

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFBELJ-WTW-P22080819

FCC ID: VBNNW6EAI-E

Product: Nokia DAC Wi-Fi 6E Indoor AP

Brand: Nokia

Model No.: NW6EAI-E

Received Date: 2022/8/31

Test Date: 2022/9/8 ~ 2022/10/27

Issued Date: 2023/2/16

Applicant: Nokia Solutions and Networks

Address: 3201 Olympus Blvd Dallas, Texas 75019 United States.

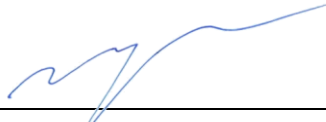
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FCC Registration / 723255 / TW2022

Designation Number:

Approved by:  , **Date:** 2023/2/16

May Chen / Manager

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Prepared by : Vito Lung / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBELJ-WTW-P22080819	Original release.	2023/2/16

1 Certificate

Product: Nokia DAC Wi-Fi 6E Indoor AP

Brand: Nokia

Test Model: NW6EAI-E

Sample Status: Engineering sample

Applicant: Nokia Solutions and Networks

Test Date: 2022/9/8 ~ 2022/10/27

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 -8.30 dB at 0.47031 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -10.7 dB at 907.78 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.3 dB at 4824.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.

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

2.1 Measurement Uncertainty

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

Measurement	Specification	Expanded Uncertainty (k=2) (±)
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.5 dB
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.5 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	Nokia DAC Wi-Fi 6E Indoor AP
Brand	Nokia
Test Model	NW6EAI-E
Status of EUT	Engineering sample
Power Supply Rating	12 Vdc from AC adapter or 56 Vdc from POE adapter
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 600 Mbps VHT: up to 800 Mbps 802.11ax: up to 1147.1 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):9
Output Power	CDD Mode 975.792 mW (29.89 dBm) Beamforming Mode 387.898 mW (25.89 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 refers 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	scan	3.9/5.8	2.4 to 2.49 /5.15 to 5.85	PIFA	ipex(MHF)
2	chain 1	3.1	2.4~2.4835	PIFA	ipex(MHF)
3	chain 2	4	2.4~2.4835	PIFA	ipex(MHF)
4	chain 3	4.1	2.4~2.4835	PIFA	ipex(MHF)
5	chain 0	5	2.4~2.4835	PIFA	ipex(MHF)
6	BLE	4.9	2.4~2.4835	PIFA	ipex(MHF)
7	chain 1	3.7	5.15~5.85	PIFA	ipex(MHF)
8	chain 3	4.8	5.15~5.85	PIFA	ipex(MHF)
9	chain 2	5.4	5.15~5.85	PIFA	ipex(MHF)
10	chain 0	5.4	5.15~5.85	PIFA	ipex(MHF)
11	chain 1	4.9	5.925~7.125	PIFA	ipex(MHF)
12	chain 3	6.8	5.925~7.125	PIFA	ipex(MHF)
13	chain 2	7.3	5.925~7.125	PIFA	ipex(MHF)
14	chain 0	6.9	5.925~7.125	PIFA	ipex(MHF)

Note: Max.gain was selected for the final test.

* 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	1Tx Fixed Chain 0	4RX
802.11g	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
VHT20	4TX	4RX
VHT40	4TX	4RX
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
802.11ax (RU242/484)	4TX	4RX
	4TX	4RX

Note:

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

3.3 Channel List

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

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

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

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

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. The AC Adapter/POE Adapter has the following models: WA-30P12FU/ADP-36PR B. Pre-scan these models of AC Adaptor/POEs and find the worst case as a representative test condition. 2. EUT can be used in the following ways: Lying/ Wall Mount. 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. AC Adapter Worst Condition: ADP-36PR B 2. Lying/ Wall Mount Worst Condition: Wall Mount

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

Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter	Remark
RF Output Power	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s	-
	802.11g	CDD	1, 6, 11	BPSK	6Mb/s	-
	VHT20	CDD & Beamforming	1, 6, 11	BPSK	MCS0	-
	VHT40	CDD & Beamforming	3, 6, 9	BPSK	MCS0	-
	802.11ax (HE20)	CDD & Beamforming	1, 6, 11	BPSK	MCS0	-
	802.11ax (HE40)	CDD & Beamforming	3, 6, 9	BPSK	MCS0	-
	20MHz RU242 2.4G	CDD & Beamforming	1, 6, 11	BPSK	MCS0	HE20_(RU52)*4
	40MHz RU484 2.4G	CDD & Beamforming	3, 6, 9	BPSK	MCS0	HE40_(RU52)*8
6 dB Bandwidth / Conducted Out of Band Emissions	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s	-
	802.11g	CDD	1, 6, 11	BPSK	6Mb/s	-
	802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0	-
	802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0	-
AC Power Conducted Emissions	802.11ax (HE20)	CDD	1	BPSK	MCS0	-
Power Spectral Density	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s	-
	802.11g	CDD	1, 6, 11	BPSK	6Mb/s	-
	802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0	-
	802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0	-
Unwanted Emissions below 1 GHz	802.11ax (HE20)	CDD	1	BPSK	MCS0	-

Unwanted Emissions above 1 GHz	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s	-
	802.11g	CDD	1, 6, 11	BPSK	6Mb/s	-
	802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0	-
	802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0	-

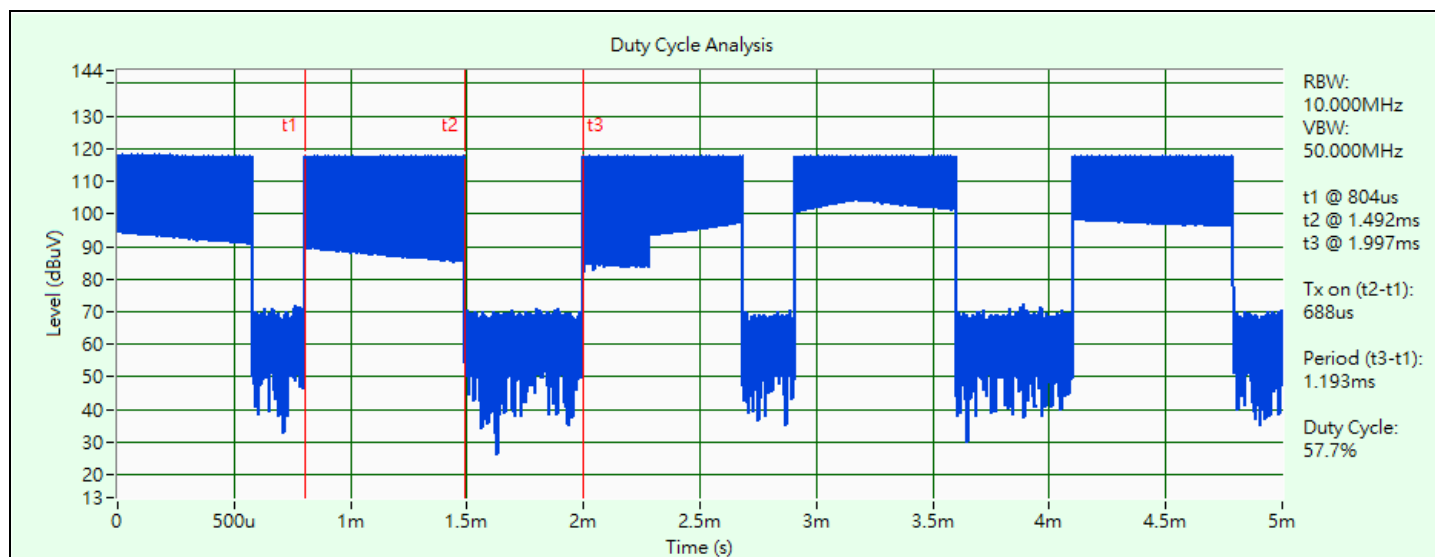
3.5 Duty Cycle of Test Signal

802.11b: Duty cycle = $0.688 \text{ ms} / 1.193 \text{ ms} \times 100\% = 57.7\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 2.39 \text{ dB}$

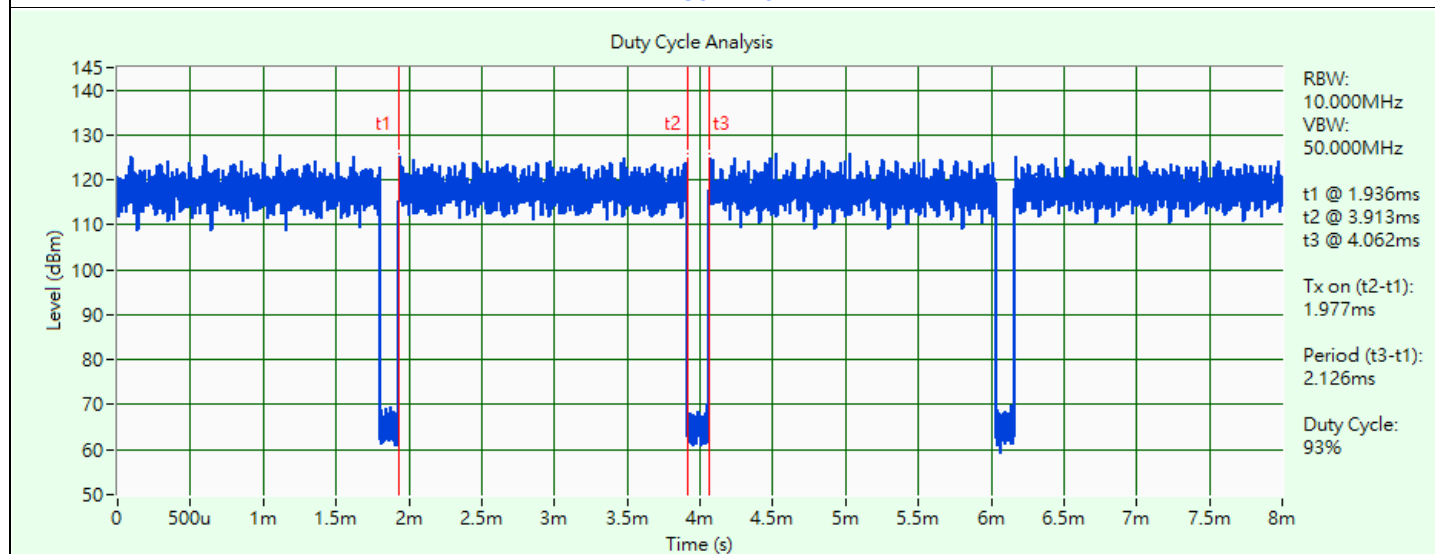
802.11g: Duty cycle = $1.977 \text{ ms} / 2.126 \text{ ms} \times 100\% = 93.0\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.32 \text{ dB}$

802.11ax (HE20): Duty cycle = $5.452 \text{ ms} / 5.747 \text{ ms} \times 100\% = 94.9\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.23 \text{ dB}$

802.11ax (HE40): Duty cycle = $5.453 \text{ ms} / 5.737 \text{ ms} \times 100\% = 95.0\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.22 \text{ dB}$

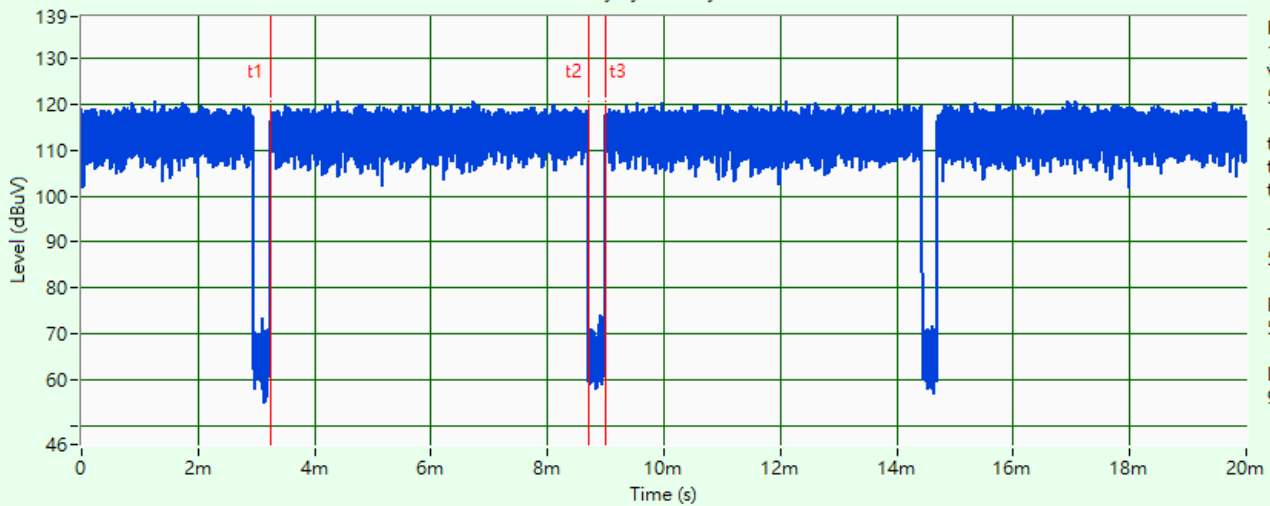


802.11b



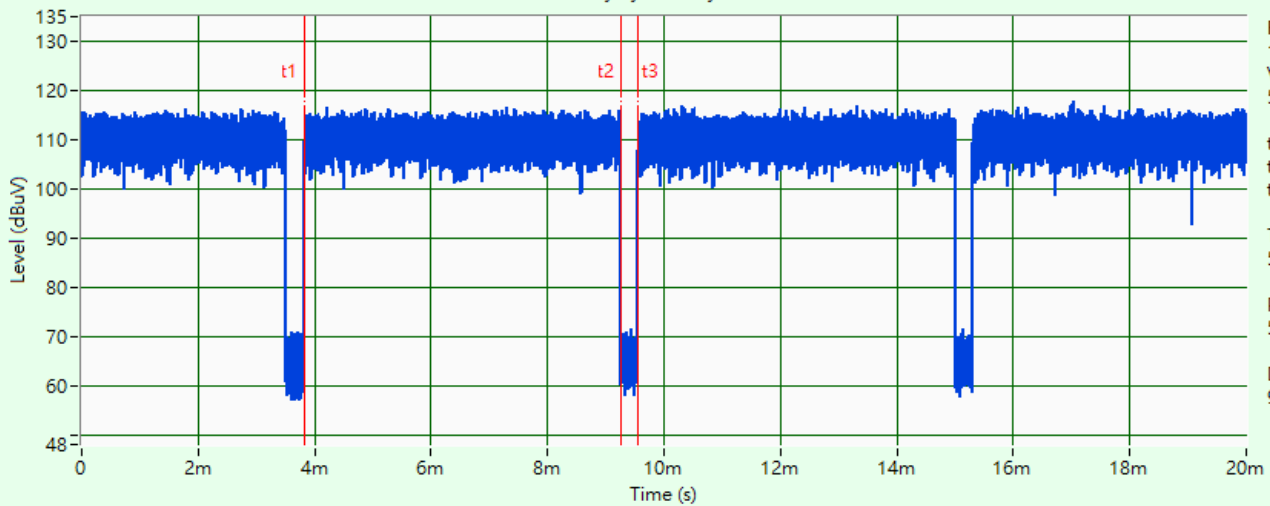
802.11g

Duty Cycle Analysis



802.11ax (HE20)

Duty Cycle Analysis



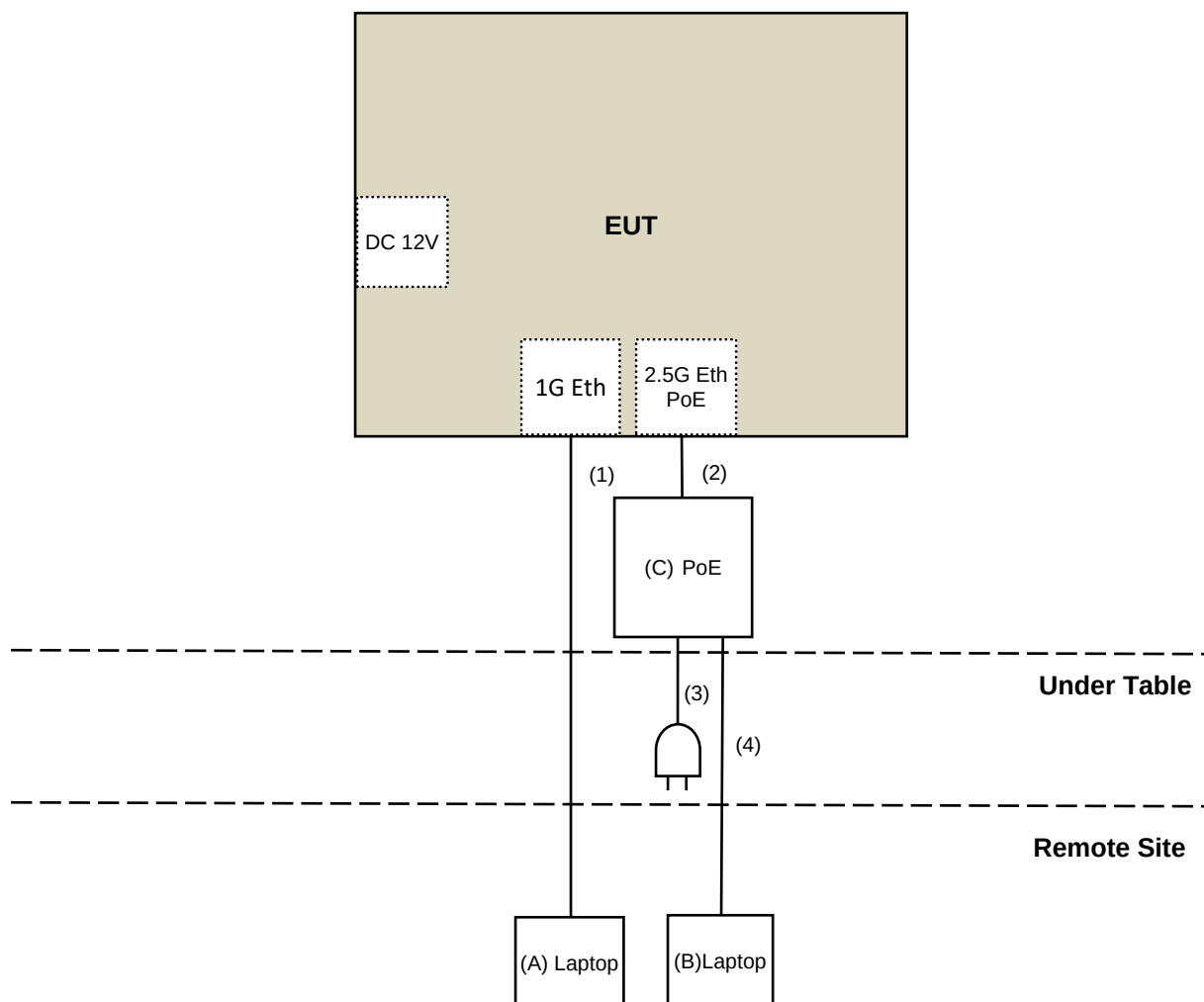
802.11ax (HE40)

3.6 Test Program Used and Operation Descriptions

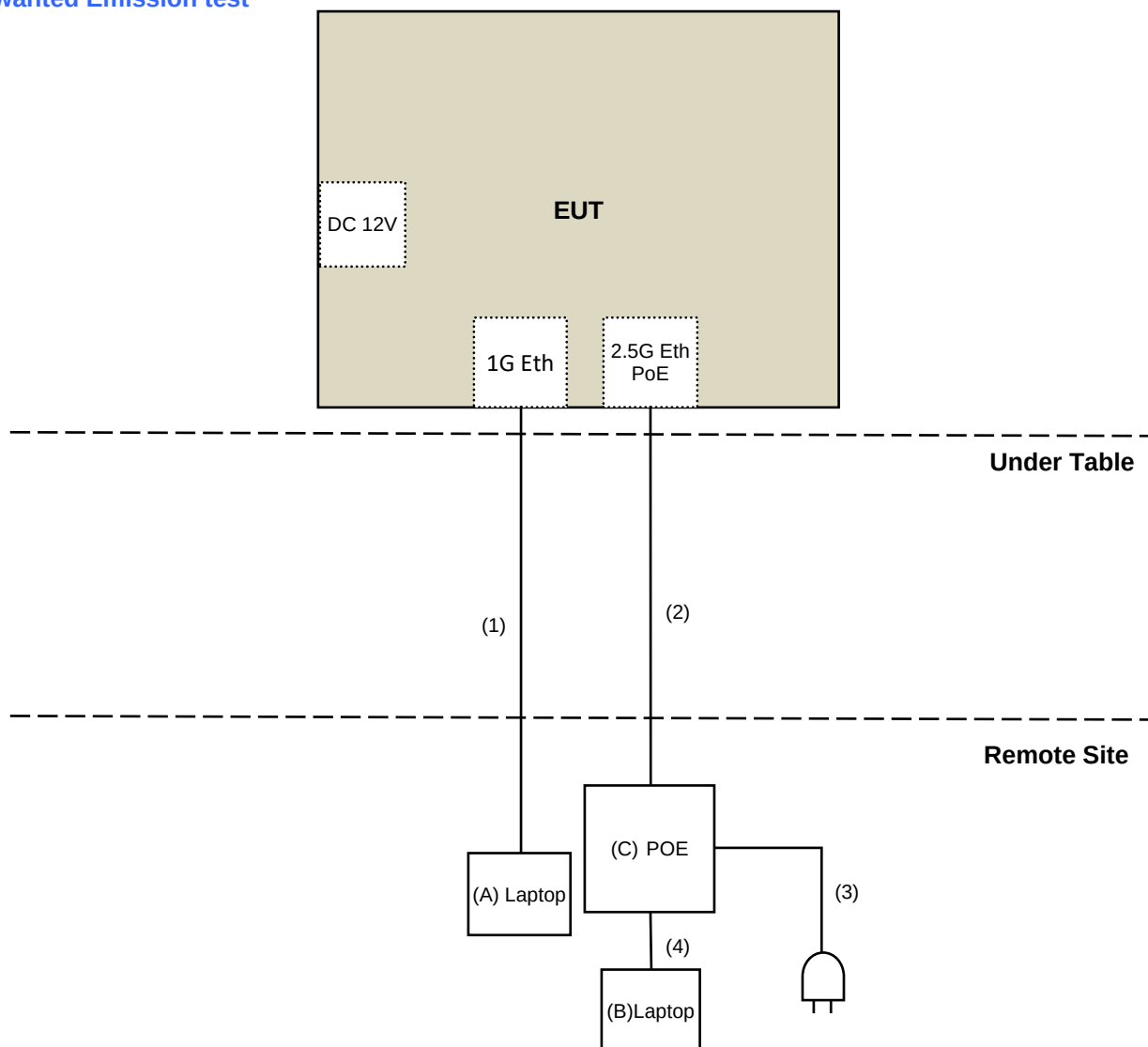
Controlling software (qdart_conn.win.1.0_installer_00082.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For AC Power Conducted Emission test



For Unwanted Emission test



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Supplied by applicant
B	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	N/A	Supplied by applicant
C	POE Adapter	DELTA ELECTRONICS, INC.	ADH-45AR B	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	10	No	0	Provided by Lab
2	RJ-45 Cable	1	1.5	No	0	Provided by Lab
3	AC Cable	1	1.8	No	0	Provided by Lab
4	RJ-45 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
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: 2022/10/15

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 R&S	FSV40	101516	2022/3/7	2023/3/6

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/10/15

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	2021/10/29	2022/10/28
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: 2022/10/27

4.6 Unwanted Emissions below 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
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-03	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	980701	2022/3/8	2023/3/7
RF Coaxial Cable COMMATE/PEWC	8D	966-4-1	2022/3/8	2023/3/7
		966-4-2	2022/3/8	2023/3/7
		966-4-3	2022/3/8	2023/3/7
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
Test Receiver Agilent	N9038A	MY51210202	2021/11/19	2022/11/18
Trilog Broadband Antenna Schwarzbeck	VULB 9168	9168-406	2022/10/21	2023/10/20

Notes:

1. The test was performed in 966 Chamber No. 4.
2. Tested Date: 2022/10/27

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-783	2021/11/14	2022/11/13
	BBHA 9170	9170-739	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC 12630 SE	980638	2022/4/5	2023/4/4
	EMC184045SE	980387	2022/1/10	2023/1/9
RF Cable-Frequency Range : 1- 26.5GHz EMCI	EMC104-SM-SM-1200	160922	2021/12/24	2022/12/23
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-2000	180502	2022/4/25	2023/4/24
	EMC104-SM-SM-6000	210704	2021/11/9	2022/11/8
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Test Receiver Agilent	N9038A	MY51210202	2021/11/19	2022/11/18

Notes:

1. The test was performed in 966 Chamber No. 4.
2. Tested Date: 2022/9/8 ~ 2022/10/14

5 Limits of Test Items

5.1 RF Output Power

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

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

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

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

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

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

5.2 Power Spectral Density

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

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

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

5.5 AC Power Conducted Emissions

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

Notes:

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

5.6 Unwanted Emissions below 1 GHz

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

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

Notes:

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

5.7 Unwanted Emissions above 1 GHz

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

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

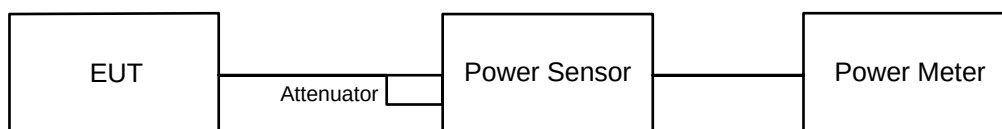
Notes:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



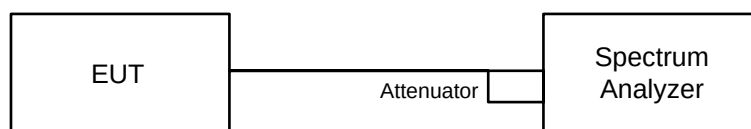
6.1.2 Test Procedure

Average Power:

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

6.2 Power Spectral Density

6.2.1 Test Setup



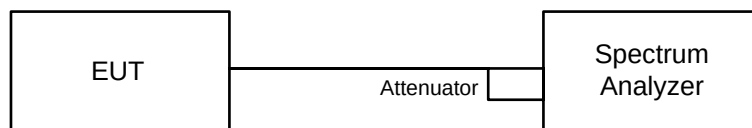
6.2.2 Test Procedure

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

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

6.3 6 dB Bandwidth

6.3.1 Test Setup

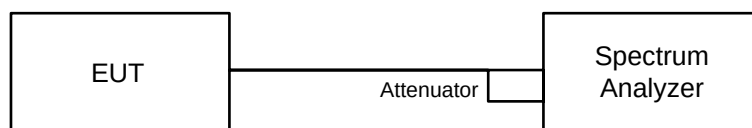


6.3.2 Test Procedure

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

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

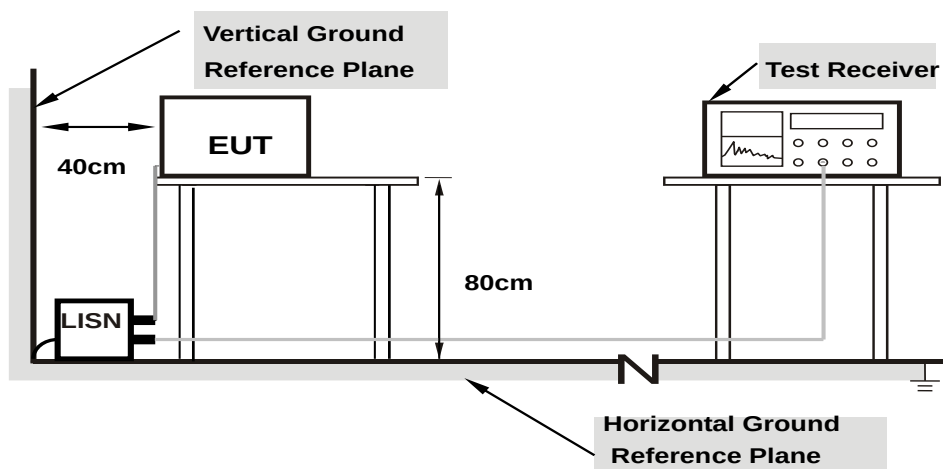
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

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

6.5 AC Power Conducted Emissions

6.5.1 Test Setup



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

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

6.5.2 Test Procedure

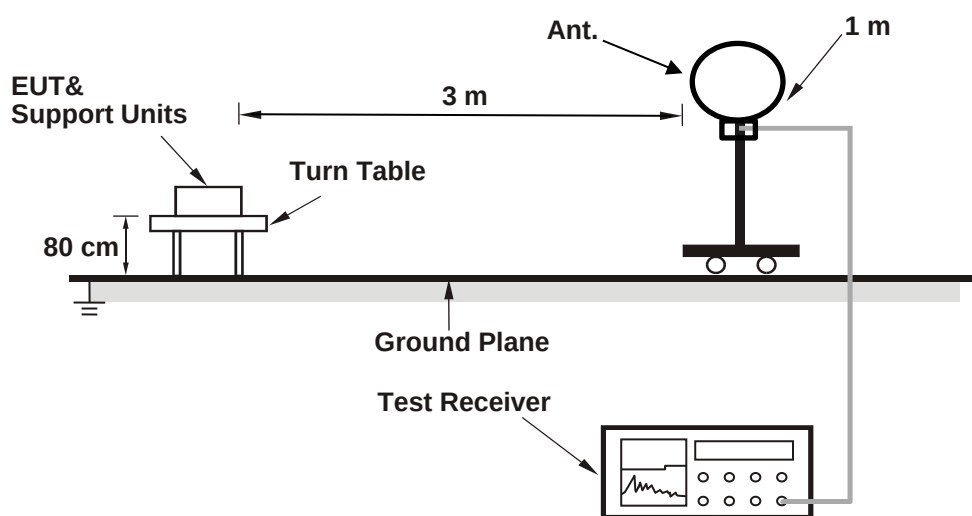
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The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

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

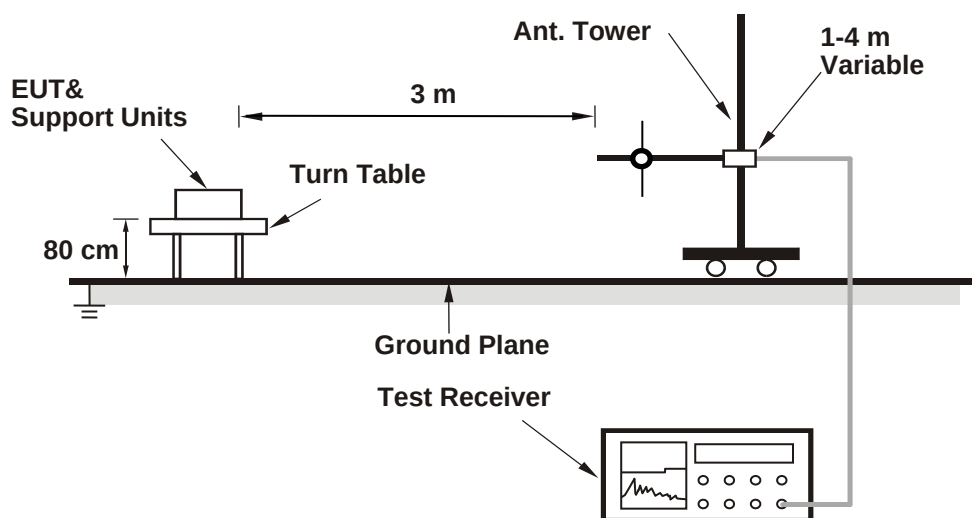
6.6 Unwanted Emissions below 1 GHz

6.6.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.6.2 Test Procedure

For Radiated emission below 30 MHz

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

Notes:

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

For Radiated emission above 30 MHz

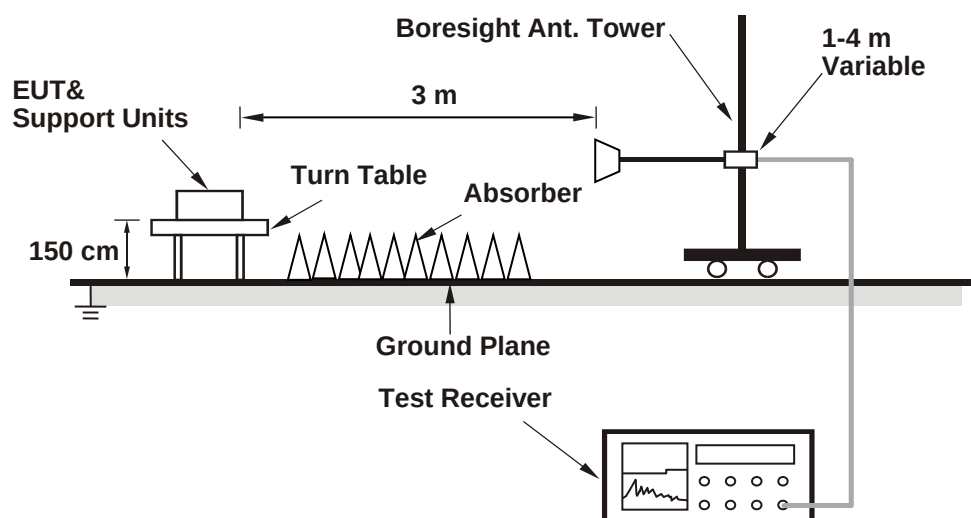
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the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

Notes:

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

6.7 Unwanted Emissions above 1 GHz

6.7.1 Test Setup



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

6.7.2 Test Procedure

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

Notes:

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

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng
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802.11b

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
1	2412	142.889	21.55	30	Pass
6	2437	343.558	25.36	30	Pass
11	2462	145.211	21.62	30	Pass

Note: The antenna gain is 5 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	Chain 2	Chain 3				
1	2412	20.12	21.00	21.00	21.00	480.479	26.82	30	Pass
6	2437	23.94	23.87	23.77	23.91	975.792	29.89	30	Pass
11	2462	20.02	20.15	20.05	20.18	409.365	26.12	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5 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	Chain 2	Chain 3				
1	2412	20.01	19.85	19.76	19.88	388.734	25.90	30	Pass
6	2437	23.82	23.77	23.64	23.75	947.566	29.77	30	Pass
11	2462	19.98	20.02	19.88	20.01	397.507	25.99	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5 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	Chain 2	Chain 3				
3	2422	19.86	19.90	19.65	19.78	381.869	25.82	30	Pass
6	2437	20.45	20.32	20.22	20.38	432.904	26.36	30	Pass
9	2452	16.68	17.01	16.48	16.79	189.009	22.76	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5 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	Chain 2	Chain 3				
1	2412	20.06	19.92	19.87	20.01	396.847	25.99	30	Pass
6	2437	23.94	23.81	23.71	23.85	965.803	29.85	30	Pass
11	2462	20.05	20.15	20.03	20.13	408.404	26.11	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5 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	Chain 2	Chain 3				
3	2422	19.91	19.96	19.74	19.90	388.945	25.90	30	Pass
6	2437	20.57	20.36	20.30	20.46	440.993	26.44	30	Pass
9	2452	16.79	17.10	16.51	16.95	193.355	22.86	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) CDD RU242

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	20.00	19.62	19.46	19.74	374.119	25.73	30	Pass
6	2437	23.98	23.21	23.40	23.80	918.105	29.63	30	Pass
11	2462	19.57	19.98	20.06	19.77	386.347	25.87	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40) CDD RU484

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	19.75	19.84	19.60	19.67	374.673	25.74	30	Pass
6	2437	20.36	20.01	20.08	20.47	422.162	26.25	30	Pass
9	2452	16.72	16.83	16.32	16.66	184.384	22.66	30	Pass

Notes:

- Directional gain is the maximum gain of antennas.
- The maximum gain is 5 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	Chain 2	Chain 3				
1	2412	19.54	19.32	19.24	19.35	345.502	25.38	25.90	Pass
6	2437	19.42	19.43	19.36	19.72	355.253	25.51	25.90	Pass
11	2462	19.49	19.52	19.71	19.77	366.839	25.64	25.90	Pass

Notes:

- Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}} + 10^{\text{Chain2/20}} + 10^{\text{Chain3/20}})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (10.1 - 6) = 25.90$ 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	Chain 2	Chain 3				
3	2422	19.43	19.48	19.22	19.34	345.877	25.39	25.90	Pass
6	2437	19.25	19.33	19.38	19.67	349.222	25.43	25.90	Pass
9	2452	16.68	17.01	16.48	16.79	189.009	22.76	25.90	Pass

Notes:

- Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}} + 10^{\text{Chain2/20}} + 10^{\text{Chain3/20}})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (10.1 - 6) = 25.90$ 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	Chain 2	Chain 3				
1	2412	19.58	19.44	19.35	19.53	354.527	25.50	25.90	Pass
6	2437	19.64	19.65	19.62	19.95	374.779	25.74	25.90	Pass
11	2462	19.76	19.75	19.92	20.03	387.898	25.89	25.90	Pass

Notes:

- Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}} + 10^{\text{Chain2/20}} + 10^{\text{Chain3/20}})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (10.1 - 6) = 25.90$ 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	Chain 2	Chain 3				
3	2422	19.50	19.54	19.33	19.51	354.109	25.49	25.90	Pass
6	2437	19.29	19.35	19.55	19.78	356.235	25.52	25.90	Pass
9	2452	16.79	17.10	16.51	16.95	193.355	22.86	25.90	Pass

Notes:

- Directional gain = $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}} + 10^{\text{Chain2/20}} + 10^{\text{Chain3/20}})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (10.1 - 6) = 25.90$ dBm.

802.11ax (HE20) Beamforming RU242

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	19.52	19.41	19.30	19.48	350.663	25.45	25.90	Pass
6	2437	19.69	19.61	19.08	19.50	354.557	25.50	25.90	Pass
11	2462	19.44	19.78	19.87	19.75	374.42	25.73	25.90	Pass

Notes:

- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (10.1 - 6) = 25.90$ dBm.

802.11ax (HE40) Beamforming RU484

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	19.24	19.29	19.09	19.28	334.683	25.25	25.90	Pass
6	2437	19.22	19.28	19.50	19.72	351.164	25.46	25.90	Pass
9	2452	16.41	16.96	16.44	16.52	182.341	22.61	25.90	Pass

Notes:

- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the output power limit shall be reduced to $30 - (10.1 - 6) = 25.90$ dBm.

7.2 Power Spectral Density

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng
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802.11b

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)	Duty Factor (dB)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-10.83	2.39	-8.44	8.00	Pass
6	2437	-6.6	2.39	-4.21	8.00	Pass
11	2462	-10.08	2.39	-7.69	8.00	Pass

Note: The antenna gain is 5 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	-14.58	-14.08	-13.89	-13.85	0.32	-7.75	3.90	Pass
6	2437	-10.21	-10.53	-10.14	-10.73	0.32	-4.06	3.90	Pass
11	2462	-13.86	-13.80	-13.92	-13.45	0.32	-7.42	3.90	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (10.1 - 6) = 3.90$ dBm/3kHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
1	2412	-15.90	-15.77	-15.34	-15.47	0.23	-9.36	3.90	Pass
6	2437	-11.38	-11.81	-12.18	-12.04	0.23	-5.59	3.90	Pass
11	2462	-15.72	-15.42	-15.21	-14.65	0.23	-8.98	3.90	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (10.1 - 6) = 3.90$ dBm/3kHz.

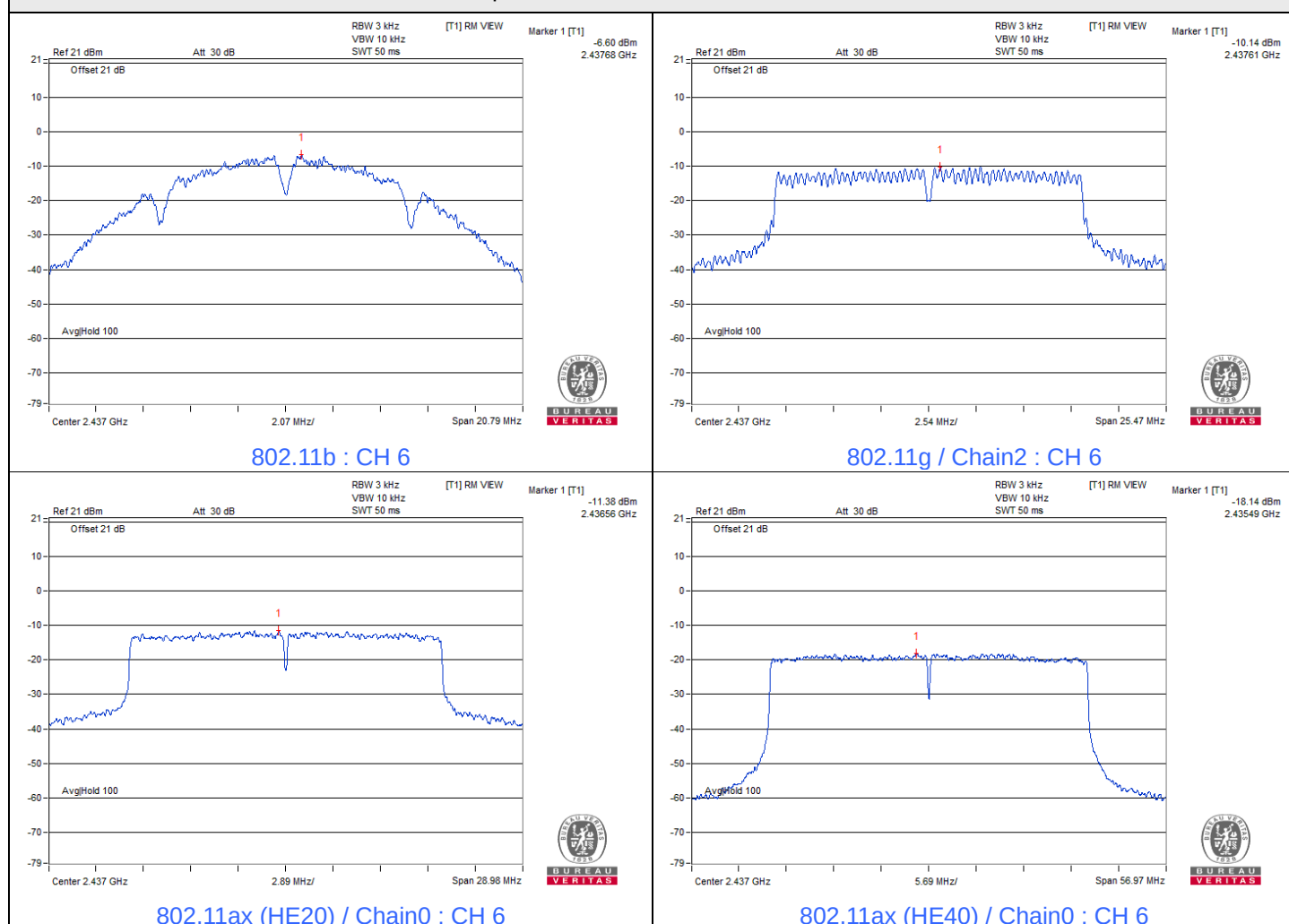
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)				Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3				
3	2422	-18.44	-18.30	-18.17	-18.80	0.22	-12.18	3.90	Pass
6	2437	-18.14	-18.45	-18.60	-18.57	0.22	-12.20	3.90	Pass
9	2452	-21.22	-21.27	-20.58	-20.35	0.22	-14.60	3.90	Pass

Notes:

- Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
- Directional gain = $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20} + 10^{\text{Chain2}/20} + 10^{\text{Chain3}/20})^2 / 4]$
- The directional gain is 10.1 dBi > 6 dBi, so the power density limit shall be reduced to $8 - (10.1 - 6) = 3.90$ dBm/3kHz.

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng
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802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2412	8.07	0.5	Pass
6	2437	8.07	0.5	Pass
11	2462	7.97	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	16.31	16.31	16.01	16.33	0.5	Pass
6	2437	16.07	16.05	16.32	16.33	0.5	Pass
11	2462	16.07	16.04	16.08	16.07	0.5	Pass

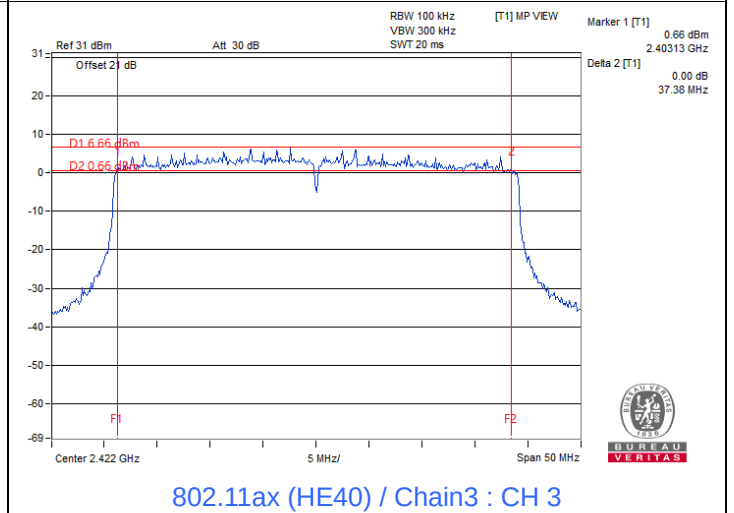
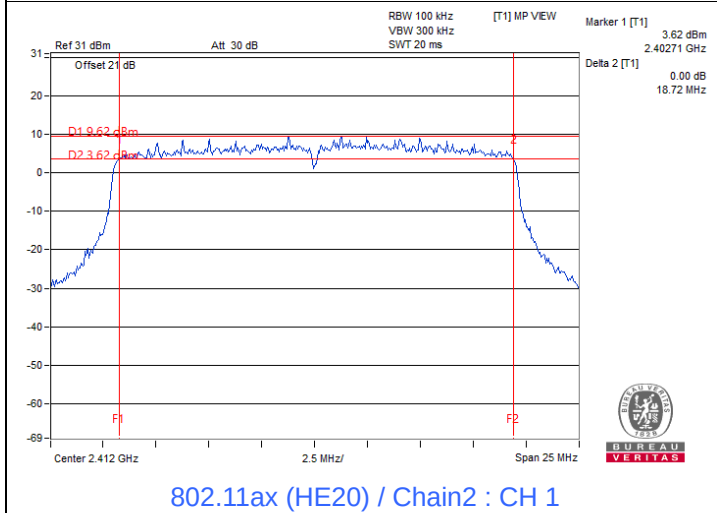
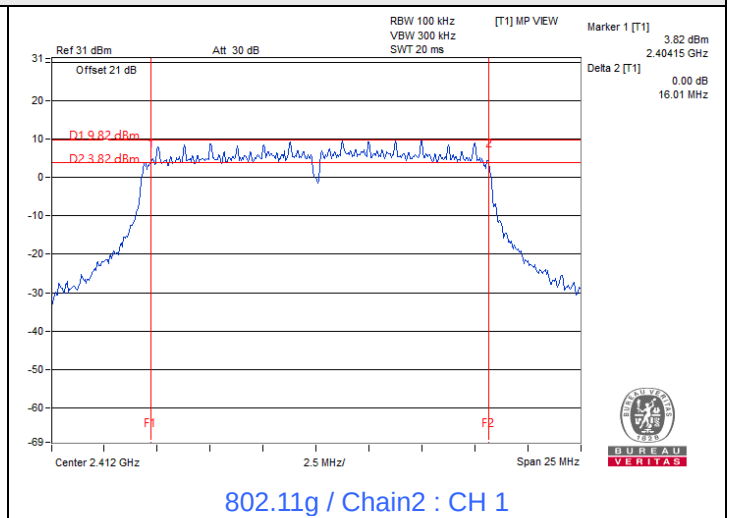
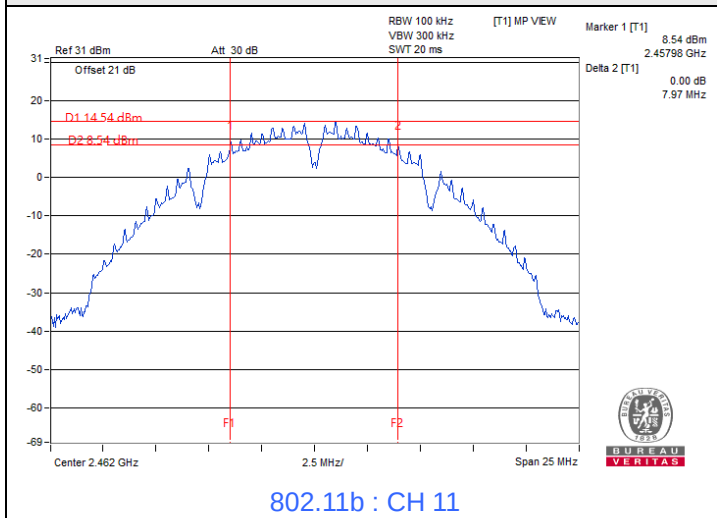
802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
1	2412	18.73	18.94	18.72	18.85	0.5	Pass
6	2437	18.93	18.74	18.86	18.91	0.5	Pass
11	2462	18.99	18.92	18.77	18.75	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)				Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1	Chain 2	Chain 3		
3	2422	37.85	37.72	37.84	37.38	0.5	Pass
6	2437	38.06	38.06	38.15	38.09	0.5	Pass
9	2452	37.89	38.04	37.72	37.48	0.5	Pass

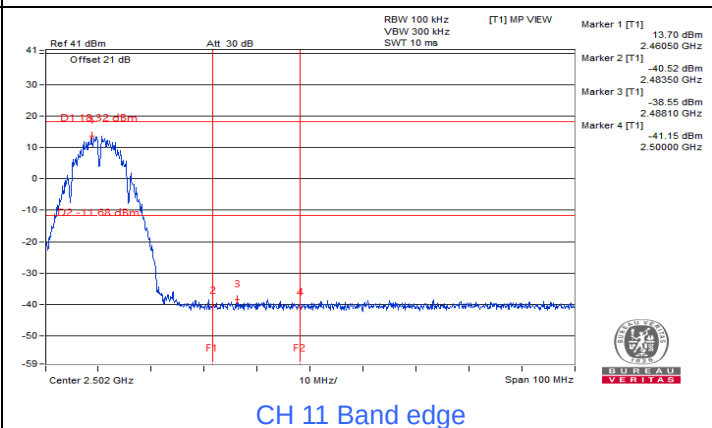
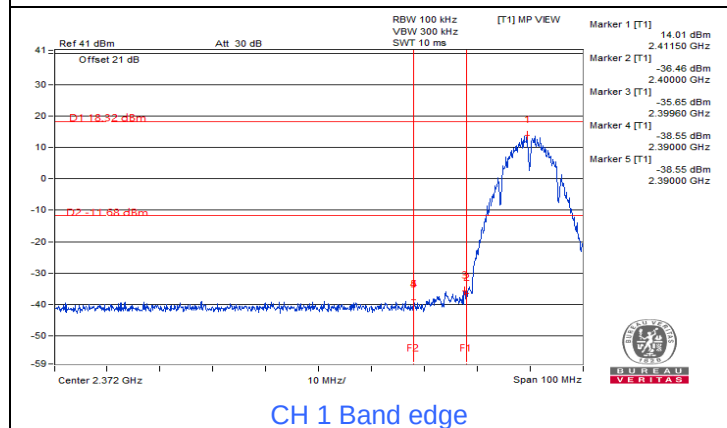
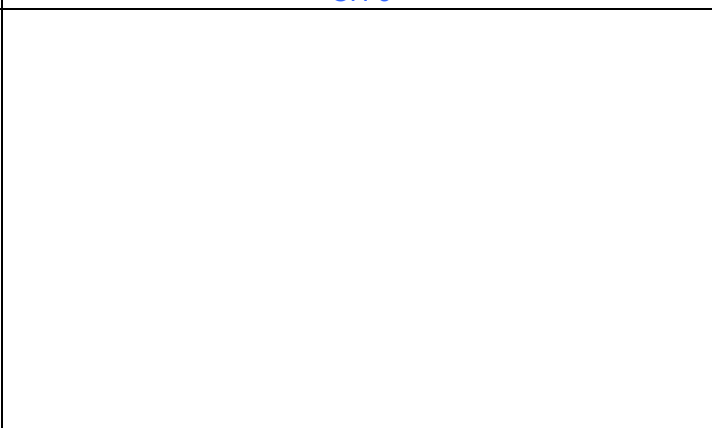
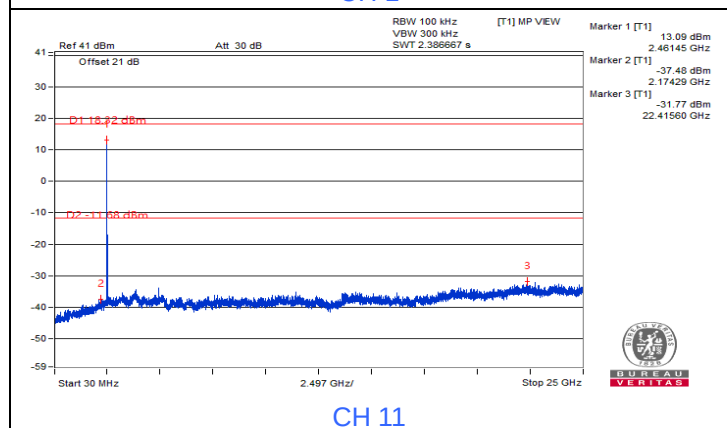
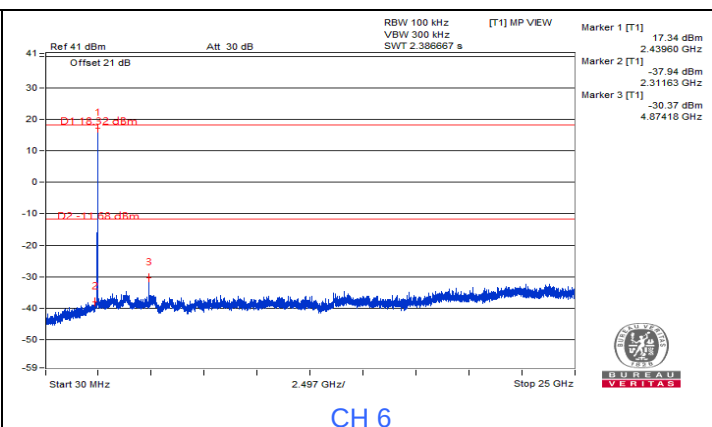
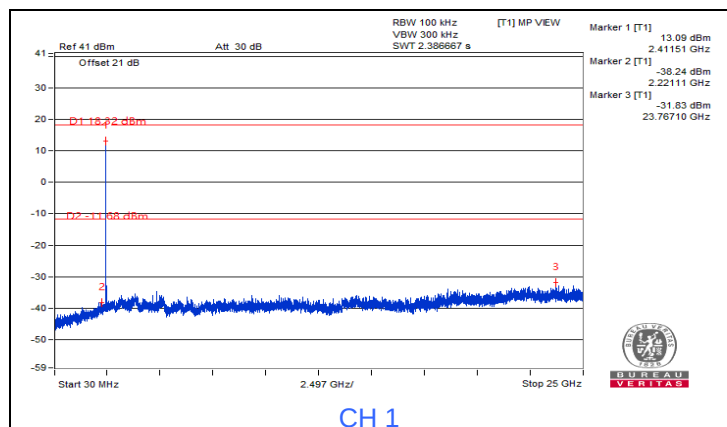
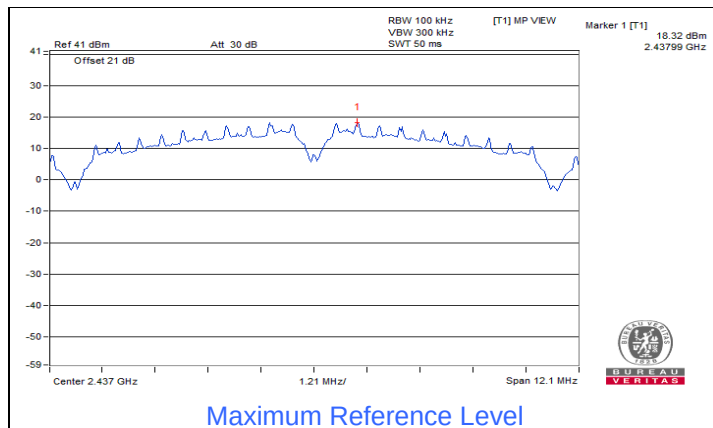
Spectrum Plot of Minimum Value



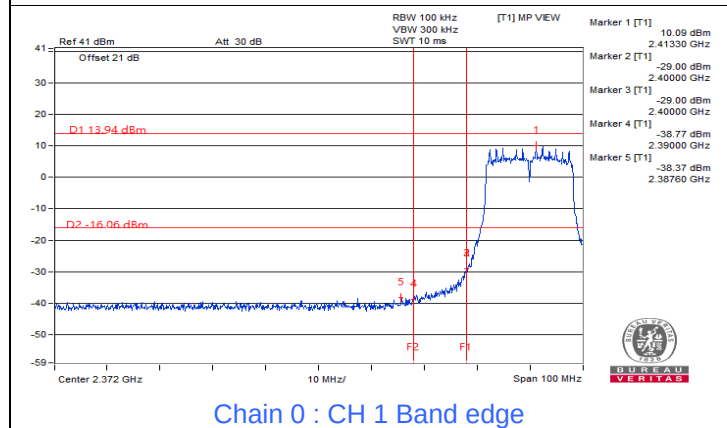
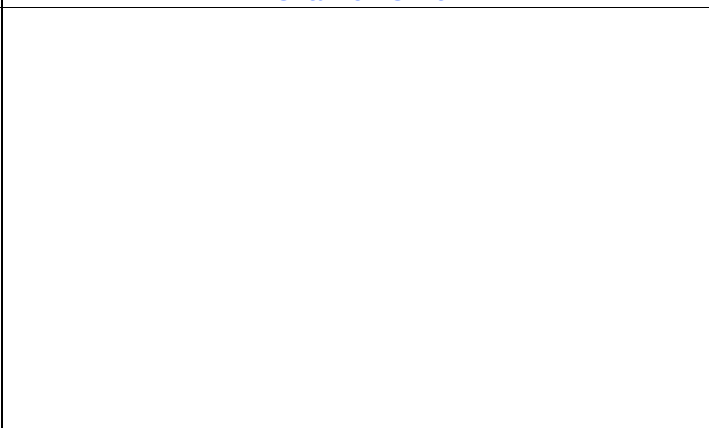
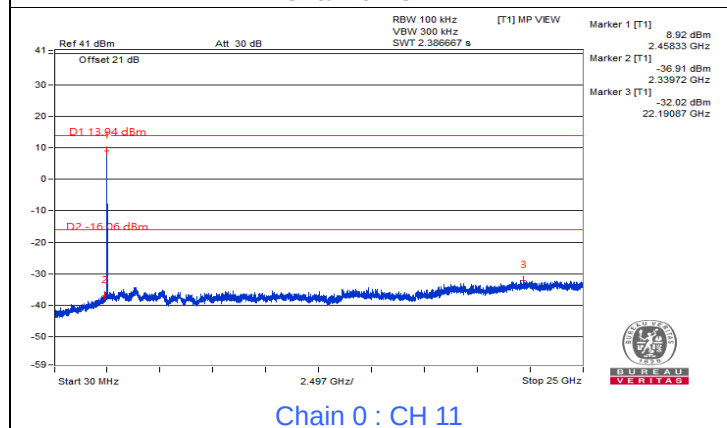
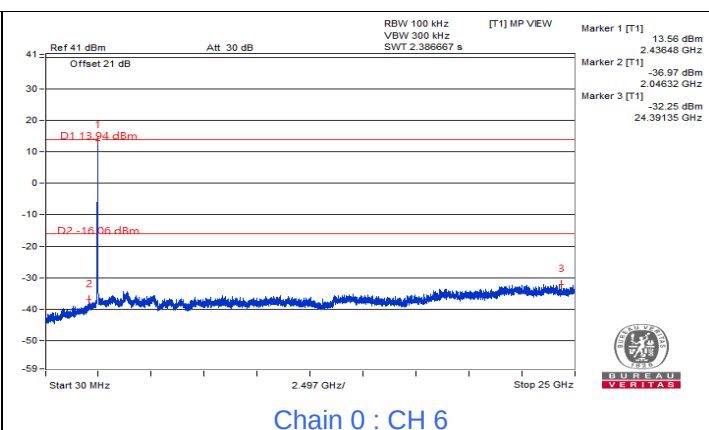
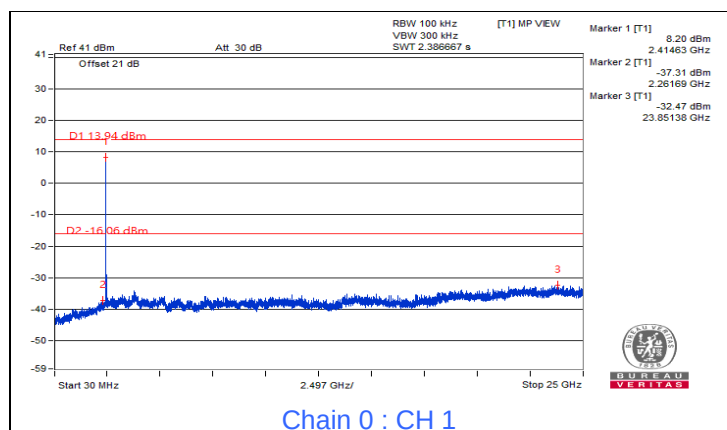
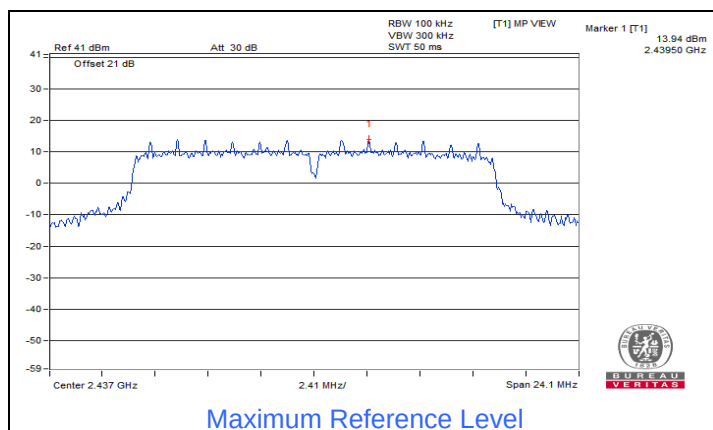
7.4 Conducted Out of Band Emissions

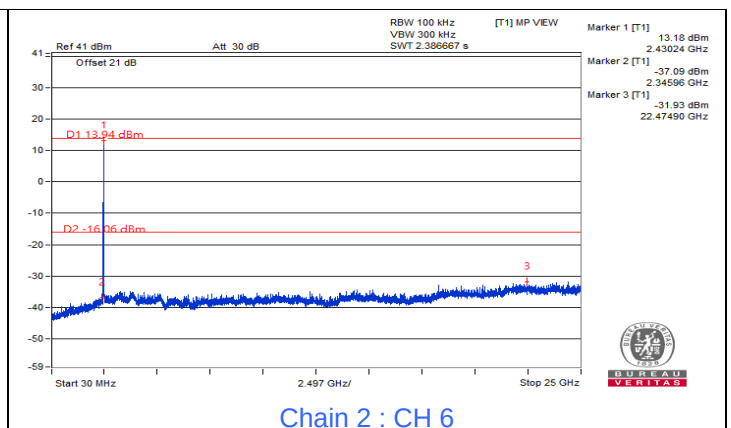
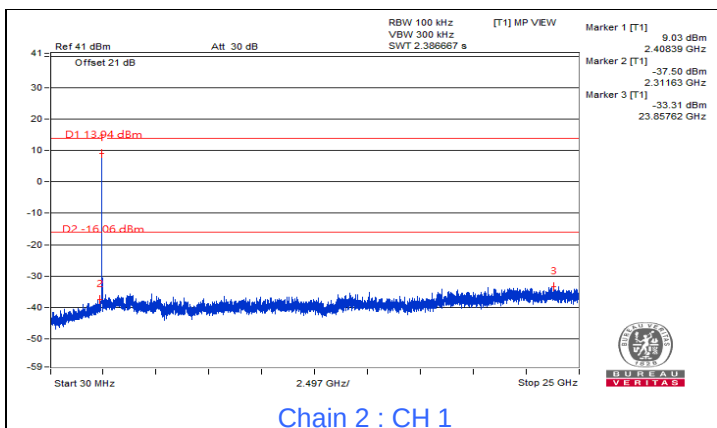
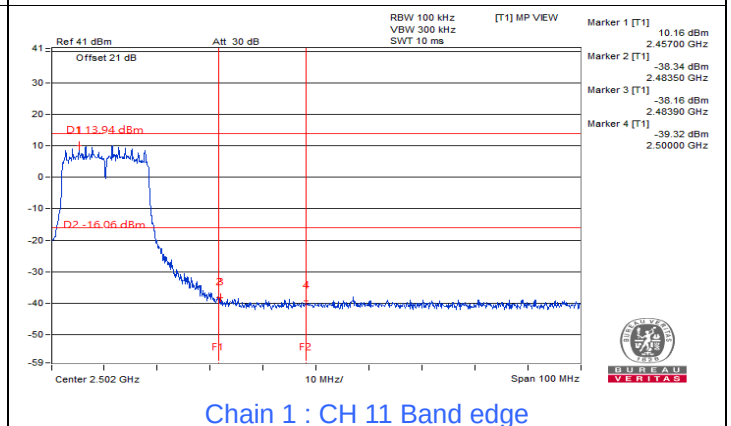
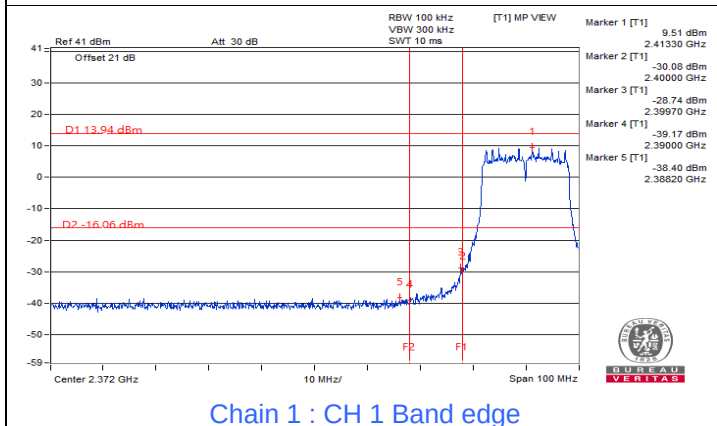
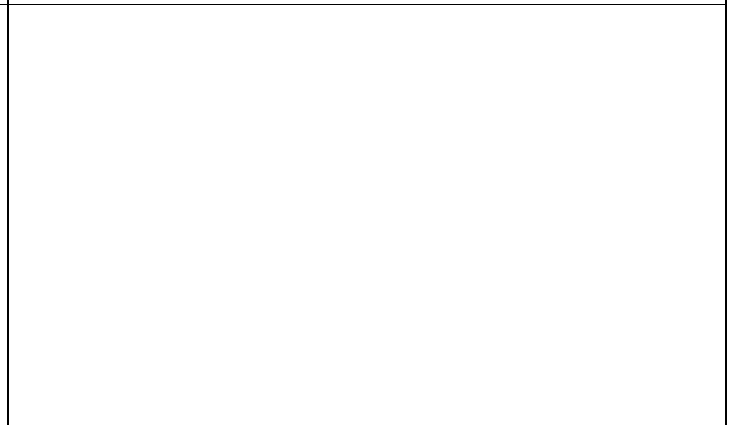
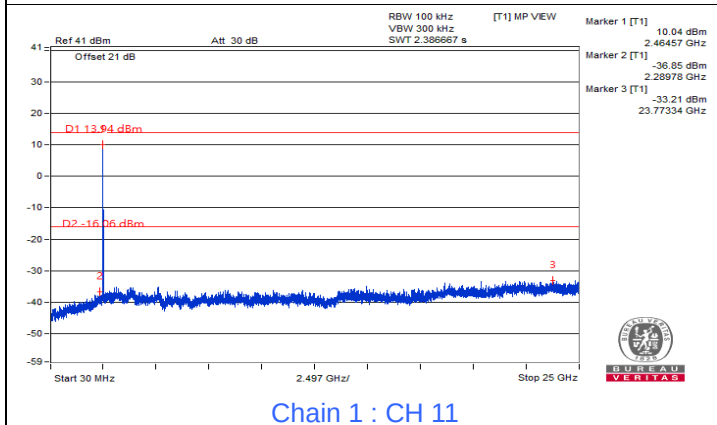
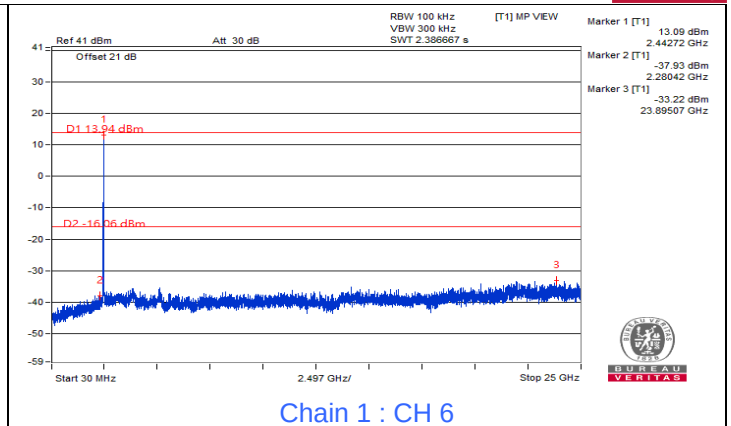
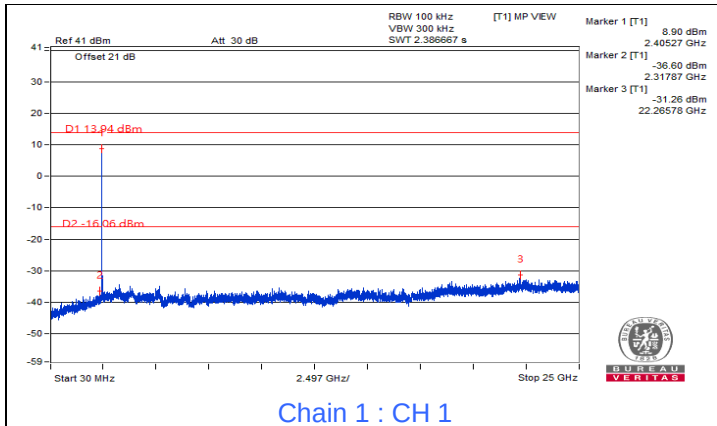
Input Power:	12 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	John Peng
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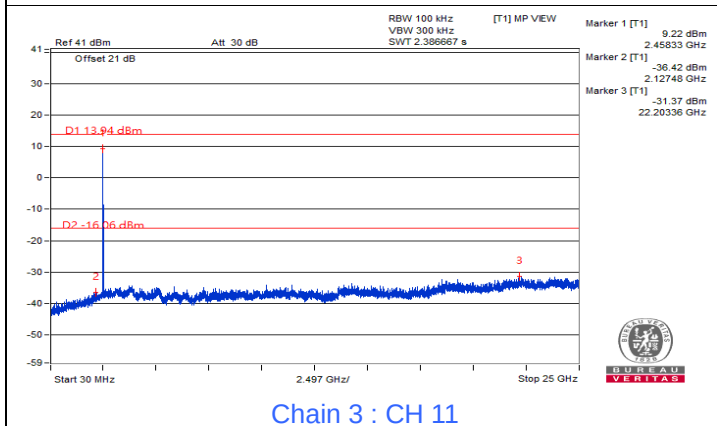
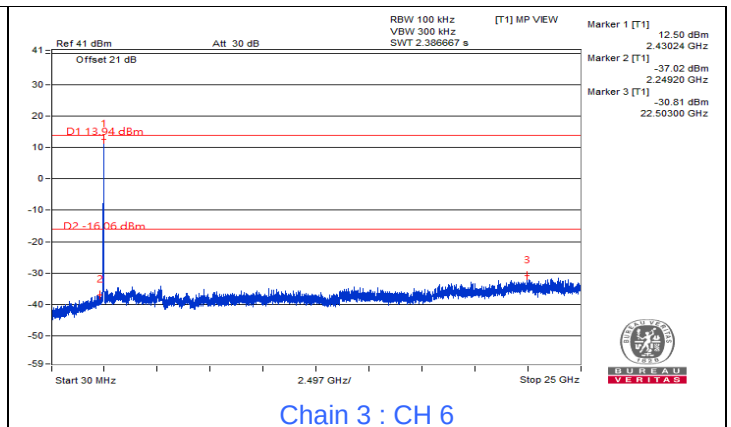
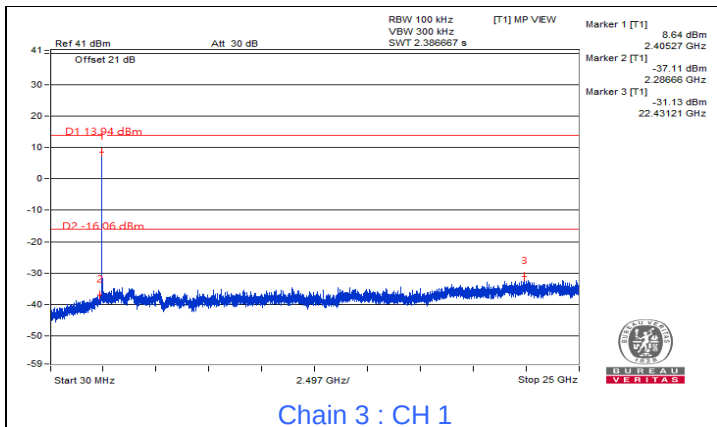
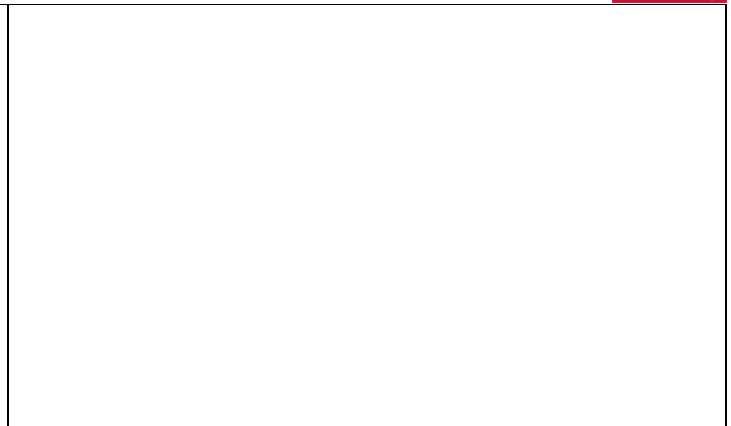
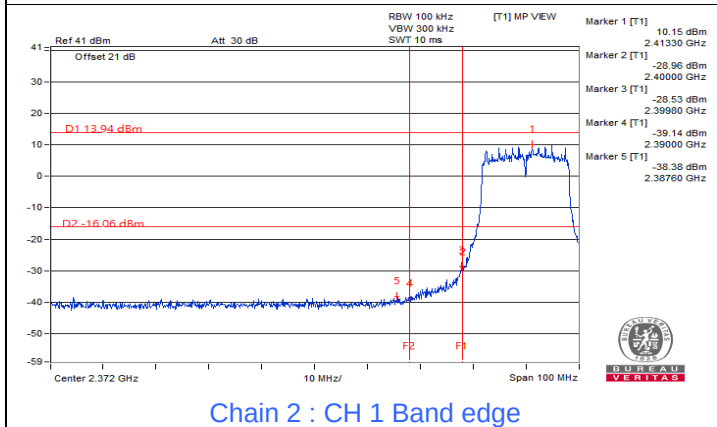
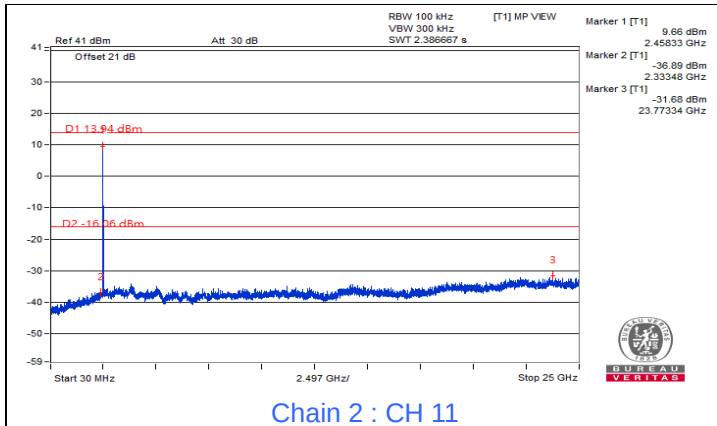
802.11b

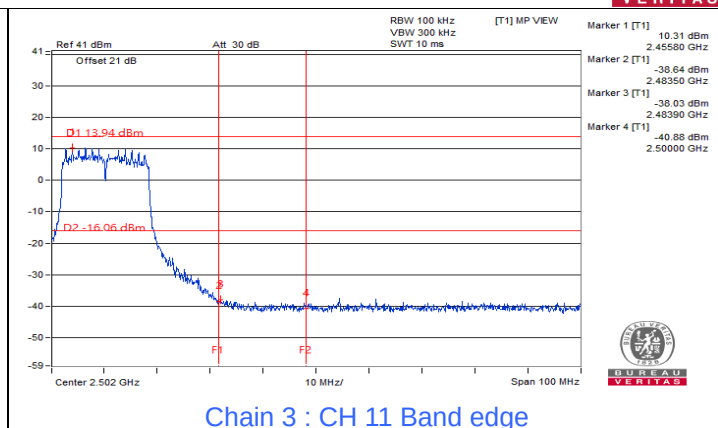
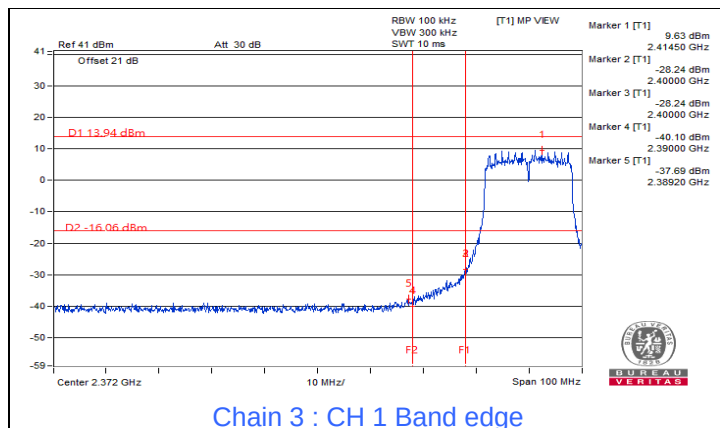


802.11g

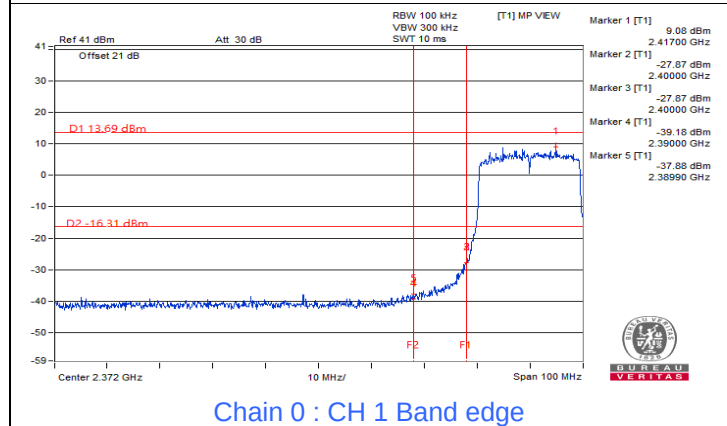
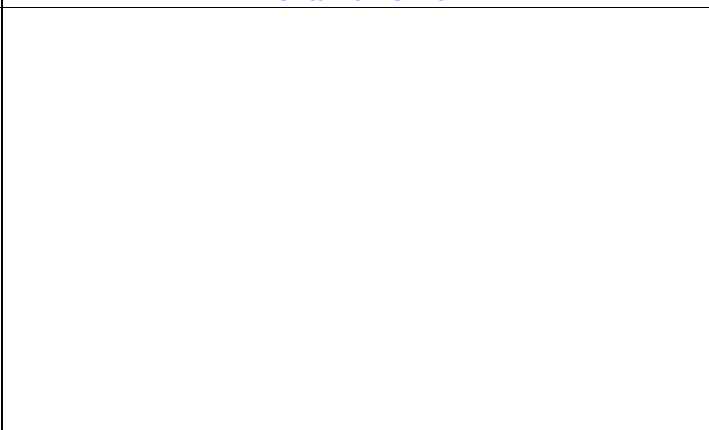
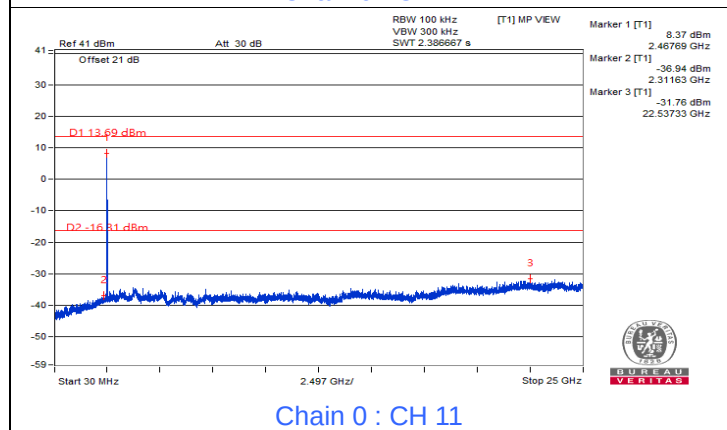
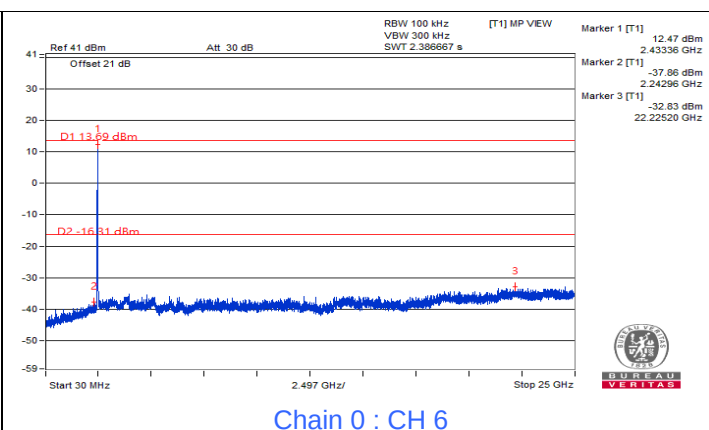
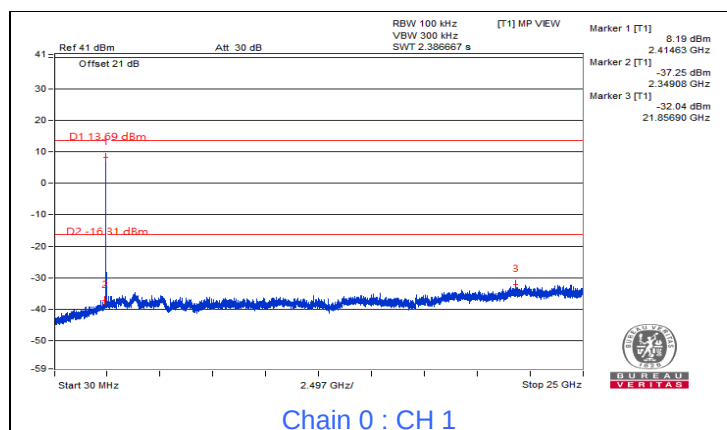
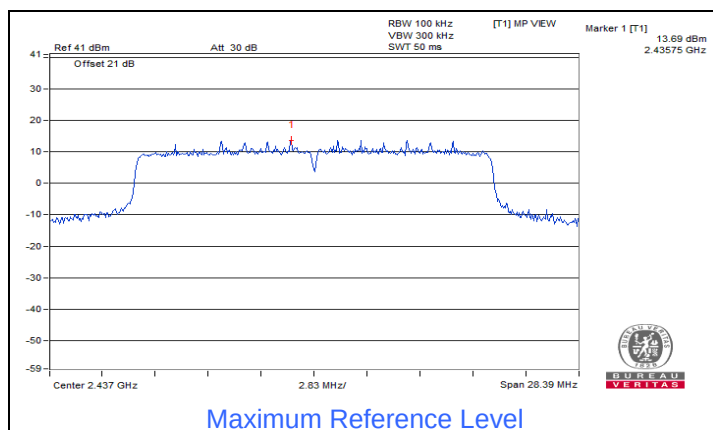


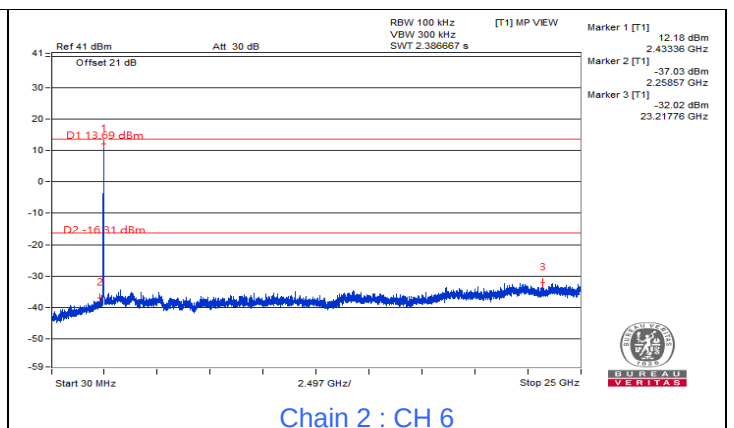
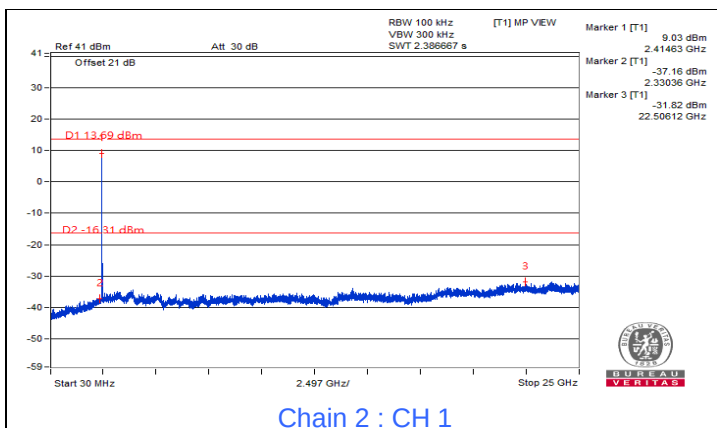
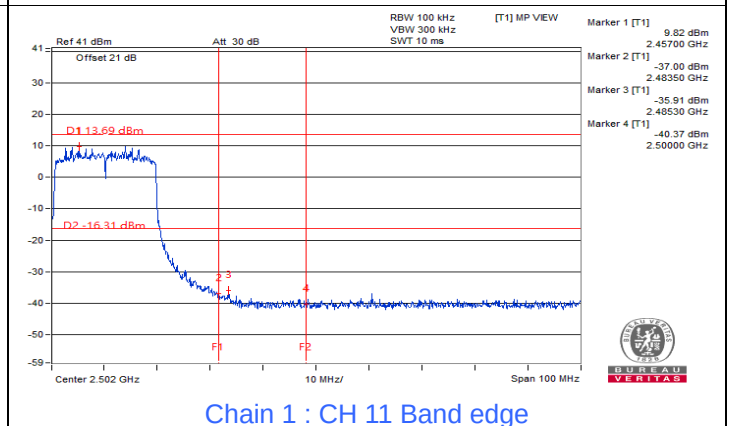
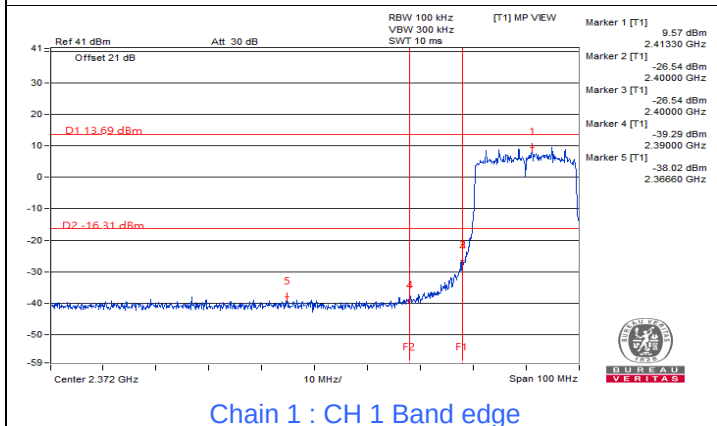
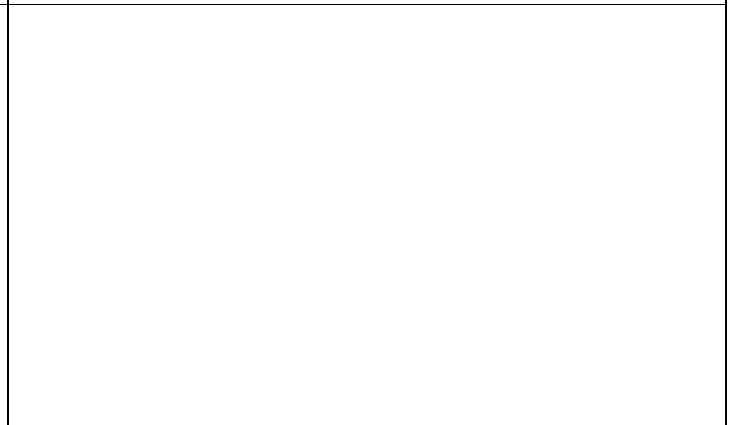
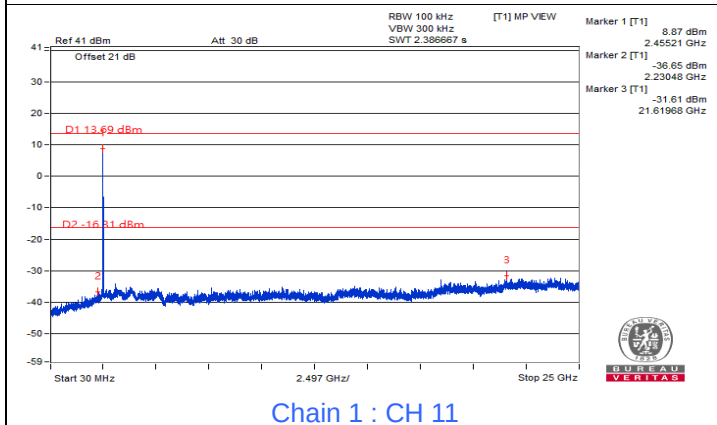
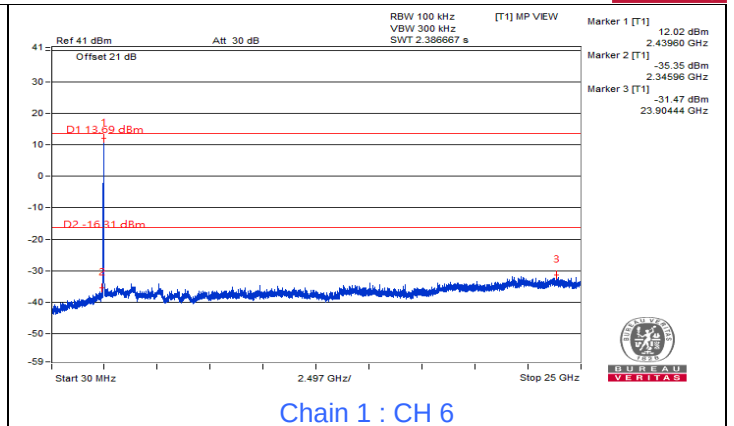
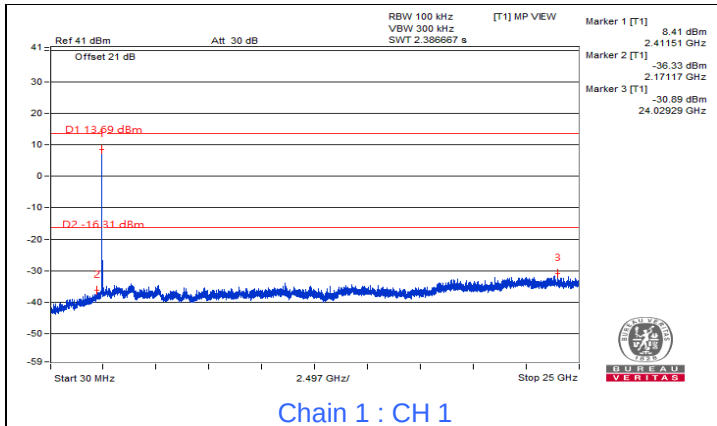


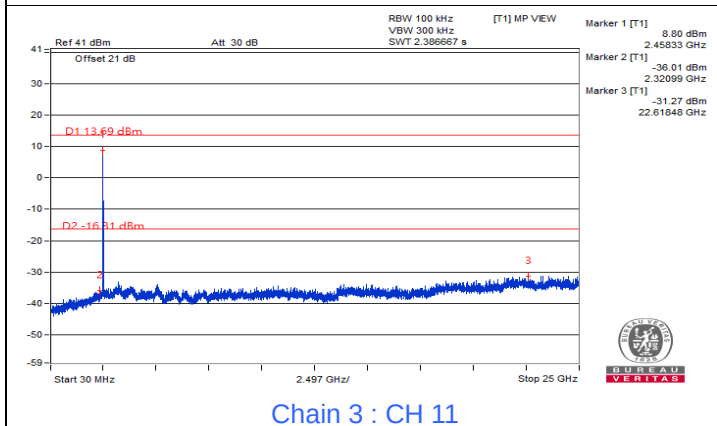
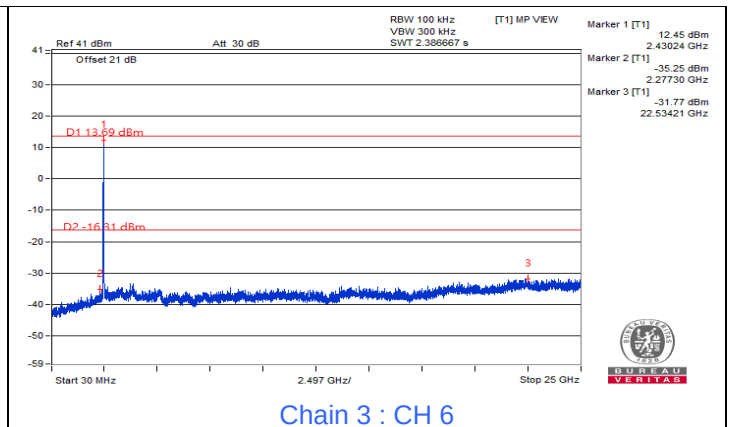
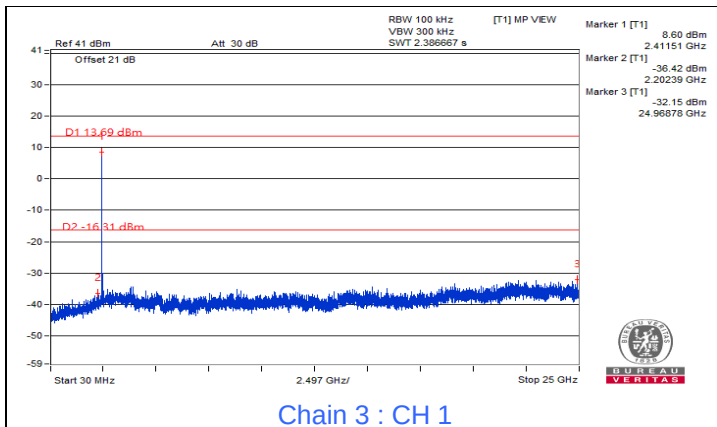
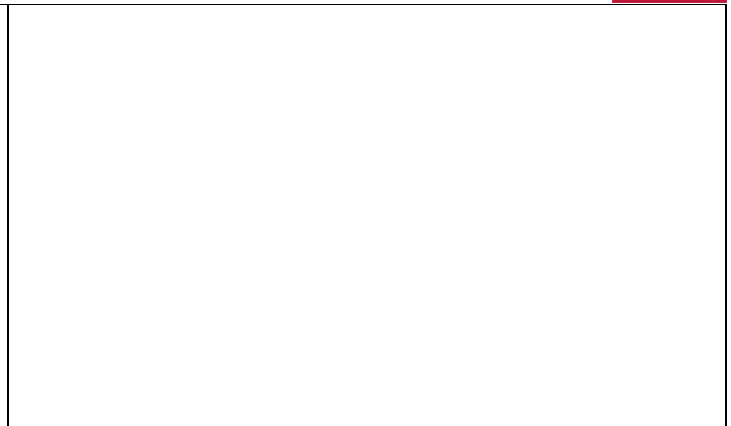
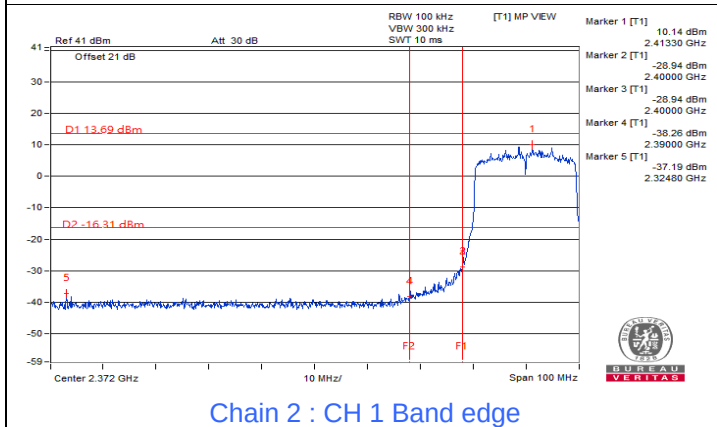
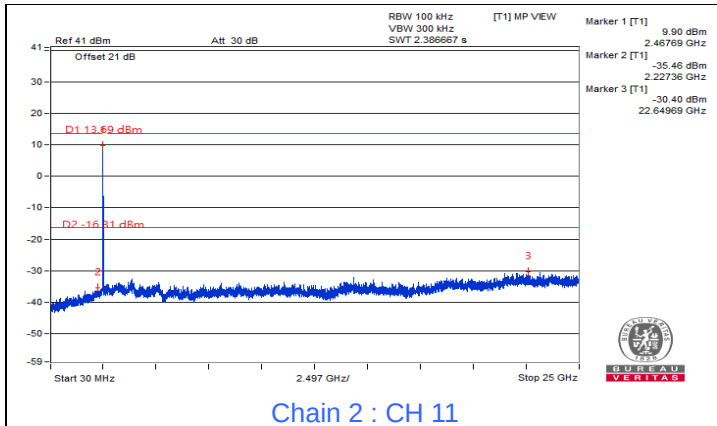


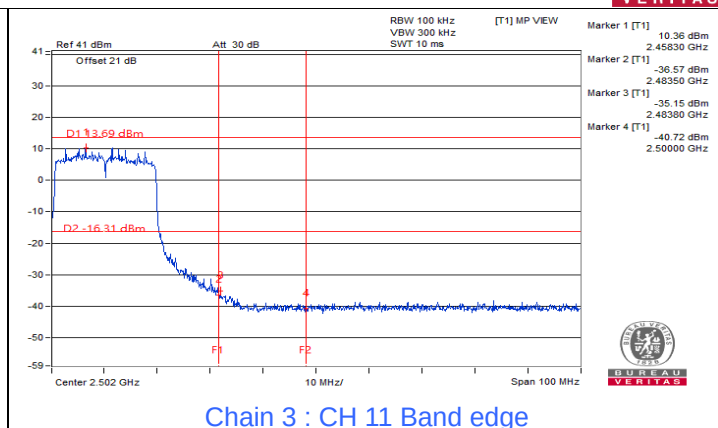
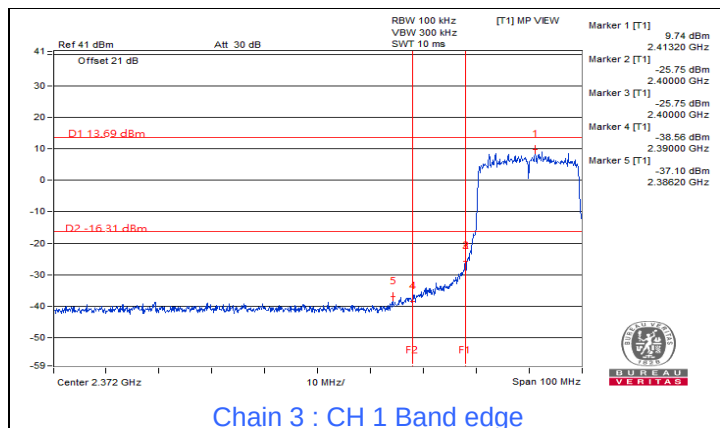


802.11ax (HE20)

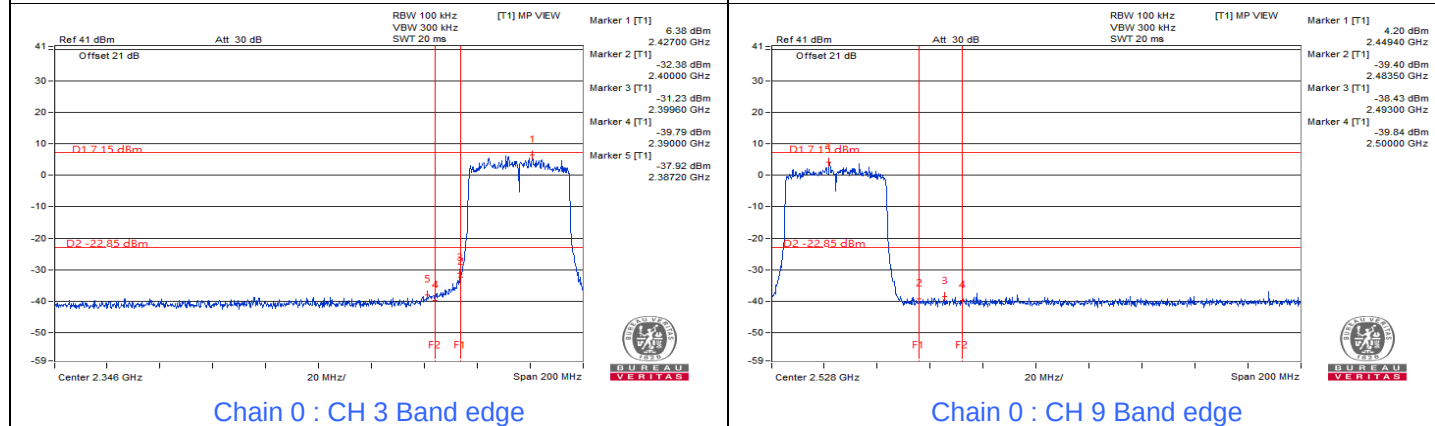
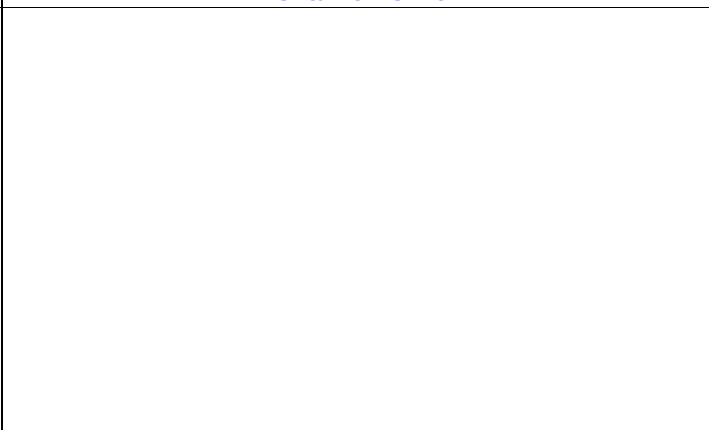
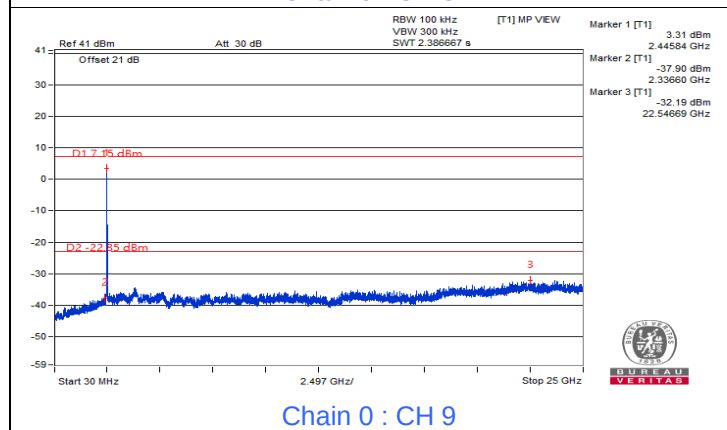
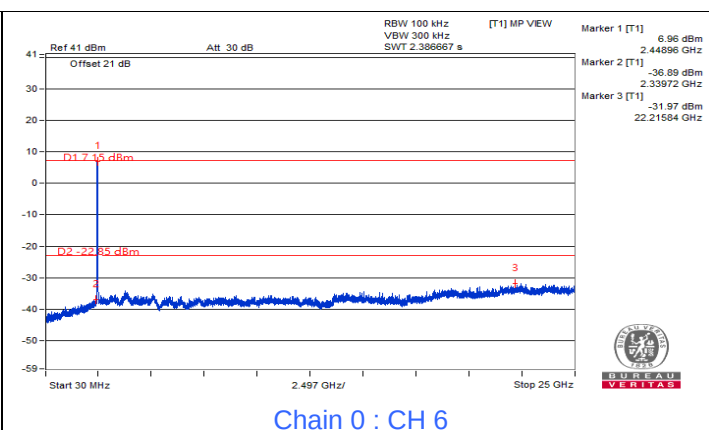
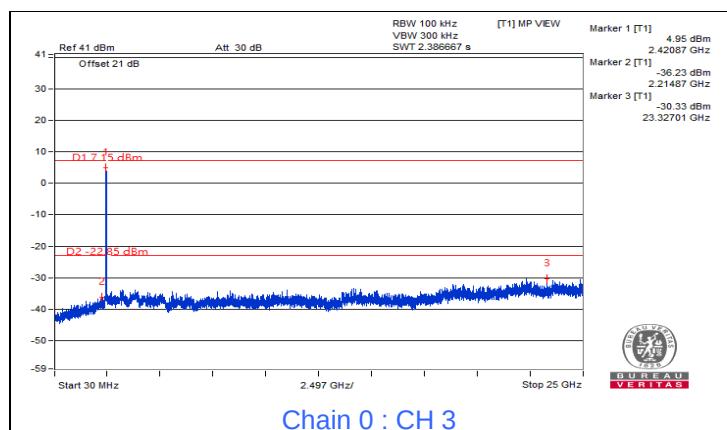
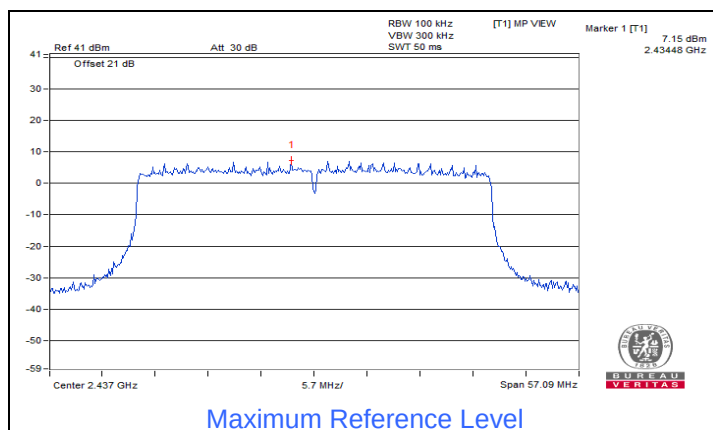


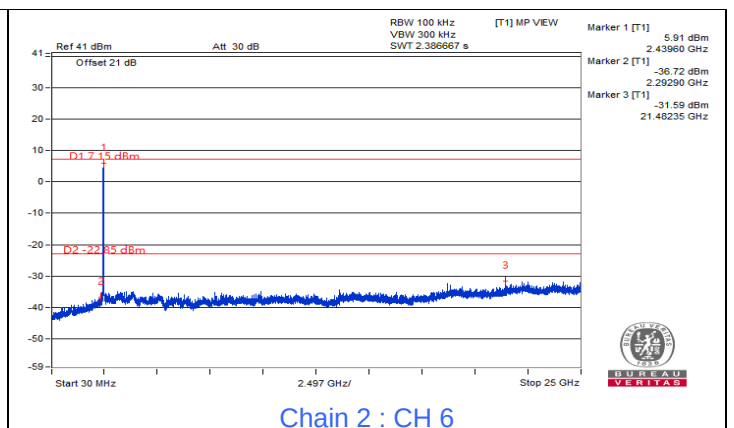
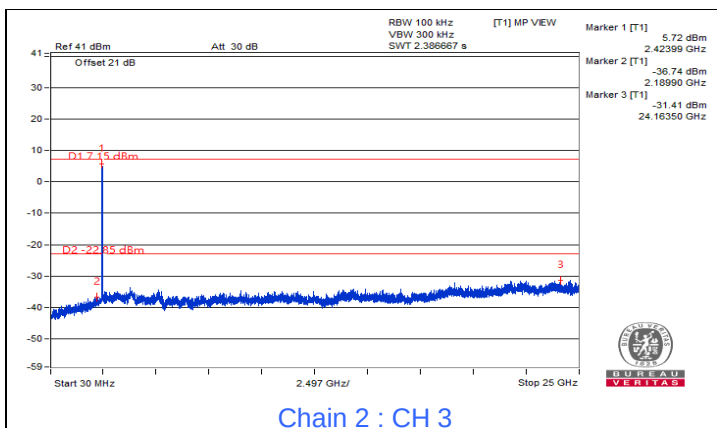
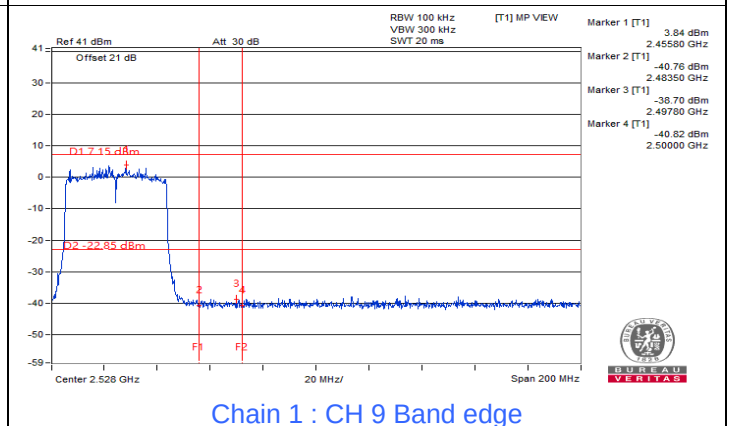
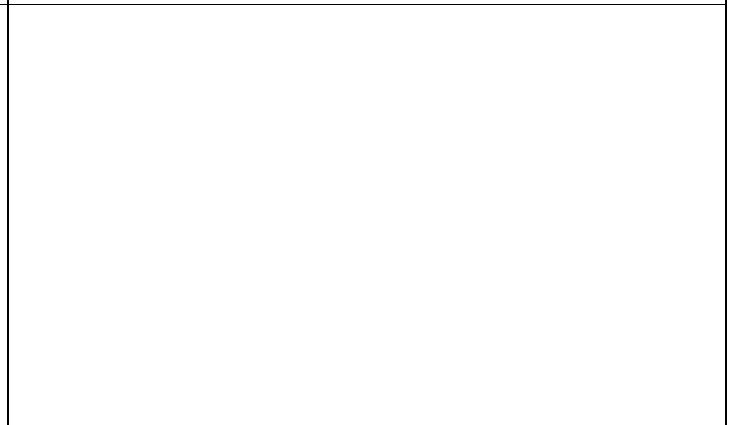
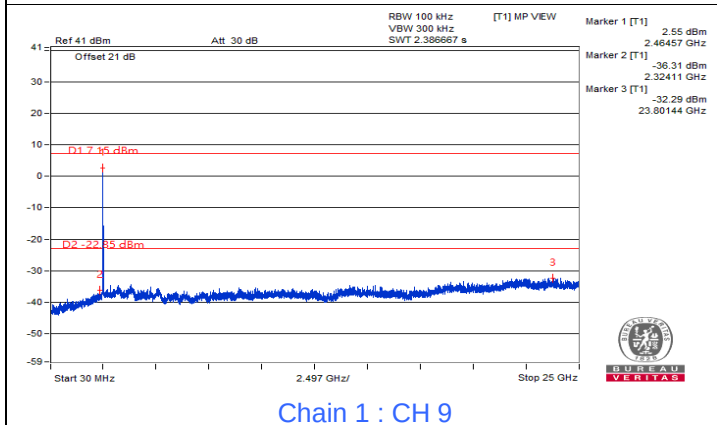
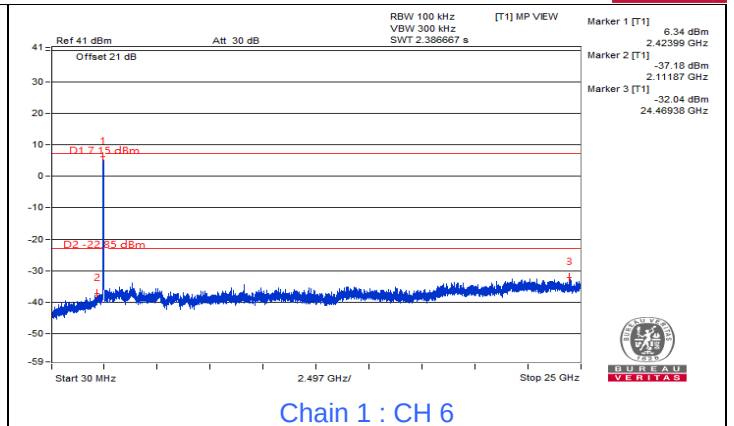
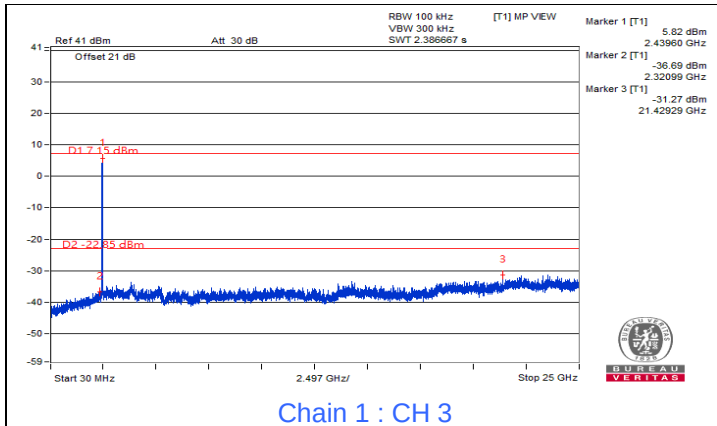


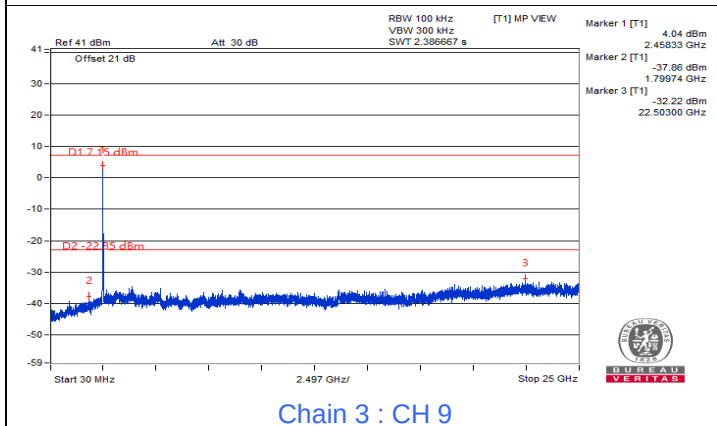
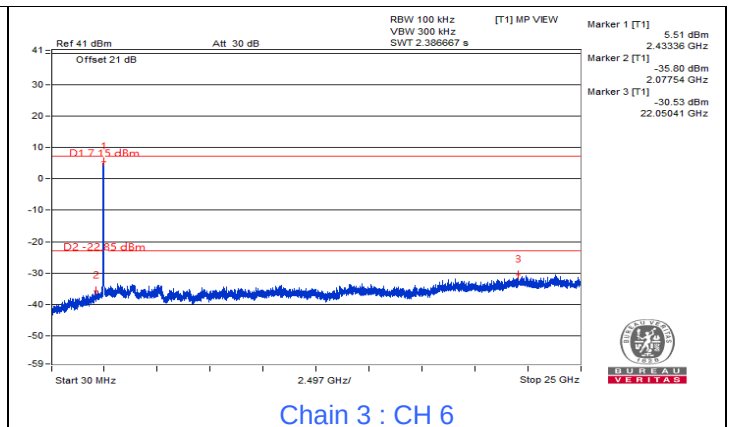
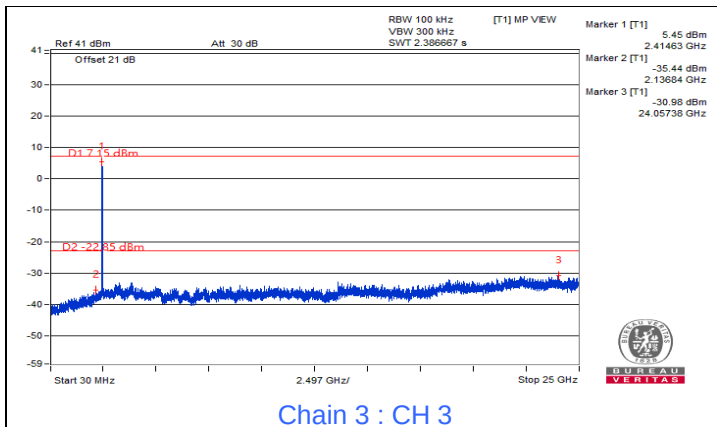
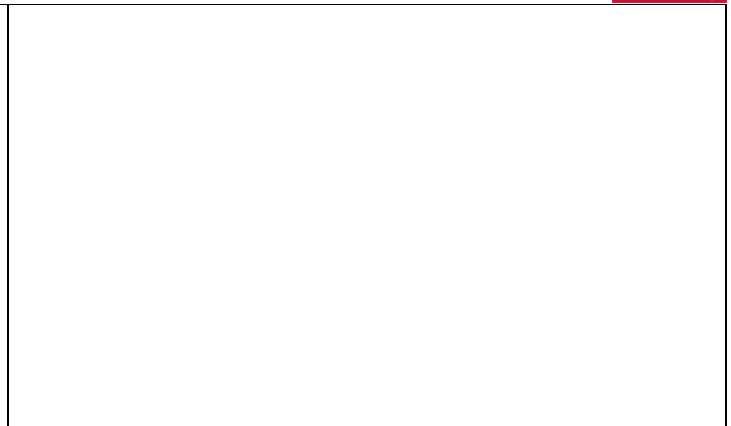
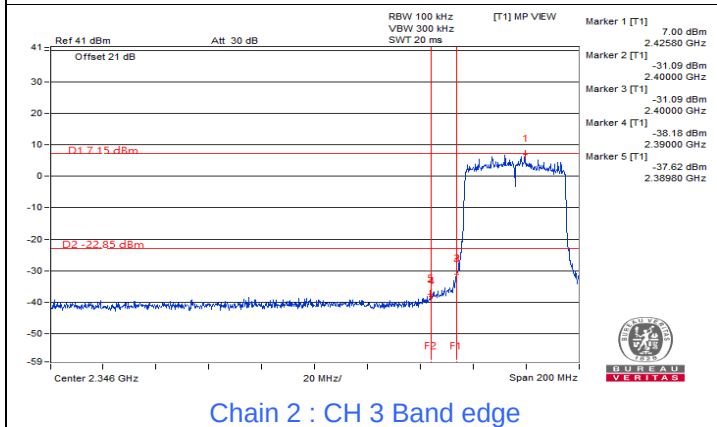
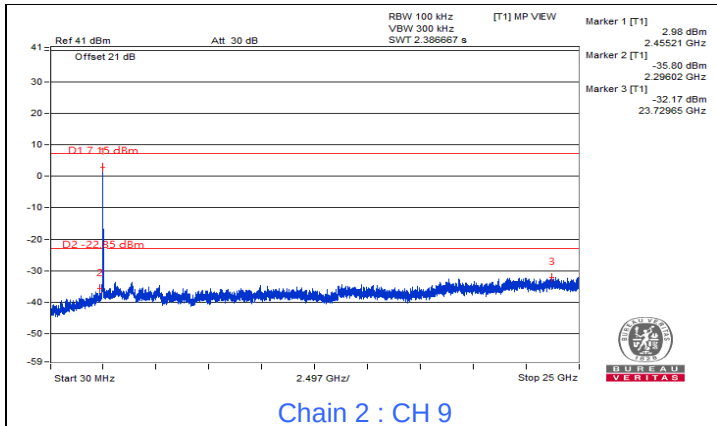


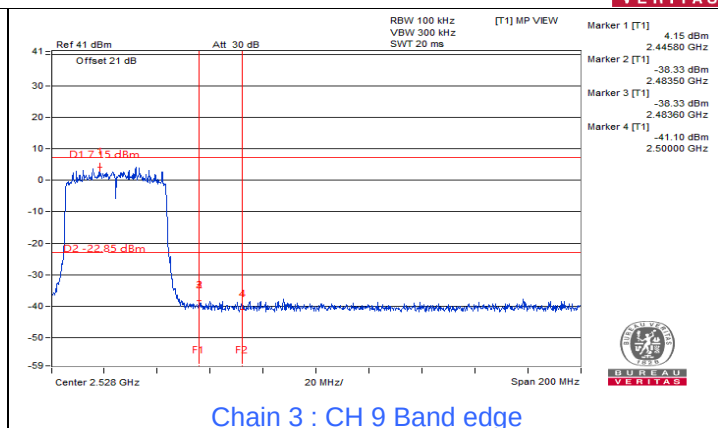
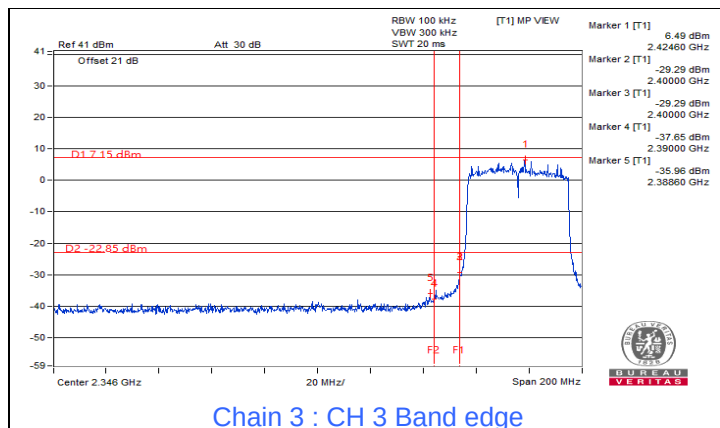


802.11ax (HE40)









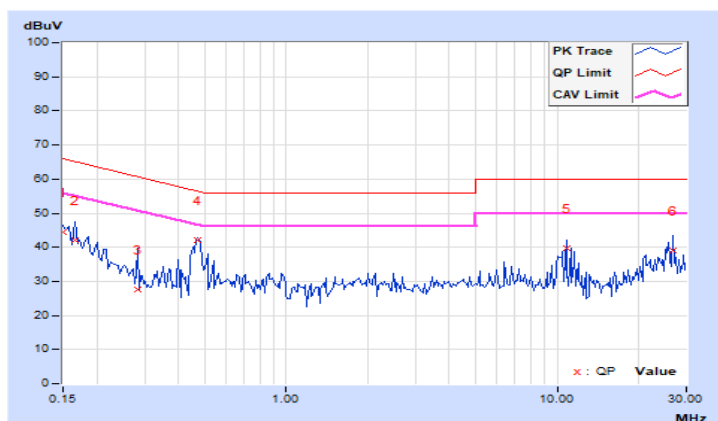
7.5 AC Power Conducted Emissions

RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Sampson Chen		

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	34.47	23.75	44.43	33.71	66.00	56.00	-21.57	-22.29
2	0.16562	9.96	31.98	20.35	41.94	30.31	65.18	55.18	-23.24	-24.87
3	0.28281	9.96	17.74	5.12	27.70	15.08	60.73	50.73	-33.03	-35.65
4	0.47031	9.97	31.95	28.24	41.92	38.21	56.51	46.51	-14.59	-8.30
5	10.79688	10.54	29.16	26.14	39.70	36.68	60.00	50.00	-20.30	-13.32
6	26.72656	11.21	27.92	24.15	39.13	35.36	60.00	50.00	-20.87	-14.64

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

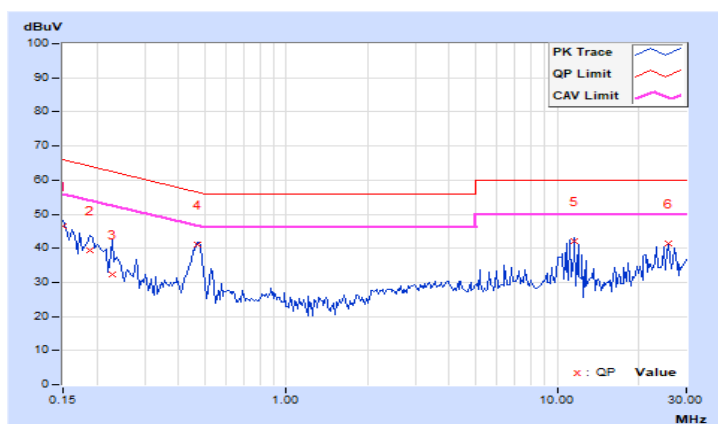


RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Sampson Chen		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.93	36.37	23.19	46.30	33.12	66.00	56.00	-19.70	-22.88
2	0.18906	9.94	29.54	20.12	39.48	30.06	64.08	54.08	-24.60	-24.02
3	0.22812	9.94	22.53	11.18	32.47	21.12	62.52	52.52	-30.05	-31.40
4	0.47031	9.94	31.17	27.43	41.11	37.37	56.51	46.51	-15.40	-9.14
5	11.60547	10.45	31.65	28.69	42.10	39.14	60.00	50.00	-17.90	-10.86
6	25.87500	10.86	30.58	29.77	41.44	40.63	60.00	50.00	-18.56	-9.37

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



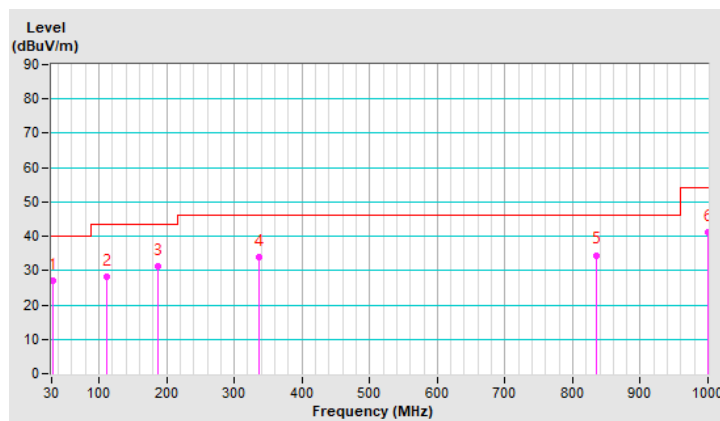
7.6 Unwanted Emissions below 1 GHz

RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	21°C, 69% RH
Tested By	Carter Lin		

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	31.90	27.2 QP	40.0	-12.8	1.00 H	278	40.5	-13.3
2	111.67	28.0 QP	43.5	-15.5	1.50 H	272	42.6	-14.6
3	186.31	31.3 QP	43.5	-12.2	1.50 H	249	45.2	-13.9
4	336.21	33.9 QP	46.0	-12.1	1.00 H	58	43.2	-9.3
5	835.04	34.5 QP	46.0	-11.5	2.00 H	326	31.9	2.6
6	999.81	41.2 QP	54.0	-12.8	1.50 H	317	35.8	5.4

Remarks:

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

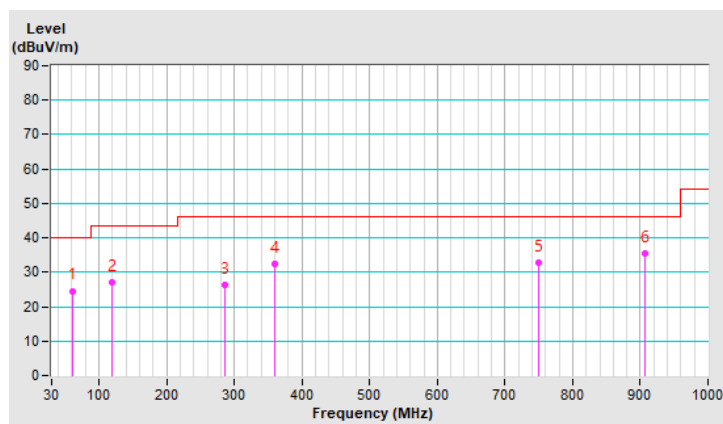


RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	21°C, 69% RH
Tested By	Carter Lin		

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	60.77	24.6 QP	40.0	-15.4	1.50 V	37	37.6	-13.0
2	120.13	27.1 QP	43.5	-16.4	1.50 V	266	40.9	-13.8
3	285.47	26.3 QP	46.0	-19.7	1.00 V	302	37.1	-10.8
4	360.25	32.5 QP	46.0	-13.5	1.00 V	37	41.2	-8.7
5	749.92	32.8 QP	46.0	-13.2	1.50 V	268	31.7	1.1
6	907.78	35.3 QP	46.0	-10.7	2.00 V	349	31.3	4.0

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.



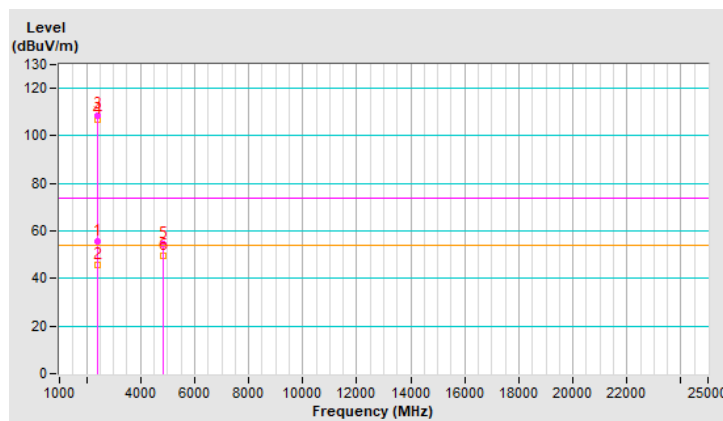
7.7 Unwanted Emissions above 1 GHz

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 = 2 kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom 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	55.7 PK	74.0	-18.3	2.28 H	47	61.3	-5.6
2	2390.00	45.8 AV	54.0	-8.2	2.28 H	47	51.4	-5.6
3	*2412.00	108.8 PK			2.28 H	47	114.4	-5.6
4	*2412.00	106.8 AV			2.28 H	47	112.4	-5.6
5	4824.00	54.6 PK	74.0	-19.4	1.64 H	23	54.4	0.2
6	4824.00	49.6 AV	54.0	-4.4	1.64 H	23	49.4	0.2

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.

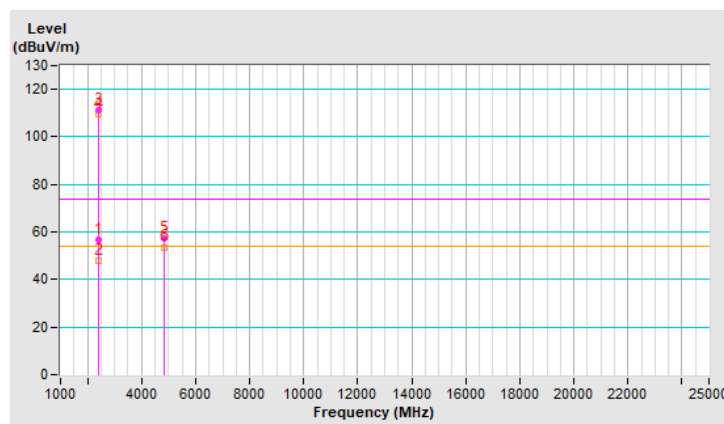


RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 2 kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.9 PK	74.0	-17.1	1.35 V	350	62.5	-5.6
2	2390.00	47.7 AV	54.0	-6.3	1.35 V	350	53.3	-5.6
3	*2412.00	111.3 PK			1.35 V	350	116.9	-5.6
4	*2412.00	109.5 AV			1.35 V	350	115.1	-5.6
5	4824.00	57.2 PK	74.0	-16.8	1.78 V	4	57.0	0.2
6	4824.00	53.7 AV	54.0	-0.3	1.78 V	4	53.5	0.2

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.

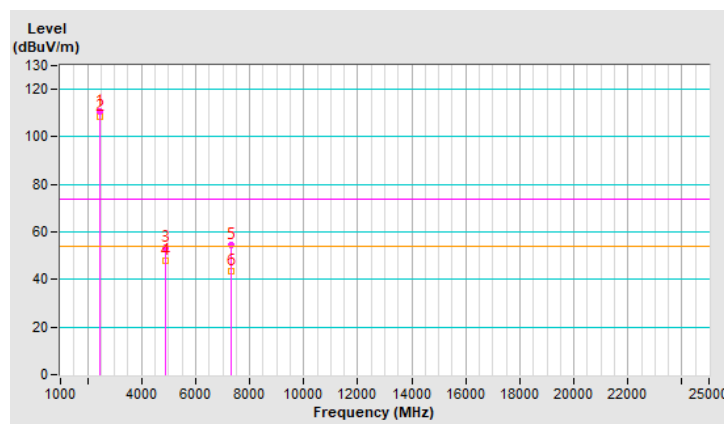


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 2 kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	*2437.00	110.8 PK			2.31 H	51	116.4	-5.6
2	*2437.00	108.6 AV			2.31 H	51	114.2	-5.6
3	4874.00	53.2 PK	74.0	-20.8	1.59 H	27	53.1	0.1
4	4874.00	47.9 AV	54.0	-6.1	1.59 H	27	47.8	0.1
5	7311.00	54.5 PK	74.0	-19.5	2.16 H	193	47.1	7.4
6	7311.00	43.4 AV	54.0	-10.6	2.16 H	193	36.0	7.4

Remarks:

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

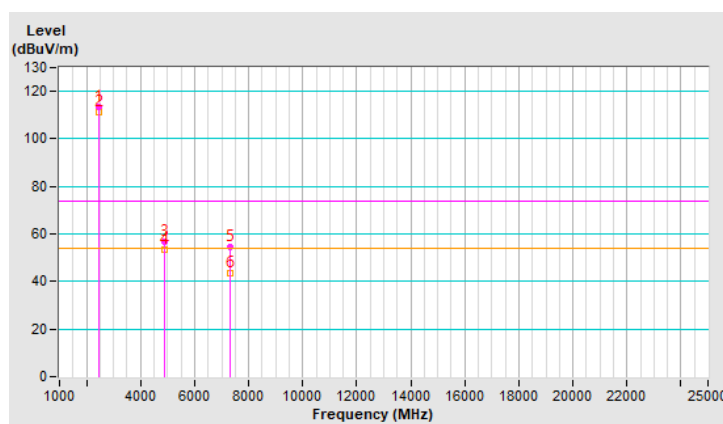


RF Mode	802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 2 kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	*2437.00	113.4 PK			1.36 V	346	119.0	-5.6
2	*2437.00	111.3 AV			1.36 V	346	116.9	-5.6
3	4874.00	56.9 PK	74.0	-17.1	1.83 V	359	56.8	0.1
4	4874.00	53.4 AV	54.0	-0.6	1.83 V	359	53.3	0.1
5	7311.00	54.7 PK	74.0	-19.3	1.67 V	243	47.3	7.4
6	7311.00	43.6 AV	54.0	-10.4	1.67 V	243	36.2	7.4

Remarks:

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

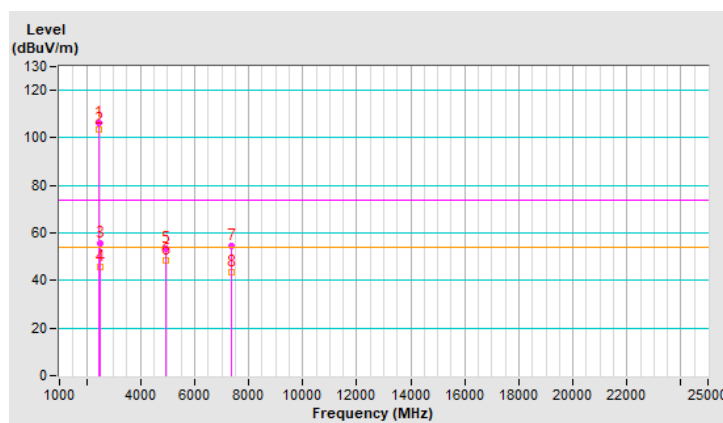


RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 2 kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	106.1 PK			2.27 H	34	111.7	-5.6
2	*2462.00	103.5 AV			2.27 H	34	109.1	-5.6
3	2483.50	55.5 PK	74.0	-18.5	2.27 H	34	61.1	-5.6
4	2483.50	45.7 AV	54.0	-8.3	2.27 H	34	51.3	-5.6
5	4924.00	53.2 PK	74.0	-20.8	1.69 H	15	52.9	0.3
6	4924.00	48.3 AV	54.0	-5.7	1.69 H	15	48.0	0.3
7	7386.00	54.4 PK	74.0	-19.6	2.16 H	192	46.7	7.7
8	7386.00	43.5 AV	54.0	-10.5	2.16 H	192	35.8	7.7

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.

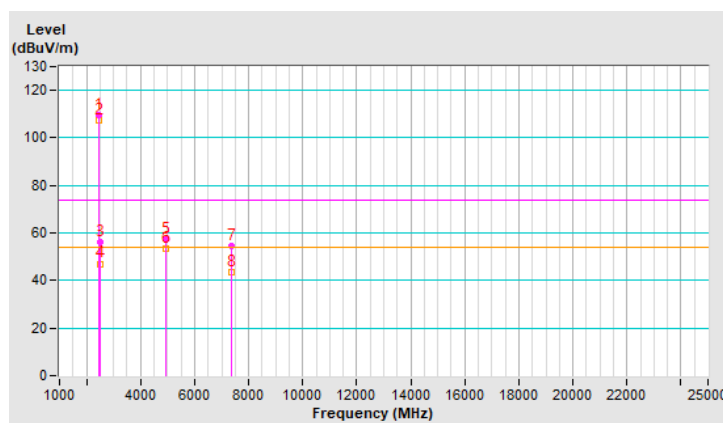


RF Mode	802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 2 kHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	109.7 PK			1.06 V	345	115.3	-5.6
2	*2462.00	107.5 AV			1.06 V	345	113.1	-5.6
3	2483.50	56.1 PK	74.0	-17.9	1.06 V	345	61.7	-5.6
4	2483.50	47.1 AV	54.0	-6.9	1.06 V	345	52.7	-5.6
5	4924.00	57.4 PK	74.0	-16.6	1.66 V	337	57.1	0.3
6	4924.00	53.4 AV	54.0	-0.6	1.66 V	337	53.1	0.3
7	7386.00	54.5 PK	74.0	-19.5	1.72 V	234	46.8	7.7
8	7386.00	43.4 AV	54.0	-10.6	1.72 V	234	35.7	7.7

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.

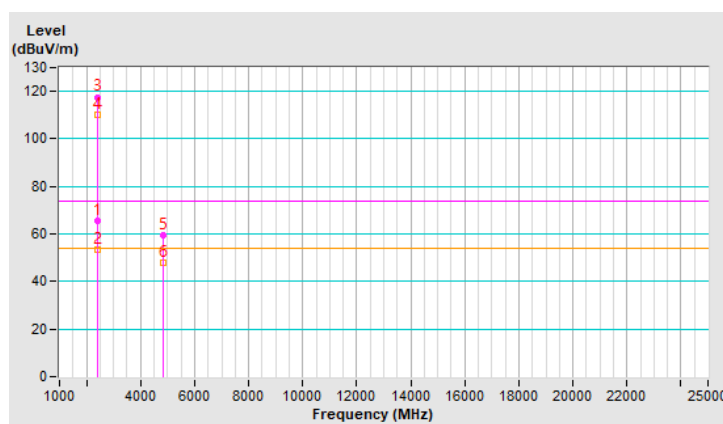


RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	65.5 PK	74.0	-8.5	1.52 H	285	71.1	-5.6
2	2390.00	53.4 AV	54.0	-0.6	1.52 H	285	59.0	-5.6
3	*2412.00	117.6 PK			1.52 H	285	123.2	-5.6
4	*2412.00	110.2 AV			1.52 H	285	115.8	-5.6
5	4824.00	59.6 PK	74.0	-14.4	3.59 H	1	59.4	0.2
6	4824.00	47.9 AV	54.0	-6.1	3.59 H	1	47.7	0.2

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.

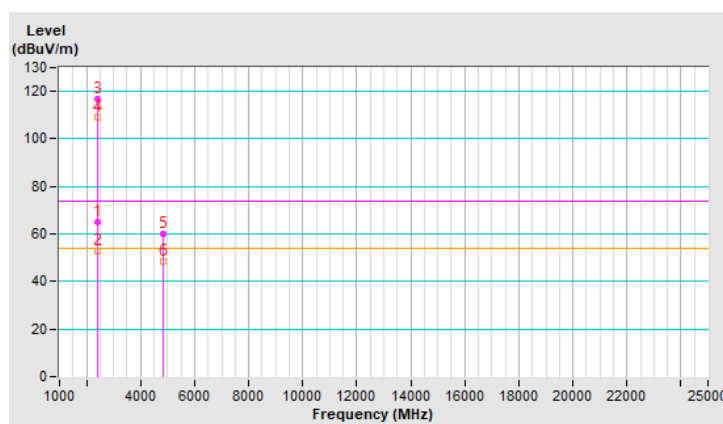


RF Mode	802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	64.8 PK	74.0	-9.2	3.60 V	339	70.4	-5.6
2	2390.00	53.0 AV	54.0	-1.0	3.60 V	339	58.6	-5.6
3	*2412.00	116.6 PK			3.60 V	339	122.2	-5.6
4	*2412.00	109.2 AV			3.60 V	339	114.8	-5.6
5	4824.00	59.8 PK	74.0	-14.2	1.77 V	13	59.6	0.2
6	4824.00	48.7 AV	54.0	-5.3	1.77 V	13	48.5	0.2

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.

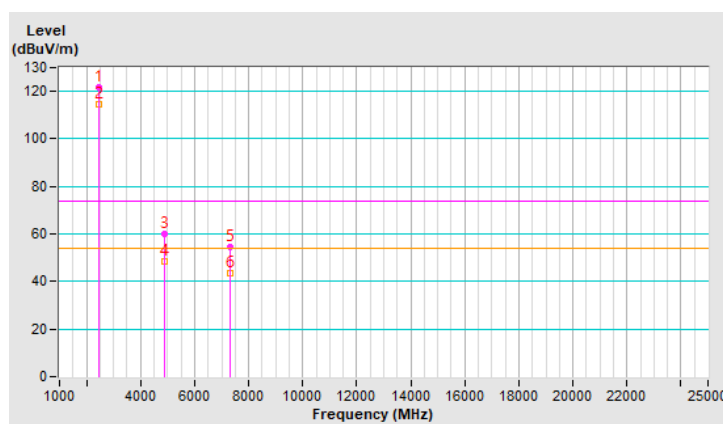


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	*2437.00	121.6 PK			1.49 H	283	127.2	-5.6
2	*2437.00	114.5 AV			1.49 H	283	120.1	-5.6
3	4874.00	60.1 PK	74.0	-13.9	1.72 H	15	60.0	0.1
4	4874.00	48.2 AV	54.0	-5.8	1.72 H	15	48.1	0.1
5	7311.00	54.7 PK	74.0	-19.3	2.11 H	199	47.3	7.4
6	7311.00	43.6 AV	54.0	-10.4	2.11 H	199	36.2	7.4

Remarks:

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

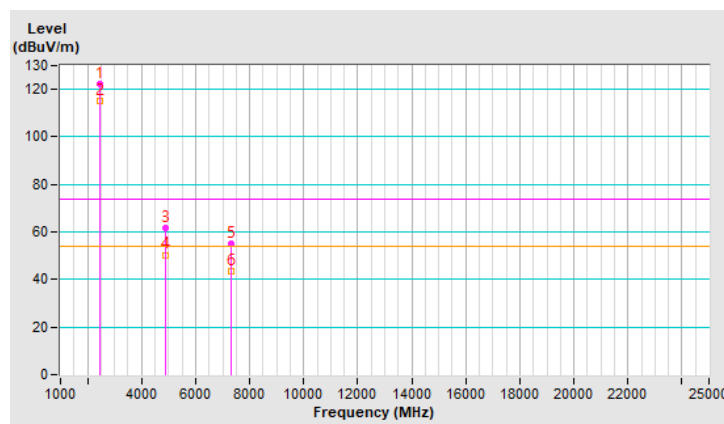


RF Mode	802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	*2437.00	122.5 PK			3.97 V	339	128.1	-5.6
2	*2437.00	115.0 AV			3.97 V	339	120.6	-5.6
3	4874.00	61.9 PK	74.0	-12.1	1.43 V	2	61.8	0.1
4	4874.00	50.4 AV	54.0	-3.6	1.43 V	2	50.3	0.1
5	7311.00	55.0 PK	74.0	-19.0	1.72 V	251	47.6	7.4
6	7311.00	43.6 AV	54.0	-10.4	1.72 V	251	36.2	7.4

Remarks:

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

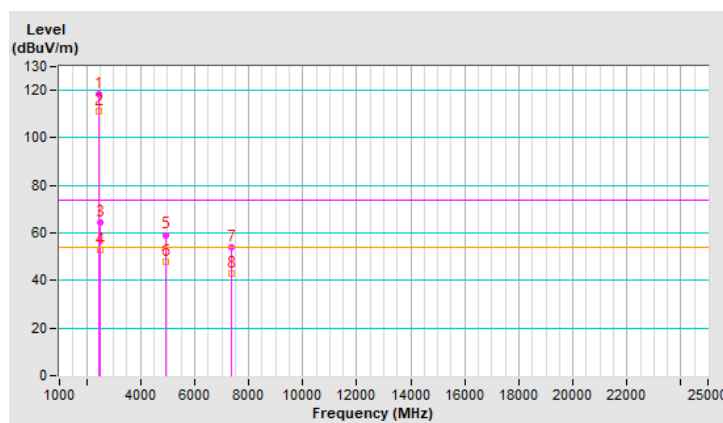


RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	118.3 PK			1.97 H	324	123.9	-5.6
2	*2462.00	111.5 AV			1.97 H	324	117.1	-5.6
3	2483.50	64.4 PK	74.0	-9.6	1.97 H	324	70.0	-5.6
4	2483.50	52.9 AV	54.0	-1.1	1.97 H	324	58.5	-5.6
5	4924.00	59.2 PK	74.0	-14.8	3.42 H	353	58.9	0.3
6	4924.00	47.8 AV	54.0	-6.2	3.42 H	353	47.5	0.3
7	7386.00	54.1 PK	74.0	-19.9	2.16 H	189	46.4	7.7
8	7386.00	43.1 AV	54.0	-10.9	2.16 H	189	35.4	7.7

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.

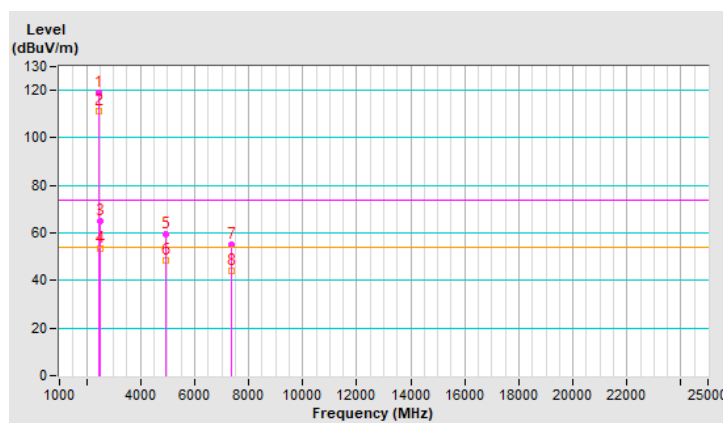


RF Mode	802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	119.2 PK			3.89 V	353	124.8	-5.6
2	*2462.00	111.1 AV			3.89 V	353	116.7	-5.6
3	2483.50	64.8 PK	74.0	-9.2	3.89 V	353	70.4	-5.6
4	2483.50	53.3 AV	54.0	-0.7	3.89 V	353	58.9	-5.6
5	4924.00	59.6 PK	74.0	-14.4	1.81 V	22	59.3	0.3
6	4924.00	48.5 AV	54.0	-5.5	1.81 V	22	48.2	0.3
7	7386.00	54.9 PK	74.0	-19.1	1.63 V	241	47.2	7.7
8	7386.00	43.8 AV	54.0	-10.2	1.63 V	241	36.1	7.7

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.

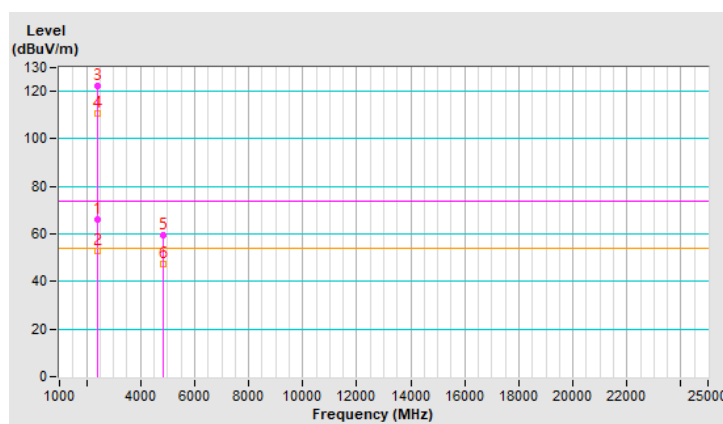


RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.0 PK	74.0	-8.0	2.31 H	58	71.6	-5.6
2	2390.00	53.1 AV	54.0	-0.9	2.31 H	58	58.7	-5.6
3	*2412.00	122.0 PK			2.31 H	58	127.6	-5.6
4	*2412.00	110.5 AV			2.31 H	58	116.1	-5.6
5	4824.00	59.4 PK	74.0	-14.6	3.71 H	5	59.2	0.2
6	4824.00	47.5 AV	54.0	-6.5	3.71 H	5	47.3	0.2

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.

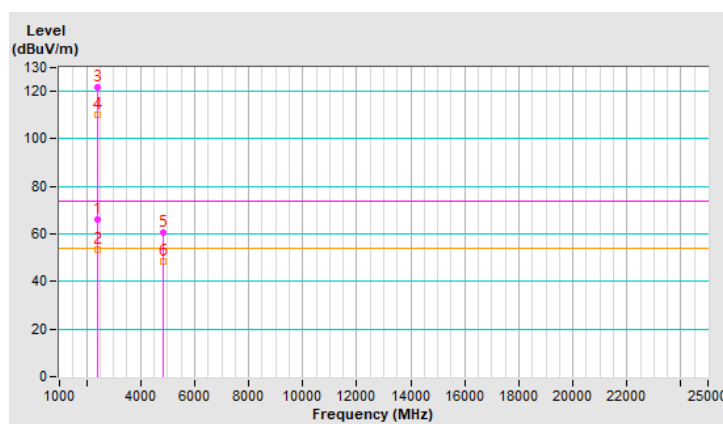


RF Mode	802.11ax (HE20)	Channel	CH 1 : 2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	3.63 V	349	71.9	-5.6
2	2390.00	53.5 AV	54.0	-0.5	3.63 V	349	59.1	-5.6
3	*2412.00	121.9 PK			3.63 V	349	127.5	-5.6
4	*2412.00	110.0 AV			3.63 V	349	115.6	-5.6
5	4824.00	60.4 PK	74.0	-13.6	1.62 V	27	60.2	0.2
6	4824.00	48.5 AV	54.0	-5.5	1.62 V	27	48.3	0.2

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.

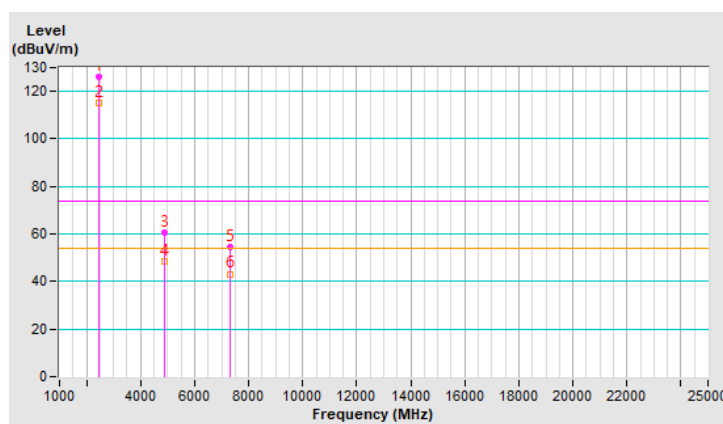


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	*2437.00	125.9 PK			2.28 H	39	131.5	-5.6
2	*2437.00	115.1 AV			2.28 H	39	120.7	-5.6
3	4874.00	60.5 PK	74.0	-13.5	3.68 H	2	60.4	0.1
4	4874.00	48.4 AV	54.0	-5.6	3.68 H	2	48.3	0.1
5	7311.00	54.4 PK	74.0	-19.6	2.09 H	202	47.0	7.4
6	7311.00	43.2 AV	54.0	-10.8	2.09 H	202	35.8	7.4

Remarks:

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

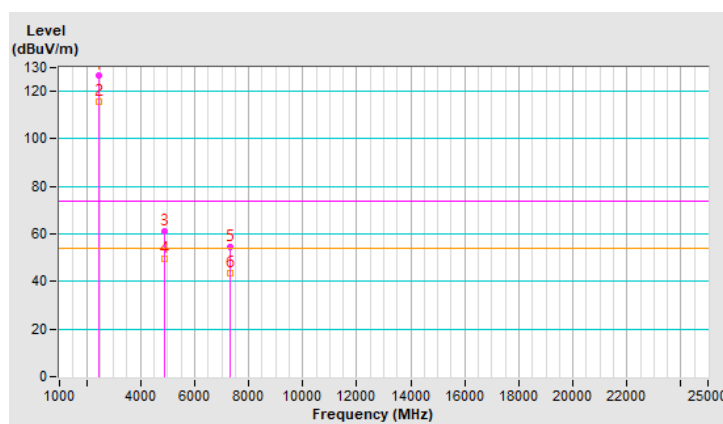


RF Mode	802.11ax (HE20)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	*2437.00	126.4 PK			3.97 V	347	132.0	-5.6
2	*2437.00	115.5 AV			3.97 V	347	121.1	-5.6
3	4874.00	61.1 PK	74.0	-12.9	1.36 V	8	61.0	0.1
4	4874.00	49.6 AV	54.0	-4.4	1.36 V	8	49.5	0.1
5	7311.00	54.6 PK	74.0	-19.4	1.72 V	245	47.2	7.4
6	7311.00	43.3 AV	54.0	-10.7	1.72 V	245	35.9	7.4

Remarks:

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

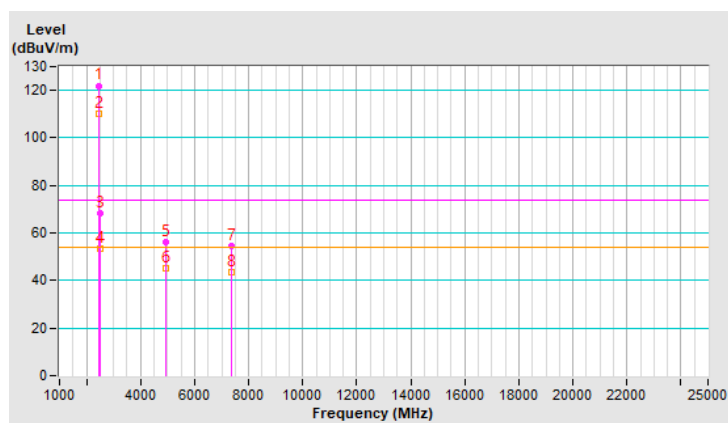


RF Mode	802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	122.0 PK			1.68 H	58	127.6	-5.6
2	*2462.00	110.1 AV			1.68 H	58	115.7	-5.6
3	2483.50	68.4 PK	74.0	-5.6	1.68 H	58	74.0	-5.6
4	2483.50	53.4 AV	54.0	-0.6	1.68 H	58	59.0	-5.6
5	4924.00	56.2 PK	74.0	-17.8	3.64 H	356	55.9	0.3
6	4924.00	45.4 AV	54.0	-8.6	3.64 H	356	45.1	0.3
7	7386.00	54.3 PK	74.0	-19.7	2.18 H	183	46.6	7.7
8	7386.00	43.3 AV	54.0	-10.7	2.18 H	183	35.6	7.7

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.

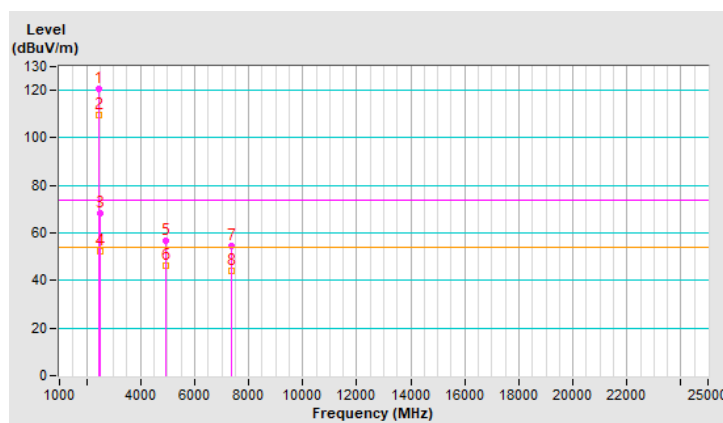


RF Mode	802.11ax (HE20)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	120.6 PK			4.00 V	346	126.2	-5.6
2	*2462.00	109.6 AV			4.00 V	346	115.2	-5.6
3	2483.50	68.1 PK	74.0	-5.9	4.00 V	346	73.7	-5.6
4	2483.50	52.4 AV	54.0	-1.6	4.00 V	346	58.0	-5.6
5	4924.00	56.7 PK	74.0	-17.3	1.59 V	0	56.4	0.3
6	4924.00	46.0 AV	54.0	-8.0	1.59 V	0	45.7	0.3
7	7386.00	54.7 PK	74.0	-19.3	1.65 V	228	47.0	7.7
8	7386.00	43.8 AV	54.0	-10.2	1.65 V	228	36.1	7.7

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.

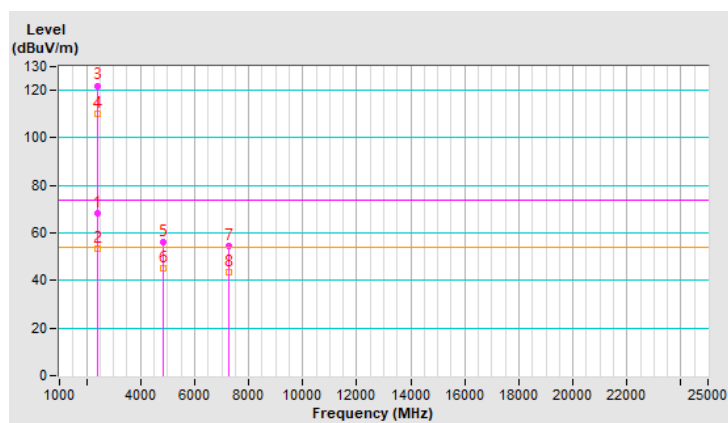


RF Mode	802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	68.4 PK	74.0	-5.6	1.68 H	58	74.0	-5.6
2	2390.00	53.4 AV	54.0	-0.6	1.68 H	58	59.0	-5.6
3	*2422.00	122.0 PK			1.68 H	58	127.6	-5.6
4	*2422.00	110.1 AV			1.68 H	58	115.7	-5.6
5	4844.00	56.2 PK	74.0	-17.8	3.64 H	356	56.1	0.1
6	4844.00	45.4 AV	54.0	-8.6	3.64 H	356	45.3	0.1
7	7266.00	54.3 PK	74.0	-19.7	2.18 H	183	47.1	7.2
8	7266.00	43.3 AV	54.0	-10.7	2.18 H	183	36.1	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.

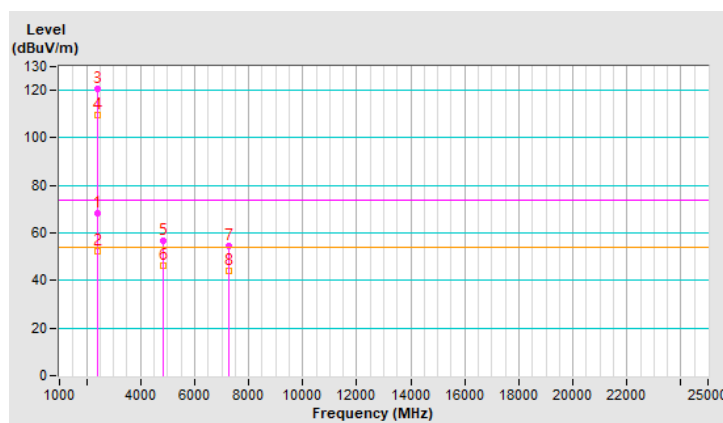


RF Mode	802.11ax (HE40)	Channel	CH 3 : 2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	68.1 PK	74.0	-5.9	4.00 V	346	73.7	-5.6
2	2390.00	52.4 AV	54.0	-1.6	4.00 V	346	58.0	-5.6
3	*2422.00	120.6 PK			4.00 V	346	126.2	-5.6
4	*2422.00	109.6 AV			4.00 V	346	115.2	-5.6
5	4844.00	56.7 PK	74.0	-17.3	1.59 V	0	56.6	0.1
6	4844.00	46.0 AV	54.0	-8.0	1.59 V	0	45.9	0.1
7	7266.00	54.7 PK	74.0	-19.3	1.65 V	228	47.5	7.2
8	7266.00	43.8 AV	54.0	-10.2	1.65 V	228	36.6	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.

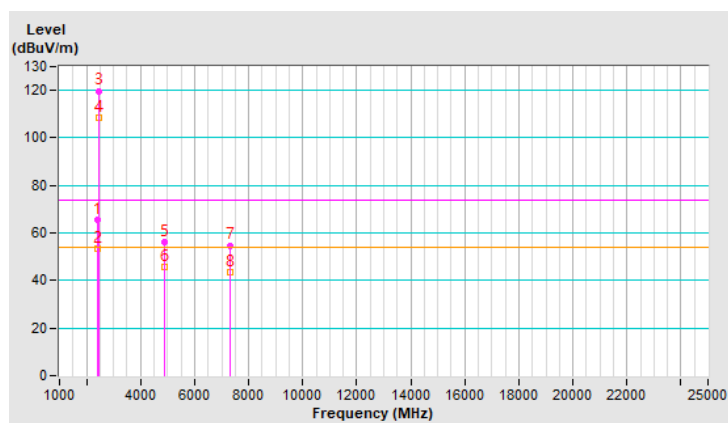


RF Mode	802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	1.66 H	54	70.9	-5.6
2	2390.00	53.3 AV	54.0	-0.7	1.66 H	54	58.9	-5.6
3	*2437.00	119.8 PK			1.66 H	54	125.4	-5.6
4	*2437.00	108.7 AV			1.66 H	54	114.3	-5.6
5	4874.00	56.4 PK	74.0	-17.6	3.61 H	355	56.3	0.1
6	4874.00	45.6 AV	54.0	-8.4	3.61 H	355	45.5	0.1
7	7311.00	54.8 PK	74.0	-19.2	2.20 H	179	47.4	7.4
8	7311.00	43.6 AV	54.0	-10.4	2.20 H	179	36.2	7.4

Remarks:

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

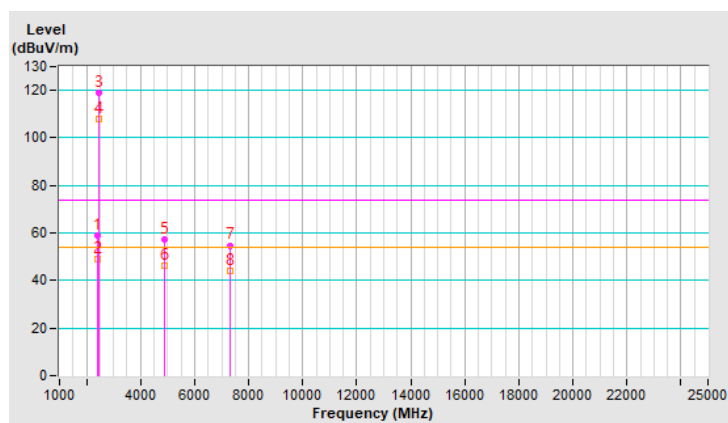


RF Mode	802.11ax (HE40)	Channel	CH 6 : 2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	58.8 PK	74.0	-15.2	3.95 V	348	64.4	-5.6
2	2390.00	49.1 AV	54.0	-4.9	3.95 V	348	54.7	-5.6
3	*2437.00	119.2 PK			3.95 V	348	124.8	-5.6
4	*2437.00	107.8 AV			3.95 V	348	113.4	-5.6
5	4874.00	57.0 PK	74.0	-17.0	1.45 V	2	56.9	0.1
6	4874.00	46.2 AV	54.0	-7.8	1.45 V	2	46.1	0.1
7	7311.00	54.8 PK	74.0	-19.2	1.61 V	242	47.4	7.4
8	7311.00	44.0 AV	54.0	-10.0	1.61 V	242	36.6	7.4

Remarks:

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

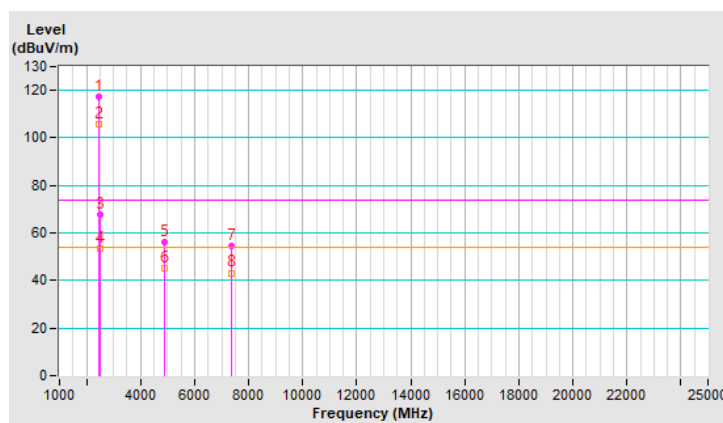


RF Mode	802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

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	117.1 PK			1.65 H	57	122.7	-5.6
2	*2452.00	105.9 AV			1.65 H	57	111.5	-5.6
3	2483.50	67.5 PK	74.0	-6.5	1.65 H	57	73.1	-5.6
4	2483.50	53.3 AV	54.0	-0.7	1.65 H	57	58.9	-5.6
5	4904.00	56.1 PK	74.0	-17.9	3.72 H	349	55.9	0.2
6	4904.00	45.3 AV	54.0	-8.7	3.72 H	349	45.1	0.2
7	7356.00	54.4 PK	74.0	-19.6	2.14 H	192	46.9	7.5
8	7356.00	43.2 AV	54.0	-10.8	2.14 H	192	35.7	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.

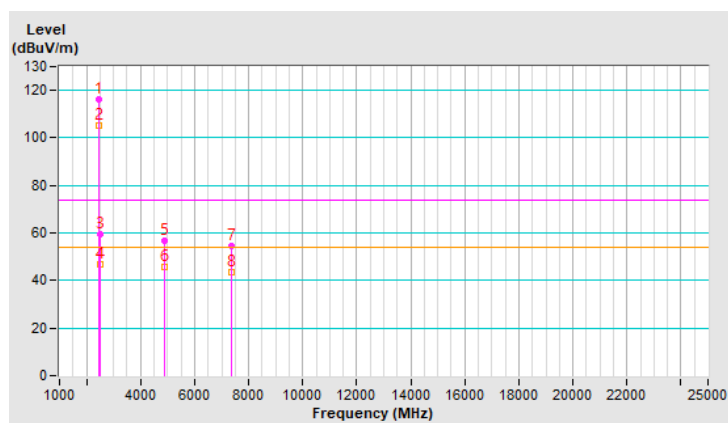


RF Mode	802.11ax (HE40)	Channel	CH 9 : 2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 200 Hz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 75% RH
Tested By	Tom Yang		

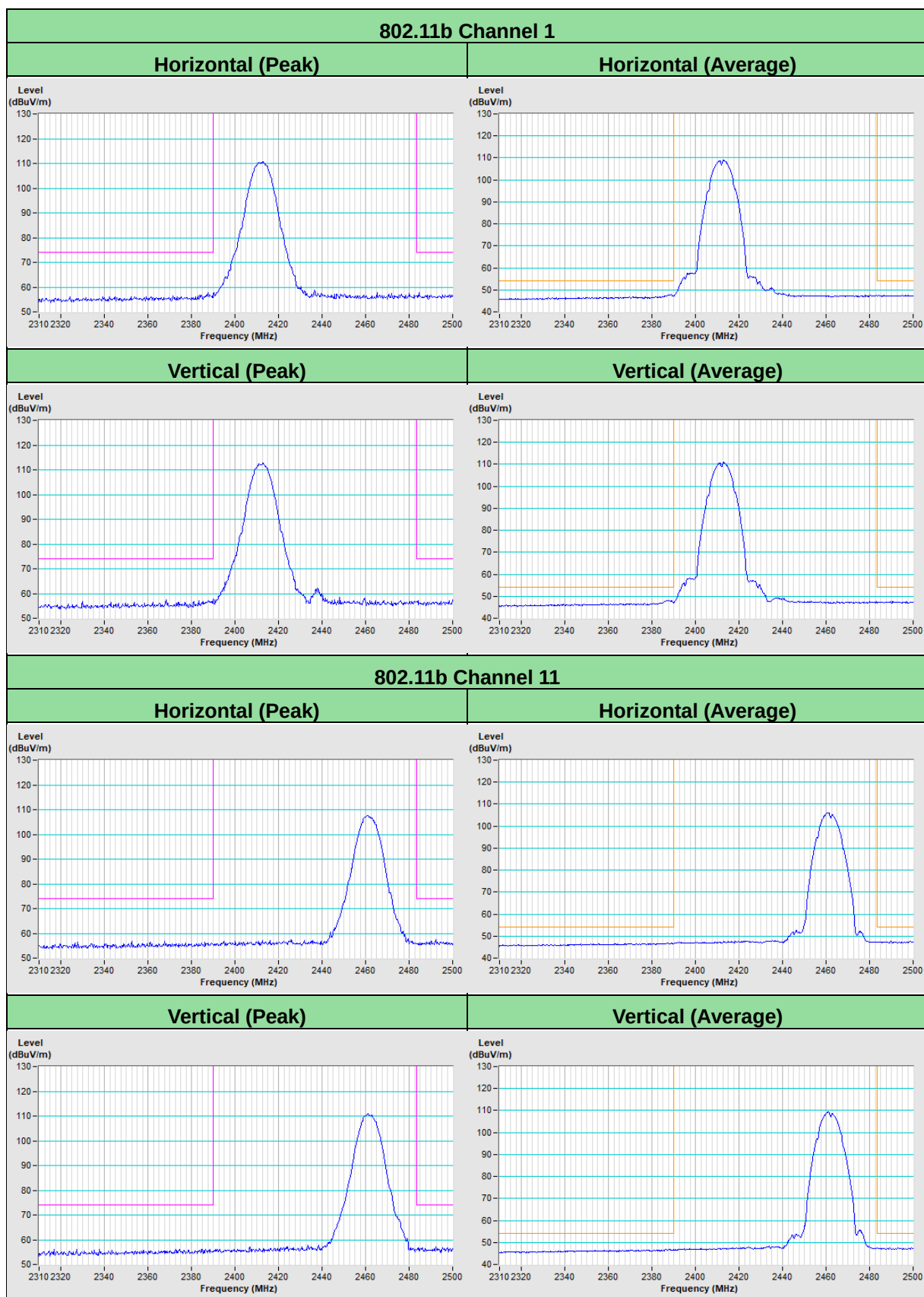
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	116.3 PK			3.95 V	347	121.9	-5.6
2	*2452.00	105.4 AV			3.95 V	347	111.0	-5.6
3	2483.50	59.3 PK	74.0	-14.7	3.95 V	347	64.9	-5.6
4	2483.50	46.8 AV	54.0	-7.2	3.95 V	347	52.4	-5.6
5	4904.00	56.7 PK	74.0	-17.3	1.51 V	358	56.5	0.2
6	4904.00	45.9 AV	54.0	-8.1	1.51 V	358	45.7	0.2
7	7356.00	54.6 PK	74.0	-19.4	1.66 V	257	47.1	7.5
8	7356.00	43.3 AV	54.0	-10.7	1.66 V	257	35.8	7.5

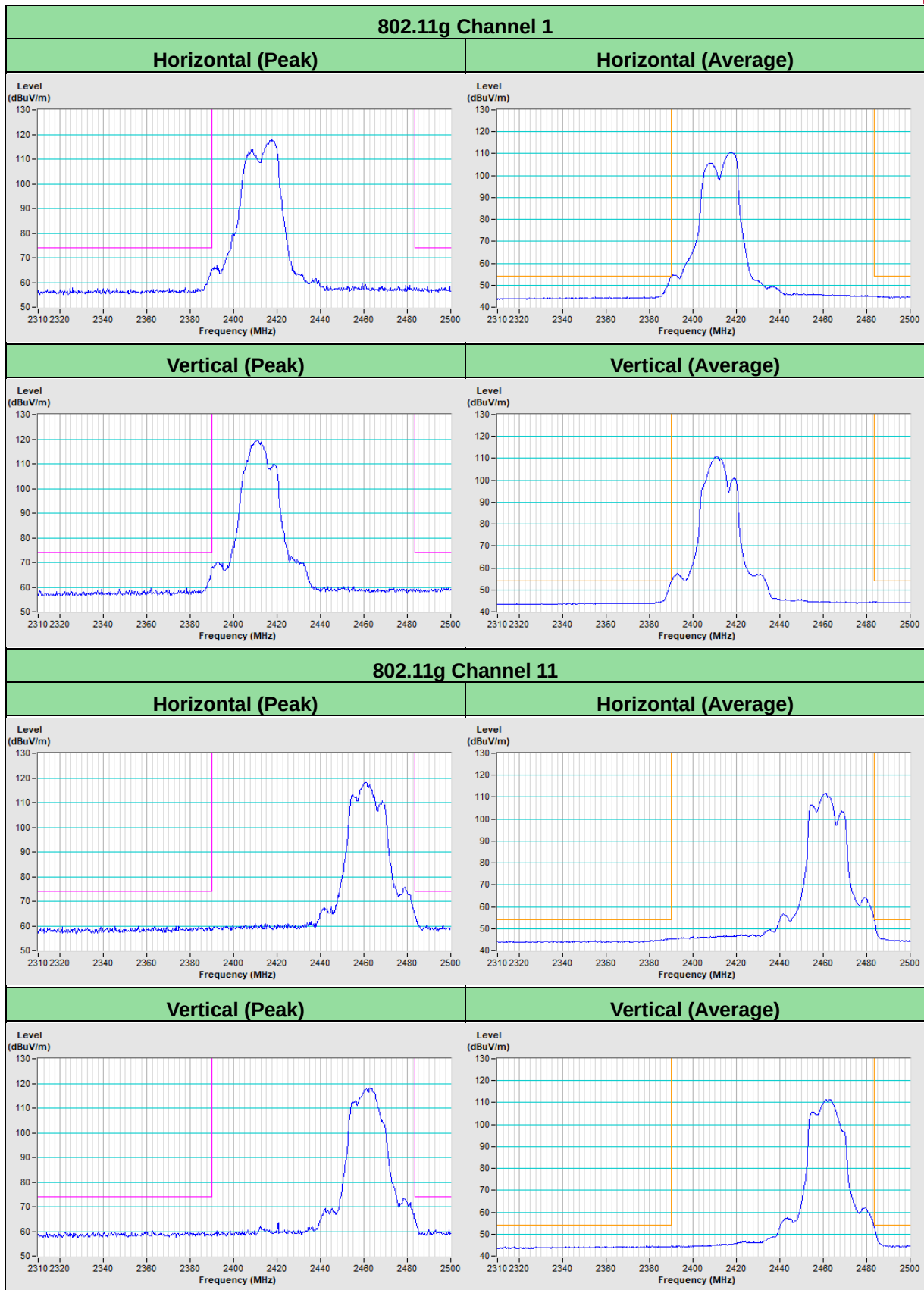
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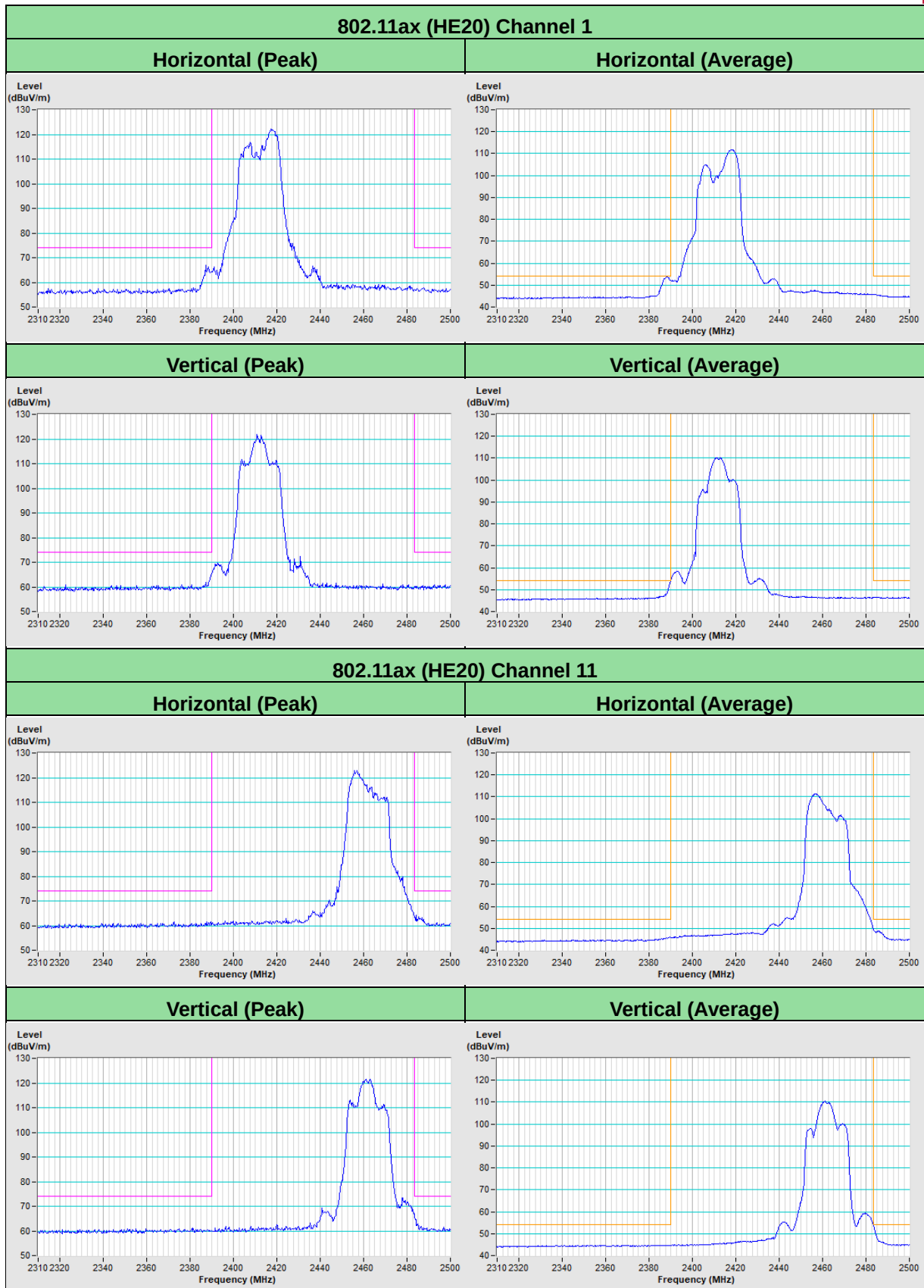
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency,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

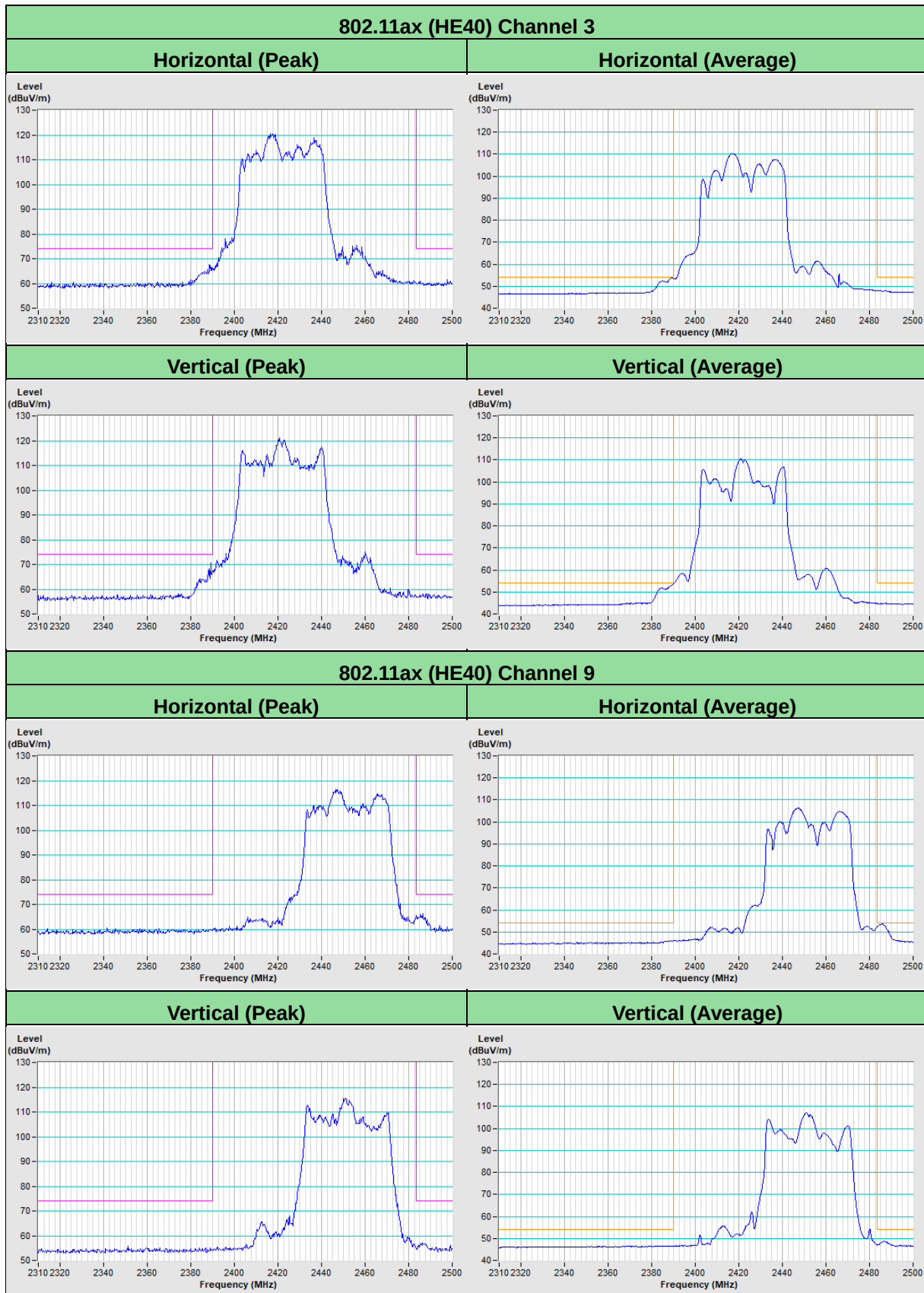


Plot of Band Edge









8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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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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