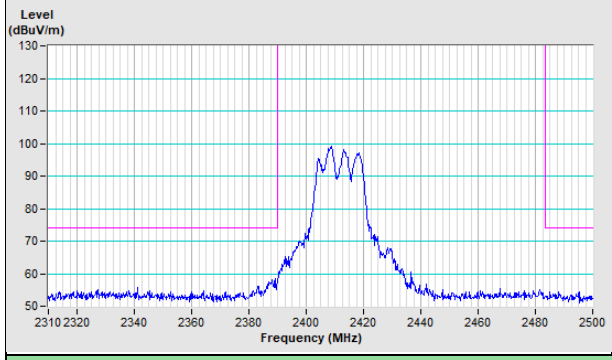


802.11g Channel 1

Horizontal (Peak)	Horizontal (Average)
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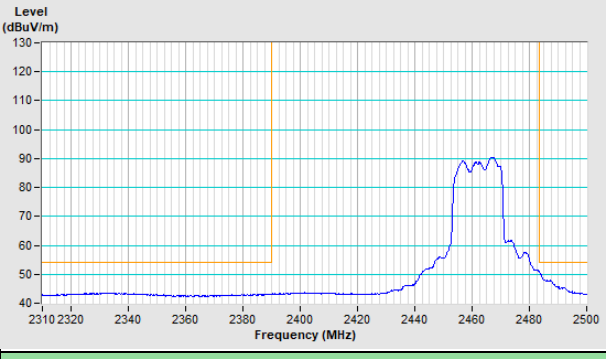
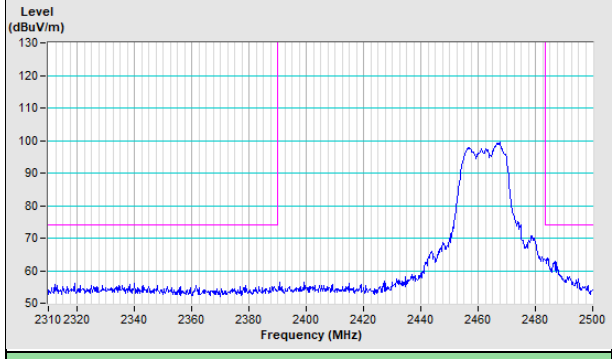


Vertical (Peak)	Vertical (Average)
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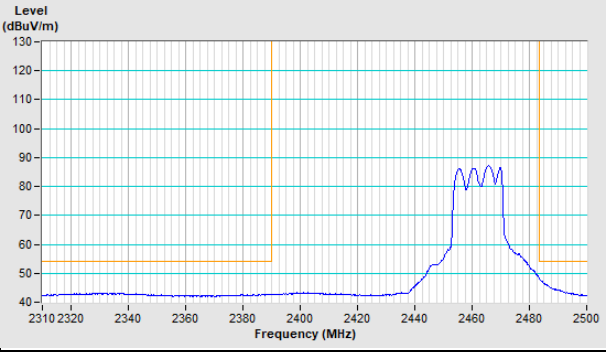
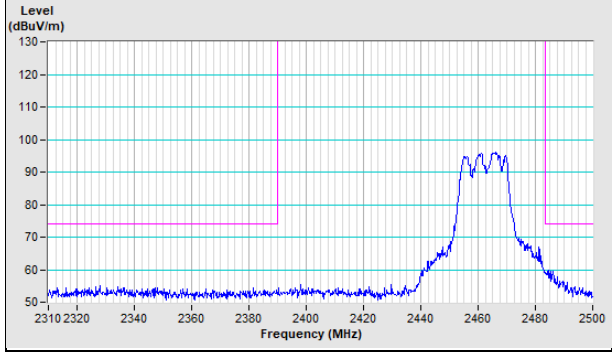


802.11g Channel 11

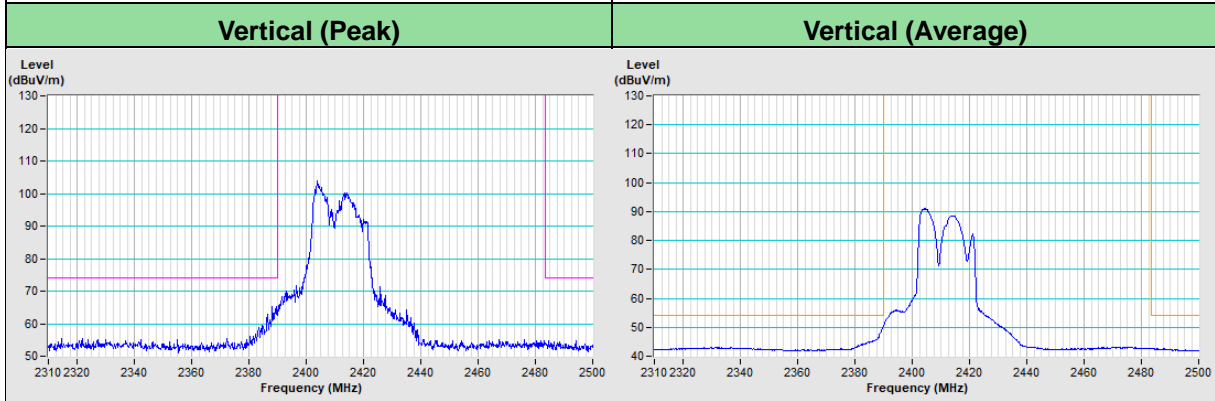
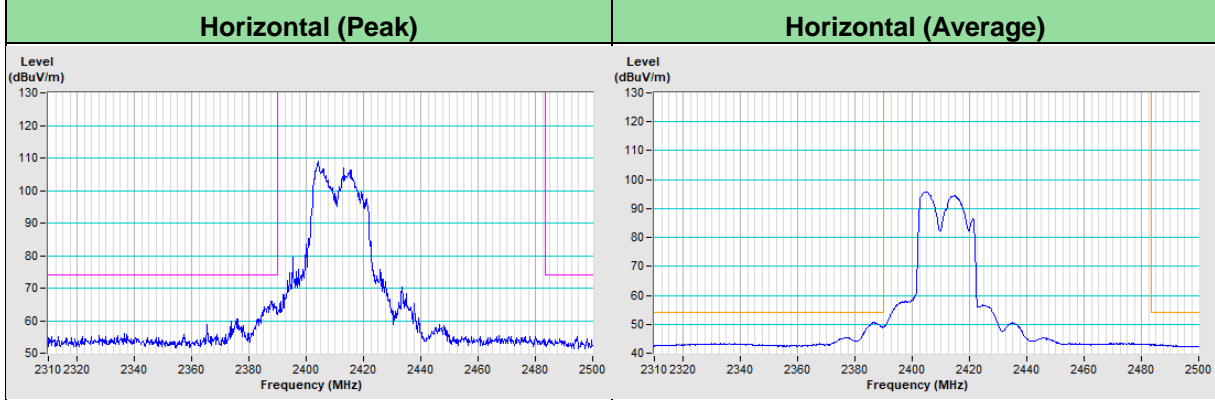
Horizontal (Peak)	Horizontal (Average)
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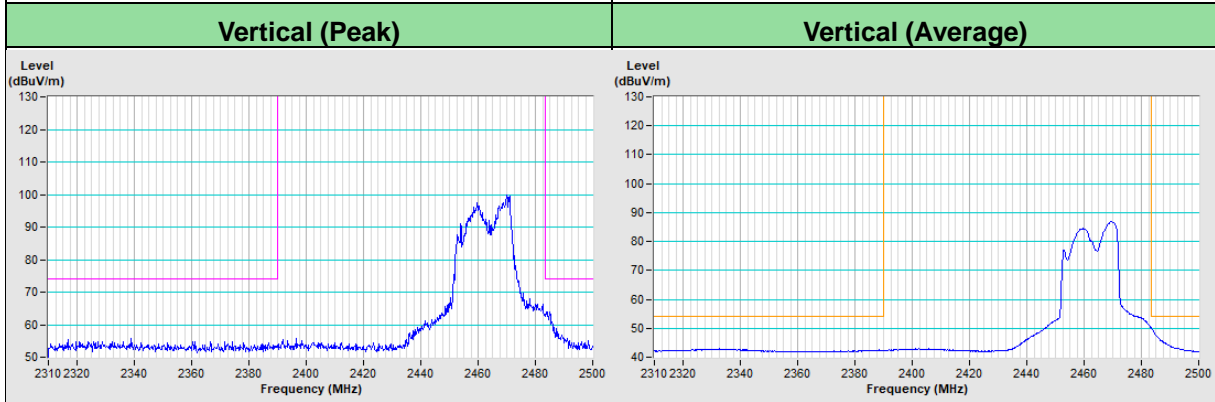
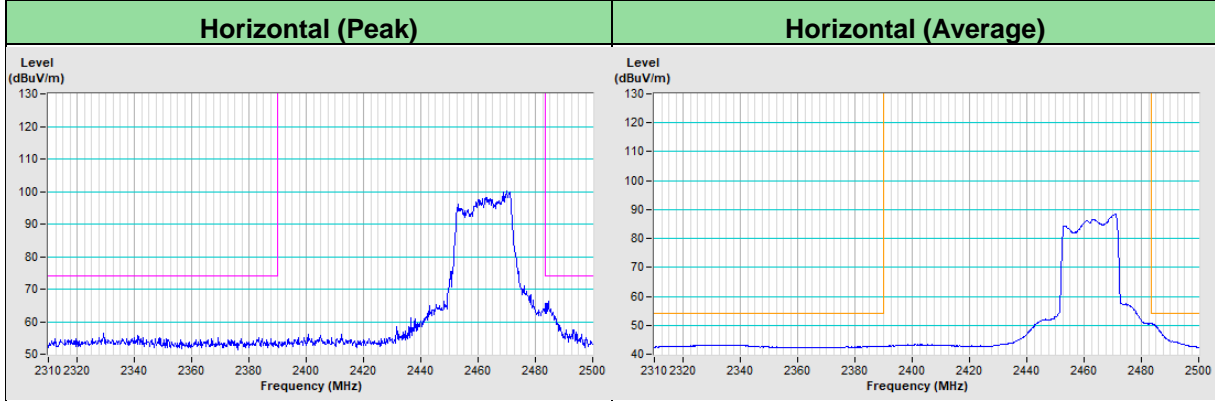
Vertical (Peak)	Vertical (Average)
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802.11ax (HE20) Channel 1

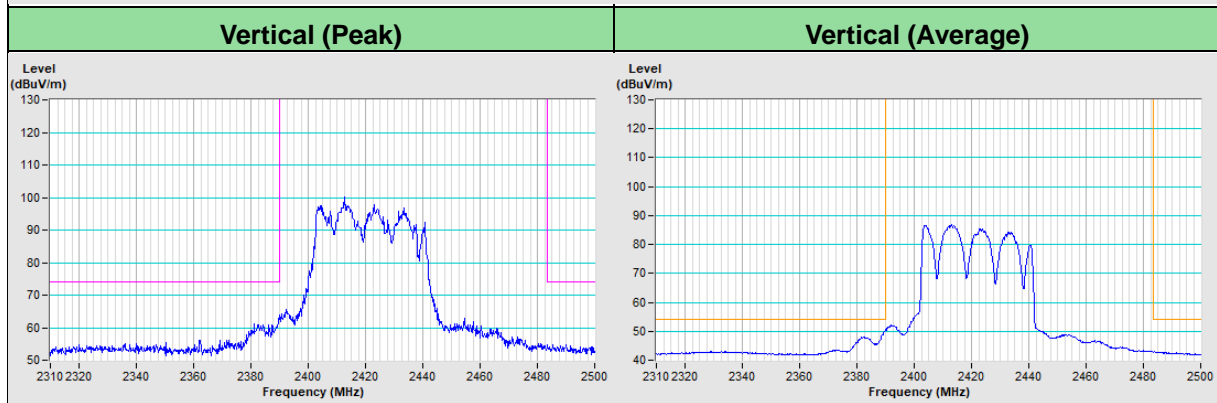
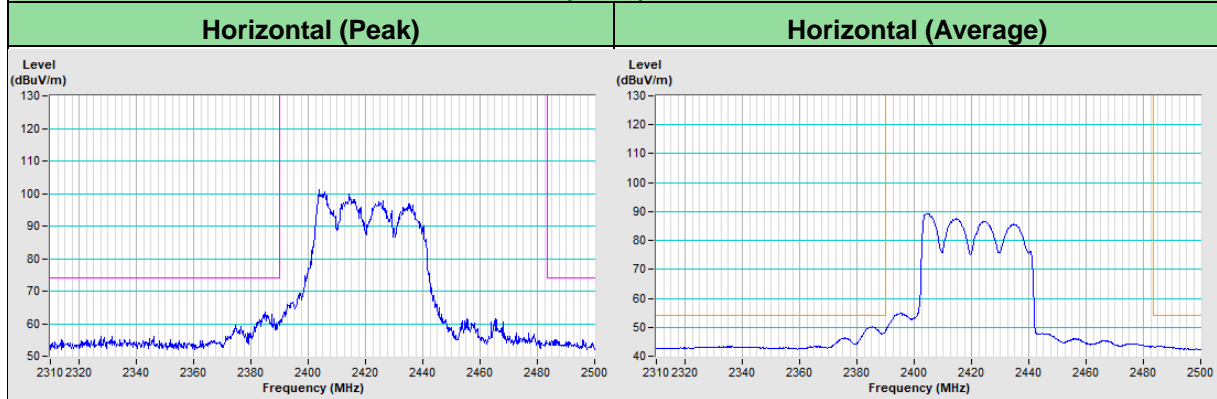


802.11ax (HE20) Channel 11

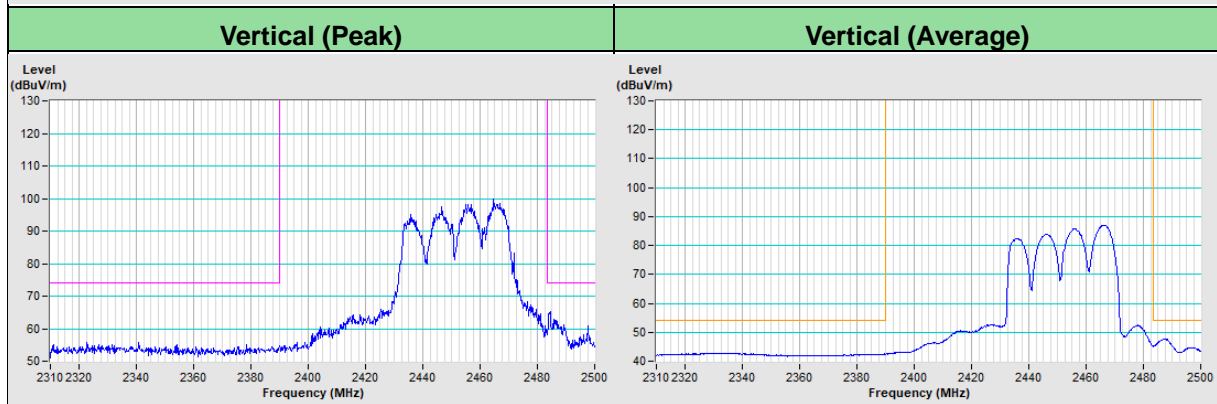
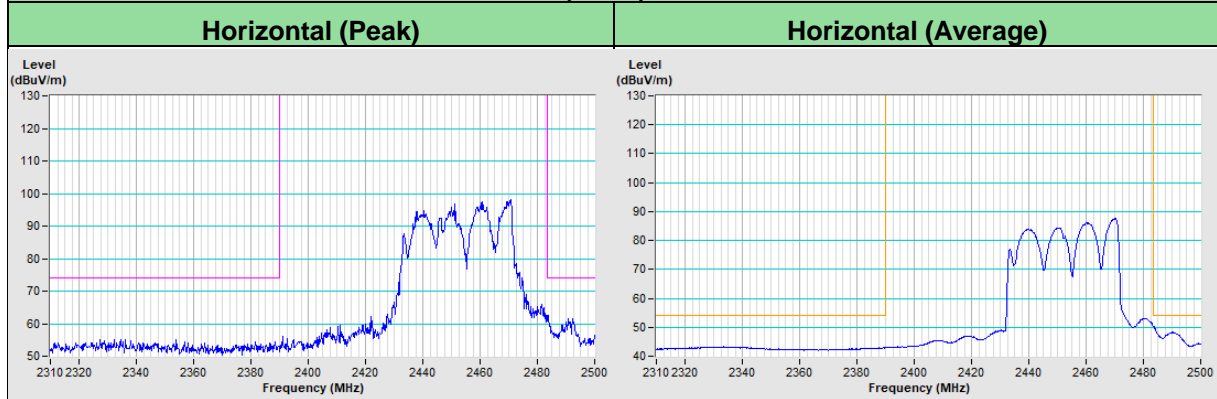




802.11ax (HE40) Channel 3



802.11ax (HE40) Channel 9



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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Fax: 886-3-6668323

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Fax: 886-3-3270892

Email: service.adt@bureauveritas.com

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

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

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