

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFBDQY-WTW-P23110009

FCC ID: 2A9V3PAX5400

Product: WiFi Access Point

Brand: Plasma Cloud Pte. Ltd.

Model No.: PAX5400

Received Date: 2023/11/1

Test Date: 2023/12/11 ~ 2024/2/6

Issued Date: 2024/3/14

Applicant: Plasma Cloud Pte. Ltd.

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

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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

FCC Registration / 723255 / TW2022

Designation Number:

Approved by: _____, **Date:** 2024/3/14

May Chen / Manager

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Prepared by : Vito Lung / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBDQY-WTW-P23110009	Original release.	2024/3/14

1 Certificate

Product: WiFi Access Point

Brand: Plasma Cloud Pte. Ltd.

Test Model: PAX5400

Sample Status: Engineering sample

Applicant: Plasma Cloud Pte. Ltd.

Test Date: 2023/12/11 ~ 2024/2/6

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 -16.33 dB at 0.17734 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.0 dB at 35.92 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.5 dB at 2390.00 and 2483.50 MHz
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.1 dB
Power Spectral Density	-	1.3 dB
6 dB Bandwidth	-	1050.00 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.6 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	5.4 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.0 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	WiFi Access Point
Brand	Plasma Cloud Pte. Ltd.
Test Model	PAX5400
Status of EUT	Engineering sample
Power Supply Rating	12 Vdc from adapter or 48~54 Vdc 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 802.11ac: 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	CDD Mode: 744.833 mW (28.72 dBm) Beamforming Mode: 507.626 mW (27.06 dBm)

Note:

1. There are WLAN (2.4 GHz & 5 GHz & 6 GHz) technology used for the EUT.
2. Simultaneously transmission condition.

Condition	Technology		
1	WLAN (2.4 GHz)	WLAN (5 GHz)	WLAN (6 GHz)

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

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna No.	RF Chain No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	2.4G Chain 0	4.3	2.4~2.4835	PIFA	ipex(MHF)	115
2	2.4G Chain 1	3.6	2.4~2.4835	PIFA	ipex(MHF)	215
3	5G Chain 0	4.4	5.15~5.25	PIFA	ipex(MHF)	180
		4.6	5.25~5.35			
		5.2	5.47~5.725			
		5.4	5.725~5.85			
4	5G Chain 1	6.0	5.15~5.25	PIFA	ipex(MHF)	234
		5.8	5.25~5.35			
		5.5	5.47~5.725			
		4.9	5.725~5.85			
5	6G Chain 0	5.8	5.925~6.425	PIFA	ipex(MHF)	165
		5.8	6.425~6.525			
		6.0	6.525~6.875			
		6.0	6.875~7.125			
6	6G Chain 1	5.2	5.925~6.425	PIFA	ipex(MHF)	205
		4.3	6.425~6.525			
		5.2	6.525~6.875			
		5.8	6.875~7.125			

* 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:

- All of modulation mode support beamforming function except 802.11b/g modulation mode.
- The EUT support Beamforming and CDD mode, therefore both modes were investigated and the worst case scenario was identified. The worst case data were presented in test report.
- The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), VHT mode for 20 MHz (40 MHz), 802.11ax mode for 20 MHz (40 MHz) therefore the manufacturer will control the power for 802.11n/VHT/ax mode is same as the 802.11ax mode or more lower than it and investigated worst case to representative mode in test report.

3.3 Channel List

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), VHT20, 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. The POE and AC Adapter has the following models: POE31U-1AT(POE) / WA-36W12R(Adapter), Pre-scan these models of POEs and AC Adapter and find the worst case as a representative test condition. 2. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition. 3. 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. POE or Adapter Worst Condition: POE Mode 2. X-axis/ Y-axis/ Z-axis Worst Condition: Y-axis

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

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

Note: Partial RU (resource unit) mechanism is not supported.

3.5 Duty Cycle of Test Signal

802.11b: Duty cycle = 0.664 ms / 0.677 ms x 100% = 98.1%

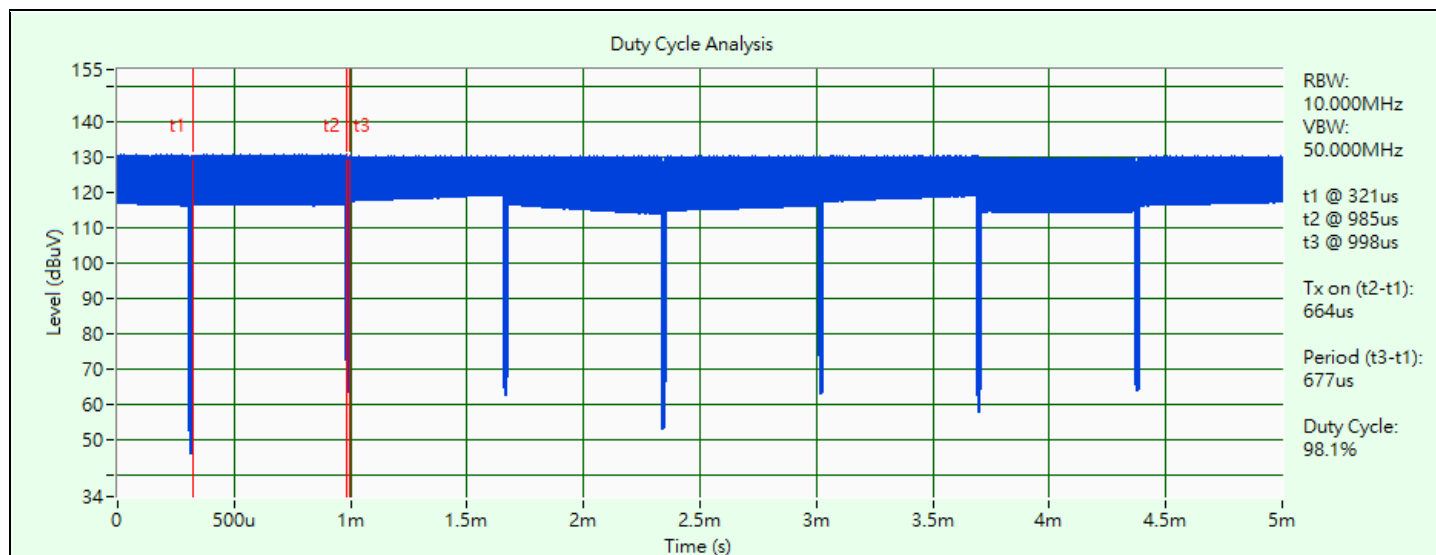
802.11g: Duty cycle = 1.977 ms / 1.993 ms x 100% = 99.2%

VHT20: Duty cycle = 5.43 ms / 5.445 ms x 100% = 99.7%

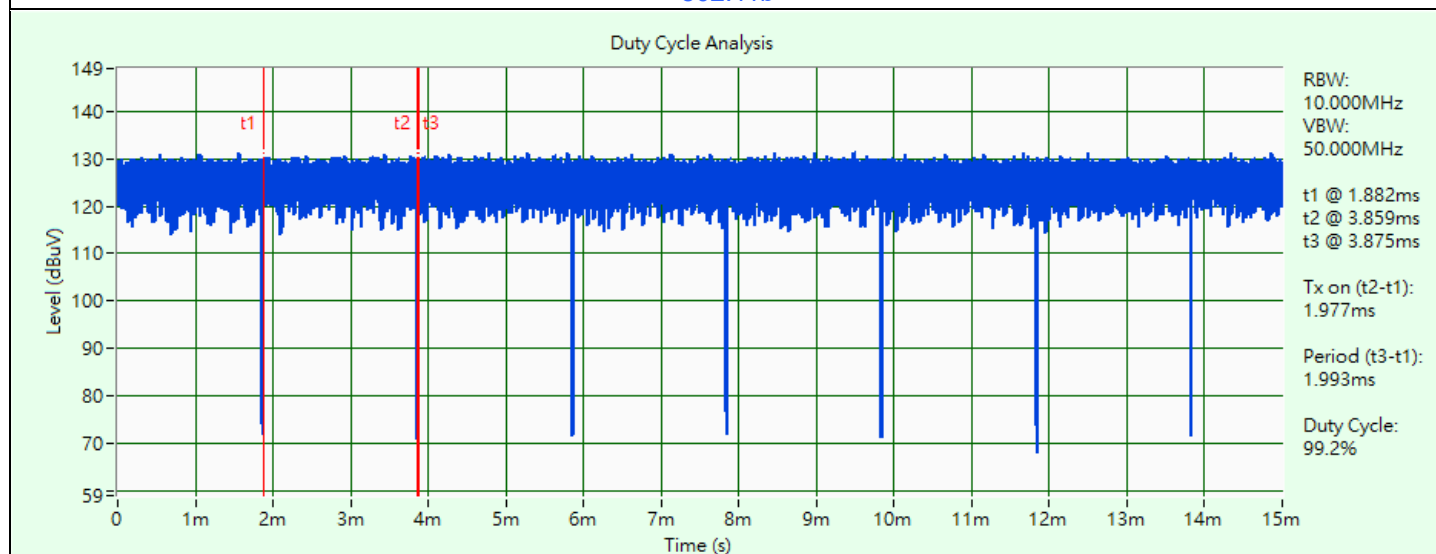
VHT40: Duty cycle = 5.428 ms / 5.444 ms x 100% = 99.7%

802.11ax (HE20): Duty cycle = 5.446 ms / 5.461 ms x 100% = 99.7%

802.11ax (HE40): Duty cycle = 5.445 ms / 5.46 ms x 100% = 99.7%

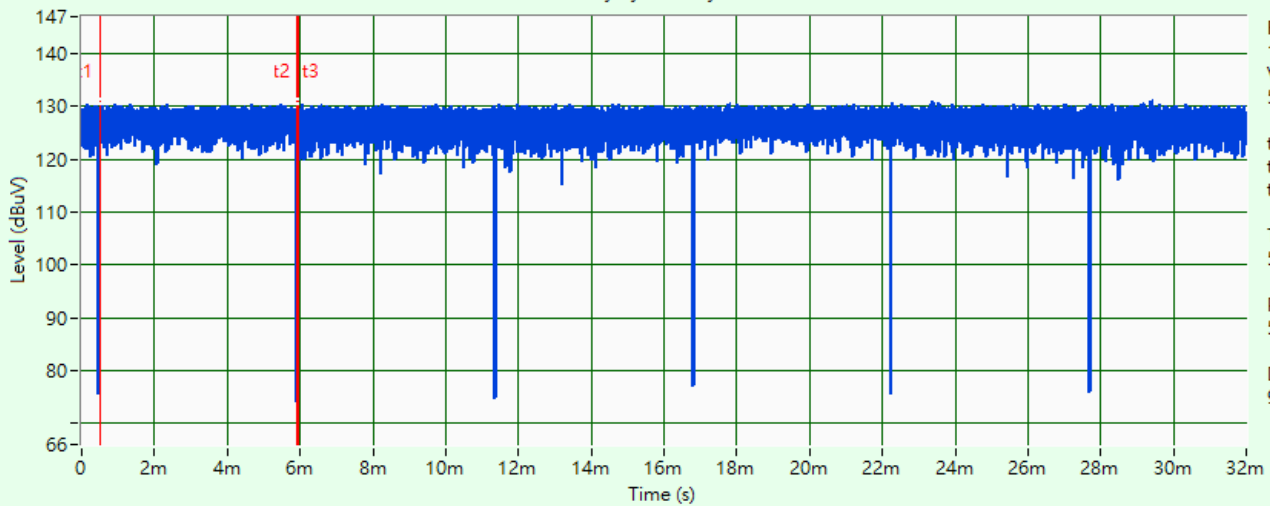


802.11b



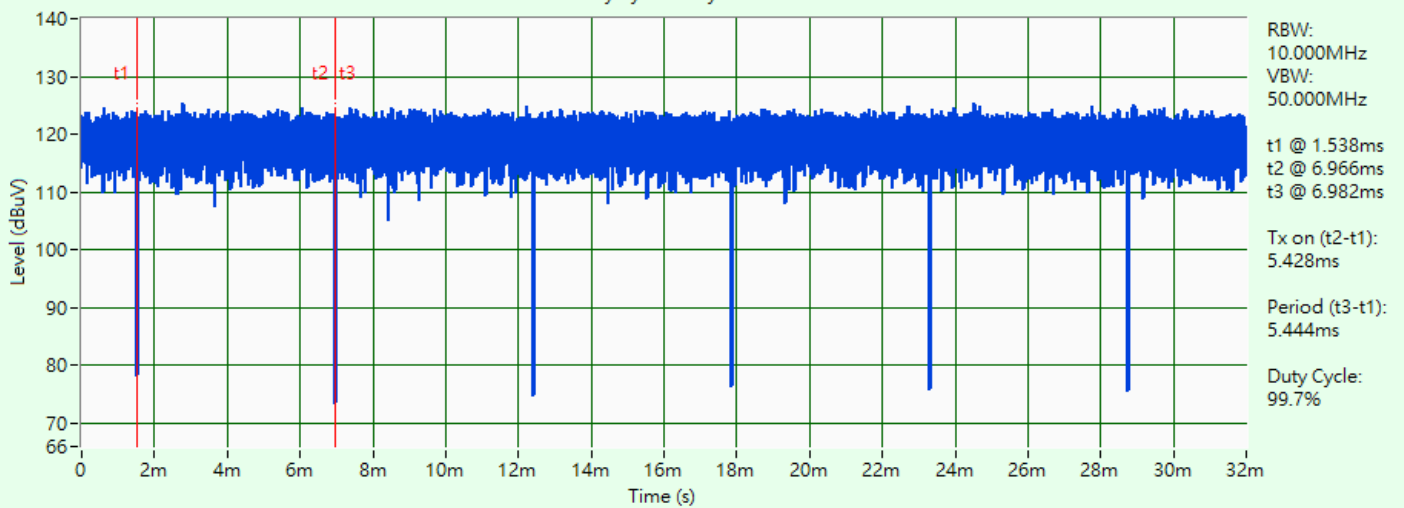
802.11g

Duty Cycle Analysis



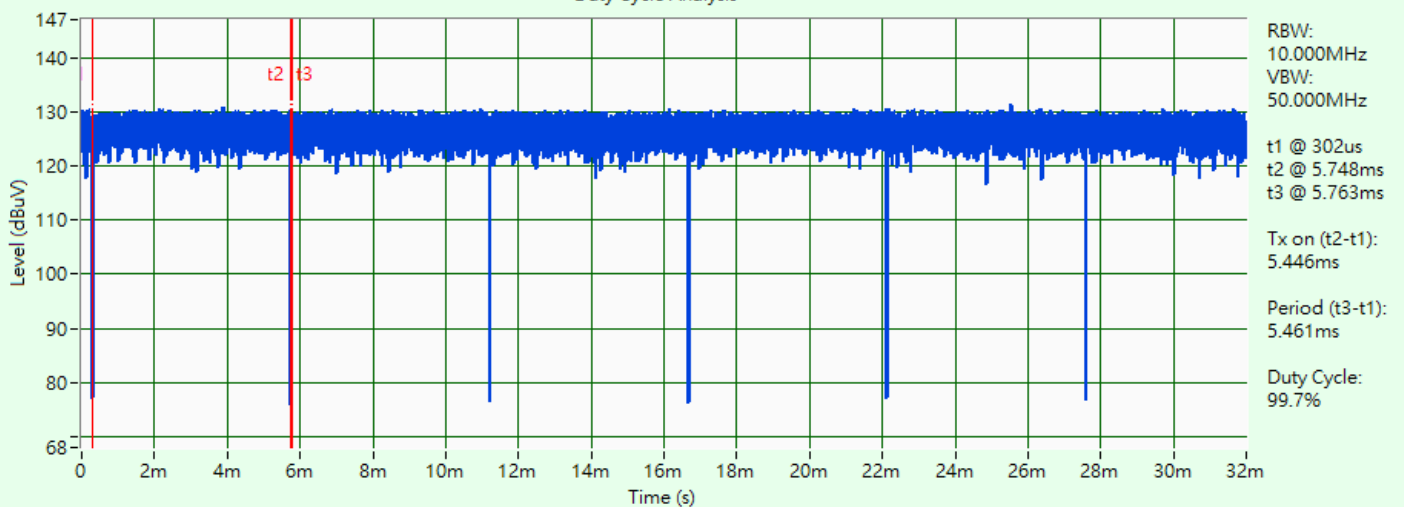
VHT20

Duty Cycle Analysis

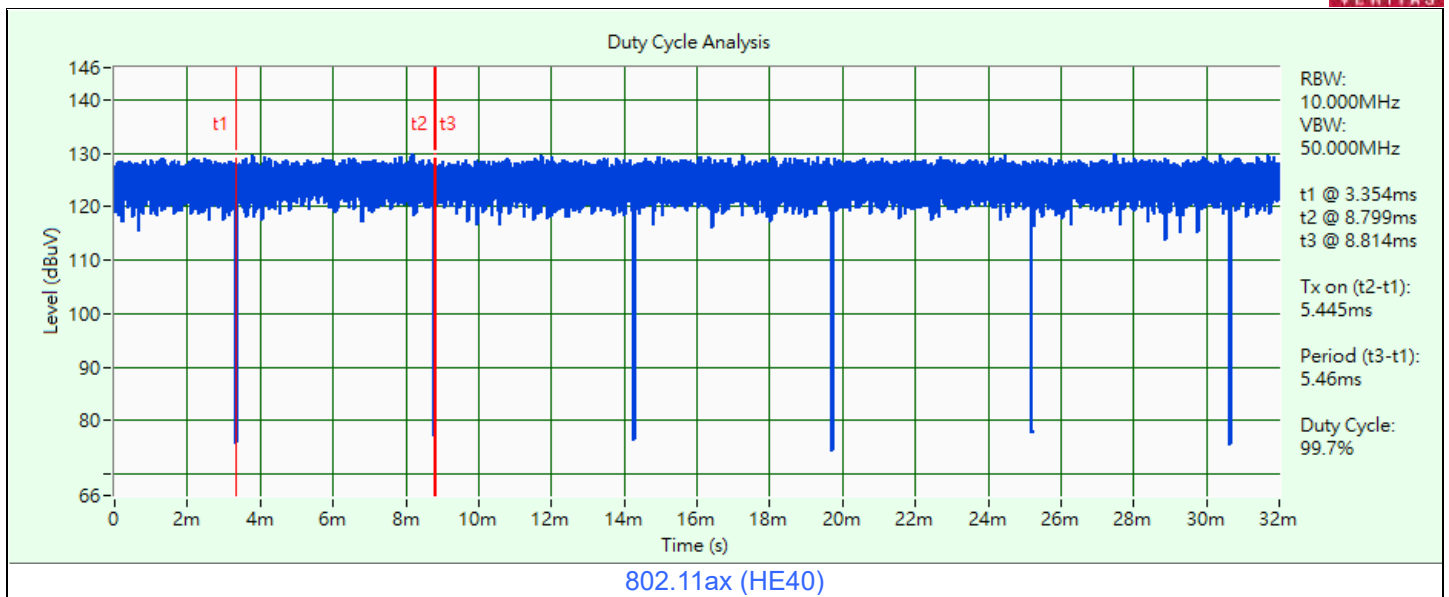


VHT40

Duty Cycle Analysis



802.11ax (HE20)

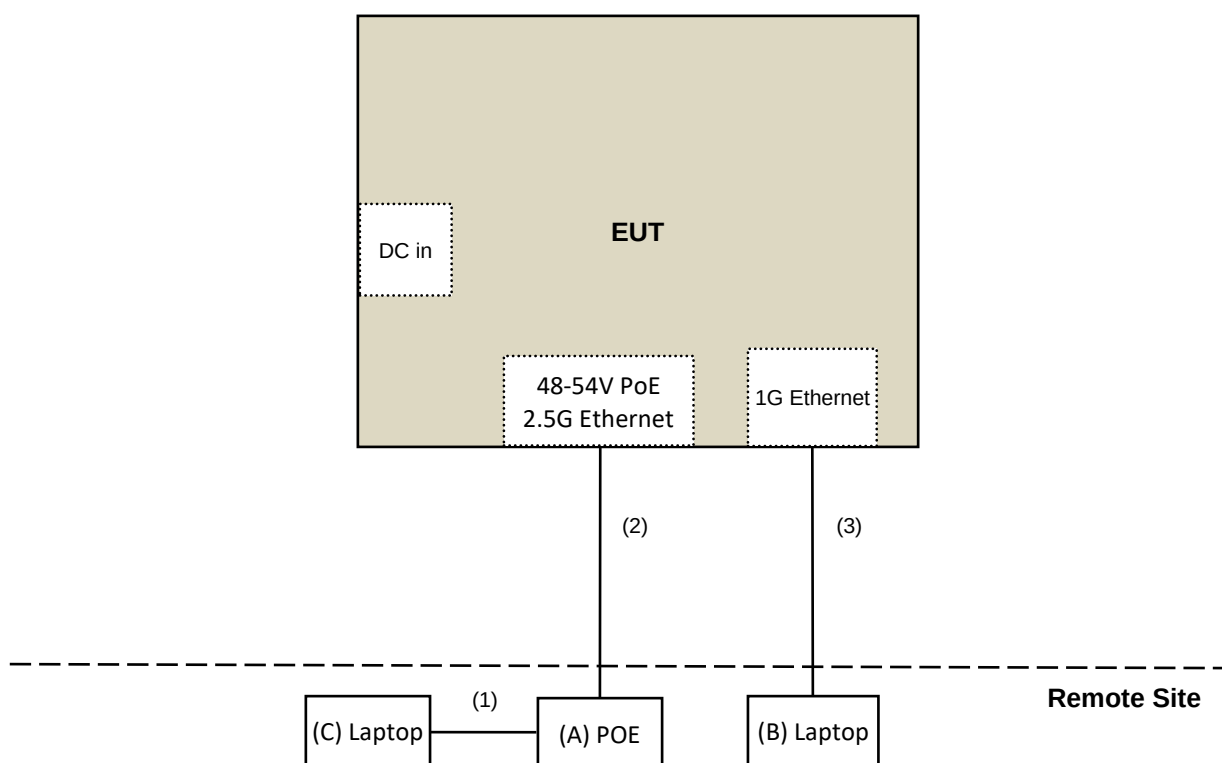


3.6 Test Program Used and Operation Descriptions

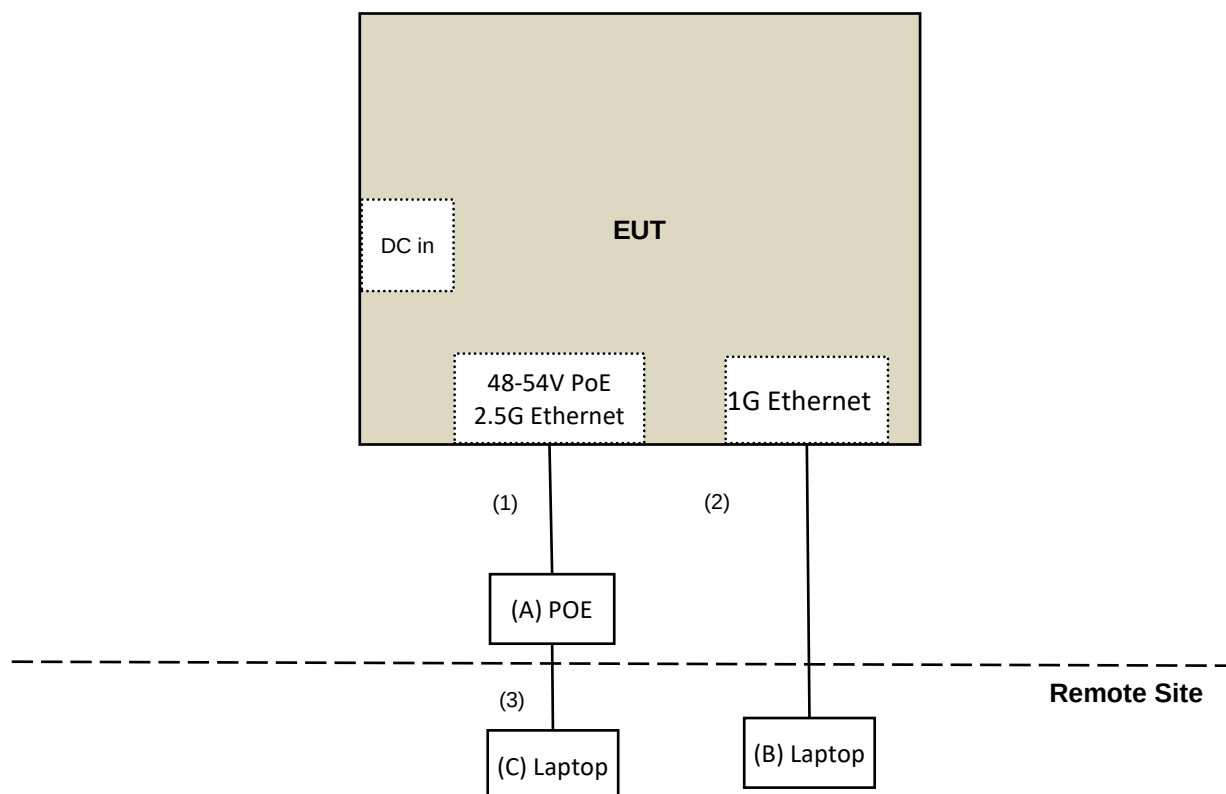
Controlling software (qdart_conn.win.1.0_installer_00094.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For Unwanted Emissions test :



For AC Power Conducted Emission Test :



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	POE	PHIHONG SWITCHING POWER SUPPLY	POE31U-1AT	N/A	N/A	Supplied by applicant
B	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	N/A	Provided by Lab
C	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ45 Cable	1	0.3	NO	0	Provided by Lab
2	RJ45 Cable	1	10	NO	0	Provided by Lab
3	RJ45 Cable	1	10	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
Power Meter Anritsu	ML2495A	1529002	2023/6/17	2024/6/16
Pulse Power Sensor Anritsu	MA2411B	1726434	2023/6/19	2024/6/18

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2024/2/6

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
MXA Signal Analyzer Keysight	N9020B	MY60112409	2023/2/18	2024/2/17
Software	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2024/2/6

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 Telegartner	50 ohm	3	2023/10/20	2024/10/19
EMI Test Receiver R&S	ESCS 30	847124/029	2023/10/18	2024/10/17
Fixed Attenuator STI	STI02-2200-10	005	2023/7/1	2024/6/30
LISN R&S	ESH3-Z5	835239/001	2023/4/6	2024/4/5
		848773/004	2023/10/13	2024/10/12
RF Coaxial Cable JYEBAO	5D-FB	COCCAB-001	2023/7/1	2024/6/30
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2024/1/27

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-361	2023/10/13	2024/10/12
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2023/9/7	2024/9/6
Loop Antenna Electro-Metrics	EM-6879	264	2023/2/21	2024/2/20
MXE EMI Receiver Agilent	N9038A	MY50010156	2023/6/13	2024/6/12
Preamplifier EMCI	EMC330N	980852	2023/2/20	2024/2/19
	EMC001340	980142	2023/5/8	2024/5/7
RF Coaxial Cable JYEBAO	5D-FB	LOOPCAB-001	2023/12/12	2024/12/11
		LOOPCAB-002	2023/12/12	2024/12/11
RF Coaxial Cable PEWC	8D	966-3-2	2023/2/17	2024/2/16
		966-3-3	2023/2/17	2024/2/16
		966-4-1	2023/2/18	2024/2/17
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2024/1/2

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-406	2023/11/12	2024/11/11
	BBHA 9170	9170-739	2023/11/12	2024/11/11
MXE EMI Receiver Agilent	N9038A	MY50010156	2023/6/13	2024/6/12
Preamplifier EMCI	EMC12630SE	980384	2023/8/9	2024/8/8
	EMC184045SE	980387	2023/8/9	2024/8/8
PXA Signal Analyzer Keysight	N9030B	MY57142938	2023/4/6	2024/4/5
RF Coaxial Cable EMCI	EMC102-KM-KM-1200	160924	2023/8/9	2024/8/8
	EMC102-KM-KM-4000	200214	2023/2/20	2024/2/19
	EMC104-SM-SM-1500	180504	2023/3/27	2024/3/26
	EMC104-SM-SM-2000	180601	2023/6/2	2024/6/1
	EMC104-SM-SM-6000	210201	2023/5/8	2024/5/7
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2023/12/11 ~ 2024/1/26

5 Limits of Test Items

5.1 RF Output Power

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

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

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

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

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

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

5.2 Power Spectral Density

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

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

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

5.5 AC Power Conducted Emissions

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

Notes:

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

5.6 Unwanted Emissions below 1 GHz

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

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

Notes:

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

5.7 Unwanted Emissions above 1 GHz

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

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

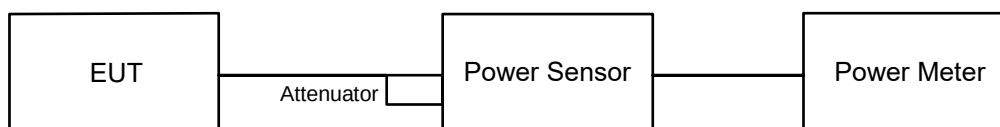
Notes:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



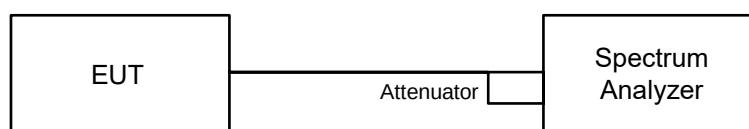
6.1.2 Test Procedure

Average Power:

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

6.2 Power Spectral Density

6.2.1 Test Setup



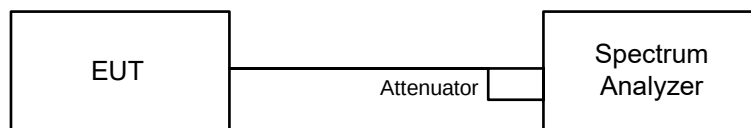
6.2.2 Test Procedure

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

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

6.3 6 dB Bandwidth

6.3.1 Test Setup

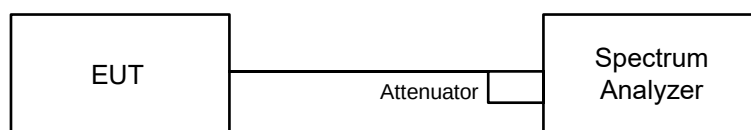


6.3.2 Test Procedure

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

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

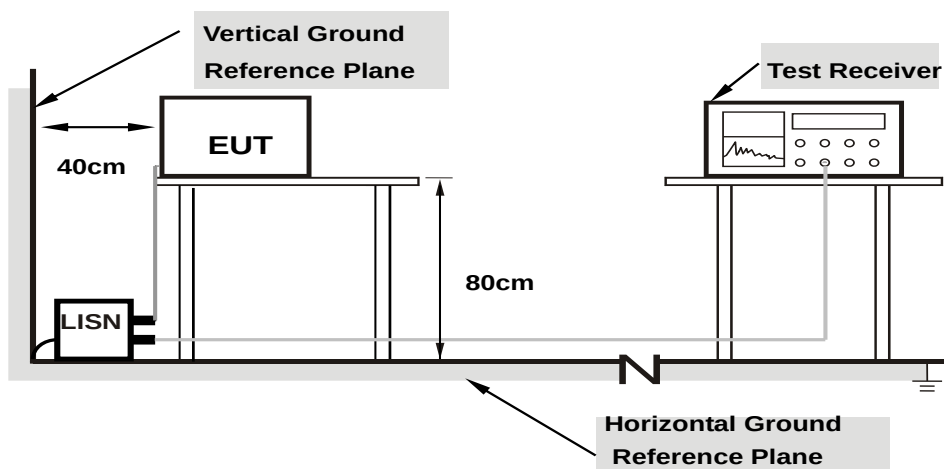
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE 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

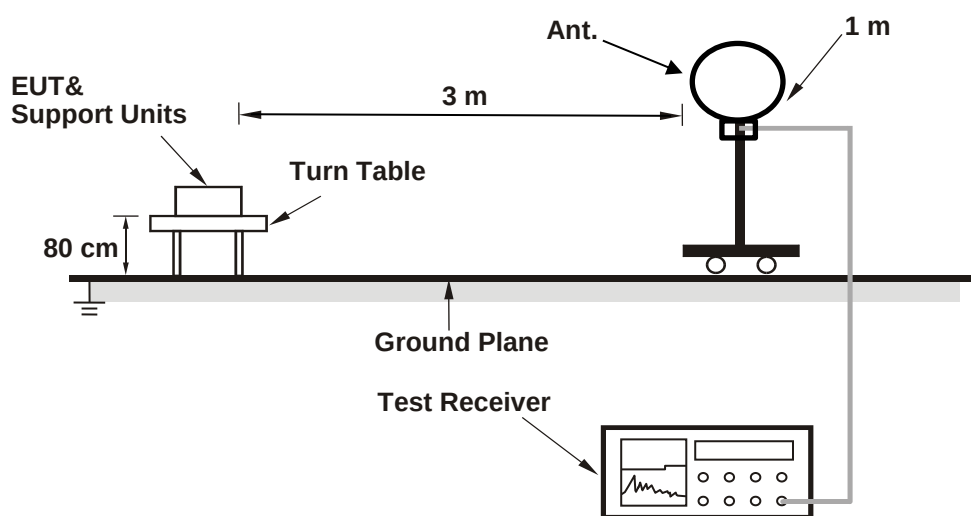
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The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

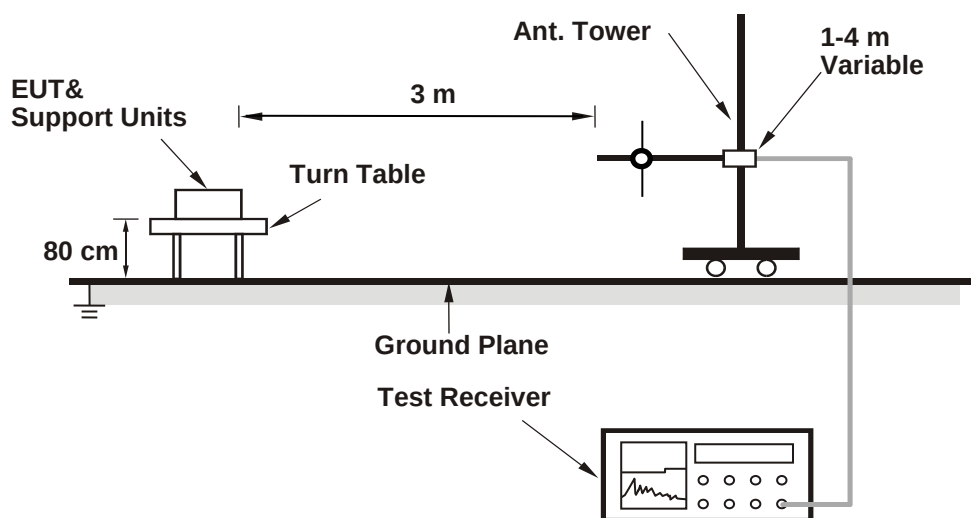
6.6 Unwanted Emissions below 1 GHz

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

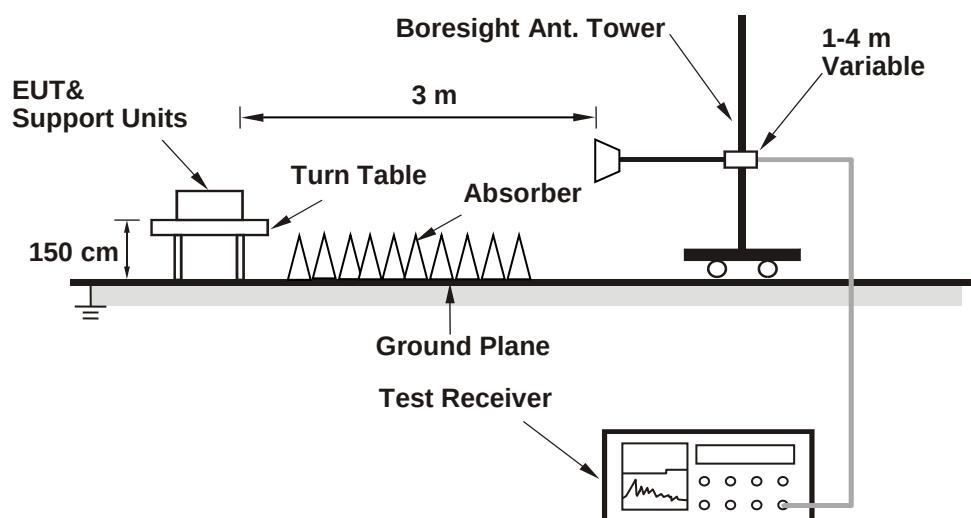
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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:	54 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Louis Yang
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802.11b CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	21.77	21.82	302.369	24.81	30	Pass
6	2437	25.66	25.76	744.833	28.72	30	Pass
11	2462	24.62	24.61	578.802	27.63	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.3 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11g CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	21.88	21.93	310.125	24.92	30	Pass
6	2437	24.82	24.68	597.154	27.76	30	Pass
11	2462	22.57	22.33	351.522	25.46	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.3 dBi < 6 dBi, so the output power limit shall not be reduced.

VHT20 CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	20.43	20.66	226.82	23.56	30	Pass
6	2437	23.79	23.76	477.016	26.79	30	Pass
11	2462	21.44	21.43	278.311	24.45	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.3 dBi < 6 dBi, so the output power limit shall not be reduced.

VHT40 CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	19.70	19.73	187.298	22.73	30	Pass
6	2437	22.34	22.47	348	25.42	30	Pass
9	2452	21.62	21.35	281.669	24.50	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.3 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	20.68	20.91	240.26	23.81	30	Pass
6	2437	24.08	24.01	507.626	27.06	30	Pass
11	2462	21.68	21.69	294.802	24.70	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.3 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	19.94	20.00	198.628	22.98	30	Pass
6	2437	22.56	22.68	365.655	25.63	30	Pass
9	2452	21.90	21.62	300.093	24.77	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 4.3 dBi < 6 dBi, so the output power limit shall not be reduced.

VHT20 Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	20.43	20.66	226.82	23.56	29.03	Pass
6	2437	23.79	23.76	477.016	26.79	29.03	Pass
11	2462	21.44	21.43	278.311	24.45	29.03	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
2. The directional gain is 6.97 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.97 - 6) = 29.03$ dBm.

VHT40 Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	19.70	19.73	187.298	22.73	29.03	Pass
6	2437	22.34	22.47	348	25.42	29.03	Pass
9	2452	21.62	21.35	281.669	24.50	29.03	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 6.97 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.97 - 6) = 29.03$ dBm.

802.11ax (HE20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	20.68	20.91	240.26	23.81	29.03	Pass
6	2437	24.08	24.01	507.626	27.06	29.03	Pass
11	2462	21.68	21.69	294.802	24.70	29.03	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 6.97 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.97 - 6) = 29.03$ dBm.

802.11ax (HE40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	19.94	20.00	198.628	22.98	29.03	Pass
6	2437	22.56	22.68	365.655	25.63	29.03	Pass
9	2452	21.90	21.62	300.093	24.77	29.03	Pass

Notes:

1. Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2]$
2. The directional gain is 6.97 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (6.97 - 6) = 29.03$ dBm.

7.2 Power Spectral Density

Input Power:	54 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Louis Yang
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802.11b CDD

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-9.67	-9.82	-6.73	7.03	Pass
6	2437	-5.90	-4.64	-2.21	7.03	Pass
11	2462	-6.79	-6.95	-3.86	7.03	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 6.97 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.97 - 6) = 7.03$ dBm/3kHz.

802.11g CDD

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-10.69	-11.26	-7.96	7.03	Pass
6	2437	-8.50	-7.89	-5.17	7.03	Pass
11	2462	-10.05	-10.68	-7.34	7.03	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 6.97 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.97 - 6) = 7.03$ dBm/3kHz.

802.11ax (HE20) CDD

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-13.30	-14.28	-10.75	7.03	Pass
6	2437	-13.75	-11.08	-9.20	7.03	Pass
11	2462	-13.29	-12.22	-9.71	7.03	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 6.97 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.97 - 6) = 7.03$ dBm/3kHz.

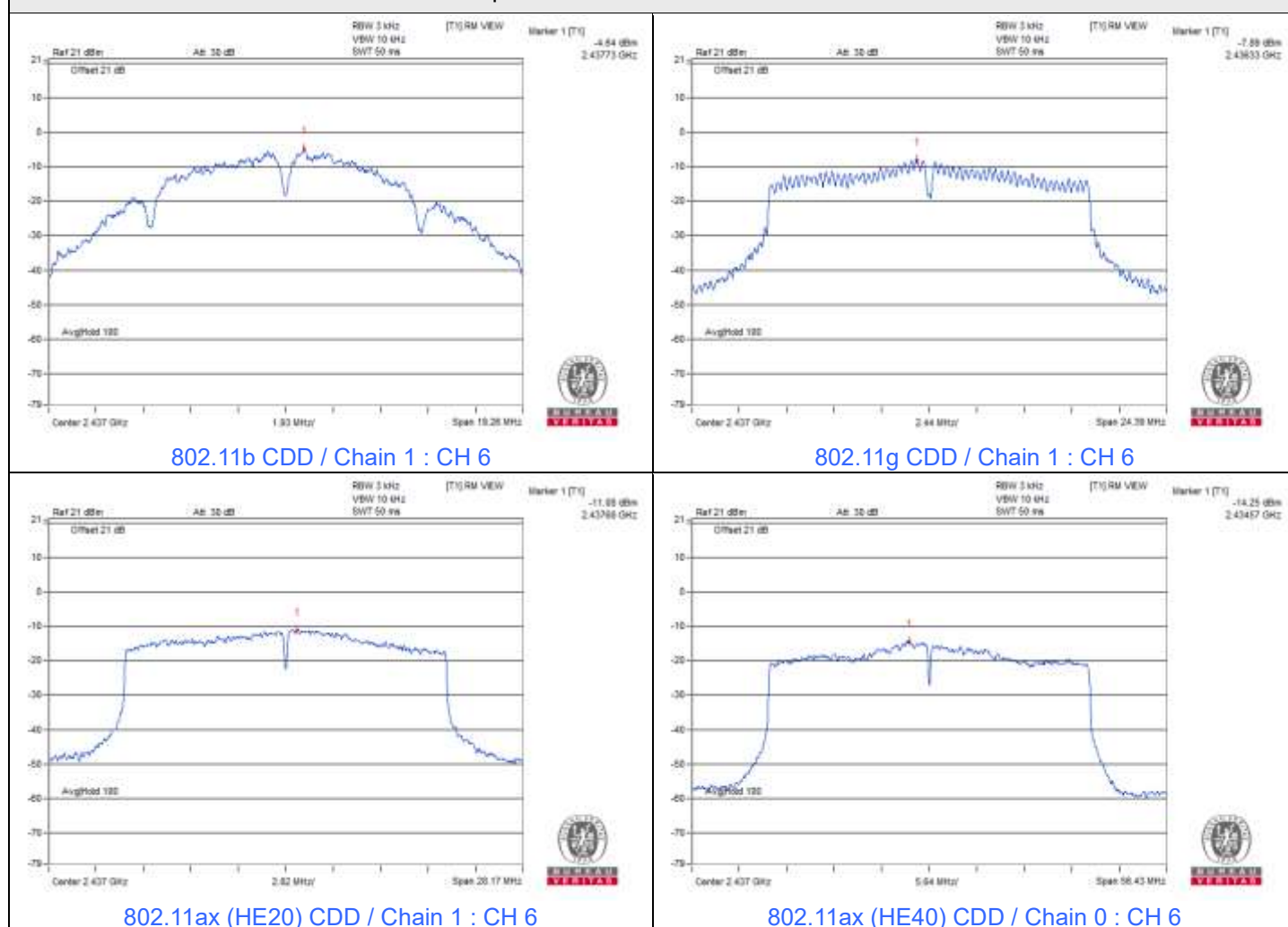
802.11ax (HE40) CDD

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
3	2422	-18.05	-17.78	-14.90	7.03	Pass
6	2437	-14.25	-14.57	-11.40	7.03	Pass
9	2452	-15.59	-15.63	-12.60	7.03	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 6.97 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (6.97 - 6) = 7.03$ dBm/3kHz.

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Input Power:	54 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Louis Yang
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802.11b CDD

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	7.59	8.58	0.5	Pass
6	2437	7.15	7.12	0.5	Pass
11	2462	7.61	7.61	0.5	Pass

802.11g CDD

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	15.11	15.14	0.5	Pass
6	2437	15.08	15.07	0.5	Pass
11	2462	15.06	15.09	0.5	Pass

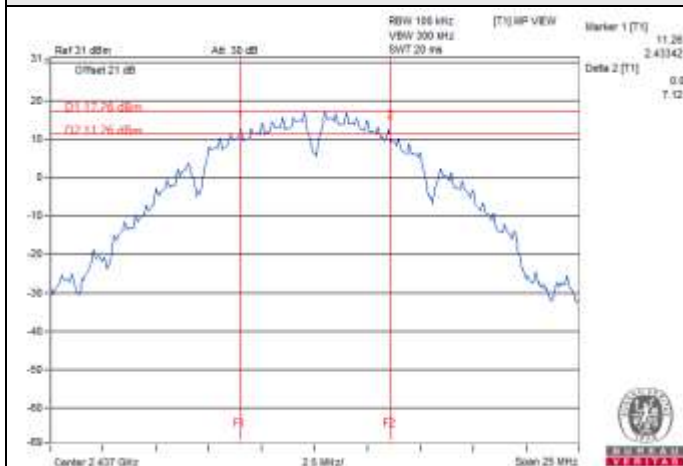
802.11ax (HE20) CDD

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	15.17	15.12	0.5	Pass
6	2437	15.09	15.12	0.5	Pass
11	2462	15.40	15.06	0.5	Pass

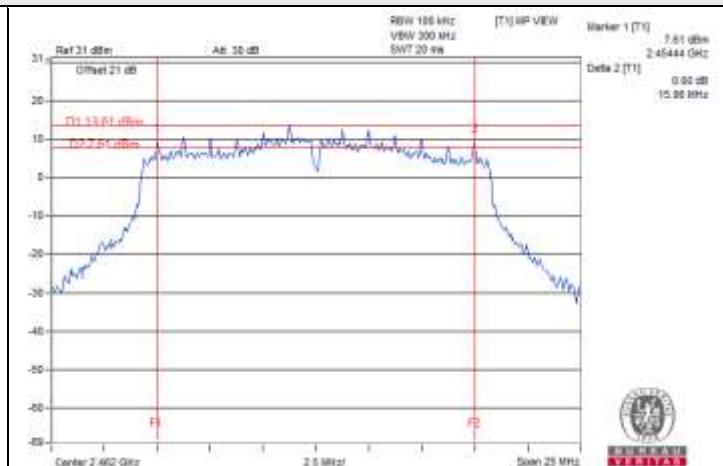
802.11ax (HE40) CDD

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	2422	34.34	35.20	0.5	Pass
6	2437	30.43	35.18	0.5	Pass
9	2452	35.36	33.86	0.5	Pass

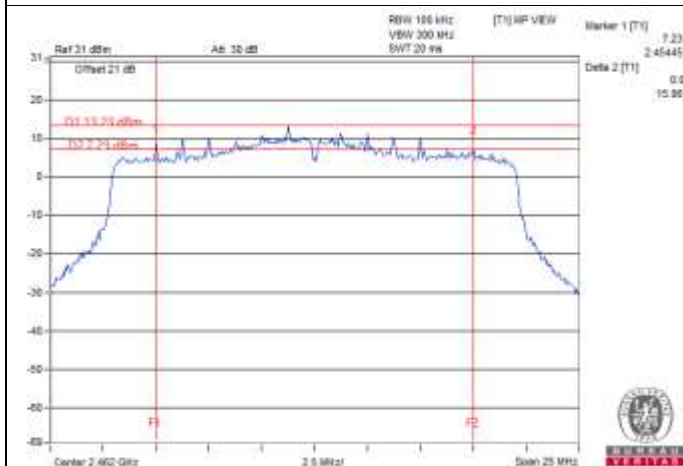
Spectrum Plot of Minimum Value



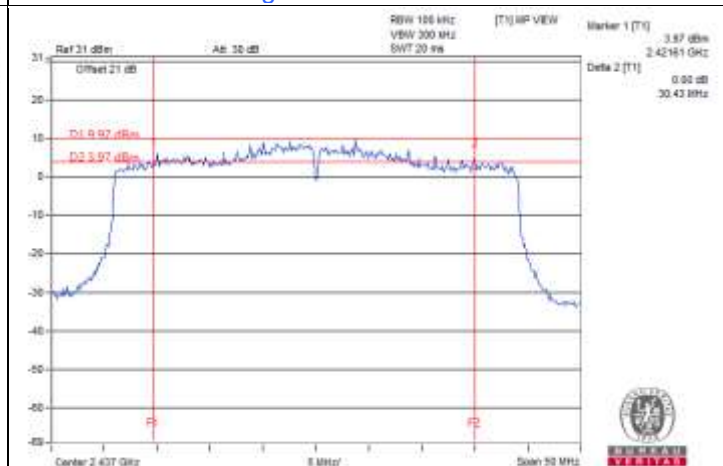
802.11b CDD / Chain 1 : CH 6



802.11g CDD / Chain 0 : CH 11



802.11ax (HE20) CDD / Chain 1 : CH 11

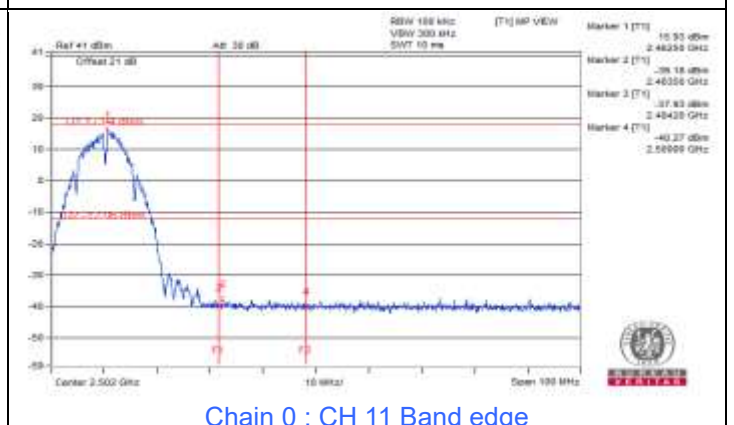
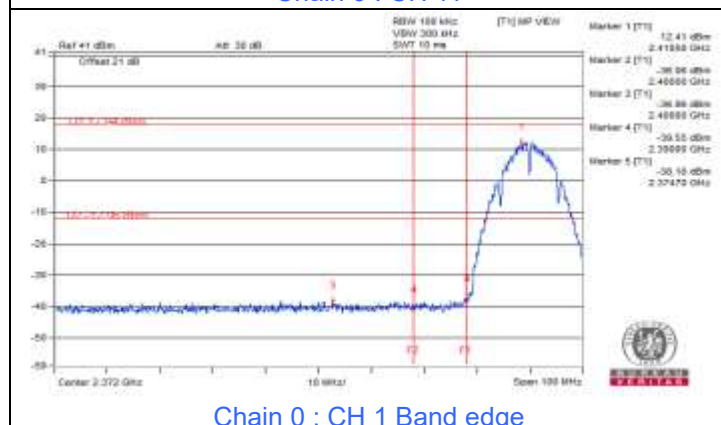
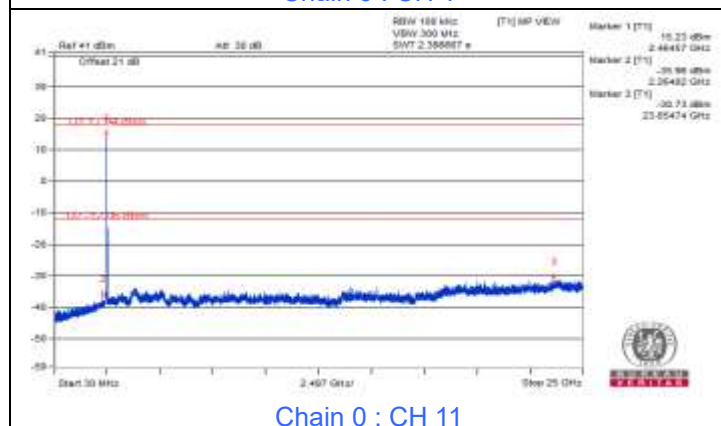
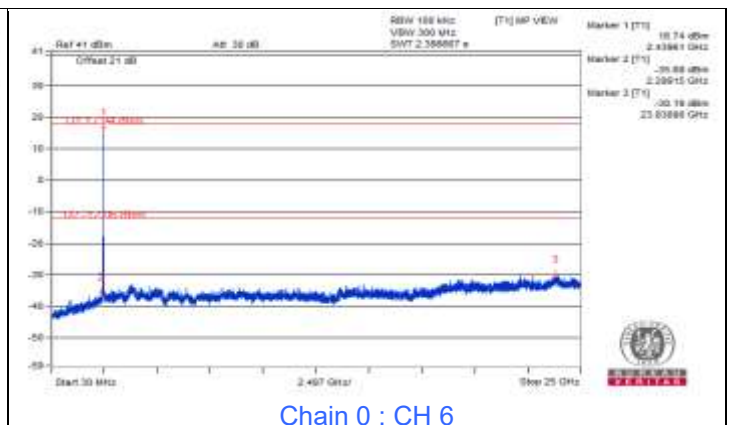
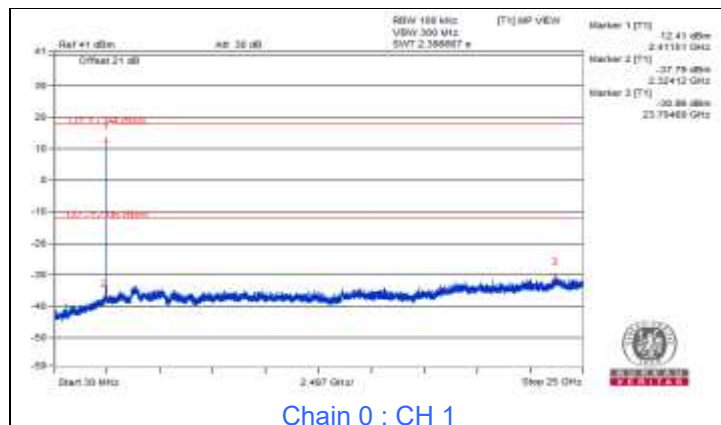
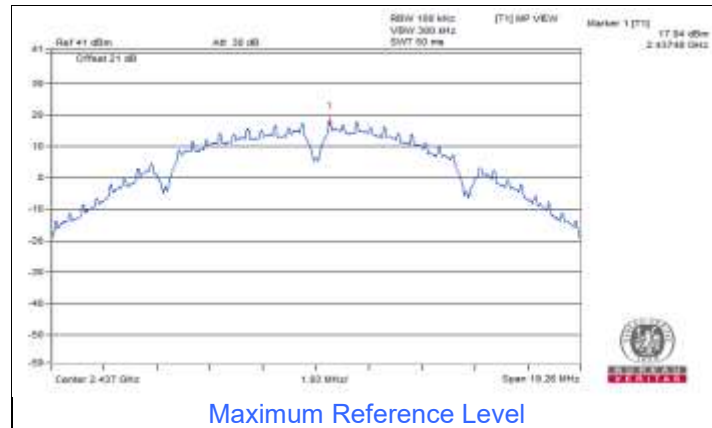


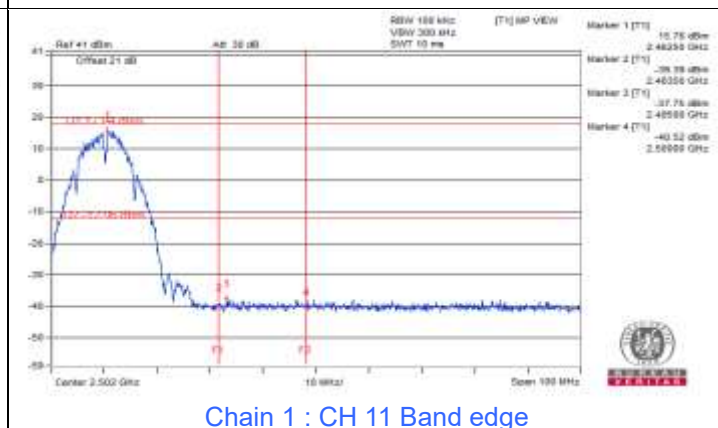
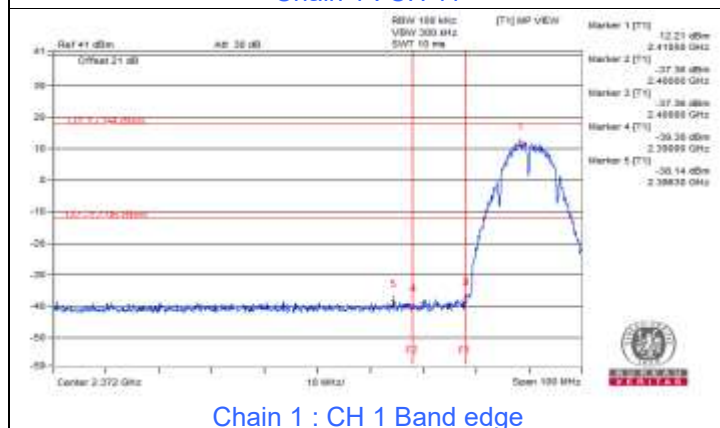
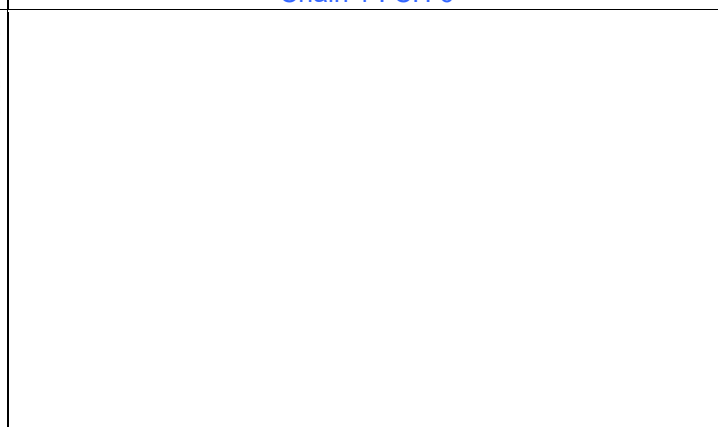
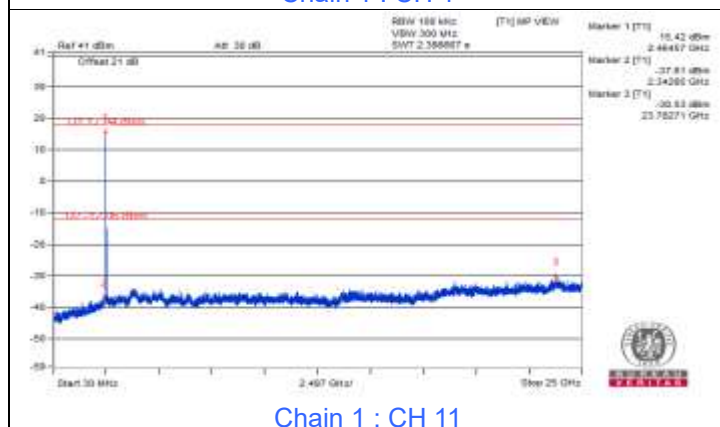
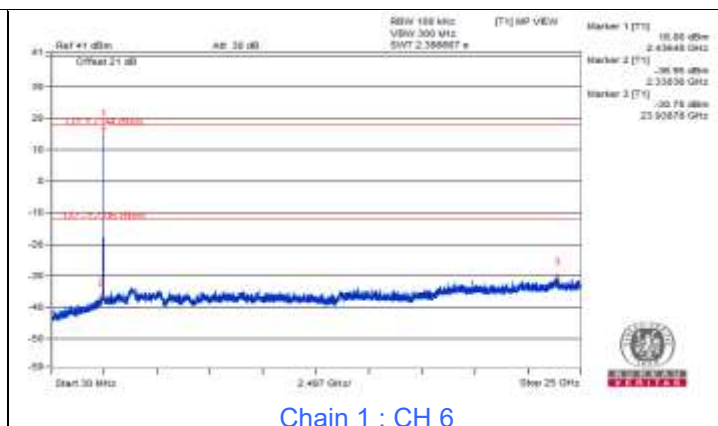
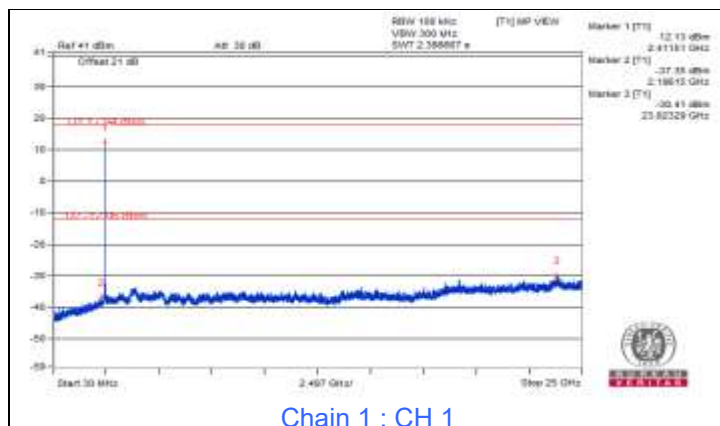
802.11ax (HE40) CDD / Chain 0 : CH 6

7.4 Conducted Out of Band Emissions

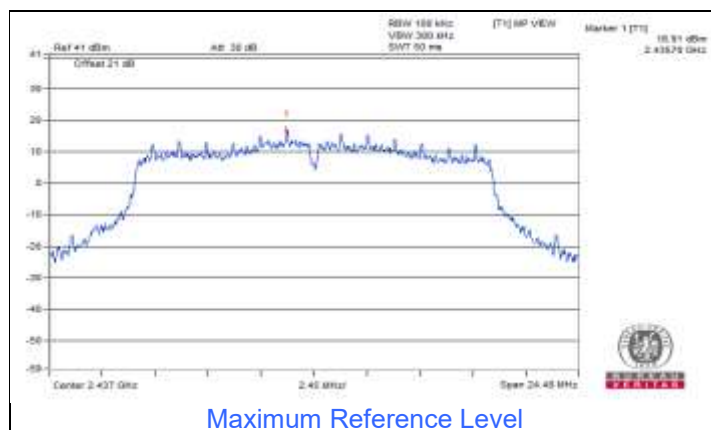
Input Power:	54 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Louis Yang
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802.11b CDD

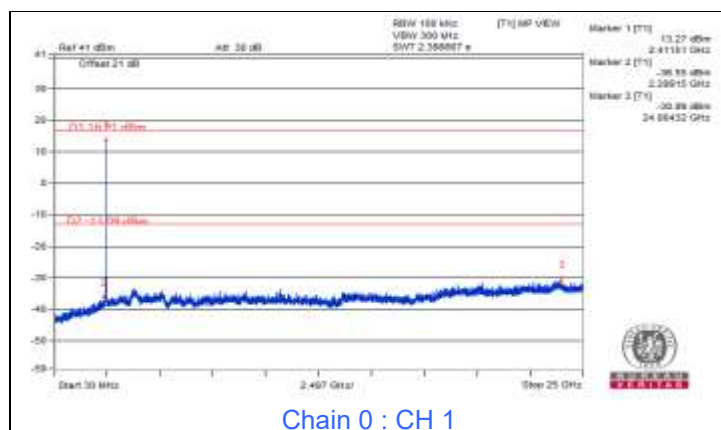




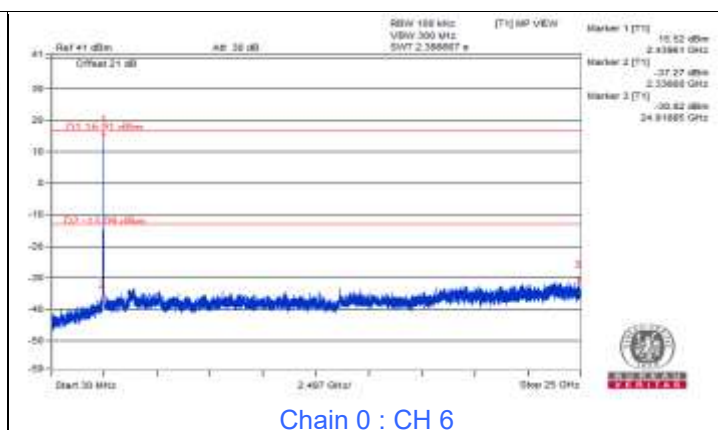
802.11g CDD



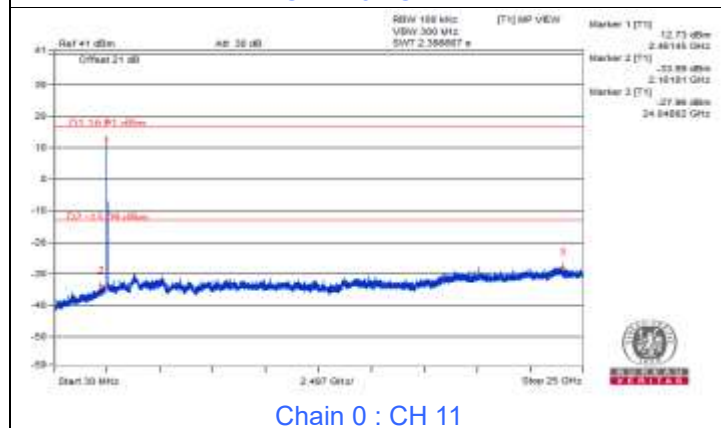
Maximum Reference Level



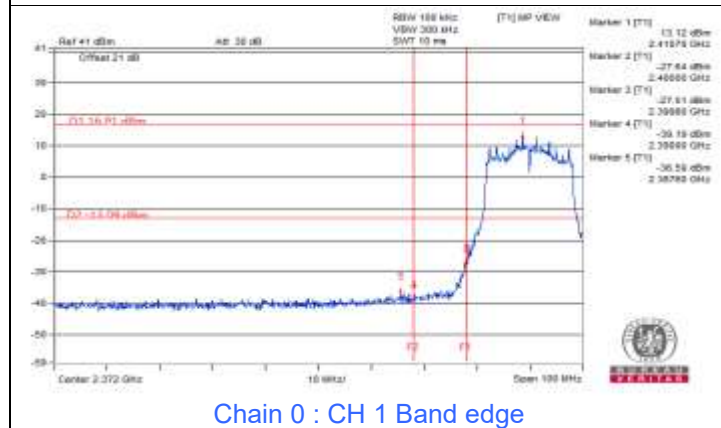
Chain 0 : CH 1



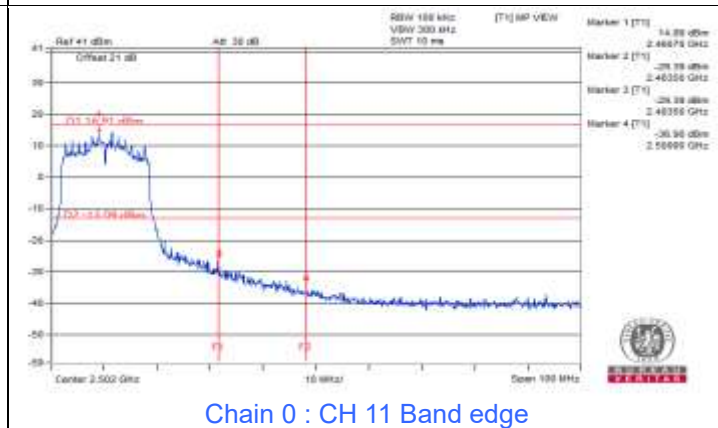
Chain 0 : CH 6



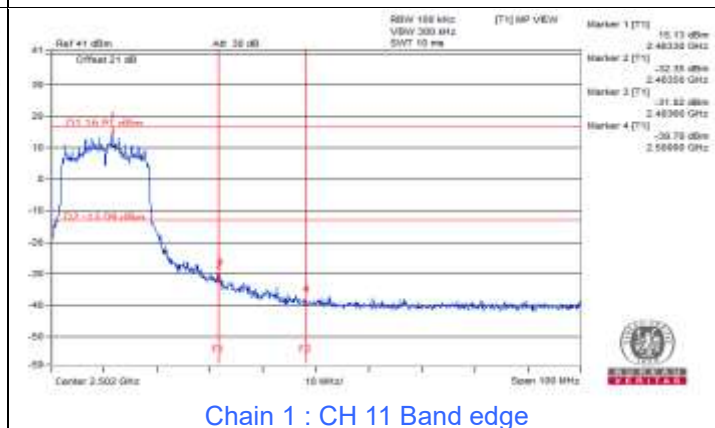
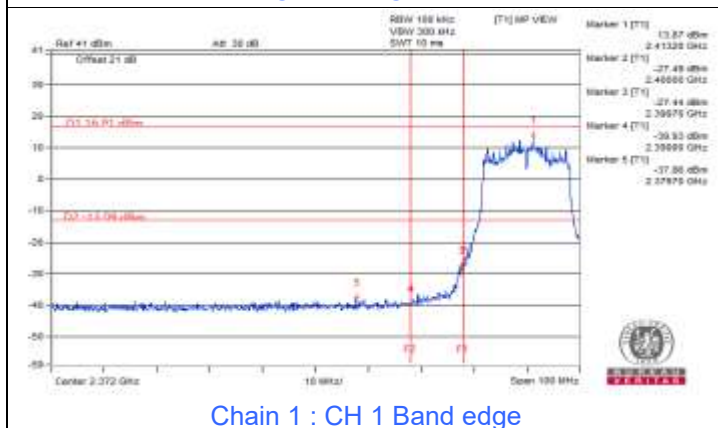
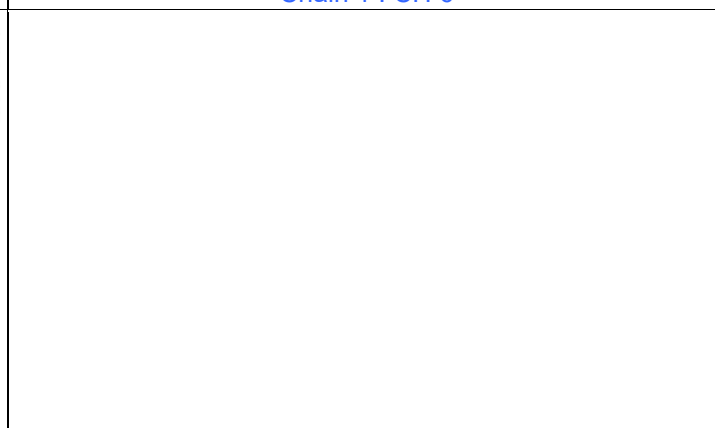
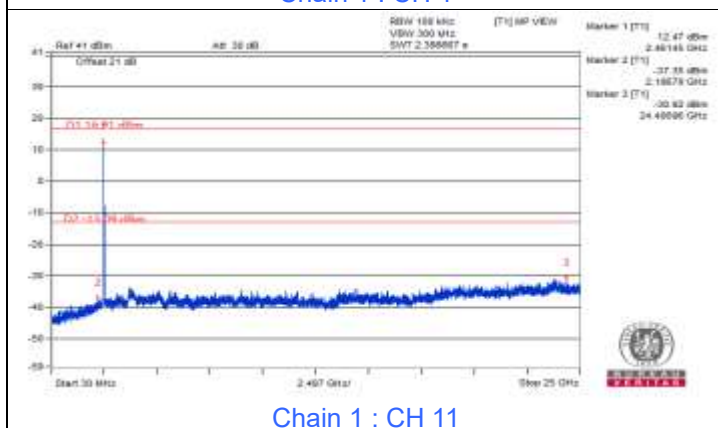
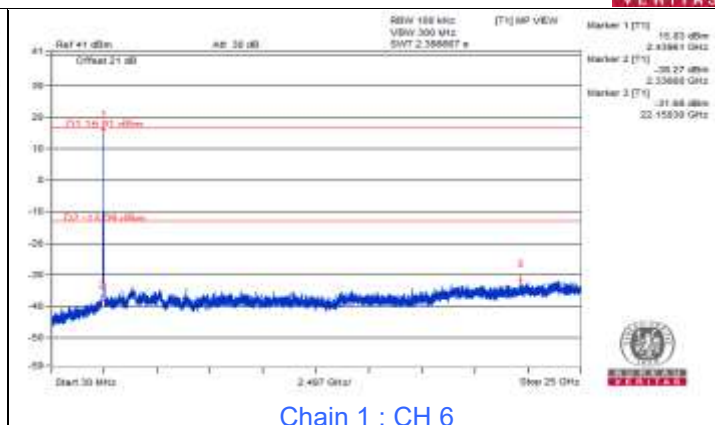
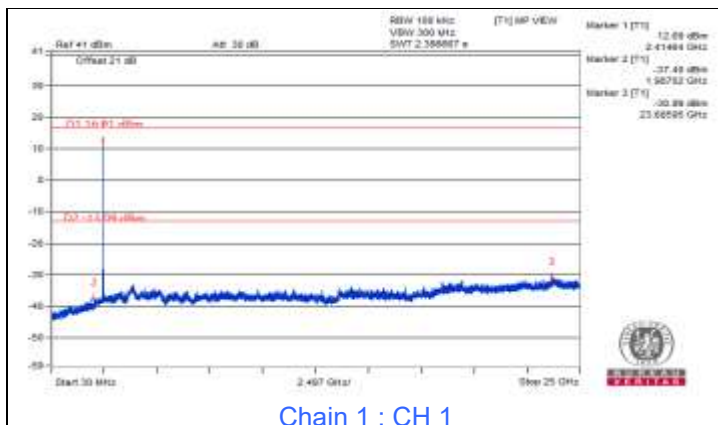
Chain 0 : CH 11



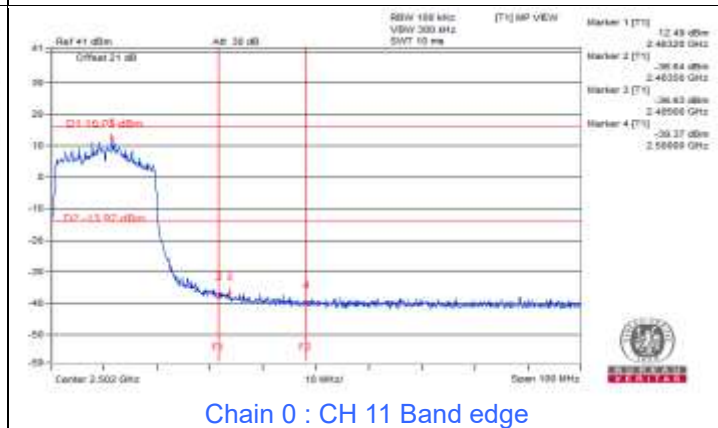
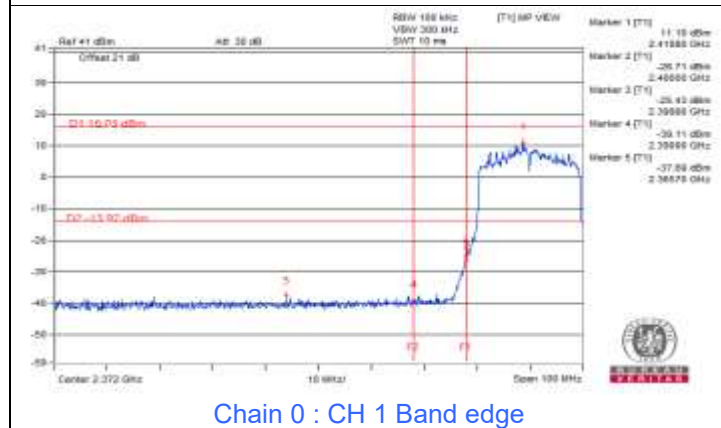
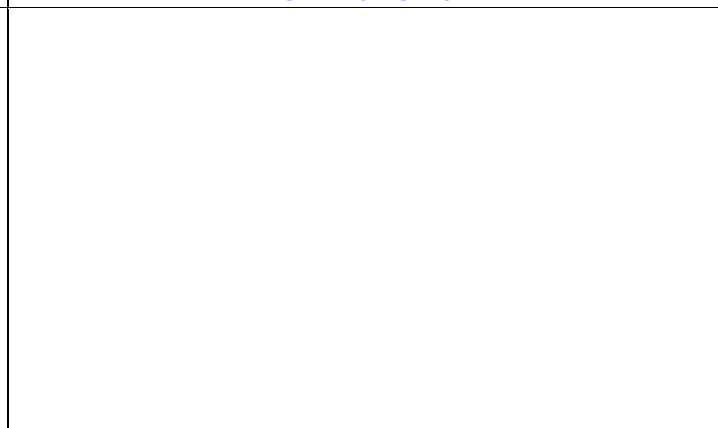
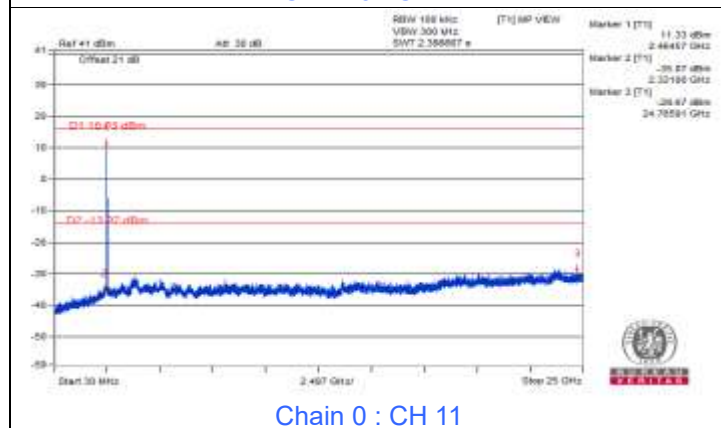
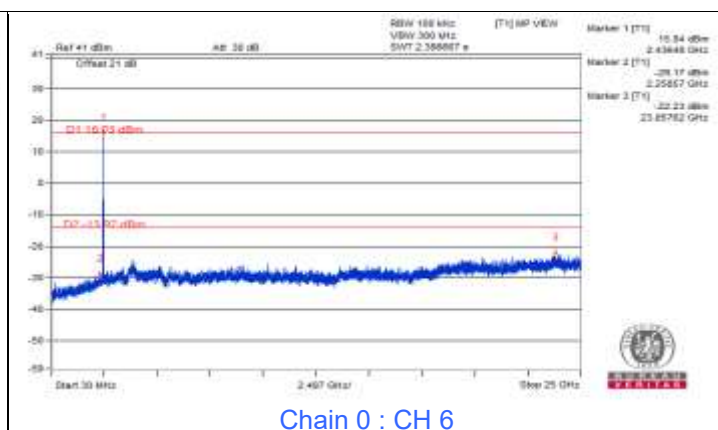
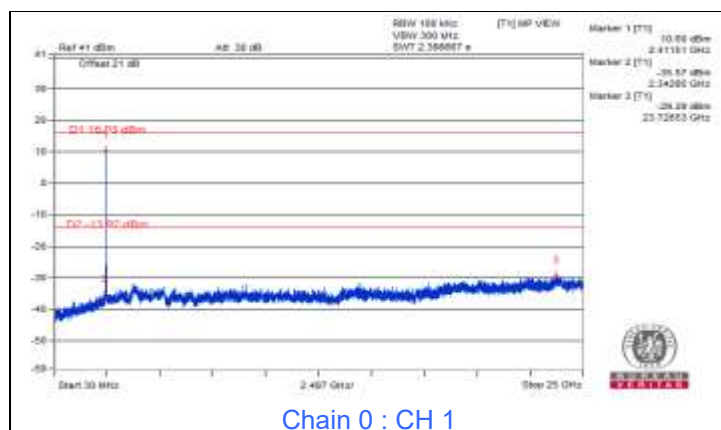
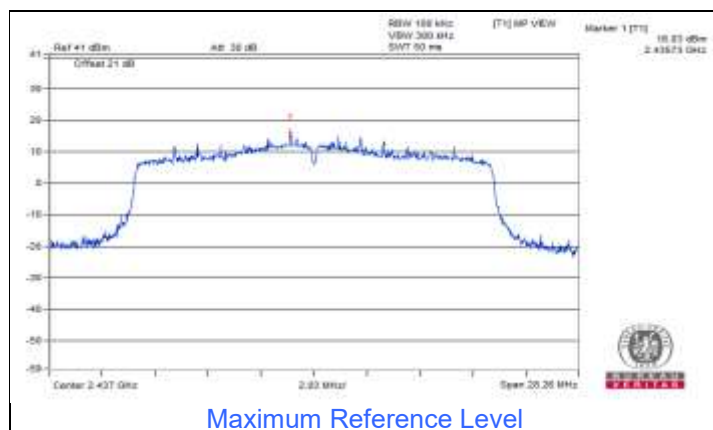
Chain 0 : CH 1 Band edge



Chain 0 : CH 11 Band edge

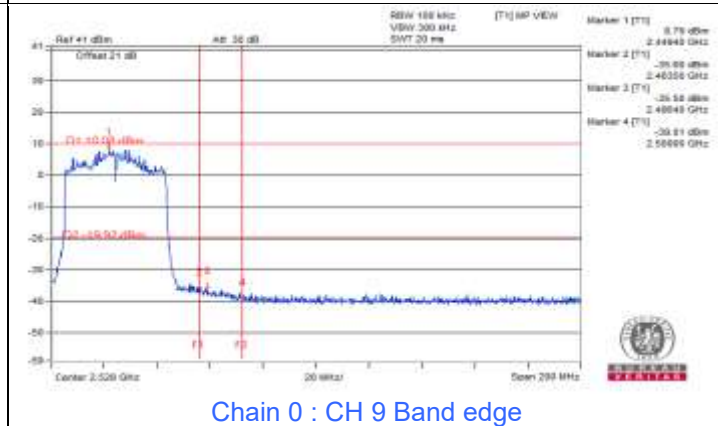
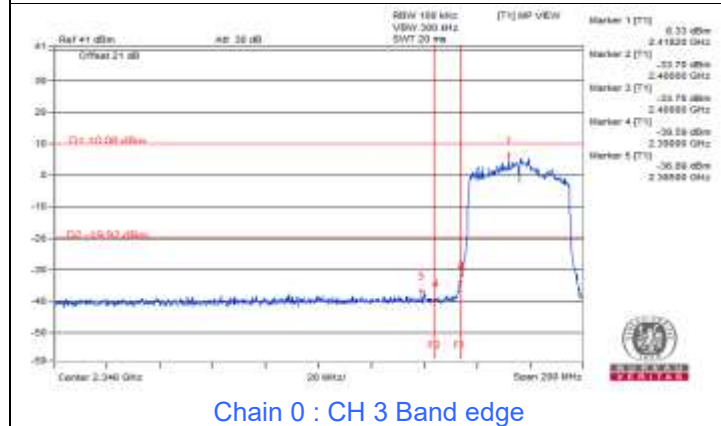
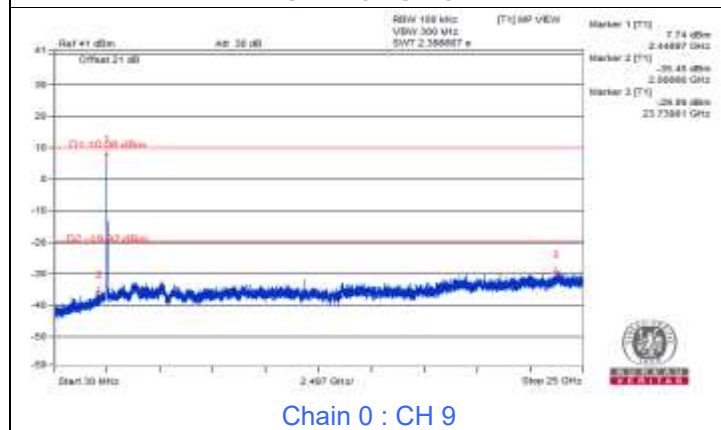
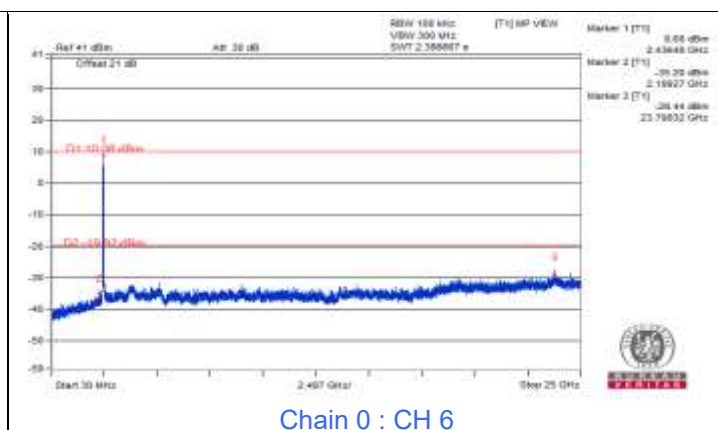
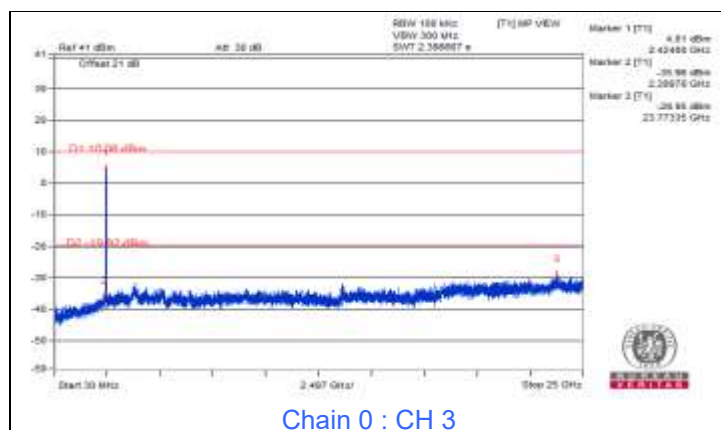
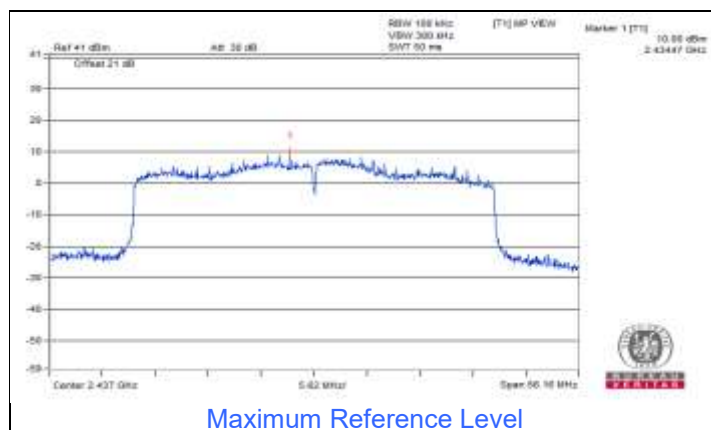


802.11ax (HE20) CDD



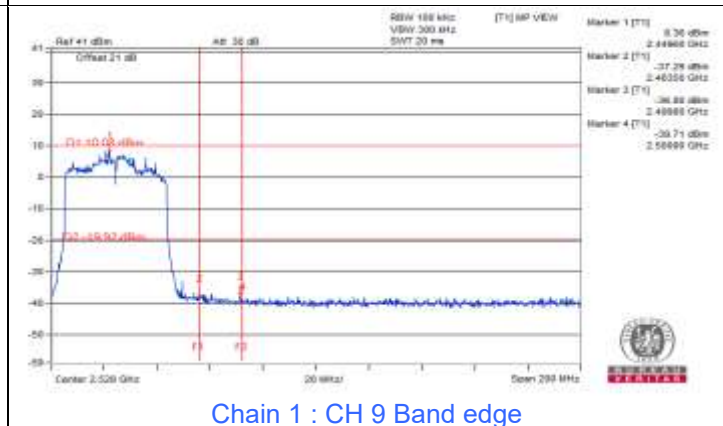
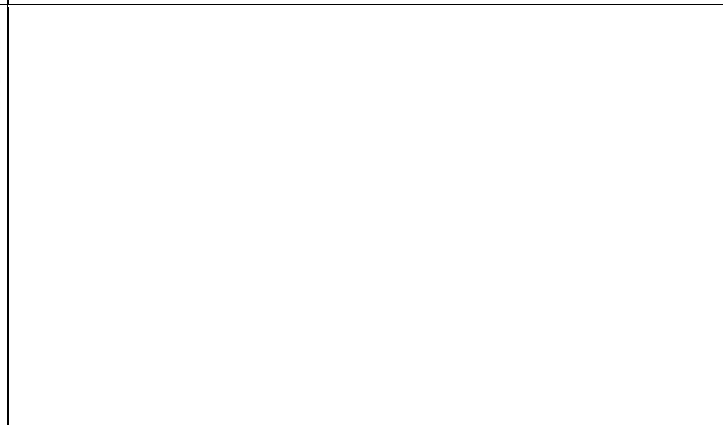
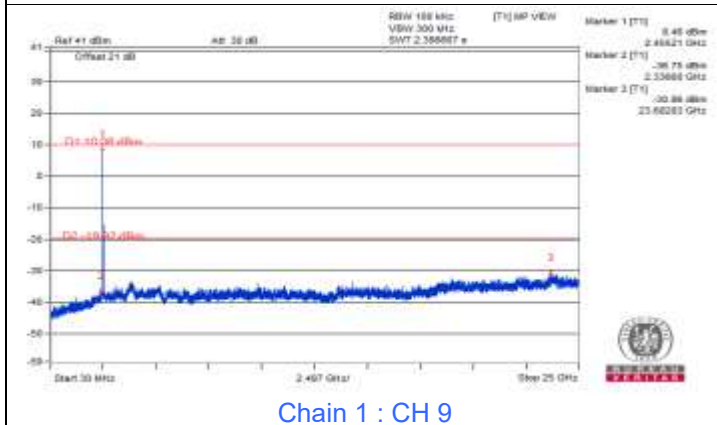
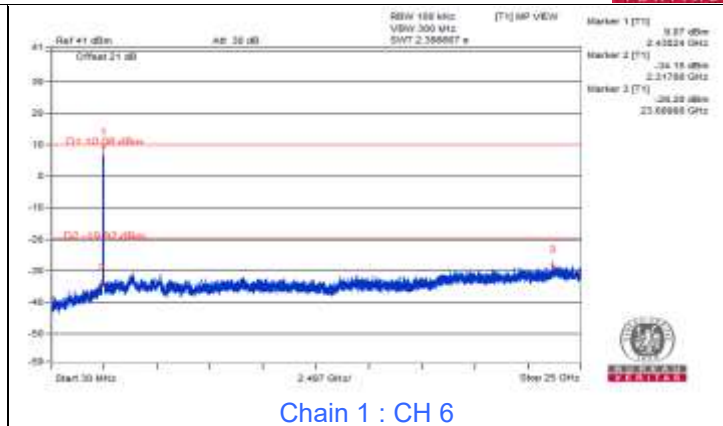
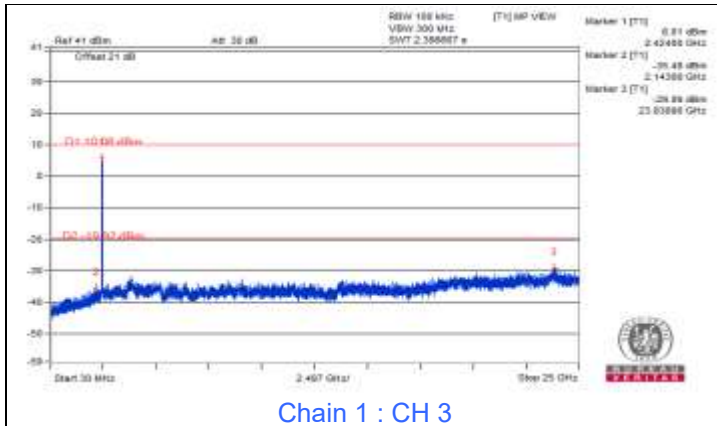


802.11ax (HE40) CDD





BUREAU
VERITAS



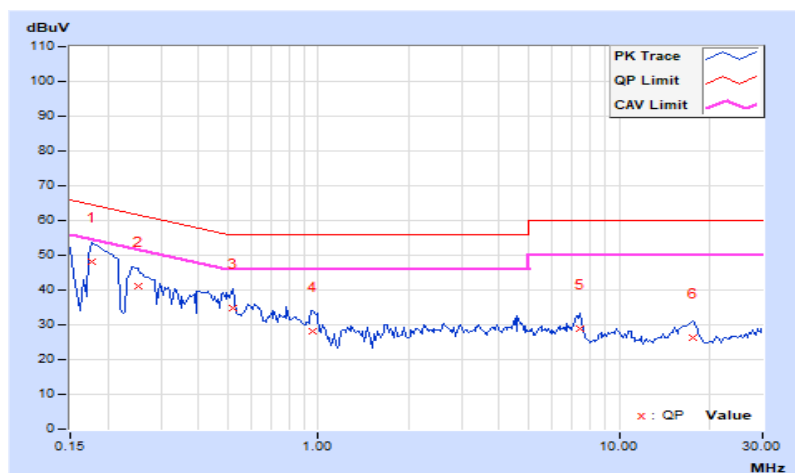
7.5 AC Power Conducted Emissions

RF Mode	802.11b	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	23°C, 71% RH
Tested By	Louis 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	0.17734	9.93	38.35	11.73	48.28	21.66	64.61	54.61	-16.33	-32.95
2	0.25156	9.93	31.23	13.85	41.16	23.78	61.71	51.71	-20.55	-27.93
3	0.52109	9.95	24.73	15.77	34.68	25.72	56.00	46.00	-21.32	-20.28
4	0.96250	9.97	18.05	8.37	28.02	18.34	56.00	46.00	-27.98	-27.66
5	7.41406	10.30	18.41	13.06	28.71	23.36	60.00	50.00	-31.29	-26.64
6	17.55078	10.97	15.35	11.04	26.32	22.01	60.00	50.00	-33.68	-27.99

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

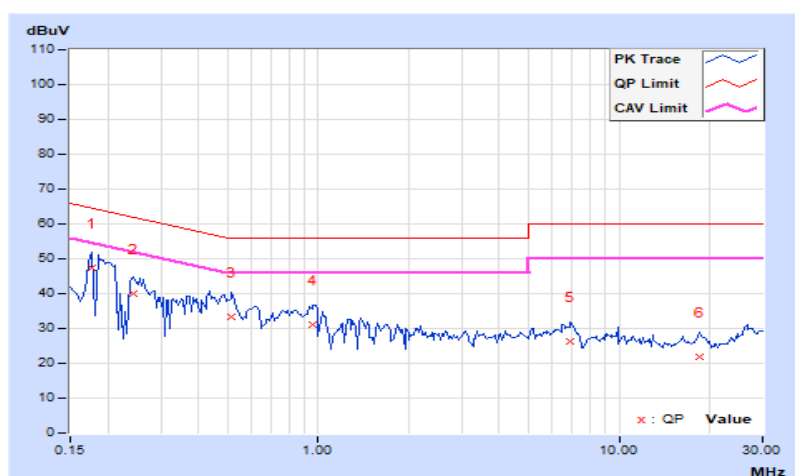


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23°C, 71% RH
Tested By	Louis Yang		

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	0.17734	9.99	37.33	10.70	47.32	20.69	64.61	54.61	-17.29	-33.92
2	0.24375	9.99	29.90	11.90	39.89	21.89	61.97	51.97	-22.08	-30.08
3	0.51719	10.00	23.48	15.65	33.48	25.65	56.00	46.00	-22.52	-20.35
4	0.95859	10.02	21.01	9.85	31.03	19.87	56.00	46.00	-24.97	-26.13
5	6.89844	10.27	15.85	9.91	26.12	20.18	60.00	50.00	-33.88	-29.82
6	18.58984	10.81	10.94	6.26	21.75	17.07	60.00	50.00	-38.25	-32.93

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



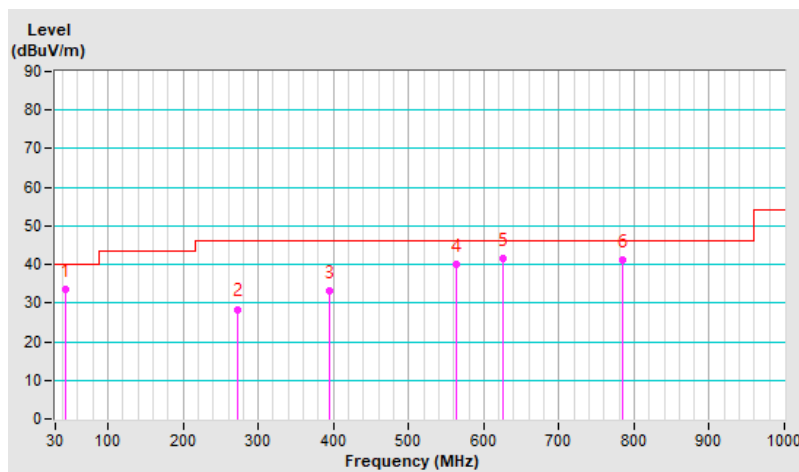
7.6 Unwanted Emissions below 1 GHz

RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	22°C, 72% 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	43.09	33.6 QP	40.0	-6.4	1.00 H	247	41.8	-8.2
2	273.30	28.4 QP	46.0	-17.6	1.00 H	360	36.4	-8.0
3	394.14	33.1 QP	46.0	-12.9	1.50 H	18	38.1	-5.0
4	563.65	39.9 QP	46.0	-6.1	1.50 H	1	41.0	-1.1
5	624.93	41.5 QP	46.0	-4.5	2.00 H	356	40.9	0.6
6	784.93	41.1 QP	46.0	-4.9	2.50 H	360	38.0	3.1

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 of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

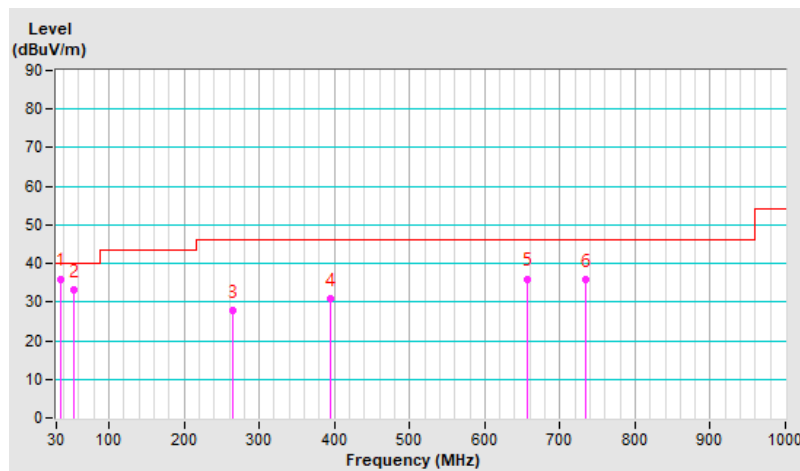


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	22°C, 72% RH
Tested By	Louis Yang		

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	35.92	36.0 QP	40.0	-4.0	1.00 V	97	44.8	-8.8
2	54.13	33.1 QP	40.0	-6.9	1.50 V	26	41.4	-8.3
3	264.18	27.7 QP	46.0	-18.3	1.50 V	283	36.2	-8.5
4	394.16	30.8 QP	46.0	-15.2	2.00 V	360	35.8	-5.0
5	656.26	36.0 QP	46.0	-10.0	2.00 V	69	35.0	1.0
6	734.44	35.9 QP	46.0	-10.1	2.50 V	360	33.5	2.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



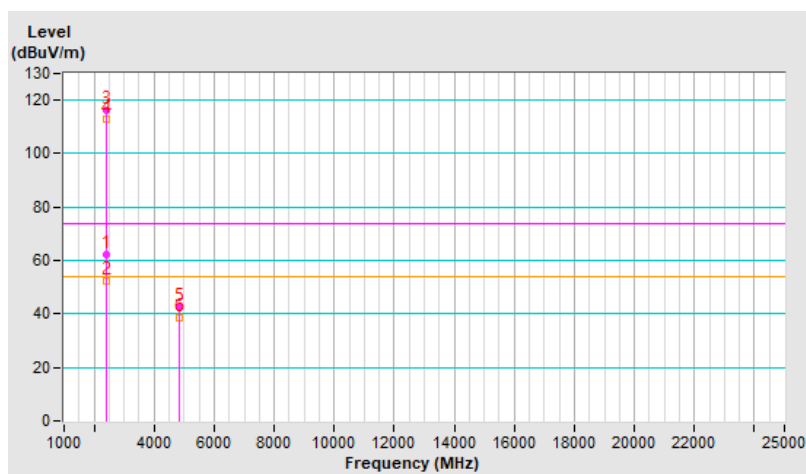
7.7 Unwanted Emissions above 1 GHz

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, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.2 PK	74.0	-11.8	1.31 H	338	64.5	-2.3
2	2390.00	52.2 AV	54.0	-1.8	1.31 H	338	54.5	-2.3
3	*2412.00	116.0 PK			1.31 H	338	118.4	-2.4
4	*2412.00	113.0 AV			1.31 H	338	115.4	-2.4
5	4824.00	42.2 PK	74.0	-31.8	1.66 H	338	40.0	2.2
6	4824.00	38.6 AV	54.0	-15.4	1.66 H	338	36.4	2.2

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.

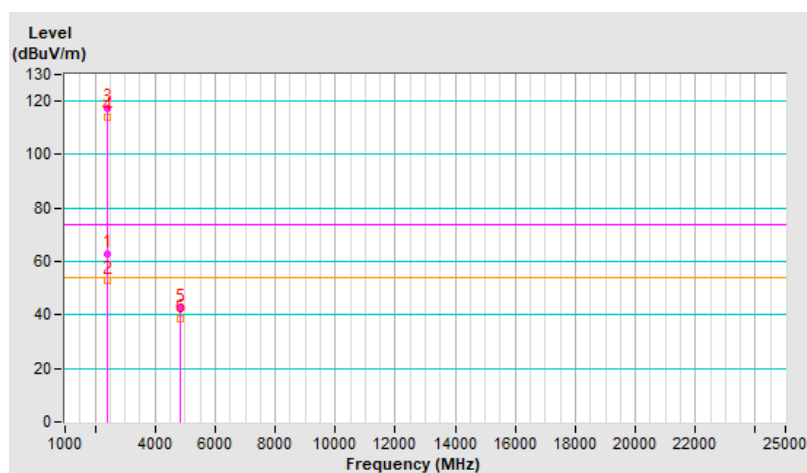


RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	62.9 PK	74.0	-11.1	1.09 V	360	65.2	-2.3
2	2390.00	53.0 AV	54.0	-1.0	1.09 V	360	55.3	-2.3
3	*2412.00	117.3 PK			1.09 V	360	119.7	-2.4
4	*2412.00	113.9 AV			1.09 V	360	116.3	-2.4
5	4824.00	42.3 PK	74.0	-31.7	1.70 V	328	40.1	2.2
6	4824.00	38.5 AV	54.0	-15.5	1.70 V	328	36.3	2.2

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.

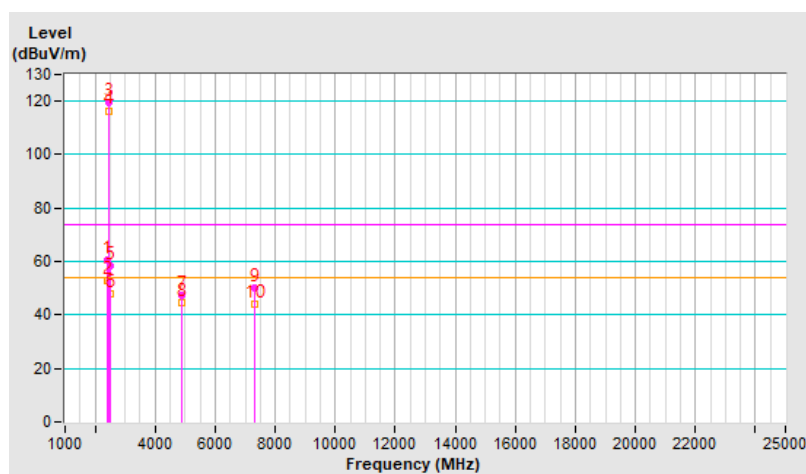


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	60.4 PK	74.0	-13.6	1.50 H	344	62.7	-2.3
2	2390.00	52.7 AV	54.0	-1.3	1.50 H	344	55.0	-2.3
3	*2437.00	119.5 PK			1.50 H	344	121.8	-2.3
4	*2437.00	116.5 AV			1.50 H	344	118.8	-2.3
5	2483.50	58.3 PK	74.0	-15.7	1.50 H	344	60.6	-2.3
6	2483.50	48.0 AV	54.0	-6.0	1.50 H	344	50.3	-2.3
7	4874.00	47.6 PK	74.0	-26.4	1.67 H	346	45.5	2.1
8	4874.00	44.4 AV	54.0	-9.6	1.67 H	346	42.3	2.1
9	7311.00	49.9 PK	74.0	-24.1	1.50 H	357	42.4	7.5
10	7311.00	44.0 AV	54.0	-10.0	1.50 H	357	36.5	7.5

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.

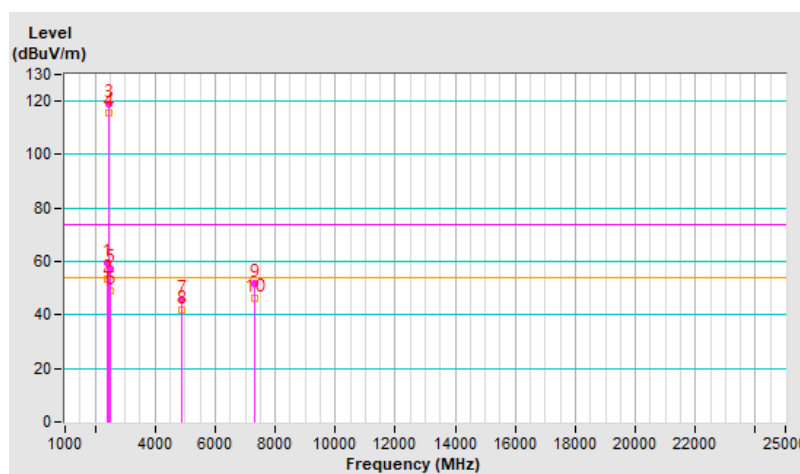


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.4 PK	74.0	-14.6	1.24 V	360	61.7	-2.3
2	2390.00	53.2 AV	54.0	-0.8	1.24 V	360	55.5	-2.3
3	*2437.00	119.2 PK			1.24 V	360	121.5	-2.3
4	*2437.00	115.9 AV			1.24 V	360	118.2	-2.3
5	2483.50	57.1 PK	74.0	-16.9	1.24 V	360	59.4	-2.3
6	2483.50	48.9 AV	54.0	-5.1	1.24 V	360	51.2	-2.3
7	4874.00	45.5 PK	74.0	-28.5	2.53 V	35	43.4	2.1
8	4874.00	41.9 AV	54.0	-12.1	2.53 V	35	39.8	2.1
9	7311.00	51.7 PK	74.0	-22.3	3.36 V	354	44.2	7.5
10	7311.00	46.3 AV	54.0	-7.7	3.36 V	354	38.8	7.5

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.

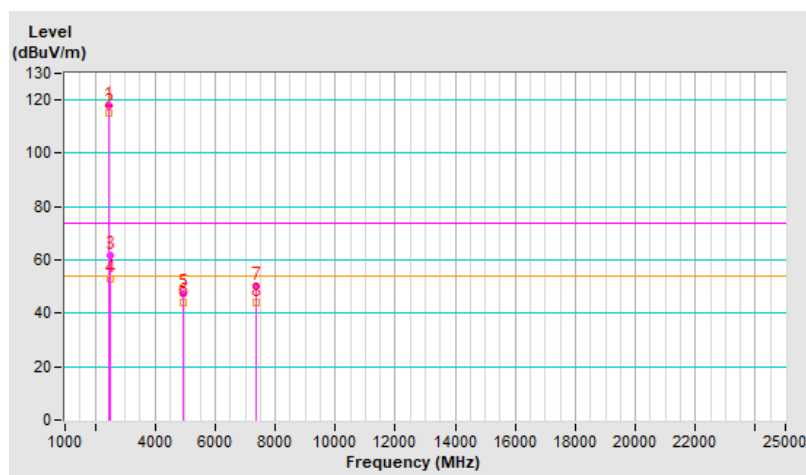


RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	118.1 PK			1.46 H	345	120.3	-2.2
2	*2462.00	114.9 AV			1.46 H	345	117.1	-2.2
3	2483.50	61.8 PK	74.0	-12.2	1.46 H	345	64.1	-2.3
4	2483.50	53.0 AV	54.0	-1.0	1.46 H	345	55.3	-2.3
5	4924.00	47.3 PK	74.0	-26.7	1.72 H	332	45.2	2.1
6	4924.00	44.2 AV	54.0	-9.8	1.72 H	332	42.1	2.1
7	7386.00	50.2 PK	74.0	-23.8	1.47 H	350	42.1	8.1
8	7386.00	44.2 AV	54.0	-9.8	1.47 H	350	36.1	8.1

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.

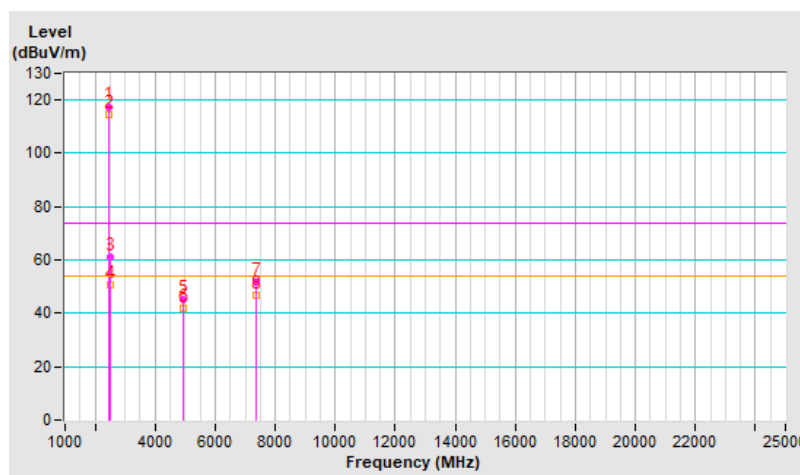


RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	117.6 PK			1.58 V	11	119.8	-2.2
2	*2462.00	114.5 AV			1.58 V	11	116.7	-2.2
3	2483.50	61.3 PK	74.0	-12.7	1.58 V	11	63.6	-2.3
4	2483.50	50.6 AV	54.0	-3.4	1.58 V	11	52.9	-2.3
5	4924.00	45.2 PK	74.0	-28.8	2.57 V	25	43.1	2.1
6	4924.00	41.9 AV	54.0	-12.1	2.57 V	25	39.8	2.1
7	7386.00	51.9 PK	74.0	-22.1	3.33 V	352	43.8	8.1
8	7386.00	46.7 AV	54.0	-7.3	3.33 V	352	38.6	8.1

Remarks:

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

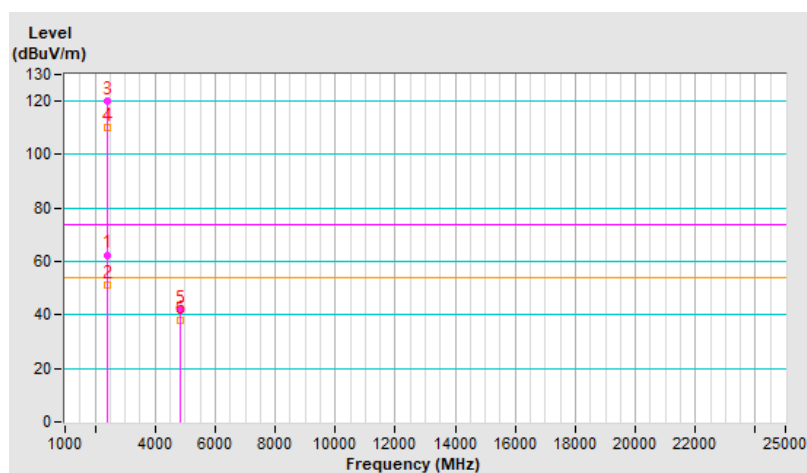


RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.5 PK	74.0	-11.5	1.29 H	340	64.8	-2.3
2	2390.00	51.3 AV	54.0	-2.7	1.29 H	340	53.6	-2.3
3	*2412.00	120.0 PK			1.29 H	340	122.4	-2.4
4	*2412.00	110.2 AV			1.29 H	340	112.6	-2.4
5	4824.00	41.8 PK	74.0	-32.2	1.62 H	352	39.6	2.2
6	4824.00	38.1 AV	54.0	-15.9	1.62 H	352	35.9	2.2

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.

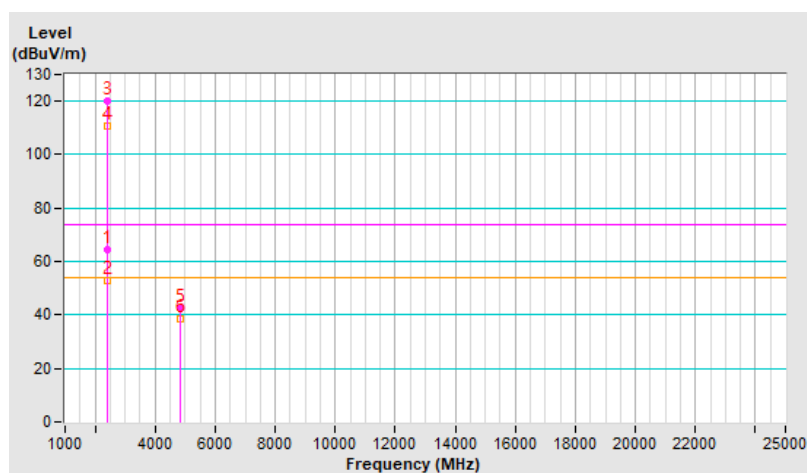


RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	64.2 PK	74.0	-9.8	1.08 V	360	66.5	-2.3
2	2390.00	52.8 AV	54.0	-1.2	1.08 V	360	55.1	-2.3
3	*2412.00	120.2 PK			1.08 V	360	122.6	-2.4
4	*2412.00	110.8 AV			1.08 V	360	113.2	-2.4
5	4824.00	42.5 PK	74.0	-31.5	1.70 V	330	40.3	2.2
6	4824.00	38.7 AV	54.0	-15.3	1.70 V	330	36.5	2.2

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.

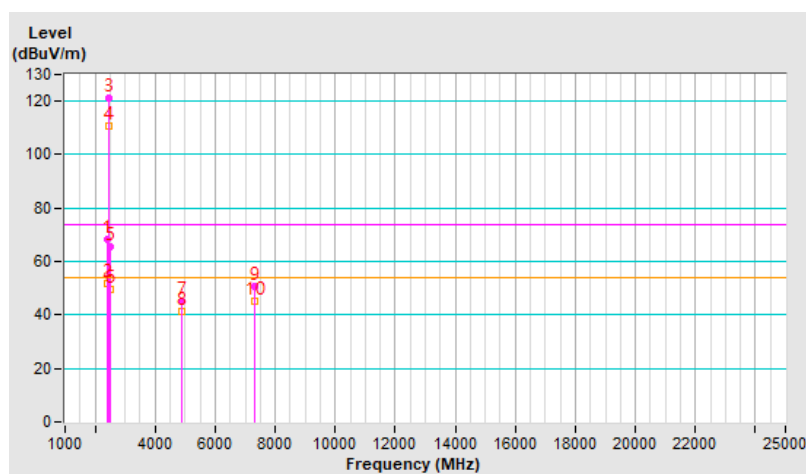


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.1 PK	74.0	-5.9	1.34 H	324	70.4	-2.3
2	2390.00	51.7 AV	54.0	-2.3	1.34 H	324	54.0	-2.3
3	*2437.00	121.3 PK			1.34 H	324	123.6	-2.3
4	*2437.00	110.7 AV			1.34 H	324	113.0	-2.3
5	2483.50	65.6 PK	74.0	-8.4	1.34 H	324	67.9	-2.3
6	2483.50	49.6 AV	54.0	-4.4	1.34 H	324	51.9	-2.3
7	4874.00	44.9 PK	74.0	-29.1	2.56 H	33	42.8	2.1
8	4874.00	41.5 AV	54.0	-12.5	2.56 H	33	39.4	2.1
9	7311.00	50.9 PK	74.0	-23.1	3.27 H	344	43.4	7.5
10	7311.00	45.1 AV	54.0	-8.9	3.27 H	344	37.6	7.5

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.

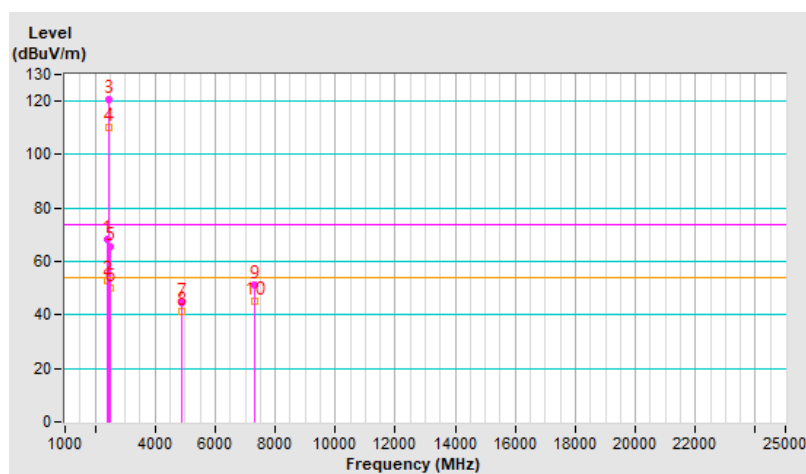


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.5 PK	74.0	-5.5	1.82 V	27	70.8	-2.3
2	2390.00	52.8 AV	54.0	-1.2	1.82 V	27	55.1	-2.3
3	*2437.00	120.8 PK			1.82 V	27	123.1	-2.3
4	*2437.00	110.4 AV			1.82 V	27	112.7	-2.3
5	2483.50	65.5 PK	74.0	-8.5	1.82 V	27	67.8	-2.3
6	2483.50	50.0 AV	54.0	-4.0	1.82 V	27	52.3	-2.3
7	4874.00	44.8 PK	74.0	-29.2	2.52 V	45	42.7	2.1
8	4874.00	41.4 AV	54.0	-12.6	2.52 V	45	39.3	2.1
9	7311.00	51.3 PK	74.0	-22.7	3.32 V	340	43.8	7.5
10	7311.00	45.2 AV	54.0	-8.8	3.32 V	340	37.7	7.5

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.

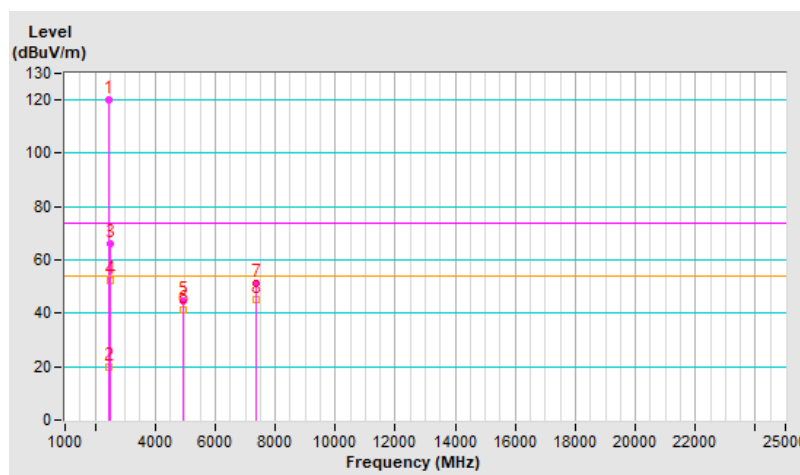


RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	119.9 PK			1.28 H	340	122.1	-2.2
2	*2462.00	19.8 AV			1.28 H	340	22.0	-2.2
3	2483.50	66.2 PK	74.0	-7.8	1.28 H	340	68.5	-2.3
4	2483.50	52.5 AV	54.0	-1.5	1.28 H	340	54.8	-2.3
5	4924.00	44.7 PK	74.0	-29.3	2.56 H	51	42.6	2.1
6	4924.00	41.3 AV	54.0	-12.7	2.56 H	51	39.2	2.1
7	7386.00	51.2 PK	74.0	-22.8	3.36 H	329	43.1	8.1
8	7386.00	45.3 AV	54.0	-8.7	3.36 H	329	37.2	8.1

Remarks:

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

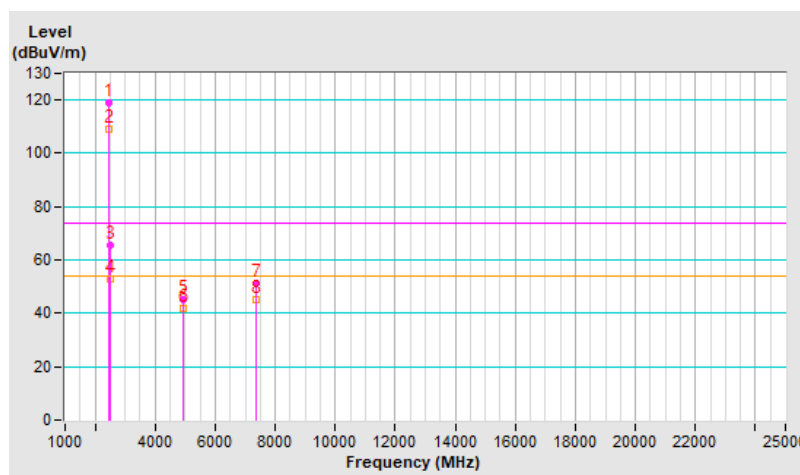


RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	118.8 PK			1.15 V	360	121.0	-2.2
2	*2462.00	109.2 AV			1.15 V	360	111.4	-2.2
3	2483.50	65.4 PK	74.0	-8.6	1.15 V	360	67.7	-2.3
4	2483.50	52.7 AV	54.0	-1.3	1.15 V	360	55.0	-2.3
5	4924.00	45.4 PK	74.0	-28.6	2.57 V	37	43.3	2.1
6	4924.00	41.8 AV	54.0	-12.2	2.57 V	37	39.7	2.1
7	7386.00	51.3 PK	74.0	-22.7	3.32 V	336	43.2	8.1
8	7386.00	45.4 AV	54.0	-8.6	3.32 V	336	37.3	8.1

Remarks:

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

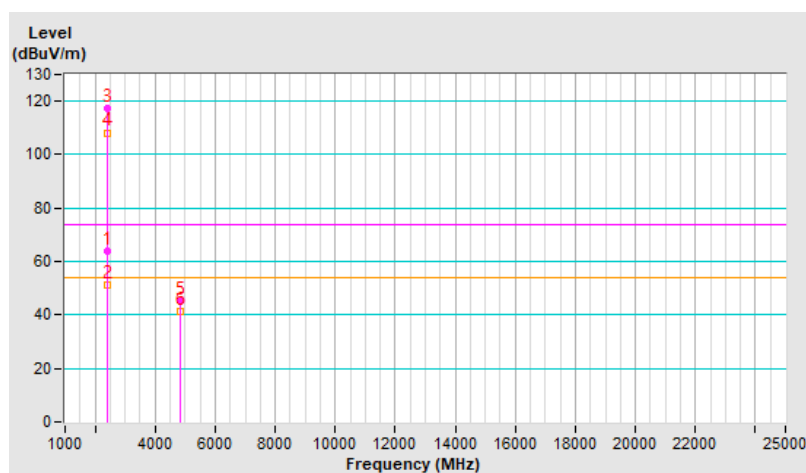


RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	64.0 PK	74.0	-10.0	1.91 H	302	66.3	-2.3
2	2390.00	51.4 AV	54.0	-2.6	1.91 H	302	53.7	-2.3
3	*2412.00	117.4 PK			1.91 H	302	119.8	-2.4
4	*2412.00	108.2 AV			1.91 H	302	110.6	-2.4
5	4824.00	44.9 PK	74.0	-29.1	2.48 H	48	42.7	2.2
6	4824.00	41.3 AV	54.0	-12.7	2.48 H	48	39.1	2.2

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.

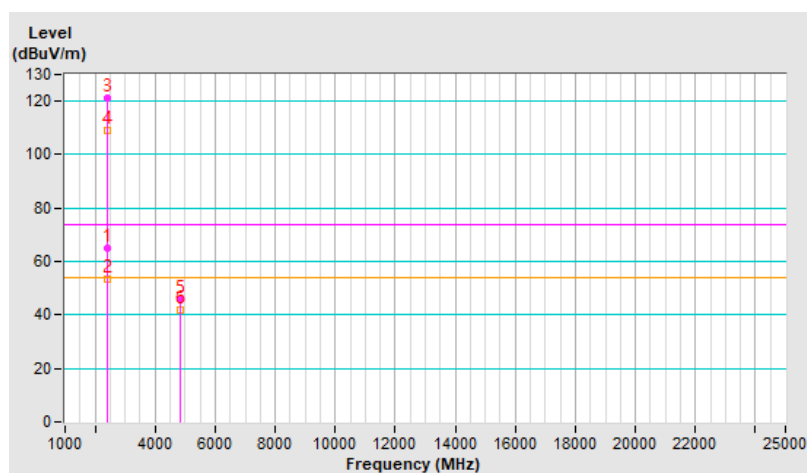


RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	65.0 PK	74.0	-9.0	1.00 V	360	67.3	-2.3
2	2390.00	53.2 AV	54.0	-0.8	1.00 V	360	55.5	-2.3
3	*2412.00	121.1 PK			1.00 V	360	123.5	-2.4
4	*2412.00	109.0 AV			1.00 V	360	111.4	-2.4
5	4824.00	45.5 PK	74.0	-28.5	2.53 V	27	43.3	2.2
6	4824.00	41.8 AV	54.0	-12.2	2.53 V	27	39.6	2.2

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.

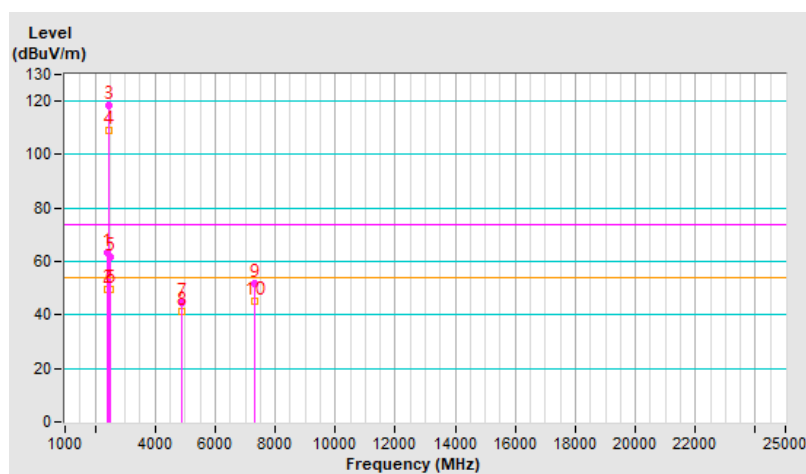


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	63.2 PK	74.0	-10.8	1.86 H	312	65.5	-2.3
2	2390.00	49.8 AV	54.0	-4.2	1.86 H	312	52.1	-2.3
3	*2437.00	118.3 PK			1.86 H	312	120.6	-2.3
4	*2437.00	109.2 AV			1.86 H	312	111.5	-2.3
5	2483.50	61.5 PK	74.0	-12.5	1.86 H	312	63.8	-2.3
6	2483.50	49.6 AV	54.0	-4.4	1.86 H	312	51.9	-2.3
7	4874.00	44.7 PK	74.0	-29.3	2.52 H	38	42.6	2.1
8	4874.00	41.3 AV	54.0	-12.7	2.52 H	38	39.2	2.1
9	7311.00	51.6 PK	74.0	-22.4	3.27 H	330	44.1	7.5
10	7311.00	45.3 AV	54.0	-8.7	3.27 H	330	37.8	7.5

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.

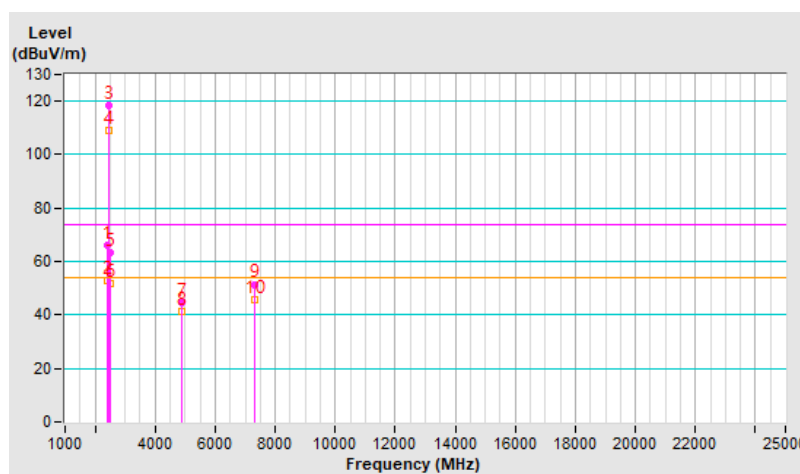


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	66.3 PK	74.0	-7.7	1.78 V	35	68.6	-2.3
2	2390.00	53.1 AV	54.0	-0.9	1.78 V	35	55.4	-2.3
3	*2437.00	118.4 PK			1.78 V	35	120.7	-2.3
4	*2437.00	109.3 AV			1.78 V	35	111.6	-2.3
5	2483.50	63.5 PK	74.0	-10.5	1.78 V	35	65.8	-2.3
6	2483.50	51.8 AV	54.0	-2.2	1.78 V	35	54.1	-2.3
7	4874.00	44.7 PK	74.0	-29.3	2.45 V	24	42.6	2.1
8	4874.00	41.1 AV	54.0	-12.9	2.45 V	24	39.0	2.1
9	7311.00	51.5 PK	74.0	-22.5	3.23 V	331	44.0	7.5
10	7311.00	45.6 AV	54.0	-8.4	3.23 V	331	38.1	7.5

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.

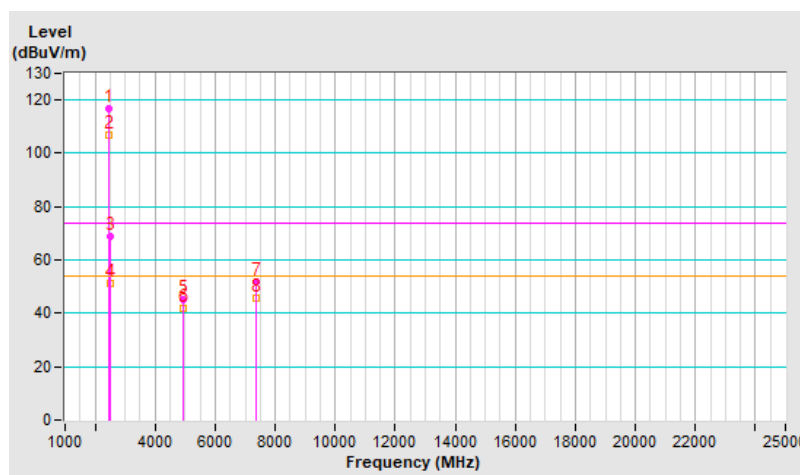


RF Mode	802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	116.8 PK			1.49 H	348	119.0	-2.2
2	*2462.00	106.8 AV			1.49 H	348	109.0	-2.2
3	2483.50	68.9 PK	74.0	-5.1	1.49 H	348	71.2	-2.3
4	2483.50	51.1 AV	54.0	-2.9	1.49 H	348	53.4	-2.3
5	4924.00	45.2 PK	74.0	-28.8	2.49 H	24	43.1	2.1
6	4924.00	41.7 AV	54.0	-12.3	2.49 H	24	39.6	2.1
7	7386.00	51.8 PK	74.0	-22.2	3.33 H	326	43.7	8.1
8	7386.00	45.8 AV	54.0	-8.2	3.33 H	326	37.7	8.1

Remarks:

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

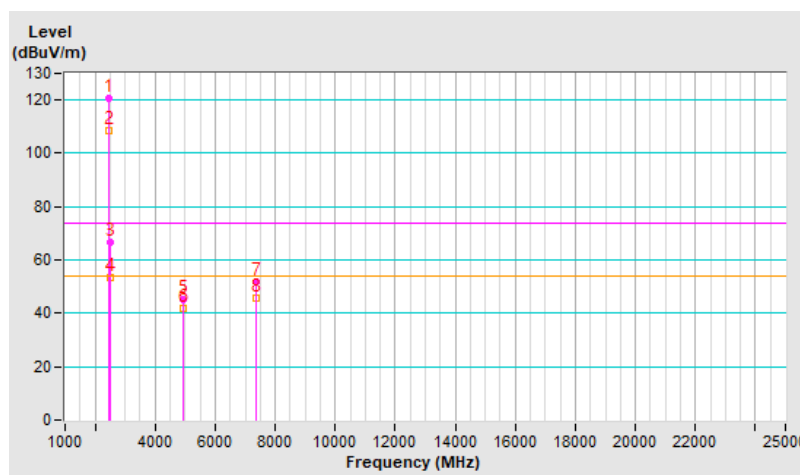


RF Mode	802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	120.5 PK			1.16 V	360	122.7	-2.2
2	*2462.00	108.5 AV			1.16 V	360	110.7	-2.2
3	2483.50	66.4 PK	74.0	-7.6	1.16 V	360	68.7	-2.3
4	2483.50	53.5 AV	54.0	-0.5	1.16 V	360	55.8	-2.3
5	4924.00	45.2 PK	74.0	-28.8	2.44 V	48	43.1	2.1
6	4924.00	41.7 AV	54.0	-12.3	2.44 V	48	39.6	2.1
7	7386.00	51.7 PK	74.0	-22.3	3.23 V	337	43.6	8.1
8	7386.00	45.5 AV	54.0	-8.5	3.23 V	337	37.4	8.1

Remarks:

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

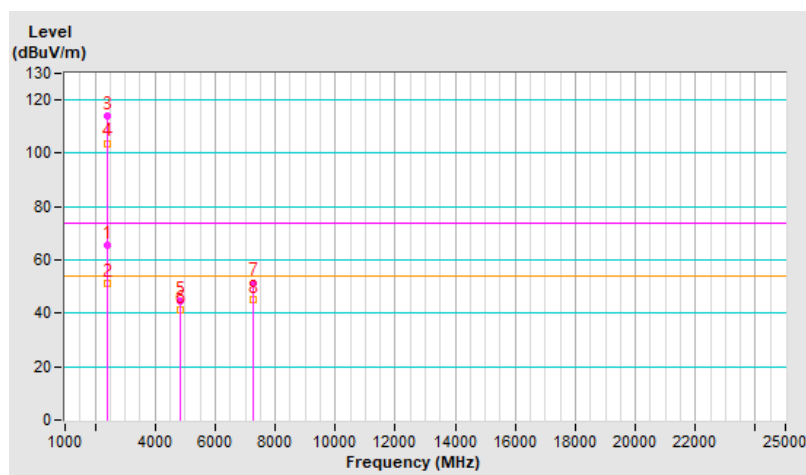


RF Mode	802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	1.50 H	345	67.6	-2.3
2	2390.00	51.1 AV	54.0	-2.9	1.50 H	345	53.4	-2.3
3	*2422.00	113.8 PK			1.50 H	345	116.1	-2.3
4	*2422.00	103.8 AV			1.50 H	345	106.1	-2.3
5	4844.00	44.5 PK	74.0	-29.5	2.51 H	47	42.3	2.2
6	4844.00	41.1 AV	54.0	-12.9	2.51 H	47	38.9	2.2
7	7266.00	51.5 PK	74.0	-22.5	3.29 H	331	43.9	7.6
8	7266.00	45.4 AV	54.0	-8.6	3.29 H	331	37.8	7.6

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.

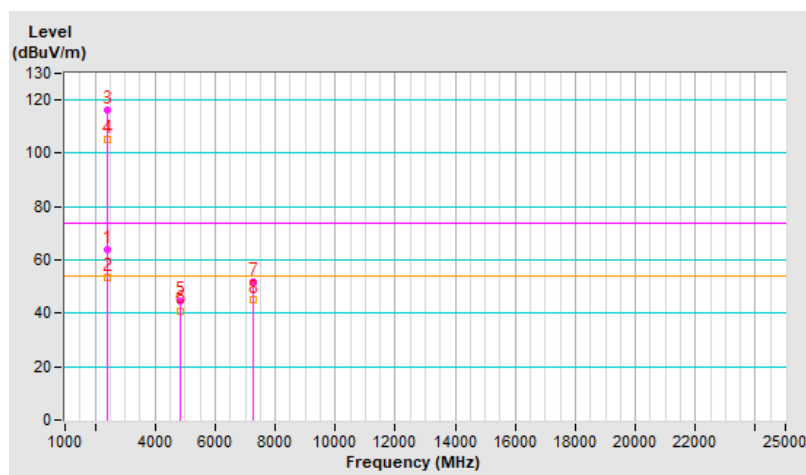


RF Mode	802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	1.08 V	360	66.3	-2.3
2	2390.00	53.5 AV	54.0	-0.5	1.08 V	360	55.8	-2.3
3	*2422.00	116.1 PK			1.08 V	360	118.4	-2.3
4	*2422.00	105.3 AV			1.08 V	360	107.6	-2.3
5	4844.00	44.7 PK	74.0	-29.3	2.45 V	43	42.5	2.2
6	4844.00	41.0 AV	54.0	-13.0	2.45 V	43	38.8	2.2
7	7266.00	51.6 PK	74.0	-22.4	3.24 V	354	44.0	7.6
8	7266.00	45.3 AV	54.0	-8.7	3.24 V	354	37.7	7.6

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.

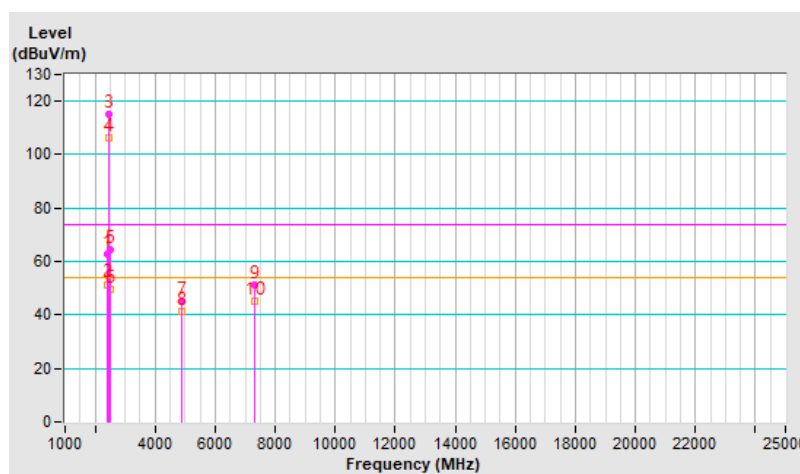


RF Mode	802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	63.0 PK	74.0	-11.0	1.32 H	329	65.3	-2.3
2	2390.00	51.5 AV	54.0	-2.5	1.32 H	329	53.8	-2.3
3	*2437.00	115.3 PK			1.32 H	329	117.6	-2.3
4	*2437.00	106.2 AV			1.32 H	329	108.5	-2.3
5	2483.50	64.3 PK	74.0	-9.7	1.32 H	329	66.6	-2.3
6	2483.50	49.7 AV	54.0	-4.3	1.32 H	329	52.0	-2.3
7	4874.00	45.1 PK	74.0	-28.9	2.45 H	22	43.0	2.1
8	4874.00	41.3 AV	54.0	-12.7	2.45 H	22	39.2	2.1
9	7311.00	51.4 PK	74.0	-22.6	3.33 H	336	43.9	7.5
10	7311.00	45.1 AV	54.0	-8.9	3.33 H	336	37.6	7.5

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.

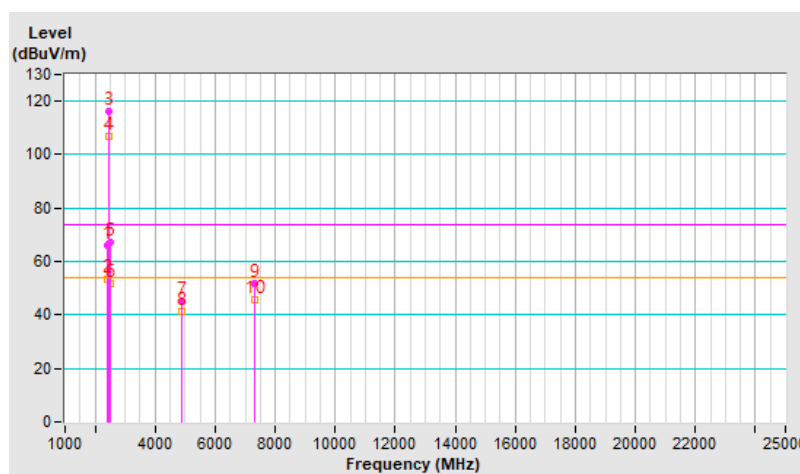


RF Mode	802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	66.0 PK	74.0	-8.0	1.79 V	27	68.3	-2.3
2	2390.00	53.2 AV	54.0	-0.8	1.79 V	27	55.5	-2.3
3	*2437.00	116.2 PK			1.79 V	27	118.5	-2.3
4	*2437.00	106.6 AV			1.79 V	27	108.9	-2.3
5	2483.50	67.3 PK	74.0	-6.7	1.79 V	27	69.6	-2.3
6	2483.50	51.8 AV	54.0	-2.2	1.79 V	27	54.1	-2.3
7	4874.00	44.9 PK	74.0	-29.1	2.46 V	33	42.8	2.1
8	4874.00	41.4 AV	54.0	-12.6	2.46 V	33	39.3	2.1
9	7311.00	52.0 PK	74.0	-22.0	3.29 V	345	44.5	7.5
10	7311.00	45.6 AV	54.0	-8.4	3.29 V	345	38.1	7.5

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.

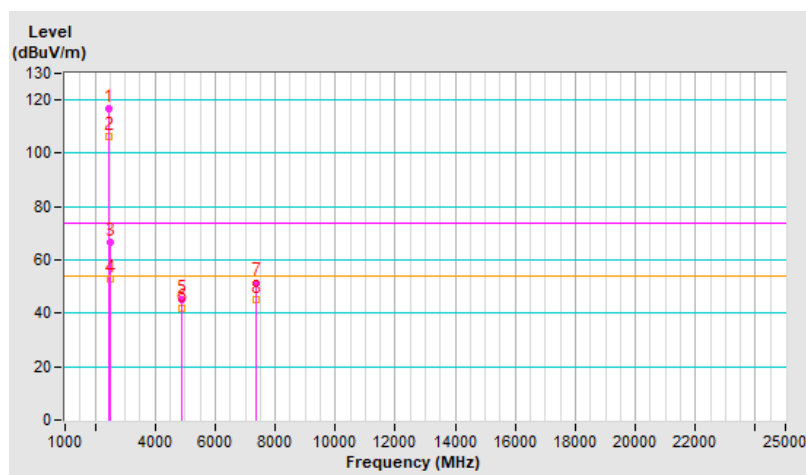


RF Mode	802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	116.8 PK			1.27 H	344	119.0	-2.2
2	*2452.00	106.3 AV			1.27 H	344	108.5	-2.2
3	2483.50	66.5 PK	74.0	-7.5	1.27 H	344	68.8	-2.3
4	2483.50	53.1 AV	54.0	-0.9	1.27 H	344	55.4	-2.3
5	4904.00	45.2 PK	74.0	-28.8	2.51 H	38	43.2	2.0
6	4904.00	41.7 AV	54.0	-12.3	2.51 H	38	39.7	2.0
7	7356.00	51.5 PK	74.0	-22.5	3.23 H	346	43.6	7.9
8	7356.00	45.3 AV	54.0	-8.7	3.23 H	346	37.4	7.9

Remarks:

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

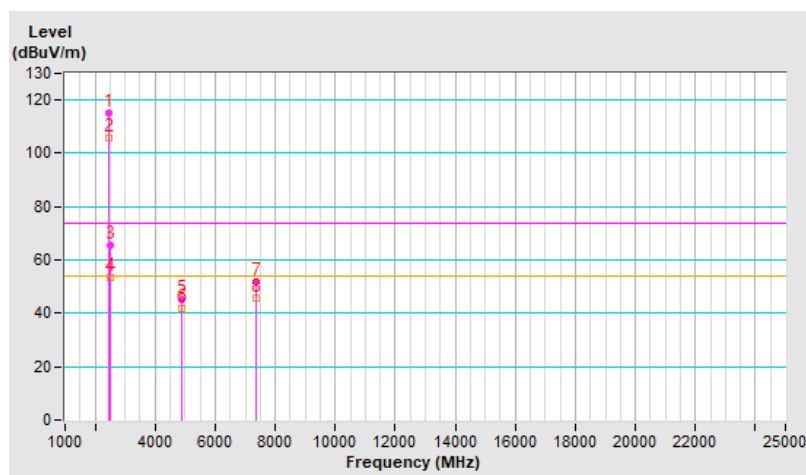


RF Mode	802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 71% RH
Tested By	Louis Yang		

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	115.3 PK			1.00 V	360	117.5	-2.2
2	*2452.00	105.7 AV			1.00 V	360	107.9	-2.2
3	2483.50	65.5 PK	74.0	-8.5	1.00 V	360	67.8	-2.3
4	2483.50	53.5 AV	54.0	-0.5	1.00 V	360	55.8	-2.3
5	4904.00	45.1 PK	74.0	-28.9	2.47 V	43	43.1	2.0
6	4904.00	41.7 AV	54.0	-12.3	2.47 V	43	39.7	2.0
7	7356.00	52.0 PK	74.0	-22.0	3.32 V	344	44.1	7.9
8	7356.00	45.9 AV	54.0	-8.1	3.32 V	344	38.0	7.9

Remarks:

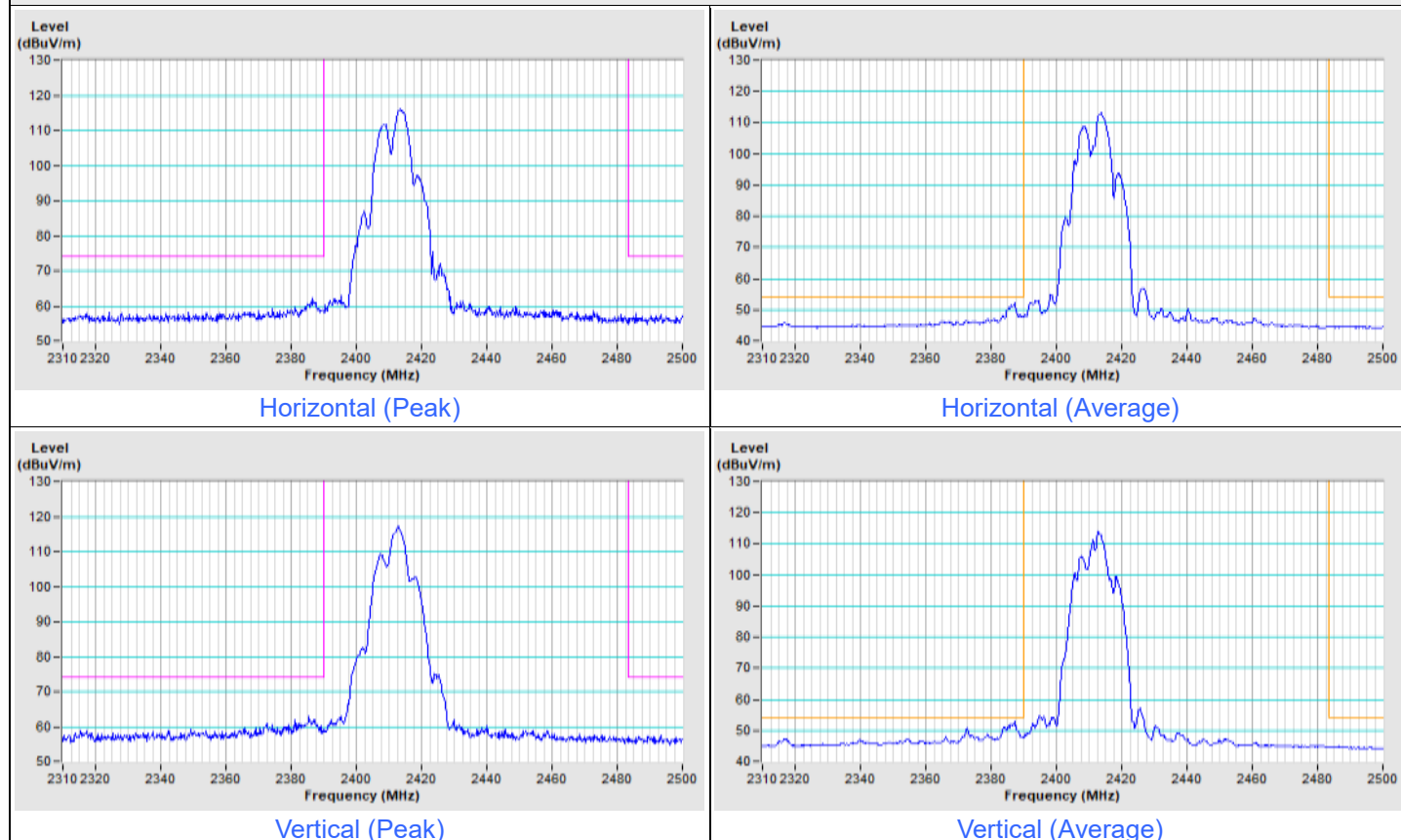
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency,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



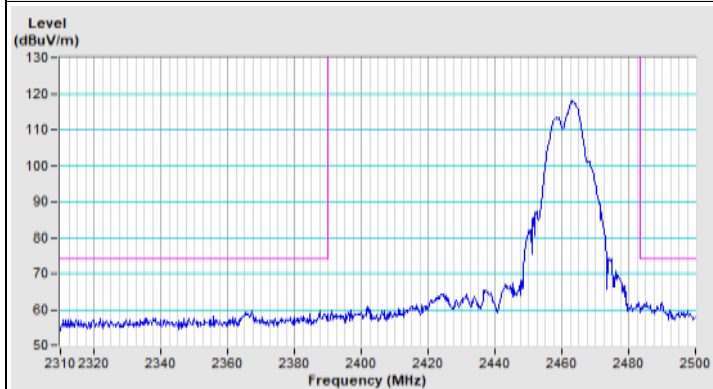
Plot of Band Edge

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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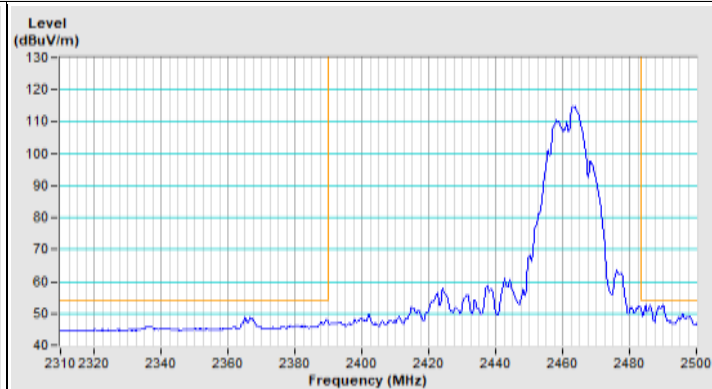
802.11b Channel 1



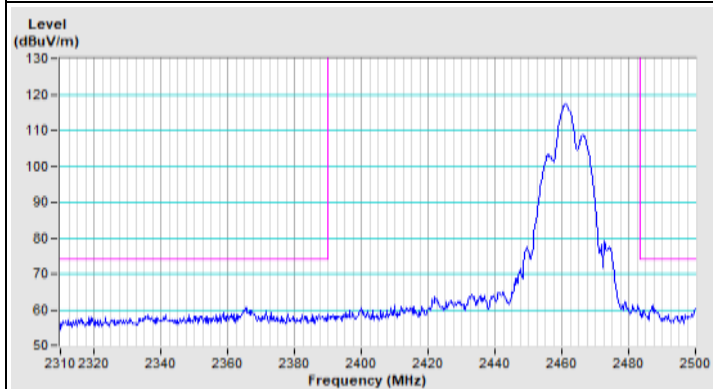
802.11b Channel 11



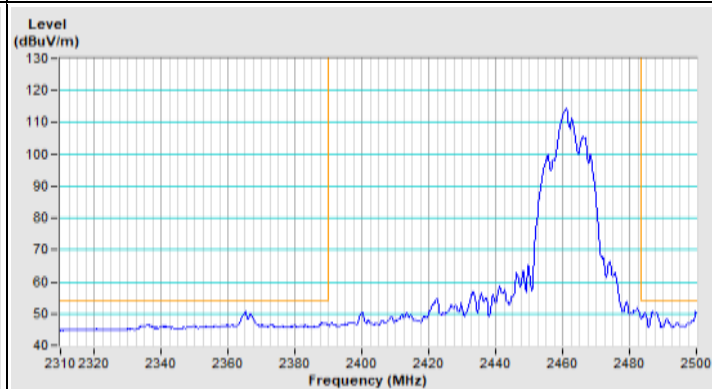
Horizontal (Peak)



Horizontal (Average)



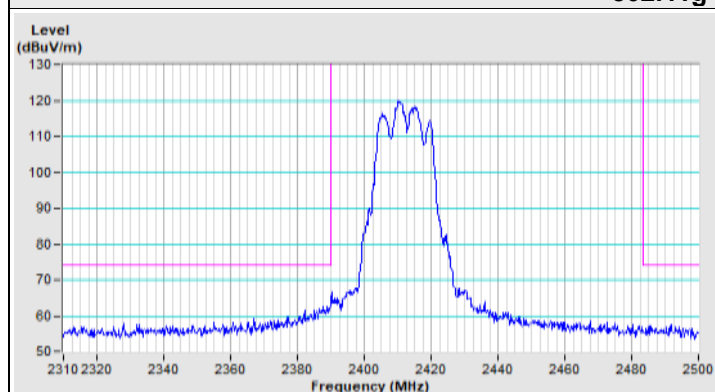
Vertical (Peak)



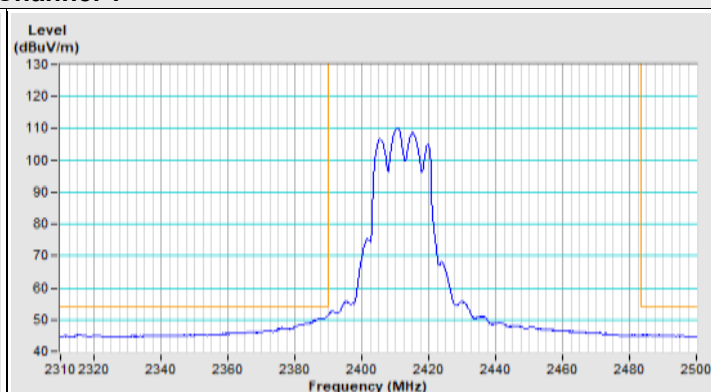
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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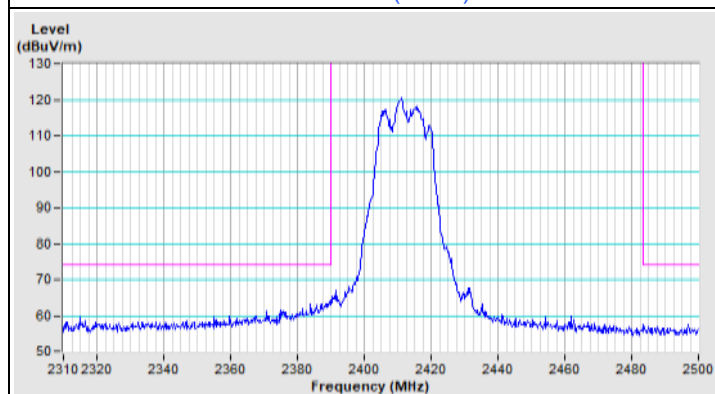
802.11g Channel 1



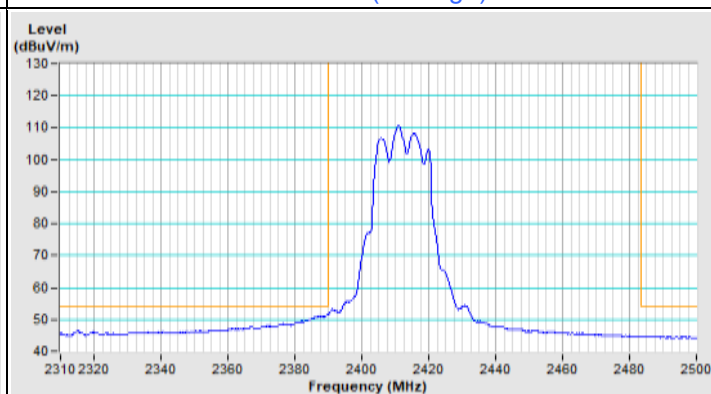
Horizontal (Peak)



Horizontal (Average)

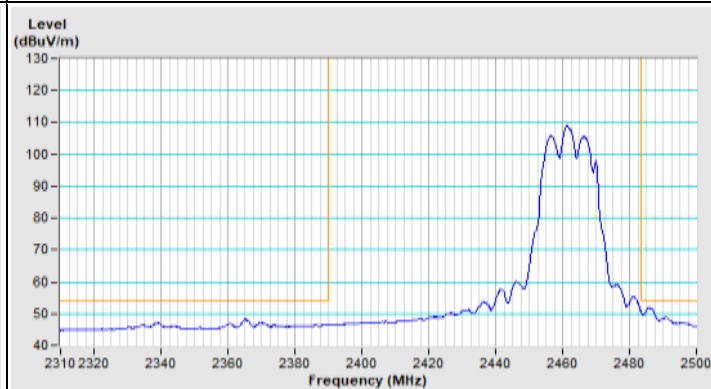
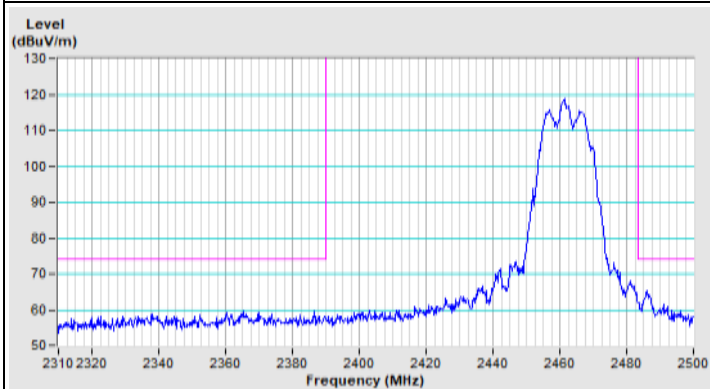
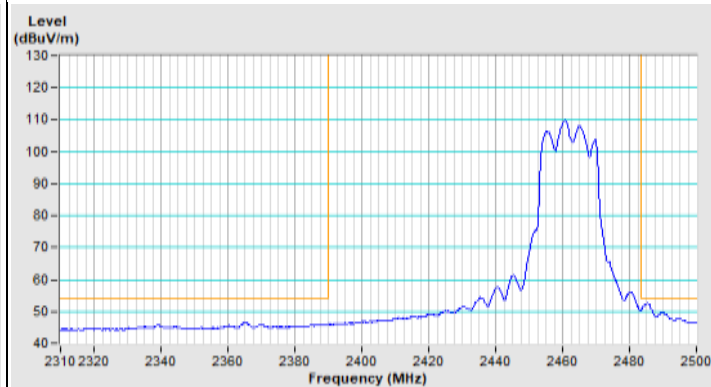
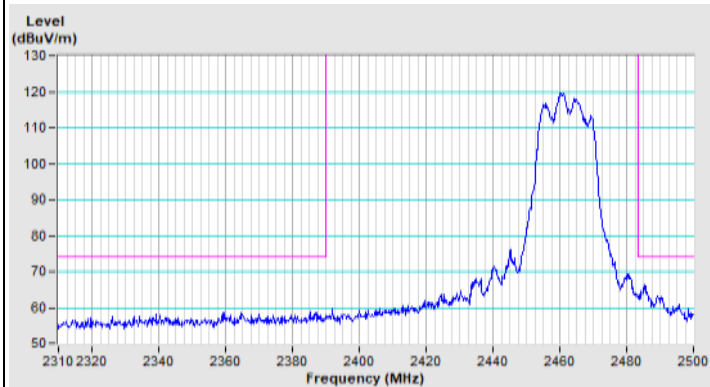


Vertical (Peak)



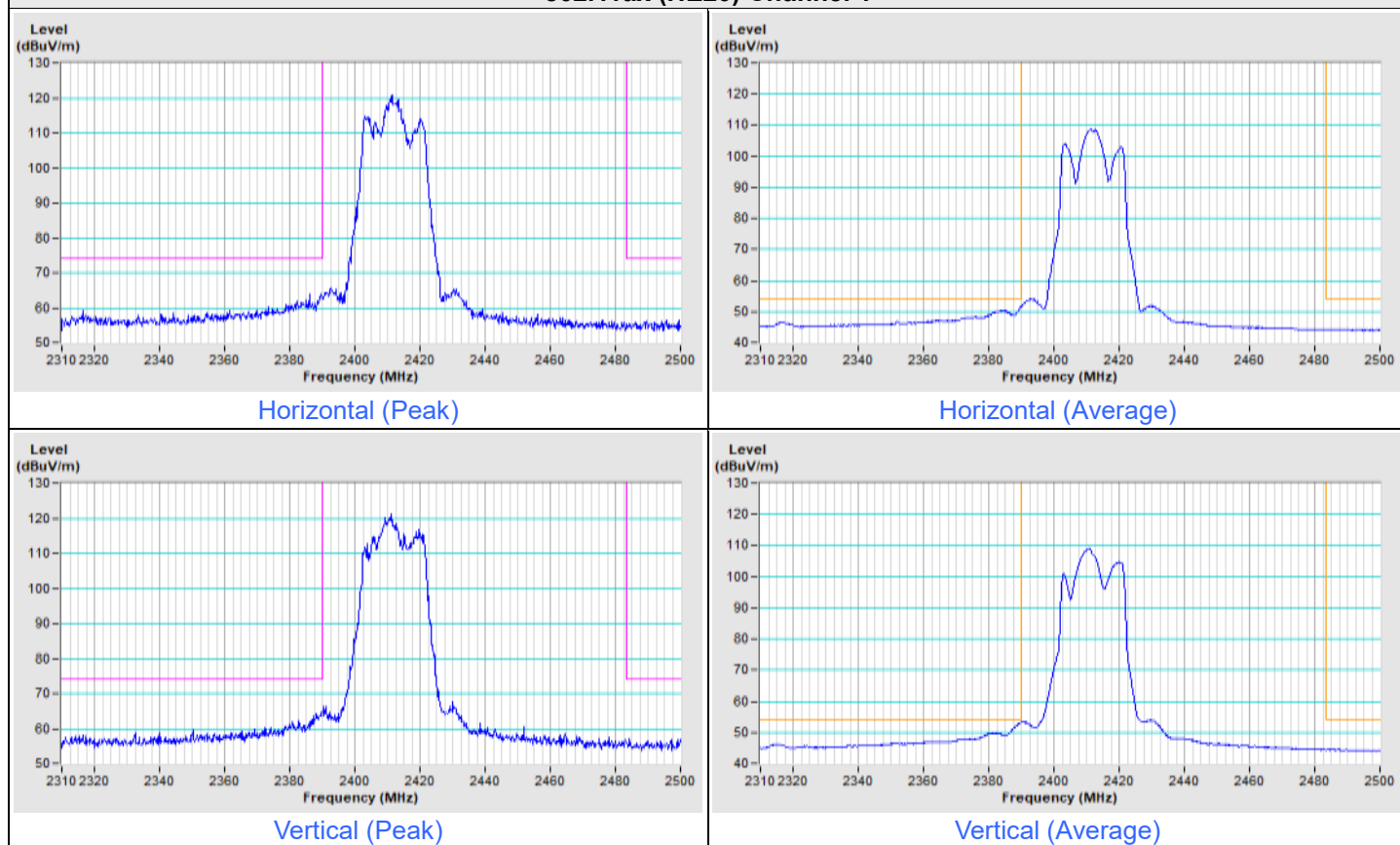
Vertical (Average)

802.11g Channel 11

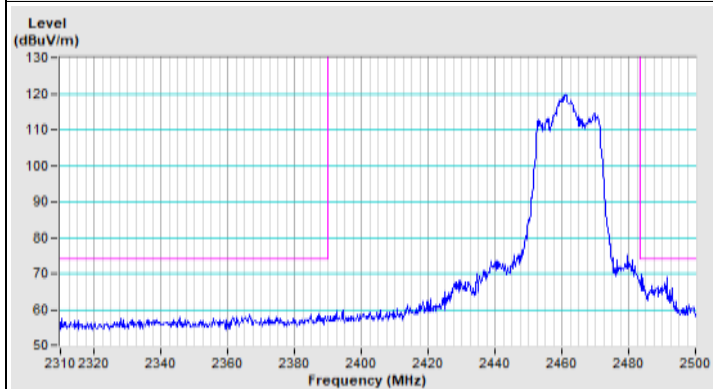


Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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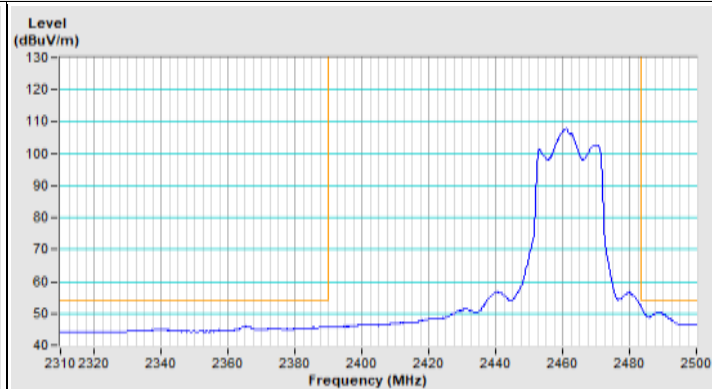
802.11ax (HE20) Channel 1



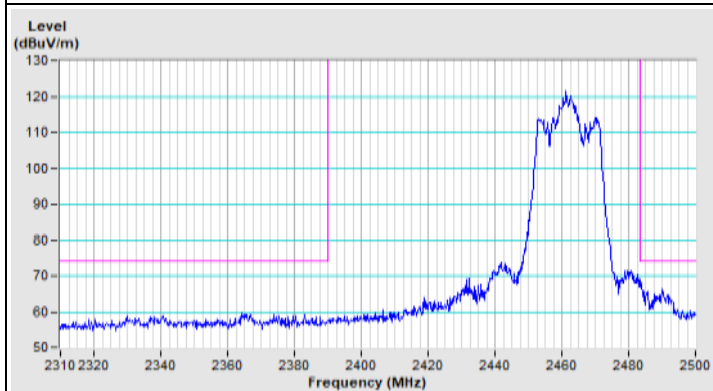
802.11ax (HE20) Channel 11



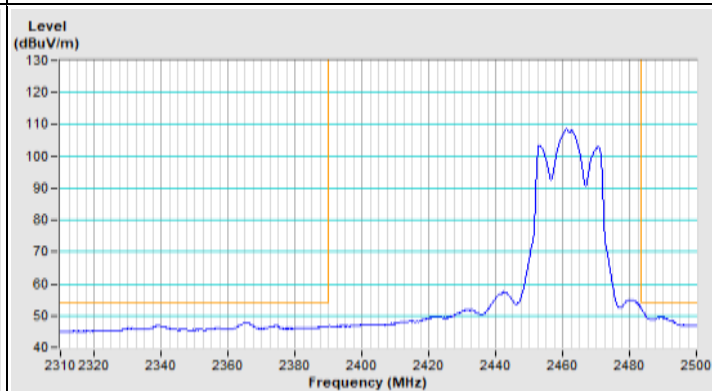
Horizontal (Peak)



Horizontal (Average)



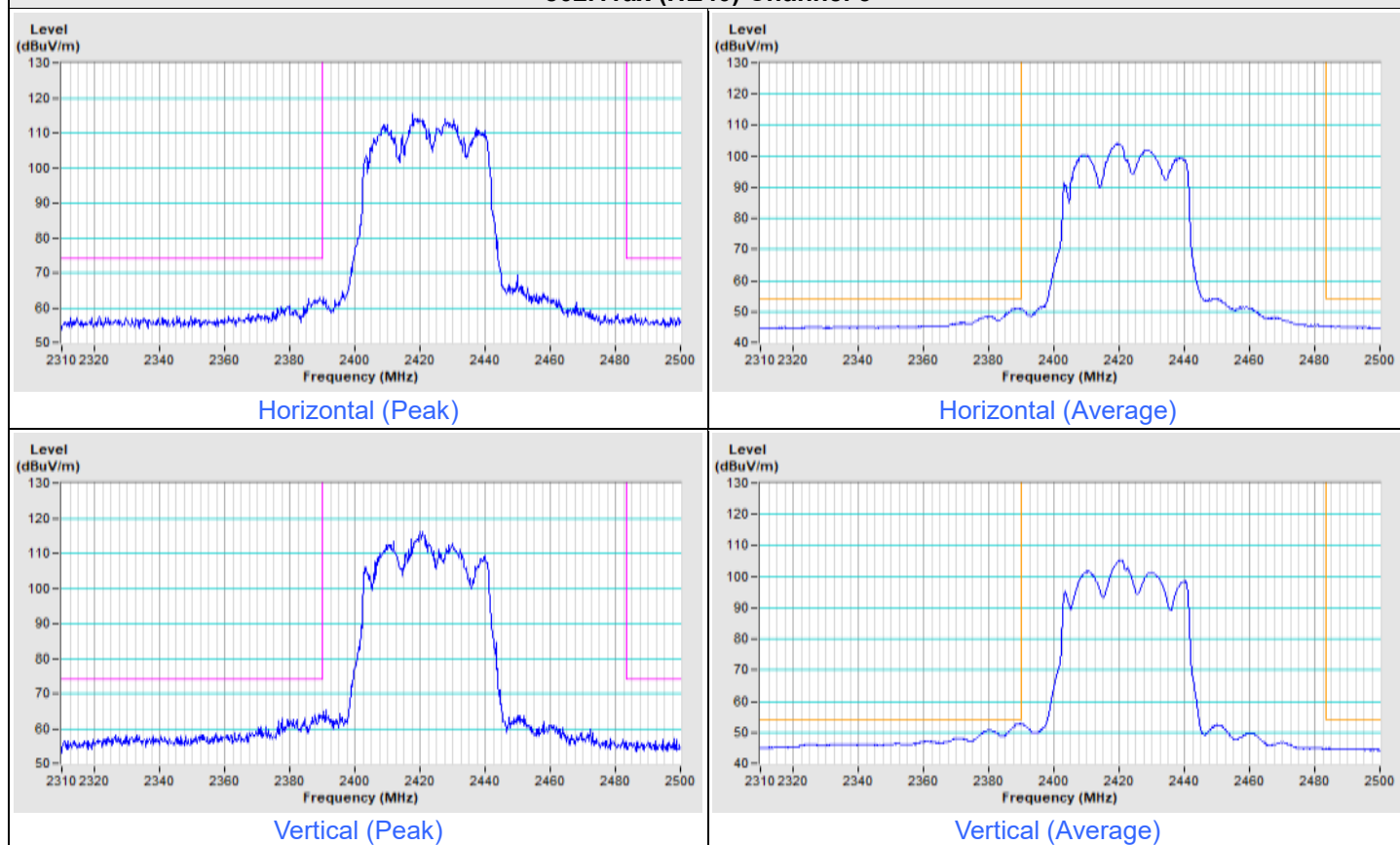
Vertical (Peak)



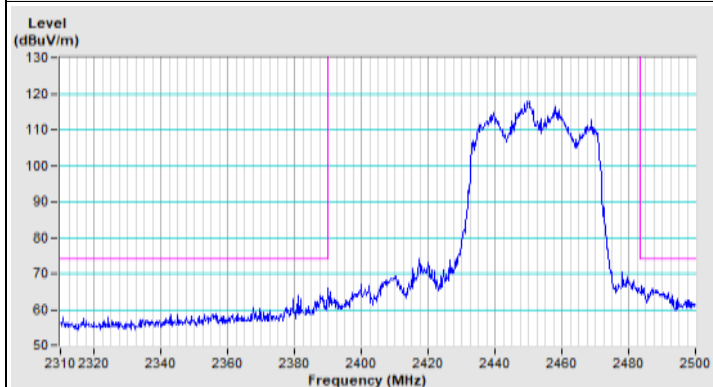
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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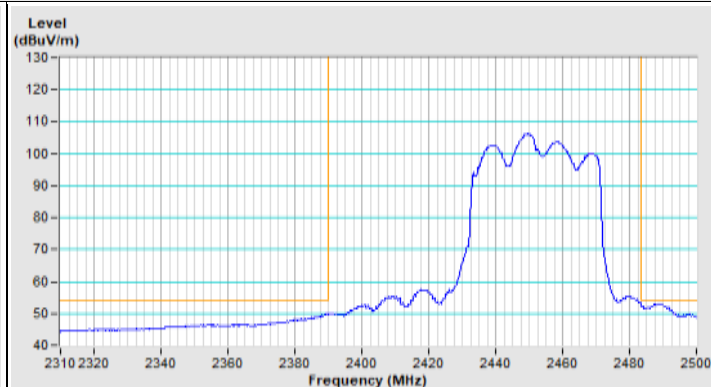
802.11ax (HE40) Channel 3



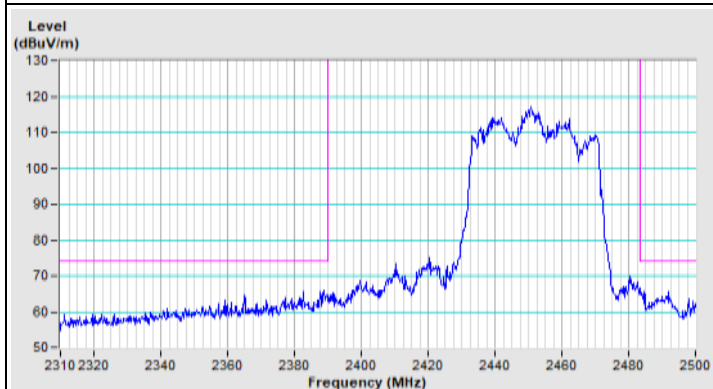
802.11ax (HE40) Channel 9



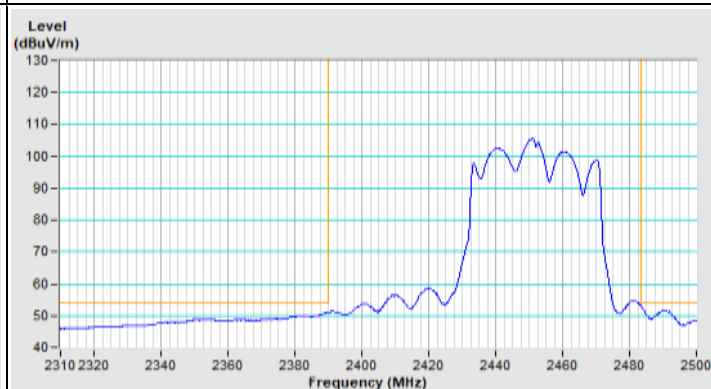
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



Vertical (Average)

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: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

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Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

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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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